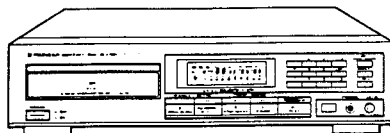


Service Manual



ORDER NO.
ARP1783

COMPACT DISC PLAYER

PD-5300 PD-5300-S

PD-5300 AND PD-5300-S HAVE FOLLOWING VERSIONS :

Type	Applicable model		Power requirement	Export destination
	PD-5300	PD-5300-S		
HEM	○	○	AC220V,240V (switchable) *	European continent
HB	○	—	AC220V,240V (switchable) *	United kingdom
SD	○	—	AC110V,120 - 127V,220V,240V (switchable)	Kingdom of Saudi Arabia and General market
HP	○	—	AC220V,240V (switchable) *	Australia

* Change the primary wiring of the Transformer board assembly.

- This service manual is applicable to the PD-5300/HEM, HB, SD, HP, and PD-5300-S /HEM types.
- For the PD-5300/HB, SD, HP and PD-5300-S/HEM types, please refer to pages 63.
- Ce manuel pour le service comprend les explications en français de réglage.
- Este manual de servicio trata del método ajuste escrito en español.

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1. SAFETY INFORMATION

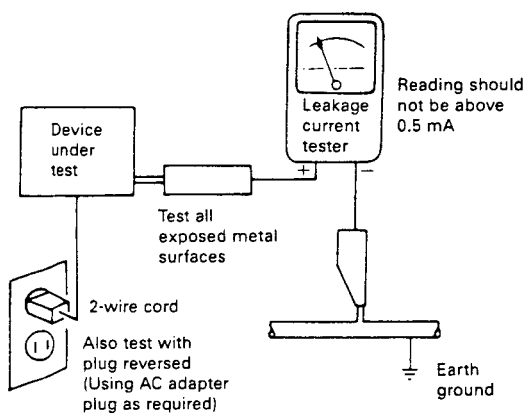
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120 V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VAROITUS!

LAITE SISÄLTÄÄ LASERDIODIN, JOKA LAHETTAÄ NÄKYMATONTA, SILMILLE VAARALLISTA INFRAPUNASATEILYÄ LAITTEEN SISÄLLÄ ON LASERDIODIN LAHEISYYDESSÄ KUVAN 1. MUKAINEN VAROITUSMERKKI.



LASER
Kuva 1
Lasersateilyn
varoituserkki

WARNING!

DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.



LASER
Picture 1
Warning sign for
laser radiation

ADVERSEL:

USYNLIG LASERSTRÄLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGA UDSÆTTELSE FOR STRÄLING.

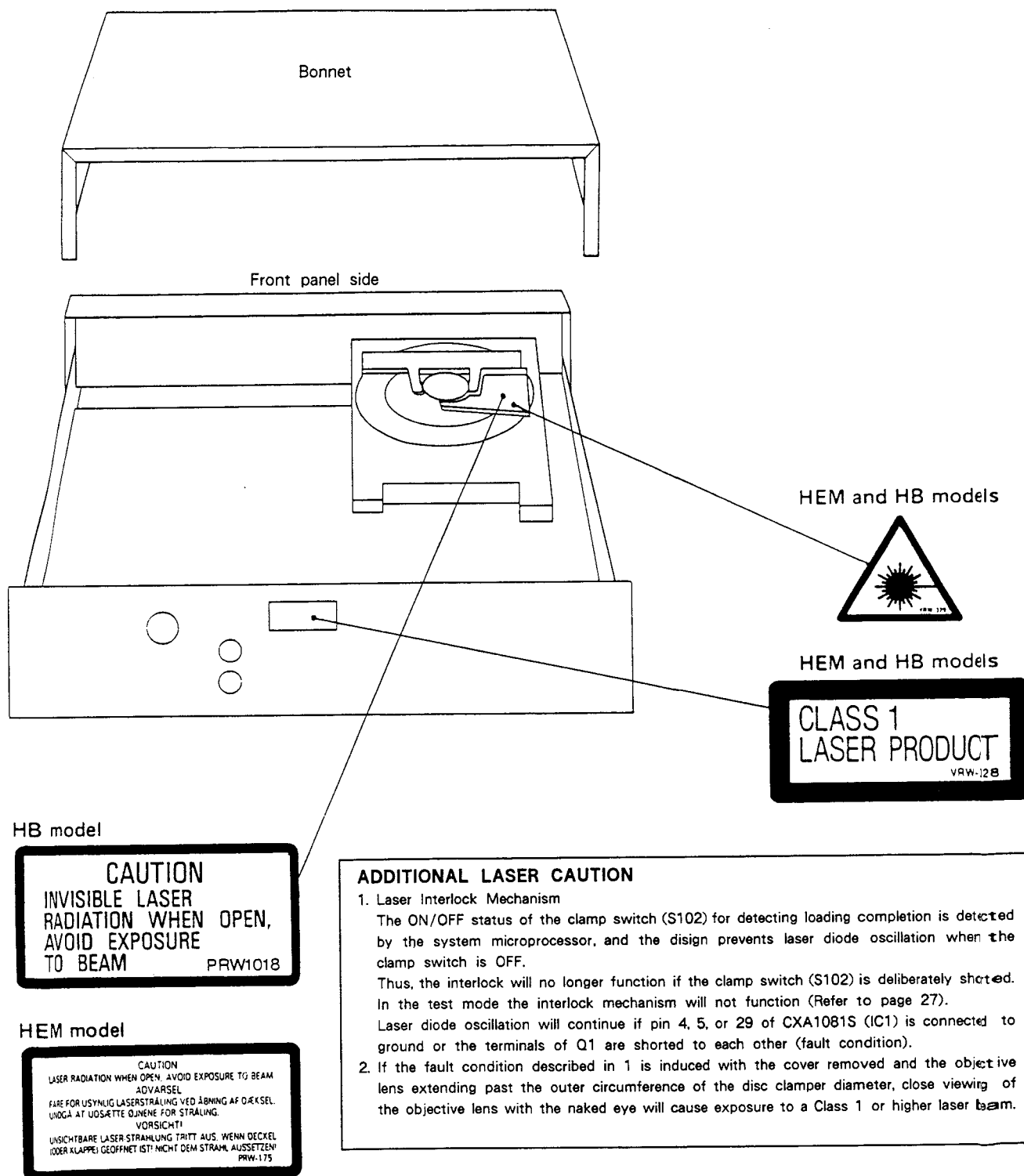
IMPORTANT

THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

VIKTIGT

APARATEN INNEHÄLLER LASER AV HÖGRE KLASS ÄN 1. INGREPP I APPARATEN BÖR GÖRAS AV SPECIELLT UTBILDAD PERSONAL.

LABEL CHECK



2. EXPLODED VIEWS AND PARTS LIST

NOTES :

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

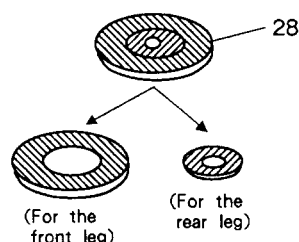
2.1 Exterior

Parts List of Exterior

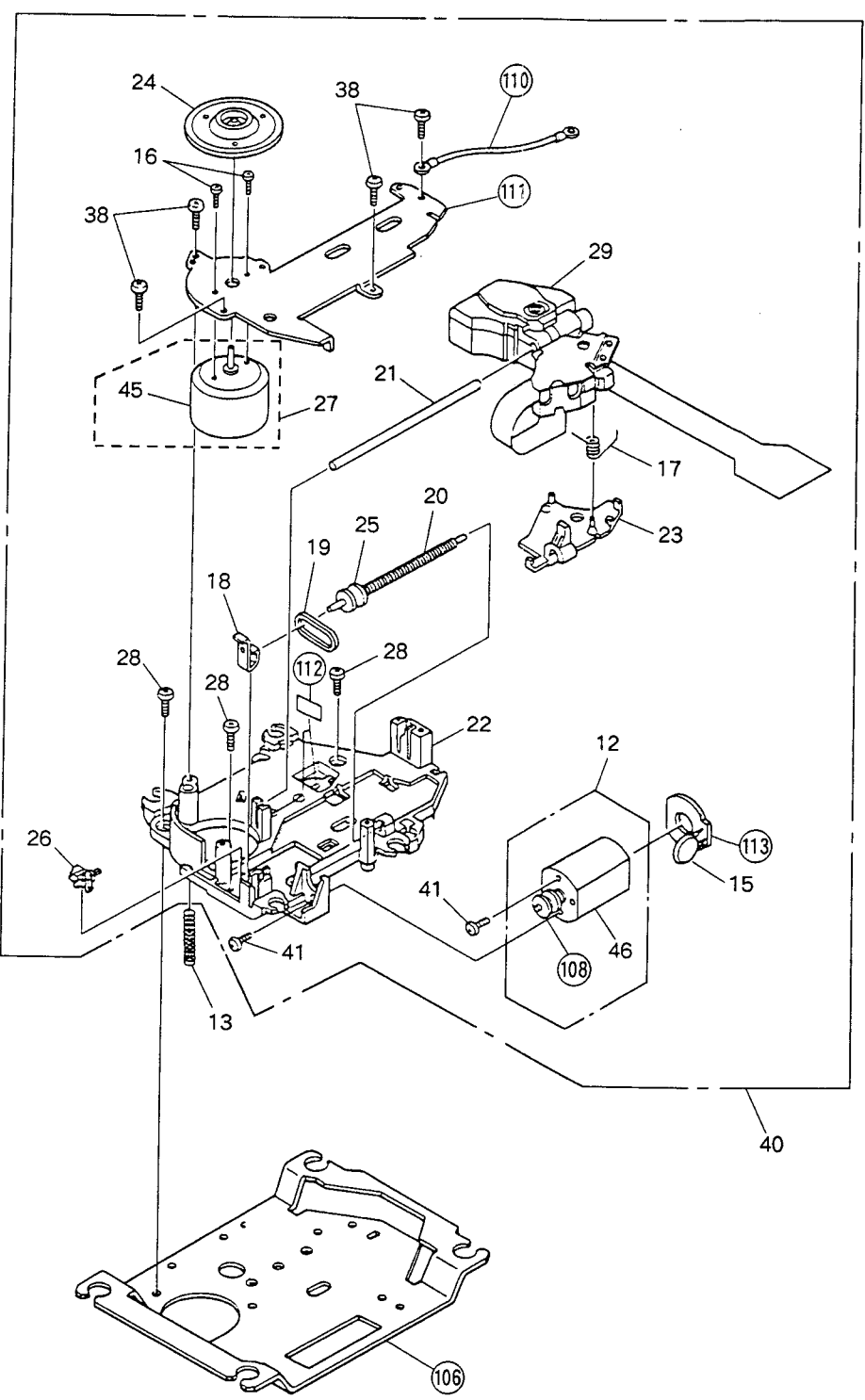
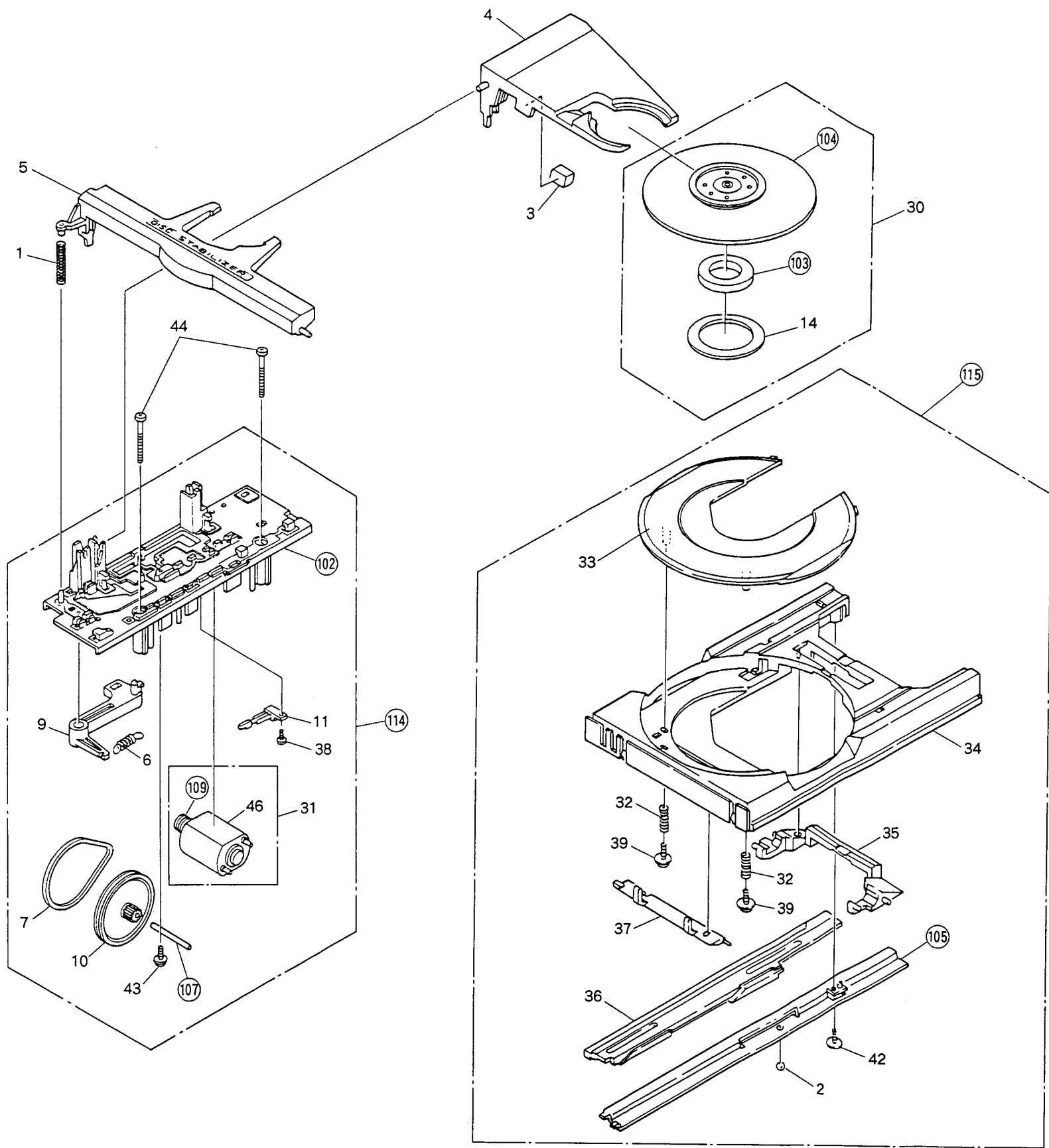
Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
Δ	1	CM-22B	Strain relief		101		Under base
Δ	2	PDG1003	AC power cord		102		• • • • •
Δ	3	PTT1055	Power transformer (AC220V,240V)		103		Rear base
	4	PBA1001	Screw		104		Angle
					105		Panel angle
	5	PNW1376	Insulator		106		Board angle
	6	PAC1370	Headphone knob		107		Switch angle
	7	PAC1354	Button (SELECT)		108		Slide guide
	8	PAC1252	Button B (POWER)		109		Mechanism support
	9	PAC1357	Button (TRACK)		110		P.Plate holder
	10	PAC1398	Button B (MODE)		111		• • • • •
	11	PAC1353	Button (O/C)		112		• • • • •
	12	PAM1275	FL plate B		113		• • • • •
	13	PAM1274	Window B		114		• • • • •
	14	PNW1502	Function panel B		115		Name plate
	15	PNW1512	Name plate B (tray)		116		SW joint
	16	BBZ30P060FMC	Screw		117		Headphone board assembly
	17	BBZ30P080FZK	Screw		118		Transformer board assembly
	18	BBZ30P120FMC	Screw				P. C. B spacer
	19	BBZ30P230FMC	Screw		119		
	20	FBT40P080FZK	Screw				
	21	PSA40P080FZB	Screw				
	22	PMZ30P060FCU	Screw				
◎	23	PWZ1581	Main board assembly				
◎	24	PWZ1588	Function board assebmly				
	25	PYY1113	Servo mechanism assembly				
	26	PYY1093	Bonnet				
	27	PAM1273	Headphone name plate B				
	28	PNM1070	Skid				
	29	PEB1031	Floating rubber				
	30	PDZ30P050FMC	Screw				
	31	IBZ30P150FCU	Screw				
	32	PBZ30P160FMC	Screw				

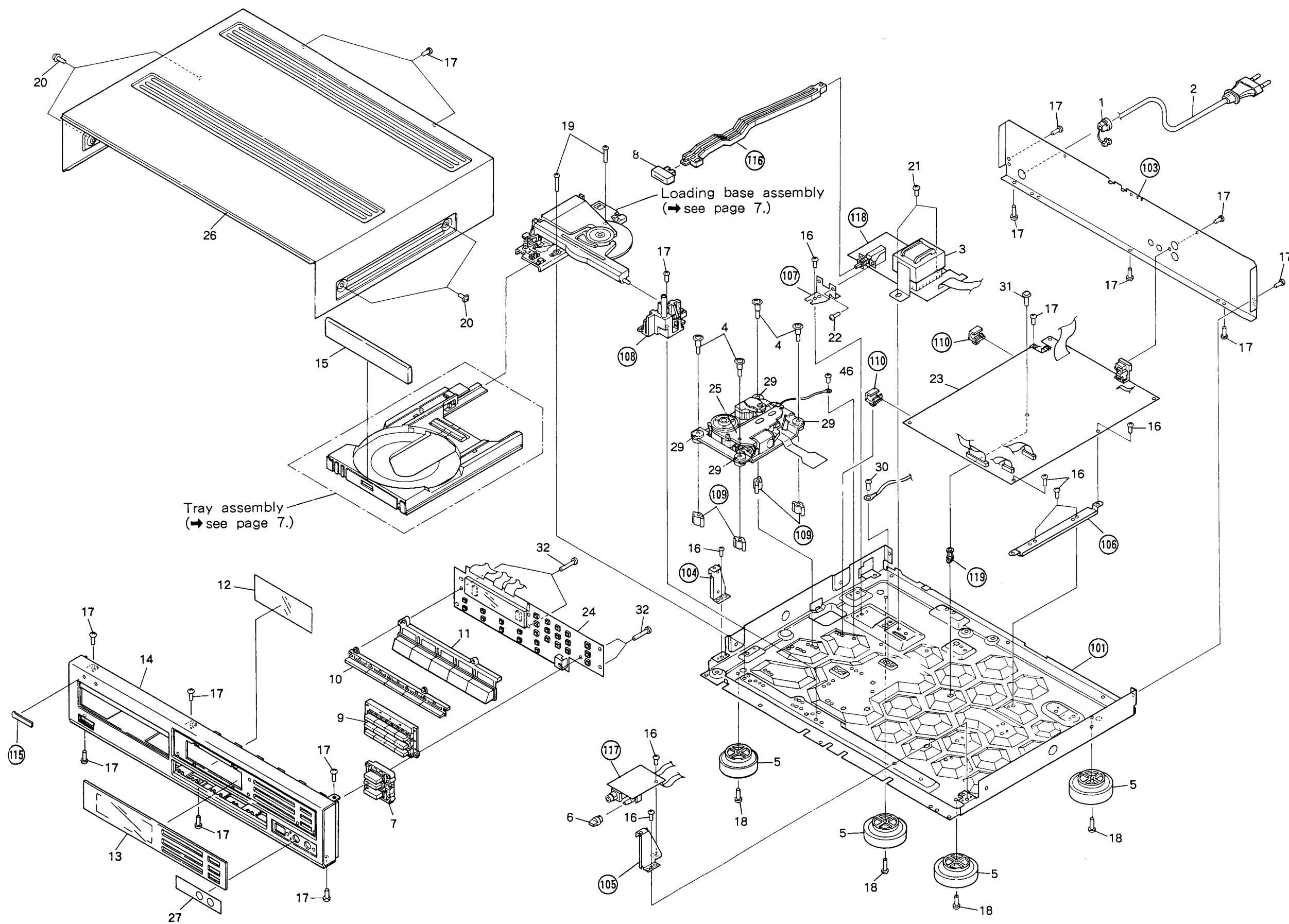
*The skid consist of the big ring part and the small ring part.

If you stick the skid to the insulator, stick the big ring part to the front insulator, and the small ring part to the rear insulator.



2.2 Mechanism section



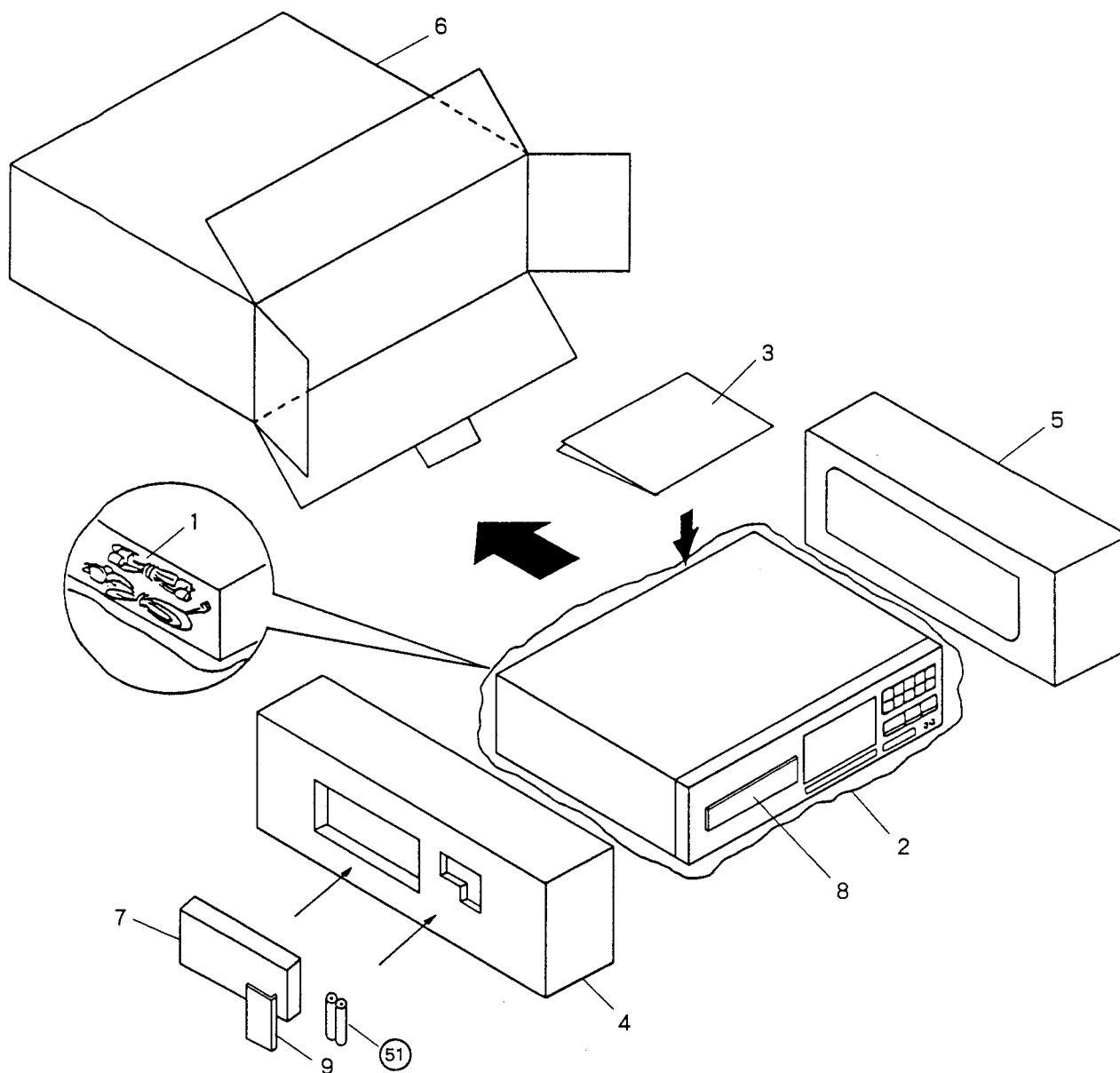


Parts List of Mechanism section

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	PBH1013	Spring		32	PBH1045	Plate spring
	2	PBP-001	Steel ball ϕ 4		33	PNW1329	Disc plate
	3	PEB1032	Stopper rubber		34	PNW1390	Tray
	4	PNW1084	Clamp holder		35	PNW1331	Plate lever (R)
	5	PNW1085	Clamp retainer		36	PNW1332	Rack
	6	PBH1012	Clamp spring		37	PNW1330	Plate lever (F)
	7	PEB1013	Belt (LOADING)		38	BPZ20P080FZK	Screw
	8				39	PBA1025	Screw
	9	PNW1083	Clamp lever		40	PYY1113	Servo mechanism assembly
	10	PNW1171	Gear pulley		41	PMZ20P030FMC	Screw
	11	VSK-015	Leaf switch (CLAMP, S102)		42	PPZ30P080FMC	Screw
	12	PYY1025	Motor assembly (CARRIAGE)		43	IPZ30P060FMC	Screw
	13	PBH1009	Earth spring		44	BBZ30P230FMC	Screw
	14	PNM1010	Disc cushion		45	PXM1001	Spindle motor
					46	PXM1002	Motor (CARRIAGE, LOADING)
	15	CGDYX104M25	Semiconductive ceramic capacitor		101		
	16	PBA1037	Screw M2 $\times$ 2.5		102		Loading base
	17	PBH1008	Drive spring		103		Magnet
	18	PBK1057	Plate spring		104		Clamper
					105		Slide base
	19	PEB1072	Belt (CARRIAGE)		106		Ballast base
	20	PLA1003	Drive worm		107		Gear shaft
	21	PLA1004	Guide bar		108		Motor pulley
	22	PNW1520	Mechanism chassis		109		Motor pulley
	23	PNW1063	Carriage plate		110		Earth lead unit
	24	PNW1064	Disc table		111		Base plate
	25	PNW1066	Pulley		112		Cloth tape
	26	PSH1003	Slide switch (INSIDE, S101)		113		Carriage M board
	27	PYY1109	Motor assembly (SPINDLE) (motor with oil)		114		Loading base assembly
					115		Tray assembly
	28	BBZ30P080FCC	Screw				
	29	PWY1010	Pickup assembly				
	30	PYY1084	Clamper assembly				
	31	PYY1090	Motor assembly (LOADING)				

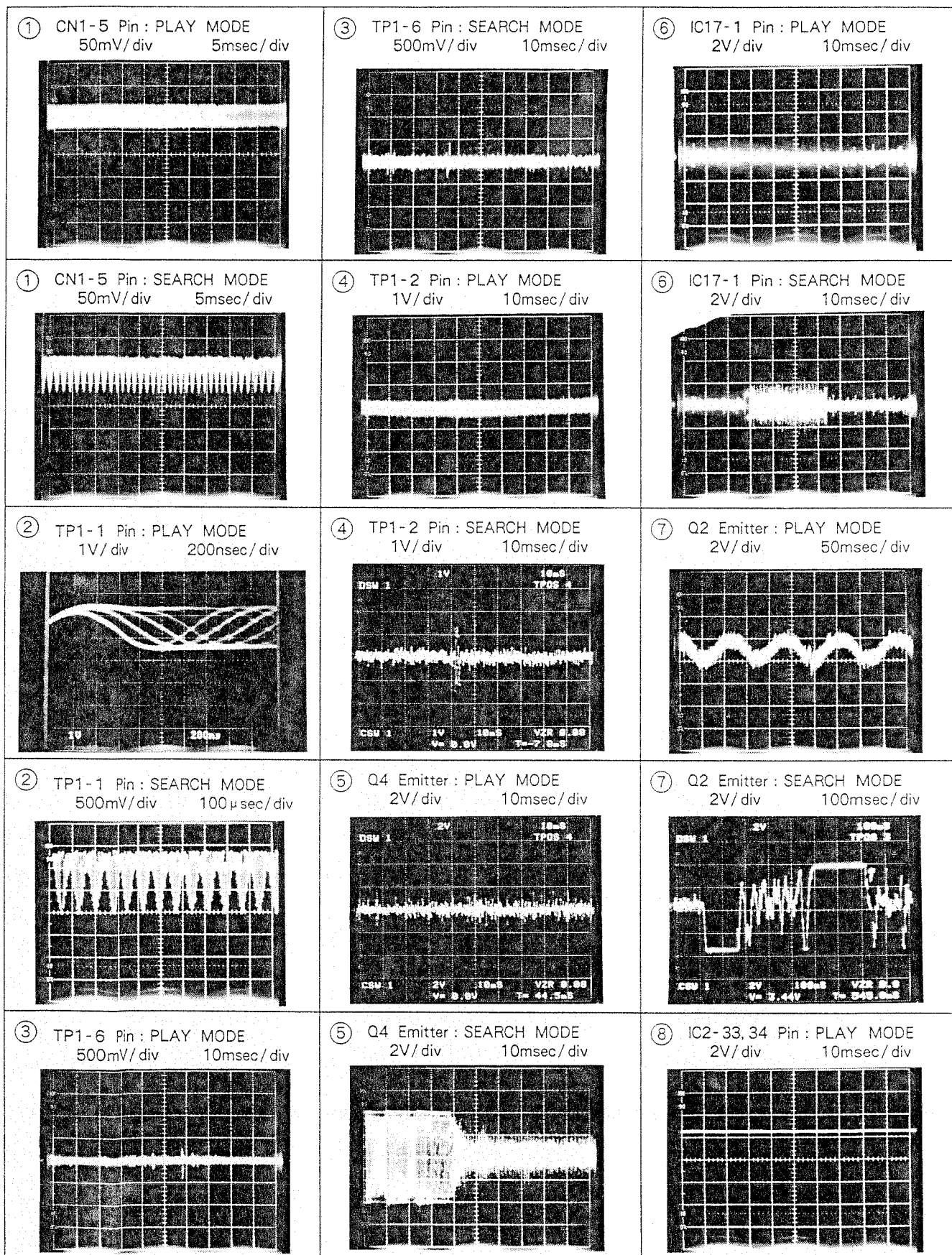
3. PACKING

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1	PDE1002	Connection cord with pin plug	6	PHG1275	CD packing case	
	2	Z23-007	Sheet	7	PWW1031	Remote control unit	
	3	PRE1077	Operating instructions (English/French/Dutch/Italian)	8	PHC1030	Spacer (into the tray)	
		PRF1016	Operating instructions (Dutch/Swedish/Spanish/Portuguese)	9	PZN1001	Battery cover	
	4	PHA1059	Protector (L)	51			Battery (UM - 4)
	5	PHA1060	Protector (R)				

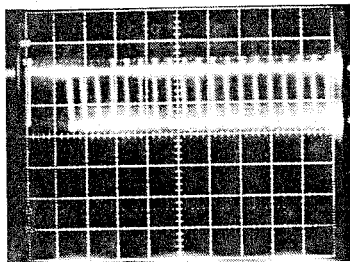


WAVE FORMS

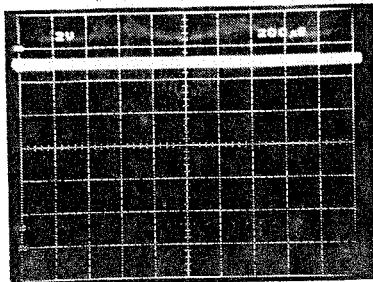
NOTE: The encircled numbers denote measuring points in the schematic diagram.



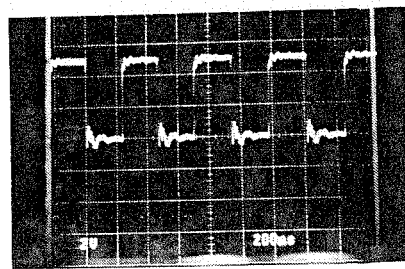
⑨ IC1-27 Pin : PLAY MODE
2V/div 500nsec/div



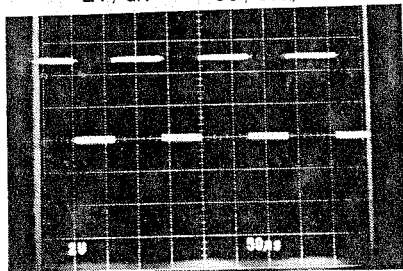
⑫ TP2-1 Pin : PLAY MODE
2V/div 200μsec/div



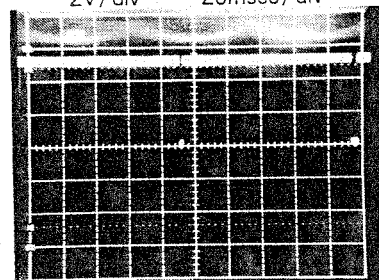
⑮ IC3-76 Pin : STOP MODE
2V/div 200nsec/div



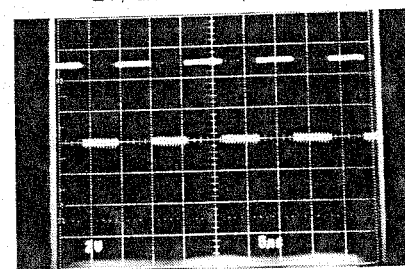
⑩ IC3-4 Pin : PLAY MODE
2V/div 50μsec/div



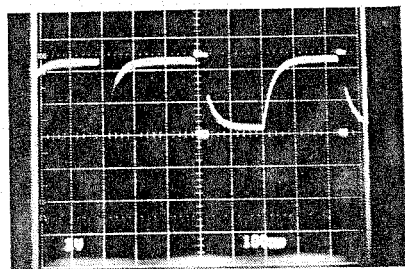
⑫ TP2-1 Pin : SEARCH MODE
2V/div 20msec/div



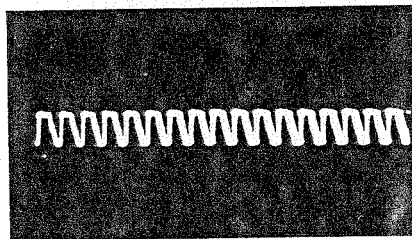
⑰ IC3-79 Pin : STOP MODE
2V/div 5μsec/div



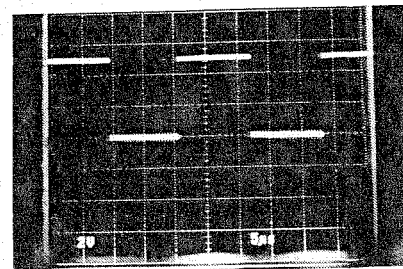
⑩ IC3-4 Pin : SEARCH MODE
2V/div 100msec/div



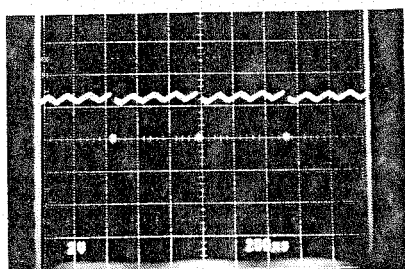
⑬ IC2-38 Pin : PLAY MODE
2V/div 200nsec/div



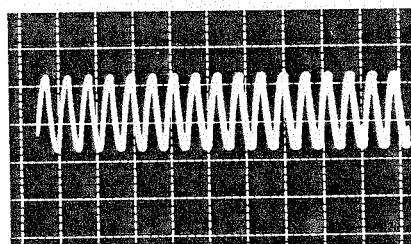
⑱ IC3-80 Pin : STOP MODE
2V/div 5μsec/div



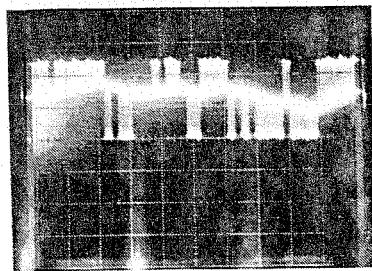
⑪ IC3-3 Pin : PLAY MODE
2V/div 200μsec/div



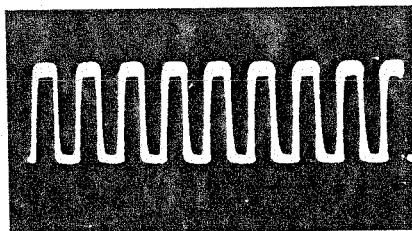
⑭ IC3-8 Pin : PLAY MODE
2V/div 200nsec/div



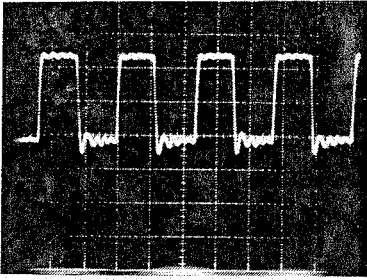
⑪ IC3-3 Pin : SEARCH MODE
2V/div 10msec/div



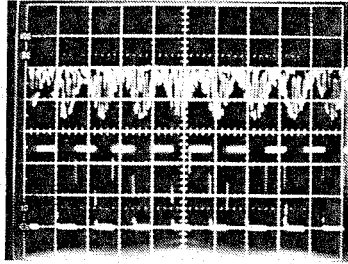
⑮ TP2-2 Pin : PLAY MODE
2V/div 200nsec/div



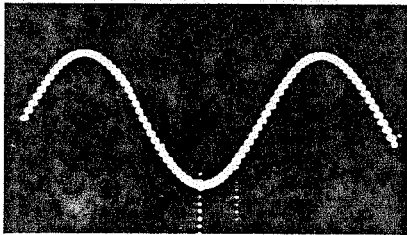
⑲ IC28-15 Pin : STOP MODE
2V/div 50nsec/div



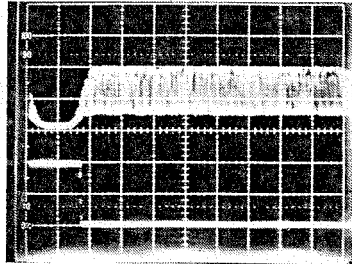
⑳ IC1-22 Pin : TRACKING OPEN
Upper TP1-1, 1V/div 0.1msec/div
Lower IC1-22, 2V/div



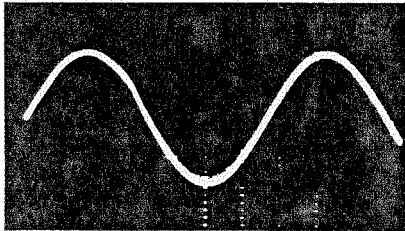
㉑ IC8-9 Pin : PLAY MODE
2V/div 50μsec/div



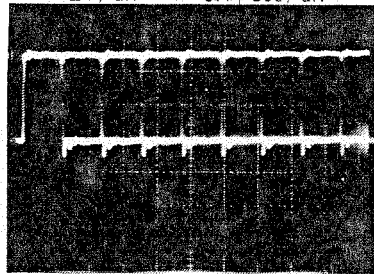
㉒ IC1-21 Pin : DFCT
Upper TP1-1, 1V/div 0.5msec/div
Lower IC1-21, 5V/div



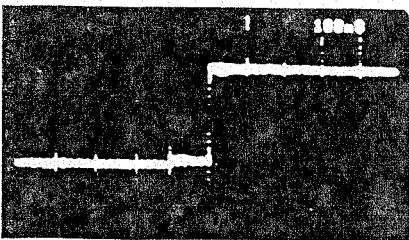
㉓ OUTPUT L ch : PLAY MODE
2V/div 50μsec/div



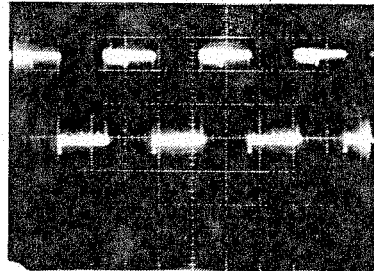
㉔ IC28-11 and 12 Pins : PLAY MODE
2V/div 0.1μsec/div



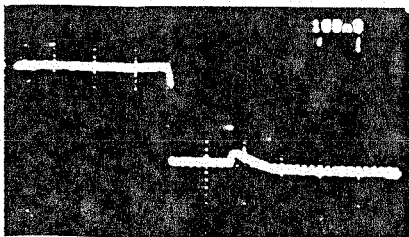
㉕ IC10-5 Pin : POWER ON
2V/div 100msec/div



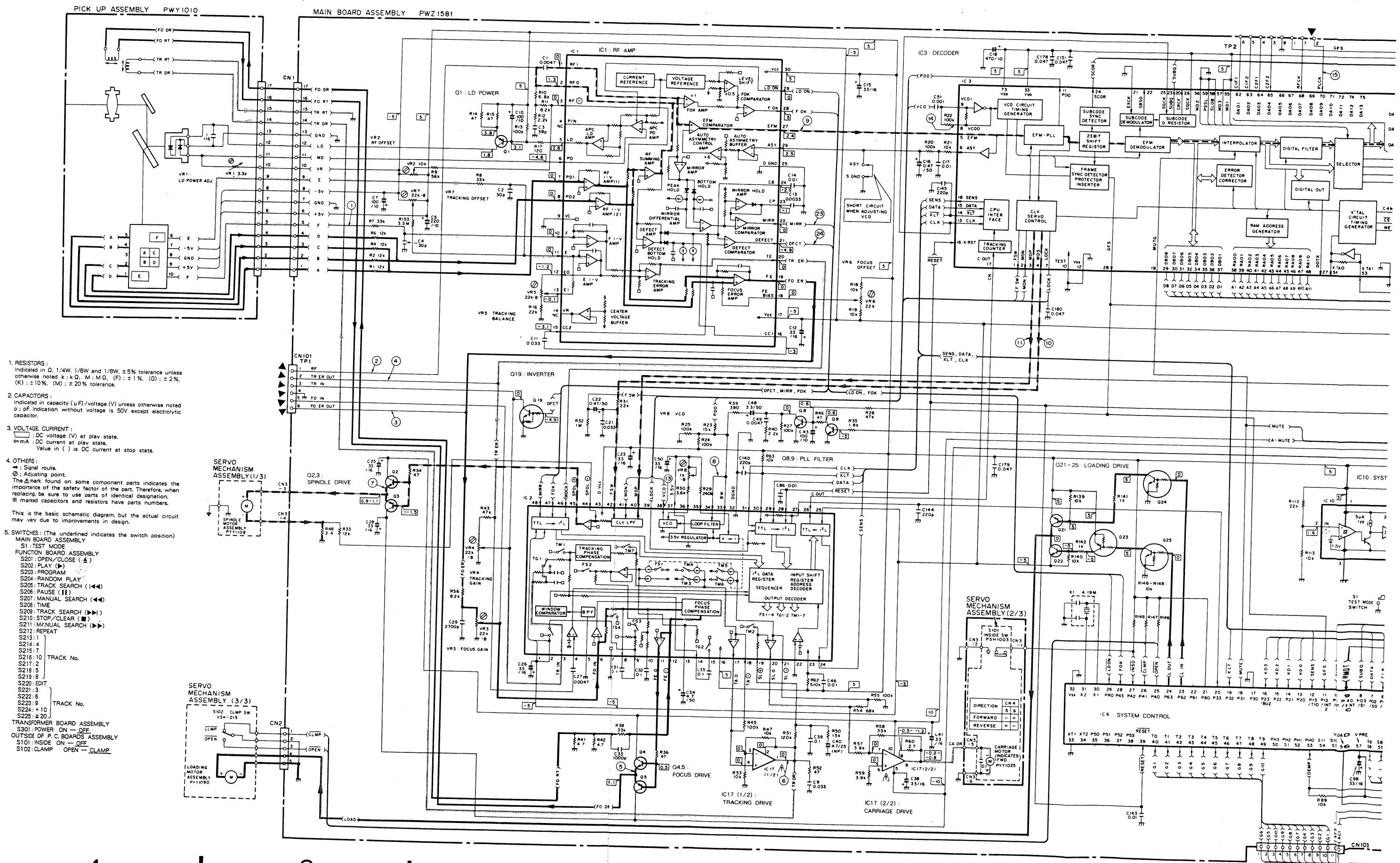
㉖ IC28-14 Pin : STOP MODE
2V/div 1μsec/div

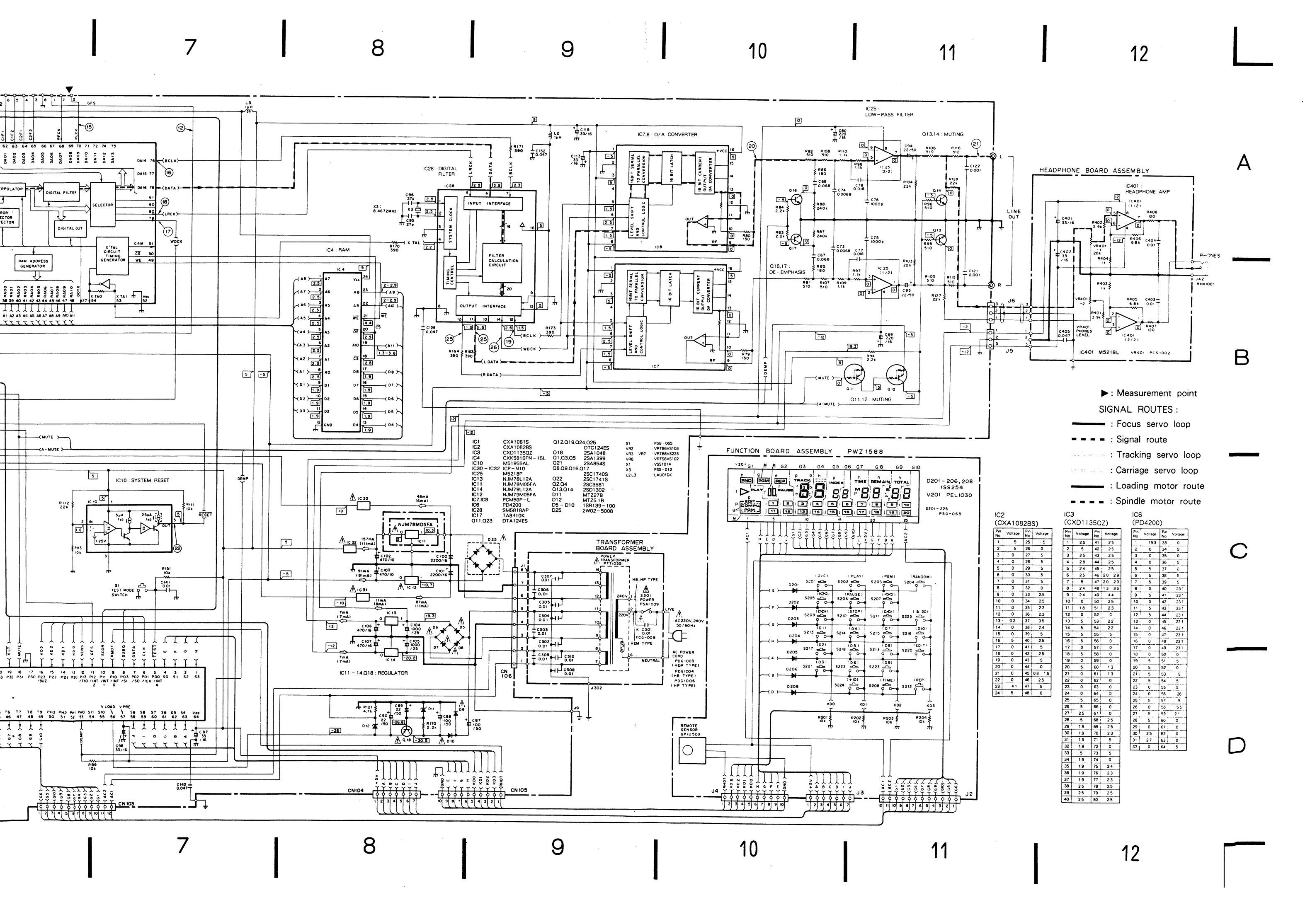


㉗ IC10-5 Pin : POWER OFF
2V/div 100msec/div



4. SCHEMATIC DIAGRAM



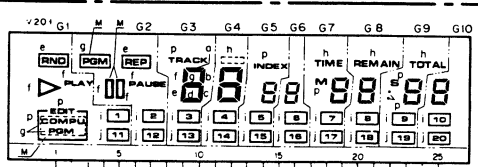


► : Measurement point

SIGNAL ROUTES :

- : Focus servo loop
- - - : Signal route
- ... : Tracking servo loop
- . - . : Carriage servo loop
- - - - : Loading motor route
- . - . - : Spindle motor route

FUNCTION BOARD ASSEMBLY PWZ1588



IC2 (CXA1082BS)

Pin No.	Voltage	Pin No.	Voltage
1	5	25	5
2	5	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	25
10	0	34	25
11	0	35	23
12	0	36	23
13	0	37	35
14	0	38	24
15	0	39	5
16	5	40	25
17	0	41	5
18	0	42	25
19	0	43	5
20	0	44	0
21	0	45	0.8
22	0	46	25
23	4	47	5
24	5	48	0

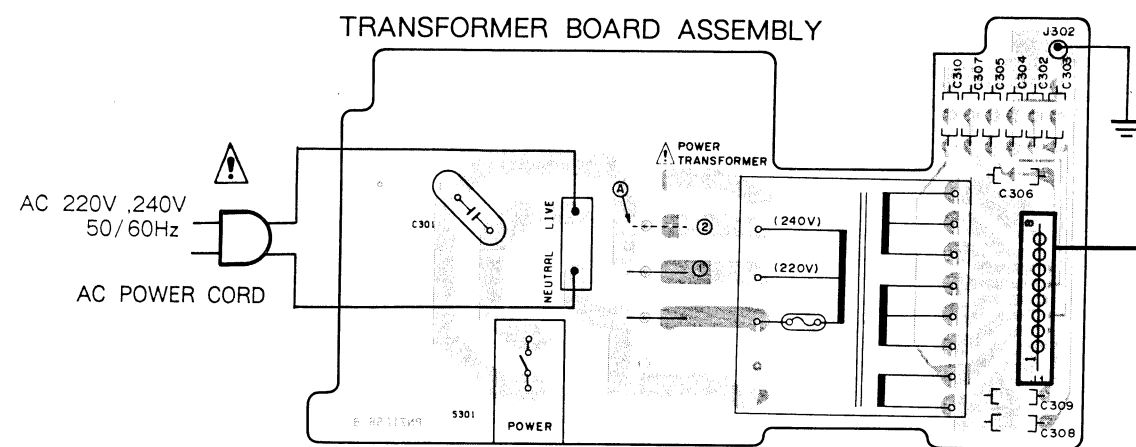
IC3 (CXD1135QZ)

Pin No.	Voltage	Pin No.	Voltage
1	25	41	25
2	5	42	25
3	25	43	25
4	28	44	25
5	24	45	25
6	25	46	20
7	5	47	20
8	24	48	13
9	24	49	44
10	0	50	25
11	18	51	23
12	0	52	0
13	5	53	22
14	5	54	22
15	5	55	5
16	5	56	0
17	0	57	0
18	5	58	0
19	0	59	0
20	5	60	13
21	0	61	13
22	0	62	0
23	0	63	0
24	0	64	0

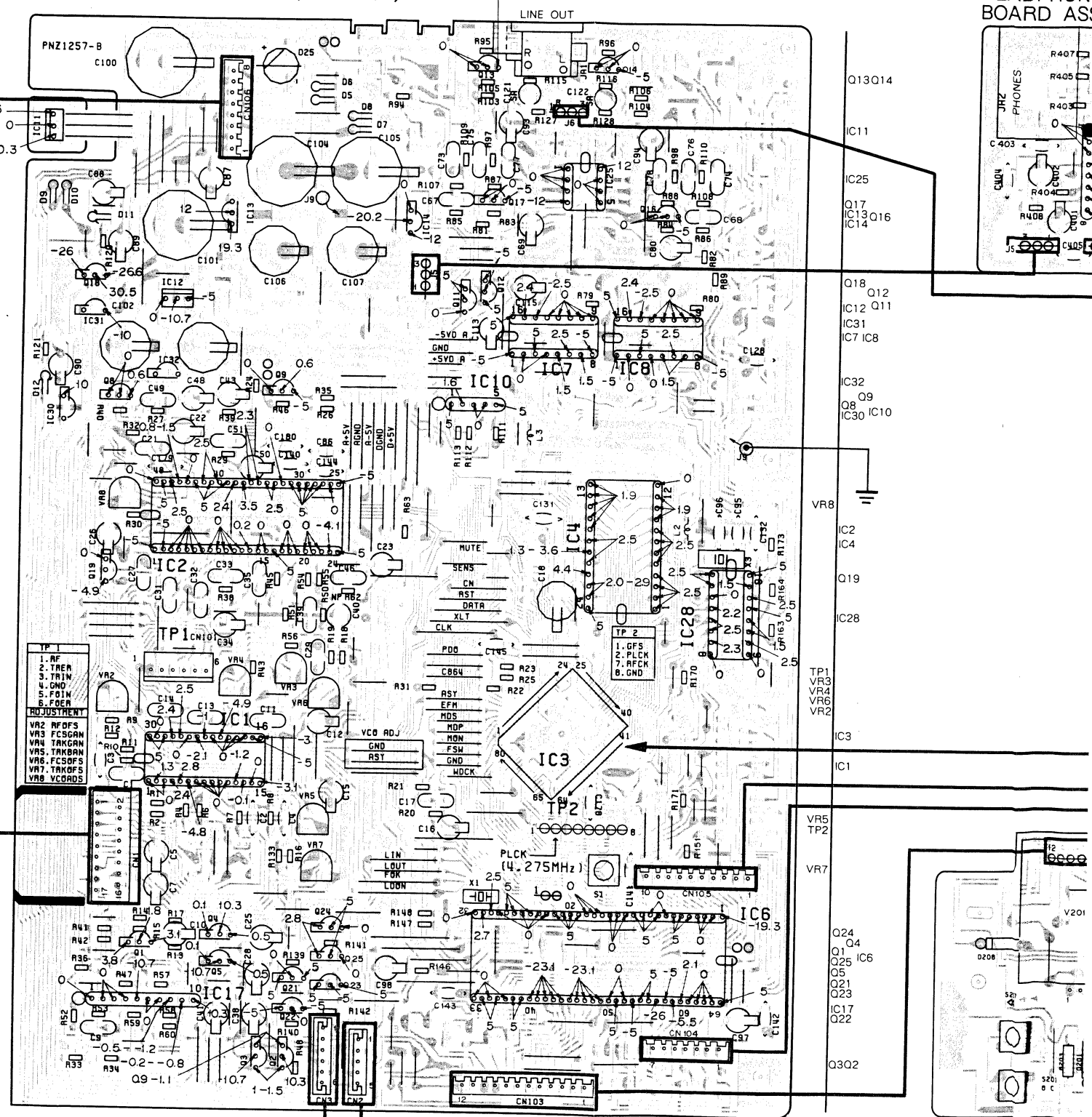
IC6 (PD4200)

Pin No.	Voltage	Pin No.	Voltage
1	19.3	33	0
2	0	34	5
3	0	35	0
4	0	36	5
5	5	37	0
6	5	38	5
7	5	39	5
8	0	40	23
9	5	41	23
10	0	42	23
11	5	43	23
12	5	44	23
13	0	45	23
14	5	46	23
15	0	47	23
16	0	48	23
17	0	49	23
18	0	50	0
19	5	51	5
20	5	52	0
21	5	53	5
22	5	54	5
23	0	55	5
24	0	56	26
25	5	57	5
26	5	58	5
27	25	59	2
28	5	60	0
29	5	61	0
30	25	62	0
31	19	63	0
32	19	64	5

5. P. C. BOARDS CONNECTION DIAGRAM

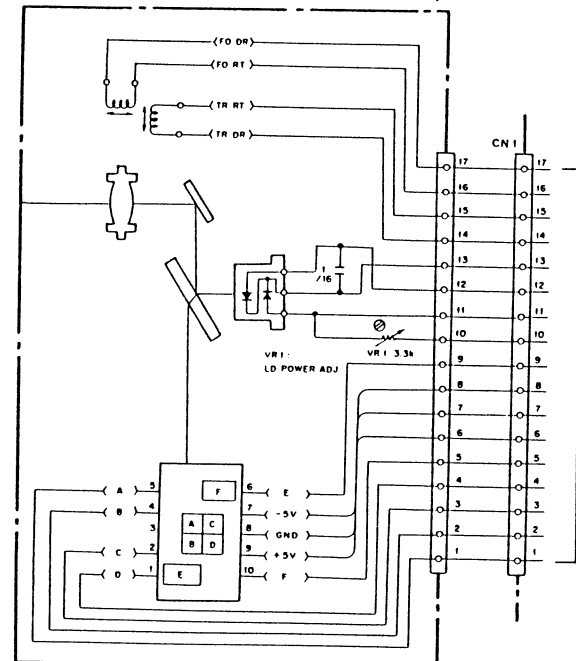


MAIN BOARD ASSEMBLY (PWZ1581)



HEADPHONE BOARD ASS

PICKUP ASSEMBLY (PWY1010)



MAIN BOARD ASSEMBLY (PWZ1581)

HEADPHONE BOARD ASSEMBLY

IC3
(CXD1135QZ)

Pin No.	Voltage	Pin No.	Voltage
1	2.5	41	2.5
2	5	42	2.5
3	2.5	43	2.5
4	2.8	44	2.5
5	2.4	45	2.5
6	2.5	46	2.0-2.9
7	5	47	2.0-2.9
8	2.4	48	1.3-3.6
9	2.4	49	4.4
10	0	50	2.5
11	1.8	51	2.3
12	0	52	0
13	5	53	2.2
14	5	54	2.2
15	5	55	5
16	5	56	0
17	0	57	0
18	5	58	0
19	0	59	0
20	5	60	1.3
21	0	61	1.3
22	0	62	0
23	0	63	0
24	0	64	0
25	5	65	0
26	5	66	0
27	2.5	67	0
28	5	68	2.5
29	1.9	69	2.5
30	1.9	70	2.3
31	1.9	71	5
32	1.9	72	0
33	5	73	5
34	1.9	74	0
35	1.9	75	2.4
36	1.9	76	2.3
37	1.9	77	2.3
38	2.5	78	2.5
39	2.5	79	2.5
40	2.5	80	2.5

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
		Zener diode			Electrolytic capacitor (Non polarized)
		LED			Electrolytic capacitor (Noiseless)
		Varactor			Electrolytic capacitor (Polarized)
		Tact switch			Electrolytic capacitor (Polarized)
		Inductor			Power capacitor
		Coil			Semi-fixed resistor
		Transformer			Resistor array
		Filter			Resistor
					Resonator
					Thermistor

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with shows negative terminal.
4. The diode marked with shows cathode side.
5. The transistor terminal marked with shows emitter.

FUNCTION BOARD ASSEMBLY (PWZ1588)

6. ELECTRICAL PARTS LIST

NOTES :

- Parts without part number cannot be supplied.
- Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5 %, and K = 10 %).

560 Ω → 56 × 10¹ → 561 RD1/4PS 561J

47k Ω → 47 × 10³ → 473 RD1/4PS 473J

0.5 Ω → 0R5 RN2H 0R5K

1 Ω → 010 RS1P 010K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 × 10¹ → 5621 RN1/4SR 5621F

Miscellaneous Parts

Mark	Symbol & Description	Part No.
	Transformer board assembly	
◎	Main board assembly	PWZ1581
◎	Function board assembly	PWZ1588
	Headphone board Assembly	
△	AC power cord	PDG1003
△	Power transformer (220V,240V)	PTT1055
△	Strain relief	CM-22B
	Pickup assembly	PWY1010
	Motor assembly (SPINDLE)	PYY1109
	Spindle motor	PXM1001
	Motor assembly (CARRIAGE)	PYY1025
	Motor assembly (LOADING)	PYY1090
	Motor (CARRIAGE, LOADING)	PXM1002
	S101 Slide switch (INSIDE)	PSH1003
	S102 Leaf switch (CLAMP)	VSK-015
	Semiconductive ceramic capacitor	CGDYX104M25

Transformer board Assembly

SWITCH

Mark	Symbol & Description	Part No.
△	S301 Push switch (POWER)	PSA-009

CAPACITOR

Mark	Symbol & Description	Part No.
△	C301 (0.01 μ F)	RCG-009
	C302-C310	CKPYF103Z50

◎ Main board Assembly (PWZ1581)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC1	CXA1081S
	IC2	CXA1082BS
	IC3	CXD1135QZ
	IC4	CXK5816PN-15L
△	IC30 - IC32	ICP-N10
	IC28	SM5818AP
	IC10	M51955AL
	IC25	M5218P
	IC13	NJM78L12A
△	IC11	NJM78M05FA
	IC14	NJM79L12A
△	IC12	NJM79M05FA
	IC7,IC8	PCM56P-L
	IC6	PD4200
△	IC17	TA8410K
	Q11,Q23	DTA124ES
	Q12,Q19,Q24,Q25	DTC124ES
△	Q18	2SA1048
	Q1,Q3,Q5	2SA1399
	Q21	2SA854S
	Q8,Q9,Q16,Q17	2SC1740S
	Q22	2SC1741S
	Q2,Q4	2SC3581
	Q13,Q14	2SD1302
	D11	MTZ27B
	D12	MTZ5.1B
△	D5-D10	1SR139-100
△	D25	2W02-5008

COILS

Mark	Symbol & Description	Part No.
	L2,L3	LAU010K

◎ Function board Assembly (PWZ1588)

SWITCH

Mark	Symbol & Description	Part No.
	S1 Tact switch (TEST)	PSG-065

CAPACITORS

Mark	Symbol & Description	Part No.
	C95,C96 C2,C4 C3 C140,C144,C145 C40	CCCCH270J50 CCCCH300J50 CCCCH390J50 CCCSL221J50 CEANP4R7M25
	C16,C22 C7,C10,C43 C87,C88 C104,C105 C89,C90,C93,C94	CEASR47M50 CEAS101M10 CEAS101M50 CEAS102M25 CEAS220M50
	C5 C69,C80 C100,C101 C48 C12,C15,C23,C25,C26,C28,C38, C41,C50,C97,C98,C113,C115	CEAS221M10 CEAS221M16 CEAS222M16 CEAS3R3M50 CEAS330M16
	C34 C18,C102,C103 C106,C107 C86,C141,C143 C131,C132,C142C179,C180	CEAS4R7M50 CEAS471M10 CEAS471M16 CKCYF103Z50 CKCYF473Z50
	C128,C178 C33,C51,C75,C76 C14,C17,C46 C31,C32,C35,C39 C77,C78	CKCYF473Z50 CQMA102K50 CQMA103K50 CQMA104K50 CQMA183J50
	C29 C13 C9,C11,C21 C1,C27,C49 C73,C74	CQMA272J50 CQMA332J50 CQMA333K50 CQMA472J50 CQMA682J50
	C67,C68 C121,C122	CQMA683J50 CQSA102J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR2 Semi-fixed (10k) VR3 - VR7 Semi-fixed (22k) VR8 Semi-fixed (1k) R30 Metal thin film Other resistors	VRTB6VS103 VRTB6VS223 VRTS6VS102 RN1/6PQ3601F RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	JA1 2P terminal (OUTPUT) X3 Crystal resonator (8.4672MHz) X1 Ceramic resonator (4.19MHz)	PKB1009 PSS-012 VSS1014

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	D201 - D206,D208	1SS254

SWITCHES

Mark	Symbol & Description	Part No.
	S201 - S225 Tact switch OPEN/CLOSE, PLAY, PROGRAM, TIME, RANDOM PLAY, PAUSE, TRACK SEARCH (◀◀, ▶▶), MANUAL SEARCH (◀◀, ▶▶), REPEAT, STOP/CLEAR, TRACK No. (1 - 10, + 10, ≥ 20)	PSG-065

RESISTORS

Mark	Symbol & Description	Part No.
	R201 - R204	RD1/4PM103J

OTHERS

Mark	Symbol & Description	Part No.
	V201 Fluorescent indicator tube Remote control sensor	PEL1030 GP1U50X

Headphone board Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC401	M5218L

CAPACITORS

Mark	Symbol & Description	Part No.
	C401,C402 C403,C404 C405	CEAS330M16 CKCYF103Z50 CKCYF473Z50

RESISTORS

Mark	Symbol & Description	Part No.
	VR401 Variable resitor (20k) (PHONES LEVEL) R401 - R408	PCS1002 RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	JA2 Headphone jack	RKN1001

7. ADJUSTMENTS

The adjustments for this unit are given below. Adjustments must be made in the order in which they are listed.

● Adjustments and check items

1. Tracking offset, focus offset and RF offset adjustment
2. RF level adjustment
3. LD (Laser Diode) power check
4. Focus lock and spindle lock check
5. Grating adjustment
6. Tracking balance adjustment
7. Tangential adjustment
8. Focus gain adjustment
9. Tracking gain adjustment
10. VCO free-run frequency adjustment
11. Method for confirming S character (focus error)

● Measuring equipment

1. Dual trace oscilloscope
2. Optical power meter
3. Test disc (YEDS-7), 8 cm disc
4. Loop gain adjustment filter
5. Signal generator
6. Frequency counter
7. Other regular measuring equipment

● About the test mode

How to activate and release the test mode

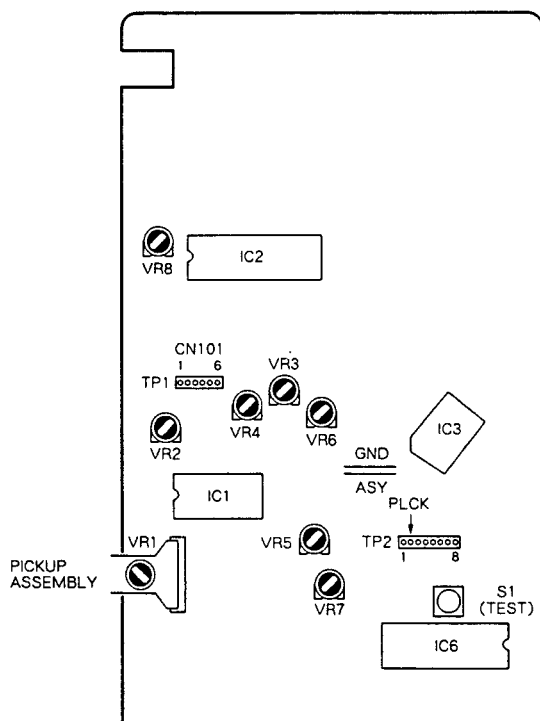
- ① To activate the test mode, turn ON the power switch (S301) with the test mode switch (S1) in the ON position.
- ② The test mode is released by turning the power switch OFF.

The functions of the keys in the test mode are outlined in Table 7-1.

● Adjustment VRs and their names

- VR1 : Laser power
 VR2 : RF offset (RF.OFS)
 VR3 : Focus gain (FCS.GAN)
 VR4 : Tracking gain (TRK.GAN)
 VR5 : Tracking balance (TRK.BAL)
 VR6 : Focus offset (FCS.OFS)
 VR7 : Tracking offset (TRK.OFS)
 VR8 : VCO adjustment (VCO.ADJ)

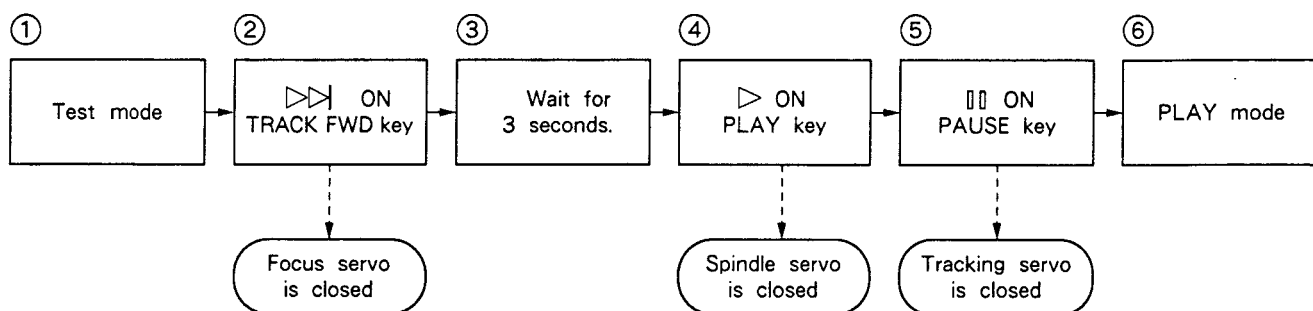
Adjustment Point



In the test mode, the servos must be closed and opened individually. Consequently, the servos must each be closed in the proper sequence (serial sequence) in order to put the machine into the play mode. Note also that the machine will not enter the play mode when the PAUSE (⏏) key is pressed.

For example, in order to change from the stop to the play mode, the function keys must be pressed in the following order.

* In the test mode, the servos must be operated in serial sequence.

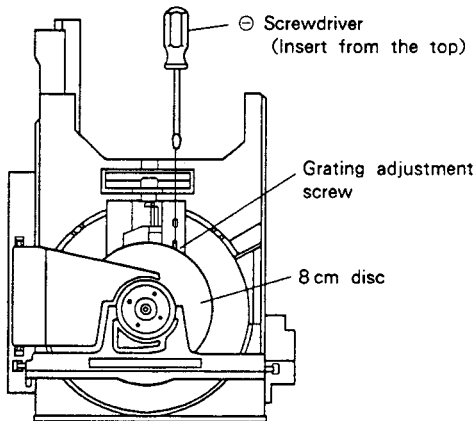
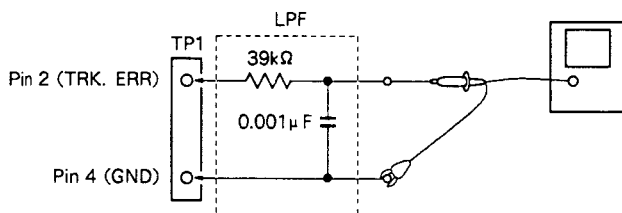


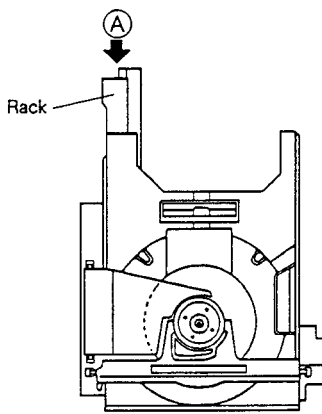
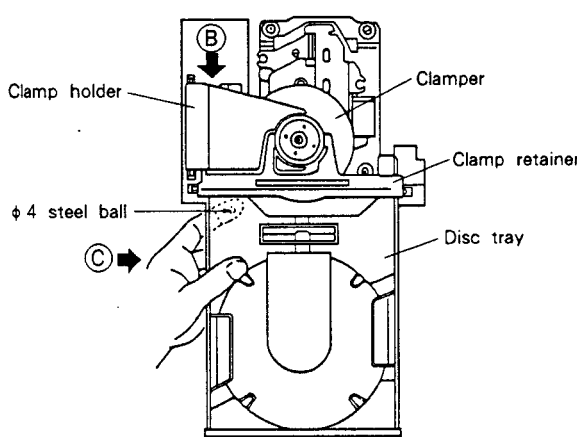
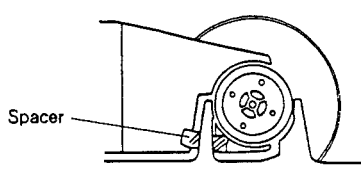
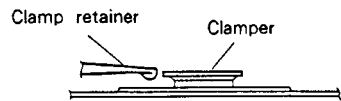
• Key Functions in Test Mode

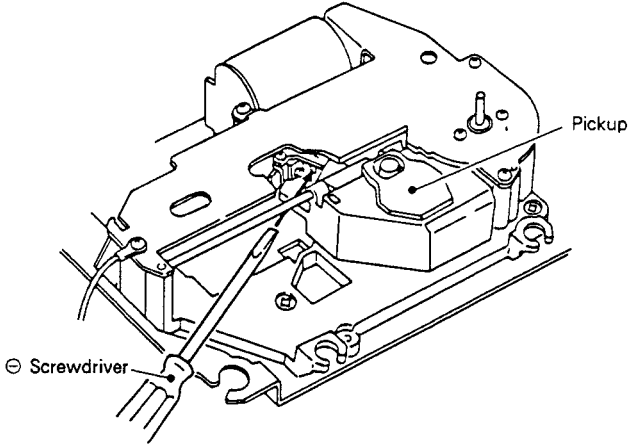
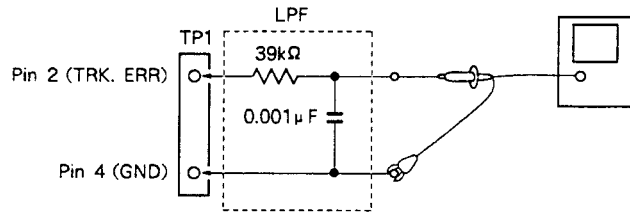
Symbol	Key name	Function in test mode	Description
	TRACK FWD	Focus servo close	Turns ON the laser diode, and raises and lowers the focusing actuator to close the focus servo.
	PLAY	Spindle servo close	Closes the servo in the CLV-A mode after kicking the spindle motor.
	PAUSE	Tracking servo close/open	Acts as a toggle: closes the tracking servo and activates play mode when pressed (provided the focus and spindle servos are closed), at which time the PAUSE indicator illuminates; opens the tracking servo when pressed again.
	MANUAL SEARCH REV	Carriage reverse (moves inward)	Moves carriage quickly (3cm/s) toward innermost track. Be careful not to move too far as there is no safety device to stop the carriage.
	MANUAL SEARCH FWD	Carriage forward (moves outward)	Moves carriage quickly (3cm/s) toward outermost track. Be careful not to move too far as there is no safety device to stop the carriage.
	STOP	Stop	Stops all servos and returns system to its initial state.
	OPEN/CLOSE	Disc tray open/close	Opens and closes the disc tray. However, pickup does not return to rest on OPEN, and it remains stationary on CLOSE.

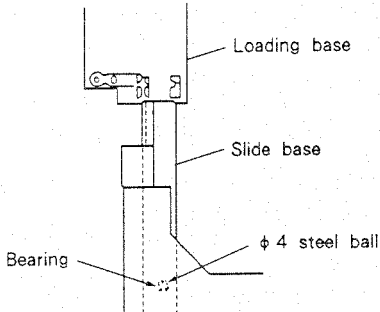
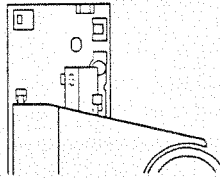
Table 7-1

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
1	Tracking offset, focus offset and RF offset adjustment					
			TP1 Pin 2 (TRK. ERR) TP1 Pin 6 (FCS. ERR) TP1 Pin 1 (RF OUTPUT)	VR5 (TRK. BAL) VR7 (TRK. OFS) VR6 (FCS. OFS) VR2 (RF. OFS)	Tracking offset 45° 0V ± 50mV FOCUS offset 0V ± 50mV RF offset 100mV ± 50mV	● Put unit in the test mode. (※) ● Set VR5 TRK.BAL (tracking balance) to the position about 45° to the left of center. ● Adjust VR7 TRK.OFS (tracking offset) so that the TRK.ERR (tracking error) voltage at TP1 pin 2 becomes 0V ± 50mV. ● Adjust VR6 FCS.OFS (focus offset) so that the FCS.ERR (focus error) voltage at TP1 pin 6 becomes 0V ± 50mV. ● Adjust VR2 RF.OFS (RF offset) so that the RF output voltage at TP1 pin 1 becomes 100mV ± 50mV. Note : When adjusting the tracking offset, always perform "6. Tracking balance adjustment."
2	RF level adjustment					
			TP1 Pin 1 (RF OUTPUT)	VR1 (Laser power)	1.5Vp-p $\pm \begin{smallmatrix} 0.2V \\ 0V \end{smallmatrix}$	● Put unit in the test mode. (※) ● Connect the oscilloscope to TP1 pin 1 (RF output), play the test disc, and measure the P-P voltage of the RF waveform. ● Adjust VR1 (Laser power) so that the voltage is 1.5Vp-p $\pm \begin{smallmatrix} 0.2V \\ 0V \end{smallmatrix}$.
3	LD (laser diode) power check					
					Less than 0.13mW	● Put unit in the test mode. (※) ● Press the TRACK FWD (▷▷) key to turn ON the laser diode (LD). ● Place the sensor of the optical power meter directly above the objective lens and confirm that the LD power is less than 0.13mW.
4	Focus lock and spindle lock check					
	0.5V/div	100msec /div	TP1 Pin 1 (RF output)		RF signal is output. Forward (clockwise) rotation	● Set the test disc. ● Put unit in the test mode. (※) ● Press the MANUAL SEARCH FWD (▷▷) key to move the pickup to the center of the disc. ● Observe the output of TP1 pin 1 (RF output) on the oscilloscope. Confirm that the RF signal is output after the TRACK FWD (▷▷) key is pressed. ● Press the PLAY (▷) key and confirm that the disc rotates at constant speed (approx. 300 rpm) near center of disc in the forward (clockwise) direction; disc may not run away or rotate counterclockwise.

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure					
	V	H									
5	Grating Adjustment (1) (When an 8 cm disc is used.)										
 Fig. 7-1 <table><tr><td>0.5V / div</td><td>5msec / div</td><td>TP1 Pin 2 (TRK. ERR)</td><td>Grating adjustment screw Grating adjustment screw</td><td>Null point Maximum amplitude</td></tr></table>  Fig. 7-2						0.5V / div	5msec / div	TP1 Pin 2 (TRK. ERR)	Grating adjustment screw Grating adjustment screw	Null point Maximum amplitude	Note : This adjustment can be made by using an 8 cm disc, having pits within the diameter range of 75 mm. ● Put unit in the test mode. (※) ● Load the 8 cm disc, move the pickup to the outer periphery so that the pickup grating adjustment hole is visible from the pit surface of the disc or from the hole in the servo mechanism (see Fig. 7-1). ● Press the TRACK FWD key (▷▷) and PLAY key (▷) in sequence to close the focus servo and spindle servo (do not turn on the tracking servo). ● Observe the TRK.ERR (tracking error) waveform at TP1 pin 2 on an oscilloscope, inserting a 4 kHz low-pass filter (see Fig. 7-2). ● Insert a ⊖ screwdriver into the grating hole, turn and find the null point (see Photo 7-1). ● Next, slowly turn the ⊖ screwdriver COUNTERCLOCKWISE from the null point and adjust until the waveform (tracking error signal) reaches maximum amplitude (see Photo 7-2). Note : Use caution since inserting the ⊖ screwdriver forcefully will cause the pickup unit to float upward. ● Lastly, make sure that there is no major fluctuation in the p-p voltage of the tracking error signal (do not insert the cutoff 4 kHz low-pass filter) when the pickup is moved to the inner and outer periphery. If there is a difference of more than ±10% again turn the grating adjustment screw and adjust the tracking error signal to maximum.
0.5V / div	5msec / div	TP1 Pin 2 (TRK. ERR)	Grating adjustment screw Grating adjustment screw	Null point Maximum amplitude							

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
5'	Grating adjustment (2) (When no 8 cm disc is available.)					
 Fig. 7-3  Fig. 7-4 This adjustment is made if no 8 cm disc is available and the grating adjustment (1) cannot be effectuated. Remove the disc tray to perform this adjustment. ● Removal of the disc tray 1. Press the rear edge of the rack, (*1) marked ① in Fig. 7-3, while pulling the disc tray out to the position where it catches, illustrated in Fig. 7-4. (*1) When the rear edge of rack ① is pressed, first the disc clamp is released. If you continue pressing after it has been released completely, the disc tray is ejected. 2. While pulling the clamp holder ② (see Fig. 7-4) upward with the right hand, hold the tray as indicated by ③ in the left hand and pull it outward. Take care not to allow the $\phi 4$ steel ball to fall (we recommend holding the ball in place with the left index finger while extracting the tray.)						
 Fig. 7-5						
 Fig. 7-6						

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
	 Fig. 7-7  Fig. 7-8					● Put unit in the test mode. (※) ● Press the MANUAL SEARCH FWD (▷▷) key to move the pickup to the vicinity of what would be the center of the disc. Position the pick up so its grating adjusting screw is visible through the elongated hole on the spindle motor side of the servo mechanism base plate. ● As shown in Fig. 7-7, insert a (slotted) ⊖ screwdriver from the rear of the mechanism and check that the grating adjusting screw can be rotated. ● Mount the test disc; be sure to insert a 3-5 mm spacer (if no spacer is available, use a hex wrench) between the clamp holder and clamp retainer, as shown in Fig. 7-5. ● Confirm that the clamper and the clamp retainer are not contacting one another (Fig. 7-6). ● Press the TRACK FWD (▷▷) and the PLAY (▷) keys sequentially to close the focus and spindle servos (do not close the tracking servo). ● Insert a 4 kHz-cutoff low pass filter between the oscilloscope and TP1 pins 2 (TRK. ERR) and 4 (GND) as shown in Fig. 7-8 and observe the waveform of TP1 pin 2 (tracking error) on the oscilloscope.
	0.5V/div	5msec /div	TP1 Pin 2 (TRK. ERR)	Grating adjusting screw Grating adjusting screw	Null point Maximum amplitude	● Turn the grating adjusting screw with the ⊖ screwdriver to find the null point (see Photo 7-1.). ● Next, slowly turn the ⊖ screwdriver COUNTERCLOCKWISE and adjust to the point where the waveform (tracking error signal) first achieves its maximum amplitude (see Photo 7-2). Note : Avoid applying pressure to the ⊖ screwdriver while adjusting the screw. Doing so causes the pickup to move inward, making adjustment more difficult. ● Lastly, remove the low pass filter and confirm that the tracking error signal (do not insert the cutoff 4 kHz low-pass filter) p-p voltage does not greatly vary when the pickup is moved to the inner-most and outer-most tracks of the disc. If the levels diverge by ±10% or more, re-adjust the maximum error amplitude point by turn the grating adjusting screw.

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
 Fig. 7-9  Fig. 7-10						Re-mount the disc tray according to the following procedure when the grating adjustment is complete. 1. Remove the disc and the spacer. 2. While lifting the clamp holder [marked ㊦ in Fig. 7-4] with the right hand, hold the tray in the left hand as indicated by ㊤ and slide the slide base into the hard resin fittings on the loading base as shown in Fig. 7-9 to re-insert the disc tray. At this time, be sure to hold the steel ball in place with the index finger of the left hand. Also, be careful that the front panel is not damaged by the slide base and bearing of the steel ball's bearing (in the slide base) coming into contact with the panel. 3. Insert the slide base so that it fits into the two hard resin fittings at the rear of the loading base (see Fig. 7-10). 4. Insert the tray tightly.

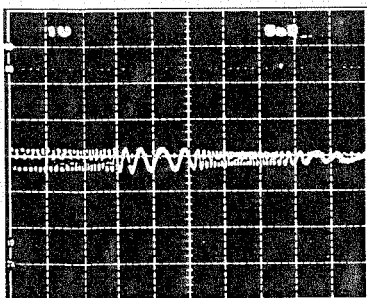


Photo 7-1
Null point

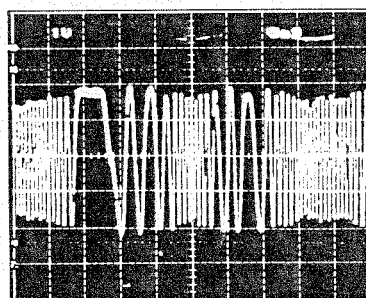


Photo 7-2
Maximum amplitude

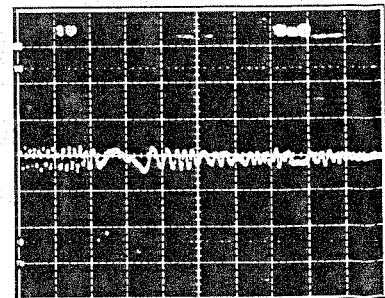
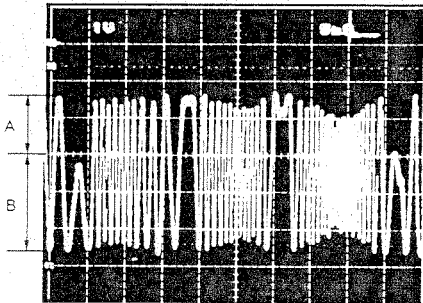
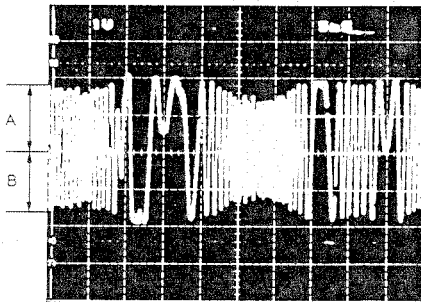
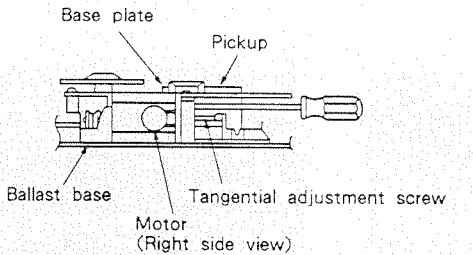
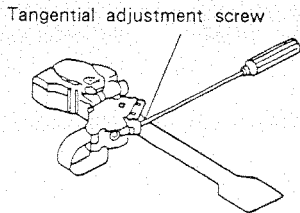


Photo 7-3
This is not the null-point waveform.

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
6 Tracking balance adjustment						
	0.5V/div	5msec /div	TP1 Pin 2 (TRK. ERR)	VR5 (TRK. BAL)		● Load the test disc. ● Put unit in the test mode. (※) ● Press the MANUAL SEARCH FWD (▷▷) key to position the pickup near the center of the disc. ● Press the TRACK FWD (▷▷) and PLAY (▷) keys sequentially to cause the disc to rotate. ● Observe TP1 pin 2 TRK.ERR (tracking error) on the oscilloscope and adjust VR5 TRK.BAL (tracking balance) to eliminate the DC elements from the tracking error signal.
						
			$A \neq B$			$A = B$
			Photo 7-4 DC elements mixed in signal			Photo 7-5 DC elements eliminated
7 Tangential adjustment						
					● Put unit in the test mode. (※) ● Open the tray and load the test disc. ● Press the MANUAL SEARCH FWD (▷▷) key to position the pickup near the center of the disc. ● Insert a hex wrench into the tangential adjustment screw section from the rear of the mechanism. ● Close the tray.	
					Note: Do not use an L-shaped hex wrench. Use one such as shown to the left. Using an L-shaped hex wrench can cause the tray to come loose (see page 31 5'. Grating adjustment (2)). ● Press the TRACK FWD (▷▷), PLAY (▷), and PAUSE (⏏) keys sequentially to close the all servos (PAUSE indicator will illuminate).	
	Fig. 7-11					

※ : See page 27.

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
		200nsec /div	TP1 Pin 1 RF output	Tangential adjustment screw	Sharpest possible eye pattern	● Observe TP1 pin 1 (RF output) on the oscilloscope and adjust the tangential adjustment screw to achieve the sharpest possible eye pattern. ● The point to which the adjusting screw should be set lies about halfway between the points at which the eye pattern becomes most blurred when the screw is rotated clockwise and counterclockwise. When the whole waveform becomes clear, concentrate on sharpening the fine lines forming the diamond at the center of the eye pattern (see Photo 7-8). Adjust until the fine lines on all four sides of the diamond are both sharply defined and dense, as shown in Photo 7-6. Note: Use a hex wrench to raise the pickup some what while making this adjustment.

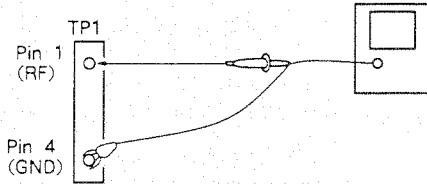
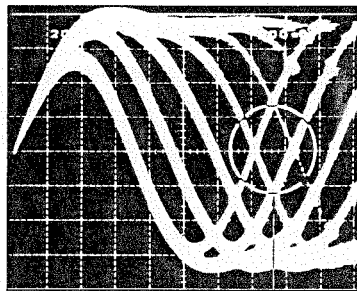


Fig. 7-12



Part to be observed

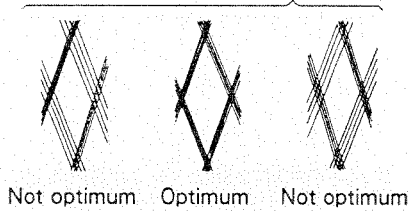


Photo 7-6

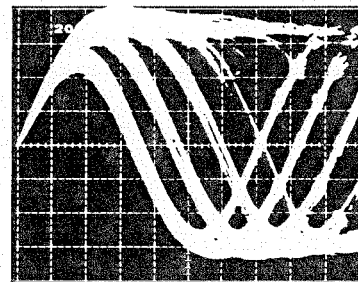


Photo 7-7

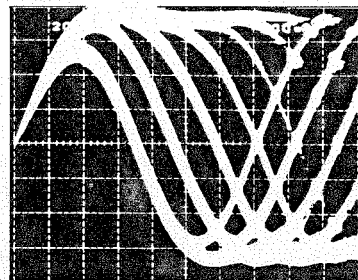


Photo 7-8

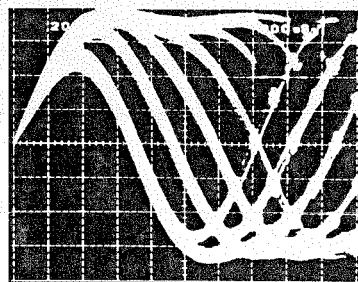


Photo 7-9

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
8	Focus gain adjustment					
	20mV/div CH1 (X) 5mV/div CH2 (Y) (probe 10 : 1)	X-axis : TP1 Pin 5 (FCS. IN) Y-axis : TP1 Pin 6 (FCS. ERR)	VR3 (FCS. GAN)	Phase difference of 90°	● In the POWER OFF state, connect the oscilloscope and oscillator as shown in Fig. 7-13. ● Set the unit to the normal PLAY mode. ● Turn ON the power to the oscillator and set it to output a 1.2kHz 1Vp-p signal. Note : Some oscillators discharge a DC voltage when turned on . It is therefore recommended that the oscillator be connected after it has been turned on. ● Adjust VR3 FCS. GAN (focus gain) so that the Lissajous's figure becomes a horizontal circle (phase difference of 90°)	

The diagram illustrates the test setup for focus gain adjustment. It shows a three-pin component with the following connections:

- Pin 5 (FCS. IN):** Connected to one terminal of a 100kΩ resistor. The other terminal of the resistor is connected to the input of an oscillator (OSC) and to the X-input (labeled 'X') of an oscilloscope. The oscillator is configured to output a 1.2kHz, 1Vp-p signal.
- Pin 4 (GND):** Connected to a common ground point.
- Pin 6 (FCS. ERR):** Connected to the input of a second oscillator (also labeled OSC) and to the Y-input (labeled 'Y') of the oscilloscope. This second oscillator is also configured to output a 1.2kHz, 1Vp-p signal.

Both oscillators are represented by a circle with a sine wave inside. The oscilloscope is shown as a rectangle with 'X' and 'Y' input terminals. The signal paths are labeled with (10 : 1) indicating the probe ratio.

Fig. 7-13

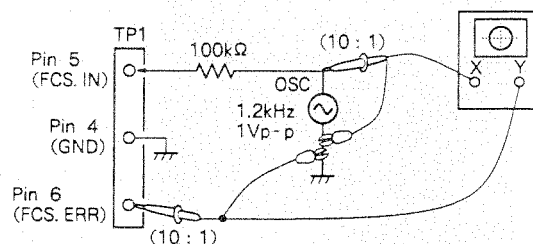


Fig. 7-13

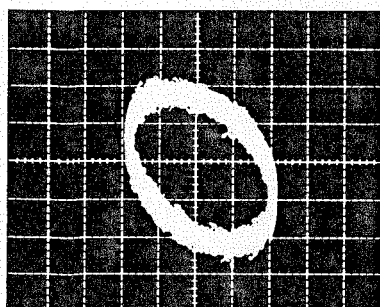


Photo 7-10
High gain

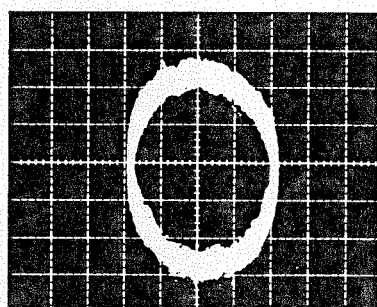


Photo 7-11
Optimum gain

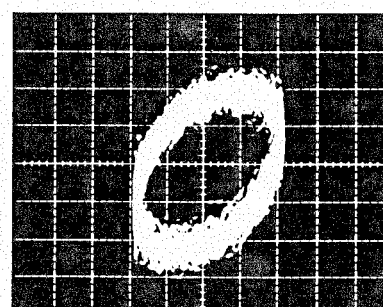


Photo 7-12
Low gain

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
9	Tracking gain adjustment					
	50mV/div CH1 (X) 5mV/div CH2 (Y) (probe 10 : 1)	X-axis : TP1 Pin 3 (TRK. IN) Y-axis : TP1 Pin 2 (TRK. ERR)	VR4 (TRK. GAN)	Phase difference of 90°	● In the POWER OFF state, connect the oscilloscope and oscillator as shown in Fig. 7-14. ● Set the unit to the normal PLAY mode. ● Turn ON the power to the oscillator and set it to output a 1.2kHz 2Vp-p signal. Note : some oscillators discharge a DC voltage when turned on . It is therefore recommended that the oscillator be connected after it has been turned on. ● Adjust VR4 TRK. GAN (tracking gain) so that the Lissajous's figure becomes a horizontal circle (phase difference of 90°).	

Fig. 7-14

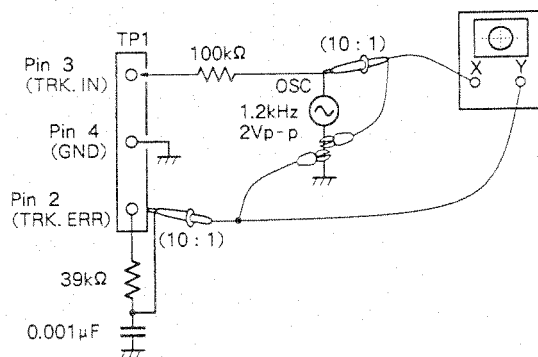


Fig. 7-14

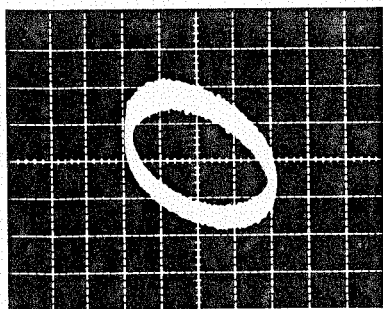


Photo 7-13
High gain

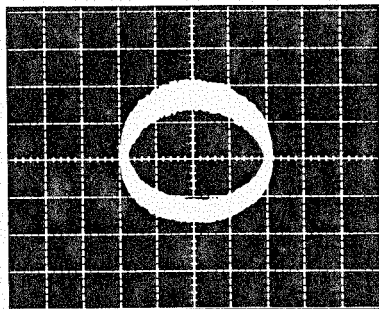


Photo 7-14
Optimum gain

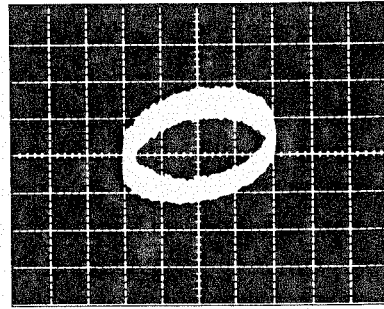


Photo 7-15
Low gain

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	V	H				
10	VCO free-run frequency adjustment					
			TP2 Pin 2 (PLCK)	VR8 (VCO. ADJ)	4.275 ± 0.025MHz	● Put unit in the test mode. (※) ● Short the ASY and GND jumper with a ⊖ screwdriver or similar tool. (※) ● Connect a frequency counter capable of measuring frequencies of 10MHz and above to TP2 pin 2 (PLCK). ● Adjust VR8 (VCO adjustment) so that the frequency counter reading becomes 4.275 ± 0.025MHz.
11	Method for confirming S character (focus error)					
			TP1 Pin 6 (FCS. ERR)			● Put unit in the test mode. (※) ● Ground TP1 pin 5 FCS.IN (focus in) to GND. ● Observe the waveform output by TP1 pin 6 FCS.ERR (focus error) when the TRACK FWD (▷▷) key is pressed.

※ : See page 27.

8. FOR PD-5300/HB, HP, SD AND PD-5300-S/HEM TYPES

NOTES :

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "©" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

8.1 CONTRAST OF MISCELLANEOUS PARTS

The PD-5300/HB, HP, SD and PD-5300-S/HEM types are the same as the PD-5300/HEM type with the exception of the following sections.

Mark	Symbol & Description	Part No.					Remarks
		PD-5300 /HEM type	PD-5300 /HB type	PD-5300 /HP type	PD-5300 /SD type	PD-5300-S /HEM type	
Δ	Voltage selector (AC110V/120-127V/220V/240V)	• • • • •	• • • • •	• • • • •	PSB1002	• • • • •	
Δ	Power transformer (AC220V, 240V)	PTT1055	PTT1055	PTT1055	• • • • •	PTT1055	
Δ	Power transformer (AC110V/120-127V/220V/240V)	• • • • •	• • • • •	• • • • •	PTT1056	• • • • •	
Δ	Transformer board assembly	Non supply	Non supply	Non supply	Non supply	Non supply	
	AC power cord	PDG1003	PDG1004	PDG1006	PDG1013	PDG1003	
	Operating instructions (English/French/Dutch/Italian)	PRE1077	• • • • •	• • • • •	• • • • •	PRE1077	
	Operating instructions (Dutch/Swedish/Spanish/ Portuguese)	PRF1016	• • • • •	• • • • •	• • • • •	PRF1016	
	Operating instructions (English)	• • • • •	PRB1084	PRB1084	PRB1084	• • • • •	
	Operating instructions (Spanish)	• • • • •	• • • • •	• • • • •	PRC1012	• • • • •	
	Button B (POWER)	PAC1252	PAC1252	PAC1252	PAC1252	PAC1289	
	Button (O/C)	PAC1353	PAC1353	PAC1353	PAC1353	• • • • •	
	Button S (O/C)	• • • • •	• • • • •	• • • • •	• • • • •	PAC1395	
	Button (TRACK)	PAC1357	PAC1357	PAC1357	PAC1357	• • • • •	
	Button S (TRACK)	• • • • •	• • • • •	• • • • •	• • • • •	PAC1397	
	Headphone knob	PAC1370	PAC1370	PAC1370	PAC1370	PAC1402	
	Headphone name plate B	PAM1273	PAM1273	PAM1273	PAM1273	PAM1306	
	CD packing case	PHG1275	PHG1275	PHG1275	PHG1275	PHG1296	For packing
	Function panel B	PNW1502	PNW1502	PNW1502	PNW1502	PNW1540	
	Name plate B (tray)	PNW1512	PNW1512	PNW1512	PNW1512	PNW1541	
	FL plate B	PAM1275	PAM1275	• • • • •	• • • • •	PAM1275	
	FL plate A	• • • • •	• • • • •	PAM1255	PAM1255	• • • • •	* 1
	Bonnet	PYY1093	PYY1093	PYY1093	PYY1093	PYY1100	

Note :

- * 1 : The FL plate A is the same as the FL plate B except for the color.

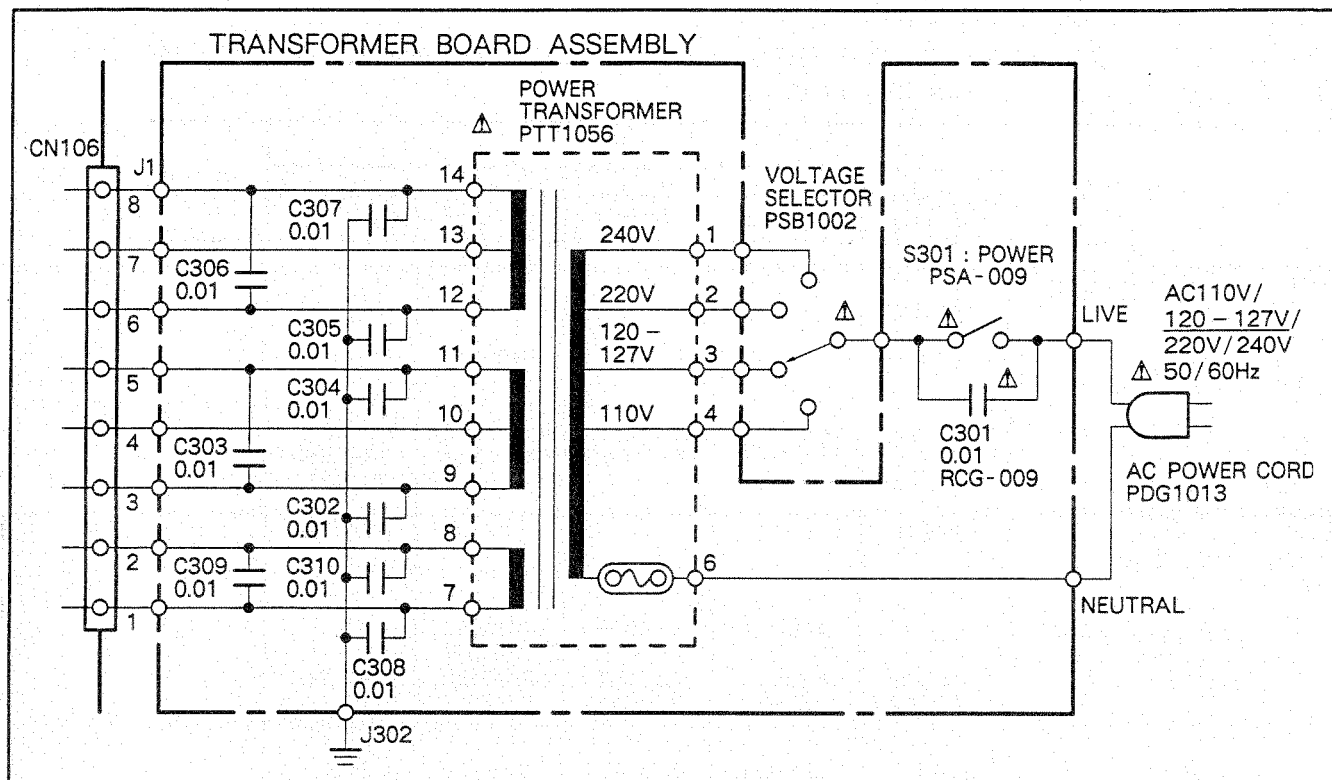
TRANSFORMER BOARD ASSEMBLY

- The Transformer board assembly of PD-5300/SD type is the same as that of PD-5300/HEM type for the service supply parts.
- The Transformer board assemblies of PD-5300/HB, HP and PD-5300-S/HEM types are the same as that of PD-5300/HEM type.

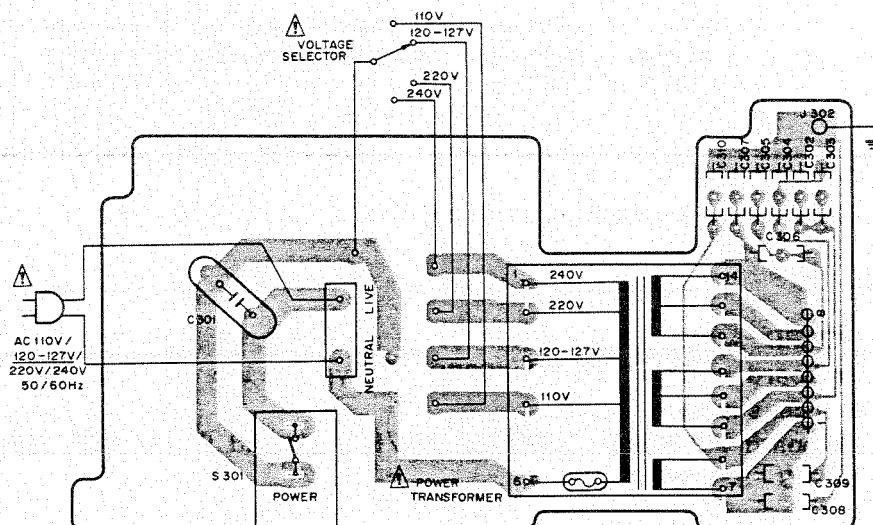
8.2 FOR PD-5300/SD TYPE

Note : The schematic diagram of PD-5300/SD type is the same as that of the PD-5300/HEM type with the exception of the power supply section.

● Schematic diagram

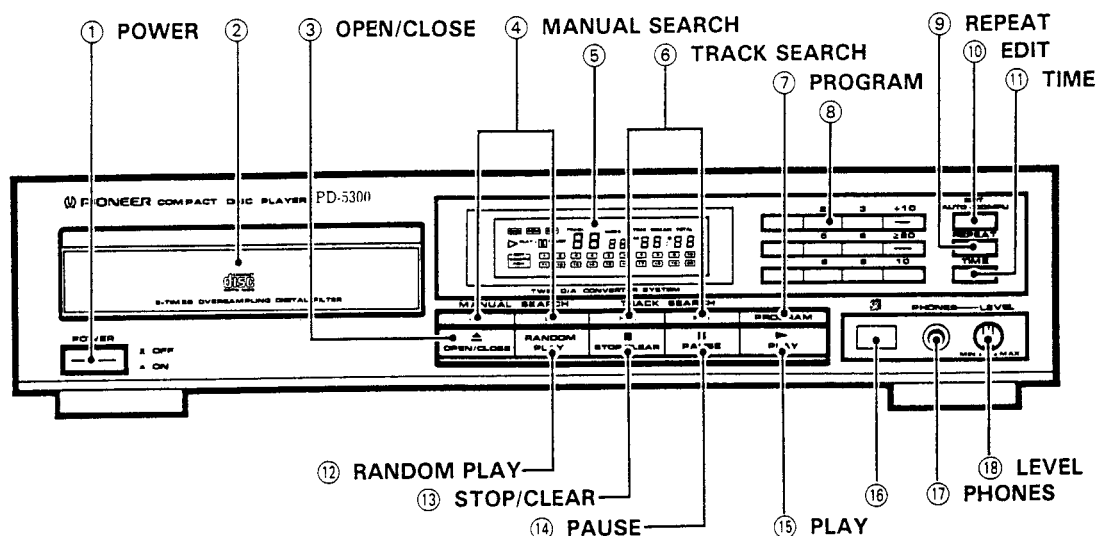


● P. C. board pattern



9. PANEL FACILITIES

FRONT PANEL



① POWER switch

Press to turn power to the unit ON and OFF.

② Disc Tray

This is where the disc is set. When power is switched ON and the OPEN/CLOSE key is pressed, the tray is ejected forward. To insert the tray, press the OPEN/CLOSE key, or lightly push the tray in with your finger.

③ OPEN/CLOSE key (▲)

Press when you wish to eject or load a disc. Each time the key is pressed, the tray is alternately pushed out or pulled in.

④ MANUAL SEARCH keys

When the player is in playback or pause modes, these keys are pressed to perform fast forward or reverse operations to allow manual searching. These operations are only carried out during the time either key is pressed.

⑤ Indicators

RND	: Lights during random playback.
PGM	: Lights after programming (after program has been memorized).
REP	: Lights during repeat play.
▷ PLAY	: Lights during playback.
⏸ PAUSE	: Lights during temporarily interrupted playback.
TRACK	: Displays the current track number (during normal playback and programmed playback) or the track being programmed during programming operation. The lower figures light up in accordance with the number of tracks recorded on the disc, and the numbers of the tracks which have been played are deleted in order. (During programmed playback only the programmed tracks light.)

INDEX : Displays the index * number of the music section of a track or the track division.

TIME/REMAIN/TOTAL

: Changes each time the TIME key is pressed.

● TIME : Displays the track number of the track being played (TRACK) and the elapsed time (minutes and seconds).

● REMAIN : Displays the remaining time on the track being played. When the TIME key is pressed again, the remaining time on the disc will be displayed.

● TOTAL : Displays the total number of tracks on the disc (TRACK) and the overall playback time (minutes and seconds). During playback, the display goes on for about 5 seconds before changing to the TIME display.

COMPU PGM EDIT

: Lights during editing.

* The INDEX is a signal which is recorded within a track to indicate division of the track into separate tunes and items of music.

⑥ TRACK SEARCH keys

During normal playback, programmed playback or pause modes, these keys are pressed to search for the desired track. Pressing either key causes the player to advance to the next track or to return to the previous track. Even in stop mode, these keys can be used to select the desired track. Press the PLAY key to playback the desired track.

⑦ PROGRAM key

Use to program a sequence of tracks.

⑧ **Track number keys (1 to 10, + 10 and ≥ 20)**

These keys are used to specify the track numbers (track 1 to 99) for direct track selection or program entry.

⑨ **REPEAT key**

Press to perform repeat playback.

⑩ **EDIT key**

Press this key to automatically program selections. When this key is pressed, a pause is inserted after half of the specified time and the selections are programmed in the sequence from track 1 (Auto Program Editing). If this key is pressed again, a pause is inserted, and the selection sequence is rearranged so the playback time is as close as possible to half of the desired playback time. The rearranged sequence is then programmed (Computer Allocated Program Editing).

⑪ **TIME key**

This key selects the display mode of the indicator panel. Each time the key is pressed, the indication changes from TIME, REMAIN, to TOTAL in that order. (For details concerning the display contents, refer to the explanation about the indicators.)

⑫ **RANDOM PLAY key**

Press to begin random playback.

⑬ **STOP/CLEAR key (■)**

Press to stop playback. When pressed, the player goes into stop mode and all operations stop.
Press to clear a program. When pressed during stop mode, the program stored in memory is cleared.

⑭ **PAUSE key (⏸)**

Press to temporarily interrupt playback. When pressed again, the pause mode is cancelled and playback resumes.

⑮ **PLAY key (▶)**

Press to begin playback, and to cancel the pause mode.

⑯ **Remote sensor**

⑰ **PHONES (headphones) jack**

When you wish to use headphones, insert the plug for the headphones into the headphone jack.

⑱ **PHONES LEVEL control knob**

Use to adjust the level of sound when using headphones. Turning the knob to the right increases the sound level.

10. SPECIFICATIONS

1. General

Type	Compact disc digital audio system
Power requirements	
European models	AC 220V, 50/60Hz
U.K., Australian models	AC 240V, 50/60Hz
Other models	AC 110/120—127/220/240V (switchable), 50/60Hz
Power consumption	13W
Operating temperature	+ 5°C — + 35°C (+ 41°F — + 95°F)
Weight	4.0kg (8lb, 9oz)
External dimensions	420(W) × 325(D) × 98(H)mm 16-1/2(W) × 12-13/16(D) × 3-7/8(H) in.

2. Audio section

Frequency response	4Hz—20kHz (± 0.5dB) (EIAJ)
S/N	104dB or more (EIAJ)
Dynamic range	95dB or more (EIAJ)
Channel separation	98dB or more (EIAJ)
Total harmonic distortion	0.005% or less (EIAJ)
Output voltage	2.0V
Wow and flutter	Limit of measurement (± 0.001% W.PEAK) or less (EIAJ)
Number of channels	2 channels (stereo)

3. Functions

- Play
- Pause
- Manual search
- Programmed playback (up to 24 tracks)
- Track search
- Index search (remote control)
- Programmed repeat
- Pause program
- Direct track selection
- All track repeat
- Add-on program
- Computer allocated program editing
- Auto program editing
- Random play
- Programmed random play
- Timer start

4. Accessories

● Remote control unit	1
● Size AAA/R03 dry cell batteries	2
● Output cable	1
● Operating instructions	1

NOTE:
The specifications and design of this product are subject to change without notice, due to improvements.