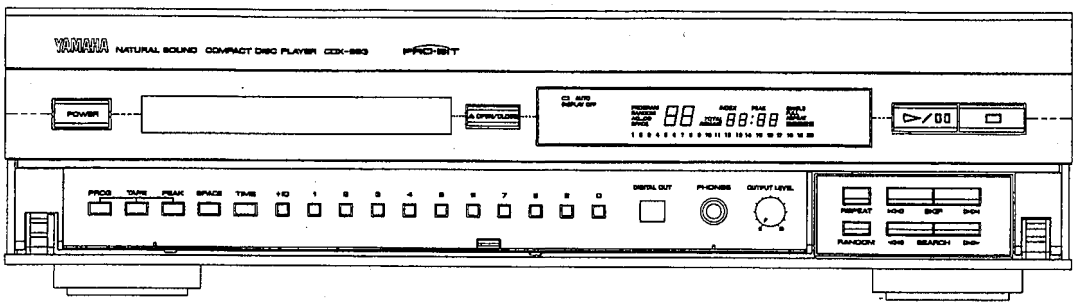
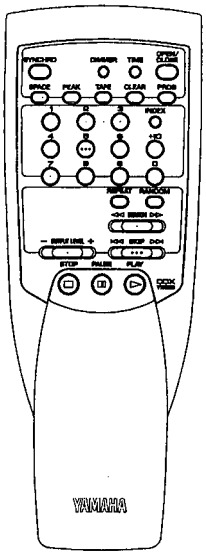
COMPACT DISC PLAYER

CDX-993

SERVICE MANUAL





IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel.
It has been assumed that basic service procedures inherant to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that all service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

■ CONTENTS

100604

YAMAHA
YAMAHA CORPORATION
P.O.Box1,Hamamatsu,Japan
1.4K-208 Printed in Japan '98.3

PARTS LIST

■ ELECTRICAL PARTS

■ **WARNING**

Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.

- Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the part Nos. of the carbon resistors, refer to the last page.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS :

C.A.EL.CHP	: CHIP ALUMI. ELECTROLYTIC CAP
C.CE	: CERAMIC CAP
C.CE.ARRAY	: CERAMIC CAP ARRAY
C.CE.CHP	: CHIP CERAMIC CAP
C.CE.ML	: MULTILAYER CERAMIC CAP
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP
C.CE.SAFTY	: RECOGNIZED CERAMIC CAP
C.CE.TUBLR	: CERAMIC TUBULAR CAP
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP
C.EL	: ELECTROLYTIC CAP
C.MICA	: MICA CAP
C.ML.FLM	: MULTILAYER FILM CAP
C.MP	: METALLIZED PAPER CAP
C.MYLAR	: MYLAR FILM CAP
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP
C.PAPER	: PAPER CAPACITOR
C.PLS	: POLYSTYRENE FILM CAP
C.POL	: POLYESTER FILM CAP
C.POLY	: POLYETHYLENE FILM CAP
C.PP	: POLYPROPYLENE FILM CAP
C.TNTL	: TANTALUM CAP
C.TNTL.CHP	: CHIP TANTALUM CAP
C.TRIM	: TRIMMER CAP
CN	: CONNECTOR
CN.BS.PIN	: CONNECTOR, BASE PIN
CN.CANNON	: CONNECTOR, CANNON
CN.DIN	: CONNECTOR, DIN
CN.FLAT	: CONNECTOR, FLAT CABLE
CN.POST	: CONNECTOR, BASE POST
COIL.MX.AM	: COIL, AM MIX
COIL.AT.FM	: COIL, FM ANTENNA
COIL.DT.FM	: COIL, FM DETECT
COIL.MX.FM	: COIL, FM MIX
COIL.OUTPT	: OUTPUT COIL
DIOD.ARRAY	: DIODE ARRAY
DIODE.BRG	: DIODE BRIDGE
DIODE.CHP	: CHIP DIODE
DIODE.VAR	: VARACTOR DIODE
DIOD.Z.CHP	: CHIP ZENER DIODE
DIODE.ZENR	: ZENER DIODE
DSCR.CE	: CERAMIC DISCRIMINATOR
FER.BEAD	: FERRITE BEADS
FER.CORE	: FERRITE CORE
FET.CHP	: CHIP FET
FL.DSPLY	: FLUORESCENT DISPLAY
FLTR.CE	: CERAMIC FILTER
FLTR.COMB	: COMB FILTER MODULE
FLTR.LC.RF	: LC FILTER ,EMI
GND.MTL	: GROUND PLATE
GND.TERM	: GROUND TERMINAL
HOLDER.FUS	: FUSE HOLDER
IC.PRTCT	: IC PROTECTOR
JUMPER.CN	: JUMPER CONNECTOR
JUMPER.TST	: JUMPER, TEST POINT
L.DTCT	: LIGHT DETECTING MODULE
L.EMIT	: LIGHT EMITTING MODULE
LED.DSPLY	: LED DISPLAY
LED.INFRD	: LED, INFRARED
MODUL.RF	: MODULATOR, RF
PHOT.CPL	: PHOTO COUPLER
PHOT.INTR	: PHOTO INTERRUPTER
PHOT.RFLCT	: PHOTO REFLECTOR
PIN.TEST	: PIN, TEST POINT
PLST.RIVET	: PLASTIC RIVET
R.ARRAY	: RESISTOR ARRAY
R.CAR	: CARBON RESISTOR
R.CAR.CHP	: CHIP RESISTOR
R.CAR.FP	: FLAME PROOF CARBON RESISTOR
R.FUS	: FUSABLE RESISTOR
R.MTL.CHP	: CHIP METAL FILM RESISTOR
R.MTL.FLM	: METAL FILM RESISTOR
R.MTL.OXD	: METAL OXIDE FILM RESISTOR
R.MTL.PLAT	: METAL PLATE RESISTOR
RSNR.CE	: CERAMIC RESONATOR
RSNR.CRYS	: CRYSTAL RESONATOR
R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
R.WW	: WIRE WOUND RESISTOR
SCR.BND.HD	: BIND HEAD B-TITE SCREW
SCR.BW.HD	: BW HEAD TAPPING SCREW
SCR.CUP	: CUP TITE SCREW
SCR.TERM	: SCREW TERMINAL
SCR.TR	: SCREW, TRANSISTOR
SUPRT.PCB	: SUPPORT, P.C.B.
SURG.PRTCT	: SURGE PROTECTOR
SW.TACT	: TACT SWITCH
SW.LEAF	: LEAF SWITCH
SW.LEVER	: LEVER SWITCH
SW.MICRO	: MICRO SWITCH
SW.PUSH	: PUSH SWITCH
SW.RT.ENC	: ROTARY ENCODER
SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
SW.RT	: ROTARY SWITCH
SW.SLIDE	: SLIDE SWITCH
TERM.SP	: SPEAKER TERMINAL
TERM.WRAP	: WRAPPING TERMINAL
THRMST.CHP	: CHIP THERMISTOR
TR.CHP	: CHIP TRANSISTOR
TR.DGT	: DIGITAL TRANSISTOR
TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
TRANS	: TRANSFORMER
TRANS.PULS	: PULSE TRANSFORMER
TRANS.PWR	: POWER TRANSFORMER ASS'y
TUNER.AM	: TUNER PACK, AM
TUNER.FM	: TUNER PACK, FM
TUNER.PK	: FRONT-END TUNER PACK
VR	: ROTARY POTENTIOMETER
VR.MTR	: POTENTIOMETER WITH MOTOR
VR.SW	: POTENTIOMETER WITH ROTARY SW
VR.SLIDE	: SLIDE POTENTIOMETER
VR.TRIM	: TRIMMER POTENTIOMETER

Note) Those parts marked with "#" are not included in the P.C.B. ass'y.

P.C.B. MAIN

	Schm Ref.	PART NO.	Description		
*		V2109000	P.C.B.	MAIN	
	CB1	VU160200	CN.BS.PIN	16P	
	CB2	VD004900	CN.BS.PIN	6P	
	CB100	VK184500	CN.BS.PIN	7P	
	CB101	VD004600	CN.BS.PIN	3P	
	CB104	VD004600	CN.BS.PIN	3P	
	CB105	VT707200	L.EMIT	TOTX178	
	CB106	LB932030	CN.BS.PIN	3P	
	CB107	LB932030	CN.BS.PIN	3P	
⚠	CB200	VD004800	CN.BS.PIN	5P	
	CB300	VD005000	CN.BS.PIN	7P	
	CB301	VD005000	CN.BS.PIN	7P	
	CB303	VU273300	CN.BS.PIN	33P	
	C1	VH053100	C.CE.TUBLR	0.1uF	50V
*	C2	UR817470	C.EL	47uF	6.3V
	C3	VG278900	C.CE.TUBLR	680pF	50V
	C4	VG278900	C.CE.TUBLR	680pF	50V
	C5	VH053100	C.CE.TUBLR	0.1uF	50V
	C6	VH053100	C.CE.TUBLR	0.1uF	50V
*	C7	VJ312200	C.CE.TUBLR	0.022uF	25V
*	C8	UR827330	C.EL	33uF	10V
	C9	VK679700	C.EL	100uF	6.3V
	C10	VG277000	C.CE.TUBLR	33pF	50V
	C11	VK679700	C.EL	100uF	6.3V
*	C12	UR827330	C.EL	33uF	10V
	C13	UA652470	C.MYLAR	470pF	50V
	C14	UA655100	C.MYLAR	0.1uF	50V
	C15	UA652470	C.MYLAR	470pF	50V
	C16	UA652100	C.MYLAR	100pF	50V
	C17	VG278900	C.CE.TUBLR	680pF	50V
	C18	VG278900	C.CE.TUBLR	680pF	50V
	C19	VH053100	C.CE.TUBLR	0.1uF	50V
	C20	UM407220	C.EL	22uF	25V
*	C21	VJ312200	C.CE.TUBLR	0.022uF	25V
	C22	VG279900	C.CE.TUBLR	6800pF	16V
	C23	UA654150	C.MYLAR	0.015uF	50V
	C24	VH053100	C.CE.TUBLR	0.1uF	50V
	C25	VH053100	C.CE.TUBLR	0.1uF	50V
	C26	VH053100	C.CE.TUBLR	0.1uF	50V
	C27	VG279400	C.CE.TUBLR	2200pF	16V
	C28	VH053100	C.CE.TUBLR	0.1uF	50V
	C29	VH053100	C.CE.TUBLR	0.1uF	50V
	C30	VH053100	C.CE.TUBLR	0.1uF	50V
	C31	VF466800	C.CE.TUBLR	100pF	50V
	C32	VJ599000	C.CE.TUBLR	0.047uF	16V
	C33	VF467300	C.CE.TUBLR	0.01uF	16V
	C34	VJ599000	C.CE.TUBLR	0.047uF	16V
	C35	VG279200	C.CE.TUBLR	1500pF	16V
	C36	VH053100	C.CE.TUBLR	0.1uF	50V
	C37	VH053100	C.CE.TUBLR	0.1uF	50V
	C38	VH053100	C.CE.TUBLR	0.1uF	50V
	C100	VH053100	C.CE.TUBLR	0.1uF	50V
	C101	VE016800	C.EL	470uF	6.3V

*New Parts

	Schm Ref.	PART NO.	Description		
	C102	VH053100	C.CE.TUBLR	0.1uF	50V
	C103	VE016800	C.EL	470uF	6.3V
	C104	VH053100	C.CE.TUBLR	0.1uF	50V
*	C105	VQ572600	C.EL	1uF	100V
	C106	VF466600	C.CE.TUBLR	10pF	50V
	C107	Vi716700	C.MYLAR	0.01uF	50V
	C108	Vi716700	C.MYLAR	0.01uF	50V
	C109	VH053100	C.CE.TUBLR	0.1uF	50V
	C110	VF466600	C.CE.TUBLR	10pF	50V
*	C111	VQ572600	C.EL	1uF	100V
	C112	VH053100	C.CE.TUBLR	0.1uF	50V
	C113	VG287100	C.EL	470uF	10V
	C114	VH053100	C.CE.TUBLR	0.1uF	50V
	C115	VG287100	C.EL	470uF	10V
*	C116	VQ572600	C.EL	1uF	100V
	C117	VF466600	C.CE.TUBLR	10pF	50V
	C118	Vi716700	C.MYLAR	0.01uF	50V
	C119	Vi716700	C.MYLAR	0.01uF	50V
	C120	VA761400	C.CE	47pF	50V
	C121	VA761400	C.CE	47pF	50V
	C122	VF466600	C.CE.TUBLR	10pF	50V
	C123	VH053100	C.CE.TUBLR	0.1uF	50V
*	C124	VQ572600	C.EL	1uF	100V
	C125	VG287100	C.EL	470uF	10V
	C126	VL872800	C.PP	1000pF	100V
	C127	FG211470	C.CE	47pF	50V
*	C128	UT553220	C.PP	2200pF	125V
	C129	Vi715900	C.MYLAR	2200pF	50V
*	C130	UT553560	C.PP	5600pF	125V
*	C131	UT553220	C.PP	2200pF	125V
	C132	FG211470	C.CE	47pF	50V
	C133	VL872800	C.PP	1000pF	100V
	C134	VL872800	C.PP	1000pF	100V
*	C135	UT553560	C.PP	5600pF	125V
	C136	UT553100	C.PP	1000pF	125V
	C137	Vi715900	C.MYLAR	2200pF	50V
	C138	UT553100	C.PP	1000pF	125V
	C139	VL872800	C.PP	1000pF	100V
	C140	FG211470	C.CE	47pF	50V
	C141	VQ569900	C.EL	100uF	25V
	C142	VQ569900	C.EL	100uF	25V
	C143	FG211470	C.CE	47pF	50V
	C144	VJ836900	C.EL	10uF	16V
	C145	VF467300	C.CE.TUBLR	0.01uF	16V
	C146	VJ836900	C.EL	10uF	16V
	C147	VF467300	C.CE.TUBLR	0.01uF	16V
	C148	VK679700	C.EL	100uF	6.3V
	C149	UM397330	C.EL	33uF	16V
	C150	VG278600	C.CE.TUBLR	330pF	50V
	C151	VL883800	C.PP	2200pF	100V
	C152	VL883800	C.PP	2200pF	100V
	C153	UJ638330	C.EL	330uF	16V
	C154	UJ638330	C.EL	330uF	16V

*New Parts

P.C.B. MAIN

	Schm Ref.	PART NO.	Description		
	C155	VG278600	C.CE.TUBLR	330pF	50V
	C156	VH053100	C.CE.TUBLR	0.1uF	50V
*	C162	V2175400	C.MYLAR	0.1uF	50V
*	C163	V2175400	C.MYLAR	0.1uF	50V
*	C164	V2175400	C.MYLAR	0.1uF	50V
*	C165	V2175400	C.MYLAR	0.1uF	50V
	C166	VF964800	C.EL	100uF	16V
	C200	V2261800	C.EL	470uF	25V
	C201	V2261800	C.EL	470uF	25V
⚠	C202	VK534100	C.PP	0.01uF	100V
	C203	UJ865680	C.EL	0.68uF	50V
	C204	Vi988100	C.EL	470uF	16V
⚠	C206	VK534100	C.PP	0.01uF	100V
	C207	VR420400	C.EL	6800uF	16V
	C208	UM416470	C.EL	4.7uF	50V
	C209	VF760000	C.EL	100uF	10V
⚠	C210	UJ667470	C.EL	47uF	50V
	C211	UJ668100	C.EL	100uF	50V
⚠	C212	FG214100	C.CE	0.01uF	50V
	C213	UM416470	C.EL	4.7uF	50V
	C214	UM416470	C.EL	4.7uF	50V
	C223	VH620400	C.EL	220uF	16V
	C227	UM416470	C.EL	4.7uF	50V
	C228	UM416470	C.EL	4.7uF	50V
	C229	VH053100	C.CE.TUBLR	0.1uF	50V
	C230	V2261900	C.POL	1uF	160V
	C231	V2261900	C.POL	1uF	160V
*	C232	V2175400	C.MYLAR	0.1uF	50V
*	C233	V2175400	C.MYLAR	0.1uF	50V
*	C234	V2175400	C.MYLAR	0.1uF	50V
*	C235	V2175400	C.MYLAR	0.1uF	50V
	C300	VF467300	C.CE.TUBLR	0.01uF	16V
	C301	VG278700	C.CE.TUBLR	390pF	50V
	C302	VG278700	C.CE.TUBLR	390pF	50V
	C303	VH053100	C.CE.TUBLR	0.1uF	50V
	C304	VK679700	C.EL	100uF	6.3V
	C305	VG278700	C.CE.TUBLR	390pF	50V
	C306	VG278700	C.CE.TUBLR	390pF	50V
	C307	VG278700	C.CE.TUBLR	390pF	50V
	C308	VF467000	C.CE.TUBLR	1000pF	50V
	C311	VH053100	C.CE.TUBLR	0.1uF	50V
	C312	VH053100	C.CE.TUBLR	0.1uF	50V
	C313	VH053100	C.CE.TUBLR	0.1uF	50V
	D100	VD631600	DIODE	1SS133,176,HSS104	
	D101	VD631600	DIODE	1SS133,176,HSS104	
	D102	VD631600	DIODE	1SS133,176,HSS104	
	D103	VD631600	DIODE	1SS133,176,HSS104	
	D104	VD631600	DIODE	1SS133,176,HSS104	
	D105	VD631600	DIODE	1SS133,176,HSS104	
	D106	VD631600	DIODE	1SS133,176,HSS104	
	D107	VD631600	DIODE	1SS133,176,HSS104	
	D108	VD631600	DIODE	1SS133,176,HSS104	
	D109	VD631600	DIODE	1SS133,176,HSS104	

* New Parts

	Schm Ref.	PART NO.	Description	
	D110	VD631600	DIODE	1SS133,176,HSS104
	D111	VD631600	DIODE	1SS133,176,HSS104
	D112	VD631600	DIODE	1SS133,176,HSS104
	D113	VD631600	DIODE	1SS133,176,HSS104
	D114	VD631600	DIODE	1SS133,176,HSS104
	D115	VD631600	DIODE	1SS133,176,HSS104
	D116	VD631600	DIODE	1SS133,176,HSS104
	D117	VD631600	DIODE	1SS133,176,HSS104
	D118	VD631600	DIODE	1SS133,176,HSS104
	D119	VD631600	DIODE	1SS133,176,HSS104
	D120	VD631600	DIODE	1SS133,176,HSS104
	D121	VG438100	DIODE.ZENR	MTZJ6.2C 6.2V
	D122	VD631600	DIODE	1SS133,176,HSS104
	D123	VD631600	DIODE	1SS133,176,HSS104
	D200	VD631600	DIODE	1SS133,176,HSS104
	D201	VD631600	DIODE	1SS133,176,HSS104
	D202	VD631600	DIODE	1SS133,176,HSS104
	D203	VG437400	DIODE.ZENR	MTZJ5.1B 5.1V
⚠	D204	VS997800	DIODE	1T2
⚠	D205	VS997800	DIODE	1T2
⚠	D206	VS997800	DIODE	1T2
⚠	D207	VS997800	DIODE	1T2
	D208	VG438800	DIODE.ZENR	MTZJ8.2A 8.2V
⚠	D209	VS997800	DIODE	1T2
	D210	VG437700	DIODE.ZENR	MTZJ5.6B 5.6V
⚠	D211	VS997800	DIODE	1T2
	D212	VG442000	DIODE.ZENR	MTZJ22A 22V
⚠	D221	VS997800	DIODE	1T2
⚠	D222	VS997800	DIODE	1T2
	D302	VG437200	DIODE.ZENR	MTZJ4.7C 4.7V
	IC4	XQ167A00	IC	CXA1791M
*	IC5	XU398A00	IC	LA6537M BTL DRIVER
*	IC6	XU688A00	IC	CXD2545Q
	IC7	iR012510	IC	HD74HC125P
	IC100	XM911A00	IC	YAC514-F
	IC101	XJ757A00	IC	NJM78L05A-T3
	IC102	XA673A00	IC	NJM5532D-D
	IC106	XA673A00	IC	NJM5532D-D
	IC114	XF494A00	IC	LB1641
	IC116	iR000001	IC	TC74HC00AP
	IC119	Xi249A00	IC	BA15218
	IC200	XD201A00	IC	M5290P
	IC300	XF494A00	IC	LB1641
	IC301	XU690B00	IC	UPD78044FGF CPU
	IC302	XS070A00	IC	S-24C01ADP EEPROM
	L100	VB056900	COIL	220uH
	L101	VB056900	COIL	220uH
	L102	VB056900	COIL	220uH
	L103	VP133800	FER.BEAD	BL02RN1-R62T4
	L104	VB056900	COIL	220uH
	L105	VB056900	COIL	220uH
	L106	VB056900	COIL	220uH
	L107	VB056900	COIL	220uH

* New Parts

P.C.B. MAIN

	Schm Ref.	PART NO.	Description	
	L112	VD473700	COIL	60uH
	L113	VB871100	FER. BEAD	BL02RN2-R62
	L114	VD473700	COIL	60uH
	L121	Vi530800	TRANS. PULS	3PTD-001
	L122	VP133800	FER. BEAD	BL02RN1-R62T4
*	PJ101	VZ953000	JACK. PIN	4P
	PJ102	V2283400	JACK. PIN	1P
	Q1	iB054430	TR	2SB544 D, E, F, G
	Q2	iC174020	TR	2SC1740S R, S
	Q100	iA093320	TR	2SA933S Q, R
	Q101	iA093320	TR	2SA933S Q, R
	Q102	iD040040	TR	2SD400
	Q103	iA093320	TR	2SA933S Q, R
	Q104	iC174020	TR	2SC1740S R, S
	Q105	iC174020	TR	2SC1740S R, S
	Q106	iC174020	TR	2SC1740S R, S
	Q107	iC174020	TR	2SC1740S R, S
	Q108	iB054430	TR	2SB544 D, E, F, G
	Q109	iB054430	TR	2SB544 D, E, F, G
	Q110	iC174020	TR	2SC1740S R, S
	Q111	iC174020	TR	2SC1740S R, S
	Q112	iC174020	TR	2SC1740S R, S
	Q113	iC174020	TR	2SC1740S R, S
	Q114	iA093320	TR	2SA933S Q, R
	Q115	iD040040	TR	2SD400
	Q116	iA093320	TR	2SA933S Q, R
	Q117	iA093320	TR	2SA933S Q, R
	Q118	iA093320	TR	2SA933S Q, R
	Q119	iA093320	TR	2SA933S Q, R
	Q120	iC174020	TR	2SC1740S R, S
	Q121	iC174020	TR	2SC1740S R, S
	Q122	iC174020	TR	2SC1740S R, S
	Q123	iC174020	TR	2SC1740S R, S
	Q124	iC174020	TR	2SC1740S R, S
	Q125	iC174020	TR	2SC1740S R, S
	Q126	iA093320	TR	2SA933S Q, R
	Q127	iA093320	TR	2SA933S Q, R
	Q128	iD040040	TR	2SD400
	Q129	iA093320	TR	2SA933S Q, R
	Q130	iC287820	TR	2SC2878 A, B
	Q131	iC287820	TR	2SC2878 A, B
	Q132	iC174020	TR	2SC1740S R, S
	Q133	iB054430	TR	2SB544 D, E, F, G
	Q134	iB054430	TR	2SB544 D, E, F, G
	Q135	iC174020	TR	2SC1740S R, S
	Q136	iC287820	TR	2SC2878 A, B
	Q137	iC287820	TR	2SC2878 A, B
	Q138	iA093320	TR	2SA933S Q, R
	Q139	iD040040	TR	2SD400
	Q140	iC174020	TR	2SC1740S R, S
	Q141	iC287820	TR	2SC2878 A, B
	Q142	iC287820	TR	2SC2878 A, B
	Q200	iA093320	TR	2SA933S Q, R

	Schm Ref.	PART NO.	Description	
⚠	Q202	VS883300	TR	2SB1565 E, F
⚠	Q203	VS883400	TR	2SD2394 E, F
	Q204	iA093320	TR	2SA933S Q, R
	Q300	iA093320	TR	2SA933S Q, R
	R176	HV455100	R. CAR. FP	100Ω 1/4W
⚠	R177	HV454100	R. CAR. FP	10Ω 1/4W
	R186	HV455100	R. CAR. FP	100Ω 1/4W
	R203	HV455100	R. CAR. FP	100Ω 1/4W
	R213	HV455100	R. CAR. FP	100Ω 1/4W
⚠	R303	HV454100	R. CAR. FP	10Ω 1/4W
	R307	VM758200	R. ARRAY	10KΩx5
	R313	VF772300	R. ARRAY	RGLE8X104J
	R317	VU675000	R. ARRAY	RGLE15X104J
	RY1	VL369700	RELAY	DC RY5W-K
	VR2	VJ693800	VR. TRIM	B22KΩ
	XL100	VJ719800	RSNR. CRYS	16.9344MHz
	XL300	VJ677200	RSNR. CE	4.19MHz
		VB966900	CN	IMSA-6024
		VR506800	HEAT. SINK	PUH16-25
		ED330066	SCR. BND. HD	3x6 FCRM3-BL

*New Parts

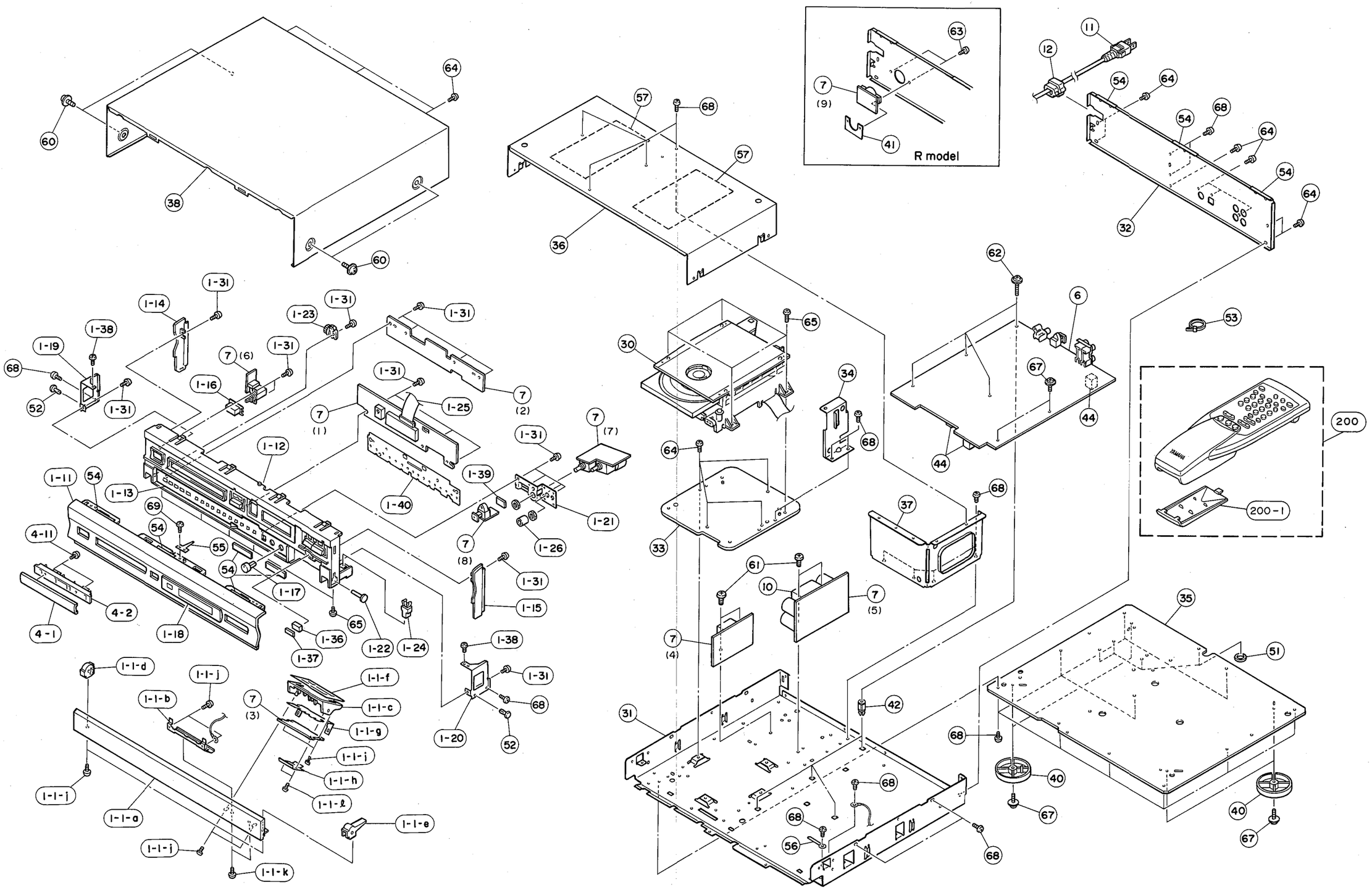
P.C.B. OPERATION

	Schm Ref.	PART NO.	Description	
*		V2109200	P. C. B.	OPERATION(R)
*		V2109300	P. C. B.	OPERATION(A)
*		V2109400	P. C. B.	OPERATION(BG)
	CB103	VT707200	L. EMIT	TOTX178
⚠	CB201	VG879900	CN. BS. PIN	2P(ABG)
⚠	CB202	VG879900	CN. BS. PIN	2P
⚠	CB203	VG879900	CN. BS. PIN	2P
	CB302	VU283300	CN. BS. PIN	33P
	CB304	VB858800	CN. BS. PIN	9P
	C157	VG280100	C. CE. TUBLR	0.022uF 25V
	C158	VH053100	C. CE. TUBLR	0.1uF 50V
	C159	VH053100	C. CE. TUBLR	0.1uF 50V
	C160	VH053100	C. CE. TUBLR	0.1uF 50V
	C161	VH053100	C. CE. TUBLR	0.1uF 50V
	C171	VH053100	C. CE. TUBLR	0.1uF 50V
⚠	C215	VS741700	C. CE. SAFTY	0.01uF 275V
⚠	C216	VK534100	C. PP	0.01uF 100V
	C217	VR024000	C. EL	6800uF 56V
⚠	C218	VK534100	C. PP	0.01uF 100V
	C219	VR024000	C. EL	6800uF 56V
⚠	C220	VK534100	C. PP	0.01uF 100V
	C221	VR024000	C. EL	6800uF 56V
⚠	C222	VK534100	C. PP	0.01uF 100V
	C223	VR024000	C. EL	6800uF 56V
⚠	C224	VS741700	C. CE. SAFTY	0.01uF 275V
⚠	C225	VS741700	C. CE. SAFTY	0.01uF 275V(ABG)
⚠	C226	VS741700	C. CE. SAFTY	0.01uF 275V
	C310	VF760000	C. EL	100uF 10V
⚠	D213	VV731400	DIODE	2A02M
⚠	D214	VV731400	DIODE	2A02M
⚠	D215	VV731400	DIODE	2A02M
⚠	D216	VV731400	DIODE	2A02M
⚠	D217	VV731400	DIODE	2A02M
⚠	D218	VV731400	DIODE	2A02M
⚠	D219	VV731400	DIODE	2A02M
⚠	D220	VV731400	DIODE	2A02M
	D300	VD631600	DIODE	1SS133, 176, HSS104
	D301	VD631600	DIODE	1SS133, 176, HSS104
	D303	VD631600	DIODE	1SS133, 176, HSS104
	D304	VD631600	DIODE	1SS133, 176, HSS104
	D305	VD631600	DIODE	1SS133, 176, HSS104
	D306	VD631600	DIODE	1SS133, 176, HSS104
	D307	VS132300	LED(re)	SLR-325VCT31
	JK100	VZ458100	JACK. PHONE	JY-6317-02-030GD
	L120	Vi491100	FER. CORE	BP53RB19012080M
	L123	VD473700	COIL	60uH
	L124	VD473700	COIL	60uH
	L125	VD473700	COIL	60uH
	L126	VP133800	FER. BEAD	BL02RN1-R62T4
	L171	VD473700	COIL	60uH
	L172	Vi491100	FER. CORE	BP53RB19012080M
	L200	Vi491100	FER. CORE	BP53RB19012080M
⚠	L201	VV900900	FLTR	3071-012-0

	Schm Ref.	PART NO.	Description	
	L300	Vi491100	FER. CORE	BP53RB19012080M
⚠	SW200	VV057600	SW. PUSH	PS-2B04T6
⚠	SW201	VL908000	VOLT. SELCT	ESE-370(R)
	SW300	VG392900	SW. TACT	SKHVAA
	SW301	VG392900	SW. TACT	SKHVAA
	SW302	VG392900	SW. TACT	SKHVAA
	SW303	VG392900	SW. TACT	SKHVAA
	SW304	VG392900	SW. TACT	SKHVAA
	SW305	VG392900	SW. TACT	SKHVAA
	SW306	VG392900	SW. TACT	SKHVAA
	SW307	VG392900	SW. TACT	SKHVAA
	SW308	VG392900	SW. TACT	SKHVAA
	SW309	VG392900	SW. TACT	SKHVAA
	SW310	VG392900	SW. TACT	SKHVAA
	SW311	VG392900	SW. TACT	SKHVAA
	SW312	VG392900	SW. TACT	SKHVAA
	SW313	VG392900	SW. TACT	SKHVAA
	SW314	VG392900	SW. TACT	SKHVAA
	SW315	VG392900	SW. TACT	SKHVAA
	SW316	VG392900	SW. TACT	SKHVAA
	SW317	VG392900	SW. TACT	SKHVAA
	SW318	VG392900	SW. TACT	SKHVAA
	SW320	VG392900	SW. TACT	SKHVAA
	SW321	VG392900	SW. TACT	SKHVAA
	SW322	VG392900	SW. TACT	SKHVAA
	SW323	VG392900	SW. TACT	SKHVAA
	SW324	VG392900	SW. TACT	SKHVAA
	SW325	VG392900	SW. TACT	SKHVAA
⚠	T200	XR300A00	TRANS. PWR	(BG)
⚠*	T200	XU323A00	TRANS. PWR	(R)
⚠*	T200	XU324A00	TRANS. PWR	(A)
	U300	VY848700	L. DTCT	SBX1976-52
	V300	VR061600	FL. DSPLY	9-MT-133GK
*	VR100	VZ248500	VR. MTR	B20KΩ RK16812MG
		VB966900	CN	IMSA-6024
		VQ948800	SHEET	FL
		VZ156000	SPACER/FL	t4x5x23
*		VT745100	CUSHION/2	12x12

*New Parts

■ EXPLODED VIEW



■ MECHANICAL PARTS

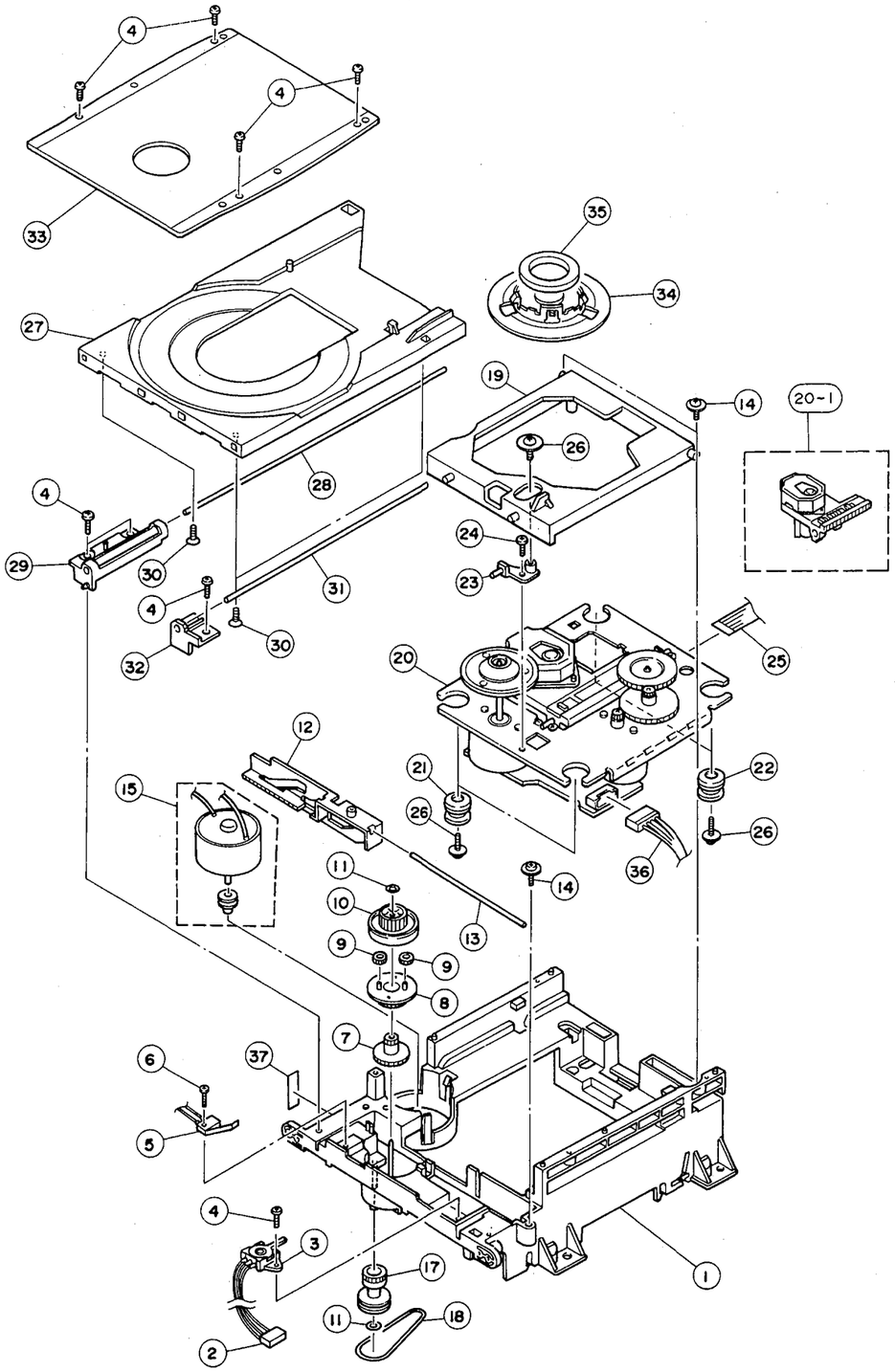
	Ref. No.	PART NO.	Description			Remarks	Markets
*	1-1-a	VZ492800	PANEL, LID			BL	
*	1-1-a	VZ492900	PANEL, LID			TI	
*	1-1-b	VZ492300	SUPPORT, BUTTON				
*	1-1-c	VZ493400	BUTTON, SUB			BL	
*	1-1-c	VZ493500	BUTTON, SUB			TI	
*	1-1-d	VZ494600	HINGE, LID L			BL	
*	1-1-d	VZ494700	HINGE, LID L			TI	
*	1-1-e	VZ494800	HINGE, LID R			BL	
*	1-1-e	VZ494900	HINGE, LID R			TI	
*	1-1-f	VZ495300	PLATE, ROL			BL	
*	1-1-f	VZ495400	PLATE, ROL			TI	
	1-1-g	V2322900	SHEET	SHIELD A			
	1-1-h	V2260800	SUPPORT	MG			
	1-1-i	EP630220	BIND HEAD P-TITE SCREW	3x8	ZMC2-BL		
*	1-1-j	V2500400	BIND HEAD SCREW	3x3	MFZN2-BL		
*	1-1-k	V2500500	BIND HEAD S-TITE SCREW	3x5	MFZN2-BL		
	1-1-l	EP600290	BIND HEAD P-TITE SCREW	3x6	ZMC2-Y		
*	1-11	VZ492600	FRONT PANEL			BL	
*	1-11	VZ492700	FRONT PANEL			TI	
*	1-12	VZ493200	SUB PANEL			BL	
*	1-12	VZ493300	SUB PANEL			TI	
*	1-13	VZ495100	PLATE, LID			BL	
*	1-13	VZ495200	PLATE, LID			TI	
*	1-14	VZ493600	PLATE, SIDE L			BL	
*	1-14	VZ493700	PLATE, SIDE L			TI	
*	1-15	VZ493800	PLATE, SIDE R			BL	
*	1-15	VZ493900	PLATE, SIDE R			TI	
*	1-16	VZ494400	BUTTON	11/22		BL	
*	1-16	VZ494500	BUTTON	11/22		TI	
*	1-17	VZ527000	KNOB, P	D12		BL	
*	1-17	VZ527200	KNOB, P	D12		TI	
*	1-18	VZ495000	WINDOW PANEL, LID				
	1-19	V2252100	SUPPORT/FR	L			
	1-20	V2252200	SUPPORT/FR	R			
*	1-21	VZ492400	SUPPORT, VR				
*	1-22	VZ492500	SHAFT, ROL				
*	1-23	V2113300	DAMPER, GEAR				
	1-24	VQ518800	LATCH	No.4U44			
	1-25	MF133180	FLEXIBLE FLAT CABLE	33P 180mm			
*	1-26	V2164200	SPACER	6x8x7.0			
	1-31	EP630220	BIND HEAD P-TITE SCREW	3x8	ZMC2-BL		
	1-36	V2269500	FERRITE MAGNET	6x8x23.5			
	1-37	V2269300	DAMPER	T3x6.5x24			
	1-38	VN413300	BIND HEAD BONDING B-T. SCREW	3x8	MFZN2-BL		
	1-39	V2269200	DAMPER	T1x13x13			
	1-40	V2322800	SHEET	SHIELD B			
*	4- 1	VZ493000	LID, PANEL			BL	
*	4- 1	VZ493100	LID, PANEL			TI	
*	4- 2	VZ494100	LID, SUPPORT			BL	
*	4- 2	VZ494200	LID, SUPPORT			TI	
	4-11	EG320160	BIND HEAD SCREW	2.6x4	MFZN2-BL		
*	6	V2109000	P.C.B. ASS'Y	MAIN			
*	7	V2109200	P.C.B. ASS'Y	OPERATION			(R)

*New Parts

	Ref. No.	PART NO.	Description			Remarks	Markets
*	7	V2109300	P.C.B. ASS'Y	OPERATION			(A)
*	7	V2109400	P.C.B. ASS'Y	OPERATION			(BG)
⚠*	10	XU326A00	POWER TRANSFORMER				(R)
⚠*	10	XU327A00	POWER TRANSFORMER				(A)
⚠*	10	XU328A00	POWER TRANSFORMER				(BG)
⚠*	11	V2296800	POWER CORD ASS'Y				(A)
⚠	11	VL238100	POWER CORD ASS'Y				(R)
⚠	11	VN363700	POWER CORD ASS'Y				(G)
⚠	11	VV437300	POWER CORD ASS'Y				(B)
	12	VN158600	CORD STOPPER	No.2104			
*	30	V2113200	CD MECH UNIT	MGCB30			
*	31	VZ491400	CHASSIS, MAIN				
*	32	VZ491600	REAR PANEL				(R)
*	32	VZ491700	REAR PANEL				(BG)
*	32	VZ491800	REAR PANEL				(A)
*	33	VZ491900	SUPPORT, MECH				
*	34	VZ582000	SUPPORT, TOP				
*	35	VZ581700	COVER/BOTTOM				
*	36	VZ581800	TOPCOVER, INNER				
*	37	VZ581900	CHASSIS, FRAME				
	38	VU876500	TOP COVER			BL	
	38	VU876600	TOP COVER			TI	
	40	VQ780300	LEG	D60xH16			
	41	VS257300	PLATE, R				(R)
	42	VU981200	SUPPORT, P.C.B.	No.3596			
	44	VQ366100	DAMPER, PCB				
	51	VU984400	RING	D14			
	52	VQ368500	PUSH RIVET	P3545-B			
	53	VU590000	BINDING TIE	CBTD001B			
	54	V2269100	DAMPER	6x45			
	55	VQ775900	GROUND PLATE				
	56	CB836200	BINDING TIE	S-70B			
	57	V2269000	DAMPER	3x80x150			
	60	EK365090	PW HEAD S-TITE SCREW	4x8-10	FCRM3-BL	BL	
	60	EX601150	BW HEAD S-TITE SCREW	4x8-10	FNM3-BL	TI	
	61	EP640100	BIND HEAD S-TITE SCREW	4x6	MFZN2-BL		
	62	EX602560	PW HEAD P-TITE SCREW	3x20-8	FCRM3-BL		
	63	EP600140	BIND HEAD B-TITE SCREW	3x10	MFZN2-BL		(R)
	64	VN413300	BIND HEAD BONDING B-T. SCREW	3x8	MFZN2-BL		
	65	Ei330086	BIND HEAD B-TITE SCREW	3x8	FCRM3-BL		
	67	EK930010	PW HEAD B-TITE SCREW	3x8-8	FCRM3-BL		
	68	V2500500	BIND HEAD S-TITE SCREW	3x5	MFZN2-BL		
	69	EX602760	PW HEAD S-TITE SCREW	3x6-8	FCRM3-BL		
			ACCESSORIES				
	200	VT989900	REMOTE CONTROL TRANSMITTER				
	200-1	CX679050	LID	74x34BLALPS			
		VY952200	PIN-PLUG CORD	2P 1.0m			
			BATTERY, MANGANESE	SUM-3,AA,R06			

*New Parts

■ EXPLODED VIEW (CD Mechanism Unit)



■ MECHANICAL PARTS (CD Mechanism Unit)

	Ref. No.	PART NO.	Description	Remarks	Markets
*		V2113200	CD MECH UNIT	MGCB30	
*	1	XX699230	CHASSIS ASS'Y	A103322	
*	2	XX699190	WIRE HARNESS	E351698	
*	3	XX699350	LEVER SWITCH	S640026	
	4	Ei326086	BIND HEAD TAP TITE SCREW 2.6x8	N82260845	
*	5	XX699360	LEVER SWITCH	S640027	
*	6	XX699300	PAN HEAD TAP TITE SCREW 2x8	N782080	
*	7	XX699160	GEAR CENTER	D131782	
*	8	XX699130	GEAR CARRIER	D130977	
*	9	XX699140	GEAR IDLER	D130978	
*	10	XX699150	GEAR MAIN	D130979	
*	11	XX699120	CUT WASHER 2.6x4.7x0.5	N190891	
*	12	XX699260	SLIDER	D103683	
*	13	XX699370	ROD GUIDE	D103659	
*	14	XX699090	BW HEAD TAPPING SCREW	N093385	
*	15	XX699340	MOTOR ASS'Y	30D9001	
*	17	XX699170	GEAR PULLEY	D131783	
*	18	XX699330	BELT	D160712	
*	19	XX699210	SUB CHASSIS FRAME	A111111	
*	20	XX699280	TRAVERSE UNIT KCTB1H	D401500	
*	20-1	XX699310	PICK UP KCP1H	T25005005	
*	21	XX699100	INSULATOR BLUE 37	J021174	
*	22	XX699110	INSULATOR GREEN 25	J021175	
*	23	XX699320	BRACKET	J195765	
	24	Ei320066	BIND HEAD TAP TITE SCREW 2x6	N862006	
*	25	XX699400	FLAT CABLE	E351981	
*	26	XX699270	TAP TITE SCREW 2.6x6	N093359	
*	27	XX699290	TRAY	J990591	
*	28	XX699240	SHAFT L	D211855	
*	29	XX699380	RETAINER	D230326	
	30	EO326066	FLAT HEAD TAP TITE SCREW 2.6x6	N882606	
*	31	XX699250	SHAFT R	D211856	
*	32	XX699390	RETAINER	D230327	
*	33	XX699220	SUB CHASSIS CLAMP	A111128	
*	34	XX699180	CLAMPER	J110823	
*	35	AX623920	MAGNET	T990544	
*	36	XX699200	WIRE HARNESS	E351753	
*	37	XX699410	NO WOVEN FABRIC	G100146	

* New Parts

■ GREASE & OIL (CD Mechanism Unit)

Listed below are the points where grease (MEN-125F) is applied.

1) Entire gear engaging section
2) Contact section of Chassis ass'y (①) and Tray (㉗)
3) Shaft (2 points) of Chassis ass'y (①)
4) Bearing bush and bearing of Center gear (⑦)
5) Bearing bush and internal tooth of Main gear (⑩)
6) Boss (2 points) of Carrier gear (⑧)
7) Cam groove (3 points) and the rack section of Slider (⑫)
8) Shaft (㉘)(for Tray L) and Shaft (㉛) (for Tray R)
9) Guide section of Tray (㉗) (2 points)

Listed below are the points where oil (CFD-005.5) is applied.

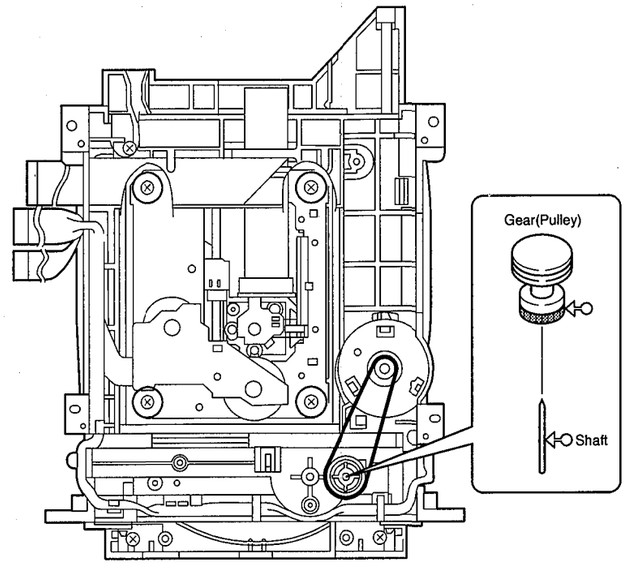
1) External tooth of the main gear (⑩)
2) Guide groove of the tray (㉗)

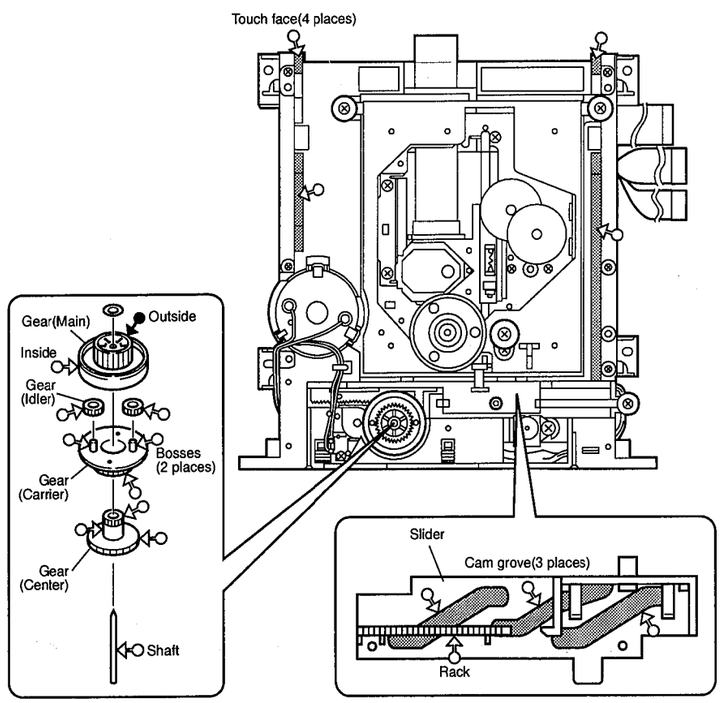
MEN-125F (Grease) :
CFD-005.5 (Oil) :

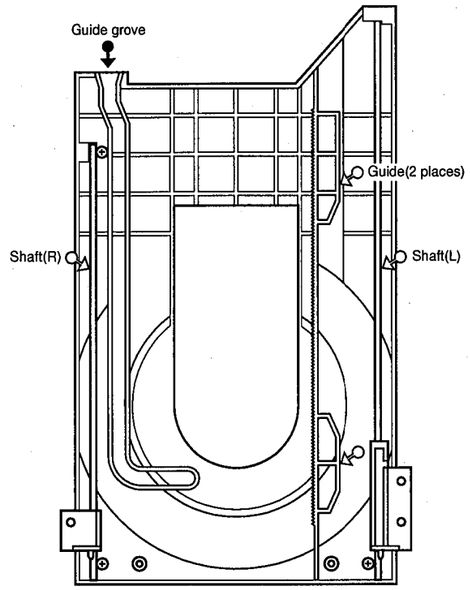
GREASE & OIL TO BE SUPPLIED

The grease and oil originally applied are not available. Instead, alternative grease (which is also usable as oil) is supplied. When using this alternative grease (FLOIL G-351), be sure to wipe off the existing grease and oil completely before applying it.

Grease & oil	Grease to be supplied (substitute)
Grease : MEN-125F	FLOIL G-351 P/NO. TX913160
Oil : CFD-005.5	FLOIL G-351 P/NO. TX913160

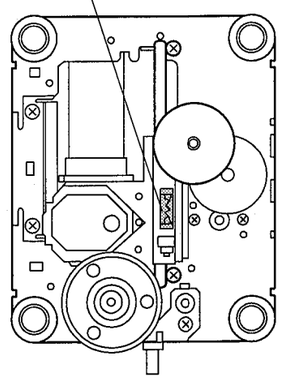






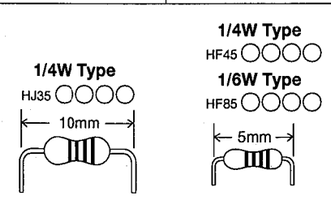
TRAY BOTTOM SIDE

MEN-125F APPLY PLACES



Parts List for Carbon Resistors

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	10 kΩ	HF45 7100	HF45 7100
1.8 Ω	HJ35 3180	※	11 kΩ	HF45 7110	HF45 7110
2.2 Ω	HJ35 3220	HF85 3220	12 kΩ	HJ35 7120	HF85 7120
3.3 Ω	HJ35 3330	HF85 3330	13 kΩ	HF45 7130	HF45 7130
4.7 Ω	HJ35 3470	HF85 3470	15 kΩ	HF45 7150	HF45 7150
5.6 Ω	HJ35 3560	HF85 3560	18 kΩ	HF45 7180	HF45 7180
10 Ω	HF45 4100	HF45 4100	22 kΩ	HF45 7220	HF45 7220
15 Ω	HJ35 4150	HF85 4150	24 kΩ	HF45 7240	HF45 7240
22 Ω	HF45 4220	HF45 4220	27 kΩ	HJ35 7270	HF85 7270
27 Ω	HJ35 4270	HF85 4270	30 kΩ	HF45 7300	HF45 7300
33 Ω	HF45 4330	HF45 4330	33 kΩ	HF45 7330	HF45 7330
39 Ω	HJ35 4470	HF85 4390	36 kΩ	HF45 7360	HF45 7360
47 Ω	HF45 4470	HF45 4470	39 kΩ	HF45 7390	HF45 7390
56 Ω	HF45 4560	HF45 4560	47 kΩ	HF45 7470	HF45 7470
68 Ω	HF45 4680	HF45 4680	51 kΩ	HF45 7510	HF45 7510
75 Ω	HF45 4750	HF45 4750	56 kΩ	HF45 7560	HF45 7560
82 Ω	HF45 4820	HF45 4820	62 kΩ	HF45 7620	HF45 7620
91 Ω	HF45 4910	HF45 4910	68 kΩ	HF45 7680	HF45 7680
100 Ω	HF45 5100	HF45 5100	82 kΩ	HF45 7820	HF45 7820
110 Ω	HJ35 5110	HF85 5110	91 kΩ	HF45 7910	HF45 7910
120 Ω	HF45 5120	HF45 5120	100 kΩ	HF45 8100	HF45 8100
150 Ω	HF45 5150	HF45 5150	110 kΩ	HF45 8110	HF45 8110
160 Ω	HJ35 5160	※	120 kΩ	HF45 8120	HF45 8120
180 Ω	HF45 5180	HF45 5180	150 kΩ	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 kΩ	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 kΩ	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 kΩ	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 kΩ	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 kΩ	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 kΩ	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 kΩ	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 kΩ	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 kΩ	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 kΩ	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 MΩ	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 MΩ	HJ35 9120	※
1.0 kΩ	HF45 6100	HF45 6100	1.5 MΩ	HJ35 9150	HF85 9150
1.2 kΩ	HF45 6120	HF45 6120	1.8 MΩ	HJ35 9180	HF85 9180
1.5 kΩ	HF45 6150	HF45 6150	2.2 MΩ	HJ35 9220	HF85 9220
1.8 kΩ	HF45 6180	HF45 6180	3.3 MΩ	HJ35 9330	HF85 9330
2.0 kΩ	HJ35 6200	HF85 6200	3.9 MΩ	HJ35 9390	※
2.2 kΩ	HF45 6220	HF45 6220	4.7 MΩ	HJ35 9470	HF85 9470
2.4 kΩ	HJ35 6240	HF85 6240			
2.7 kΩ	HF45 6270	HF45 6270			
3.0 kΩ	HF45 6300	HF45 6300			
3.3 kΩ	HF45 6330	HF45 6330			
3.6 kΩ	HJ35 6360	HF85 6360			
3.9 kΩ	HF45 6390	HF45 6390			
4.7 kΩ	HF45 6470	HF45 6470			
5.1 kΩ	HF45 6510	HF45 6510			
5.6 kΩ	HF45 6560	HF45 6560			
6.8 kΩ	HF45 6680	HF45 6680			
8.2 kΩ	HF45 6820	HF45 6820			
9.1 kΩ	HF45 6910	HF45 6910			



1992

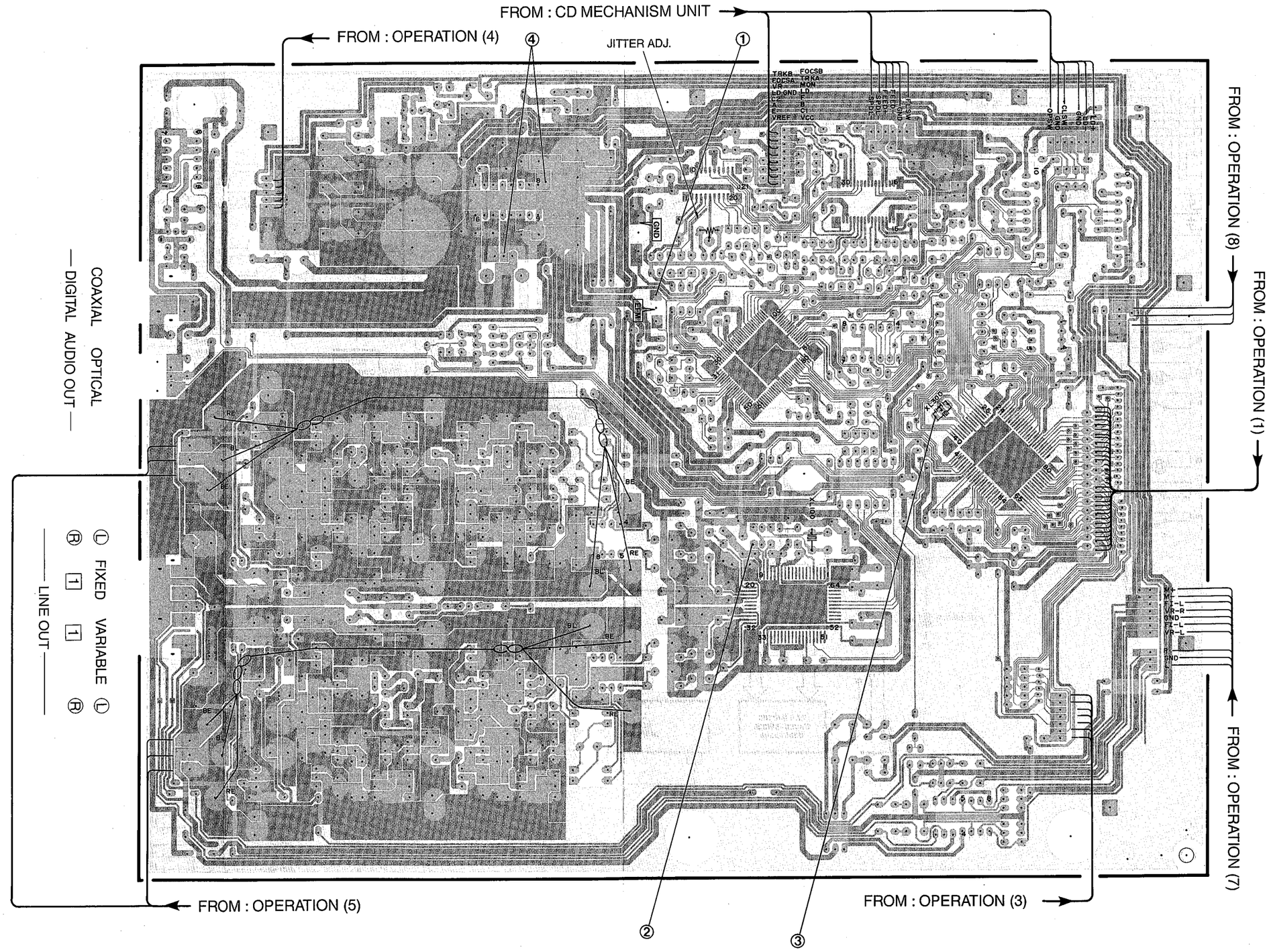
CDX-993

YAMAHA

■ PRINTED CIRCUIT BOARD (Foil sdie)／シート図 (パターン側)

P. C. B. MAIN

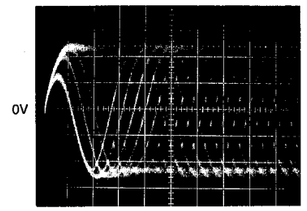
No.	Location
D100	D5
D101	D5
D102	D5
D103	D5
D104	D5
D105	D4
D106	D4
D107	D4
D108	D4
D109	D4
D110	C5
D111	C5
D112	C4
D113	C4
D114	C5
D115	C5
D116	C5
D117	C4
D118	C4
D119	C4
D120	F5
D121	G2
D122	F5
D123	C4
D200	D3
D201	D3
D202	D3
D203	D3
D204	C2
D205	C2
D206	C2
D207	C2
D208	D2
D209	C2
D210	C2
D211	C2
D212	C2
D221	C2
D222	C2
D302	F2
IC4	E2
IC5	F2
IC6	E2
IC7	F3
IC100	E4
IC101	C4
IC102	D5
IC106	D4
IC114	G2
IC116	B2
IC119	F5
IC200	D2
IC300	F2
IC301	F3
IC302	F3



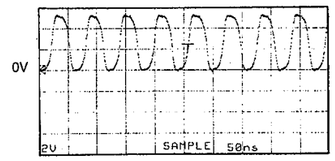
No.	Location
Q1	E3
Q2	F3
Q100	D5
Q101	D5
Q102	D5
Q103	D5
Q104	D5
Q105	D5
Q106	D5
Q107	D5
Q108	D5
Q109	D4
Q110	D4
Q111	D4
Q112	D4
Q113	D4
Q114	D4
Q115	D3
Q116	D4
Q117	D4
Q118	C5
Q119	C5
Q120	C5
Q121	C5
Q122	C5
Q123	C4
Q124	C4
Q125	C4
Q126	C4
Q127	C4
Q128	C5
Q129	C5
Q130	C5
Q131	C5
Q132	C5
Q133	C5
Q134	C4
Q135	C4
Q136	C4
Q136	C5
Q137	C3
Q138	C4
Q139	C3
Q140	D4
Q141	F5
Q142	F5
Q200	D3
Q202	D3
Q203	D2
Q204	C2
Q300	F4

■ PRINTED CIRCUIT BOARD (Foil sdie)／シート図 (パターン側)

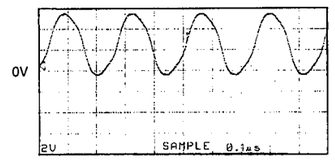
Point ① (EFM)
V : 0.2V/div H : 0.5µsec/div AC range 1 : 1 probe



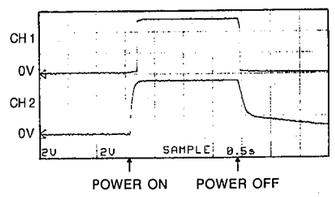
Point ② (Pin 17 of IC100)
V : 2V/div H : 50nsec/div DC range 1 : 1 probe



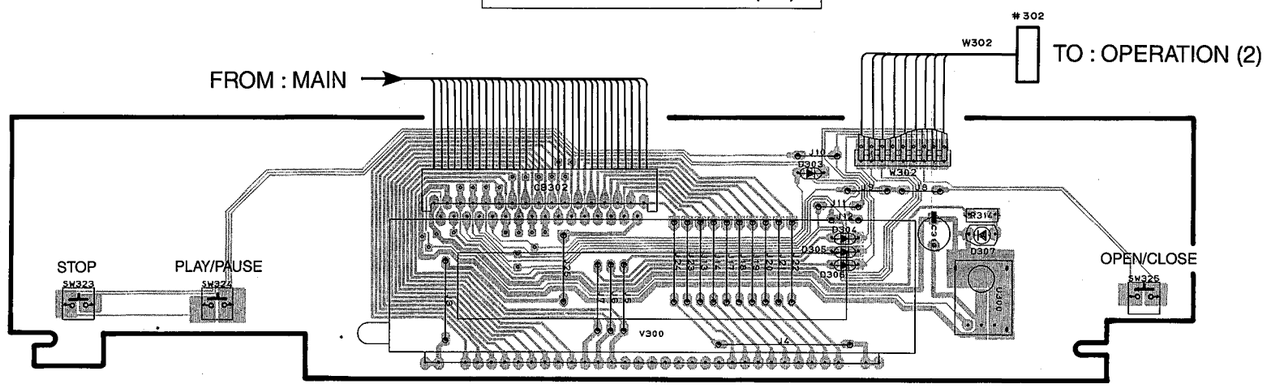
Point ③ (Pin 35 of IC301)
V : 2V/div H : 0.1µsec/div DC range 1 : 1 probe



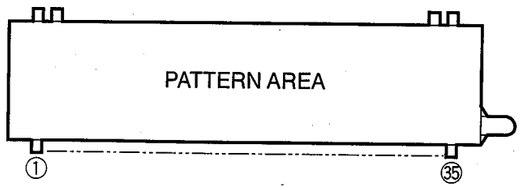
Point ④
(CH1 : Pin 8 of IC200 V : 2V/div CH1
CH2 : Collector of Q202) V : 2V/div CH2
H : 0.5sec/div DC range 1 : 1 probe



P. C. B. OPERATION (1)



V300 : 9-MT-133GK



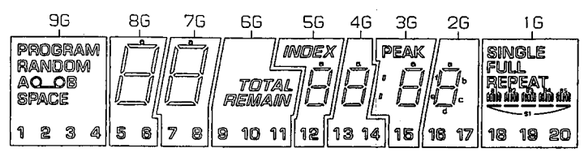
PIN CONNECTION

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
CONNECTION	F1	F1	NP	9G	8G	7G	6G	5G	4G	3G	2G	1G	NC	NC	NC	NC	NC	NC

PIN NO.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
CONNECTION	NC	NC	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NP	F2	F2

NOTE 1) F1, F2 ..... Filament
2) NP ..... No pin
3) NC ..... No connection
4) P1~P12 ..... Datum Line
5) 1G~9G ..... Grid

GRID ASSIGNMENT

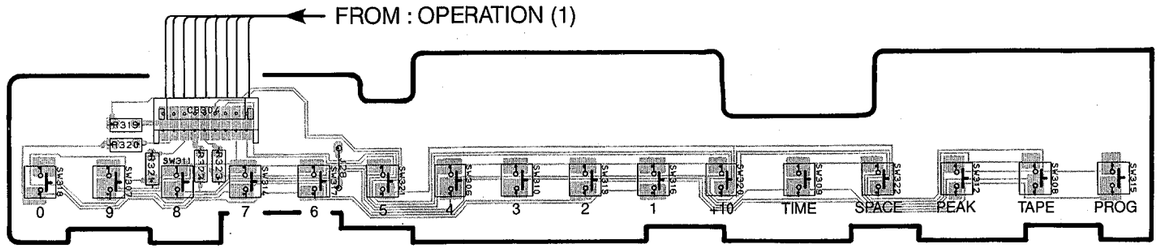


ANODE CONNECTION

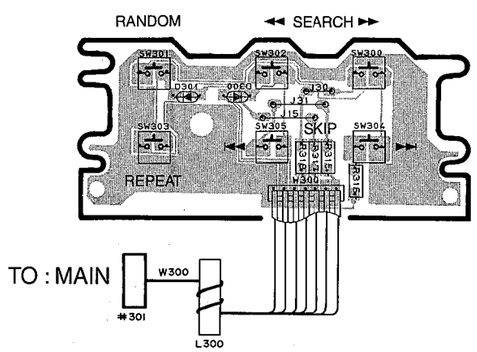
	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	PROGRAM	a	a	*TOTAL*	a	a	a	a	SINGLE
P2	RANDOM	b	b	*REMAIN*	b	b	b	b	FULL
P3	A	c	c	—	c	c	c	c	REPEAT
P4	Q	d	d	—	d	d	d	d	B1
P5	B	e	e	—	e	e	e	e	B2
P6	SPACE	f	f	—	f	f	f	f	B3
P7	—	g	g	—	g	g	g	g	B4
P8	—	—	—	—	—	—	:	—	B5
P9	1	5	7	9	12	13	15	16	S1
P10	2	6	8	10	*INDEX*	14	PEAK	17	18
P11	3	—	—	11	—	—	—	—	19
P12	4	—	—	—	—	—	—	—	20

■ PRINTED CIRCUIT BOARD (Foil sdie)／シート図 (パターン側)

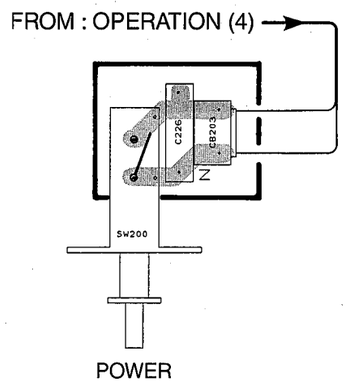
P. C. B. OPERATION (2)



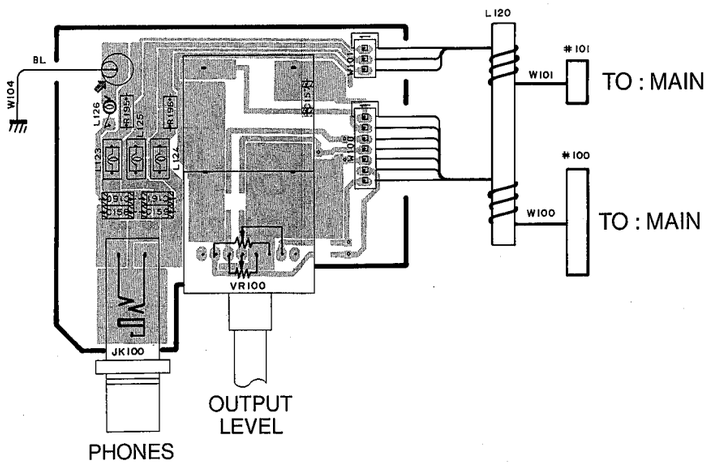
P. C. B. OPERATION (3)



P. C. B. OPERATION (6)

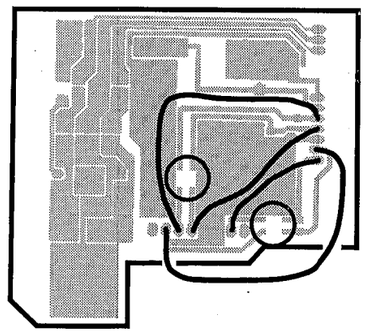


P. C. B. OPERATION (7)

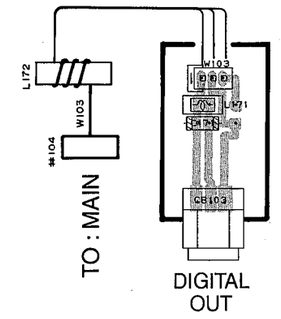


CAUTION

* Wiring patern cut. (2 points)
* Addition of jumper wires. (4 points)
* Addition of jumper wires must be applied bond.



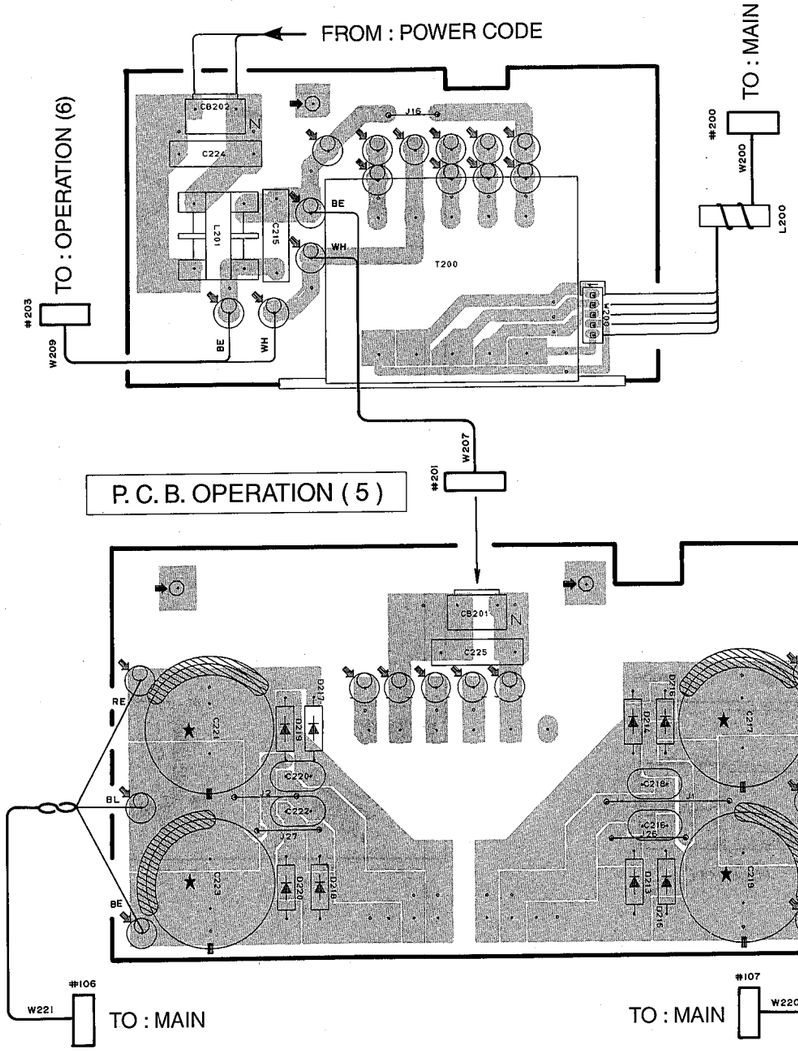
P. C. B. OPERATION (8)



■ PRINTED CIRCUIT BOARD (Foil sdie)／シート図 (パターン側)

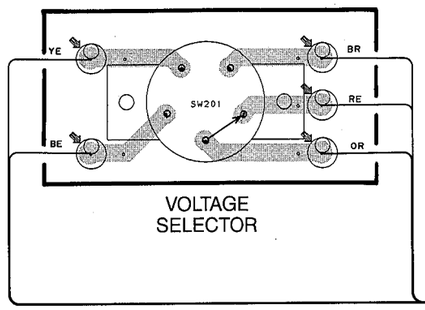
● J, A, B, G models

P. C. B. OPERATION (4)

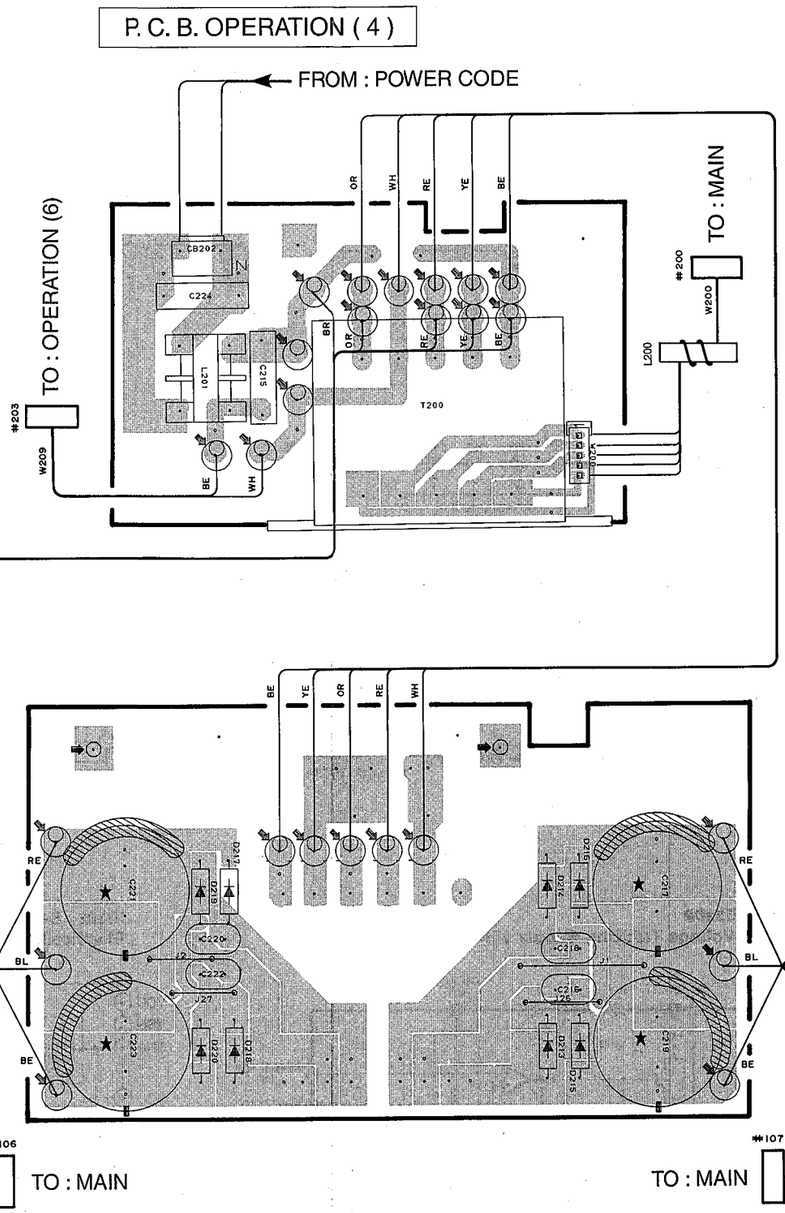


● R model

P. C. B. OPERATION (9)

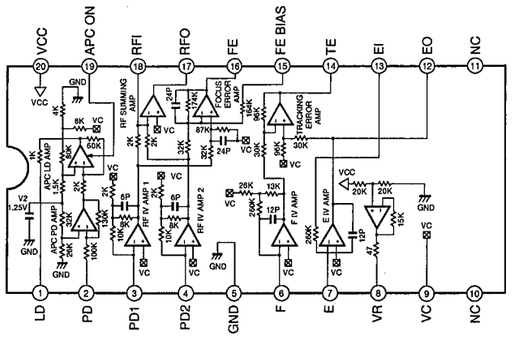


P. C. B. OPERATION (4)

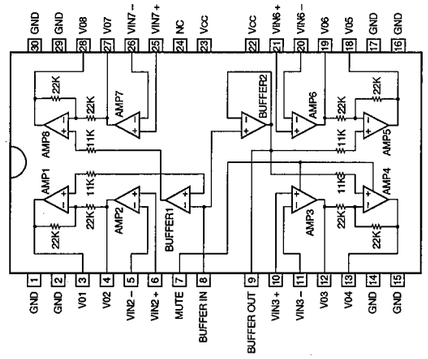


■ IC BLOCKS／ICブロック

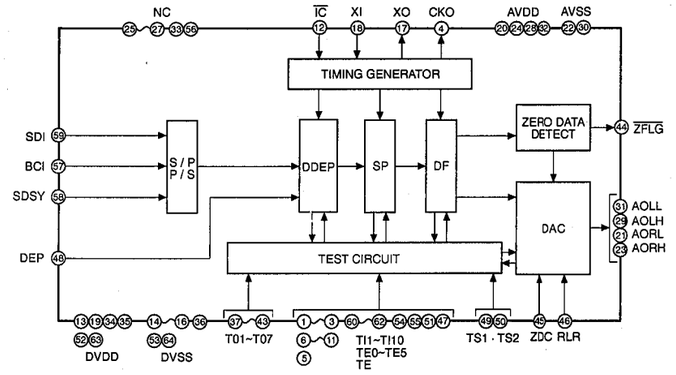
IC4 : CXA1791M
Digital Servo Head Amp



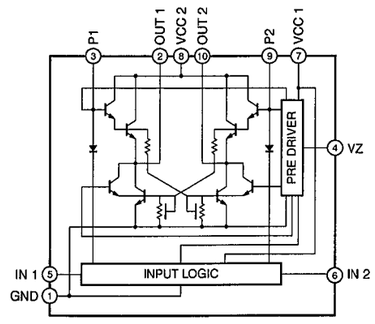
IC5 : LA6537M
4-Channel BTL Driver



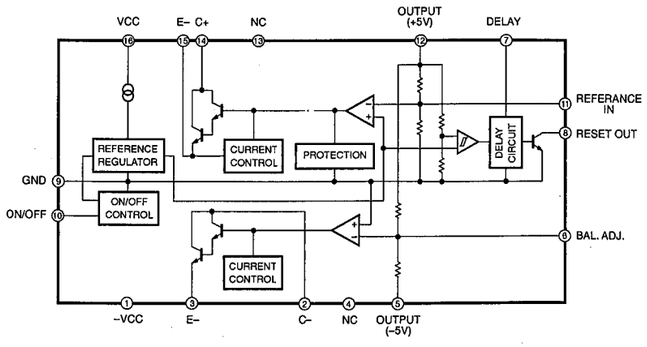
IC100 : YAC514
D/A Converter



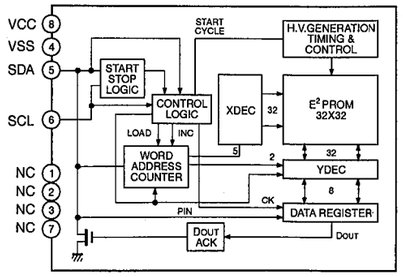
IC114, 300 : LB1641
Motor Driver



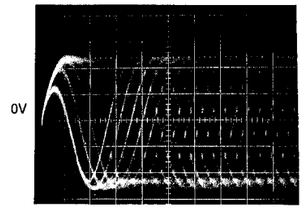
IC200 : M5290P
Constant-Voltage Tracking Supply with Reset



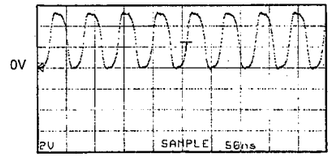
IC302 : S-24C01ADP
Electrically Erasable PROM



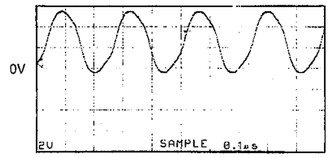
Point ① (EFM)
V : 0.2V/div H : 0.5µsec/div AC range 1 : 1 probe



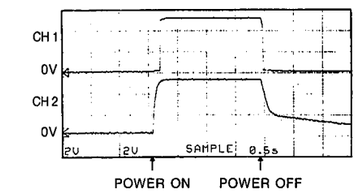
Point ② (Pin 17 of IC100)
V : 2V/div H : 50nsec/div DC range 1 : 1 probe



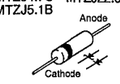
Point ③ (Pin 35 of IC301)
V : 2V/div H : 0.1µsec/div DC range 1 : 1 probe



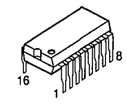
Point ④
(CH1 : Pin 8 of IC200 / CH2 : Collector of Q202)
V : 2V/div CH1
V : 2V/div CH2
H : 0.5sec/div DC range 1 : 1 probe



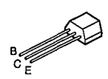
1SS133 MTZJ5.6B
1T2 MTZJ6.2C
2A02M MTZJ8.2A
MTZJ4.7C MTZJ22.0A
MTZJ5.1B



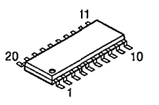
M5290P



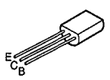
2SA933S(Q,R)
2SC1740S(R,S)



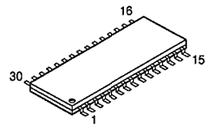
CXA1791M



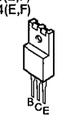
2SB544(E,F,G)
2SC2878(A,B)
2SD400(E,F)



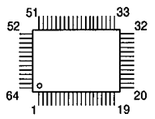
LA6537M



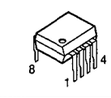
2SB1565(E,F)
2SD2394(E,F)



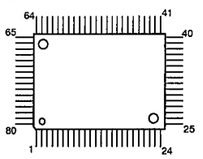
YAC514



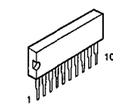
BA15218
NJM5532D
S-24C01ADP



µPD78044FGF



LB1641



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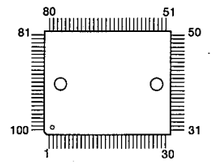
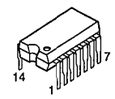
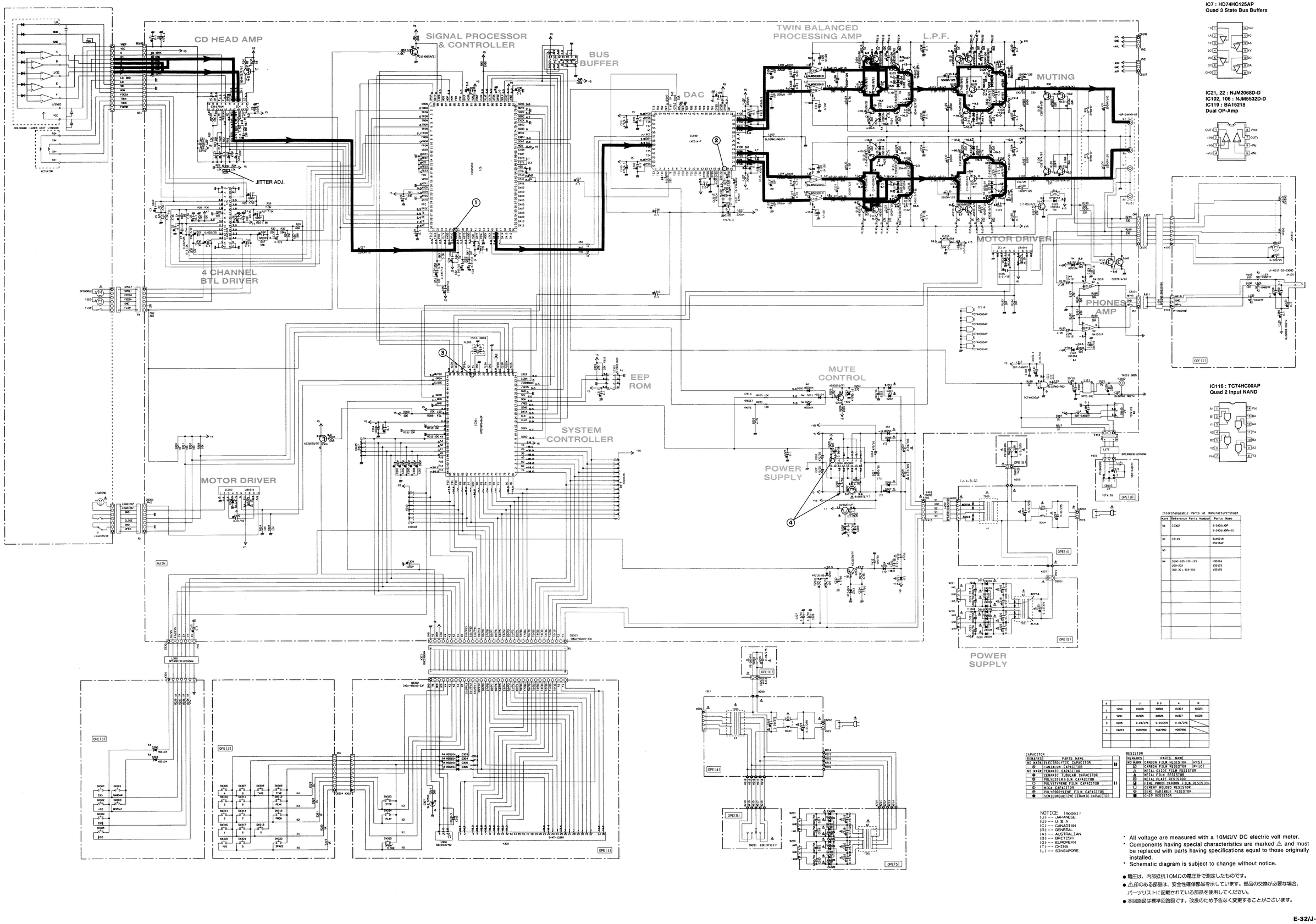


HD74HC125P
TC74HC00AP



■ SCHEMATIC DIAGRAM／総回路図



Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
k1	IC302	S-24C01ASP S-24C01ASFH-01
k2	IC119	BA15218 MS218AP
k3		
k4	D100-105-122-123 200-202 300-301-303-306	HSS084 ISS133 ISS176

n		J	B-G	A	R
1	T250	VS068	VD909	KU324	KU323
2	T251	KU325	KU328	KU327	KU326
3	D205	G-01/275	G-01/275	G-01/275	
4	D201	VS07990	VS07990	VS07990	

CAPACITOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊕	CERAMIC TUBULAR CAPACITOR
⊕	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
⊙	MICA CAPACITOR
⊕	POLYPROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
☑	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
◎	METAL PLATE RESISTOR
◪	FINE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

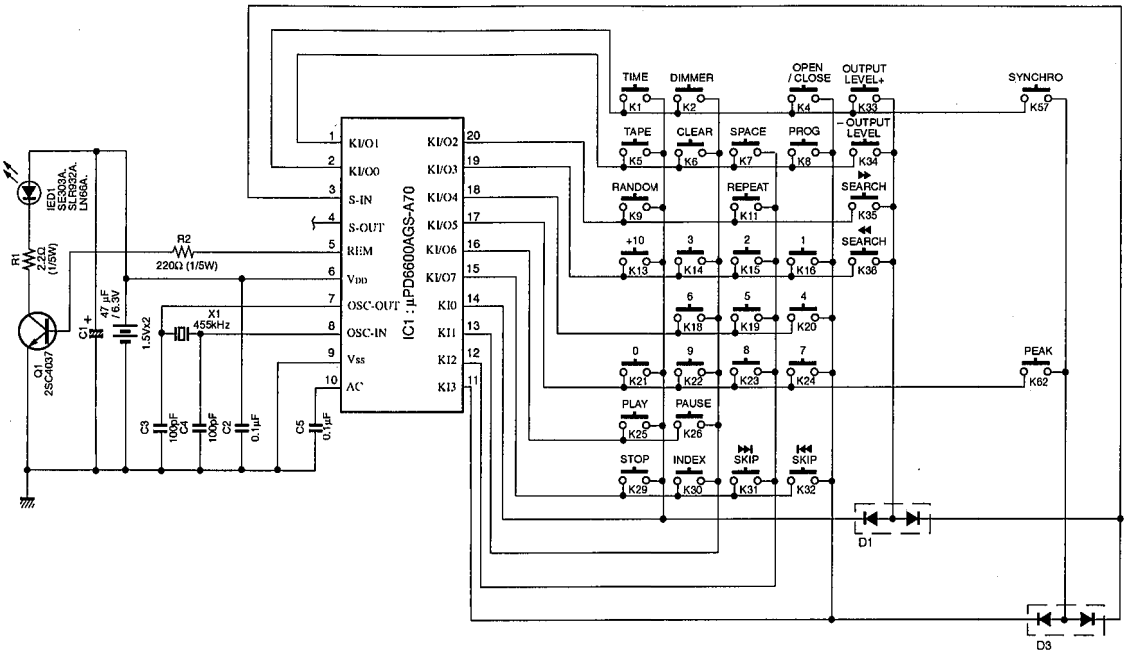
NOTICE (mode)
(J)..... JAPANESE
(U)..... U.S.A
(C)..... CANADIAN
(R)..... GENERAL
(A)..... AUSTRALIAN
(B)..... BRITISH
(G)..... EUROPEAN
(T)..... CHINA
(L)..... SINGAPORE

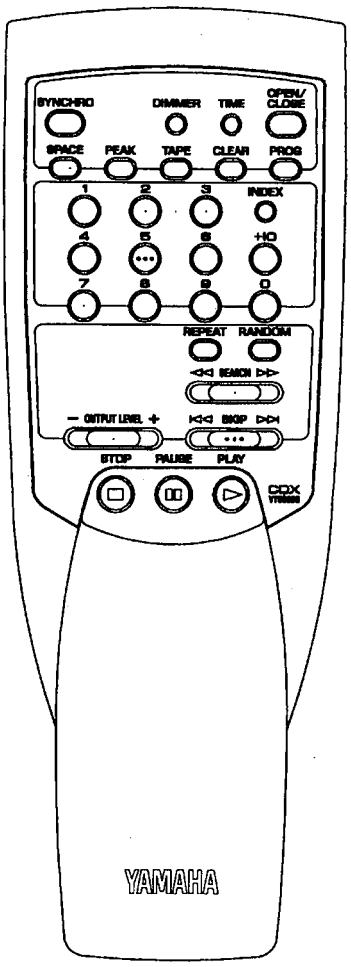
* All voltage are measured with a 10MΩ/V DC electric volt meter.
* Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

● 電圧は、内部抵抗10MΩの電圧計で測定したものです。
● ⚠印のある部品は、安全性確保部品を示しています。部品の交換が必要な場合、パーツリストに記載されている部品を使用してください。
● 本回路図は標準回路図です。改良のため予告なく変更することがございます。

REMOTE CONTROL TRANSMITTER

■ SCHEMATIC DIAGRAM

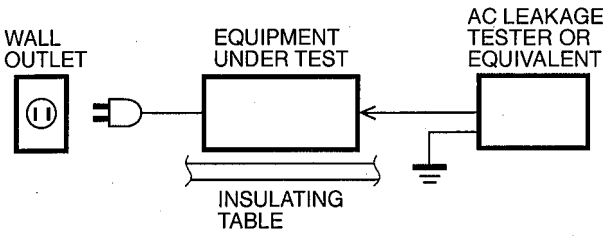




KEY No.	FUNCTION	CUSTOM CODE (HEX)	REVERSE CUSTOM CODE (HEX)	DATA CODE (HEX)	REMARKS D0 D7
K1	TIME	79	86	0A	01010000
K2	DIMMER	79	86	1E	01111000
K4	OPEN/CLOSE	79	86	01	10000000
K5	TAPE	79	86	57	11101010
K6	CLEAR	79	86	0D	10110000
K7	SPACE	79	86	0F	11110000
K8	PROG	79	86	0C	00110000
K9	RANDOM	79	86	1B	11011000
K11	REPEAT	79	86	08	00010000
K13	+10	79	86	1A	01011000
K14	3	79	86	13	11001000
K15	2	79	86	12	01001000
K16	1	79	86	11	10001000
K18	6	79	86	16	01101000
K19	5	79	86	15	10101000
K20	4	79	86	14	00101000
K21	0	79	86	10	00001000
K22	9	79	86	19	10011000
K23	8	79	86	18	00011000
K24	7	79	86	17	11101000
K25	PLAY	79	86	02	01000000
K26	PAUSE	79	86	55	10101010
K29	STOP	79	86	56	01101010
K30	INDEX	79	86	0B	11010000
K31	SKIP ▶▶|	79	86	07	11100000
K32	|◀◀ SKIP	79	86	04	00100000
K33	OUTPUT LEVEL +	79	86	1D	10111000
K34	– OUTPUT LEVEL	79	86	1C	00111000
K35	SEARCH ▶▶	79	86	06	01100000
K36	◀◀ SEARCH	79	86	05	10100000
K57	SYNCHRO	79	86	58	00011010
K62	PEAK	79	86	5D	10111010

■ TO SERVICE PERSONNEL

Critical Components Information.
Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.



CAUTION: USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

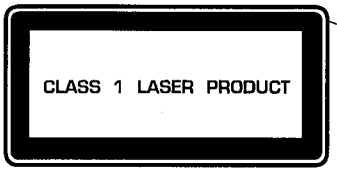
This set employs a laser. Therefore, be sure to carefully follow the instructions below when servicing .

1. Laser Diode Properties
   - Material : GaAlAs
   - Wavelength : 780 nm
   - Emission Duration : Continuous
   - Laser Output : max. 44.6 μW*

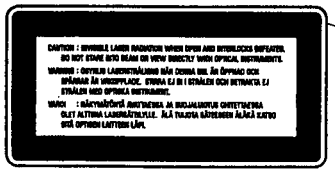
   * This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.

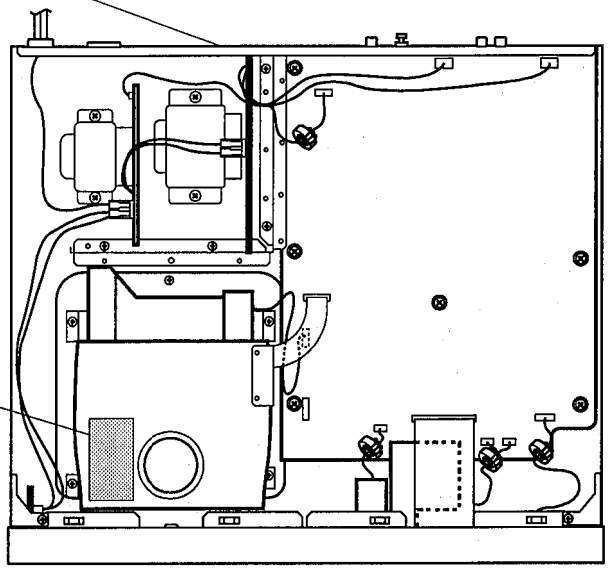
2. When checking the laser diode emission, keep your eyes more than 30 cm away from the objective lens.

① R, G, B models



② R, G, B models





English

① THIS PRINTING (SEE POSITION SHOWN IN THE ILLUSTRATION) INFORMS THE USER THAT THE APPARATUS CONTAINS A LASER COMPONENT.

② THIS LABEL (SEE POSITION SHOWN IN THE ILLUSTRATION) WARNS THAT ANY FURTHER PROCEDURE WILL BRING THE USER INTO EXPOSURE WITH THE LASER BEAM.

CAUTION : USE OF CONTROLS, ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN, MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

Swedish

① DENNA MÄRKNING (SE FIGUR) UPPLYSER OM ATT DET I APPARATEN INGÅR EN LASERKOMPONENT AV TYP KLASS 1.

② VARNINGSMÄRKNING (SE FIGUR) FÖR STRÅLNING. INGREPP I APPARATEN BÖR ENDAST FÖRETAGAS AV FACKMAN MED KÅNNEDOM OM LASER. APPARATEN INNEHÅLLER EN LASERKOMPONENT SOM AVGER STRÅLNING ÖVERSTIGANDE GRÄNSEN FÖR LASERKLASS 1.

VARNING : OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD : BETRAKTA EJ STRÅLEN.

Danish

① DETTE MÆRKAT ER ANBRAGT SOM VIST I ILLUSTRATIONEN FOR AT ADVARE BRUGEREN OM AT APPARATET INDEHOLDER EN LASERKOMPONENT.

② DETTE MÆRKAT OM LASEREN ER ANBRAGT PÅ APPARATET SOM EN OPLYSNING OM AT APPARATET INDEHOLDER ET LASERKOMPONENT.

ADVARSEL : INDGREB BOR KUN FORETAGES AF EN FAGMAND DA DER ER RISIKO FOR RADIOAKTIV STRÅLING.

ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING.
UNDGÅ UDSAETTELSE FOR STRÅLING.

Finnish

VARO! :
AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

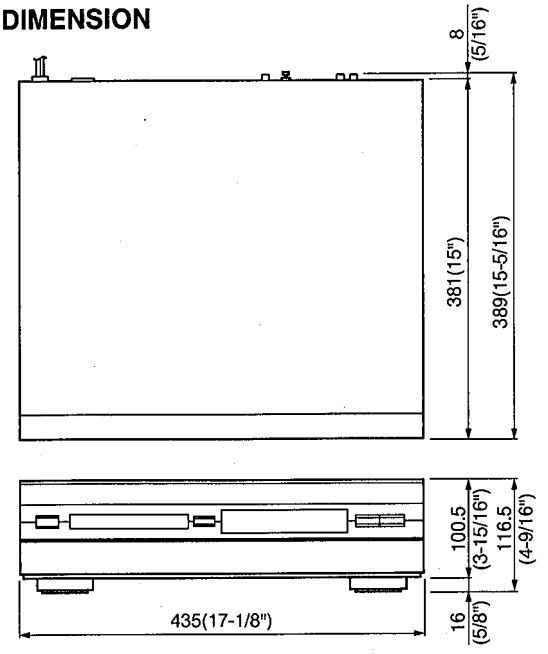
■ SPECIFICATIONS

Output Level 1kHz, 0dB	2.0±0.5Vrms
Signal to Nosie Ratio (EIAJ)	118dB
Dynamic Range	98dB
Harmonic Distortion+Noise (1kHz)	0.002%
Frequency Response 2Hz — 20kHz	±0.3dB
Headphone Output 150Ω, 1kHz, –20dB Input	300mV±60mV
Power Requirements	230V AC 50Hz
Power Consumption	20W
Dimensions (W x H x D)	435 x 116.5 x 389mm (17-1/8" x 4-9/16" x 15-5/16")
Weight	9.6kg (21 lbs 2oz)
Accessories	Pin plug code Remote control transmitter (Dry-cell : x 2: Size "AA", R06)

**Specifications are subject to change without notice.*

B ..... British model
G ..... European model
R ..... General model

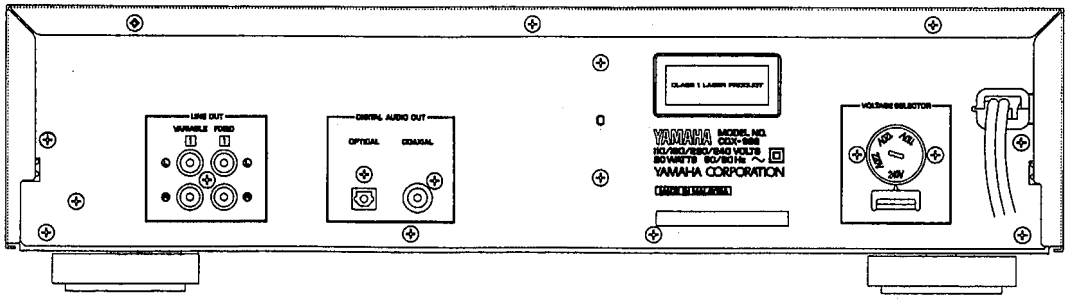
● **DIMENSION**



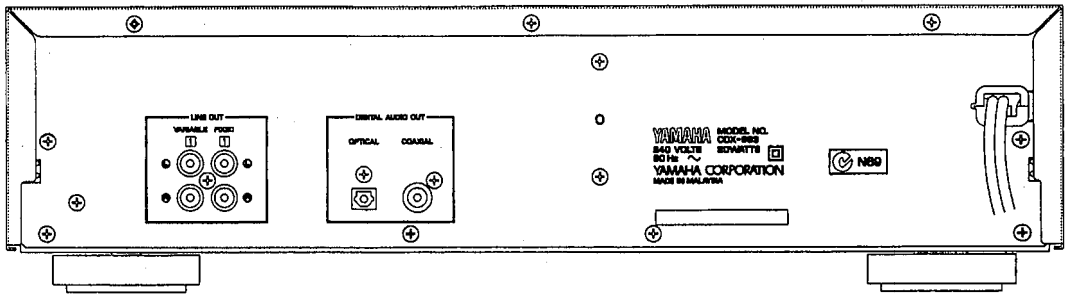
Unit : mm (inch)

■ REAR PANELS

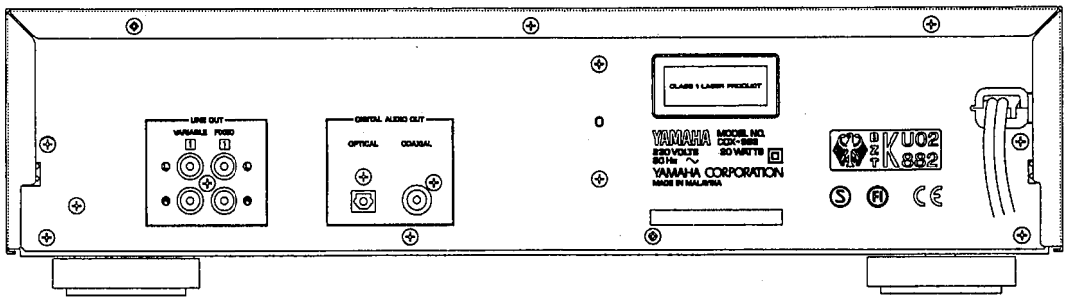
● R model



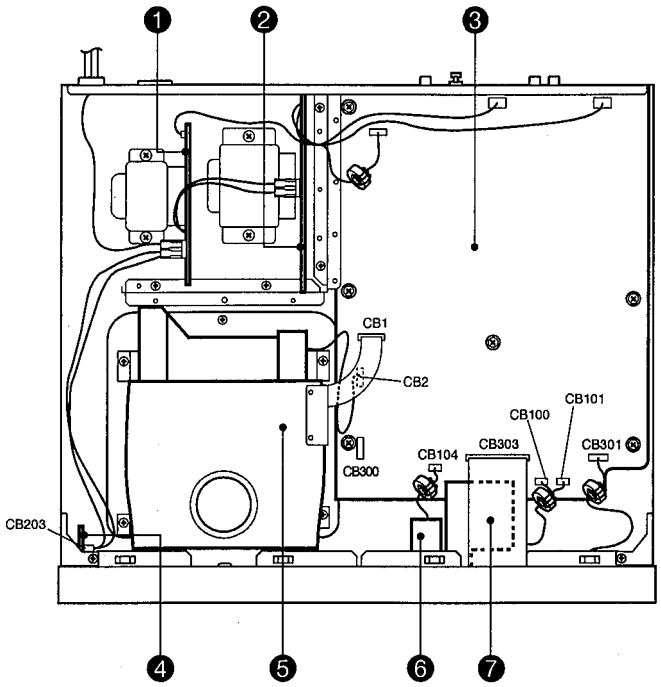
● B model



● G model



■ INTERNAL VIEW



1. P.C.B. OPERATION (4)
2. P.C.B. OPERATION (5)
3. P.C.B. MAIN
4. P.C.B. OPERATION (6)
5. CD MECHANISM UNIT
6. P.C.B. OPERATION (8)
7. P.C.B. OPERATION (7)

■ DISASSEMBLY PROCEDURES (Remove parts in disassembly order as numbered.)

1. Removal of Top Cover
a. Remove 4 screws (①) also 3 screws (②) in Fig. 1.
b. Lift the Top Cover at the rear and move it rearward slantingly.

2. Removal of Inner Cover
a. Remove 6 screws (③) in Fig. 1.

3. Removal of Lid
a. Using a flat tip screwdriver of the like through the hole in the main unit on the bottom cover side, move the slider lever to the "Tray OPEN" position as shown in Fig.2. Then the tray will come out about 5cm forward.
b. Open the tray manually.
c. As the Lid is fixed with 7 hooks unhook these hooks as described below and then remove the Lid. (Fig.3)
Unhook 3 hooks (Ⓐ) (upward).
Unhook 2 hooks (Ⓑ) (inward).
Unhook 2 hooks (Ⓒ) (outward).
d. Close the tray again manually after removing the Lid.

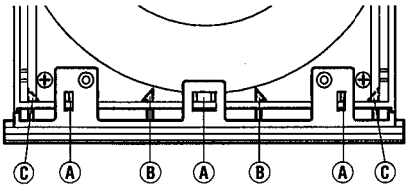


Fig. 3

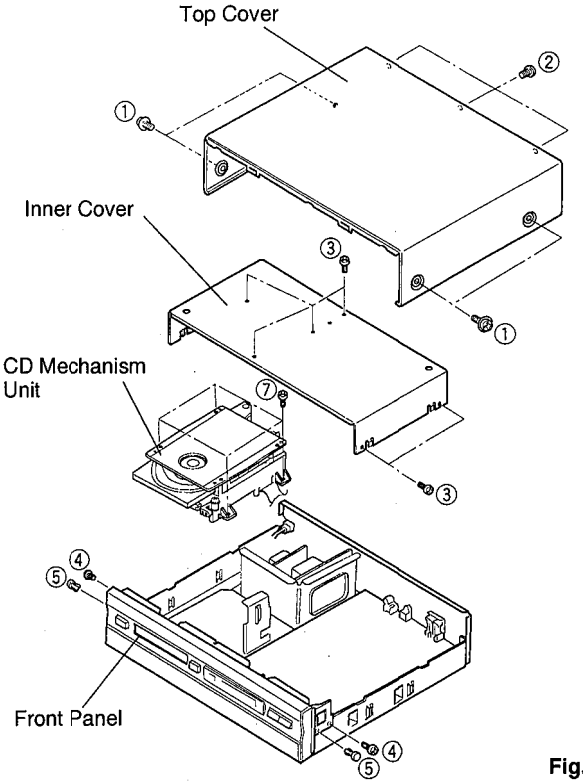


Fig. 1

4. Removal of Front Panel
a. Remove 6 connectors.
(Identified by following INTERNAL VIEW)
CB104, CB303, CB100, CB101, CB301, CB203
b. Remove 2 screws (④) and 2 push rivets (⑤) in Fig. 1.
c. Remove 5 screws (⑥) in Fig. 2.
d. Unhook 3 panel hooks on the bottom in Fig. 2 and pull out the Front Panel.

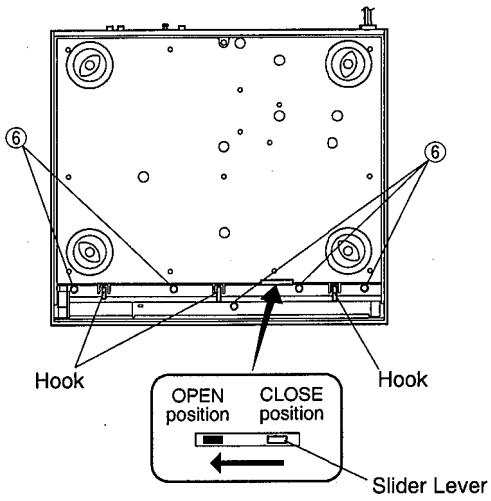


Fig. 2

5. Removal of CD Mechanism Unit
a. Remove 3 connectors.
(Identified by following INTERNAL VIEW)
CB1, CB2, CB300
b. Remove 4 screws (⑦) in Fig. 1.

6. Removal of Clamper Unit
a. Remove 4 screws (⑧) and then remove the Clamper Unit. (Fig.4)

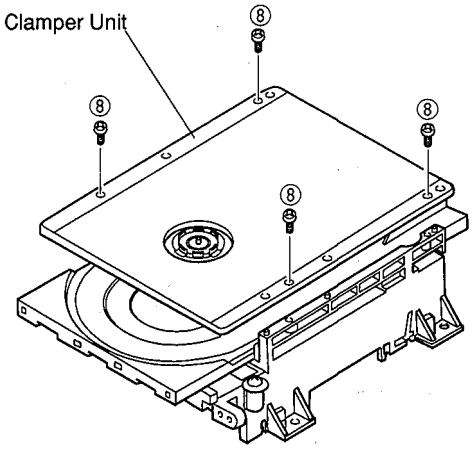


Fig. 4

7. Removal of Tray Unit

a. Move the slider lever to the "Tray OPEN" position as shown in Fig. 5. This causes the Traverse to move down.
b. Pull out the tray manually to the intermediate position between OPEN and CLOSE as shown in Fig. 6. This causes the lever switch to turn off.
c. Remove 3 screws (⑨) and pull out the Retainers (L/R) to set the Tray frees shown in Fig. 6.
d. Lift the Tray and remove it.

8. Removal of Pick-up Head

a. Remove 2 screws (⑩) and then remove the Traverse as shown in Fig. 7.
b. Remove 5 screws (⑪) and then remove the Drive Unit as shown in Fig. 5 and Fig. 7.
c. Remove a washer (⑫) and then remove the Driving Gear as shown in Fig. 8.
d. Remove 2 screws (⑬), pull out the Guide Rod and then remove the Pick-up Head as shown in Fig. 8.

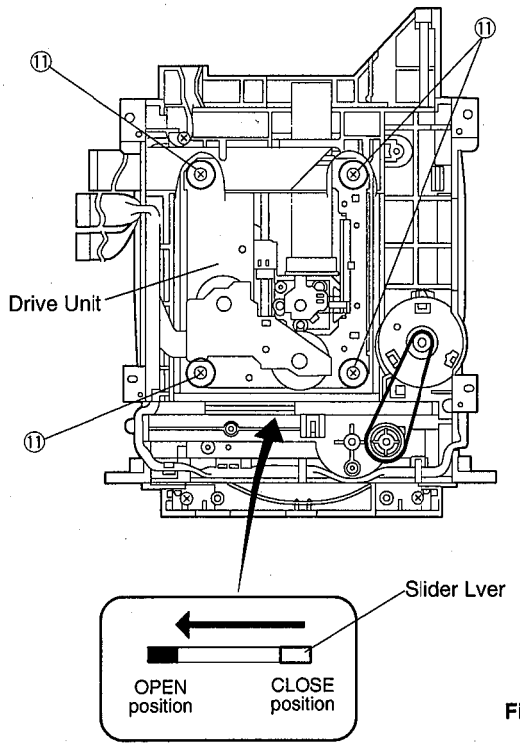


Fig. 5

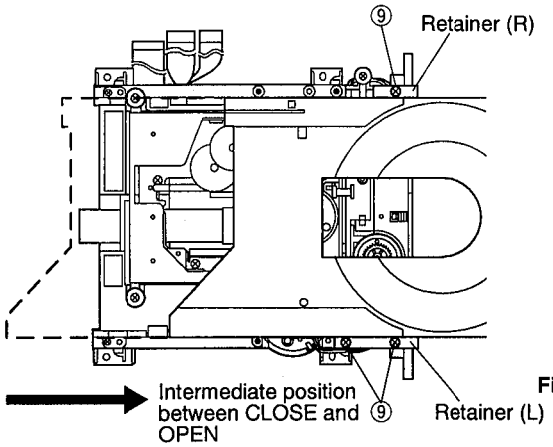


Fig. 6

• Installation of Tray Unit

a. Move the Slider Lever to the "Tray OPEN" position as shown in Fig. 5.
b. Place the Tray at the intermediate position between OPEN and CLOSE as shown in Fig. 6.
At this time, note the following points. (Fig. 7)
  • The pin of the Slider should fit in the Tray guide groove.
  • The Main Gear and the loading cam of the Tray should be engaged.
  • The lever switch is not contacted.
c. Insert Retainers L/R along the groove in the mechanical chassis as far as they go and fix them with 3 screws (⑨) as shown in Fig. 6.
d. Close the Tray manually.

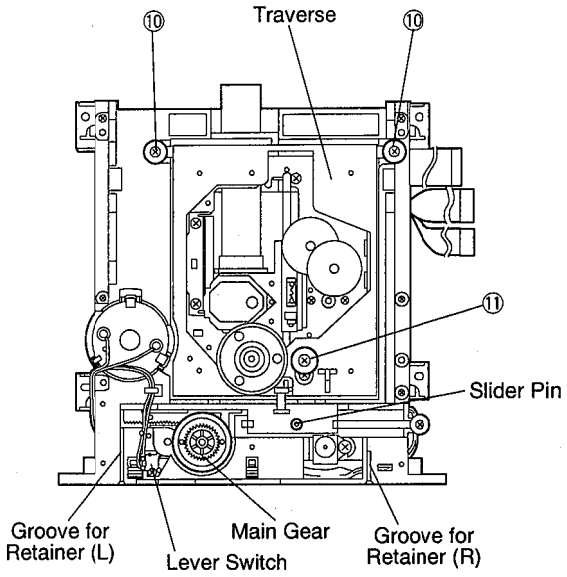


Fig. 7

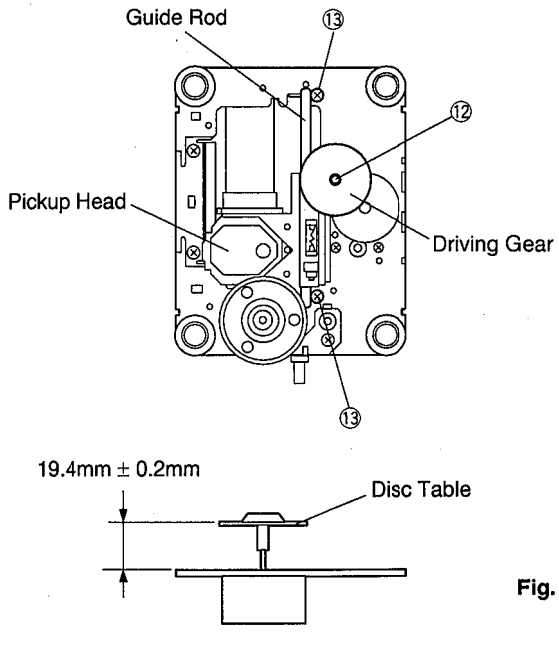
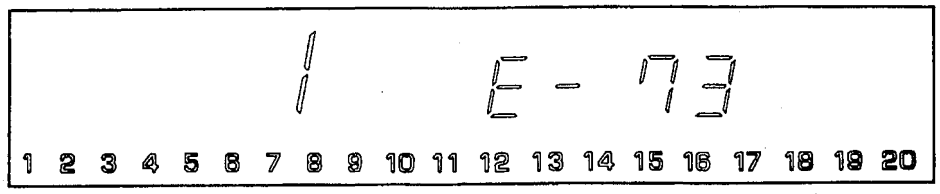


Fig. 8

■ ERROR MESSAGE

(1) When operation is terminated in an abnormal condition (stop or open), pressing STOP on the remote control while pressing STOP on the panel will set to the error message display enable mode.
(2) Shown below is an example of display. ("E-73" as an example)



(3) This function stays effective till the power is turned OFF. (It is cleared at OFF.)
(4) Listed in the table below are error messages.

● **Error Messages List**

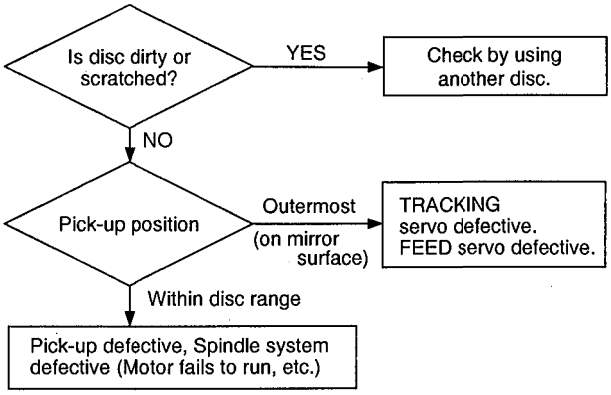
ERROR MESSAGES	DESCRIPTION
E – X 0	Data cannot be read after finishing search.
E – X 1	Data cannot be read during PLAY(X=0), PAUSE(X=3), or SCAN(X=2).
E – 7 1	At the start, tracking servo is not effective.
E – 7 2	At the start, spindle servo PLL is not effective.
E – 7 3	At the start, data can not read.
E – 9 4	Close switch does not work with tray closed.
E – A 5	Open switch does not work with tray open.
E – X 7	Traverse(Feed) inner switch does not work.
E – X 8	Recovery action fails after focus drop.

***No. for each state (meaning of "X")**

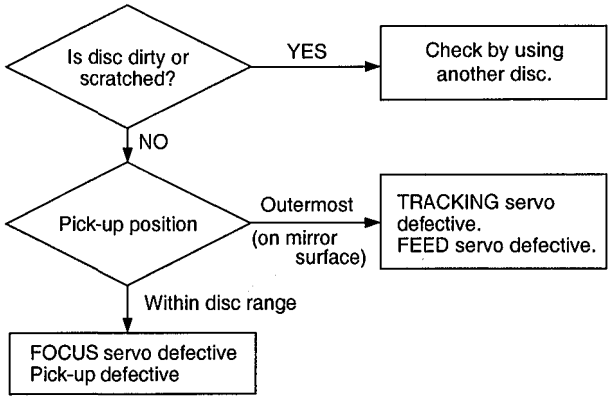
PLAY	X="0"
SCAN	X="2"
PAUSE	X="3"
PEAK SEARCH	X="4"
SEARCH	X="5"
START	X="7"
STOP	X="8"
LOADING	X="9"
OPEN	X="A"
NO DISC	X="C"

1) Error Code Troubleshooting

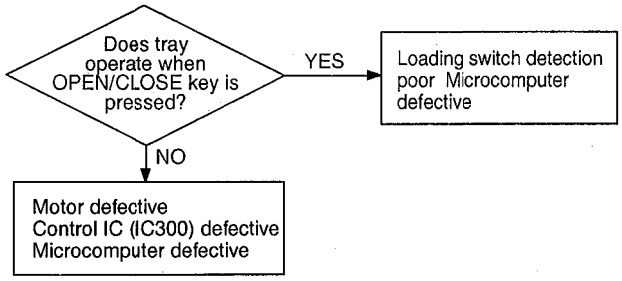
Error code [X0], [X1], [73] ..... Data cannot be read.



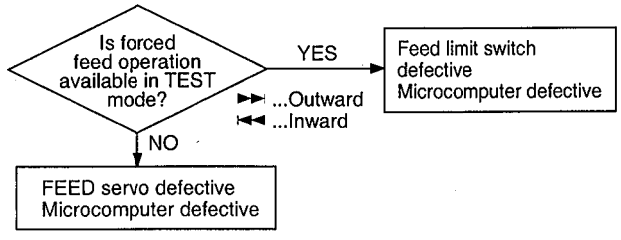
Error code [X8] ..... Focus drops.



Error codes [94], [A] ..... Poor tray loading operation.

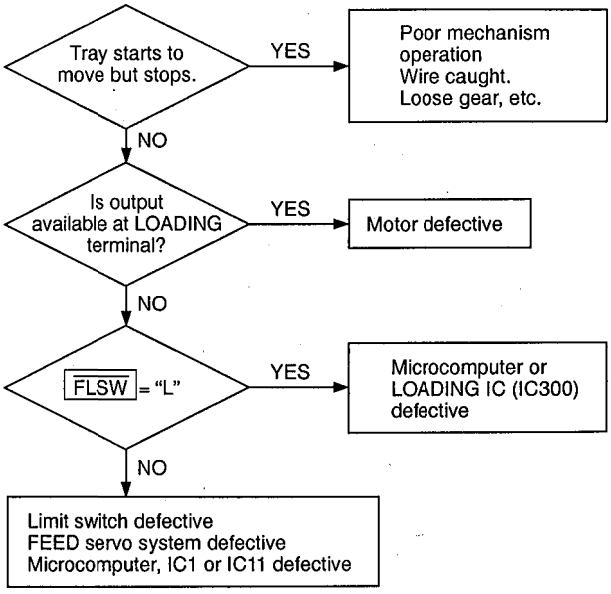


Error code [X7] ..... FEED operation defective.
(Limit switch fails)



2) Troubleshooting from System Malfunctions

a) Tray fails to come out/go in.



When tray fails to close completely (when it stops midway)

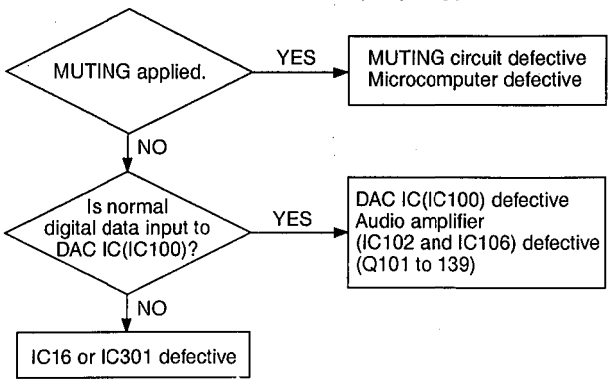
[Corrective measure]

1) Turn ON the power and open the tray.
* If it failed to open (head and tray contacting each other), open it after removing the clamper unit.

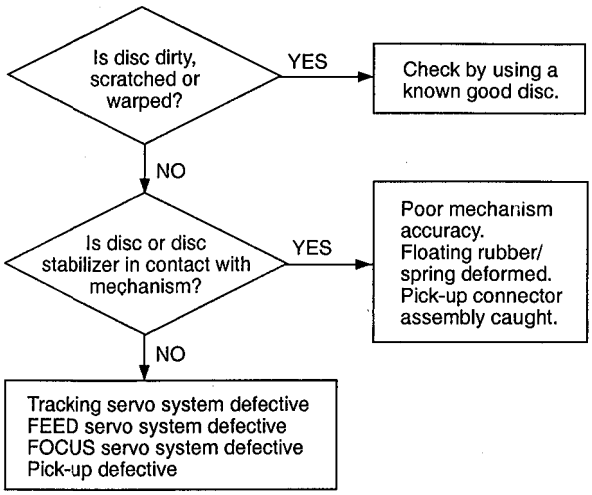
2) Turn OFF the power and force the tray to go in fully and close.

3) With the power turned ON, open and close the tray to check if the tray close completely.

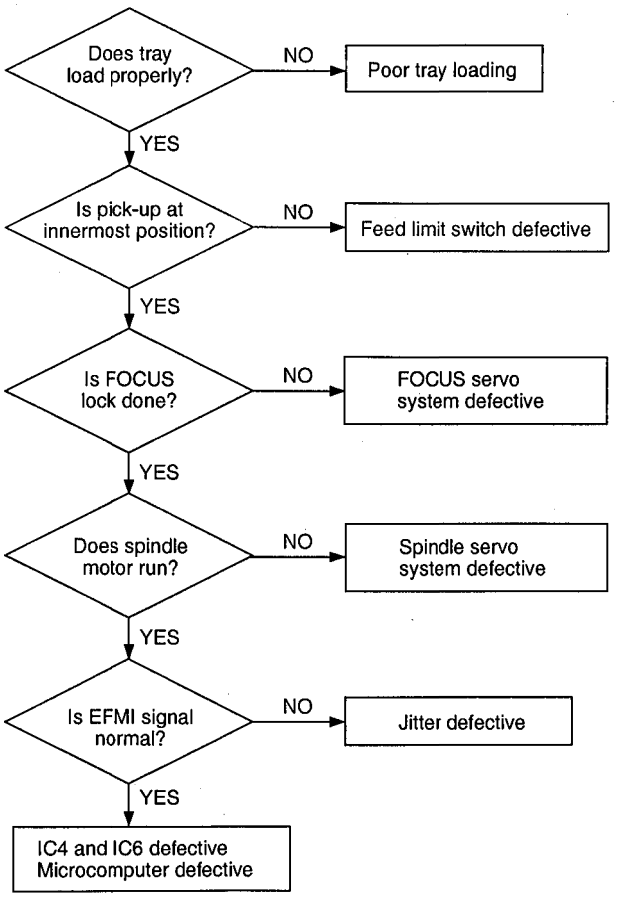
b) No sound generated, Sound cut during play.
(but time display advances properly)



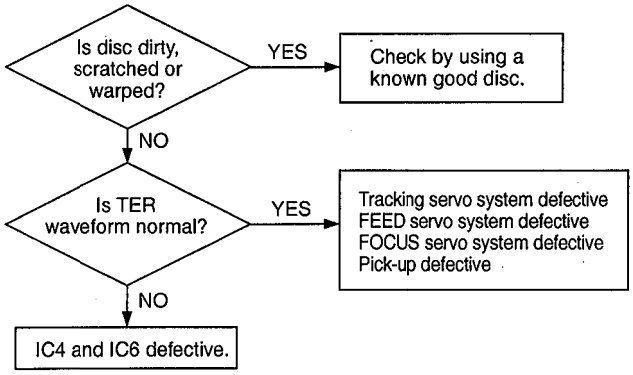
d) Sound skips.
(Time display fails to advance properly)



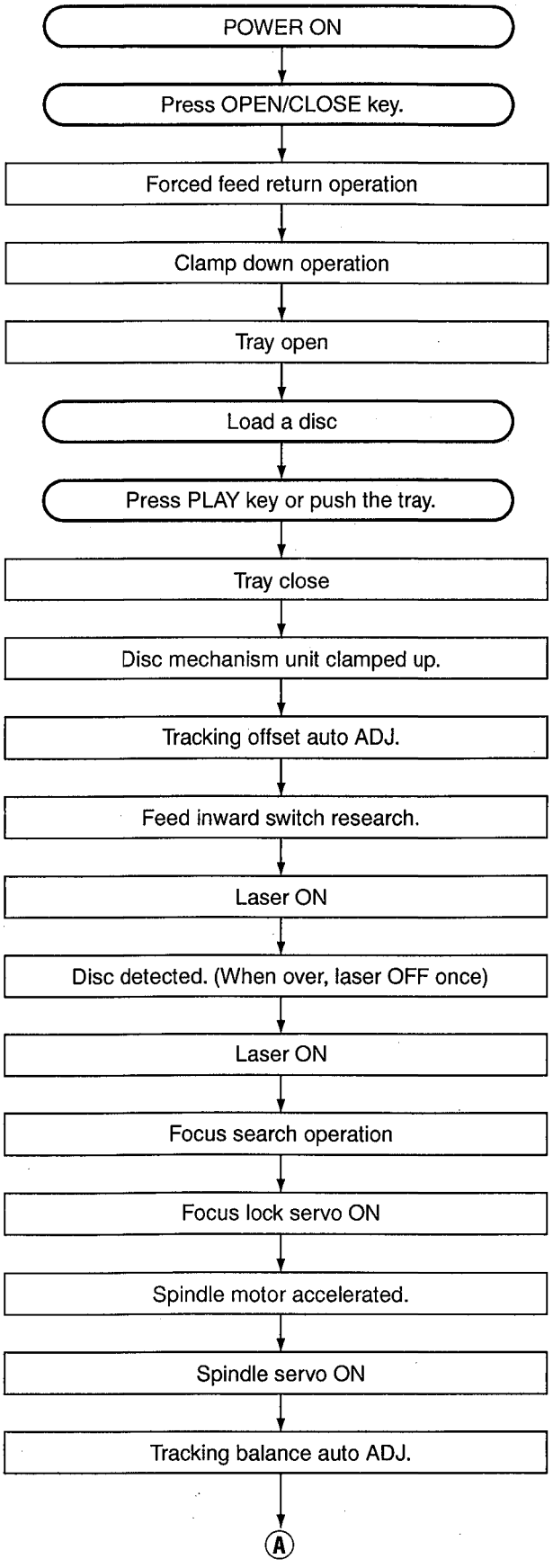
c) Operates as if no disc loaded. (although loaded)



e) No search provided. (Sound skipped after search)



■ STANDARD OPERATION CHART



If a disc is not loaded, " 0 : 00 " appears in the time indicator.

" OPEN " appears in the TIME indicator.

" SRDR " signal is output until detection of LIMIT switch.

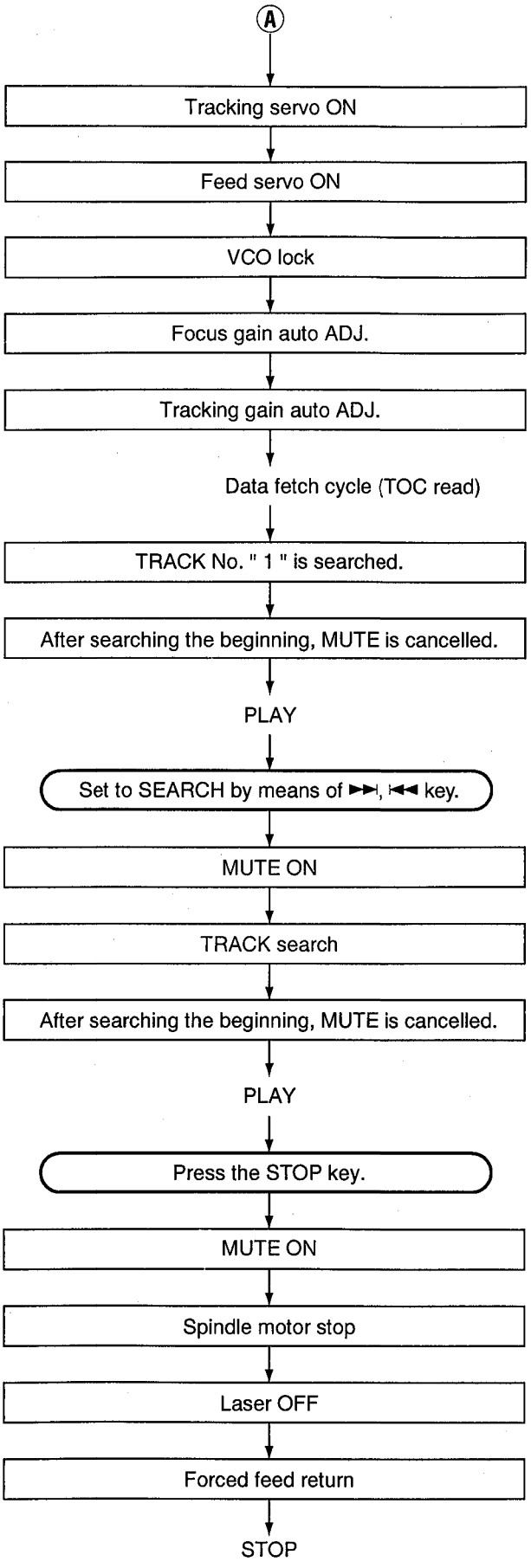
Stop after detection of LOADING switch.

Proceeds to next step after detection of LOADING switch.

If FLSW (IC301, 31 pin) = " L ", proceeds to next step.

: LDON (IC301, 23 pin) = " L "

: (only tray OPEN/CLOSE)



: MUTE OFF (Q200 collector) = " H " → " L "
" 0 : 00 " appears in the time indicator.

: MUTE ON (Q200 collector) = " L " → " H "
" 0 : 00 " appears in the time indicator.

: MUTE OFF (Q200 collector) = " H " → " L "
" 0 : 00 " appears in the time indicator.

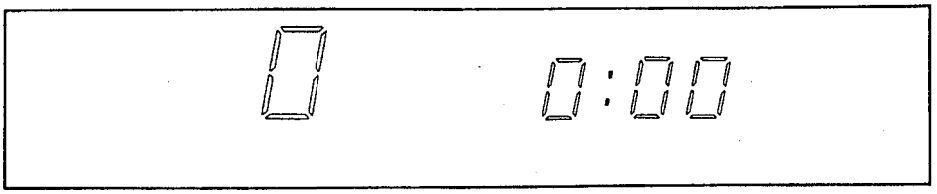
: MUTE ON (Q200 collector) = " L " → " H "

: LDON (IC301, 23 pin) = " L " → " H "

: FLSW (IC301, 31 pin) = " L "

■ TEST MODE

(1) Turning ON the POWER while pressing the keys "4" and "7" will set to the TEST mode. (When the TEST mode is set, all indicators light for 1 second.)



(2) Shown below are the panel keys and remote control transmitter in the TEST mode.

● **Function List of Panel keys**

PANEL KEY	FUNCTION
OPEN/CLOSE	Tray open/close.
PLAY/PAUSE	Plays if focus servo is effective. TRON(TR gain normal), MUTE OFF
STOP	All stop. (Focus, spindle, feed, laser, tray, etc.) Initializes FL display
⏮	Backward traverse move. (If inner SW turn on, traverse is stopped)
⏭	Forward traverse move.
◀◀	Inner 10 tracks kick continuously.
▶▶	Outer 10 tracks kick continuously.
REPEAT	TR gain up (TR brake off)
RANDOM	TR gain normall (TR brake off)
PROG	LD on → Focus search
TAPE	Accelerates spindle.
PEAK	TROF, FEON
SPACE	Spindle play
TIME	Checks FL display. (Test pattern 88 8888 → goes out → All lamps)
+10	Rotating the mode of coefficients.
1	Returns to product mode from stop mode.
2	Auto adjustment mode 1 (Average adjustment)
3	Auto adjustment mode 2 (TR-balance adjustment → Play) (Coefficient set up mode : Address upper digit down)
4	Auto adjustment mode 3 (FO gain, TR gain adjustment) (Coefficient set up mode : Address upper digit up)
5	Displays FO auto gain coefficienet (K13) (Coefficient set up mode : Address lower digit down)
6	Displays TR auto gain coefficienet (K07, K17, K23) (Coefficient set up mode : Address lower digit up)
7	1 TRACK KICK – continuously (Coefficient set up mode : Coefficient upper digit down)
8	1 TRACK KICK + continuously (Coefficient set up mode : Coefficient upper digit up)
9	50 TRACK KICK – continuously (Coefficient set up mode : Coefficient lower digit down)
0	50 TRACK KICK + continuously (Coefficient set up mode : Coefficient lower digit up)

● **Function List of Remote Control Transmitter**

CUSTOM CODE = (79)x

CODE	KEY	FUNCTION
01	OPEN/CLOSE	Tray open/close.
02	PLAY	Plays if focus servo is effective. TRON(TR gain normal), MUTE OFF
04	⏮ SKIP	Backward traverse move. (If inner SW turn on, traverse is stopped)
05	◀◀ SEARCH	Inner 10 tracks kick continuously.
06	▶▶ SEARCH	Outer 10 tracks kick continuously.
07	⏭ SKIP	Forward traverse move.
08	REPEAT	TR gain up (TR brake off)
0A	TIME	Checks FL display. (Test pattern 88 8888 → goes out → All lamps)
0B	INDEX	LD on
0C	PROG	LD on → Focus search
0D	CLEAR	Decelerates spindle.
0F	SPACE	Spindle play
10	0	50 TRACK KICK + continuously (Coefficient set up mode : Coefficient lower digit up)
11	1	Returns to product mode from stop mode.
12	2	Auto adjustment mode 1 (Average adjustment)
13	3	Auto adjustment mode 2 (TR-balance adjustment → Play) (Coefficient set up mode : Address upper digit down)
14	4	Auto adjustment mode 3 (FO gain, TR gain adjustment) (Coefficient set up mode : Address upper digit up)
15	5	Displays FO auto gain coefficienet (K13) (Coefficient set up mode : Address lower digit down)
16	6	Displays TR auto gain coefficienet (K07, K17, K23) (Coefficient set up mode : Address lower digit up)
17	7	1 TRACK KICK – continuously (Coefficient set up mode : Coefficient upper digit down)
18	8	1 TRACK KICK + continuously (Coefficient set up mode : Coefficient upper digit up)
19	9	50 TRACK KICK – continuously (Coefficient set up mode : Coefficient lower digit down)
1A	+10	Rotating the mode of coefficients.
1B	RANDOM	TR gain normall (TR brake off)
1C	OUTPUT LEVEL–	Backward 1000 tracks move
1D	OUTPUT LEVEL+	Forward 1000 tracks move
1E	DIMMER	Checks FL display. (Test pattern 88 8888 → goes out → All lamps)
55	PAUSE	TRON, FEOF
56	STOP	All stop. (Focus, spindle, feed, laser, tray, etc.) Initializes FL display
57	TAPE	Accelerates spindle.
58	SYNCHRO	Backward traverse move
5D	PEAK	TRON, FEON

■ MEMORY BACKUP

After the Power is turned OFF, some functions are kept in memory.

Functions kept in memory are :

- DIMMER
- FULL REPEAT
- RANDOM MODE
- TIME MODE
- AUTO SPACE

■ ADJUSTMENTS

● Necessary items

Measuring instruments

Oscilloscope : x 1
(Band width of 50MHz or more)

Test disc

SONY YEDS-18 (P/No. TX911730),
A-BEX TCD-782 (P/No. TX913350)
or Philips 5 : x 1

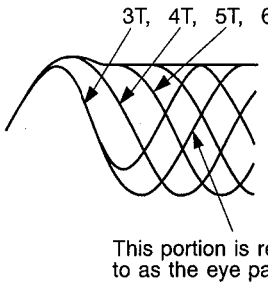
Tools

Screwdriver
(For Pre-set Potentiometer adjustment) : x 1

● Jitter Adjustment

① Connect an oscilloscope to the test point EFM .
② Set to the TEST mode.
③ Load the test disc.
④ Press the PROG key.
⑤ Press the PLAY/PAUSE key.
⑥ Confirm that the EFM signal (eye pattern) waveform is distinct and clear.
⑦ Adjust VR2 only when the eye pattern has not been obtained properly.

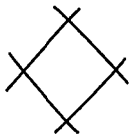
Waveforms 3T—11T.



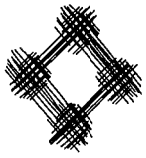
An abnormal eye pattern has less distinct lines and smaller amplitude than that of a good waveform.

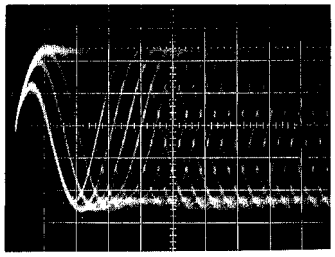
This portion is referred to as the eye pattern.

Good waveform

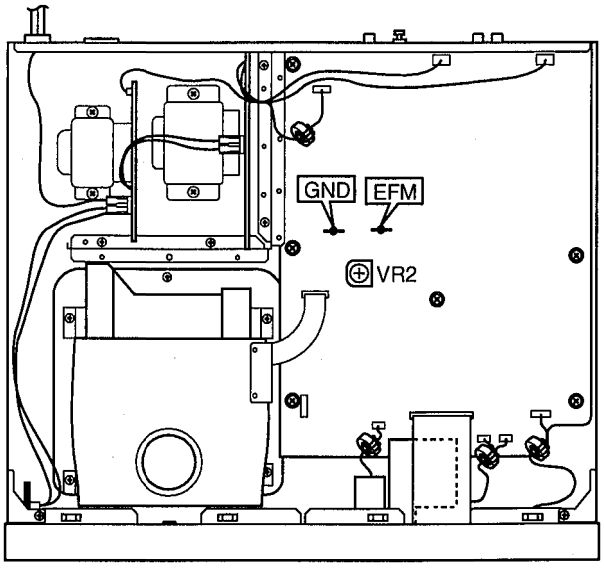


Abnormal waveform



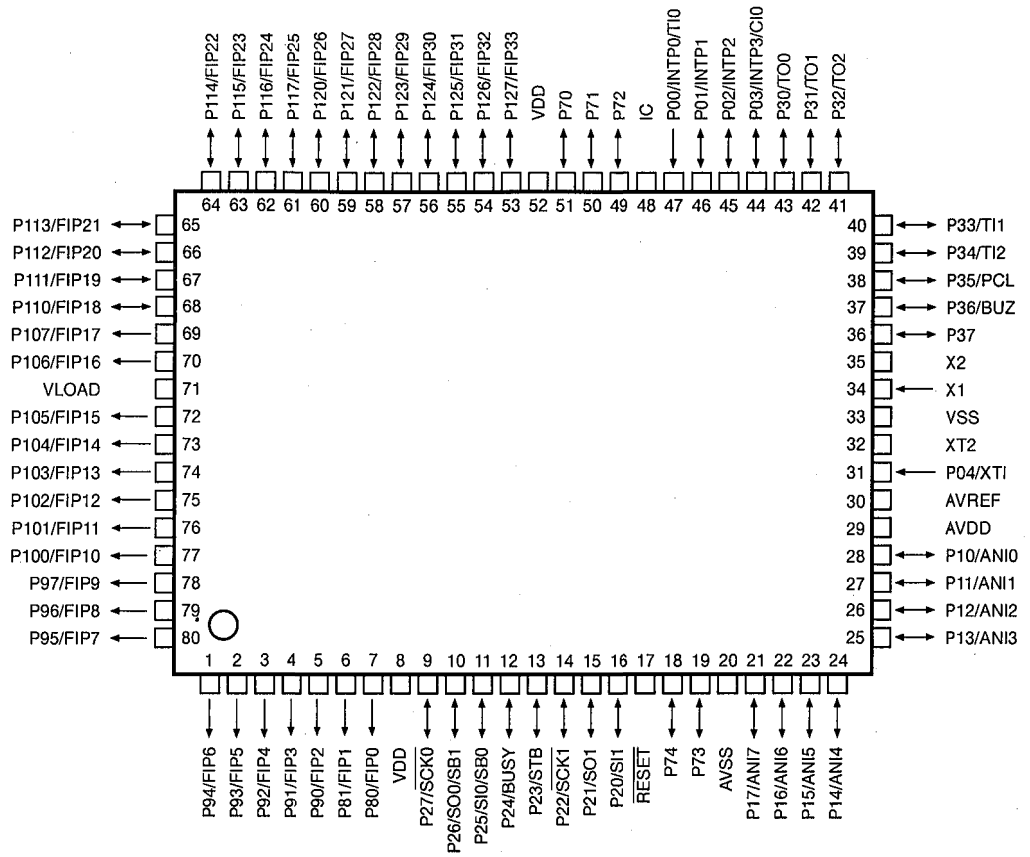


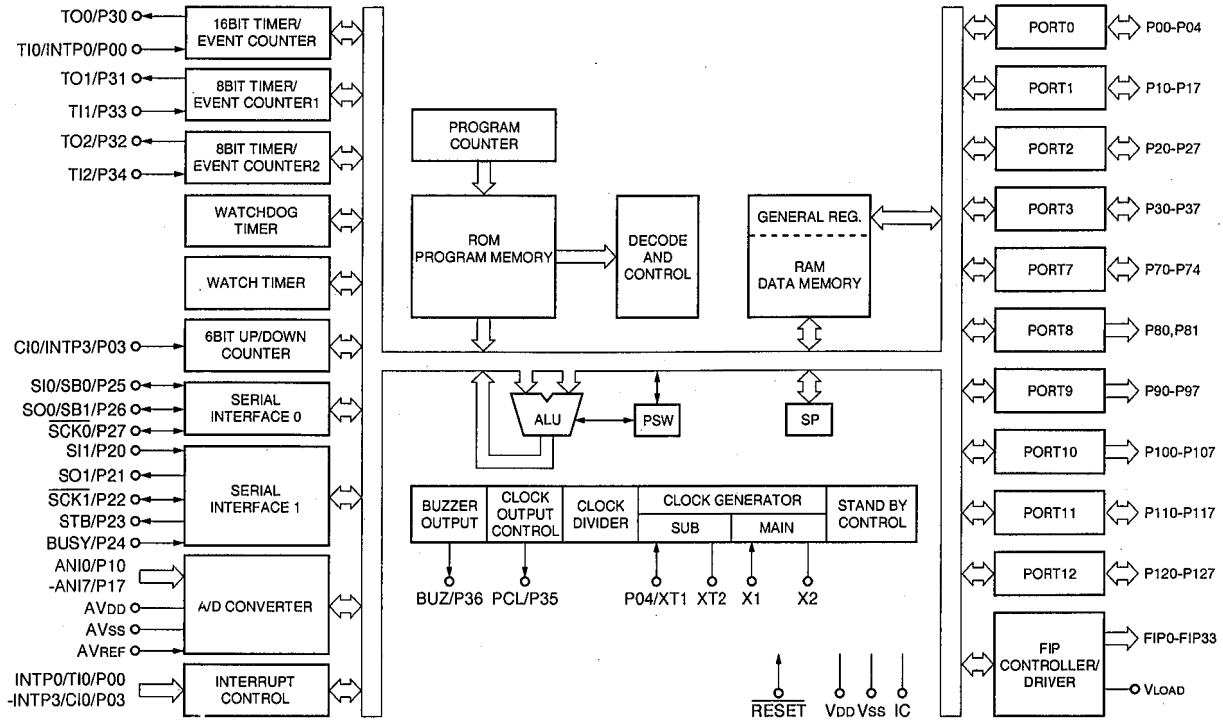
V : 0.2V/div H : 0.5µsec/div
AC range 1 : 1 probe



■ IC DATA

IC301 : μPD78044FGF
System Controller (8bit μ-COM)





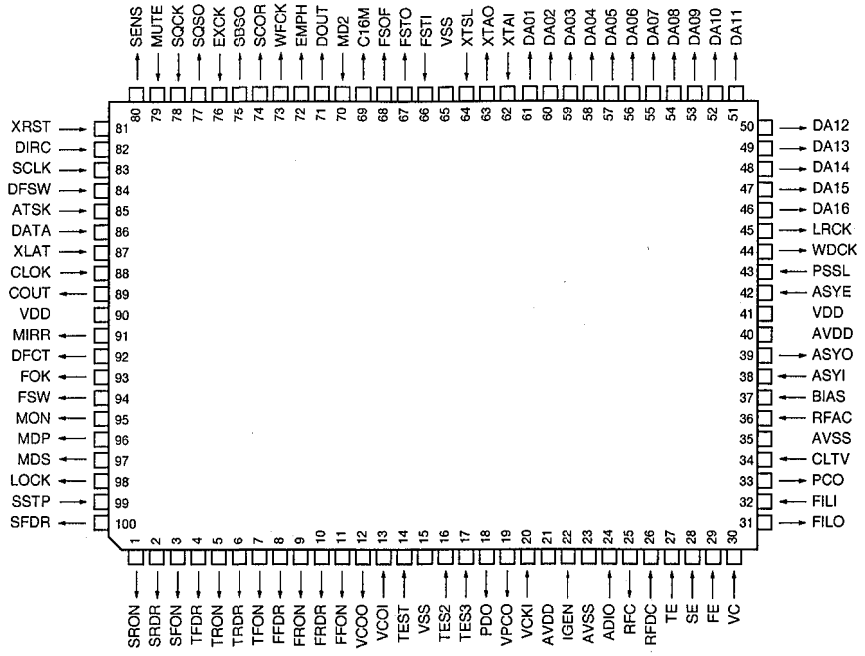
IC301 : μPD78044FGF
System Controller (8bit μ-COM)

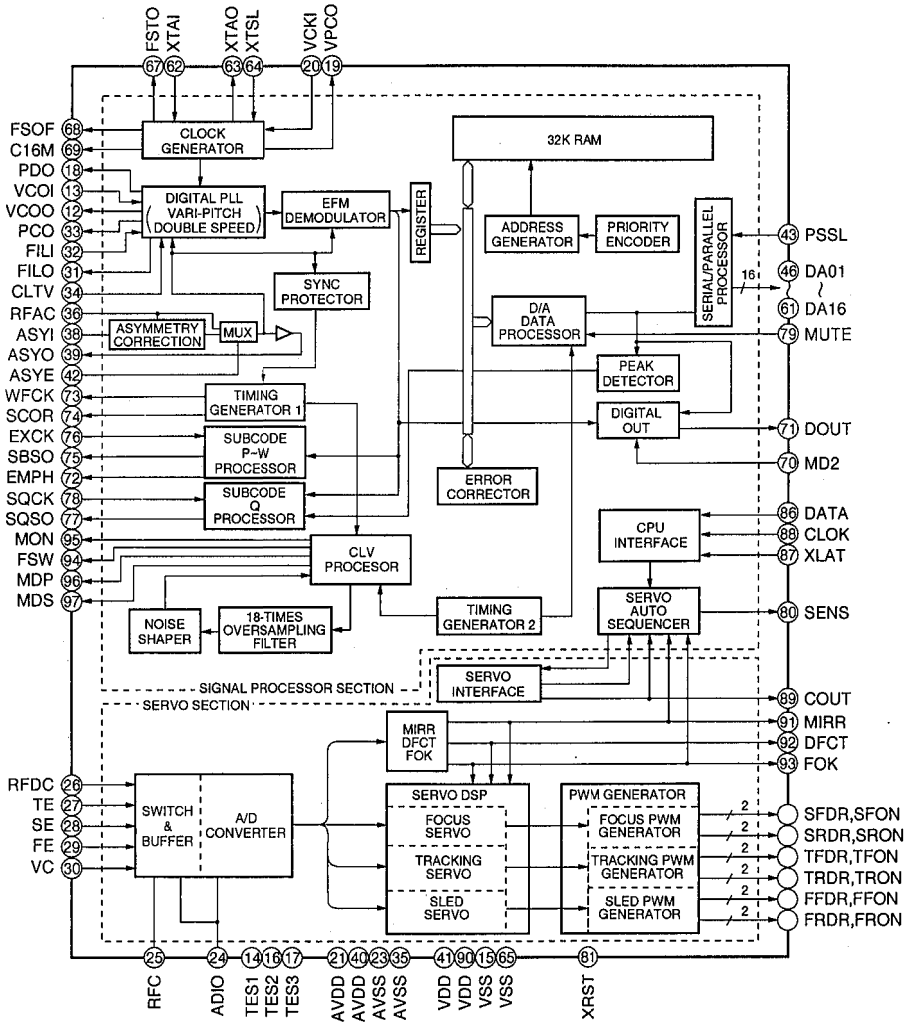
No.	Port	Name	I/O	Function
1	P94/FIP6	7G	O	Digit signal for FL display
2	P93/FIP5	6G	O	Digit signal for FL display
3	P92/FIP4	5G	O	Digit signal for FL display
4	P91/FIP3	4G	O	Digit signal for FL display
5	P90/FIP2	3G	O	Digit signal for FL display
6	P81/FIP1	2G	O	Digit signal for FL display
7	P80/FIP0	1G	O	Digit signal for FL display
8	V_DD			+ 5V
9	P27/SCK0	SQCK	O	Serial clock for Q code to CXD2545
10	P26		I	NC
11	P25/SI0	SQSO	I	Q code data from CXD2545
12	P24		I	NC
13	P23	XLAT	O	Latch signal to CXD2545
14	P22/SCK1	CLK	O	Sense/command clock to CXD2545
15	P21/SO1	DATA	O	Command signal to CXD2545
16	P20	SENS	I	Sense signal from CXD2545
17	RESET	/RES	I	Microprocessor reset signal
18	P74	SDA	I/O	EEPROM serial data
19	P73	SCL	O	EEPROM serial clock
20	AV_SS	GND		GND
21	P17	/SENS	O	Sense clock output select signal
22	P16	/COMMAND	O	Command clock output select signal
23	P15	LDON	O	PU laser control signal (L : Lighting)
24	P14	XRST	O	CXD2545 reset signal
25	P13	MUTE	O	Analog sound mute signal (L : Mute)
26	P12	POSSW	I	Tray position SW (L : SW ON)
27	P11	CLSW	I	Tray close SW (L : Close)
28	P10	OPSW	I	Tray open SW (L : Open)
29	AV_DD			+ 5V
30	AV_REF	GND		GND
31	P04	FLSW	I	Feed inner track limit SW (L : PU innermost track)
32	XT2			NC
33	V_SS	GND		GND
34	X1	X1	I	4.19 MHz oscillation signal
35	X2	X2		4.19 MHz oscillation signal
36	P37		O	NC
37	P36	FOK	I	Focus OK signal from CXD2545
38	P35	VLUP	O	Motor volume up drive
39	P34	VLDN	O	Motor volume down drive
40	P33	LOCK	I	Frame synchronization signal from CXD2545
41	P32	MUTE2	O	Analog sound mute signal when power ON (L : Mute)
42	P31	OPEN	O	Tray open drive signal
43	P30	CLOSE	O	Tray close drive signal
44	P03		I	NC
45	P02		I	NC
46	P01	SCOR	I	Sub-code synchronous signal from CXD2545
47	P00	REM	I	Remote control sensor signal
48	IC(V_PP)	GND		GND
49	P72		O	Pull-up
50	P71	LED	O	AUTO DISPLAY OFF LED drive signal (L : LED ON)
51	P70		O	NC
52	V_DD			+ 5V
53	P127		O	Error occurrence monitor signal (H : Error occurred)
54	P126		O	Test monitor signal
55	P125		O	Automatic adjustment monitor signal

IC301 : μPD78044FGF
System Controller (8bit μ-COM)

No.	Port	Name	I/O	Function
56	P124	K4	I	Key matrix signal
57	P123	K3	I	Key matrix signal
58	P122	K2	I	Key matrix signal
59	P121	K1	I	Key matrix signal
60	P120	K0	I	Key matrix signal
61	P117		O	NC
62	P116		O	NC
63	P115/FIP23	P14	O	Digit signal of key matrix
64	P114/FIP22	P13	O	Digit signal of key matrix
65	P113/FIP21	P12	O	Segment signal for FL display / Digit signal of key matrix
66	P112/FIP20	P11	O	Segment signal for FL display / Digit signal of key matrix
67	P111/FIP19	P10	O	Segment signal for FL display / Digit signal of key matrix
68	P110/FIP18	P9	O	Segment signal for FL display / Digit signal of key matrix
69	P107/FIP17	P8	O	Segment signal for FL display
70	P106/FIP16	P7	O	Segment signal for FL display
71	V_LOAD	-20V		Voltage for FL display tube drive pull-down
72	P105/FIP15	P6	O	Segment signal for FL display
73	P104/FIP14	P5	O	Segment signal for FL display
74	P103/FIP13	P4	O	Segment signal for FL display
75	P102/FIP12	P3	O	Segment signal for FL display
76	P101/FIP11	P2	O	Segment signal for FL display
77	P100/FIP10	P1	O	Segment signal for FL display
78	P97		O	NC
79	P96/FIP8	9G	O	Digit signal for FL display
80	P95/FIP7	8G	O	Digit signal for FL display

IC6 : CXD2545Q
Signal Processor & Controller (SPC)





IC6 : CXD2545Q
Signal Processor & Controller (SPC)

No.	Name	I/O	Function
1	SRON	O	Sled drive output
2	SRDR	O	Sled drive output
3	SFON	O	Sled drive output
4	TFDR	O	Tracking drive output
5	TRON	O	Tracking drive output
6	TRDR	O	Tracking drive output
7	TFON	O	Tracking drive output
8	FFDR	O	Focus drive output
9	FRON	O	Focus drive output
10	FRDR	O	Focus drive output
11	FEON	O	Focus drive output
12	VCOO	O	Oscillation circuit output for analog EFM PLL
13	VCOI	O	Oscillation circuit input for analog EFM PLL (8.6436MHz)
14	TEST	I	Test terminal, normally GND
15	VSS		Digital GND
16	TES2	I	Test terminal, normally GND
17	TES3	I	Test terminal, normally GND
18	PDO	O	Charge pump output for analog EFM PLL
19	VPCO	O	PLL charge pump output for variable pitch
20	VCKI	I	Clock input from external VCO for variable pitch (16.9344MHz)
21	AVDD		Analog power supply
22	IGEN	I	Operation amplifier current source for digital servo, reference resistor connecting terminal
23	AVSS		Analog GND
24	ADIO	O	A/D converter input monitor terminal
25	RFC	I	Low pass filter for RFDC input, capacitor connecting terminal
26	RFDC	I	RF signal input, input range 2.15~5.0V (when VDD=AVDD=5.0V)
27	TE	I	Tracking error signal input, input range 2.5V±1.0V (when VDD=AVDD=5.0V)
28	SE	I	Sled error signal input, input range 2.5V±1.0V (when VDD=AVDD=5.0V)
29	FE	I	Focus error signal input, input range 2.5V±1.0V (when VDD=AVDD=5.0V)
30	VC	I	Mid-point voltage input terminal
31	FILO	O	Filter output for master PLL
32	FILI	I	Filter input for master PLL
33	PCO	O	Charge pump output for master PLL
34	CLTV	I	VCO control voltage input for master
35	AVSS		Analog GND
36	RFAC	I	EFM signal input
37	BIAS	I	Asymmetry circuit constant current input
38	ASYI	I	Asymmetry comparate voltage input
39	ASYO	O	EFM full swing output (L=VSS, H=VDD)
40	AVDD		Analog power supply
41	VDD		Digital power supply
42	ASYE	I	Asymmetry circuit ON/OFF (L=OFF, H=ON)
43	PSSL	I	Input terminal for switching audio data output mode, "L" for serial output and "H" for parallel output
44	WDCK	O	48 bit slot D/A interface, word clock (f=2Fs)
45	LRCK	O	48 bit slot D/A interface, L/R clock (f=Fs)
46	DA16	O	DA16 output when PSSL=1, 48 bit slot serial data when PSSL=0
47	DA15	O	DA15 output when PSSL=1, 48 bit slot bit clock when PSSL=0
48	DA14	O	DA14 output when PSSL=1, 64 bit slot serial data when PSSL=0
49	DA13	O	DA13 output when PSSL=1, 64 bit slot bit clock when PSSL=0
50	DA12	O	DA12 output when PSSL=1, 64 bit slot LR clock when PSSL=0
51	DA11	O	DA11 output when PSSL=1, GTOP output when PSSL=0
52	DA10	O	DA10 output when PSSL=1, XUGF output when PSSL=0
53	DA09	O	DA09 output when PSSL=1, XPLCK output when PSSL=0
54	DA08	O	DA08 output when PSSL=1, GFS output when PSSL=0
55	DA07	O	DA07 output when PSSL=1, RFCK output when PSSL=0

IC6 : CXD2545Q
Signal Processor & Controller (SPC)

No.	Name	I/O	Function
56	DA06	O	DA06 output when PSSL=1, C2PO output when PSSL=0
57	DA05	O	DA05 output when PSSL=1, XRAOF output when PSSL=0
58	DA04	O	DA04 output when PSSL=1, MNT3 output when PSSL=0
59	DA03	O	DA03 output when PSSL=1, MNT2 output when PSSL=0
60	DA02	O	DA02 output when PSSL=1, MNT1 output when PSSL=0
61	DA01	O	DA01 output when PSSL=1, MNT0 output when PSSL=0
62	XTAI	I	X'tal oscillation circuit input (16.9344MHz or 33.8688MHz input)
63	XTAO	O	X'tal oscillation circuit output
64	XTSL	I	X'tal selection input terminal, set to "L" when X'tal is 16.9344MHz and to "H" when it is 33.8688MHz (during normal reproduction).
65	VSS		Digital GND
66	FSTI	I	Reference clock input terminal for digital servo block
67	FSTO	O	2/3 division output of 62, 63 terminals, no change when variable pitch occurs
68	FSOF	O	1/4 division output of 62, 63 terminals, no change when variable pitch occurs
69	C16M	O	16.9344MHz output, changed simultaneously when variable pitch occurs (during normal reproduction)
70	MD2	I	Digital-Out ON/OFF control terminal (L=OFF, H=ON)
71	DOUT	O	Digital-Out output terminal
72	EMPH	O	Reproduction disc emphasis mode output (emphasis not provided at "L", provided at "H")
73	WFCK	O	WFCK output
74	SCOR	O	Sub-code synch output terminal ("H" when either sub-code synch S0 or S1 is detected)
75	SBSO	O	Serial output of Sub-P~W
76	EXCK	I	Clock input for SBSO read out
77	SQSO	O	Sub-Q 80 bit output, PCM peak data, level data 16 bit output
78	SQCK	I	Clock input for SQSO read out
79	MUTE	I	Mute switching terminal (Mute at "H")
80	SENS	O	SENS output, output to CPU
81	XRST	I	System reset (Reset at "L")
82	DIRC	I	Used when jumping 1 track (VDD level inputted when not used)
83	SCLK	I	Clock for reading SENS serial data
84	DFSW	I	DFCT switching terminal (DFCT countermeasure circuit OFF at "H")
85	ATSK	I	Anti-shock terminal
86	DATA	I	Serial data input from CPU
87	XLAT	I	Latch input from CPU
88	CLOK	I	Serial data transfer clock input from CPU
89	COUT	O	Number of tracks counting signal output
90	VDD		Digital power supply
91	MIRR	O	Mirror signal output
92	DFCT	O	Defect signal output
93	FOK	O	Focus OK output
94	FSW	O	Output terminal for switching output filter of spindle motor
95	MON	O	Output terminal for spindle motor ON-OFF control
96	MDP	O	Servo control of spindle motor
97	MDS	O	Servo control of spindle motor
98	LOCK	O	When sampling GFS at 460Hz, H output when GFS is at "H" and L output when it is at "L" 8 times continuously
99	SSTP	I	Terminal for disc innermost track detect signal
100	SFDR	O	Sled drive output

■ BLOCK DIAGRAM／ブロックダイアグラム