

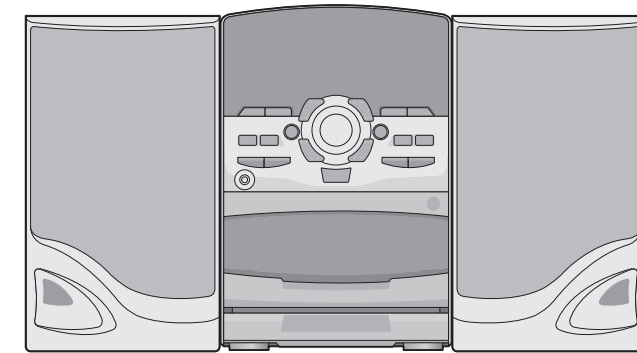
SERVICE MANUAL MODEL: FFH-M217X, FE-M217E



MP3 CD MICRO SYSTEM **SERVICE MANUAL**

CAUTION

BEFORE SERVICING THE UNIT, READ THE "SUMMARY" IN THIS MANUAL.



MODEL: FFH-M217X, FE-M217E



LG Electronics Inc.

[CONTENTS]

○ SECTION 1. GENERAL

- SERVICING PRECAUTIONS 1-2
- ESD PRECAUTIONS 1-4
- SPECIFICATION 1-5

○ SECTION 2. ELECTRICAL SECTION

- ADJUSTMENTS 2-1
- TROUBLESHOOTING 2-2
- WAVEFORMS OF MAJOR CHECK POINT 2-18
- INTERNAL BLOCK DIAGRAM OF ICs 2-20
- BLOCK DIAGRAM 2-25
- SCHEMATIC DIAGRAMS 2-27
- WIREING DIAGRAM 2-29
- PRINTED CIRCUIT DIAGRAMS 2-33

○ SECTION 3. EXPLODED VIEWS

- CABINET AND MAIN FRAME SECTION 3-1
- TAPE DECK MECHANISM: SINGLE AUTO REVERSE DECK 3-3
- OPTION PICK-UP CARRIAGE 3-5

○ SECTION 4. SPEAKER PART

- SPEAKER PART 4-1

○ SECTION 5. REPLACEMENT PARTS LIST

- REPLACEMENT PARTS LIST 5-1

SECTION 1. GENERAL

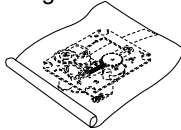
❑ SERVICING PRECAUTIONS

NOTES REGARDING HANDLING OF THE PICK-UP

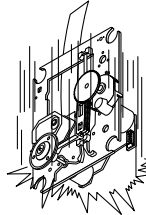
1. Notes for transport and storage

- 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

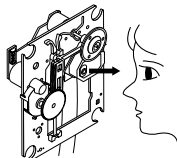


Drop impact



2. Repair notes

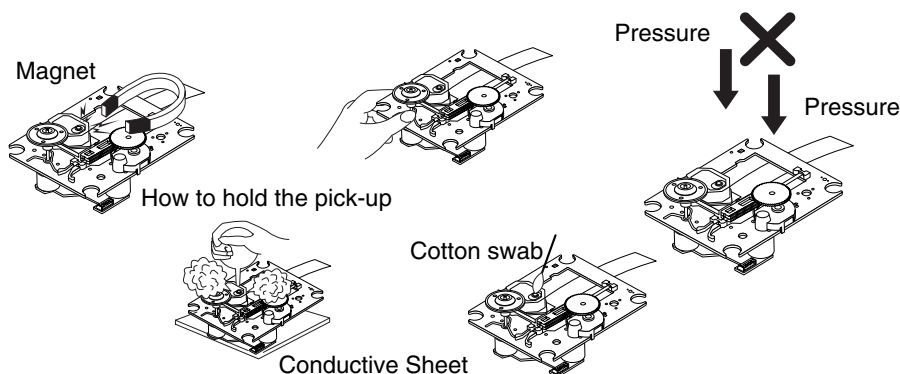
- 1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
- 2) The pick-up should always be handled correctly and carefully, taking care to avoid external pressure and impact. If it is subjected to strong pressure or impact, the result may be an operational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

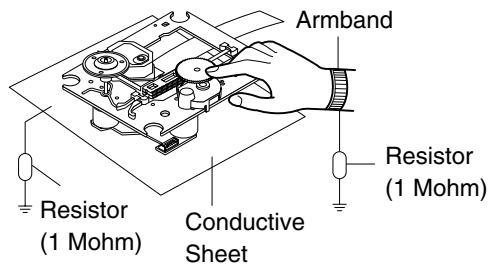
NOTES REGARDING COMPACT DISC PLAYER REPAIRS

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 (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.



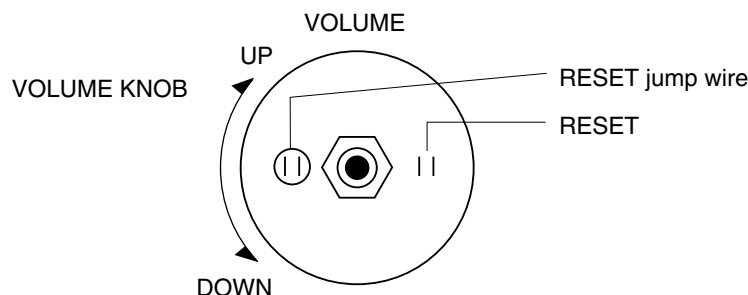
CLEARING MALFUNCTION

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 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 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.

SPECIFICATIONS

General		Power supply	Refer to the back panel of the unit
		Power consumption	50W
		Mass	4.2kg
		External dimensions(W x H x D)	161 x 249 x 275mm
CD		Frequency Response	40 -18000Hz
		Signal-to-noise ratio	70dB
		Dynamic range	70dB
TUNER	FM	Tuning Range	87.5 -108.0MHz or 65 ~ 74MHz, 87.5 ~108.0 MHz
		Intermediate Frequency	10.7 MHz
		Signal-to-noise ratio	60/55 dB
		Frequency Response	60 -10000Hz
	AM	Tuning Range	522-1620kHz or 520-1720kHz
		Intermediate Frequency	450kHz
		Signal-to-noise ratio	35 dB
		Frequency Response	100 -1800 Hz
AMP		Output Power	20W + 20W
		T.H.D	0.2%
		Frequency Response	40-25000Hz
		Signal-to-noise ratio	80dB
TAPE		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	250-8000Hz
		Signal-to-noise ratio	43dB(P/B)/43dB(R/P)
		Channel Separation	50dB(P/B)/45dB(R/P)
		Erase Ratio	55dB (MTT-5511)
Speaker		Type	2 Way 2 Speaker
		Impedance	6Ω
		Frequency Response	85-20000Hz
		Sound Pressure Level	88dB/W(1m)
		Rated Input Power	20W
		Max.Input Power	40W
		Net Dimension(W x H x D)	153 x 240 x 220mm
		Net Weight(1EA)	2.24kg

NOTE : Specification are subject to change without notice in the course of product improvement.

MEMO

[illegible]

SECTION 2. ELECTRICAL SECTION

ADJUSTMENTS

This set has been aligned at the factory and normally will not require further adjustment. As a result, it is not recommended that any attempt is made to modificate any circuit. If any parts are replaced or if anyone tampers with the adjustment, realignment may be necessary.

IMPORTANT

1. Check Power-source voltage.
2. Set the function switch to band being aligned.
3. Turn volume control to minimum unless otherwise noted.
4. Connect low side of signal source and output indicator to chassis ground unless otherwise specified.
5. Keep the signal input as low as possible to avoid AGC and AC action.

TAPE DECK ADJUSTMENT

1. AZIMUTH ADJUSTMENT

Deck Mode	Test Tape	Test Point	Adjustment	Adjust for
Palyback	MTT-114	Speaker Out	DECK Screw Azimuth Screw	Maximum

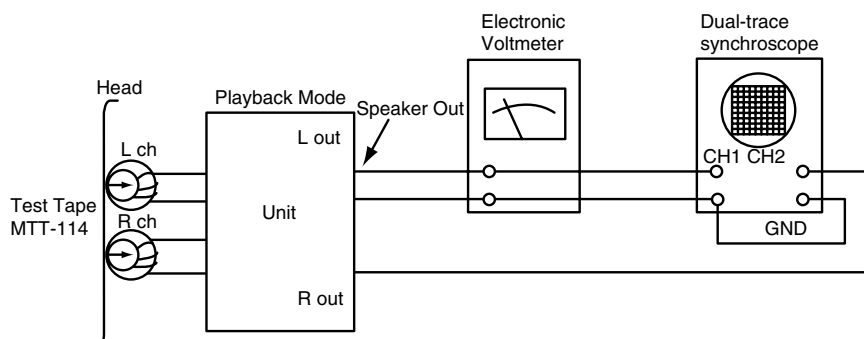
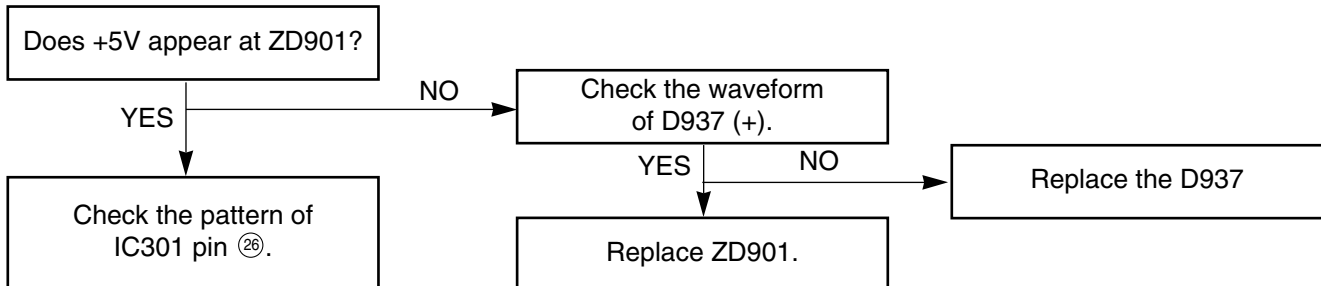


Figure 1. Azimuth Adjustment Connection Diagram

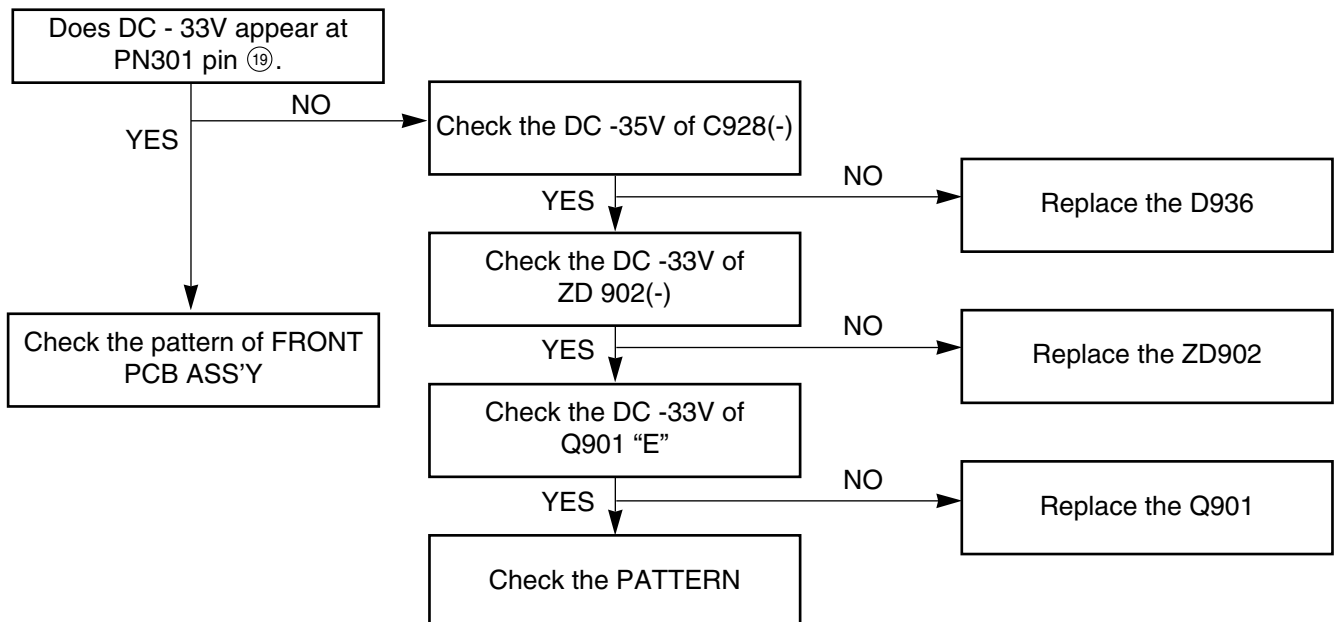
❑ TROUBLESHOOTING

• AUDIO PART

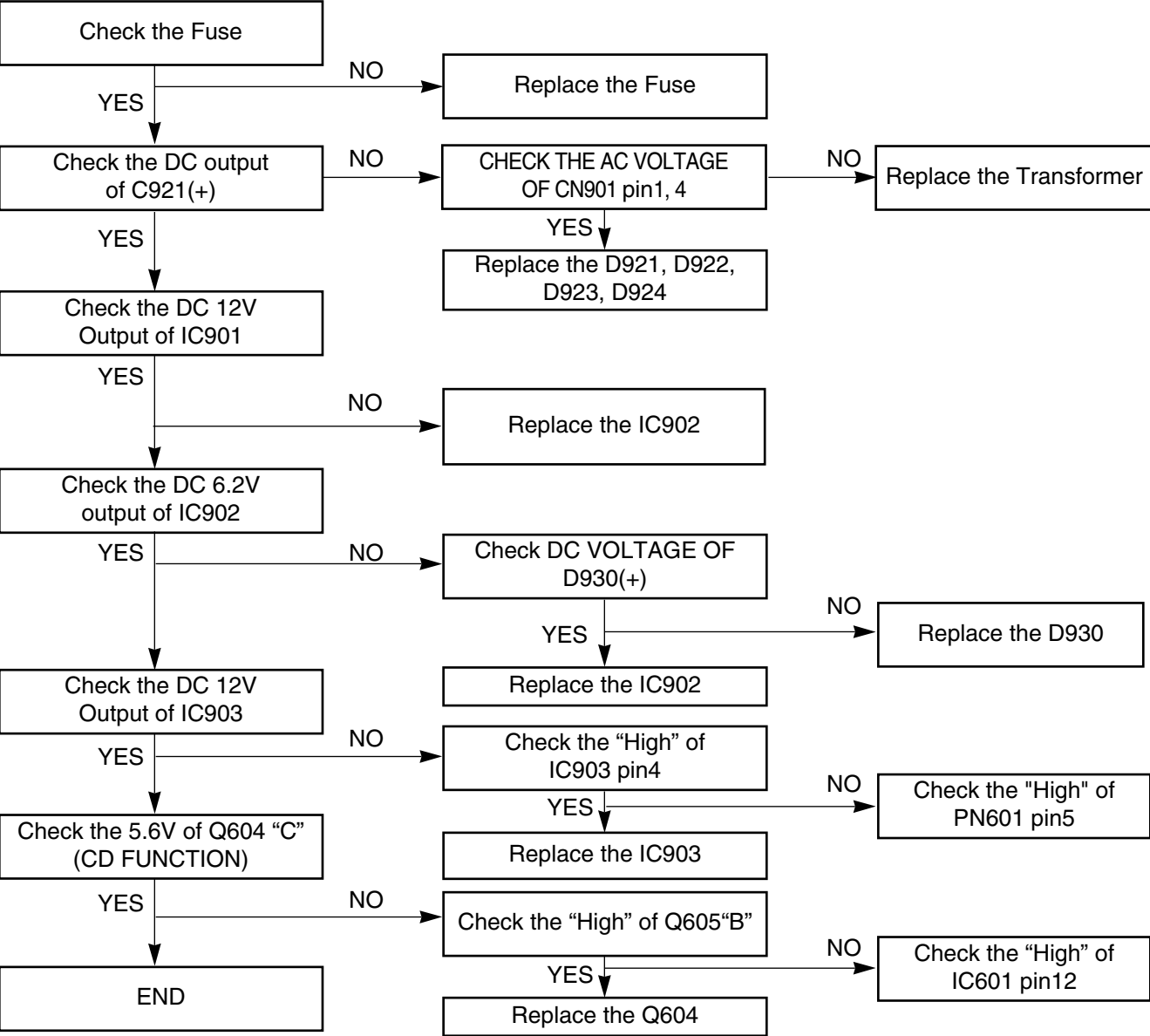
P-SENS PART



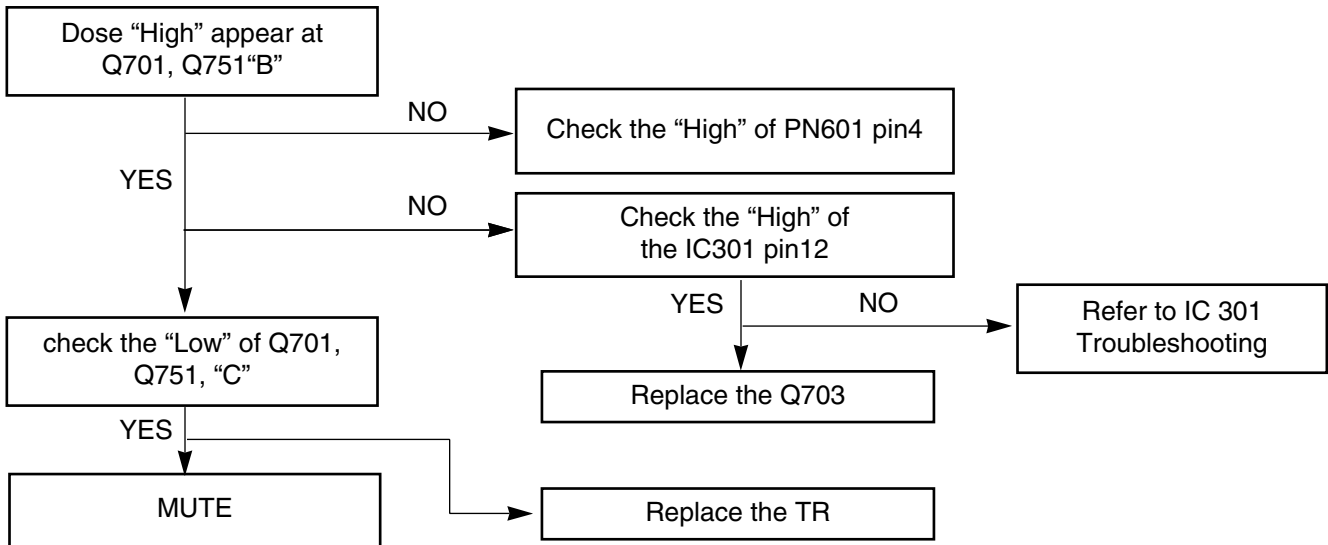
VKK PART



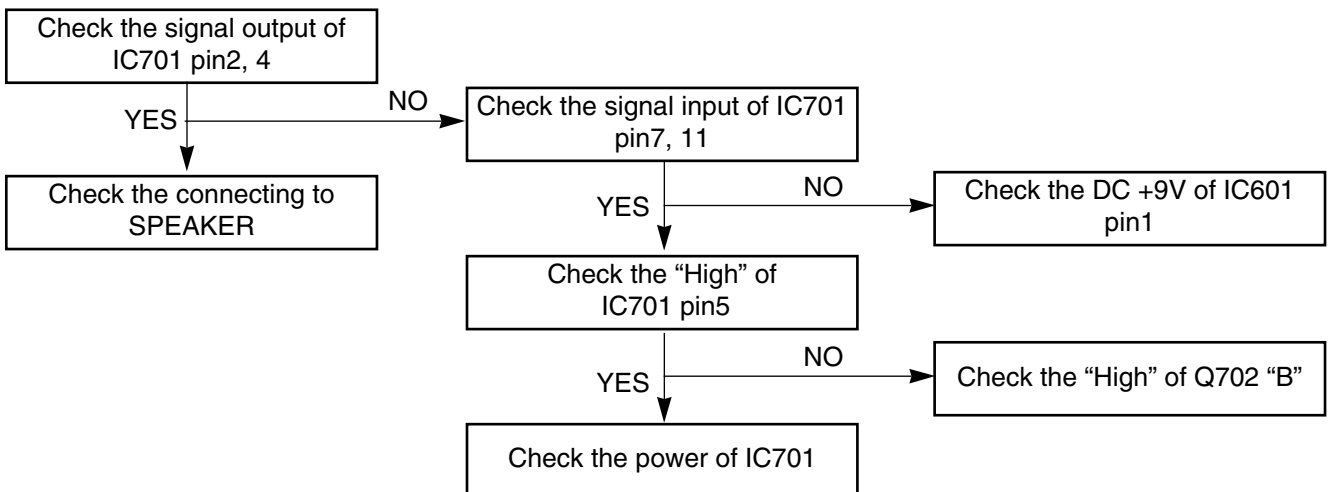
POWER CIRCUIT



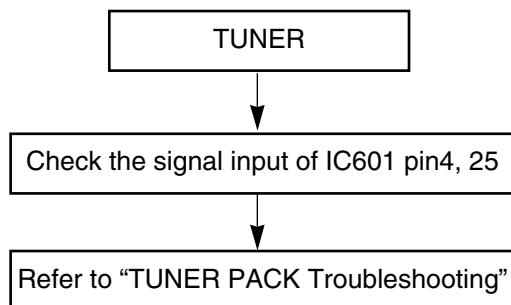
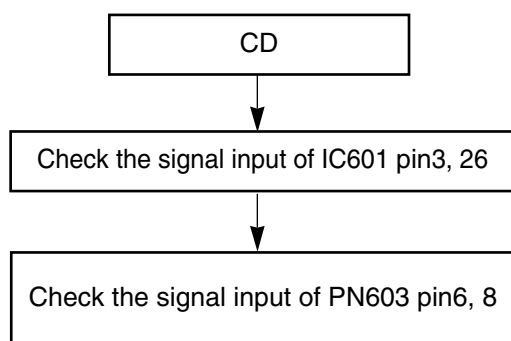
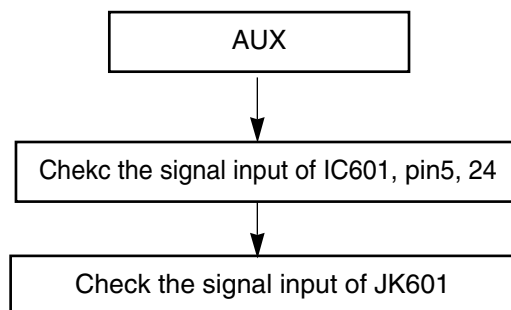
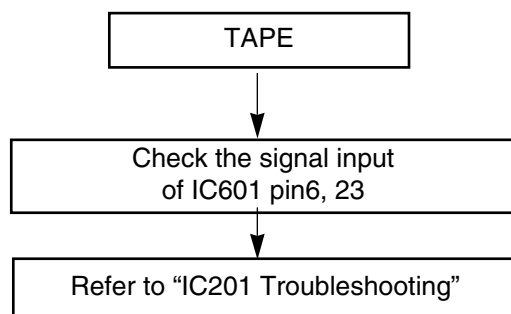
MUTING CIRCUIT (MUTE)



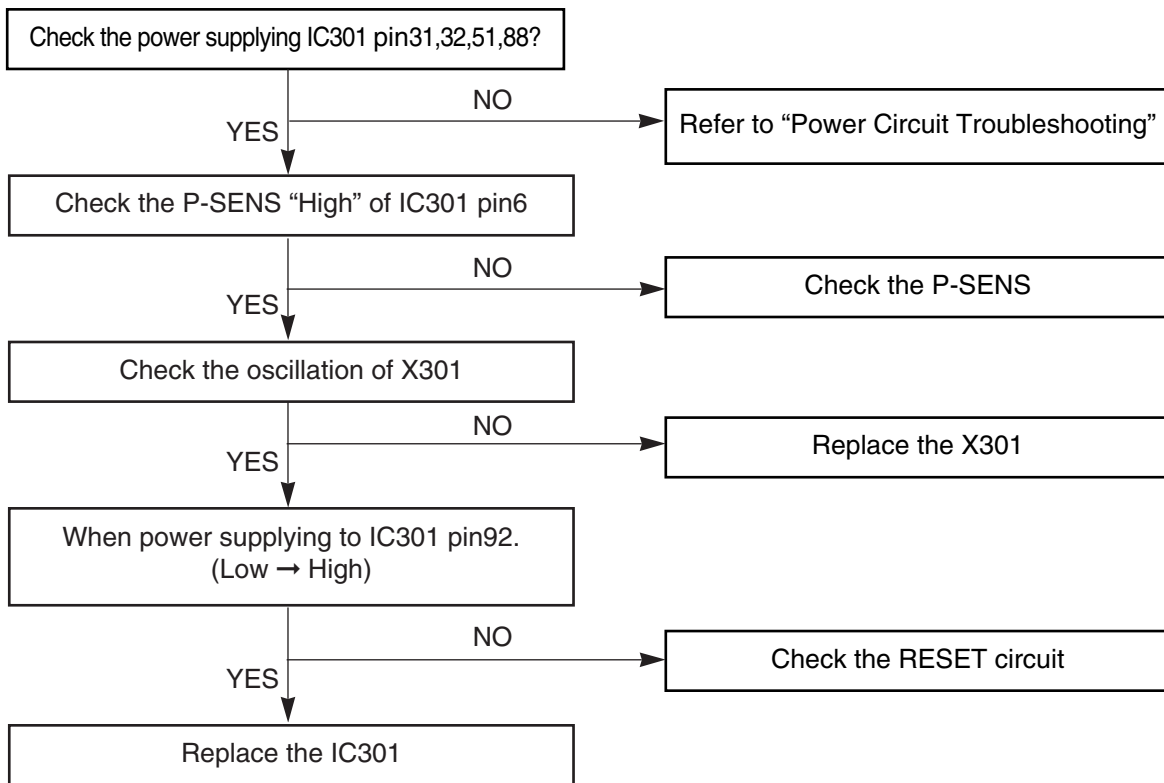
AUDIO ABNORMAL



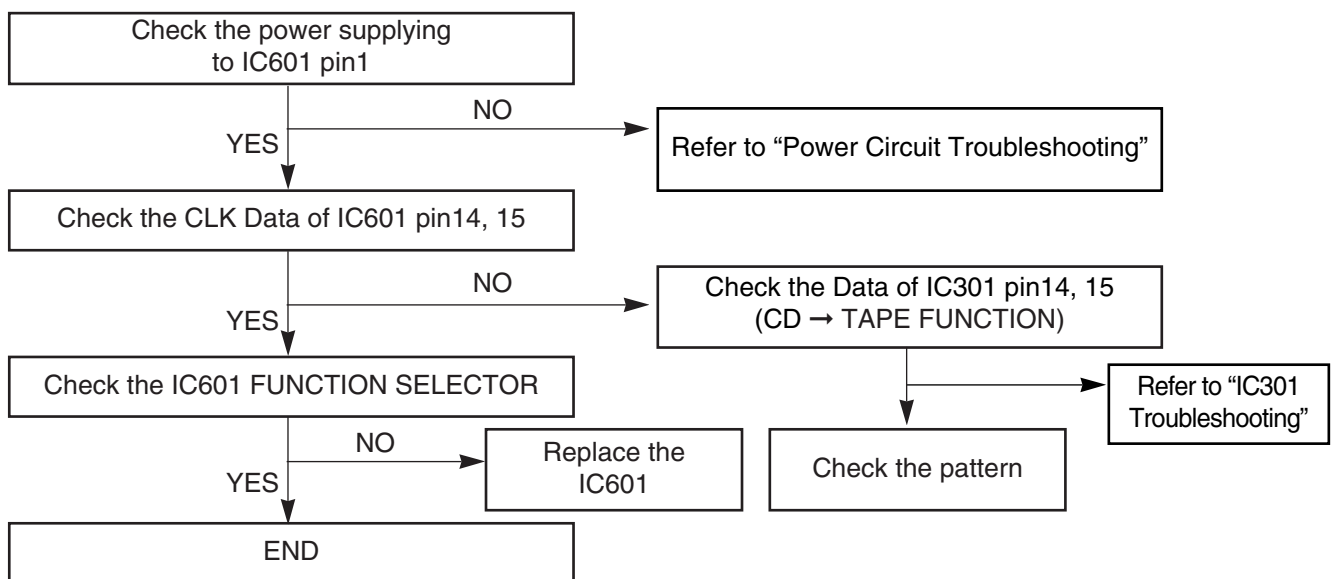
FUNCTION MODE AUDIO ABNORMAL



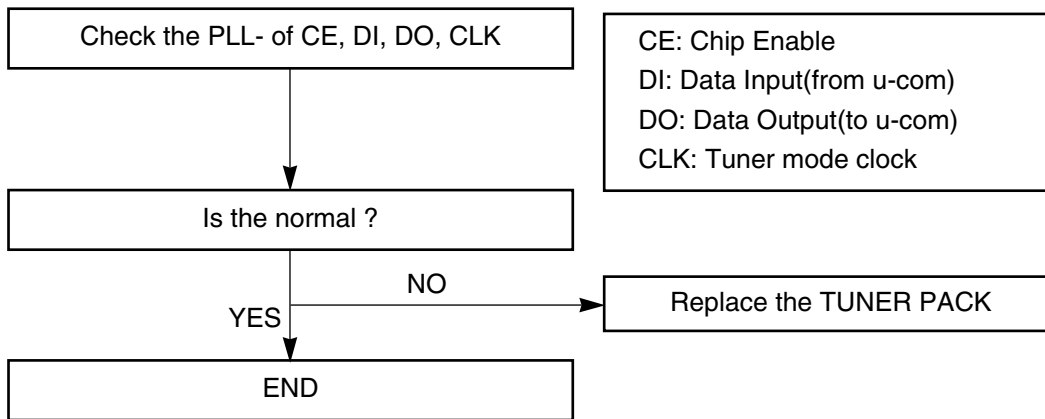
IC301 TROUBLESHOOTING



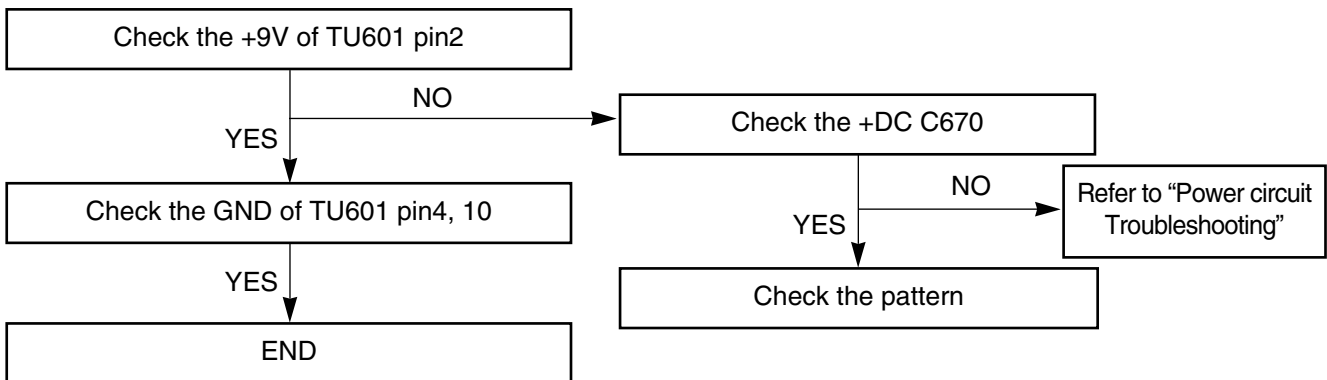
IC601 TROUBLESHOOTING



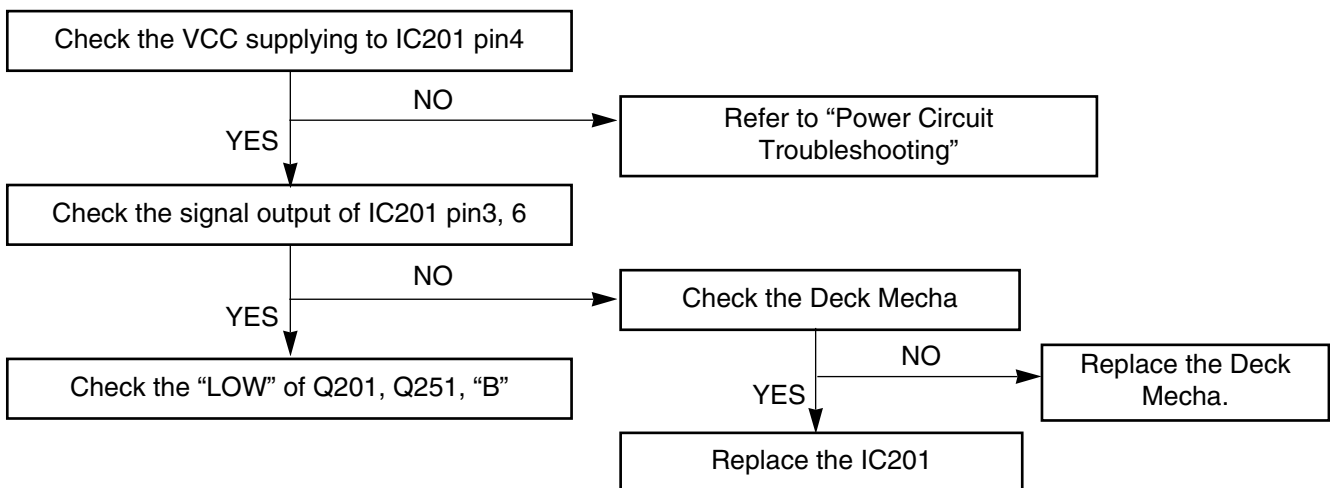
TUNER PACK TROUBLESHOOTING



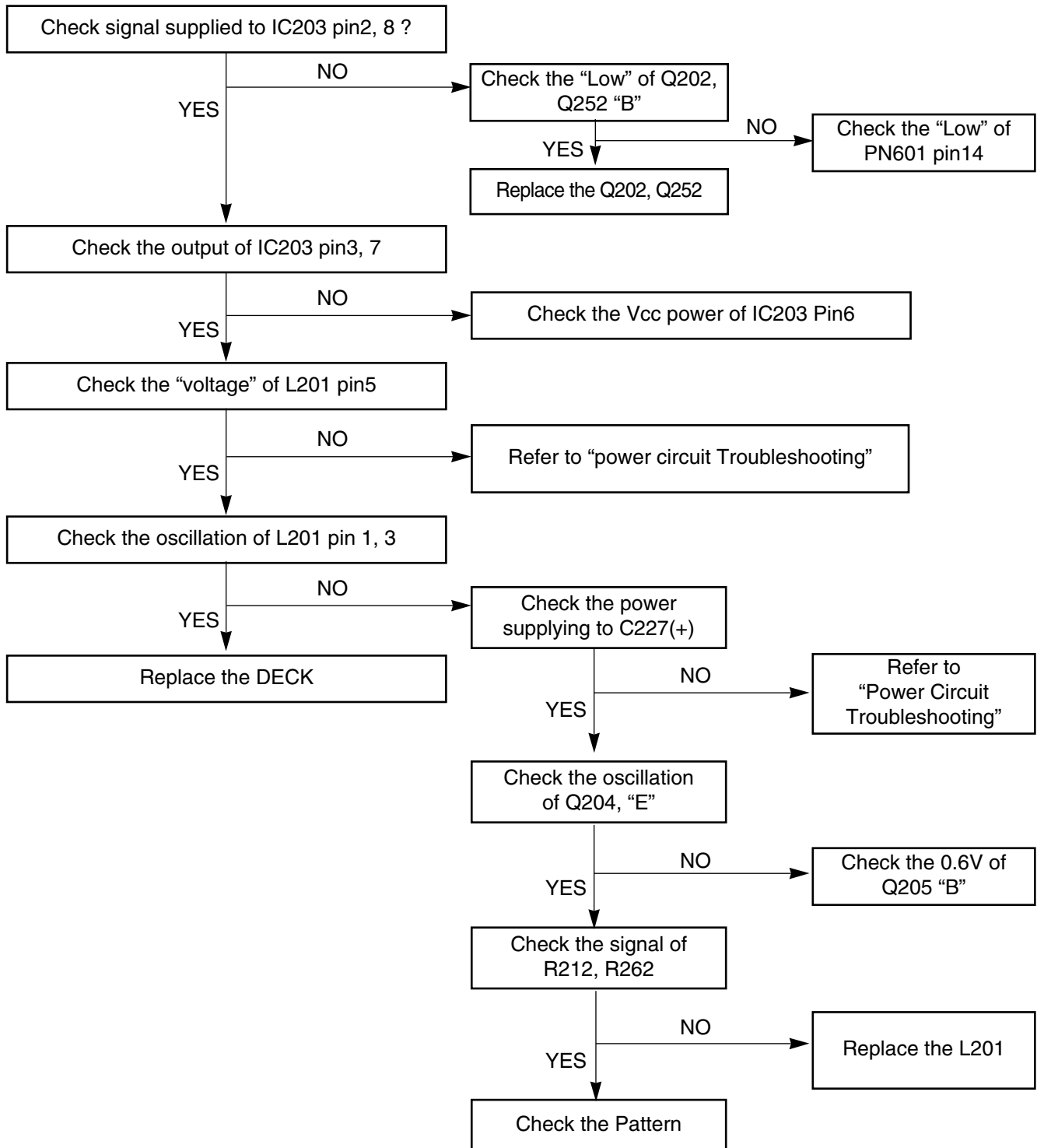
TUNER PACK POWER TROUBLESHOOTING



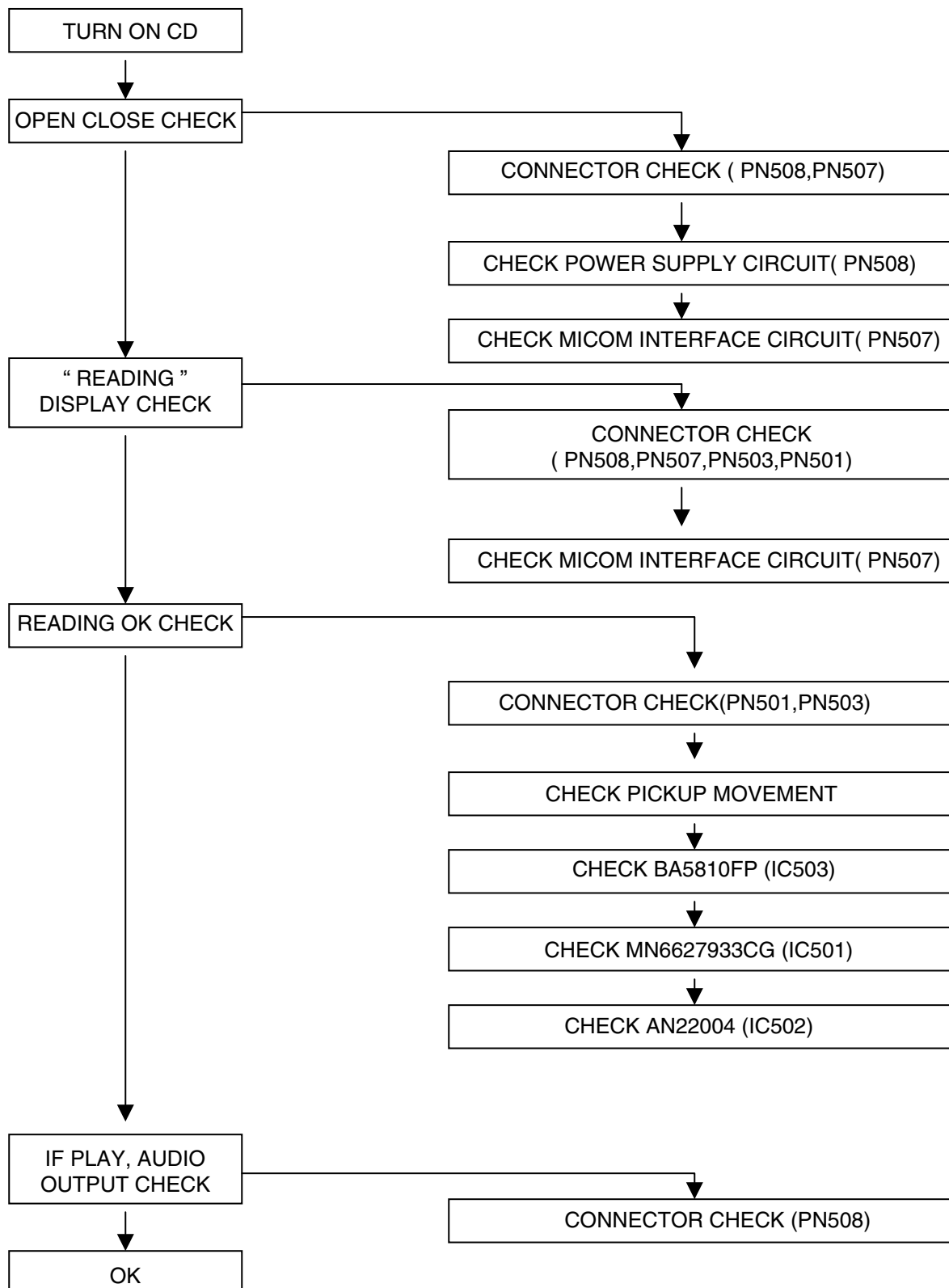
PLAY



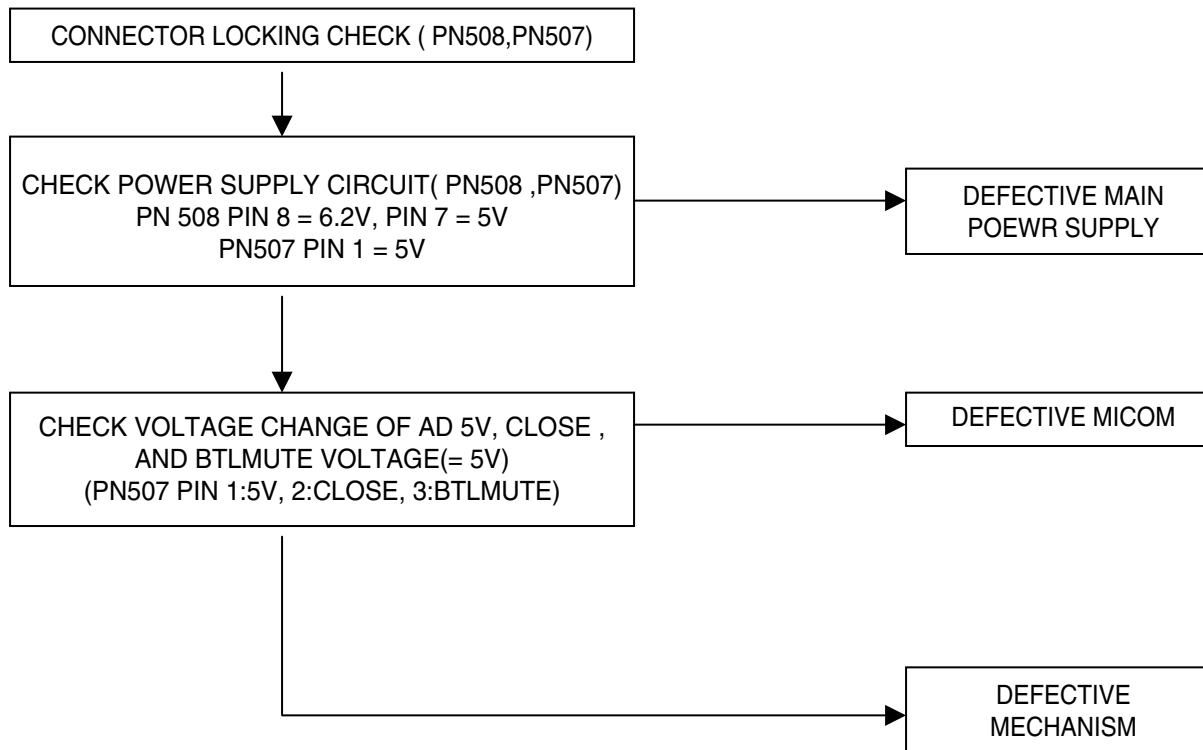
REC (Q252, Q202 ON / R273, R223 HIGH)



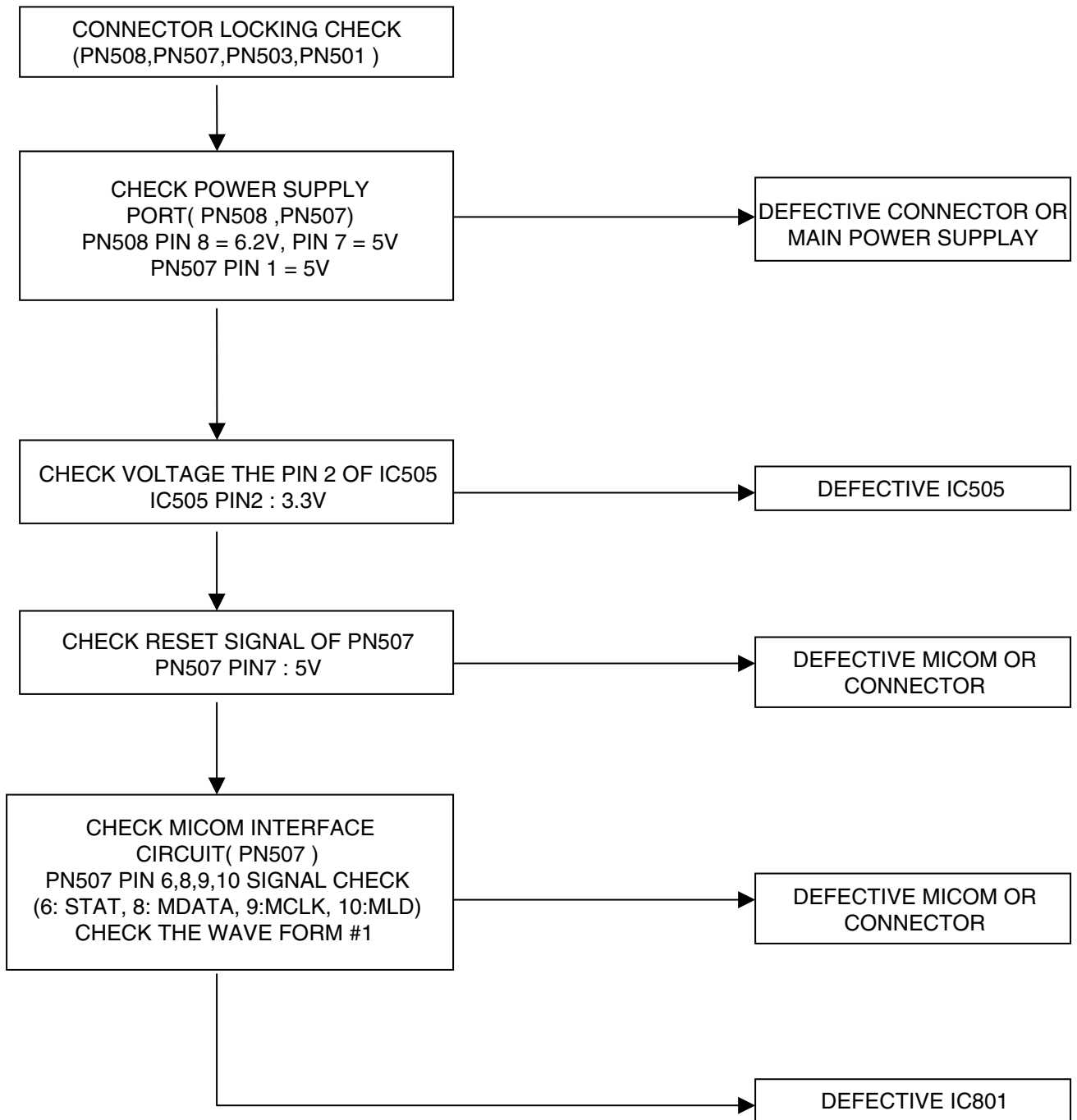
• CD PART



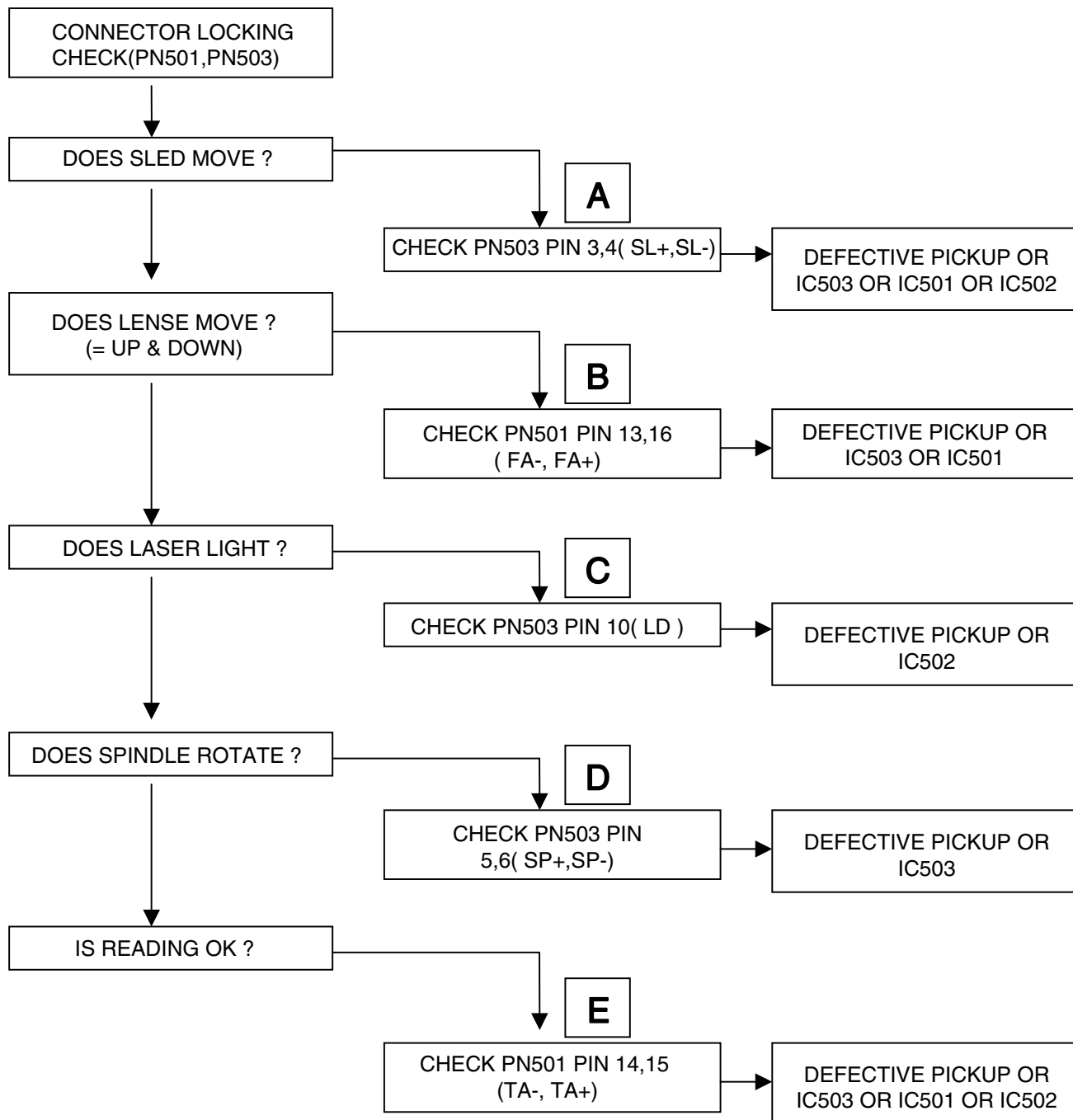
OPEN CLOSE NG



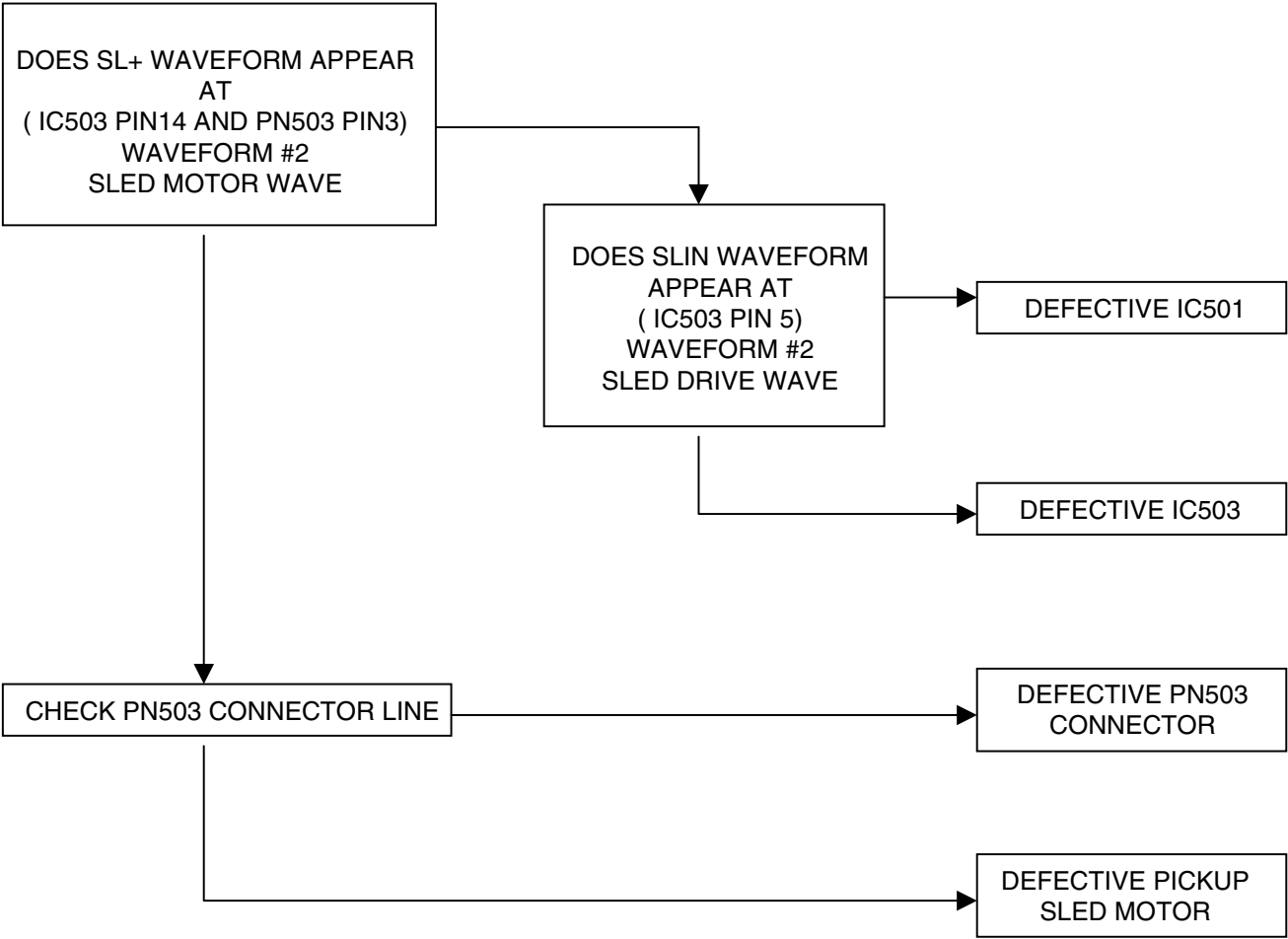
“ READING ” DISPLAY CHECK (= ONLY “CD “DISPLAY)



READING OK CHECK (= “NO DISC” DISPLAY)

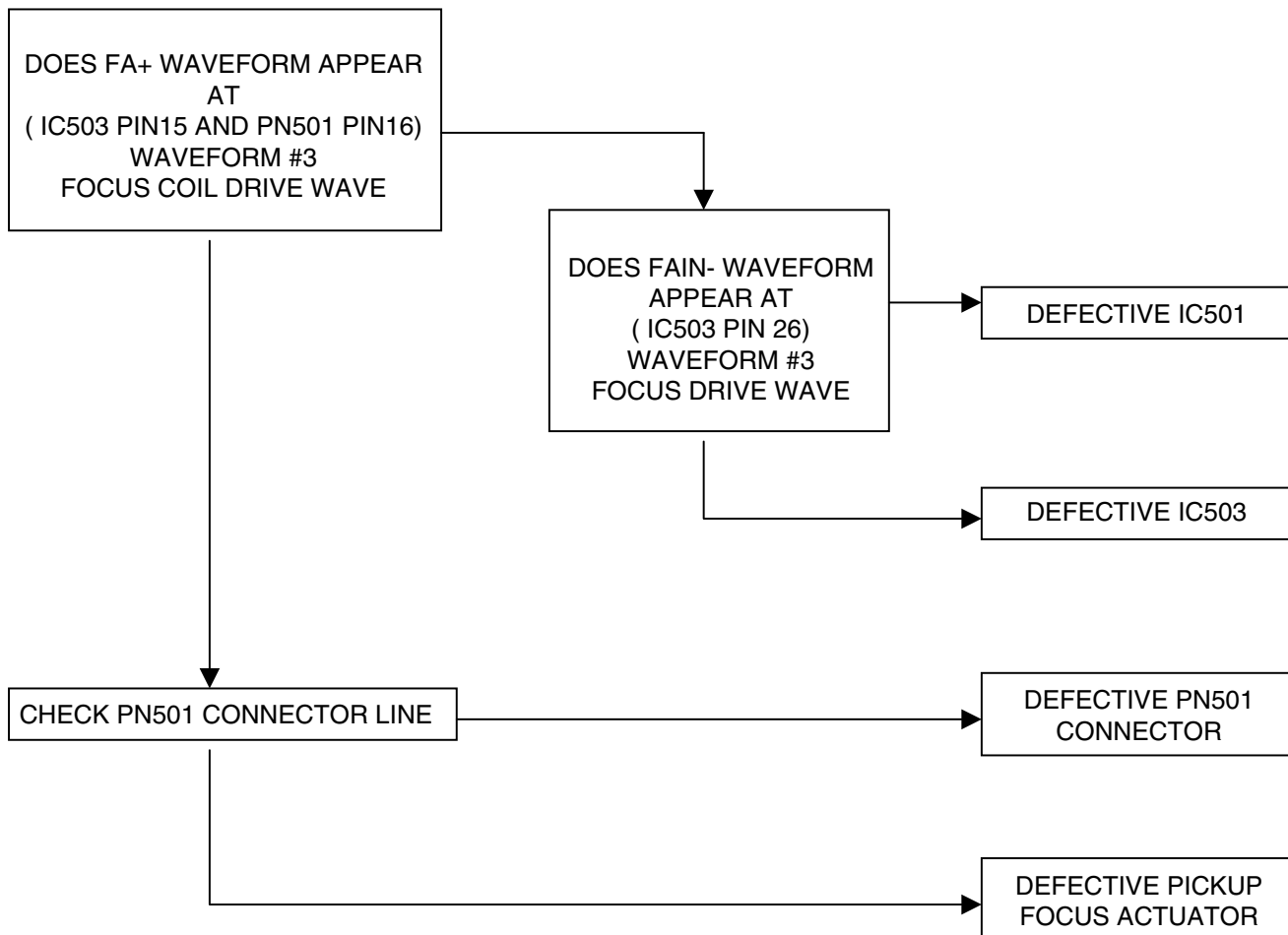


READING OK CHECK #A (= “NO DISC” DISPLAY)



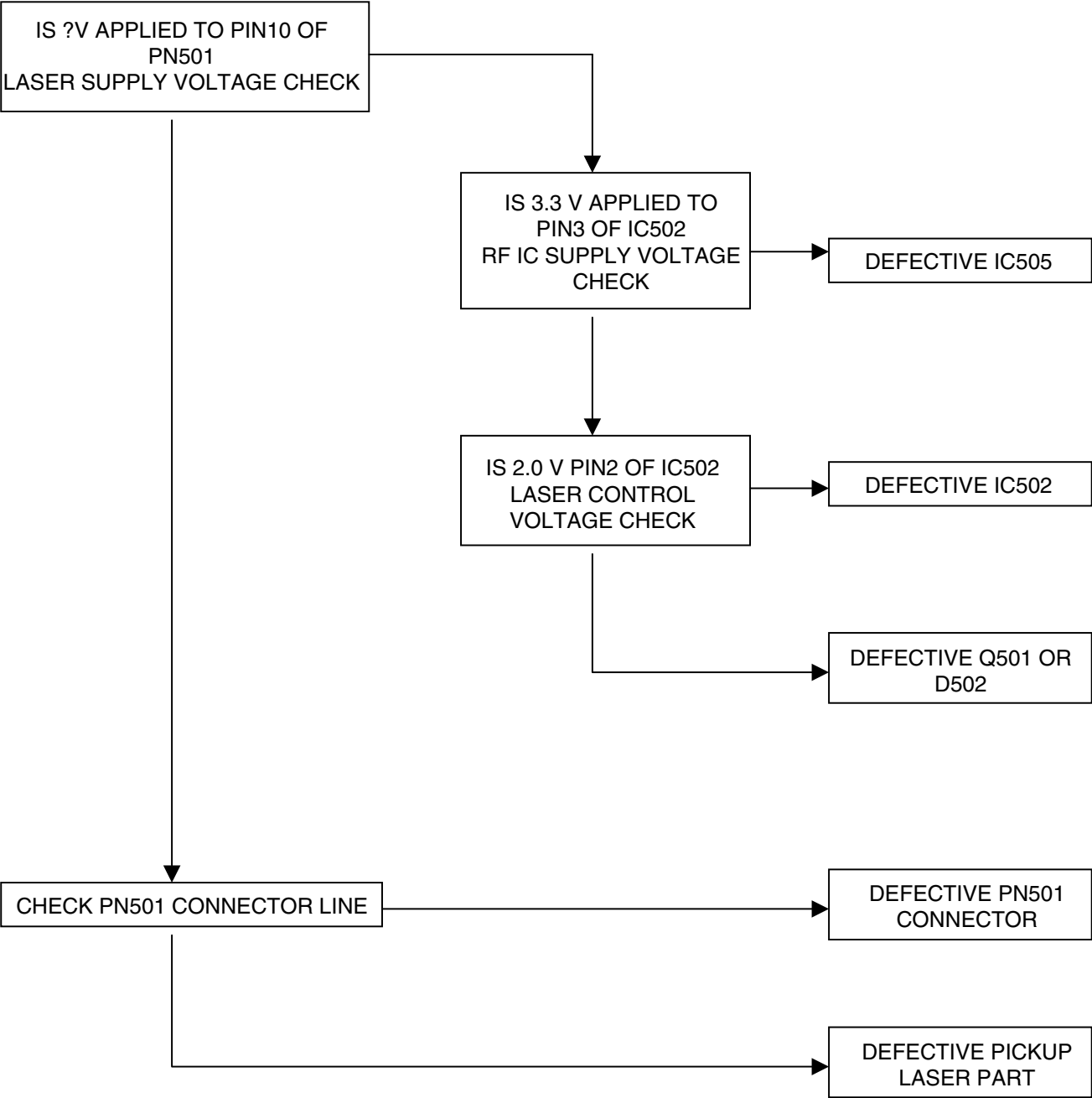
READING OK CHECK #B (= “NO DISC” DISPLAY)

B



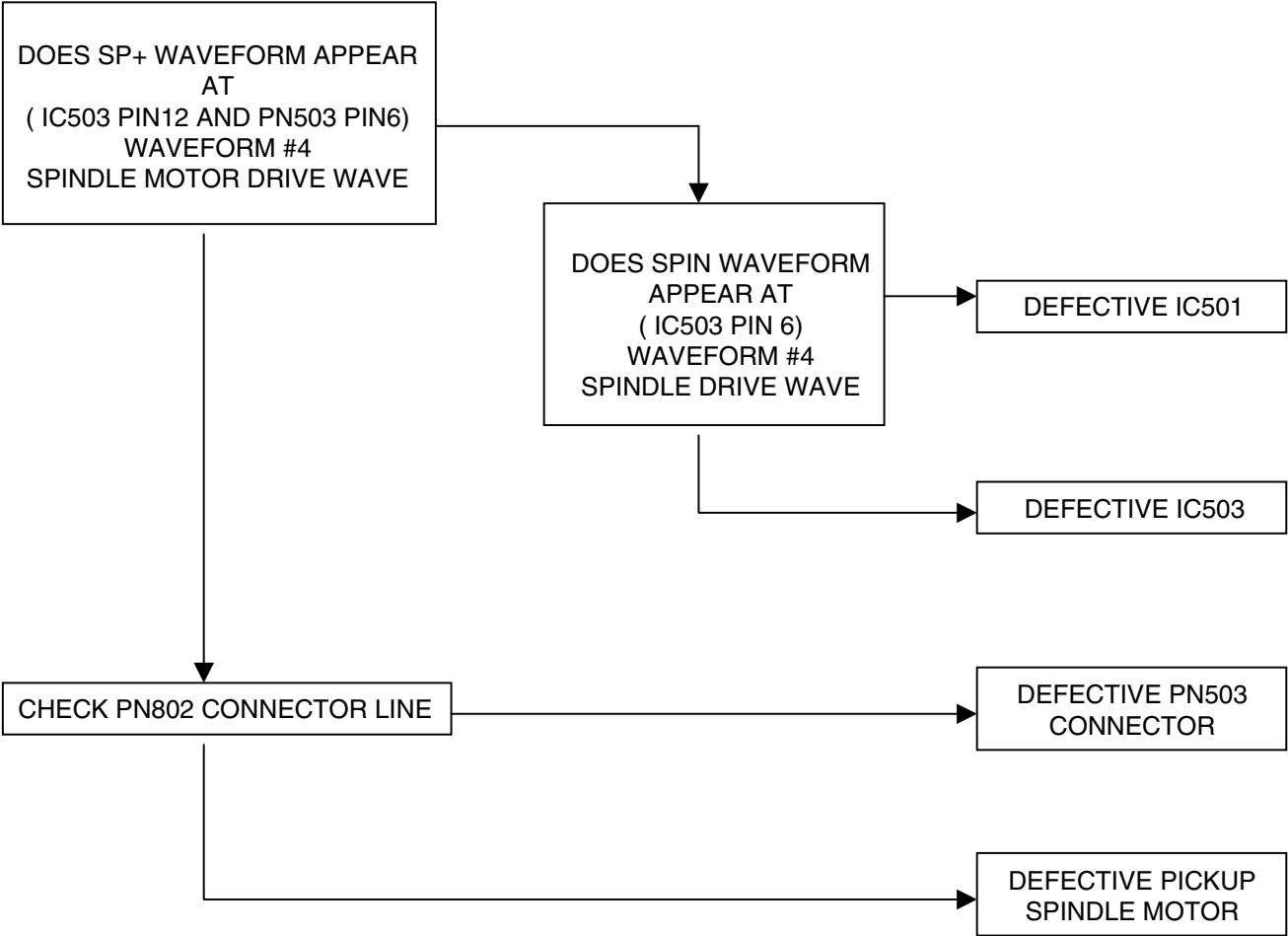
READING OK CHECK #C (= “NO DISC” DISPLAY)

C

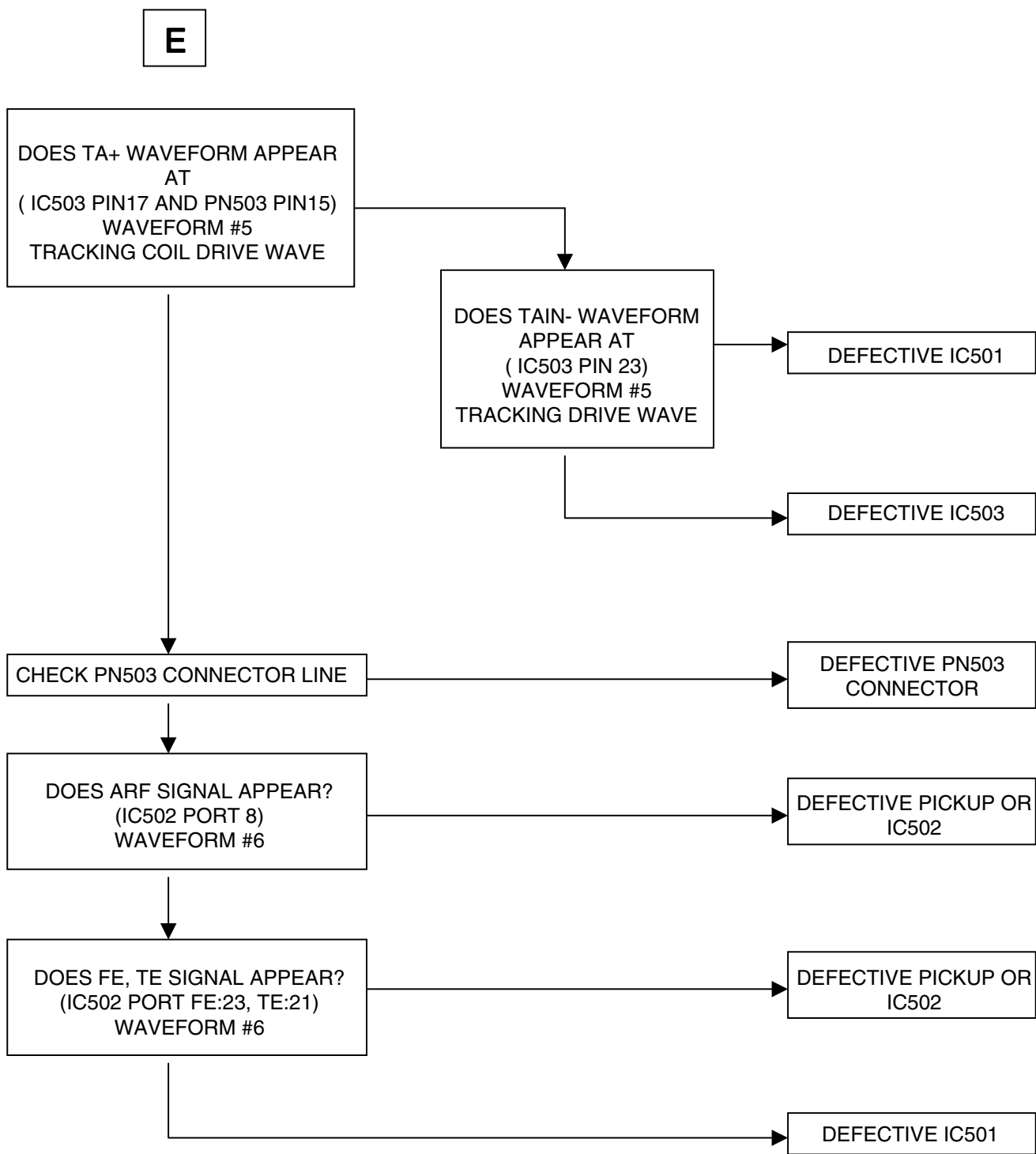


READING OK CHECK #D (= “NO DISC” DISPLAY)

D

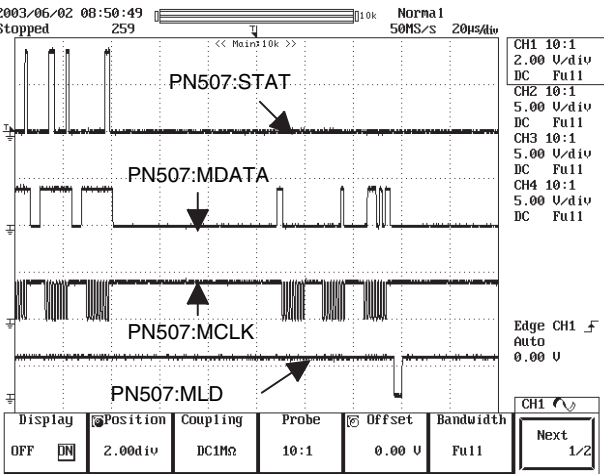


READING OK CHECK #E (= “NO DISC” DISPLAY)

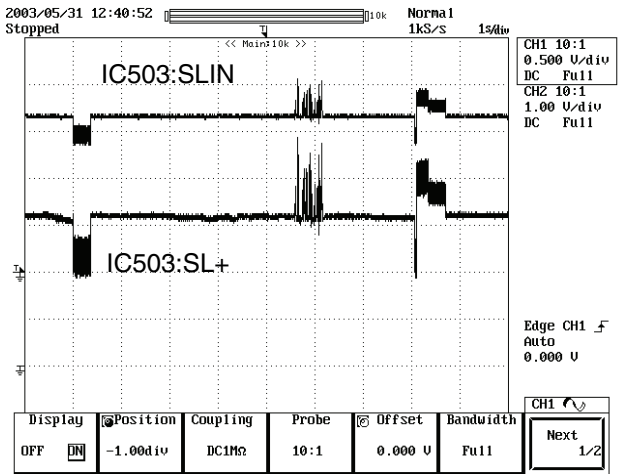


WAVEFORMS OF MAKOR CHECK POINT

#1.MICOM INTERFACE WAVEFORM
(PN507 pin6,8,9,10)during normal play



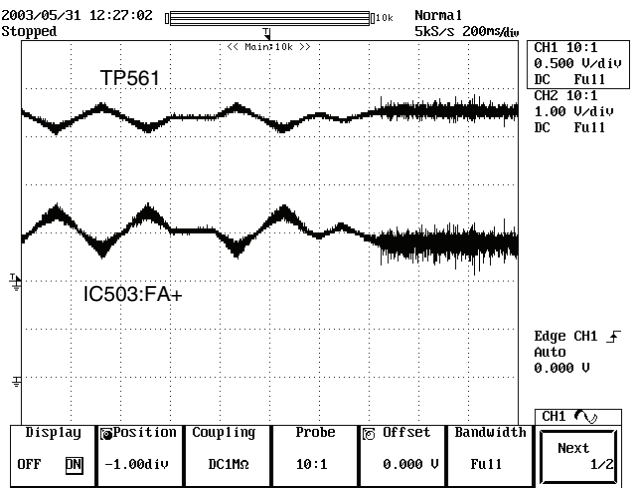
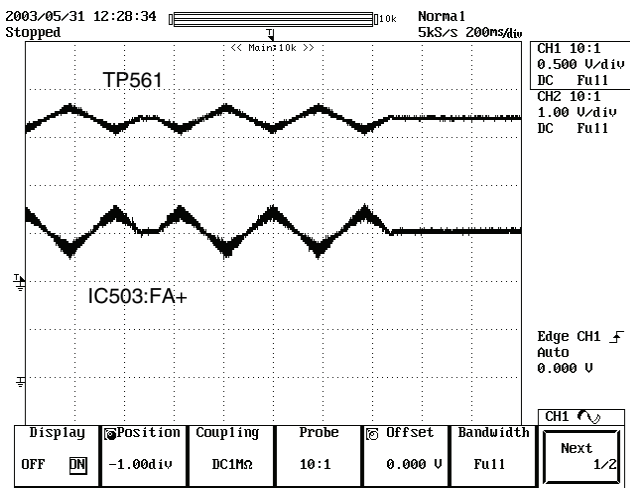
#2.SLED DRIVE AND MOTOR WAVEFORM
(IC503 pin5,14)when focus search



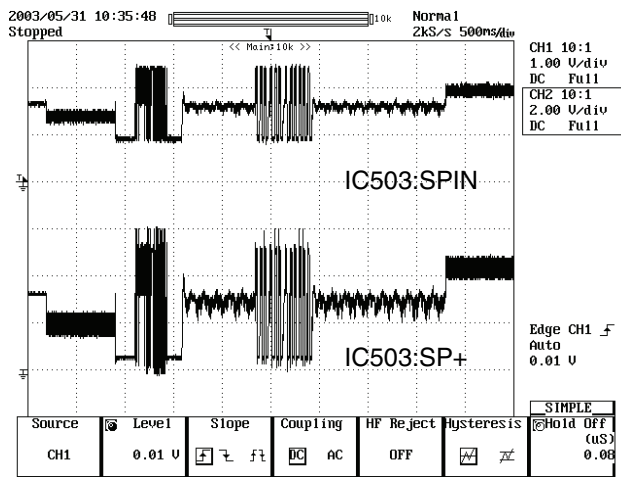
#3.FOCUS DRIVE AND MOTOR WAVEFORM
(TP561,IC503 pin15)

• When focus search failed or there is no disc on tray

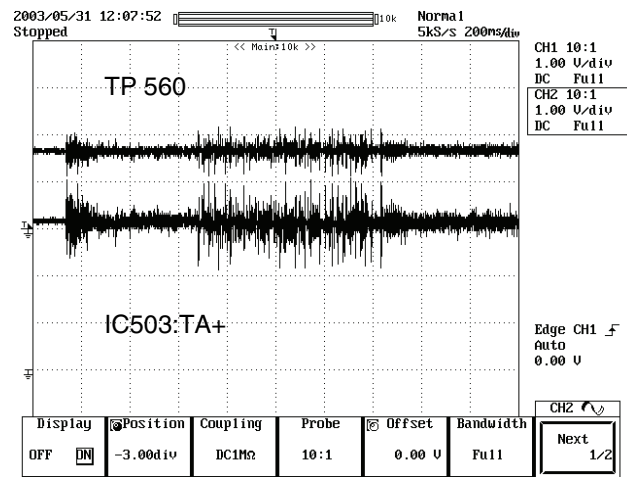
• There is disc on tray and focus search success



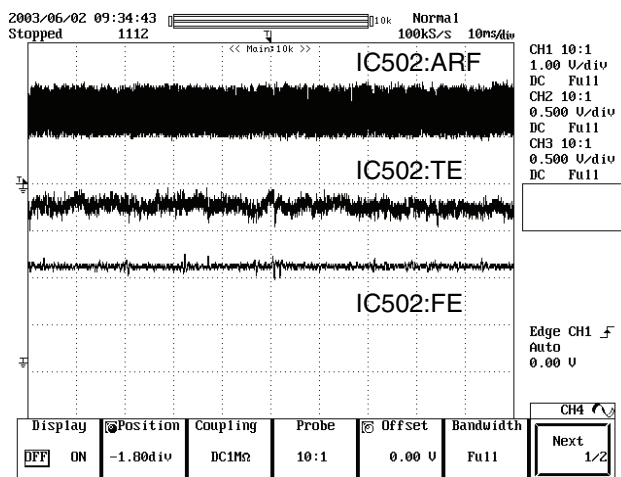
#4.SPINDLE DRIVE AND MOTOR WAVEFORM (IC503 pin6,12) when TOC reading



#5.TRACK DRIVE AND MOTOR WAVEFORM (TP560,IC503 pin23)during normal play



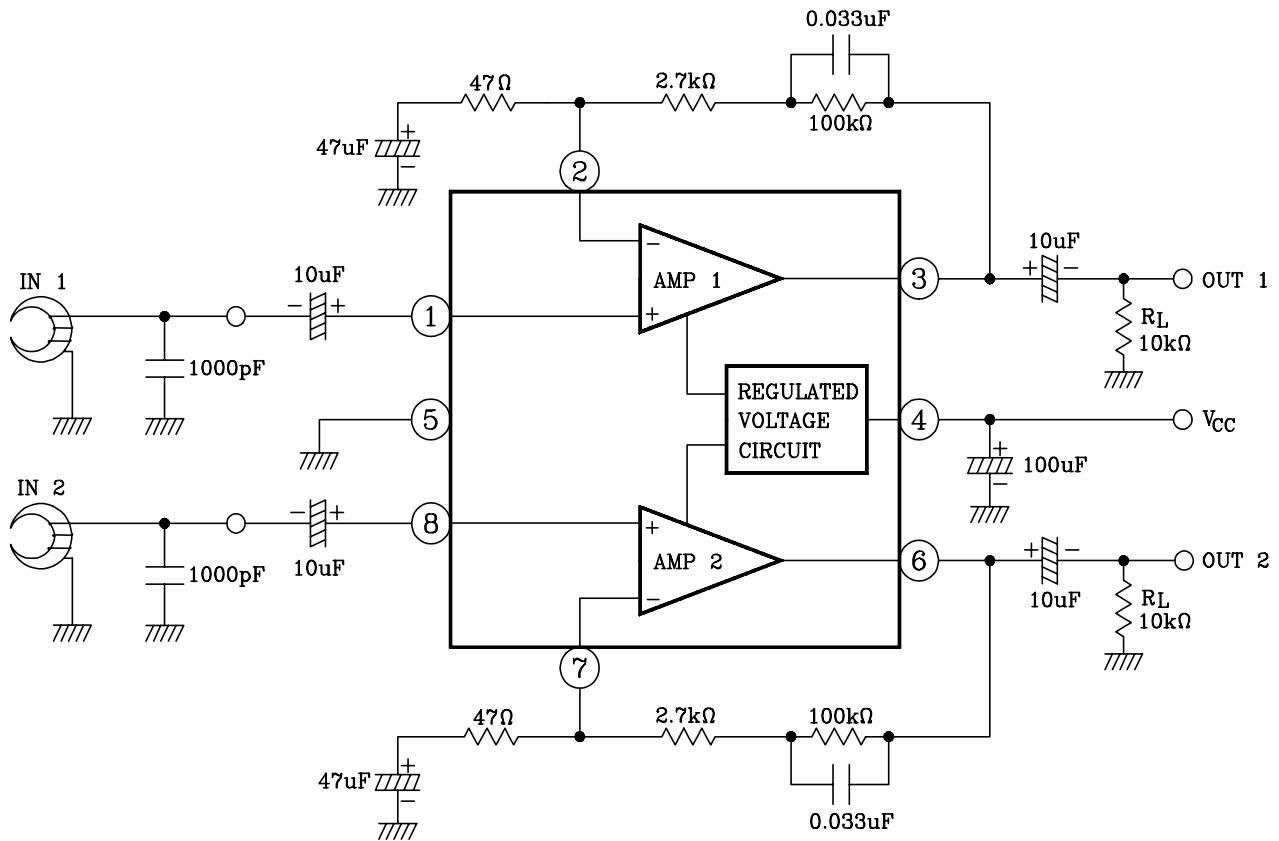
#6.RF,TRACKING AND FOCUS ERROR WAVEFORM (IC802 pin8,21,23)during normal play



INTERNAL BLOCK DIAGRAM OF ICs

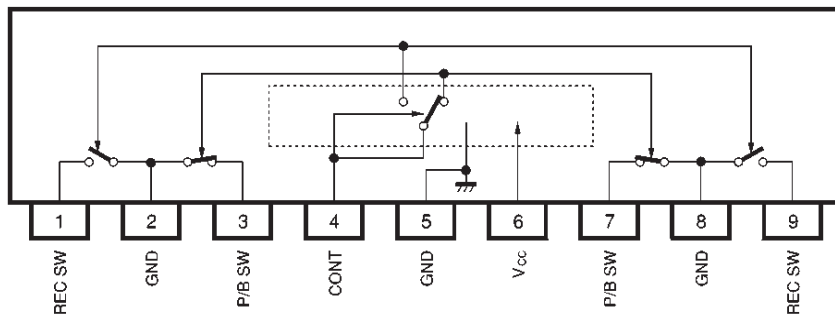
KIA6225P/S (IC201)

- BIPOLAR LINEAR INTEGRATED CIRCUIT

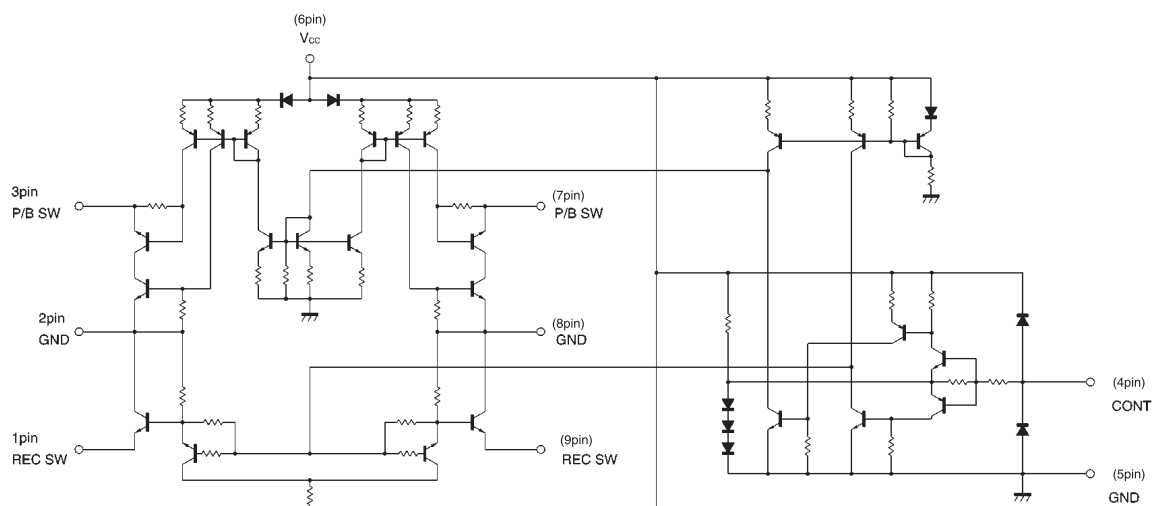


■ BA3126N (IC202)

2-CHANNEL HEAD SWITCH FOR RADIO CASSETTE RECOREDERS

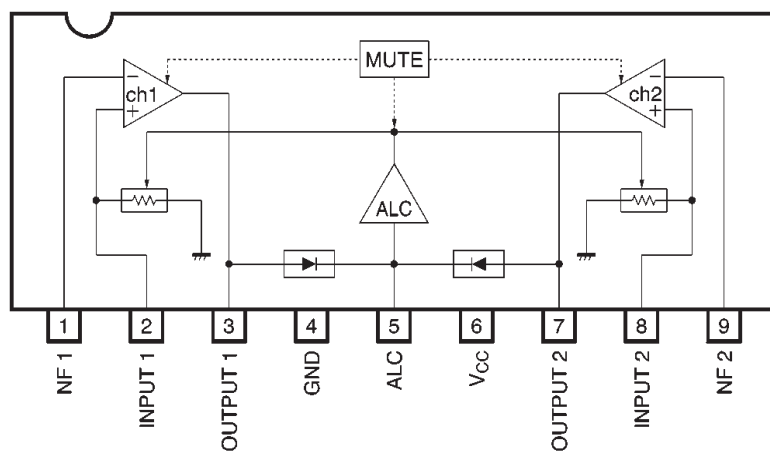


• INTERNAL CIRCUIT CONFIGURATION



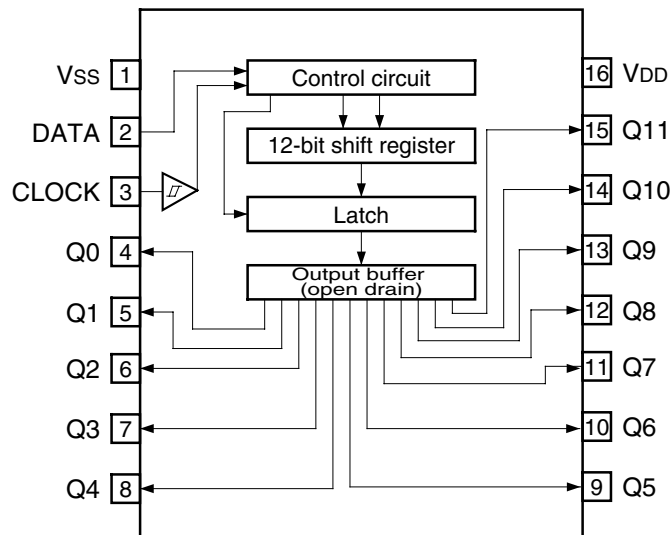
■ BA3308 (IC203)

DUAL PREAMPLIFIER WITH ALC

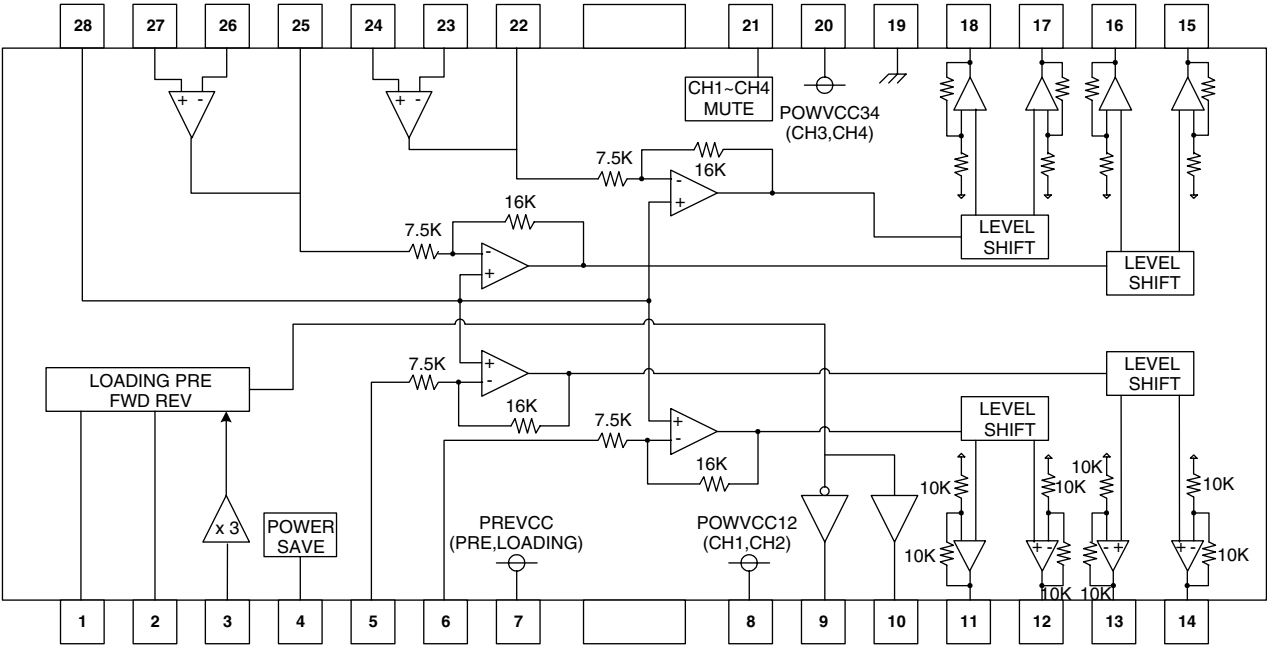


■ BU2090F (IC501)

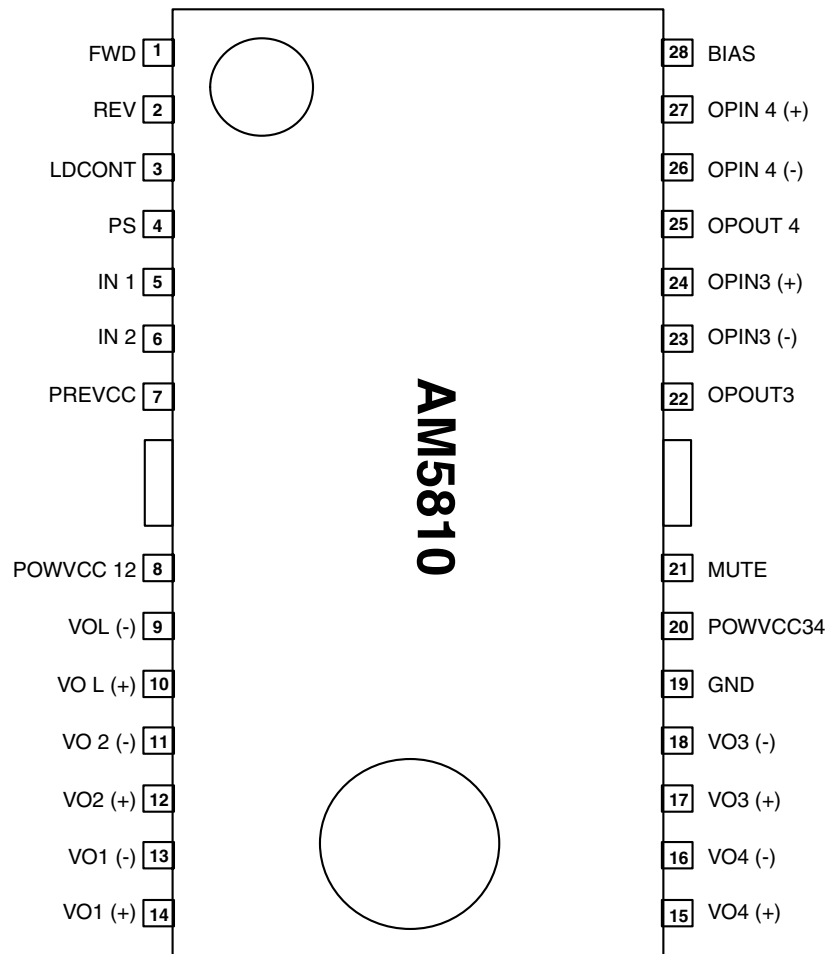
- **-12 -BIT, SERIAL IN, PARALLEL OUT DRIVER**



■ AM5810 (IC503)



• PIN CONFIGURATION

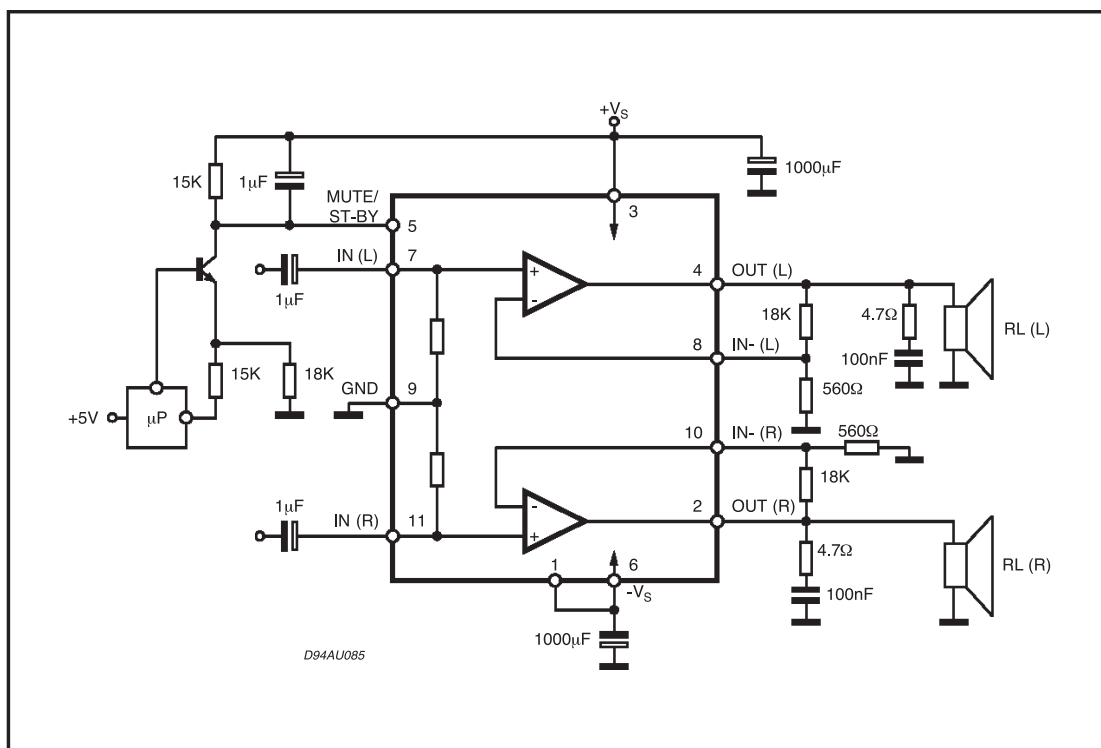


■ TDA7265 (IC701)

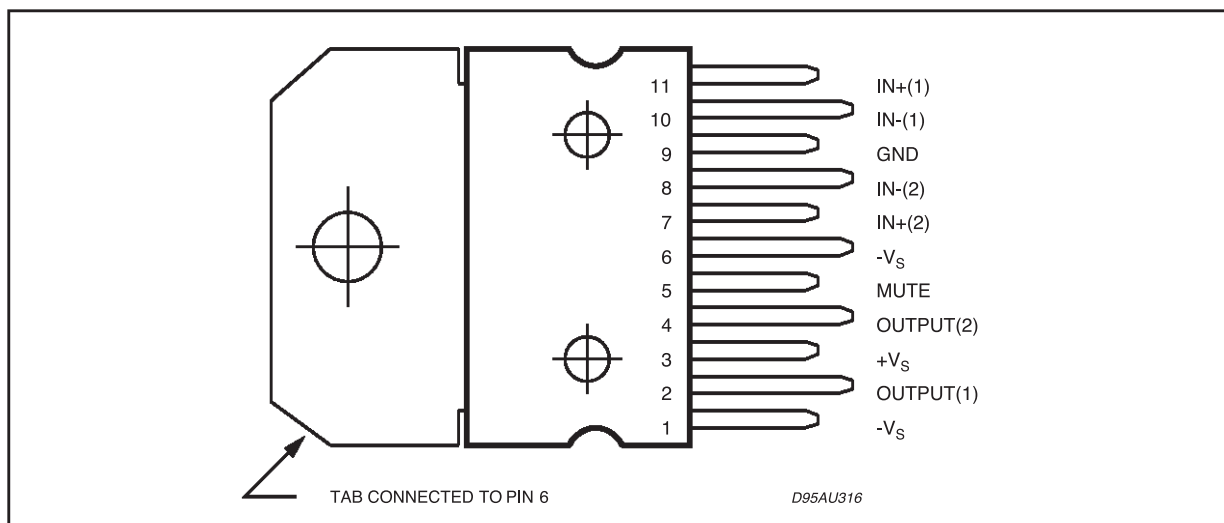
25 +25W STEREO AMPLIFIER WITH MUTE & ST-BY

• DESCRIPTION

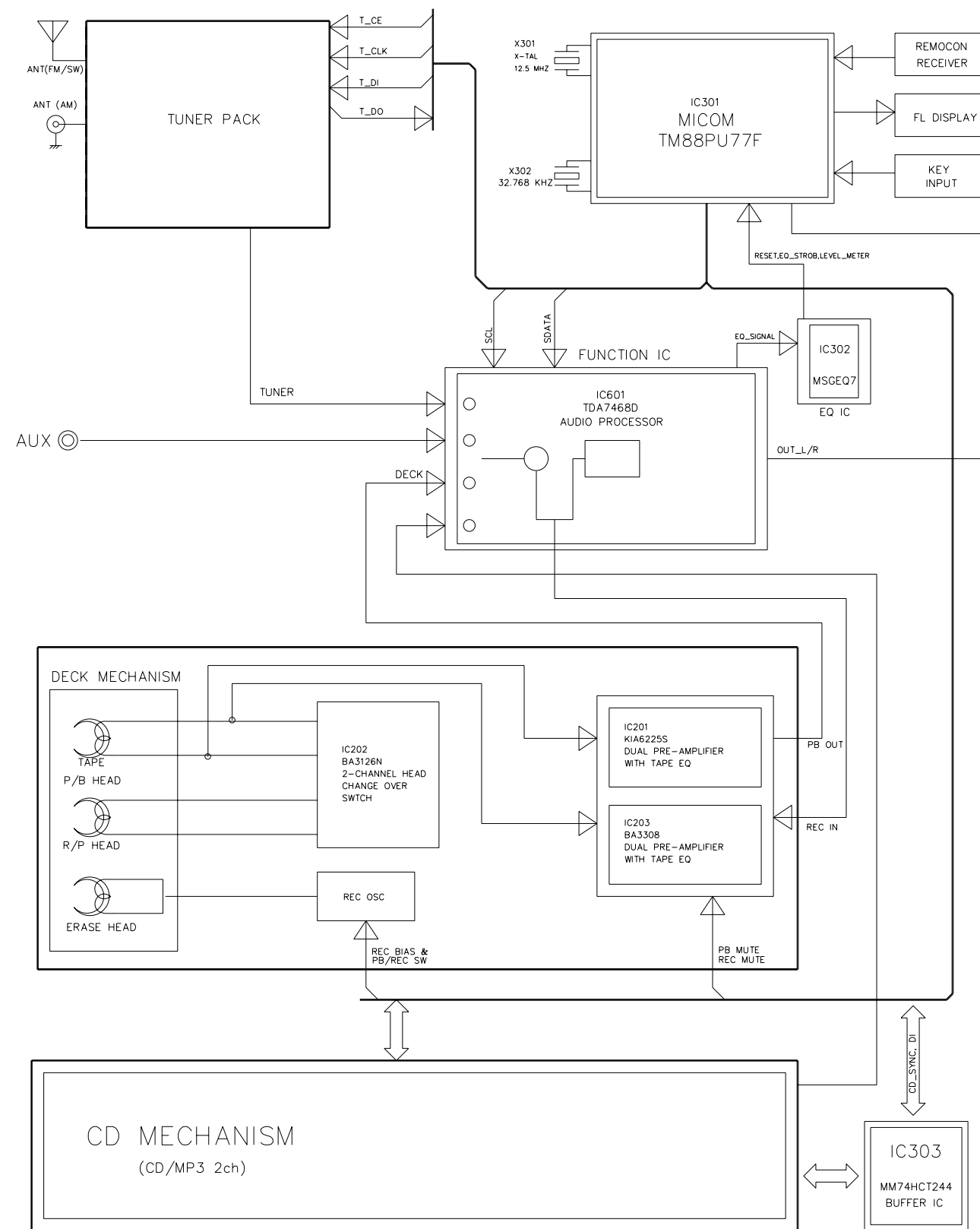
The TDA7265 is class AB dual Audio power am-plifier assembled in the Multiwatt package, spe-cially designed for high quality sound application as Hi-Fi music centers and stereo TV sets.



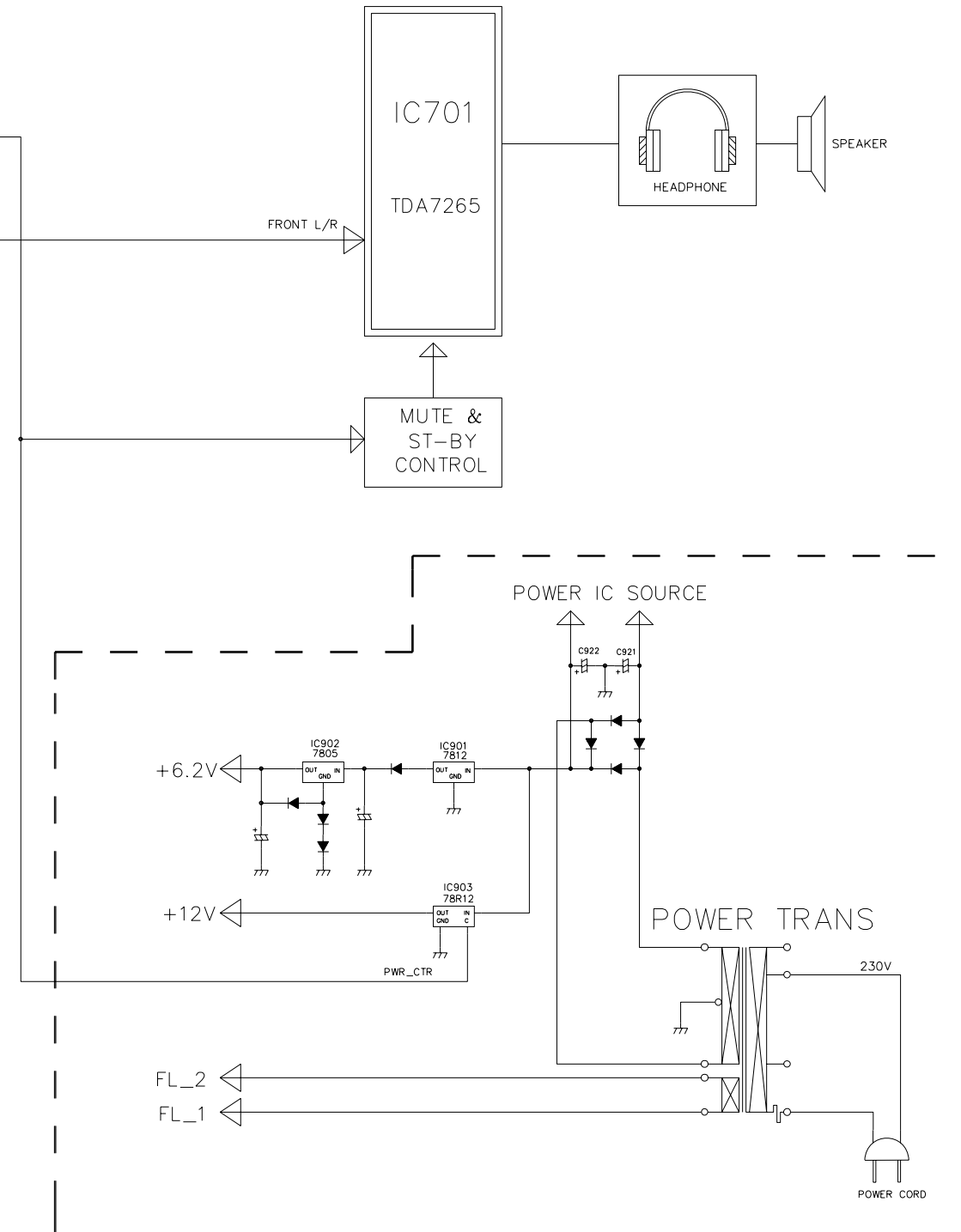
• PIN CONNECTION (Top view)



BLOCK DIAGRAM



POWER IC



- **MAIN SCHEMATIC DIAGRAM**



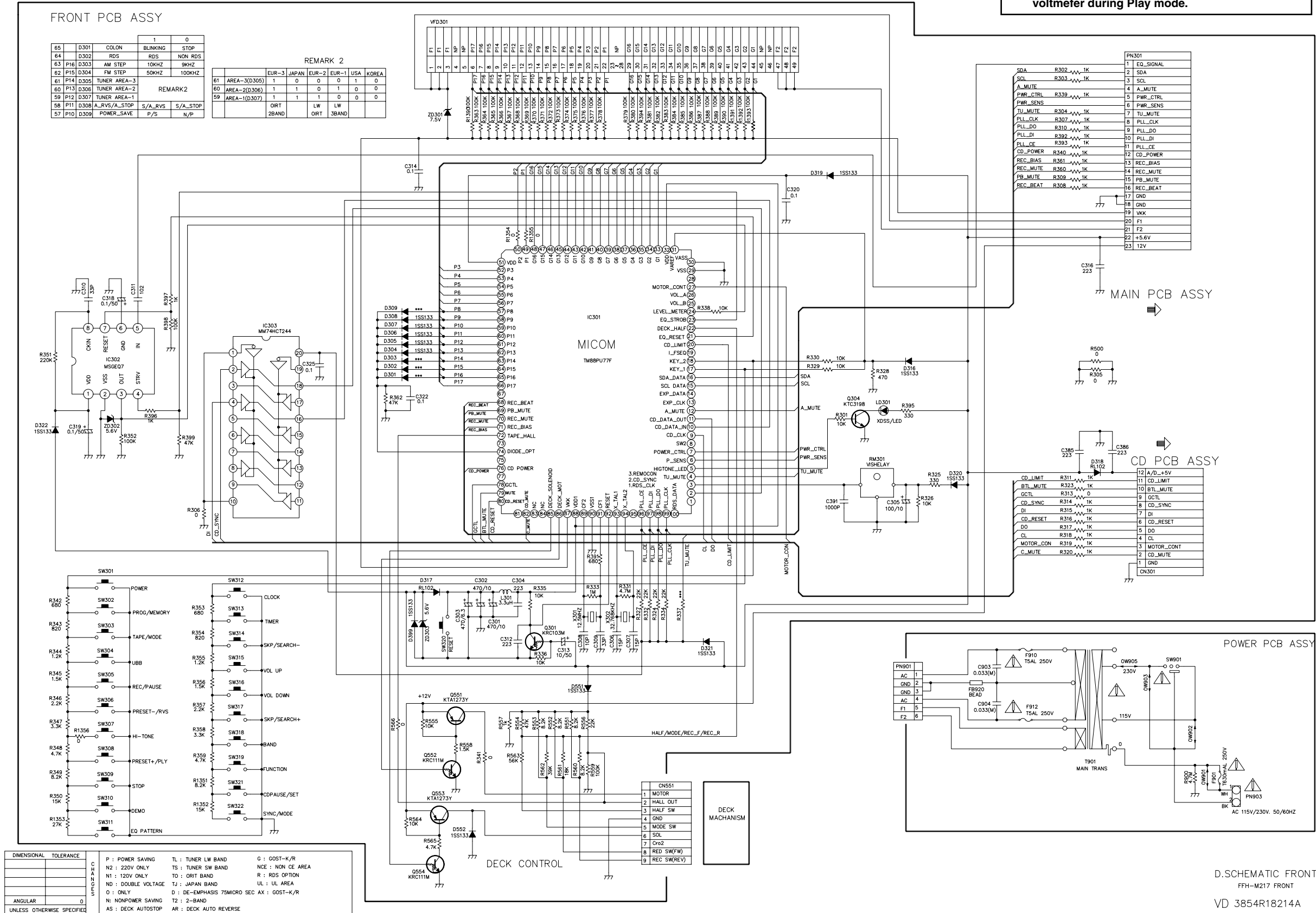
• FRONT SCHEMATIC DIAGRAM

NOTE: Warning

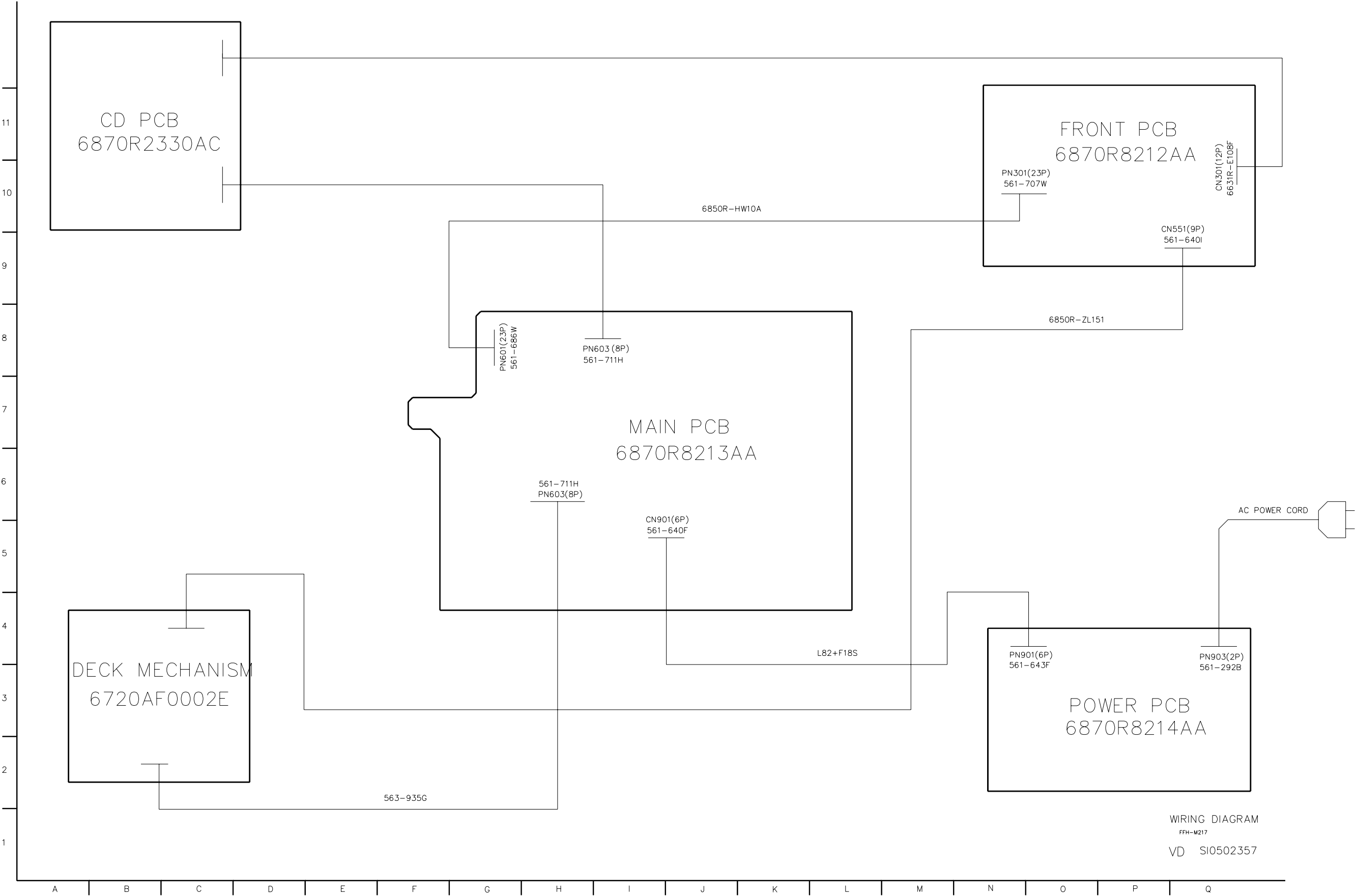
Parts that are shaded are critical With respect to risk of fire or electrical shock.

NOTE:

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



❏ WIRING DIAGRAM

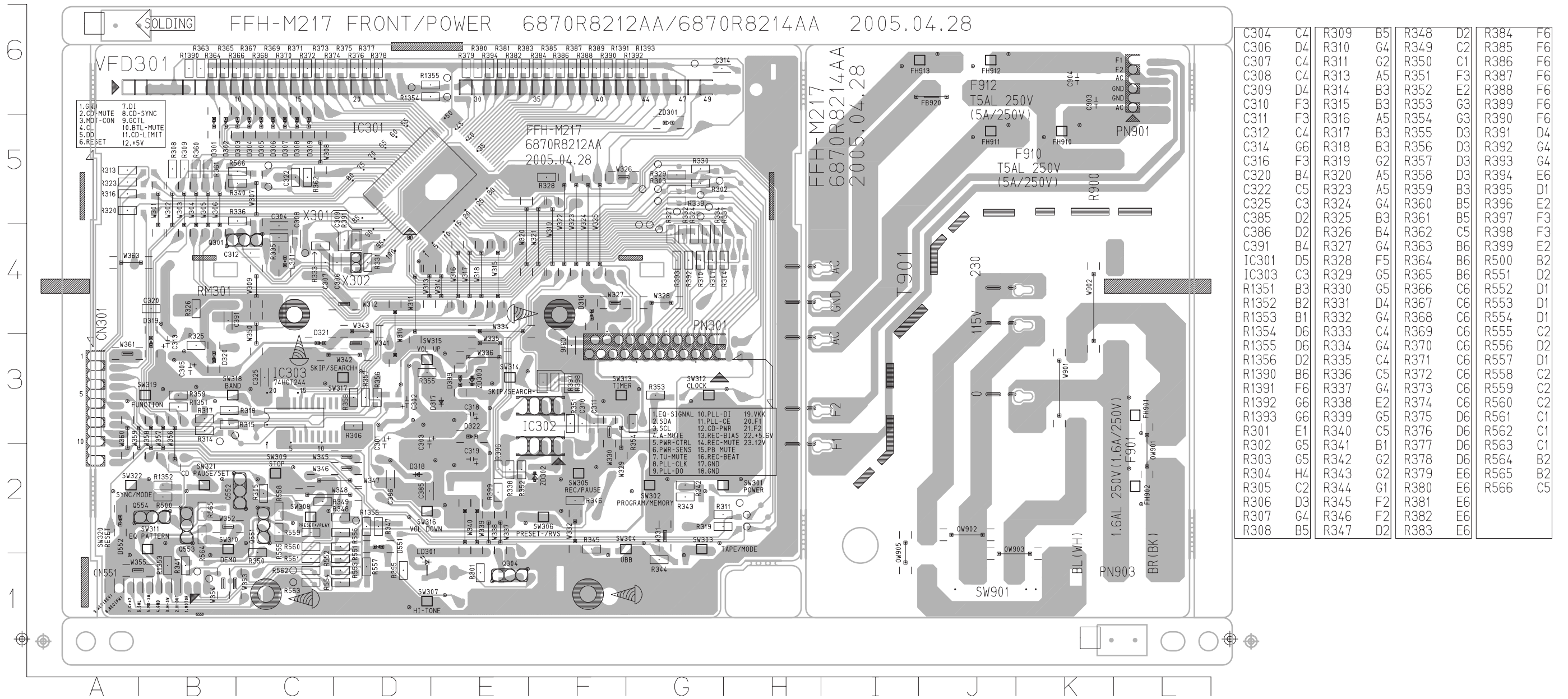


WIRING DIAGRAM
FFH-M217
VD SI0502357

- **MAIN P.C. BOARD**



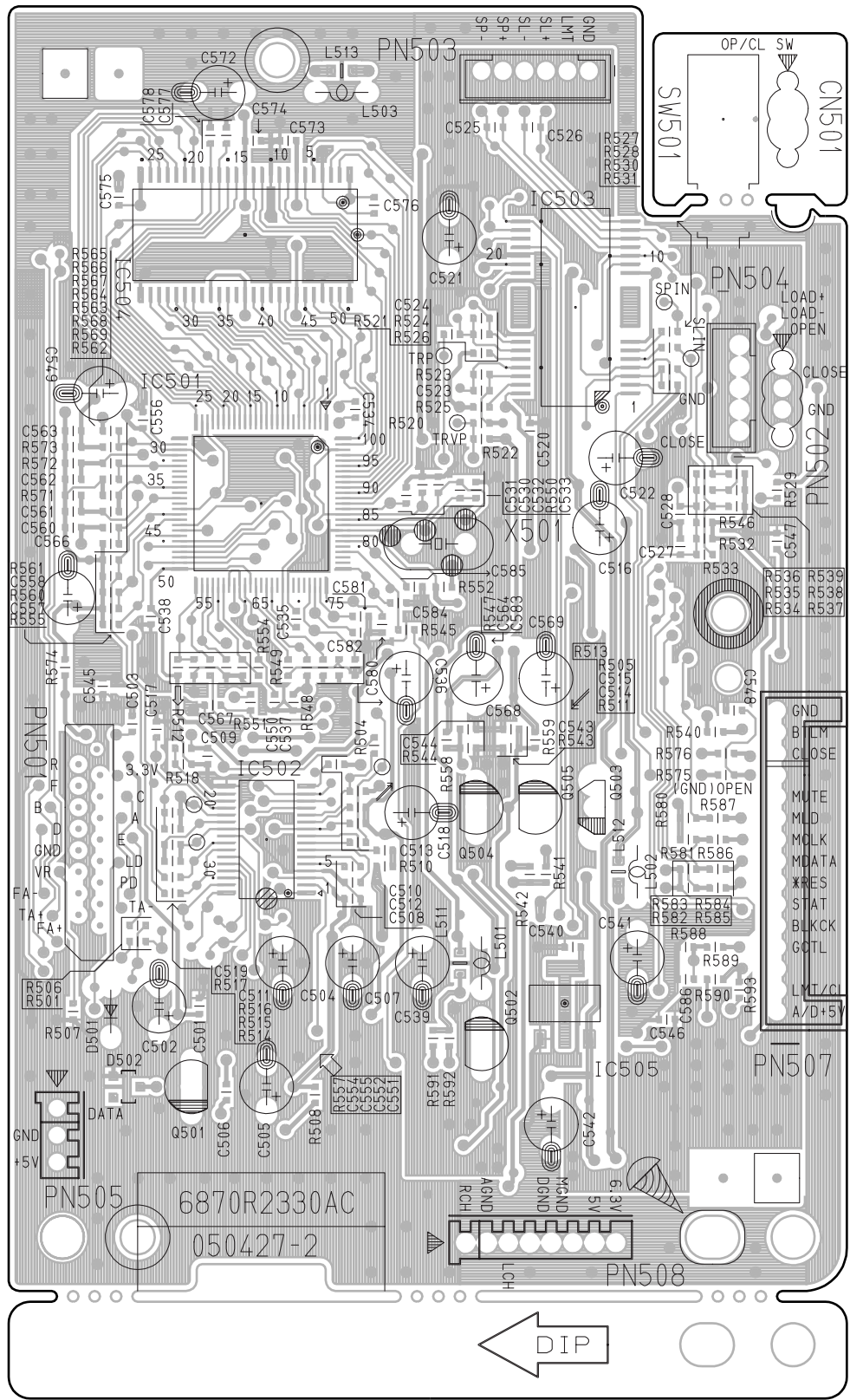
• **FRONT/POWER P.C. BOARD (COMPONENT SIDE)**





2-38

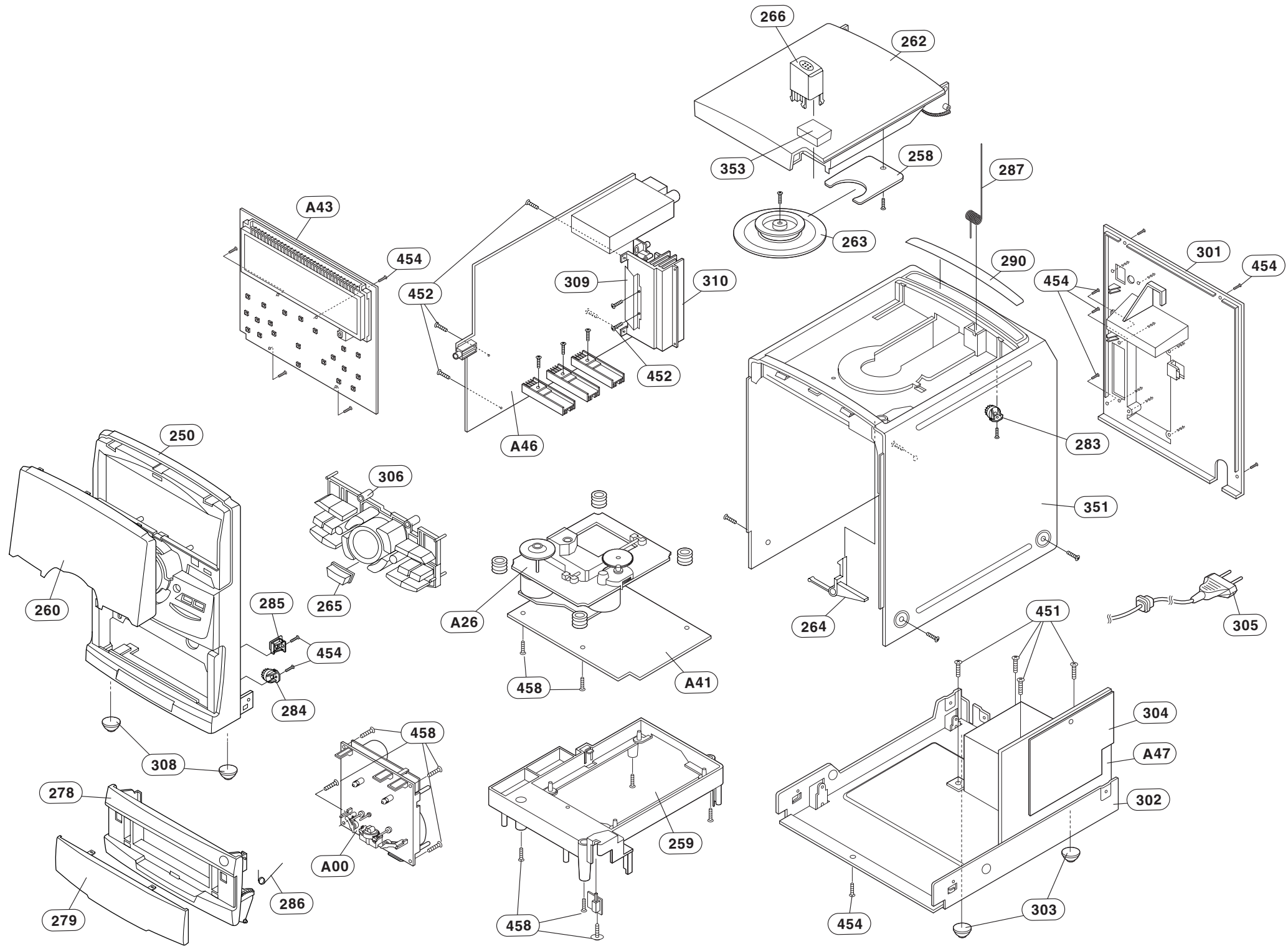
• CDP P.C. BOARD (COMPONENT SIDE)



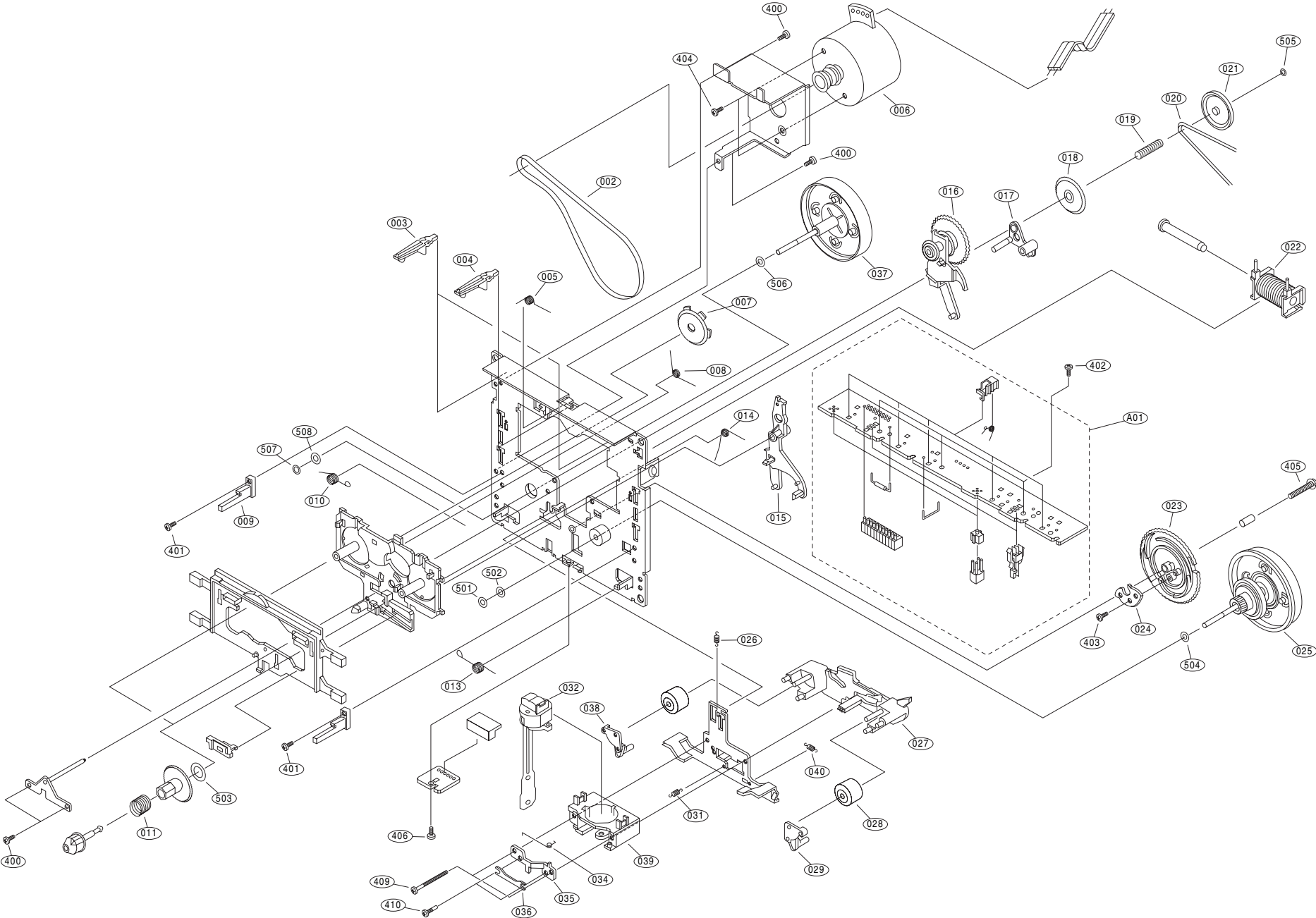
SECTION 3. EXPLODED VIEWS

CABINET AND MAIN FRAME SECTION

NOTE) Refer to “SECTION 5 REPLACEMENT PARTS LIST” in order to look for the part number of each part.



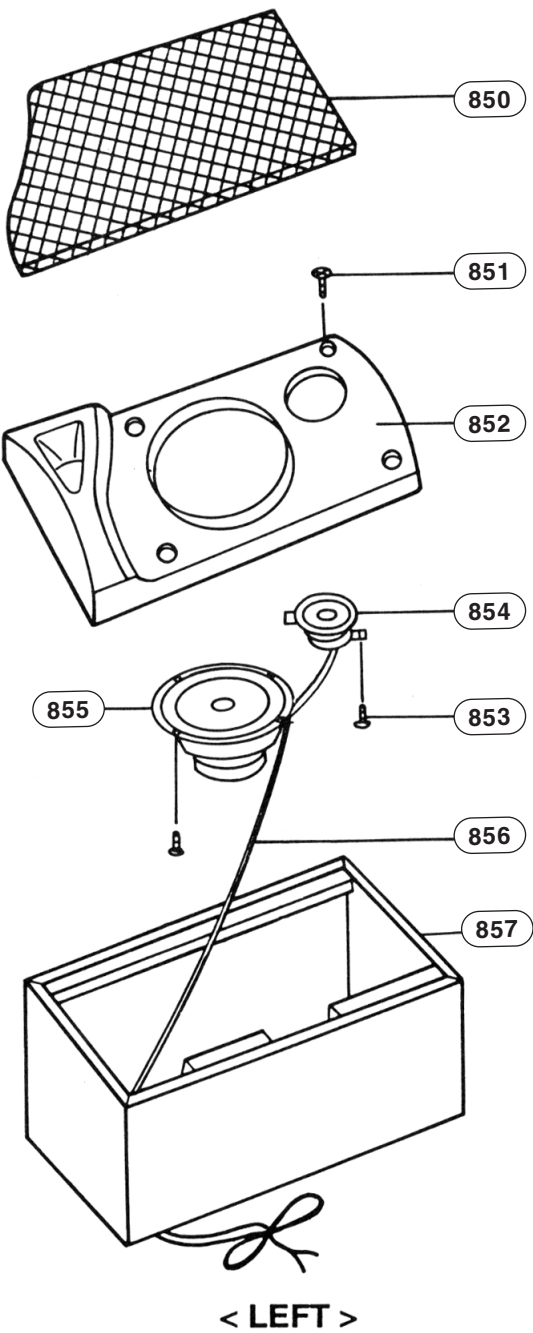
• TAPE DECK MECHANISM: SINGLE AUTO REVERSE DECK



LOCA. NO	PART NO.	DESCRIPTION	SPECIFICATION
A00	6720AF0002E	DECK,AUDIO	CRM4212 TOKYO PIGEON L-SINGLE
A01	6768R-UP03A	DECK MECHANISM PARTS	50-093-4941 PIGEON PWB ASSY UN
002	6768R-BP03A	DECK MECHANISM PARTS	02-083-4252 PIGEON BELT/FELT C
003	6768R-PP03A	DECK MECHANISM PARTS	33-160-4309 PIGEON PRESS CASSE
006	6768R-QP03A	DECK MECHANISM PARTS	50-093-4891 PIGEON MOTOR(ASSY)
007	6768R-GP03B	DECK MECHANISM PARTS	50-222-4578 PIGEON GEAR IDLER
008	6768R-SP01F	DECK MECHANISM PARTS	01-082-4598 PIGEON SPRING CWL4
009	6768R-MP01C	DECK MECHANISM PARTS	50-219-4014 PIGEON MOLD CWL44
011	6768R-SP01A	DECK MECHANISM PARTS	01-081-4601 PIGEON SPRING CWL4
013	6768R-SP03A	DECK MECHANISM PARTS	01-082-4686 PIGEON SPRING CRM4
015	6768R-AP01A	DECK MECHANISM PARTS	50-268-3016 PIGEON ARM CWL44
016	6768R-GP01H	DECK MECHANISM PARTS	50-093-4503 PIGEON GEAR CRL442
017	6768R-AP01C	DECK MECHANISM PARTS	50-239-4072 PIGEON ARM CWL44
018	6768R-GP01J	DECK MECHANISM PARTS	50-222-4428 PIGEON GEAR CRL442
019	6768R-SP01P	DECK MECHANISM PARTS	01-081-4678 PIGEON SPRING CRL4
020	6768R-BP01C	DECK MECHANISM PARTS	02-083-4188 PIGEON BELT/FELT C
021	6768R-LP01C	DECK MECHANISM PARTS	50-223-4429 PIGEON PULLEY/FLYW
022	6768R-VP03A	DECK MECHANISM PARTS	50-093-4748 PIGEON SOLENOID AS
023	6768R-GP03A	DECK MECHANISM PARTS	50-093-4810 PIGEON GEAR ASSY C
025	6768R-JP03B	DECK MECHANISM PARTS	50-093-31009 PIGEON PULLEY/FLY
026	6768R-SP01D	DECK MECHANISM PARTS	01-080-4609 PIGEON SPRING CWL4
027	6768R-DP01A	DECK MECHANISM PARTS	50-259-3342 PIGEON LEVER CWL44
028	6768R-RP01A	DECK MECHANISM PARTS	22-027-41054 PIGEON ROLLER CWL
029	6768R-MP01A	DECK MECHANISM PARTS	50-219-4033 PIGEON MOLD CWL44
031	6768R-SP04A	DECK MECHANISM PARTS	01-082-4731 PIGEON SPRING
032	6768R-EP04A	DECK MECHANISM PARTS	50-093-41007 PIGEON HEAD ASSY
035	6768R-PP04A	DECK MECHANISM PARTS	50-119-4915 PIGEON PRESS
036	6768R-SP04B	DECK MECHANISM PARTS	01-081-4730 PIGEON SPRING
037	6768R-JP03A	DECK MECHANISM PARTS	50-093-4674 PIGEON PULLEY/FLYW
038	6768R-MP01D	DECK MECHANISM PARTS	50-219-4034 PIGEON MOLD CWL44
039	6768R-MP02A	DECK MECHANISM PARTS	50-219-3900 PIGEON MOLD
040	6768R-SP01M	DECK MECHANISM PARTS	01-080-4607 PIGEON SPRING CWL4
401	6768R-CP01B	DECK MECHANISM PARTS	GSE20A2005 PIGEON SCREW CWL44
402	6768R-CP01A	DECK MECHANISM PARTS	GSE10A2003 PIGEON SCREW CWL44
403	6768R-CP01D	DECK MECHANISM PARTS	GSL10A1704 PIGEON SCREW CWL44
406	6768R-CP01G	DECK MECHANISM PARTS	GSE20A2004 PIGEON SCREW CWL44
409	6768R-CP02A	DECK MECHANISM PARTS	GSD10A2016 PIGEON SCREW
501	6768R-WP03A	DECK MECHANISM PARTS	GWN19S035040 PIGEON WASHER CRM
502	6768R-WP03B	DECK MECHANISM PARTS	03-000-4532 PIGEON WASHER CRM4
504	6768R-WP01D	DECK MECHANISM PARTS	GWP21X045020 PIGEON WASHER CWL
505	6768R-WP01E	DECK MECHANISM PARTS	GWP12X030040S PIGEON WASHER CW
506	6768R-WP01H	DECK MECHANISM PARTS	GWP23X040020 PIGEON WASHER CWL
507	6768R-WP01F	DECK MECHANISM PARTS	GWN21X040040 PIGEON WASHER CWL

SECTION 4. SPEAKER SECTION

❑ MODEL: FE-M217E



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