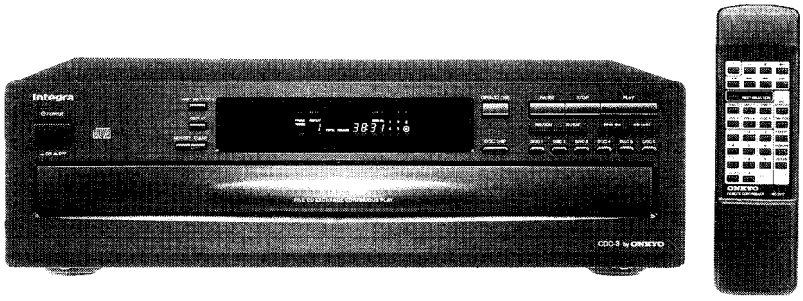
Ref. No. 3634
Sep., 1999

Integra. SERVICE MANUAL

COMPACT DISC CHANGER

MODEL CDC-3



Black model

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

SPECIFICATIONS

Signal readout system:	Optical non-contact
Reading rotation:	About 500 - 200 r.p.m. (constant linear velocity)
Linear velocity:	1.2 - 1.4 m/s
Error correction system:	Cross Interleave Reed-Solomon code
D/A converter:	1 bit PWM/ACCUPULSE
Sampling frequency:	352.8 kHz (8 times oversampling)
Number of channels:	2 (stereo)
Frequency response:	5 Hz - 20 kHz
Total harmonic distortion:	0.005% (at 1 kHz)
Dynamic range:	96 dB
Signal to noise ratio:	92 dB
Channel separation:	92 dB (at 1 kHz)
Wow and Flutter:	Below threshold of measurability
Output level:	2 volts r.m.s.
Power consumption:	10 watts
Power supply:	120 V, 60 Hz
Dimensions (W × H × D):	435× 131× 433mm (17-1/8" × 5-3/16" × 17-1/16")
Weight:	6.9 kg (15.2 lbs.)

Specifications and features are subject to change without notice.

ONKYO®
AUDIO COMPONENTS

TABLE OF CONTENTS

Specifications	1
Caution on replacement of optical pick-up	2
Protection of eyes from laser beam during servicing	3
Laser warning label	3
IC block diagrams and descriptions	4
Microprocessor connection diagram	8
Microprocessor terminal description	9
Care should be taken with the optical pickup	10
Trouble shooting	11
Initializing operation	13
Error message displayed in heat-running mode	14
Block diagram	15
Chassis exploded view	17
Parts list	19
Pick-up drive unit view	20
Printed circuit board-parts list	21
Printed circuit board view from bottom side	23
Schematic diagram	27
Adjustment procedures	29
Packing view	30

SERVICE PROCEDURES

1. Safety-check out

After correcting the original service problem,perform the following safety check before releasing the set to the customer:

Connect the insulating-resistance tester between the plug of power supply cord and chassis.

Specifications:More than 10Mohm at 500V.

CAUTION ON REPLACEMENT OF OPTICAL PICK UP

The laser diode in the optical pickup block is so sensitive to static electricity,surge current and etc, that the components are liable to be broken down or its reliability remarkably deteriorated.

During repair,carefulley take the following precautions. (The following precautions are included in the service parts.)

PRECAUTIONS

1.Ground for the work-desk.
Place a conductive sheet such as a sheet of copper (with inpedance lower than 10MΩ) on the work-desk and place the set on the conductive sheet so that the chassis.

2.Grounding for the test equipment and tools.
Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

3.Grounding for the human body.
Be sure to put on a wrist-strap for grounding whose other end is grounded.
Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

4.Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.

5.Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

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

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMMISION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

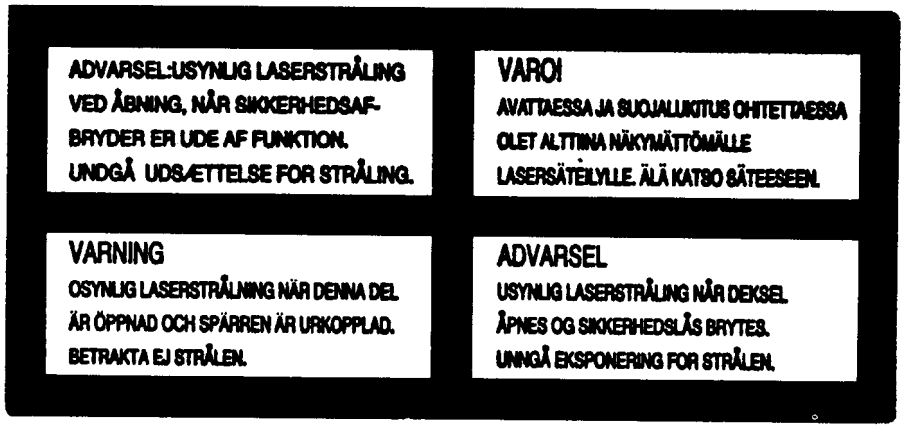
Laser Diode Properties

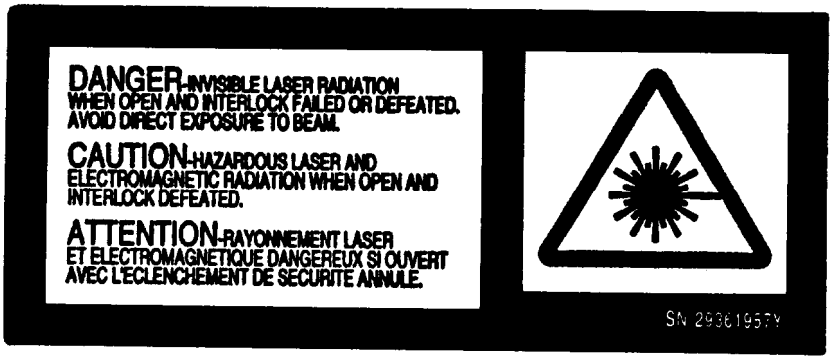
- Material: GaAlAs
- Wavelength: 760~800nm
- Emission Duration: continuous
- Laser output: max. 0.5mW*

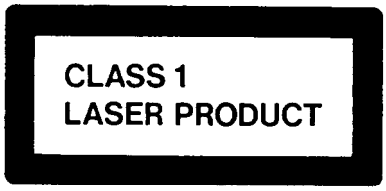
  *This output is the value measured at a distance about 1.8mm from the objective lens surface on the Optical Pick-up Block.

LASER WARNING LABEL

These labels are located on the mechanism.

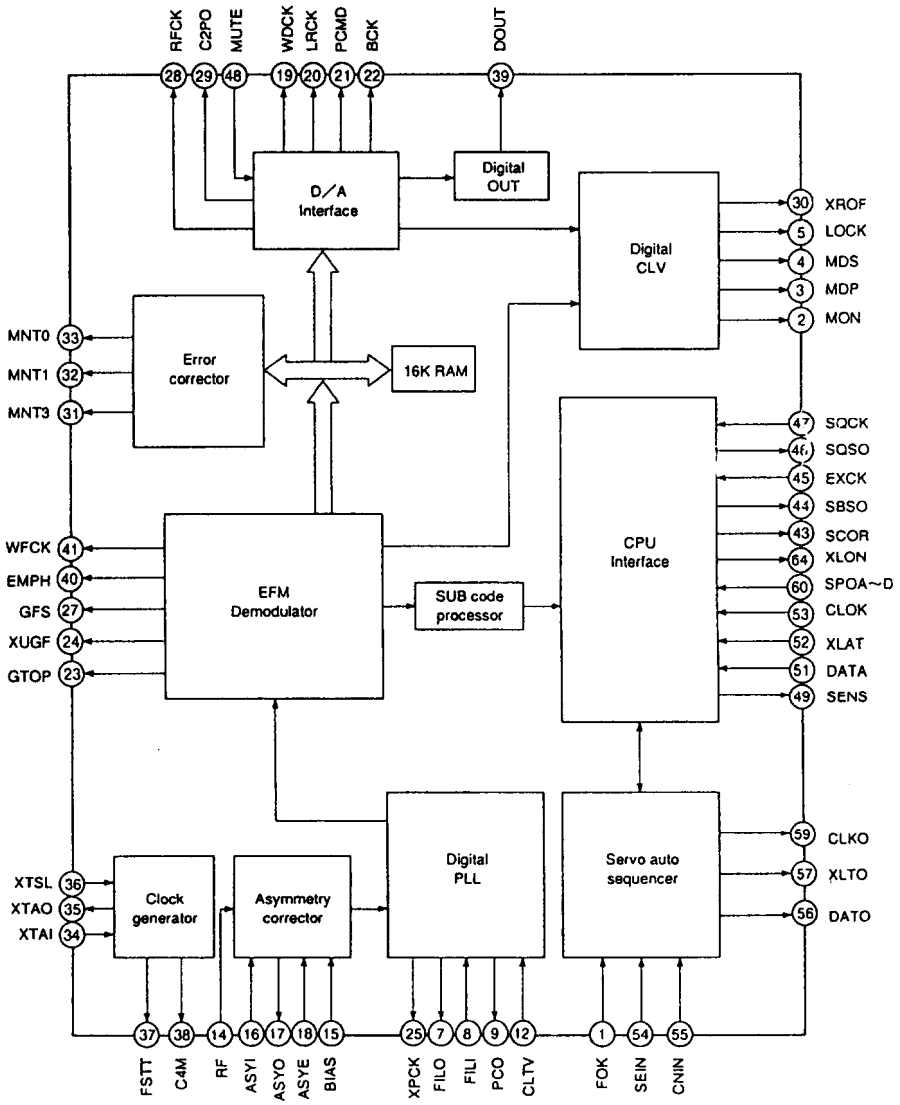




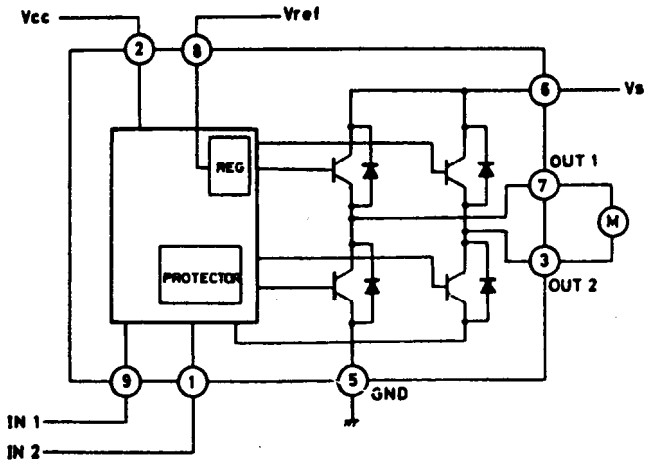


IC BLOCK DIAGRAMS AND DESCRIPTIONS

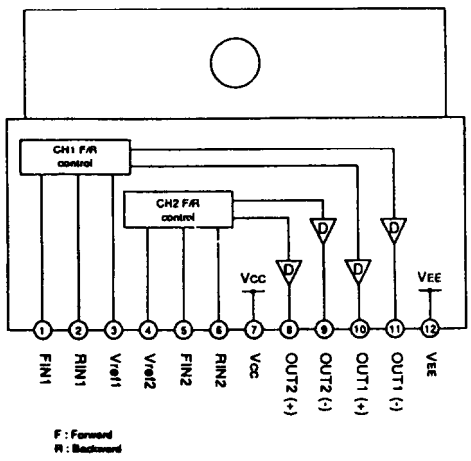
CXD2507AQ (Digital Signal Processor)



TA-7291S (Motor Drive)

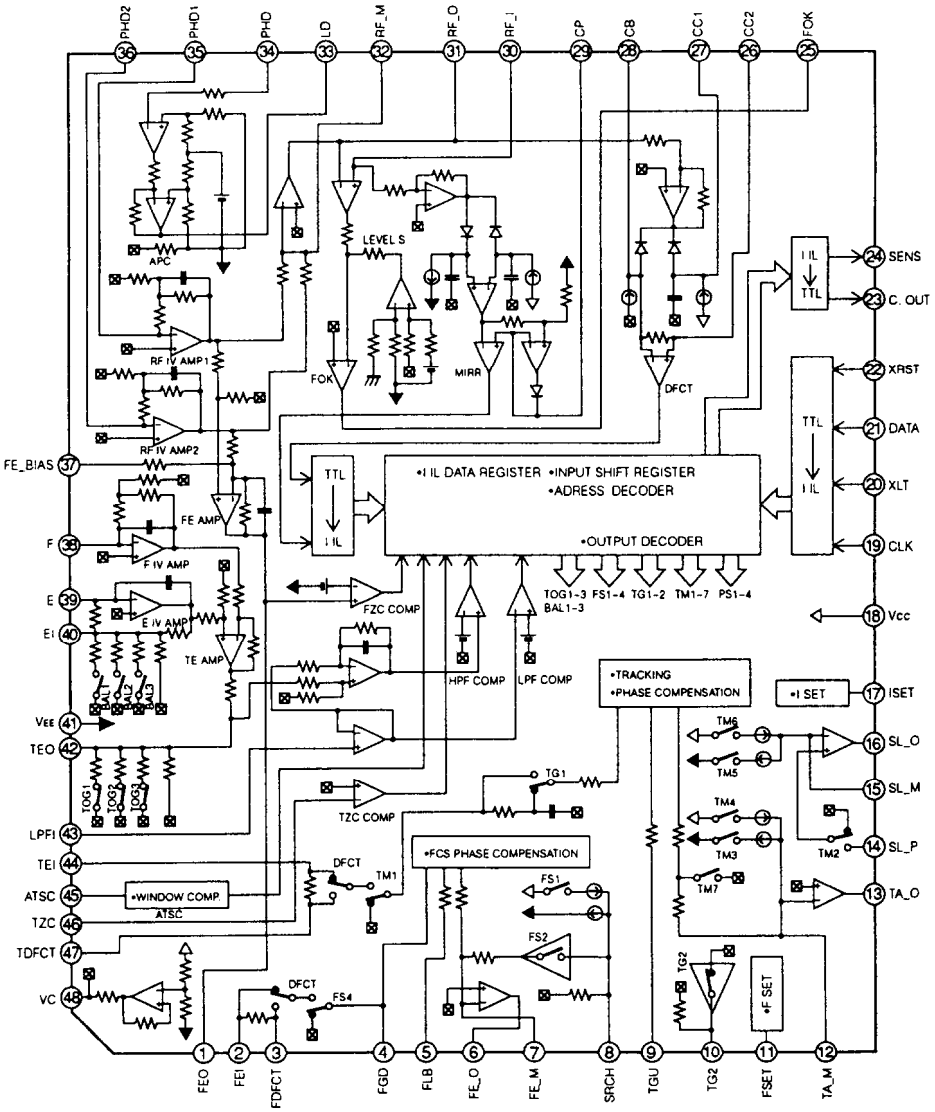


BA6191 (Motor Drive)



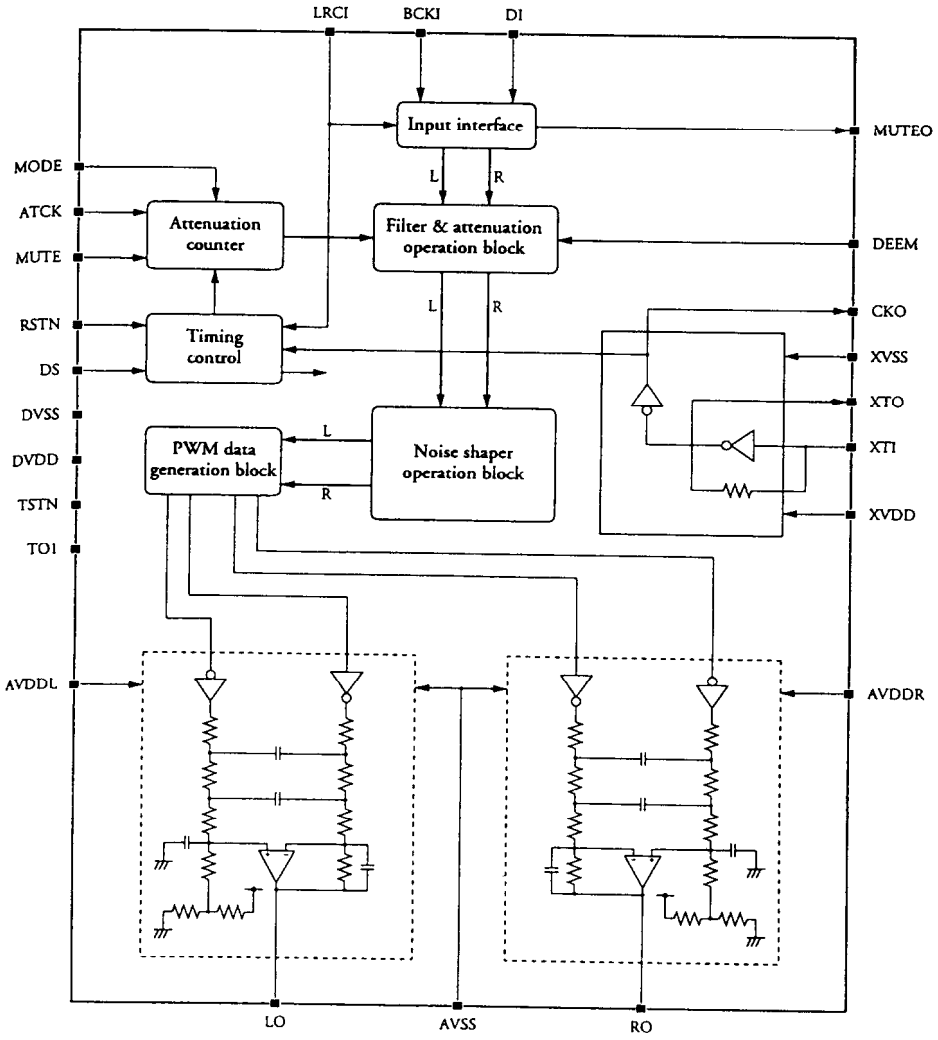
NO.	SYMBOL	I/O	DESCRIPTION
1	FOK	I	Foucs OK input
2	MON	O	Spindle motor ON/OFF control output
3	MDP	O	Spindle motor servo control
4	MDS	O	Spindle motor servo control
5	LOCK	O	H when GFS is the high level
6	TEST	I	Test terminal
7	FILO	O	Filter output for master PLL.
8	FILI	I	Filter input for master PLL.
9	PCO	O	Charge pump output of master PLL
10	Vss	-	Ground terminal
11	AVss	-	Analog ground
12	CLTV	I	VCO control voltage input for master
13	AVDD	-	Analog section power supply (+5V)
14	RF	I	EFM signal input
15	BIAS	I	Asymmetry circuit constant current input
16	ASYI	I	Asymmetry comparator voltage input
17	ASYO	O	EFM full swing output. (at L: Vss, H:Vdd)
18	ASYE	I	Asymmetry control circuit. (at L: asymmetry circuit OFF, H: asymmetry circuit ON)
19	WDCK	O	D/A interface for 48 bits slot. Word clock f=2Fs.
20	LRCK	O	D/A interface for 48 bits slot. LR clock f=Fs.
21	PCMD	O	D/A interface for 48 bits slot. Serial data. (2's COMP, MSB fast)
22	BCK	O	D/A interface for 48 bits slot. Bit clock.
23	GTOP	O	GTOP output
24	XUGF	O	XUGF output
25	XPCK	O	XPLCK output
26	VDD	-	Power supply terminal (+5V)
27	GFS	O	GFS output
28	RFCK	O	RFCK output
29	C2PO	O	C2P0 output
30	XROF	O	XRAOF output
31	MNT3	O	MNT 3 output
32	MNT1	O	MNT 1 output
33	MNT0	O	MNT 0 output
42	Vss	-	Ground terminal
34	XTAI	I	Crystal oscillation circuit input of 16.9344MHz or 33.8688MHz input.
35	XTAO	O	Crystal oscillation circuit output of 16.9344MHz.
36	XTSL	I	Crystal selection input terminal. L when 16.9344MHz. H when 33.8688MHz.
37	FSTT	O	2/3 divided output of pins 34 and 35.
38	C4M	O	4.2336 MHz output
39	DOUT	O	Digital output
40	EMPH	O	Emphasis control output. Active high.
41	WFCK	O	WFCK (Write Frame Clock) output
43	SCOR	O	Sub-code detection output. H when is detected S0 or S1.
44	SBSO	O	Serial output of sub-code (P~W)
45	EXCK	I	Clock input for read out SBSO.
46	SQSO	O	Serial output of sub Q 80 bits.
47	SQCK	I	Clock input for read out SQSO
48	MUTE	I	Muting control input. Active H.
49	SENS	O	Sens output. Output to the microprocessor.
50	XRST	I	System reset. Reset at the low level.
51	DATA	I	Serial data input from the microprocessor.
52	XLAT	I	Latch input from the microprocessor. Latch the serial data at the trailing.
58	VDD	-	Power supply treminal (+5V).
53	CLOK	I	Serial data transfer clock input from microprocessor.
54	SEIN	I	Sens input from SSP.
55	CNIN	I	Track jump numbers count signal input.
56	DATO	O	Serial data output to SSP.
57	XLTO	O	Serial data latch output to SSP. Latch at trailing.
59	CLKO	O	Serial data transfer clock output to SSP.
60	SPOA	I	Microprocessor extend interface (input A)
61	SPOB	I	Microprocessor extend interface (input B)
62	SPOC	I	Microprocessor extend interface (input C)
63	SPOD	I	Microprocessor extend interface (input D)
64	XLON	O	Microprocessor extend interface (output)

CXA1782BQ (Servo Signal Processor)



PIN NO.	SYMBOL	I/O	DESCRIPTION
1	FEO	I	Focus error amplifier output terminal.
2	FEI	I	Focus error input terminal.
3	FDFCT	I	Capacitor connection terminal for time constant when defect.
4	FGD	I	Connect the capacitor between GND and this pin when the high frequency gain focus servo is dropped.
5	FLB	I	Input terminal for the low frequency boost of focus servo.
6	FE_O	O	Focus driver output terminal.
7	FE_M	I	Inversion input terminal of focus amplifier.
8	SRCH	I	Time constant terminal to make the focus search waveform.
9	TGU	I	Tracking high frequency changeover input terminal.
10	TG2	I	Tracking high frequency changeover input terminal.
11	FSET	I	Peak setting input of phase correction of focus tracking.
12	TA_M	I	Inversion input terminal of tracking amplifier.
13	TA_O	O	Tracking drive output terminal.
14	SL_P	I	No-inversion input terminal of sled amplifier.
15	SL_M	I	Inversion input terminal of sled amplifier.
16	SL_O	O	Sled drive output terminal.
17	ISET	I	This terminal is flowed the current so that the focus search, tacking jump and sled kick height is decided.
18	VCC	I	Power supply terminal.
19	CLK	I	Serial data transfer clock input from microprocessor.
20	XLT	I	Latch input terminal for microprocessor.
21	DATA	I	Serial data input terminal for microprocessor.
22	XRST	I	Reset input terminal. Active low.
23	C.OUT	O	Signal output to count the track numbers.
24	SENS	O	This terminal outputs FZC, DFCT, TZC, Gain and BAL to according command from the microprocessor.
25	FOK	O	Focus OK comparator output terminal.
26	CC2	I	Defect bottom hold input terminal from CC1.
27	CC1	O	Defect bottom hold output terminal.
28	CB	I	Defect bottom hold capacitor connection terminal.
29	CP	I	Mirror hold capacitor connection terminal.
30	RF_I	I	RF summing amplifier input terminal.
31	RF_O	O	RF summing amplifier output terminal.
32	RF_M	I	Inversion input terminal of RF summing amplifier.
33	LD	O	APC amplifier output terminal.
34	PHD	I	APC amplifier input terminal.
35	PHD1	I	Inversion input terminal of RI I-V amplifier.
36	PHD2	I	Inversion input terminal of RI I-V amplifier.
37	FE_BIAS	I	Bias adjust terminal of focus error amplifier.
38	F	I	Inversion input terminal of F I-V amplifier.
39	E	I	Inversion input terminal of E I-V amplifier.
40	EI	-	I-V amplifier E gain adjust terminal.
41	VEE		GND
42	TEO	O	Tracking error amplifier output terminal.
43	LPFI	I	BAL adjust comparator input terminal.
44	TEI	I	Tracking error input terminal.
45	ATSC	I	Window comparator input terminal for ATSC detection.
46	TZC	I	Tracking zero-cross comparator input terminal.
47	TDFCT	I	Capacitor connection terminal for time constant when defect.
48	VC	O	Mid-point voltage output terminal.

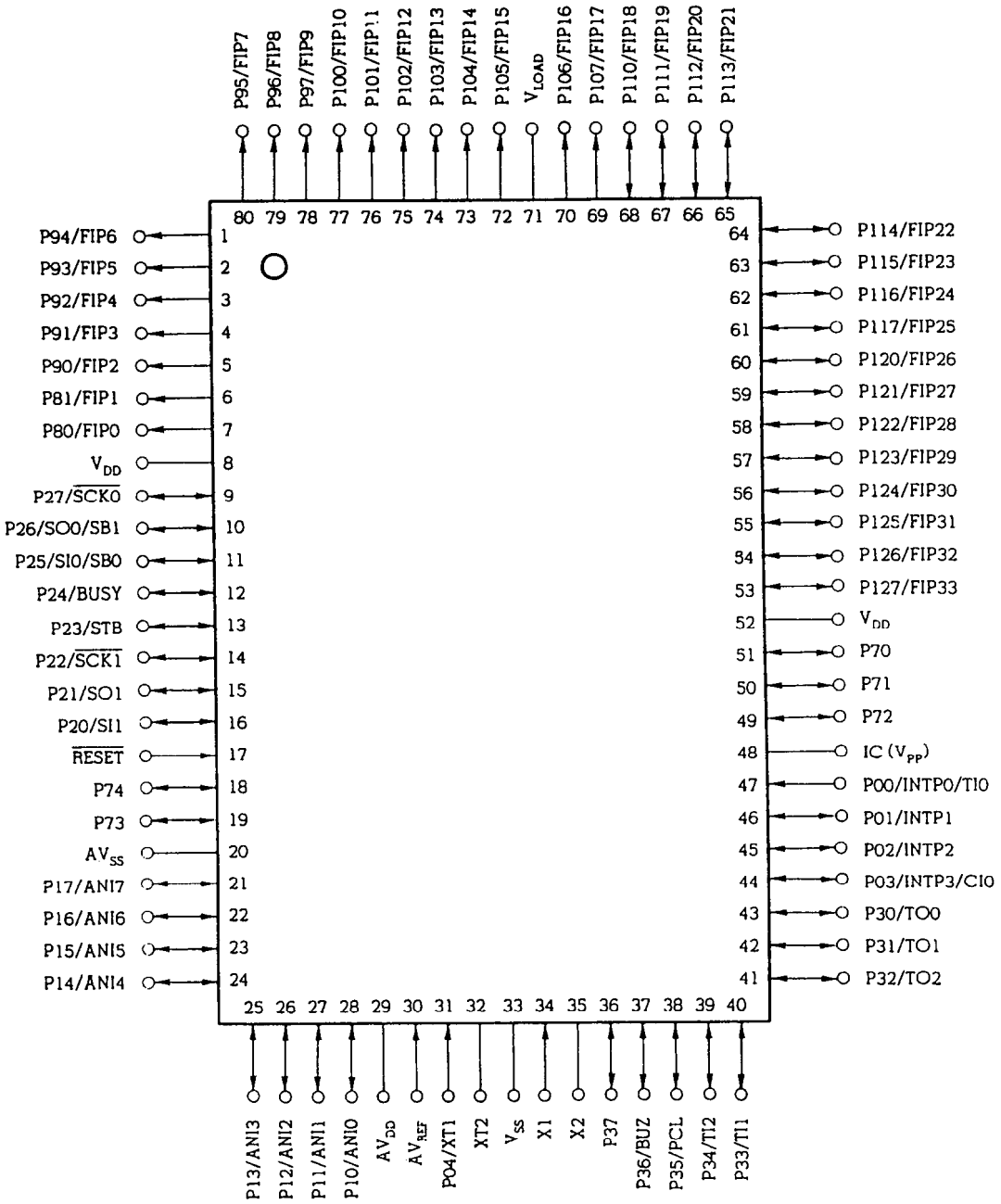
SM5877AN (DAC)



Pin No.	Symbol	I/O	Description
1	MUTE	Ip	MODE=H:Muting control pin. (at H: Mute) MODE=L:Attenuator level control pin. (at H: mode)
2	DEEM	Ip	De-emphasis control pin. (at H: De-emphasis ON)
3	CKO	O	Clock output pin. (16.9344MHz)
4	DVSS	-	Digital supply pin.
5	BCKI	Ip	Bit clock input pin.
6	DI	Ip	Serial data input pin.
7	DVDD	-	Digital supply pin.
8	LRCI	Ip	Sampling rate clock (fe) input pin. (at H: L ch, L:R ch)
9	TSTN	Ip	Test input pin.
10	TO1	O	Test output pin. (normal: L level)
11	AVDDL	-	Analogue supply pin for left channel.
12	LO	O	Analogue signal output pin for left channel.

Pin No.	Symbol	I/O	Description
13	AVSS	-	Analogue supply pin.
14	RO	O	Analogue signal output pin for right channel.
15	AVDDR	-	Analogue supply pin for right channel.
16	MUTEO	O	Infinitely zero detector output.
17	XVDD	-	Supply pin for resonator system.
18	XTI	I	Crystal connection or external clock input pin. (16.9344MHz)
19	XTO	O	Crystal connection pin.
20	XVSS	-	Supply pin for resonator system.
21	DS	Ip	Playback speed select pin. (at H: double speed)
22	RSTN	Ip	Reset pin. (at L: reset)
23	MODE	Ip	Muting/Attenuator mode select pin. (at H: muting mode)
24	ATCK	Ip	Attenuator level setting clock.

MICROPROCESSOR CONECTION DIAGRAM (μ PD78043FGF)



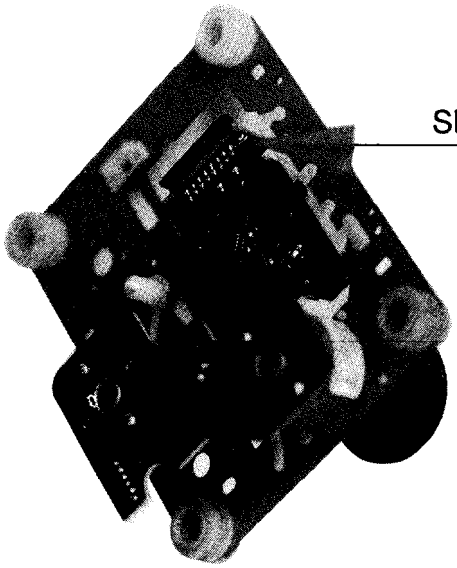
Pin No.	Symbol	I/O	Description
1~2			Not used.(Open)
3~7	1G~5G	O	Grid output terminals for FL tube.
8	VDD	I	Power supply terminal. +5V.
9	CLK	O	Clock output terminal to signal processor IC.
10	DATA	O	Data output terminal to signal processor IC.
11	XLT	O	Latch output terminal to signal processor IC.
12	MUT	O	Digital muting control output terminal
13	SENS	I	Sense signal input terminal from processor IC.
14	SQCK	O	Sub code transfer clock output terminal to signal processor IC.
15	GND		Ground terminal
16	SQSO	I	Sub code input terminal from signal processor IC.
17	XRST	I	Reset signal input terminal.
18	GND		Not used. (Open)
19			Not used. (Open)
20	Avss	I	Ground terminal for A/D converter
21	ROT.R	O	Roulette motor control output terminal. (right side)
22	ROT.L	O	Roulette motor control output terminal. (left side)
23	ROT. H	O	Roulette motor voltage control output terminal. (height)
24	RI-OUT	I	System control signal output terminal.
25~28	AD3~AD0	I	Operation key connection terminals
29	AVDD	I	Power supply terminal for A/D converter
30	AVREF	I	Reference voltage input terminal for A/D converter
31	RI.INPUT	I	System signal input terminal.
32	XT2		Not used.
33	Vss	I	Ground terminal
34	X1	I	Ceramic oscillator connection terminal
35	X2	O	Ceramic oscillator connection terminal
36	GND	I	Ground terminal
37	C.OUT	I	Track counter input terminal from RF amp.
38	DISC. SENSOR	I	Disc sensor input terminal of on the tray.
39	LD.CURRENT	I	Tray motor current reference input terminal.
40	CH.OPEN SW	I	Chucking open detection switch input terminal
41	CH.CLOSE SW	I	Chucking close detection switch input terminal
42	LD.OPEN SW	I	Loading motor open detection switch input terminal.
43	LD.CLOSE SW	I	Loading motor close detection switch input terminal.
44	CH.OPEN	O	Chucking open motor control output terminal.
45	CH.CLOSE	O	Chucking close motor control output terminal.
46	SCOR	I	Sub code block detector signal input terminal from signal processor IC.
47	RMCN	I	Remote control signal input terminal
48	IC	I	Microprocessor internally connect terminal.(connected to GND)
49	FGD	O	Focus gain down control output terminal. (Not used)
50	ROT.STOP.SENS	I	Roulette stop position detection input terminal.
51	ROT.POS.SENS	I	Roulette position detection input terminal.
52	VDD	I	Power supply terminal. +5V.
53	LD.OPEN	O	Control output terminal to open the tray .
54	LD.CLOSE	O	Control output terminal to close the tray .
55~60			Not used. (Open)
61~70	P16~P7	O	FL tube segment output terminal.
71	-VFIP	I	Negative power supply terminal for FL tube.
72~77	P6~P1	O	FL tube segment output terminal.
78~80			Not used. (Open)

CAUTION ON REPLACEMENT OF OPTICAL PICKUP

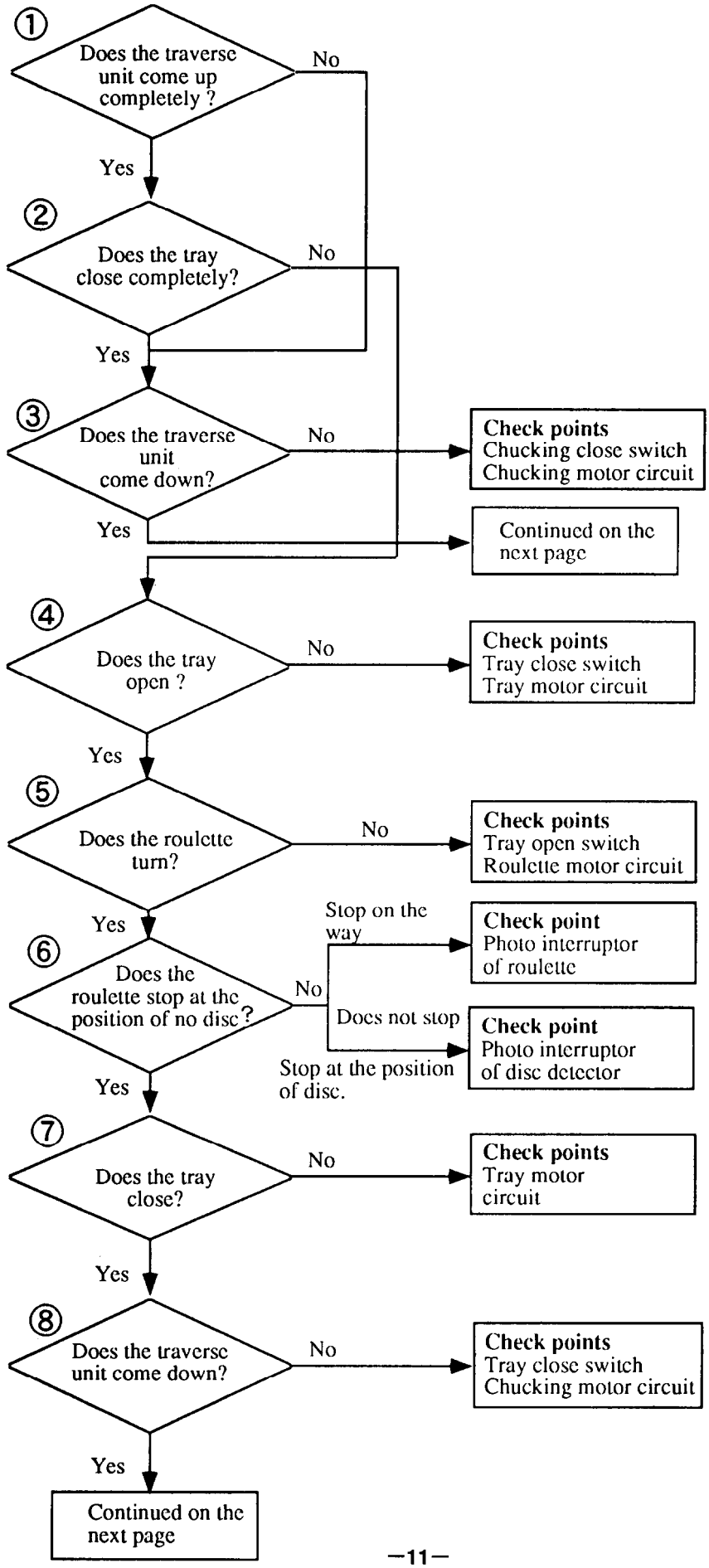
The laser diode in the optical pickup block is so sensitive to static electricity, surge current and etc. that the components are liable to be broken down or its reliability remarkbly deteriorated.

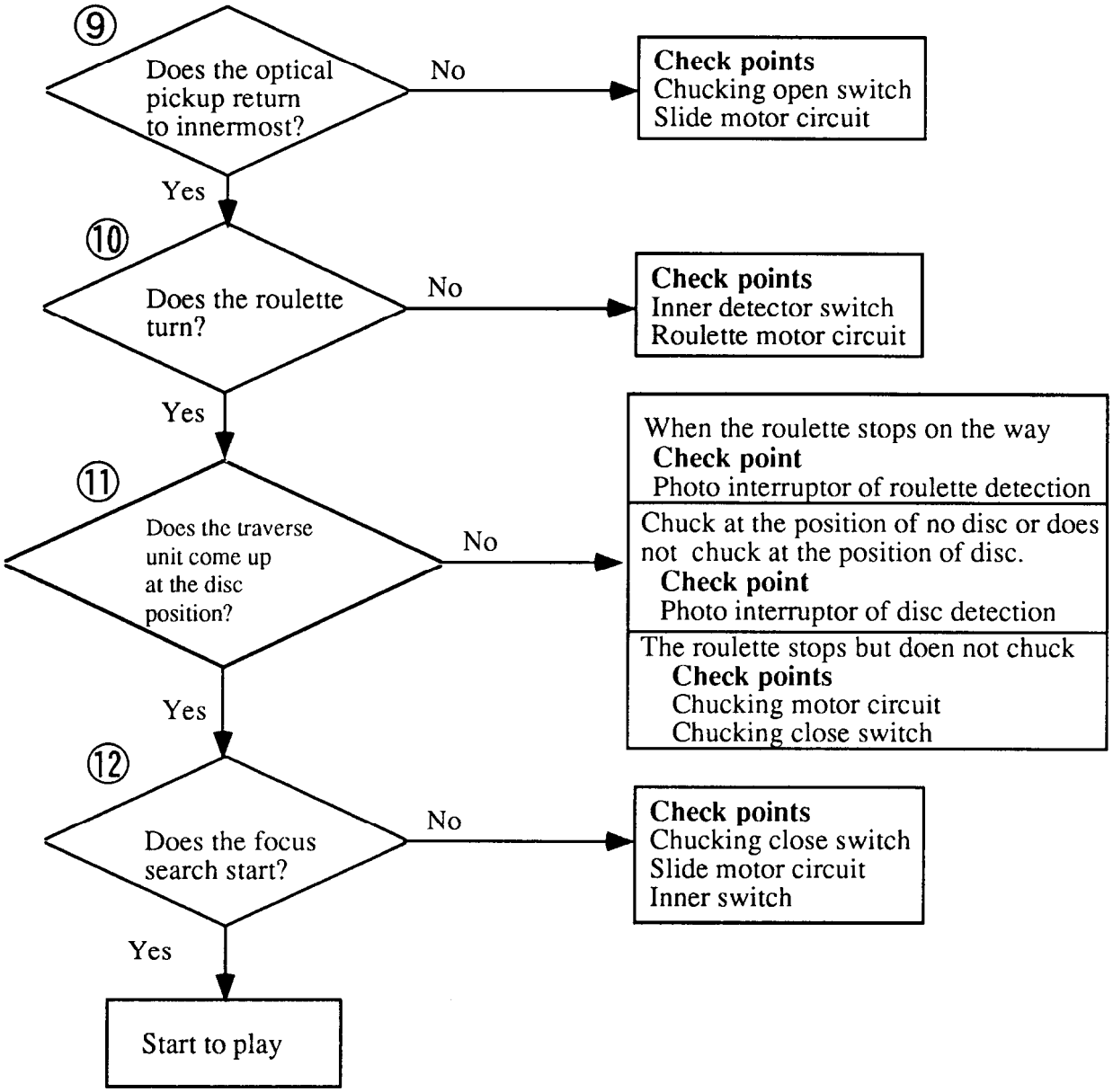
During repair, carefully take the following precautions.

1. When replacing the optical pickup, first short the LD terminals and remove the connector. Also, when attaching the new opitical pickup, after attaching the connector, unsolder the LD terminals.
2. Do not touch the optical pickup object lens with the hands.

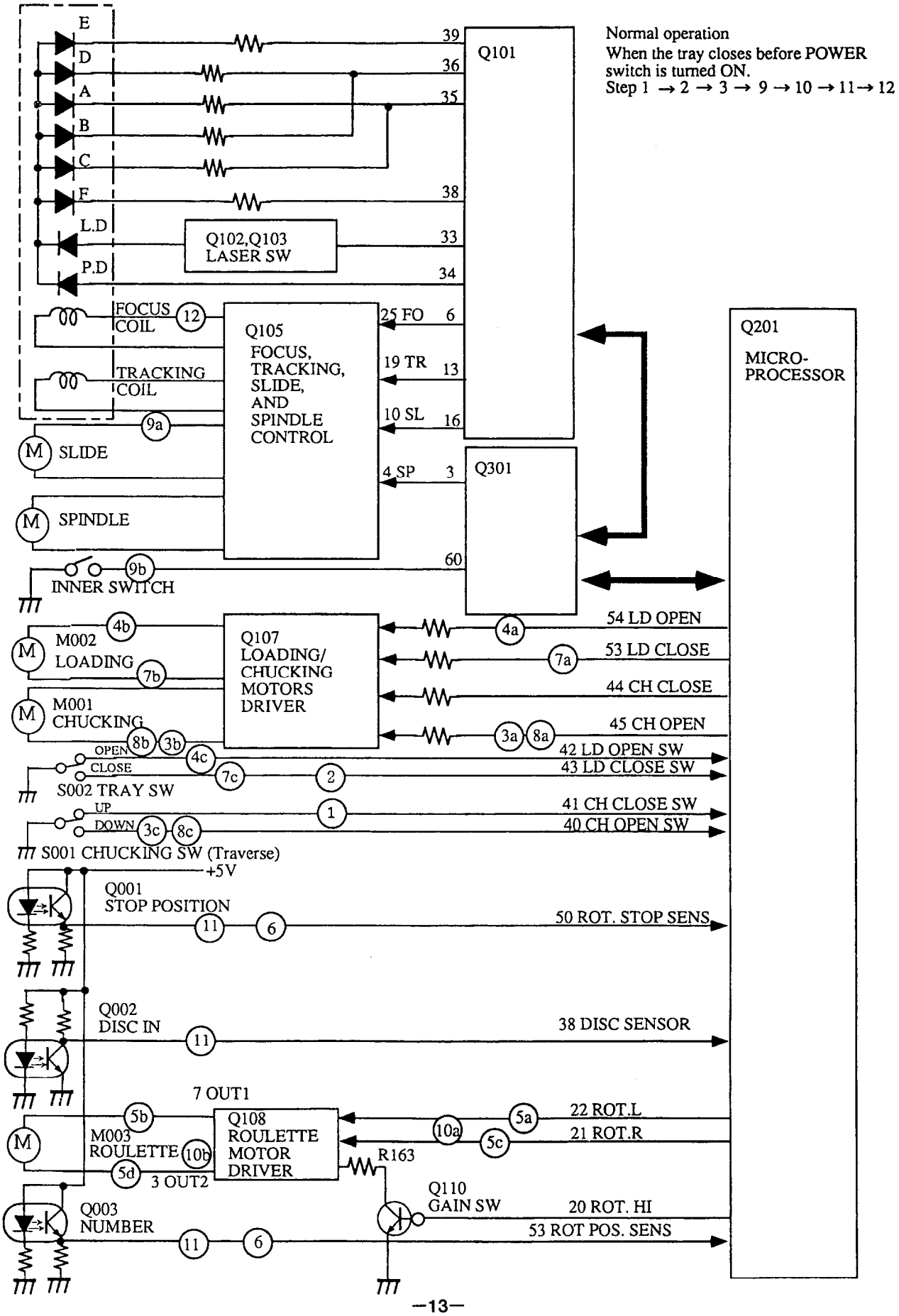


TROUBLE SHOOTING




⑨
Does the optical pickup return to innermost?
No
Check points
Chucking open switch
Slide motor circuit
Yes
⑩
Does the roulette turn?
No
Check points
Inner detector switch
Roulette motor circuit
Yes
⑪
Does the traverse unit come up at the disc position?
No
When the roulette stops on the way
Check point
Photo interruptor of roulette detection
Chuck at the position of no disc or does not chuck at the position of disc.
Check point
Photo interruptor of disc detection
The roulette stops but doen not chuck
Check points
Chucking motor circuit
Chucking close switch
Yes
⑫
Does the focus search start?
No
Check points
Chucking close switch
Slide motor circuit
Inner switch
Yes
Start to play

INITIALIZING OPERATION



ERROR MESSAGE DISPLAYED IN HEAT-RUNNING MODE

Heat-running Mode : Power ON as pushing DOWN button together.

Operation :
1. DISC 1 chucking and TOC Reading (Pick-up Home position is displayed.)
2. Accessing of the Outermost Track
3. Tray Open
4. Tray Close
5. DISC 1 Playing / Stop and Chucking Down
6. Roulette Turning 7/6 Turns clockwise

Then,
1. DISC 2 chucking and TOC Reading (Pick-up Home position is displayed.)
2. Accessing of the Outermost Track
3. Tray Open
4. Tray Close
5. DISC 2 Playing / Stop and Chucking Down
6. Roulette Turning 5/6 Turns counter-clockwise

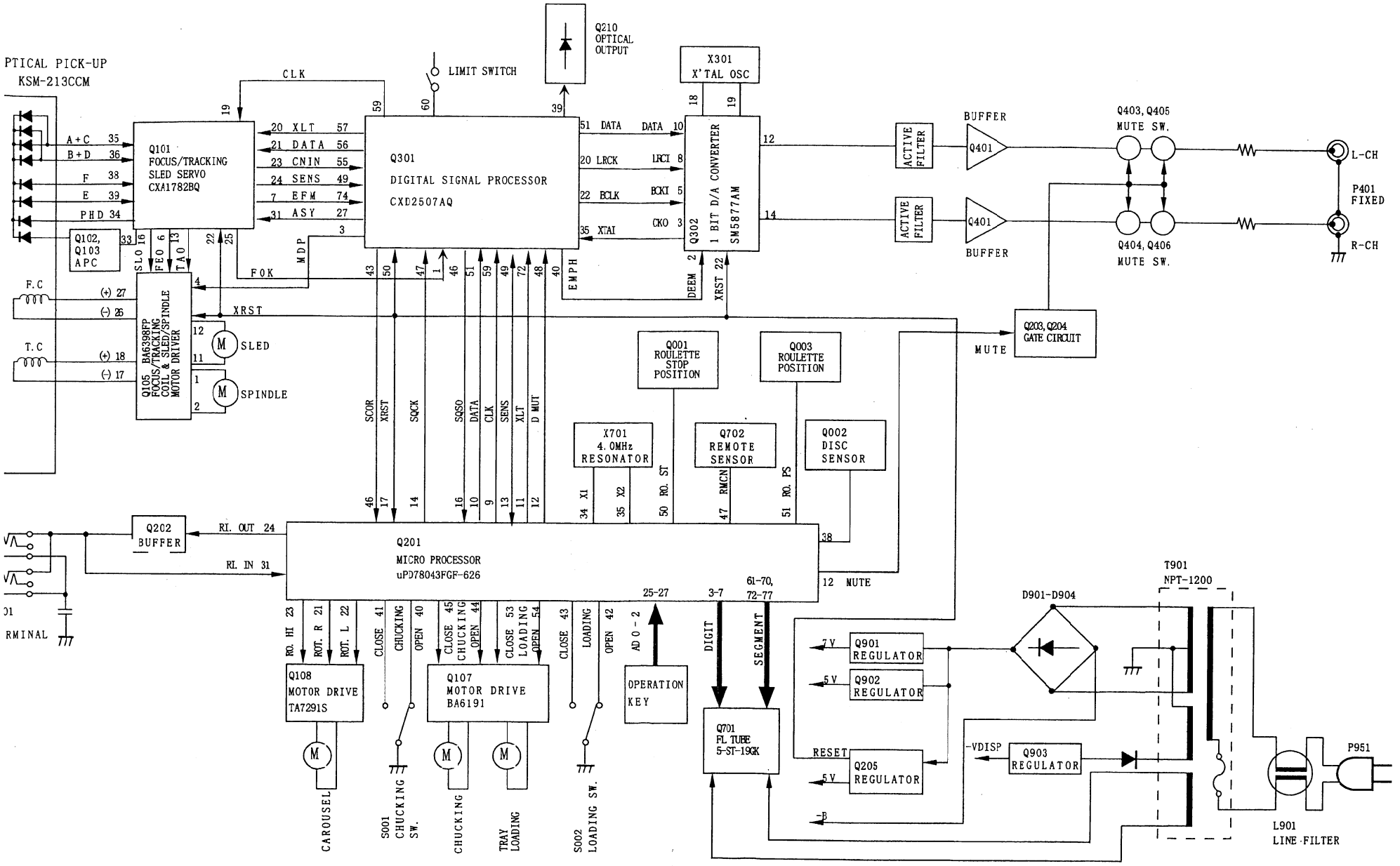
Then,
Continued as the above.

In these operation Error Message is shown in the display if any error occurs in the mechanism or the servo control. And then you can find the failure point almost exactly in this mode before you repair rejected units.

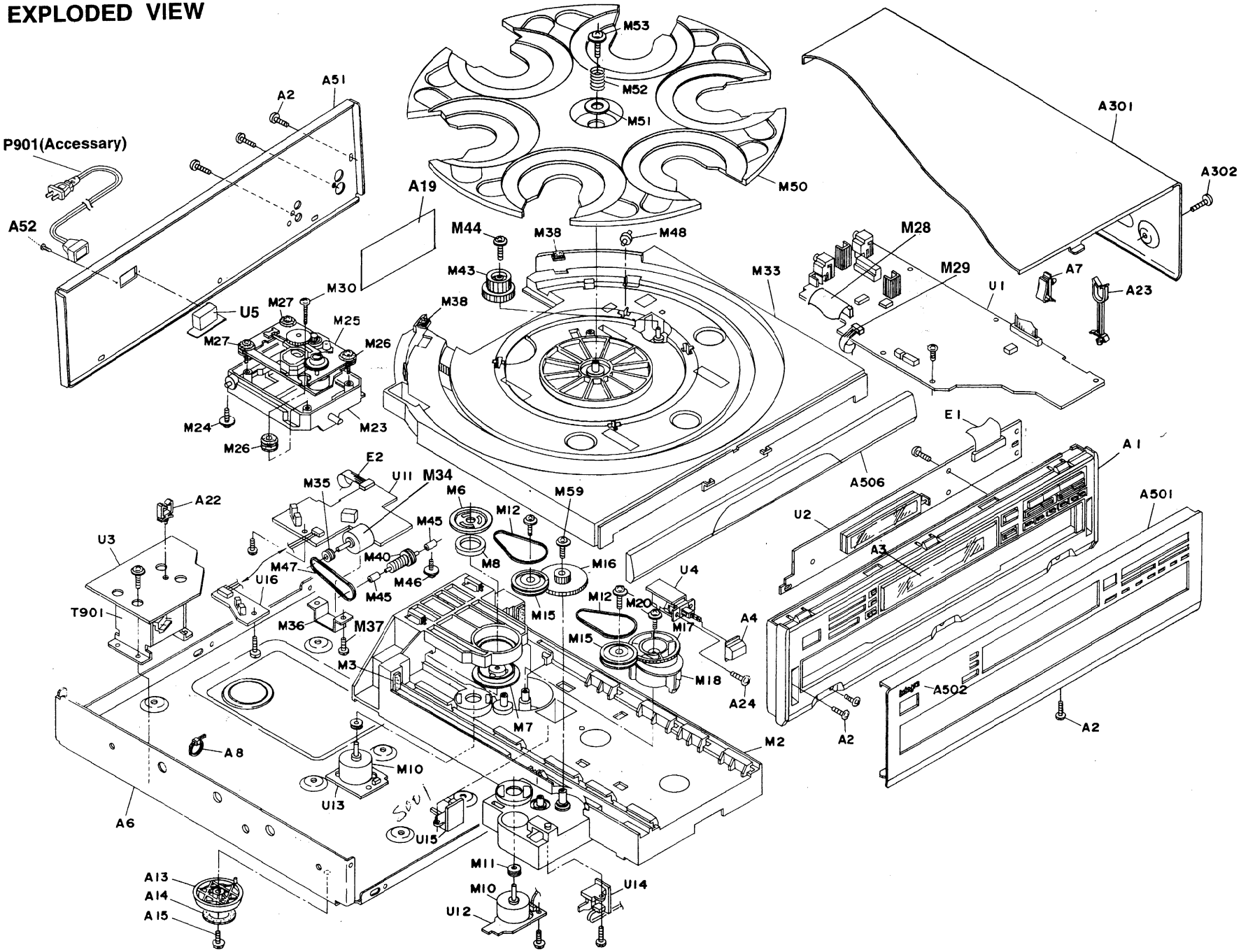
1. nf : FOCUS NG : FOCUS SERVO ON missed (Failure in Laser or RF circuit)
2. ng : GFS NG : TIMEOUT for Non-GFS (Synchronous Signal Detection) (Failure in RF Demodulator or CLV)
3. Ld : TOC Reading NG : TIME OUT Before TOC Reading completion (All SERVO Circuit)
4. Ac : ACCESS NG : TIME OUT before ACCESS completion (All SERVO Circuit)
5. co : CH OPEN NG : Non-CHUCKING Open
6. cc : CH CLOSE NG : Non-CHUCKING Close
7. rL : ROT LEFT NG : Non CCW Turning of Roulette or Non-Detection of CCW Turning of Roulette
8. rr : ROT RIGHT NG : Non CW Turning of Roulette or Non-Detection of CW Turning of Roulette
9. OP : TRAY OPEN NG : Non TRAY Open
10. CL : TRAY CLOSE NG : Non TRAY Close
11. PU : PICK UP RETURN NG : PICK-UP Non Return to the inner most.

There are two Errors in the normal operation as follows.
1. Er : INITIALIZE ERROR : Error occurred in Mechanism when it is initialized. (Error points are displayed in Heat-running Mode.)
2. rn : RAM NG : RAM for File is not initialized.

LOCK DIAGRAM



CHASSIS EXPLODED VIEW

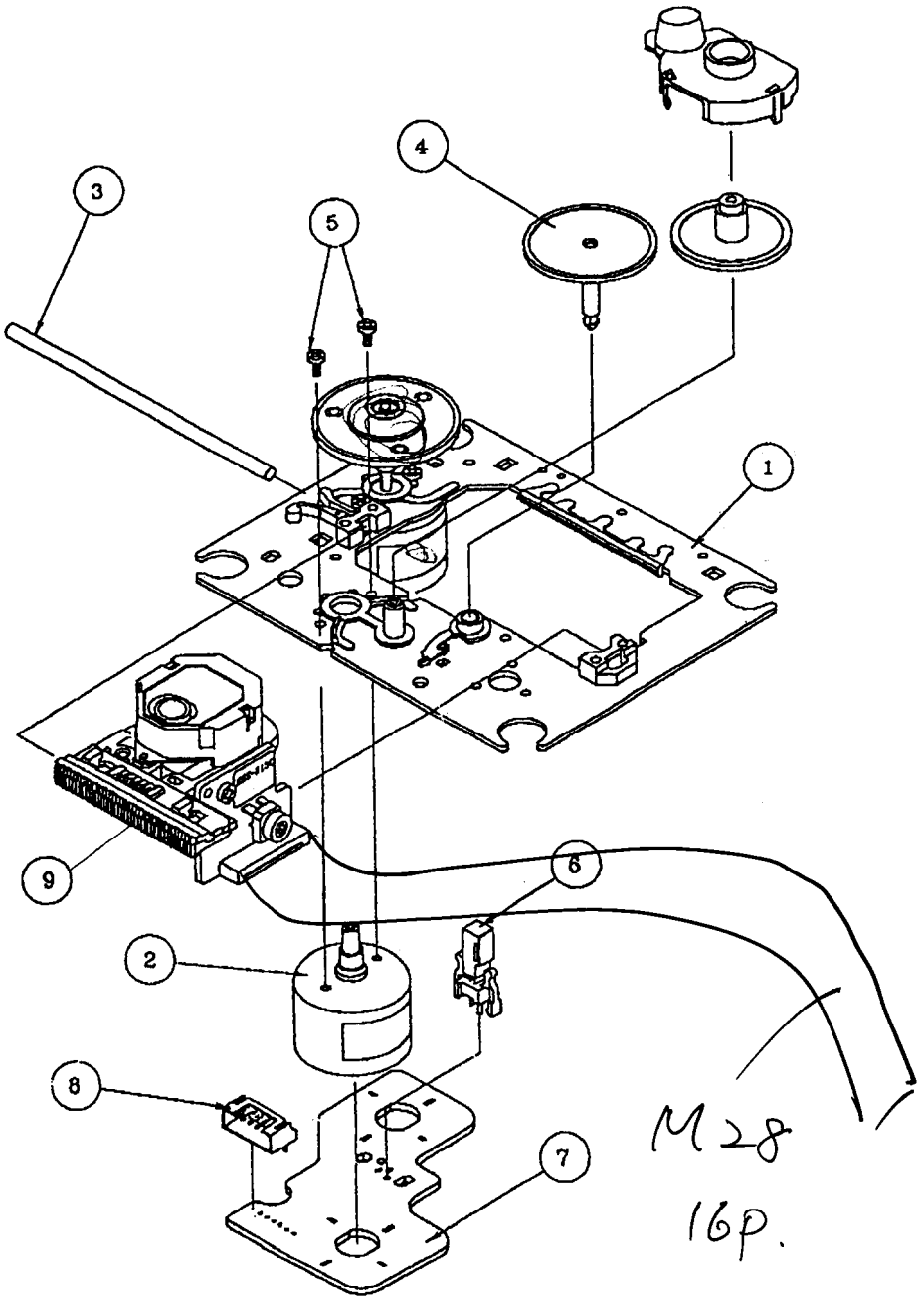


REF.NO.	PART NO.	DESCRIPTION
A1	27110990B	Front bracket
A2	838130088	3TTB+8B,Self-tapping screw
A3	28191859	Clear plate
A4	28325465	Knob, Power
A5	27100327B	Chassis
A7	27191000	MFS-1000,Holder
A8	260208	Wire tie
A13	27175316B	Leg
A14	28141332	Cushion
A15	831430088	3TTW+8B(BC), Self-tapping screw
A19	29361957	Label, Caution
A22	27300833-2	WS-2NS,Clamp
A23	27301779	HL-38-0,Clamp
A24	838430107	3TTB+10S(BC), Self-tapping screw
A51	27122641	Rear panel
A52	838440089	4TTB+8C(BC),Self-tapping screw
A301	28184680A	Top cover
A302	838430088	3TTB+8B(BC),Self-tapping screw
A501	27212125	Front panel
A502	28135275	Badge
A503	838130088	3TTB+8B(BC),Self-tapping screw
A506	28148365	Door
E1	204329005Y	NCFC3-29005, Flexible flat cable
E2	204307007	NCFC3-07007,Flexible flat cable
P951	253295KAW⚠	AS-UC-1#18, Power supply cord
T901	2300992Y	⚠NPT-1200D,Power transformer
U1	1H420580-4	NAAR-5880-4,Main circuit PC board ass'y
U2	1H420581-4	NADIS-5881-4, Display circuit PC board ass'y
U3	1H420582-4	NAPS-5882-4,Power supply circuit PC board ass'y
U4	1H420583-4	NASW-5883-4,Power switch PC board ass'y
U5	1H420511-4	NAPS-6711-4,AC inlet terminal PC board ass'y

REF.NO.	PART NO.	DESCRIPTION
U11	1H401554-1	NAETC-5854-1,Position sensor PC board ass'y
U12	1H401555-1	NAETC-5855-1,Chucking motor PC board ass'y
U13	1H401556-1	NAETC-5856-1,Loading motor PC board ass'y
U14	1H401557-1	NASW-5857-1,Chucking switch PC board ass'y
U15	1H401558-1	NASW-5858-1,Roulette position PC board ass'y
U16	1H401559-1	NAETC-5859-1,Disc sensor PC board ass'y
M2	24840109B	Rail
M3	28141337	Cushion
M4	28141384	0.1*φ24.5*φ18,Cushion
M6	24830004Y	York
M7	24824006Y	Cap
M8	24832006Y	Magnet
M10	24804015Y	RF-500TB-14415,Motor
M11	24810028Y	Pulley
M12	24816010AY	Belt
M15	24810040Y	Gear, pulley
M16	24810039AY	Gear, load
M17	24810041Y	Cam gear A
M18	24810042Y	Cam gear B
M20	831430088	3TTW+8B(BC), Self-tapping screw
M23	24802024Y	Chassis, sub
M24	24840111	Screw
M25	24800017Y	KSM-213CCM, Mechanical unit
M26	24818013Y	Insulator A
M27	24818014Y	Insulator B
M28	204416004Y	NCFC4-16004, Flexible flat cable
M29	2009990464	NASA-12P618,Socket
M30	24840111	Screw
M33	24840107D	Tray
M34	24804021Y	RF-310TA-11400, Motor
M35	24810066	Pulley C
M36	24822018Y	Retainer
M37	838130088	3TTB+8B, Self-tapping screw
M40	24810045A	Worm ass'y
M43	24810043Y	Gear, wheel
M44	831430088	3TTW+8B(BC), Self-tapping screw
M45	24834017Y	Spacer
M46	24840111	Screw
M47	24816035	Belt
M48	24840110Y	Roller
M49	28141340	Cushion
M50	24840108A	Roulette
M51	24834016Y	Washer A
M52	24820033Y	Spring A
M53	24840111	Screw
M59	838426088	2.6TTB+8B(BC), Self-tapping screw

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

PICK-UP DRIVE UNIT



REF.NO.	PART NO.	DESCRIPTION
1	X-2625-877-1	Motor chassis ass'y
2	X2625-769-1	Motor gear ass'y
3	2626-908-01	Sled shaft
4	24810023	Gear A
5	7621-255-15	P2x3,Pan head screw
6	24840008	Leaf switch
7	1639-678-12	Motor PC board
8	1564-722-11	6P, Connector pin
9	8848-483-05	KSS-213C, Optical pickup

PRINTED CIRCUIT BOARD-PARTS LIST

MAIN CIRCUIT PC BOARD(NAAR-588-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q101	22241093	CXA1782BQ
Q105	22241066	BA6398FP
Q107	22240771	BA6191
Q108	22240239	TA7291S
Q201	22241094	MPD78043FGF-026
Q205	22240018	M51943ASL
Q301	22241096	CXD2507AQ
Q302	22241074R9	SM5877AM
Q401	222956	NJM2068D-D
Q901	222780075	78M07HF
Q902	222780055	78M05HF
	Photo coupler	
Q210	24120038	GP1F32T
	Transistors	
Q102,Q903	2211504	2SA950-Y
Q103,Q109	2212600 or	DTA124ES or
Q202	2215780 NP	KRA103M
Q110,Q203	221282 or	DTC144ES or
	2215820 NP	KRC104M
Q106	2211255 or	2SC1815-GR or
	2215985 NP	KTC3198-GR
Q204	2211455 or	2SA1015-GR or
	2215975 NP	KTA1266-GR
Q403-Q406	2211706	2SD655-F
	Diodes	
D101,D201	223205 or	1SS270A or
D203,D205	223163	1SS133
D102,D202	224470562	MTZJ5.6B
D206	223205 or	1SS270A or
	223163	1SS133
D401	224470562	MTZJ5.6B
D908	224473004	MTZJ30D
D909	224470512	MTZJ5.1B
	Oscillator	
X201	3010229	EFOEC004A4,Ceramic
X301	3010159	AT-38-169,Crystal
	Coil	
L101	233454K100	NCH-1452 100K
	Capacitors	
C101,C102	354721019	100μF,6.3V,Elect.
C105,C109	374721034	0.01μF±5%,50V,Plastic
C106,C112	374722224	2200pF±5%,50V,Plastic
C107	374723334	0.033μF±5%,50V,Plastic
C108,C126	354721019	100μF,6.3V,Elect.
C110,C120	374721034	0.01μF±5%,50V,Plastic
C111,C114	374724744	0.47μF±5%,50V,Plastic
C113	374721024	1000pF±5%,50V,Plastic
C115,C116	374721044	0.1μF±5%,50V,Plastic

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C117	354780479	4.7μF,50V,Elect.
C119	374721044	0.1μF±5%,50V,Plastic
C122	354763309	33μF,35V,Elect.
C123	354780339	3.3μF,50V,Elect.
C125,C127	354744709	47μF,16V,Elect.
C128,C135	354744709	47μF,16V,Elect.
C129,C138	374721034	0.01μF±5%,50V,Plastic
C131	374722224	2200pF±5%,50V,Plastic
C202,C211	354721019	100μF,6.3V,Elect.
C205,C303	354784799	0.47μF,50V,Elect.
C206	354782299	0.22μF,50V,Elect.
C207	354721029	1000μF,6.3V,Elect.
C215,C216	354781019	100μF,50V,Elect.
C301	374722234	0.022μF±5%,50V,Plastic
C302	374721524	1500pF±5%,50V,Plastic
C304,C306	374721034	0.01μF±5%,50V,Plastic
C308	354721019	100μF,6.3V,Elect.
C311-C313	354722219	220μF,6.3V,Elect.
C314	354724719	470μF,6.3V,Elect.
C316,C317	354741009	10μF,16V,Elect.
C401,C402	374723924	3900pF±5%,50V,Plastic
C403-C406	374721824	1800pF±5%,50V,Plastic
C407,C408	374724714	470pF±5%,50V,Plastic
C409,C410	374721824	1800pF±5%,50V,Plastic
C411,C412	374723924	3900pF±5%,50V,Plastic
C413,C414	374722724	2700pF±5%,50V,Plastic
C415,C416	354781009	10μF,50V,Elect.
C417-C420	374722734	0.027μF±5%,50V,Plastic
C421,C422	354744709	47μF,16V,Elect.
C423	374722734	0.027μF±5%,50V,Plastic
C910-C912	354744709	47μF,16V,Elect.
C913	354721029	1000μF,6.3V,Elect.
C916,C917	354764709	47μF,35V,Elect.
	Resistors	
R108,R126	5210263	N06HR20KBC
	Terminals	
P201	25045481 or	NPJ-2PDBL299 or
	25045330	NPJ-2PDBL184
P401	25045422	NPJ-2PDBL247
	Plugs	
P102A,P104A	25055150	NPLG-6P134
P103A	25055149	NPLG-5P133
P106	25055038	NPLG-2P29
P107	25055045	NPLG-4P33
	Sockets	
P101	25051768	NSCT-16P1555
P105A	25051851	NSCT-7P1638
P202A	25051836	NSCT-29P1623
P901A	25050273	NSCT-9P101

CIRCUIT NO.	PART NO.	DESCRIPTION
	Sockets	
P902A	25050269	NSCT-5P97
	Radiators	
Q901A,Q902A	27160145-1	RAD-51
	Screws	
Q901B,Q902B	838430107	3TTB+10S(BC)
	Holder	
X301A	27190751	

DISPLAY CIRCUIT PC BOARD (NADIS-5881-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q701	212132	5-ST-19GK,FL tube
Q702	24130011	PIC-12043TE2,Remote sensor
C701	353721019	100 μ F,6.3V,Elect. capacitor
P702B	25051873	NSCT-29P1660,Socket
S701-S719	25035652	NPS-111-S604,Switch
E701	27190941	Holder FL

POWER SUPPLY CIRCUIT PC BOARD (NAPS-5882-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D901-D907	22380260 or	RL1N4003 or
	22380035	GP104003E
	Coil	
L901	231222 ⚠	NCH-3454
	Capacitors	
C901	354744729S	4700 μ F,16V,Elect.
C902	393342227	2200 μ F,16V,Elect.
C905	354784709	47 μ F,50V,Elect.
C906	354780229	2.2 μ F,50V,Elect.
C908,C909	354744719	470 μ F,16V,Elect.
	Sockets	
P901B	25051113	NSCT-9P900
P902B	25051109	NSCT-5P896
P903B	2009990531UL	NSAS-2P0696

POWER SWITCH PC BOARD (NASW-5883-4)

CIRCUIT NO.	PART NO.	DESCRIPTION
C950	3500191 ⚠	DE7150F-103M,IS capacitor
S901	25035636 ⚠	NPS-111-L590P,Power switch

AC INLET TERMINAL PC BOARD (NAPS-6711-4)

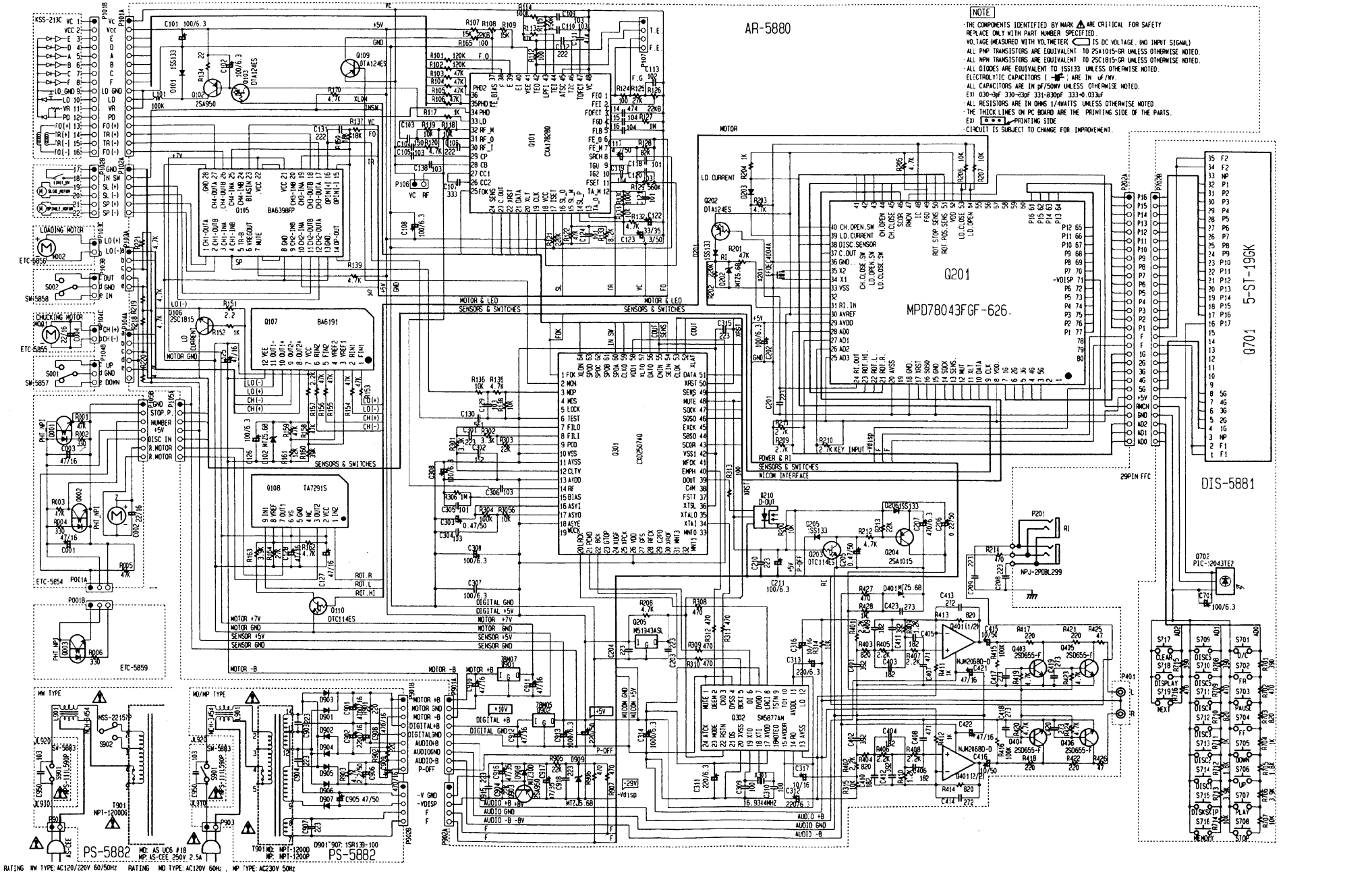
CIRCUIT NO.	PART NO.	DESCRIPTION
P903A	25055960 ⚠	NPLG-2P913, Inlet

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

MECHANISM SECTION PC BOARD-PARTS LIST

CIRCUIT NO.	PART NO.	DESCRIPTION
Q001	24190041	SG-207,Photo interrupter
Q002	24190046	GP2S28,Photo interrupter
Q003	24190041	SG-207,Photo interrupter
C001	354744709	47 μ F,16V,Elect. capacitor
C002	352942206	22 μ F,16V,Elect. capacitor
C003	354744709	47 μ F,16V,Elect. capacitor
C004	352942206	22 μ F,16V,Elect. capacitor
S001	25065491	NMS-1223,Micro switch
S002	25065375	NMS-1219,Micro switch
P001A	2002390605UL	NSAS-6P0597,Socket
P001B	25055367	NPLG-3P350,Plug
P103	2009990447UL	NSAS-10P0596,Socket
P104	2009990446UL	NSAS-11P0595,Socket
P105B	25051851Y or	NSCT-7P1638 or
	25050913	NSCT-7P700,Socket

SCHEMATIC DIAGRAM



ADJUSTMENT PROCEDURES

Instruments required

Dual trace oscilloscope, Frequency counter, AF oscillator, Test disc (SONY YEDS-18) and AC voltmeter.

1. Focus offset adjustment

Turn R108 and R126 to the mechanical center.
Load the test disc YEDS-18 on the tray and play the track 2.
Connect the oscilloscope to terminal P106.
Adjust R108 until the waveform on the oscilloscope becomes maximum.
After adjustment, disconnect the oscilloscope.

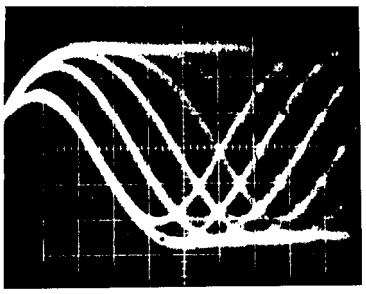
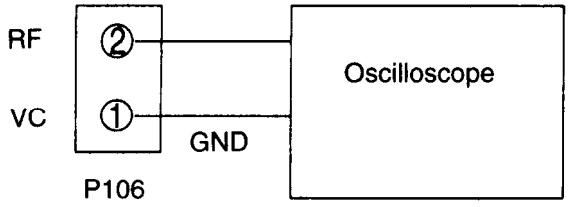


Photo 1

0.2V/div
0.2μs/div



2. Focus gain adjustment

Set the output of AF oscillator to 1kHz, 2 Vp-p.
Play the track 2 of test disc.
Connect the oscilloscope and the AF oscillator as shown below.

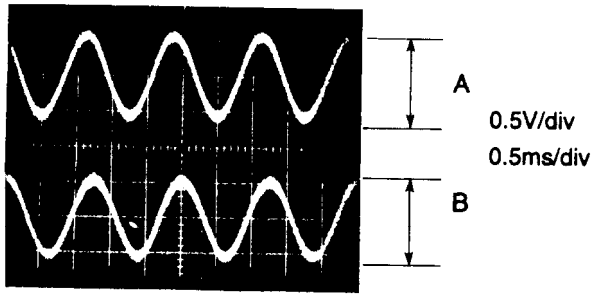
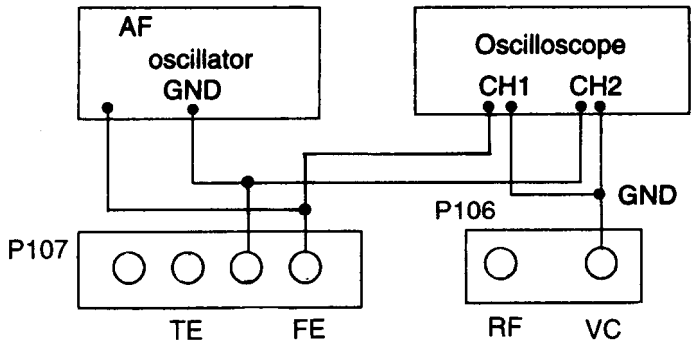
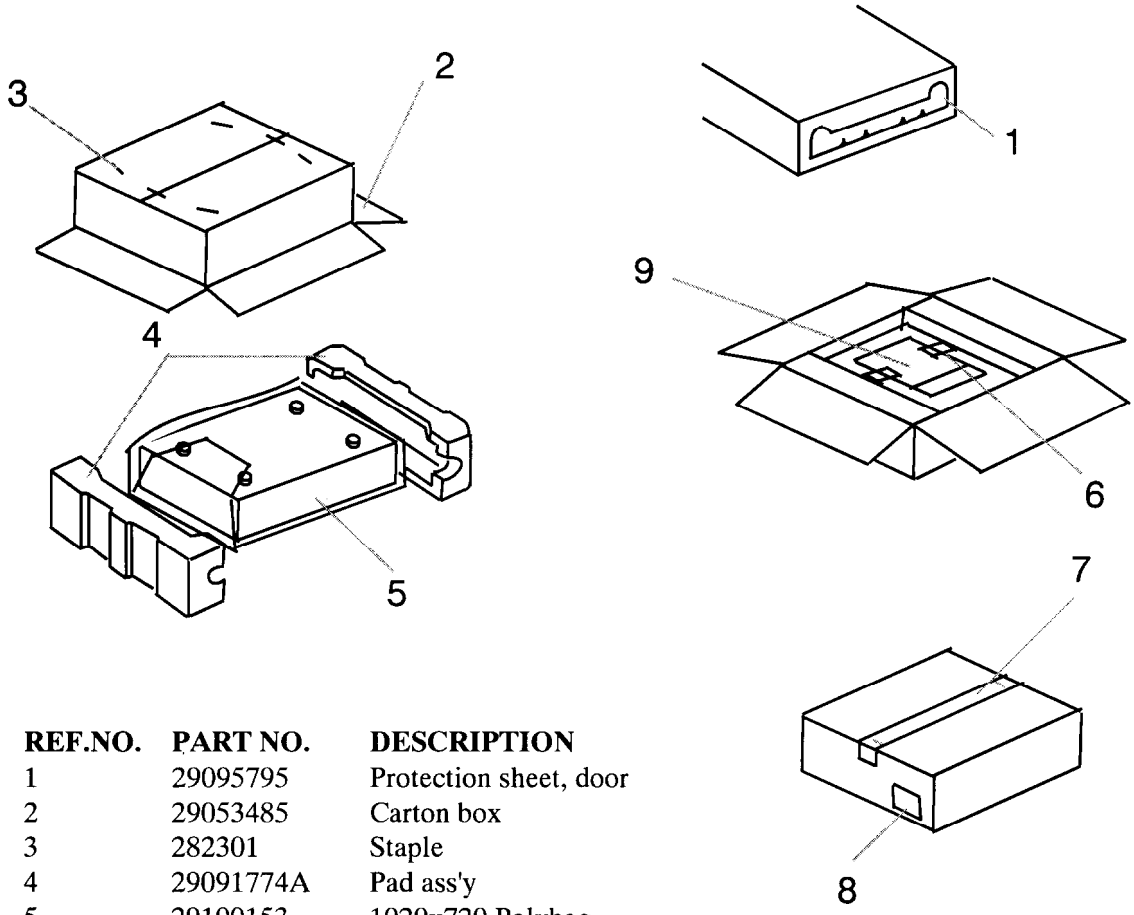


Photo 2



Adjust R126 until 1kHz components of channels 1and 2 on oscilloscope become same level.
After adjustment, disconnect the AF oscillator and the oscilloscope.

PACKING VIEW



REF.NO.	PART NO.	DESCRIPTION
1	29095795	Protection sheet, door
2	29053485	Carton box
3	282301	Staple
4	29091774A	Pad ass'y
5	29100153	1020x720,Polybag
6	261504	Paper tape
7	29110098	PP tape
8	29362497	Label UPC
9	2010098A	Audio connection cable
	2010200	RI cord
	24140331A	RC-331C,Remote controller
	29100097-1A	350*250,Polybag
	29342785	Instruction manual E
	29355299	Instruction sheet
	29095865	Instruction sheet
	29365080A	Warranty card
	3010054	UM-3,Battery
	27270397	Spacer

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