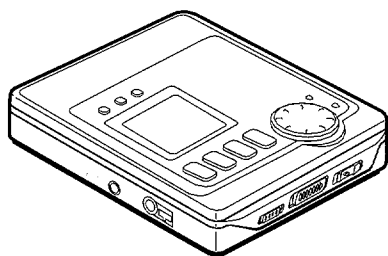


aiwa



AM-C80 AM-F80



MINIDISC RECORDER

- BASIC MD MECHANISM: ZZG-A R1

- TYPE: C80 (AU), F80 (AHC, AHK, AHR, AK, AEZ)

REVISION PUBLISHING

- This Service Manual is the "Revision Publishing" and replaces "Simple Manual" of AM-F80 <AHC, AHK, AHR, AK, AEZ>, (S/M Code No. 09-99A-419-2T2).

S/M Code No. 09-99B-419-2R2

MANUAL
SERVICE

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SPECIFICATIONS

Main unit

Playback system	MiniDisc digital audio system
Laser pickup	Semiconductor laser
Recording system	Magnetic polarity modulation overwrite system
Revolutions	Approx. 400 to 900 rpm (CLV)
Sampling Frequency	44.1 kHz, with built-in sampling frequency rate converter
Number of channels	Stereo: 2 channels Monaural: 1 channel
Modulation system	Eight to Fourteen Modulation (EFM)
A/D, D/A converter	1-bit
Frequency response	20 to 20,000 Hz \pm 1 dB
Wow and Flutter	Below measurable limit (\pm 0.00 1% W.PEAK)

Input

	MIC	LINE	OPT (digital)
Jack type	Stereo mini-jack	Stereo mini-jack	OPTICAL mini-jack
Rated input level	1.1 mV	280 mV	–
Minimum input level	0.4 mV	100 mV	–

Output

	OUTPUT / PHONES
Jack type	Stereo mini-jack
Maximum output level	10 mW + 10 mW
Load impedance	16 ohms

Power requirements	DC 3.6 V using the supplied lithium-ion rechargeable battery LIB-902 DC 1.5 V using one LR6 (size AA) dry cell batteries (used together with rechargeable battery) AC house current using the supplied AC adaptor AC-D401.
---------------------------	---

Battery life	Using the supplied rechargeable battery Approx. 11.5 hours for playback Approx. 5 hours for recording Using the supplied rechargeable battery and one LR6 (size AA) dry cell batteries Approx. 20 hours for playback Approx. 7.5 hours for recording
---------------------	--

Dimensions	Approx. 78.8 (W) X 18.8 (H) X 86.8 (D) mm (3 ¹ / ₈ X 3 ³ / ₄ X 3 ¹ / ₂ inches)
-------------------	---

Weight	Approx. 163 g (6 oz) including the rechargeable battery.
---------------	---

AC adaptor (AC-D401)<AHC, AHR>

Output	DC 4.5 V
Rated voltage	AC 110 – 120 V/220 – 240 V, switchable, 50/60 Hz

AC adaptor (AC-D401)<AHK, AK, AEZ>

Output	DC 4.5 V
Rated voltage	AC 230 V, 50 Hz

AC adaptor (AC-D401)<AU>

Output	DC 4.5 V
Rated voltage	AC 120 V, 60 Hz

Supplied headphones HP-M031 H<AK, AEZ>

Type	In-ear type
Impedance	16 ohms
Sensitivity	94 dB/mW

Recommended commercially available headphones<AK, AEZ>

Type	In-ear type / Vertical type / Headband type
Impedance	16 ohms
Sensitivity	91 – 99 dB/mW

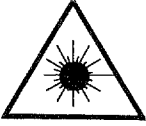
- Design and specifications are subject to change without notice.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

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

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION. BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

VAROITUS!

Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyt-täjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

WARNING!

Om apparaten används på annat sätt än vad som specificeras i denna bruksanvising, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

ATTENTION

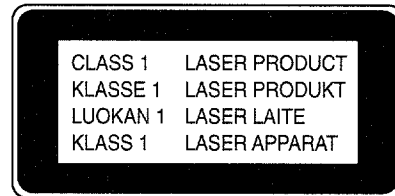
L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

ADVARSEL!

Usynlig laserstråling ved åbning, når sikkerhedsafbrydereer ude af funktion. Undgå udsættelse for stråling.

This Compact Disc player is classified as a CLASS 1 LASER product.

The CLASS 1 LASER PRODUCT label is located on the rear exterior.

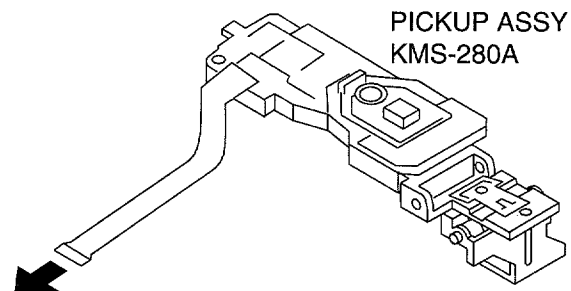
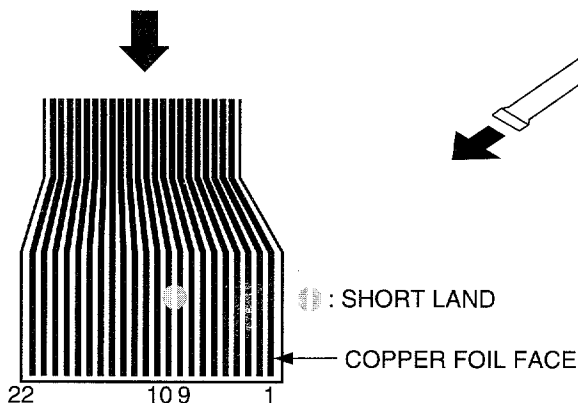


Precaution to replace Optical block

(KMS – 280A)

Body or clothes electrostatic potential could ruin laser diode in the optical block. Be sure ground body and workbench, and use care the clothes do not touch the diode.

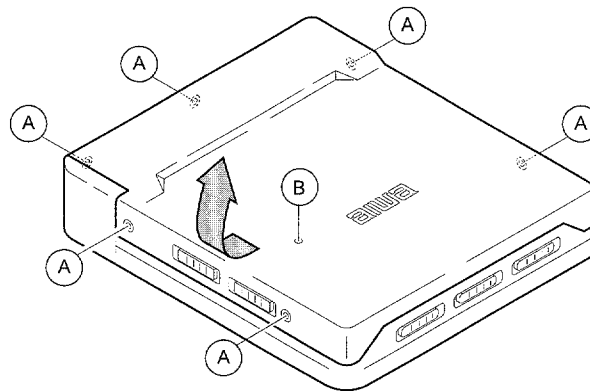
1) After the connection, remove solder shown in right figure.



DISASSEMBLY INSTRUCTION

1. Bottom Panel Removal

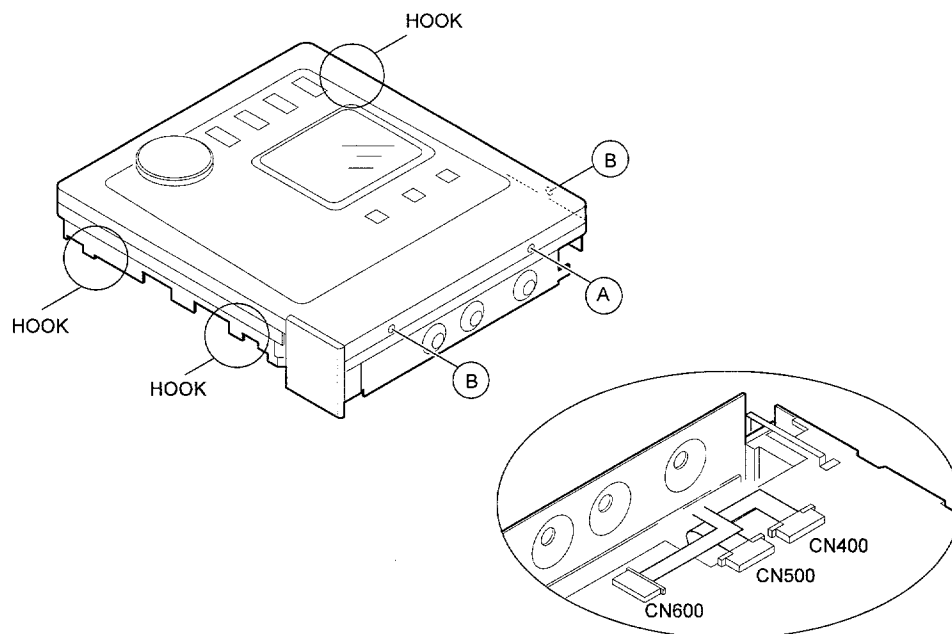
- a) Remove 6 screws **(A)** and 1 screw **(B)**.
- b) Remove the bottom panel in the direction of the arrow.



※ When fit it up together, make sure to align SYNC SW and INPUT SELECT SW.

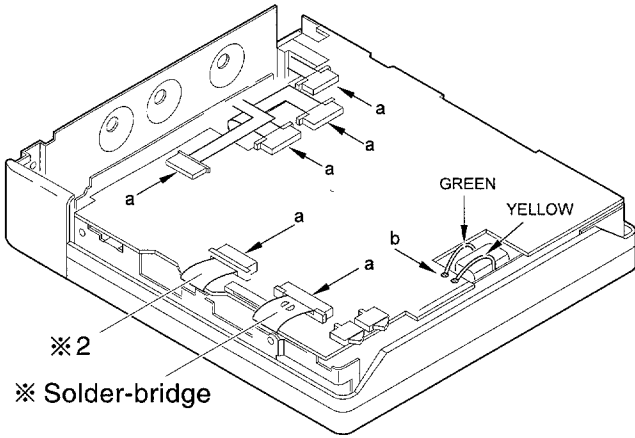
2. Top Panel Removal

- a) Disconnect 3 FFC connectors (CN400, CN500 and CN600).
- b) Remove 1 screw **(A)** and 2 screws **(B)**.
- c) Remove 3 HOOKs.
- d) Remove the top panel carefully so as not to cut FFC of LCD.

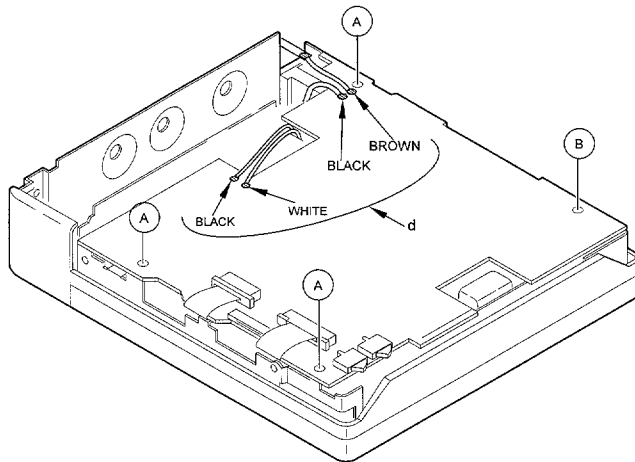


3. Main C.B Removal

- a) Disconnect 6 FFC connectors.
 - ※ Solder-bridge the shortland of LD before removing FFC of Pick-Up.
- b) Remove 2 wires of OWH motor.
 - ※ 2. Use double-coated tapes to fixate FFC (that is between the main circuit board and the mechanism circuit board) to the main circuit board.

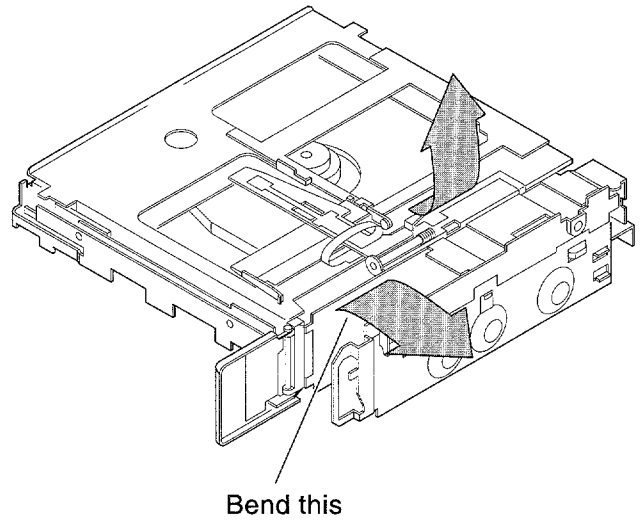
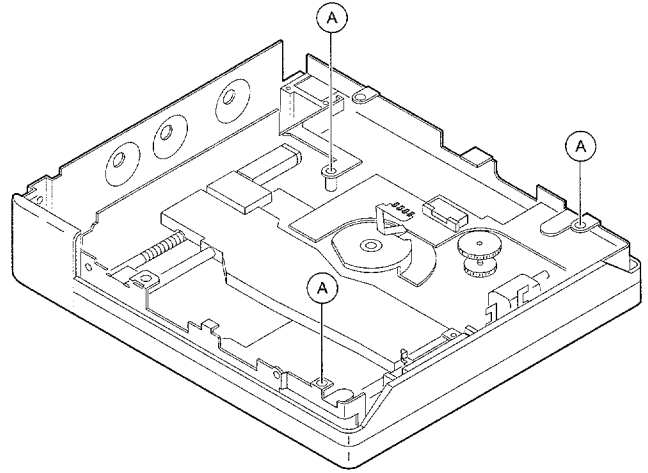


- d) Remove 2 wires from Spindle motor and another 2 wires from the external power supply.
- e) Remove 3 screws (A) and 1 screw (B), then remove the main circuit board.

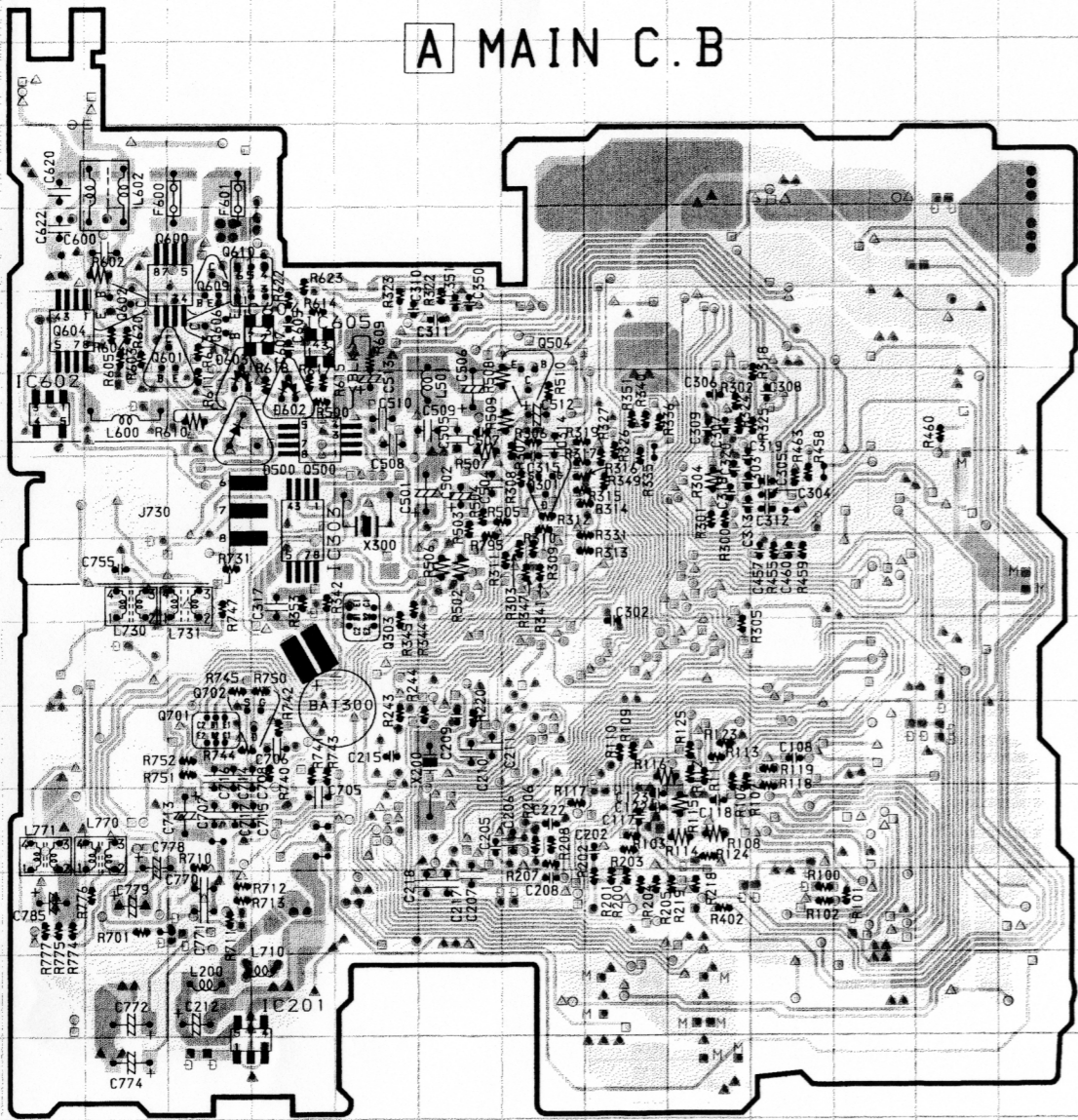


4. Mechanism Assembly Removal

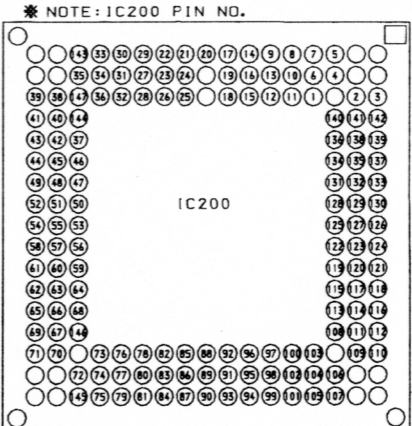
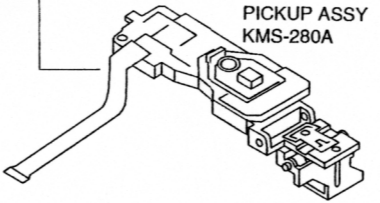
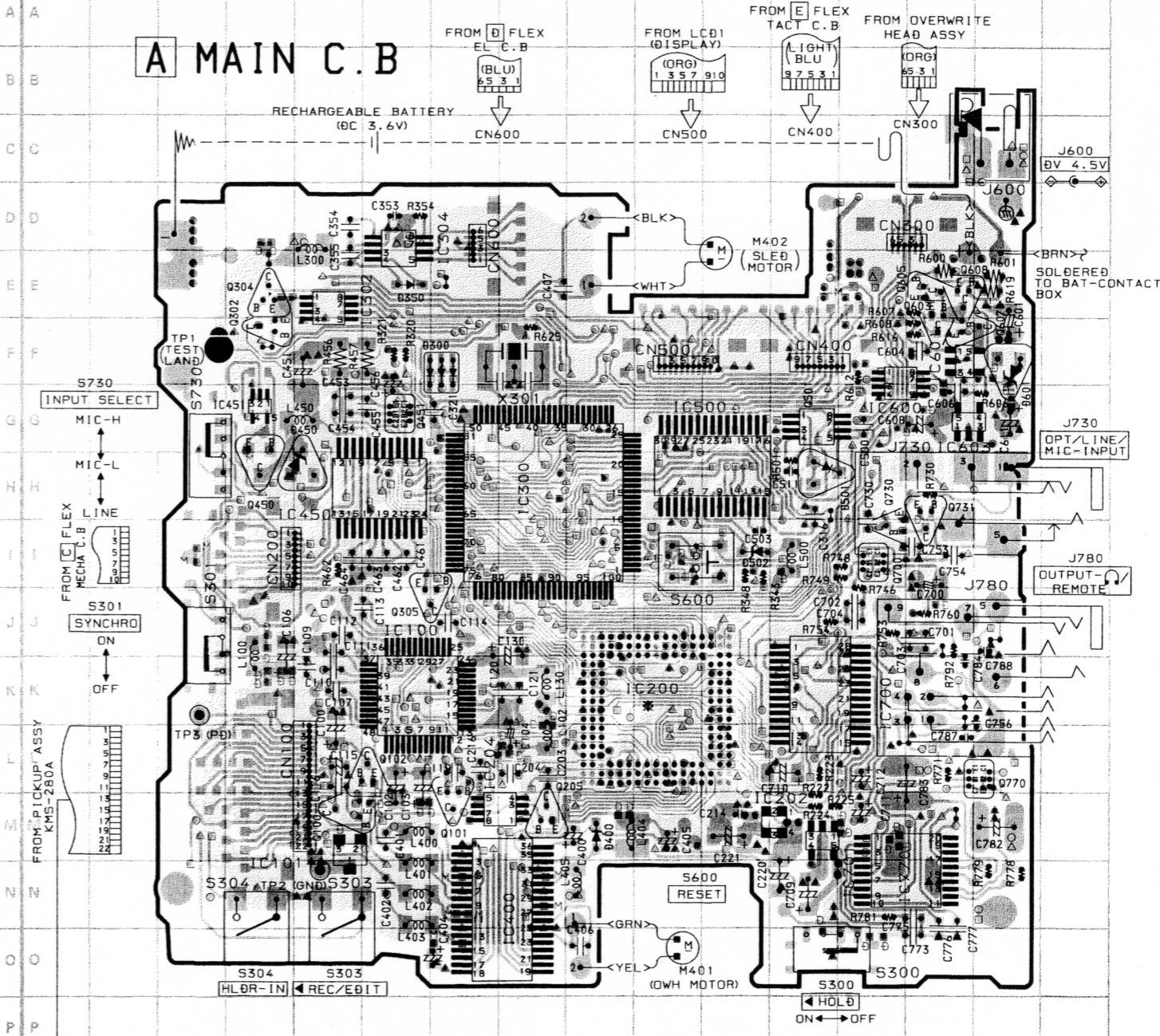
- a) Remove rear panel, top panel and the main circuit board.
- b) Remove 3 screws (A).
- c) Bend the battery cover and remove the machine in the direction of the arrow.
Do not bend the main frame.

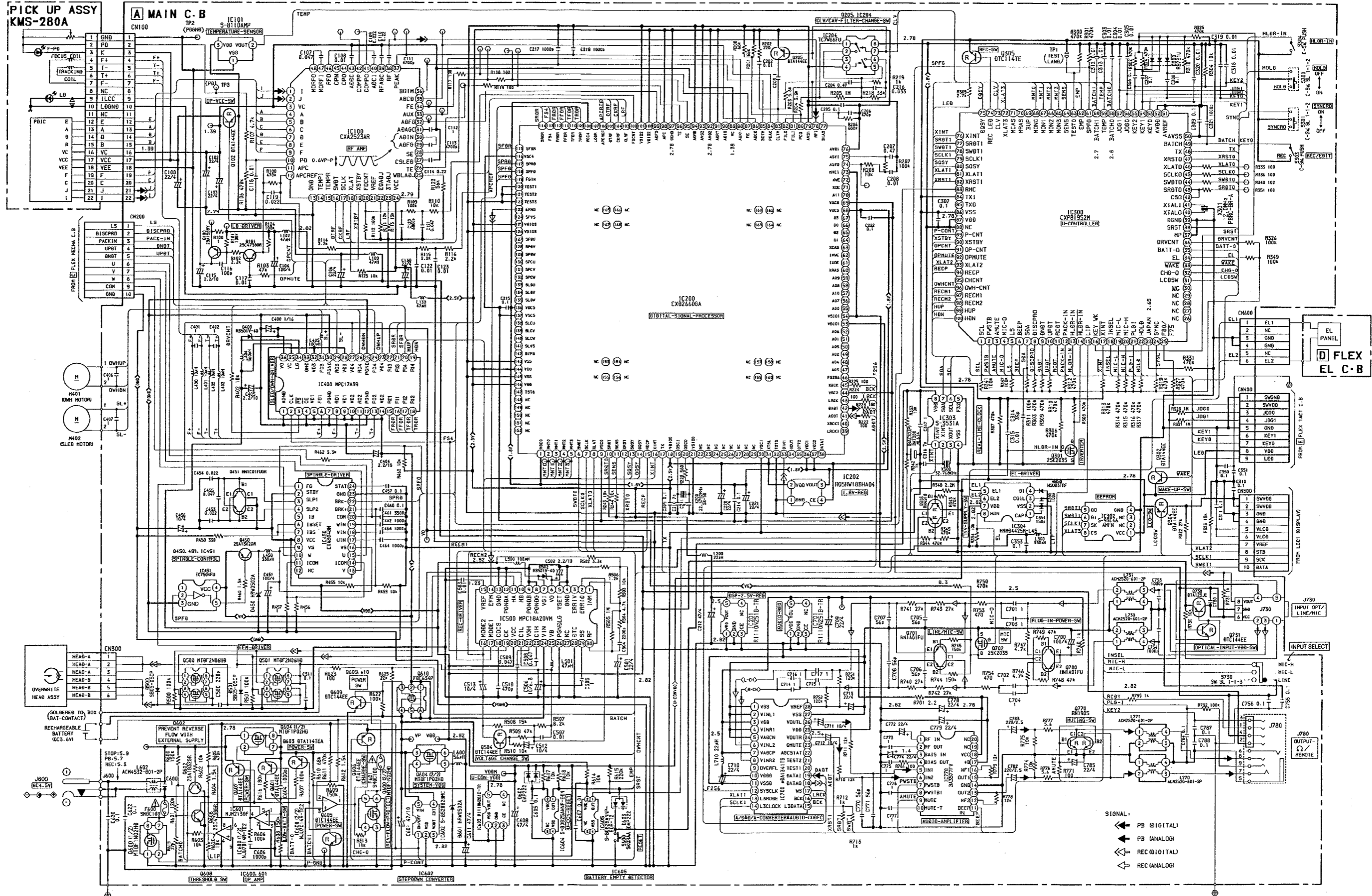


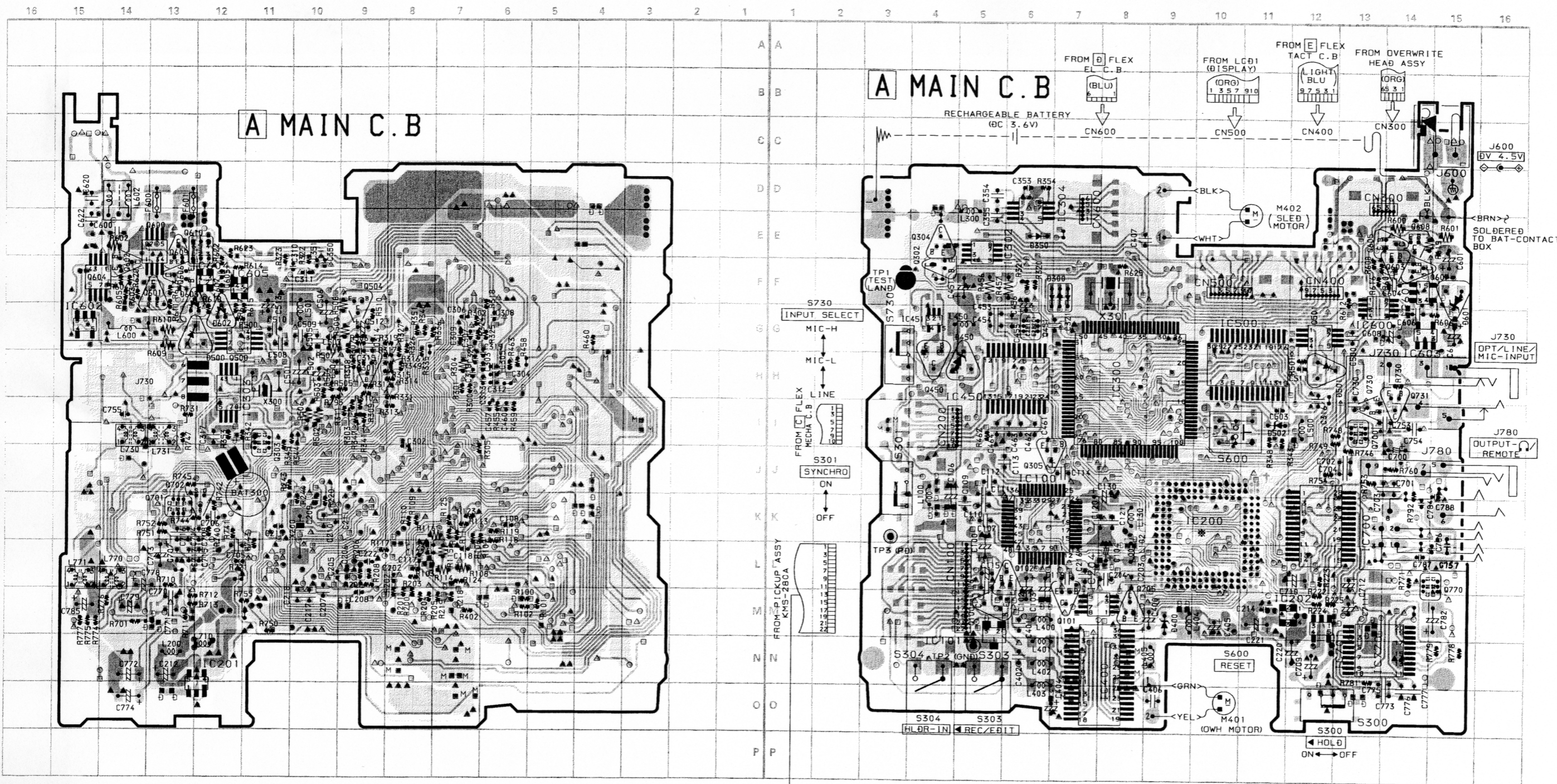
16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16



THIS WIRING SHOWS A 4-LAYER BOARD. THE ▲, ●, ■, □, ◻ MARKS SHOW THE CONNECTIONS BETWEEN THE USUAL DOUBLE-FACE PATTERNS AND THE PATTERNS ON THE INTERNAL LAYERS THAT CANNOT BE SEEN. THE PATTERNS WITH ▲ MARKS ARE CONNECTED TO GND PATTERNS. THE PATTERNS WITH ● MARKS ARE CONNECTED TO JUMPER PATTERNS. THE PATTERNS WITH ■ MARKS ARE CONNECTED TO U-CON VDD PATTERNS. THE PATTERNS WITH □ MARKS ARE CONNECTED TO VDD PATTERNS. THE PATTERNS WITH ◻ MARKS ARE CONNECTED TO VM PATTERNS.







THIS WIRING SHOWS A 4-LAYER BOARD. THE ▲, ●, ■, □, ○ MARKS SHOW THE CONNECTIONS BETWEEN THE USUAL DOUBLE-FACE PATTERNS AND THE PATTERNS ON THE INTERNAL LAYERS THAT CANNOT BE SEEN.

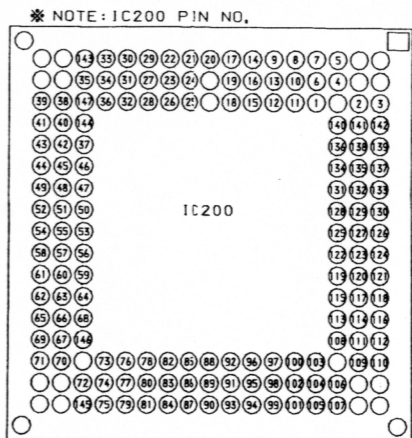
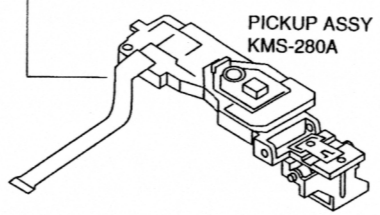
THE PATTERNS WITH ▲ MARKS ARE CONNECTED TO GND PATTERNS.

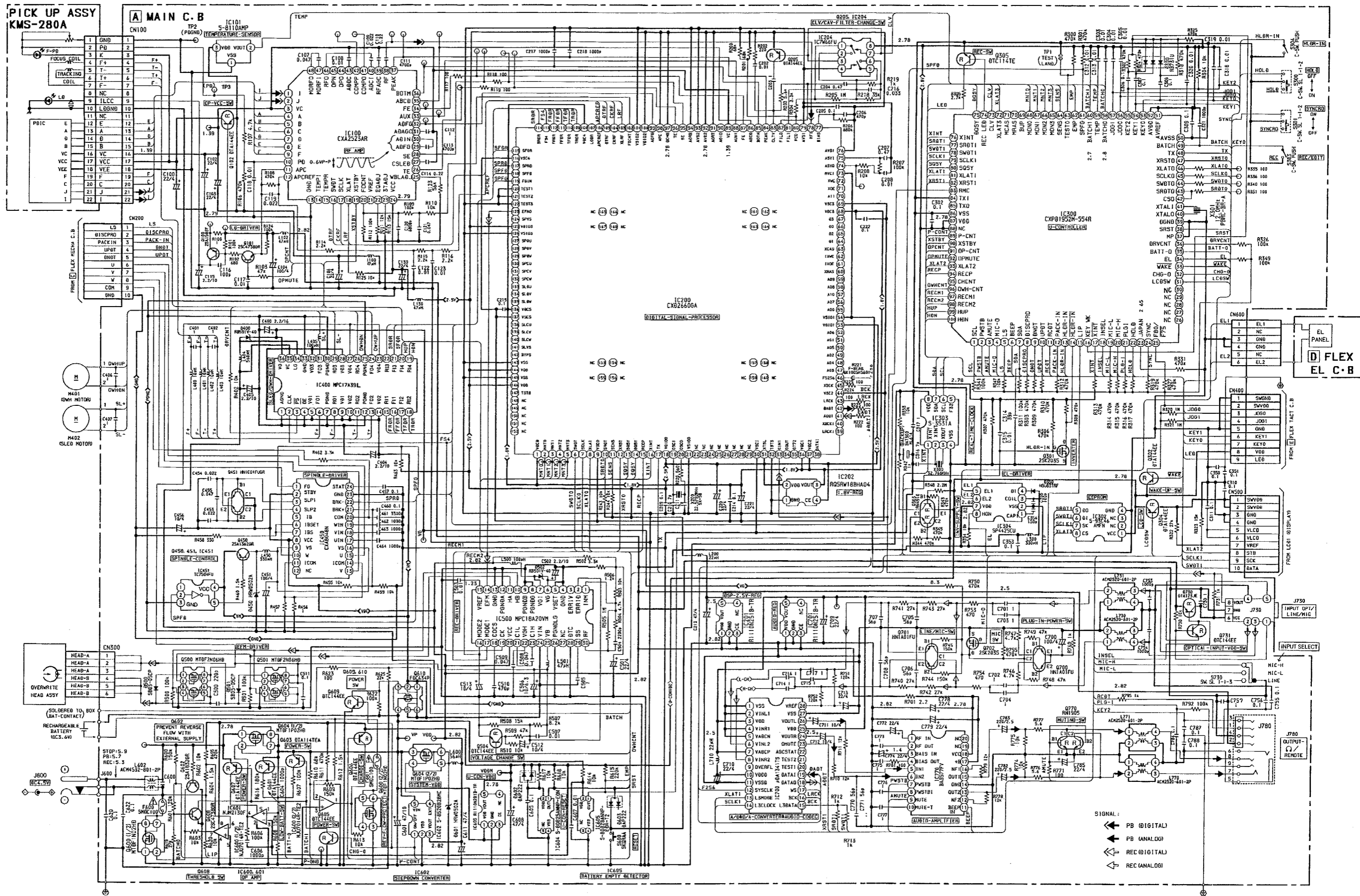
THE PATTERNS WITH ● MARKS ARE CONNECTED TO JUMPER PATTERNS.

THE PATTERNS WITH ■ MARKS ARE CONNECTED TO U-CON VDD PATTERNS.

THE PATTERNS WITH □ MARKS ARE CONNECTED TO VDD PATTERNS.

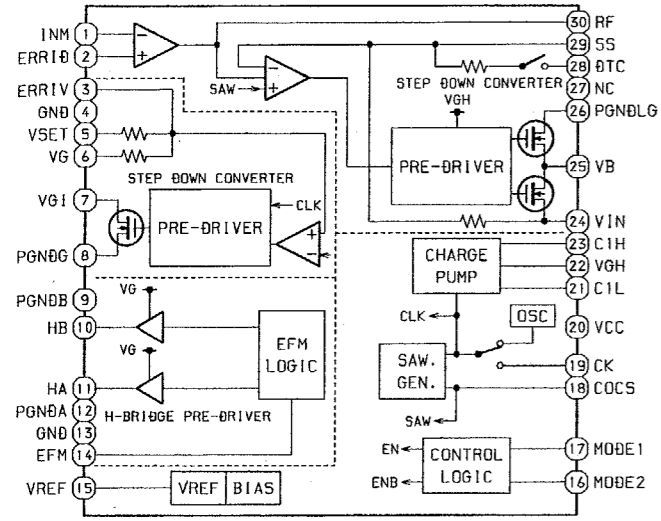
THE PATTERNS WITH ○ MARKS ARE CONNECTED TO VM PATTERNS.



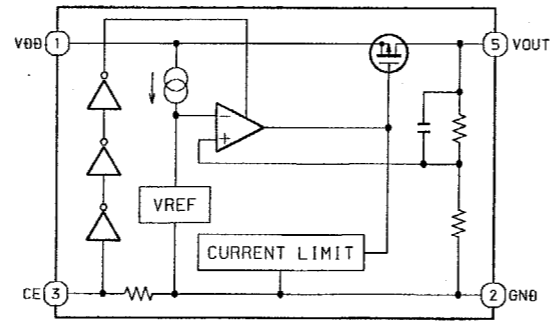


IC BLOCK DIAGRAM - 1

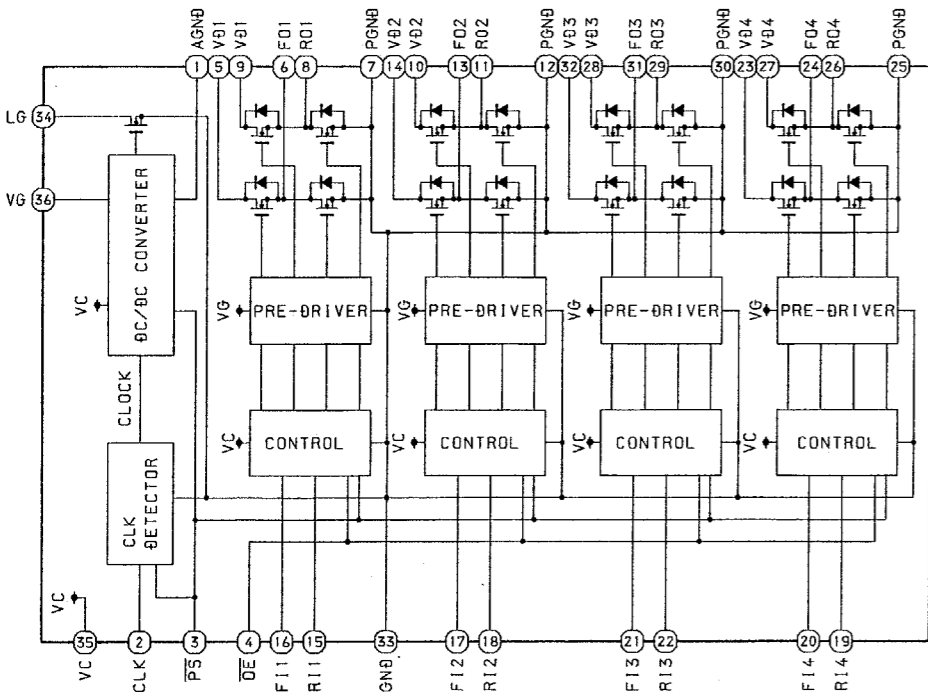
IC, MPC18A20VM



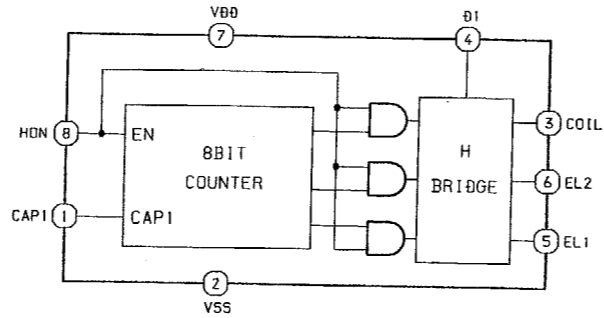
IC, R1110N251B-TR
IC, R1110N281B-TR



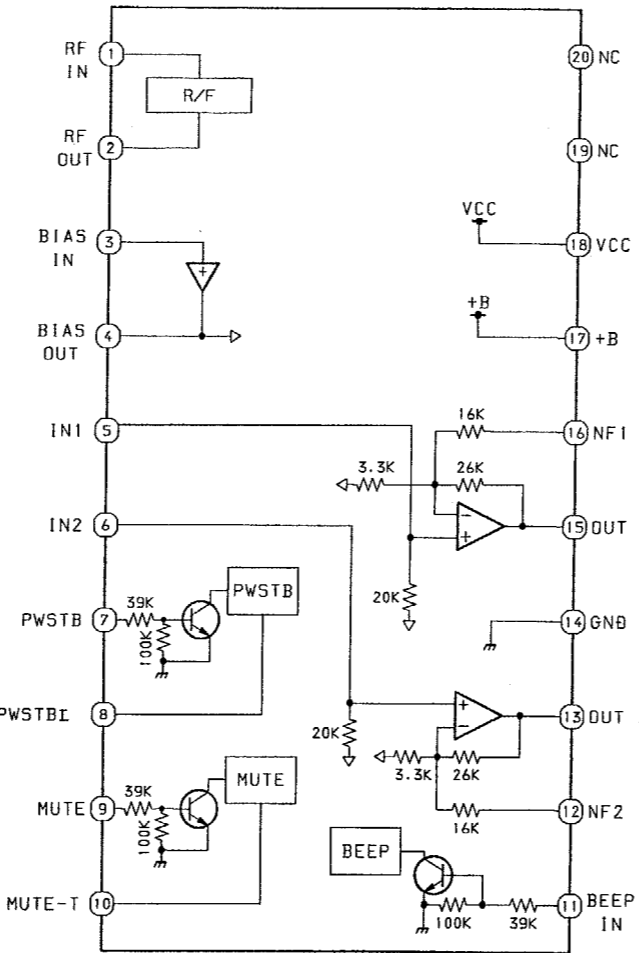
IC, MPC17A39
IC, MPC17A39L



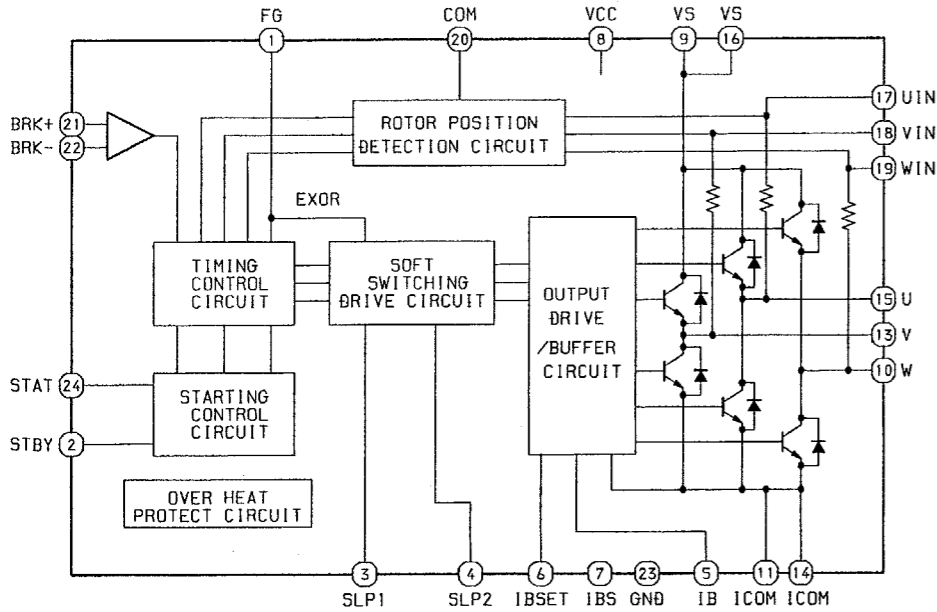
IC, HMMD4425M-L4S
IC, SP4425CU



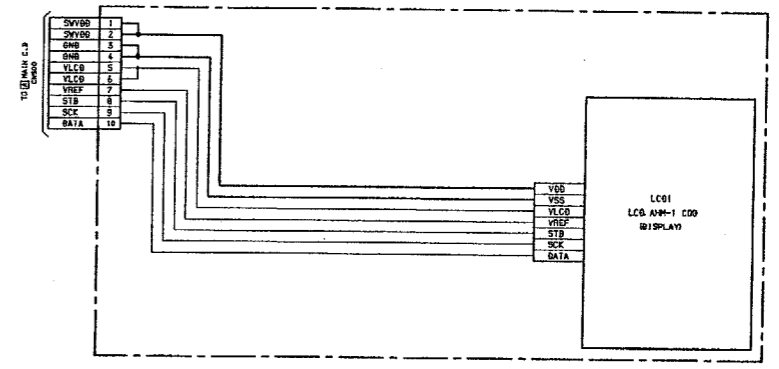
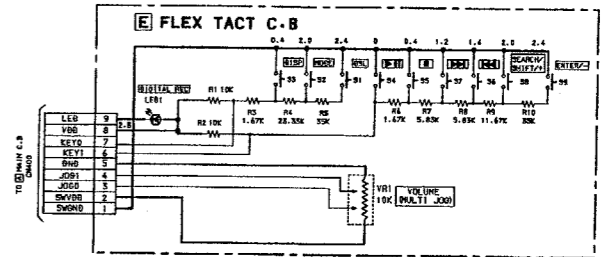
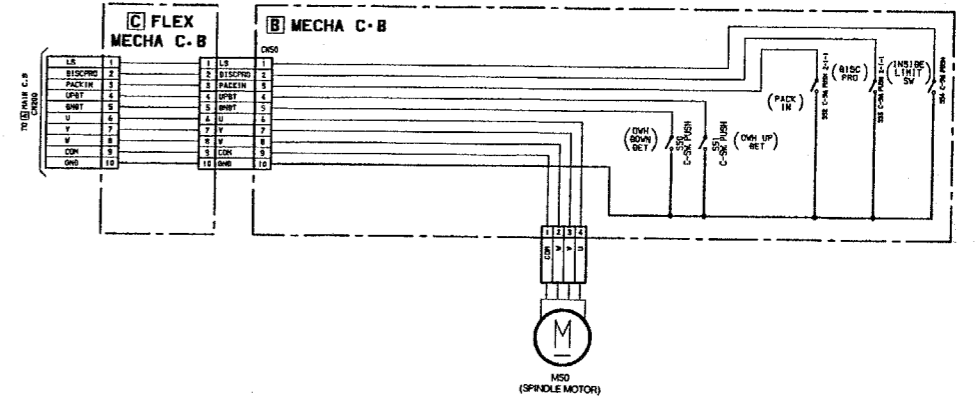
IC, BA3577FV



IC, CXA8048N



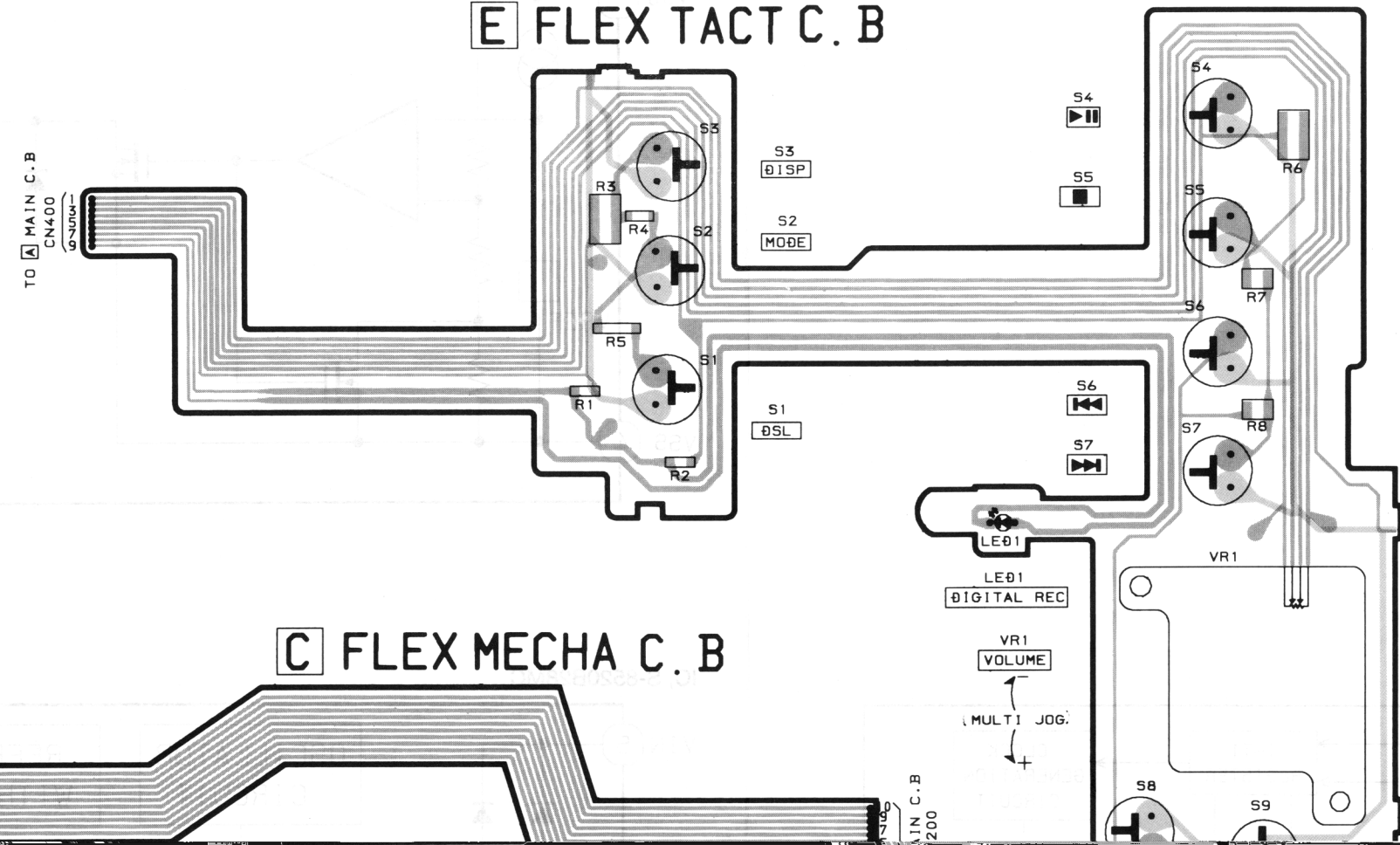
SCHEMATIC DIAGRAM - 3 (MECHA / FLEX MECHA / FLEX TACT / LCD 1)



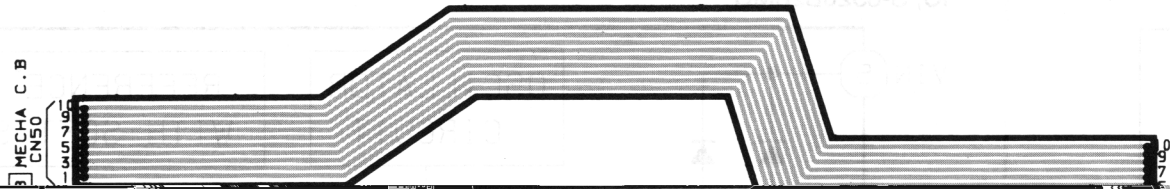
1 2 3 4 5 6 7 8 9 10 11 12 13 14

A
B
C
D
E
F

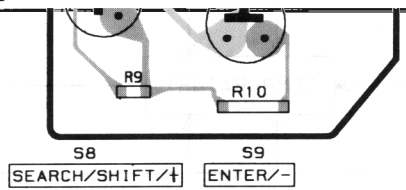
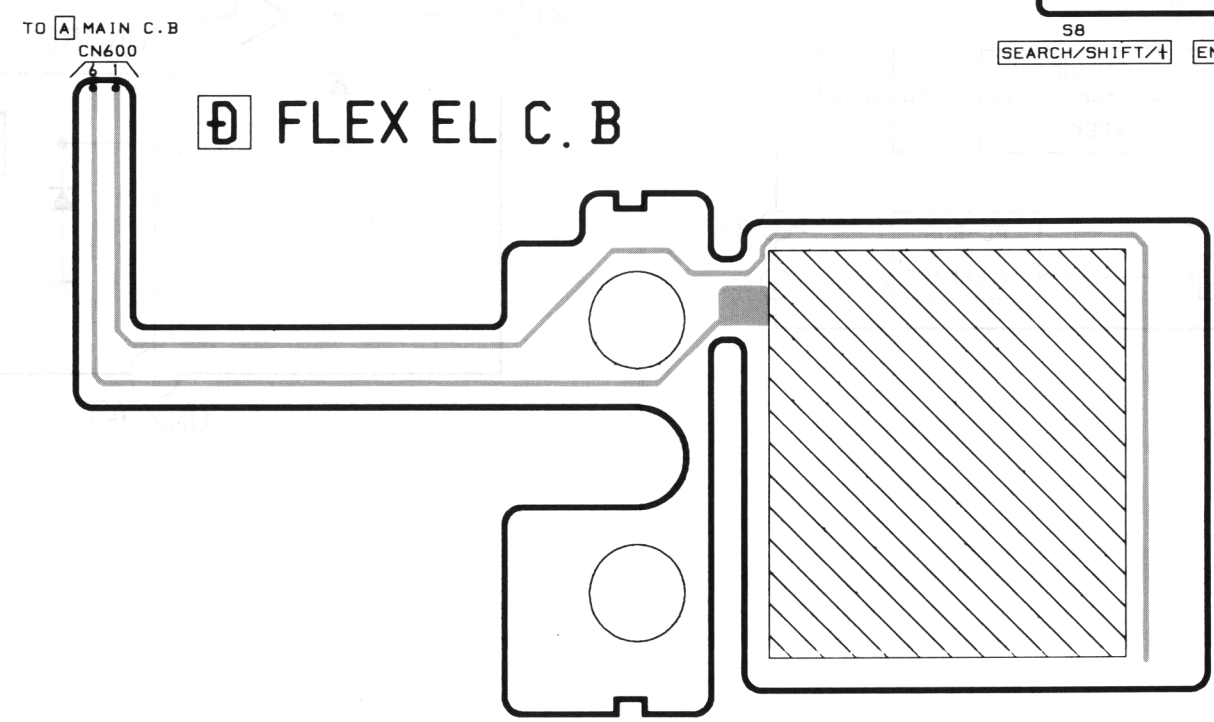
E FLEX TACT C. B



C FLEX MECHA C. B



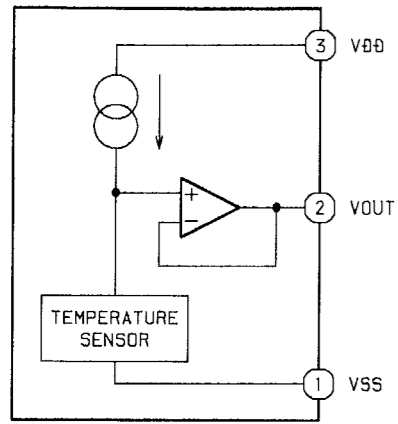
D FLEX EL C. B



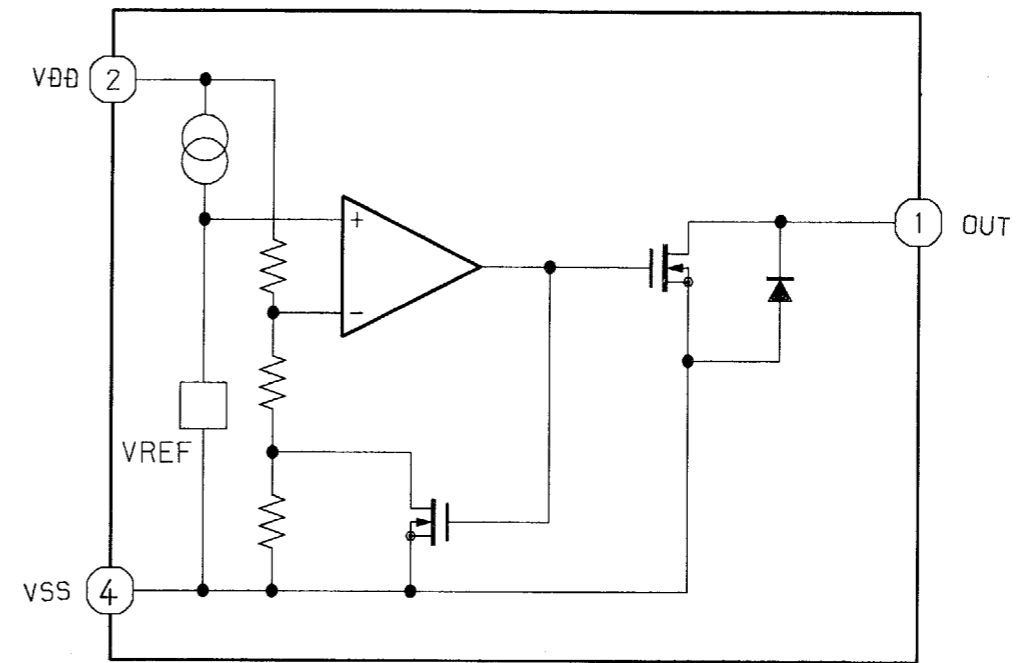
G
H
I
J

IC BLOCK DIAGRAM - 2

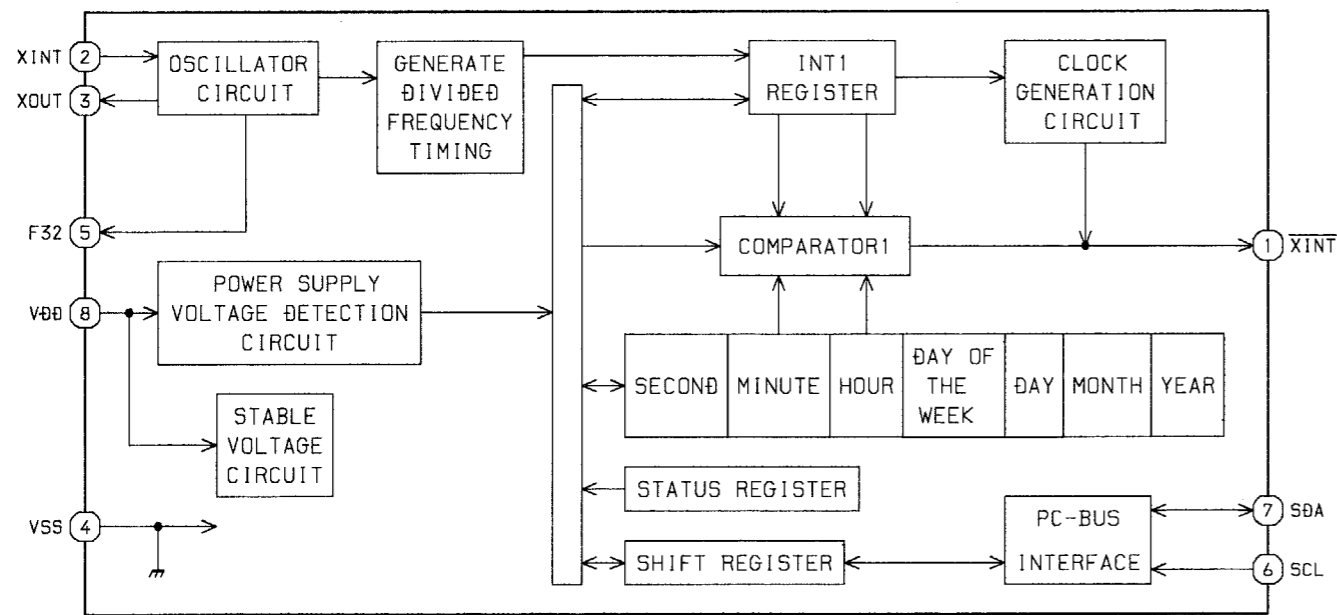
IC, S-8110AMP



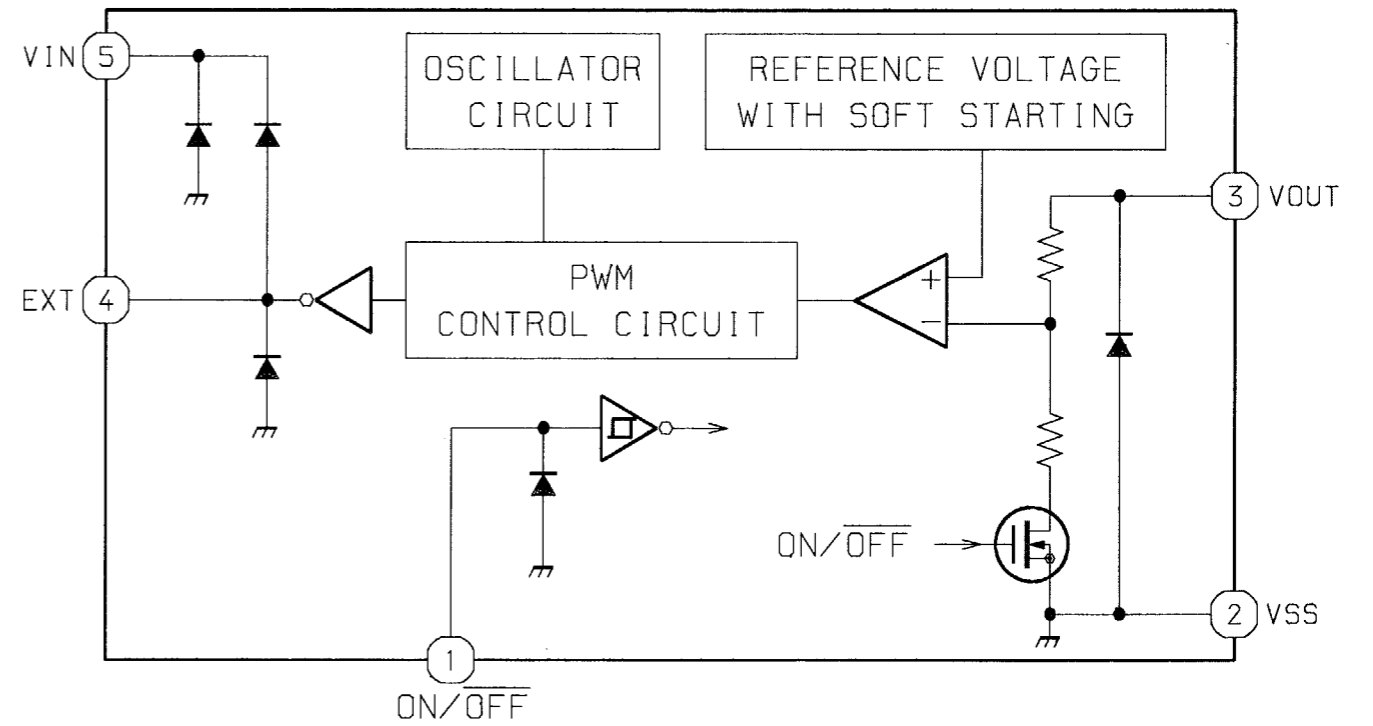
IC, S-80828ANNP-EDR-T2

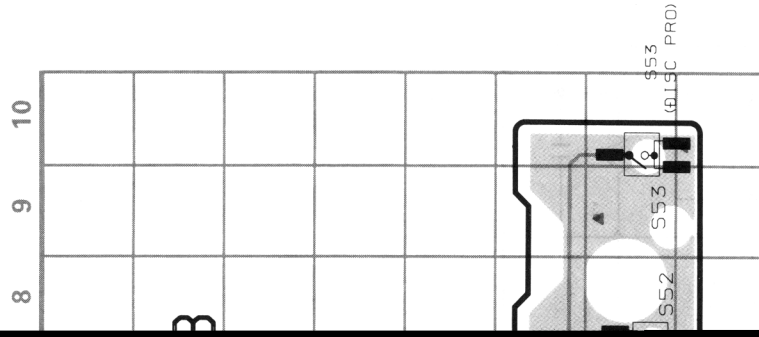


IC, S-3531A



IC, S-8520B28MC

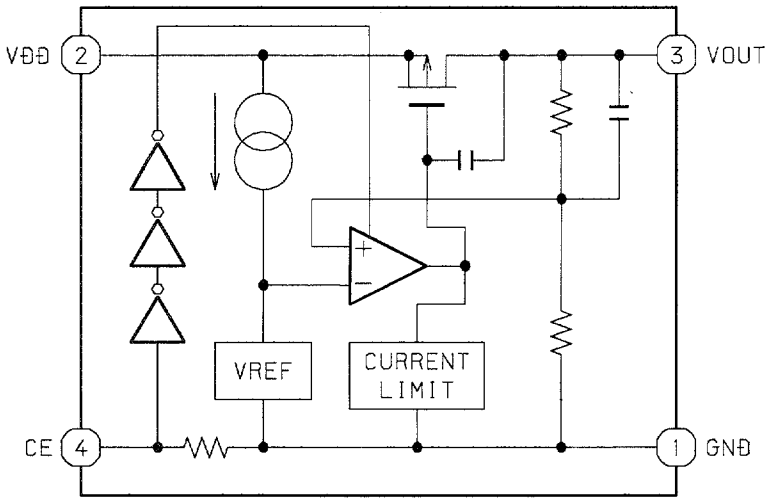




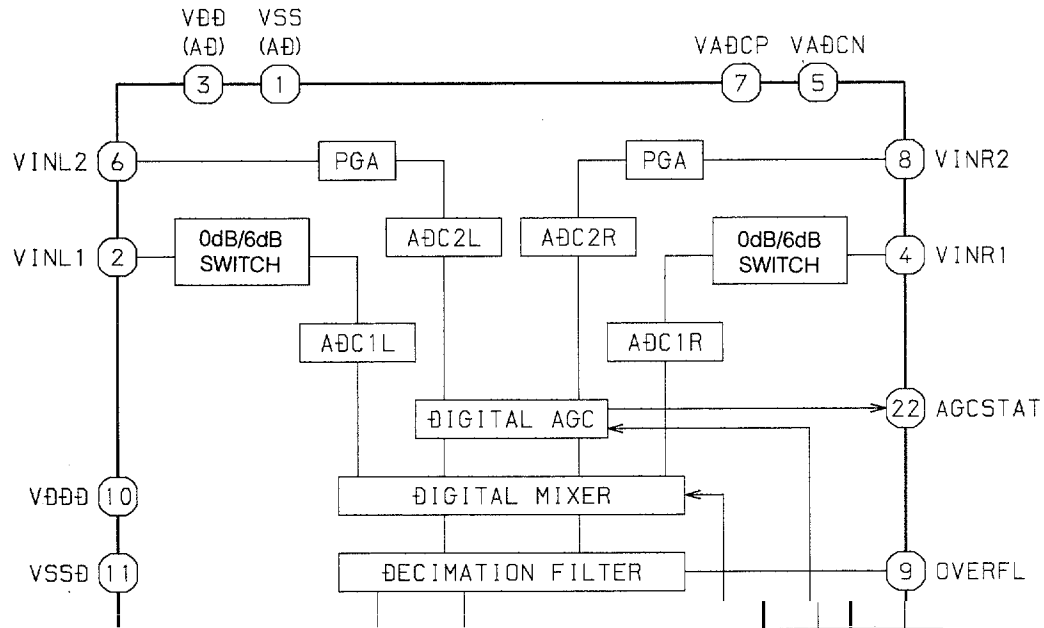
SHOW THE PATTERNS AND NOT BE SEEN. PATTERNS.

IC BLOCK DIAGRAM – 3

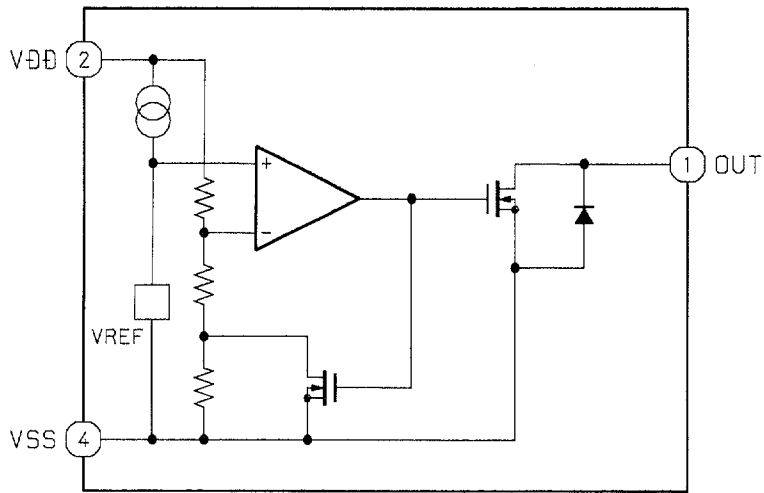
IC, RQ5RW18BHA04



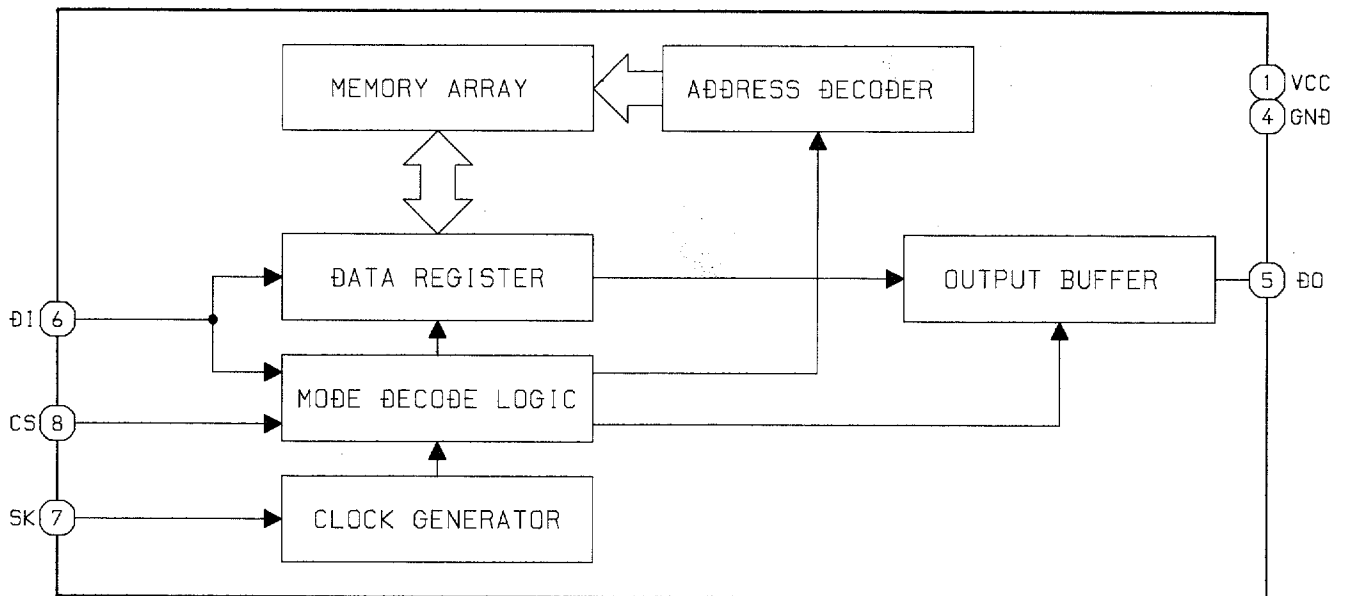
IC, UDA1341TS

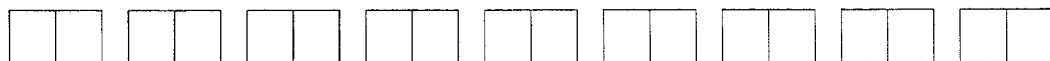


IC, S-80825ANNP-EDN



IC, S-93C46AMFN





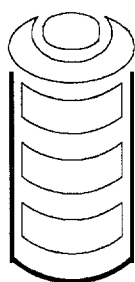
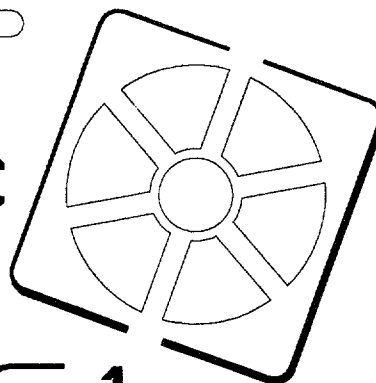
REC

MONO

AUTO MARK SYNC

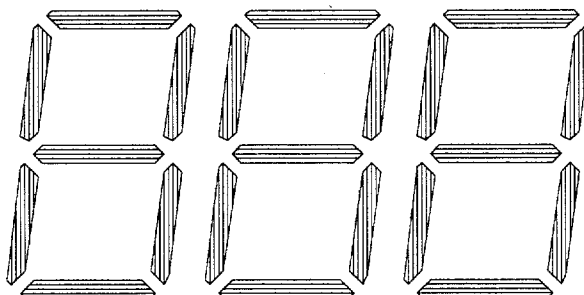
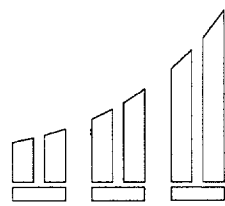
TIME MARK ALC

PRGM RANDOM  **1**



DSL

TRACK NO.



05

06

07

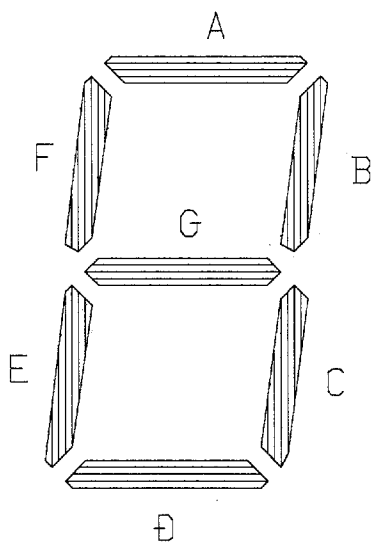
08

09

0A

0B

0C



IC DESCRIPTION

IC, CXP81952M

IC, CXP81952M-554R

Pin No.	Pin Name	I/O	Description
1	SCL	O	Clock IC (S-3531A) clock output pin.
2	PWSTB	O	Head-phone amp standby output. ("L": Standby)
3	AMUTE	O	Head-phone LINE MUTE. ("H": Mute)
4	MIC-O	O	MIC/LINE switch and MIC plug IN power control pin. ("H": MIC)
5	LS	I	Limit switch detection. ("L": ON)
6	BEEP	O	Output pin for BEEP sound.
7	SDA	I/O	Clock IC (S-3531A) data bus.
8	DISCPRO	I	Disc record prohibition switch detection. ("H": Disable recording)
9	DNDT	I	Head DOWN switch. ("L": ON)
10	UPDT	I	Head UP switch. ("L": ON)
11	RCDT	O	Remote control output.
12	PACK-IN	I	Pack IN switch detection. ("L": Detected pack)
13	HLDR-IN	I	Holder switch detection. ("L": Close)
14	$\overline{\text{HLDR-IN}}$	I	Holder switch detection. ("H": Close)
15	LIP	I	"L" when detecting AC adaptor.
16	KEY WK	I	Input pin to wake up the remote control key.
17	$\overline{\text{XINT}}$	I	Clock IC (S-3531A) alarm interrupt input. (Input 1Hz)
18	INSEL	I	Input select. ("H": Analog)
19	MIC-L	I	MIC/LINE switch, "H"=LINE, "L"=MIC-L, "H"=MIC-H.
20	MIC-H	I	MIC/LINE switch, "H"=LINE, "H"=MIC-L, "L"=MIC-H.
21	PLGI	I	Head-phone jack insertion "L" detection.
22	HOLD	I	Key HOLD switch detection. ("H": HOLD)
23	JAPAN	I	Destination setting. ("H": D type, "L": Export type)
24	SYNC	I	Synchro REC switch detection. ("L": ON)
25	F80/ $\overline{\text{F75}}$	I	Model setting. ("H": AM-F80, "L": AM-F75)
26	NC	-	Not connected.
27	NC	-	Not connected.
28	NC	-	Not connected.
29	NC	-	Not connected.
30	NC	-	Not connected.
31	LCD SW	O	LCD ON/OFF output. ("L" when ON)
32	CHG-O	O	Charge control output pin. ("L": Charge)
33	$\overline{\text{WAKE}}$	O	Power-control output pin at WAKEUP. "L" setting at WAKEUP.
34	EL	O	EL ON/OFF. ("H": EL light ON)
35	BATT-O	O	AC adaptor/battery switching output. ("L": AC adaptor)
36	DRVCNT	O	Driver IC (MPC17A39) Power Control. ("L" is ON)
37	MP	-	Connected to GND.
38	SRST	I	Micro-processor reset.
39	DGND	-	Connected to GND.
40	XTALO	-	12MHz clock.
41	XTALI	-	12MHz clock.

Pin No.	Pin Name	I/O	Description
42	CSO	I	Serial data FLAG check.
43	SRDTO	I	Serial data IN.
44	SWDTO	O	Serial data OUT.
45	SCLKO	O	Serial clock.
46	XLATO	O	Serial data latch.
47	XRSTO	O	Reset IC.
48	TX	O	Record data output enable. ("H": Enable)
49	BATCH	I	A/B input pin for voltage supply monitor.
50	AVSS	-	Connected to GND.
51	AVREF	-	Connected to VDD.
52	AVDD	-	Connected to VDD.
53	KEY0	I	Key 0.
54	KEY1	I	Key 1.
55	KEY2	I	Key 2. (Remote control)
56	JOG0	I	Jog dial input pin.
57	JOG1	I	Jog dial input pin.
58	BATCH0	I	A/D input pin for power supply voltage check.
59	TEMP	I	A/D input pin for temperature sensor.
60	BATCH1	I	A/D input pin for charging check.
61	SPFG	I	Spindle F/G input pin.
62	EMP	I	Detect battery empty. ("L": Empty)
63	TEST0	I	"L": Test mode.
64	SENS	I	SENS input.
65	MON3	I	Monitor pin 3.
66	MON2	I	Monitor pin 2.
67	MON1	I	Monitor pin 1.
68	MON0	I	Monitor pin 0.
69	BUP	O	Used for control selection at DRAM backup. (Normal setting at "L") (Not used.)
70	MRAS	O	DRAM micro-processor control RAS. (Normal setting at "L") (Not used.)
71	MCAS	O	DRAM micro-processor control CAS. (Normal setting at "L") (Not used.)
72	XLAT3	O	Chip select output pin for EEPROM.
73	CLV	O	Circuit switch output for wide range PLL. ("H": Normal PLL)
74	REC LED	O	REC LED. ("H": Light ON)
75	DQSY	I	Digital IN sync.
76	XINT	I	CXD2660GA status sync.
77	SRDT1	I	Data input pin for AD/DA and EEPROM.
78	SWDT1	O	Data output pin for LCD, AD/DA and EEPROM.
79	SCLK1	O	Clock output pin for LCD, AD/DA and EEPROM.
80	SQSY	I	SUBQ, ADIP sync input.
81	XLAT1	O	Mode output pin for AD/DA.
82	XRST1	O	Mute output pin for AD/DA.

Pin No.	Pin Name	I/O	Description
83	RMC	I	Connected to digital IN.
84	TXI	-	Connected to GND.
85	TXO	-	Open. (Not used)
86	VSS	-	Connected to GND.
87	VDD	-	Connected to VDD.
88	NC	-	Connected to VDD.
89	P-CNT	O	Power supply ON/OFF control. ("H": Power ON)
90	XTSBY	O	IC standby. (CXA2523AR) "L": Standby.
91	OP-CNT	O	Power supply control for PICKUP. ("L": ON)
92	OPMUTE	O	Laser power MUTE. ("L": MUTE / "H": ON)
93	XLAT2	O	Chip strobe output pin for LCD.
94	RECP	O	Laser power switch control. ("H": record power)
95	CHCNT	-	Not used.
96	OWH-CNT	O	Head motor drive control. ("H" at drive)
97	RECM1	O	Used for REC driver control signal 1.
98	RECM2	O	Used for REC driver control signal 2.
99	HUP	O	Overwrite head UP output. ("H": UP, "L": DOWN)
100	HDN	O	Overwrite head DOWN output. ("L": UP, "H": DOWN)

IC, CXD2660GA

Pin No.	Pin Name	I/O	Description
1	VDC0	-	Power supply 1.8V.
2~5	MNT0~MNT3	O	Monitor output pin.
6	SWDT	I	Data input pin for micro-processor serial interface.
7	SCLK	I	Shift clock input pin for micro-processor serial interface.
8	XLAT	I	Latch input pin for micro-processor serial interface. Shut down: Latch.
9	VSC0	-	GND.
10	SRDT	O	Data output pin for micro-processor serial interface.
11	SENS	O	Output internal status according to micro-processor serial interface address.
12	XRST	I	Reset input pin. "L": Reset.
13	SQSY	O	Disc sub-code Q synchronize / ADIP synchronize output.
14	DQSY	O	When source of the digital in is set to CD or MD, output sub-code Q synchronize of UbitCD or MD format.
15	RECP	I	Laser power switching input pin. "H": Record power. "L": Playback power.
16	XINT	O	Intrusion demand output pin. "L" setting when intrusion demand status is generated.
17	TX	I	Record data output enable signal input pin. "H": Enable.
18	VDIO0	-	Power supply 2.5V.

19	OSCII	I	Crystal oscillator circuit input pin.
20	OSCO	O	Crystal oscillator circuit output pin. (OSCI inverted)
21	VSI00	-	GND.
22~29	NC	-	Not connected.
30	VSCI	-	GND.
31	XTSL	I	Switch input frequency of OSCI pin. Connected to "H": 512Fs (22.5792MHz); "L": 1624Fs (45.1584MHz)
32	TST3	-	Connected to GND.
33	DIN1	I	Input digital audio interface signal.
34	DOUT	O	Output digital audio interface signal. (Not used.)
35	DT72	-	Not used.
36,37	VDC1, VDC2	-	Power supply 1.8V.
38	DATAI	-	Not used.
39	LRCKI	-	Not used.
40	XBCKI	-	Not used.
41	ADDT	I	Analog record input pin. (Connected to external A/D converter output)
42	DADT	O	REC monitor output pin / Output decode audio data
43	LRCK	O	Output LRCK (44.1kHz) to external audio block.
44	VSC2	-	GND.
45	XBCK	O	Output bit clock (2.8224MHz) to external audio block.
46	FS256	O	Output 256Fs (11.2896MHz).
47	A03	O	Output address for external DRAM. (Not used.)
48	A04	O	Output address for external DRAM. (Not used.)
49	A02	O	Output address for external DRAM. (Not used.)

Pin No.	Pin Name	I/O	Description
91	ADRT	I	Input maximum voltage of A/D converter operation range.
92	AVD2	-	Power supply 2.5V
93	AVS2	-	GND.
94	ADRB	I	Input minimum voltage of A/D converter operation range. (Connected to GND)
95	SE	I	Input sled error signal.
96	TE	I	Input tracking error signal.
97	DCHG	I	Connected to the power supply of low impedance. (Connected to 2.5V power supply)
98	APC	I	Input error signal for laser digital APC. (Connected to 2.5V power supply)
99	ADFG	I	Input ADIP binary data FM signal (22.051kHz \pm 1kHz).
100	VDIO2	-	Power supply 2.5V
101	VSIO2	-	GND.
102	FOCNT	O	Current setting output pin for CXA2523AR.
103	XLRF	O	Latch output pin for CXA2523AR control. Shut down: Latch.
104	CKRF	O	Shift clock output pin for CXA2523AR control.
105	DTRF	O	Data output pin for CXA2523AR control.
106	APCREF	O	Reference PWM output pin for laser APC.
107	LDDR	O	PWM output for laser digital APC. (Not used)

TRDR	O	Tracking servo drive PWM output (-).	109
TFDR	O	Tracking servo drive PWM output (+).	110
FFDR	O	Focus servo drive PWM output (-).	111
FRDR	O	Focus servo drive PWM output (-).	112
FS4	O	Output 4Fs (176.4kHz).	113
SRDR	O	Sled servo drive PWM output (-). (Not used)	114
SFDR	O	Sled servo drive PWM output (+). (Not used)	115
VSC4	-	GND.	116
SPRD	O	Spindle servo drive PWM output. (PWM (-) or polarity)	117
SPFD	O	Spindle servo drive PWM output. (PWM (+) or PWM absolute value)	118
FGIN	I	Spindle CAV servo FG input.	119
TEST 1	I	Test pin. (Connected to GND)	120
TEST 2	I	Test pin. (Connected to GND)	121
TEST 3	I	Test pin. (Connected to GND)	122
EFMO	O	Output "L" at playback, EFM (encode data) at recording.	123
SPVS	-	Not used.	124
VDIO3	-	Power supply 2.5V.	125
VSIO3	-	GND.	126
SPDU	-	Not used.	127
SPDV	-	Not used.	128
SPDW	-	Not used.	129
SPCU	-	Not used.	130
SPCV	-	Not used.	131

Pin No.	Pin Name	I/O	Description
132	SPCW	-	Not used.
133	SLDU	-	Not used.
134	SLDV	-	Not used.
135	SLDW	-	Not used.
136	VDC5	-	Power supply 1.8V
137	VSC5	-	GND.
138	SLCU	-	Not used.
139	SLCV	-	Not used.
140	SLCW	-	Not used.
141	SLVS	-	Not used.
142	BYPS	-	Not used.
143	VSS	-	GND.
144	VDD	-	Power supply 2.5V.
145	VSS	-	GND.
146	VDD	-	Power supply 2.5V.
147	TST8	-	Not used.
148~168	NC	-	Not connected.

IC, CXA2523AR

Pin No.	Pin Name	I/O	Description
1	I	I	Input "I" RF signal converted to I-V.
2	J	I	Input "J" RF signal converted to I-V.
3	VC	O	Output voltage for VCC/2.
4	A	I	Input current for main beam servo signal A.
5	B	I	Input current for main beam servo signal B.
6	C	I	Input current for main beam servo signal C.
7	D	I	Input current for main beam servo signal D.
8	E	I	Input current for side beam servo signal E.

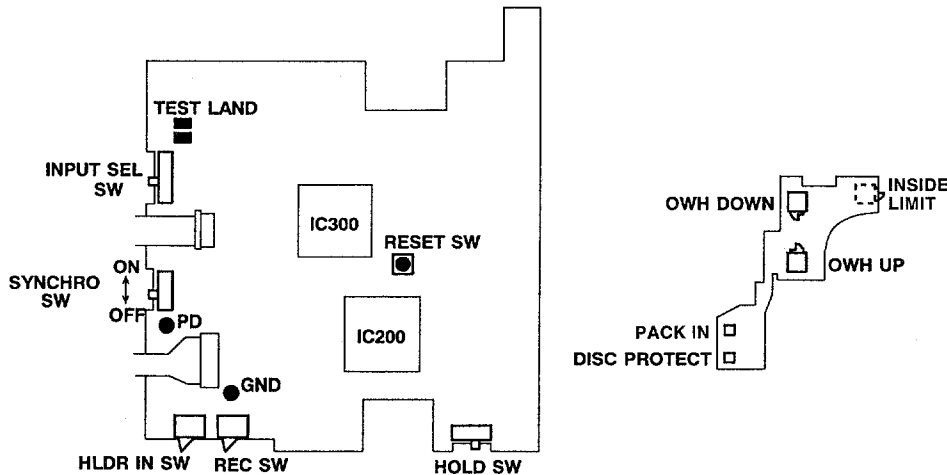
I	Input beam spectrum monitor signal.	10	PD
O	Output laser APC.	11	APC
I	Input reference voltage for laser power setting.	12	APCREF
-	GND.	13	GND
I	Temperature sensor-connection pin. (Not used)	14	TEMPI
I	Temperature sensor connection pin. Output reference voltage. (Not used)	15	TEMPR
I	Input micro-processor serial interface data.	16	SWDT
I	Input micro-processor serial interface shift clock.	17	SCLK
I	Input micro-processor serial interface latch. "L": Latch.	18	XLAT

Pin No.	Pin Name	I/O	Description
19	XSTBY	I	Standby setting pin. "H": Normal mode, "L": Standby.
20	FOCNT	I	Internal current setting pin.
21	VREF	O	Output reference voltage. (Not used)
22	EQADJ	I/O	EQ central frequency setting pin.
23	3TADJ	I/O	BPF3T central frequency setting pin.
24	VCC	-	Power supply pin.
25	WBLADJ	I/O	BPF22 central frequency setting pin.
26	TE	O	Output tracking error signal.
27	CSLED	-	LPF capacitor connection pin for SLED error signal.
28	SE	O	Output SLED error signal.
29	ADFG	O	Output ADIP FM signal.
30	ADIN	I	Input ADIP signal comparator.
31	ADAGC	-	ADIPAGC capacitor connection pin.
32	ADFG	O	Output ADIP2 binary data signal.
33	AUX	O	13 output / Output temperature signal. Switched by serial command.
34	FE	O	Output focus error signal.
35	ABCD	O	Output beam spectrum signal for main beam servo detector.
36	BOTM	O	Output bottom hold signal for RF/ABCD.
37	PEAK	O	Output peak hold signal for RF/ABCD.
38	RF	O	RF equalizer output pin.
39	RF AGC	-	RFAGC capacitor connection pin.
40	AGCI	I	RFAGC input pin.
41	COMPO	O	User comparator output pin. (Not used)
42	COMPP	I	User comparator non-inverted input pin. (Not used)
43	ADDC	I/O	Capacitor connection pin for ADIP amplifier on return circuit.
44	OPO	O	Output pin for user operational amplifier. (Not used)
45	OPN	I	Non-inverted input pin for user operational amplifier. (Not used)
46	RFO	O	RF amplifier output pin. Check point for eye pattern.
47	MORFI	I	Input pin where Groove RF signal is AC coupled.
48	MORFO	O	Output pin for Groove RF signal. Check point for eye pattern.

TEST MODE

Test Mode and Adjustment Mode

TEST MODE has 2 types: Test Mode that checks operation and Adjustment Mode. These modes are displayed by LCDs of the main unit and remote controller. The keys of the main unit and remote controller can control shifts between operations.
 * Only KEY HOLD of remote controller can function while Test Mode is on.



Test Mode

Note When Handling Discs

In Test and Adjustment Modes, "HOLD" switch of the main unit distinguishes discs.
 When insert a disc, check the "HOLD" switch.
 PIT disc (e.g. TEST DISC TGYS-1) : Turn on "HOLD" switch of the main unit
 MO disc (fully recorded MDW-74) : Turn off "HOLD" switch of the main unit

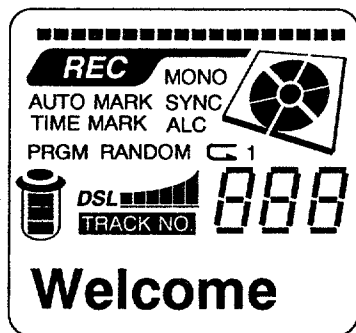
1. Start and Cancel Test Mode

1) Starting Test Mode

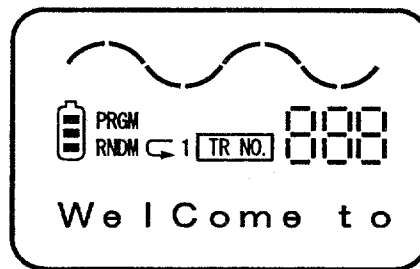
There are 2 ways to start Test Mode.

- a. Press "REC/EDIT" key and "B-SKIP" key together, and then press "RESET" (to start Test Mode without removing the exterior).
- b. Switch off "SYNCHRO" and short the testland of the main circuit board. Then press "RESET".

Once Test Mode is started, all LCDs will be turned on to display [Welcome To Mini Disk World].



LCD Display of the main unit



LCD Display of remote controller

2) Cancelling Test Mode

- a. Press "RESET" key.
- b. Plug off AC plug and turn off the power.

Caution

- * Ignore mechanism failure during Test Mode operation. If any operation failures were detected, plug off the power supply.
- * No replay or record while Test Mode is on.
- * Do not insert a disc when OWH (Over Write Head) is lowered.

2. Remote controller LCD Display

Once Test Mode is started, all LCD of both main unit and remote controller will be turned on.

3. Audio Output Check

It checks playback audio circuit (DAC, HP AMP).

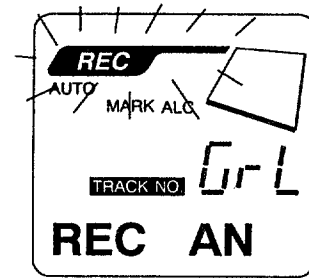
After Test Mode was started, 1KHz, -32.4dbv (24mV) signal is output from PHONE OUT when all LCD displays turned on.

4. REC Monitor Check

Press "STOP" key to turn off LCD display and turn on [SV OFF] display.

It checks REC audio circuit (MIC/LINE AMP, ADC).

Input digital/analog source signals when [SV OFF] display is on, and press "REC" key to check the monitor sound. Then LCD displays "REC" to indicate that the signals are inputted.



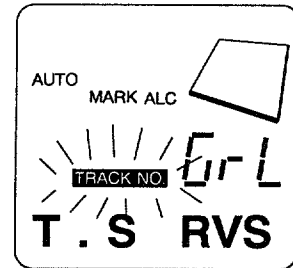
5. Sledding Operation Check

It checks the Pick-Up sledding operation when [SV OFF] display is on.

When the Pick-Up is at the most internal circumference, LCD of the main unit displays [TRACK NO].

* Press "F-SKIP" key to shift the Pick-Up to the external circumference. Display [T.S FWD]

* Press "B-SKIP" key to shift the Pick-Up to the internal circumference. Display [T.S RVS]



6. OWH (Over Write Head) Operation Check

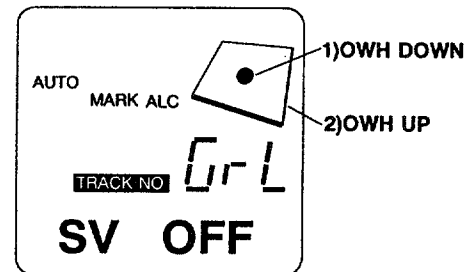
It checks the up-down movement of OWH when [SV OFF] display is on.

1) DOWN DETECT

Press "ENTER" key to lower down OWH and display DISC center.

2) UP DETECT

Press "SEARCH" key to raise up OWH and display DISC outline.



Caution

- * Do not lower down OWH when insert a high-reflection disc.
- * If insert a disc with OWH lowered, it may result in bending OWH.

7. Various Switch Operation Check

ON/OFF condition (condition of switch contact) of various switches of the main unit and the mechanism can be checked on the LCD Display on the main unit.

Press "STOP" key to turn off LCD displays and turn on [SV OFF] display.

* Main unit LCD Display

1) HOLDER IN

Display [MARK] of TIME MARK, once the top panel is closed (switch on "HLDR IN").

2) HOLD

Display Battery outline, once the "HOLD" switch on the main unit is turned on.

3) SYNCHRO

Display [SYNC] , once "SYNCHRO" switch is turned on.

4) INPUT SELECT

LCD display of the main unit will be switched over depending on the position of "INPUT SELECT" switch.

* MIC HIGH → Display [TIME].

* MIC LOW → Display [MARK] of AUTO MARK.

* LINE → Display [AUTO].

5) INPUT (OPT/LINE/MIC)

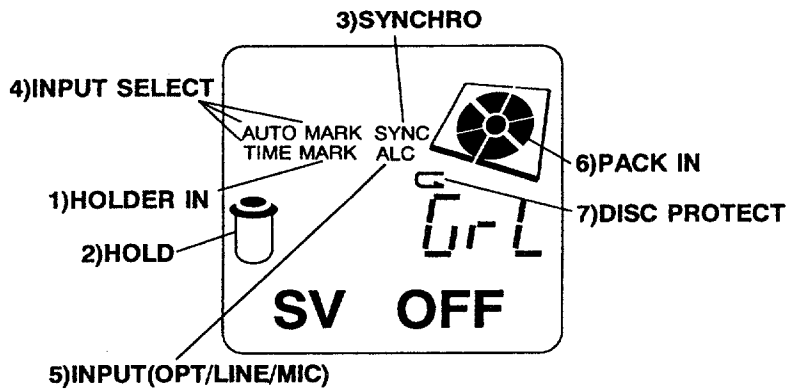
When Optical Plug is inserted, [ALC] display will turn off.

6) PACK IN

When the disc is inserted, disc fans will turn on.

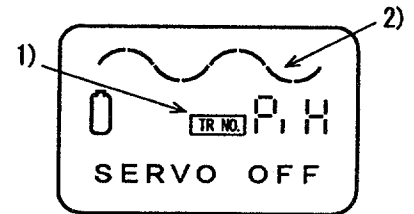
7) DISC PROTECT

When a recordable MO disc (the write-protect tab is blocked) is inserted, it displays REPEAT.



* Remote controller LCD Display

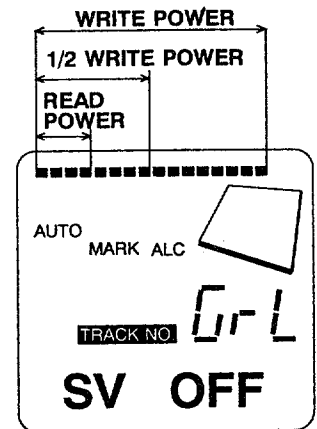
- 1) Displays [TRNO.] when "HOLD" switch on the main unit is on. However, not when "HOLD" switch on the remote controller is on.
- 2) Displays [~ ~] when the top panel is closed (turn on "HLDR IN" switch).



8. Laser Output Check

Press "DSL" key when [SV OFF] display is on, to make the Pick-Up lasers radiate. The level of luminosity will change every time "DSL" key is pressed. The level meter of LCD displays the lasers' luminosity level.

OFF → READ POWER → 1/2 WRITE POWER → WRITE POWER

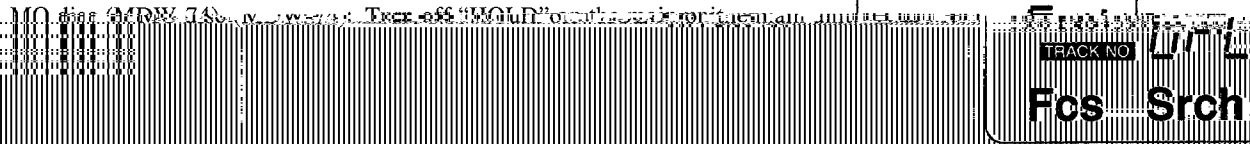


9. Servo Operation Check

1) Focus Search and Spindle Kick Check

Press "PLAY" key without no disc inside, to visually check the Focus Search and Spindle Kick. It displays [Fcs Srch].

* PIT disc (TEST DISC TGYS-1) : Turn on "HOLD" on the main unit.



2) Focus Servo On

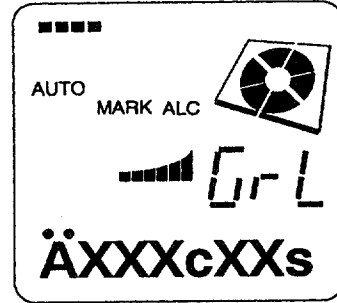
Insert a disc and press "PLAY" key to set focus and display [Focus ON!]. Insert a MO disc and press "ENTER" key to lower OWH down. If "PLAY" key is pressed in this condition, it will not set focus!



3) All Servo On

Press "MODE" key with focus servo on to turn on tracking and sledding servo, and lock spindle servo. Then, LCD on the remote controller will display disc addresses.

XXXc : cluster
XXs : sector



4) Switching between CAV/CLV of Spindle Servo

Spindle servo is operated by CAV servo when all servos are on.

Press "MULTI JOG" key to switch from CAV servo to CLV servo.

However, it cannot be switched back from CLV servo to CAV when all servos are on.

In order to start CAV servo, press "STOP" key to terminate the operation and turn all servos back on.

5) Track Jump

Press "MULTI JOG" key after setting all servo on, to jump tracks.

* "+" direction to jump tracks in FWD

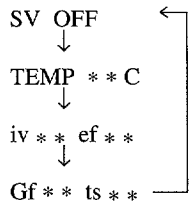
* "-" direction to jump tracks in RVS

10. Adjustment Values and Error Rate Check

Press "DISP" key in each operation to display the following values on LCD.

1) Adjustment Value Check

Press "DISP" key when [SV OFF] display is on, to check temperature preset value, IVR value, EF Balance value, Focus Gain, Tracking / Sledding Gain.

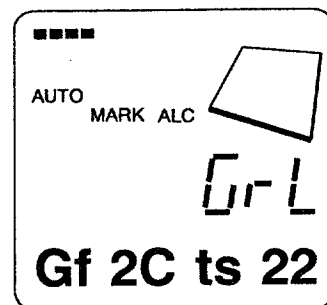
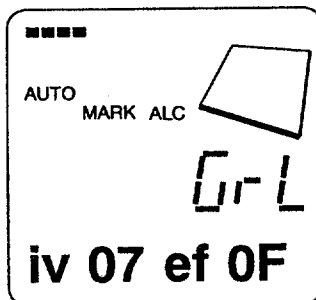
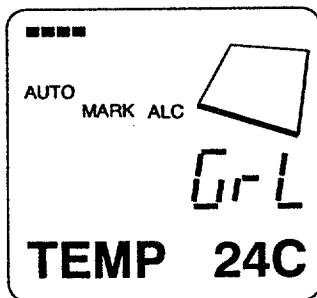


Press the [DISP] key to switch adjustment values.

a) Temperature (the internal temperature of the main unit is displayed.)

b) IVR and EF balance values

c) Focus Gain and Tracking/Sled Gain value



* Default Value

a) Temperature Display

Same as the room temperature (immediately after turning on the power)

PIT disc adjustment value

Turn on "HOLD" switch, display [Pi H].

iv : 14 ~ 19 ef : 09 ~ 15

Gf : 40 ~ 80 ts : 15 ~ 40

MO disc adjustment value

Turn off "HOLD" switch, display [Gr L].

iv : 05 ~ 0A ef : 09 ~ 15

Gf : 30 ~ 70 ts : 15 ~ 40

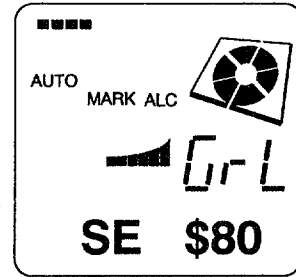
2) EF Balance Value Check

Insert a disc and press "DISP" key with [Focus ON!] display on, to check EF Balance DC Offset value.

Focus ON! ←
↓
SE \$ **

centre value
SE \$ 8 0

SLED ERROR
(EF balance)



3) Error Rate Check

Press "DISP" key with All Servo On, to display Error Rate.

It displays the error rate of recorded discs, which can be used to check the recording condition of discs.

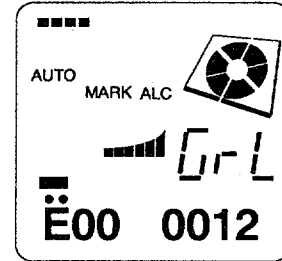
*** c *** s ←
↓
Er ** ΔΔΔΔ

Address

Error rate

** : C2 Error

ΔΔΔΔ : C1 Error



a) PIT disc (TGYS-1)

1. Turn on "KEY HOLD" switch and display [PiH].
2. Shift Pick-Up to the slightly more external position than the most inner circumference.
3. Press "PLAY" key and then "MODE" key to set all servo on and adjust address at approximately 600s00.
4. Press "DISP" key to check that C1 error is below [0030].

b) MO disc (MDW-74)

1. Turn off "KEY HOLD" switch to display [GrL].
2. Set all servo on and adjust address at approximately 600s00.
3. Check that C1 error is below [0030].

c) Record/Playback Error Rate Check

1. Turn off "KEY HOLD" switch to display [GrL].
2. Insert a MO disc and press "F-SKIP" key to shift the Pick-Up to the slightly more external position than the most inner circumference.
3. Press "ENTER" key to lower down OWH.
4. Press "REC/EDIT" key to display [REC AN].
5. Press "PLAY" key to display [Fcs ON!].
6. Press "MODE" → "REC" keys to check that recording starts at 600c.
7. Record for 15 seconds and press "STOP".
8. Press "SEARCH" key to raise up OWH.
9. Press "PLAY" → "MODE" keys to check that the address is set at approximately 600s00.
10. Press "DISP" key to check that C1 error is below [0030].

Adjustment Mode

1. Start and Cancel Adjustment Mode

1) Starting Adjustment Mode

Turn on "SYNCHRO" switch and short the testland of the main circuit board. Then press "RESET" key. Once Adjustment Mode is started, LCD will be all turned on to display [ADJ MODE].

2) Cancelling Adjustment Mode

- * Press "RESET" key.
- * Plug off AC plug and turn off the power.

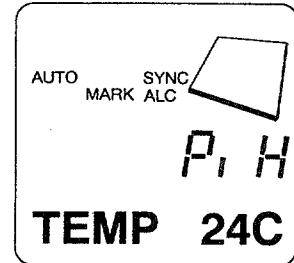
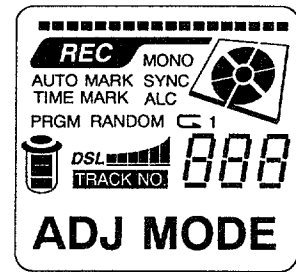
* If adjustment is not complete, it displays [NO ADJ!].

2. Temperature Compensation

Press "STOP" key to display [SV OFF].

Press "DISP" key once to display [TEMP **C].

Use "ENTER", "SEARCH" keys to adjust the displayed temperature value to the room temperature.



Note

- * Make this adjustment immediately after turning on the power.
- * Make sure that the temperature of the circuit board is same as the room temperature.

3. Laser Power

It adjusts the laser power of Read/Write.

Press "STOP" key to display [SV OFF].

Caution

- * Do not make this adjustment with a disc inside, as it may damage the disc.

Procedure

* READ POWER ADJUSTMENT

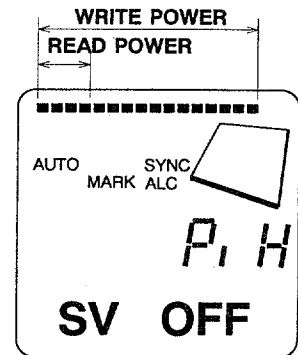
Press "DSL" key once to increase one grade of a level meter.

Check the voltage between Test Points PD-GND with a digital multi meter.

Use "ENTER", "SEARCH" keys to set digital multi meter display at $105 \pm 6mV$.

* WRITE POWER ADJUSTMENT

Press "DSL" key twice to increase the grade of the level meter to the maximum. Check the voltage between Test Points PD-GND with a digital multi meter. Use "ENTER", "SEARCH" keys to set digital multi meter display at $810 \pm 6mV$.



4. Automatic Adjustment Mode

This mode automatically adjusts servos and maintains the adjustment data in EEPROM.

Recommended making a new adjustment after every replacement of Pick-Up, microcomputer or EEPROM, and mechanism repair.

Caution

- * If a disc had any stains or scars on, the adjustment may not be completed. Use a new clean disc for adjustment.
- * Always place the machine with its cassette cover upward for adjustment.
- * Adjustment must be done on both PIT disc and MO disc. Otherwise it displays [NO ADJUST!] and stops operating.

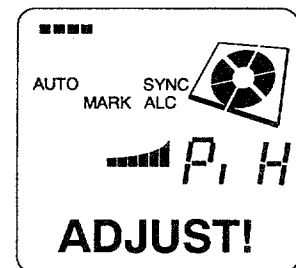
* PIT disc (test disc TGYS-1)

* MO disc (fully recorded MDW-74 or equivalent)

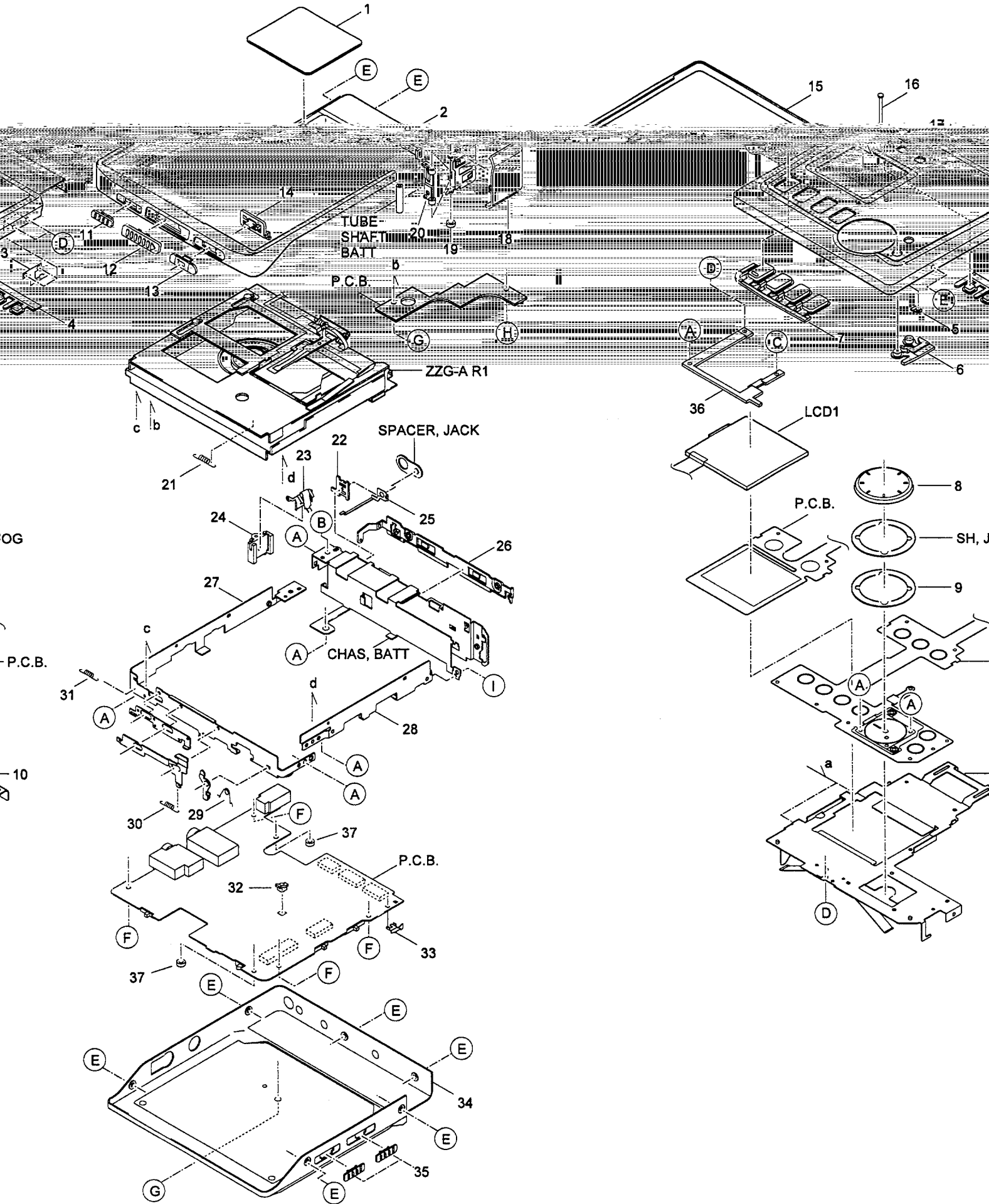
Procedure

1. Insert a PIT disc and press "PLAY" key.
2. LCD displays [ADJUST!] and starts automatic adjustment.
3. Once the LCD display says [COMPLETE], the adjustment is done.
4. Press "B-SKIP" key and get [TRACK NO.] on LCD display.
5. Insert a MO disc and press "PLAY" key.
6. LCD displays [ADJUST!] and starts automatic adjustment.
7. Once the LCD display says [COMPLETE], the adjustment is done.

* If LCD displays [SERVO OFF], the adjustment is incomplete.



MECHANICAL EXPLODED VIEW 1 / 1

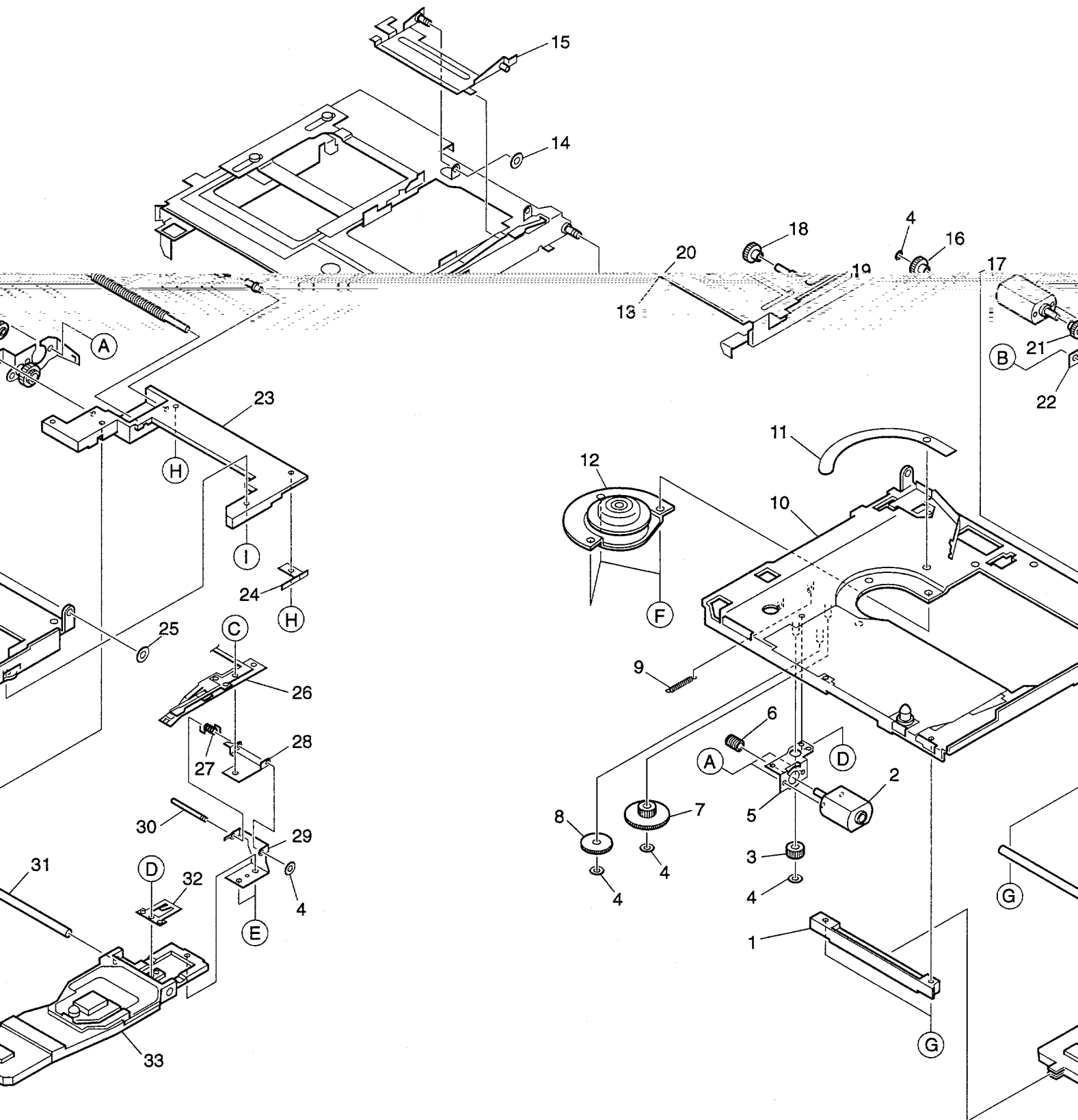


MECHANICAL PARTS LIST 1 / 1

If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-HM1-006-210		WINDOW, DISP<EXCEPT AK, AEZ>	23	8A-HM1-236-110		BAT-CONTACT, +
1	8A-HM1-061-010		WINDOW, DISP N<AK, [N]AEZ>	24	8A-HM1-238-010		COVER, BATT +
1	8A-HM1-062-010		WINDOW, DISP G<[G]AEZ>	25	8A-HM1-233-010		BAT-CONTACT, BOX
2	8A-HM1-001-110		PANEL ASSY, TOP<EXCEPT AU, AK, AEZ>	26	8A-HM1-203-010		HINGE, PANEL TOP
2	8A-HM1-041-010		PANEL ASSY, TOP N<AK, [N]AEZ>	27	8A-HM1-206-210		FRAME ASSY, FR
2	8A-HM1-043-010		PANEL ASSY, TOP G<[G]AEZ>	28	8A-HM1-216-110		FRAME, R
2	8A-HM1-045-010		PANEL ASSY, TOP U<AU>	29	8A-HM1-244-110		SPR-T, OPEN
3	8A-HM1-229-010		HLDR, PANEL	30	8Z-HM4-230-010		SPR-E, EJECT
4	8A-HM1-008-010		KEY, CONT SUB	31	8A-HM1-250-010		SPR-E, LOCK B
5	8A-HM1-011-010		LENS, REC	32	8A-HM1-247-110		HLDR, PWB
6	8A-HM1-009-010		KEY, SEARCH	33	8A-HM1-237-010		BAT-CONTACT, -
7	8A-HM1-007-010		KEY, CONT MAIN	34	8A-HM1-031-010		PANEL, BOT HC<AHR, AHC, AHK>
8	8A-HM1-010-010		KNOB, RTRY JOG	34	8A-HM1-034-010		PANEL, BOT EZ N<AK, [N]AEZ>
9	8A-HM1-243-010		PLATE, JOG	34	8A-HM1-033-010		PANEL, BOT U<AU>
10	8A-HM1-226-010		HLDR ASSY, TOP	34	8A-HM1-035-010		PANEL, BOT EZ G<[G]AEZ>
11	8A-HM1-015-010		KNOB, SL HOLD	35	8A-HM1-016-010		KNOB, SL SEL<EXCEPT AK, AEZ>
12	8A-HM1-012-010		KNOB, SL EJECT	35	8A-HM1-066-010		KNOB, SL SEL N<AK, [N]AEZ>
13	8A-HM1-013-010		KNOB, SL REC	35	8A-HM1-067-010		KNOB, SL SEL G<[G]AEZ>
14	8A-HM1-014-210		KNOB, LEVER REC	36	8A-HM1-225-010		HLDR LCD
15	8A-HM1-003-110		FRAME, CENTER<EXCEPT AK, AEZ>	37	8A-HM1-272-010		W-L, 1.7-3.6-0.05 W/ADH
15	8A-HM1-026-010		FRAME, CENTER EZ<AK, AEZ>	A	87-HM1-254-010		S-SCREW, 1.4-1.4CR
16	8A-HM1-235-110		SHAFT, HINGE BATT	B	87-078-052-010		S-SCREW+1.4-3.5HL(B)
17	8A-HM1-234-110		HINGE, BATT	C	87-HM1-242-010		S-SCREW, 1.4-2.0CR
18	8A-HM1-004-110		LID, BATT<EXCEPT AK, AEZ>	D	8A-HM1-291-010		SCREW, 1.4-1.0CR
18	8A-HM1-056-010		LID, BATT<AK, [N]AEZ>	E	87-HM1-243-010		S-SCREW, 1.4-1.4CRNL
18	8A-HM1-057-010		LID, BATT<[G]AEZ>	F	87-067-746-010		SCREW, M 1.4-2(H0.5)

MD MECHANISM EXPLODED VIEW 1 / 1



MD MECHANISM PARTS LIST 1 / 1

If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8Z-ZGA-226-010		HLDR, P.U.GUIDE S
2	87-A91-016-010		MOT, LA8-388L
3	88-ZG2-228-010		GEAR, A OWH
4	87-067-569-010		POLY WASHER 0.83-2.5-0.25
5	88-ZG2-221-110		HLDR, MOT OWH
6	88-ZG2-227-010		GEAR, MOT OWH
7	88-ZG2-230-010		GEAR, C OWH
8	88-ZG2-229-010		GEAR, B OWH
9	88-ZG2-240-010		SPR-E, E-LOCK
10	8Z-ZGA-201-010		CHAS, ASSY, R
11	8Z-ZGA-254-010		SH, SPINDLE
12	87-A91-014-010		MOT, SSM01C10A
13	8Z-ZGA-216-010		HLDR ASSY, CTRG
14	87-B10-152-010		W-P, 0.83-2.0-0.25 C
15	87-ZG1-262-010		LEVER ASSY, KICK OWH
16	8Z-ZGA-233-010		GEAR, B SL
17	8Z-ZGA-214-010		SHAFT, GEAR SL B
18	8Z-ZGA-234-010		GEAR, C SL
19	8Z-ZGA-236-010		SHAFT, LEAD
20	87-A91-493-010		MOT, PNN7GE08KD
21	8Z-ZGA-231-010		GEAR, MOT SL
22	8Z-ZGA-237-010		HLDR ASSY, MOT SL
23	8Z-ZGA-225-010		HLDR, P.U.GUIDE M
24	8Z-ZGA-241-010		SPR-P, LS GUIDE
25	87-078-123-010		PW, 1.1-2.5-0.3C
26	87-A91-467-010		HEAD, RF328-74 E
27	87-ZG1-244-010		SPR-T, OWH
28	88-ZG2-222-210		HLDR, PU
29	87-ZG1-242-110		HLDR, OWH
30	87-ZG1-243-010		SHAFT, OWH
31	8Z-ZGA-235-010		SHAFT, GUIDE M
32	88-ZG2-243-110		SPR-P, RACK
33	87-A90-956-010		PICKUP, KMS-280A
A	87-078-120-010		1V+1.2-1.5
B	88-ZG6-224-010		S-SCREW, VBT+1.4-3
C	87-231-501-310		PRECISION SCREW, Q+1.4-1.6
D	87-263-500-310		SCREW V+1.4-1.4
E	88-ZG2-255-010		S-SCREW, +1.7-1.6 AZIMUTH
F	87-067-393-010		SCREW +1.4-1.4
G	88-ZG2-256-010		S-SCREW, +1.4-3.5
H	87-067-511-010		SCREW, V+1.4-2 BK
I	88-ZG2-257-010		S-SCREW, +1.4-3.1

ACCESSORIES / PACKAGE LIST

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
△	1	87-A90-312-010	PLUG, CONVERSION WTN-1157R1<AHR>
△	2	87-B30-143-110	AC ADAPTOR, AC-D401E NC<AEZ>
△	2	87-B30-144-010	AC ADAPTOR, AC-D401K NC<AHK, AK>
△	2	87-B30-159-010	AC ADAPTOR, AC-D401HR<AHR>
△	2	87-B30-177-010	AC ADAPTOR, AC-D401HC<AHC>
△	2	87-B30-142-010	AC ADAPTOR, AC-D401U NC<AU>
	3	87-B30-111-010	BAT, LIB-902
	4	87-B30-297-010	HEADPHONE, HP-M031 H<EXCEPT AU>
	4	87-B30-248-010	HEADPHONE, HP-M038<AU>
	5	8A-HM1-904-010	IB, HC (ECK) I<AHC>
	5	8A-HM1-905-010	IB, HR (ECA) I<AHR, AHK>
	5	8A-HM1-907-010	IB, EZ (EGF) I<AK, AEZ>
	5	8A-HM1-908-010	IB, EZ (SID) I<AEZ>
	5	8A-HM1-909-010	IB, EZ (PHNCZ) I<AEZ>
	5	8A-HM1-903-010	IB, U (ESF) I<AU>
	6	8A-HM1-951-010	BOX ASSY, BAT AHM-1<AHC, AHR, AHK, AU>
	6	8A-HM1-957-010	BOX ASSY, BAT AHM-1 N<AK, [N]AEZ>
	6	8A-HM1-959-010	BOX ASSY, BAT AHM-1 G<[G]AEZ>
	7	8A-HM3-952-010	BAG, CARRING
	8	8Z-HM4-605-010	RC UNIT, RC-HX30<AHC, AHR, AHK, [G]AEZ, AU>
	8	8Z-HM4-608-010	RC UNIT, RC-HX30 N<AK, [N]AEZ>
	9	87-B30-231-010	CABLE, OP-W2S
	10	8A-HM1-612-010	ADAPTOR, DC-550A<AU>
	11	86-YK1-001-110	ADAPTOR, CAP-6<AU>

REFERENCE NAME LIST

ELECTRICAL SECTION

DESCRIPTION	REFERENCE NAME
ANT	ANTENNAS
C-	CHIP
C-CAP	CAP, CHIP
C-CAP TN	CAP, CHIP TANTALUM
C-COIL	COIL, CHIP
C-DI	DIODE, CHIP
C-DIODE	DIODE, CHIP
C-FET	FET, CHIP
C-FOTR	FILTER, CHIP
C-JACK	JACK, CHIP

MECHANICAL SECTION

DESCRIPTION	REFERENCE NAME
ADHESHIVE	SHEET ADHESHIVE
AZ	AZIMUTH
BAR-ANT	BAR-ANTENNA
BAT	BATTERY
BATT	BATTERY
BRG	BEARING
BTN	BUTTON
CAB	CABINET
CASS	CASSETTE
CHAS	CHASSIS