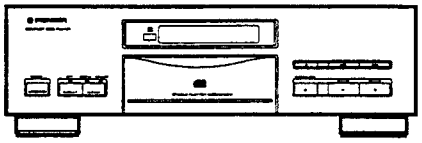
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2527

COMPACT DISC PLAYER

PD-S95
PD-95

PD-S95 AND PD-95 HAVE THE FOLLOWING:

Type	Model		Power Requirement	Remarks
	PD-S95	PD-95		
KU/CA	○	–	AC120V only	
HEM	–	○	AC220-230V, 240V (switchable) *	

* Change the connection of the power transformer's primary wiring.

- **This manual is applicable to PD-S95/KU/CA and PD-95/HEM.**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

CONTENTS

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SN MAY. 1992 Printed in Japan

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. SAFETY INFORMATION

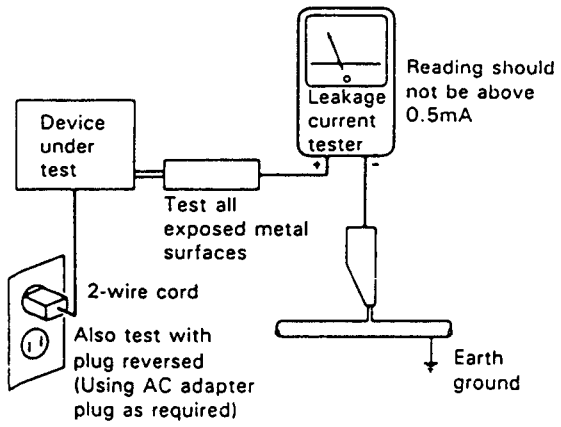
(FOR USA MODEL ONLY)

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 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



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 ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose 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.

2. LABEL CHECK

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

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.

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

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LASER
Picture 1
Warning sign for laser radiation

HEM type

HEM type

Additional Laser Caution

1. Laser Interlock mechanism
   The ON/OFF status of the clamp switch (S 102) for detecting loading completion is detected by the system microprocessor, and the design prevents laser diode oscillation when the clamp switch is OFF.
   Thus, the interlock will no longer function if the clamp switch (S 102) is deliberately shorted.
   In the test mode the interlock mechanism will not function (refer to page 36).
   Laser diode oscillation will continue if pin 4, 5, or 29 of CXA 1081 S(IC 1) is connected to ground or the terminals of Q 304 are shorted each other (fault condition).

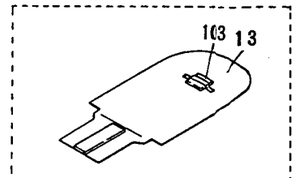
2. If the fault condition described in 1 is induced with the cover removed and the objective lens extending past the outer circumference of the disc clamper diameter, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

3. PACKING AND PARTS LIST

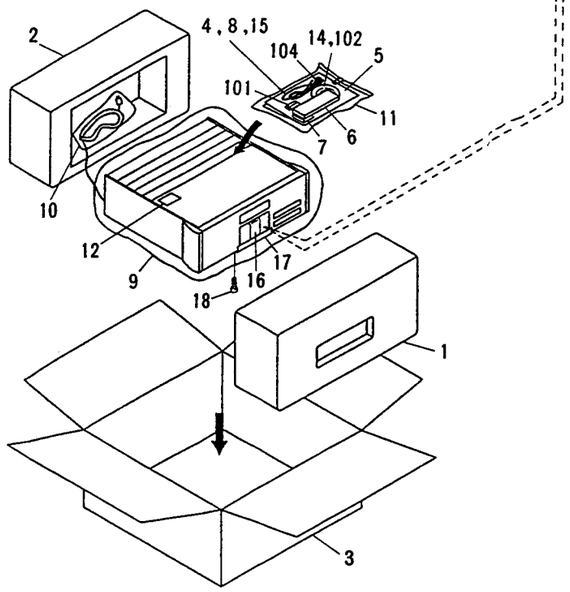
NOTES:
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List

Mark	No.	Description	Part No.
	1	Styrol protector (F)	PHA1176
	2	Styrol protector (R)	PHA1177
	3	Packing case (PD-95)	PHG1814
		Packing case (PD-S95)	PHG1815
	4	Connection cord (PD-95 only)	PDE1032
	5	Operating instructions (English/French)	PRE1165
		Operating instructions (German/Italian/Dutch/Swedish/Spanish/Portuguese) (PD-95 only)	PRF1058
	6	Wireless remote control unit	PWW1056
	7	Battery cover	PZN1009
	8	Cord with mini plug (PD-S95 only)	PDE – 319
	9	Mirror mat	VHL1012
	10	Vinyl bag	Z21 – 037
	11	Vinyl bag	Z21 – 038
	12	Caution label	PRW1246
	13	Sheet	PRW1245
	14	Table rubber assembly	PEA1174
	15	Video cord (PD-S95 only)	VDE1003
	16	Styrol protector	PHC1057
	17	Caution	PRM1025
	18	Screw	PBA1065
NSP	101	Battery (R03, AAA)	VEM – 022
NSP	102	Turn table rubber	PEB1187
NSP	103	Spacer (rubber)	PEB1174
NSP	104	Earth lead unit (PD-S95 only)	PDF1129



Stored at the turntable of the tray assembly.



4. EXPLODED VIEWS AND PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- 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.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

4.1 EXTERIOR

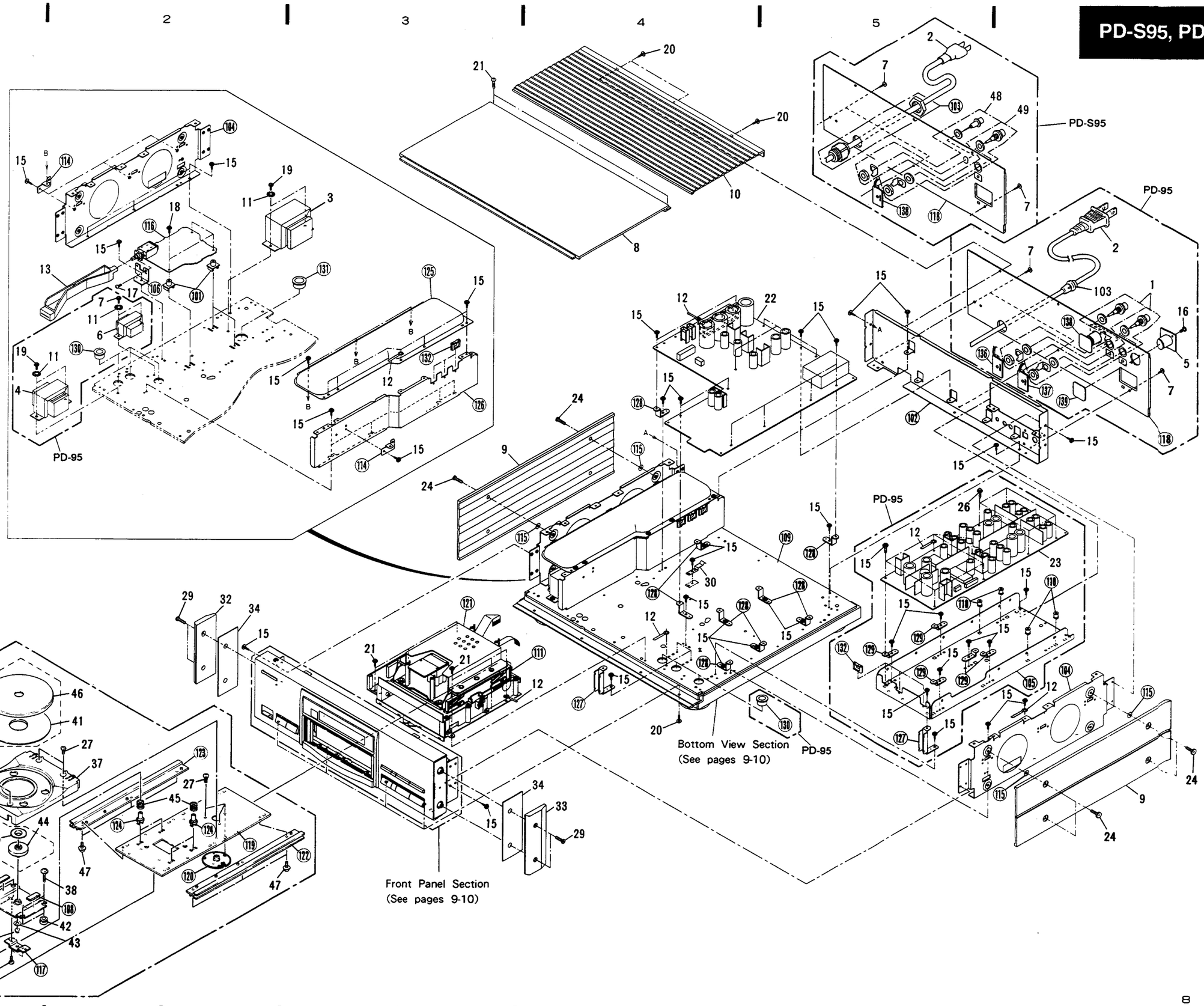
Parts List

Mark	No.	Description	Part No.
	1	1P pin jack (PD-95)	PKB1017
⚠	2	AC power cord (PD-95)	PDG1003
⚠		AC power cord (PD-S95)	PDG1045
⚠	3	Power transformer (PD-95)	PTT1254
⚠		Power transformer (PD-S95)	PTT1251
⚠	4	Power transformer (PD-95)	PTT1255
	5	3P receptacle (PD-95)	PKP1006
⚠	6	Power transformer (PD-95)	PTT1256
	7	Screw	IBZ30P080FCC
	8	Upper board (F)	PNS1026
	9	Side board	PAN1225
	10	Upper board (R)	PAN1227
	11	Washer	WH40FUC
	12	Cord clamper	RNH – 184
	13	Power button	PAC1610
	14	Plate assembly	PXA1465
	15	Screw	IBZ30P060FCC
	16	Screw	PMZ26P060FNI
	17	Screw	PDZ30P050FCC
	18	Screw	IBZ30P180FCC
	19	Screw	IBZ40P080FCC
NSP	20	Screw	BBT30P080FCC
	21	Screw	IBZ30P100FCC
NSP	22	Main board assembly (PD-95)	PWZ2212
NSP		Main board assembly (PD-S95)	PWZ2213
⊙	23	Analog board assembly (PD-95)	PWM1529
	24	Screw	PBA1049
	25	Tape	PNM1129
	26	Screw	IBZ30P150FCU
	27	Screw	IBZ30P060FCC
	28	.....	
	29	Screw	VBA1027
	30	Plate	PBK1090

Mark	No.	Description	Part No.
	31	Screw	CPZ30P080FMC
	32	Side pole	PAN1224
	33	Side pole (R)	PAN1237
	34	Side spacer	PEB1197
	35	Caution label	PRW1244
	36	Table assembly	PEA1255
	37	Over tray	PNW2079
	38	Screw	PBA1064
	39	Spindle base assembly	PXA1421
	40	Holder	VNL – 268
	41	Damper sheet	PNM1125
	42	Damper rubber	PEB1146
	43	E ring	YE30FUC
	44	Rotor assembly	PXA1392
	45	Spring	PBH1092
	46	Turn table	PAN1267
	47	Screw	BBZ30P060FCC
⚠	48	Ground terminal (PD-S95)	DKE – 101
⚠	49	BNC connectors (PD-S95)	PKB1018
NSP	101	PCB mold	AMR1525
NSP	102	Rear base (PD-S95)	PNA1712
NSP		Rear base (PD-95)	PNA1894
⚠	103	Strain relief (PD-95)	CM – 22B
NSP		Strain relief (PD-S95)	PNW2145
NSP	104	Side angle	PNB1328
NSP	105	Audio case (PD-95)	PNB1332
NSP	106	Switch angle	PNB1373
NSP	107	Sash A	PAN1192
	108	Stopper (rubber)	PEB1148
NSP	109	Base plate	PNA1711
NSP	110	PCB spacer (PD-95)	PNY – 404
NSP	111	Single mechanism assembly	PXA1461
NSP	112	Tray assembly	PXA1447
NSP	113	Plate spring ST	PBK1089
NSP	114	PCB angle	PNB1205
NSP	115	Spacer	PNM1019

Mark	No.	Description	Part No.
NSP	116	Transformer primary assembly (PD-95)	PWZ2217
NSP		Transformer primary assembly (PD-S95)	PWZ2218
NSP	117	Thrust holder	PNB1325
NSP	118	Rear panel (PD-95)	PAN1258
NSP		Rear panel (PD-S95)	PAN1259
NSP	119	Tray	PNA1782
NSP	120	Tray locker	PNW2014
NSP	121	Mechanism cover	PNB1402
NSP	122	Slide guide	PNW2080
NSP	123	Rack	PNW2081
NSP	124	Collar	PNW2012
NSP	125	Trans roof	PNB1331
NSP	126	AC shield plate	PNB1330
NSP	127	Angle (PD-95)	PNB1333
NSP	128	PCB angle M	PNB1334
NSP	129	PCB angle A (PD-95)	PNB1372
NSP	130	Edge cover 11 (PD-95)	PEC1018
NSP	131	Edge cover 15	PEC1019
NSP	132	Edge guard (B)	DEC1144
NSP	133	Plate	PAN1263
NSP	134	Tray rubber	PEB1198
NSP	135	Tray holder B	PNW2077
NSP	136	Line L board assembly (PD-95)	PWZ2320
NSP	137	Line R board assembly	PWZ2321
NSP	138	Ballance L board assembly (PD-95)	PWZ2223
NSP		BNC board assembly (PD-S95)	PWZ2326
NSP	139	Ballance R board assembly (PD-95)	PWZ2225

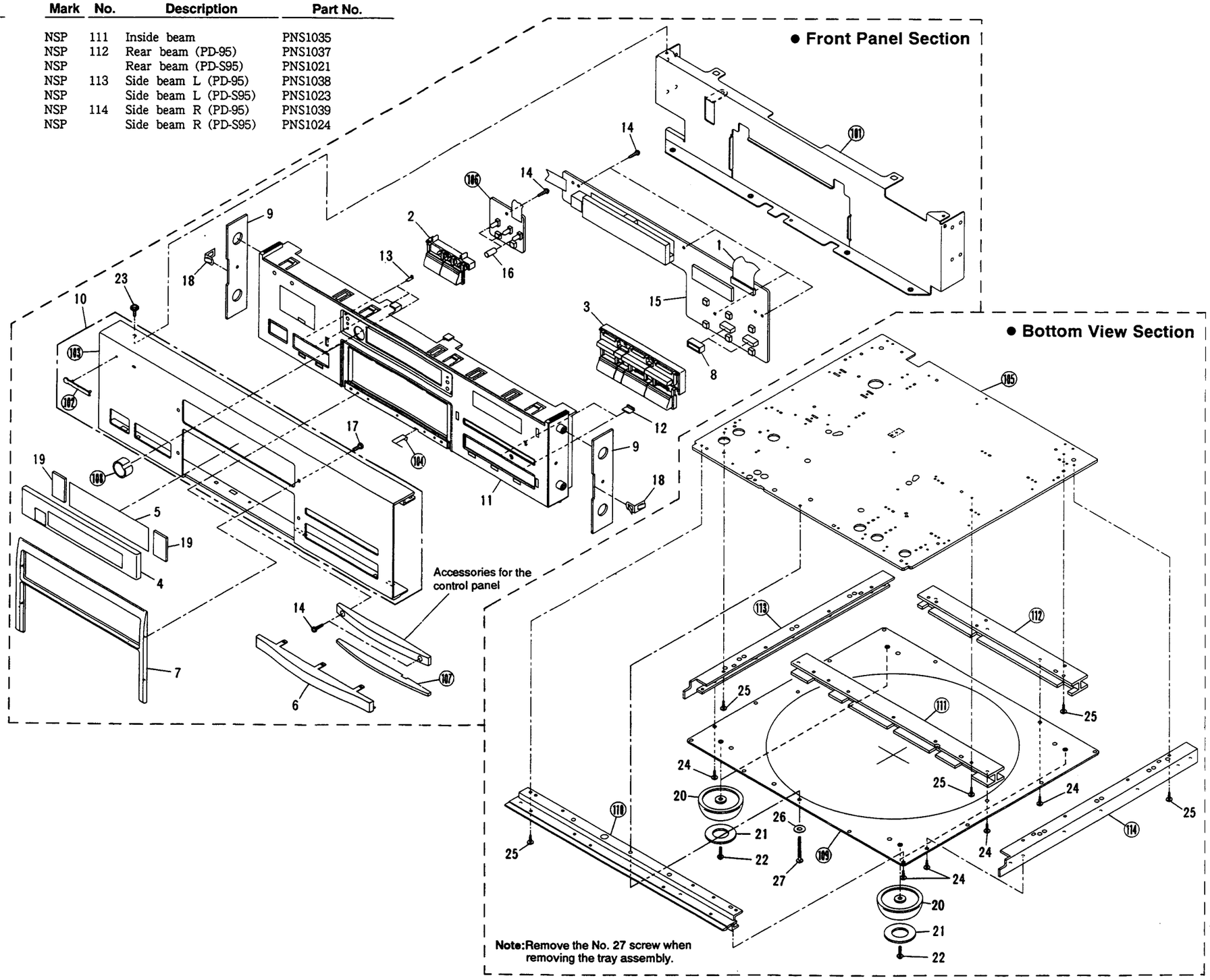
Exterior


PD-95
PD-S95
Front Panel Section
(See pages 9-10)
Bottom View Section
(See pages 9-10)

4.2 FRONT PANEL AND BOTTOM VIEW SECTION

Parts List

Mark	No.	Description	Part No.
⚠	1	23P F.F.C/30V (PD-95)	PDD1069
⚠		25P F.F.C/30V (PD-S95)	PDD1096
	2	Button	PAC1649
	3	Control button	PAC1619
	4	Display window	PAM1536
	5	FL sheet (PD-95)	PAM1535
		FL sheet (PD-S95)	PAM1580
	6	Display plate (PD-95)	PAN1189
		Display plate (PD-S95)	PAM1263
	7	Front mask	PAN1245
	8	LED cover	PEB1150
	9	Side rubber	PEB1196
	10	Front panel assembly (PD-95)	PEA1238
		Front panel assembly (PD-S95)	PEA1237
	11	Control panel	PNW2076
	12	Lens L	PNW1860
	13	Indicater lens	PNW1893
	14	Screw	BBZ26P080FCC
NSP	15	Operate A board assembly (PD-95)	PWZ1998
NSP		Operate A board assembly (PD-S95)	PWZ2000
	16	LED cover (S)	PEB1167
	17	Screw	PMA30P080FCU
	18	Earth plate S	PBK1100
	19	FL sheet	PNM1149
	20	Insulator	PLA1097
	21	Stopper	PNM1156
	22	Screw	IBZ40P150FCC
NSP	23	Screw	BBT30P080FCC
	24	Screw	BBZ40P080FZK
	25	Screw	IBZ30P080FCC
	26	Washer	WC40FCU
	27	Screw	BBZ40P300FZK
NSP	101	Front angle	PNB1329
NSP	102	Name plate	PAN1262
NSP	103	Front panel (PD-95)	PAN1256
NSP		Front panel (PD-S95)	PAN1257
NSP	104	Plate spring K	PBK1087
NSP	105	Base plate	PNA1711
NSP	106	Operate B board assembly	PWZ1999
NSP	107	Absorber (sponge)	PNM1116
NSP	108	Senser plate	PNM1154
NSP	109	Under base	PNA1710
NSP	110	Front beam	PNS1034
NSP	111	Inside beam	PNS1035
NSP	112	Rear beam (PD-95)	PNS1037
NSP		Rear beam (PD-S95)	PNS1021
NSP	113	Side beam L (PD-95)	PNS1038
NSP		Side beam L (PD-S95)	PNS1023
NSP	114	Side beam R (PD-95)	PNS1039
NSP		Side beam R (PD-S95)	PNS1024



4.3 MECHANISM UNIT

● Installing the Disc Table

Fig. 1

Cut the spacer indicated by the arrow (Refer to Fig. 1) with a pair of nippers (rear side), insert it between the disc table and mechanism base, and tighten it with a screw.
Torque above 5 kg/cm at this time.
(Reference) : If a torque driver is not available, tighten a hexagonal screw tightly, press down the disc table and check that it does not move downwards.
Remove the spacer after installing the disc table. (Thickness of the spacer is 1 mm.)

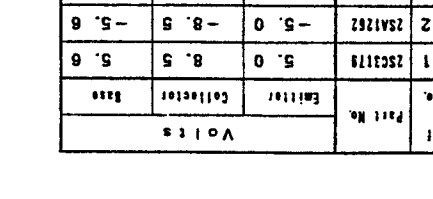
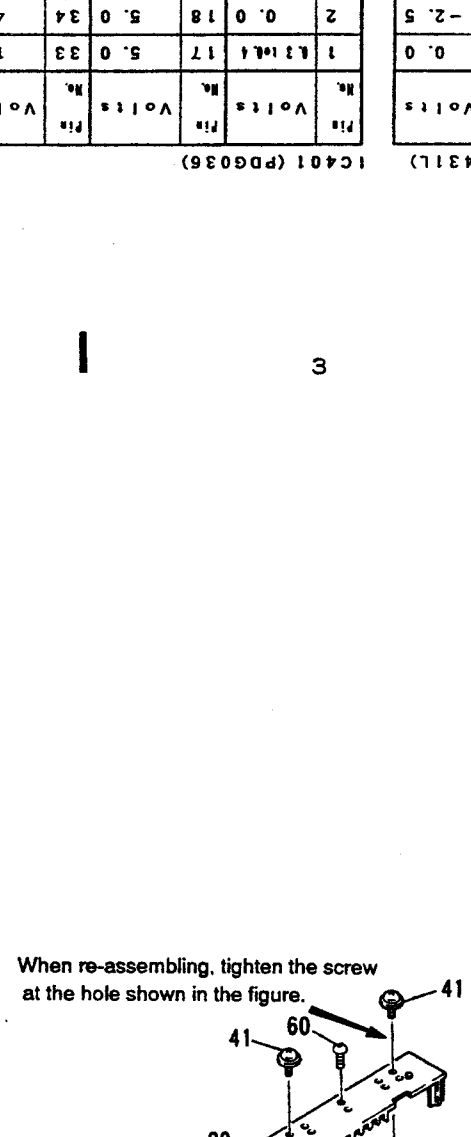


Fig. 2

When re-assembling, tighten the screw at the hole shown in the figure.



IC401 (PDG036)

Pin No.	Volts	Pin No.	Volts	Pin No.	Volts	Pin No.	Volts
1	6.3 to 6.4	17	5.0	33	1.3	49	-26.9
2	0.0	18	5.0	34	4.9	50	-26.9
3	4.9	19	5.0	35	4.9	51	-26.9
4	4.9	20	5.0	36	1.3	52	-26.9
5	5.1	21	5.0	37	1.3	53	-26.9
6	0.0	22	5.0	38	5.0	54	-26.9
7	6.3 to 6.4	23	5.0	39	-24.4	55	-26.5
8	0.0	24	0.0	40	-21.3	56	-26.5
9	0.0	25	0.0	41	5.1	57	-26
10	0.0	26	0.0	42	0.6	58	0.0
11	0.0	27	0.0	43	5.0	59	0.0
12	0.0	28	5.0	44	-24.4	60	2.3
13	0.0	29	5.0	45	1.6	61	2.2
14	0.0	30	0.0	46	-22.6	62	5.0
15	0.0	31	0.0	47	-26.9	63	5.0
16	5.0	32	0.0	48	-26.9	64	5.0

IC23 (NJM4311L)

Pin No.	Volts
1	0.0
2	-2.5
3	0.0

IC20 (NJM4311L)

Pin No.	Volts
1	2.5
2	0.0
3	2.5

IC14 (AN7910F)

Pin No.	Volts
1	0.0
2	-16.5
3	-10

IC12 (NJM2114D)

Pin No.	Volts
1	-2.4
2	-2.5
3	-2.5
4	-8.5
5	2.5
6	2.5
7	2.4
8	8.5

IC10 (MS19574L)

Pin No.	Volts
1	5.0
2	1.6
3	0.0
4	1.3
5	5.0

IC11 (NJM7805FA)

Pin No.	Volts
1	8.5
2	0.0
3	5.0

IC13 (AN7810F)

Pin No.	Volts
1	16.5
2	0.0
3	10

IC21 (AN7810F)

Pin No.	Volts
1	17.2
2	0.0
3	10

IC15 (NJM7812FA)

Pin No.	Volts
1	17.1
2	0.0
3	12

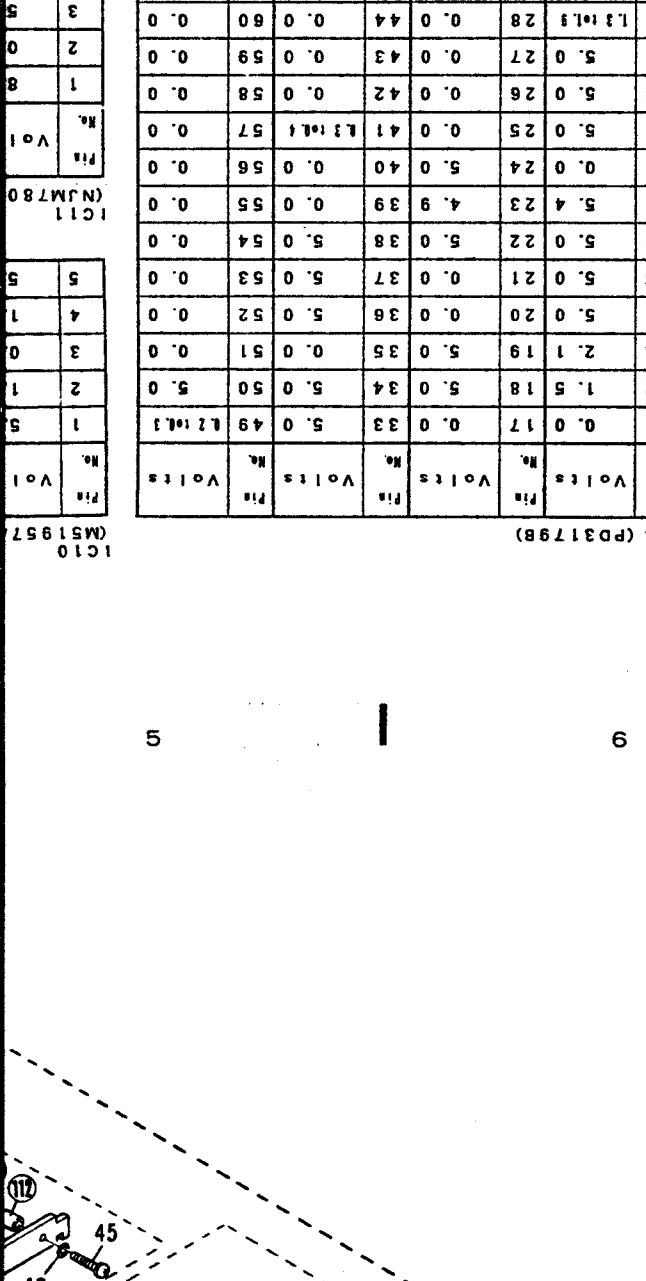
IC18 (NJM7912FA)

Pin No.	Volts
1	0.0
2	-17.1
3	-12

IC22 (AN7910F)

Pin No.	Volts
1	0.0
2	-17.2
3	-10

Ref No.	Part No.	Volts		
		Emitter	Collector	Base
Q11	2SC3178	5.0	8.5	5.6
Q12	2SA1262	-5.0	-8.5	-5.6
Q13	2SA1262	17.1	10	16.6
Q14	2SC3178	-17.1	-10	-16.6
Q15	2SB715	3.5	0.0	2.8
Q16	2SD755	-3.5	0.0	-2.8



When re-assembling, tighten the screw at the hole shown in the figure.

Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
A	1	Lever switch	DSK1003		51	.....	
	2	Screw	PBA1064		52	Washer	WT32D080D050
	3	Float spring (A)	PBH1098		53	.....	
	4	Float spring (B)	PBH1099		54	Screw	PMA26P040FCU
	5	Spring	PBH1112		55	.....	
	6	Float spring (C)	PBH1113		56	Screw	BPZ26P060FCU
	7	Float spring (D)	PBH1114		57	Washer	WT31D054D013
	8	Belt	PEB1138		58	Screw	IPZ30P060FCU
	9	Damper rubber	PEB1146		59	Screw	ZMD30H040FBT
	10	Stopper (rubber)	PEB1085		60	Screw	IBZ30P120FCC
	11	Screw	PMZ30P350FCU		61	Screw	BMZ26P050FCU
	12	Roller	PNW2037		62	Screw	PMZ26P040FCU
	13	.....			63	Screw	IBZ30P080FCC
	14	Gear	PNW1097		64	Screw	PDZ30P060FCC
	15	Motor pulley	PNW1643				
				NSP	101	Connector assembly (6P)	PDE1110
	16	Cam	PNW1816	NSP	102	Connector assembly (4P)	PDE1111
B	17	Synchronize gear	PNW1817	NSP	103	Felt	PED – 047
	18	Gear pulley	PNW1870	NSP	104	Synchronize gear shaft	PLA1079
	19	Single gear	PNW1878	NSP	105	Gear angle	PNB1320
	20	Plate	PNW2013				
				NSP	106	Deck	PNB1323
	21	Loading base L	PNW2050	NSP	107	Bottom plate	PNB1335
	22	Loading base R	PNW2051	NSP	108	Base plate	PNB1322
	23	DC motor assembly	PEA1225	NSP	109	Collar	PNW2012
	24	Weight	PNB1232	NSP	110	U guide	PNW1880
	25	Screw	PBA1024				
				NSP	111	Servo mechanism assembly	PXA1452
	26	Screw	PBA1054	NSP	112	Collar	PBE1002
	27	Spring	PBH1028	NSP	113	Cushion rubber (2.5)	PEB – 304
	28	Spring	PBH1029	NSP	114	Magnet	PMF1006
	29	Spring	PBK1021	NSP	115	Side yoke	PNB1046
	30	Rivet	PBM – 015				
				NSP	116	Center yoke	PNB1047
	31	Stopper (rubber)	PEB1035	NSP	117	Sheet	PNM – 042
C	32	Holder rubber	PEB1048	NSP	118	Tape	PNM – 044
	33	Guide bar	PLA1026	NSP	119	Linear flexible cable	PNP1022
	34	Shaft	PLA1027	NSP	120	Carriage	PNR1034
	35	Disc table	PLA1088				
				NSP	121	Bobbin (A)	PNW1205
	36	Roller	PLM1001	NSP	122	Bobbin (B)	PNW1206
	37	Adjust lever	PNB1048	NSP	123	Mechanism base unit	PNW2078
	38	Spindle motor assembly	PEA1224	NSP	124	Blind sheet	PNM1112
	39	Pickup assembly	PWY1004	NSP	125	Earth lead unit	PDF1074
	40	Screw	BBZ30P060FCC				
	41	Screw	IPZ30P120FCU				
	42	Screw	PMZ26P030FCU				
	43	Screw	PMZ26P060FCU				
	44	Screw	PMZ30P080FCU				
	45	Screw	PMZ30P160FCU				
	46	Washer	WS30FMC				
	47	Washer	WT26D047D025				
D	48	.....					
	49	Drive unit	PEA1222				
	50	Speed detect unit	PEA1223				

IC1 (CXA1081S)

Pin No.	Volts	Pin No.	Volts
1	0.0	16	-3.0
2	1.3	17	-5.0
3	0.0	18	0.0
4	2.4	19	0.0
5	2.8	10	0.0
6	-4.8	21	-4.9
7	0.0	22	0.0
8	0.0	23	-1.0
9	0.0	24	-2.1
10	0.0	25	0.0
11	0.0	26	2.5
12	-1.2	27	2.4
13	-0.1	28	5.0
14	0.0	28	0.0
15	-3.1	30	5.0

IC2 (CXA1082BS)

Pin No.	Volts	Pin No.	Volts	Pin No.	Volts
1	-5.0	17	0.0	33	2.5
2	0.0	18	0.0	34	2.5
3	0.0	19	0.0	35	2.3
4	0.0	20	0.0	36	2.3
5	0.0	21	0.0	37	3.5
6	0.0	22	0.0	38	2.4
7	0.0	23	-4.1	39	5.0
8	0.0	24	5.0	40	2.5
9	0.0	25	-5.0	41	5.0
10	0.0	26	0.0	42	2.5
11	0.2	27	5-0	43	5.0
12	0.0	28	5.0	44	0.0
13	0.2	29	5.0	45	6.2316.23
14	0.0	30	5.0	46	2.5
15	0.0	31	5.0	47	5.0
16	5.0	32	0.0	48	0.0

IC3 (CXD1167Q)

Pin No.	Volts	Pin No.	Volts	Pin No.	Volts	Pin No.	Volts
1	2.5	21	0.0	41	0.0	61	1.3
2	5.0	22	0.12	42	0.0	62	0.0
3	2.5	23	0.0	43	0.0	63	0.0
4	2.8	24	0.0	44	0.0	64	0.0
5	2.4	25	0.0	45	0.0	65	0.0
6	2.5	26	5.0	46	0.0	66	0.0
7	5.0	27	2.5	47	0.0	67	0.0
8	2.4	28	5.0	48	0.0	68	2.5
9	2.4	29	1.9	49	0.0	69	2.5
10	0.0	30	1.9	50	0.0	70	2.3
11	1.8	31	0.0	51	2.3	71	5.0
12	0.0	32	0.0	52	0.0	72	0.0
13	5.0	33	5.0	53	2.2	73	5.0
14	5.0	34	0.0	54	2.2	74	0.0
15	5.0	35	0.0	55	0.0	75	2.4
16	5.0	36	0.0	56	0.0	76	2.3
17	0.0	37	0.0	57	5.0	77	2.3
18	5.0	38	0.0	58	0.0	78	2.5
19	0.0	39	0.0	59	0.0	79	2.5
20	5.0	40	0.0	60	1.3	80	2.5

IC4 (PD3179B)

Pin No.	Volts	Pin No.	Volts	Pin No.	Volts	Pin No.	Volts
1	0.0	17	0.0	33	5.0	49	6.2316.23
2	1.5	18	5.0	34	5.0	50	5.0
3	2.1	19	5.0	35	0.0	51	0.0
4	5.0	20	0.0	36	5.0	52	0.0
5	5.0	21	0.0	37	5.0	53	0.0
6	5.0	22	5.0	38	5.0	54	0.0
7	5.4	23	4.9	39	0.0	55	0.0
8	0.0	24	5.0	40	0.0	56	0.0
9	5.0	25	0.0	41	6.3116.31	57	0.0
10	5.0	26	0.0	42	0.0	58	0.0
11	5.0	27	0.0	43	0.0	59	0.0
12	6.3116.31	28	0.0	44	0.0	60	0.0
13	5.0	29	4.9	45	0.0	61	0.0
14	5.0	30	4.9	46	0.0	62	2.5
15	0.0	31	0.0	47	0.0	63	0.0
16	5.0	32	0.0	48	5.0	64	2.5

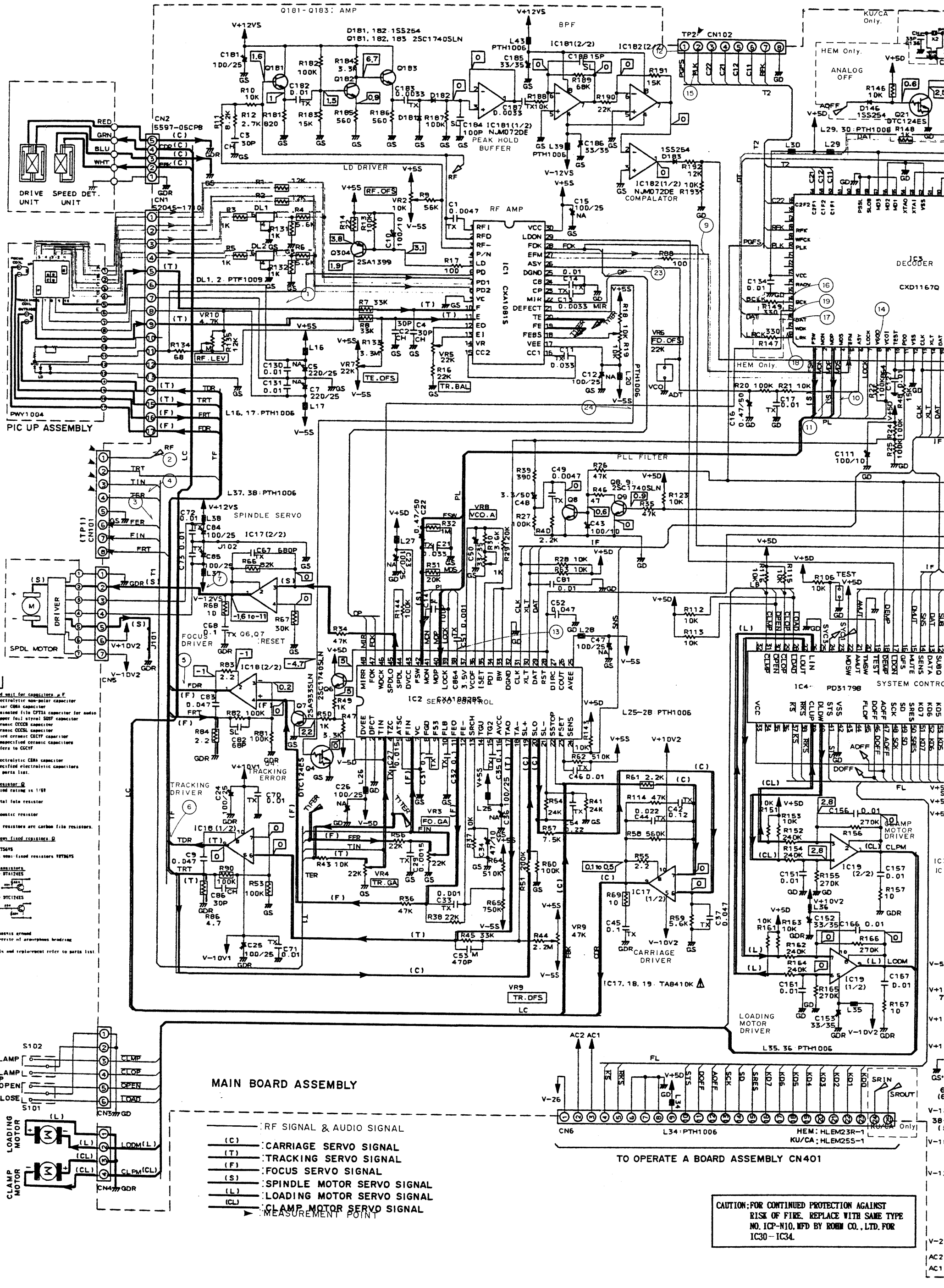
IC10 (M51957

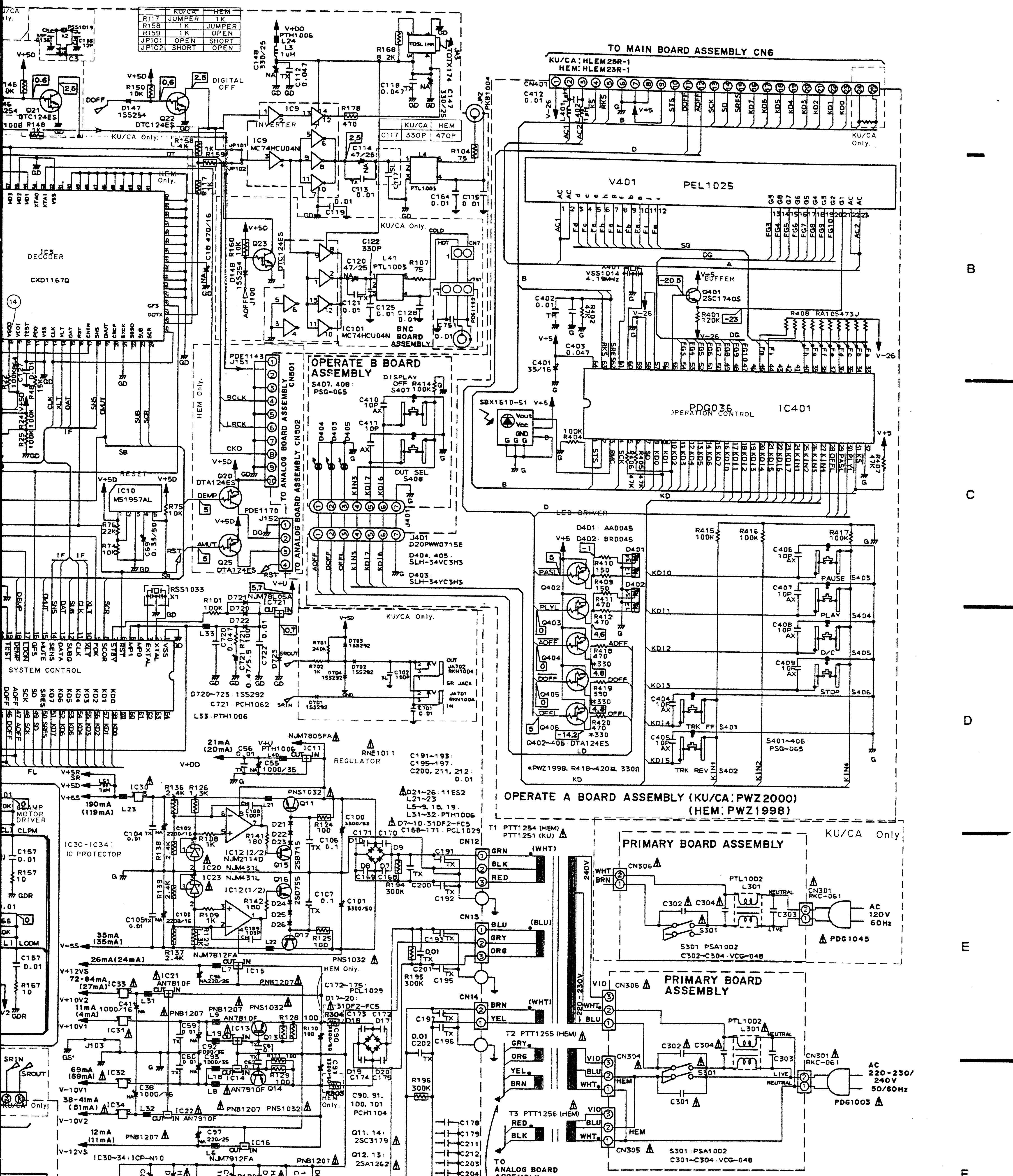
Pin No.	Vol
1	5
2	1
3	0
4	1
5	5

IC11 (NJM780

Pin No.	Vol
1	8
2	0
3	5

5. SCHEMATIC AND PCB CONNECTIONS DIAGRAMS





Line Voltage Selection

Line voltage can be changed with the follows.
1. Disconnect the AC power cord.
2. Remove the cover.
3. Change the transformer wire of CN304 and CN305 pins ② and ③ and CN306 pins ① and ③ as follows.

Voltage	CN304 and CN305		CN306	
	Pin No. ②	Pin No. ③	Pin No. ①	Pin No. ③
220V to 230V	BLUE	VIOLET	BLUE	VIOLET
240V	VIOLET	BLUE	VIOLET	BLUE

4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX 193	220V label
AAX 192	240V label

• View from component side

MAIN BOARD ASSEMBLY

*1
IC1 (CXA1081S)

Pin No.	Volts	Pin No.	Volts
1	0.0	16	−3.0
2	7.3	17	−5.0
3	0.0	18	0.0
4	2.4	19	0.0
5	2.8	10	0.0
6	−4.8	21	−4.9
7	0.0	22	0.0
8	0.0	23	−1.9
9	0.0	24	−2.1
10	0.0	25	0.0
11	0.0	26	2.5
12	−1.2	27	2.4
13	−0.1	28	5.0
14	0.0	29	0.0
15	−3.1	30	5.0

*2
IC2 (CXA1082BS)

Pin No.	Volts	Pin No.	Volts	Pin No.	Volts
1	−5.0	17	0.0	33	2.5
2	0.0	18	0.0	34	2.5
3	0.0	19	0.0	35	2.3
4	0.0	20	0.0	36	2.3
5	0.0	21	0.0	37	3.5
6	0.0	22	0.0	38	2.4
7	0.0	23	−4.1	39	5.0
8	0.0	24	5.0	40	2.5
9	0.0	25	−5.0	41	5.0
10	0.0	26	0.0	42	2.5
11	0.2	27	5.0	43	5.0
12	0.0	28	5.0	44	0.0
13	0.2	29	5.0	45	0.2±0.21
14	0.0	30	5.0	46	2.5
15	0.0	31	5.0	47	5.0
15	5.0	32	0.0	48	0.0

*3
IC3 (CXD1167Q)

Pin No.	Volts	Pin No.	Volts	Pin No.	Volts	Pin No.	Volts
1	2.5	21	0.0	41	0.0	61	1.3
2	5.0	22	0.1	42	0.0	62	0.0
3	2.5	23	0.0	43	0.0	63	0.0
4	2.8	24	0.0	44	0.0	64	0.0
5	2.4	25	5.0	45	0.0	65	0.0
6	2.5	26	5.0	46	0.0	66	0.0
7	5.0	27	2.5	47	0.0	67	0.0
8	2.4	28	5.0	48	0.0	68	2.5
9	2.4	29	1.9	49	0.0	69	2.5
10	0.0	30	1.9	50	0.0	70	2.3
11	1.8	31	0.0	51	2.3	71	5.0
12	0.0	32	0.0	52	0.0	72	0.0
13	5.0	33	5.0	53	2.2	73	5.0
14	5.0	34	0.0	54	2.2	74	0.0
15	5.0	35	0.0	55	0.0	75	2.4
16	5.0	36	0.0	56	0.0	76	2.3
17	0.0	37	0.0	57	5.0	77	2.3
18	5.0	38	0.0	58	0.0	78	2.5
19	0.0	39	0.0	59	0.0	79	2.5
20	5.0	40	0.0	60	1.3	80	2.5

*4
IC4 (PD31798)

Pin No.	Volts	Pin No.	Volts	Pin No.	Volts	Pin No.	Volts
1	0.0	17	0.0	33	5.0	49	0.2±0.21
2	1.5	18	5.0	34	5.0	50	5.0
3	2.1	19	5.0	35	0.0	51	0.0
4	5.0	20	0.0	36	5.0	52	0.0
5	5.0	21	0.0	37	5.0	53	0.0
6	5.0	22	5.0	38	5.0	54	0.0
7	5.4	23	4.9	39	0.0	55	0.0
8	0.0	24	5.0	40	0.0	56	0.0
9	5.0	25	0.0	41	3.3±0.4	57	0.0
10	5.0	26	0.0	42	0.0	58	0.0
11	5.0	27	0.0	43	0.0	59	0.0
12	3.3±0.4	28	0.0	44	0.0	60	0.0
13	5.0	29	4.9	45	0.0	61	0.0
14	5.0	30	4.9	46	0.0	62	2.5
15	0.0	31	0.0	47	0.0	63	0.0
16	5.0	32	0.0	48	5.0	64	2.5

IC401 (PDG036)

Pin No.	Volts	Pin No.	Volts	Pin No.	Volts	Pin No.	Volts
1	3.3±0.4	17	5.0	33	1.3	49	−28.8
2	0.0	18	5.0	34	4.9	50	−28.8
3	4.9	19	5.0	35	4.9	51	−28.8
4	4.9	20	5.0	36	1.3	52	−28.8
5	5.1	21	5.0	37	1.3	53	−28.8
6	0.0	22	5.0	38	5.0	54	−28.8
7	3.3±0.4	23	5.0	39	−24.4	55	−28.5
8	0.0	24	0.0	40	−23.5	56	−28.5
9	0.0	25	0.0	41	5.1	57	−26
10	0.0	26	0.0	42	0.6	58	0.0
11	0.0	27	0.0	43	5.0	59	0.0
12	0.0	28	5.0	44	−24.4	60	2.3
13	0.0	29	5.0	45	1.6	61	2.2
14	0.0	30	0.0	46	−23.5	62	5.0
15	0.0	31	0.0	47	−28.8	63	5.0
16	5.0	32	0.0	48	−28.8	64	5.0

PWY1004- PU ASS'Y

DRIVE UNIT / SPEED DET UNIT

OPERATE A BOARD ASSEMBLY

OPERATE B BOARD ASSEMBLY

SPDL MOTOR

LOADING MOTOR

CLAMP MOTOR

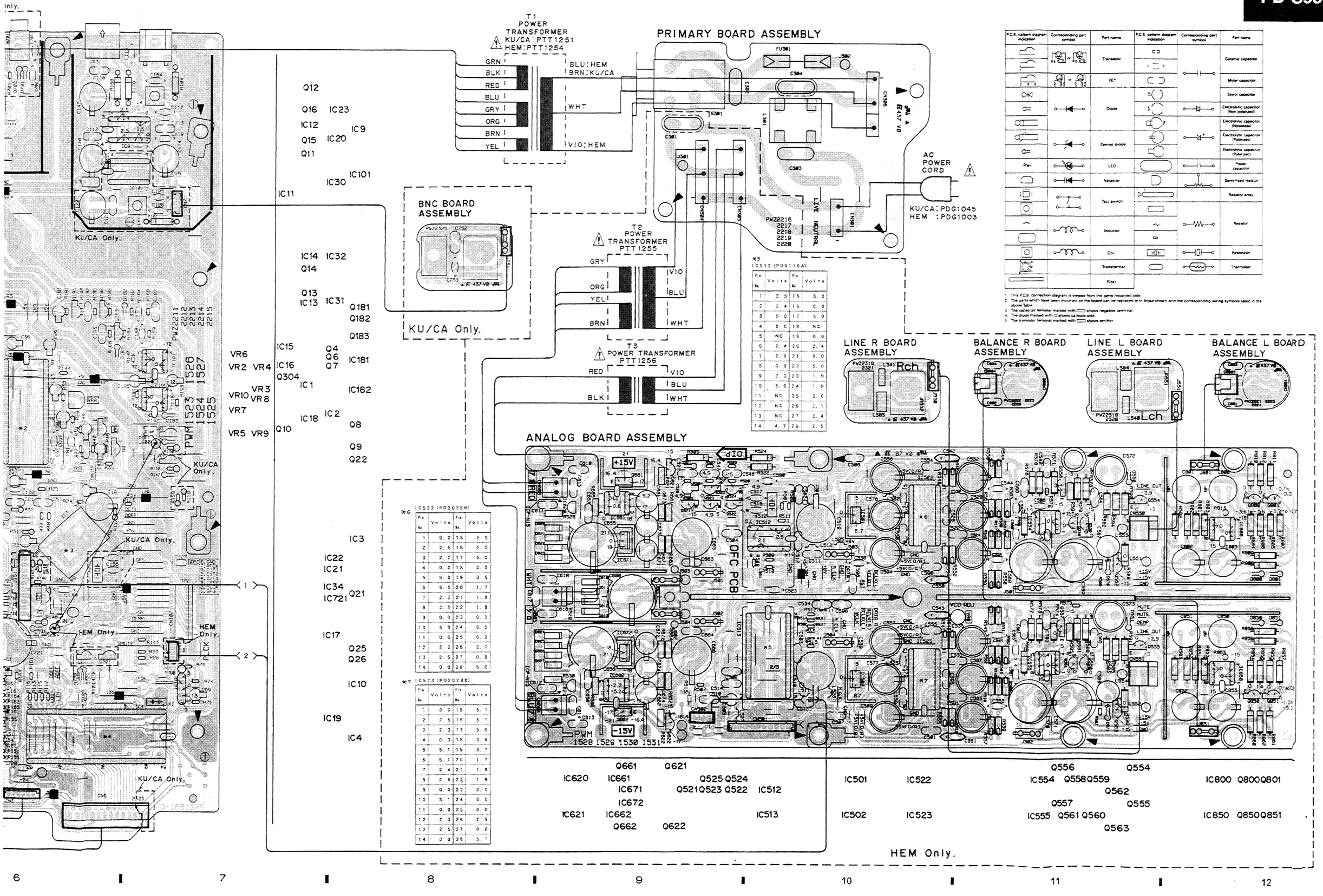
S102 MECHA SW
CLAMP
CLAMP UP
OPEN
CLOSE
S101 MECHA SW

KU/CA Only.

HEM Only.

CAUTION REPLACE WITH CAT. NO. ICP-N10 FOR IC30-IC34
ATTENTION REPLACE AVEC CAT. NO. ICP-N10 POUR IC30-IC34

PWM1523
PWZ 1998 2000
PWZ2211 2212 2213



Pin No.	Volts	Pin No.	Volts
1	2.5	15	5.0
2	2.4	16	0.0
3	5.0	17	5.0
4	0.0	18	NC
5	NC	19	0.0
6	2.4	20	2.4
7	2.6	21	0.0
8	0.0	22	5.0
9	2.3	23	1.9
10	5.0	24	1.8
11	NC	25	3.6
12	NC	26	2.1
13	NC	27	2.4
14	4.7	28	2.5

*6 IC522 (PD2028A)

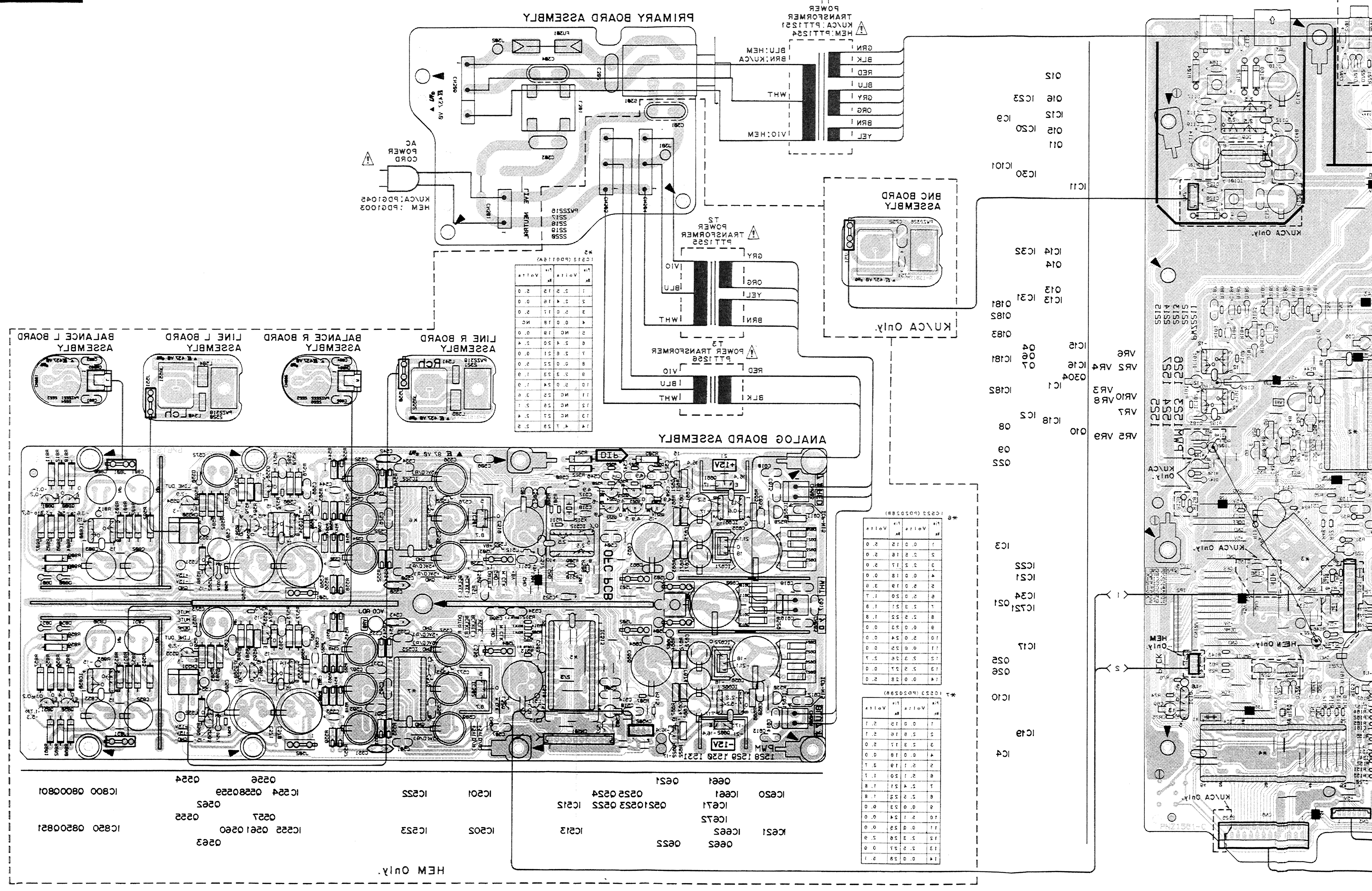
Pin No.	Volts	Pin No.	Volts
1	0.0	15	5.0
2	2.5	16	5.0
3	2.2	17	5.0
4	0.0	18	0.0
5	5.0	19	3.6
6	5.0	20	1.7
7	2.3	21	1.8
8	2.5	22	1.8
9	0.0	23	0.0
10	5.0	24	0.0
11	0.0	25	0.0
12	2.3	26	2.7
13	2.5	27	0.0
14	0.0	28	5.0

*7 IC523 (PD2028B)

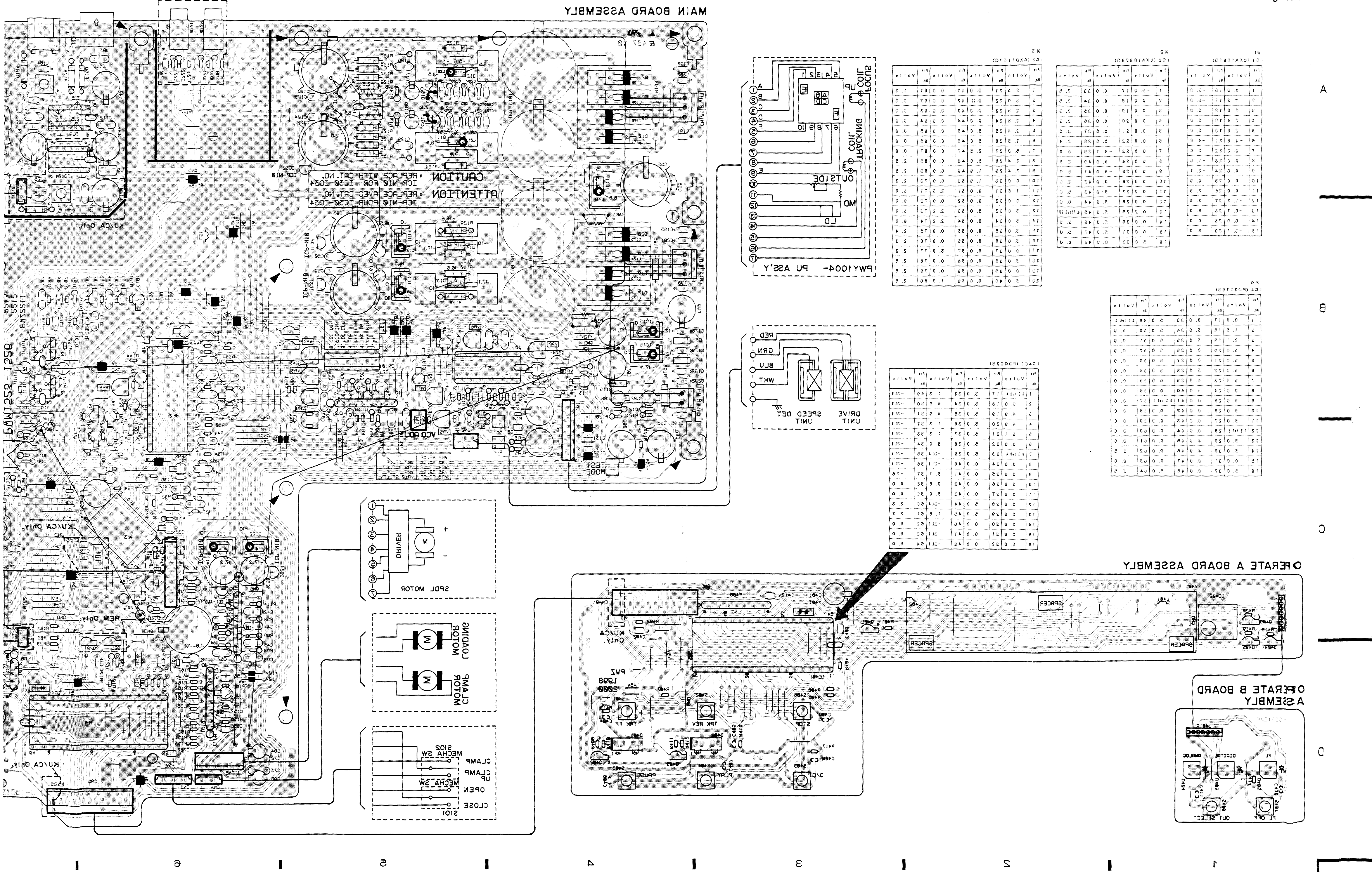
Pin No.	Volts	Pin No.	Volts
1	0.0	15	5.1
2	2.5	16	5.1
3	2.3	17	5.0
4	0.0	18	0.0
5	5.1	19	3.7
6	5.1	20	1.7
7	2.4	21	1.8
8	2.5	22	1.8
9	0.0	23	0.0
10	5.1	24	0.0
11	0.0	25	0.0
12	2.3	26	2.9
13	2.5	27	0.0
14	0.0	28	5.1

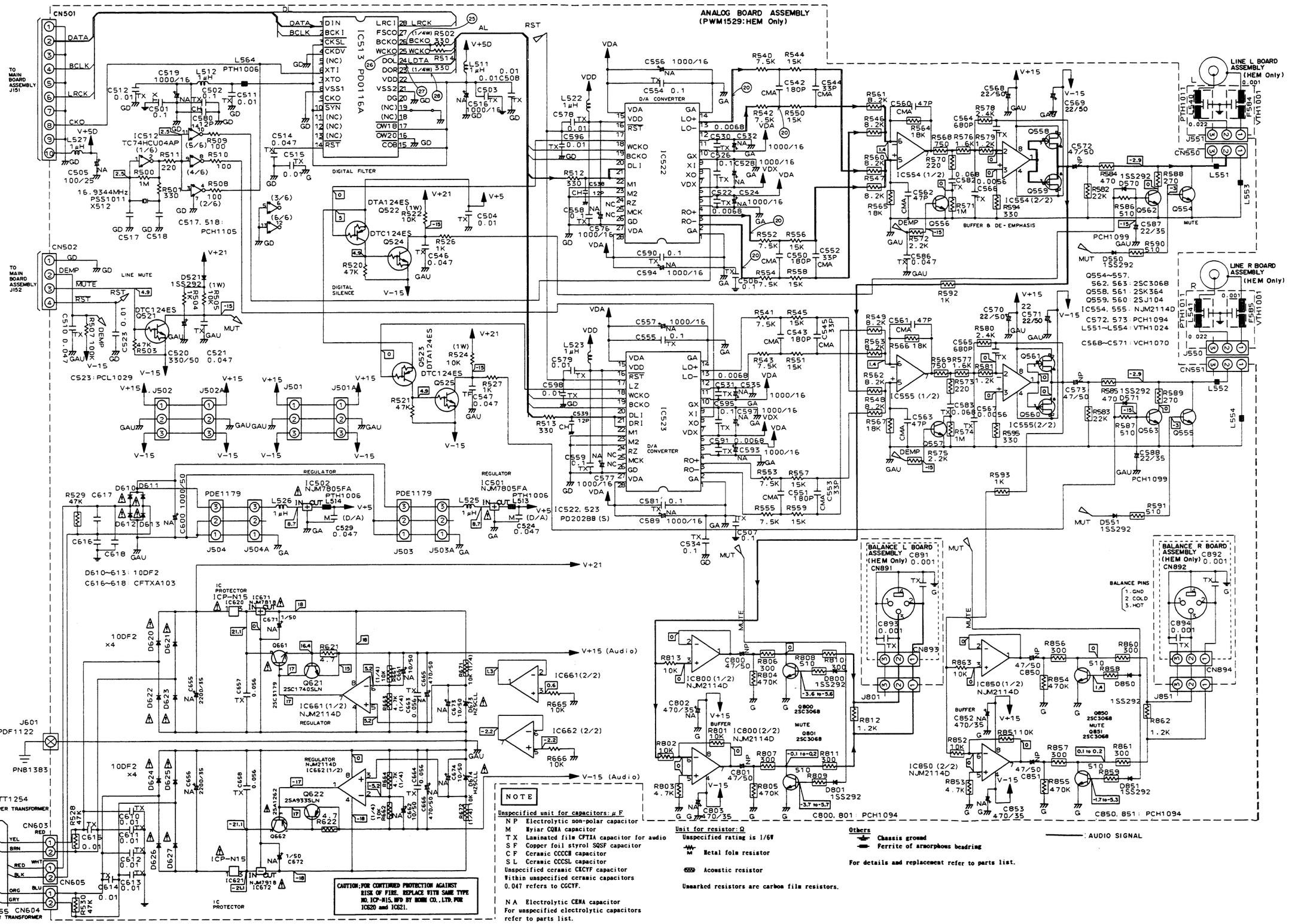
P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styro capacitor
		Zenner diode			Electrolytic capacitor (Non polarized)
		LED			Electrolytic capacitor (Nonpolarized)
		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.


PRIMARY BOARD ASSEMBLY
T1 POWER TRANSFORMER KU/CA:PTT1251 HEM:PTT1254
AC POWER CORD KU/CA:PDG1045 HEM:PDG1003
BNC BOARD ASSEMBLY
KU/CA Only.
T2 POWER TRANSFORMER PTT1255
T3 POWER TRANSFORMER PTT1256
LINE R BOARD ASSEMBLY
BALANCE R BOARD ASSEMBLY
LINE L BOARD ASSEMBLY
BALANCE L BOARD ASSEMBLY
ANALOG BOARD ASSEMBLY
HEM Only.

• View from soldering side




ANALOG BOARD ASSEMBLY
(PWM1529:HEM Only)
CN501
TO MAIN BOARD ASSEMBLY J151
DATA
BCLK
LRCK
CKO
IC513 PD0116A
DIGITAL FILTER
IC512 TC74HCU04AP
16.9344MHz PSS1011 X512
C517, 518: PCH1105
CN502
TO MAIN BOARD ASSEMBLY J152
LINE MUTE
DIGITAL SILENCE
C523: PCL1029
J502
J502A
J501
J501A
REGULATOR
IC502 NJM7805FA
IC501 NJM7805FA
PTH1006
PDE1179
J504
J504A
J503
J503A
D610–613: 10DF2
C616–618: CFTXA103
IC PROTECTOR
ICP-N15 IC620
IC671 NJM7818
IC672 NJM7918
10DF2 ×4
J601 PDF1122
PNB1383
PTT1254
For POWER TRANSFORMER
CN603
CN605
PTT1255 CN604
For POWER TRANSFORMER
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE WITH SAME TYPE NO. ICP-N15, MFD BY ROHM CO., LTD. FOR IC620 and IC621.
IC522 D/A CONVERTER
IC523 D/A CONVERTER
IC522, 523 PD20288 (S)
IC554 (1/2)
IC554(2/2)
IC555 (1/2)
IC555(2/2)
BUFFER & DE-EMPHASIS
IC661(2/2)
IC662 (2/2)
IC661(1/2) NJM2114D
IC662(1/2)
IC800(1/2) NJM2114D
IC800(2/2) NJM2114D
IC850(1/2) NJM2114D
IC850 (2/2) NJM2114D
LINE L BOARD ASSEMBLY (HEM Only)
LINE R BOARD ASSEMBLY (HEM Only)
BALANCE L BOARD ASSEMBLY (HEM Only) CN891
BALANCE R BOARD ASSEMBLY (HEM Only) CN892
BALANCE PINS
1. GND
2. COLD
3. HOT
MUTE
BUFFER
Q554~557, 562, 563: 2SC3068
Q558, 561: 2SK364
Q559, 560: 2SJ104
IC554, 555: NJM2114D
C572, 573: PCH1094
L551~L554: VTH1024
C568~C571: VCH1070
C800, 801: PCH1094
C850, 851: PCH1094
NOTE
Unspecified unit for capacitors: μ F
NP Electrolytic non-polar capacitor
M Mylar CQMA capacitor
TX Laminated film CFTXA capacitor for audio
SF Copper foil styrol SQSF capacitor
CF Ceramic CCCCH capacitor
SL Ceramic CCCSL capacitor
Unspecified ceramic CKCYF capacitor
Within unspecified ceramic capacitors 0.047 refers to CGCYF.
NA Electrolytic CENA capacitor
For unspecified electrolytic capacitors refer to parts list.
Unit for resistor: Ω
Unspecified rating is 1/6W
M Metal film resistor
Acoustic resistor
Unmarked resistors are carbon film resistors.
Others
Chassis ground
Ferrite of amorphous beadring
For details and replacement refer to parts list.
: AUDIO SIGNAL

1. RESISTORS :
   Indicated in Ω, 1/4W, 1/6W, 1/8W, ± 5 % tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ± 1 %, (G) ; ± 2 %, (K) ; ± 10 %,(M) ; ± 20 % tolerance.

2. CAPACITORS :
   Indicated in capacity (μ F) /voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE CURRENT :
   ; DC voltage (V) in play mode.
   ⬅mA ; DC current in play mode.
   ; Value in ( ) is DC current in stop mode.

4. OTHERS :
   ➡ ; Signal route.
   ⊘ ; Adjusting point
   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.
   ※ marked capacitors and resistors have parts numbers.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES (The underlined indicates the switch position)

   PRIMARY BOARD ASSEMBLY
   S301 : POWER ON — OFF

   OPERATE A BOARD ASSEMRLY

   S401 : TRK FF
   S402 : TRK REV
   S403 : PAUSE
   S404 : PLAY
   S405 : O/C
   S406 : STOP

   OPERATE B BOARD ASSEMBLY
   S407 : DISPLAY OFF
   S408 : OUT SEL

IC513 (PD0116A)

Pin No.	Volts	Pin No.	Volts
1	2. 5	15	5. 0
2	2. 4	16	0. 0
3	5. 0	17	5. 0
4	0. 0	18	NC
5	NC	19	0. 0
6	2. 4	20	2. 4
7	2. 6	21	0. 0
8	0. 0	22	5. 0
9	2. 3	23	1. 9
10	5. 0	24	1. 9
11	NC	25	3. 6
12	NC	26	2. 1
13	NC	27	2. 4
14	4. 7	28	2. 5

IC522 (PD2028B)

Pin No.	Volts	Pin No.	Volts
1	0. 0	15	5. 0
2	2. 5	16	5. 0
3	2. 2	17	5. 0
4	0. 0	18	0. 0
5	5. 0	19	3. 6
6	5. 0	20	1. 7
7	2. 3	21	1. 8
8	2. 5	22	1. 8
9	0. 0	23	0. 0
10	5. 0	24	0. 0
11	0. 0	25	0. 0
12	2. 3	26	2. 7
13	2. 5	27	0. 0
14	0. 0	28	5. 0

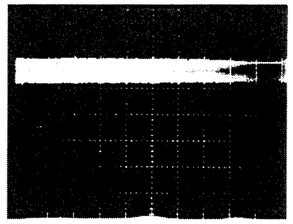
IC523 (PD2028B)

Pin No.	Volts	Pin No.	Volts
1	0. 0	15	5. 1
2	2. 6	16	5. 1
3	2. 3	17	5. 0
4	0. 0	18	0. 0
5	5. 1	19	3. 7
6	5. 1	20	1. 7
7	2. 4	21	1. 8
8	2. 5	22	1. 8
9	0. 0	23	0. 0
10	5. 1	24	0. 0
11	0. 0	25	0. 0
12	2. 3	26	2. 9
13	2. 5	27	0. 0
14	0. 0	28	5. 1

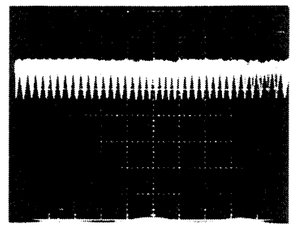
Waveforms

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

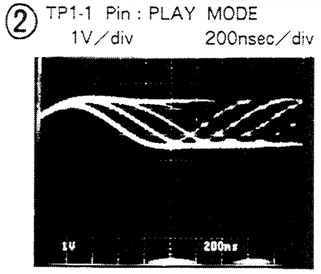
① CN1-5 Pin : PLAY MODE
50mV/div 5msec/div



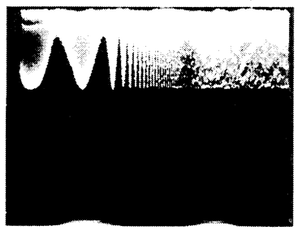
① CN1-5 Pin : SEARCH MODE
50mV/div 5msec/div



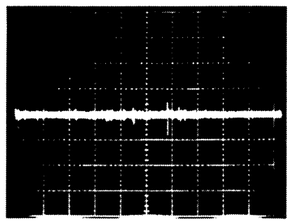
② TP1-1 Pin : PLAY MODE
1V/div 200nsec/div



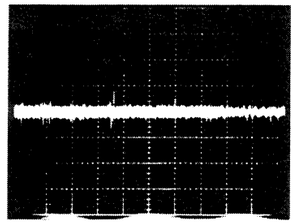
② TP1-1 Pin : SEARCH MODE
500mV/div 5msec/div



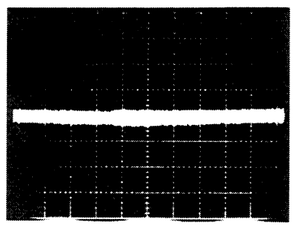
③ TP1-6 Pin : PLAY MODE
500mV/div 10msec/div



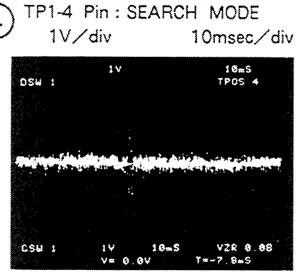
③ TP1-6 Pin : SEARCH MODE
500mV/div 10msec/div



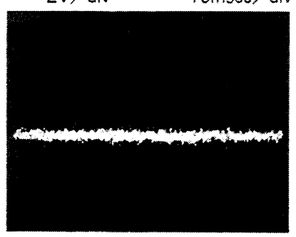
④ TP1-4 Pin : PLAY MODE
1V/div 10msec/div



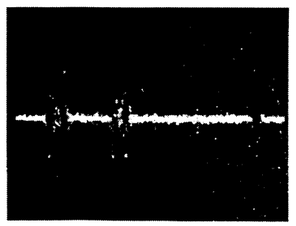
④ TP1-4 Pin : SEARCH MODE
1V/div 10msec/div



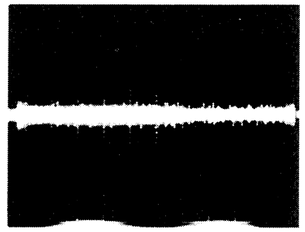
⑤ IC18-1 Pin : PLAY MODE
2V/div 10msec/div



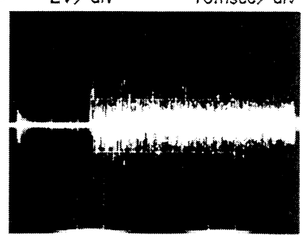
⑤ IC18-1 Pin : SEARCH MODE
5V/div 10msec/div



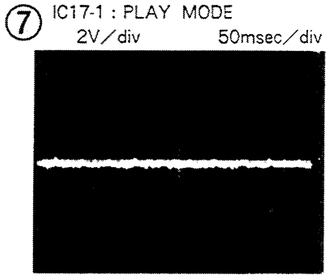
⑥ IC18-9 Pin : PLAY MODE
2V/div 10msec/div



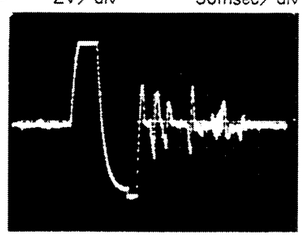
⑥ IC18-9 Pin : SEARCH MODE
2V/div 10msec/div



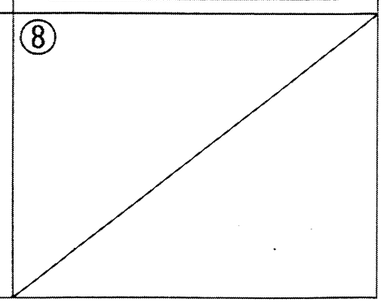
⑦ IC17-1 : PLAY MODE
2V/div 50msec/div



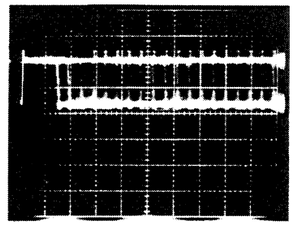
⑦ IC17-1 Pin : SEARCH MODE
2V/div 50msec/div



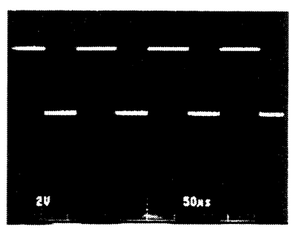
⑧



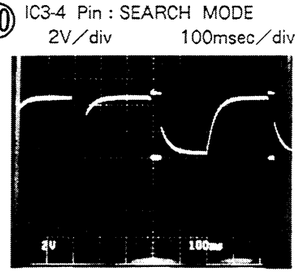
⑨ IC1-27 Pin : PLAY MODE
2V/div 500nsec/div



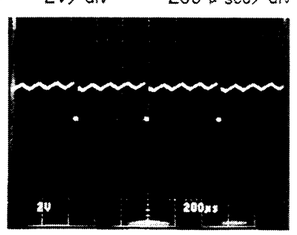
⑩ IC3-4 Pin : PLAY MODE
2V/div 50 μ sec/div



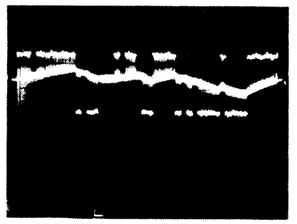
⑩ IC3-4 Pin : SEARCH MODE
2V/div 100msec/div



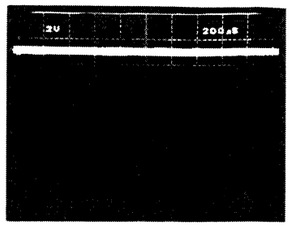
⑪ IC3-3 Pin : PLAY MODE
2V/div 200 μ sec/div



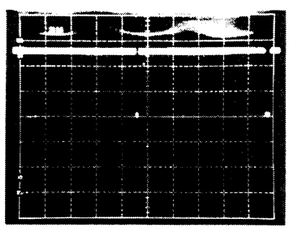
⑪ IC3-3 Pin : SEARCH MODE
2V/div 10msec/div



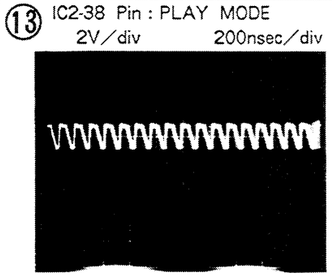
⑫ TP2-1 Pin : PLAY MODE
2V/div 200 μ sec/div



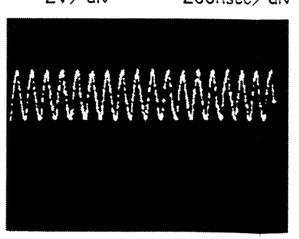
⑫ TP2-1 Pin : SEARCH MODE
2V/div 20msec/div



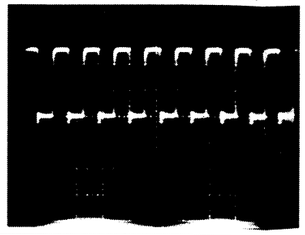
⑬ IC2-38 Pin : PLAY MODE
2V/div 200nsec/div



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



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



⑯⑰⑱⑲

IC3 (CXD1167Q)

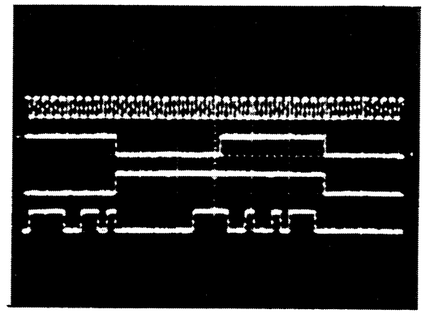
PLAY MODE

⑯ BCLK (Pin76)

⑰ WDCK (Pin79)

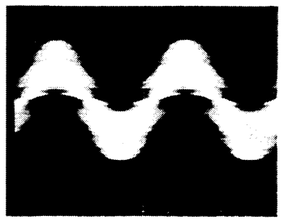
⑱ LRCK (Pin80)

⑲ DATA (Pin78)

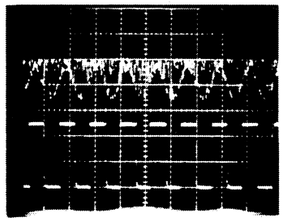


10V／div
2 μ sec／div

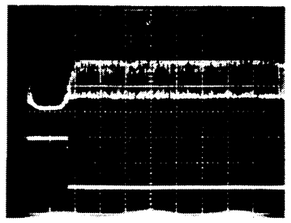
⑳ IC522, IC523 – 13, 12, 2, 3 Pin :
PLAY MODE (0dB, 1kHz)
2V／div 200 μ sec／div



㉓ IC1-22 Pin : TRACKING OPEN
0.1msec／div
Upper TP1-1 Pin : 1V／div
Lower IC1-22 Pin : 2V／div



㉔ IC1-21 Pin : DFCT 0.5msec／div
Upper TP1-1 Pin : 1V／div
Lower IC1-21 Pin : 5V／div



㉕㉖㉗㉘

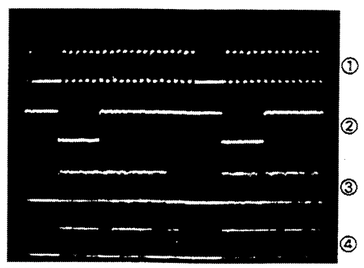
IC513 PD0116A
PLAY MODE
5V／div.

㉕ BCKO (Pin26)

㉖ WCKO (Pin25)

㉗ DOL (Pin24)

㉘ DOR (Pin23)



6. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- 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 × 10^1 → 561 ····· RD1/4PS 5 6 1 J
47k Ω → 47 × 10^3 → 473 ····· RD1/4PS 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 010 ····· RS1P 0 1 0 K

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

5.62k Ω → 562 × 10^1 → 5621 ····· RN1/4SR 5 6 2 1 F

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
PD-S95			
⊙		SUB BOARD ASSEMBLY	PWM1363
NSP		├OPERATE B BOARD ASSEMBLY	PWZ1999
NSP		└OPERATE A BOARD ASSEMBLY	PWZ2000
⊙		MOTHER BOARD ASSEMBLY	PWM1525
NSP		├MAIN BOARD ASSEMBLY	PWZ2213
NSP		├PRIMARY BOARD ASSEMBLY	PWZ2218
NSP		└BNC BOARD ASSEMBLY	PWZ2326
PD-95			
⊙		SUB BOARD ASSEMBLY	PWM1362
NSP		├OPERATE B BOARD ASSEMBLY	PWZ1999
NSP		└OPERATE A BOARD ASSEMBLY	PWZ1998
⊙		MOTHER BOARD ASSEMBLY	PWM1524
NSP		├MAIN BOARD ASSEMBLY	PWZ2212
NSP		├PRIMARY BOARD ASSEMBLY	PWZ2217
NSP		├BALLANCE L BOARD ASSEMBLY	PWZ2223
NSP		├BALLANCE R BOARD ASSEMBLY	PWZ2225
NSP		├LINE L BOARD ASSEMBLY	PWZ2320
NSP		└LINE R BOARD ASSEMBLY	PWZ2321
⊙		ANALOG BOARD ASSEMBLY	PWM1529
ANALOG BOARD ASSEMBLY (PD-95 only)			
SEMICONDUCTORS			
	IC501, 502	REGULATOR IC	NJM7805FA
	IC512	LOGIC IC	TC74HCU04AP
	IC513	IC	PD0116A
	IC522, 523	D/A CONVERTER IC	PD2028B
	IC554, 555	OP-AMP IC	NJM2114D
⚠	IC620, 621	IC PROTECTOR	ICP-N15
	IC661, 662	OP-AMP IC	NJM2114D
⚠	IC671	REGULATOR IC	NJM7818FA
⚠	IC672	REGULATOR IC	NJM7918FA
	IC800	OP-AMP IC	NJM2114D
	IC850	OP-AMP IC	NJM2114D
	Q521	TRANSISTOR	DTC124ES
	Q522, 523	TRANSISTOR	DTA124ES
	Q524, 525	TRANSISTOR	DTC124ES
	Q554-557	TRANSISTOR	2SC3068
	Q558		2SK364
	Q559, 560	FET	2SJ104
	Q561		2SK364
	Q562, 563	TRANSISTOR	2SC3068
	Q621	TRANSISTOR	2SC1740SLN
	Q622	TRANSISTOR	2SA933SLN
⚠	Q661	TRANSISTOR	2SC3179
⚠	Q662	TRANSISTOR	2SA1262
	Q800, 801	TRANSISTOR	2SC3068
	Q850, 851	TRANSISTOR	2SC3068
	D521	DIODE	1SS292
	D550, 551	DIODE	1SS292
	D570, 571	DIODE	1SS292
⚠	D610-613	DIODE	10DF2
⚠	D620-627	DIODE	10DF2
⚠	D673, 674	ZENER DIODE	HZ5CLL
	D800, 801	DIODE	1SS292
	D850, 851	DIODE	1SS292
COILS/TRANSFORMERS			
	L511, 512	AXIAL INDUCTOR	LAU010K
	L513, 514		PTH1006
	L522, 523	AXIAL INDUCTOR	LAU010K
	L525-527	AXIAL INDUCTOR	LAU010K
	L551-554	FERRITE BEAD	VTH1024
	L564		PTH1006
CAPACITORS			
	C501, 502	AUDIO FILM CAPACITOR	CFTXA104J50
	C503, 504	AUDIO FILM CAPACITOR	CFTXA103J50
	C505	ELECT. CAPACITOR	CENA101M25
	C506, 507	AUDIO FILM CAPACITOR	CFTXA104J50
	C508	AUDIO FILM CAPACITOR	CFTXA103J50
	C510	AUDIO FILM CAPACITOR	CFTXA473J50
	C511, 512	AUDIO FILM CAPACITOR	CFTXA103J50
	C514	AUDIO FILM CAPACITOR	CFTXA473J50
	C515	AUDIO FILM CAPACITOR	CFTXA103J50
	C516	ELECT. CAPACITOR	CENA102M16
	C517, 518	(12P/100)	PCH1105

Mark	No.	Description	Part No.
	C519	ELECT. CAPACITOR	CENA102M16
	C520	ELECT. CAPACITOR	CEAS331M50
	C521	AUDIO FILM CAPACITOR	CFTXA473J50
	C522	AUDIO FILM CAPACITOR	CFTXA682J50
	C523	CERAMIC CAPACITOR(0.01)	PCL1029
	C524	ELECT. CAPACITOR	CENA102M16
	C526	AUDIO FILM CAPACITOR	CFTXA104J50
	C527	MYLAR FILM CAPACITOR	CQMA473J50
	C528	ELECT. CAPACITOR	CENA102M16
	C529	MYLAR FILM CAPACITOR	CQMA473J50
	C530, 531	AUDIO FILM CAPACITOR	CFTXA682J50
	C532	ELECT. CAPACITOR	CENA102M16
	C534	AUDIO FILM CAPACITOR	CFTXA104J50
	C535	ELECT. CAPACITOR	CENA102M16
	C538, 539	CERAMIC CAPACITOR	CCCCH120J50
	C542, 543	MICA CAPACITOR	CMA181J500
	C544, 545	MICA CAPACITOR	CMA330J500
	C546, 547	AUDIO FILM CAPACITOR	CFTXA473J50
	C550, 551	MICA CAPACITOR	CMA181J500
	C552, 553	MICA CAPACITOR	CMA330J500
	C554, 555	AUDIO FILM CAPACITOR	CFTXA104J50
	C556, 557	ELECT. CAPACITOR	CENA102M16
	C558, 559	AUDIO FILM CAPACITOR	CFTXA104J50
	C560-563	MICA CAPACITOR	CMA470J500
	C564, 565		CFTXA681J50
	C566, 567		CFTXA562J50
	C568-571	ELECT. CAPACITOR(22μ)	VCH1070
	C572, 573	ELECT. CAPACITOR(47μ)	PCH1094
	C576, 577	ELECT. CAPACITOR	CENA102M16
	C578, 579	AUDIO FILM CAPACITOR	CFTXA103J50
	C580	CERAMIC CAPACITOR	CCCCH120J50
	C581	AUDIO FILM CAPACITOR	CFTXA104J50
	C582, 583	AUDIO FILM CAPACITOR	CFTXA683J50
	C586	AUDIO FILM CAPACITOR	CFTXA473J50
	C587, 588	ELECT. CAPACITOR(22/35)	PCH1099
	C589	ELECT. CAPACITOR	CENA102M16
	C590	AUDIO FILM CAPACITOR	CFTXA104J50
	C591	AUDIO FILM CAPACITOR	CFTXA682J50
	C593, 594	ELECT. CAPACITOR	CENA102M16
	C595	AUDIO FILM CAPACITOR	CFTXA104J50
	C596	AUDIO FILM CAPACITOR	CFTXA103J50
	C597	ELECT. CAPACITOR	CENA102M16
	C598	AUDIO FILM CAPACITOR	CFTXA103J50
	C600	ELECT. CAPACITOR	CENA102M50
	C610-618	AUDIO FILM CAPACITOR	CFTXA103J50
	C655, 656	ELECT. CAPACITOR	CENA222M35
	C657, 658	AUDIO FILM CAPACITOR	CFTXA563J50
	C661, 662	ELECT. CAPACITOR	CENA100M50
	C663, 664	AUDIO FILM CAPACITOR	CFTXA563J50
	C665, 666	ELECT. CAPACITOR	CENA471M50
	C671, 672	ELECT. CAPACITOR	CENA010M50
	C673, 674	ELECT. CAPACITOR	CENA100M50
	C800, 801	ELECT. CAPACITOR(47μ)	PCH1094
	C802, 803	ELECT. CAPACITOR	CENA471M35
	C850, 851	ELECT. CAPACITOR(47μ)	PCH1094
	C852, 853	ELECT. CAPACITOR	CENA471M35

Mark	No.	Description	Part No.
RESISTORS			
	R500	CARBONFILM RESISTOR	RD1/6PM105J
	R501	CARBONFILM RESISTOR	RD1/6PM□□□J
	R502	CARBONFILM RESISTOR	RD1/4PM□□□J
	R503, 504	CARBONFILM RESISTOR	RD1/6PM□□□J
	R505	METAL OXIDE RESISTOR	RS1LMF□□□J
	R507-513	CARBONFILM RESISTOR	RD1/6PM□□□J
	R514	CARBONFILM RESISTOR	RD1/4PM□□□J
	R520, 521	CARBONFILM RESISTOR	RD1/6PM□□□J
	R522	METAL OXIDE RESISTOR	RS1LMF□□□J
	R524	METAL OXIDE RESISTOR	RS1LMF□□□J
	R526, 527	CARBONFILM RESISTOR	RD1/6PM□□□J
	R528-530	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R540-567	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R568-571	CARBONFILM RESISTOR	RDM1/2P□□□J
	R572	CARBONFILM RESISTOR	RD1/6PM□□□J
	R573, 574	CARBONFILM RESISTOR	RDM1/2P□□□J
	R575	CARBONFILM RESISTOR	RD1/6PM□□□J
	R576-585	CARBONFILM RESISTOR	RDM1/2P□□□J
	R586, 587	CARBONFILM RESISTOR	RD1/6PM□□□J
	R588-593		RDM1/2P□□□J
	R594, 595	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R621, 622	CARBONFILM RESISTOR	RDR1/2PM□□□J
	R661-666	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R671, 672	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R801-813	CARBONFILM RESISTOR	RDM1/2P□□□J
	R851-863	CARBONFILM RESISTOR	RDM1/2P□□□J
OTHERS			
	X512	XTAL RES (OSC)	PSS1011

OPERATE B BOARD ASSEMBLY

Mark	No.	Description	Part No.
SEMICONDUCTORS			
	D403	LED	SLH-34YC3H3
	D404, 405	LED	SLH-34VC3H3
SWITCHES			
	S407, 408	SWITCH	PSG-065
CAPACITORS			
	C410, 411	AXIAL CERAMIC C.	CCPUCH100J5(
RESISTORS			
	R414	CARBONFILM RESISTOR	RD1/6PM□□□J

OPERATE A BOARD ASSEMBLY

Mark	No.	Description	Part No.
SEMICONDUCTORS			
	IC401	FL MCU	PDG036
	Q401	TRANSISTOR	2SC1740S
	Q402-406	TRANSISTOR	DTA124ES
	D401	LED	AA0045
	D402	LED	BR0045
SWITCHES			
	S401-406	SWITCH	PSG-065
COILS/TRANSFORMERS			
	L401, 402	AXIAL INDUCTOR	LAU010K
CAPACITORS			
	C401	ELECT. CAPACITOR	CEJA330M16

Mark	No.	Description	Part No.
	C402	AUDIO FILM CAPACITOR	CFTXA103J50
	C403	CERAMIC CAPACITOR	CGCYF473Z25
	C404-409	AXIAL CERAMIC C.	CCPUCH100J50
	C412	CERAMIC CAPACITOR	CKCYF103Z50
	RESISTORS		
	R401, 402	CARBONFILM RESISTOR	RD1/6PM□□□J
	R404-407	CARBONFILM RESISTOR	RD1/6PM□□□J
	R408	RESISTOR ARRAY (47K)	RA10S□□□J
	R409-412	CARBONFILM RESISTOR	RD1/6PM□□□J
	R415-417	CARBONFILM RESISTOR	RD1/6PM□□□J
	R418	CARBONFILM RESISTOR	RD1/6PM471J(PD-S95)
			RD1/6PM331J(PD-95)
	R419	CARBONFILM RESISTOR	RD1/6PM391J(PD-S95)
			RD1/6PM331J(PD-95)
	R420	CARBONFILM RESISTOR	RD1/6PM471J(PD-S95)
			RD1/6PM331J(PD-95)
	OTHERS		
		REMOTE SENSOR	SBX1610-51
	CN401	CONNECTOR	HLEM25R-1(PD-S95)
			HLEM23R-1(PD-95)
	V401	FL TUBE	PEL1025
	X401	CERAMIC RESONATOR	VSS1014

MAIN BOARD ASSEMBLY

Mark	No.	Description	Part No.
	SEMICONDUCTORS		
	IC1	PRE AMP IC	CXA1081S
	IC2	SERVO CONTROL IC	CXA1082BS
	IC3	EFM DEMODULATION IC	CXD1167Q
	IC4	MICROCOMPUTER, IC	PD3179B
	IC9	IC	MC74HCU04N
	IC10	SYSTEM RESET IC	M51957AL
⚠	IC11	REGULATOR IC	NJM7805FA
	IC12	OP-AMP IC	NJM2114D
⚠	IC13	REGULATOR IC	AN7810F
⚠	IC14	REGULATOR IC	AN7910F
	IC15	REGULATOR IC	NJM7812FA
	IC16	REGULATOR IC	NJM7912FA
⚠	IC17-19	POWER OP-AMP	TA8410K
⚠	IC20	S. REGURATOR	NJM431L
⚠	IC21	REGULATOR IC	AN7810F
⚠	IC22	REGULATOR IC	AN7910F
⚠	IC23	S. REGURATOR	NJM431L
⚠	IC30-34	IC PROTECTOR	ICP-N10
	IC101	IC	MC74HCU04N(PD-S95)
	IC181, 182	IC	NJM072DE
	IC721	REGULATOR IC	NJM78L05A
	Q4	TRANSISTOR	DTC124ES
	Q6	TRANSISTOR	2SC1740SLN
	Q7	TRANSISTOR	2SA933SLN
	Q8, 9	TRANSISTOR	2SC1740SLN
	Q10	TRANSISTOR	2SA1399
⚠	Q11	TRANSISTOR	2SC3179
⚠	Q12, 13	TRANSISTOR	2SA1262
⚠	Q14	TRANSISTOR	2SC3179
	Q15	TRANSISTOR	2SB715
	Q16	TRANSISTOR	2SD755
	Q20, 21		DTA124ES(PD-95)
	Q22	TRANSISTOR	DTC124ES
	Q23	TRANSISTOR	DTC124ES(PD-S95)
	Q25		DTA124ES(PD-95)
	Q181-183	TRANSISTOR	2SC1740SLN
	Q304	TRANSISTOR	2SA1399
⚠	D5, 6	DIODE	10E2
⚠	D7-10		31DF2-FC5
⚠	D11	ZENER DIODE	HZ27-1/2L
⚠	D12	ZENER DIODE	HZ20-1L
⚠	D17-20		31DF2-FC5
⚠	D21-26	DIODE	11ES2
	D146		1SS254(PD-95)
	D147	DIODE	1SS254
	D148	DIODE	1SS254(PD-S95)
	D181-183	DIODE	1SS254
	D701-704	DIODE	1SS292(PD-S95)
	D720-723	DIODE	1SS292
	COILS/TRANSFORMERS		
	L3	RADIAL INDUCTOR	LFA010K
	L4	COIL	PTL1003
	L5-9		PTH1006
	L16-40		PTH1006
	L41	COIL	PTL1003(PD-S95)
	L43		PTH1006
	L51	AXIAL INDUCTOR	LAU010K
	CAPACITORS		
	C1	AUDIO FILM CAPACITOR	CFTXA472J50
	C2-4	CERAMIC CAPACITOR	CCCCH300J50
	C5	ELECT. CAPACITOR	CENA221M25
	C7	ELECT. CAPACITOR	CENA221M25
	C9	CERAMIC CAPACITOR	CGCYF473Z25
	C10	ELECT. CAPACITOR	CEAS101M10
	C11	AUDIO FILM CAPACITOR	CFTXA333J50
	C12	ELECT. CAPACITOR	CENA101M25
	C13	AUDIO FILM CAPACITOR	CFTXA332J50
	C14	AUDIO FILM CAPACITOR	CFTXA103J50
	C15	ELECT. CAPACITOR	CENA101M25
	C16	ELECT. CAPACITOR	CEASR47M50
	C17	AUDIO FILM CAPACITOR	CFTXA103J50
	C18	ELECT. CAPACITOR	CENA471M16
	C21	AUDIO FILM CAPACITOR	CFTXA333J50
	C22	ELECT. CAPACITOR	CEASR47M50
	C23	ELECT. CAPACITOR	CENA101M25
	C24, 25	ELECT. CAPACITOR	CEAS101M25
	C26	ELECT. CAPACITOR	CENA101M25
	C27	AUDIO FILM CAPACITOR	CFTXA153J50
	C29		CFTXA152J50
	C31, 32	AUDIO FILM CAPACITOR	CFTXA104J50
	C33		CFTXA102J50
	C34	ELECT. CAPACITOR	CEAS470M10
	C35	AUDIO FILM CAPACITOR	CFTXA104J50
	C36	ELECT. CAPACITOR	CENA101M25
	C37	AUDIO FILM CAPACITOR	CFTXA473J50
	C38	ELECT. CAPACITOR	CENA102M16
	C41	ELECT. CAPACITOR	CENA102M16
	C42	AUDIO FILM CAPACITOR	CFTXA124J50
	C43	ELECT. CAPACITOR	CEAS101M10
	C44	AUDIO FILM CAPACITOR	CFTXA223J50
	C45	AUDIO FILM CAPACITOR	CFTXA104J50

Mark	No.	Description	Part No.
	C46	AUDIO FILM CAPACITOR	CFTXA103J50
	C47	ELECT. CAPACITOR	CENA101M25
	C48	ELECT. CAPACITOR	CEAS3R3M50
	C49	AUDIO FILM CAPACITOR	CFTXA472J50
	C50	ELECT. CAPACITOR	CEAS330M35
	C51		CFTXA102J50
	C52	CERAMIC CAPACITOR	CGCYF473Z25
	C53	MYLAR FILM CAPACITOR	CQMA471J50
	C54	AUDIO FILM CAPACITOR	CFTXA224J50
	C55	ELECT. CAPACITOR	CENA102M35
	C56	AUDIO FILM CAPACITOR	CFTXA103J50
	C59, 60	AUDIO FILM CAPACITOR	CFTXA103J50
	C61, 62	AUDIO FILM CAPACITOR	CFTXA104J50
	C67		CFTXA681J50
	C68	AUDIO FILM CAPACITOR	CFTXA104J50
	C69	ELECT. CAPACITOR	CEASR33M50
	C70-73	AUDIO FILM CAPACITOR	CFTXA103J50
	C80	ELECT. CAPACITOR	CEAS470M50
	C81	CERAMIC CAPACITOR	CKCYF103Z50
	C82	CERAMIC CAPACITOR	CCCSL680J50
	C83	CERAMIC CAPACITOR	CGCYF473Z25
	C84, 85	ELECT. CAPACITOR	CEAS101M25
	C86	CERAMIC CAPACITOR	CCCCH300J50
	C87	ELECT. CAPACITOR	CEAS330M35
	C88	ELECT. CAPACITOR	CEAS101M50
	C90, 91	ELECTR. CAPACITOR(3300)	PCH1104
	C92, 93	ELECT. CAPACITOR	CENA102M35
	C96, 97	ELECT. CAPACITOR	CENA221M25
	C98	ELECT. CAPACITOR	CEAS100M50
	C99	ELECT. CAPACITOR	CEAS101M50
	C100, 101	ELECT. CAPACITOR(3300)	PCH1104
	C102, 103	ELECT. CAPACITOR	CENA222M16
	C104, 105	AUDIO FILM CAPACITOR	CFTXA103J50
	C106, 107	AUDIO FILM CAPACITOR	CFTXA104J50
	C108, 109	CERAMIC CAPACITOR	CCCCH101J50
	C111	ELECT. CAPACITOR	CEAS101M10
	C112	AUDIO FILM CAPACITOR	CFTXA473J50
	C122		CCCSL331J50(PD-S95)
	C113	AUDIO FILM CAPACITOR	CFTXA103J50
	C114	ELECT. CAPACITOR	CENA470M25
	C115	CERAMIC CAPACITOR	CKCYF103Z50
	C117		CCCSL471J50(PD-95)
	C117		CCCSL331J50(PD-S95)
	C118	AUDIO FILM CAPACITOR	CFTXA473J50
	C119	CERAMIC CAPACITOR	CKCYF103Z50
	C120	ELECT. CAPACITOR	CENA470M25(PD-S95)
	C121	AUDIO FILM CAPACITOR	CFTXA103J50(PD-S95)
	C125	CERAMIC CAPACITOR	CKCYF103Z50(PD-S95)
	C127	CERAMIC CAPACITOR	CKCYF103Z50
	C128	CERAMIC CAPACITOR	CKCYF103Z50(PD-S95)
	C130, 131	CERAMIC CAPACITOR	CKCYF103Z50
	C134	AUDIO FILM CAPACITOR	CFTXA103J50
	C135	CERAMIC CAPACITOR	CCCCH120J50(PD-S95)
	C136	CERAMIC CAPACITOR	CCCCH330J50(PD-S95)
	C141	CERAMIC CAPACITOR	CCDSL101J50
	C147, 148	ELECT. CAPACITOR	CENA331M25
	C151	CERAMIC CAPACITOR	CKCYF103Z50
	C152, 153	ELECT. CAPACITOR	CEAS330M35
	C156, 157	CERAMIC CAPACITOR	CKCYF103Z50
	C161	CERAMIC CAPACITOR	CKCYF103Z50
	C164	CERAMIC CAPACITOR	CKCYF103Z50
	C166, 167	CERAMIC CAPACITOR	CKCYF103Z50
	C168-175	CERAMIC CAPACITOR(0.01)	PCL1029
	C178, 179	CERAMIC CAPACITOR(0.01)	PCL1029
	C181	ELECT. CAPACITOR	CEAS101M25
	C182	AUDIO FILM CAPACITOR	CFTXA103J50
	C183	AUDIO FILM CAPACITOR	CFTXA332J50
	C184	CERAMIC CAPACITOR	CCCSL101J50
	C185, 186	ELECT. CAPACITOR	CEAS330M35
	C187	AUDIO FILM CAPACITOR	CFTXA332J50
	C188	CERAMIC CAPACITOR	CCCSL150J50
	C191-193	AUDIO FILM CAPACITOR	CFTXA103J50
	C195-197	AUDIO FILM CAPACITOR	CFTXA103J50
	C200	AUDIO FILM CAPACITOR	CFTXA103J50
	C203, 204	CERAMIC CAPACITOR(0.01)	PCL1029
	C206-209	CERAMIC CAPACITOR(0.01)	PCL1029
	C211, 212	CERAMIC CAPACITOR(0.01)	PCL1029
	C701	CERAMIC CAPACITOR	CKCYF103Z50(PD-S95)
	C702	CERAMIC CAPACITOR	CCCSL101J50(PD-S95)
	C720	CERAMIC CAPACITOR	CGCYF473Z25
	C721(0.47F/5.5)		PCH1062
	C722	CERAMIC CAPACITOR	CKCYF103Z50
	C201, 202		CFTXA103J50

RESISTORS

	R1-8	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R9-13	CARBONFILM RESISTOR	RD1/6PM□□□J
	R14	CARBONFILM RESISTOR	RDR1/2PM□□□J
	R16-22	CARBONFILM RESISTOR	RD1/6PM□□□J
	R24-29	CARBONFILM RESISTOR	RD1/6PM□□□J
	R30	METALFILM RESISTOR	RN1/6PQ□□□□F
	R31, 32	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R34-41	CARBONFILM RESISTOR	RD1/6PM□□□J
	R43-51	CARBONFILM RESISTOR	RD1/6PM□□□J
	R53	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R54-57	CARBONFILM RESISTOR	RD1/6PM□□□J
	R58, 59	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R60	CARBONFILM RESISTOR	RD1/6PM□□□J
	R61	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R62-65	CARBONFILM RESISTOR	RD1/6PM□□□J
	R66-69	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R74-76	CARBONFILM RESISTOR	RD1/6PM□□□J
	R81-83	CARBONFILM RESISTOR	RD1/6PM□□□J
	R84	CARBONFILM RESISTOR	RDR1/2PM□□□J
	R86	CARBONFILM RESISTOR	RDR1/2PM□□□J
	R88	CARBONFILM RESISTOR	RD1/6PM□□□J
	R90	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R100, 101	CARBONFILM RESISTOR	RD1/6PM□□□J
	R104	CARBONFILM RESISTOR	RDM1/2P□□□J
	R106	CARBONFILM RESISTOR	RD1/6PM□□□J
	R107	CARBONFILM RESISTOR	RDM1/2P750J(PD-S95)
	R108-111	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R112, 113	CARBONFILM RESISTOR	RD1/6PM□□□J
	R114	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R115, 116	CARBONFILM RESISTOR	RD1/6PM□□□J

Mark	No.	Description	Part No.
	R117		RDM1/2P102J(PD-95)
	R119-121	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R123	CARBONFILM RESISTOR	RD1/6PM□□□J
	R124-129	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R131, 132	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R133-135	CARBONFILM RESISTOR	RD1/6PM□□□J
	R136-139	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R141, 142	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R143, 144	CARBONFILM RESISTOR	RD1/6PM□□□J
	R146		RDR1/4PM103J(PD-95)
	R147		RD1/6OM331J(PD-95)
	R148		RDM1/2P102J(PD-95)
	R149		RD1/6PM331J(PD-95)
	R150	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R151-157	CARBONFILM RESISTOR	RD1/6PM□□□J
	R158, 159		RDM1/2P102J(PD-S95)
	R160	CARBONFILM RESISTOR	RDR1/4PM103J (PD-S95)
	R161-167	CARBONFILM RESISTOR	RD1/6PM□□□J
	R168		RDM1/2P□□□J
	R178	CARBONFILM RESISTOR	RDM1/2P□□□J
	R181-193	CARBONFILM RESISTOR	RD1/6PM□□□J
	R194-196	CARBONFILM RESISTOR	RDR1/4PM□□□J
	R303, 304		PCX1024(PD-95)
	R701	CARBONFILM RESISTOR	RD1/6PM244J(PD-S95)
	R702	CARBONFILM RESISTOR	RD1/6PM102J(PD-S95)
	R721	CARBONFILM RESISTOR	RD1/6PM□□□J
	VR2	SEMI-FIXED RESISTOR	VRTB6VS103
	VR3-7	VR	VRTB6VS223
	VR8	VR	VRTS6VS102
	VR9	VR	VRTB6VS473
	VR10	VR	VRTS6VS472

OTHERS

	CN1	52045-1710
	CN2	5597-05CPB
	CN6 CONNECTOR	HLEM25S-1(PD-S95) HLEM23R-1(PD-95)
	DL1, 2 FILTER	PTF1009
	JA2 JACK	PKB1004
	JA3	TOTX174
	JA701, 702 JACK	RKN1004(PD-S95)
	X1 CERAMIC RESONATOR	RSS1033
	X2 XTAL RES (OSC)	PSS1019(PD-S95)

TRANSFORMER PRIMARLY ASSEMBLY

SWITCHES

⚠	S301 POWER SWITCH	PSA1002

COILS/TRANSFORMERS

⚠	L301 FILTER	PTL1002

CAPACITORS

	C301	VCG-048(PD-95)
⚠	C302-304 CAPACITOR (CERAMIC)	VCG-048

OTHERS

⚠	TERMINAL	RKC-061

Mark	No.	Description	Part No.

BALLANCE R BOARD ASSEMBLY (PD-95 only)

CAPACITORS

	C892	CFTXA102J50
	C894	CFTXA102J50

BALLANCE L BOARD ASSEMBLY (PD-95 only)

CAPACITORS

	C891	CFTXA102J50
	C893	CFTXA102J50

LINE L BOARD ASSEMBLY (PD-95 only)

COILS/TRANSFORMERS

	L540 FILTER	PTH1011
	F584 FILTER	VTH1001

LINE R BOARD ASSEMBLY (PD-95 only)

COILS/TRANSFORMERS

	L541 FILTER	PTH1011
	F585 FILTER	VTH1001

BNC BOARD ASSEMBLY (PD-S95 only)

CAPACITORS

	C751 CERAMIC CAPACITOR	CKCYF103Z50

7. ADJUSTMENTS

Perform the following adjustments in the indicated order.

● Adjustments

1. Tracking error offset, focus error offset and RF offset adjustment.
2. Tracking return offset adjustment.
3. Focus lock and spindle lock check.
4. Grating adjustment.
5. Tracking balance adjustment.
6. Tangential adjustment
7. Radial adjustment
8. RF level check
9. Focus gain adjustment
10. Tracking gain adjustment
11. VCO free–running frequency adjustment
12. Method of focus error check

● Measuring Devices

1. Dual–trace oscilloscope
2. Light power meter
3. YEDS–7 test disc
4. Focus and tracking adjustment filter
5. Loop gain adjustment band–pass filter
6. Signal generator
7. Grating driver
8. General–use tools
9. Commercial available disc (8 cm and 12 cm)
10. Hex. wrenchdriver (GGK 1002, 1.5 mm)

● About the test mode

How to activate and release the test mode

① To activate the test mode, turn ON the power switch with the test mode jumper short-circuited.

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 1.

● Adjustment Volume Name

VR2: RF offset (RF. OF)
VR3: Focus gain (FO. GA)
VR4: Tracking gain (TR. GA)
VR5: Tracking balance (TR. BL)
VR6: Focus error offset (FO. OF)
VR7: Tracking error offset (TE. OF)
VR8: VCO frequency counter (VCOA)
VR9: Tracking return offset (TR. OF)
VR10 : RF level (RF.LEV)

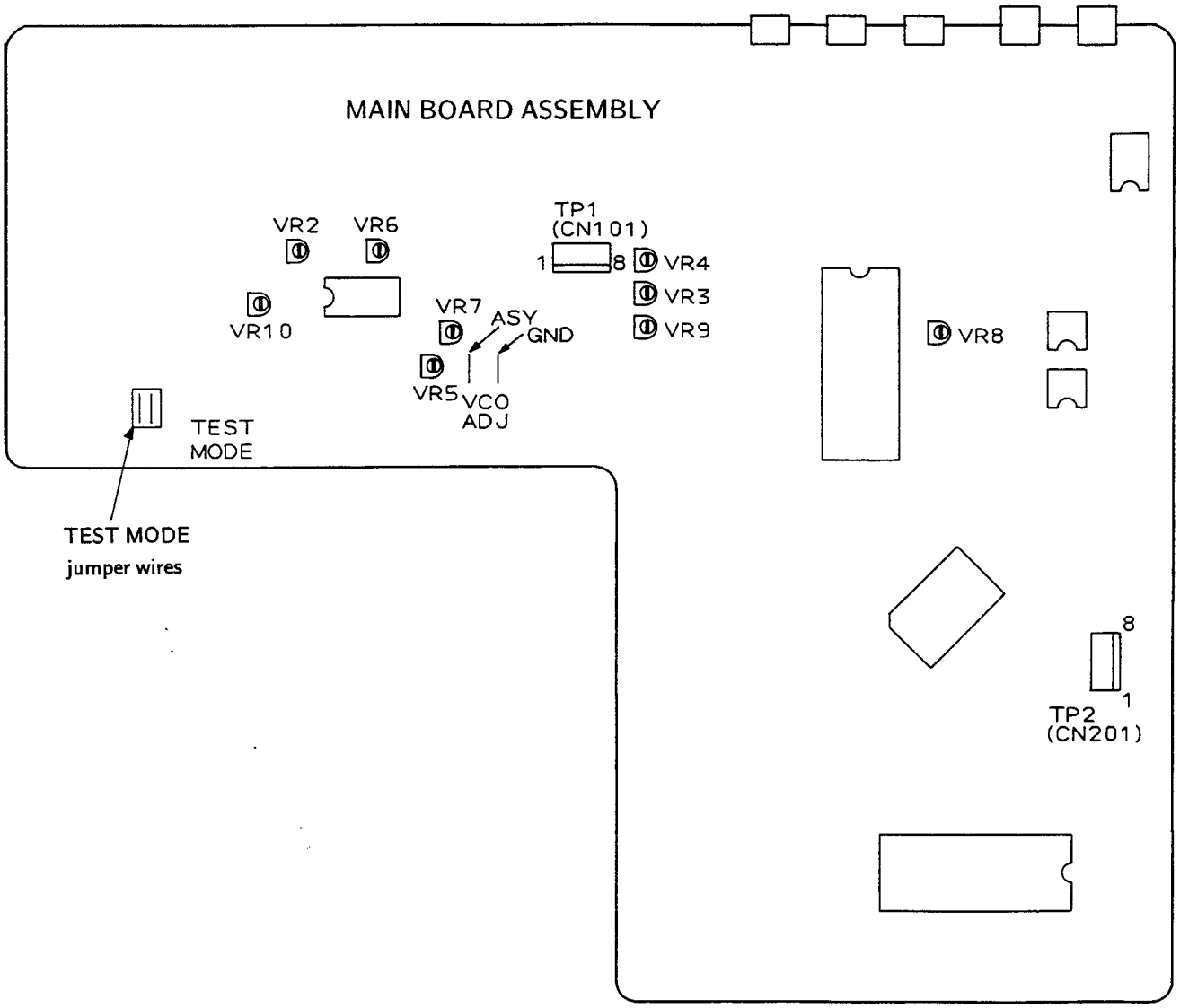
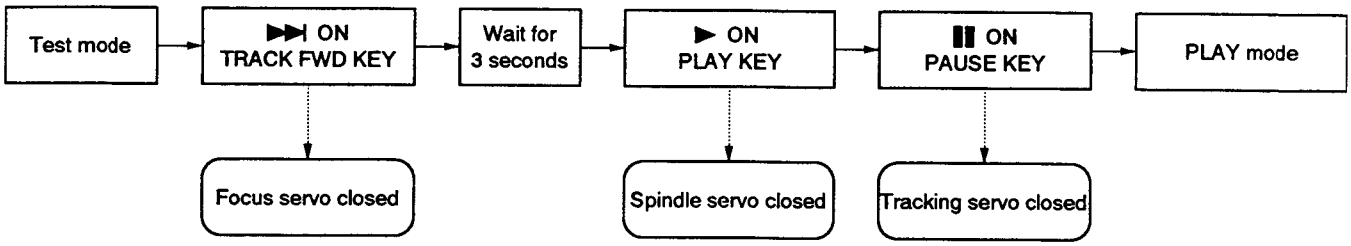


Fig.1 Adjusting point

In the test mode, closing and opening of servos is performed independently. Therefore, to set the play mode the servos have to be closed in (serial) sequence. Remember that in the test mode the play mode can't be set simply by pressing PAUSE (▮▮) key.

For example, to set the play mode from the stop mode, press the following keys in the indicated order.



* In the test mode, servos keep a serial sequence.

● Function of Each Key In the Test Mode

Symbol	Key name	Function during test mode	Description
▶▶|	TRACK FWD	Focus servo close	Lights the laser diode and sets the focus actuator UP/DOWN to close the focus servo.
▶	PLAY	Spindle servo close	After kicking the spindle motor, it closes the servo in the CLV–H mode.
▮▮	PAUSE	Tracking servo close/open	Performs a toggle operation. When pressed, the tracking servo is closed and the unit enters the play mode (the focus servo and spindle servo should be already closed). At this time the PAUSE indicator lights. If pressed again, the tracking servo opens.
	OUTPUT	Carriage reverse (inward)	Moves the carriage inwards at high (approx. 1 cm/s) speed. Since there is no safety device to stop the carriage, be sure to stop it manually in time.
	DISPLAY	Carriage forward (outward)	Moves the carriage outwards at high (approx. 1 cm/s) speed. Since there is no safety device to stop the carriage, be sure to stop it manually in time.
■	STOP	Stop	Stops all servos and returns the unit to the initial condition.
▲	OPEN/CLOSE	(Disc tray) open/close	Opens and closes the disc tray. However, the pickup does not return to the rest position when the tray is opened. It does not move either when the tray is closed.

Table 1.

Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
1	**Tracking error offset, focus error offset and RF offset adjustment**					
		TP1	TP1 Pin 4 (TR. ER)	VR7 (TE. OF)	0V ± 50 mV	● Set the test mode. (*) ● Adjust VR7 (TE. OF: tracking error offset) so that the voltage at Pin 4 (TE: tracking error) of TP1 becomes 0V ± 50 mV. ● Adjust VR6 (FO. OF: focus error offset) so that the voltage at Pin 6 (FO. ER: focus error) of TP1 becomes 0V ± 50 mV. ● Adjust VR2 (RF. OF: RF offset) so that RF output voltage at Pin 1 of TP 1 becomes 100 mV ± 50 mV.
		TP1	TP1 Pin 6 (FO. ER)	VR6 (FO.OF)	0V ± 50 mV	
		TP1	TP 1 Pin 1 (RF)	VR2 (RF. OF)	100 mV ± 50 mV	
2	**Tracking return offset adjustment**					
		TP1	TP1 Pin 2 (TR. RT)	VR9 (TR. OF)	0V ± 10 mV	● Set the test mode. (*) ● Adjust VR9 (TR. OF: tracking return offset) so that the voltage at Pin 2 TR. RT (tracking return) of TP1 becomes 0V ± 10 mV.
3	**Focus lock and spindle lock check**					
	V 0.5V/div	H 100 msec /div	TP 1 Pin 1 (RF output)		RF output Clockwise rotation	● Load the disc. ● Set the test mode. (*) ● Move the pickup close to the center of the disc using DISPLAY Key. Be sure to perform this operation. ● Observe Pin 1 RF (RF output) of TP 1 with an oscilloscope and confirm that RF signal is output after pressing TRACK FWD key (▶▶I). ● Press PLAY key (▶) and confirm that the disc rotates clockwise at approx. normal speed (about 300 rpm around the center of the disc), without running wildly or in reverse direction.

* See Page 36.

Step No.	Oscilloscope setting V	Oscilloscope setting H	Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
4–1	**Grating adjustment (1) (with an 8 cm disc)**					
	1V/div	5 ms/div	TP1 Pin 4 (TR. ER)	Grating	Null point	● This adjustment can be performed with an 8 cm disc having pits over a 75 mm in diameter. ● Load the disc. (8 cm) ● Set the test mode. (*) ● Press TRACK FWD (▶▶I) and PLAY (▶) keys in that order to close the focus and spindle servos (the tracking servo is open state.) ● Press DISPLAY key and move the pickup to the outer track of the 8 cm disc. When moving the pickup, it is possible to insert a slotted screwdriver in the grating adjustment plate slot from above the unit. (Fig. 3.) ● Observe the waveform at Pin 4 TR. ER (tracking error) of TP1 with an oscilloscope and at this time, insert cut off 4 kHz low-pass filter (Fig. 2). ● Insert the tracking driver in the adjustment slot and turn it so as to find out the null point (Photo–1).

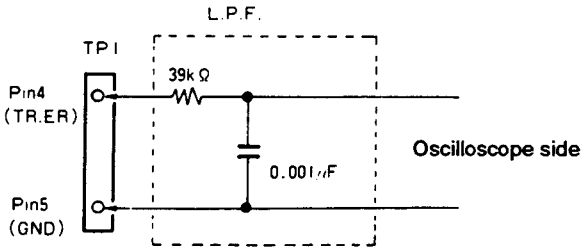


Fig. 2.

* See Page 36.

Step No.	Oscilloscope setting V	Oscilloscope setting H	Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
4–2	**Grating adjustment (2) (with an 12 cm disc playing more than 60 minutes)**					
	1V/div	5 ms/div	TP1 Pin 4 (TR. ER)	Grating	Null point	● Load the disc (playing more than 60 minutes). ● Set the test mode. (*) ● Press TRACK FWD (▶▶|) and PLAY (▶) keys in that order to close the focus and spindle servos (the tracking servo is open state). ● Press DISPLAY key and move the pickup to the outer track of the disc. When moving the pickup, it is possible to insert a slotted screwdriver in the grating adjustment plate slot from above the unit. (Fig. 3.) ● Observe the waveform at Pin 4 TR. ER (tracking error) of TP1 with an oscilloscope and at this time, insert cut off 4 kHz low–pass filter. (Fig. 2.) ● Insert the tracking driver in the adjustment slot and turn it so as to find out the null point (Photo–1).
				Grating	Maximum amplitude	● Turn the grating driver slowly clockwise from the null point and set to at the first point where the waveform amplitude (tracking error signal) is maximum. (See photo–2)

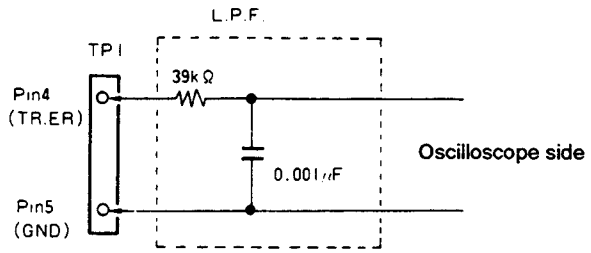


Fig. 2.

* See Page 36.

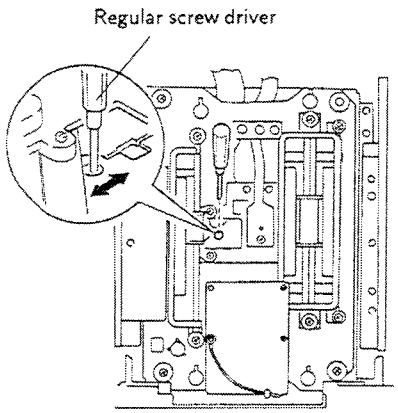
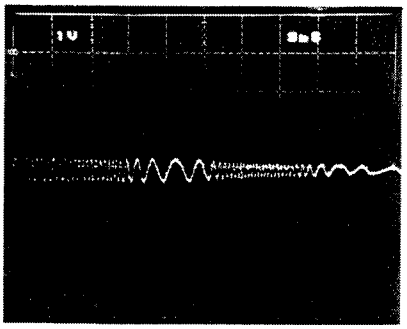
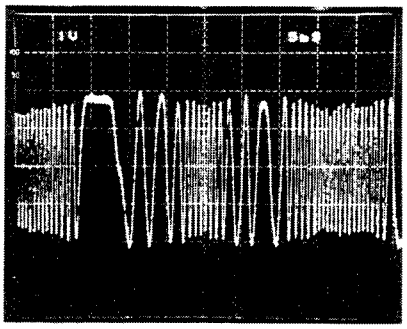


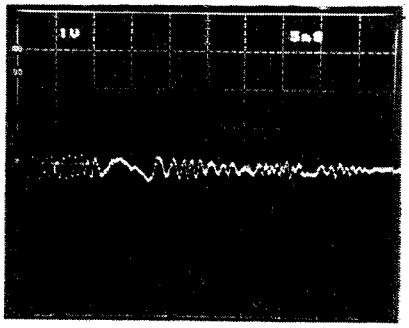
Fig. 3. Grating Adjustment



Photo–1 Null point

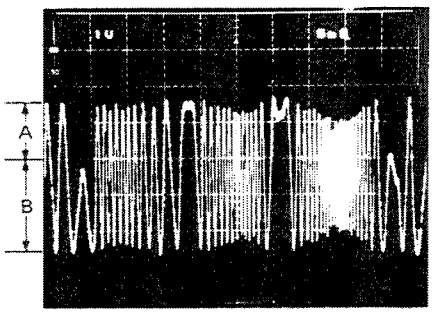


Photo–2 Maximum amplitude



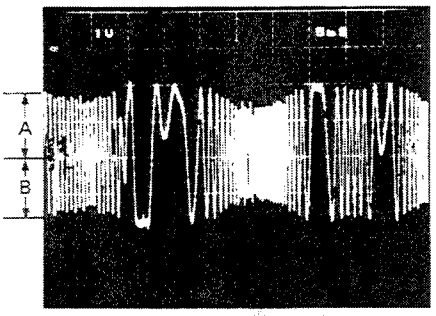
Photo–3 Out of null point

Step No.	Oscilloscope setting V	Oscilloscope setting H	Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
5	**Tracking balance adjustment**					
	0.5V/div	5 msec/div	TP1 Pin 4 (TR. ER)	VR5 (TR. BL)		● Load the disc. ● Set the test mode. (*) ● Press DISPLAY key and move carriage close to the center track of the disc. ● Press TRACK FWD (▶▶▌) and PLAY (▶) keys in that order to turn the disc. ● Observe Pin 4 TR. ER (tracking error) of TP1 with an oscilloscope. And adjust VR5 TR. BL (tracking balance) so as to remove DC elements from the tracking error waveform.



A≠B

Photo–6



A=B

Photo–7

* See Page 36.

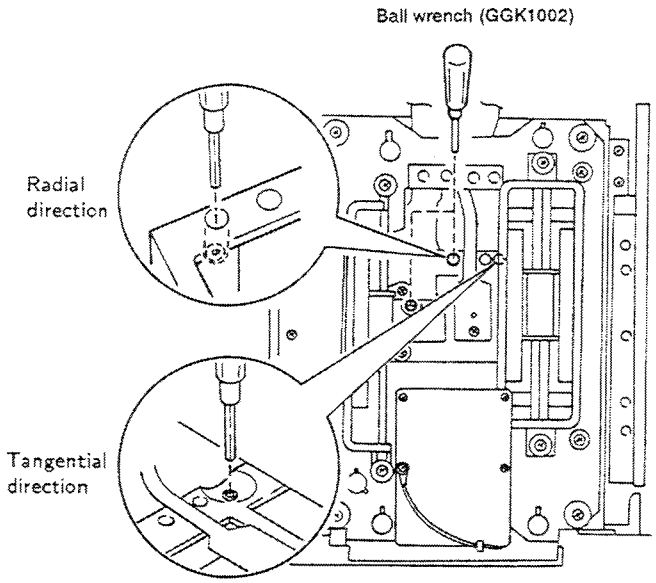
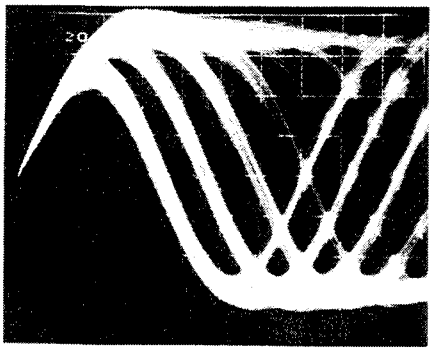
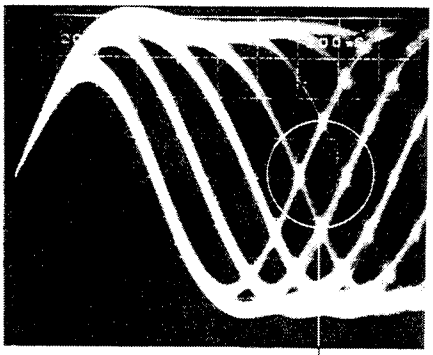


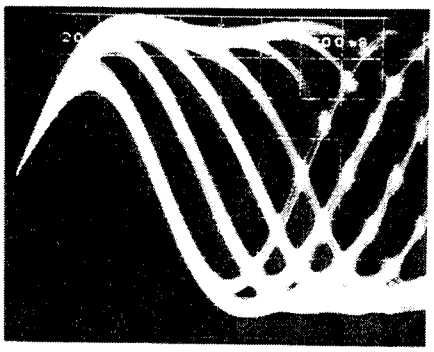
Fig. 4. Tangential Adjustment



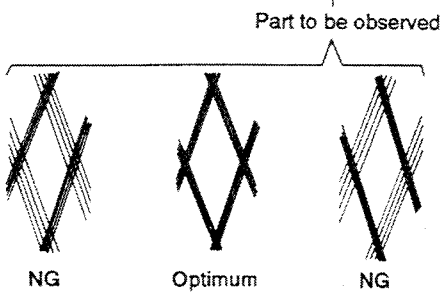
Photo–8



Photo–9



Photo–10



Step No.	Oscilloscope setting V	Oscilloscope setting H	Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
6	**Tangential adjustment**					
			TP 1 Pin 1 (RF output)	Tangential adjustment screw	Eye pattern optimum point	● Load the disc. ● Set the test mode. (*) ● Press DISPLAY key and move the pickup to the center track of the disc (set it to such a location that the tangential screw can be seen from above the servo mechanism. (See fig. 4.) ● Press TRACK FWD (▶▶|), PLAY (▶) and PAUSE (▮▮) keys in that order to close all servos. (Pause indicator lights.) ● Observe Pin 1 RF (RF output) of TP 1 with an oscilloscope and adjust the tangential screw so that the eye pattern becomes clear. (Fig. 4.) ● The adjustment point is located around the middle location between the point where the eye pattern becomes blurred when turning the tangential screw clockwise and the point where the eye pattern becomes blurred when turning the adjustment screw counterclockwise. Observe the overall clearness of the waveform and one of the diamond shapes in the eye pattern (photo-9). Optimum adjustment is attained at the point where diamond shape lines are relatively thin.

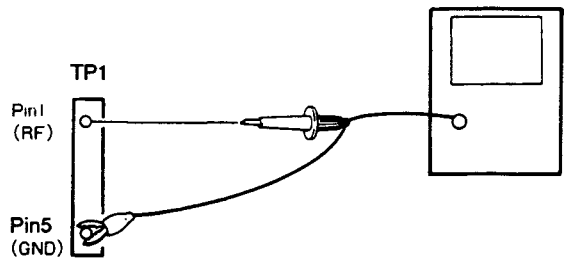


Fig. 5

* See Page 36.

Step No.	Oscilloscope setting V	Oscilloscope setting H	Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
7	**Radial adjustment**					
			TP 1 Pin 1 (RF output)	Radial adjustment screw	Eye pattern optimum point	● Load the disc. ● Set the test mode. (*) ● Press DISPLAY key and move the pickup to the center track of the disc (set it to such a location that the tangential screw can be seen from above the servo mechanism. (See fig. 4.) ● Press TRACK FWD (▶▶|), PLAY (▶) and PAUSE (▮▮) keys in that order to close all servos. (Pause indicator lights.) ● Observe Pin 1 RF (RF output) of TP 1 with an oscilloscope and adjust the tangential screw so that the eye pattern becomes clear. (Fig. 4.) ● The adjustment point is located around the middle location between the point where the eye pattern becomes blurred when turning the tangential screw clockwise and the point where the eye pattern becomes blurred when turning the adjustment screw counterclockwise. Observe the overall clearness of the waveform and one of the diamond shapes in the eye pattern (photo-9). Optimum adjustment is attained at the point where diamond shape lines are relatively thin. ● Perform the tangential and radial adjustments alternately two or more times.

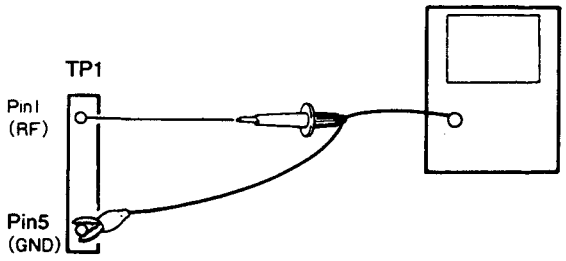


Fig. 5

* See Page 36.

Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
8	**RF level check**					
			TP 1 Pin 1 (RF)	Check	1.5V $^{+0.2V}_{-0V}$	● Set the test mode. (*) ● Connect the probe of the oscilloscope to Pin 1 RF (RF output) of TP 1 . ● Play back the disc, measure the RF waveform p–p voltage and confirm that it becomes 1.5V $^{+0.2V}_{-0V}$.
			TP 1 Pin 1 (RF)	VR 10	1.5V $^{+0.2V}_{-0V}$	● Adjust VR 10 if the voltage does not become 1.5V $^{+0.2V}_{-0V}$.

* See Page 36.

Step No.	Oscilloscope setting V	Oscilloscope setting H	Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
9	**Focus gain adjustment**					
	CH1 (X) , CH2 (Y) 20 mV/div, 5 mV/div (probe 10:1)		X axis: TP1 Pin 5 (FO. IN) Y axis: TP1 Pin 6 (FO. ER)	VR3 (FO. GA)	Phase difference 90 °	● With the power off, connect the oscilloscope and the oscillator as shown in Fig. 6. ● Set the normal playback mode. ● Turn the oscillators power on and set it to output a 1.2 kHz, 1 Vp–p signal. **Note:** (Some oscillators output DC when turned ON. In that case, connect the oscillator after turning it on.) ● Adjust VR3 FO. GA (focus gain) so that the resurge waveform on an oscilloscope becomes a horizontal circle (phase difference 90 °).

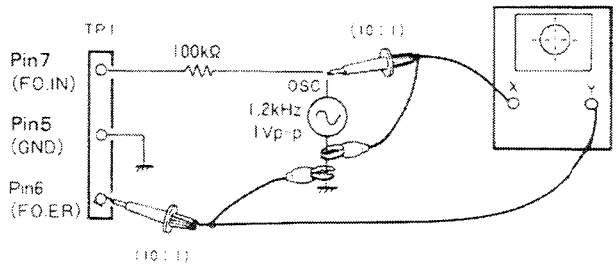
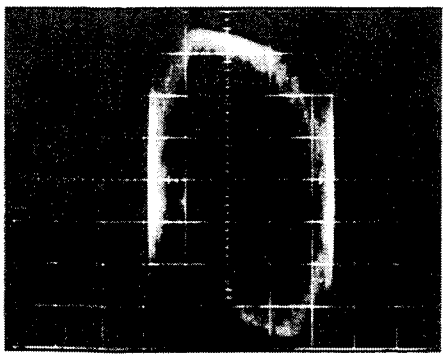
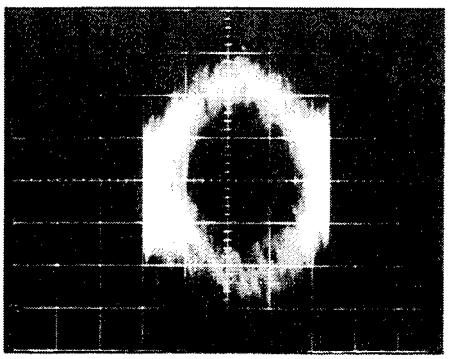


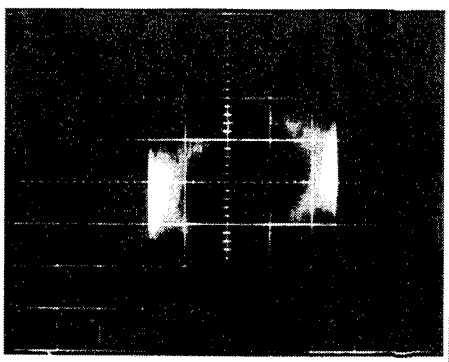
Fig. 6.



High gain
Photo–11



Optimum gain
Photo–12



Low gain
Photo–13

Step No.	Oscilloscope setting V	Oscilloscope setting H	Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
10	**Tracking gain adjustment**					
	CH1 (X), CH2 (Y) 50 mV/div, 5 mV/div (Probe 10:1)		X axis: TP1 Pin 3 (TR. IN) Y axis: TP1 Pin 2 (TR. ER)	VR4 (TR. GA)	Phase difference 90°	● With the power off, connect the oscilloscope and the oscillator as shown in Fig. 7. ● Set the normal playback mode. ● Turn the oscillators power on and set it to output a 1 kHz, 2 Vp–p signal. **Note:** (Some oscillators output DC when turned on. In that case, connect the oscillator after turning it on.) ● Adjust VR4 TR. GA (tracking gain) so that the resurge waveform on an oscilloscope becomes a horizontal circle (phase difference 90°).

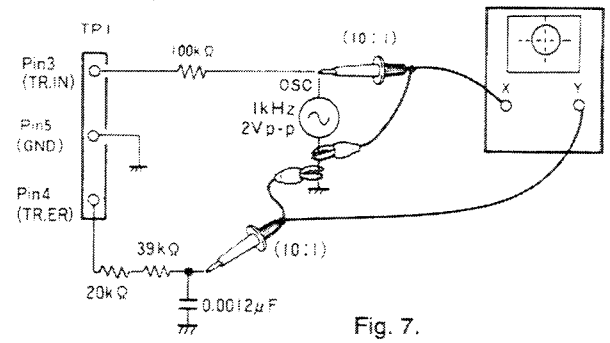
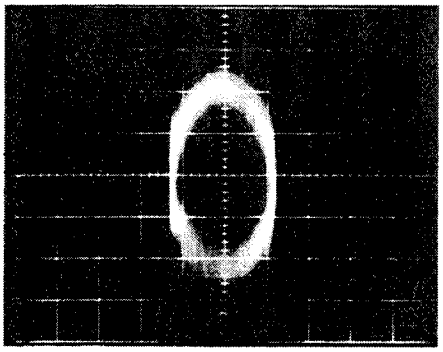
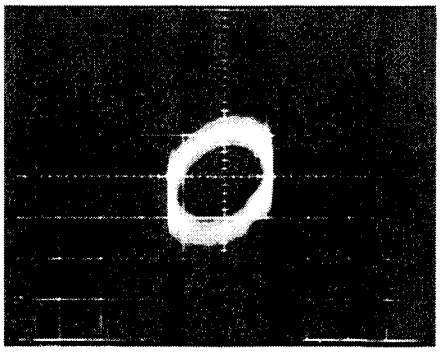


Fig. 7.

High gain
Photo–14



Optimum gain
Photo–15

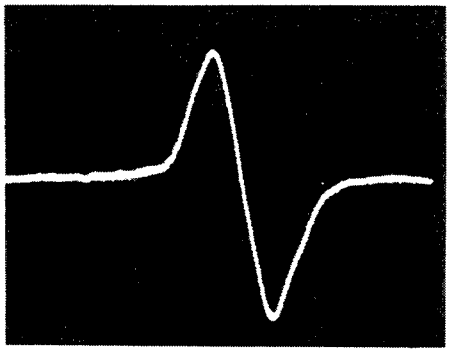


Low gain
Photo–16

11	**VCO free–running frequency adjustment**					
			TP 2 Pin 2		Frequency 4.275 MHz ± 0.025 MHz	● Set the test mode. (*) ● Short the ASY and GND jumpers by using a slotted screw driver or similar. ● Connect the frequency counter (10 MHz range) to Pin 2 of TP 2. ● Adjust VR8 (VCO. A) so that the frequency counter reads 4.275 MHz ± 0.025 MHz. **Note:** Adjust with the stop mode.

* See Page 36.

Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
12	Focus error check					
	1V/div	2 ms/div	TP1 Pin 6 (FO. ER)	Check	Waveform	● Set the test mode. (*) ● Connect Pin 7 FO. IN (focus in) of TP1 to GND. ● Press TRACK FWD key and check the waveform on Pin 6 FO. ER (focus error) of TP1 with the oscilloscope.



Focus error
Photo–17

* See Page 36.

7. REGLAGES

Effectuer les réglages suivants dans l'ordre indiqué.

● Réglages

1. Réglage du décalage d'erreur d'alignement, du décalage d'erreur de mise au point et du décalage RF (fréquence radio).
2. Réglage du décalage de retour d'alignement.
3. Contrôle du verrouillage de mise au point et du verrouillage d'axe.
4. Réglage du filtre.
5. Réglage de l'équilibre d'alignement.
6. Réglage tangentiel.
7. Réglage radial.
8. Contrôle du niveau RF (fréquence radio)
9. Réglage du gain de mise au point
10. Réglage du gain d'alignement
11. Réglage de la fréquence de relaxation du VCO (oscillateur à fréquence réglée par variation de tension)
12. Méthode de contrôle d'erreur de mise au point

● Appareils de Mesure

1. Oscilloscope à double trace
2. Indicateur de puissance lumineuse
3. Disc d'essai YEDS-7
4. Filtre de réglage de mise au point et d'alignement
5. Filtre passe-bande de réglage de gain de boucle
6. Générateur de signal
7. Excitateur de filtre
8. Outils à usage général
9. Disc disponible dans le commerce (8 cm et 12 cm)
10. Clé hex. (GGK 1002, 1.5 mm)

● Apropos du mode d'essai

Mise en/hors service du mode d'essai

① Pour activer le mode d'essai, mettre l'interrupteur d'alimentation sous tension en court-circuitant le cavalier de mode d'essai.

② Le mode d'essai est annulé en ramenant l'interrupteur d'alimentation sur OFF.

Les fonctions des touches en mode d'essai sont décrites au Tableau 1.

● Nom des Résistances Variables de Réglage

VR2: Décalage RF (RF. OF)
VR3: Gain de mise au point (FO. GA)
VR4: Gain d'alignement (TR. GA)
VR5: Equilibre d'alignement (TR. BL)
VR6: Décalage d'erreur de mise au point (FO. OF)
VR7: Décalage d'erreur d'alignement (TE. OF)
VR8: Compteur de fréquence VCO (VCOA)
VR9: Décalage de retour d'alignement (TR. OF)
VR 10 : Niveau RF (RF.LEV)

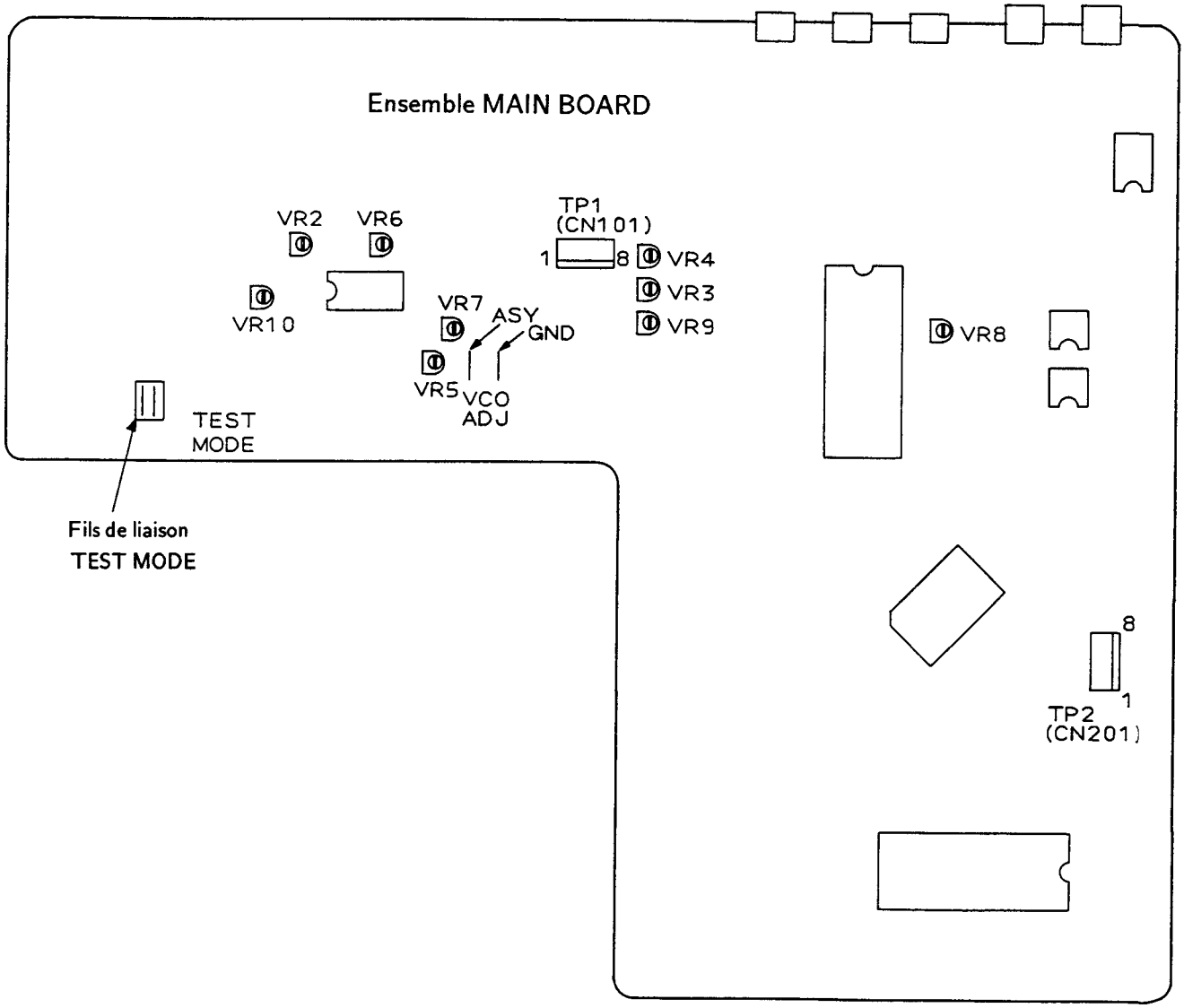
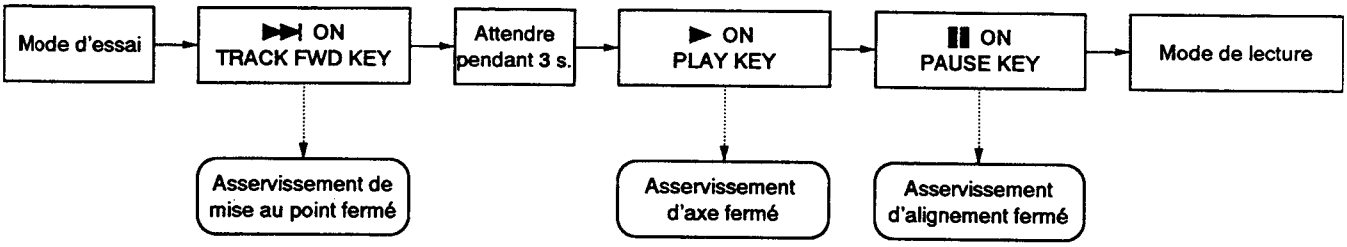


Fig.1 Points de réglage

Dans le mode d'essai, l'ouverture et la fermeture des circuits d'asservissement sont effectuées indépendamment. Par conséquent, pour régler le mode de lecture, les asservissements doivent être fermés l'un après l'autre (en série). Ne pas oublier que, dans le mode d'essai, le mode de lecture ne peut pas être réglé simplement en appuyant sur la touche PAUSE (▮▮).

Par exemple, pour régler le mode de lecture à partir du mode d'arrêt, appuyer sur les touches suivantes dans l'ordre indiqué.



* Dans le mode d'essai, les asservissements restent en séquence sérielle.

● Fonction de Chaque Touche dans le Mode D'essai

Symbole	Touche	Fonction en mode d'essai	Explication
▶▶|	TRACK FWD	Fermeture asservissement de mise au point	Fait s'allumer la diode laser et déplace le dispositif de commande de mise au point dans le sens vertical pour fermer l'asservissement de mise au point.
▶	PLAY	Fermeture asservissement d'axe	Après le démarrage du moteur d'axe, ferme l'asservissement dans le mode CLV–H.
▮▮	PAUSE	Fermeture/ouverture asservissement d'alignement	Exécute une opération de bascule. Quand elle est enfoncée, l'asservissement d'alignement est fermé et l'appareil passe dans le mode de lecture (les asservissements de mise au point et d'axe doivent déjà être fermés). A ce moment–là le témoin de PAUSE s'allume. Si elle est de nouveau enfoncée, l'asservissement d'alignement s'ouvre.
	OUTPUT	Retour du chariot (vers l'intérieur)	Déplace le chariot vers l'intérieur à grande vitesse (approx. 1 cm/s.). Comme il n'y a pas de dispositif de sécurité pour arrêter le chariot, il faut donc l'arrêter manuellement à temps.
	DISPLAY	Avance du chariot (vers l'extérieur)	Déplace le chariot vers l'extérieur à grande vitesse (approx. 1 cm/s.). Comme il n'y a pas de dispositif de sécurité pour arrêter le chariot, il faut donc l'arrêter manuellement à temps.
■	STOP	Arrêt	Arrête tous les asservissements et ramène l'appareil à sa condition initiale.
▲	OPEN/CLOSE	Ouverture/fermeture du plateau de disc	Ouvre et ferme le plateau de disc. Le capteur ne revient cependant pas à la position d'arrêt quand le plateau est ouvert. Il ne se déplace pas non plus quand le plateau est fermé.

Tableau 1.

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
1	**Réglage du décalage d'erreur d'alignement, du décalage d'erreur de mise au point et du décalage RF (fréquence radio)**					
		TP1	TP1 Pin 4 (TR. ER)	VR7 (TE. OF)	0V ± 50 mV	● Régler le mode d'essai. (*) ● Ajuster VR7 (TE. OF: décalage d'erreur d'alignement) afin que la tension à la broche 4 (TE: erreur d'alignement) de TP1 devienne 0V ± 50 mV.
		TP1	TP1 Pin 6 (FO. ER)	VR6 (FO.OF)	0V ± 50 mV	● Ajuster VR6 (FO. OF: décalage d'erreur de mise au point) afin que la tension à la broche 6 (FO. ER: erreur de mise au point) de TP1 devienne 0V ± 50 mV.
		TP1	TP 1 Pin 1 (RF)	VR2 (RF. OF)	100 mV ± 50 mV	● Ajuster VR2 (RF. OF: décalage RF) afin que la tension à la broche 1 de TP 1 devienne 100 mV ± 50 mV.
2	**Réglage du décalage de retour d'alignement**					
		TP1	TP1 Pin 2 (TR. RT)	VR9 (TR. OF)	0V ± 10 mV	● Régler le mode d'essai. (*) ● Ajuster VR9 (TR. OF: décalage de retour d'alignement) afin que la tension à la broche 2 (TR. RT: retour d'alignement) de TP1 devienne 0V ± 10 mV.
3	**Contrôle du verrouillage de mise au point et du verrouillage d'axe**					
	V 0,5V/div	H 100 msec /div	TP 1 Pin 1 (Sortie RF)		Sortie RF Rotation dans le sens des aiguilles d'une montre	● Charger le disc. ● Régler le mode d'essai. (*) ● Amener le capteur près du centre du disc en utilisant la touche DISPLAY. Toujours effectuer cette opération. ● Observer la sortie RF à la broche 1 de TP 1 avec un oscilloscope et confirmer que le signal RF est sorti lorsque la touche TRACK FWD (▶▶I) est enfoncée. ● Appuyer sur la touche PLAY (▶) et confirmer que le disc tourne dans le sens des aiguilles d'une montre à approximativement la vitesse normale (environ 300 tr/mn près du centre du disc), sans qu'il tourne irrégulièrement ou en sens inverse.

* Voir Page 51.

Etape No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
4–1	**Réglage du filtre (1) (avec un disc de 8 cm)**					
	1V/div	5 ms/div	TP1 Pin 4 (TR. ER)	Filtre	Point nul	● Ce réglage peut être effectué avec un disc de 8 cm ayant des microcuvettes sur un rayon supérieur à 75 mm. ● Charger le disc. (8 cm) ● Régler le mode d'essai. (*) ● Appuyer sur les touches TRACK FWD (▶▶I) et PLAY (▶) dans cet ordre pour fermer les asservissements de mise au point et d'axe (l'asservissement d'alignement est en état ouvert). ● Appuyer sur la touche DISPLAY. et amener le capteur sur la piste extérieure du disc de 8 cm. Lors du déplacement du capteur, il est possible d'insérer un tournevis dans la fente de la plaque de réglage du filtre depuis le haut de l'appareil. (Fig. 3). ● Observer la forme d'onde à la broche 4 (TR. ER: erreur d'alignement) de TP1 avec un oscilloscope et à ce moment–là, insérer un filtre passe–bas de coupure 4 kHz (Fig. 2). ● Insérer le tournevis d'alignement dans la fente de réglage et le tourner afin de trouver le point nul (Photo–1).

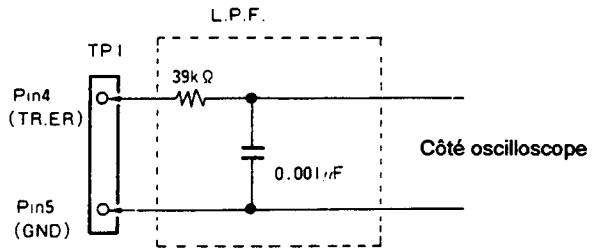


Fig. 2.

* Voir Page 51.

Etape No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
4–2	**Réglage du filtre (2) (avec un disc de 12 cm dont la durée de lecture est supérieure à 60 minutes)**					
	1V/div	5 ms/div	TP1 Pin 4 (TR. ER)	Filtre	Point nul	● Charger le disc. (durée de lecture supérieure à 60 minutes). ● Régler le mode d'essai. (*) ● Appuyer sur les touches TRACK FWD (▶▶I) et PLAY (▶) dans cet ordre pour fermer les asservissements de mise au point et d'axe (l'asservissement d'alignement est en état ouvert). ● Appuyer sur la touche DISPLAY et amener le capteur sur la piste extérieure du disc. Lors du déplacement du capteur, il est possible d'insérer un tournevis dans la fente de la plaque de réglage du filtre depuis le haut de l'appareil. (Fig. 3). ● Observer la forme d'onde à la broche 4 (TR. ER: erreur d'alignement) de TP1 avec un oscilloscope et à ce moment–à, insérer un filtre passe–bas de coupure 4 kHz (Fig. 2). ● Insérer le tournevis d'alignement dans la fente de réglage et le tourner afin de trouver le point nul (Photo–1).
				Filtre	Amplitude maximum	● Tourner lentement l'excitateur de filtre dans le sens des aiguilles d'une montre à partir du point nul et le régler au premier point où l'amplitude de la forme d'onde (signal d'erreur d'alignement) est maximum. (Voir photo–2).

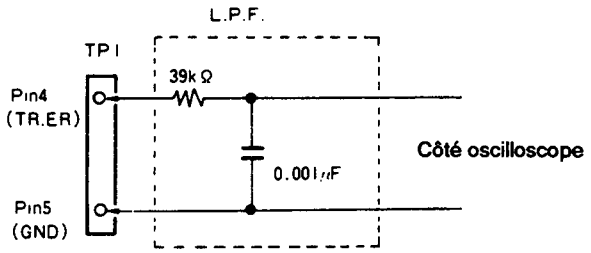


Fig. 2.

* Voir Page 51.

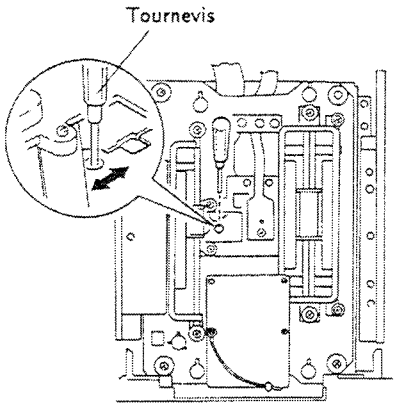
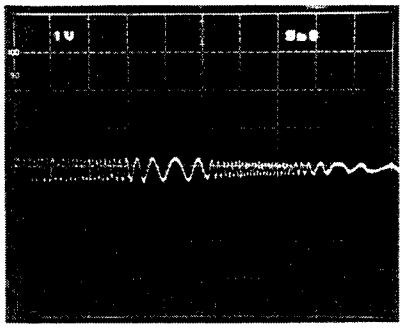
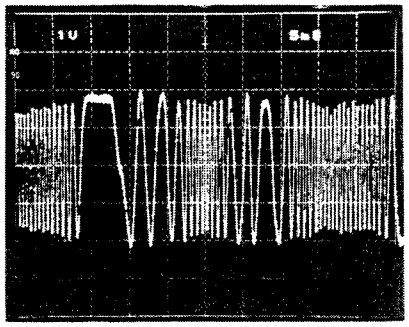


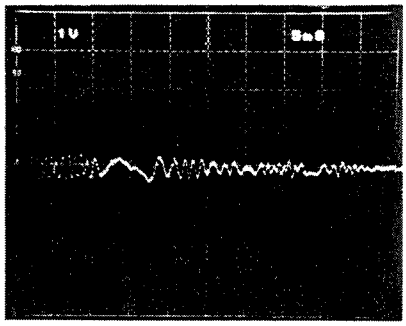
Fig. 3. Réglage du Filtre



Photo–1 Point nul

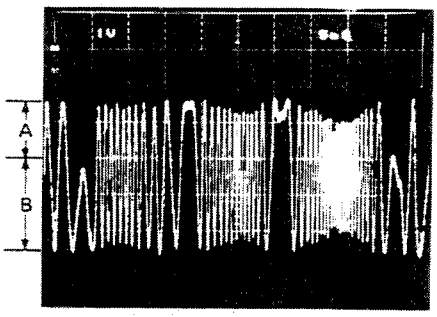


Photo–2 Amplitude maximum



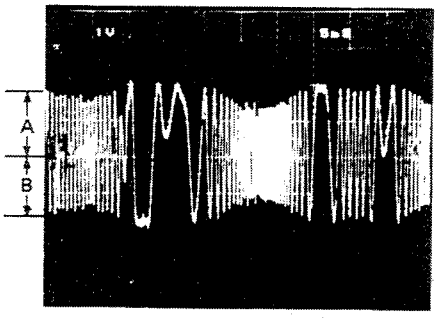
Photo–3 Hors du point nul

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
5	**Réglage de l'équilibre d'alignement**					
	0.5V/div	5 msec/div	TP1 Pin 4 (TR. ER)	VR5 (TR. BL)		● Charger le disc. ● Régler le mode d'essai. (*) ● Appuyer sur la touche DISPLAY et amener le chariot près de la piste centrale du disc. ● Appuyer sur les touches TRACK FWD (▶▶|) et PLAY (▶) dans cet ordre pour faire tourner le disc. ● Observer la forme d'onde à la broche 4 (TR. ER: erreur d'alignement) de TP1 avec un oscilloscope. Et régler VR5 (TR. BL: équilibre d'alignement) afin d'éliminer les éléments CC de la forme d'onde d'erreur d'alignement.



A≠B

Photo–6



A=B

Photo–7

* Voir Page 51.

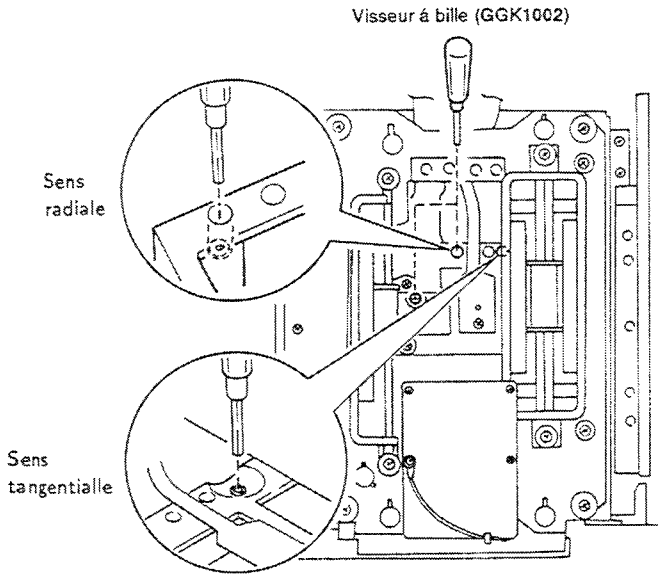
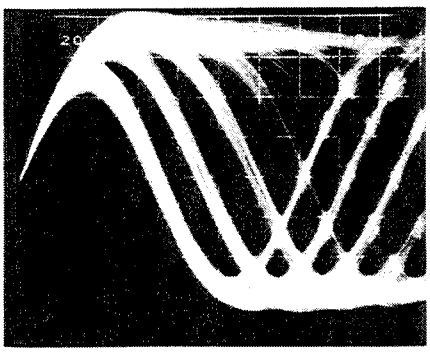
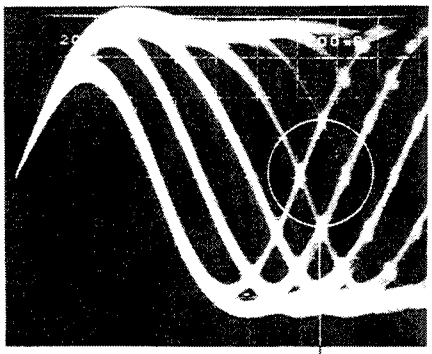


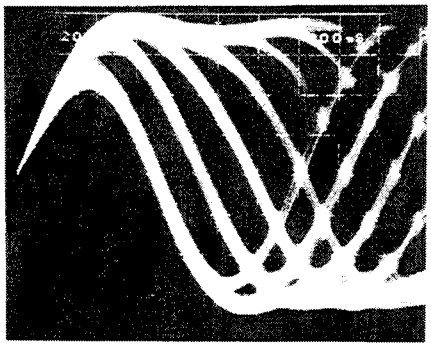
Fig. 4. Réglage Tangentiel



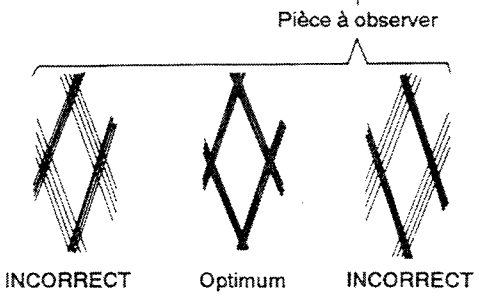
Photo–8



Photo–9



Photo–10



Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
6	**Réglage tangentiel**					
			TP 1 Pin 1 (Sortie RF)	Vis de réglage tangentiel	Point optimum de mire	● Charger le disc. ● Régler le mode d'essai. (*) ● Appuyer sur la touche DISPLAY et amener le capteur à la piste centrale du disc. (Le placer à un endroit où la vis tangentielle peut être vue depuis le haut du mécanisme d'asservissement. (Voir Fig. 4.). ● Appuyer sur les touches TRACK FWD (▶▶I), PLAY (▶) et PAUSE (▮▮) dans cet ordre pour fermer tous les asservissements. (Le témoin de pause s'allume). ● Observer la sortie RF broche 1 de TP 1 avec un oscilloscope et régler la vis tangentielle afin que la mire devienne claire. (Fig. 4.). ● Le point de réglage est situé vers la position médiane entre le point où la mire devient floue lorsque la vis tangentielle est tournée dans le sens des aiguilles d'une montre et le point où la mire devient floue lorsque la vis de réglage est tournée dans le sens inverse. Observer la netteté d'ensemble de la forme d'onde et une des formes en diamant dans la mire (Photo–9). Le réglage optimum est obtenu au point où les lignes de la forme en diamant sont relativement fines.

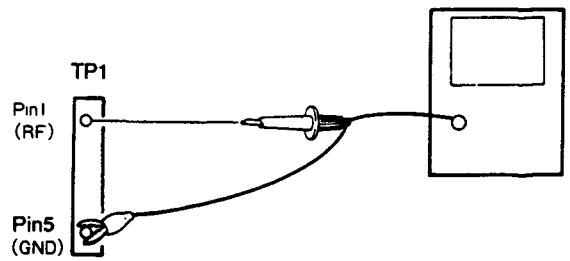


Fig. 5

* Voir Page 51.

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
7	**Réglage radial**					
			TP 1 Pin 1 (Sortie RF)	Vis de réglage radial	Point optimum de mire	● Charger le disc. ● Régler le mode d'essai. (*) ● Appuyer sur la touche DISPLAY et amener le capteur à la piste centrale du disc. (Le placer à un endroit où la vis radiale peut être vue depuis le haut du mécanisme d'asservissement. (Voir Fig. 5.). ● Appuyer sur les touches TRACK FWD (▶▶I), PLAY (▶) et PAUSE (▮▮) dans cet ordre pour fermer tous les asservissements. (Le témoin de pause s'allume). ● Observer la sortie RF broche 1 de TP 1 avec un oscilloscope et régler la vis radiale afin que la mire devienne claire. (Fig. 4.). ● Le point de réglage est situé vers la position médiane entre le point où la mire devient floue lorsque la vis radiale est tournée dans le sens des aiguilles d'une montre et le point où la mire devient floue lorsque la vis de réglage est tournée dans le sens inverse. Observer la netteté d'ensemble de la forme d'onde et une des formes en diamant dans la mire (Photo–9). Le réglage optimum est obtenu au point où les lignes de la forme en diamant sont relativement fines. ● Effectuer alternativement, deux fois ou plus, les réglages tangentiel et radial.

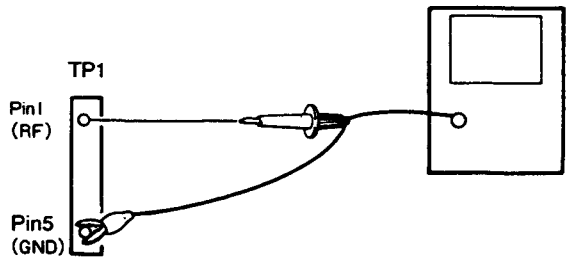


Fig. 5

* Voir Page 51.

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
8	Contrôle du niveau RF (fréquence radio)					
			TP 1 Pin 1 (RF)	Contrôle	1,5V $^{+0,2V}_{-0V}$	● Régler le mode d'essai. (*) ● Connecter la sonde de l'oscilloscope à la sortie RF broche 1 de TP 1 . ● Reproduire le disc, mesurer la tension c-c de la forme d'onde RF et confirmer qu'elle devient 1,5V $^{+0,2V}_{-0V}$.
			TP 1 Pin 1 (RF)	VR 10	1,5V $^{+0,2V}_{-0V}$	● Ajuster VR 10 si la tension ne devient pas 1,5V $^{+0,2V}_{-0V}$.

* Voir Page 51.

Etape No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
9	**Réglage du gain de mise au point**					
	CH1 (X) , CH2 (Y) 20 mV/div, 5 mV/div (Sonde 10:1)		Axe X: TP1 Pin 5 (FO. IN) Axe Y: TP1 Pin 6 (FO. ER)	VR3 (FO. GA)	Différence de phase 90 °	● L'alimentation étant coupée, connecter l'oscilloscope et l'oscillateur comme indiqué sur la Fig. 6. ● Régler le mode de lecture normal. ● Mettre l'oscillateur sous tension et le régler pour sortir un signal 1 Vc–c, 1,2 kHz. **Remarque:** (Certains oscillateurs sortent CC lorsqu'ils sont mis sous tension. Dans ce cas, connecter l'oscillateur après l'avoir mis sous tension). ● Ajuster VR3 (FO. GA: gain de mise au point) afin que la forme d'onde de choc sur l'oscilloscope devienne un cercle horizontal (différence de phase 90 °).

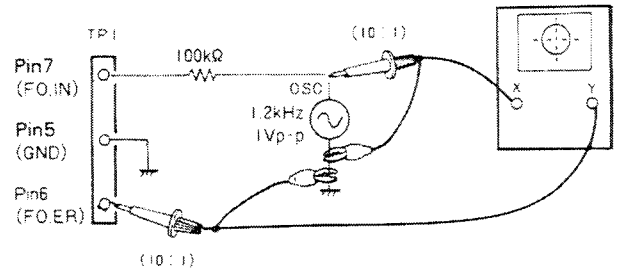
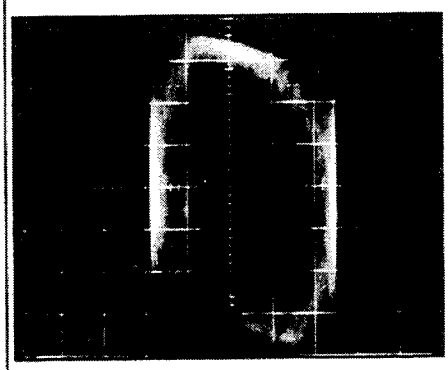
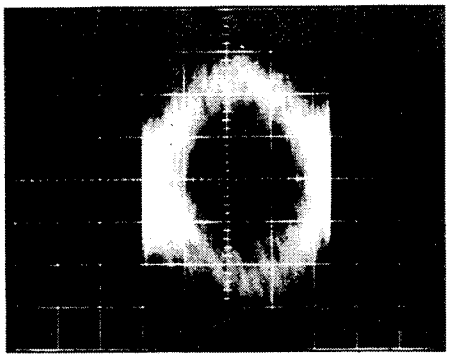


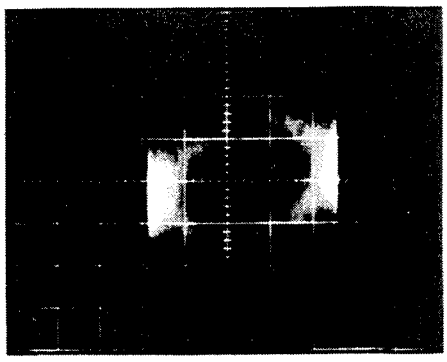
Fig. 6.



Gain élevé
Photo–11



Gain optimum
Photo–12



Gain faible
Photo–13

Etape No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
10	**Réglage du gain d'alignement**					
	CH1 (X), CH2 (Y) 50 mV/div, 5 mV/div (Sonde 10:1)		Axe X: TP1 Pin 3 (TR. IN) Axe Y: TP1 Pin 2 (TR. ER)	VR4 (TR. GA)	Différence de phase 90 °	● L'alimentation étant coupée, connecter l'oscilloscope et l'oscillateur comme indiqué sur la Fig. 7. ● Régler le mode de lecture normal. ● Mettre l'oscillateur sous tension et le régler pour sortir un signal 2 Vc–c, 1 kHz. **Remarque:** (Certains oscillateurs sortent CC lorsqu'ils sont mis sous tension. Dans ce cas, connecter l'oscillateur après l'avoir mis sous tension). ● Ajuster VR4 (TR. GA: gain d'alignement) afin que la forme d'onde de choc sur l'oscilloscope devienne un cercle horizontal (différence de phase 90 °).

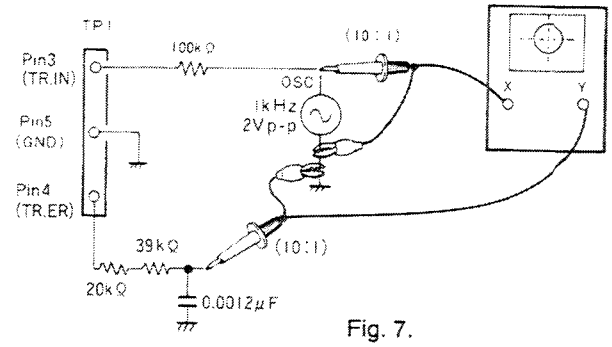
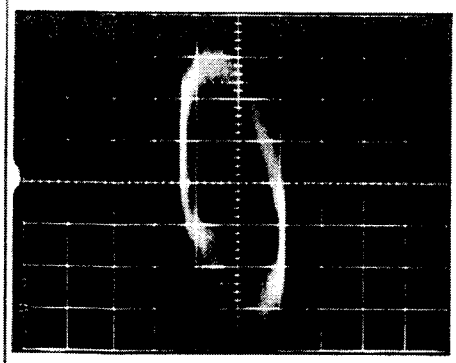
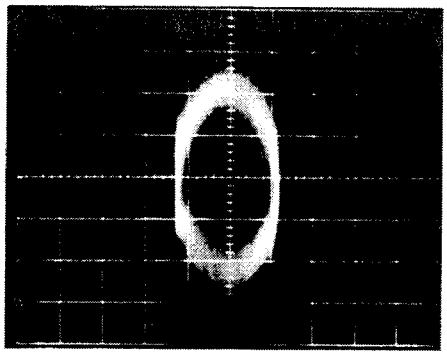


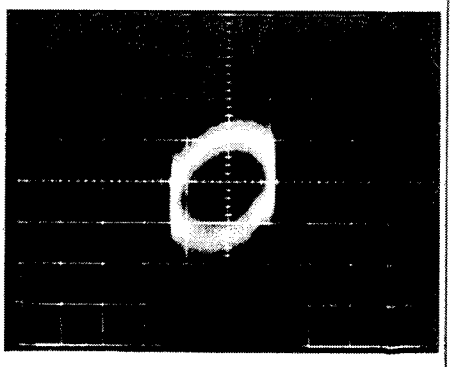
Fig. 7.



Gain élevé
Photo–14



Gain optimum
Photo–15

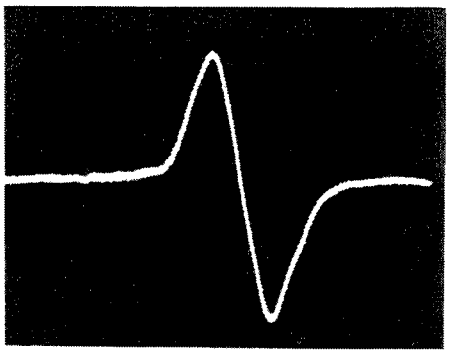


Gain faible
Photo–16

11	**Réglage de la fréquence de relaxation du VCO (oscillateur à fréquence réglée par variation de tension)**					
			TP 2 Pin 2		Fréquence 4,275 MHz ± 0,025 MHz	● Régler le mode d'essai. (*) ● Coupler ASY et les fils GND en utilisant un tournevis à fente ou objet similaire. ● Connecter le fréquencemètre (gamme 10 MHz) à la broche 2 de TP 2. ● Ajuster VR8 (VCO. A) afin que le fréquencemètre indique 4,275 MHz ± 0,025 MHz. **Remarque:** Ajuster dans le mode d'arrêt.

* Voir Page 51.

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
12	**Contrôle d'erreur de mise au point**					
	1V/div	2 ms/div	TP1 Pin 6 (FO. ER)	Contrôle	Forme d'onde	● Régler le mode d'essai. (*) ● Connecter la broche 7 FO. IN (entrée de mise au point) de TP1 à GND. ● Appuyer sur la touche TRACK FWD et contrôler la forme d'onde à la broche 6 FO. ER (erreur de mise au point) de TP1 avec l'oscilloscope.



Erreur de mise au point
Photo–17

* Voir Page 51.

7. AJUSTES

Realice los siguientes ajustes en el orden indicado:

● Ajustes

1. Ajuste de compensación del error de seguimiento, del error de foco y de RF
2. Ajuste de compensación del retorno de seguimiento
3. Comprobación de la sincronización del foco y del eje
4. Ajuste de la rejilla
5. Ajuste del equilibrio del seguimiento
6. Ajuste tangencial
7. Ajuste radial
8. Comprobación del nivel de RF
9. Ajuste de la ganancia de foco
10. Ajuste de la ganancia de seguimiento
11. Ajuste de la frecuencia propia del VCO (oscilador controlado por tensión)
12. Método de comprobación del error de foco

● Dispositivos de Medición

1. Osciloscopio de doble trazo
2. Medidor de potencia lumínica
3. Disco de prueba YEDS–7
4 Filtro de ajuste de foco y seguimiento
5. Filtro de paso de banda para el ajuste de la ganancia de bucle.
6. Generador de señales
7. Destornillador de la rejilla
8. Herramientas de uso general
9. Disco disponible comercialmente (de 8 cm y de 12 cm)
10. Llave hex.(GGK 1002, 1.5 mm)

● Modo de prueba

Activación y desacivation del mode de prueba

① Para activar el mode de prueba, ponga en ON el interruptor de alimentación con el puente del mode de prueba cortocircuitado.

② El modo de pruebga se desactivará poniendo el interrupter de alimentación en OFF.

Las funciónes de las teclas en el modo de prueba se describen en la tabla 1.

● Descripción de los Resistores Variables Empleados para el Ajuste

VR2: Compensación de RF (RF. OF)
VR3: Ganancia de foco (FO. GA)
VR4: Ganancia de seguimiento (TR. GA)
VR5: Equilibrio de seguimiento (TR. BL)
VR6: Compensación del error de foco (FO. OF)
VR7: Compensación del error de seguimiento (TE. OF)
VR8: Contador de frecuencias del oscilador controlado por tensión (VCOA)
VR9: Compensación del retorno de seguimiento (TR. OF)
VR10 : Nivel de RF (RF.LEV)

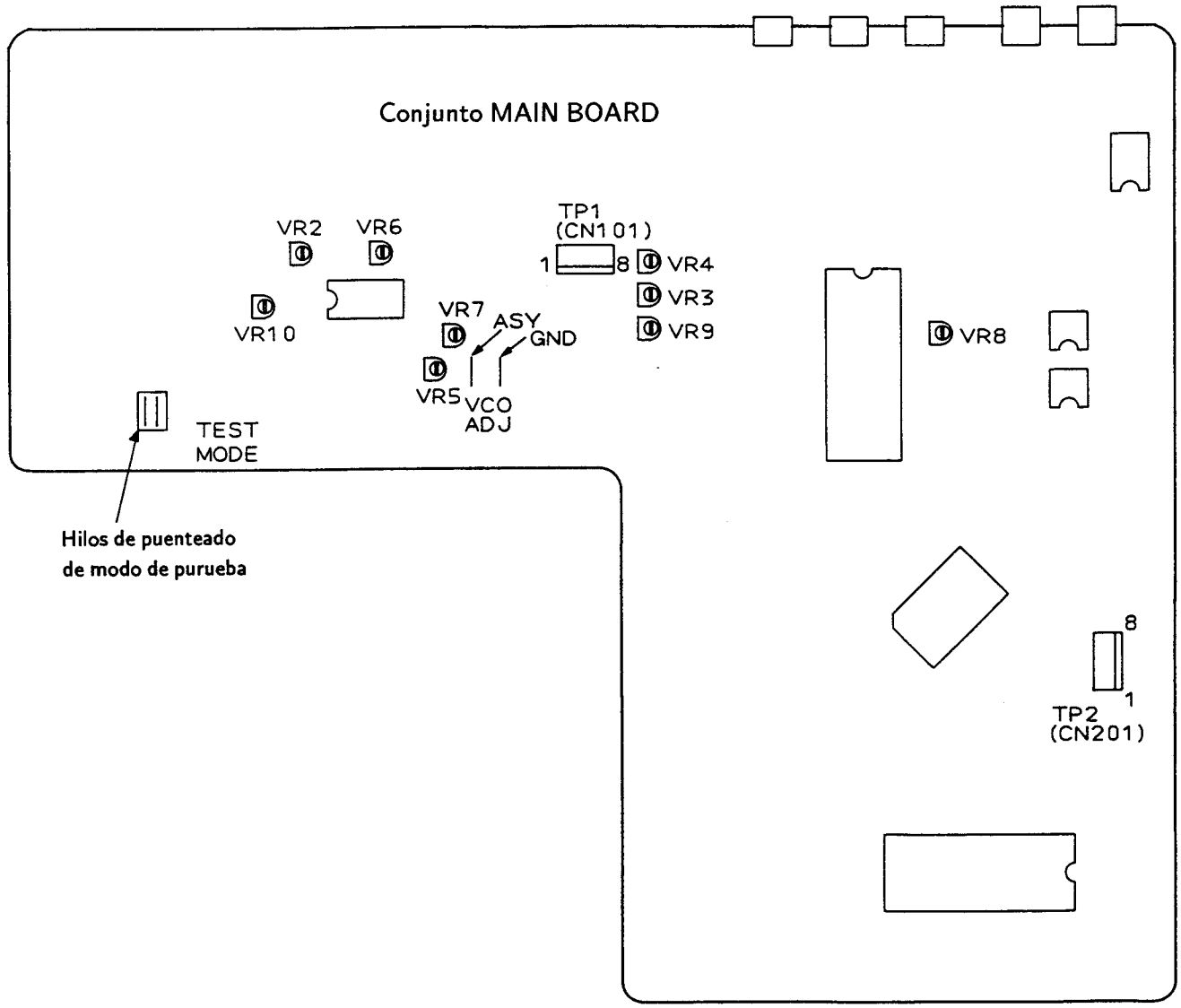
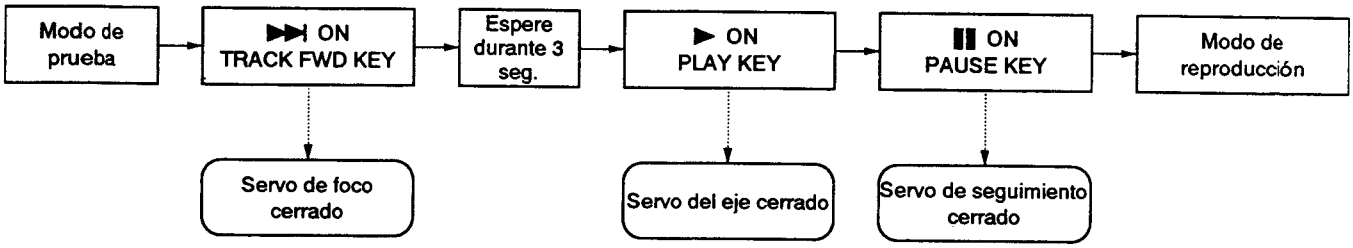


Fig.1 Punt de ajuste

En el modo de prueba, la apertura y cerrado de los servos se efectúa independientemente. Por lo tanto, para establecer el modo de reproduccion se deben cerrar los servos en orden serial. Recuerde que en el modo de prueba no se puede establecer el modo de reproducción pulsando simplemente la tecla PAUSE (▮▮).

Por ejemplo, para establecer el modo de reproducción partiendo del modo de parada pulse las teclas siguientes en el orden indicado.



* En el modo de prueba los servos siguen un orden serial.

● Función de Cada Tecla en el Modo de Prueba

Símbolo	Tecla	Función durante el modo de prueba	Explicación
▶▶|	TRACK FWD	Cerrar el servo del foco	Enciende el diodo laser y mueve el actuador del foco en dirección vertical para cerrar el servo del foco.
▶	PLAY	Cerrar el servo del eje	Después de arrancar el motor del eje, cierre el servo en el modo CLV–H.
▮▮	PAUSE	Abrir/cerrar el servo de seguimiento	Ejecuta una conmutación. Al pulsar esta tecla se cierra el servo de seguimiento y la unidad entra en el modo de reproducción (los servos del foco y del eje deben estar cerrados previamente). En ese momento se enciende el indicador PAUSE. Si se la pulsa nuevamente, se abre el servo de seguimiento.
	OUTPUT	Movimiento en retroceso (hacia dentro) del carro	Mueve el carro hacia dentro a alta velocidad (aprox. 1 cm/seg.). Dado que no existe un dispositivo de seguridad que detenga el carro, asegúrese de detenerlo manualmente a tiempo.
	DISPLAY	Movimiento en avance (hacia fuera) del carro	Mueve el carro hacia fuera a alta velocidad (aprox. 1 cm/seg). Dado que no existe un dispositivo de seguridad que detenga el carro, asegúrese de detenerlo manualmente a tiempo.
■	STOP	Parada	Detiene todos los servos y hace que la unidad vuelva a su estado inicial.
▲	OPEN/CLOSE	Abrir/cerrar la bandeja del disco	Abre y cierra la bandeja del disco. Sin embargo, el lector no vuelve a la posición de reposo cuando se abre la bandeja y tampoco se mueve al cerrarse la bandeja.

Tabla 1.

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
1	**Ajuste de compensación del error de seguimiento, del error de foco y de RF**					
		TP1	TP1 Pin 4 (TR. ER)	VR7 (TE. OF)	0V ± 50 mV	● Establezca el modo de prueba (*) ● Ajuste VR7 (TE. OF: compensación del error de seguimiento) de forma que la tensión en el contacto 4 (TE: error de seguimiento) de TP1 sea 0V ± 50 mV.
		TP1	TP1 Pin 6 (FO. ER)	VR6 (FO.OF)	0V ± 50 mV	● Ajuste VR6 (FO. OF: compensación del error de foco) de forma que la tensión en el contacto 6 (FO. ER: error de foco) de TP1 sea 0V ± 50 mV.
		TP1	TP 1 Pin 1 (RF)	VR2 (RF. OF)	100 mV ± 50 mV	● Ajuste VR2 (RF. OF: compensación de RF) de forma que la tensión de salida de RF en el contacto 1 de TP 1 sea 100 mV ± 50 mV.
2	**Ajuste de compensación del retorno de seguimiento**					
		TP1	TP1 Pin 2 (TR. RT)	VR9 (TR. OF)	0V ± 10 mV	● Establezca el modo de prueba. (*) ● Ajuste VR9 (TR. OF: compensación del retorno de seguimiento) de forma que la tensión en el contacto 2 (TR. RT: retorno de seguimiento) de TP1 sea 0V ± 10 mV.
3	**Comprobación de la sincronización del foco y del eje**					
	V 0.5V/div	H 100 msec /div	TP 1 Pin 1 (Salida de RF)		Salida de RF Rotación en sentido horario	● Cargue el disco. ● Establezca el modo de prueba. (*) ● Aproxime el lector al centro del disco usando la tecla DISPLAY. Asegúrese de efectuar esta operación. ● Observe la salida de RF por el contacto 1 de TP 1 con un osciloscopio y confirme que la señal de RF sea emitida al pulsar la tecla TRACK FWD (▶▶I). ● Pulse la tecla PLAY (▶) y confirme que el disco gira en sentido horario a aproximadamente la velocidad normal (unos 300 rpm por estar el lector cerca del centro del disco) sin que corra descontroladamente o en dirección inversa.

* Vea la Página 66.

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
4–1	**Ajuste de la rejilla (1) (con un disco de 8 cm)**					
	1V/div	5 ms/div	TP1 Pin 4 (TR. ER)	Rejilla	Punto nulo	● Este ajuste puede realizarse utilizando un disco de 8 cm con hoyos sobre un diámetro de 75 mm. ● Cargue el disco. (8 cm) ● Establezca el modo de prueba. (*) ● Pulse las teclas TRACK FWD (▶▶|) y PLAY (▶) en este orden para cerrar los servos del foco y del eje (el servo de seguimiento estará abierto). ● Pulse la tecla DISPLAY y mueva el lector a la pista externa del disco de 8 cm. Cuando mueva el lector, será posible introducir un destornillador en la ranura de la placa de ajuste de la rejilla desde la parte de arriba de la unidad. (Fig. 3) ● Observe la forma de la onda por el contacto 4 (TR. ER: error de seguimiento) de TP1 con un osciloscopio y, en ese momento, introduzca un filtro de corte pasabajos de 4 kHz. (Fig. 2) ● Introduzca el destornillador de seguimiento en la ranura de ajuste y gírelo de forma que encuentre el punto nulo (Foto–1).

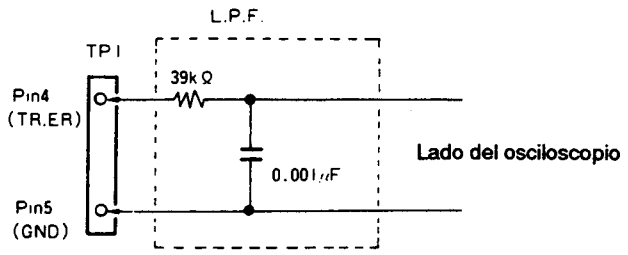


Fig. 2.

* Vea la Página 66.

Paso	Margen del osciloscopio V	Margen del osciloscopio H	Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
4-2	**Ajuste de la rejilla (2) (con un disco de 12 cm reproduciendo durante más de 60 minutos)**					
	1V/div	5 ms/div	TP1 Pin 4 (TR. ER)	Rejilla	Punto nulo	● Cargue el disco (reproduciendo durante más de 60 minutos). ● Establezca el modo de prueba. (*) ● Pulse las teclas TRACK FWD (▶▶I) y PLAY (▶) en este orden para cerrar los servos del foco y del eje (el servo de seguimiento estará abierto). ● Pulse la tecla DISPLAY y mueva el lector a la pista externa del disco. Cuando mueva el lector, será posible introducir un destornillador en la ranura de la placa de ajuste de la rejilla desde la parte de arriba de la unidad. (Fig. 3) ● Observe la forma de la onda por el contacto 4 (TR. ER: error de seguimiento) de TP1 con un osciloscopio y, en ese momento, introduzca un filtro de corte pasabajos de 4 kHz. (Fig. 2) ● Introduzca el destornillador de seguimiento en la ranura de ajuste y gírelo de forma que encuentre el punto nulo. (Foto–1)
				Rejilla	Amplitud máxima	● Gire el destornillador de la rejilla lentamente en sentido antihorario a partir del punto nulo y deténgase en el primer punto donde la amplitud de la onda (señal de error de seguimiento) sea máxima. (Vea Foto–2)

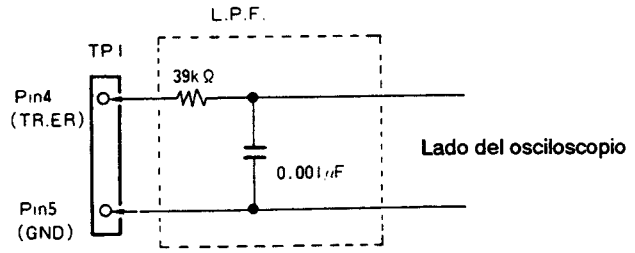


Fig. 2.

* Vea la Página 66.

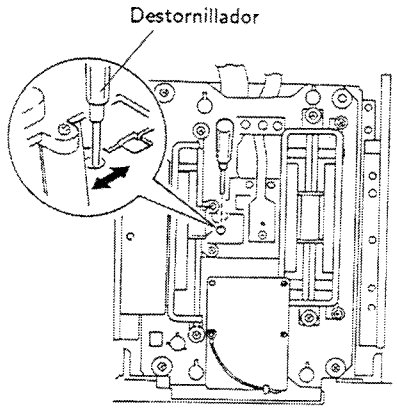
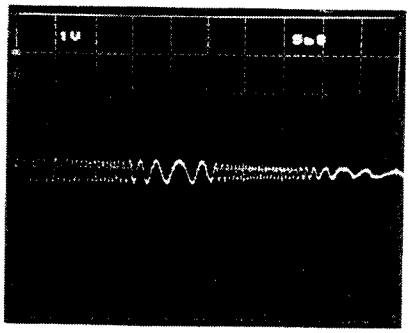
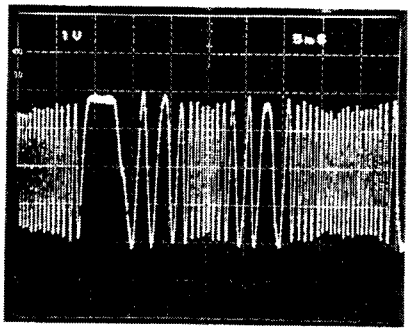


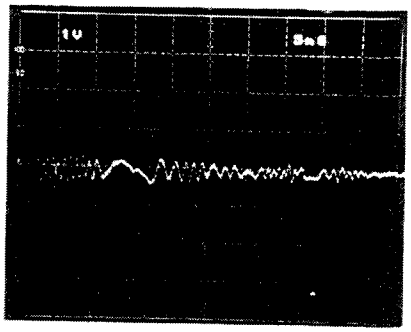
Fig. 3. Ajuste de la Rejilla



Foto–1 Punto nulo

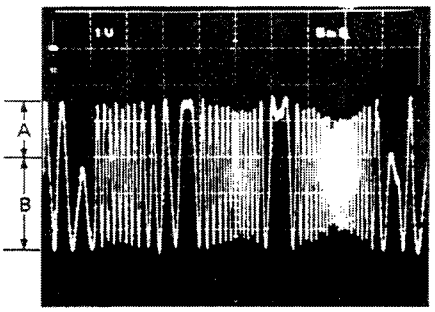


Foto–2 Amplitud máxima



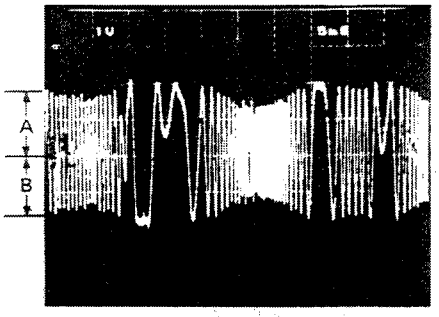
Foto–3 Fuera del punto nulo

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
5	**Ajuste del equilibrio del seguimiento**					
	0.5V/div	5 msec/div	TP1 Pin 4 (TR. ER)	VR5 (TR. BL)		● Cargue el disco ● Establezca el modo de prueba. (*) ● Pulse la tecla DISPLAY y mueva el carro hasta cerca de la pista central del disco. ● Pulse las teclas TRACK FWD (▶▶|) y PLAY (▶) en ese orden para hacer girar el disco. ● Observe la forma de la onda por el contacto 4 (TR. ER: error de seguimiento) de TP1 con un osciloscopio y ajuste el VR5 (TR. BL: equilibrio de seguimiento) de forma que desaparezcan los elementos de CC de la onda del error de seguimiento.



A≠B

Foto–6



A=B

Foto–7

* Vea la Página 66.

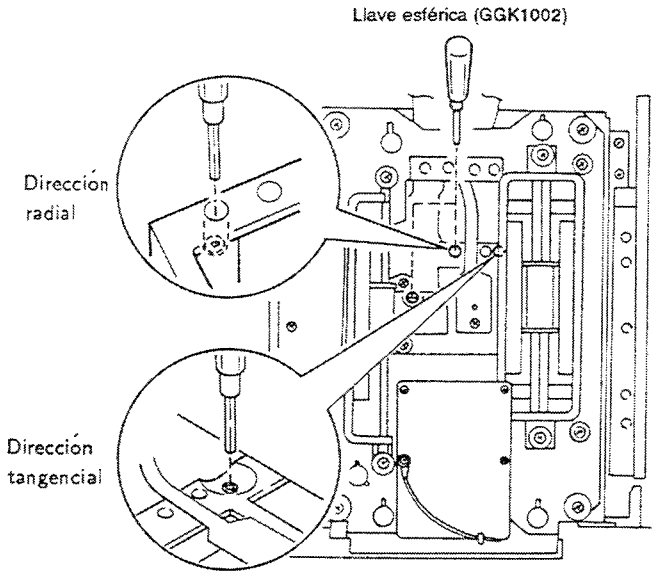
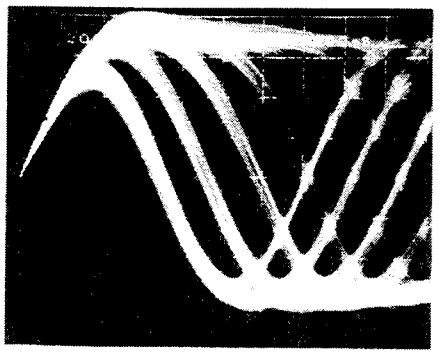
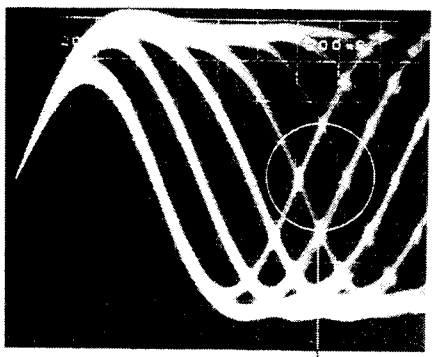


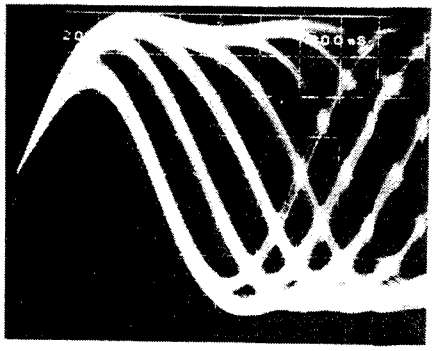
Fig. 4. Ajuste Tangencial



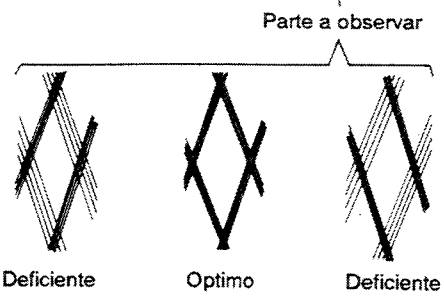
Foto–8



Foto–9



Foto–10



Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
6	**Ajuste tangencial**					
			TP 1 Pin 1 (Salida de RF)	Tornillo de ajuste tangencial	Punto óptimo de la figura del ojo	● Cargue el disco. ● Establezca el modo de prueba. (*) ● Pulse la tecla DISPLAY y mueva el lector a la pista central del disco (colóquelo en un lugar tal que el tornillo de ajuste tangencial pueda verse desde arriba del servomecanismo. (Vea la Fig. 4) ● Pulse las teclas TRACK FWD (▶▶I), PLAY (▶) y PAUSE (▮▮) en este orden para cerrar todos los servos. (Se enciende el indicador de pausa). ● Observe la salida de RF por el contacto 1 de TP 1 con un osciloscopio y ajuste el tornillo tangencial de forma que la figura del ojo se vea claramente. (Fig. 4) ● El punto de ajuste se encuentra cerca del punto medio entre el punto donde la figura del ojo se enturbia al girar el tornillo tangencial en sentido horario y el punto donde la figura del ojo se enturbia al girar el tornillo de ajuste en sentido antihorario. Observe la claridad general de la onda y una de las figuras del diamante en la figura del ojo (foto–9). El ajuste óptimo se obtiene donde las líneas de la figura del diamante son relativamente delgadas.

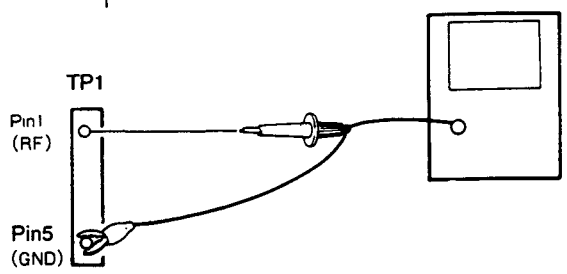


Fig. 5

* Vea la Página 66.

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
7	**Ajuste radial**					
			TP 1 Pin 1 (Salia de RF)	Tornillo de ajuste radial	Punto óptimo de la figura del ojo	● Cargue el disco. ● Establezca el modo de prueba. (*) ● Pulse la tecla DISPLAY y mueva el lector a la pista central del disco (colóquelo en un lugar tal que el tornillo de ajuste tangencial pueda verse desde arriba del servomecanismo. (Vea la Fig. 5) ● Pulse las teclas TRACK FWD (▶▶I), PLAY (▶) y PAUSE (▮▮) en este orden para cerrar todos los servos. (Se enciende el indicador de pausa). ● Observe la salida de RF por el contacto 1 de TP 1 con un osciloscopio y ajuste el tornillo radial de forma que la figura del ojo se vea claramente. (Fig. 4) ● El punto de ajuste se encuentra cerca del punto medio entre el punto donde la figura del ojo se enturbia al girar el tornillo radial en sentido horario y el punto donde la figura del ojo se enturbia al girar el tornillo de ajuste en sentido antihorario. Observe la claridad general de la onda y una de las figuras del diamante en la figura del ojo (foto–9). El ajuste óptimo se obtiene donde las líneas de la figura del diamante son relativamente delgadas. ● Efectúe los ajustes tangencial y radial alternativamente dos o más veces.

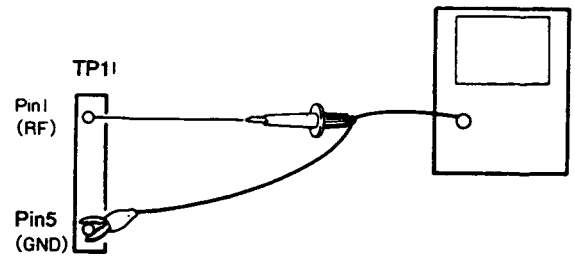


Fig. 5

* Vea la Página 66.

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
8	**Comprobación del nivel de RF**					
			TP 1 Pin 1 (RF)	Comprobación	1.5V $^{+0,2V}_{-0V}$	● Establezca el modo de prueba. (*) ● Conecte la sonda del osciloscopio al contacto 1 (salida de RF) de TP 1. ● Reproduzca el disco, mida la tensión p-p de la onda de RF y confirme que sea 1.5V $^{+0,2V}_{-0V}$.
			TP 1 Pin 1 (RF)	VR 10	1.5V $^{+0,2V}_{-0V}$	● Ajuste VR 10 si la tensión no es 1.5V $^{+0,2V}_{-0V}$.

* Vea la Página 66.

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
9	Ajuste de la ganancia de foco					
	CH1 (X) , CH2 (Y) 20 mV/div, 5 mV/div (Sonda 10:1)		Eje X: TP1 Pin 5 (FO. IN) Eje Y: TP1 Pin 6 (FO. ER)	VR3 (FO. GA)	Diferencia de fase de 90 °	● Con la unidad apagada, conecte el osciloscopio y el oscilador como muestra la Fig. 6. ● Establezca el modo de reproducción normal. ● Encienda el oscilador y ajústelo para que emita una señal de 1,2 kHz, 1 Vp-p. **Nota:** Algunos osciladores emiten CC al ser encendidos. En este caso, encienda el oscilador antes de conectarlo. ● Ajuste VR3 (FO. GA: ganancia de foco) de forma que la onda de resurgimiento en el osciloscopio se convierta en un círculo horizontal (diferencia de fase de 90 °).

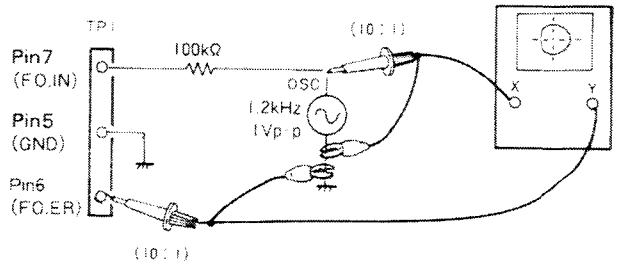
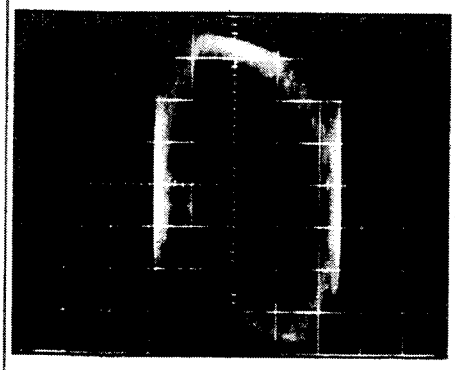
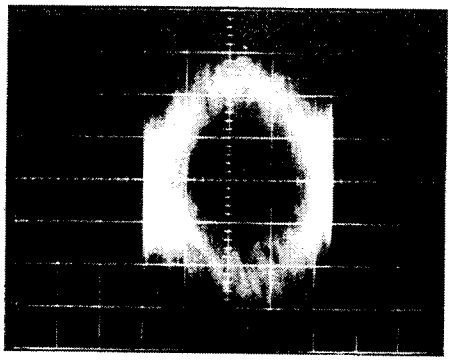


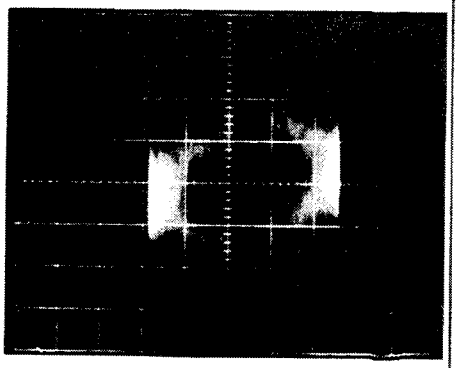
Fig. 6.



Alta ganancia
Foto–11



Ganancia óptima
Foto–12



Baja ganancia
Foto–13

Paso	Margen del osciloscopio V	Margen del osciloscopio H	Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
10	**Ajuste de la ganancia de seguimiento**					
	CH1 (X), CH2 (Y) 50 mV/div, 5 mV/div (Sonda 10:1)		Eje X: TP1 Pin 3 (TR. IN) Eje Y: TP1 Pin 2 (TR. ER)	VR4 (TR. GA)	Diferencia de fase de 90 °	● Con la unidad apagada, conecte el osciloscopio y el oscilador como muestra la Fig. 7. ● Establezca el modo de reproducción normal. ● Encienda el oscilador y ajústelo para que emita una señal de 1 kHz, 2 Vp-p. **Nota:** Algunos osciladores emiten CC al ser encendidos. En este caso, encienda el oscilador antes de conectarlo. ● Ajuste VR4 (TR. GA: ganancia de seguimiento) de forma que la onda de resurgimiento en el osciloscopio se convierta en un círculo horizontal (diferencia de fase de 90 °).

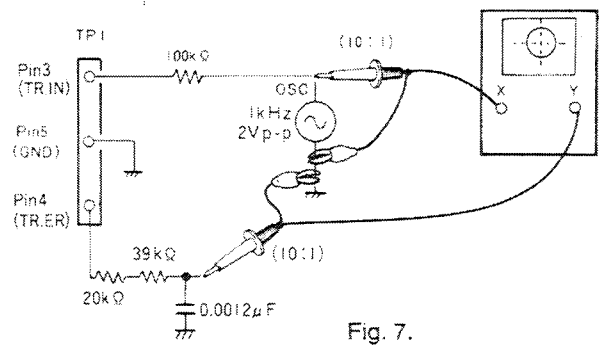
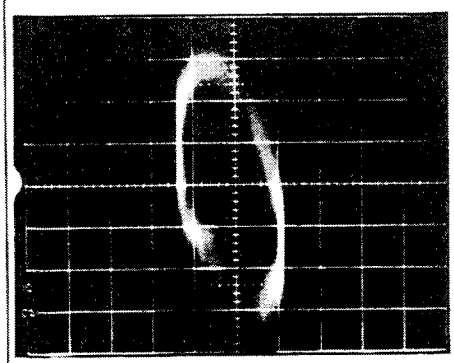
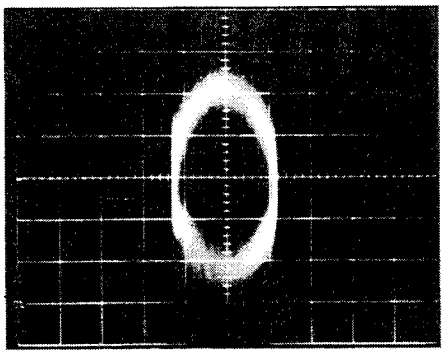


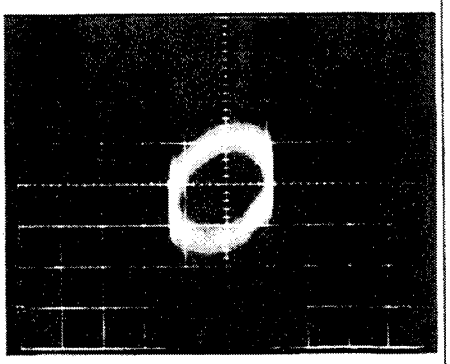
Fig. 7.



Alta ganancia
Foto–14



Ganancia óptima
Foto–15

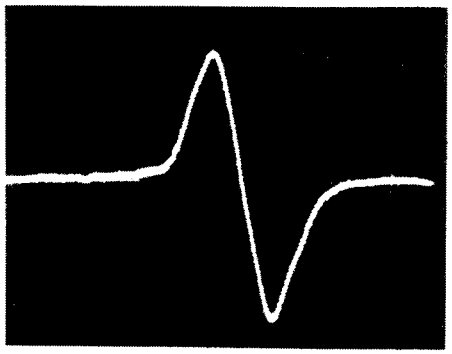


Baja ganancia
Foto–16

11	**Ajuste de la frecuencia propia del oscilador controlado por tensión**					
			TP 2 Pin 2		Frecuencia 4,275 MHz ± 0,025 MHz	● Establezca el modo de prueba. (*) ● Ponga en derivacion los puentes del ASY y GND empleando un destornillador de cabeza ranurada u otra herramienta similar. ● Conecte el contador de frecuencias (margen de 10 MHz) al contacto 2 de TP 2. ● Ajuste VR8 (VCO. A) de forma que en el contador de frecuencias se lea 4,275 MHz ± 0,025 MHz. **Nota:** Ajuste con la unidad en el modo de parada

* Vea la Página 66.

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
12	**Comprobación del error de foco**					
	1V/div	2 ms/div	TP1 Pin 6 (FO. ER)	Comprobación	Forma de onda	● Establezca el modo de prueba. (*) ● Conecte a tierra el contacto 7 (FO. IN: entrada de foco) de TP1. ● Pulse la tecla TRACK FWD y compruebe la forma de la onda en el contacto 6 (FO. ER: error de foco) de TP1 con un osciloscopio.



Error de foco
Foto–17

* Vea la Página 66.

8. IC INFORMATION

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

8.1 PD0116A (IC513)

• DIGITAL FILTER

Pin Function Table

Pin No.	Pin Name	I/O	Pin Function
1	DATA	I	Serial data input (16-bit, 2 complement, MSB first)
2	BCK	I	Bit clock input for input data
3	CKS	I	XIN (master clock) frequency selection H=384 fs, L=256 fs
4	(NC)	(I)	
5	CKEN	I	Crystal oscillation circuit operation control H=Oscillation, L=Stop
6	XIN	I	Crystal oscillation circuit input or external clock input
7	XOUT	O	Crystal oscillation circuit output
8	VSS1	–	GND terminal 1
9	CKOUT	O	Master clock output (Frequency is the same as XIN)
10	CHS	I	Playback data channel selection (During 1 ch playback mode) H=Lch, L=Rch
11	MDCK	I	Clock input for microprocessor data
12	MDATA	I	Microprocessor data input
13	MDLE	I	Latch enable signal input for microprocessor data
14	$\overline{\text{RST}}$	I	System reset H=Normal operation, L=Reset
15	LRS	I	LR clock polarity selection LRS: H → LRCK H: Lch, LRCK L: Rch LRS: L → LRCK H: Rch, LRCK L: Lch
16	OBS1	I	Output data bit length selection OBS1 H, OBS2 H: 16 OBS1 H, OBS2 L: 18 OBS1 L, OBS2 H: 20 OBS1 L, OBS2 L: 19+1
17	OBS2	I	
18	$\overline{\text{SMUTE}}$	I	Soft mute control H=OFF, L=ON
19	IPFS	I	Interpolation function selection Fixed to L
20	PLYS	I	Playback channel mode selection H=2ch playback, L=1ch playback
21	VSS2	–	GND terminal 2
22	VDD	–	+5V power supply terminal
23	RDOUT	O	Rch serial data output (During 1ch playback mode, serial data output) (2 complement, MSB first)
24	LDOUT	O	Lch serial data output (During 1ch playback mode, "L" fixed output) (2 complement, MSB first)
25	WOUT	O	Word clock output
26	BOUT	O	Bit clock output for output data
27	MDS	I	Mode setting method selection H=Terminal control, L=Microprocessor control
28	LRCK	I	LR clock input

*Input terminals other than XIN come with pull-up resistor.

9. DISASSEMBLY

9.1 PLACING THE ANALOG BOARD ASSEMBLY UPRIGHT (PD-95 only)

1. Remove the connectors. (5 in front and 4 behind)
   3 from the audio transformer (Ⓐ)
   2 from the main board (Ⓑ)
   1 from both analog boards-2 altogether (Ⓒ)
   1 from the L and R jacks respectively-2 altogether (Ⓓ)
2. Remove the ground lead wire.
3. Remove the screws of the board.
4. Remove the audio case.
5. Insert the analog board assembly into the holder of the front panel, and place it upright.
6. Re-insert the connectors.
7. When placing the analog board upright, ground one ground wire to the plate of the unit using an alligator clip extension cable.

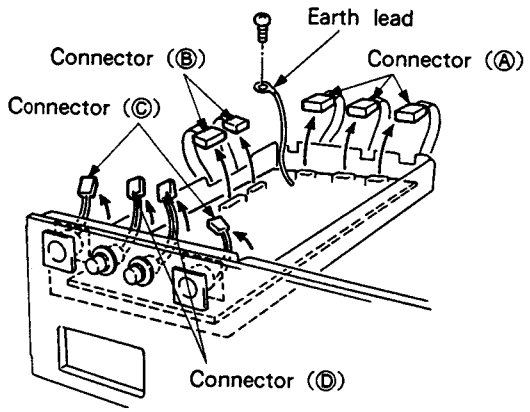


Fig. 1

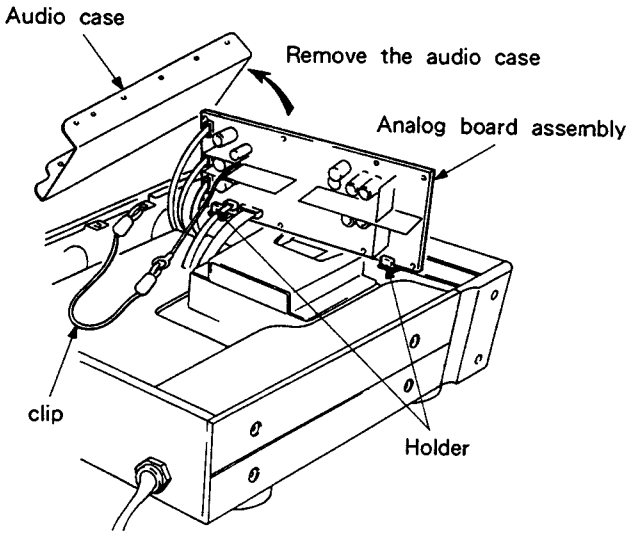


Fig. 2

9.2 PLACING THE MAIN BOARD ASSEMBLY UPRIGHT

Perform this after removing the analog board. (PD-95 only)

1. Remove the two screws ① of the DIGITAL OUT section on the rear side.
2. Remove all the screws of the main board assembly.
3. Remove the flexible cable from the input.
   (Be especially careful as this cable breaks easily.)
4. Insert the main board assembly into the slit of the base plate.
5. Re-insert the flexible cable and connectors.

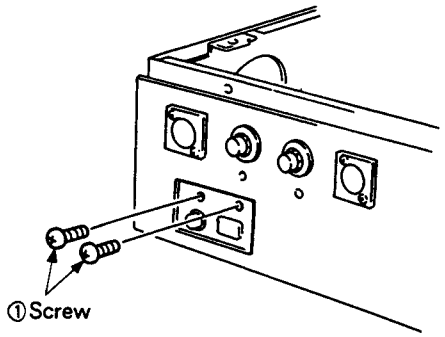


Fig. 3

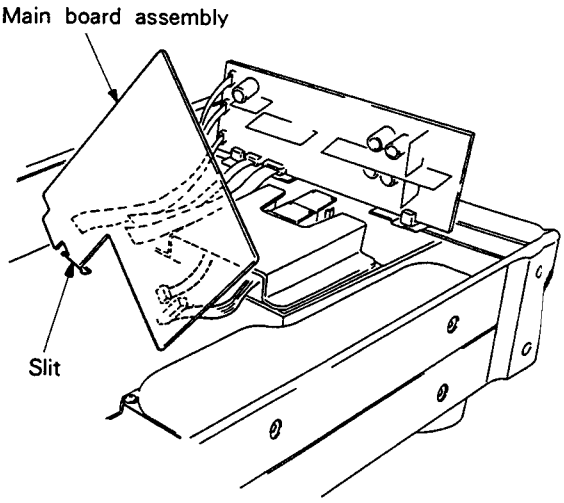
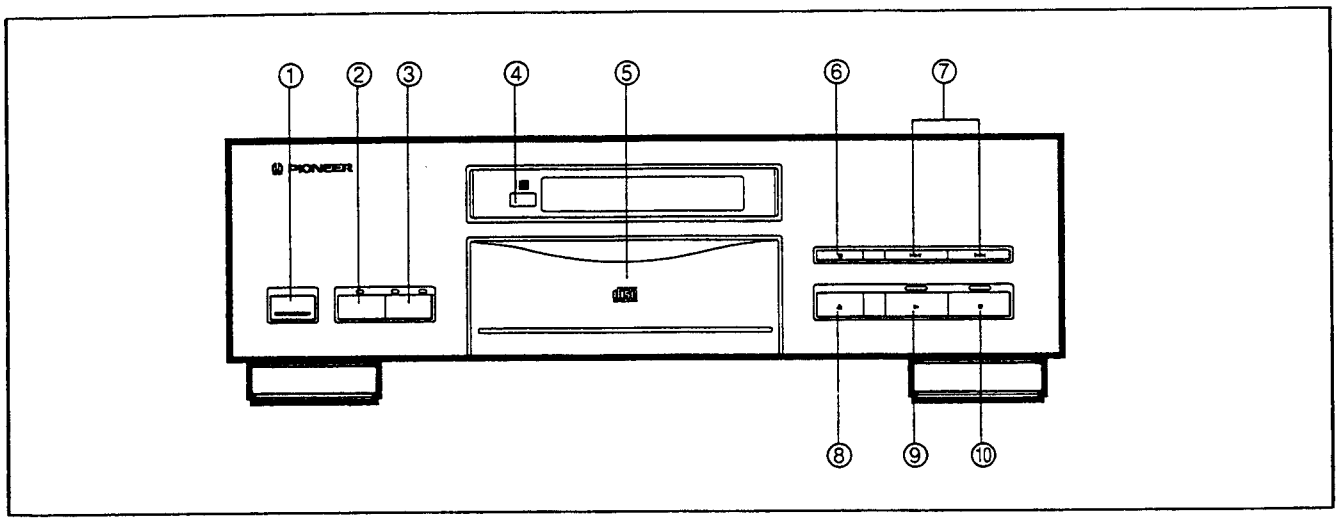


Fig. 4

10. PANEL FACILITIES



① POWER switch
② DISPLAY button and OFF indicator
③ OUTPUT button and DIGITAL/ANALOG indicators
(PD-S95: OPTICAL/COAXIAL indicators)
④ Remote sensor
Receives the signal from the remote control unit.
⑤ Disc tray
⑥ Stop button (■)
⑦ Track search buttons (|◄◄/►►|)
⑧ OPEN/CLOSE button (⏏)
⑨ Play button (►) and indicator
⑩ Pause button (II) and indicator

11. SPECIFICATIONS

1. General

Type ..... Compact disc digital audio system
Power requirements
European model ..... AC 220 - 230 V, 50/60 Hz
U.K. and Australian models ..... AC 230 - 240 V, 60 Hz
U.S. and Canadian models ..... AC 120 V, 60Hz
Other models ..... AC 110/120 - 127/220/240 V (Switchable), 50/60 Hz
Power consumption
PD-95 ..... 30 W
PD-S95 ..... 22 W
Operating temperature ..... +5°C - +35°C
+41°F - +95°F
Weight
PD-95 ..... 20.0 kg (44 lb)
PD-S95 ..... 17.5 kg (38 lb, 6 oz)
External dimensions ..... 440(W) X 433(D) X 151(H) mm
17-5/16(W) X 17-1/16(D) X 5-15/16(H) in

2. Audio section

PD-95
Frequency response ..... 2 Hz - 20 kHz
S/N ratio ..... 112 dB or more (EIAJ)
Dynamic range ..... 98 dB or more (EIAJ)
Channel separation ..... 108 dB or more (EIAJ)
Harmonic distortion ..... 0.0018% or less (EIAJ)
Output voltage 2.0V
Wow and flutter ..... Limit of measurement (±0.001% W.PEAK) or less (EIAJ)
Channels ..... 2-channel (stereo)
Balanced type audio line out
(U.S. and Canadian models) ..... 2V (600 Ω)
PD-S95
Wow and flutter ..... Limit of measurement (±0.001% W.PEAK) or less (EIAJ)

3. Output terminal

Unbalanced type audio line output jacks (PD-95 only)
Balanced type audio line output jacks (PD-95 only)
Optical and coaxial digital output jacks (BNC type coaxial digital output jack (PD-S95 only))
Control input/output jacks (U.S. and Canadian models only)

4. Functions

Basic operation buttons
- PLAY, PAUSE, STOP

Search function
- Direct play
- Track search
- Manual search
- Index search
- Time location

Programming
- Maximum 24 steps
- Pause
- Program check/correction
- Program clear (single track or all tracks)

Repeat functions
- 1 track repeat
- All tracks repeat
- Program play repeat
- Random play repeat
- Program random play repeat

Random play (repeat also available)

Switching display
Time consumed, remaining time (track/disc), and total time

Timer start

5. Accessories

- Remote control unit 1
- Size AAA/R03 dry batteries 2
- Turntable sheet 1
- Control cord (U.S. and Canadian models only) 1
- Output cable (PD-95 only) 1
- Operating instructions 1
- Coaxial output cable (PD-S95 only) 1
- Ground lead unit (PD-S95 only) 1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

POWER-CORD CAUTION

Handle the power cord by the plug. Do not pull out the plug by tugging the cord and never touch the power cord when your hands are wet as this could cause a short circuit or electric shock. Do not place the unit, a piece of furniture, etc., on the power cord, or pinch the cord. Never make a knot in the cord or tie it with other cords. The power cords should be routed such that they are not likely to be stepped on. A damaged power cord can cause fire or give you an electrical shock. Check the power cord once in a while. When you find it damaged, ask your nearest PIONEER authorized service center or your dealer for a replacement.