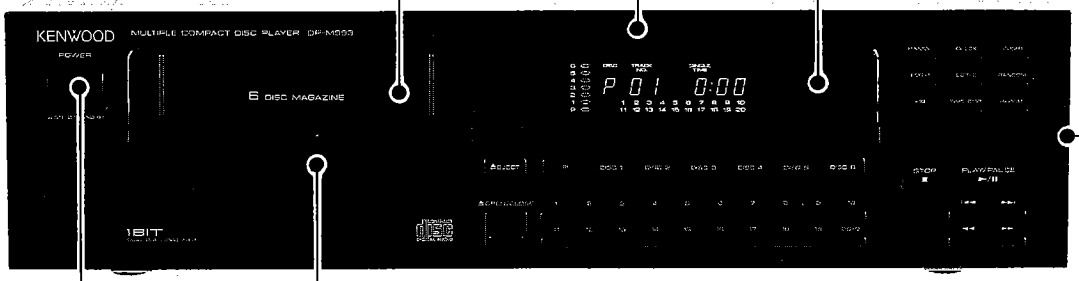
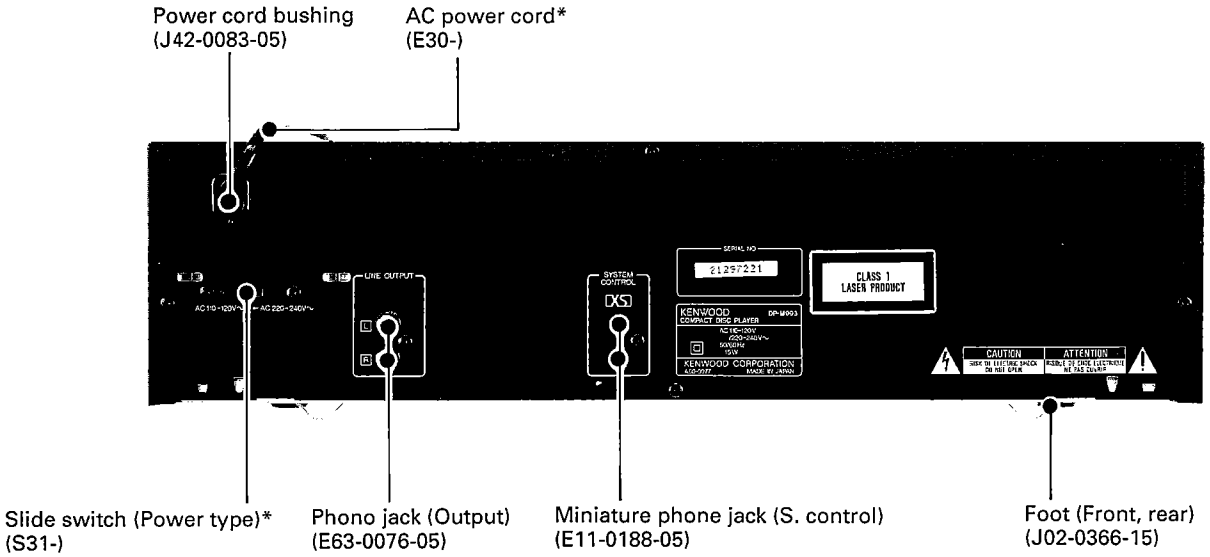
COMPACT DISC PLAYER

DP-M993/M5550/M6650

SERVICE MANUAL

KENWOOD





In compliance with Federal Regulations, following are reproductions of labels on, or inside the product relating to laser product safety.

KENWOOD-Corp. certifies this equipment conforms to DHHS Regulations No. 21 CFR 1040. 10, Chapter 1, Subchapter J.

DANGER : Laser radiation when open and interlock defeated. AVOID DIRECT EXPOSURE TO BEAM.

Photo is DP-M993.

***Refer to parts list on page 39.**

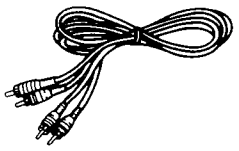
DP-M993/M5550/M6650

CONTENTS / ACCESSORIES / CAUTION

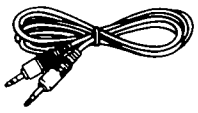
CONTENTS

ACCESSORIES

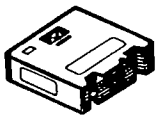
• Audio cord 1
(E30-0505-05)



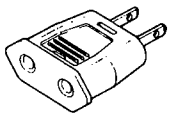
• System control cord 1
(E30-2733-05)



• Magazine (with 6 disc trays) 1
(J19-3394-13)

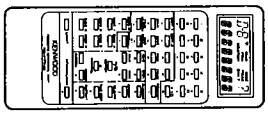


• AC plug adapter (M type only) 1
(E03-0115-05)



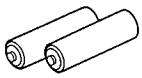
(Except for some areas)
For the unit with a European
AC plug in areas other than Europe.

• Remote control unit 1
(A70-0927-05 : DP-M5550, M6650 only)



Battery cover (A09-0145-08)

• Battery ("AAA" or "R06") 2
(– : DP-M5550, M6650 only)



CAUTION

• Caution of the Service Manual

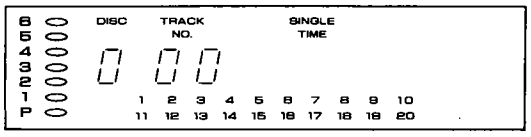
This manual is available 3 models, DP-M993, DP-M5550 and DP-M6650. Before using this manual, please check model's name. CD player unit (X32-) parts list is written the parts for all of 3 models. Also refer to comparison table in schematic diagram.

Model name	CD player unit	Mechanism
DP-M993	X32-2470-11 (K, P, X)	X92-1569-11
	X32-2470-22 (M, Y)	X92-1569-11
DP-M5550	X32-2470-12 (K, P, E)	X92-1569-11
	X32-2470-23 (Y)	X92-1569-11
DP-M6650	X32-2470-10 (K, P, X, T, E)	X92-1569-11
	X32-2470-21 (M, Y)	X92-1569-11

• Note related to transportation and movement

Carry out the following operations before transporting or moving this unit.

1. Remove disc and the magazine from the unit and turn the power ON.
2. Wait a few seconds to check that the display appears as shown in the illustration at the right.
3. Turn the power OFF.



BEFORE OPERATION

Beware of Condensation

When water vapor comes into contact with the surface of cold material, water drops are produced.
If condensation occurs, correct operation may not be possible, or the unit may not function correctly.
This is not a malfunction, however, and the unit should be dried. (To do this, turn the POWER switch ON and leave the unit as it is for several hours.)

Be especially careful in the following conditions:
- When the unit is brought from a cold place to a warm place, and there is a large temperature difference.
- When a heater starts operating.
- When the unit is brought from an air-conditioned place to a place of high temperature with high humidity.
- When there is a large difference between the internal temperature of the unit and the ambient temperature, or in conditions where condensation occurs easily.

English **Note:**
The unit's power supply is secondarily connected. Note following. The unit is not completely disconnected from the mains as long as the power cord is connected to a wall outlet.

Svenska **Observera:**
Apparatens strömförsörjning kopplas från sekundärt. V.g. ge akt på följande. Apparaten frånkopplas inte helt och hållet från strömnätet medan apparatens nätsladd är ansluten till växelströmsuttaget.

Finnish **Huom:**
Virta yksikköön on kytketty pois sekundaaripuolelta. Huomioi seuraava. Tämä yksikkö ei ole kokonaan kypketty pois pää virranjakajasta kun pää katkaisin on liitettynä virtatiiriin.

Dansk **Bemærk:**
Strømmen til apparatet afbrydes på den sekundære side. Vear opmærksom på følgende. Denne enhed er ikke fullstendig koblet fra lysnettet så lenge stikket er tilsluttet stikkontakten.

Norwegian **Anmerkning:**
Strømmen til apparatet er stått av på sekundærsiden. Vær oppmerksom på det følgende. Dette apparatet koples ikke fullstendig fra nettet så lenge støpselet står i en stikkontakt, selv om strømpryteren settes i av-stilling.

Warning

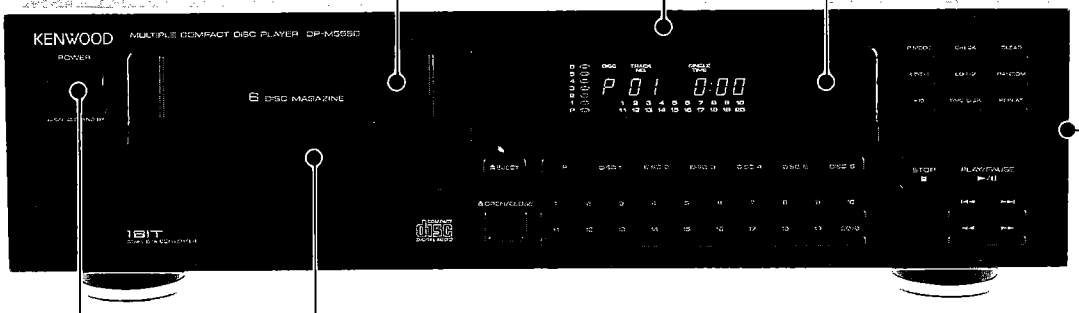
For CANADA
DOC REGULATION
"This digital apparatus does not exceed the CLASS B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications."

For the U.S.A.
FCC WARNING:
This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

NOTE:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment may cause harmful interference to radio communications, if it is not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

DP-M993/M5550/M6650

EXTERNAL VIEW



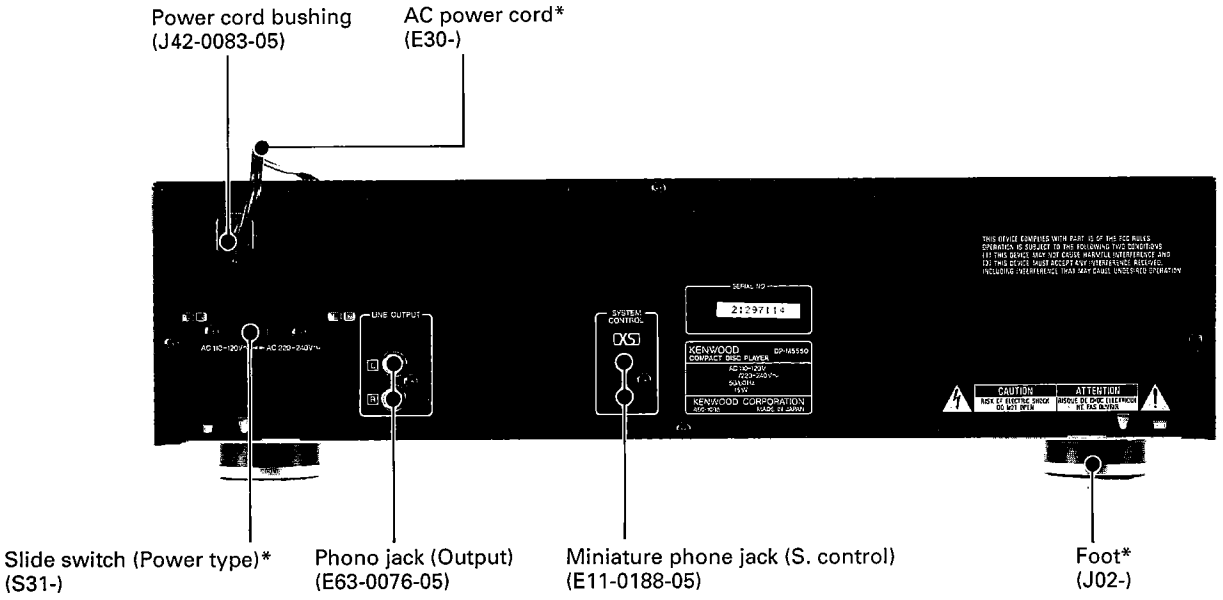
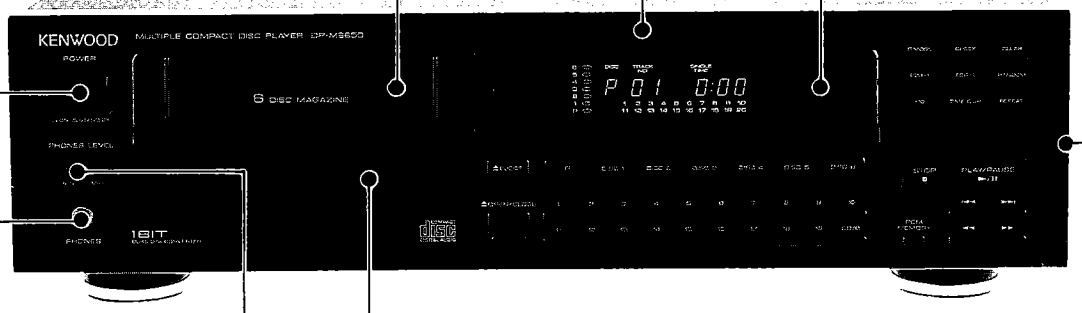


Photo is DP-M5550 (with REMOTE CONTROL).

***Refer to parts list on page 39.**

EXTERNAL VIEW



Knob (Power) (K27-2095-04)

Metallic cabinet (A01-3028-01)

Panel (6 disc magazine) (A29-0334-03)

Panel (Front) (A60-0374-02)

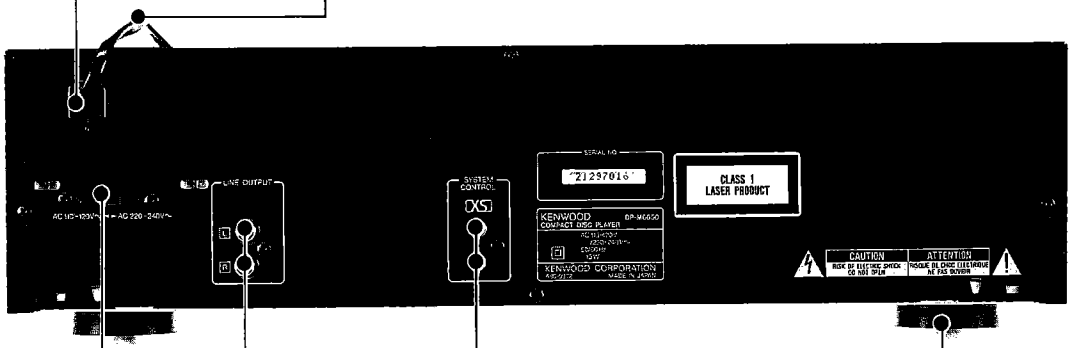
Dressing plate (B03-2826-04)

Phone jack (Phones) (E11-0190-05)

Knob (Phones level) (K29-3928-04)

Panel (Tray) (A29-0335-03)

Sub panel (A22-1616-01)



Power cord bushing (J42-0083-05)

AC power cord* (E30-)

Slide switch (Power type)* (S31-)

Phono jack (Output) (E63-0076-05)

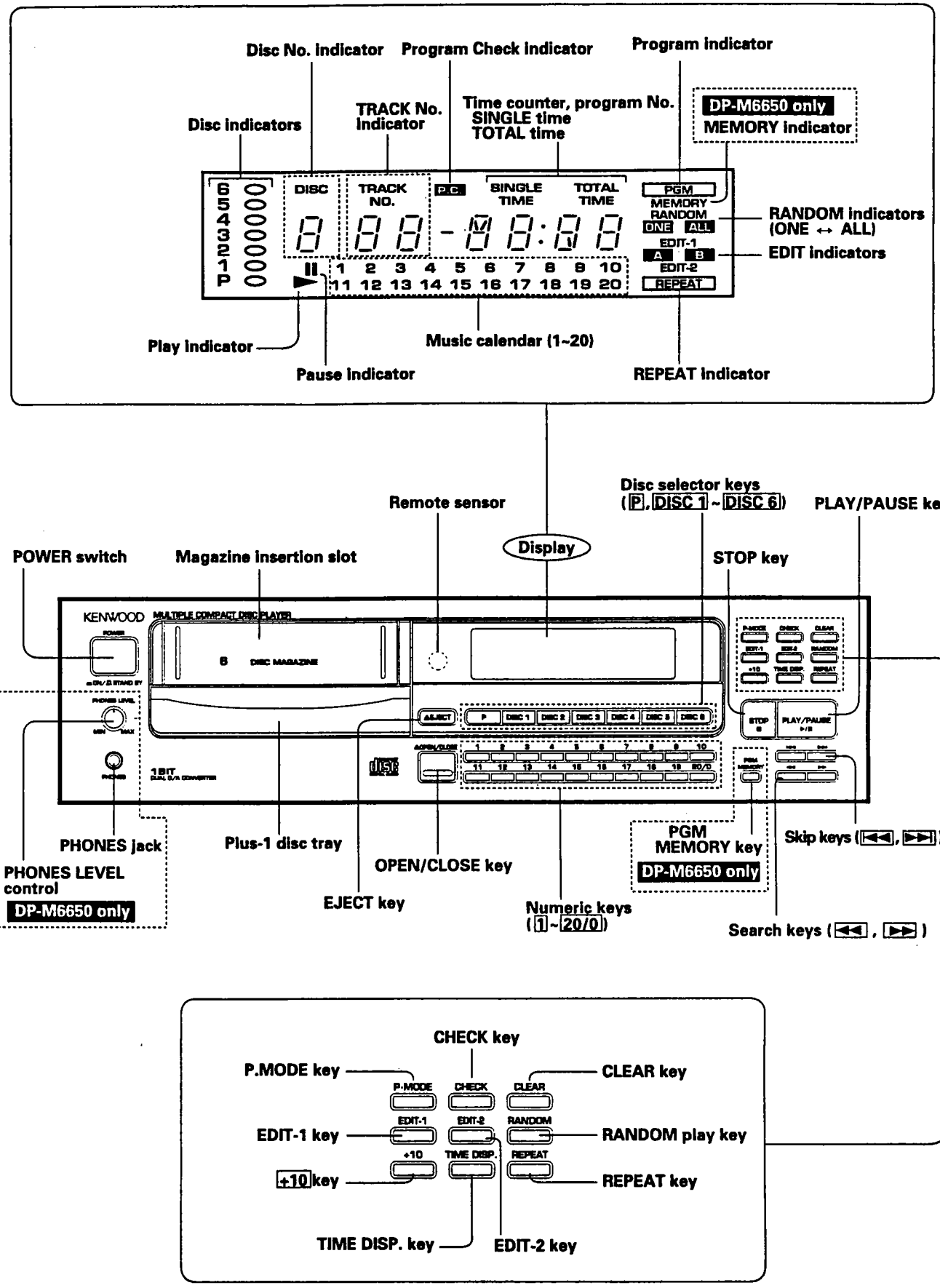
Miniature phone jack (S. control) (E11-0188-05)

Foot* (J02-)

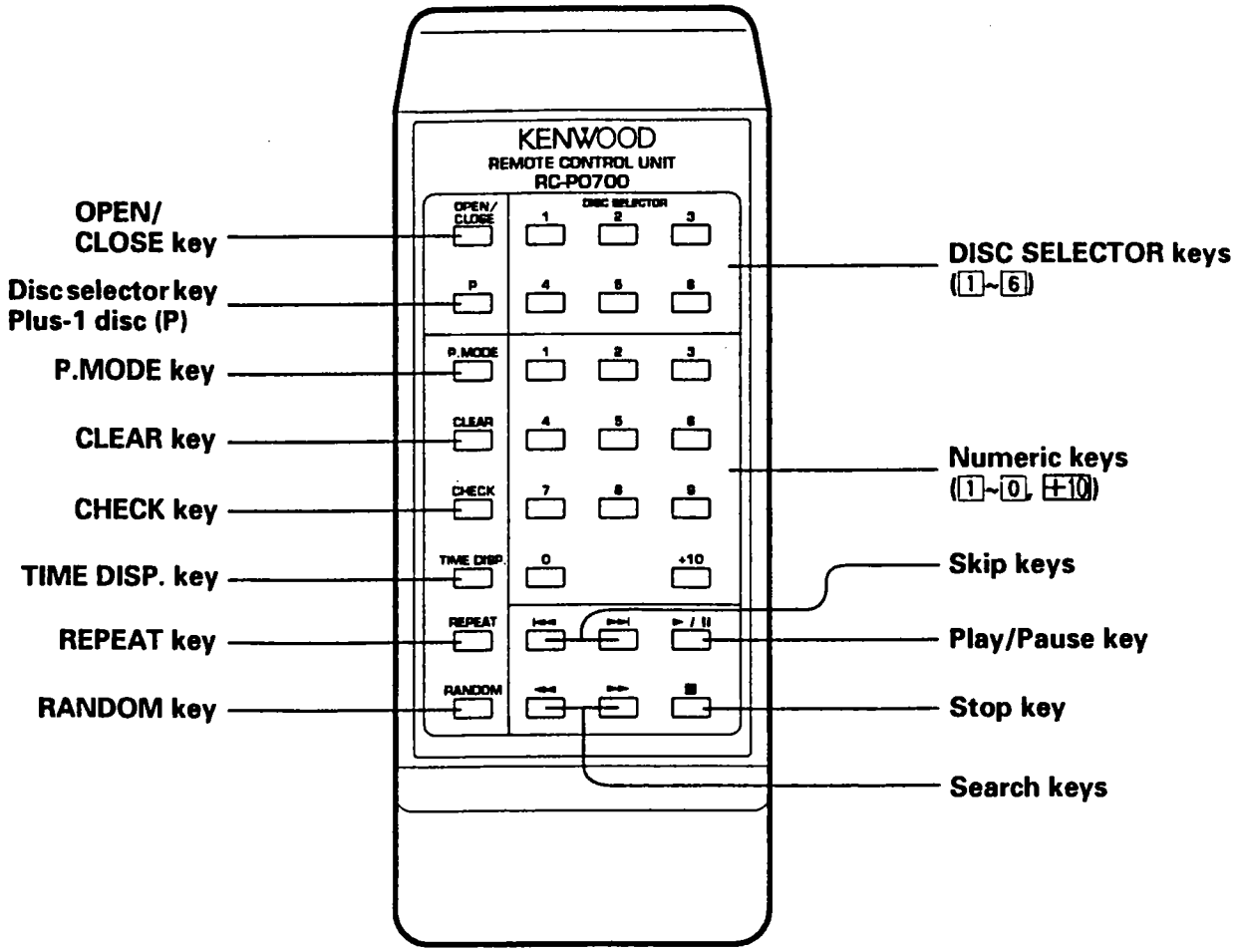
Photo is DP-M6650 (with REMOTE CONTROL).

***Refer to parts list on page 39.**

CONTROL


Disc No. indicator
Program Check indicator
Program indicator
Disc indicators
TRACK No. Indicator
Time counter, program No.
SINGLE time
TOTAL time
DP-M6650 only
MEMORY indicator
DISC
TRACK NO.
P.C.
SINGLE TIME
TOTAL TIME
PGM
MEMORY
RANDOM
ONE
ALL
EDIT-1
A
B
EDIT-2
REPEAT
RANDOM indicators (ONE ↔ ALL)
EDIT indicators
Play indicator
Pause indicator
Music calendar (1~20)
REPEAT indicator
Remote sensor
Disc selector keys (P, DISC 1 ~ DISC 6)
PLAY/PAUSE key
POWER switch
Magazine insertion slot
Display
STOP key
KENWOOD
MULTIPLE COMPACT DISC PLAYER
6 DISC MAGAZINE
EJECT
STOP
PLAY/PAUSE
PHONES jack
PHONES LEVEL control
DP-M6650 only
Plus-1 disc tray
OPEN/CLOSE key
EJECT key
PGM MEMORY key
DP-M6650 only
Skip keys (◀◀, ▶▶)
Numeric keys (1~20/0)
Search keys (◀◀, ▶▶)
CHECK key
P.MODE key
CLEAR key
EDIT-1 key
RANDOM play key
+10 key
REPEAT key
TIME DISP. key
EDIT-2 key

REMOTE CONTROL OPERATION

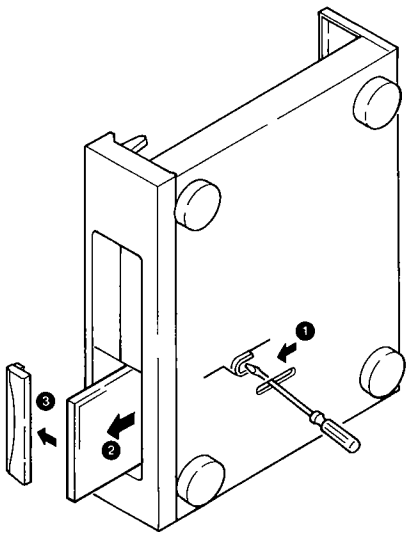


DISASSEMBLY FOR REPAIR

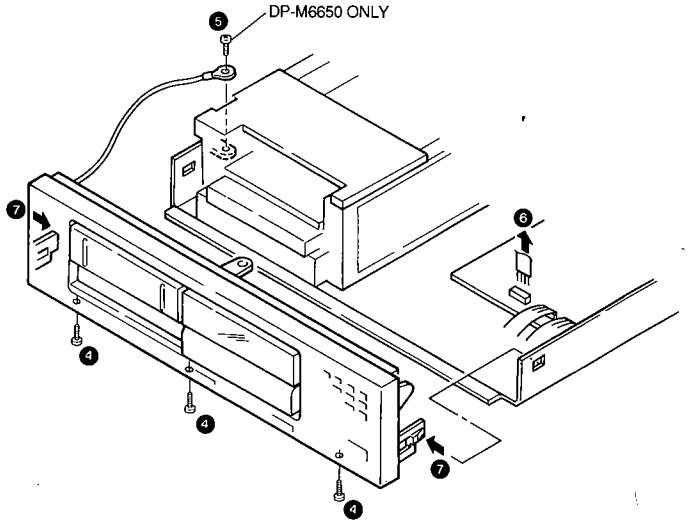
1. How to Disassemble

*** When the power can not be turn ON, or when the tray can not be opened by pressing the OPEN key.**

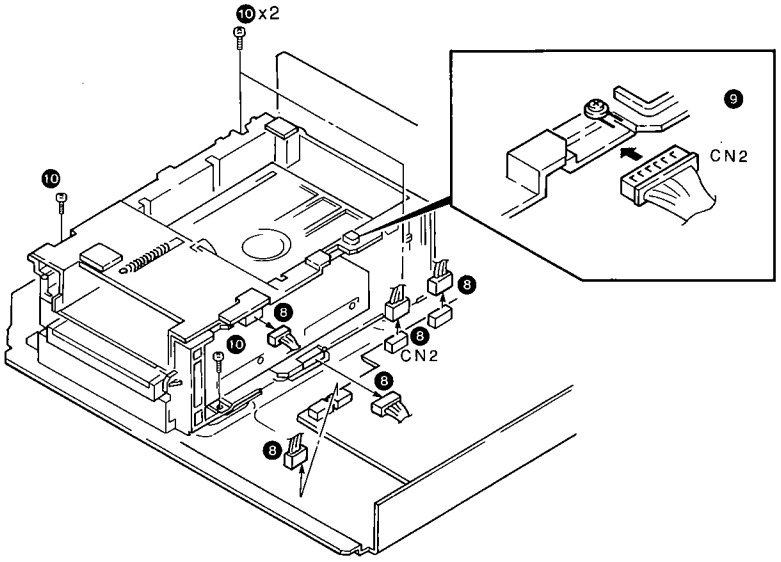
1. Insert the screw driver to the bottom hole and slide the lever frontwards with screw driver (❶).
2. Pull out the tray (❷).
3. Remove the tray's panel (❸), and push the tray backwards.



4. Remove the front panel screws (❹).
5. Remove the GND wire screw (DP-M6650 only) (❺).
6. Remove connector (❻).
7. Disengage the stoppers of the both side of the front panel (❼).



8. Remove 5 connectors (❽).
9. Set CN2 connector to LD short pin (❾).
10. Remove mechanism screws (❿).

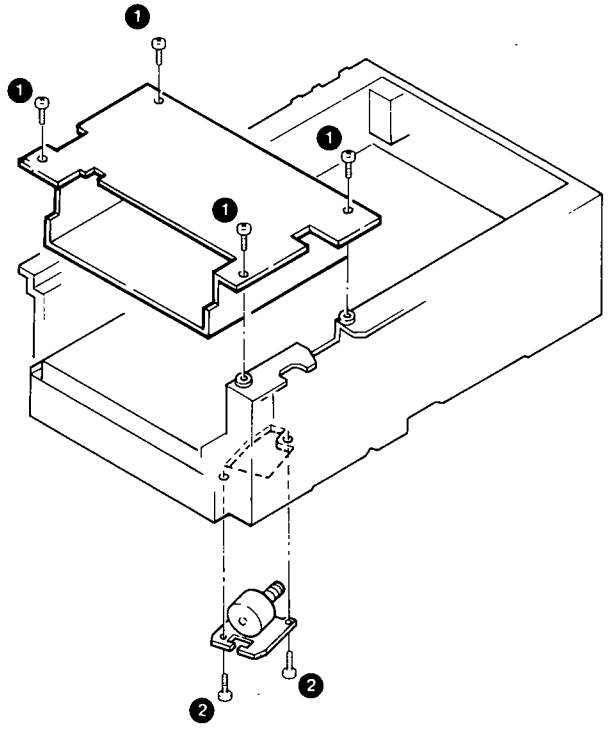


DISASSEMBLY FOR REPAIR

2. How to Replace the Pickup

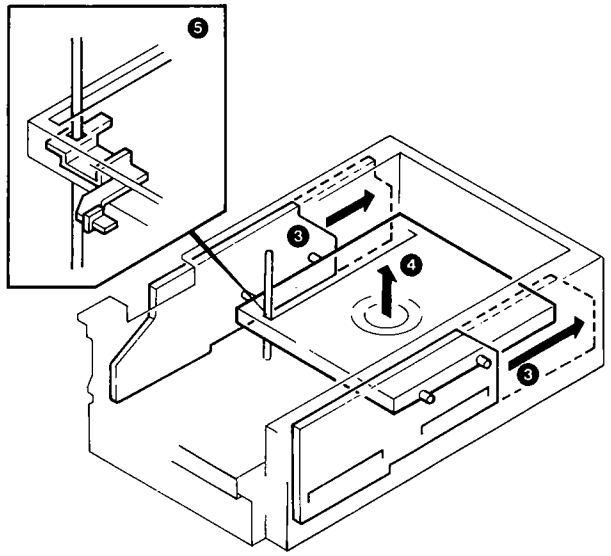
*** The following description is the unit of the mechanism only.**

1. Remove magazine plate ass'y screws (❶).
2. Remove Vertical Motor screws (❷).



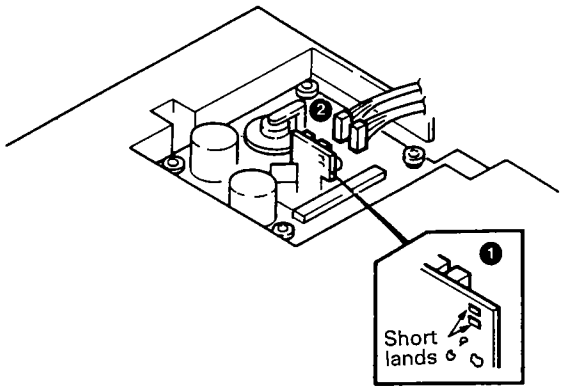
3. Slide the both of sliders backwards (❸), and remove the holder upwards (❹).

Note: If mounting the holder, set the shaft to holder as figure (❺).
If mounting the sliders, set the sliders to fully backward position (dot line in figure).

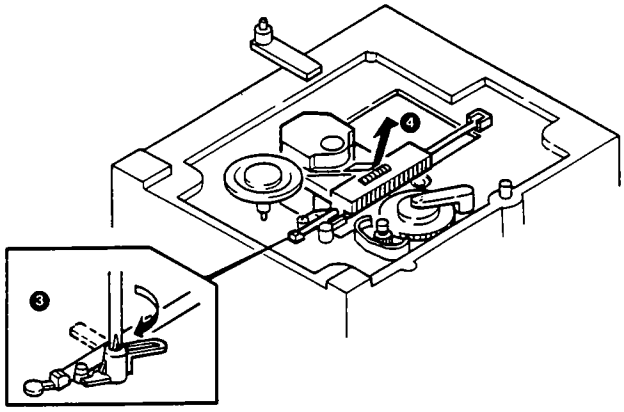


DISASSEMBLY FOR REPAIR

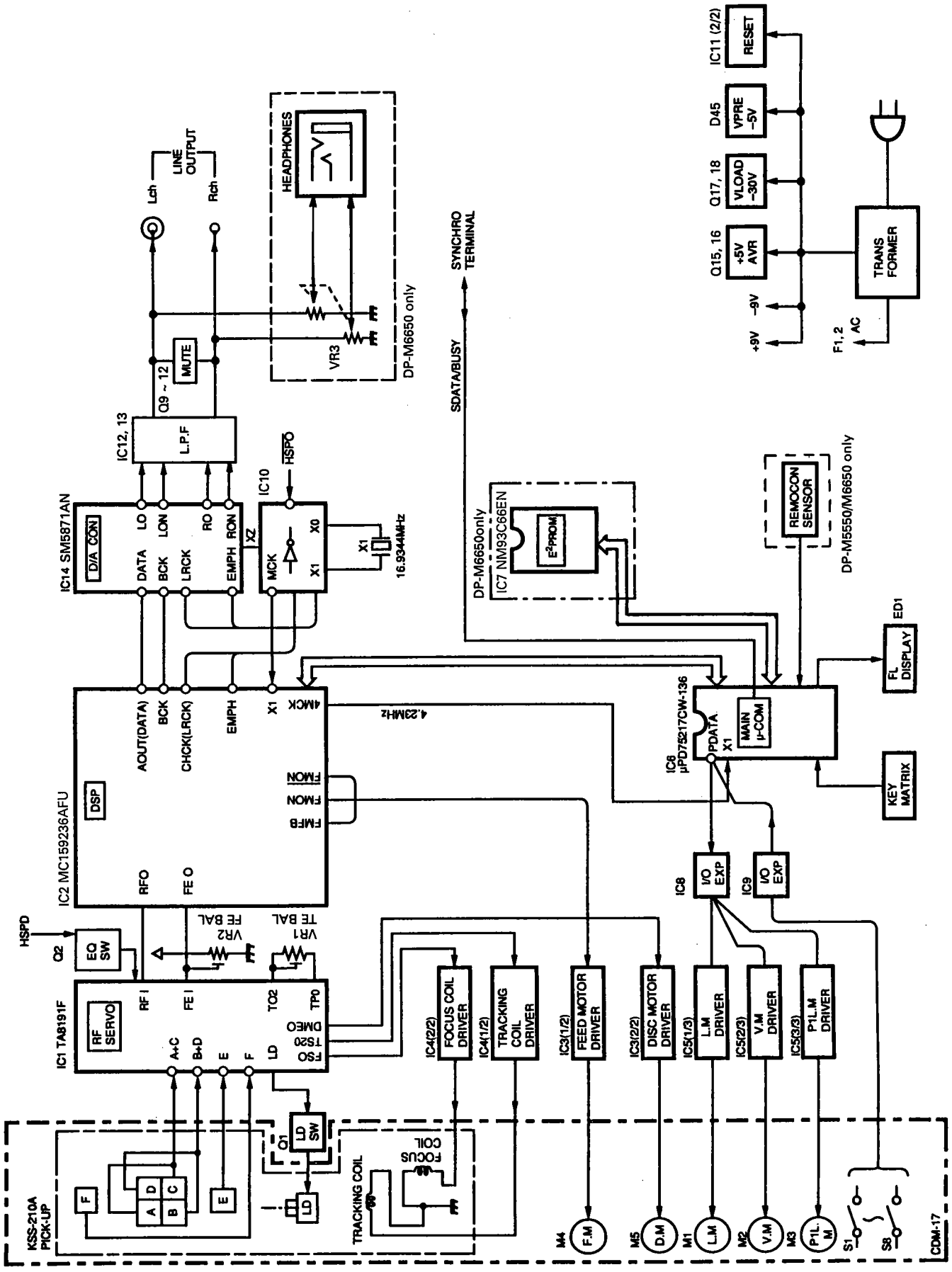
4. Turn the unit upside down, and solder the short land of the pickup (❶).
5. Remove 2 connectors (❷).



6. Turn the stopper (❸).
7. Remove the pickup upwards (❹).



BLOCK DIAGRAM



CIRCUIT DESCRIPTION

1. Test Mode

Setting the test mode

This microprocessor can be put the test mode by just short-circuiting the test pins (#9 and #10) even in the test mode (normal condition).

No.	Input key	Function
1	STOP	(1) Focusing servo ..... OFF (2) Tracking servo ..... OFF (3) Feed servo ..... OFF
2	REPEAT	(1) Laser ..... ON (In STOP mode only)
3	CHECK	(1) Focusing servo ..... ON (2) Tracking servo ..... OFF (3) Feed servo ..... OFF
4	CLEAR	(1) Focusing servo ..... ON (2) Tracking servo ..... ON (3) Feed servo ..... OFF
5	PLAY	(1) Focusing servo ..... ON (2) Tracking servo ..... ON (3) Feed servo ..... ON
6	DISC1	Load No.1 disc to No.6 in order.
7	DISC2	Read the TOC (table of contents) of disc No.3 to No.6 in order. TEST mode is cancelled after reading the TOC of No.6 disc, and then playback the 1st track.
8	P.MODE	Track No.7, 8 and 6 are programmed, and playback (Track No.6 is playbacked under double speed. Also, TEST mode is cancelled).
9	DISC3 ~ 6	Load the decided No. disc which is pressed by the disc key and set to STOP mode. ex. Disc No.4 key is pressed (PLAY, CHECK and CLEAR keys are available to operate).
10	UP ▶▶|	Turns all FL display lamps ON.

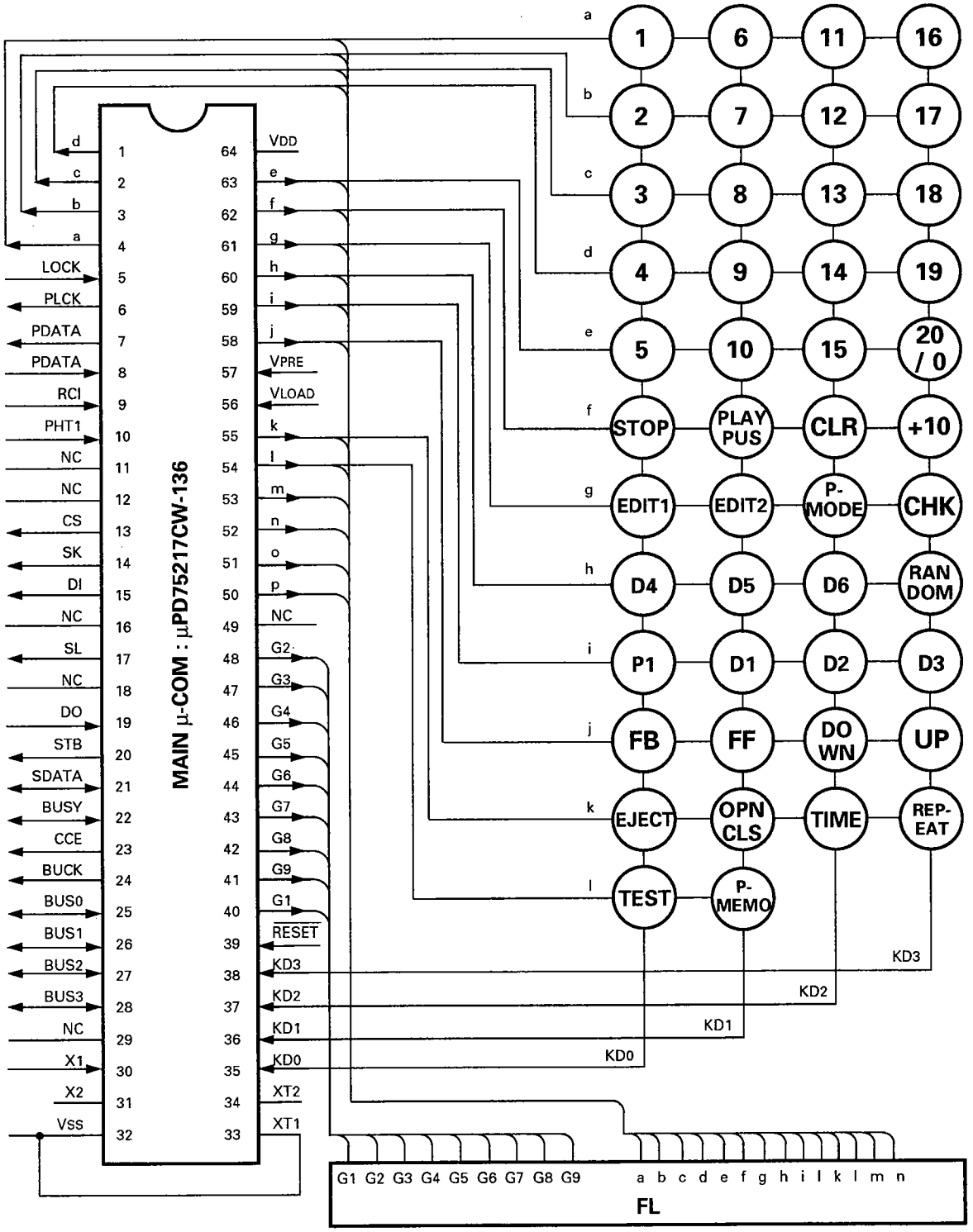
CIRCUIT DESCRIPTION

<table>
<tr><th>No.</th><th>Input key</th><th>Function</th></tr>
<tr><td>11</td><td>DOWN
⏮</td><td>Turns all FL display lamps OFF.
"Disc" and "1 ~ 6" are not OFF, because circuit is static operation.</td></tr>
<tr><td>12</td><td>EDIT-1</td><td>Turns "EDIT-1" letters ON.</td></tr>
<tr><td>13</td><td>EDIT-2</td><td>Turn "EDIT-2" letters ON.</td></tr>
<tr><td>14</td><td>FF
⏩</td><td>In the STOP mode, moves the pickup slightly toward the outer position of disc.</td></tr>
<tr><td>15</td><td>FB
⏪</td><td>In the STOP mode, moves the pickup slightly toward the inner position of disc.</td></tr>
<tr><td>16</td><td>Numeric key (1 ~10)</td><td>Jumps tracks as shown below.
<table>
<tr><td>Key</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>Number of tracks</td><td>1</td><td>4</td><td>8</td><td>32</td><td>1000</td></tr>
<tr><td>Direction</td><td colspan="5">Outer</td></tr>
<tr><td>Key</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr>
<tr><td>Number of tracks</td><td>1</td><td>4</td><td>8</td><td>32</td><td>1000</td></tr>
<tr><td>Direction</td><td colspan="5">Inner</td></tr>
</table></td></tr>
</table>

CIRCUIT DESCRIPTION

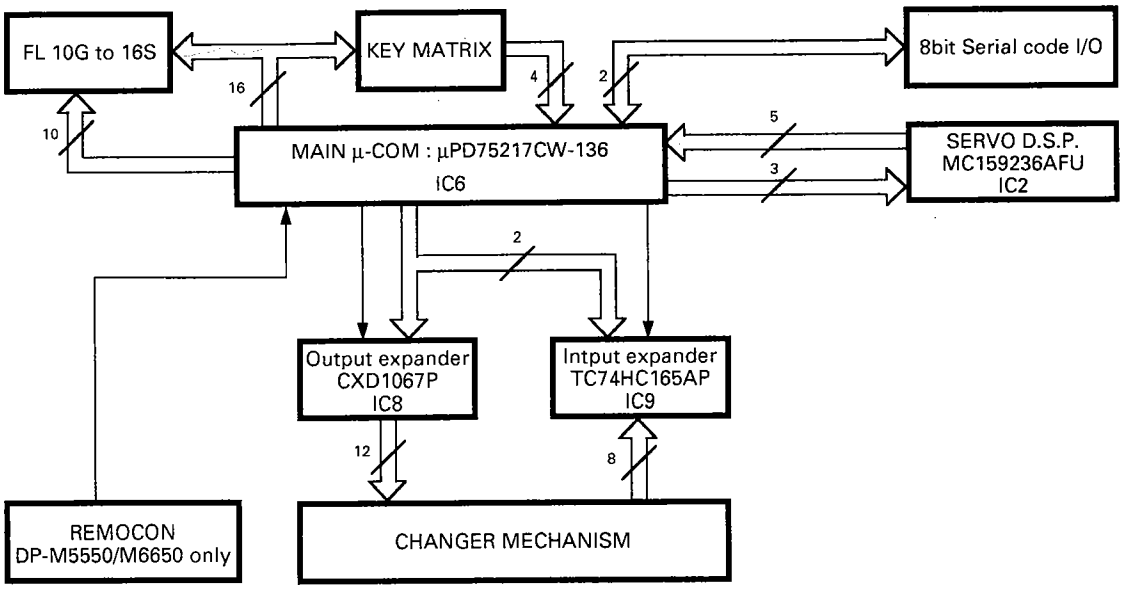
2. Main μ-com : μPD75217CW-136 (IC6)

2-1. Pin connection



CIRCUIT DESCRIPTION

2-2. Block diagram and key matrix



2-3. Pin functions : μPD75217CW-136

Pin No.	Pin name	I/O	Function
1 ~ 4	d ~ a	O	Display segments (key scan control)
5	LOCK	I	LOCK signal sensor from signal processor
6	PLCK	O	Clock output port for CXD1067 and TC74HC165
7	PDATA	O	Data output port for CXD1067
8	PDATA	I	Data input port for TC74HC165
9	RCI	I	Remote control signal input port
10	PHT1	I	Photo interrupter input port for mechanism up/down
11	NC	I	Not use
12	NC	I	Not use
13	CS	O	CS signal output port for NM93C66
14	SK	O	Clock output port for NM93C66
15	DI	O	Data output port for NM93C66
16	NC	–	Not use
17	SL	O	Latch signal output port for CXD1067
18	NC	O	Not use
19	DO	I	Data input port from NM93C66
20	STB	O	STROB signal output port for TC74HC165
21	SDATA	I/O	DATA signal input/output port for system serial communication
22	BUSY	I/O	BUSY signal input/output port for system serial communication

Pin No.	Pin name	I/O	Function
23	CCE	O	CCE control port for MC159236AFU
24	BUCK	O	BUCK control port for MC159236AFU
25 ~ 28	BUS0 ~ BUS3	I/O	BUS line control input/output port for MC159236AFU
29	NC	O	Not use
30	X1	I	System clock input port
31	X2	–	Not use
32	Vss	–	GND
33	XT1	–	GND
34	XT2	–	Open
35 ~ 38	KD0 ~ 3	I	Return key input of key matrix
39	$\overline{\text{RESET}}$	I	RESET signal input port
40 ~ 48	G1, G9~G2	O	Display digit control port
49	NC	O	Not use
50 ~ 55	p ~ k	O	Display segment control port (key scan)
56	VLOAD	I	Display drive negative power supply (–35V)
57	VPRE	I	Display pre-driver negative power supply (–5V)
58 ~ 63	j ~ e	O	Display segments control port (key scan)
64	VDD	–	Power supply (+5V)

CIRCUIT DESCRIPTION

3. RF Amplifier : TA8191F (IC1)

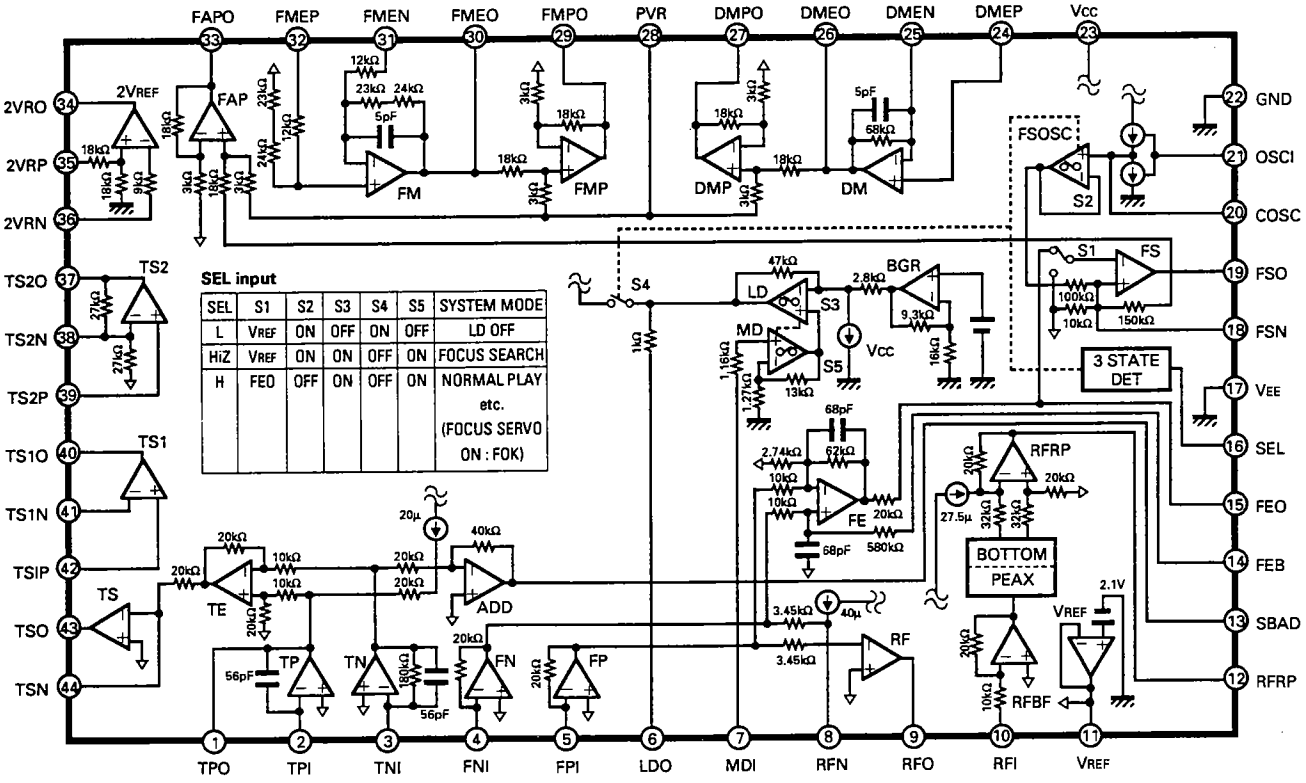
Out line

TA8191F is an LSI for focus tracking servo applicable to PUH of 3 beam type in a CD player system.

Features

- RF amplifier, focus error amplifier, and tracking error amplifier are built in.
- Focus tracking servo amplifier is built in.
- Phase compensation amplifier and LPF amplifier are built in.
- ALPC amplifier is built in.

3-1.Block diagram



SEL input

SEL	S1	S2	S3	S4	S5	SYSTEM MODE
L	VREF	ON	OFF	ON	OFF	LD OFF
HiZ	VREF	ON	ON	OFF	ON	FOCUS SEARCH
H	FEO	OFF	ON	OFF	ON	NORMAL PLAY
						etc.
						(FOCUS SERVO ON : FOK)

CIRCUIT DESCRIPTION

3-2. Pin fuction

Pin No.	Pin name	I/O	Function
1	TPO	O	Sub beam I-V amplifier (TP AMP) output terminal.
2	TPI	I	Sub beam I-V amplifier (TP AMP) input terminal.
3	TNI	I	Sub beam I-V amplifier (TN AMP) input terminal.
4	FNI	I	Main beam I-V amplifier (FN AMP) input terminal.
5	FPI	I	Main beam I-V amplifier (FP AMP) input terminal.
6	LDO	O	Laser diode amplifier (LD AMP) output terminal.
7	MDI	I	Monitor photo diode amplifier (MD AMP) input terminal.
8	RFN	I	RF amplifier (RF AMP) negative phase input terminal.
9	RFO	O	RF amplifier (RF AMP) output terminal.
10	RFI	I	RF ripple signal generating circuit input terminal.
11	VREF	O	Reference voltage output terminal.
12	RERP	O	RF ripple signal output terminal.
13	SBAD	O	Flaw sensing output terminal.
14	FEB	O	Focus error balance adjustment input terminal.
15	FEO	O	Focus error amplifier (FE AMP) output terminal.
16	SEL	I	Analog switch control signal input terminal.
17	VEE	–	Power supply terminal.
18	FSN	I	Focus output amplifier (FS AMP) negative phase input terminal.
19	FSO	O	Focus output amplifier (FS AMP) output terminal.
20	COSC	O	Focus search signal generating capacitor connection terminal.
21	OSCI	I	Built in current control input terminal for focus search signal generation.
22	GND	–	Ground terminal.
23	Vcc	–	Power supply (+5V).
24	DMEF	I	Disc motor amplifier (DM AMP) positive phase input terminal.
25	DMEN	I	Disc motor amplifier (SM AMP) negative phase output terminal.
26	DMEO	O	Disc motor amplifier (SM AMP) output terminal.
27	DMPO	O	Disc motor drive amplifier (SM AMP) negative phase output terminal.
28	PVR	I	Drive amplifier reference voltage input terminal.
29	FMPO	O	Feed motor drive amplifier (FM AMP) output terminal.
30	FMEO	O	Feed motor amplifier (FM AMP) output terminal.
31	FMEN	I	Feed motor amplifier (FM AMP) negative phase input terminal.
32	FMEP	I	Feed motor amplifier (FM AMP) positive phase input terminal.
33	FAPO	O	Focus actuator drive amplifier (FAP AMP) output terminal.
34	2VRO	O	2VREF amplifier (2VREF AMP) output terminal.
35	2VRP	I	2VREF amplifier (2VREF AMP) positive phase input terminal.
36	2VRN	I	2VREF amplifier (2VREF AMP) negative phase input terminal.
37	TS2O	O	Tracking servo amplifier 2 (TSP AMP) output terminal.
38	TS2N	I	Tracking servo amplifier 2 (TSP AMP) negative phase input terminal.
39	TS2P	I	Tracking servo amplifier 2(TSP AMP) positive phase input terminal.
40	TS1O	O	Tracking servo amplifier 1(TSP AMP) output terminal.
41	TS1N	I	Tracking servo amplifier 1(TSP AMP) negative phase input terminal.
42	TS1P	I	Tracking servo amplifier 1(TSP AMP) positive phase input terminal.
43	TSO	O	Tracking output amplifier (TS AMP) output terminal.
44	TSN	I	Tracking output amplifier (TS AMP) negative phase input terminal.

CIRCUIT DESCRIPTION

4. Digital Signal Processor : MC159236AFU (IC2)

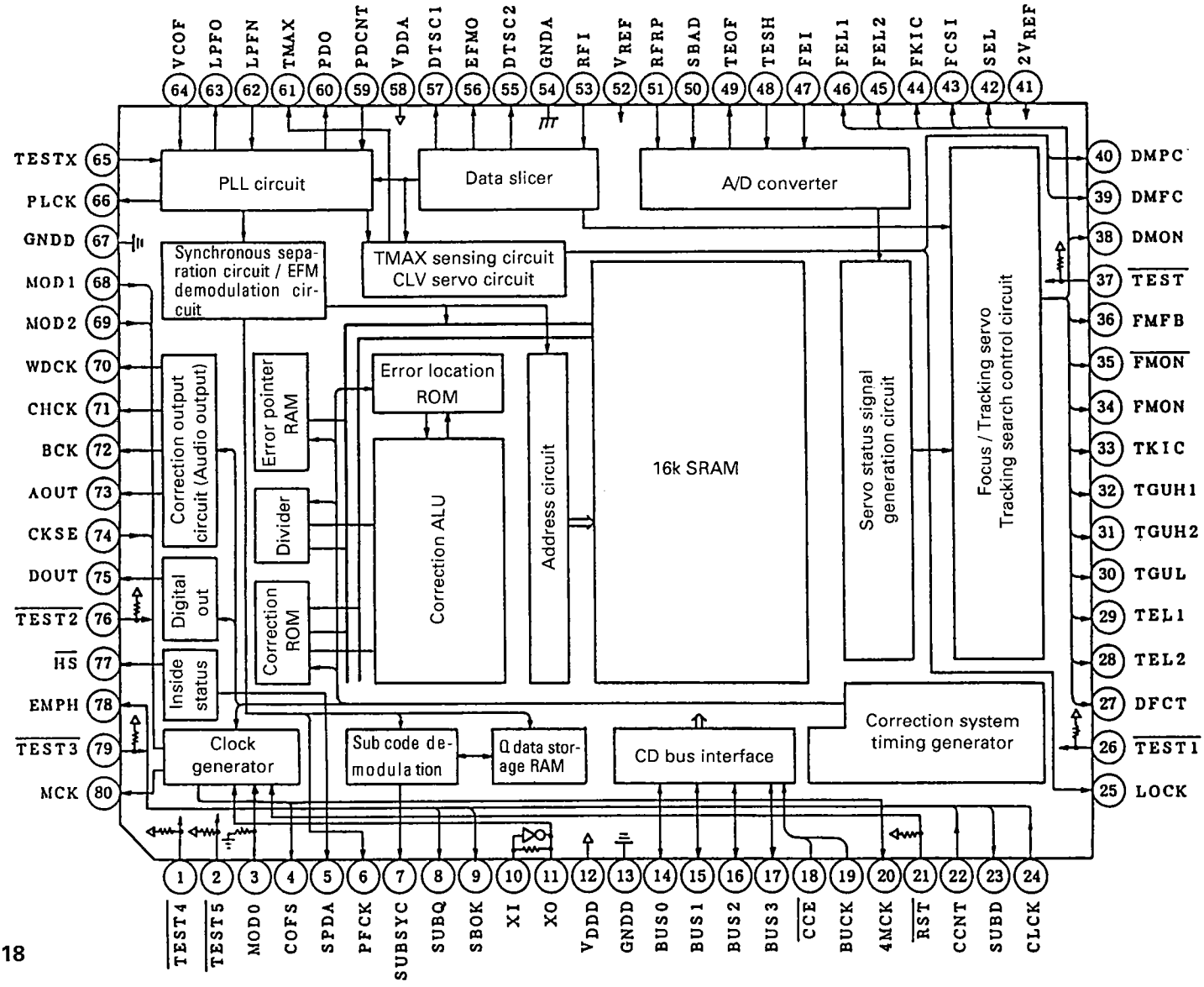
Outline

MC159236AFU is a 1-chip processor for step-out protection and interpolation, EFM, error correction, microcomputer interface, CLV servo and focus tracking servo of the CD player.

Features

- CMOS silicone structure for high-speed and low power consumption.
- Flat package with 80 pins. Stable synchronous pattern sensing function, synchronous signal protection and interpolation function.
- Built-in EF demodulation and sub code demodulation circuits.
- CIRC correction theoretical formula is used for single correction by C1 correction part and double correction by C2 correction part.
- Jitter absorbing capacity of ±5 frames.
- Smooth muting by zero cross sensing is possible.
- Attenuation of 12dB is possible.
- Built-in 16k S-RAM.
- Built-in digital out circuit.
- Built-in data slicer and analog PLL (with adjustment-free VCO) circuits.
- Automatic adjustment function of focus and tracking loop again.
- Built-in AFC and APC circuits for disc motor CLV servo.
- Built-in focus and tracking servo control circuit.
- Tracking search control applicable in any mode.
- Built-in microcomputer interface circuit.
- Read timing-free sub code Q data.
- Applicable to double-speed operation.

4-1.Block diagram



CIRCUIT DESCRIPTION

4-2. Pin fuction

Pin No.	Pin name	I/O	Function
1	$\overline{\text{TEST4}}$	I	Test terminal, normally "H" or open.
2	$\overline{\text{TEST5}}$	I	Test terminal, normally "H" or open.
3	MOD0	I	Input terminal for inside operation mode setting.
4	COFS	O	Correction system frame period signal output terminal, 7.35kHz.
5	SPDA	O	Processor status signal output terminal. Correction judgement result, memory buffer capacity, etc.
6	PFCK	O	Playback system frame period signal output terminal, 7.35kHz
7	SUBSYC	O	Sub code sink signal output terminal.
8	SUBQ	O	Sub code Q data output terminal.
9	SBOK	O	Output terminal for CRC check result of sub code Q.
10, 11	XI, XO	I/O	Crystal oscillator connection terminal.
12	V_{DD}	–	Digital source voltage terminal.
13	GN_{DD}	–	Digital ground terminal.
14 ~ 17	BUS0 ~ 3	I/O	Input /output terminal for transmission and receiving of commands and data.
18	$\overline{\text{CCE}}$	I	Input terminal of chip enable signal for transmission and receiving of commands and data. Bus line is active at "L".
19	BUCK	I	Clock input terminal for transmission and receiving of commands and data.
20	4MCK	O	4M clock output terminal, 4.236MHz.
21	$\overline{\text{RST}}$	I	Reset input terminal. Inside system is reset at "L".
22	CCNT	I	Input terminal of signal to inhibit renewal of control bit of sub code Q data. Renewal is inhibited at "H".
23	SUBD	O	Sub code P-W output terminal.
24	CLCK	I	Sub code P-W data reading clock input terminal.
25	LOCK	O	Lock status output terminal. If sink pattern in EFN signal of run-away detection information is not detected for 17ms, this terminal is set to "L".
26	$\overline{\text{TEST1}}$	I	Test terminal, normally "H" or open.
27	DFCT	O	Defect sensing signal output terminal. When defect detected, V_{REF}. Normally HiZ.
28, 29	TEL2, 1	O	Analog switch output terminal for tracking gain adjustment, V_{REF} or HiZ.
30	TGUL	O	Analog switch output terminal for changeover of low-band phase compensator of tracking servo loop. When shock detected, HiZ (gain increased), normally V_{REF}.
31	TGUH2	O	Analog switch output terminal for medium and high band tracking servo loop. When shock detected, HiZ (gain increased), normally V_{REF}. TGUH1 used for normally replay and TGUH2 used for
32	TGUH1		double-speed replay.
33	TKIC	O	Tracking actuator kick signal output terminal. Kicked in outside peripheral direction at "H" and inside peripheral direction at "L".
34	FMON	O	Analog switch output terminal for ON and OFF of feed servo.
35	$\overline{\text{FMON}}$		
36	FMFB	O	Control signal output terminal for FWD/BWD feed motor. Fed in outside peripheral direction at "H" and inside peripheral direction at "L".
37	$\overline{\text{TEST}}$	I	Test terminal, normally "H" or open.
38	DMON	O	Analog switch output terminal for changeover of gain of disc motor drive circuit.
39	DMFC	O	AFC signal output terminal for disc motor CLV servo.
40	DMPC	O	APC signal output terminal for disc motor CLV servo.
41	$2V_{REF}$	I	Double-reference voltage input terminal (V_{REF} x 2).
42	SEL	O	Servo mode indication signal output terminal.

Feed servo	FMON	$\overline{\text{FMON}}$
ON	HiZ	V_{REF}
OFF	V_{REF}	HiZ

Command	DMF output	Operation
DMFK	H	Acceleration of motor
DMSV	PWM	CLV servo ON
DMBK	L	Deceleration of motor
DMOFF	V_{REF}	CLV servo OFF

SEL	LD ON/OFF	Focus servo	Operation mode
L	OFF	OFF	LD OFF
HiZ	ON	OFF	Focus search
H	ON	ON	Normal play etc. (Focus servo ON : FOK)

CIRCUIT DESCRIPTION

Pin No.	Pin name	I/O	Function
43	FSCI	O	Focus actuator drive signal output terminal in focus search mode.
44	FKIC	O	Focus actuator drive signal output terminal in focus gain adjustment mode.
45, 46	FEL2, 1	O	Analog switch output terminal focus gain adjustment.
47	FEI	I	Focus error signal input terminal.
48	TESH	I	Analog switch input terminal for tracking error signal sample holding.
49	TEOF	O	Analog switch output terminal for tracking servo operation.
50	SBAD	I	Sub-beam addition signal input terminal.
51	RFRP	I	RF ripple signal input terminal.
52	V_{REF}	I	Standard voltage input terminal.
53	RFI	I	RF signal input terminal.
54	GNDA	–	Analog ground terminal.
55	DTSC2	O	EFM signal reverse output terminal for data slice control.
56	EFMO	O	EFM signal monitor output terminal.
57	DTSC1	O	EFM signal ordinary output terminal for data slice control.
58	V_{DDA}	–	Analog source voltage terminal.
59	PDCNT	I	PDO output control terminal. PDO output is forcedly set to HiZ at "L".
60	PDO	O	Phase error signal output terminal between EFM signal and PLCK.
61	TMAX	O	TMAX signal output terminal. When system is locked, HiZ.
62	LPFN	I	LPF amplifier inverted input terminal for PLL.
63	LPFO	O	LPF amplifier output terminal for PLL.
64	VCOF	I	Filter terminal for VCO.
65	TESTX	I	Outside VCO clock input terminal.
66	PLCK	O	Clock output terminal for reading replay data.
67	GN_{DD}	–	Digital ground terminal.
68, 69	MOD1, 2	I	Input terminal for inside operation mode setting.
70	WDCK	O	Ward clock output terminal, normally set to 88.2kHz.
71	CHCK	O	Channel clock output terminal, normally set to 44.1kHz.
72	BCK	O	Bit clock output terminal, normally set to 1.4112MHz.
73	AOUT	O	Audio data output terminal.
74	CKSE	I	Inside clock selection terminal.
75	DOUT	O	Digital out output terminal.
76	$\overline{TEST2}$	I	Test terminal, normally "H" or open.
77	HS	O	Output terminal for double-speed monitor. Double-speed operation at "L".
78	EMPH	O	Emphasis ON/OFF indication signal output terminal. Emphasis is one at "H".
79	$\overline{TEST3}$	I	Test terminal, normally "H" or open.
80	MCK	O	Master clock output terminal.

Function (Pin 43 FSCI):

Command	FCSI output	Operation
FORST	H	Lens moves far from disc
FOSET	L	Lens moves near disc
Other than above	HiZ	Other than focus search

Function (Pin 44 FKIC):

Command	FKIC output	Operation
FGASR	H	Lens moves far from disc
FGASS	L	Lens moves near disc
Other than above	HiZ	Other than focus gain adjustment

Function (Pin 61 TMAX):

TMAX period	TMAX output
Longer than specified period	L
Shorter than specified period	H ($2V_{REF}$)
Specified period	HiZ

CIRCUIT DESCRIPTION

5. D/A Converter : SM5871AN (IC14)

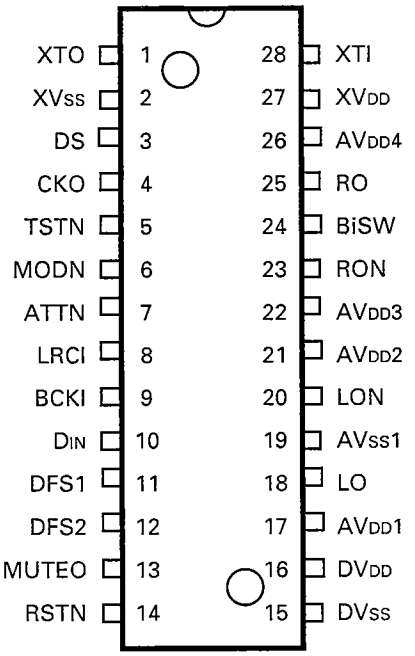
Outline

This LSI is a ΣΔ-type 2-channel D/A converter (ΣDECO) which has a built-in over-sampling digital filter and is used for playback of 16 bit digital audio signals. This LSI also has de-emphasis filters for 3-types of fs and soft mute function.
Furthermore, the CD player can be set to the normal or double-speed playback mode without changing the system clock. Since the package is a 28 pin shrink DIP, this LSI has high cost performance.

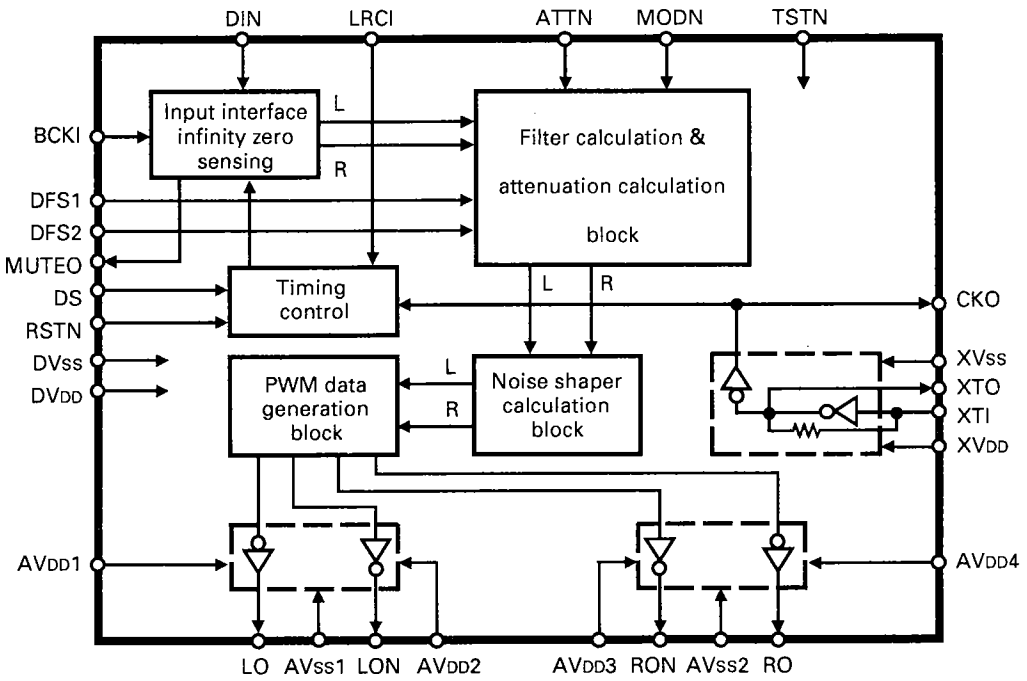
Features

- 2-channel processing
- Serial data input
  Complementary number of 2, 16bit/MSB first
- De-emphasis filter (IIS type) : Matched to 3 fs's
- Soft mute
- 32-time (32fs) over-sampling
  4fs FIR-type filter (45 degrees +9 degrees) employed
  Total characteristics after 32fs : attenuation of 40dB, ripple of band pass of 0.15dB
  At double-speed : 16-time (16fs) over-sampling
- ΣΔ-type D/A converter (ΣDECO)
  32fs over-sampling operation (At double-speed : 16fs)
  Zero-shift noise shaper of third degree (ZSNS)
  Semi-symmegrical PWM output (11 levels : differential PWM)
- Setting of CD to normal/double-speed playback mode (DS terminal)
- System clock
  (Normal mode) DS=L : 384fs- - -16.9344MHz
  @ fs=44.1kHz
  (Double-speed mode) DS=L : 192fs- - -16.9344MHz
  @fs=88.2kHz
- Built-in quartz oscillation circuit'
- 5V (standard) single power source (normal mode/ double-speed mode)
- Can operate at low voltage (3.2V) (only in normal mode)

5-1. Pin connection



5-2. Block diagram



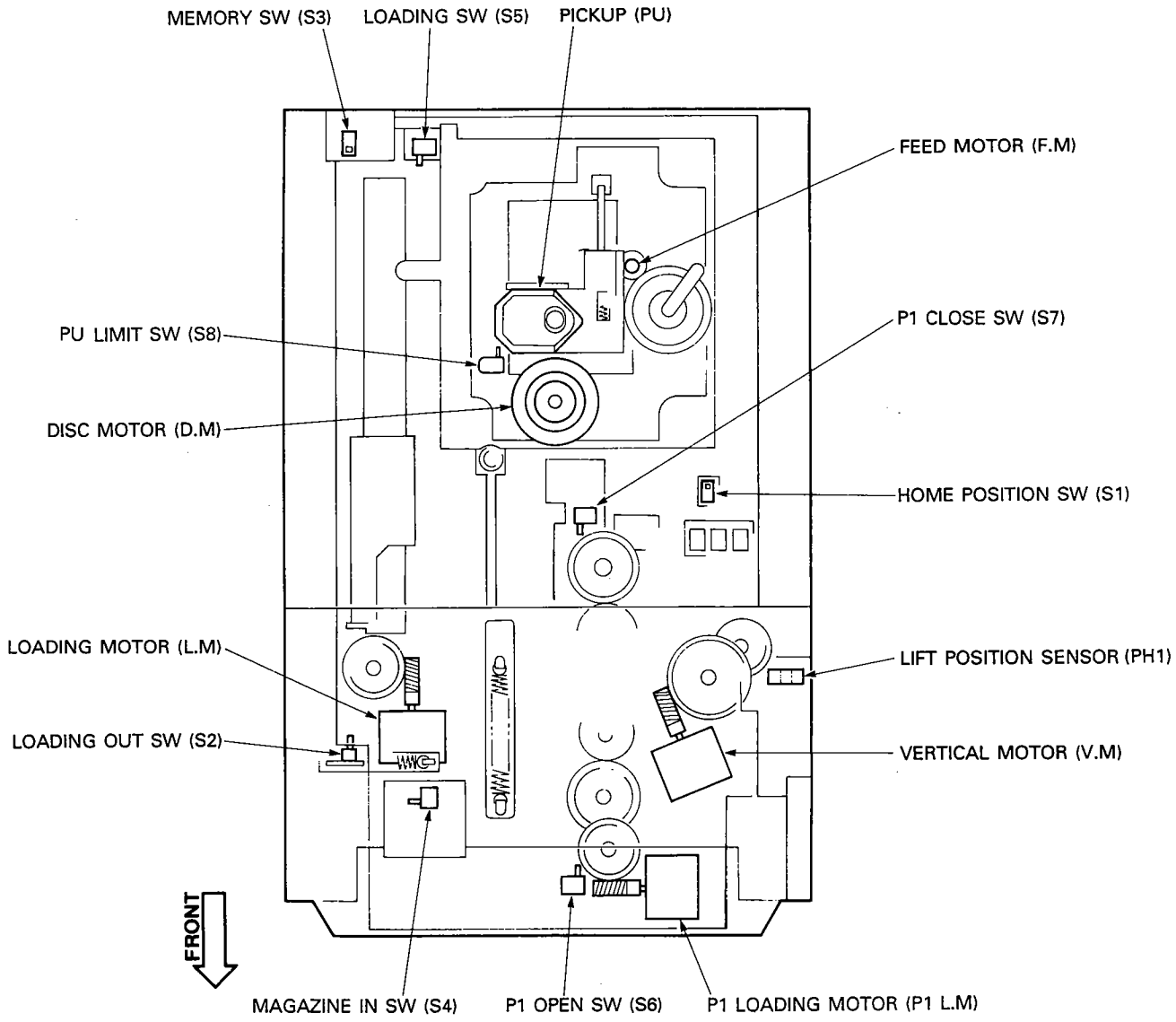
CIRCUIT DESCRIPTION

5-3. Pin fuction (Ip is indicated an input terminal with pull-up resistor.)

Pin No.	Pin name	I/O	Function
1	XTO	O	Output terminal of oscillation block.
2	XVss	–	X'tal system GND terminal (0V).
3	DS	Ip	Normal/double-speed playback mode selection. (DS=L : Normal playback mode, DS=B : Double-speed playback mode)
4	CKO	O	Output clock of oscillation block . (DS=L : Same 384fs as XTI input frequecncy, DS=E : Same 192fs as XTI input frequency)
5	TSTN	Ip	Test terminal : To be fixed to H level when used.
6	MODN	Ip	Mode terminal : To be fixed to H level when used.
7	ATTN	Ip	Soft mute control terminal (ATTN=H : Soft mute off, ATTN=L : Soft mute on).
8	LRCI	Ip	Sample rate (fs) clock of input data clock : H=Lch, L=Rch
9	BCKI	Ip	Bit clock of input data.
10	DIN	Ip	Input data.
11	DFS1	Ip	De-emphasis control terminal 1.
12	DFS2	Ip	De-emphasis control terminal 2.
13	MUTEO	O	Infinity zero sensing output .
14	RSTN	Ip	System reset : H=Normal operation, L=System reset.
15	DVss	–	Digital GND terminal (0V).
16	DVDD	–	Digital VDD terminal (5V).
17	AVDD1	–	Analog VDD terminal 1 (5V).
18	LO	O	Lch PWN output (+).
19	AVss1	–	Analog GND terminal 1 (0V).
20	LON	O	Lch PWN output (–).
21	AVDD2	–	Analog VDD terminal 2 (5V).
22	AVDD3	–	Analog VDD terminal 3 (5V).
23	RON	O	Rch PWN output (–).
24	AVss2	–	Analog GND terminal 2 (0V).
25	RO	O	Rch PWN output (+).
26	AVDD4	–	Analog VDD terminal 4 (5V).
27	XVDD	–	X'tal system VDD terminal (5V).
28	XTI	I	Input terminal of oscillation block (364fs : When DS=L, 192fs : When DS=H).

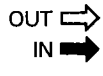
DFS2	Seclection	DFS1 L	DFS1 H
	L	De-emphasis ON 44.1kHz	De-emphasis OFF
	H	De-emphasis ON 48.0kHz	De-emphasis ON 32.0kHz

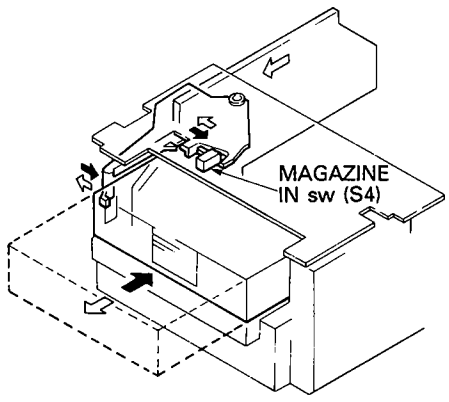
MECHANISM OPERATION DESCRIPTION



1. Magazine Setup Operation

If load the magazine to unit, fix the magazine by magazine lock lever and set the magazine in-switch (S4) to on.



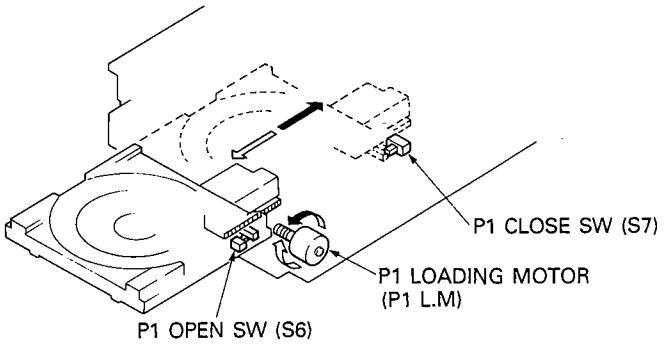


MECHANISM OPERATION DESCRIPTION

2. Plus One (P1) Tray Open and Close Operation

P1 tray is moved by P1-loading motor (P1LM). In open mode, P1-open switch (S6) is on, in close mode, P1-close switch (S7) on.

OPEN ⇨
CLOSE ➡

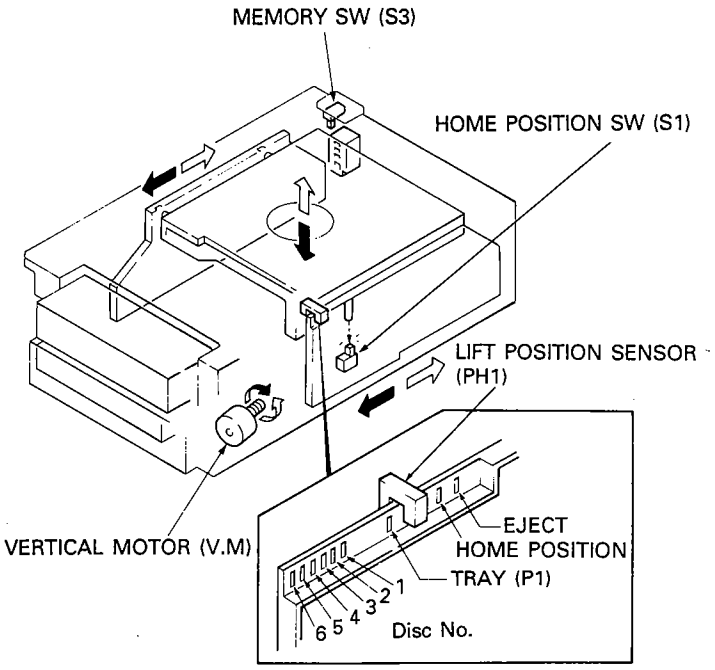


3. Magazine Lifter Operation

After loading magazine, the magazine is controlled vertically by vertical motor (V.M). The vertical position is memorized by the lift position sensor (PH1).

The home position switch (S1) is turned on when the unit is in STOP mode (Disc holder at the lowest position).

UP ⇨
DOWN ➡

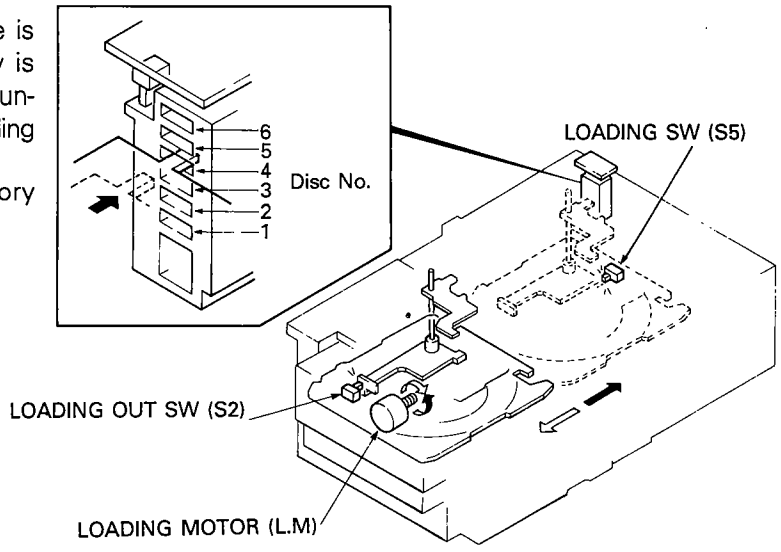


4. Tray Loading Operation (In Case of Magazine Inserted NO.3 Tray)

After loading magazine, the tray of the magazine is pulled by the loading motor (L.M). When the tray is loaded, the loading in-switch (S5) is on, on the countrary when the tray is returned to magazine, the loading out-switch (S2) on.

The tray position is memorized by the memory guide's hole and the memory switch (S3).

OUT ⇨
IN ➡



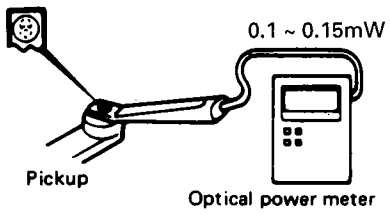
ADJUSTMENT

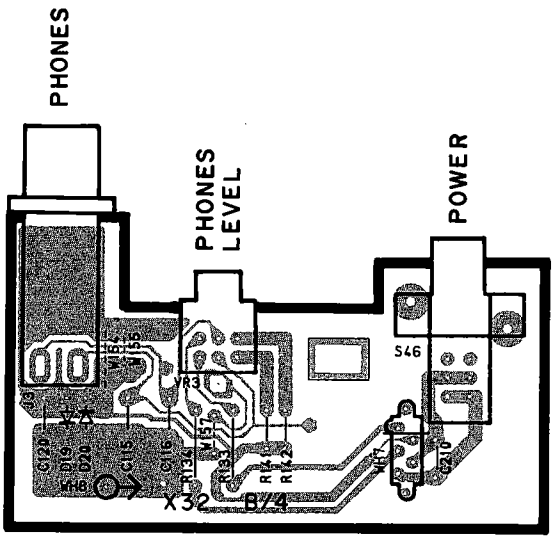
No.	ITEM	INPUT SETTING	OUTPUT SETTING	PLAYER SETTING	ALIGNMENT POINT	ALIGN FOR	FIG.
1	LASER POWER	–	Apply the sensor section of optical power meter on the pickup lens.	Short-circuit pins TEST and turn the power on to enter the test mode. Press the MANUAL S. key (▶▶) to move the pickup outwards. Press the REPEAT key to check the LD emits light. Then confirm that the display is "02"	–	On the power from 0.1 to 0.15mW. When the diffraction grating is correctly aligned with the RF level of 1.0Vp-p or more and the TE (servo open) level of 1.5Vp-p or more, the pickup is acceptable.	(a)
2	TRACKING ERROR BALANCE	Test disc Type 4	Connect an oscilloscope as follows. CH1 : RF (CN5-1) CH2 : TE (CN5-6)	Turn power switch off and set the unit to test mode. Set the test disc to the 3rd position in the magazine pack. Press the 3rd key of the disc selector and load the test disc. Press the CHECK key. Then confirm that the display is "03".	TE BALANCE VR2	Symmetry between upper and lower patterns, or DC = VREF (2.1V) ±0.03V.	(b)
3	FOCUS ERROR BALANCE	Test disc Type 4	Connect an oscilloscope as follows. CH1 : RF (CN5-1) CH2 : FE (CN5-2)	Press the PLAY key. Confirm that the display is "05".	FE BALANCE VR1	Optimum eyepattern.	(c)

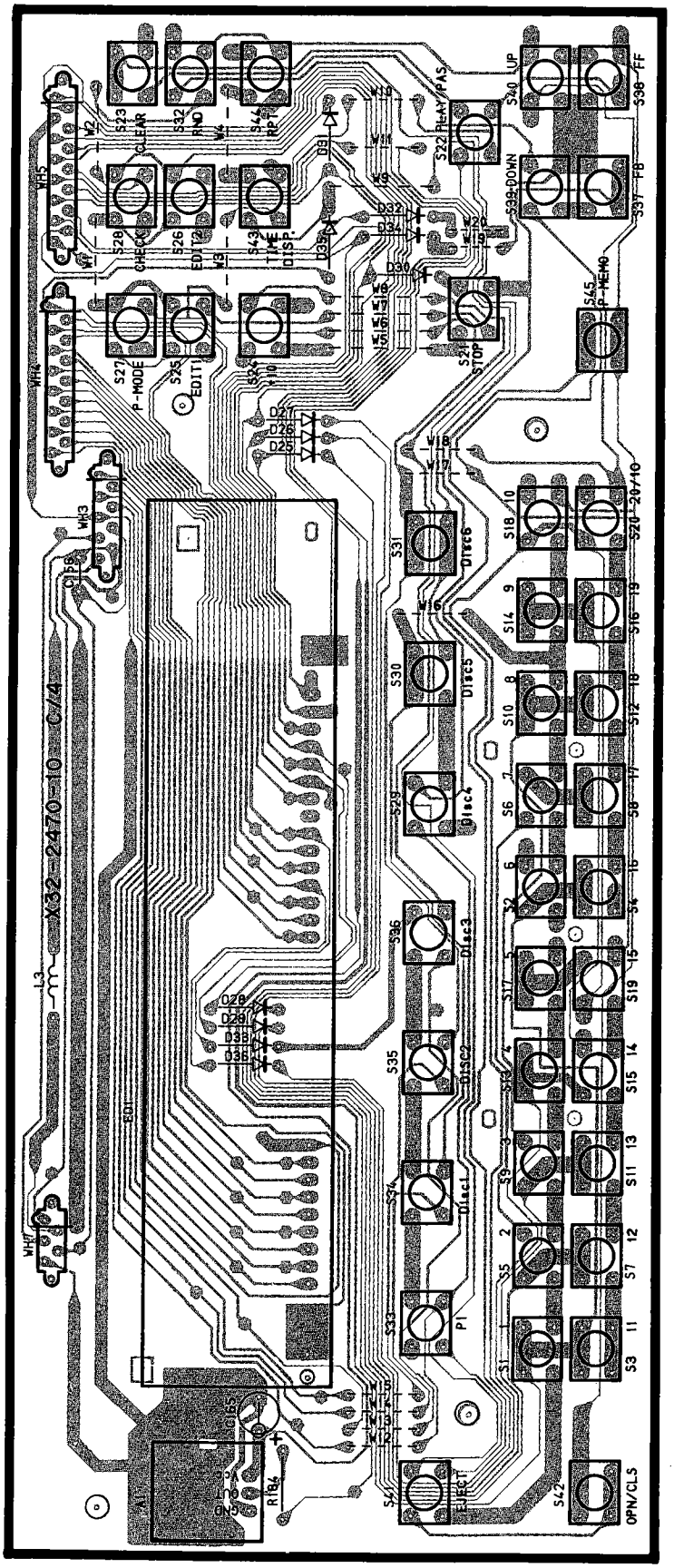
Note

Type 4 disc : SONY YEDS-18 Test Disc or equivalent. Step 1 ~ 3 are in Test Mode.

(a) Laser Power




PHONES
PHONES LEVEL
POWER
S46
X32-2470-10 C/4
X32 B/4


X32-2470-10 C/4
S23 CLEAR
S32 RND
S44 RPT
S28 CHECK
S26 EDIT2
S43 TIME DISP.
S27 P-MODE
S25 EDIT1
S24 ENTER
S22 PLAY/PAS.
S40 UP
S39 DOWN
S38 FF
S37 FB
S45 P-MEMO
S31
S30
S29
S36
S35
S34
S33
S41 EJECT
S42 OPN/CLS
Disc6
Disc5
Disc4
Disc3
Disc2
Disc1
REMOTE CONTROL SENSOR

RÉGLAGE / ABGLEICH

ÉGLAGE

No.	ELÉMENT	D'ENTRÉE	SORTIE	MISE EN FONCTIONNEMENT DU LECTEUR	POINT DE CONTRÔLE	CRITÈRE D'APPRÉCIATION	FIG.
1	PUISSANCE LASER	–	Appliquer, la section détecteur du compteur de puissance optique sur la lentille du capteur.	Court-circuiter les broches TEST et fournir l'alimentation pour enter en mode de test. Presser la touche MANUAL S. (⏭) pour déteteur vers l'extérieur. Presser la touche CHECK pour véifier que ladiode émet de ensuite que l'ffichage est "02".	–	Sur l'alimentation de 0.1 à 0.15mW, quand le réseau de diffraction est correctement aligné avec le niveau RF de 1.0Vc-c ou plus et le niveau TE (servo ouvert) de 1,5Vc-c ou plus, le détecteur est acceptable.	(a)
2	BALANCE D'ERREUR D'ALIGNEMENT	Disque test Type 4	Raccorder un oscilloscope comme suit. CH1 : RF (CN5-1) CH2 : TE (CN5-6)	Régler l'interrupteur d'alimentation sur arrêt et mettre l'unité dans le mode d'essai. Placer le disque d'essai à la 3ème position dans le magasin. Appuyer sur la 3ème touche du sélecteur de disque et charger le disque d'essai. Appuyer sur la touche CHECK, puis confirmer que l'affichage indique "03".	TE BALANCE VR2	Symétrie entre les formes supérieure et inférieure ou DC = VREF (2,1V) ±0.03V.	(b)
3	BALANCE D'ERREUR DE MISE AU POINT	Disque test Type 4	Raccorder un oscilloscope comme suit. CH1 : RF (CN5-1) CH2 : FE (CN5-2)	Presser la touche PLAY S'assurer que l'affichage est l'affichage est "05".	FE BALANCE VR1	Forme optimum.	(c)

emarque

isque de type 4 : Disque test SONY YEDS-18 ou équivalent. No.1~3 = Le mode d'essai.

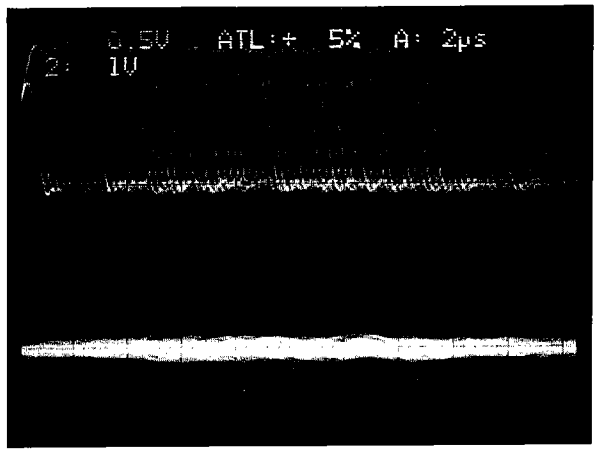
ABGLEICH

Nr.	EINSTELLGRÖSSE	EINGANGSEIN STELLUNG	AUSGANGSEIN STELLUNG	SPIELER-BETRIEBSART	EINSTELLPUNKT	EINSTELLVORGANG	Abb.
1	LASERLEISTUNG	–	Das Sensorteil des optischen Leistungmeters auf die Aufnehmerlinse ansetzen.	Die Stifte TEST kurzschließen und die Spannungsversorgumg einschalten, um den Testmodus zu aktivieren. Die Taste MANUAL S. (⏭) dücken, umden Abtaster nach außen zu bewegen. Die CHECK-Taste dücken, um zu prüfen, ob die LD Light abgibt. Dann sicherstellen, daß "02" angezeigt wird.	–	Bei der Leistung von 0,1 bis 0,15mW, wenn das beugungsgitter richtig mit dem RF-Pegel von 1,0Vs-s oder mehr und dem TE-Pegel (Servo offen) von 1,5Vs-s oder mehr ausgerichtet ist, ist der Abtaster zugänglich.	(a)
2	SPURHALTEFEHLER-AUSGLEICH	Testdisc Typ 4	Ein Oszilloskop wie folgt anschließen : CH1 : RF (CN5-1) CH2 : TE (CN5-6)	Netzschalter ausschalten und Gerät auf Test-Modus stellen. Test-Disc in 3. Position im Magazin legen. Taste 3 des Disc-Wählers drücken und Test-Disc einlegen. CHECK-Taste drücken und sicherstellen, daß in der Anzeige "03" erscheint.	TE BALANCE VR2	Symmetrie zwischen oberen und umteren Mustern oder Gleichstrom DC = VREF (2,1V) ±0,03V.	(b)
3	FOKUS-FEHLERAUSGLEICH	Testdisc Typ 4	Ein Oszilloskop wie folgt anschließen : CH1 : RF (CN5-1) CH2 : FE (CN5-2)	Die PLAY-Taste dücken und sicherstellen, daß "05" angezeigt wird.	FE BALANCE VR1	Optimales Augenmuster.	(c)

Hinweis

Typ 4 Disc : SONY YEDS-18 Testdisc oder Äquivalent. Nr.1~3 = Im Test-modus.

ADJUSTMENT / RÉGLAGE / ABGLEICH



CH1
RF signal

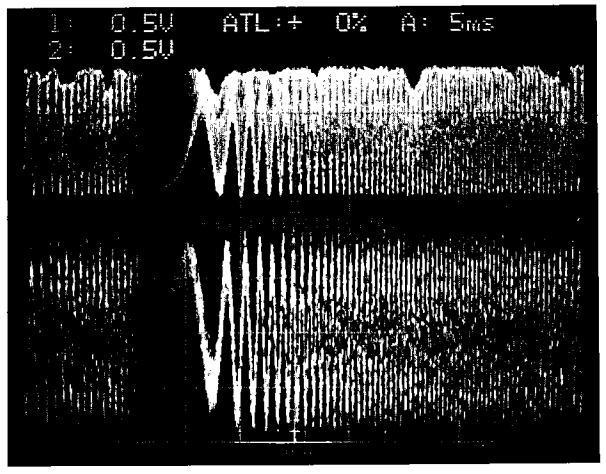
← VREF 2.1 (V)

← VREF 2.1 (V)
CH2
TE siganl

- RF signal and TE signal in test mode (PLAY).
- If the diffraction grating has been adjusted properly, the influence of triggering is observed on the TE wave form of appox. 13µs after RF signal, in the form of a projection.

- Signal RF et signal TE dans le mode d'essai (PLAY).
- Si le sélecteur de mode de diffraction a été correctement réglé, l'influence du déclenchement est observée sur la forme d'onde TE d'approximativement 13µs après le signal RF, sous forme de projection.

- RF-Signal und TE-Signal im Test-Modus (PLAY).
- Bei korrekter Justierung des Beugungsgitters wird der Triggering-Einfluß der TE-Wellenform ca. 13µs nach dem RF-Signal als Projektion beobachtet.



CH1
RF signal

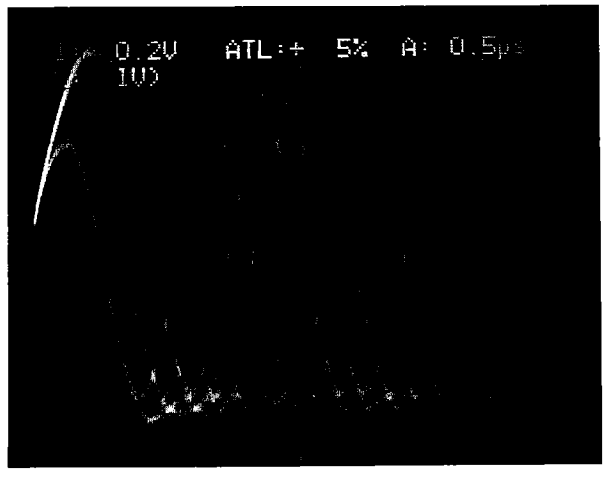
← VREF 2.1 (V)

← VREF 2.1 (V)
CH2
TE signal

- RF signal and TE signal in test mode (Focusing servo ON, CHECK).
- Adjust TE signal so that the wave form is symmetrical above and below 0V (TE BALANCE, VR2).

- Signal RF et signal TE dans le mode d'essai (asservissement focalisation activé, CHECK).
- Ajuster le signal TE de sorte que la forme d'onde soit symétrique au-dessus et au-dessous de 0V (TE BALANCE, VR2).

- RF-Signal und TE-Signal im Test-Modus (Fokussier-Servo EIN, CHECK).
- Das TE-Signal so justieren, daß die Wellenform symmetrisch über und unter 0V liegt (TE BALANCE, VR2).



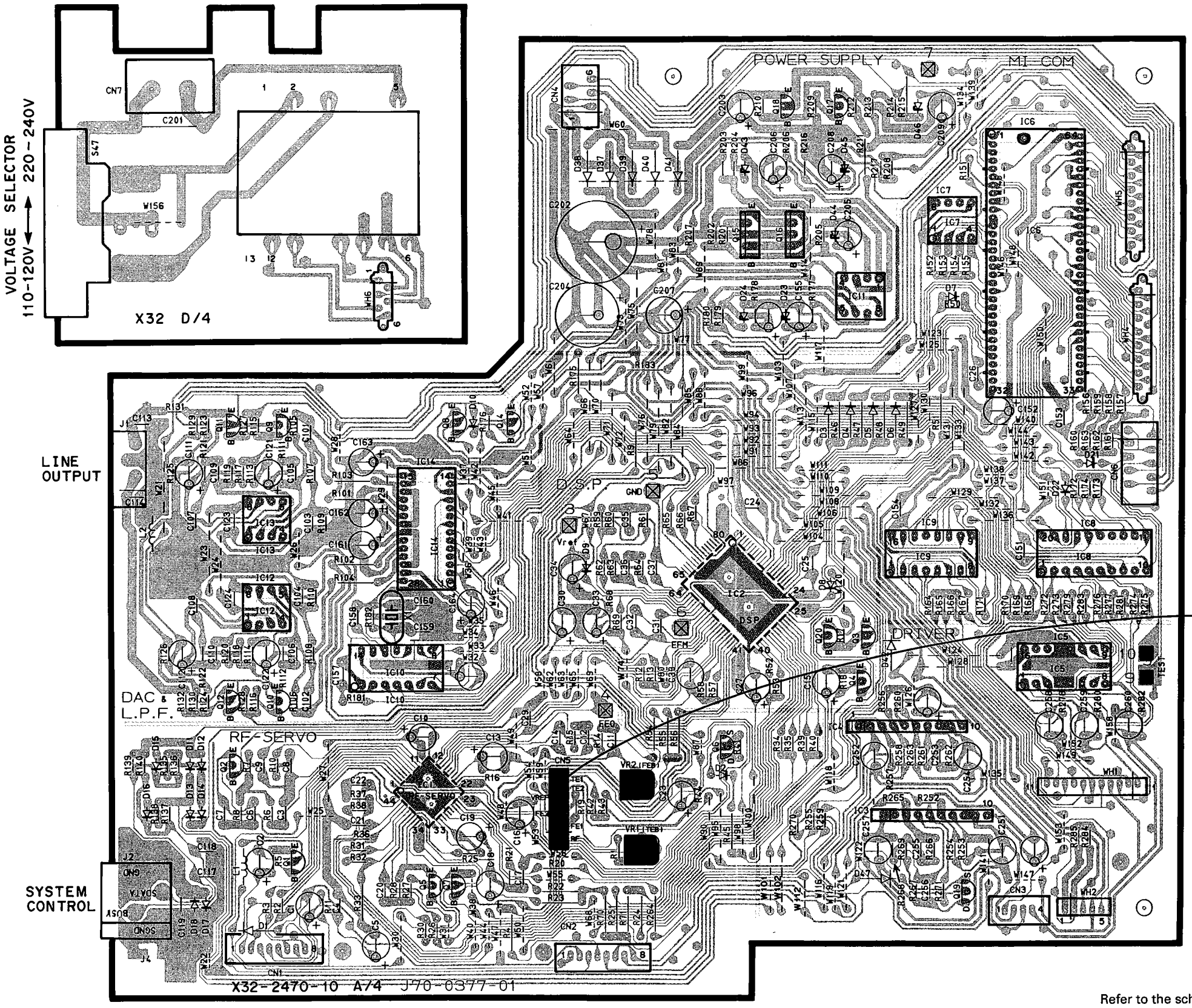
RF signal

- RF signal in test mode (PLAY).
- Perform the focusing offset adjustments so that each of the center cross points are focusing into one points above and below the center shall also displayed clearly (FE BALANCE, VR1).

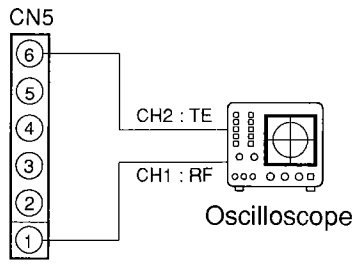
- Signal RF dans le mode d'essai (PLAY).
- Effectuer les adjustments de décalage de focalisation de sorte que chacun des points de connexion de symétrie soit focalisé en un point au-dessus et au-dessous du centre et soit aussi affiché clairement (FE BALANCE, VR1).

- RF-Signal im Test-modus (PLAY).
- Den Fokussier-Versatz so justieren, daß alle Mitten-Kreuzpunkte auf einen Punkt über und unter der Mitte fokussiert und deutlich angezeigt werden (FE BALANCE, VR1).

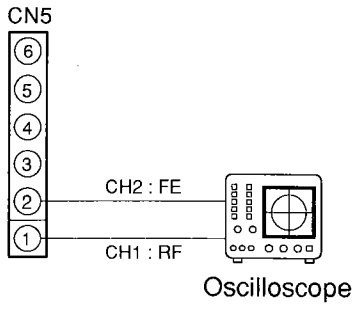
PC BOARD (COMPONENT SIDE VIEW)



(b) Tracking error : Symmetry between upper and lower patterns, or DC=Vref (2.1V) ±0.03V.



(c) Focus error : Optimum eye pattern.



Refer to the schematic diagram for the values of resistors and capacitors.

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

	Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
				DP-M993			
	601	1D	*	A01-3028-01	METALLIC CABINET		
	604	3D	*	A22-1617-01	SUB PANEL		
	605	2D	*	A29-0334-03	PANEL(6 DISC MAGAZINE)		
	606	3D	*	A29-0335-03	PANEL(TRAY)		
	607	3C	*	A60-0386-02	PANEL(FRONT)		
	611	2D	*	B03-2827-04	DRESSING PLATE		
	612	3D	*	B07-2239-03	ESCUTCHEON		
	-			B46-0092-23	WARRANTY CARD	K	
	-			B46-0094-03	WARRANTY CARD	Y	
	-			B46-0095-03	WARRANTY CARD	Y	
	-			B46-0096-33	WARRANTY CARD	X	
	-			B46-0121-23	WARRANTY CARD	P	
	-			B46-0197-00	QUESTIONAIRE CARD	K	
	-			B58-0513-04	CAUTION CARD (PRESET220-240)	Y	
	-		*	B60-1178-00	INSTRUCTION MANUAL(ENGLISH)		
	-		*	B60-1179-00	INSTRUCTION MANUAL(FRENCH)	P	
	-		*	B60-1180-00	INSTRUCTION MANUAL(S,C)	M	
⚠	621	1C		E03-0115-05	AC PLUG ADAPTOR	M	
	622	1D		E30-0505-05	AUDIO CORD		
⚠	623	1F		E30-2592-15	AC POWER CORD	M	
⚠	623	1F		E30-2605-05	AC POWER CORD	Y	
⚠	623	1F		E30-2650-05	AC POWER CORD	KP	
⚠	623	1F		E30-2717-05	AC POWER CORD	X	
	624	1D		E30-2733-05	CORD WITH PLUG(SYSTEM CONTROL)		
	630	2D		G09-0620-14	SPRING		
	-			H10-5113-02	POLYSTYRENE FOAMED FIXTURE(L)		
	-		*	H10-5114-22	POLYSTYRENE FOAMED FIXTURE(R)		
	-		*	H13-0127-04	CARTON BOARD	X	
	-			H20-0567-04	PROTECTION COVER	M	
	-			H25-0232-04	PROTECTION BAG (235X350X0.03)		
	-			H25-0319-04	PROTECTION BAG	KPYX	
	-		*	H50-0619-04	ITEM CARTON CASE		
	631	3F		J02-0366-15	FOOT(FRONT,REAR)		
	635	1C		J19-3394-13	HOLDER ASSY		
⚠	636	1F		J42-0083-05	POWER CORD BUSHING		
	-			J61-0307-05	WIRE BAND	MX	
	641	2C		K27-2095-04	KNOB(POWER)		
⚠	643	2F		L07-0293-05	POWER TRANSFORMER	KP	
⚠	643	2F		L07-0294-05	POWER TRANSFORMER	YM	
⚠	643	2F		L07-0295-05	POWER TRANSFORMER	X	
	A			N09-1561-05	TAPTITE SCREW (3X6,+-)		
	B			N89-3008-45	BINDING HEAD TAPTITE SCREW		
	C			N89-3012-45	BINDING HEAD TAPTITE SCREW		
	D			N89-3008-46	BINDING HEAD TAPTITE SCREW		
	E			N09-0301-05	TAPTITE SCREW (3X8,+BIND)		
				DP-M5550			
	601	1D	*	A01-3028-01	METALLIC CABINET		
	603	1C		A09-0145-08	BATTERY COVER		
	604	3D	*	A22-1617-01	SUB PANEL		
	605	2D	*	A29-0334-03	PANEL(6 DISC MAGAZINE)		

L:Scandinavia **K:**USA **P:**Canada
Y:PX(Far East, Hawaii) **T:**England **E:**Europe
Y:AAFES(Europe) **X:**Australia **M:**Other Areas

⚠ indicates safety critical components.

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
606	3D	*	A29-0335-03	PANEL(TRAY)		
607	3C	*	A60-0375-02	PANEL(FRONT)		
608	1D	*	A70-0927-05	REMOTE CONTROLLER ASSY		
611	2D	*	B03-2826-04	DRESSING PLATE		
612	3D	*	B07-2239-03	ESCUTCHEON		
615	3C		B43-0287-04	KENWOOD BADGE		
-			B46-0092-23	WARRANTY CARD	K	
-			B46-0094-03	WARRANTY CARD	Y	
-			B46-0095-03	WARRANTY CARD	Y	
-			B46-0121-23	WARRANTY CARD	P	
-			B46-0122-23	WARRANTY CARD	E	
-			B46-0197-00	QUESTIONAIRE CARD	K	
-			B58-0513-04	CAUTION CARD (PRESET220-240)	Y	
-		*	B60-1172-00	INSTRUCTION MANUAL(ENGLISH)		
-		*	B60-1173-00	INSTRUCTION MANUAL(FRENCH)	PE	
-		*	B60-1174-00	INSTRUCTION MANUAL(G,D,I)	E	
622	1D		E30-0505-05	AUDIO CORD		
⚠ 623	1F		E30-2592-15	AC POWER CORD	E	
⚠ 623	1F		E30-2605-05	AC POWER CORD	Y	
⚠ 623	1F		E30-2650-05	AC POWER CORD	KP	
624	1D		E30-2733-05	CORD WITH PLUG(SYSTEM CONTROL)		
630	2D		G09-0620-14	SPRING		
-			H10-5113-02	POLYSTYRENE FOAMED FIXTURE(L)		
-		*	H10-5114-22	POLYSTYRENE FOAMED FIXTURE(R)		
-			H25-0232-04	PROTECTION BAG (235X350X0.03)		
-			H25-0319-04	PROTECTION BAG		
-		*	H50-0618-04	ITEM CARTON CASE		
632	3F		J02-1013-05	FOOT(REAR)	KP	
633	3F		J02-1024-05	FOOT(FRONT)	KP	
634	3F		J02-1034-05	FOOT(FRONT,REAR)	YE	
635	1C		J19-3394-13	HOLDER ASSY		
⚠ 636	1F		J42-0083-05	POWER CORD BUSHING		
-			J61-0307-05	WIRE BAND	E	
641	2C		K27-2095-04	KNOB(POWER)		
⚠ 643	2F		L07-0293-05	POWER TRANSFORMER	KP	
⚠ 643	2F		L07-0294-05	POWER TRANSFORMER	Y	
⚠ 643	2F		L07-0295-05	POWER TRANSFORMER	E	
A			N09-1561-05	TAPTITE SCREW (3X6,+-)		
B			N89-3008-45	BINDING HEAD TAPTITE SCREW		
C			N89-3012-45	BINDING HEAD TAPTITE SCREW		
D			N89-3008-46	BINDING HEAD TAPTITE SCREW		
E			N09-0301-05	TAPTITE SCREW (3X8,+BIND)		
DP-M6650						
601	1D	*	A01-3028-01	METALLIC CABINET		
603	1C	*	A09-0145-08	BATTERY COVER		
604	3D	*	A22-1616-01	SUB PANEL		
605	2D	*	A29-0334-03	PANEL(6 DISC MAGAZINE)		
606	3D	*	A29-0335-03	PANEL(TRAY)		
607	3C	*	A60-0374-02	PANEL(FRONT)		
608	1D	*	A70-0927-05	REMOTE CONTROLLER ASSY		
611	2D	*	B03-2826-04	DRESSING PLATE		

L:Scandinavia **K:**USA **P:**Canada
Y:PX(Far East, Hawaii) **T:**England **E:**Europe
Y:AAFES(Europe) **X:**Australia **M:**Other Areas

⚠ indicates safety critical components.

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

	Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
	612	3D	*	B07-2239-03	ESCUTCHEON		
	615	3C		B43-0287-04	KENWOOD BADGE		
	-			B46-0092-23	WARRANTY CARD	K	
	-			B46-0094-03	WARRANTY CARD	Y	
	-			B46-0095-03	WARRANTY CARD	Y	
	-			B46-0096-33	WARRANTY CARD	X	
	-			B46-0121-23	WARRANTY CARD	P	
	-			B46-0122-23	WARRANTY CARD	E	
	-			B46-0143-13	WARRANTY CARD	T	
	-			B46-0197-00	QUESTIONAIRE CARD	K	
	-			B58-0513-04	CAUTION CARD (PRESET220-240)	Y	
	-		*	B58-0945-03	CAUTION CARD	T	
	-		*	B60-1172-00	INSTRUCTION MANUAL(ENGLISH)		
	-		*	B60-1173-00	INSTRUCTION MANUAL(FRENCH)	PE	
	-		*	B60-1174-00	INSTRUCTION MANUAL(G,D,I)	E	
	-		*	B60-1175-00	INSTRUCTION MANUAL(S,C)	M	
⚠	621	1C		E03-0115-05	AC PLUG ADAPTOR	M	
	622	1D		E30-0505-05	AUDIO CORD		
⚠	623	1F		E30-2592-15	AC POWER CORD	ME	
⚠	623	1F		E30-2605-05	AC POWER CORD	Y	
⚠	623	1F		E30-2650-05	AC POWER CORD	KP	
⚠	623	1F		E30-2717-05	AC POWER CORD	X	
⚠	623	1F		E30-2721-05	AC POWER CORD	T	
	624	1D		E30-2733-05	CORD WITH PLUG(SYSTEM CONTROL)		
	630	2D		G09-0620-14	SPRING		
	-			H10-5113-02	POLYSTYRENE FOAMED FIXTURE(L)	KPYMXE	
	-		*	H10-5114-22	POLYSTYRENE FOAMED FIXTURE(R)	KPYMXE	
	-			H10-5474-02	POLYSTYRENE FOAMED FIXTURE(L)	T	
	-			H10-5475-02	POLYSTYRENE FOAMED FIXTURE(R)	T	
	-			H13-0127-04	CARTON BOARD	X	
	-			H20-0567-04	PROTECTION COVER	M	
	-			H25-0232-04	PROTECTION BAG (235X350X0.03)	KPYMXE	
	-			H25-0319-04	PROTECTION BAG	KPYXE	
	-			H25-0651-04	PROTECTION BAG (0232 PRINTED)	T	
	-			H25-0657-04	PROTECTION BAG (0319 PRINTED)	T	
	-			H50-0612-04	ITEM CARTON CASE	KPYMXE	
	-			H50-0613-04	ITEM CARTON CASE	T	
	632	3F		J02-1024-05	FOOT(FRONT)	KP	
	633	3F		J02-1013-05	FOOT(REAR)	KP	
	634	3F		J02-1034-05	FOOT(FRONT,REAR)	YMXTE	
	635	1C		J19-3394-13	HOLDER ASSY		
	635	1C		J19-3397-12	HOLDER ASSY		
⚠	636	1F		J42-0083-05	POWER CORD BUSHING		
	-			J61-0307-05	WIRE BAND	MXTE	
	641	2C		K27-2095-04	KNOB(POWER)		
	642	2C		K29-3928-04	KNOB(PHONES LEVEL)		
⚠	643	2F		L07-0293-05	POWER TRANSFORMER	KP	
⚠	643	2F		L07-0294-05	POWER TRANSFORMER	YM	
⚠	643	2F		L07-0295-05	POWER TRANSFORMER	XTE	
	A			N09-1561-05	TAPTITE SCREW (3X6,+-)		
	B			N89-3008-45	BINDING HEAD TAPTITE SCREW		

L:Scandinavia **K:**USA **P:**Canada
Y:PX(Far East, Hawaii) **T:**England **E:**Europe
Y:AAFES(Europe) **X:**Australia **M:**Other Areas

⚠ indicates safety critical components.

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
C			N89-3012-45	BINDING HEAD TAPTITE SCREW		
D			N89-3008-46	BINDING HEAD TAPTITE SCREW		
E			N09-0301-05	TAPTITE SCREW (3X8,+BIND)		
MECHA ELECTRIC UNIT (X25-4280-10)						
S1 -3			S40-1140-05	PUSH SWITCH		
S4 -7			S40-1139-05	PUSH SWITCH		
PH1			T95-0123-05	OPTO ISOLATOR		
CD PLAYER UNIT (X32-2470-10)						
C1			CE04KW1V100M	ELECTRO 10UF 35WV		
C2			CE04KW1A101M	ELECTRO 100UF 10WV		
C3			CC45FSL1H020C	CERAMIC 2.0PF C		
C4			CK45FF1H103Z	CERAMIC 0.010UF Z		
C5			CE04KW1V100M	ELECTRO 10UF 35WV		
C6			CC45FSL1H270J	CERAMIC 27PF J		
C7			CC45FSL1H150J	CERAMIC 15PF J		
C8			CF92FV1H104J	MF 0.10UF J		
C9			CF92FV1H332J	MF 3300PF J		
C10			CE04KW1C330M	ELECTRO 33UF 16WV		
C11			CF92FV1H823J	MF 0.082UF J		
C12			CF92FV1H104J	MF 0.10UF J		
C13			CE04KW1E220M	ELECTRO 22UF 25WV		
C14			CK45FB1H471K	CERAMIC 470PF K		
C15			CE04KW1E470M	ELECTRO 47UF 25WV		
C16			CE04KW1A101M	ELECTRO 100UF 10WV		
C17			CF92FV1H392J	MF 3900PF J		
C18			CE04KW1A101M	ELECTRO 100UF 10WV		
C19			CE04KW1V100M	ELECTRO 10UF 35WV		
C20			CF92FV1H333J	MF 0.033UF J		
C21			CF92FV1H223J	MF 0.022UF J		
C22			CC45FSL1H680J	CERAMIC 68PF J		
C23			CE04KW1V100M	ELECTRO 10UF 35WV		
C24 ,25			CK45FF1H103Z	CERAMIC 0.010UF Z		
C26			CK45FB1H102K	CERAMIC 1000PF K		
C27			CE04KW1C330M	ELECTRO 33UF 16WV		
C29			CC45FSL1H101J	CERAMIC 100PF J		
C30			CE04KW1V100M	ELECTRO 10UF 35WV		
C31 ,32			CF92FV1H332J	MF 3300PF J		
C33			CE04KW1V100M	ELECTRO 10UF 35WV		
C34			CE04KW1A101M	ELECTRO 100UF 10WV		
C35			CC45FSL1H101J	CERAMIC 100PF J		
C36			CF92FV1H682J	MF 6800PF J		
C37			CK45FF1H103Z	CERAMIC 0.010UF Z		
C101,102			CC45FSL1H221J	CERAMIC 220PF J		
C103-106			CC45FSL1H680J	CERAMIC 68PF J		
C107,108			CF92FV1H822J	MF 8200PF J		
C109,110			CF92FV1H681J	MF 680PF J		
C111,112			CE04KW0J221M	ELECTRO 220UF 6.3WV	6	
C111,112			CE04KW1V100M	ELECTRO 10UF 35WV	9,5	
C113,114			CK45FB1H102K	CERAMIC 1000PF K		
C115,116			CK45FB1H102K	CERAMIC 1000PF K	6	
C117,118			CC45FSL1H221J	CERAMIC 220PF J		
C119			CK45FF1H103Z	CERAMIC 0.010UF Z		
C120			CK45FF1H103Z	CERAMIC 0.010UF Z	6	

L:Scandinavia **K:**USA **P:**Canada
Y:PX(Far East, Hawaii) **T:**England **E:**Europe
Y:AAFES(Europe) **X:**Australia **M:**Other Areas

9=DP-M993
5=DP-M5550
6=DP-M6650

⚠ indicates safety critical components.

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
C121,122			CE04KW1A470M	ELECTRO 47UF 10WV		
C123,124			CK45FF1H103Z	CERAMIC 0.010UF Z		
C151			CK45FF1H103Z	CERAMIC 0.010UF Z		
C152			CE04KW1A101M	ELECTRO 100UF 10WV		
C153,154			CK45FF1H103Z	CERAMIC 0.010UF Z		
C155			CE04KW1V100M	ELECTRO 10UF 35WV		
C156			CK45FF1H103Z	CERAMIC 0.010UF Z	6	
C157			CC45FSL1H151J	CERAMIC 150PF J		
C158			CC45FSL1H220J	CERAMIC 22PF J		
C159,160			CC45FSL1H330J	CERAMIC 33PF J		
C161-163			CE04KW1A101M	ELECTRO 100UF 10WV		
C164			CE04KW1E470M	ELECTRO 47UF 25WV		
C165			CK45FF1H103Z	CERAMIC 0.010UF Z	5,6	
C166			CK45FB1H102K	CERAMIC 1000PF K		
C167			CK45FF1H473Z	CERAMIC 0.047UF Z		
⚠ C201			C91-0971-05	FILM 0.01UF 250WV	9,5	
⚠ C201			C91-0971-05	FILM 0.01UF 250WV	6(YM)	
⚠ C201			C91-1439-05	FILM 0.01UF 250VAC	6(KPX)	
⚠ C201			C91-1439-05	FILM 0.01UF 250VAC	6(TE)	
C202			CE04EW1C332M	ELECTRO 3300UF 16WV		
C203			CE04KW1H470M	ELECTRO 47UF 50WV		
C204			CE04EW1C102M	ELECTRO 1000UF 16WV		
C205			CE04KW1H4R7M	ELECTRO 4.7UF 50WV		
C206			CE04KW1V100M	ELECTRO 10UF 35WV		
C207			CE04KW0J471M	ELECTRO 470UF 6.3WV		
C208			CE04KW1A470M	ELECTRO 47UF 10WV		
C209			CE04KW1H4R7M	ELECTRO 4.7UF 50WV		
C210			CK45FF1H103Z	CERAMIC 0.010UF Z		
C251,252			CE04HW1H010M	NP-ELEC 1.0UF 50WV		
C253			CF92FV1H104J	MF 0.10UF J		
C254			CE04HW1H010M	NP-ELEC 1.0UF 50WV		
C255,256			CK45FB1H102K	CERAMIC 1000PF K		
C257			CE04HW1H010M	NP-ELEC 1.0UF 50WV		
C258			CE04HW1H2R2M	NP-ELEC 2.2UF 50WV		
C259			CE04HW1H010M	NP-ELEC 1.0UF 50WV		
C260			CE04HW1A470M	NP-ELEC 47UF 10WV		
J1	1F		E63-0076-05	PHONO JACK(OUTPUT)		
J2	1E		E11-0188-05	MINIATURE PHONE JACK(S.CONTROL		
J3	2D		E11-0190-05	PHONE JACK(PHONES)	6	
L1			L40-1001-17	SMALL FIXED INDUCTOR(10UH,K)		
L2			L92-0017-05	FERRITE CORE		
L3			L92-0017-05	FERRITE CORE	6	
X1			L77-1164-05	CRYSTAL RESONATOR(16.9344MHz)		
VR1			R12-5652-05	TRIMMING POT 220K<TE BAL.>		
VR2			R12-1619-05	TRIMMING POT 4.7K<FE BAL.>		
VR3	2D	*	R10-1005-05	POTENTIOMETER(PHONES LEVEL)	6	
S1 -44	3D,3E		S40-1064-05	TACT SWITCH(1-20/0 etc.)		
S45	3E		S40-1064-05	TACT SWITCH(PGM MEMORY)	6	
S46	2C		S40-2370-05	TACT SWITCH(POWER)		
⚠ S47	2F		S31-2131-05	SLIDE SWITCH (POWER TYPE)	YM	
D1 -9			HSS104	DIODE		
D1 -9			1SS133	DIODE		
D10			HZS5.6N(B2)	ZENER DIODE		

L:Scandinavia **K:**USA **P:**Canada
Y:PX(Far East, Hawaii) **T:**England **E:**Europe
Y:AAFES(Europe) **X:**Australia **M:**Other Areas

9=DP-M993
5=DP-M5550
6=DP-M6650

⚠ indicates safety critical components.

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
D10			RD5.6ES(B2)	ZENER DIODE		
D11 -18			HSS104	DIODE		
D11 -18			1SS133	DIODE		
D19 ,20			HSS104	DIODE	6	
D19 ,20			1SS133	DIODE	6	
D21 ,22			HSS104	DIODE		
D21 ,22			1SS133	DIODE		
D23			HZS5.1S(B2)	ZENER DIODE		
D23			RD5.1JS(B2)	ZENER DIODE		
D24			HZS2.7N(B2)	ZENER DIODE		
D24			RD2.7ES(B2)	ZENER DIODE		
D25 -35			HSS104	DIODE		
D25 -35			1SS133	DIODE		
D36			HSS104	DIODE	6	
D36			1SS133	DIODE	6	
⚠ D37 -42			S5688B	DIODE		
⚠ D37 -42			1SR139-100	DIODE		
D43 -45			HZS5.1S(B2)	ZENER DIODE		
D43 -45			RD5.1JS(B2)	ZENER DIODE		
D46			HZS6.8N(B2)	ZENER DIODE		
D46			RD6.8ES(B2)	ZENER DIODE		
D47 -51			HSS104	DIODE		
D47 -51			1SS133	DIODE		
ED1	3E		FIP9CXM7	INDICATOR TUBE		
IC1			TA8191F	IC(RF AMP , SERVO)		
IC2			MC159236AFU	IC(CD 1CHIP PROCESSOR)		
IC3 ,4			LA6510	IC(DUAL POWER OP AMP)		
IC3 ,4			TA8410AK	IC(POWER OP AMP)		
IC5			LA6520	IC(OP AMP X3)		
IC6			UPD75217CW-136	IC(MICROPROCESSOR)		
IC7			NM93C66EN	IC(EEPROM)	6	
IC8			CXD1067P	IC(SERIAL-PARALLEL CONVERTER)		
IC9			TC74HC165AP	IC(8BIT SHIFT REGISTER)		
IC10			TC74HCU04AP	IC(CMOS INVERTER)		
IC11			NJM4558D	IC(OP AMP X2)		
IC12,13			NJM4580D	IC(OP AMP X2)		
IC14			SM5871AN	IC(16BIT D/A CONVERTER)		
Q1			2SA1534A(R,S)	TRANSISTOR		
Q2			2SC2458(Y,GR)	TRANSISTOR		
Q2			2SC3311A(Q,R)	TRANSISTOR		
Q3			DTA124ES	DIGITAL TRANSISTOR		
Q3			UN4112	DIGITAL TRANSISTOR		
Q4			2SC2878(B)	TRANSISTOR		
Q5			2SC2458(Y,GR)	TRANSISTOR		
Q5			2SC3311A(Q,R)	TRANSISTOR		
Q6			2SK246(Y,GR)	FET		
Q7			2SA1048(Y,GR)	TRANSISTOR		
Q7			2SA1309A(Q,R)	TRANSISTOR		
Q8			DTC124ES	DIGITAL TRANSISTOR		
Q8			UN4212	DIGITAL TRANSISTOR		
Q9 -12			2SC2878(B)	TRANSISTOR		
Q14			DTC124ES	DIGITAL TRANSISTOR		
Q14			UN4212	DIGITAL TRANSISTOR		
⚠ Q15 ,16			2SD1944	TRANSISTOR		
⚠ Q17			2SA1048(Y,GR)	TRANSISTOR		

L:Scandinavia **K:**USA **P:**Canada
Y:PX(Far East, Hawaii) **T:**England **E:**Europe
Y:AAFES(Europe) **X:**Australia **M:**Other Areas

9=DP-M993
5=DP-M5550
6=DP-M6650

⚠ indicates safety critical components.

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
⚠ Q17			2SA1309A(Q,R)	TRANSISTOR		
⚠ Q18			2SC2003(L,K)	TRANSISTOR		
Q19			2SK246(Y,GR)	FET		
Q20			DTC124ES	DIGITAL TRANSISTOR		
Q20			UN4212	DIGITAL TRANSISTOR		
A1	3D		W02-1046-05	ELECTRIC CIRCUIT MODULE	5,6	
MECHANISM UNIT (X92-1569-11)						
1	2B		A10-2802-11	CHASSIS		
2	1B		A11-0699-02	SUB CHASSIS		
3	1B		A11-0700-02	SUB CHASSIS		
4	1A		A11-0701-03	SUB CHASSIS		
11	1B		D10-2325-04	ROD(PICKUP)		
12	3B		D10-2495-04	ROD		
13	2B		D10-2496-03	SLIDER		
14	2B		D10-2497-03	SLIDER		
15	2B	*	D10-2498-13	SLIDER		
16	1A		D10-2499-04	SLIDER ASSY		
20	3A		D10-3101-03	SLIDER ASSY		
21	3A		D10-3104-04	ROD		
22	3A		D10-3105-03	SLIDER		
23	3A		D10-3106-03	SLIDER		
24	1A		D10-3107-03	ARM		
25	1A		D10-3108-03	ARM		
26	2A		D10-3109-03	SLIDER		
27	1A		D10-3110-04	ARM		
28	1B		D13-0879-08	GRAR		
29	1B		D13-0880-18	GEAR		
30	1B		D13-0881-08	GEAR		
31	2A,3B		D13-0897-04	GEAR		
32	2A,2B		D13-0898-24	GEAR		
33	2A,2B		D13-0899-24	GEAR		
34	2A,2B		D13-0900-14	GEAR		
35	3A,3B		D13-0901-04	WORM		
36	3B		D13-0902-04	WORM		
37	2B		D13-0904-14	GEAR		
38	2B,3A		D21-1633-05	SHAFT		
43	2B		E23-0343-04	TERMINAL		
44	1B		E35-0419-05	WIRING HARNESS		
45	1B		E31-7885-05	WIRING HARNESS		
50	2B		G01-3332-04	EXTENSION SPRING		
51	3A		G01-3333-04	EXTENSION SPRING		
52	1A		G01-3334-04	EXTENSION SPRING		
53	1A		G01-3335-04	EXTENSION SPRING		
54	3B		G01-3336-04	COMPRESSION SPRING		
55	3A		G11-2055-04	CUSHION		
60	1B		J02-1057-15	INSULATOR		
61	1B		J11-0168-03	CLAMPER		
62	3A		J19-3344-03	HOLDER ASSY		
63	3A		J19-3345-02	HOLDER		
64	2A		J19-3347-02	HOLDER		
65	2A		J19-3348-02	HOLDER		
66	2B		J90-0666-04	GUIDE		

L:Scandinavia **K:**USA **P:**Canada
Y:PX(Far East, Hawaii) **T:**England **E:**Europe
Y:AAFES(Europe) **X:**Australia **M:**Other Areas

9=DP-M993
5=DP-M5550
6=DP-M6650

⚠ indicates safety critical components.

PARTS LIST

* New Parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名／規格	Destination 仕向	Remarks 備考
67	2A		J99-0094-02	TRAY		
A			N82-2608-46	BINDIG HEAD TAPTITE SCREW		
B			N09-2769-05	MACHINE SCREW		
C			N09-2809-05	SET SCREW		
D			N09-2810-05	TAPTITE SCREW		
E			N09-2817-05	TAPTITE SCREW (2.6X10,12P)		
F			N39-2025-46	PAN HEAD MACHIN SCREW		
G			N86-2606-46	BINDING HEAD TAPTITE SCREW		
H			N89-2008-46	BINDING HEAD TAPTITE SCREW		
J			N89-2610-45	BINDING HEAD TAPTITE SCREW		
72	1B		S33-1022-05	LEVER SWITCH(LIMIT)		
75	1B		T50-1055-04	YOKE		
76	1B		T99-0503-15	MAGNET		
DM			A11-0679-18	SUB CHASSIS ASSY(DISC MOTOR)		
FM	1B		T42-0566-05	DC MOTOR(FEED MOTOR)		
LM	3B		T42-0567-05	DC MOTOR(LOADING MOTOR)		
PU	1B		T25-0011-05	OPTICAL PICKUP HEAD (KSS-210A)		
VM	3A		T42-0567-05	DC MOTOR(VERTICAL MOTOR)		
P1LM	3B		T42-0567-05	DC MOTOR(P1 LOADING MOTOR)		

L:Scandinavia **K:**USA **P:**Canada
Y:PX(Far East, Hawaii) **T:**England **E:**Europe
Y:AAFES(Europe) **X:**Australia **M:**Other Areas

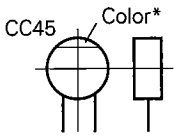
⚠ indicates safety critical components.

PARTS LIST

CAPACITORS

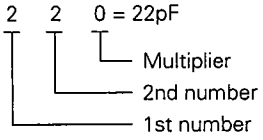
CC 45 TH 1H 220 J
1 2 3 4 5 6

1 = Type ... ceramic, electrolytic, etc.
2 = Shape ... round, square, ect.
3 = Temp. coefficient
4 = Voltage rating
5 = Value
6 = Tolerance



• Capacitor value

010 = 1pF
100 = 10pF
101 = 100pF
102 = 1000pF = 0.001μF
103 = 0.01μF



• Temperature coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	–80	–150	–220	–330	–470	–750

2nd Word	G	H	J	K	L
ppm/°C	±30	±60	±120	±250	±500

Example : CC45TH = –470 ± 60ppm/°C

• Tolerance (More than 10pF)

Code	C	D	G	J	K	M	X	Z	P	No code
(%)	±0.25	±0.5	±2	±5	±10	±20	+40	+80	+100	More than 10μF – 10 ~ +50
							–20	–20	–0	Less than 4.7μF –10 ~ +75

(Less than 10pF)

Code	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

• Voltage rating

2nd word / 1st word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	–
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	–
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	–

• Chip capacitors

(EX) C C 7 3 F S L 1 H 0 0 0 J
1 2 3 4 5 6 7
(Chip) (CH, RH, UJ, SL)

(EX) C K 7 3 F F 1 H 0 0 0 Z
1 2 3 4 5 6 7
(Chip) (B, F)

Refer to the table above.
1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

Dimension (Chip capacitors)

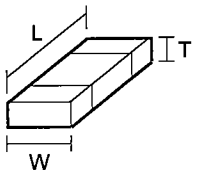
Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
A	4.5 ± 0.5	3.2 ± 0.4	Less than 2.0
B	4.5 ± 0.5	2.0 ± 0.3	Less than 2.0
C	4.5 ± 0.5	1.25 ± 0.2	Less than 1.25
D	3.2 ± 0.4	2.5 ± 0.3	Less than 1.5
E	3.2 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25
G	1.6 ± 0.2	0.8 ± 0.2	Less than 1.0

RESISTORS

• Chip resistor (Carbon)

(EX) R K 7 3 E B 2 B 0 0 0 J
1 2 3 4 5 6 7
(Chip) (B,F)

Dimension



• Carbon resistor (Normal type)

(EX) R D 1 4 B B 2 C 0 0 0 J
1 2 3 4 5 6 7

1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Rating wattage
6 = Value
7 = Tolerance

Dimension (Chip resistor)

Dimension code	L	W	T
E	3.2 ± 0.2	1.6 ± 0.2	1.0
F	2.0 ± 0.3	1.25 ± 0.2	1.0
G	1.6±0.2	0.8±0.2	0.5±0.1

Rating wattage

Code	Wattage	Code	Wattage	Code	Wattage
1J	1/16W	2C	1/6W	3A	1W
2A	1/10W	2E	1/4W	3D	2W
2B	1/8W	2H	1/2W		

DP-M993/M5550/M6650

SPECIFICATIONS

[Format]

System ..... Compact disc digital audio system
Laser ..... Semiconductor laser
Number of channels ..... 2 channels
Playing rotation ..... 200rpm ~ 500rpm (CLV)

[D/A converters]

D/A conversion ..... 1 Bit
Oversampling 8fs

[Audio]

Frequency response ..... 8Hz ~ 20kHz ±1.0dB
Signal to noise ratio ..... More than 96dB
Dynamic range ..... More than 94dB
Total harmonic distortion ..... Less than 0.005% (at 1kHz)
Channel separation ..... More than 90dB (at 1kHz)
Wow & Flutter ..... Unmeasurable limit
Output level / impedance
  Fixed ..... 2.0V / 3.3kΩ
  Headphone output (max.) ..... 20mW / 16Ω (DP-M6650 only)

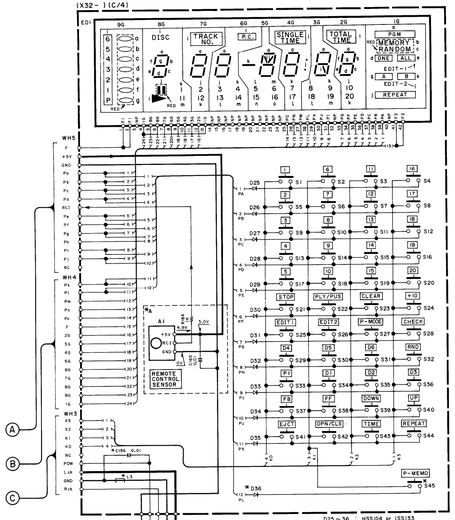
[General]

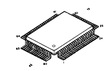
Power consumption 15W
Dimensions
  DP-M993 ..... W : 440mm (17-5/16") x H : 119mm (4-11/16") x D : 360mm (14-3/16")
  DP-M5550 / DP-M6650 ..... W : 440mm (17-5/16") x H : 128mm (5-1/16") x D : 368mm (14-1/2")
Weight (Net)
  DP-M993 ..... 5.1kg (11.2lb)
  DP-M5550 / DP-M6650 ..... 5.4kg (11.9lb)

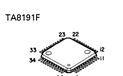
Note:
KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

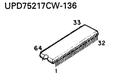
Note :
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

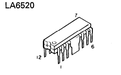
KENWOOD CORPORATION
Alive Mitake, 2-5, 1-chome Shibuya, Shibuya-ku, Tokyo 150, Japan
KENWOOD U.S.A. CORPORATION
CONSUMER ELECTRONICS GROUP
P.O. BOX 22745, 2201 East Dominguez St., Long Beach, CA 90810, U.S.A.
KENWOOD ELECTRONICS CANADA INC.
6070 Kestrel Road, Mississauga, Ontario, Canada L5T 1S8
KENWOOD ELECTRONICS LATIN AMERICA S.A.
P.O. BOX 55-2791, Piso 6 Plaza Chase, Cl. 47 y Aquilino de la Guardia, Panama, Republic de Panama
TRIO-KENWOOD U.K. LIMITED
KENWOOD House, Dwight Road, Watford, Herts., WD1 8EB United Kingdom
KENWOOD ELECTRONICS BENELUX N.V.
Mechelsesteenweg 418 B-1930 Zaventem, Belgium
KENWOOD ELECTRONICS DEUTSCHLAND GMBH
Rembrücker-Str. 15, 6056 Heusenstamm, Germany
TRIO-KENWOOD FRANCE S.A.
13 Boulevard Ney, 75018 Paris, France
KENWOOD LINEAR S.p.A.
20125, Milano-via Arbe, 50, Italy
KENWOOD ESPAÑA S.A.
Bolivia, 239-08020 Barcelona, Spain
KENWOOD ELECTRONICS AUSTRALIA PTY. LTD. (A.C.N. 001 499 074)
P.O. BOX 504, 8 Figtreel Drive, Australia Centre, Homebush, N.S.W. 2140, Australia
KENWOOD & LEE ELECTRONICS, LTD.
Unit 3712-3724, Level 37 Tower 1, Metroplaza, 223 Hing Fong Road, Kwai Fong N.T. Hong Kong
KENWOOD ELECTRONICS SINGAPORE PTE LTD.
No. 1 Genting Lane #07-00, Singapore, 1334











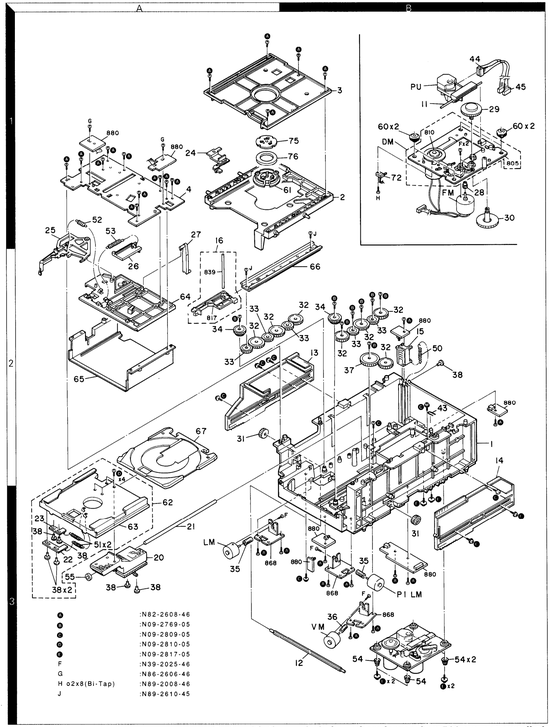
MODEL NAME	DESTINATION/ CODE/TYPE	PWB No.	UNIT No.	A	B	D45	D36	D35	L5
DP-M993	U.S.A. CANADA AUSTRALIA GENERAL MARKET	A	X32-2470-11	NO	NO	NO	NO	NO	NO
		B	X32-2470-22	NO	NO	NO	NO	NO	NO
DP-M5550	U.S.A. CANADA EUROPE	A	X32-2470-12	YES	NO	NO	NO	NO	NO
		B	X32-2470-23	YES	NO	NO	NO	NO	NO
DP-M6650	U.S.A. CANADA EXCLUSIVE EUROPE	A	X32-2470-13	YES	YES	YES	YES	YES	YES
	GENERAL MARKET PX	B	X32-2470-24	YES	YES	YES	YES	YES	YES

- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.
- Les tensions c.c. doivent être measurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.
- Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen instrumenten oder Geräten u.U. geringfügig.

CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

DP-M993/M5550/M6650
KENWOOD

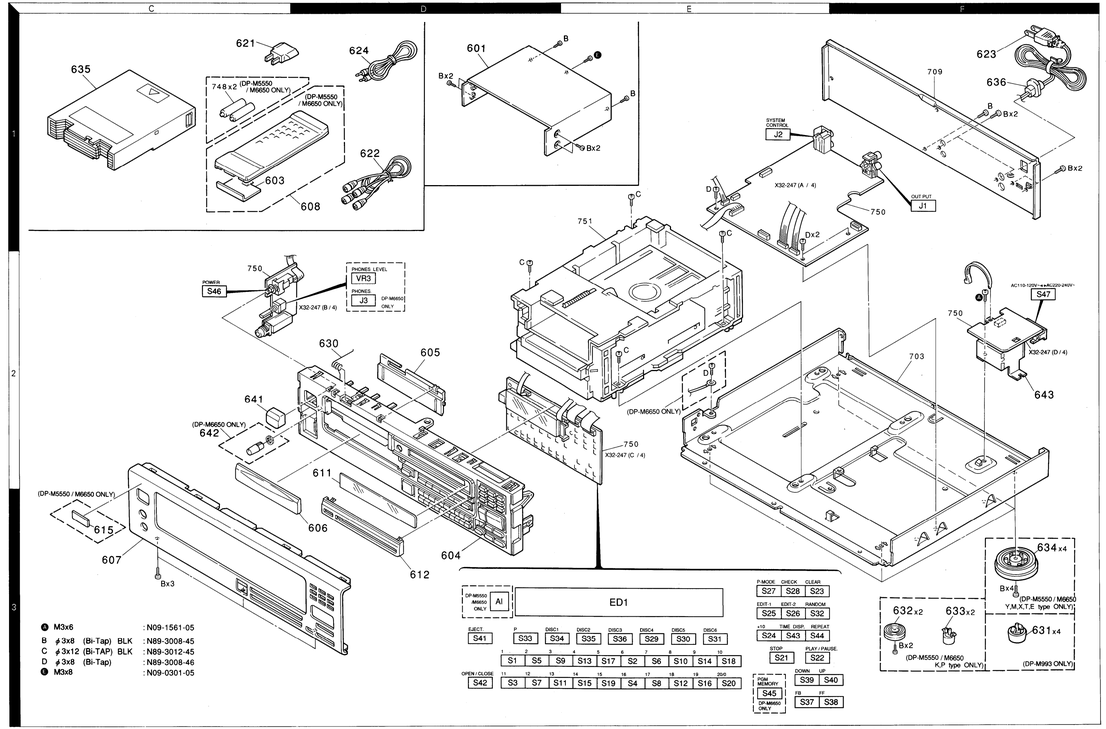
EXPLODED VIEW (MECHANISM)



●	:N82-2608-46
●	:N09-2769-05
●	:N09-2809-05
●	:N09-2810-05
●	:N09-2817-05
F	:N39-2025-46
G	:N86-2606-46
H	ø2x8(Bi-Tap) :N89-2008-46
J	:N89-2610-45

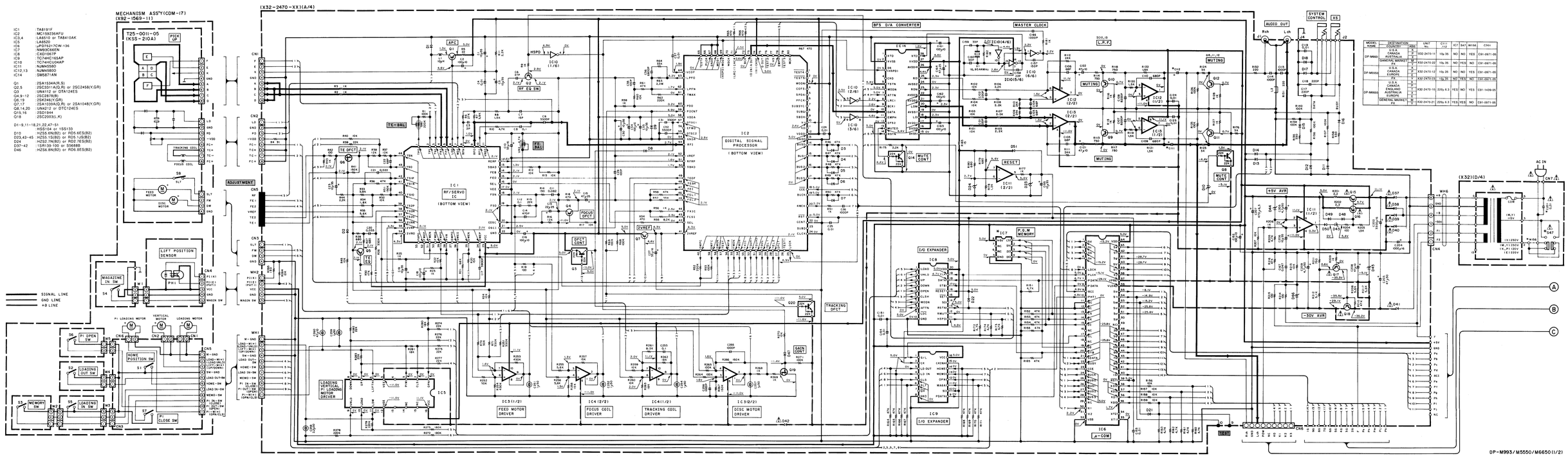
Parts with the exploded numbers larger than 700 are not supplied.

EXPLODED VIEW (UNIT)



●	M3x6 :N09-1561-05
B	ø3x8 (Bi-Tap) BLK :N89-3008-45
C	ø3x12 (Bi-Tap) BLK :N89-3012-45
D	ø3x8 (Bi-Tap) :N89-3008-46
●	M3x6 :N09-0301-05

Parts with the exploded numbers larger than 700 are not supplied.



MODEL NAME	DESTINATION/ COUNTRY	KEY No.	UNIT No.	C111 ~115	IC7	S47	W156	C701
DP-M993	U.S.A./ CANADA W/ATTENUATOR	K	X32-2470-11	10p 35	NO	YES	NO	C91-0971-05
	GENERAL MARKET	K	X32-2470-22	10p 35	NO	YES	NO	C91-0971-05
DP-M5550	U.S.A./ CANADA	K	X32-2470-12	10p 35	NO	NO	YES	C91-0971-05
	GENERAL MARKET	K	X32-2470-23	10p 35	NO	YES	NO	C91-0971-05
DP-M6650	U.S.A./ CANADA ENGLAND AUSTRALIA EUROPE	K	X32-2470-16	220p 6.3	YES	NO	YES	C91-1439-05
	GENERAL MARKET PA	K	X32-2470-21	220p 6.3	YES	YES	NO	C91-0971-05

2SA1534A 2SC2003 2SC2878
DTA124ES 2SA1048 DTC124ES 2SC2458 UN4112
2SD1944
UN4212 2SA1309A 2SC3311A
NJM4558D NM93C66EN
TC74HCU04AP
TC74HC165AP
CXD1067P
SM5871AN
NJM4580D
LA6510 TA8410AK
2SK246

- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.
- Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.
- Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen instrumenten oder Geräten u.U. geringfügig.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

Y22-3310-10

DP-M993/M5550/M6650

KENWOOD