

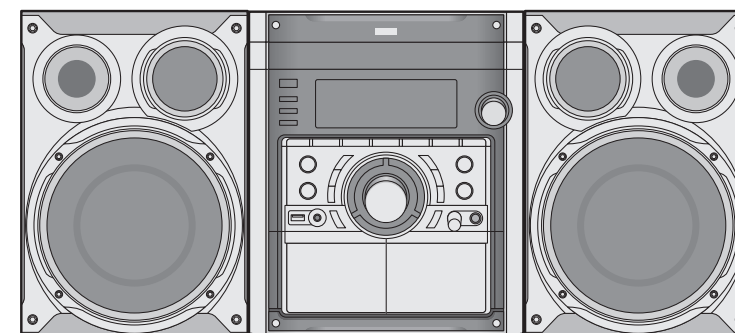


SERVICE MANUAL

MODEL : LM-U1060/LMS-U1060



3CD CHANGER MINI Hi-Fi SYSTEM **SERVICE MANUAL**



MODEL : LM-U1060/LMS-U1060

P/NO : AFN30721349

JUNE,2006

LG Electronics Inc.

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SECTION 1. GENERAL

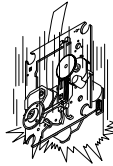
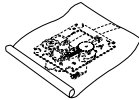
□ SERVICING PRECAUTIONS

■ 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.

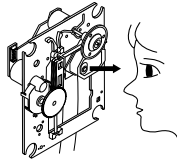
Storage in conductive bag



Drop impact

2. Repair notes

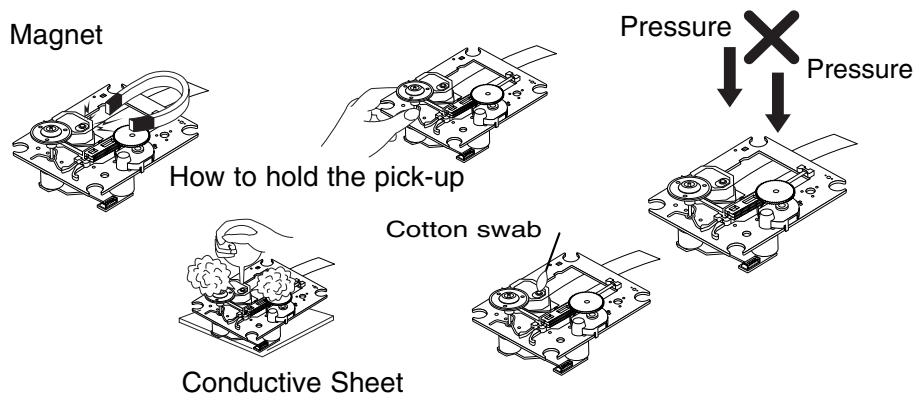
- 1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
- 2) The pick-up should always be handled correctly and carefully, taking care to avoid external pressure and impact. If it is subjected to strong pressure or impact, the result may be an operational 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.

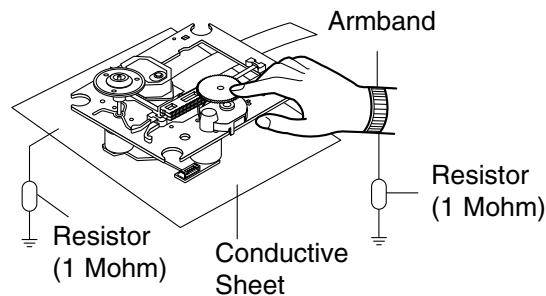
■ NOTES REGARDING COMPACT DISC PLAYER REPAIRS

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 or humidity is high, where strong magnetism is present, or where there is excessive dust.

2. Notes for repair

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



CLEARING MALFUNCTION

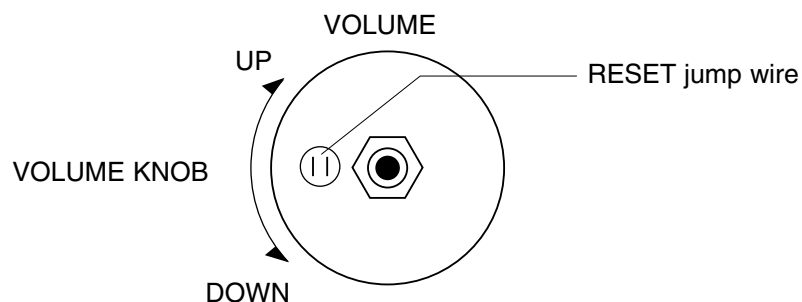
You can reset your unit to initial status if malfunction occur(button malfunction, display, etc.).

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

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

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

CAUTION. GRAPHIC SYMBOLS

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

SPECIFICATIONS

[GENERAL]

Power supply	Refer to the back panel of the unit.
Power consumption	Refer to the back panel of the unit.
Net Weight	6.2 kg
External dimensions (W x H x D)	273 x 321x 359 mm

[CD]

Frequency response	40 - 20000 Hz
Signal-to-noise ratio	75 dB
Dynamic range	75 dB

[TUNER]

FM

Tuning Range	87.5 - 108.0 MHz
Intermediate Frequency	10.7 MHz
Signal to Noise Ratio	60/55 dB
Frequency Response	50 - 10000 Hz

AM [MW]

Tuning Range	522 - 1620 kHz or 520 - 1720 kHz
Intermediate Frequency	450 kHz
Signal to Noise Ratio	30 dB
Frequency Response	140 - 1800 Hz

[AMP]

Output Power	100W +100W+150W [LM-U1560+LMS-U1560W(SUB WOOFER)] 100W+100W [LM-U1060] 50W +50W [LM-U560] 30W + 30W [LM-U360]
T.H.D	0.5%
Frequency Response	40 - 20000 Hz
Signal-to-noise ratio	75 dB

[TAPE]

Tape Speed	4.75cm/sec
Wow Flutter	0.25% (MTT -111, JIS-WTD)
F.F/REW Time	120sec (C-60)
Frequency Response	250 - 8000Hz
Signal to Noise Ratio	43dB
Channel Separation	50dB(P/B)/45dB(R/P)
Erase Ratio	55dB (MTT-5513)

[SPEAKERS]

MODEL	LMS-U1560	LMS-U1560W (SUB WOOFER)	LMS-U560	LMS-U360
Type	LMS-U1060	2way 2speaker	1way 1speaker	2way 2speaker
Impedance	4Ω	3Ω	4Ω	4Ω
Frequency Response	50-20000Hz	50-15000Hz	55-20000Hz	55-20000Hz
Sound Pressure Level	85dB/W (1m)	84dB/W (1m)	86dB/W (1m)	86dB/W (1m)
Rated Input Power	100W	180W	50W	30W
Max. Input Power	200W	360W	100W	60W
Net Dimensions (W x H x D)	229X224X286mm	273x325x384mm	229X224X286mm	229X224X286mm
Net Weight	3.8kg	6kg	3.9kg	3.8kg

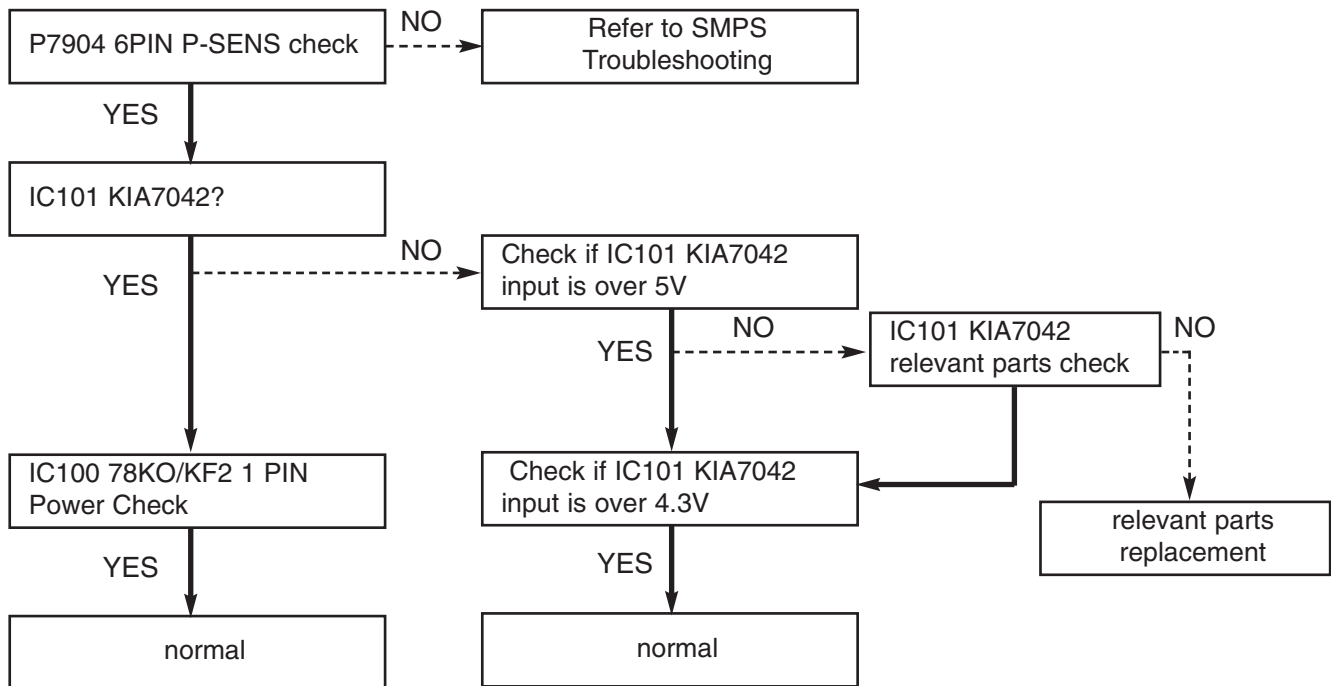
MEMO

Handwriting practice lines consisting of 24 horizontal dotted lines.

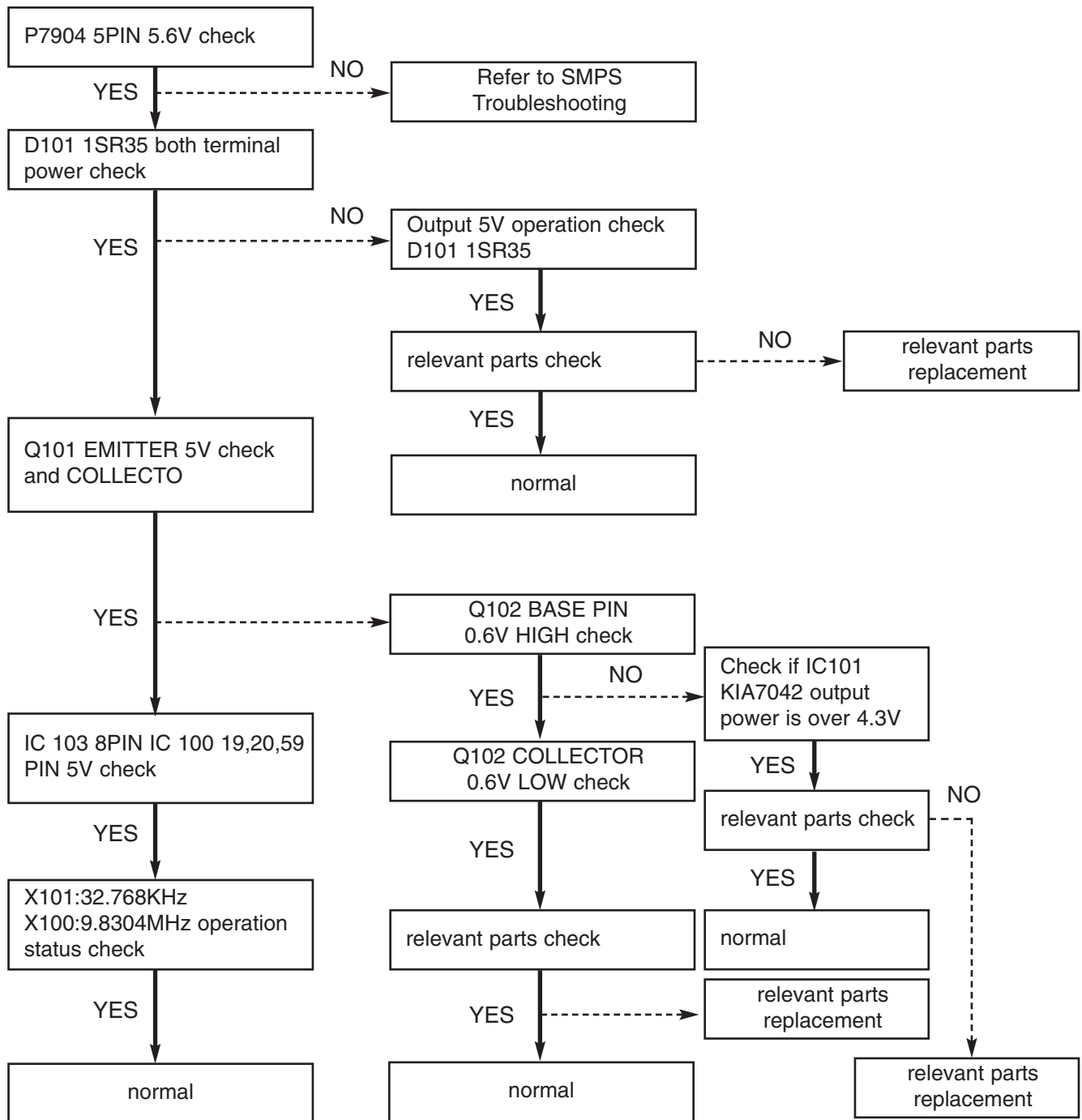
SECTION 2. ELECTRICAL

□ ELECTRICAL TROUBLESHOOTING GUIDE(AUDIO PART)

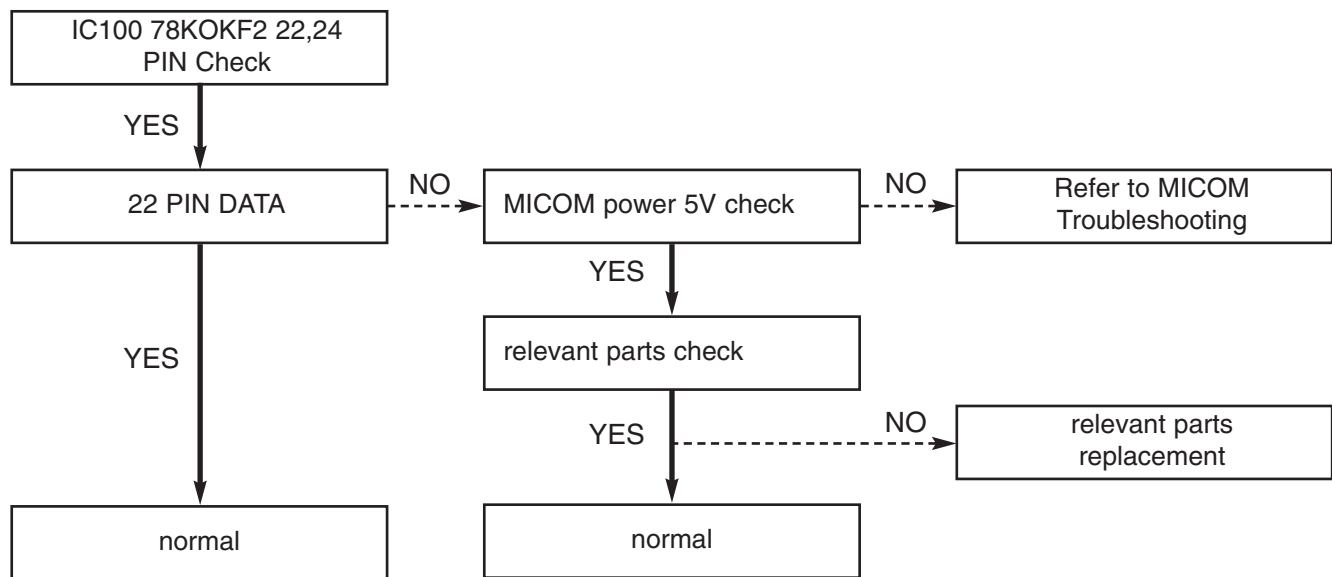
■ MICOM PART CHECK I



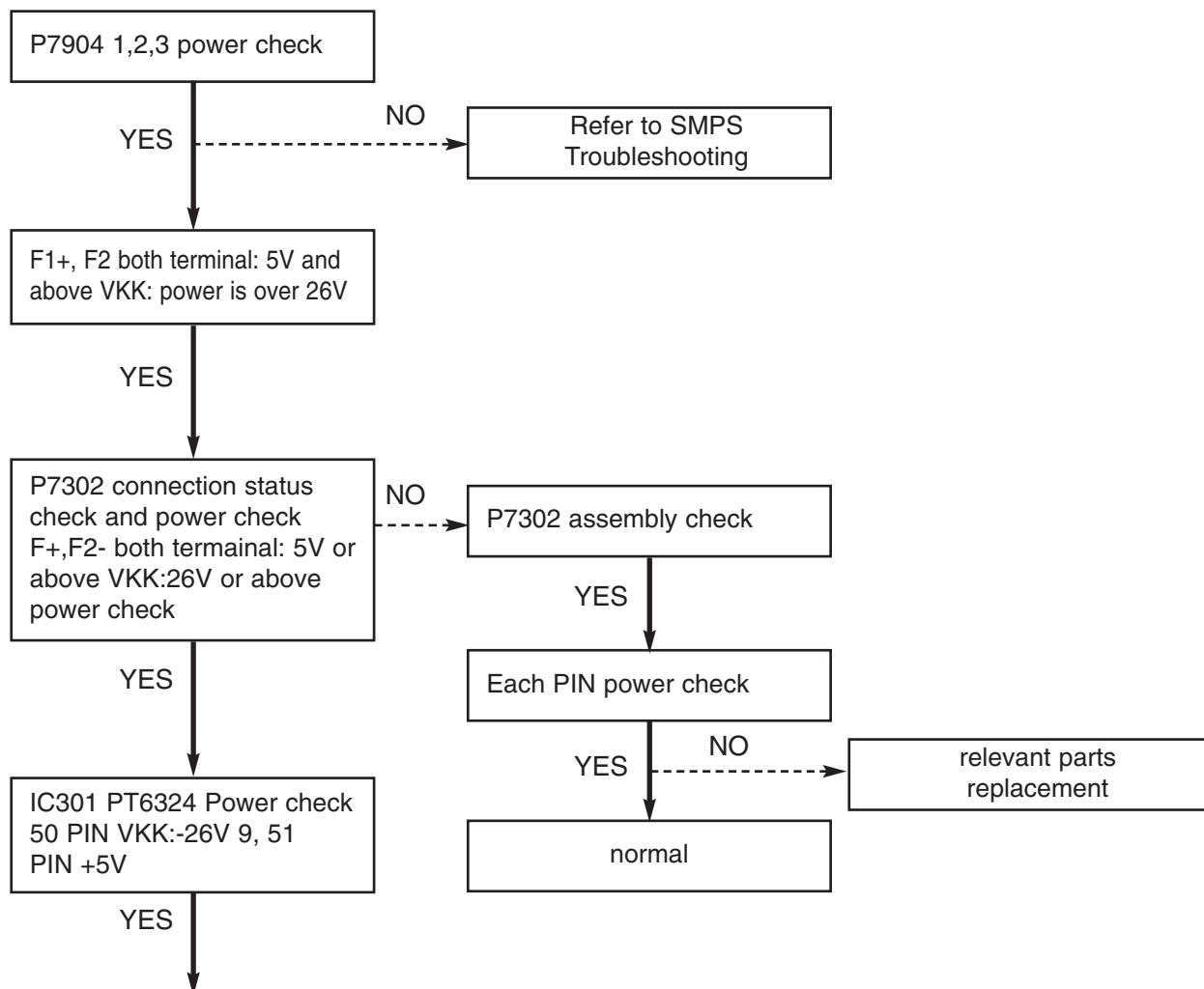
■ MICOM PART CHECK II

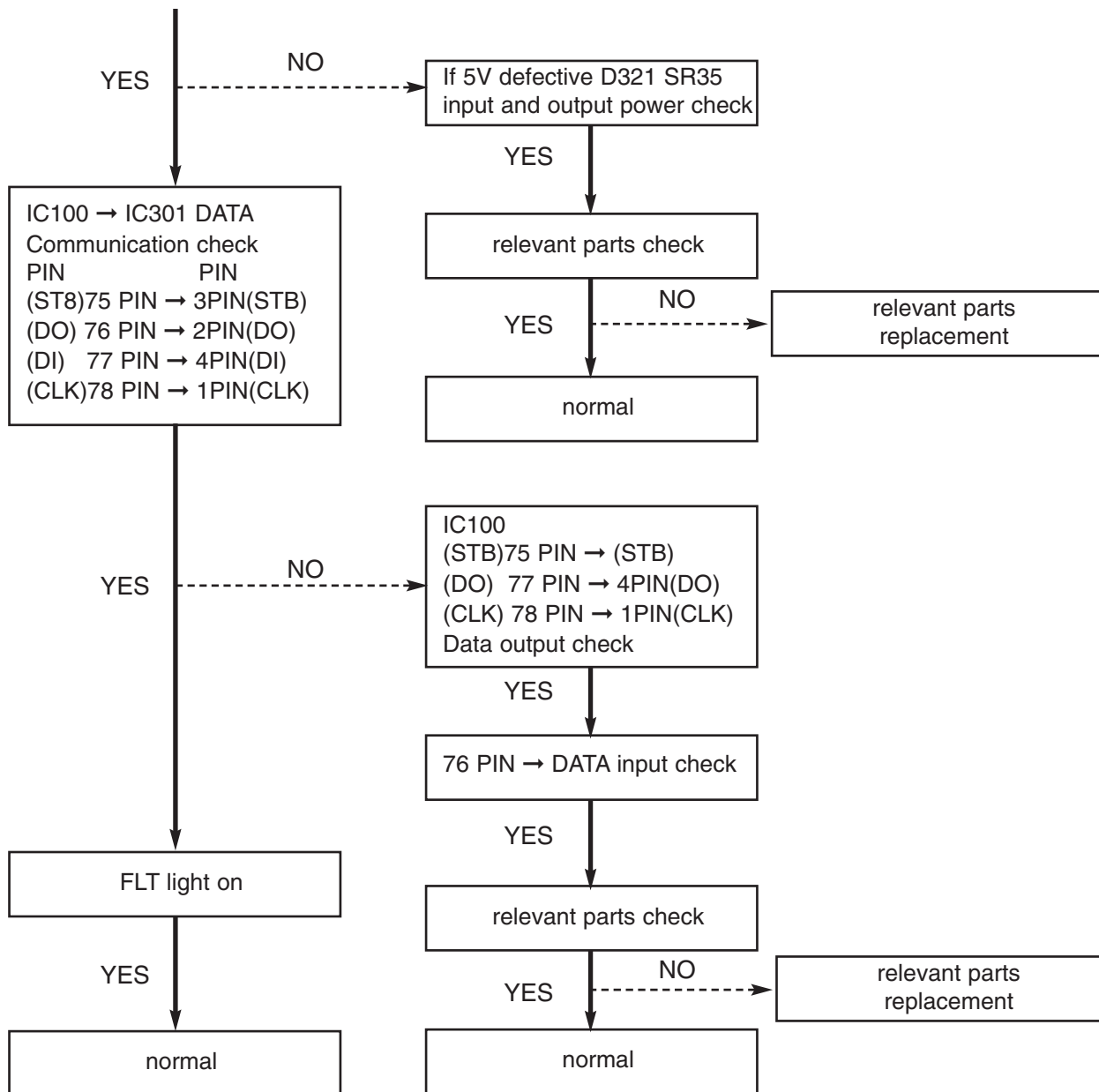


■ IC103 KS4CD21CS CHECK

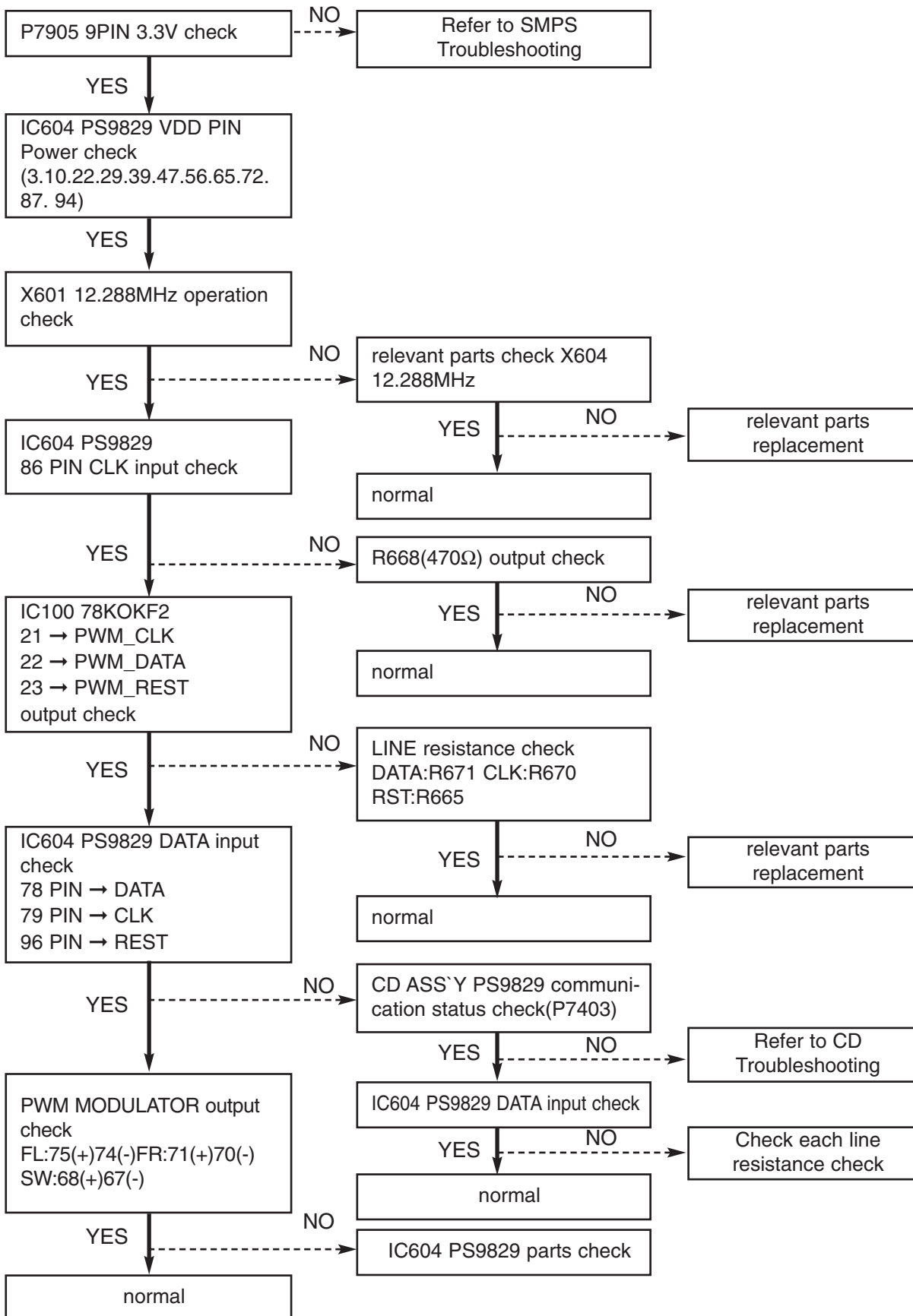


■ FLD DISPLAY CHECK

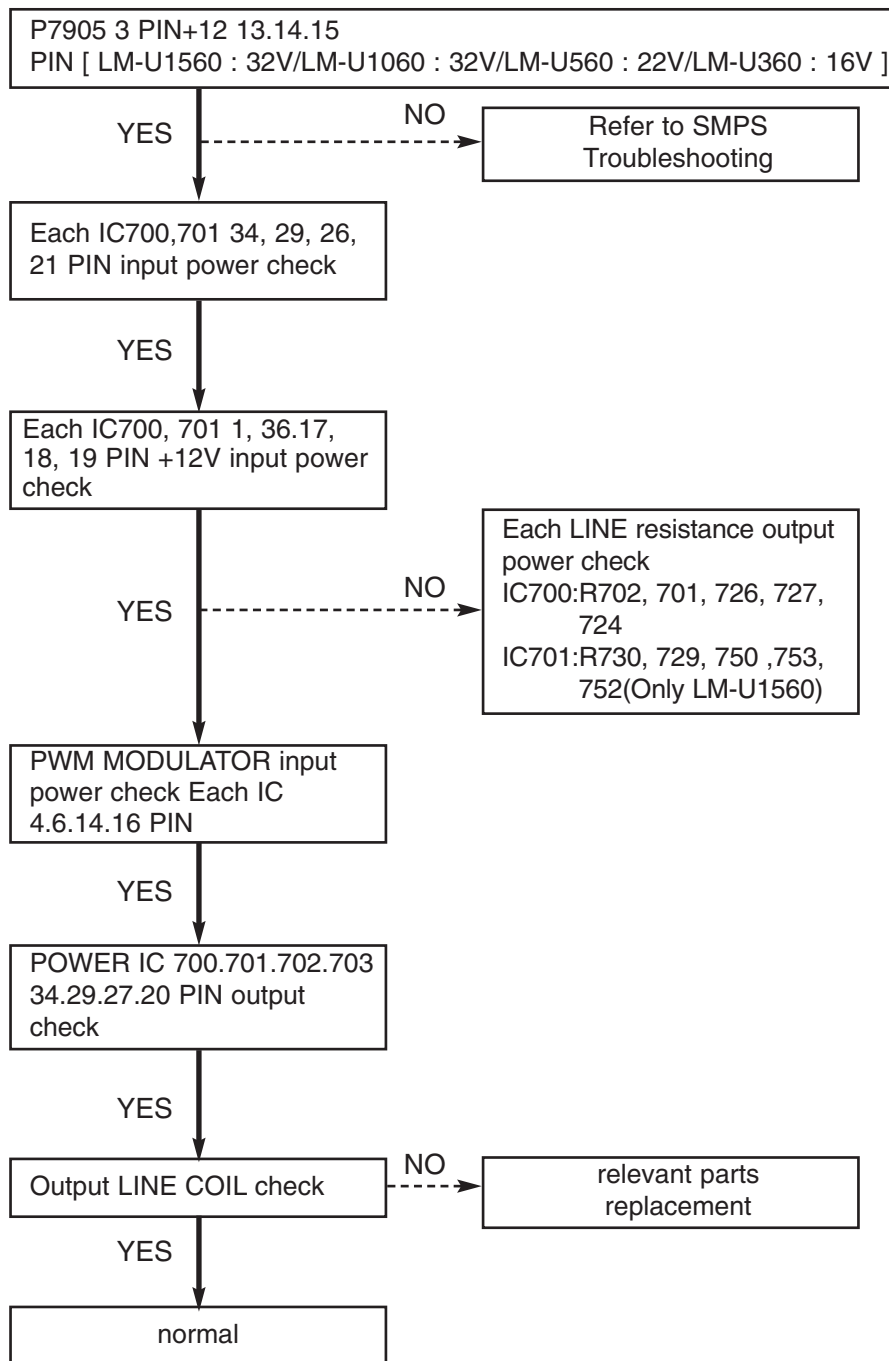




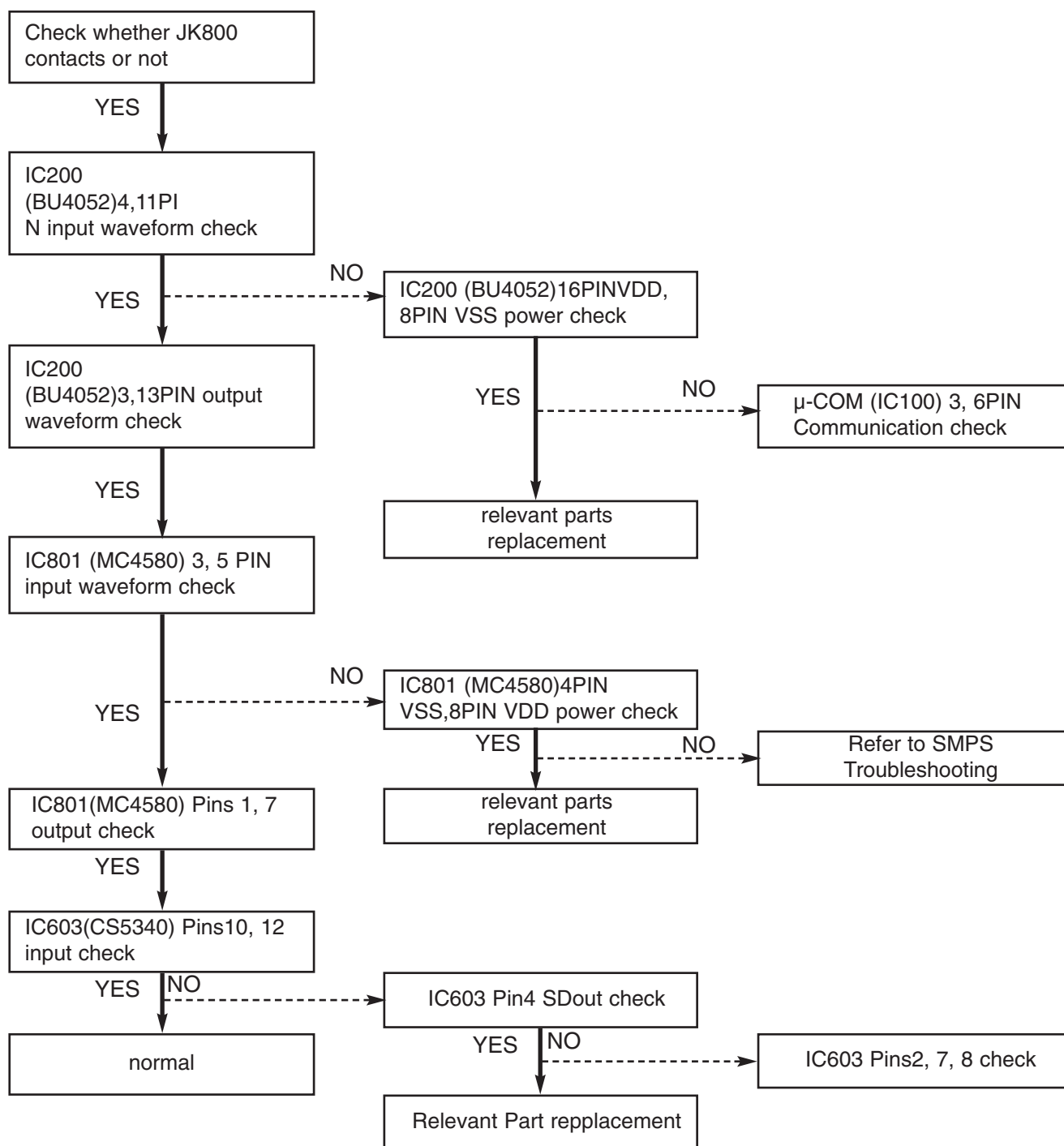
■ PWM ALTERATION PART CHECK



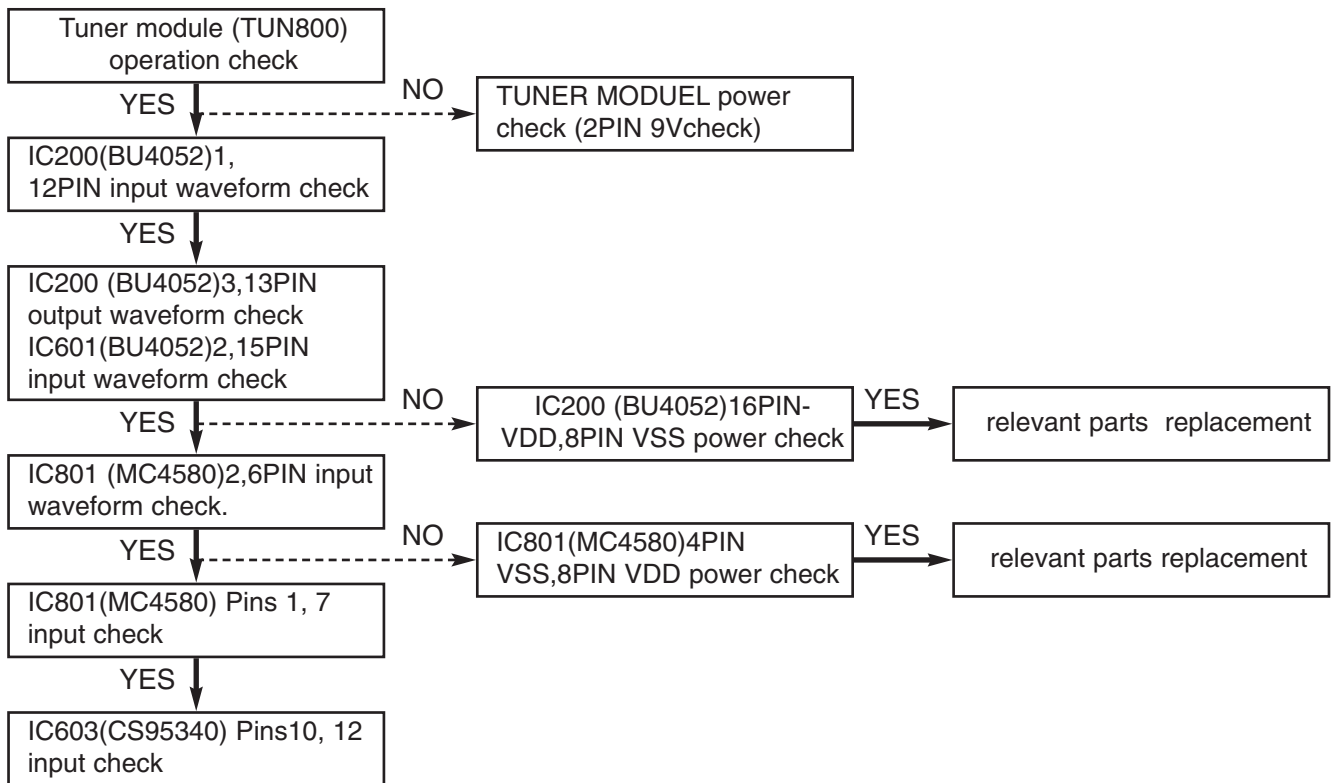
■ POWER AMP PART CHECK



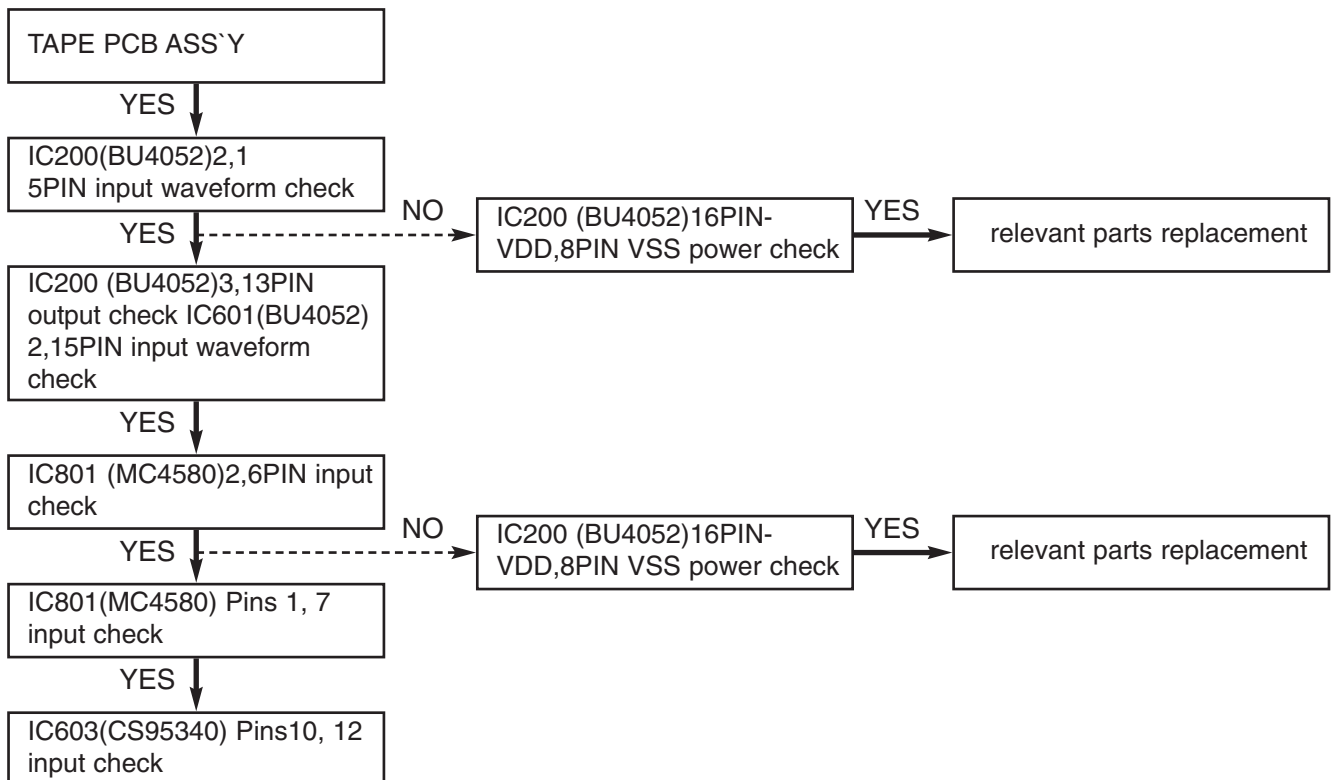
■ AUX FUNCTION



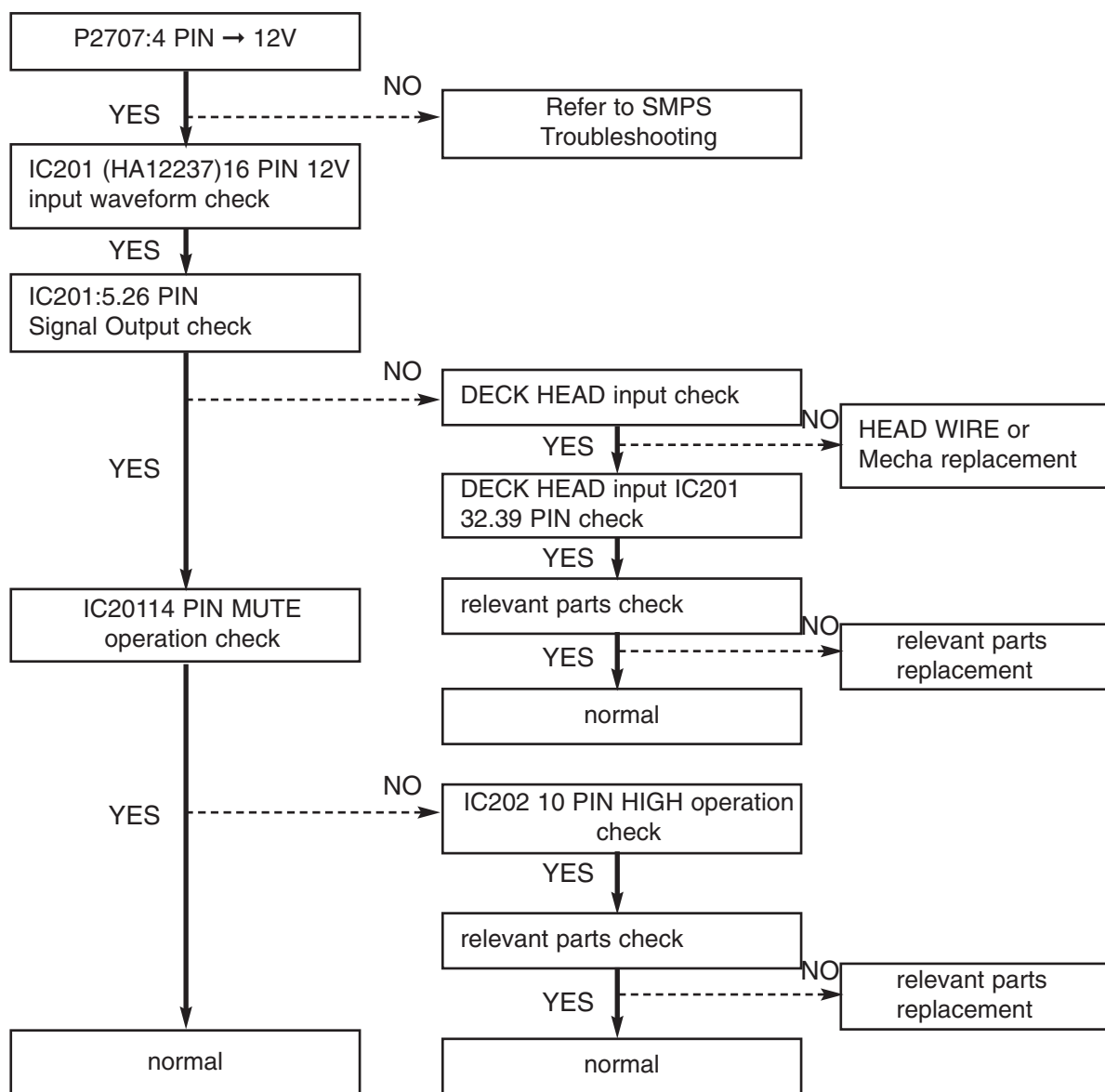
■ TUNER FUNCTION CHECK



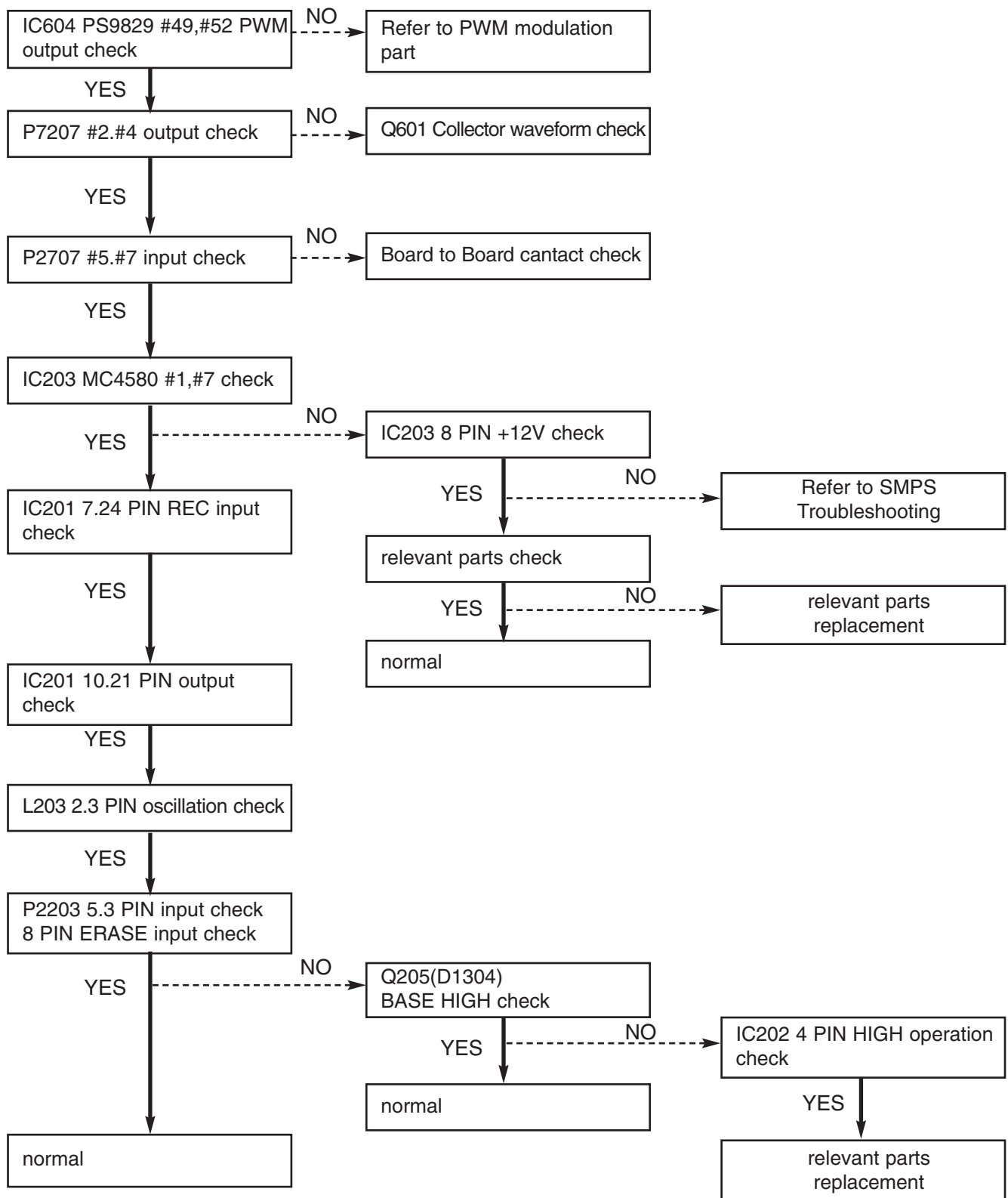
■ TAPE FUNCTION CHECK



■ TAPE PLAY PART CHECK

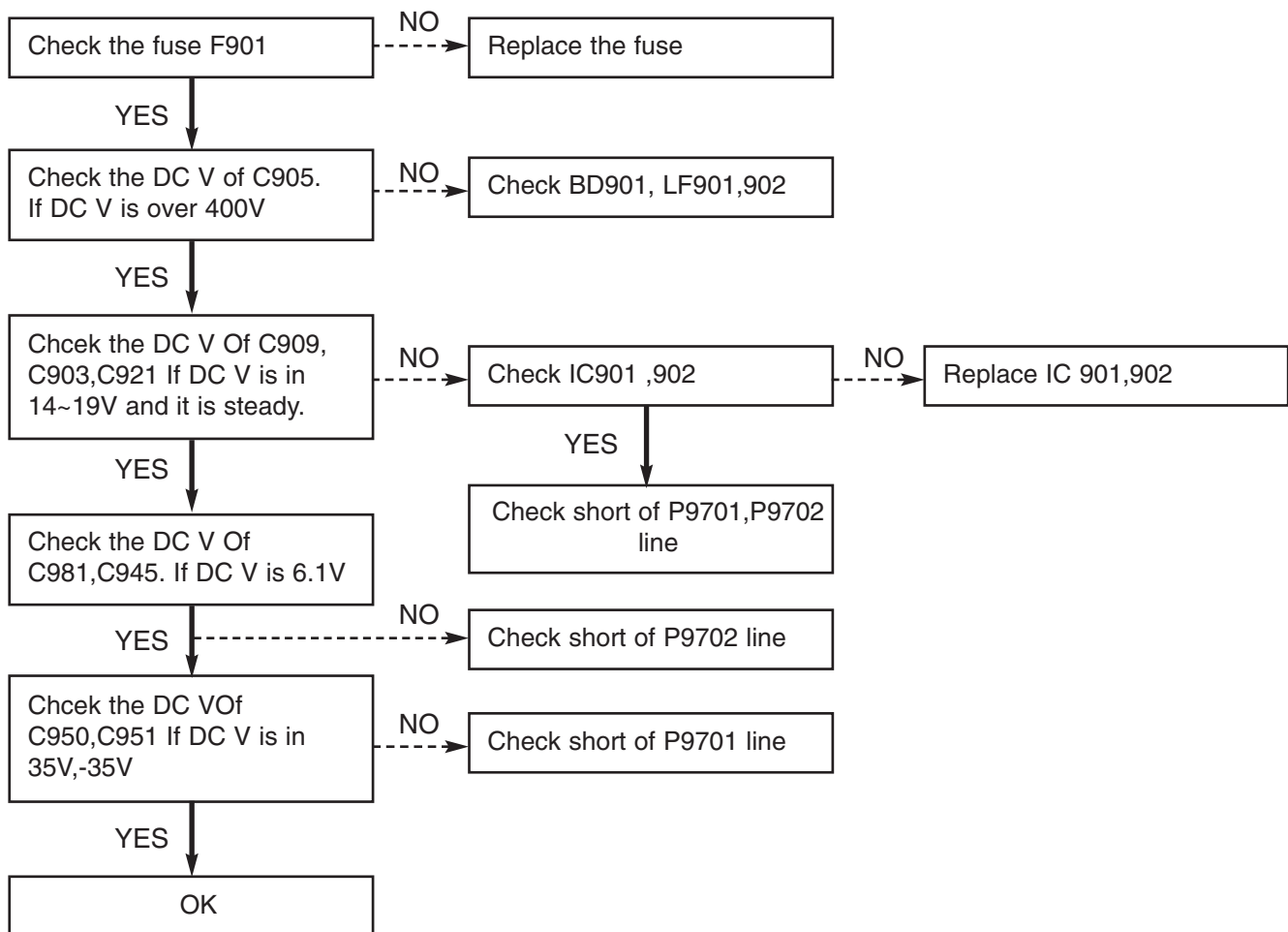


■ TAPE REC PART CHECK

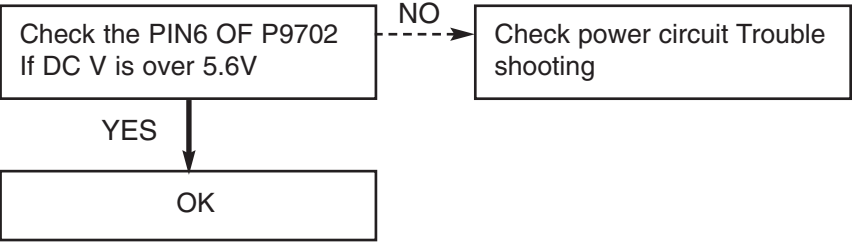


■ SMPS POWER CIRCUIT

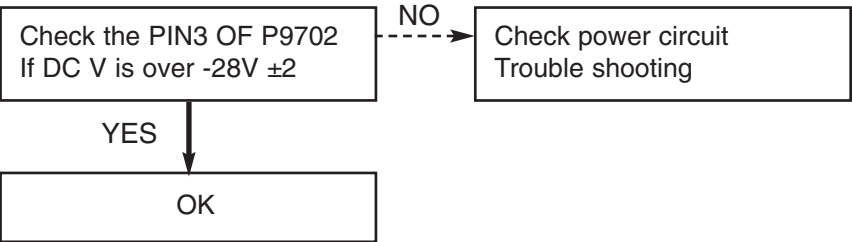
*MAIN PART



***P-SENS PART (OPTIONAL PART)**

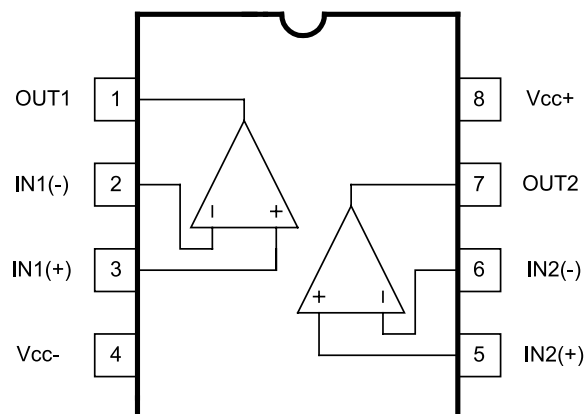


***VKK PART**

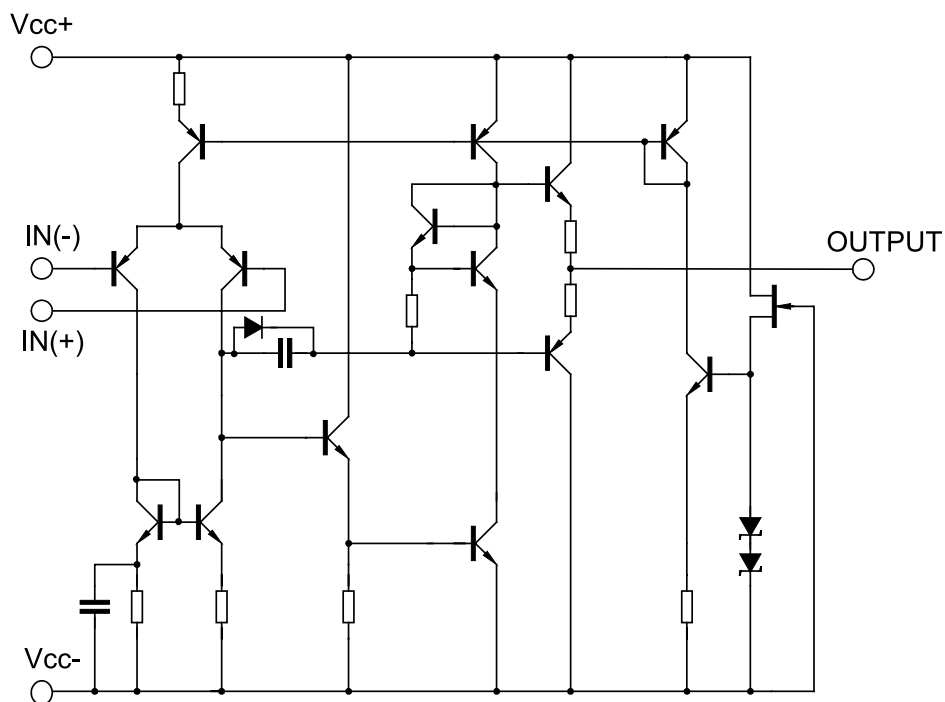


INTERNAL BLOCK DIAGRAM of ICs

• UTC MC4580 PIN CONFIGURATION



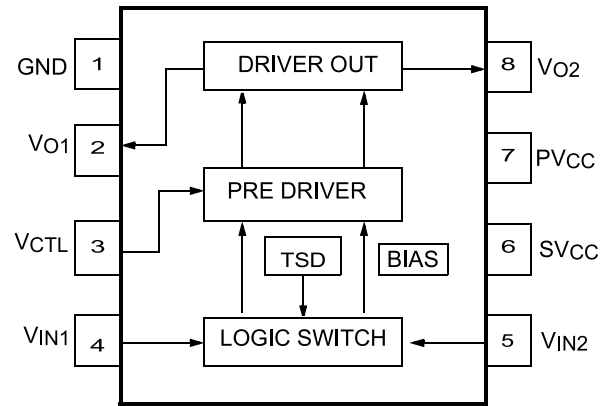
TEST CIRCUIT



ABSOLUTE MAXIMUM RATINGS (Ta=25 °C)

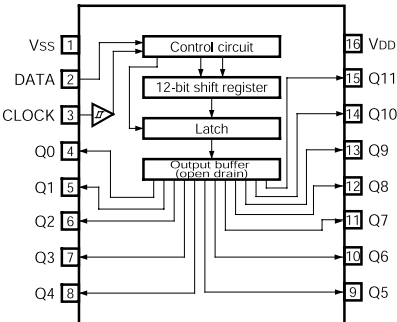
PARAMETER	SY	MBOL	RATINGS	UNIT
Supply Voltage	V^+/V^-		± 18	V
Input Voltage	V_{IC}		± 15	V
Differential Input Voltage	V_{ID}		± 30	V
Output Current	I_o		± 50	mA
Power Dissipation	P_D	300	(SOP-8) 800 (DIP-8) 250(TSSOP-8)	mW
Operating Temperature Range	T_{opr}		-40 to +85	°C
Storage Temperature Range	T_{stg}		-40 to +125	°C

- **FAN8082D**
Internal Block Diagram

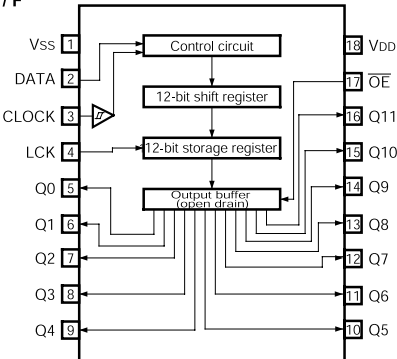


• **BU2090**
Block diagram

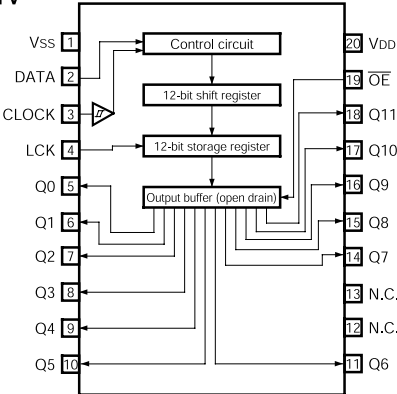
BU2090 / F / FS



BU2092 / F



BU2092FV

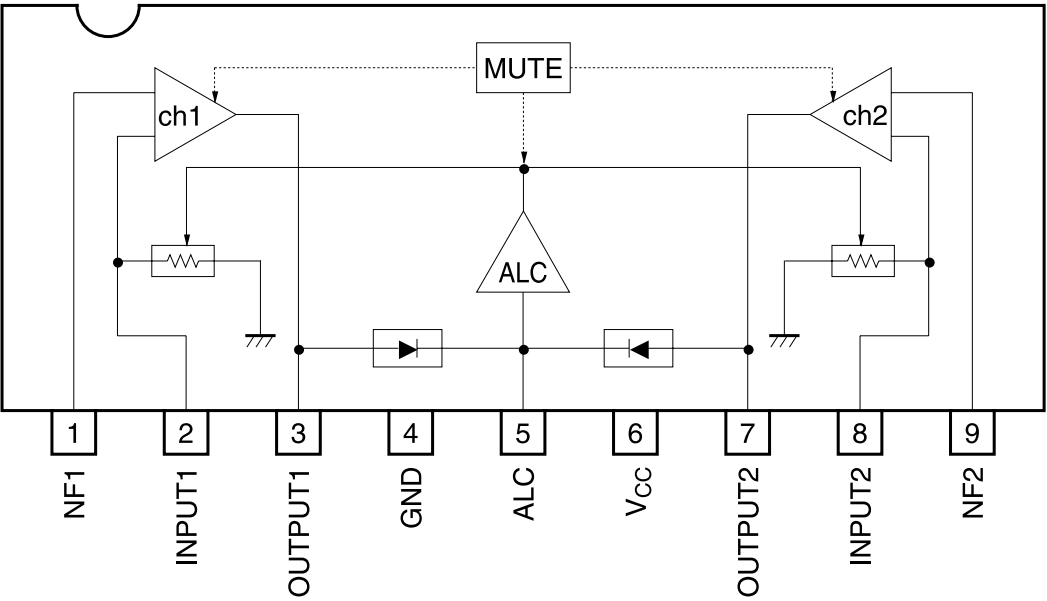


• Pin descriptions

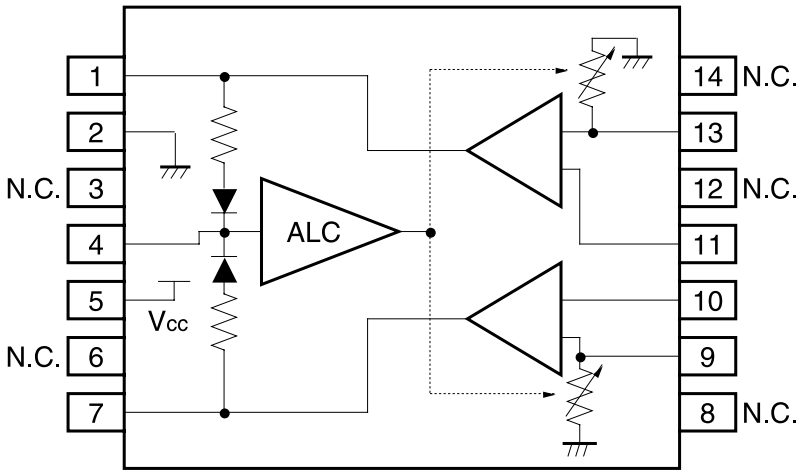
Pin No.			Pin name	Function
BU2090 / F / FS	BU2092 / F	BU2092 / FV		
1	1	1	V _{SS}	GND
2	2	2	DATA	Serial data input
3	3	3	CLOCK	Data shift clock input
\bar{N}	4	4	LCK	Data latch clock input
4	5	5	Q0	Parallel data output
5	6	6	Q1	Parallel data output
6	7	7	Q2	Parallel data output
7	8	8	Q3	Parallel data output
8	9	9	Q4	Parallel data output
9	10	10	Q5	Parallel data output
10	11	11	Q6	Parallel data output
\bar{N}	\bar{N}	12	N.C.	Not connected
\bar{N}	\bar{N}	13	N.C.	Not connected
11	12	14	Q7	Parallel data output
12	13	15	Q8	Parallel data output
13	14	16	Q9	Parallel data output
14	15	17	Q10	Parallel data output
15	16	18	Q11	Parallel data output
\bar{N}	17	19	\overline{OE}	Output Enable
16	18	20	V _{DD}	Power supply

• **BA3308 / BA3308F**
BLOCK DIAGRAM

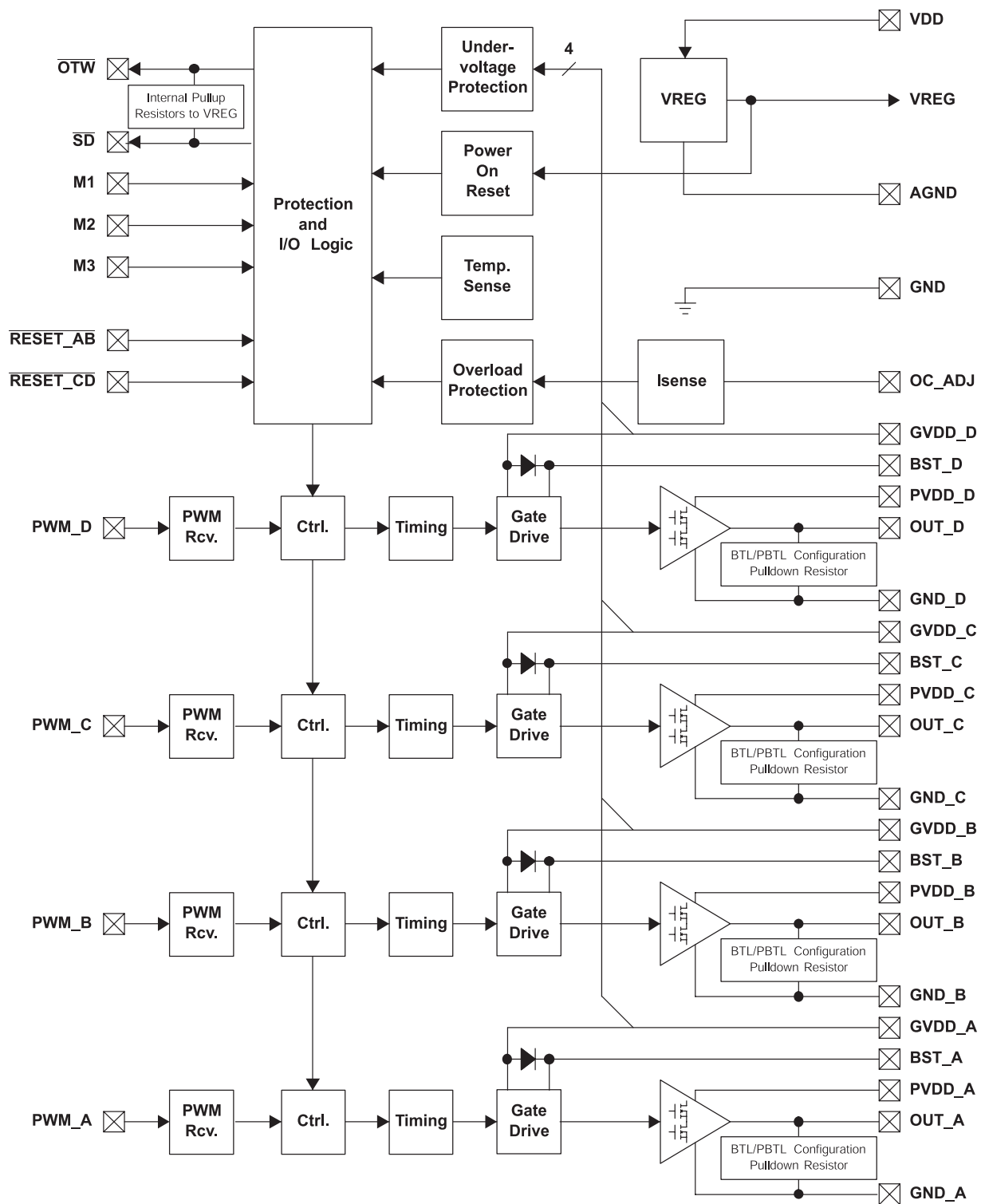
BA3308



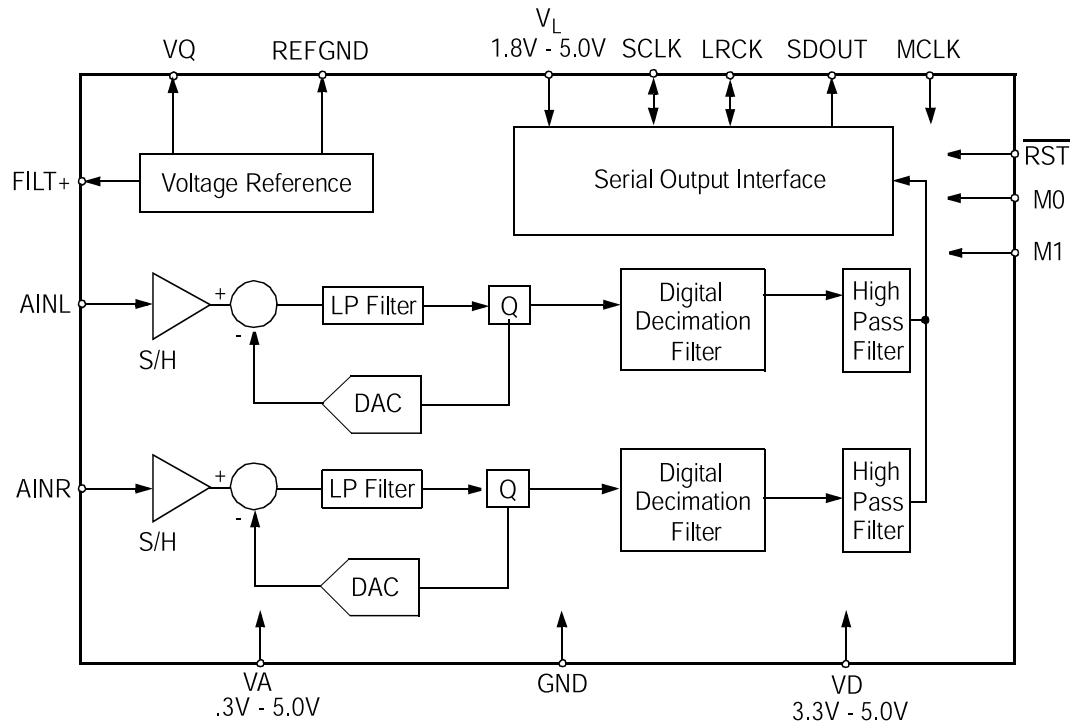
BA3308F



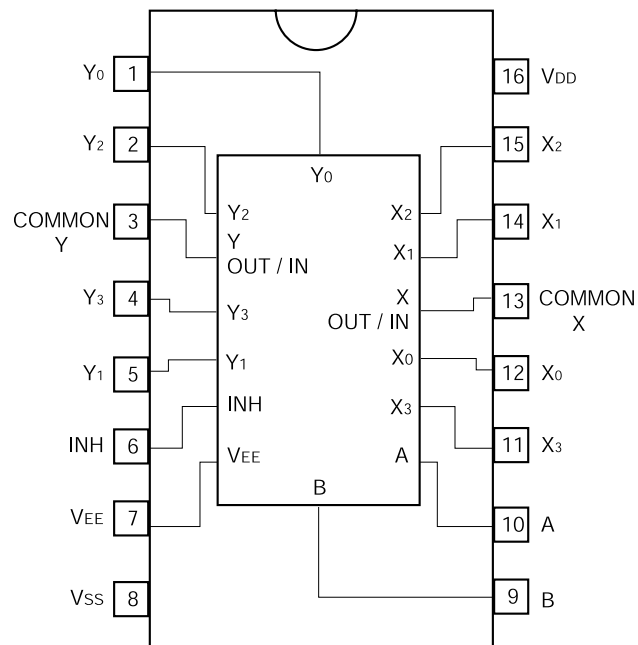
• HT1200-4
FUNCTIONAL BLOCK DIAGRAM



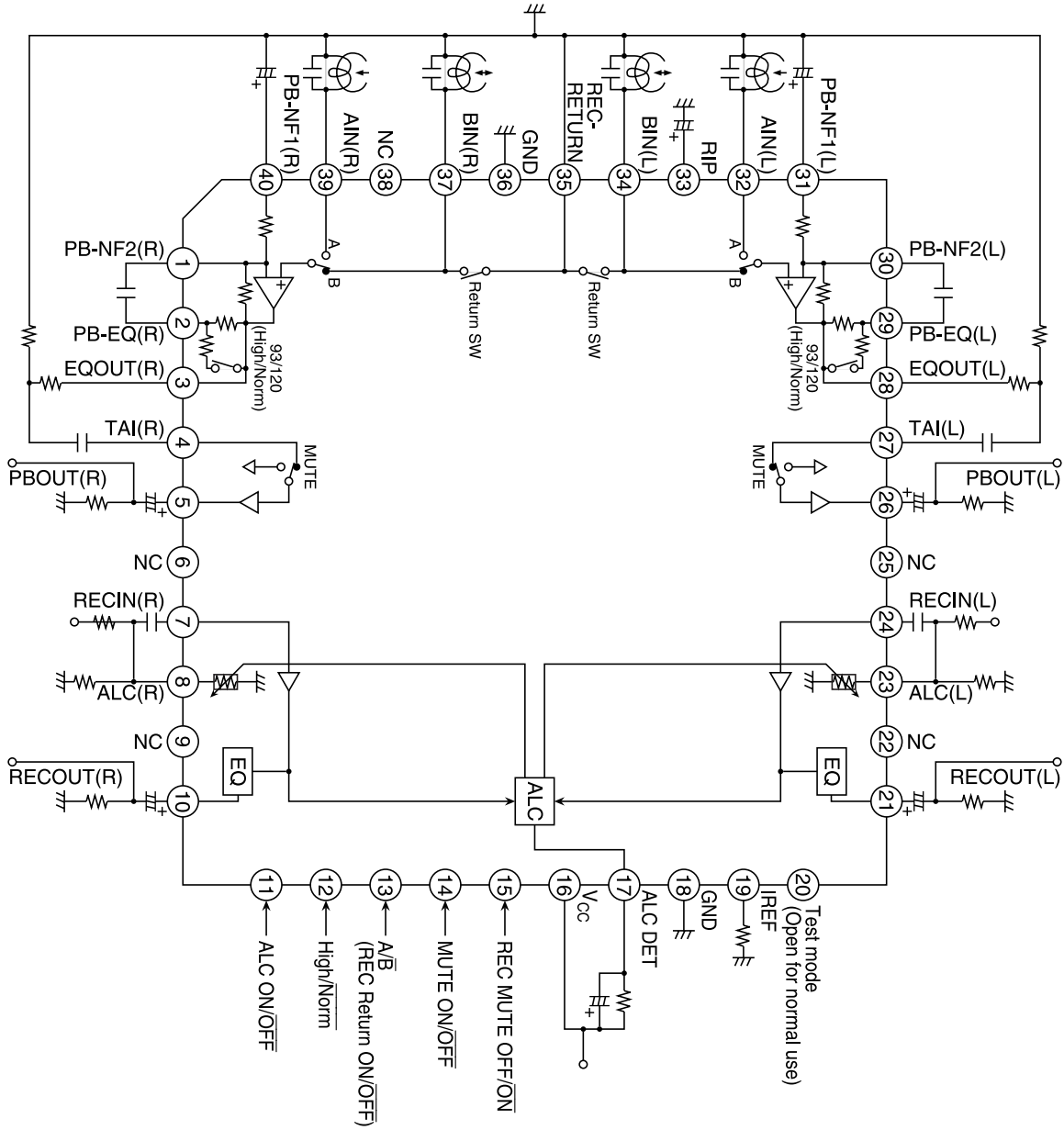
• **CS5340**
BLOCK DIAGRAM



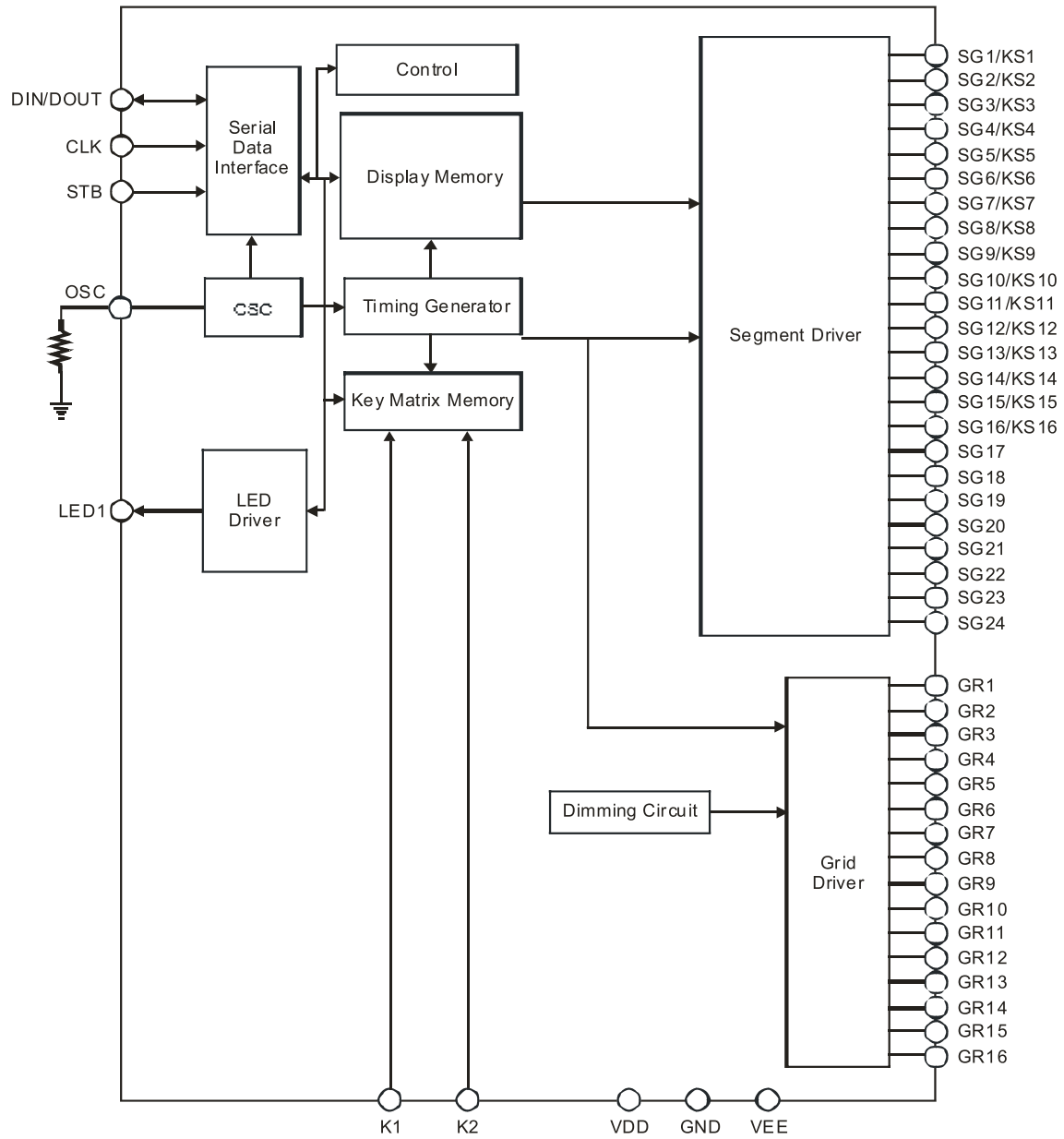
• **BU4052**
BLOCK DIAGRAM



• HA12237F
BLOCK DIAGRAM

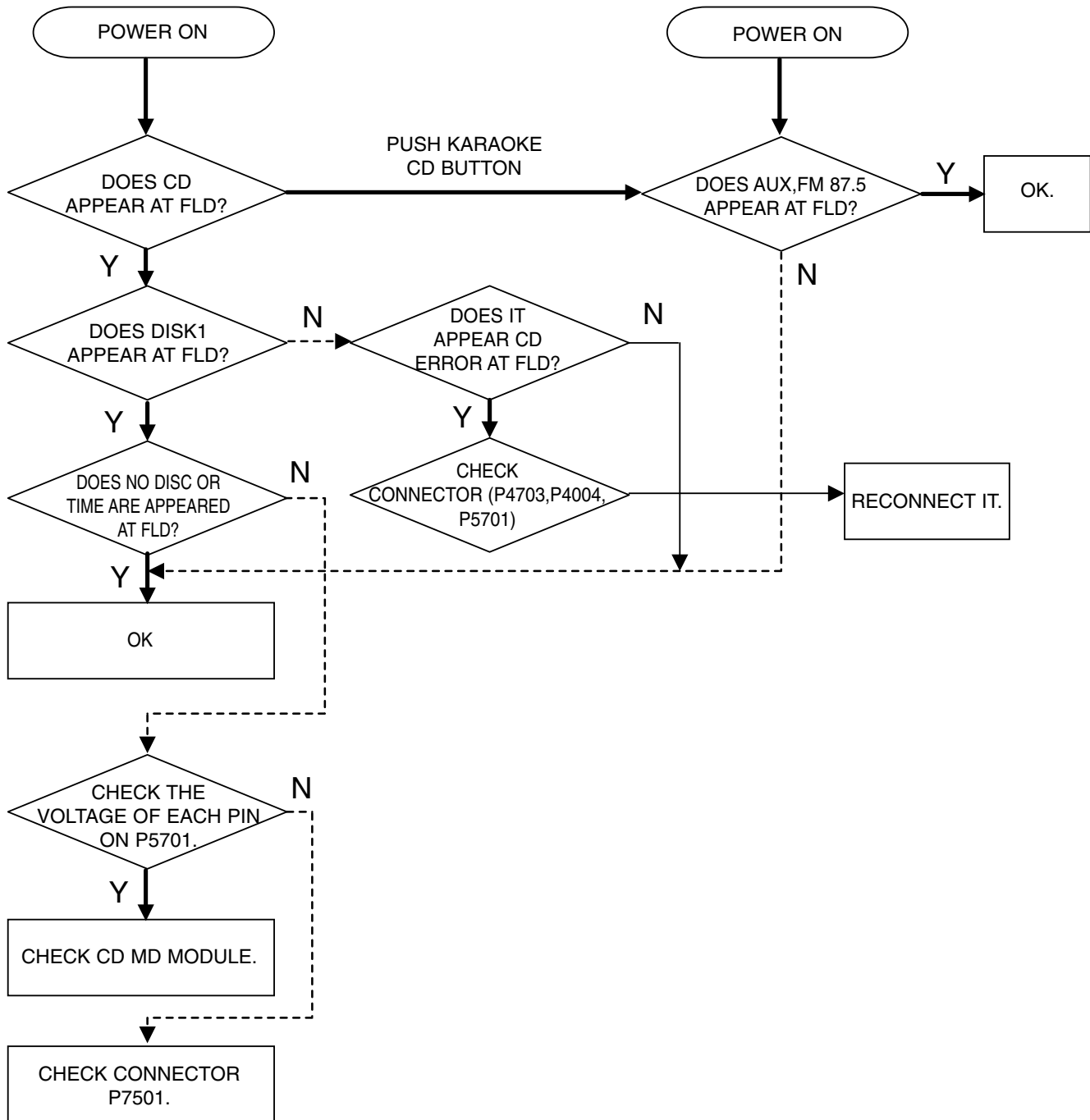


• **PT6324**
BLOCK DIAGRAM

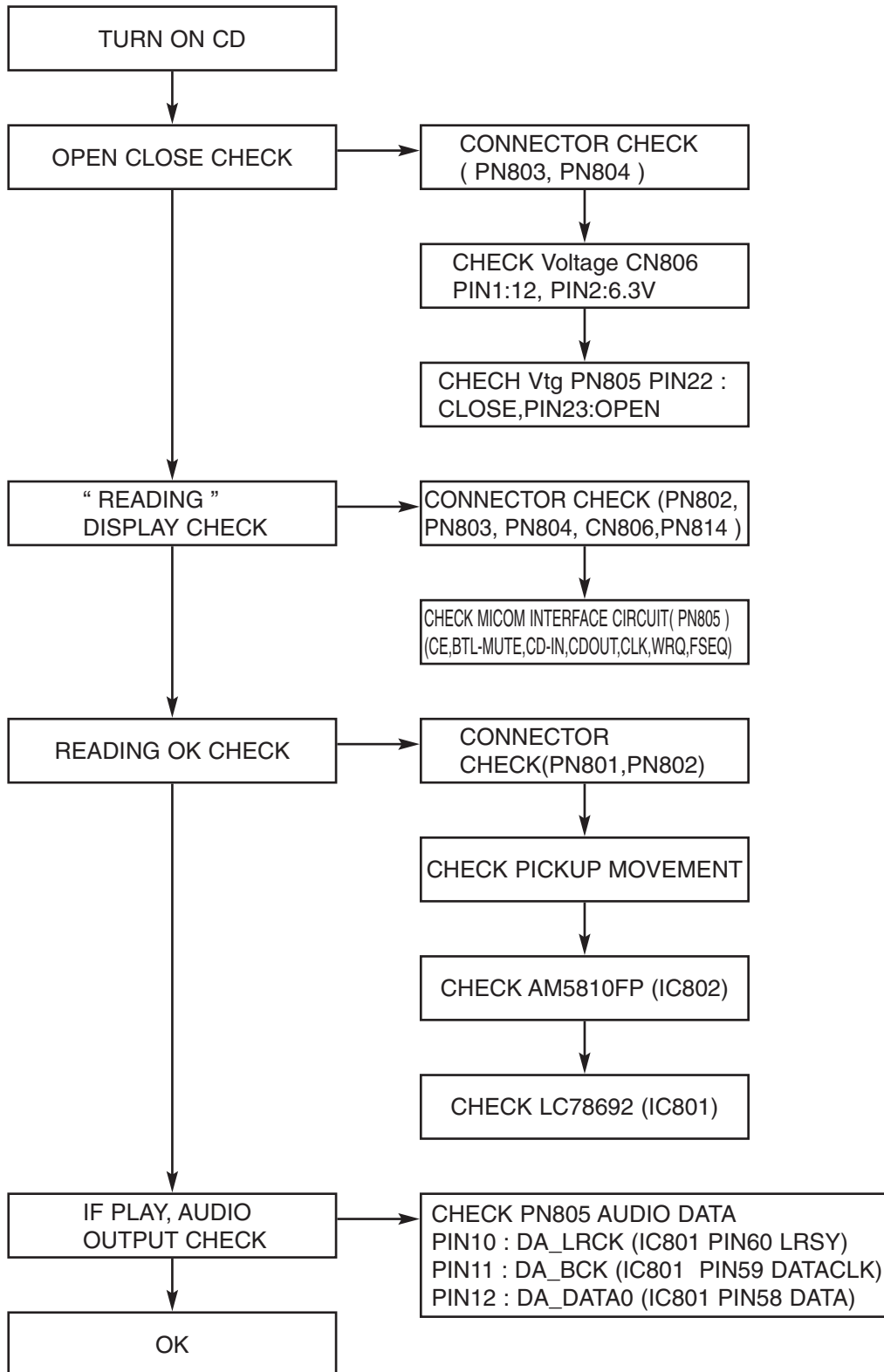


■ ELECTRICAL TROUBLESHOOTING GUIDE & WAVEFORM(CD PART)

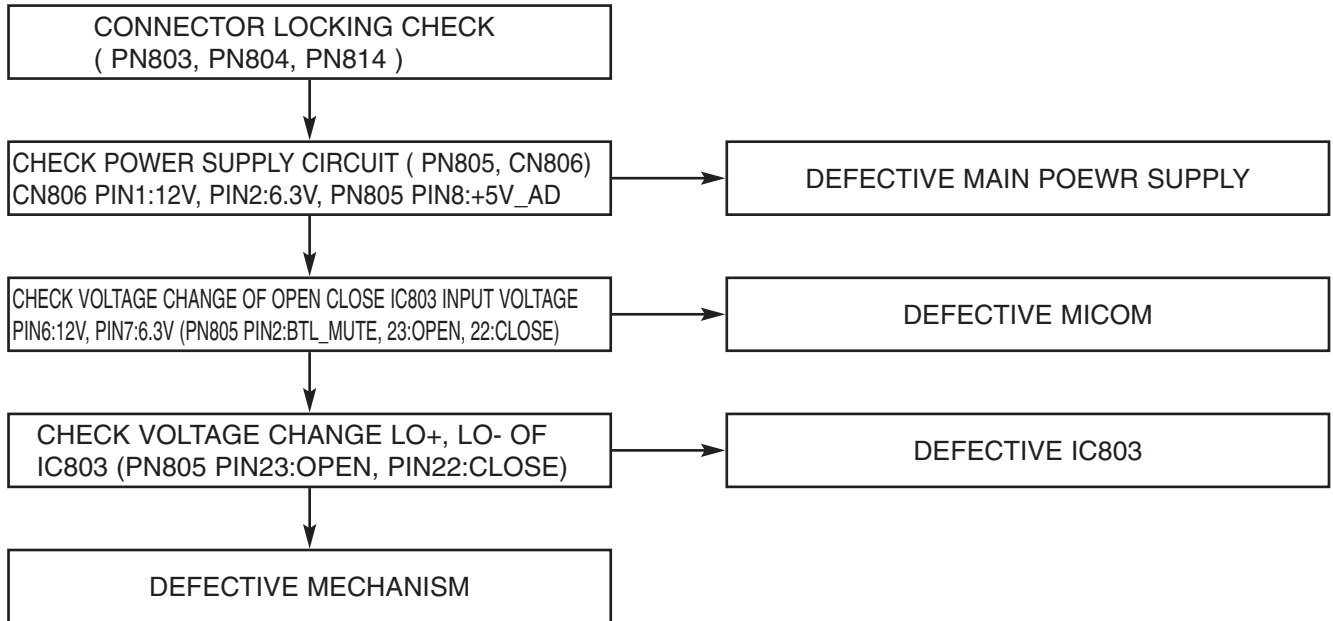
■ POWER CHECK GUIDE



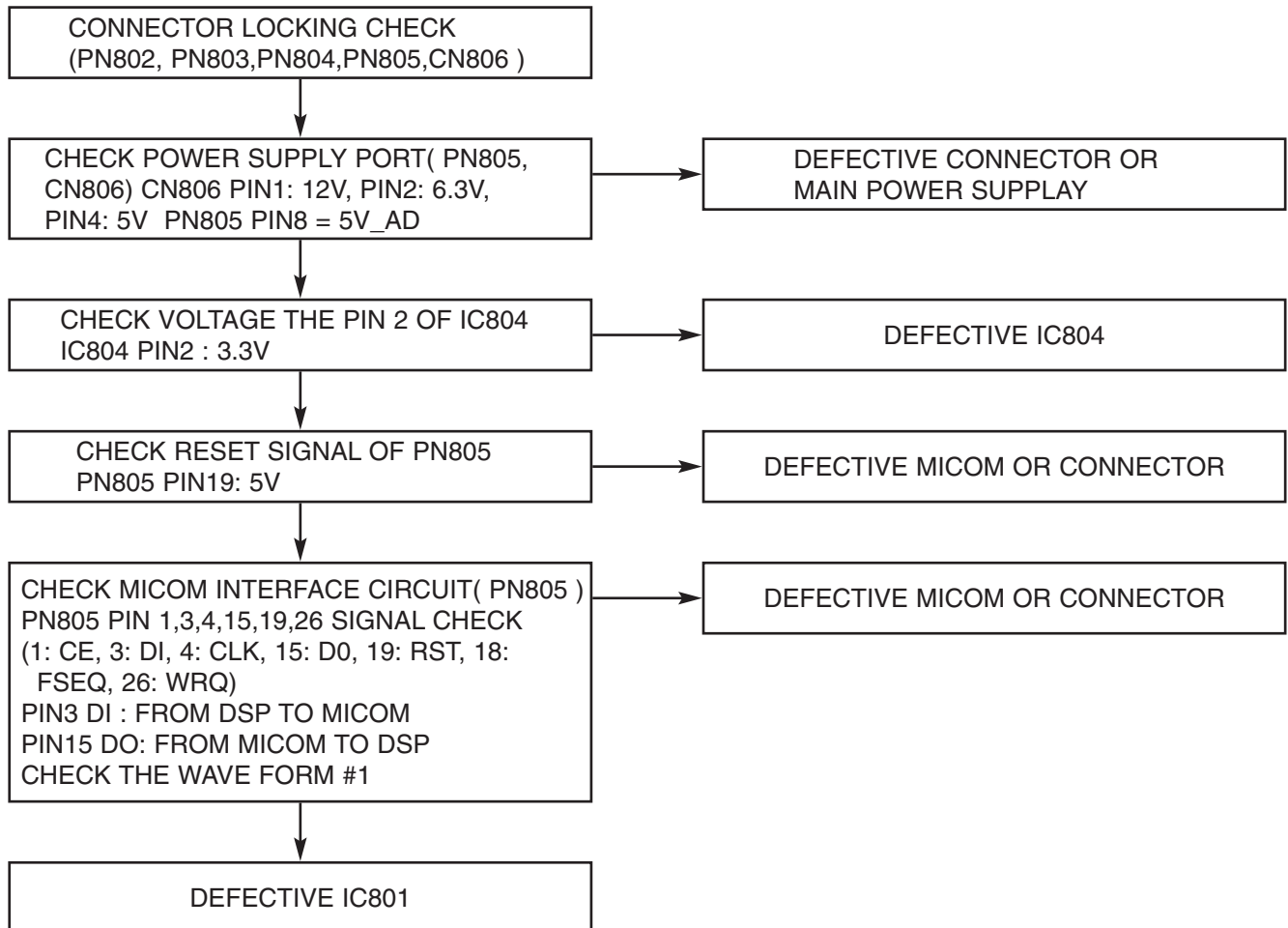
■ CD PART



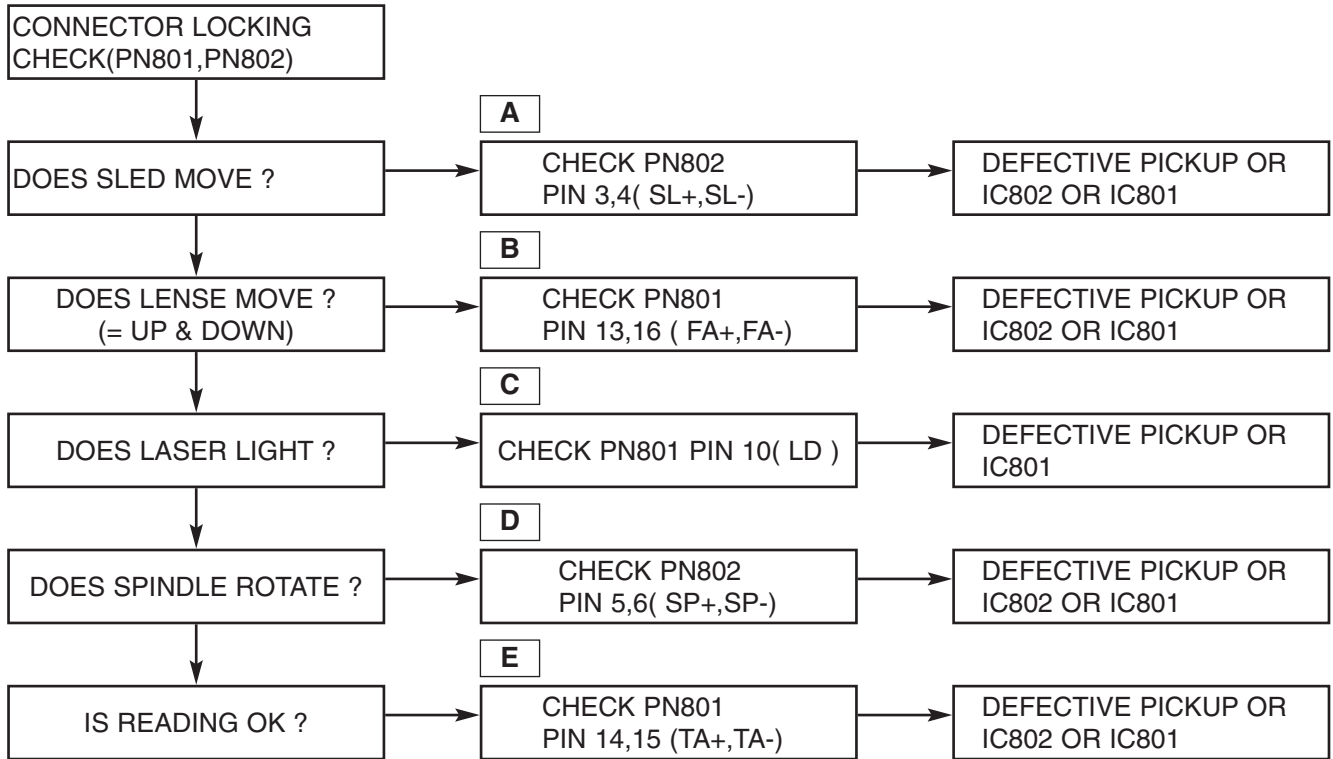
■ OPEN CLOSE NG



■ “ READING ” DISPLAY CHECK (= ONLY “CD” DISPLAY)

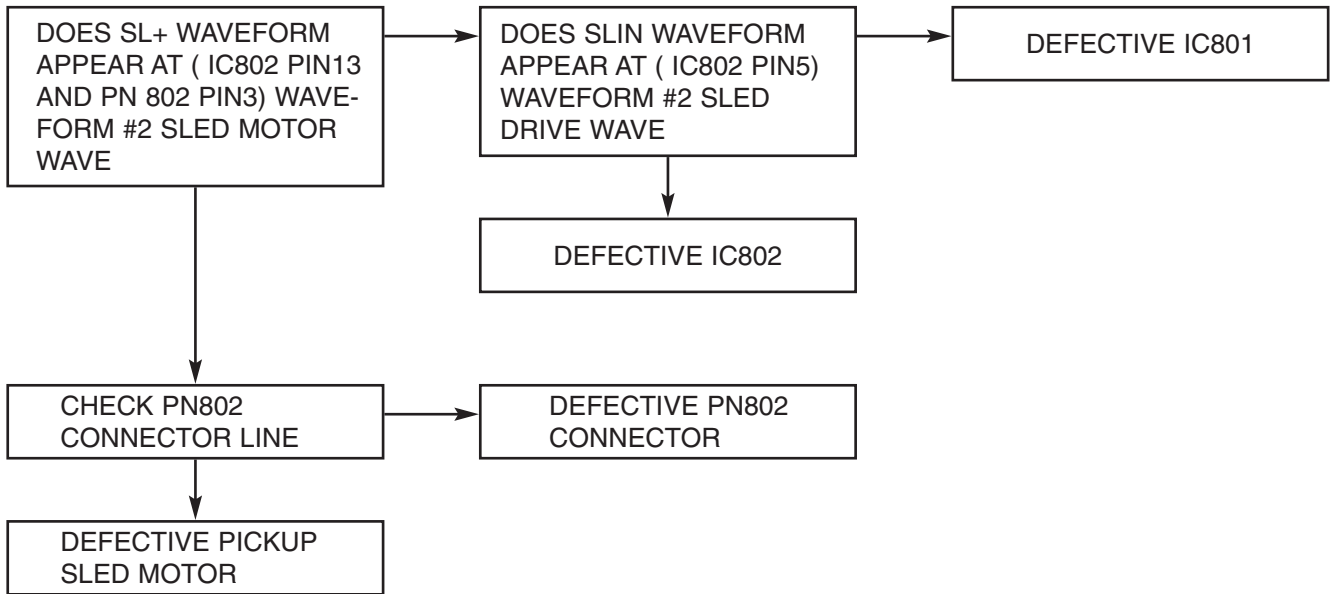


■ READING OK CHECK (= “NO DISC” DISPLAY)



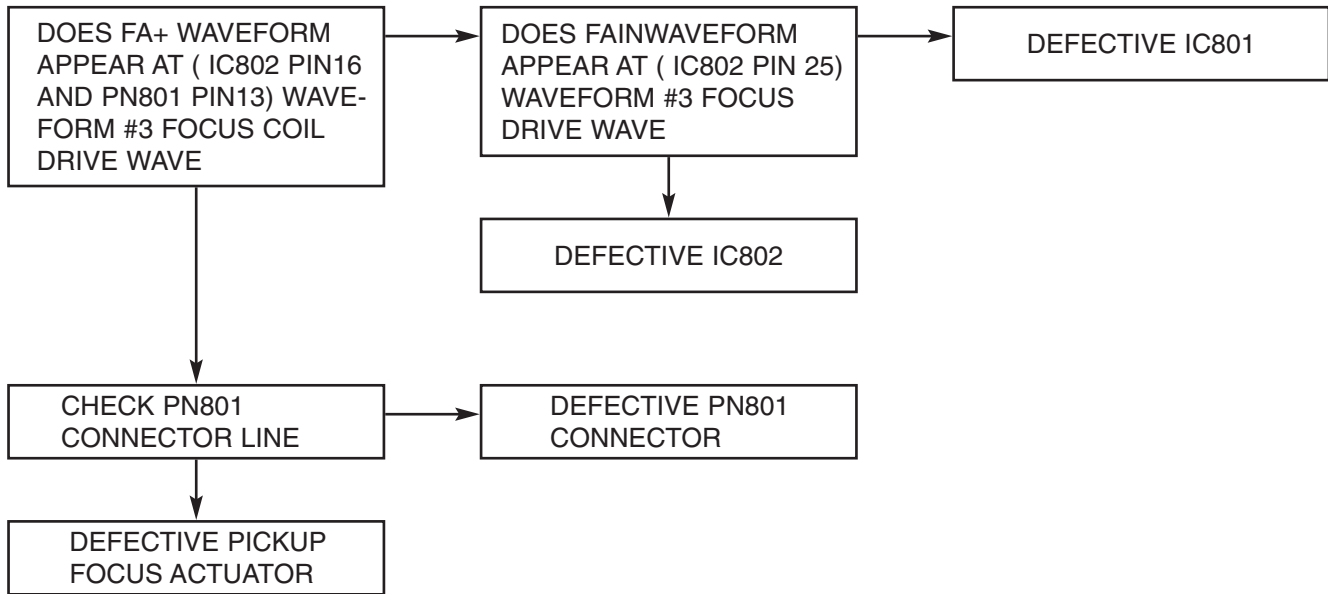
■ READING OK CHECK #A (= “NO DISC” DISPLAY)

A



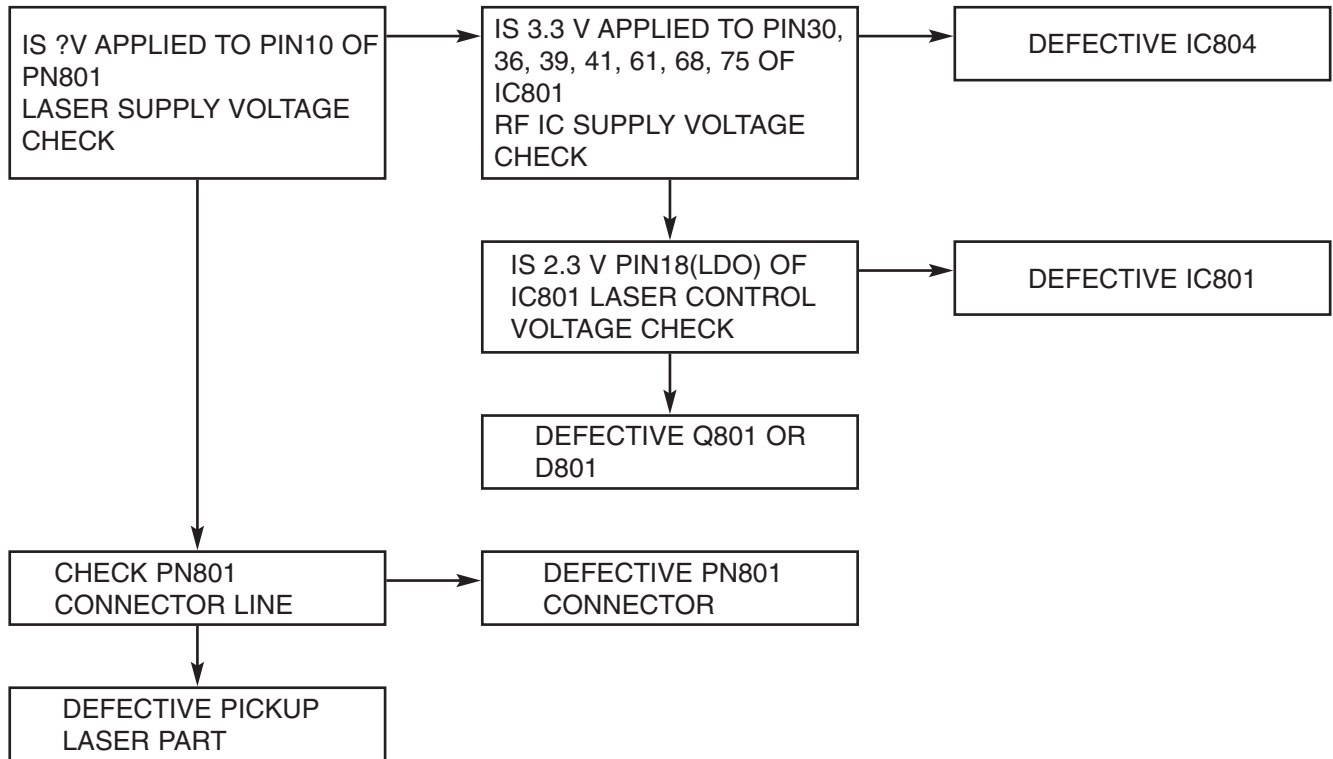
■ READING OK CHECK #B (= “NO DISC” DISPLAY)

B



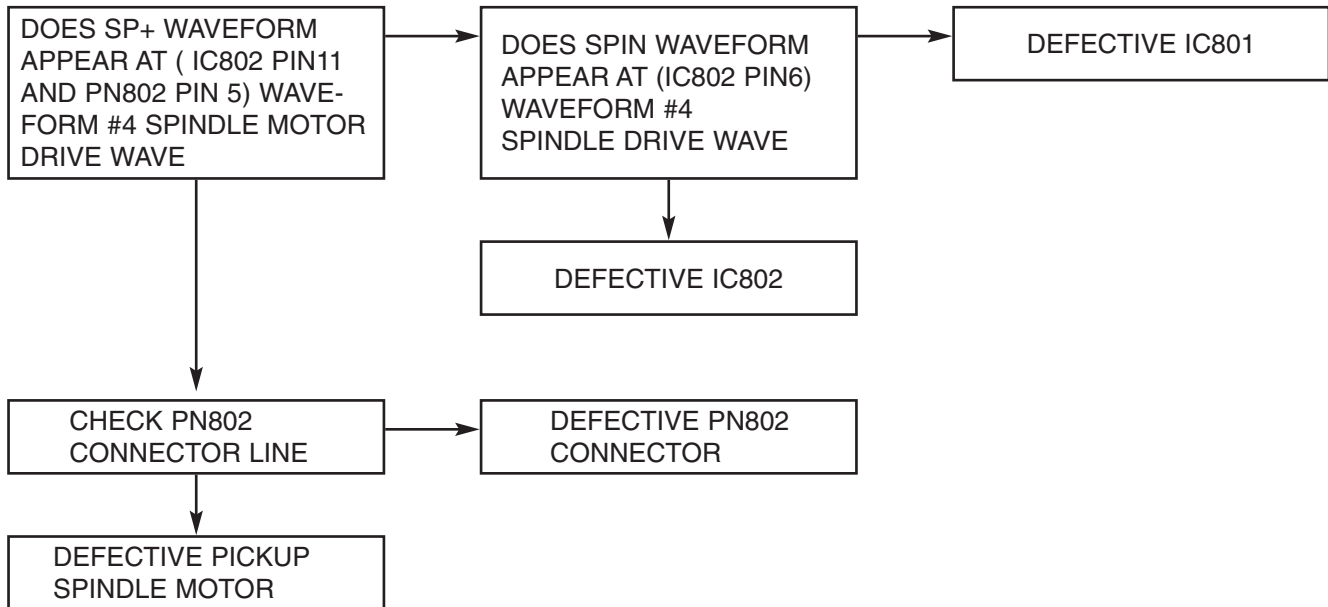
■ READING OK CHECK #C (= “NO DISC” DISPLAY)

C



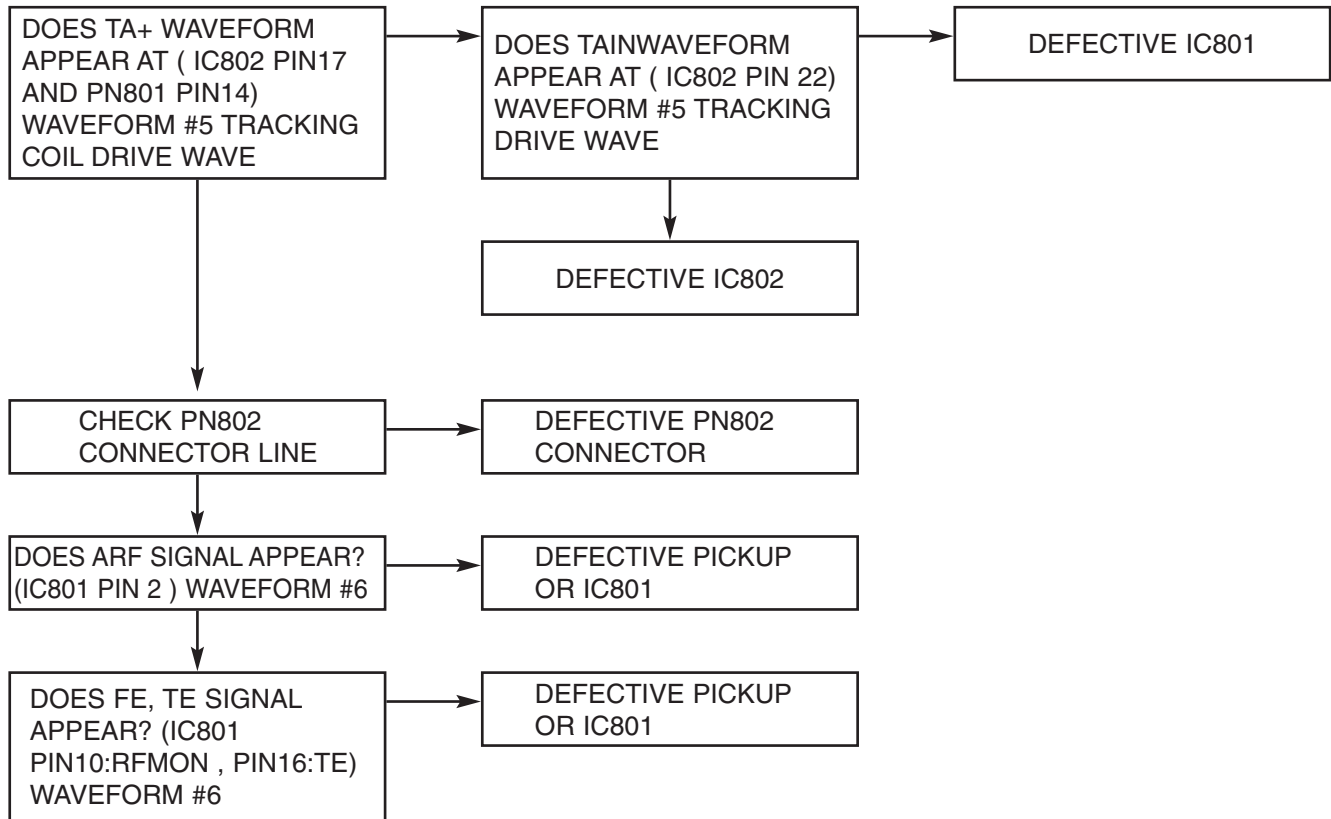
■ READING OK CHECK #D (= “NO DISC” DISPLAY)

D



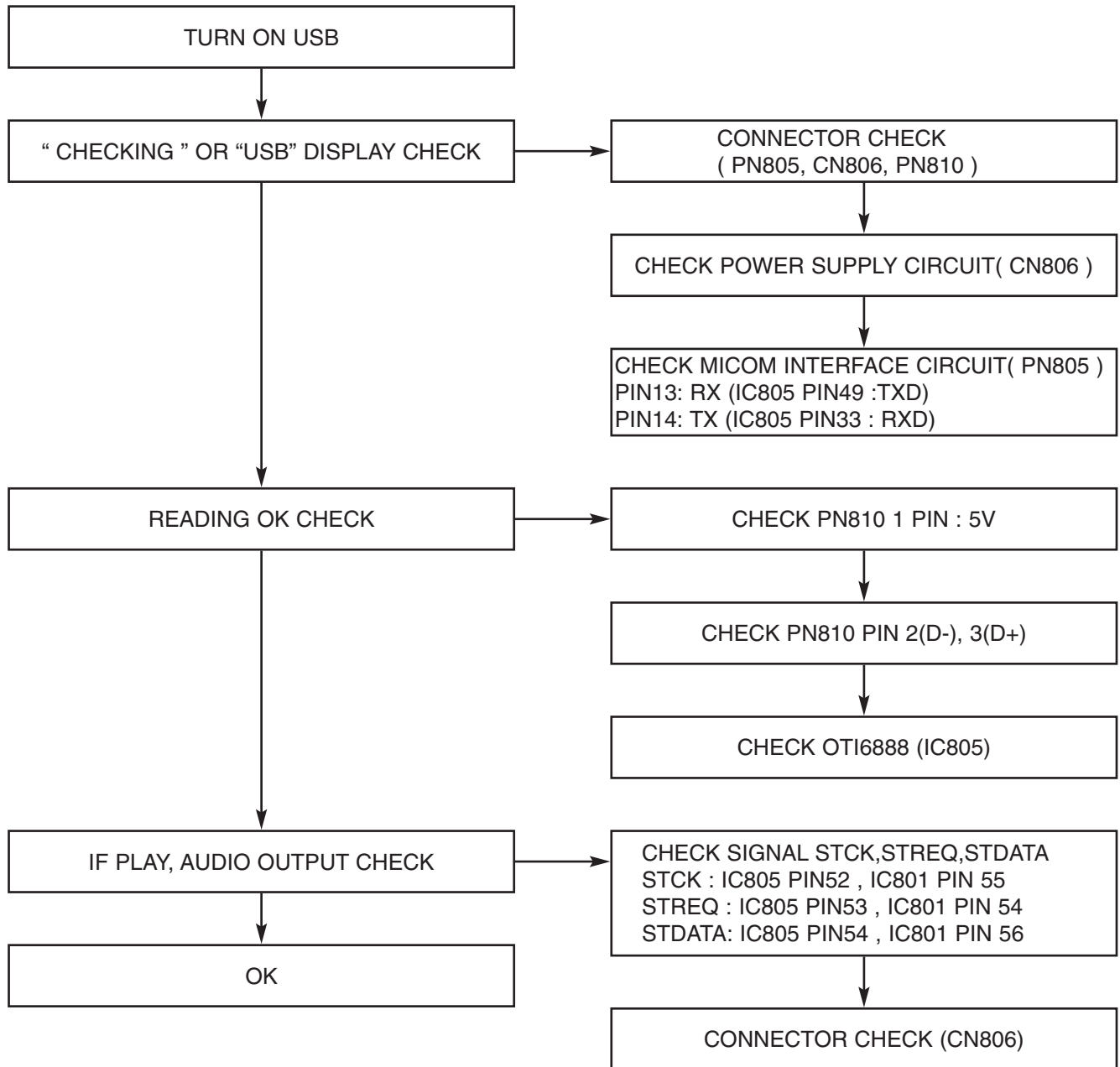
■ READING OK CHECK #E (= “NO DISC” DISPLAY)

E



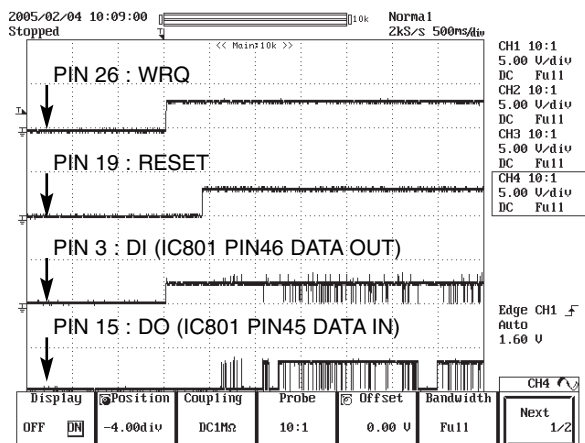
* REMON IS FE

■ USB PART

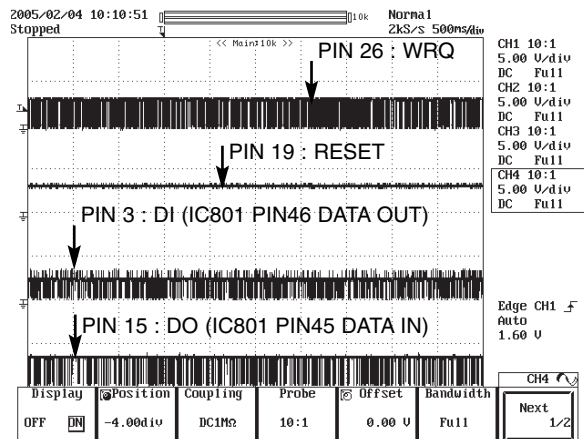


■ WAVEFORMS OF MAKOR CHECK POINT

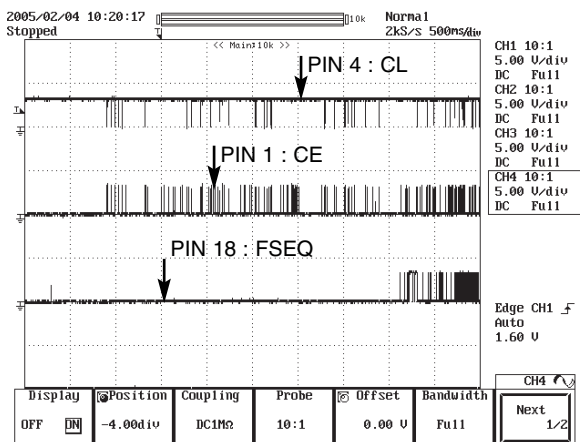
#1. MICOM INTERFACE WAVEFORM (PN805 PIN 26, 19, 3, 15) DURING POWER ON



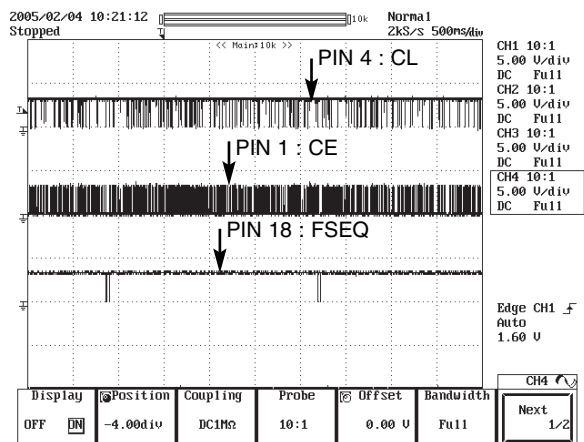
#2. MICOM INTERFACE WAVEFORM (PN805 PIN 26, 19, 3, 15) DURING NORMAL PLAY



#1. MICOM INTERFACE WAVEFORM (PN805 PIN 4, 1, 18) DURING POWER ON

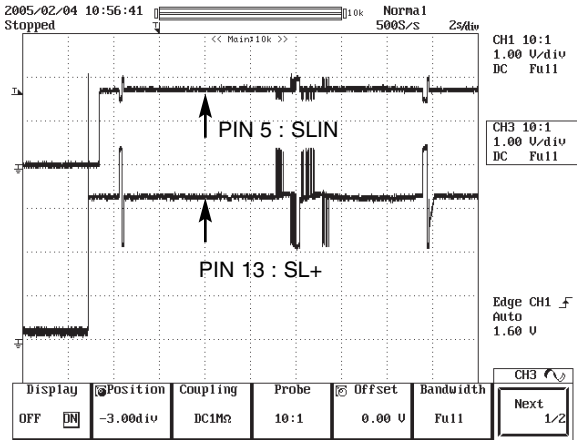


#1. MICOM INTERFACE WAVEFORM (PN805 PIN 4, 1, 18) DURING NORMAL PLAY

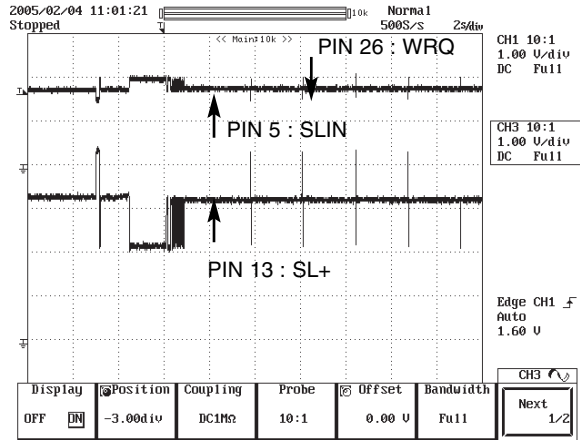


■ WAVEFORMS OF MAKOR CHECK POINT

#2. SLED DRIVE AND MOTOR WAVEFORM (IC802 PIN 5, 13) WHEN FOCUS SEARCH

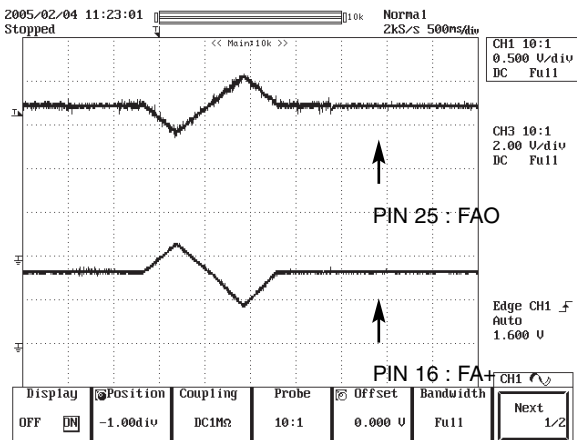


#2. MICOM INTERFACE WAVEFORM (PN805 PIN 26, 19, 3, 15) DURING NORMAL PLAY



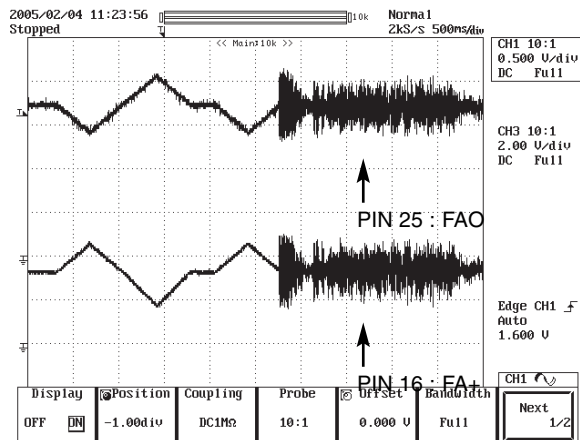
#3. FOCUS DRIVE AND MOTOR WAVEFORM (IC802 PIN 25, IC802 PIN 16)

- WHEN FOCUS SEARCH FAILED OR THERE IS NO DISC ON TRAY



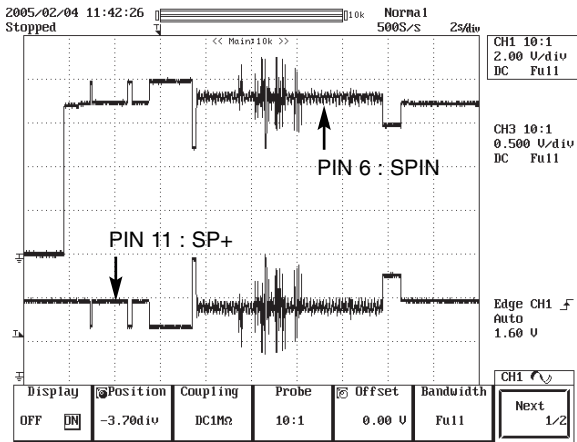
#3. FOCUS DRIVE AND MOTOR WAVEFORM (IC802 PIN 25, IC802 PIN 16)

- THERE IS DISC ON TRAY AND FOCUS SEARCH SUCCESS

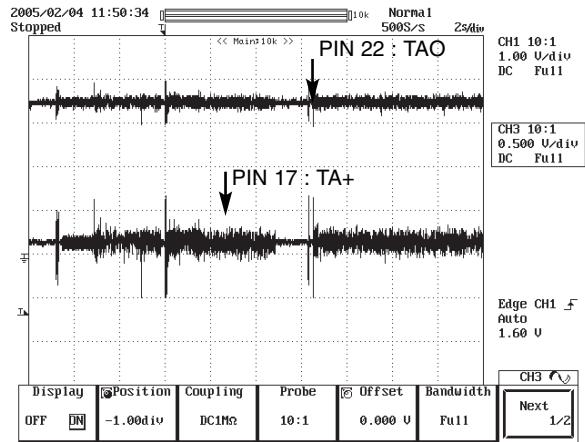


■ WAVEFORMS OF MAKOR CHECK POINT

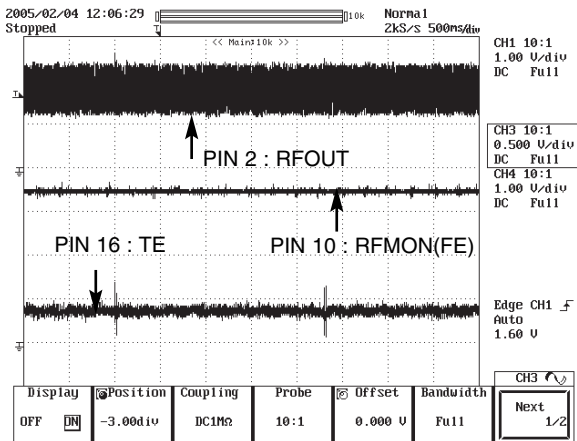
#4. SPINDLE DRIVE AND MOTOR WAVEFORM (IC802 PIN 6, 11) WHEN TOC READING



#5. TRACK DRIVE AND MOTOR WAVEFORM (IC802 PIN 22, IC802 PIN 17) DURING NORMAL PLAY



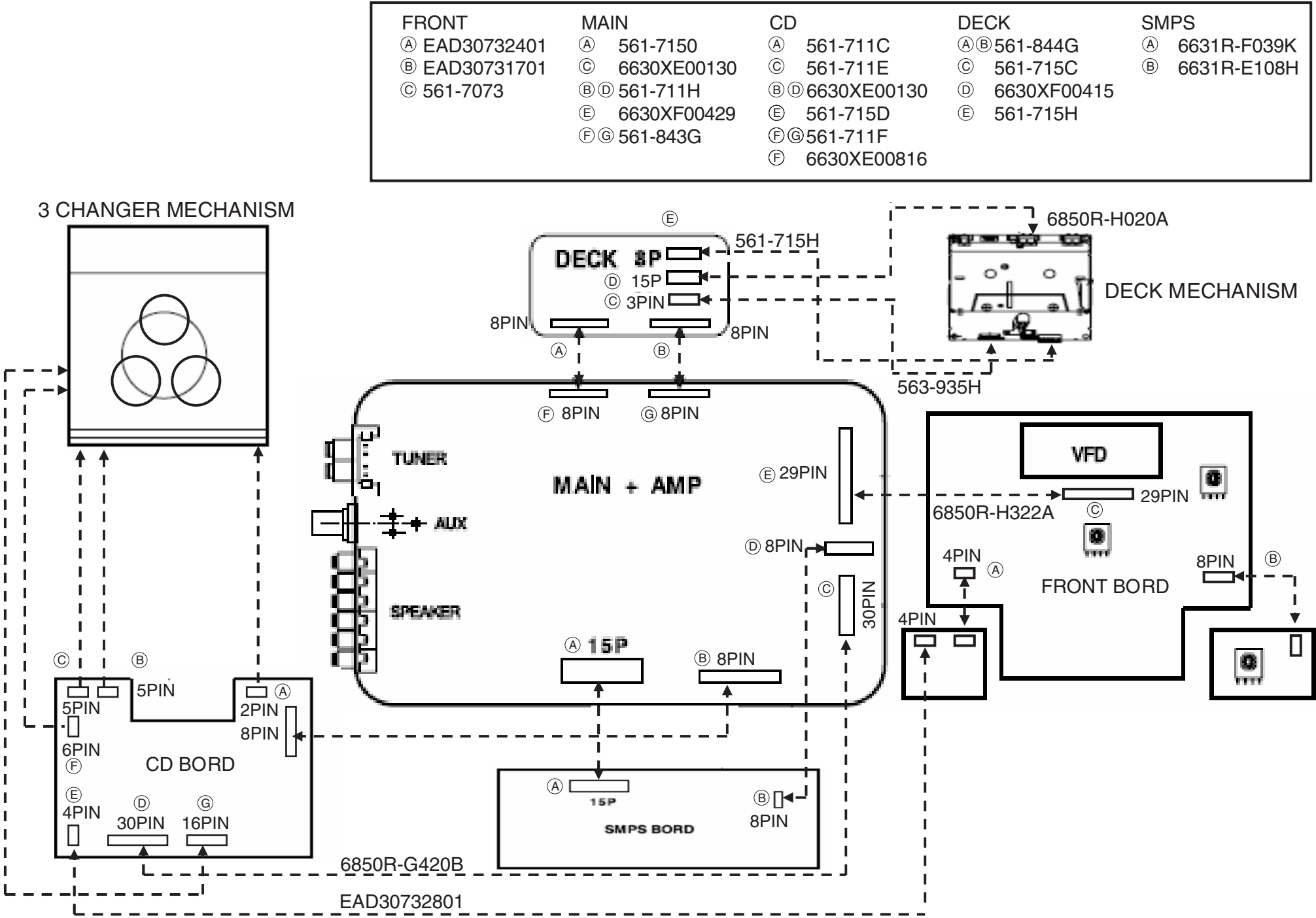
#6. RF, FOCUS AND TRACKING ERROR WAVEFORM (IC801 PIN 2, 10, 16) DURING NORMAL PLAY



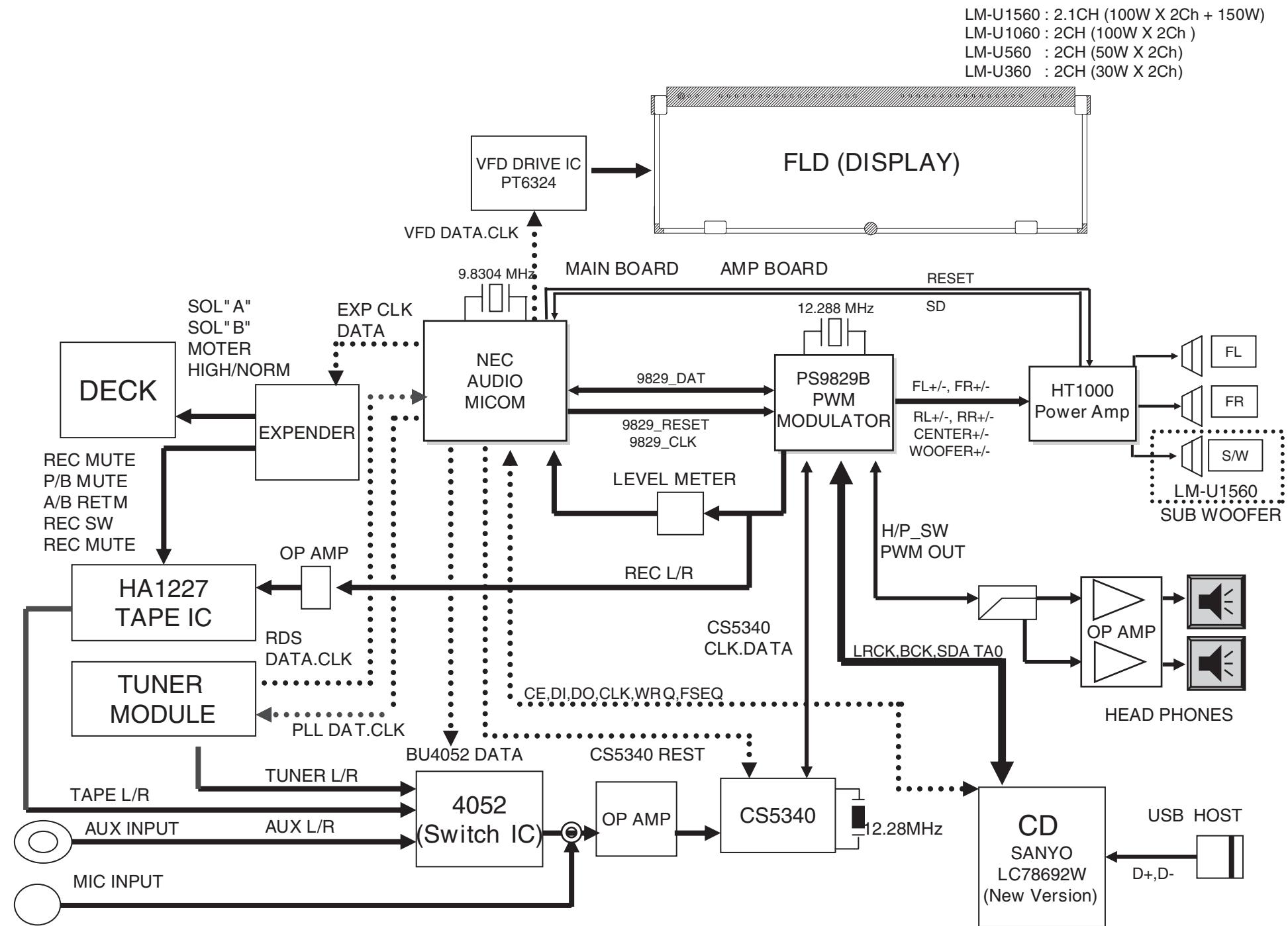
MEMO

Handwriting practice lines consisting of 28 horizontal dotted lines.

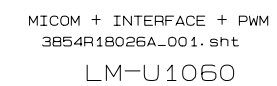
❑ WIRING DIAGRAM



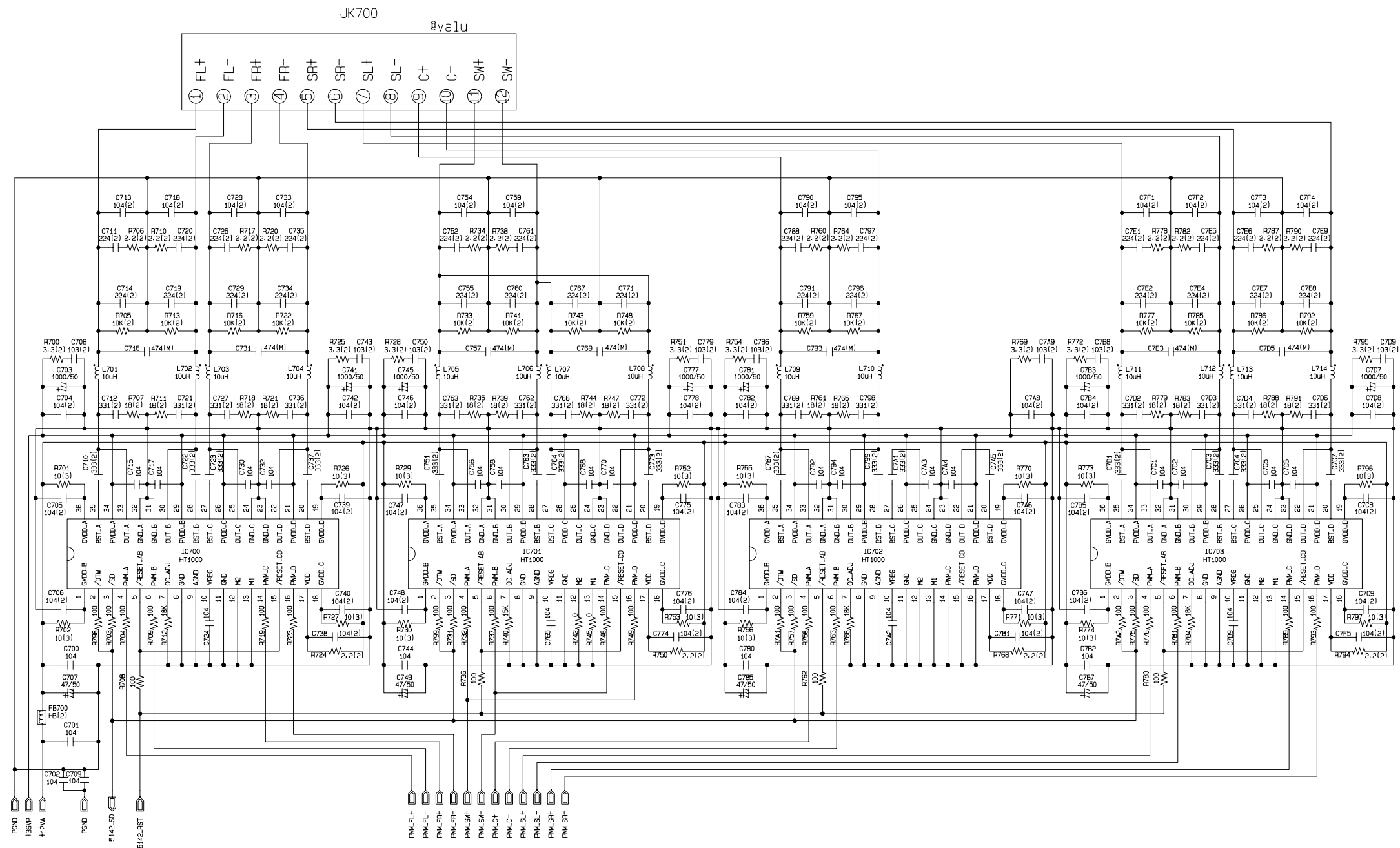
BLOCK DIAGRAM



- **MAIN SCHEMATIC DIAGRAM**



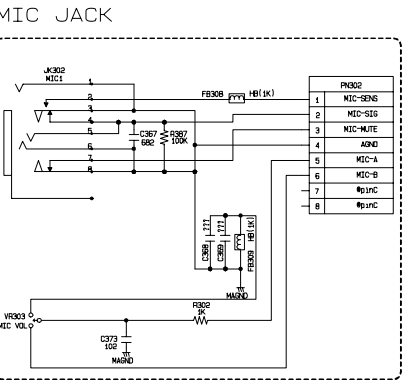
- **AMP SCHEMATIC DIAGRAM**



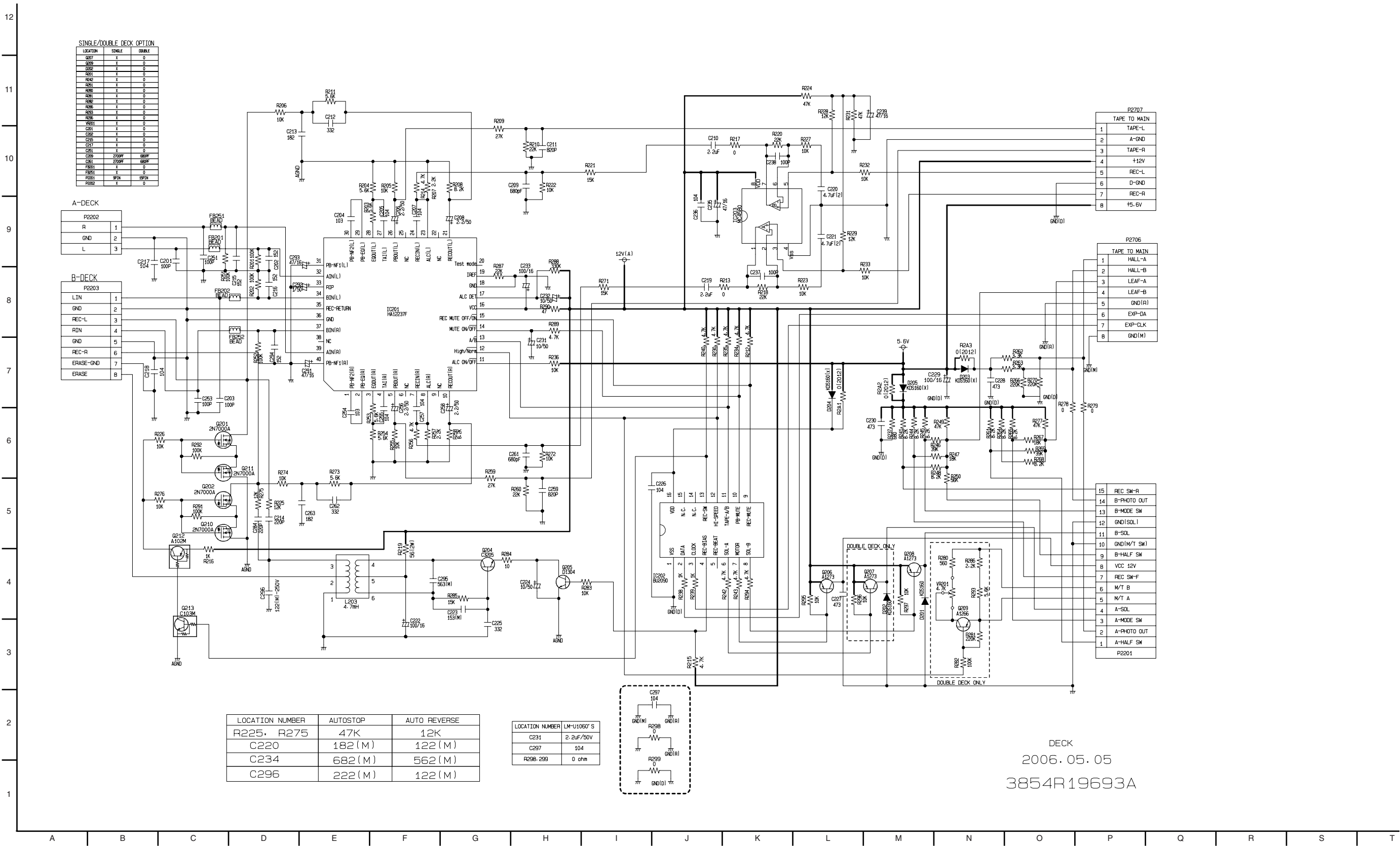
6CH. AMP
3854R18026A-002
LM-U1060

FRONT SCHEMATIC DIAGRAM

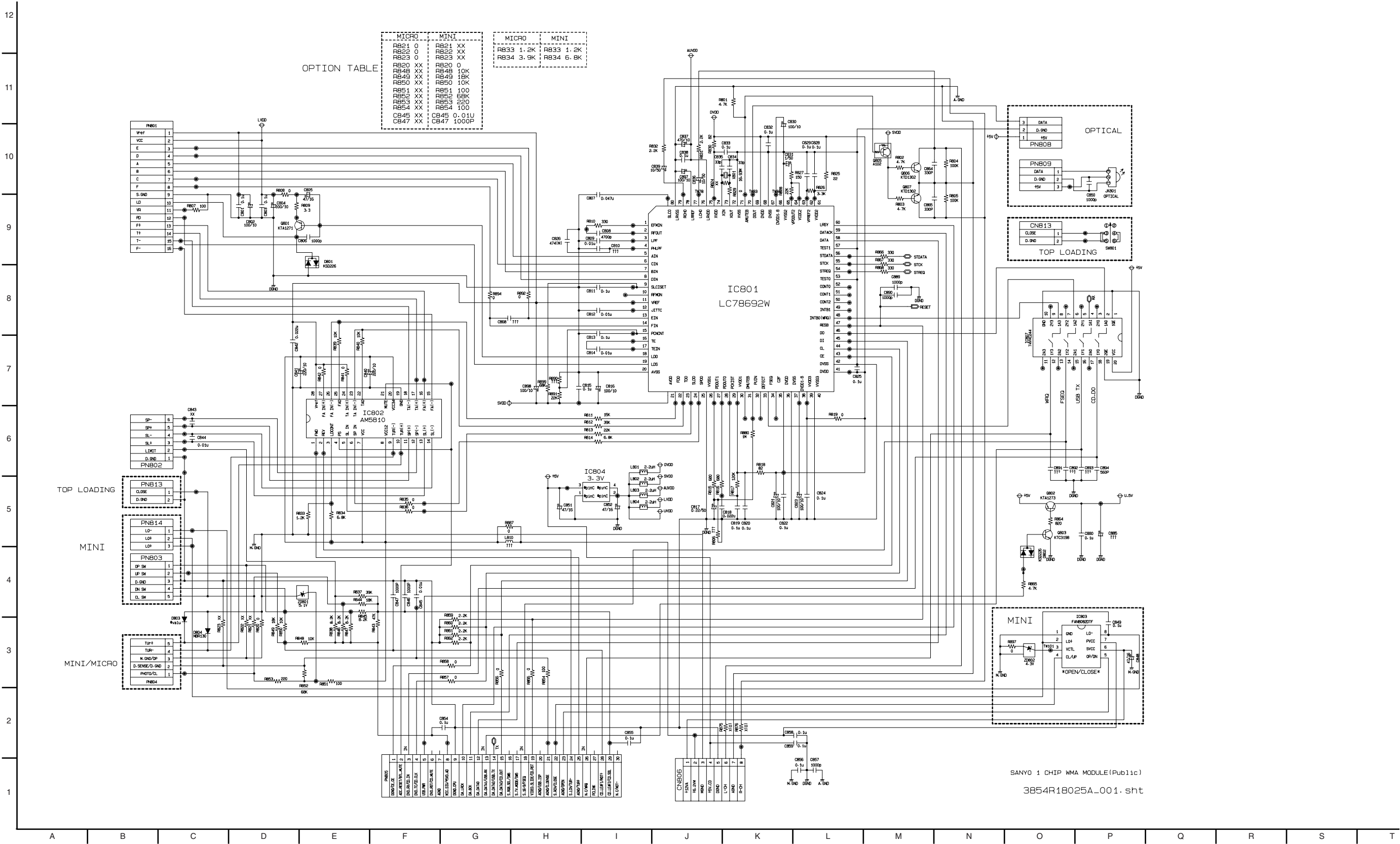
SYMBOL	CONTENTS	DESCRIPTION	
D301	RDS	X	NON RDS
D302	AM STEP	X	9KHz
D303	FM STEP	X	50KHz
D304	BAND1	X	AM/FM
D305	BAND2	X	AM/FM/DIR
D306	JAPAN BAND	X	NON JAPAN BAND
D307	TUNER	X	2CHIP(IC72131)
D308	SCART	X	WITHOUT SCART
D309	USB	X	WITHOUT USB
D310	OPTICAL-IN	X	WITHOUT OPTICAL-IN
D311	OUTPUT POWER	X	30W
D312	CONFIG (SPEAKER)	X	2CH
D313	DECK OPTION	X	A/S+A/R
D314	VOLUME INITIAL	X	LAST MEMORY
D315	BUYER OPTION	X	LG
D316	PICK-UP	X	SAMSUNG
D317	DECO LED	X	LED LIGHT



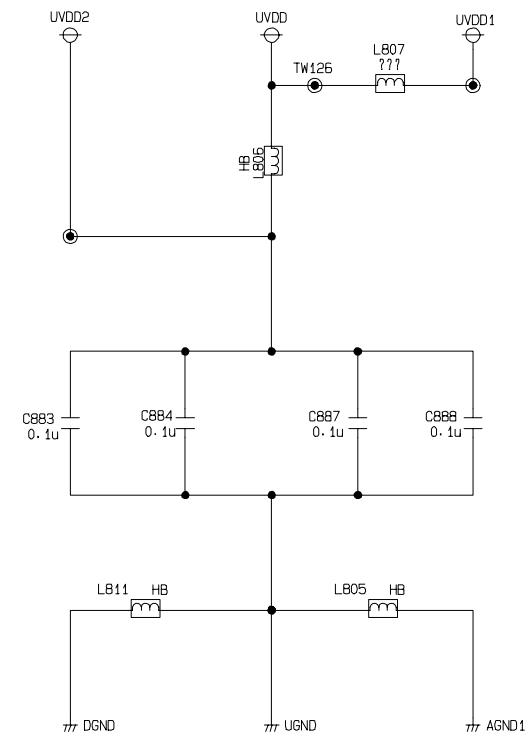
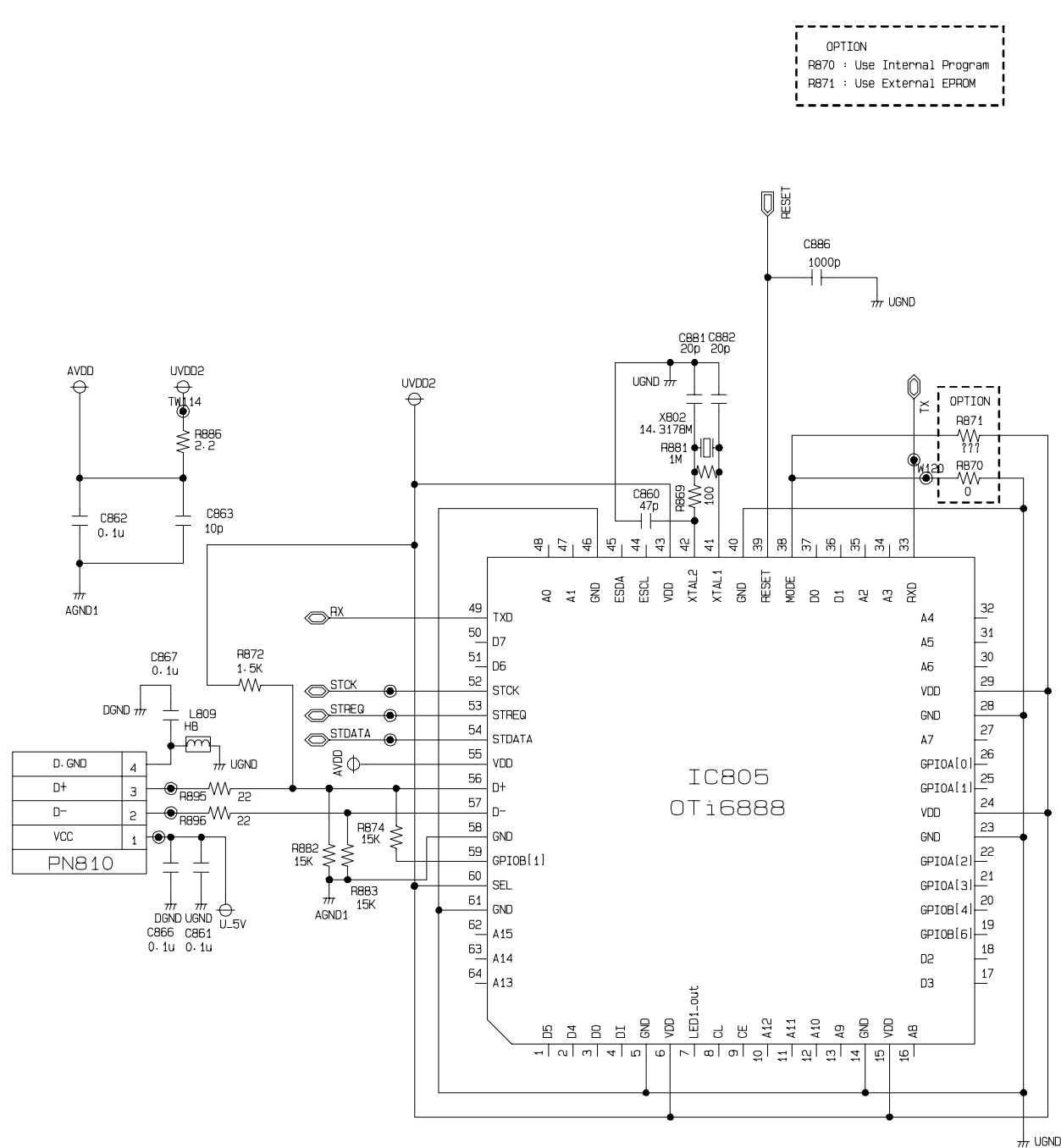
• DECK SCHEMATIC DIAGRAM



• CD SCHEMATIC DIAGRAM



• USB SCHEMATIC DIAGRAM



USB Part

3854R18025A_002.sht

• SMPS SCHEMATIC DIAGRAM

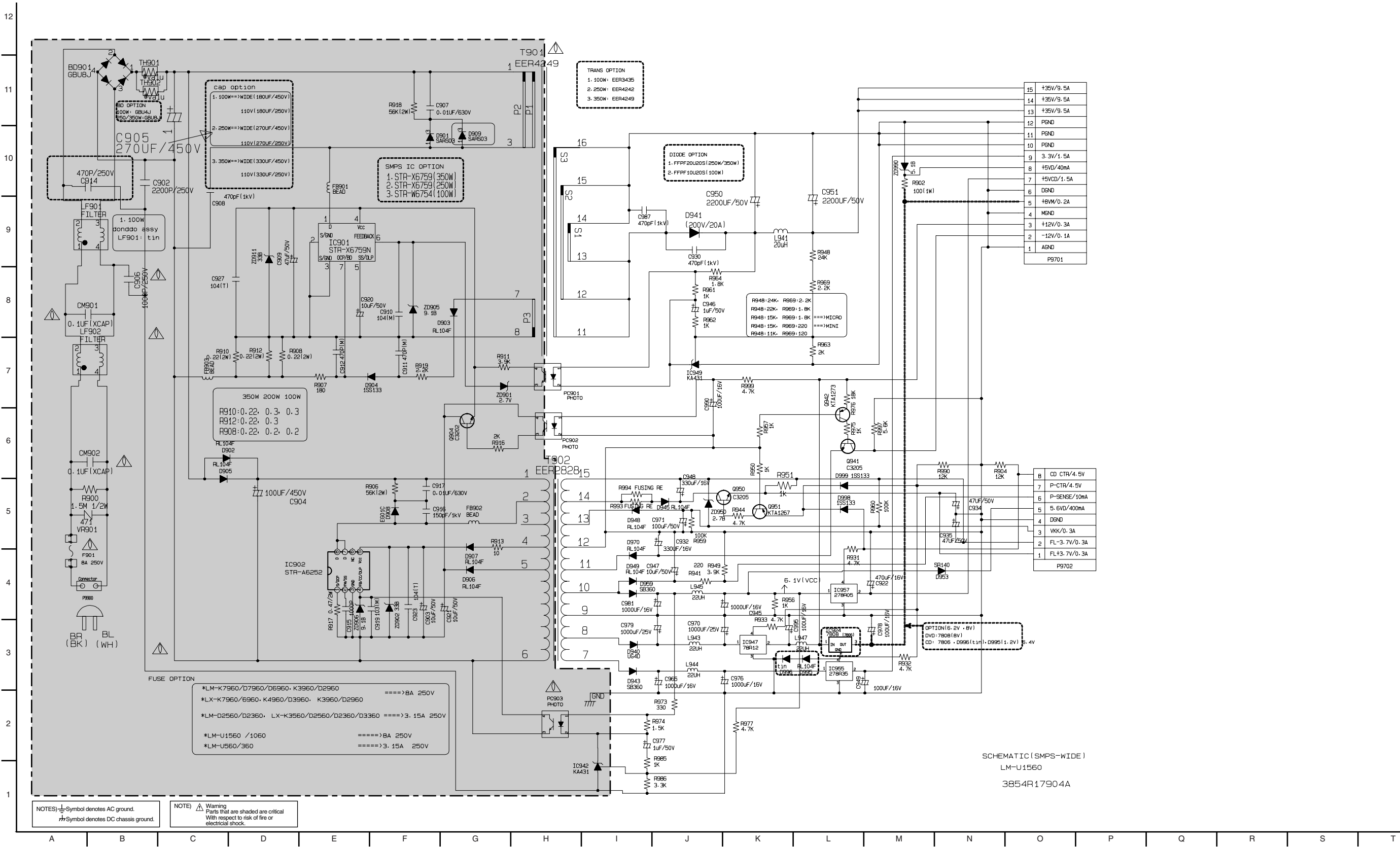
IMPORTANT SAFETY NOTICE

WHEN SERVICING THIS CHASSIS, UNDER NO CIRCUMSTANCES SHOULD THE ORIGINAL DESIGN BE MODIFIED OR ALTERED WITHOUT PERMISSION FROM THE LG ELECTRONICS CORPORATION. ALL COMPONENTS SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL CIR-

CUIT. 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.

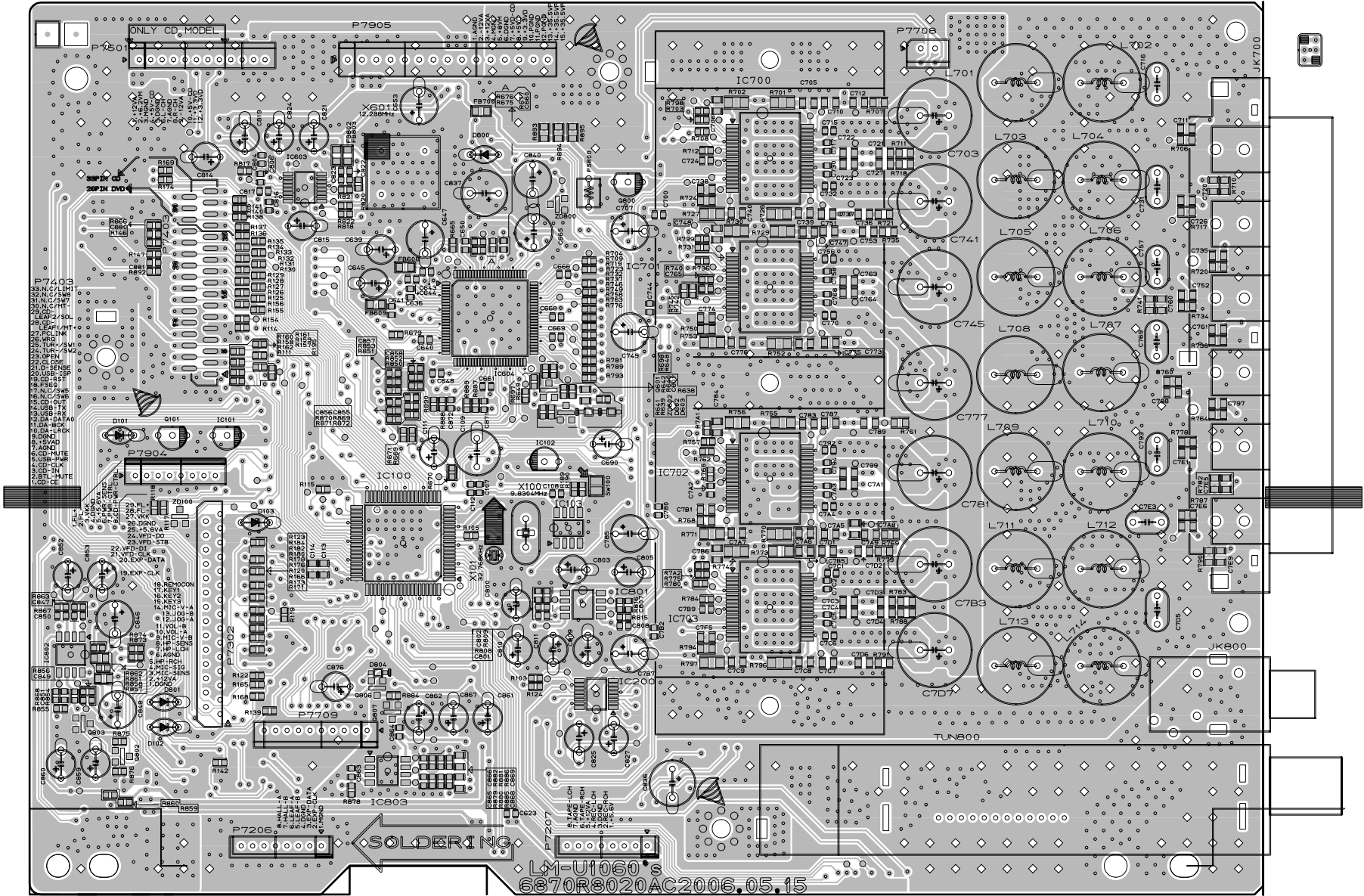
NOTE :

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.

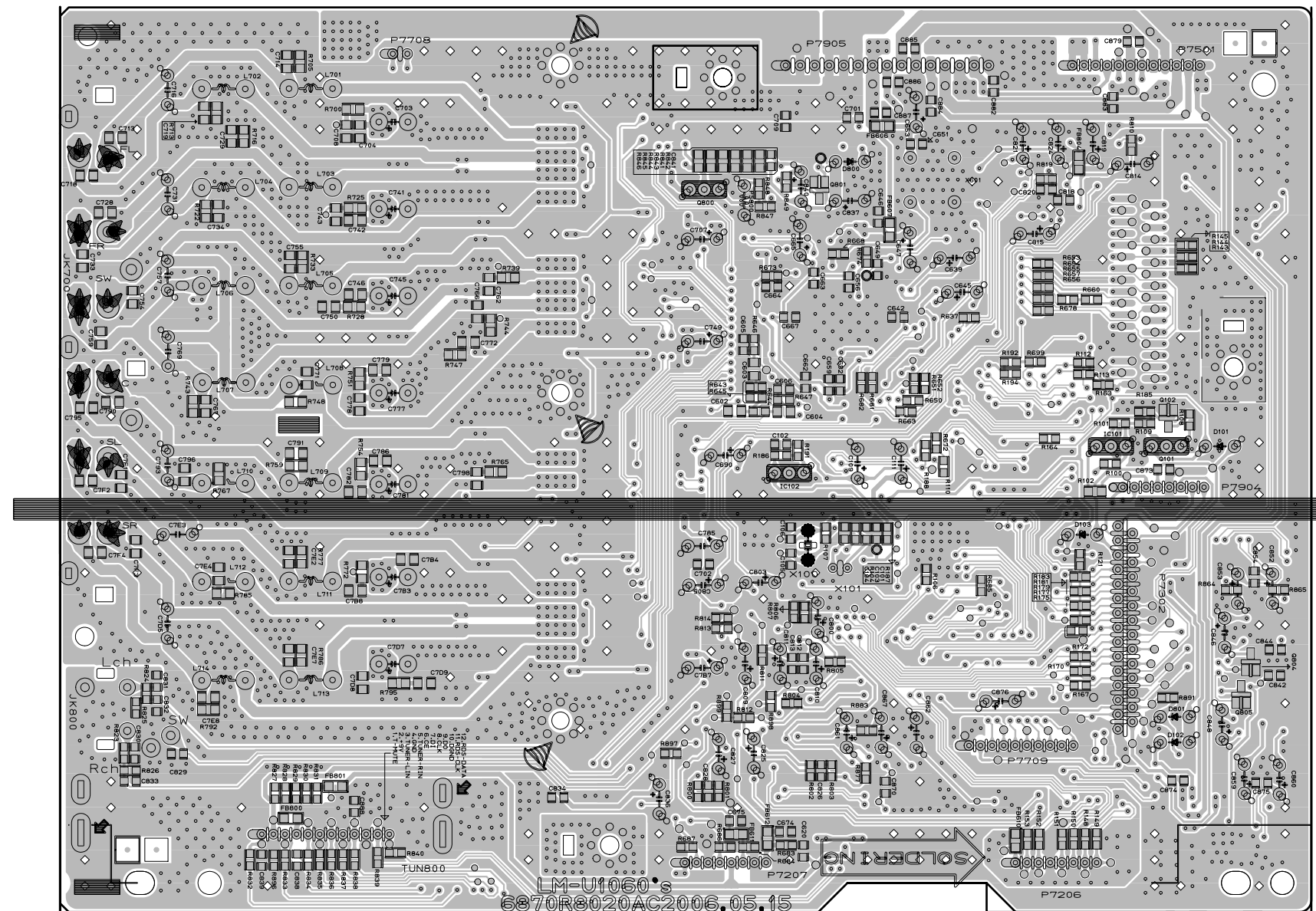


❑ PRINTED CIRCUIT DIAGRAMS

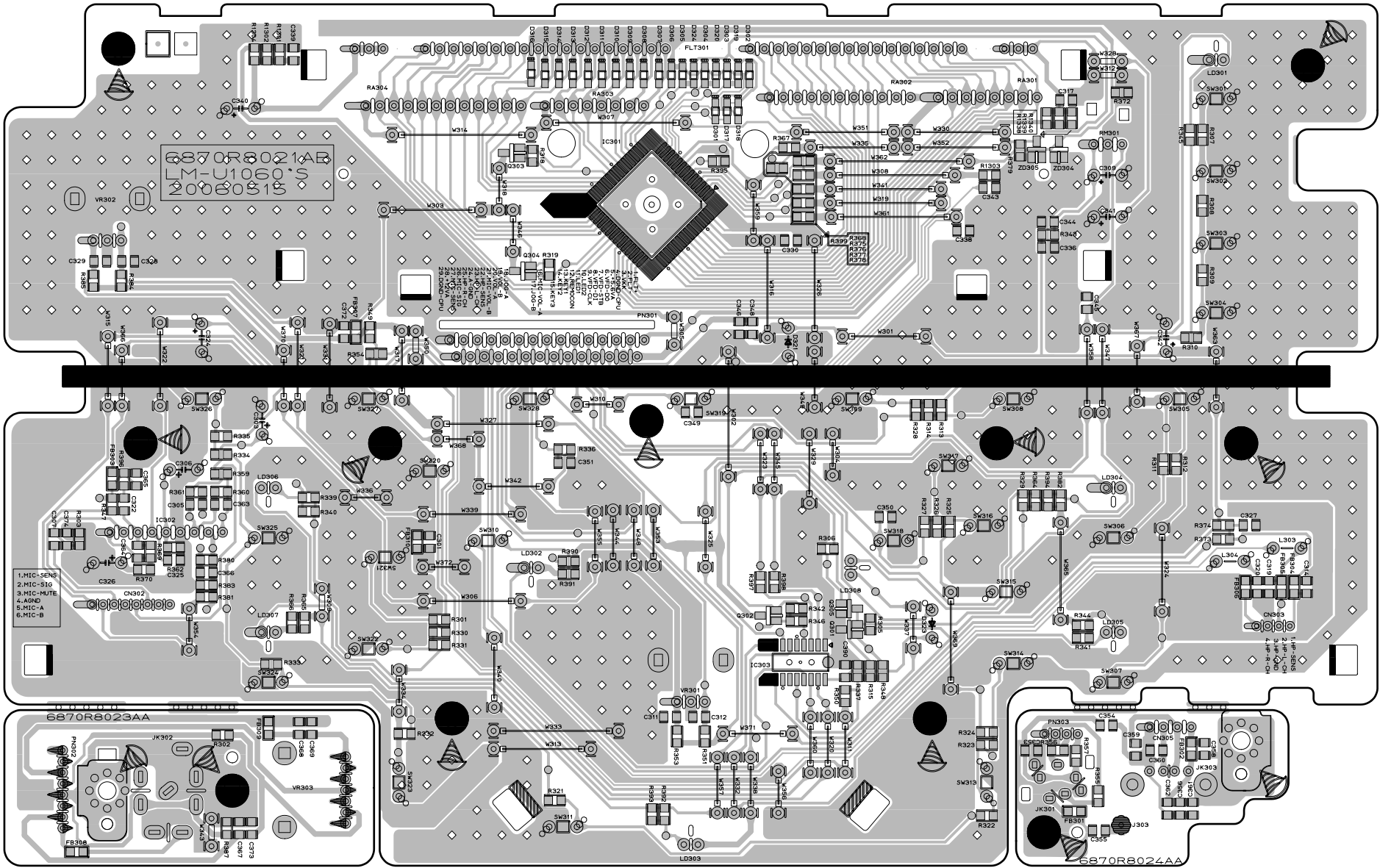
• MAIN P.C. BOARD (TOP VIEW)



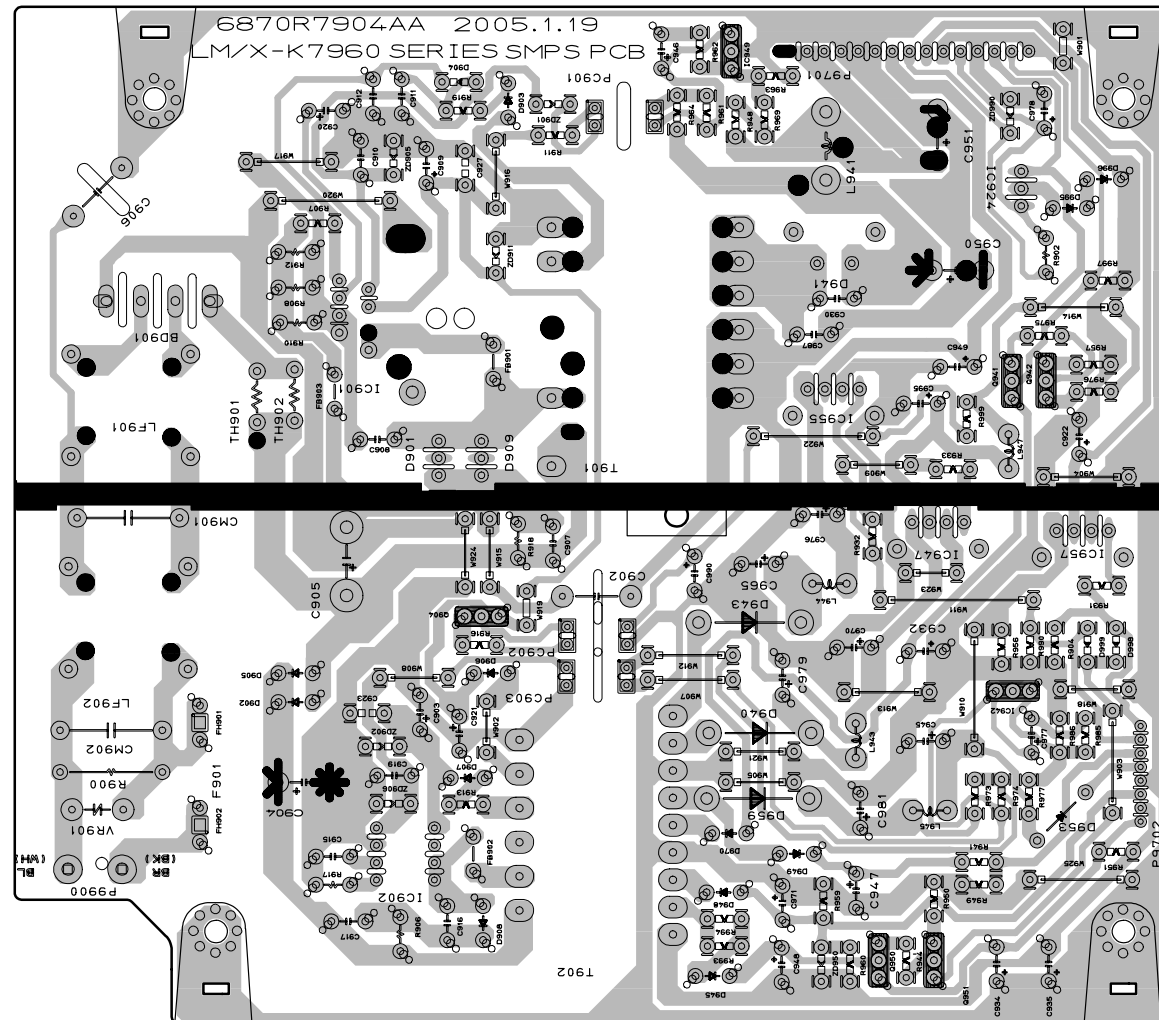
- **MAIN P.C. BOARD (BOTTOM VIEW)**



• FRONT P.C. BOARD

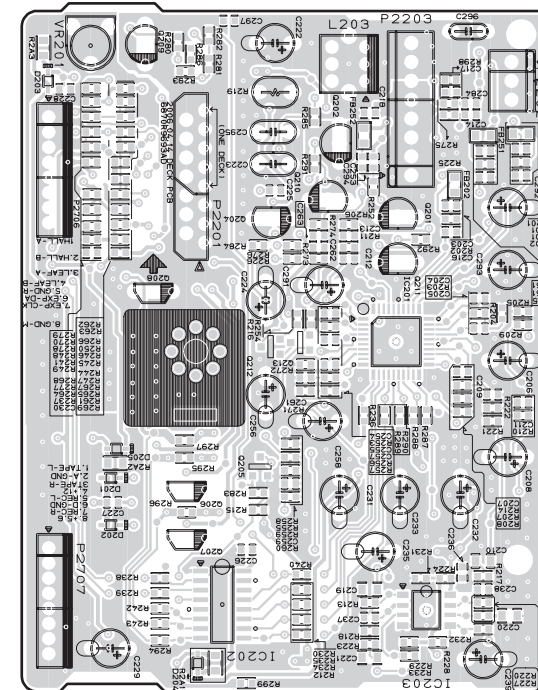


- **SMPS P.C. BOARD**

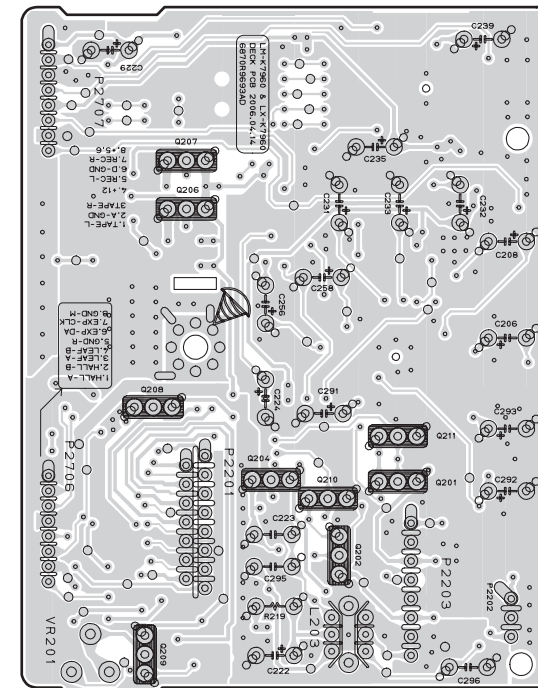


- **DECK P.C. BOARD**

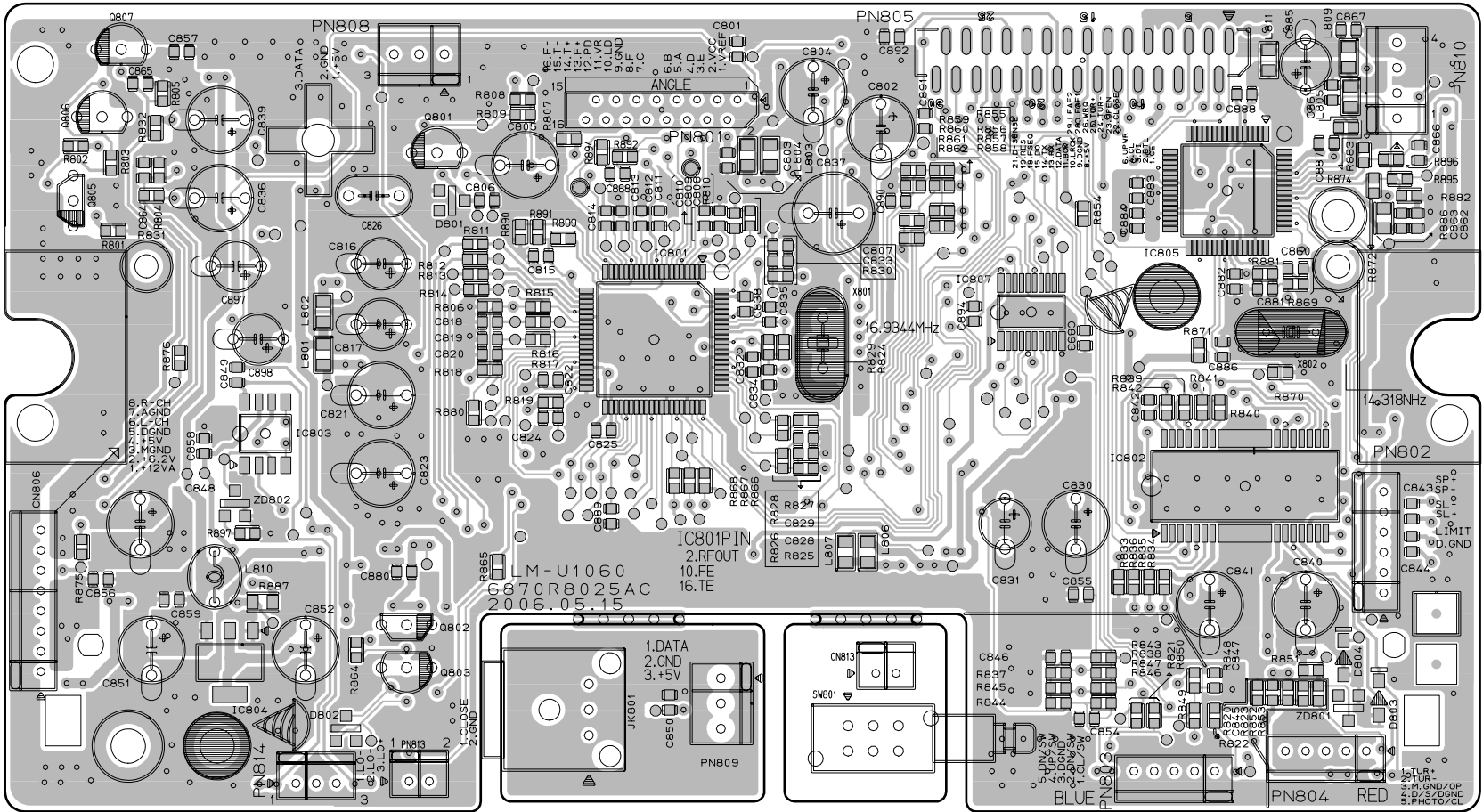
(TOP VIEW)



(BOTTOM VIEW)



• CD P.C. BOARD (TOP VIEW)



MEMO

Lined area for writing on the left page.

MEMO

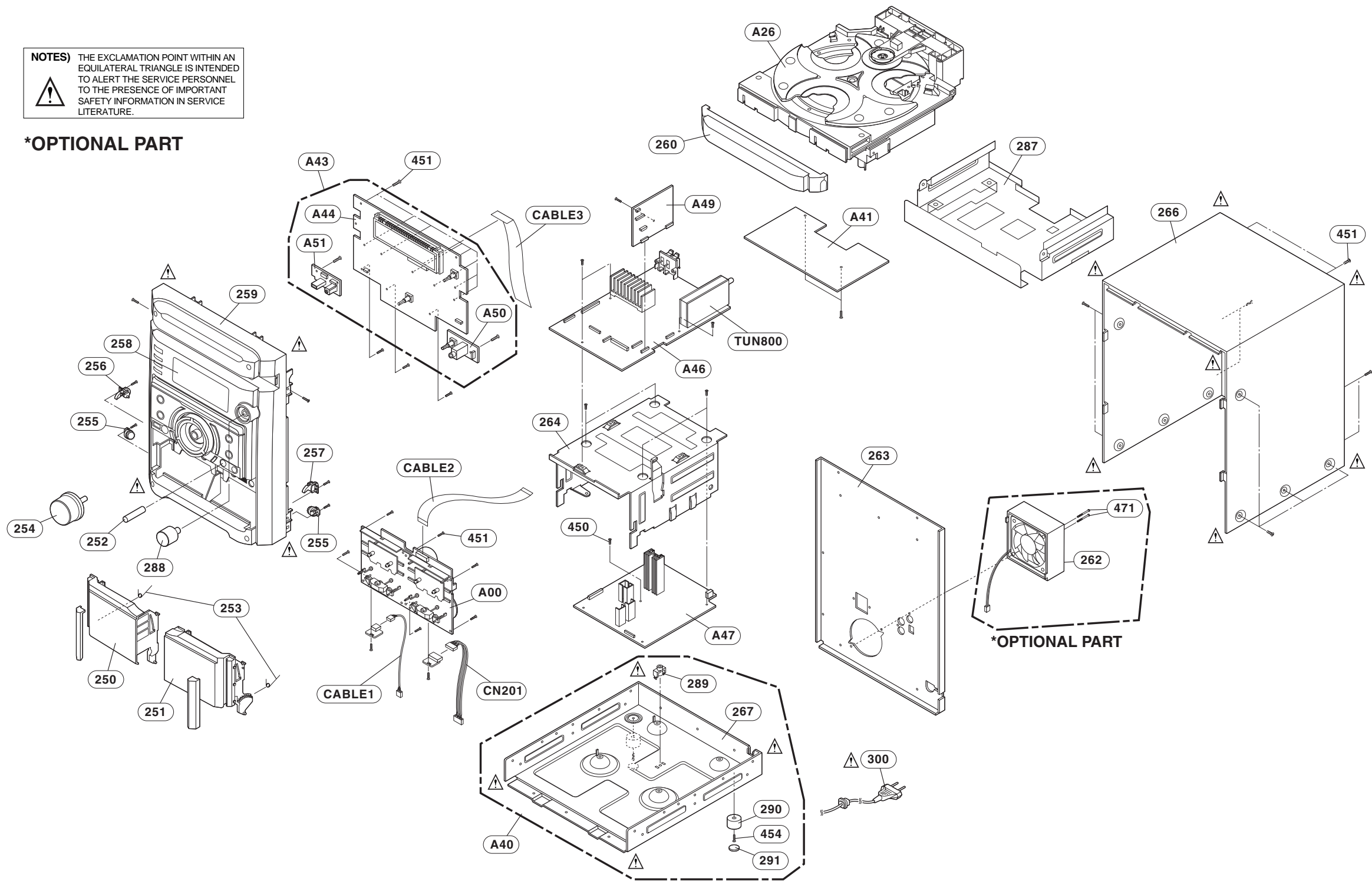
Lined area for writing on the right page.

SECTION 3. EXPLODED VIEWS

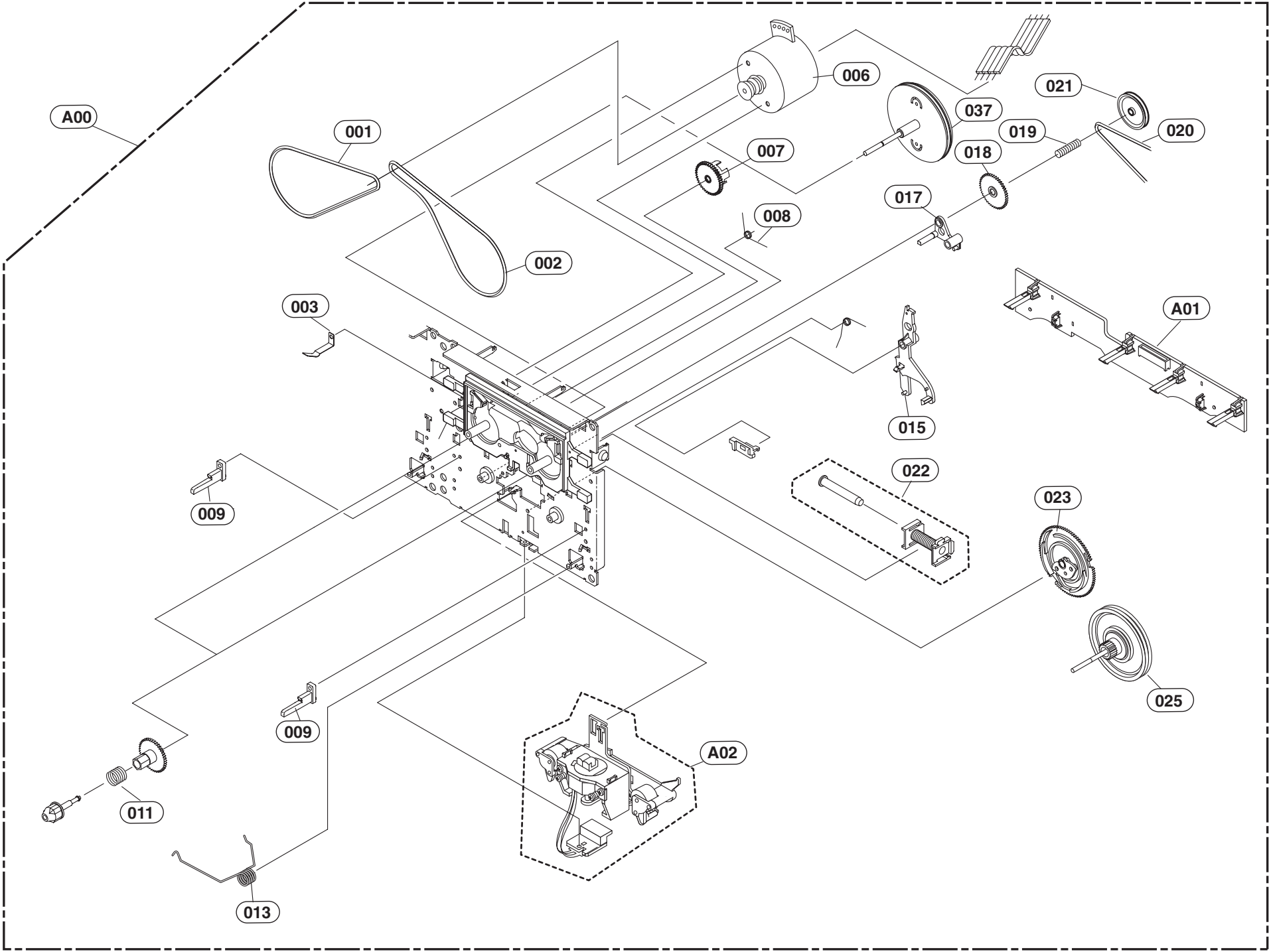
CABINET AND MAIN FRAME SECTION

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.

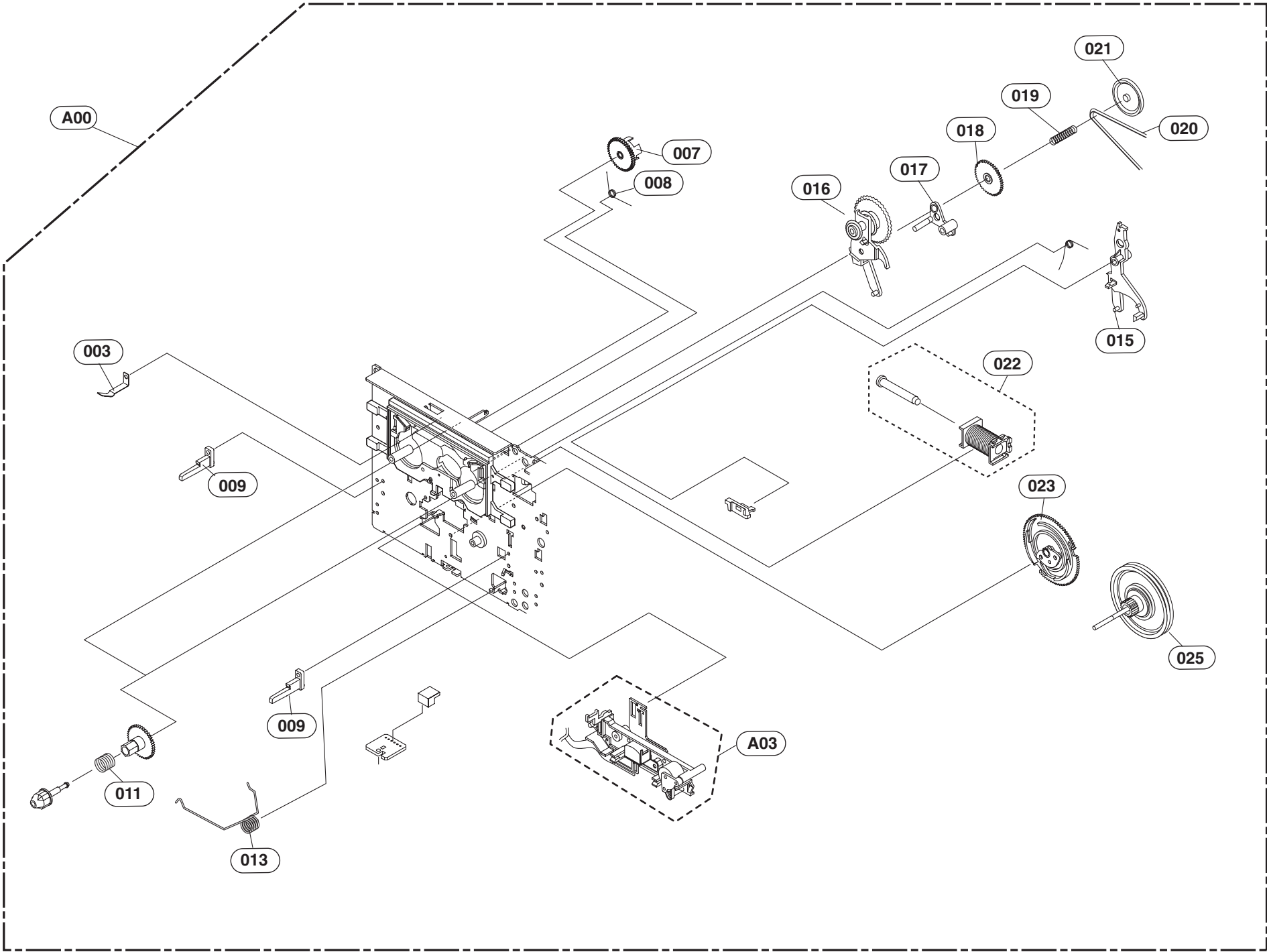
*OPTIONAL PART



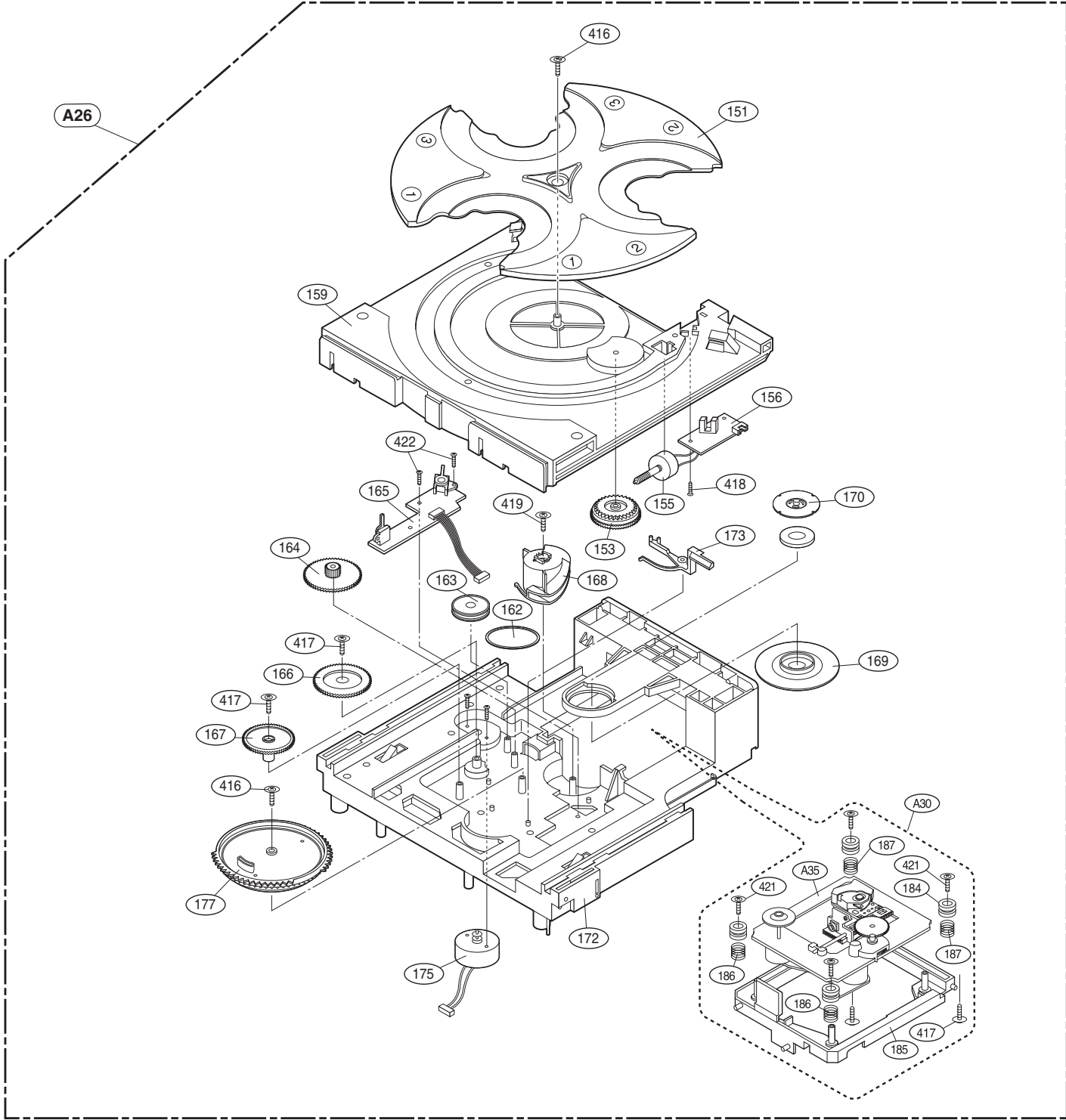
□ TAPE DECK MECHANISM (A/R & A/S : LEFT A/S DECK)



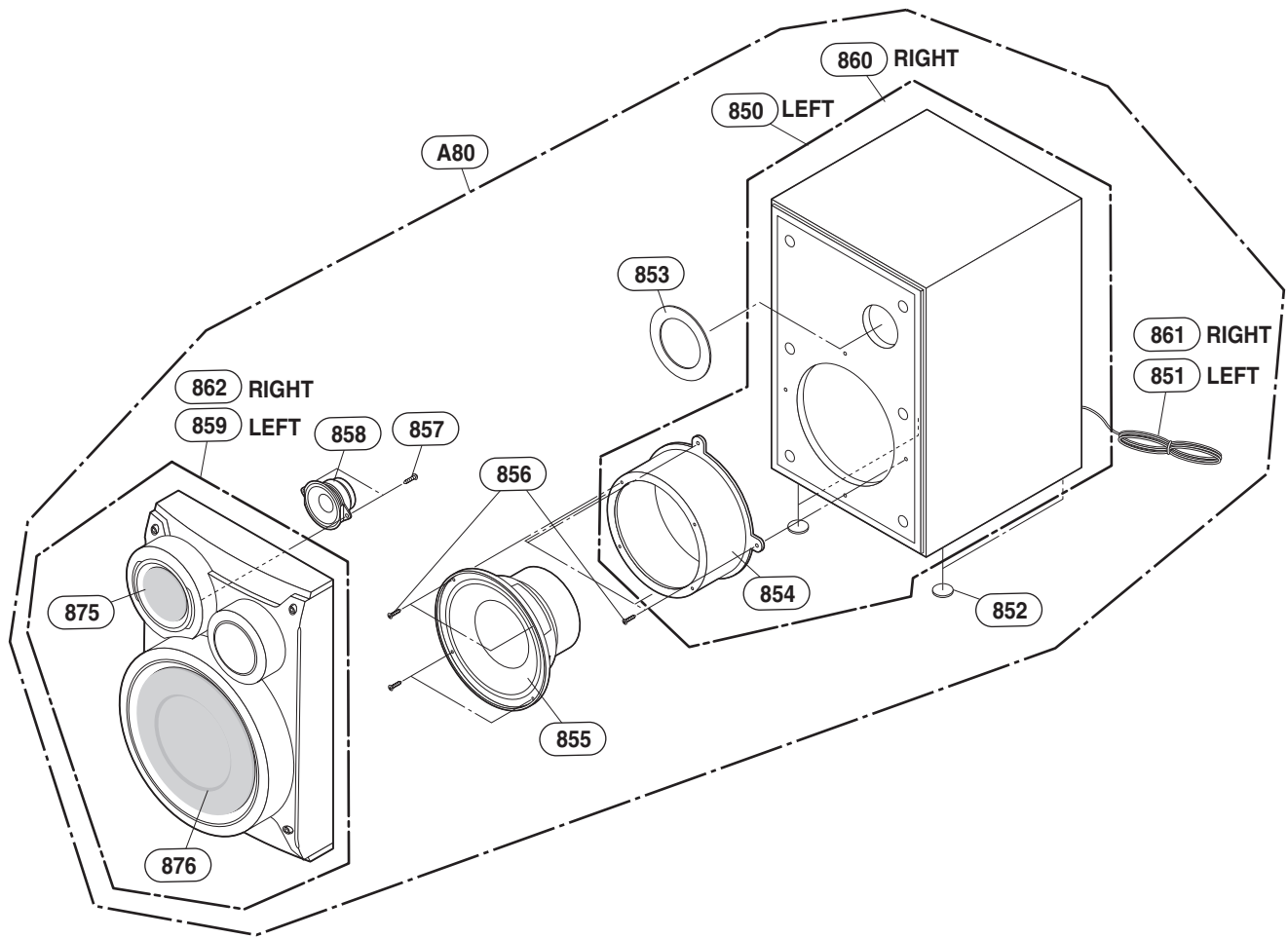
□ TAPE DECK MECHANISM (A/R & A/S : RIGHT A/R DECK)



DECK MECHANISM EXPLODED VIEWS



❑ SPEAKER (MODEL:LMS-U1060)



MEMO

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.