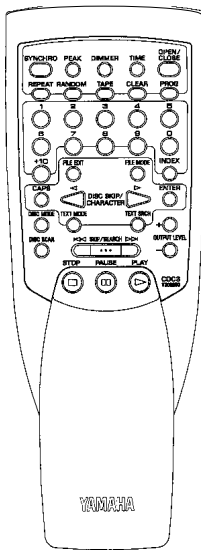
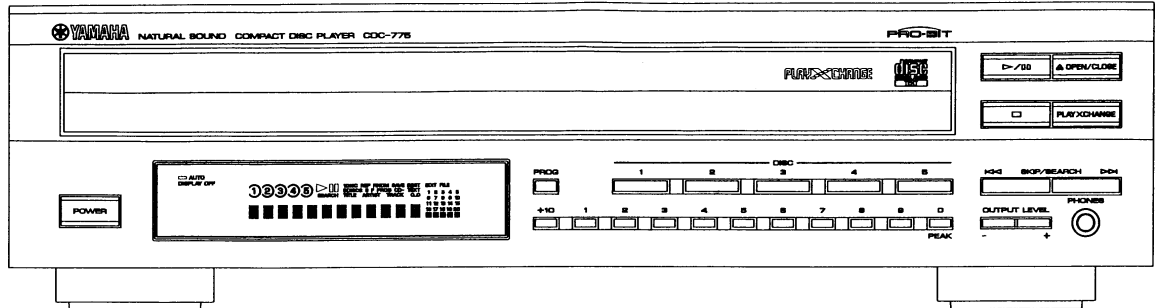


COMPACT DISC PLAYER CDC-775

SERVICE MANUAL



IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that any service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

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100669

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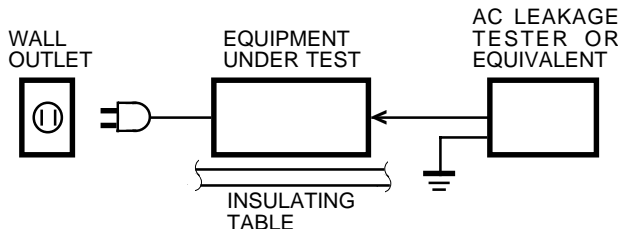


YAMAHA
YAMAHA CORPORATION
P.O. Box 1, Hamamatsu, Japan

CDC-775

■ TO SERVICE PERSONNEL

1. Critical Components Information.
Components having special characteristics are marked and must be replaced with parts having specifications equal to those originally installed.
2. Leakage Current Measurement (For 120V Models Only).
When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.
 - Meter impedance should be equivalent to 1500 ohm shunted by 0.15μF.
 - Leakage current must not exceed 0.5mA.
 - Be sure to test for leakage with the AC plug in both polarities.



CAUTION: USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to carefully follow the instructions below when servicing .

1. Laser Diode Properties
 - Material : GaAlAs
 - Wavelength : 780 nm
 - Emission Duration : Continuous
 - Laser Output : max. 44.6 μW*

* This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.
2. When checking the laser diode emission, keep your eyes more than 30 cm away from the objective lens.

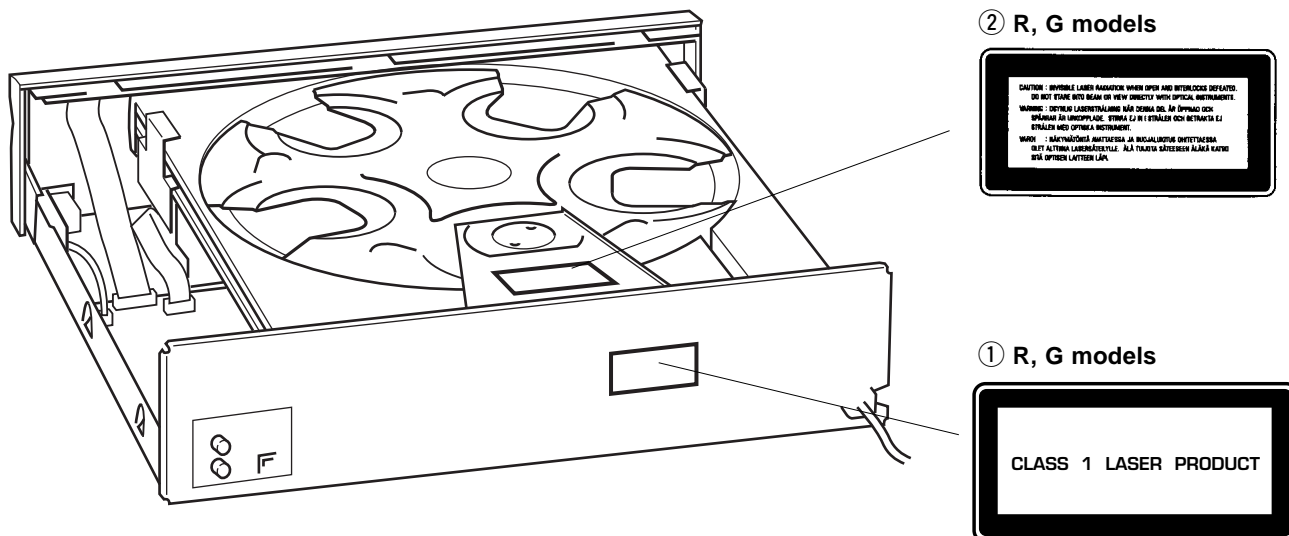
WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.



English

- ① THIS PRINTING (SEE POSITION SHOWN IN THE ILLUSTRATION) INFORMS THE USER THAT THE APPARATUS CONTAINS A LASER COMPONENT.
- ② THIS LABEL (SEE POSITION SHOWN IN THE ILLUSTRATION) WARNS THAT ANY FURTHER PROCEDURE WILL BRING THE USER INTO EXPOSURE WITH THE LASER BEAM.

CAUTION : USE OF CONTROLS, ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN, MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

Swedish

- ① DENNA MÄRKNING (SE FIGUR) UPPLYSER OM ATT DET I APPARATEN INGÅR EN LASERKOMPONENT AV TYP KLASS 1.
- ② VARNINGSMÄRKNING (SE FIGUR) FÖR STRÅLNING. INGREPP I APPARATEN BÖR ENDAST FÖRETAGAS AV FACKMAN MED KÄNNEDOM OM LASER. APPARATEN INNEHÅLLER EN LASERKOMPONENT SOM AVGER STRÅLNING ÖVERSTIGANDE GRÄNSEN FÖR LASERKLASS 1.

VARNING : OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD : BETRÄKTA EJ STRÅLEN.

Danish

- ① DETTE MÆRKAT ER ANBRAGT SOM VIST I ILLUSTRATIONEN FOR AT ADVARE BRUGEREN OM AT APPARATET INDEHOLDER EN LASERKOMPONENT.
- ② DETTE MÆRKAT OM LASEREN ER ANBRAGT PÅ APPARATET SOM EN OPLYSNING OM AT APPARATET INDEHOLDER ET LASERKOMPONENT.

ADVARSEL : INDGREG BOR KUN FORETAGES AF EN FAGMAND DA DER ER RISIKO FOR RADIOAKTIV STRÅLING.

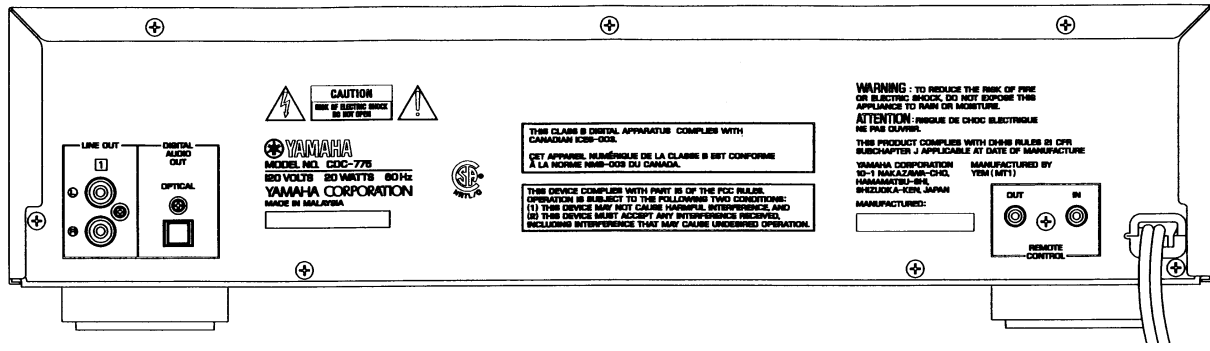
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING.
UNDGÅ UDSAETTELSE FOR STRÅLING.

Finnish

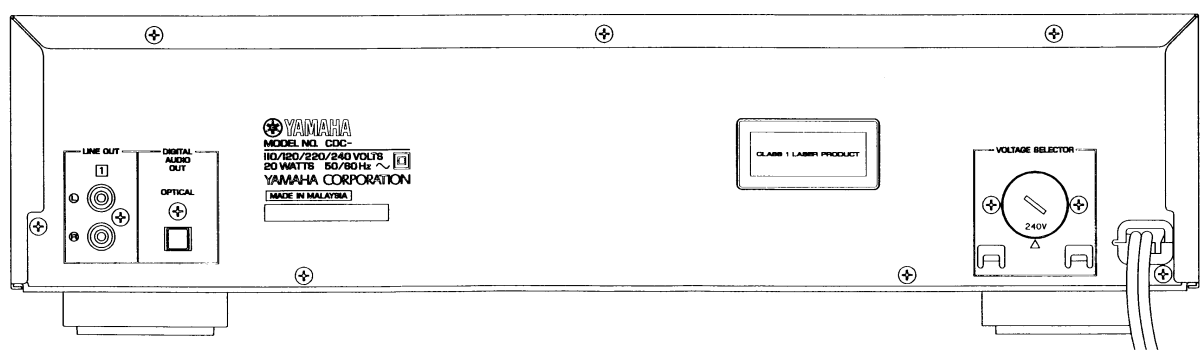
VARO! :
AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

REAR PANELS

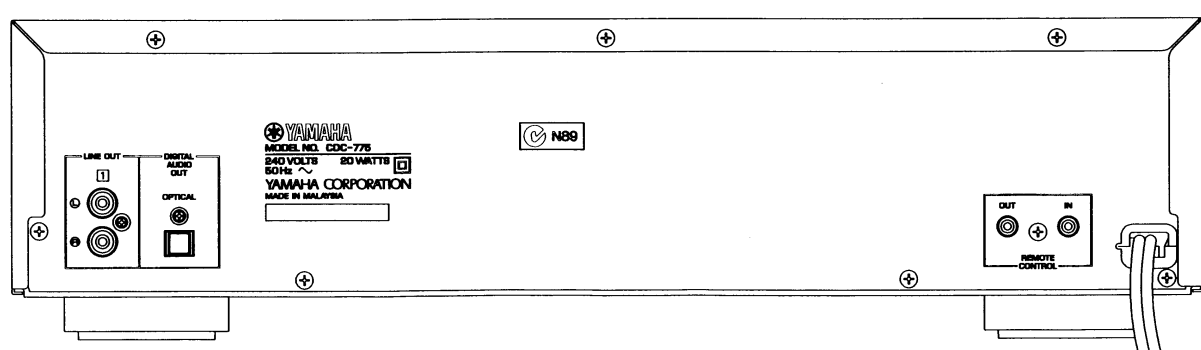
U, C models



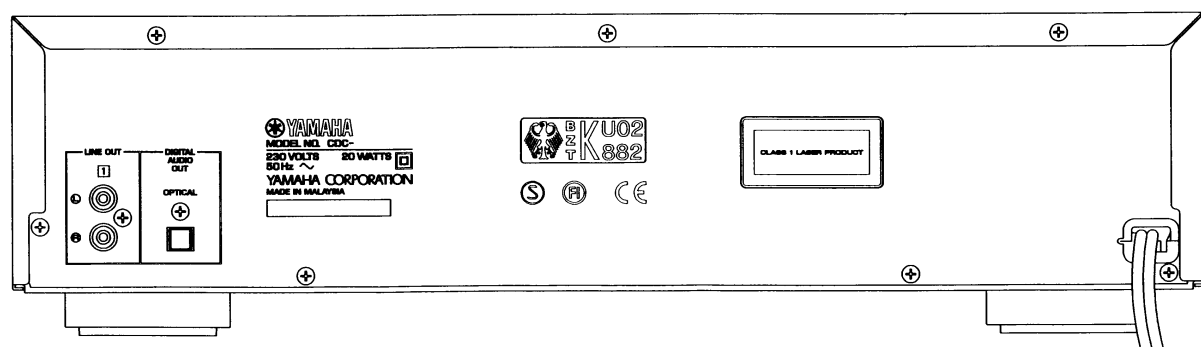
R model



A model



G model



■ SPECIFICATIONS

■ AUDIO SECTION

Output Voltage	2.0±0.5V
S/N Ratio	115dB
Dynamic Range	100dB
Harmonic Distortion+Noise (1kHz)	0.0025%
Frequency Response (2Hz~20kHz)	±0.5dB
Headphone Output	
150Ω, 1kHz, -20dB Input	200±40mV

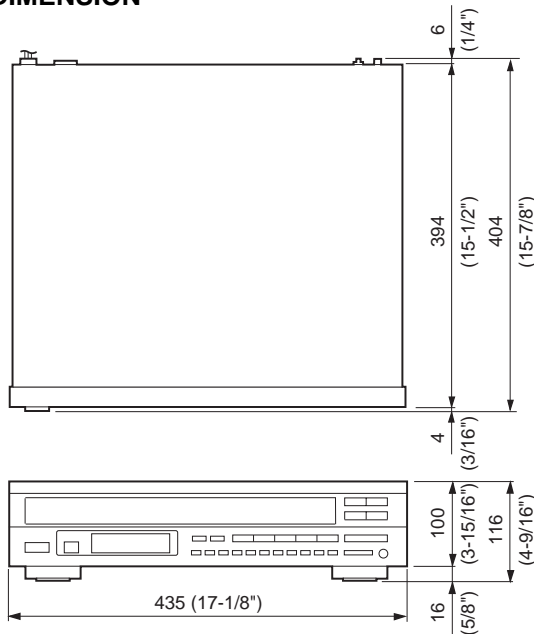
■ GENERAL

Power Requirements	
U, C models	120V AC 60Hz
G model	230V AC 50Hz
A model	240V AC 50Hz
R model	110/120/220/240V AC 50/60Hz
Power Consumption	20W
Dimensions (W x H x D)	435 x 116 x 404 mm (17-1/8" x 4-9/16" x 15-7/8")
Weight	5.8kg (12 lbs 12 oz)
Accessories	Pin plug cord Remote control transmitter Dry-cell: x2 (Size "AA", R06)

* Specifications subject to change without notice.

U USA model G European model
 C Canadian model R General model
 A Australian model

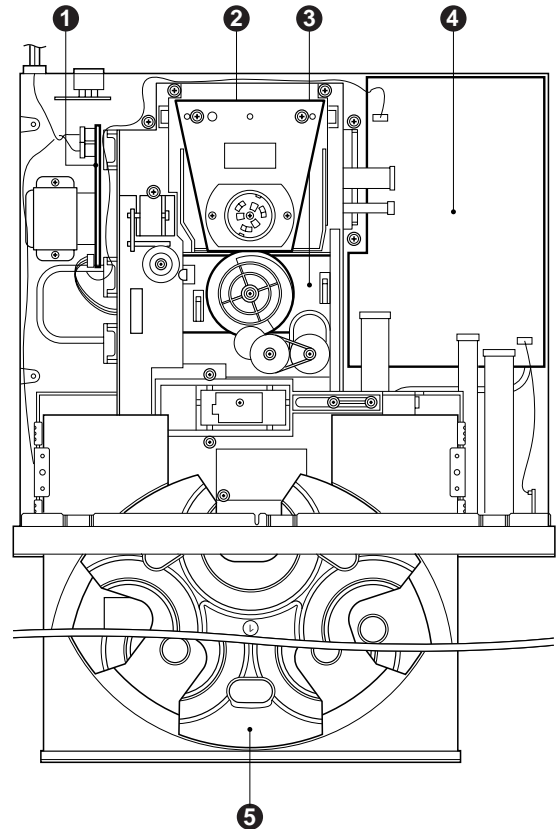
● DIMENSION



Unit : mm (inch)

■ INTERNAL VIEW

- ① P.C.B. MAIN (2)
- ② CLAMP ASS'Y
- ③ CM-210 UNIT
- ④ P.C.B. MAIN (1)
- ⑤ TRAY ASS'Y



CAUTION FOR TRANSPORTING THIS UNIT

When transporting this unit, first remove all discs from the disc tray and close the tray by pressing the **OPEN/CLOSE** button, and then switch off the power after you confirm that the display has turned as follows.



Never switch off the power if the display does not turn as above, otherwise the unit will get out of order during transport because the internal mechanism is not locked.

DISASSEMBLY PROCEDURES (Remove parts in the order as numbered.)

1. Removal of Top Cover

- a. Remove 4 screws (①) and also 3 screws (②) as shown in Fig. 1.

2. Removal of Clamp Ass'y

- a. Remove 2 screws (③) as shown in Fig. 1.

3. Removal of Tray Ass'y

- a. Remove 1 screw (④) as shown in Fig. 1.
- b. Turn Gear/L0 as shown in Fig. 2 counter clockwise gradually till immediately before the tray starts to move and stop it there.

CAUTION : Gear/L0, if turned counter clockwise continuously, will mesh with the gear of the tray and the tray will come out. When removing the tray, use care so that Gear/L0 will not mesh with the gear of the tray.

- c. Pull out the Tray Ass'y.

4. Removal of Table

- a. Remove 1 screw (⑤) and then remove the Support/T as shown in Fig. 1.
- b. Remove the Plate/Table as shown in Fig. 1.
- c. Remove 1 screw (⑥) and then take off the Table as shown in Fig. 1.

● Precaution for installation of the Tray Ass'y.
On Tray Ass'y setting.
Check the Direction of marking "▲" on gear according to this drawing.

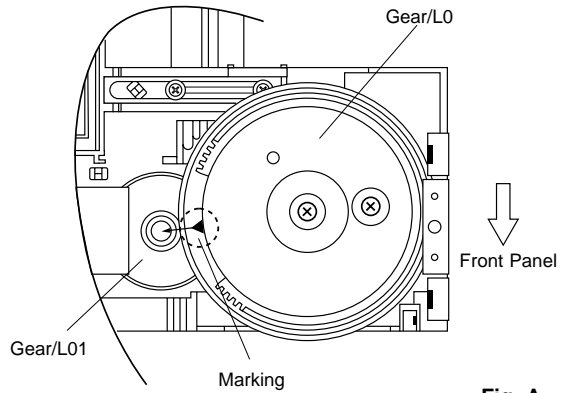


Fig. A

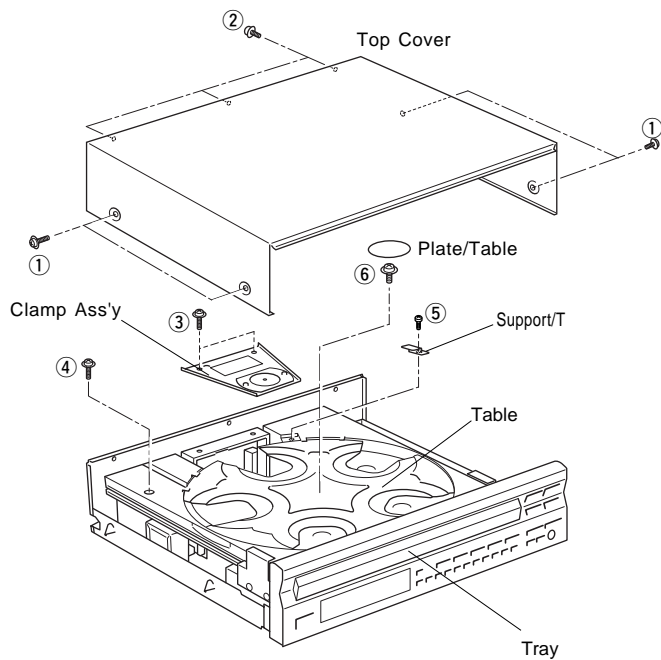


Fig. 1

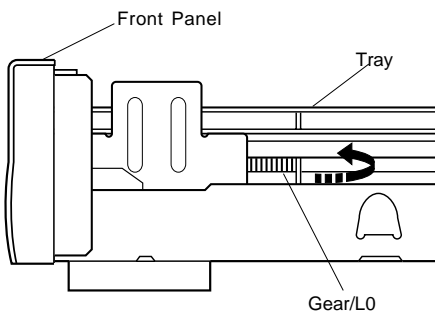


Fig. 2

IMPORTANT : Installation of Table.

Install the table according to the following procedure.

- 1) Slide the Lever so that the Gear/RT1 becomes free. (Fig.B-1)
- 2) With the "▲" mark on the Gear/RT1 aligned with the same mark on the Tray, lock it with the Lever. (Fig.B-1)
- 3) Install the Table by aligning it to the thick line on "/" mark. (Fig.B-2)

*Check that the Table is locked after installation.

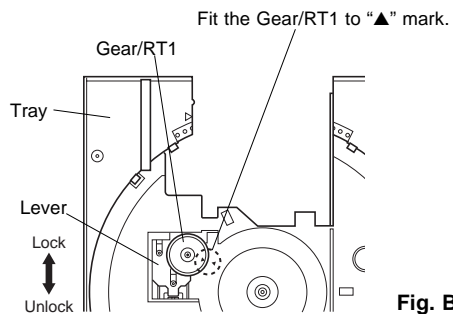


Fig. B-1

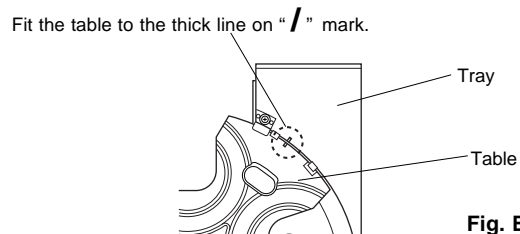


Fig. B-2

5. Removal of CM-210 Unit

- a. Remove 5 screws (⑦) as shown in Fig. 3.
- b. Remove connectors (CB201 & 202) and cables (CB1 & 2, CB300) from the P.C.B. Main.
- c. Take the CM-210 Unit out slowly as shown in Fig. 3.

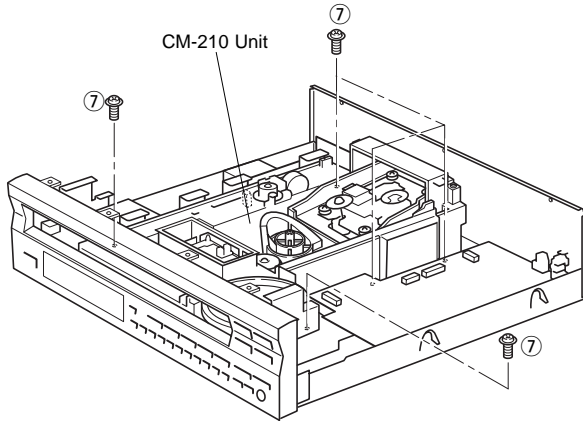
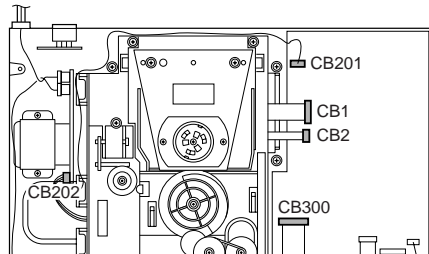


Fig. 3



6. Removal of PU Mechanism Unit

- a. Remove 2 screws (⑧) and then remove the PU Unit Ass'y as shown Fig. 4.

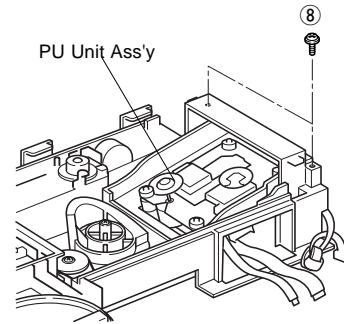


Fig. 4

- b. Pull out 4 Pins (⑨) and then remove the PU Mechanism Unit as shown in Fig. 5.

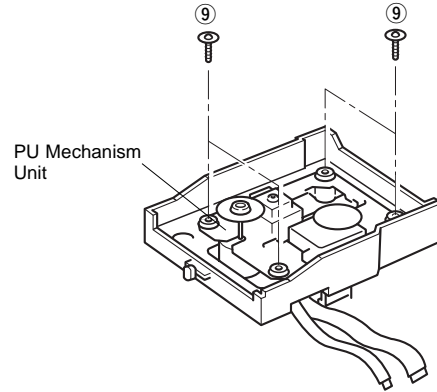


Fig. 5

● Operation Check Procedure

- ① Disassembly
 - 1) Remove the top cover.
 - 2) Remove the Clamp Ass'y.
 - 3) Remove the stabilizer from the Holder.

Turn the Plate clockwise by 30° while holding the Stabilizer, and the Plate will come off. Remove the Stabilizer from the Holder.
- ② Clamp the disc by using the stabilizer.
- ③ Set to the TEST mode and check for any faulty conditions.

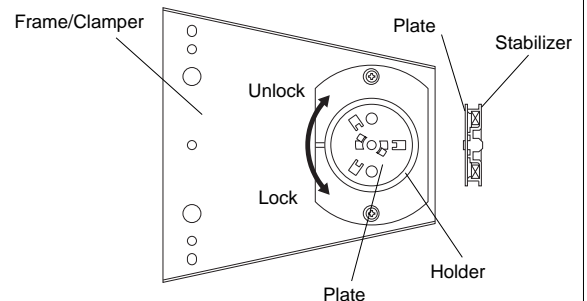
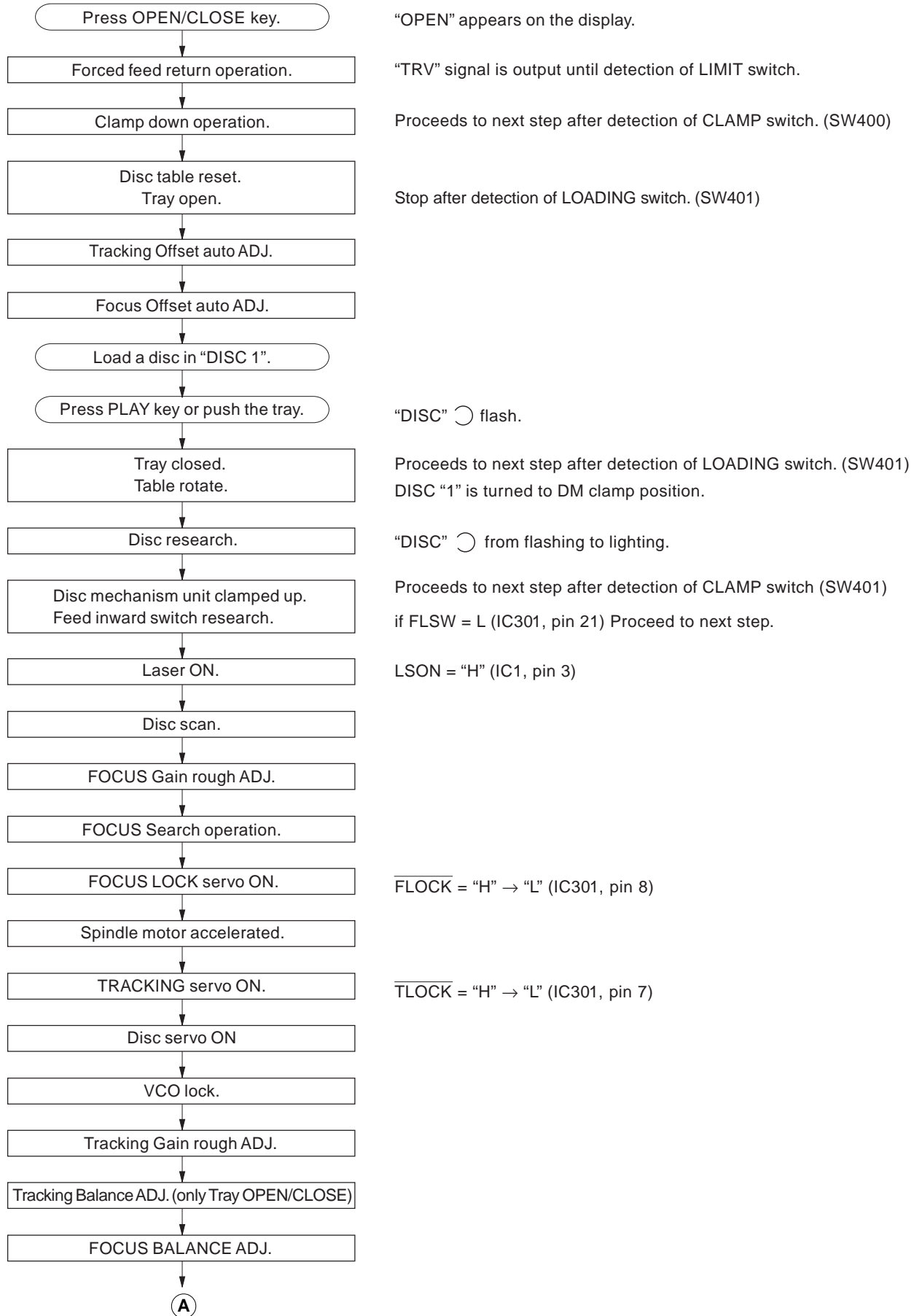
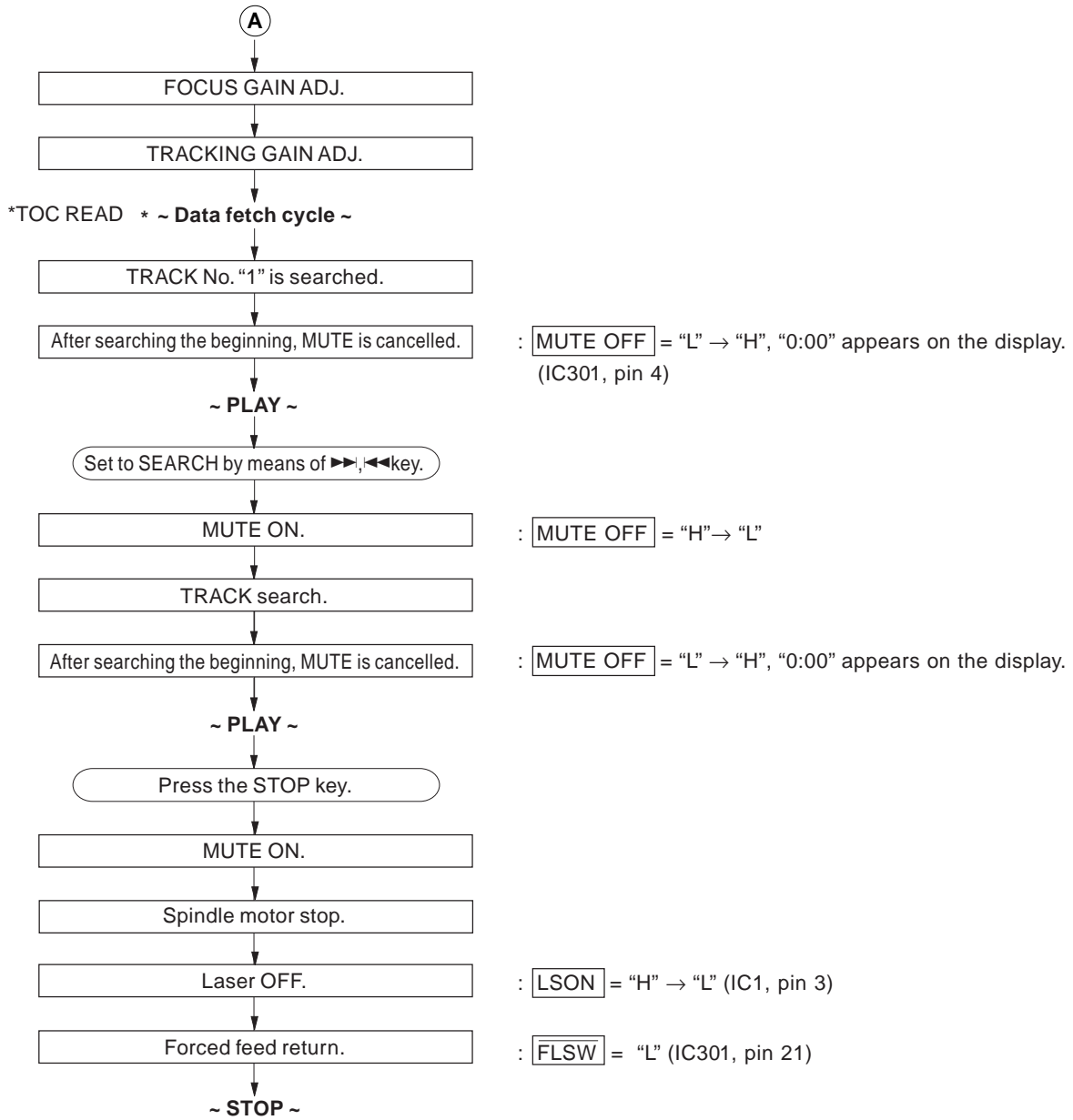


Fig. C

■ STANDARD OPERATION CHART





■ TEST MODE

● Starting TEST mode

Test mode is brought about when the power is turned on while the “PLAY/PAUSE” and “STOP” keys on the panel are simultaneously pressed and held.

When the test mode is brought about, all the displays light up for about 1 second. ("TEST" on display)

NOTE : To fully operate all test modes the remote control must be used.

● Function List of Panel keys

Note: “traverse servo” means the same as “feed servo”

PANEL KEY	FUNCTION
OPEN/CLOSE	Tray open/close.
PLAYXCHANGE	Rotating the mode of coefficients. (Coefficient mode→Coefficient setting→Product mode) Pressing twice will set to the product mode.
PLAY/PAUSE	Plays if focus servo is effective. TRON, MUTE OFF.
STOP	All stop. (Focus, spindle, feed, laser, tray, etc.) Initializes FL display.
◀◀SKIP	Backward traverse move. (If inner SW turns on, traverse is stopped.) (Coefficient set up mode : upper digit down.)
▶▶SKIP	Forward traverse move. (Coefficient set up mode : upper digit up.)
DISC 1	Returns to product mode. (Tray and table inoperative.)
DISC 2	Adjustment mode 1 (TR-offset, FO-offset, FO-rough gain adjustment)
DISC 3	Adjustment mode 2 (TR-balance, TR-rough gain adjustment)
DISC 4	Adjustment mode 3 (FO-fine gain, TR-fine gain, FO-balance adjustment)
DISC 5	If not clamped up, measurement the rotating time of the turn table. (Slow speed) (Note 2 :See page 11) If clamped up, enter EQSW adjustment mode. (In adjustment mode, save EQSW value to EEPROM.)
PROG	Decelerates or stops spindle.
OUTPUT LEVEL -	Output level down. (Coefficient set up mode : address down.) (EQSW adjustment mode : value down)
OUTPUT LEVEL +	Output level up. (Coefficient set up mode : address up.) (EQSW adjustment mode : value up)
+10	—
1	Returns to product mode. (tray and table inoperative.)
2	Adjustment mode 1 (TR-offset, FO-offset, FO-rough gain adjustment)
3	Adjustment mode 2 (TR-balance, TR-rough gain adjustment)
4	Adjustment mode 3 (FO-fine gain, TR-fine gain, FO-balance adjustment)
5	Turn table turns counterclockwise. (Slow speed)
6	Turn table turns clockwise. (Slow speed)
7 NOTE:	Turn table turns counterclockwise. (Fast speed)
8 NOTE:	Turn table turns clockwise. (Fast speed)
9	Backward 10 TRACK KICK-continuously
0	Forward 10 TRACK KICK-continuously

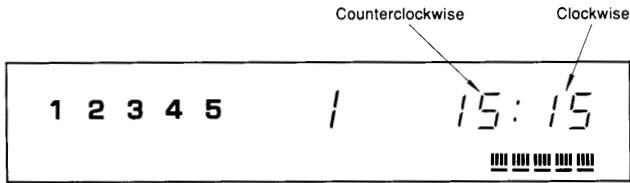
NOTE: When the disc table is not positioned correctly, be sure to turn the disc table one full rotation by using the DISC SKIP key on the remote control unit before canceling the TEST mode.

● Function List of Remote Control Transmitter

CUSTOM CODE = (79)x

CODE	KEY	FUNCTION
00	MODE	Traverse stop
01	OPEN/CLOSE	Tray open/close
02	PLAY	PLAY (FOON, TRON, TVON (FEON), SPON)
04	◀◀SKIP	Backward traverse move. (If inner SW turns on, traverse is stopped.) (Coefficient set up mode : upper digit down)
2B	TEXT MODE	Clamp down. (Coefficient set up mode : lower digit down)
2C	TEXT SRCH	Clamp up. (Coefficient set up mode : lower digit up)
07	▶▶SKIP	Forward traverse move. (Coefficient set up mode : upper digit up)
08	REPEAT	FOON, TROF (Enter focus search if focus servo is off.)
0A	TIME	Checks FL display. (Note 3 : See page 11)
0B	INDEX	FOON, TROF, TVOF (FEOF) (Enter focus search if focus servo is off.)
0C	PROG	Rotates or accelerates spindle.
0D	CLEAR	Decelerates spindle.
10	0	Backward 150 TRACK KICK continuously
11	1	Returns to product mode. (Tray and Table inoperative.)
12	2	Adjustment mode 1 (TR-offset, FO-off set, FO-rough gain adjustment)
13	3	Adjustment mode 2 (TR-balance, TR-rough gain adjustment)
14	4	Adjustment mode 3 (FO-fine gain, TR-fine gain, FO-balance adjustment)
15	5	Forward 1 TRACK KICK continuously
16	6	Backward 1 TRACK KICK continuously
17	7	Forward 30 TRACK KICK continuously
18	8	Backward 30 TRACK KICK continuously
19	9	Forward 150 TRACK KICK continuously
1A	+10	Enter coefficient set up mode.
1B	RANDOM	SPON (Spindle servo on.)
1C	OUTPUT LEVEL -	Output level down. (Coefficient set up mode : address down.) (EQSW adjustment mode : value down)
1D	OUTPUT LEVEL +	Output level up. (Coefficient set up mode : address up.) (EQSW adjustment mode : value up)
1E	DIMMER	Checks FL display. (Note 3 :See page 11)
1F	FILE MODE	Note :Don't use
2D	CAPS	Switches servo gain (normal or High). Head amp (GCTRL)
4F	DISC SKIP ▷	DISC SKIP + (Clockwise)
50	DISC SKIP ◁	DISC SKIP - (Counterclockwise)
53	DISC SCAN	Measurement the rotating time of the turn table. (Fast speed) (Note 2 :See page 11)
55	PAUSE	FOON, TROF, TVOF (FEOF) (Enter focus search if focus servo is off.)
56	STOP	All stop. (Focus, spindle, traverse, laser, tray, etc.)
57	TAPE	Spindle free (off)
58	SYNCHRO	Backward traverse move

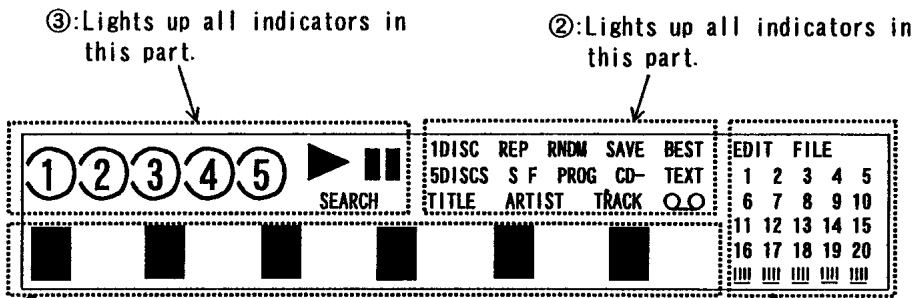
(Note 2) Display at time measurement.



The time display shows the time for 1 rotation of the turn table.
The unit of time is 0.1 second (rotate fast) or 1 second (rotate slow).

(Note 3) Checks FL display.

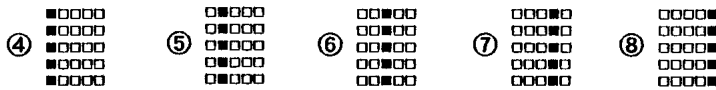
Display changes as follows (①→②→...→⑩) as you press the key.



③:Lights up all indicators in this part.

②:Lights up all indicators in this part.

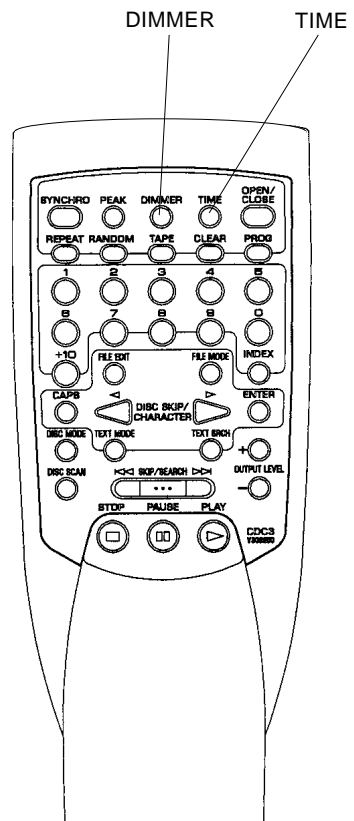
④-⑧ Each dot matrix changes as follows.



①:Lights up all indicators in this part.

⑨ Dot matrix lights up like this.

⑩ All indicators light off.



■ ADJUSTMENTS

● Necessary items

Measuring instruments

- Oscilloscope : x 1
(Band width of 50MHz or more)
- Jitter meter : x 1

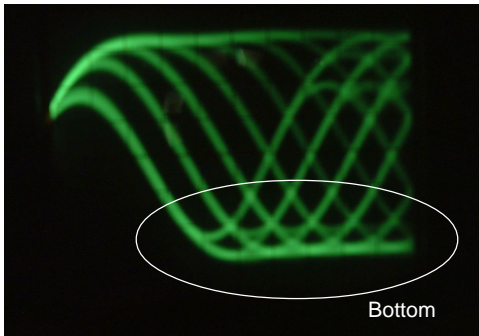
Test disc

- SONY YEDS-18 (P/No. TX911730),
A-BEX TCD-782 (P/No. TX913350)
or Philips 5 : x 1

● Jitter Adjustment

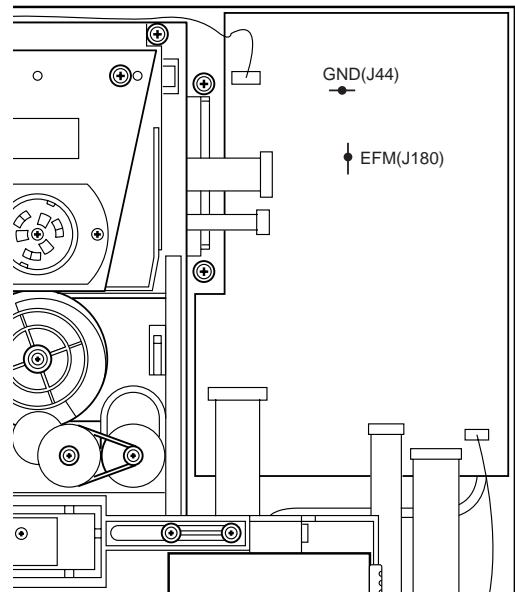
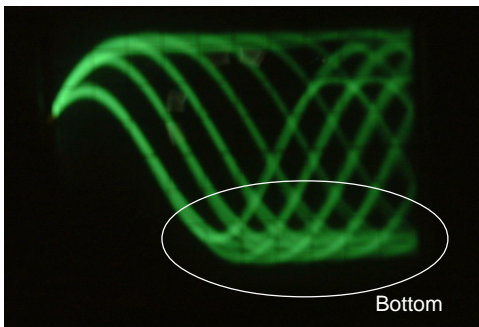
- ① Connect an oscilloscope and a jitter meter to the test points EFM and GND.
- ② Set to the TEST mode.
(While pressing both the "PLAY/PAUSE" and "STOP" keys, turn ON the power switch.) See page 9 for TEST mode explanation.
- ③ Set the test disc on the turntable, and press the "TEXT SRCH" key on the remote control. And then the disc is clamped up.
- ④ Press the DISC2 key.
(Auto adjustment mode 1)
- ⑤ Press the DISC3 key.
(Auto adjustment mode 2)
- ⑥ Press the DISC4 key.
(Auto adjustment mode 3)
- ⑦ Press the PLAY/PAUSE key.
(Play mode)
- ⑧ Press the DISC5 key, and check "EQSW ADJ (DC)" is displayed.
(EQSW adjustment mode)
- ⑨ Press the OUTPUT LEVEL + or - key, and adjust the needle of jitter meter to minimum.
Specification : ≤ 32 nS (3T)
- ⑩ Press the OUTPUT LEVEL + or - key, and adjust the bottom of EFM signal (eye pattern) waveform clearly.
(Fig. A)
- ⑪ At last press the DISC5 key, and check "00:00"(time) is displayed.

OK (Fig. A)



V : 0.2V/div H : 0.5 μ sec/div
AC range 1 : 1 probe

NG (Fig. B)



■ ERROR MESSAGE

When stopped by any cause, press “STOP” of the remote control while pressing and holding the “STOP” on the panel key. The operation mode turns to the mode allowing the display of messages.
(The error messages are cleared with the power off.)

● Error Messages List

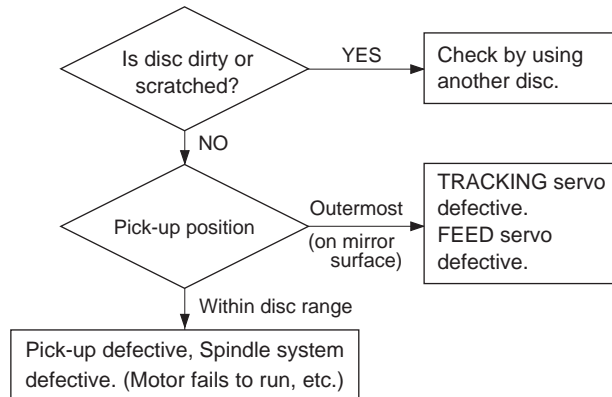
ERROR MESSAGE	DESCRIPTION
E — X 0	Data cannot be read after finishing search.
E — X 1	Data cannot be read during PLAY (x = 0), PAUSE (x = 3) or SCAN (x = 2).
E — 7 1	At the start, tracking servo is not effective.
E — 7 2	At the start, spindle servo PLL is not effective.
E — 7 3	At the start, data can never read.
E — X 4	Close switch does not work with tray closed.
E — X 5	Open switch does not work with tray open.
E — X 6	Table does not turn.
E — X 7	Traverse (Feed) inner circumference switch does not work.
E — X 8	Recovery action fails after focus drop.
E — X 9	Clamp down switch does not work with clamp down.
E — X A	Clamp up switch does not work with clamp up.
E r r	MN35511 does not give response of SENSE, with resetting by the unit's microcomputer.

* Meaning of each state (“X”) :

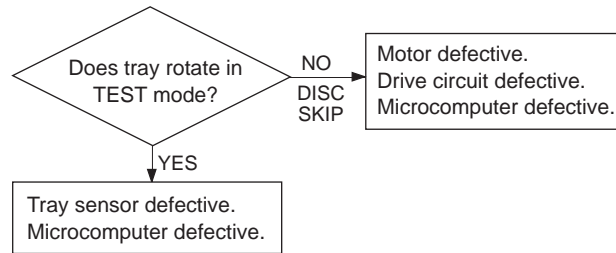
- (X = 0)PLAY
- (X = 2)SCAN
- (X = 3)PAUSE
- (X = 4)PEAK SEARCH
- (X = 5)SEARCH
- (X = 6)DISC SCAN
- (X = 7)START
- (X = 8)STOP
- (X = 9)DISC SEARCH
- (X = -)EJECT
- (X = C) NO DISC

1) Error Code Troubleshooting

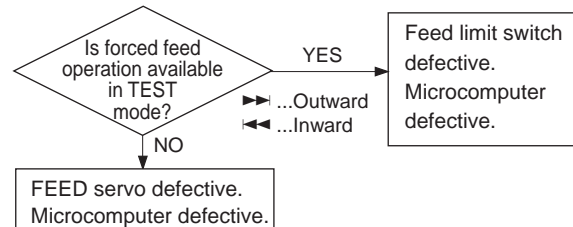
Error codes **X0**, **X1**, **73** Data cannot be read.



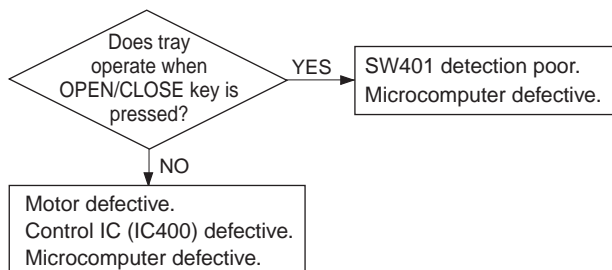
Error code **X6** Poor table rotation.



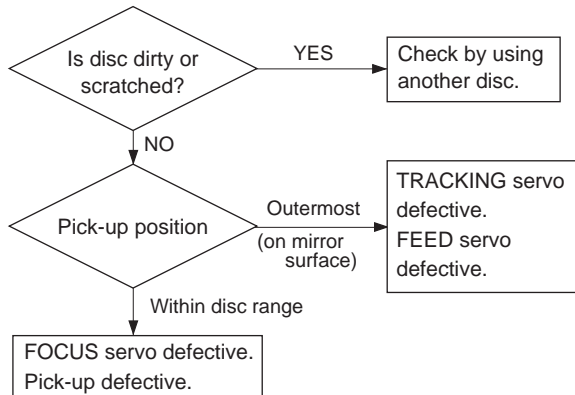
Error code **X7** FEED operation defective. (Limit switch fails)



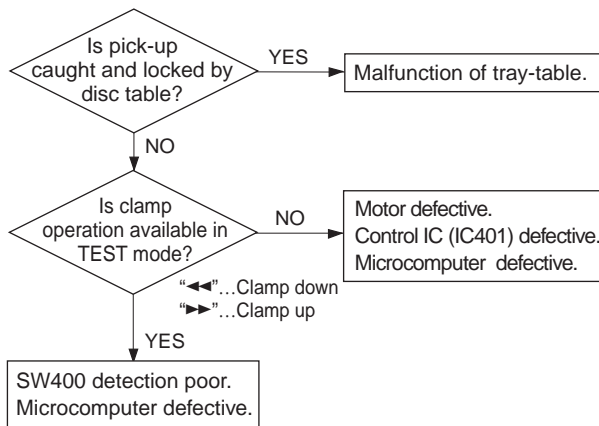
Error codes **X4**, **X5** Poor tray loading operation.



Error code **X8** Focus drops.

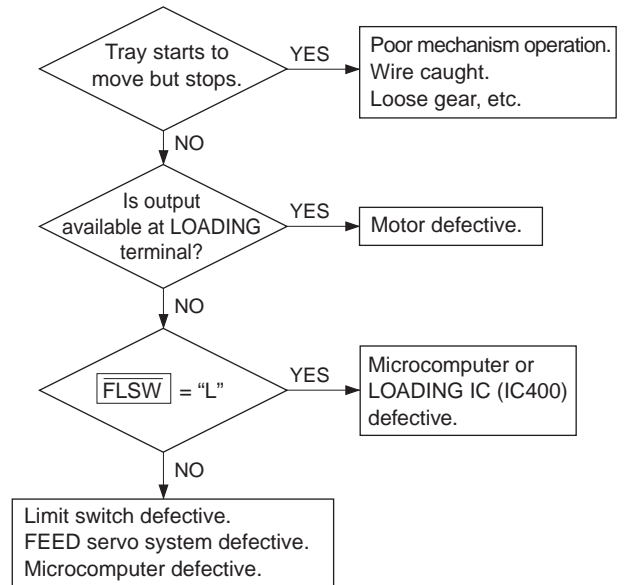


Error code **X9**, **XA** Poor clamp operation.

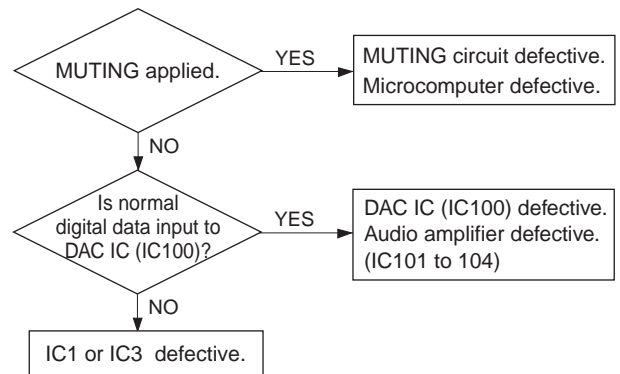


2) Troubleshooting from System Malfunctions.

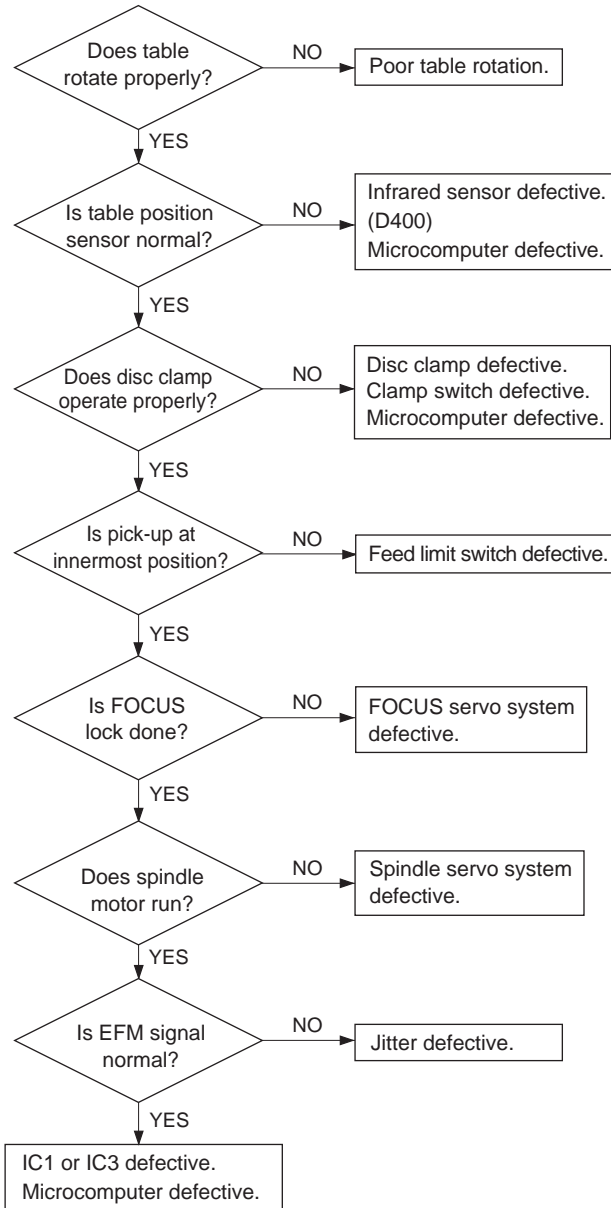
a) Tray fails to come out/go in.



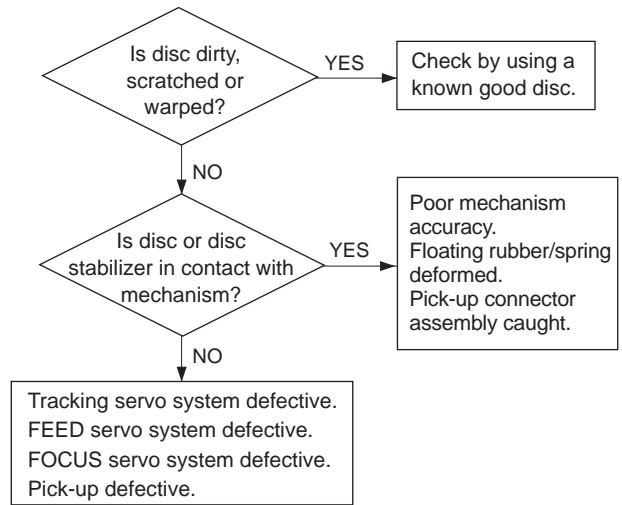
b) No sound generated, Sound cut during play. (but time display advanced properly)



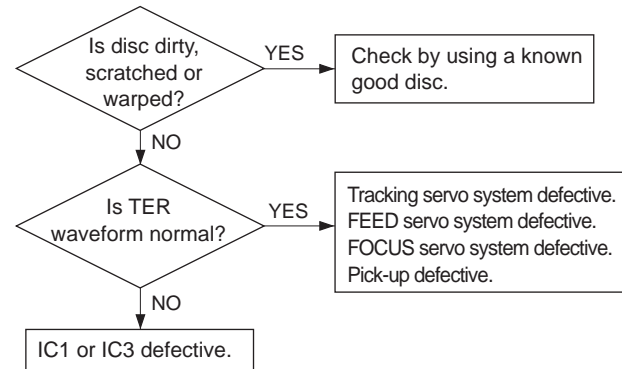
**c) Operates as if no disc loaded.
(although loaded)**



**d) Sound skips.
(Time display fails to advance properly)**

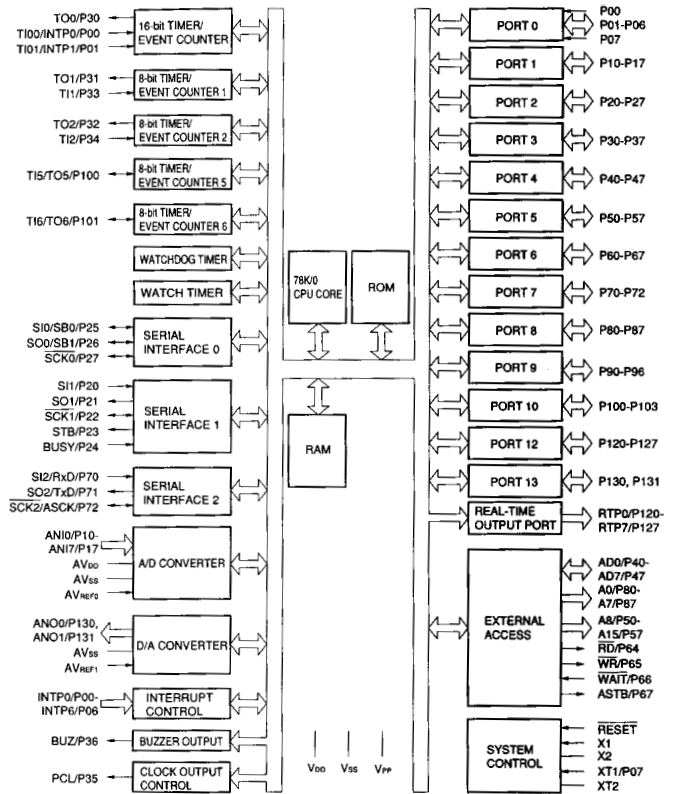
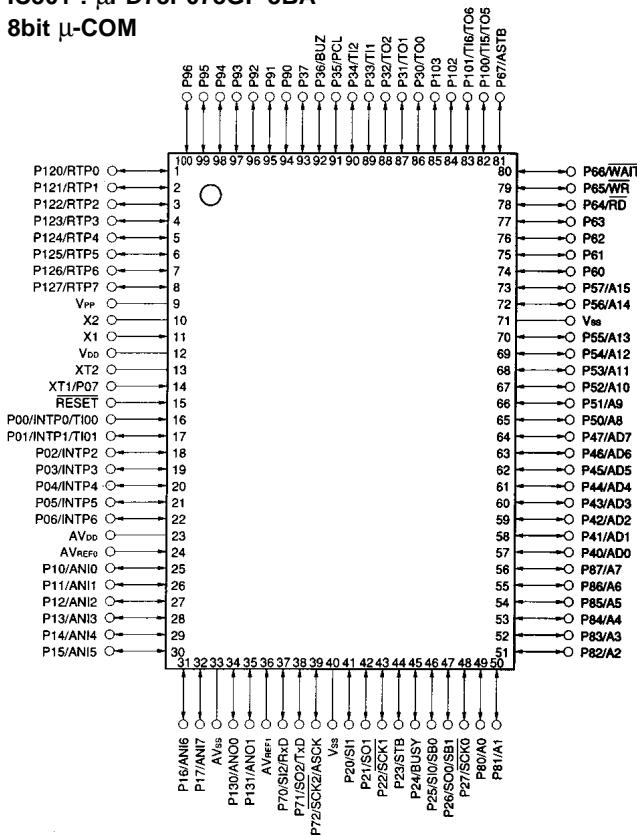


**e) No search provided.
(Sound skipped after search)**



IC DATA

IC301 : μPD78P078GF-3BA
8bit μ-COM



No.	Port	Name	I/O	Function
1	P120/RTP0	OPSW	I	Opened state of tray sensing switch input. Opened state at "L".
2	P121/RTP1	CLSW	I	Closed state of tray sensing switch input. Closed state at "L".
3	P122/RTP2	TBL POS	I	Table position detect signal input.
4	P123/RTP3	MUTE	O	Sound output at "H" and sound output muted at "L".
5	P124/RTP4	RES	O	Hardware reset output of MN35511. Reset at "L".
6	P125/RTP5	DMUTE	O	Mute output to MN35511. Muted at "H".
7	P126/RTP6	TLOCK	I	Tracking servo drawing signal input from MN35511. Drawn at "L".
8	P127/RTP7	FLOCK	I	Focus servo drawing signal input from MN35511. Drawn at "L".
9	IC	IC		GND
10	X2	X2		Ceramic oscillator. (5MHz)
11	X1	X1		
12	VDD	VDD		+5V
13	XT2	XT2		N.C.
14	XT1/P07	XT1		GND
15	RESET	RESET	I	Reset input.
16	P00/INTP0/T100	REM	I	Input from remote control receiving unit.
17	P01/INTP1/T101	BLKCK	I	Sub code, block clock input from MN35511.
18	P02/INTP2	LED	O	Auto display off LED control.
19	P03/INTP3	DOWNSW	I	PU unit down limit switch input. DOWN at "L".
20	P04/INTP4	UPSW	I	PU unit up limit switch input. UP at "L".
21	P05/INTP5	FLSW	I	Feed origin switch input. Feed origin at "L".
22	P06/INTP6	CLDCK	I	MN35511 subcode frame clock
23	AVDD	AVDD		+5V
24	AVREF0	AVREF0		+5V
25	P10/ANI0	PON	I	Power ON/OFF detect
26	P11/ANI1			N.C.
27	P12/ANI2			N.C.

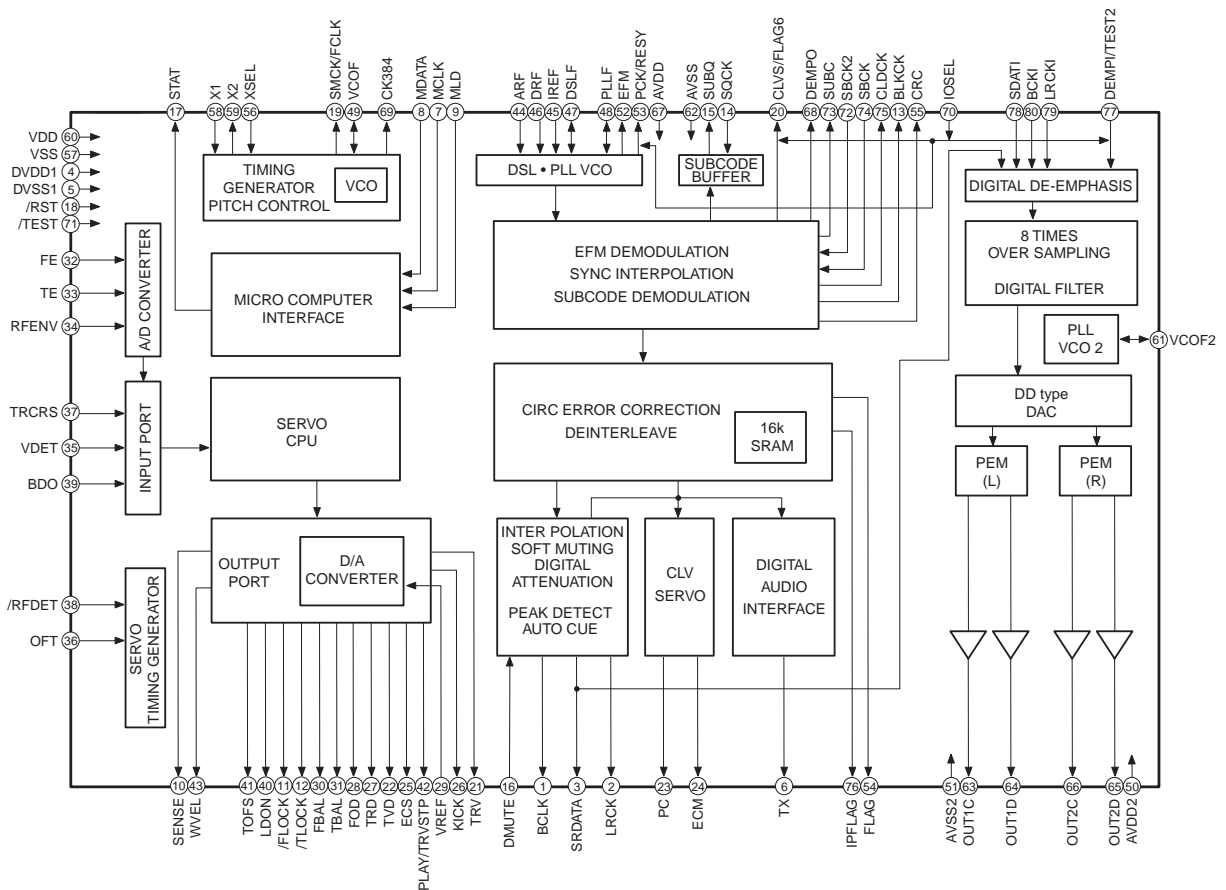
IC301 : μ PD78P078GF-3BA
8bit μ -COM

No.	Port	Name	I/O	Function
28	P13/ANI3			N.C.
29	P14/ANI4			
30	P15/ANI5			
31	P16/ANI6			
32	P17/ANI7			
33	AVSS	AVSS		GND
34	P130/ANO0	EQSW	O	AN8849 equalizer control.
35	P131/ANO1	GCTRL	O	AN8849 gain control.
36	AVREF1			
37	P70/S12/RXD	SUBQ	I	Serial I/F input (SUBQ)
38	P71/SO2/TXD	STAT	I	Status signal input from MN35511.
39	P72/SCK2/ASCK	SQCK	O	Serial I/F clock (SQCK)
40	VSS	VSS		GND
41	P20/S11	SUBC	I	Serial I/F input (CD TEXT)
42	P21/SO1			N.C.
43	P22/SCK1	SBCK2	O	Serial I/F clock (CD TEXT)
44	P23/STB	MLD	O	MN35511 chip select
45	P24/BUSY	SENSE	I	MN35511 sense input
46	P25/SI0/SB0	SO		Serial I/F input (EEPROM)
47	P26/SO0/SB1	MDATA	O	Serial I/F output (MDATA/FL driver/EEPROM)
48	P27/SCK0	MCLK	O	Serial I/F clock (MCLK/FL driver/EEPROM)
49	P80/A0	CS	O	EEPROM chip select
50	P81/A1	CE	O	FL driver chip select
51	P82/A2	BLK	O	FL driver reset
52	P83/A3			N.C.
53	P84/A4			N.C.
54	P85/A5	FEED OFF	O	Feed servo off signal output.
55	P86/A6			N.C.
56	P87/A7			
57	P40/AD0			
58	P41/AD1			
59	P42/AD2			
60	P43/AD3			
61	P44/AD4			
62	P45/AD5			
63	P46/AD6			
64	P47/AD7			
65	P50/A8	KD4	O	Key scan
66	P51/A9	KD3	O	
67	P52/A10	KD2	O	
68	P53/A11	KD1	O	
69	P54/A12	KD0	O	
70	P55/A13			N.C.
71	VSS	VSS		GND
72	P56/A14			N.C.
73	P57/A15			N.C.
74	P60	K4	I	Key detect
75	P61	K3	I	
76	P62	K2	I	
77	P63	K1	I	
78	P64/RD	K0	I	
79	P65/WR			N.C.
80	P66/WAIT			N.C.

IC301 : μ PD78P078GF-3BA
8bit μ -COM

No.	Port	Name	I/O	Function
81	P67/ASTB			N.C.
82	P100/TI5/TO5	TBL-L	O	Table counterclockwise rotate signal output.
83	P101/TI6/TO6	TBL-R	O	Table clockwise rotate signal output.
84	P102			N.C.
85	P103			N.C.
86	P30/TO0	CLOSE	O	Tray close signal output.
87	P31/TO1	OPEN	O	Tray open signal output.
88	P32/TO2	CL-DOWN	O	Clamp down signal output.
89	P33/TI1	CL-UP	O	Clamp up signal output.
90	P34/TI2			N.C.
91	P35/PCL			N.C.
92	P36/BUZ			N.C.
93	P37	STAN	O	M56748 standby control
94	P90		I	Model detect 1 (775 : "H")
95	P91		I	Model detect 2 (775 : "H")
96	P92		O	Monitor 1
97	P93		O	Monitor 2
98	P94		O	Monitor 3
99	P95		O	Monitor 4
100	P96		O	Monitor (error)

IC3 : MN35511
Signal Processor & Controller



IC3 : MN35511
Signal Processor & Controller

Pin No.	Name	I/O	Function
1	BCLK	O	Bit clock output for SR DATA
2	LRCK	O	L/R identification signal output
3	SRDATA	O	Serial data output
4	DVDD1	I	Power supply for digital circuit (+5)
5	DVSS1	I	GND for digital circuit
6	TX	O	Digital, audio, interface output signal
7	MCLK	I	Microprocessor command clock signal input (data latched at leading edge)
8	MDATA	I	Microprocessor command data input
9	MLD	I	Microprocessor command load signal input (L : LOAD)
10	SENSE	O	Sense signal output (OFT, FESL, NACEND, NAJEND, SFG, NWTEND)
11	FLOCK	O	Focus servo drawing signal (L : when drawn)
12	TLOCK	O	Tracking servo drawing signal (L : when drawn)
13	BLKCK	O	Sub code block clock signal (BLKCK=75Hz)
14	SQCK	I	Clock input for sub-code Q register
15	SUBQ	O	Sub-code Q code output
16	DMUTE	I	Muting input (H : MUTE)
17	STAT	O	Status signal (CRC, STCNT, CLVS, TTSTOP, SQOK, RESY, FCLV, FLAG6, SENSE, /FLOCK, /RFDET, /TLOCK)
18	RST	I	Reset input (L : RESET)
19	SMCK/ FCLK	O	4.2336MHz clock signal output SMCK when command is defaulted. (Note 1) (NC) SMCK (8.4672MHz), FCLK (7.35kHz) or "L" fixed is selected when command is switched.
20	CLVS/ FLAG6	O	With command defaulted : CLVS when IOSEL=H, FLAG6 when IOSEL=L (NC) These settings can be reversed by command (FLAG6 when IOSEL=H).
21	TRV	O	Traverse (Feed) forced feed output 3-State
22	TVD	O	Traverse (Feed) drive output
23	PC	O	Spindle motor ON signal L : ON (default) (NC)
24	ECM	O	Spindle motor drive signal (forced mode output) 3-State
25	ECS	O	Spindle motor drive signal (servo error signal output)
26	KICK	O	Kick pulse output 3-State
27	TRD	O	Tracking drive output
28	FOD	O	Focus drive output
29	VREF	I	Reference voltage for DA output block (TVD, ECS, TRD, FOD, FBAL, TBAL)
30	FBAL	O	Focus balance adjustment output
31	TBAL	O	Tracking balance adjustment output
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	RFENV	I	RF envelope signal input (analog input)
35	VDET	I	Oscillation detect signal input (H : DETECT)
36	OFT	I	Off track signal input (H : OFF TRACK)
37	TRCRS	I	Track cross signal input (analog input)
38	RFDET	I	RF detect signal input (L : DETECT)
39	BDO	I	Drop out signal input (H : DROP OUT)
40	LDON	O	Laser ON signal output (H : ON)
41	TOFS	O	Tracking offset adjustment output (NC)
42	PLAY/TRVSTOP	O	Switched by command. PLAY (Play signal output) when command is defaulted. (NC)
43	WVEL	O	Double speed status signal output (H : double speed) (NC)
44	ARF	I	RF signal input
45	IREF	I	Reference current input terminal
46	DRF	I	Bias terminal for DSL

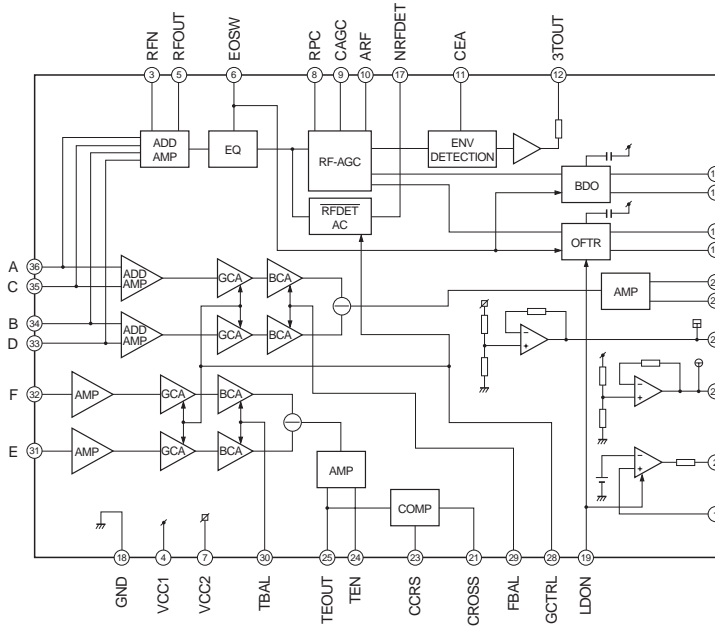
(Note 1) At the SMCK/FCLK pin, output does not stop while /RST=L.

IC3 : MN35511
Signal Processor & Controller

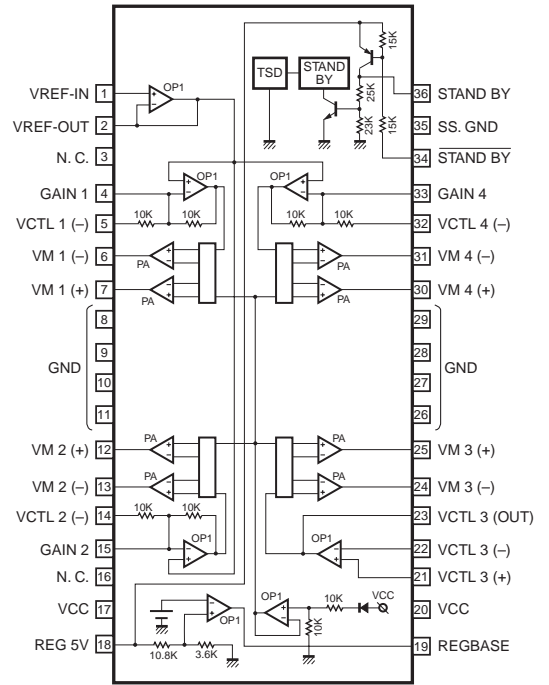
Pin No.	Name	I/O	Function	
47	DSLFL	I/O	Loop filter terminal for DSL	
48	PLLF	I/O	Loop filter terminal for PLL	
49	VCOF	I/O	Loop filter terminal for VCO	(+5)
50	AVDD2	I	Power supply for analog circuit (for AD of DSL, PLL, DA output blocks)	(+5)
51	AVSS2	I	GND for analog circuit (for AD of DSL, PLL, DA output blocks)	(GND)
52	EFM	O	EFM signal output	(NC)
53	PCK/ RESY	O	With command defaulted : PLL extract clock output PCK when IOSEL=H, frame re-synchronous signal RESY when IOSEL=L These settings can be reversed by command (RESY when IOSEL=H).	(NC)
54	FLAG	O	Flag signal output	(NC)
55	CRC	O	Sub-code CRC check result output (H : OK, L : NG)	(NC)
56	XSEL	I	L : Normal mode H : • For internal master clock, VCO2 output clock for jitter adsorbing PLL is used instead of Xtal oscillation output (X2). • VCO2 is always fixed to oscillation mode regardless of VCO2 oscillation stop command or resetting (/RST=L) and Xtal oscillation is stopped.	(GND)
57	VSS	I	GND for oscillation circuit	
58	X1	I	Crystal oscillation circuit input terminal	
59	X2	O	Crystal oscillation circuit output terminal	
60	VDD	I	Power supply for oscillation circuit	(+5)
61	VCOF2	O	PLL loop filter terminal for jitter adsorption	(GND)
62	AVSS1	O	GND for audio DAC	
63	OUT1C	O	PEM output terminal 1C	(NC)
64	OUT1D	O	PEM output terminal 1D	(NC)
65	OUT2D	O	PEM output terminal 2D	(NC)
66	OUT2C	O	PEM output terminal 2C	(NC)
67	AVDD1	I	Power supply terminal for audio DAC	
68	DEMPO	O	Deemphasis detect signal output	
69	CK384	O	384fs clock output (At the CK384 pin, output does not stop while /RST=L.) Xtal system when command is defaulted. Signal processing system when command is switched	(NC)
70	IOSEL	I	Mode selecting terminal	(+5)
71	TEST	I	Test mode setting terminal (Normal : H)	(+5)
72	SBCK2	I	Sub-code data read clock input	
73	SUBC	O	Sub-code serial output (SBCK effective) when command is defaulted. PACK data usable (SBCK2 effective) when command is switched	
74	SBCK	I	Clock input for sub-code serial output (with pull-up resistor)	(NC)
75	CLDCK	O	Sub-code frame clock signal output when command is defaulted (fCLDCK=7.35kHz) PACK synchronous signal when command is switched	
76	IPFLAG	O	Interpolation flag signal output (H : INTERPOLATION)	(NC)
77	DEMPI /TEST2	I	When IOSEL=H, L : NORMAL H : TEST2 Emphasis control in accordance with DEMPO When IOSEL=L, external DEMP1 input terminal For emphasis control, DEMPO, OR of DEMP1, DEMP1, forced OFF or forced ON is selected by command. When command is defaulted, DEMPO and OR of DEMP1	(GND)
78	SDATI	I	SRDATA input (effective only when IOSEL=L)	(NC)
79	LRCKI	I	LRCK input (effective only when IOSEL=L) H : Lch data, L : Rch data	(NC)
80	BCKI	I	BCK input (effective only when IOSEL=L)	(NC)

IC BLOCKS

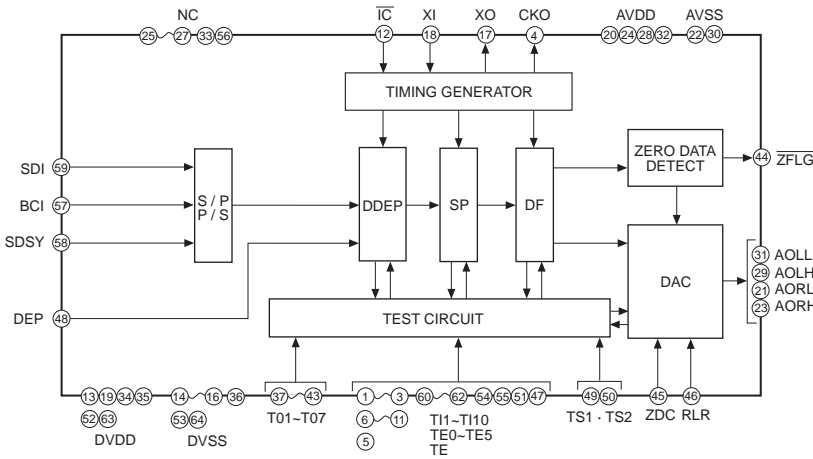
IC1 : AN8849SB
Digital Servo Head Amp



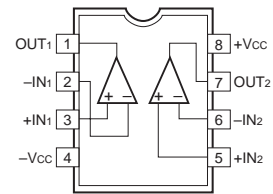
IC2 : M56748FP
4-Channel BTL Driver



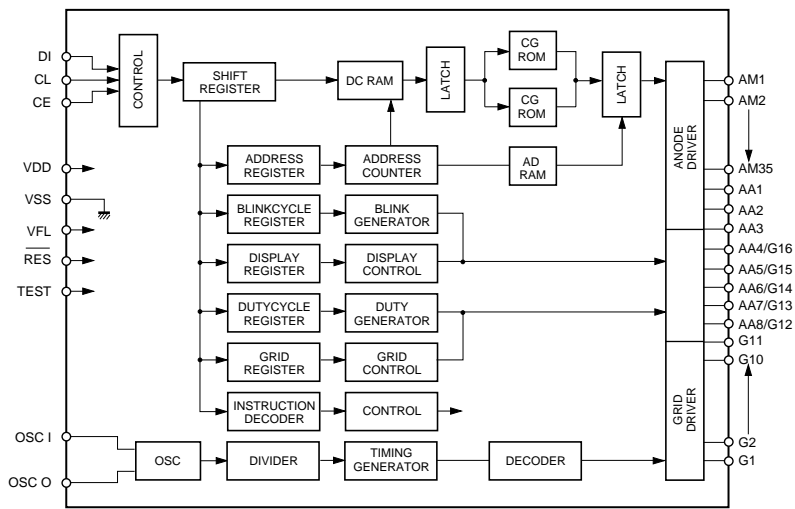
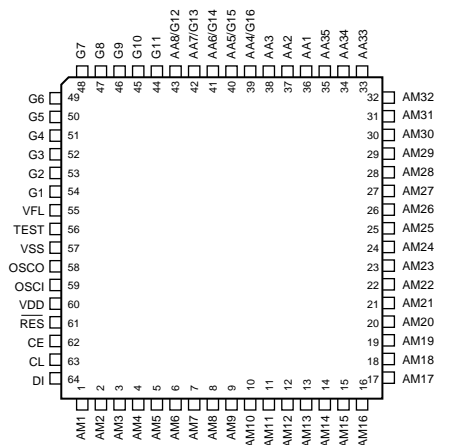
IC100 : YAC514
D/A Converter



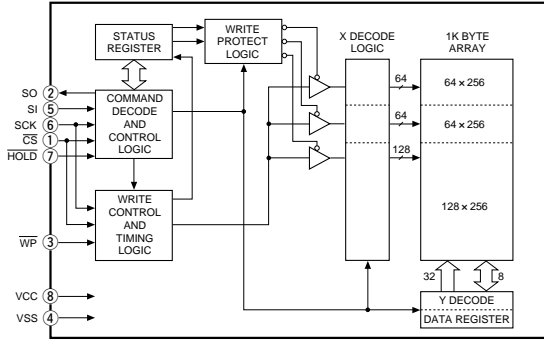
IC101, 103 : NJM2068D-D
IC102, 104 : NJM5532D
IC105 : BA15218
Dual Op-Amp



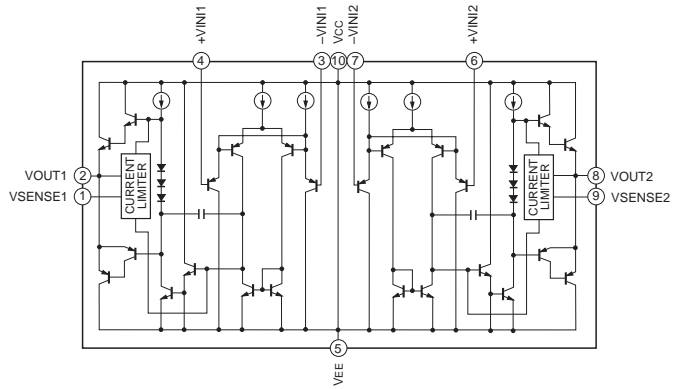
IC303 : LC75711NE
FL Driver



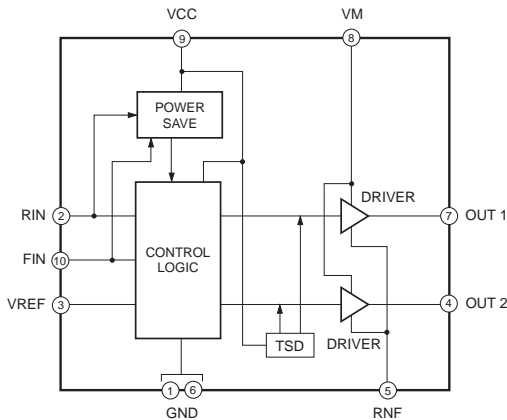
IC302 : X25642P
Electrically Erasable PROM



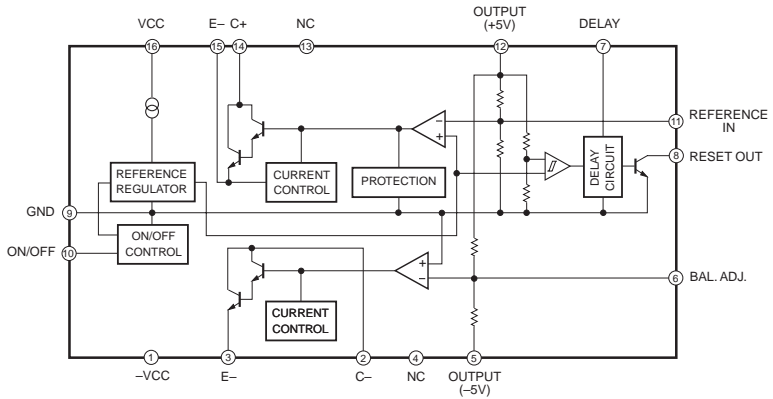
IC401 : LA6510
Dual Power Operational Amp



IC400 : BA6286
Motor Driver



IC200 : M5290P
Constant-Voltage Tracking Supply with Reset



Other ICs

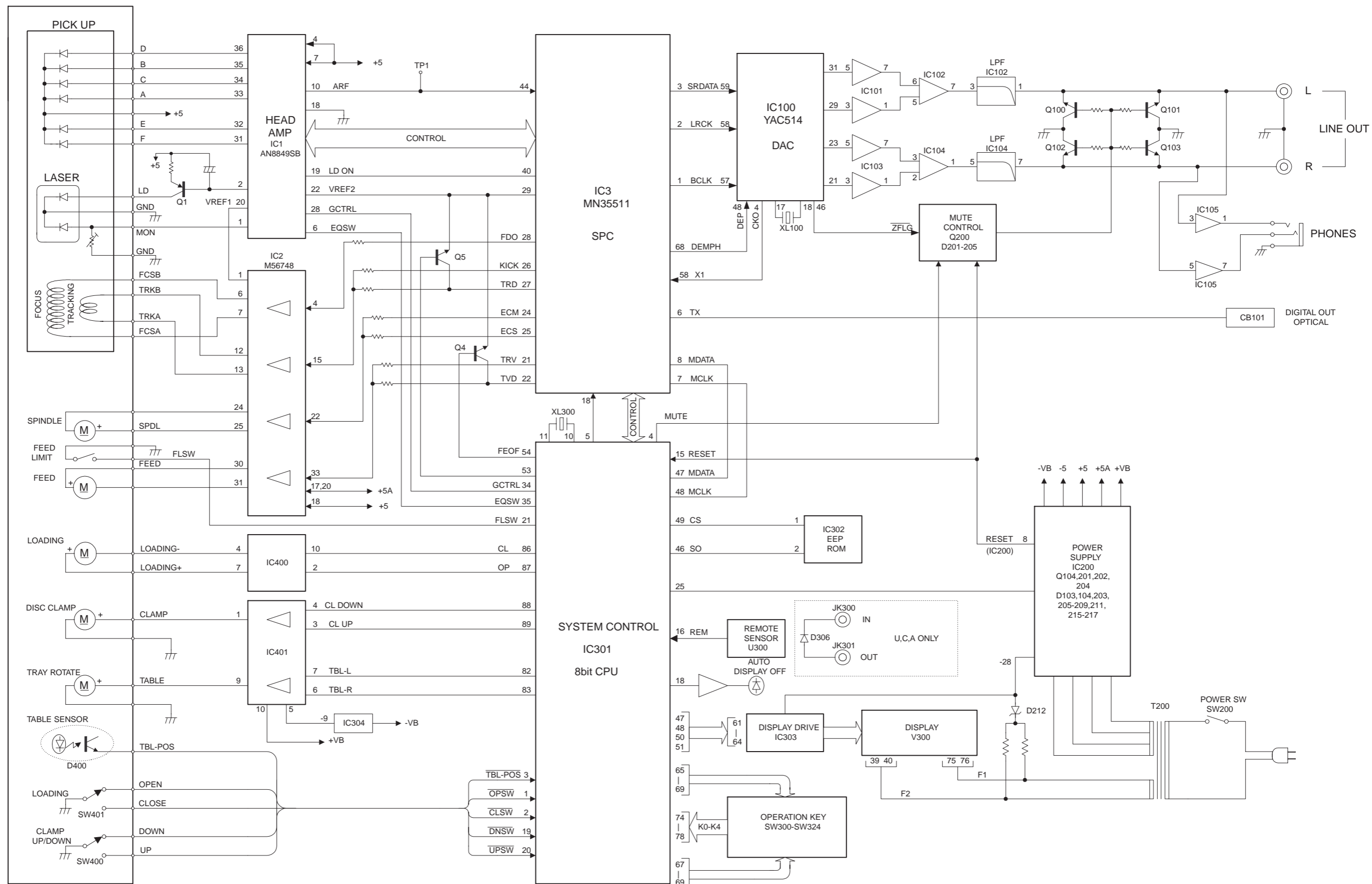
- IC301 : μ PD78P078GF-3BA → See page 16
- IC3 : MN35511 → See page 18

PIN CONNECTION DIAGRAM

<p>1S5133 1N4002S MTZJ5.1B MTZJ5.6B MTZJ7.5C MTZJ9.1C MTZJ30.0B</p>	<p>2SA933S (Q,R) 2SC1740S (R,S) 2SD1915F (S,T)</p>	<p>2SB544 (E,F,G) 2SC2878 (A, B) 2SD400 (E, F)</p>	<p>2SA1708(S,T) 2SC4488(S,T)</p>	<p>22SB1565 (E, F) 2SD2394 (E, F)</p>	<p>MN35511</p>
<p>NJM7909F</p>	<p>NJM2068D-D NJM5532D</p>	<p>BA15218 X25642P</p>	<p>M5290P</p>	<p>YAC514</p>	<p>μPD78P078GF-3BA</p>
<p>LA6510</p>	<p>BA6286</p>	<p>AN8849SB M56748FP</p>	<p>LC75711NE</p>		

■ BLOCK DIAGRAM

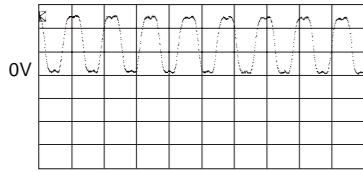
1
2
3
4
5
6



PRINTED CIRCUIT BOARD (Foil side)

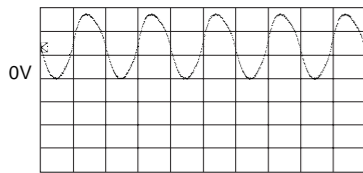
Point ① (Pin 59 of IC3)

V : 2V/div, H : 50nsec/div
DC, 1 : 1 probe



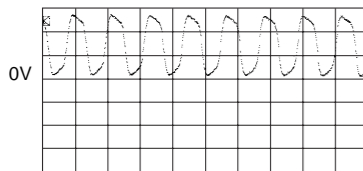
Point ② (Pin 10 of IC301)

V : 2V/div, H : 0.1μsec/div
DC, 1 : 1 probe



Point ③ (Pin 17 of IC100)

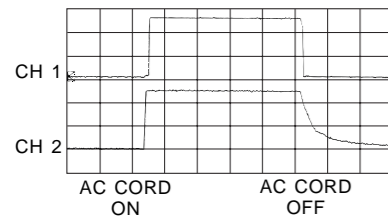
V : 2V/div, H : 50nsec/div
DC, 1 : 1 probe



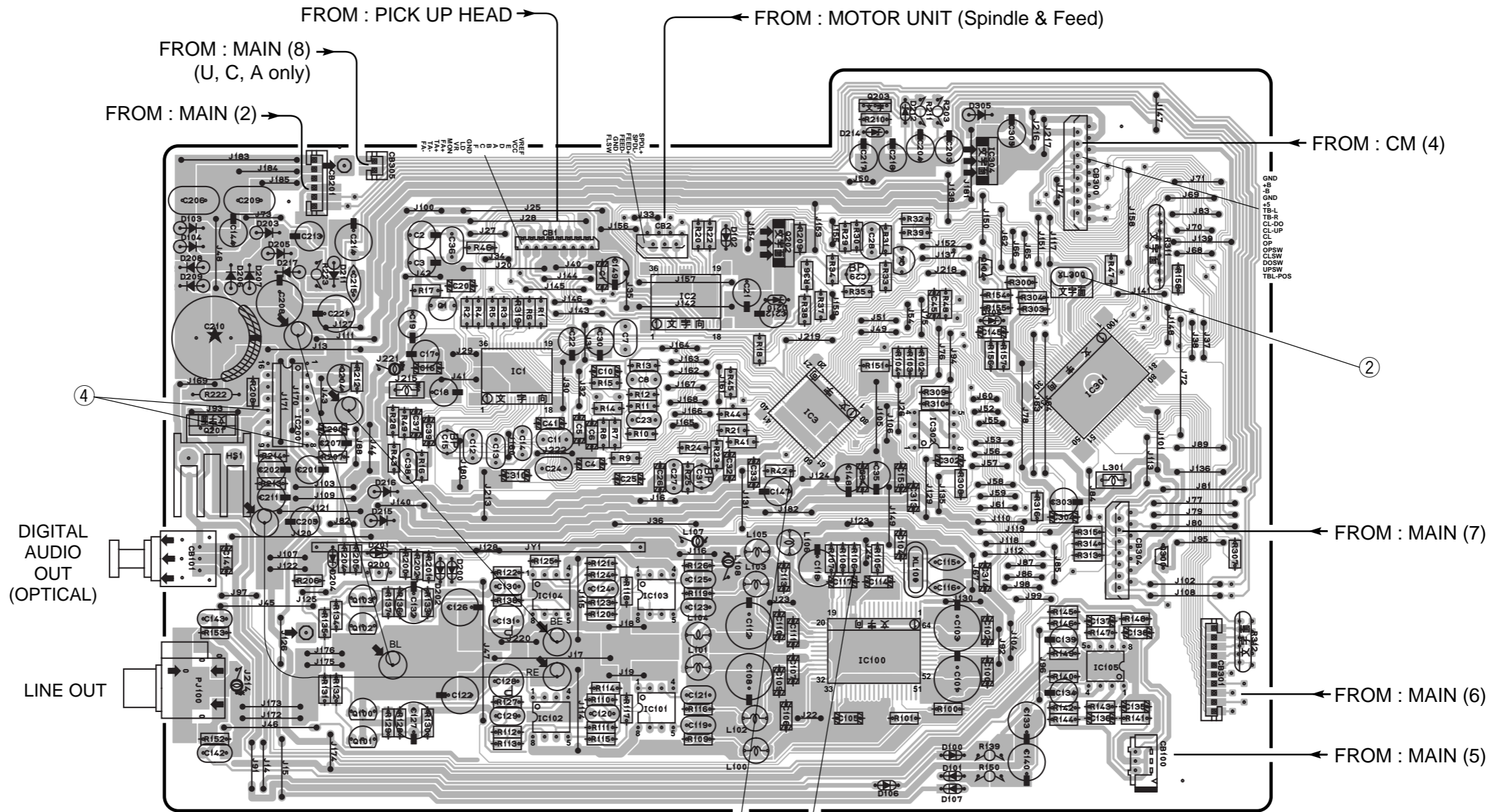
Point ④

CH 1 : Pin 8 of IC200
CH 2 : Pin 12 of IC200

V : 2V/div (CH 1/CH 2)
DC, 1 : 1 probe, H : 0.5sec/div



P. C. B. MAIN (1)



④

②

①

③

PRINTED CIRCUIT BOARD (Foil side)

1

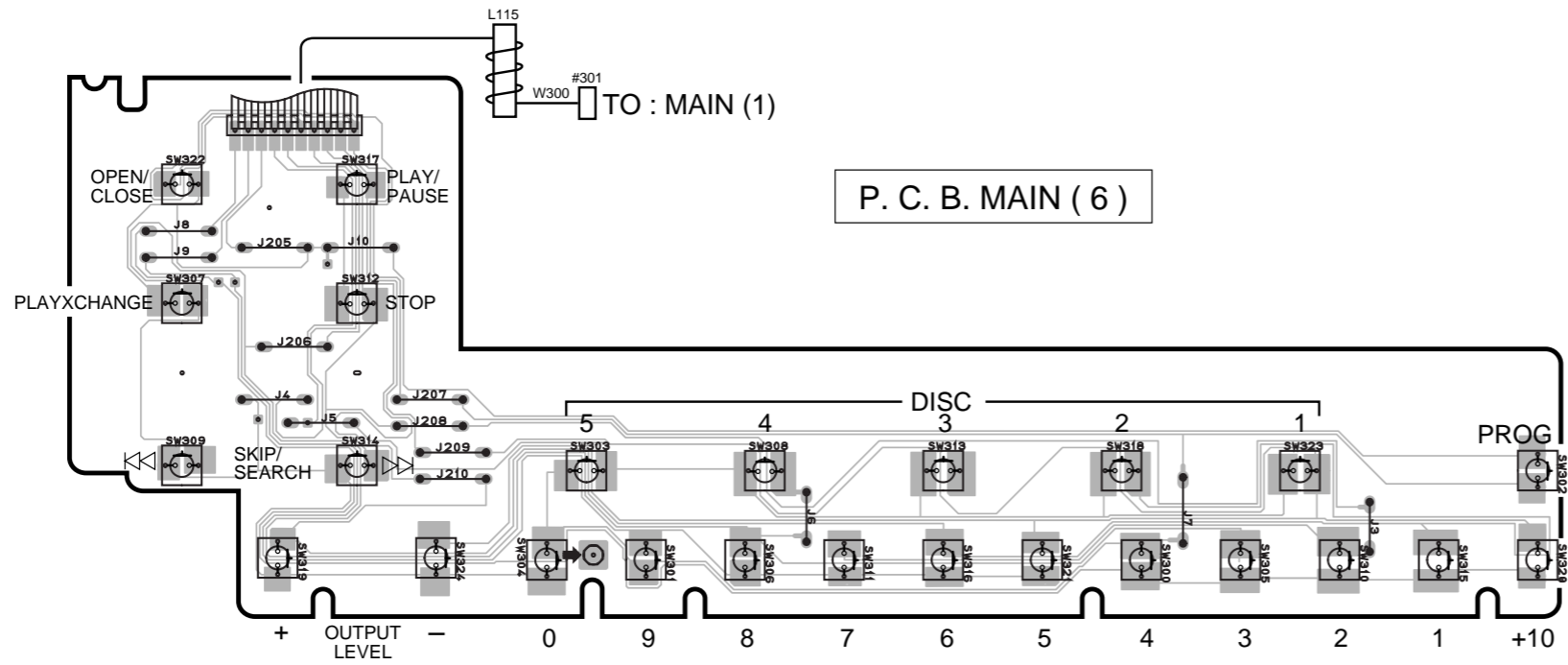
2

3

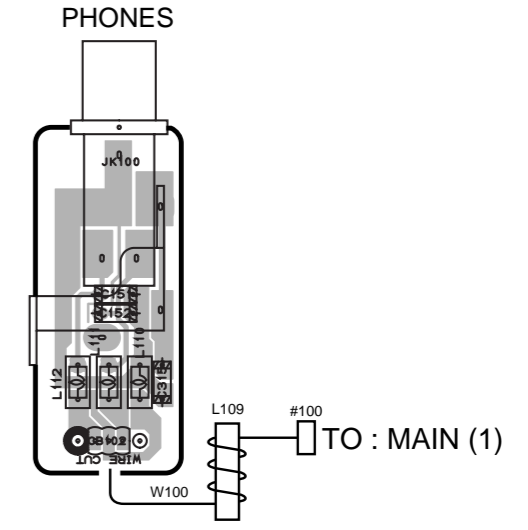
4

5

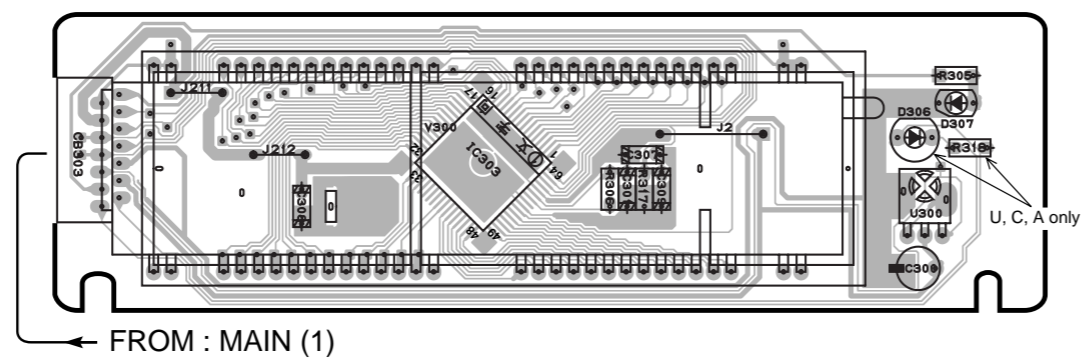
6



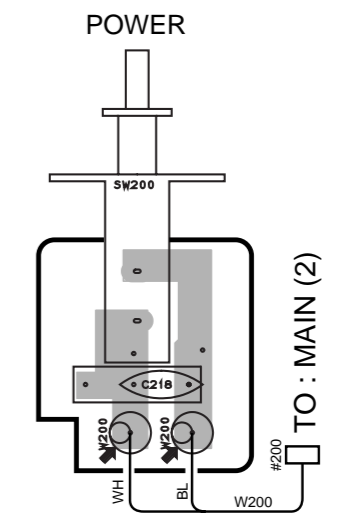
P. C. B. MAIN (5)



P. C. B. MAIN (7)

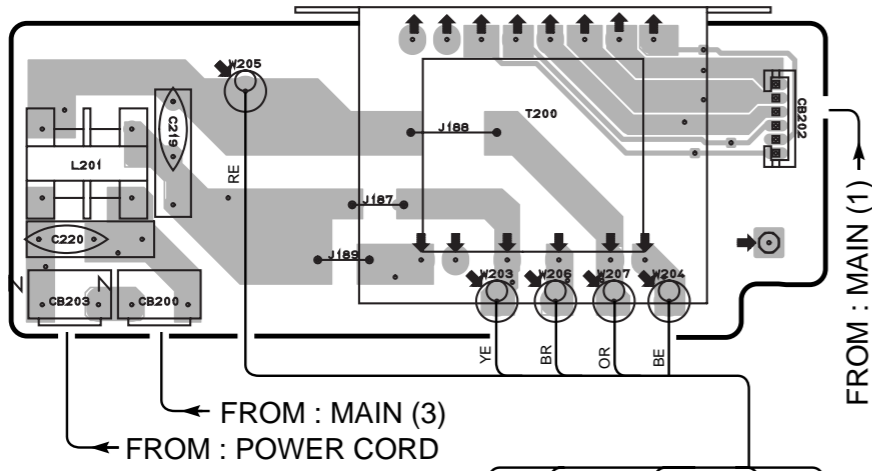


P. C. B. MAIN (3)



PRINTED CIRCUIT BOARD (Foil side)

P. C. B. MAIN (2)



CIRCUIT CHANGES BY MARKET.

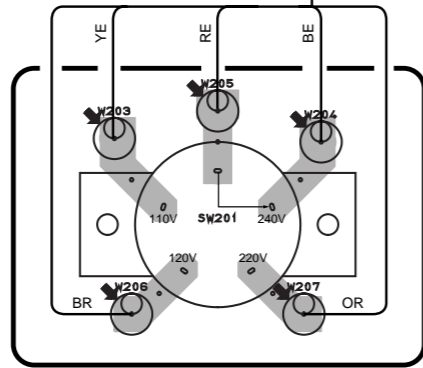
	U, C	R	A	G
J189	X	O	X	X
J187, 188	O	X	O	O

O : USED
X : NOT USED

FROM : MAIN (3)
FROM : POWER CORD

FROM : MAIN (1)

P. C. B. MAIN (4)

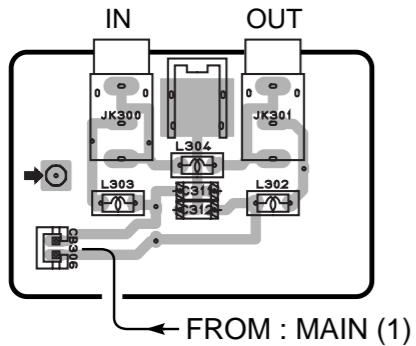


VOLTAGE SELECTOR (R ONLY)

• U, C, A, only

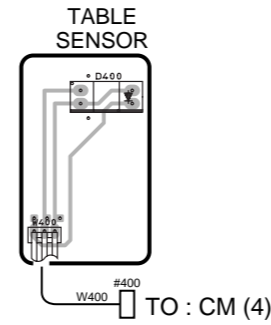
P. C. B. MAIN (8)

REMOTE CONTROL

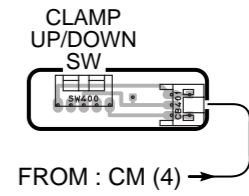


FROM : MAIN (1)

P. C. B. CM (1)

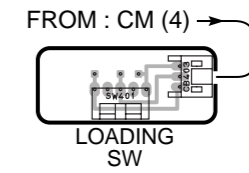


P. C. B. CM (2)



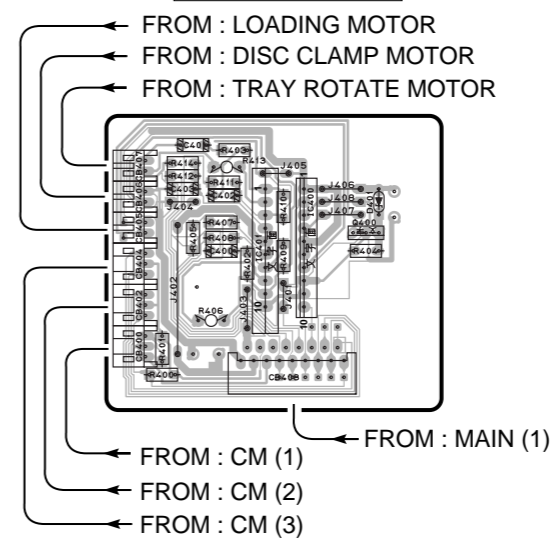
FROM : CM (4)

P. C. B. CM (3)

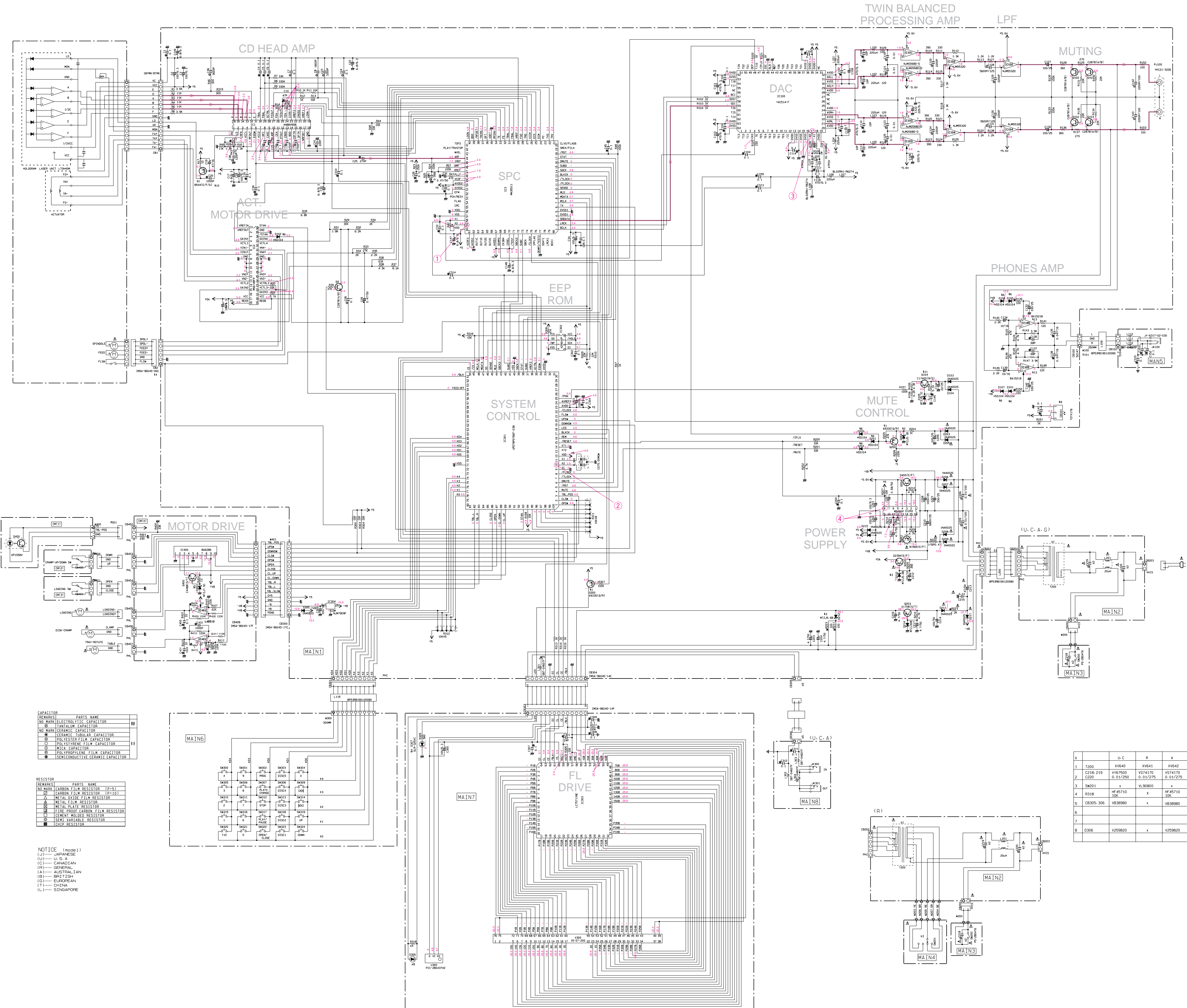


FROM : CM (4)

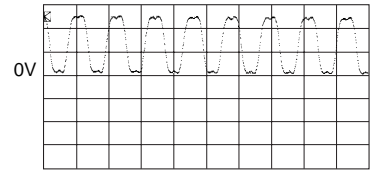
P. C. B. CM (4)



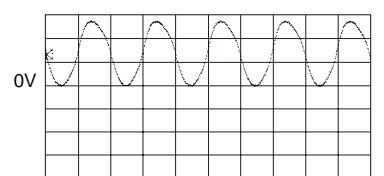
SCHEMATIC DIAGRAM



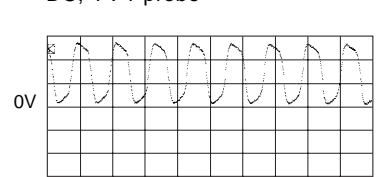
Point ① (Pin 59 of IC3)
 V : 2V/div, H : 50nsec/div
 DC, 1 : 1 probe



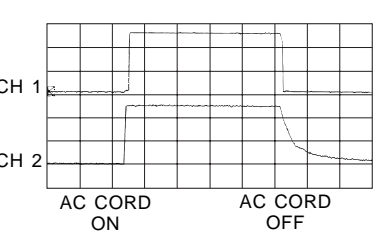
Point ② (Pin 10 of IC301)
 V : 2V/div, H : 0.1µsec/div
 DC, 1 : 1 probe



Point ③ (Pin 17 of IC100)
 V : 2V/div, H : 50nsec/div
 DC, 1 : 1 probe



Point ④
 CH 1 : Pin 8 of IC200
 CH 2 : Pin 12 of IC200
 V : 2V/div (CH 1/CH 2)
 DC, 1 : 1 probe, H : 0.5sec/div



CAPACITOR

MARK	BASE NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊖	PANALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊖	CERAMIC TUBULAR CAPACITOR
⊖	POLYSTYRENE FILM CAPACITOR
⊖	POLYESTER FILM CAPACITOR
⊖	POLYPROPYLENE FILM CAPACITOR
⊖	SEMI-CONDUCTIVE CERAMIC CAPACITOR

RESISTOR

MARK	BASE NAME
NO MARK	CARBON FILM RESISTOR (DIP)
⊖	CARBON FILM RESISTOR (SIP)
⊖	METAL GLAZE FILM RESISTOR
⊖	METAL PLATE RESISTOR
⊖	FILM DRUM CARBON FILM RESISTOR
⊖	CEMENT WOUND RESISTOR
⊖	LOW VARIABLE RESISTOR
⊖	WIRE RESISTOR

NOTICE (mode 1)
 (J)..... JAPANESE
 (U)..... U. S. A.
 (C)..... CANADIAN
 (F)..... GENERAL
 (A)..... AUSTRALIAN
 (E)..... SWITZER
 (G)..... EUROPEAN
 (T)..... CHINA
 (L)..... SINGAPORE

Interchangeable Parts at Manufacture-Stage

Mark	Reference	Parts Number	Parts Name
41	D200-300	2549335(G/R)	2541115(E/F)
42	D204	WZJ5-1B	H255C1
43	D210-212	WZJ5-6B	H256A3
44	D307	SLR-325VC131	SLR-325VC447
45	D401	WZJ7-5C	H257C2
46	D100-102-106-107-100-102	H55104	155133
47		155176	
48			
49	CB101	1071170	GP1F32T
50	D1	258544(E/F/G)	254934(P/R)
51	D104-400	2521745(E/F/S)	2523020(E/F)
52		2523311(G/R/S)	
53	IC105	BA15218	H5184P

All voltage are measured with a 10MΩ/DC electric volt meter.
 Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
 Schematic diagram is subject to change without notice.

PARTS LIST

■ ELECTRICAL PARTS

■ WARNING

- Components having special characteristics are marked \triangle and must be replaced with parts having specifications equal to those originally installed.
- Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the parts No. of the carbon resistors, refer to last page.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS :

C.A.EL.CHP	: CHIP ALUMI. ELECTROLYTIC CAP	L.EMIT	: LIGHT EMITTING MODULE
C.CE	: CERAMIC CAP	LED.DSPLY	: LED DISPLAY
C.CE.ARRAY	: CERAMIC CAP ARRAY	LED.INFRD	: LED, INFRARED
C.CE.CHP	: CHIP CERAMIC CAP	MODUL.RF	: MODULATOR, RF
C.CE.ML	: MULTILAYER CERAMIC CAP	PHOT.CPL	: PHOTO COUPLER
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP	PHOT.INTR	: PHOTO INTERRUPTER
C.CE.SAFTY	: RECOGNIZED CERAMIC CAP	PHOT.RFLCT	: PHOTO REFLECTOR
C.CE.TUBLR	: CERAMIC TUBULAR CAP	PIN.TEST	: PIN, TEST POINT
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP	PLST.RIVET	: PLASTIC RIVET
C.EL	: ELECTROLYTIC CAP	R.ARRAY	: RESISTOR ARRAY
C.MICA	: MICA CAP	R.CAR	: CARBON RESISTOR
C.ML.FLM	: MULTILAYER FILM CAP	R.CAR.CHP	: CHIP RESISTOR
C.MP	: METALLIZED PAPER CAP	R.CAR.FP	: FLAME PROOF CARBON RESISTOR
C.MYLAR	: MYLAR FILM CAP	R.FUS	: FUSABLE RESISTOR
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP	R.MTL.CHP	: CHIP METAL FILM RESISTOR
C.PAPER	: PAPER CAPACITOR	R.MTL.FLM	: METAL FILM RESISTOR
C.PLS	: POLYSTYRENE FILM CAP	R.MTL.OXD	: METAL OXIDE FILM RESISTOR
C.POL	: POLYESTER FILM CAP	R.MTL.PLAT	: METAL PLATE RESISTOR
C.POLY	: POLYETHYLENE FILM CAP	RSNR.CE	: CERAMIC RESONATOR
C.PP	: POLYPROPYLENE FILM CAP	RSNR.CRYS	: CRYSTAL RESONATOR
C.TNTL	: TANTALUM CAP	R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
C.TNTL.CHP	: CHIP TANTALUM CAP	R.WW	: WIRE WOUND RESISTOR
C.TRIM	: TRIMMER CAP	SCR.BND.HD	: BIND HEAD B-TITE SCREW
CN	: CONNECTOR	SCR.BW.HD	: BW HEAD TAPPING SCREW
CN.BS.PIN	: CONNECTOR, BASE PIN	SCR.CUP	: CUP TITE SCREW
CN.CANNON	: CONNECTOR, CANNON	SCR.TERM	: SCREW TERMINAL
CN.DIN	: CONNECTOR, DIN	SCR.TR	: SCREW, TRANSISTOR
CN.FLAT	: CONNECTOR, FLAT CABLE	SUPRT.PCB	: SUPPORT, P.C.B.
CN.POST	: CONNECTOR, BASE POST	SURG.PRTCT	: SURGE PROTECTOR
COIL.MX.AM	: COIL, AM MIX	SW.TACT	: TACT SWITCH
COIL.AT.FM	: COIL, FM ANTENNA	SW.LEAF	: LEAF SWITCH
COIL.DT.FM	: COIL, FM DETECT	SW.LEVER	: LEVER SWITCH
COIL.MX.FM	: COIL, FM MIX	SW.MICRO	: MICRO SWITCH
COIL.OUTPT	: OUTPUT COIL	SW.PUSH	: PUSH SWITCH
DIOD.ARRAY	: DIODE ARRAY	SW.RT.ENC	: ROTARY ENCODER
DIODE.BRG	: DIODE BRIDGE	SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
DIODE.CHP	: CHIP DIODE	SW.RT	: ROTARY SWITCH
DIODE.VAR	: VARACTOR DIODE	SW.SLIDE	: SLIDE SWITCH
DIOD.Z.CHP	: CHIP ZENER DIODE	TERM.SP	: SPEAKER TERMINAL
DIODE.ZENR	: ZENER DIODE	TERM.WRAP	: WRAPPING TERMINAL
DSCR.CE	: CERAMIC DISCRIMINATOR	THRMST.CHP	: CHIP THERMISTOR
FER.BEAD	: FERRITE BEADS	TR.CHP	: CHIP TRANSISTOR
FER.CORE	: FERRITE CORE	TR.DGT	: DIGITAL TRANSISTOR
FET.CHP	: CHIP FET	TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
FL.DSPLY	: FLUORESCENT DISPLAY	TRANS	: TRANSFORMER
FLTR.CE	: CERAMIC FILTER	TRANS.PULS	: PULSE TRANSFORMER
FLTR.COMB	: COMB FILTER MODULE	TRANS.PWR	: POWER TRANSFORMER ASS'y
FLTR.LC.RF	: LC FILTER, EMI	TUNER.AM	: TUNER PACK, AM
GND.MTL	: GROUND PLATE	TUNER.FM	: TUNER PACK, FM
GND.TERM	: GROUND TERMINAL	TUNER.PK	: FRONT-END TUNER PACK
HOLDER.FUS	: FUSE HOLDER	VR	: ROTARY POTENTIOMETER
IC.PRTCT	: IC PROTECTOR	VR.MTR	: POTENTIOMETER WITH MOTOR
JUMPER.CN	: JUMPER CONNECTOR	VR.SW	: POTENTIOMETER WITH ROTARY SW
JUMPER.TST	: JUMPER, TEST POINT	VR.SLIDE	: SLIDE POTENTIOMETER
L.DTCT	: LIGHT DETECTING MODULE	VR.TRIM	: TRIMMER POTENTIOMETER

Note) Those parts marked with “#” are not included in the P.C.B. ass'y.

P.C.B. MAIN

Schm Ref.	PART NO.	Description	
*	V3172200	P.C.B.	MAIN(UC)
*	V3172300	P.C.B.	MAIN(R)
*	V3172400	P.C.B.	MAIN(A)
*	V3172500	P.C.B.	MAIN(G)
CB1	V2731000	CN.FMN	16P
CB2	VU270600	CN	6P
CB100	VK024700	CN.BS.PIN	3P
CB101	VT707200	L.EMIT	TOTX178
CB102	Vi878100	CN.BS.PIN	3P
CB200	VG879900	CN.BS.PIN	2P
△ CB201	VB390200	CN.BS.PIN	6P
△ CB202	VB390200	CN.BS.PIN	6P
△ CB203	VG879900	CN.BS.PIN	2P
CB300	VU271700	CN	17P
* CB301	VB390600	CN.BS.PIN	10P
* CB303	VU281400	CN	14P
* CB304	VU271400	CN	14P
CB305	VB389800	CN.BS.PIN	2P(UCA)
CB306	VB389800	CN.BS.PIN	2P(UCA)
C1	VJ599100	C.CE.TUBLR	0.1uF 50V
C2	UR818100	C.EL	100uF 6.3V
C3	UR818100	C.EL	100uF 6.3V
C4	VJ599100	C.CE.TUBLR	0.1uF 50V
C5	VJ599100	C.CE.TUBLR	0.1uF 50V
C6	VJ599100	C.CE.TUBLR	0.1uF 50V
C7	UA655100	C.MYLAR	0.1uF 50V
C8	UA953180	C.MYLAR	1800pF 50V
C10	VF466700	C.CE.TUBLR	47pF 50V
C11	UA655100	C.MYLAR	0.1uF 50V
C12	UA655100	C.MYLAR	0.1uF 50V
C13	UA953270	C.MYLAR	2700pF 50V
C14	UA953270	C.MYLAR	2700pF 50V
C15	UN866100	C.EL	1uF 50V
C16	VJ599100	C.CE.TUBLR	0.1uF 50V
C17	VR498100	C.EL	6.8uF 6.3V
C18	UR818100	C.EL	100uF 6.3V
C19	UR837470	C.EL	47uF 16V
C20	VF467000	C.CE.TUBLR	1000pF 50V
C21	UR818100	C.EL	100uF 6.3V
C22	VR498100	C.EL	6.8uF 6.3V
C23	UA953330	C.MYLAR	3300pF 50V
C24	UA655100	C.MYLAR	0.1uF 50V
C25	VG278500	C.CE.TUBLR	270pF 50V
C26	VJ599100	C.CE.TUBLR	0.1uF 50V
C27	UA654680	C.MYLAR	0.068uF 50V
C28	UA655100	C.MYLAR	0.1uF 50V
C29	UN865470	C.EL	0.47uF 50V
C30	VR498100	C.EL	6.8uF 6.3V
C31	UN865470	C.EL	0.47uF 50V
C32	VJ599100	C.CE.TUBLR	0.1uF 50V
C33	VJ599100	C.CE.TUBLR	0.1uF 50V
C34	VJ599100	C.CE.TUBLR	0.1uF 50V
C35	UR818100	C.EL	100uF 6.3V

* New Parts

Schm Ref.	PART NO.	Description	
C36	UA653360	C.MYLAR	3600pF 50V
C37	VF466600	C.CE.TUBLR	10pF 50V
C38	UA952120	C.MYLAR	120pF 50V
C39	VJ599100	C.CE.TUBLR	0.1uF 50V
C41	VG278400	C.CE.TUBLR	220pF 50V
C45	VJ599100	C.CE.TUBLR	0.1uF 50V
C100	VJ599100	C.CE.TUBLR	0.1uF 50V
C101	VE016800	C.EL	470uF 6.3V
C102	VJ599100	C.CE.TUBLR	0.1uF 50V
C103	VE016800	C.EL	470uF 6.3V
C104	VJ599100	C.CE.TUBLR	0.1uF 50V
C105	VJ599100	C.CE.TUBLR	0.1uF 50V
C106	VF466600	C.CE.TUBLR	10pF 50V
C107	VJ599100	C.CE.TUBLR	0.1uF 50V
* C108	VH619300	C.EL	470uF 6.3V
C109	VF466600	C.CE.TUBLR	10pF 50V
C110	VF466600	C.CE.TUBLR	10pF 50V
C111	VJ599100	C.CE.TUBLR	0.1uF 50V
* C112	VH619300	C.EL	470uF 6.3V
C113	VF466600	C.CE.TUBLR	10pF 50V
C114	VJ599100	C.CE.TUBLR	0.1uF 50V
C115	VA761400	C.CE	47pF 50V
C116	VA761400	C.CE	47pF 50V
C117	VJ599100	C.CE.TUBLR	0.1uF 50V
C118	VG286500	C.EL	470uF 10V
C119	UA954100	C.MYLAR	0.01uF 50V
C120	VU347900	C.MYLAR	2200pF 50V
C121	UA954100	C.MYLAR	0.01uF 50V
* C122	VQ569000	C.EL	220uF 6.3V
C123	UA954100	C.MYLAR	0.01uF 50V
C124	VU347900	C.MYLAR	2200pF 50V
C125	UA954100	C.MYLAR	0.01uF 50V
* C126	VQ569000	C.EL	220uF 6.3V
C127	VQ569900	C.EL	100uF 25V
C128	UT553560	C.PP	5600pF 125V
C129	Vi715900	C.MYLAR	2200pF 50V
C130	Vi715900	C.MYLAR	2200pF 50V
C131	UT553560	C.PP	5600pF 125V
C132	VQ569900	C.EL	100uF 25V
C133	UR848330	C.EL	330uF 25V
C134	UR837100	C.EL	10uF 16V
C135	VJ599000	C.CE.TUBLR	0.047uF 16V
C136	VG277700	C.CE.TUBLR	68pF 50V
C137	VG277700	C.CE.TUBLR	68pF 50V
C138	VJ599000	C.CE.TUBLR	0.047uF 16V
C139	UR837100	C.EL	10uF 16V
C140	UR848330	C.EL	330uF 25V
C141	VJ599100	C.CE.TUBLR	0.1uF 50V
C142	VL883800	C.PP	2200pF 100V
C143	VL883800	C.PP	2200pF 100V
C144	UR847220	C.EL	22uF 25V
C145	VJ599100	C.CE.TUBLR	0.1uF 50V
C147	VR498100	C.EL	6.8uF 6.3V

* New Parts

P.C.B. MAIN

Schm Ref.	PART NO.	Description
C148	VR498100	C.EL 6.8uF 6.3V
C149	VR498100	C.EL 6.8uF 6.3V
C151	VJ599100	C.CE.TUBLR 0.1uF 50V
C152	VJ599100	C.CE.TUBLR 0.1uF 50V
C159	VJ599100	C.CE.TUBLR 0.1uF 50V
C200	VJ599100	C.CE.TUBLR 0.1uF 50V
* C201	VG286200	C.EL 100uF 10V
* C202	VG286200	C.EL 100uF 10V
C203	UR866470	C.EL 4.7uF 50V
C204	UR866470	C.EL 4.7uF 50V
C205	UR848220	C.EL 220uF 25V
△ C206	VK534100	C.PP 0.01uF 100V
C207	UR865680	C.EL 0.68uF 50V
* C208	V3750300	C.EL 1000uF 25V
△ C209	VK534100	C.PP 0.01uF 100V
C210	V3483900	C.EL 6800uF 25V
C211	UR866470	C.EL 4.7uF 50V
C212	UR828100	C.EL 100uF 10V
△ C213	UR867470	C.EL 47uF 50V
△ C214	UR868100	C.EL 100uF 50V
△ C215	FG644100	C.CE 0.01uF 50V
C216	UR866470	C.EL 4.7uF 50V
C217	UR866470	C.EL 4.7uF 50V
C218	VS741700	C.CE.SAFTY 0.01uF 275V(RAG)
△ C218	VY675000	C.CE.SAFTY 0.01uF 250V(UC)
△ C219	VS741700	C.CE.SAFTY 0.01uF 275V(RAG)
△ C219	VY675000	C.CE.SAFTY 0.01uF 250V(UC)
△ C220	VS741700	C.CE.SAFTY 0.01uF 275V(RAG)
△ C220	VY675000	C.CE.SAFTY 0.01uF 250V(UC)
* C221	V3483700	C.EL 330uF 25V
C300	UM388100	C.EL 100uF 10V
C301	VG276700	C.CE.TUBLR 24pF 50V
C302	VJ599100	C.CE.TUBLR 0.1uF 50V
C303	UR818100	C.EL 100uF 6.3V
C304	VJ599100	C.CE.TUBLR 0.1uF 50V
C305	UR838100	C.EL 100uF 16V
C307	VJ599100	C.CE.TUBLR 0.1uF 50V
C308	VJ599100	C.CE.TUBLR 0.1uF 50V
C309	VJ599100	C.CE.TUBLR 0.1uF 50V
C310	VJ599100	C.CE.TUBLR 0.1uF 50V
C311	VJ599100	C.CE.TUBLR 0.1uF 50V(UCA)
C312	VJ599100	C.CE.TUBLR 0.1uF 50V(UCA)
C313	VJ599100	C.CE.TUBLR 0.1uF 50V
C314	VJ599100	C.CE.TUBLR 0.1uF 50V
C315	VJ599100	C.CE.TUBLR 0.1uF 50V
D100	VD631600	DIODE 1SS133,176,HSS104
D101	VD631600	DIODE 1SS133,176,HSS104
D102	VD631600	DIODE 1SS133,176,HSS104
D103	VV307700	DIODE 1N4002S
D104	VV307700	DIODE 1N4002S
D105	VG439300	DIODE.ZENR MTZJ9.1C 9.1V
D106	VD631600	DIODE 1SS133,176,HSS104
D107	VD631600	DIODE 1SS133,176,HSS104

* New Parts

Schm Ref.	PART NO.	Description
D200	VD631600	DIODE 1SS133,176,HSS104
D201	VD631600	DIODE 1SS133,176,HSS104
D202	VD631600	DIODE 1SS133,176,HSS104
△ D203	VV307700	DIODE 1N4002S
D204	VG437400	DIODE.ZENR MTZJ5.1B 5.1V
△ D205	VV307700	DIODE 1N4002S
△ D206	VV307700	DIODE 1N4002S
△ D207	VV307700	DIODE 1N4002S
△ D208	VV307700	DIODE 1N4002S
△ D209	VV307700	DIODE 1N4002S
D210	VG437700	DIODE.ZENR MTZJ5.6B 5.6V
△ D211	VV307700	DIODE 1N4002S
D212	VG437700	DIODE.ZENR MTZJ5.6B 5.6V
D214	VG443300	DIODE.ZENR MTZJ30B 30V
D215	VV307700	DIODE 1N4002S
D216	VV307700	DIODE 1N4002S
△ D217	VV307700	DIODE 1N4002S
D305	VV307700	DIODE 1N4002S
D306	V2598200	LED SIR-505ST(UCA)
D307	VS132300	LED(re) SLR-325VCT31
HS1	VR110000	HEAT.SINK UOT-16CS25
HS2	VA119100	HEAT.SINK
* IC1	XV627A00	IC AN8849SB
IC2	XU103A00	IC M56748FP CD-DRIVER
IC3	XV628A00	IC MN35511
IC100	XM911A00	IC YAC514-F
IC101	XA987A00	IC NJM2068D-D
* IC102	iG142800	IC NJM5532D
IC103	XA987A00	IC NJM2068D-D
* IC104	iG142800	IC NJM5532D
IC105	Xi249A00	IC BA15218
IC200	XD201A00	IC M5290P
* IC301	XV909A00	IC uPD78076GF-XXX CPU
* IC302	XS178A00	IC X25642D EEPROM
IC303	XV633A00	IC LC75711NE FLD
IC304	XV872A00	IC NJM7909FA -9V
JK100	VS899700	JACK.PHONE JY-6317-02-030
JK300	VJ726800	JACK.MNI (UCA)
JK301	VJ726800	JACK.MNI (UCA)
L100	VB056900	COIL 220uH
L101	VB056900	COIL 220uH
L102	VB056900	COIL 220uH
L103	VB056900	COIL 220uH
L104	VB056900	COIL 220uH
L105	VB056900	COIL 220uH
L106	VB056900	COIL 220uH
L107	VP133800	FER.BEAD BL02RN1-R62T4
L108	VP133800	FER.BEAD BL02RN1-R62T4
L109	Vi491100	FER.CORE BP53RB19012080M
L110	VD473700	COIL 60uH
L111	VD473700	COIL 60uH
L112	VD473700	COIL 60uH
L115	Vi491100	FER.CORE BP53RB19012080M

* New Parts

P.C.B. MAIN & CM

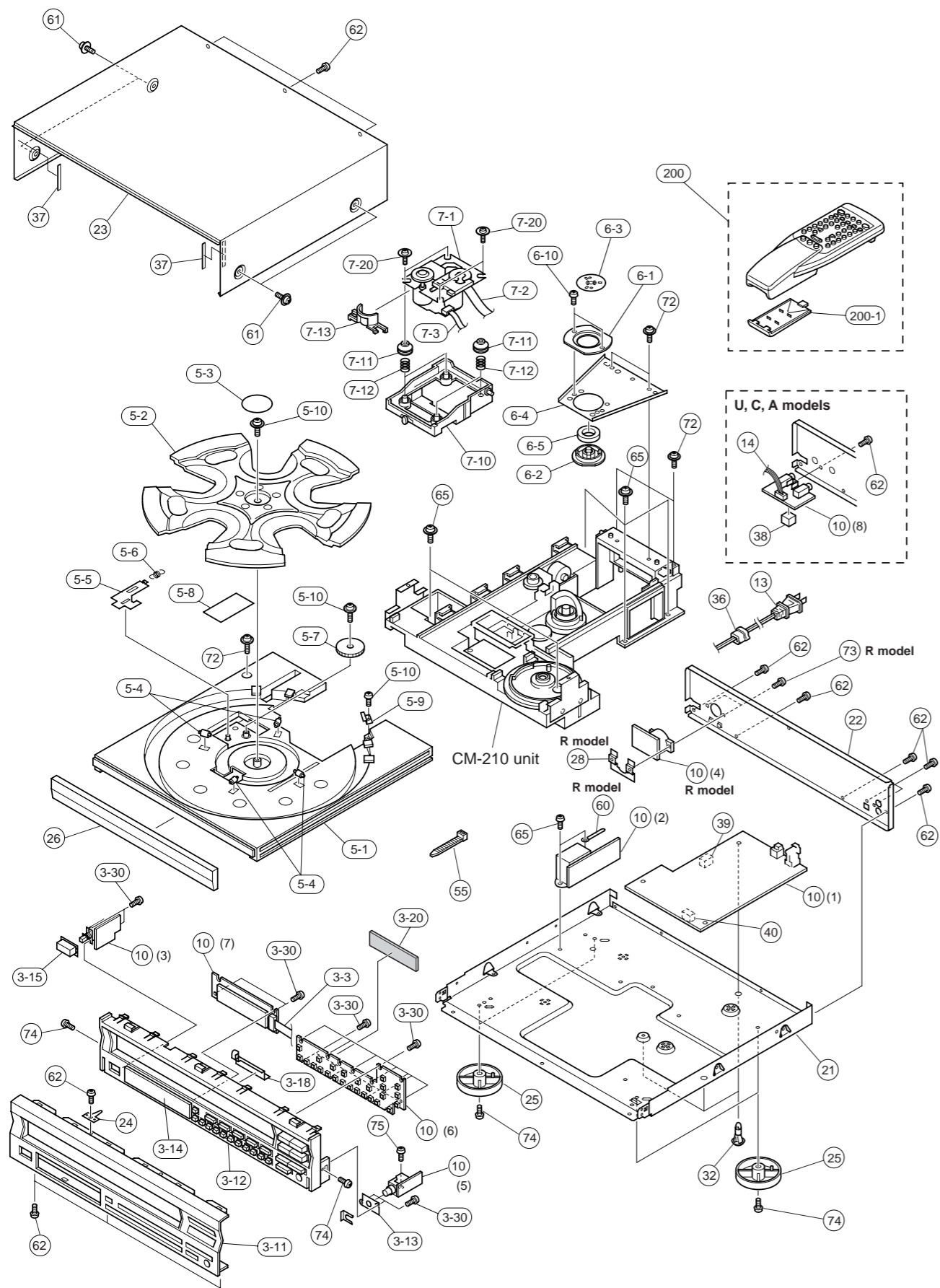
Schm Ref.	PART NO.	Description
△ L201	VV900900	FLTR 3071-012-0
L301	VD473700	COIL 60uH
L302	VD473700	COIL 60uH(UCA)
L303	VD473700	COIL 60uH(UCA)
L304	VD473700	COIL 60uH(UCA)
PJ100	VV411100	JACK.PIN 2P
Q1	iB054430	TR 2SB544 D,E,F,G
Q4	iC287820	TR 2SC2878 A,B
Q100	iC287820	TR 2SC2878 A,B
Q101	iC287820	TR 2SC2878 A,B
Q102	iC287820	TR 2SC2878 A,B
Q103	iC287820	TR 2SC2878 A,B
Q104	iC174020	TR 2SC1740S R,S
Q200	iA093320	TR 2SA933S Q,R
△ Q201	VS883300	TR 2SB1565 E,F
△ Q202	VS883400	TR 2SD2394 E,F
Q203	VP872600	TR 2SA1708 S,T
Q204	iD040040	TR 2SD400
Q300	iA093320	TR 2SA933S Q,R
R139	HV755100	R.CAR.FP 100Ω 1/4W
R150	HV755100	R.CAR.FP 100Ω 1/4W
R203	HV755100	R.CAR.FP 100Ω 1/4W
R211	HV755100	R.CAR.FP 100Ω 1/4W
△ R222	V2370600	R.FUS 0.47Ω 1/6W
△ R223	HV756120	R.CAR.FP 1.2KΩ 1/4W
R311	VF771900	R.ARRAY RGL8X103J
* R312	V3578000	R.ARRAY RGL5X103J
△ SW200	VV057600	SW.PUSH PS-2B04T6
△ SW201	VL908000	VOLT.SELCT ESE-370(R)
SW300	VG392900	SW.TACT SKHVAA
SW301	VG392900	SW.TACT SKHVAA
SW302	VG392900	SW.TACT SKHVAA
SW303	VG392900	SW.TACT SKHVAA
SW304	VG392900	SW.TACT SKHVAA
SW305	VG392900	SW.TACT SKHVAA
SW306	VG392900	SW.TACT SKHVAA
SW307	VG392900	SW.TACT SKHVAA
SW308	VG392900	SW.TACT SKHVAA
SW309	VG392900	SW.TACT SKHVAA
SW310	VG392900	SW.TACT SKHVAA
SW311	VG392900	SW.TACT SKHVAA
SW312	VG392900	SW.TACT SKHVAA
SW313	VG392900	SW.TACT SKHVAA
SW314	VG392900	SW.TACT SKHVAA
SW315	VG392900	SW.TACT SKHVAA
SW316	VG392900	SW.TACT SKHVAA
SW317	VG392900	SW.TACT SKHVAA
SW318	VG392900	SW.TACT SKHVAA
SW319	VG392900	SW.TACT SKHVAA
SW320	VG392900	SW.TACT SKHVAA
SW321	VG392900	SW.TACT SKHVAA
SW322	VG392900	SW.TACT SKHVAA
SW323	VG392900	SW.TACT SKHVAA

* New Parts

Schm Ref.	PART NO.	Description
SW324	VG392900	SW.TACT SKHVAA
△ T200	XV640A00	TRANS.PWR (UC)
△ T200	XV641A00	TRANS.PWR (R)
△ T200	XV642A00	TRANS.PWR (A)
△ T200	XV643A00	TRANS.PWR (G)
U300	V2856200	L.DTCT PIC-28043TH2
V300	V3008400	FL.DSPLY 15-ST-20G
XL100	VJ719800	RSNR.CRYS 16.9344MHz
XL300	VU763600	RSNR.CE 5MHz
	VB966900	CN IMSA-6024
	VJ828000	PIN IMSA-6024-03E
	VS257700	PLATE
	V3393500	SHEET.FL
	V3747500	SUPRT
	BB071360	SCR.TERM 8.3x13(UCA)
	V3747400	SPACER.FL T4x6x18
	V3172600	P.C.B. CM
CB400	VB858200	CN.BS.PIN 3P
CB401	VB858200	CN.BS.PIN 3P
CB402	VB858200	CN.BS.PIN 3P
CB403	VB858200	CN.BS.PIN 3P
CB404	VB858200	CN.BS.PIN 3P
CB405	VB858100	CN.BS.PIN 2P
CB406	VB858100	CN.BS.PIN 2P
CB407	VB858100	CN.BS.PIN 2P
CB408	VU281700	CN 17P
C400	VJ599100	C.CE.TUBLR 0.1uF 50V
C401	VJ599100	C.CE.TUBLR 0.1uF 50V
C402	VF467000	C.CE.TUBLR 1000pF 50V
C403	VF467000	C.CE.TUBLR 1000pF 50V
D400	V2363400	PHOT.INTR ON1024
D401	VG438700	DIODE.ZENR MTZJ7.5C 7.5V
IC400	XQ135A00	IC BA6286
IC401	XF947A00	IC LA6510
Q400	VP872700	TR 2SC4488 S,T
R406	HV753100	R.CAR.FP 1Ω 1/4W
R413	HV753100	R.CAR.FP 1Ω 1/4W
SW400	Vi294000	SW.LEVER SSCF21
SW401	Vi294000	SW.LEVER SSCF21

* New Parts

EXPLODED VIEW



MECHANICAL PARTS

Ref. No.	PART NO.	Description	Remarks	Markets
* 3-3	MF114350	FLEXIBLE FLAT CABLE	14P 350mm	
* 3-11	V2668000	FRONT PANEL		
* 3-12	V2668700	SUB PANEL		
* 3-13	V2668300	SUPPORT, HP		
* 3-14	V2669600	WINDOW PANEL, LID		
3-15	VZ494400	BUTTON	11x22	
* 3-18	V3492600	SHEET, GROUND		
* 3-20	V3624200	DAMPER	T2x25x190	
3-30	EP600730	BIND HEAD P-TITE SCREW	3x8 FCRM3-BL	
5-1	VZ761500	TRAY	B	
* 5-2	V2430500	TABLE, C		
5-3	V2133100	PLATE, TABLE		
5-4	VS037300	ROLLER		
5-5	VV014400	LEVER	PO	
5-6	VS036900	SPRING, RT		
5-7	VZ761800	GEAR, RT1		
5-8	VS037900	SHEET, TRAY	B	
* 5-9	V3316800	SUPPORT, TR		
5-10	VA775100	PW HEAD P-TITE SCREW	3x8-10 FCRM3-BL	
* 6-1	V2430700	HOLDER, CLAMPER/C		
6-2	VL782500	STABILIZER		
6-3	VS500400	PLATE	STABILIZER	
6-4	VZ762600	FRAME, CLAMPER		
6-5	VQ930900	MAGNET	DH29.6x18x3.6FMS	
6-10	EP600820	BIND HEAD B-TITE SCREW	3x6 FCRM3-BL	
* 7-1	V3175200	PU MECHA. UNIT	DA11T3	
* 7-2	V3340500	CONNECTOR, FLAT CABLE	16P 230mm	
* 7-3	V3340300	CONNECTOR, FLAT CABLE	6P 90mm	
* 7-10	V2430600	HOLDER, PU/C		
* 7-11	V2430800	DAMPER, CDC		
* 7-12	VQ386500	SPRING		
* 7-13	V2480800	BARRIER, PU		
* 7-20	V2478200	PW HEAD P-TITE SCREW	2.6x8-12 MFZN2-Y	
* 10	V3172200	P.C.B. ASS'Y	MAIN	UC
* 10	V3172300	P.C.B. ASS'Y	MAIN	R
* 10	V3172400	P.C.B. ASS'Y	MAIN	A
* 10	V3172500	P.C.B. ASS'Y	MAIN	G
* 13	V2296800	POWER CORD ASS'Y		A
* 13	V2363800	POWER CORD ASS'Y		UC
* 13	VN363700	POWER CORD ASS'Y		G
* 13	VZ542500	POWER CORD ASS'Y		R
* 14	V3527300	CONNECTOR ASS'Y	2P 280mm	UCA
21	V3430400	CHASSIS		
* 22	V2576200	REAR PANEL		UC
* 22	V2576300	REAR PANEL		R
* 22	V2576400	REAR PANEL		A
* 22	V2576500	REAR PANEL		G
23	VZ876700	TOP COVER		
24	VQ775900	GROUND PLATE		
25	VQ780300	LEG	D60xH16	
* 26	V2668900	LID		
28	VS257300	PLATE, R		R
32	VG854200	SPACER, PCB	KGLS-10RT	

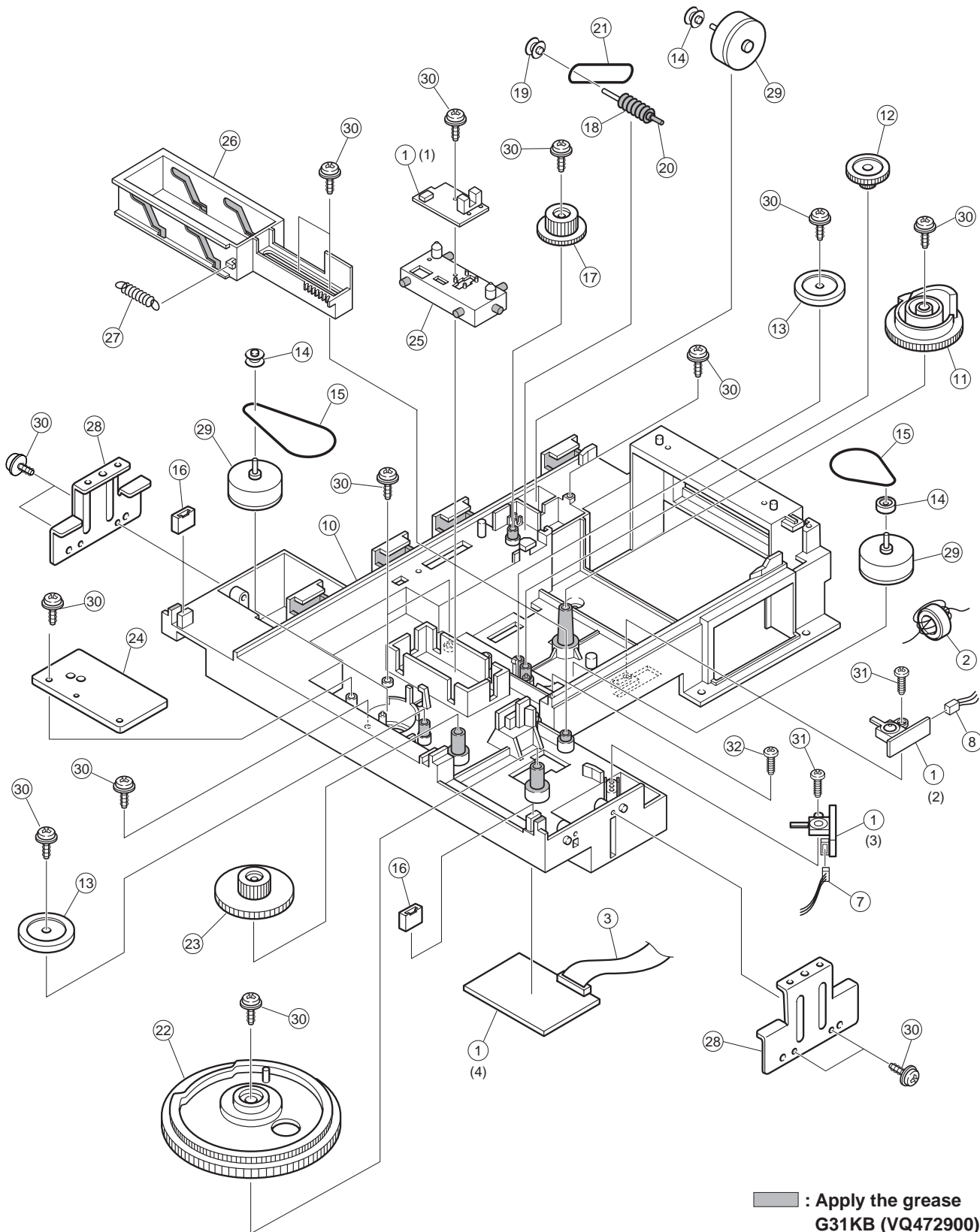
* New Parts

Ref. No.	PART NO.	Description	Remarks	Markets
36	V2438700	CORD STOPPER	#10P1	
37	V2269100	DAMPER	6x45	
38	V3393800	SPACER	CDC-T14	UCA
39	VQ861500	CUSHION	SHEET	
40	V2879500	SPACER PCB-M		
55	VU590000	BINDING TIE	CBTD001B	
60	CB040540	BINDING TIE	S-72B	R
61	21991500	PW HEAD S-TITE SCREW	4x8-10 FCRM3-BL	
62	VN413300	BIND HEAD BONDING B-T. SCREW	3x8 MFZN2-BL	
65	V2728500	BIND HEAD S-TITE SCREW	4x7 MFZN2-BL	
72	VN559500	PW HEAD P-TITE SCREW	3x12-10 ZMC2-Y	
73	EP600140	BIND HEAD B-TITE SCREW	3x10 MFZN2-BL	R
74	EP600830	BIND HEAD B-TITE SCREW	3x8 FCRM3-BL	
75	EL300650	PW HEAD B-TITE SCREW	3x8-8 FCRM3-BL	
		ACCESSORIES		
* 200	V3022500	REMOTE CONTROL TRANSMITTER	SBGH20043A CDC3	
200-1	CX679050	LID	74x34BLALPS	
	VY952200	PIN-PLUG CORD	2P 1.0m	
		BATTERY, MANGANESE	SUM-3,AA,R06	

* New Parts

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EXPLODED VIEW (CM-210 Unit)



■ MECHANICAL PARTS (CM-210 Unit)

Ref. No.	PART NO.	Description	Remarks	Markets
* 1	V3172600	P.C.B. ASS'Y	CM	
* 2	VP128600	FERRITE CORE	FSOB160PB	
* 3	V3340400	CONNECTOR, FLAT CABLE	17P 110mm	
* 7	V3175700	CONNECTOR ASS'Y	3P 220mm	
* 8	V3175900	CONNECTOR ASS'Y	3P 220mm	
10	VZ760500	CHASSIS	B	
11	VZ760600	CAM, CL		
12	VS035400	GEAR, CL2		
13	VS036100	GEAR PULLEY		
14	VS036200	PULLEY		
15	VQ776900	BELT	V	
16	VQ775500	DAMPER, TRAY		
17	VS035800	GEAR, WW		
18	VS035700	GEAR, WO		
19	V2009500	PULLEY, RT		
20	VS036600	SHAFT, 2		
21	VS036500	BELT, RT		
22	VZ760700	GEAR, LO		
23	VS035300	GEAR, LO1		
24	VZ760800	SHEET, BELT		
25	VZ761000	HOLDER, SENSOR		
26	VZ761200	CAM, SLIDE		
27	VS036800	SPRING, CAM		
28	VS037400	SUPPORT, TRAY		
△ 29	VM444200	MOTOR	RF-500TB-14415	
30	VA775100	PW HEAD P-TITE SCREW	3x8-10 FCRM3-BL	
31	VF617600	PAN HEAD P-TITE SCREW	2.6x8 FCRM3-BL	
32	03786010	BIND HEAD SCREW	2.6x5 ZMC2-BL	

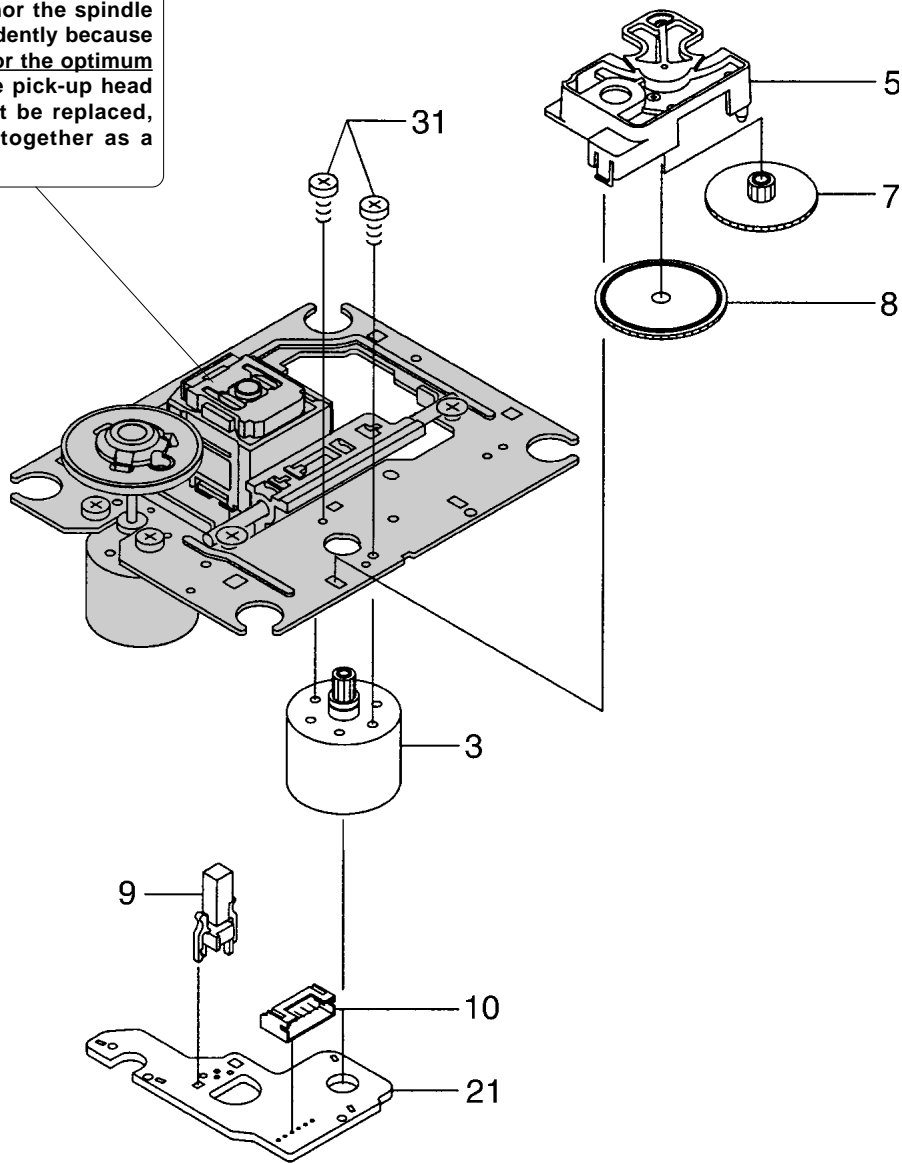
* New Parts

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1 ■ EXPLODED VIEW (PU Mecha. Unit)

Note :

Neither the pick-up head nor the spindle motor is available independently because they are factory-adjusted for the optimum level after assembly. If the pick-up head or the spindle motor must be replaced, be sure to replace them together as a unit.



Ref. No.	PART NO.	Description	Remarks	Markets
*	V3175200	PU MECHA. UNIT	DA11T3	
* 3	XX702580	SLED MOTOR ASS'Y	6.0V	1EA0M10A09700
* 5	XX702590	COVER, GEAR		1EA2121A20000
* 7	XX702610	GEAR, MIDDLE		1EA2511A21000
* 8	XX702600	GEAR, DRIVE		1EA2511A21100
* 9	XX702660	SWITCH, LEAF	PWB MOTOR	1EA4S13A01600
* 10	XX702620	CONNECTOR, S	6P	1EA4J13A54700
* 21	XX702570	PWB, MOTOR		1EA4B10B06100
* 31	XX702640	SCREW, PAN PCS	2x3	SE1PN203R0SE

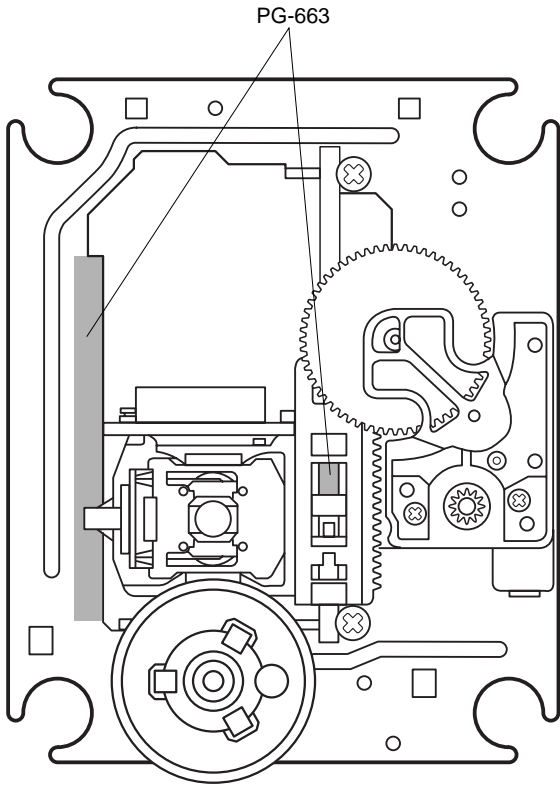
* New Parts

1

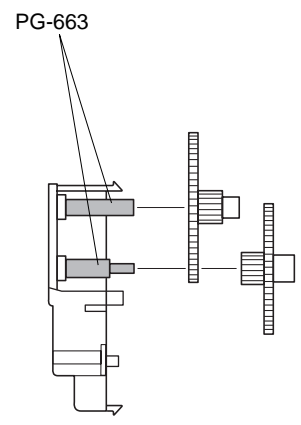
GREASE APPLICATION DIAGRAM (PU Mechanism)

Apply the grease
Molykote PG-663 (P/No. AAX01170)

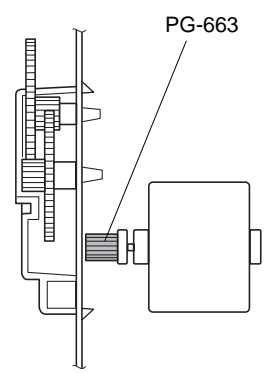
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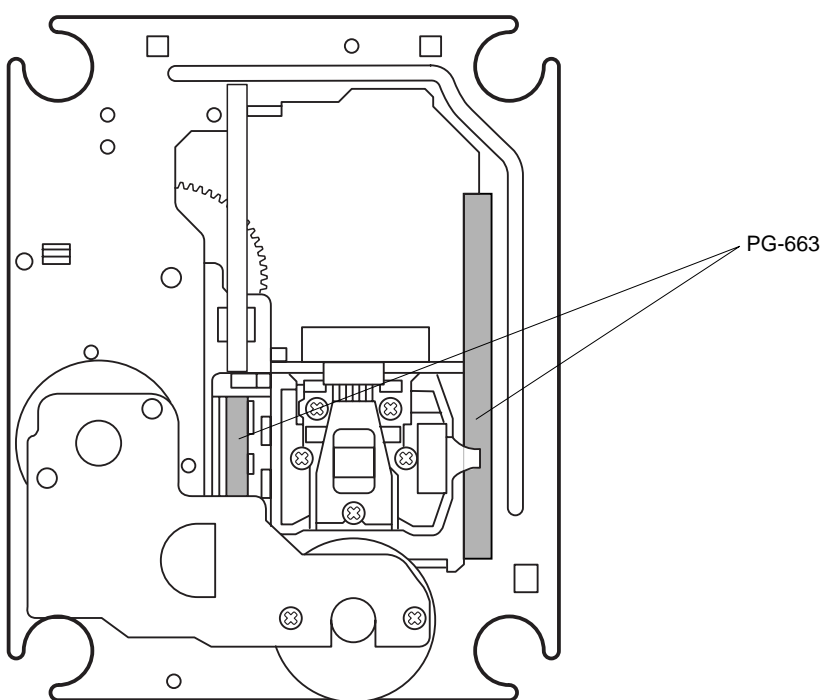
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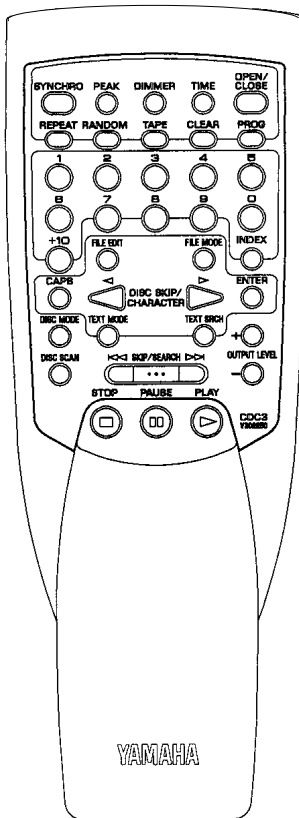
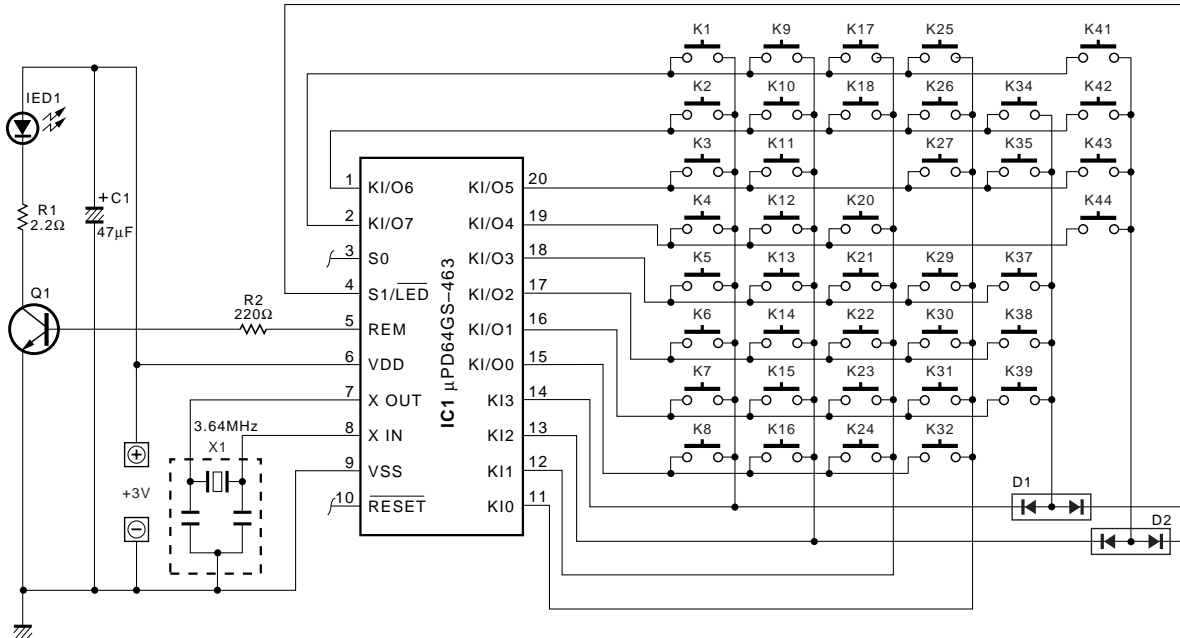
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REMOTE CONTROL TRANSMITTER

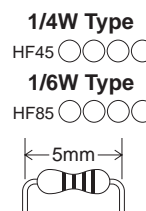
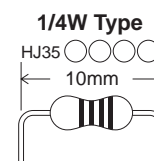
■ SCHEMATIC DIAGRAM



Key No.	FUNCTION	CUSTOM (HEX)	DATA (HEX)
1	OPEN/CLOSE	79	01
2	REPEAT	79	08
3	RANDOM	79	1B
4	TAPE	79	57
5	CLEAR	79	0D
6	PROG	79	0C
7	1	79	11
8	2	79	12
9	3	79	13
10	4	79	14
11	5	79	15
12	6	79	16
13	7	79	17
14	8	79	18
15	9	79	19
16	0	79	10
17	+10	79	1A
18	FILE EDIT	79	67
20	FILE MODE	79	1F
21	INDEX	79	0B
22	DISC SCAN	79	53
23	SKIP/SEARCH <<	79	04
24	SKIP/SEARCH >>	79	07
25	OUTPUT LEVEL -	79	1C
26	CAPS	79	2D
27	DISC SKIP/CHARACTER <	79	50
29	DISC SKIP/CHARACTER >	79	4F
30	ENTER	79	3F
31	DISC MODE	79	00
32	TEXT MODE	79	2B
34	TEXT SRCH	79	2C
35	OUTPUT LEVEL +	79	1D
37	STOP	79	56
38	PAUSE	79	55
39	PLAY	79	02
41	SYNCHRO	79	58
42	PEAK	79	5D
43	DIMMER	79	1E
44	TIME	79	0A

Parts List for Carbon Resistors

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	10 kΩ	HF45 7100	HF45 7100
1.8 Ω	HJ35 3180	*	11 kΩ	HF45 7110	HF45 7110
2.2 Ω	HJ35 3220	HF85 3220	12 kΩ	HJ35 7120	HF85 7120
3.3 Ω	HJ35 3330	HF85 3330	13 kΩ	HF45 7130	HF45 7130
4.7 Ω	HJ35 3470	HF85 3470	15 kΩ	HF45 7150	HF45 7150
5.6 Ω	HJ35 3560	HF85 3560	18 kΩ	HF45 7180	HF45 7180
10 Ω	HF45 4100	HF45 4100	22 kΩ	HF45 7220	HF45 7220
15 Ω	HJ35 4150	HF85 4150	24 kΩ	HF45 7240	HF45 7240
22 Ω	HF45 4220	HF45 4220	27 kΩ	HJ35 7270	HF85 7270
27 Ω	HJ35 4270	HF85 4270	30 kΩ	HF45 7300	HF45 7300
33 Ω	HF45 4330	HF45 4330	33 kΩ	HF45 7330	HF45 7330
39 Ω	HJ35 4470	HF85 4390	36 kΩ	HF45 7360	HF45 7360
47 Ω	HF45 4470	HF45 4470	39 kΩ	HF45 7390	HF45 7390
56 Ω	HF45 4560	HF45 4560	47 kΩ	HF45 7470	HF45 7470
68 Ω	HF45 4680	HF45 4680	51 kΩ	HF45 7510	HF45 7510
75 Ω	HF45 4750	HF45 4750	56 kΩ	HF45 7560	HF45 7560
82 Ω	HF45 4820	HF45 4820	62 kΩ	HF45 7620	HF45 7620
91 Ω	HF45 4910	HF45 4910	68 kΩ	HF45 7680	HF45 7680
100 Ω	HF45 5100	HF45 5100	82 kΩ	HF45 7820	HF45 7820
110 Ω	HJ35 5110	HF85 5110	91 kΩ	HF45 7910	HF45 7910
120 Ω	HF45 5120	HF45 5120	100 kΩ	HF45 8100	HF45 8100
150 Ω	HF45 5150	HF45 5150	110 kΩ	HF45 8110	HF45 8110
160 Ω	HJ35 5160	*	120 kΩ	HF45 8120	HF45 8120
180 Ω	HF45 5180	HF45 5180	150 kΩ	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 kΩ	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 kΩ	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 kΩ	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 kΩ	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 kΩ	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 kΩ	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 kΩ	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 kΩ	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 kΩ	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 kΩ	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 MΩ	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 MΩ	HJ35 9120	*
1.0 kΩ	HF45 6100	HF45 6100	1.5 MΩ	HJ35 9150	HF85 9150
1.2 kΩ	HF45 6120	HF45 6120	1.8 MΩ	HJ35 9180	HF85 9180
1.5 kΩ	HF45 6150	HF45 6150	2.2 MΩ	HJ35 9220	HF85 9220
1.8 kΩ	HF45 6180	HF45 6180	3.3 MΩ	HJ35 9330	HF85 9330
2.0 kΩ	HJ35 6200	HF85 6200	3.9 MΩ	HJ35 9390	*
2.2 kΩ	HF45 6220	HF45 6220	4.7 MΩ	HJ35 9470	HF85 9470
2.4 kΩ	HJ35 6240	HF85 6240			
2.7 kΩ	HF45 6270	HF45 6270			
3.0 kΩ	HF45 6300	HF45 6300			
3.3 kΩ	HF45 6330	HF45 6330			
3.6 kΩ	HJ35 6360	HF85 6360			
3.9 kΩ	HF45 6390	HF45 6390			
4.7 kΩ	HF45 6470	HF45 6470			
5.1 kΩ	HF45 6510	HF45 6510			
5.6 kΩ	HF45 6560	HF45 6560			
6.8 kΩ	HF45 6680	HF45 6680			
8.2 kΩ	HF45 6820	HF45 6820			
9.1 kΩ	HF45 6910	HF45 6910			



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YAMAHA