

Service Manual

 **PIONEER**
The Art of Entertainment



ORDER NO.
ARP2311

LASERDISC PLAYER

LD-V4300D

- This manual is applicable to the LD - V4300D/PGZ type.

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1. SAFETY INFORMATION

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.

(FOR EUROPEAN MODEL ONLY)

VAROITUS

LAITE SISÄLTÄÄ LASERDIODIN, JOKA LAHETTAÄ NÄKYMÄTÖNTÄ, SILMILLE VAARALLISTA INFRAPUNASATEILYÄ LAITTEEN SISÄLLÄ ON LASERDIODIN LÄHEISYYDESSÄ KUVA 1. MUKAINEN VÄROITUSMERKKI.



LASER
Kuva 1
Lasersäteilyn
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.



LASER
Picture 1
Warning sign for
laser radiation

ADVERSEL:

USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNGDÅ UDSÆTTELSE FOR STRÅLING.

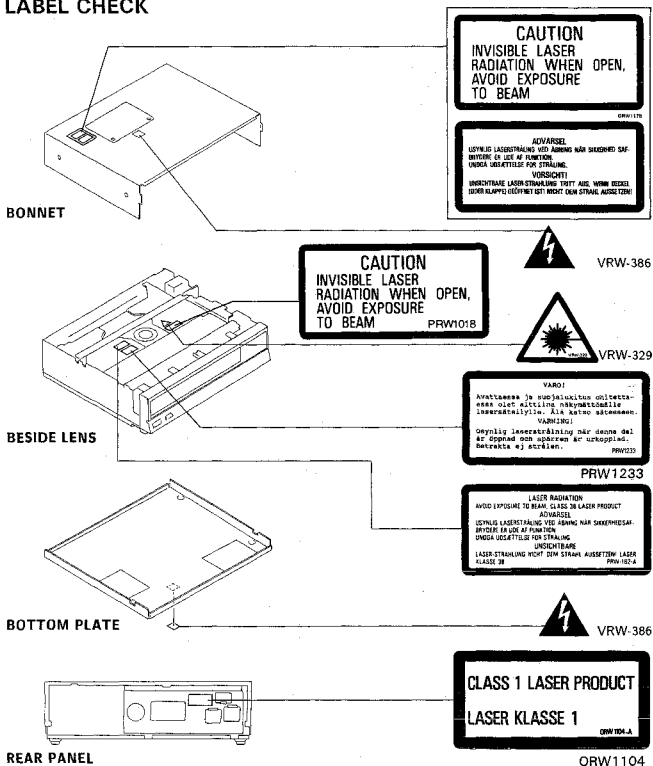
IMPORTANT

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

VIKTIGT

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

2. LABEL CHECK



Additional Laser Caution

1. Laser Interlock Mechanism

The design prevents laser diode oscillation when Slide Switch S2, for detect of Disc Tray being put into the player, is not activated (IN SW signal : High level).

This Slide Switch S2 is activated by Rack Gear (R) (refer to page 8, No.3) when Disc Tray is put into the player (IN SW signal : Low level).

Therefore, laser diode oscillation will not continue without

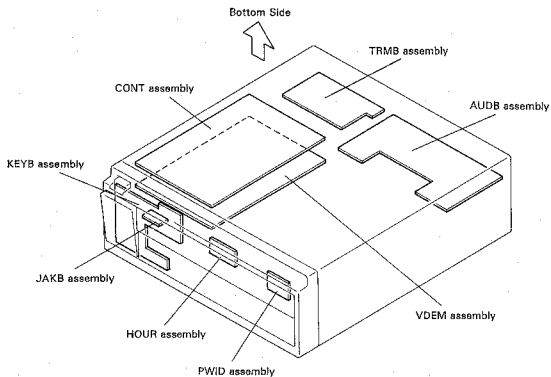
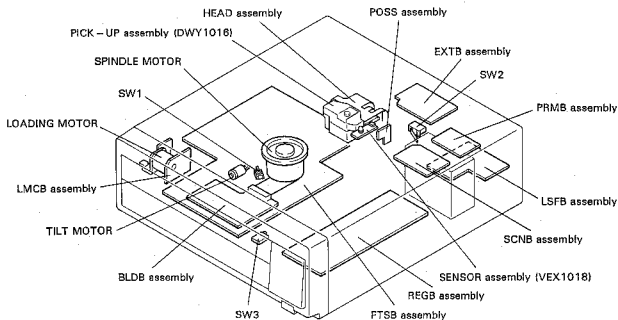
Disc Tray being placed in the player.

However, with Disc Tray out, the interlock will no longer function if Slide Switch S2 is manually activated.

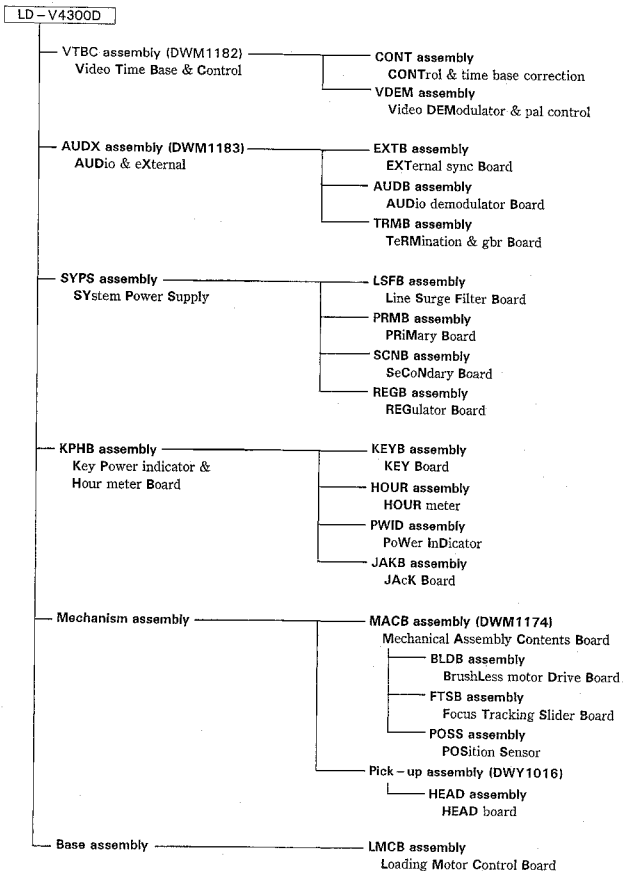
2. When the cover is opened and the reinforced bridge (refer to page 11, No.101) is removed, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 or higher laser beam.

3. P.C.BOARDS LOCATION

3.1 P.C.BOARDS LOCATION



3.2 ASSEMBLIES LIST



4. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES:

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

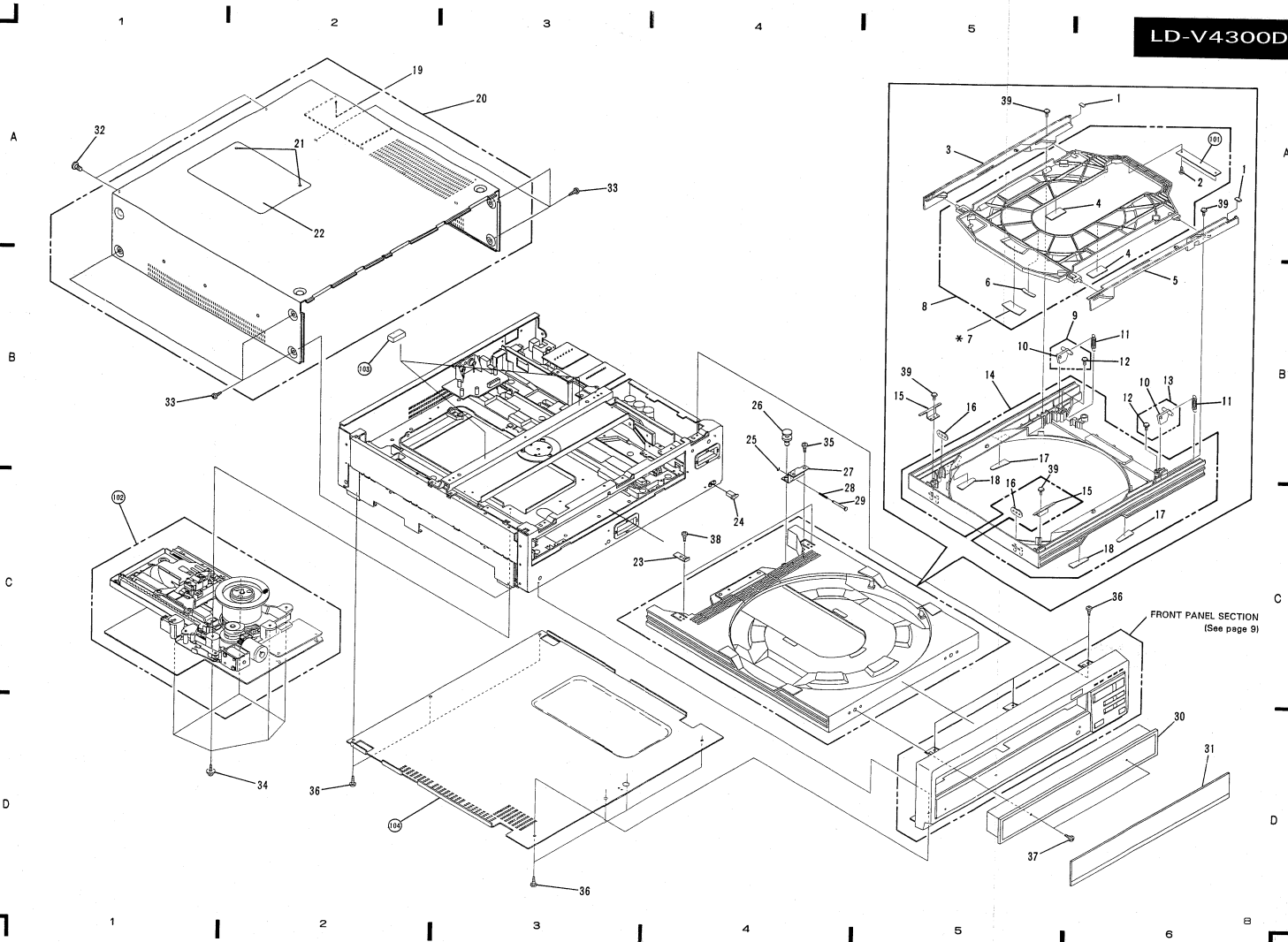
4.1 EXTERIOR

Parts list of Exterior

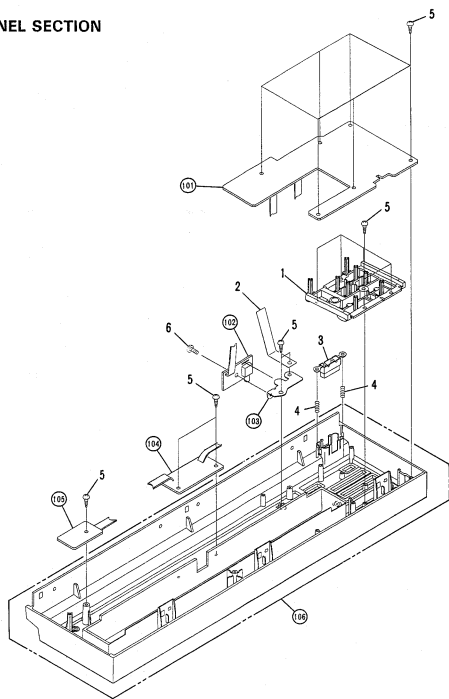
Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	RACK DUMP RUBBER	VEB1041		101	REINFORCED PLATE	DNH1160
	2	SCREW	BPZ30P060FMC		102	MECHANISM ASSEMBLY	DWT1045
	3	RACK GEAR (R)	VNL1061		103	DUMPER RUBBER	VEC1004
	4	DISC PAD B	DED1031		104	BOTTOM PLATE	DNE1133
	5	RACK GEAR (L)	VNL1060				
	6	DISC PAD A	DED1030				
	7	DISC PAD C	DED1032				
	8	CONTAINER ASSEMBLY	DXA1118				
	9	STOPPER (R) ASSEMBLY	DXB1243				
	10	STOPPER	VNL1062				
	11	STOPPER SPRING	VBH1021				
	12	SCREW	PPZ30P060FMC				
	13	STOPPER (L) ASSEMBLY	DXB1242				
	14	CARRY ASSEMBLY	DXA1117				
	15	RACK HOLDER	VNE1074				
	16	NUT	VEN-005				
	17	DISC PAD D	DED1033				
	18	DISC PAD E	DED1034				
	19	GUARD	DEC1391				
	20	BONNET ASSEMBLY-S	DXX1641				
	21	SCREW	AMZ30P060FNI				
	22	BONNET COVER ASSEMBLY	DXA1306				
	23	STOP PLATE	DNH1162				
	24	PSW CAP	DNK1325				
	25	E RING	YE20FUC				
	26	PLASTIC RIVET	VEC1059				
	27	SW METAL ASSEMBLY	DXB1100				
	28	SPRING	DBH1039				
	29	SW SHAFT	DLA1155				
	30	LOADING PANEL	DNK2058				
	31	DECORATION PANEL	DNK2005				
	32	SCREW	BBT30P080FNI				
	33	SCREW	BBT40P080FNI				
	34	SCREW	PMB30P080FMC				
	35	SCREW	BPZ30P080FMC				
	36	SCREW	BBZ30P080FMC				
	37	SCREW	PMA40P100FMC				
	38	SCREW	BPZ30P080FCU				
	39	SCREW	IPZ30P080FCU				

Note : *

There is only one DISC PAD C (No.7) in the illustration (location B-5). However, it has to put at five places of the container.



4.2 FRONT PANEL SECTION



Parts list of Front panel section

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	CONTROL BUTTON	DNK2004		101	KEYB ASSEMBLY	DWG1209
	2	GND PLATE	DNH1588		102	JAKB ASSEMBLY	DWX1203
	3	POWER BUTTON	DNK2059		103	MINI JACK HOLDER	VNE-576
	4	POWER BUTTON SPRING	DBH1043		104	HOUR ASSEMBLY	DWX1201
	5	SCREW	BPZ30P080FMC		105	PWID ASSEMBLY	DWX1202
	6	SCREW	BBZ30P080FCU		106	FRONT PANEL ASSEMBLY	DXA1284

4.3 INTERIOR 1

Parts list of Interior 1

A	Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	△	1	3P INLET ASSEMBLY	DKN1040		101	REINFORCED BRIDGE	DNF1323
	△	2	FUSE (T1.6A, FU1)	REK-102		102	REAR PANEL	DNC1182
		3	JOINT CAP	DEB1057		103	EXTB ASSEMBLY	DWG1208
	△	4	PROTECTOR	DEC1404		104	REINFORCED PLATE	DNF1134
		5	POWER TRANSFORMER (T1)	DTT1055		105	LSFB ASSEMBLY	DWR1087
	△	6	FUSE (T2A, FU2)	REK-103		106	SWITCH HOLDER	DNF1138
	△	7	FUSE (T2A, FU3)	REK-103		107	PRMB ASSEMBLY	DWR1088
	△	8	FUSE (T3.15A, FU4)	REK-105		108	SCNB ASSEMBLY	DWR1089
	△	9	FUSE (T3.15A, FU5)	REK-105		109	REGB ASSEMBLY	DWR1090
		10	PSW BUSH	DNK1326		110	PSW JOINT	DNH1527
		11	SCREW	BBZ30P080FMC				
		12	SCREW	BPZ26P080FZK				
		13	SCREW	BBZ30P080FZK				
		14	SCREW	PMZ30P080FZK				
		15	SCREW	BBT30P080FZK				
	B			BBT40P080FZK				
		16	SCREW	PMB30P060FMC				
		17	SCREW	PMB40P080FMC				
		18	SCREW	PMB40P080FMC				
		19	BINDER	PEC-107				

C

D

A

B

C

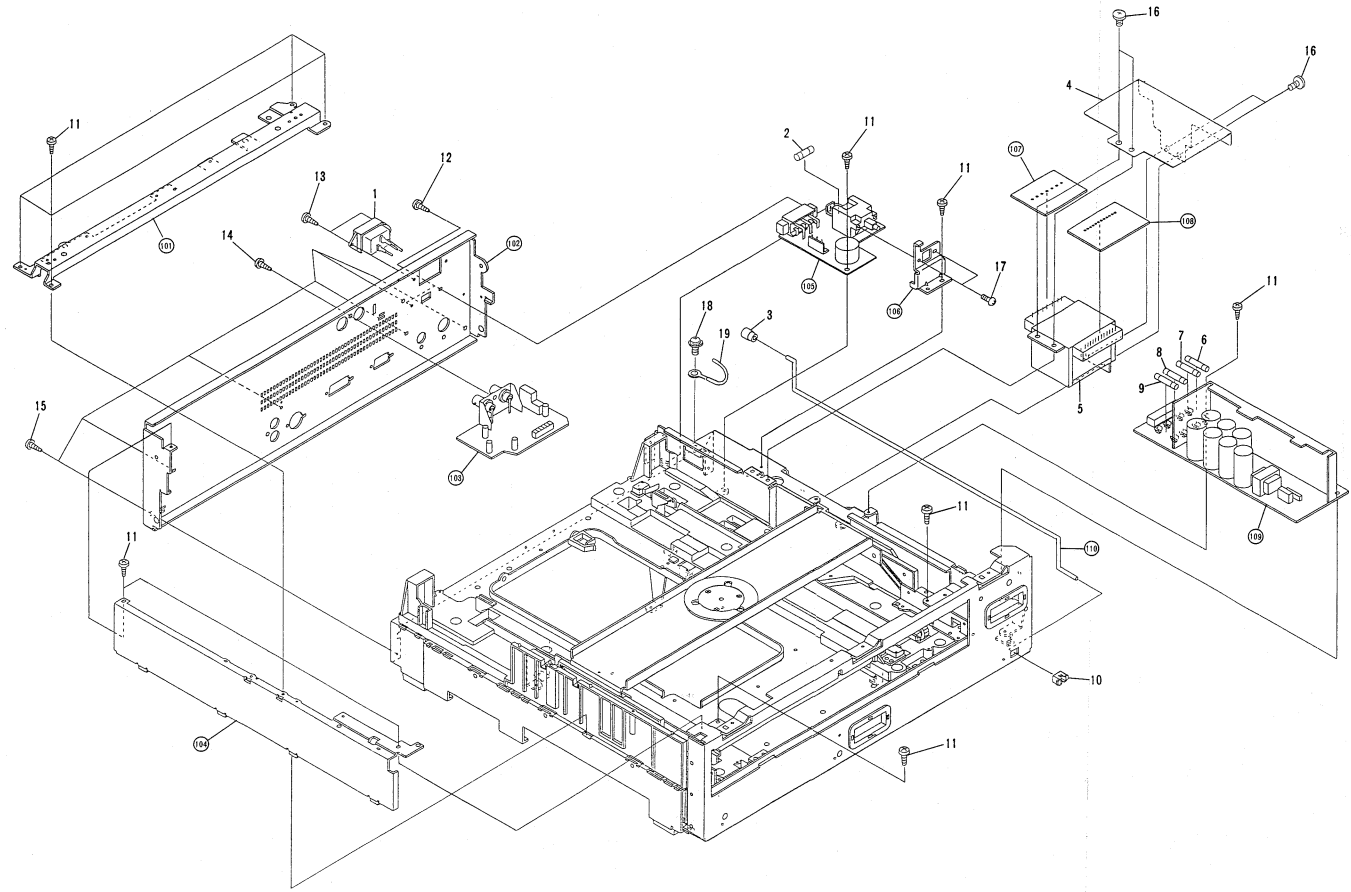
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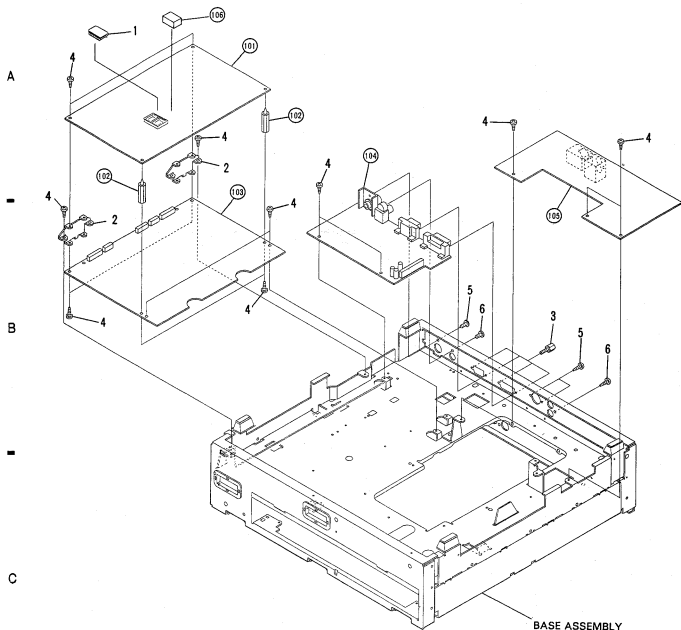
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4.4 INTERIOR 2



Parts list of Interior 2

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	PROGRAMED EPROM (1C9)	DYW1134	101	CONT ASSEMBLY	DWG1207	
	2	PCB STAY (L)	DND1092	102	PCB POST (29)	DEC1390	
	3	CONNECTING BOLT	DBA1038	103	VDEM ASSEMBLY	DWV1070	
	4	SCREW	BBZ30P080FMC	104	TRMB ASSEMBLY	DWV1072	
	5	SCREW	PMZ30P080FZK	105	AUDB ASSEMBLY	DWV1071	
D	6	SCREW	BBT30P080FZK	106	CUSHION	DEC1414	

4.5 BASE ASSEMBLY

Parts list of Base assembly

A	Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	SCREW	BFZ26P060FCU	101	CLAMPER HOLDER ASSEMBLY	DXB1184		
	2	CLAMPER HEAD	VNL1130	102	LMCB ASSEMBLY	DWG1093		
	3	SCREW	CMZ20P050FMC	103	GUARD SHEET	DEC1375		
	4	DISC CLAMPER ASSEMBLY-S	VXX1157	104	SWITCH HOLDER (A)	VNE1078		
	5	GEAR (A)	VNL1020	105	SYNCHRONIZED PLATE (R)	DNH1165		
	6	GEAR (A) SHAFT	VLL1037	106	SYNCHRONIZED PLATE (L)	DNH1164		
	7	GEAR (B)	VNL1064	107	SWITCH HOLDER (B)	VNE1079		
	8	WASHER	WT32D06D050	108	BASE DUMP RUBBER	VEB1042		
	9	GEAR (C)	VNL1010	109	PLASTIC BASE (L)	DNK1465		
	10	MOTOR BASE ASSEMBLY	VXA1088	110	PLASTIC BASE (R)	DNK1466		
	11	RUBBER BUSHING	VEB1025	111	INNER PLATE (R)	DNF1325		
	12	SCREW	PMB26P040FMC	112	INNER PLATE (F)	DNF1324		
	13	PULLY (L) ASSEMBLY	VXA-477	113	PCB SPACER (10)	DEC1388		
	14	SYNCHRONIZED BELT L LOADING MOTOR ASSEMBLY-S	VEB-125	114	PROTECTOR	DNK1340		
	15		VXX1084	115	FRONT PLATE	DNA1088		
	16	MOTOR PULLY	VNL1051	116	WIRE CLIP D	VEC-130		
	17	PLASTIC RIVET	DEC1405	117	LEG	DNK1354		
	18	CLAMP CAM (L)	VNL1068	118	PCB SPACER (30)	DEC1389		
	19	LOCK LEVER (L)	VNL1070	119	WIRE CLIP	DEC1410		
	20	SLIDE SWITCH (TABLE/IN, S2)	VSK-010	120	LOCKING WIRE SADDLE	DEC1305		
	21	CLAMP CAM (R)	VNL1069	121	CHASSIS PLATE	DNA1089		
	22	LOCK LEVER (R)	VNL1071					
	23	SCREW	VBA1002					
	24	SYNCHRONIZED GEAR ASSEMBLY	DXB1109					
	25	SLIDE SWITCH (TABLE/OUT, S3)	VSK-012					
	26	ROLLER PLATE (L) ASSEMBLY	DXB1106					
	27	ROLLER PLATE (R) ASSEMBLY	VXA1162					
	28	ROD HOLDER	DNK1341					
	29	SCREW	BBZ30P080FMC					
	30	LEG PAD	DEB1066					
	31	SCREW	VBA1003					
	32	PCB STAY (S)	DND1093					
	33	SCREW	BFZ30P080FMC					
	34	SCREW	ABZ30P080FMC					



PION-04868


PIONEER
 The Art of Entertainment

Service Manual

 ORDER NO.
 RRV1435

LASERDISC PLAYER

LD-V4300D

- Refer to the service manual ARP2311 for LD-V4300D /PGZ. +3515

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	The voltage can be converted by the following method.
	LD-V4300D		
PGZ8	○	AC120/220-240V	With the voltage selector

CONTRAST OF MISCELLANEOUS PARTS

NOTES:

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

LD-V4300D/PGZ8 and LD-V4300D/PGZ have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		LD-V4300D/PGZ	LD-V4300D/PGZ8	
NSP	CE mark label	Not used	RRW1222	

Note : The Δ marks will be added in the parts list and schematic diagram for the following :

- F201 of the CONT assy
- F3 of the KEYB assy
- F601 and F602 of the VDEM assy
- F301 of the JAKB assy

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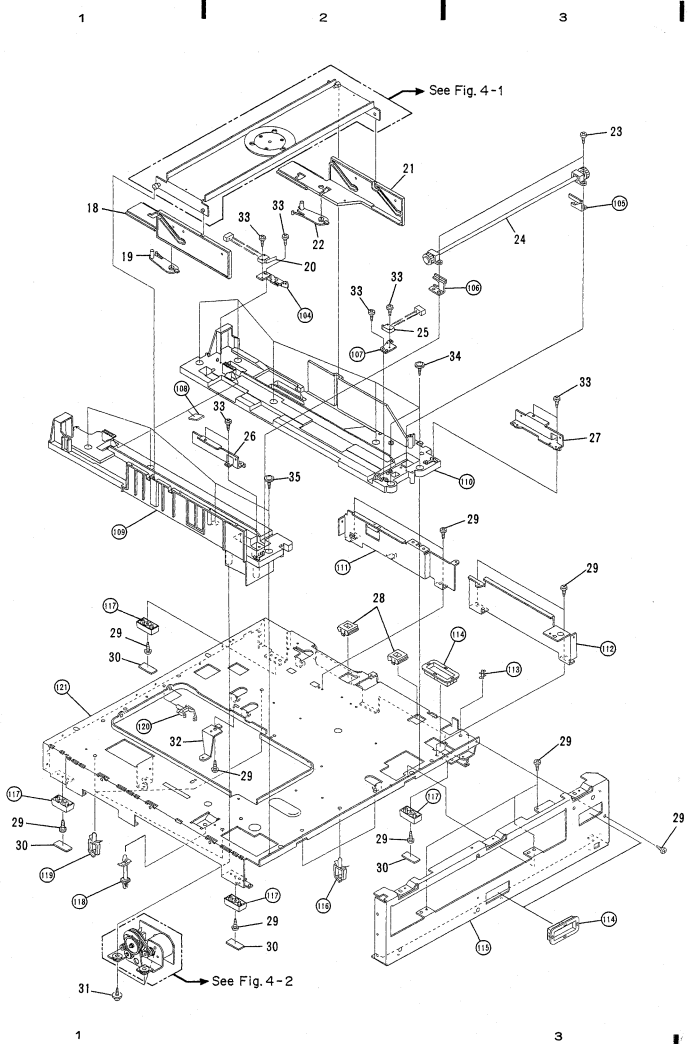


Fig. 4-1

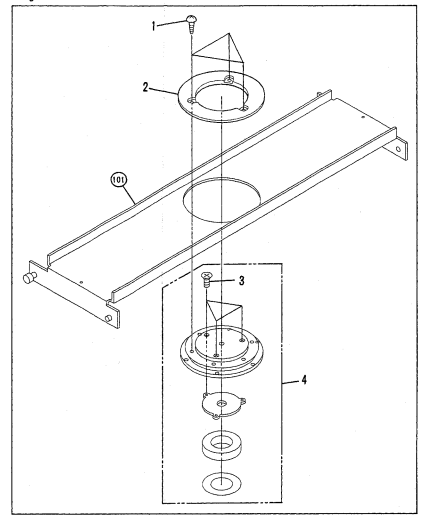
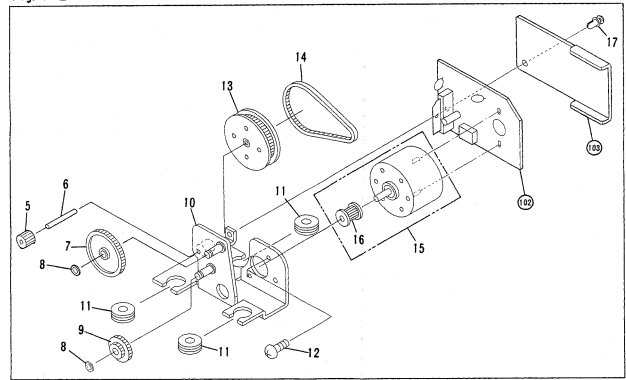


Fig. 4-2



4.6 MECHANISM ASSEMBLY

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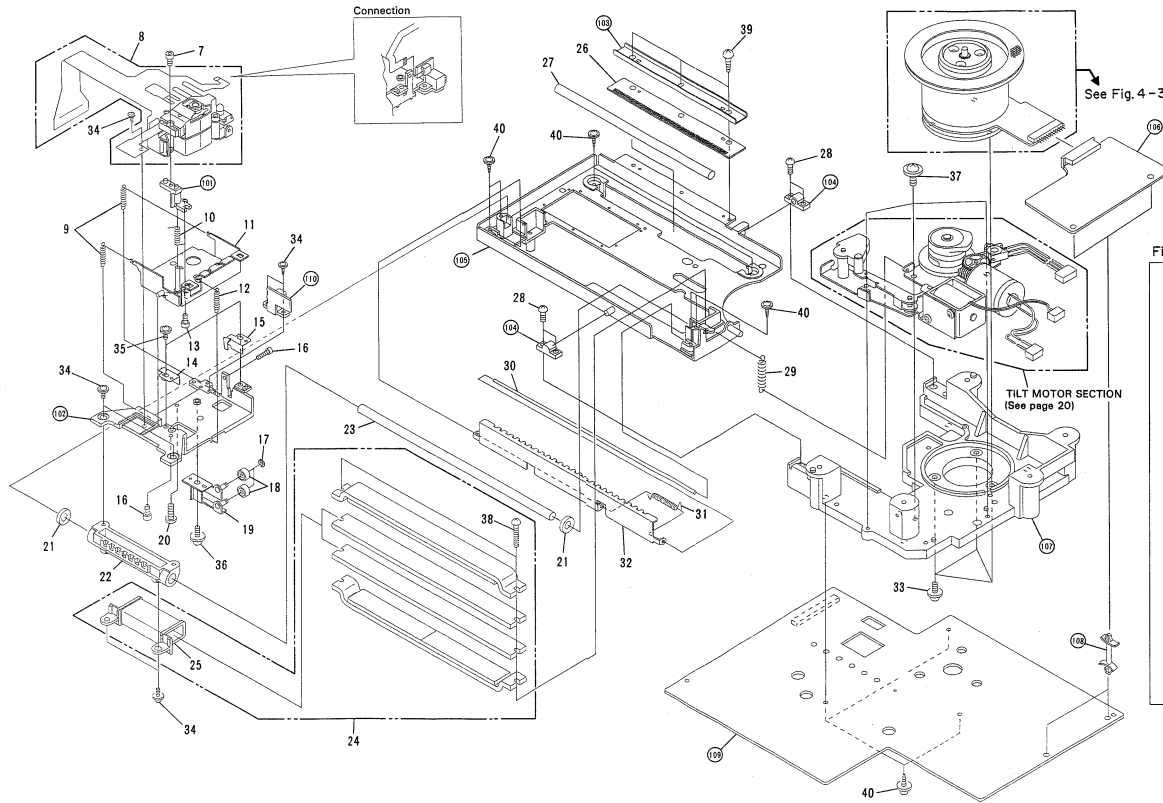
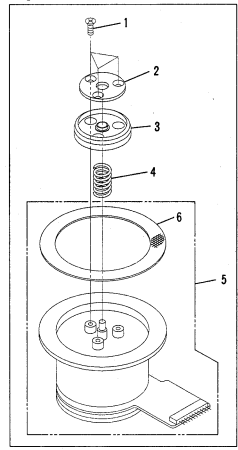


Fig. 4-3



A

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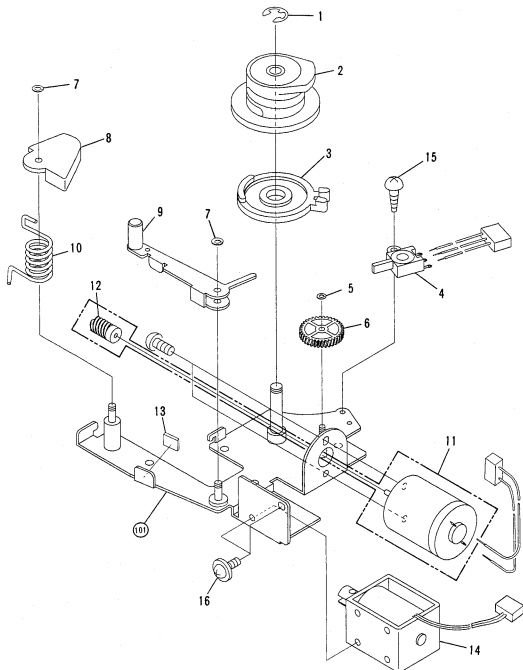
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Parts list of Mechanism assembly

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	SCREW	CBZ30P080FCC		101	PU HOLDER	DNS1049
	2	PLATE	VNE1103		102	SLIDER	DNS1117
	3	CENTERING HAB	DLA1496		103	REINFORCED PLATE	DNF1142
	4	CENTERING SPRING	DBH1154		104	OPTICAL HOLDER	DNS1078
	5	SPINDLE MOTOR ASSEMBLY-S	DXX1681		105	TILT BASE	DNK1984
	6	RUBBER SPACER	DEB1052		106	BLDB ASSEMBLY	DWR1081
	7	BOLT (M2.6×6)	VLL1107		107	MECHANISM CHASSIS	DNK1985
	8	PICK-UP ASSEMBLY	DWY1016		108	PCB SPACER (14)	DEC1387
	9	RETURN SPRING	DBH1182		109	FTSB ASSEMBLY	DWV1068
	10	HT SPRING	DBH1044		110	POSS ASSEMBLY	DWX1191
	11	ADJUSTMENT PLATE ASSEMBLY	DXB1111				
	12	FIXATION SPRING	DBH1045				
	13	SCREW	SMZ26H120FZK				
	14	G PLATE (L)	DBK1023				
	15	G PLATE (R)	DBK1024				
	16	ADJUSTMENT SCREW	DBA1034				
	17	WASHER	WT26D047D050				
	18	BEARING	DXB1121				
	19	ROLLER PLATE ASSEMBLY	DXB1112				
	20	ADJUSTMENT SCREW	DBA1013				
	21	STOPPER	DEB1164				
	22	SHAFT CATCHER	DNK1986				
	23	D SHAFT	DLA1172				
	24	DRIVE UNIT	DXX1682				
	25	D COIL	DXP1021				
	26	SLIT PLATE	DNH1166				
	27	S SHAFT	DLA1173				
	28	SCREW	PMA30P120FMC				
	29	TILT SPRING	DBH1178				
	30	LOCK SHAFT	DLA1437				
	31	LOCK SPRING	DBH1152				
	32	LOCK TEETH	DNH1512				
	33	SCREW	PMB30P080FMC				
	34	SCREW	AMZ26P040FMC				
	35	SCREW	AMZ30P030FMC				
	36	SCREW	AMZ30P060FMC				
	37	SCREW	BPZ30P080FMC				
	38	SCREW	BEZ30P200FMC				
	39	SCREW	BEZ30P060FMC				
	40	SCREW	APZ30P080FMC				

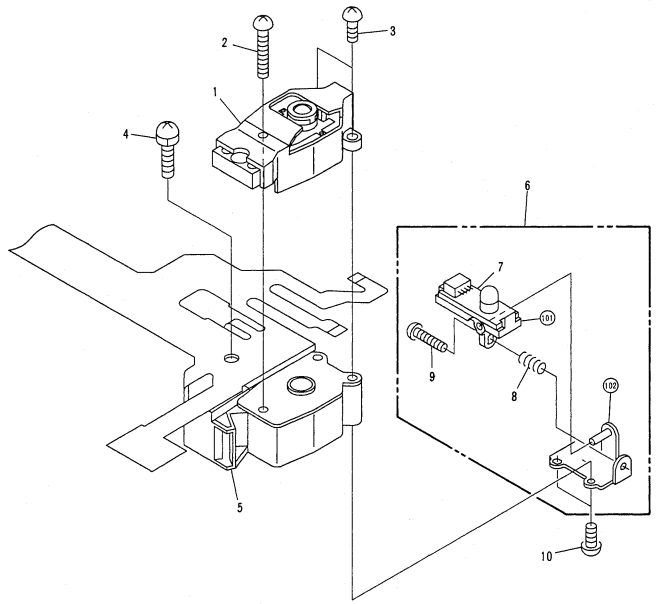
4.7 TILT MOTOR SECTION



Parts list of Tilt motor section

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
1		E RING	YE40FUC	11		TILT MOTOR ASSEMBLY	DXX1683
2		TILT CAM	VNL1273	12		WORM GEAR	VNL1085
3		SYNCHRONIZE CAM	DNK1983	13		STOPPER	DEB1053
4		LEVER SWITCH	DSK1001	14		PLUNGER	DXP1001
5		WASHER	WT21D050D050	15		SCREW	BMZ20P080FCU
6		GEAR	VNL1078	16		SCREW	AMZ30P040FMC
7		WASHER	WT26D047D050	101		LOCK BASE	DNH1514
8		LOCK CAM	DNK1333				
9		LOCK ARM	DNH1596				
10		CAM SPRING	DBH1153				

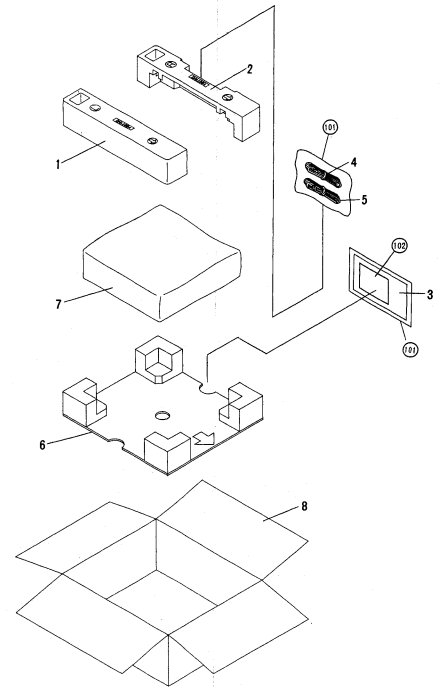
4.8 PICK-UP ASSEMBLY (DWY1016)



Parts list of Pick-up assembly

Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
1	ACTUATOR ASSEMBLY	VXX1552	101	SPACER	DNA1129
2	SCREW	PMA20P160FMC	102	SENSOR STAY	DNK1987
3	SCREW	PMA20P060FMC			
4	SCREW	PMA20P080FMC			
5	PRE PICK-UP ASSEMBLY-S	DXX1684			
6	SENSOR ASSEMBLY-S	VXX1611			
7	SENSOR ASSEMBLY	YEX1018			
8	SENSOR SPRING	DBH1151			
9	SCREW	PMZ20P140FMC			
10	SCREW	PMA20P040FMC			

4.9 PACKING

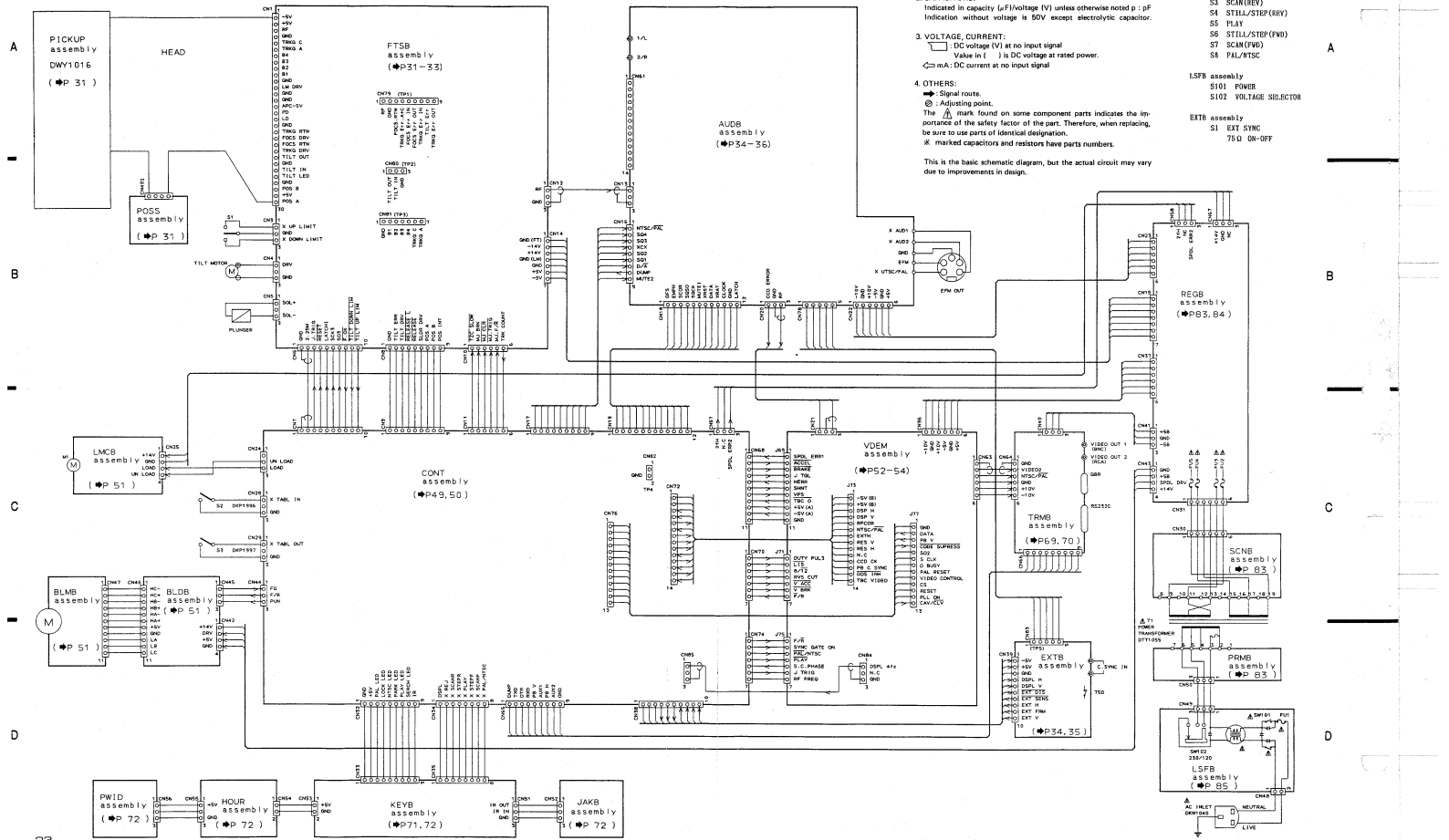


Parts list of Packing

Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
1	TOP PAD (L)	DHA1054	101	POLYETHYLENE BAG	VHL-014
2	TOP PAD (R)	DHA1055	102	NOTES	VRM1027
3	OPERATIONG INSTRUCTIONS	DRE1006			
4	VIDEO CABLE	VDE-056			
5	CONNECTION CORD	VDE-055			
6	BOTTOM PAD	DHA1138			
7	PACKING MAT	VHL1005			
8	PACKING CASE	DHG1281			

5. SCHEMATIC AND P.C.BOARDS CONNECTION DIAGRAM

5.1 CONNECTION DIAGRAM



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

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

3. VOLTAGE, CURRENT:
□ DC voltage (V) at no input signal
Values in / is DC voltage at rated power.
⊖ MA: DC current at no input signal

4. OTHERS:
→ Signal route.
⊕ Adjusting point.
The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
⊕ marked capacitors and resistors have parts numbers.

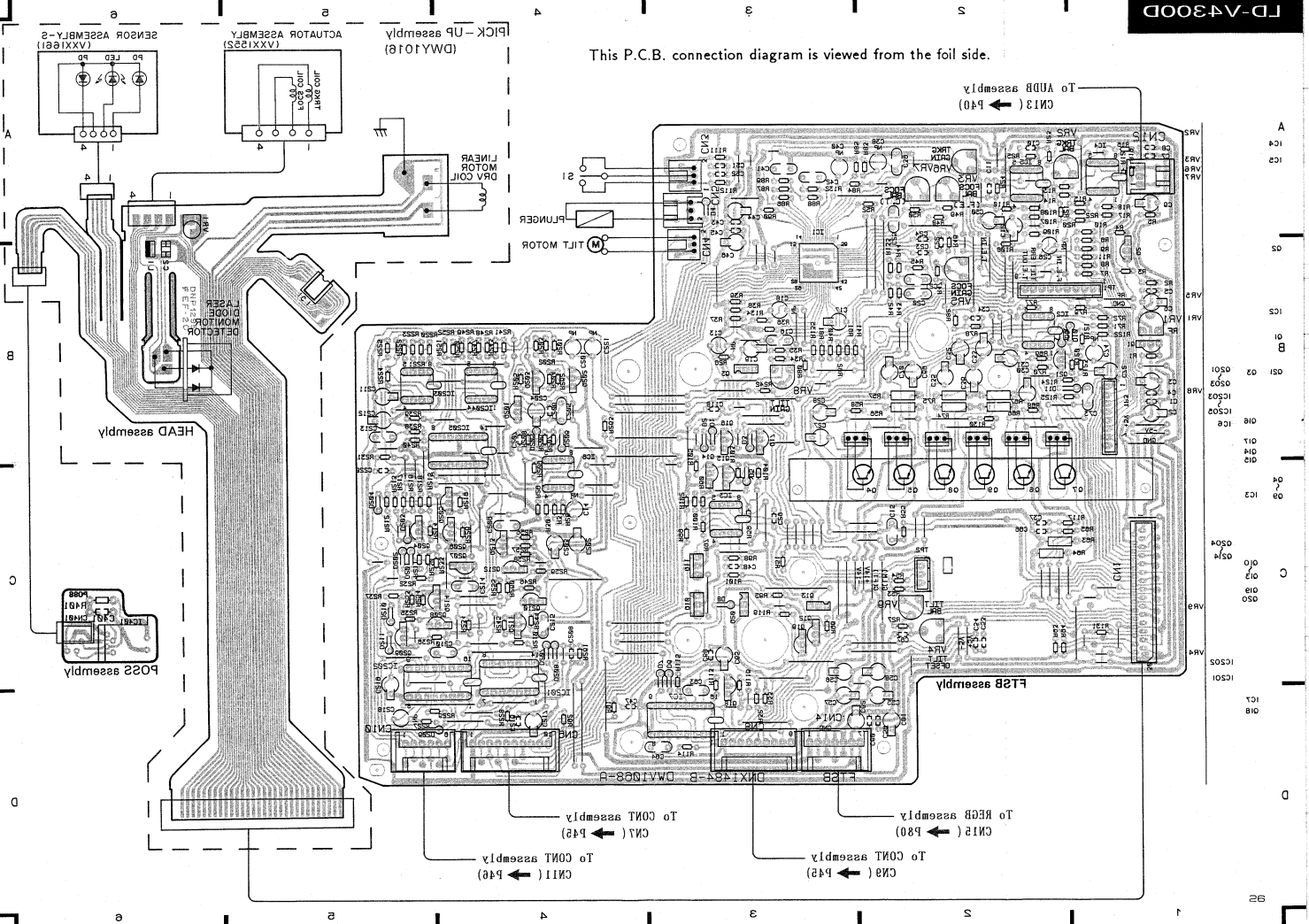
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:
EXTB assembly
S1 DIS/PLAY
S2 OPEN/CLOSE
S3 SCAM(REV)
S4 STILL/STEP(REV)
S5 PLAY
S6 STILL/STEP(FWD)
S7 SCAM(FWD)
S8 PAL/ATSC

LSFB assembly
S101 POWER
S102 VOLTAGE SELECTOR

EXTB assembly
S1 SET SYNC
75Ω ON-OFF

This P.C.B. connection diagram is viewed from the foil side.



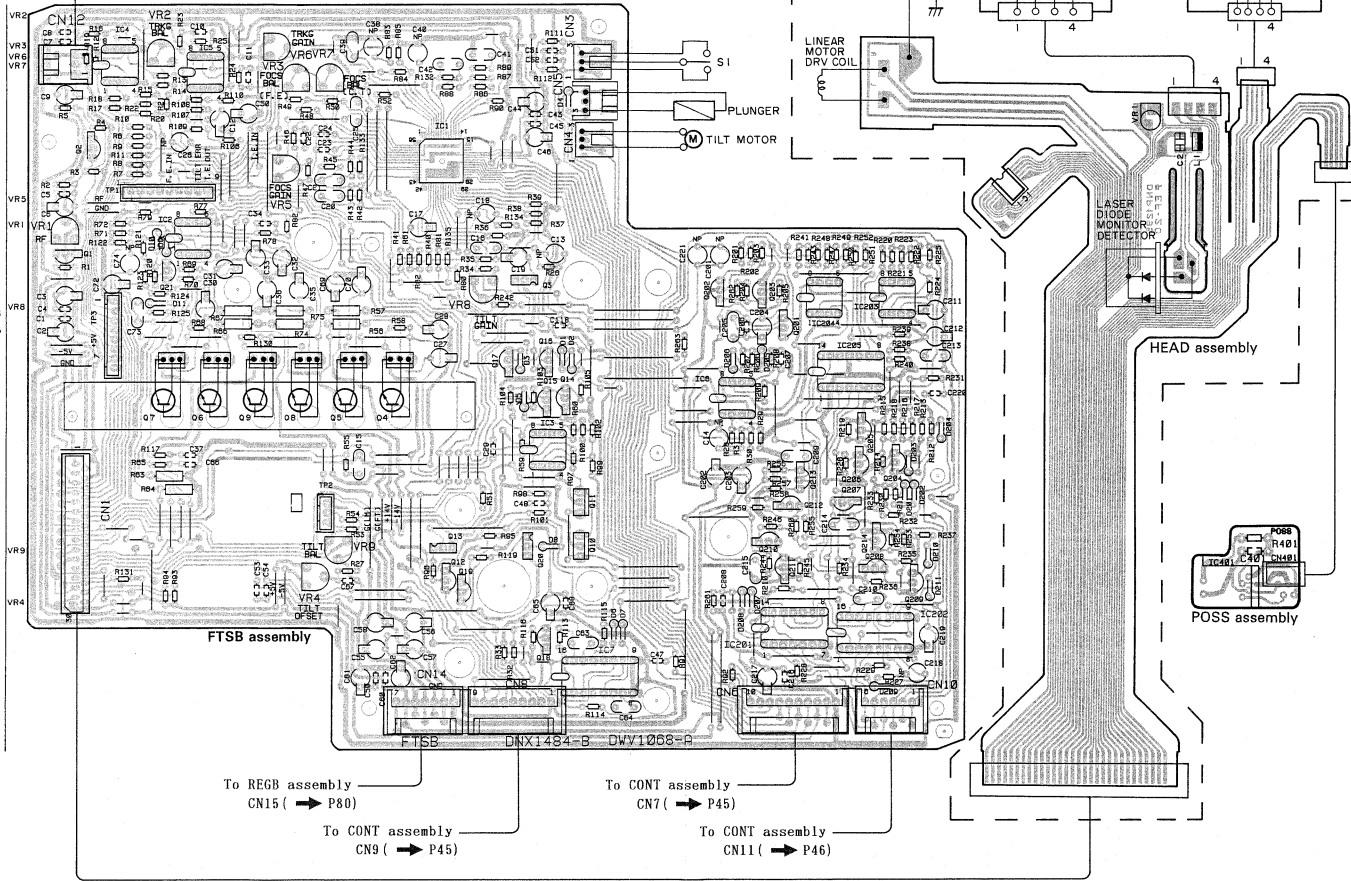
5.2 FTSB, POSS, HEAD and PICK - UP assembly (DWY1016)

To AUBB assembly
CN13 (→ P40)

PICK - UP assembly
(DWY1016)

ACTUATOR ASSEMBLY
(VXX1552)

SENSOR ASSEMBLY-S
(VXX1661)



FTSB assembly

HEAD assembly

POSS assembly

To REGB assembly
CN15 (→ P80)

To CONT assembly
CN7 (→ P45)

To CONT assembly
CN9 (→ P45)

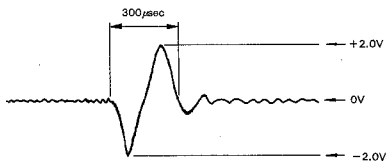
To CONT assembly
CN11 (→ P46)

A
IC4
IC5
02
IC2
01
03
0201
0203
IC203
IC205
IC6
01
04
05
IC3
0204
0214
01
05
020
IC202
IC201
IC7
018
D
27

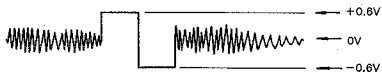
1 2 3 4 5 6

● FTSB assembly

① TRKG ERROR (STILL)

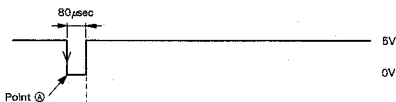


② TRKG RTN (STILL)

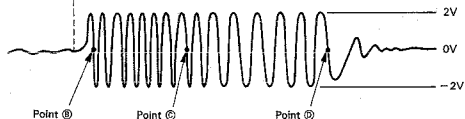


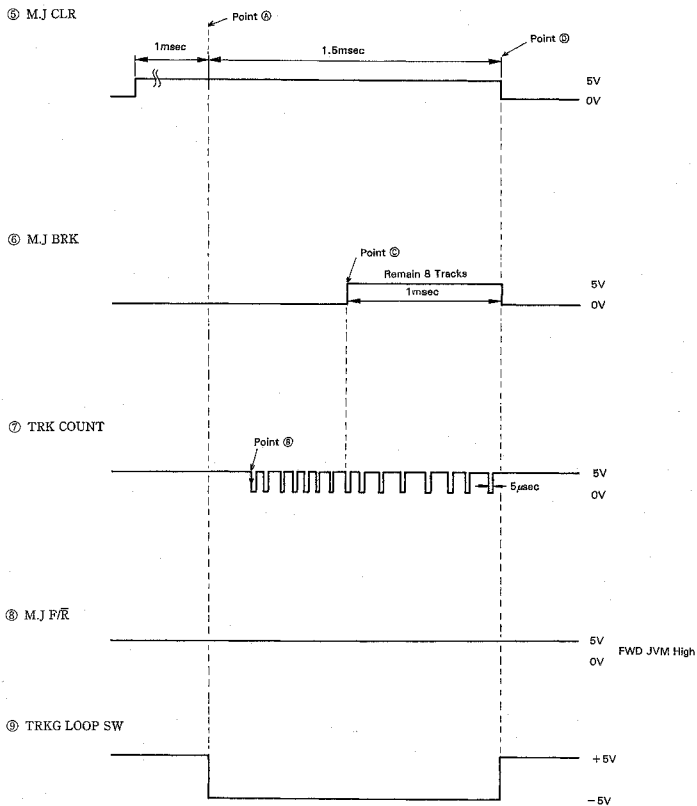
● Multi Jump (M.J) 15 Tracks Forward

③ M.J TRIG



④ TRKG Err



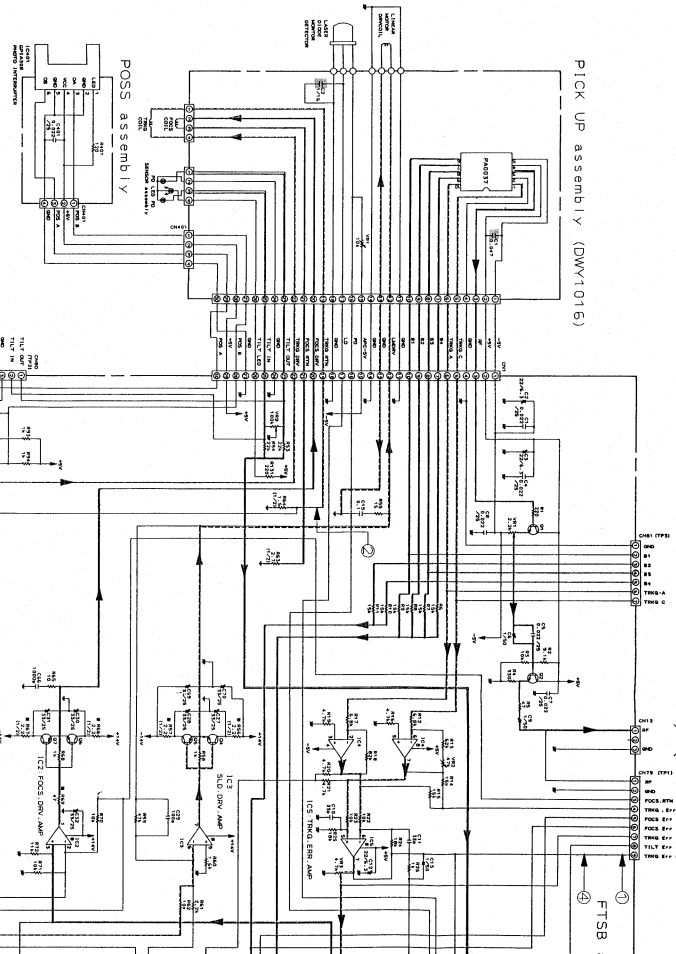


A
B
C
D
E
F

1
2
3
4

Power 3515

PICK UP assembly (DWV1016)



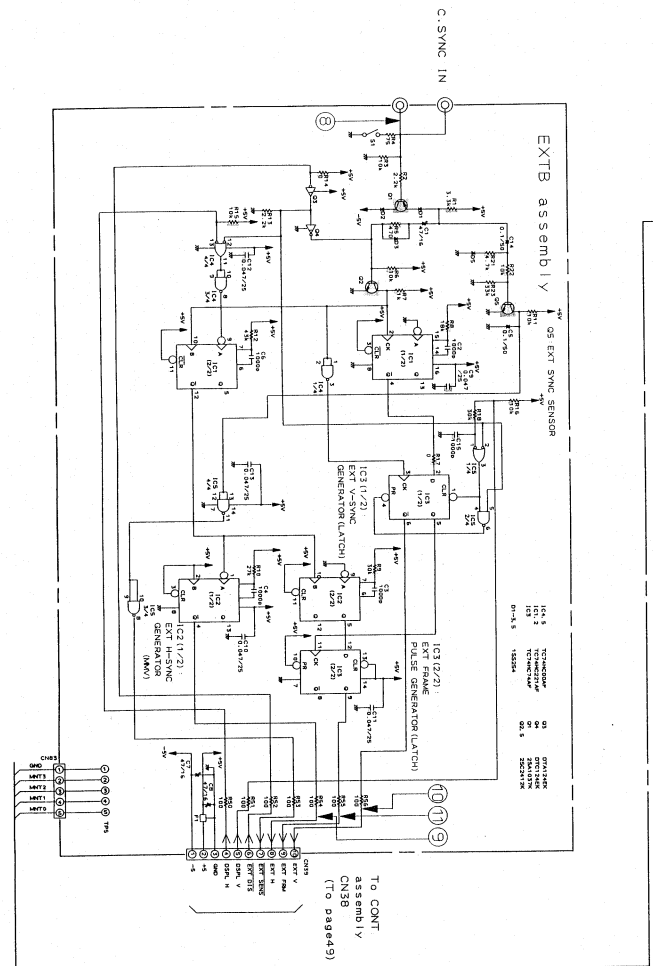
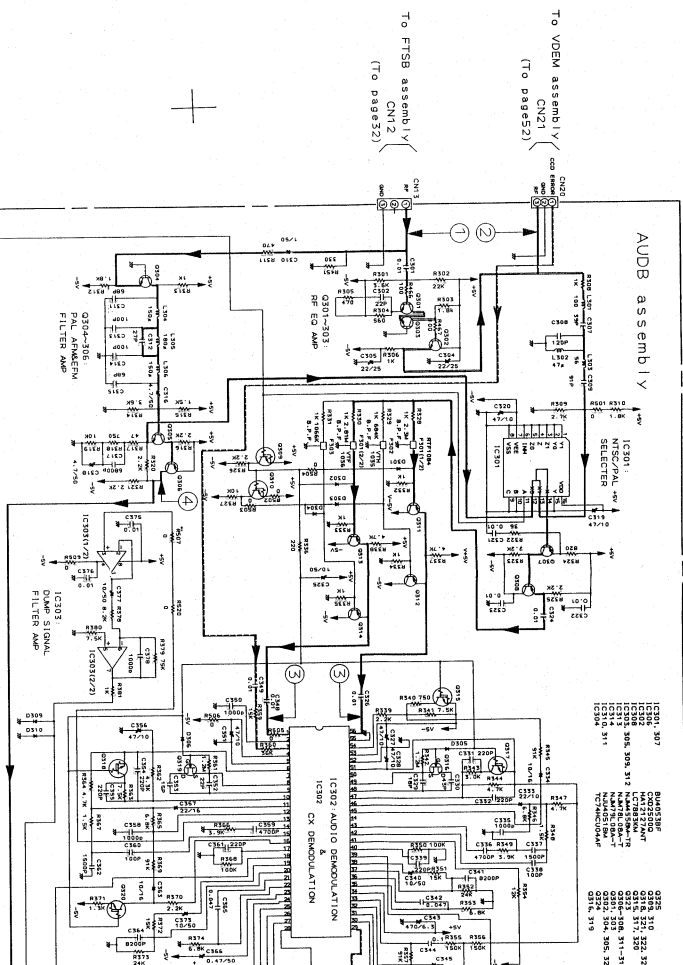
To ADB assembly
(CN13)
(To P40334)

To CONF assembly
(CN5)
(To P40445)

To CONF assembly
(CN5)
(To P40445)

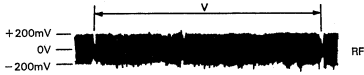
F

1
2
3
4

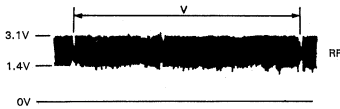


● AUSB assembly

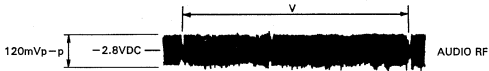
- ① NTSC Test Disc GGV1003 Frame#24,000
(CONPOSITE TEST)



- ② NTSC Test Disc GGV1003 Frame#24,000
(CONPOSITE TEST)



- ③ NTSC Test Disc GGV1003 Frame#24,000
(CONPOSITE TEST)



- ④ NTSC Test Disc GGV1003 Frame#24,000
(CONPOSITE TEST)

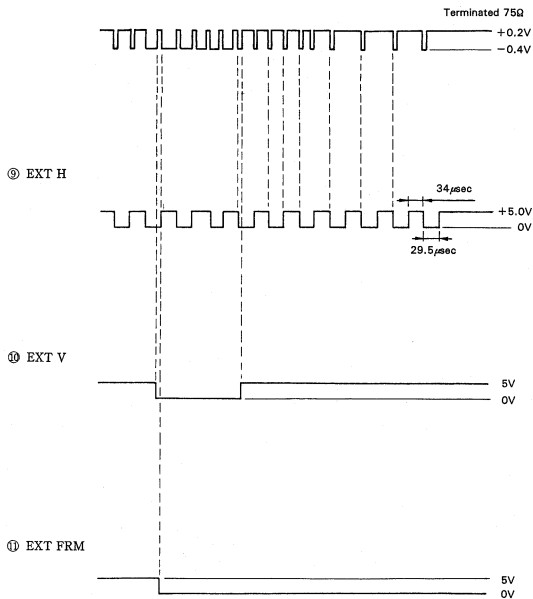


- ⑤ NTSC Test Disc GGV1003 Frame#24,000
(CONPOSITE TEST)

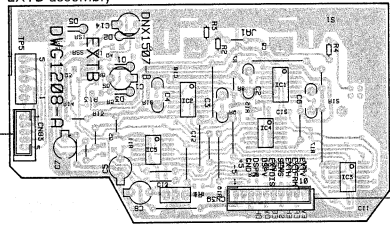


● EXT B assembly

⑧ NTSC EXT SYNC INPUT



EXTB assembly



To CONT assembly
CN38 (→ P48)

PCB screen display indication	Corresponding part symbol	Part name	PCB screen display indication	Corresponding part symbol	Part name	PCB screen display indication	Corresponding part symbol	Part name
		Variable			Resistor			Capacitor
		Diode			Inductor			Variable capacitor
		Diode			Resistor			Resistor
		Diode			Resistor			Capacitor
		Diode			Resistor			Capacitor
		LED			Capacitor			Capacitor
		Resistor			Capacitor			Capacitor
		Inductor			Capacitor			Capacitor

1. The PCB location diagram is viewed from the parts mounted side.
 2. The parts which have been mounted in the space on the resistor with three planes with the corresponding wiring symbols listed in the "Part name" column, except marked with (C), require separate terminal.
 3. The diode marked with (C) means cathode side.
 4. The resistor without marked with (C) means resistor.

A

A

To CONT assembly
CN19 (→ P45)

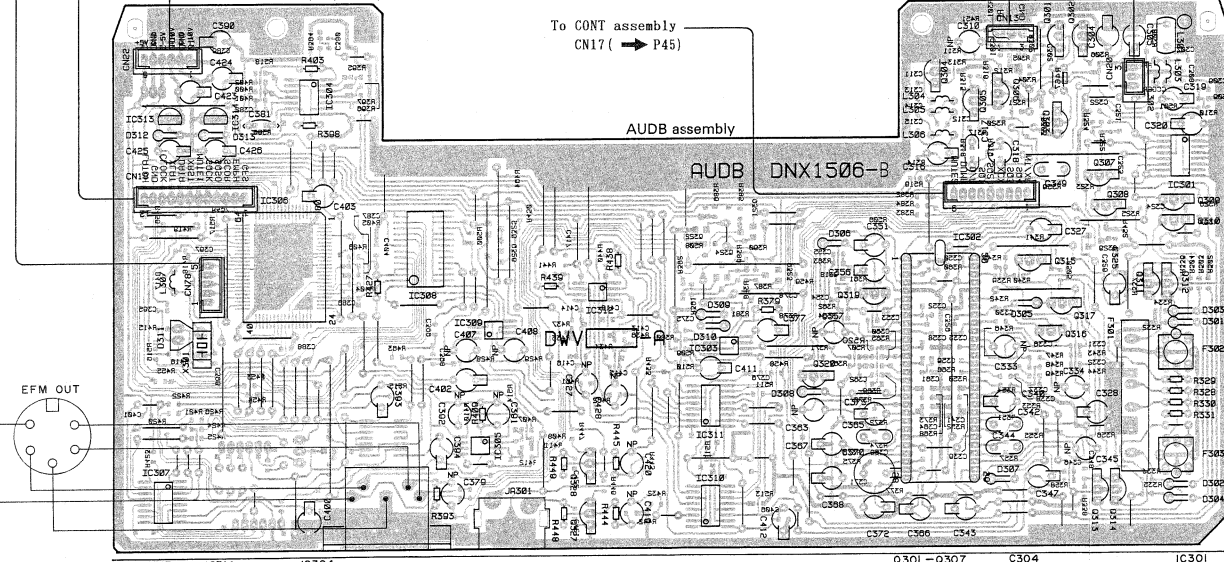
To REGB assembly
CN23 (→ P79)

To CONT assembly
CN17 (→ P45)

AUDB assembly

To FTSB assembly
CN12 (→ P27)

To VDEB assembly
CN21 (→ P60)



B

B

C

C

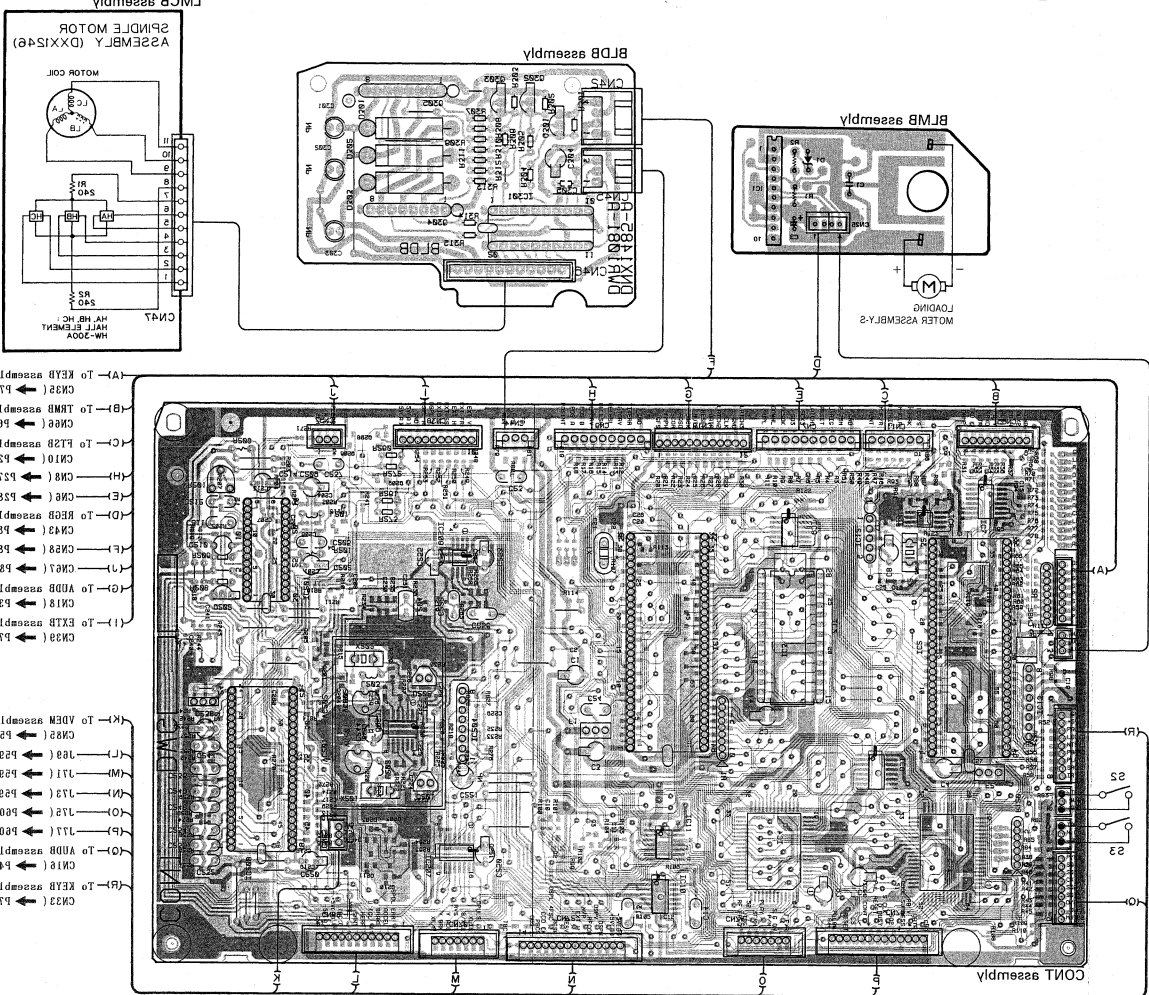
EFM OUT

D

D

- 1 IC315 IC314 IC306 IC307
- 2 IC306 IC309 IC305 IC312 IC313 IC327 IC328
- 3 IC308 IC309 IC325 IC326 IC327 IC328
- 4 IC310 IC311 IC308 IC312 IC313
- 5 IC302 IC308-IC312 IC313 IC314
- 6 IC301 IC302 IC303 IC304 IC305 IC306 IC307 IC308 IC309 IC310 IC311 IC312 IC313 IC314 IC315 IC316 IC317 IC318 IC319 IC320 IC321 IC322 IC323 IC324 IC325 IC326 IC327 IC328 IC329

011	0510
012	0511
013	0508
014	0505
015	0502
016	0501
017	0505
018	0507
019	0504
020	0501
021	0505
022	0508
023	0505
024	0504
025	0505
026	0508
027	0508
028	0508



- (A) To REFB assembly (CN32) (P13)
- (B) To LMB assembly (CN6) (P2)
- (C) To F2B assembly (CN1) (P2)
- (H) (CN4) (P2)
- (E) (CN5) (P2)
- (D) To REFB assembly (CN43) (P8)
- (F) (CN28) (P8)
- (J) (CN23) (P8)
- (G) To HDB assembly (CN18) (P2)
- (I) To EXTB assembly (CN26) (P2)
- (K) To ADB assembly (CN25) (P2)
- (L) (P2)
- (M) (P11)
- (N) (P2)
- (O) (P2)
- (P) (P11)
- (Q) To HDB assembly (CN18) (P2)
- (R) To REFB assembly (CN32) (P13)

A
B
C
D

A

e

5

3

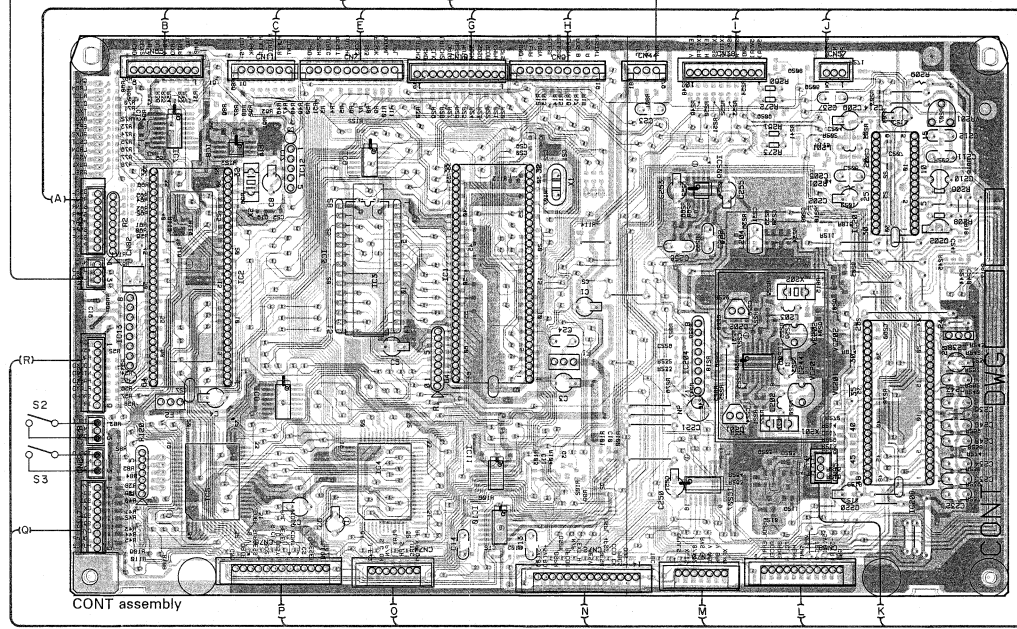
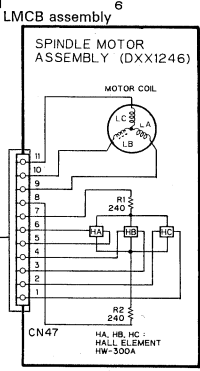
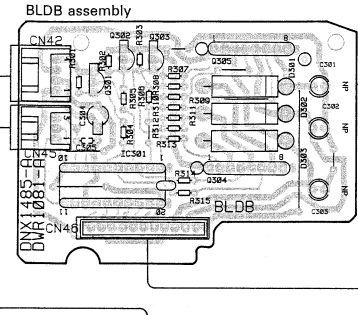
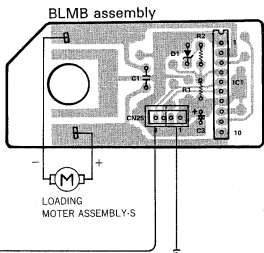
4

2

e

5.4 CONT, BLDB, BLMB and LMCB assembly

PCB assembly diagram	Component part	Part no.	PCB assembly diagram	Component part	Part no.
	Resistor	C3		Capacitor	CA101
	Diode	DI1		Motor	MA1
	Switch	SW1		Relay	RE1
	LED	LED1		IC	IC101
	Transistor	TR1		IC	IC102
	IC	IC103		IC	IC104
	IC	IC105		IC	IC106
	IC	IC107		IC	IC108
	IC	IC109		IC	IC110
	IC	IC111		IC	IC112
	IC	IC113		IC	IC114
	IC	IC115		IC	IC116
	IC	IC117		IC	IC118
	IC	IC119		IC	IC120
	IC	IC121		IC	IC122
	IC	IC123		IC	IC124
	IC	IC125		IC	IC126
	IC	IC127		IC	IC128
	IC	IC129		IC	IC130
	IC	IC131		IC	IC132
	IC	IC133		IC	IC134
	IC	IC135		IC	IC136
	IC	IC137		IC	IC138
	IC	IC139		IC	IC140
	IC	IC141		IC	IC142
	IC	IC143		IC	IC144
	IC	IC145		IC	IC146
	IC	IC147		IC	IC148
	IC	IC149		IC	IC150
	IC	IC151		IC	IC152
	IC	IC153		IC	IC154
	IC	IC155		IC	IC156
	IC	IC157		IC	IC158
	IC	IC159		IC	IC160
	IC	IC161		IC	IC162
	IC	IC163		IC	IC164
	IC	IC165		IC	IC166
	IC	IC167		IC	IC168
	IC	IC169		IC	IC170
	IC	IC171		IC	IC172
	IC	IC173		IC	IC174
	IC	IC175		IC	IC176
	IC	IC177		IC	IC178
	IC	IC179		IC	IC180
	IC	IC181		IC	IC182
	IC	IC183		IC	IC184
	IC	IC185		IC	IC186
	IC	IC187		IC	IC188
	IC	IC189		IC	IC190
	IC	IC191		IC	IC192
	IC	IC193		IC	IC194
	IC	IC195		IC	IC196
	IC	IC197		IC	IC198
	IC	IC199		IC	IC200



- (A) - To KEYB assembly CN35 (→ P73)
- (B) - To TRMB assembly CN66 (→ P65)
- (C) - To FTSB assembly CN10 (→ P28)
- (H) - CN8 (→ P27)
- (E) - CN6 (→ P28)
- (D) - To REGB assembly CN43 (→ P80)
- (F) - CN58 (→ P80)
- (J) - CN67 (→ P80)
- (G) - To AUDB assembly CN18 (→ P39)
- (I) - To EXTB assembly CN39 (→ P79)
- (K) - To VDEM assembly CN85 (→ P59)
- (L) - J69 (→ P59)
- (M) - J71 (→ P59)
- (N) - J73 (→ P59)
- (O) - J75 (→ P60)
- (P) - J77 (→ P60)
- (Q) - To AUDB assembly CN16 (→ P40)
- (R) - To KEYB assembly CN33 (→ P73)

A

A

B

B

C

C

D

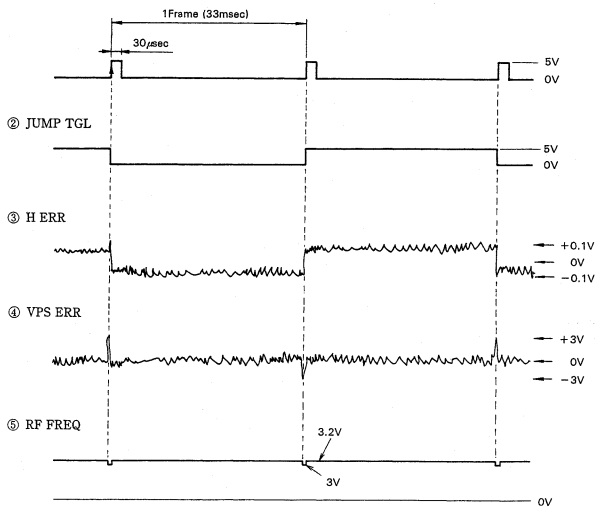
D

- CONT assembly

- TBC Section

NTSC STILL (12inch Disc)

① JUMP TRIG



● LMCB assembly

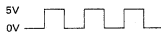
⑥ CN25 - Pin 3, 4

When CLOSE: Both UNLOAD and LOAD will be "high" momentarily when starting.

Later, UNLOAD becomes below waveform and LOAD becomes "low", then just before close, both become "high" again.

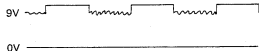


When OPEN: While operating, LOAD becomes below waveform which is opposite the CLOSE waveform and UNLOAD becomes "low", then both of them become "high" just before close.

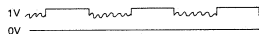


⑦ IC1 - Pin10

OPEN:



CLOSE:



● BLDB assembly

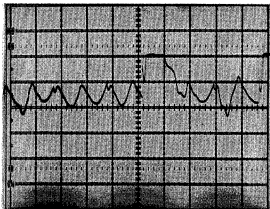
⑧ Pin 3 of CN42

STAND BY: -13V

5mS/div

PLAY:

5V/div



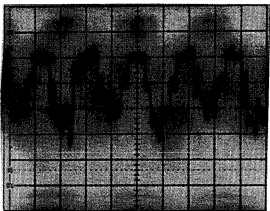
⑨ Pin 9 of CN46

STAND BY: 10V

10mS/div

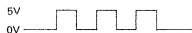
PLAY:

5V/div



⑩ IC301 - Pin11

PLAY:



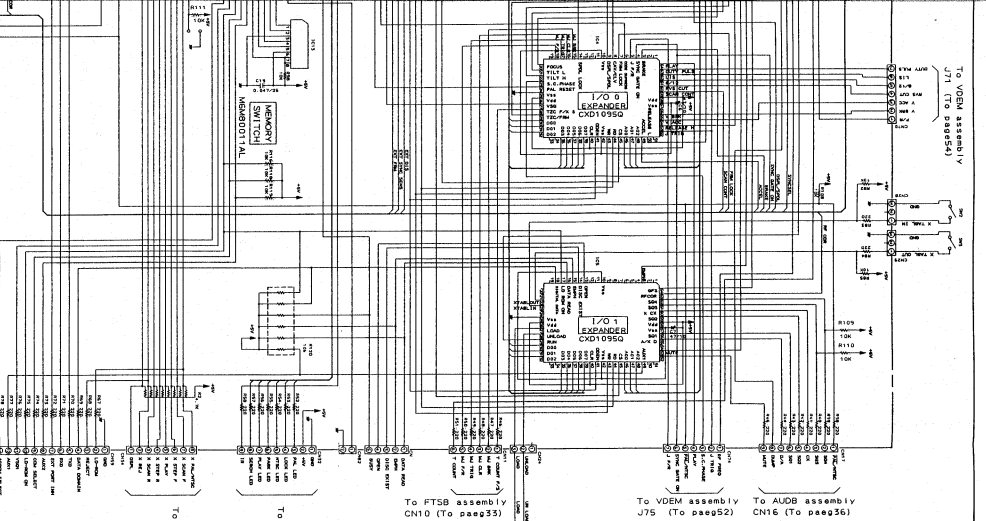
⑪ IC301 - Pin 2

⑫ IC301 - Pin 1

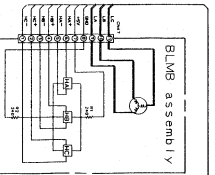
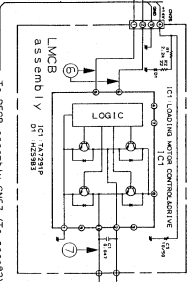
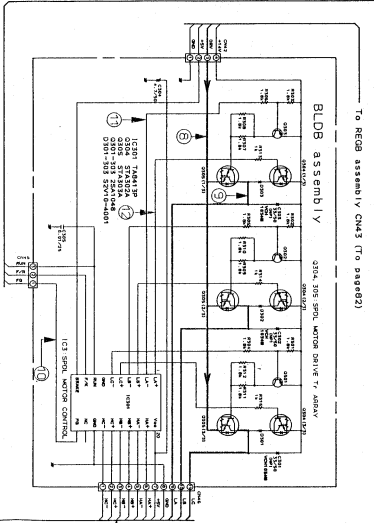
STAND BY: 16V

PLAY:



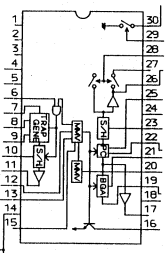


IC8	BA10393F	D203	DAN22X
IC7, 207	BUV0528F	D1	DA224K
IC4, 5	CO01950	D201, 202	SWC278P
IC3, 4	ME1958L		
IC12	ME1958L		
IC13	MEM8017AL	Q208, 209	DTA124EK
IC29	MEM8017AL	Q1, 4, 201, 203, 204, 210, 211	DT124EK
IC20	PA8011A	Q202	DT124ES
IC1	PD0081A1	Q205, 206	28C2472X
IC2	PD0110A	Q2, 3	28C2472X
IC3, 208	PD0110A		
IC6	TC74HC04AF		
IC10	TC74HC123AF		
IC9	TC74HC12AF		

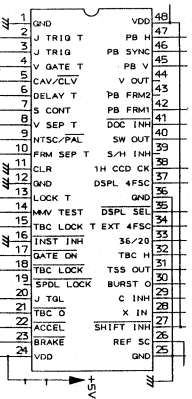


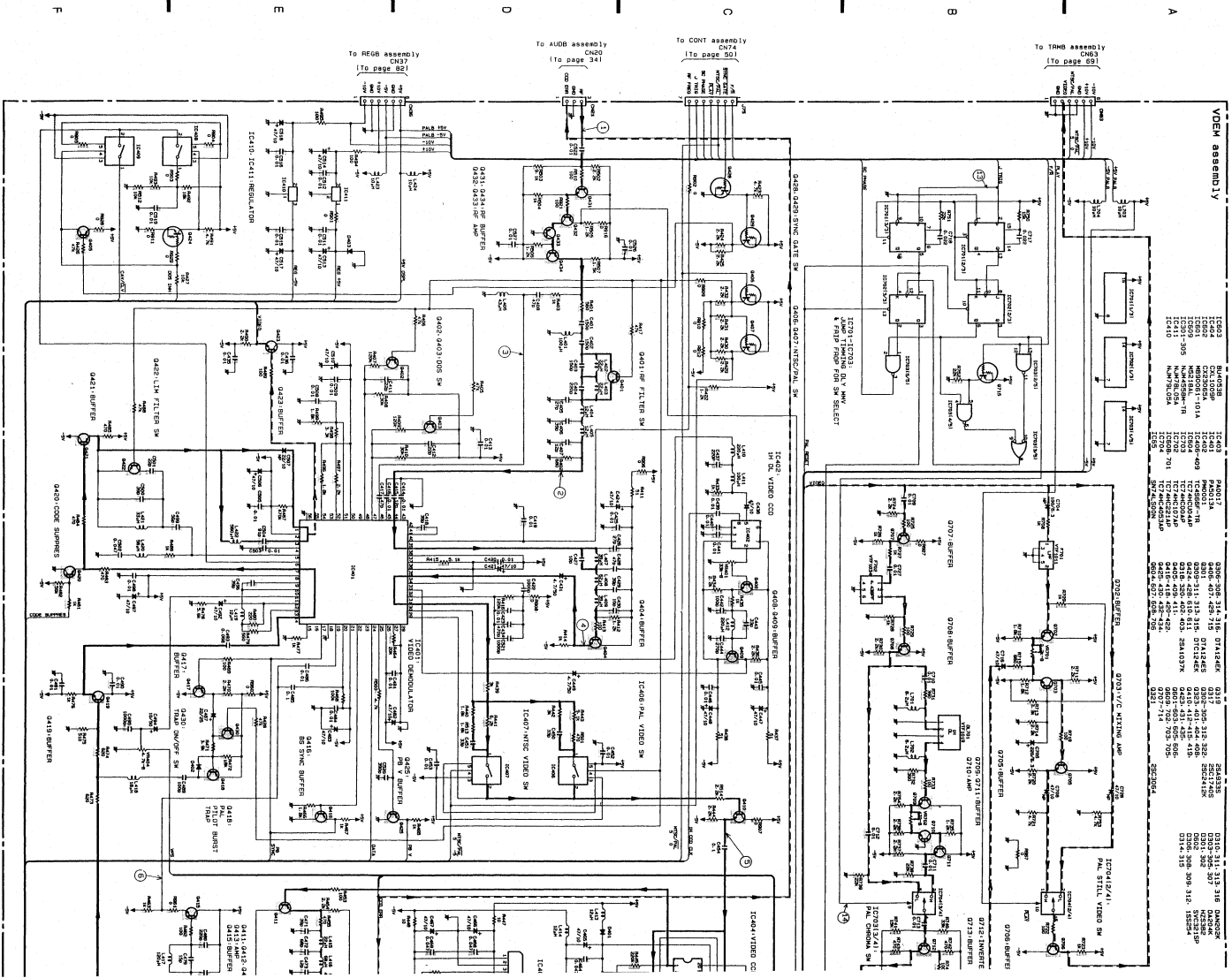
SPUL SERVO
TBC SERVO
SLOP SERVO
TILT SERVO

IC201



IC208





F

E

D

C

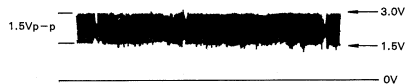
B

A

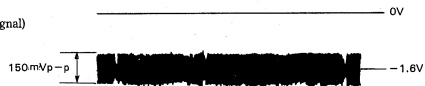
● VDEM assembly

NTSC Test Disc GGV1003 Frame#24,000

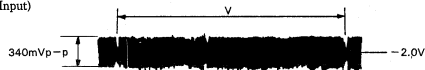
① RF Signal



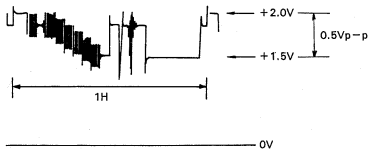
② RF (Det.Input Signal)



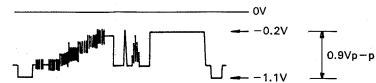
③ RF Signal (DOS Input)



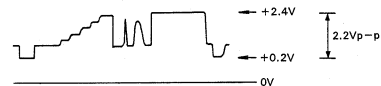
④ VIDEO Det. Output Signal



⑤ CCD Input VIDEO Signal



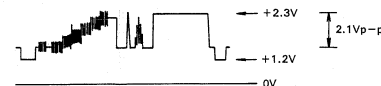
⑥ SYNC-SEP Input VIDEO Signal



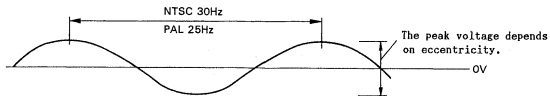
⑦ Charactor generator (IC 601)Input VIDEO Signal



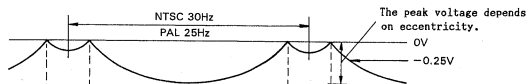
⑧ Charactor generator Output VIDEO Signal



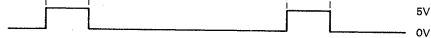
③ VCO Control Voltage



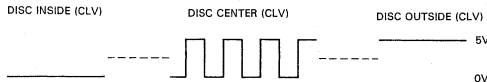
④ SPDL ERR



⑤ X F/R

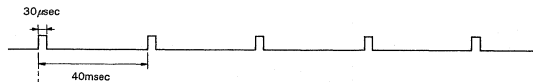


⑥ DUTY PULSE



● PAL Test Disc (Color Bar) STILL

⑧ JUMP TRIG



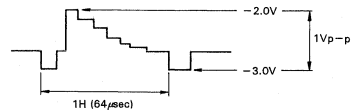
⑨ 0/90° SW



⑩ 0/180° SW



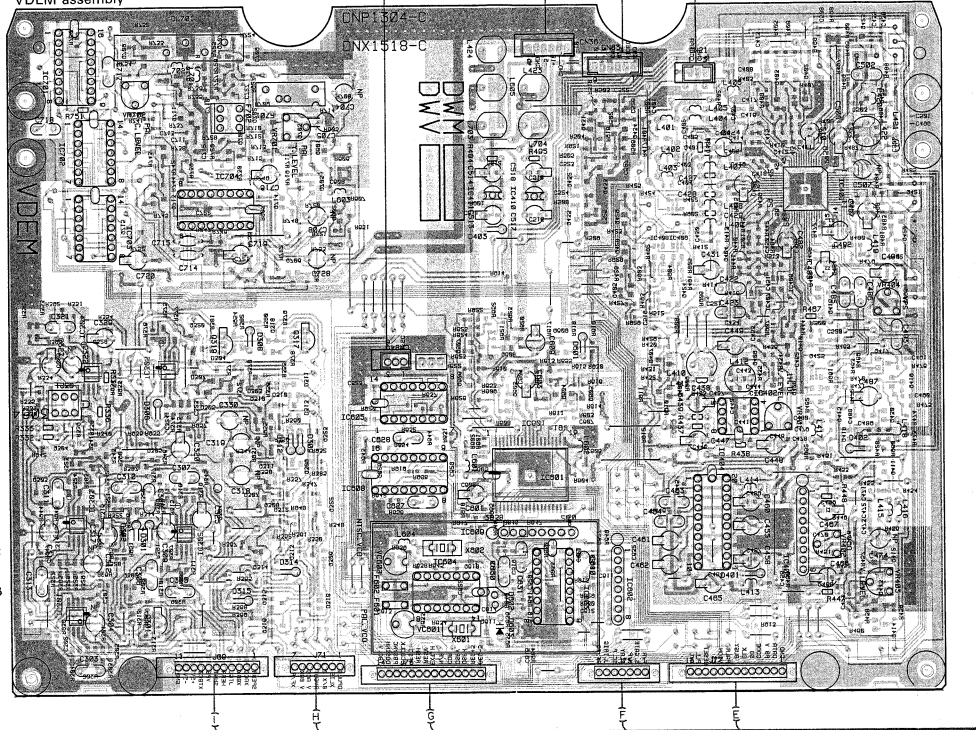
⑪ LUMINANCE



⑫ CROMA



VDEM assembly

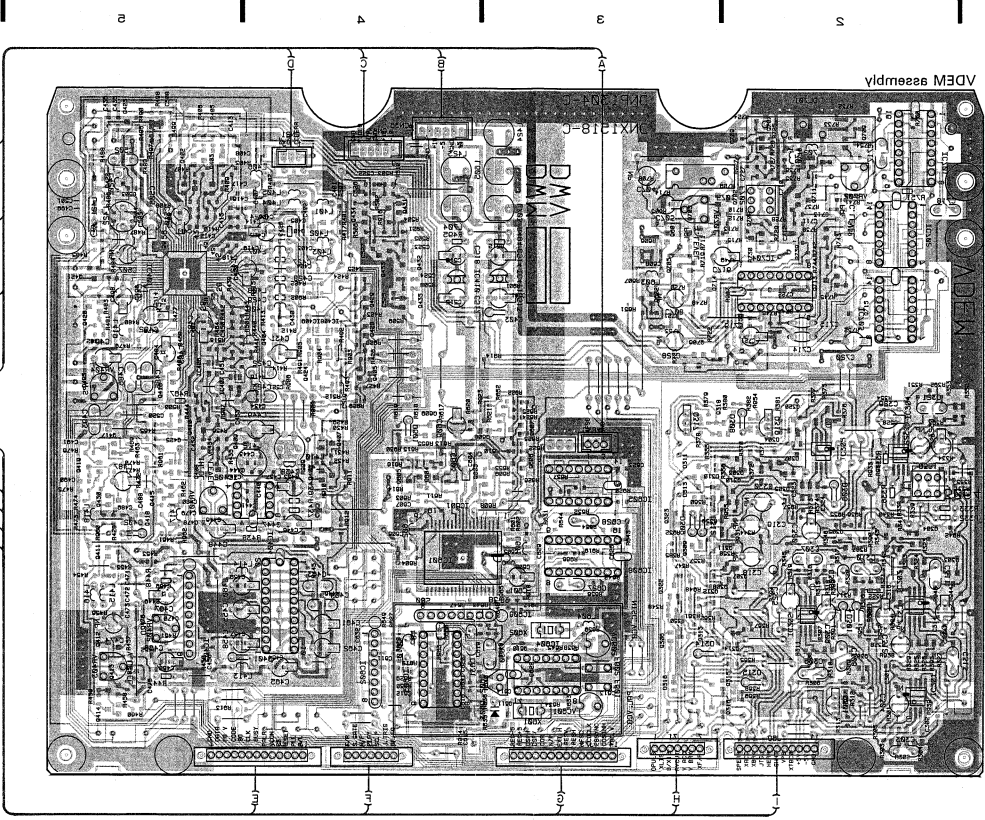


Q707 Q423
 Q709 0402
 A Q710 0403
 IC701 0422
 VR702 0426
 Q711 Q702 Q431 0427
 Q708 Q703 Q434 0427
 Q712 Q601 Q434 0401
 IC702 0401
 IC704Q705
 IC411 Q432
 Q713 Q714 Q433 IC401
 IC410 Q421
 0802 Q435
 Q715 Q429
 IC703 IC408Q420
 IC409Q404
 Q706 Q428
 VR404 0405
 0424
 B IC304Q318 0416
 Q320 Q317 0609 0410
 Q319 Q807 0407 0417
 IC305 0608 Q425
 Q409
 Q321 Q806 Q803 Q408
 Q310 Q604 Q419
 IC605 Q605 IC402
 Q406 Q415
 Q323 IC601 Q430
 0418
 Q304 IC404
 Q305 Q411
 Q309
 Q311
 Q303 IC608
 Q307
 IC303 Q308
 Q322
 Q312 IC609
 IC302 IC604 0412
 Q313 0610 IC403
 C Q302 Q314
 Q315 IC802 Q413
 IC301 Q316 IC603
 Q301 Q611 Q414

A To CONT assembly
 CN84 (P46)
 B To REGB assembly
 CN37 (P79)
 C To TRMB assembly
 CN64 (P65)
 D To AUDB assembly
 CN20 (P40)
 E To CONT assembly
 CN76 (P45)
 F CN74 (P45)
 G CN72 (P46)
 H CN70 (P46)
 I CN68 (P46)

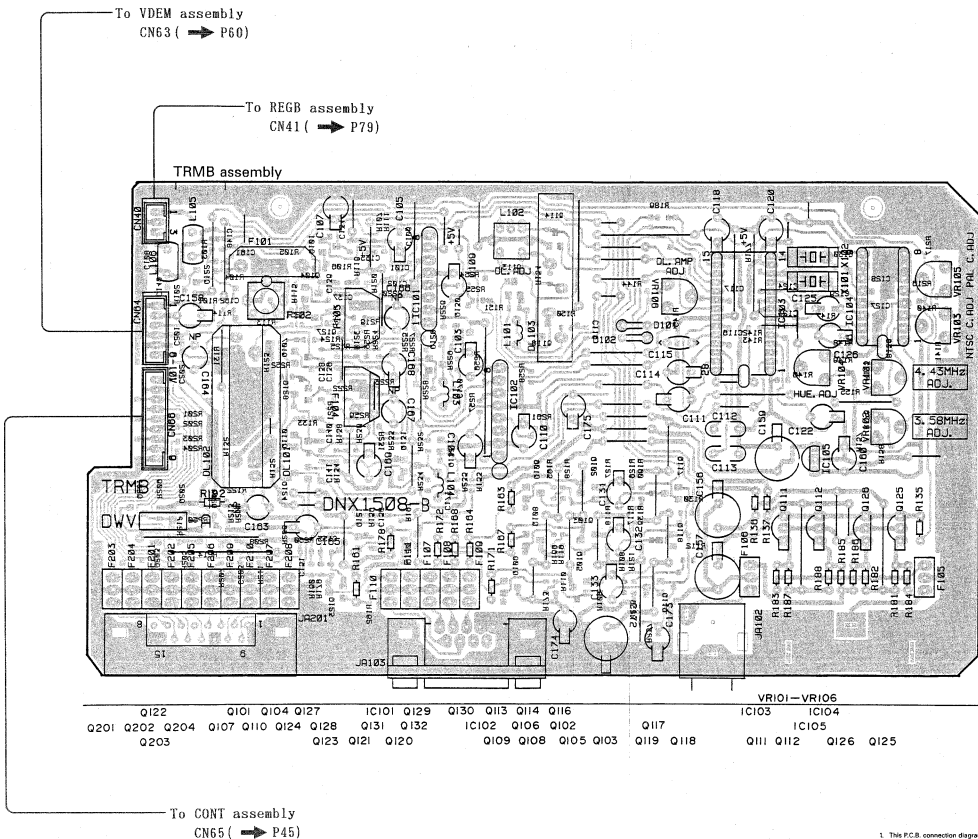
PCB jumper diagram	Component and value	Part name	PCB jumper diagram	Component and value	Part name	PCB jumper diagram	Component and value	Part name	PCB jumper diagram	Component and value	Part name
		Resistor			Resistor			Resistor			Resistor
		Capacitor			Capacitor			Capacitor			Capacitor
		Inductor			Inductor			Inductor			Inductor
		Diode			Diode			Diode			Diode
		Zener diode			Zener diode			Zener diode			Zener diode
		LED			LED			LED			LED
		Ceramic capacitor			Ceramic capacitor			Ceramic capacitor			Ceramic capacitor
		Mirror capacitor			Mirror capacitor			Mirror capacitor			Mirror capacitor
		SMD capacitor			SMD capacitor			SMD capacitor			SMD capacitor
		Electromagnetic interference filter (EMI filter)			Electromagnetic interference filter (EMI filter)			Electromagnetic interference filter (EMI filter)			Electromagnetic interference filter (EMI filter)
		High-voltage capacitor			High-voltage capacitor			High-voltage capacitor			High-voltage capacitor
		Electromagnetic interference filter (P)			Electromagnetic interference filter (P)			Electromagnetic interference filter (P)			Electromagnetic interference filter (P)
		Power inductor			Power inductor			Power inductor			Power inductor
		SMD inductor			SMD inductor			SMD inductor			SMD inductor

1 The PCB assembly diagram is viewed from the parts mounted side.
 2 The color which were omitted on the board can be replaced with those shown with the corresponding wiring symbol used in the above table.
 3 The location omitted marked with □ shows optional function.
 4 The gauge marked with □ shows callouts etc.
 5 The rectangle symbol marked with □ shows solder.



- (A) To COM1 assembly
CN24 (P4E) ←
- (B) To REG1 assembly
CN31 (P4B) ←
- (C) To TRMB assembly
CN4 (P6E) ←
- (D) To VDD assembly
CN30 (P4D) ←
- (E) To COM2 assembly
CN8 (P4E) ←
CN10 (P4E) ←
CN14 (P4E) ←
CN17 (P4E) ←
CN18 (P4E) ←
CN19 (P4E) ←
CN16 (P4E) ←

- (A) To COM1
IC101
0403
0405
0408
0409
0432
0433
0434
0435
0436
0437
0438
0439
0440
0441
0442
0443
0444
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0496
0497
0498
0499
0500
- (B) To COM2
IC301
0501
0502
0503
0504
0505
0506
0507
0508
0509
0510
0511
0512
0513
0514
0515
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0589
0590
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0597
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0600
- (C) To COM3
IC201
0601
0602
0603
0604
0605
0606
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0608
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0700

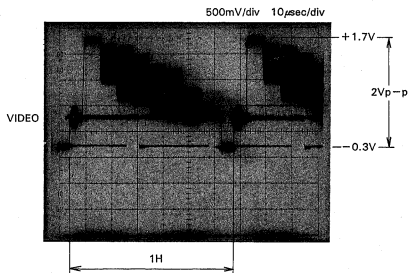


PCB pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zener diode
		LED
		Varactor
		Test switch
		Inductor
		Coil
		Transformer
		Filter
PCB pattern diagram indication	Corresponding part symbol	Part name
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor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

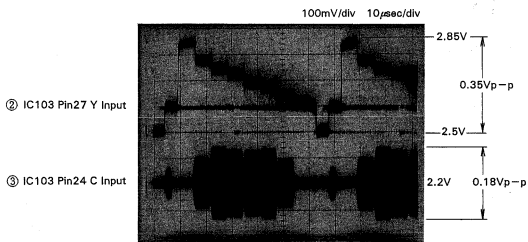
- This P.C.B. connection diagram is viewed from the parts mounted side.
- The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
- The capacitor terminal marked with shows negative terminal.
- The diode marked with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

● TRMB assembly

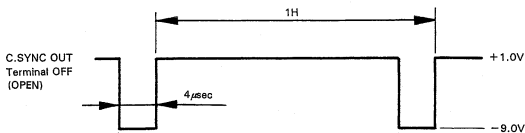
- ① NTSC Test Disc GGV1003 Frame#7,200
(COLOR BAR)



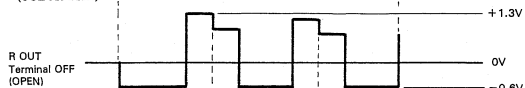
- ② ③ NTSC Test Disc GGV1003 Frame#7,200
(COLOR BAR)



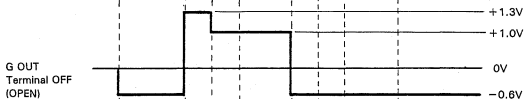
④ NTSC Test Disc GGV1003 Frame#7,200
(COLOR BAR)



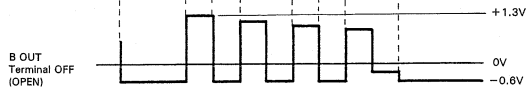
⑤ NTSC Test Disc GGV1003 Frame#7,200
(COLOR BAR)



⑥ NTSC Test Disc GGV1003 Frame#7,200
(COLOR BAR)



⑦ NTSC Test Disc GGV1003 Frame#7,200
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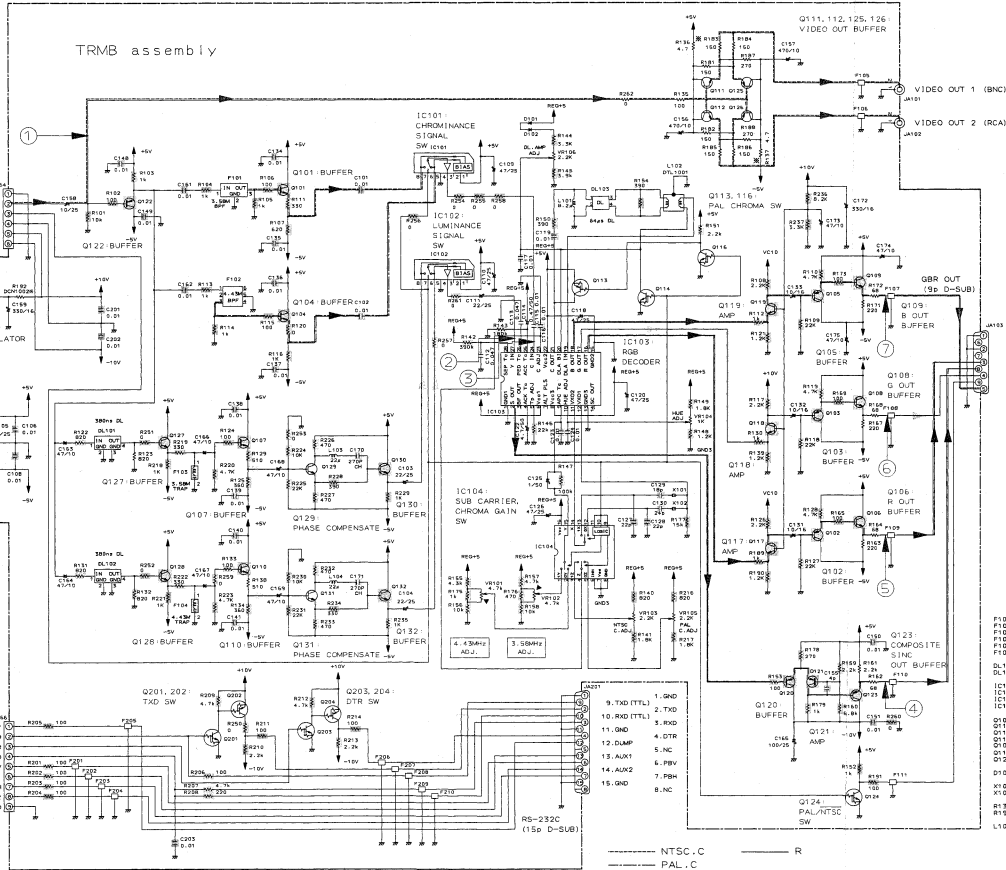


TRMB assembly

To VDEM assembly
CN5
(To page52)

To REGB assembly
CN41
(To page82)

To CONT assembly
CN6
(To page49)



- 6. N.C.
- 2. GND
- 7. N.C.
- 3. R OUT
- 8. C. SYNC
- 4. G. OUT
- 9. PAL/NTSC
- 5. B. OUT

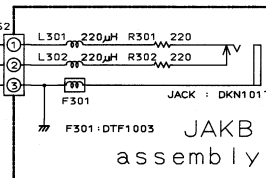
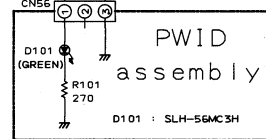
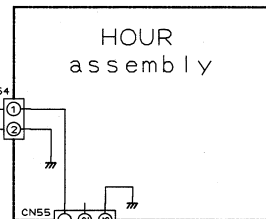
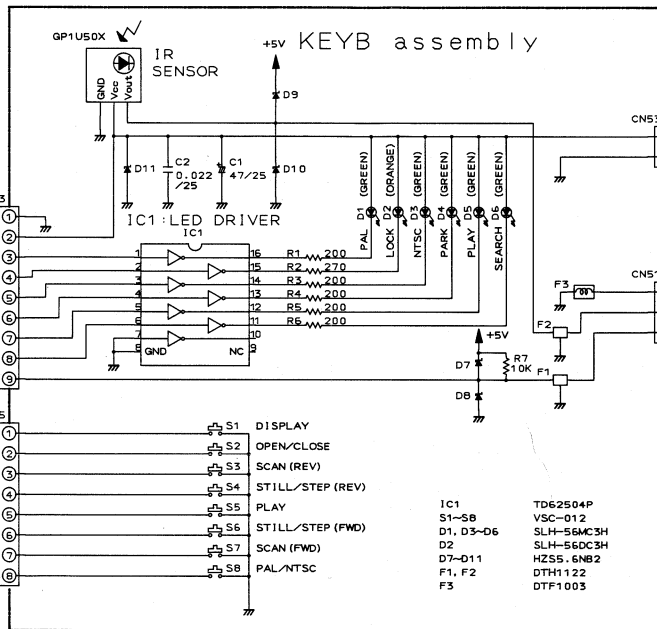
- F105, 106 DTH122
- F107 VFI108
- F108 VFI104
- F109 VFI104
- F104 VFI101B
- F102-111, 201-210 VTH009
- DL101, 102 DTF103B
- DL103 DTF103
- IC108, 109 N405239AL
- IC105 TCC4C4053AP
- IC106 NJM74LSA
- Q101, 104, 105-112, 125-126 2SC242K
- Q114, 110, 124, 201, 203 DT104K
- Q113, 202, 204, 205 DT104K
- F102, 105, 106, 120-123 2SA1027M
- Q115, 112 2SA1027M
- Q116, 111 2SA1027M
- D101, 102 155Z54
- X101 V551023 (3.58MHz)
- X102 DS10214 (4.33MHz)
- R136, 137 DCN1001 (1/4w, 4, 70)
- R192 DCN1002 (1/4w, 150)
- L102 DTL1001

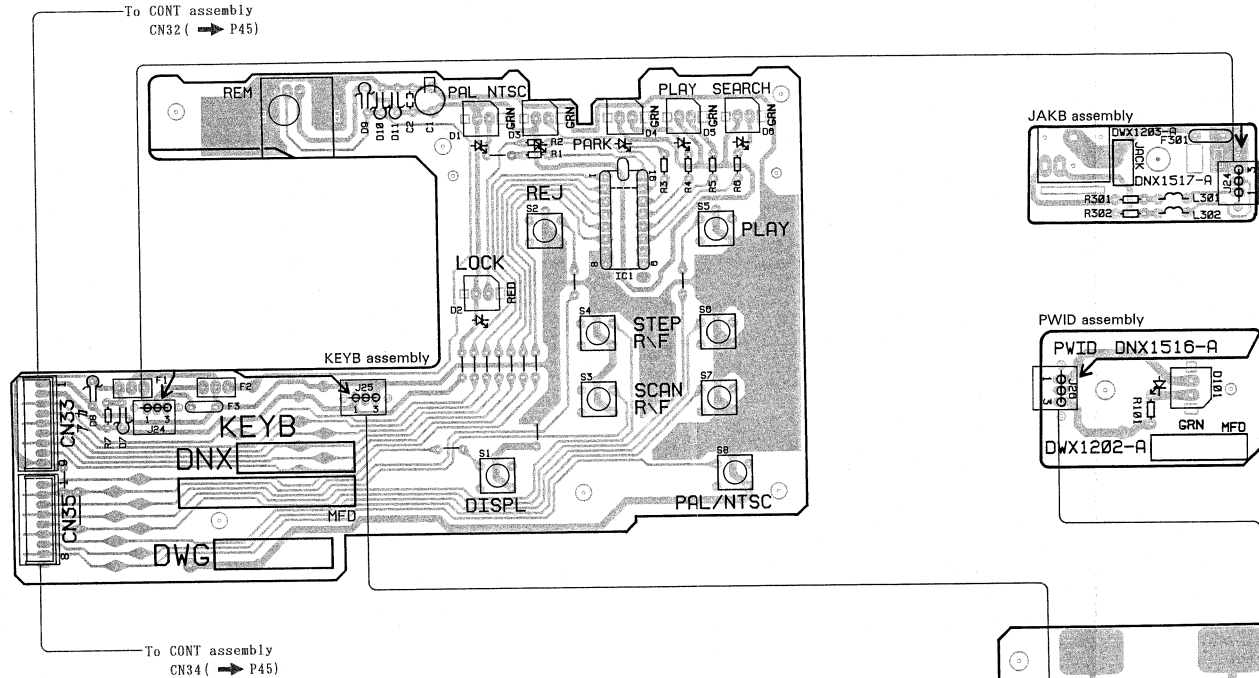
- NTSC.C R
- PAL.C G
- NTSC.Y B
- PAL.Y B
- VIDEO
- COMPOSITE SYNC

5.7 PWID, HOUR, KEYB and JAKB assembly

To CONT assembly
CN32
(To page 50)

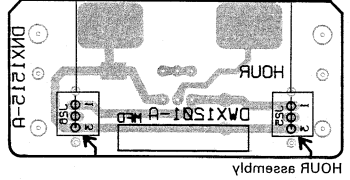
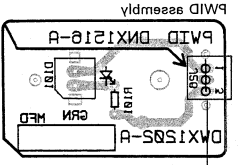
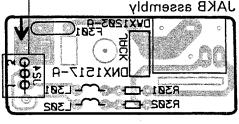
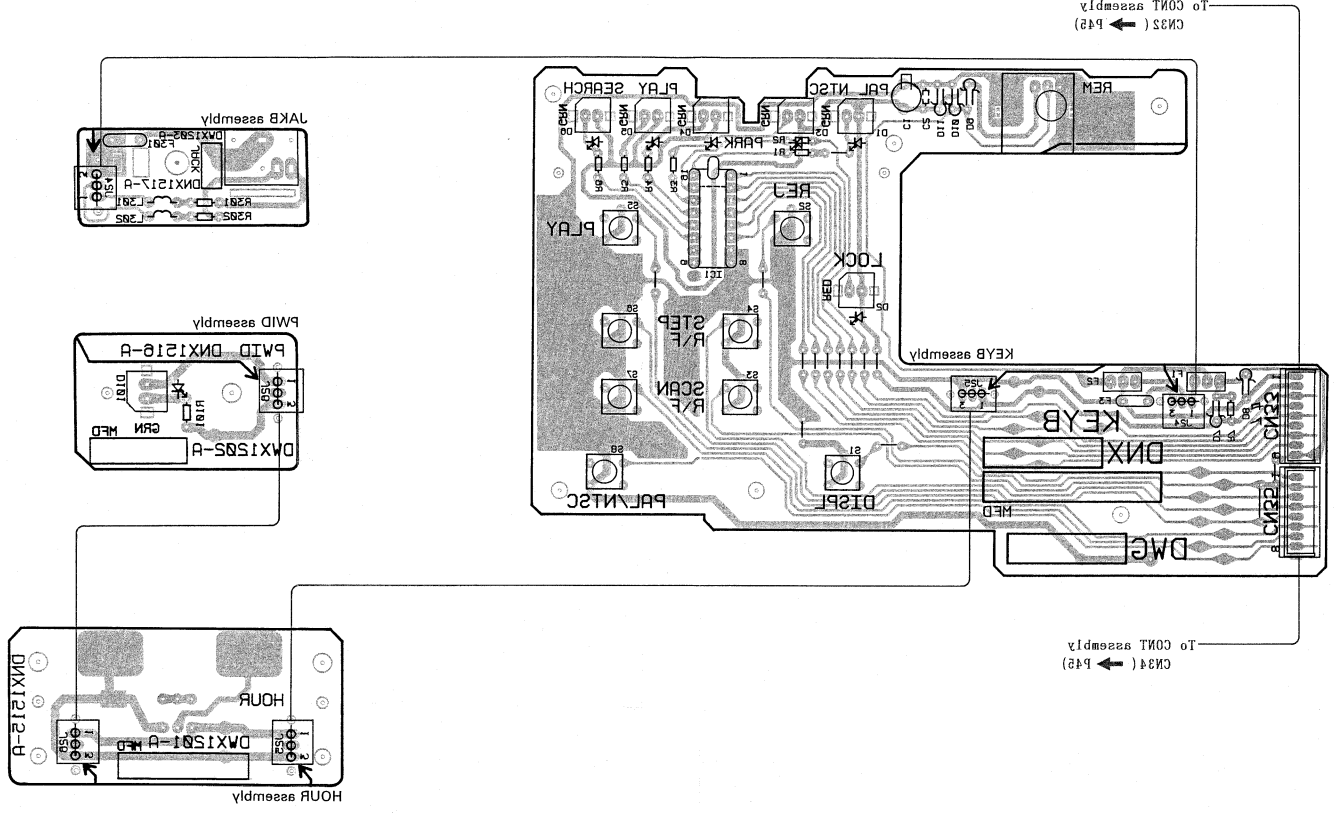
To CONT assembly
CN34
(To page 50)





P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name	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			Resistor array			Varactor
		Mylar capacitor			Electronic capacitor (Non polarized)			Resistor			Inductor
		SMD capacitor			Electrolytic capacitor (Polarized)			Resistor			Coil
		Diode			Electronic capacitor (Non polarized)			Resistor			Transformer
		Zenor diode			Electrolytic capacitor (Polarized)			Resistor			Filter
		LED			Electronic capacitor (Non polarized)			Thermistor			Tact switch

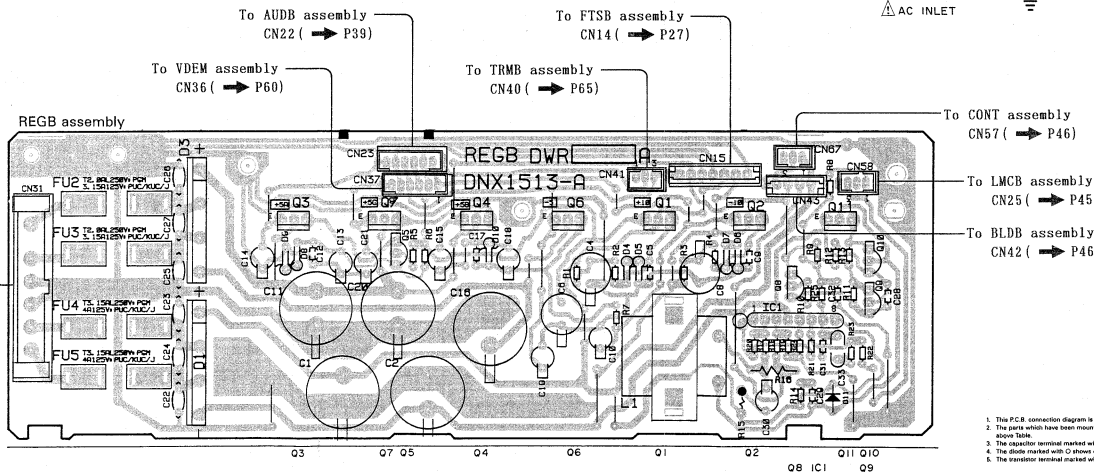
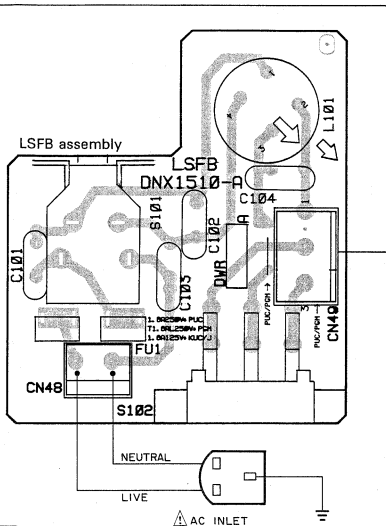
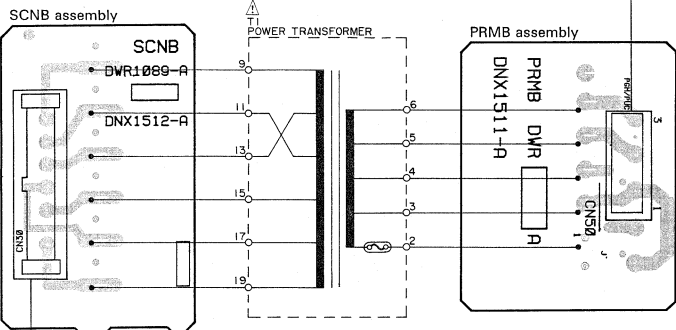
- This P.C.B. connection diagram is viewed from the parts mounted side.
- The parts which have been mounted on the board can be replaced with those shown with the corresponding writing symbols listed in the above Table.
- The capacitor terminal marked with shows negative terminal.
- The diode marked with shows cathode side.
- The resistor terminal marked with shows positive.



A
B
C
D

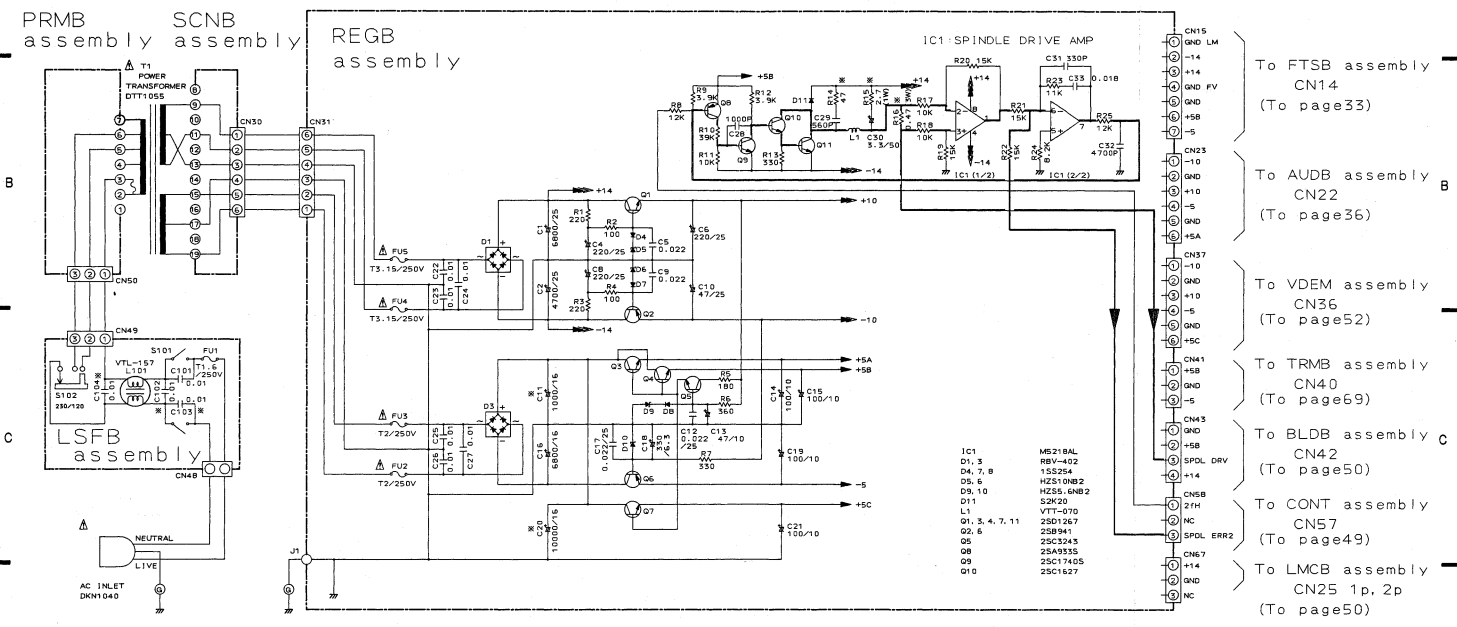
A
B
C
D

5.8 LSFB, PRMB, SCNB and REGB assembly



PCB pattern diagram indication	Corresponding part symbol	Part name
		Transformer
		FET
		Diode
		Zener diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Spray capacitor
		Electrolytic capacitor (non polarized)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi fixed resistor
		Resistor array
		Resistor
		Resistor
		Thermistor

1. This PCB connection diagram is viewed from the parts mounted side.
 2. The parts which have been mounted on the board can be recognized 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 resistor-terminal marked with shows orator.



- To FTSB assembly CN14 (To page33)
- To AUSB assembly CN22 (To page36)
- To VDEM assembly CN36 (To page52)
- To TRMB assembly CN40 (To page69)
- To BLDB assembly CN42 (To page50)
- To CONT assembly CN57 (To page49)
- To LMCA assembly CN25 1p, 2p (To page50)

6. PCB's PARTS LIST

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

560Ω	56 × 10 ¹	561.....	RD18PM	□ □ □ J
47kΩ	47 × 10 ³	473.....	RD14PS	□ □ □ J
0.5Ω	0RS.....		RN2H	□ □ □ K
1Ω	010.....		RS1P	□ □ □ K

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

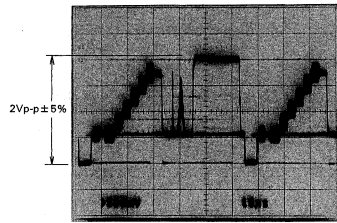
5.62kΩ	562 × 10 ¹	5621.....	RN14SR	□ □ □ F
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Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
CONT ASSEMBLY					
SEMICONDUCTORS					
IC1	MECHANISM CONT, MCU	PD0081A1	F1, 2	FILTER	VTH1001
IC10	LOGIC IC	TC74HC123AF	CAPACITORS		
IC11	QUAD 2-INPUT NAND	TC74HC00AF	VC201	VARIABLE CAPACITOR (10p)	PCM1001
IC12	SYSTEM PRESET IC	M51953BL	VC202	VARIABLE CAPACITOR (120p)	DCM1007
IC13	EEPROM	M6M80011AL			
IC2	MODE CONT, MCU	PD0110A	C1	ELECTR. CAPACITOR	CEAS101M10
IC201	IC	PA5012	C10, C11	CERAMIC CAPACITOR	CCSQSL102J50
IC204	IC	CK25085A	C12	CERAMIC CAPACITOR	CKSQYF473Z25
IC206	HEX INVERTER	TC74HCU04AF	C13	MYLOR FILM CAPACITOR	CQMA681J50
IC207	LOGIC IC	BU4053BF	C14	MYLOR FILM CAPACITOR	CQMA392J50
IC208	IC	PD6090B	C15	CERAMIC CAPACITOR	CKSQYF473Z25
IC209	IC	NM4658M-TR	C16	CHIP CAPACITOR	CKSQYF103Z50
IC4, 5	LOGIC IC	CKD195Q	C17, C18	CHIP CAPACITOR	CCSQCH180J50
IC7	LOGIC IC	TC74HC139AF	C19, C2	CERAMIC CAPACITOR	CKSQYF473Z25
IC8	LOGIC IC	BU4053BF	C20	CHIP CAPACITOR	CKSQYF103Z50
IC9	COMPARATOR	BA10393F	C201, C27	CHIP CAPACITOR	CKSQYF103Z50
IC1	SCHMITT INVERTER	TC74HC14AF	C202	ELECTR. CAPACITOR	CEAS470M10
Q1	DIGITAL TRANSISTOR	DTC124EK	C203	CHIP CAPACITOR	CCSQCH680J50
Q2	CHIP TRANSISTOR	2SC2412K	C204	CERAMIC CAPACITOR	CKSQYB681K50
Q201	DIGITAL TRANSISTOR	DTC124EK	C205	MYLOR FILM CAPACITOR	CQMA102J50
Q202	TRANSISTOR	DTC124ES	C206-208	CHIP CAPACITOR	CCSQCH101J50
Q203, 204	DIGITAL TRANSISTOR	DTC124EK	C209	ELECTR. CAPACITOR	CEAS470M10
Q205, 206	CHIP TRANSISTOR	2SA1037K	C21	CHIP CAPACITOR	CCSQCH330J50
Q208, 209	DIGITAL TRANSISTOR	DTA124EK	C210	PL. STYRENE CAPACITOR	QCSA181J50
Q210, 211	DIGITAL TRANSISTOR	DTC124EK	C211	MYLOR FILM CAPACITOR	CQMA682J50
Q3	CHIP TRANSISTOR	2SC2412K	C213	CHIP CAPACITOR	CKSQYF103Z50
Q4	DIGITAL TRANSISTOR	DTC124EK	C214	ELECTR. CAPACITOR	CEAS470M10
D1	CHIP DIODE ARRAY	DA204K	C216	CHIP CAPACITOR	CKSQYF103Z50
D201, 202	VARI-CAP DIODE	SVC321SP	C217	CHIP CAPACITOR	CCSQCH680J50
D203	CHIP DIODE ARRAY	DAN202K			
COILS					
L201	AXIAL INDUCTOR	LAU270J			
L202	AXIAL INDUCTOR	LAU010K			

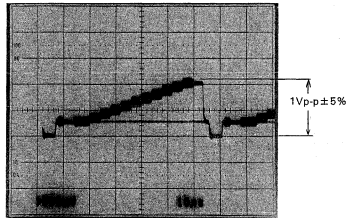
Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
C218	CHIP CAPACITOR	CCSQCH101J50	R2	RESISTOR ARRAY (4.7k)	RA8T47ZJ
C219	CHIP CAPACITOR	CKSQYF103Z50	R201	RESISTOR (4.7kΩ, 1/6W)	DCN1001
C22	CHIP CAPACITOR	CCSQCH330J50	R206	CARBON FILM RESISTOR	RD16PM183J
C220	ELECTR. CAPACITOR	CEAS470M10			
C221	ELECTROLYTIC CAPACITOR	CEANP0R1M50	R208	CARBON FILM RESISTOR	RD16PM103J
C222	AUDIO FILM CAPACITOR	CPTXA104J50	R209	RESISTOR (4.7kΩ, 1/6W)	DCN1001
C223	CHIP CAPACITOR	CKSQYF103Z50	R260, 261	CARBON FILM RESISTOR	RD16PM122J
C224	CERAMIC CAPACITOR	CKSQYB103K50	R272, 273	CARBON FILM RESISTOR	RD16PM122J
C225	CHIP CAPACITOR	CKSQYF103Z50			
C226	CERAMIC CAPACITOR	CKSQYB103K50	R276	CARBON FILM RESISTOR	RD16PM125J
C227	CHIP CAPACITOR	CKSQYF103Z50			
C228	CHIP CAPACITOR	CKSQYF103Z50			
C229	CERAMIC CAPACITOR	CKSQYB103K50		Other resistors	RS1/10S□□□
C23	MYLOR FILM CAPACITOR	CQMA473J50	OTHERS		
C230, 231	CERAMIC CAPACITOR	CCSQCH151J50		IC SOCKET	VKH-029
C232	MYLOR FILM CAPACITOR	CQMA182J50		IC SOCKET 28P	VKH1001
C234	MYLOR FILM CAPACITOR	CQMA272J50	X1	CERAMIC RESONATOR	VSS1040
C235	MYLOR FILM CAPACITOR	CQMA472J50	X2	CRYSTAL RESONATOR	DSS1010
C236	MYLOR FILM CAPACITOR	CQMA472J50	X201	CRYSTAL RESONATOR (14.318MHz)	VSS1029
C237	MYLOR FILM CAPACITOR	CQMA122J50	X202	CRYSTAL RESONATOR (3.750MHz)	DSS1019
C238	ELECTR. CAPACITOR	CEAS470M10	EXTB ASSEMBLY		
C239	CHIP CAPACITOR	CKSQYF103Z50	SEMICONDUCTORS		
C24	MYLOR FILM CAPACITOR	CQMA103J50	IC1, 2	DUAL MMV IC	TC74HC221AF
C240, 241	CHIP CAPACITOR	CKSQYF103Z50	IC3	QUAD 2-INPUT NAND	TC74HC74AF
C244	ELECTR. CAPACITOR	CEAS470M10	IC4, 5	QUAD 2-INPUT NAND	TC74HC00AF
C247	AUDIO FILM CAPACITOR	CPTXA104J50	Q1	CHIP TRANSISTOR	2SA1037K
C248, 249	MYLOR FILM CAPACITOR	CQMA102J50	Q2	CHIP TRANSISTOR	2SC2412K
C250	ELECTR. CAPACITOR	CEAS470M10	Q3	DIGITAL TRANSISTOR	DTA124EK
C251, 252	CHIP CAPACITOR	CKSQYF103Z50	Q4	DIGITAL TRANSISTOR	DTC124EK
C253	ELECTR. CAPACITOR	CEAS470M10	Q5	CHIP TRANSISTOR	2SC2412K
C254, 260	CHIP CAPACITOR	CKSQYF103Z50	D1-3	DIODE	1SS254
C255	ELECTR. CAPACITOR	CEAS470M10	D5	DIODE	1SS254
C256	MYLOR FILM CAPACITOR	CQMA393J50	SWITCH		
C259	CHIP CAPACITOR	CCSQCH121J50	S1	SWITCH	VSK-005
C25, 26	CHIP CAPACITOR	CKSQYF103Z50	COIL		
C3-7	ELECTR. CAPACITOR	CEAS470M10	F1	FILTER	VTH1001
C8	ELECTR. CAPACITOR	CEAS47M50	CAPACITORS		
C9	CERAMIC CAPACITOR	CKSQYF473Z25	C1	ELECTR. CAPACITOR	CEAS470M16
RESISTORS			C10-13	CERAMIC CAPACITOR	CKSQYF473Z25
VR201	VR	VRTB6VS473	C14	ELECTROLYTIC CAPACITOR	CEASR10M50
R1	RESISTOR ARRAY (4.7k)	RA8T47ZJ	C15	CERAMIC CAPACITOR	CCSQSL102J50
R120	RESISTOR ARRAY (10k)	RA6T103J	C2-4	MYLOR FILM CAPACITOR	CQMA102J50

● Waveforms

● Video Level Adjustment

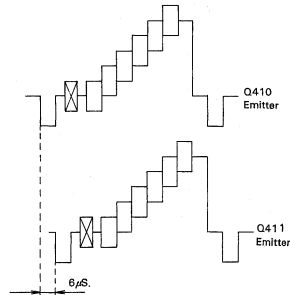


Waveform 1 (NTSC)



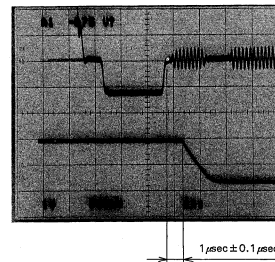
Waveform 2 (PAL)

● VCO (CCD) Centering Frequency Adjustment

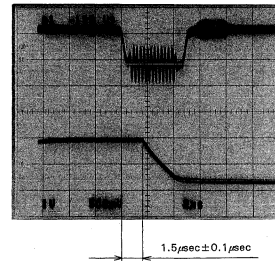


Waveform 3 (1H+6µsec delay)

● Burst Gate Timing Adjustment

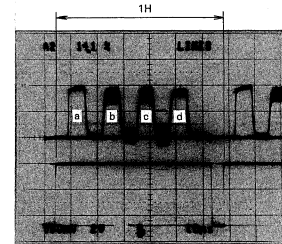


Waveform 4 (NTSC)

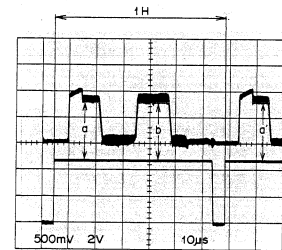


Waveform 4 (PAL)

● Chroma Adjustment



Waveform 5 (NTSC)



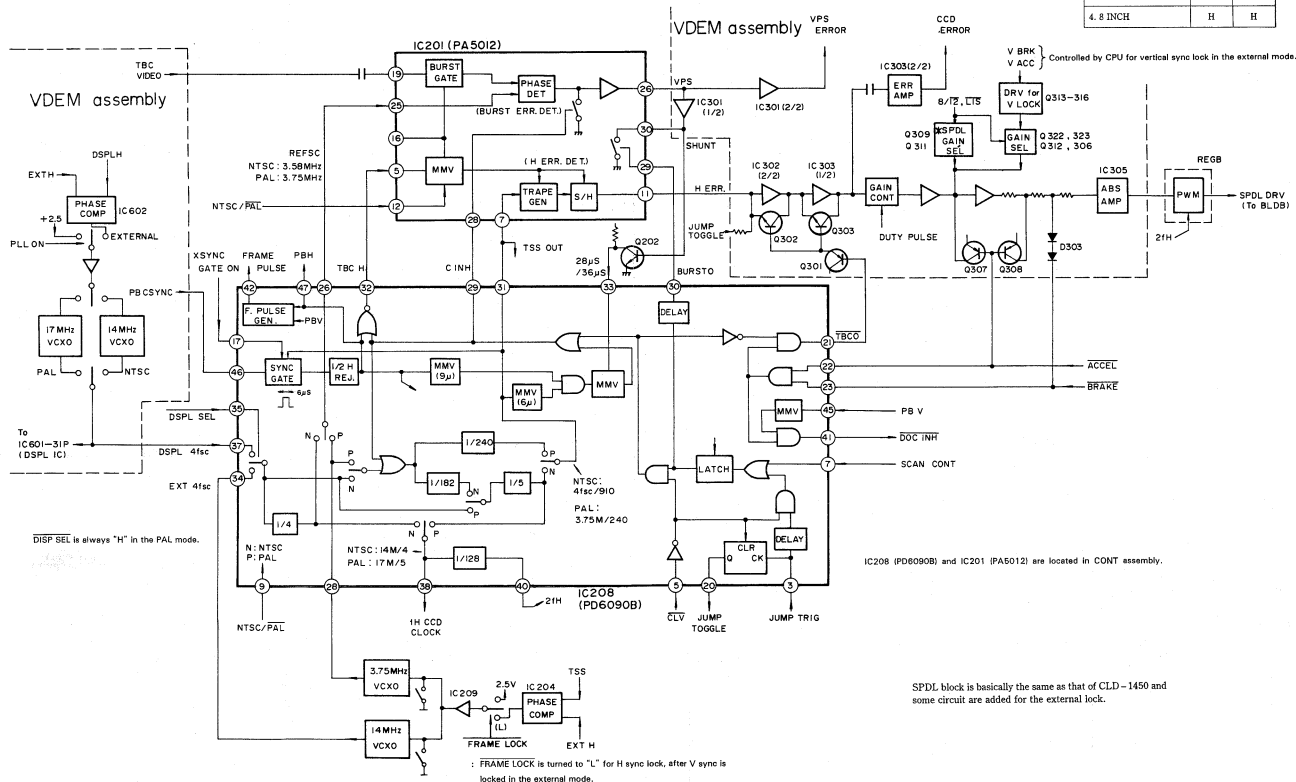
Waveform 6 (PAL)

9. BLOCK DIAGRAM

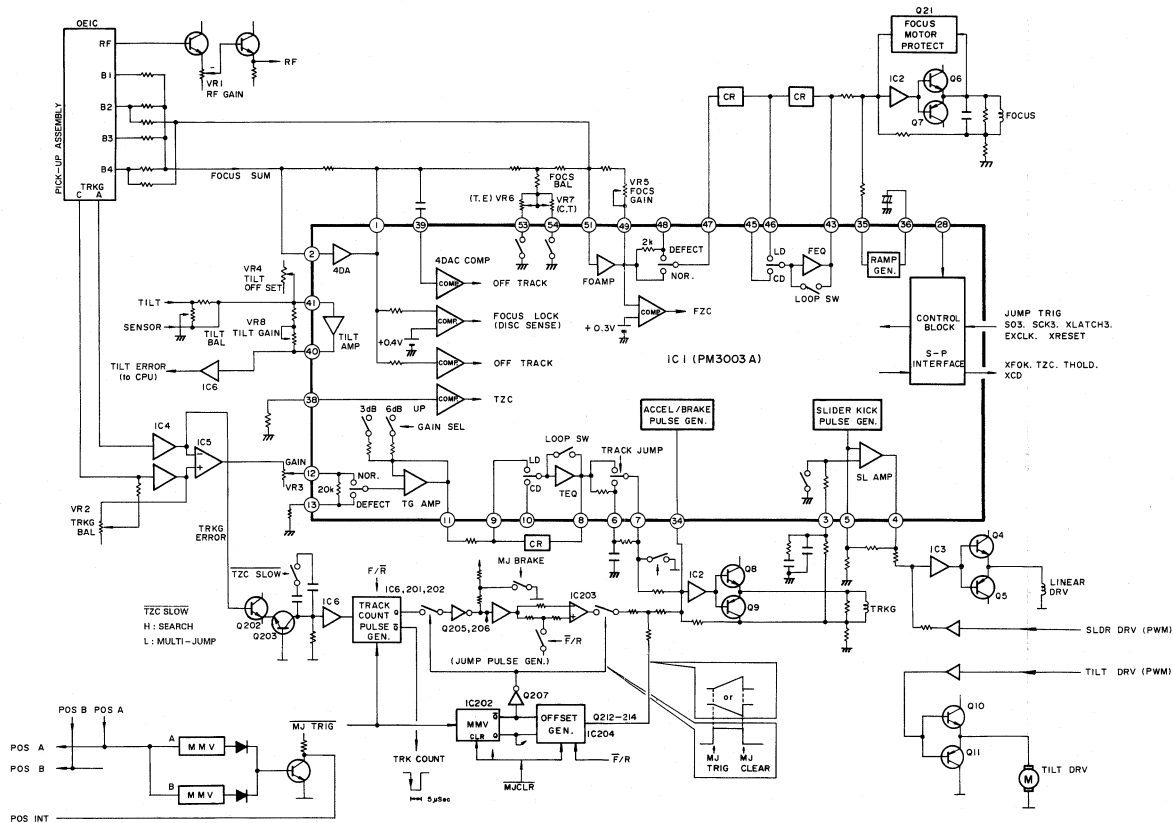
9.1 SPDL BLOCK DIAGRAM

NOTE :

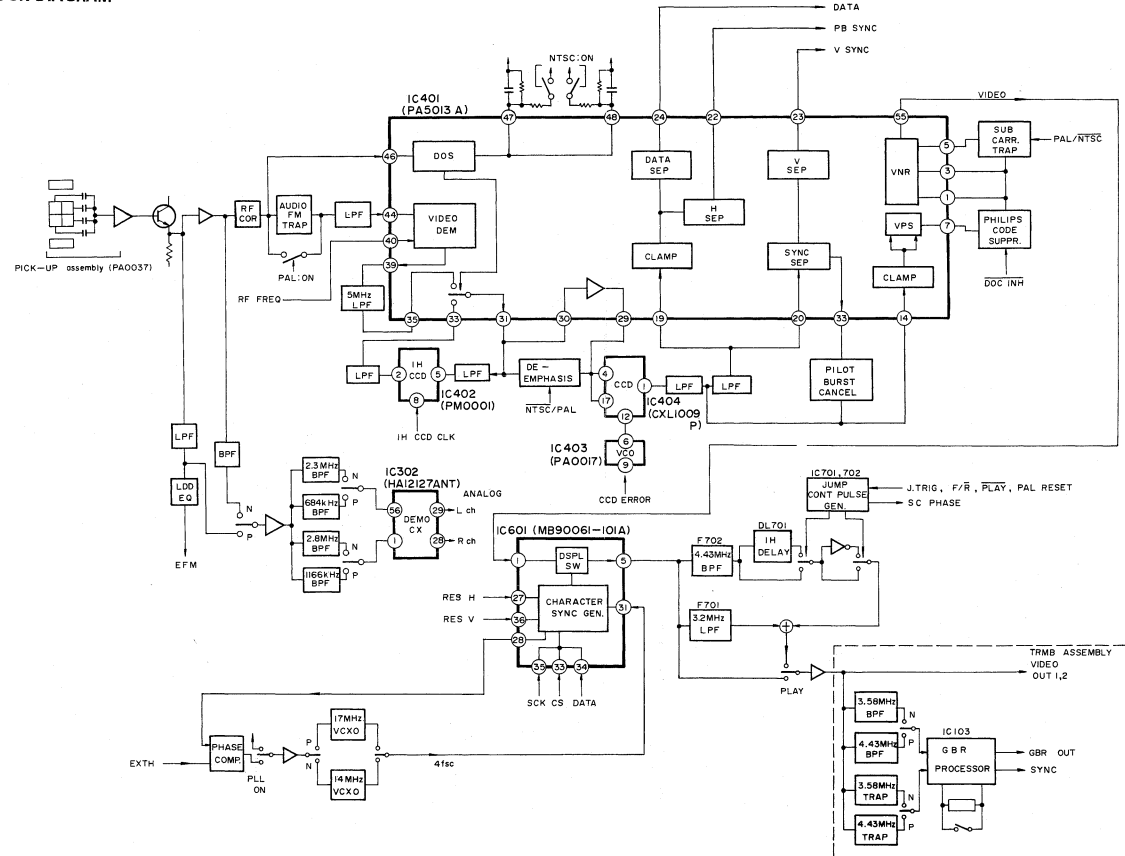
*SPDL GAIN SEL	IIS	8/12
1. ALUMINIUM	L	L
2. 12 INCH	H	L
3. 12 INCH SINGLE	L	H
4. 8 INCH	H	H



9.2 FTS BLOCK DIAGRAM



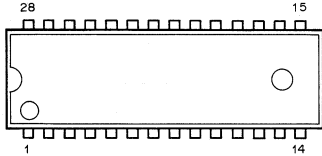
9.3 VIDEO BLOCK DIAGRAM



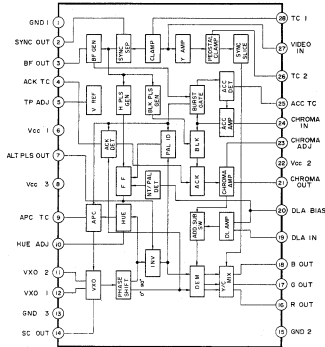
10. IC INFORMATION

■ IC103 (V7021) : NTSC/PAL DECODER

● Pin Assignment



● Block Diagram



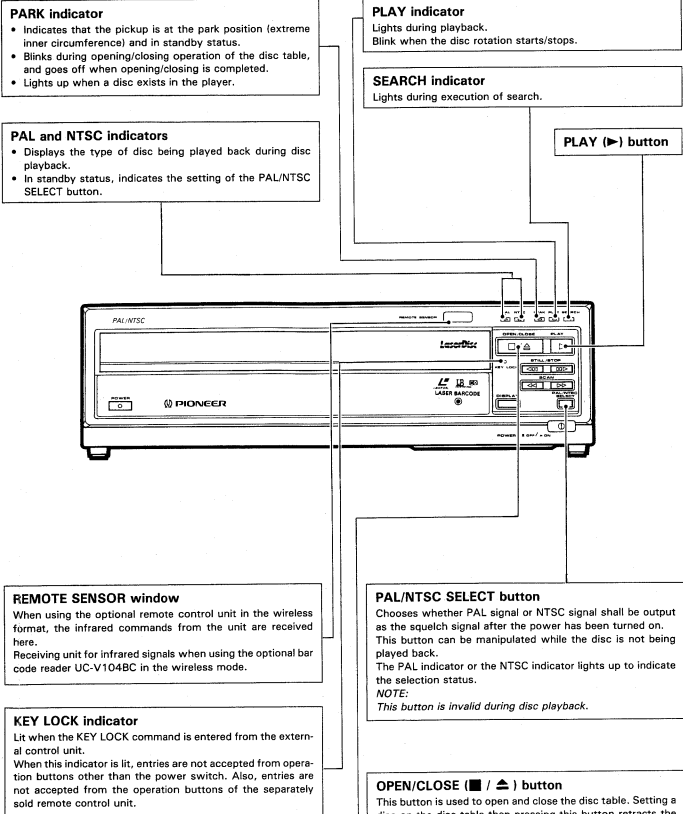
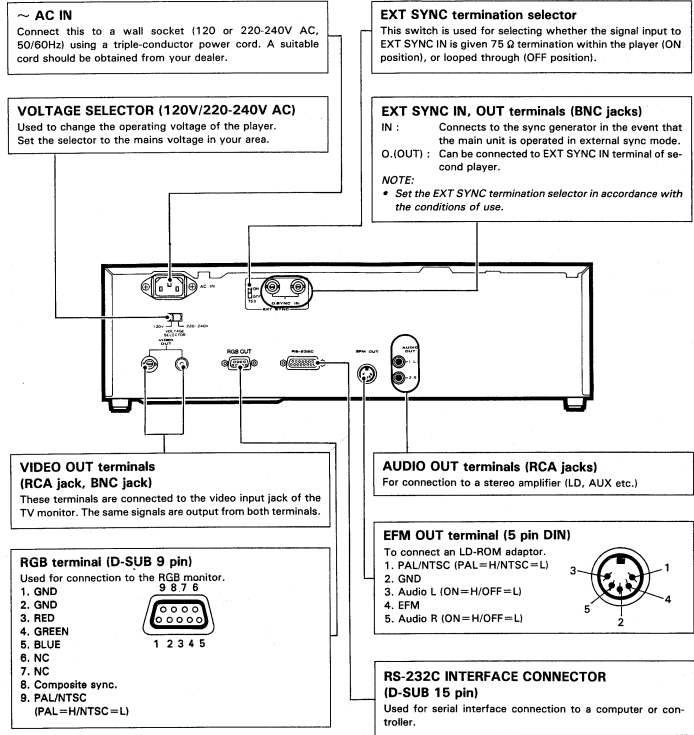
● Pin Function

● External applied voltage

No.	Symbol	Description
1	GND1	GND terminal of Y AMP and SYNC SEP.
2	SYNC OUT	Output terminal of COMPOSIT SYNC. (TTL level)
3	BF OUT	Burst flag output terminal. (TTL level)
4	ACK TC	Time constant terminal of ACK (automatic color killer).
5	TP ADJ	Burst flag position adjustment terminal. The burst flag position can be adjusted to tp (BF) = 5.6 μs by changing the current from this terminal.
6	Vcc 1	Power terminal of Y AMP and SYNC SEP.
7	ALT PLS OUT	Line alternate pulse output terminal. During NTSC mode : L. During PAL mode : Alternately changes H to L and vice versa at every 1H.
8	Vcc 3	Power terminal of APC, HUE and VXO.
9	APC TC	APC (color synchronous) time constant and f0 adjustment terminal. The free-run frequency of VXO can be adjusted by changing the DC voltage on this terminal to variable.
10	HUE ADJ	HUE adjustment terminal. Hue over ±30° can be adjusted by applying a voltage of 0 to 5V to this terminal. For the PAL mode, ground this terminal using a capacitor.
11	VXO 2	Crystal oscillator terminal

No.	Symbol	Description
12	VXO 1	Crystal oscillator terminal
13	GND 3	GND terminal of APC, HUE and VXO.
14	SC OUT	Subcarrier output terminal
15	GND 2	GND terminal of the demodulator and the Y/C mixer.
16	R OUT	R output terminal
17	G OUT	G output terminal
18	B OUT	B output terminal
19	DLA IN	DL amplifier input terminal. Ground this terminal for the NTSC mode. Connect to the 1HDL IN terminal for the PAL mode.
20	DLA BIAS	NTSC/PAL mode switching and DL amplifier gain adjustment terminal. By changing the voltage on this terminal, the mode can be changed from NTSC to PAL and vice versa, and the gain of the DL amplifier in the PAL mode can be adjusted. $V_{DL} \leq 0.8V$: NTSC mode $2.0V \leq V_{DL} \leq 2.8V$: PAL mode Variable range : ±30B or more
21	CHROMA OUT	Chroma output terminal. Connect to Vcc2 for the NTSC mode. Connect to the 1HDL IN terminal for the PAL mode.
22	Vcc 2	Power terminal of demodulator and Y/C mixer.
23	CHROMA ADJ	Chroma amplifier gain adjustment terminal. The gain of the chroma amplifier can be adjusted by changing the voltage on this terminal. $V_{CA} \leq 0.8V$: Monochrome mode (free run) $2.0V \leq V_{CA} \leq 3.0V$: Color mode Variable range : -20 to 0dB or more
24	CHROMA IN	Chroma signal input terminal. The standard input level is burst amplification of 143mVp-p.
25	ACC TC	ACC (automatic color control) time constant terminal.
26	TC 2	Pedestal clamp time constant terminal
27	VIDEO IN	Video signal (luminance and synchronous signals) input terminal. The standard input level is 0.38Vp-p.
28	TC 1	Clamp time constant terminal for SYNC SEP.

11. PANEL FACILITIES



Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
C5	ELECTR. CAPACITOR	CEAS010M50	Q5	TRANSISTOR	2SC3243
C6	MYLOR FILM CAPACITOR	CQMA102J50	Q6	TRANSISTOR	2SB941
C7, 8	ELECTR. CAPACITOR	CEAS470M16	Q7	TRANSISTOR	2SD1267
C9	CERAMIC CAPACITOR	CKSQYF473Z25	Q8	TRANSISTOR	2SA9335
			Q9	TRANSISTOR	2SC1740S
RESISTORS			D1	BRIDGE STACK	RBV-402
R2	CARBON FILM RESISTOR	RD1/6PM222J	D10	ZENER DIODE	HZS5.6NB2
R3	CARBON FILM RESISTOR	RD1/6PM103J	D11	FAST RECOVERY DIODE	S2K20
R4	CARBON FILM RESISTOR	RD1/6PM750J	D3	BRIDGE STACK	RBV-402
	Other resistors	RS1/10S□□□□	D4	DIODE	1SS254
OTHERS			D5, 6	ZENER DIODE	HZS10NB2
JA1	BNC ASSY	DKN1038	D7, 8	DIODE	1SS254
			D9	ZENER DIODE	HZS5.6NB2
LSFB ASSEMBLY			COILS		
SWITCHES			L1	COIL	VIT-070
△ S101	SWITCH	VSA-011	CAPACITORS		
△ S102	VOLTAGE SELECTOR SW	DSH1015	C1	CAPACITOR (1000 μ /35)	DCH1041
COIL			C10	ELECTR. CAPACITOR	CEAS470M25
△ L101	FILTER	VTL-157	C11	CAPACITOR (10000 μ /16)	VCH1050
CAPACITORS			C12	CERAMIC CAPACITOR	CKPUYF223Z25
△ C101-104	CAPACITOR (CERAMIC)	VCG-048	C13	ELECTROLYTIC CAPACITOR	CEHAQ470M10
PRMB ASSEMBLY			C14, 15	ELECTROLYTIC CAPACITOR	CEHAQ101M10
No parts are supplied with the PRMB assembly.			C16	ELECTROLYTIC CAPACITOR	CEAS682M16
SCNB ASSEMBLY			C17	CERAMIC CAPACITOR	CKPUYF223Z25
No parts are supplied with the SCNB assembly.			C18	ELECTROLYTIC CAPACITOR	CEHAQ331M6R3
REGB ASSEMBLY			C19	ELECTR. CAPACITOR	CEAS101M10
SEMICONDUCTORS			C2	ELECTROLYTIC CAPACITOR	CEAS472M25
IC1	OP-AMP-IC	M5218AL	C20	CAPACITOR (10000 μ /16)	VCH1050
Q1	TRANSISTOR	2SD1267	C21	ELECTROLYTIC CAPACITOR	CEHAQ101M10
Q10	TRANSISTOR	2SC1627	C22-27	CERAMIC CAPACITOR	CKCYF103Z50
Q11	TRANSISTOR	2SD1267	C28	CERAMIC CAPACITOR	CKPUYB102K50
Q2	TRANSISTOR	2SB941	C29	AXIAL CAPACITOR	CKPUYB561K50
Q3, 4	TRANSISTOR	2SD1267	C30	ELECTR. CAPACITOR	CEAS9R3M50
			C31	CERAMIC CAPACITOR	CKPUYB331K50
			C32	MYLOR FILM CAPACITOR	CQMA472J50
			C33	MYLOR FILM CAPACITOR	CQMA183J50
			C4	ELECTROLYTIC CAPACITOR	CEHAQ221M25
			C5	CERAMIC CAPACITOR	CKPUYF223Z25
			C6	ELECTR. CAPACITOR	CEAS221M25
			C8	ELECTROLYTIC CAPACITOR	CEHAQ221M25
			C9	CERAMIC CAPACITOR	CKPUYF223Z25

Mark No.	Description	Parts No.
RESISTORS		
R14	RESISTOR (47 Ω , 1/6W)	DCN1003
R15	RESISTOR (2.7 Ω , 3W)	VCN-100
R16	RESISTOR (0.47 Ω , 3W)	DCN1013
R17, 18	METALFILM RESISTOR	RN1/6PQ1002F
R19	METALFILM RESISTOR	RN1/6PQ1502F
R20	METALFILM RESISTOR	RN1/6PQ1502F
	Other resistors	RD1/6PM□□□□

VDEM ASSEMBLY**SEMICONDUCTORS**

IC301-305	IC	NJM4558M-TR
IC401	VIDEO IC	PA5013A
IC402	CDD DELAY LINE	PM0001
IC403	IC	PA0017
IC404	IC	CXL1009P
IC406-409	LOGIC IC	TC4S66F-TR
IC410	REGULATOR IC	NJM79L05A
IC411	REGULATOR IC	NJM78L05A
IC601	DISP IC	MB90061-101A
IC602	IC	CX23065A
IC603	LOGIC IC	BU4053B
IC604	LOGIC IC	TC74HC04AP
IC605	LOGIC IC	SN74LS00N
IC608	LOGIC IC	TC74HC221AP
IC609	OP-AMP-IC	M5218AL
IC701	LOGIC IC	TC74HC221AP
IC702	CMOS, IC	TC74HC107AP
IC703	LOGIC IC	TC74HC00AP
IC704	ANALOG SWITCH	TC74HC4053AP
Q301	TRANSISTOR	DTA124ES
Q302-305	CHIP TRANSISTOR	2SC2412K
Q306-308	DIGITAL TRANSISTOR	DTA124EK
Q309-311	DIGITAL TRANSISTOR	DTC124EK
Q312	CHIP TRANSISTOR	2SC2412K
Q313	DIGITAL TRANSISTOR	DTC124EK
Q314	DIGITAL TRANSISTOR	DTA124EK
Q315	DIGITAL TRANSISTOR	DTC124EK
Q316	DIGITAL TRANSISTOR	DTA124EK
Q317	TRANSISTOR	2SC1740S
Q318	CHIP TRANSISTOR	2SA1037K
Q319	TRANSISTOR	2SA933S
Q320	CHIP TRANSISTOR	2SA1037K
Q321	TRANSISTOR	2SC3064
Q322, 323	CHIP TRANSISTOR	2SC2412K
Q401	CHIP TRANSISTOR	2SC2412K
Q402, 403	CHIP TRANSISTOR	2SA1037K
Q404	CHIP TRANSISTOR	2SC2412K
Q405	CHIP TRANSISTOR	2SA1037K
Q406, 407	DIGITAL TRANSISTOR	DTA124EK

Mark No.	Description	Parts No.
Q408	CHIP TRANSISTOR	2SC2412K
Q409	CHIP TRANSISTOR	2SA1037K
Q410	CHIP TRANSISTOR	2SC2412K
Q411	CHIP TRANSISTOR	2SA1037K
Q412-415	CHIP TRANSISTOR	2SC2412K
Q416-418	CHIP TRANSISTOR	2SA1037K
Q419	CHIP TRANSISTOR	2SC2412K
Q420-422	CHIP TRANSISTOR	2SA1037K
Q423	CHIP TRANSISTOR	2SC2412K
Q424	DIGITAL TRANSISTOR	DTC124EK
Q425	CHIP TRANSISTOR	2SA1037K
Q428	DIGITAL TRANSISTOR	DTC124EK
Q429	DIGITAL TRANSISTOR	DTA124EK
Q430	CHIP TRANSISTOR	2SA1037K
Q431	CHIP TRANSISTOR	2SC2412K

Q432-434	CHIP TRANSISTOR	2SA1037K
Q435	CHIP TRANSISTOR	2SC2412K
Q601-603	CHIP TRANSISTOR	2SA1037K
Q604	CHIP TRANSISTOR	2SA1037K
Q605, 606	CHIP TRANSISTOR	2SC2412K
Q607, 608	CHIP TRANSISTOR	2SA1037K
Q609	CHIP TRANSISTOR	2SC2412K
Q610, 611	DIGITAL TRANSISTOR	DTC124EK
Q702, 703	CHIP TRANSISTOR	2SC2412K
Q705	CHIP TRANSISTOR	2SC2412K

Q706	CHIP TRANSISTOR	2SA1037K
Q707-714	CHIP TRANSISTOR	2SC2412K
Q715	DIGITAL TRANSISTOR	DTA124EK

D301, 302	ZENER DIODE	HZ53B2
D303-305	CHIP DIODE ARRAY	DA204K
D306	DIODE	1S254
D307	CHIP DIODE ARRAY	DA204K
D308, 309	DIODE	1S254

D310, 311	CHIP DIODE ARRAY	DAN202K
D312	DIODE	1S254
D313	CHIP DIODE ARRAY	DAN202K
D314, 315	DIODE	1S254
D316	CHIP DIODE ARRAY	DAN202K

D401-403	DIODE	1S254
D601	DIODE	1S254
D602	VARI-CAP DIODE	SVC321SP
D603	VARI-CAP DIODE	1SV68

COILS

L401	AXIAL INDUCTOR	LAU101J
L402, 403	AXIAL INDUCTOR	LAU220J
L404, 405	AXIAL INDUCTOR	LAU120J
L406	AXIAL INDUCTOR	LAU430J
L407	AXIAL INDUCTOR	LAU390J
L408	AXIAL INDUCTOR	LAU620J
L409	AXIAL INDUCTOR	LAU390J
L410	RADIAL INDUCTOR	LFA221J
L411	AXIAL INDUCTOR	LAU101J
L412	RADIAL INDUCTOR	LFA221J

Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
L413, 414	AXIAL INDUCTOR	LAU120J	C320	ELECTR. CAPACITOR	CEAL4R7M50
L415	AXIAL INDUCTOR	LAU220J	C321	MYLOR FILM CAPACITOR	CQMA103J50
L416	AXIAL INDUCTOR	LAU680J			
L417	AXIAL INDUCTOR	LAU121J			
L418	AXIAL INDUCTOR	LAU180J	C322	ELECTR. CAPACITOR	CEANP4R7M16
			C323	CHIP CAPACITOR	CCS2QL102J50
L419	AXIAL INDUCTOR	LAU120J	C324	CHIP CAPACITOR	CCSQCH01J50
L420	AXIAL INDUCTOR	LAU560J	C325	ELECTR. CAPACITOR	CEAL470M16
L421	AXIAL INDUCTOR	LAU330J	C326	CHIP CAPACITOR	CKSQYF103Z50
L422	RADIAL INDUCTOR	LFA561J			
L423, 424	RADIAL INDUCTOR	LFA100J	C327	ELECTR. CAPACITOR	CEAS470M10
			C328	CHIP CAPACITOR	CKSQYF103Z50
L601	RADIAL INDUCTOR	LFA101J	C329	ELECTR. CAPACITOR	CEAS470M10
L602	AXIAL INDUCTOR	LAU100J	C330	ELECTROLYTIC CAPACITOR	CEALNP470M6R3
L603	AXIAL INDUCTOR	LAU220J			
L604	AXIAL INDUCTOR	LAU010K	C401-403	CERAMIC CAPACITOR	CCSQCH151J50
L605	RADIAL INDUCTOR	LFA100J			
			C404	CHIP CERAMIC C,	CCSQCH221J50
L701, 702	AXIAL INDUCTOR	LAU8R2J	C405	CERAMIC CAPACITOR	CCSQCH270J50
L703, 704	RADIAL INDUCTOR	LFA100J	C406	CERAMIC CAPACITOR	CCSQCH390J50
			C407	CERAMIC CAPACITOR	CCSQCH120J50
DL701	FILTER	VTF1019	C408	CERAMIC CAPACITOR	CCSQCH470J50
F601, 602	FERRITE CORE	DTF1013	C411, 412	CHIP CERAMIC C,	CCSQCH220J50
F701	FILTER	VTF1011	C413	CHIP CAPACITOR	CKSQYF103Z50
F702	FILTER	VTF1034	C414	CERAMIC CAPACITOR	CKSQYB103K50
			C415	CERAMIC CAPACITOR	CCSQCH120J50
			C416	CERAMIC CAPACITOR	CKSQYB103K50
CAPACITORS					
VC601	VARIABLE CAPACITOR (20p)	DCM1005	C417	CERAMIC CAPACITOR	CCSQCH470J50
VC602	VARIABLE CAPACITOR (10p)	PCM1001	C418	CERAMIC CAPACITOR	CCSQCH390J50
			C419, 420	CHIP CAPACITOR	CKSQYF103Z50
C301, 302	CHIP CAPACITOR	CKSQYF103Z50	C421	ELECTR. CAPACITOR	CEAS470M10
C303	AUDIO FILM CAPACITOR	CFTXA563J50	C422	MYLOR FILM CAPACITOR	CQMA102J50
C304	ELECTR. CAPACITOR	CEANP220M10	C423	MYLOR FILM CAPACITOR	CQMA103J50
C305	MYLOR FILM CAPACITOR	CQMA153J50	C424	ELECTR. CAPACITOR	CEAS470M10
C306	MYLOR FILM CAPACITOR	CQMA103J50	C425	CHIP CAPACITOR	CKSQYF103Z50
			C426	CERAMIC CAPACITOR	CCSQCH270J50
			C427	AXIAL CERAMIC C,	CCPUCH100J50
C307	AUDIO FILM CAPACITOR	CFTXA124J50	C428	AXIAL CERAMIC C,	CCPUSL470J50
C308	MYLOR FILM CAPACITOR	CQMA223J50	C429	AXIAL CERAMIC C,	CCPUSL390J50
			C430	CHIP CAPACITOR	CCSQCH100D50
C309	ELECTR. CAPACITOR	CEAS470M10	C431	ELECTR. CAPACITOR	CEAS4R7M50
C310	AUDIO FILM CAPACITOR	CFTXA394J50	C434	CHIP CAPACITOR	CCSQSL471J50
C311	AUDIO FILM CAPACITOR	CFTXA104J50	C435, 436	CHIP CAPACITOR	CKSQYF103Z50
			C437	CHIP CERAMIC C,	CCSQCH221J50
			C438	ELECTR. CAPACITOR	CEAS470M10
C312	ELECTR. CAPACITOR	CEANP220M10	C439	CERAMIC CAPACITOR	CKPUYF103N16
C313	MYLOR FILM CAPACITOR	CQMA393J50	C440, 441	CHIP CAPACITOR	CKSQYF103Z50
C314	CHIP CAPACITOR	CKSQYF103Z50	C442	CHIP CAPACITOR	CCSQCH101J50
C315	ELECTR. CAPACITOR	CEAS470M10	C443	CHIP CAPACITOR	CCSQCH330J50
C316	CHIP CAPACITOR	CKSQYF103Z50	C444	CHIP CERAMIC C,	CCSQCH271J50
			C445, 446	CHIP CAPACITOR	CKSQYF103Z50
			C447, 448	ELECTR. CAPACITOR	CEAS470M10
C317	ELECTR. CAPACITOR	CEAS470M10			
C318	ELECTROLYTIC CAPACITOR	CEALNP330M10	C449	ELECTR. CAPACITOR	CEAS4R7M50
			C450, 451	CHIP CAPACITOR	CCSQCH330J50
C319	ELECTROLYTIC CAPACITOR	CEALNP470M6R3	C452, 453	CHIP CAPACITOR	CKSQYF103Z50
			C454	AUDIO FILM CAPACITOR	CFTXA104J50

Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
C455	ELECTR. CAPACITOR	CEAS3R3M50	C513, 514	ELECTR. CAPACITOR	CEAS470M10
C456	CERAMIC CAPACITOR	CKSQYB103K50	C515, 516	CHIP CAPACITOR	CKSQYF103Z50
C457	CERAMIC CAPACITOR	CKSQYF473Z25	C517, 518	ELECTR. CAPACITOR	CEAS470M10
C458	ELECTROLYTIC CAPACITOR	CEAS471M6R3	C519	CHIP CAPACITOR	CKSQYF103Z50
C459	CERAMIC CAPACITOR	CKSQYF473Z25	C520	CERAMIC CAPACITOR	CCS QL391J50
C460	ELECTR. CAPACITOR	CEAS220M25	C521	CERAMIC CAPACITOR	CCS QL102J50
C461, 462	ELECTR. CAPACITOR	CEAS3R3M50	C522	CERAMIC CAPACITOR	CKSQYB103K50
C463	AUDIO FILM CAPACITOR	CPTXA224J50	C524	CHIP CERAMIC C,	CCSQCH220J50
C464	CERAMIC CAPACITOR	CKSQYF473Z25	C525-527	CHIP CAPACITOR	CKSQYF103Z50
C465-467	ELECTR. CAPACITOR	CEAS470M10	C601	ELECTR. CAPACITOR	CEAS470M10
C468, 469	CERAMIC CAPACITOR	CKSQYF473Z25	C602	CHIP CAPACITOR	CKSQYF103Z50
C470	CHIP CERAMIC C,	CCSQCH220J50	C603	ELECTR. CAPACITOR	CEAS470M10
C471	CERAMIC CAPACITOR	CCSQCH390J50	C604 605	CHIP CAPACITOR	CKSQYF103Z50
C472	CHIP CAPACITOR	CCSQCH680J50	C606	CERAMIC CAPACITOR	CCSQCH270J50
C473	CERAMIC CAPACITOR	CCSQCH120J50	C607	CHIP CERAMIC C,	CCSQCH220J50
C474	ELECTROLYTIC CAPACITOR	CEANP470M10	C608	CHIP CAPACITOR	CCSQCH060D50
C475, 476	CHIP CAPACITOR	CKSQYF103Z50	C609	ELECTR. CAPACITOR	CEAS470M10
C478	CERAMIC CAPACITOR	CCSQCH470J50	C610	MYLOR FILM CAPACITOR	CQMA104J50
C479	CHIP CERAMIC C,	CCSQCH150J50	C611, 612	CHIP CAPACITOR	CKSQYF103Z50
C480	CHIP CERAMIC C,	CCSQCH221J50	C613	CHIP CAPACITOR	CCSQCH680J50
C481	CHIP CAPACITOR	CKSQYF103Z50	C614	CHIP CERAMIC C,	CCSQCH271J50
C482, 483	ELECTR. CAPACITOR	CEAS470M10	C615	CHIP CAPACITOR	CKSQYF103Z50
C484	CHIP CAPACITOR	CKSQYF103Z50	C616	CHIP CERAMIC C,	CCSQCH221J50
C485	MYLOR FILM CAPACITOR	CQMA104J50	C618	CERAMIC CAPACITOR	CKSQYB103K50
C486	MYLOR FILM CAPACITOR	CQMA103J50	C619	CHIP CAPACITOR	CKSQYF103Z50
C487	ELECTR. CAPACITOR	CEAS220M25	C620	CHIP CERAMIC C,	CCSQCH221J50
C489	CHIP CAPACITOR	CCSQCH101J50	C621-623	CHIP CAPACITOR	CKSQYF103Z50
C490, 491	CHIP CAPACITOR	CKSQYF103Z50	C625	CHIP CAPACITOR	CKSQYF103Z50
C492	ELECTR. CAPACITOR	CEAS470M10	C627	MYLOR FILM CAPACITOR	CQMA182J50
C493	AUDIO FILM CAPACITOR	CPTXA683J50	C628	MYLOR FILM CAPACITOR	CQMA102J50
C494	ELECTR. CAPACITOR	CEAS100M50	C629	CHIP CAPACITOR	CCSQCH101J50
C495	CHIP CAPACITOR	CCS QL102J50	C630	MYLOR FILM CAPACITOR	CQMA393J50
C496	CERAMIC CAPACITOR	CCSQCH390J50	C631	MYLOR FILM CAPACITOR	CQMA104J50
C497	ELECTR. CAPACITOR	CEAS470M10	C632	CERAMIC CAPACITOR	CCCCH100D50
C498	CHIP CAPACITOR	CKSQYF103Z50	C704	ELECTR. CAPACITOR	CEANP101M6R3
C499	CERAMIC CAPACITOR	CCSQCH560J50	C705	ELECTROLYTIC CAPACITOR	CEAS221M6R3
C500	CERAMIC CAPACITOR	CCSQCH390J50	C708	ELECTROLYTIC CAPACITOR	CEANP470M10
C501	CHIP CERAMIC C,	CCSQCH220J50	C709-713	CERAMIC CAPACITOR	CKSQYB103K50
C502	AUDIO FILM CAPACITOR	CPTXA4473J50	C714, 715	CERAMIC CAPACITOR	CKCYB681K50
C503	CHIP CAPACITOR	CKSQYF103Z50	C716	ELECTR. CAPACITOR	CEAS470M10
C504	CHIP CAPACITOR	CCSQCH910J50	C717, 718	MYLOR FILM CAPACITOR	CQMA473J50
C505	CHIP CAPACITOR	CKSQYF103Z50	C719, 720	ELECTR. CAPACITOR	CEAS470M10
C506	ELECTR. CAPACITOR	CEAS470M10	C721, 722	CHIP CAPACITOR	CKSQYF103Z50
C507	ELECTR. CAPACITOR	CEANP220M10	C727	CERAMIC CAPACITOR	CKSQYB103K50
C508, 509	CHIP CAPACITOR	CKSQYF103Z50	C728	ELECTROLYTIC CAPACITOR	CEANP470M10
C510	ELECTR. CAPACITOR	CEAS470M10			
C511, 512	CHIP CAPACITOR	CKSQYF103Z50			

Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
RESISTORS			IC308	IC	LC7883KM
VR401	VARIABLE RESISTOR	VRTB6VS333	IC309	IC	NJM4558M-TR
VR402	VR	VRTB6VS472	IC310, 311	LOGIC IC	NJU4051BM
VR404	VR	VRTB6VS472	IC312	IC	NJM4558M-TR
VR701	VR	VRTB6VS222	IC313	REGULATOR IC	NJM78L08A
VR702	VR	VRTB6VS471	IC314	REGULATOR IC	NJM79L08A
R332, 333	METALFILM RESISTOR	RN1/6PQ6801F	Q301	TRANSISTOR	2SC1674
R336, 337	METALFILM RESISTOR	RN1/6PQ1202F	Q302	TRANSISTOR	2SC1740S
R408	CHIP TYPE RESISTOR	RS1/10S303F	Q303	TRANSISTOR	2SC1674
R410	CHIP TYPE RESISTOR	RS1/10S303F	Q304, 305	TRANSISTOR	2SC1740S
R411	CARBON FILM RESISTOR	RD1/6PM510J	Q306-308	TRANSISTOR	2SA933S
R415	CHIP TYPE RESISTOR	RS1/10S512F	Q309, 310	TRANSISTOR	DTA124ES
R437, 438	CARBON FILM RESISTOR	RD1/6PM510J	Q311-314	TRANSISTOR	2SA933S
R447, 448	CARBON FILM RESISTOR	RD1/6PM100J	Q315	TRANSISTOR	DTC124ES
R464	CHIP TYPE RESISTOR	RS1/10S203F	Q316	N-FET	2SK184
R467	CARBON FILM RESISTOR	RD1/6PM102J	Q317	TRANSISTOR	DTC124ES
R494, 495	CARBON FILM RESISTOR	RD1/6PM101J	Q318	DIGITAL TRANSISTOR	DTC124EK
R514	CARBON FILM RESISTOR	RD1/6PM222J	Q319	N-FET	2SK184
R632	CARBON FILM RESISTOR	RD1/6PM221J	Q320	TRANSISTOR	DTC124ES
R637	CARBON FILM RESISTOR	RD1/6PM221J	Q321, 322	DIGITAL TRANSISTOR	DTC124EK
R751	RESISTOR	RD1/6PM223J	Q323	CHIP TRANSISTOR	2SA1037K
R755	CARBON FILM RESISTOR	RD1/6PM103J	Q324	CHIP TRANSISTOR	2SC2412K
Other resistors		RS1/10S□□□□	Q325	DIGITAL TRANSISTOR	DTA124EK
OTHERS			Q326	DIGITAL TRANSISTOR	DTC124EK
X601	CRYSTAL RESONATOR (17.734MHz)	VSS1019	Q327, 328	TRANSISTOR	2SC1740S
X602	CRYSTAL RESONATOR (14.318MHz)	VSS1029	Q329	DIGITAL TRANSISTOR	DTC124EK
AUDB ASSEMBLY SEMICONDUCTORS			D301-310	DIODE	1SS254
IC301	LOGIC IC	BU4053BF	D311	VARI-CAP	FC54M
IC302	BIPOLAR IC	HA12127ANT	D312, 313	DIODE	1SS254
IC303	IC	NJM4558M-TR	COILS		
IC304	HEX INVERTER	TC74HC044F	L301	RADIAL INDUCTOR	LRA101J
IC305	IC	NJM4558M-TR	L302	AXIAL INDUCTOR	LAU470J
IC306	EFM DEMODULATION IC	CXD2500Q	L303	AXIAL INDUCTOR	LAU560J
IC307	LOGIC IC	BU4053BF	L304	AXIAL INDUCTOR	LAU151J
			L305	AXIAL INDUCTOR	LAU181J
			L306	AXIAL INDUCTOR	LAU151J
			L307	AXIAL INDUCTOR	LAU18RK
			F301	BPF (2.30, 2.81MHz)	RTF1084
			F302	FILTER	VTF1035
			F303	FILTER	VTF1036
			CAPACITORS		
			C301	CERAMIC CAPACITOR	CKSQYB103K50
			C302	CHIP CERAMIC C.	CCSQCH220J50
			C304, 305	ELECTR. CAPACITOR	CEAS220M25
			C307	CERAMIC CAPACITOR	CCSQCH390J50
			C308	CHIP CAPACITOR	CCSQCH121J50
			C309	CHIP CAPACITOR	CCSQCH910J50
			C310	ELECTR. CAPACITOR	CEANP010M50
			C311	CHIP CAPACITOR	CCSQCH680J50
			C312	CERAMIC CAPACITOR	CCSQCH270J50
			C313, 314	CHIP CAPACITOR	CCSQCH101J50
			C315	CHIP CAPACITOR	CCSQCH680J50

Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
C316	ELECTR. CAPACITOR	CEAS4R7M50			
C317	MYLOR FILM CAPACITOR	CQMA682J50	C370	ELECTROLYTIC CAPACITOR	CEAS471M6R3
C318	ELECTR. CAPACITOR	CEAS4R7M50	C371	CHIP CAPACITOR	CCSLSL102J50
C319, 320	ELECTR. CAPACITOR	CEAS470M10	C372	ELECTR. CAPACITOR	CEAS220M25
C321	CERAMIC CAPACITOR	CKSQYB103K50	C373	ELECTR. CAPACITOR	CEAS100M50
C322, 323	CHIP CAPACITOR	CKSQYF103Z50	C375, 376	CHIP CAPACITOR	CKSQYF103Z50
C324	CERAMIC CAPACITOR	CKSQYB103K50	C377	ELECTR. CAPACITOR	CEAL100M50
C325	ELECTR. CAPACITOR	CEAS100M50	C378	CHIP CAPACITOR	CCSLSL102J50
C326	CERAMIC CAPACITOR	CKSQYB103K50	C379	ELECTR. CAPACITOR	CEANP3R3M16
C327, 328	ELECTR. CAPACITOR	CEAS470M10	C380	CERAMIC CAPACITOR	CKSQYF473Z25
C329	CHIP CAPACITOR	CCSQCH180J50	C381	CERAMIC CAPACITOR	CKCYB103K50
C330	CHIP CAPACITOR	CCSQCH450J50	C382	CERAMIC CAPACITOR	CKSQYB103K50
C331, 332	CHIP CERAMIC C,	CCSQCH221J50	C386	CERAMIC CAPACITOR	CKSQYB152K50
C333	ELECTR. CAPACITOR	CEANP220M10	C387	CERAMIC CAPACITOR	CKSQYF473Z25
C334	ELECTR. CAPACITOR	CEANP100M16	C388, 389	CHIP CAPACITOR	CKSQYF103Z50
C335	CHIP CAPACITOR	CCSLSL102J50	C390	ELECTR. CAPACITOR	CEAS470M10
C336	CERAMIC CAPACITOR	CKSQYB472K50	C391	ELECTR. CAPACITOR	CEANP010M50
C337	CERAMIC CAPACITOR	CKSQYB152K50	C392	ELECTR. CAPACITOR	CEANP100M16
C338	CHIP CAPACITOR	CCSQCH101J50	C393, 394	ELECTR. CAPACITOR	CEAS470M10
C339	CHIP CERAMIC C,	CCSQCH221J50	C395	CERAMIC CAPACITOR	CKSQYB103K50
C340	ELECTR. CAPACITOR	CEAS100M50	C396	CHIP CAPACITOR	CCSLSL102J50
C341	CERAMIC CAPACITOR	CKSQYB822K50	C397	CERAMIC CAPACITOR	CCSQCH120J50
C342	AUDIO FILM CAPACITOR	CFTXA473J50	C398	CHIP CAPACITOR	CCSQCH100D50
C343	ELECTROLYTIC CAPACITOR	CEAS471M6R3	C399	CERAMIC CAPACITOR	CKSQYB103K50
C344	AUDIO FILM CAPACITOR	CFTXA104J50	C400	ELECTR. CAPACITOR	CEAS470M10
C345	ELECTR. CAPACITOR	CEANP220M10	C401	CHIP CAPACITOR	CKSQYF103Z50
C346	CHIP CAPACITOR	CCSLSL102J50	C402	ELECTR. CAPACITOR	CEAS221M10
C347	ELECTR. CAPACITOR	CEAS220M25	C403	ELECTR. CAPACITOR	CEAL470M16
C348	CERAMIC CAPACITOR	CKSQYB103R50	C404, 406	CHIP CAPACITOR	CKSQYF103Z50
C349	AUDIO FILM CAPACITOR	CFTXA103J50	C407, 408	ELECTROLYTIC CAPACITOR	CEANP220M16
C350	CHIP CAPACITOR	CCSLSL102J50	C411, 412	ELECTR. CAPACITOR	CEAS220M25
C351	ELECTR. CAPACITOR	CEAS470M10	C413, 414	CHIP CAPACITOR	CCSLSL471J50
C352	CHIP CERAMIC C,	CCSQCH220J50	C415, 416	CERAMIC CAPACITOR	CKSQYB821K50
C353	CHIP CERAMIC C,	CCSQCH150J50	C417, 418	CHIP CAPACITOR	CKSQYF103Z50
C354, 355	CHIP CERAMIC C,	CCSQCH221J50	C419, 420	ELECTROLYTIC CAPACITOR	CEANP220M16
C356	ELECTR. CAPACITOR	CEAS470M10	C421, 422	CERAMIC CAPACITOR	CCSLSL331J50
C357	ELECTR. CAPACITOR	CEALNP220M16	C423, 424	ELECTR. CAPACITOR	CEAL470M16
C358	CHIP CAPACITOR	CCSLSL102J50	C425, 426	ELECTR. CAPACITOR	CEAS470M16
C359	CERAMIC CAPACITOR	CKSQYB472K50	C427, 428	ELECTROLYTIC CAPACITOR	CEANP220M16
C360	CHIP CAPACITOR	CCSQCH101J50			
C361	CHIP CERAMIC C,	CCSQCH221J50	RESISTORS		
C362	CERAMIC CAPACITOR	CKSQYB152K50	R328 - 331	CARBON FILM RESISTOR	RD1/6PM102J
C363	ELECTR. CAPACITOR	CEANP100M16	R379	CARBON FILM RESISTOR	RD1/6PM753J
C364	CERAMIC CAPACITOR	CKSQYB822K50	R393	CARBON FILM RESISTOR	RD1/6PM103J
C365	AUDIO FILM CAPACITOR	CFTXA473J50	R398	CARBON FILM RESISTOR	RD1/6PM473J
C366	ELECTR. CAPACITOR	CEASR47M50	R403	CARBON FILM RESISTOR	RD1/6PM223J
C367	ELECTROLYTIC CAPACITOR	CEAS471M6R3			
C368	ELECTR. CAPACITOR	CEAS4R7M50			
C369	CHIP CAPACITOR	CCSLSL102J50			

Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
R409	CARBON FILM RESISTOR	RD1/6PM563J	L102	1H DL ADJUST COIL	D7L1001
R427	RESISTOR (47Ω, 1/6W)	DCN1003	L103, 104	AXIAL INDUCTOR	LAU220J
R438, 439	CARBON FILM RESISTOR	RD1/6PM103J	L105, 106	RADIAL INDUCTOR	LFA101J
R444	CARBON FILM RESISTOR	RD1/6PM681J	F101	B. P. F.	VTF1038
R445	CARBON FILM RESISTOR	RD1/6PM301J	F102	FILTER	VTF1034
R448, 449	CARBON FILM RESISTOR	RD1/6PM301J	F103	FILTER	VTF-062
R467	CARBON FILM RESISTOR	RD1/6PM101J	F104	FILTER	VTF1018
	Other resistors	RS1/10S□□□□	F105, 106	EMI FILTER	DTH1122
OTHERS			F107-111	EMI FILTER	VTH1009
JA301	JACK	DKB1013	F201-210	EMI FILTER	VTH1009
X301	CRYSTAL RESONATOR	VSS1022	CAPACITORS		
	DIN SOCKET 5P	DKN1033	C101, 102	CERAMIC CAPACITOR	CKSQYB103K50
			C103, 104	ELECTR. CAPACITOR	CEAS220M25
			C105	ELECTR. CAPACITOR	CEAS470M25
			C106	CHIP CAPACITOR	CKSQYF103Z50
			C107	ELECTR. CAPACITOR	CEAS470M25
			C108	CHIP CAPACITOR	CKSQYF103Z50
			C109, 110	ELECTR. CAPACITOR	CEAS470M25
			C111	ELECTR. CAPACITOR	CEAS220M25
			C112, 113	MYLOR FILM CAPACITOR	CQMA473150
			C114	ELECTR. CAPACITOR	CEAS47M50
			C115	CERAMIC CAPACITOR	CKCYB103K50
			C116, 117	CHIP CAPACITOR	CKSQYF103Z50
			C118	ELECTR. CAPACITOR	CEAS470M25
			C119	CERAMIC CAPACITOR	CKSQYB103K50
			C120	ELECTR. CAPACITOR	CEAS470M25
			C122	ELECTR. CAPACITOR	CEAS47M50
			C123, 124	CHIP CAPACITOR	CKSQYF103Z50
			C125	ELECTR. CAPACITOR	CEAS010M50
			C126	ELECTR. CAPACITOR	CEAS470M25
			C127, 128	CHIP CERAMIC C.	CCSQCH220J50
			C129	CHIP CAPACITOR	CCSQCH180J50
			C130	CHIP CERAMIC C.	CCSQCH240J50
			C131-133	ELECTROLYTIC CAPACITOR	CEAS100M16
			C134-141	CHIP CAPACITOR	CKSQYF103Z50
			C148-151	CHIP CAPACITOR	CKSQYF103Z50
			C155	CHIP CAPACITOR	CCSQCH040C50
			C156, 157	ELECTR. CAPACITOR	CEAS471M10
			C158	ELECTR. CAPACITOR	CEAS100M25
			C159	ELECTR. CAPACITOR	CEAS331M16
			C160	ELECTR. CAPACITOR	CEAS470M25
			C161, 162	CERAMIC CAPACITOR	CKSQYB103K50
			C163, 164	ELECTROLYTIC CAPACITOR	CEANP470M10
			C165	ELECTR. CAPACITOR	CEAS101M25
			C166, 167	ELECTROLYTIC CAPACITOR	CEANP470M10
			C168, 169	ELECTR. CAPACITOR	CEAS470M10
			C170, 171	CHIP CERAMIC C.	CCSQCH271J50
			C172	ELECTR. CAPACITOR	CEAS331M16
			C173-175	ELECTR. CAPACITOR	CEAS470M10
			C201-203	CHIP CAPACITOR	CKSQYF103Z50
TRMB ASSEMBLY					
SEMICONDUCTORS					
IC101, 102	VIDEO SW IC	NJM2233BL			
IC103	NTSC/PAL DECODER IC	V7021			
IC104	ANALOG SWITCH	TC74HC4053AP			
IC105	REGULATOR IC	NJM78L05A			
Q101	CHIP TRANSISTOR	2SC2412K			
Q102, 103	CHIP TRANSISTOR	2SA1037K			
Q104	CHIP TRANSISTOR	2SC2412K			
Q105	CHIP TRANSISTOR	2SA1037K			
Q106-110	CHIP TRANSISTOR	2SC2412K			
Q111, 112	TRANSISTOR	2SC1740S			
Q113	DIGITAL TRANSISTOR	DTA124EK			
Q114, 116	DIGITAL TRANSISTOR	DTC124EK			
Q117-119	CHIP TRANSISTOR	2SC2412K			
Q120-123	CHIP TRANSISTOR	2SA1037K			
Q124	DIGITAL TRANSISTOR	DTC124EK			
Q125, 126	TRANSISTOR	2SA933S			
Q127-132	CHIP TRANSISTOR	2SC2412K			
Q201	DIGITAL TRANSISTOR	DTC124EK			
Q202	DIGITAL TRANSISTOR	DTA124EK			
Q203	DIGITAL TRANSISTOR	DTC124EK			
Q204	DIGITAL TRANSISTOR	DTA124EK			
D101, 102	DIODE	1SS254			
COILS					
DL101, 102	FILTER	VTN1001			
DL103	DELAY LINE	DTF1033			
L101	AXIAL INDUCTOR	LAU8R2J			

Mark No.	Description	Parts No.
RESISTORS		
VR101, 102	VR	VRTS6VS472
VR103	VR	VRTB6VS222
VR104	VR	VRTB6VS102
VR105	VR	VRTB6VS222
VR106	VR	VRTS6VS222
R135	CARBON FILM RESISTOR	RD1/6PM101J
R136, 137	RESISTOR (4.7 Ω , 1/6W)	DCN1001
R161	CARBON FILM RESISTOR	RD1/6PM222J
R163	CARBON FILM RESISTOR	RD1/6PM221J
R164	CARBON FILM RESISTOR	RD1/6PM680J
R167	CARBON FILM RESISTOR	RD1/6PM221J
R168	CARBON FILM RESISTOR	RD1/6PM680J
R171	CARBON FILM RESISTOR	RD1/6PM221J
R172	CARBON FILM RESISTOR	RD1/6PM680J
R178	CARBON FILM RESISTOR	RD1/6PM271J
R181-186	CARBON FILM RESISTOR	RD1/6PM151J
R187, 188	CARBON FILM RESISTOR	RD1/6PM271J
R192	RESISTOR (10 Ω , 1/6W)	DCN1002
	Other resistors	RS1/10S□□□□
OTHERS		
JA102	JACK	VKB-014
JA103	D-SUB SOCKET 9P	DKN1051
JA201	D-SUB SOCKET 15P	DKN1052
X101	CRYSTAL RESONATOR (3.58MHz)	VSS1023
X102	CRYSTAL RESONATOR (4.433MHz)	DSS1023
	BNC CONNECTOR	DKN1010
LMCB ASSEMBLY		
SEMICONDUCTORS		
IC1	LINEAR IC	TA7291P
D1	ZENER DIODE	HZS9B3
CAPACITORS		
C1	CERAMIC CAPACITOR	CGDYX473M25
C3	ELECTR. CAPACITOR	CEAS100M50

Mark No.	Description	Parts No.
RESISTORS		
R1	CARBON FILM RESISTOR	RD1/4VM222J
R2	CARBON FILM RESISTOR	RD1/4VM220J
KEYB ASSEMBLY		
SEMICONDUCTORS		
IC1	TR-ARRAY	TD62504P
D1	LED	SLH-56MC3H-S
D10, 11	ZENER DIODE	HZS5.6NB2
D2	LED	SLH-56DC3H-S
D3-6	LED	SLH-56MC3H-S
D7-9	ZENER DIODE	HZS5.6NB2
SWITCHES		
S1-8	SWITCH	VSC-012
COILS		
F1, 2	EMI FILTER	DTH1122
F3	FERRITE CORE	DTF1003
CAPACITORS		
C1	ELECTROLYTIC CAPACITOR	CEAS470M25
C2	CERAMIC CAPACITOR	CKPUYF223Z25
RESISTORS		
	All resistors	RD1/6PM□□□□
OTHERS		
	REMOTE SENSOR	GP1U50X
BLDB ASSEMBLY		
SEMICONDUCTORS		
IC301	MOTOR CONTROL IC	TA8413P
Q301-303	TRANSISTOR	2SA1048
Q304	TRANSISTOR ARRAY	STA302A
Q305	TRANSISTOR ARRAY	STA303A
D301-303	RECTIFIER DIODE	S2V10-4001
CAPACITORS		
C301-303	ELECTR. CAPACITOR (33/50)	VCH1034
C304	ELECTR. CAPACITOR	CEAS47M50
C305	CERAMIC CAPACITOR	CKPUYF103Z25
RESISTORS		
	All resistors	RD1/6PM□□□□
OTHERS		
CN46	CONNECTOR 11P	F11P-SHVQ

Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
FTSB ASSEMBLY			CAPACITORS		
SEMICONDUCTORS			C1	CERAMIC CAPACITOR	CKPUYF233Z25
IC1	FTS IC	FM3003A	C10, 11	AXIAL CERAMIC C	CCPUSL330J50
IC2	IC	NJM4558DE	C118	CERAMIC CAPACITOR	CKPUYF233Z25
IC201	LOGIC IC	TC74HC00AP	C12	ELECTROLYTIC CAPACITOR	CEAL220M6R3
IC202	LOGIC IC	SN74LS221N	C13, 14	ELECTR. CAPACITOR	CEALNP010M50
IC203	IC	NJM082D	C15	FILM CAPACITOR	CFTNA104J50
IC204	LINEAR IC	NJM4558D	C16	MYLOR FILM CAPACITOR	CQMA472J50
IC205	IC	TC4016BP	C17	ELECTR. CAPACITOR	CEAL100M16
IC3	IC	NJM4558DE	C18	ELECTR. CAPACITOR	CEALNP220M16
IC4, 5	LINEAR IC	NJM4558D	C19, 2	ELECTROLYTIC CAPACITOR	CEAL220M6R3
IC6	IC	NJM082D	C20	MYLOR FILM CAPACITOR	CQMA473J50
IC7	LOGIC IC	SN74LS221N	C201	ELECTROLYTIC CAPACITOR	CEALNP470M6R3
Q1	TRANSISTOR	2SC1740S	C202, 203	ELECTR. CAPACITOR	CEAL101M6R3
Q10	TRANSISTOR	2SD1762-F8	C204	ELECTR. CAPACITOR	CEAL2R2M50
Q11	TRANSISTOR	2SB1185-F8	C205	MYLOR FILM CAPACITOR	CQMA103J50
Q12	TRANSISTOR	DTA124ES	C206	CERAMIC CAPACITOR	CKPUYB151K50
Q13	TRANSISTOR	2SD1859	C207	AXIAL CAPACITOR	CKPUYB681K50
Q14	TRANSISTOR	2SC1740S	C208	AXIAL CERAMIC C,	CCPUGH150J50
Q15	TRANSISTOR	DTA124ES	C209	FILM CAPACITOR	CFTNA473J50
Q16, 17	TRANSISTOR	2SA933S	C21	MYLOR FILM CAPACITOR	CQMA103J50
Q18	TRANSISTOR	DTA124ES	C210	MYLOR FILM CAPACITOR	CQMA102J50
Q19	TRANSISTOR	DTA124ES	C211, 212	ELECTR. CAPACITOR	CEAL101M6R3
Q2	TRANSISTOR	2SC1740S	C213	MYLOR FILM CAPACITOR	CQMA272J50
Q20	TRANSISTOR	2SD1859	C214	MYLOR FILM CAPACITOR	CQMA562J50
Q201	TRANSISTOR	DTA124ES	C215	MYLOR FILM CAPACITOR	CQMA472J50
Q202-205	TRANSISTOR	2SC1740S	C216	CERAMIC CAPACITOR	CKPUYF233Z25
Q206, 207	TRANSISTOR	2SA933S	C217	ELECTR. CAPACITOR	CEAL101M6R3
Q208	TRANSISTOR	2SC1740S	C218	ELECTR. CAPACITOR	CEALNP2R2M35
Q209	TRANSISTOR	2SA933S	C219	ELECTR. CAPACITOR	CEAL4R7M50
Q21	N-FET	2SK117	C22	CERAMIC CAPACITOR	CKPUYB151K50
Q210	TRANSISTOR	2SA933S	C220	AXIAL CAPACITOR	CKPUYB821K50
Q211	TRANSISTOR	2SC1740S	C221	ELECTROLYTIC CAPACITOR	CEALNP470M6R3
Q212, 213	TRANSISTOR	2SA933S	C23, 24	CERAMIC CAPACITOR	CKPUYF233Z25
Q214	TRANSISTOR	2SC1740S	C25	MYLOR FILM CAPACITOR	CQMA333J50
Q3	TRANSISTOR	2SD1859	C26	ELECTR. CAPACITOR	CEALNP010M50
Q4	TRANSISTOR	2SD1762-F8	C27, 28	ELECTR. CAPACITOR	CEAL330M25
Q5	TRANSISTOR	2SB1185-F8	C29	AXIAL CAPACITOR	CKPUYB101K50
Q6	TRANSISTOR	2SD1762-F8	C3	ELECTROLYTIC CAPACITOR	CEAL220M6R3
Q7	TRANSISTOR	2SB1185-F8	C30-35	ELECTR. CAPACITOR	CEAL330M25
Q8	TRANSISTOR	2SD1762-F8	C34	AXIAL CAPACITOR	CKPUYB391K50
Q9	TRANSISTOR	2SB1185-F8	C35, 36	ELECTR. CAPACITOR	CEAL330M25
D1	DIODE	1SS254	C37	CERAMIC CAPACITOR	CKPUYB102K50
D10	ZENER DIODE	HZS3B3	C38	ELECTR. CAPACITOR	CEALNP4R7M25
D11, 2	DIODE	1SS254			
D201-211	DIODE	1SS254			
D3	DIODE	1SS254			
D4	RECTIFIER DIODE	1SR139-400			
D5	ZENER DIODE	HZS5B2			
D6, 7	DIODE	1SS254			
D8	RECTIFIER DIODE	1SR139-400			
D9	ZENER DIODE	HZS3B3			

7. TEST MODE

Note:

- The test mode has no backup function to stop operation in case of a malfunction and prevent the unit from being damaged. Therefore, be careful when using the test mode.
- Use either of the following remote control units for the test mode and adjustment:

Remote controller : RU-V103

LD player SR remote controller : GGF1067

The LD-V4300D has the following three test modes:

1) Service mode

Turns the tracking servo ON/OFF and controls the tilt angle. Use this mode for adjustment.

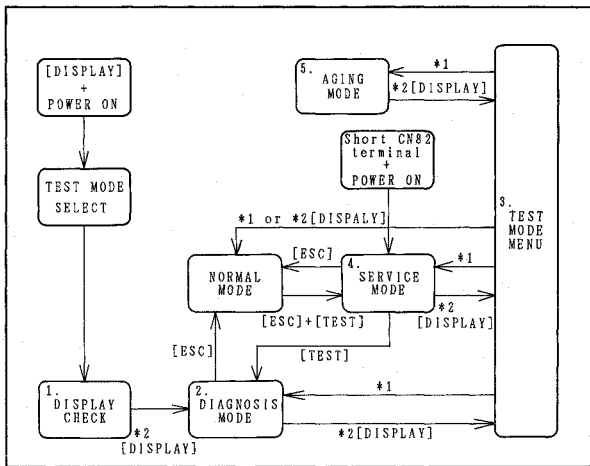
2) Diagnosis mode

Displays the operational state of the player on a monitor connected to the system. Used for determining the malfunctioning part.

3) Aging mode

To repeat operations of the player. Serves to check reliability.

Fig. 1 shows the relationship of the test modes.



NOTE)

*1: Select the mode in the Test Mode Menu.

*2: There is a [DISPLAY] key on the front panel of LD-V4300D.

Fig. 1 Test mode diagram

7.1 DISPLAY CHECK

(How to Enter the Test Mode)

Switch the power to ON while holding down the [DISPLAY] key on the front panel. The system enters the function switch setting mode. Turn the test mode switch to ON using the keys on the front panel, and press the [DISPLAY] key. The system changes to the test mode and the characters shown in Fig. 3 will appear on the display.

Confirm that the characters are correct and the indicators will light in the correct order.

NOTE :

The system directly enters the "SERVICE MODE" by short-circuiting CN82 (Fig. 2) and switching the power to ON. Note that the "DISPLAY CHECK" screen (Fig. 3) cannot be displayed.

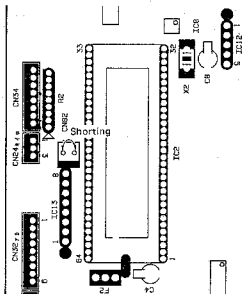


Fig. 2

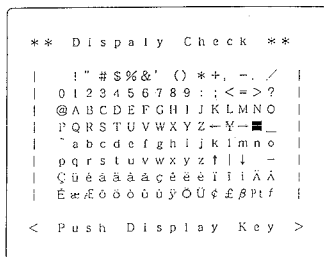


Fig. 3

7.2 DIAGNOSIS MODE

Press the [DISPLAY] key on the front panel in the display check mode. The system enters the diagnosis mode. An alternative way is to select the diagnosis mode in the test mode menu (see '7.3 Test Mode Menu').

The diagnosis mode displays the state of each part as shown in Fig. 4. The malfunctioning part can be determined by checking the unit while operating it (see '7.4 Service Mode').

To cancel the diagnosis mode, press the [ESC] key. The system returns to the normal mode.

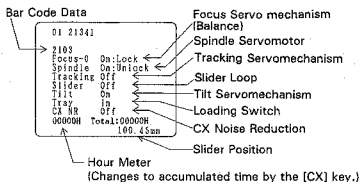


Fig. 4

7.3 TEST MODE MENU

Press the [DISPLAY] key on the front panel in the diagnosis or service mode. The system displays the test mode menu as shown in Fig. 5.

Select the desired mode using the keys on the remote controller or the front panel. Table 1 shows the functions of the keys.

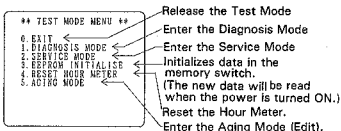


Fig. 5

The functions of the keys on the remote controller and the front panel are as follows:

Front panel of LD-V4300D	Remote Controller	Function
[DISPLAY]	---	Release the test mode.
[STEP FWD]	[STEP FWD]	Advances a selection item.
[STEP REV]	[STEP REV]	Reverses a selection item.
[PLAY]	[PLAY]	Execute the selected item.
---	[0]~[6]	Execute the item corresponding to the number.

Table 1

7.4 SERVICE MODE

Select the service mode in the test menu, or press the [ESC] + [TEST] keys on the remote control unit in the normal mode. The system enters the service mode and the messages shown in Fig. 6 will be displayed.

Note that the indicators on the front panel will light in sequence until a key is pressed on the remote controller changing the system to the service mode.

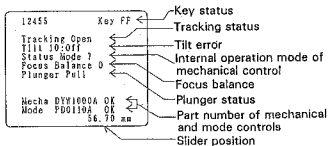


Fig. 6

① State of the keys

Displays the data of the currently pressed key on the front panel or the remote control unit. Table 2 shows the code numbers to be displayed and the functions of the pressed keys.

If no key is pressed, "FF" will be displayed.

CODE	Function	CODE	Function	CODE	Function
00	0	10	SKIP REV	20	NTSC/PAL SEL
01	1	11	STEP FWD	21	OPEN/CLOSE
02	2	12	STEP REV	22	MAIN DISPLAY
03	3	13	MULTI FWD	23	(+10)
04	4	14	MULTI REV	24	(REPEAT A)
05	5	15	SEARCH	25	(TV/LDP)
06	6	16	CHAPTER/FRAME		
07	7	17	DISPALY		
08	8	18	AUDIO MONITOR		
09	9	19	REPEAT MODE		
0A	PLAY	1A	SPEED UP		
0B	REJECT	1B	SPEED DOWN		
0C	PAUSE	1C	CLEAR		
0D	SCAN FWD	1D (CX)			
0E	SCAN REV	1E	TEST		
0F	SKIP FWD	1F	ESC		

Table 2

② Internal operation mode of the player control IC (ICONT assembly IC1)

Table 3 shows the status modes and the operating modes.

Data	Operation Mode	Data	Operation Mode
0	NO OPERATION	4	PARK
1	OPEN	5	REJECT
2	UNLOAD	6	SET UP
3	LOAD	7	PLAY

Table 3

③ Part numbers of the player control IC and the mode control IC (CONT assembly IC2)

Displays the part numbers of IC1 and IC2 being used, followed by "OK" for correct ROM data or "NG" for incorrect ROM data.

- Table 4 shows the functions and operations of each part in the service mode.

Function	Operation	
	LD-V4300D	Remote controller
OPEN	Press the [OPEN/CLOSE] key in the stop mode.	Press the [REPEAT MODE (REPEAT B)] key.
STOP	Press the [OPEN/CLOSE] key in the play mode.	Press the [REPEAT A] key. Press the [REJECT] key in the play mode.
PLAY Video and audio are ON. Tracking is OPEN.	Press the [PLAY] key in the stop mode.	Press the [TV/LDP] key. Press the [PLAY] key in the stop mode.
STILL	Press the [PLAY] key during TRACKING OPEN in the play mode.	Press the [CX] key in the play mode. Press the [PLAY] key during TRACKING OPEN in the play mode.
TRACKING OPEN	Press the [STEP FWD] key in the play mode. Press the [PLAY] key in the play mode.	Press the [STEP FWD] key in the play mode. Press the [PLAY] key in the play mode.
TRACKING CLOSE	Press the [STEP REV] key in the play mode. Press the [PLAY] key during TRACKING OPEN in the play mode.	Press the [STEP REV] key in the play mode. Press the [PLAY] key during TRACKING OPEN in the play mode.
SLIDER IN	Press the [SCAN REV] key.	Press the [SCAN REV] key.
SLIDER OUT	Press the [SCAN FWD] key.	Press the [SCAN FWD] key.
TILT SERVO OFF		Press the [SPEED DOWN] key.
TILT SERVO ON		Press the [SPEED UP] key.
TILT DECREASE & SERVO OFF		Press the [SKIP REV] key.
TILT INCREASE & SERVO OFF		Press the [SKIP FWD] key.

Function	Operation	
	LD-V4300D	Remote controller
DISPLAY ON		Press the [DISPLAY] key.
DISPLAY OFF		Press the [AUDIO MONITOR] key.
SEARCH ADDRESS ENTRY	Press the [+10] key in the play mode.	Press the [+10] key. The last address searched will be displayed.
SEARCH ADDRESS INPUT		Input the address using [0] through [9] keys.
SEARCH EXECUTE		Press the [CHAPTER/FRAME] key.
FOCUS BALANCE → 0		Press the [MULTI FWD] key during playback.
FOCUS BALANCE → 1		Press the [MULTI REV] key during playback.
PLUNGER PULL		Press the [PAUSE] key.
PLUNGER RELEASE		Press the [REJECT] key.
RETURN TO TEST MODE MENU	Press the [DISPLAY] key.	
GO TO DIAGNOSIS MODE		Press the [TEST] key.
CANCEL TEST MODE		Press the [ESC] key.

Table 4

7.5 AGING MODE

Selecting the aging mode in the test mode displays the aging mode edit menu (Fig. 7).

Aging can be programmed (instructions conform to serial commands) by using the keys on the remote controller. Table 5 shows the keys with special functions. Submenus (Fig. 8) allow changing of the repeat point, and execution and deletion of the programs that cannot be performed by the remote control unit.

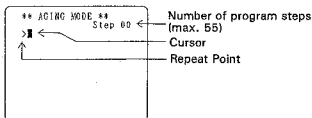


Fig. 7

Remote controller	Function
[SPEED UP]	Moves the cursor one step forward.
[SPEED DOWN]	Moves the cursor one step backward.
[CLEAR]	Deletes the program located immediately left to the cursor.
[REPEAT MODE]	Opens the submenu.
[DISPLAY] on the front panel	Returns to the test mode menu.

Table 5

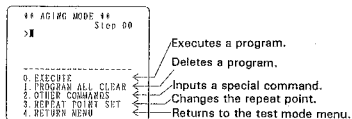


Fig. 8

① Execution of the program

When the program is executed, messages shown in Fig. 9 are displayed and the system continues aging. To interrupt aging, select "1. STOP".

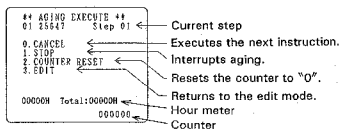


Fig. 9

② Interruption of the aging

After interrupting aging, messages shown in Fig. 10 will be displayed.

If the system stops due to an error, an error code (see Table 6) will be displayed on the position of the frame number.

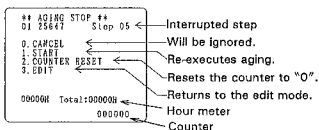


Fig. 10

- Example : Search the frame number 1000 and perform aging by repeating play back until the frame number 1200.

1) Press the [PLAY] key. (Fig. 11)

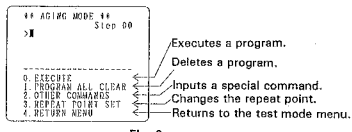


Fig. 11

2) Press the [CHAPTER/FRAME] key. Press [1] when the menu is displayed. (Fig. 12)

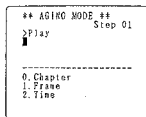


Fig. 12

ERROR CODE	MESSAGE	EXPLANATION
E00	Communication error	Communication error <ul style="list-style-type: none"> ● Framing error ● Buffer overflow
E04	Feature not available	Attempted to execute an invalid function. <ul style="list-style-type: none"> ● Incorrect command mnemonic ● Cannot be used in that mode.
E06	Missing argument	Necessary parameter is not specified.
E11	Disc not exist	A disc has not been loaded.
E12	Search error	Could not find the search address.
E13	Defocussing error	Defocussing error occurred.
E15	Picture stop	The picture is stopped. <ul style="list-style-type: none"> ● Changed to the still mode by the picture stop code during auto playback.
E16	Interrupt by other device	The execution of the command was interrupted by the command from the keys on the remote controller or the front panel.
E99	Panic	An unrecoverable error occurred. <ul style="list-style-type: none"> ● Cannot load a disc. ● The system cannot continue playback and stopped.

Table 6

- 3) Press [1] [0] [0] [0] [SEARCH] [1] [2] [0] [0] in sequence.
(Fig. 13)

```

** AGING MODE **
>Play          Step 12
Frame
1000 Search
1200 Play
|

```

Fig. 13

- 4) Move the cursor to the beginning of "1000 Search," and press the [REPEAT MODE] key to open the submenu. Press [3] when the submenu is displayed. (Fig. 14)

```

** AGING MODE **
Play          Step 12
Frame
>1000 Search
1200 Play
|

```

Fig. 14

- 5) Move the cursor downwards and open the submenu again. Press [0]. Aging will be executed.

7.6 PRECAUTIONS FOR TERMINATING THE TEST MODE

If you have turned ON the test mode using the function switch setting mode, turn the test mode switch to OFF after all operations are finished.

The LD-V4300D will maintain the test mode status after the power is turned OFF. Therefore, normal operation cannot be performed if the system is operated without turning the test mode switch to OFF.

8. ADJUSTMENT

8.1 ADJUSTING JIG AND TOOLS REQUIRED FOR ADJUSTMENT

- Small flat-bladed \ominus screwdriver (with a shaft of about 7cm)
- Small philips \oplus screwdriver (with a shaft of more than 15cm)
- Hexagonal wrench (Allen wrench) (2.00mm)
- Low-pass filter (100k Ω + 1 μ F)
- Dual-trace oscilloscope (with delay)
- Frequency counter
- LD test disc (GGV1003 : NTSC, J1 : PAL)
- 8-inch LDD disc (commercially available)
- Shorting clip
- Digital voltmeter

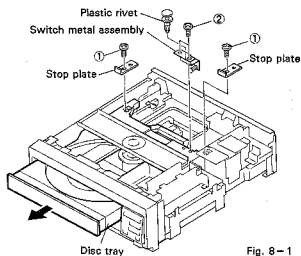


Fig. 8-1

8.2 PREPARATIONS AND PRECAUTIONS FOR ADJUSTMENT

1. Perform the adjustment after removing the disc tray (Fig. 8-1) and changing to the service mode in the test mode (see "7. TEST MODE").

2. How to clamp a disc

After the disc tray is removed, insert a disc from the rear of the player. To clamp the disc, extend the lock levers located on both sides of the base toward outwards, then push them toward the rear. (Fig. 8-2)

3. How to reassemble the tray

Insert the disc tray while applying the half-tooth portion of the gear to the gear of the disc tray. (Fig. 8-3)

NOTE :

The setting values for the oscilloscope for the adjustment are those when used with the 10 : 1 probe unless otherwise specified.

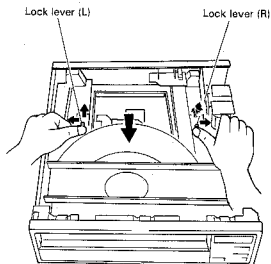


Fig. 8-2

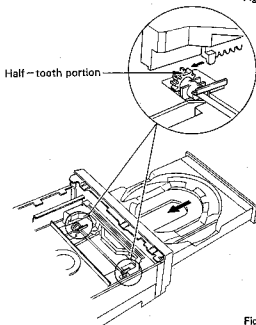
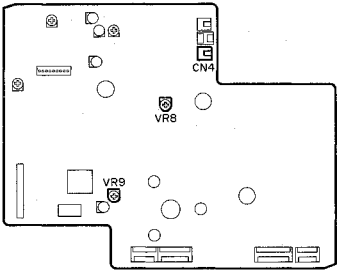
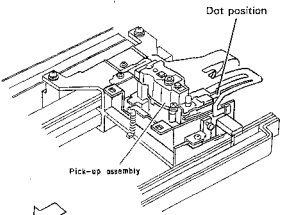


Fig. 8-3

8.3 ADJUSTMENTS

1. TILT GAIN ADJUSTMENT

<ul style="list-style-type: none"> • Purpose: To adjust the gain of tilt servo according to the gain rank of the tilt sensor. • Symptoms when incorrectly adjusted: Hunting of the tilt servo and increased crosstalk due to an increased non-sensitive range of the tilt servo. 	
Measurement equipment & jigs <ul style="list-style-type: none"> • Screwdriver (flat bladed) 	Adjusting point <ul style="list-style-type: none"> • VR8 in the FTSB assembly
Adjusting procedure <ul style="list-style-type: none"> • Check that VR9 is set to its mechanical center position, and set "TILT SERVO OFF" by remote controller or remove the CN4 connector from the FTSB assembly (to turn off the tilt servo). <p>1. Check the color of the dot on the flexible cable located at the side of the tilt sensor. (Fig. 1-1)</p> <p>There are three dot conditions: adjust VR8 on the FTSB board according to the following code.</p> <p>Red dot: Turn VR8 fully clockwise.</p> <p>Blue dot: Turn VR8 fully counterclockwise.</p>	
Adjustment diagram <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>FTSB assembly</p>  </div> <div style="text-align: center;">  <p>Dot position</p> <p>Pick-up assembly</p> <p>Front panel</p> <p>Fig. 1-1</p> </div> </div>	

2. GRATING TEMPORARY ADJUSTMENT AND TRACKING (TRKG) BALANCE ADJUSTMENT

- Purpose: Set the laser beam which is divided into three by the grating so that it is directed to the optimum position on the playback track. Set the offset voltage of the tracking servo to 0 V.
- Symptoms when incorrectly adjusted: Disc play impossible. Track jumping.

Measurement equipment & jigs	Measurement equipment connecting points	Player condition	Adjusting points
<ul style="list-style-type: none"> • Screwdriver (flat bladed) • Oscilloscope • Test disc: GGV1003 	<ul style="list-style-type: none"> • Oscilloscope: In FTSB assembly • CH1: Between TRKG ERROR (TP1-9) and GND 	<ul style="list-style-type: none"> * Service mode: • Play mode • Tracking servo loop open • Tilt servo OFF 	<ul style="list-style-type: none"> • Grating adjustment screw in the pick-up assembly • VR2 and VR6 in FTSB assembly

Adjusting procedure

[Grating temporary adjustment]

1. With the player set horizontally, play the test disc.
2. Press the DISPLAY key so that the frame number is displayed on the TV screen.
3. Open the TRKG servo loop.
4. Using the SCAN key, move the pick-up to a position around frame #2000.
5. Connect the oscilloscope to TP1-9 (TRKG error) to observe the waveforms.
6. Insert the flat bladed \ominus screwdriver (small) into the grating adjustment hole horizontally (Fig. 2-1). When the grating adjustment screw is turned, the tracking error waveform alternates between large and small. After the waveform amplitude becomes small, find the position where the waveform shows a smooth envelope. (Photo 1) (This status is called the "on-track" position.)
(When adjusting the grating with the small screwdriver (flat-bladed), since the pick-up assembly tends to shift toward the inside of the disc, perform adjustment while holding it with your hand. If a remote control is available, lock the pick-up by pressing the multi-

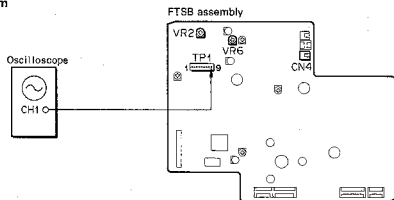
reverse key instead of holding with your hand.)

7. In this condition, when the grating adjustment screw is turned counterclockwise slowly, the amplitude of the tracking error waveform gradually becomes larger. Set to the position where the waveform amplitude becomes maximum. (Photo 2)
8. Set the tracking error to maximum by using VR6 (FOCS BAL). Note that "1" should be selected for FOCS BAL shown on the monitor. Change it to "0" (VR7) after adjustment.
9. Close the Tracking servo to make sure that a picture on the screen is normal.

[TRKG (Tracking) balance adjustment]

1. Set the player to the stop mode and raise it so it is vertical, then play the test disc in the service mode.
(Note: If the disc cannot be played in this condition, set the player horizontally and engage the service mode to start playing the disc, and then raise the left side of the player slowly, so it is vertical.)
2. Set the oscilloscope's GND point to the center of the oscilloscope screen.
3. Adjust VR2 in the FTSB assembly so that the positive amplitude (A) and the negative amplitude (B) becomes equal. (Photo 2)

Adjustment diagram



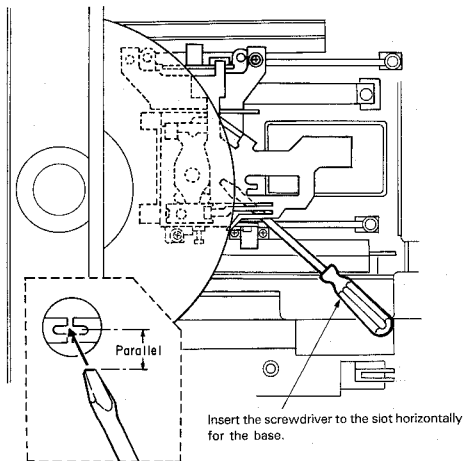


Fig. 2-1

Waveforms

* Oscilloscope range: DC 50 mV/div, 5 mS/div.

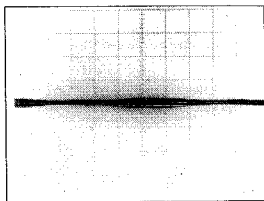


Photo 1 On-track position

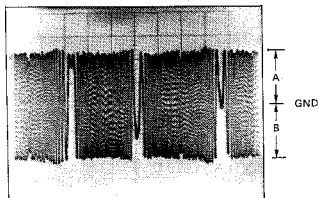


Photo 2 Maximum amplitude

3. PICK-UP HEIGHT ADJUSTMENT AND DRIVE SHAFT LEVELNESS ADJUSTMENT

- Purpose: Adjust the inclination of the slider shaft so that the pick-up assembly moves parallel the disc.
- Symptoms when incorrectly adjusted: Lens comes contact with the disc surface, Warped discs cannot be played.

Measurement equipment & jigs	Measurement equipment connecting points	Player condition	Adjusting points
<ul style="list-style-type: none"> • Oscilloscope • Hexagonal wrench (2 mm) • Low-pass filter (100kΩ/1μF) • Test disc: GGV1003 	<ul style="list-style-type: none"> • Oscilloscope: In FTSB assembly • CH1: Between TP1-3 (FOCS RTN) and GND 	<ul style="list-style-type: none"> • Service mode: • Play mode • Tracking servo loop open • Tilt servo OFF 	<ul style="list-style-type: none"> • Pick-up height adjustment screw in the pick-up assembly • Pinion gear of the tilt motor in the mechanism assembly

Adjusting procedure

Note: This adjustment should be performed with the unit placed horizontally.

[Pick-up assembly height adjustment]

1. Connect the oscilloscope as shown in the figure below, and play the test disc around the frame #10000.
2. Open the tracking servo loop.
3. Measure the voltage at TP1-3 (FOCS RTN) in the FTSB assembly with the oscilloscope.
4. Check that the focus return voltage is $0V \pm 10mV$ with respect to the GND voltage. If it is out of the standard, adjust the pick-up height adjustment screw so that

the voltage value comes within the standard value using the hexagonal wrench (2mm).

[Drive shaft levelness adjustment]

5. Perform the level adjustment by changing the screen to the service mode and confirming that the tilt function is OFF. Move the tilt motor UP/DOWN by using the [SKIP REV/FWD] key on the remote control unit so that the focus return voltage described above becomes the same value as the inside and outside of the disc. (Fig. 3-1)

- * Frame No. 115 = V1
- * Frame No. 10000 = V2
- * Frame No. 22000 = V3
- V1 - V2 ≤ 20 mV
- V3 - V2 ≤ 20 mV

Adjustment diagram

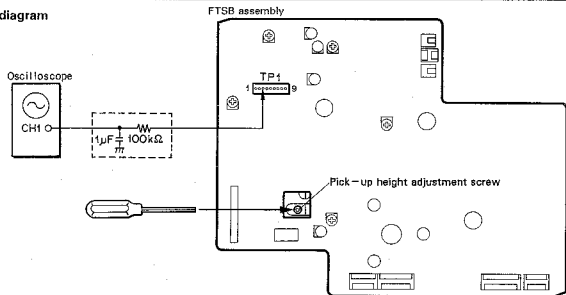


Fig. 3-1

4. PICK-UP TRACKING AND TANGENTIAL DIRECTION INCLINATION ADJUSTMENT

- Purpose: Adjust the angle of the pick-up assembly in the tracking direction so that the laser beam strikes the disc perpendicularly (at a right angle).
- Symptoms when incorrectly adjusted: Crosstalk.

Measurement equipment & jigs	Measurement equipment connecting points	Player condition	Adjusting points
<ul style="list-style-type: none"> • TV monitor • Hexagonal wrench (2 mm) • Test disc: GGV1003 	<ul style="list-style-type: none"> • TV monitor Connect to the video output terminal of the player.	<ul style="list-style-type: none"> * Normal mode: • Still mode • Tilt servo OFF (Unplug the connector of CN28) 	<ul style="list-style-type: none"> • Tracking direction angle adjustment screw, tangential direction angle adjustment screw in the pick-up assembly.

Adjusting procedure

Note: This adjustment should be performed with the unit placed horizontally.

1. Play the test disc and search for frame #115.
2. Rotate the tracking angle and tangential angle adjustment screws alternately and adjust repeatedly so that the crosstalk occurring on the right and left sides of the TV screen becomes minimum.

Adjustment diagram

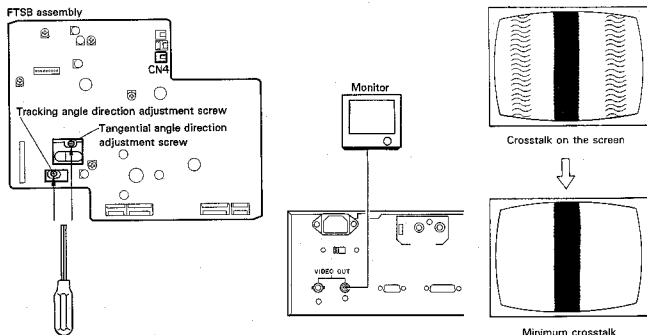


Fig. 4 - 1

5. FOCUS ERROR BALANCE ADJUSTMENT

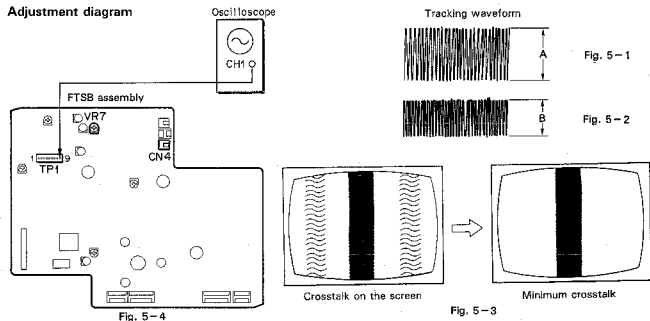
- Purpose: To set the object lens to its optimum position so that it works optimally with the focus servo while playing a disc.
- Symptoms when incorrectly adjusted: Crosstalk.

Measurement equipment & jigs	Measurement equipment connecting points	Player condition	Adjusting points
<ul style="list-style-type: none"> • TV monitor • Test disc: GGV1003 • Oscilloscope 	<ul style="list-style-type: none"> • TV monitor: Connect to the video output terminal of the player. • Oscilloscope: In the FTSB assembly CH1: Between TRKG ERROR (TP1-9) and GND 	<ul style="list-style-type: none"> * Service mode: • Play mode • Tracking servo loop open • Tilt servo OFF * Normal mode • Still mode • Tilt servo OFF 	<ul style="list-style-type: none"> • VR7 in the FTSB assembly

Adjusting procedure

1. Play the test disc in the service mode.
 2. Around the position of frame #1,000, open the tracking servo, and write down the error level (A) at this time. (Fig. 5-1)
FOCS BAL should be set to "1".
 3. Set the player to the normal mode and search for frame #115.
Select "0" for FOCS BAL. (When FOCS BAL is set to "1", the trigger error will be maximum. Use VR6 for adjustment.)
 4. Observe the crosstalk appearing on both the left and right sides of the TV screen, and check that the crosstalk is minimum and symmetrical. If crosstalk seems to be in good condition, this adjustment is finished.
 5. If the crosstalk observed above is not acceptable, readjust VR7 in the FTSB assembly to get minimum cross-
- talk. (Fig. 5-3)
6. Set the player to the service mode again, open the tracking servo around frame #1,000 and write down the error level (B) at this time. (Fig. 5-2)
 7. When level difference between A and B is within 30% ($B/A \geq 0.7$), this adjustment is finished.
 8. If the level difference is more than 30%, return VR7 so that it becomes within 30%.
 9. Set the player to the normal mode again and search for frame #115, and check that the crosstalk is minimum and symmetrical. (Fig. 5-3)
 10. If the crosstalk seems in good condition, this adjustment is finished. If it is not acceptable, perform item "4. Pick-up tracking and tangential direction inclination adjustment" again. (See page 112)

Adjustment diagram



6. PICK-UP ASSEMBLY CENTERING CHECK

- Purpose: To check that the center of the spindle motor is on the track of the laser beam.

Measurement equipment & jigs	Measurement equipment connecting points	Player condition	Adjusting points
<ul style="list-style-type: none"> • Oscilloscope • Test disc: GGV1003 	<ul style="list-style-type: none"> • Oscilloscope: In FTSB assembly CH1 (X): Between TP1-9 (TRKG Error) and GND CH2 (Y): TP1-4 (TRKG A+C) 	<ul style="list-style-type: none"> • Service mode: • Play mode • Tracking servo loop open • Tilt servo OFF 	

Adjusting procedure

1. With the player set horizontally, play the test disc.
2. After moving the pick-up toward inside of the disc using the Step keys, open the tracking servo.
3. Connect the X-input (CH1) of the oscilloscope to TP1-9 (TRKG ERROR) in FTSB assembly and the Y-input (CH2) to TP1-4 (TRKG A+C). Set the oscilloscope to the X-Y mode, and observe the Lissajous waveform of the TRKG error signal and the TRKG A+C signal.
4. Record the Y-axis amplitude of the Lissajous waveform.
5. Close the tracking servo and move the pick-up toward the outside of the disc using the SCAN FWD keys. Then, open the tracking servo again, and observe the Lissajous waveform. At this time, check that the Y-axis amplitude of the Lissajous waveform is the same as the recorded one in step 4. If the Lissajous waveforms of the inside and outside of the disc are different in their Y-axis amplitude, perform "7. Pick-up Assembly Centering Adjustment". (See page 116)

Adjustment diagram

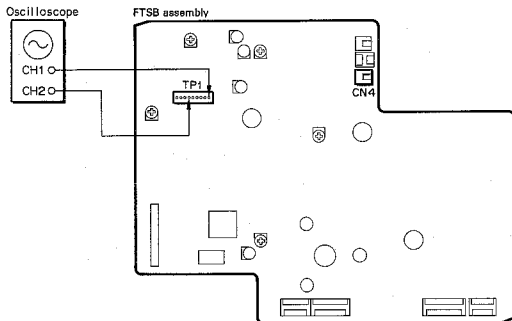
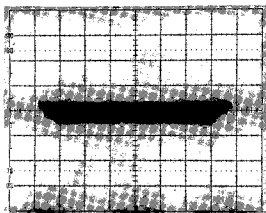


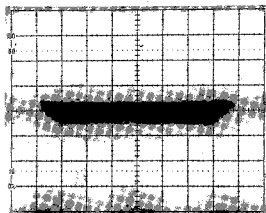
Fig. 6-1

Waveforms

* Oscilloscope range:
 CH1(X): 0.2V/div., DC input
 CH2(Y): 0.2V/div., AC input
 X-Y mode



Lissajous waveform at the inside of the TEST disc

Check that $Y = Y'$.

Lissajous waveform at the outside of the TEST disc

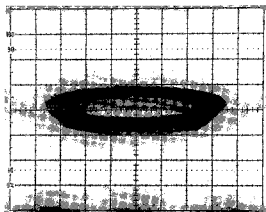


Photo 5: Waveform when insufficiently adjusted

7. PICK-UP ASSEMBLY CENTERING ADJUSTMENT

- Purpose: To adjust so center of the spindle motor comes on the track of the laser beam.
- Symptoms when incorrectly adjusted: Track jumping, longer search time.

Measurement equipment & jigs	Measurement equipment connecting points	Player condition	Adjusting points
<ul style="list-style-type: none"> • Oscilloscope • Short-shaft hexagonal wrench (2 mm) or, L-shaped hexagonal wrench • Test disc: GGV1003 	<ul style="list-style-type: none"> • Oscilloscope: In FTSB assembly CH1 (X): Between TP1-9 (TRKG Error) and GND CH2 (Y): TP1-4 (TRKG A + C) 	<ul style="list-style-type: none"> • Service mode: • Play mode • Tracking servo loop open/close • Tilt servo OFF 	<ul style="list-style-type: none"> • Centering adjustment screw in the pick-up assembly

Adjusting procedure

Note: This adjustment should be performed only when the pick-up assembly is insufficiently adjusted by the "6. Pick-up assembly centering check". (See page 114)

1. Connect the X-input (CH1) of the oscilloscope to TP1-9 (TRKG ERROR) in FTSB assembly and Y-input (CH2) to TP1-4 (TRKG A + C) respectively.
2. Play the test disc and search for frame #20,000 using the SCAN FWD key to move the pick-up towards the outside of the disc.
3. Open the tracking servo, and observe the Lissajous waveforms of the TRKG error signal and the TRKG A + C signal.
4. Fine adjust the grating so that the Y-axis amplitude of the Lissajous waveform becomes minimum. (Photo 7)
5. Close the TRKG servo and move the pick-up toward the inside of the disc by pressing the SCAN REV key.
6. Open the TRKG servo again, and observe the

- Lissajous waveform and record its Y-axis amplitude.
7. Move the pick-up toward outside again, and rotate the centering adjustment screw clockwise by 45° with the hexagonal wrench. (Fig. 7-1)
- Rotate the centering adjustment screw slowly so that the Y-axis amplitude of the Lissajous waveform decreases. After the Y-axis amplitude of the Lissajous waveform becomes minimum, rotate the hexagonal wrench further in the same direction until the Y-axis amplitude of the Lissajous waveform becomes the same level as the recorded one in step 6. (Photo 6 - 8)
8. Close the TRKG servo and move the pick-up toward the outside of the disc using the SCAN FWD key.
 9. Repeat the operation in steps 3, 4 and 5.
 10. Open the TRKG servo again to observe the Lissajous waveform, and check that the Y-axis amplitude is minimum.
- If the Lissajous waveform is expanded in the Y-axis direction, repeat the operation in steps 7, 8, 9, and 10.

Adjustment diagram

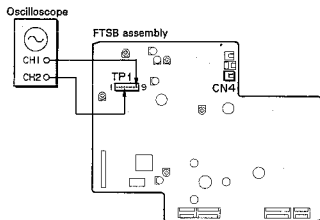
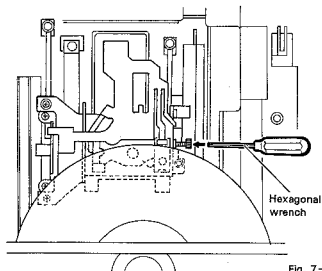


Fig. 7-1

Waveforms

*Oscilloscope range:
X: 0.2V/div., DC input
Y: 0.2V/div., AC input
X-Y mode

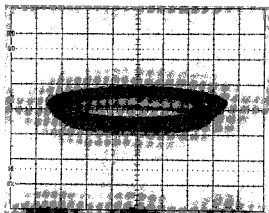


Photo 6

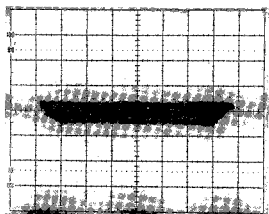


Photo 7

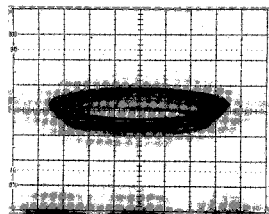


Photo 8

8. TILT SENSOR INCLINATION ADJUSTMENT

- Purpose: To set the electrical offset of the tilt servo to 0 V by adjusting the inclination of the tilt sensor.
- Symptoms when incorrectly adjusted: Crosstalk

Measurement equipment & jigs	Measurement equipment connecting points	Player condition	Adjusting points
<ul style="list-style-type: none"> • Oscilloscope • Test disc: GGV1003 • Philips \oplus screwdriver • Monitor TV 	<ul style="list-style-type: none"> • Oscilloscope: In FTSB assembly CH1: Between TP1-8 (TILT ERROR) and GND 	<ul style="list-style-type: none"> • Normal mode: • Play mode • Tilt servo OFF 	<ul style="list-style-type: none"> • Tilt sensor inclination adjustment screw in the pick-up assembly

Adjusting procedure

Note: This adjustment should be performed with the unit placed horizontally.

This adjustment should be performed in the range of F# (frame numbers) 2000 — 10000 so the sensor output is not influenced by the mirror surface at the inside of the disc and external light at the edges of the disc.

1. Play the test disc and search for a position around frame # 5000.
2. Connect the oscilloscope to TP1-8 in the FTSB assembly, and observe the DC voltage of the tilt error signal.
3. Insert the small Philips \oplus screwdriver with a long shaft

from the rear panel of the player, and adjust the tilt sensor inclination adjustment screw so that the DC voltage of the tilt error signal becomes $0V \pm 20mV$. (Fig. 8-1)

At this time, the above adjustment will be easy to perform when the pickup is locked by pressing the Multi Reverse key on the remote control.

4. Set "TILT SERVO ON" by remote controller.
5. Search for frame # 115 and check that crosstalk at the left and right sides of the TV screen is minimum and symmetrical.

NOTE :

Displaying "10" for tilt error is not a fatal error. "TILT ERROR 10" will be displayed on the monitor when TP1-8 is 0V.

Adjustment diagram

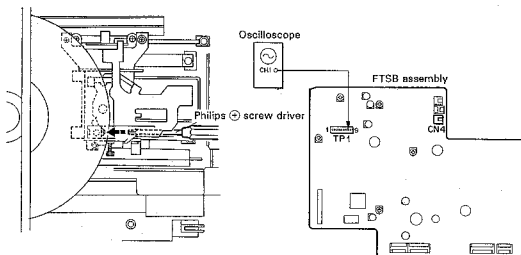


Fig. 8-1 Tilt stay inclination adjustment

9. GRATING FINE ADJUSTMENT AND TRACKING BALANCE CHECK

- Purpose: To fine adjust the grating so that the two laser beams for TRKG (tracking) servo are emitted at the optimum track positions of the disc. Set the DC off-set voltage to 0V of TRKG Servo.
- Symptoms when incorrectly adjusted: Track jumping.

Measurement equipment & jigs	Measurement equipment connecting points	Player condition	Adjusting points
<ul style="list-style-type: none"> • Oscilloscope • Test disc: GGV1003 • Flat bladed \ominus screwdriver 	<ul style="list-style-type: none"> • Oscilloscope: In the FTSB assembly CH1 (X): Between TP1-9 (TRKG ERROR) and GND CH2 (Y): TP1-4 (TRKG A+C) 	<ul style="list-style-type: none"> • Service mode: • Play mode • Tracking servo loop open • Tilt servo OFF 	<ul style="list-style-type: none"> • Grating adjustment screw in the pick-up assembly

Adjusting procedure

1. Play the test disc and search for frame #16,000, then open the TRKG servo.
2. Connect the X-input (CH1) of the oscilloscope to TP1-9 (TRKG ERROR) of the FTSB assembly and Y-input (CH2) to TP1-4 (TRKG A+C) respectively. Set the oscilloscope to the X-Y mode, and observe the Lissajous waveform of the TRKG error signal and TRKG A+C signal.
3. Insert the flat-bladed small screwdriver into the grating adjustment hole, and fine adjust the grating so that the Y-axis dimension of the Lissajous waveform becomes minimum. (Fig.9-1)

- At this time, if the grating is rotated excessively and the optimum point becomes unclear, perform "2. Grating Temporary Adjustment" again. (See page 109)
4. Select the X-input (CH1) of the oscilloscope, and check that the positive (A) and negative (B) amplitudes of the TRKG error signal are equal. (Photo 10)
If the sizes of the positive and negative amplitude are different, perform "4. Pick-up Tracking and Tangential Direction Inclination Adjustment" again.
 5. Close the TRKG servo loop and check that the picture on the TV screen is normal.

Adjustment diagram

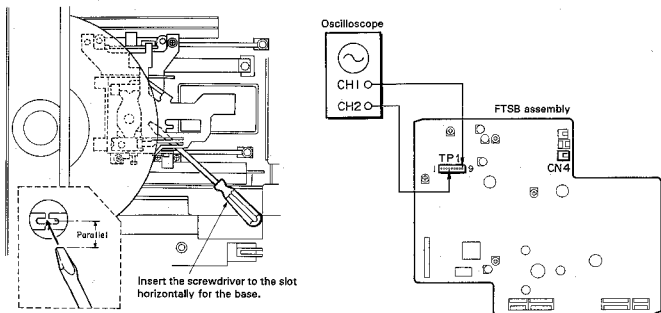


Fig. 9-1

Waveforms

- Oscilloscope range:
 - Grating adjustment
 - CH1 (X): 0.5V/div., DC input
 - CH2 (Y): 0.5V/div., DC input
 - X-Y mode
 - TRKG balance adjustment
 - CH1: 1V/div., 5mS/div.

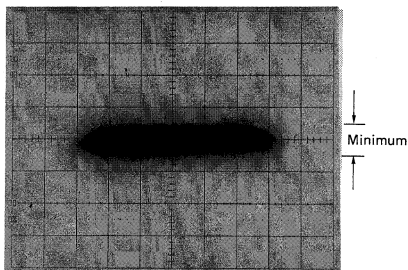
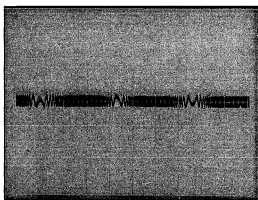
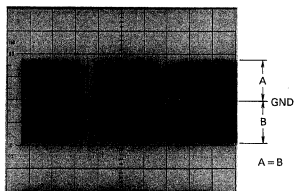


Photo 9 Grating Fine Adjustment



Null point



Maximum amplitude

Photo 10 TRKG Balance Adjustment

10. RF GAIN ADJUSTMENT

- Purpose: To set the amplitude of the RF signal to the optimum value.
- Symptoms when incorrectly adjusted: Dropout occurs frequently.

Measurement equipment & jigs	Measurement equipment connecting points	Player condition	Adjusting points
<ul style="list-style-type: none"> • Oscilloscope • Test disc: GGV1003 	<ul style="list-style-type: none"> • Oscilloscope: In the FTSB assembly CH1: Between TP1-1 (RF) and GND 	<ul style="list-style-type: none"> * Normal mode: • Still mode • TILT servo OFF 	<ul style="list-style-type: none"> • VR1 in the FTSB assembly

Adjusting procedure

1. Play the test disc and search for frame #15,000.
2. Connect the oscilloscope to TP1-1 in the FTSB assembly to observe the RF signal.
3. Adjust VR1 in the PREB assembly so that the amplitude of the RF signal becomes $300\text{ mV} \pm 20\text{ mV}$. (Photo 11)

Adjustment diagram

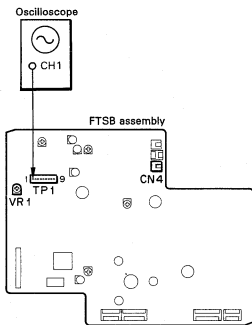


Fig. 10-1

Waveforms

- Oscilloscope range: AC100mV/div., 2mS/div.

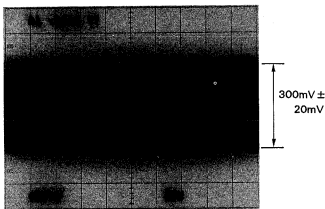


Photo 11 RF signal

11. FOCUS SERVO LOOP GAIN ADJUSTMENT

- Purpose: To set the loop gain of the FOCS (focus) servo to the optimum value.
- Symptoms when incorrectly adjusted: Play ability grow worse.

Measurement equipment & jigs	Measurement equipment connecting points	Player condition	Adjusting points
<ul style="list-style-type: none"> • Oscilloscope • Test disc: GGV1003 • AF oscillator • Resistance (100kΩ) 	<ul style="list-style-type: none"> • Oscilloscope: In FTSB assembly CH1 (X): Between TP1-5 (FOCS ERR IN) with 100kΩ and GND CH2 (Y): TP1-6 (FOCS ERR OUT) 	<ul style="list-style-type: none"> • Normal mode: • Still mode • TILT servo OFF 	<ul style="list-style-type: none"> • VR5 in the FTSB assembly

Adjusting procedure

1. Play the test disc and search for frame # 15,000.
2. Connect the X and Y terminals of the oscilloscope as shown in Fig. 11-1, and observe the Lissajous's waveforms.
3. Adjust VR5 so that the Lissajous's waveform as shown in Photo 13 appears. Photo 12 shows a waveform when the adjustment is incorrect.

Adjustment diagram

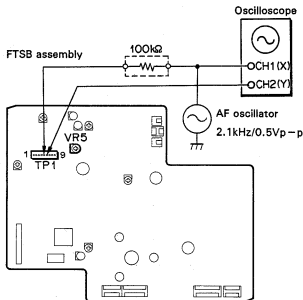


Fig. 11-1

Waveforms

- Oscilloscope range: X-Y mode
X: 100mV/div. DC input
Y: 20mV/div. DC input

Waveform when insufficiently adjusted



Photo 12

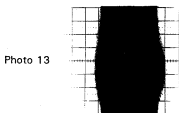


Photo 13

12. TRACKING SERVO LOOP GAIN ADJUSTMENT

- Purpose: To set the loop gain of the TRKG (tracking) servo to the optimum value.
- Symptoms when incorrectly adjusted: Play ability grow worse.

Measurement equipment & jigs	Measurement equipment connecting points	Player condition	Adjusting points
<ul style="list-style-type: none"> ● Oscilloscope ● Test disc: GGV1003 ● AF oscillator ● Resistance (100kΩ) 	<ul style="list-style-type: none"> ● Oscilloscope: In FTSB assembly CH1 (X): Between TP1-7 (TRKG ERR IN) with 100kΩ and GND CH2 (Y): TP1-9 (TRKG ERR OUT) 	<ul style="list-style-type: none"> * Normal mode: ● Still mode ● TILT servo OFF 	<ul style="list-style-type: none"> ● VR3 in the FTSB assembly

Adjusting procedure

1. Play the test disc and search for frame # 15,000.
2. Connect the X and Y terminals of the oscilloscope as shown in Fig. 12-1, and observe the Lissajous's waveforms.
3. Adjust VR3 so that the Lissajous's waveform as shown in Photo 15 appears. Photo 14 shows a waveform when the adjustment is incorrect.

Adjustment diagram

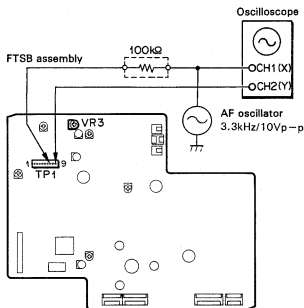
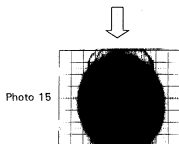
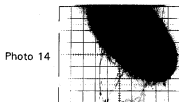


Fig. 12-1

Waveforms

- Oscilloscope range: X-Y mode
- X: 0.2mV/div. DC input
- Y: 10mV/div. DC input

Waveform when insufficiently adjusted



13. CHECKING THE TILT OPERATION

1. Connect the TILT connector. Turn TILT OFF by using the remote control unit.
2. Move the tilt motor using the [SKIP FWD] or [SKIP RWD] key and change TILT ERR display to "0D" or "13" from "10".
3. Confirm that TILT ERR converges to "10 tolerance (OF to 1.1)" when TILT SERVO is turned off by the [SPEED UP] key.

14. ELECTRICAL ADJUSTMENT

No.	Adjustment Items	Adjust Assembly	Adjusting Point	Measurement Point	Player Condition (MODE)	Adjusting Specification
1	NTSC character generator frequency adjustment	VDEM	VC602	IC605 pin6	Power ON (NTSC)	Adjust clock frequency to 14.318180MHz±10Hz.
2	PAL character generator frequency adjustment		VC601		Power ON (PAL)	Adjust clock frequency to 17.734476MHz±10Hz.
3	NTSC TBC 4fsc adjustment	CONT	VC201	IC206 pin8	Power ON (NTSC)	Adjust clock frequency to 14.318180MHz±10Hz.
4	PAL TBC 3.75MHz adjustment		VC202	IC206 pin6	Power ON (PAL)	Adjust clock frequency to 3.750000MHz±10Hz.
5	Video level adjustment	VDEM	VR403	VIDEO OUT terminal on TRMB assembly	STILL (NTSC) Frame#19801	Play the test disc (GGV1003) and adjust the level to 2Vp-p±5% (Open). (Refer to waveform 1)
6	VCO (CCD) centering frequency adjustment				VR402	Q410 Emitter Q414 Emitter
			STILL (NTSC) Frame#5100	Play the test disc. Compare the output of the Q414 emitter with that of the Q410 emitter, and adjust to 70μsec±1.4μsec (1H+6μsec). (Refer to waveform 3)		
7	NTSC 1H Delay video level adjustment	VR401	IC401 pins31 and 33	STILL (NTSC) Frame#3800	Play the test disc. Adjust the video level of the 1H delay waveform of Pin33 to the same level of the main video signal of Pin31. Tolerance is within 3%.	
8	Burst gate timing adjustment	CONT (TBC) and VDEM	VR201	IC201 pin20 and Q414 Emitter	NTSC	Play the test disc. Compare the trailing edge of the output of IC201 to the leading edge of the output of Q414, and delay the timing for 1μsec±0.1μsec (Refer to waveform 4)
					PAL	Play the test disc. Compare the trailing edge of the output of IC201 to the trailing edge of the output of Q414, and delay the timing for 1.5μsec±0.1μsec (Refer to waveform 4)

No.	Adjustment Items	Adjust Assembly	Adjusting Point	Measurement Point	Player Condition (MODE)	Adjusting Specification
9	Hue error signal level adjustment	VDEM	VR404	TV Monitor screen	STILL (NTSC) Frame#7201	Color irregularity on the magenta screen is minimized.
10	PAL Y level adjustment		VR701	VIDEO OUT terminal on TRMB assembly	PLAY, STILL (PAL) Chapter#11	Play the test disc. Adjust the luminance level of the video output of PLAY to the same value of the video output of STILL.
11	PAL 1H delay S.C. level adjustment		VR703	TV Monitor screen	STILL (PAL) Chapter#11	Adjust the flicker on the monitor display to minimum.
12	NTSC S.C. frequency adjustment	TRMB	VR102	IC103 pin14	STILL (NTSC) Color bar	Connect the IC103 Pin23 to GND. Play the test disc, and adjust the S.C. frequency to 3.579545MHz \pm 20Hz. After the adjustment, disconnect the IC103 Pin23 from GND.
13	NTSC Hue adjustment		VR104	JA103 pin5		Play the test disc, and stabilize the output level of the blue signal to a-b-c-d. (Refer to waveform 5)
14	NTSC Chroma adjustment		VR103			Play the test disc, and adjust the output level of the blue signal to 0.75V _p -p \pm 10%. (a=b=c=d=0.75V _p -p \pm 10%, Terminated 75 Ω) (Refer to waveform 5)
15	PAL S.C. frequency adjustment		VR101	IC103 pin14		Connect the IC103 Pin23 to GND. Play the test disc, and adjust the S.C. frequency to 4.433619MHz \pm 20Hz. After the adjustment, disconnect the IC103 Pin23 from GND.
16	PAL Delay amp adjustment	VR106 and L102	JA103 pin3	PLAY (PAL) Color bar	Play the test disc, and stabilize the output level of the red signal to a-a' and b-b'. (Refer to waveform 6)	
17	PAL Chroma adjustment	VR105			Play the test disc, and adjust the output level of the red signal to 0.75V _p -p \pm 10%. (a-a'=b-b'=0.75V _p -p \pm 10%, Terminated 75 Ω) (Refer to waveform 6)	

NOTE :

When the adjustments after step No.12 (adjustment of TRMB assembly) are completed, confirm that normal color bar signals for both NTSC and PAL are output on the monitor display.

SCAN (◀◀, ▶▶) button

This is for quickly finding a particular point in the program from which you wish to play the disc. Scanning continues for as long as you keep the SCAN button depressed.

- ▶▶ : Forward direction
- ◀◀ : Reverse direction

DISC TABLE

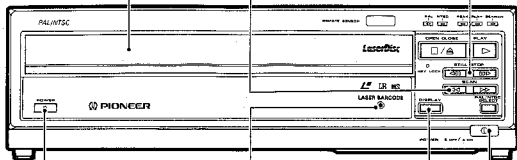
When power is switched on, and OPEN/CLOSE button is pressed, the disc table is expelled outward.

STILL/STEP (◀◀, ▶▶) button**Functions only during CAV disc playback.**

When either end of the button is pressed, the unit will enter frame-by-frame playback. Then, when the ▶▶ end is pressed, the picture will advance forward frame-by-frame. When the ◀◀ end is pressed, the picture will reverse frame-by-frame.

NOTE:

If this button is pressed during CLV disc playback, "CLV" appears on the screen to indicate that the button does not function.

**POWER indicator**

When power is turned on, the indicator lights up.

**LASER BARCODE terminal
(stereo miniature phone jack)**

A terminal for connecting an optional remote control unit RU-V103 in the wired mode.

To be connected when using the optional bar code reader UC-V104BC in the wired mode.

POWER switch

Press to turn the power on and off.

DISPLAY button

This button is used to display or erase chapter number and frame numbers on the TV screen.

When the power is turned ON with this button pressed, the function switches to setting mode.

NOTE:

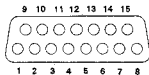
- During CLV disc playback, elapsed time numbers will be displayed in place of frame numbers.
- When only the DISPLAY button is pressed, the display appears and reappears alternately each time the button is pressed.

12. INTERFACE CONNECTOR TERMINALS

Used when external control is performed by using a controller or computer.

[Shape]

15 pin D-SUB connector

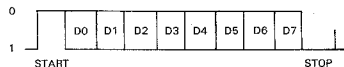


[Terminal names]

Pin No.	Terminal	I/O	Level
1	GND	-	-
2	TxD	Output	RS-232C
3	RxD	Input	RS-232C
4	DTR	Output	RS-232C
5	Not used	-	-
6	V SYNC	Output	TTL
7	H SYNC	Output	TTL
8	Not used	-	-
9	TxD	Output	TTL
10	RxD	Input	TTL
11	GND	-	-
12	DUMP	Output	-
13	AUX1	Output	TTL
14	AUX2	Output	TTL
15	GND	-	-

- Signals for both the RS-232C level (No.2 and 3) and TTL level (No. 9 and 10) are provided. However, they cannot be used at the same time. They also cannot be connected together.
- The following is the data format:

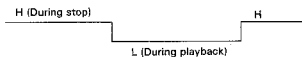
1 START + 8 DATA + 1 STOP



- By setting the FUNCTION switch, the baud rate can be set to either 9600 bits/sec, 4800 bits/sec or 1200 bits/sec.

[Function]

- | | |
|-----------|------------------------------------------------------------------------------------|
| 1. GND | : Ground (TxD, RxD use) |
| 2. TxD | : Transmitted Data (RS-232C) |
| 3. RxD | : Received Data (RS-232C) |
| 4. DTR | : Data Terminal Ready (RS-232C) |
| 6. V SYNC | : Playback vertical sync output (TTL) |
| 7. H SYNC | : Playback horizontal sync output (TTL) |
| 9. TxD | : Transmitted data (TTL) |
| 10. RxD | : Received data (TTL) |
| 11. GND | : Ground |
| 12. DUMP | : Audio CH2 signal output |
| 13. AUX1 | : Video indicator output (TTL)
High during stop but low during screen playback. |



- | | |
|----------|-------------------------------------------------|
| 14. AUX2 | : Jump TOGGLE output (TTL) |
| 15. GND | : Ground (for synchronizing signal output use.) |

NOTES:

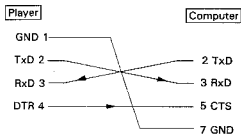
- Do not connect terminals 5 and 8 to ground; make sure it is free.
- Be sure to perform plugging and unplugging when the power is turned off.

CONNECTIONS TO COMPUTER RS-232C PORTS

Connect the player TxD, RxD and GND to the computer RxD, TxD and GND respectively.

Although TxD and RxD are provided for both RS-232C and TTL levels, they cannot be used at the same time. The player DTR (Terminal 4) is connected to the computer CTS (Clear to Send), if necessary.

(Use a separately sold interface cable.)



In regard to the data format, it has 1 start bit, 8 data bits, and 1 stop bit.

13. SPECIFICATIONS

1. General

System and Disc specifications ... LaserVision Videodisc system

Maximum playing time

30 cm (12-inch) CAV disc	30 min/side
30 cm (12-inch) CLV disc	60 min/side
20 cm (8-inch) CAV disc	14 min/side
20 cm (8-inch) CLV disc	20 min/side

Spindle motor speed (When 30 cm disc is used.)

During PAL disc playback	
CAV disc	1500 rpm
CLV disc	1500 - 500 rpm

During NTSC disc playback

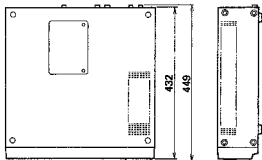
CAV disc	1800 rpm
CLV disc	1800 - 600 rpm

Power requirements 120/220 - 240 V AC (switchable), 50/60Hz

Max. power consumption 120 V 0.8 A/220 - 240 V 0.4 A

Net weight (without package) 12.6kg (28 lb)

Dimensions 420(W) x 449(D) x 125(H) mm
16-9/16(W) x 18-15/16(D) x 4-15/16(H) in



Operating temperature	+5°C to +35°C (41°F to 95°F)
Operating humidity	5% to 90% (There should be no condensation.)

2. Video characteristics

Format	PAL/NTSC (automatic switchover)
Video output	
Level	1 Vp-p nominal sync. negative, terminated
Impedance	75 Ω unbalanced
Terminal	BNC jack, RCA jack

3. Audio characteristics

Audio output	Two-channel: stereo or two individual channels
Level	200 mV nominal
Terminal	Two RCA-jacks

4. Functions

[Operations provided by player front panel function buttons]

Function	CAV disc	CLV disc
PLAY	YES	YES
REJECT	YES	YES
SCAN FWD.REV	YES	YES
STILL/STEP FWD.REV	YES	NO
DISPLAY ON/OFF	YES	YES
PAL/NTSC	Automatic switchover during playback	

[Operations by a separately sold remote control unit]

Function	CAV disc	CLV disc
PLAY	YES	YES
PAUSE	YES	YES
REJECT	YES	YES
REPEAT MODE	YES	YES
STILL/STEP FWD.REV. STILL	YES	NO
MULTI-SPEED FWD.REV	YES	NO
SCAN FWD.REV	YES	YES
AUDIO SELECT	YES	YES
VIDEO ON/OFF	YES	YES
DISPLAY ON/OFF	YES	YES
CLEAR	YES	YES
FRAME NUMBER SEARCH	YES	YES
TIME NUMBER SEARCH	NO	YES
CHAPTER NUMBER SEARCH	YES*	YES*

- * Enabled when a disc with recorded chapter numbers is played back.

[Other Function]

- CX system ... Auto selection operation when a disc with recorded CX auto selection codes is played back.

5. Other Terminals

- LASER BARCODE (front panel) ... Stereo miniature phone jack
- INTERFACE CONNECTOR (rear panel) ... 16 pin, D-SUB connector
- EFM OUT (rear panel) ... 5 pin, DIN connector
- RGB OUT (rear panel) ... 9 pin, D-SUB connector
- EXT SYNC IN/OUT ... BNC jacks

6. Accessories

- Operating instructions 1
- Audio connecting cord 1
- Video connecting cord 1

NOTE:

The playback time depends on the content of a disc.
Specifications and design subject to possible modifications without notice, due to improvements.



This symbol shows that the bar code can be used for the Laser Barcode system. Use a bar code marked with this symbol.

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