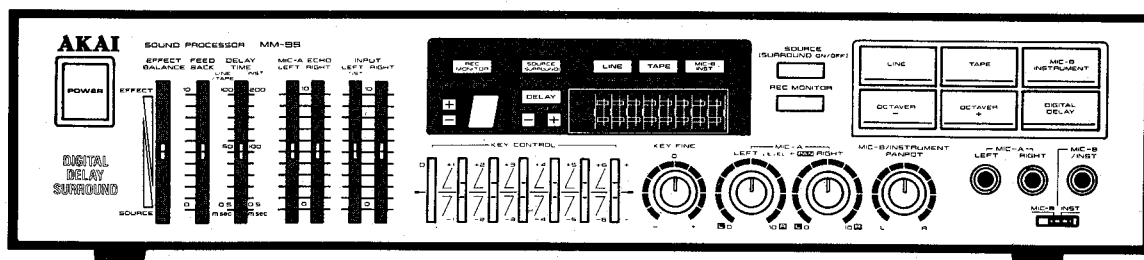


AKAI SERVICE MANUAL



SOUND PROCESSOR

MODEL **MM-99**



SOUND PROCESSOR

MODEL MM-99

SECTION 1	SERVICE MANUAL	3
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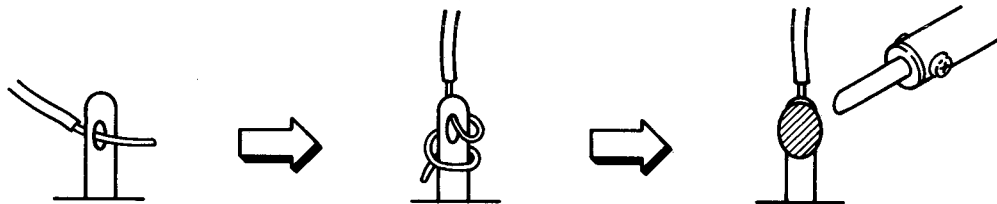
SAFETY INSTRUCTIONS

SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 Mohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for [C] or [A], specified insulation resistance should be more than 2.2 Mohms (ground terminals, microphone jacks, headphone jacks, line-in-out jacks etc.)

PRECAUTIONS DURING SERVICING

1. Parts identified by the Δ symbol parts are critical for safety.
Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
 - 1) Wires covered with PVC tubing
 - 2) Double insulated wires
 - 3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
 - 1) Insulation Tape
 - 2) PVC tubing
 - 3) Spacers (Insulating Barriers)
 - 4) Insulation sheets for transistors
 - 5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

VOLTAGE AND CYCLE CONVERSION

VOLTAGE CONVERSION

Models for JPN, Canada, USA, Europe, UK and Australia are not equipped with this facility. Each machine is preset at the factory according to its destination, but, some machines can be set to 110V, 120V, 220V, or 240V as required.

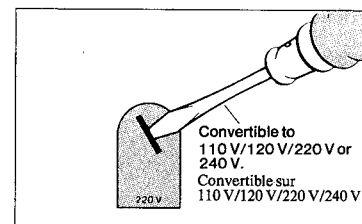
If your machine's voltage can be converted:

Before connecting the power cord, gently pull the voltage selector plug (located on the rear panel) from its socket.

Remove the 3 prong cap from the voltage selector plug. Reinsert the prongs of the cap into the holes in such a way the when inserted, the correct voltage for your area will be displayed. Then, return the voltage selector plug to its socket.

CYCLE CONVERSION

Cycle conversion is not necessary.



SECTION 1

SERVICE MANUAL

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For basic adjustments, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAL.

I. SPECIFICATIONS

TYPE	8bit DPCM cross fade control (Delay and key control)
INPUT	MIC-A, LINE, TAPE, INST/MIC-B
OUTPUT	LINE, TAPE, INST, SURROUND
DISPLAY	LED
INPUT SENSITIVITY/IMPEDANCE	
LINE	150mV/47kohms
TAPE	150mV/47kohms
MIC-A/B	1mV/5kohms
INST	10mV/100kohms
OUTPUT LEVEL/IMPEDANCE	
LINE	150mV/1kohms
TAPE	150mV/1kohms
INST	150mV/1kohms
SURROUND OUT	150mV/1k ohms
CHANNEL CROSSTALK	More than 45dB
SIGNAL TO NOISE RATIO	More than 55dB (at 1kHz, LINE)
DISTORTION	Less than 0.1% (at 400kHz)
FREQUENCY RESPONSE	20Hz to 16kHz ± 1 dB
DELAY TIEM	
LINE/TAPE	0.5 to 100msec
INST/MIC-B	0.5 to 200msec
ECHO TIME (MIC-A)	0 to 1.5sec
FEED BACK LEVEL	75%
KEY CONTROL	$\pm$ half octave
KEY FINE	Within $\pm$ half step
OCTAVER	± 1 octave
DIMENSIONS	440(W) $\times$ 98(H) $\times$ 360(D) mm (17.3 $\times$ 3.85 $\times$ 14.2 inches)
WEIGHT	5.3kg (11.7 lbs)

* For improvement purposes, specifications and design are subject to change without notice.

III. CONTROLS

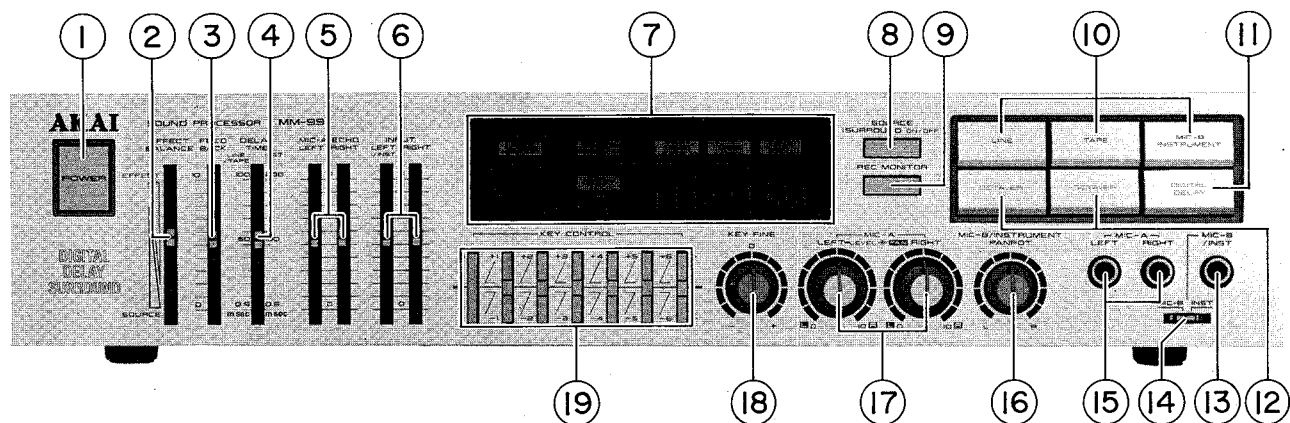


Fig. 3-1 Front View

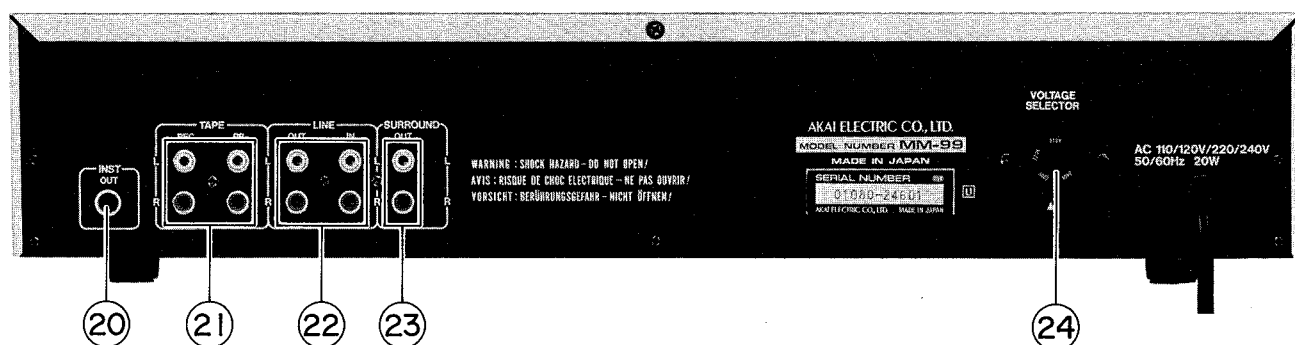


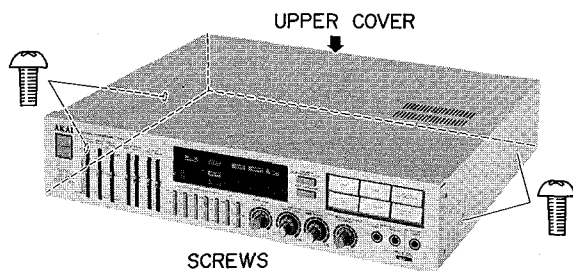
Fig. 3-2 Rear View

1. POWER SWITCH
2. EFFECT BALANCE CONTROL
3. FEED BACK CONTROL
4. DELAY TIME CONTROL
5. MIC-A ECHO LEFT, RIGHT CONTROL
6. INPUT LEFT/INST, RIGHT CONTROL
7. DISPLAY
8. SOURCE (SURROUND ON/OFF) SWITCH
9. REC MONITOR SWITCH
10. INPUT SELECTOR
11. DIGITAL DELAY SWITCH
12. OCTAVER +, -
13. MIC-B/INST JACK
14. MIC-B/INSTRUMENT SELECTOR
15. MIC-A (LEFT, RIGHT) JACK
16. MIC-B/INSTRUMENT PAN POT CONTROL
17. MIC-A LEVEL, PAN (LEFT, RIGHT) CONTROL
18. KEY FINE CONTROL
19. KEY CONTROL BUTTON
20. INSTRUMENT OUT JACK
21. TAPE REC, PB JACK
22. LINE IN, OUT JACK
23. SURROUND OUT JACK
24. VOLTAGE SELECTOR (U Model Only)

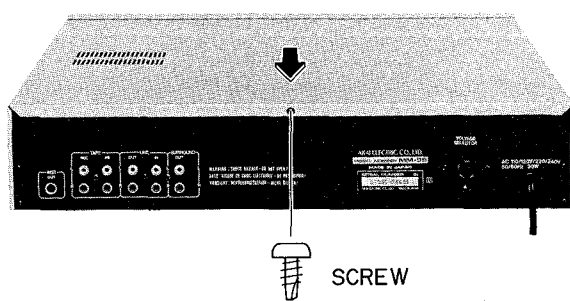
II. DISMANTLING OF UNIT

In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.

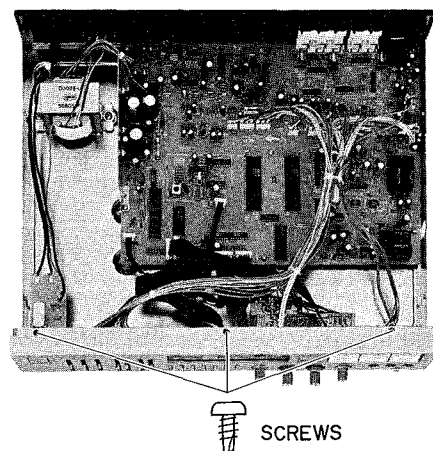
1



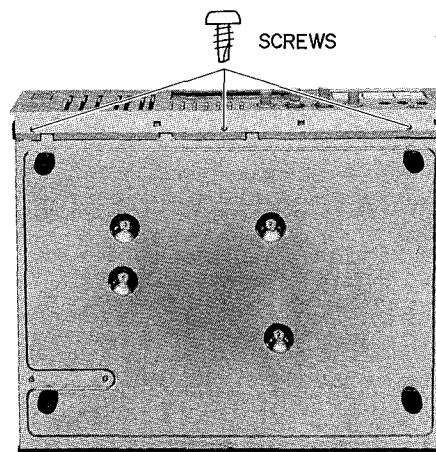
2



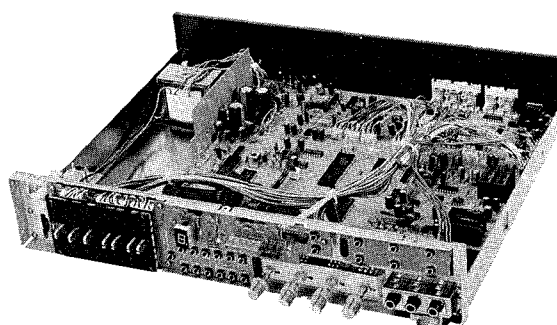
3



4



5



IV. PRINCIPAL PARTS LOCATION

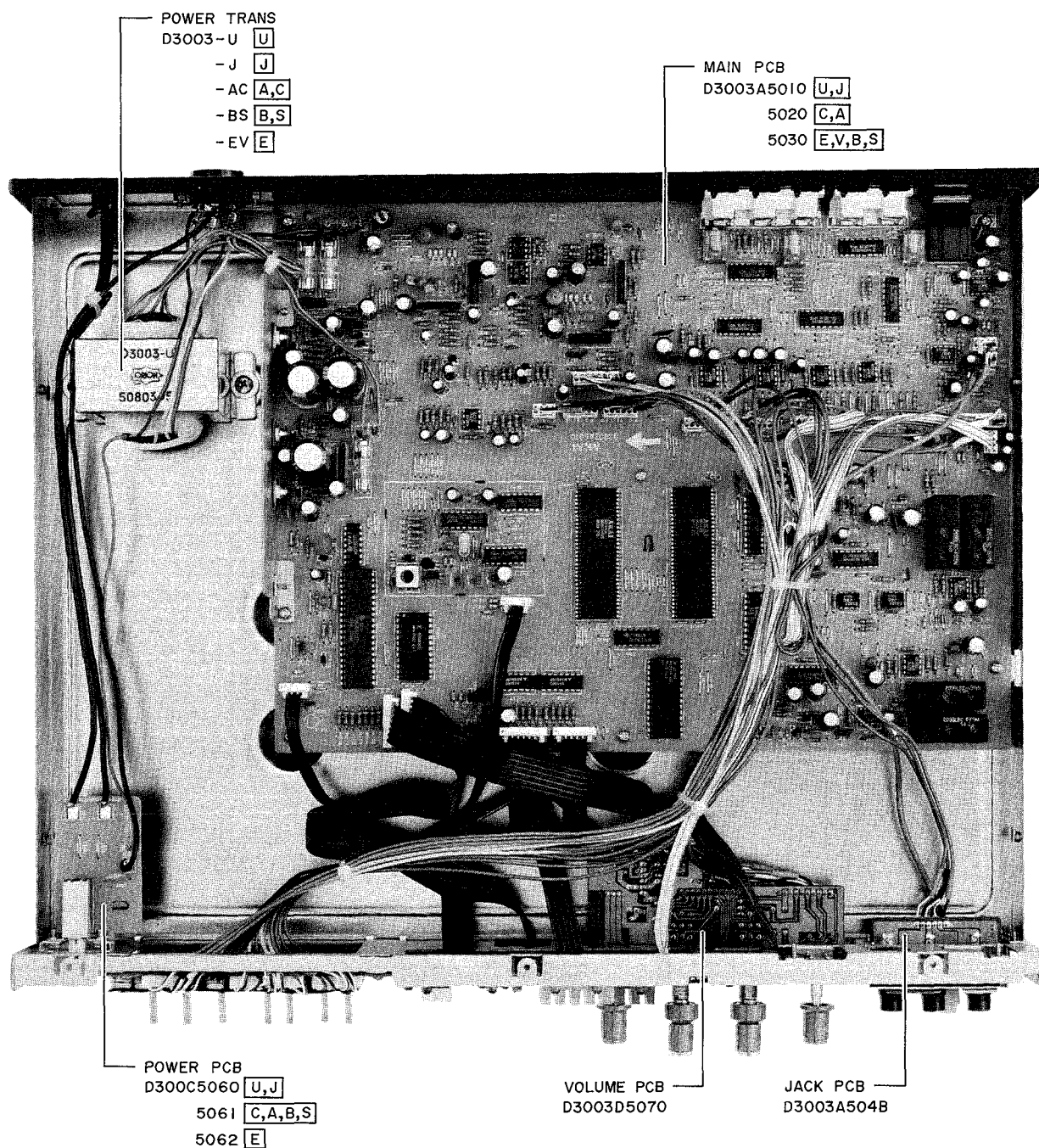


Fig. 4-1 Top View

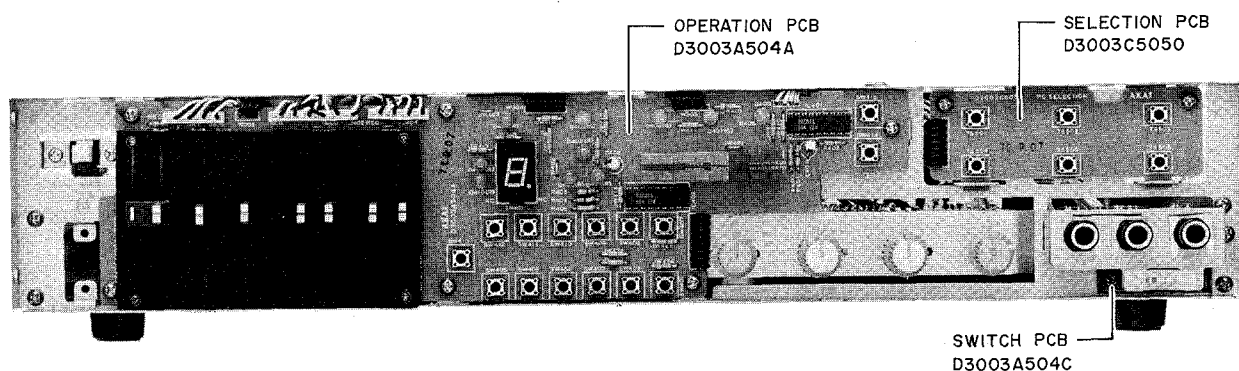


Fig. 4-2 Front View

V. ADJUSTMENT

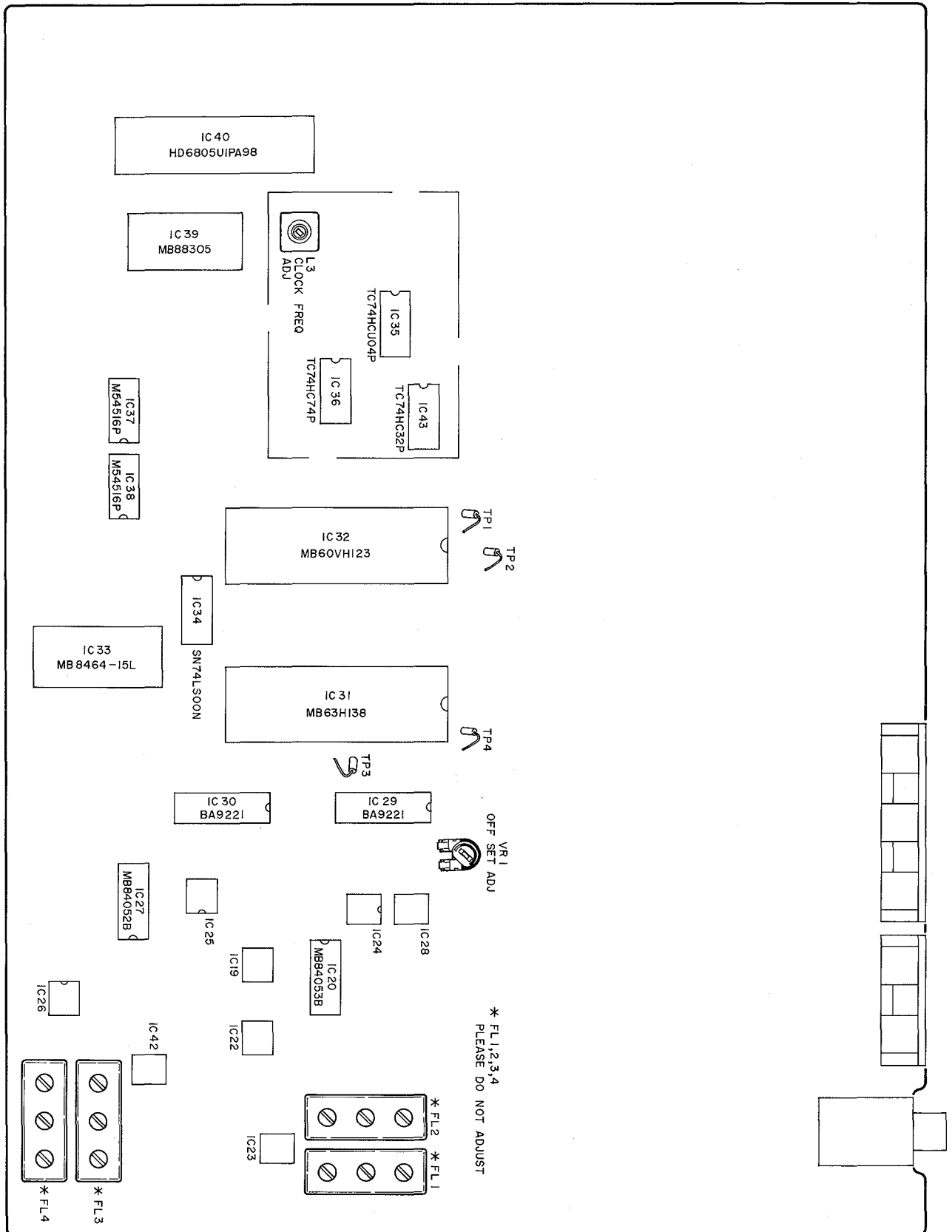


Fig. 5-1 Main PCB

5-1. CLOCK FREQUENCY ADJUSTMENT

1. Connect the Frequency Counter to TP2.
2. Set Key Fine Volume to center click position.
3. Depress Digital Delay Switch. (Digital Delay Mode)
4. Adjust L3 so that the frequency of TP2 is 12.5MHz $\pm$ 50kHz.
5. Connect a Dual-Trace Oscilloscope CH-1 to TP2 and CH-2 to TP1 respectively.
6. Depress 0 (Zero) Key Control. (Key Control Mode)
7. Turn Key Fine Volume to fully clockwise, then turn Key Fine Volume to counter-clockwise until center click position again.
8. Confirm waveform of TP1 and TP2 are synchronized.

5-2. OFF-SET ADJUSTMENT

1. Connect a oscilloscope to TP3.
2. Set the Input Level Volume to minimum.
3. Adjust VR1 for clock waveform as shown in Fig. 5-1.

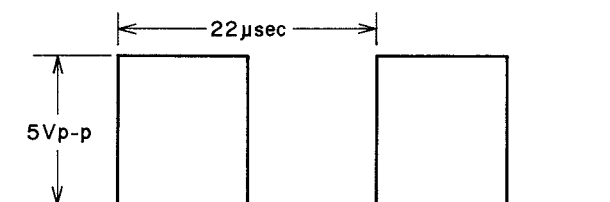


Fig. 5-2

NOTE:

Please do not turn cores of FL1, FL2, FL3 and FL4.
If these cores are turned, readjustment of factory specifications becomes very difficult.
In case, replace new part.

VI. PC BOARD TITLE AND IDENTIFICATION NUMBERS

PC BOARD TITLE		PC BOARD NUMBER	REMARK
MAIN	PC BOARD	D3003A5010	U, J
		5020	C, A
		5030	E, V, B, S
OPERATION	PC BOARD	D3003A504A	
JACK	PC BOARD	D3003A504B	
SWITCH	PC BOARD	D3003A504C	
SELECTION	PC BOARD	D3003A5050	
POWER	PC BOARD	D3003C5060	U, J
		D3003C5061	C, A, B, S
		D3003C5062	E
VOLUME	PC BOARD	D3003B5070	

SECTION 2

PARTS LIST

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10. FINAL ASSEMBLY BLOCK	19
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Resistor and Capacitor which is not listed in this parts list, please refer to COMMON LIST FOR SERVICE PARTS.

ATTENTION

1. When placing an order for parts, be sure to list the parts no., model no., and description of each part. If any of this information is omitted, there are instances in which parts cannot be shipped or the wrong parts will be delivered.
2. Please be careful not to make a mistake in the parts no. If the parts no. is in error, a part different from the one ordered may be delivered.
3. Because part numbers and part definitions and supply in the Preliminary Parts List may have been the subject of changes, please use this parts list for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List shows those parts which are considered necessary for repairs. Other parts, such as resistors and capacitors, are shown in the "Common List for Service Parts" from which these parts should be selected and parts.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the parts list

a) Mechanism Block

b) P.C Board Block

2. HEAD BASE BLOCK

REF. NO.	PART NO.	DESCRIPTION
2-1x	BH-T2023A320A	HEAD BASE BLOCK GX-F66R
2-2	HP-H2206A010A	HEAD R/P PR4-8FU C
2-3	ZS-477876	PAN20x03STL CMT
2-4	ZS-536488	BID20x08STL CMT
2-5	ZG-402895	CS ANGLE ADJUST SPRING

SP (Service Parts) Classification

A small "x" indicates the inability to show that particular part in the Photo or Illustration.

This number corresponds with the individual parts index number in that figure

This number corresponds with the Figure Number

6. SYS. CON. P C BOARD BLOCK

REF. NO.	PART NO.	DESCRIPTION
6-1	BA-T2034A070A	PC SYS CON BLK GX-F44R
6-1C1	EI-324536	IC HD14049BP
6-1C2	EI-336801	IC MB8841-564M
6-1C3	EI-331661	IC SN7405N
6-1C4	EI-336725	IC M54527P
6-TR1to4	ET-200985	TR 2SC2603 F,G
6-TR5to28	ET-554657	TR 2SA733A P,Q
6-D1	ED-318292	D SILICON H 1S2473T-77 T26
6-D2to4	ED-308952	D GERMA V 1K34A-LR F07
6-D5to10	ED-318292	D SILICON H 1S2473T-77 T26
6-X1	EI-318384	OSC X'TAL NC-18C 3.579545MHZ

SP (Service Parts) Classification

These reference symbols correspond with component symbols in the Schematic Diagrams.

5. The kind of part and its installation position can both be determined by the Part Number. To determine where a part number is listed, utilize the Parts Index at the end of the Parts List. It is necessary first of all to find the Part Number. This can be accomplished by using the Reference Number listed at the right of the part number in the Parts Index.

WARNING

⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS

AVERTISSEMENT

⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

RECOMMENDED SPARE PARTS

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

REF. PART NO. DESCRIPTION
NO.

1 N	BT-360177	△ TRANS POWER D3003-AC [C,A]
2 N	BT-360181	△ TRANS POWER D3003-BS [B,S]
3 N	BT-360179	△ TRANS POWER D3003-EV [E]
4 N	BT-360176	△ TRANS POWER D3003-J [J]
5 N	BT-360175	△ TRANS POWER D3003-U [U]
6	ED-562397	D GERMA H 1S188FM1
7 N	ED-360236	D LED GL-5EG5 GREEN
8 N	ED-360234	D LED GL-5HD5 RED
9	ED-330319	△ D SILICON DBA10B 100/1.0A
10	ED-301911	D SILICON H DS448
11	ED-344280	D SILICON H GMA-01-FY2 F05
12 N	ED-360216	D VARACTOR MA328
13	ED-346610	D ZENER H HZ11 A3
14	ED-324526	D ZENER H HZ12 C1
15	ED-306320	D ZENER H HZ15 2
16	ED-319167	D ZENER H HZ6 C3
17	ED-346459	D ZENER H HZ7FA F10 B2
18	ED-346608	D ZENER H HZ9 B3
19	ED-306014	D ZENER H HZ9 C3
20	EF-355374	△ FUSE BET T 500MA 250V [B]
21	EF-358974	△ FUSE BET T 630MA 250V [B]
22	EF-593706	△ FUSE SEMKO T 500MA 250V [E,S]
23	EF-601942	△ FUSE SEMKO T 630MA 250V [E,S]
24	EF-309388	△ FUSE TSC A 250V 0.80A [U,J]
25	EF-309391	△ FUSE TSC 125V 0.80A [C,A]
26 N	EH-361979	FILTER LC LP 209BLRC-4919N
27 N	EI-360233	IC BA681A
28	EI-360050	IC BA9221
29 N	EI-362227	IC HD6805U1A98P
30	EI-201550	IC HD7407P
31	EI-360954	IC IR9311
32 N	EI-360223	IC MB60VH123P-G-SH
33 N	EI-360222	IC MB63H138P-G-SH
34 N	EI-360229	IC MB84052
35	EI-355863	IC MB84053B
36 N	EI-361982	IC MB8464-15L
37	EI-353851	IC MB88305-P
38	EI-360227	IC MN3007
39	EI-360228	IC MN3101
40	EI-355697	IC M5221P
41	EI-332258	IC M54516
42	EI-213390	IC NJM4558D
43 N	EI-360225	IC NJM5532
44	EI-354158	IC SN74LS00N
45	EI-360040	IC TC74HCU0 4P
46	EI-360036	IC TC74HC32P
47	EI-360028	IC TC74HC74P
48	EI-349372	OSC CE CSA4.00MG 4MHz
49 N	EI-360210	OSC X'TAL D3003 25.000000MHz
50 N	EM-360239	IND LE GL-103R5 RED
51 N	EM-360238	IND LE GL-105N5 GREEN
52 N	EM-360237	IND LE GL-9R04
53	EQ-348929	RELAY SIG G5A-232P 2TR 12V
54	ES-348998	△ SW PUSH SDL1P 01-1
55	ES-359606	△ SW SELECTOR 8T-41S0454 01-4 [U]
56 N	ES-360242	SW SLIDE SSY022 02-2
57	ES-349367	SW TACT SKHHAK003A
58 N	ET-360212	TR FET 2SK55D
59	ET-308472	TR 2SA1115 E,F,G
60	ET-360687	△ TR 2SB1015 Y,GR
61	ET-308141	TR 2SC2603 G
62	ET-349285	△ TR 2SD1406 Y
63	ET-208012	TR 2SD571 K
64	EV-523620	R S-FIX H V8K4-1 3P 501
65 N	EV-360245	VR ROTARY EVH-CCA K3514 OB502
66 N	EV-360244	VR ROTARY K16D2010K AC103 3B103
67 N	EV-360243	VR ROTARY 16P20×4B AC103
68 N	EV-360249	VR SLIDE S4518 OB 103

REF. PART NO. DESCRIPTION
NO.

69 N	EV-360248	VR SLIDE S4518 OB 203
70 N	EV-360247	VR SLIDE S4518 3B103
71 N	EV-360251	VR SLIDE S4528 MN103
72	EV-363961	VR SLIDE S4528 MN103 L=15
73	EV-360250	VR SLIDE S4528 3B 103

“NOTE” N: New Parts

SYMBOL FOR DESTINATION

[A] :	AAL (U.S.A.)
[B] :	UK (England)
[C] :	CSA (Canada)
[E] :	CEE (Europe)
[J] :	JPN (Japan)
[S] :	SAA (Australia)
[U] :	U/T (Universal Area)

1. PC BOARD BLOCK

REF. NO.	PART NO.	DESCRIPTION
1-1	BA-D3003A030A	PC MAIN BLK MM-99 (U,J)
1-1A	BA-D3003A030B	PC MAIN BLK MM-99 (C,A)
1-1B	BA-D3003A030C	PC MAIN BLK MM-99 (E,B,S)
1-2	BA-D3003A020A	PC OPERATION BLK MM-99

NOTE:

PC OPERATION BLK consists of following PC BOARDS.

- OPERATION PC BOARD
- JACK PC BOARD
- SWITCH PC BOARD

2. MAIN PC BOARD

REF. NO.	PART NO.	DESCRIPTION
MAIN PC BOARD		
2-IC1	EI-213390	IC NJM4558D
2-IC2,3	EI-337228	IC M5218L
2-IC4,5	EI-360227	IC MN3007
2-IC6	EI-360228	IC MN3101
2-IC7,8	EI-337228	IC M5218L
2-IC9 to 13	EI-213390	IC NJM4558D
2-IC14	EI-360229	IC MB84052
2-IC15 to 18	EI-355863	IC MB84053B
2-IC19	EI-360225	IC NJM5532
2-IC20	EI-355863	IC MB84053B
2-IC21	EI-213390	IC NJM4558D
2-IC22	EI-360225	IC NJM5532
2-IC23	EI-213390	IC NJM4558D
2-IC24 to 26	EI-355697	IC M5221P
2-IC27	EI-360229	IC MB84052
2-IC28	EI-360954	IC IR9311
2-IC29,30	EI-360050	IC BA9221
2-IC31	EI-360222	IC MB63H138P-G-SH
2-IC32	EI-360223	IC MB60VH123P-G-SH
2-IC33	EI-361982	IC MB8464-15L
2-IC34	EI-354158	IC SN74LS00N
2-IC35	EI-360040	IC TC74HC04P
2-IC36	EI-360028	IC TC74HC74P
2-IC37,38	EI-332258	IC M54516
2-IC39	EI-353851	IC MB88305-P
2-IC40	EI-362227	IC HD6805U1A98P
2-IC41	EI-201550	IC HD7407P
2-IC42	EI-213390	IC NJM4558D
2-IC43	EI-360036	IC TC74HC32P
2-IC50	EI-337228	IC M5218L
2-TR1	ET-308141	TR 2SC2603 G
2-TR2	ET-349285	△ TR 2SD1406 Y
2-TR3	ET-308141	TR 2SC2603 G
2-TR4	ET-349285	△ TR 2SD1406 Y
2-TR5	ET-308472	TR 2SA1115 E,F,G
2-TR6	ET-360687	△ TR 2SB1015 Y,GR
2-TR7,8	ET-308141	TR 2SC2603 G
2-TR9	ET-308472	TR 2SA1115 E,F,G
2-TR10	ET-208012	TR 2SD571 K
2-TR11	ET-308472	TR 2SA1115 E,F,G
2-TR12	ET-208012	TR 2SD571 K
2-TR13,14	ET-308141	TR 2SC2603 G
2-TR15,16	ET-360212	TR FET 2SK55D
2-TR17	ET-208012	TR 2SD571 K
2-TR18 to 27	ET-308141	TR 2SC2603 G
2-D1,2	ED-330319	△ D SILICON DBA10B 100/1.0A
2-D3	ED-319167	D ZENER H HZ6 C3
2-D4,5	ED-324526	D ZENER H HZ12 C1
2-D6	ED-344280	D SILICON H GMA-01-FY2 F05
2-D7	ED-360216	D VARACTOR MA328
2-D8	ED-306320	D ZENER H HZ15 2
2-D9	ED-346610	D ZENER H HZ11 A3
2-D10,11	ED-346459	D ZENER H HZ7FA F10 B2
2-D12,13	ED-346610	D ZENER H HZ11 A3

REF. NO.	PART NO.	DESCRIPTION
2-D14	ED-301911	D SILICON H DS448
2-D15 to 18	ED-344280	D SILICON H GMA-01-FY2 F05
2-D20 to 22	ED-346608	D ZENER H HZ9 B3
2-D23,24	ED-306014	D ZENER H HZ9 C3
2-D28 to 30	ED-301911	D SILICON H DS448
2-D31	ED-346608	D ZENER H HZ9 B3
2-D32 to 35	ED-301911	D SILICON H DS448
2-D40,41	ED-346459	D ZENER H HZ7FA F10 B2
2-VR1	EV-523620	R S-FIX H V8K4-1 3P 501
2-FL1 to 4	EH-361979	FILTER LC LP 209BLRC-4919N
2-L1,2	EO-368403	COIL FIX 1 FL09H 333J
2-L3	EO-360217	COIL VARI 1 YTKXNS-35490N
2-L4,5	EO-485504	COIL FIX 1 FL05H 271K
2-RL1 to 3	EQ-348929	RELAY SIG G5A-232P 2TR 12V
2-X1	EI-360210	OSC X'TAL D3003 25.000000MHZ
2-X3	EI-349372	OSC CE CSA4.00MG 4MHz
2-C1	EC-315967	C EC V CUT SM 332M 16.0DC
2-C2,3	EC-324662	C EC V CUT SM 222M 25DC
2-C21	EC-200948	C EC V F05 NP SM 1R0M 50DC
2-C22	EC-333988	C EC V F05 NP SM 100M 25DC
2-C31	EC-333972	C EC V F05 NP SM 3R3M 50DC
2-C32	EC-200948	C EC V F05 NP SM 1R0M 50DC
2-C33	EC-333988	C EC V F05 NP SM 100M 25DC
2-C51	EC-333972	C EC V F05 NP SM 3R3M 50DC
2-C61,62	EC-200948	C EC V F05 NP SM 1R0M 50DC
2-C64	EC-333988	C EC V F05 NP SM 100M 25DC
2-C66	EC-200948	C EC V F05 NP SM 1R0M 50DC
2-C67	EC-333988	C EC V F05 NP SM 100M 25DC
2-C68	EC-200948	C EC V F05 NP SM 1R0M 50DC
2-C71,72	EC-200948	C EC V F05 NP SM 1R0M 50DC
2-C73,74	EC-333988	C EC V F05 NP SM 100M 25DC
2-C75	EC-325320	C EC V F05 NP AWA 2R2M 50DC
2-C76	EC-333971	C EC V F05 NP SM 2R2M 50DC
2-C85,86	EC-333972	C EC V F05 NP SM 3R3M 50DC
2-C103,104	EC-330466	C EC V F05 NP SM 4R7M 50DC
2-C137	EC-325320	C EC V F05 NP AWA 2R2M 50DC
2-C138 to 141	EC-332052	C EC V F05 NP SM 4R7M 35DC
2-C205,206	EC-333972	C EC V F05 NP SM 3R3M 50DC
2-C211,212	EC-333988	C EC V F05 NP SM 100M 25DC
2-C221,222	EC-200948	C EC V F05 NP SM 1R0M 50DC
2-J6	EJ-336905	PIN J AJC-035-ACB P 4P
2-J7	EJ-336904	PIN J AJC-036-ACB P 6P
2-J8	EJ-360252	PHONE J P HJ2307-3020
ASSEMBLY BLOCK		
2-F1	EF-309388	△ FUSE TSC A 250V 0.80A [U,J]
2-F1A	EF-309391	△ FUSE TSC 125V 0.80A [C,A]
2-F1B	EF-593706	△ FUSE SEMKO T 500MA 250V [E,V,S]
2-F1C	EF-355374	△ FUSE BET T 500MA 250V [B]
2-F2	EF-309388	△ FUSE TSC A 250V 0.80A [U,J]
2-F2A	EF-309391	△ FUSE TSC 125V 0.80A [C,A]
2-F2B	EF-593706	△ FUSE SEMKO T 500MA 250V [E,V,S]
2-F2C	EF-355374	△ FUSE BET T 500MA 250V [B]
2-F3	EF-309388	△ FUSE TSC A 250V 0.80A [U,J]
2-F3A	EF-309391	△ FUSE TSC 125V 0.80A [C,A]
2-F3B	EF-601942	△ FUSE SEMKO T 630MA 250V [E,S]
2-F3C	EF-358974	△ FUSE BET T 630MA 250V [B]
2-1	EZ-200473	SILICON RUBBER SHEET TC-30

3. OPERATION PC BOARD

REF. NO.	PART NO.	DESCRIPTION
3-IC401,402	EI-360233	IC BA681A
3-D401 to 405	ED-360234	D LED GL-5HD5 RED
3-D406 to 409	ED-360236	D LED GL-5EG5 GREEN
3-D410	ED-360234	D LED GL-5HD5 RED
3-VR401,402	EV-360247	VR SLIDE S4518 3B103
3-VR403,404	EV-360248	VR SLIDE S4518 OB203
3-VR405	EV-360249	VR SLIDE S4518 OB 103
3-VR406	EV-360250	VR SLIDE S4528 3B 103
3-VR407	EV-360251	VR SLIDE S4528 MN103
3-VR408	EV-363961	VR SLIDE S4528 MN103 L=15
3-SW401 to 415	ES-349367	SW TACT SKHHAK003A
3-IN401	EM-360237	IND LE GL-9R04
3-IN402,403	EM-360238	IND LE GL-105N5 GREEN
3-IN404,405	EM-360239	IND LE GL-103R5 RED
3-1	EJ-363962	SOCKET IC IC-66-5 08#2

4. VOLUME PC BOARD

REF. NO.	PART NO.	DESCRIPTION
4-IC701	EI-337228	IC M5218L
4-D701	ED-301911	D SILICON H DS448
4-D702	ED-562397	D GERMA H 1S188FM1
4-VR701	EV-360243	VR ROTARY 16P20x4B AC103
4-VR702,703	EV-360244	VR ROTARY K16D2010K AC103 3B103
4-VR704	EV-360245	VR ROTARY EVH-CCA K3514 OB502
4-C702	EC-200948	C EC V F05 NP SM 1R0M 50DC

5. SELECTION PC BOARD

REF. NO.	PART NO.	DESCRIPTION
5-TS501 to 506	ES-349367	SW TACT SKHHAK003A

6. POWER PC BOARD

REF. NO.	PART NO.	DESCRIPTION
6-SW601	ES-348998	△ SW PUSH SDL1P 01-1
6-L601	EO-338409	COIL LF FKOB160MH02 250UH [U,E]
6-C601	EC-320548	△ C CE V F 103Z 250AC [J]
6-C601A	EC-338411	△ C CE V FZ 103P 400AC [EXCEPT J]

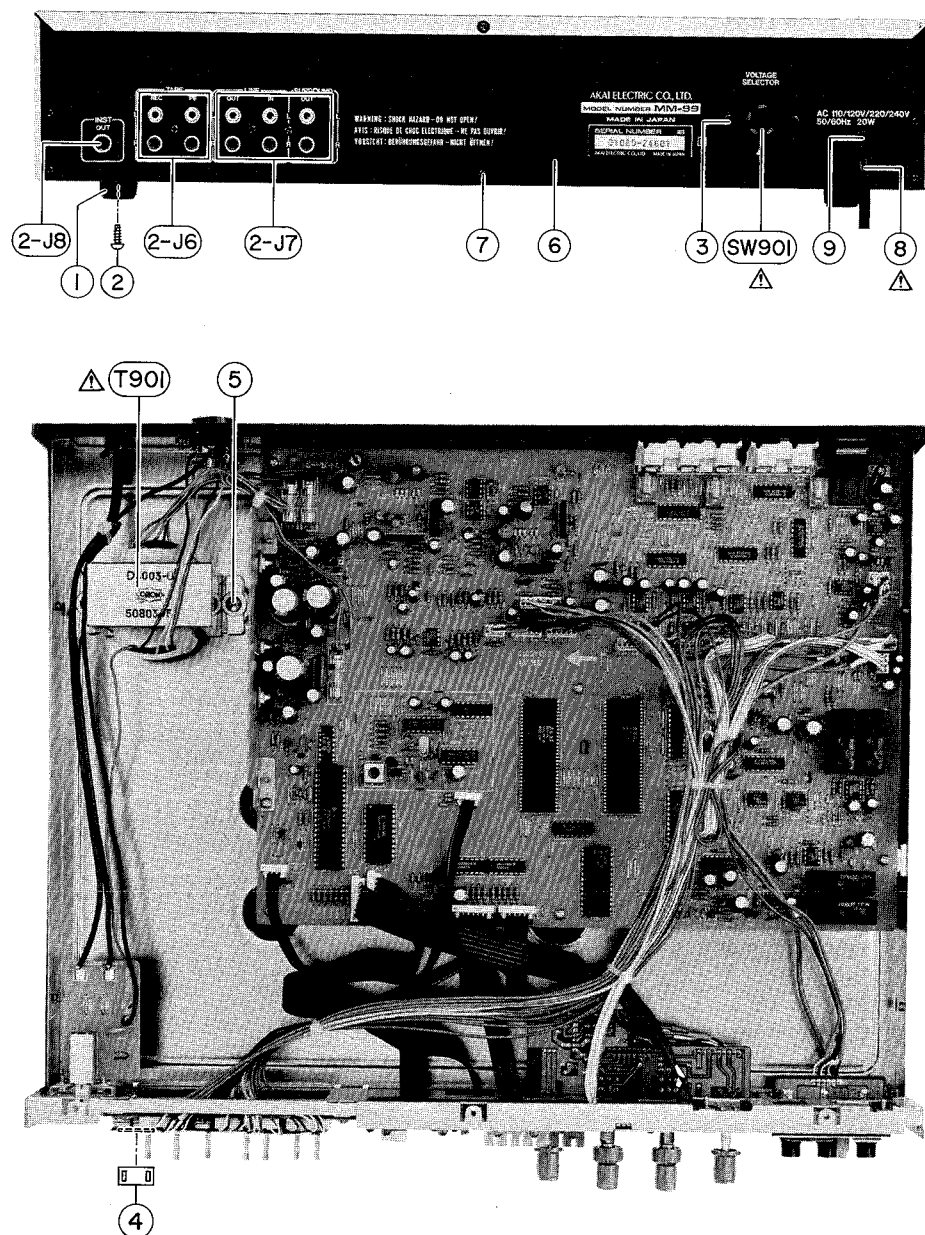
7. JACK PC BOARD

REF. NO.	PART NO.	DESCRIPTION
7-J421	EJ-360240	PHONE J HLJ2337-3000
7-J422	EJ-360241	PHONE J P HLJ2307-3000

8. SWITCH PC BOARD

REF. NO.	PART NO.	DESCRIPTION
8-SW431	ES-360242	SW SLIDE SSY022 02-2

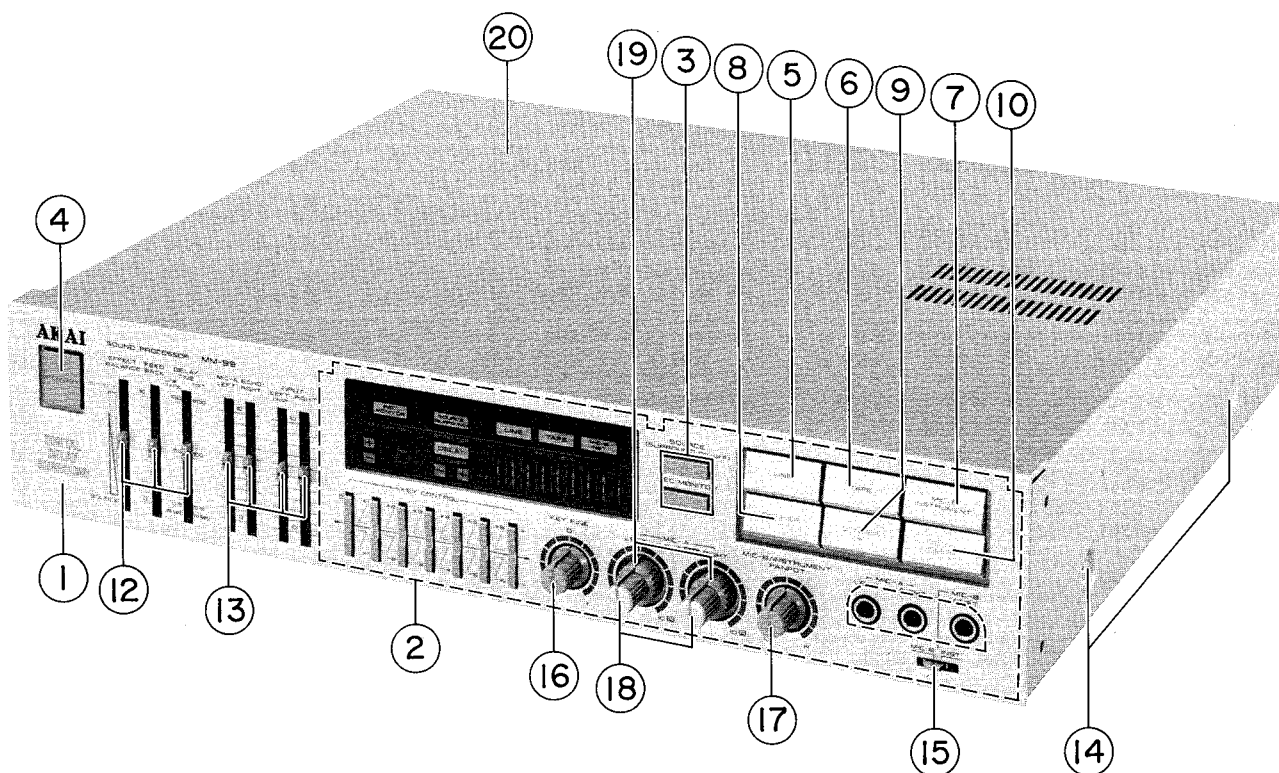
ASSEMBLY BLOCK



9. ASSEMBLY BLOCK

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
	ASSEMBLY BLOCK			MAIN PC BOARD	
9-1	SA-327847	TRAN LEG T-H	2-J6	EJ-336905	PIN J AJC-035-ACB P 4P
9-2	ZS-523664	T2BR30x10STL CMT	2-J7	EJ-336904	PIN J AJC-036-ACB P 6P
9-3	ZS-309315	T2BR30x10STL BNI (SW901 FIX) [U]	2-J8	EJ-360252	PHONE J P HJ2307-3020
9-4	MZ-360129	JOINT VOLUME			
9-5	ZS-314702	ST BID40x10STL CMT [POWER TRANS FIX]			
9-6	SP-360133B	PANEL REAR MM-99 (J)			
9-6A	SP-360133A	PANEL REAR MM-99 (U)			
9-6B	SP-360133C	PANEL REAR MM-99 (A,C)			
9-6C	SP-360133D	PANEL REAR MM-99 (E,V)			
9-6D	SP-360133E	PANEL REAR MM-99 (B,S)			
9-7	ZS-447761	T2BR30x06STL BNI			
9-8	EW-524845	△ AC CORD 2 CORES VM1165B, VFF J [J]			
9-8A	EW-374894	△ AC CORD 2 CORES VM-0129A, VFF U/T [U]			
9-8B	EW-352237	△ AC CORD 2 CORES KP-8, SPT-2 UC [C,A]			
9-8C	EW-336923	△ AC CORD 2 CORES KP-419C, LTCE-2F EV [E]			
9-8D	EW-346249	△ AC CORD 2 CORES LCFL2x0.75 B [B]			
9-8E	EW-347898	△ AC CORD 2 CORES VM-0436, LCFL S [S]			
9-9	EZ-631945	STRAIN RELIEF SR-4N-4			
9-T901	BT-360176	△ TRANS POWER D3003-J [J]			
9-T901A	BT-360175	△ TRANS POWER D3003-U [U]			
9-T901B	BT-360177	△ TRANS POWER D3003-AC [C,A]			
9-T901C	BT-360179	△ TRANS POWER D3003-EV [E,V]			
9-T901D	BT-360181	△ TRANS POWER D3003-BS [B,S]			
9-SW901	ES-359606	△ SW SELECTOR 8T-41S0454 01-4 [U]			

FINAL ASSEMBLY BLOCK



10. FINAL ASSEMBLY BLOCK

REF. NO.	PART NO.	DESCRIPTION
PANEL FRONT BLOCK		
10-1	BD-D3003A060A	PANEL FRONT BLK MM-99
10-1B	BD-D3003A060B	PANEL FRONT BLK MM-99-B
10-2	BD-B360131	PANEL SUB PART
10-2B	BD-B360131B	PANEL SUB-B PART
10-3	SK-358722D	KNOB MODE (2)
10-3B	SK-358722B	KNOB MODE-B
10-4	SK-343017C	KNOB POWER (2)
10-4B	SK-343017F	KNOB POWER-B
10-5	SK-B360205A1	KNOB SELECT LINE PART
10-5B	SK-B360205B1	KNOB SELECT LINE-B PART
10-6	SK-B360205A2	KNOB SELECT TAPE PART
10-6B	SK-B360205B2	KNOB SELECT TAPE-B PART
10-7	SK-B360205A3	KNOB SELECT INSTRUMENT PART
10-7B	SK-B360205B3	KNOB SELECT INSTRUMENT-B PART
10-8	SK-B360205A4	KNOB SELECT OCTAVER (-) PART
10-8B	SK-B360205B4	KNOB SELECT OCTAVER (-)-B PART
10-9	SK-B360205A5	KNOB SELECT OCTAVER (+) PART
10-9B	SK-B360205B5	KNOB SELECT OCTAVER (+)-B PART
10-10	SK-B360205A6	KNOB SELECT DELAY PART
10-10B	SK-B360205B6	KNOB SELECT DELAY-B PART

REF. NO.	PART NO.	DESCRIPTION
FINAL ASSEMBLY BLOCK		
10-11x	ZS-447840	T2BR30x08STL CMT [PANEL FRONT FIX]
10-12	SK-360203A	KNOB VOLUME (3)
10-12B	SK-360203C	KNOB VOLUME (3)-B
10-13	SK-360203B	KNOB VOLUME (4)
10-13B	SK-360203D	KNOB VOLUME (4)-B
10-14	ZS-322570	ST BID40x08STL NI3 [COVER UPPER FIX]
10-14B	ZS-322580	ST BID40x08STL BNI [COVER UPPER FIX]
10-15	SK-358066A	KNOB SLIDE
10-15B	SK-358066B	KNOB SLIDE-B
10-16	SK-B352952B1	KNOB MONITOR BLUE (2) PART
10-17	SK-B352952B2	KNOB MONITOR VIOLET (2) PART
10-18	SK-B352953B	KNOB UPPER WHITE (2) PART
10-19	SK-352755B	KNOB LOWER (2)
10-20	SP-355493C	COVER UPPER (2)
10-20B	SP-354493D	COVER UPPER (2)-B
10-21x	AV-315170	CORD RR-165 PIN-PIN/2P

NOTE:

PANEL FRONT BLK consists of 10-2 to 10-10B.

SYMBOL FOR COLOR VARIATION

NON : STANDARD COLOR

B or BL : BLACK

INDEX

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BA-D3003A030A	1-1	EF-601942	2-F3B	ET-308141	2-TR21				
BA-D3003A030B	1-1A	EH-361979	2-FL1 to 4	ET-308472	2-TR9				
BA-D3003A030C	1-1B	EI-201550	2-IC41	ET-308472	2-TR5				
BD-B360131	10-2	EI-213390	2-IC1	ET-308472	2-TR11				
BD-B360131B	10-2B	EI-213390	2-IC9 to 13	ET-349285	2-TR2				
BD-D3003A060A	10-1	EI-213390	2-IC21	ET-349285	2-TR4				
BD-D3003A060B	10-1B	EI-213390	2-IC23	ET-360212	2-TR15,16				
BT-360175	9-T901A	EI-213390	2-IC42	ET-360687	2-TR6				
BT-360176	9-T901	EI-332258	2-IC37	EV-360243	4-VR701				
BT-360177	9-T901B	EI-332258	2-IC38	EV-360244	4-VR702				
BT-360179	9-T901C	EI-337228	2-IC2	EV-360244	4-VR703				
BT-360181	9-T901D	EI-337228	2-IC3	EV-360245	4-VR704				
EC-200948	2-C72	EI-337228	2-IC7,8	EV-360247	3-VR401,402				
EC-200948	2-C21	EI-337228	2-IC50	EV-360248	3-VR404				
EC-200948	2-C32	EI-337228	4-IC701	EV-360248	3-VR403				
EC-200948	2-C61	EI-349372	2-X3	EV-360249	3-VR405				
EC-200948	2-C62	EI-353851	2-IC39	EV-360250	3-VR406				
EC-200948	2-C66	EI-354158	2-IC34	EV-360251	3-VR407				
EC-200948	2-C68	EI-355697	2-IC24	EV-363961	3-VR408				
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EF-309391	2-F2A	ET-308141	2-TR3						
EF-309391	2-F3A	ET-308141	2-TR7,8						
EF-355374	2-F1C	ET-308141	2-TR13,14						
EF-355374	2-F2C	ET-308141	2-TR18 to 20						
EF-358974	2-F3C	ET-308141	2-TR22 to 24						

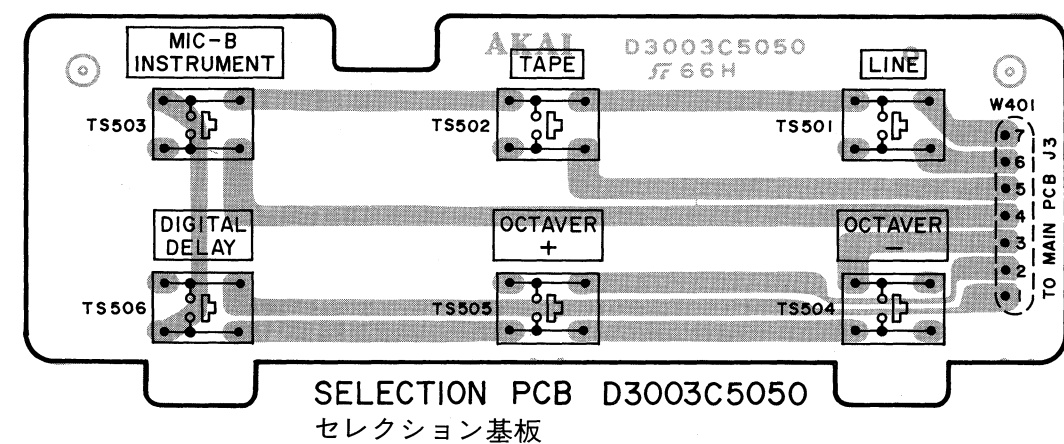
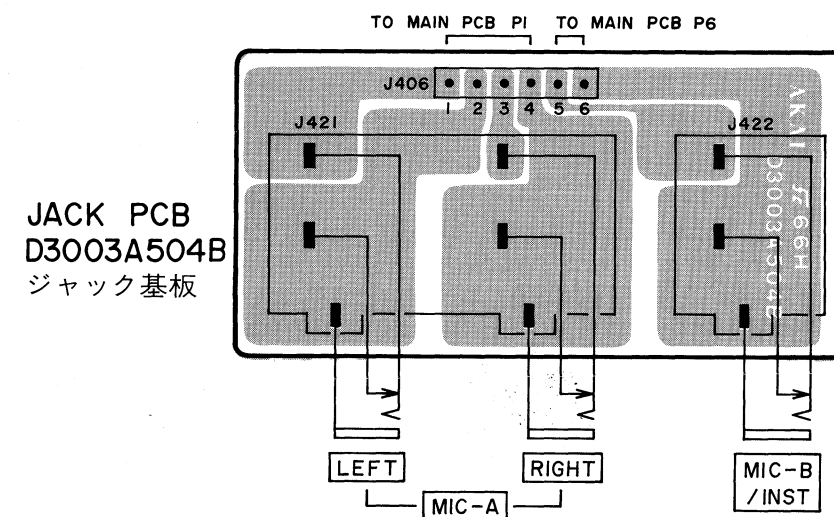
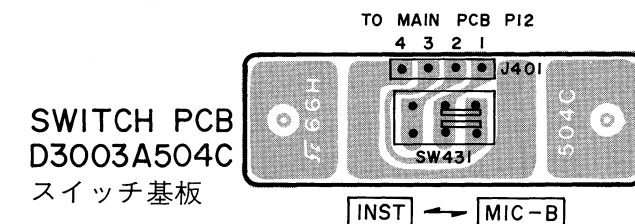
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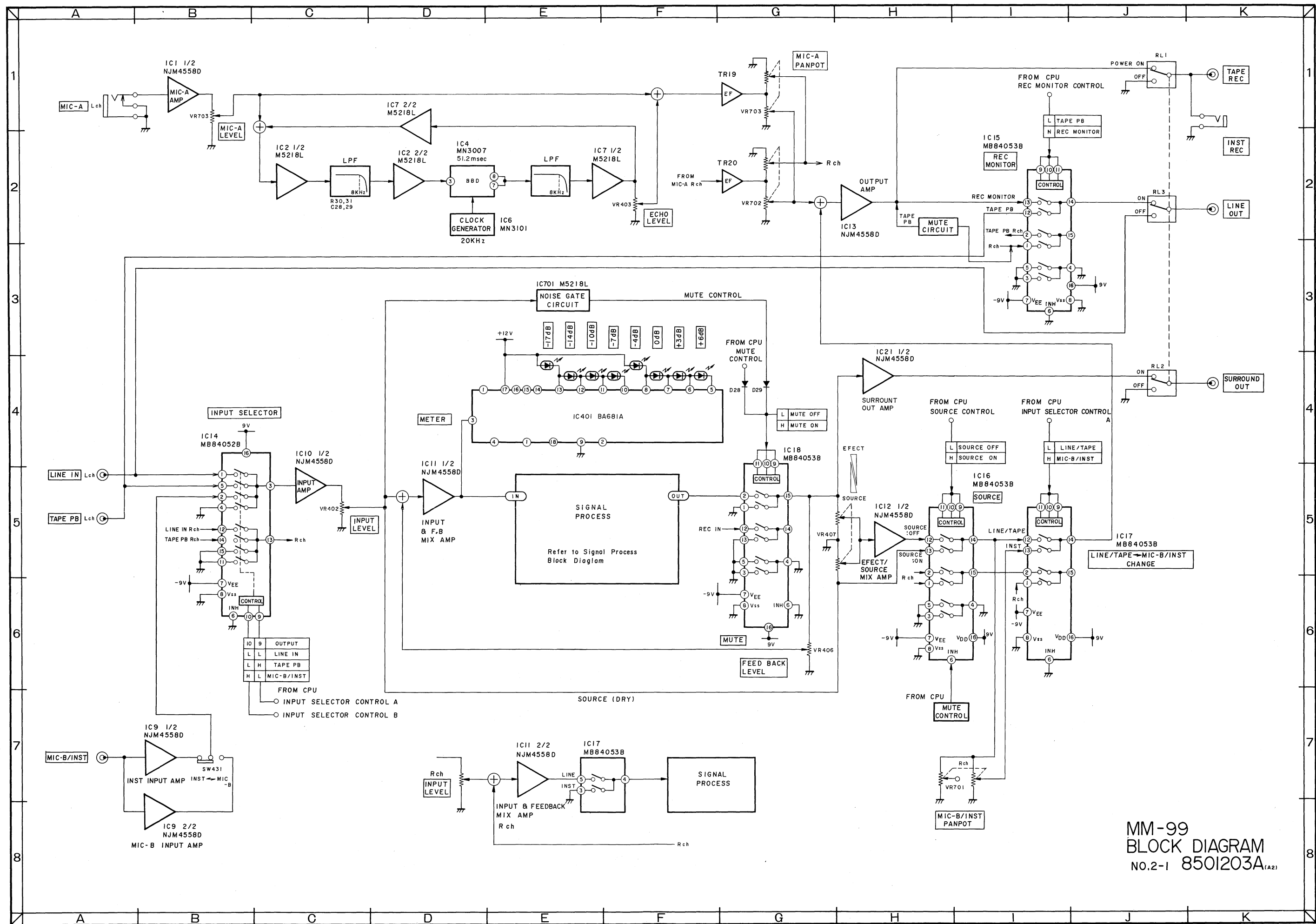
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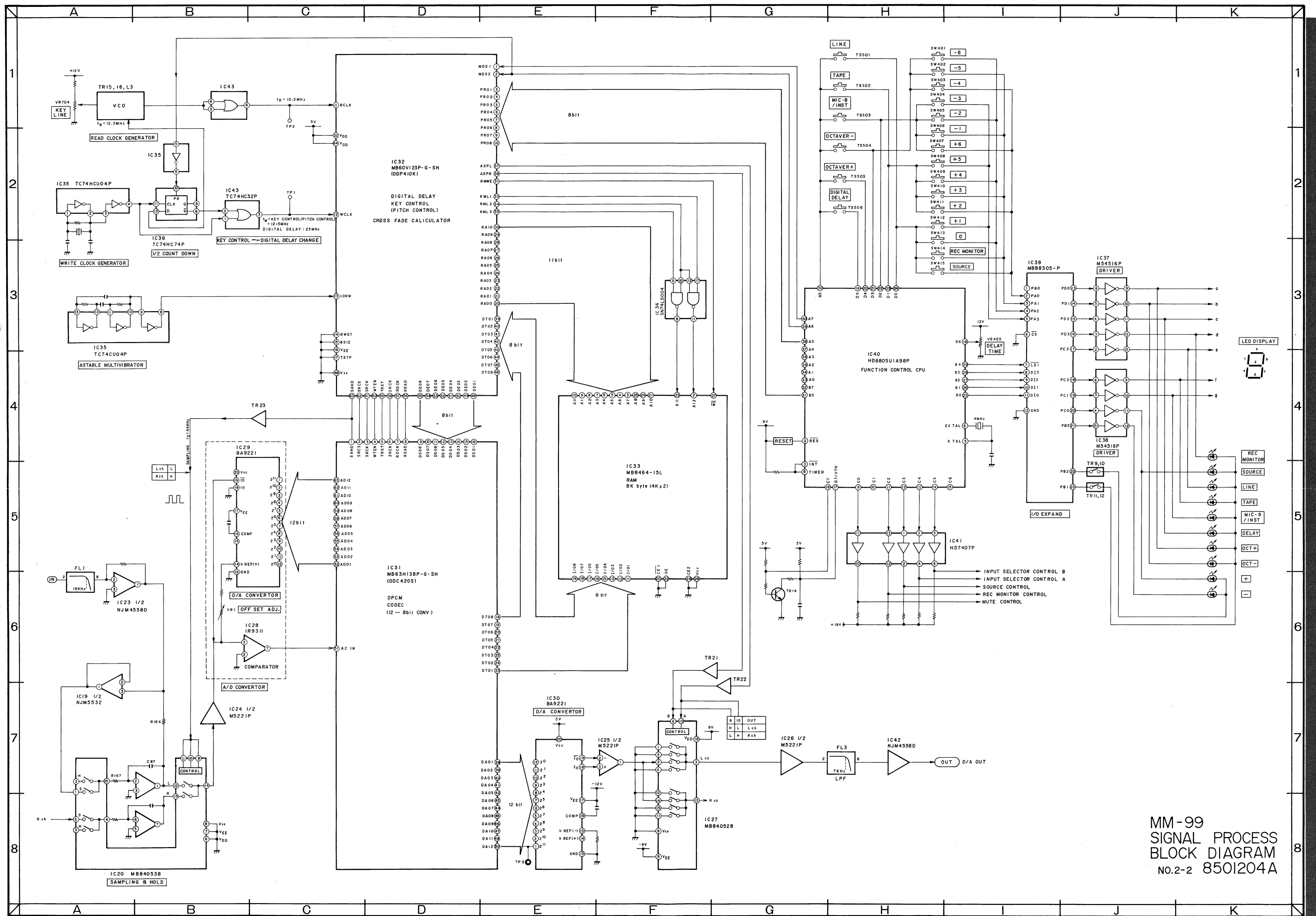
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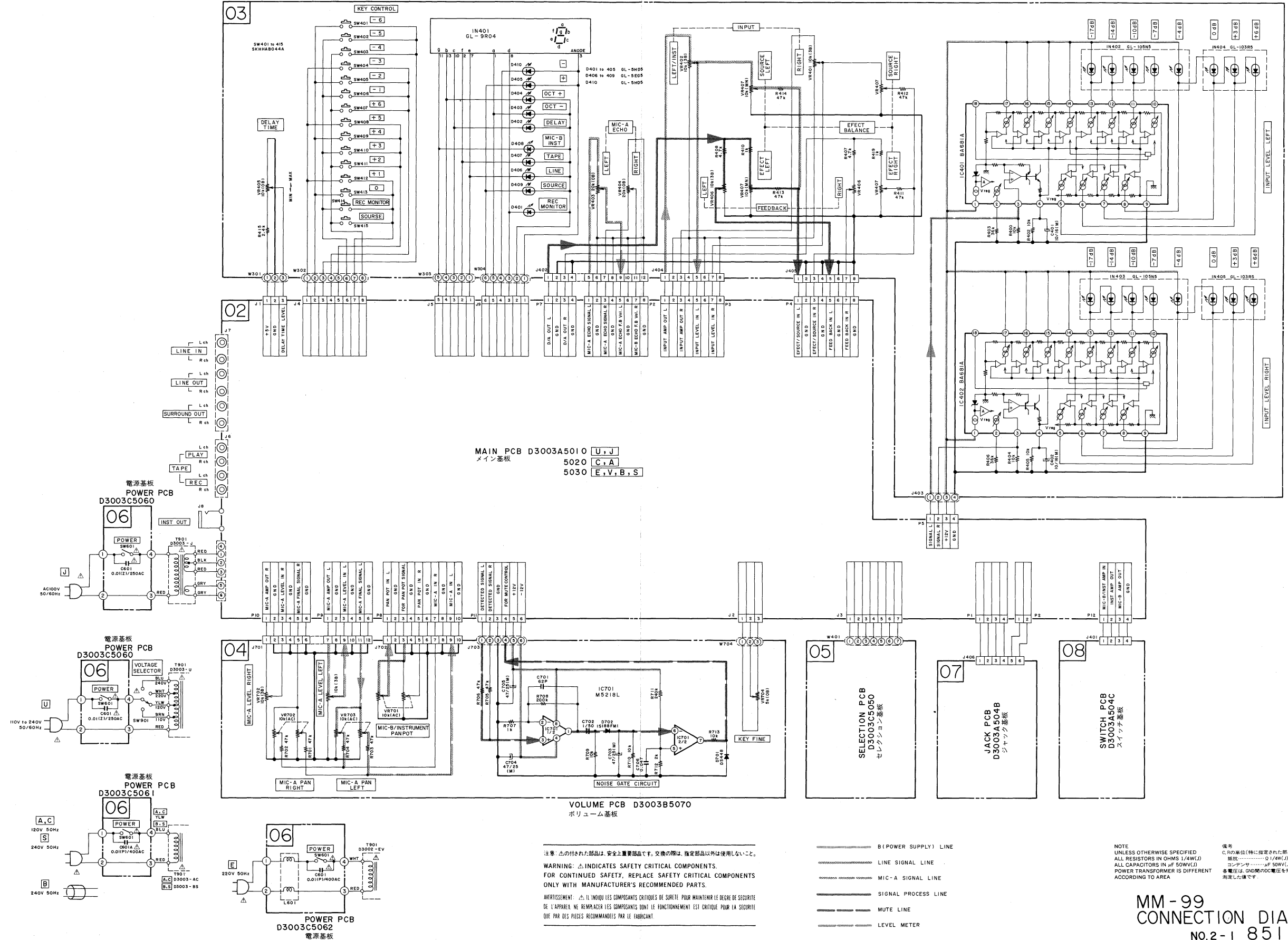




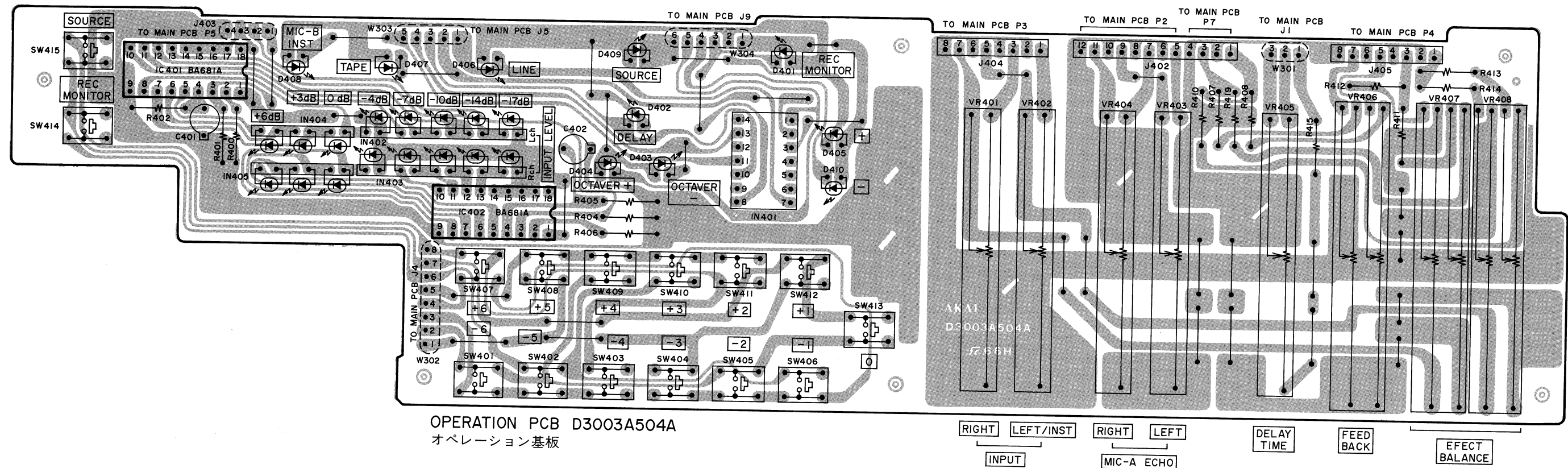
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BLOCK DIAGRAM
NO.2-2 8501204A

MM - 99

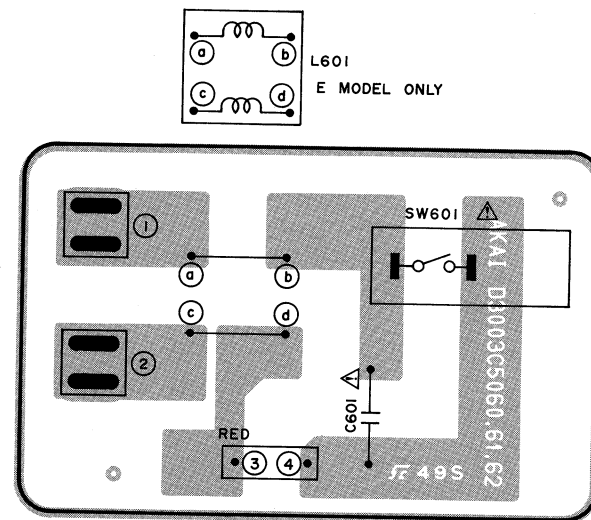
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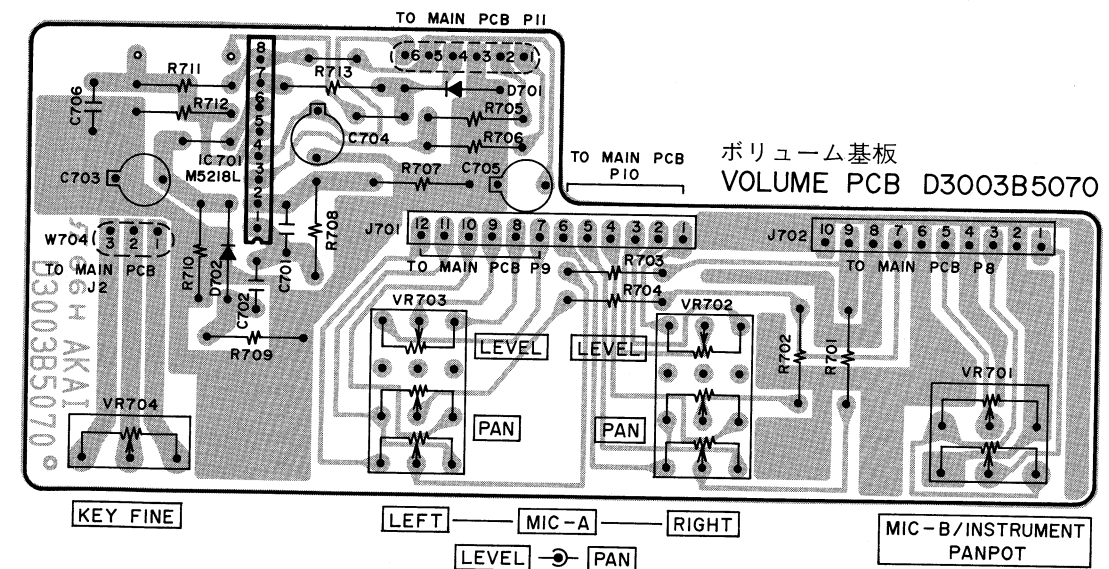
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CONNECTION DIAGRAM
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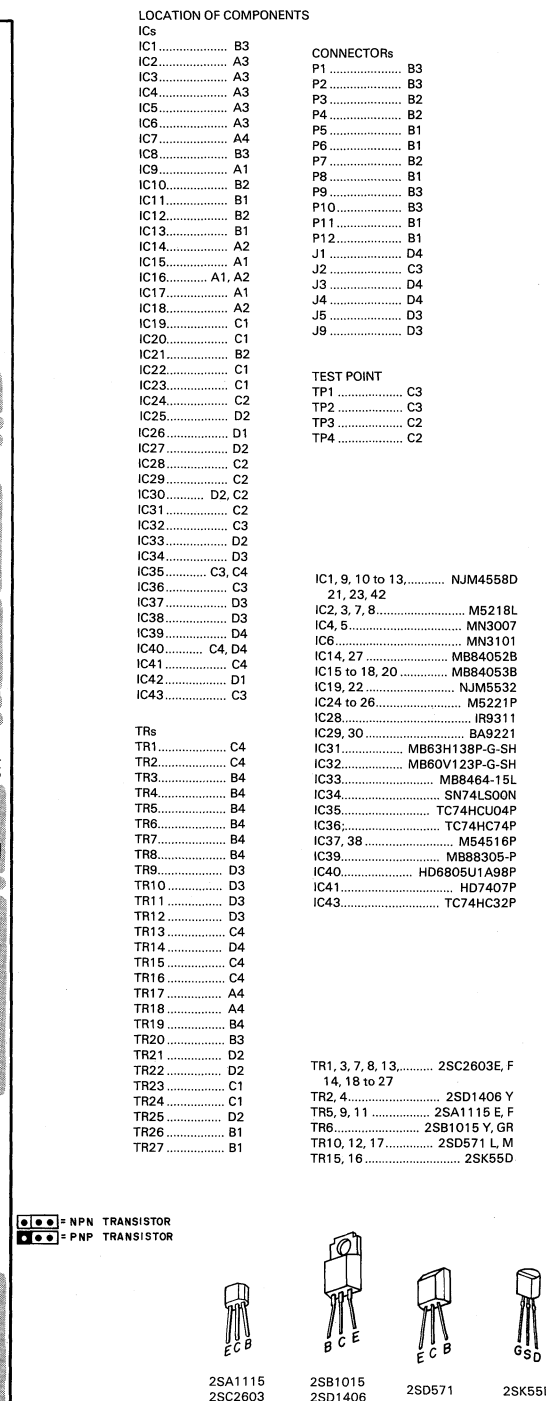


注意: △の付された部品は、安全上重要部品です。交換の際は、指定部品以外は使用しないこと。
 WARNING: △ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.
 AVERTISSEMENT: △ IL INDIQUE LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SURETE DE L'APPAREIL, NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.



5061 A,C,B,S
5062 E

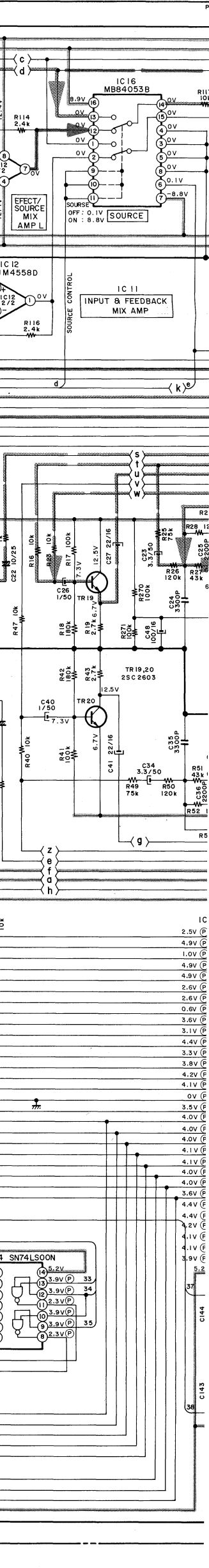




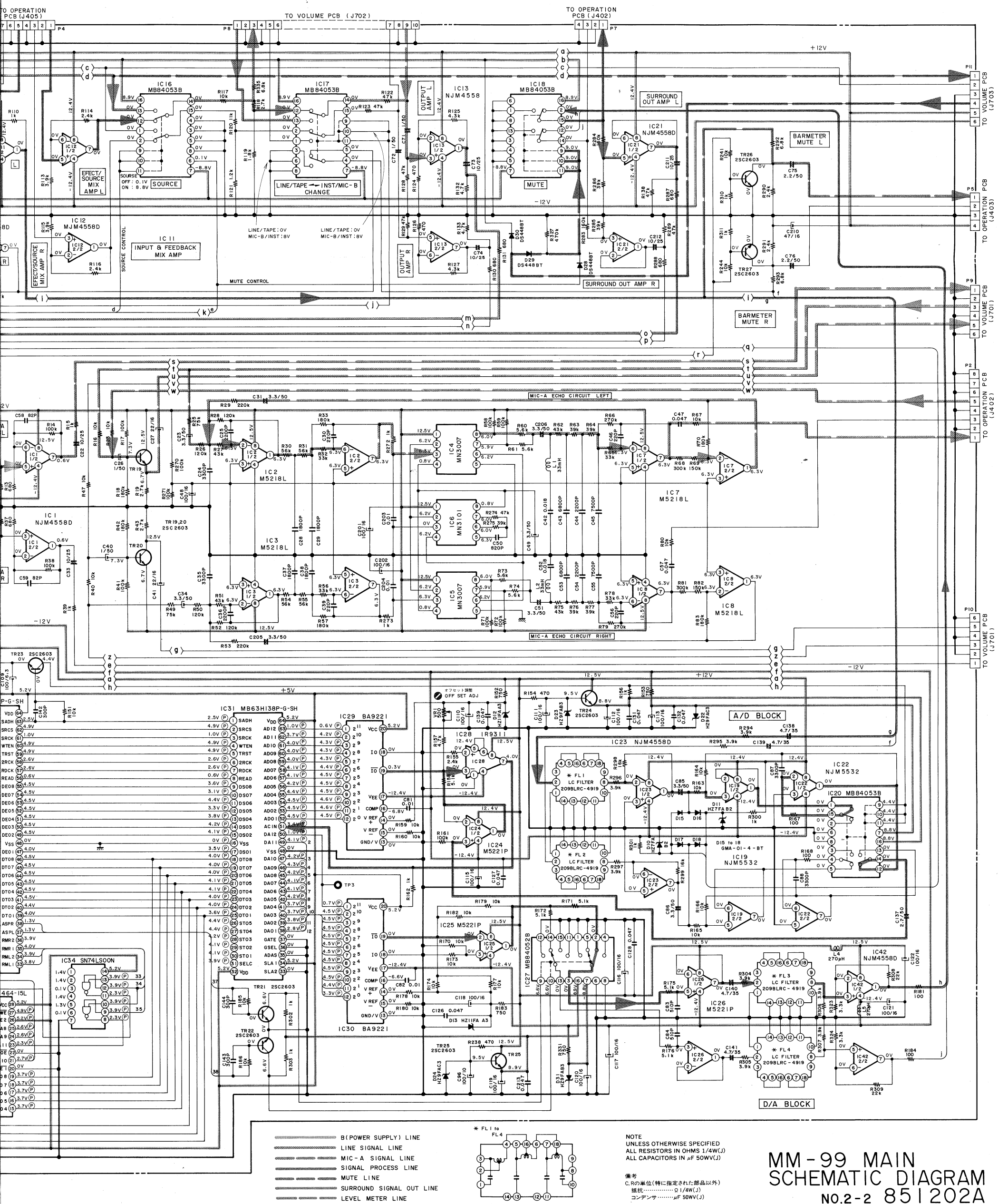
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ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: △ L'INDIQUE LES COMPOSANTS CRITIQUES DE SÛRETÉ. POUR MAINTENIR LE DEGRÉ DE SÛRETÉ
DE L'APPAREIL, NE REMPLACEZ LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SÛRETÉ
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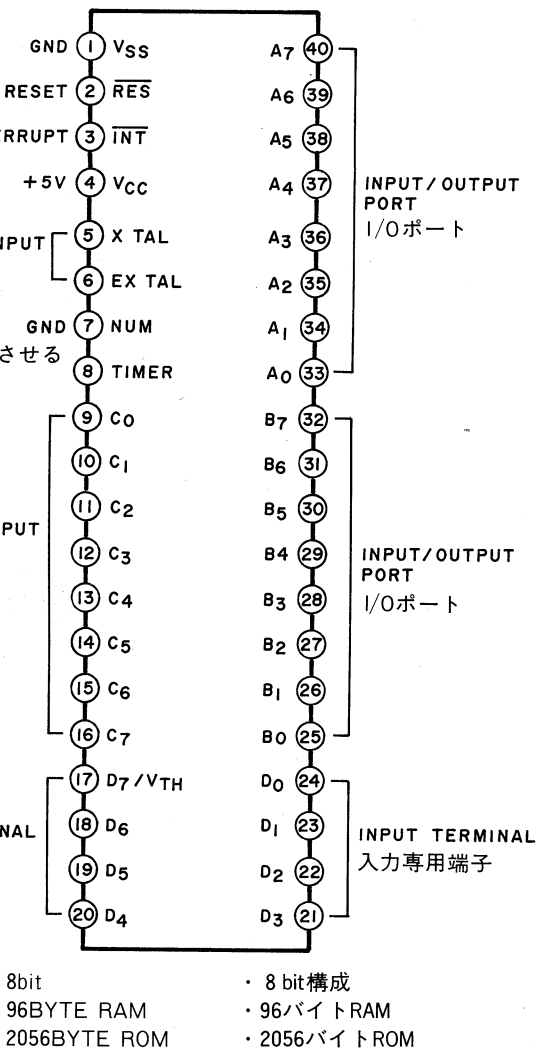
6



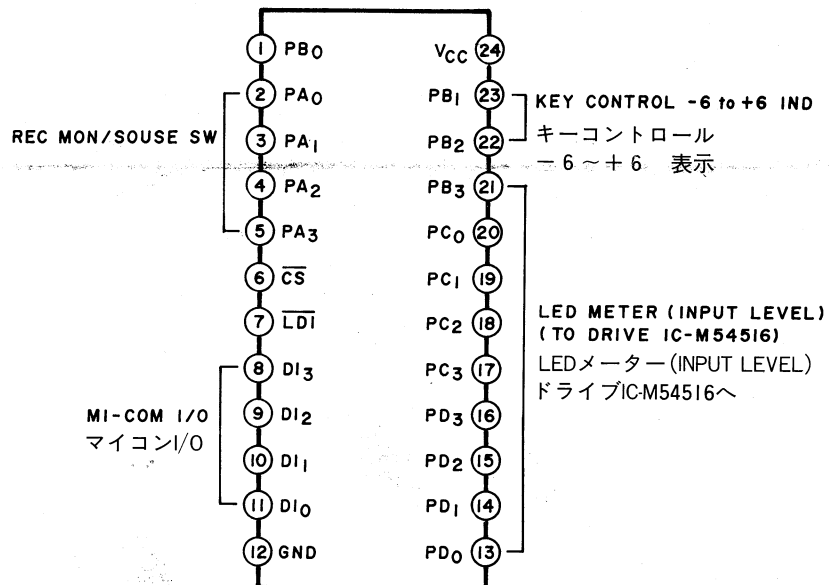
MAIN PCB D3003A5010	J, U
5020	C, A
5030	E, V, B, S



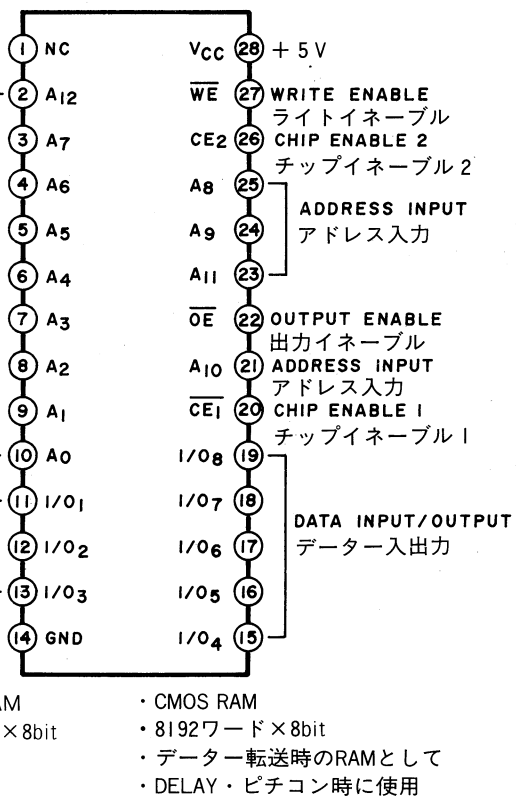
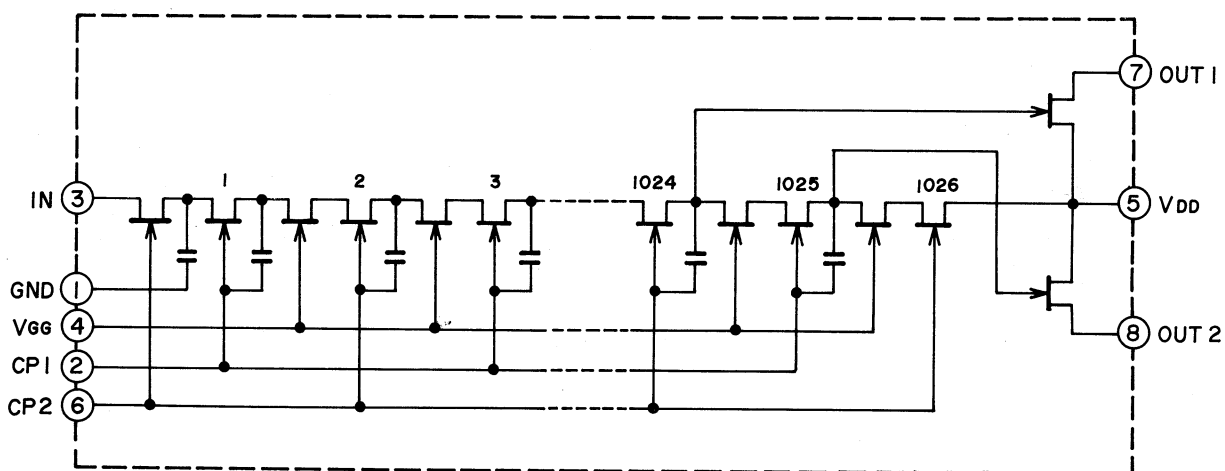
MM-99 MAIN
SCHEMATIC DIAGRAM
No.2-2 851202A



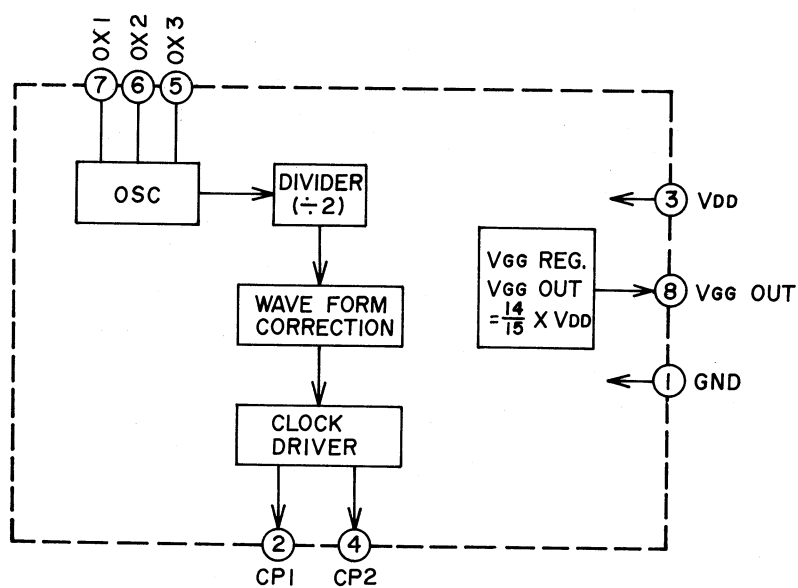
MB88305-P (INPUT/OUTPUT EXPANDER)



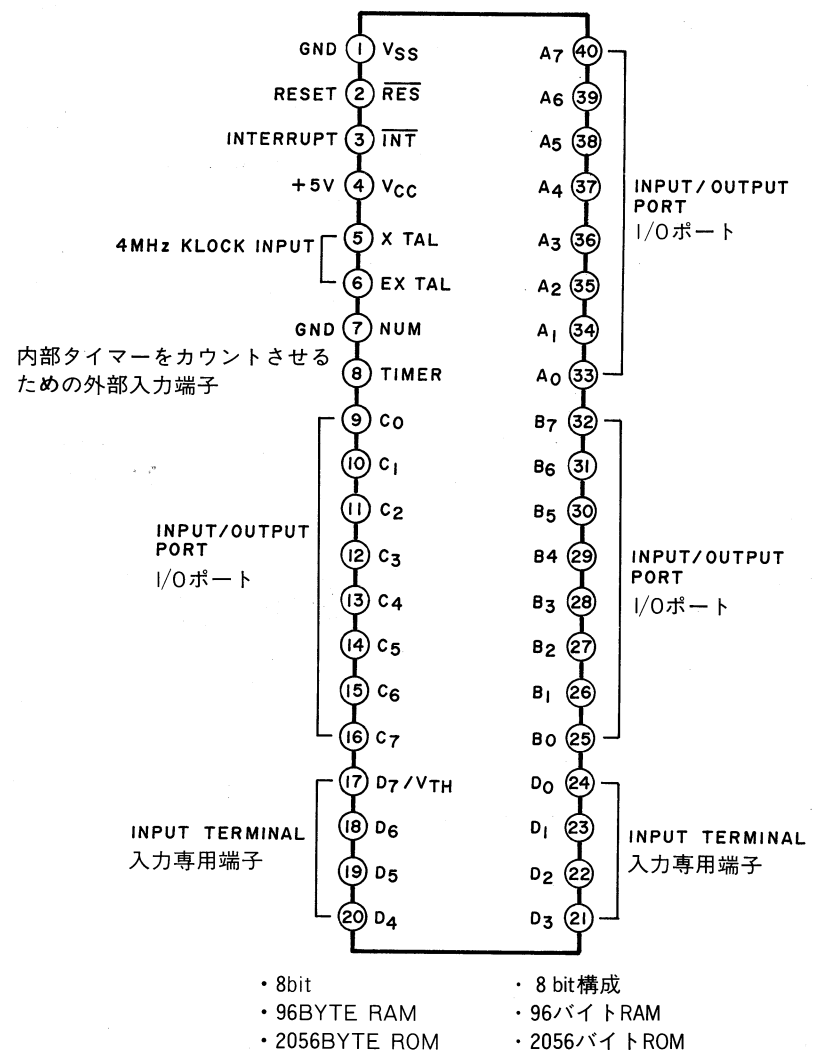
MN3007



MN3101



HD6085U1A98P



MB8464-15L

