PIONEER
The Art of Entertainment

Service Manual

ORDER NO.
ARP2311

LASERDISC PLAYER

LD-V4300D

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

CONTENTS

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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 LÄHETTÄÄ NÄKYMÄTÖNTÄ, SILMILLE VAARALLISTA INFRAPUNASÄTEILYÄ. LAITTEEN SISÄLLÄ ON LASERDIODIN LÄHEISYYDESSÄ KUVAN 1. MUKAINEN VAROITUSMERKKI.

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.

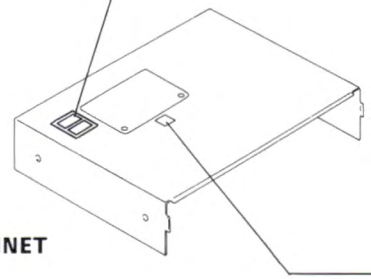
LASER
Picture 1
Warning sign for laser radiation

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE 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
APARATEN INNEHÅLLER LASER AV HÖGRE KLASS ÄN 1. INGREPP I APPARATEN BÖR GÖRAS AV SPECIELLT UTBILDAD PERSONAL.

2. LABEL CHECK



BONNET

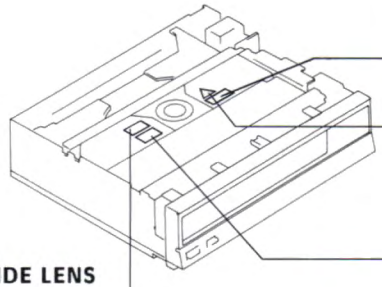
CAUTION
INVISIBLE LASER
RADIATION WHEN OPEN,
AVOID EXPOSURE
TO BEAM

DRW1178

ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.

VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL (ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!

VRW-386



BESIDE LENS

CAUTION
INVISIBLE LASER
RADIATION WHEN OPEN,
AVOID EXPOSURE
TO BEAM PRW1018

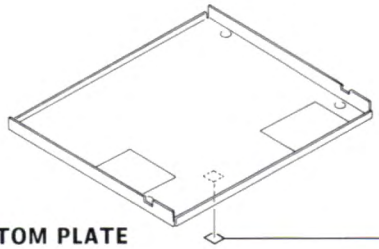
VRW-329

VARO!
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

VARNING!
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

PRW1233

PRW1233



BOTTOM PLATE

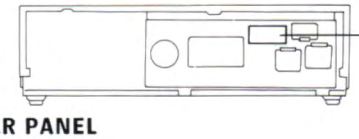
LASER RADIATION
AVOID EXPOSURE TO BEAM. CLASS 3B LASER PRODUCT

ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION
UNDGÅ UDSÆTTELSE FOR STRÅLING

UNSICHTBARE
LASER-STRAHLUNG NICHT DEM STRAHL AUSSETZEN! LASER KLASSE 3B

PRW-182-A

VRW-386



REAR PANEL

CLASS 1 LASER PRODUCT

LASER KLASSE 1

ORW 1104-A

ORW1104

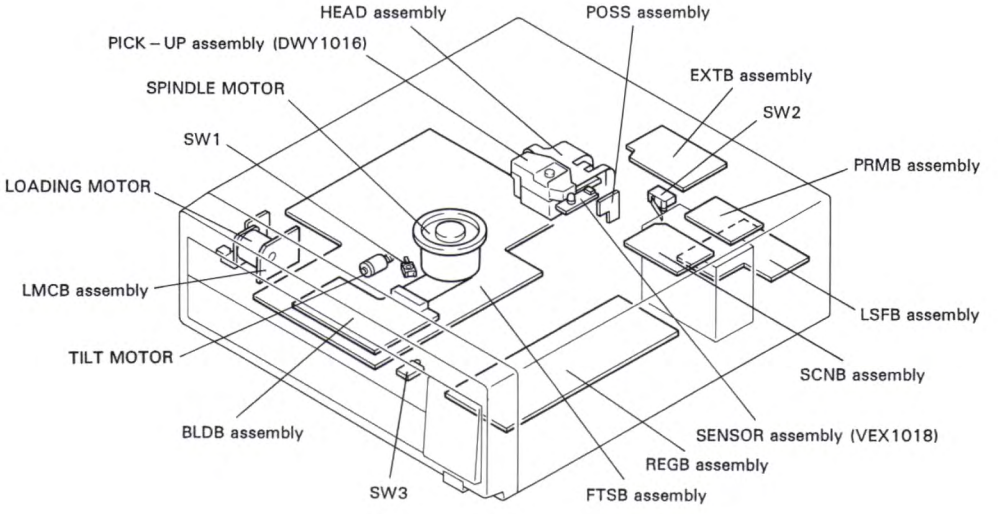
Additional Laser Caution

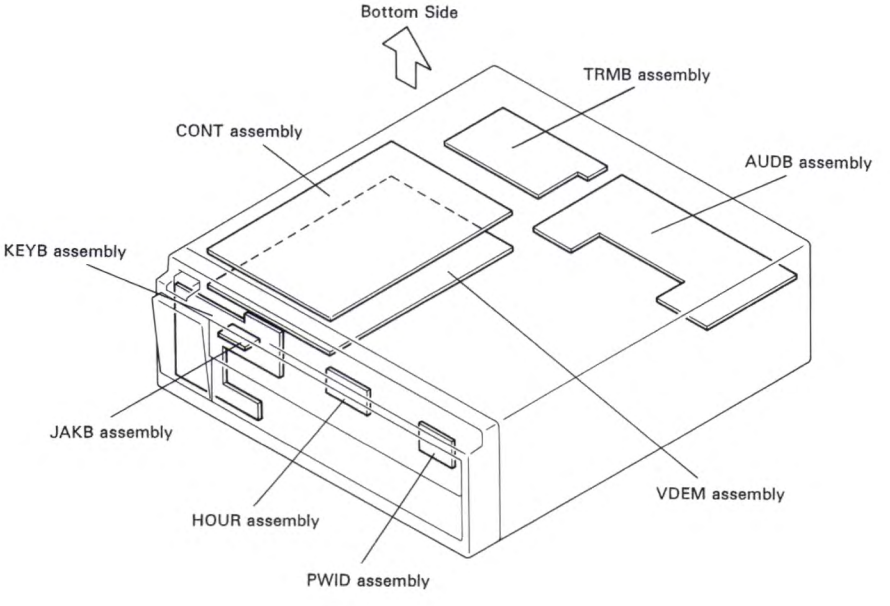
1. Laser Interlock Mechanism
   The design prevents laser diode oscillation when Slide Switch S2, for detect of Disc Tray being put into the player, is not activated (IN SW signal : High level).
   This Slide Switch S2 is activated by Rack Gear (R) (refer to page 8, No.3) when Disc Tray is put into the 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.

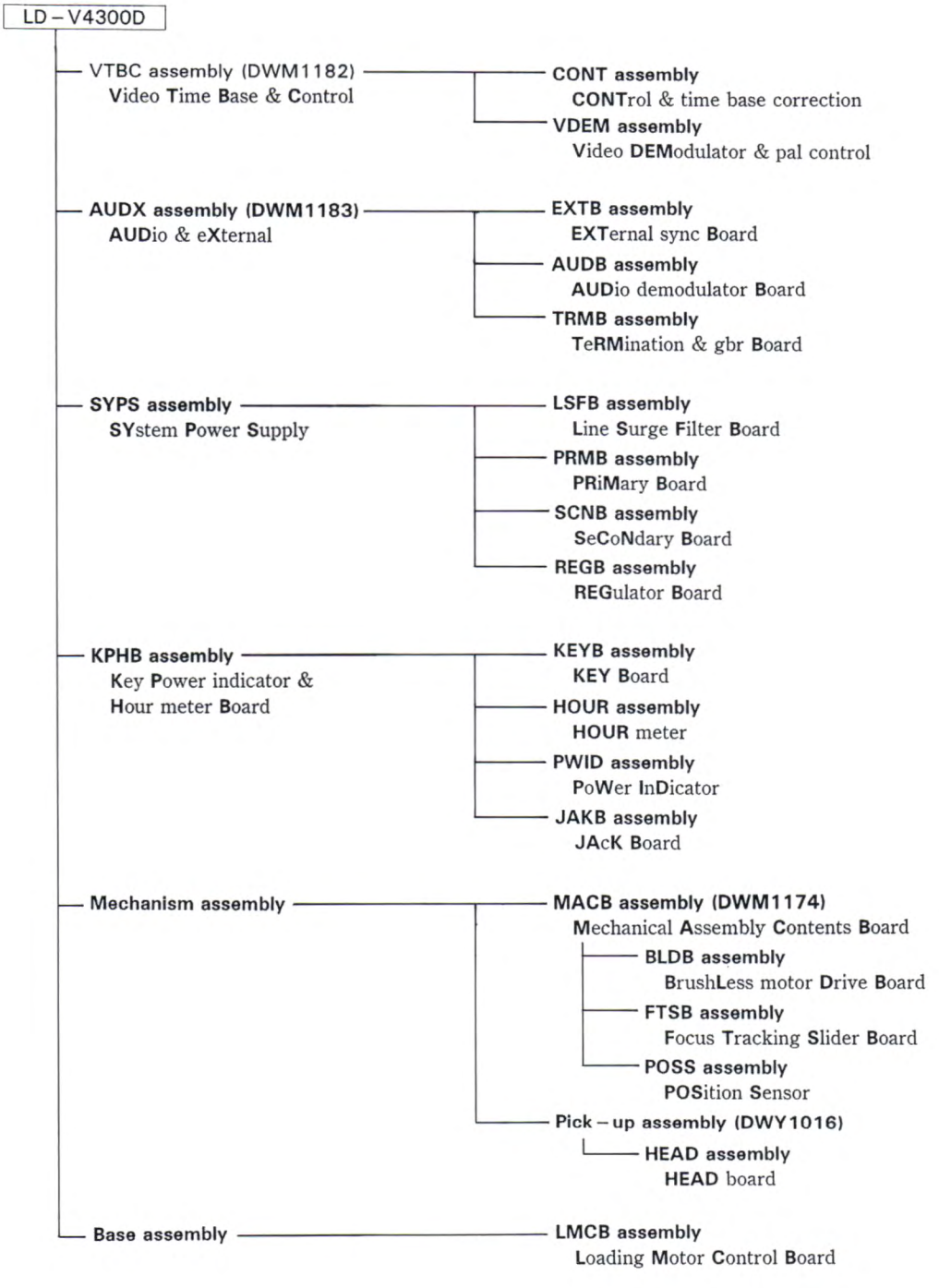
3. P.C.BOARDS LOCATION

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 ⚠ 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.*

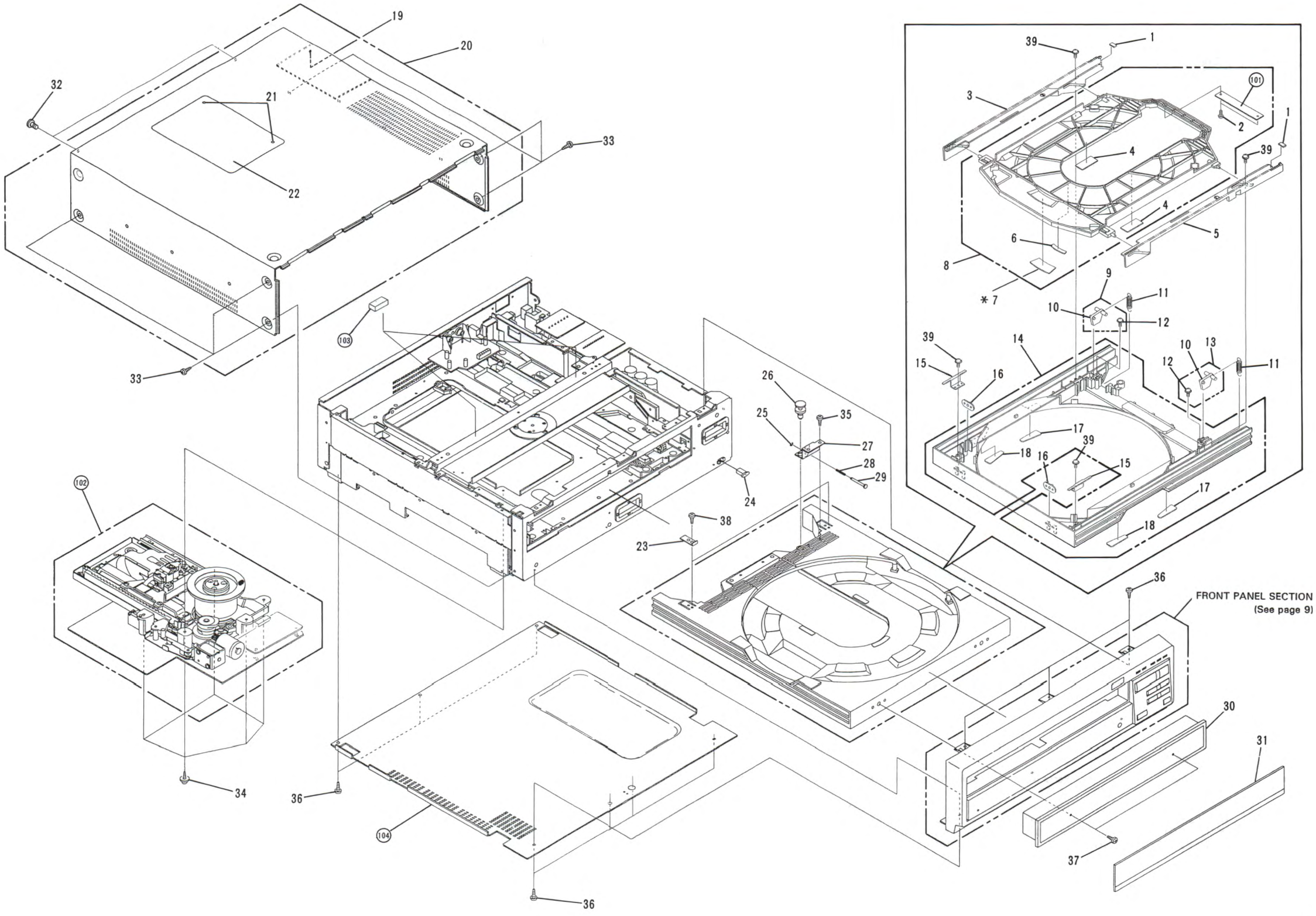
4.1 EXTERIOR

Parts list of Exterior

Mark	No.	Description	Parts No.
	1	RACK DUMP RUBBER	VEB1041
	2	SCREW	BPZ30P060FMC
	3	RACK GEAR (R)	VNL1061
	4	DISC PAD B	DED1031
	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	VBN−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

Mark	No.	Description	Parts No.
	101	REINFORCED PLATE	DNH1160
	102	MECHANISM ASSEMBLY	DWT1045
	103	DUMPER RUBBER	VEC1004
	104	BOTTOM PLATE	DNE1133

*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.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FRONT PANEL SECTION
(See page 9)
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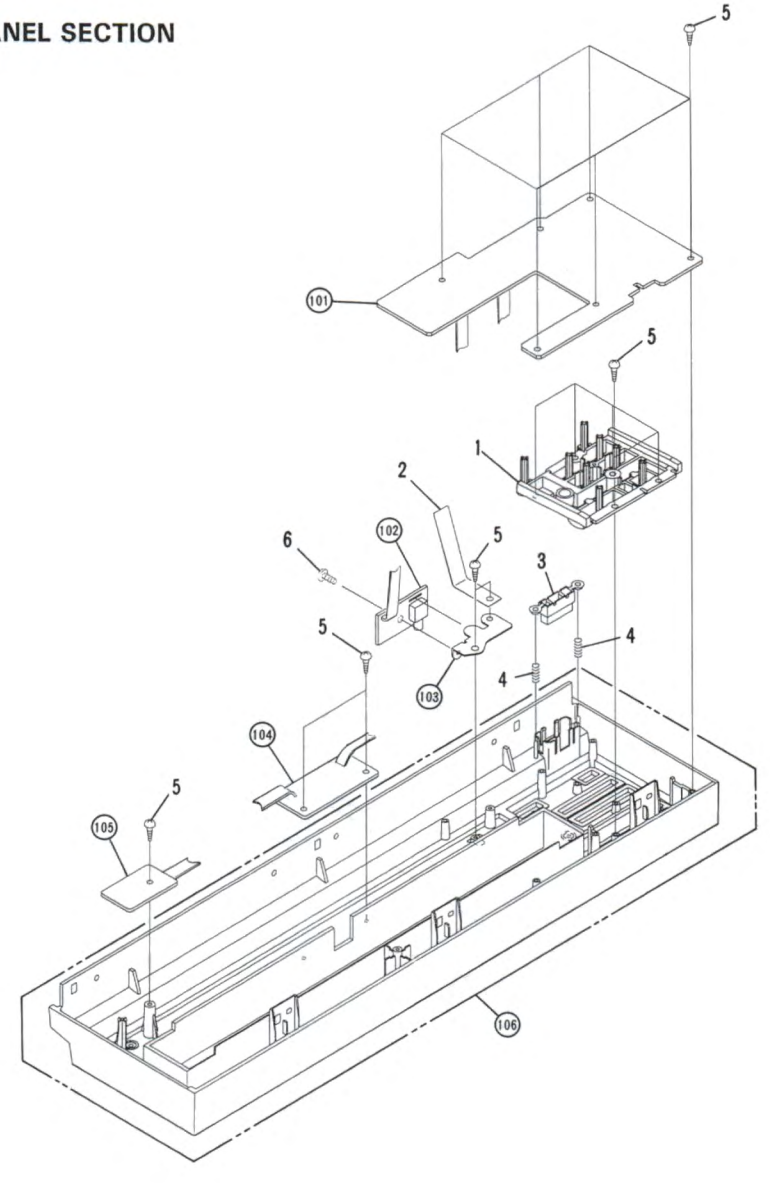
4.2 FRONT PANEL SECTION



Parts list of Front panel section

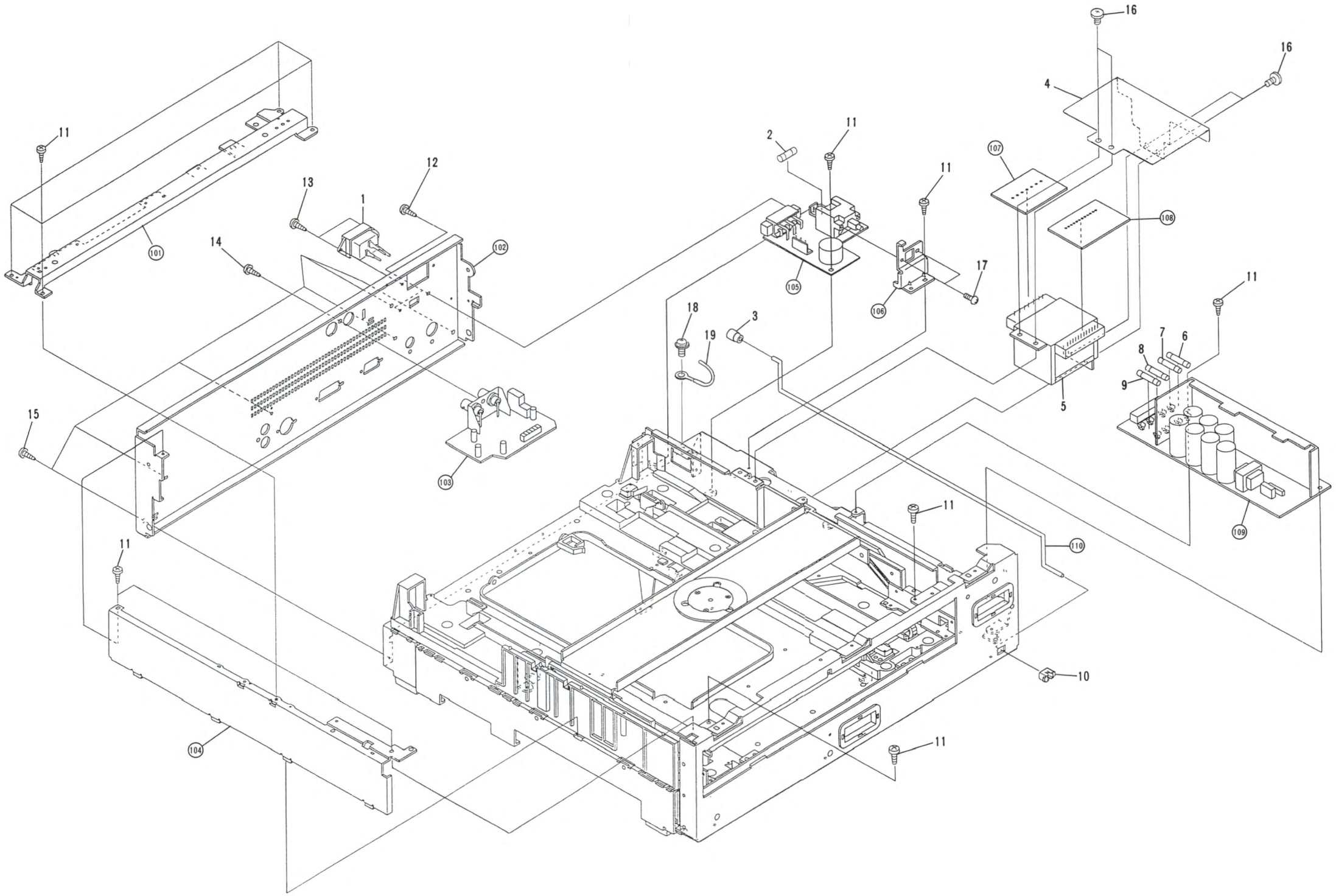
Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	CONTROL BUTTON	DNK2004		101	KEYB ASSEMBLY	DWG1209
	2	GND PLATE	DNH1588		102	JAKB ASSEMBLY	DWX1203
	3	POWER BUTTON	DNK2059		103	MINI JACK HOLDER	VNE−576
	4	POWER BUTTON SPRING	DBH1043		104	HOUR ASSEMBLY	DWX1201
	5	SCREW	BPZ30P080FMC		105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

4.3 INTERIOR 1

Parts list of Interior 1

Mark	No.	Description	Parts No.
⚠	1	3P INLET ASSEMBLY	DKN1040
⚠	2	FUSE (T1.6A, FU1)	REK−102
	3	JOINT CAP	DEB1057
	4	PROTECTOR	DEC1404
⚠	5	POWER TARNSFORMER (T1)	DTT1055
⚠	6	FUSE (T2A, FU2)	REK−103
⚠	7	FUSE (T2A, FU3)	REK−103
⚠	8	FUSE (T3.15A, FU4)	REK−105
⚠	9	FUSE (T3.15A, FU5)	REK−105
	10	PSW BUSH	DNK1326
	11	SCREW	BBZ30P080FMC
	12	SCREW	BPZ26P080FZK
	13	SCREW	BBZ30P080FZK
	14	SCREW	PMZ30P080FZK
	15	SCREW	BBT30P080FZK
	16	SCREW	BBT40P080FZK
	17	SCREW	PMB30P060FMC
	18	SCREW	PMB40P080FMC
	19	BINDER	PEC−107

Mark	No.	Description	Parts No.
	101	REINFORCED BRIDGE	DNF1323
	102	REAR PANEL	DNC1182
	103	EXTB ASSEMBLY	DWG1208
	104	REINFORCED PLATE	DNF1134
	105	LSFB ASSEMBLY	DWR1087
	106	SWITCH HOLDER	DNF1138
	107	PRMB ASSEMBLY	DWR1088
	108	SCNB ASSEMBLY	DWR1089
	109	REGB ASSEMBLY	DWR1090
	110	PSW JOINT	DNH1527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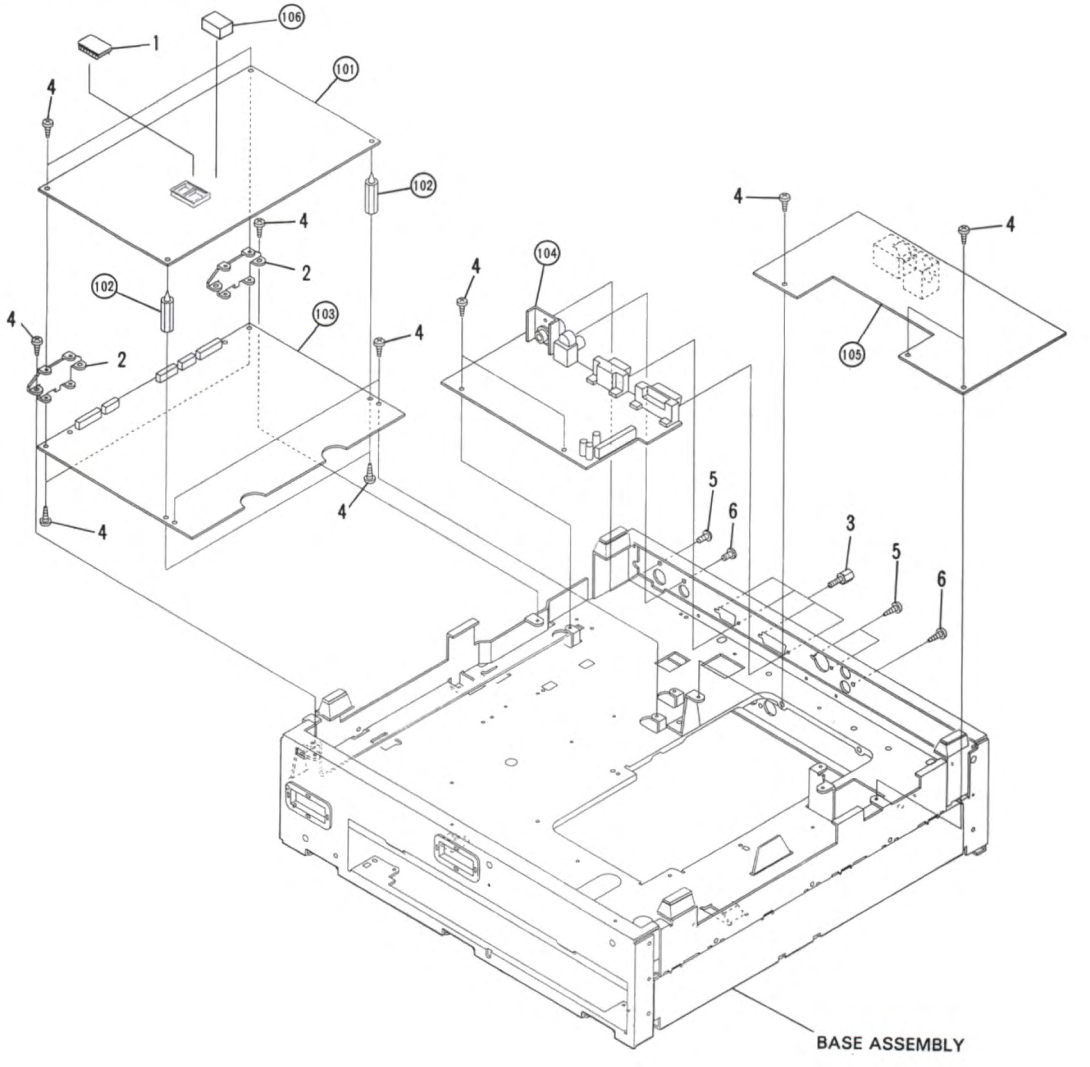
4.4 INTERIOR 2



Parts list of Interior 2

Mark	No.	Description	Parts No.	Mark	No.	Description	Parts No.
	1	PROGRAMED EPROM (IC9)	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
	6	SCREW	BBT30P080FZK		106	CUSHION	DEC1414

4.5 BASE ASSEMBLY

Parts list of Base assembly

Mark	No.	Description	Parts No.
	1	SCREW	BPZ26P060FCU
	2	CLAMPER HEAD	VNL1130
	3	SCREW	CMZ20P050FMC
	4	DISC CLAMPER ASSEMBLY−S	VXX1157
	5	GEAR (A)	VNL1020
	6	GEAR (A) SHAFT	VLL1037
	7	GEAR (B)	VNL1064
	8	WASHER	WT32D060D050
	9	GEAR (C)	VNL1010
	10	MOTOR BASE ASSEMBLY	VXA1088
	11	RUBBER BUSHING	VEB1025
	12	SCREW	PMB26P040FMC
	13	PULLY (L) ASSEMBLY	VXA−477
	14	SYNCHRONIZED BELT L	VEB−125
	15	LOADING MOTOR ASSEMBLY−S	VXX1084
	16	MOTOR PULLY	VNL1051
	17	PLASTIC RIVET	DEC1405
	18	CLAMP CAM (L)	VNL1068
	19	LOCK LEVER (L)	VNL1070
	20	SLIDE SWITCH (TABLE/IN, S2)	VSK−010
	21	CLAMP CAM (R)	VNL1069
	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	BPZ30P080FMC
	34	SCREW	ABZ30P080FMC
	101	CLAMPER HOLDER ASSEMBLY	DXB1184
	102	LMCB ASSEMBLY	DWG1093
	103	GUARD SHEET	DEC1375
	104	SWITCH HOLDER (A)	VNE1078
	105	SYNCHRONIZED PLATE (R)	DNH1165
	106	SYNCHRONIZED PLATE (L)	DNH1164
	107	SWITCH HOLDER (B)	VNE1079
	108	BASE DUMP RUBBER	VEB1042
	109	PLASTIC BASE (L)	DNK1465
	110	PLASTIC BASE (R)	DNK1466
	111	INNER PLATE (R)	DNF1325
	112	INNER PLATE (F)	DNF1324
	113	PCB SPACER (10)	DEC1388
	114	PROTECTOR	DNK1340
	115	FRONT PLATE	DNA1088
	116	WIRE CLIP D	VEC−130
	117	LEG	DNK1354
	118	PCB SPACER (30)	DEC1389
	119	WIRE CLIP	DEC1410
	120	LOCKING WIRE SADDLE	DEC1305
	121	CHASSIS PLATE	DNA1089

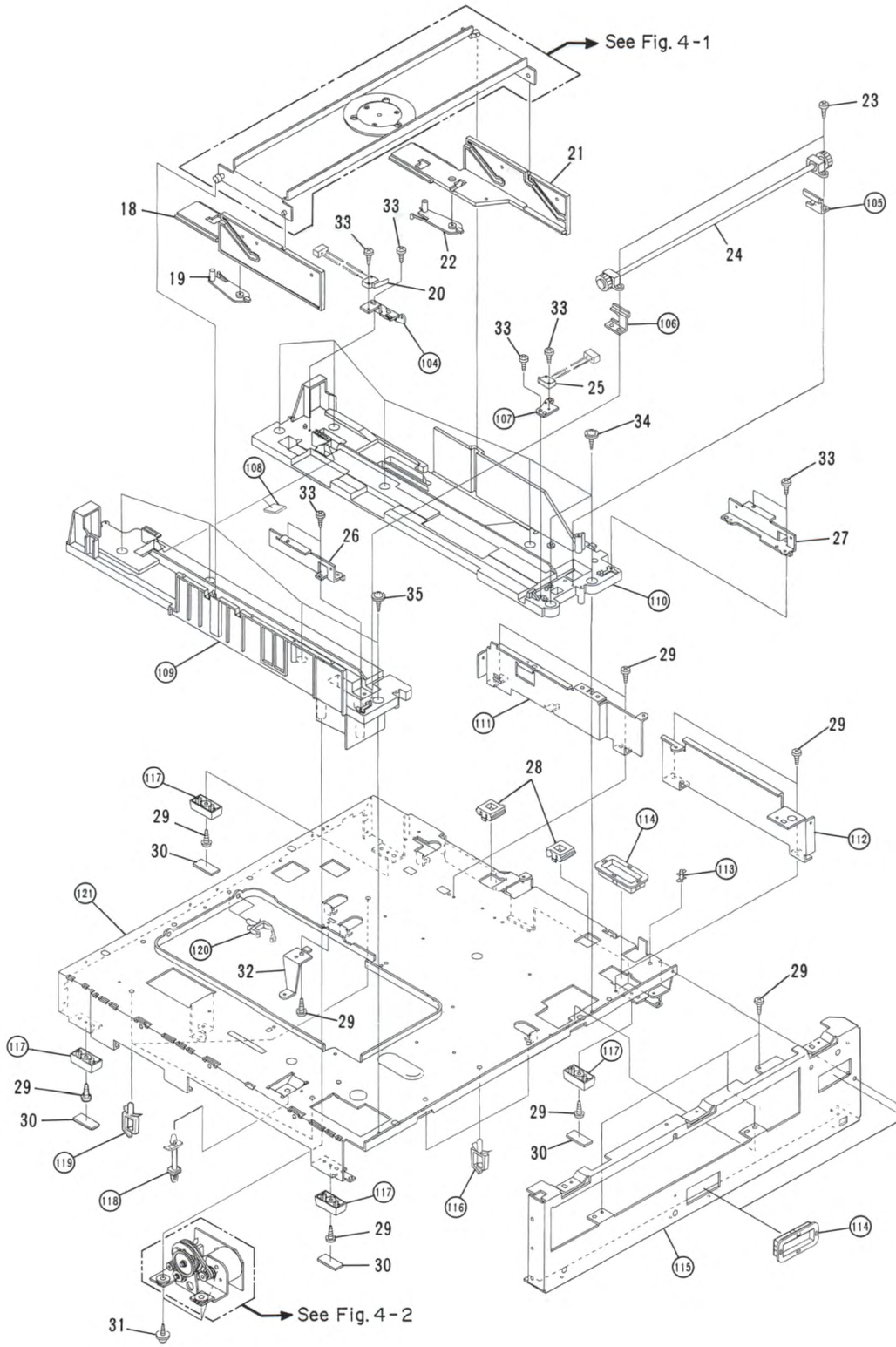


Fig. 4-1

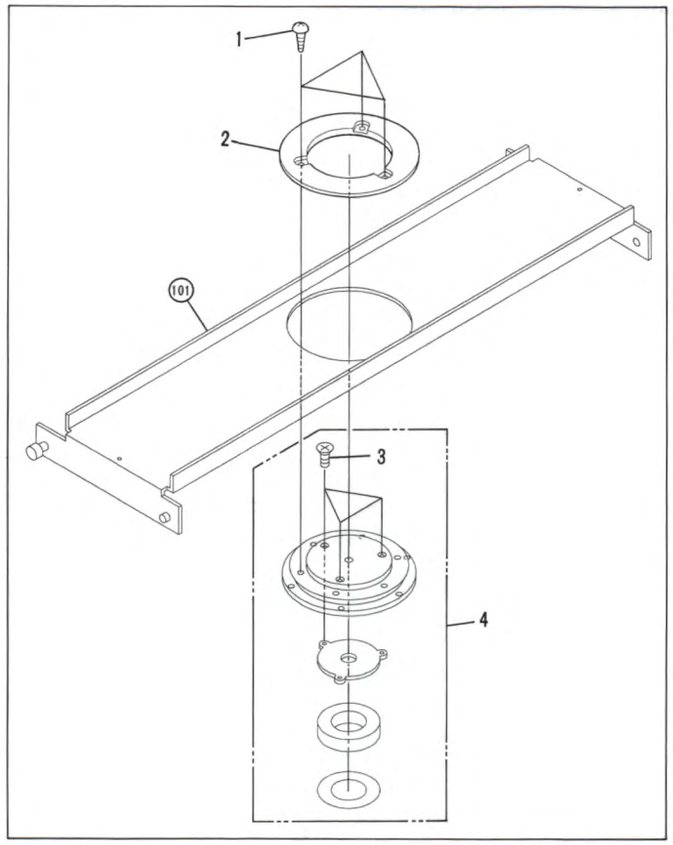
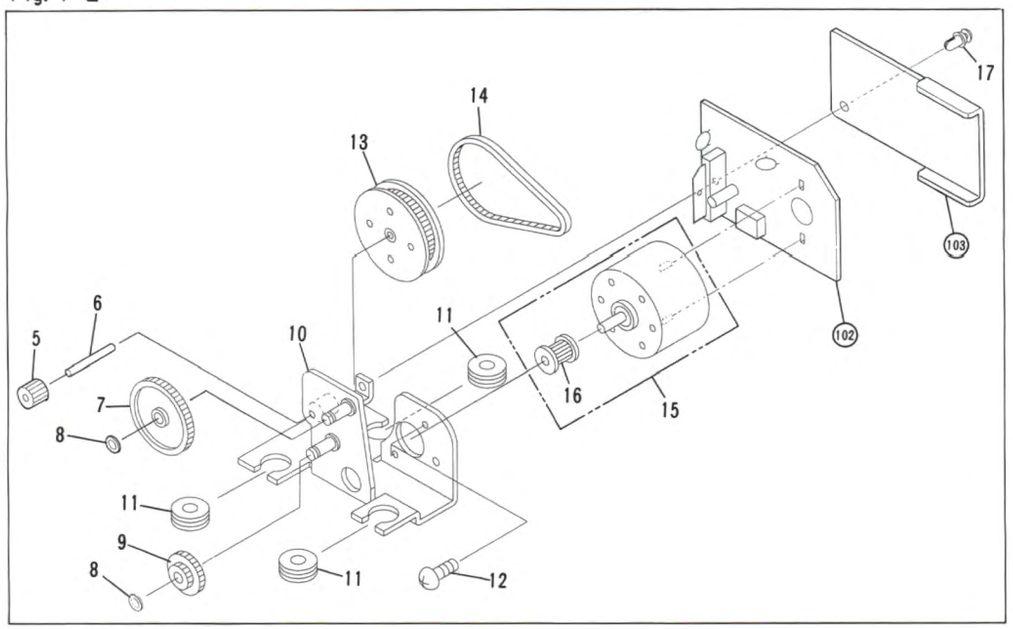
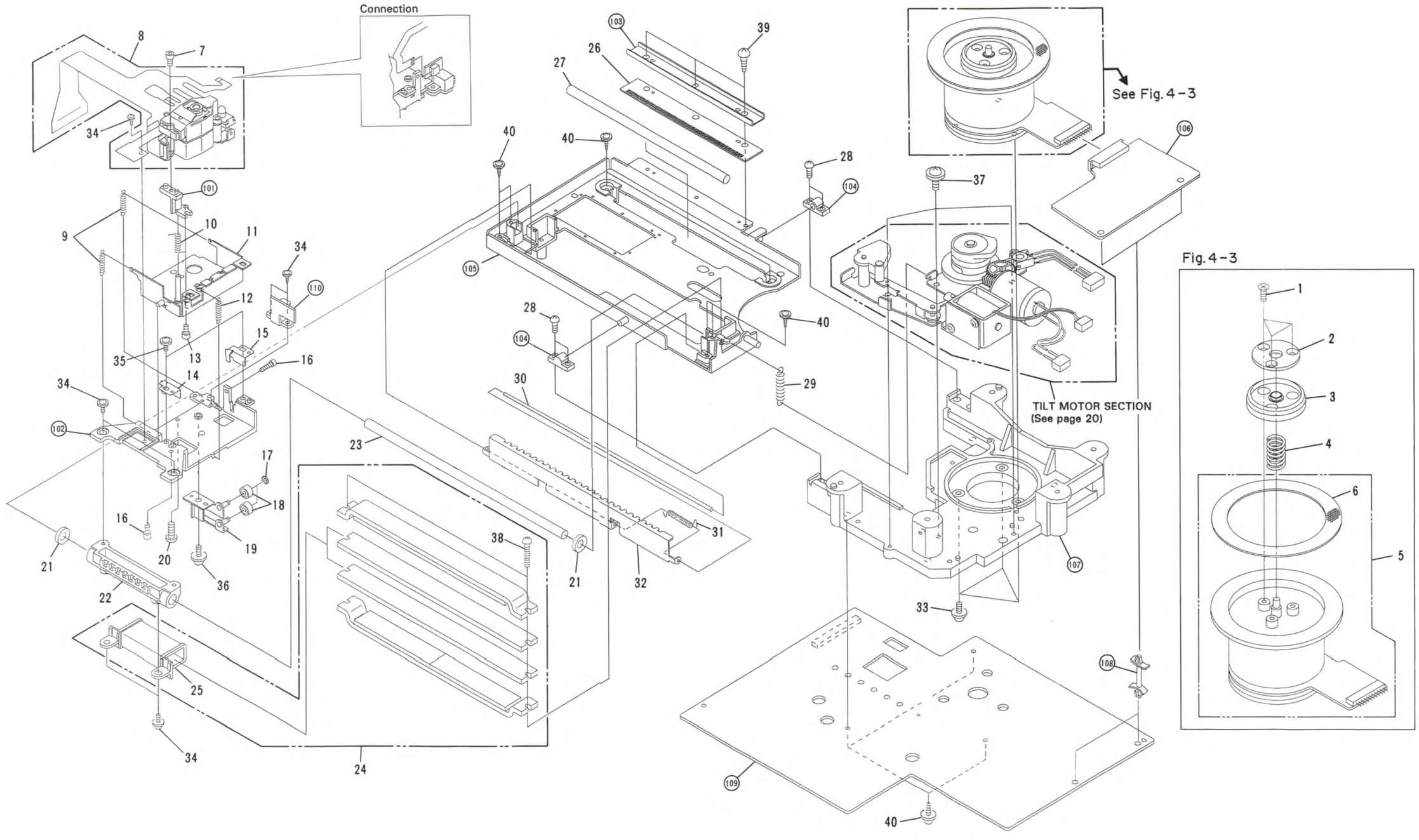


Fig. 4-2



4.6 MECHANISM ASSEMBLY

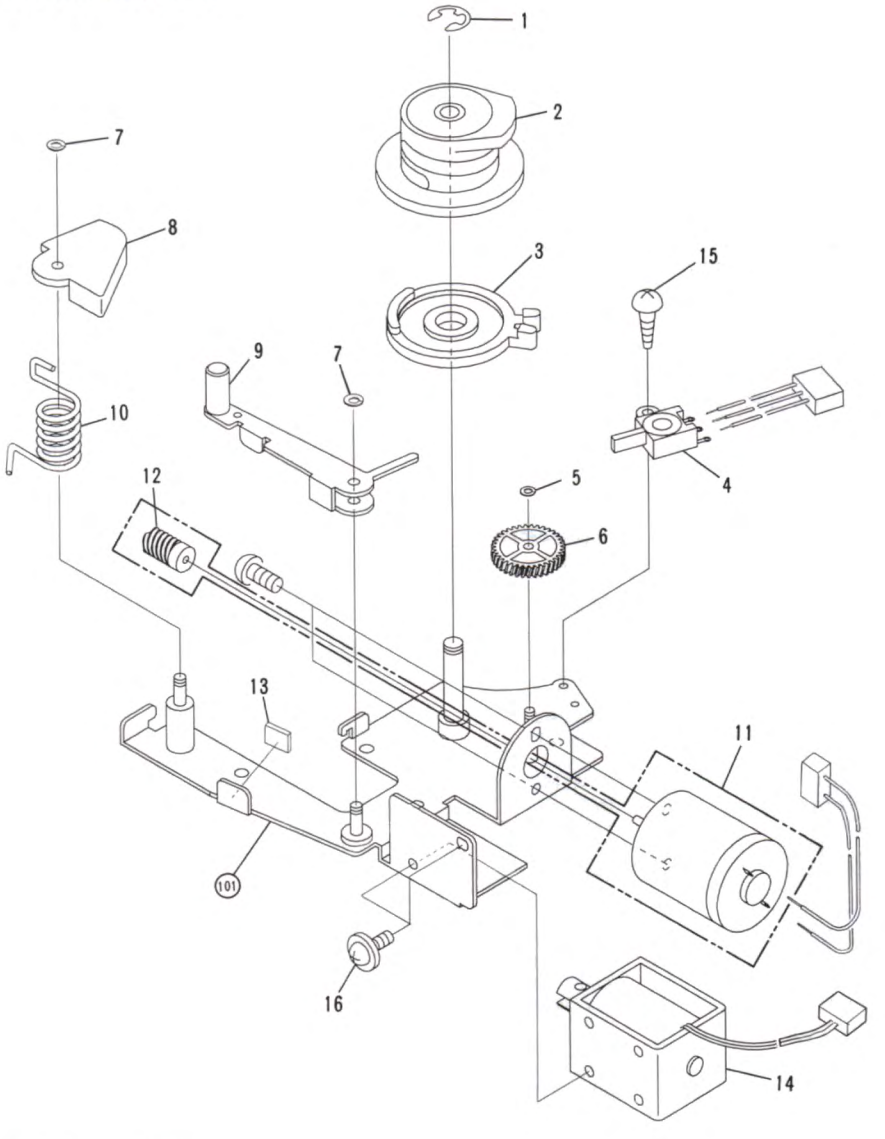


Parts list of Mechanism assembly

Mark	No.	Description	Parts No.
	1	SCREW	CBZ30P080FCC
	2	PLATE	VNE1103
	3	CENTERING HAB	DLA1496
	4	CENTERING SPRING	DBH1154
	5	SPINDLE MOTOR ASSEMBLY−S	DXX1681
	6	RUBBER SPACER	DEB1052
	7	BOLT (M2.6×6)	VLL1107
	8	PICK−UP ASSEMBLY	DWY1016
	9	RETURN SPRING	DBH1182
	10	HT SPRING	DBH1044
	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	BBZ30P200FMC
	39	SCREW	BBZ30P060FMC
	40	SCREW	APZ30P080FMC

Mark	No.	Description	Parts No.
	101	PU HOLDER	DNS1049
	102	SLIDER	DNS1117
	103	REINFORCED PLATE	DNF1142
	104	OPTICAL HOLDER	DNS1078
	105	TILT BASE	DNK1984
	106	BLDB ASSEMBLY	DWR1081
	107	MECHANISM CHASSIS	DNK1985
	108	PCB SPACER (14)	DEC1387
	109	FTSB ASSEMBLY	DWV1068
	110	POSS ASSEMBLY	DWX1191

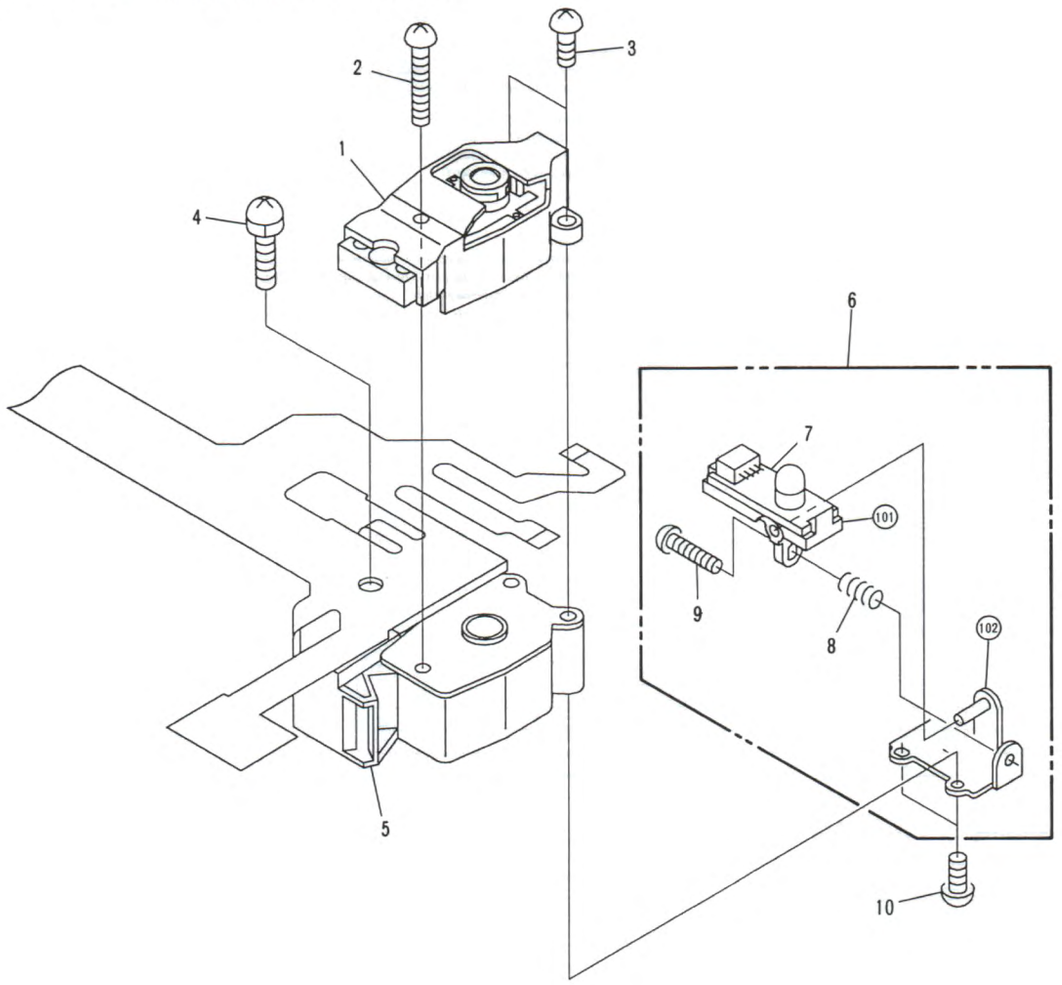
4.7 TILT MOTOR SECTION



Parts list of Tilt motor section

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

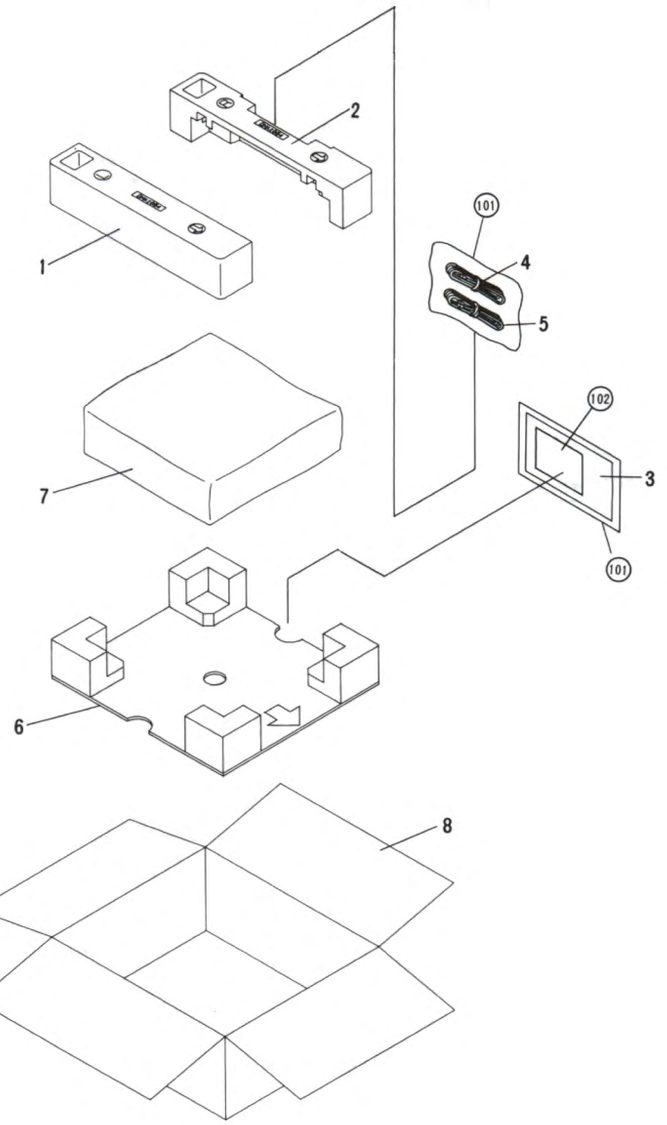
4.8 PICK－UP ASSEMBLY (DWY1016)



Parts list of Pick－up assembly

Mark	No.	Description	Parts No.
	1	ACTUATOR ASSEMBLY	VXX1552
	2	SCREW	PMA20P160FMC
	3	SCREW	PMA20P060FMC
	4	SCREW	PMA20P080FMC
	5	PRE PICK－UP ASSEMBLY－S	DXX1684
	6	SENSOR ASSEMBLY－S	VXX1611
	7	SENSOR ASSEMBLY	VEX1018
	8	SENSOR SPRING	DBH1151
	9	SCREW	PMZ20P140FMC
	10	SCREW	PMA20P040FMC
	101	SPACER	DNA1129
	102	SENSOR STAY	DNK1987

4.9 PACKING



Parts list of Packing

Mark	No.	Description	Parts No.
	1	TOP PAD (L)	DHA1054
	2	TOP PAD (R)	DHA1055
	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
	101	POLYETHYLENE BAG	VHL－014
	102	NOTES	VRM1027

5. SCHEMATIC AND P.C.BOARDS CONNECTION DIAGRAM

5.1 CONNECTION DIAGRAM

1. RESISTORS:
Indicated in Ω, ¼W, ⅛W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10% (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/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
Value in ( ) is DC voltage at rated power.
⇦ mA : DC current at no input signal

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

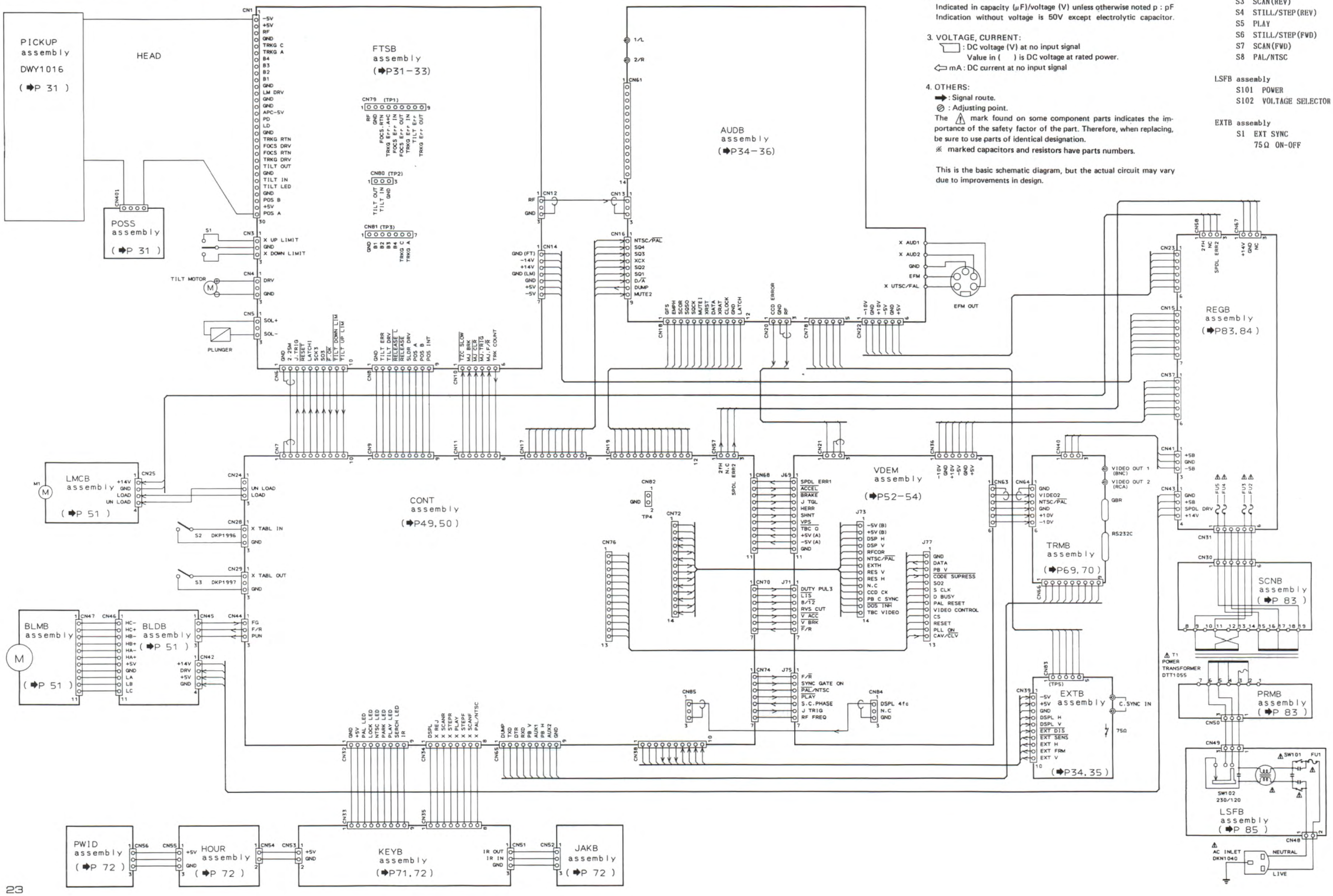
This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

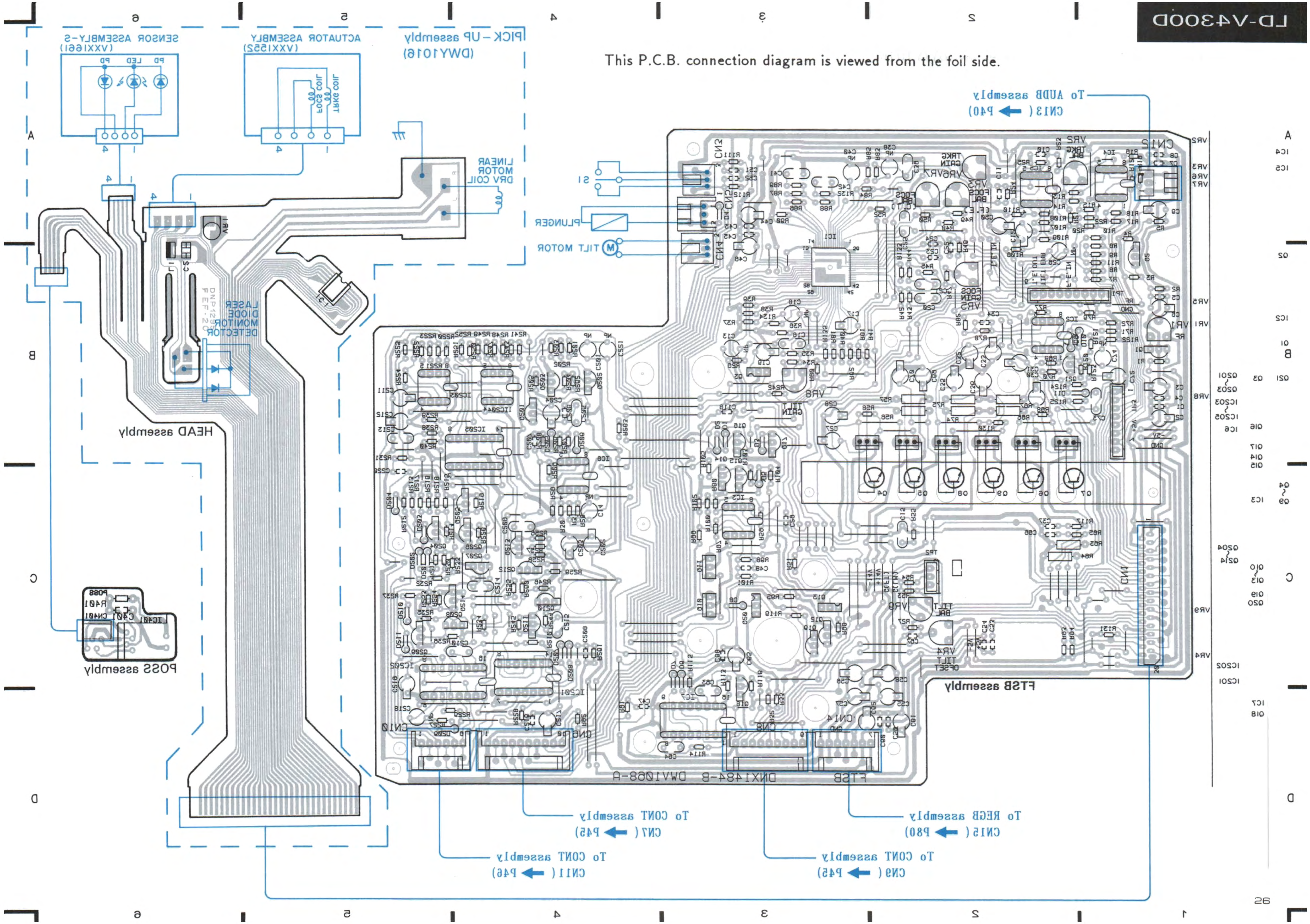
KEYB assembly
- S1 DISPLAY
- S2 OPEN/CLOSE
- S3 SCAN(REV)
- S4 STILL/STEP(REV)
- S5 PLAY
- S6 STILL/STEP(FWD)
- S7 SCAN(FWD)
- S8 PAL/NTSC

LSFB assembly
- S101 POWER
- S102 VOLTAGE SELECTOR

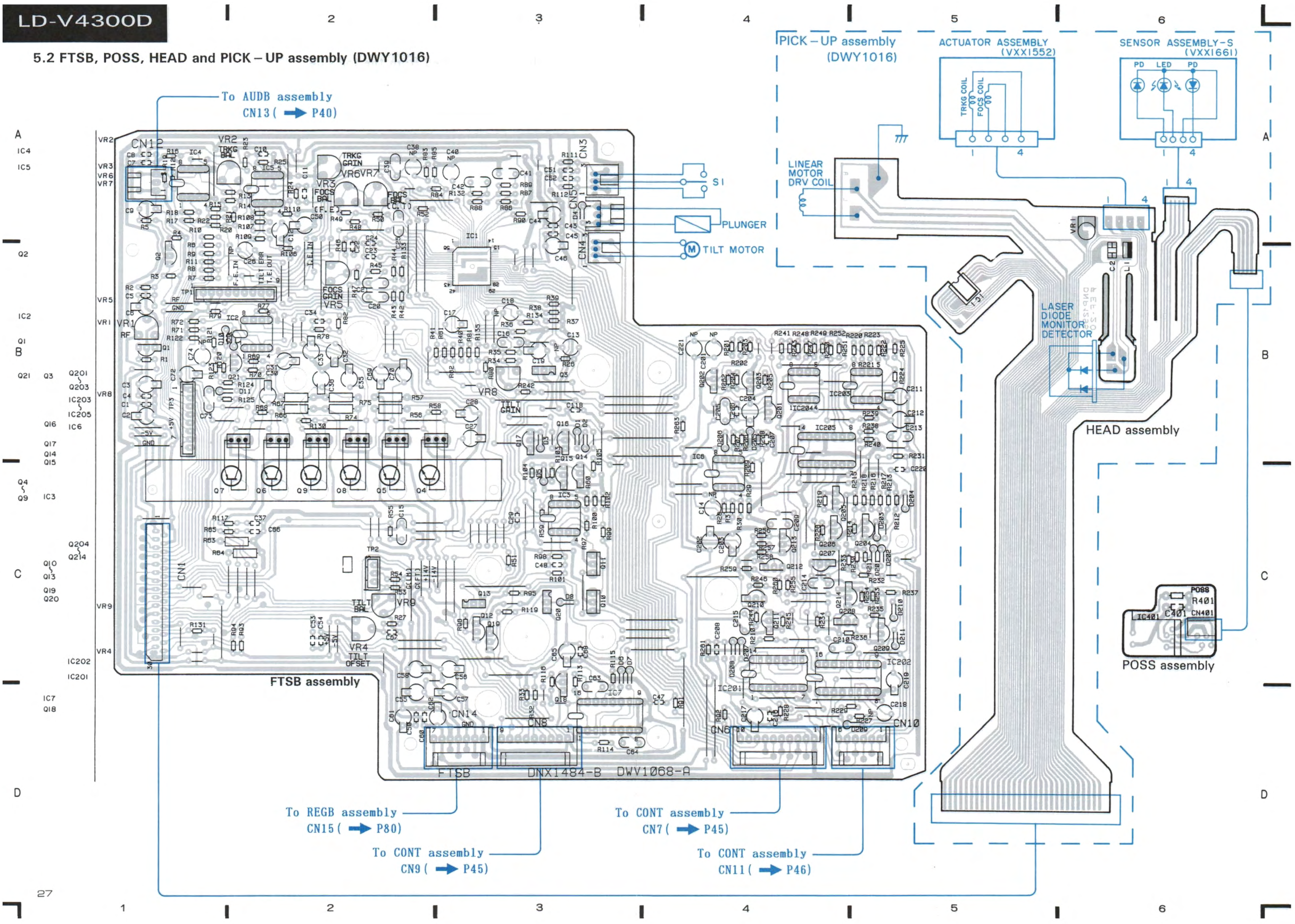
EXTB assembly
- S1 EXT SYNC 75Ω ON-OFF



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

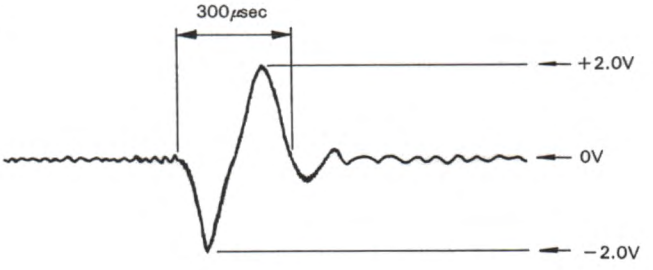


5.2 FTSB, POSS, HEAD and PICK – UP assembly (DWY1016)

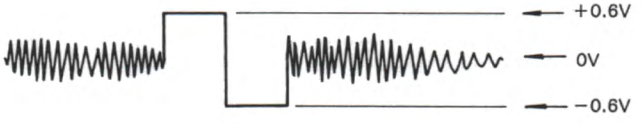


● FTSB assembly

① TRKG ERROR (STILL)



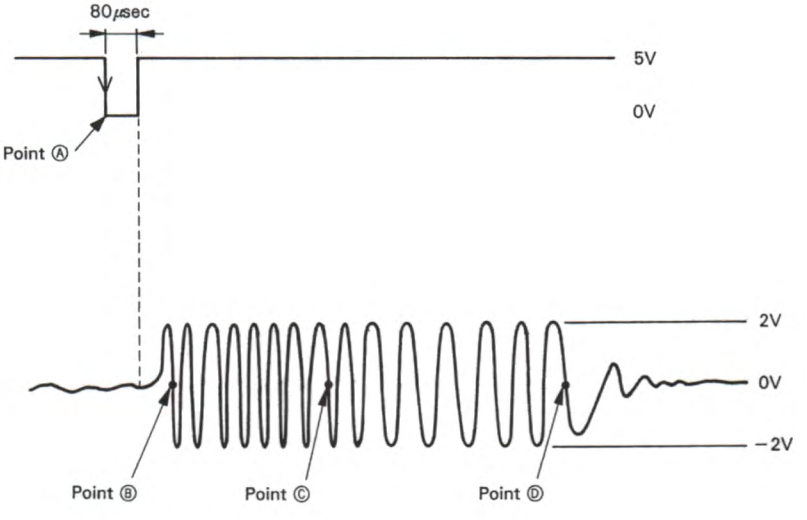
② TRKG RTN (STILL)



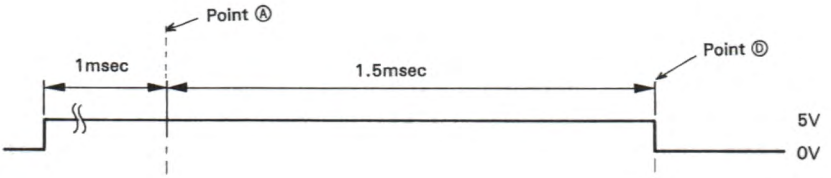
● Multi Jump (M.J) 15 Tracks Forward

③ M.J TRIG

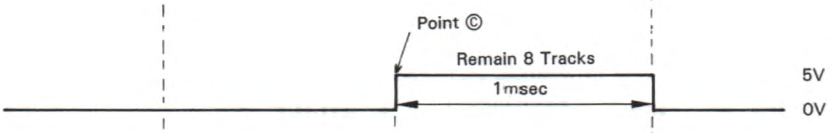
④ TRKG Err



⑤ M.J CLR



⑥ M.J BRK



⑦ TRK COUNT

⑧ M.J F/$\overline{R}$

FWD JVM High

⑨ TRKG LOOP SW

To AUDB assembly
CN13
(To page34)

To CONT assembly
CN7
(To page49)

To CONT
assembly
CN11
(To page50)

FTSB assembly

PICK UP assembly (DWY1016)

POSS assembly

IC401
GP1A30R
PHOTO INTERRUPTER

IC1 : FTS IC

IC2 : FOCS. DRV. AMP

IC2 : TRKG. DRV. AMP

IC3 : TILT. DRV. AMP

IC3
SLD. DRV. AMP

IC5 : TRKG. ERR. AMP

IC6 : TILT. ERR. AMP

TRKG ERR
+0.3V
0V
-0.3V

2.5VDC
0V

IC1	PM3003A
IC6, 203	NJM082D
IC2, 3	NJM4558DE
IC4, 5, 204	NJM4558D
IC7, 202	SN74LS221N
IC205	TC4016BP
IC201	TC74HC00AP

Q12, 15, 19, 201	DTA124ES
Q18	DTC124ES
Q16, 17, 206, 207, 209, 210, 212, 213	2SA933S
Q5, 7, 9, 11	2SB1185
Q1, 2, 14, 202~205, 208, 211, 214	2SC1740S
Q4, 6, 8, 10	2SD1762
Q3, 13, 20	2SD1859
Q21	2SK117

D9, 10	HZS3B3
D5	HZS5B2
D4, 8	1SR139
D1~3, 6, 7, 11, 201~211	1SS254

2V/div. 0.2mS/div

TP1 pin 9

Between
R241 and R242

Search the frame#10010 → #10000.

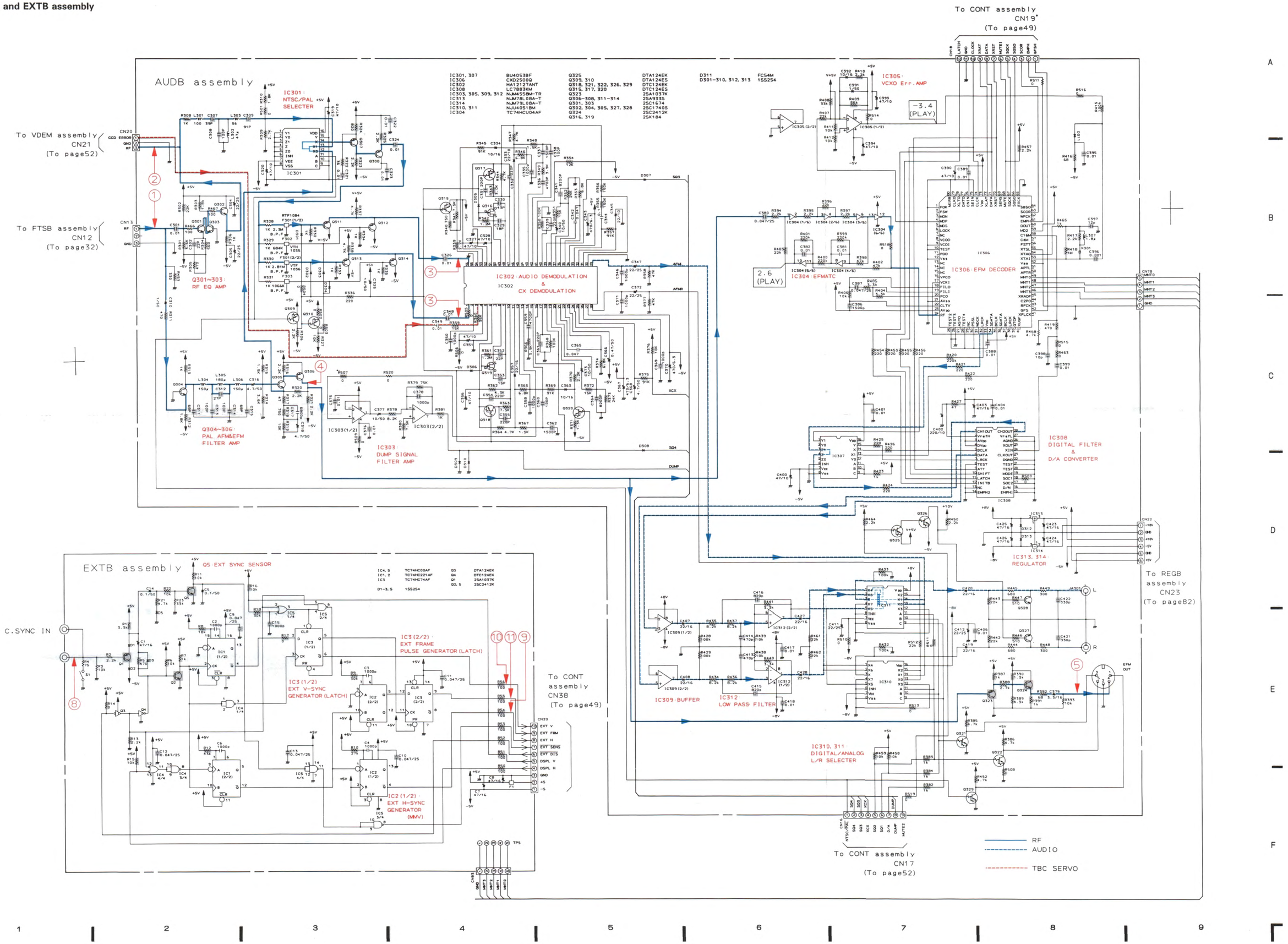
Search the frame#10000 → #10020.

To CONT assembly
CN9
(To page49)

To REGB
assembly
CN15
(To page82)

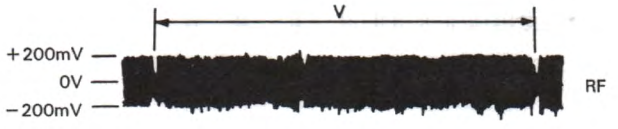
TRKG SERVO
RF SIGNAL
FOCUS SERVO
SLDR SERVO
TILT SERVO

5.3 AUDB and EXTB assembly

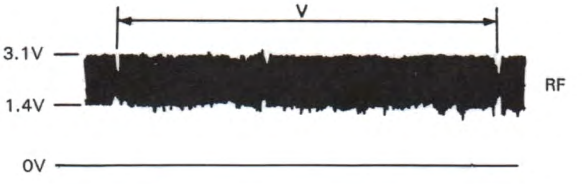


● AUDB assembly

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



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



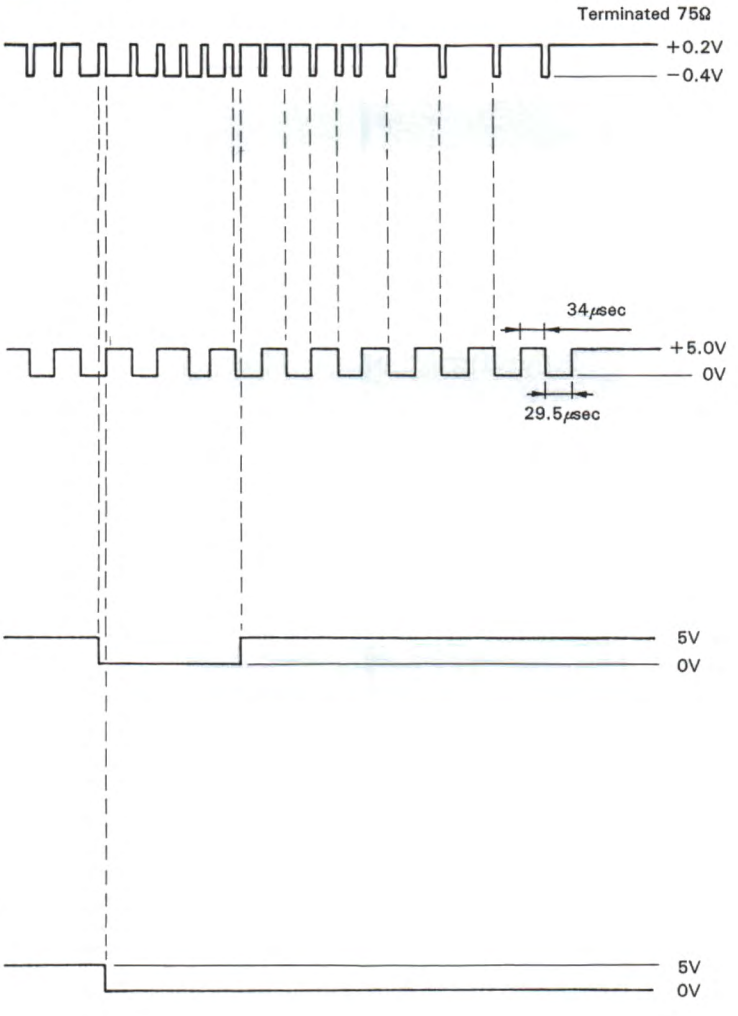
③ NTSC Test Disc GGV1003 Frame#24,000
(CONPOSITE TEST)

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

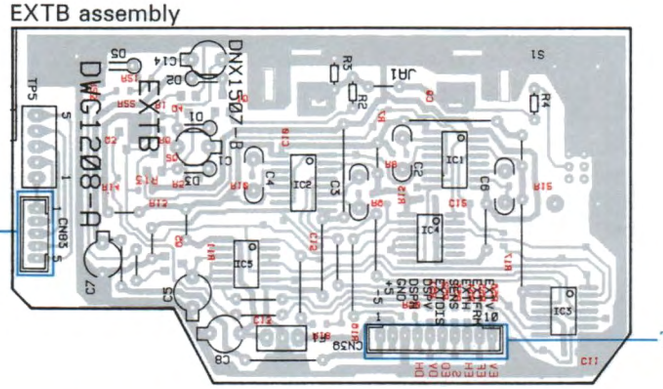
⑤ NTSC Test Disc GGV1003 Frame#24,000
(CONPOSITE TEST)

● EXTB assembly

⑧ NTSC EXT SYNC INPUT



EXTB assembly



To CONT assembly
CN38 (➡ P48)

To CONT assembly
CN19 (➡ P45)

To REGB assembly
CN23 (➡ P79)

To CONT assembly
CN17 (➡ P45)

AUDB assembly

To FTSB assembly
CN12 (➡ P27)

To VDEM assembly
CN21 (➡ P60)

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
		FET			Mylar capacitor			Resistor
		Diode			Styrol capacitor			
					Electrolytic capacitor (Non polarized)			Resonator
					Electrolytic capacitor (Noiseless)			Thermistor
		Zenner diode			Electrolytic capacitor (Polarized)			Coil
					Electrolytic capacitor (Polarized)			Transformer
		LED			Power capacitor			Filter
		Varactor			Semi-fixed resistor			
		Tact switch			Inductor			

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

EFM OUT

AUDB DNX1506-B

IC313 IC314 IC304 IC306 IC307 IC308 IC309 Q325 Q326 IC312 IC305 Q327 Q328 Q318–Q324 IC303 IC310 IC311 Q301–Q307 IC302 C304 Q308–Q312 Q315–Q317 Q329 Q313 Q314 IC301

EXTB assembly

To CONT assembly
CN38 (➡ P48)

To CONT assembly
CN19 (➡ P45)

To REGB assembly
CN23 (➡ P19)

To VDEM assembly
CN21 (➡ P60)

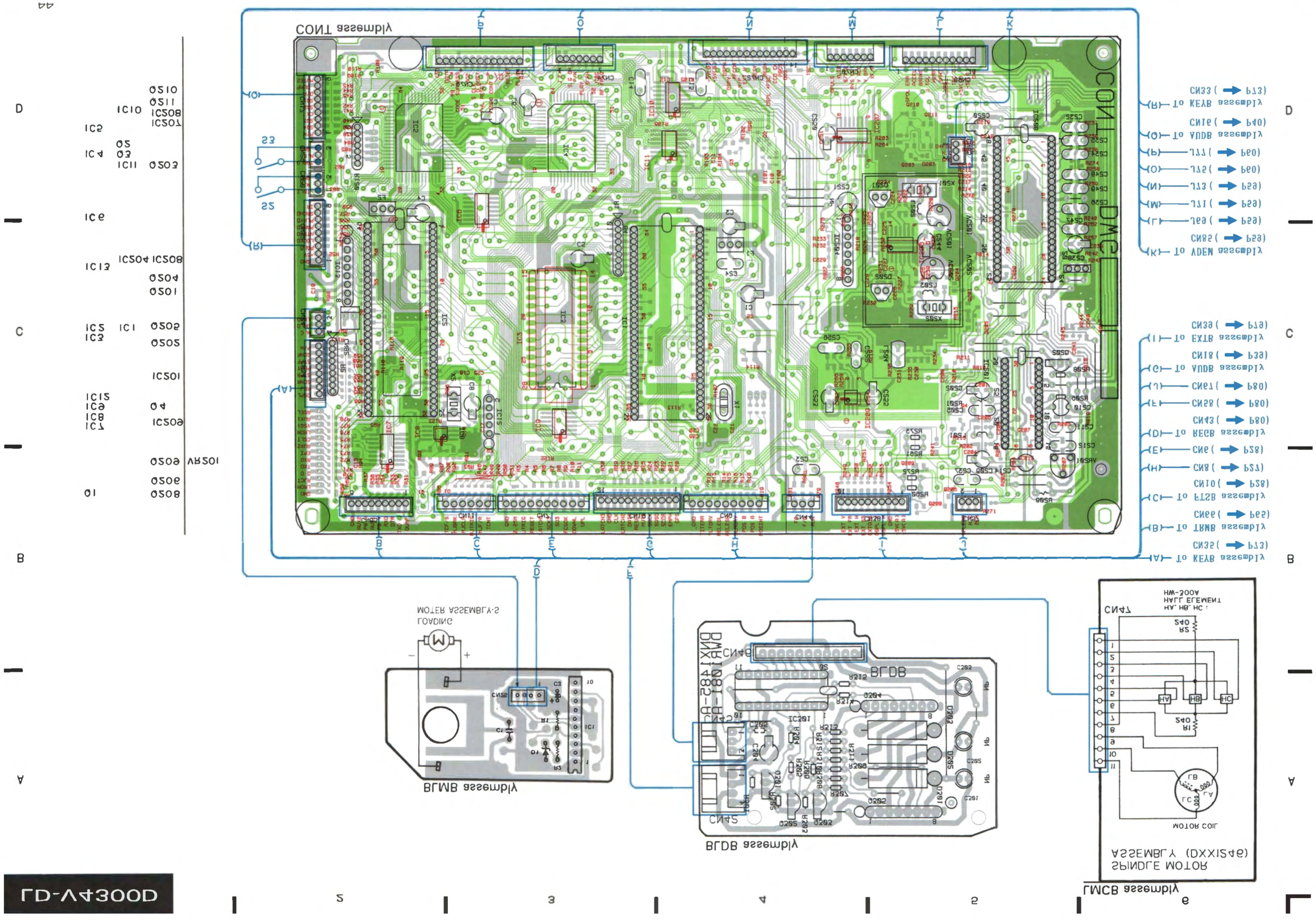
To FTSB assembly
CN12 (➡ P27)

To CONT assembly
CN17 (➡ P45)

AUDB assembly

AUDB DNX1506-B

EFM OUT


CONT assembly
MOTOR ASSEMBLY-2
LOADING
BLMB assembly
BLDB assembly
SPINDLE MOTOR
ASSEMBLY (DXX1SA8)
LMCB assembly
MOTOR COIL
HALL ELEMENT
HA HB HC
SA
RA
RB
RC
HA
HB
HC
LA
LB
LC
CN47
CN46
CN45
CN44
CN43
CN42
CN41
CN40
CN39
CN38
CN37
CN36
CN35
CN34
CN33
CN32
CN31
CN30
CN29
CN28
CN27
CN26
CN25
CN24
CN23
CN22
CN21
CN20
CN19
CN18
CN17
CN16
CN15
CN14
CN13
CN12
CN11
CN10
CN9
CN8
CN7
CN6
CN5
CN4
CN3
CN2
CN1
to KEYB assembly
to ADEN assembly
to AUDB assembly
to EXTB assembly
to TRAB assembly
to TRNB assembly
to KEYB assembly
to MECB assembly

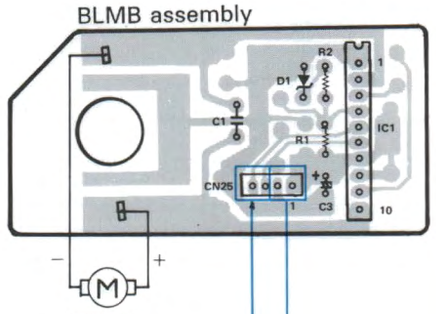
LD-V4300D

5.4 CONT, BLDB, BLMB and LMCB assembly

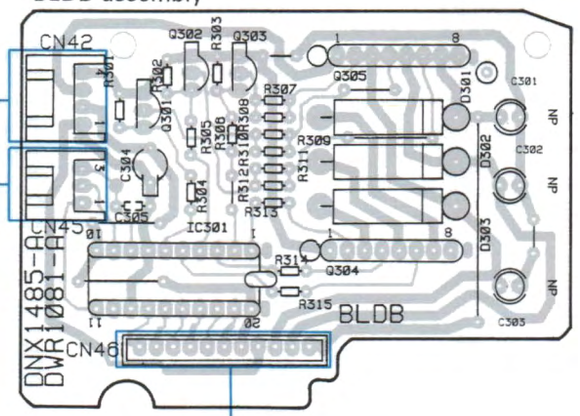
P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
					Electrolytic capacitor (Non polarized)
		Zenner diode			Electrolytic capacitor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

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

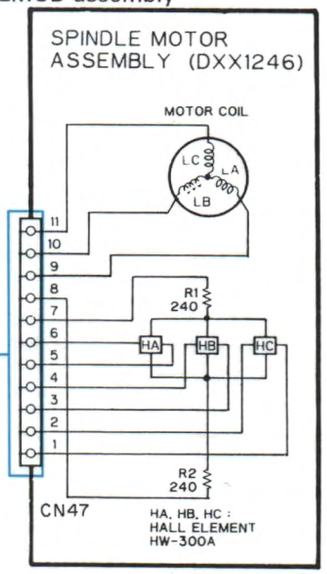
BLMB assembly

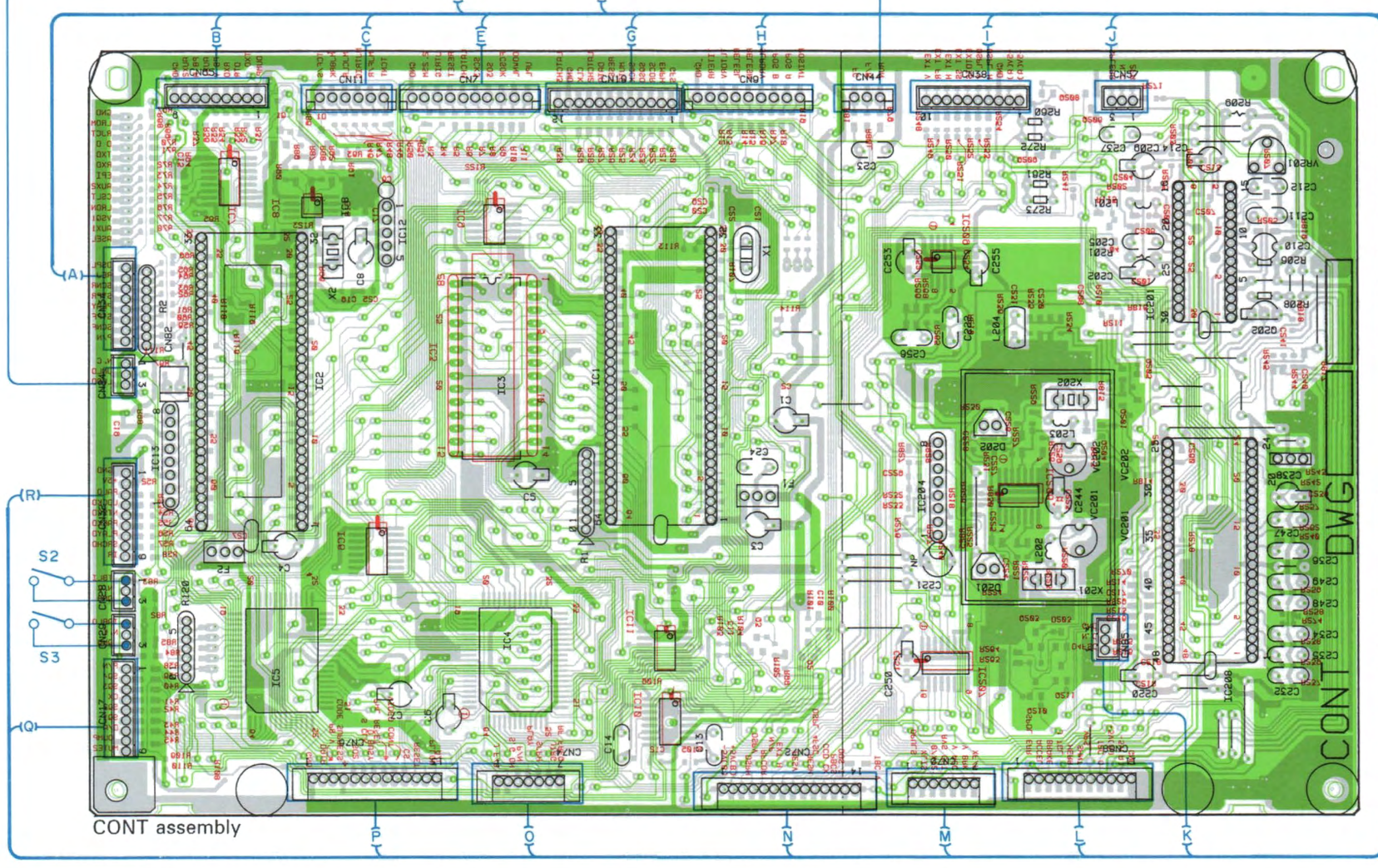


BLDB assembly



LMCB assembly

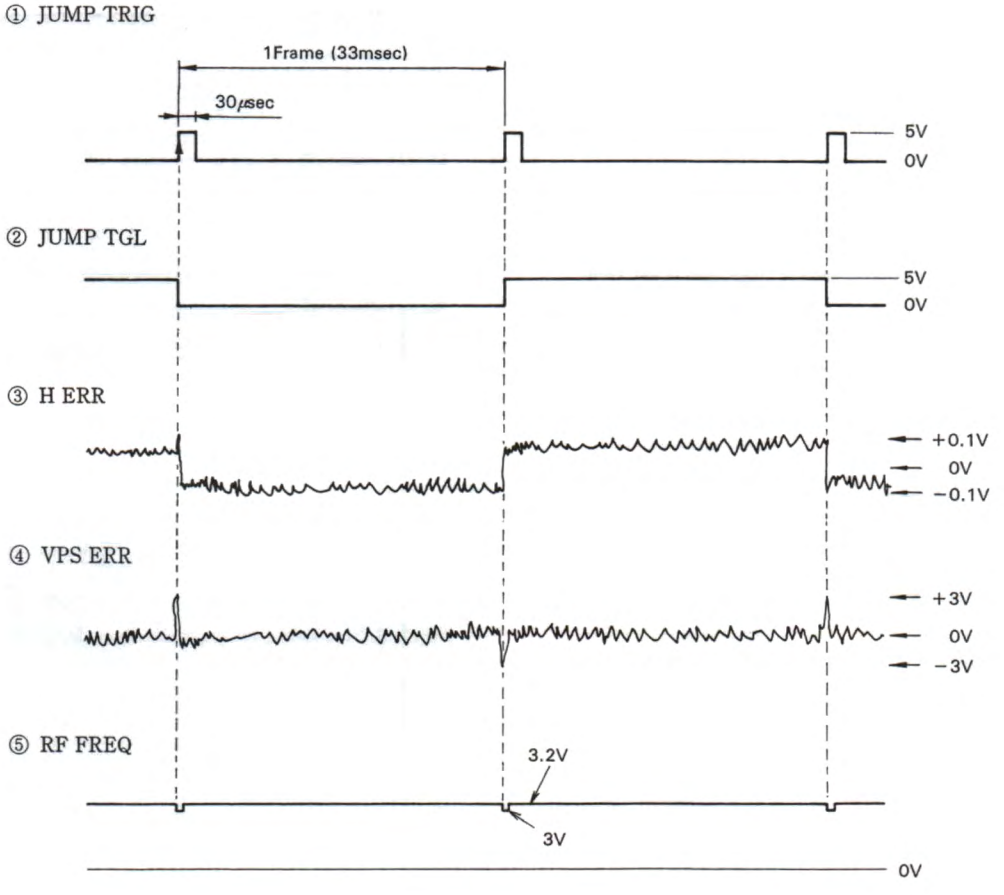




Q1 Q208 Q206 Q209 VR201
IC7 IC8 IC9 IC12 IC209 Q4 IC201
IC3 IC2 IC1 Q202 Q205 Q201 Q204
IC13 IC204 IC208
IC6
IC11 Q203
IC4 Q3 Q2
IC5
IC10 IC207 IC208 Q211 Q210

- **CONT assembly**
- **TBC Section**

NTSC STILL (12inch Disc)



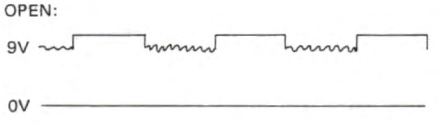
● LMCB assembly

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.

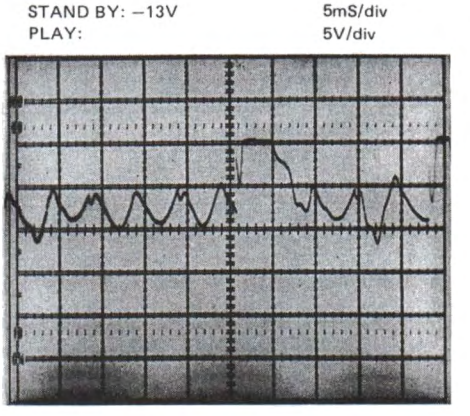
When OPEN : While operating, LOAD becomes below waveform which is opposite the CLOSE waveform and UNLOAD becomes "low", then both of them become "high" just before close.

⑦ IC1 – Pin10

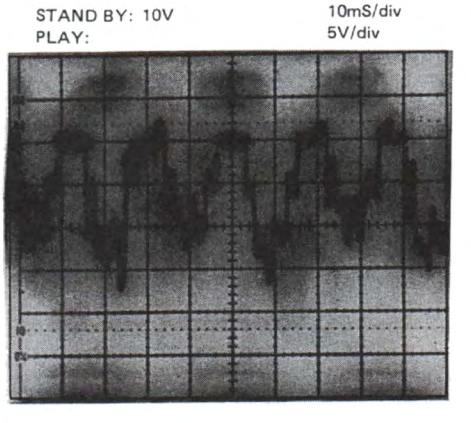


● BLDB assembly

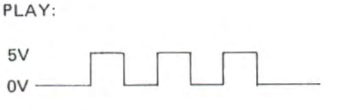
⑧ Pin 3 of CN42



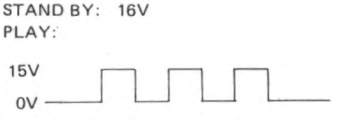
⑨ Pin 9 of CN46



⑩ IC301 – Pin11



⑪ IC301 – Pin 2
⑫ IC301 – Pin 1



CONT assembly

To VDEM assembly J71 (To page54)

To REGB assembly CN43 (To page82)

BLDB assembly

Q304, 305:SPDL MOTOR DRIVE Tr ARRAY

IC301 TA8413P
Q304 STA302A
Q305 STA303A
D301~303 S2V10-4001

IC3:SPDL MOTOR CONTROL

IC1:LOADING MOTOR CONTROL&DRIVE

IC1

LOGIC

LOADING MOTOR ASSEMBLY-S (VXX1084)

LMCB assembly

IC1 TA7291P
D1 HZS9B3

To REGB assembly CN67 (To page82)

BLMB assembly

To AUDB assembly CN16 (To page36)

To VDEM assembly J75 (To page52)

To FTSB assembly CN10 (To page35)

To FTSB assembly CN6 (To page32)

To FTSB assembly CN8 (To page31)

To AUDB assembly CN18 (To page36)

To TRMB assembly CN66 (To page69)

To VDEM assembly J77 (To page54)

To VDEM assembly CN84 (To page54)

To VDEM assembly J73 (To page54)

To REGB assembly CN86 (To page82)

To VDEM assembly J69 (To page54)

To EXTB assembly CN39 (To page35)

To KEYB assembly CN33 (To page71)

To KEYB assembly CN35 (To page71)

MECHA CONTROL

7004

256kbit ROM

I/O EXPANDER CXD1095Q

I/O EXPANDER CXD1095Q

MODE CONTROL

7400

MEMORY SWITCH

M6M80011AL

RESET

M51953BL

IC8:232C LEVEL SHIFTER

IC10:PBH, PBV PULSE GENERATOR (MMV)

IC201: TBC ERROR GENERATOR

IC204:PHASE COMPARATOR

NTSC 4fsc VCXO

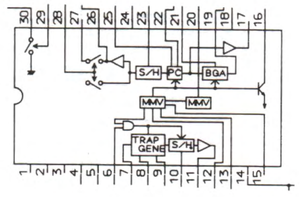
PAL 3.75MHz VCXO

IC208: SPINDLE CONTROL IC208 PD60908

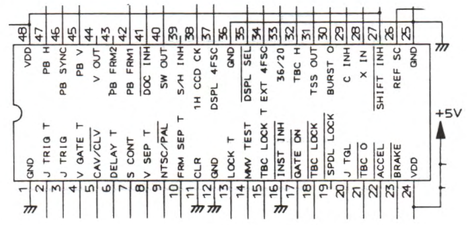
IC8	BA10393F	D203	DAN202K	
IC7, 207	BU4053BF	D1	DA204K	
IC4, 5	CXD1095Q	D201, 202	SVC321SP	
IC204	CX23065A			
IC12	M51953BL			
IC13	M6M80011AL	Q208, 209	DTA124EK	
IC209	NJM4558M-TR	Q1, 4, 201, 203, 204, 210, 211	DTC124EK	
IC201	PA5012			
IC1	PD0081A1	Q202	DTC124ES	
IC2	PD0110A	Q205, 206	2SA1037K	
IC208	PD60908	Q2, 3	2SC2412K	
IC6	TC74HCU04AF			
IC11	TC74HC00AF			
IC10	TC74HC123AF			
IC6	TC74HC139AF			
IC9	TC74HC14AF			

SPDL SERVO
TBC SERVO
SLDR SERVO
TILT SERVO

IC201



IC208



VDEM assembly

IC603	BU4053B	IC403	PA0017	Q306-308-314-316	DTA124EK	Q319	2SA933S	D310-311-313-316	DAN202K
IC404	CXL1009P	IC401	PA5013A	Q406-407-429-715		Q317	2SC1740S	D303-305-307	DA204K
IC602	CX23065A	IC402	PM0001	Q301	DTA124ES	Q302-305-312-322	2SC2412K	D301-302	HZS3B2
IC601	MB90061-101A	IC406-409	TC4S66F-TR	Q309-311-313-315	DTC124EK	Q323-401-404-408		D602	SVC321SP
IC609	M5218AL	IC604	TC74HCU04AP	Q424-428-610-611		Q410-412-415-419		D306-308-309-312	1SS254
IC301-305	NJM4558M-TR	IC703	TC74HC00AP	Q318-320-402-403	2SA1037K	Q423-431-435		D314-315	
IC411	NJM78L05A	IC702	TC74HC107AP	Q405-409-411		Q601-603-605-606			
IC410	NJM79L05A	IC608-701	TC74HC221AP	Q416-418-420-422		Q609-702-703-705			
		IC704	TC74HC4053AP	Q425-430-432-434		Q707-714			
		IC65	SN74LS00N	Q604-607-608-706		Q321	2SC3064		

RF
TBC SERVO
SPDL SERVO
VIDEO

IC701-IC703: JUMP TIMMING DLY MMV & FRIP FROP FOR SW SELECT

Q702: BUFFER
Q703: Y/C MIXING AMP
IC704(2/4): PAL STILL VIDEO SW
Q705: BUFFER
Q706: BUFFER
Q714: BUFFER
Q709, Q711: BUFFER
Q710: AMP
Q712: INVERTER
Q713: BUFFER
IC704(4/4): PAL CHROMA SW
IC703(3/4): PAL CHROMA SW
Q707: BUFFER
Q708: BUFFER

IC301-IC304: TBC ERR EQ AMP

IC305: ABSOLUTE AMP
Q304, Q305: CURRENT LIMITER
Q309-Q311: SPDL GAIN SELECTOR
Q306, Q312-Q316, Q322, Q323: V LOCK ACC/BRK SIGNAL GENERATOR

Q428, Q429: SYNC GATE SW
Q405, Q407: NTSC/PAL SW
IC402: 1H DL VIDEO CCD
Q408, Q409: BUFFER
IC404: VIDEO CCD
IC406: PAL VIDEO SW
IC407: NTSC VIDEO SW
Q404: BUFFER
Q401: RF FILTER SW
Q431, Q434: RF BUFFER
Q432, Q433: RF AMP
Q402, Q403: DOS SW
IC401: VIDEO DEMODULATOR
Q425: PB V BUFFER
Q416: BS SYNC BUFFER
Q423: BUFFER
Q422: LIM FILTER SW
Q421: BUFFER
Q420: CODE SUPPRES
Q417: BUFFER
Q418: PAL PILOT BURST TRAP
Q430: TRAP ON/OFF SW
Q419: BUFFER
Q411, Q412, Q414: BUFFER
Q413: AMP
Q415: BUFFER
IC403: VCO
Q601, Q602: BUFFER
Q603-Q604: DC BUFFER
Q606: BUFFER
Q607: DC BUFFER
Q608: BUFFER
Q609: CLAMP
Q610, Q611: 4Fsc ON/OFF SW
IC410, IC411: REGULATOR

IC601: CHARACTER GENELATOR
IC602: PLL
IC608(1/3), (2/3): H, V RESET PALSE GENERATOR(MMV)
IC609(1/2): ERROR AMP
IC603(2/3): ERROR SW
IC603(1/3): INT/EXT SW
IC604(3/5): PAL 4Fsc VCO
IC604(4/5): NTSC 4Fsc VCO
Q435: RF CORR SW

To TRMB assembly CN63 (To page 69)
To AUDB assembly CN20 (To page 34)
To REGB assembly CN37 (To page 82)
To CONT assembly CN01 (To page 50)
To CONT assembly CN68 (To page 49)
To CONT assembly CN70 (To page 49)
To CONT assembly CN72 (To page 49)
To CONT assembly CN75 (To page 49)

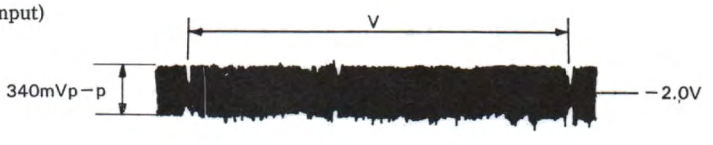
● VDEM assembly

NTSC Test Disc GGV1003 Frame#24,000

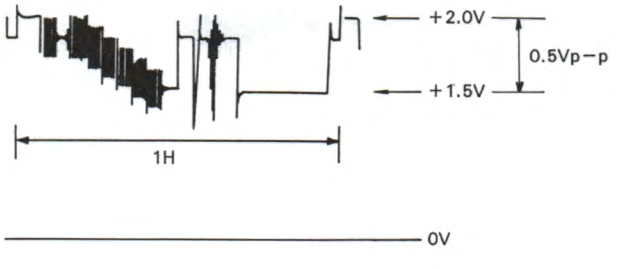
① RF Signal

② RF (Det.Input Signal)

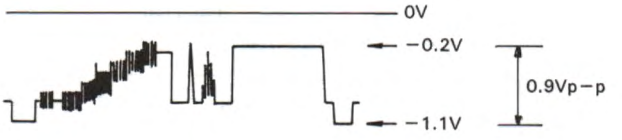
③ RF Signal (DOS Input)



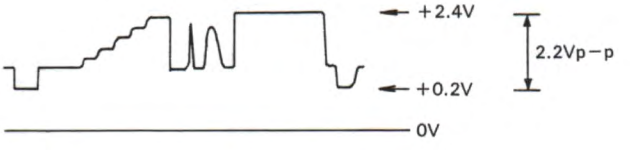
④ VIDEO Det. Output Signal



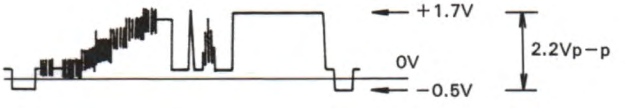
⑤ CCD Input VIDEO Signal



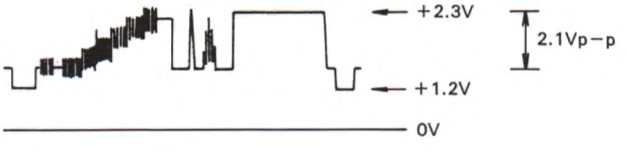
⑥ SYNC−SEP Input VIDEO Signal



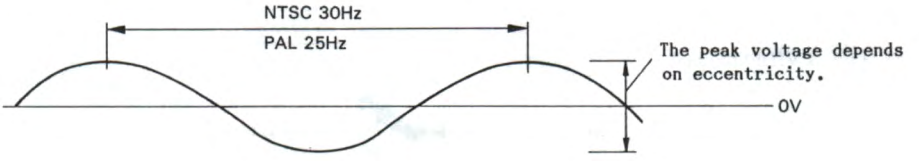
⑦ Charactor generator (IC 601)Input VIDEO Signal



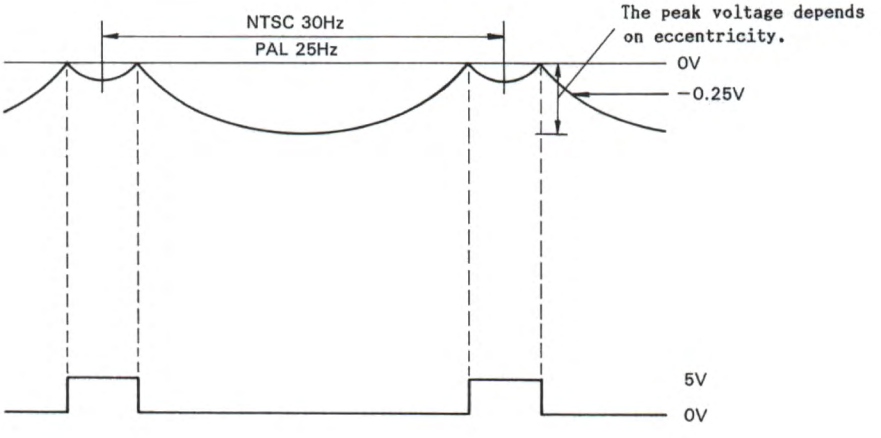
⑧ Charactor generator Output VIDEO Signal



⑨ VCO Control Voltage



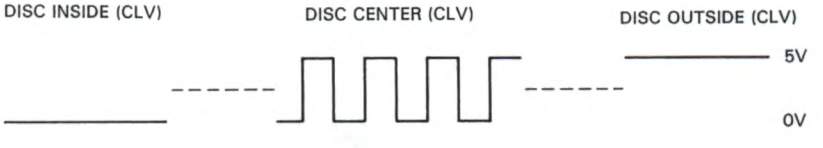
⑩ SPDL ERR



⑪ X F/R

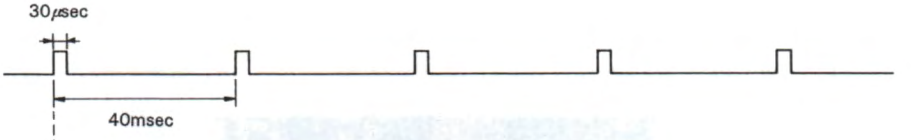
CAV is ALL LOW (0V)

⑫ DUTY PULSE

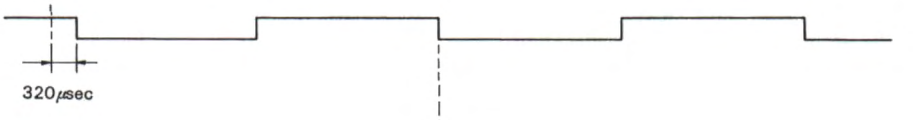


● **PAL Test Disc (Color Bar) STILL**

⑬ JUMP TRIG

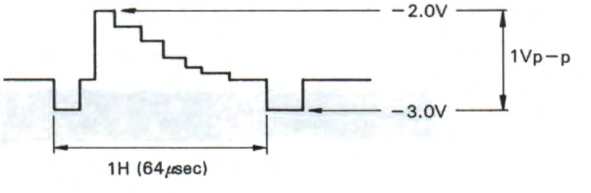


⑭ 0/90° SW



⑮ 0/180° SW

⑰ LUMINANCE

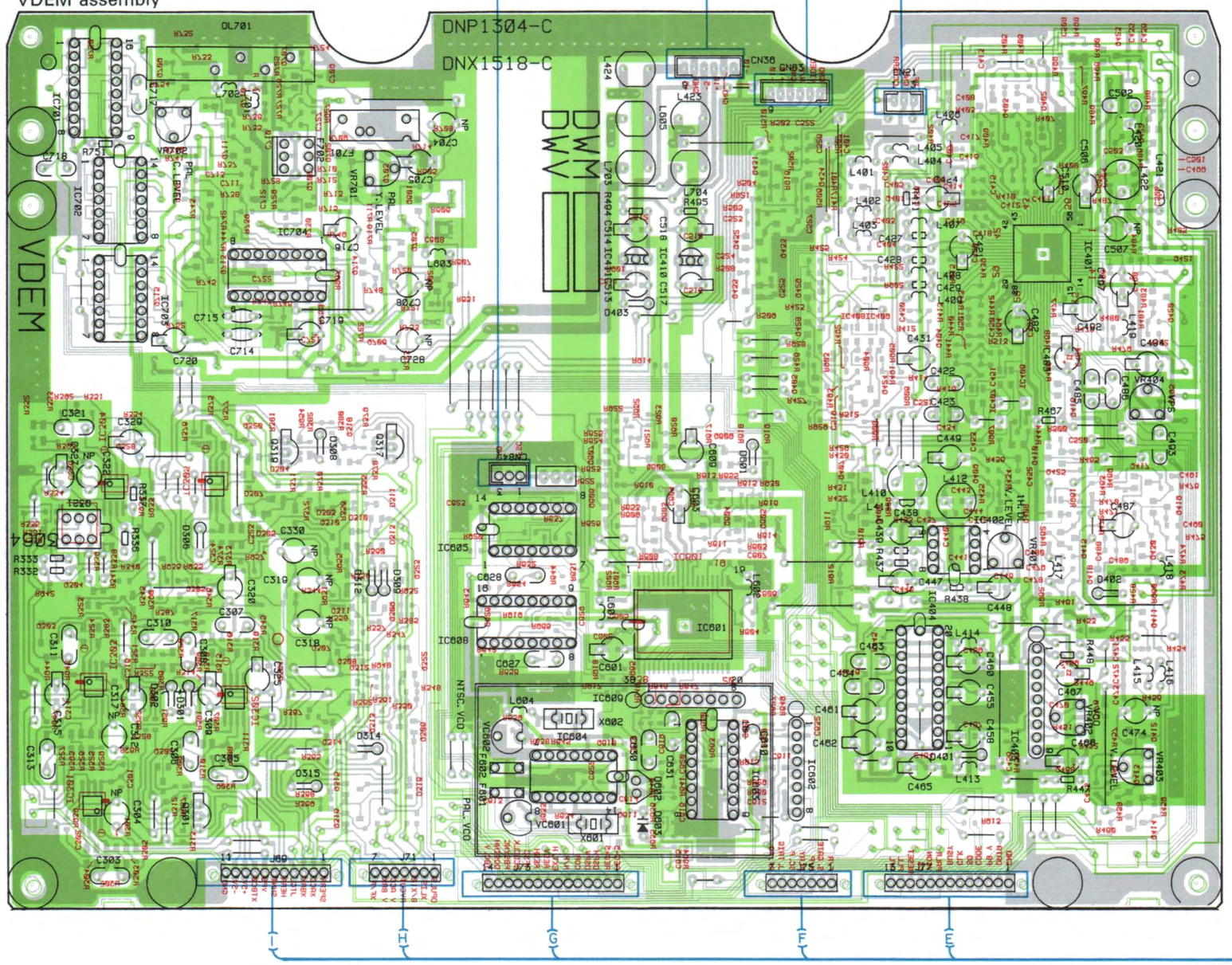


⑯ CROMA

VDEM assembly

DNP1304-C

DNX1518-C



(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)

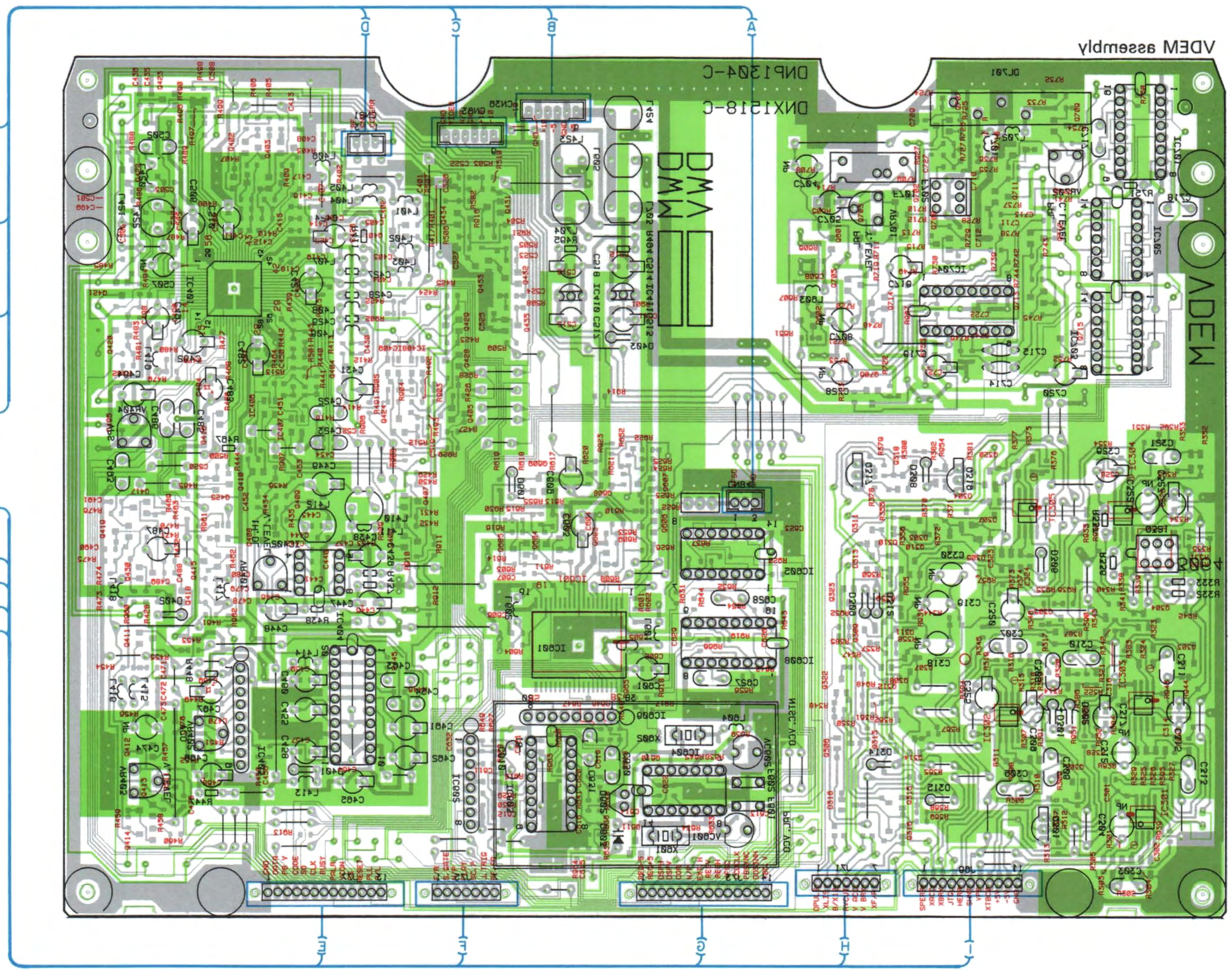
(I) CN68 (→ P46)

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			Semi-fixed resistor			Varactor
								Resistor array			Inductor
		FET			Mylar capacitor			Resistor			
		Diode			Styrol capacitor						Coil
					Electrolytic capacitor (Non polarized)						Transformer
					Electrolytic capacitor (Noiseless)			Resonator			Filter
		Zenner diode			Electrolytic capacitor (Polarized)			Thermistor			
					Electrolytic capacitor (Polarized)			Tact switch			
		LED			Power capacitor						

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

VDEM assembly

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

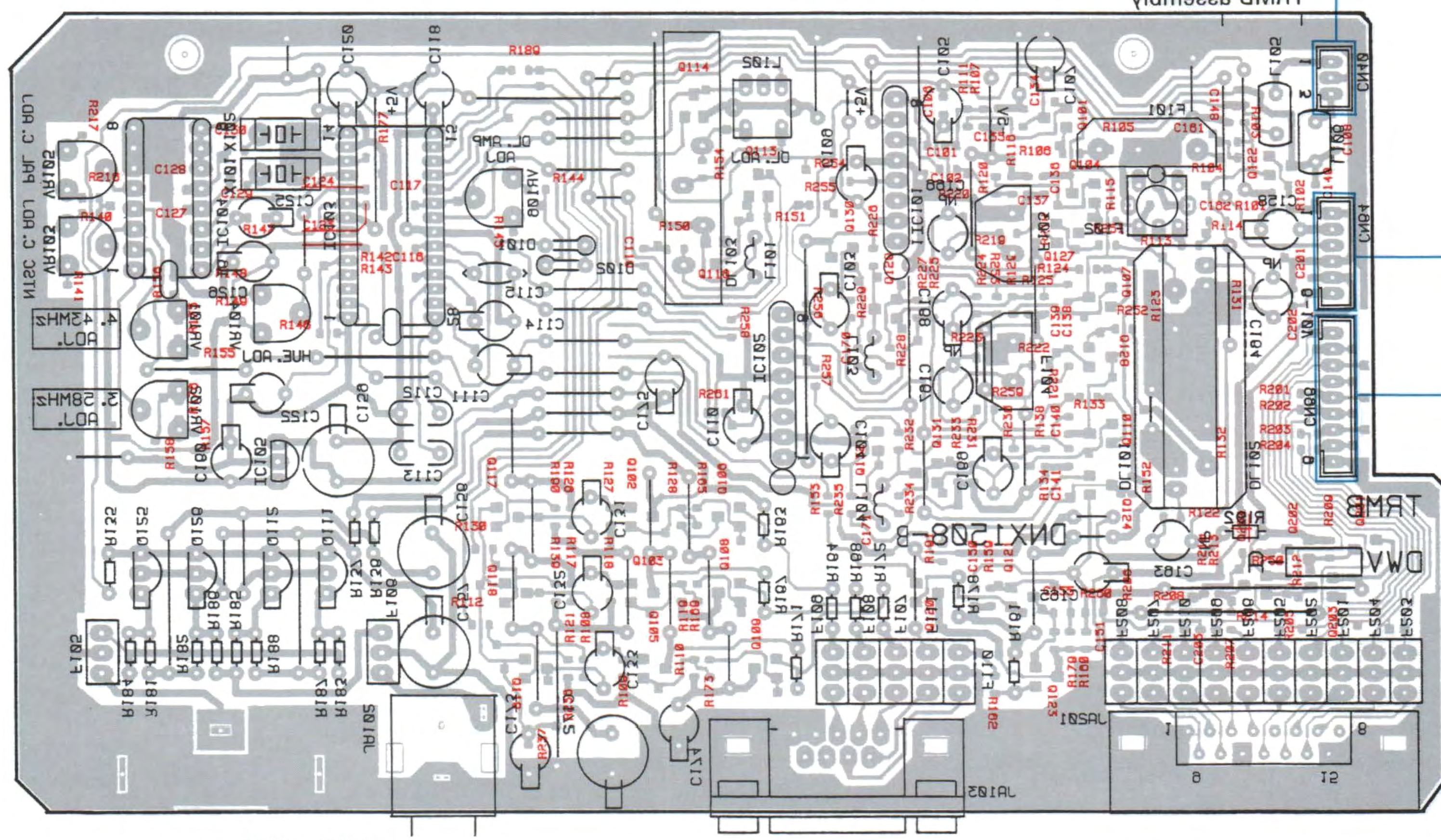


A	Q707 Q709 Q710 IC701			Q423	
				Q402 Q403	
	Q711 Q708 Q712 IC702	Q702 Q703 Q601	Q431 Q434 Q401	Q422 Q426 Q427	VR702 VR701
	IC704 Q705 Q713 Q715 IC703	IC411 Q714 Q802 Q706	Q432 Q433 IC410 Q435 Q429 IC408 IC409 Q428	IC401 Q421 Q420 Q404	
			Q405 Q424		VR404
B	IC304 Q318 Q320 Q319 IC305 Q321 Q310 IC605	Q317 Q807 Q407 Q608 Q806 Q803 Q604 Q605 Q406	Q609 Q417 Q425 Q409 Q408 Q419 IC402 Q415	Q416 Q410	VR401
	Q304 Q305 Q303 IC303	Q323 Q309 Q311 IC608 Q307 Q308 Q322	IC601 Q430 Q418 IC404 Q411		
C	IC302 Q302 IC301 Q301	Q312 IC604 Q313 Q306 Q314 Q315 Q316	IC609 Q610 IC602 IC603 Q611	Q412 IC403 Q413 Q414	VR402 VR403

To VDEM assembly
CN63 (⬅ P60)

To REGB assembly
CN41 (⬅ P79)

TRMB assembly



Q122 Q101 Q104 Q127 IC101 Q129 Q130 Q113 Q114 Q116 IC103 IC104
Q201 Q202 Q204 Q107 Q110 Q124 Q128 Q131 Q132 IC102 Q106 Q102 Q117 IC105
Q203 Q123 Q121 Q120 Q109 Q108 Q105 Q103 Q119 Q118 Q111 Q112 Q126 Q125
VR101—VR106

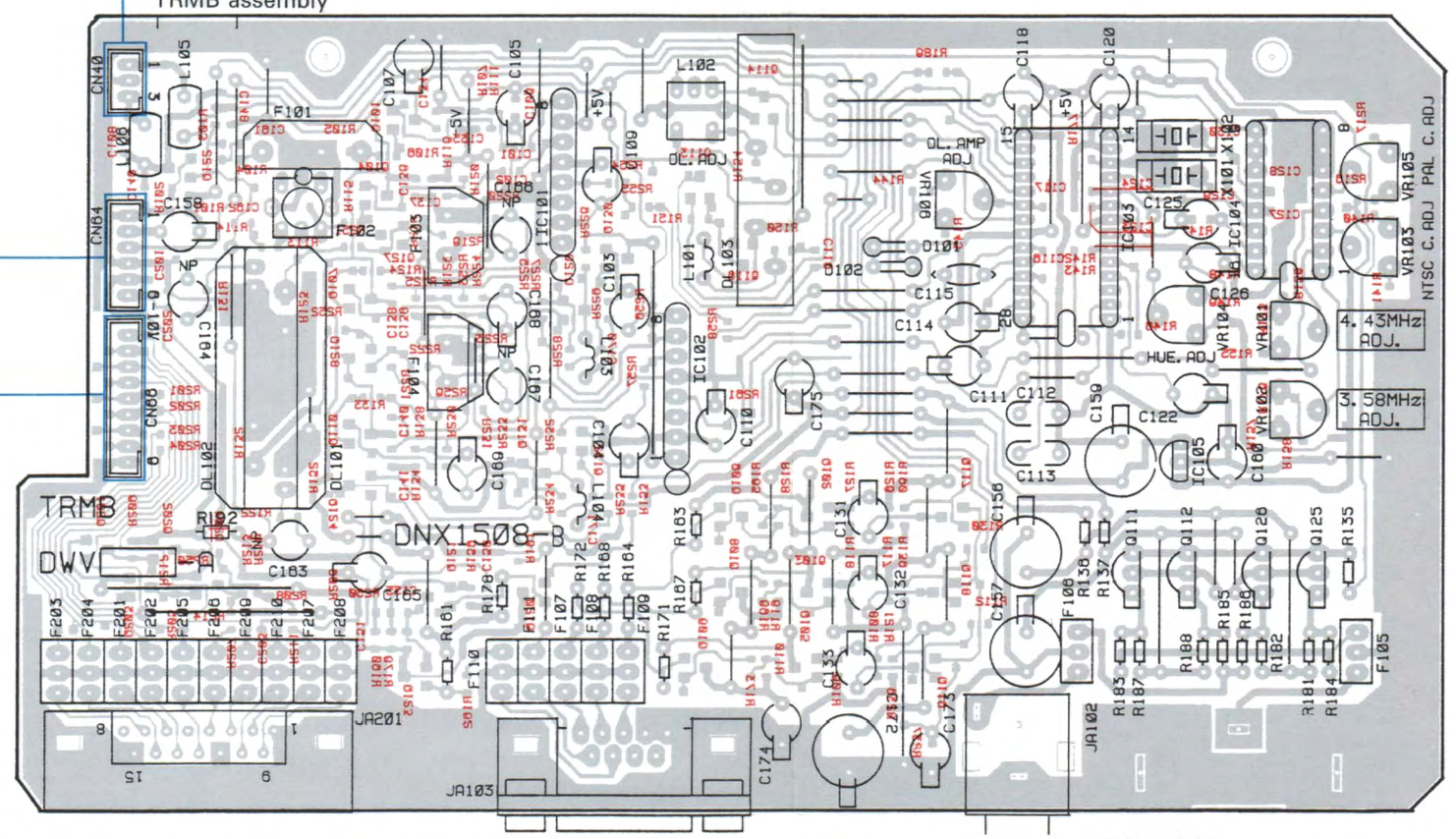
To CONT assembly
CN65 (⬅ P45)

5.6 TRMB assembly

To VDEM assembly
CN63(➡ P60)

To REGB assembly
CN41(➡ P79)

TRMB assembly



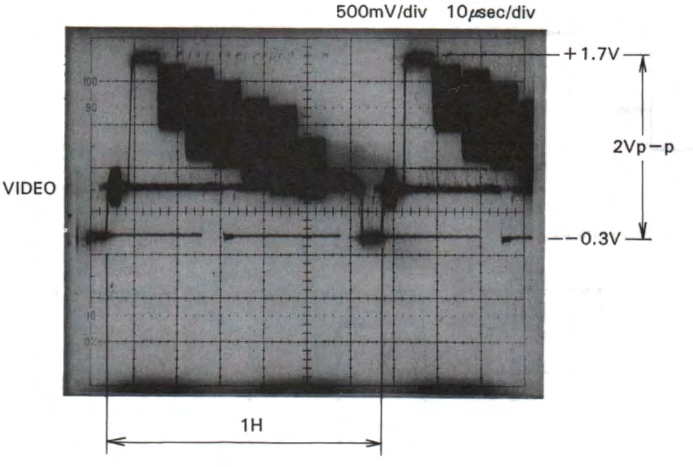
To CONT assembly
CN65(➡ P45)

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

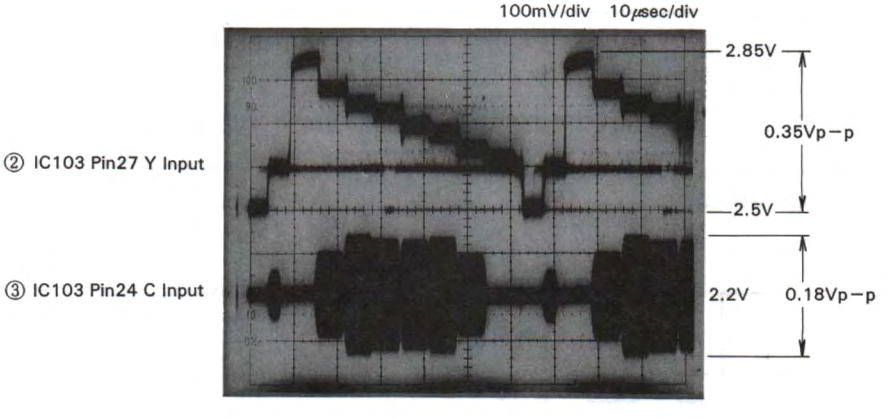
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked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

● TRMB assembly

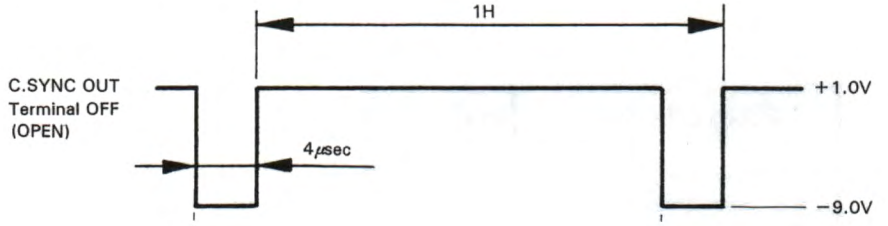
① NTSC Test Disc GGV1003 Frame#7,200
(COLOR BAR)



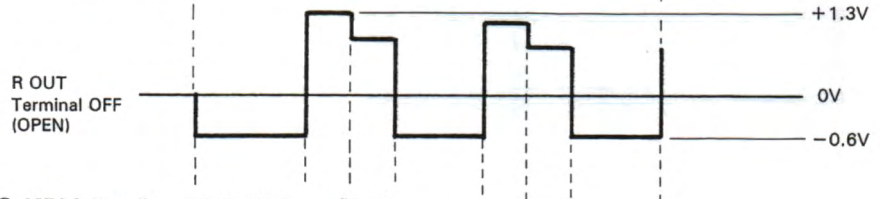
② ③ NTSC Test Disc GGV1003 Frame#7,200
(COLOR BAR)



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

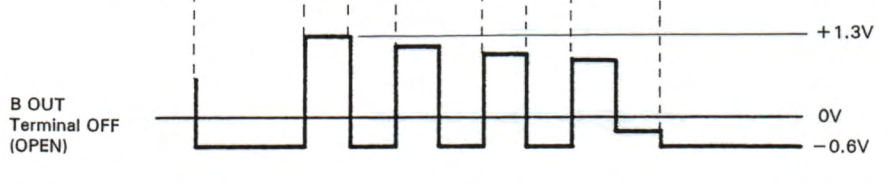


⑤ NTSC Test Disc GGV1003 Frame#7,200
(COLOR BAR)



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

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



TRMB assembly

To VDEM assmbly
CN63
(To page52)

To REGB assmbly
CN41
(To page82)

To CONT assembly
CN65
(To page49)

Q122 : BUFFER

Q101 : BUFFER

Q104 : BUFFER

IC101 : CHROMINANCE SIGNAL SW

IC102 : LUMINANCE SIGNAL SW

IC105 : REGULATOR

IC103 : RGB DECODER

IC104 : SUB CARRIER, CHROMA GAIN SW

Q127 : BUFFER

Q107 : BUFFER

Q129 : PHASE COMPENSATE

Q130 BUFFER

Q128 : BUFFER

Q110 : BUFFER

Q131 : PHASE COMPENSATE

Q132 : BUFFER

Q111, 112, 125, 126 : VIDEO OUT BUFFER

VIDEO OUT 1 (BNC)

VIDEO OUT 2 (RCA)

Q113, 116 : PAL CHROMA SW

Q119 : AMP

Q118 : AMP

Q117 : AMP

Q102 : BUFFER

Q109 : B OUT BUFFER

Q105 : BUFFER

Q108 : G OUT BUFFER

Q103 : BUFFER

Q106 : R OUT BUFFER

GBR OUT (9p D-SUB)

Q123 : COMPOSITE SINC OUT BUFFER

Q120 : BUFFER

Q121 : AMP

Q124 : PAL/NTSC SW

Q201, 202 : TXD SW

Q203, 204 : DTR SW

RS-232C (15p D-SUB)

JA103

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

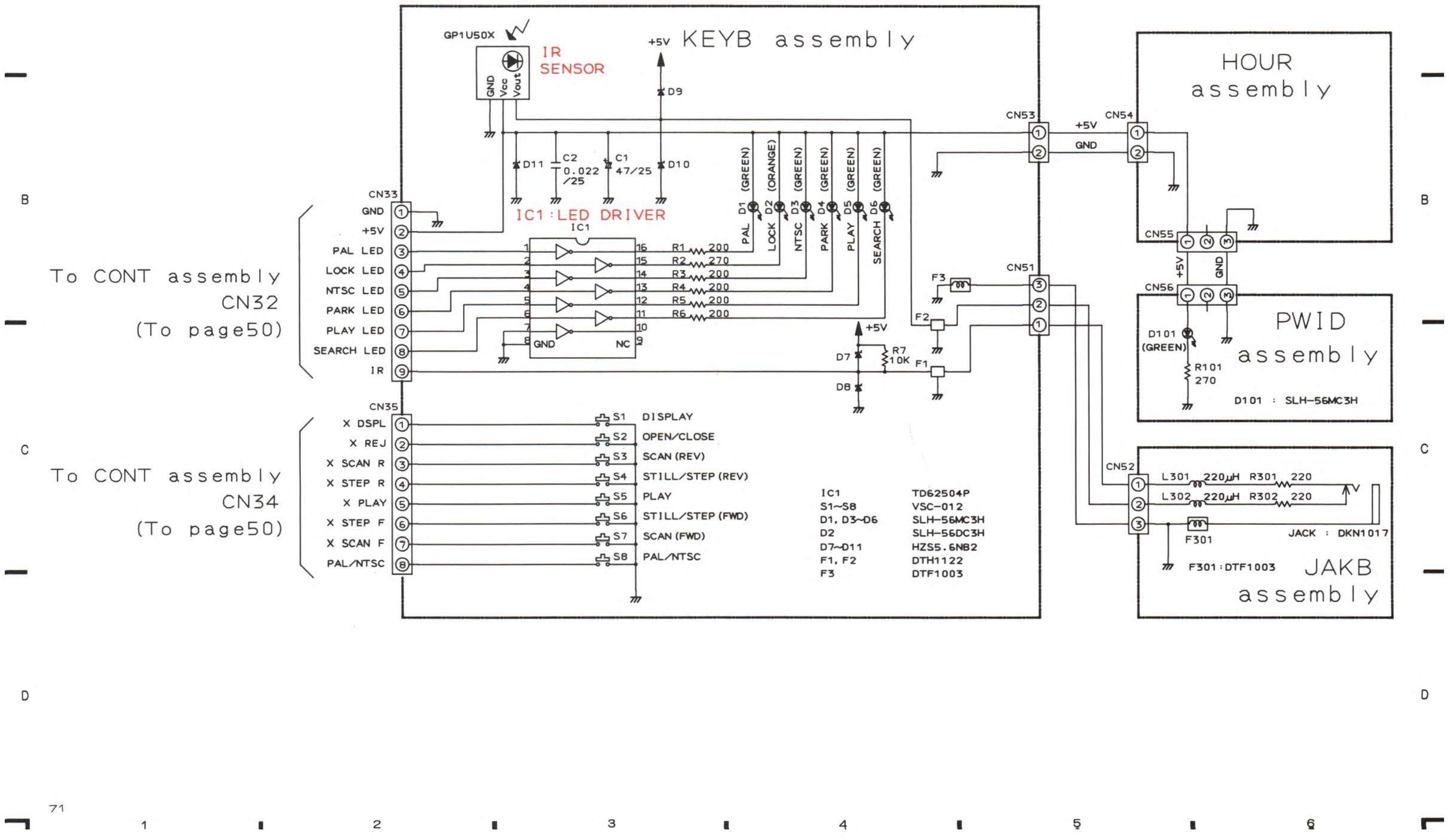
JA201

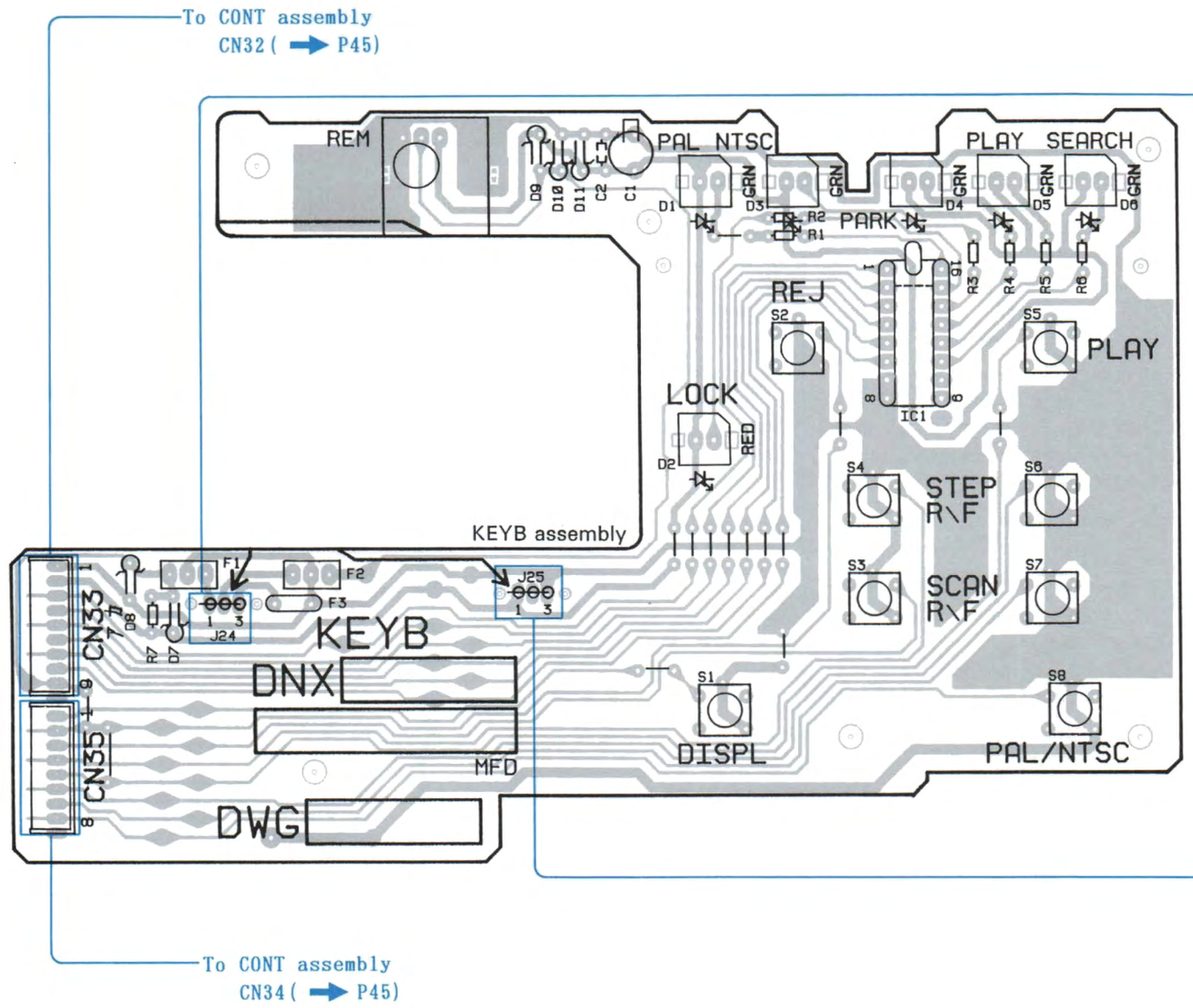
1. GND	9. TXD (TTL)
2. TXD	10. RXD (TTL)
3. RXD	11. GND
4. DTR	12. DUMP
5. NC	13. AUX1
6. PBV	14. AUX2
7. PBH	15. GND
8. NC	

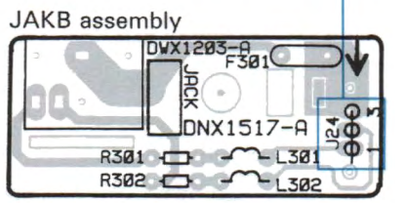
F105, 106	DTH1122
F101	VTF1038
F102	VTF1034
F103	VTF-062
F104	VTF1018
F107~111, 201~210	VTH1009
DL101, 102	DTF1033
DL103	DTF1033
IC101, 102	NJM2233BL
IC103	V7021
IC104	TC74HC4053AP
IC105	NJM78L05A
Q101, 104, 106~110	2SC2412K
Q117~119, 127~132	DTC124EK
Q114, 116, 124, 201, 203	DTA124EK
Q113, 202, 204	2SA1037K
Q102, 103, 105, 120~123	2SC1740S
Q111, 112	2SA933S
Q125, 126	
D101, 102	1SS254
X101	VSS1023 (3.58MHz)
X102	DSS1023 (4.433MHz)
R136, 137	DCN1001 (1/6w, 4.7Ω)
R192	DCN1002 (1/6w, 10Ω)
L102	DTL1001

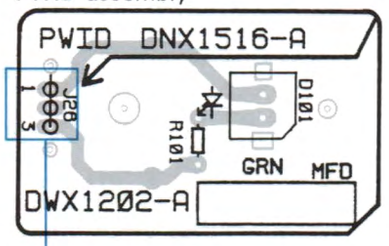
NTSC.C
PAL.C
NTSC.Y
PAL.Y
VIDEO
COMPOSITE SYNC
R
G
B

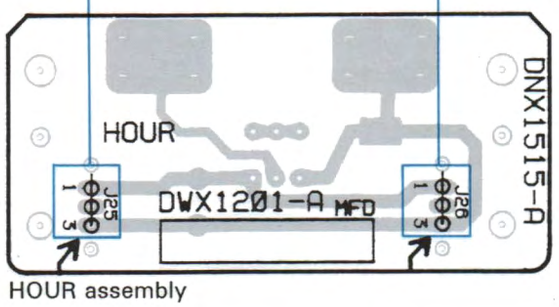
5.7 PWID, HOUR, KEYB and JAKB assembly











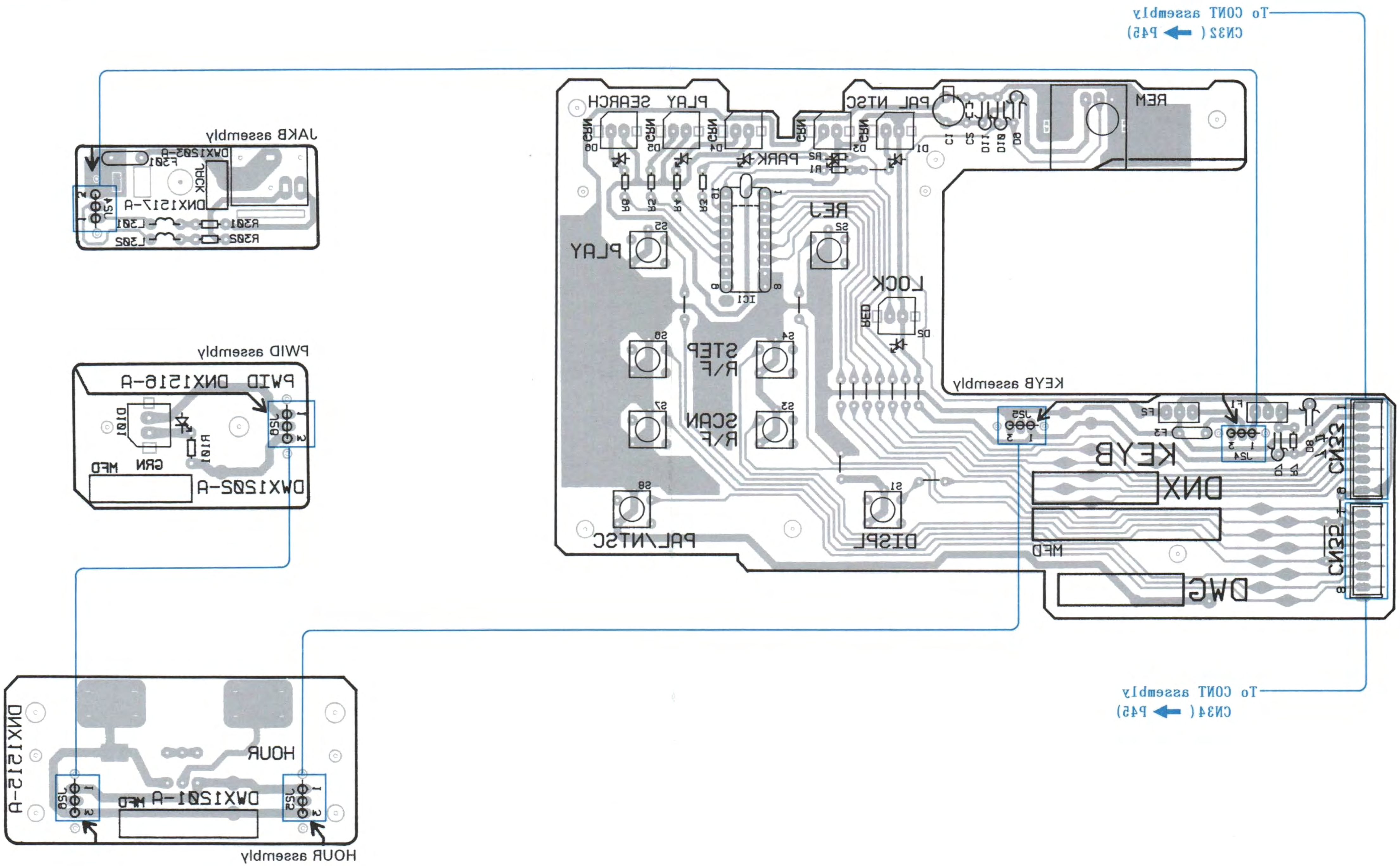
P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED

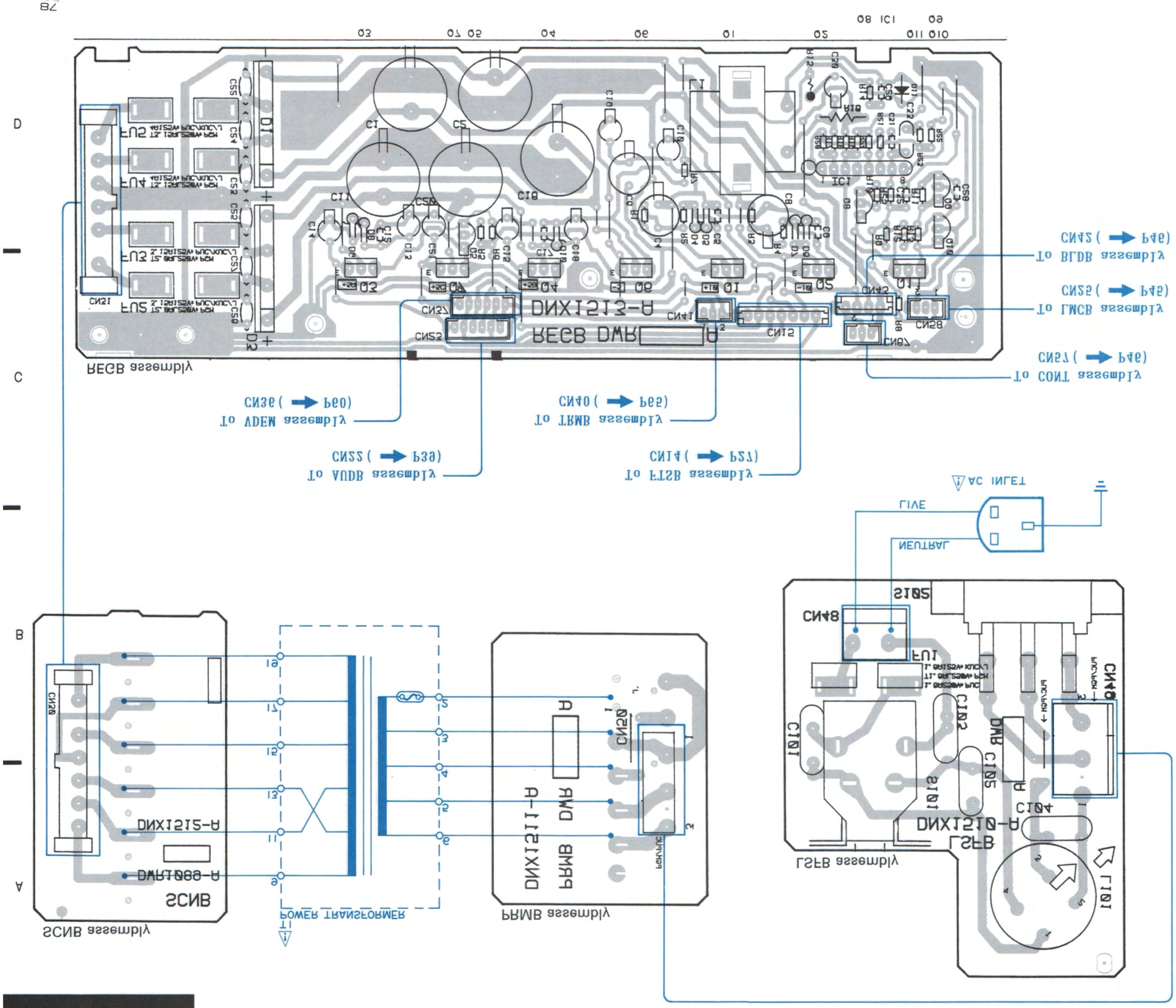
P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor

P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor
		Tact switch

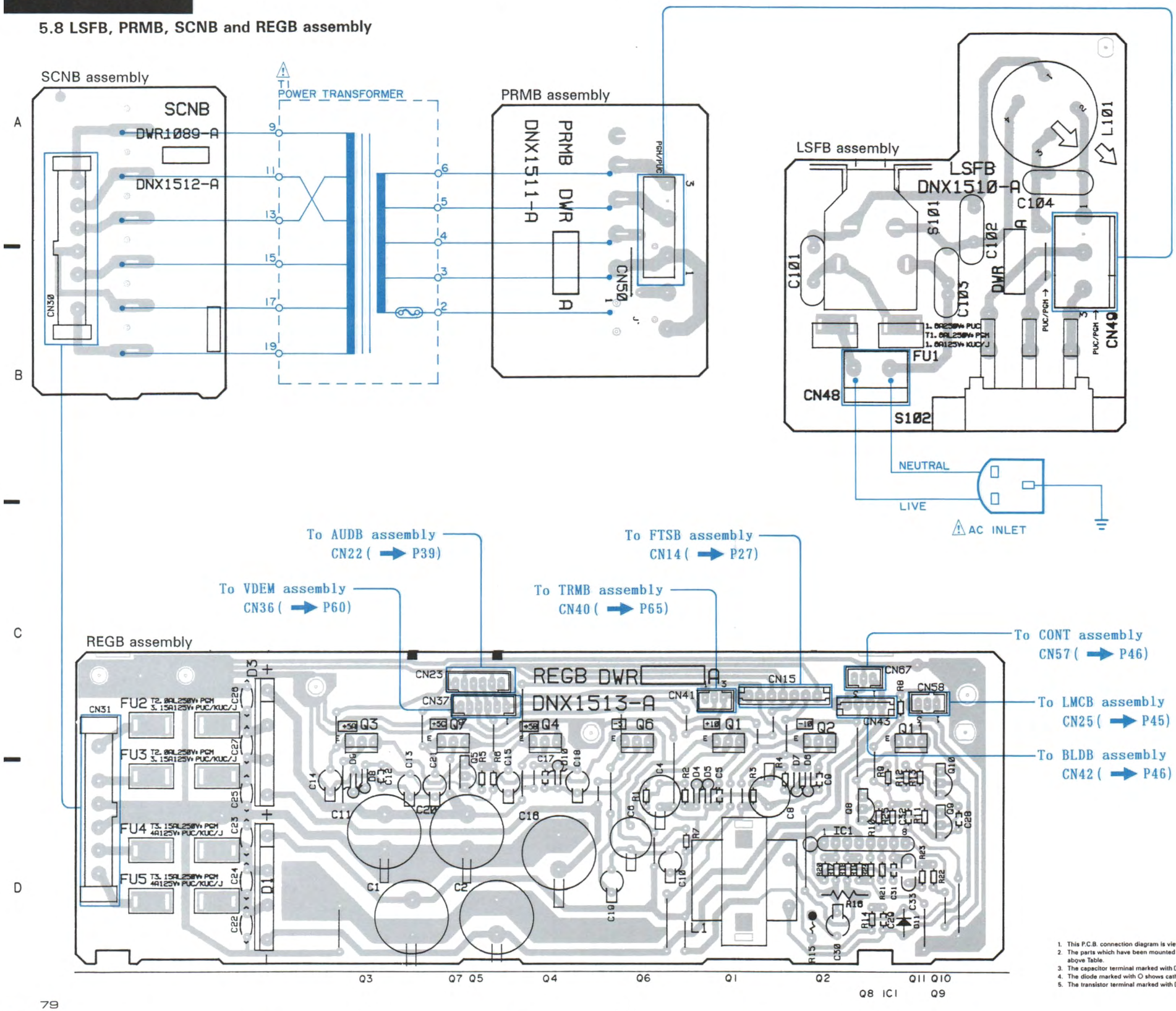
P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Varactor
		Inductor
		Coil
		Transformer
		Filter

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


To CONT assembly
CN32 (P45)
To CONT assembly
CN34 (P45)
JAKB assembly
DWX1203-A
DNX1517-A
JACK
F301
J54
R301
R302
L301
L302
PWID assembly
PWID DNX1516-A
DWX1202-A
D101
R101
J56
GRN
MFD
HOUR assembly
HOUR
DWX1201-A
DNX1515-A
J55
J56
KEYB assembly
SEARCH
PLAY
PAL NTSC
REM
PARK
REJ
LOCK
STEP R/F
SCAN R/F
PAL/NTSC
DISPL
IC1
KEYB
DNX
MFD
DWG
CN32
J24
J25
F1
F2
F3


REGB assembly
To ADEM assembly (P60)
To VADB assembly (P38)
To TRNB assembly (P62)
To FTSB assembly (P57)
To BLDB assembly (P48)
To LNCB assembly (P42)
To CONT assembly (P48)
AC INLET
LIVE
NEUTRAL
SCNB assembly
POWER TRANSFORMER
PRMB assembly
LSTB assembly

5.8 LSFB, PRMB, SCNB and REGB assembly



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

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

PRMB assembly

SCNB assembly

REGB assembly

LSFB assembly

IC1 : SPINDLE DRIVE AMP

T1 POWER TRANSFORMER DTT1055

CN30 CN31 CN50 CN49 CN48

S101 S102 230/120 FU1 T1.6/250V VTL-157 L101

NEUTRAL LIVE AC INLET DKN1040

FU5 T3.15/250V FU4 T3.15/250V FU3 T2/250V FU2 T2/250V

D1 D3 J1

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11

IC1 (1/2) IC1 (2/2)

+14 +10 -10 -14 +5A +5B -5 +5C +5B

CN15
1 GND LM
2 -14
3 +14
4 GND FV
5 GND
6 +5B
7 -5

To FTSB assembly CN14 (To page33)

CN23
1 -10
2 GND
3 +10
4 -5
5 GND
6 +5A

To AUDB assembly CN22 (To page36)

CN37
1 -10
2 GND
3 +10
4 -5
5 GND
6 +5C

To VDEM assembly CN36 (To page52)

CN41
1 +5B
2 GND
3 -5

To TRMB assembly CN40 (To page69)

CN43
1 GND
2 +5B
3 SPDL DRV
4 +14

To BLDB assembly CN42 (To page50)

CN58
1 2fH
2 NC
3 SPDL ERR2

To CONT assembly CN57 (To page49)

CN67
1 +14
2 GND
3 NC

To LMCB assembly CN25 1p, 2p (To page50)

IC1	M5218AL
D1, 3	RBV-402
D4, 7, 8	1SS254
D5, 6	HZS10NB2
D9, 10	HZS5.6NB2
D11	S2K20
L1	VTT-070
Q1, 3, 4, 7, 11	2SD1267
Q2, 6	2SB941
Q5	2SC3243
Q8	2SA933S
Q9	2SC1740S
Q10	2SC1627

SPDL SERVO

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 ⚠ 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 × 10¹*	*561*	*.....RD1/8PM 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*.....RD1/4PS 4 7 3 J*
0.5Ω		*0R5*	*.....RN2H 0 R 5 K*
1Ω		*010*	*.....RS1P 0 1 0 K*

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

5.62kΩ	*562 × 10¹*	*5621*	*.....RN1/4SR 5 6 2 1 F*

Mark No.	Description	Parts No.
CONT ASSEMBLY		
SEMICONDUCTORS		
IC1	MECHANISM CONT, MCU	PD0081A1
IC10	LOGIC IC	TC74HC123AF
IC11	QUAD 2−INPUT NAND	TC74HC00AF
IC12	SYSTEM PRESET IC	M51953BL
IC13	EEPROM	M6M80011AL
IC2	MODE CONT, MCU	PD0110A
IC201	IC	PA5012
IC204	IC	CX23065A
IC206	HEX INVERTER	TC74HCU04AF
IC207	LOGIC IC	BU4053BF
IC208	IC	PD6090B
IC209	IC	NJM4558M−TR
IC4, 5	IC	CXD1095Q
IC6	LOGIC IC	TC74HC139AF
IC7	LOGIC IC	BU4053BF
IC8	COMPARATOR	BA10393F
IC9	SCHMITT INVERTER	TC74HC14AF
Q1	DIGITAL TRANSISTOR	DTC124EK
Q2	CHIP TRANSISTOR	2SC2412K
Q201	DIGITAL TRANSISTOR	DTC124EK
Q202	TRANSISTOR	DTC124ES
Q203, 204	DIGITAL TRANSISTOR	DTC124EK
Q205, 206	CHIP TRANSISTOR	2SA1037K
Q208, 209	DIGITAL TRANSISTOR	DTA124EK
Q210, 211	DIGITAL TRANSISTOR	DTC124EK
Q3	CHIP TRANSISTOR	2SC2412K
Q4	DIGITAL TRANSISTOR	DTC124EK
D1	CHIP DIODE ARRAY	DA204K
D201, 202	VARI−CAP DIODE	SVC321SP
D203	CHIP DIODE ARRAY	DAN202K
COILS		
L201	AXIAL INDUCTOR	LAU270J
L202	AXIAL INDUCTOR	LAU010K
L203	AXIAL INDUCTOR	LAU560J
L204	RADIAL INDUCTOR	LRA120K
F1, 2	FILTER	VTH1001
CAPACITORS		
VC201	VARIABLE CAPACITOR (10p)	PCM1001
VC202	VARIABLE CAPACITOR (120p)	DCM1007
C1	ELECTR. CAPACITOR	CEAS101M10
C10, C11	CERAMIC CAPACITOR	CCSQSL102J50
C12	CERAMIC CAPACITOR	CKSQYF473Z25
C13	MYLOR FILM CAPACITOR	CQMA681J50
C14	MYLOR FILM CAPACITOR	CQMA392J50
C15	CERAMIC CAPACITOR	CKSQYF473Z25
C16	CHIP CAPACITOR	CKSQYF103Z50
C17, C18	CHIP CAPACITOR	CCSQCH180J50
C19, C2	CERAMIC CAPACITOR	CKSQYF473Z25
C20	CHIP CAPACITOR	CKSQYF103Z50
C201, C27	CHIP CAPACITOR	CKSQYF103Z50
C202	ELECTR. CAPACITOR	CEAS470M10
C203	CHIP CAPACITOR	CCSQCH680J50
C204	CERAMIC CAPACITOR	CKSQYB681K50
C205	MYLOR FILM CAPACITOR	CQMA102J50
C206−208	CHIP CAPACITOR	CCSQCH101J50
C209	ELECTR. CAPACITOR	CEAS470M10
C21	CHIP CAPACITOR	CCSQCH330J50
C210	PL, STYRENE CAPACITOR	CQSA181J50
C211	MYLOR FILM CAPACITOR	CQMA682J50
C213	CHIP CAPACITOR	CKSQYF103Z50
C214	ELECTR. CAPACITOR	CEAS470M10
C216	CHIP CAPACITOR	CKSQYF103Z50
C217	CHIP CAPACITOR	CCSQCH680J50

Mark No.	Description	Parts No.
C218	CHIP CAPACITOR	CCSQCH101J50
C219	CHIP CAPACITOR	CKSQYF103Z50
C22	CHIP CAPACITOR	CCSQCH330J50
C220	ELECTR. CAPACITOR	CEAS470M10
C221	ELECTROLYTIC CAPACITOR	CEANP0R1M50
C222	AUDIO FILM CAPACITOR	CFTXA104J50
C223	CHIP CAPACITOR	CKSQYF103Z50
C224	CERAMIC CAPACITOR	CKSQYB103K50
C225	CHIP CAPACITOR	CKSQYF103Z50
C226	CERAMIC CAPACITOR	CKSQYB103K50
C227	CHIP CAPACITOR	CKSQYF103Z50
C228	CHIP CAPACITOR	CKSQYF103Z50
C229	CERAMIC CAPACITOR	CKSQYB103K50
C23	MYLOR FILM CAPACITOR	CQMA473J50
C230, 231	CERAMIC CAPACITOR	CCSQCH151J50
C232	MYLOR FILM CAPACITOR	CQMA182J50
C234	MYLOR FILM CAPACITOR	CQMA272J50
C235	MYLOR FILM CAPACITOR	CQMA472J50
C236	AUDIO FILM CAPACITOR	CFTXA104J50
C237	MYLOR FILM CAPACITOR	CQMA122J50
C238	ELECTR. CAPACITOR	CEAS470M10
C239	CHIP CAPACITOR	CKSQYF103Z50
C24	MYLOR FILM CAPACITOR	CQMA103J50
C240, 241	CHIP CAPACITOR	CKSQYF103Z50
C244	ELECTR. CAPACITOR	CEAS470M10
C247	AUDIO FILM CAPACITOR	CFTXA104J50
C248, 249	MYLOR FILM CAPACITOR	CQMA102J50
C250	ELECTR. CAPACITOR	CEAS470M10
C251, 252	CHIP CAPACITOR	CKSQYF103Z50
C253	ELECTR. CAPACITOR	CEAS470M10
C254, 260	CHIP CAPACITOR	CKSQYF103Z50
C255	ELECTR. CAPACITOR	CEAS470M10
C256	MYLOR FILM CAPACITOR	CQMA393J50
C259	CHIP CAPACITOR	CCSQCH121J50
C25, 26	CHIP CAPACITOR	CKSQYF103Z50
C3−7	ELECTR. CAPACITOR	CEAS470M10
C8	ELECTR. CAPACITOR	CEASR47M50
C9	CERAMIC CAPACITOR	CKSQYF473Z25

RESISTORS

VR201	VR	VRTB6VS473
R1	RESISTOR ARRAY (4.7k)	RA8T472J
R120	RESISTOR ARRAY (10k)	RA6T103J
R2	RESISTOR ARRAY (4.7K)	RA8T472J
R201	RESISTOR (4.7kΩ, 1/6W)	DCN1001
R206	CARBON FILM RESISTOR	RD1/6PM183J
R208	CARBON FILM RESISTOR	RD1/6PM103J
R209	RESISTOR (4.7kΩ, 1/6W)	DCN1001
R260, 261	CARBON FILM RESISTOR	RD1/6PM122J
R272, 273	CARBON FILM RESISTOR	RD1/6PM122J
R276	CARBON FILM RESISTOR	RD1/6PM125J
	Other resistors	RS1/10S□□□J

OTHERS

	IC SOCKET	VKH−029
	IC SOCKET 28P	VKH1001
X1	CERAMIC RESONATOR	VSS1040
X2	CRYSTAL RESONATOR	DSS1010
X201	CRYSTAL RESONATOR (14.318MHz)	VSS1029
X202	CRYSTAL RESONATOR (3.750MHz)	DSS1019

EXTB ASSEMBLY

SEMICONDUCTORS

IC1, 2	DUAL MMV	TC74HC221AF
IC3	IC	TC74HC74AF
IC4, 5	QUAD 2−INPUT NAND	TC74HC00AF
Q1	CHIP TRANSISTOR	2SA1037K
Q2	CHIP TRANSISTOR	2SC2412K
Q3	DIGITAL TRANSISTOR	DTA124EK
Q4	DIGITAL TRANSISTOR	DTC124EK
Q5	CHIP TRANSISTOR	2SC2412K
D1−3	DIODE	1SS254
D5	DIODE	1SS254

SWITCH

S1	SWITCH	VSK−005

COIL

F1	FILTER	VTH1001

CAPACITORS

C1	ELECTR. CAPACITOR	CEAS470M16
C10−13	CERAMIC CAPACITOR	CKSQYF473Z25
C14	ELECTROLYTIC CAPACITOR	CEASR10M50
C15	CERAMIC CAPACITOR	CCSQSL102J50
C2−4	MYLOR FILM CAPACITOR	CQMA102J50

Mark No.	Description	Parts No.
C5	ELECTR. CAPACITOR	CEAS010M50
C6	MYLOR FILM CAPACITOR	CQMA102J50
C7, 8	ELECTR. CAPACITOR	CEAS470M16
C9	CERAMIC CAPACITOR	CKSQYF473Z25
RESISTORS		
R2	CARBON FILM RESISTOR	RD1/6PM222J
R3	CARBON FILM RESISTOR	RD1/6PM103J
R4	CARBON FILM RESISTOR	RD1/6PM750J
	Other resistors	RS1/10S□□□J
OTHERS		
JA1	BNC ASSY	DKN1038

LSFB ASSEMBLY

Mark No.	Description	Parts No.
SWITCHES		
⚠ S101	SWITCH	VSA−011
⚠ S102	VOLTAGE SELECTOR SW	DSH1015
COIL		
⚠ L101	FILTER	VTL−157
CAPACITORS		
⚠ C101−104	CAPACITOR (CERAMIC)	VCG−048

PRMB ASSEMBLY

No parts are supplied with the PRMB assembly.

SCNB ASSEMBLY

No parts are supplied with the SCNB assembly.

REGB ASSEMBLY

Mark No.	Description	Parts No.
SEMICONDUCTORS		
IC1	OP−AMP−IC	M5218AL
Q1	TRANSISTOR	2SD1267
Q10	TRANSISTOR	2SC1627
Q11	TRANSISTOR	2SD1267
Q2	TRANSISTOR	2SB941
Q3, 4	TRANSISTOR	2SD1267
Q5	TRANSISTOR	2SC3243
Q6	TRANSISTOR	2SB941
Q7	TRANSISTOR	2SD1267
Q8	TRANSISTOR	2SA933S
Q9	TRANSISTOR	2SC1740S
D1	BRIDGE STACK	RBV−402
D10	ZENER DIODE	HZS5.6NB2
D11	FAST RECOVERY DIODE	S2K20
D3	BRIDGE STACK	RBV−402
D4	DIODE	1SS254
D5, 6	ZENER DIODE	HZS10NB2
D7, 8	DIODE	1SS254
D9	ZENER DIODE	HZS5.6NB2
COILS		
L1	COIL	VTT−070
CAPACITORS		
C1	CAPACITOR (1000μ/35)	DCH1041
C10	ELECTR. CAPACITOR	CEAS470M25
C11	CAPACITOR (10000μ/16)	VCH1050
C12	CERAMIC CAPACITOR	CKPUYF223Z25
C13	ELECTROLYTIC CAPACITOR	CEHAQ470M10
C14, 15	ELECTROLYTIC CAPACITOR	CEHAQ101M10
C16	ELECTROLYTIC CAPACITOR	CEAS682M16
C17	CERAMIC CAPACITOR	CKPUYF223Z25
C18	ELECTROLYTIC CAPACITOR	CEHAQ331M6R3
C19	ELECTR. CAPACITOR	CEAS101M10
C2	ELECTROLYTIC CAPACITOR	CEAS472M25
C20	CAPACITOR (10000μ/16)	VCH1050
C21	ELECTROLYTIC CAPACITOR	CEHAQ101M10
C22−27	CERAMIC CAPACITOR	CKCYF103Z50
C28	CERAMIC CAPACITOR	CKPUYB102K50
C29	AXIAL CAPACITOR	CKPUYB561K50
C30	ELECTR. CAPACITOR	CEAS3R3M50
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 (47Ω, 1/6W)	DCN1003
R15	RESISTOR (2.7Ω, 3W)	VCN−100
R16	RESISTOR (0.47Ω, 3W)	DCN1013
R17, 18	METALFILM RESISTOR	RN1/6PQ1002F
R19	METALFILM RESISTOR	RN1/6PQ1502F
R20	METALFILM RESISTOR	RN1/6PQ1502F
	Other resistors	RD1/6PM□□□J

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	TC74HCU04AP
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
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	2SC2412K
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	HZS3B2
D303−305	CHIP DIODE ARRAY	DA204K
D306	DIODE	1SS254
D307	CHIP DIODE ARRAY	DA204K
D308, 309	DIODE	1SS254
D310, 311	CHIP DIODE ARRAY	DAN202K
D312	DIODE	1SS254
D313	CHIP DIODE ARRAY	DAN202K
D314, 315	DIODE	1SS254
D316	CHIP DIODE ARRAY	DAN202K
D401−403	DIODE	1SS254
D601	DIODE	1SS254
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.
L413, 414	AXIAL INDUCTOR	LAU120J
L415	AXIAL INDUCTOR	LAU220J
L416	AXIAL INDUCTOR	LAU680J
L417	AXIAL INDUCTOR	LAU121J
L418	AXIAL INDUCTOR	LAU180J
L419	AXIAL INDUCTOR	LAU120J
L420	AXIAL INDUCTOR	LAU560J
L421	AXIAL INDUCTOR	LAU330J
L422	RADIAL INDUCTOR	LFA561J
L423, 424	RADIAL INDUCTOR	LFA100J
L601	RADIAL INDUCTOR	LFA101J
L602	AXIAL INDUCTOR	LAU100J
L603	AXIAL INDUCTOR	LAU220J
L604	AXIAL INDUCTOR	LAU010K
L605	RADIAL INDUCTOR	LFA100J
L701, 702	AXIAL INDUCTOR	LAU8R2J
L703, 704	RADIAL INDUCTOR	LFA100J
DL701	FILTER	VTF1019
F601, 602	FERRITE CORE	DTF1013
F701	FILTER	VTF1011
F702	FILTER	VTF1034
CAPACITORS		
VC601	VARIABLE CAPACITOR (20p)	DCM1005
VC602	VARIABLE CAPACITOR (10p)	PCM1001
C301, 302	CHIP CAPACITOR	CKSQYF103Z50
C303	AUDIO FILM CAPACITOR	CFTXA563J50
C304	ELECTR. CAPACITOR	CEANP220M10
C305	MYLOR FILM CAPACITOR	CQMA153J50
C306	MYLOR FILM CAPACITOR	CQMA103J50
C307	AUDIO FILM CAPACITOR	CFTXA124J50
C308	MYLOR FILM CAPACITOR	CQMA223J50
C309	ELECTR. CAPACITOR	CEAS470M10
C310	AUDIO FILM CAPACITOR	CFTXA394J50
C311	AUDIO FILM CAPACITOR	CFTXA104J50
C312	ELECTR. CAPACITOR	CEANP220M10
C313	MYLOR FILM CAPACITOR	CQMA393J50
C314	CHIP CAPACITOR	CKSQYF103Z50
C315	ELECTR. CAPACITOR	CEAS470M10
C316	CHIP CAPACITOR	CKSQYF103Z50
C317	ELECTR. CAPACITOR	CEAS470M10
C318	ELECTROLYTIC CAPACITOR	CEALNP330M10
C319	ELECTROLYTIC CAPACITOR	CEALNP470M6R3

Mark No.	Description	Parts No.
C320	ELECTR. CAPACITOR	CEAL4R7M50
C321	MYLOR FILM CAPACITOR	CQMA103J50
C322	ELECTR. CAPACITOR	CEANP4R7M16
C323	CHIP CAPACITOR	CCSQSL102J50
C324	CHIP CAPACITOR	CCSQCH101J50
C325	ELECTR. CAPACITOR	CEAL470M16
C326	CHIP CAPACITOR	CKSQYF103Z50
C327	ELECTR. CAPACITOR	CEAS470M10
C328	CHIP CAPACITOR	CKSQYF103Z50
C329	ELECTR. CAPACITOR	CEAS470M10
C330	ELECTROLYTIC CAPACITOR	CEALNP470M6R3
C401−403	CERAMIC CAPACITOR	CCSQCH151J50
C404	CHIP CERAMIC C,	CCSQCH221J50
C405	CERAMIC CAPACITOR	CCSQCH270J50
C406	CERAMIC CAPACITOR	CCSQCH390J50
C407	CERAMIC CAPACITOR	CCSQCH120J50
C408	CERAMIC CAPACITOR	CCSQCH470J50
C411, 412	CHIP CERAMIC C,	CCSQCH220J50
C413	CHIP CAPACITOR	CKSQYF103Z50
C414	CERAMIC CAPACITOR	CKSQYB103K50
C415	CERAMIC CAPACITOR	CCSQCH120J50
C416	CERAMIC CAPACITOR	CKSQYB103K50
C417	CERAMIC CAPACITOR	CCSQCH470J50
C418	CERAMIC CAPACITOR	CCSQCH390J50
C419, 420	CHIP CAPACITOR	CKSQYF103Z50
C421	ELECTR. CAPACITOR	CEAS470M10
C422	MYLOR FILM CAPACITOR	CQMA102J50
C423	MYLOR FILM CAPACITOR	CQMA103J50
C424	ELECTR. CAPACITOR	CEAS470M10
C425	CHIP CAPACITOR	CKSQYF103Z50
C426	CERAMIC CAPACITOR	CCSQCH270J50
C427	AXIAL CERAMIC C,	CCPUCH100J50
C428	AXIAL CERAMIC C,	CCPUSL470J50
C429	AXIAL CERAMIC C,	CCPUSL390J50
C430	CHIP CAPACITOR	CCSQCH100D50
C431	ELECTR. CAPACITOR	CEAS4R7M50
C434	CHIP CAPACITOR	CCSQSL471J50
C435, 436	CHIP CAPACITOR	CKSQYF103Z50
C437	CHIP CERAMIC C,	CCSQCH221J50
C438	ELECTR. CAPACITOR	CEAS470M10
C439	CERAMIC CAPACITOR	CKPUYY103N16
C440, 441	CHIP CAPACITOR	CKSQYF103Z50
C442	CHIP CAPACITOR	CCSQCH101J50
C443	CHIP CAPACITOR	CCSQCH330J50
C444	CHIP CERAMIC C,	CCSQCH271J50
C445, 446	CHIP CAPACITOR	CKSQYF103Z50
C447, 448	ELECTR. CAPACITOR	CEAS470M10
C449	ELECTR. CAPACITOR	CEAS4R7M50
C450, 451	CHIP CAPACITOR	CCSQCH330J50
C452, 453	CHIP CAPACITOR	CKSQYF103Z50
C454	AUDIO FILM CAPACITOR	CFTXA104J50

Mark No.	Description	Parts No.
C455	ELECTR. CAPACITOR	CEAS3R3M50
C456	CERAMIC CAPACITOR	CKSQYB103K50
C457	CERAMIC CAPACITOR	CKSQYF473Z25
C458	ELECTROLYTIC CAPACITOR	CEAS471M6R3
C459	CERAMIC CAPACITOR	CKSQYF473Z25
C460	ELECTR. CAPACITOR	CEAS220M25
C461, 462	ELECTR. CAPACITOR	CEAS3R3M50
C463	AUDIO FILM CAPACITOR	CFTXA224J50
C464	CERAMIC CAPACITOR	CKSQYF473Z25
C465–467	ELECTR. CAPACITOR	CEAS470M10
C468, 469	CERAMIC CAPACITOR	CKSQYF473Z25
C470	CHIP CERAMIC C,	CCSQCH220J50
C471	CERAMIC CAPACITOR	CCSQCH390J50
C472	CHIP CAPACITOR	CCSQCH680J50
C473	CERAMIC CAPACITOR	CCSQCH120J50
C474	ELECTROLYTIC CAPACITOR	CEANP470M10
C475, 476	CHIP CAPACITOR	CKSQYF103Z50
C478	CERAMIC CAPACITOR	CCSQCH470J50
C479	CHIP CERAMIC C,	CCSQCH150J50
C480	CHIP CERAMIC C,	CCSQCH221J50
C481	CHIP CAPACITOR	CKSQYF103Z50
C482, 483	ELECTR. CAPACITOR	CEAS470M10
C484	CHIP CAPACITOR	CKSQYF103Z50
C485	MYLOR FILM CAPACITOR	CQMA104J50
C486	MYLOR FILM CAPACITOR	CQMA103J50
C487	ELECTR. CAPACITOR	CEAS220M25
C489	CHIP CAPACITOR	CCSQCH101J50
C490, 491	CHIP CAPACITOR	CKSQYF103Z50
C492	ELECTR. CAPACITOR	CEAS470M10
C493	AUDIO FILM CAPACITOR	CFTXA683J50
C494	ELECTR. CAPACITOR	CEAS100M50
C495	CHIP CAPACITOR	CCSQSL102J50
C496	CERAMIC CAPACITOR	CCSQCH390J50
C497	ELECTR. CAPACITOR	CEAS470M10
C498	CHIP CAPACITOR	CKSQYF103Z50
C499	CERAMIC CAPACITOR	CCSQCH560J50
C500	CERAMIC CAPACITOR	CCSQCH390J50
C501	CHIP CERAMIC C,	CCSQCH220J50
C502	AUDIO FILM CAPACITOR	CFTXA473J50
C503	CHIP CAPACITOR	CKSQYF103Z50
C504	CHIP CAPACITOR	CCSQCH910J50
C505	CHIP CAPACITOR	CKSQYF103Z50
C506	ELECTR. CAPACITOR	CEAS470M10
C507	ELECTR. CAPACITOR	CEANP220M10
C508, 509	CHIP CAPACITOR	CKSQYF103Z50
C510	ELECTR. CAPACITOR	CEAS470M10
C511, 512	CHIP CAPACITOR	CKSQYF103Z50

Mark No.	Description	Parts No.
C513, 514	ELECTR. CAPACITOR	CEAS470M10
C515, 516	CHIP CAPACITOR	CKSQYF103Z50
C517, 518	ELECTR. CAPACITOR	CEAS470M10
C519	CHIP CAPACITOR	CKSQYF103Z50
C520	CERAMIC CAPACITOR	CCSQSL391J50
C521	CERAMIC CAPACITOR	CCSQSL102J50
C522	CERAMIC CAPACITOR	CKSQYB103K50
C524	CHIP CERAMIC C,	CCSQCH220J50
C525–527	CHIP CAPACITOR	CKSQYF103Z50
C601	ELECTR. CAPACITOR	CEAS470M10
C602	CHIP CAPACITOR	CKSQYF103Z50
C603	ELECTR. CAPACITOR	CEAS470M10
C604 605	CHIP CAPACITOR	CKSQYF103Z50
C606	CERAMIC CAPACITOR	CCSQCH270J50
C607	CHIP CERAMIC C,	CCSQCH220J50
C608	CHIP CAPACITOR	CCSQCH060D50
C609	ELECTR. CAPACITOR	CEAS470M10
C610	MYLOR FILM CAPACITOR	CQMA104J50
C611, 612	CHIP CAPACITOR	CKSQYF103Z50
C613	CHIP CAPACITOR	CCSQCH680J50
C614	CHIP CERAMIC C,	CCSQCH271J50
C615	CHIP CAPACITOR	CKSQYF103Z50
C616	CHIP CERAMIC C,	CCSQCH221J50
C618	CERAMIC CAPACITOR	CKSQYB103K50
C619	CHIP CAPACITOR	CKSQYF103Z50
C620	CHIP CERAMIC C,	CCSQCH221J50
C621–623	CHIP CAPACITOR	CKSQYF103Z50
C626	CHIP CAPACITOR	CKSQYF103Z50
C627	MYLOR FILM CAPACITOR	CQMA182J50
C628	MYLOR FILM CAPACITOR	CQMA102J50
C629	CHIP CAPACITOR	CCSQCH101J50
C630	MYLOR FILM CAPACITOR	CQMA393J50
C631	MYLOR FILM CAPACITOR	CQMA104J50
C632	CERAMIC CAPACITOR	CCCCH100D50
C704	ELECTR. CAPACITOR	CEANP101M6R3
C705	ELECTROLYTIC CAPACITOR	CEAS221M6R3
C708	ELECTROLYTIC CAPACITOR	CEANP470M10
C709–713	CERAMIC CAPACITOR	CKSQYB103K50
C714, 715	CERAMIC CAPACITOR	CKCYB681K50
C716	ELECTR. CAPACITOR	CEAS470M10
C717, 718	MYLOR FILM CAPACITOR	CQMA473J50
C719, 720	ELECTR. CAPACITOR	CEAS470M10
C721, 722	CHIP CAPACITOR	CKSQYF103Z50
C727	CERAMIC CAPACITOR	CKSQYB103K50
C728	ELECTROLYTIC CAPACITOR	CEANP470M10

Mark No.	Description	Parts No.
RESISTORS		
VR401	VARIABLE RESISTOR	VRTB6VS333
VR402	VR	VRTB6VS472
VR404	VR	VRTB6VS472
VR701	VR	VRTB6VS222
VR702	VR	VRTB6VS471
R332, 333	METALFILM RESISTOR	RN1/6PQ6801F
R336, 337	METALFILM RESISTOR	RN1/6PQ1202F
R408	CHIP TYPE RESISTER	RS1/10S303F
R410	CHIP TYPE RESISTER	RS1/10S303F
R411	CARBON FILM RESISTOR	RD1/6PM510J
R415	CHIP TYPE RESISTER	RS1/10S512F
R437, 438	CARBON FILM RESISTOR	RD1/6PM510J
R447, 448	CARBON FILM RESISTOR	RD1/6PM100J
R464	CHIP TYPE RESISTER	RS1/10S203F
R467	CARBON FILM RESISTOR	RD1/6PM102J
R494, 495	CARBON FILM RESISTOR	RD1/6PM101J
R514	CARBON FILM RESISTOR	RD1/6PM222J
R632	CARBON FILM RESISTOR	RD1/6PM221J
R637	CARBON FILM RESISTOR	RD1/6PM221J
R751	CARBON FILM RESISTOR	RD1/6PM223J
R755	CARBON FILM RESISTOR	RD1/6PM103J
	Other resistors	RS1/10S□□□J
OTHERS		
X601	CRYSTAL RESONATOR (17.734MHz)	VSS1019
X602	CRYSTAL RESONATOR (14.318MHz)	VSS1029

AUDB ASSEMBLY

SEMICONDUCTORS

IC301	LOGIC IC	BU4053BF
IC302	BIPOLAR IC	HA12127ANT
IC303	IC	NJM4558M−TR
IC304	HEX INVERTER	TC74HCU04AF
IC305	IC	NJM4558M−TR
IC306	EFM DEMODULATION IC	CXD2500Q
IC307	LOGIC IC	BU4053BF
IC308	IC	LC7883KM
IC309	IC	NJM4558M−TR
IC310, 311	LOGIC IC	NJU4051BM
IC312	IC	NJM4558M−TR
IC313	REGULATOR IC	NJM78L08A
IC314	REGULATOR IC	NJM79L08A
Q301	TRANSISTOR	2SC1674
Q302	TRANSISTOR	2SC1740S
Q303	TRANSISTOR	2SC1674
Q304, 305	TRANSISTOR	2SC1740S
Q306−308	TRANSISTOR	2SA933S
Q309, 310	TRANSISTOR	DTA124ES
Q311−314	TRANSISTOR	2SA933S
Q315	TRANSISTOR	DTC124ES
Q316	N−FET	2SK184
Q317	TRANSISTOR	DTC124ES
Q318	DIGITAL TRANSISTOR	DTC124EK
Q319	N−FET	2SK184
Q320	TRANSISTOR	DTC124ES
Q321, 322	DIGITAL TRANSISTOR	DTC124EK
Q323	CHIP TRANSISTOR	2SA1037K
Q324	CHIP TRANSISTOR	2SC2412K
Q325	DIGITAL TRANSISTOR	DTA124EK
Q326	DIGITAL TRANSISTOR	DTC124EK
Q327, 328	TRANSISTOR	2SC1740S
Q329	DIGITAL TRANSISTOR	DTC124EK
D301−310	DIODE	1SS254
D311	VARI−CAP	FC54M
D312, 313	DIODE	1SS254

COILS

L301	RADIAL INDUCTOR	LRA101J
L302	AXIAL INDUCTOR	LAU470J
L303	AXIAL INDUCTOR	LAU560J
L304	AXIAL INDUCTOR	LAU151J
L305	AXIAL INDUCTOR	LAU181J
L306	AXIAL INDUCTOR	LAU151J
L307	AXIAL INDUCTOR	LAU1R8K
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.
C316	ELECTR. CAPACITOR	CEAS4R7M50
C317	MYLOR FILM CAPACITOR	CQMA682J50
C318	ELECTR. CAPACITOR	CEAS4R7M50
C319, 320	ELECTR. CAPACITOR	CEAS470M10
C321	CERAMIC CAPACITOR	CKSQYB103K50
C322, 323	CHIP CAPACITOR	CKSQYF103Z50
C324	CERAMIC CAPACITOR	CKSQYB103K50
C325	ELECTR. CAPACITOR	CEAS100M50
C326	CERAMIC CAPACITOR	CKSQYB103K50
C327, 328	ELECTR. CAPACITOR	CEAS470M10
C329	CHIP CAPACITOR	CCSQCH180J50
C330	CHIP CAPACITOR	CCSQCH430J50
C331, 332	CHIP CERAMIC C,	CCSQCH221J50
C333	ELECTR. CAPACITOR	CEANP220M10
C334	ELECTR. CAPACITOR	CEANP100M16
C335	CHIP CAPACITOR	CCSQSL102J50
C336	CERAMIC CAPACITOR	CKSQYB472K50
C337	CERAMIC CAPACITOR	CKSQYB152K50
C338	CHIP CAPACITOR	CCSQCH101J50
C339	CHIP CERAMIC C,	CCSQCH221J50
C340	ELECTR. CAPACITOR	CEAS100M50
C341	CERAMIC CAPACITOR	CKSQYB822K50
C342	AUDIO FILM CAPACITOR	CFTXA473J50
C343	ELECTROLYTIC CAPACITOR	CEAS471M6R3
C344	AUDIO FILM CAPACITOR	CFTXA104J50
C345	ELECTR. CAPACITOR	CEANP220M10
C346	CHIP CAPACITOR	CCSQSL102J50
C347	ELECTR. CAPACITOR	CEAS220M25
C348	CERAMIC CAPACITOR	CKSQYB103K50
C349	AUDIO FILM CAPACITOR	CFTXA103J50
C350	CHIP CAPACITOR	CCSQSL102J50
C351	ELECTR. CAPACITOR	CEAS470M10
C352	CHIP CERAMIC C,	CCSQCH220J50
C353	CHIP CERAMIC C,	CCSQCH150J50
C354, 355	CHIP CERAMIC C,	CCSQCH221J50
C356	ELECTR. CAPACITOR	CEAS470M10
C357	ELECTR. CAPACITOR	CEALNP220M16
C358	CHIP CAPACITOR	CCSQSL102J50
C359	CERAMIC CAPACITOR	CKSQYB472K50
C360	CHIP CAPACITOR	CCSQCH101J50
C361	CHIP CERAMIC C,	CCSQCH221J50
C362	CERAMIC CAPACITOR	CKSQYB152K50
C363	ELECTR. CAPACITOR	CEANP100M16
C364	CERAMIC CAPACITOR	CKSQYB822K50
C365	AUDIO FILM CAPACITOR	CFTXA473J50
C366	ELECTR. CAPACITOR	CEASR47M50
C367	ELECTROLYTIC CAPACITOR	CEAS471M6R3
C368	ELECTR. CAPACITOR	CEAS4R7M50
C369	CHIP CAPACITOR	CCSQSL102J50
C370	ELECTROLYTIC CAPACITOR	CEAS471M6R3
C371	CHIP CAPACITOR	CCSQSL102J50
C372	ELECTR. CAPACITOR	CEAS220M25
C373	ELECTR. CAPACITOR	CEAS100M50
C375, 376	CHIP CAPACITOR	CKSQYF103Z50
C377	ELECTR. CAPACITOR	CEAL100M50
C378	CHIP CAPACITOR	CCSQSL102J50
C379	ELECTR. CAPACITOR	CEANP3R3M16
C380	CERAMIC CAPACITOR	CKSQYF473Z25
C381	CERAMIC CAPACITOR	CKCYB103K50
C382	CERAMIC CAPACITOR	CKSQYB103K50
C386	CERAMIC CAPACITOR	CKSQYB152K50
C387	CERAMIC CAPACITOR	CKSQYF473Z25
C388, 389	CHIP CAPACITOR	CKSQYF103Z50
C390	ELECTR. CAPACITOR	CEAS470M10
C391	ELECTR. CAPACITOR	CEANP010M50
C392	ELECTR. CAPACITOR	CEANP100M16
C393, 394	ELECTR. CAPACITOR	CEAS470M10
C395	CERAMIC CAPACITOR	CKSQYB103K50
C396	CHIP CAPACITOR	CCSQSL102J50
C397	CERAMIC CAPACITOR	CCSQCH120J50
C398	CHIP CAPACITOR	CCSQCH100D50
C399	CERAMIC CAPACITOR	CKSQYB103K50
C400	ELECTR. CAPACITOR	CEAS470M10
C401	CHIP CAPACITOR	CKSQYF103Z50
C402	ELECTR. CAPACITOR	CEAS221M10
C403	ELECTR. CAPACITOR	CEAL470M16
C404, 406	CHIP CAPACITOR	CKSQYF103Z50
C407, 408	ELECTROLYTIC CAPACITOR	CEANP220M16
C411, 412	ELECTR. CAPACITOR	CEAS220M25
C413, 414	CHIP CAPACITOR	CCSQSL471J50
C415, 416	CERAMIC CAPACITOR	CKSQYB821K50
C417, 418	CHIP CAPACITOR	CKSQYF103Z50
C419, 420	ELECTROLYTIC CAPACITOR	CEANP220M16
C421, 422	CERAMIC CAPACITOR	CCSQSL331J50
C423, 424	ELECTR. CAPACITOR	CEAL470M16
C425, 426	ELECTR. CAPACITOR	CEAS470M16
C427, 428	ELECTROLYTIC CAPACITOR	CEANP220M16

RESISTORS

R328–331	CARBON FILM RESISTOR	RD1/6PM102J
R379	CARBON FILM RESISTOR	RD1/6PM753J
R393	CARBON FILM RESISTOR	RD1/6PM103J
R398	CARBON FILM RESISTOR	RD1/6PM473J
R403	CARBON FILM RESISTOR	RD1/6PM223J

Mark No.	Description	Parts No.
R409	CARBON FILM RESISTOR	RD1/6PM563J
R427	RESISTOR (47Ω, 1/6W)	DCN1003
R438, 439	CARBON FILM RESISTOR	RD1/6PM103J
R444	CARBON FILM RESISTOR	RD1/6PM681J
R445	CARBON FILM RESISTOR	RD1/6PM301J
R448, 449	CARBON FILM RESISTOR	RD1/6PM301J
R467	CARBON FILM RESISTOR	RD1/6PM101J
	Other resistors	RS1/10S□□□J
OTHERS		
JA301	JACK	DKB1013
X301	CRYSTAL RESONATOR	VSS1022
	DIN SOCKET 5P	DKN1033

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
L102	1H DL ADJUST COIL	DTL1001
L103, 104	AXIAL INDUCTOR	LAU220J
L105, 106	RADIAL INDUCTOR	LFA101J
F101	B. P. F.	VTF1038
F102	FILTER	VTF1034
F103	FILTER	VTF−062
F104	FILTER	VTF1018
F105, 106	EMI FILTER	DTH1122
F107−111	EMI FILTER	VTH1009
F201−210	EMI FILTER	VTH1009

CAPACITORS

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	CQMA473J50
C114	ELECTR. CAPACITOR	CEASR47M50
C115	CERAMIC CAPACITOR	CKCYB103K50
C116, 117	CHIP CAPACITOR	CKSQYF103Z50
C118	ELECTR. CAPACITOR	CEAS470M25
C119	CERAMIC CAPACITOR	CKSQYB103K50
C120	ELECTR. CAPACITOR	CEAS470M25
C122	ELECTR. CAPACITOR	CEAS4R7M50
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

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 (4.7Ω, 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 (10Ω, 1/6W)	DCN1002
	Other resistors	RS1/10S□□□J
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□□□J
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	CEAS4R7M50
C305	CERAMIC CAPACITOR	CKPUYF103Z25
RESISTORS		
	All resistors	RD1/6PM□□□J
OTHERS		
CN46	CONNECTOR 11P	F11P−SHVQ

Mark No.	Description	Parts No.
FTSB ASSEMBLY		
SEMICONDUCTORS		
IC1	FTS IC	PM3003A
IC2	IC	NJM4556DE
IC201	LOGIC IC	TC74HC00AP
IC202	LOGIC IC	SN74LS221N
IC203	IC	NJM082D
IC204	LINEAR IC	NJM4558D
IC205	IC	TC4016BP
IC3	IC	NJM4556DE
IC4, 5	LINEAR IC	NJM4558D
IC6	IC	NJM082D
IC7	LOGIC IC	SN74LS221N
Q1	TRANSISTOR	2SC1740S
Q10	TRANSISTOR	2SD1762−F8
Q11	TRANSISTOR	2SB1185−F8
Q12	TRANSISTOR	DTA124ES
Q13	TRANSISTOR	2SD1859
Q14	TRANSISTOR	2SC1740S
Q15	TRANSISTOR	DTA124ES
Q16, 17	TRANSISTOR	2SA933S
Q18	TRANSISTOR	DTC124ES
Q19	TRANSISTOR	DTA124ES
Q2	TRANSISTOR	2SC1740S
Q20	TRANSISTOR	2SD1859
Q201	TRANSISTOR	DTA124ES
Q202−205	TRANSISTOR	2SC1740S
Q206, 207	TRANSISTOR	2SA933S
Q208	TRANSISTOR	2SC1740S
Q209	TRANSISTOR	2SA933S
Q21	N−FET	2SK117
Q210	TRANSISTOR	2SA933S
Q211	TRANSISTOR	2SC1740S
Q212, 213	TRANSISTOR	2SA933S
Q214	TRANSISTOR	2SC1740S
Q3	TRANSISTOR	2SD1859
Q4	TRANSISTOR	2SD1762−F8
Q5	TRANSISTOR	2SB1185−F8
Q6	TRANSISTOR	2SD1762−F8
Q7	TRANSISTOR	2SB1185−F8
Q8	TRANSISTOR	2SD1762−F8
Q9	TRANSISTOR	2SB1185−F8
D1	DIODE	1SS254
D10	ZENER DIODE	HZS3B3
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

Mark No.	Description	Parts No.
CAPACITORS		
C1	CERAMIC CAPACITOR	CKPUYF223Z25
C10, 11	AXIAL CERAMIC C	CCPUSL330J50
C118	CERAMIC CAPACITOR	CKPUYF223Z25
C12	ELECTROLYTIC CAPACITOR	CEAL220M6R3
C13, 14	ELECTR. CAPACITOR	CEALNP010M50
C15	FILM CAPACITOR	CFTNA104J50
C16	MYLOR FILM CAPACITOR	CQMA472J50
C17	ELECTR. CAPACITOR	CEAL100M16
C18	ELECTR. CAPACITOR	CEALNP220M16
C19, 2	ELECTROLYTIC CAPACITOR	CEAL220M6R3
C20	MYLOR FILM CAPACITOR	CQMA473J50
C201	ELECTROLYTIC CAPACITOR	CEALNP470M6R3
C202, 203	ELECTR. CAPACITOR	CEAL101M6R3
C204	ELECTR. CAPACITOR	CEAL2R2M50
C205	MYLOR FILM CAPACITOR	CQMA103J50
C206	CERAMIC CAPACITOR	CKPUYB151K50
C207	AXIAL CAPACITOR	CKPUYB681K50
C208	AXIAL CERAMIC C,	CCPUCH150J50
C209	FILM CAPACITOR	CFTNA473J50
C21	MYLOR FILM CAPACITOR	CQMA103J50
C210	MYLOR FILM CAPACITOR	CQMA102J50
C211, 212	ELECTR. CAPACITOR	CEAL101M6R3
C213	MYLOR FILM CAPACITOR	CQMA272J50
C214	MYLOR FILM CAPACITOR	CQMA562J50
C215	MYLOR FILM CAPACITOR	CQMA472J50
C216	CERAMIC CAPACITOR	CKPUYF223Z25
C217	ELECTR. CAPACITOR	CEAL101M6R3
C218	ELECTR. CAPACITOR	CEALNP2R2M35
C219	ELECTR. CAPACITOR	CEAL4R7M50
C22	CERAMIC CAPACITOR	CKPUYB151K50
C220	AXIAL CAPACITOR	CKPUYB821K50
C221	ELECTROLYTIC CAPACITOR	CEALNP470M6R3
C23, 24	CERAMIC CAPACITOR	CKPUYF223Z25
C25	MYLOR FILM CAPACITOR	CQMA223J50
C26	ELECTR. CAPACITOR	CEALNP010M50
C27, 28	ELECTR. CAPACITOR	CEAL330M25
C29	AXIAL CAPACITOR	CKPUYB101K50
C3	ELECTROLYTIC CAPACITOR	CEAL220M6R3
C30−33	ELECTR. CAPACITOR	CEAL330M25
C34	AXIAL CAPACITOR	CKPUYB391K50
C35, 36	ELECTR. CAPACITOR	CEAL330M25
C37	CERAMIC CAPACITOR	CKPUYB102K50
C38	ELECTR. CAPACITOR	CEALNP4R7M25

Mark No.	Description	Parts No.
C39	FILM CAPACITOR	CFTNA104J50
C4	CERAMIC CAPACITOR	CKPUYF223Z25
C40	ELECTR. CAPACITOR	CEALNP2R2M35
C41	MYLOR FILM CAPACITOR	CQMA473J50
C42	MYLOR FILM CAPACITOR	CQMA683J50
C43	CERAMIC CAPACITOR	CKPUYF223Z25
C44	ELECTROLYTIC CAPACITOR	CEAL220M6R3
C45	CERAMIC CAPACITOR	CKPUYF223Z25
C46	ELECTROLYTIC CAPACITOR	CEAL220M6R3
C47	CERAMIC CAPACITOR	CKPUYF223Z25
C48	AXIAL CAPACITOR	CKPUYB101K50
C5	CERAMIC CAPACITOR	CKPUYF223Z25
C50	ELECTROLYTIC CAPACITOR	CEAL220M6R3
C51, 52	CERAMIC CAPACITOR	CKPUYF223Z25
C53, 54	AXIAL CAPACITOR	CKPUYB221K50
C55−58	ELECTR. CAPACITOR	CEAL330M25
C59	CERAMIC CAPACITOR	CKPUYF223Z25
C6	ELECTR. CAPACITOR	CEAL010M50
C60	CERAMIC CAPACITOR	CKPUYF223Z25
C61, 62	ELECTR. CAPACITOR	CEAL101M6R3
C63, 64	MYLOR FILM CAPACITOR	CQMA222J50
C65	ELECTROLYTIC CAPACITOR	CEAL220M6R3
C66	CERAMIC CAPACITOR	CKPUYB102K50
C67, 68	CERAMIC CAPACITOR	CKPUYF223Z25
C69	ELECTR. CAPACITOR	CEAL330M25
C7	CERAMIC CAPACITOR	CKPUYF223Z25
C70	ELECTR. CAPACITOR	CEAL330M25
C72	ELECTR. CAPACITOR	CEAL010M50
C73	MYLOR FILM CAPACITOR	CQMA102J50
C74	ELECTR. CAPACITOR	CEALNP4R7M25
C8	CERAMIC CAPACITOR	CKPUYF223Z25
C9	ELECTR. CAPACITOR	CEAL010M50
RESISTORS		
VR1	VR	VRTB6VS222
VR2	VR	VRTB6VS473
VR3	VR	VRTB6VS472
VR4, 5	SEMI−FIXED RESISTOR	VRTB6VS103
VR6, 7	VR	VRTB6VS223
VR8	VR	VRTB6VS474
VR9	VR	VRTB6VS104
R136, 137	RESISTOR (2.2Ω, 1/4W)	DCN1014
R210	METALFILM RESISTOR	RN1/6PQ7501F
R214	METALFILM RESISTOR	RN1/6PQ1002F
R215	METALFILM RESISTOR	RN1/6PQ6802F
R217	METALFILM RESISTOR	RN1/6PQ1002F
R218	METALFILM RESISTOR	RN1/6PQ2402F
R37−39	METALFILM RESISTOR	RN1/6PQ3902F
R56, 57	RESISTOR	DCN1014
R63	CARBON FILM RESISTOR	RD1/2PMF2R7J
R64	CARBON FILM RESISTOR	RD1/2PMF1R5J
R66, 67	RESISTOR	DCN1014
R69	RESISTOR (47Ω, 1/6W)	DCN1003
R74, 75	RESISTOR (2.2Ω, 1/4W)	DCN1014
R77	RESISTOR (47Ω, 1/6W)	DCN1003
R97	RESISTOR (47Ω, 1/6W)	DCN1003
	Other resistors	RD1/6PM□□□J

POSS ASSEMBLY

SEMICONDUCTOR

IC401	PHOTE INTERRUPTER	GP1A30R

CAPACITOR

C401	CERAMIC CAPACITOR	CKPUYF223Z25

RESISTOR

R401	CARBON FILM RESISTOR	RD1/6PM121J

HOUR ASSEMBLY

No parts are supplied with the HOUR assembly.

PWID ASSEMBLY

SEMICONDUCTOR

D101	LED	SLH−56MC3H−S

RESISTOR

R101	CARBON FILM RESISTOR	RD1/6PM271J

JAKB ASSEMBLY

COILS

L301, 302	AXIAL INDUCTOR	LAU221J
F301	FERRITE CORE	DTF1003

RESISTORS

R301, 302	CARBON FILM RESISTOR	RD1/6PM221J

OTHERS

	JACK	DKN1017

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.

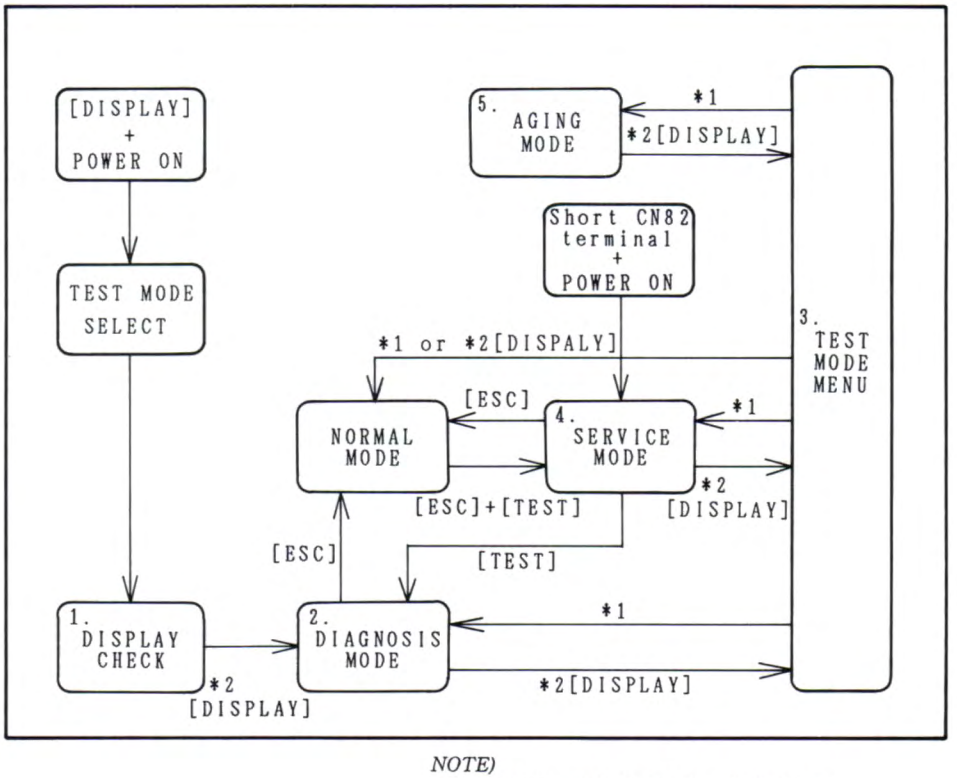
2) Diagnosis mode

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.

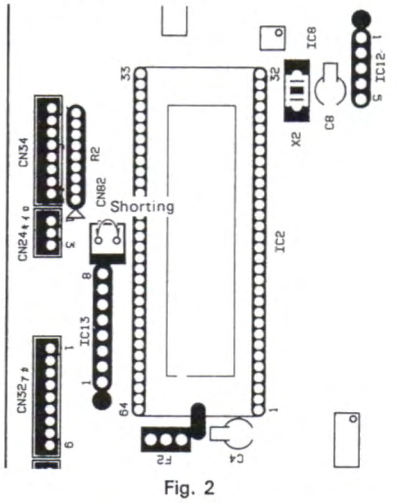


Fig. 2

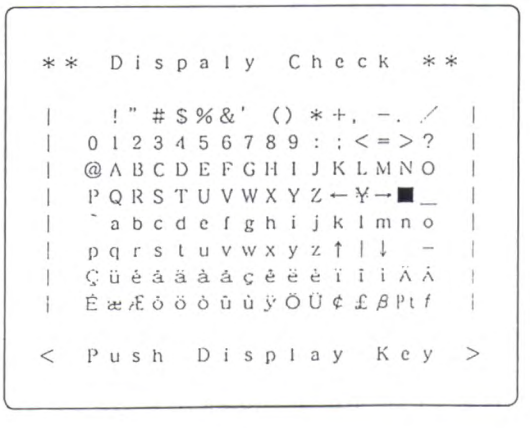


Fig. 3

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.

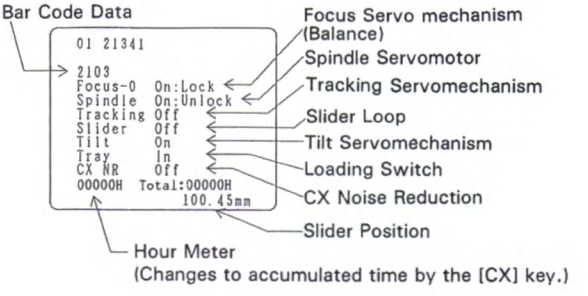


Fig. 4

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.

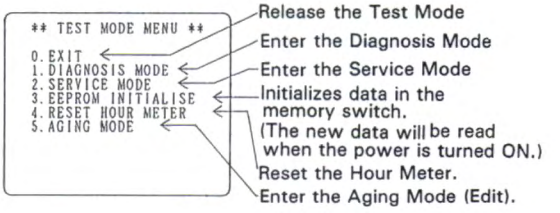


Fig. 5

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.

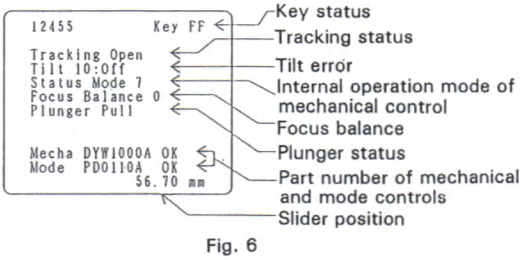


Fig. 6

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 (CONT 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.

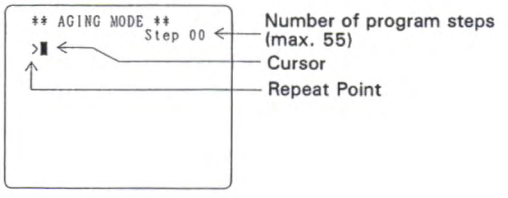
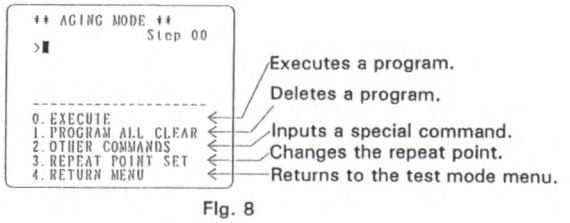


Fig. 7

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



Flg. 8

①Execution 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".

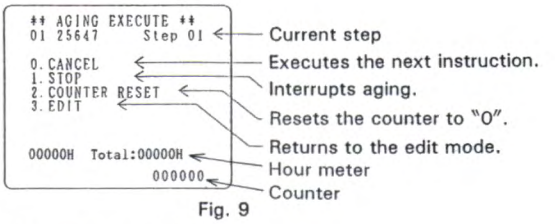


Fig. 9

②Interruption 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.

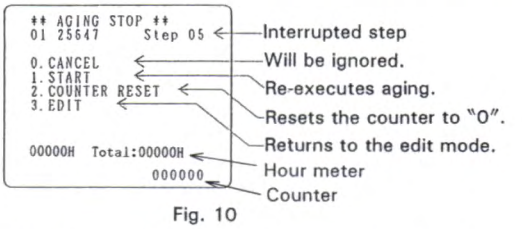


Fig. 10

- 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)

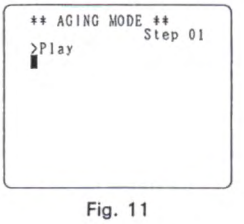


Fig. 11

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

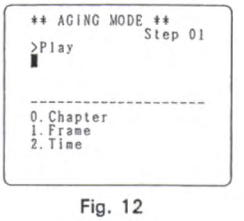


Fig. 12

ERROR CODE	MESSAGE	EXPLANATION
E00	Communication error	Communication error ● Framing error ● Buffer overflow
E04	Feature not available	Attempted to execute an invalid function. ● 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. ● 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. ● 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)

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)

Fig. 14

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

7.6 PRECAUSIONS 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 ⊖ screwdriver (with a shaft of about 7cm)
- Small philips ⊕ screwdriver (with a shaft of more than 15cm)
- Hexagonal wrench (Allen wrench) (2.00mm)
- Low−pass filter (100kΩ + 1μF)
- Dual−trace oscilloscope (with delay)
- Frequency counter
- LD test disc (GGV1003 : NTSC, J1 : PAL)
- 8−inch LDD disc (commercially available)
- Shorting clip
- Digital voltmeter

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.

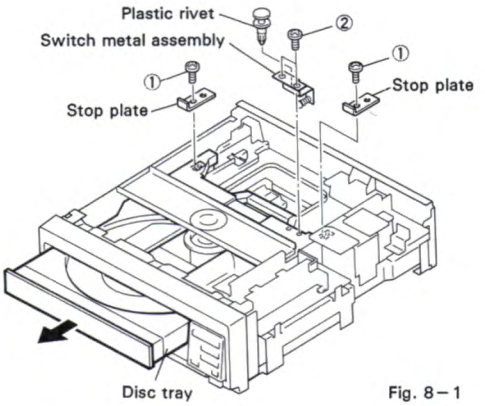


Fig. 8−1

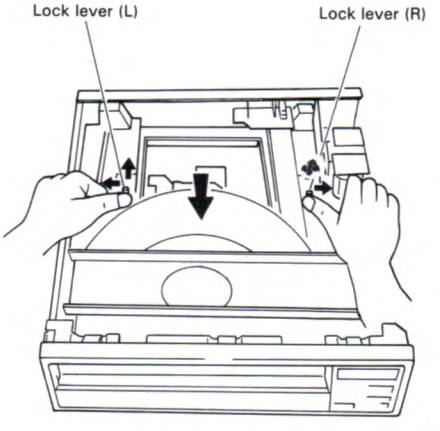


Fig. 8−2

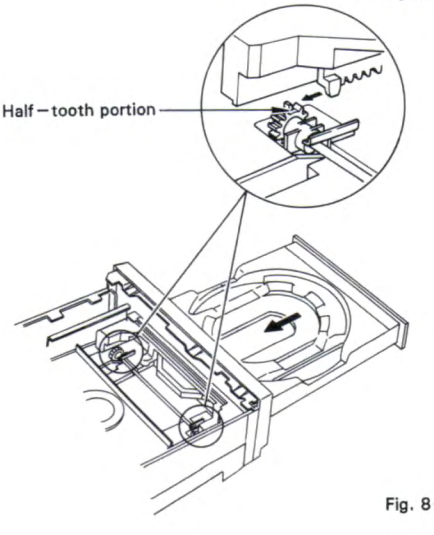


Fig. 8−3

8.3 ADJUSTMENTS

1. TILT GAIN ADJUSTMENT

- 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	Adjusting point
• Screwdriver (flat bladed)	• VR8 in the FTSB assembly

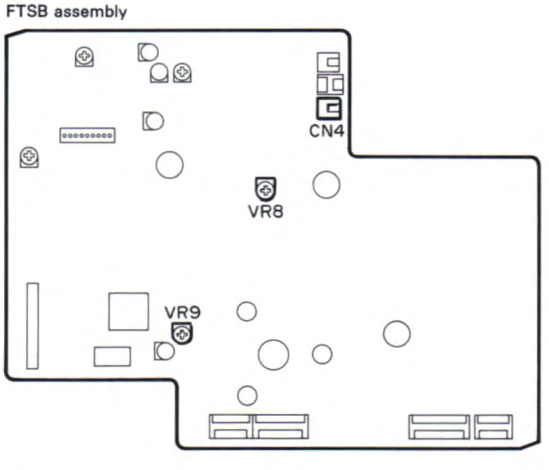
Adjusting procedure

- 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).

1. Check the color of the dot on the flexible cable located at the side of the tilt sensor. (Fig. 1−1)
   There are three dot conditions: adjust VR8 on the FTSB board according to the folowing code.
   Red dot: Turn VR8 fully clockwise.
   Blue dot: Turn VR8 fully counterclockwise.

No dot: Set VR8 to its mechanical center position.

Adjustment diagram



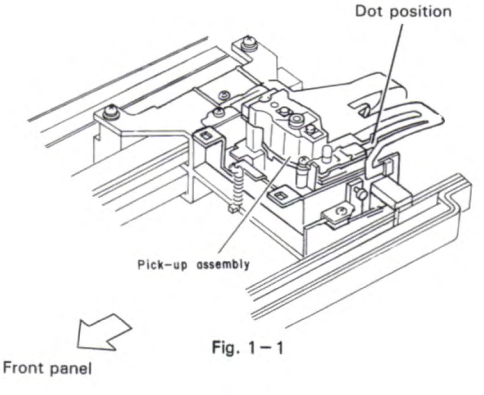


Fig. 1−1

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
• Screwdriver (flat bladed) • Oscilloscope • Test disc: GGV1003	• Oscilloscope: In FTSB assembly CH1: Between TRKG ERROR (TP1−9) and GND	* Service mode: • Play mode • Tracking servo loop open • Tilt servo OFF	• 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 #20000.
5. Connect the oscilloscope to TP1−9 (TRKG error) to observe the waveforms.
6. Insert the flat bladed ⊖ 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 adjustmejnt.
9. Close the Tracking servo to make sure that a picture on the screen is normal.

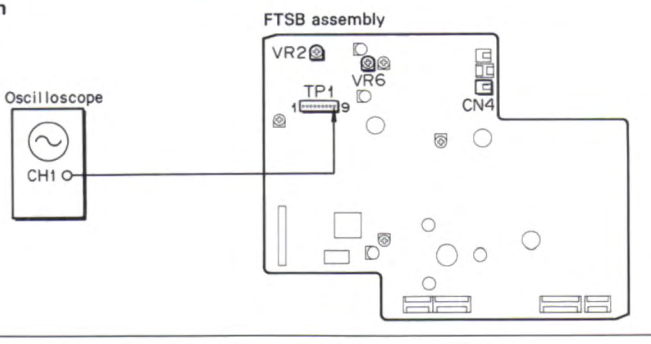
[TRKG (Tracking) balance adjustment]

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



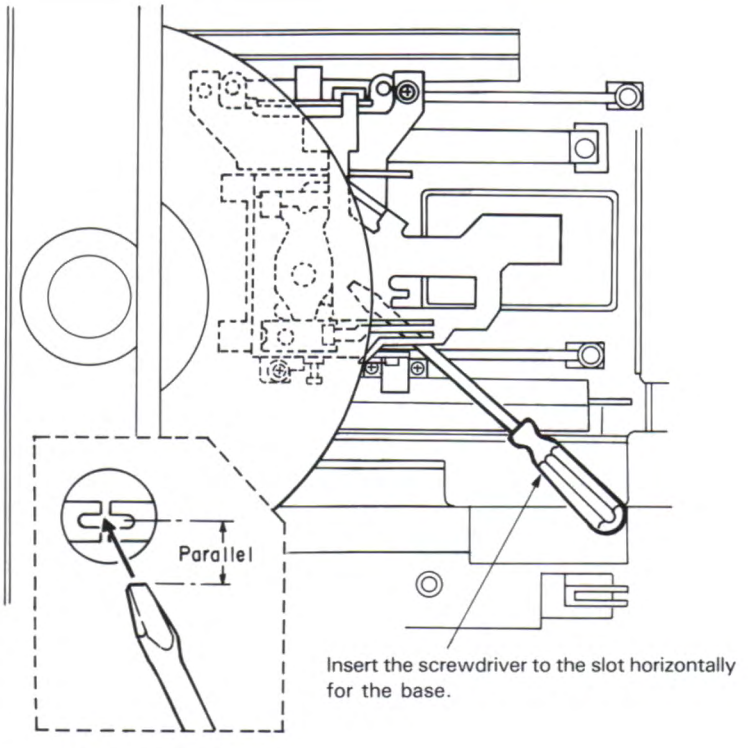


Fig. 2–1

Waveforms

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

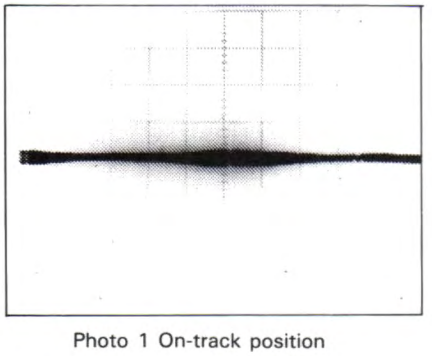


Photo 1 On-track position

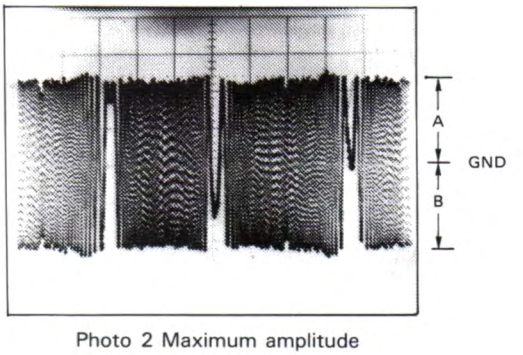


Photo 2 Maximum amplitude

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
• Oscilloscope • Hexagonal wrench (2 mm) • Low-pass filter (100kΩ/1μF) • Test disc: GGV1003	• Oscilloscope: In FTSB assembly CH1: Between TP1−3 (FOCS RTN) and GND	* Service mode: • Play mode • Tracking servo loop open • Tilt servo OFF	• 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±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

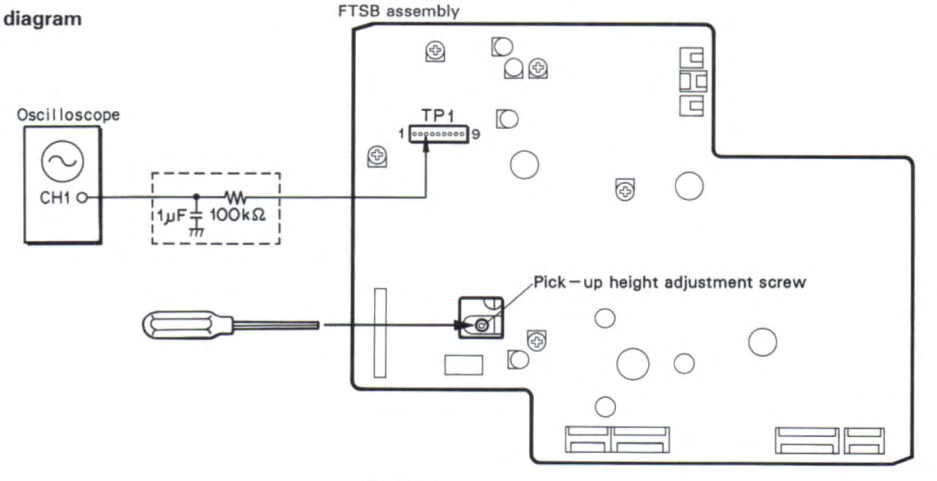


Fig. 3−1

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
• TV monitor • Hexagonal wrench (2 mm) • Test disc: GGV1003	• TV monitor Connect to the video output terminal of the player.	* Normal mode: • Still mode • Tilt servo OFF (Unplug the connector of CN28)	• 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

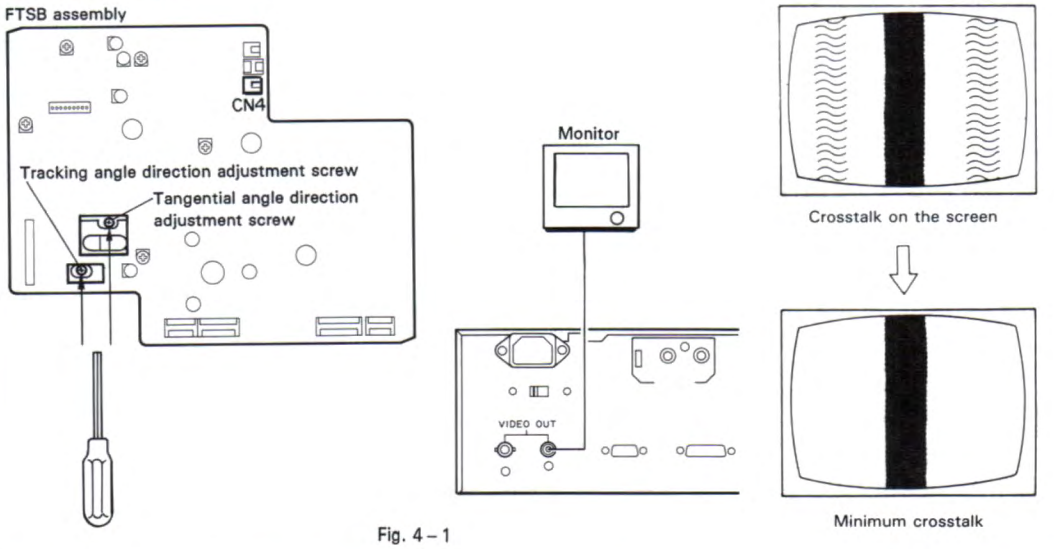


Fig. 4 – 1

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
• TV monitor • Test disc: GGV1003 • Oscilloscope	• TV monitor: Connect to the video output terminal of the player. • Oscilloscope: In the FTSB assembly CH1: Between TRKG ERROR (TP1−9) and GND	* Service mode: • Play mode • Tracking servo loop open • Tilt servo OFF * Normal mode • Still mode • Tilt servo OFF	• 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 crosstalk. (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 ≧ 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 symmertrial. (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

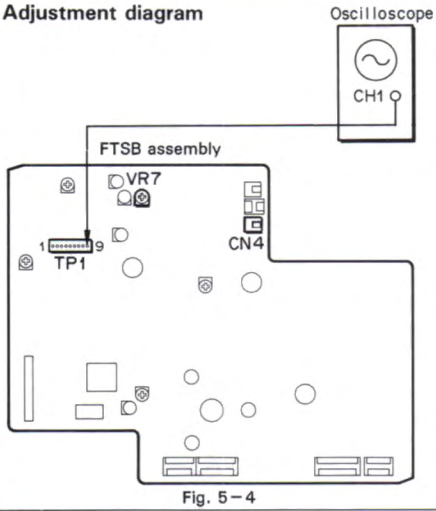
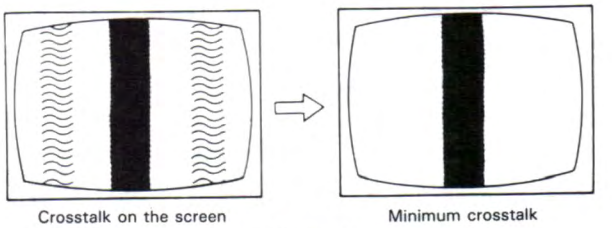


Fig. 5−4

Tracking waveform

Fig. 5−1

Fig. 5−2



Crosstalk on the screen

Minimum crosstalk

Fig. 5−3

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
• Oscilloscope • Test disc: GGV1003	• Oscilloscope: In FTSB assembly CH1 (X): Between TP1-9 (TRKG Error) and GND CH2 (Y): TP1-4 (TRKG A + C)	* 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

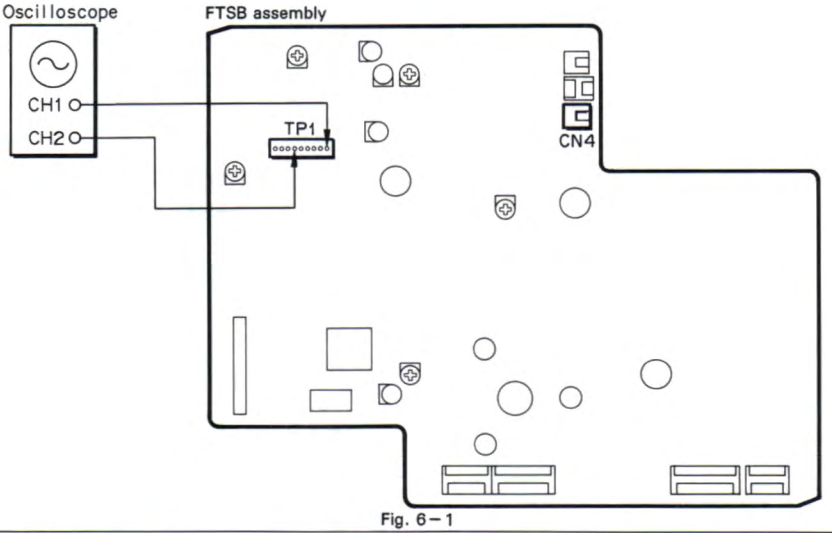


Fig. 6 – 1

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

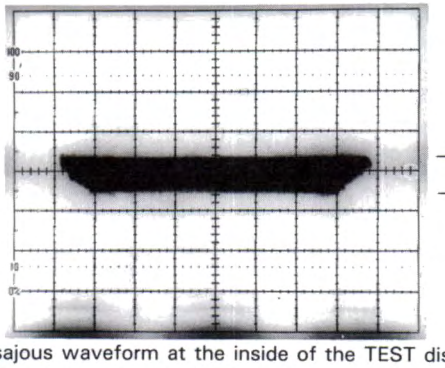


Photo 3

Lissajous waveform at the inside of the TEST disc

⇩

Check that Y = Y'.

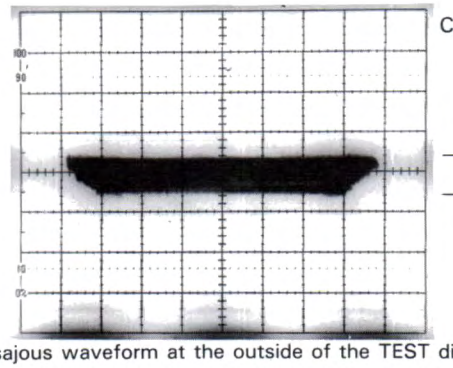


Photo 4

Lissajous waveform at the outside of the TEST disc

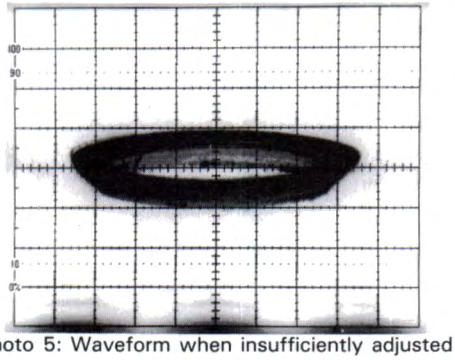


Photo 5: Waveform when insufficiently adjusted

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
• Oscilloscope • Short-shaft hexagonal wrench (2 mm) or, L-shaped hexagonal wrench • Test disc: GGV1003	• Oscilloscope: In FTSB assembly CH1 (X): Between TP1-9 (TRKG Error) and GND CH2 (Y): TP1-4 (TRKG A + C)	* Service mode: • Play mode • Tracking servo loop open/close • Tilt servo OFF	• 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

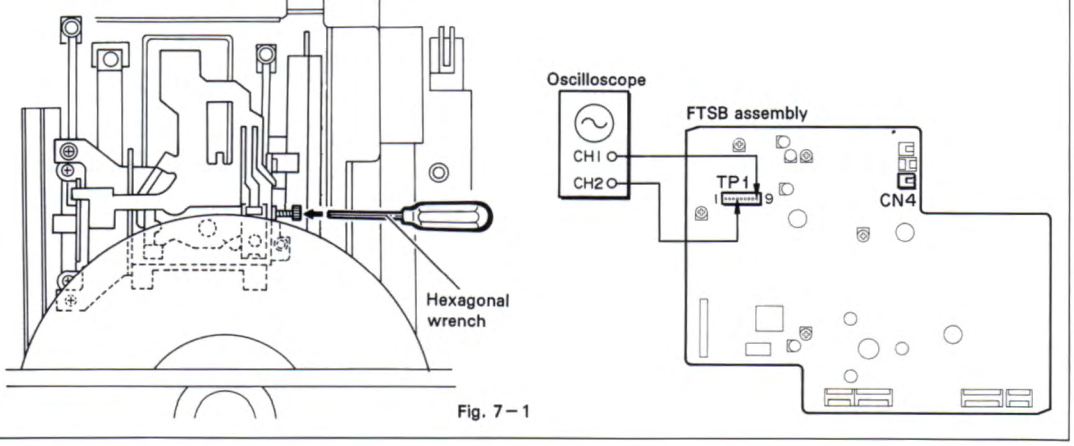


Fig. 7−1

Waveforms

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

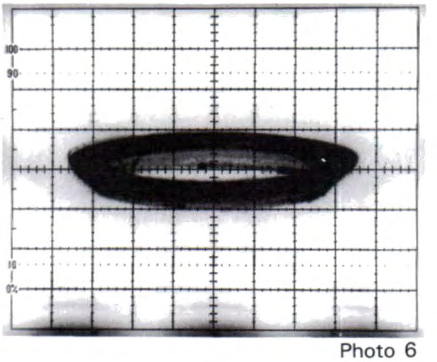


Photo 6

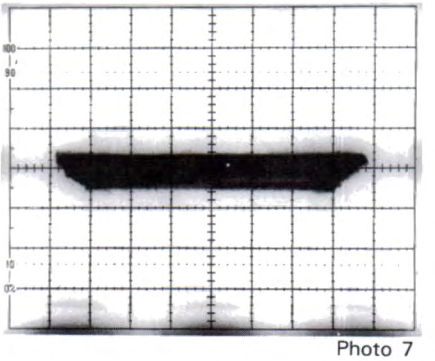


Photo 7

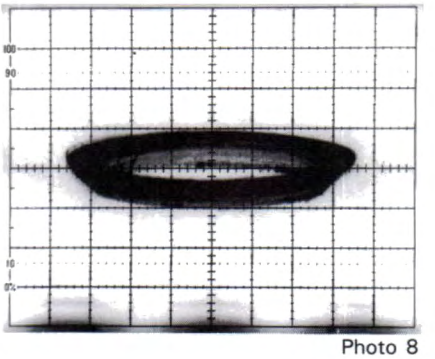


Photo 8

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
• Oscilloscope • Test disc: GGV1003 • Philips ⊕ screwdriver • Monitor TV	• Oscilloscope: In FTSB assembly CH1: Between TP1-8 (TILT ERROR) and GND	# Normal mode: • Play mode • Tilt servo OFF	• 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 ⊕ 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±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

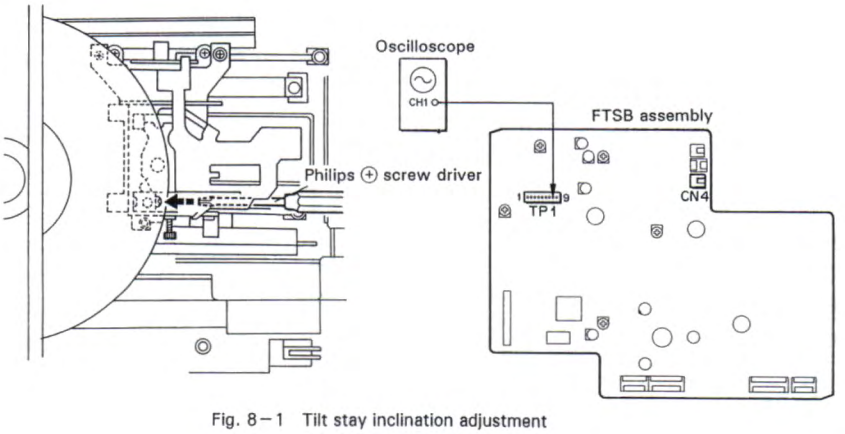


Fig. 8–1 Tilt stay inclination adjustment

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
• Oscilloscope • Test disc: GGV1003 • Flat bladed ⊖ screwdriver	• Oscilloscope: In the FTSB assembly CH1 (X): Between TP1-9 (TRKG ERROR) and GND CH2 (Y): TP1-4 (TRKG A + C)	* Service mode: • Play mode • Tracking servo loop open • Tilt servo OFF	• 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

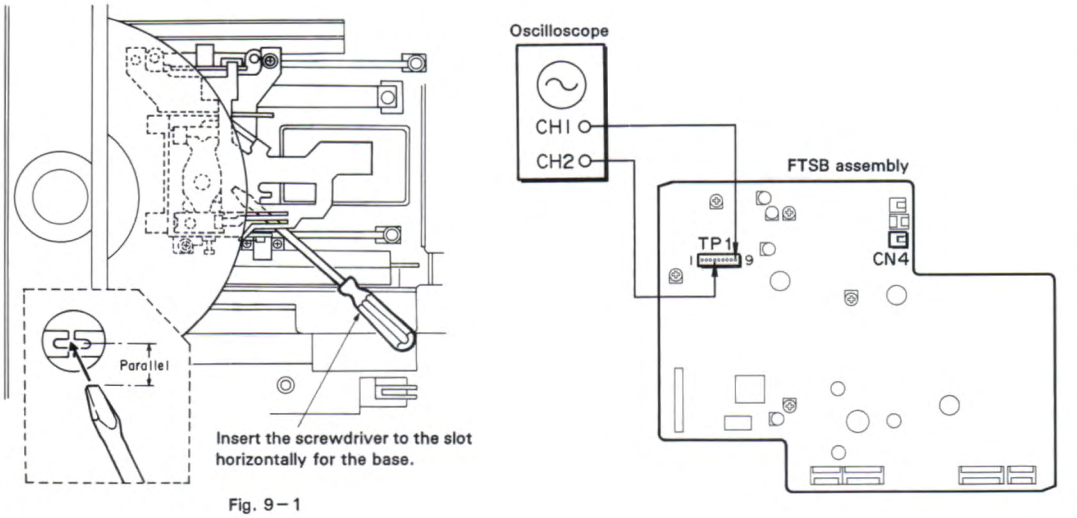


Fig. 9−1

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.

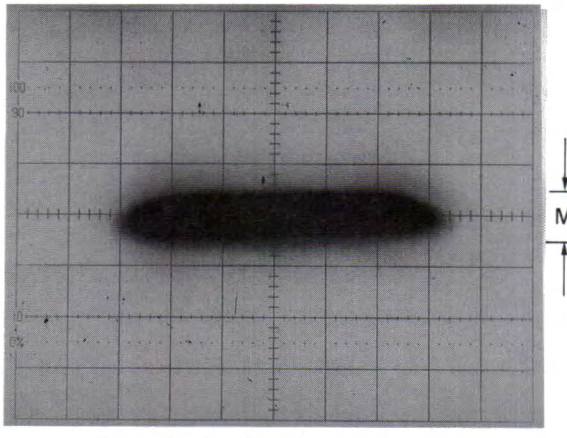
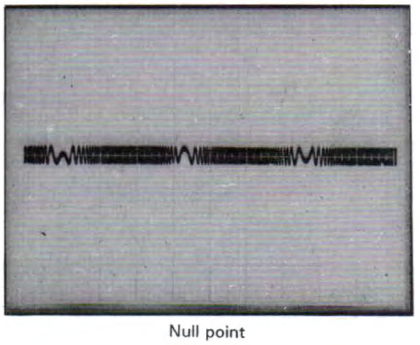
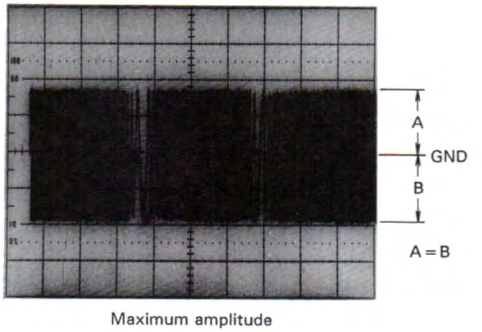


Photo 9 Grating Fine Adjustment



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
• Oscilloscope • Test disc: GGV1003	• Oscilloscope: In the FTSB assembly CH1: Between TP1-1 (RF) and GND	* Normal mode: • Still mode • TILT servo OFF	• 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 mV ±20mV. (Photo 11)

Adjustment diagram

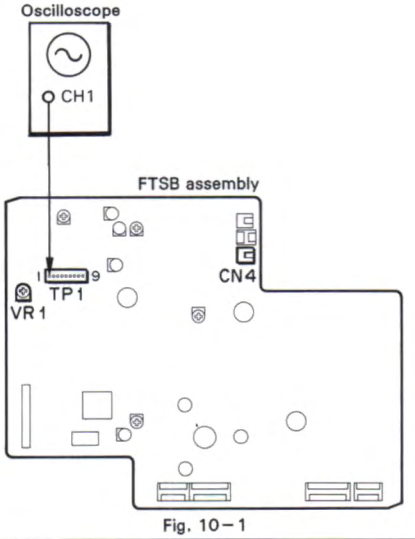


Fig. 10−1

Waveforms

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

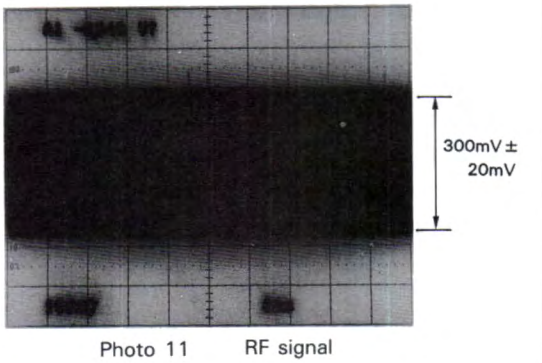


Photo 11 RF signal

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
• Oscilloscope • Test disc: GGV1003 • AF oscillator • Resistance (100kΩ)	• Oscilloscope: In FTSB assembly CH1 (X): Between TP1−5 (FOCS ERR IN) with 100kΩ and GND CH2 (Y): TP1−6 (FOCS ERR OUT)	* Normal mode: • Still mode • TILT servo OFF	• 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

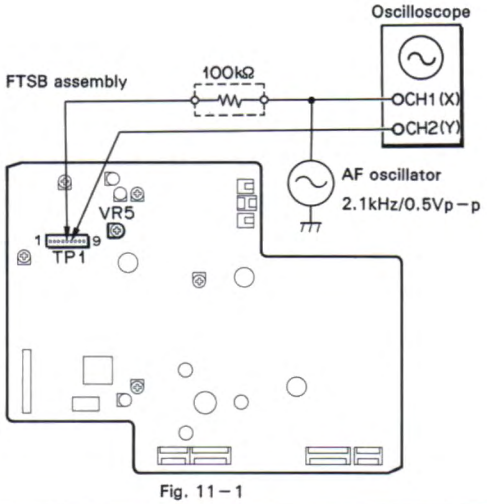


Fig. 11−1

Waveforms

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

Waveform when insufficiently adjusted

Photo 12

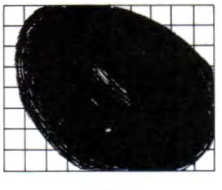


Photo 13

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
• Oscilloscope • Test disc: GGV1003 • AF oscillator • Resistance (100kΩ)	• Oscilloscope: In FTSB assembly CH1 (X): Between TP1−7 (TRKG ERR IN) with 100kΩ and GND CH2 (Y): TP1−9 (TRKG ERR OUT)	* Normal mode: • Still mode • TILT servo OFF	• 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

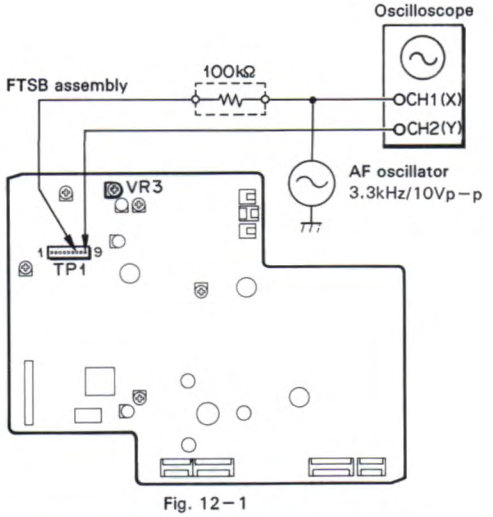


Fig. 12−1

Waveforms

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

Waveform when insufficiently adjusted

Photo 14

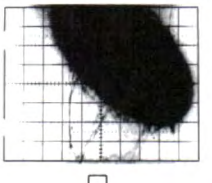


Photo 15

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 (0F to 11)" when TILT SERVO is turned off by the [SPEED UP] key.

14. ELECTRICAL ADJUSTMENT

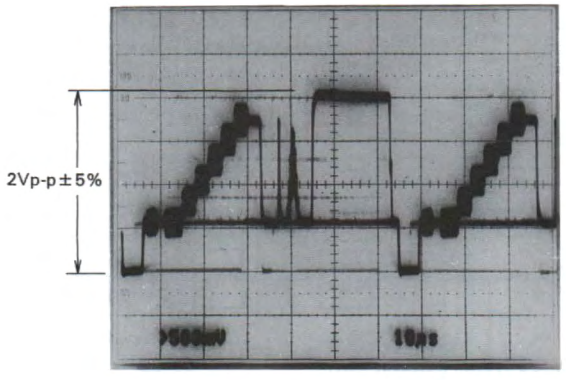
No.	Adjustment Items	Adjust Assembly	Adjusting Point	Measurement Point	Player Condition (MODE)	Adjusting Specification
1	NTSC charactor generator frequency adjustment	VDEM	VC602	IC605 pin6	Power ON (NTSC)	Adjust clock frequency to 14.318180MHz±10Hz.
2	PAL charactor generator frequency adjustment		VC601		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)
					PLAY (PAL) Chapter#11	Play the test disc (J1) and adjust the level to 1Vp−p±5% (Terminated 75Ω). (Refer to waveform 2)
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 ±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 0.75Vp-p±10%. (a=b=c=d=0.75Vp-p±10%, Terminated 75Ω) (Refer to waveform 5)
15	PAL S.C. frequency adjustment		VR101	IC103 pin14	PLAY (PAL) Color bar	Connect the IC103 Pin23 to GND. Play the test disc, and adjust the S.C. frequency to 4.433619MHz ±20Hz. After the adjustment, disconnect the IC103 Pin23 from GND.
16	PAL Delay amp adjustment		VR106 and L102	JA103 pin3		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 0.75Vp-p±10%. (a=a'=b=b'=0.75Vp-p±10%, Terminated 75Ω) (Refer to waveform 6)

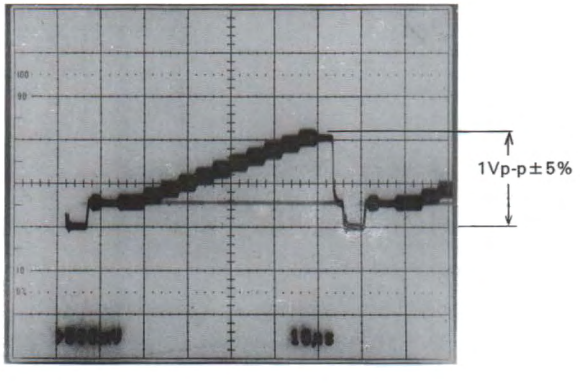
NOTE :
When the adjustments after step No.12 (adjustment of TRMB assembly) are completed, confirm that normal color bar signals for both NTSC and PAL are output on the monitor display.

● Waveforms

● Video Level Adjustment

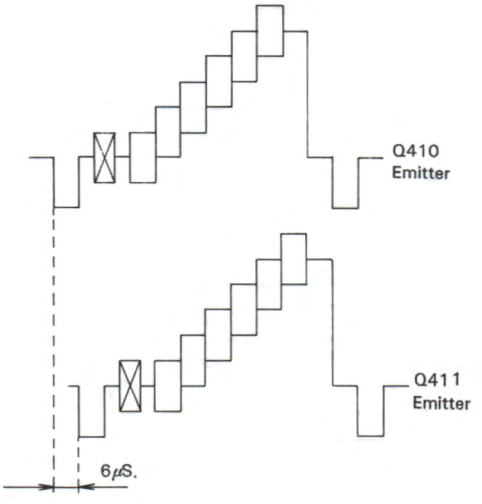


Waveform 1 (NTSC)



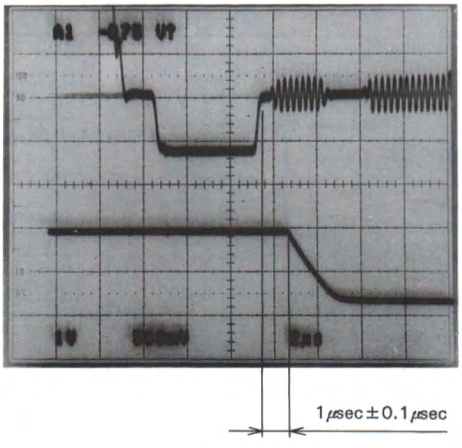
Waveform 2 (PAL)

● VCO (CCD) Centering Frequency Adjustment



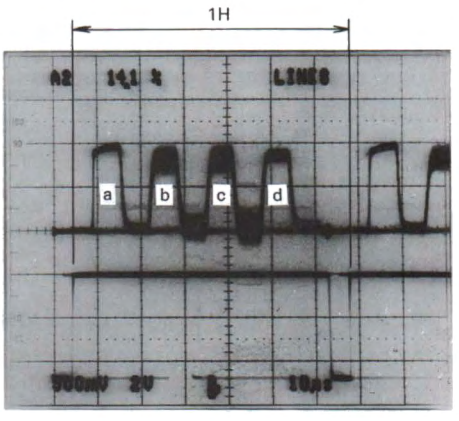
Waveform 3 (1H+6μsec delay)

● Burst Gate Timing Adjustment

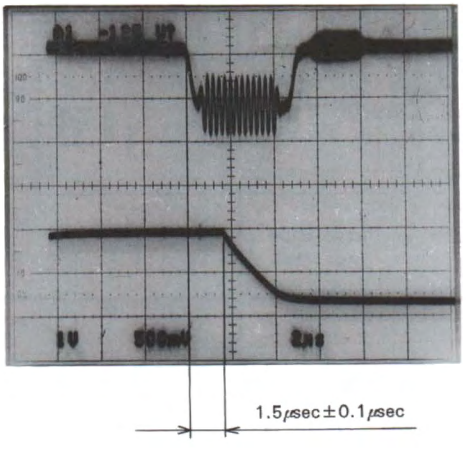


Waveform 4 (NTSC)

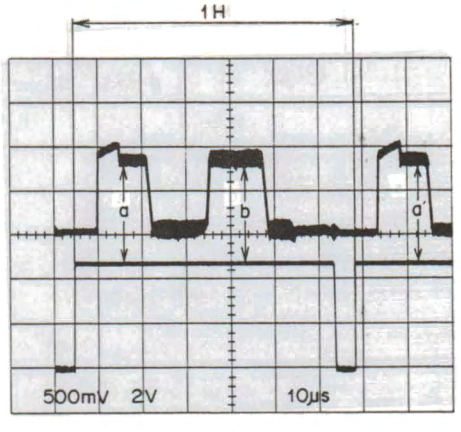
● Chroma Adjustment



Waveform 5 (NTSC)



Waveform 4 (PAL)



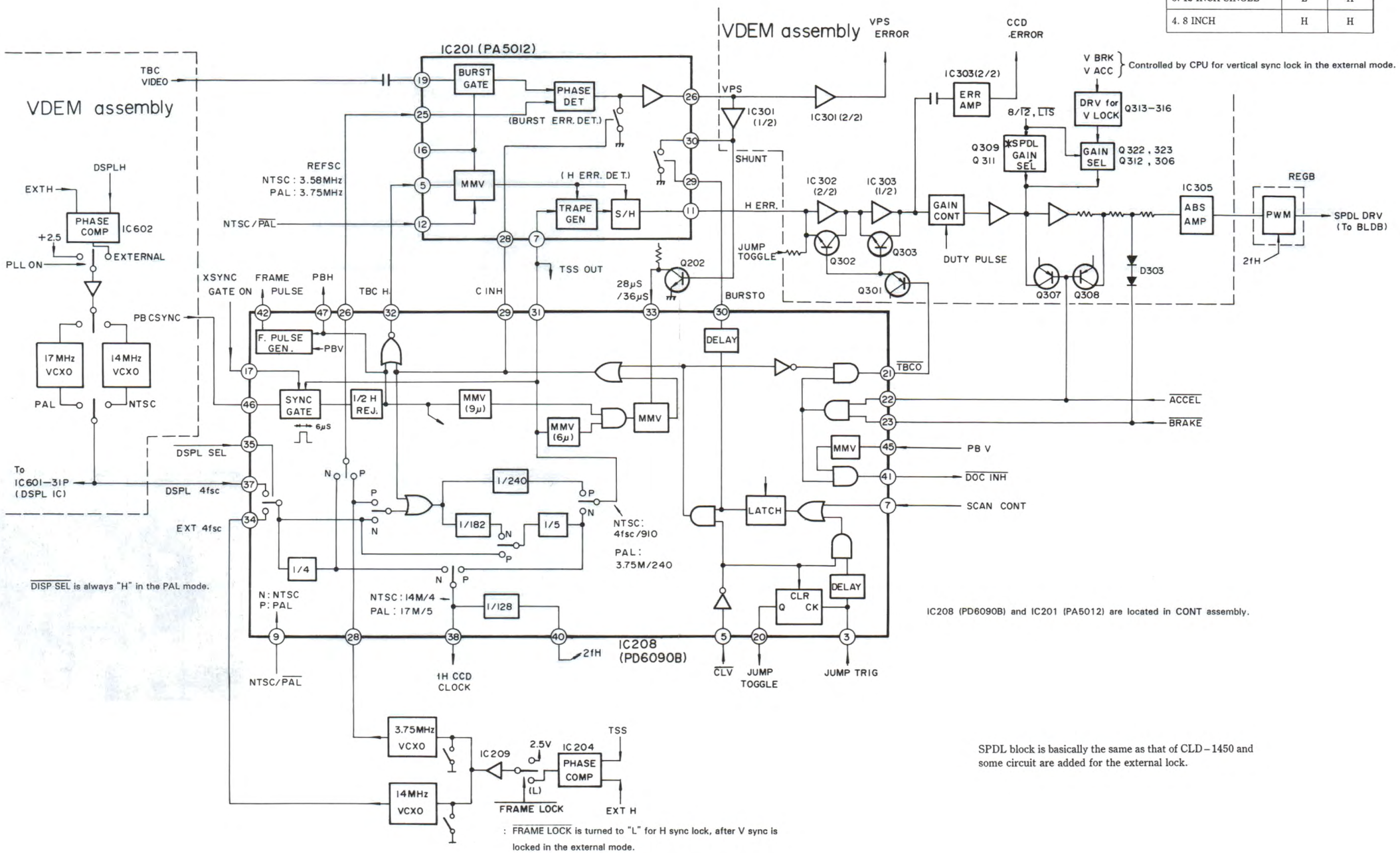
Waveform 6 (PAL)

9. BLOCK DIAGRAM

9.1 SPDL BLOCK DIAGRAM

NOTE :

*SPDL GAIN SEL	$\overline{LIS}$	$8/\overline{12}$
1. ALUMINIUM	L	L
2. 12 INCH	H	L
3. 12 INCH SINGLE	L	H
4. 8 INCH	H	H



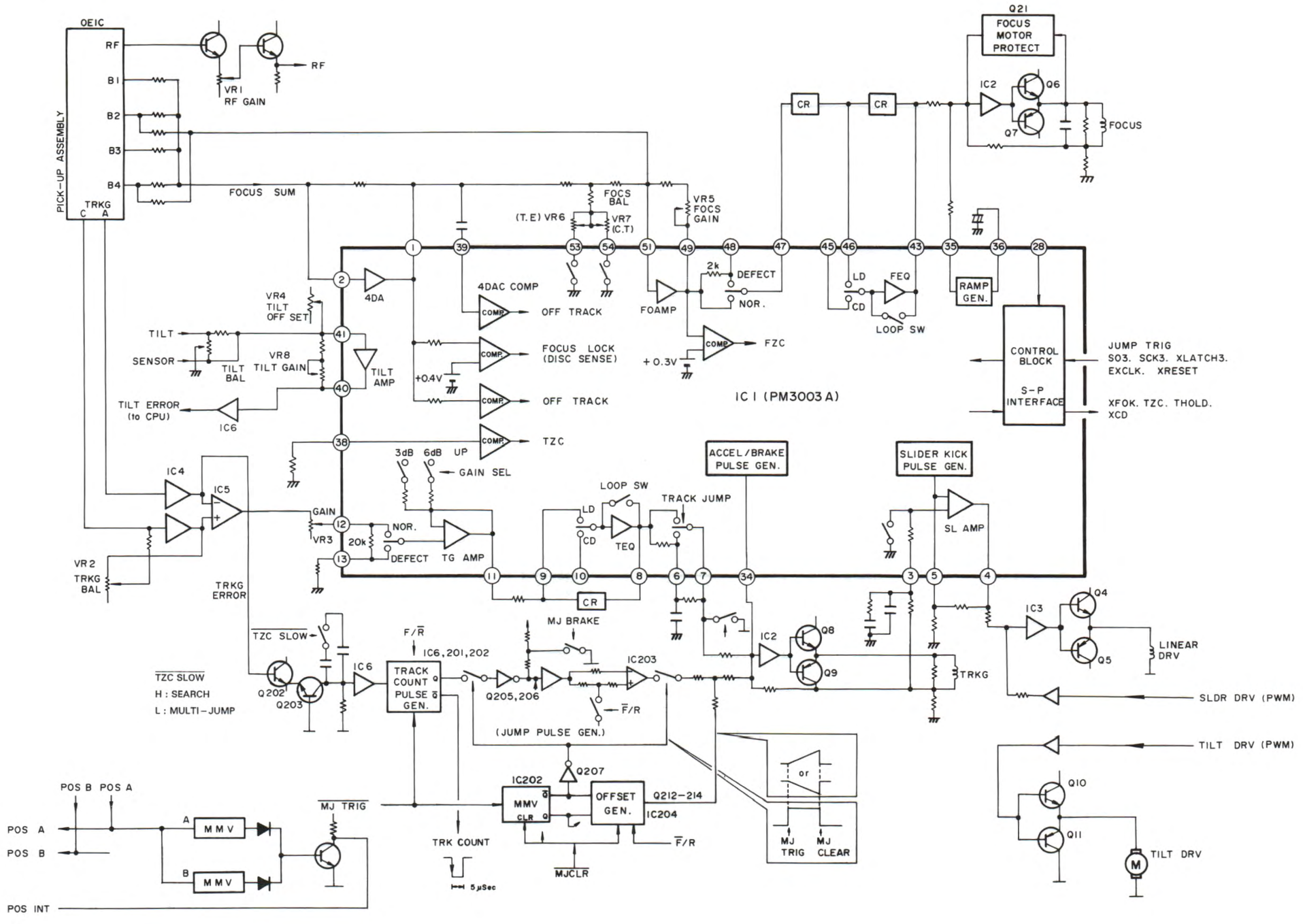
DISP SEL is always "H" in the PAL mode.

IC208 (PD6090B) and IC201 (PA5012) are located in CONT assembly.

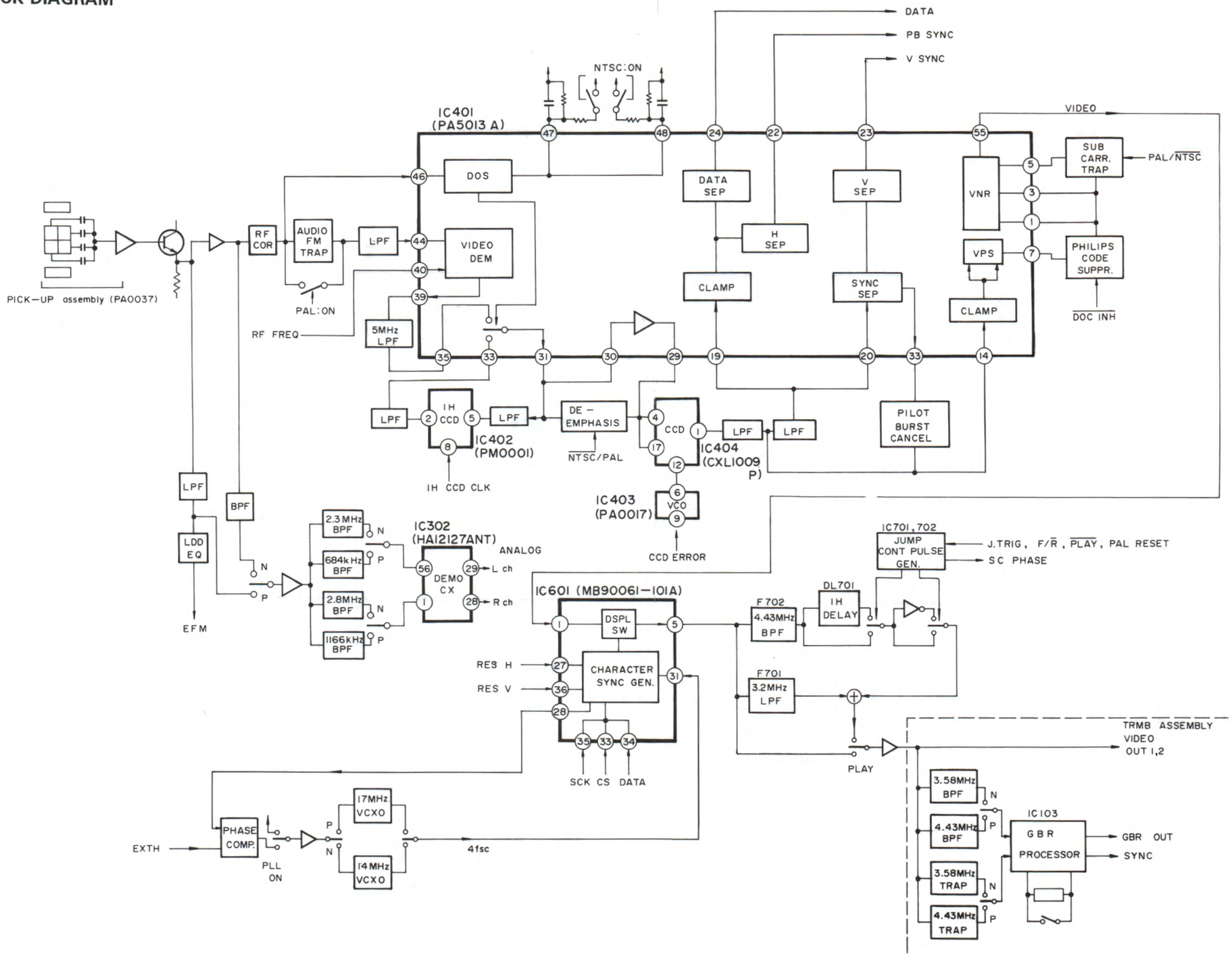
SPDL block is basically the same as that of CLD–1450 and some circuit are added for the external lock.

: FRAME LOCK is turned to "L" for H sync lock, after V sync is locked in the external mode.

9.2 FTS BLOCK DIAGRAM



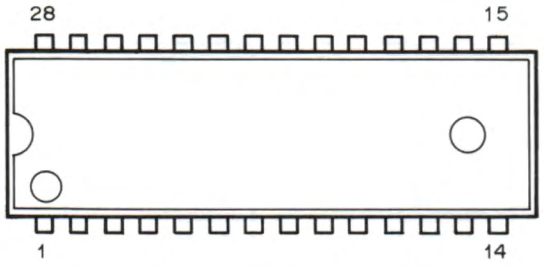
9.3 VIDEO BLOCK DIAGRAM



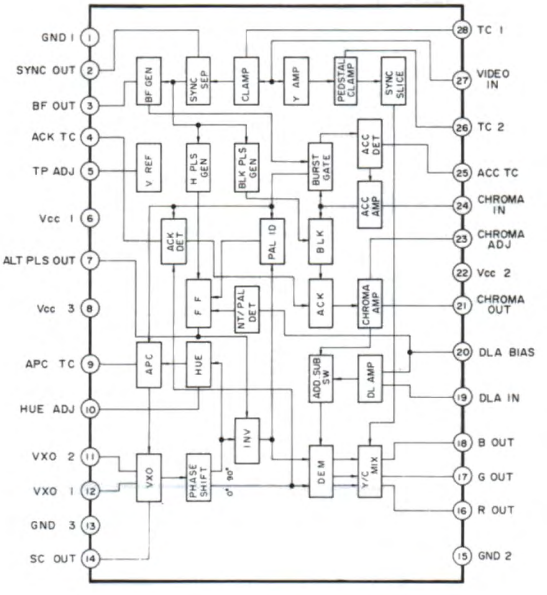
10. IC INFORMATION

■ 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 $\pm 30°$ 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 OUT 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. $V_{20} \leqq 0.8V$: NTSC mode $2.0V \leqq V_{20} \leqq 2.8V$: PAL mode Variable range : ±3dB 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. $V_{23} \leqq 0.8V$: Monochrome mode (free run) $2.0V \leqq V_{23} \leqq 3.0V$: 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 0.36Vp-p.
28	TC 1	Clamp time constant terminal for SYNC SEP.

11. PANEL FACILITIES

~ AC IN

Connect this to a wall socket (120 or 220-240V AC, 50/60Hz) using a triple-conductor power cord. A suitable cord should be obtained from your dealer.

VOLTAGE SELECTOR (120V/220-240V AC)

Used to change the operating voltage of the player.
Set the selector to the mains voltage in your area.

EXT SYNC termination selector

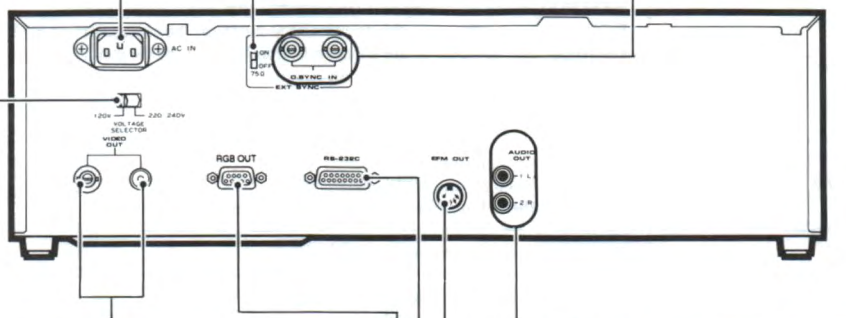
This switch is used for selecting whether the signal input to EXT SYNC IN is given 75 Ω termination within the player (ON position), or looped through (OFF position).

EXT SYNC IN, OUT terminals (BNC jacks)

IN : Connects to the sync generator in the event that the main unit is operated in external sync mode.
O.(OUT) : Can be connected to EXT SYNC IN terminal of second player.

NOTE:

- *Set the EXT SYNC termination selector in accordance with the conditions of use.*



VIDEO OUT terminals (RCA jack, BNC jack)

These terminals are connected to the video input jack of the TV monitor. The same signals are output from both terminals.

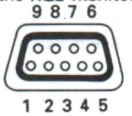
AUDIO OUT terminals (RCA jacks)

For connection to a stereo amplifier (LD, AUX etc.)

RGB terminal (D-SUB 9 pin)

Used for connection to the RGB monitor.

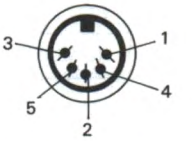
1. GND
2. GND
3. RED
4. GREEN
5. BLUE
6. NC
7. NC
8. Composite sync.
9. PAL/NTSC
   (PAL=H/NTSC=L)



EFM OUT terminal (5 pin DIN)

To connect an LD-ROM adaptor.

1. PAL/NTSC (PAL=H/NTSC=L)
2. GND
3. Audio L (ON=H/OFF=L)
4. EFM
5. Audio R (ON=H/OFF=L)



RS-232C INTERFACE CONNECTOR (D-SUB 15 pin)

Used for serial interface connection to a computer or controller.

PARK indicator

- Indicates that the pickup is at the park position (extreme inner circumference) and in standby status.
- Blinks during opening/closing operation of the disc table, and goes off when opening/closing is completed.
- Lights up when a disc exists in the player.

PAL and NTSC indicators

- Displays the type of disc being played back during disc playback.
- In standby status, indicates the setting of the PAL/NTSC SELECT button.

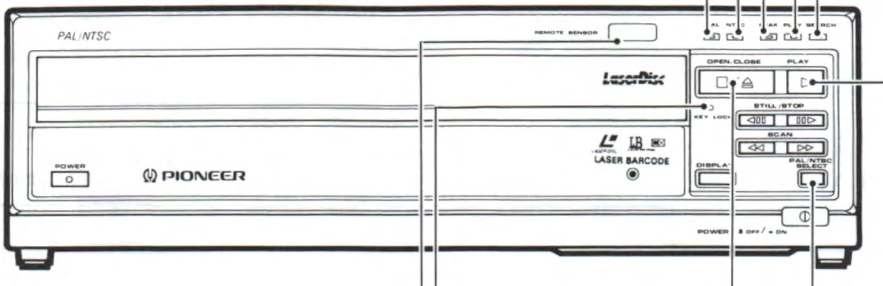
PLAY indicator

Lights during playback.
Blink when the disc rotation starts/stops.

SEARCH indicator

Lights during execution of search.

PLAY (►) button



REMOTE SENSOR window

When using the optional remote control unit in the wireless format, the infrared commands from the unit are received here.
Receiving unit for infrared signals when using the optional bar code reader UC-V104BC in the wireless mode.

KEY LOCK indicator

Lit when the KEY LOCK command is entered from the external control unit.
When this indicator is lit, entries are not accepted from operation buttons other than the power switch. Also, entries are not accepted from the operation buttons of the separately sold remote control unit.

PAL/NTSC SELECT button

Chooses whether PAL signal or NTSC signal shall be output as the squelch signal after the power has been turned on.
This button can be manipulated while the disc is not being played back.
The PAL indicator or the NTSC indicator lights up to indicate the selection status.
NOTE:
This button is invalid during disc playback.

OPEN/CLOSE (■ / ⏏) button

This button is used to open and close the disc table. Setting a disc on the disc table then pressing this button retracts the disc table into the player. Pressing this button during player stops play. When pressed again, the table will be extended from the player.

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.

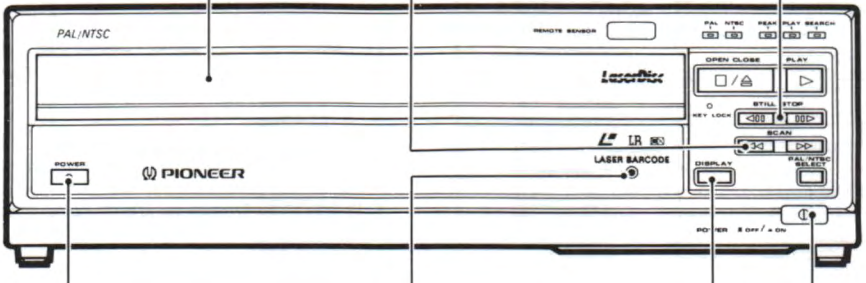
STILL/STEP (◄▮▮, ▮▮►) button

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.

POWER switch

Press to turn the power on and off.

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.

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:

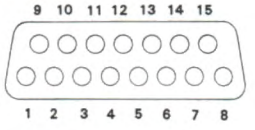
- *During CLV disc playback, elapsed time numbers will be displayed in place of frame numbers.*
- *When only the DISPLAY button is pressed, the display appears and reappears alternately each time the button is pressed.*

12. INTERFACE CONNECTOR TERMINALS

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

[Shape]

15 pin D-SUB connector

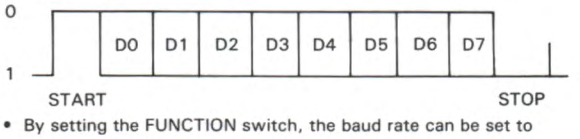


[Terminal names]

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:

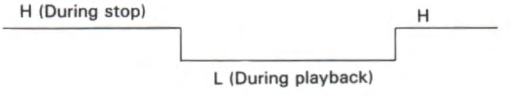
1 START + 8 DATA + 1 STOP



- 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.



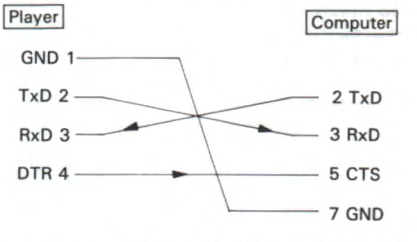
14. AUX2 : Jump TOGGLE output (TTL)
15. GND : Ground (for synchronizing signal output use.)

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.)

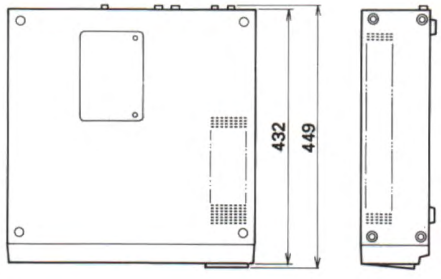


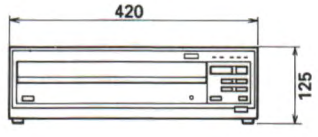
In regard to the data format, it has 1 start bit, 8 data bits, and 1 stop bit.

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 16-15/16(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 play-back	

[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)····· 15 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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