

33237

COMPACT DISC PLAYER CDX-493/593

SERVICE MANUAL

CDX-493/593

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 inherent 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.

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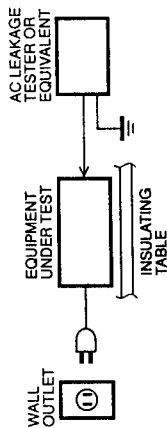
YAMAHA

YAMAHA CORPORATION
P.O.Box 1, Hamamatsu, Japan

1.54K-815 ☐ Printed in Japan '97.12

TO SERVICE PERSONNEL

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



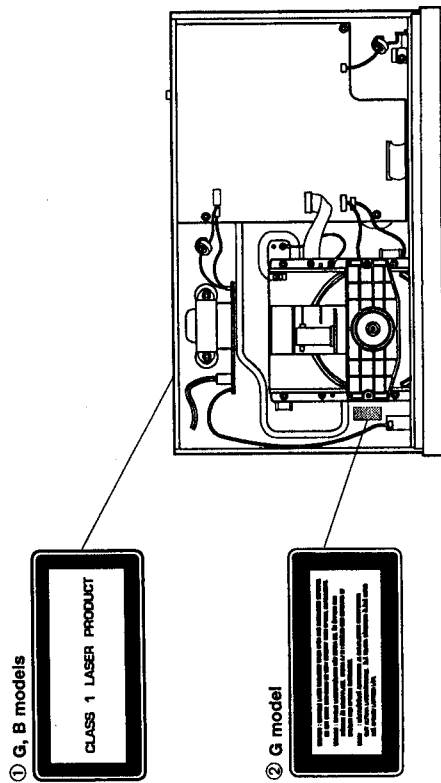
CAUTION: USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

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 μ W
 2. When checking the laser diode emission, keep your eyes more than 30 cm away from the objective lens.
- * This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.



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 KLAS 1.
 - ② VARNINGSMÄRKNING (SE FIGUR) FÖR STRÅLNING. INGREPP I APPARATEN BÖR ENDAST FÖRETAGAS AV FACKMAN MED KÄNNEDOM 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 : INDGREG BOR KUN FORETAGES AF EN FAGMAND DA DER ER RISIKO FOR RADIOAKTIV STRÅLING.
- ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING.
UNDGÅ UDSÆTTELSE FOR STRÅLING.

Finnish

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

CDX-493/593

CDX-493/593

■ FRONT PANELS

● CDX-493

● CDX-593

● CDX-493/593

■ REAR PANELS

▼ CDX-493 R model

▼ CDX-493 G, B models

▼ CDX-593 G, B models

3

4

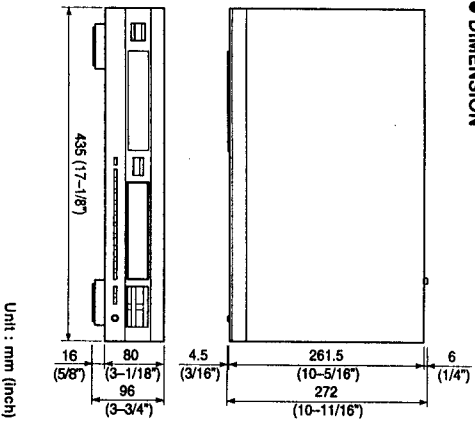
■ CDX-493 SPECIFICATIONS

Output Level 1kHz, 0dB	2.0/0.5Vrms
Signal to Noise Ratio (EIAJ)	105dB
Dynamic Range	95dB
Harmonic Distortion+Noise (1kHz)	0.003%
Frequency Response 2Hz — 20kHz	±0.5dB
Headphone Output 150Ω, 1kHz, -20dB Input	200mV±40mV
Power Requirements B, G models R model	230V AC 50Hz 110/120/220/240V AC 50/60Hz
Power Consumption	435 x 96 x 272mm 20W
Dimensions (W x H x D)	(17-1/8" x 3-3/4" x 10-11/16")
Weight	3.6kg (7 lbs 15 oz)
Accessories	Pin plug code Remote control transmitter (Dry-cell : x 2; Size "AA", R06)

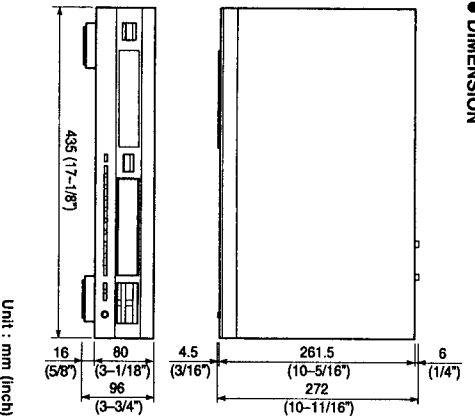
Output Level 1kHz, 0dB	2.0/0.5Vrms
Signal to Noise Ratio (EIAJ)	115dB
Dynamic Range	98dB
Harmonic Distortion+Noise (1kHz)	0.0025%
Frequency Response 2Hz — 20kHz	±0.5dB
Headphone Output 150Ω, 1kHz, -20dB Input	200mV±40mV
Power Requirements B, G models	230V AC 50Hz
Power Consumption	435 x 96 x 272mm 20W
Dimensions (W x H x D)	(17-1/8" x 3-3/4" x 10-11/16")
Weight	3.8kg (7 lbs 15 oz)
Accessories	Pin plug code Remote control transmitter (Dry-cell : x 2; Size "AA", R06)

■ CDX-593 SPECIFICATIONS

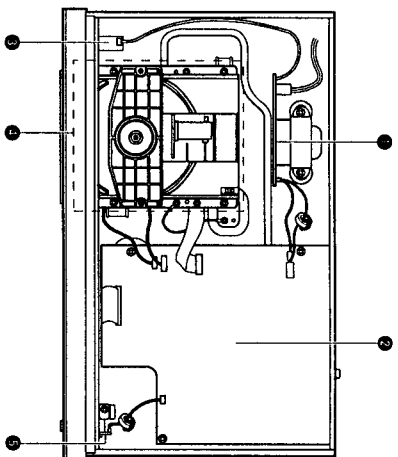
● DIMENSION



● DIMENSION



■ INTERNAL VIEW



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

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

1. Removal of Top Cover
 - a. Remove 4 screws (①) and 3 screws (②) in Fig. 1.
 - b. Lift the Top Cover at the rear and move it rearward slantingly.
2. Removal of Front Panel
 - a. Press the OPEN/CLOSE key and open the tray. Then remove the Lid attached to the front edge of the tray in Fig. 2.
 - b. Press the OPEN/CLOSE key and close the tray, then unplug the power cord.
 - c. Remove 3 connectors (CB6, CB11, CBA13) in Fig. 2.
 - d. Remove 5 screws (③) and 1 screw (④) in Fig. 1.
 - e. Remove 2 hooks and then pull the Front Panel forward.
3. Removal of CD Mechanism Unit
 - a. Remove 3 connectors (CB2, CB4, CB5) in Fig. 2.
 - b. Remove 1 screw (⑤) in Fig. 1. (CDX-593 only)
 - c. Remove 4 screws (⑥) in Fig. 1.

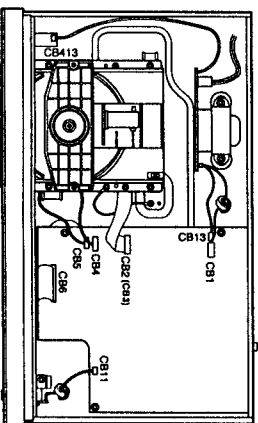
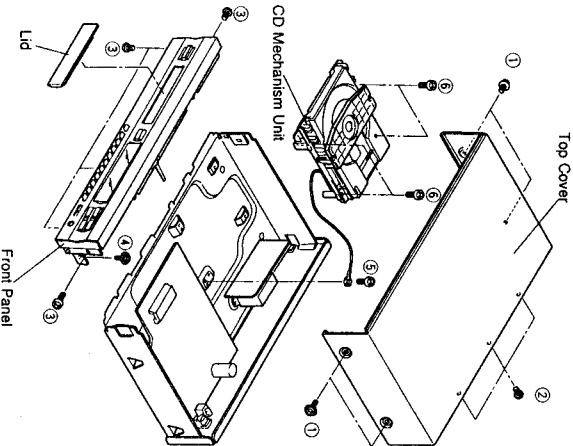


Fig. 1

Fig. 2

4. **Removal of Tray Unit**
 - a. Remove 2 screws (7) and then remove the Chucking Unit in Fig. 3.
 - b. Remove 1 hook and then remove the Stopper Pin in Fig. 3.
 - c. Rotate the Drive Gear and then open the Tray Unit in Fig. 3.
 - d. Detach the Stoppers on both sides and then pull out the Tray in Fig. 3.

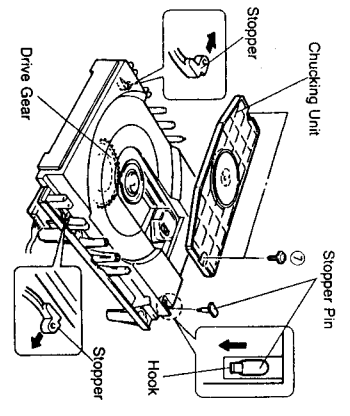


Fig. 3

5. **Removal of Pick-up Head**
 - a. Remove 2 screws (8) in Fig. 4.
 - b. Remove 4 screws (9) and then remove the Drive Unit in Fig. 4.
 - c. Remove the gear A in Fig. 5.
 - d. Pull out the Sled Shaft in Fig. 5.
 - e. Remove the Pick-up Head.

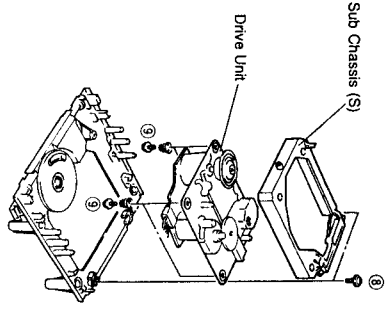


Fig. 4

Check that the disc table height is as specified below.

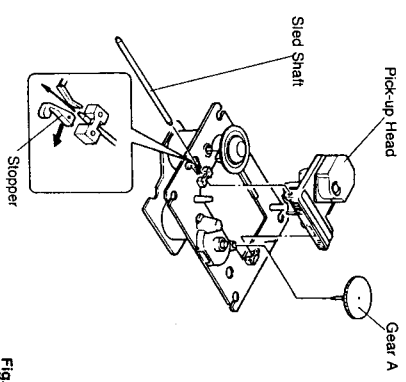
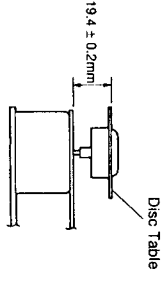
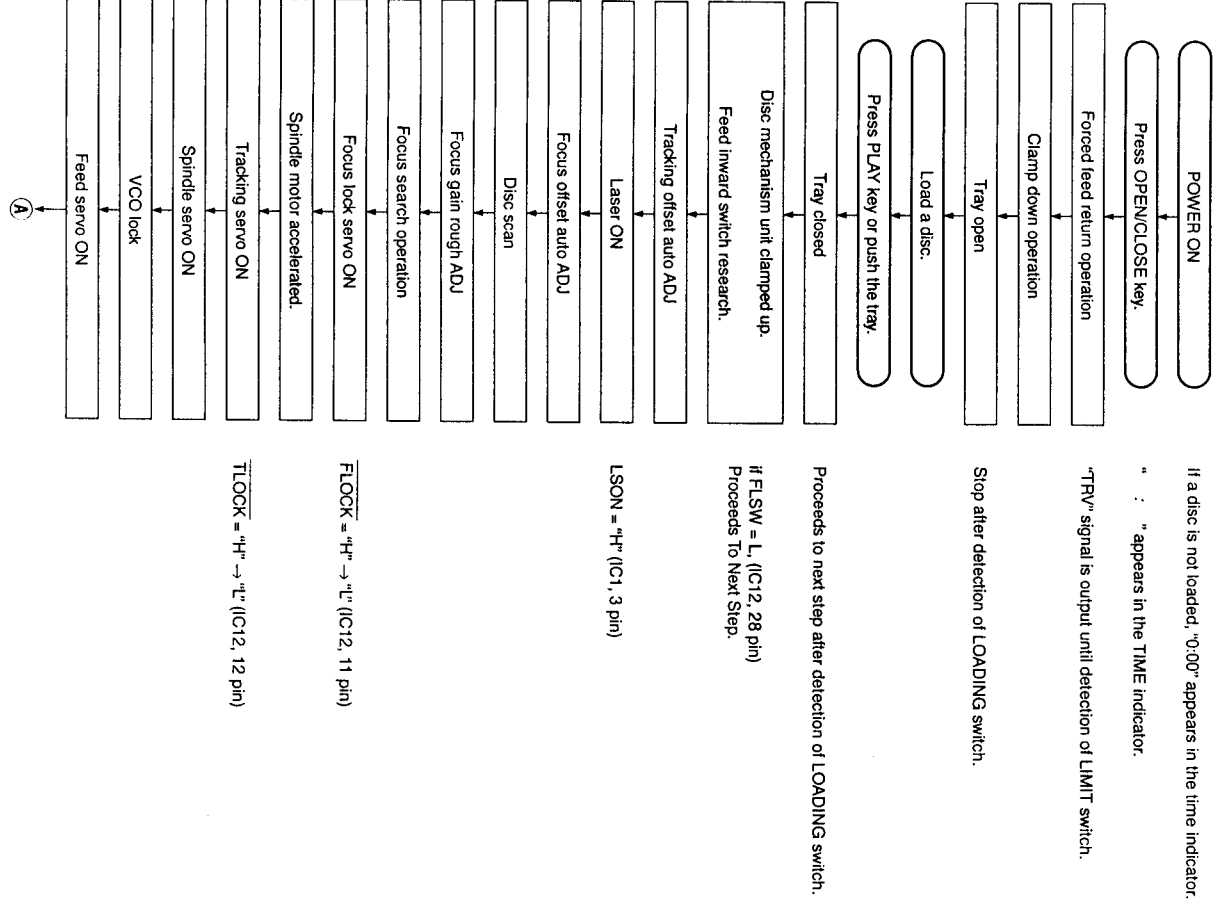
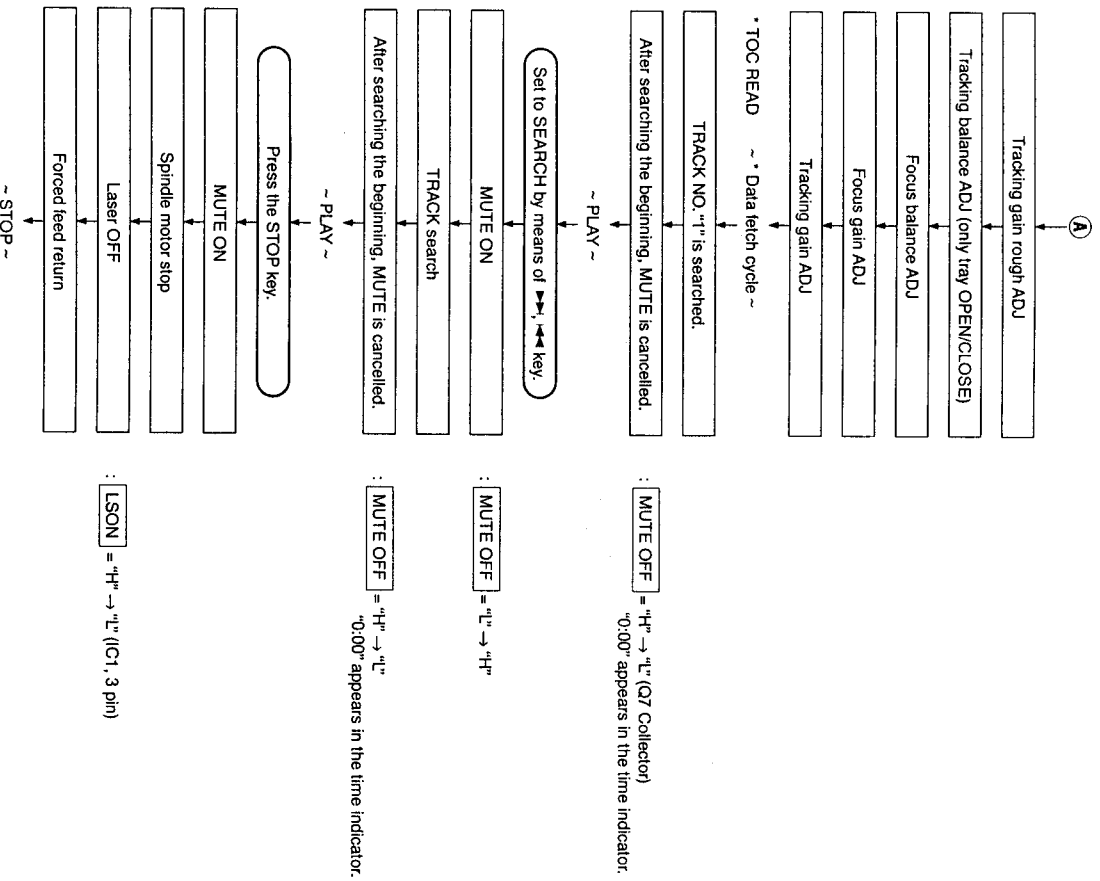


Fig. 5

■ STANDARD OPERATION CHART





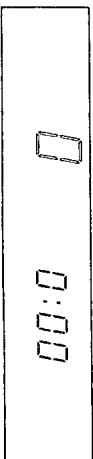
: [MUTE OFF] = "H" → "L" (Q7 Collector)
 "0:00" appears in the time indicator.

: [MUTE OFF] = "H" → "L"
 "0:00" appears in the time indicator.

: [LSON] = "H" → "L" (IC1, 3 pin)

■ 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

Note) "Traverse servo" means the same as "feed servo".

PANEL KEY	FUNCTION
OPEN/CLOSE	Tray open/close.
PLAY/PAUSE	FOON, TRON, SPON, TVON(FEON).
STOP	All stop. (Focus, spindle, feed, laser, tray, etc.) Initializes FL display
(SKIP/SEARCH) \leftarrow	Inner circumference traverse servo.
(SKIP/SEARCH) \rightarrow	Outer circumference traverse servo.
OUTPUT LEVEL -	Move output level down.
OUTPUT LEVEL +	Move output level up.
+10	Rotating the mode of coefficients. (Coefficient mode → Coefficient setting → product mode) Pressing twice will set to the product mode.
1	Returns to product mode.
2	Auto adjustment mode 1 (TR-off set, FO-off set, FO-rough gain adjustment)
3	Auto adjustment mode 2 (TR-balance, TR-rough gain adjustment)
4	Auto adjustment mode 3 (FO-fine gain, TR-fine gain, FO-balance adjustment)
5	1 TRACK KICK - continuously (Coefficient set up mode : address down)
6	1 TRACK KICK + continuously (Coefficient set up mode : address up)
7	30 TRACK KICK - continuously (Coefficient set up mode : upper digit down)
8	30 TRACK KICK + continuously (Coefficient set up mode : upper digit up)
9	150 TRACK KICK - continuously (Coefficient set up mode : lower digit down)
0	150 TRACK KICK + continuously (Coefficient set up mode : lower digit up)

● Function List of Remote Control Transmitter

CUSTOM CODE = (79)x

CODE	KEY	FUNCTION
01	OPEN/CLOSE	Tray open/close.
02	PLAY	PLAY (FOON, TROU, TVON/FEON), SPON)
04	SKIP	Inner circumference traverse servo.
05	SEARCH	Inner 10 tracks kick continuously.
06	SEARCH	Outer 10 tracks kick continuously.
07	SKIP	Outer circumference traverse servo.
08	REPEAT	FOON, TROF (Enter focus search if focus servo is off.)
0A	TIME	Checks FL display. (88, 8888 → goes out → All lamps.)
0B	INDEX	FOON, TROF, TVOF (EFOF) (Enter focus search if focus servo is off.)
0C	PROG	Rotates or accelerates spindle.
0D	CLEAR	Decelerates spindle. (checking EFM pattern and reflected STAT)
0F	SPACE	FOOF, TROF, TVOF (EFOF)
10	0	150 TRACK KICK + continuously (Coefficient set up mode : lower digit up)
11	1	Returns to product mode. (tray inoperative)
12	2	Auto adjustment mode 1 (TR-off set, FO-off set, FO-rough gain adjustment)
13	3	Auto adjustment mode 2 (TR-balance, TR-rough gain adjustment)
14	4	Auto adjustment mode 3 (FO-fine gain, TR-fine gain, FO-balance adjustment)
15	5	1 TRACK KICK - continuously (Coefficient set up mode : address down)
16	6	1 TRACK KICK + continuously (Coefficient set up mode : address up)
17	7	30 TRACK KICK - continuously (Coefficient set up mode : upper digit down)
18	8	30 TRACK KICK + continuously (Coefficient set up mode : upper digit up)
19	9	150 TRACK KICK - continuously (Coefficient set up mode : lower digit down)
1A	+10	Rotating the mode of coefficients.
1B	RANDOM	SPON (Spindle servo on.)
1C	OUTPUT LEVEL-	Move output level down.
1D	OUTPUT LEVEL+	Move output level up.
1E	DIMMER	Checks FL display. (88, 8888 → goes out → All lamps.)
55	PAUSE	FOON, TROF, TVOF (EFOF) (Enter focus search if focus servo is off.)
56	STOP	All stop. (Focus, spindle, traverse, laser, tray, etc.)
57	TAPE	Spindle free (off)
58	SYNCHRO	TV/Feed) REV
5D	PEAK	—

■ MEMORY BACKUP

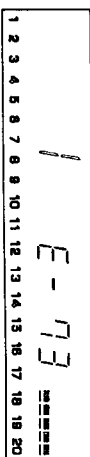
After the Power is turned OFF, some functions are kept in memory.

Functions kept in memory are :

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

■ 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.

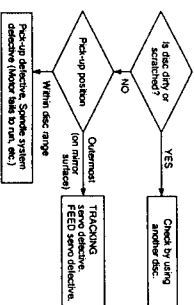
● Error Messages List

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 - 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.
E r t	MN65271/MN652720 does not give response of SENSE, with resetting by the unit's microcomputer.

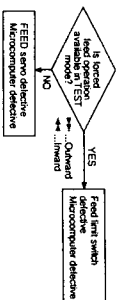
*No. for each state (meaning of "X")
 X="0"
 X="2"
 X="3"
 X="4"
 X="5"
 X="7"
 X="8"
 X="9"
 X="C"

1) Error Code Troubleshooting

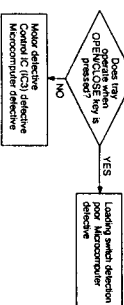
Error code [X0], [X1], [73] Data cannot be read.



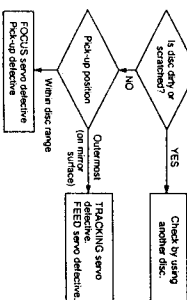
Error code [X7] FEED operation defective. (Limit switch fails)



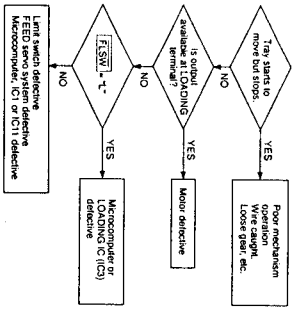
Error codes [94], [5] Poor tray loading operation.



Error code [X8] Focus drops.



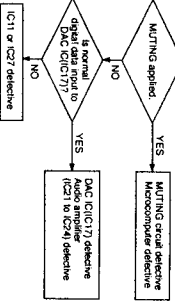
2) Troubleshooting from System Malfunctions
a) Tray fails to come out/go in.



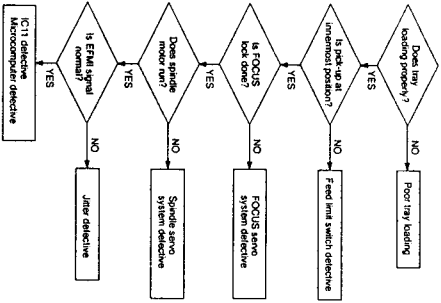
When tray fails to close completely (When it stops midway)

- [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 chucking 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.

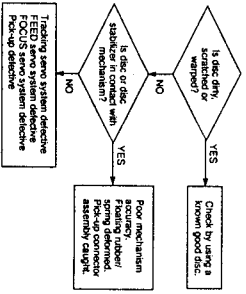
b) No sound generated, Sound cut during play. (but time display advances properly)



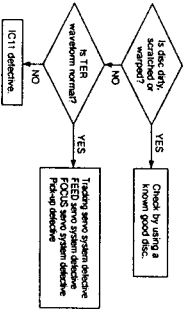
c) Operates as if no disc loaded. (although loaded)



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

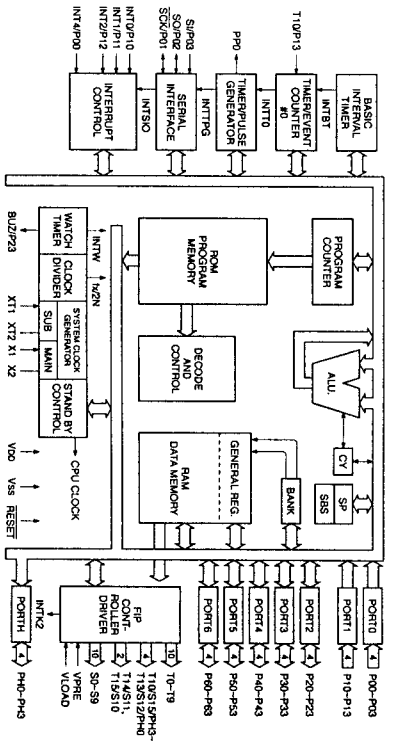
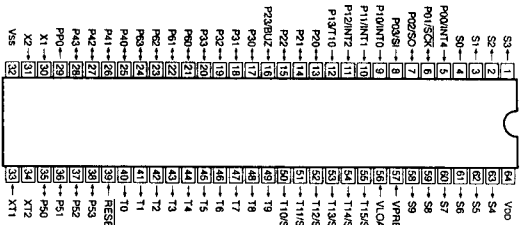


e) No search provided. (Sound skipped after search)



■ IC DATA

IC12 : μ PD75217CW
System Controller (4bit μ -COM)



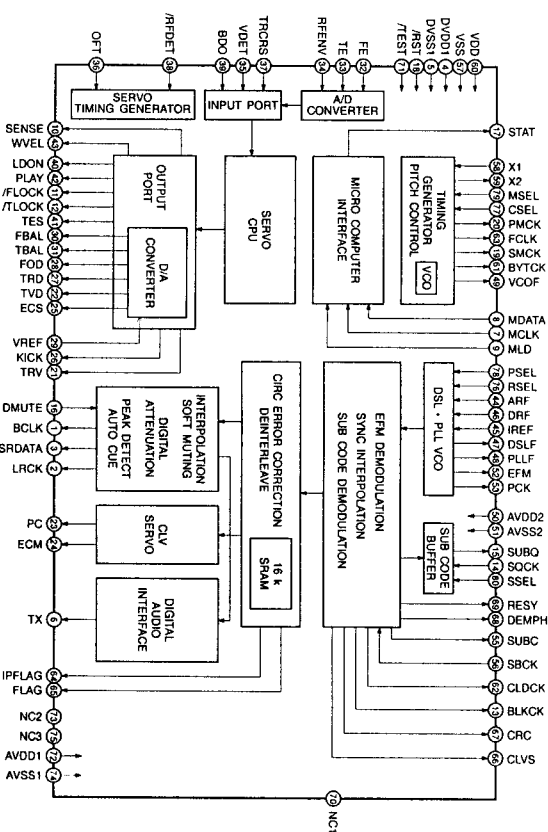
Pin No.	Pin Name	Description	Function
1	S3	S3	Fluorescent character display tube anode drive signal
2	S2	S2	
3	S1	S1	
4	S0	S0	N.C
5	PO0	D/A	
6	PO1	SCK	
7	PO2	SO	Serial data output to MN66271/MN662720
8	PO3	SI	Serial data input from MN66271/MN662720
9	P10	REM	Input from remote control beam receiving unit
10	P11	BLKICK	Synchronous clock input for O-code FCV from MN66271/MN662720 (Fine pulse at RCV, normally LO)
11	P12	FLOCK	FOCUS lock signal input from MN66271/MN662720 (LO at LOCK)

IC11 : MN68271RA
Signal Processor & Controller (SPC)

Pin No.	Name	I/O	Function
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive output
28	FOD	O	Focus drive output
29	VREF	I	Reference voltage for DA output block
30	FBAL	O	Focus balance adjustment output
31	TBAL	O	Tracking balance adjustment output
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	RFENV	I	RF envelope signal input (analog input)
35	VDET	I	Oscillation detect signal input (H : DETECT)
36	OFF	I	Off track signal input (H : OFF TRACK)
37	TRCRS	I	Track cross signal input
38	RFDET	I	RF detect signal input (L : DETECT)
39	BDO	I	Drop out signal input (H : DROP OUT)
40	LDO	O	Laser ON signal output (H : ON)
41	TES	O	Tracking error shunt signal output (H : SHUNT)
42	PLAY	O	Play signal output (H : PLAY)
43	WVEL	O	Double speed status signal output (NC)
44	ARF	I	RF signal input
45	IREF	I	Reference current input terminal
46	DRF	I	Bias terminal for DSL
47	DSL F	I/O	Loop filter terminal for DSL
48	PLL F	I/O	Loop filter terminal for PLL
49	VCOF	I/O	Loop filter terminal for VCO
50	AVDD2	I	Power supply for analog circuit (for DSL, PLL, DA output blocks) (+5)
51	AVSS2	I	GND for analog circuit (for DSL, PLL, DA output blocks) (GND)
52	EFM	O	EFM signal output (NC)
53	PCK	O	PLL extract clock output (PCK = 4.321MHz) (NC)
54	POO	O	EFM signal to PCK signal phase comparison signal output (NC)
55	SUBC	O	Sub-code serial output data output (NC)
56	SBCK	I	Clock input for sub-code serial output (SND)
57	VSS	I	GND for oscillation circuit
58	X1	I	Crystal oscillation circuit input terminal (f = 16.9344MHz)
59	X2	O	Crystal oscillation circuit output terminal (f = 16.9344MHz) (+5)
60	VDD	I	Power supply for oscillation circuit (NC)
61	BYTCK	O	Byte clock output (NC)
62	CLDCK	O	Sub-code frame clock signal output (f CLDCK = 7.35kHz) (NC)
63	FCLK	O	Crystal frame clock output (f FCLK = 7.35kHz) (NC)
64	IPFLAG	O	Interpolation flag output H : INTERPOLATION (NC)
65	FLAG	O	Flag output (NC)
66	CLVS	O	Spindle servo phase synchronous status signal output H : CLV L : ROUGH SERVO (NC)
67	CRG	O	Sub-code CRC check result output H : OK, L : NG (NC)
68	DEMPH	O	Deemphasis detect signal output H : ON (NC)
69	RESY	O	Re-synchronous signal output of frame synchronization H : SYNCHRONOUS L : ASYNCHRONOUS (NC)
70	RES2	I	Reset terminal for stop after MASH circuit (L : RESET) (+5)
71	TEST	I	Test terminal (Normal : H) (+5)
72	AVDD1	I	Power supply for analog circuit (for audio output section (used for both L and R channels)) (+5)
73	OUTL	O	L channel output
74	AVSS1	I	GND for analog circuit (for audio output section (used for both L and R channels))
75	OUTR	O	R channel output
76	RSEL	I	RF signal polarity specifying terminal RSEL = H when Bright level is at "H" RSEL = L when Bright level is at "L" (+5)
77	CSEL	I	Crystal oscillation frequency specifying terminal (Normal : L) (GND)
78	PSEL	I	Test terminal (Normal : L) (GND)
79	MSEL	I	SMCK terminal Output: frequency switch terminal H : SMCK = 8.4672MHz, L : SMCK = 4.2336MHz (GND)
80	SSEL	I	SUBQ terminal Output: mode switch terminal H : Q code buffer use mode (+5)

IC11 : MN682720RB
Signal Processor & Controller (SPC)

Pin No.	Pin Name	I/O	FUNCTION
1	BCLK	O	Bit clock output for SR DATA
2	LROK	O	L/R identification signal output
3	SRDATA	O	Serial data output
4	DVDD1	I	Power supply for digital circuit
5	DVSS1	I	GND for digital circuit
6	TX	I	Digital, audio, interface output signal
7	MCLK	I	Microprocessor command clock signal input (data latched at leading edge)
8	MDATA	I	Microprocessor command data input
9	MLD	I	Microprocessor command load signal input L : LOAD
10	SENSE	O	Sense signal output
11	FLOCK	O	Focus servo drawing signal (L : when drawn)
12	TLOCK	O	Tracking servo drawing signal (L : when drawn)
13	BLKCK	O	Sub code block clock signal
14	SOCK	I	Clock input for sub-code Q register
15	SUBQ	O	Sub-code Q code output
16	DMUTE	I	Muting input H : MUTE
17	STAT	O	Status signal
18	RST	I	Reset input L : RESET
19	SMCK	O	8.4672MHz clock signal output when MSEL = H
20	PMCK	O	88.2kHz clock signal output
21	TRV	O	Traverse (Feed) forced feed output
22	TVD	O	Traverse (Feed) drive output
23	PC	O	Spindle motor ON signal L : ON
24	ECM	O	Spindle motor drive signal (forced mode output) 3-State
25	ECS	O	Spindle motor drive signal (servo error signal output)



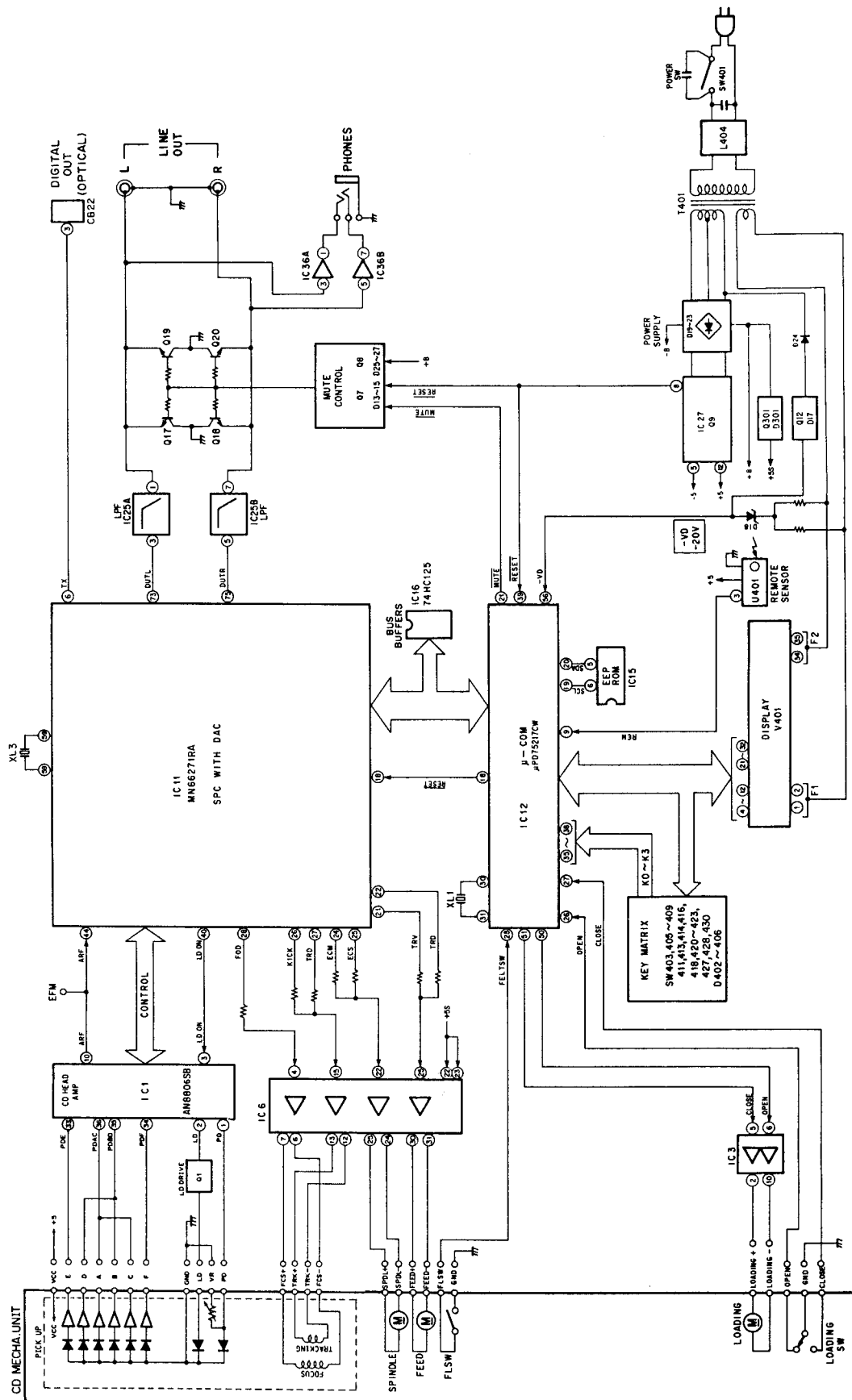
IC11 : MN662720RB
Signal Processor & Controller (SPC)

CDX-493/593

Pin No.	Pin Name	I/O	FUNCTION
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive output
28	FOD	O	Focus drive output
29	VREF	I	Reference voltage for DA output block
30	FBAL	O	Focus balance adjustment output
31	TBAL	O	Tracking balance adjustment output
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	RFENV	I	RF envelope signal input (analog input)
35	VDET	I	Oscillation detect signal input (H : DETECT)
36	OFFT	I	Off track signal input (H : OFF TRACK)
37	TRCRS	I	Track cross signal input
38	HFDET	I	RF detect signal input (L : DETECT)
39	BDO	I	Drop out signal input (H : DROP OUT)
40	LDON	O	Laser ON signal output (H : ON)
41	TES	O	Tracking error shunt signal output (H : SHUNT)
42	PLAY	O	Play signal output (H : PLAY)
43	WVEL	O	Double speed status signal output
44	ARF	I	RF signal input
45	IREF	I	Reference current input terminal
46	DRF	I	Bias terminal for DSL
47	DSLFL	I/O	Loop filter terminal for DSL
48	PULLF	I/O	Loop filter terminal for PLL
49	VCOF	I/O	Loop filter terminal for VCO
50	AVDD2	I	Power supply for analog circuit (for DSL, PLL, DA output blocks)
51	AVSS2	I	GND for analog circuit (for DSL, PLL, DA output blocks)
52	EFM	O	EFM signal output
53	PCK	O	PLL extract clock output (f PCK = 4.321MHz)
54	PDO	O	EFM signal to PCK signal phase comparison signal output
55	SUBC	O	Sub-code serial output data output
56	SBCK	I	Clock input for sub-code serial output
57	VSS	I	GND for oscillation circuit
58	X1	I	Crystal oscillation circuit input terminal (f = 16.9344MHz)
59	X2	O	Crystal oscillation circuit output terminal (f = 16.9344MHz)
60	VDD	I	Power supply for oscillation circuit
61	BYTCK	O	Byte clock output
62	CLDCK	O	Sub-code frame clock signal output (f CLDCK = 7.35kHz)
63	FCLK	O	Crystal frame clock output (f FCLK = 7.35kHz)
64	IPFLAG	O	Interpolation flag output H : INTERPOLATION
65	FLAG	O	Flag output
66	CLVS	O	Spiral servo phase synchronous status signal out. H : CLV L : ROUGH SERVO
67	CRC	O	Sub-code CRC check result output H : OK, L : NG
68	DEMPH	O	Deemphasis detect signal output H : ON
69	RESY	O	Re-synchronous signal output of frame synchronization H : SYNCHRONOUS L : ASYNCHRONOUS
70	NC1	-	N. C.
71	TEST	I	Test terminal (Normal : H)
72	AVDD1	I	Power supply for digital circuit
73	NC2	-	N. C.
74	AVSS1	I	GND for digital circuit
75	NC3	-	N. C.
76	RSEL	I	RF signal polarity specifying terminal RSEL = L when Bright level is at "L"
77	CSEL	I	Crystal oscillation frequency specifying terminal (Normal : L)
78	PSEL	I	Test terminal (Normal : L)
79	MSEL	I	SMCK terminal Output frequency switch terminal H : SMCK = 8.4672MHz, L : SMCK = 4.2336MHz
80	SSEL	I	SUBQ terminal Output mode switch terminal H : Q code buffer use mode

CDX-493

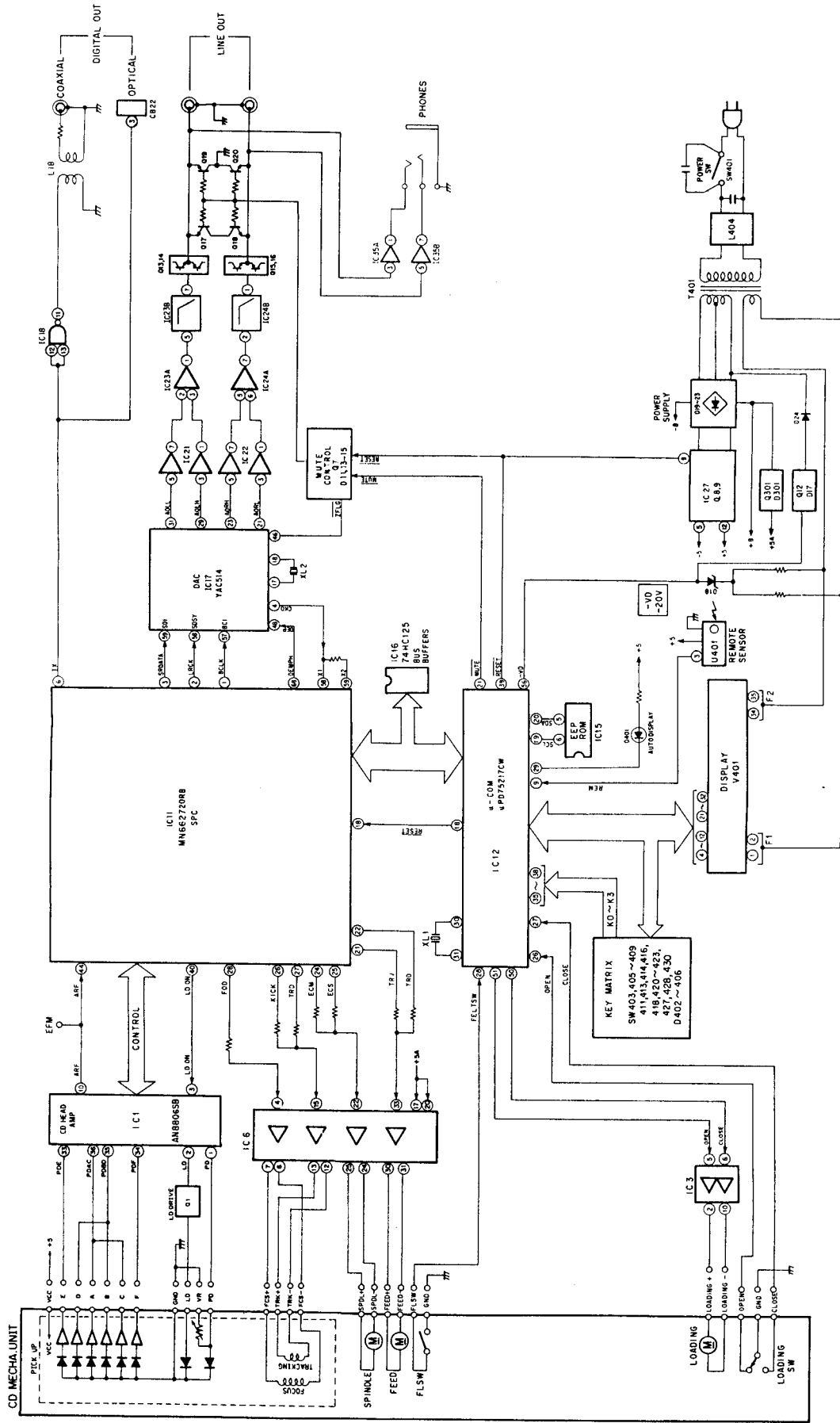
CDX-493 BLOCK DIAGRAM



CDX-493/593

CDX-593 BLOCK DIAGRAM

CDX-493/593



A

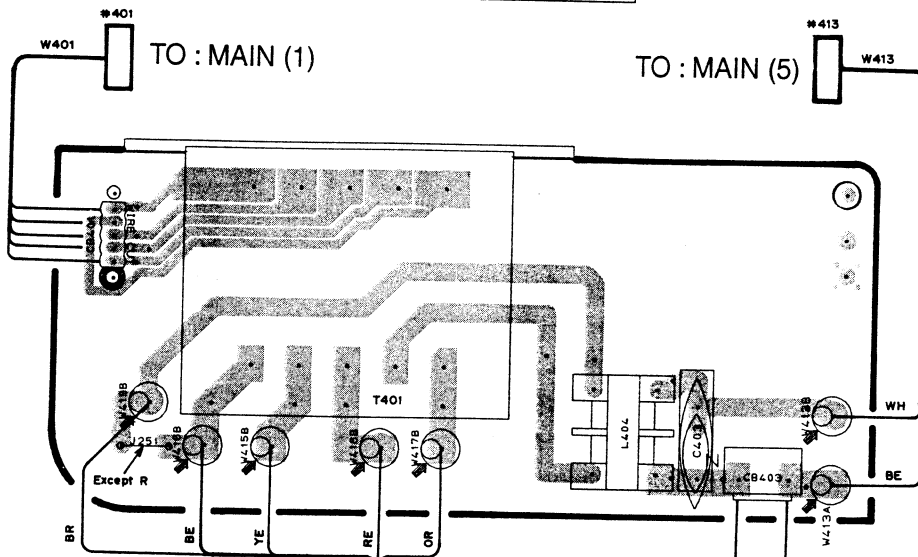
B

C

D

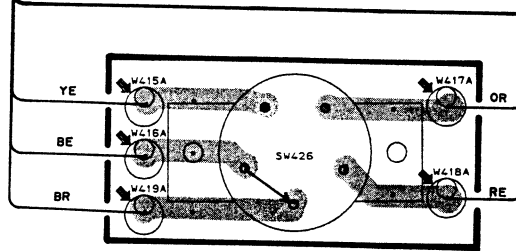
CDX-493 PRINTED CIRCUIT BOARD (Foil side) / シート図 (パターン側)

P. C. B. MAIN (4)



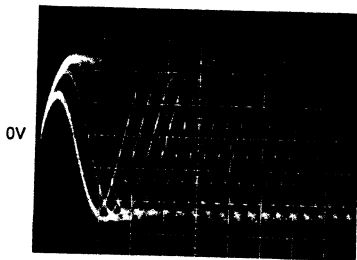
R only

P. C. B. MAIN (3)

VOLTAGE
SELECTOR

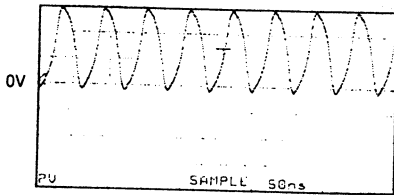
Point ① (EFM : Pin10 of IC1)

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



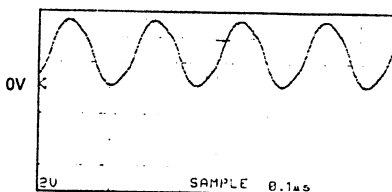
Point ② (Pin59 of IC11)

V : 2V/div H : 50 nsec/div
DC range 1 : 1 probe



Point ③ (Pin31 of IC12)

V : 2V/div H : 0.1 μsec/div
DC range 1 : 1 probe

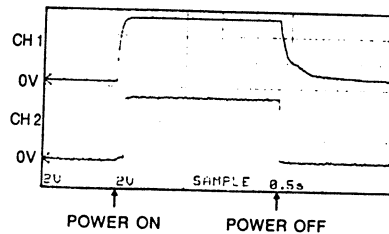


Point ④ (CH1 : Collector of Q9, CH2 : Pin8 of IC27)

V : 2V/div (CH1)

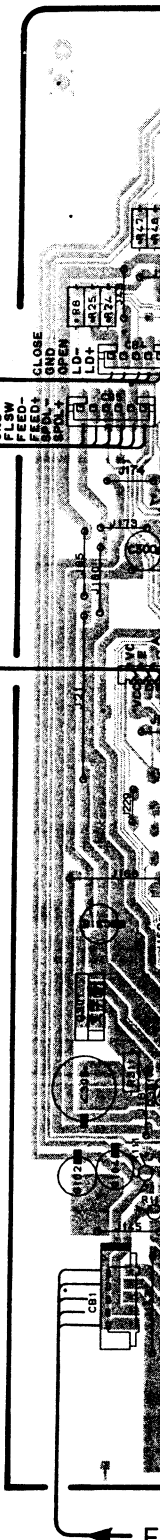
V : 2V/div (CH2)

H : 0.5 sec/div DC range 1 : 1 probe



FROM : CD MECHANISM UNIT

P. C.



F

A

B

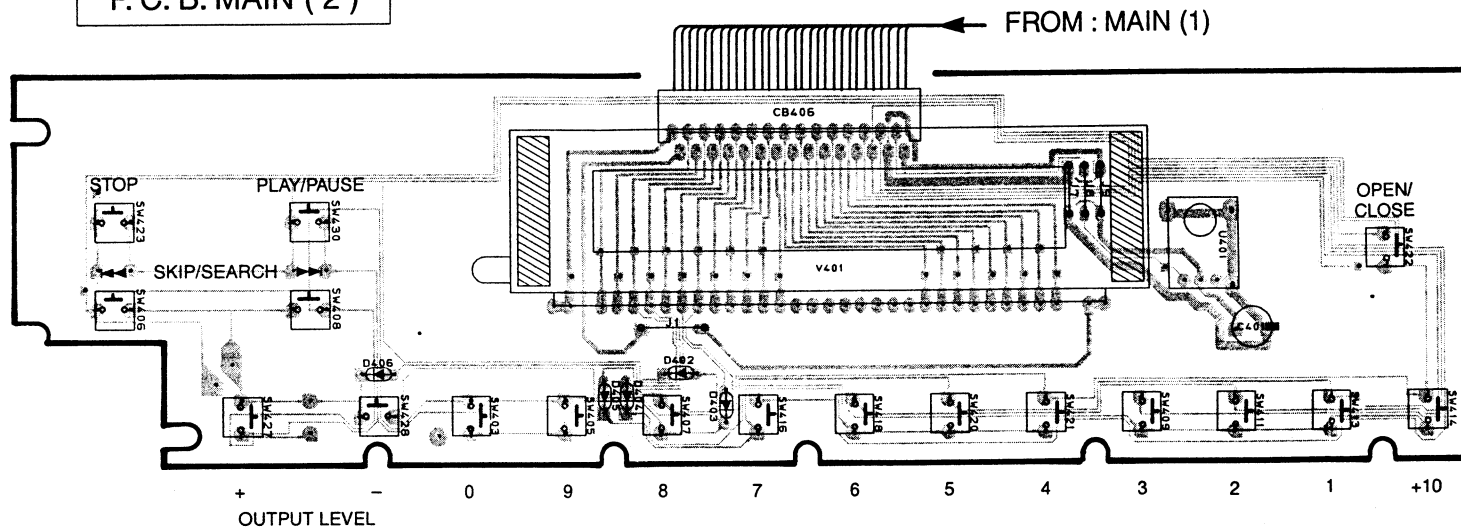
C

D

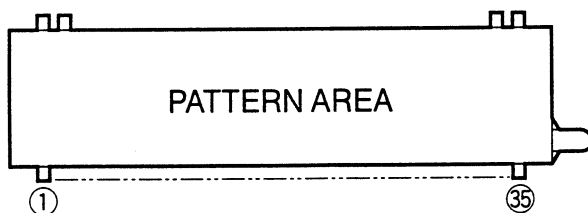
CDX-493

CDX-493 PRINTED CIRCUIT BOARD (Foil side) / シート図 (パターン側)

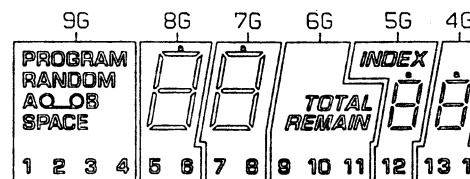
P. C. B. MAIN (2)



V401 : 9-MT-133GK



GRID ASSIGNMENT



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	

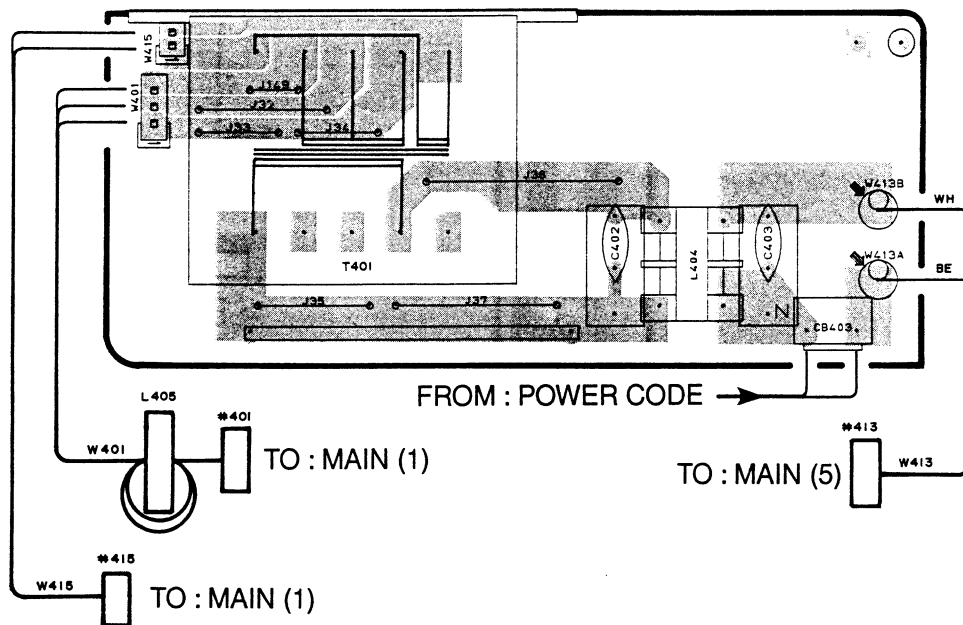
- NOTE 1) F1, F2 Filament
 2) NP No pin
 3) NC No connection
 4) P1-P10 ... Datum Line
 5) 1G-9G Grid

ANODE CONNECTION

	9G	7G	7G	6G
P1	PROGRAM	a	a	TOTAL
P2	RANDOM	b	b	REMAIN
P3	A	c	c	—
P4	○ ○	d	d	—
P5	B	e	e	—
P6	SPACE	f	f	—
P7	—	g	g	—
P8	—	—	—	—
P9	1	5	7	9
P10	2	6	8	10
P11	3	—	—	11
P12	4	—	—	—

CDX-593 PRINTED CIRCUIT BOARD (Foil side) / シート図 (パターン側)

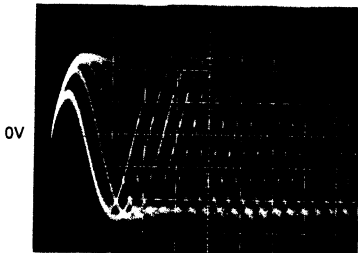
P. C. B. MAIN (4)



P. C. B.

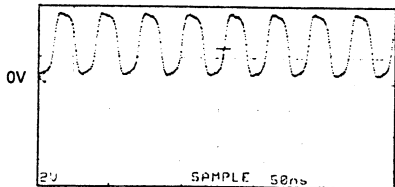
Point ① (EFM : Pin10 of IC1)

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



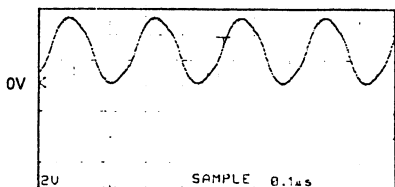
Point ② (Pin17 of IC17)

V : 2V/div H : 50 nsec/div
DC range 1 : 1 probe



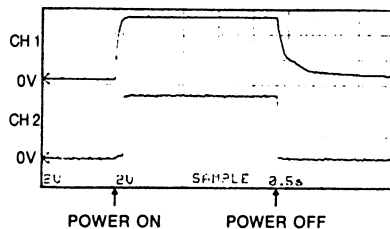
Point ③ (Pin31 of IC12)

V : 2V/div H : 0.1 μsec/div
DC range 1 : 1 probe

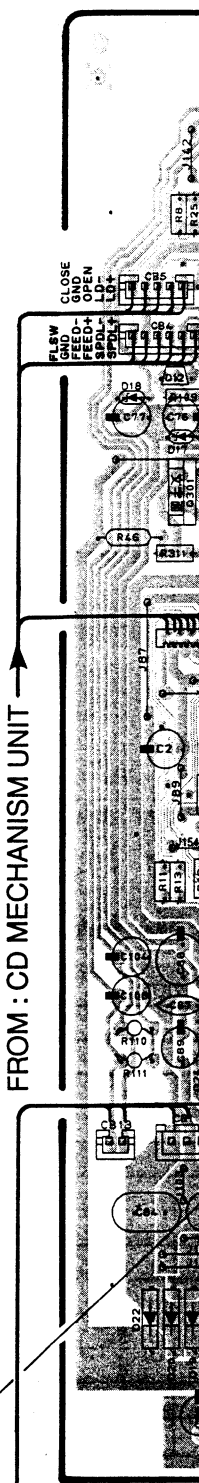


Point ④ (CH1 : Collector of Q9, CH2 : Pin8 of IC27)

V : 2V/div (CH1)
V : 2V/div (CH2)
H : 0.5 sec/div DC range 1 : 1 probe



FROM : CD MECHANISM UNIT



FROM

1

2

3

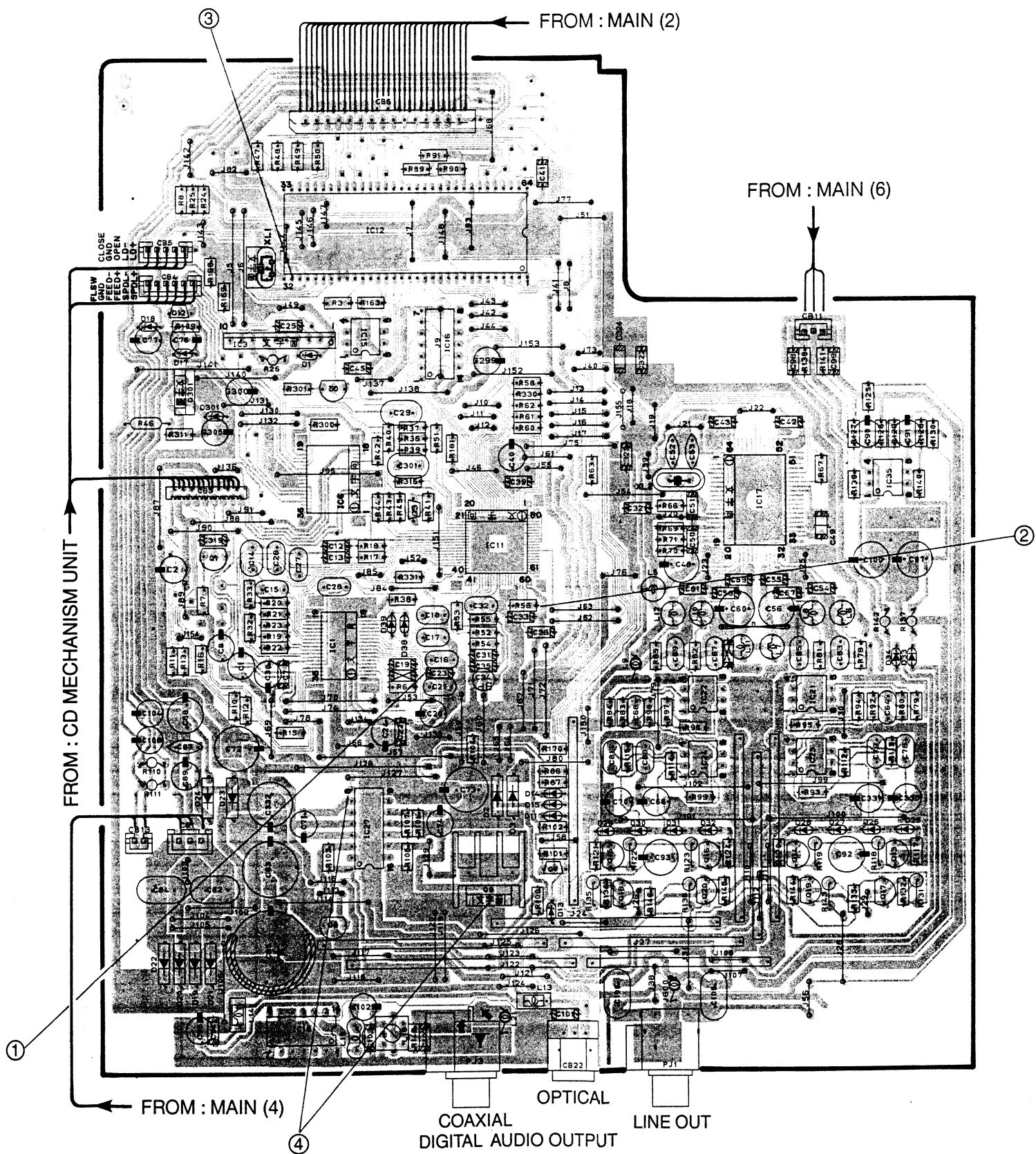
4

5

6

ターン側)

P.C.B. MAIN (1)



A

B

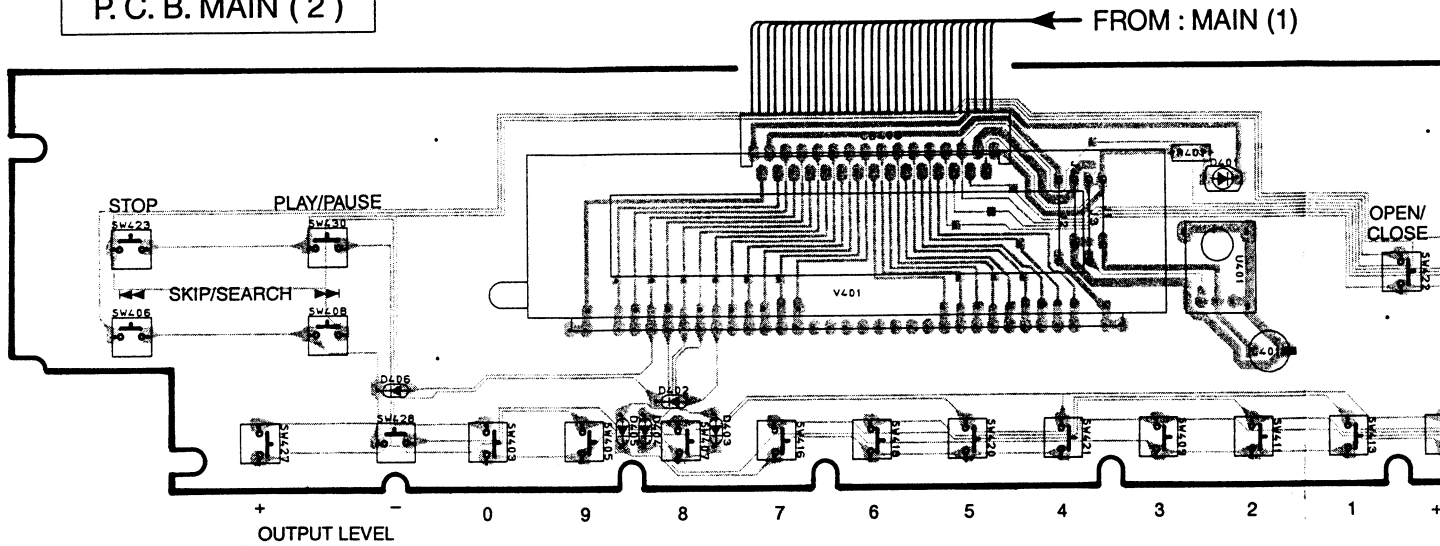
C

D

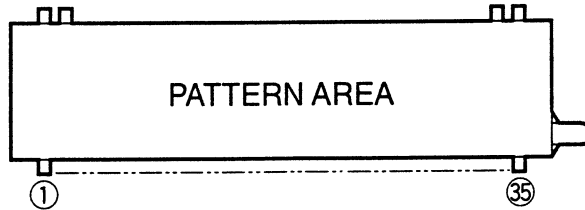
CDX-593

CDX-593 PRINTED CIRCUIT BOARD (Foil side) / シート図 (パターン側)

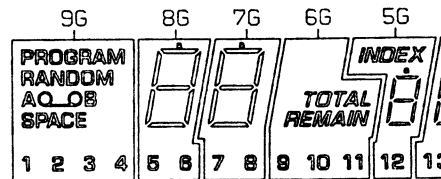
P. C. B. MAIN (2)



V401 : 9-MT-133GK



GRID ASSIGNMENT



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

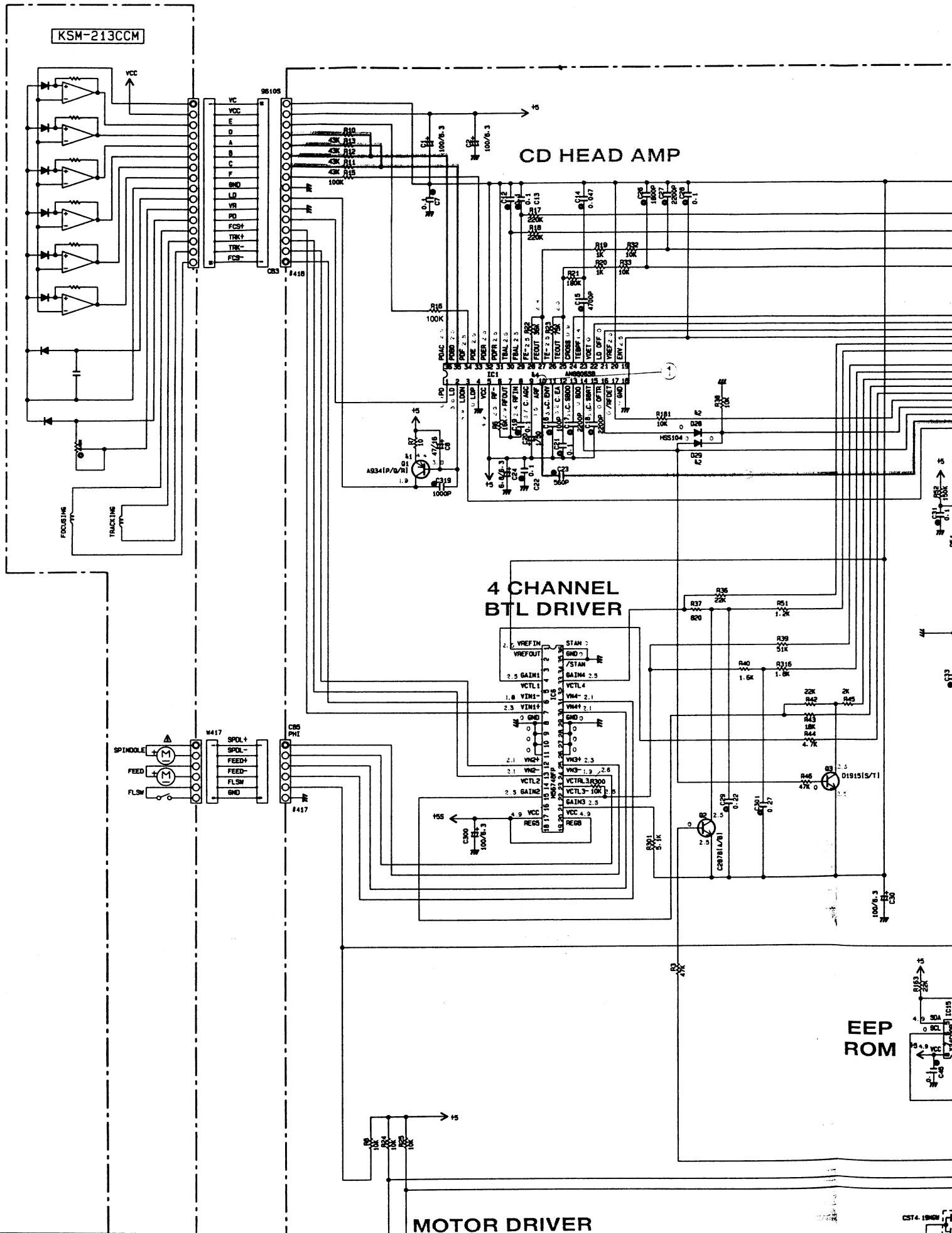
PIN NO.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
CONNECTION	NC	NC	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NP	F2	F2

- NOTE 1) F1, F2 Filament
 2) NP No pin
 3) NC No connection
 4) P1~P10 Datum Line
 5) 1G~9G Grid

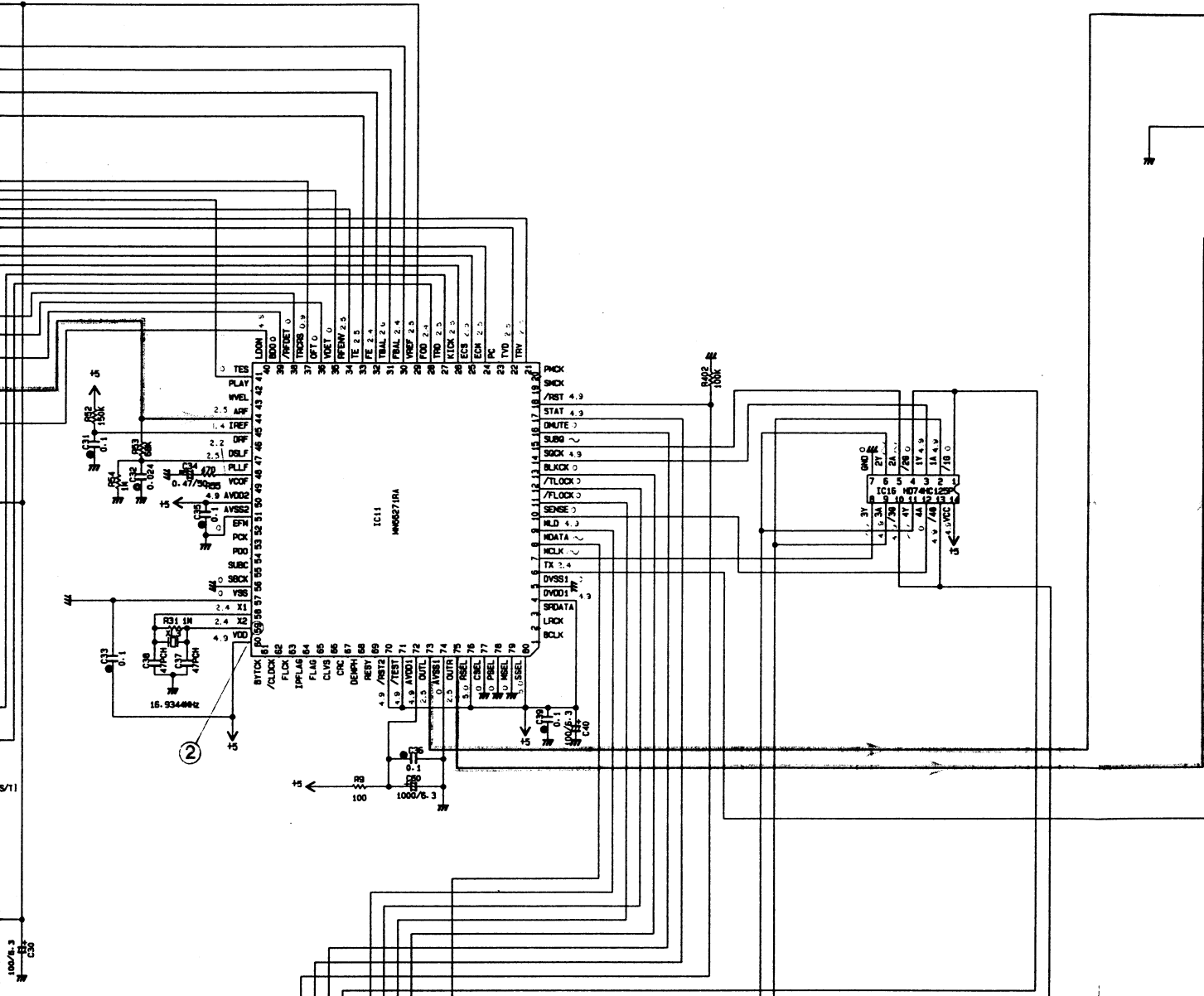
ANODE CONNECTION

	9G	7G	7G	5G
P1	PROGRAM	a	a	TO
P2	RANDOM	b	b	RE
P3	A	c	c	
P4	○ ○	d	d	
P5	B	e	e	
P6	SPACE	f	f	
P7	—	g	g	
P8	—	—	—	
P9	1	5	7	
P10	2	6	8	
P11	3	—	—	
P12	4	—	—	

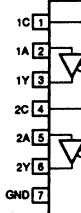
CDX-493 SCHEMATIC DIAGRAM / 総回路図



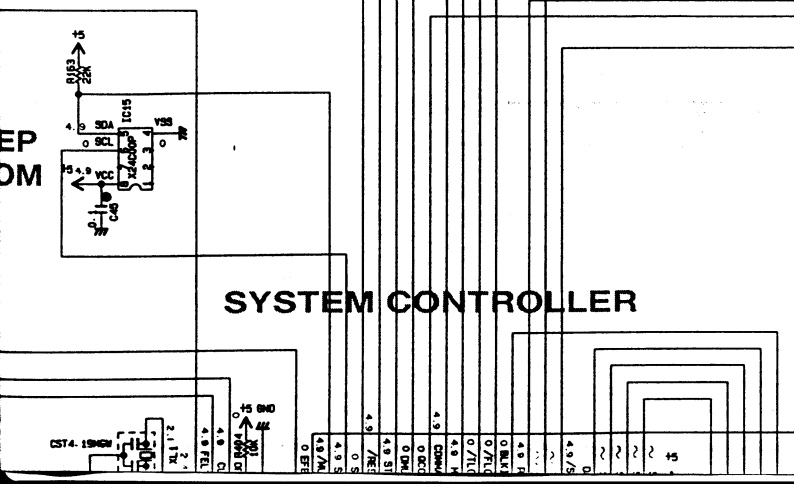
SIGNAL PROCESSOR & CONTROLLER



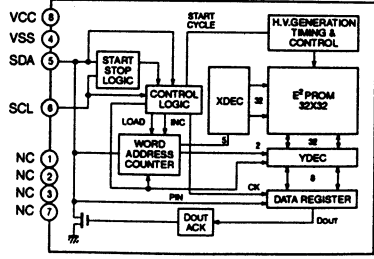
IC16 : HD7147 Quad 3 Sta

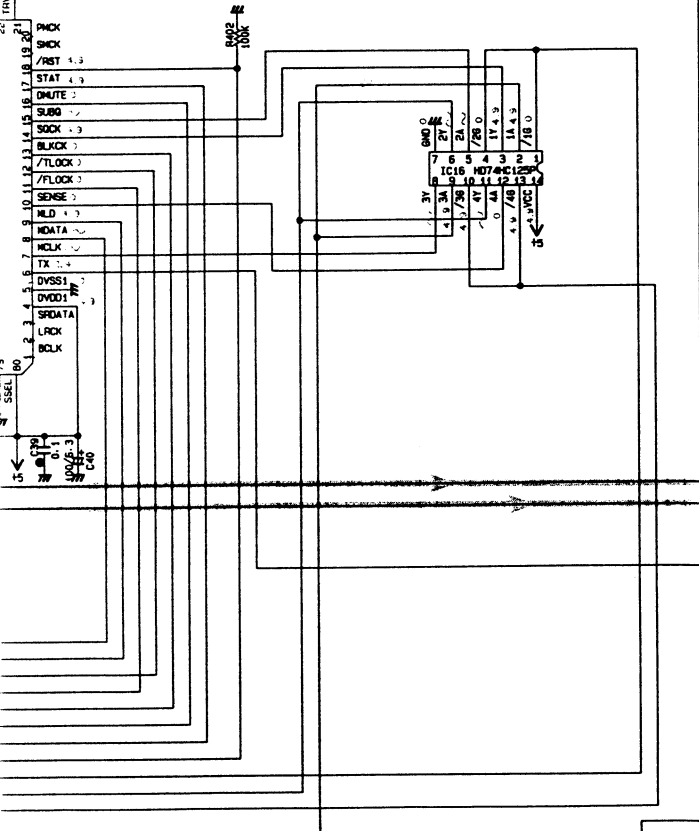


SYSTEM CONTROLLER

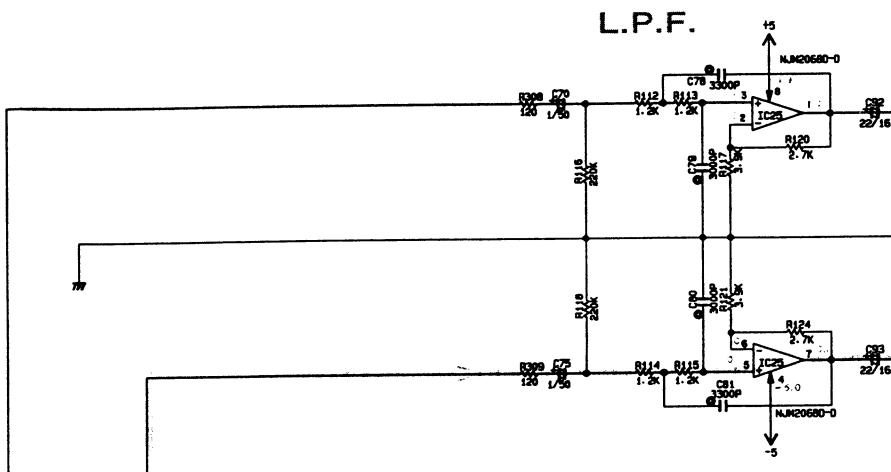
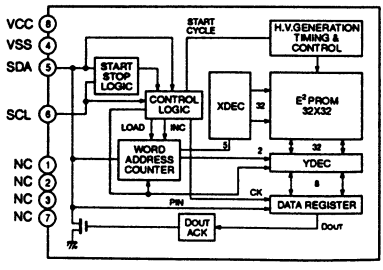


IC15 : X24C00P Electrically Erasable PROM



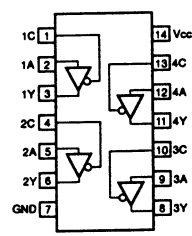


IC15 : X24C00P
Electrically Erasable PROM

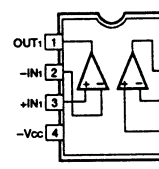


L.P.F.

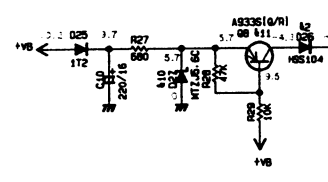
IC16 : HD74HC125P
Quad 3 State Bus Buffers



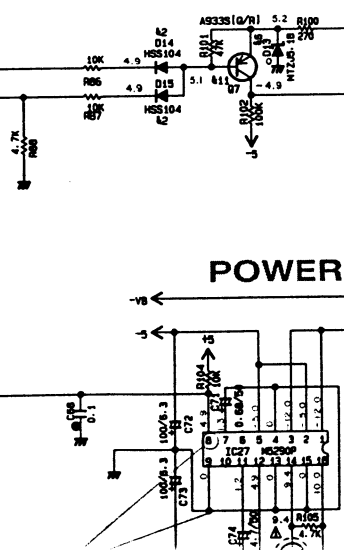
IC25 : NJM20680-D
IC36 : BA15218
Dual OP-Amp

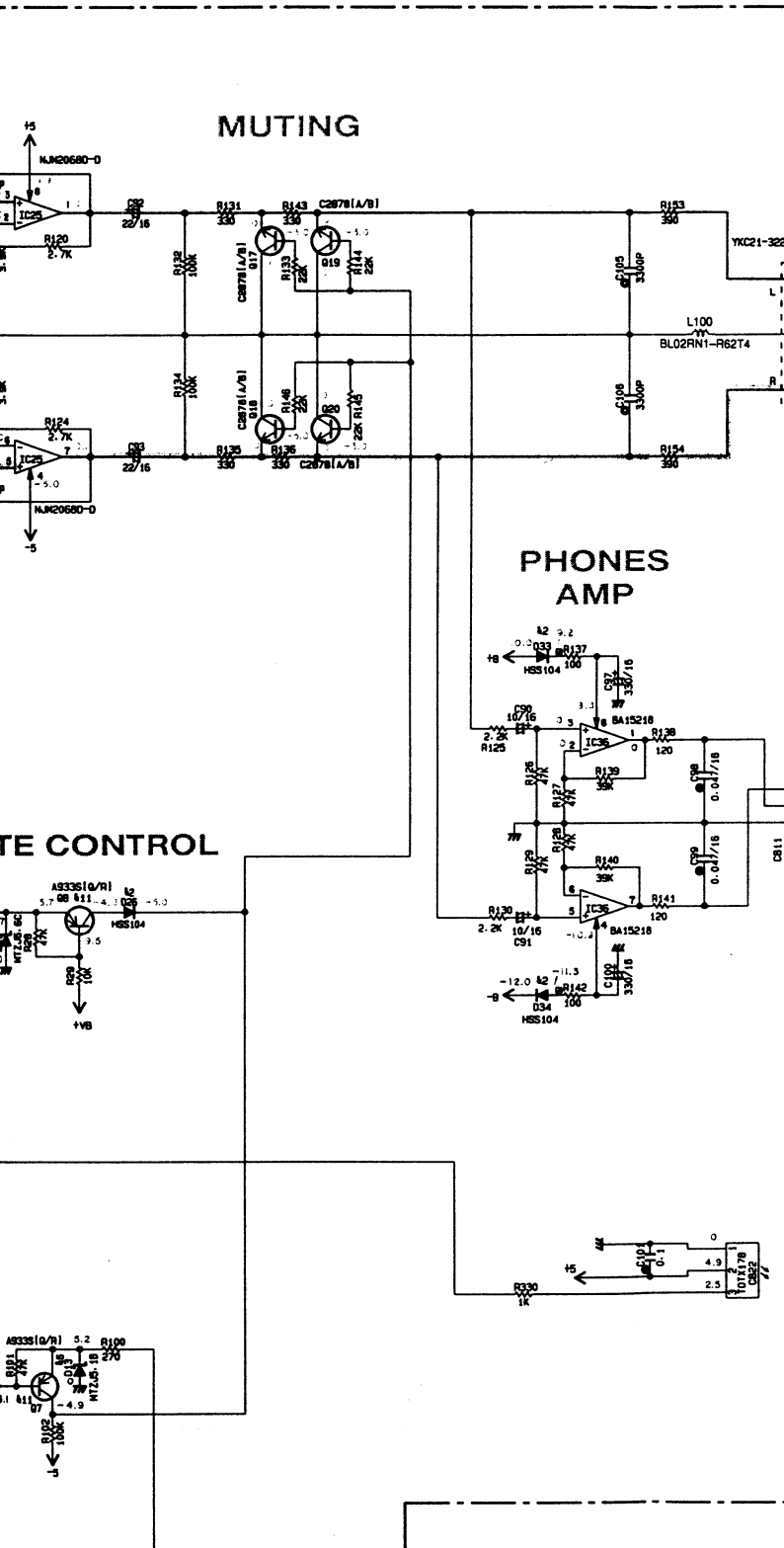


MUTE CONTROL



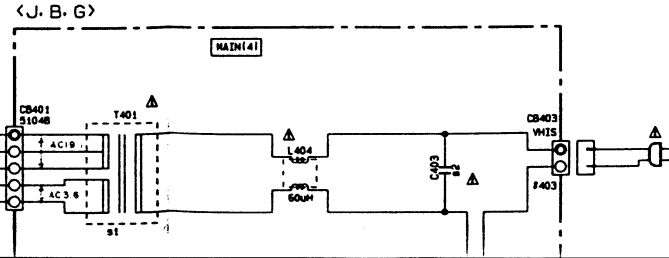
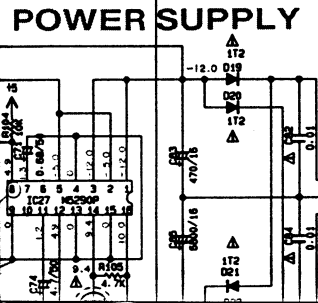
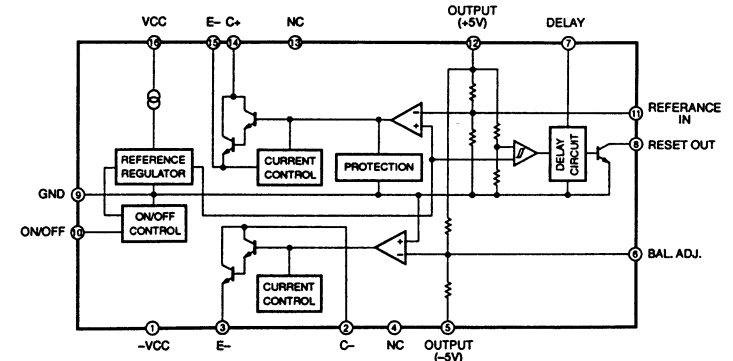
POWER



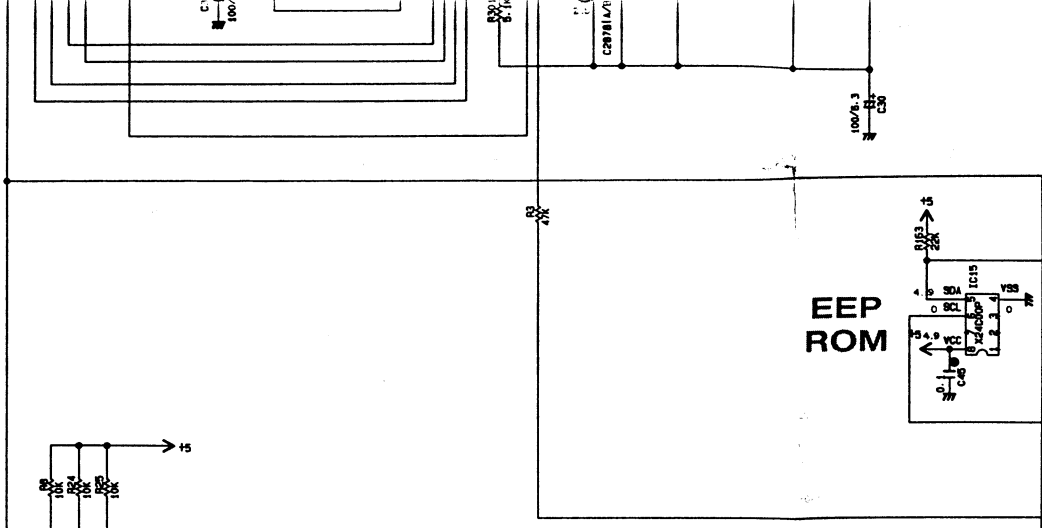


<p>1SS133 1T2 MTZJ4.7C MTZJ5.1B MTZJ5.6B</p>	<p>MTZJ5.6C MTZJ22.0A</p>	<p>HD74HC125P TC74HC00AP</p>	<p>M5290P</p>
<p>2SA933S(Q,R) 2SD1915F(S,T)</p>	<p>AN8806SB M56748FP</p>	<p>2SA934(P,Q,R) 2SB544(E,F,G) 2SC2878(A,B) 2SD400(E,F)</p>	<p>μPD75217CW</p>
<p>2SB1565(E,F) 2SD2394(E,F)</p>	<p>YAC514</p>	<p>BA15218 NJM2068D NJM5332D X24C00P</p>	<p>MN86271RA MN862720RB</p>
<p>LB1641</p>			

IC27 : M5290P
Constant-Voltage Tracking Supply with Reset

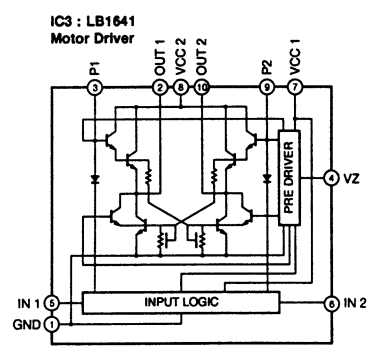
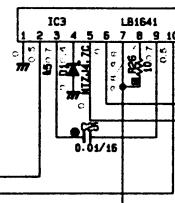
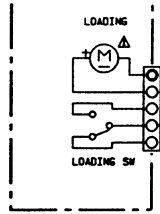


Point ① (EFM : Pin10 of IC1)



EEP ROM

MOTOR DRIVER

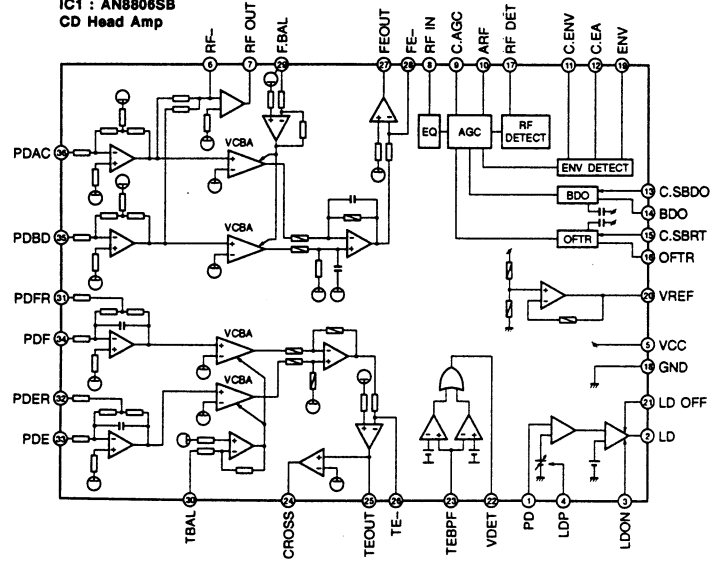


REMARKS	PARTS NAME	SYMBOL
NO MARK	ELECTROLYTIC CAPACITOR	ZZ
⊕	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	
●	CERAMIC TUBULAR CAPACITOR	
⊙	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
⊖	MICA CAPACITOR	
⊕	POLYPROPYLENE FILM CAPACITOR	
●	SEMICONDUCTIVE CERAMIC CAPACITOR	

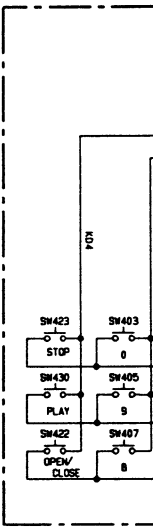
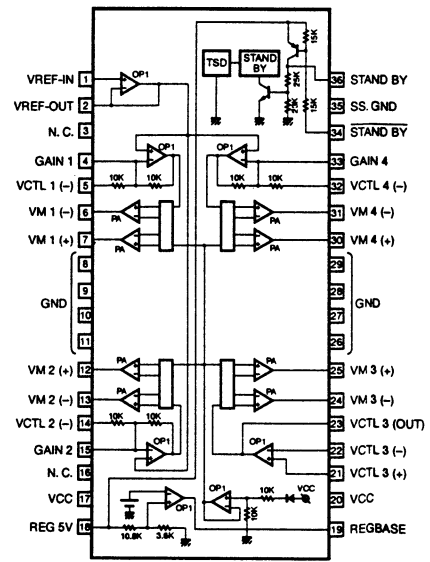
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
⊠	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊞	METAL PLATE RESISTOR
⊞	FIRE PROOF CARBON FILM RESISTOR
⊞	CEMENT MOLDED RESISTOR
⊞	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

MAIN (1)

IC1 : AN8806SB
CD Head Amp

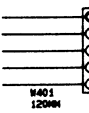
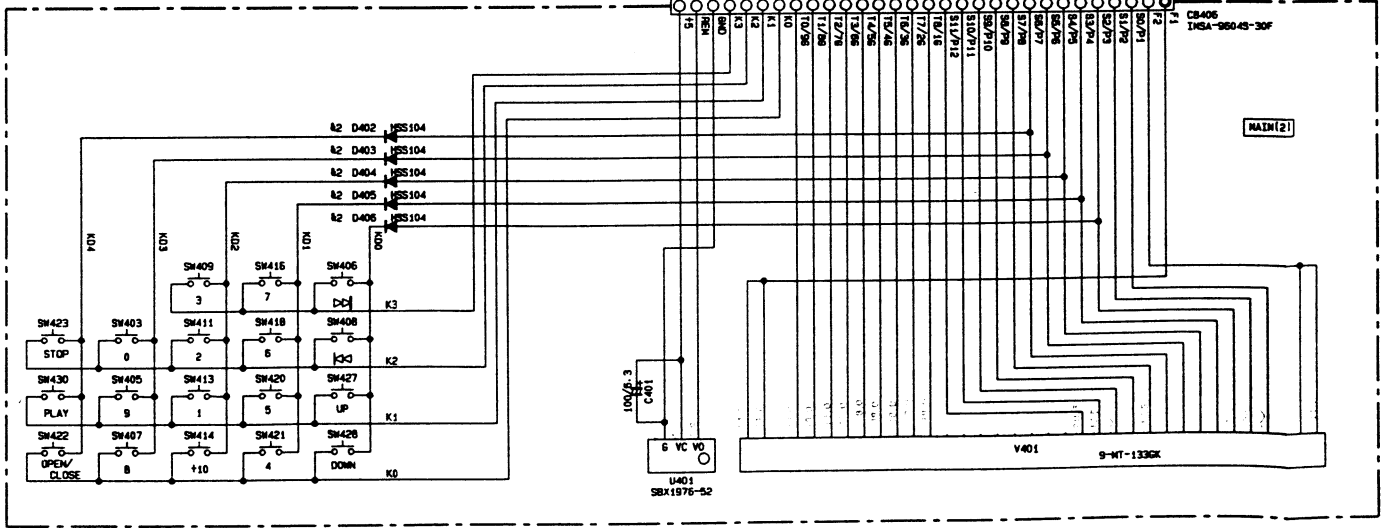
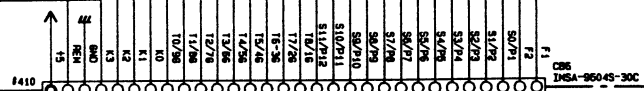
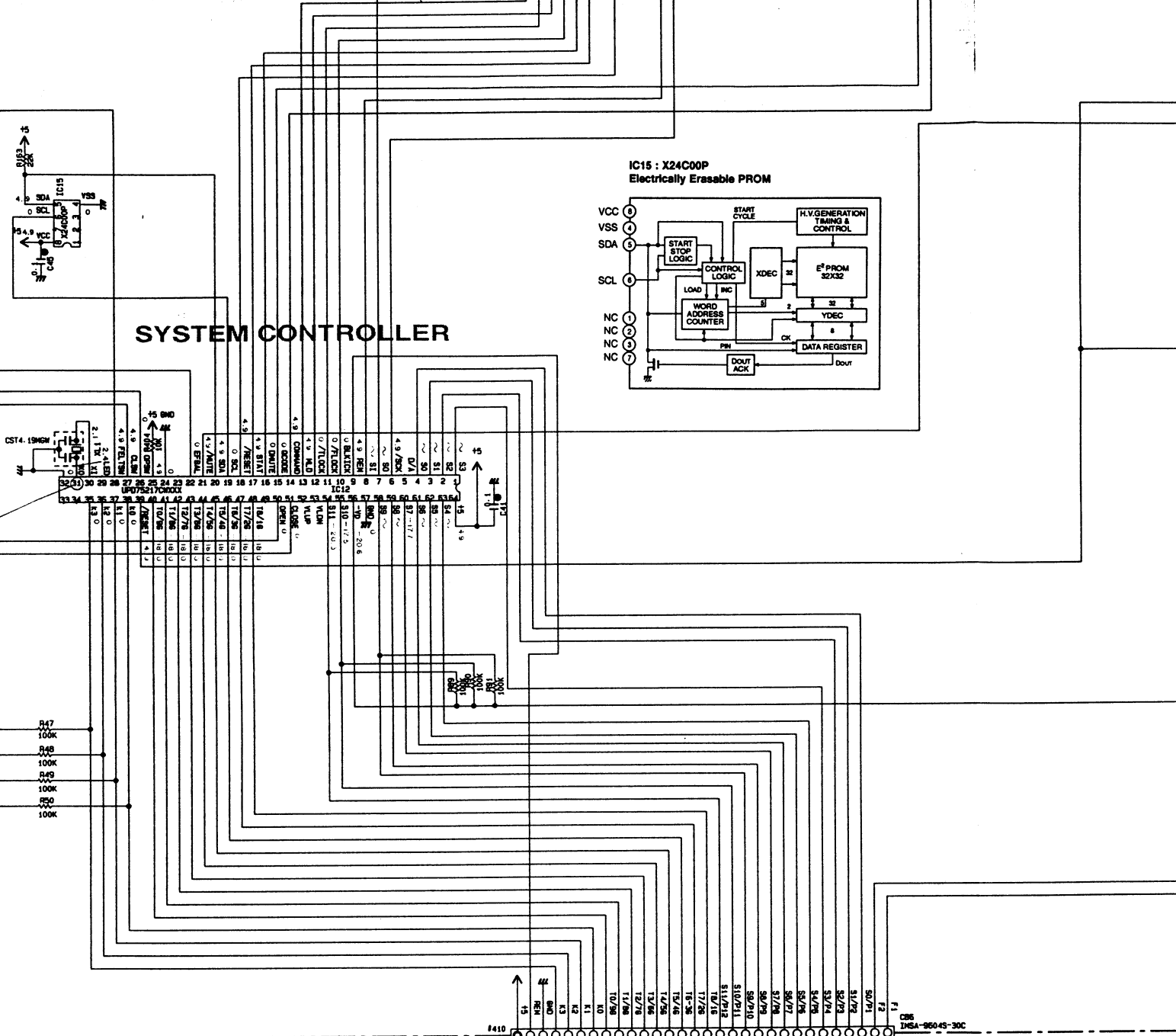
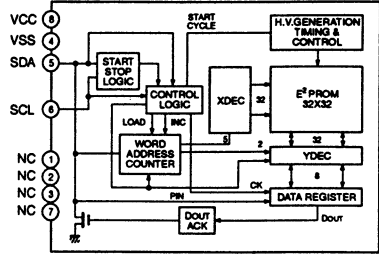


IC6 : M56748FP
4-Channel BTL Driver

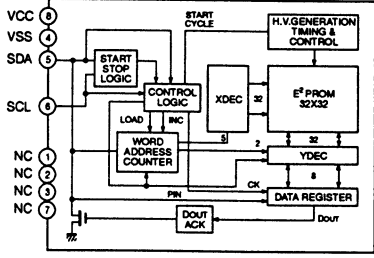


SYSTEM CONTROLLER

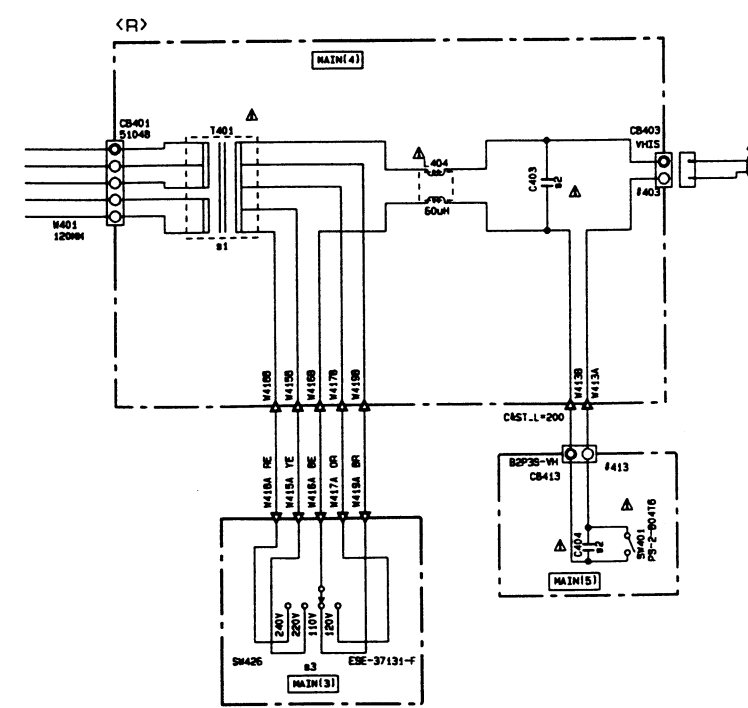
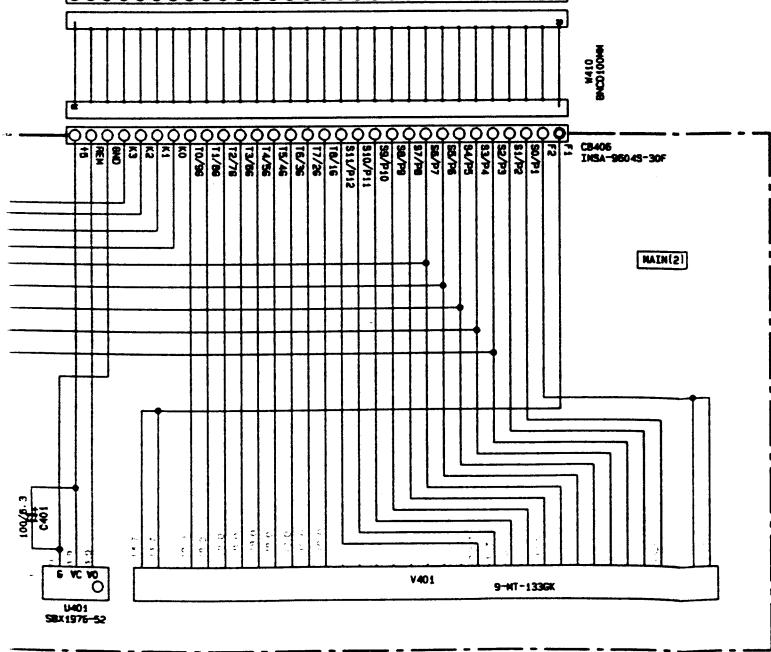
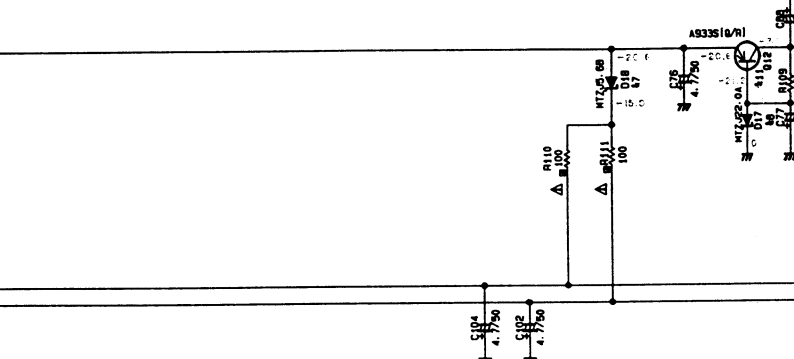
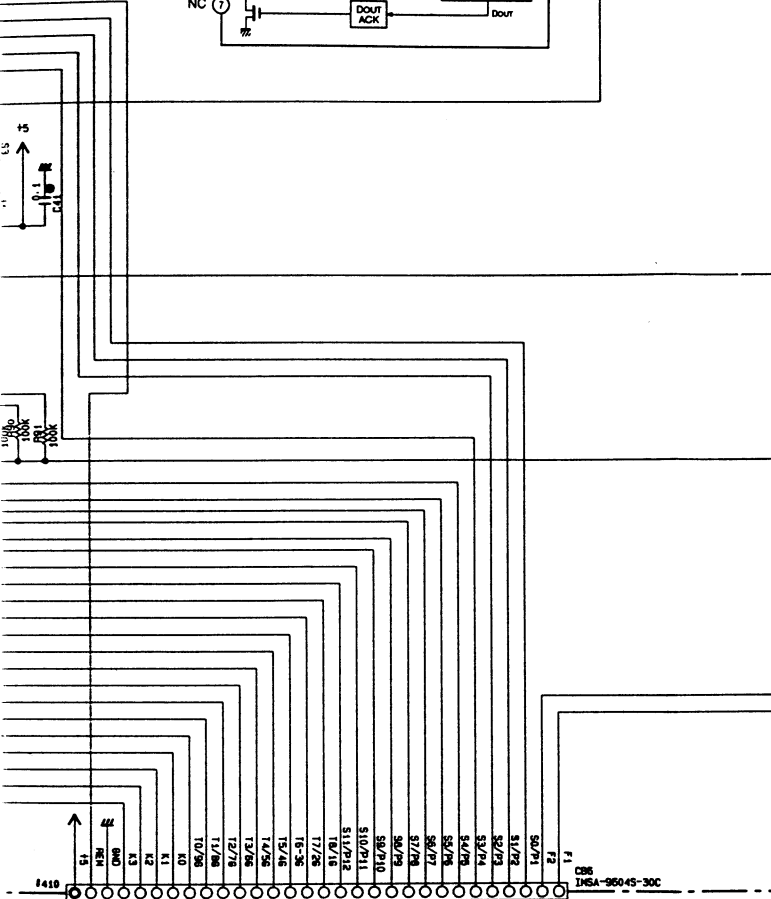
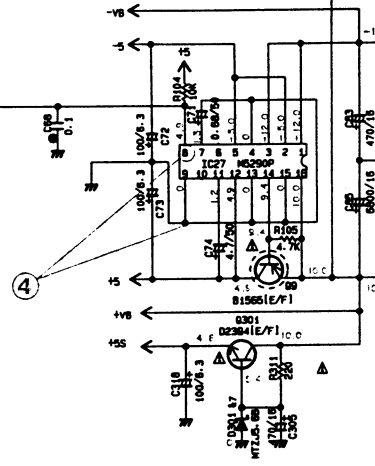
IC15 : X24C00P Electrically Erasable PROM



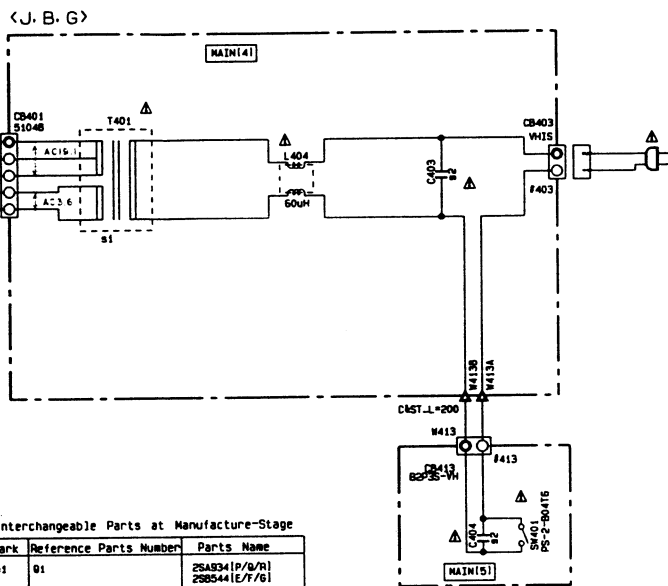
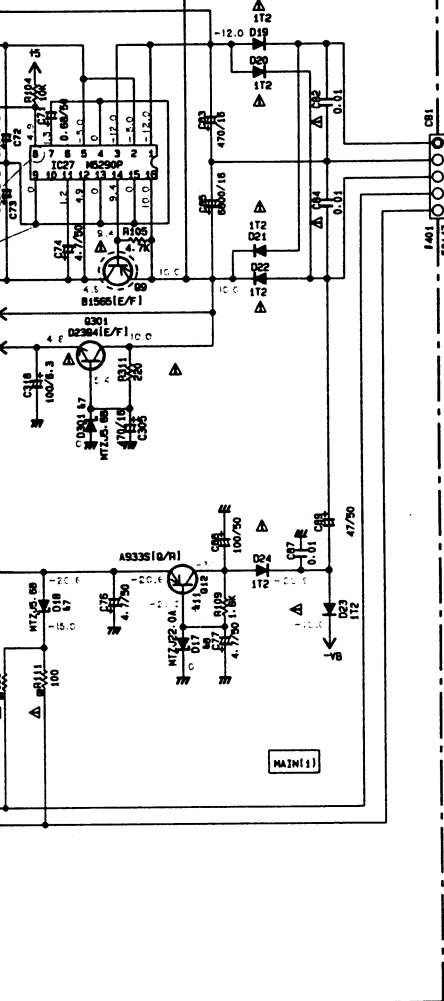
IC15 : X24C00P
Electrically Erasable PROM



POWER SUPPLY



POWER SUPPLY



Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
81	01	25A935[R/R] 28A115[E/F]
82	D14-15-26-28-29-33-34 402-406	HSS104 ISS133 ISS176
84	IC1	AN88065B AN88035B
85	D1	MT2J4-7C HZ3582
86	D13	MT2J5-1B HZ35C1
87	D1B-D301	MT2J5-5B HZ36A3
88	D17	MT2J22A HZ3203
810	D27	MT2J5-6C HZ3582
811	07-B-12	25A935[R/R] 28A115[E/F] 25A1308A[G/R/S]

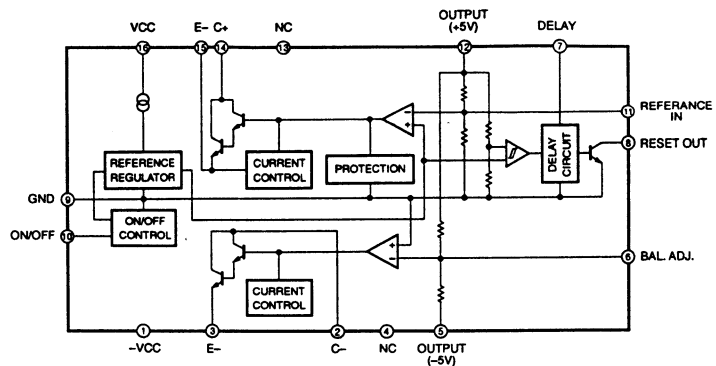
	J	R	B-6
1	T401	X5069	X0394 X0393
2	C403-C404	F132410	Y574170 Y574170
3	SH426	X	YL90800 X
4			

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

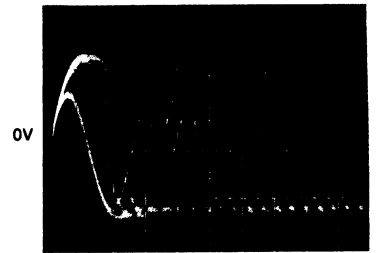
- * All voltages are measured with a 10MΩ/DC electric volt meter.
- * Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
- * Schematic diagram is subject to change without notice.

- 電圧は、内部抵抗10MΩの電圧計で測定したものです。
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- 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。

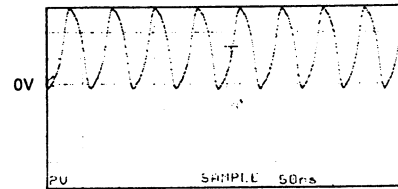
Constant-Voltage Tracking Supply with Reset



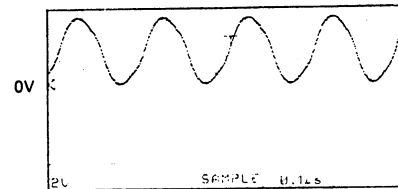
Point ① (EFM : Pin10 of IC1)
 V : 0.2V/div H : 0.5 μsec/div
 AC range 1 : 1 probe



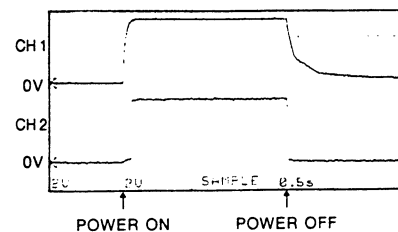
Point ② (Pin59 of IC11)
 V : 2V/div H : 50 nsec/div
 DC range 1 : 1 probe



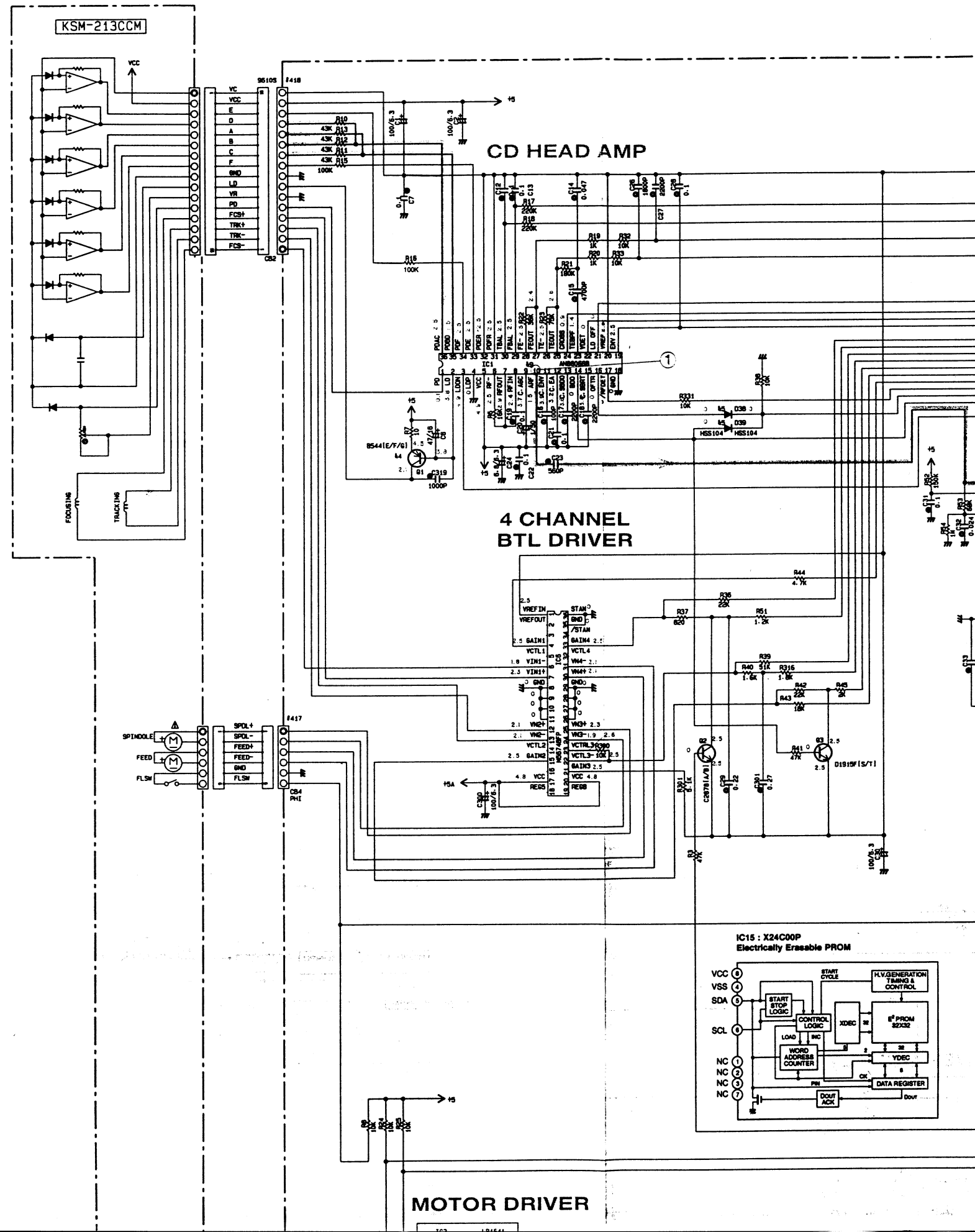
Point ③ (Pin31 of IC12)
 V : 2V/div H : 0.1 μsec/div
 DC range 1 : 1 probe



Point ④ (CH1 : Collector of Q9, CH2 : Pin8 of IC1)
 V : 2V/div (CH1)
 V : 2V/div (CH2)
 H : 0.5 sec/div DC range 1 : 1 probe

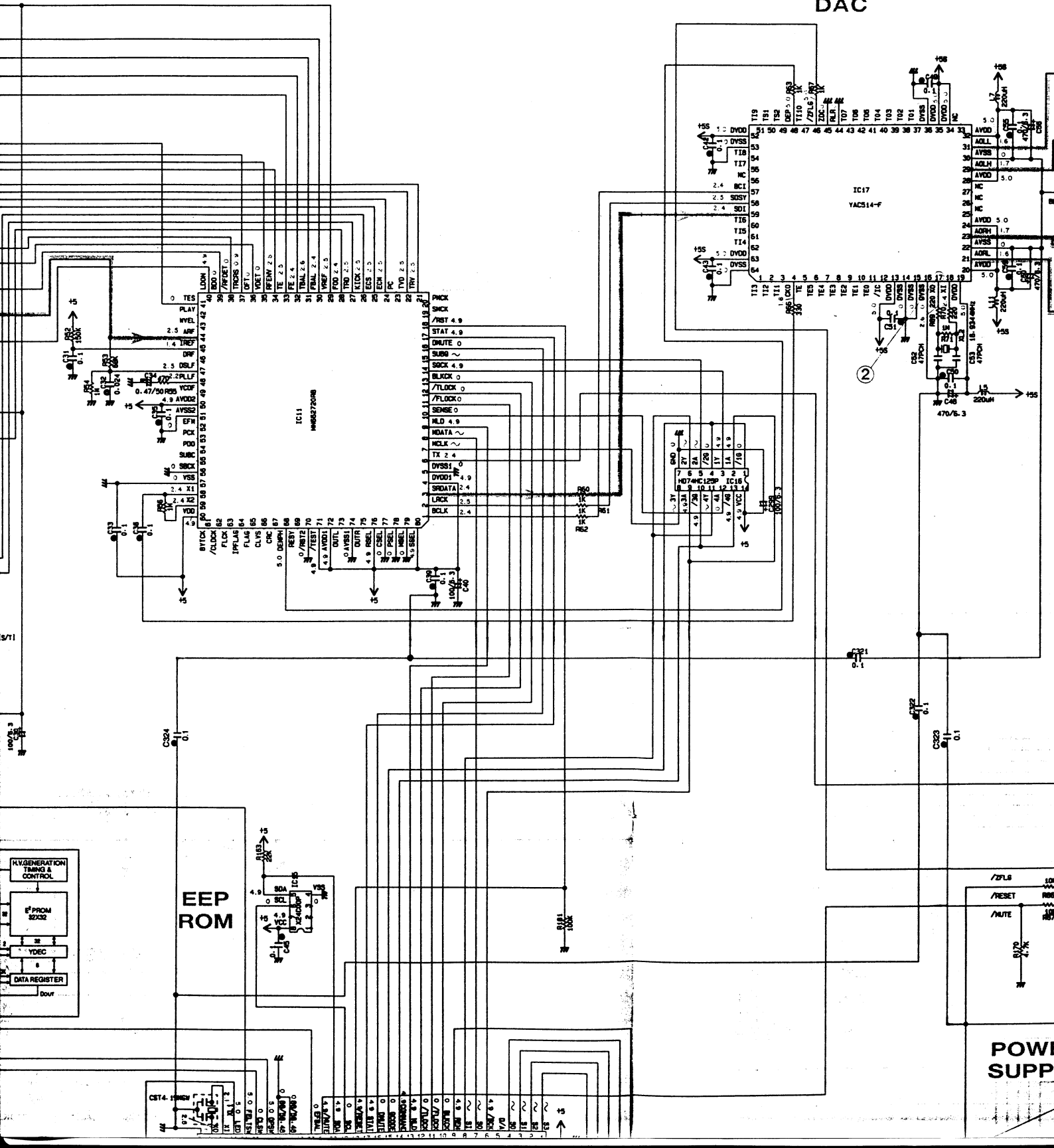


CDX-593 SCHEMATIC DIAGRAM / 総回路図

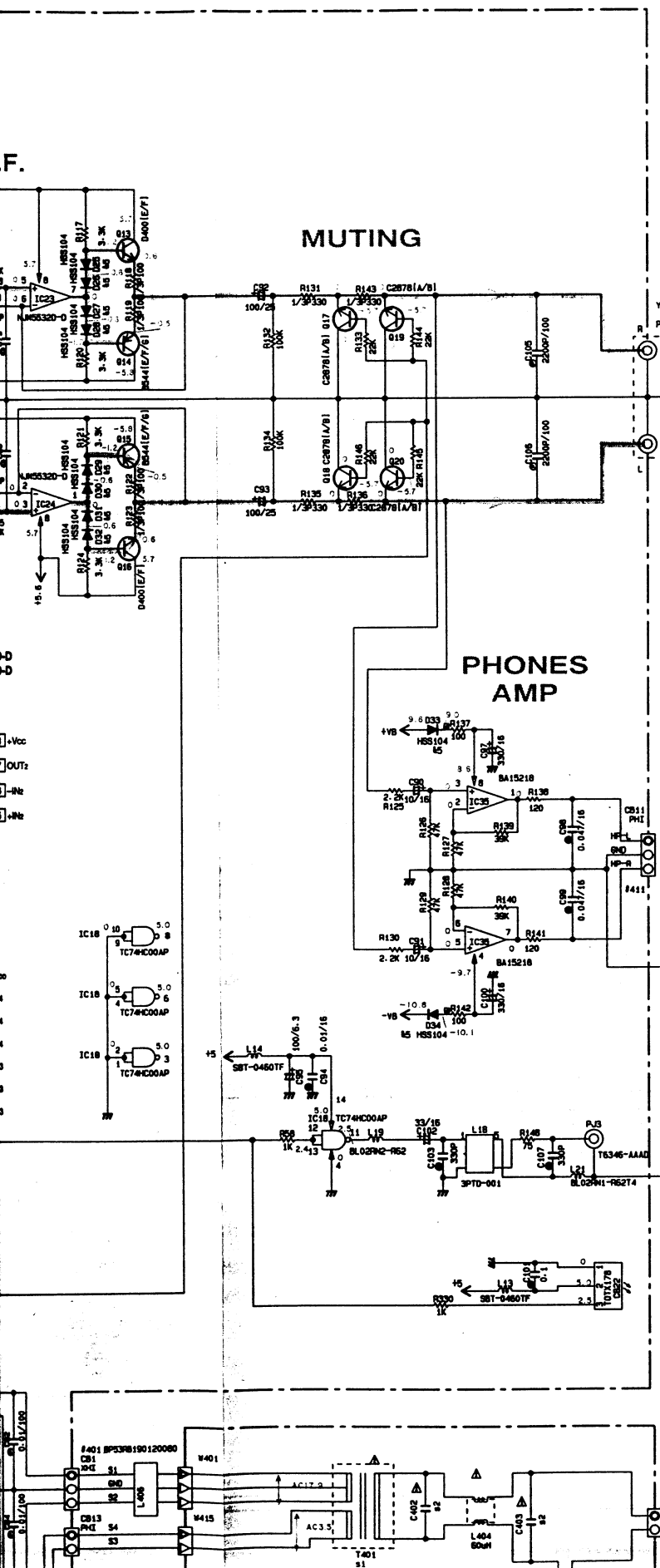


SIGNAL PROCESSOR & CONTROLLER

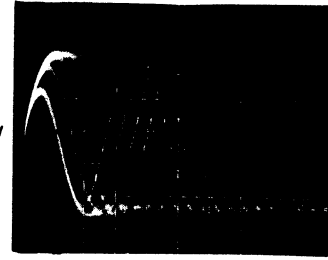
DAC



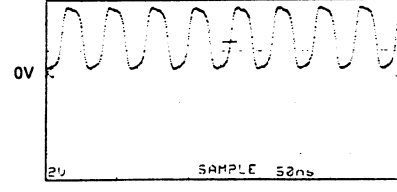
F.



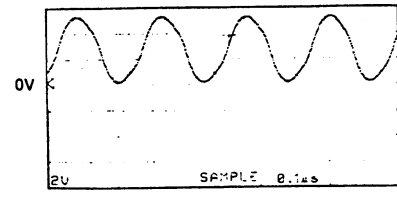
Point ① (EFM : Pin10 of IC1)
 V : 0.2V/div H : 0.5 μsec/div
 AC range 1 : 1 probe



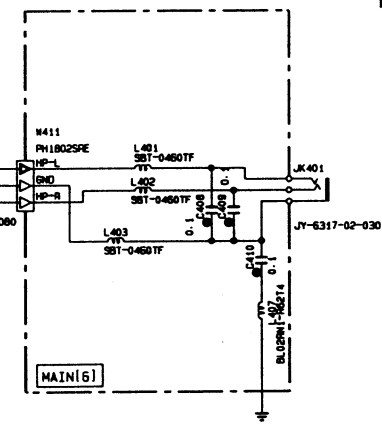
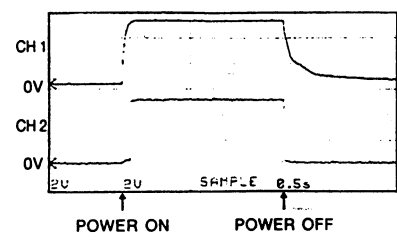
Point ② (Pin17 of IC17)
 V : 2V/div H : 50 nsec/div
 DC range 1 : 1 probe



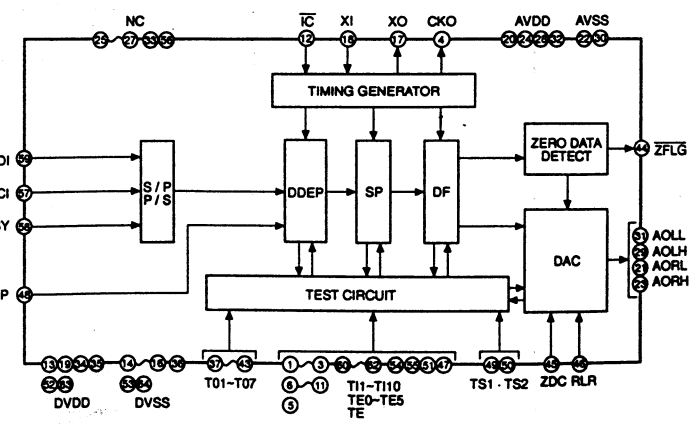
Point ③ (Pin31 of IC12)
 V : 2V/div H : 0.1 μsec/div
 DC range 1 : 1 probe



Point ④ (CH1 : Collector of Q9, CH2 : Pin8 of IC17)
 V : 2V/div (CH1)
 V : 2V/div (CH2)
 H : 0.5 sec/div DC range 1 : 1 probe



IC17 : YAC514
D/A Converter



+Vcc
out
-Ve
+Ve

IC18
IC18
IC18

0.1V/100

5

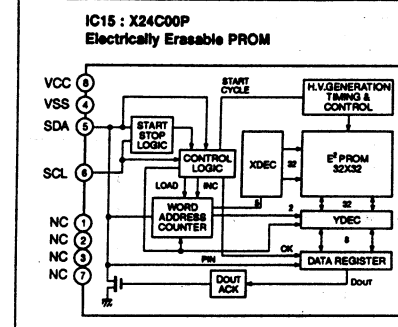
6

7

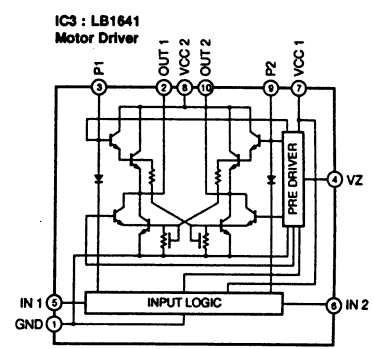
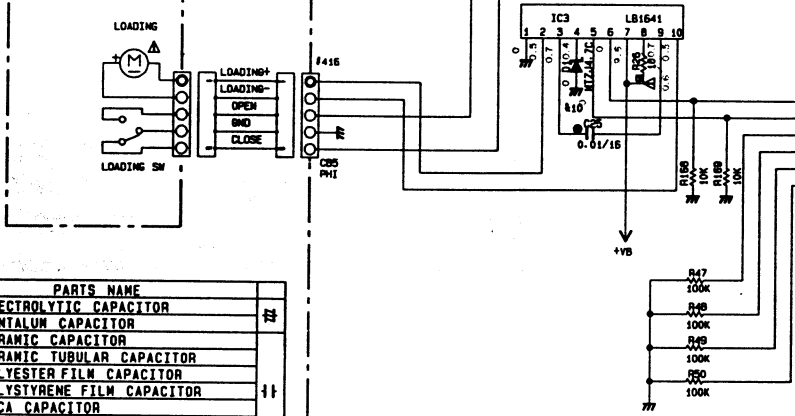
8

9

0



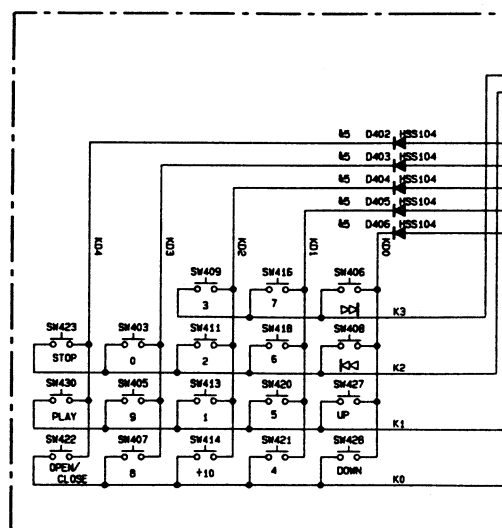
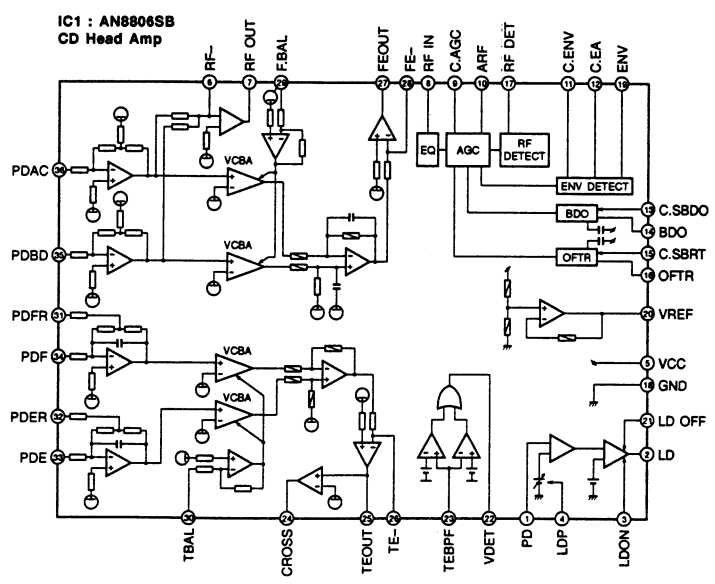
MOTOR DRIVER



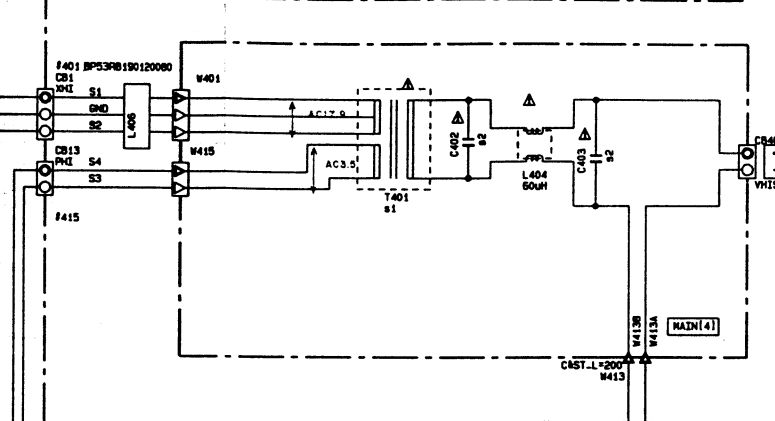
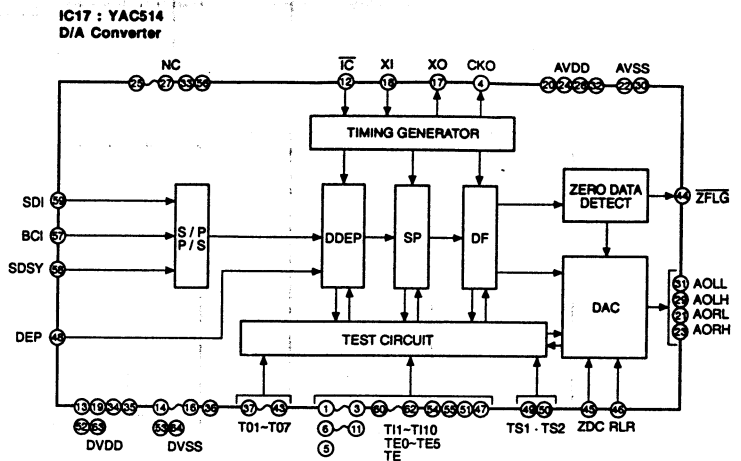
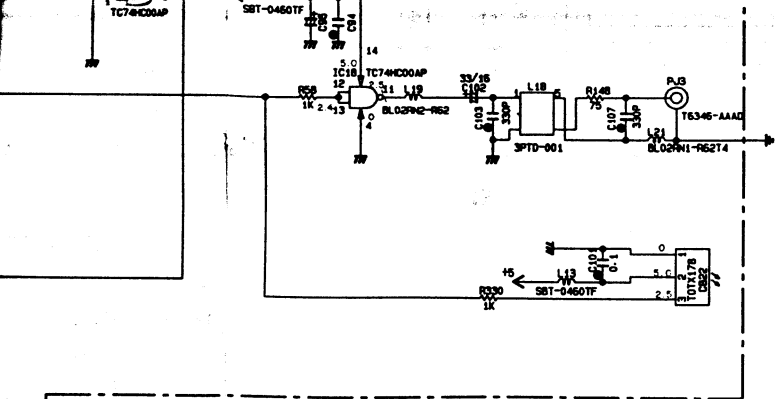
REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	ZZ
⊕	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	
●	CERAMIC TUBULAR CAPACITOR	
○	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
⊖	MICA CAPACITOR	
⊖	POLYPROPYLENE FILM CAPACITOR	
●	SEMICONDUCTIVE CERAMIC CAPACITOR	

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
■	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊗	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

MAIN (1)

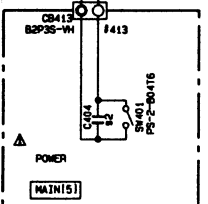


CDX-593



Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
41	07-12	2S4833S(Q,R) 2S4111S(E,F) 2S4139S(A,Q/R/S)
44	01	2SB544(E,F/G) 2SA934(P/Q/R)
45	D11-14, 15-25-34, 36-39 402-405	HSS104 1SS133 1SS176
49	IC1	AN8806SB AN8803SB
410	D1	MTZJ4-7C H2S582
411	D13	MTZJ5-1B H2S5C1
412	D18 D301	MTZJ5-6B H2S6A3
413	D17	MTZJ22A H2S203



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

Mark	Reference Parts Number	Parts Name
1	T401	X3068 XR300
2	C402-404	F132410 Y574170
3		
4		

1SS133 1T2 MTZJ4.7C MTZJ5.1B MTZJ5.6B	MTZJ5.6C MTZJ22.0A	HD74HC125P TC74HC00AP	M5290P
2SA933S(Q,R) 2SD1915F(S,T)	AN8806SB M56748FP	2SA934(P,Q,R) 2SB544(E,F,G) 2SC2878(A,B) 2SD400(E,F)	μ PD75217CW
2SB1565(E,F) 2SD2394(E,F)	BA15218 NJM2068D NJM5532D X24C00P	YAC514	MN66271RA MN662720RB
LB1641			

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PARTS LIST

ELECTRICAL PARTS

WARNING

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

Note) Those parts marked with "*" are not included in the P.C.B. assy.

CDX-493/593

CDX-493 P.C.B. MAIN

Schm Ref.	PART NO.	Description
C1	VZ576000	P.C.B. MAIN(R)
C2	VZ576100	P.C.B. MAIN(BG)
C3	VK024900	CN.RS. PIN 5P
C4	VU160200	CN.BS. PIN 16P
C5	VU004800	CN.BS. PIN 5P
C6	VU004900	CN.BS. PIN 6P
C7	VU273000	CN.BS. PIN 30P
C8	VK024700	CN.RS. PIN 3P
C9	V1707200	L.EMIT TOX178
C10	VF187800	CN.RS. PIN 5P
C11	VG879900	CN.BS. PIN 2P
C12	VU283000	CN.BS. PIN 30P
C13	V1878100	CN.BS. PIN 3P
C14	VP245600	CN 2P
C15	VK679700	C.EL 100uF 6.3V
C16	VK679700	C.EL 100uF 6.3V
C17	VH053100	C.CE. TUBLR 0.1uF 50V
C18	VJ837200	C.EL 47uF 16V
C19	VH053100	C.CE. TUBLR 0.1uF 50V
C20	VH053100	C.CE. TUBLR 0.1uF 50V
C21	UA654470	C.MTLAR 0.047uF 50V
C22	UA653470	C.MTLAR 4700pF 50V
C23	UA652100	C.MTLAR 100pF 50V
C24	UA653220	C.MTLAR 2200pF 50V
C25	UA653100	C.CE. TUBLR 0.1uF 50V
C26	VJ839100	C.EL 1uF 50V
C27	UA655100	C.MTLAR 0.1uF 50V
C28	VH053100	C.CE. TUBLR 0.1uF 50V
C29	VG278800	C.CE. TUBLR 560pF 50V
C30	VR498100	C.EL 6.8uF 6.3V
C31	VF467300	C.CE. TUBLR 0.01uF 16V
C32	UA653180	C.MTLAR 1800pF 50V
C33	UA655100	C.MTLAR 2200pF 50V
C34	UA655220	C.EL 0.22uF 50V
C35	VH053100	C.CE. TUBLR 0.1uF 50V
C36	VH053100	C.CE. TUBLR 0.02uF 50V
C37	UK665470	C.EL 0.47uF 50V
C38	VH053100	C.CE. TUBLR 0.1uF 50V
C39	VH053100	C.CE. TUBLR 0.1uF 50V
C40	VH053100	C.CE. TUBLR 0.1uF 50V
C41	VH053100	C.CE. TUBLR 0.1uF 50V
C42	VH053100	C.CE. TUBLR 0.1uF 50V
C43	VH053100	C.CE. TUBLR 0.1uF 50V
C44	VH053100	C.CE. TUBLR 0.1uF 50V
C45	VH053100	C.CE. TUBLR 0.1uF 50V
C46	VH053100	C.CE. TUBLR 0.1uF 50V
C47	VH053100	C.CE. TUBLR 0.1uF 50V
C48	VH053100	C.CE. TUBLR 0.1uF 50V
C49	VH053100	C.CE. TUBLR 0.1uF 50V
C50	VH053100	C.CE. TUBLR 0.1uF 50V

* New Parts

CDX-493 P.C.B. MAIN

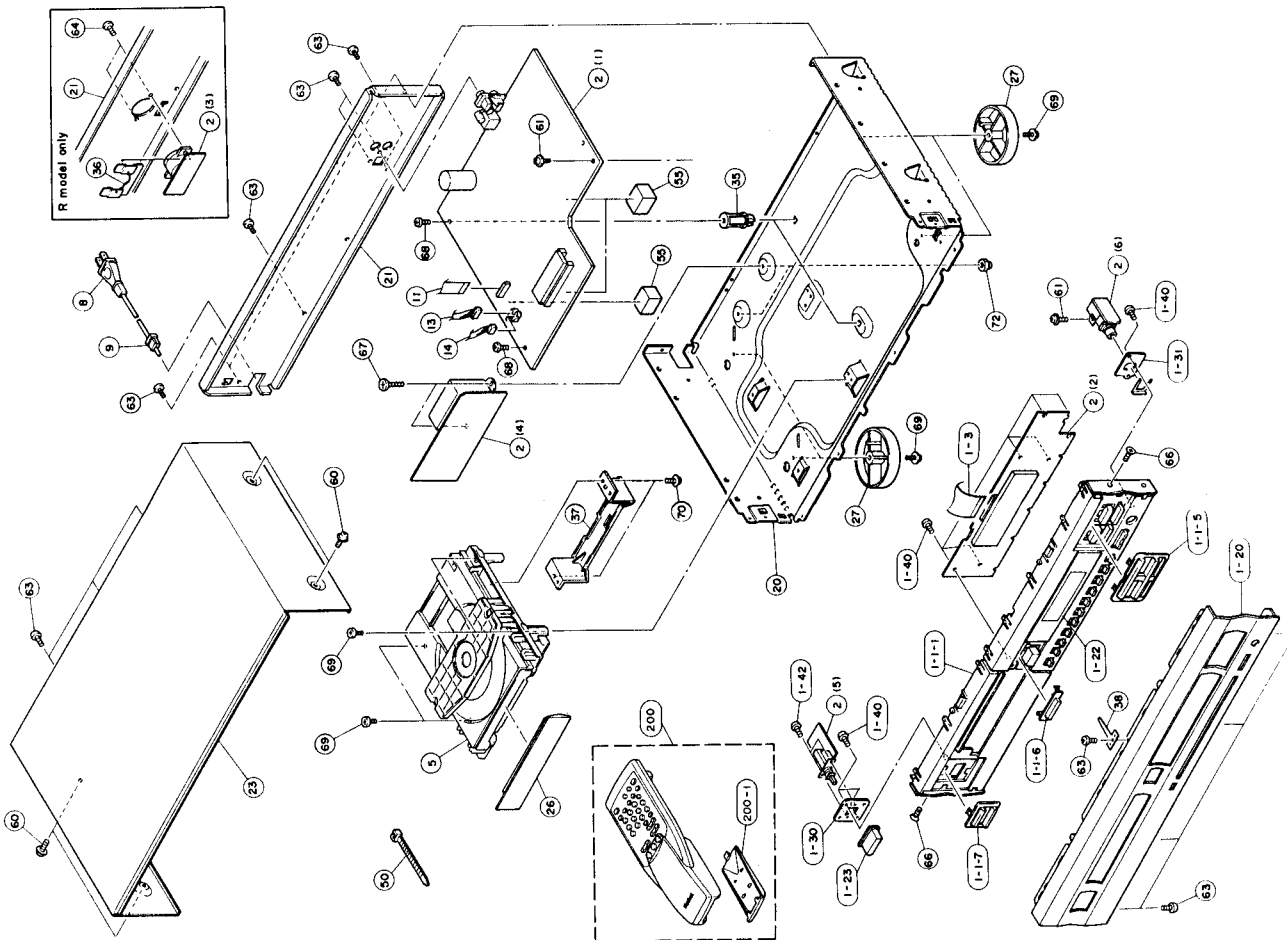
Schm Ref.	PART NO.	Description
D27	VG437800	DIODE. ZENR MTZ15.6C 5.6V
D28	VD631600	DIODE ISS133.176. HSS104
D29	VD631600	DIODE ISS133.176. HSS104
D30	VD631600	DIODE ISS133.176. HSS104
D31	VD631600	DIODE ISS133.176. HSS104
D32	VD631600	DIODE ISS133.176. HSS104
D33	VD631600	DIODE ISS133.176. HSS104
D34	VD631600	DIODE ISS133.176. HSS104
D35	VD631600	DIODE ISS133.176. HSS104
D36	VD631600	DIODE ISS133.176. HSS104
D37	VD631600	DIODE ISS133.176. HSS104
D38	VD631600	DIODE ISS133.176. HSS104
D39	VD631600	DIODE ISS133.176. HSS104
D40	VD631600	DIODE ISS133.176. HSS104
D41	VD631600	DIODE ISS133.176. HSS104
D42	VD631600	DIODE ISS133.176. HSS104
D43	VD631600	DIODE ISS133.176. HSS104
D44	VD631600	DIODE ISS133.176. HSS104
D45	VD631600	DIODE ISS133.176. HSS104
D46	VD631600	DIODE ISS133.176. HSS104
D47	VD631600	DIODE ISS133.176. HSS104
D48	VD631600	DIODE ISS133.176. HSS104
D49	VD631600	DIODE ISS133.176. HSS104
D50	VD631600	DIODE ISS133.176. HSS104
D51	VD631600	DIODE ISS133.176. HSS104
D52	VD631600	DIODE ISS133.176. HSS104
D53	VD631600	DIODE ISS133.176. HSS104
D54	VD631600	DIODE ISS133.176. HSS104
D55	VD631600	DIODE ISS133.176. HSS104
D56	VD631600	DIODE ISS133.176. HSS104

* New Parts

Schm Ref.	PART NO.	Description
SW418	VC92900	SW. TACT SKHVA
SW420	VC92900	SW. TACT SKHVA
SW422	VC92900	SW. TACT SKHVA
SW423	VC92900	SW. TACT SKHVA
SW426	V1908000	VOLT. SELECT ESF-370 (R)
SW427	VC92900	SW. TACT SKHVA
SW428	VC92900	SW. TACT SKHVA
SW430	VC92900	SW. TACT SKHVA
T401	XN393A00	TRANS. PWR (BG)
T401	XN394A00	TRANS. PWR (R)
U401	V1848700	L. DTCT SBX1976-52
U401	V1848700	L. DTCT 9-MI-1336K
XL1	V1677200	FL. DSPLY 4.19MHz
XL3	V1719800	RSMR. CE 16.934MHz
VS257700	VS257700	PLATE
VQ948800	VQ948800	SHEET FL
V1835500	V1835500	HEAT. SINK PH-0124S-B
V119100	V119100	HEAT. SINK
VZ156000	VZ156000	SPACER/FL t4x5x23

* New Parts

CDX-493 EXPLODED VIEW



MECHANICAL PARTS

Ref. No.	PART NO.	Description	Remarks	Markets
* 1-1-1	VZ154100	SUB PANEL	BL	
* 1-1-1	VZ154200	SUB PANEL	TI	
* 1-1-5	VZ154500	ESCUTCHEON, PLAY	BL	
* 1-1-5	VZ154600	ESCUTCHEON, PLAY	TI	
* 1-1-6	VZ154700	ESCUTCHEON, OP	BL	
* 1-1-6	VZ154800	ESCUTCHEON, OP	TI	
* 1-1-7	VZ154900	ESCUTCHEON, PW	BL	
* 1-1-7	VZ155000	ESCUTCHEON, PW	TI	
* 1-3	MF130100	FLEXIBLE FLAT CABLE, 30P 100mm	BL	
* 1-20	VZ152100	FRONT PANEL	TI	
* 1-20	VZ152200	FRONT PANEL, LID	BL	
* 1-22	VZ155700	WINDOW PANEL, LID	TI	
* 1-23	VU875100	BUTTON	BL	
* 1-23	VU875200	BUTTON	TI	
* 1-30	VZ152500	SUPPORT, SWITCH		
* 1-31	VU876800	SUPPORT, HP		
1-40	EP630220	BIND HEAD P-TITE SCREW	ZMC2-BL	(R)
1-42	EI330066	BIND HEAD B-TITE SCREW	FCRM3-BL	(BG)
* 2	VZ576000	P.C.B. ASS'Y		
* 2	VZ576100	P.C.B. ASS'Y		
* 5	VZ573200	CD MECHANISM UNIT		
8	VL238100	POWER CORD ASS'Y		(R)
8	VN363700	POWER CORD ASS'Y		(G)
8	W437300	POWER CORD ASS'Y		(B)
9	VN158600	CORD STOPPER		
11	VN201700	CONNECTOR, FLAT CABLE		
13	MF706100	CONNECTOR ASS'Y		
14	MF705100	CONNECTOR ASS'Y		
20	VZ151800	CHASSIS, MAIN		(R)
21	VZ153300	REAR PANEL		(BG)
21	VZ153500	REAR PANEL		
23	VZ151900	TOP COVER		
23	VZ152000	TOP COVER		
26	VZ154300	LID		
26	VZ154400	LID		
27	VQ780300	LEG		
35	VU981200	SUPPORT, P.C.B.		(R)
36	VS257300	PLATE, R		
37	VZ262200	SUPPORT		
38	VQ775900	GROUND PLATE		
50	VU590000	BINDING TIE		
55	VZ113100	SPACER		
60	EK365090	PW HEAD S-TITE SCREW	FCRM3-BL	(R)
60	EX601150	BW HEAD S-TITE SCREW	FNM3-BL	
61	EK930010	PW HEAD B-TITE SCREW	FCRM3-BL	
63	VN413300	BIND HEAD BONDING B-T. SCREW	MFZ2-BL	
64	EP600140	BIND HEAD B-TITE SCREW	MFZ2-BL	
66	E0030066	FLAT HEAD SCREW	ZMC2-Y	
67	EK396010	BIND HEAD S-TITE SCREW	FCRM3-BL	
68	EP630640	BIND HEAD P-TITE SCREW	FCRM3-BL	
69	EI330086	BIND HEAD B-TITE SCREW	FCRM3-BL	
70	VZ128100	PW HEAD S-TITE SCREW	MFZ2-Y	
72	EX604260	HEXAGONAL CAP NUT	MFN133	

* New Parts

CDX-493

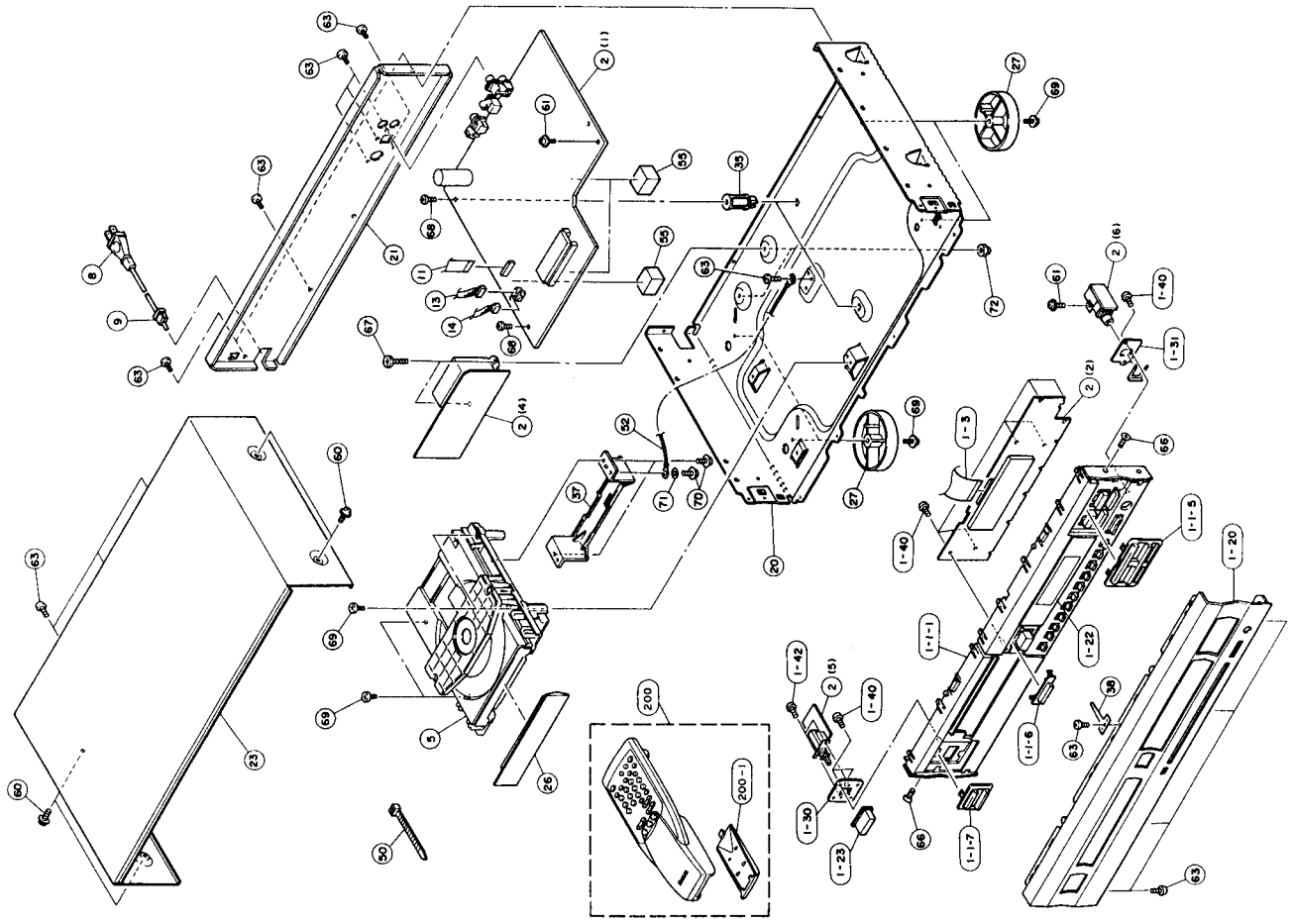
Ref. No.	PART NO.	Description	Remarks	Markets
200	VT989900	ACCESSORIES		
200-1	CX679050	REMOTE CONTROL TRANSMITTER		
	WY952200	LID	74x3.4BLALPS	
		PIN-PLUG CORD	2P 1.0m	
		BATTERY, MANGANESE	SUM-3, AA, R06	

*

* New Parts

CDX-593

CDX-593 EXPLODED VIEW



MECHANICAL PARTS

Ref. No.	PART NO.	Description	Remarks	Markets
* 1-1	VZ154100	SUB PANEL	BL	
* 1-1	VZ154200	SUB PANEL	TI	
* 1-1	VZ154500	ESCUTCHEON, PLAY	BL	
* 1-1	VZ154600	ESCUTCHEON, PLAY	TI	
* 1-1	VZ154700	ESCUTCHEON, OP	BL	
* 1-1	VZ154800	ESCUTCHEON, OP	TI	
* 1-1	VZ154900	ESCUTCHEON, PW	BL	
* 1-1	VZ155000	ESCUTCHEON, PW	TI	
* 1-3	MF131100	FLEXIBLE FLAT CABLE	BL	
* 1-20	VZ152300	FRONT PANEL	TI	
* 1-20	VZ152400	FRONT PANEL	BL	
* 1-22	VZ155800	WINDOW PANEL, LID	BL	
* 1-23	VU875100	WINDOW PANEL, LID	TI	
* 1-23	VU875200	WINDOW PANEL, LID	BL	
* 1-30	VZ152500	SUPPORT, SWITCH	BL	
* 1-31	VU876800	SUPPORT, HP	TI	
* 1-40	EP630220	BIND HEAD P-TITE SCREW	3x8	ZMC2-BL
* 1-42	EI330066	BIND HEAD B-TITE SCREW	3x6	FCRM3-BL
* 2	VZ578900	P.C.B. ASS'Y	MAIN	
* 5	VZ573200	CD MECHANISM UNIT	KSL-2130COM	
* 8	VN363700	POWER CORD ASS'Y		(G)
* 8	VW437300	POWER CORD ASS'Y		(B)
* 9	VN158600	CORD STOPPER		
* 11	VZ017700	CONNECTOR, FLAT CABLE	No. 2104	
* 13	MF706100	CONNECTOR ASS'Y	16P 280mm	
* 14	MF705100	CONNECTOR ASS'Y	6P 100mm	
* 20	VZ151800	CHASSIS, MAIN	5P 100mm	
* 21	VZ153700	REAR PANEL	ALL	
* 23	VZ151900	TOP COVER		BL
* 23	VZ152000	TOP COVER		TI
* 26	VZ154300	LID		BL
* 26	VZ154400	LID		TI
* 27	VQ780300	LEG	D60xH16	
* 35	VU981200	SUPPORT, P.C.B.	No. 3596	
* 37	VZ262200	SUPPORT	PU	
* 38	VQ775900	GROUND PLATE		
* 50	VU015400	BINDING TIE	CBTD001B	
* 52	VW015400	CONNECTOR ASS'Y	IP 110mm	
* 55	VZ113100	SPACER		
* 60	EK365090	PW HEAD S-TITE SCREW	4x8-10	FCRM3-BL
* 60	EK365150	PW HEAD S-TITE SCREW	4x8-10	FNM3-BL
* 61	EK390010	PW HEAD B-TITE SCREW	3x8-8	FCRM3-BL
* 63	EO030066	BIND HEAD BONDING B-T. SCREW	3x8	MEZNY-BL
* 66	EK396010	BIND HEAD S-TITE SCREW	3x6	ZMC2-Y
* 67	EP630640	BIND HEAD P-TITE SCREW	4x8	FCRM3-BL
* 68	EI330086	BIND HEAD B-TITE SCREW	3x20	FCRM3-BL
* 69	VZ128100	PW HEAD S-TITE SCREW	3x8	FCRM3-BL
* 70	EY410036	TOOTH LOCKED WASHER	3x12-8	MEZNY-Y
* 71	EY410036	TOOTH LOCKED WASHER	3	MEZNY
* 72	EY604260	HEXAGONAL CAP NUT	4.0	MFN133
200	VU989900	ACCESSORIES		
200-1	C679050	REMOTE CONTROL TRANSMITTER		
	VU952200	LID	2P 1.0m	
		PIN-PLUG CORD	SUM-3, AA, R06	
		BATTERY, MANGANESE		

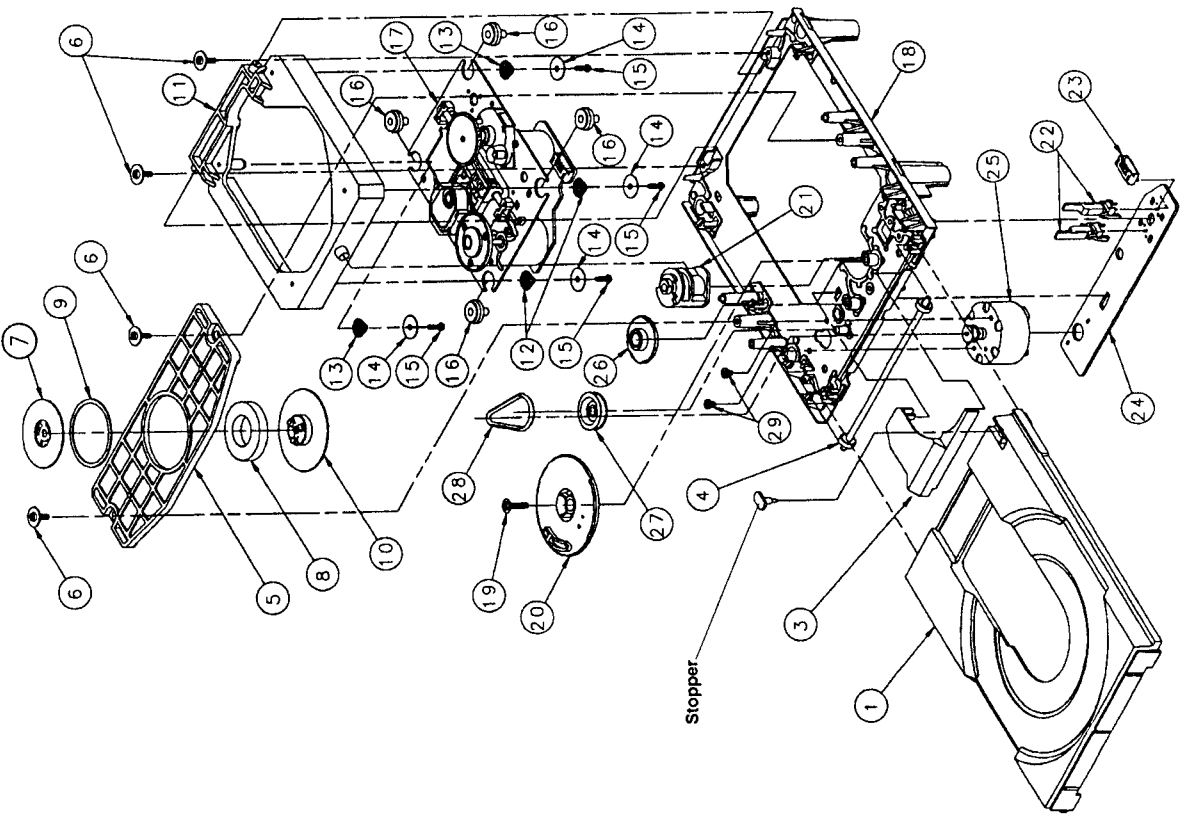
* New Parts

COMMON

MECHANICAL PARTS (CD Mechanism Unit)

Ref. No.	PART NO.	Description	Remarks	Markets
*	VZ573200	CD MECHANISM UNIT		
*	CA680620	TRAY (C)	KSL-2130CCM	
*	CA675250	GEAR COVER (S)	2130	
*	CA675210	TRAY GEAR (S)		
*	AX619150	CHUCKING PLATE (S)		
*	EX602890	BF HEAD P-TITE SCREW	2.6x7	
*	BA602660	CHUCKING YOKE (S)		
*	NA610570	MAGNET ASS'Y		
*	CA675240	DAMPER (S)		
*	NA636010	CHUCKING PULLEY		
*	AX624650	SUB CHASSIS ASS'Y (S)		
*	AX624640	COIL, SPRING (F)		
*	AX624630	COIL, SPRING (R)		
*	AX624660	WASHER	2130	
*	EX604270	P-TITE SCREW	2.6x10	
*	AX624620	INSULATOR		
*	AX619160	MAIN CHASSIS (S), OUTSERT		
*	VH554700	BF HEAD P-TITE SCREW	2.6x16	
*	CA675270	DRIVE GEAR (S)		
*	CA675260	CONTROL CAM (S)		
*	XX604780	LEAF SWITCH		
*	LY608390	CONNECTOR PIN	5P	
*	NA613050	PMB, LOADING (S)		
*	IX601470	LOADING MOTOR ASS'Y		
*	CA675200	CENTER GEAR (S)		
*	CA675220	LOADING PULLEY (S)		
*	CA610840	BELT, LOADING MOTOR		
*	EX602880	SCREW	2.6x2.5	

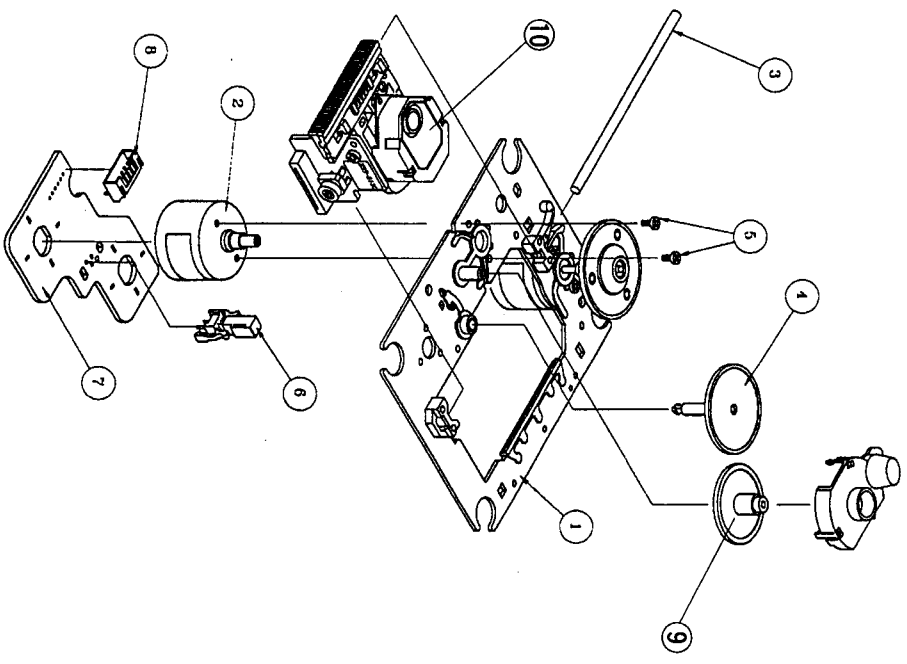
* New Parts



* The stopper is not supplied with the tray as a spare part.
 When replacing the tray, keep the removed stopper and reuse it.
 Should it be lost and a new one be necessary, order service part 18 Main Chassis (S) and remove the stopper only from it and use it as a spare part.

EXPLODED VIEW (CD Mechanism Unit)

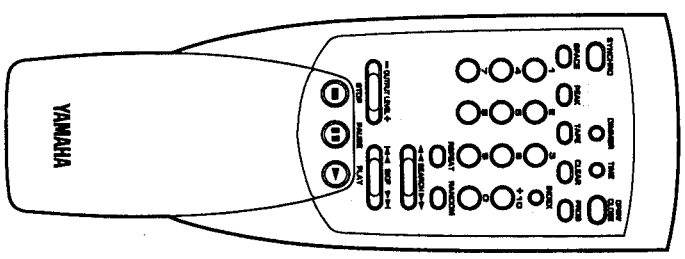
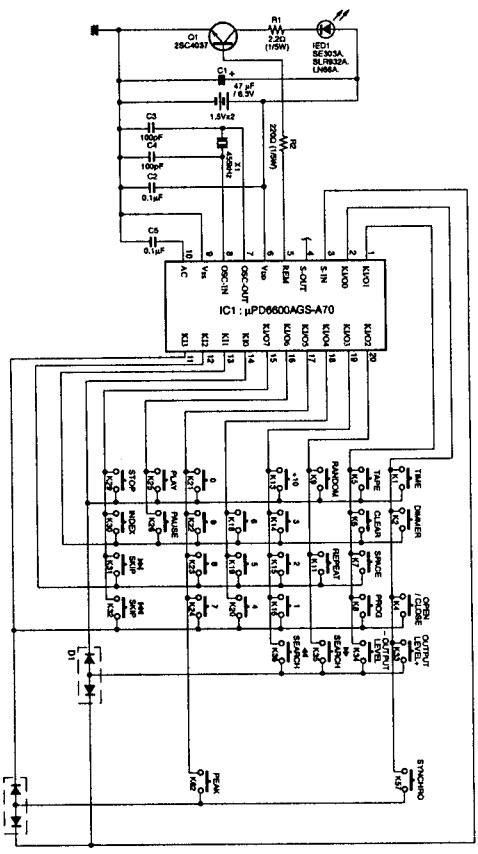
EXPLODED VIEW (Drive Unit)



Ref. No.	PART NO.	Description	(MB)	Remarks	Markets
1	NK635420	MOTOR CHASSIS ASS'Y	(MB)	X26258771	
2	CX679710	MOTOR GEAR ASS'Y		X26257691	
3	AX623980	SLID SHAFT		262690801	
4	CX679720	GEAR, A	(S)	262690701	
5	EA020036	PAN HEAD SCREW	2x3	762125515	ZMK2-Y
6	KX604660	LEAF SWITCH		157208511	
7	NK613040	PMR, MOTOR		163967812	MOTOR 6P
8	LY610120	CONNECTOR PIN	6P	156472211	
9	CX689030	GEAR		262700301	
10	NK636020	OPTICAL HEAD		KSM213C	

*New Parts

REMOTE CONTROL TRANSMITTER SCHEMATIC DIAGRAM



KEY No.	FUNCTION	CUSTOM CODE (HEN)	REVERSE CUSTOM CODE (HEN)	DATA CODE (HEN)	REMARKS
K1	TIME	79	86	DA	01010000
K2	DIMMER	79	86	1E	01111000
K4	OPEN/CLOSE	79	86	01	10000000
K5	TAPE	79	86	57	11010100
K6	CLEAN	79	86	0D	10100000
K7	SHOCK	79	86	0E	11100000
K8	PROG	79	86	0C	00100000
K9	RANDOM	79	86	1B	11010000
K11	REPEAT	79	86	08	00010000
K13	*10	79	86	1A	01010000
K14	3	79	86	13	11001000
K15	2	79	86	12	01001000
K16	1	79	86	11	10001000
K18	6	79	86	16	01010000
K19	5	79	86	15	10101000
K20	4	79	86	14	00001000
K21	0	79	86	10	00001000
K22	9	79	86	19	10011000
K23	8	79	86	18	00011000
K24	7	79	86	17	11010000
K25	PLAY	79	86	12	01000000
K26	PAUSE	79	86	55	10101010
K29	STOP	79	86	09	01010100
K30	INDEX	79	86	08	11010000
K31	SKIP	79	86	07	11000000
K32	***SKIP	79	86	04	00100000
K33	OUTPUT LEVEL, *	79	86	10	00111000
K34	OUTPUT LEVEL, *	79	86	1C	00110000
K35	SEARCH	79	86	06	01000000
K36	SEARCH	79	86	05	10100000
K37	SYNCHRO	79	86	58	00010100
K38	PEAK	79	86	50	10110100

Parts List for Carbon Resistors

CDX-493/593

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			

