

CONTENTS

SECTION 1. GENERAL

• SERVICING PRECAUTIONS	1-2
• ESD PRECAUTIONS	1-4
• SPECIFICATIONS	1-5

SECTION 2. ELECTRICAL

• ADJUSTMENTS	2-1
• TROUBLESHOOTING	2-3
• WAVEFORMS OF MAJOR CHECK POINT	2-8
• BLOCK DIAGRAM	2-9
• SCHEMATIC DIAGRAMS	2-11
• WIRING DIAGRAM	2-19
• PRINTED CIRCUIT DIAGRAMS	2-21
• INTERNAL BLOCK DIAGRAM OF ICs	2-30

SECTION 3. EXPLODED VIEWS

• CABINET AND MAIN FRAME SECTION	3-1
• TAPE DECK MECHANISM: AUTO STOP DECK(OPTIONAL)	3-3
• TAPE DECK MECHANISM: AUTO REVERSE DECK	3-5
• CD MECHANISM	3-7

SECTION 4. SPEAKER

4-1

SECTION 5. REPLACEMENT PARTS LIST

5-1

SECTION 1. GENERAL

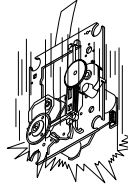
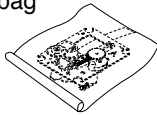
SERVICING PRECAUTIONS

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.

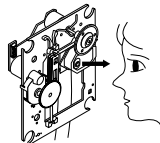
Storage in conductive bag



Drop impact

2. Repair notes

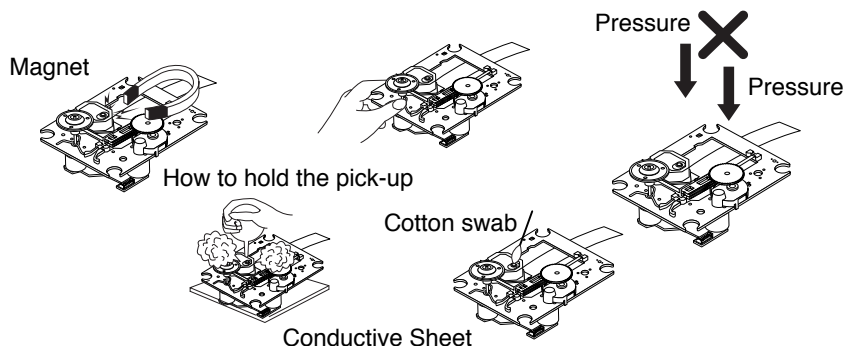
- 1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
- 2) The pick-up should always be handled correctly and carefully, taking care to avoid external pressure and impact. If it is subjected to strong pressure or impact, the result may be an operational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

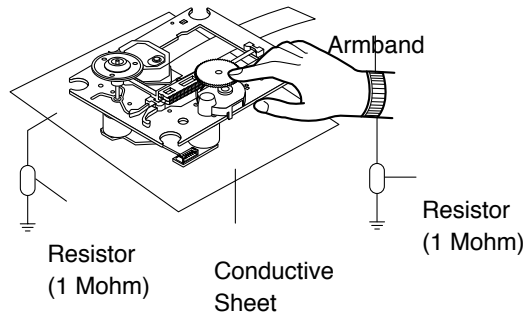
NOTES REGARDING COMPACT DISC PLAYER REPAIRS

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 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.



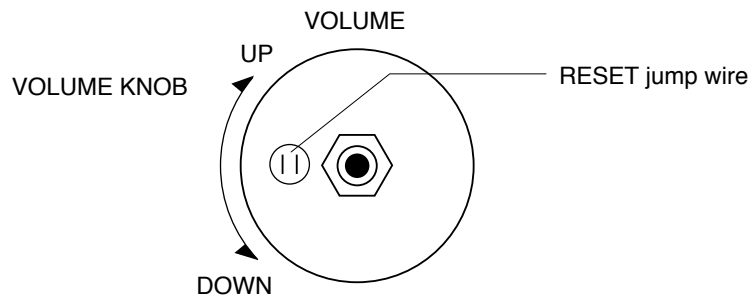
CLEARING MALFUNCTION

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 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 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 INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

SPECIFICATIONS

1. AMP SECTION

- 1) Power Output (6 Ω , 2 channel, T.H.D. 10%) 20W+20W
- 2) T.H.D 0.15%
- 3) Frequency Response (-3dB down) 42Hz~25kHz
- 4) Signal-to-noise Ratio 80dB
- 5) Input Sensitivity AUX 400 \pm 50mV
- 6) Channel Difference 1kHz 2dB

2. TUNER SECTION

1) FM

- 1) Frequency Range 87.5MHz~108MHz
- 2) Intermediate Frequency 10.7MHz
- 3) Sensitivity (90/98/106MHz) 12dB
- 4) Signal-to-noise Ratio 98.1MHz(Mono/Stereo) 64dB/55dB
- 5) Image Rejection 106.1MHz 18dB
- 6) IF Rejection 90.1MHz 60dB
- 7) Distortion 98.1MHz(Mono/Stereo) 1.2/1.2%
- 8) Frequency Response (-3dB) 60Hz~10kHz
- 9) Stereo Separation (100Hz/1kHz/10kHz) 25dB

2) AM(MW)

- 1) Frequency Range 522kHz~1611kHz
- 2) Intermediate Frequency 455kHz
- 3) Usable Sensitivity 55dB/m
- 4) Image Rejection (1404kHz) 20dB
- 5) IF Rejection (603kHz) 40dB
- 6) Selectivity (1008kHz) \pm 23dB
- 7) Signal-to-noise Ratio (1008kHz) 35dB
- 8) Distortion (1008kHz) 1.5%
- 9) Frequency Response (1008kHz) 100Hz~1800Hz

3) SW(OPTIONAL)

- 1) Frequency Range 5.8MHz~18MHz
- 2) Intermediate Frequency 450kHz
- 3) Usable Sensitivity 40dB/m
- 4) Signal To Noise Ratio 35dB
- 5) Distortion 3%

4) LW(OPTIONAL)

- 1) Frequency Range 153kHz~281kHz
- 2) Intermediate Frequency 450kHz
- 3) Usable Sensitivity 65dB
- 4) Signal To Noise Ratio (200kHz) 28dB
- 5) Distortion (200kHz) 3%

3. TAPE DECK SECTION

1) Tape Speed (MTT-111) / Normal Speed	4.75cm/sec
2) Wow Flutter (MTT-111)	0.25%
3) Fast Forward and Rewind Time (C-60)	120sec
4) Frequency Response (6dB range)	250Hz~8kHz
5) Signal-to-noise Ratio (Playback/Record)	43dB/43dB
6) Distortion (Playback/Record)	3% / 4%
7) Crosstalk (Playback: 1kHz)	55dB
8) Channel Separation (Playback: 1kHz)	50dB/45dB
9) Erase Ratio	55dB

4. COMPACT DISC PLAYER SECTION

1) Frequency Response (40Hz-18kHz)	+0.5/-3.0dB
2) Signal-to-noise Ratio (1kHz)	70dB
3) Dynamic Range (1kHz)	70dB
4) T.H.D. (1kHz)	0.2%
5) Separation (100Hz/1kHz/10kHz)	45dB/47dB/40dB
6) Access Time (Short / Long)	2sec/6sec

5. GENERAL

1) Power requirement	Refer to the back panel of unit
2) Power consumption	60W
3) Dimension (W x H x D)	180 x 248 x 241.3 (mm)

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

SECTION 2. ELECTRICAL 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 modify 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
Playback	MTT-114	Speaker Out	DECK Screw Azimuth Screw	Maximum

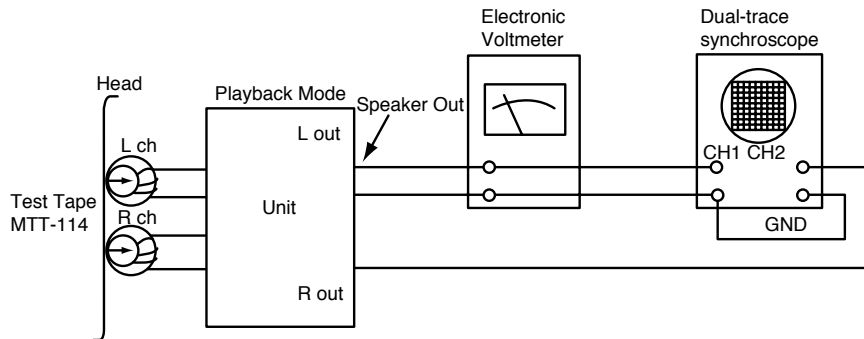


Figure 1. Azimuth Adjustment Connection Diagram

2. RECORD BIAS ADJUSTMENT

Deck Mode	Test Tape	Test Point	Adjustment	Adjust for
Rec/Pause	MTT-5511	ERASE HEAD WIRE(PN201)	L201	60kHz±5kHz (Auto stop) 85kHz±5kHz(Auto Reverse)

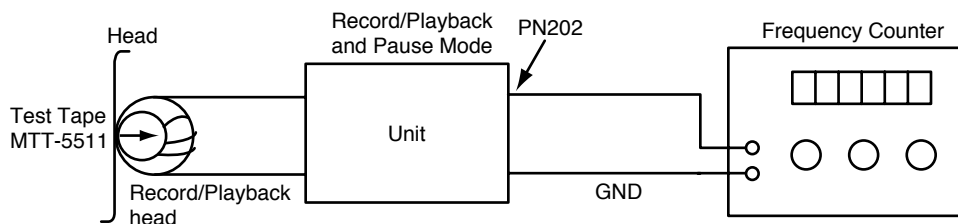


Figure 2. Record Bias Adjustment Connection Diagram

3. TUNER ADJUSTMENT

(FM)

Item	Test Point	Adjustment	Adjust for
DC Voltage	Check Point TP1, TP2	L101	0V±50mV

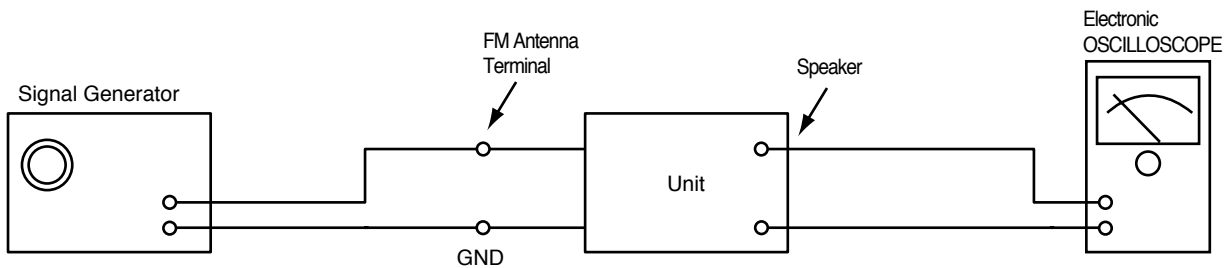
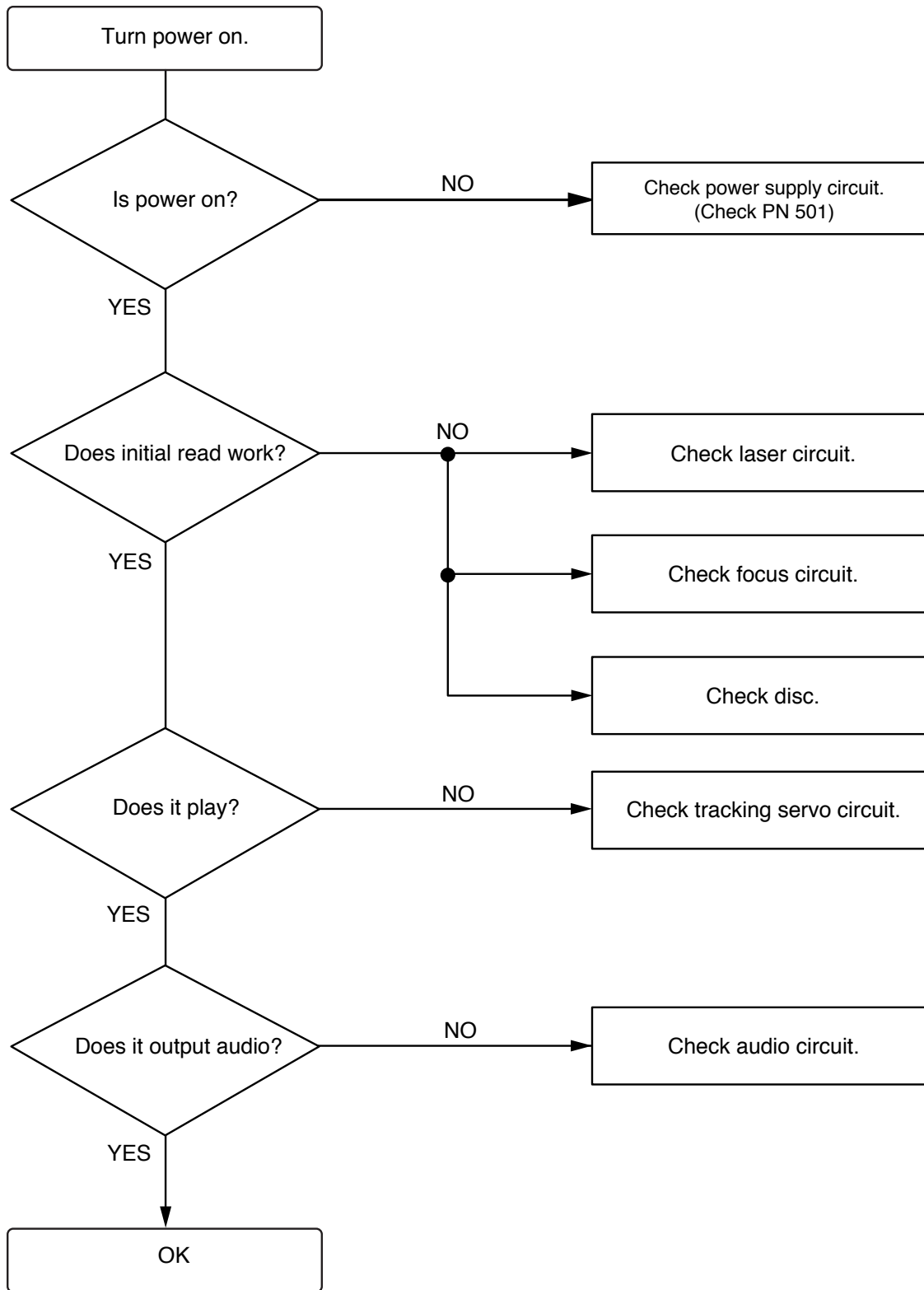
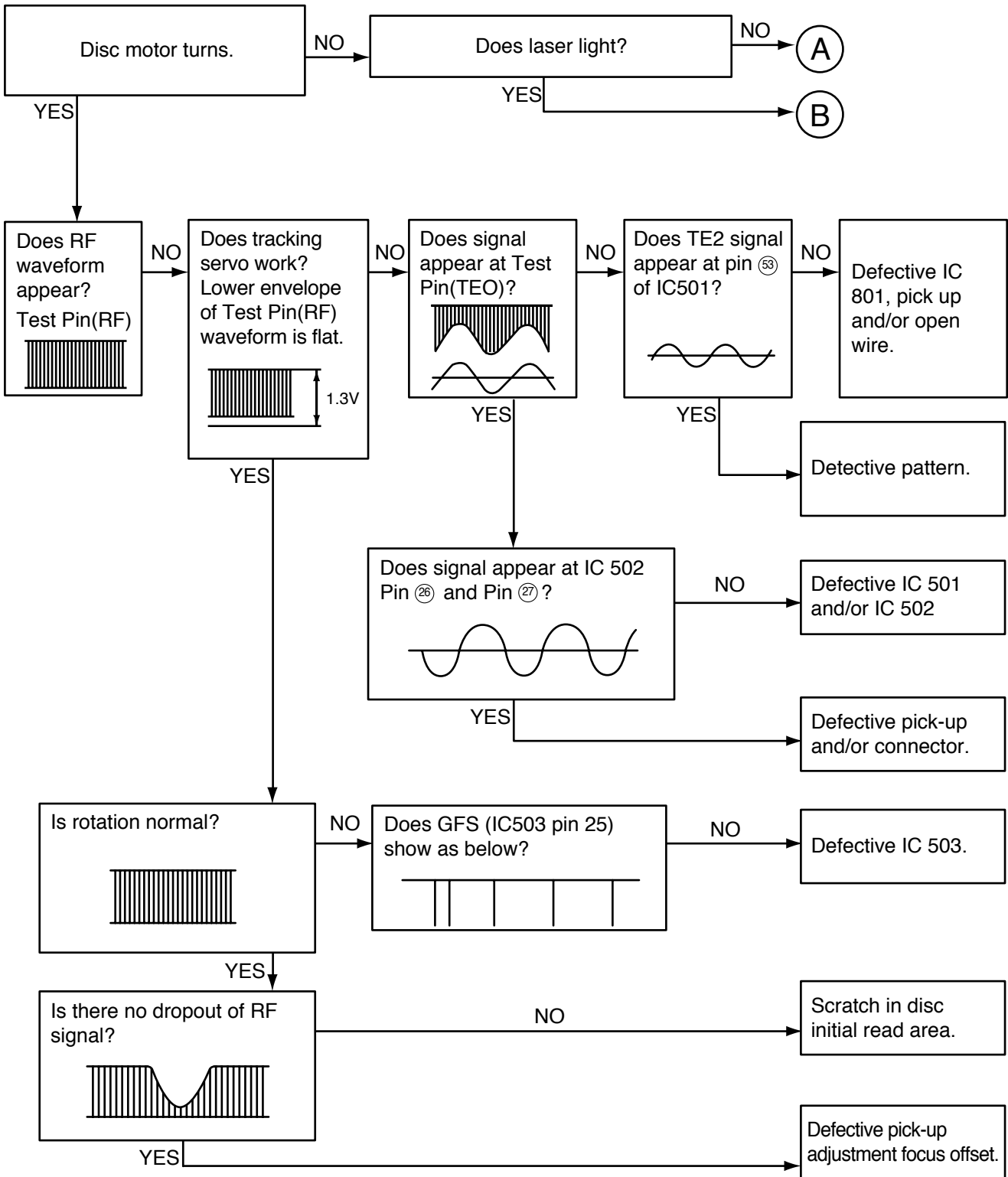


Figure 3. Tuner(S curve) Adjustment Connection Diagram

TROUBLESHOOTING

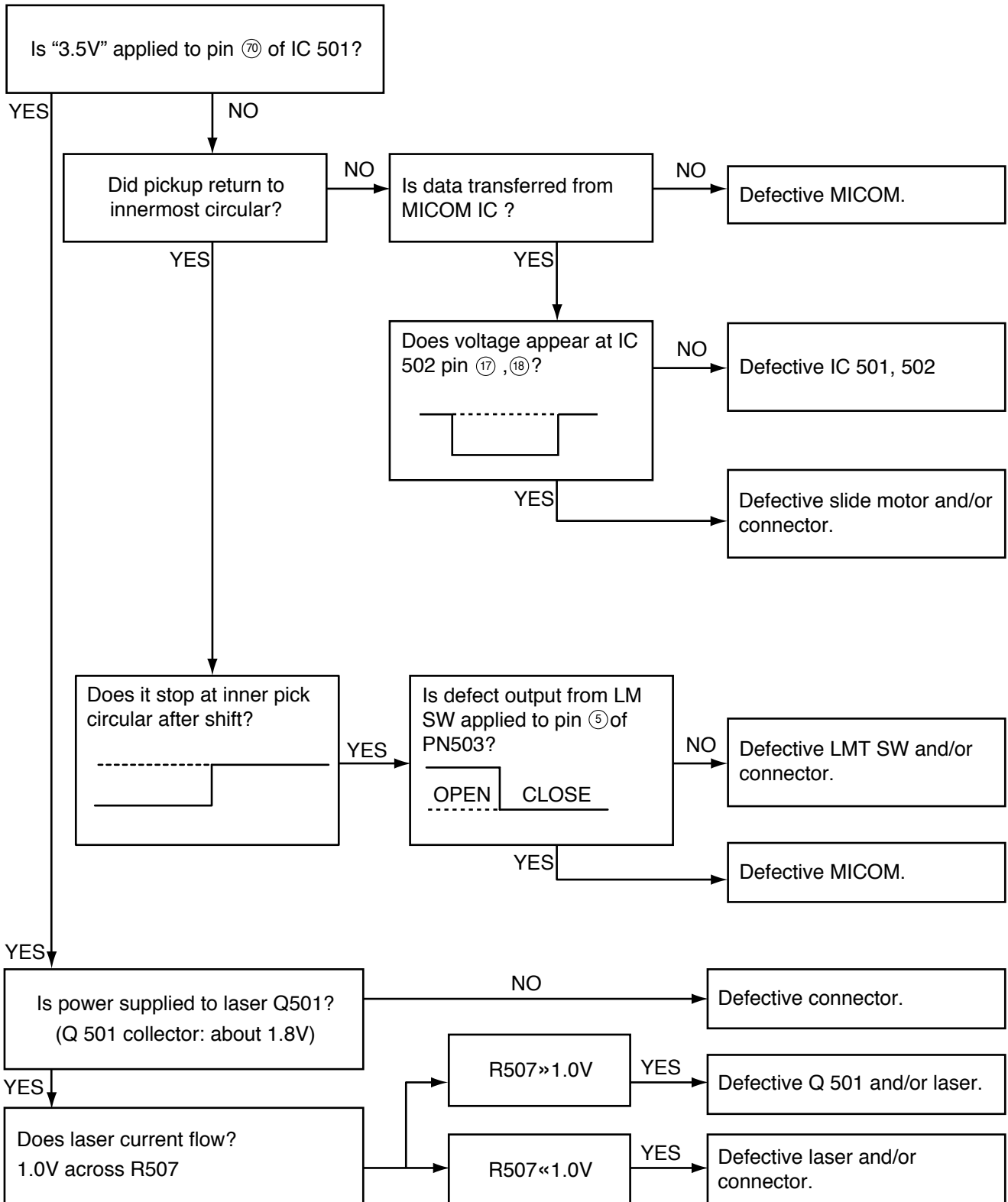


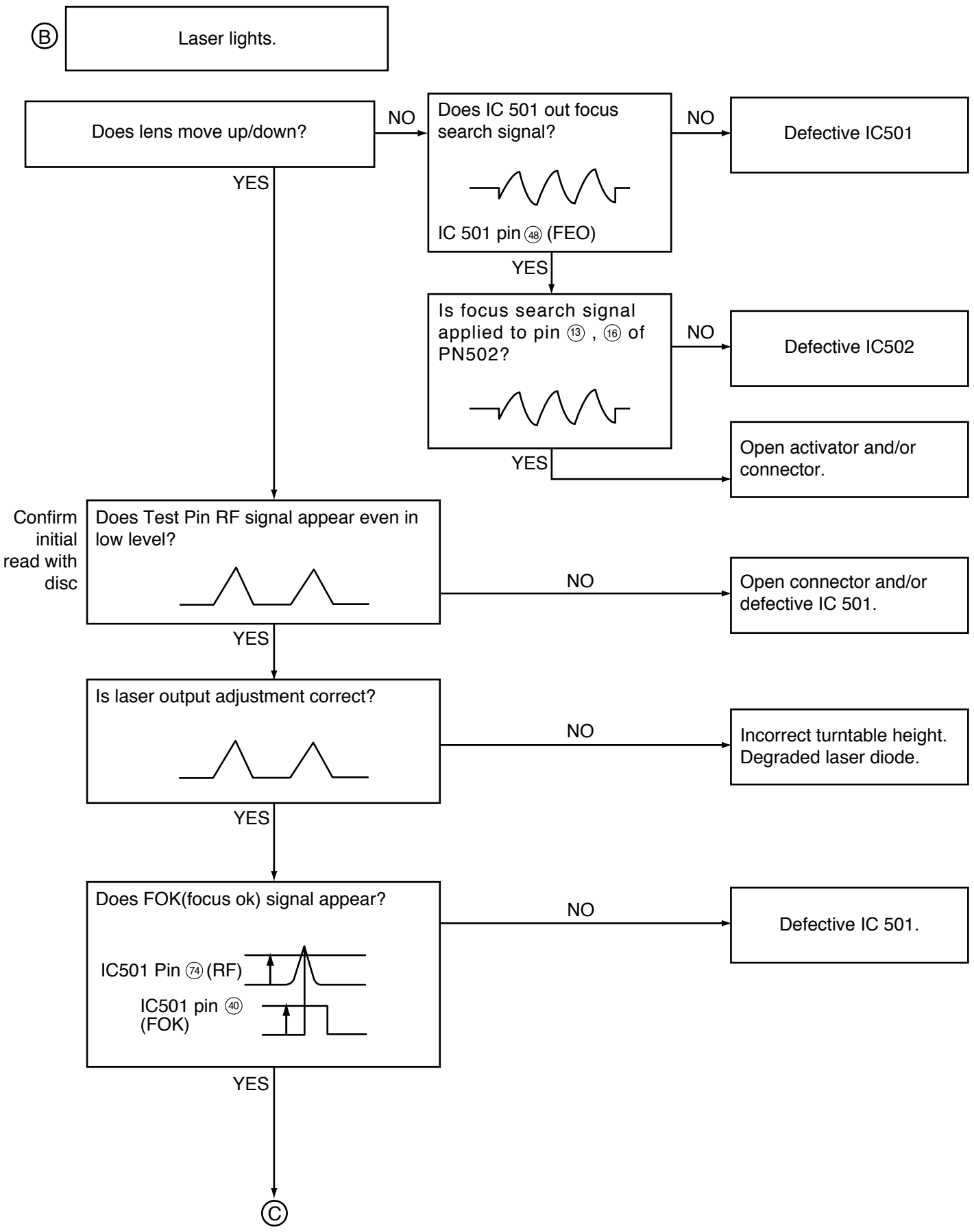
Fails to initial read

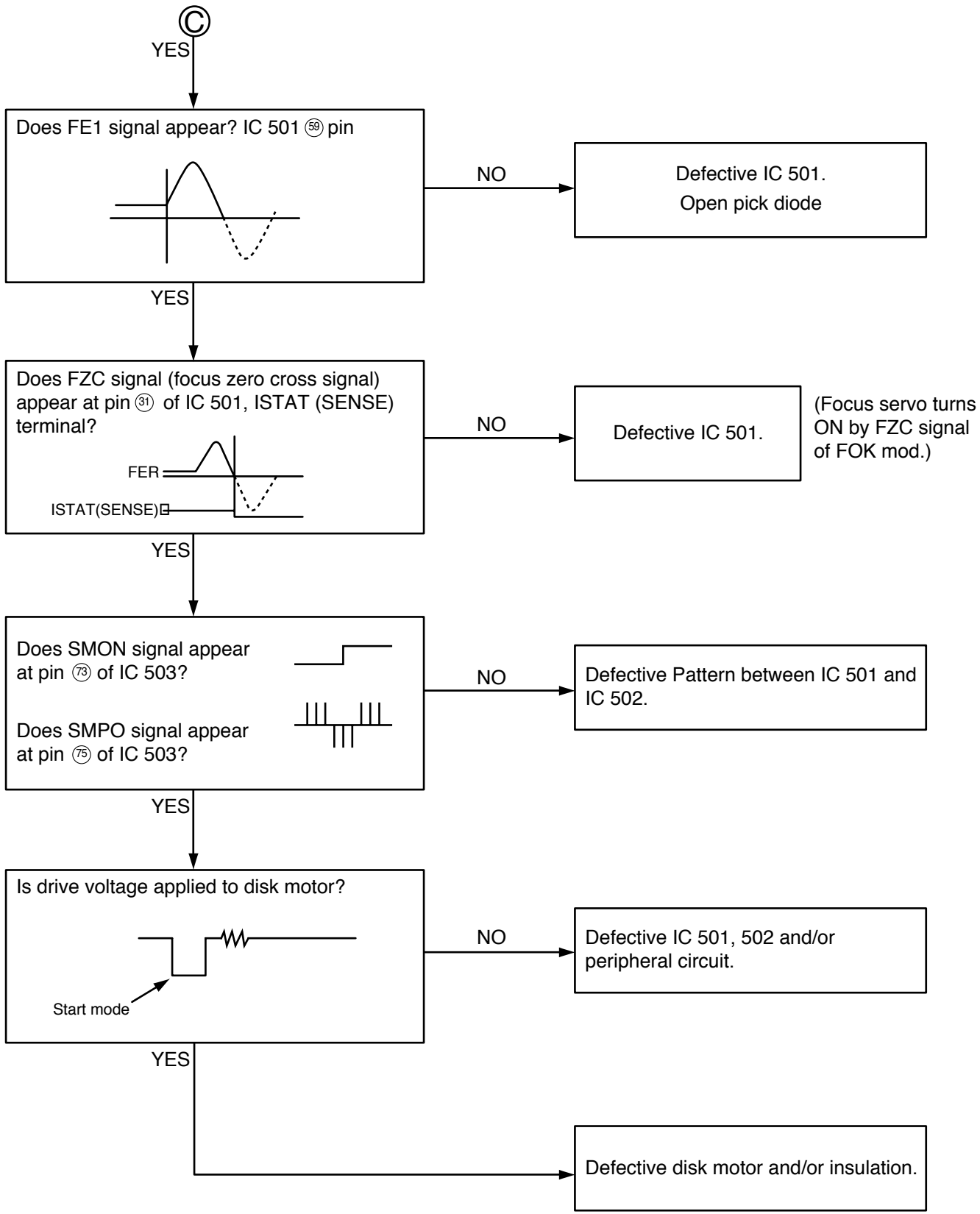


(A)

Laser does not light.

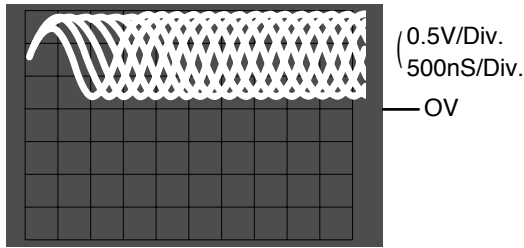




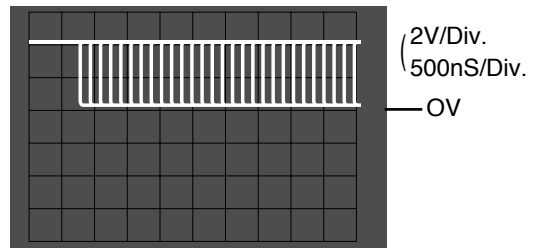


WAVEFORMS OF MAJOR CHECK POINT

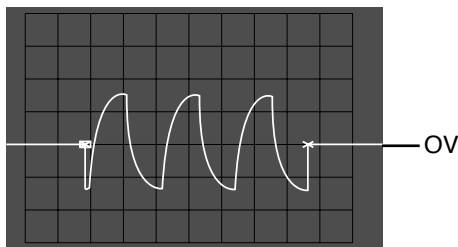
1. HF signal (RF signal) waveform
(Test Point) during normal play



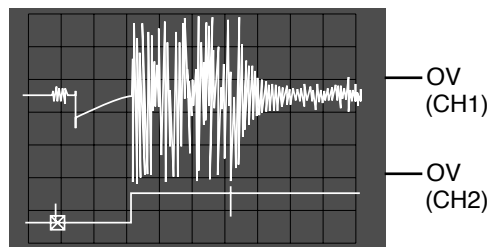
2. EFM signal (pin 33 IC 501) waveform
during Normal Play



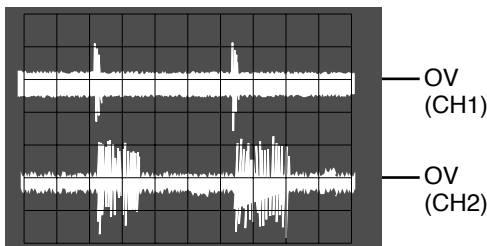
3. Focus coil drive waveform (Pin NO 1, 2 of IC 502)
• When focus search failed or there is no disc on the tray



- Focus coil drive waveform (pin NO 1, 2 of IC 502) and
FOK (pin NO 40 of IC 501) when focus search is
accomplished

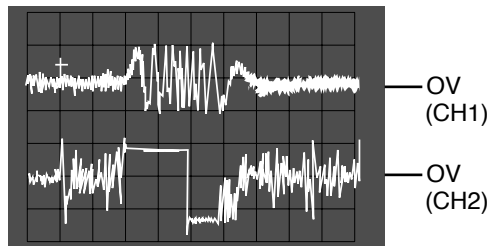


4. Tracking coil drive waveform (pin NO 26, 27 of IC 502)
and TEO during track traverse
(1) When time division is 20nS/div



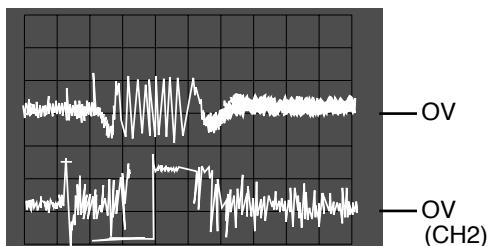
(CH1 : TEO (Test Point)
1V/Div.
CH2 : TRACK COIL DRIVE
SIGNAL 2V/Div.

- (2) When time division 0.5nS/div.
(During forward track traverse)



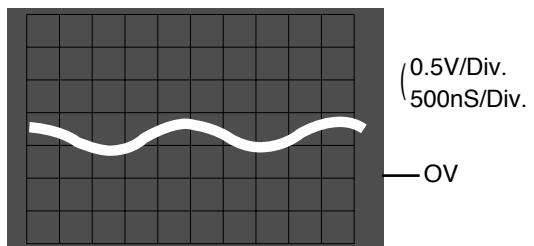
(CH1 : TEO (Test Point)
1V/Div.
CH2 : TRACKING COIL DRIVE
SIGNAL 2V/Div.

- (3) When time division is 0.5nS/div.
(During backward Track Traverse)

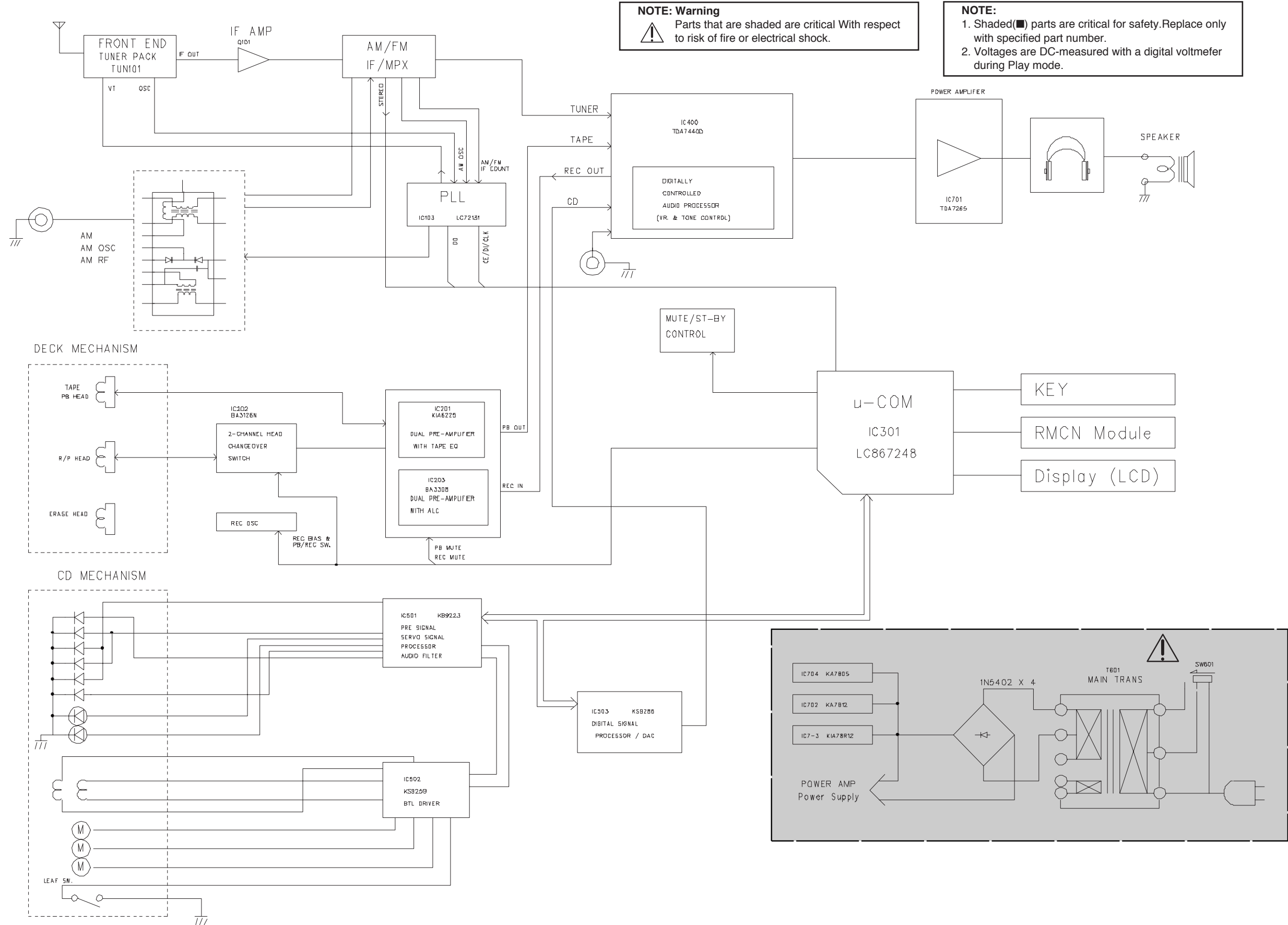


(CH1 : TEO (Test Point)
1V/Div.
CH2 : TRACKING COIL DRIVE
SIGNAL 2V/Div.

5. Feed motor drive waveform (pin NO 11, 12 of IC 502)
During normal play




BLOCK DIAGRAM



SCHEMATIC DIAGRAMS

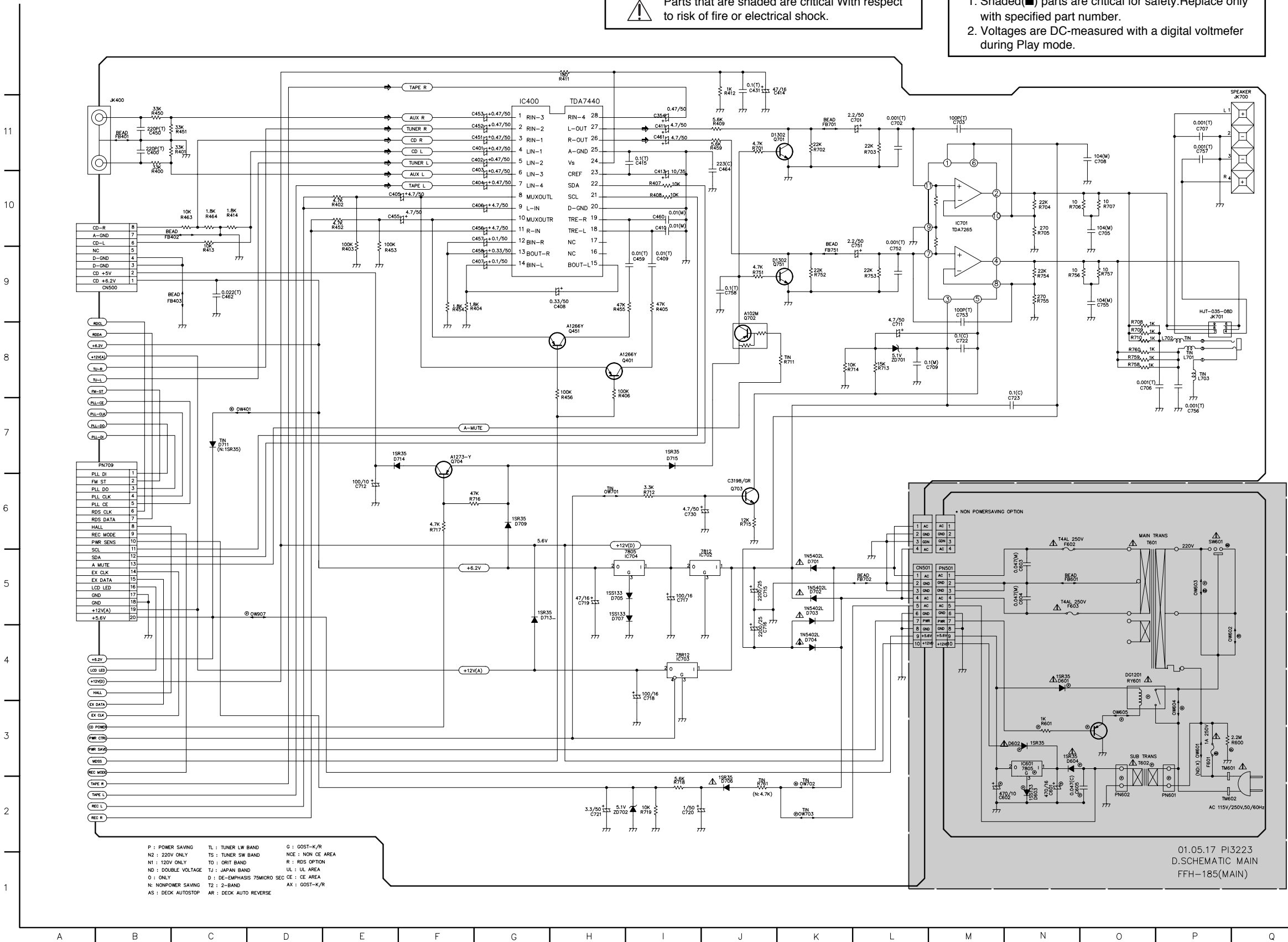
• MAIN SCHEMATIC DIAGRAM

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 voltmeter during Play mode.

LOCATION GUIDE

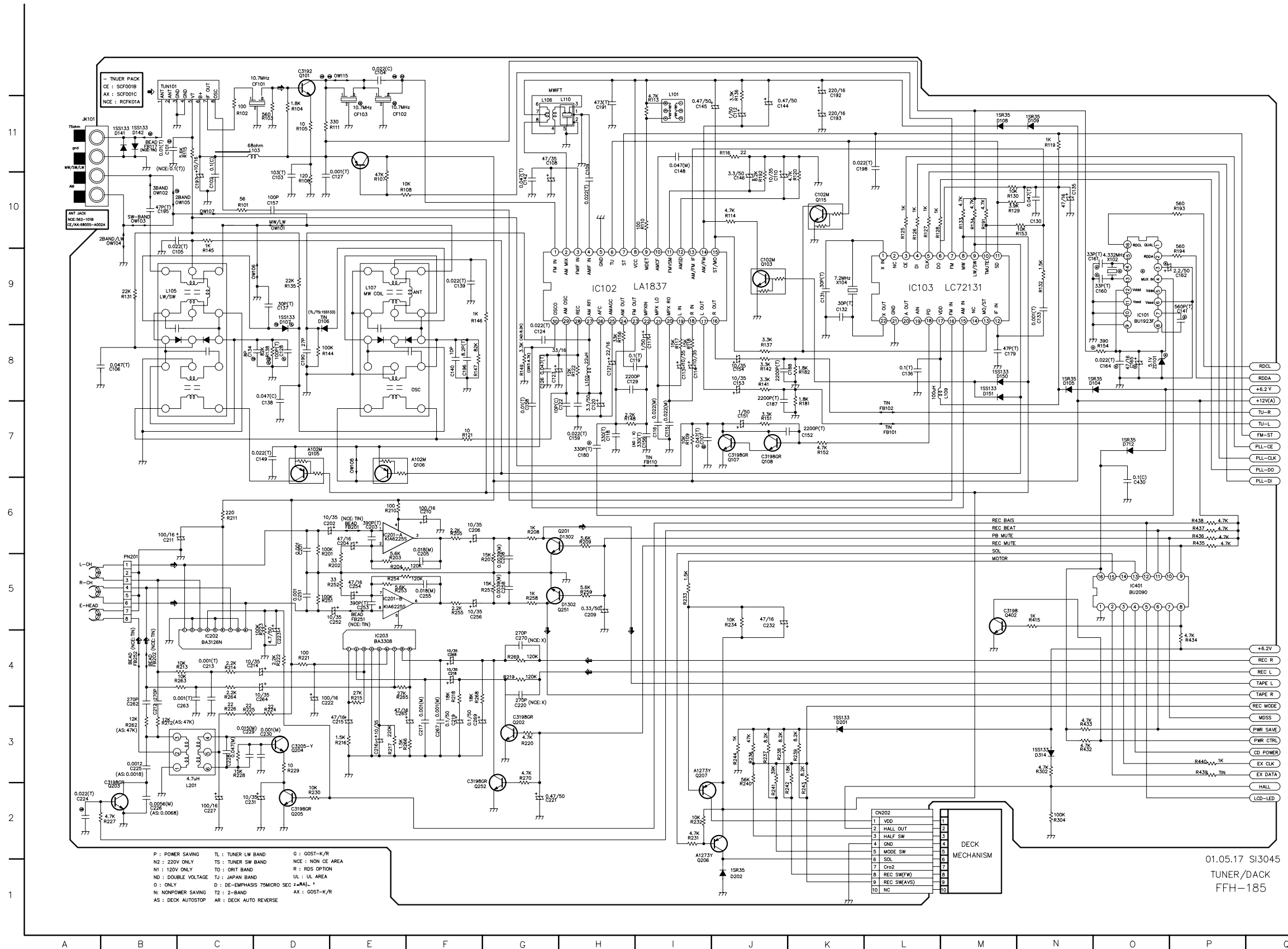
C354	I11	L703	P8
C400	B11	LCD LED A4	
C401	F11	MDSS A3	
C402	F11	OW401 C7	
C403	F10	OW601 P3	
C404	F10	OW602 Q4	
C405	E10	OW603 P5	
C406	F10	OW604 P3	
C407	F9	OW605 O3	
C408	H9	OW701 H6	
C409	I9	OW702 K2	
C410	I10	OW703 K2	
C411	I11	OW907 D5	
C413	I10	PLL-CE A7	
C414	J12	PLL-CLKA7	
C415	I11	PLL-DI A7	
C431	J12	PLL-DO A7	
C450	B11	PN501 M5	
C451	F11	PN601 P2	
C452	F11	PN602 O2	
C453	F11	PN709 B7	
C455	E10	PWR CTR A3	
C456	F10	PWR SA V3	
C457	F10	Q401 H8	
C458	F9	Q451 H8	
C459	I9	Q701 J11	
C460	I10	Q702 J9	
C461	I11	Q703 J6	
C462	O9	Q704 F7	
C464	J10	Q751 J9	
C501	N2	R400 B10	
C602	M2	R401 C11	
C603	N5	R402 E10	
C604	N5	R403 E9	
C605	N2	R404 F9	
C701	K11	R405 I9	
C702	L11	R406 H8	
C703	M11	R407 I10	
C705	O10	R408 I10	
C706	O8	R409 J11	
C707	P11	R411 H12	
C708	O11	R412 J12	
C709	L8	R413 C9	
C711	L8	R414 C10	
C712	E6	R450 B11	
C715	J5	R451 C11	
C716	J4	R452 E10	
C717	I5	R453 E9	
C718	I4	R454 F9	
C719	H5	R455 H9	
C720	I2	R456 H7	
C721	H2	R459 J11	
C722	M8	R463 C10	
C723	N7	R464 C10	
C730	I6	R600 Q3	
C751	K9	R601 N3	
C752	L9	R701 J11	
C753	M9	R702 K11	
C755	O9	R703 L11	
C756	P7	R704 N10	
C757	N10	R705 N10	
C758	J9	R706 N10	
CD POWER3	R707	O10	
CN500	B9	R708 O8	
CN501	L5	R709 O8	
D601	N4	R710 N8	
D602	N3	R711 H8	
D603	N2	R712 I6	
D604	N3	R713 L8	
D701	K5	R714 K8	
D702	K5	R715 J6	
D703	K5	R716 F6	
D704	K4	R717 F6	
D705	H5	R718 I2	
D706	J2	R719 I2	
D707	H5	R751 J9	
D709	G6	R752 K9	
D711	C7	R753 L9	
D713	O5	R754 N9	
D714	E7	R755 N9	
D715	I7	R756 N9	
EX CLK A3	R757	O9	
EX DATA3	R758	O8	
F601	P3	R759 O8	
F602	N6	R760 O8	
F603	N5	R761 J2	
FB401	B11	RDCL A8	
FB402	B10	RDDA A8	
FB403	B9	REC L A2	
FB601	N5	REC MOD A3	
FB701	K11	REC R A2	
FB702	L5	RY601 O4	
FB751	K9	SW601 P6	
FM-ST A8	T601	O6	
HALL A4	T602	O3	
IC400	G11	TAPE L A2	
IC601	N3	TAPE R A2	
IC701	M10	TM601 P3	
IC702	I5	TM602 P2	
IC703	I4	TU-L A8	
IC704	H5	TU-R A8	
JK400	B11	ZD701 L8	
JK700	O11	ZD702 H2	
JK701	P9		
L701	P8		
L702	P8		



P : POWER SAVING TL : TUNER LW BAND G : GOST-K/R
 N2 : 220V ONLY TS : TUNER SW BAND HSE : NON CE AREA
 N1 : 120V ONLY TO : ORT BAND R : RDS OPTION
 ND : DOUBLE VOLTAGE TJ : JAPAN BAND UL : UL AREA
 O : ONLY D : DE-EMPHASIS 75MICRO SEC CE : CE AREA
 NP : NONPOWER SAVING T2 : 2-BAND AX : GOST-K/R
 AS : DECK AUTOSTOP AR : DECK AUTO REVERSE

01.05.17 PI3223
 D.SCHEMATIC MAIN
 FFH-185(MAIN)

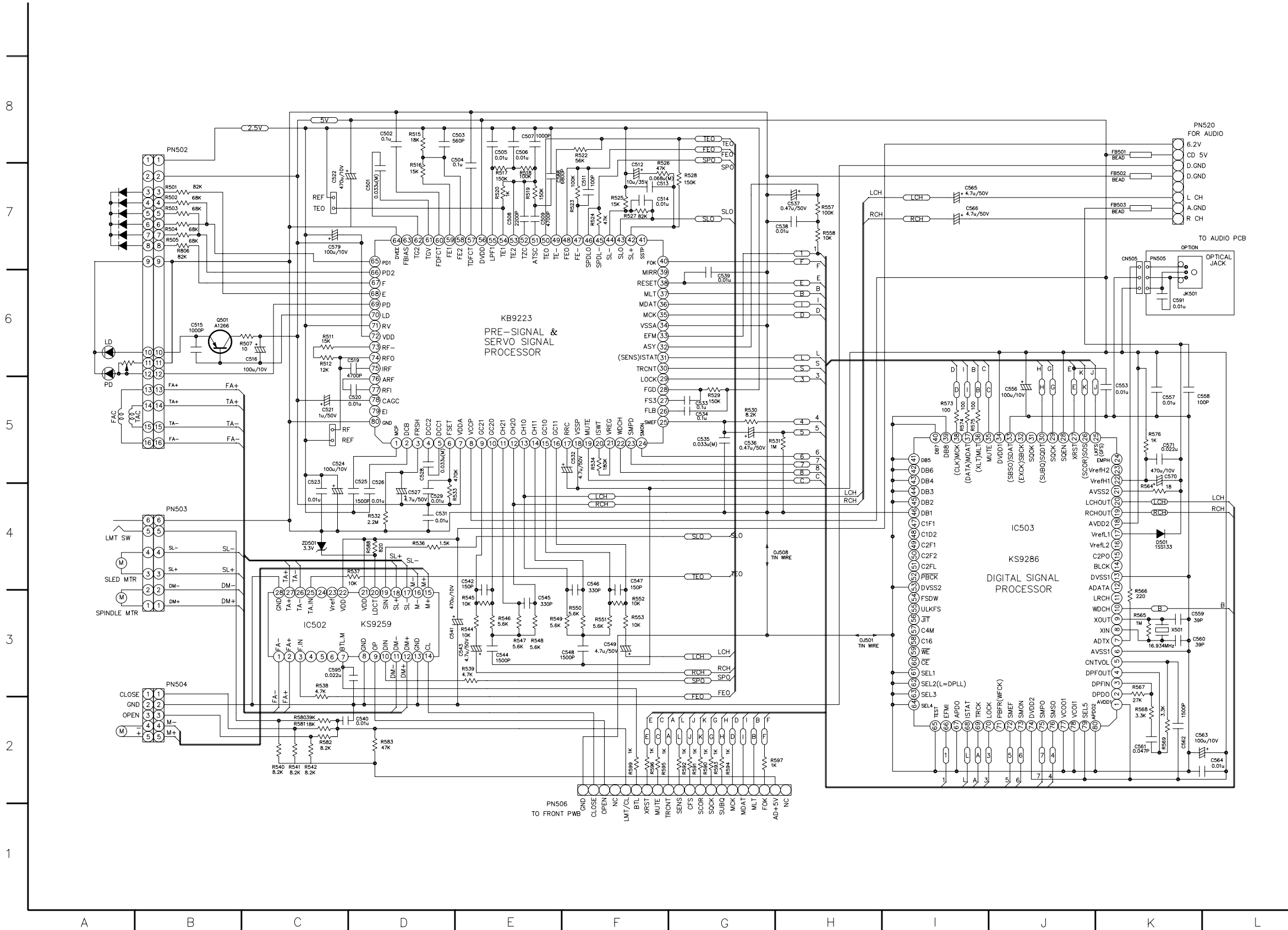
• TUNER SCHEMATIC DIAGRAM



LOCATION GUIDE

+12V(A) Q7	C268 F4	R130 M10
+6.2V Q8	C269 F3	R131 B9
+6.2V Q4	C270 G4	R132 N9
C101 B1	C430 G6	R133 M10
C102 C10	CD POWER Q3	R134 M10
C103 D10	CF101 C12	R135 D9
C104 E12	CF102 E11	R136 J11
C105 B9	CF103 E11	R137 J8
C106 BB	CH202 L2	R138 D8
C107 I7	D104 N8	R141 H8
C108 H11	D105 N8	R142 J8
C109 G10	D106 D9	R144 D8
C110 J10	D107 D9	R145 C9
C112 J11	D108 M11	R146 F9
C113 I8	D109 N11	R147 F8
C114 I8	D141 B11	R148 H7
C115 I7	D142 B11	R149 G8
C116 I7	D150 M8	R151 J7
C117 I8	D151 M8	R152 K7
C118 H7	D201 K3	R153 M10
C119 H8	D202 J1	R154 O8
C120 H7	D314 N3	R156 H8
C121 H8	D712 O7	R181 K7
C122 H7	E-HEAD A5	R182 K8
C123 G8	EX CLK Q3	R191 M10
C124 G8	EX DATA Q3	R192 J10
C126 G8	FB101 L7	R193 P10
C127 E10	FB102 L7	R194 P9
C128 D8	FB110 I7	R201 D5
C129 H8	FB117 B11	R202 D5
C130 N10	FB201 E6	R203 E5
C131 K9	FB202 B4	R204 E5
C132 K9	FB251 E5	R205 F6
C133 N9	FB252 B4	R207 F5
C134 C8	FM-ST O7	R208 G6
C135 N10	HALL Q2	R209 H6
C136 L8	IC101 O9	R210 E6
C137 D9	IC102 J9	R211 C6
C138 D7	IC103 L9	R212 B3
C139 F9	IC201-A E6	R213 C4
C140 F8	IC201-B E5	R214 C4
C141 P9	IC202 C4	R215 E4
C142 G10	IC203 E4	R216 E3
C144 J11	IC401 O5	R217 E3
C145 I11	JK101 A11	R218 F4
C146 J10	L-CH A5	R219 G4
C148 I10	L101 I11	R220 G3
C149 D7	L102 H8	R221 D4
C151 J7	L103 C11	R222 D4
C152 K7	L105 B9	R223 D4
C153 J8	L106 G11	R224 D3
C154 J8	L107 J9	R225 C3
C156 I7	L109 M8	R226 C3
C157 D10	L201 C2	R227 B2
C158 G7	LCD-LED O2	R228 C3
C159 H7	MDSS Q3	R229 D3
C160 O9	OW101 D10	R230 D2
C161 N9	OW102 B10	R231 I2
C162 P9	OW103 B10	R232 I2
C164 O8	OW104 B10	R233 I5
C165 O8	OW105 B10	R234 J5
C179 M8	OW106 D9	R236 J3
C180 H7	OW107 C10	R237 J3
C181 N9	OW108 E7	R238 J3
C188 K8	OW115 E12	R239 K3
C190 D8	PLL-CE Q7	R240 J2
C191 H11	PLL-CLK Q7	R241 J2
C192 K11	PLL-DI O6	R242 K2
C193 K11	PLL-DO Q7	R243 K2
C194 B10	PW201 B5	R244 J3
C196 F8	PWR CTRL Q3	R251 D5
C197 C10	PWR SAVE Q3	R252 D5
C198 K11	Q101 D12	R253 E5
C201 D5	Q103 J9	R254 E5
C202 E6	Q105 D7	R255 F5
C203 E6	Q106 F7	R257 F5
C204 E6	Q107 J7	R258 G5
C205 F5	Q108 J7	R259 H5
C206 F6	Q115 K10	R262 B3
C208 G5	Q201 H6	R263 B4
C209 H5	Q202 G3	R264 C4
C210 F6	Q203 B2	R265 E4
C211 B6	Q204 D3	R266 F3
C212 B3	Q205 D2	R268 F4
C213 C4	Q206 I1	R269 G4
C214 C4	Q207 I3	R270 G3
C215 E3	Q251 G5	R302 N3
C216 E3	Q252 F2	R304 N2
C217 F3	Q402 M5	R415 N5
C218 F4	R-CH A5	R432 N3
C219 F3	R101 C10	R433 N3
C220 G3	R102 C11	R434 P4
C221 C2	R103 D11	R435 P6
C222 D4	R104 D11	R436 P6
C223 D4	R105 D11	R437 P6
C224 A2	R106 D10	R438 P6
C225 B3	R107 E10	R439 P3
C226 B2	R108 E10	R440 P3
C227 C2	R109 I7	RDDCL Q8
C228 C3	R110 I0	RDDA Q8
C229 C3	R111 E11	REC L Q4
C230 D3	R113 I11	REC MODE Q3
C231 C2	R114 I11	REC R Q4
C232 J5	R115 C11	TAPE L Q4
C251 D5	R116 J11	TAPE R Q4
C252 E5	R117 B	TU-L Q7
C253 E5	R118 I8	TU-R Q7
C254 E5	R119 N11	TUN101 B12
C255 F5	R120 K10	X102 O9
C256 F5	R121 F7	X104 K9
C258 O5	R122 H8	ZD101 O8
C262 B4	R125 L10	
C263 C3	R126 L10	
C264 D4	R127 L10	
C265 E3	R128 L10	
C267 F3	R129 M10	

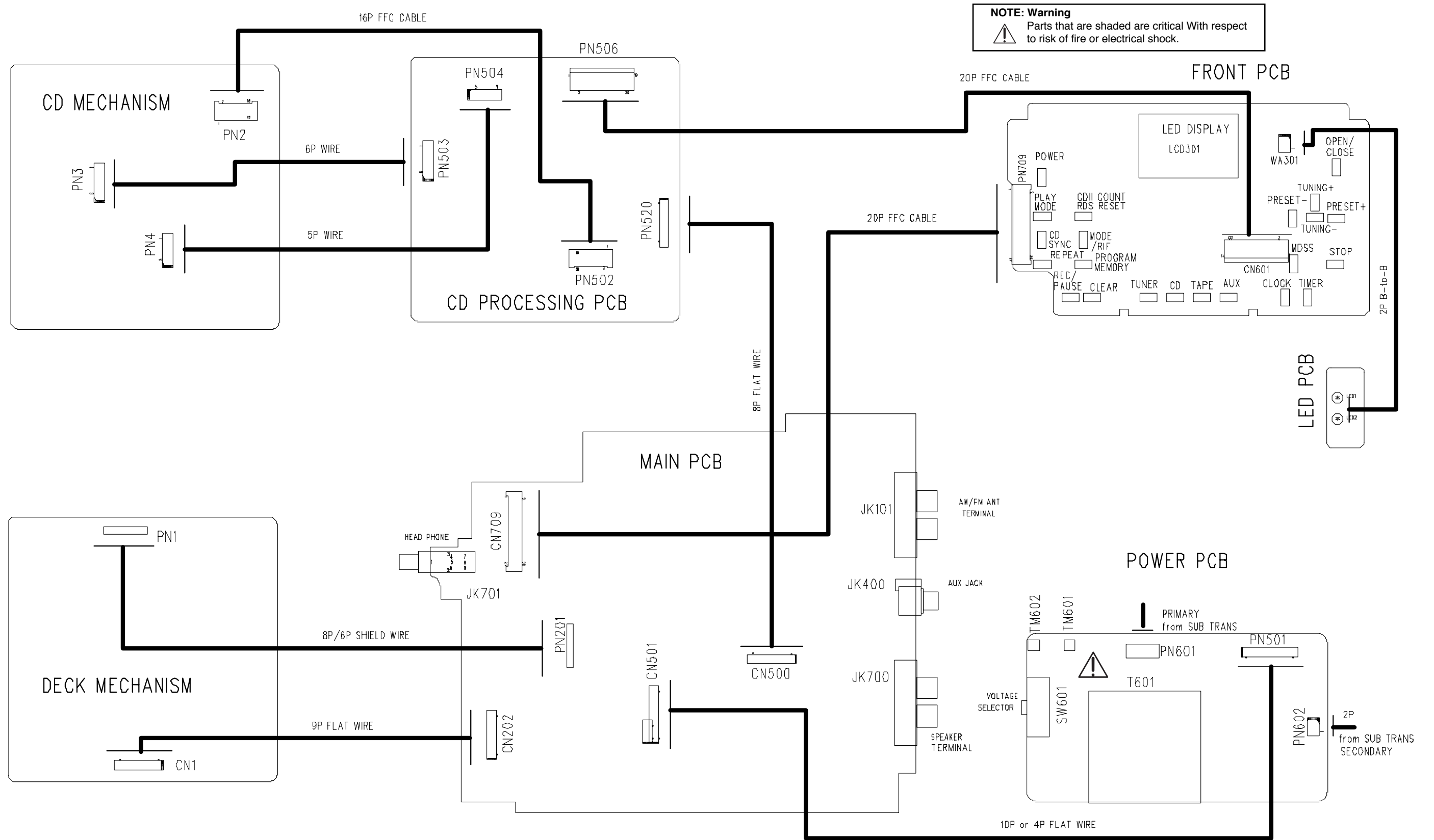
• CDP SCHEMATIC DIAGRAM



LOCATION GUIDE

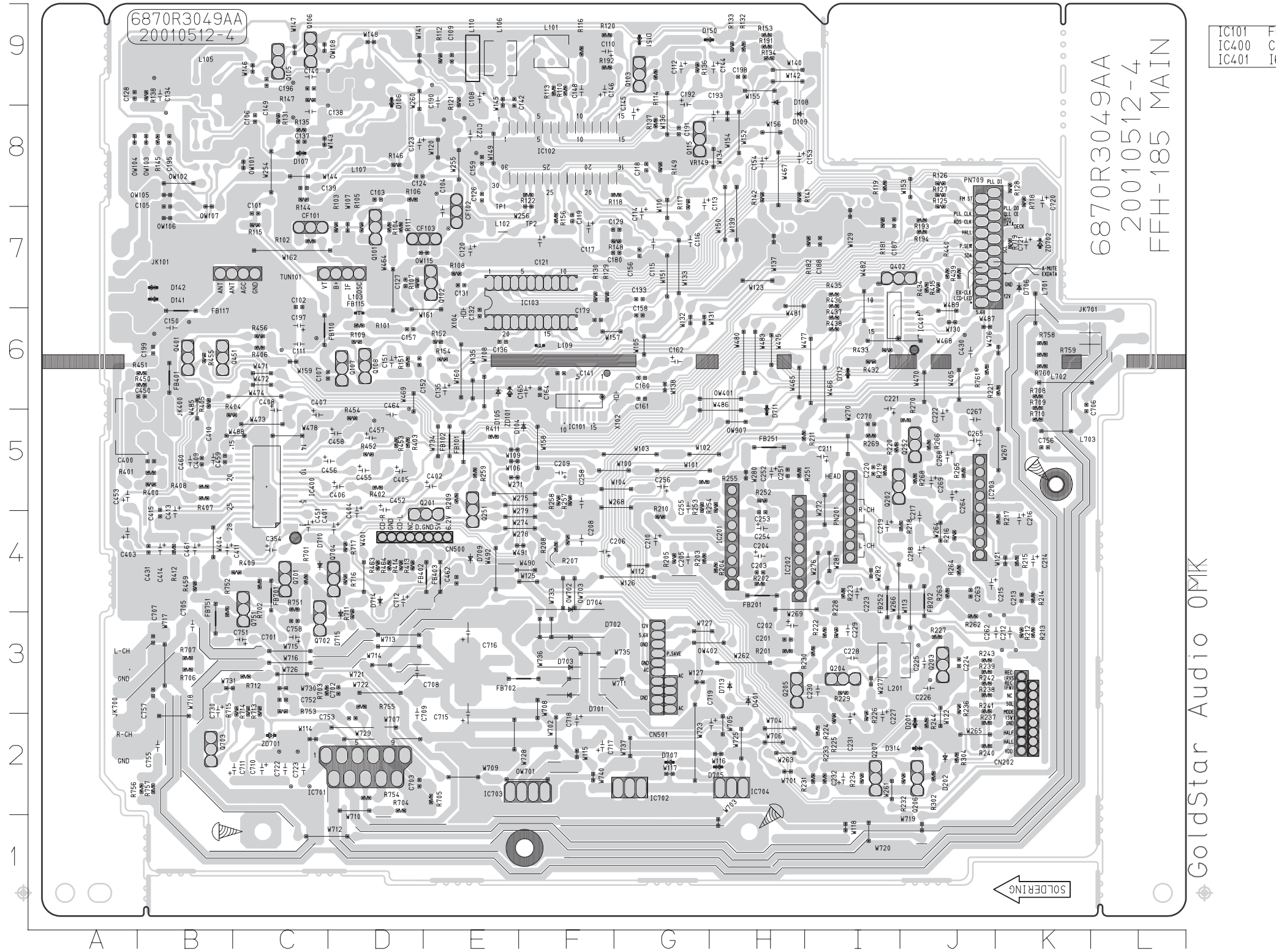
C501	D7	OJ501	H3	R593	G2
C502	D8	OJ508	G4	R594	G2
C503	D8	PN502	B8	R595	F2
C504	D8	PN503	B4	R596	F2
C505	E8	PN504	B3	R597	G2
C506	E8	PN505	K7	R599	F2
C507	E8	PN506	E1	R806	B7
C508	E7	PN520	K8	X501	K3
C509	E7	Q501	B6	ZD501	C4
C511	F7	R501	B7		
C512	F7	R502	B7		
C513	F7	R503	B7		
C514	F7	R504	B7		
C515	B6	R505	B7		
C516	C6	R507	B6		
C519	C6	R511	C6		
C520	D5	R512	C6		
C521	C5	R515	D8		
C522	C7	R516	D7		
C523	C4	R517	E7		
C524	C5	R518	E7		
C525	D5	R519	E7		
C526	D4	R520	E7		
C527	D4	R522	F8		
C528	D5	R523	F7		
C529	D4	R524	F7		
C531	D4	R525	F7		
C532	F5	R526	F7		
C533	G5	R527	F7		
C534	G5	R528	G7		
C535	G5	R529	G5		
C536	G5	R530	G5		
C537	H7	R531	G5		
C538	H7	R532	D4		
C539	G6	R533	E4		
C540	D2	R534	F5		
C541	D3	R536	D4		
C542	E4	R537	C4		
C543	E3	R538	C3		
C544	E3	R539	E3		
C545	E3	R540	C2		
C546	F4	R541	C2		
C547	F4	R542	C2		
C548	F3	R544	E3		
C549	F3	R545	E3		
C553	K5	R546	E3		
C556	J5	R547	E3		
C557	K5	R548	E3		
C558	K5	R549	E3		
C559	K3	R550	F3		
C560	K3	R551	F3		
C561	K2	R552	F3		
C562	K2	R553	F3		
C563	K2	R557	H7		
C564	L2	R558	H7		
C565	I7	R564	K4		
C566	I7	R565	K3		
C570	K5	R566	K3		
C571	K5	R567	K3		
C579	E7	R568	K2		
C588	E7	R569	K2		
C591	K6	R573	I5		
C595	C3	R574	I5		
CN505	C7	R575	I5		
D501	K4	R576	K5		
FB501	K8	R580	C2		
FB502	K7	R581	C2		
FB503	K8	R582	C2		
FEO	G7	R583	D2		
FEO	G3	R588	D4		
IC502	C3	R590	G2		
IC503	J4	R591	G2		
LCH	H4	R592	G2		

WIRING DIAGRAM

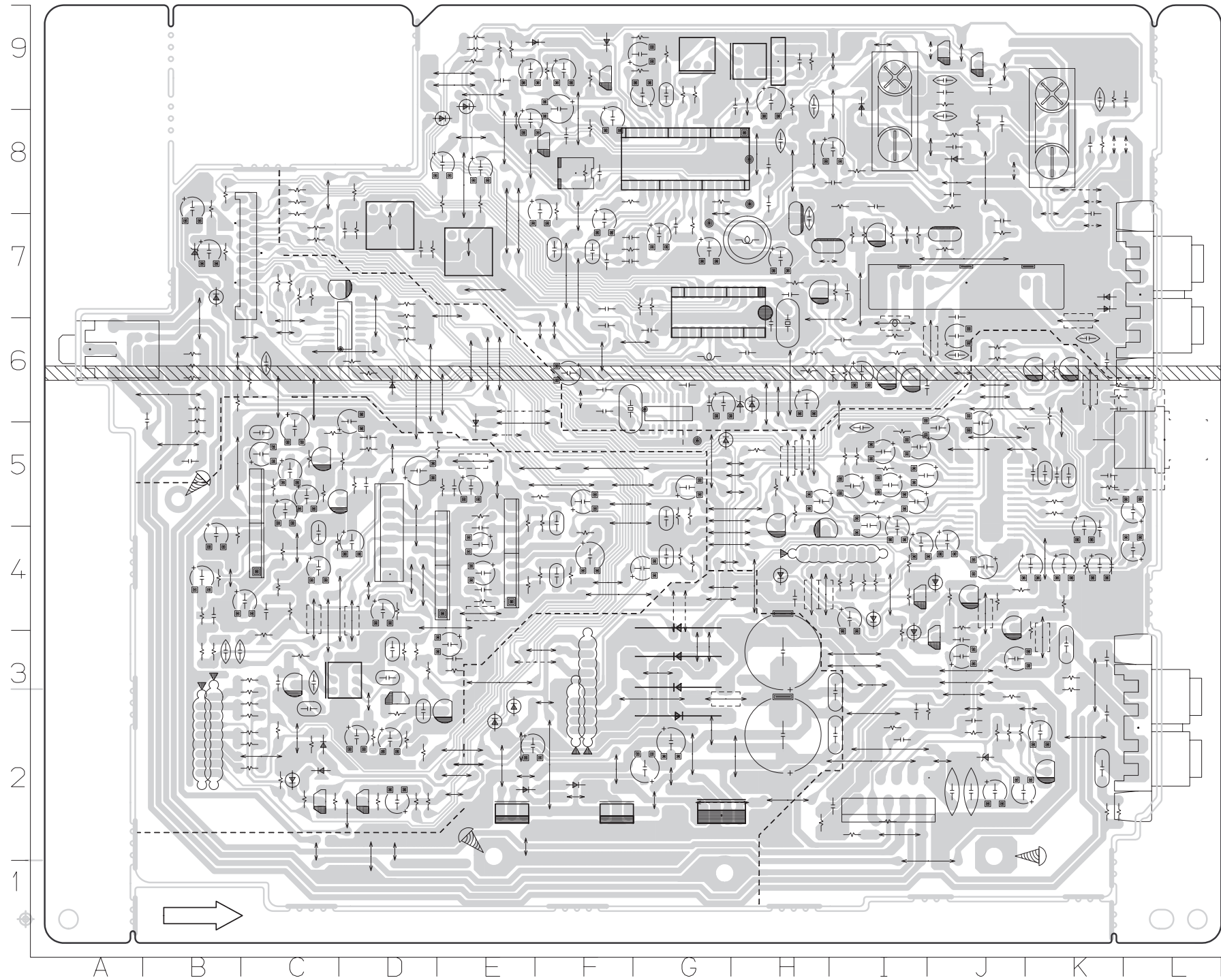


PRINTED CIRCUIT DIAGRAMS

• MAIN/TUNER P.C. BOARD(SOLDER SIDE)




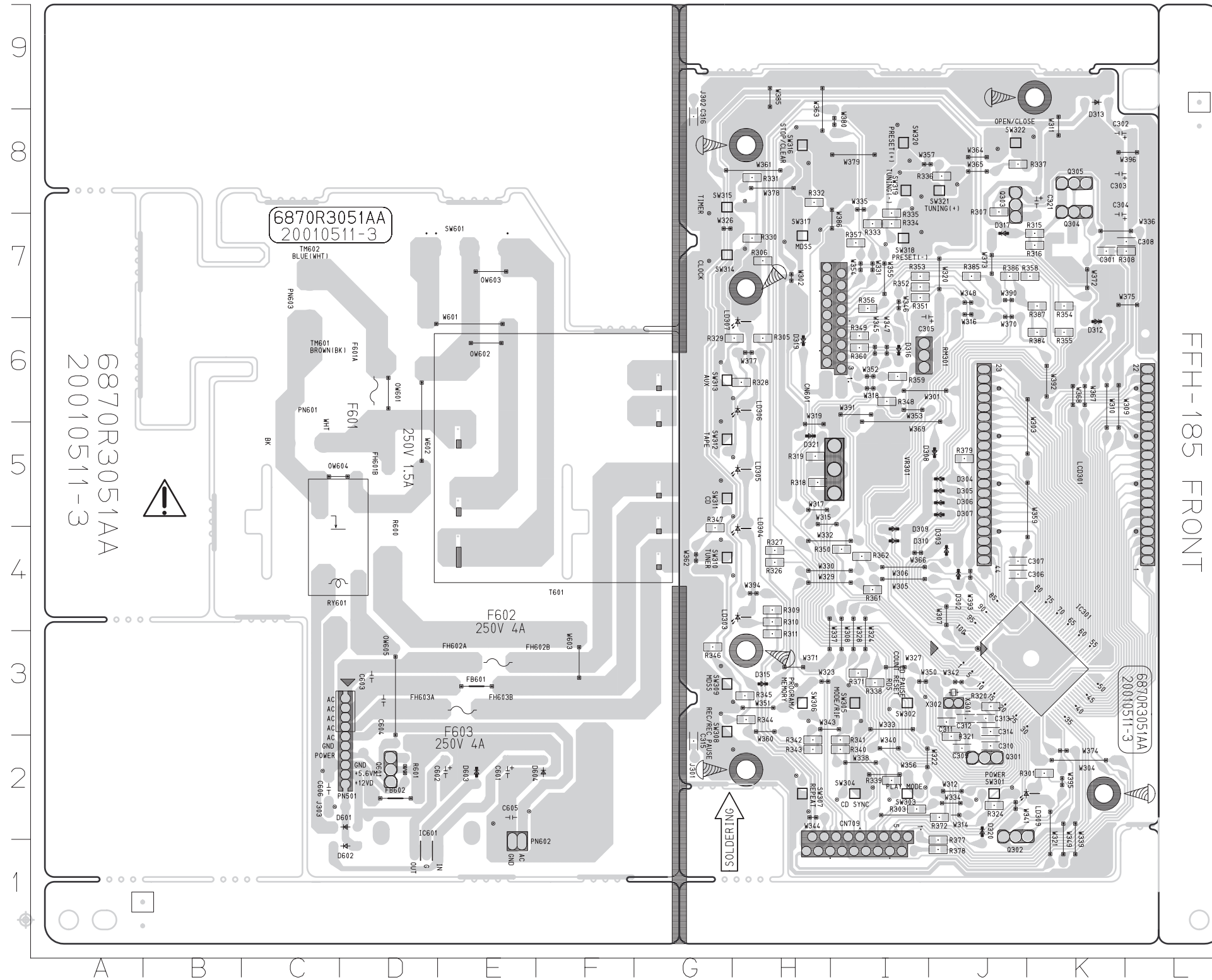
• MAIN/TUNER P.C. BOARD(COMPONENT SIDE)



C101	J7	C187	D7	C403	L4	D104	G5	L107	I8	R113	G9	R220	D5	R436	D7
C102	J7	C188	D7	C404	I4	D105	H6	L109	G6	R114	F9	R221	B6	R437	D6
C103	I8	C190	H9	C405	I5	D106	I9	L110	H9	R115	J7	R222	D3	R438	D6
C104	H7	C191	F8	C406	I5	D107	J8	L201	D3	R116	G9	R223	D4	R439	C7
C105	K7	C192	F8	C407	J5	D108	E9	L701	B6	R117	F8	R224	D2	R440	C7
C106	J8	C193	E8	C408	J5	D109	E8	L702	B6	R118	F8	R225	D2	R450	K6
C107	J6	C195	K8	C409	K5	D141	K7	L703	B5	R119	D8	R226	D2	R451	K6
C108	H9	C196	J9	C410	K5	D142	K7	OW101	J8	R120	G9	R227	C3	R452	I5
C109	H9	C197	J6	C411	K4	D150	F9	OW102	K8	R121	H9	R228	D3	R453	I5
C110	G9	C198	E9	C413	K4	D151	F9	OW103	K8	R122	G8	R229	D3	R454	I5
C111	J6	C199	K6	C414	K4	D201	C2	OW104	L8	R125	C7	R230	D3	R455	K6
C112	F9	C201	E3	C415	K4	D202	C2	OW105	K8	R126	C8	R231	D2	R456	J6
C113	F8	C202	E3	C430	C6	D314	C2	OW106	K7	R127	C8	R232	C2	R459	K4
C114	F7	C203	E4	C431	K4	D401	E3	OW107	K7	R128	B8	R233	D2	R463	I4
C115	F7	C204	E4	C450	K6	D701	G3	OW108	J9	R129	G7	R234	D2	R464	I4
C116	F7	C205	F4	C451	J4	D702	G3	OW115	H7	R130	G7	R236	C3	R701	J4
C117	G7	C206	G4	C452	I5	D703	G3	OW401	E6	R131	J8	R237	C2	R702	J4
C118	F8	C208	G4	C453	L5	D704	G4	OW402	F3	R132	E9	R238	C3	R703	J3
C119	G7	C209	G5	C455	I5	D705	E2	OW701	G2	R133	E9	R239	C3	R704	I2
C120	H7	C210	F4	C456	I5	D706	B7	OW702	G4	R134	E9	R240	C2	R705	H2
C121	G7	C211	D5	C457	I5	D707	F2	OW703	G4	R135	J8	R241	C3	R706	K3
C122	H8	C212	B3	C458	I5	D709	H4	OW907	E5	R136	F9	R242	C3	R707	K3
C123	I8	C213	B4	C459	K5	D710	J4	PN201	D4	R137	F8	R243	C3	R708	B6
C124	I8	C214	B4	C460	K5	D711	E5	PN709	C7	R138	K9	R244	C2	R709	B6
C126	H8	C215	B4	C461	K4	D712	D6	Q101	I7	R141	E8	R251	E5	R710	B5
C127	I7	C216	B4	C462	H4	D713	E3	Q102	H7	R142	E8	R252	E5	R711	I3
C128	L9	C217	C4	C464	I5	D714	I4	Q103	F9	R144	J8	R253	F5	R712	J3
C129	F7	C218	C4	C701	J3	D715	I3	Q105	J9	R145	J8	R254	E5	R713	J3
C131	H7	C219	D4	C702	I3	FB101	H5	Q106	J9	R146	I8	R255	F5	R714	J3
C132	H6	C220	D5	C703	I2	FB102	H5	Q107	I6	R147	J9	R257	G5	R715	J3
C133	F7	C221	D6	C705	K3	FB110	J6	Q108	I6	R148	F7	R258	G5	R716	I4
C134	K9	C222	C5	C706	B6	FB115	I6	Q115	F8	R149	F8	R259	H5	R717	I4
C135	H6	C223	D4	C707	K3	FB117	K6	Q201	H4	R151	I6	R262	C3	R718	B8
C136	H6	C224	C3	C708	I3	FB201	E4	Q202	D5	R152	H6	R263	C4	R719	B7
C137	J8	C225	C3	C709	I2	FB202	C4	Q203	C3	R153	E9	R264	C4	R751	J4
C138	J8	C226	C3	C710	J2	FB251	E5	Q204	D3	R154	H6	R265	C5	R752	K3
C139	J8	C227	D2	C711	J2	FB252	D4	Q205	E3	R156	G7	R266	C5	R753	J3
C140	J9	C228	D3	C712	I4	FB401	K6	Q206	C2	R181	D7	R268	C5	R754	I2
C141	G6	C229	D3	C715	H2	FB402	H4	Q207	D2	R182	D7	R269	D5	R755	I3
C142	H9	C230	D3	C716	H3	FB403	H4	Q251	H5	R191	E9	R270	C5	R756	K2
C144	E9	C231	D2	C717	G2	FB701	J4	Q252	C5	R192	G9	R302	C2	R757	K2
C145	F8	C232	D2	C718	G2	FB702	G3	Q401	K6	R193	C7	R304	C2	R758	B6
C146	G9	C251	E5	C719	E2	FB751	K3	Q402	D7	R194	C7	R400	K5	R759	B6
C148	G9	C252	E5	C720	B8	IC103	H7	Q451	K6	R201	E3	R401	K5	R760	B6
C149	J9	C253	E4	C721	B7	IC201	E4	Q701	J4	R202	E4	R402	I5	R761	C6
C150	K6	C254	E4	C722	J2	IC202	E4	Q702	J3	R203	F4	R403	I5	TP1	H8
C151	I6	C255	F5	C723	J2	IC203	C4	Q703	K2	R204	E4	R404	K5	TP2	G7
C152	I6	C256	F5	C730	K3	IC701	J2	Q704	I4	R205	F4	R405	K6	TUN101	J7
C153	E8	C258	G5	C751	J3	IC702	F2	Q751	J4	R207	G4	R406	J6	VR149	F8
C154	E8	C262	B3	C752	J3	IC703	G2	R101	I6	R208	G4	R407	K5	X102	F6
C156	F7	C263	C4	C753	I2	IC704	E2	R102	J7	R209	H5	R408	K5	X104	H6
C157	I6	C264	C5	C755	K2	J2	B3	R103	I7	R210	F4	R409	J4	ZD101	H6
C158	F6	C265	C5	C756	B5	JK101	L7	R104	I7	R211	E5	R411	H5	ZD701	J2
C159	H8	C267	C5	C757	K3	JK400	L5	R105	I7	R212	B3	R412	K4	ZD702	B7
C160	F6	C268	C5	C758	J3	JK700	L3	R106	I8	R213	B3	R413	I4		
C161	F6	C269	C5	CF101	J7	JK701	A6	R107	I7	R214	B4	R414	I4		
C162	F6	C270	D5	CF102	H7	L101	G9	R108	H7	R215	B4	R415	C7		
C164	G6	C354	J4	CF103	H7	L102	H7	R109	I6	R216	C4	R432	D6		
C165	G6	C400	K5	CN202	B3	L103	I6	R110	G9	R217	B4	R433	D6		
C179	G6	C401	I4	CN500	H4	L105	K8	R111	I7	R218	C4	R434	C7		
C180	F7	C402	H5	CN501	F3	L106	H9	R112	H9	R219	D5	R435	D7		

• FRONT/POWER P.C. BOARD(SOLDER SIDE)

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

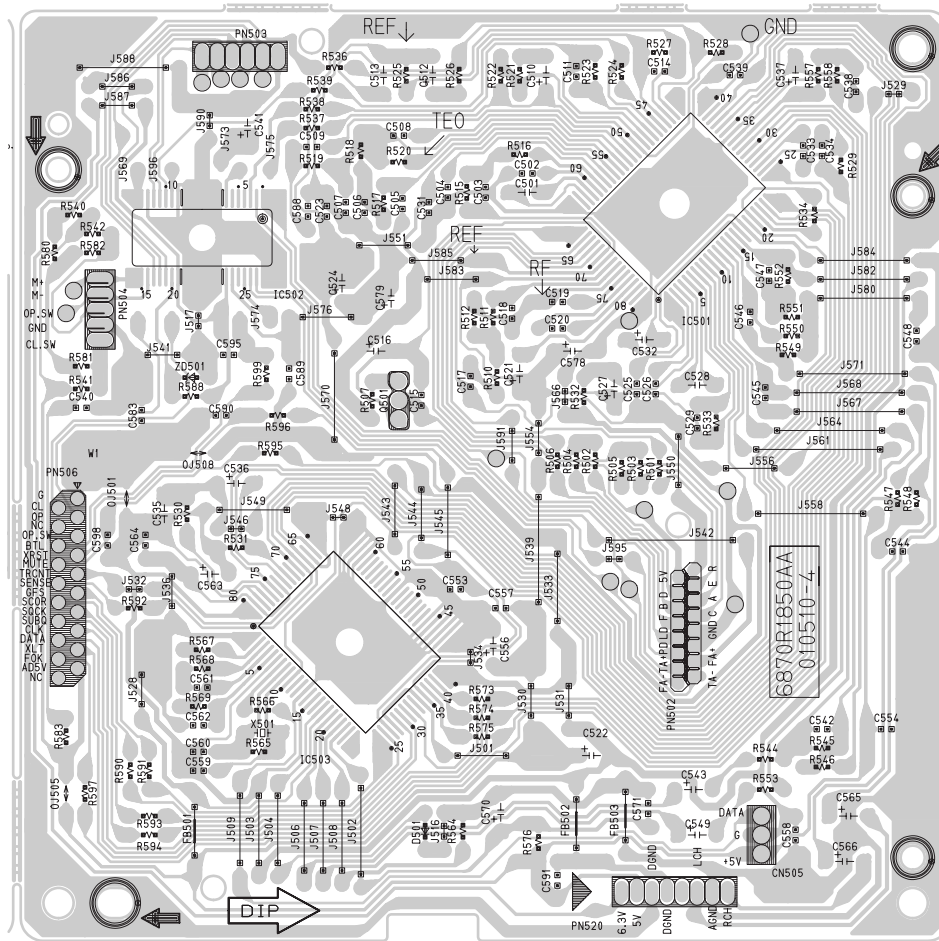


C301	K7	R335	I7
C306	J4	R336	J8
C307	J4	R337	J8
C308	L7	R338	I3
C309	J2	R339	I2
C310	J2	R340	I2
C311	J3	R341	I2
C312	J3	R342	H2
C313	J3	R343	H2
C314	J3	R344	H3
C315	G2	R345	H3
C316	G8	R346	G3
IC301	K3	R347	G4
R301	K2	R348	I6
R303	I2	R349	I6
R305	H6	R350	I4
R306	H7	R351	I7
R307	J8	R352	I7
R308	L7	R353	I7
R309	H4	R354	K7
R310	H4	R355	K6
R311	H3	R356	I7
R315	K7	R357	I7
R316	K7	R358	K7
R318	H5	R359	I6
R319	H5	R360	I6
R320	J3	R361	I4
R321	J2	R362	I4
R324	J2	R371	I3
R326	H4	R372	J2
R327	H4	R377	J1
R328	H6	R378	J1
R329	H6	R379	J5
R330	H7	R384	K6
R331	H8	R385	J7
R332	H8	R386	J7
R333	I7	R387	K7
R334	I7		

FEH-185 FRONT

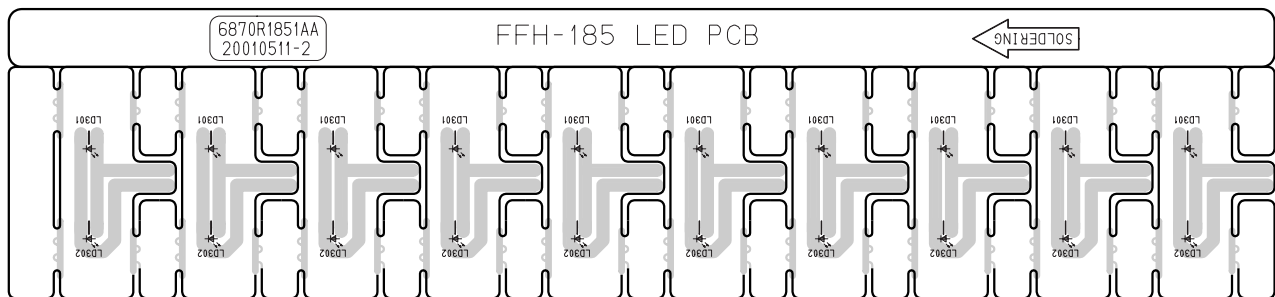
GoldStar Audio OMK

• CD MAIN P.C. BOARD

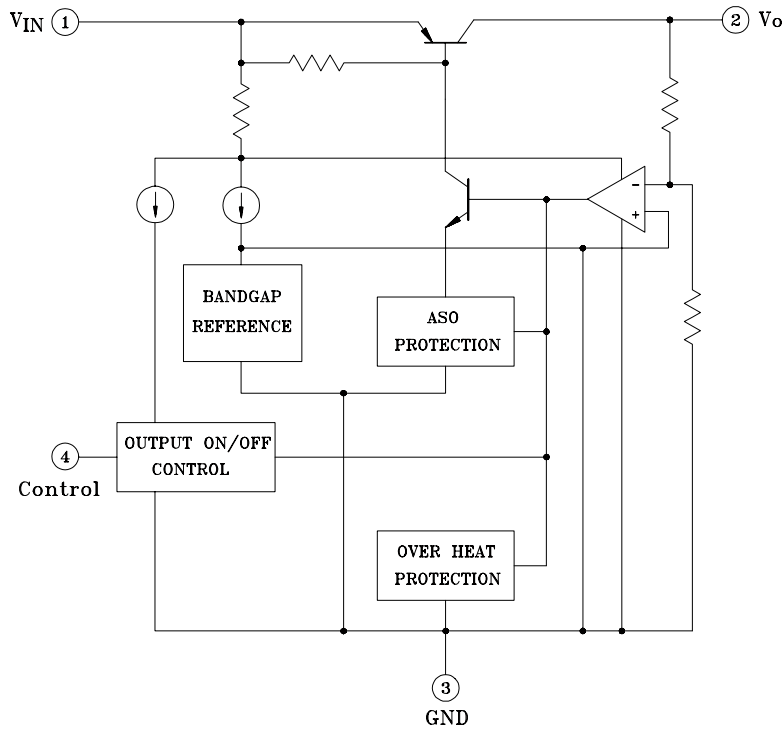


GoldStar Audio OMK

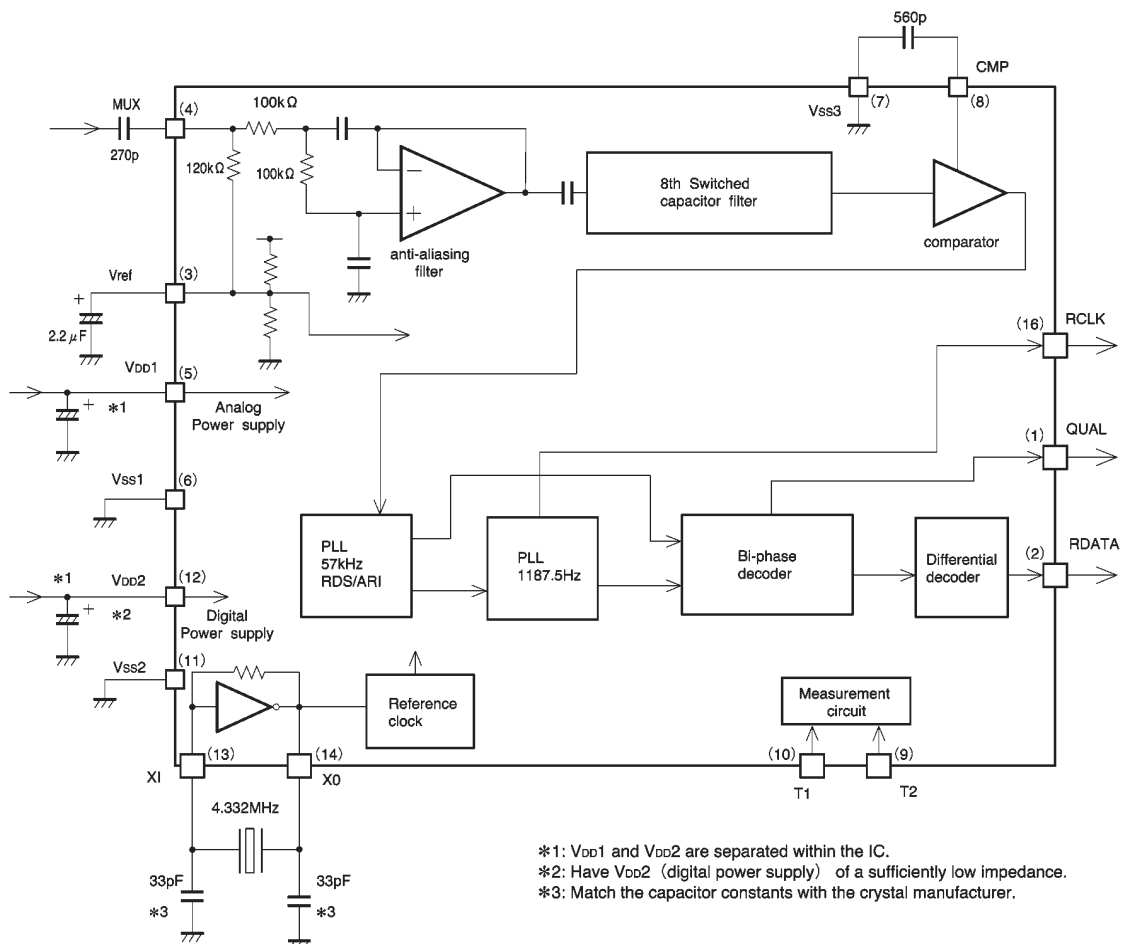
• LED P.C. BOARD



■ KIA7805 P/PI ~ KIA7815 P/PI

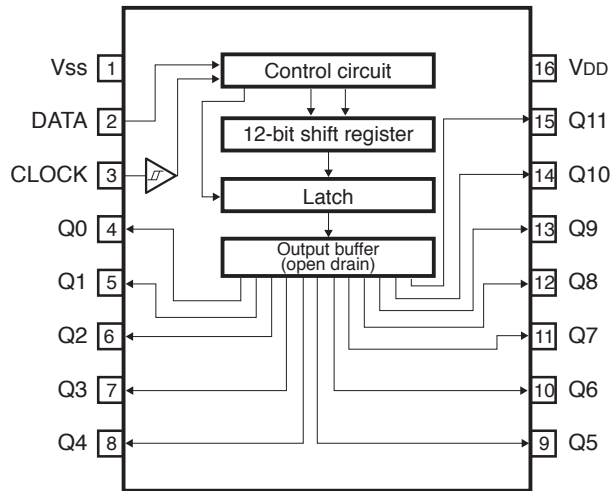


■ BU1923(FOR RDS/RBDS)



■ BU2090F

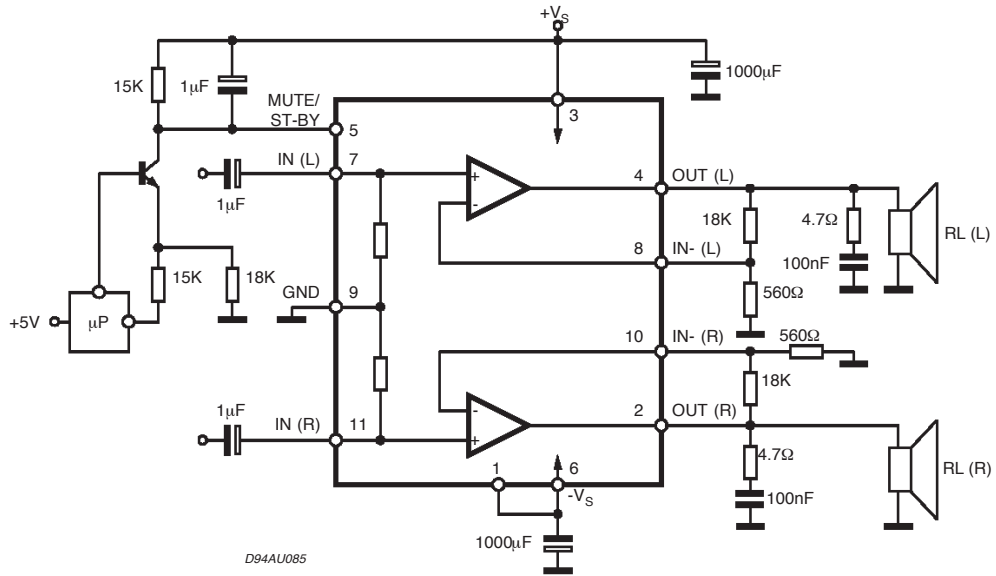
Block diagram



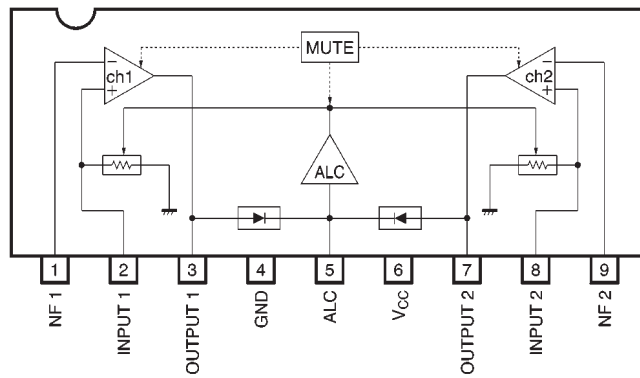
PIN DESCRIPTION

Pin No.			Pin name	Function
BU2090/F/FS	BU2092/F	BU2092/FV		
1	1	1	Vss	GND
2	2	2	DATA	Serial data input
3	3	3	CLOCK	Data shift clock input
-	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
-	-	12	N.C.	Not connected
-	-	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
-	17	19	\overline{OE}	Output Enable
16	18	20	VDD	Power supply

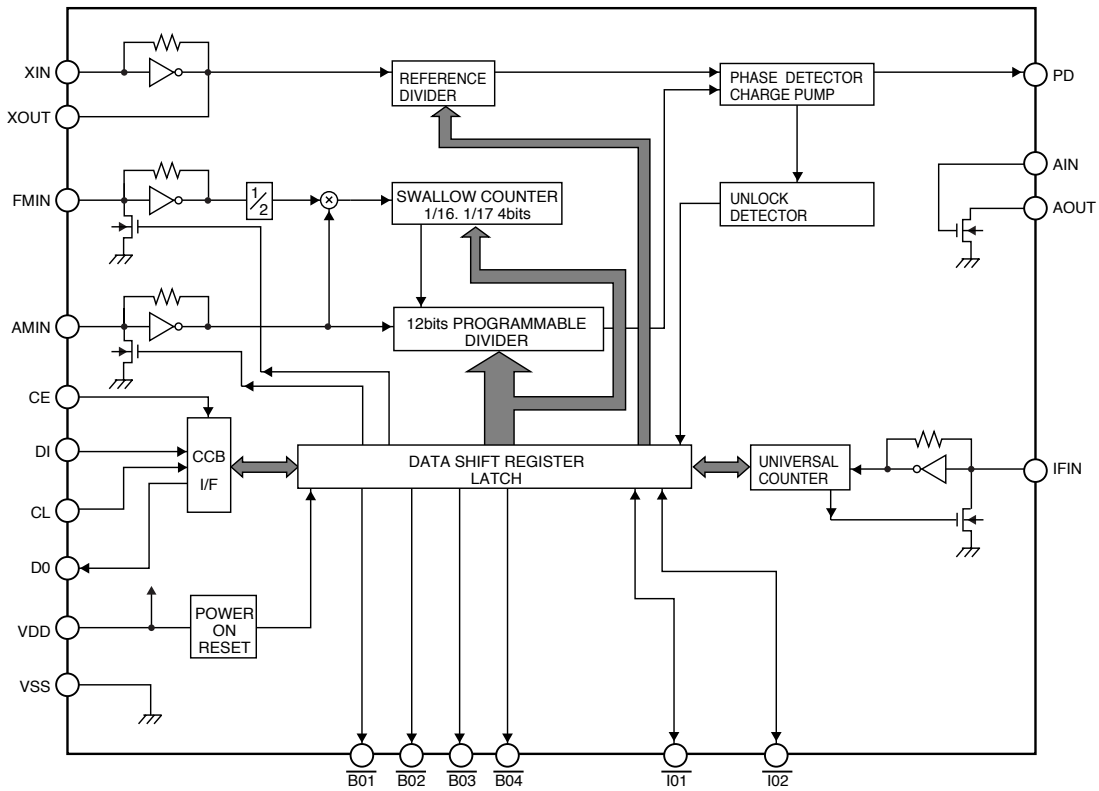
■ TDA7265



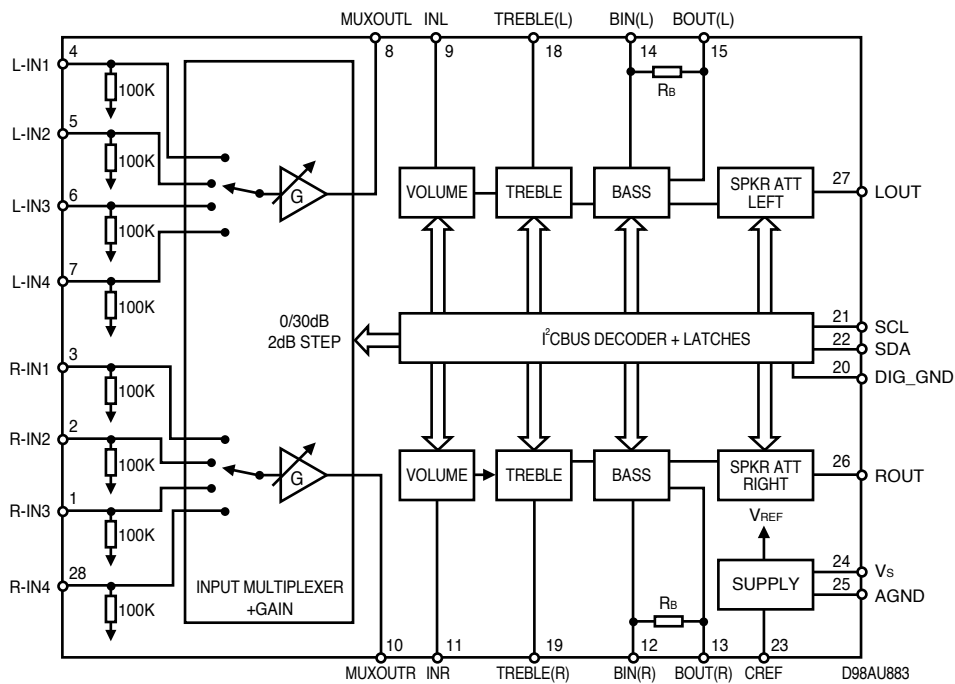
■ BA3308



LC72131, 72131M



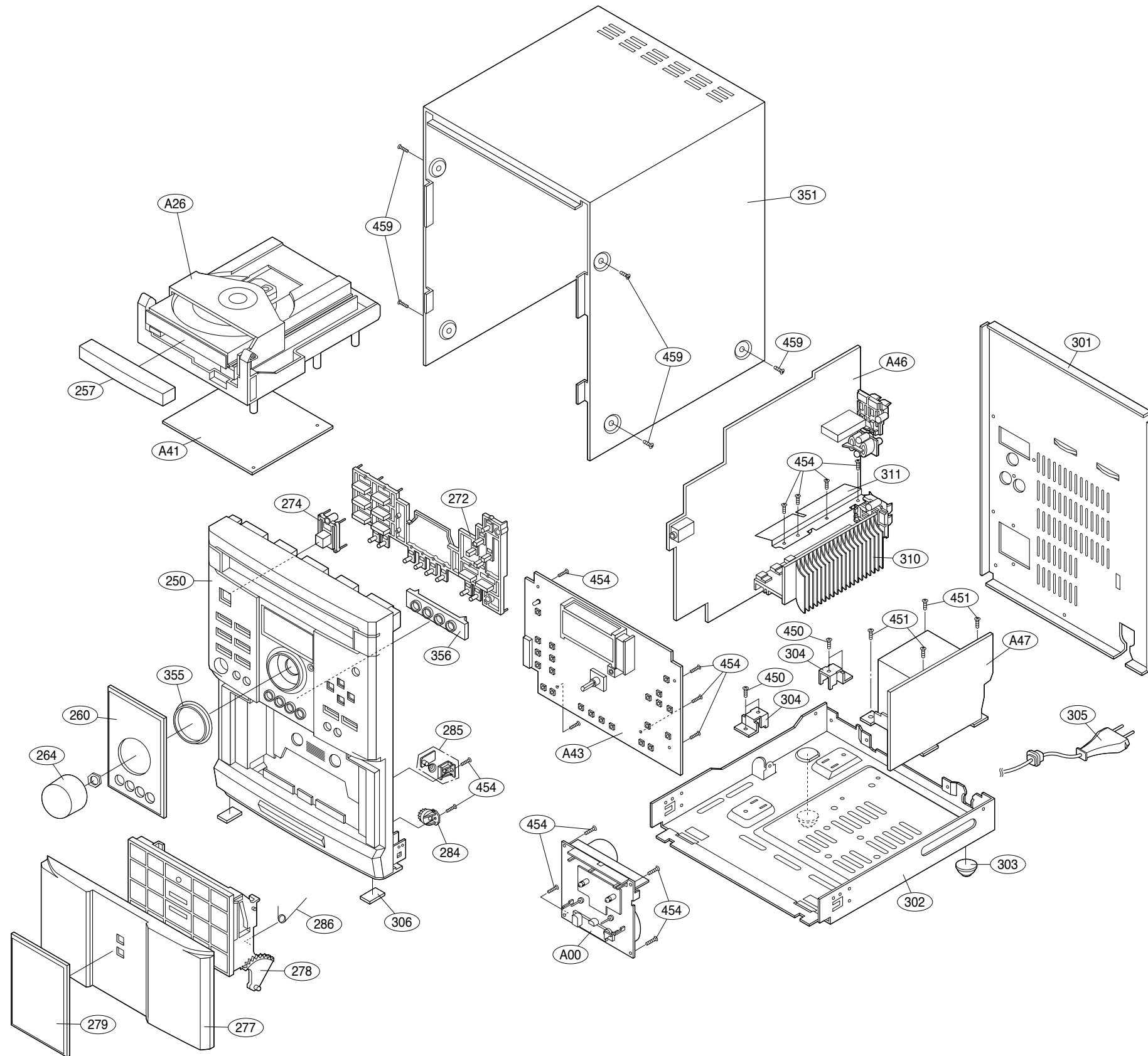
TDA7440D



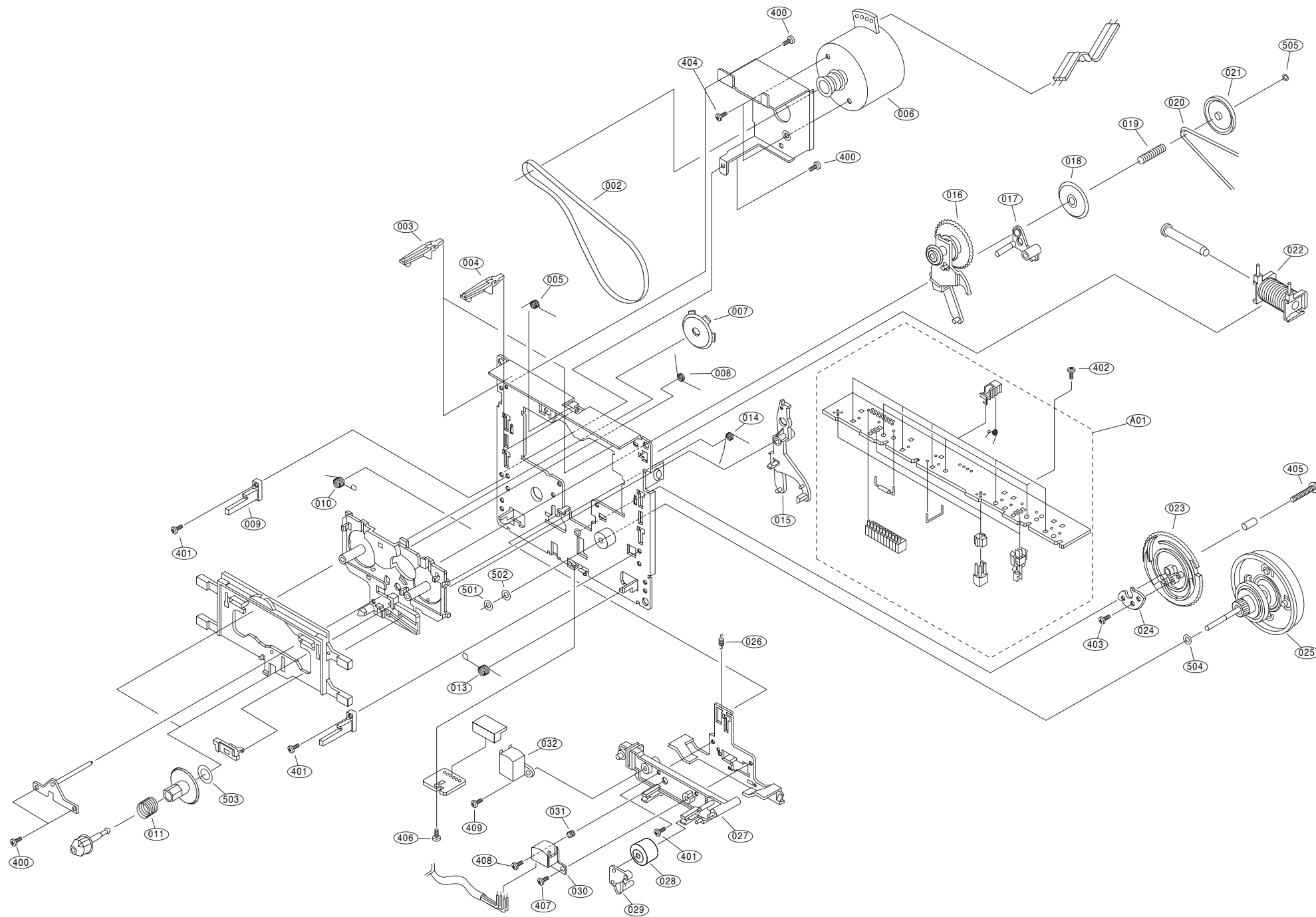
SECTION 3. EXPLODED VIEWS

• CABINET AND MAIN FRAME SECTION

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

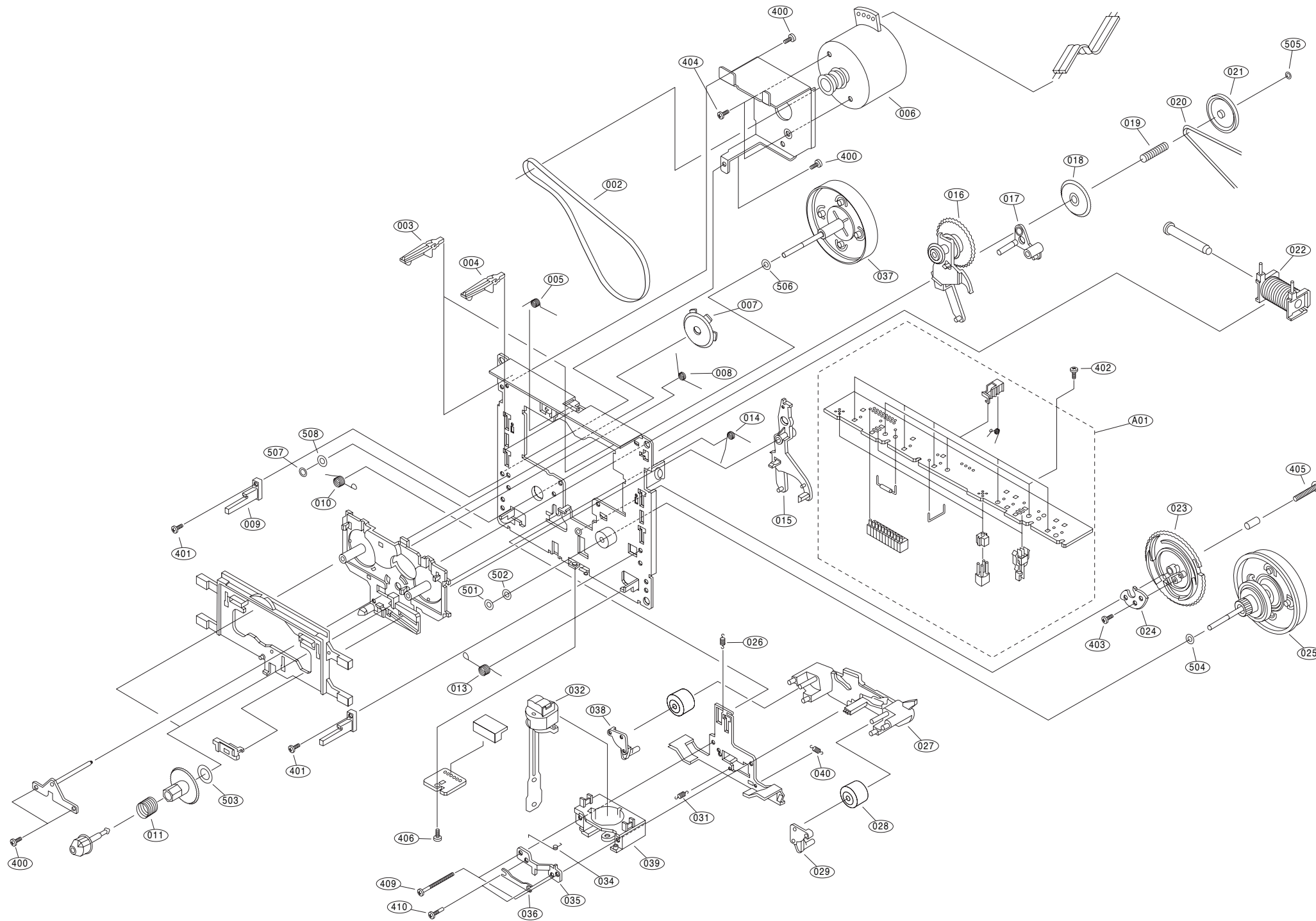


• TAPE DECK MECHANISM: AUTO STOP DECK(OPTIONAL)



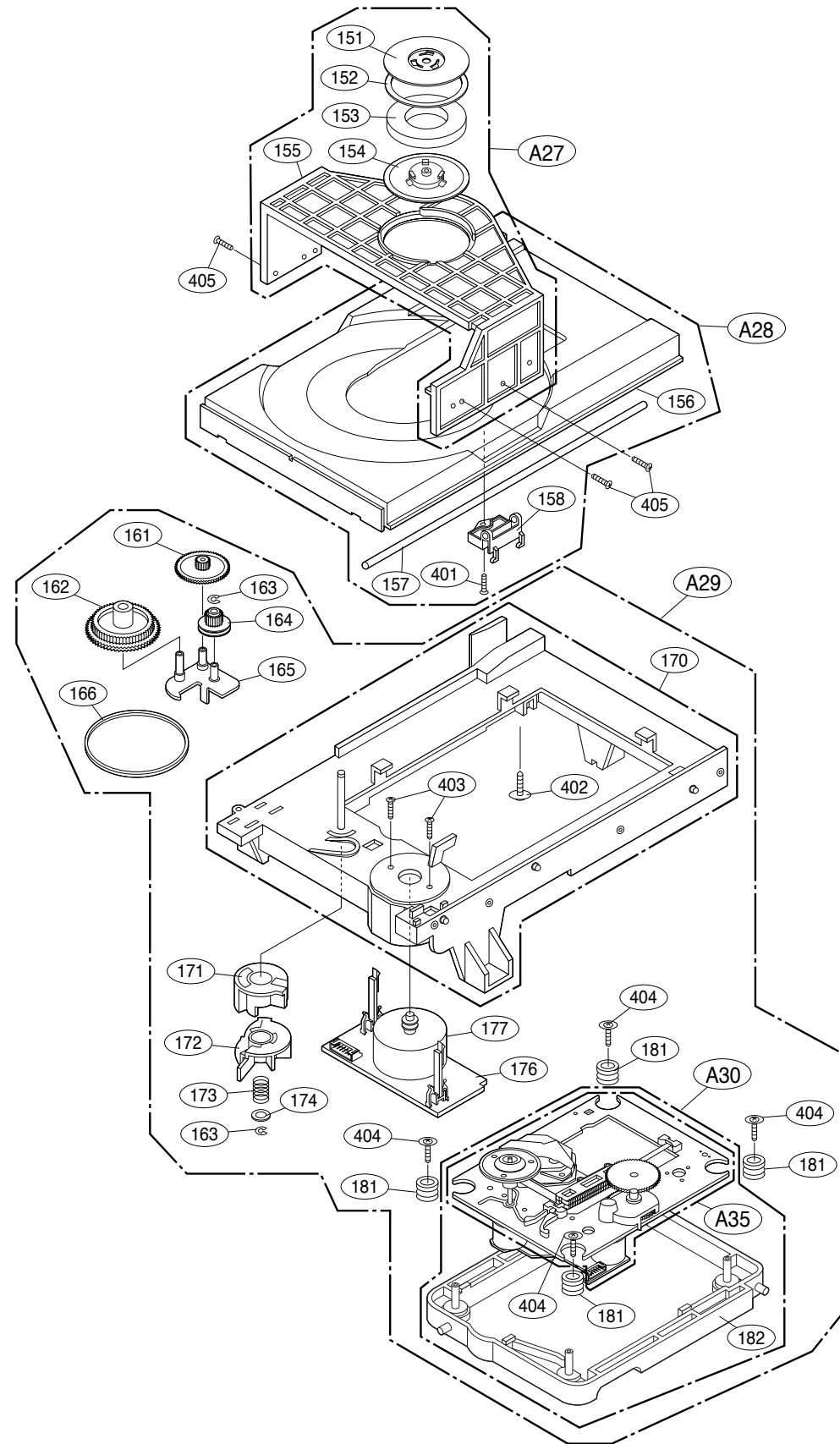
LOCA. NO	PART NO.	SPECIFICATION
A00	6730R-F001A	CFL4410 PIGEON L-SINGLE A/STOP
A01	6768R-UP01C	50-093-4527 PIGEON UNIT CFL441
002	6768R-BP01L	02-084-4201 PIGEON BELT/FELT C
003	6768R-AP01D	50-239-4027 PIGEON ARM CWL44
004	6768R-AP01E	50-239-4026 PIGEON ARM CWL44
005	6768R-SP01E	01-082-4654 PIGEON SPRING CWL4
006	6768R-QP01D	50-093-4328 PIGEON MOTOR(ASSY)
007	6768R-GP01A	50-093-4063 PIGEON GEAR CWL44
008	6768R-SP01F	01-082-4598 PIGEON SPRING CWL4
009	6768R-MP01C	50-219-4014 PIGEON MOLD CWL44
010	6768R-SP01C	01-082-4652 PIGEON SPRING CWL4
011	6768R-SP01A	01-081-4601 PIGEON SPRING CWL4
013	6768R-SP01B	01-082-4651 PIGEON SPRING CWL4
014	6768R-SP01G	01-082-4597 PIGEON SPRING CWL4
015	6768R-AP01A	50-268-3016 PIGEON ARM CWL44
016	6768R-GP01H	50-093-4503 PIGEON GEAR CRL442
017	6768R-AP01C	50-239-4072 PIGEON ARM CWL44
018	6768R-GP01J	50-222-4428 PIGEON GEAR CRL442
019	6768R-SP01P	01-081-4678 PIGEON SPRING CRL4
020	6768R-BP01C	02-083-4188 PIGEON BELT/FELT C
021	6768R-LP01C	50-223-4429 PIGEON PULLEY/FLYW
022	6768R-VP01A	50-093-4125 PIGEON SOLENOID CW
023	6768R-GP01G	50-21-4474 PIGEON GEAR CRL4428
024	6768R-AP01B	50-139-4292 PIGEON ARM CWL44
025	6768R-JP01H	50-093-3440 PIGEON PULLEY/FLYW
026	6768R-SP01D	01-080-4609 PIGEON SPRING CWL4
027	6768R-MP01B	50-093-3036 PIGEON MOLD CWL44
028	6768R-RP01A	22-027-41054 PIGEON ROLLER CWL
029	6768R-MP01A	50-219-4033 PIGEON MOLD CWL44
030	6768R-HP01A	TC881CB067B PIGEON HEAD CWL44
031	6768R-SP01J	01-081-4605 PIGEON SPRING CWL44
032	6768R-HP01B	TC231F PIGEON HEAD CWL44
400	6768R-CP01A	GSE10A2003 PIGEON SCREW CWL44
401	6768R-CP01B	GSE20A2005 PIGEON SCREW CWL44
402	6768R-CP01C	GSE10A2004 PIGEON SCREW CWL44
403	6768R-CP01D	GSL10A1704 PIGEON SCREW CWL44
404	6768R-CP01E	GSP10A2603 PIGEON SCREW CWL44
405	6768R-CP01F	GSP11A2012 PIGEON SCREW CWL44
406	6768R-CP01G	GSE20A2004 PIGEON SCREW CWL44
407	6768R-CP01H	GSL20A2005 PIGEON SCREW CWL44
408	6768R-CP01J	03-300-4127 PIGEON SCREW CWL44
409	6768R-CP01K	GSL20A2008 PIGEON SCREW CWL44
501	6768R-WP01A	GWM19S035035 PIGEON WASHER CWL
502	6768R-WP01B	GWM17S050035S PIGEON WASHER CW
503	6768R-WP01C	GWM48X075010 PIGEON WASHER CWL
504	6768R-WP01D	GWP21X045020 PIGEON WASHER CWL
505	6768R-WP01E	GWP12X030040S PIGEON WASHER CW

• TAPE DECK MECHANISM: AUTO REVERSE DECK



LOCA. NO	PART NO.	SPECIFICATION
A00	6730R-F001B	CRL4428 PIGEON L-SINGLE A/REVERSE
A01	6768R-UP01B	50-093-4329 PIGEON UNIT CRL442
002	6768R-BP01K	02-084-4200 PIGEON BELT/FELT C
003	6768R-AP01D	50-239-4027 PIGEON ARM CWL44
004	6768R-AP01E	50-239-4026 PIGEON ARM CWL44
005	6768R-SP01E	01-082-4654 PIGEON SPRING CWL4
006	6768R-QP01D	50-093-4328 PIGEON MOTOR(ASSY)
007	6768R-GP01A	50-093-4063 PIGEON GEAR CWL44
008	6768R-SP01F	01-082-4598 PIGEON SPRING CWL4
009	6768R-MP01C	50-219-4014 PIGEON MOLD CWL44
010	6768R-SP01C	01-082-4652 PIGEON SPRING CWL4
011	6768R-SP01A	01-081-4601 PIGEON SPRING CWL4
013	6768R-SP01B	01-082-4651 PIGEON SPRING CWL4
014	6768R-SP01G	01-082-4597 PIGEON SPRING CWL4
015	6768R-AP01A	50-268-3016 PIGEON ARM CWL44
016	6768R-GP01H	50-093-4503 PIGEON GEAR CRL442
017	6768R-AP01C	50-239-4072 PIGEON ARM CWL44
018	6768R-GP01J	50-222-4428 PIGEON GEAR CRL442
019	6768R-SP01P	01-081-4678 PIGEON SPRING CRL4
020	6768R-BP01C	02-083-4188 PIGEON BELT/FELT C
021	6768R-LP01C	50-223-4429 PIGEON PULLEY/FLYW
022	6768R-VP01A	50-093-4125 PIGEON SOLENOID CW
023	6768R-GP01G	50-21-4474 PIGEON GEAR CRL4428
024	6768R-AP01B	50-139-4292 PIGEON ARM CWL44
025	6768R-JP01H	50-093-3440 PIGEON PULLEY/FLYW
026	6768R-SP01D	01-080-4609 PIGEON SPRING CWL4
027	6768R-DP01A	50-259-3342 PIGEON LEVER CWL44
028	6768R-RP01A	22-027-41054 PIGEON ROLLER CWL
029	6768R-MP01A	50-219-4033 PIGEON MOLD CWL44
031	6768R-SP01L	01-080-4649 PIGEON SPRING CWL4
032	6768R-EP01A	50-093-4070 PIGEON HEAD ASSY C
034	6768R-SP01K	01-082-4650 PIGEON SPRING CWL4
035	6768R-PP01A	50-119-4046 PIGEON PRESS CWL44
036	6768R-PP01B	50-160-4108 PIGEON PRESS CWL44
037	6768R-JP01G	50-093-3439 PIGEON PULLEY/FLYW
038	6768R-MP01D	50-219-4034 PIGEON MOLD CWL44
039	6768R-MP01E	50-219-3024 PIGEON MOLD CWL44
040	6768R-SP01M	01-080-4607 PIGEON SPRING CWL4
400	6768R-CP01A	GSE10A2003 PIGEON SCREW CWL44
401	6768R-CP01B	GSE20A2005 PIGEON SCREW CWL44
402	6768R-CP01C	GSE10A2004 PIGEON SCREW CWL44
403	6768R-CP01D	GSL10A1704 PIGEON SCREW CWL44
404	6768R-CP01E	GSP10A2603 PIGEON SCREW CWL44
405	6768R-CP01F	GSP11A2012 PIGEON SCREW CWL44
406	6768R-CP01G	GSE20A2004 PIGEON SCREW CWL44
409	6768R-CP01L	GSD10A2018 PIGEON SCREW CWL44
410	6768R-CP01M	03-300-4056 PIGEON SCREW CWL44
501	6768R-WP01A	GWM19S035035 PIGEON WASHER CWL
502	6768R-WP01B	GWM17S050035S PIGEON WASHER CW
503	6768R-WP01C	GWM48X075010 PIGEON WASHER CWL
504	6768R-WP01D	GWP21X045020 PIGEON WASHER CWL
505	6768R-WP01E	GWP12X030040S PIGEON WASHER CW
506	6768R-WP01H	GWP23X040020 PIGEON WASHER CWL
507	6768R-WP01F	GWN21X040040 PIGEON WASHER CWL
508	6768R-WP01G	GWM19X055035S PIGEON WASHER CW
A01	6768R-UP01B	50-093-4329 PIGEON UNIT CRL442

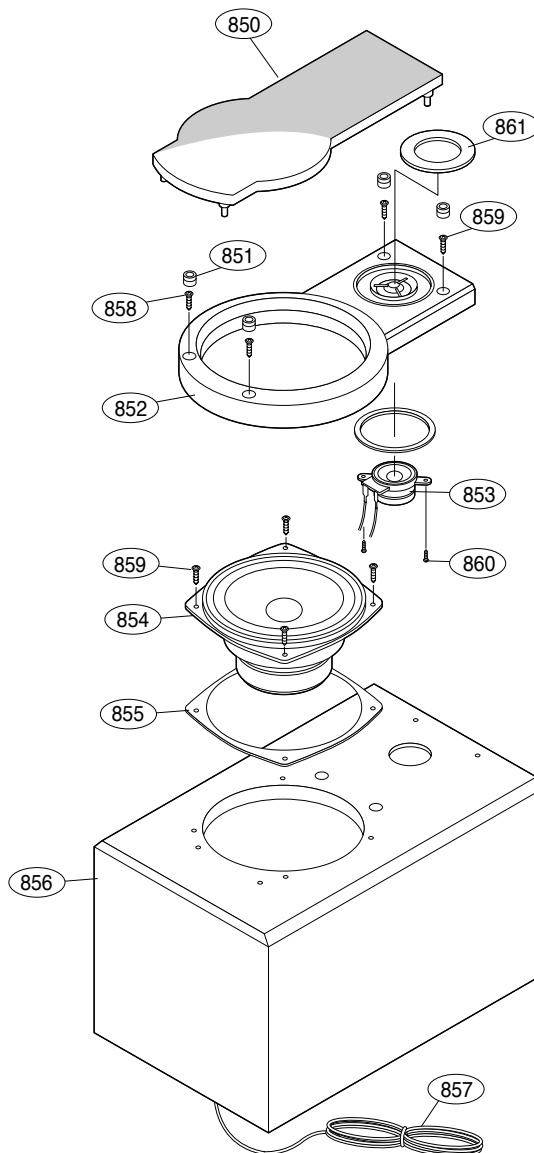
• CD MECHANISM



LOCA. NO	PART NO.	SPECIFICATION
A26	4405RCD001A	CDM-X233 HZ SHIN HEUNG CDP
A27	4980SC0001A	CLAMP ASSY (CDM-X211)
A28	318-317A	DISC ASSY
A29	3041RB0004A	TOTAL PU (CDM-X209)
A30	3041RB0003A	PU(CDM-X209)
A35	6717RCA001A	KSM-213VSCM SONY FRONT LOADING
151	524-012AAAA	CLAMP MAGNET (030X018X5T)
152	384-064B	FELT 0.5T,BK
153	221-527AAAA	MAGNET (SECC 0.8T)
154	327-013AAAA	DISC (DURACON M90-44,BK)
155	322-322A	CLAMP (LEXAN 141,BK)
156	318-318A	DISC (LUCKEY ABS XR-401,BK)
157	423-423AAAA	LOADING (SUS420J2)
158	384-384A	SHAFT(DURACON M90-44,BK)
161	435-436AAAA	MIDDLE (NYCON 12,BK)
162	435-437AAAA	LOADING (DURACON M90-44,BK)
163	345S345A	E (02)
164	435-435AAAA	PULLEY (DURACON M90-44,BK)
165	252-252A	ASSY
166	451-145U	COUNTER (CR RUBBER)
170	225-225AAAA	LOADING ASS'Y
171	374-374A	UP (DURACON M90-44,BK)
172	374-375A	DOWN (DURACON M90-44,BK)
173	442-778A	COM (SUS 304PB,00.7)
174	354S354A	PLATE (010X03.2X0.5T)
176	6870S-158AB	ASSY
177	414-043AAAA	MOTOR ASSY
181	4900SB0001A	DAMPER RUBBER
182	225-229D	P/U,(CDM-X211N)
401	353S353D	SPECIAL (0.2X6L,FBK)
402	353S353B	WASHER (012X03X8L,FZMY)
403	353S353F	D2.6 L4.0 MSWR3 / (BK)
404	6756SBX001A	SCREW 2.6X10X10XFZMY CDM-H813
405	353S353C	BIND (03X8L,FBK)

SECTION 4. SPEAKER SECTION

MODEL: FE-1850E



RUN DATE : 10.MARCH.2003

LOCA.NO.	PART NO	DESCRIPTION	SPECIFICATION	REMARK
850	3701RM0010B	NET ASSEMBLY	JERSEY NET ASSY FE-185E/DV25VE	
851	4930RM0006A	HOLDER	RUBBER HOLDER NET (FE-185E/DV2	
852	3720RMF007A	PANEL,FRONT	FRONT (FE-185E)	
853	6400RMBZ01B	SPEAKER,TWEETER	B13TP6B2 BALHAE 25VE HZ-LOCAL	
854	6400RMTG01A	SPEAKER,WOOFER	FE-DV55VE TOPTONE F50C-D138A 6	
855	4766RM0007A	FELT	FE-185E/DV25VE 380 BLACK WOOFE	
856	3091RMW015A	CABINET ASSY	ASSY FE-DV25VE	
857	6871RU4122A	PWB(PCB) ASSY,SUBSET(AUDIO)	FE-DV25VE 2.7UF POSITIVE 2M SP	
858	353M052P	SCREW	BH 3.5X24	
859	353M050C	SCREW	BH 3.5X16 FBK	
860	353M050F	SCREW,DRAWING	+ 2 D3.5 L14.0 MSWR3/FZY 8X3.5	
861	3806RM0004A	DECO	DECO RING (FE-185E/DV25VE)	

MEMO

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