LG

SERVICE MANUAL

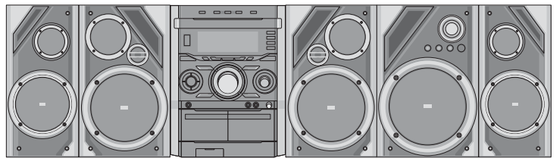
MODEL : MDV902(MDS902V, MDS902S, MDS902W)

LG

http://biz.lgservice.com

KARAOKE MINI HOME THEATER
SERVICE MANUAL

CAUTION
BEFORE SERVICING THE UNIT, READ THE “SAFETY PRECAUTIONS” IN THIS MANUAL.



MODEL : MDV902(MDS902V, MDS902S, MDS902W)

P/NO : AFN35036903

JULY, 2007

CONTENTS

SECTION 1 GENERAL

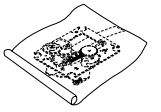
SERVICING PRECAUTIONS

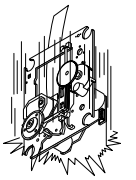
NOTES REGARDING HANDLING OF THE PICK-UP

1. Notes for transport and storage

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

Storage in conductive bag

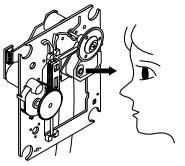




Drop impact

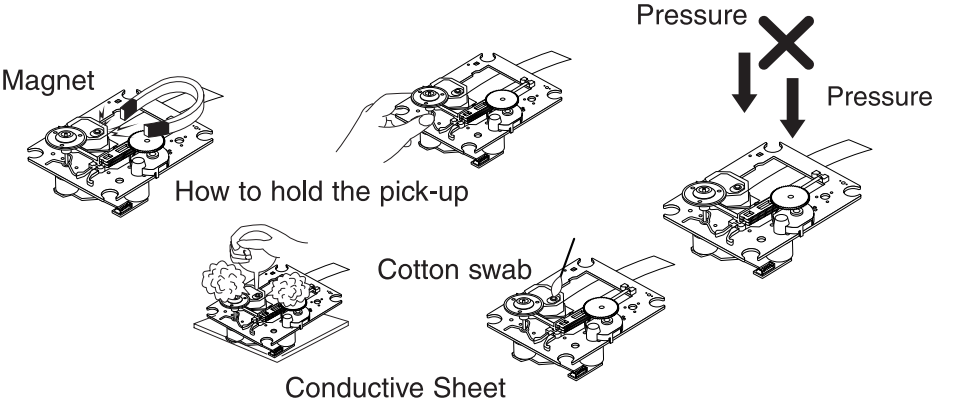
2. Repair notes

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



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

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



6) Never attempt to disassemble the pick-up.
   Spring by excess pressure. If the lens is extremely dirty, apply isopropyl alcohol to the cotton swab. (Do not use any other liquid cleaners, because they will damage the lens.) Take care not to use too much of this alcohol on the swab, and do not allow the alcohol to get inside the pick-up.

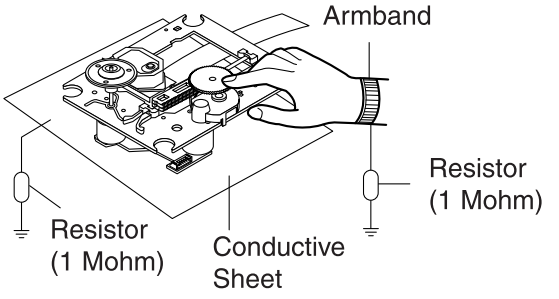
NOTES REGARDING COMPACT DISC PLAYER REPAIRS

1. Preparations

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

2. Notes for repair

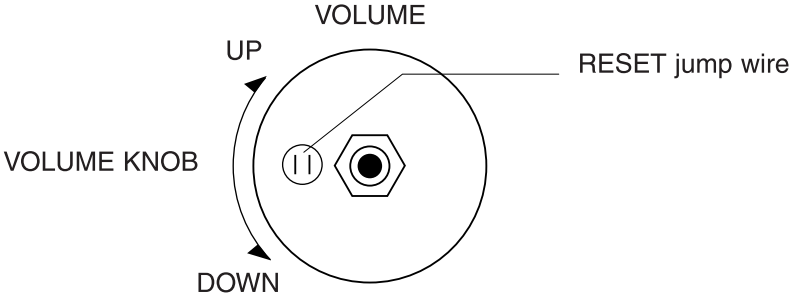
1) Before replacing a component part, first disconnect the power supply lead wire from the unit
2) All equipment, measuring instruments and tools must be grounded.
3) The workbench should be covered with a conductive sheet and grounded.
   When removing the laser pick-up from its conductive bag, do not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



CLEARING MALFUNCTION

You can reset your unit to initial status if malfunction occur(button malfunction, display, etc.).
Using a pointed good conductor(such as driver), simply short the RESET jump wire on the inside of the volume knob for more than 3 seconds.
If you reset your unit, you must reenter all its settings(stations, clock, timer)

NOTE: 1. To operate the RESET jump wire, pull the volume rotary knob and release it.
2. If you wish to operate the RESET jump wire, it is necessary to unplug the power cord.



ESD PRECAUTIONS

Electrostatically Sensitive Devices (ESD)

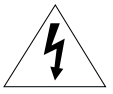
Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called electrostatically sensitive devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following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

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

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

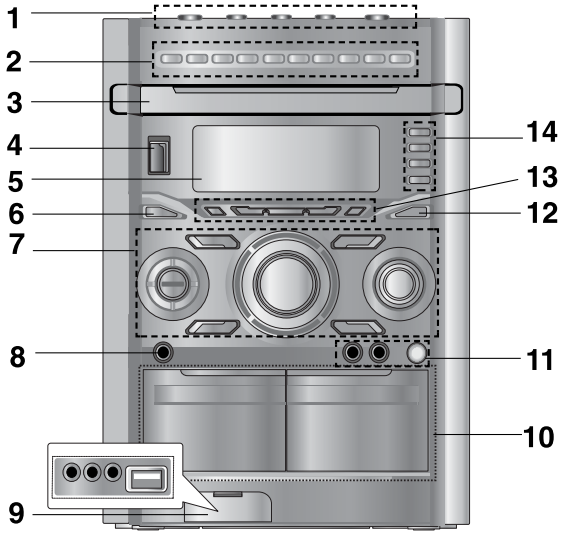
8. Minimize bodily motions when handing unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

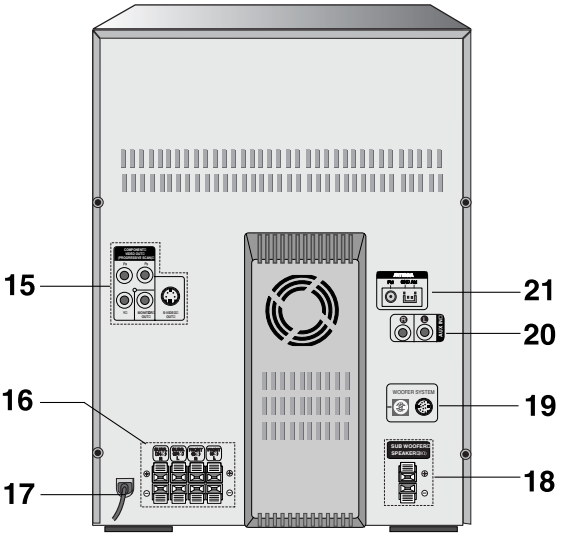
[CAUTION. GRAPHIC SYMBOLS]

	THE LIGHTNING FLASH WITH ARROWHEAD 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 INTENED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

LOCATION OF USERS CONTROLS

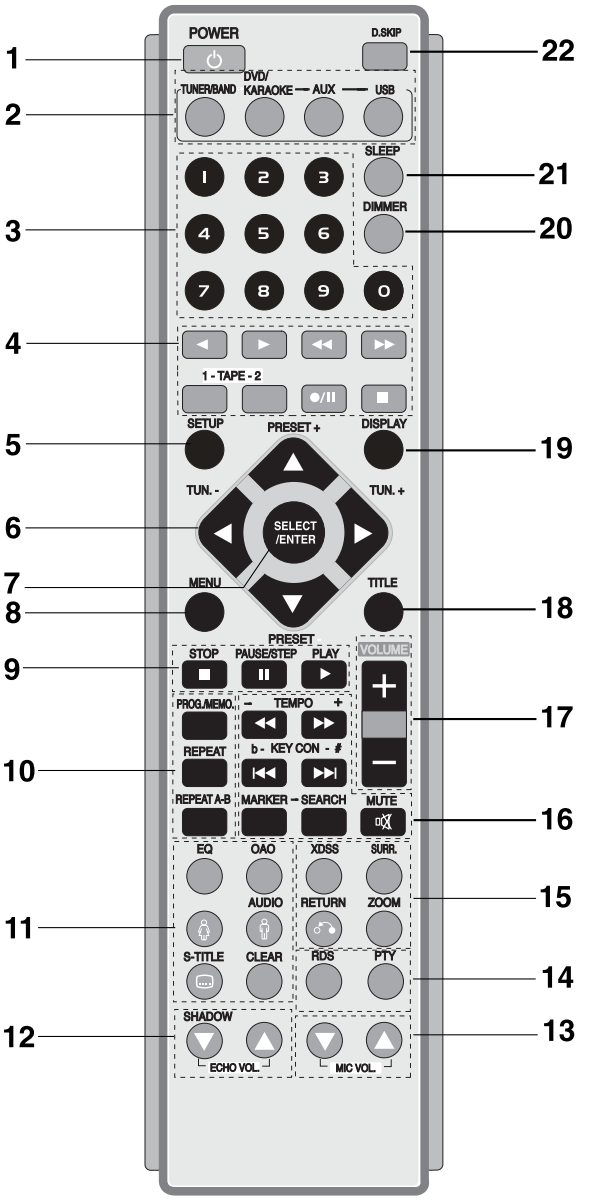
FRONT PANEL / REAR PANEL





1. • DISC SKIP button
   • ⏏ OPEN / CLOSE button
   • DISC SELECT buttons (DISC1, DISC2,DISC3)
2. NUMERIC buttons (0-9)
3. DISC DOOR
4. (⏻/II)POWER button
5. DISPLAY WINDOW
6. XDSS button
7. • (PROG./MEMO.) PROGRAM / MEMORY button
   • (● REC/PAUSE II)
   RECORD / RECORD PAUSE button
   • (PLAY MODE) PLAY MODE / DEMO button
   • (SET/CD II / (RDS-OPTIONAL) / AM-NOISE button
   • FUNCTION SELECT buttons
   (TUNER, KARAOKE/DVD, TAPE, USB, AUX / AV)
   • VOLUME knob
   • EQ button
   • SURROUND button
   • (MP3 OPT) MP3 OPTIMIZER button
   • USER EQ button
   MULTI JOG.
   • MANUAL TUNING
   • CD SKIP(⏮ SKIP ⏭)
   • CLOCK ADJUST
   • (b-KEY CON-#) KEY CONTROL
8. HEADPHONE Jack (PHONES): ø6.3mm
9. • GAME LINK connector (VIDEO IN, AUDIO L/R)
   • USB connector ( )
10. ⏏ PUSH EJECT position (TAPE 1)
    ⏏ PUSH EJECT position (TAPE 2)
11. • MIC VOLUME knob (MIC VOL.)
    • MIC Jacks (MIC1 / MIC2) : ø6.3mm - OPTIONAL
12. OAO button
13. • AUTO TUNING DOWN/UP button
    • REWIND / FAST FORWARD(◀◀/▶▶)
    • TEMPO DOWN(-) / TEMPO UP(+)
    • PRESET DOWN / UP button
    • STOP / CLEAR(■) button
    • BACKWARD PLAY (◀) button - OPTIONAL
    • FORWARD PLAY (▶) button
14. • CLOCK button
    • TIMER button
    • (ST. / MONO) STEREO/MONO,
    (NOR.DUBB.) NORMAL DUBBING button
    • CD SYNCHRO RECORDING (CD SYNC.),
    HIGH DUBBING (HI-DUBB.) button
15. • COMPONENT VIDEO OUT
    (PROGRESSIVESCAN) connector (Y Pb Pr)
    • MONITOR OUT Jack
    • S-VIDEO OUT Jack
16. SPEAKER Terminal
17. POWER CORD
18. SUBWOOFER SPEAKER Terminal
19. WOOFER SYSTEM Terminal
20. (AUX IN) AUXILIARY INPUT Jack
21. (FM/AM) ANTENNA Jack

REMOTE CONTROL



1. POWER button
2. FUNCTION SELECT buttons
   (TUNER / BAND, DVD / KARAOKE, AUX, USB)
3. NUMERIC buttons (0-9)
4. TAPE FUNCTION buttons
   - REVERSE PLAY (◄)
   - PLAY (►)
   - REWIND / FAST FORWARD PLAY (◄◄/►►)
   - TAPE 1-2 SELECT buttons (1-TAPE-2)
   - RECORD/ RECORD PAUSE (● /❚❚)
   - TAPE STOP (■)
5. SET UP button
6. • ARROW buttons (▲/▼ / ◄/►)
   (For use in highlighting a selection on a GUI menu screen, TITLE and MENU screen.)
   - PRESET (-/+) buttons (▲/▼)
   - TUN. (-/+) buttons (◄/►)
7. SELECT / ENTER button
8. MENU button
   (Use the MENU button to display the menu screen included on DVD video discs.)
9. STOP (■), PAUSE(❚❚) / STEP, PLAY (►) buttons
10. PROG. / MEMO., REPEAT, REPEAT A-B buttons
11. EQ ,OAO, FEMALE(), AUDIO / MALE(),
    SUBTITLE (S-TITLE), SHADOW, CLEAR buttons
12. ECHO VOL. (▼/▲) buttons
13. MIC VOL. (▼/▲) buttons
14. RDS, PTY buttons (OPTIONAL)
15. XDSS ,SURROUND(SURR.), ZOOM,
    RETURN () buttons
16. • MARKER, SEARCH, MUTE() buttons,
    • SCAN (◄◄/►►) / TEMPO (- / +), / KEY CON (b/#)/, SKIP(◄◄ / ►►)
17. VOLUME -/+ buttons
18. TITLE button
    (Use the TITLE button to display the title screen included on DVD video discs.)
19. DISPLAY button
20. DIMMER button
21. SLEEP button
22. DISC SKIP (D.SKIP) button

SPECIFICATIONS

• GENERAL

Power supply	Refer to the main label.
Power consumption	200W
Net Weight	8.65kg
External dimensions (W x H x D)	280 X 365 X 370 mm

• TUNER/AMPLIFIER

FM Tuning Range	87.5 - 108.0MHz or 65 -74MHz, 87.5 -108.0MHz
Intermediate Frequency	10.7MHz
Signal to Noise Ratio	60 / 55dB (Mono / Stereo)
Frequency Response	140 - 10000Hz
AM Tuning Range	522 - 1620kHz or 520 - 1720kHz
Intermediate Frequency	450kHz
Signal to Noise Ratio	30dB
Frequency Response	140 - 1800Hz
Output Power	Front : 270W + 270 W (6Ω, THD 10%) Surround : 110W + 110 W (8Ω, THD 10%) Subwoofer : 110W (6Ω, THD 10%)
T.H.D	0.7%
Frequency Response	42 - 20000Hz
Signal-to-noise ratio	75dB

• DVD / VCD / CD PLAYER

Frequency response (audio)	40 - 20000Hz
Signal-to-noise ratio (audio)	More than 75dB (1kHz)
Signal-to-noise ratio (video)	More than 55dB (1kHz)
Dynamic range (audio)	More than 75dB
Video output	1.0V (p-p), 75Ω
S-video output	(Y) 1.0V (p-p), 75Ω (C) 0.3V (p-p), 75Ω
Component Video output	(Y) 1.0V (p-p), 75Ω (Pb) / (Pr) 0.7V (p-p), 75Ω

• CASSETTE TAPE PLAYER

Tape Speed	3000 ± 3% (MTT-111. NORMAL-SPEED)
Wow Flutter	0.25% (MTT -111, JIS-WTD)
F.F/REW. Time	120sec (C-60)
Frequency Response	125 - 8000Hz
Signal to Noise Ratio	43dB
Channel Separation	50dB (P/B)/45dB (R/P)
Erase Ratio 55dB	(MTT-5511)

• SPEAKERS

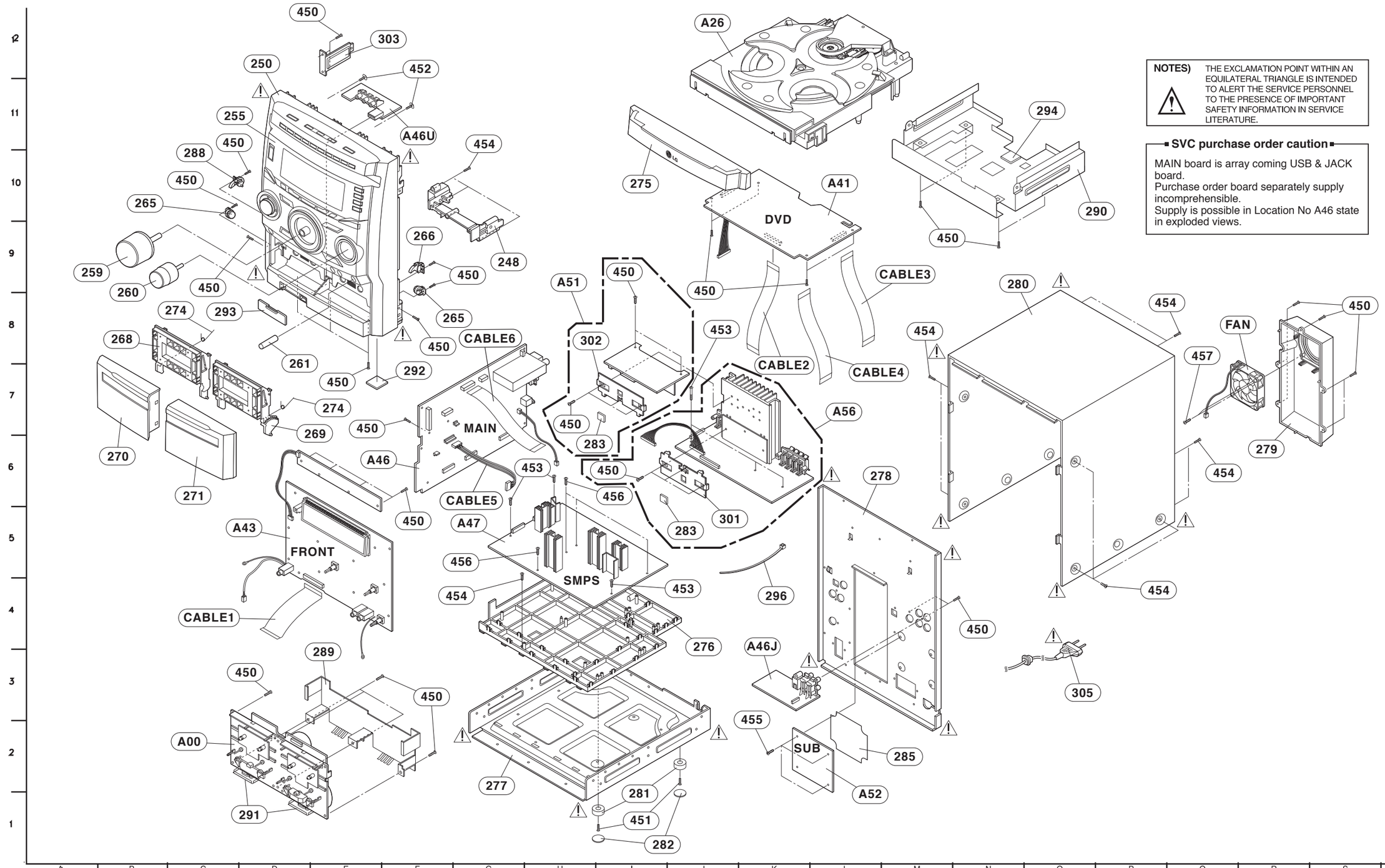
Speaker Name	**Front Speaker (L/R)**	**Subwoofer**
Type	Bass Reflex 3Way 3Speaker	Bass Reflex 1Way 1Speaker
Impedance	6Ω	6Ω
Frequency Response	55 - 20000Hz	43 - 1500Hz
Sound Pressure Level	86dB/W (1m)	84dB/W (1m)
Rated Input Power	270W	350W
Max. Input Power	540W	700W
Net Dimensions (W x H x D)	260 X 436 X 330mm	290 X 438 X 340mm
Net Weight	11.2kg	12kg

Speaker Name	**Surround Speaker (L/R)**
Type Bass Reflex	2Way 2Speaker
Impedance	24Ω
Frequency Response	60 - 20000Hz
Sound Pressure Level	86dB/W (1m)
Rated Input Power	110W
Max. Input Power	220W
Net Dimensions (W x H x D)	210 X 436 X 285mm
Net Weight	4.5kg

MEMO

SECTION 2 EXPLODED VIEWS

CABINET AND MAIN FRAME SECTION



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

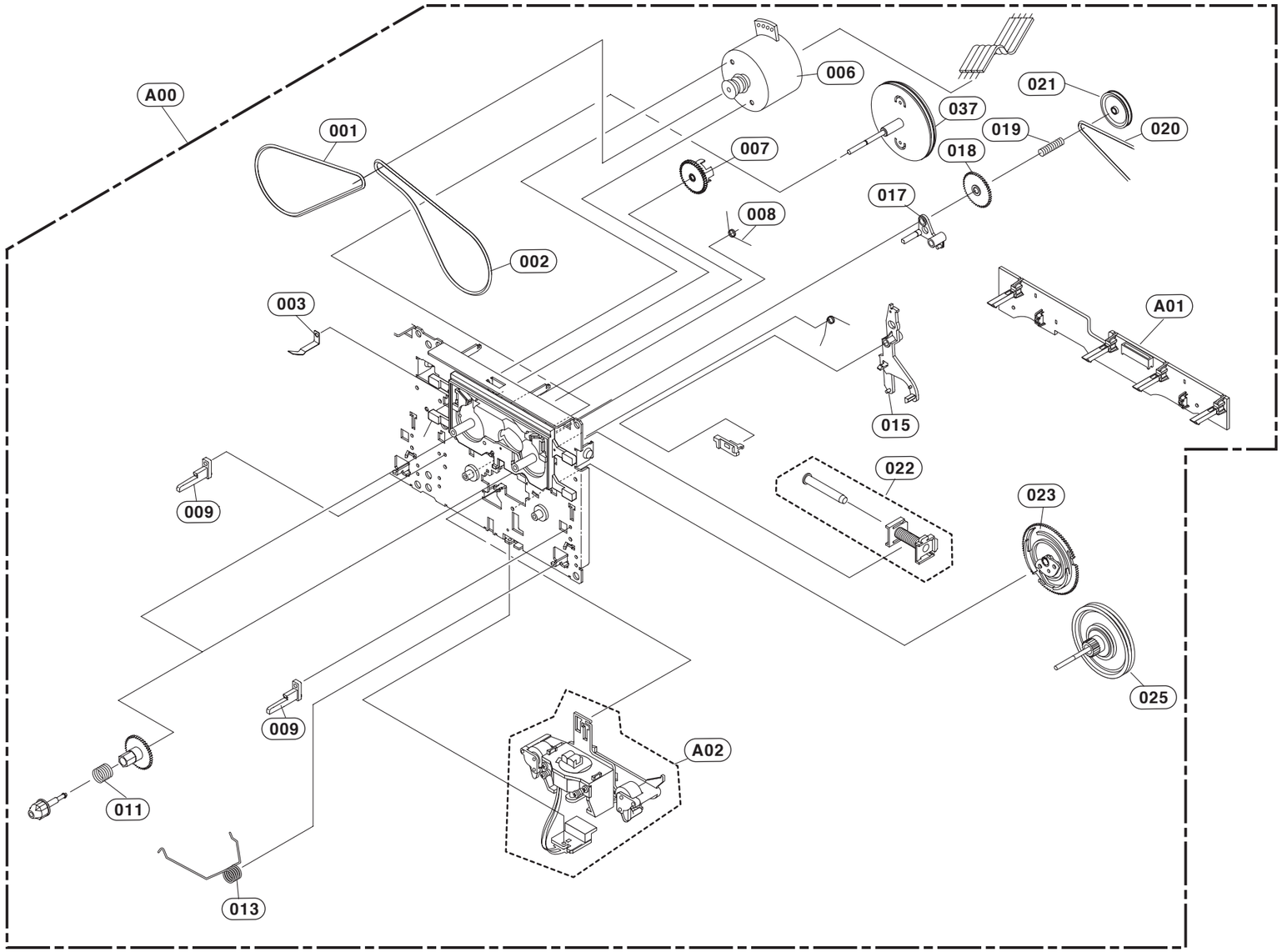
SVC purchase order caution

MAIN board is array coming USB & JACK board.
Purchase order board separately supply incomprehensible.
Supply is possible in Location No A46 state in exploded views.

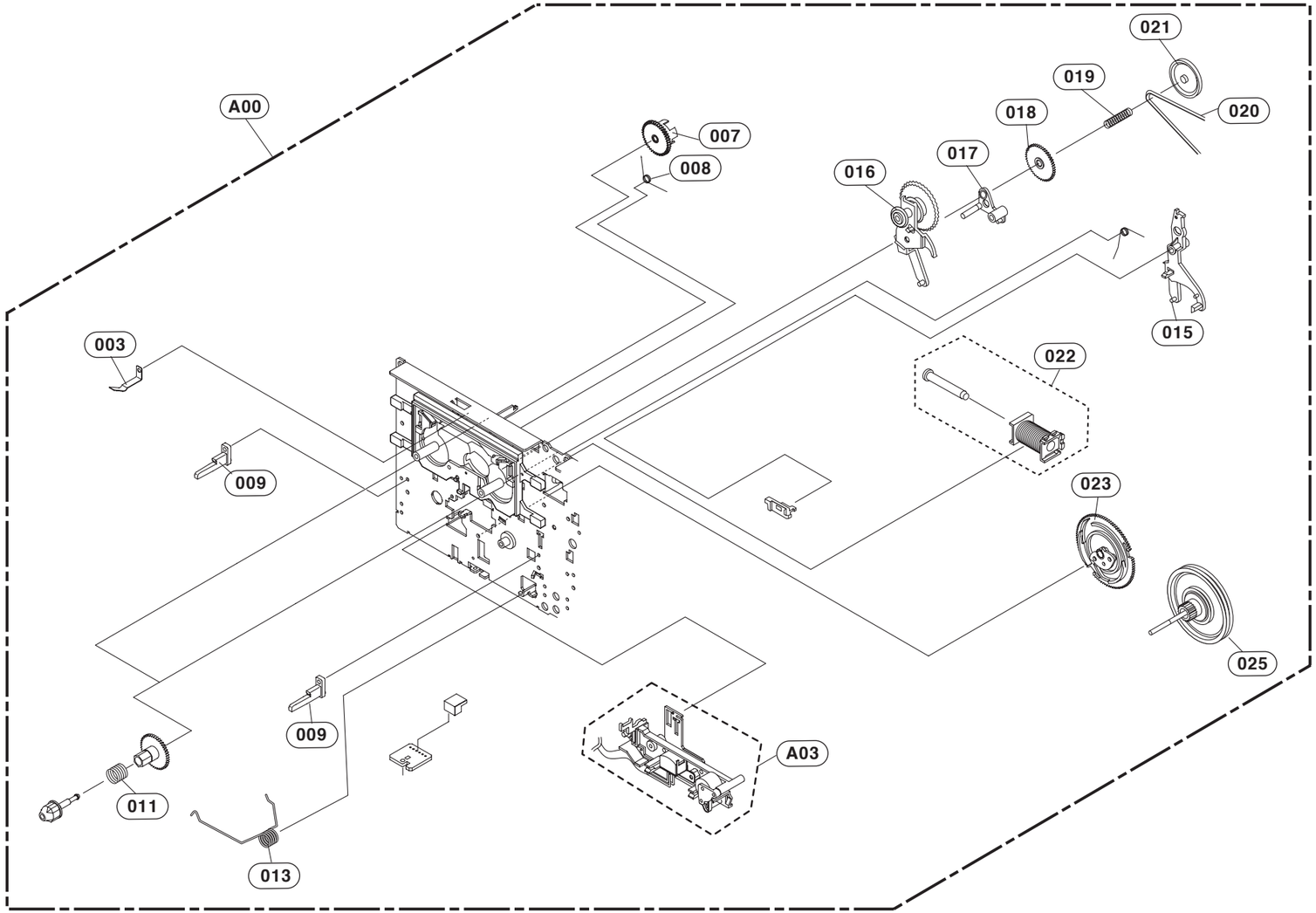
2-1 2-2

TAPE DECK MECHANISM EXPLODED VIEW

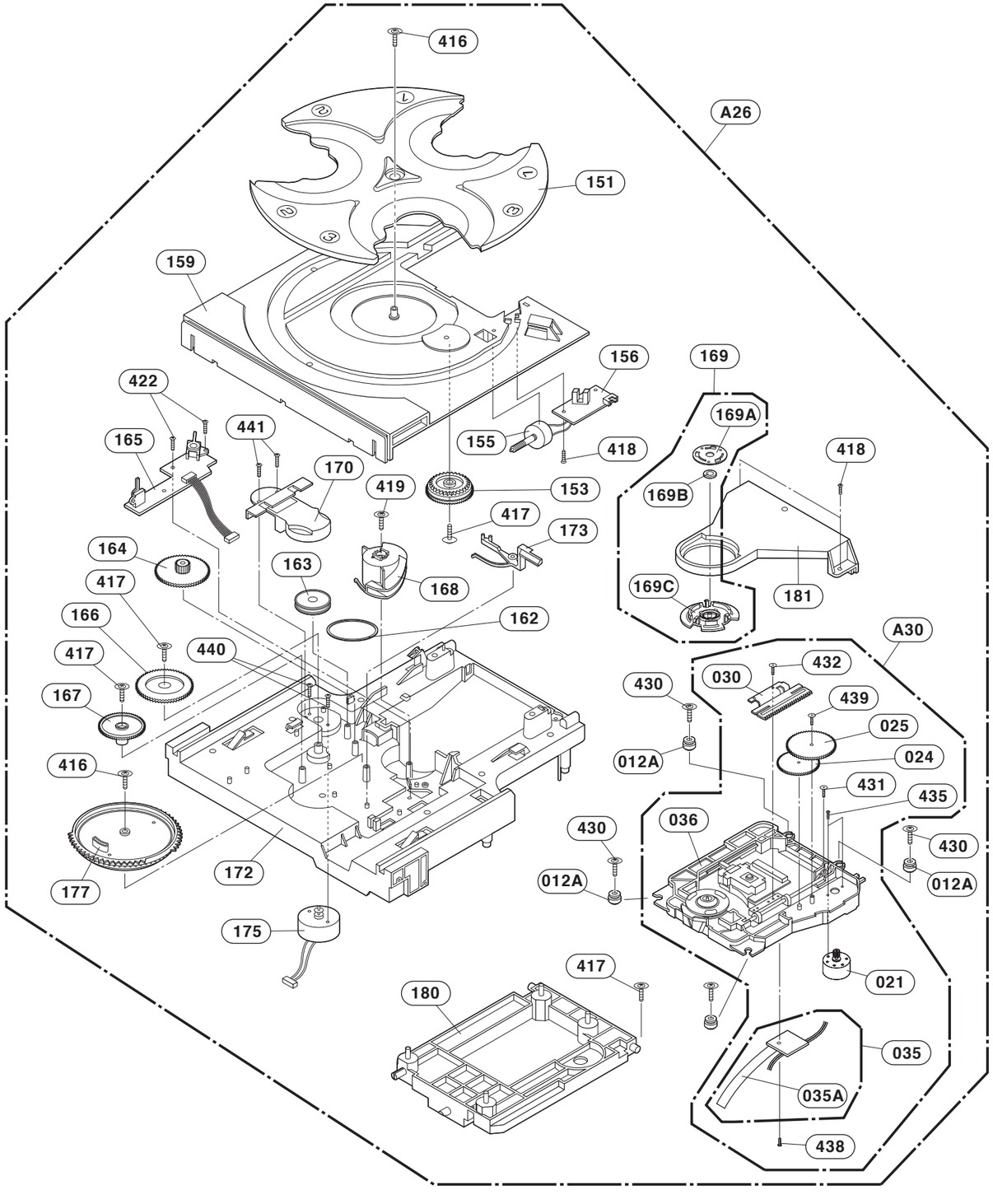
1. TAPE DECK MECHANISM (A/R & A/S : LEFT A/R DECK)



2. TAPE DECK MECHANISM (A/R & A/S : RIGHT A/S DECK)

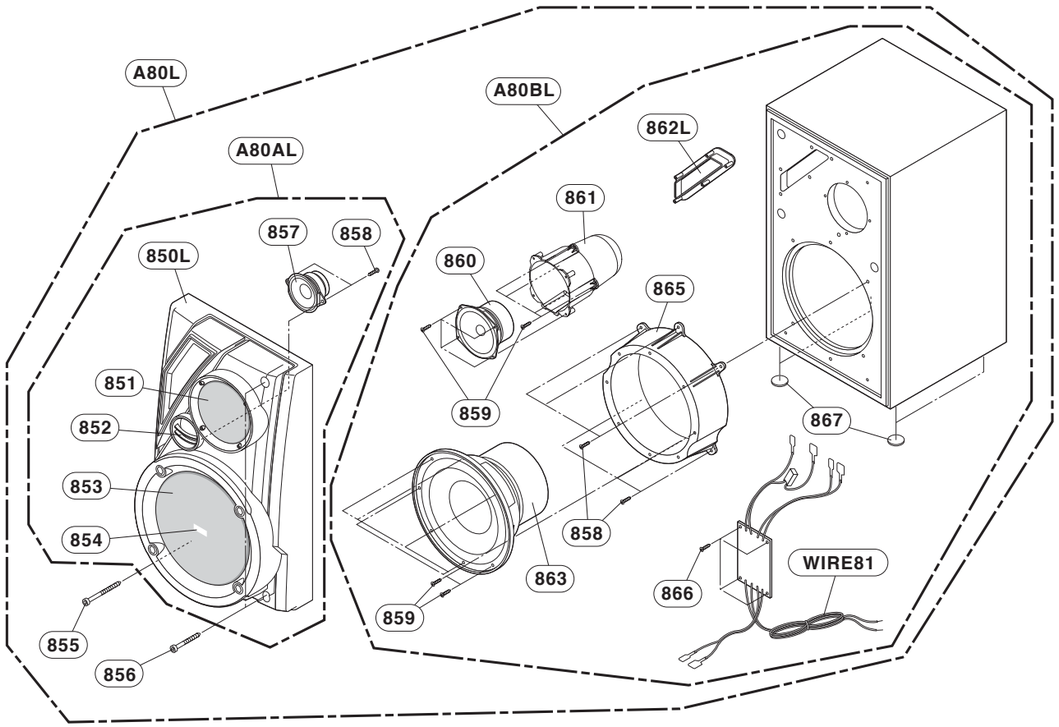


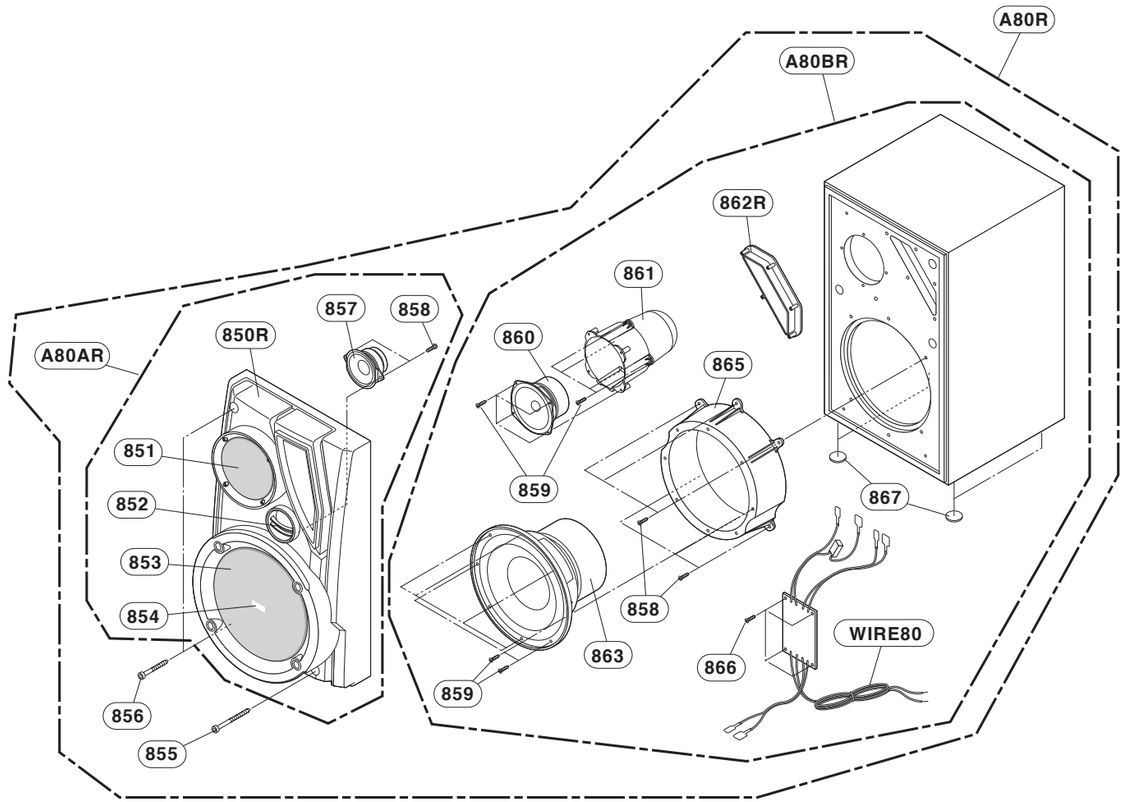
DVD MECHANISM EXPLODED VIEW



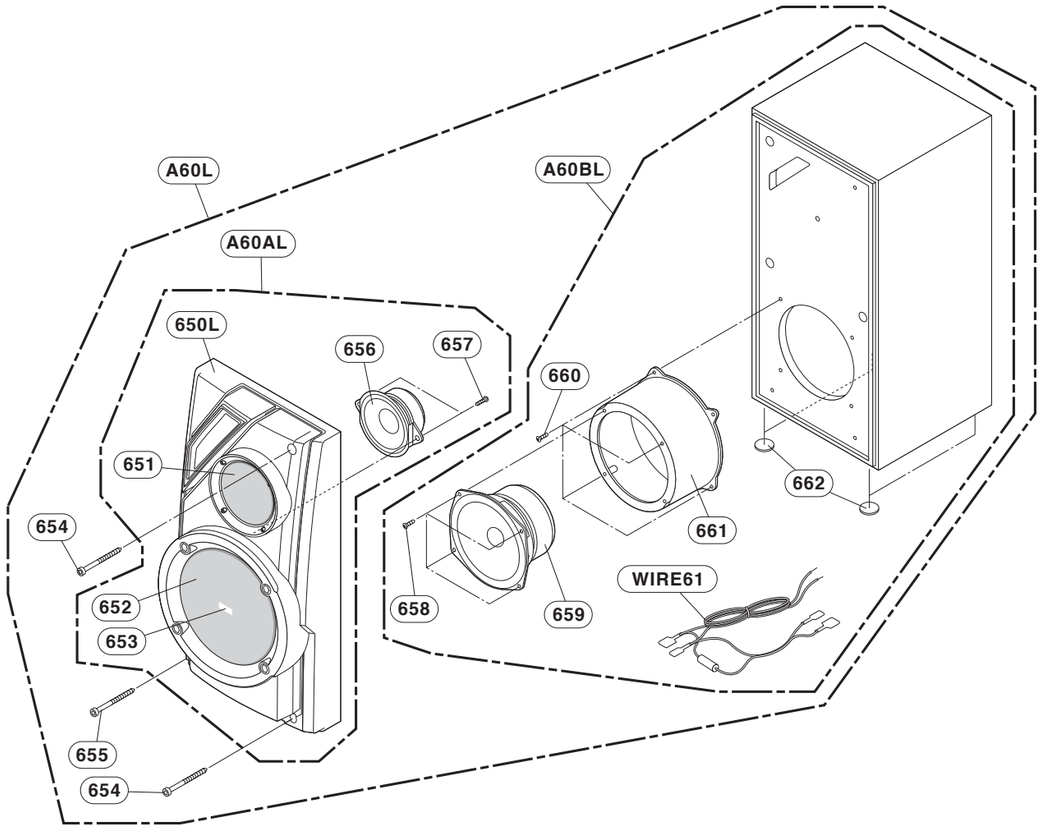
SPEAKER EXPLODED VIEW

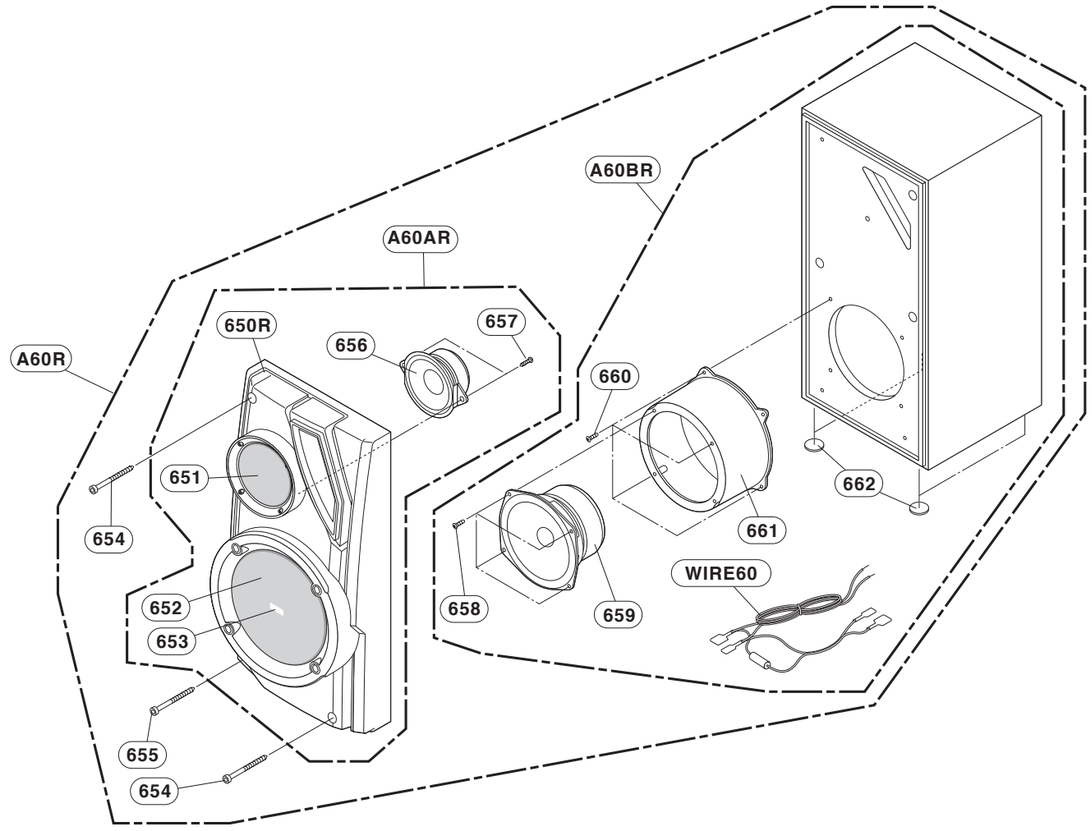
1. MODEL : MDS902V (FRONT SPEAKERS)



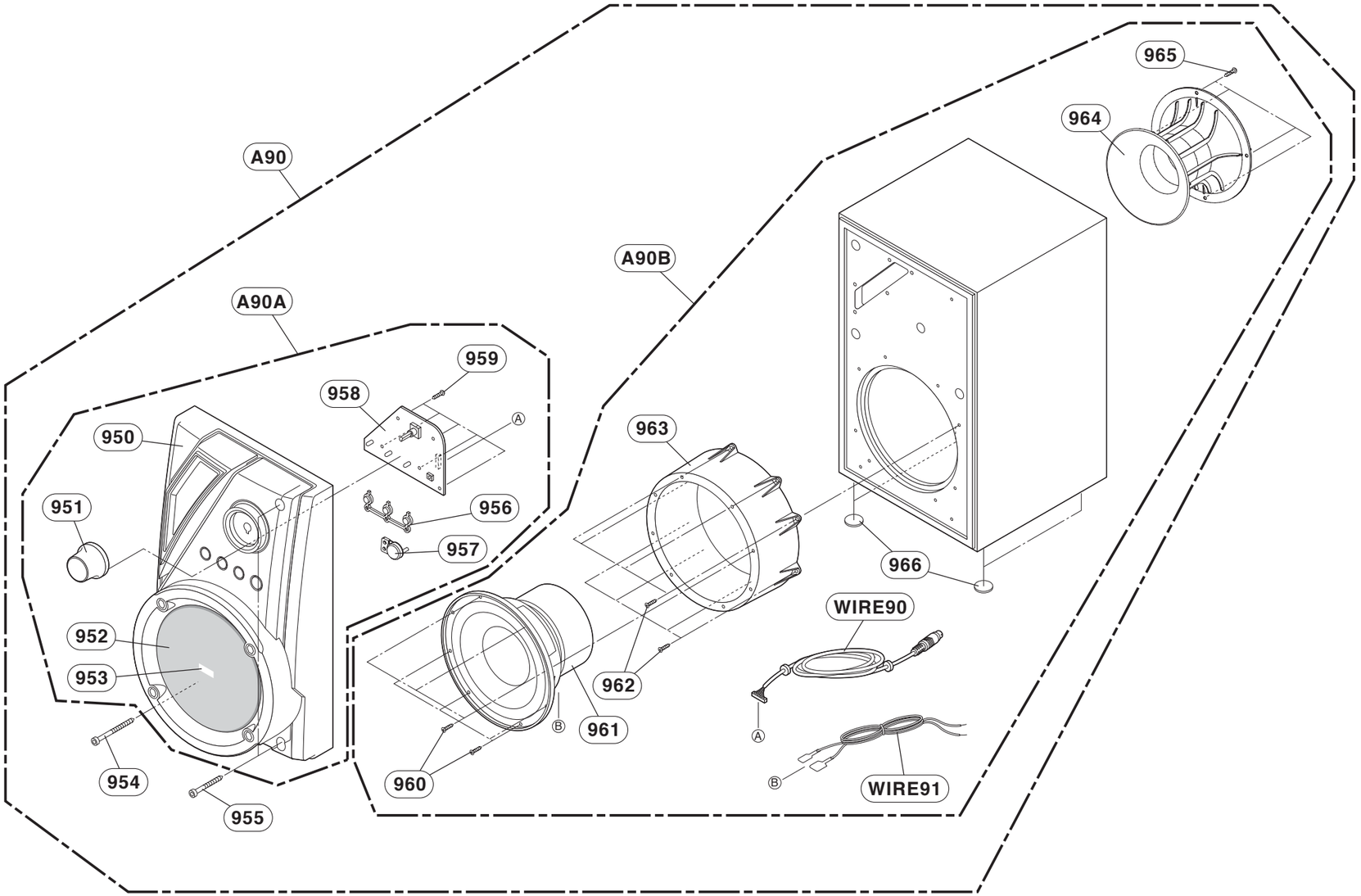


2. MODEL : MDS902S (REAR SPEAKERS)





3. MODEL : MDS902W (SUBWOOFER)

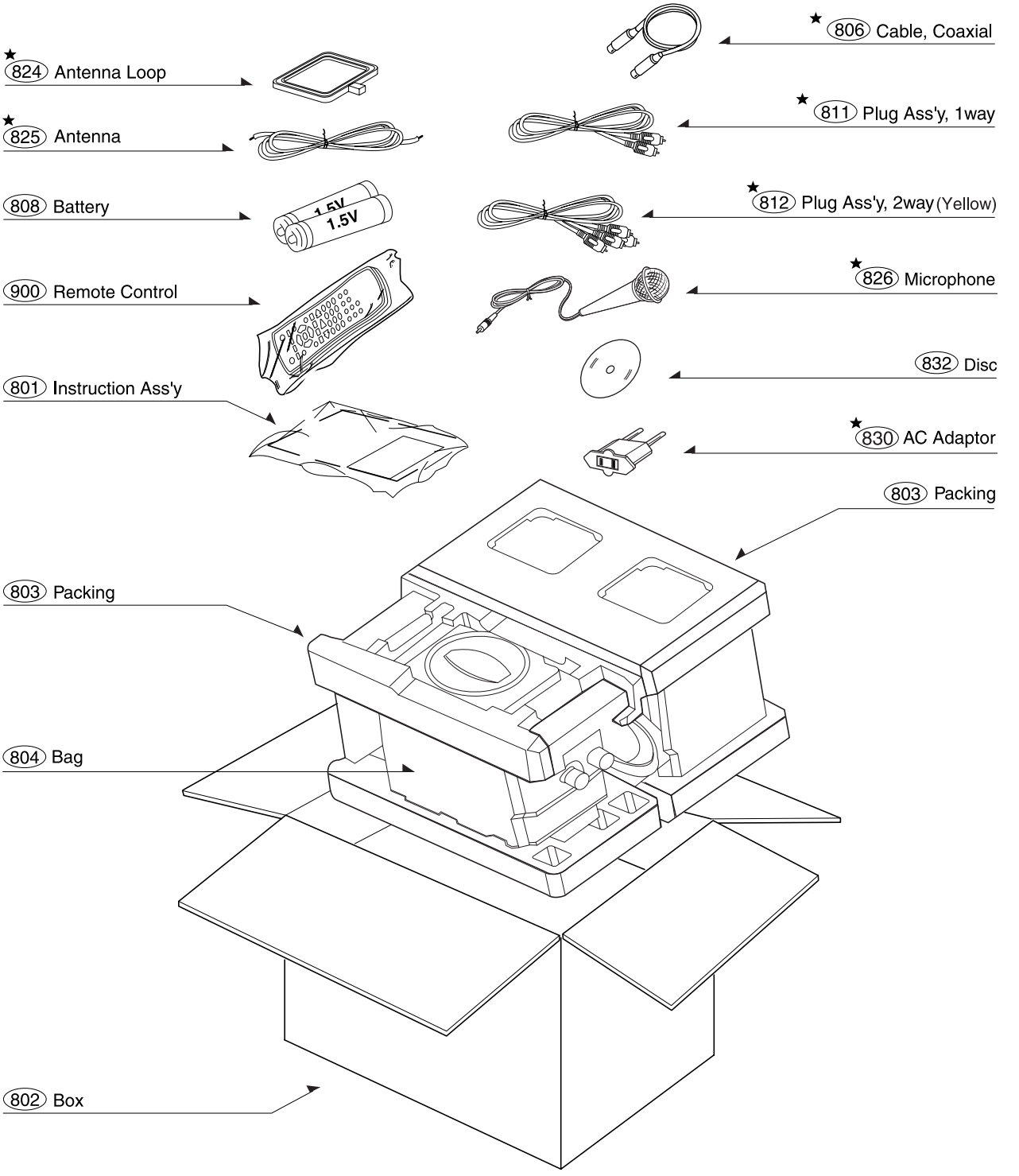


MEMO

MEMO

PACKING ACCESSORY SECTION

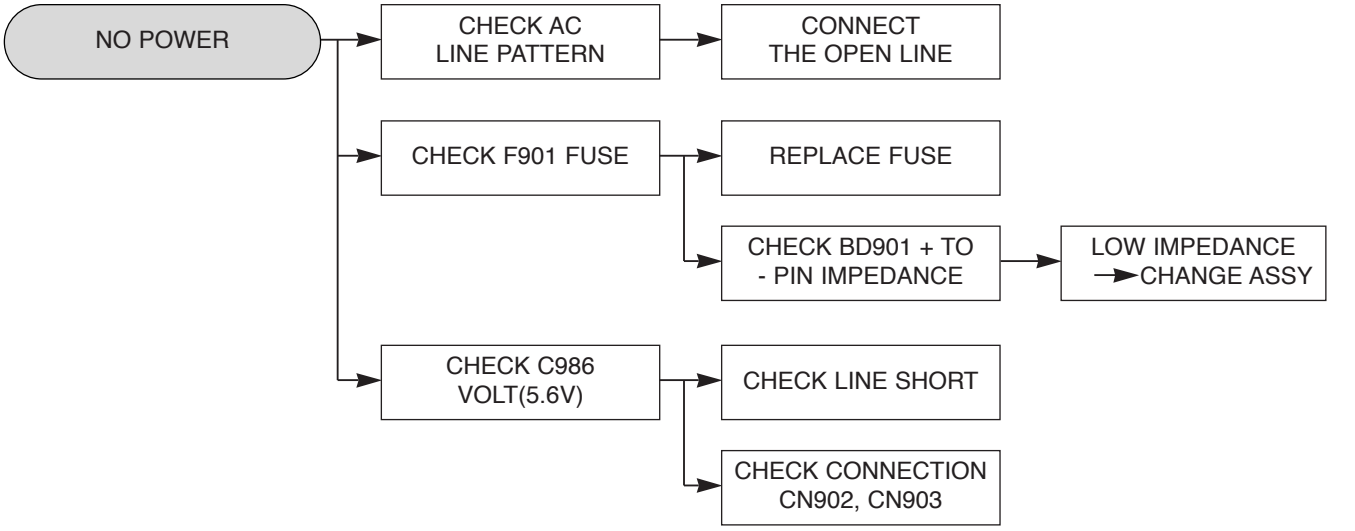
★ OPTIONAL PARTS

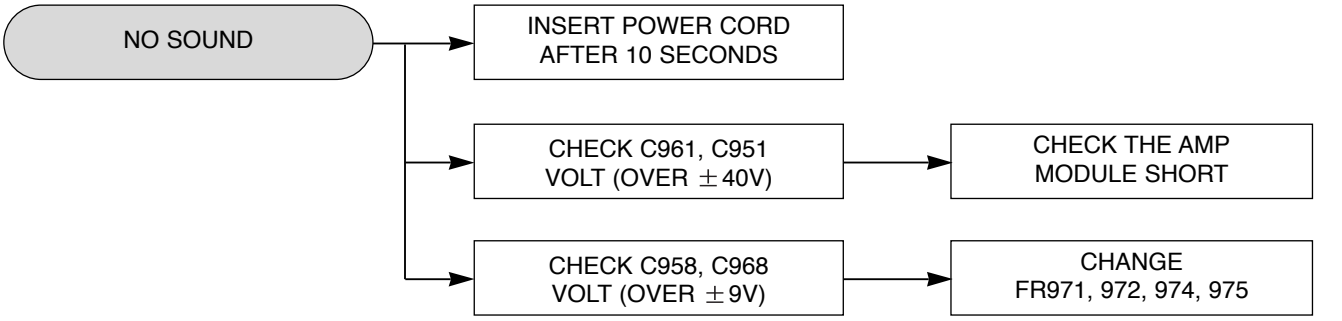


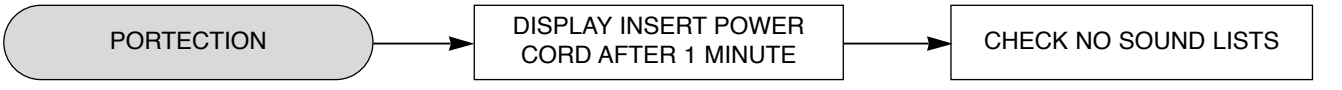
SECTION 3 AUDIO PART ELECTRICAL

ELECTRICAL TROUBLESHOOTING GUIDE

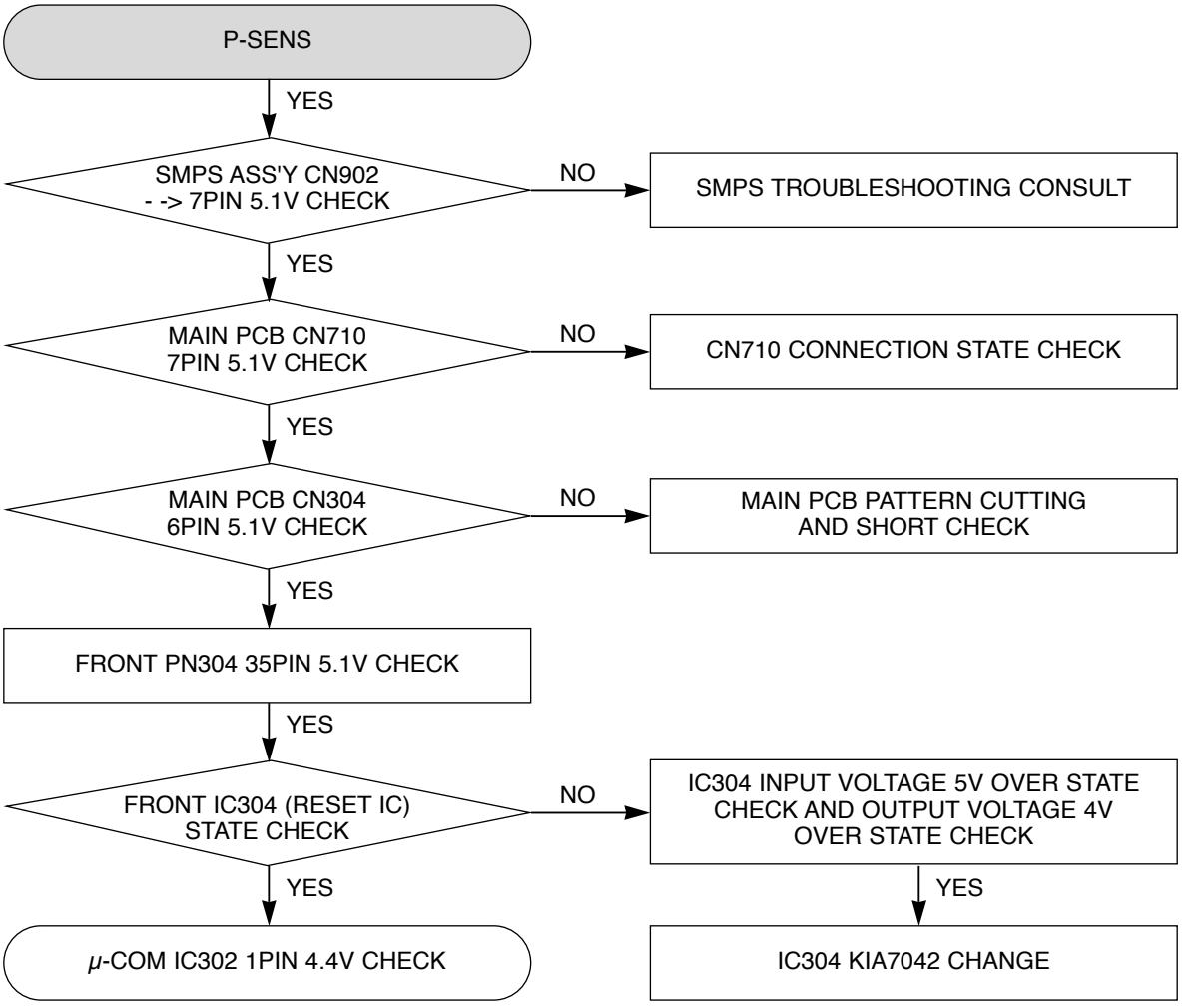
1. POWER (SMPS)



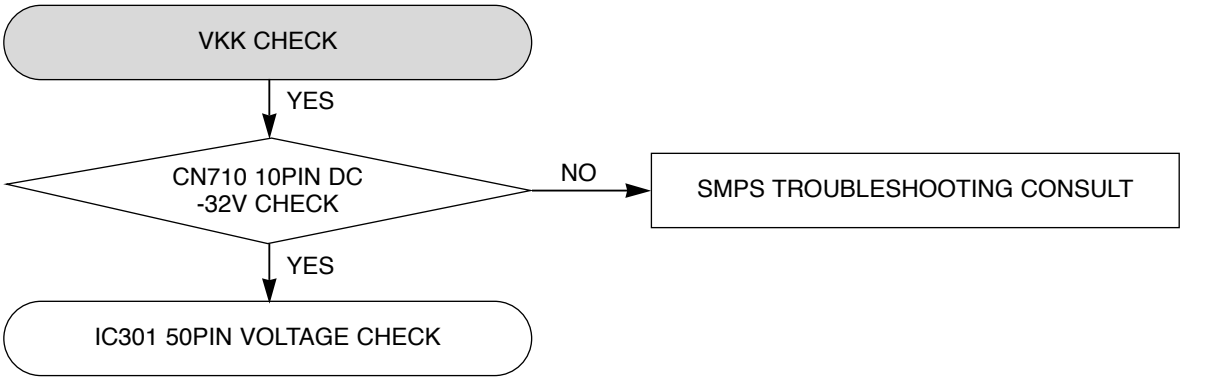




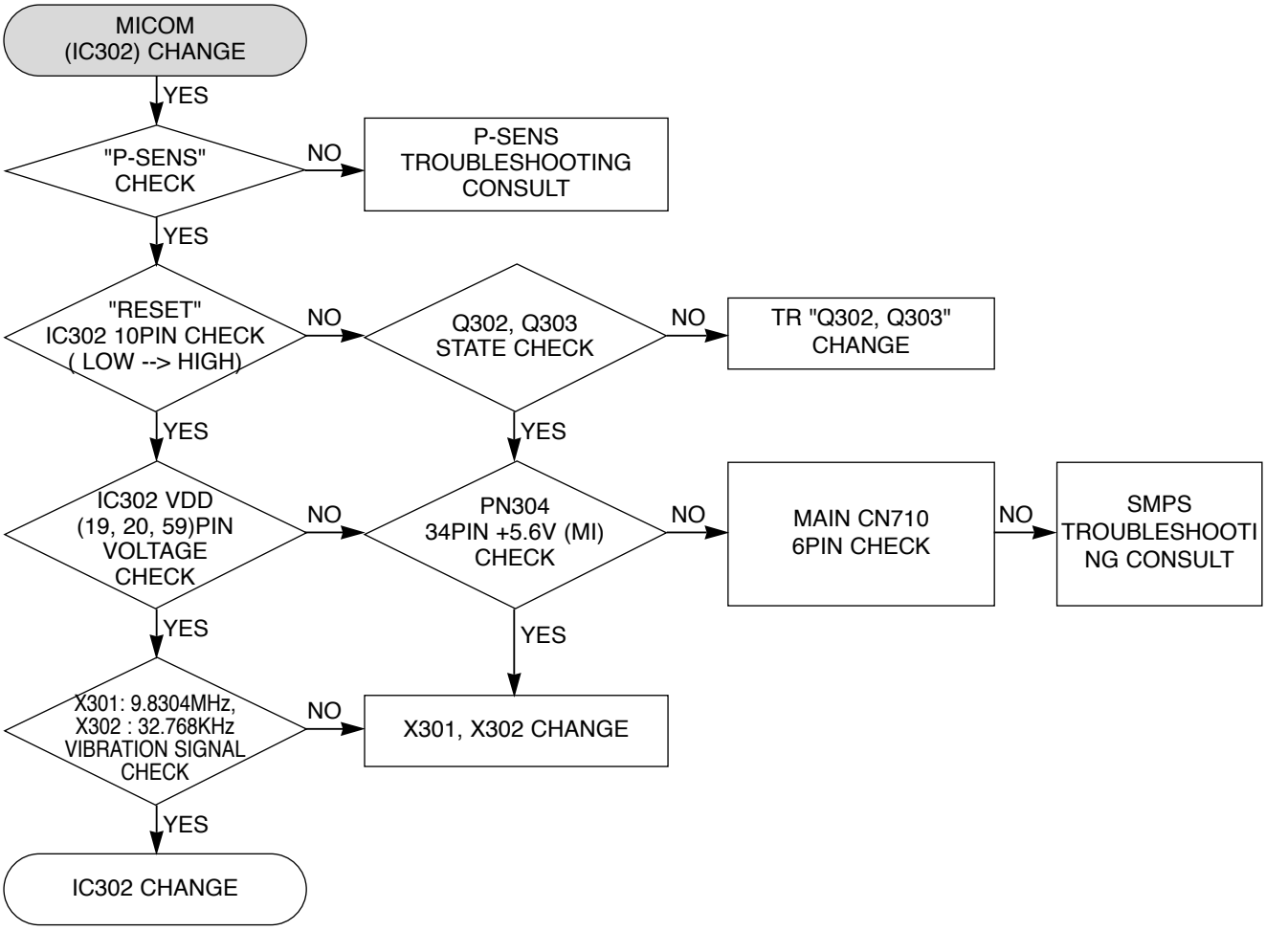
2. P-SENS



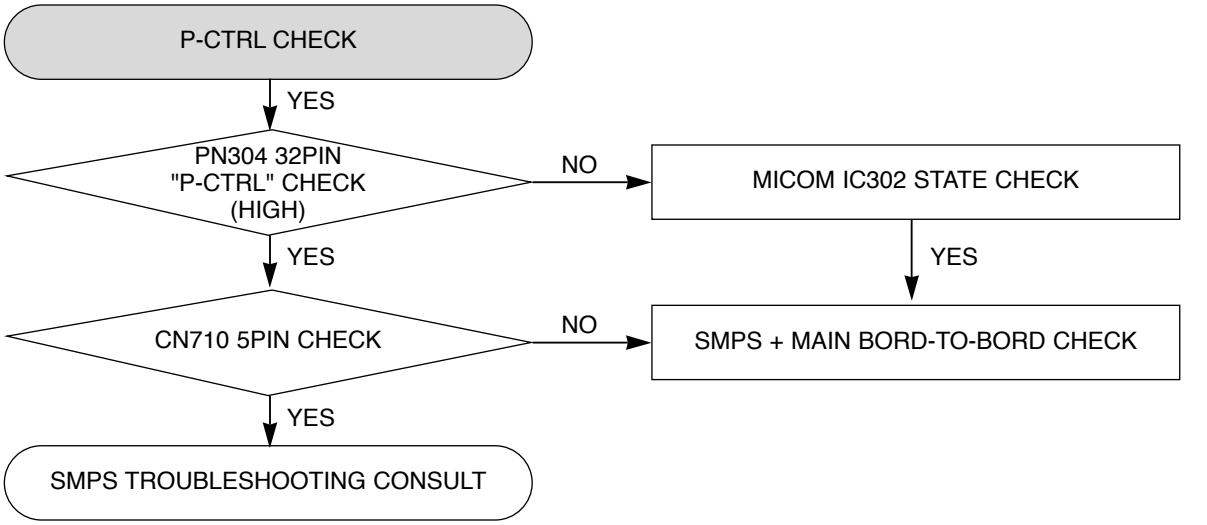
3. VKK CHECK



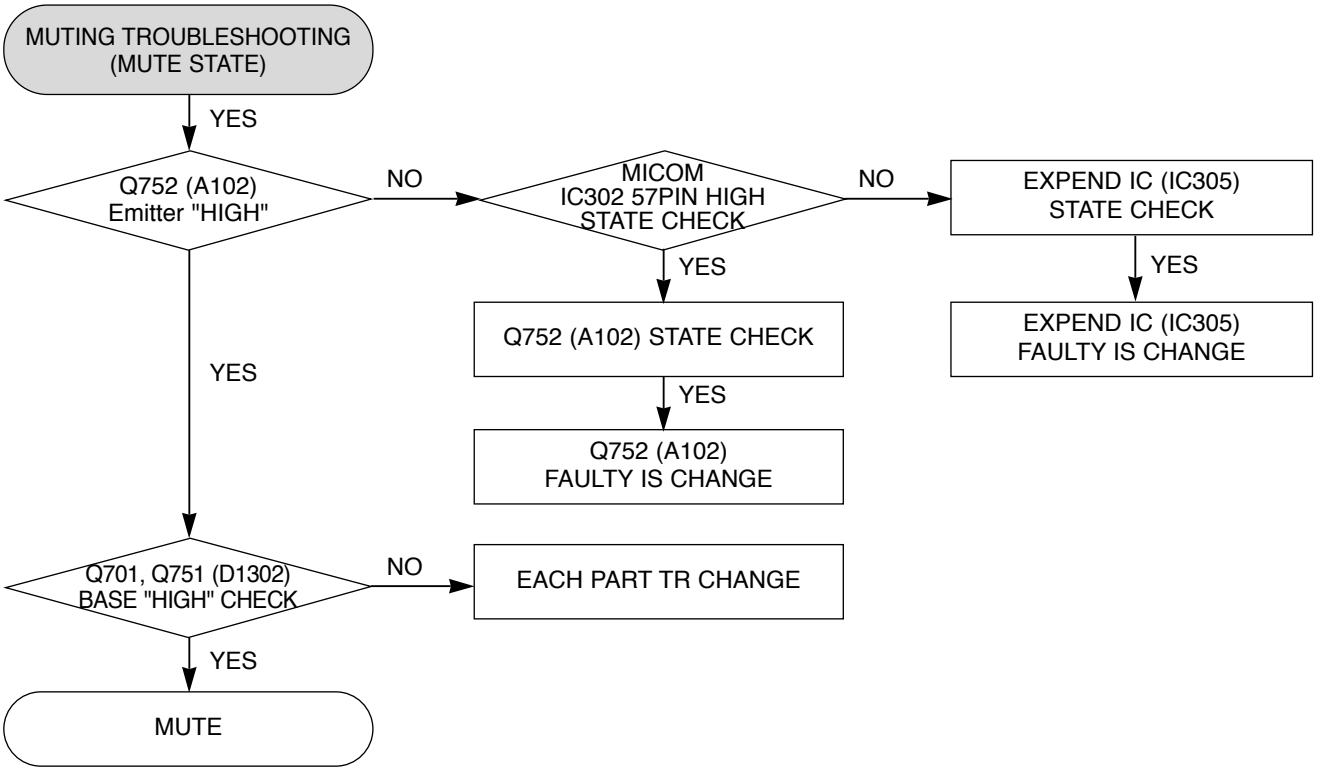
4. MICOM (IC302) CHANGE



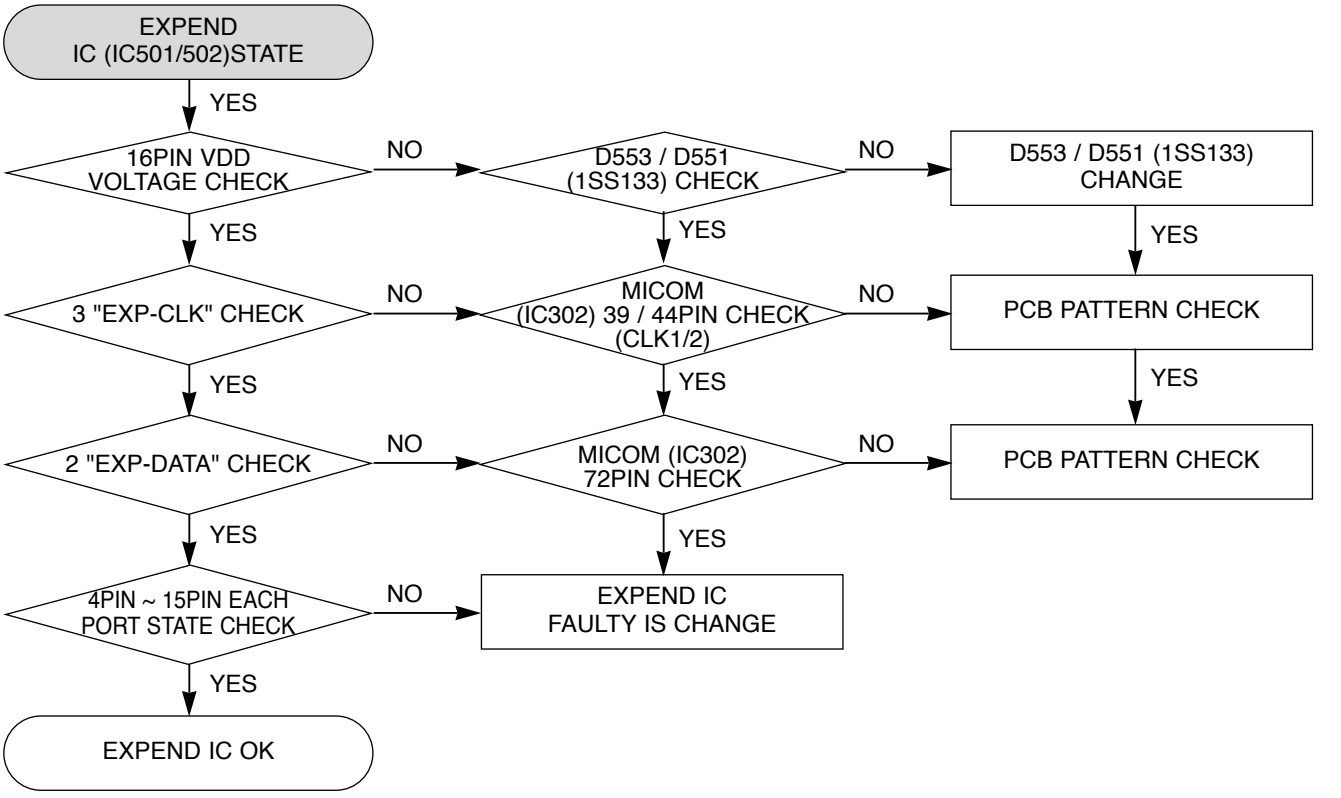
5. P-CTRL CHECK



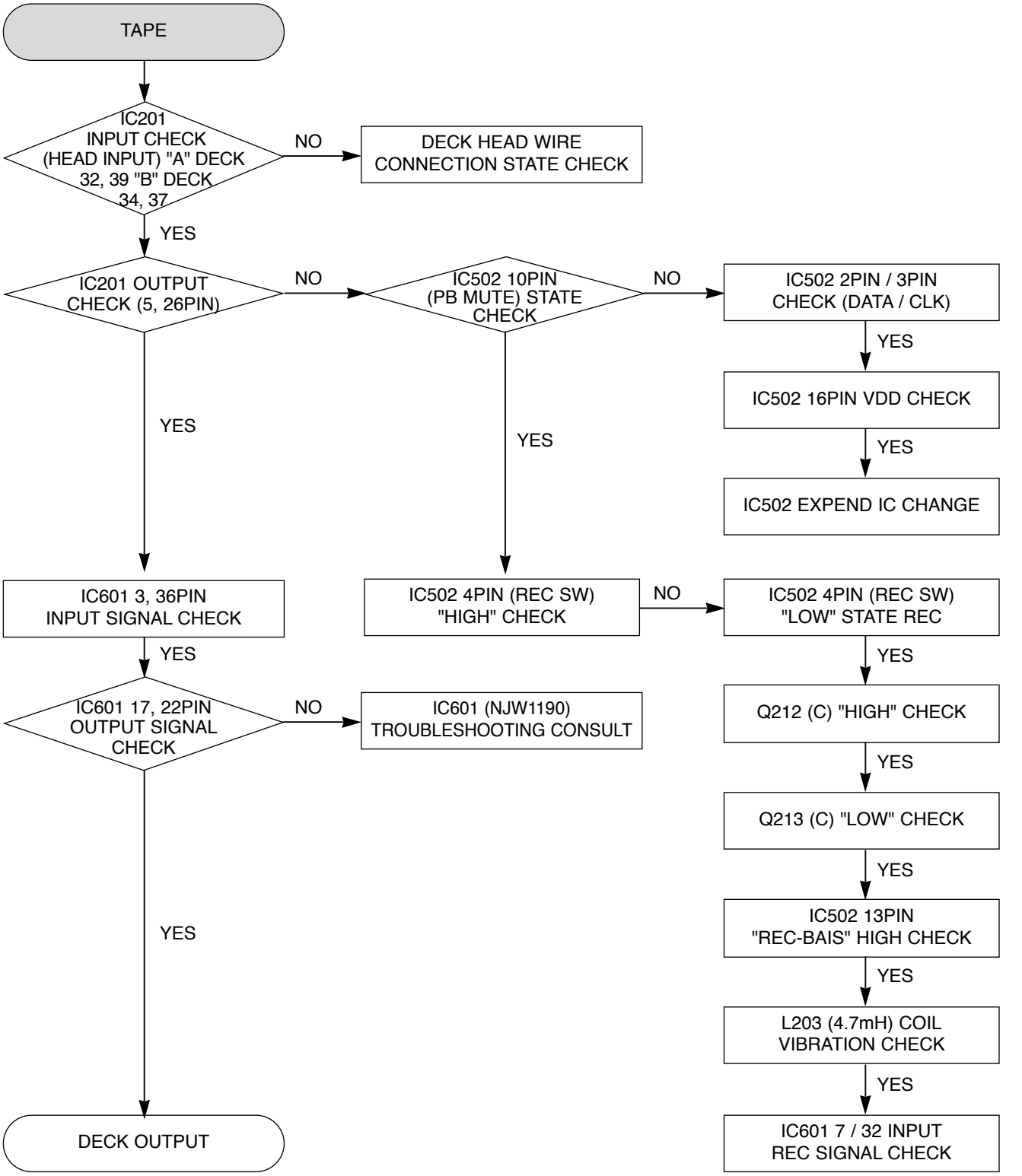
6. MUTING TROUBLESHOOTING (MUTE STATE)

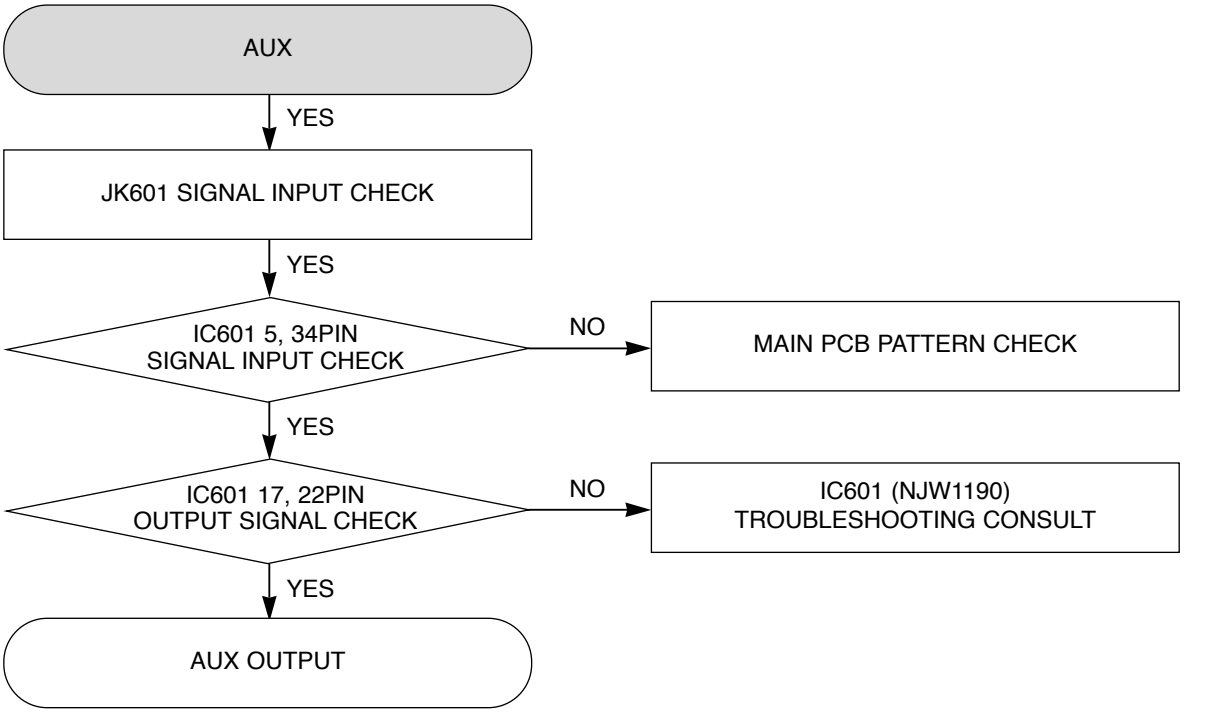


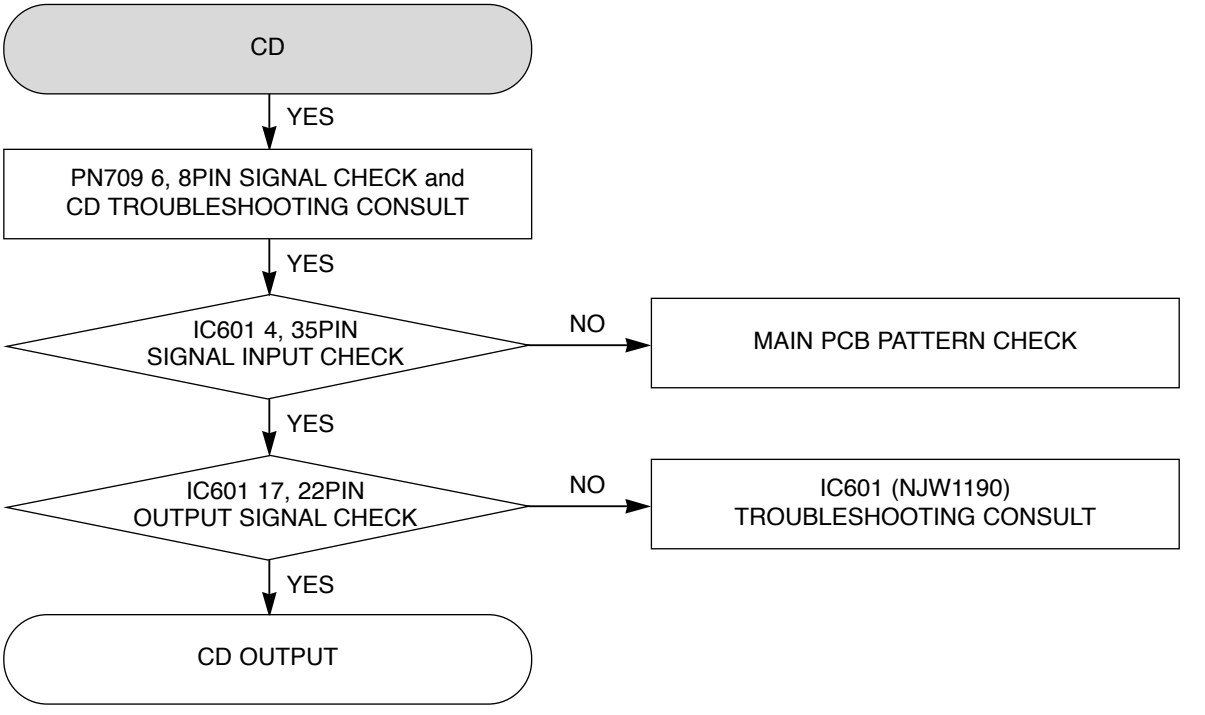
7. EXPEND IC (IC501 / 502) STATE

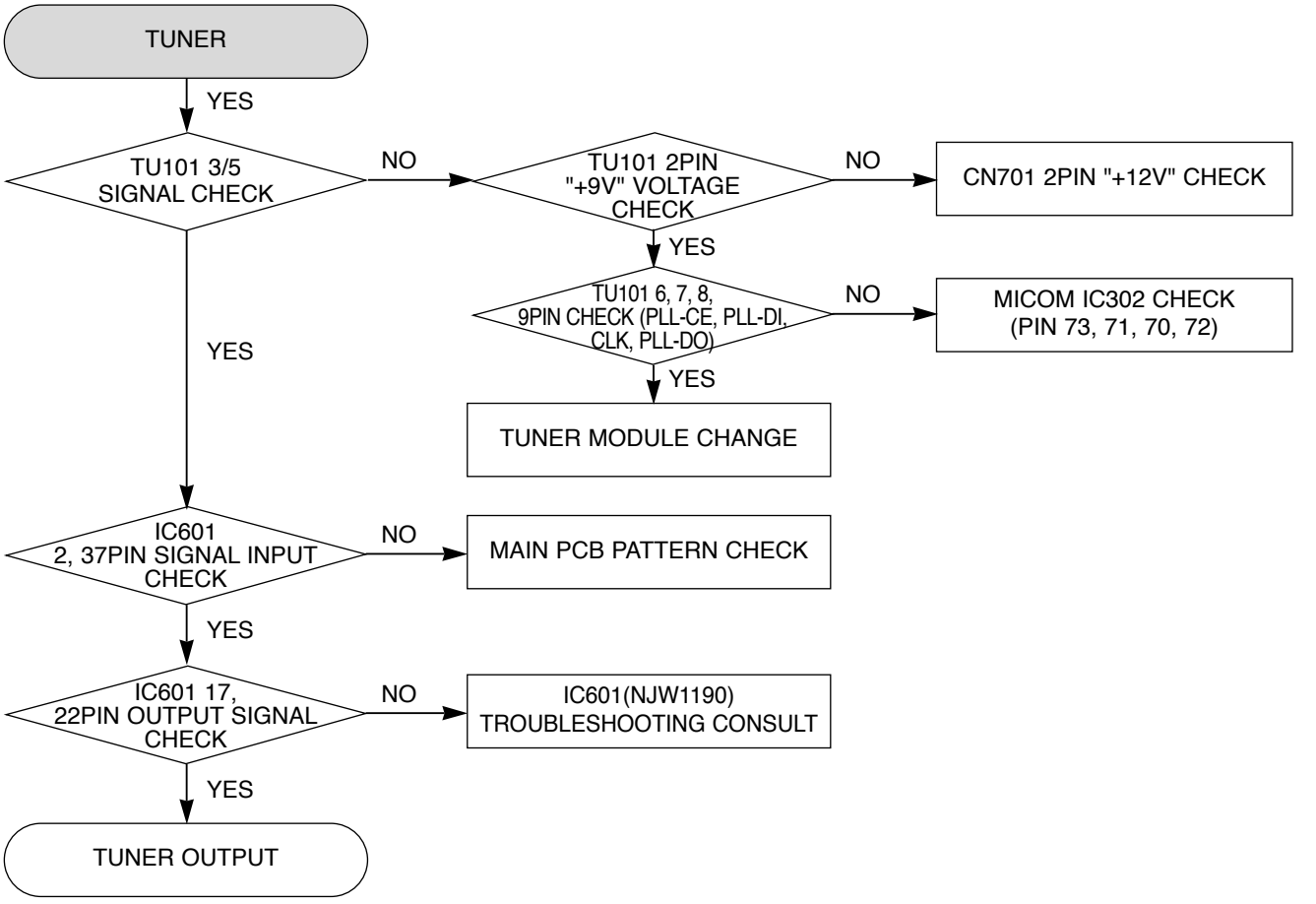


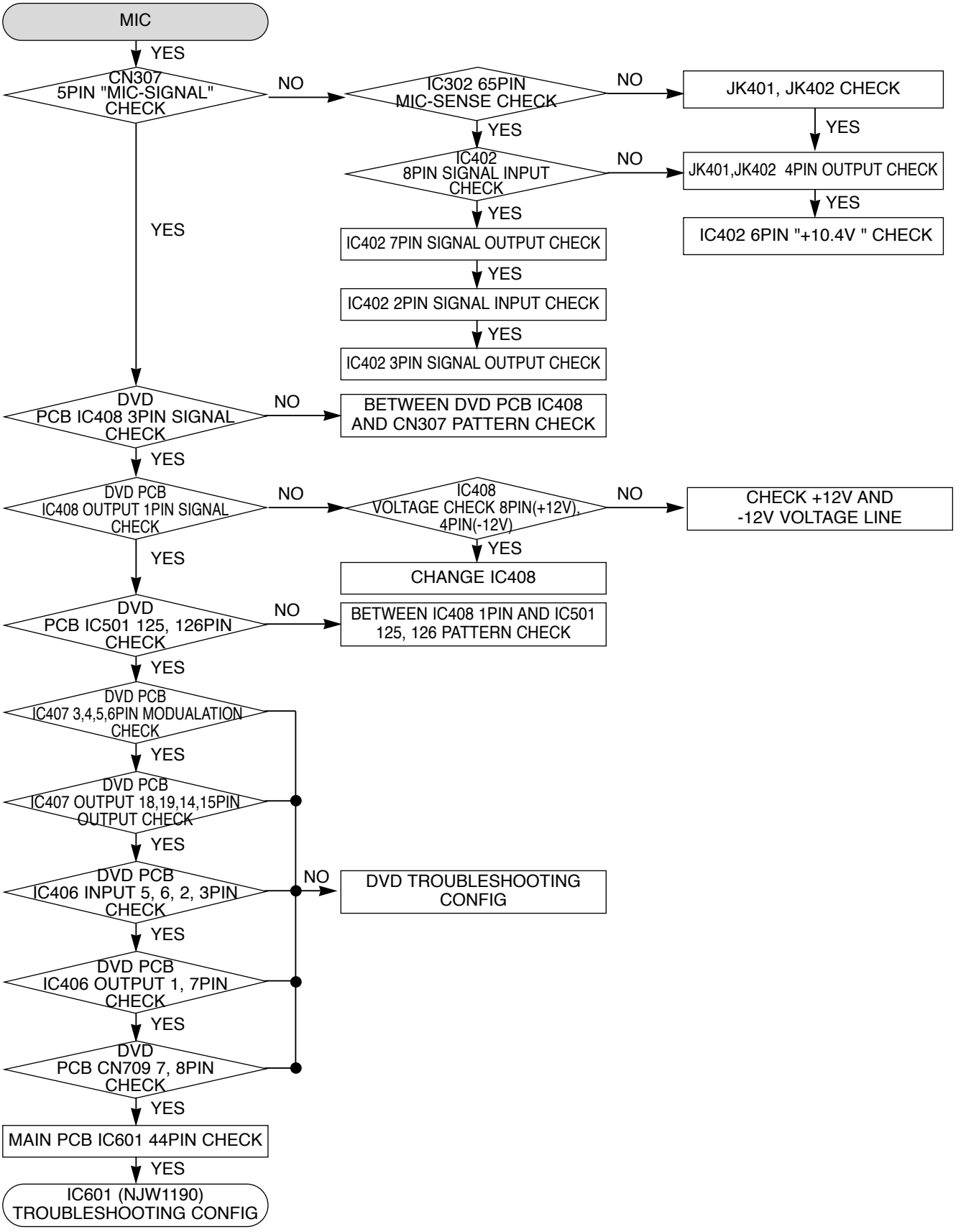
8. FUNCTION MODE HAS NO SOUND (NJW1190) IC601



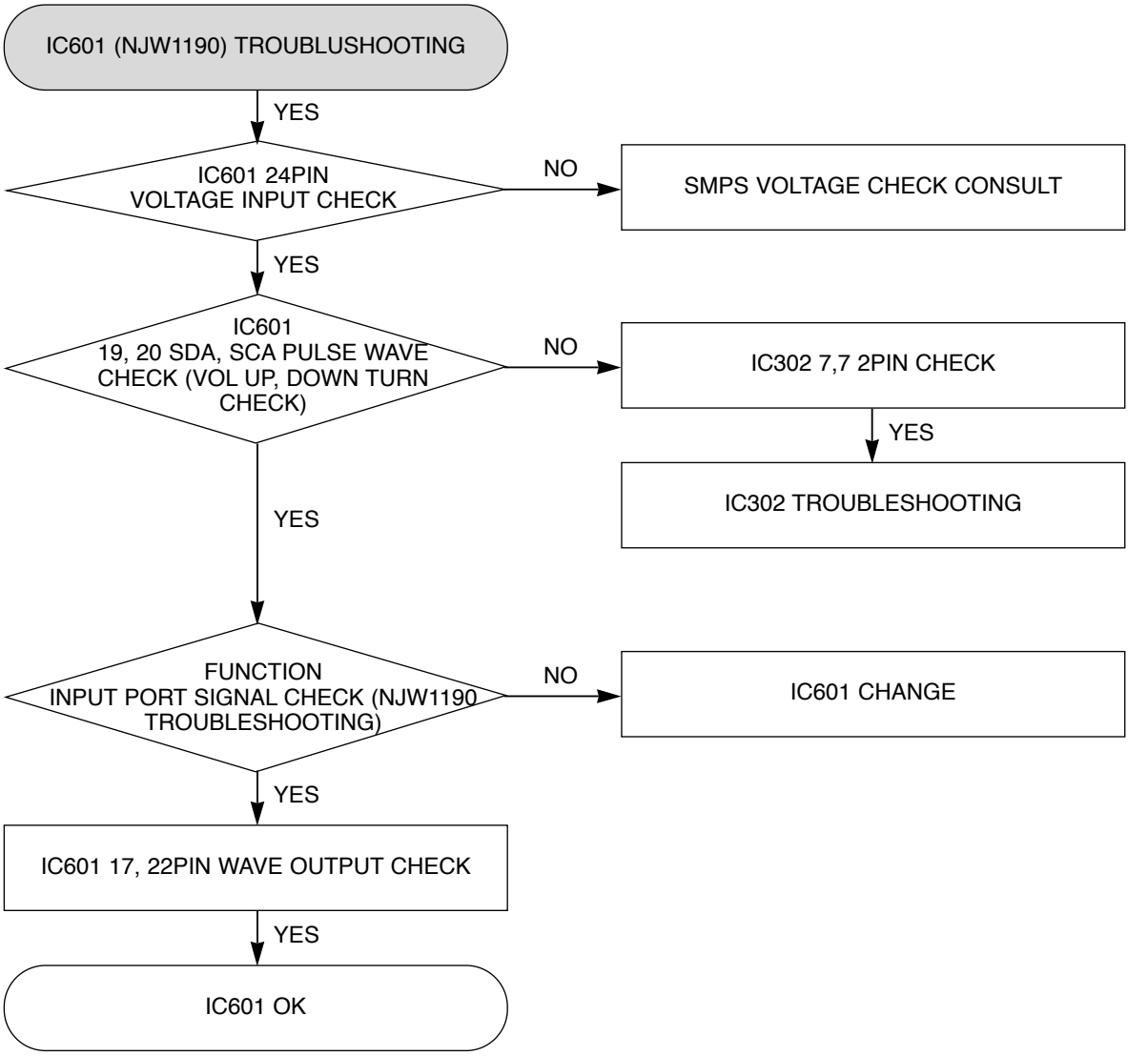

AUX
YES
JK601 SIGNAL INPUT CHECK
YES
IC601 5, 34PIN
SIGNAL INPUT CHECK
NO
MAIN PCB PATTERN CHECK
YES
IC601 17, 22PIN
OUTPUT SIGNAL CHECK
NO
IC601 (NJW1190)
TROUBLESHOOTING CONSULT
YES
AUX OUTPUT


CD
YES
PN709 6, 8PIN SIGNAL CHECK and
CD TROUBLESHOOTING CONSULT
YES
IC601 4, 35PIN
SIGNAL INPUT CHECK
NO
MAIN PCB PATTERN CHECK
YES
IC601 17, 22PIN
OUTPUT SIGNAL CHECK
NO
IC601 (NJW1190)
TROUBLESHOOTING CONSULT
YES
CD OUTPUT

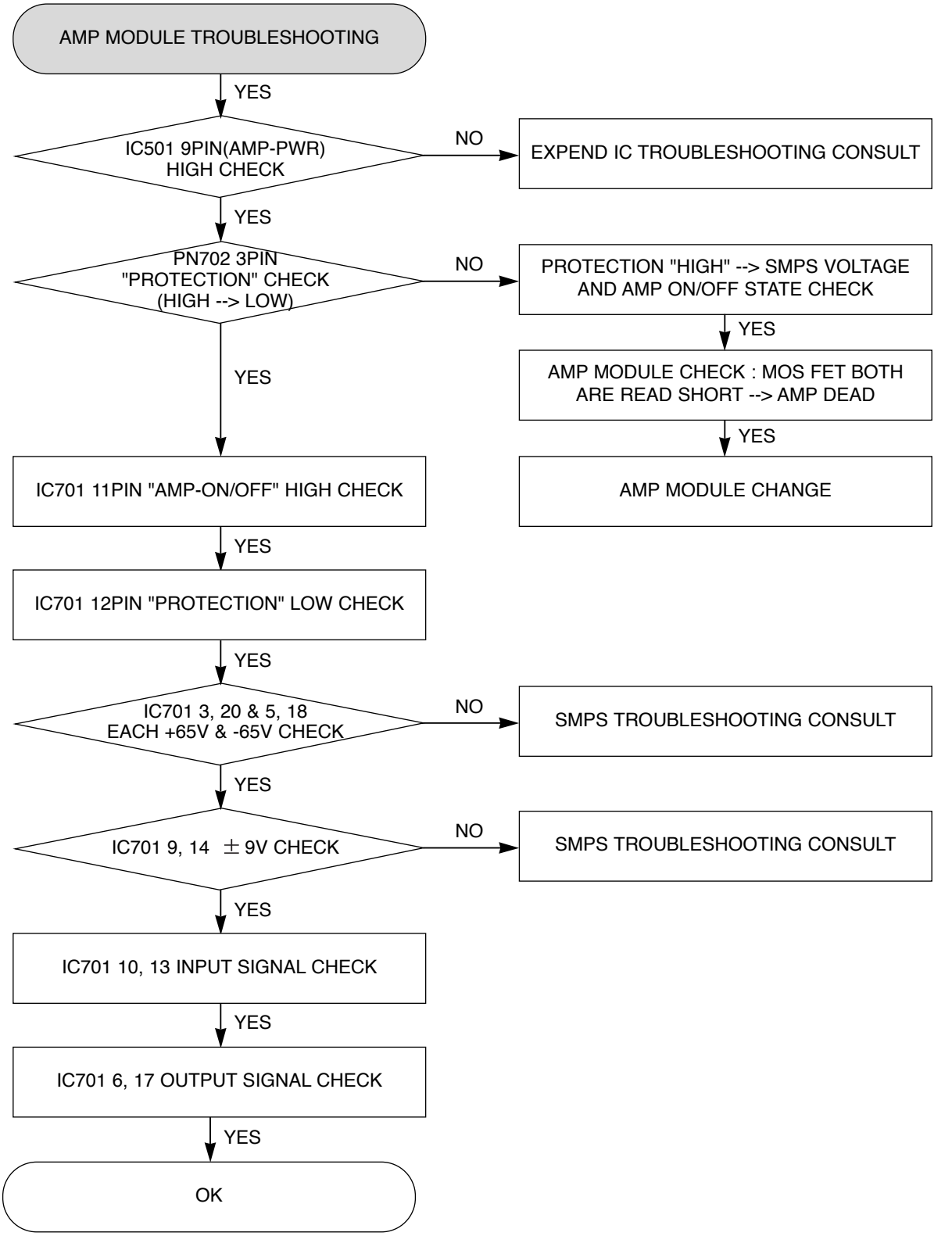

TUNER
YES
TU101 3/5
SIGNAL CHECK
NO
TU101 2PIN
"+9V" VOLTAGE
CHECK
NO
CN701 2PIN "+12V" CHECK
YES
TU101 6, 7, 8,
9PIN CHECK (PLL-CE, PLL-DI,
CLK, PLL-DO)
NO
MICOM IC302 CHECK
(PIN 73, 71, 70, 72)
YES
TUNER MODULE CHANGE
YES
IC601
2, 37PIN SIGNAL INPUT
CHECK
NO
MAIN PCB PATTERN CHECK
YES
IC601 17,
22PIN OUTPUT SIGNAL
CHECK
NO
IC601(NJW1190)
TROUBLESHOOTING CONSULT
YES
TUNER OUTPUT


MIC
YES
CN307
5PIN "MIC-SIGNAL"
CHECK
NO
IC302 65PIN
MIC-SENSE CHECK
NO
JK401, JK402 CHECK
YES
YES
IC402
8PIN SIGNAL INPUT
CHECK
NO
JK401,JK402 4PIN OUTPUT CHECK
YES
YES
IC402 6PIN "+10.4V " CHECK
YES
IC402 7PIN SIGNAL OUTPUT CHECK
YES
IC402 2PIN SIGNAL INPUT CHECK
YES
IC402 3PIN SIGNAL OUTPUT CHECK
DVD
PCB IC408 3PIN SIGNAL
CHECK
NO
BETWEEN DVD PCB IC408
AND CN307 PATTERN CHECK
YES
DVD PCB
IC408 OUTPUT 1PIN SIGNAL
CHECK
NO
IC408
VOLTAGE CHECK 8PIN(+12V),
4PIN(-12V)
NO
CHECK +12V AND
-12V VOLTAGE LINE
YES
YES
CHANGE IC408
DVD
PCB IC501 125, 126PIN
CHECK
NO
BETWEEN IC408 1PIN AND IC501
125, 126 PATTERN CHECK
YES
DVD PCB
IC407 3,4,5,6PIN MODUALATION
CHECK
YES
DVD PCB
IC407 OUTPUT 18,19,14,15PIN
OUTPUT CHECK
YES
DVD PCB
IC406 INPUT 5, 6, 2, 3PIN
CHECK
NO
DVD TROUBLESHOOTING
CONFIG
YES
DVD PCB
IC406 OUTPUT 1, 7PIN
CHECK
YES
DVD
PCB CN709 7, 8PIN
CHECK
YES
MAIN PCB IC601 44PIN CHECK
YES
IC601 (NJW1190)
TROUBLESHOOTING CONFIG

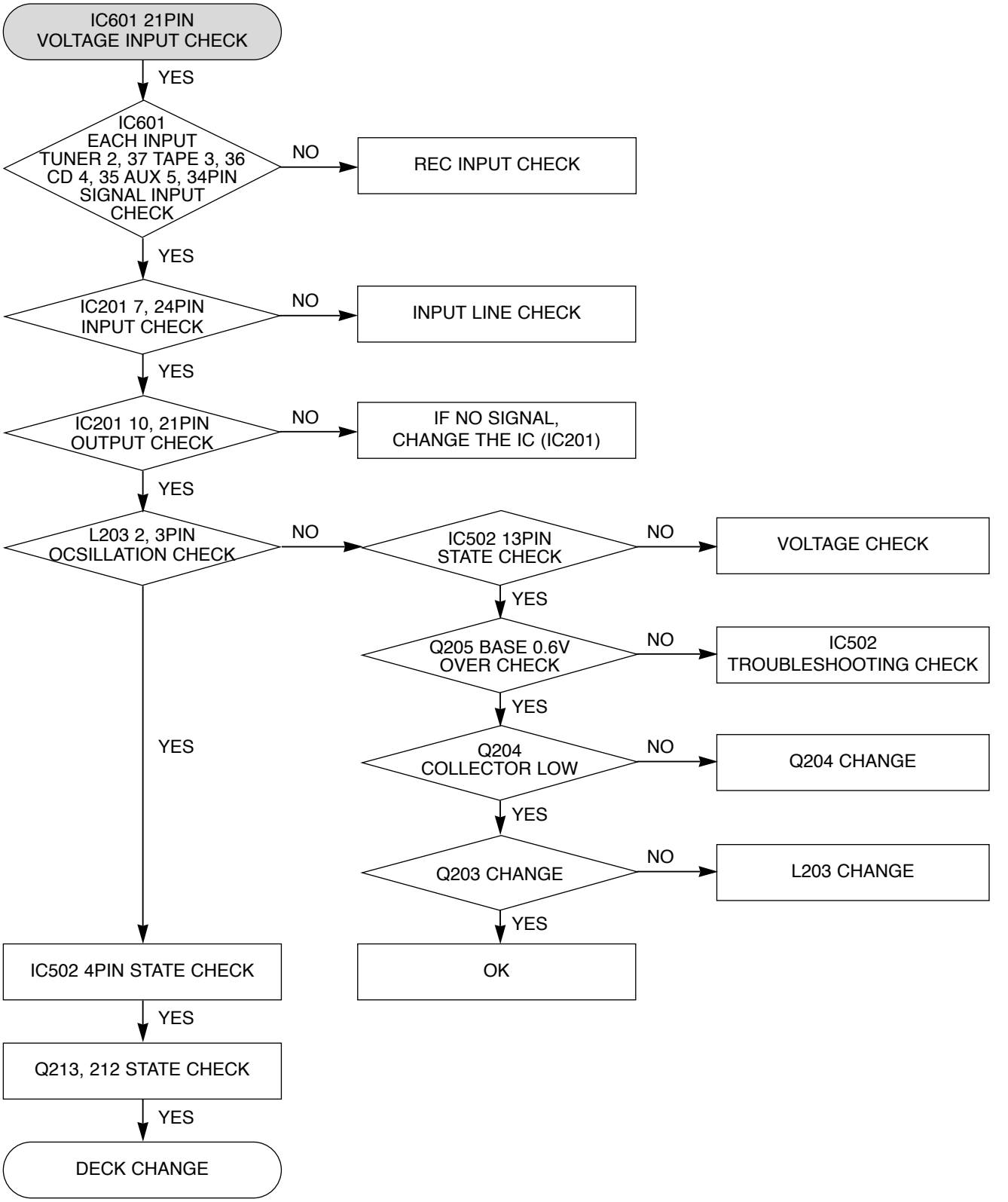
9. IC601 (NJW1190) TROUBLUSHOOTING



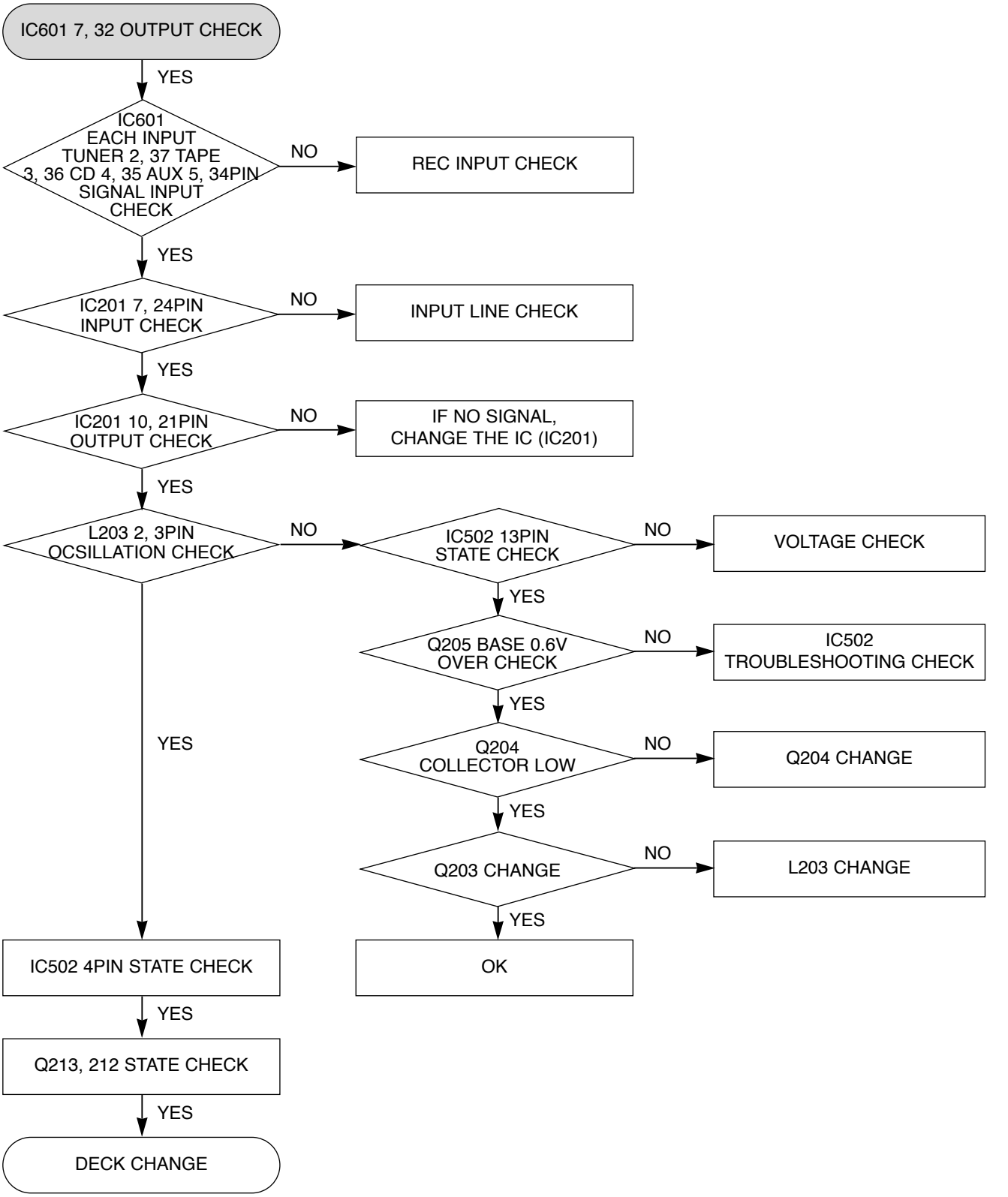
10. AMP MODULE TROUBLESHOOTING



11. REC CHECK (Q201, Q202 ON : R276, R226 HIGH)



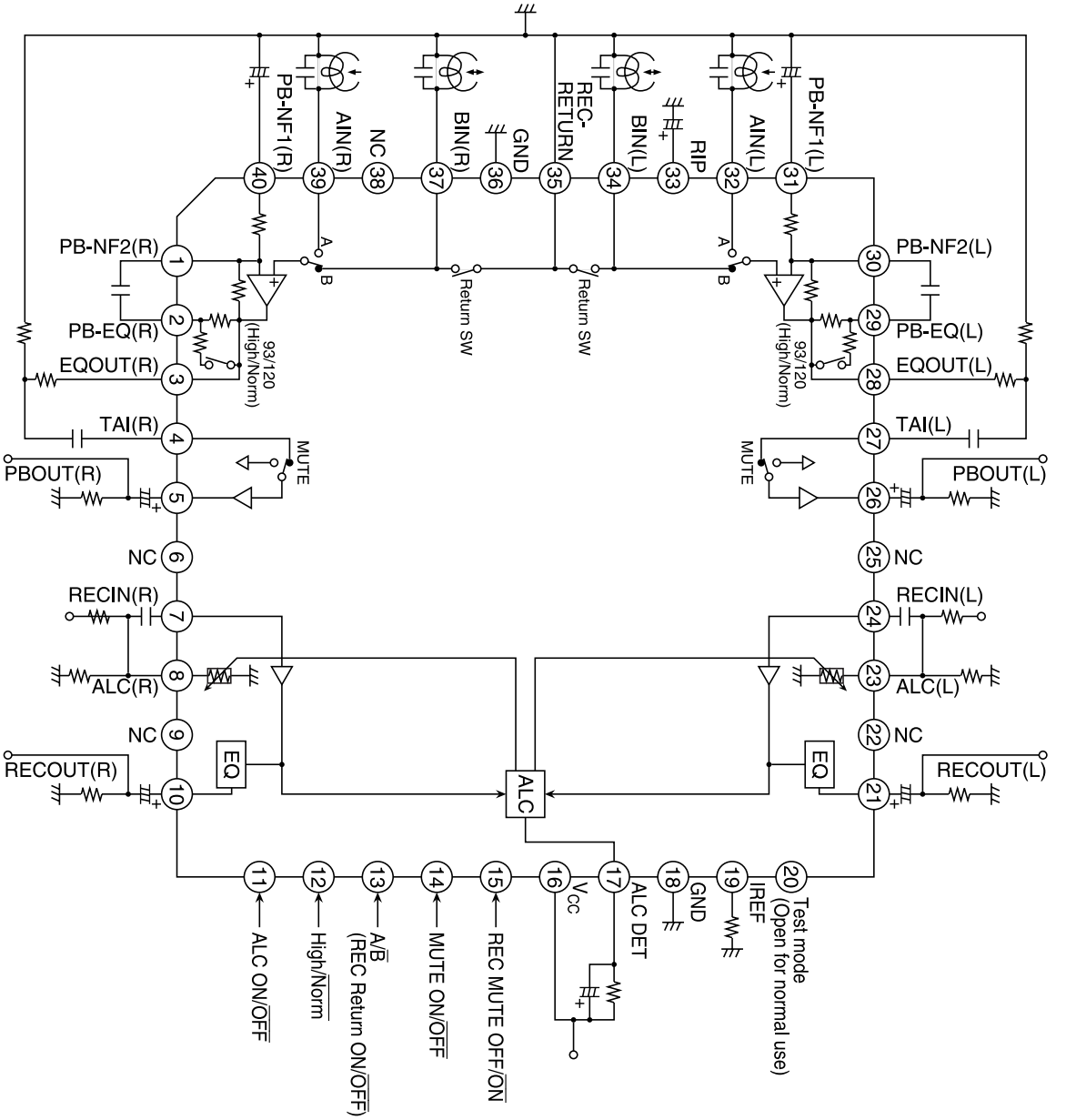
12. DUBBING CHECK ("NORMAL OR REC" // "HIGH")



INTERNAL BLOCK DIAGRAM OF ICs

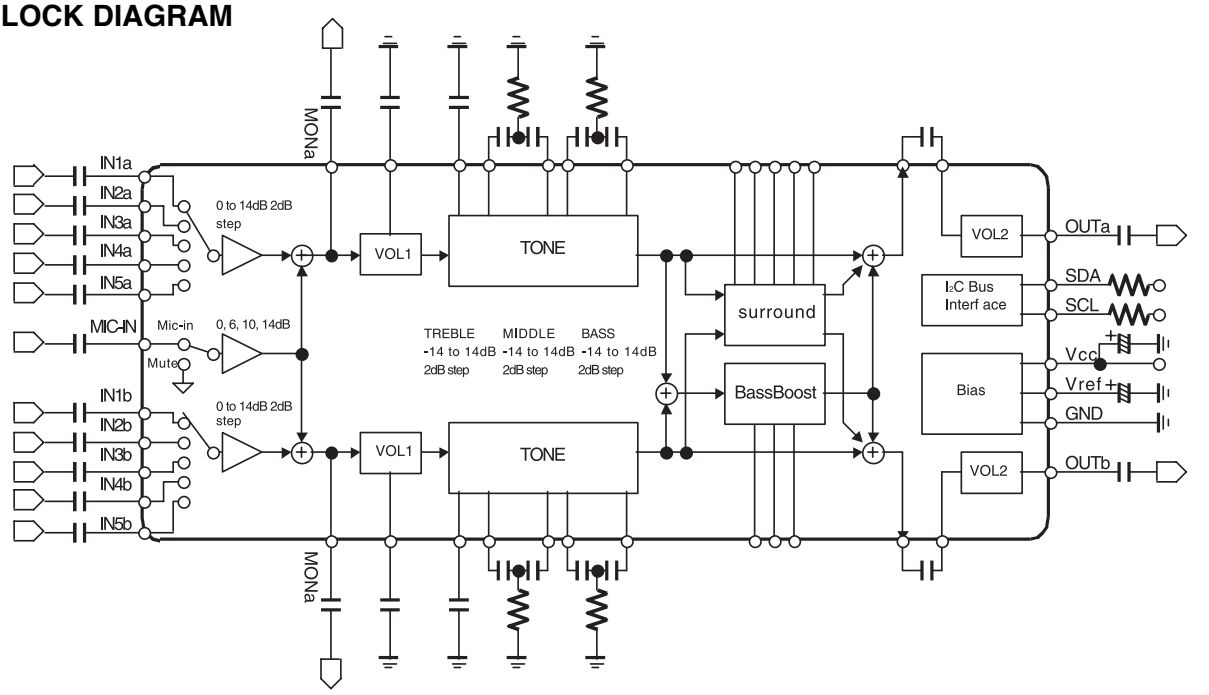
1. HA12237F

BLOCK DIAGRAM



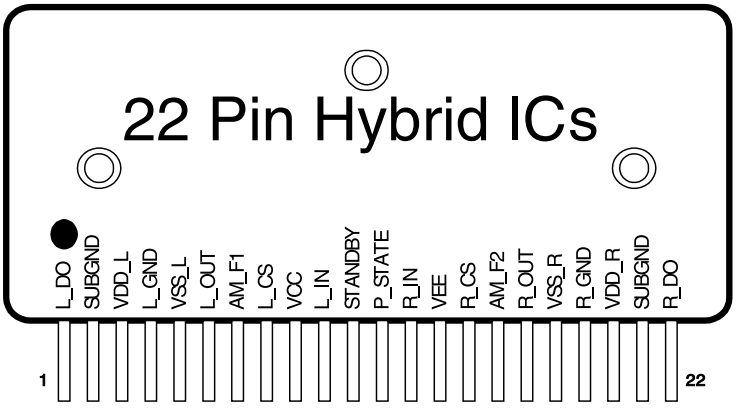
2. NJW1190

BLOCK DIAGRAM

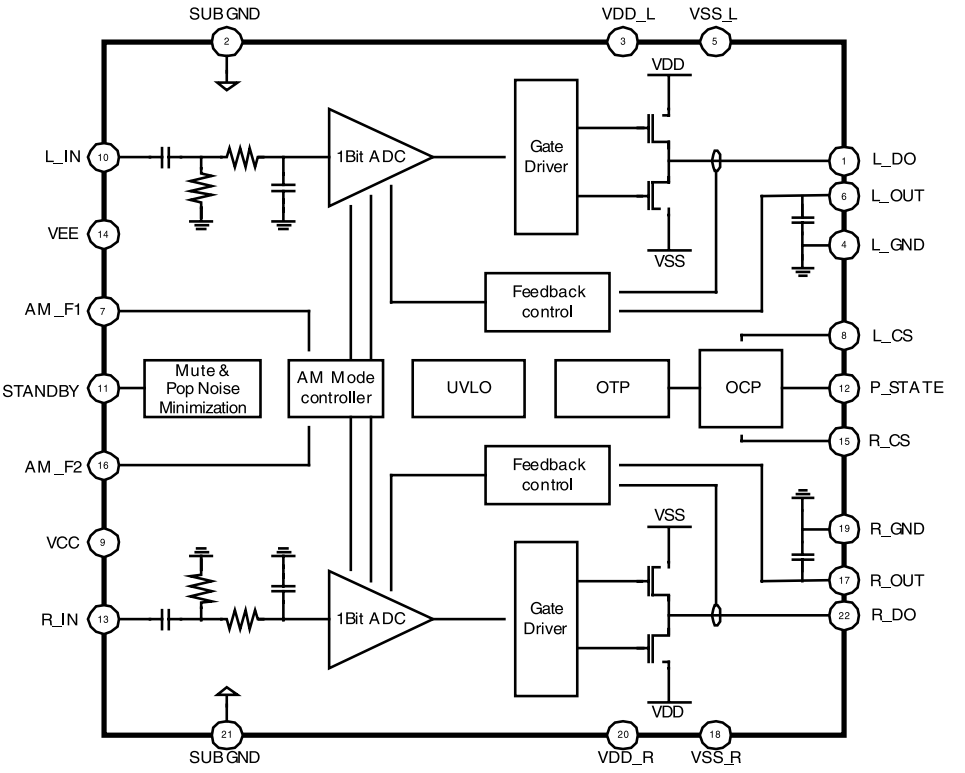


3. AF330W20FT

3-1. PIN CONFIGURATION



3-2. BLOCK DIAGRAM

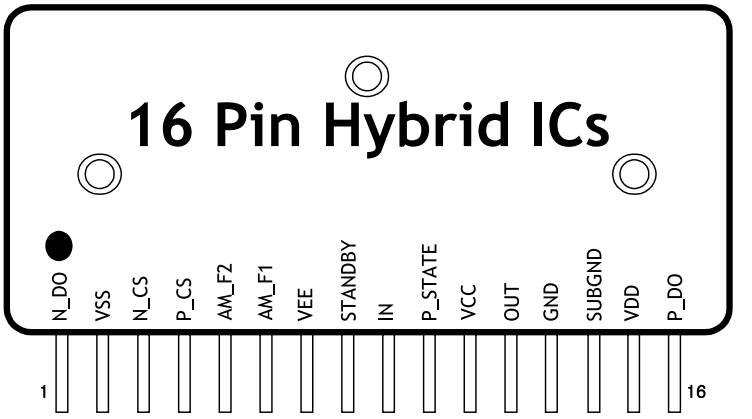


3-3. PIN DESCRIPTION

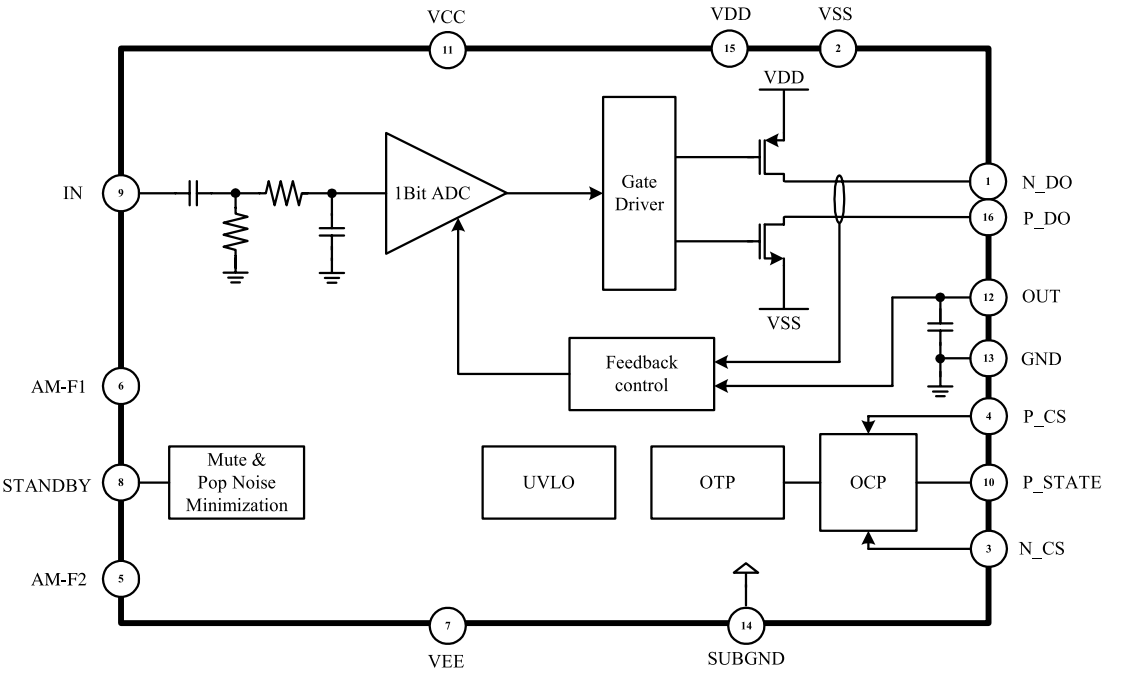
Pin Number	Symbol	Type	Description
1	L_DO	O	L-Channel Drain Output
2	SUBGND	G	Sub Ground
3	VDD_L	P	L-Channel Positive supply Voltage
4	L_GND	P	L-Channel Signal Ground
5	VSS_L	O	L-Channel Negative supply Voltage
6	L_OUT	G	L-Channel Audio Output
7	AM_F1	I	AM Mode control Input 1
8	L_CS	I	L-Channel Current Sense Input
9	VCC	P	Positive supply Voltage
10	L_IN	I	L-Channel Audio Input
11	STANDBY	I	ON/OFF control
12	P_STATE	O	Protection State
13	R_IN	I	R-Channel Audio Input
14	VEE	P	Negative supply Voltage
15	R_CS	I	R-Channel Current Sense Input
16	AM_F2	I	AM Mode control Input 2
17	R_OUT	G	R-Channel Audio Output
18	VSS_R	O	R-Channel Negative supply Voltage
19	R_GND	P	R-Channel Signal Ground
20	VDD_R	P	R-Channel Positive supply Voltage
21	SUBGND	G	Sub Ground
22	R_DO	O	R-Channel Drain Output

4. AF350W01FT

4-1. PIN CONFIGURATION



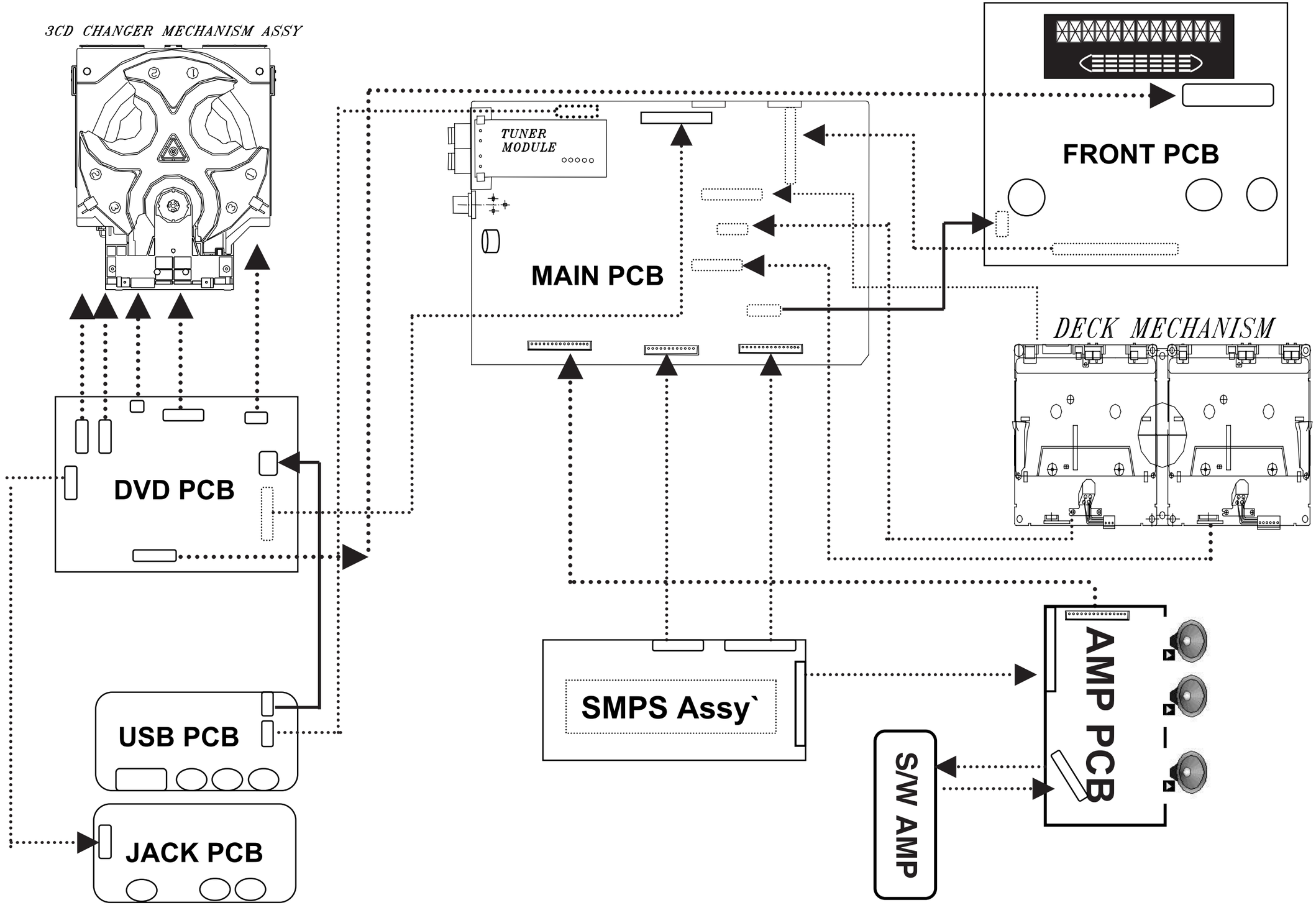
4-2. BLOCK DIAGRAM



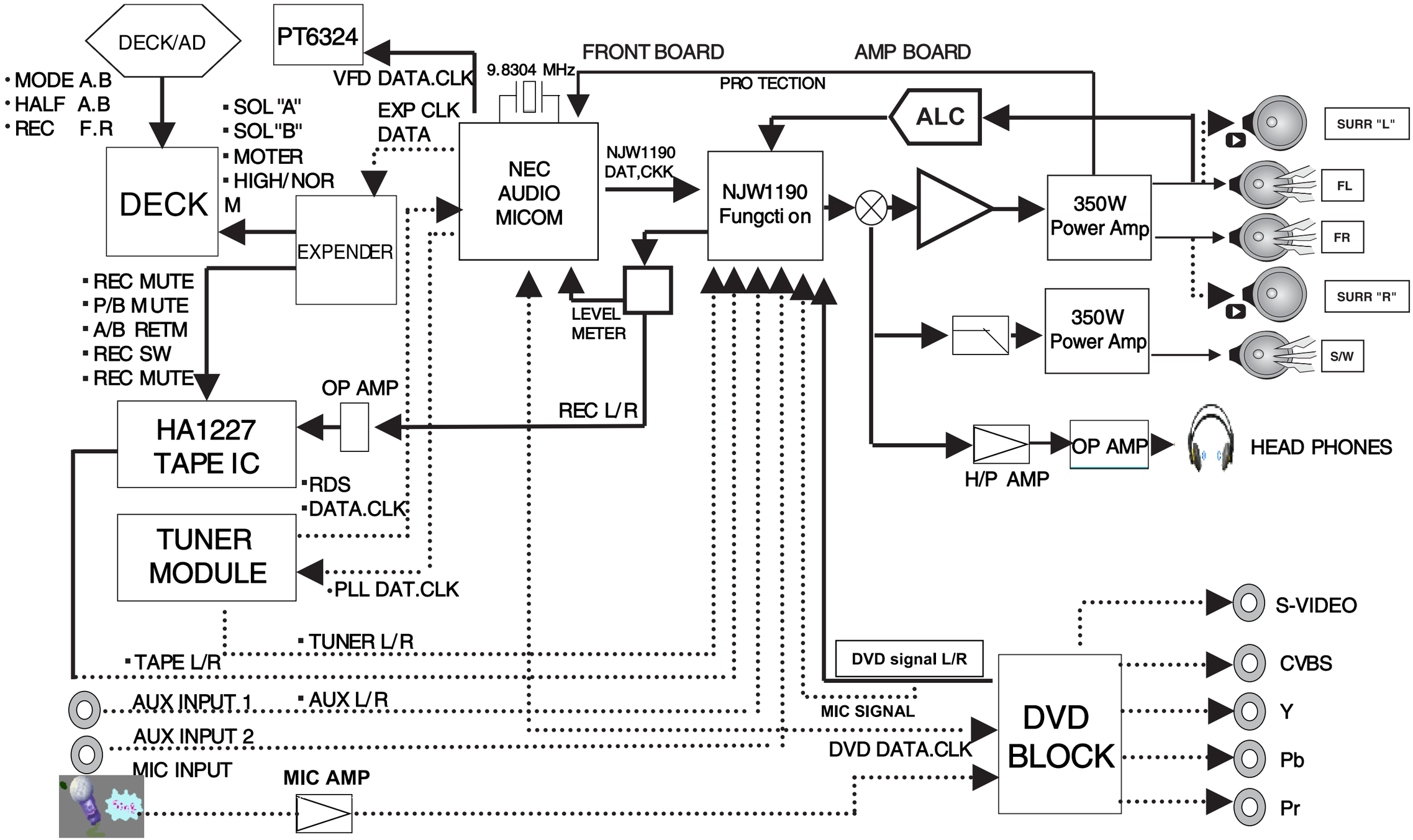
4-3. PIN DESCRIPTION

Pin Number	Symbol	Type	Description
1	N_DO	O	NMOS Drain Output
2	VSS	P	Negative supply Voltage
3	N_CS	I	NMOS Current Sense Input
4	P_CS	I	PMOS Current Sense Input
5	AM_F2		
6	AM_F1		
7	VEE	P	Negative supply Voltage
8	STANDBY	I	ON/OFF control
9	IN	I	Audio Input
10	P_STATE	O	Protection State
11	VCC	P	Positive supply Voltage
12	OUT	O	Audio Output
13	GND	G	Signal Ground
14	SUBGND	G	Sub Ground
15	VDD	P	Positive supply Voltage
16	P_DO	O	PMOS Drain Output

WIRING DIAGRAM



BLOCK DIAGRAM



SCHEMATIC DIAGRAMS

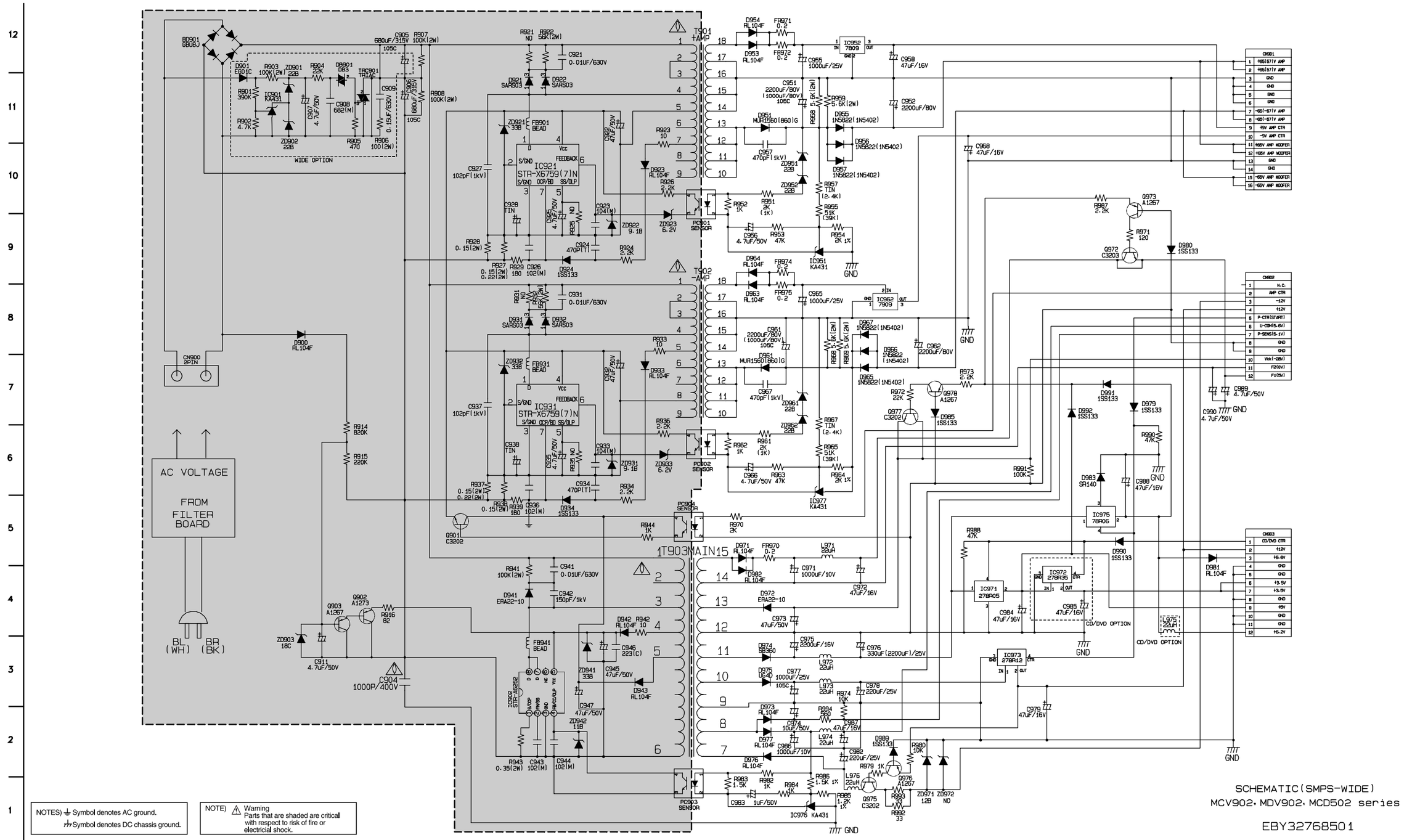
1. SMPS (POWER) SCHEMATIC DIAGRAM

IMPORTANT SAFETY

WHEN SERVICING THIS CHASSIS, UNDER NO CIRCUMSTANCES SHOULD THE ORIGINAL DESIGN BE MODIFIED OR ALTERED WITHOUT PERMISSION FROM THE LG CORPORATION. ALL COMPONENTS SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT. SPECIAL COMPONENTS ARE SHADED ON THE SCHEMATIC FOR EASY IDENTIFICATION. THIS CIRCUIT DIAGRAM MAY OCCASIONALLY DIFFER FROM THE ACTUAL CIRCUIT USED. THIS WAY, IMPLEMENTATION OF THE LATEST SAFETY AND PERFORMANCE IMPROVEMENT CHANGES INTO THE SET IS NOT DELAYED UNTIL THE NEW SERVICE LITERATURE IS PRINTED.

NOTE :

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



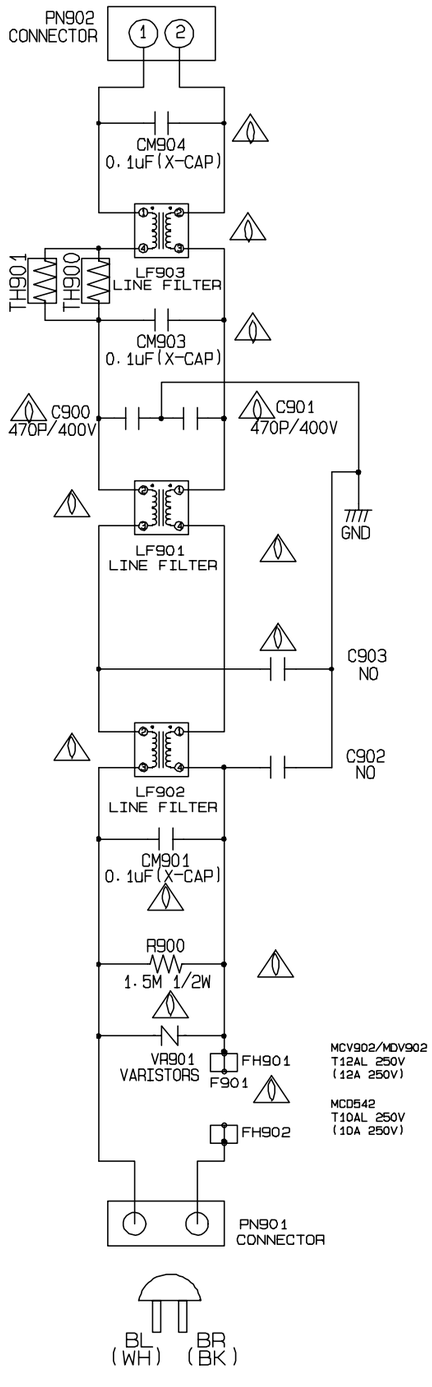
NOTES) ⏚ Symbol denotes AC ground.
⏚ Symbol denotes DC chassis ground.

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

SCHEMATIC(SMPS-WIDE)
MCV902, MDV902, MCD502 series

EBY32768501

2. SUB SMPS (POWER) SCHEMATIC DIAGRAM



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

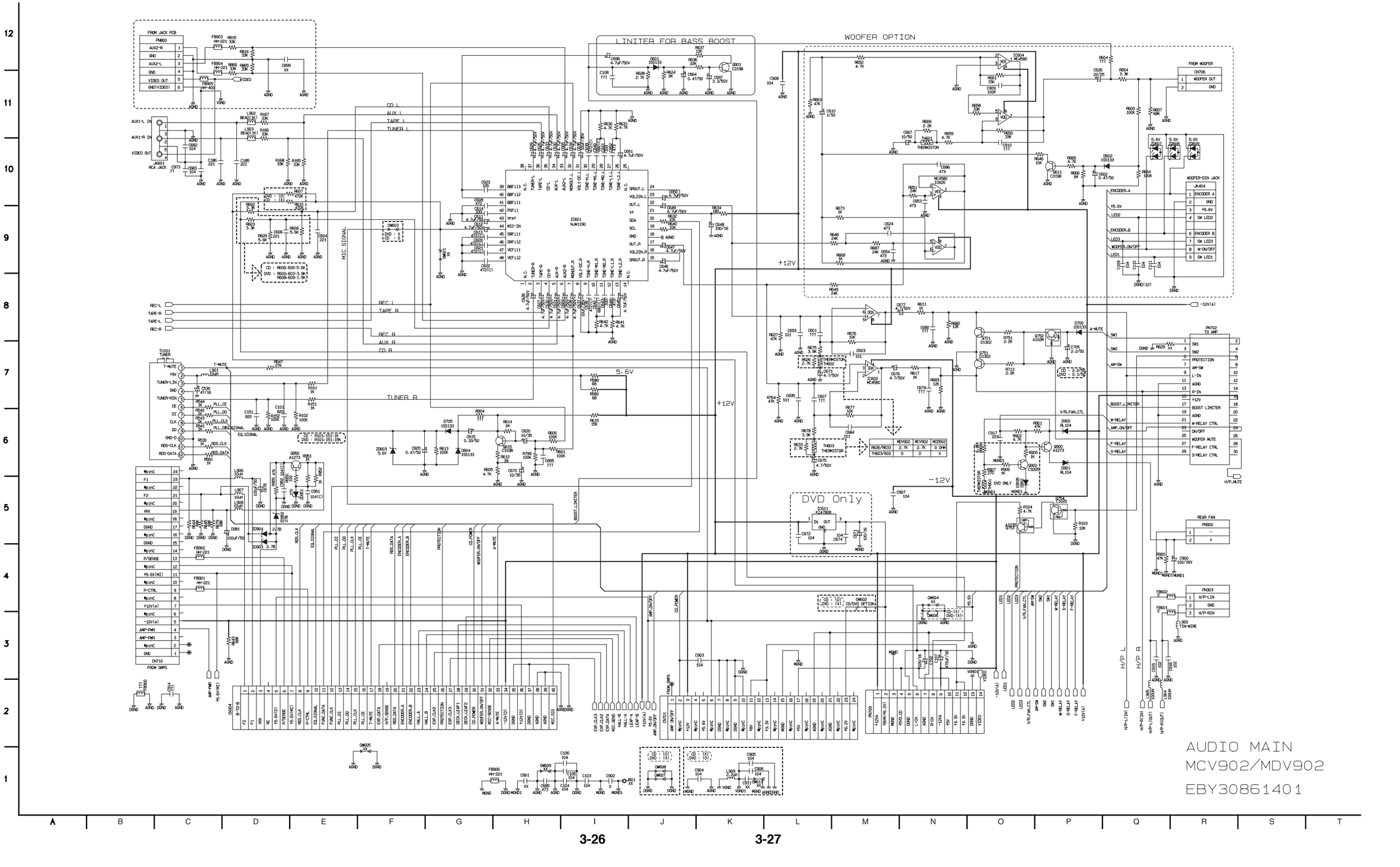
SCHEMATIC(SUB SMPS-WIDE)
MDV902/MCV902/MCD502

EBY32768701

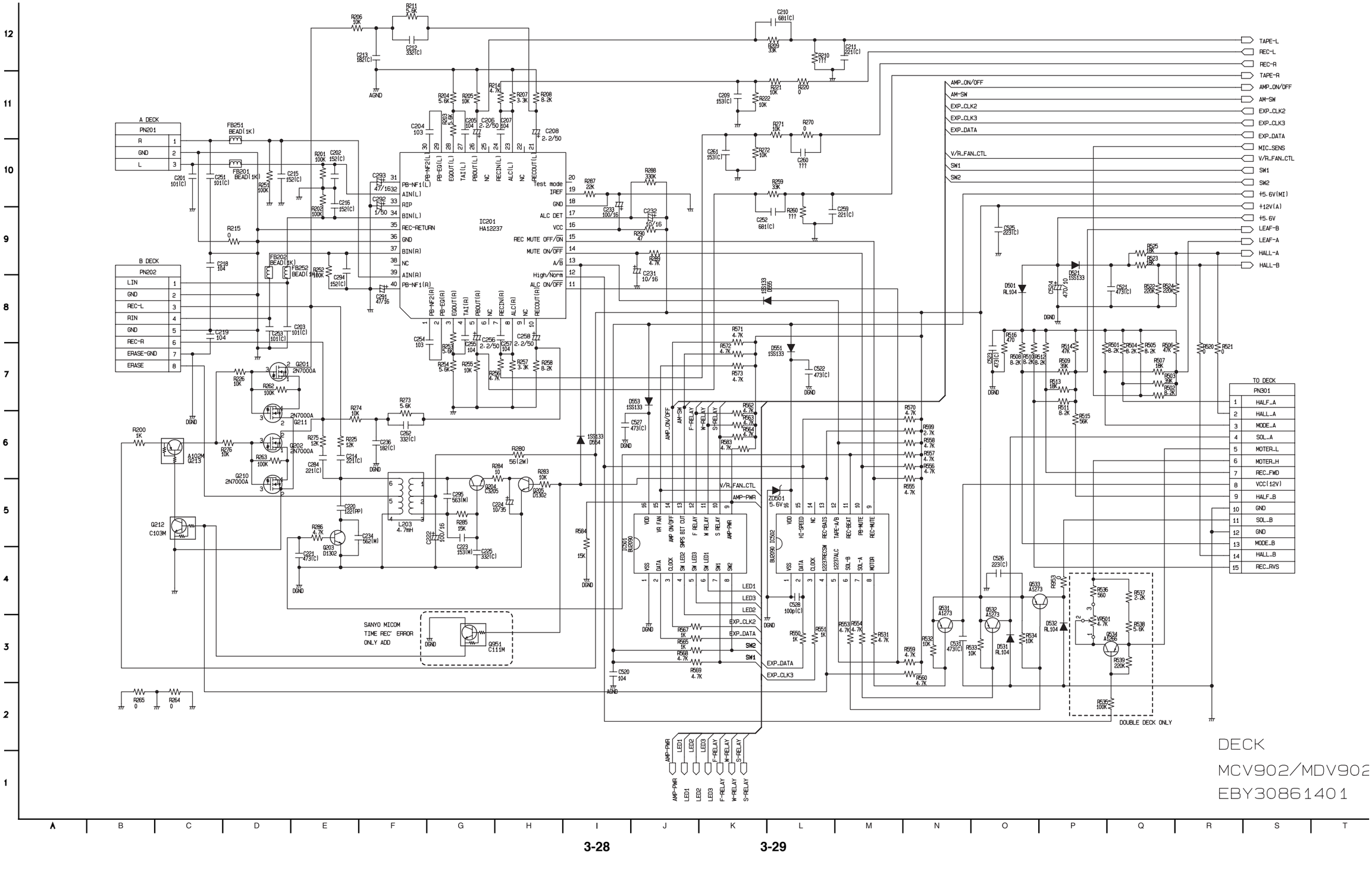
IMPORTANT SAFETY

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

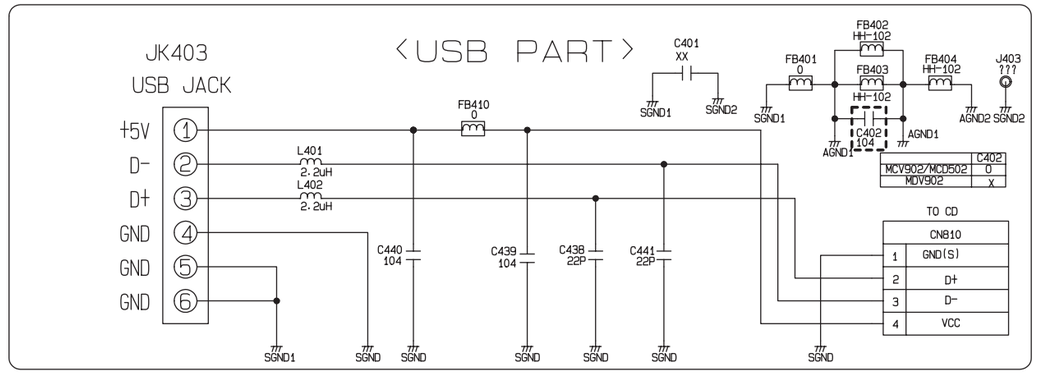
3. AUDIO MAIN SCHEMATIC DIAGRAM

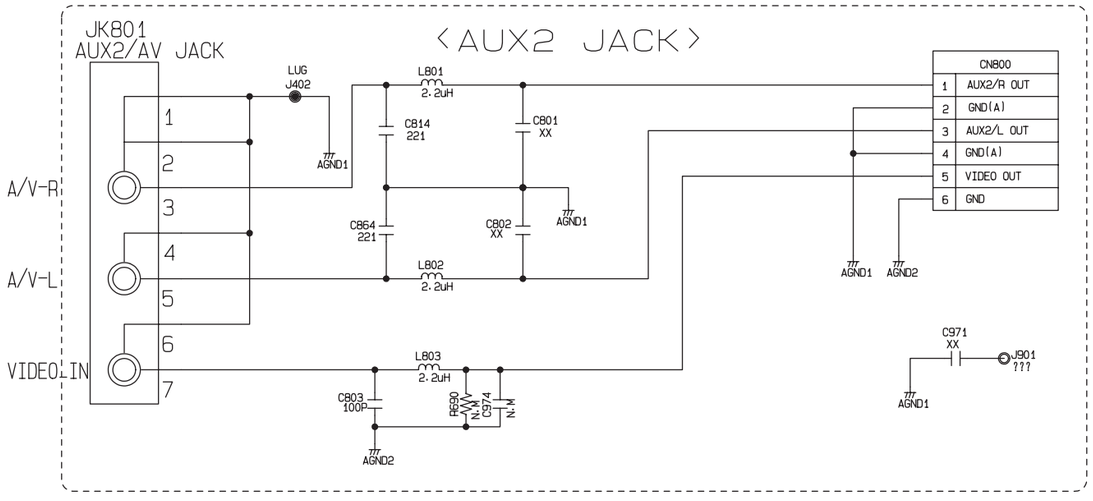


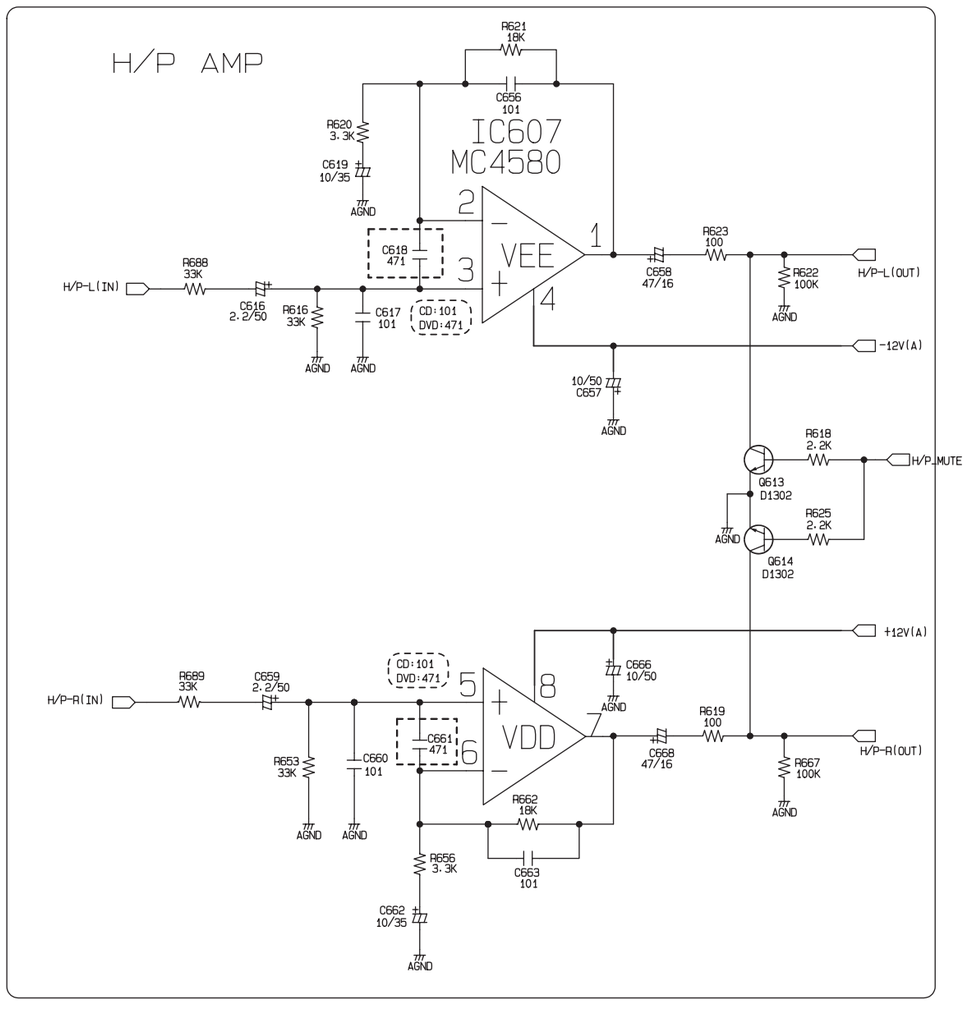
4. DECK SCHEMATIC DIAGRAM



5. USB, AUX2 & HEADPHONE AMP SCHEMATIC DIAGRAM

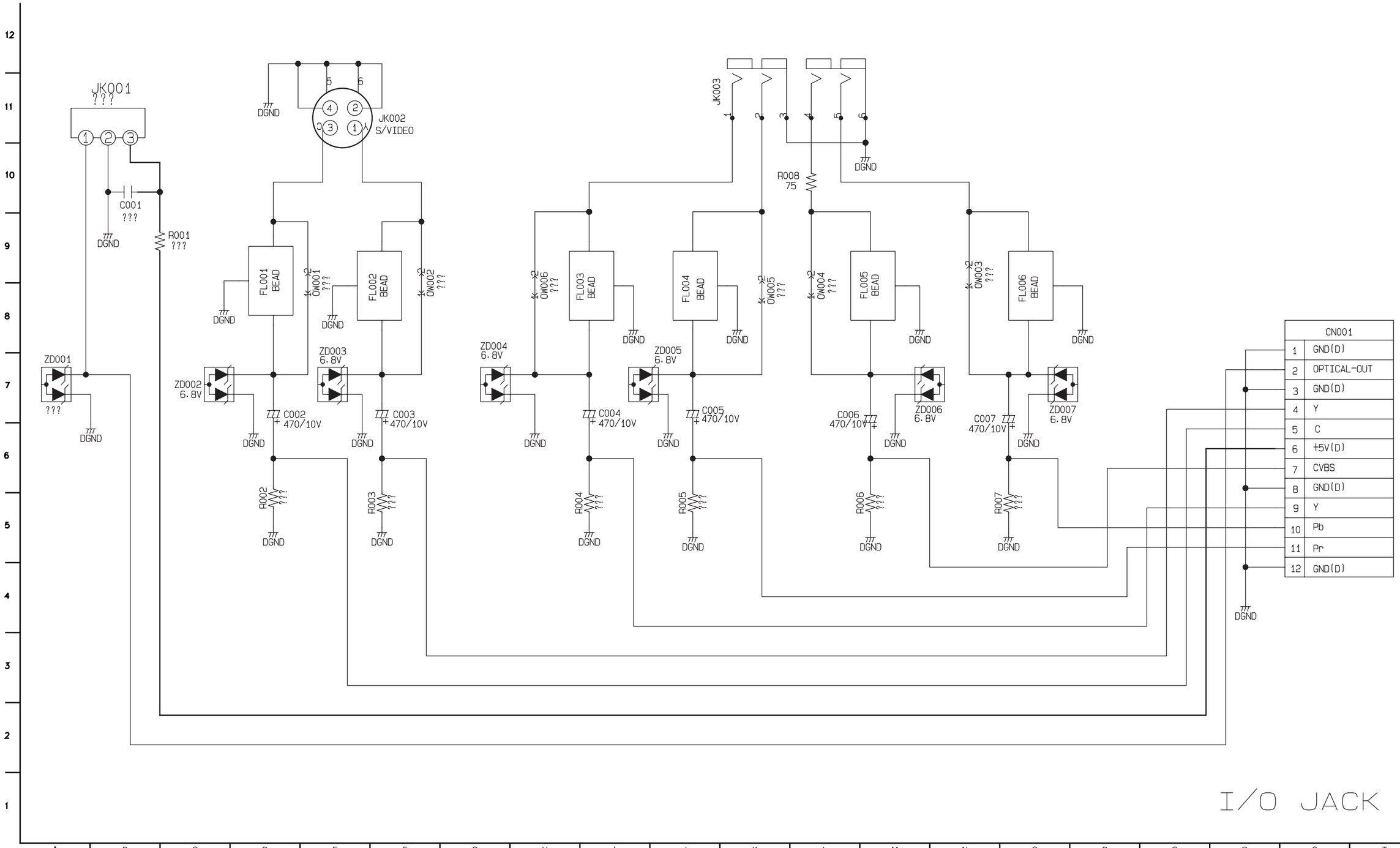




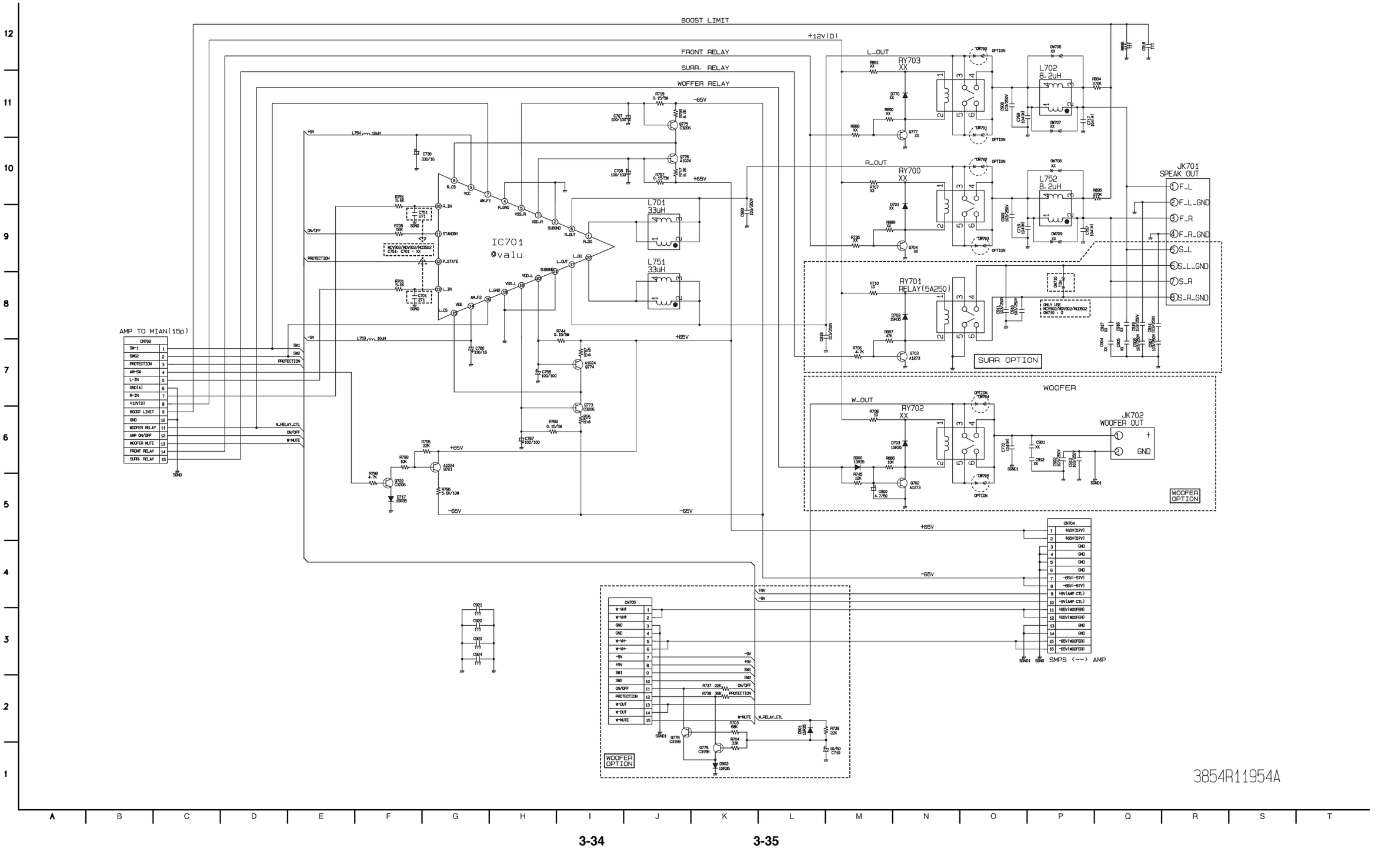


USB/AUX2
MCV902/MDV902
EBY30861401

6. I/O JACK SCHEMATIC DIAGRAM

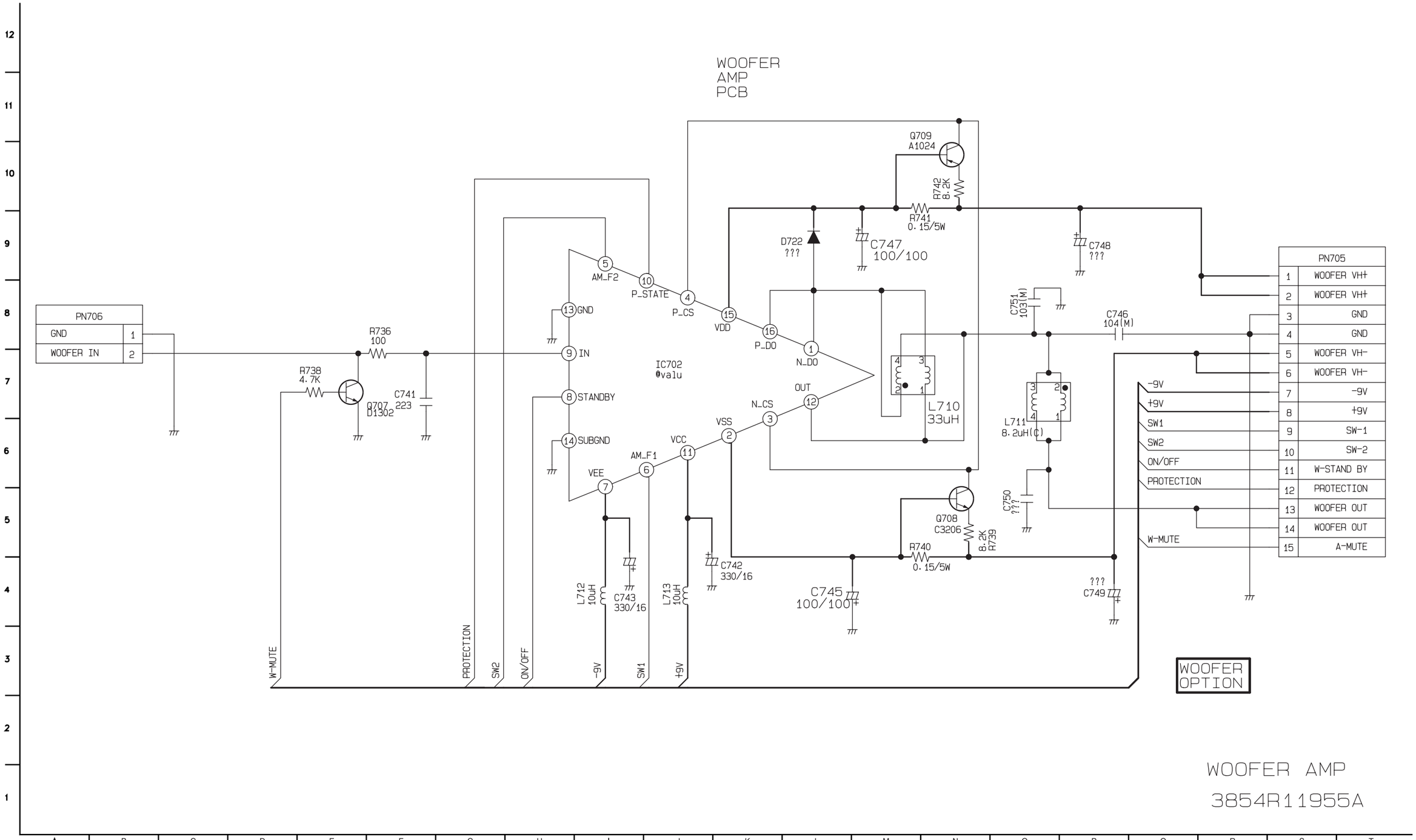


7. AMP SCHEMATIC DIAGRAM



3854R11954A

8. WOOFER AMP SCHEMATIC DIAGRAM



9. FRONT SCHEMATIC DIAGRAM

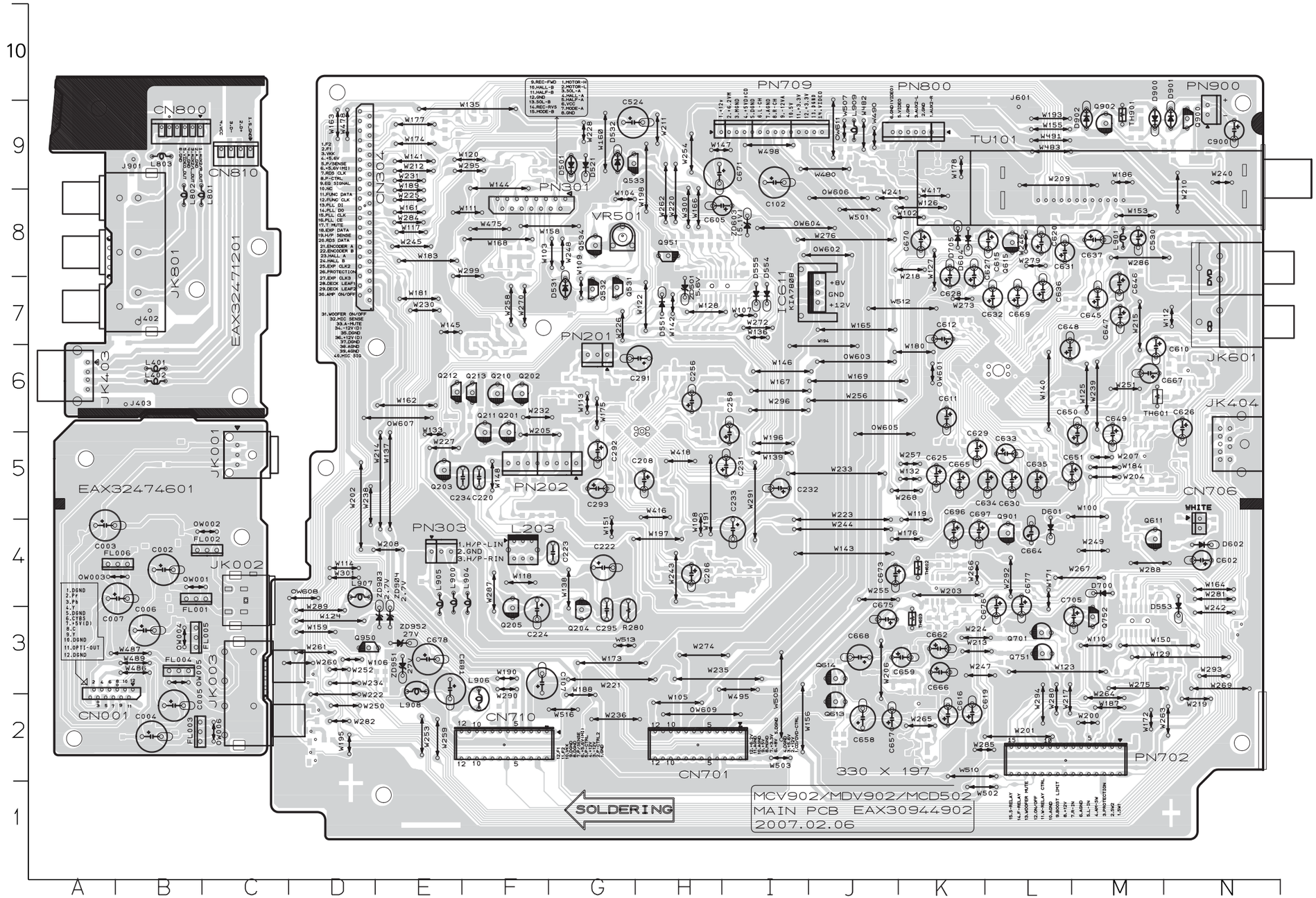
FRONT DIODE OPTION TABLE

DIODE SYM. NO	PIN	CONTENTS									TABLE X	TABLE O
D301	10	RDS (FM 50KHz-RDS/FM 100KHz-RBDS)									NON-RDS	RDS
D302	11	AM STEP									9KHz	10KHz
D303	12	FM STEP									50KHz	100KHz
D304	13	BAND 1	X	AM/FM	0	AM/FM/DIRT	X	AM/FM/SW	0	AM/FM/LW		
D305	14	BAND 2	X		X		0		0			
D306	15	JAPAN									NON-JAPAN BAND	JAPAN BAND
D307	16	TUNER									2CHIP SAMSUNG LC72131	1CHIP TAE-RONG LV23000R
D308	17	SCART									LM-U5060 MODEL- OUT OF USE	
D309	18	USB									Without USB	With USB
D310	19	OPTICAL - IN									LM-U5060 MODEL-OUT OF USE	
D311	20	OUTPUT POWER									LM-U5060 MODEL-OUT OF USE	
D312	21											
D313	22	CONFIG(SPEAKER)	X	2CH			0	2. 1CH			LM-U5060 MODEL- OUT OF USE	
D314	23		X				X					
D315	24	DECK OPTION	X	A/SHA/B		A/SHA/R	X	A/SHA/S	0	OUT OF USE		
D316	25		X				0		0			
D317	10	VOLUME INITIAL					LAST MEMORY		VOLUME INITIAL			
D318	11	BUYER OPTION	X	LG	0	SEMP	X	PHILCO	0	OUT OF USE		
D319	12		X		X		0					
D320	13	PICK-UP					SAMSUNG		SONY			
D321	14	DECO LED					LM-U5060 MODEL- OUT OF USE					

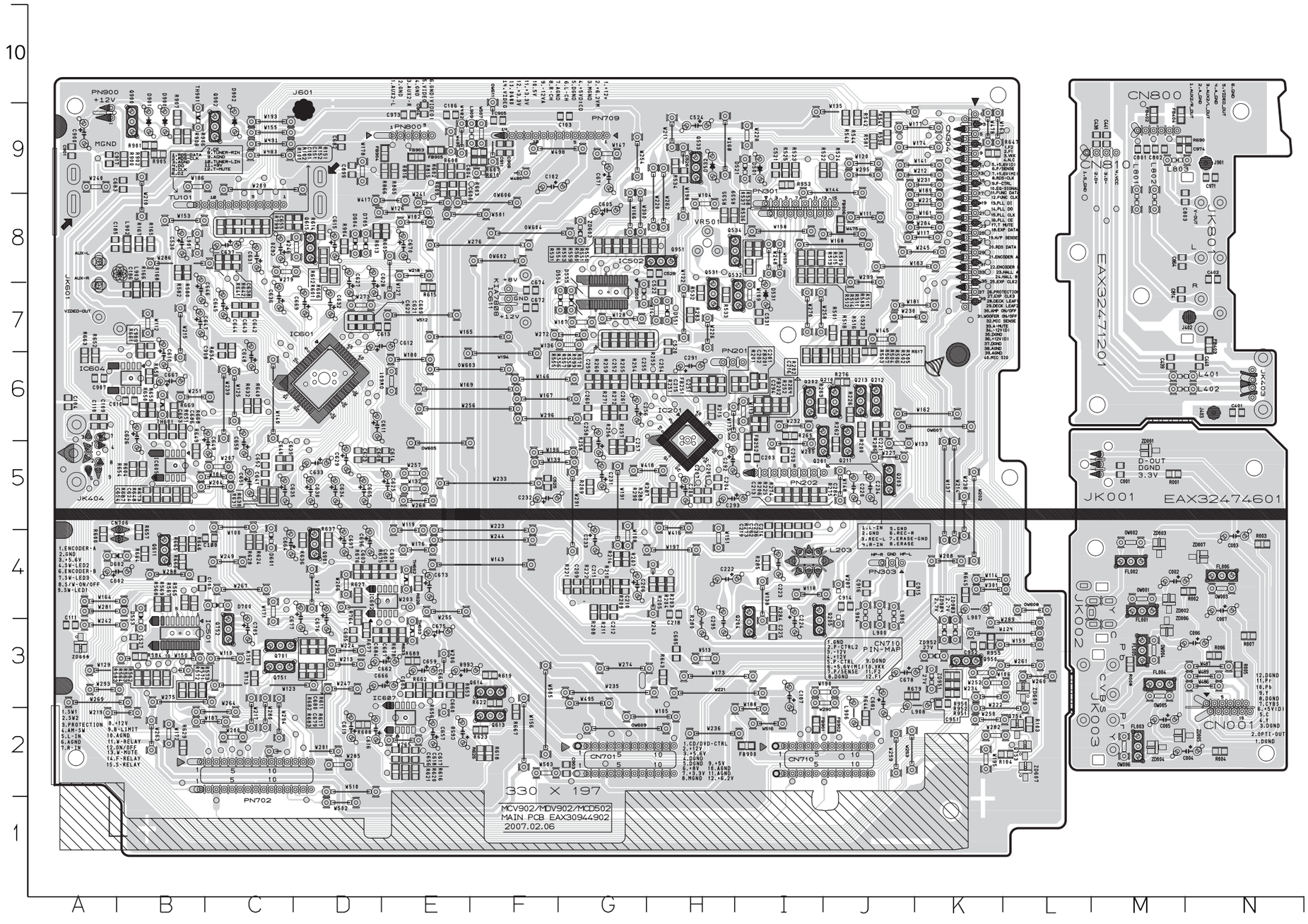
PRINTED CIRCUIT DIAGRAMS

1. MAIN P.C.BOARD

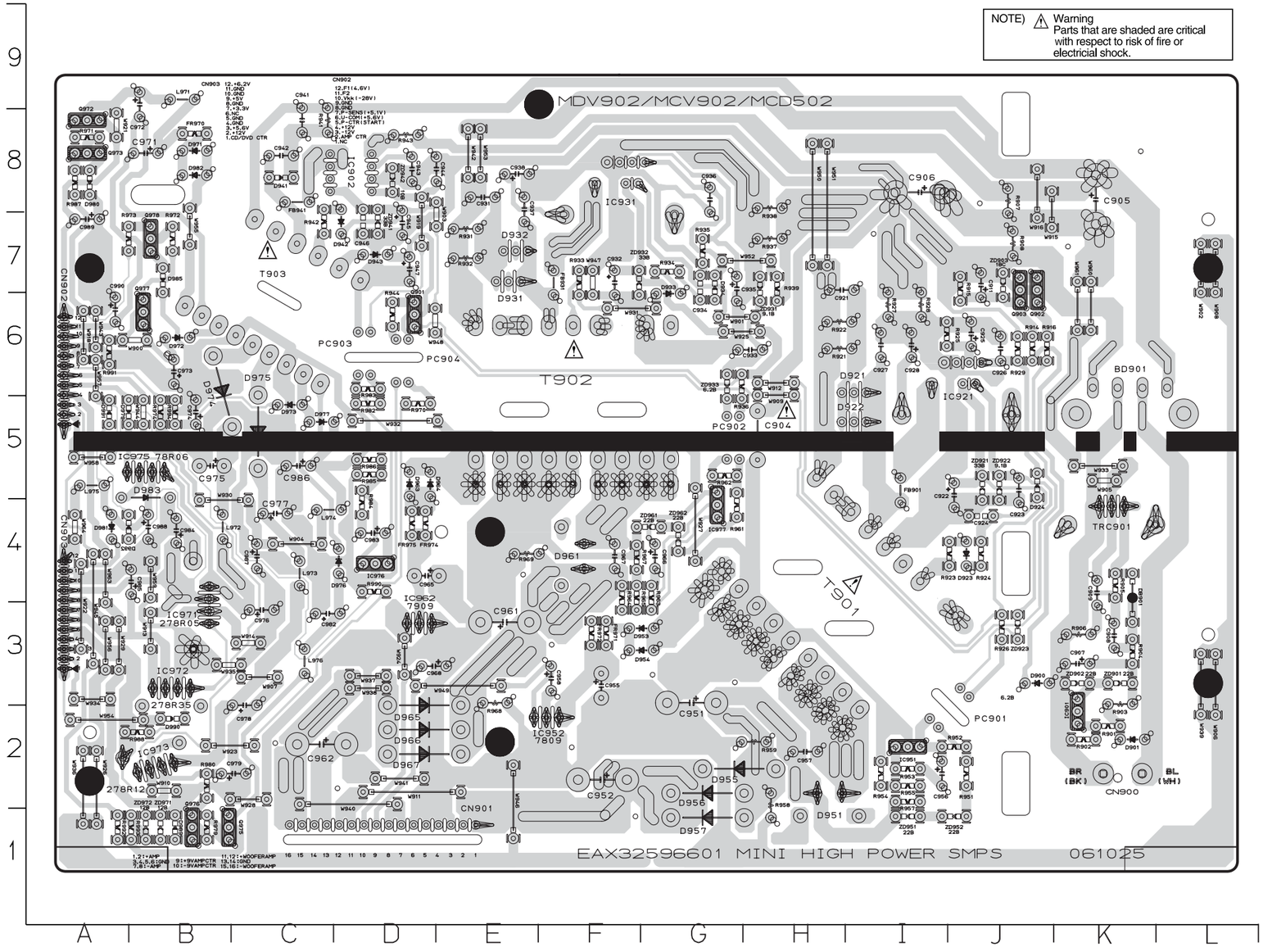
(TOP VIEW)



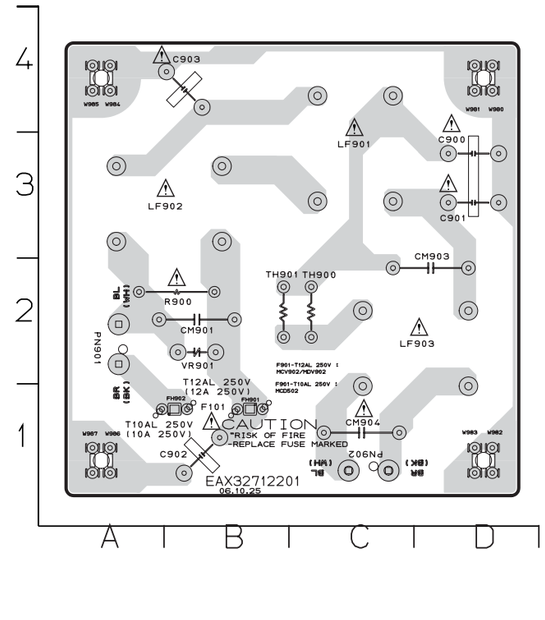
MAIN P.C.BOARD
(BOTTOM VIEW)



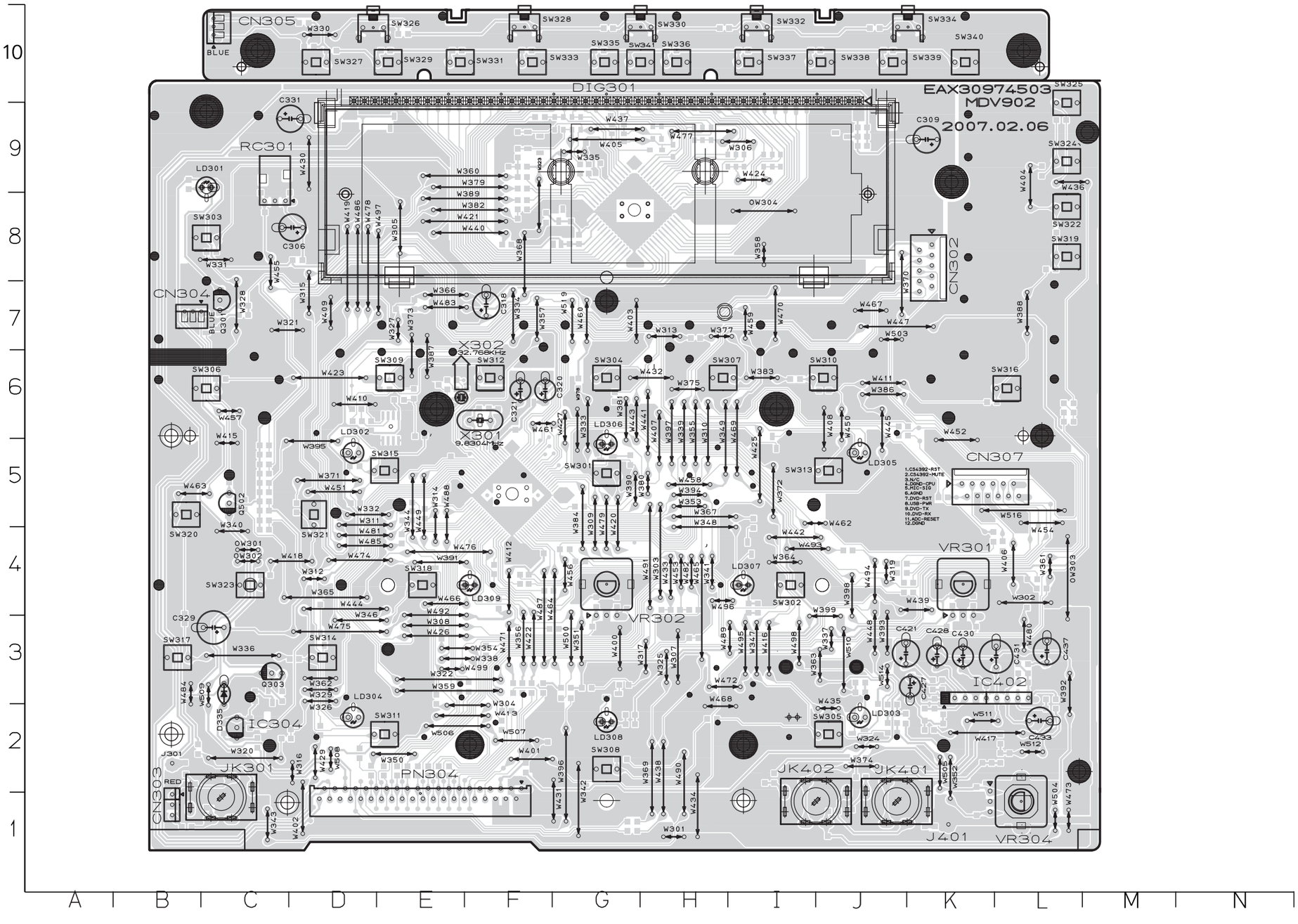
2. SMPS (POWER) P.C.BOARD



3. SUB SMPS (POWER) P.C.BOARD



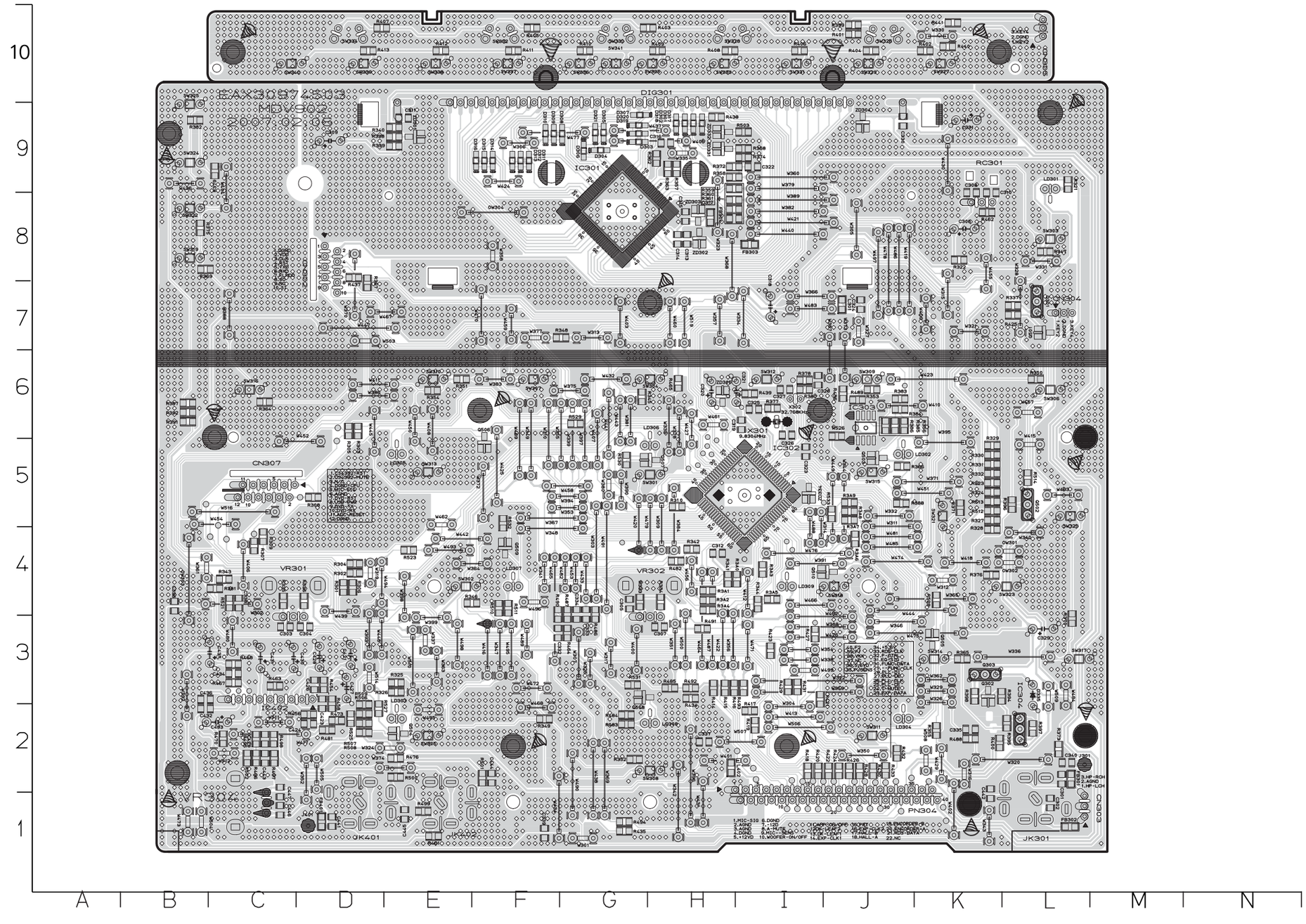
4. FRONT P.C.BOARD
(TOP VIEW)



A B C D E F G H I J K L M N

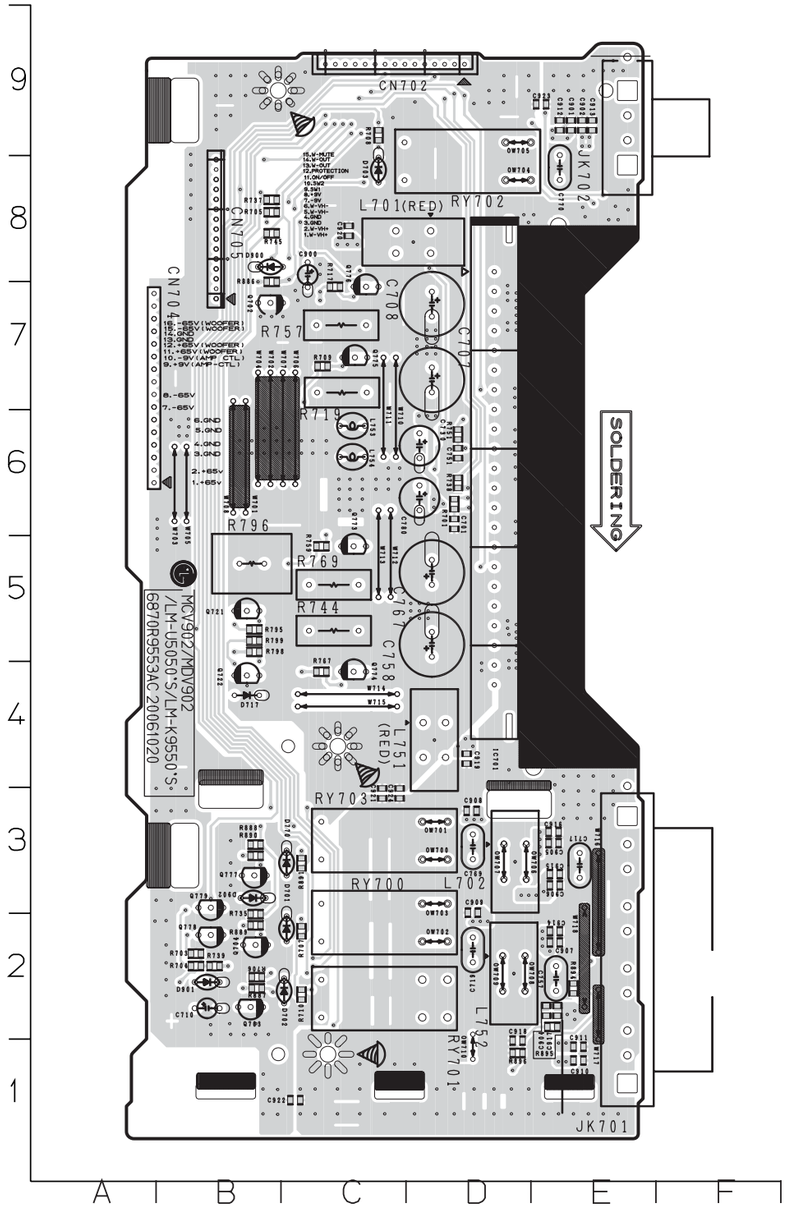
1 2 3 4 5 6 7 8 9 10

FRONT P.C.BOARD
(BOTTOM VIEW)

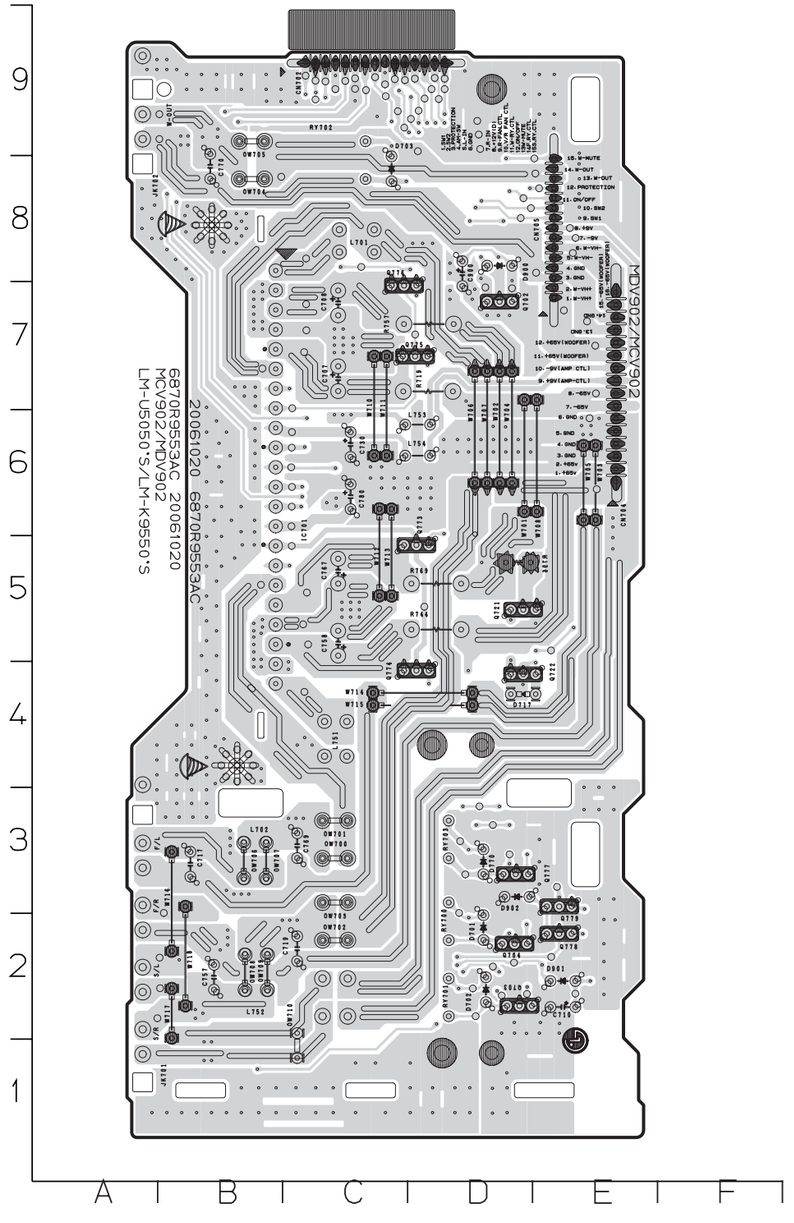


5. AMP P.C.BOARD

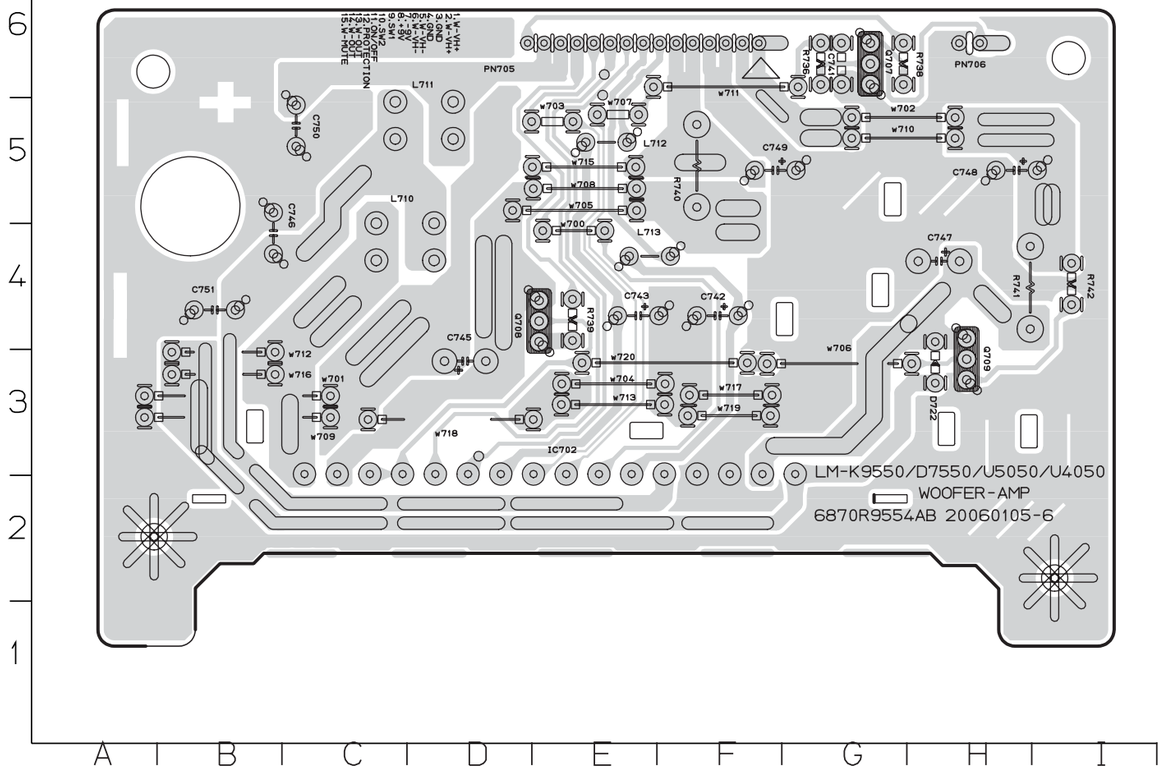
(TOP VIEW)



(BOTTOM VIEW)



6. WOOFER AMP P.C.BOARD

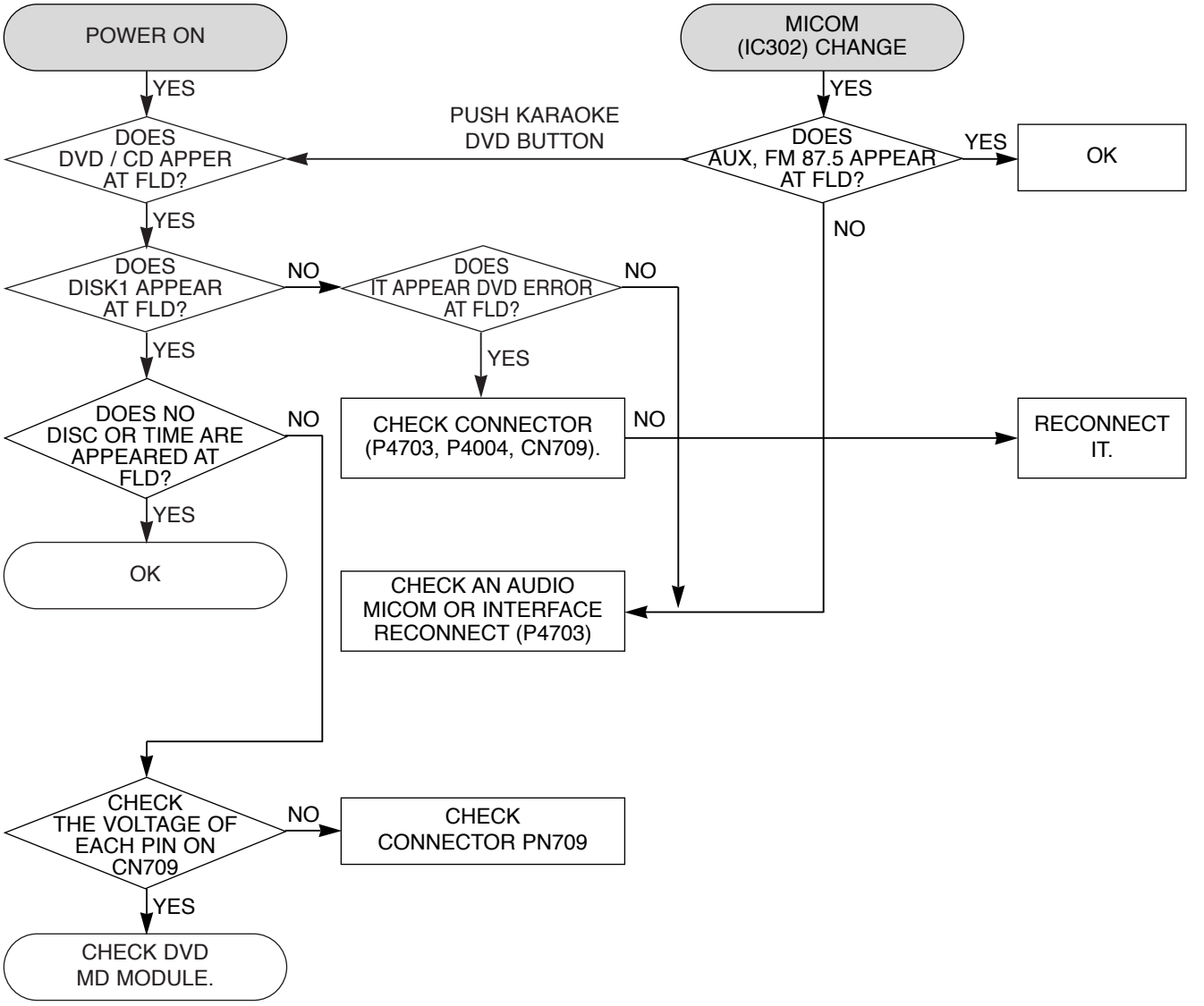


MEMO

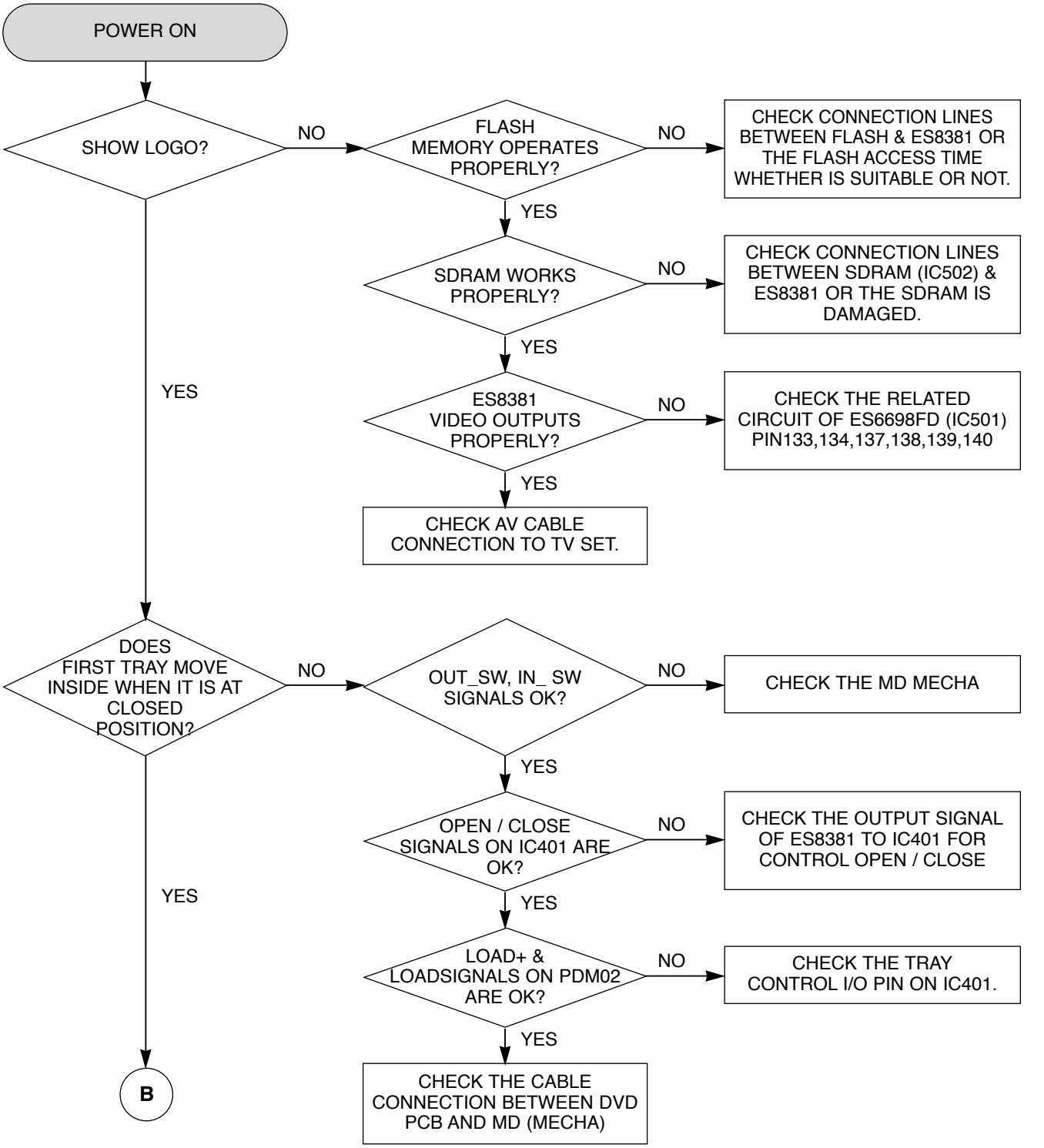
SECTION 4 DVD PART ELECTRICAL

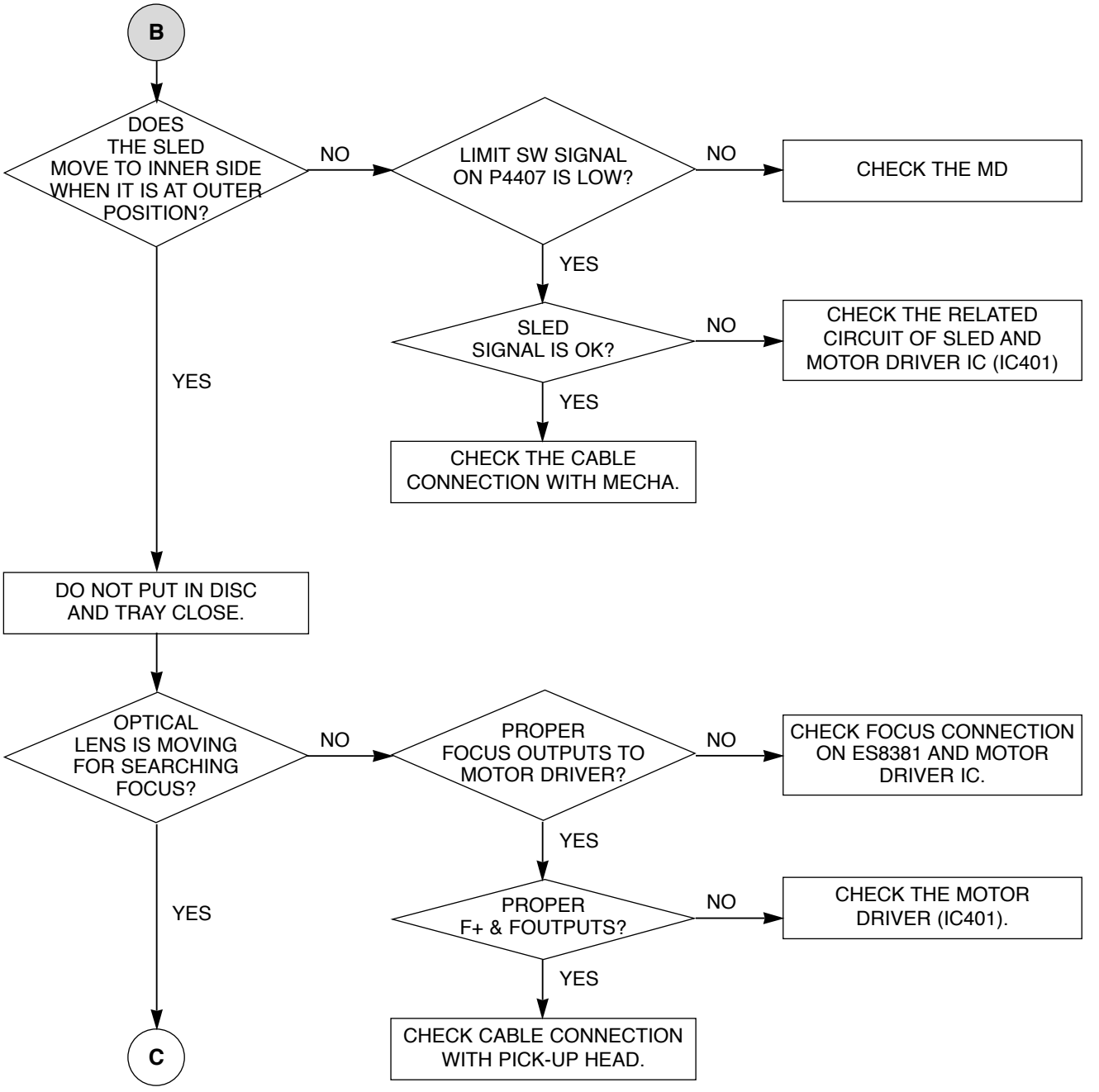
ELECTRICAL TROUBLESHOOTING GUIDE

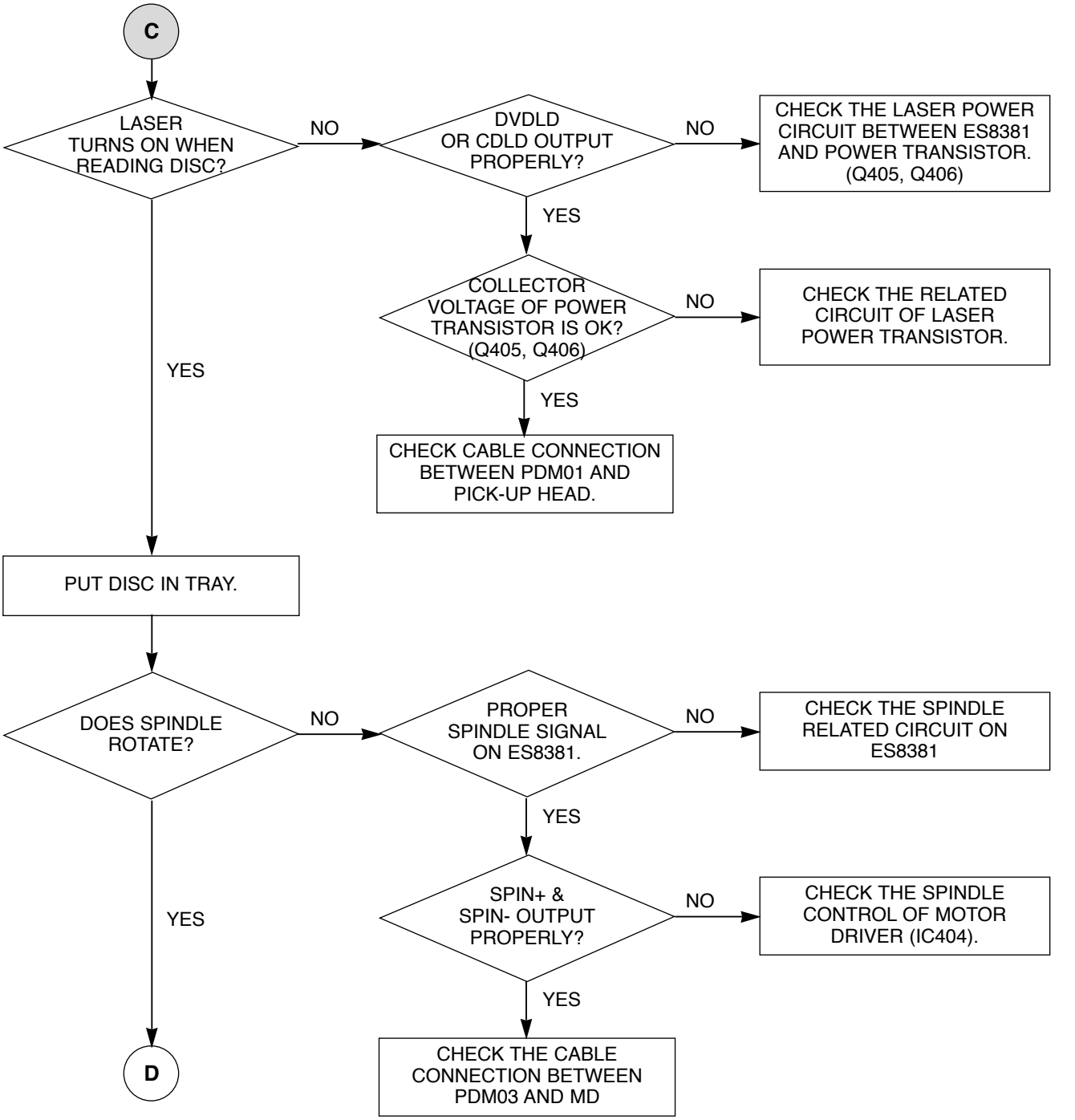
1. POWER

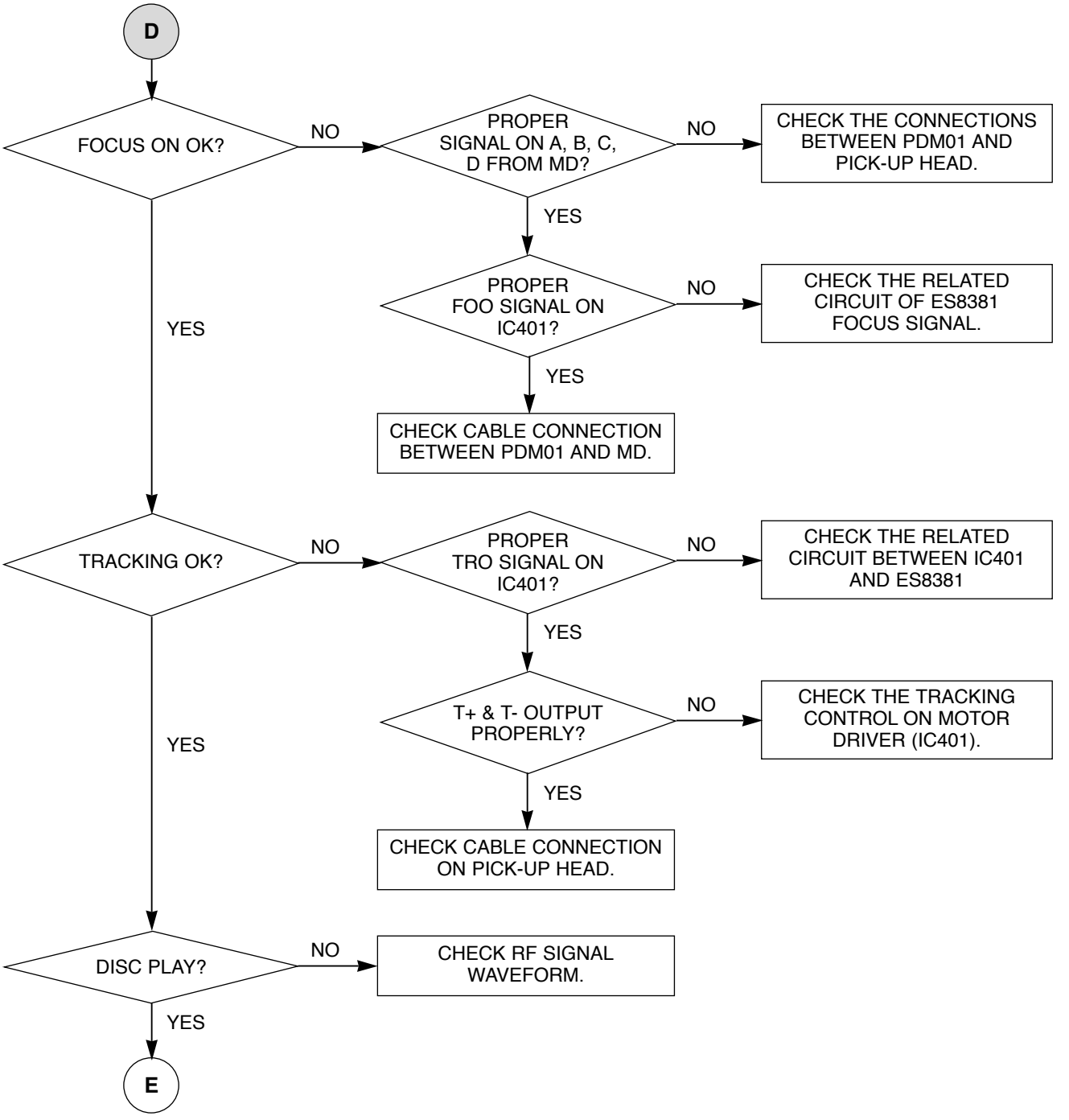


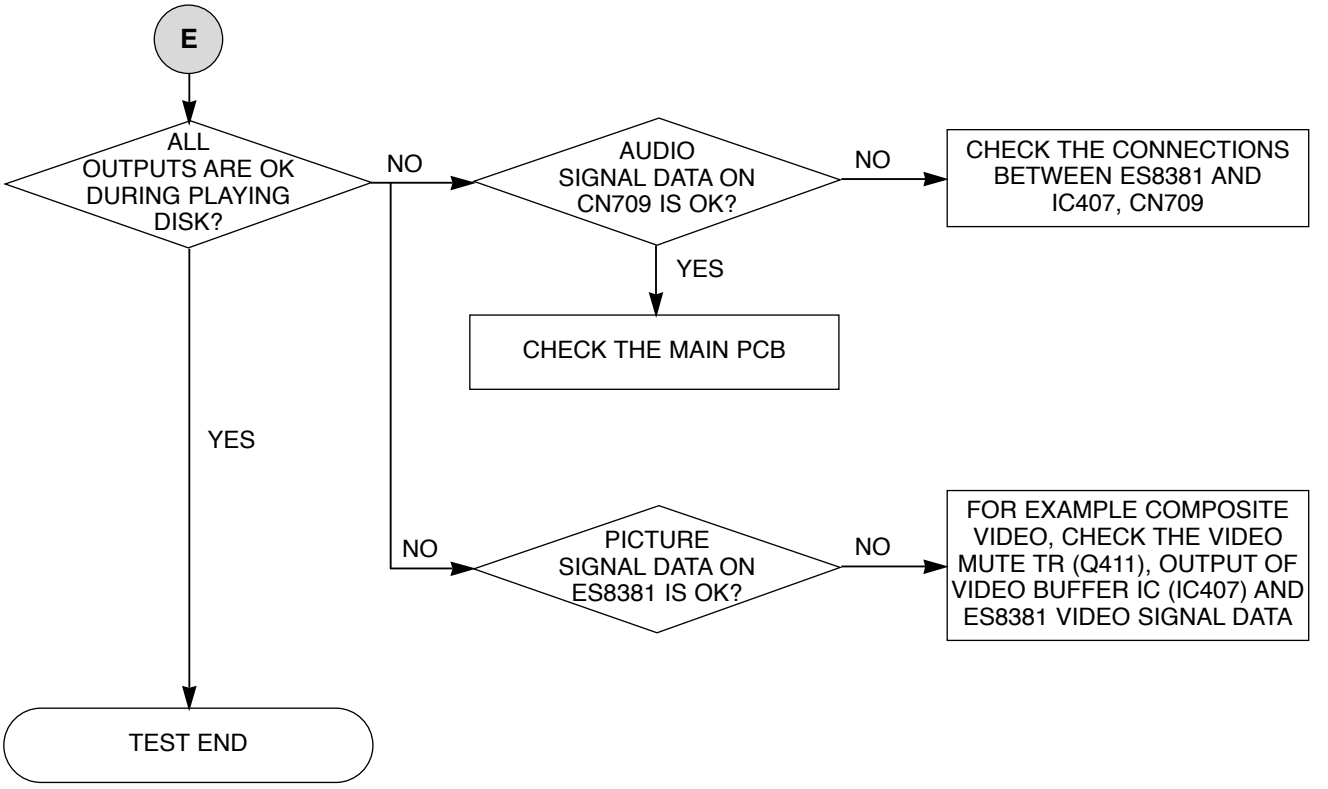
2. TEST & DEBUG


POWER ON
SHOW LOGO?
NO
FLASH MEMORY OPERATES PROPERLY?
NO
CHECK CONNECTION LINES BETWEEN FLASH & ES8381 OR THE FLASH ACCESS TIME WHETHER IS SUITABLE OR NOT.
YES
SDRAM WORKS PROPERLY?
NO
CHECK CONNECTION LINES BETWEEN SDRAM (IC502) & ES8381 OR THE SDRAM IS DAMAGED.
YES
ES8381 VIDEO OUTPUTS PROPERLY?
NO
CHECK THE RELATED CIRCUIT OF ES6698FD (IC501) PIN133,134,137,138,139,140
YES
CHECK AV CABLE CONNECTION TO TV SET.
YES
DOES FIRST TRAY MOVE INSIDE WHEN IT IS AT CLOSED POSITION?
NO
OUT_SW, IN_ SW SIGNALS OK?
NO
CHECK THE MD MECHA
YES
OPEN / CLOSE SIGNALS ON IC401 ARE OK?
NO
CHECK THE OUTPUT SIGNAL OF ES8381 TO IC401 FOR CONTROL OPEN / CLOSE
YES
LOAD+ & LOADSIGNALS ON PDM02 ARE OK?
NO
CHECK THE TRAY CONTROL I/O PIN ON IC401.
YES
CHECK THE CABLE CONNECTION BETWEEN DVD PCB AND MD (MECHA)
YES
B

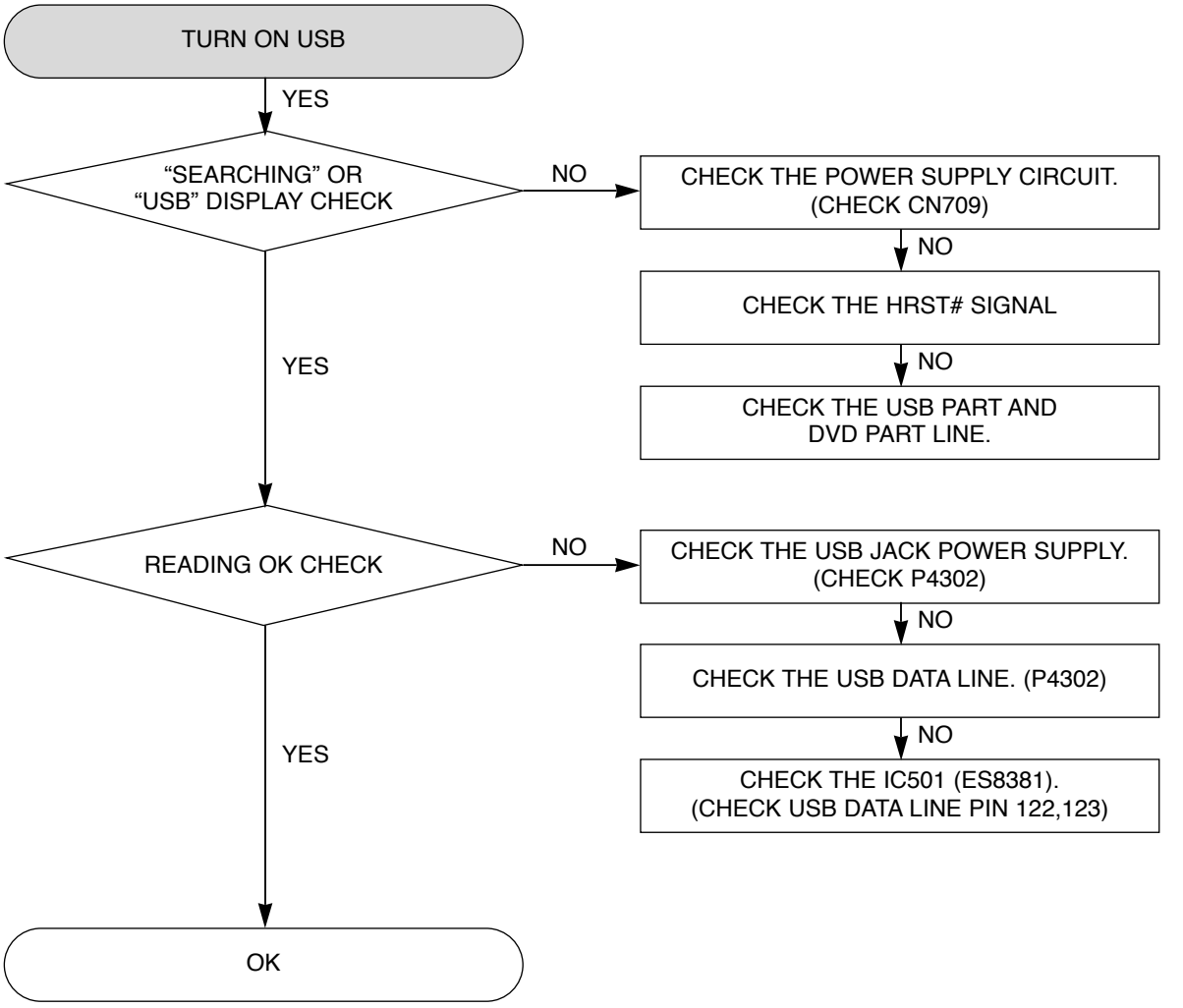

B
DOES THE SLED MOVE TO INNER SIDE WHEN IT IS AT OUTER POSITION?
NO
LIMIT SW SIGNAL ON P4407 IS LOW?
NO
CHECK THE MD
YES
SLED SIGNAL IS OK?
NO
CHECK THE RELATED CIRCUIT OF SLED AND MOTOR DRIVER IC (IC401)
YES
CHECK THE CABLE CONNECTION WITH MECHA.
YES
DO NOT PUT IN DISC AND TRAY CLOSE.
OPTICAL LENS IS MOVING FOR SEARCHING FOCUS?
NO
PROPER FOCUS OUTPUTS TO MOTOR DRIVER?
NO
CHECK FOCUS CONNECTION ON ES8381 AND MOTOR DRIVER IC.
YES
PROPER F+ & FOUTPUTS?
NO
CHECK THE MOTOR DRIVER (IC401).
YES
CHECK CABLE CONNECTION WITH PICK-UP HEAD.
YES
C


C
LASER TURNS ON WHEN READING DISC?
NO
DVDLD OR CDLD OUTPUT PROPERLY?
NO
CHECK THE LASER POWER CIRCUIT BETWEEN ES8381 AND POWER TRANSISTOR. (Q405, Q406)
YES
COLLECTOR VOLTAGE OF POWER TRANSISTOR IS OK? (Q405, Q406)
NO
CHECK THE RELATED CIRCUIT OF LASER POWER TRANSISTOR.
YES
CHECK CABLE CONNECTION BETWEEN PDM01 AND PICK-UP HEAD.
YES
PUT DISC IN TRAY.
DOES SPINDLE ROTATE?
NO
PROPER SPINDLE SIGNAL ON ES8381.
NO
CHECK THE SPINDLE RELATED CIRCUIT ON ES8381
YES
SPIN+ & SPIN- OUTPUT PROPERLY?
NO
CHECK THE SPINDLE CONTROL OF MOTOR DRIVER (IC404).
YES
CHECK THE CABLE CONNECTION BETWEEN PDM03 AND MD
YES
D


D
FOCUS ON OK?
NO
PROPER SIGNAL ON A, B, C, D FROM MD?
NO
CHECK THE CONNECTIONS BETWEEN PDM01 AND PICK-UP HEAD.
YES
PROPER FOO SIGNAL ON IC401?
NO
CHECK THE RELATED CIRCUIT OF ES8381 FOCUS SIGNAL.
YES
CHECK CABLE CONNECTION BETWEEN PDM01 AND MD.
YES
TRACKING OK?
NO
PROPER TRO SIGNAL ON IC401?
NO
CHECK THE RELATED CIRCUIT BETWEEN IC401 AND ES8381
YES
T+ & T- OUTPUT PROPERLY?
NO
CHECK THE TRACKING CONTROL ON MOTOR DRIVER (IC401).
YES
CHECK CABLE CONNECTION ON PICK-UP HEAD.
YES
DISC PLAY?
NO
CHECK RF SIGNAL WAVEFORM.
YES
E


E
ALL OUTPUTS ARE OK DURING PLAYING DISK?
NO
AUDIO SIGNAL DATA ON CN709 IS OK?
NO
CHECK THE CONNECTIONS BETWEEN ES8381 AND IC407, CN709
YES
CHECK THE MAIN PCB
YES
NO
PICTURE SIGNAL DATA ON ES8381 IS OK?
NO
FOR EXAMPLE COMPOSITE VIDEO, CHECK THE VIDEO MUTE TR (Q411), OUTPUT OF VIDEO BUFFER IC (IC407) AND ES8381 VIDEO SIGNAL DATA
TEST END

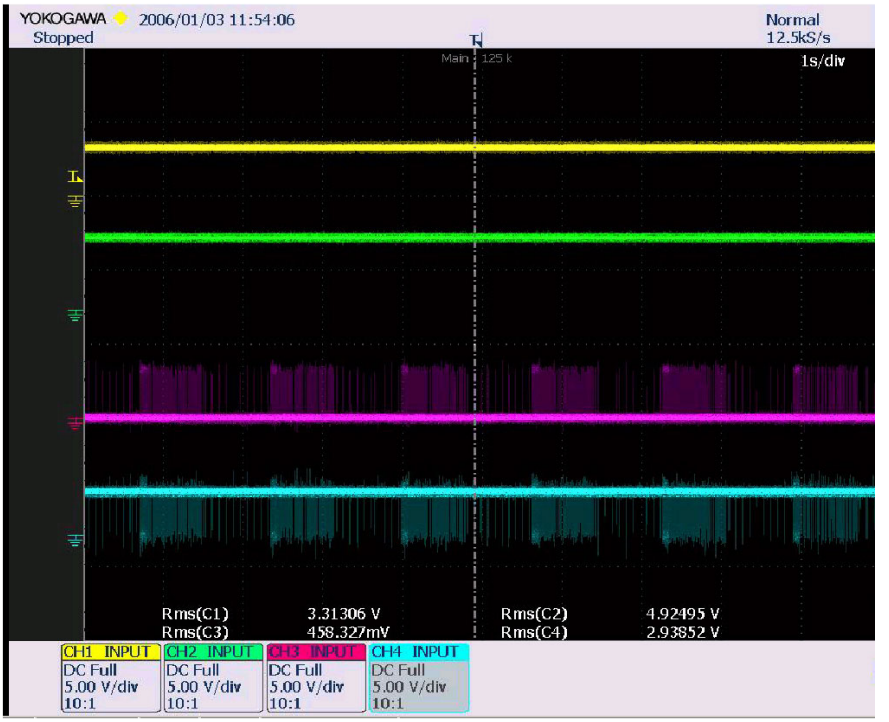
3. USB


TURN ON USB
YES
"SEARCHING" OR
"USB" DISPLAY CHECK
NO
CHECK THE POWER SUPPLY CIRCUIT.
(CHECK CN709)
NO
CHECK THE HRST# SIGNAL
NO
CHECK THE USB PART AND
DVD PART LINE.
YES
READING OK CHECK
NO
CHECK THE USB JACK POWER SUPPLY.
(CHECK P4302)
NO
CHECK THE USB DATA LINE. (P4302)
NO
CHECK THE IC501 (ES8381).
(CHECK USB DATA LINE PIN 122,123)
YES
OK

WAVEFORMS

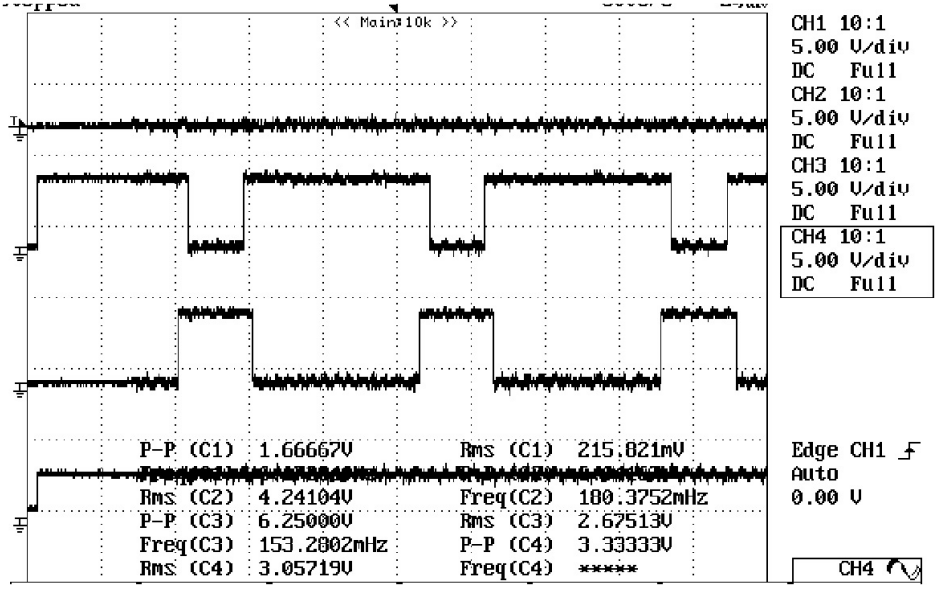
1. WHEN POWER ON, RESET & DATA ETC WAVEFORM

1. RESET(DVD)
2. RX
3. TX
4. LCS3# (FLASH)



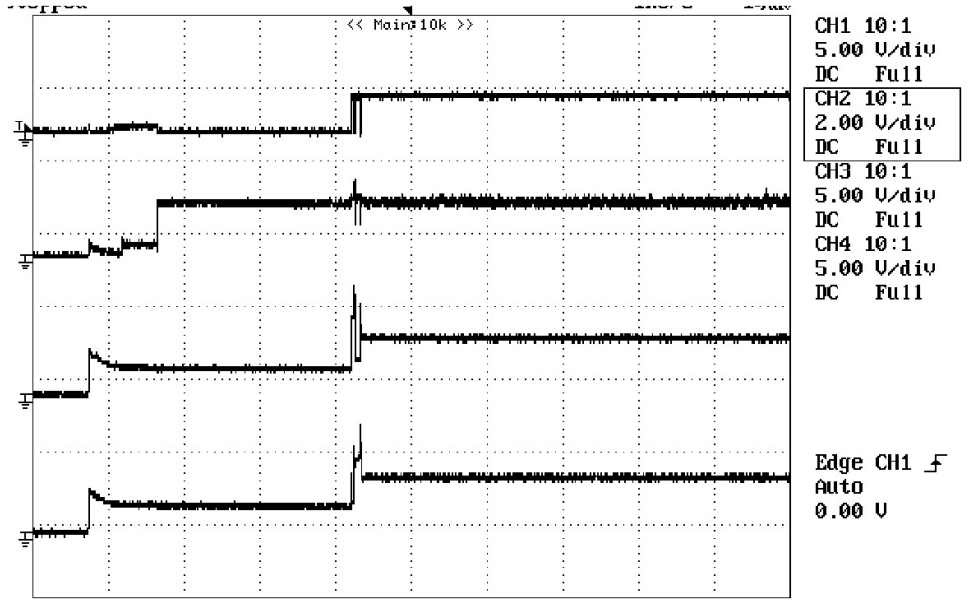
Playing at USB function
1. HRST#
2. 5V
3. D-
4. D+

2. OPEN / CLOSE WAVEFORM AT POWER ON



1. open
2. UP-sw
3. DOWN-sw
4. close

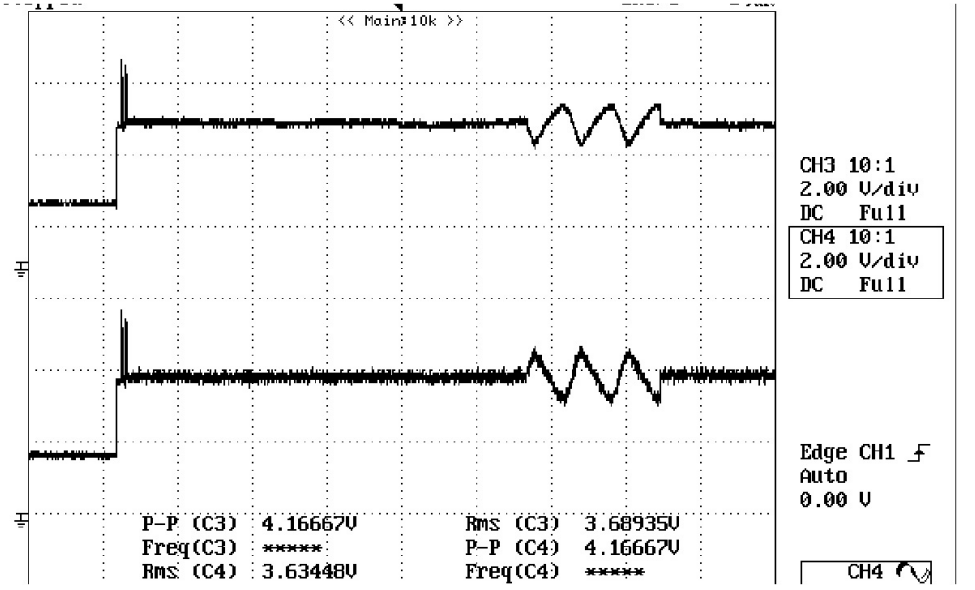
3. STARTING ACTION WAVEFORM IN MD DEVICE



1. Driver STBY
2. SLEGN
3. SL+
4. SL-

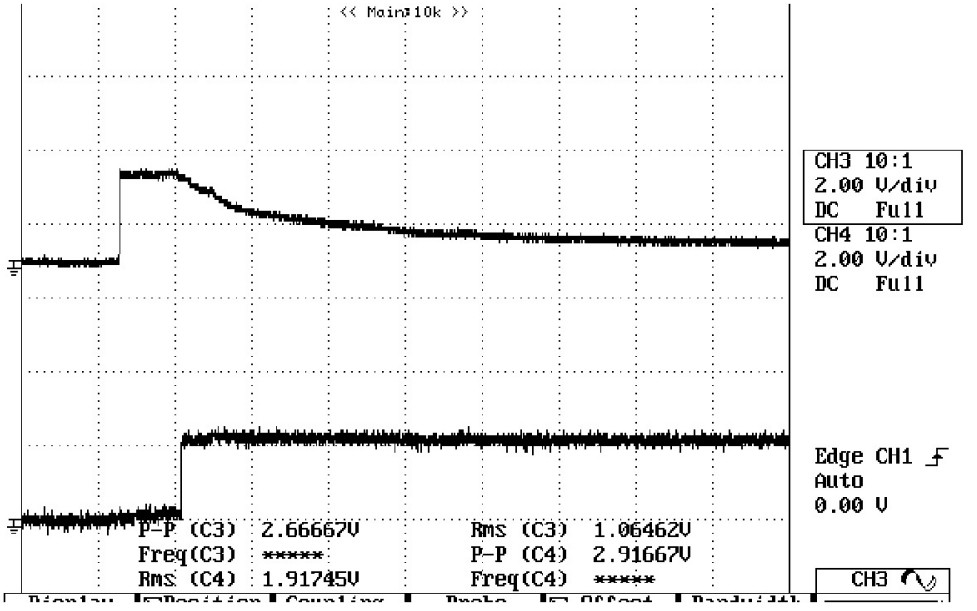
(At Power on)

4. FOCUS WAVEFORM (AT CD)



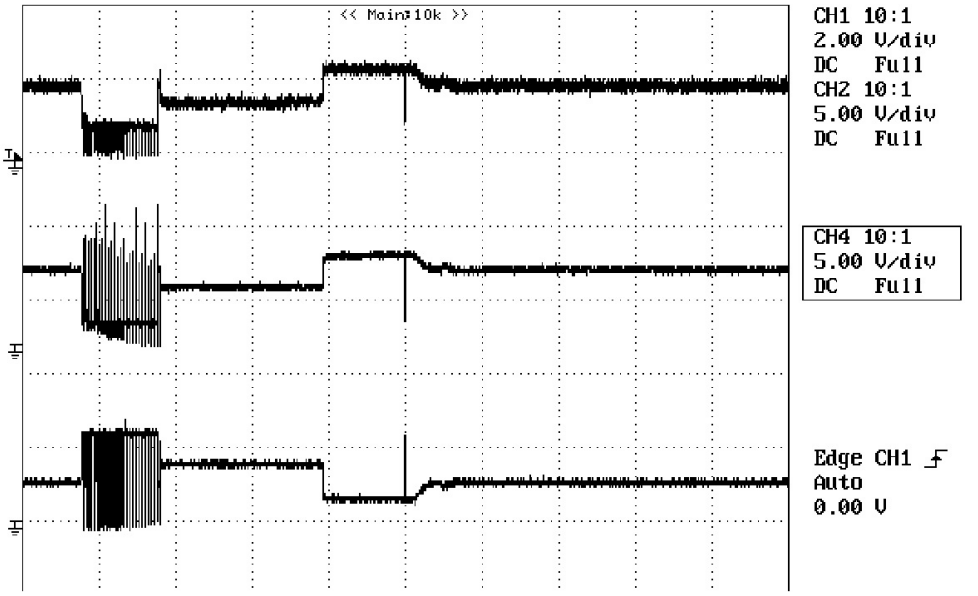
1. F+
2. F-
(NO DISK)

5. FOCUS WAVEFORM (AT DVD)



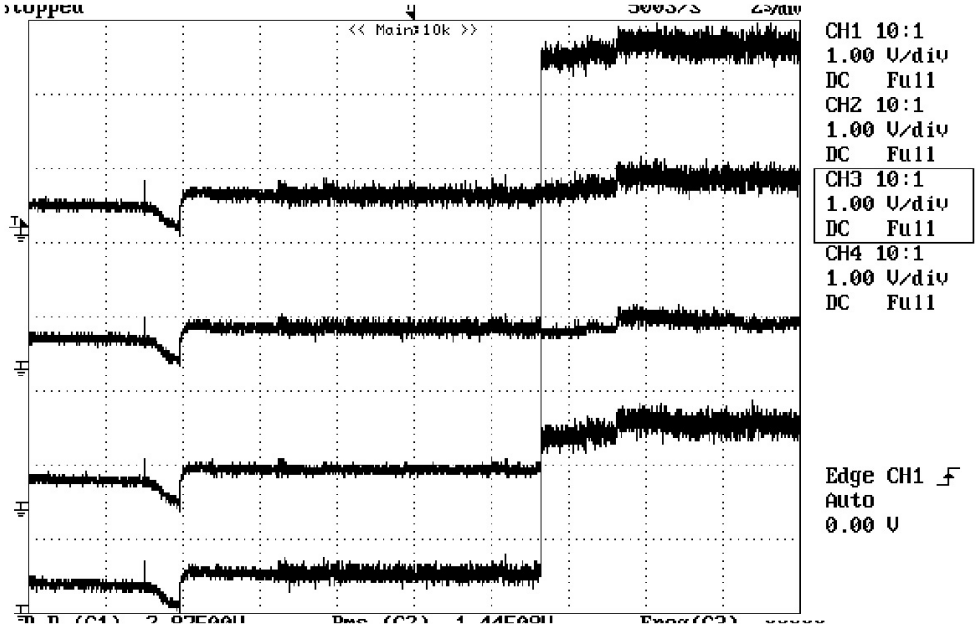
1.Q401(DVD_LD)
2.Q402(CD_LD)
(INSERT CD)

6. AT POWER ON, SPINDLE SIGNAL AT MD DECK



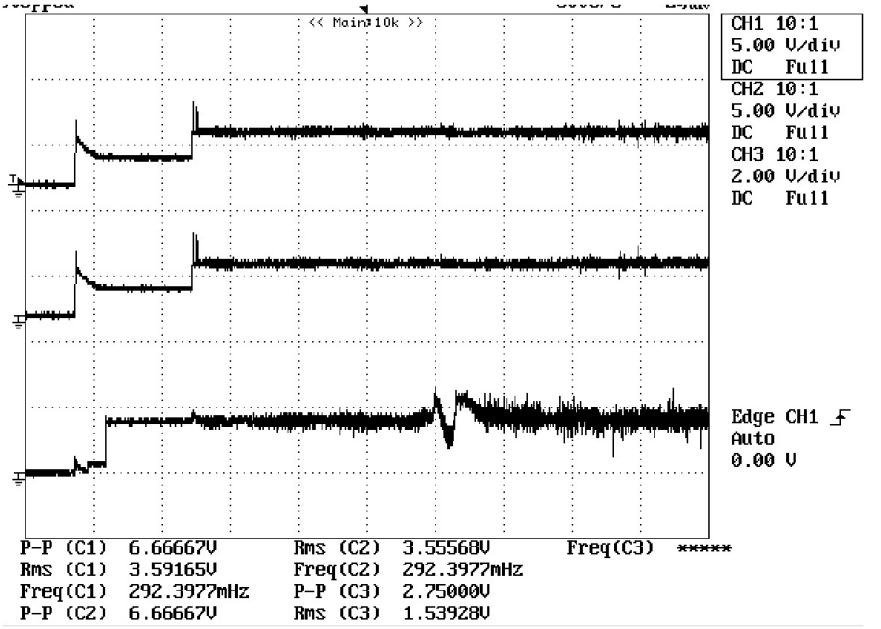
1. Spind
2. Spin+
3. Spin-

7. AT FIRST ACTION, FOCUS SIGNAL A, B, C, D



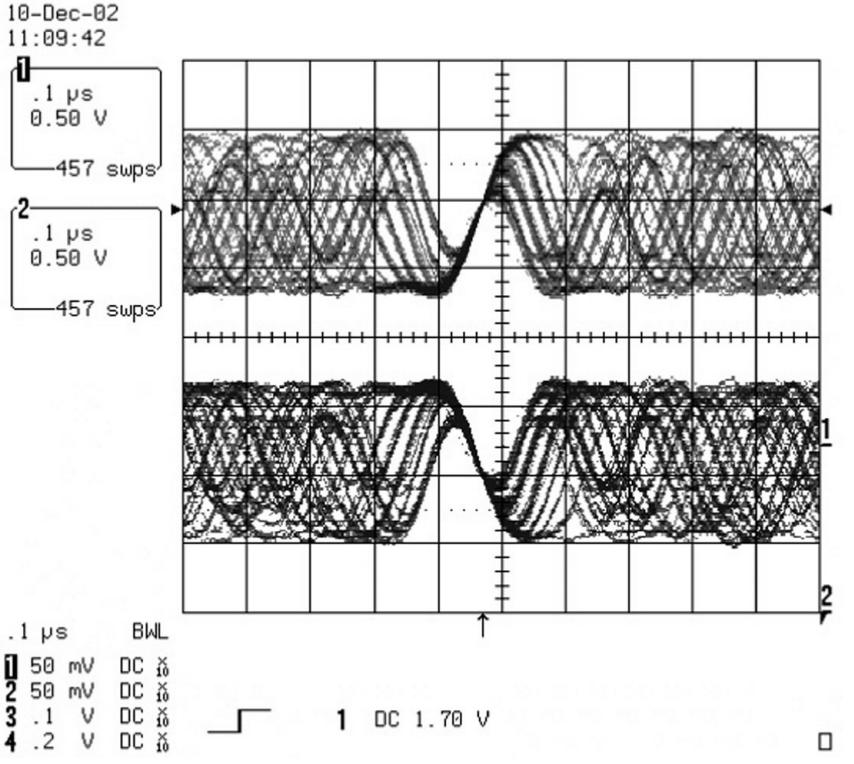
1. A
2. B
3. C
4. D

8. TRACKING SIGNAL

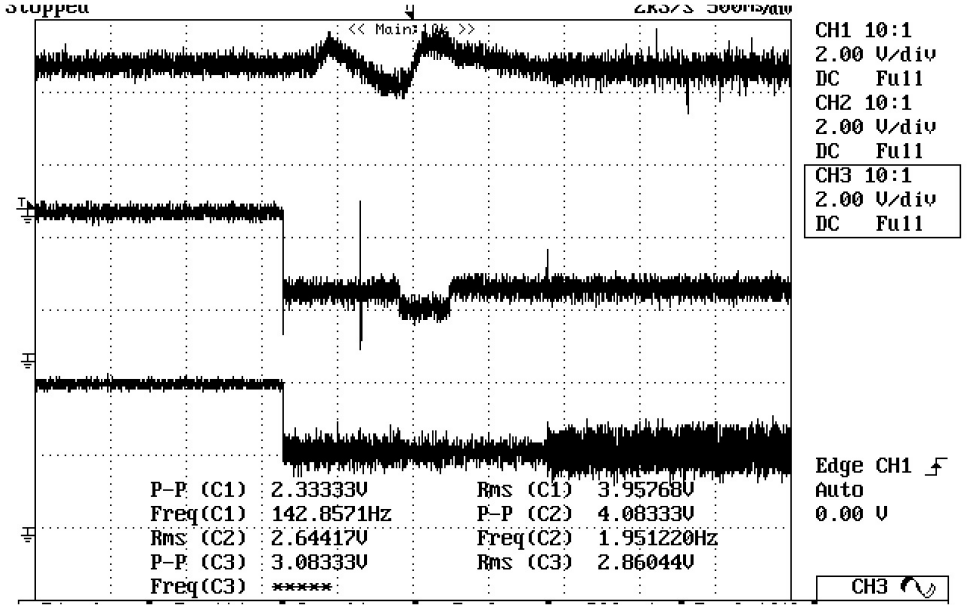


1. Tro
2. Tr-
3. Tr+

9. RF WAVEFORM

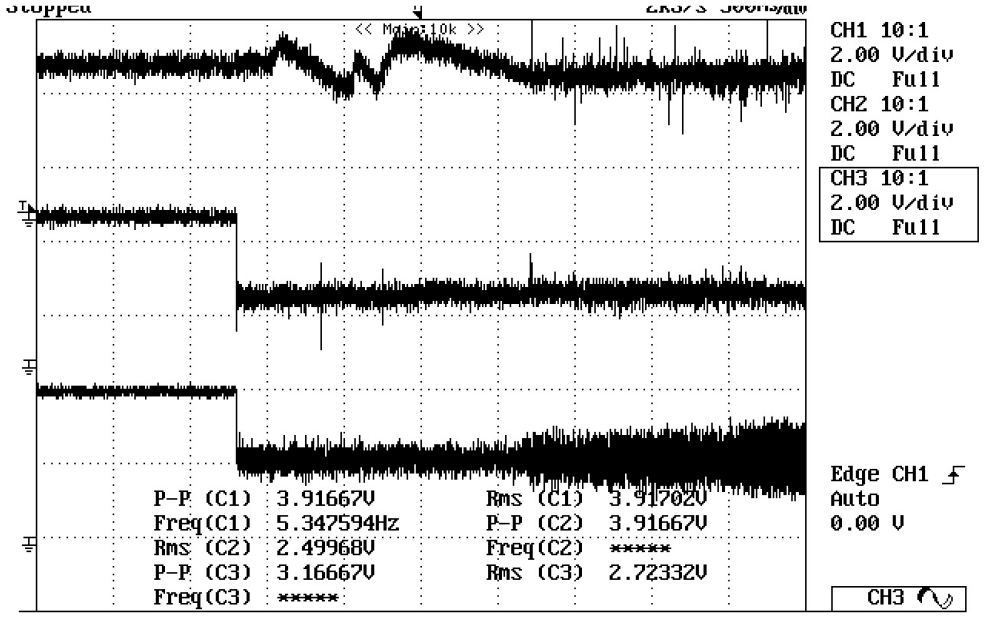


10. DISK TYPE JUGEMENT WAVEFORM



(DVD)

1. F+
2. FDO
3. SVRRF

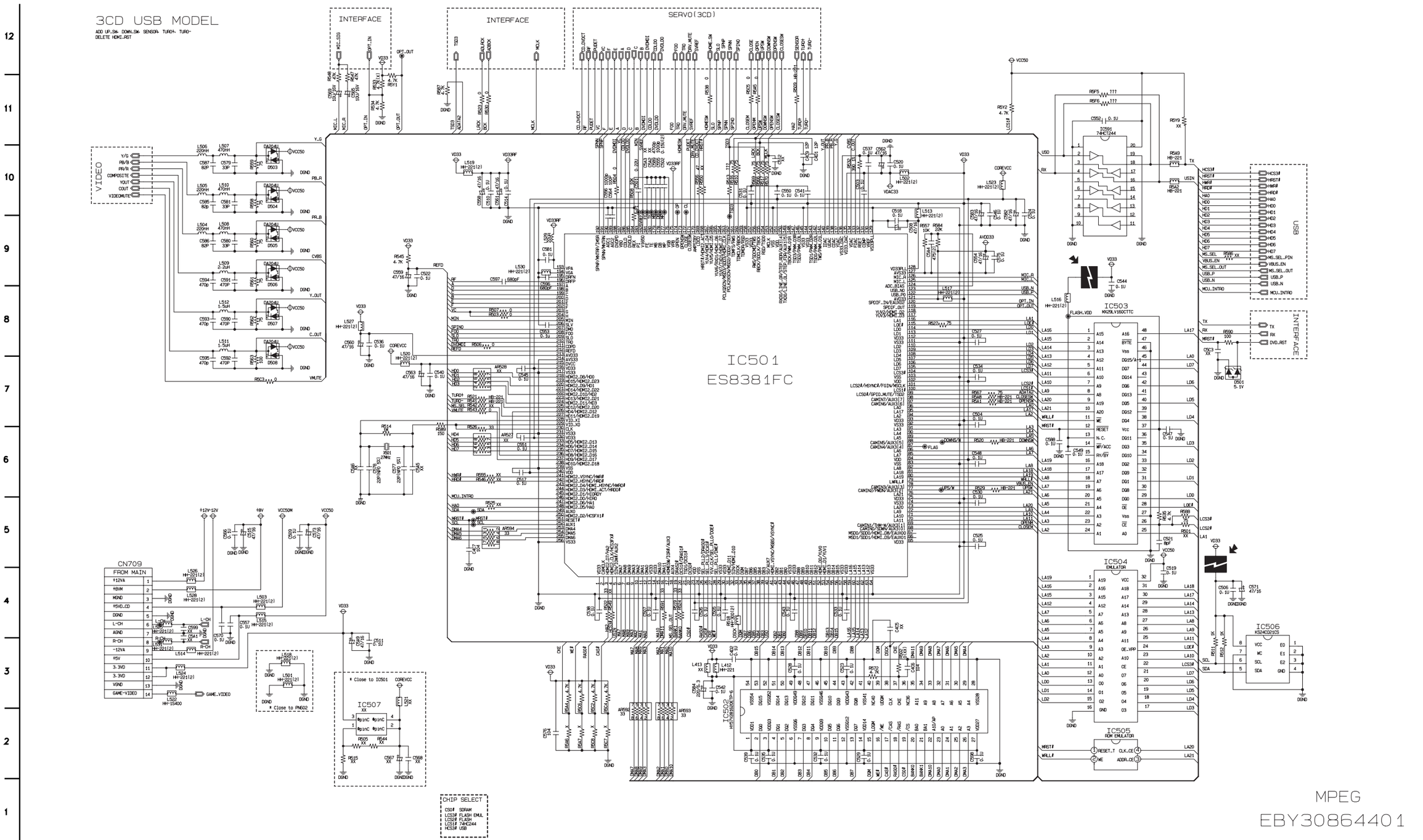


(CD)

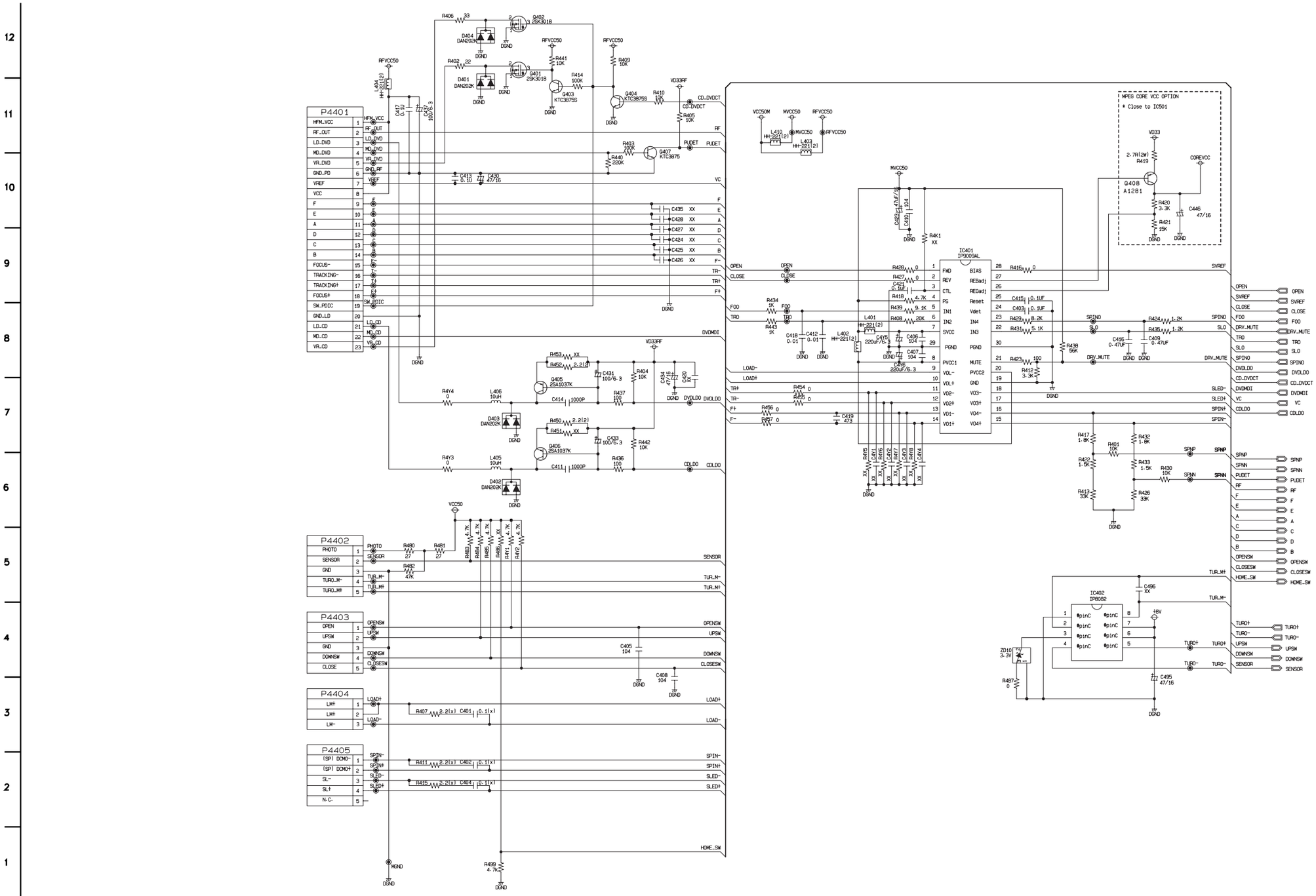
MEMO

SCHEMATIC DIAGRAMS

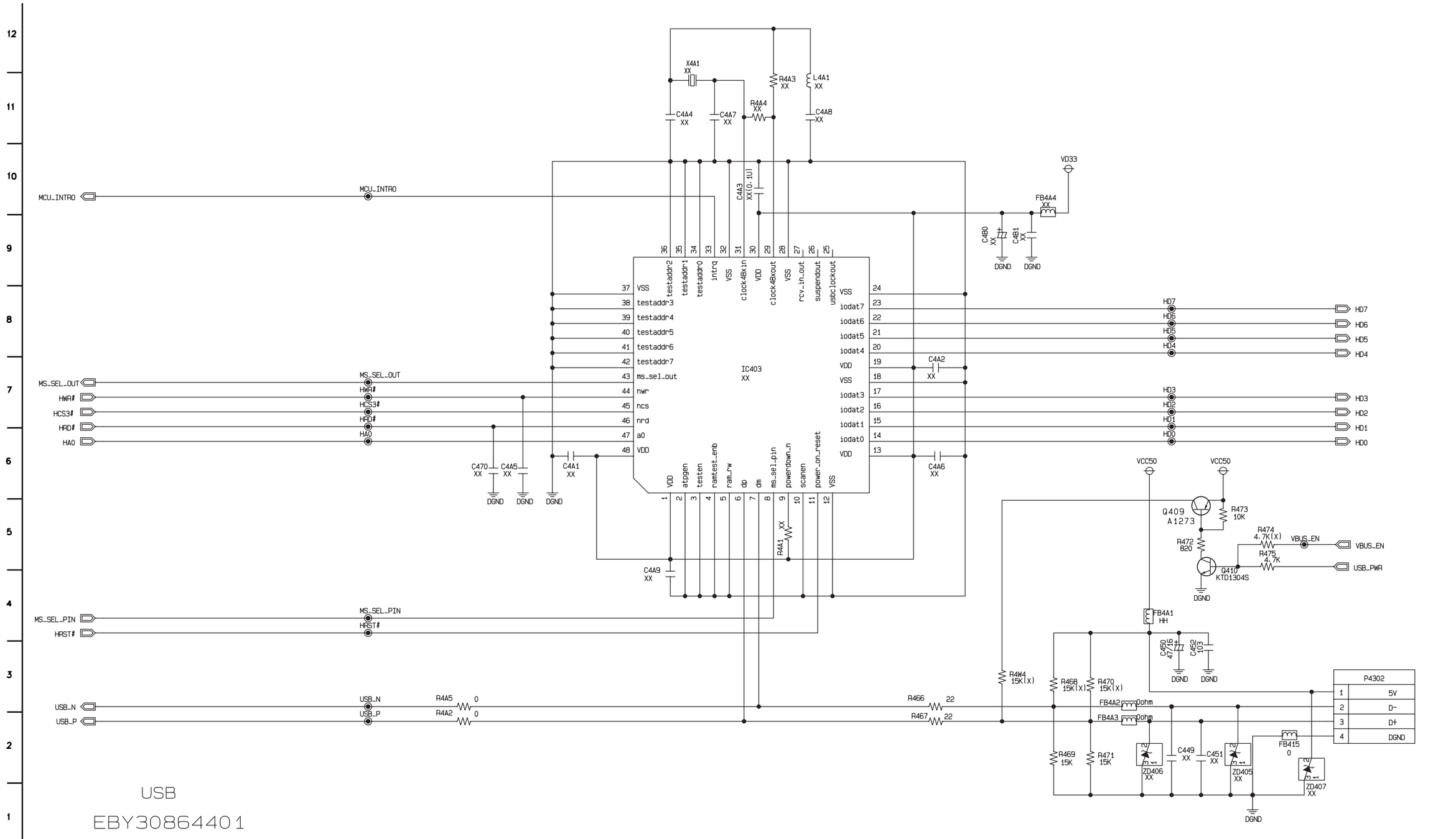
1. MPEG SCHEMATIC DIAGRAM



2. SERVO SCHEMATIC DIAGRAM



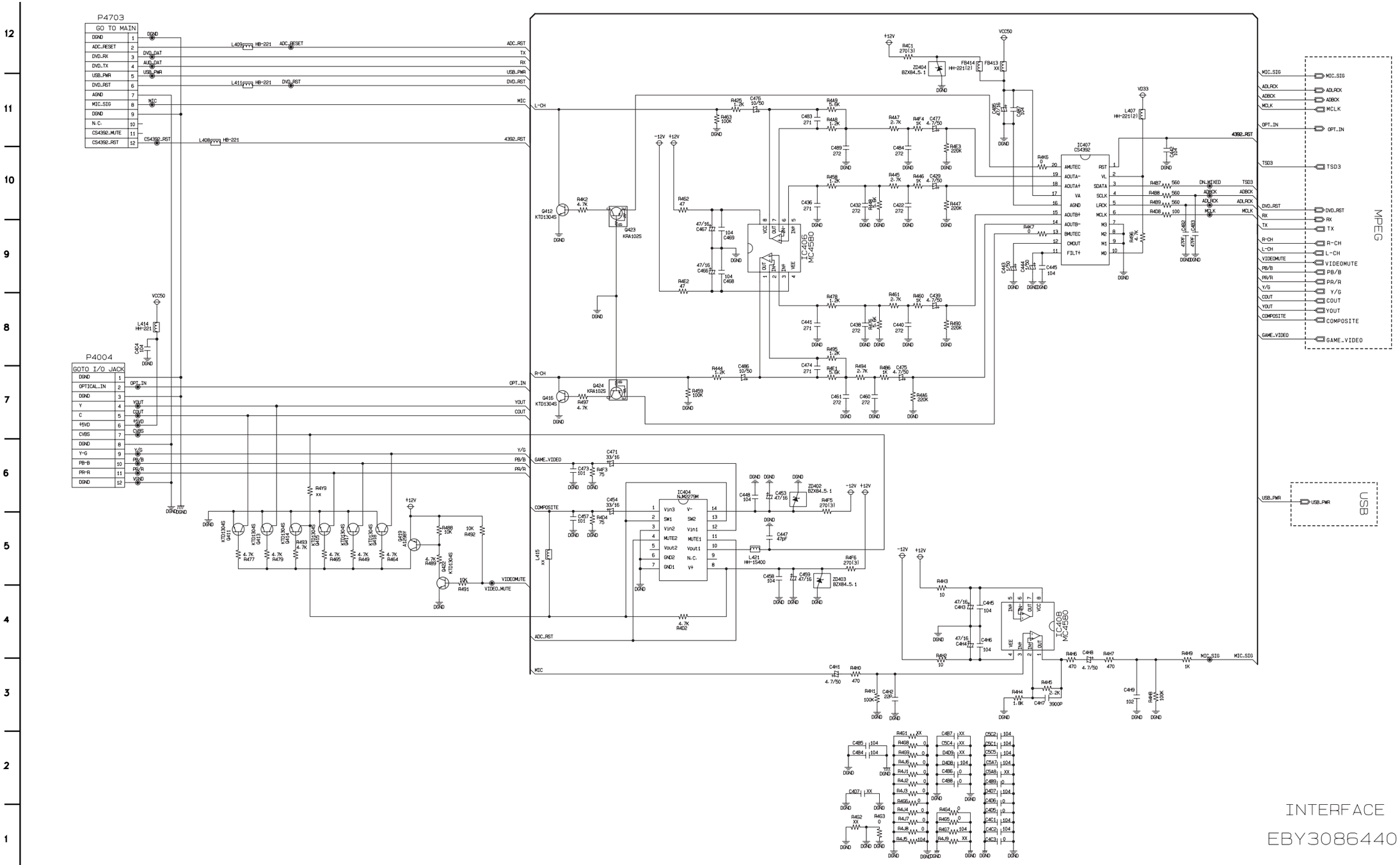
3. USB SCHEMATIC DIAGRAM



USB

EBY30864401

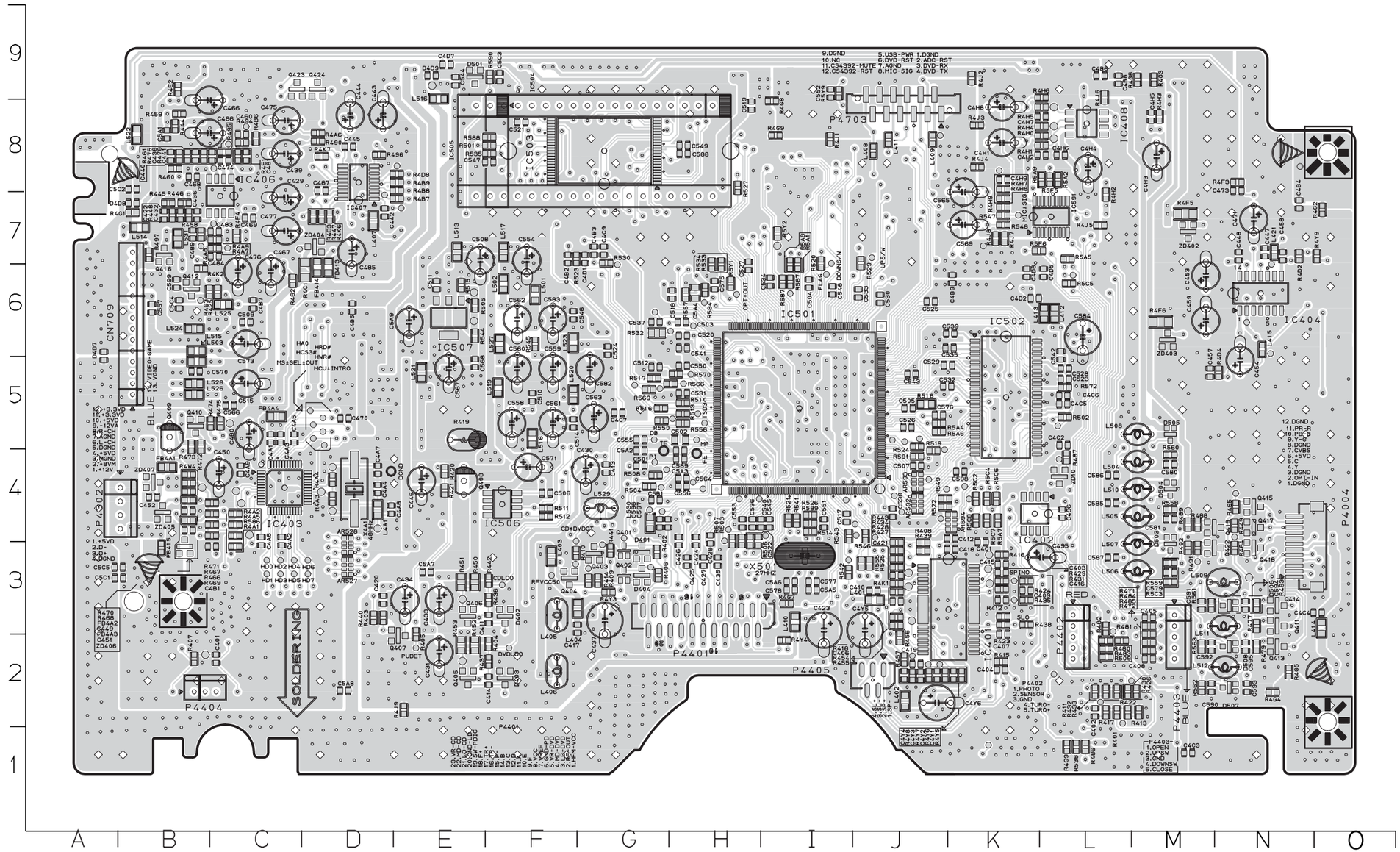
4. INTERFACE SCHEMATIC DIAGRAM



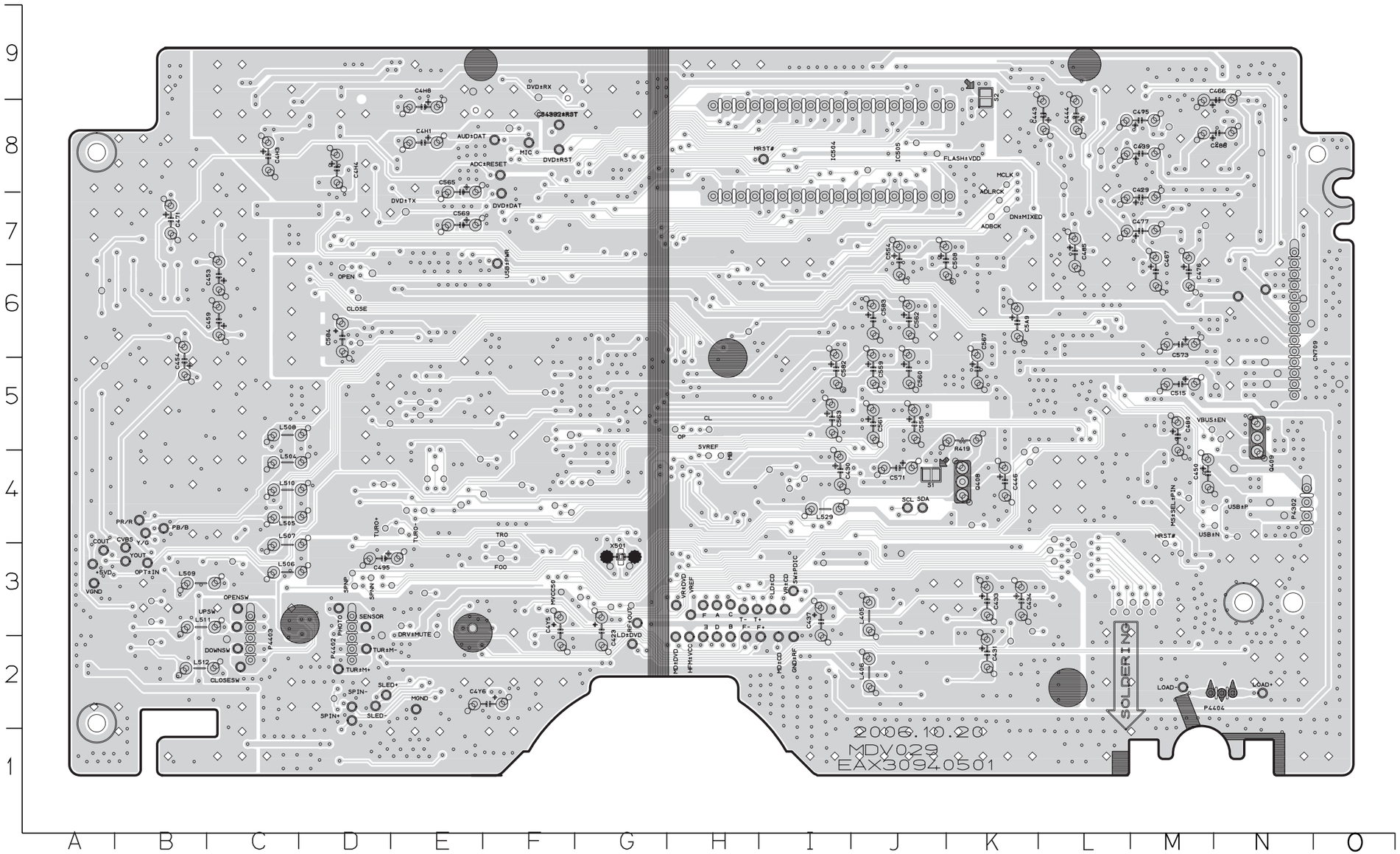
PRINTED CIRCUIT DIAGRAM

DVD P.C.BOARD

(TOP VIEW)



DVD P.C.BOARD
(BOTTOM VIEW)



A B C D E F G H I J K L M N O

9 8 7 6 5 4 3 2 1