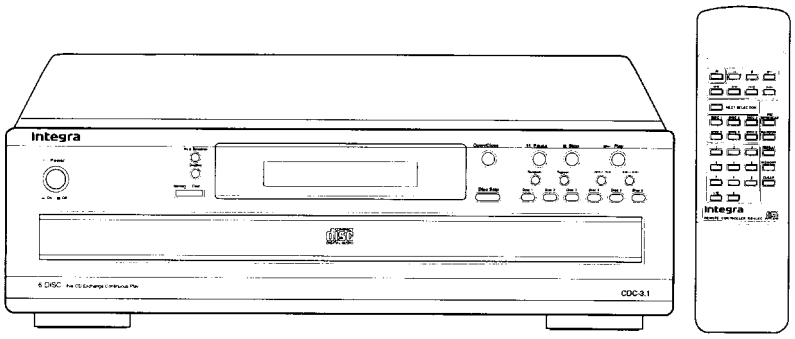
Ref. No. 3661
July, 2000

Integra SERVICE MANUAL

COMPACT DISC CHANGER
MODEL CDC-3.1



Black model

BMD	120V AC, 60Hz

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.

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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-Rolomon code
D/A converter:	1 bit PWM/ACCUPULSE
Sampling frequency:	352.8 kHz (8 times oversampling)
Number of channel:	2 (stereo)
Frequency response:	5 Hz - 20kHz
Total harmonic distortion:	0.005% (at 1kHz)
Dynamic range:	96 dB
Signal to noise ratio:	92 dB
Channel separation:	92 dB (at 1kHz)
Wow and Flutter:	Below threshold of measurability
Output level:	2 volts r.m.s.
Power consumption:	10 watts
Power supply :	120V, 60Hz 230V, 50Hz
Dimensions (W x H x D):	435 x 131 x 433 mm (17-1/8" x 5-3/16" x 17-1/16"
Weight:	6.9 kg (15.2 lbs.)

Specifications and features are subject to change wuthout notice.

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 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 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 SERVICE

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. INCASE 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: GaAS/GaALAs
Wavelength: 760 ~ 800mm
Emission Duration: continuous
Laser output: max. 0.5mW*

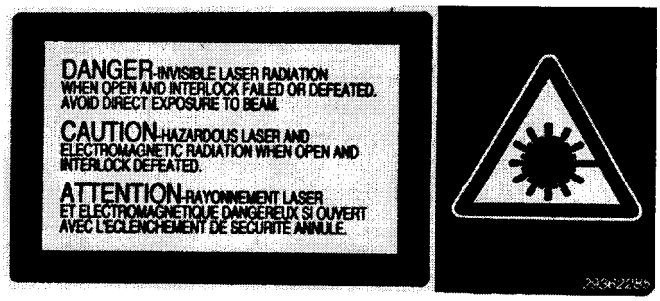
*This output is the value measured at a distance about 1.8mm from the objective lens surface on the Optical Pick-up Block.

LASER WARNING LABEL

These labels are located on the mechanism.

1. Warning label

   This label is located on the chassis.



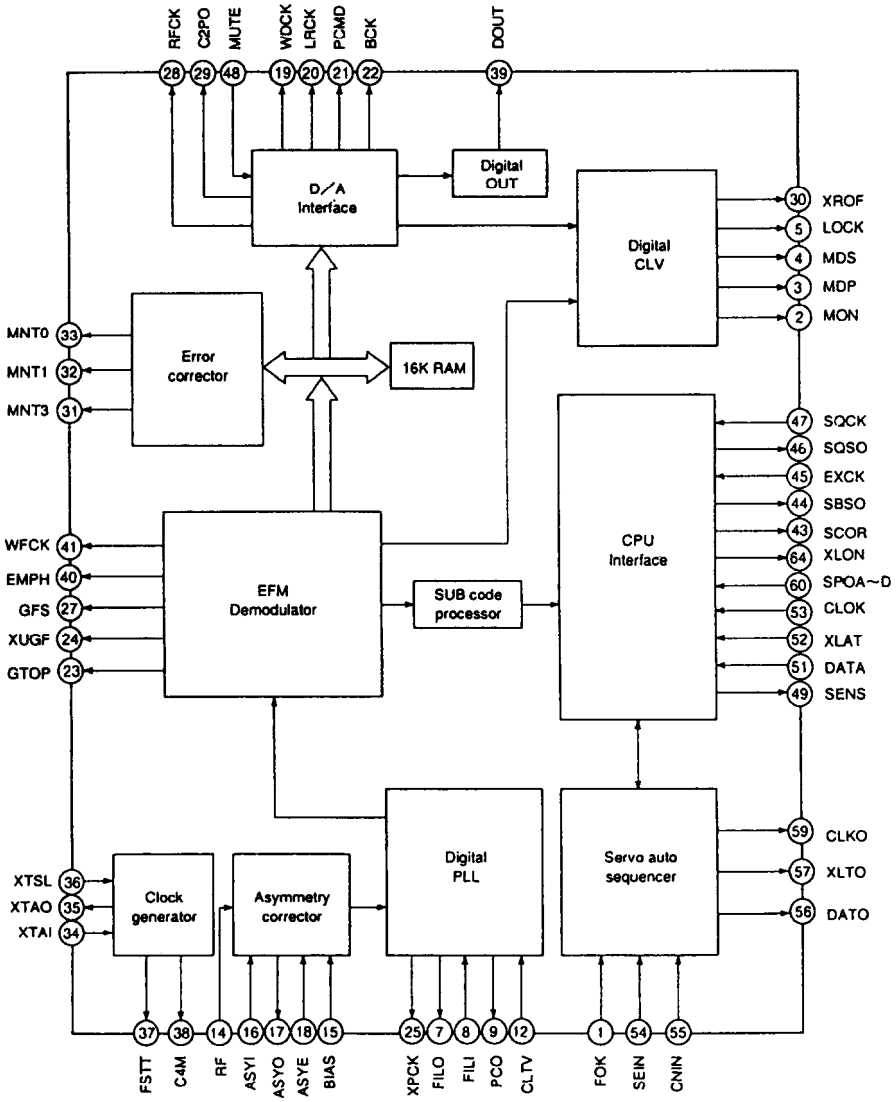
2. Class 1 label

   This label is located on the rear panel.

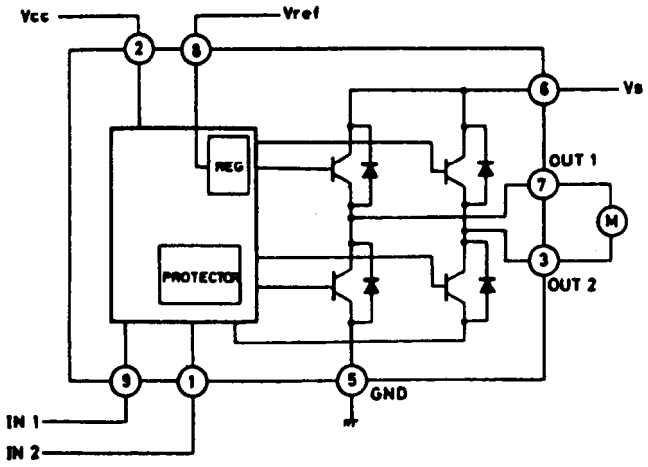
Only 230V model

IC BLOCK DIAGRAMS AND DESCRIPTIONS

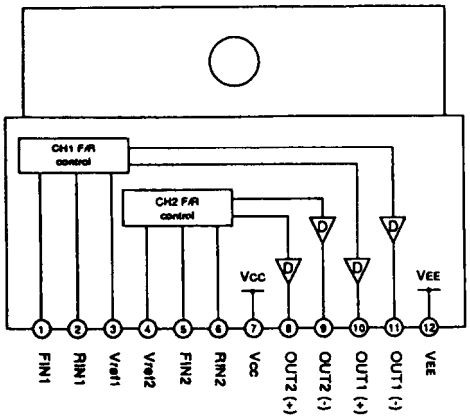
CXD2507AQ (Digital Signal Processor)



TA-7291S (Motor Drive)



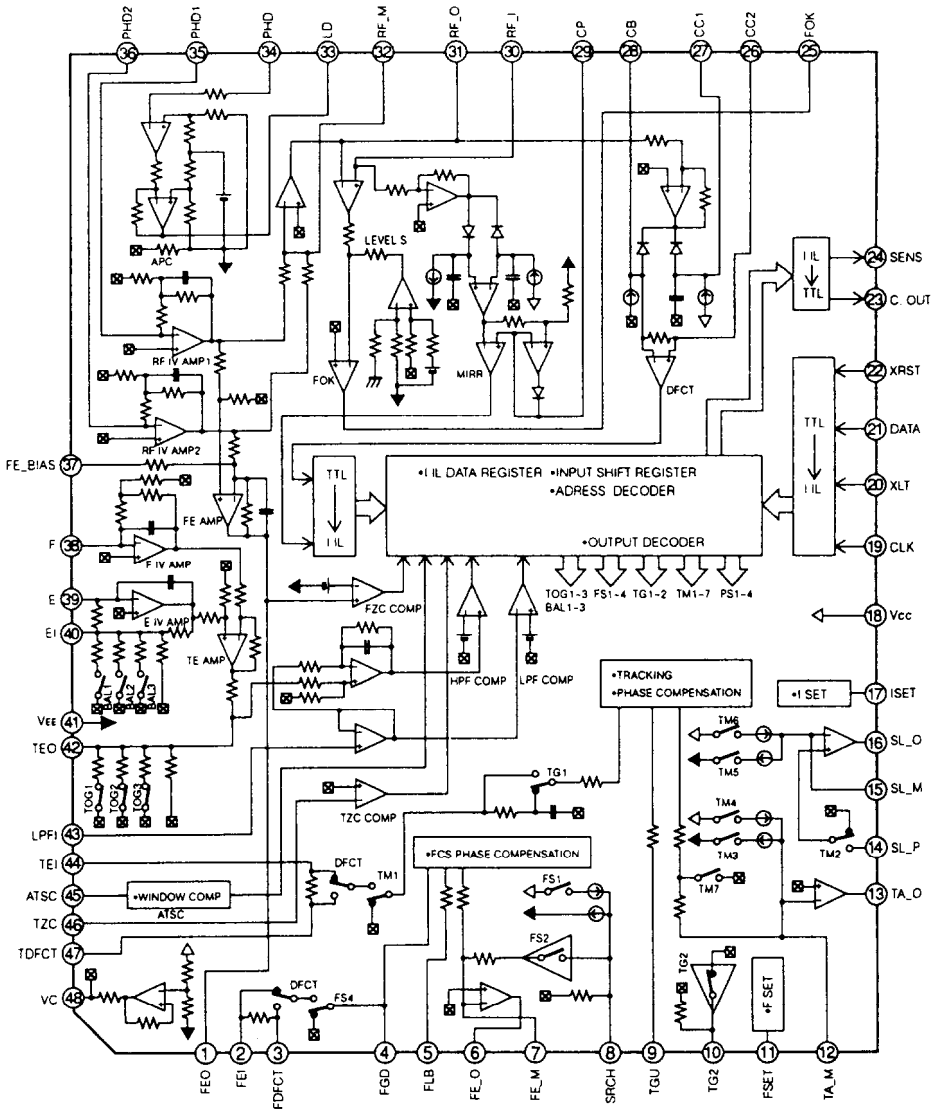
BA6191 (Motor Drive)



F : Forward
R : Reverse

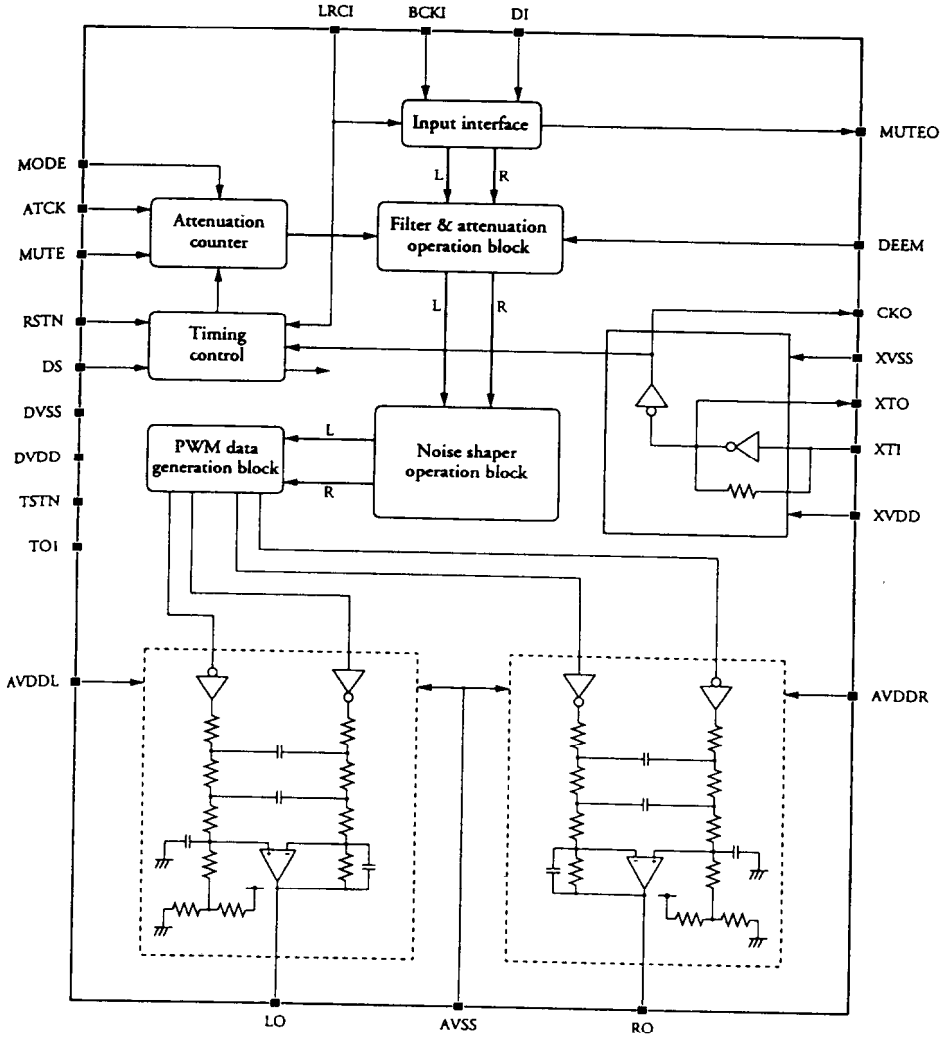
NO.	SYMBOL	I/O	DESCRIPTION
1	FOK	I	Foucs OK input
2	MON	O	Spindle motor ON/OFF control output
3	MDP	O	Spindle motor servo control
4	MDS	O	Spindle motor servo control
5	LOCK	O	H when GFS is the high level
6	TEST	I	Test terminal
7	FILO	O	Filter output for master PLL.
8	FILI	I	Filter input for master PLL.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

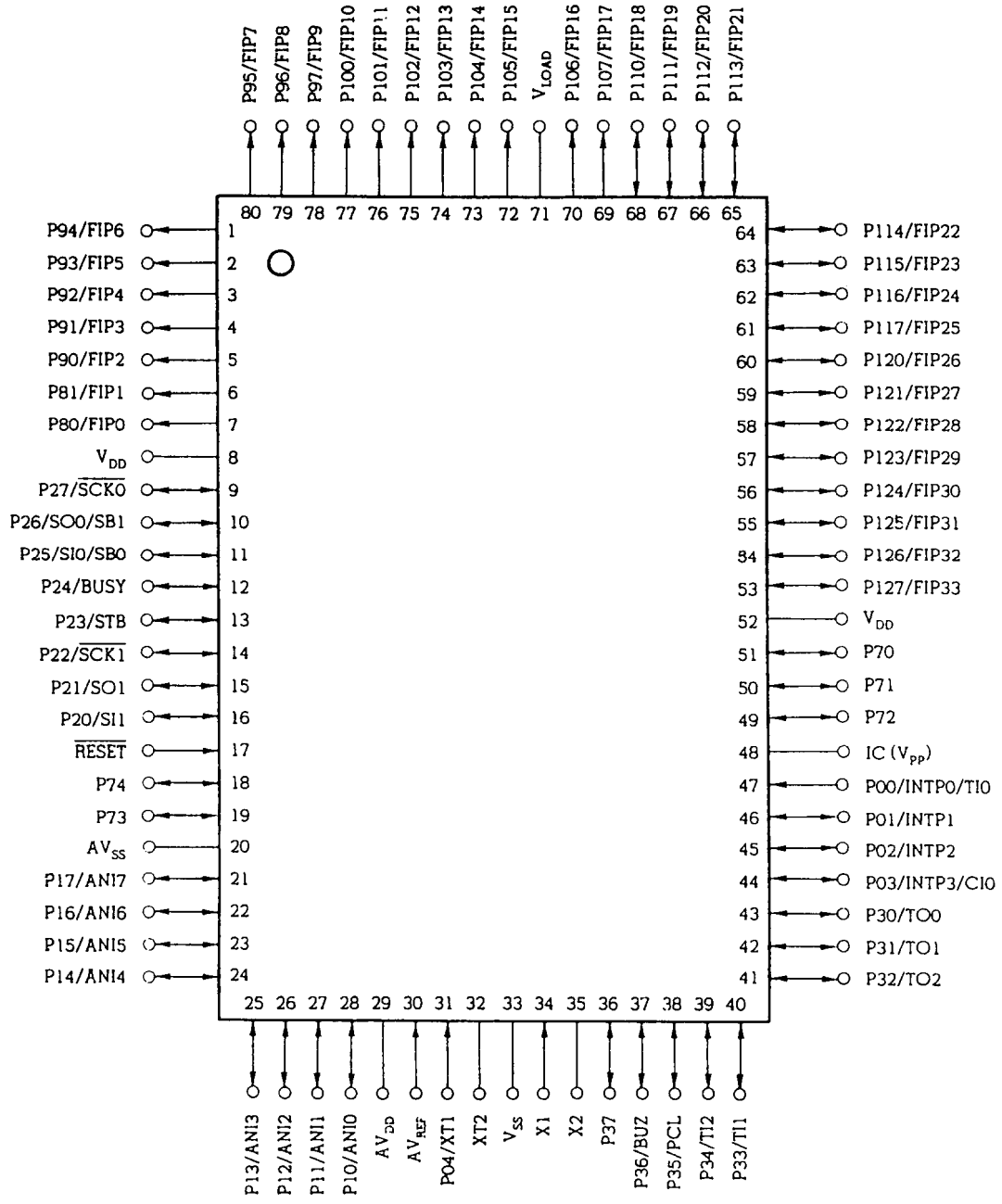
SM5877AN (DAC)



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	TOI	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 CONNECTION DIAGRAM (μ PD78043FGF)

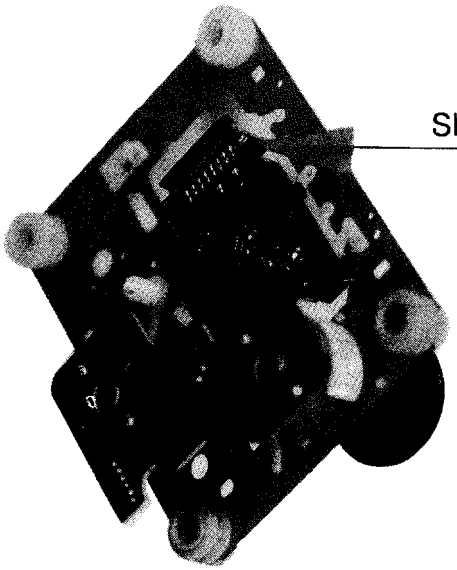


Pin No.	Symbol	I/O	Description
1~2			Not used.(Open)
3~7	1G~5G	O	Grid output terminals for FL tube.
8	VDD	I	Power supply terminal. +5V.
9	CLK	O	Clock output terminal to signal processor IC.
10	DATA	O	Data output terminal to signal processor IC.
11	XLT	O	Latch output terminal to signal processor IC.
12	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		GND
19			(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

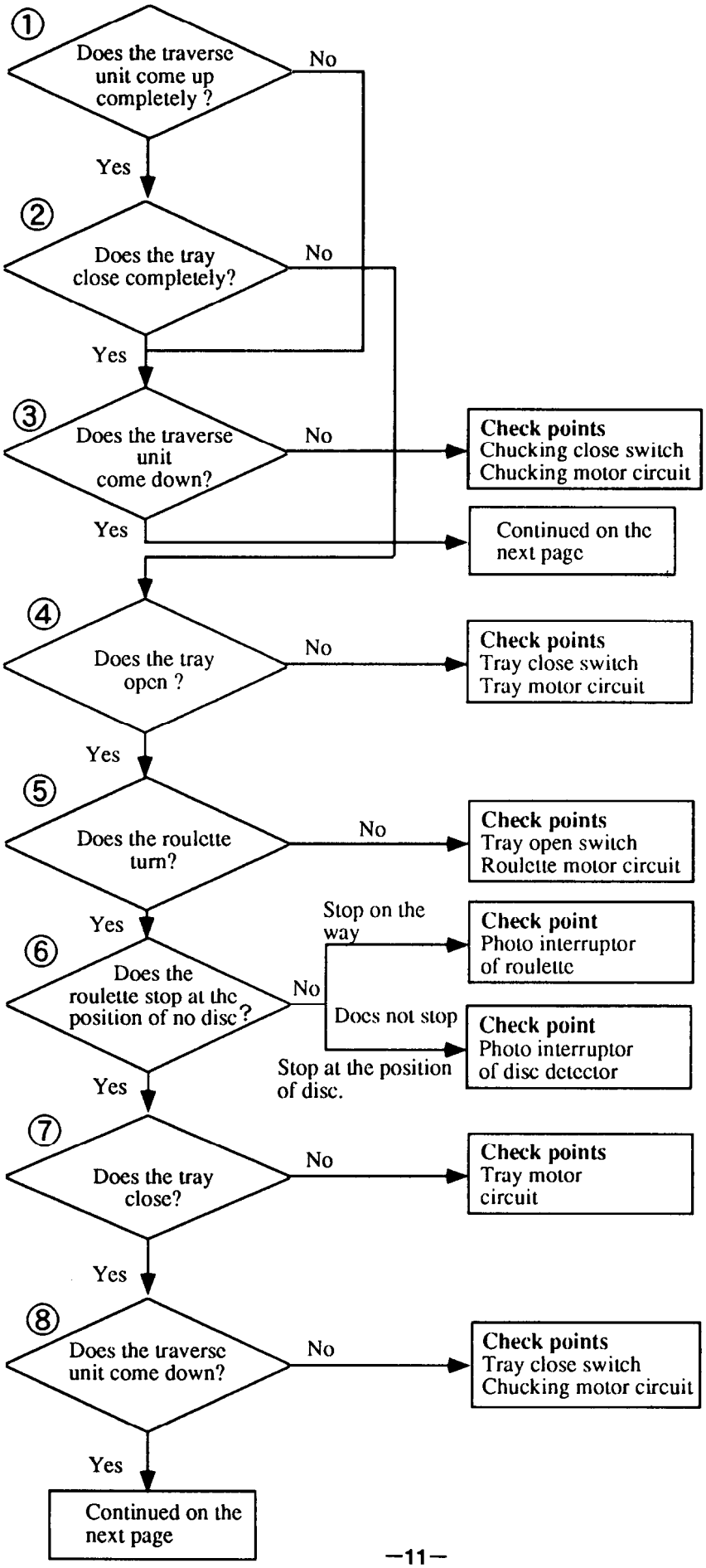
The laser diode in the optical pickup block is so sensitive to static electricity, surge current and etc. that the components are liable to be broken down or its reliability remarkbly deteriorated.
During repair, carefully take the following precautions.

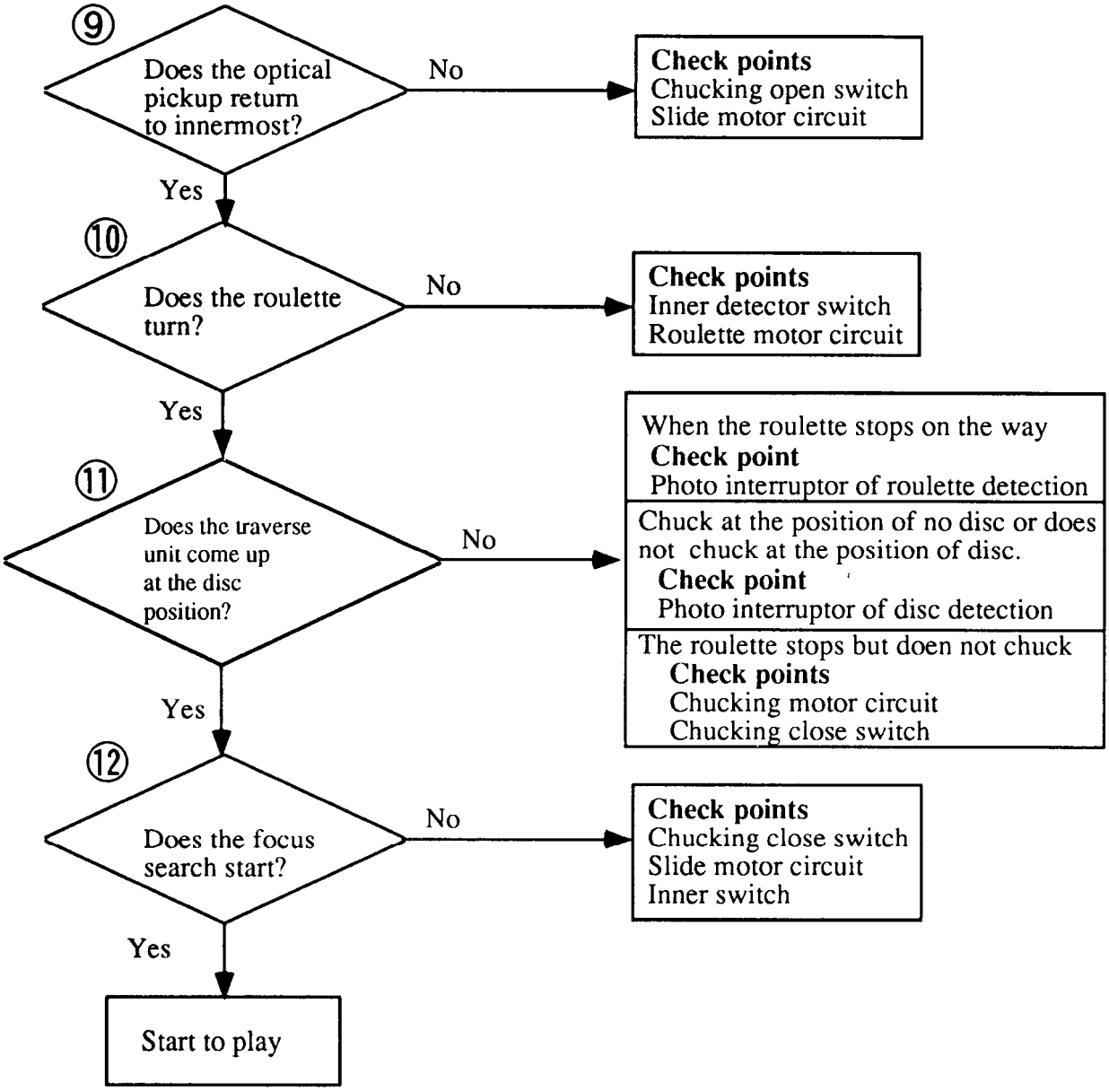
1. When replacing the optical pickup, first short the LD terminals and remove the connector. Also, when attaching the new opitical pickup, after attaching the connector, unsolder the LD terminals.
2. Do not touch the optical pickup object lens with the hands.



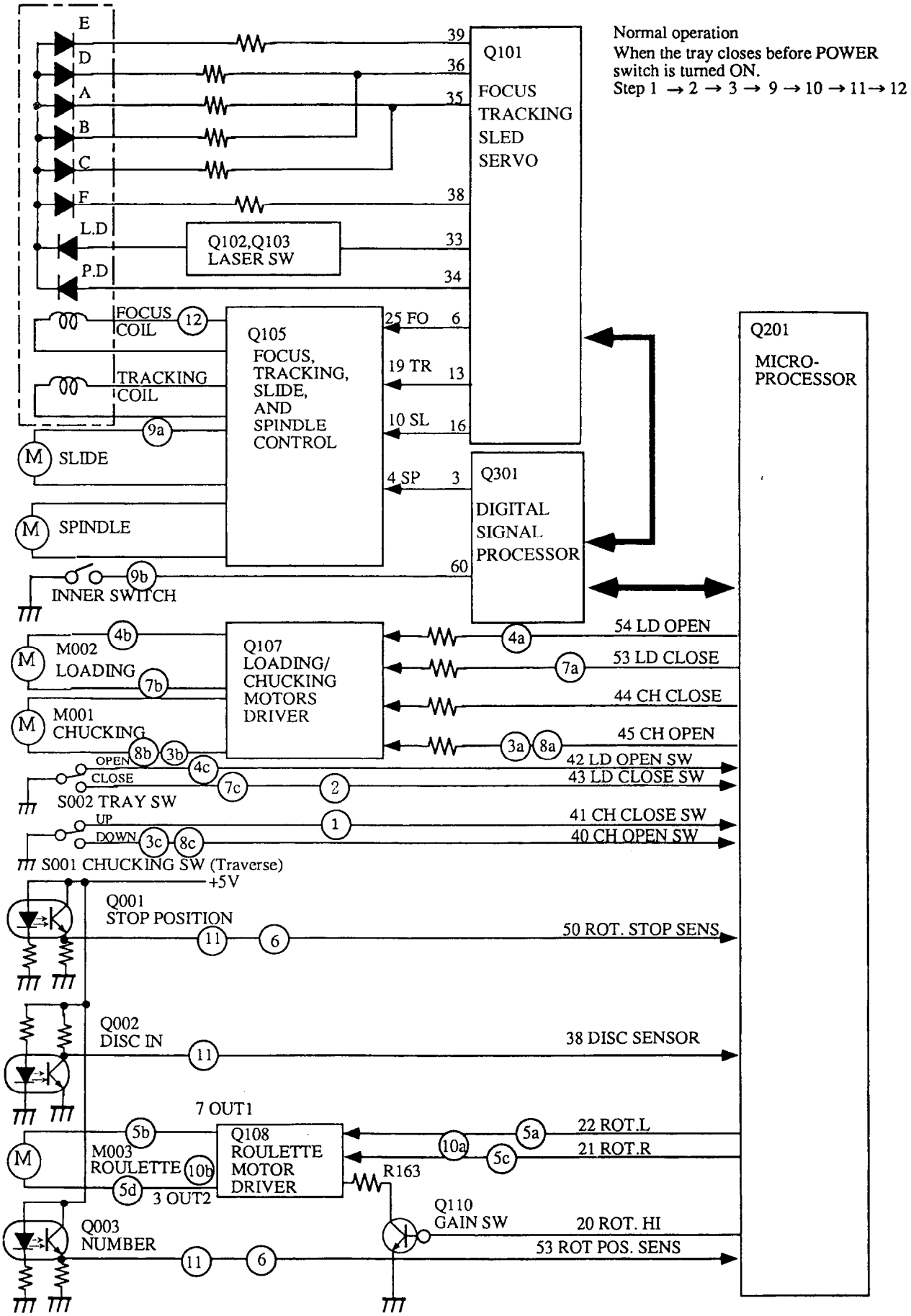
Short pattern for LD protection.

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

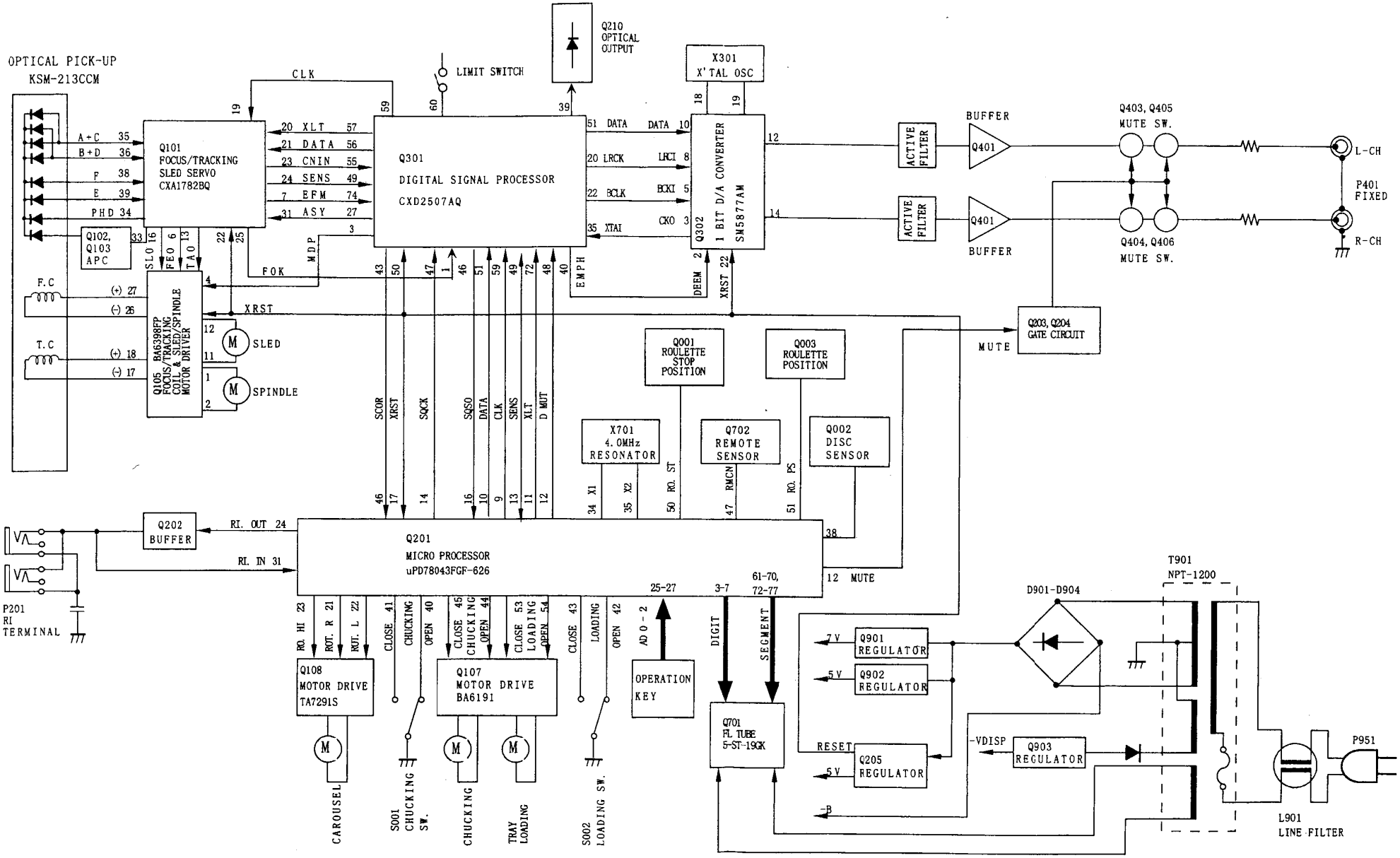
Then,
Continued as the above.

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.

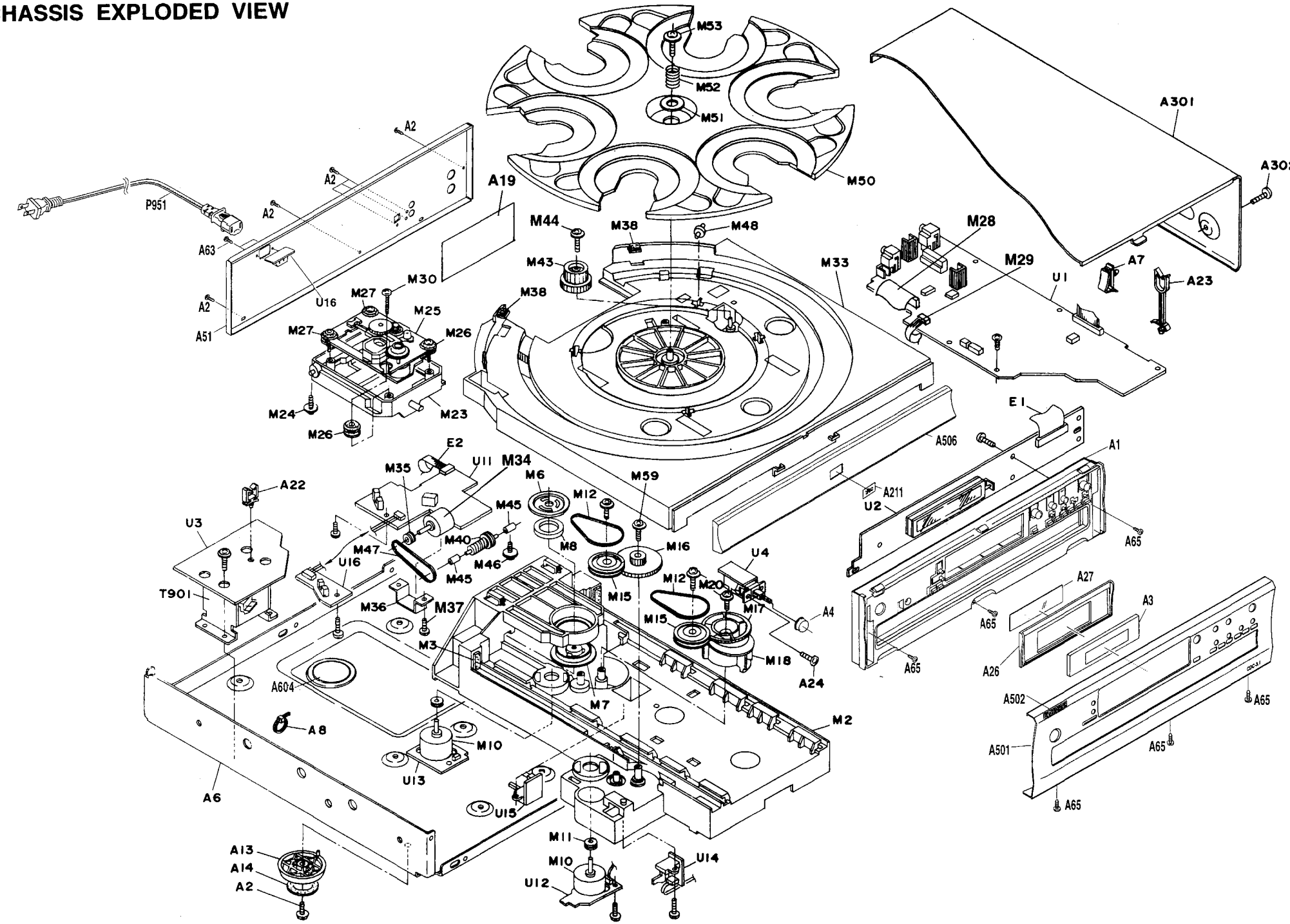
1. nf : FOCUS NG : FOCUS SERVO ON missed (Failure in Laser or RF circuit)
2. ng : GFS NG : TIMEOUT for Non-GFS (Synchronous Signal Detection) (Failure in RF Demodulator or CLV)
3. Ld : TOC Reading NG : TIME OUT Before TOC Reading completion (All SERVO Circuit)
4. Ac : ACCESS NG : TIME OUT before ACCESS 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.

BLOCK DIAGRAM



CHASSIS EXPLODED VIEW



PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
A1	27111164B	Front bracket
A2	834430088	3TTS+8B(BC), Self- tapping screw
A3	28191890	Clear plate
A4	28325767	Knob (Power)
A6	27100327B	Chassis
A7	27191000	Holder, MFS-1000
A8	260208	Wire tie
A13	27175316B	Leg
A14	28141332	Cushion
A19	29361957	Label (ALL2)
A20	831430088	3TTW+8B(BC), Self-tapping screw
A22	27300833-2	Clamp, WS-2NS
A23	27301779	Clamp, HL-38-0
A24	838430107	3TTB+10S(BC), Self-tapping screw
A26	27191107	Holder (Plate)
A27	28133395	Plate
A51	27122740	Rear panel
A301	28184680-1	Top cover
A302	838430088	3TTB+8B(BC)), Self-tapping screw
A501	27212221B	Front panel
A502	28135278	Badge
A506	28148417A	Door
E1	204329005	Flexible flat cable, NCFC3-29005
E2	204307007	Flexible flat cable, NCFC3-07007
T901	⚠ 2300992	Power transformer , NPT-1200D
A63	838440089	4TTB+8C(BC), Self- tapping screw
A65	838130088	3TTB+8B, Self-tapping screw
A211	27262656	Plate (DISC)
U1	1H442580-5A	Main circuit PC board assy , NAAR-5880-5A
U2	1H442581-5A	Display circuit PC board assy , NADIS-5881-5A
U3	1H442582-5A	Power supply circuit PC board assy , NAPS-5882-5A
U4	1H442583-5A	Power switch PC board assy , NAPS-5883-5A
U11	1H401554-1	Position sensor PC board assy , NAETC-5854-1
U12	1H401555-1	Chucking motor PC board assy , NAETC-5855-1
U13	1H401556-1	Loading motor PC board assy , NAETC-5856-1
U14	1H401557-1	Chucking switch PC board assy , NAETC-5857-1
U15	1H401559-1	Disc sensor PC board assy , NAETC-5859-1
U16	1H442511-5A	Inlet terminal PC board assy , NAPS-6711-5A

REF. NO.	PART NO.	DESCRIPTION
M2	24840109B	Rail
M3	28141337	Cushion
M6	24830004	Yoke (CHB)
M7	24824006	Cap (CHC)
M8	24832006	Magnet (CHB)
M10	24804015	Motor, RF-500TB-14415
M11	24810028	Pulley
M12	24816010A	Rubber belt (B)
M15	24810040	Gear (Pulley)
M16	24810039A	Gear (Load)
M17	24810041	Gear (A)
M18	24810042	Gear (B)
M20	831430088	3TTW+8B(BC), Self-tapping screw
M23	24802024	Chassis (Sub)
M24	24840111	Special self-tapping screw
M25	24800017	CD Mechanism unit, KSM-213CCM
M26	24818013	Insulator (A)
M27	24818014	Insulator (B)
M28	204416004	Flexible flat cable, NCFC4-16004
M29	2009990464	Socket AS, NASA-12P618
M30	24840111	Special self-tapping screw
M33	24840107D	Tray
M34	24804021	Motor, RF-310TA-11400
M35	24810066	Pulley (C)
M36	24822018	Retainer
M37	838130088	3TTB+8B, Self-tapping screw
M38	28141340	Cushion
M40	24810045A	Worm AS
M43	24810043	Wheel gear
M44	831430088	3TTW+8B(BC), Self-tapping screw
M45	24834017A	Spacer
M46	24840111	Special self-tapping screw
M47	24816035	Rubber belt (G)
M48	24840110	Roller
M50	24840108A	Roulette
M51	24834016	Washer (A)
M52	24820033	Spring (A)
M53	24840111	Special self-tapping screw
M58	838130088	3TTB+8B, Self-tapping screw
M59	838426088	2.6TTB+8B(BC), Self-tapping screw

NOTE:
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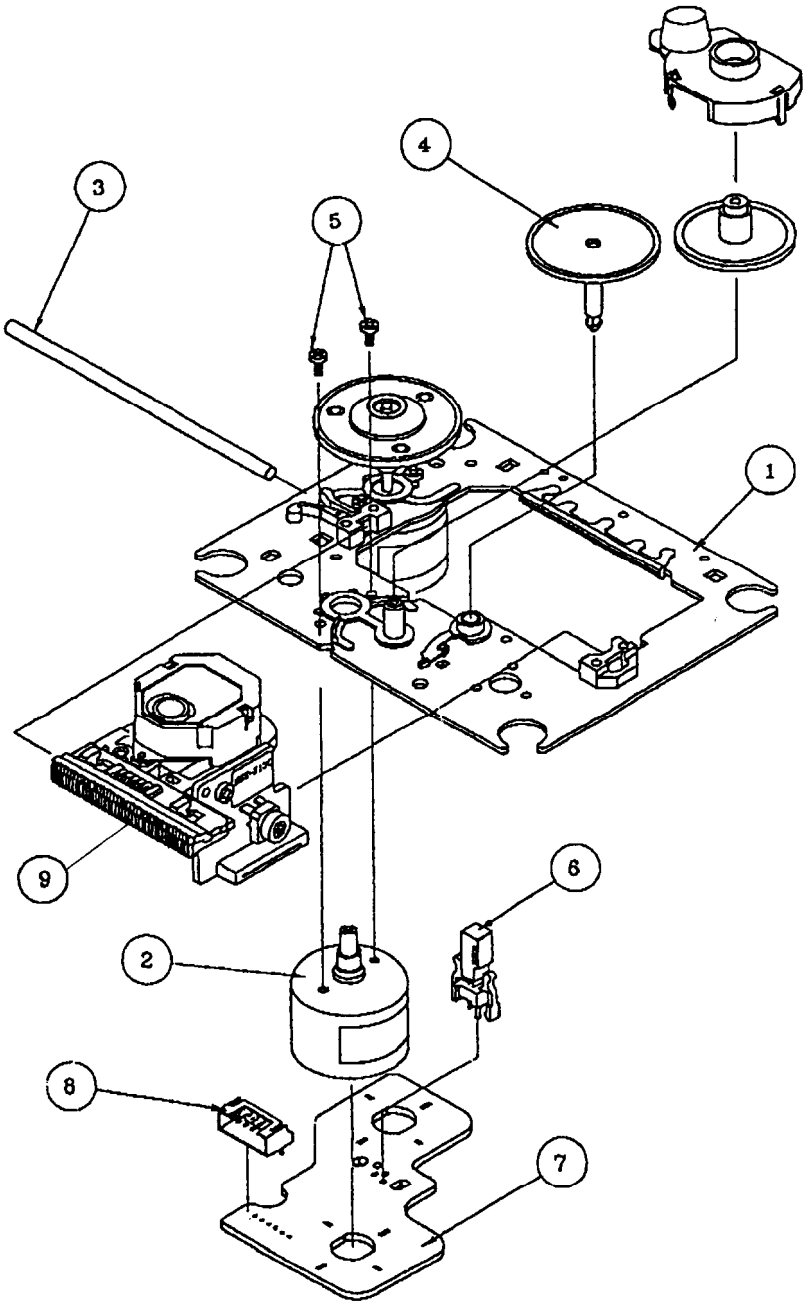
PICK-UP DRIVE UNIT



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-5880-5A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q101	22241093	CXA1782BQ
Q105	22241066	BA6398FP
Q107	22240771	BA6191
Q108	22240239	TA7291S
Q201	22241094	MPD78043FGF-026
Q205	22240018	M51943A(M51943ASL)
Q301	22241096	CXD2507AQ
Q302	22241074R9	SM5877AM
Q401	222956	NJM2068D-D
Q901	222780075	78M07HF
Q902	222780055	78M05HF
	Transistors	
Q102,Q903	2211504	2SA950-Y
Q103,Q109,Q202	2212600 or	DTA124ES or
	2215780	KRA103M
Q106	2211255 or	2SC1815-GR or
	2215985	KTC3198-GR
Q110,Q203	221282	DTC144ES
	2215820 or	KRC104M or
Q204	2211455 or	2SA1015-GR or
	2215975	KTA1266-GR
Q403-Q406	2211706 or	2SD655-F or
	2216002	KTC2874-B
	Photo coupler	
Q210	24120038	GP1F32T
	Diodes	
D10,D201,D203,	223205 or	1SS270A or
D205,D206	223163	1SS133
D102,D202,D401	224470562	MTZJ5.6B, Zener
D908	224473004	MTZJ30D, Zener
D909	224470512	MTZJ5.1B, Zener
	Capacitors	
C101,C102,C108,	354721019	100 μ F, 6.3V, Elect.
C126,C202,C211,		
C308		
C105,C109,C110,	374721034	0.01 μ F±5%, 50V, Plastic
C120,C129,C138,		
C304,C306		
C106,C112,C131	374722224	2200pF±5%, 50V, Plastic
C107	374723334	0.033 μ F±5%, 50V, Plastic
C111,C114	374724744	0.47 μ F±5%, 50V, Plastic
C113	374721024	1000pF±5% , 50V, Plastic
C115,C116,C119	374721044	0.1 μ F±5%, 50V, Plastic
C117	354780479	4.7 μ F, 50V, Elect.
C122	354763309	33 μ F, 35V, Elect.
C123	354780339	3.3 μ F, 50V, Elect.
C125,C127,C128,	354744709	47 μ F, 16V, Elect.
C135,C421,C422,		
C910-C912		
C205,C303	354784799	0.47 μ F, 50V, Elect.
C206	354782299	0.22 μ F, 50V, Elect.
C207,C913	354721029	1000 μ F, 50V, Elect.
C215,C216	354781019	100 μ F, 50V, Elect.
C301	374722234	0.022 μ F±5%, 50V, Plasti
C302	374721524	1500pF±5%, 50V, Plastic
C311-C313	354722219	220 μ F, 6.3V, Elect.
C314	354724719	470 μ F, 6.3V, Elect.
C316,C317	354741009	10 μ F, 16V, Elect.
C401,C402,C411,	374723924	3900pF±5% , 50V, Plastic
C412		
C403-C406,	374721824	1800pF±5% , 50V, Plastic
C409,C410		
C407,C408	374724714	470pF±5% , 50V, Plastic
C413,C414	374722724	2700pF±5% , 50V, Plastic
C415,C416	354781009	10 μ F, 50V, Elect.
C417-C420,	374722734	0.027 μ F±5%, 50V, Plastic
C423		
C916,C917	354764709	47 μ F, 35V, Elect.
	Resistors	
R108,R126	5210263	N06HR20KBC, Trim
R217	49163104405	RM1/10IJ-100K *5, R net
	Ceramic lock	
X201	3010229	EFOEC004A4
	Resonator	
X301	3010159	AT-38-169 , Crystal
	Holder	
X301A	27190751	
	Choke coil	
L101	233454K100	NCH-1452 100K
	Sockets	
P101	25051768	NSCT-16P1555
P105A	25051851	NSCT-7P1638
P202A	25051836	NSCT-29P1623
	Plugs	
P102A,P104A	25055150	NPLG-6P134
P103A	25055149	NPLG-5P133
P106	25055038	NPLG-2P29
P107	25055045	NPLG-4P33
	Jacks	
P201	25045481 or	NPJ-2PDBL299 or
	25045330	NPJ-2PDBL184
P401	25045422	NPJ-2PDBL247
	Radiators	
Q901A,Q902A	27160145-1	RAD-51

DISPLAY CIRCUIT PC BOARD (NADIS-5881-5A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	FL tube	
Q701	212132	5-ST-19GK
	Remote sensor	
Q702	24130011 or	PIC-12043TE2 or
Q702 or	241330	PIC-26043TE2
	Capacitor	
C701	353721019	100 μ F, 6.3V, Elect
	Switches	
S701-S719	25035652 or	NPS-111-S604 or
	25035652MAT or	NPS-111-S624 or
	25035704	NPS-111-S667
	Holder	
E701	27190941	(FL)
	Socket	
P202B	25051873	NSCT-29P1660

POWER SUPPLY CIRCUIT PC BOARD (NAPS-5882-5A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D901-D907	22380260 or	⚠ RL1N4003 or
	22380035	⚠ GP104003E

CIRCUIT NO.	PART NO.	DESCRIPTION
	Coil	
L901	231222	⚠ NCH-3454
	Capacitors	
C901	354744729S	4700 μ F, 16V,Elect
C902	393342227S	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	
P901A	25050273	NSCT-9P101
P902A	25050269	NSCT-5P97
	Plug	
P903	25055676	NPLG-2P632

POWER SWITCH PC BOAED (NASW-5883-5A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitor	
C950	3500191	⚠ DE7150F-103M , AC400V/125V , IS C
	Switch	
S901	25035636	⚠ NPS-111-L590P , Power

POSITION SENSOR PC BOARD (NAETC-5854-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Photo interrupters	
Q001	24190041	SG-207
Q002	24190046	GP2S28
	Capacitors	
C001,C003	354744709	47 μ F, 16V, Elect
C002	352942206	22 μ F, 16V, Elect
	Sockets AS	
P001A	2002390605UL	NSAS-6P0597
P103	2009990447UL c	NSAS-10P0596 or
	2009990594UL	NSAS-10P-0807
P104	2009990446UL c	NSAS-11P0595 or
	2009990593UL	NSAS-11P-0806
	Sockets	
P105B	25051851 or	NSCT-7P1638 or
	25050913	NSCT-7P700

CHUCKING MOTOR PC BOARD (NAETC-5855-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitor	
C004	352942206S	22 μ F, 16V, Elect

CHUCKING SWITCH PC BOARD (NAETC-5857-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switch	
S001	25065491	NMS-1223

ROULETTE IN/OUT PC BOARD (NASW-5858-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switch	
S002	25065375	NMS-1219

DISC SENSOR PC BOARD (NAETC-5859-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Photo interrupters	
Q003	24190041	SG-207
	Plug	
P001B	25055367	NPLG-3P350

INLET PC BOARD (NAPS-6711-5A)

	Sockets	
P903B	2009990531UL	⚠ NSAS-2P0696 , Inlet terminal
	Terminal	
P903A	25055960	⚠ NPLG-2P913 , AC inlet

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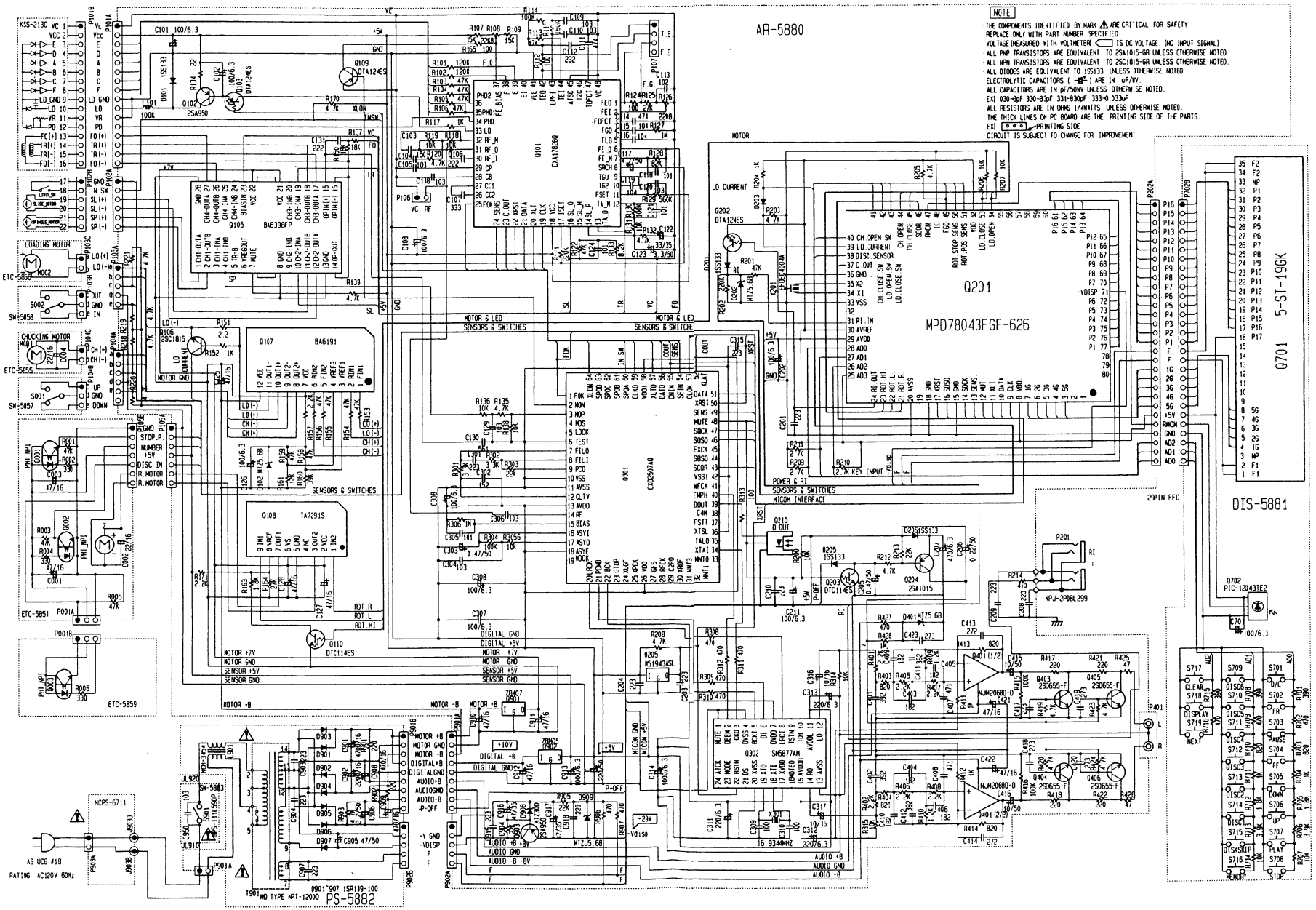
SCHEMATIC DIAGRAM



ADJUSTMENT PROCEDURES

Instruments required

Dual trace oscilloscope, 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.

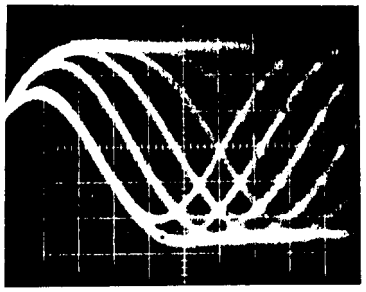
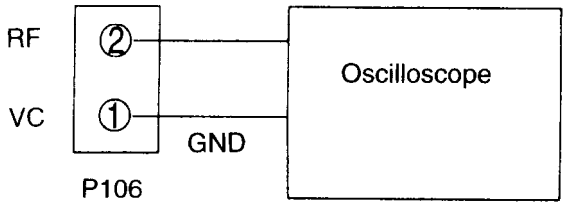


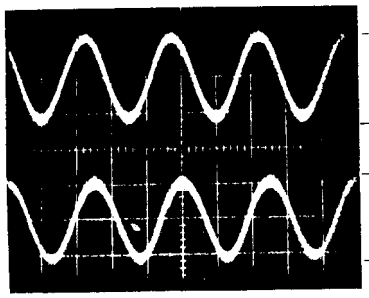
Photo 1

0.2V/div
0.2μs/div



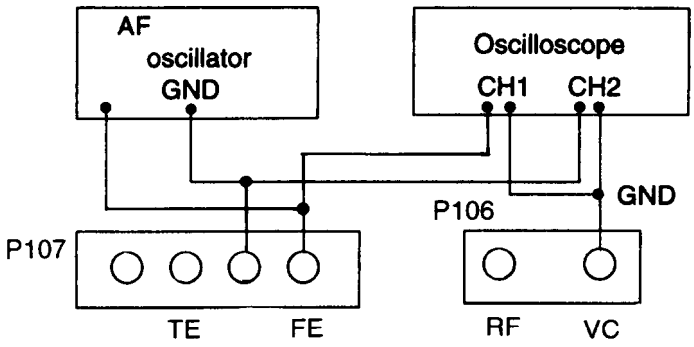
2. Focus gain adjustment

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.



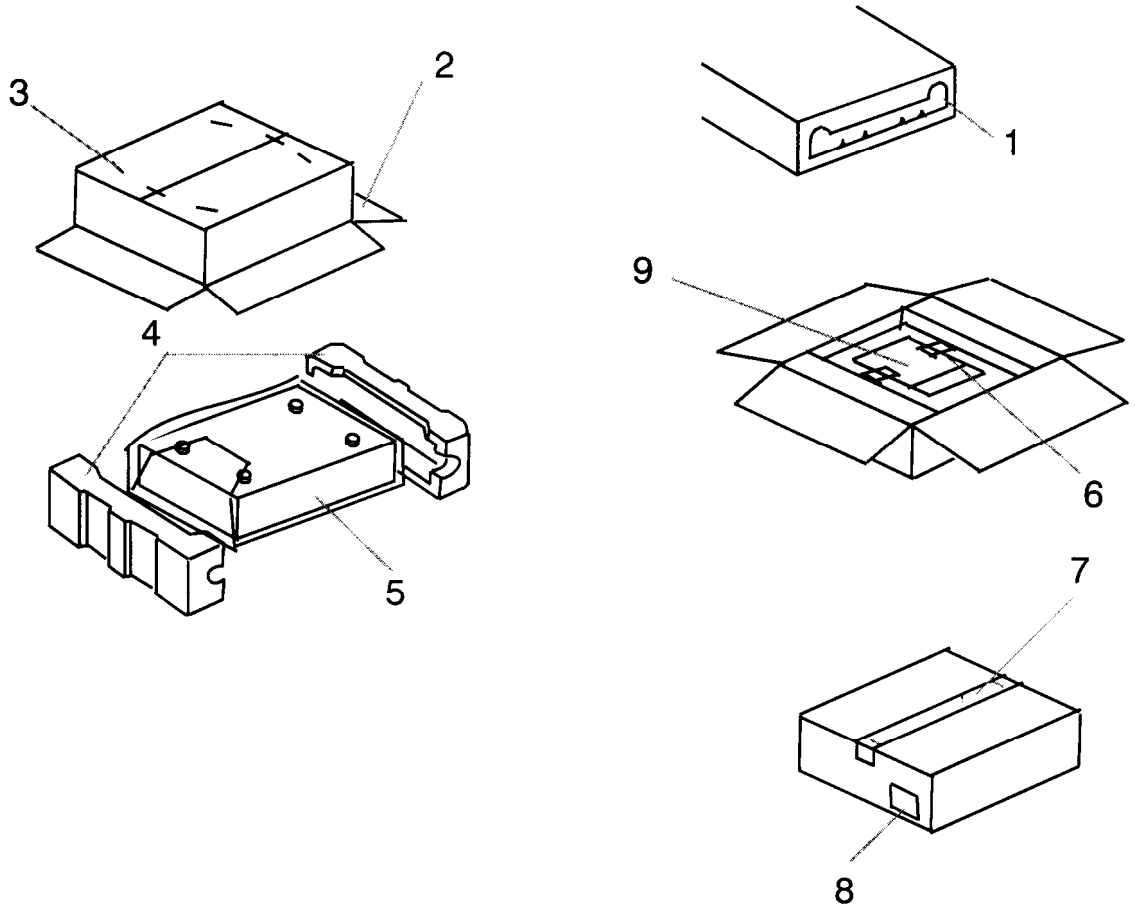
0.5V/div
0.5ms/div

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	Sheet (Door)
2	29053676	Carton box
3	282321	Staple
4	29091774A	Pad assy
5	29100153	Poly bag, 1020 x 720
6	261504	Paper tape
7	29110098	PP tape, W50 3M NO 371
8	29362653	Label, UPC
	29100097-1A	Poly bag, 350 x 250
	29095892	Sheet

REF. NO.	PART NO.	DESCRIPTION
9	**Accessory bag ass'y**	
	29355299	Instruction sheet
	29360840	Label (sheet)
	29095865	Sheet (INTEGRA)
	2010381 or 2010326	Audio connection cable
	29342934	E, Instruction manual
	2010200	RI cable
	24140435	RC-435C, Remote controller
	3010054	UM-3, Battery
	29365080B	Warranty card
	253297KAW	AS-UC-2, AC cord

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