

COMPACT DISC PLAYER

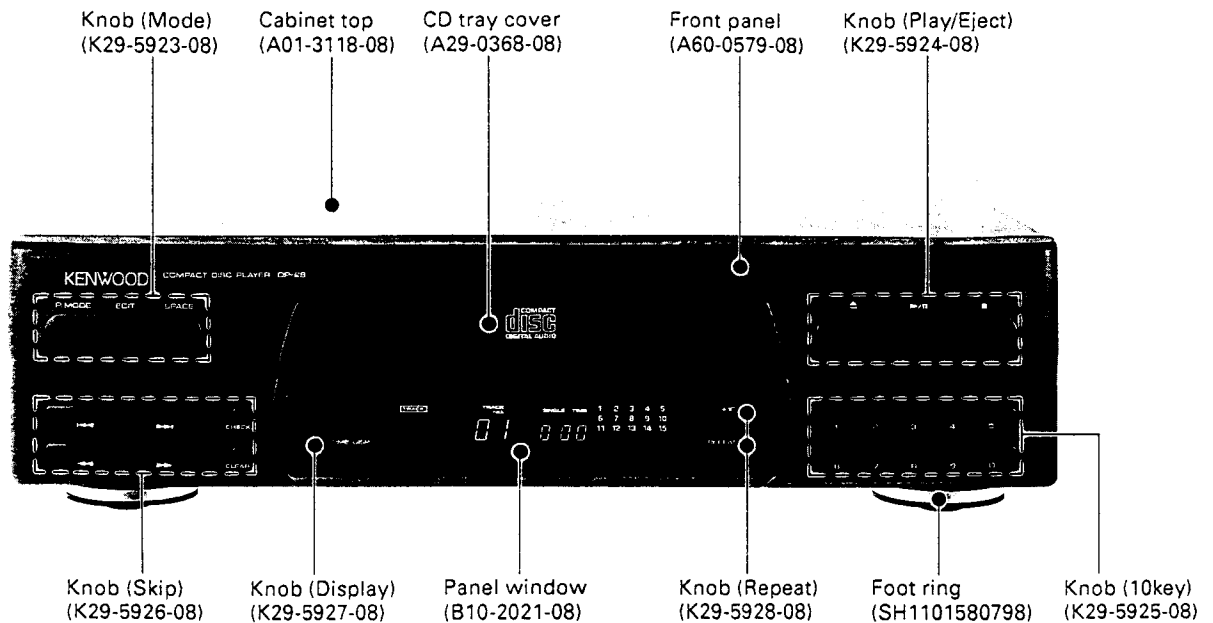
DP-28

SERVICE MANUAL

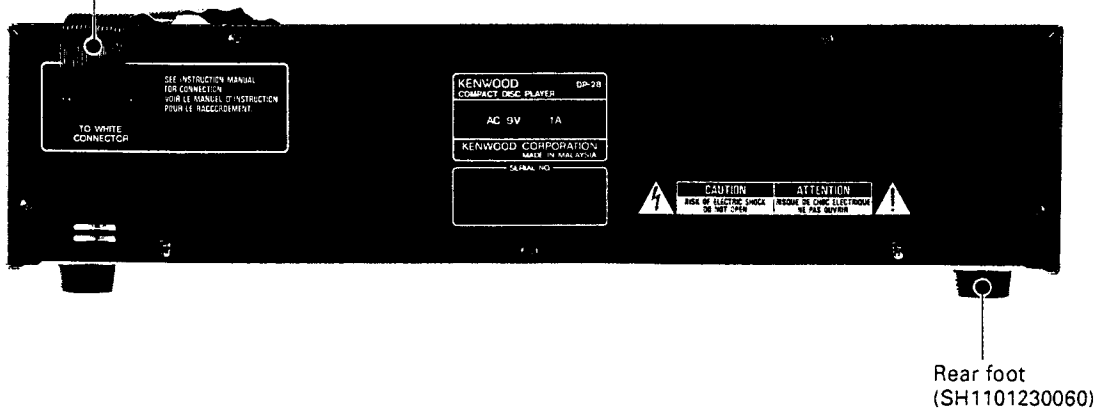
(M-28)

KENWOOD

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B51-4832-00(O) 2494



Connector ass'y (15pin)
(E30-2673-05)



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.

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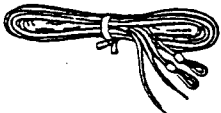
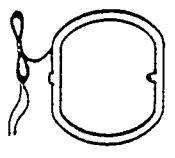
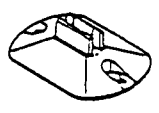
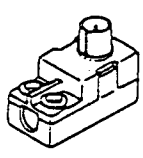

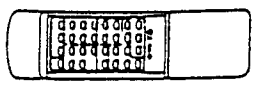
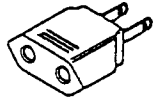
DP-28

CONTENTS/ACCESSORIES

CONTENTS

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ACCESSORIES

<ul style="list-style-type: none"> • FM indoor antenna 1 (T90-0175-05) 	<ul style="list-style-type: none"> • AM (MW, LW) loop antenna ... 1 (T90-0195-05) 	<ul style="list-style-type: none"> • Loop antenna stand 1 (J19-3636-05) 	<ul style="list-style-type: none"> • Antenna adaptor (75Ω/300Ω) ... 1 (T90-0185-05) 
<ul style="list-style-type: none"> • Batteries (R6/AA) 2 (-) 	<ul style="list-style-type: none"> • Remote control unit 1 (A70-0956-05) : RC-28 	<ul style="list-style-type: none"> • AC plug adaptor (M type only) 1 (E03-0115-05) 	

Battery cover (A09-0146-08)

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

All accessories are packed with RX-28.

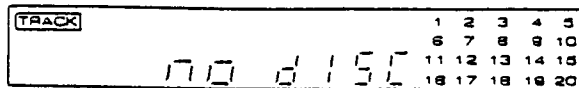
System name	Cassette receiver	CD player	Speaker	DP-28 instruction manual
M-28	RX-28	DP-28	LS-28	(B60-1539-08) E, F, G, D, I, S : E (B60-1540-08) English : X, T (B60-1541-08) Eng. Spa. Chi. : M, I

Option	Graphic equalizer
	GE-28

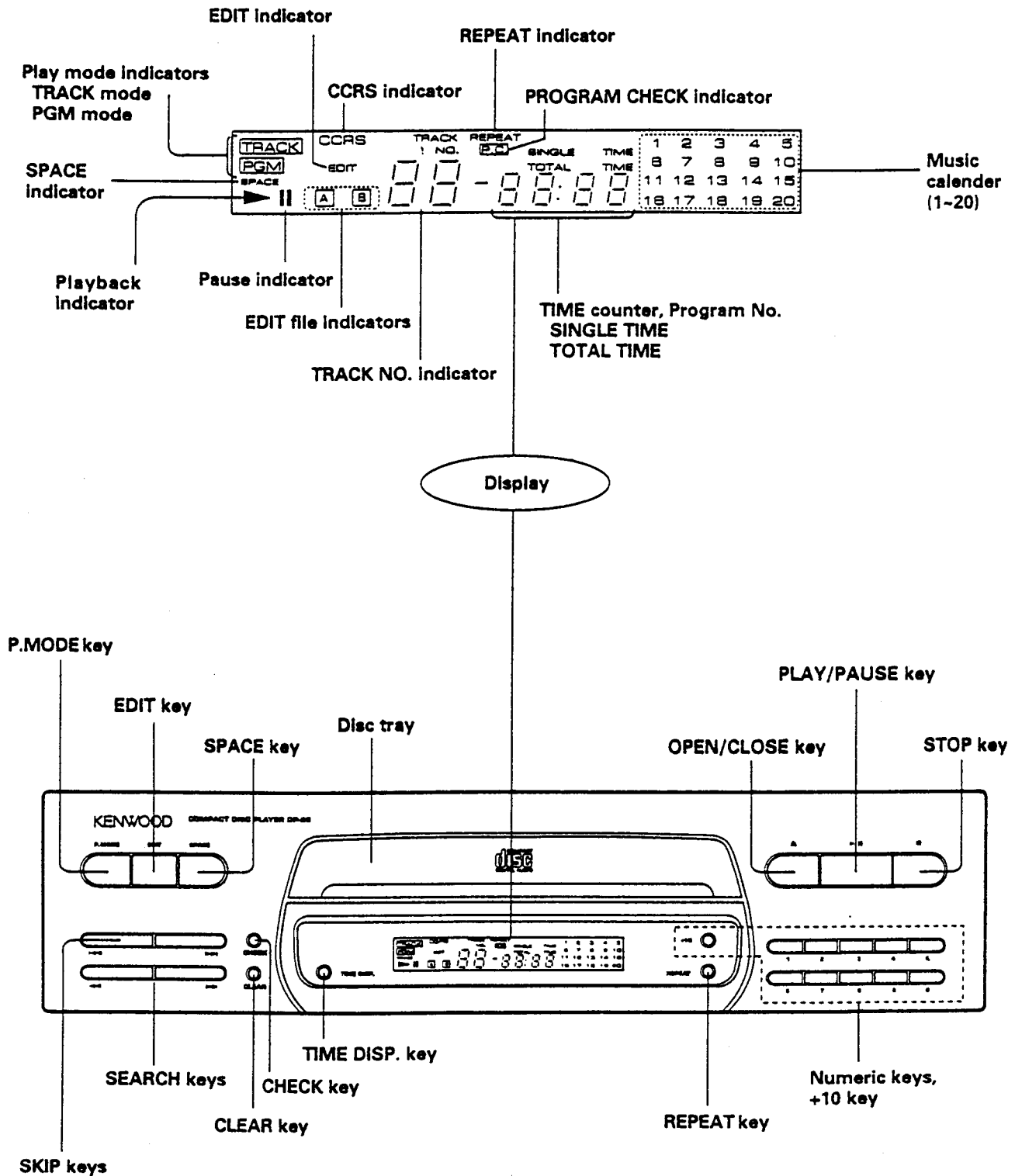
Note related to transportation and movement

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 (RX-28).

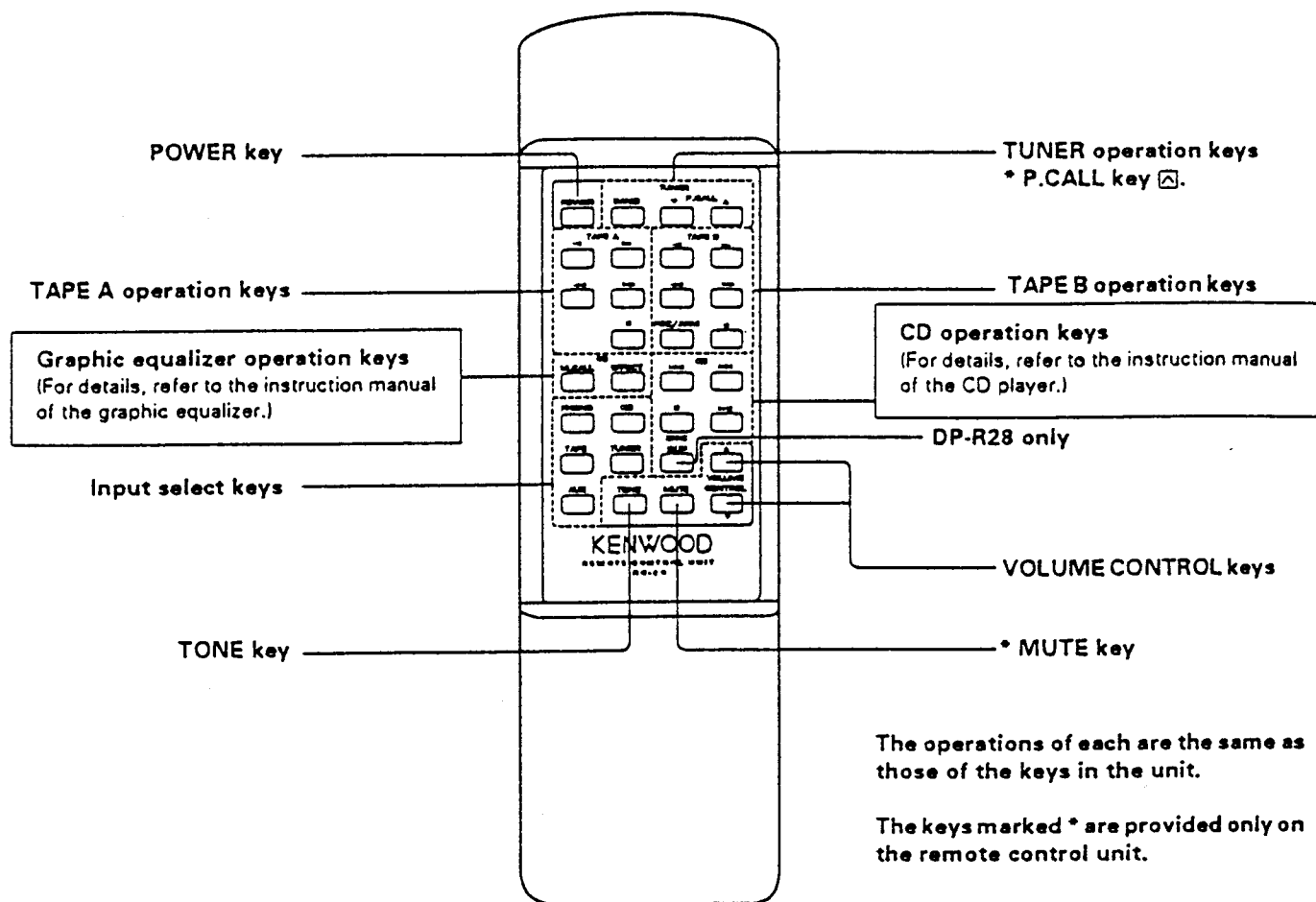


CONTROL



DP-28

REMOTE CONTROL



The operations of each are the same as those of the keys in the unit.

The keys marked * are provided only on the remote control unit.

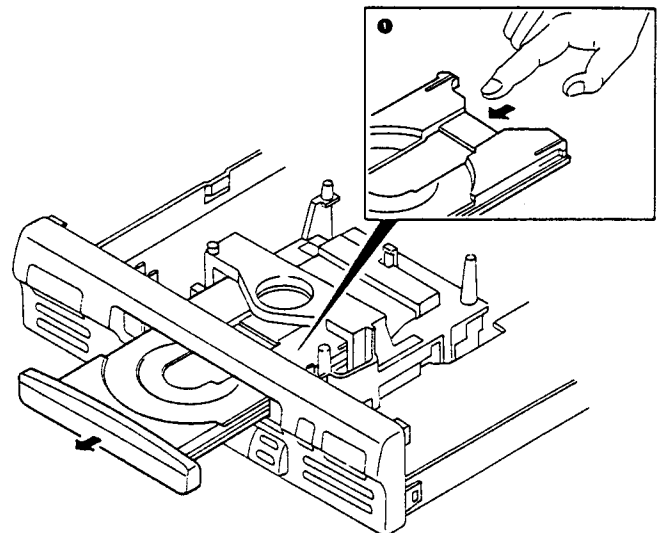
Remote control unit (A70-0956-05) : RC-28
Battery cover (A09-0146-08)

Remote control unit is packed with RX-28

DISASSEMBLY FOR REPAIR

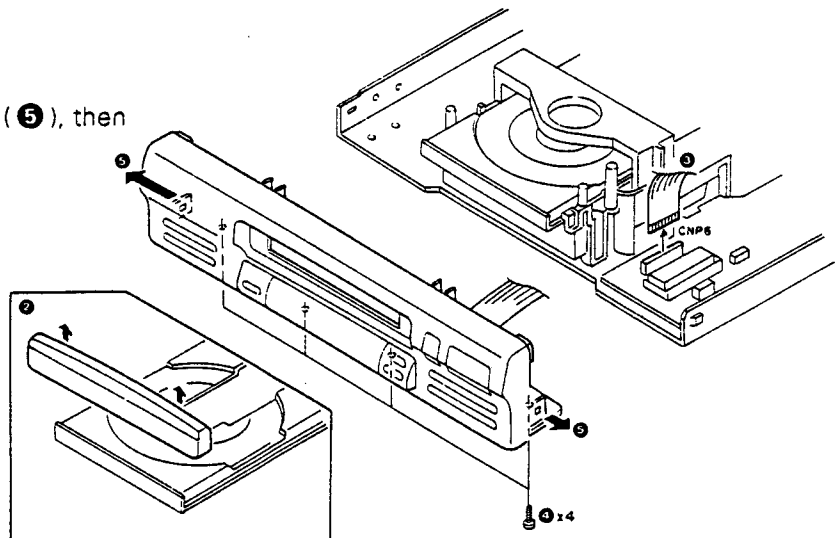
1. When not coming out the tray under normal operation

1. Press the tray slowly by hand (❶).



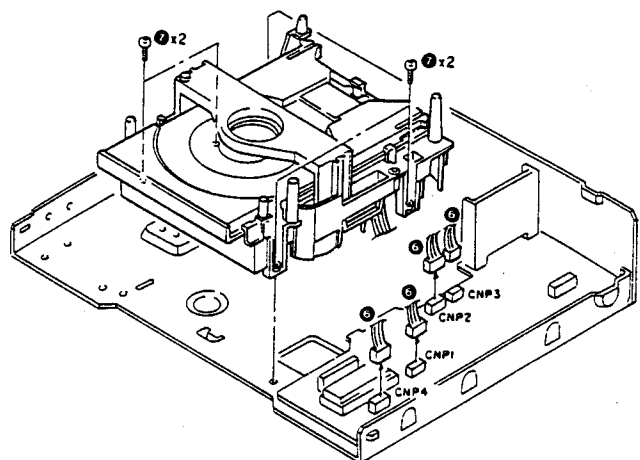
2. Removing the front panel

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



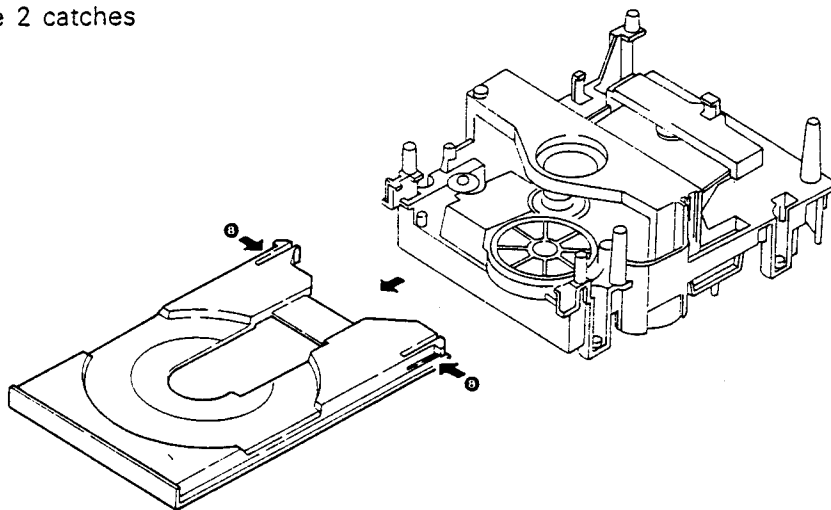
3. Removing the mechanism ass'y and that tray

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



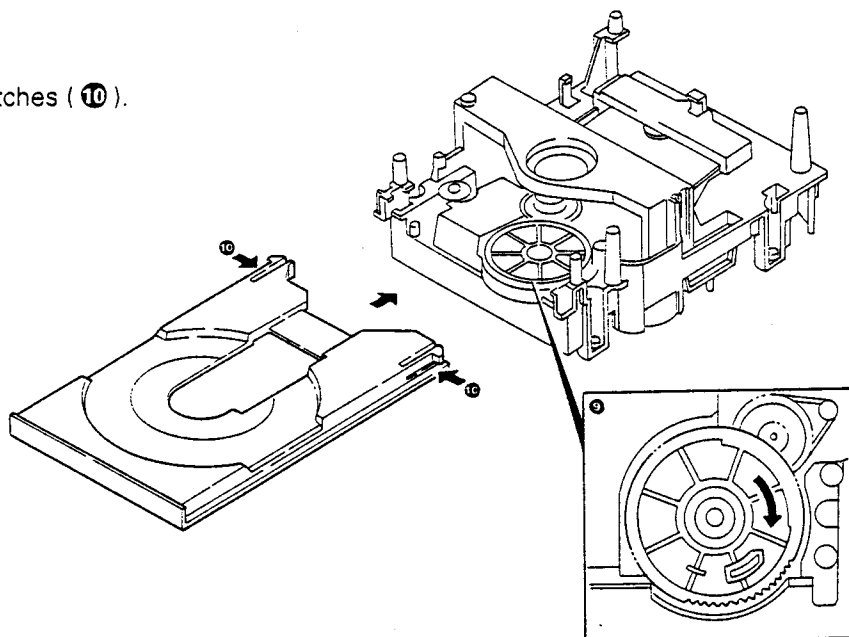
DISASSEMBLY FOR REPAIR

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



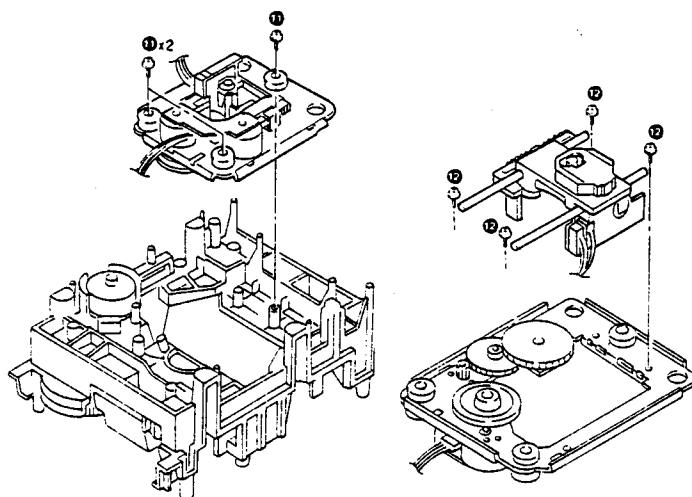
4. How to mount the tray

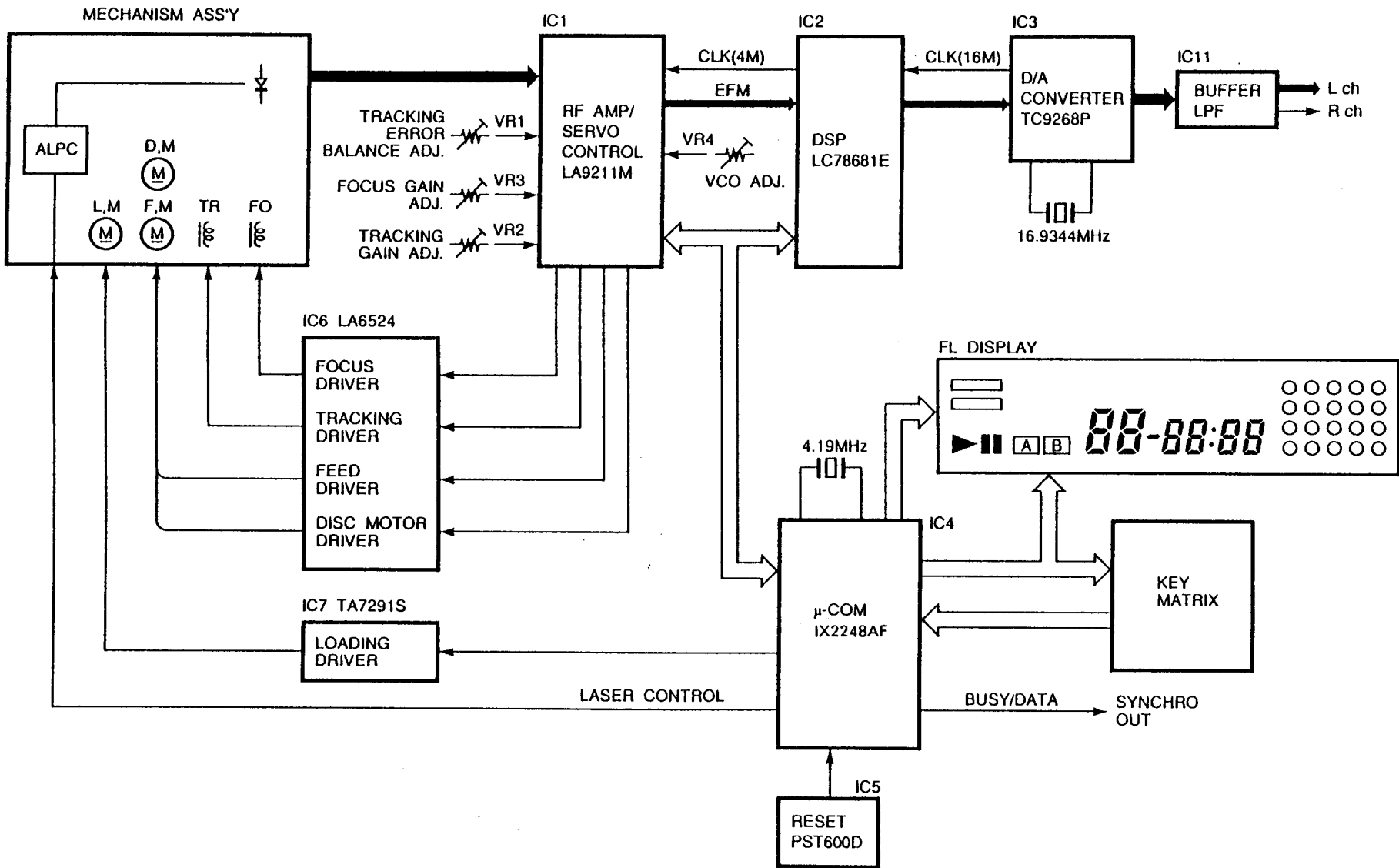
1. Turn the gear fully clockwise (9).
2. Insert the tray while pressing the 2 catches (10).



5. Removing the pickup

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





BLOCK DIAGRAM

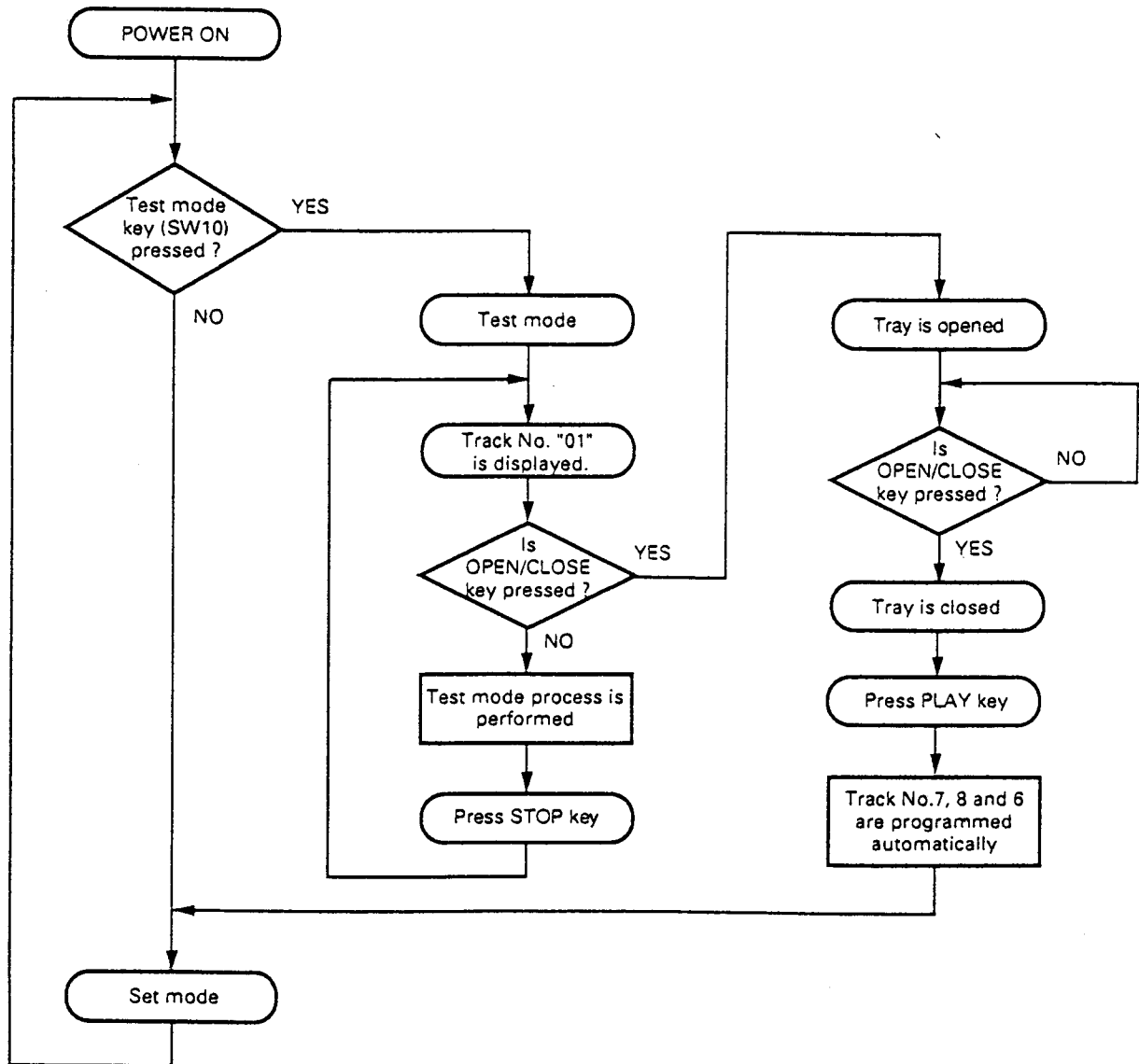
DP-28

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

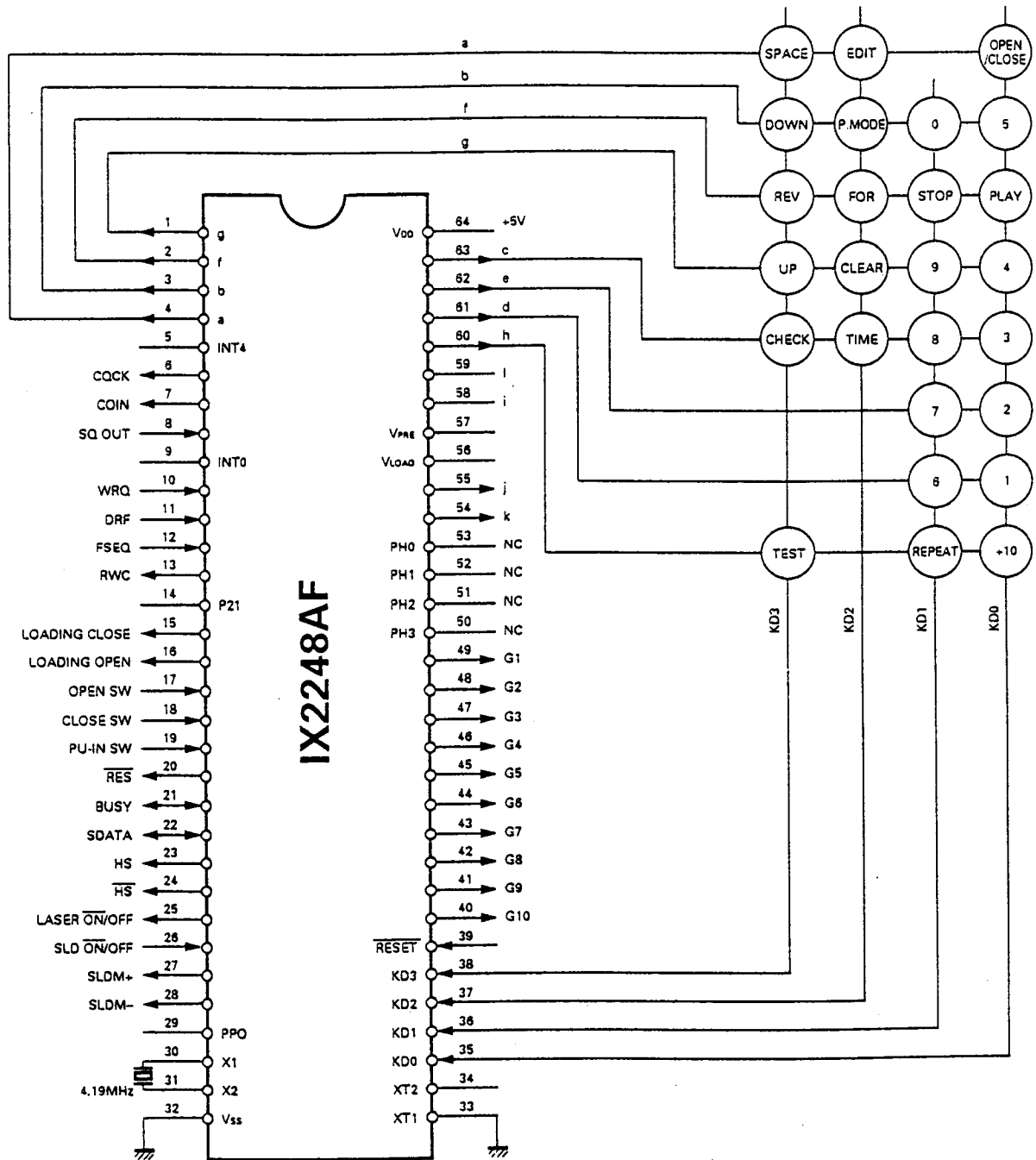
No.	Input key	Function	Track No. display																																				
1	PLAY	(1) Focusing servo ON (2) Tracking servo ON (3) Feed servo ON	TRACK NO. 05 ↓ Displayed for a few seconds after completion (1), (2) and (3). ↓ Disc Track No. is displayed.																																				
2	CHECK or 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;"> <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></td> </tr> <tr> <td>Number of tracks</td> <td>1</td> <td>4</td> <td>128</td> <td>512</td> <td></td> </tr> <tr> <td>Direction</td> <td colspan="5" style="text-align: center;">Inner</td> </tr> </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																																		
Direction	Outer																																						
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...

CIRCUIT DESCRIPTION

2. Microprocessor : IX2248AF (IC4)

2-1. Terminal connection diagram

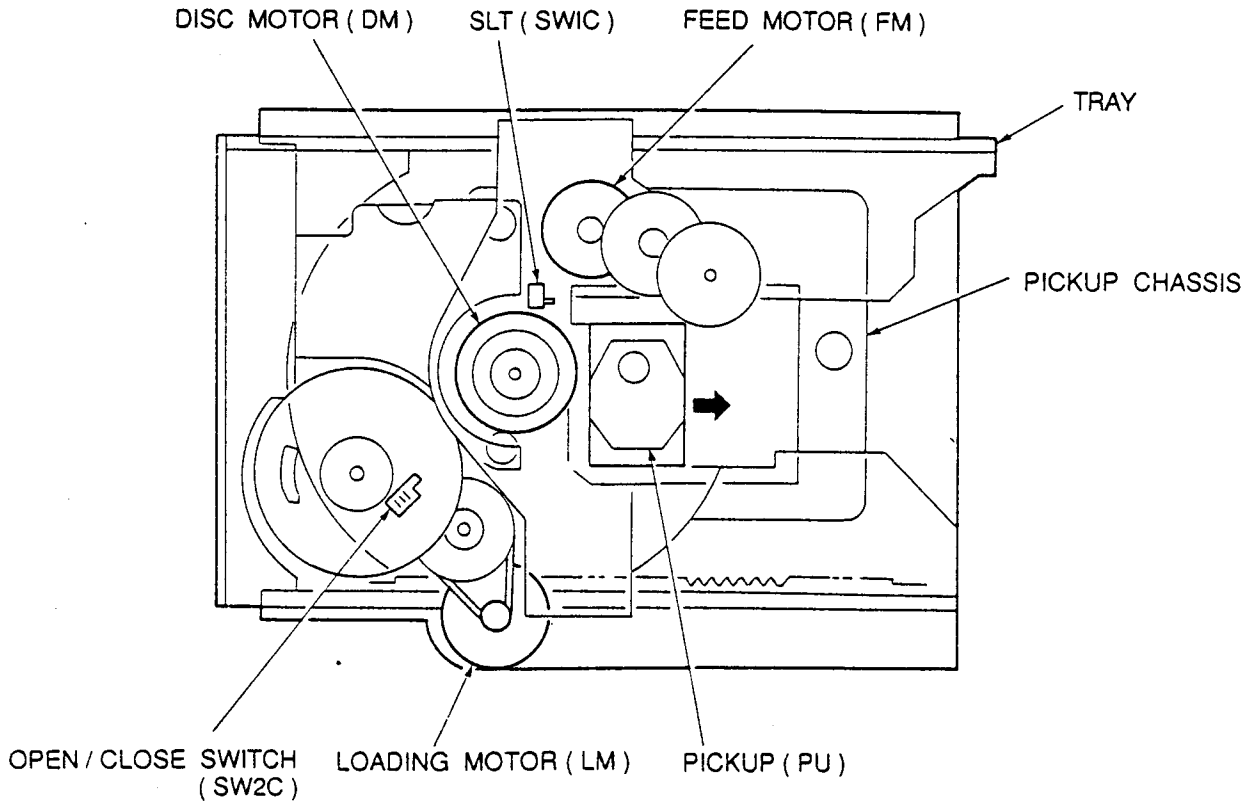


CIRCUIT DESCRIPTION

2-2. Pin function

No.	Pin name	I/O	Function
1~4	g, f, b, a	O	Fluorescent indicator segment.
5	INT4	-	GND
6	COCK	O	DSP IC COCK 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).

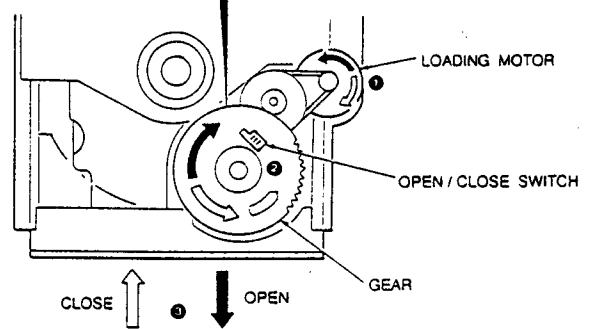
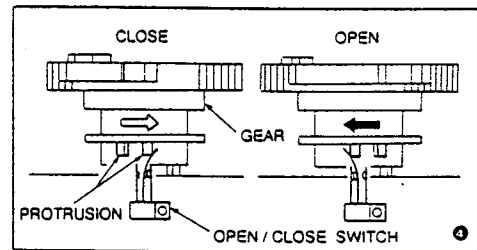
MECHANISM OPERATION DESCRIPTION



1. Tray OPEN/CLOSE operation

By the rotation of the motor (❶), the gear (❷) is rotated and the tray starts OPEN/CLOSE operation (❸).

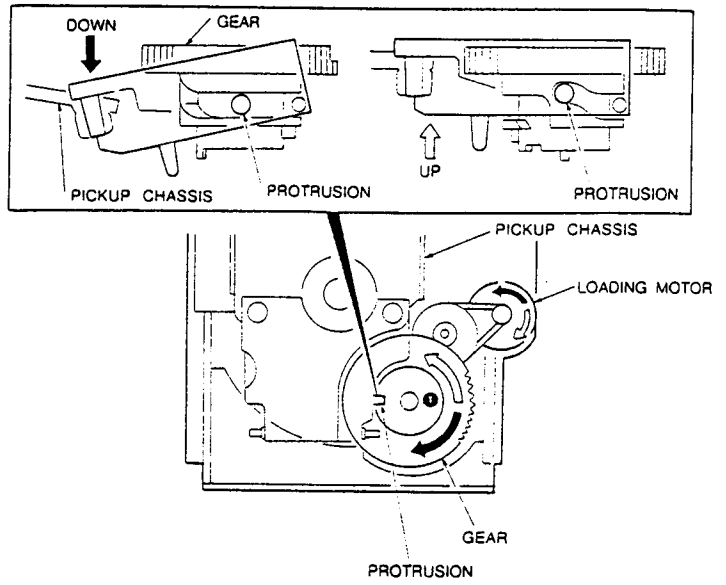
The OPEN/CLOSE operation stops when the protrusion of the gear comes in contact with the detection switch (❹).



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).



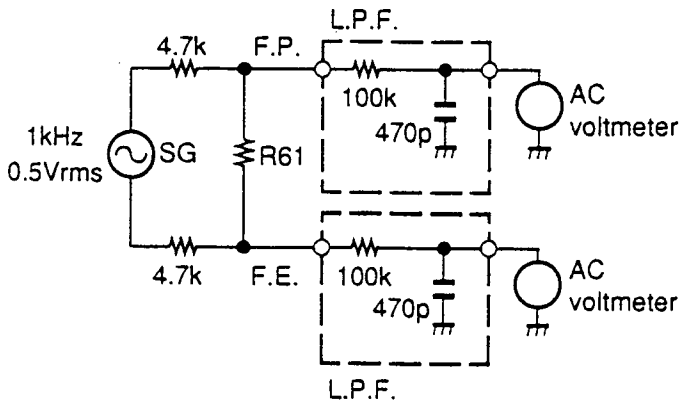
ADJUSTMENT

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 LPF 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 LPF 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)

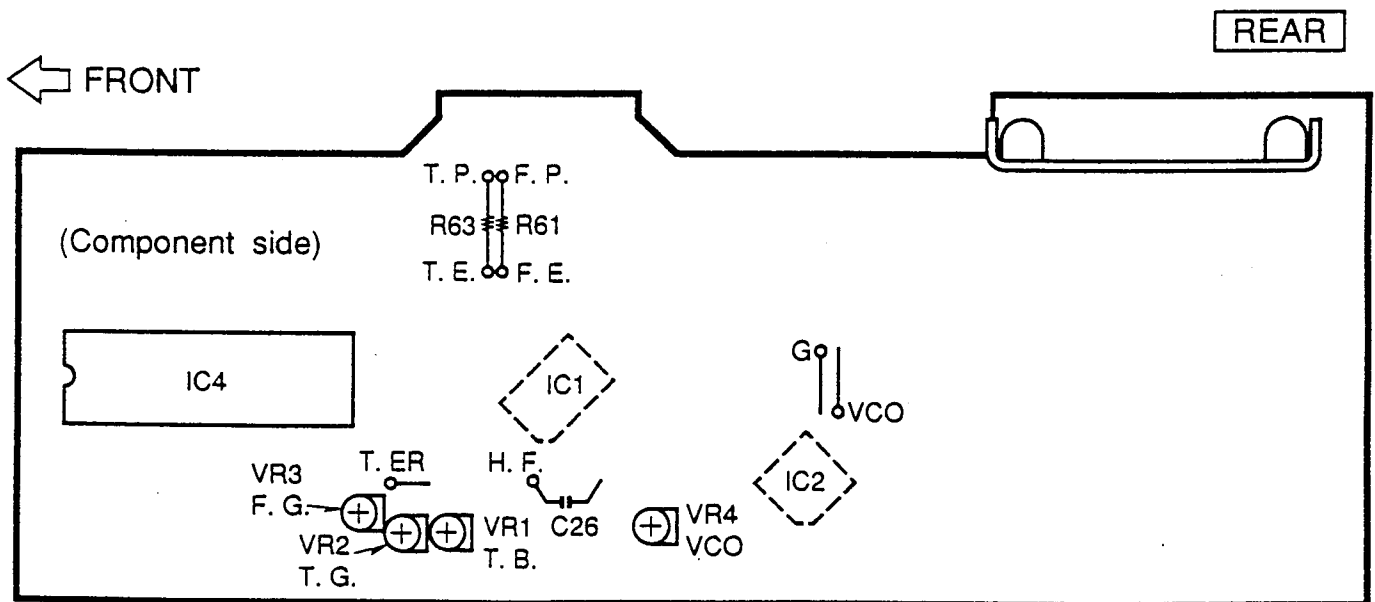
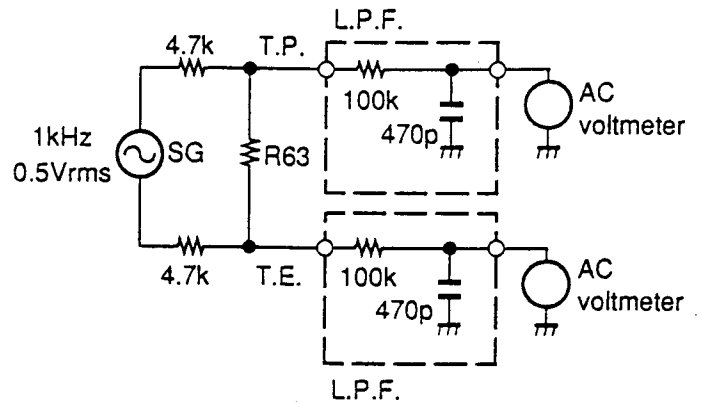
(NOTE) Type 4 disc : SONY YEDS-18 TEST DISC or equivalent.
Adjustment procedures are in TEST MODE.

ADJUSTMENT

(c) Focus gain

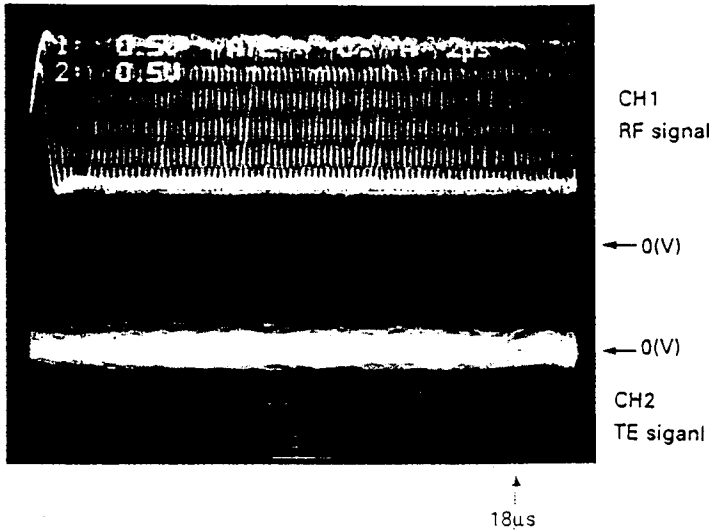


(d) Tracking gain



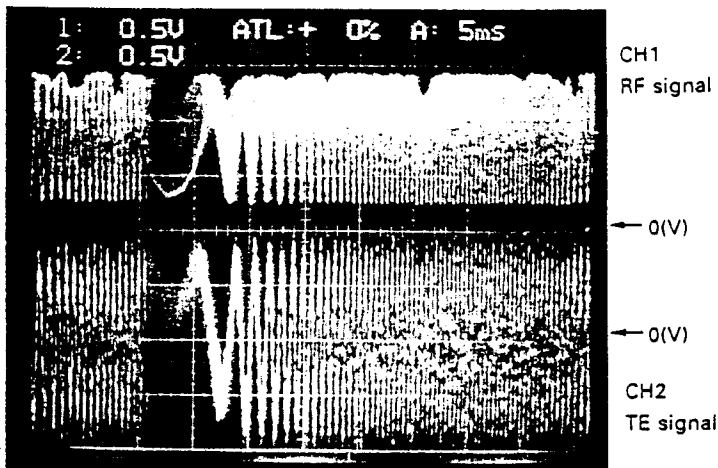
ADJUSTMENT

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. 18 μ s after RF signal, in the form of a projection.

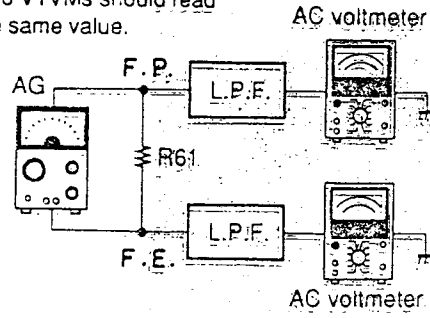
(b) Tracking error balance



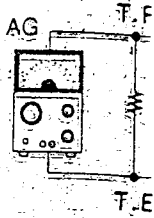
- RF signal and T.Error signal; in test mode (Focusing ON). (Disc type 4)
- Adjust T.Error so that the waveform is symmetrical above and below 0V. (VR 1)

PC BOARD (COMPONENT SIDE VIEW)

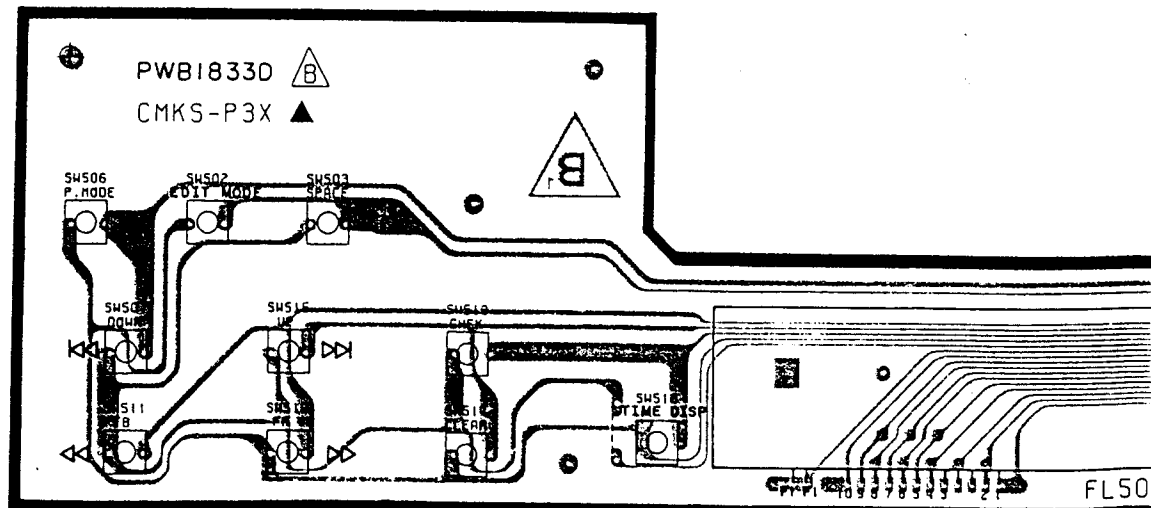
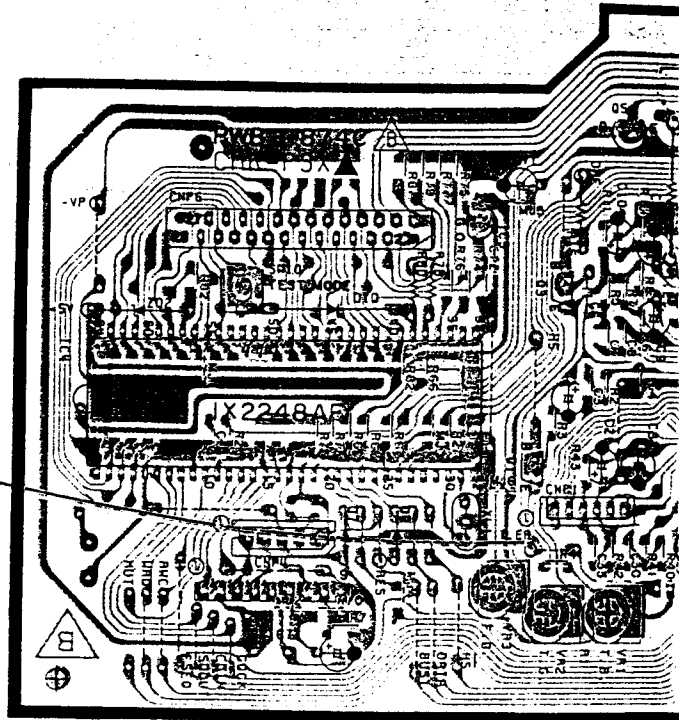
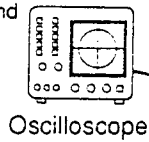
(c) Focus gain :
Two VTVMs should read
the same value.



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



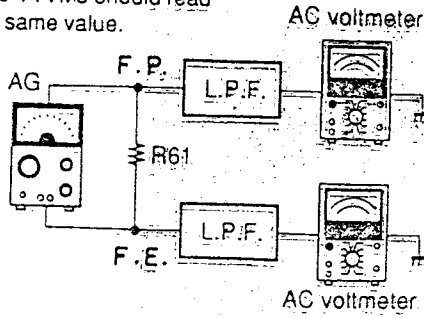
(b) Tracking error balance :
Symmetry between upper and
lower patterns,
or
 $DC=0 \pm 0.05V$



ONENT SIDE VIEW)

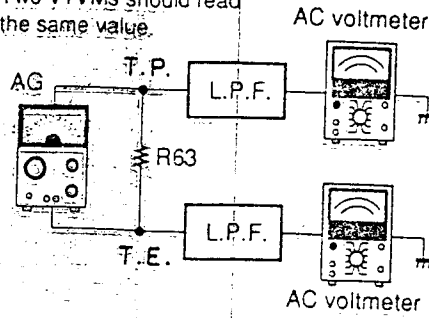
(c) Focus gain :

Two VTVMs should read the same value.

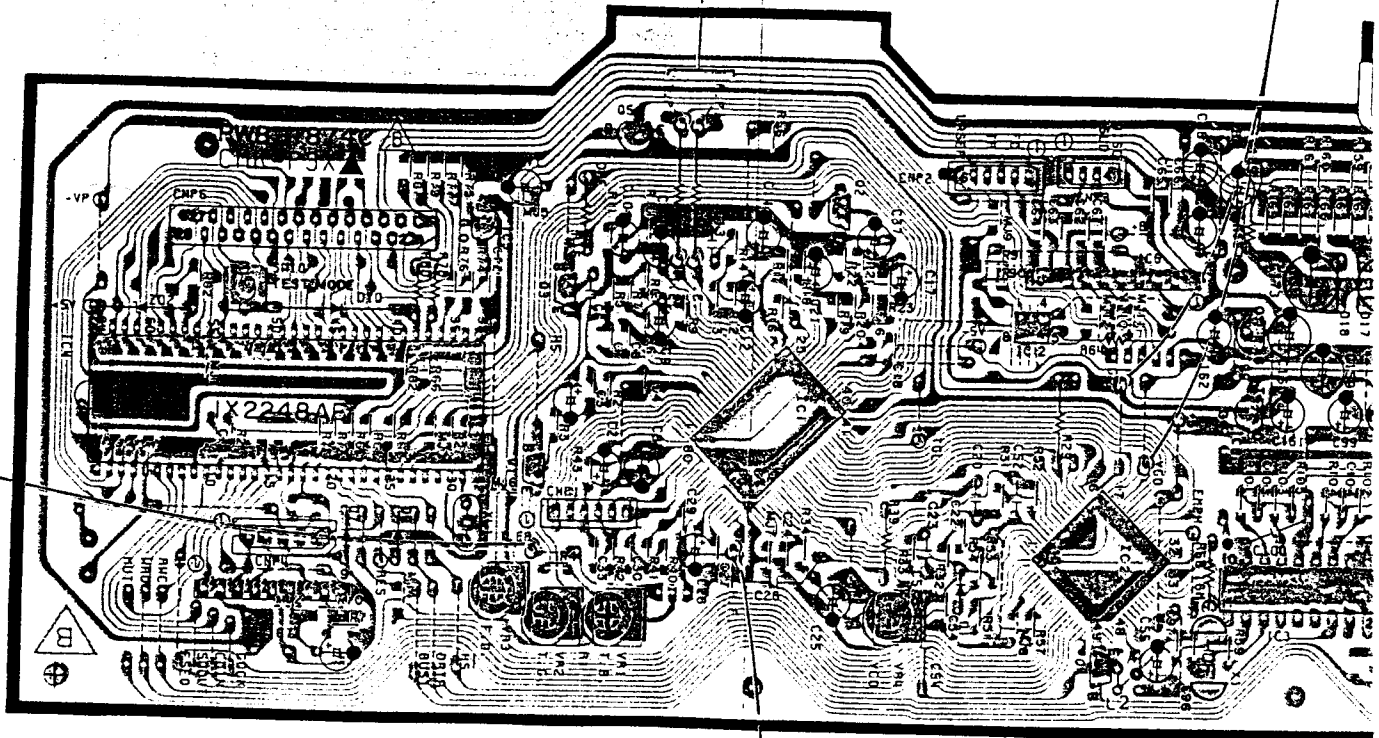
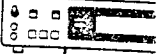


(d) Tracking gain :

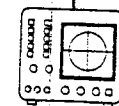
Two VTVMs should read the same value.



Frequency cou

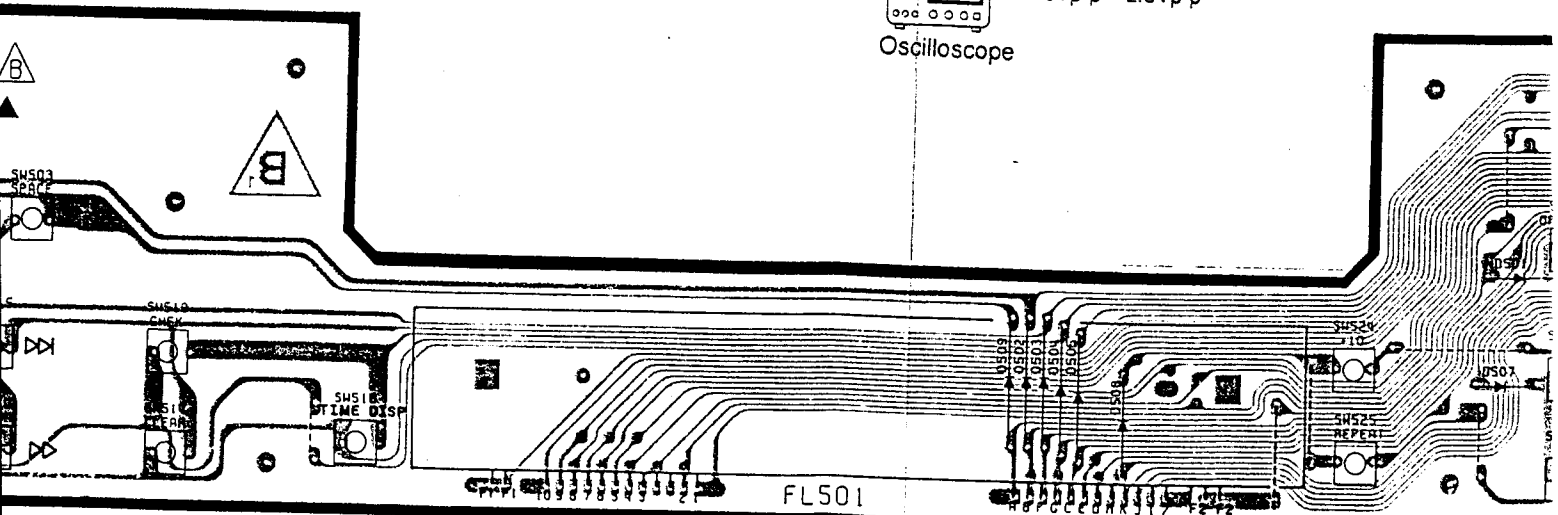


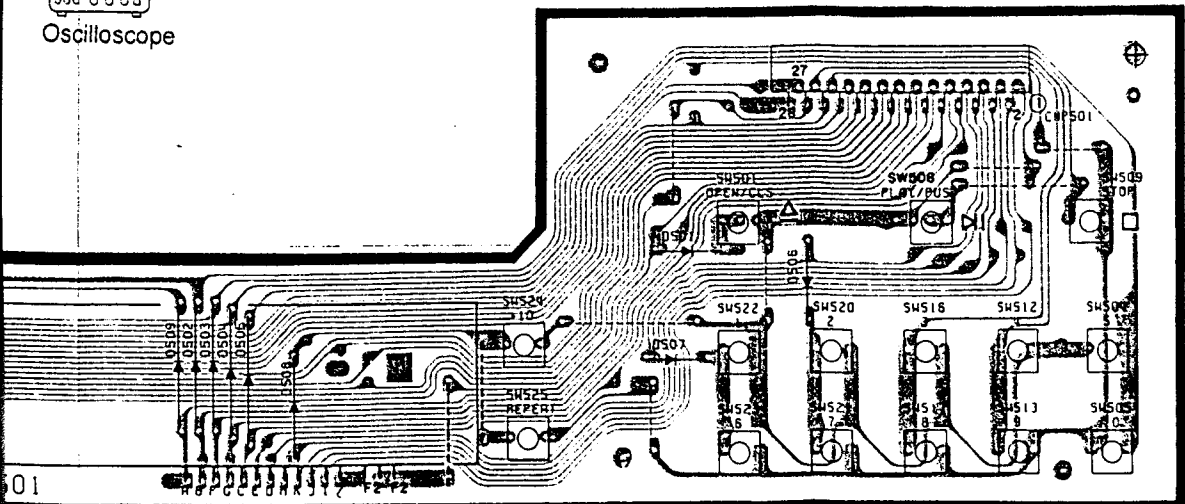
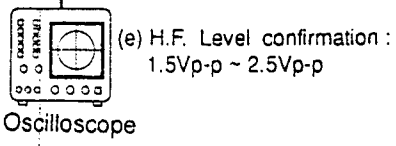
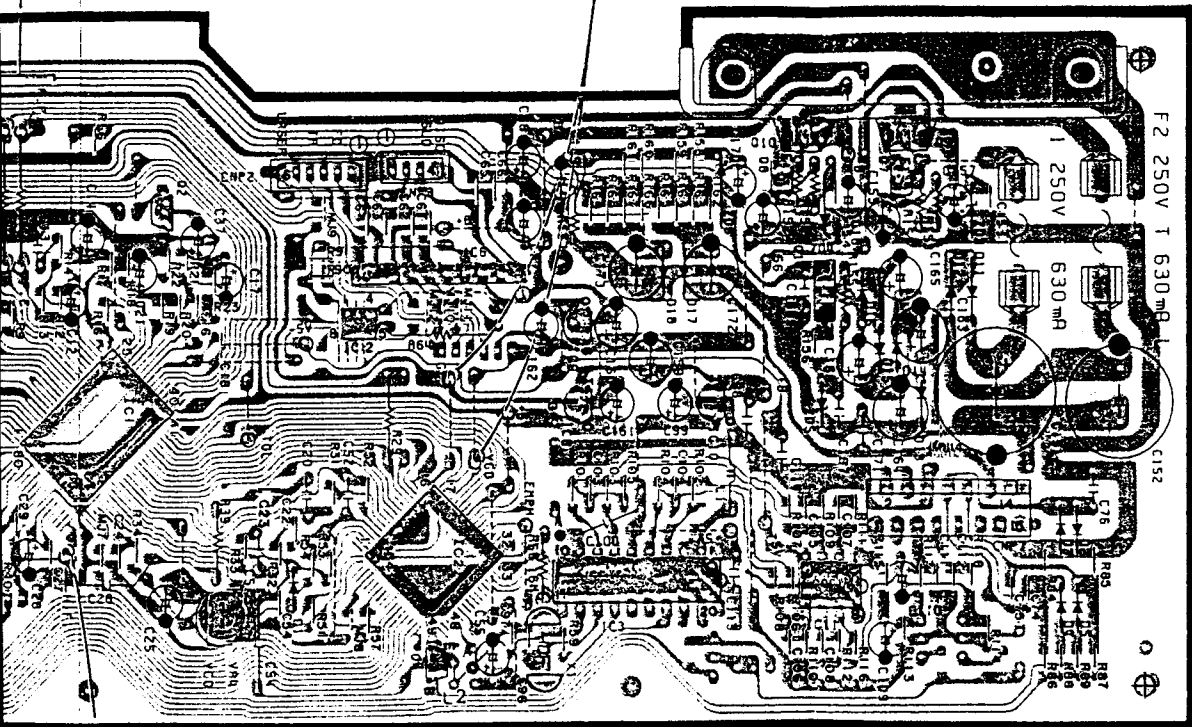
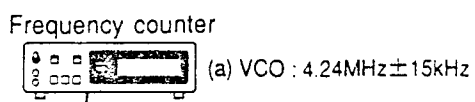
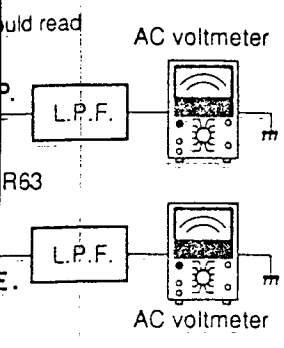
and
Oscilloscope



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

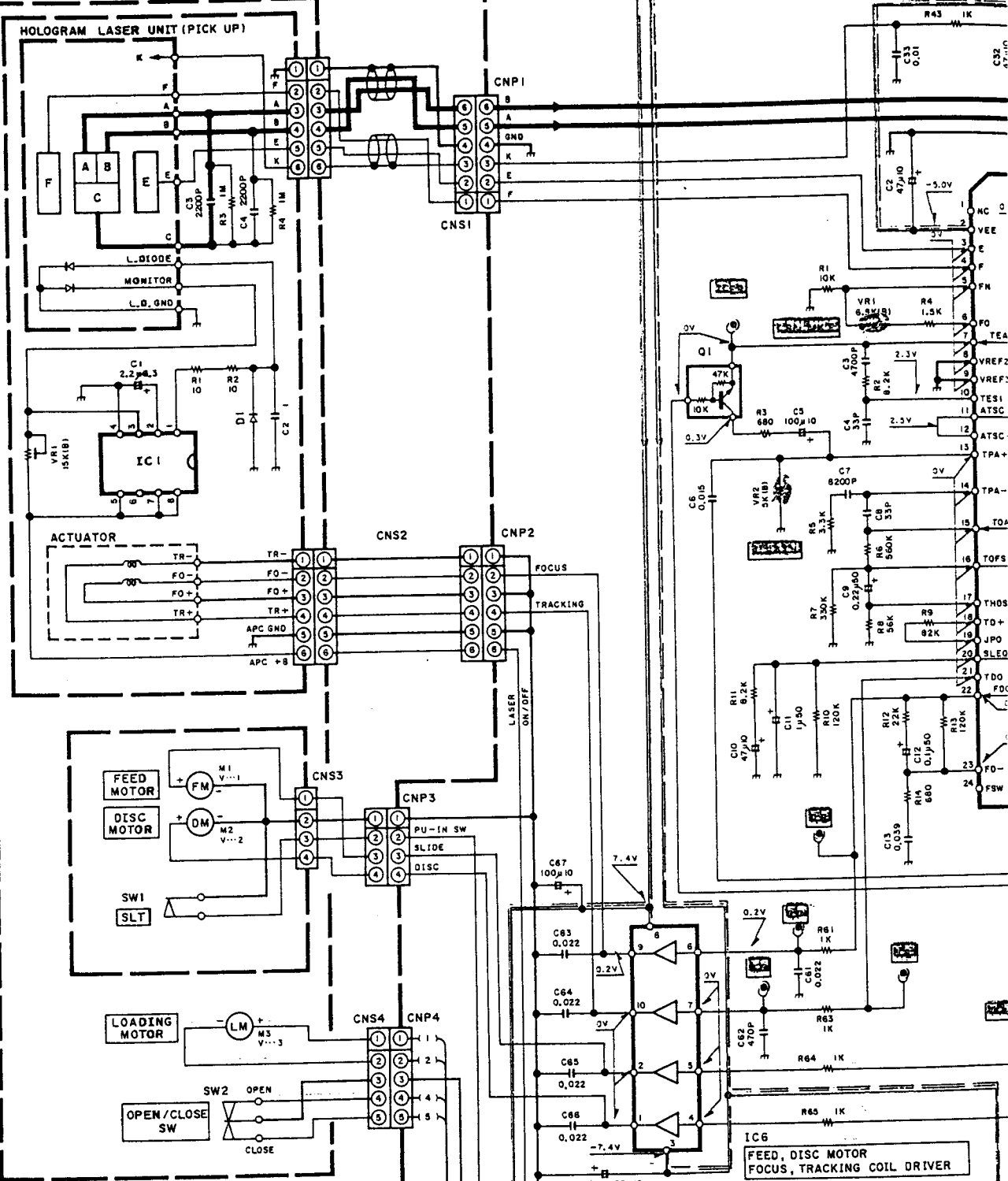
Oscilloscope





MECHANISM ASS'Y

MAIN UNIT



- | | |
|------------------|-------------------|
| IC1 : LA9211M | Q1-4 : DTC114YS |
| IC2 : LC78681E | Q5 : 2SA1015GR |
| IC3 : TC9268P | Q7 : 2SC1740SR |
| IC4 : IX2248AF | Q8 : 2SA933SR |
| IC5 : PST800D | Q9 : 2SD2012 |
| IC6 : LA6524 | Q10 : 2SB1375 |
| IC7 : TA7291S | Q11 : 2SB1237R3 |
| IC8 : TA78L005AP | |
| IC9 : AN79L05 | D1-5,7,9,10,13-18 |
| IC10 : AN78L05 | : 1SS133 |
| IC11 : NJM4560D | D11,12 : RL104T |
| IC12 : NJM4558M | ZD2-4 : MTZ9.1A |
| | ZD5 : MTZJ30B |
| | ZD6 : MTZJ6.8B |

2

3

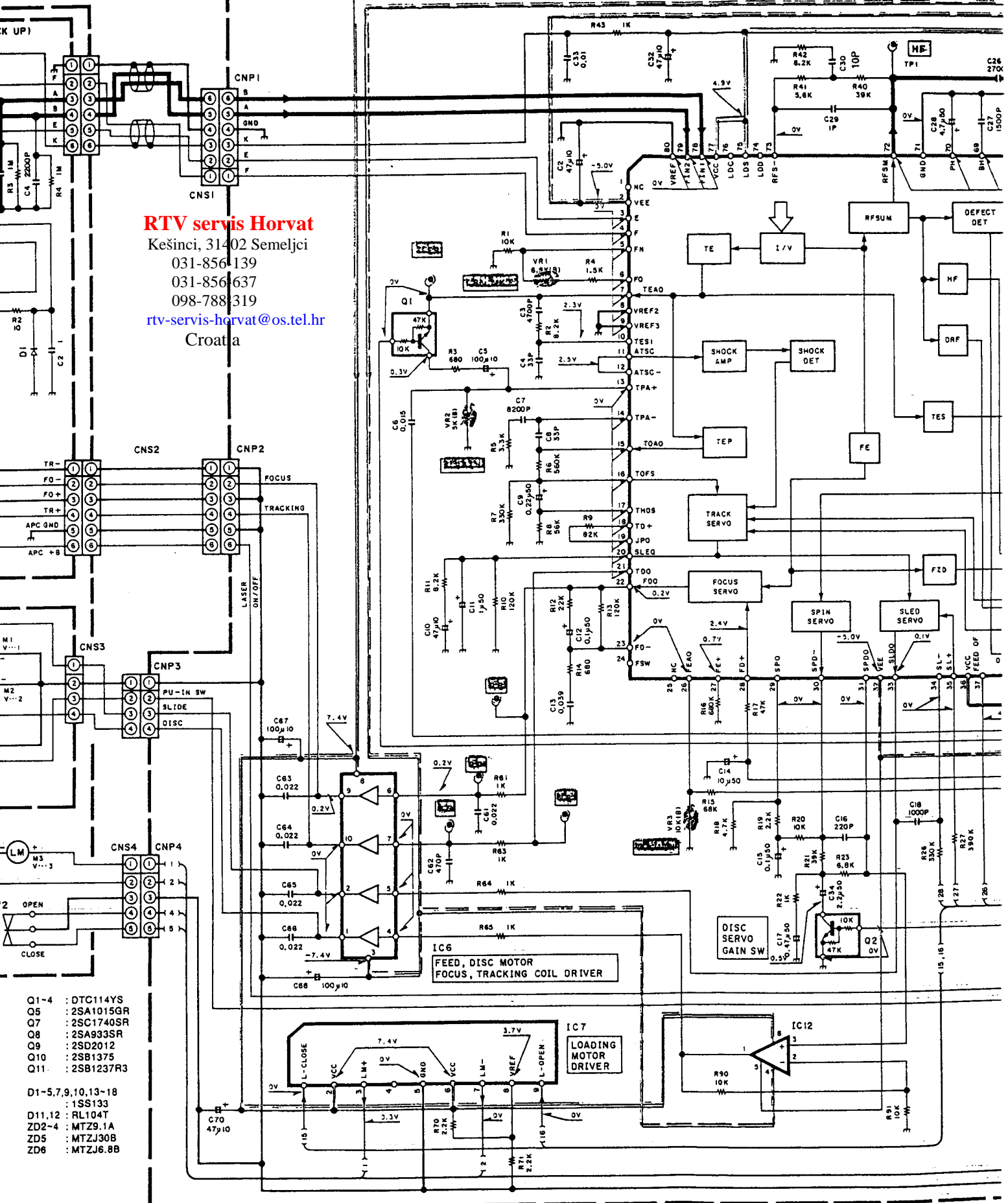
4

5

6

7

MAIN UNIT



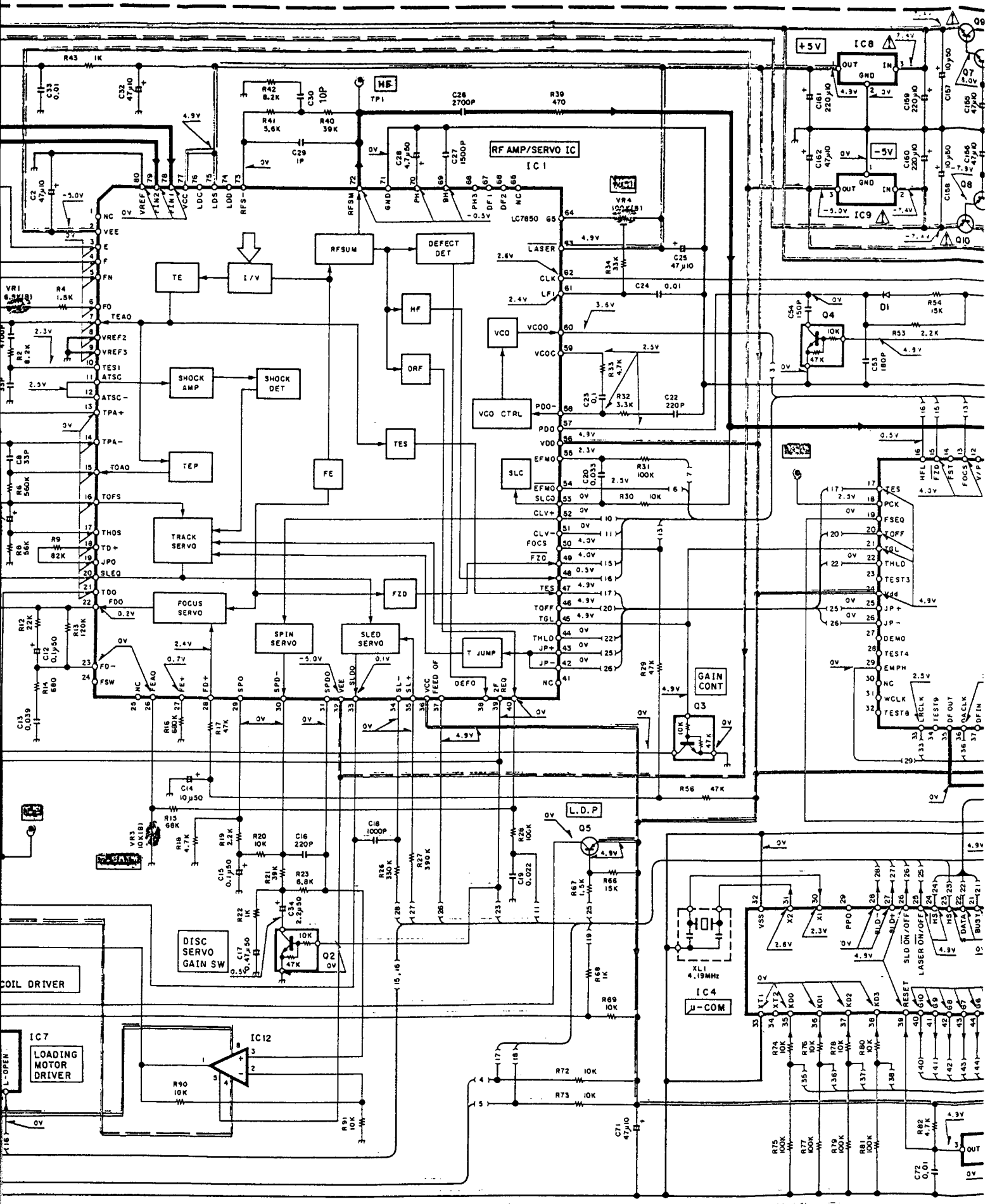
RTV servis Horvat
 Kešinci, 31402 Semeljci
 031-856 139
 031-856 637
 098-788 319
rtv-servis-horvat@os.tel.hr
 Croatia

IC6
 FEED, DISC MOTOR
 FOCUS, TRACKING COIL DRIVER

IC7
 LOADING MOTOR
 DRIVER

IC12

- Q1-4 : DTC114YS
- Q5 : 2SA1015GR
- Q7 : 2SC1740SR
- Q8 : 2SA933SR
- Q9 : 2SD2012
- Q10 : 2SB1375
- Q11 : 2SB1237R3
- D1-5,7,9,10,13-18 : 1SS133
- D11,12 : RL104T
- ZD2-4 : MTZ9.1A
- ZD5 : MTZJ30B
- ZD6 : MTZJ6.8B



COIL DRIVER

IC7
LOADING MOTOR DRIVER

DISC SERVO GAIN SW

L.D.P.
05

IC4
u-COM

XLI
4.19MHz

GAIN CONT
Q3

T JUMP

SLED SERVO

SPIN SERVO

FOCUS SERVO

TRACK SERVO

TEP

SHOCK AMP

I/V

RF AMP/SERVO IC
IC1

+5V
IC8

-5V
IC9

Q4

Q3

Q2

Q5

Q1

Q6

Q7

Q8

Q9

Q10

Q11

Q12

Q13

Q14

Q15

Q16

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Q154

Q155

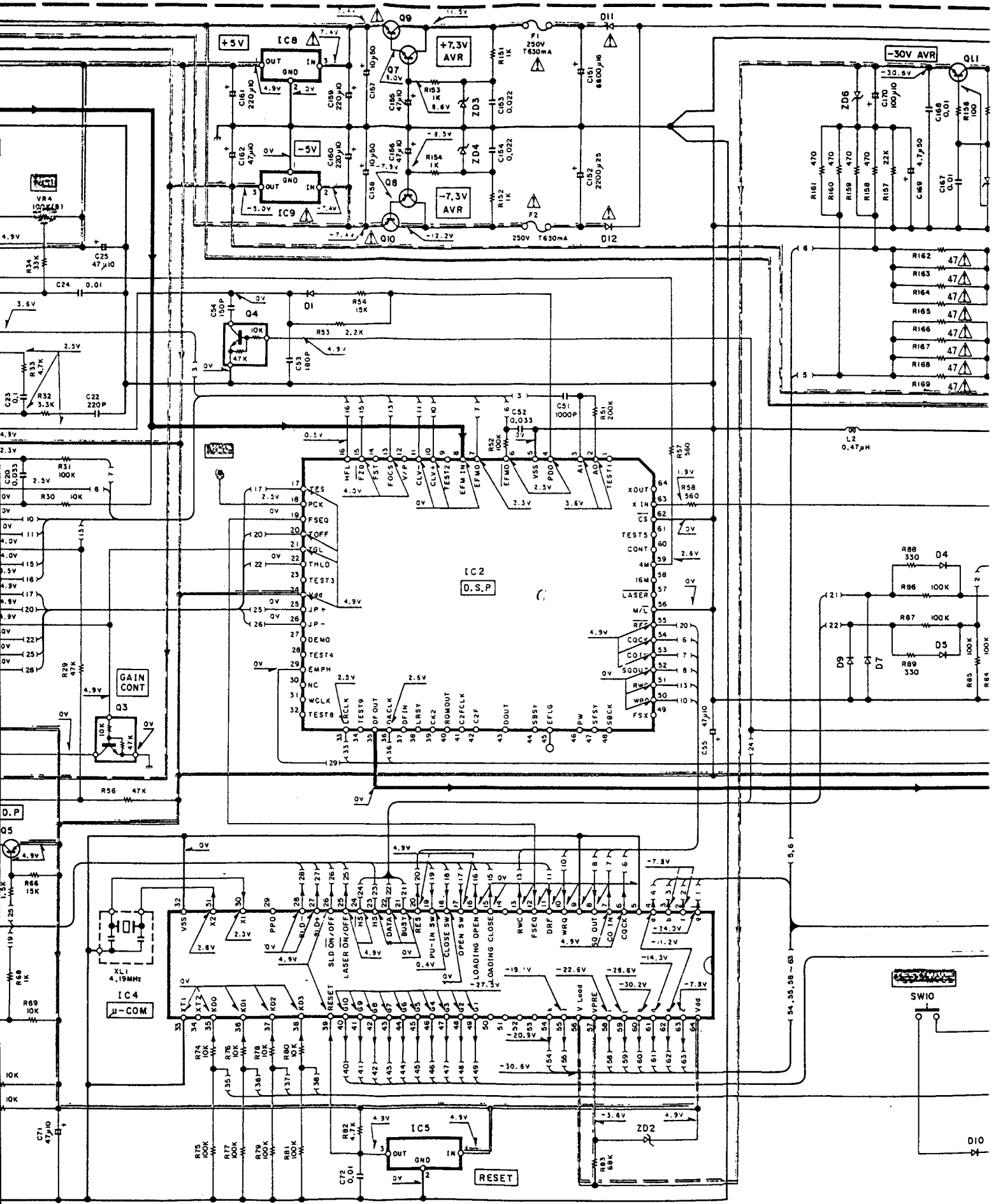
Q156

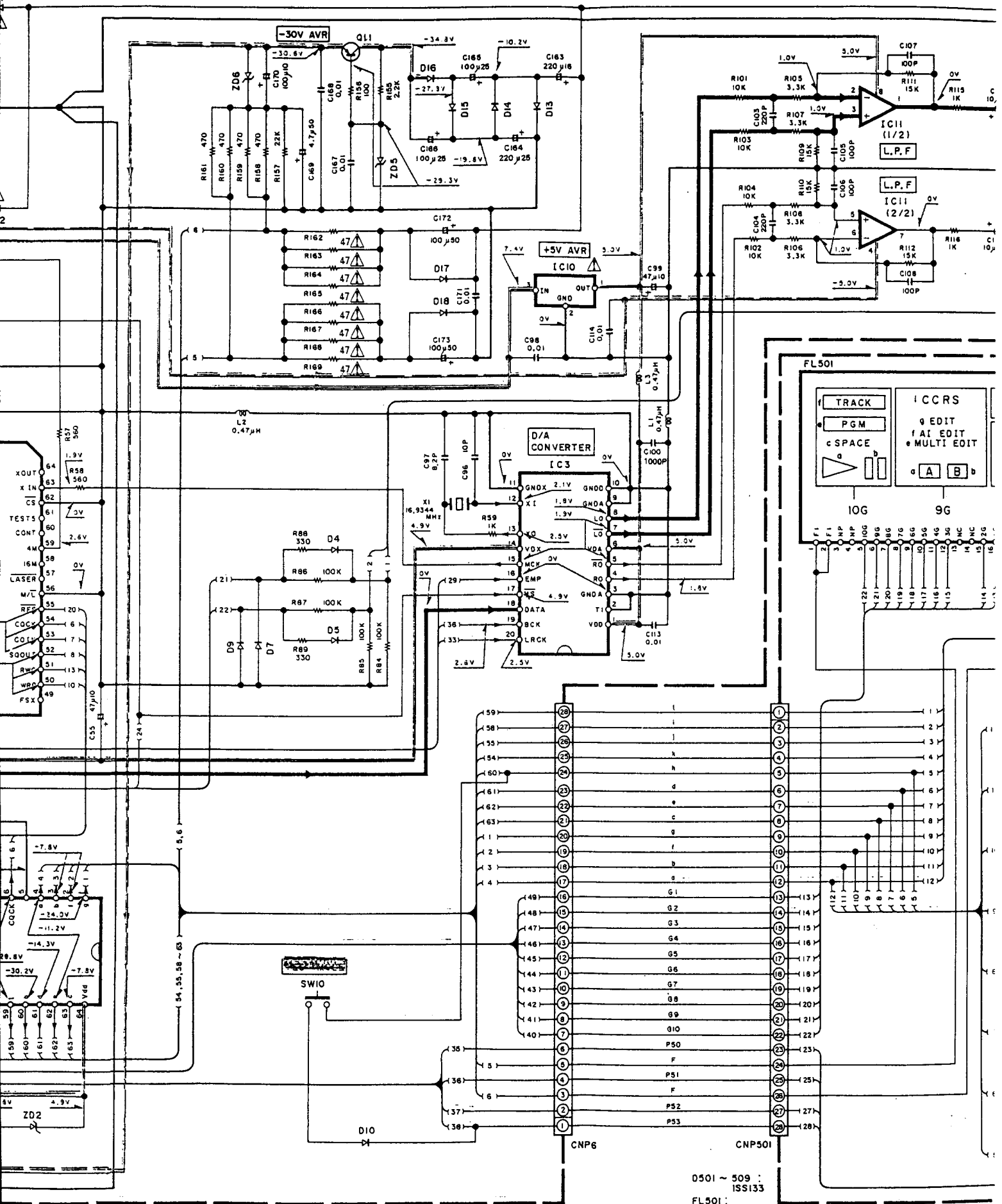
Q157

Q158

Q159

Q160



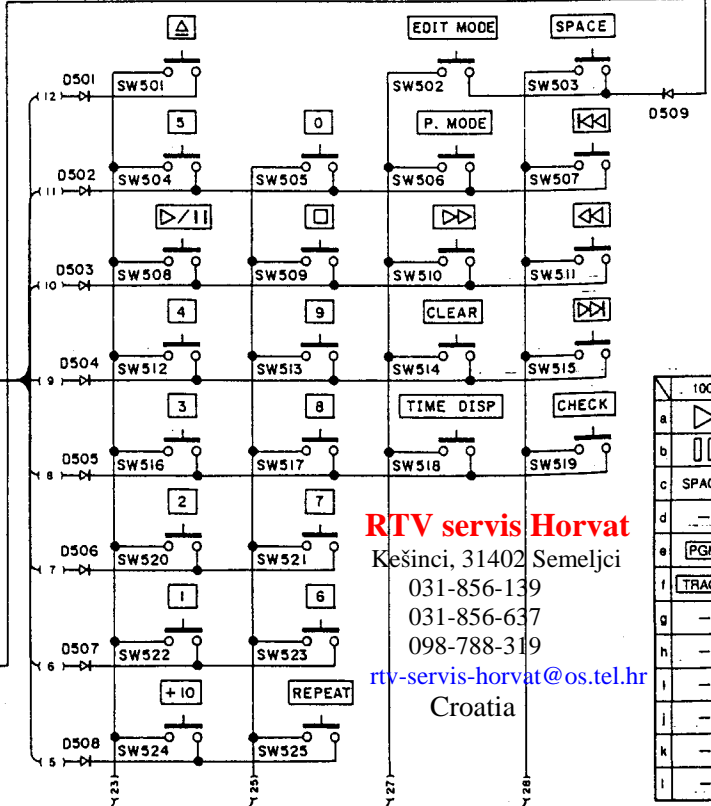
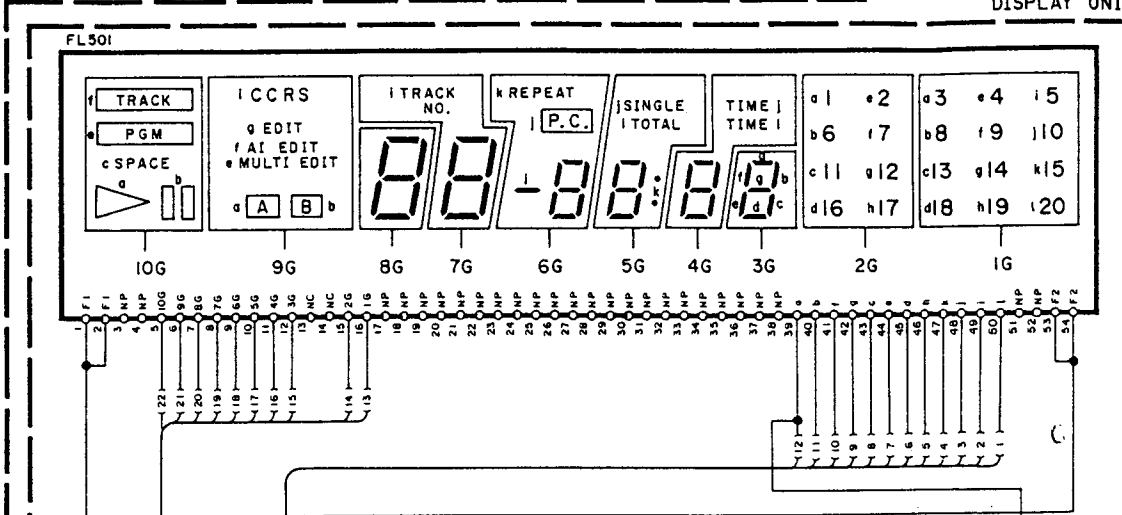
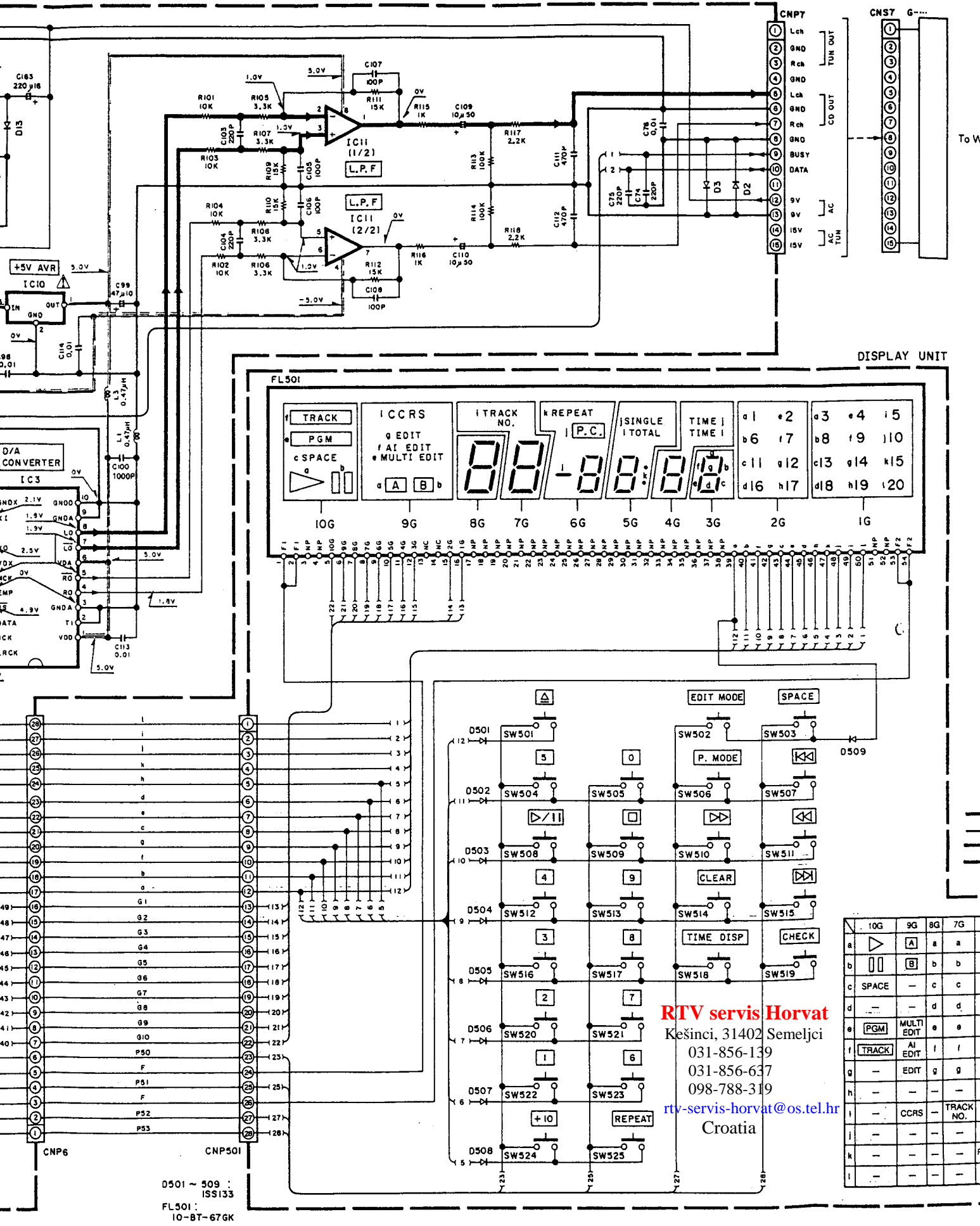


FL501

TRACK	CCRS	EDIT
PGM		AI EDIT
SPACE		MULTI EDIT
		A B

IOG 9G

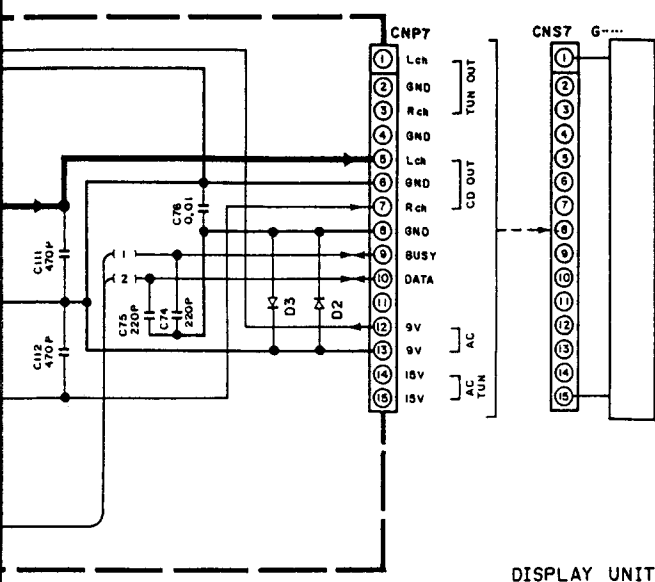
D501 ~ 509 :
ISS133
FL501 :
10-8T-676K



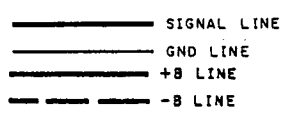
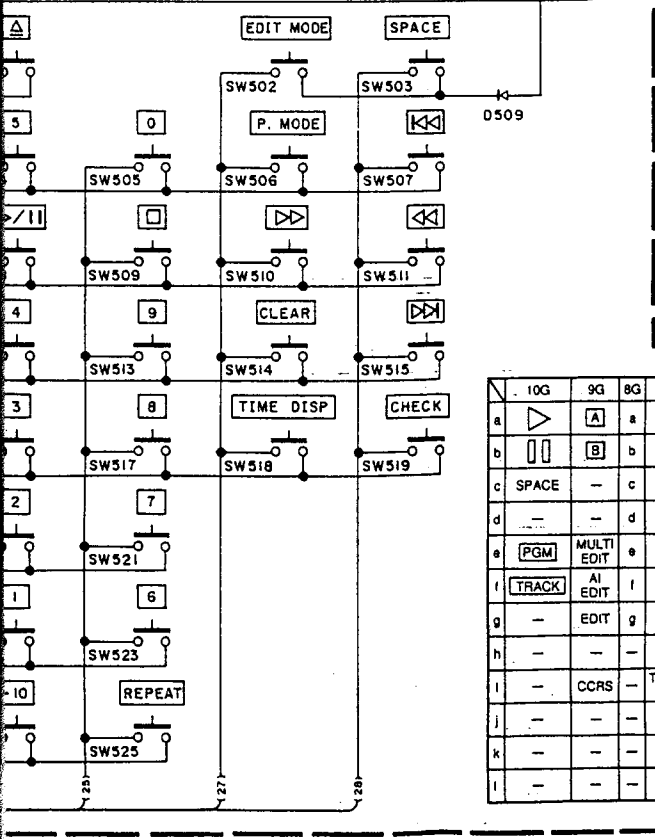
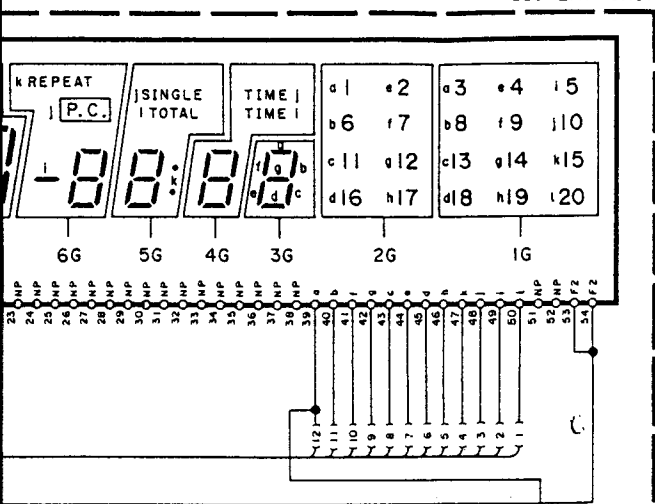
	10G	9G	8G	7G
a	▶	A	a	a
b	▭	B	b	b
c	SPACE	-	c	c
d	-	-	d	d
e	PGM	MULTI EDIT	e	e
f	TRACK	AI EDIT	f	f
g	-	EDIT	g	g
h	-	-	-	-
i	-	CCRS	-	TRACK NO.
j	-	-	-	-
k	-	-	-	-
l	-	-	-	-

RTV servis Horvat
 Kešinci, 31402 Semeljci
 031-856-139
 031-856-637
 098-788-319
rtv-servis-horvat@os.tel.hr
 Croatia

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

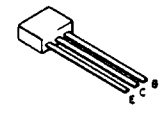


To WHITE CONNECTOR

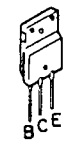


	10G	9G	8G	7G	8G	5G	4G	3G	2G	1G
a	▶	A	a	a	a	a	a	a	a	1 3
b	□	B	b	b	b	b	b	b	b	6 8
c	SPACE	-	c	c	c	c	c	c	c	11 13
d	-	-	d	d	d	d	d	d	d	16 18
e	PGM	MULTI EDIT	e	e	e	e	e	e	e	2 4
f	TRACK	AI EDIT	f	f	f	f	f	f	f	7 9
g	-	EDIT	g	g	g	g	g	g	g	12 14
h	-	-	-	-	-	-	-	-	-	17 19
i	-	CCRS	-	TRACK NO.	-	TOTAL TIME()	-	-	-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

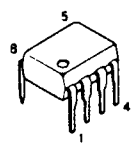
DTC114YS



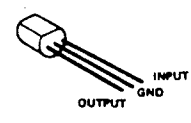
2SB1375
2SD2012



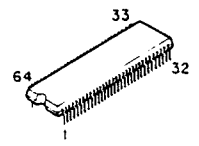
NJM4560D



TA78L005AF



IX2248AF



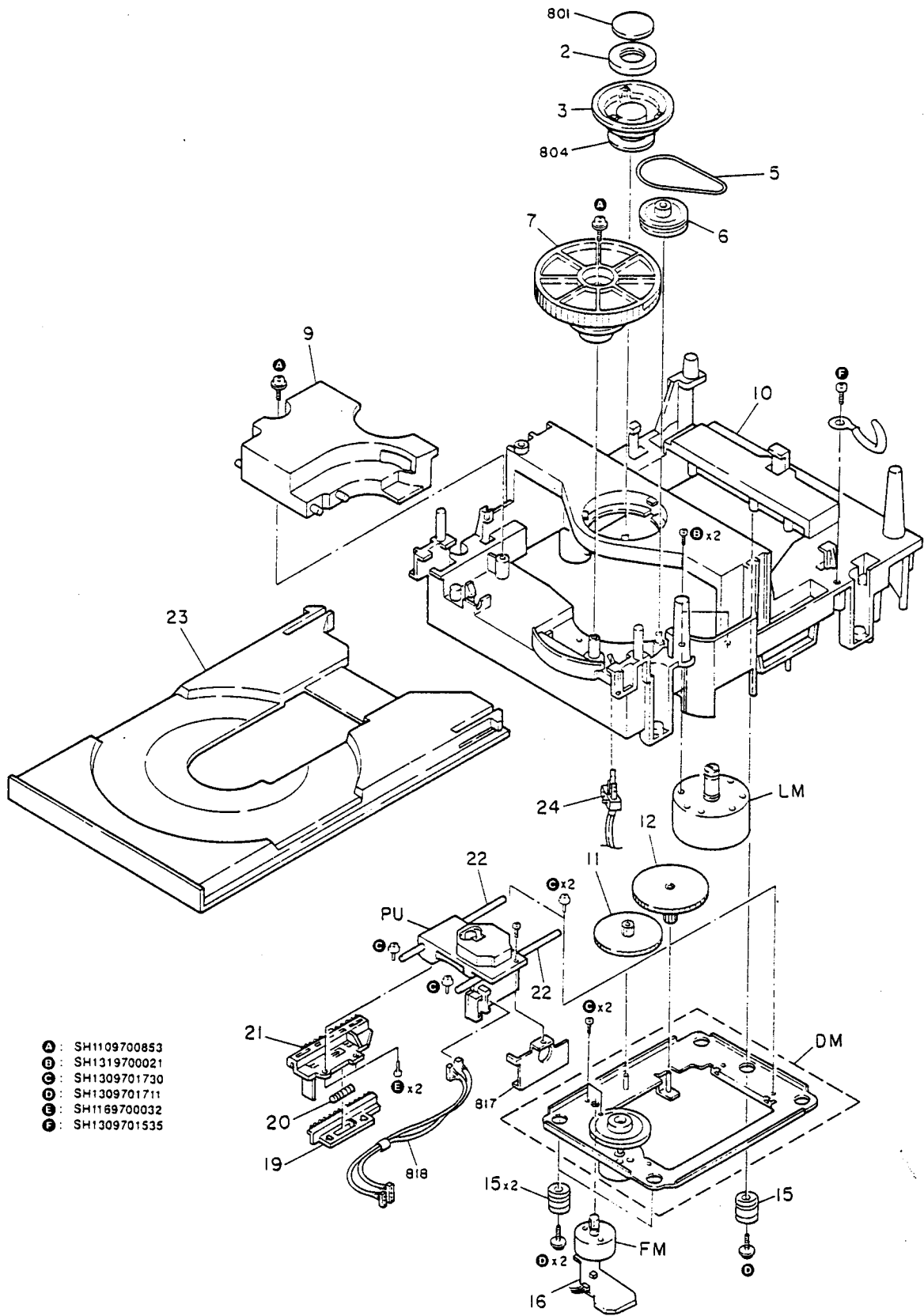
• DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). **A** 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.

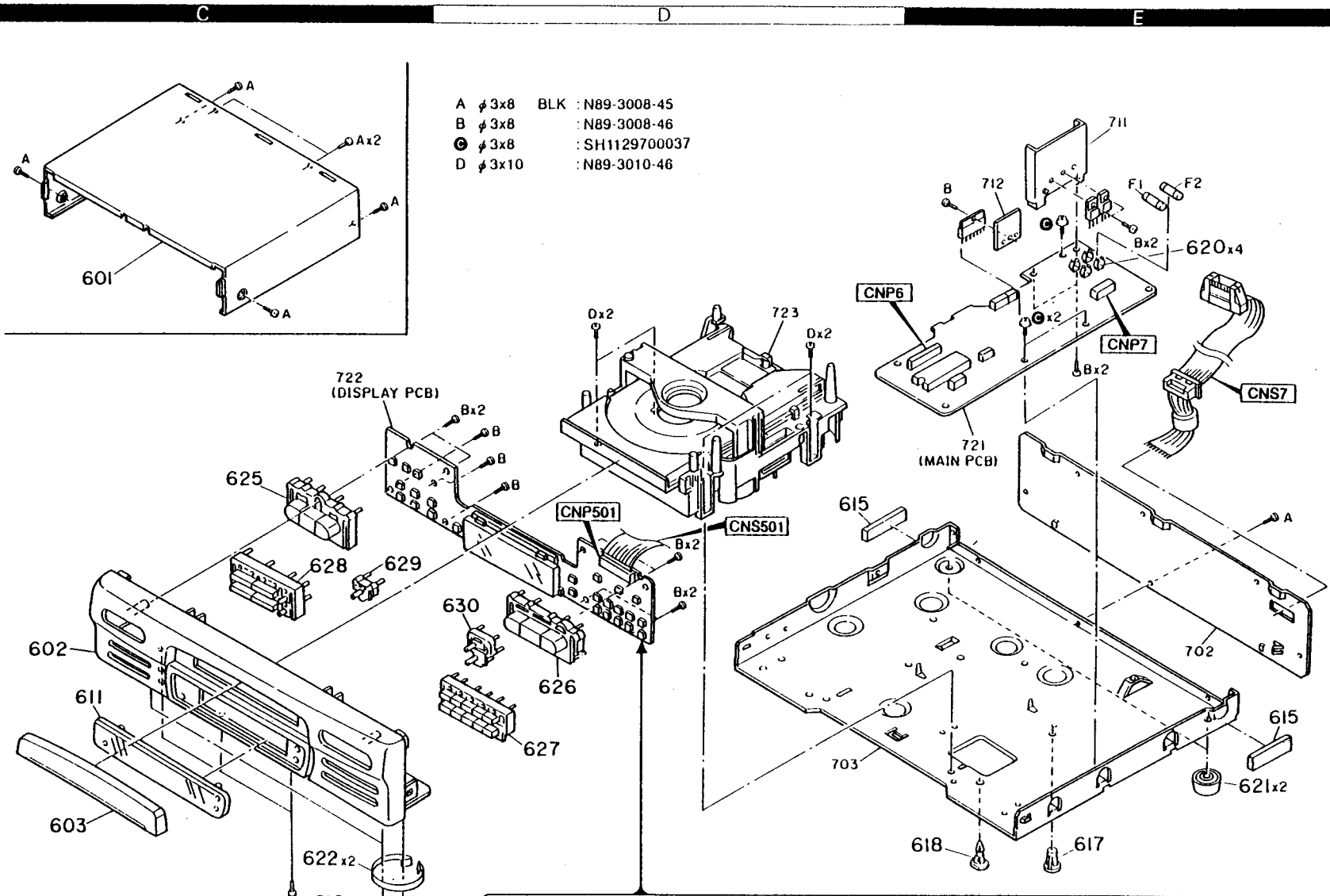
DP-28
KENWOOD

Y22-3642-70

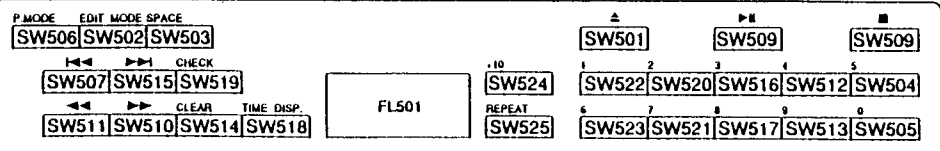
EXPLODED VIEW (MECHANISM)



EXPLODED VIEW (UNIT)



- A ϕ 3x8 BLK : N89-3008-45
- B ϕ 3x8 : N89-3008-46
- C ϕ 3x8 : SH1129700037
- D ϕ 3x10 : N89-3010-46



PARTS LIST

* New Parts

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

2

Ref. No. 参照番号	Address 位置	New Parts 新部品	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 向	Re- marks 備考
C23			SH142S900032	CERAMIC		
C24			SH130S900718	CYLND CHIP C 0.010UF		K
C25			CE04KW1A470M	ELECTRØ 47UF		K 10WV
C26			SH115900271	CERAMIC 2700PF		K
C27			SH130S900674	CERAMIC 1500PF		K
C28			CE04KV1H4R7M	ELECTRØ 4.7UF		50WV
C29			CC41DSL1H1R0C	CYLND CHIP C 1.0PF		C
C30			CC41DSL1H100J	CYLND CHIP C 10PF		J
C32			CE04KW1A470M	ELECTRØ 47UF		10WV
C33			SH130S900718	CYLND CHIP C 0.010UF		K
C34			CE04KV1H2R2H	ELECTRØ 2.2UF		50WV
C51			CK73FB1H102K	CHIP C 1000PF		K
C52			SH130S900664	CERAMIC 0.033UF		K
C53			CK73FB1H181K	CHIP C 180PF		K
C54			CK45FB1H151K	CERAMIC 150PF		K
C55			CE04KV1A470M	ELECTRØ 47UF		10WV
C61			SH130S900673	CYLND CHIP C 0.022UF		K
C62			CK73FB1H471K	CHIP C 470PF		K
C63	-66		SH130S900689	CERAMIC 0.022UF		25WV
C67	,68		CE04KW1A101H	ELECTRØ 100UF		10WV
C70	,71		CE04KV1A470M	ELECTRØ 47UF		10WV
C72			SH130S900718	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			CC41DSL1H8R2D	CYLND CHIP C 8.2PF		D
C98			CK45FF1H103Z	CERAMIC 0.010UF		Z
C99			CE04KW1A470M	ELECTRØ 47UF		10WV
C100			CK73FB1H102K	CERAMIC 1000PF		K
C103	,104		CK73FB1H221K	CHIP C 220PF		K
C105	-108		CK73FB1H101K	CHIP C 100PF		K
C109	,110		CE04KW1H100M	ELECTRØ 10UF		50WV
C111	,112		CK73FB1H471K	CHIP C 470PF		K
C113	,114		CK45FF1H103Z	CERAMIC 0.010UF		Z
C151			CE04KV1C682H	ELECTRØ 6800UF		16WV
C152			CE04KV1E222H	ELECTRØ 2200UF		25WV
C153	,154		SH130S900689	CERAMIC 0.022UF		25WV
C155	,156		CE04KW1A470M	ELECTRØ 47UF		10WV
C157	,158		CE04KW1H100M	ELECTRØ 10UF		50WV
C159	-161		CE04KW1A221H	ELECTRØ 220UF		10WV
C162			CE04KW1A470M	ELECTRØ 47UF		10WV
C163			CE04KW1C221H	ELECTRØ 220UF		16WV
C164			CE04KV1E221M	ELECTRØ 220UF		25WV
C165	,166		CE04KW1E101M	ELECTRØ 100UF		25WV
C167	,168		CK45FF1H103Z	CERAMIC 0.010UF		Z
C169			CE04KV1H4R7M	ELECTRØ 4.7UF		50WV
C170			CE04KW1A101M	ELECTRØ 100UF		10WV
C171			CK45FF1H103Z	CERAMIC 0.010UF		Z
C172	,173		CE04KW1H101M	ELECTRØ 100UF		50WV
CNP6		*	E40-4168-05	PLUG(28Pin)		
CNP7	1E		SH1105100540	CONNECTØR(15Pin)		
CNP8	1E		E30-2673-05	CONNECTØR ASSY(15Pin)		
CNP501	2D		E40-4208-05	PLUG(28Pin)		
CNS501	1D		E35-0791-08	FLAT CABLE CONNECTØR ASSY(28P)		

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

K:USA
T:England
X:Australia

P:Canada
E:Europe
M:10thm Areas

△ indicates safety critical components

* New Parts

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Teile ohne Paris No. werden nicht geliefert.

1

Ref. No. 参照番号	Address 位置	New Parts 新部品	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 向	Re- marks 備考
DP-28						
601	1C		A01-3118-08	CABINET TOP		
602	2C	*	A60-0579-08	FRONT PANEL		
603	2C	*	A29-0368-08	CD TRAY COVER		
611	2C	*	B10-2021-08	PANEL WINDOW		E
-	-	*	B60-1539-08	INSTRUCTION MANUAL(E,F,G,D,I,S)		XT
-	-	*	B60-1540-08	INSTRUCTION MANUAL(ENGLISH)		MI
-	-	*	B60-1541-08	INSTRUCTION MANUAL(E,S,C)		ITEM
615	1D, 2E		G10-0199-08	CHASSIS CUSHION		I
616	2C		SH1103260268	LEG CUSHION		
-	-		H10-5730-08	POLYSTYRENE FOAMED FIXTURE(L)		
-	-		H10-5731-08	POLYSTYRENE FOAMED FIXTURE(R)		
-	-	*	H50-1080-08	ITEM CARTON CASE		
-	-	*	H50-1081-08	ITEM CARTON CASE		
-	-		SH1109020633	PAD		
-	-		SH1109060121	PROTECTION BAG(UNIT)		
617	2E		SH1104130267	SPACER, PWB		
618	2E		SH1102140449	TUNER PWB HOLDER		
620	1E		SH130S160014	FUSE HOLDER		
621	2E		SH1101230060	REAR FOOT		
622	2C		SH1101560798	FOOT RING		
625	1C	*	K29-5923-08	KNØB(MØDE)		
626	2D	*	K29-5924-08	KNØB(PLAY/EJECT)		
627	2D	*	K29-5925-08	KNØB(10KEY)		
628	2C	*	K29-5926-08	KNØB(SKIP)		
629	1C	*	K29-5927-08	KNØB(01SPRAY)		
630	2D	*	K29-5928-08	KNØB(REPEAT)		
A			N89-3008-45	SCREW		
B			N89-3008-46	SCREW		
C			SH1129700037	SCREW		
D			N89-3010-46	SCREW		
ELECTRIC PARTS						
C2			CE04KW1A470M	ELECTRØ 47UF		10WV
C3			SH130S900678	CYLND CHIP C 4700PF		K
C4			CC41DSL1H330J	CYLND CHIP C 33PF		J
C5			CE04KW1A101M	ELECTRØ 100UF		10WV
C6			SH130S900683	CERAMIC 0.015UF		K
C7			SH110S900992	CYLND CHIP C 8200PF		K
C8			CC41DSL1H350J	CYLND CHIP C 33PF		J
C9			CE04KW1HR22M	ELECTRØ 0.22UF		50WV
C10			CE04KW1A470M	ELECTRØ 47UF		10WV
C11			CE04KV1H010M	ELECTRØ 1.0UF		50WV
C12			CE04KW1H0R1M	ELECTRØ 0.1UF		50WV
C13			SH130S900642	CERAMIC 0.039UF		K
C14			CE04KW1H100M	ELECTRØ 10UF		50WV
C15			CE04KW1H0R1M	ELECTRØ 0.1UF		50WV
C16			CK73FB1H221K	CHIP C 220PF		K
C17			CE04KW1HR47M	ELECTRØ 0.47UF		50WV
C18			CK73FB1H102K	CHIP C 1000PF		K
C19			SH130S900673	CYLND CHIP C 0.022UF		M
C20			SH130S900664	CERAMIC 0.033UF		K
C22			CK73FB1H221K	CHIP C 220PF		K

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

K:USA
T:England
X:Australia

P:Canada
E:Europe
M:10thm Areas

△ indicates safety critical components

PARTS LIST

4
 x 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.

Ref. No. 参照番号	Address 位置	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
21	3A	SH1302810231	GEAR(RACK FIX)	
22	3B	SH1302900394	SHAFT(GUIDE)	
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	
EM	3B	T42-0657-08	FEED MOTOR WITH GEAR	
FM	2B	SH1106300200	LOADING MOTOR WITH PULLEY	
LM	2B			
PU	3A	T25-0032-08	CD PICKUP ASSY	

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

K:USA
 T:England
 X:Australia

P:Canada
 E:Europe
 M:1,Other Areas

△ indicates safety critical components

3
 x New Parts
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Ref. No. 参照番号	Address 位置	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
F1, 2		F05-6313-05	FUSE(250V T630mA)	
X1		L77-2132-08	CRYSTAL RESONATOR(16.9344MHz)	
XL1		L78-0267-05	RESONATOR(4.19MHz)	
VR1		R12-2048-08	TRIMMING POT(6.8K) <T. BALANCE>	
VR2		R12-1619-05	TRIMMING POT(4.7K) <T. GAIN>	
VR3		R12-3485-05	TRIMMING POT(10K) <F. GAIN>	
VR4		R12-5651-05	TRIMMING POT(100K) <VCO>	
SV10		SH1305301218	SWITCH(TEST MODE)	
SV501-525	2D, 2E	SH1305301218	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	
Z02-4		MTZ19, 1A	ZENER DIODE	
Z05		MTZ130BT	ZENER DIODE	
Z06		MTZ16, 8B	ZENER DIODE	
FL501	2D	10-BT-67GK	INDICATOR TUBE	
IC1		LA9211H	IC(CRF AMP/SERVØ)	
IC2		LC78681E	IC(D.S.P)	
IC3		TC9268P	IC(D/A CONVERTØR)	
IC4		IX2248AF	IC(MICROPROCESSØR)	
IC5		PST600D	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)	
IC12		NJM4558M	IC(OP AMP X2) CIRCUIT	
Q1 -4		DTC114YS	DIGITAL TRANSISTØR	
Q5		2SA1015CR	TRANSISTØR	
Q7		2SC1740SK	TRANSISTØR	
Q8		2SA933SR	TRANSISTØR	
Q9		2SD2012	TRANSISTØR	
Q10		2SB1375	TRANSISTØR	
Q11		2SB1237R3	TRANSISTØR	
MECHANISM				
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 PINØN	
9	1A	SH1102480607	SHIFT LEVER	
10	1B	A11-1021-08	CHASSIS LOADING	
11	2B	SH1302810228	GEAR(HØDLE)	
12	2B	SH1302810229	GEAR(DRIVE)	
15	3B	SH1303280448	CUSHØN	
16	2B	SH1305301248	PUSH SWITCH(SLT)	
19	3A	SH1302810232	GEAR(RACK MOVE)	
20	3A	SH1252580244	SPRING(RACK)	

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

K:USA
 T:England
 X:Australia

P:Canada
 E:Europe
 M:1,Other Areas

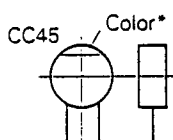
△ indicates safety critical components

PARTS LIST

CAPACITORS

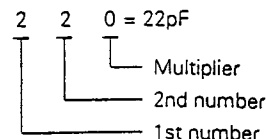
CC 45 TH 1H 220 J
 1 2 3 4 5 6

- 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 -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 \ 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

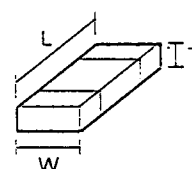
(Chip) (B, F)

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		

