

COMPACT DISC PLAYER

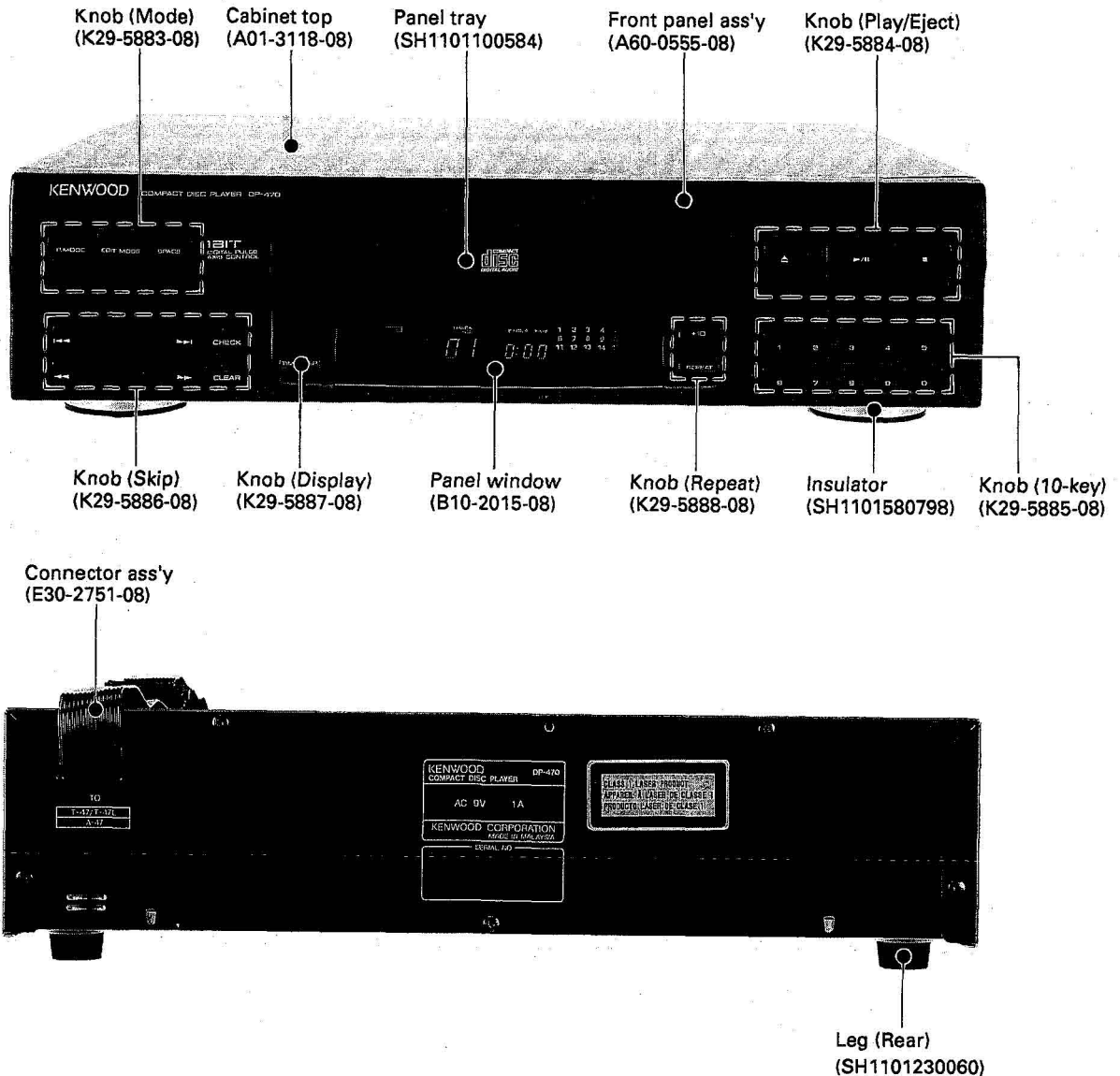
# DP-470

## SERVICE MANUAL

(System K-66, MIDI M-47)

# KENWOOD

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B51-4794-00 (O) 2568



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 I, Subchapter J.

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

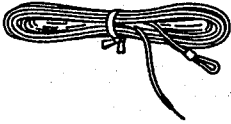
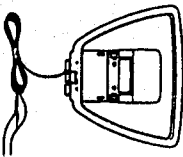

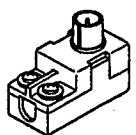

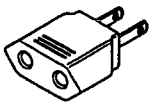
# DP-470

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### CONTENTS

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### ACCESSORIES

<ul style="list-style-type: none"> <li>• FM indoor antenna ..... 1 (SH1105020014)</li> </ul> 	<ul style="list-style-type: none"> <li>• Loop antenna ..... 1 (SH1105020020)</li> </ul> 	<ul style="list-style-type: none"> <li>• Remote control unit ..... 1 (W03-4603-08)</li> </ul> 
<ul style="list-style-type: none"> <li>• Antenna adaptor (75<math>\Omega</math>/300<math>\Omega</math>) ..... 1 (SH1105240051)</li> </ul> 	<ul style="list-style-type: none"> <li>• Batteries (R6/AA) ..... 2 (-)</li> </ul> 	<ul style="list-style-type: none"> <li>• AC plug adaptor (M type only) ..... 1 (SH1305240053)</li> </ul> 

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

All accessories are packed with X-47.

#### M, X type

System name	Tuner	Amp	Cassette deck	CD player	Speaker
K-66	T-47	A-47	X-47	DP-470	LS-47

#### T, E type

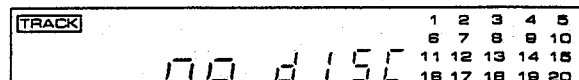
System name	Tuner	Amp	Cassette deck	CD player	Speaker
MIDI M-47	T-47L	A-47	X-47	DP-470	LS-47

Option	Graphic equalizer
	GE-470

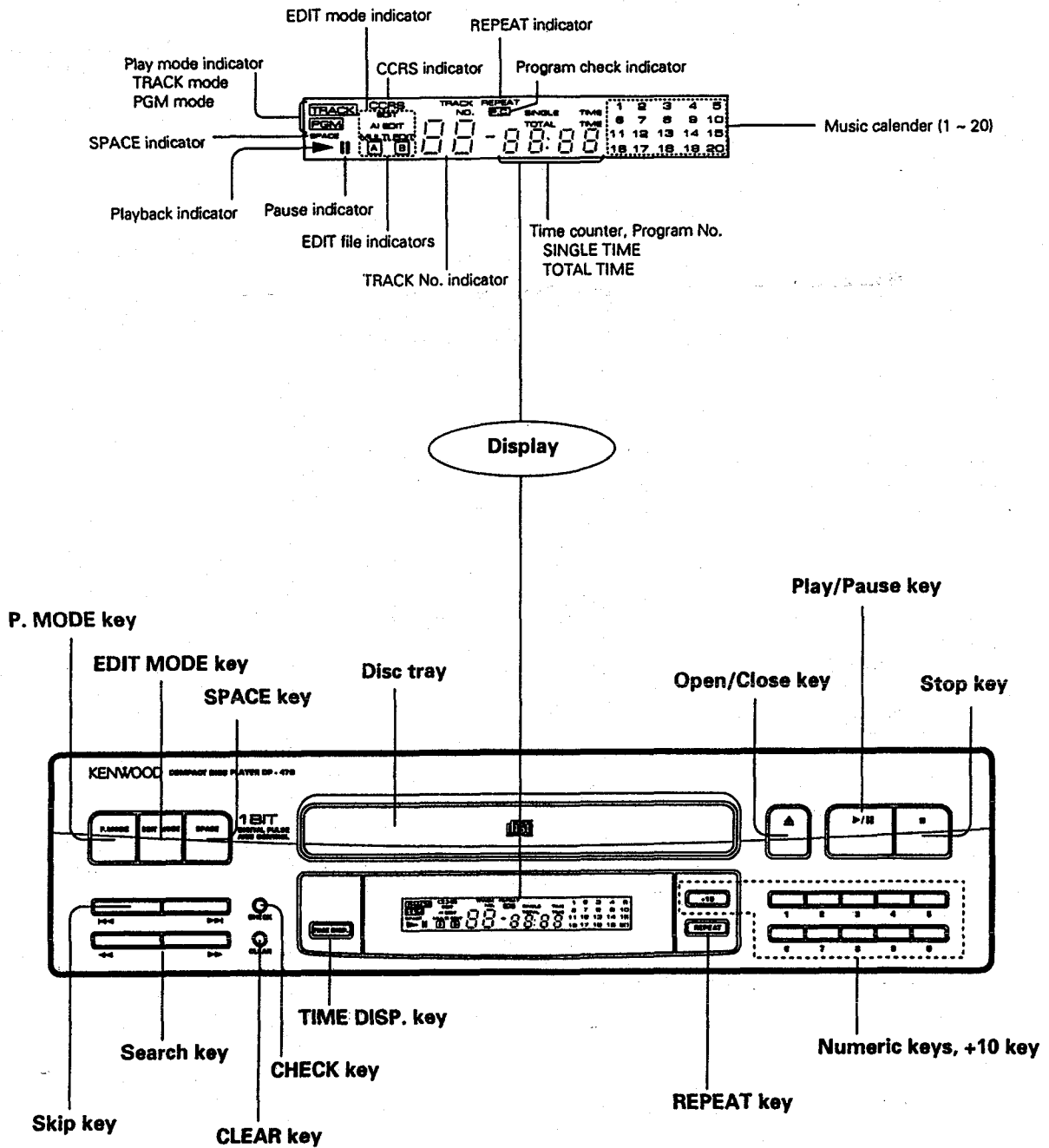
#### Note related to transportation and movement

Before transporting or moving the CD PLAYER, carry out the following operations.

1. Turn the power ON but do not load a disc.
2. Wait a few seconds and verify that the display shown appears.
3. Turn the power OFF.

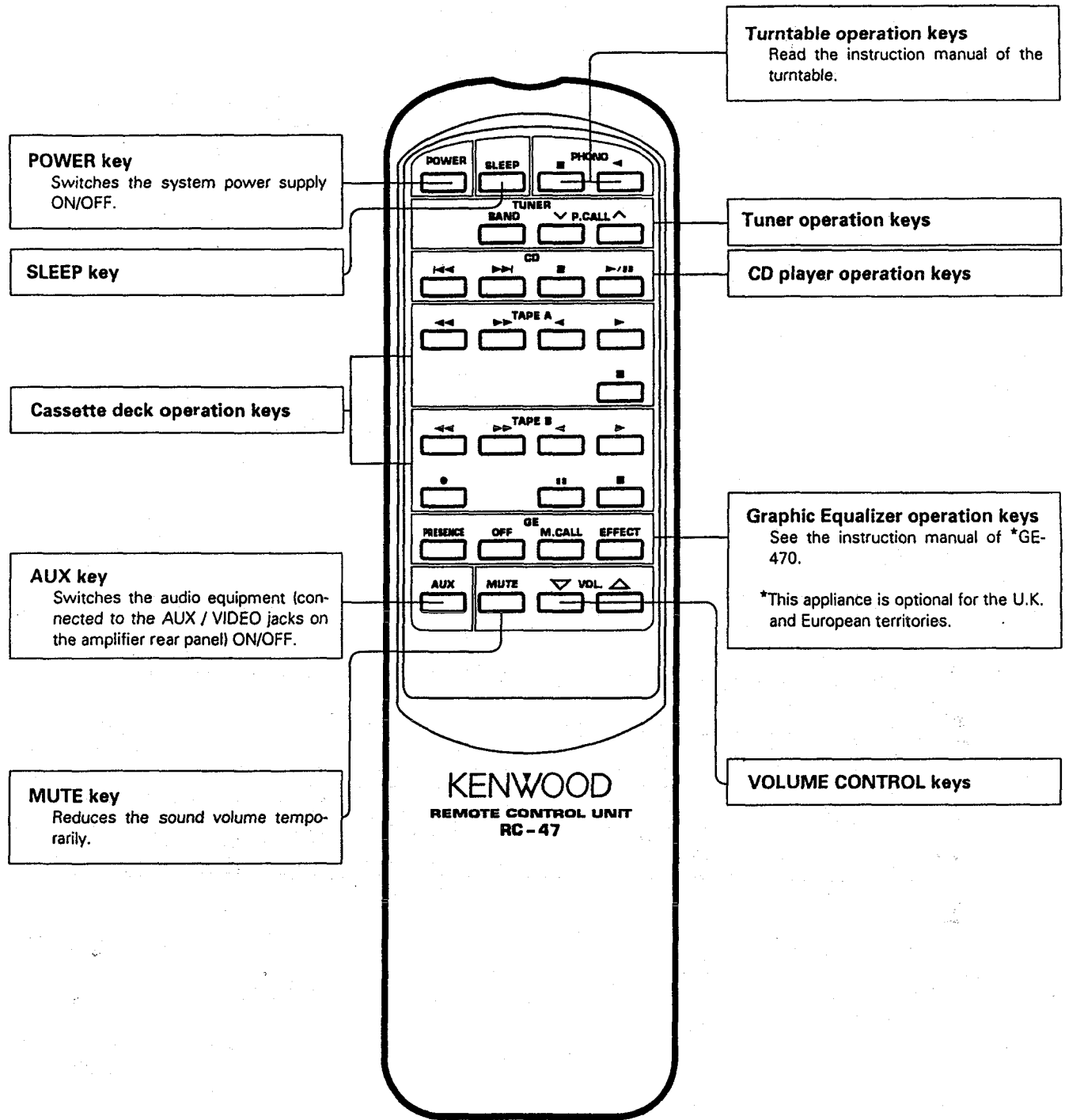


## CONTROL



# DP-470

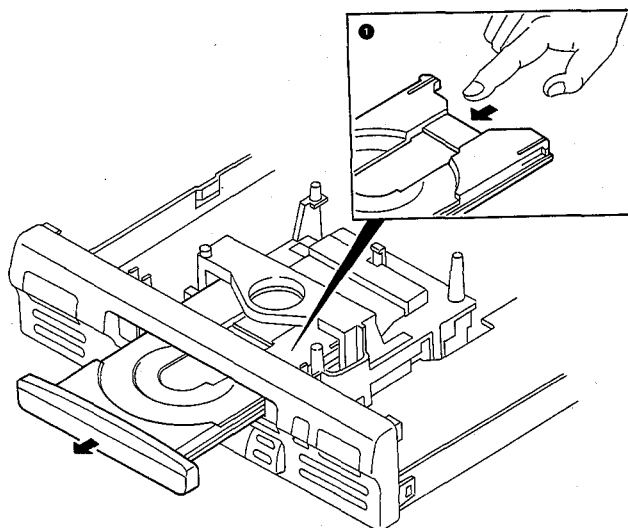
## REMOTE CONTROL



## DISASSEMBLY FOR REPAIR

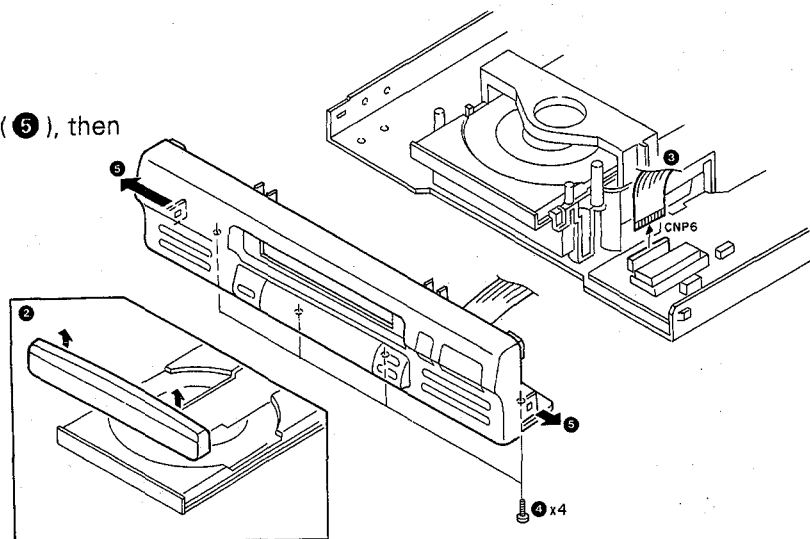
### 1. When not coming out the tray under normal operation

1. Press the tray slowly by hand (1).



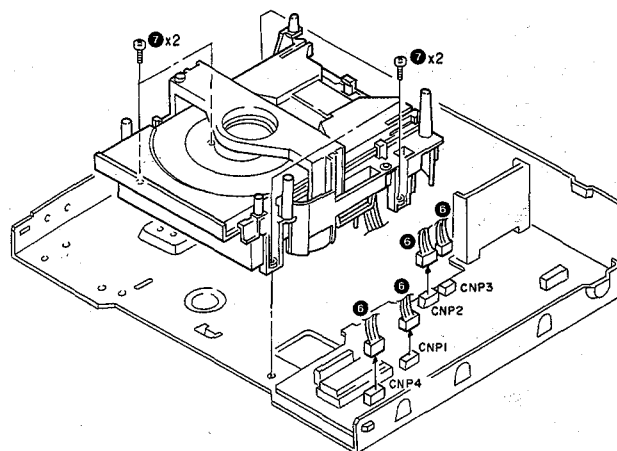
### 2. Removing the front panel

1. Remove the tray panel (2).
2. Disconnect the flexible cord (3).
3. Remove the 4 screws (4).
4. Remove the panel-catches from chassis (5), then remove the front panel.



### 3. Removing the mechanism ass'y and that tray

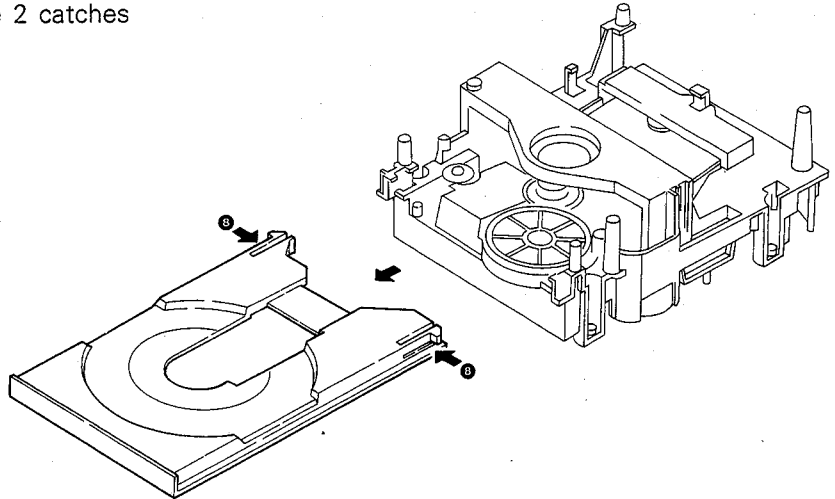
1. Disconnect the 4 connectors (6).
2. Remove the 4 screws (7), then remove the mechanism ass'y.



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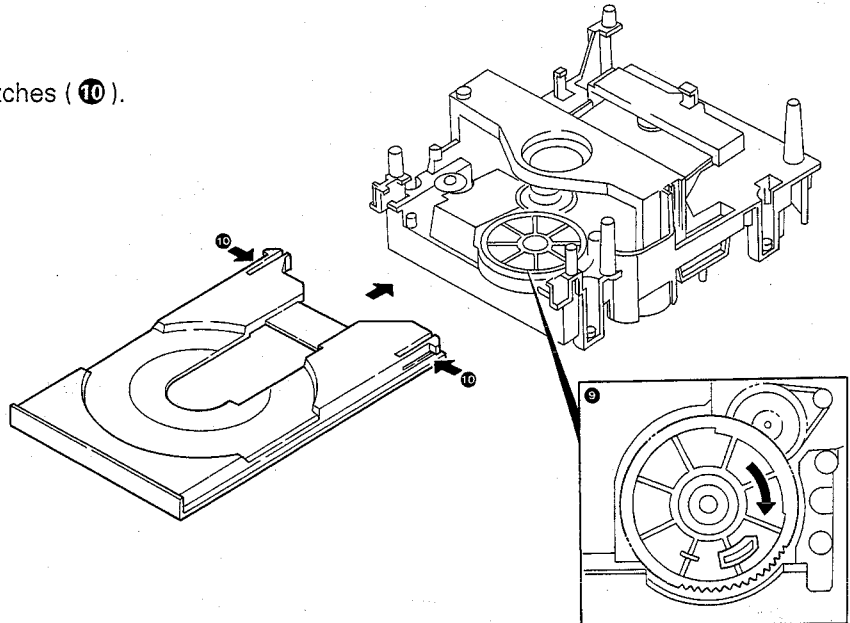
## DISASSEMBLY FOR REPAIR

- Slide the tray front-wards, remove the 2 catches (8), then remove the tray.



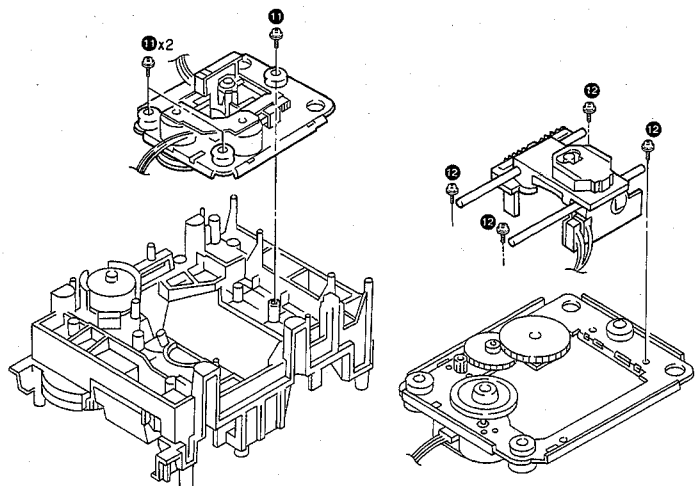
### 4. How to mount the tray

- Turn the gear fully clockwise (9).
- Insert the tray while pressing the 2 catches (10).

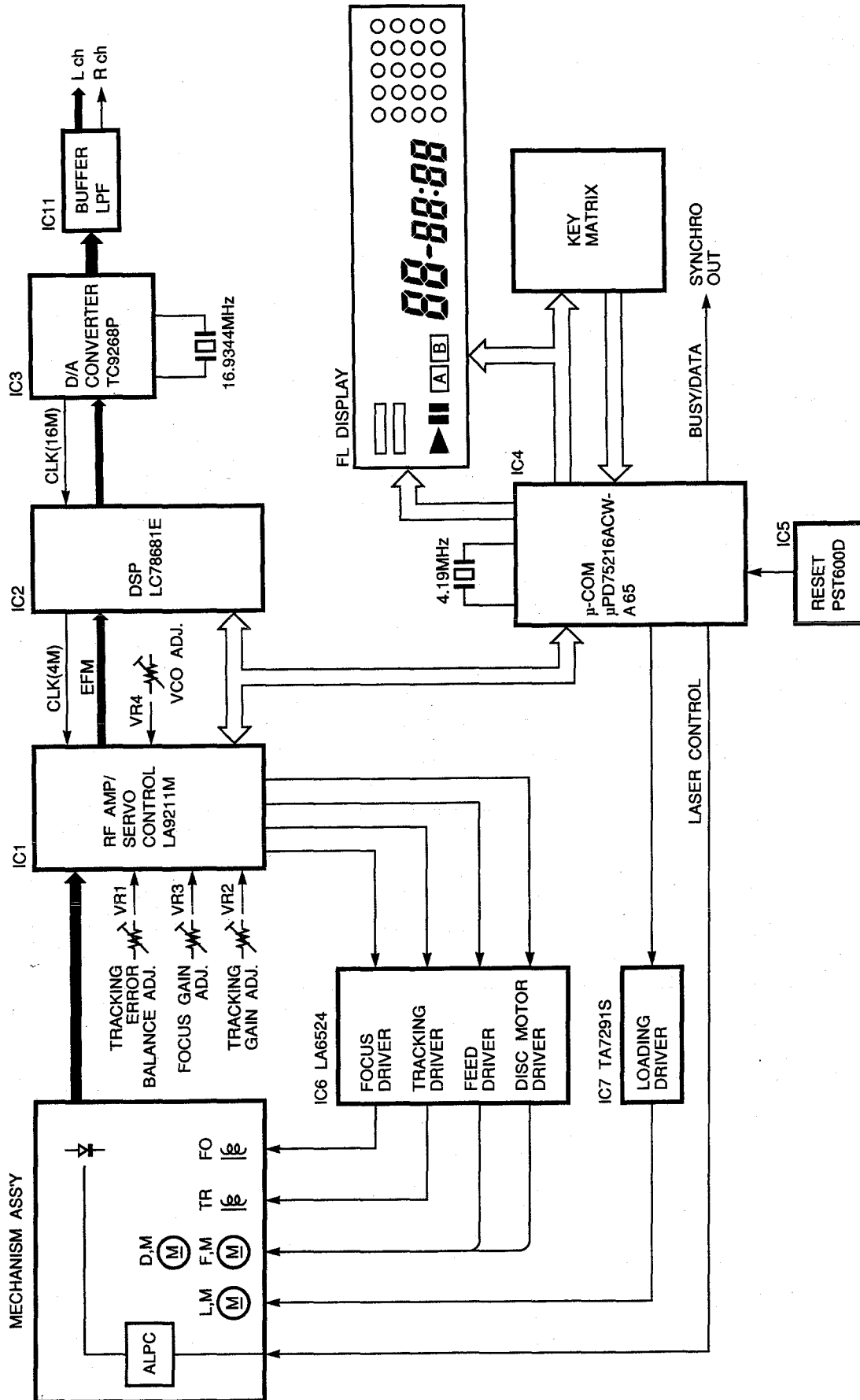


### 5. Removing the pickup

- Remove the 3 screws (11), then remove the pickup mechanism ass'y.
- Remove the 4 screws (12), then remove the pickup.



## BLOCK DIAGRAM

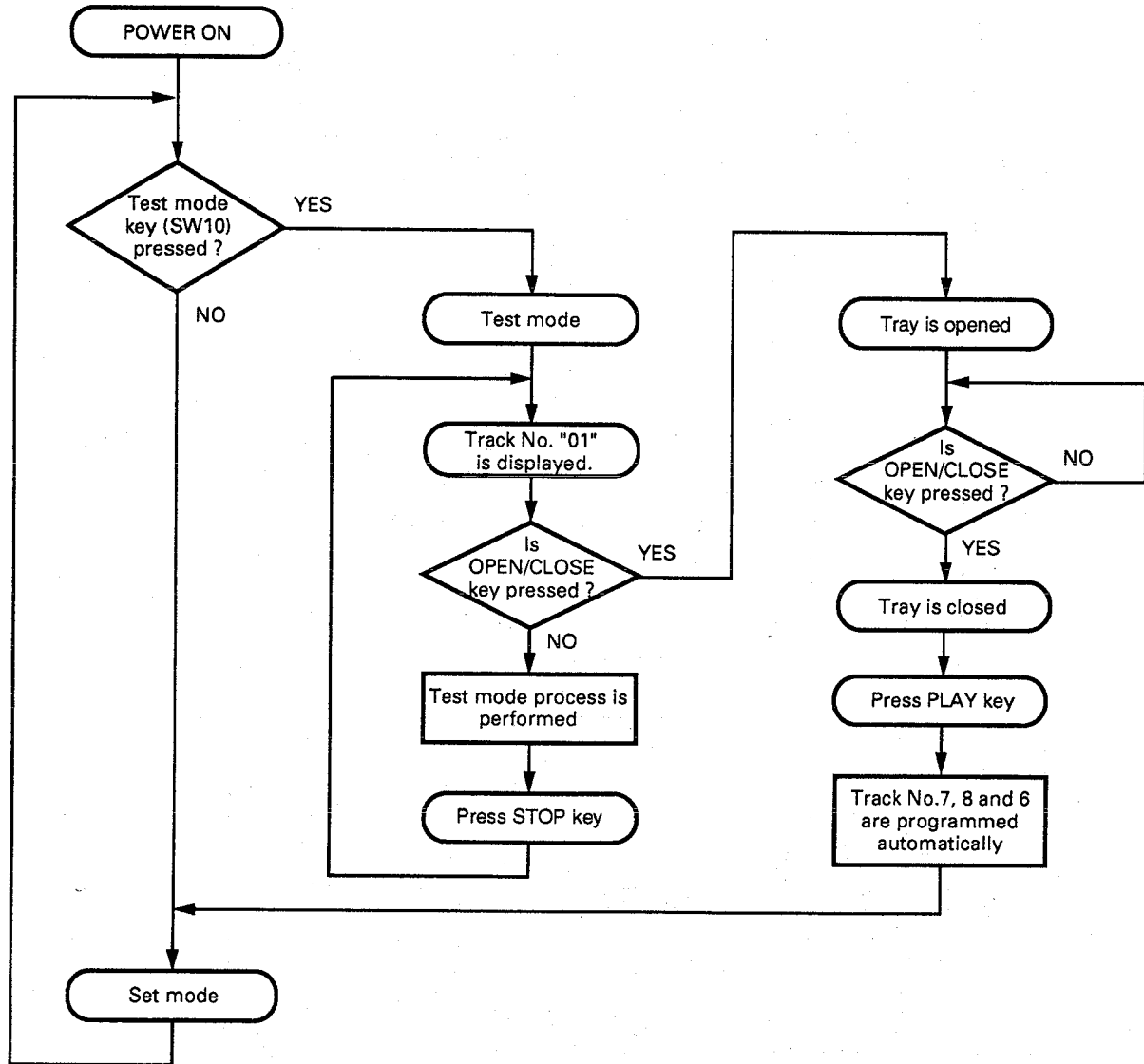


## CIRCUIT DESCRIPTION

### 1. Test mode

#### 1-1. Setting the test mode

This microprocessor built in this unit can be put to TEST MODE (SW10).





## CIRCUIT DESCRIPTION

### 1-2. Key and functions valid in test mode

No.	Input key	Function	Track No. display																																			
1	PLAY	(1) Focusing servo ..... ON (2) Tracking servo ..... ON (3) Feed servo ..... ON	TRACK NO. 05 ↓ Displayed for a few seconds after completion (1), (2) and (3). ↓ Disc Track No. is displayed.																																			
2	CHECK or Number "0" key	(1) Focusing servo ..... ON (2) Tracking servo ..... OFF (3) Feed servo ..... OFF	TRACK NO. 03																																			
3	STOP	(1) Focusing servo ..... OFF (2) Tracking servo ..... OFF (3) Feed servo ..... OFF	TRACK NO. 01																																			
4	▶▶	In the STOP mode, moves the pickup slightly toward the outer position of disc. When feed servo is ON, sets the track gain to "H".	-																																			
5	◀◀	In the STOP mode, moves the pickup slightly toward the inner position of disc. When feed servo is ON, sets the track gain to "L".	-																																			
6	UP ▶▶	Turns all FL display lamps ON.	TRACK NO. 88																																			
7	DOWN ◀◀	Turns all FL display lamps OFF. "TRACK NO." is lighted.	TRACK NO. 88																																			
8	+10	Playback Track No.1 under High-speed mode (If not open tray, SPACE key function is available.)	-																																			
9	SPACE	Set playback mode to High-speed or Normal.	-																																			
10	P. MODE	Track No. 7,8, and 6 (High-speed) are programmed and playback from Track No.7. The test mode is canceled.	-																																			
11	OPEN/CLOSE	When the tray is opened then closed. Track No. 7, 8, and 6 are programmed and set is in STOP mode. The test mode is canceled.	TRACK NO. 00																																			
12	Numeric key (1 ~ 9)	Jumps tracks as shown below. <table border="1" style="margin-left: 20px;"> <tbody> <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>128</td> <td>512</td> <td>1000</td> </tr> <tr> <td>Direction</td> <td colspan="5" style="text-align: center;">Outer</td> </tr> <tr> <td>Key</td> <td>6</td> <td>7</td> <td>8</td> <td>9</td> <td rowspan="2" style="text-align: center;">/</td> </tr> <tr> <td>Number of tracks</td> <td>1</td> <td>4</td> <td>128</td> <td>512</td> </tr> <tr> <td>Direction</td> <td colspan="5" style="text-align: center;">Inner</td> </tr> </tbody> </table>	Key	1	2	3	4	5	Number of tracks	1	4	128	512	1000	Direction	Outer					Key	6	7	8	9	/	Number of tracks	1	4	128	512	Direction	Inner					-
Key	1	2	3	4	5																																	
Number of tracks	1	4	128	512	1000																																	
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Key	6	7	8	9	/																																	
Number of tracks	1	4	128	512																																		
Direction	Inner																																					
13	REPEAT	(1) Tray ..... Opened (2) Laser ..... ON The REPEAT function is canceled when the tray is closed by pressing the tray. "REPEAT" figures is lighted.	TRACK NO. 02																																			

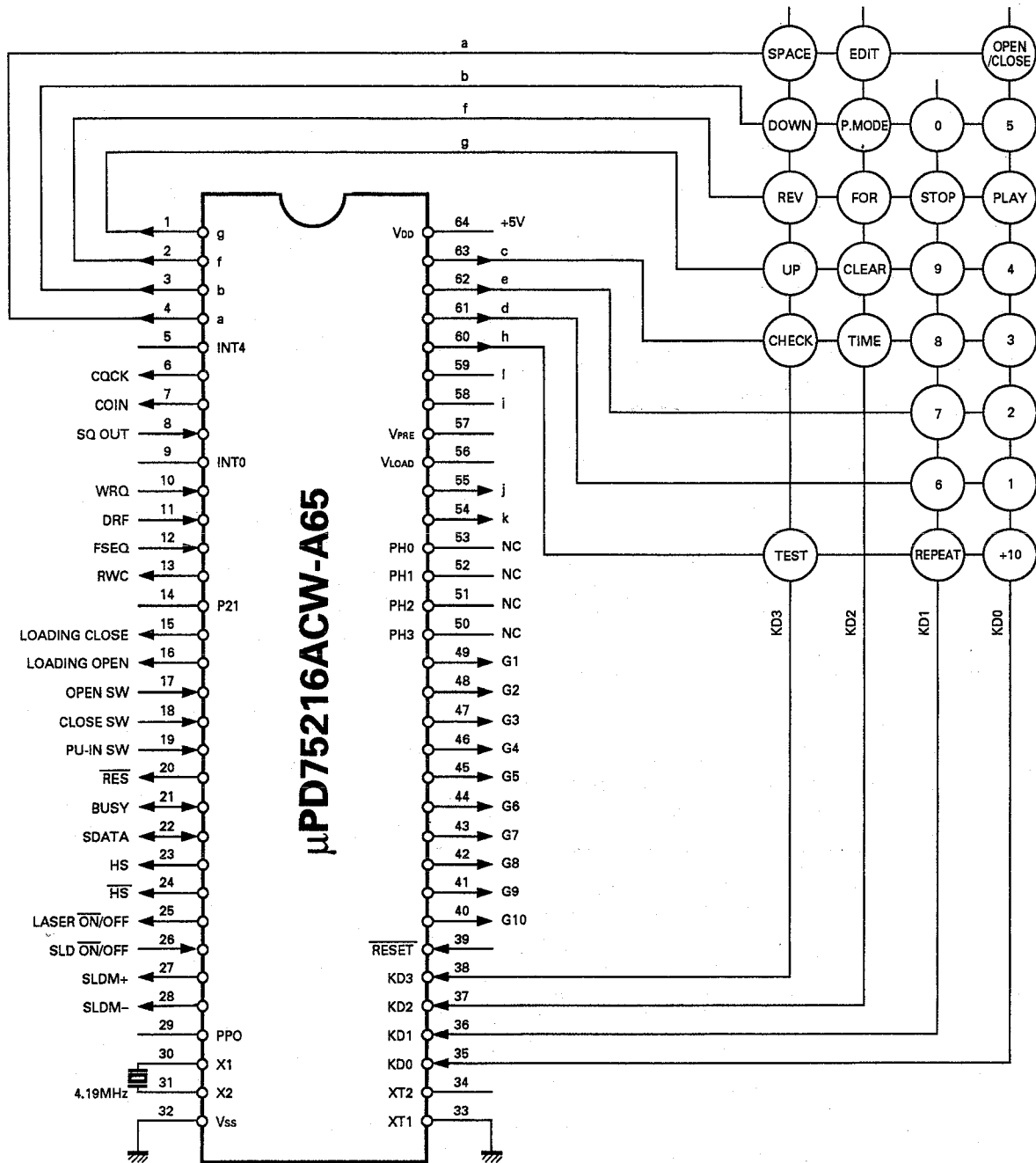
REPEAT mode : Press "REPEAT" key → Press "OPEN/CLOSE" key → Press "REPEAT" key...

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## CIRCUIT DESCRIPTION

### 2. Microprocessor : $\mu$ PD75216ACW-A65 (IC4)

#### 2-1. Terminal connection diagram



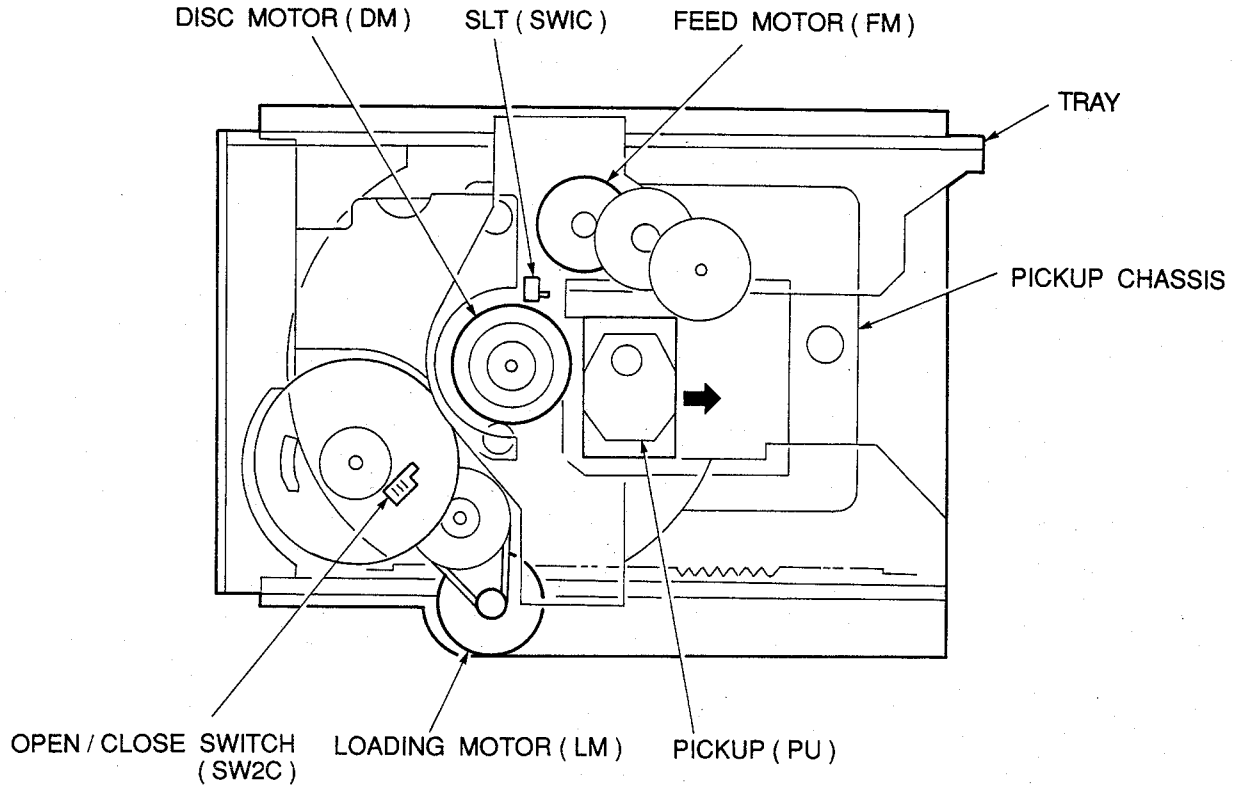
## CIRCUIT DESCRIPTION

## 2-2. Pin function

No.	Pin name	I/O	Function
1~4	g, f, b, a	O	Fluorescent indicator segment.
5	INT4	-	GND
6	CQCK	O	DSP IC CQCK terminal.
7	COIN	O	DSP IC COIN terminal.
8	SQ OUT	I	DSP IC SQ OUT terminal.
9	INT0	-	GND
10	WRQ	I	DSP IC WRQ terminal.
11	DRF	I	LA9211M DRF terminal.
12	FSEQ	I	DSP IC FSEQ terminal.
13	PWC	O	DSP IC RWC terminal.
14	P21	-	GND
15	LOADING CLOSE	O	Tray close signal output.
16	LOADING OPEN	O	Tray open signal output.
17	OPEN SW	I	Tray open detection signal input.
18	CLOSE SW	I	Tray close detection signal input.
19	PU-IN SW	I	Pick up limit signal input.
20	RES	O	DSP IC reset signal output.
21	BUSY	I/O	System control signal (BUSY).
22	SDATA	I/O	System control signal (DATA).
23	HS	O	High speed control.
24	HS	O	High speed control.
25	LASER ON/OFF	O	Laser ON/OFF control signal output.
26	SLD ON/OFF	I	Feed motor ON/OFF signal input.
27	SLD +	O	Feed motor control signal output.
28	SLD -	O	Feed motor control signal output.
29	PPO	-	No connected.
30	X1	I	Oscillator signal input.
31	X2	O	Oscillator signal output.
32	Vss	-	GND
33	XT1	-	GND
34	XT2	-	No connected.
35~38	KD0~KD3	I	Key input signal.
39	RESET	I	Reset signal input.
40~49	G10~G1	O	Fluorescent indicator tube grid signal output.
50~53		-	GND
54, 55	k, j	O	Fluorescent indicator segment.
56	VLOAD	-	FL pull down resistor power supply (-30V).
57	VPRE	-	FL driver circuit power supply (-6V).
58~63	i, l, h, d, e, c	O	Fluorescent indicator segment.
64	VDD	-	Power supply (+5V).

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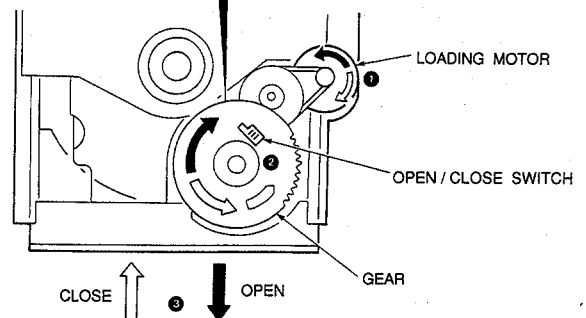
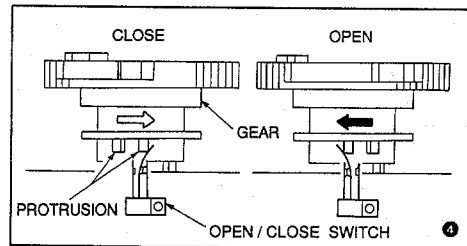
## MECHANISM OPERATION DESCRIPTION



### 1. Tray OPEN/CLOSE operation

By the rotation of the motor (①), the gear (②) is rotated and the tray starts OPEN/CLOSE operation (③).

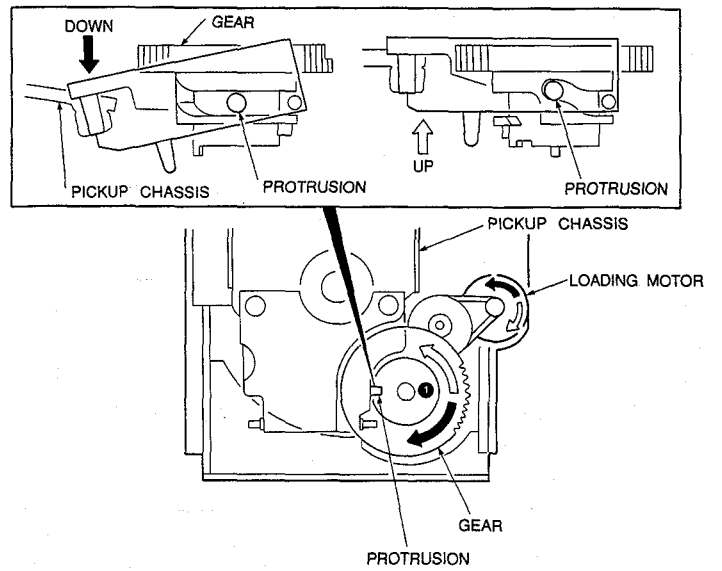
The OPEN/CLOSE operation stops when the protrusion of the gear comes in contact with the detection switch (④).



## MECHANISM OPERATION DESCRIPTION

### 2. Pickup chassis UP/DOWN operation

Accompanied with the OPEN/CLOSE operation, the pickup chassis moves up and down along with the grooves in the gear (1).



## ADJUSTMENT

No.	ITEM	INPUT SETTING	OUTPUT SETTING	PLAYER SETTING	ALIGNMENT POINT	ALIGN FOR	FIG.
1	VCO	Test disc Type 4	Connect the frequency counter to "VCO" and GND.	Short-circuit pins TEST and turn the power on to enter the test mode. Press the STOP key. Then, confirm that the display is "01"	VR4	4.24MHz±15kHz	(a)
2	TRACKING ERROR BALANCE	Test disc Type 4	Connect the oscilloscope to "T.ER".	Press the OPEN/CLOSE key to open the tray. Reset to TEST mode Then, press the CHECK key. Confirm that the display is "03".	VR1	Symmetry between upper and lower patterns, or DC=0±0.05V	(b)
3	FOCUS GAIN	Test disc Type 4 Apply signal of 1kHz, 0.5Vrms to R61(F.P.- F.E.).	Connect a LPP to R61 (F.P.- F.E.), to which connect two AC voltmeters.	Press the PLAY key Confirm that the display is "05".	VR3	Two VTVMs should read the same value.	(c)
4	TRACKING GAIN	Test disc Type 4 Apply signal of 1kHz, 0.5Vrms to R63(T.P.- T.E.).	Connect a LPP to R63 (T.P.- T.E.), to which connect two AC voltmeters.	Press the PLAY key Confirm that the display is "05".	VR2	Two VTVMs should read the same value.	(d)
5	H.F. LEVEL CONFIRMATION	Test disc Type 4	Connect the oscilloscope to "H.F.".	Press the PLAY key Confirm that the display is "05".	-	1.5Vp-p ~ 2.5Vp-p	(e)

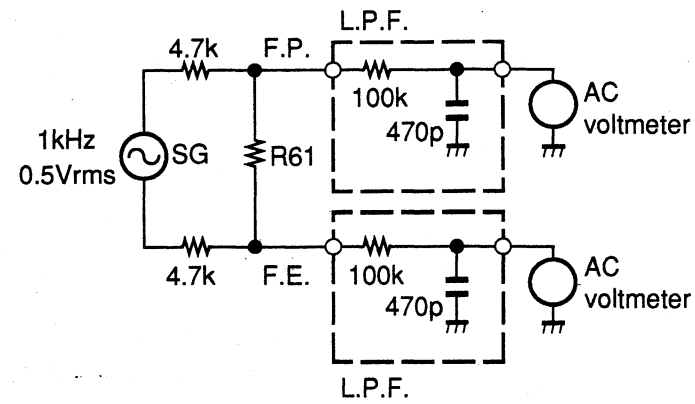
(NOTE) Type 4 disc : SONY YEDS-18 TEST DISC or equivalent.

Adjustment procedures are in TEST MODE.

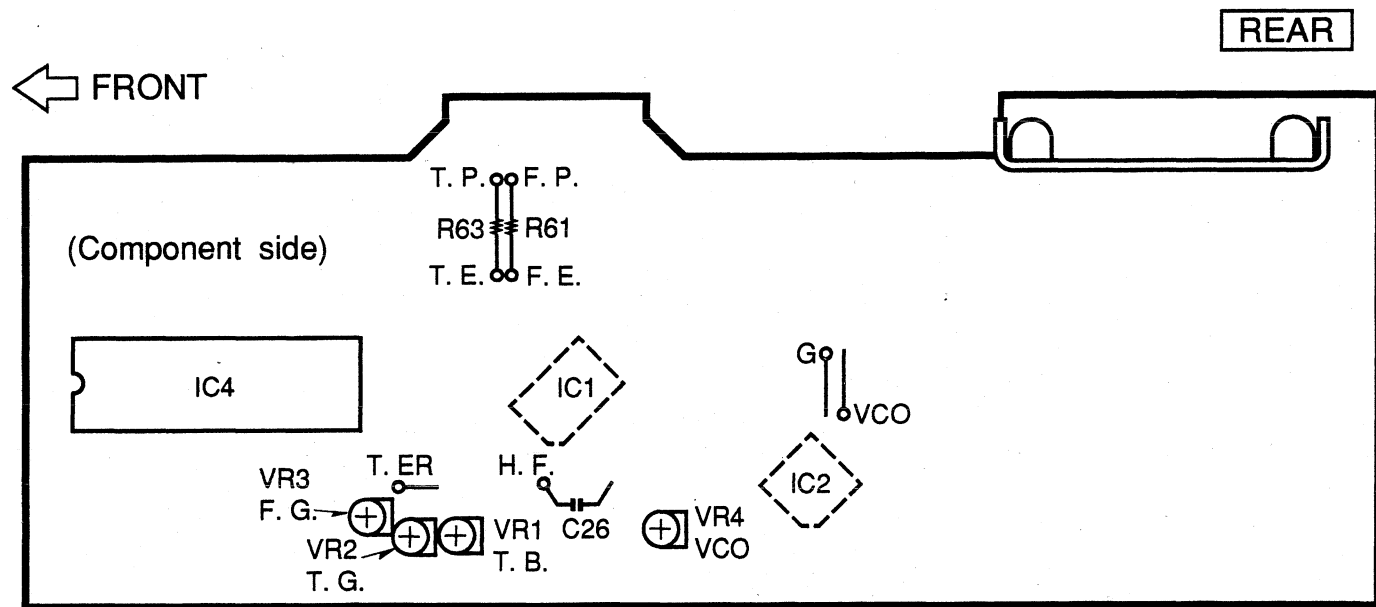
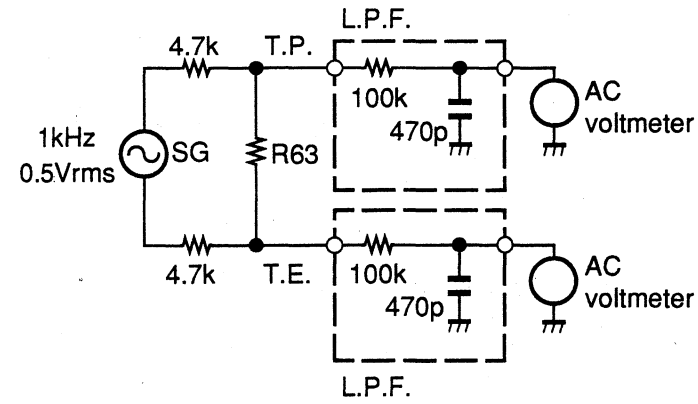
ADJUSTMENT

ADJUSTMENT

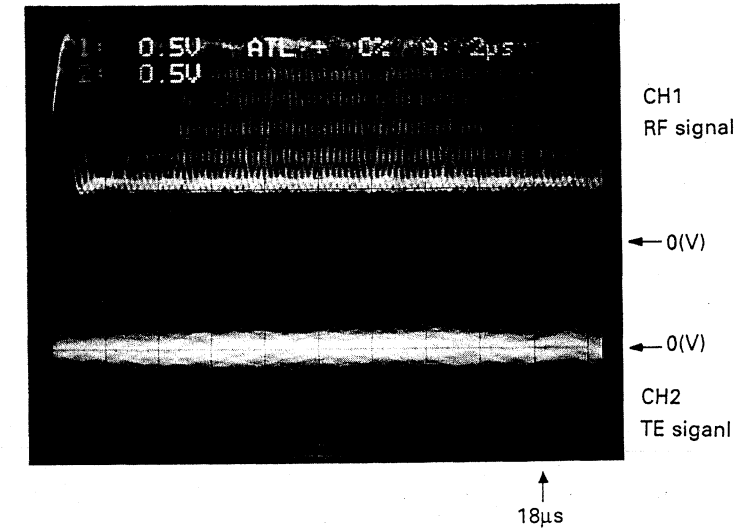
(c) Focus gain



(d) Tracking gain

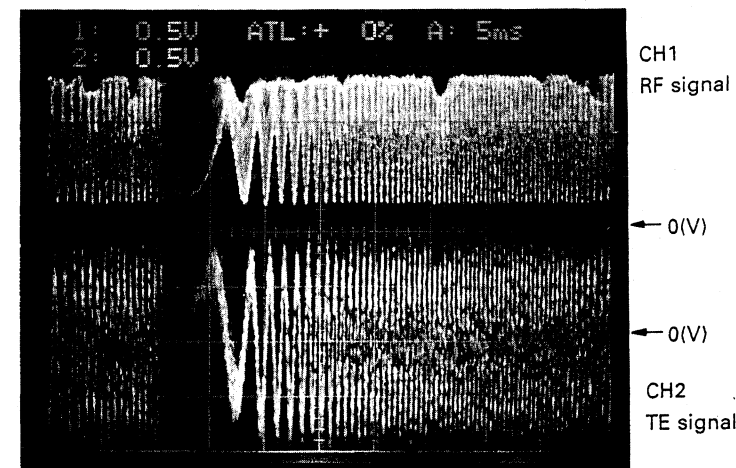


RF level, TE waveform



- RF signal and E.Spot signal in test mode (PLAY).
- If the diffraction grating has been adjusted properly, the influence of triggering is observed on the E.Spot waveform of approx. 18μs after RF signal, in the form of a projection.

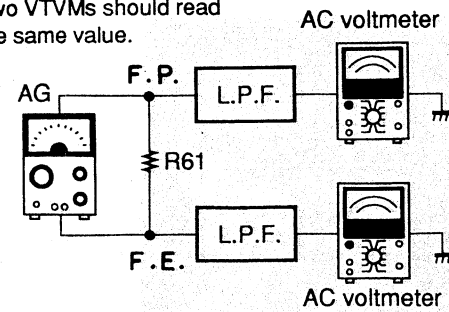
(b) Tracking error balance



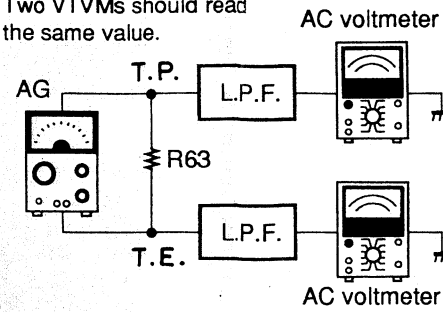
- RF signal and T.Error signal; in test mode (Focusing ON). (Disc type 4)
- Adjust T.Error so that the waveform is symmetrical above and below 0V. (VR 1)

# PC BOARD (COMPONENT SIDE VIEW)

(c) Focus gain :  
Two VTVMs should read  
the same value.

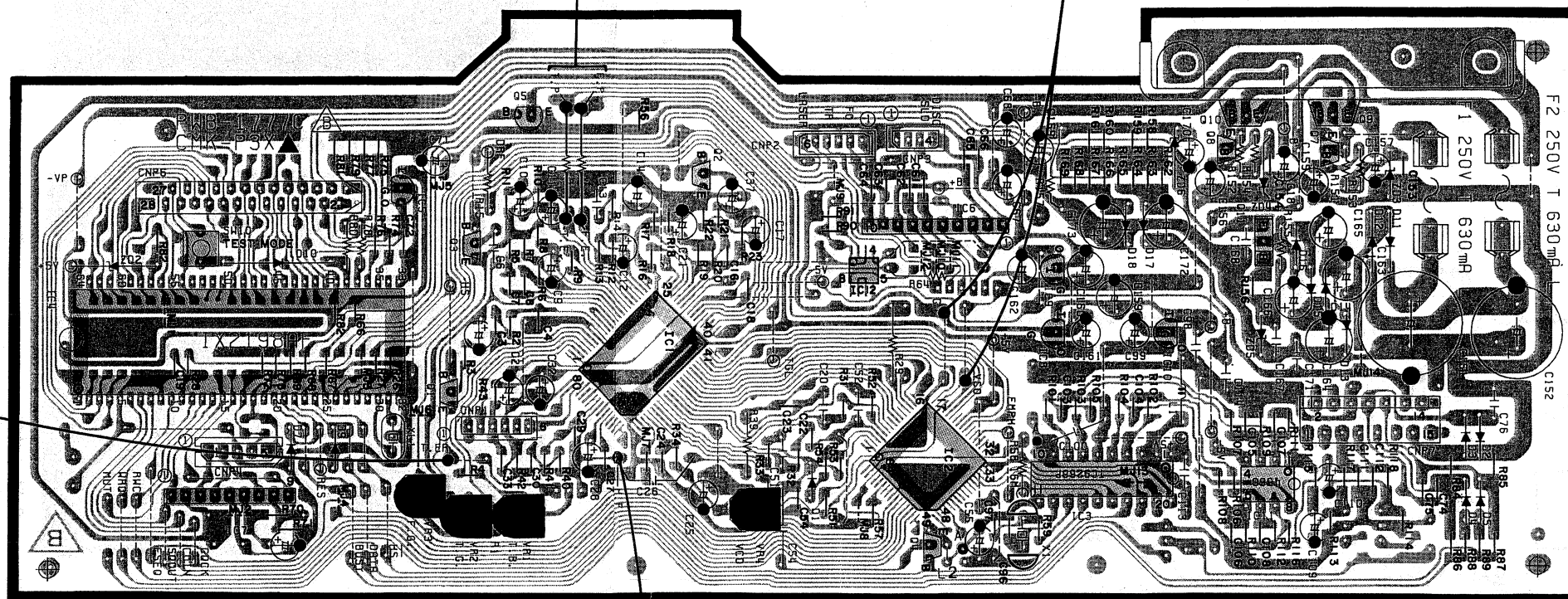
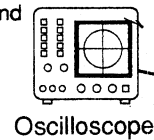


(d) Tracking gain :  
Two VTVMs should read  
the same value.

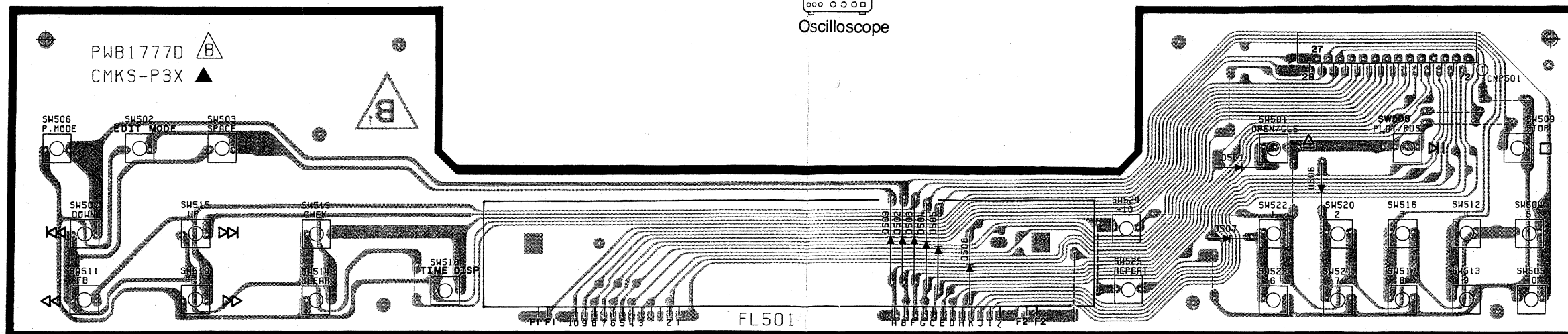


Frequency counter  
(a) VCO : 4.24MHz ± 15kHz

(b) Tracking error balance :  
Symmetry between upper and  
lower patterns,  
or  
DC=0 ± 0.05V



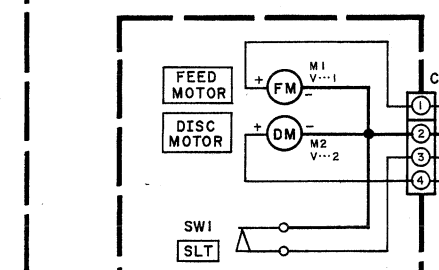
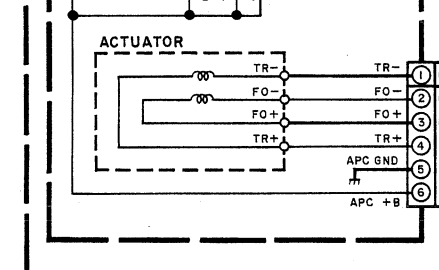
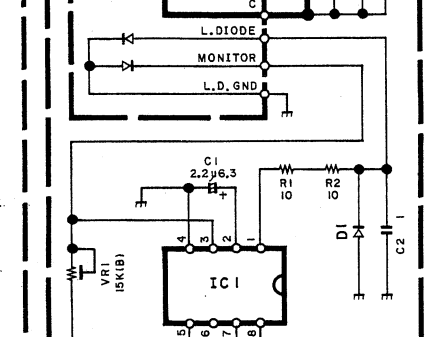
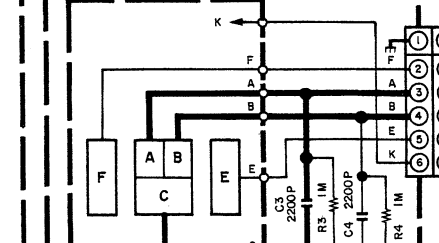
(e) H.F. Level confirmation :  
1.5Vp-p ~ 2.5Vp-p  
Oscilloscope



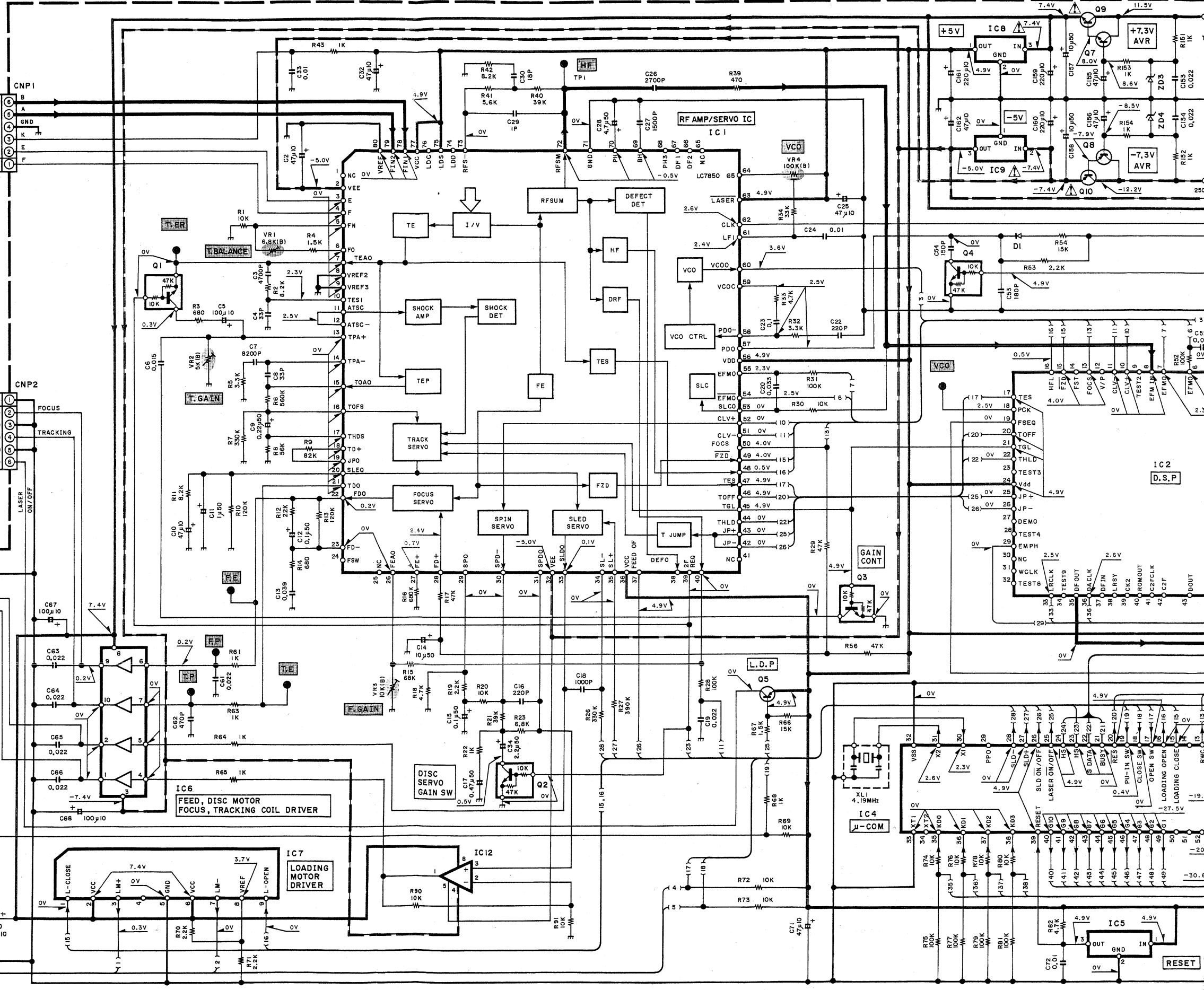


MECHANISM ASS'Y

HOLOGRAM LASER UNIT (PICK UP)

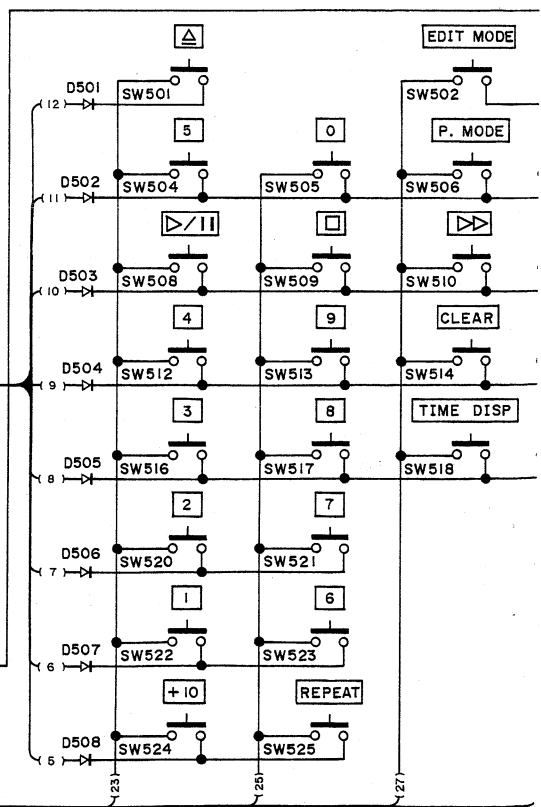
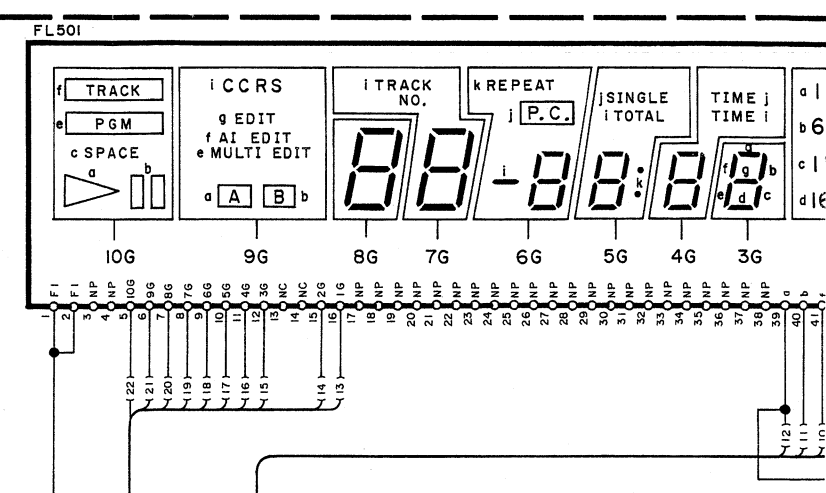
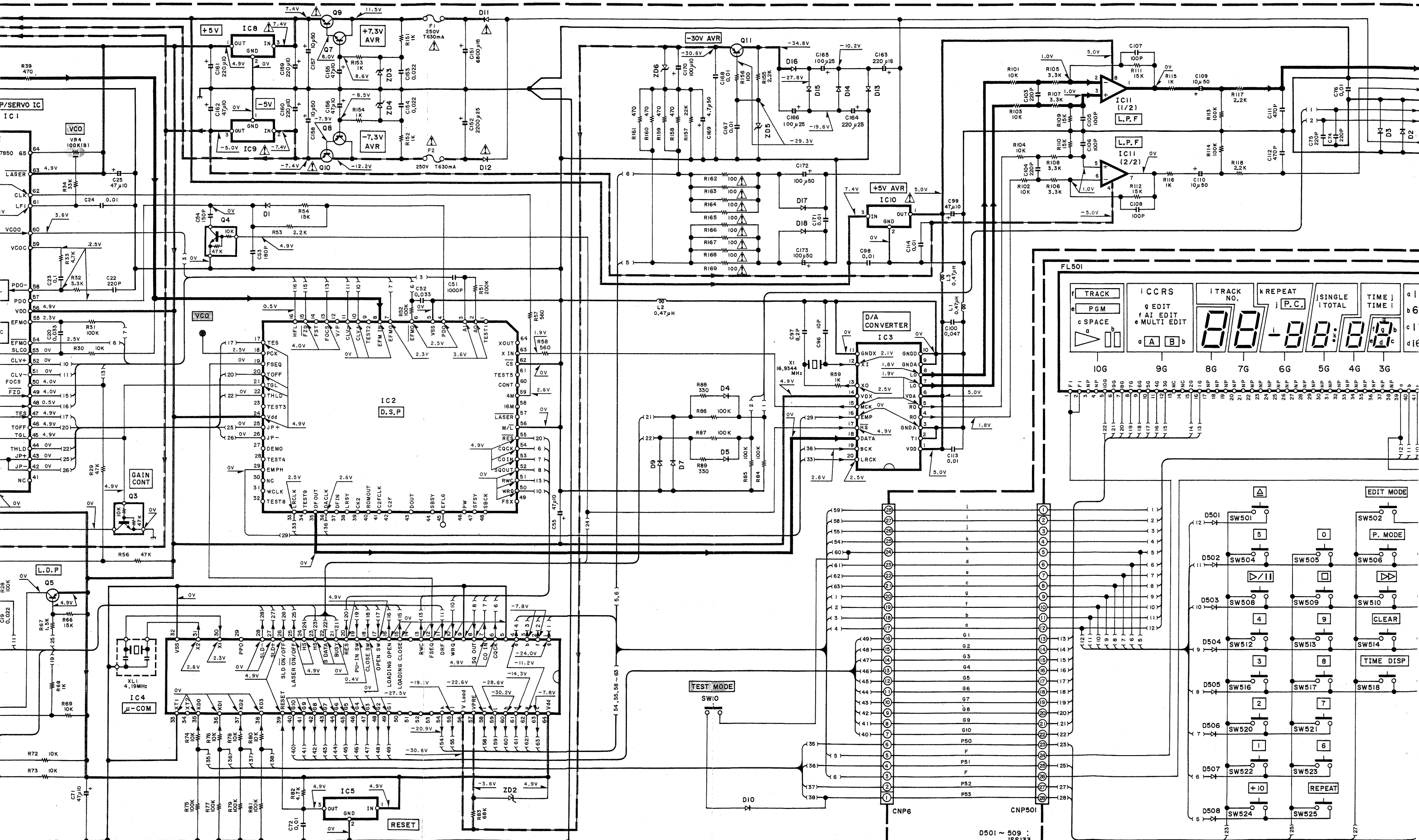


MAIN UNIT

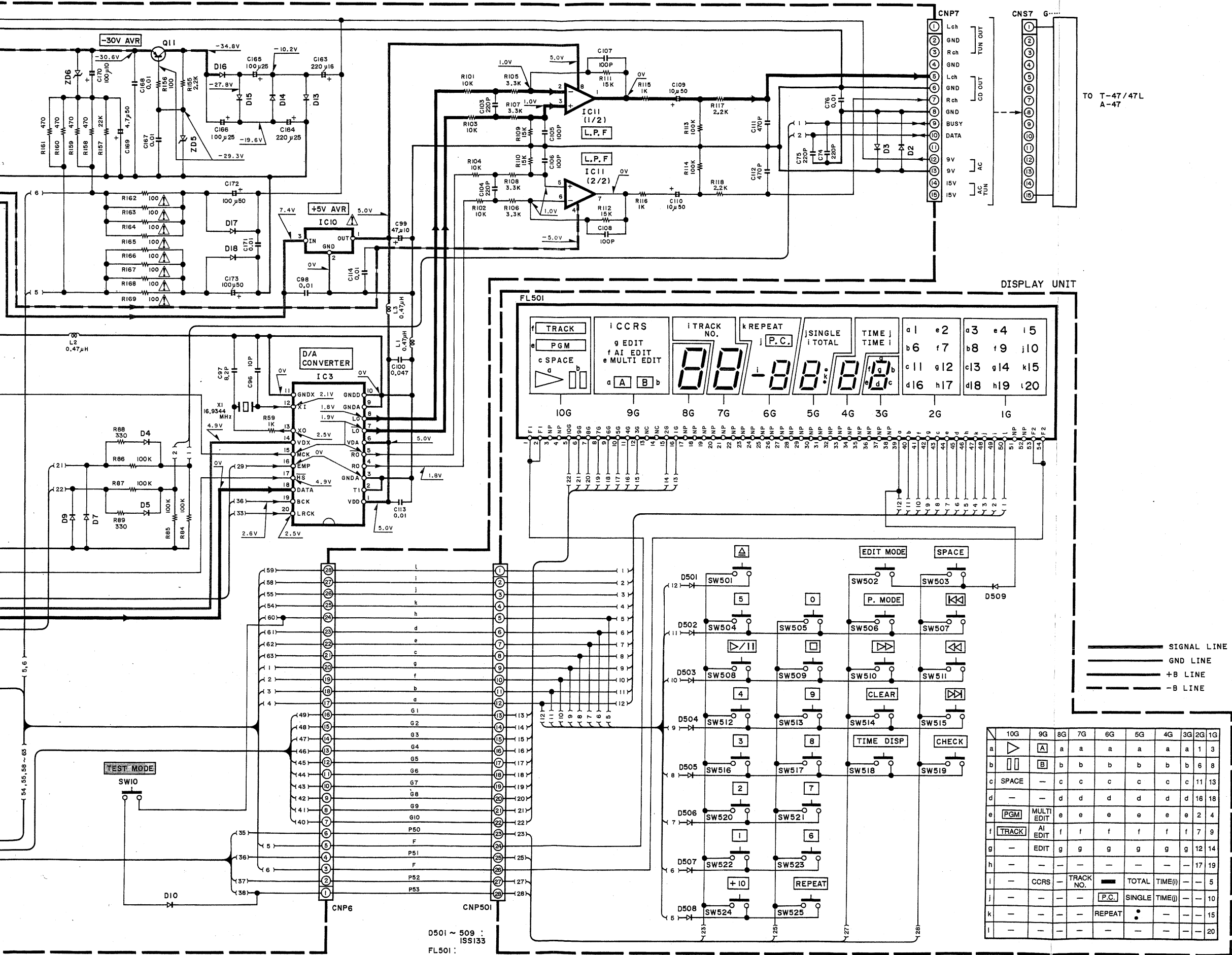


- |                       |                            |
|-----------------------|----------------------------|
| IC1 : LA9211M         | Q1-4 : DTC114YS            |
| IC2 : LC78681E        | Q5 : 2SA1015GR             |
| IC3 : TC9268P         | Q7 : 2SC1740SR             |
| IC4 : μPD75216ACW-W65 | Q8 : 2SA933SR              |
| IC5 : PST600D         | Q9 : 2SD2012               |
| IC6 : LA6524          | Q10 : 2SB1375              |
| IC7 : TA7291S         | Q11 : 2SB1237R3            |
| IC8 : TA78L005AP      |                            |
| IC9 : AN79L05         | D1-5,7,9,10,13-18 : 1SS133 |
| IC10 : AN78L05        | D11,12 : RL104T            |
| IC11 : NUM4560D       | ZD2-4 : MTZ9.1A            |
| IC12 : NJM4558M       | ZD5 : MTZJ30B              |
|                       | ZD6 : MTZJ6.8B             |

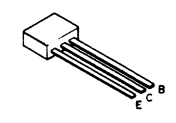
2  
3  
4  
5  
6  
7



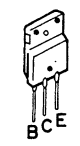
D501 ~ 509 : ISS133  
 FL501 : 10-BT-676K



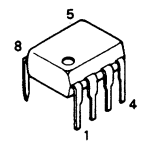
DTC114YS



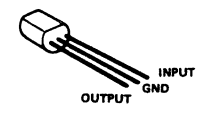
2SB1375  
2SD2012



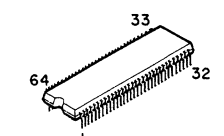
NJM4560D



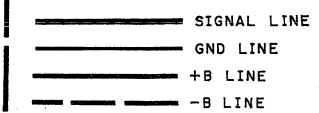
TA78L005AP



UPD75216ACW-A65



T-47/47L  
A-47



	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	▶	A	a	a	a	a	a	a	a	1 3
b	▯	B	b	b	b	b	b	b	b	6 8
c	SPACE	-	c	c	c	c	c	c	c	11 13
d	-	-	d	d	d	d	d	d	d	16 18
e	PGM	MULTI EDIT	e	e	e	e	e	e	e	2 4
f	TRACK	AI EDIT	f	f	f	f	f	f	f	7 9
g	-	EDIT	g	g	g	g	g	g	g	12 14
h	-	-	-	-	-	-	-	-	-	17 19
i	-	CCRS	-	TRACK NO.	-	TOTAL	TIME()	-	-	5
j	-	-	-	-	P.C.	SINGLE	TIME()	-	-	10
k	-	-	-	-	REPEAT	•	-	-	-	15
l	-	-	-	-	-	-	-	-	-	20

D501 ~ 509 :  
ISS133  
FL501 :  
10-BT-67GK

DP-470 (K)

• DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

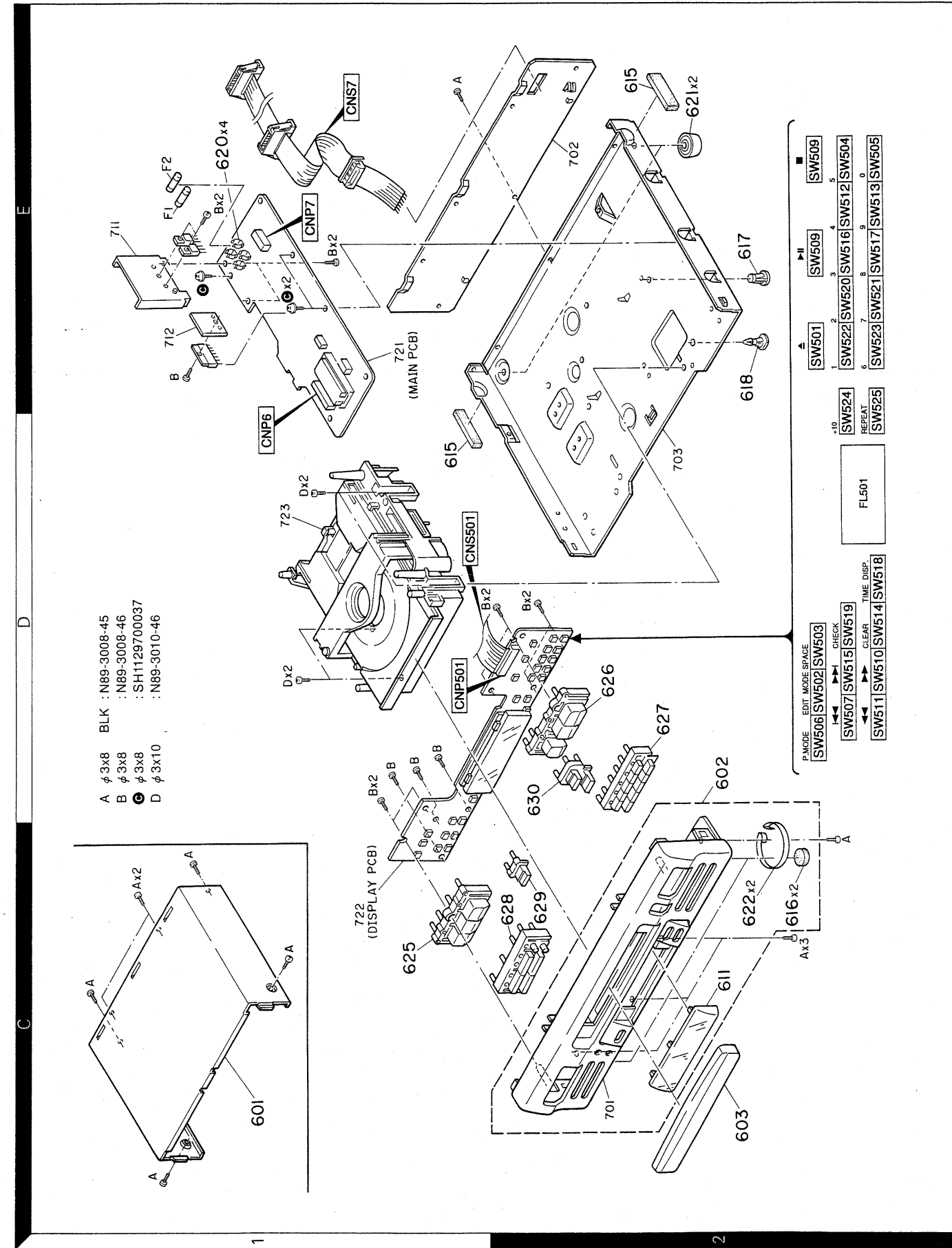
**CAUTION:** For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Δ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably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

**DP-470**  
**KENWOOD**

Y22-3492-70



EXPLODED VIEW (UNIT)



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

PARTS LIST

Ref. No. 参照番号	Address 位置	Parts No. 部品番号	Description 部品名/規格	Destination 仕向	Remarks 備考
601	1C	A01-3118-08	CABINET TOP		
602	2D	A60-0555-08	FRONT PANEL ASSY		
603	2C	SH1101100584	PANEL TRAY		
611	2C	B10-2015-08	PANEL WINDOW		
		B46-0096-33	WARRANTY CARD		
		B46-0310-03	WARRANTY CARD		
615	1D, 2E	G10-0199-08	CUSHION CHASSIS		
616	2C	SH1103260268	CUSHION		
		H10-5730-08	POLYSTYRENE FOAMED FIXTURE(L)		
		H10-5731-08	POLYSTYRENE FOAMED FIXTURE(R)		
		H50-0827-08	ITEM CARTON CASE		
		H50-0828-08	ITEM CARTON CASE		
		SH1109020633	PAD		
		SH1109060121	PROTECTION BAG(UNIT)		
617	2E	SH104130267	SPACER PWB		
618	2E	SH102140449	BRACKET PWB		
619	1E	SH105160005	FUSE HOLDER		
621	2E	SH101230060	LEG(REAR)		
622	2C	SH101580798	INSULATOR		
625	1C	K29-5883-08	KN08(M0DE)		
626	2D	K29-5884-08	KN08(PLAY/EJECT)		
627	2D	K29-5885-08	KN08(10-key)		
628	2C	K29-5886-08	KN08(SKIP)		
629	2C	K29-5887-08	KN08(DISPLAY)		
630	2D	K29-5888-08	KN08(REPEAT)		
A		N89-3008-45	SCREW 3X8		
B		N89-3008-46	SCREW 3X8		
C		SH1129700037	SCREW 3X10		
D		N89-3010-46	SCREW 3X10		
<b>MAIN UNIT</b>					
C2		CE04KW1A470M	ELECTRO 47UF 10WV		
C3		SH1305900678	CYLND CHIP C 4700PF K		
C4		CC41DSL1H330J	CYLND CHIP C 33PF J		
C5		CE04KW1A101M	ELECTRO 100UF 10WV		
C6		SH1305900683	CERAMIC 0.015UF K		
C7		SH1105950092	CYLND CHIP C 8200PF K		
C8		CC41DSL1H330J	CYLND CHIP C 33PF J		
C9		CE04KW1HR22M	ELECTRO 0.22UF 50WV		
C10		CE04KW1A470M	ELECTRO 47UF 10WV		
C11		CE04KW1H010M	ELECTRO 1.0UF 50WV		
C12		CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
C13		SH1305900642	CERAMIC 0.039UF K		
C14		CE04KW1H00M	ELECTRO 100F 50WV		
C15		CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
C16		CK73FB1H221K	CHIP C 220PF K		
C17		CE04KW1HR47M	ELECTRO 0.47UF 50WV		
C18		CK73FB1H102K	CHIP C 1000PF K		
C19		SH1305900673	CYLND CHIP C 0.022UF M		
C20		SH1305900664	CERAMIC 0.033UF K		
C22		CK73FB1H221K	CHIP C 220PF K		
C23		SH1425900032	CERAMIC 0.1UF K		
C24		SH1305900718	CYLND CHIP C 0.010UF K		
C25		CE04KW1A470M	ELECTRO 47UF 10WV		
C26		SH115900271	CERAMIC 2700PF K		
C27		SH1305900674	CERAMIC 1500PF K		
C28		CE04KW1HR7M	ELECTRO 4.7UF 50WV		
C29		CC41DSL1HR0C	CYLND CHIP C 1.0PF C		
C30		CC41DSL1H180J	CYLND CHIP C 18PF J		
C32		CE04KW1A470M	ELECTRO 47UF 10WV		
C33		SH1305900718	CYLND CHIP C 0.010UF K		
C34		CE04KW1HR2M	ELECTRO 2.2UF 50WV		
C51		CK73FB1H102K	CHIP C 1000PF K		
C52		SH1305900664	CERAMIC 0.033UF K		
C53		CK73FB1H181K	CHIP C 180PF K		
C54		CK45FB1H151K	CERAMIC 150PF K		
C55		CE04KW1A470M	ELECTRO 47UF 10WV		
C61		SH1305900673	CYLND CHIP C 0.022UF K		
C62		CK73FB1H471K	CHIP C 470PF K		
C65-66		SH1305900689	CERAMIC 0.022UF 25WV		
C67, 68		CE04KW1A101M	ELECTRO 100UF 10WV		
C70, 71		CE04KW1A470M	ELECTRO 47UF 10WV		
C72		SH1305900718	CYLND CHIP C 0.010UF K		
C74, 75		CK73FB1H221K	CHIP C 220PF K		
C76		CK45FF1H103Z	CERAMIC 0.010UF Z		
C96		CC41DSL1H100J	CYLND CHIP C 10PF J		
C97		CC41DSL1HR82D	CYLND CHIP C 8.2PF D		
C98		CK45FF1H103Z	CERAMIC 0.010UF Z		
C99		CE04KW1A470M	ELECTRO 47UF 10WV		
C100		CK45FF1H473Z	CERAMIC 0.047UF Z		
C103, 104		CK73FB1H221K	CHIP C 220PF K		
C105-108		CK73FB1H101K	CHIP C 100PF K		
C109, 110		CE04KW1H100M	ELECTRO 100F 50WV		
C111, 112		CK73FB1H471K	CHIP C 470PF K		
C113, 114		CK45FF1H103Z	CERAMIC 0.010UF Z		
C115		SH1425910004	CYLND CHIP C 0.010UF K		
C151		CE04KW1C682M	ELECTRO 6800UF 16WV		
C152		CE04KW1E22M	ELECTRO 2200UF 25WV		
C153, 154		SH1305900669	CERAMIC 0.022UF 25WV		
C155, 156		CE04KW1A470M	ELECTRO 47UF 10WV		
C157, 158		CE04KW1H100M	ELECTRO 100F 50WV		
C159-161		CE04KW1A221M	ELECTRO 220UF 10WV		
C162		CE04KW1A470M	ELECTRO 47UF 10WV		
C163		CE04KW1C221M	ELECTRO 220UF 25WV		
C164, 166		CE04KW1E101M	ELECTRO 100UF 25WV		
C167, 168		CK45FF1H103Z	CERAMIC 0.010UF Z		
C169		CE04KW1HR47M	ELECTRO 4.7UF 50WV		
C170		CE04KW1A101M	ELECTRO 100UF 10WV		
C171		CK45FF1H103Z	CERAMIC 0.010UF Z		
C172, 173		CE04KW1H101M	ELECTRO 100UF 50WV		
CNP6	1E	E40-4168-05	PLUG(28pin)		
CNP7	1E	SH1105100685	CONNECTOR ASSY(15pin)		
CNP501	1E	E30-2751-08	PLUG(28pin)		
CNP502	2D	E40-4208-05	PLUG(28pin)		
CNP503	1D	E35-0791-08	CONNECTOR ASSY(28pin)		
<p>* New Parts Parts without Parts No. are not supplied. Les articles non mentionnés dans le Parts No. ne sont pas fournis. Teile ohne Parts No. werden nicht geliefert.</p>					
<p>* New Parts Parts without Parts No. are not supplied. Les articles non mentionnés dans le Parts No. ne sont pas fournis. Teile ohne Parts No. werden nicht geliefert.</p>					
<p>L:Scandinavia K:USA P:Canada Y:FX(Far East, Hawaii) T:England E:Europe Y:AAFE(S/Europe) X:Australia M:Other Areas</p>					
<p>L:Scandinavia K:USA P:Canada Y:FX(Far East, Hawaii) T:England E:Europe Y:AAFE(S/Europe) X:Australia M:Other Areas</p>					
<p>△ indicates safety critical components.</p>					

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Teile ohne Parts No. werden nicht geliefert.

3

Ref. No. 参照番号	Address 位置	Parts No. 部品番号	Description 部品名/規格	Desti- nation 仕	Re- marks 備考
F1 ,2		F05-6313-05	FUSE(250V T630mA)		
X1	*	L77-2132-08	CRYSTAL REZONATOR(16.9344MHz)		
XL1		L78-0267-05	REZONATOR(4.19MHz)		
VR1	*	R12-2048-08	TRIMMING POT. 6.8K(T. BALANCE)		
VR2		R12-1619-05	TRIMMING POT. 4.7K(T. GAIN)		
VR3		R12-3685-05	TRIMMING POT. 10K(T. GAIN)		
VR4		R12-5651-05	TRIMMING POT. 100K(VCO)		
SH10		SH1305301218	TACT SWITCH(TEST MODE)		
SW501-525		SH1305301218	TACT SWITCH(EJECT etc.)		
D1 -5		1SS133	DIODE		
D7		1SS133	DIODE		
D9 ,10		1SS133	DIODE		
D11 ,12		RL104T	DIODE		
D13 -18		1SS133	DIODE		
D501-509		1SS133	DIODE		
FL501		10-BT-676K	INDICATOR TUBE		
IC1		LA9211M	IC(RF AMP/SERV0)		
IC2	*	LC78481E	IC(D. S.P.)		
IC3	*	TC9248P	IC(O/A CONVERTOR)		
IC4	*	UPD75216ACW-A65	IC(MICROPROCESSOR)		
IC5	*	PST6000	IC(RESET)		
IC6	*	LA6524	IC(DRIVER)		
IC7		TA7291S	IC(BRIDGE DRIVER)		
IC8		TA78L005AP	IC(VOLTAGE REGULATOR/ +5V)		
IC9	*	AN79L05T	IC(VOLTAGE REGULATOR/ -5V)		
IC10	*	AN78L05T	IC(VOLTAGE REGULATOR/ +5V)		
IC11		NJM4560D	IC(OP AMP X2)		
Q1 -4		DTC114YS	DIGITAL TRANSISTOR		
Q5		ZSA1015GR	TRANSISTOR		
Q7		ZSC1740SR	TRANSISTOR		
Q8		ZSA933SR	TRANSISTOR		
Q9		2SD2012	TRANSISTOR		
Q10		2SB1375	TRANSISTOR		
Q11		2SB1237R3	TRANSISTOR		
ZD2 -4		MTZ9.1A	ZENER DIODE		
ZD5		MTZJ30BT	ZENER DIODE		
ZD6		MTZJ6.8B	ZENER DIODE		
<b>MECHANISM ASSY</b>					
2	1B	SH1313730001	MAGNET		
3	1B	T50-1067-08	BRACKET MAGNET		
5	1B	D16-0362-08	BELT DRIVE		
6	1B	D15-0364-08	PULLEY DRIVE		
7	1B	SH1102810098	GEAR PINION		
9	1A	SH1102480607	SHIFT LEVER		
10	1B	A11-1021-08	CHASSIS LOADING		
11	2B	SH1302810228	GEAR(MIDDLE)		
12	2B	SH1302810229	GEAR(DRIVE)		
15	3B	SH1303260448	CUSHION		
16	2B	SH1305301248	PUSH SWITCH(SLT)		
19	3A	SH1302810229	GEAR(RACK MOVE)		
20	3A	SH1252560244	SPRING(RACK)		

L:Scandinavia  
Y:PX(Far East, Hawaii)  
Y:AAFES(Europe)

K:USA  
T:England  
X:Australia

P:Canada  
E:Europe  
M:Other Areas

△ indicates safety critical components.

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

4

PARTS LIST

Ref. No. 参照番号	Address 位置	Parts No. 部品番号	Description 部品名/規格	Desti- nation 仕	Re- marks 備考
21	3A	SH1302810231	GEAR(RACK FIX)		
22	3B	SH1302900394	SHAFT(CUIDE)		
23	2A	SH1102140395	DISC TRAY		
24	2B	S74-0027-08	SWITCH(OPEN/CLOSE)		
A		SH1109700853	SCREW		
B		SH1319700021	SCREW		
C		SH1309701730	SCREW		
D		SH1309701711	SCREW		
E		SH1169700032	SCREW		
F		SH1309701535	SCREW		
DM	3B	T42-0658-08	DISC MOTOR ASSY		
FM	3B	T42-0657-08	SLIDE MOTOR WITH GEAR		
LM	2B	SH1106300200	MOTOR WITH PULLEY		
PU	3A	T25-0032-08	PICKUP		

L:Scandinavia  
Y:PX(Far East, Hawaii)  
Y:AAFES(Europe)

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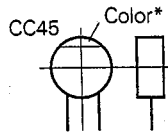
△ indicates safety critical components.

## PARTS LIST

### CAPACITORS

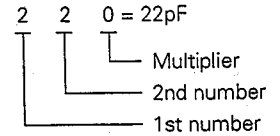
CC 45 TH 1H 220 J  
 1 2 3 4 5 6

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

#### 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

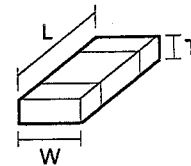
(Chip) (B, F)

#### 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



#### 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-470

## SPECIFICATIONS

### Format

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

### D/A convertors

**D/A conversion** ..... 1Bit  
**Oversampling** ..... 8fs (352.8kHz)

### Audio

**Frequency response** ..... 8Hz~20kHz,  $\pm 1.0$ dB  
**Signal to noise ratio** ..... More than 94dB

**Dynamic range** ..... More than 92dB  
**Total harmonic distortion** ..... Less than 0.005%  
**Channel separation** ..... More than 83dB  
**Wow & flutter** ..... Unmeasurable limit  
**Output level/impedance**  
**Fixed** ..... 1.2V/3.3k $\Omega$

### General

**Dimensions** ..... W : 360mm  
H : 94mm  
D : 307mm  
**Weight (Net)** ..... 3.4kg

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

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### Note :

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the Europe (E) 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.

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