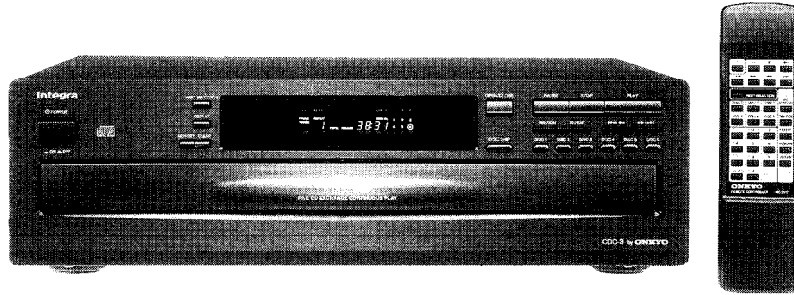


# Integra. SERVICE MANUAL

## COMPACT DISC CHANGER

### MODEL CDC-3



Black model

#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\Delta$  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 x H x D):	435x 131x 433mm (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 without notice.

**ONKYO**<sup>®</sup>  
**AUDIO COMPONENTS**

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## 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, carefully 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 impedance lower than  $10M\Omega$ ) 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 EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

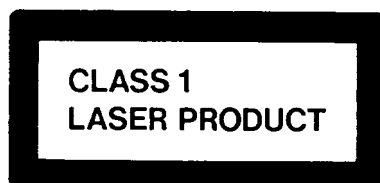
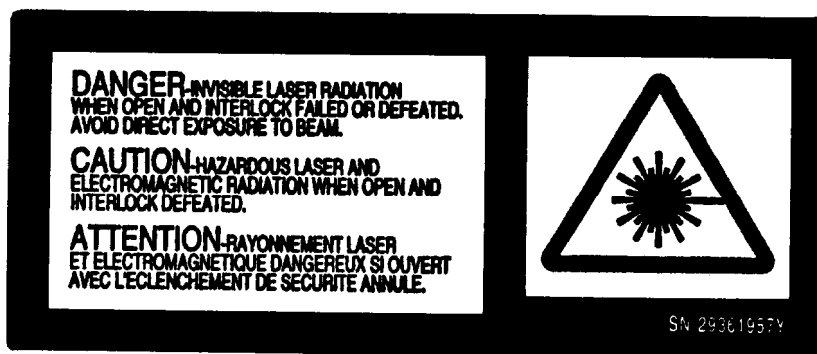
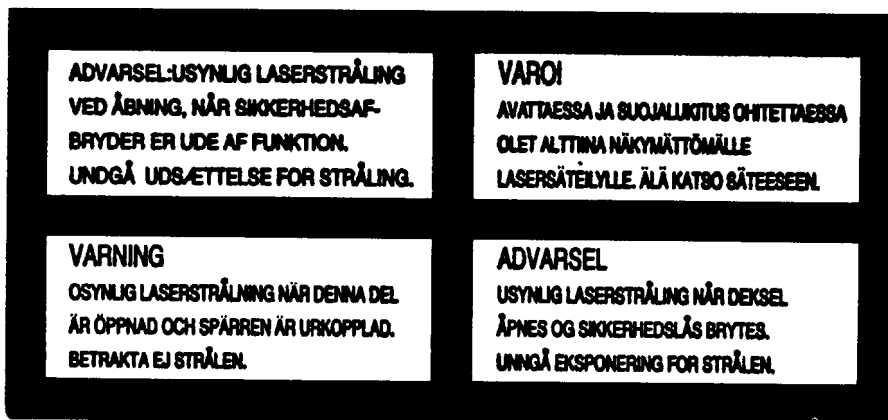
**Laser Diode Properties**

- 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.

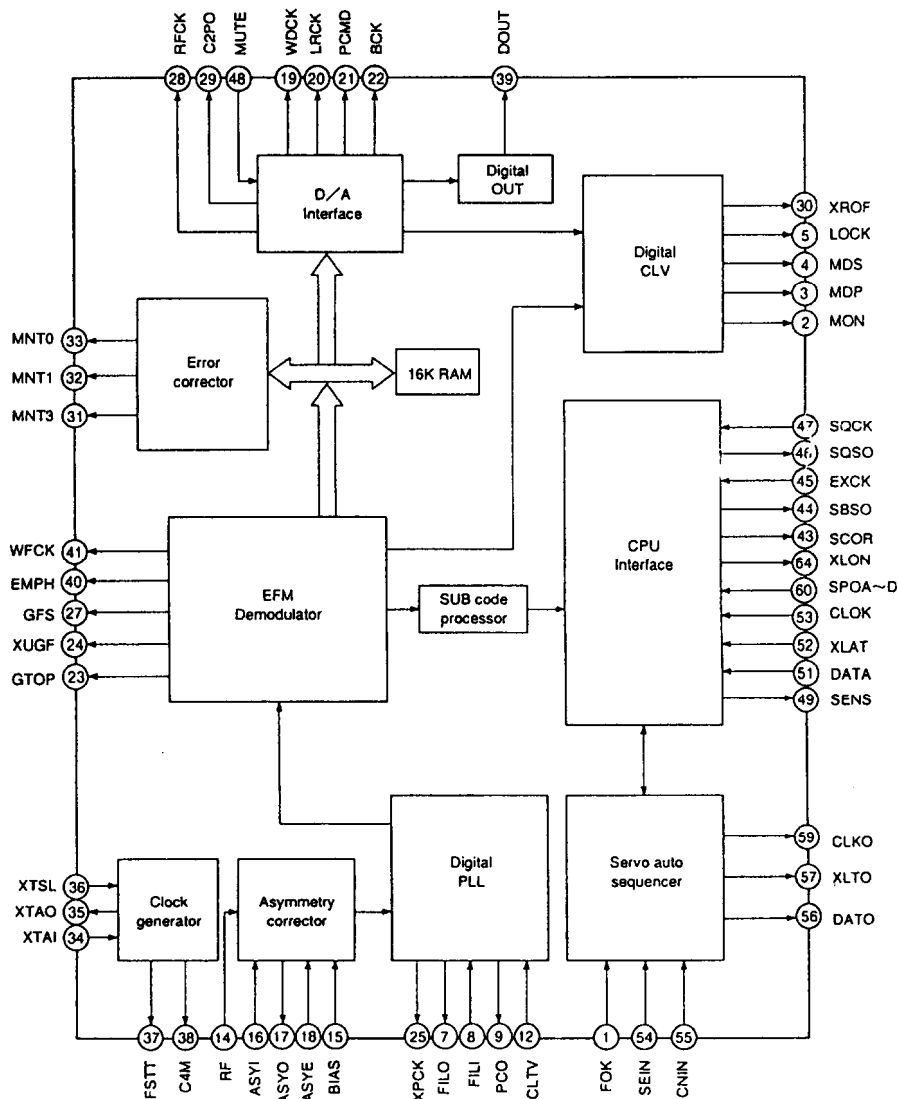
## LASER WARNING LABEL

These labels are located on the mechanism.

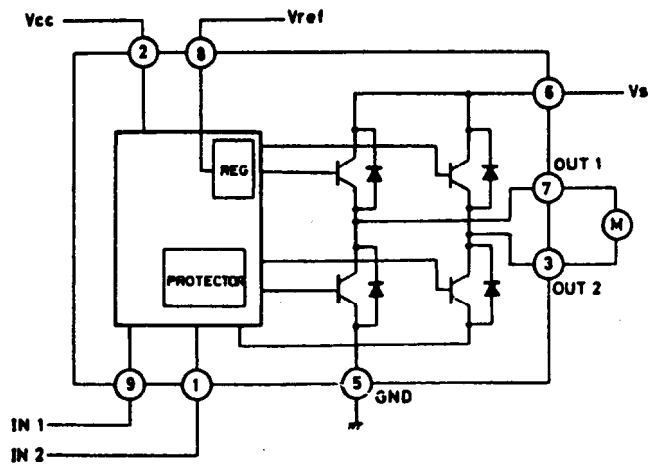


# IC BLOCK DIAGRAMS AND DESCRIPTIONS

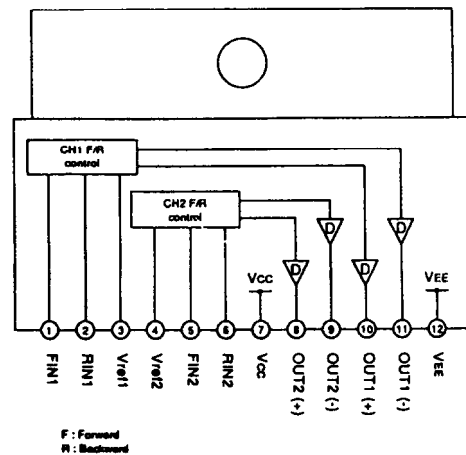
## CXD2507AQ (Digital Signal Processor)



## TA-7291S (Motor Drive)

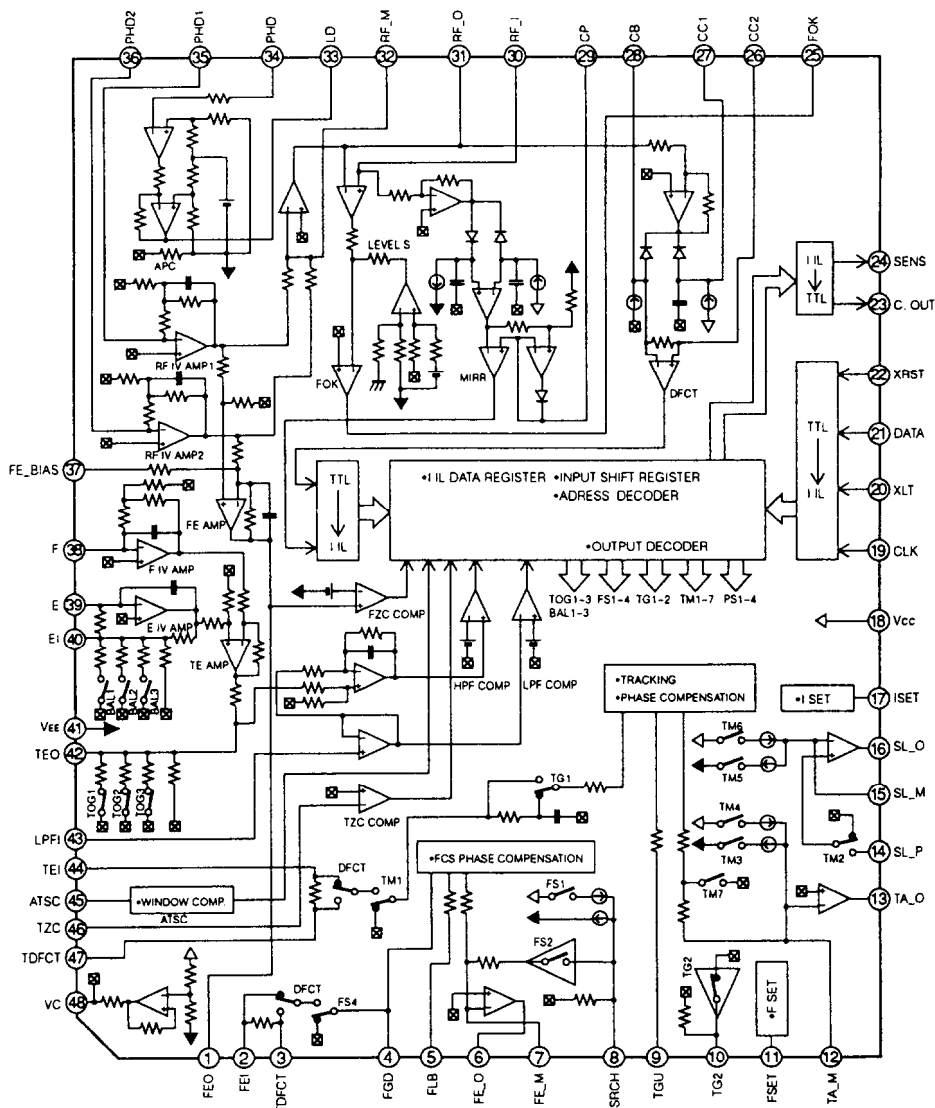


## BA6191 (Motor Drive)



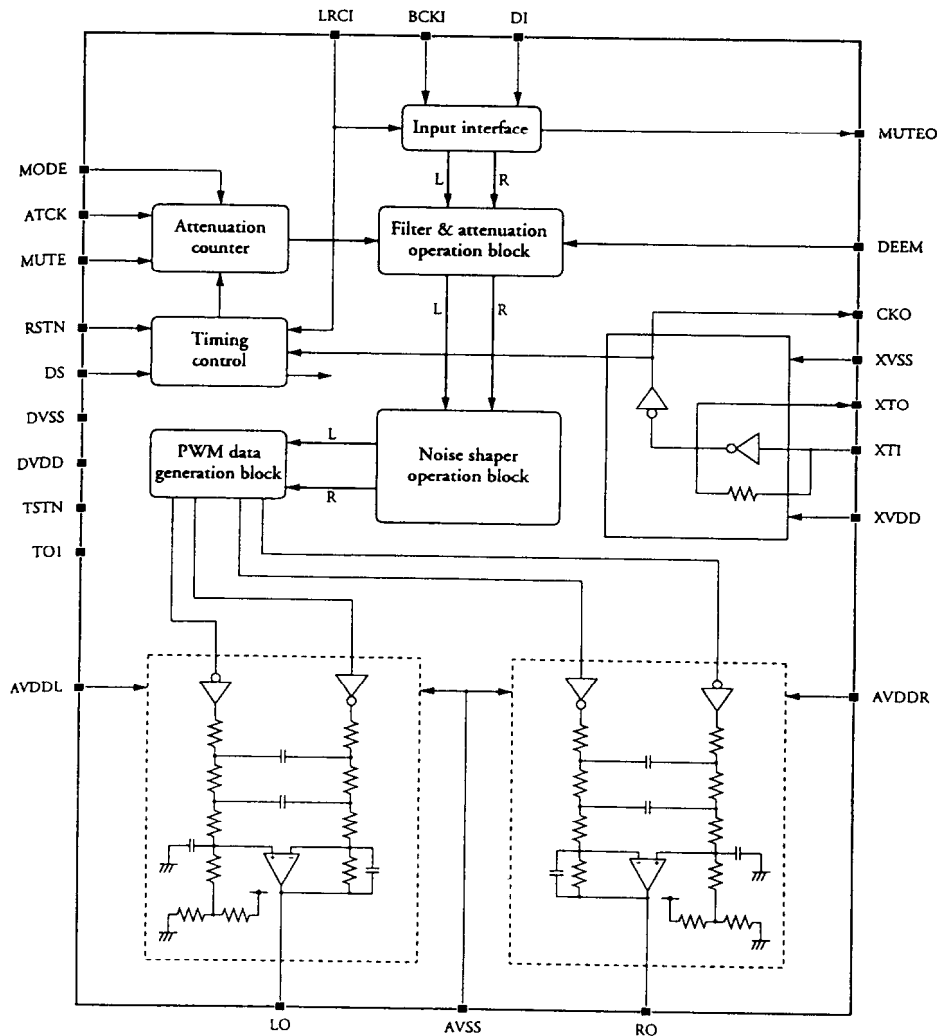
NO.	SYMBOL	I/O	DESCRIPTION
1	FOK	I	Foucs OK input
2	MON	O	Spindle motor ON/OFF control output
3	MDP	O	Spindle motor servo control
4	MDS	O	Spindle motor servo control
5	LOCK	O	H when GFS is the high level
6	TEST	I	Test terminal
7	FILO	O	Filter output for master PLL.
8	FILI	I	Filter input for master PLL.
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 $f=2F_s$ .
20	LRCK	O	D/A interface for 48 bits slot. LR clock $f=F_s$ .
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	C2PO 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 terminal (+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.
4	FGD	I	Connect the capacitor between GND and this pin when the high frequency gain focus servo is dropped.	24	SENS	O	This terminal outputs FZC, DFCT, TZC, Gain and BAL to according command from the microprocessor.
5	FLB	I	Input terminal for the low frequency boost of focus servo.	25	FOK	O	Focus OK comparator output terminal.
6	FE O	O	Focus driver output terminal.	26	CC2	I	Defect bottom hold input terminal from CC1.
7	FE M	I	Inversion input terminal of focus amplifier.	27	CC1	O	Defect bottom hold output terminal.
8	SRCH	I	Time constant terminal to make the focus search waveform.	28	CB	I	Defect bottom hold capacitor connection terminal.
9	TGU	I	Tracking high frequency changeover input terminal.	29	CP	I	Mirror hold capacitor connection terminal.
10	TG2	I	Tracking high frequency changeover input terminal.	30	RF I	I	RF summing amplifier input terminal.
11	FSET	I	Peak setting input of phase correction of focus tracking.	31	RF O	O	RF summing amplifier output terminal.
12	TA M	I	Inversion input terminal of tracking amplifier.	32	RF M	I	Inversion input terminal of RF summing amplifier.
13	TA O	O	Tracking drive output terminal.	33	LD	O	APC amplifier output terminal.
14	SL P	I	No-inversion input terminal of sled amplifier.	34	PHD	I	APC amplifier input terminal.
15	SL M	I	Inversion input terminal of sled amplifier.	35	PHD1	I	Inversion input terminal of RI I-V amplifier.
16	SL O	O	Sled drive output terminal.	36	PHD2	I	Inversion input terminal of RI I-V amplifier.
17	ISET	I	This terminal is flowed the current so that the focus search, tacking jump and sled kick height is decided.	37	FE BIAS	I	Bias adjust terminal of focus error amplifier.
18	VCC	I	Power supply terminal.	38	F	I	Inversion input terminal of F I-V amplifier.
19	CLK	I	Serial data transfer clock input from microprocessor.	39	E	I	Inversion input terminal of E I-V amplifier.
20	XLT	I	Latch input terminal for microprocessor.	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.

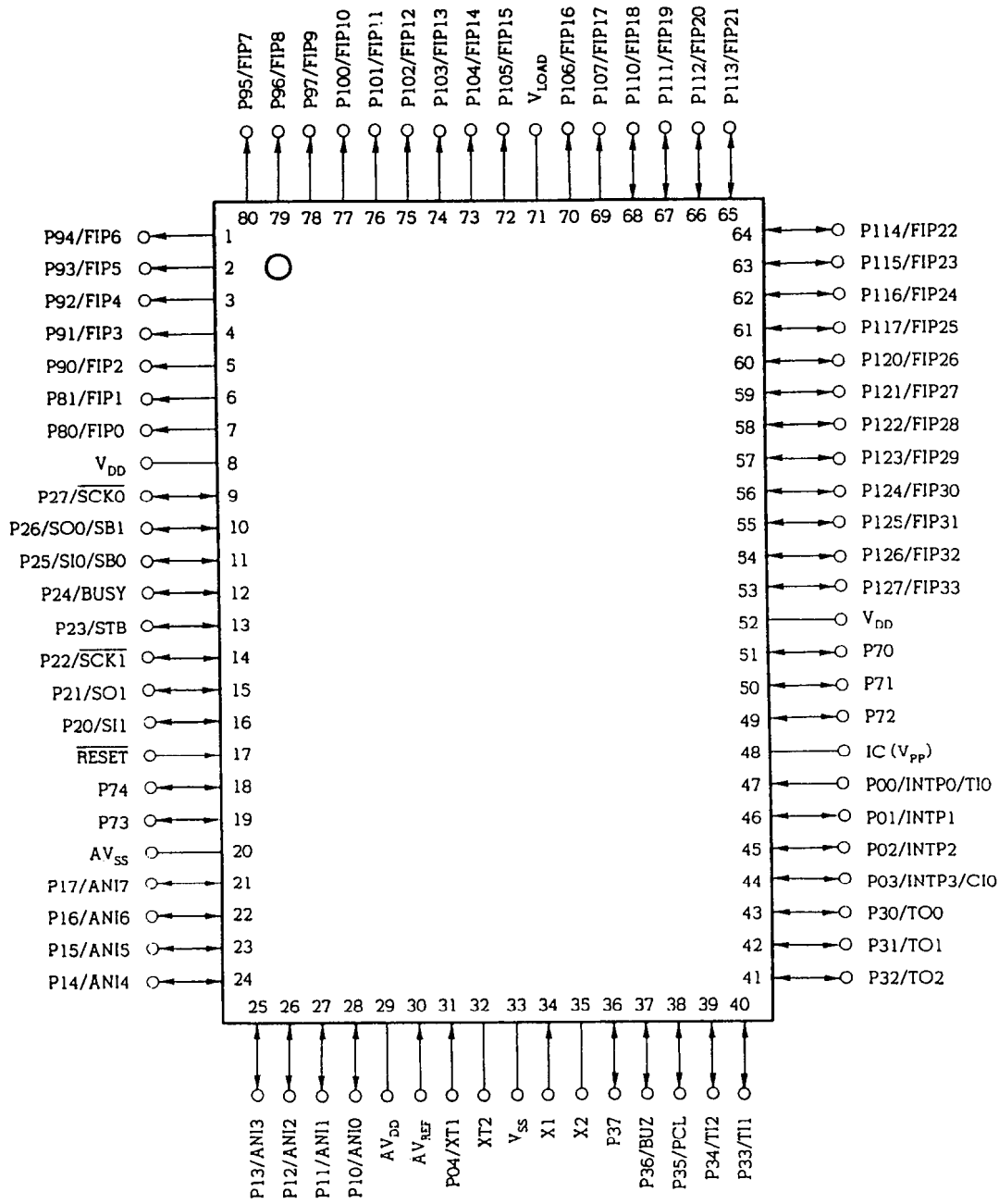
# SM5877AN (DAC)



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	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	MUTE0	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 ( $\mu$ PD78043FGF)





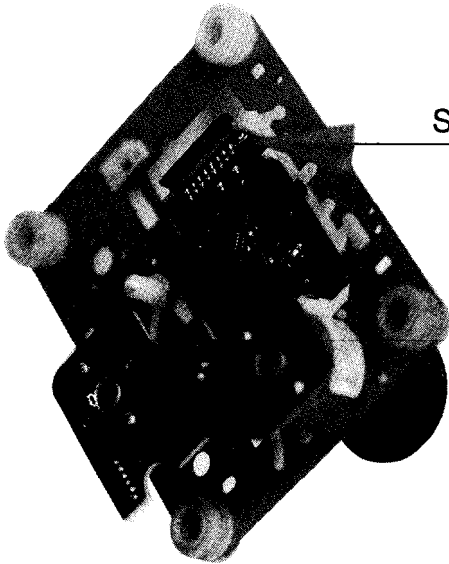
Pin No.	Symbol	I/O	Description
1~2			Not used.(Open)
3~7	1G~5G	O	Grid output terminals for FL tube.
8	VDD	I	Power supply terminal. +5V.
9	CLK	O	Clock output terminal to signal processor IC.
10	DATA	O	Data output terminal to signal processor IC.
11	XLT	O	Latch output terminal to signal processor IC.
12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

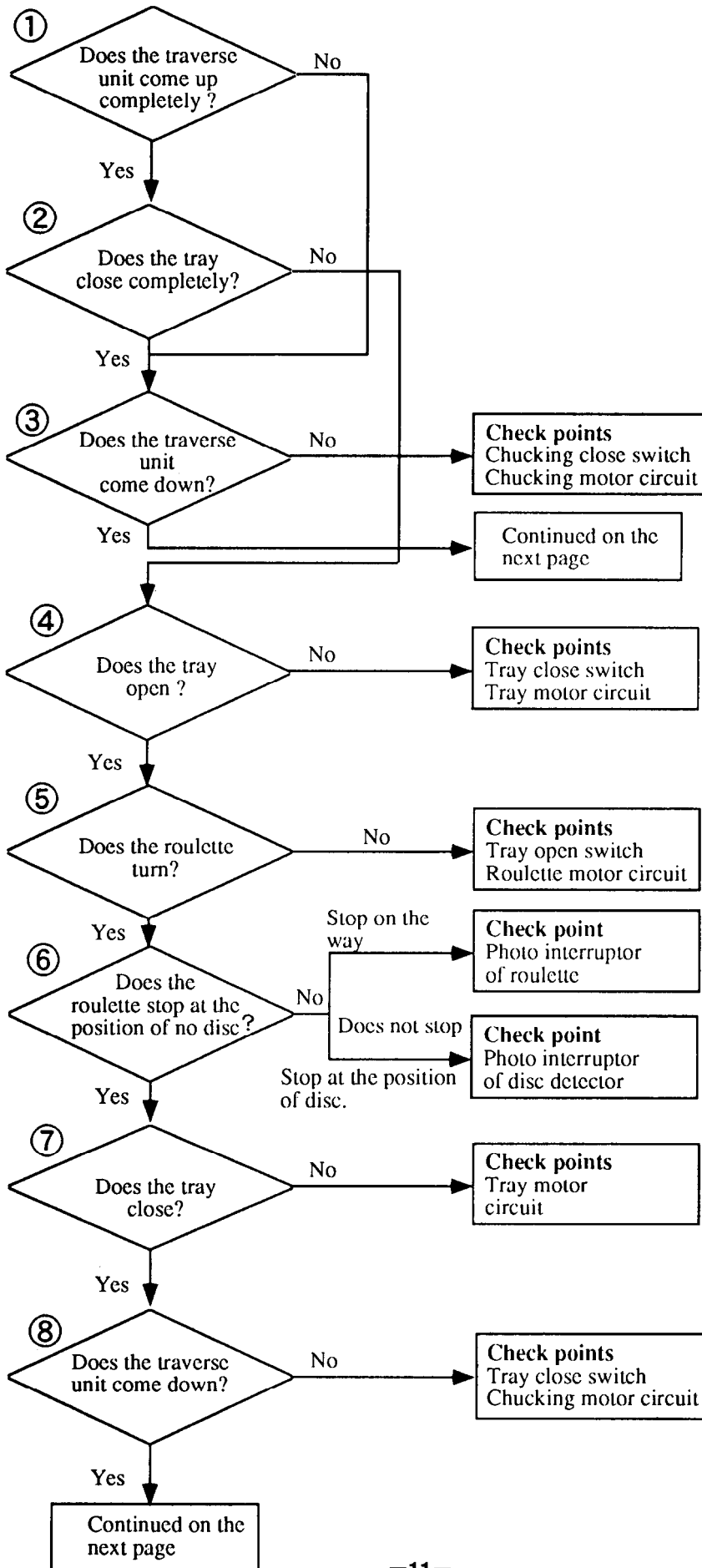
During repair, carefully take the following precautions.

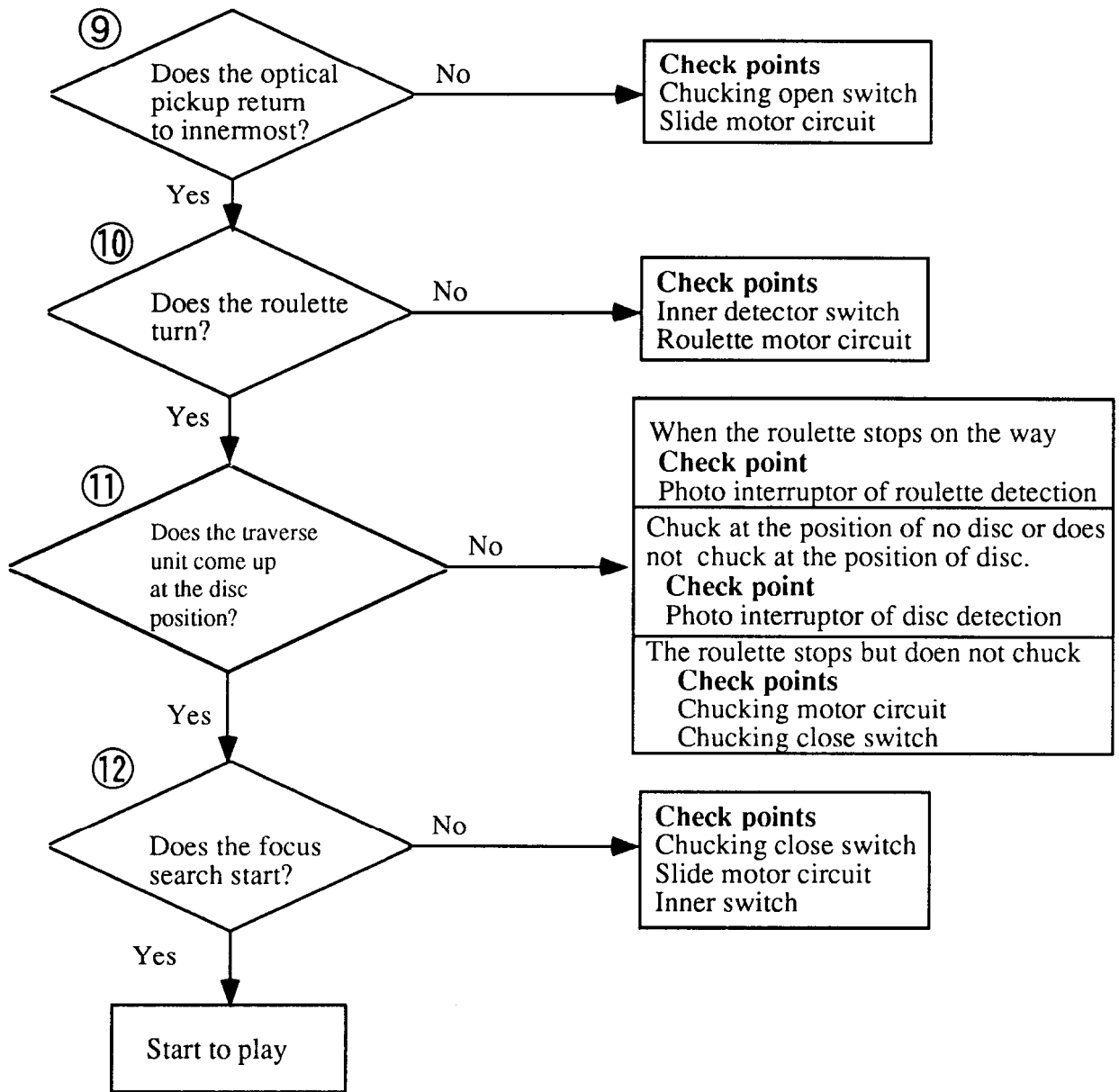
1. When replacing the optical pickup, first short the LD terminals and remove the connector. Also, when attaching the new optical pickup, after attaching the connector, unsolder the LD terminals.
2. Do not touch the optical pickup object lens with the hands.



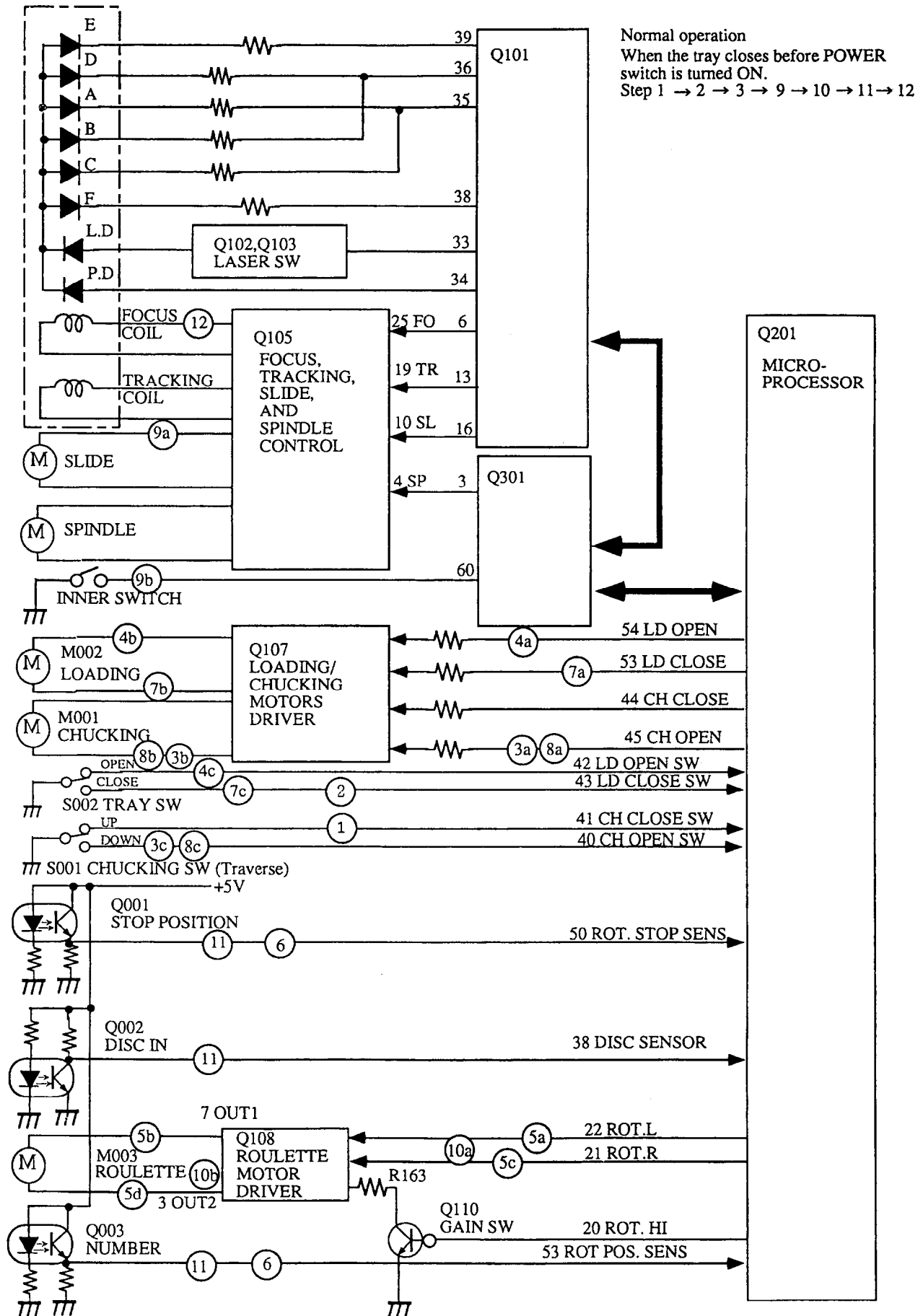
Short pattern for LD protection.

# TROUBLE SHOOTING





# 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.

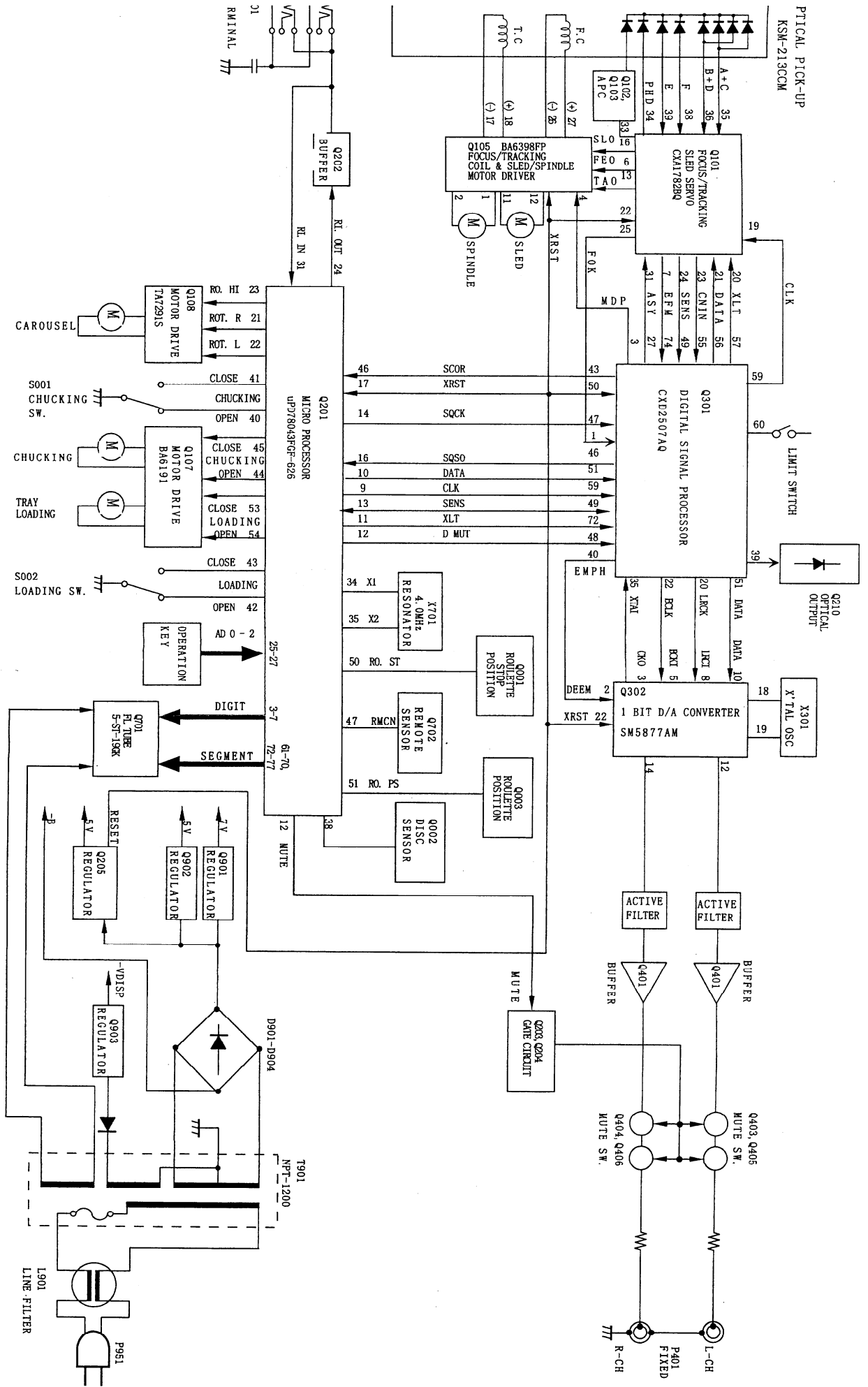
In these operation Error Message is shown in the display if any error occurs in the mechanism or the servo control. And then you can find the failure point almost exactly in this mode before you repair rejected units.

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.**

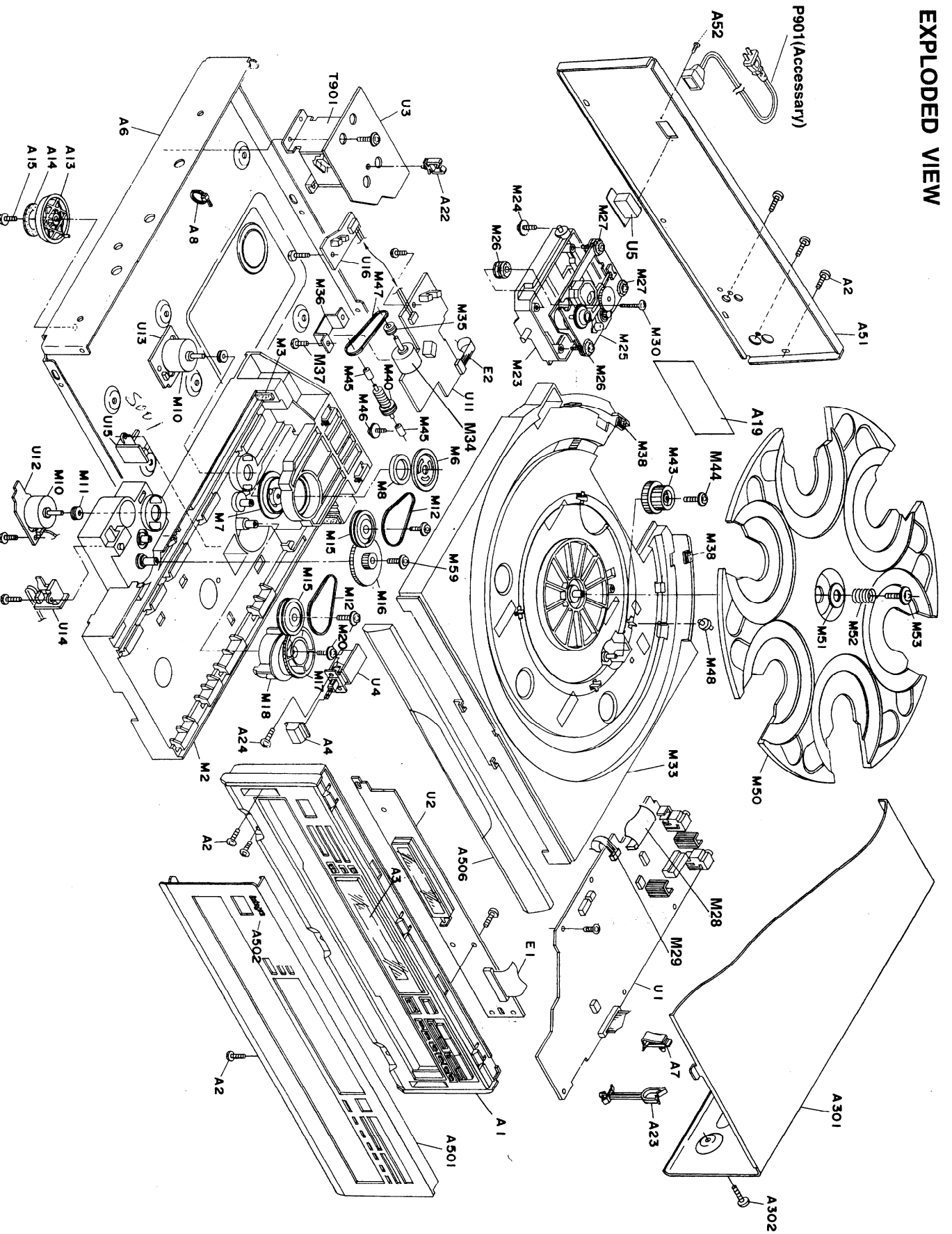
1. Er : INITIALIZE ERROR : Error occurred in Mechanism when it is initialized. ( Error points are displayed in Heat-running Mode. )
2. rn : RAM NG : RAM for File is not initialized.

# LOCK DIAGRAM



# CHASSIS EXPLODED VIEW

CDC-3 CDC-3

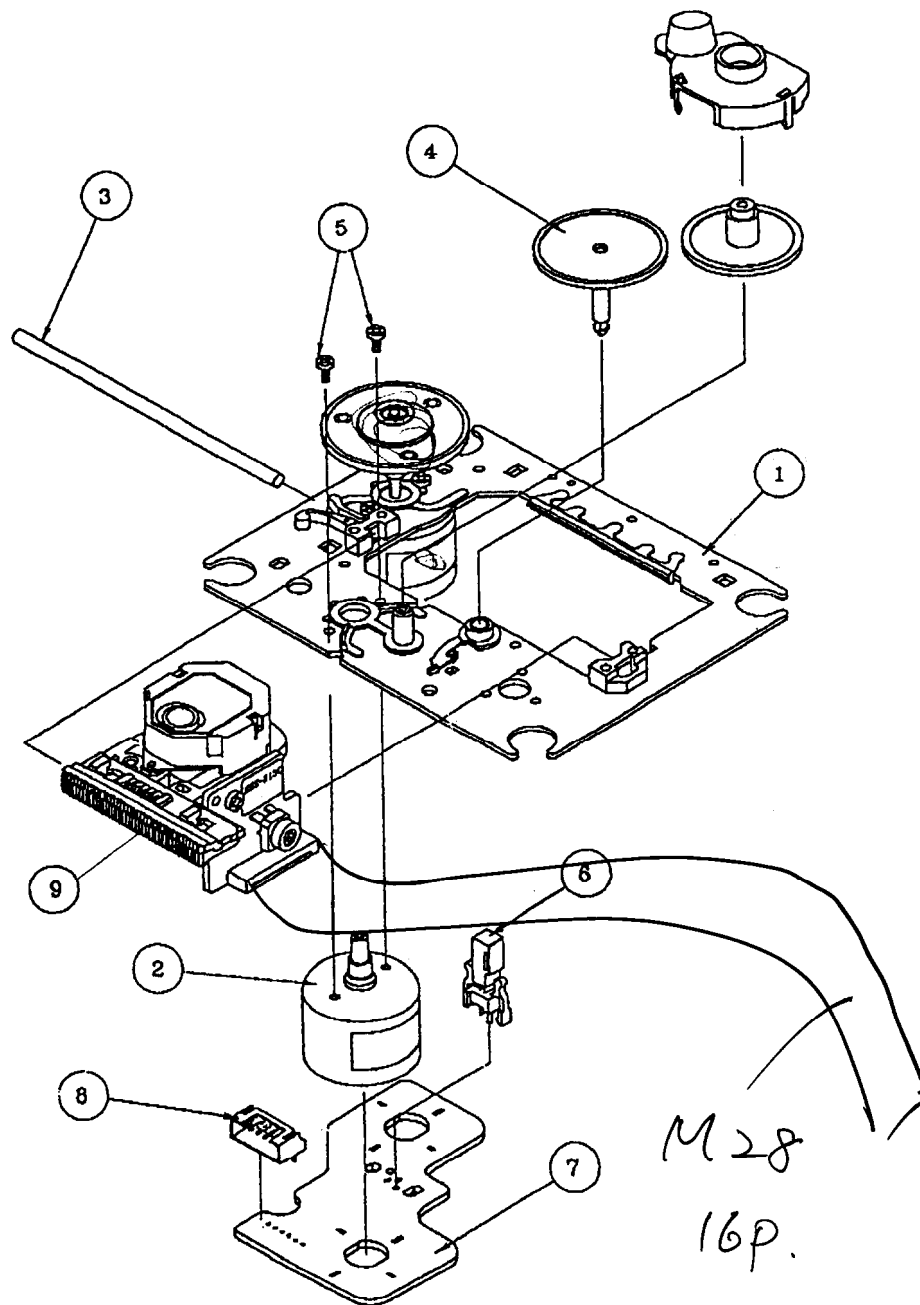




REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A1	27110990B	Front bracket	U11	1H401554-1	NAETC-5854-1,Position sensor PC board ass'y
A2	838130088	3TTB+8B,Self-tapping screw	U12	1H401555-1	NAETC-5855-1,Chucking motor PC board ass'y
A3	28191859	Clear plate	U13	1H401556-1	NAETC-5856-1,Loading motor PC board ass'y
A4	28325465	Knob, Power	U14	1H401557-1	NASW-5857-1,Chucking switch PC board ass'y
A5	27100327B	Chassis	U15	1H401558-1	NASW-5858-1,Roulette position PC board ass'y
A7	27191000	MFS-1000,Holder	U16	1H401559-1	NAETC-5859-1,Disc sensor PC board ass'y
A8	260208	Wire tie	M2	24840109B	Rail
A13	27175316B	Leg	M3	28141337	Cushion
A14	28141332	Cushion	M4	28141384	0.1 * $\phi$ 24.5 * $\phi$ 18,Cushion
A15	831430088	3TTW+8B(BC), Self-tapping screw	M6	24830004Y	York
A19	29361957	Label, Caution	M7	24824006Y	Cap
A22	27300833-2	WS-2NS,Clamp	M8	24832006Y	Magnet
A23	27301779	HL-38-0,Clamp	M10	24804015Y	RF-500TB-14415,Motor
A24	838430107	3TTB+10S(BC), Self-tapping screw	M11	24810028Y	Pulley
A51	27122641	Rear panel	M12	24816010AY	Belt
A52	838440089	4TTB+8C(BC),Self-tapping screw	M15	24810040Y	Gear, pulley
A301	28184680A	Top cover	M16	24810039AY	Gear, load
A302	838430088	3TTB+8B(BC),Self-tapping screw	M17	24810041Y	Cam gear A
A501	27212125	Front panel	M18	24810042Y	Cam gear B
A502	28135275	Badge	M20	831430088	3TTW+8B(BC), Self-tapping screw
A503	838130088	3TTB+8B(BC),Self-tapping screw	M23	24802024Y	Chassis, sub
A506	28148365	Door	M24	24840111	Screw
E1	204329005Y	NCFC3-29005, Flexible flat cable	M25	24800017Y	KSM-213CCM, Mechanical unit
E2	204307007	NCFC3-07007,Flexible flat cable	M26	24818013Y	Insulator A
P951	253295KAW $\Delta$	AS-UC-1#18, Power supply cord	M27	24818014Y	Insulator B
T901	2300992Y $\Delta$	NPT-1200D,Power transformer	M28	204416004Y	NCFC4-16004, Flexible flat cable
U1	1H420580-4	NAAR-5880-4,Main circuit PC board ass'y	M29	2009990464	NASA-12P618,Socket
U2	1H420581-4	NADIS-5881-4, Display circuit PC board ass'y	M30	24840111	Screw
U3	1H420582-4	NAPS-5882-4,Power supply circuit PC board ass'y	M33	24840107D	Tray
U4	1H420583-4	NASW-5883-4,Power switch PC board ass'y	M34	24804021Y	RF-310TA-11400, Motor
U5	1H420511-4	NAPS-6711-4,AC inlet terminal PC board ass'y	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  $\Delta$  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	CIRCUIT NO.	PART NO.	DESCRIPTION
		<b>ICs</b>			
Q101	22241093	CXA1782BQ	C117	354780479	4.7 μ F,50V,Elect.
Q105	22241066	BA6398FP	C119	374721044	0.1 μ F±5%,50V,Plastic
Q107	22240771	BA6191	C122	354763309	33 μ F,35V,Elect.
Q108	22240239	TA7291S	C123	354780339	3.3 μ F,50V,Elect.
Q201	22241094	MPD78043FGF-026	C125,C127	354744709	47 μ F,16V,Elect.
Q205	22240018	M51943ASL	C128,C135	354744709	47 μ F,16V,Elect.
Q301	22241096	CXD2507AQ	C129,C138	374721034	0.01 μ F±5%,50V,Plastic
Q302	22241074R9	SM5877AM	C131	374722224	2200pF±5%,50V,Plastic
Q401	222956	NJM2068D-D	C202,C211	354721019	100 μ F,6.3V,Elect.
Q901	222780075	78M07HF	C205,C303	354784799	0.47 μ F,50V,Elect.
Q902	222780055	78M05HF	C206	354782299	0.22 μ F,50V,Elect.
		<b>Photo coupler</b>	C207	354721029	1000 μ F,6.3V,Elect.
Q210	24120038	GP1F32T	C215,C216	354781019	100 μ F,50V,Elect.
		<b>Transistors</b>	C301	374722234	0.022 μ F±5%,50V,Plastic
Q102,Q903	2211504	2SA950-Y	C302	374721524	1500pF±5%,50V,Plastic
Q103,Q109	2212600 or	DTA124ES or	C304,C306	374721034	0.01 μ F±5%,50V,Plastic
Q202	2215780	NP KRA103M	C308	354721019	100 μ F,6.3V,Elect.
Q110,Q203	221282 or	DTC144ES or	C311-C313	354722219	220 μ F,6.3V,Elect.
	2215820	NP KRC104M	C314	354724719	470 μ F,6.3V,Elect.
Q106	2211255 or	2SC1815-GR or	C316,C317	354741009	10 μ F,16V,Elect.
	2215985	NP KTC3198-GR	C401,C402	374723924	3900pF±5%,50V,Plastic
Q204	2211455 or	2SA1015-GR or	C403-C406	374721824	1800pF±5%,50V,Plastic
	2215975	NP KTA1266-GR	C407,C408	374724714	470pF±5%,50V,Plastic
Q403-Q406	2211706	2SD655-F	C409,C410	374721824	1800pF±5%,50V,Plastic
		<b>Diodes</b>	C411,C412	374723924	3900pF±5%,50V,Plastic
D101,D201	223205 or	1SS270A or	C413,C414	374722724	2700pF±5%,50V,Plastic
D203,D205	223163	1SS133	C415,C416	354781009	10 μ F,50V,Elect.
D102,D202	224470562	MTZJ5.6B	C417-C420	374722734	0.027 μ F±5%,50V,Plastic
D206	223205 or	1SS270A or	C421,C422	354744709	47 μ F,16V,Elect.
	223163	1SS133	C423	374722734	0.027 μ F±5%,50V,Plastic
D401	224470562	MTZJ5.6B	C910-C912	354744709	47 μ F,16V,Elect.
D908	224473004	MTZJ30D	C913	354721029	1000 μ F,6.3V,Elect.
D909	224470512	MTZJ5.1B	C916,C917	354764709	47 μ F,35V,Elect.
		<b>Oscillator</b>	R108,R126	5210263	N06HR20KBC
X201	3010229	EFOEC004A4,Ceramic			<b>Resistors</b>
X301	3010159	AT-38-169,Crystal			<b>Terminals</b>
		<b>Coil</b>	P201	25045481 or	NPJ-2PDBL299 or
L101	233454K100	NCH-1452 100K		25045330	NPJ-2PDBL184
		<b>Capacitors</b>	P401	25045422	NPJ-2PDBL247
C101,C102	354721019	100 μ F,6.3V,Elect.			<b>Plugs</b>
C105,C109	374721034	0.01 μ F±5%,50V,Plastic	P102A,P104A	25055150	NPLG-6P134
C106,C112	374722224	2200pF±5%,50V,Plastic	P103A	25055149	NPLG-5P133
C107	374723334	0.033 μ F±5%,50V,Plastic	P106	25055038	NPLG-2P29
C108,C126	354721019	100 μ F,6.3V,Elect.	P107	25055045	NPLG-4P33
C110,C120	374721034	0.01 μ F±5%,50V,Plastic			<b>Sockets</b>
C111,C114	374724744	0.47 μ F±5%,50V,Plastic	P101	25051768	NSCT-16P1555
C113	374721024	1000pF±5%,50V,Plastic	P105A	25051851	NSCT-7P1638
C115,C116	374721044	0.1 μ F±5%,50V,Plastic	P202A	25051836	NSCT-29P1623
			P901A	25050273	NSCT-9P101

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Sockets</b>		
P902A	25050269	NSCT-5P97
<b>Radiators</b>		
Q901A,Q902A	27160145-1	RAD-51
<b>Screws</b>		
Q901B,Q902B	838430107	3TTB+10S(BC)
<b>Holder</b>		
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 $\mu$ 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
<b>Diodes</b>		
D901-D907	22380260 or 22380035	RL1N4003 or GP104003E
<b>Coil</b>		
L901	231222 $\triangle$	NCH-3454
<b>Capacitors</b>		
C901	354744729S	4700 $\mu$ F,16V,Elect.
C902	393342227	2200 $\mu$ F,16V,Elect.
C905	354784709	47 $\mu$ F,50V,Elect.
C906	354780229	2.2 $\mu$ F,50V,Elect.
C908,C909	354744719	470 $\mu$ F,16V,Elect.
<b>Sockets</b>		
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 $\triangle$	DE7150F-103M,IS capacitor
S901	25035636 $\triangle$	NPS-111-L590P,Power switch

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

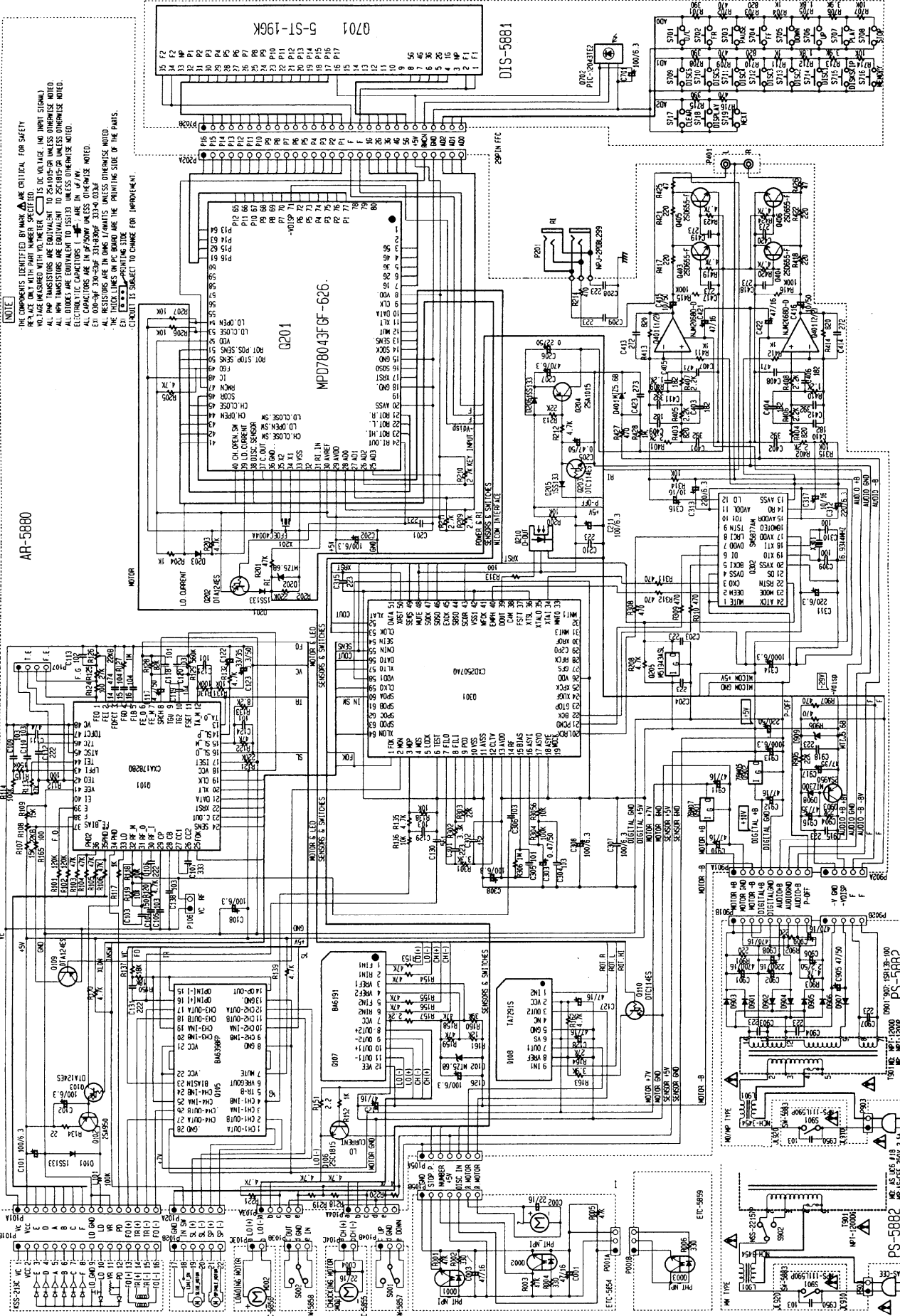
CIRCUIT NO.	PART NO.	DESCRIPTION
P903A	25055960 $\triangle$	NPLG-2P913, Inlet

**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 $\mu$ F,16V,Elect. capacitor
C002	352942206	22 $\mu$ F,16V,Elect. capacitor
C003	354744709	47 $\mu$ F,16V,Elect. capacitor
C004	352942206	22 $\mu$ F,16V,Elect. capacitor
S001	25065491	NMS-1223,Micro switch
S001	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 25050913	NSCT-7P1638 or NSCT-7P700,Socket

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

SCHEMATIC DIAGRAM



BUILDING IN TYPE AC/20V 60/50HZ. RATING NO TYPE AC/20V 60HZ. PART TYPE AC/20V 50HZ.

# 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.

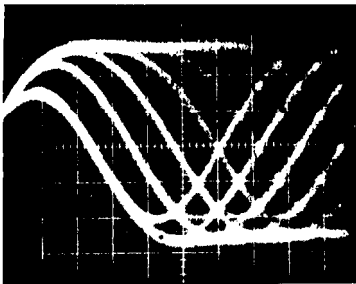
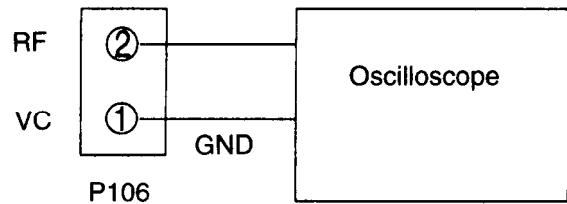


Photo 1

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.

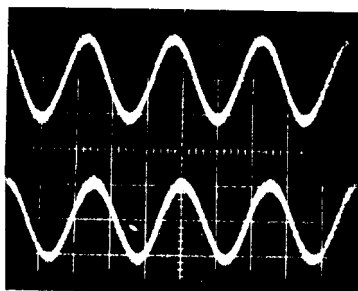
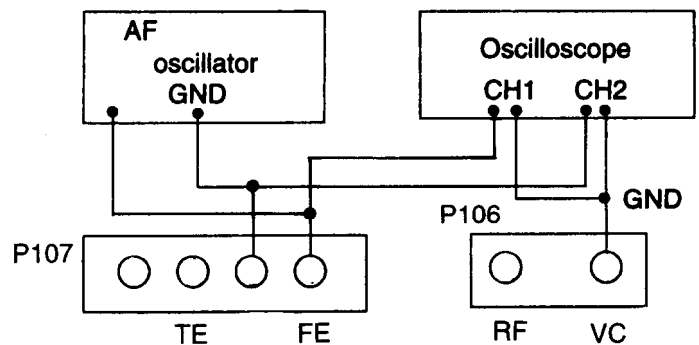


Photo 2

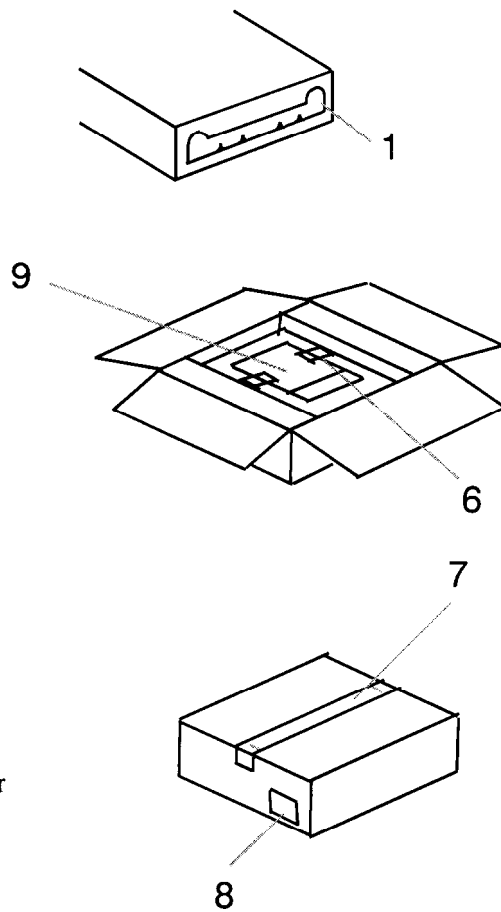
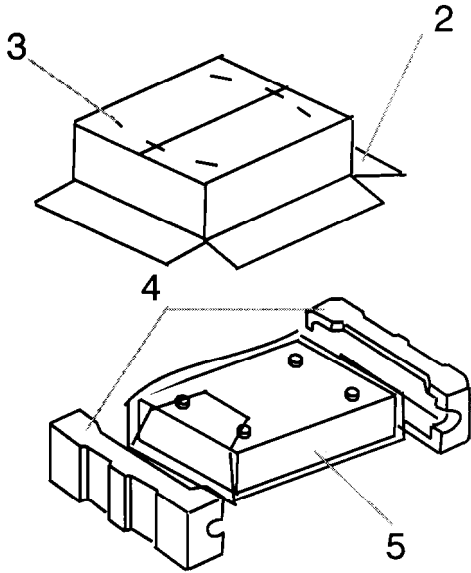
0.5V/div  
0.5ms/div



Adjust R126 until 1kHz components of channels 1 and 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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