

SEGATM SERVICE MANUAL

GENESIS II /MEGA DRIVE II (PAL-B/I/G, RGB)

NO.	001-1
ISSUED	AUGUST, 1993

SUPPLEMENT

The specifications of IC1 on page 16
are corrected as follows.

Sega Enterprises, Ltd.

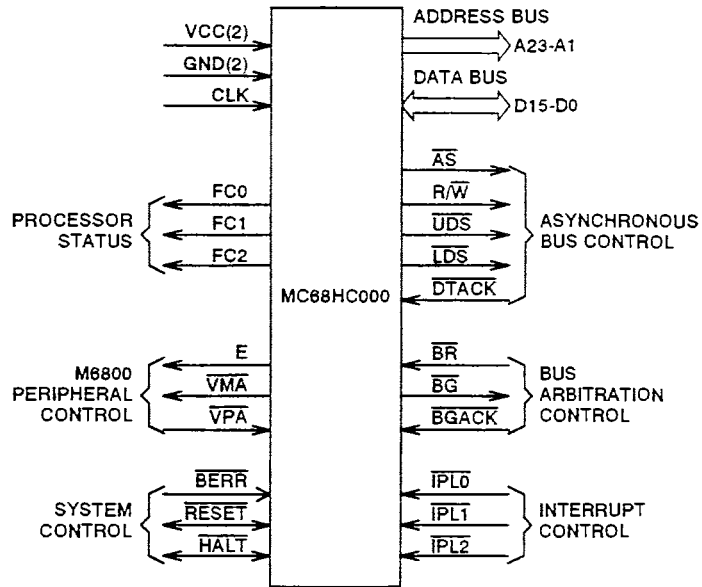
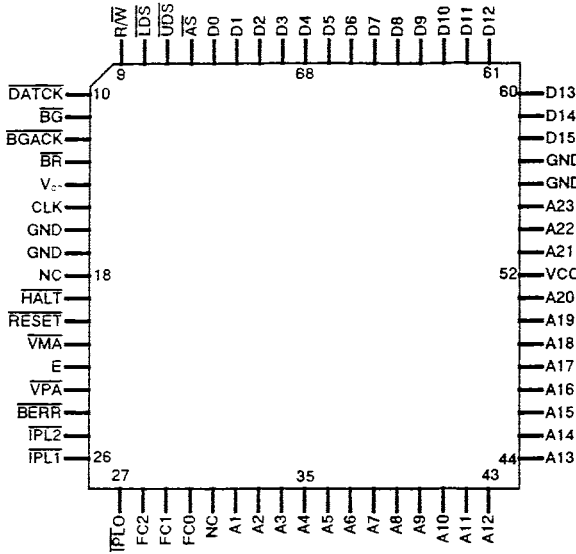
IC1 16/32-Bit Microprocessor

IC MC68HC000FN8

IC HD68HC000CP8

Top View & Pin Layout

Signal Description



Description

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	D ₄	I/O	Data Bus	23	VPA	I	Valid Peripheral Address	46	A ₁₅	O	Address Bus
2	D ₃			24	BERR	I	Bus Error	47	A ₁₆		
3	D ₂			25	IPL ₂	I	Interrupt Control	48	A ₁₇		
4	D ₁			26	IPL ₁			49	A ₁₈		
5	D ₀			27	IPL ₀			50	A ₁₉		
6	AS	O	Address Strobe	28	FC ₂	O	Processor Status	51	A ₂₀		
7	UDS	O	Upper Data Strobe	29	FC ₁			52	V _{CC}	-	Power Supply
8	LDS	O	Lower Data Strobe	30	FC ₀			53	A ₂₁	O	Address Bus
9	R/W	O	Read/Write	31	N.C.	-		54	A ₂₂	O	Address Bus
10	DTACK	I	Data Transfer Acknowledge	32	A ₁	O	Address Bus	55	A ₂₃	O	Address Bus
11	BG	O	Bus Grant	33	A ₂			56	V _{SS}	-	GND
12	BGACK	I	Bus Grant Acknowledge	34	A ₃			57	V _{SS}	-	GND
13	BR	I	Bus Request	35	A ₄			58	D ₁₅	I/O	Data Bus
14	V _{CC}	-	Power Supply	36	A ₅			59	D ₁₄		
15	CLK	I	Clock	37	A ₆			60	D ₁₃		
16	V _{SS}	-	GND	38	A ₇			61	D ₁₂		
17	V _{SS}	-	GND	39	A ₈			62	D ₁₁		
18	NC	-	Not Connected	40	A ₉			63	D ₁₀		
19	HALT	I/O	Halt	41	A ₁₀			64	D ₉		
20	RES	I/O	Reset	42	A ₁₁			65	D ₈		
21	VMA	O	Valid Memory Address	43	A ₁₂			66	D ₇		
22	E	O	Enable	44	A ₁₃			67	D ₆		
				45	A ₁₄			68	D ₅		

Differences between MEGA DRIVE and MEGA DRIVE 2

● Electrical Components

Note: For components marked (*), components equivalent to those listed and made by other companies can also be used.

Component	MEGA DRIVE	MEGA DRIVE 2	Remarks
MAIN CPU	MC68000 DIP (*)	HC68HC000FN8 PLCC (*)	Package changed.
SUB CPU	Z80A DIP	Z84C0006 QFP (*)	Package changed.
VIDEO DISPLAY PROCESSOR	CUSTOM CHIP YM7101	CUSTOM CHIP FC1001	Integrated into one chip.
BUS ARBITER	CUSTOM CHIP UPD92271GD-001		
FM SOUND SOURCE	YM2612		
RGB ENCODER	MB3514	Same as on left	
REGULATOR IC	MA7805UC (*)	UPC7805HF (*)	
OP AMP	LM358 DIP	LM324 SOP (*)	Integrated with op amp.
HEADPHONE AMP	CXA1034P		
MEMORY FOR MAIN CPU	TC51382-12 DIP (*)	TC51832AFL-10 SOP (*)	Package changed.
MEMORY FOR SUB CPU	KM6264BL-12 DIP600 (*)	KM6264BLG-10 SOP (*)	Package changed.
MEMORY FOR VDP	UPD41264V-12 (*)	Same as on left	
OSCILLATOR	OSC 53. 203424M20PPM (*)	Same as on left	
SUB BOARD FOR DC JACK	Yes	No	Integrated into main board.
SUB BOARD FOR HEADPHONE JACK	Yes	No	As the headphone jack is omitted.

● Features

Item	MEGA DRIVE	MEGA DRIVE 2	Remarks
HEADPHONE JACK	Yes	No	
HEADPHONE VOLUME	Yes	No	
RF OUT/CH SWITCH	Yes	No	Integrated with RF unit.
POWER SWITCH	Slide switch	Push-button	
DC JACK	Pin plug for DC/NP	CONN DC JACK EIAJ 3 HEC3100	Changed as the AC adapter has been changed.
RESET SWITCH	Tact push button	Same as on left	
AC ADAPTER	1.2 A	0.85 A	Same as for MASTER SYSTEM II.

Differences between GENESIS and GENESIS 2

● Electrical Components

Note: For components marked (※), components equivalent to those listed and made by other companies can also be used.

Component	GENESIS	GENESIS 2	Remarks
MAIN CPU	MC68HC000FN8 (※)	Same as on left (※)	
SUB CPU	Z80A DIP	Z84C0006 QFP	Package changed.
VIDEO DISPLAY PROCESSOR	CUSTOM CHIP FC1004	Same as on left	Integrated into one chip.
BUS ARBITER			
FM SOUND SOURCE			
RGB ENCODER	CXA1145M-16	Same as on left	
REGULATOR IC	UPC7805HF	Same as on left	
OP AMP	LM324	Same as on left	
HEADPHONE AMP	LM324	Same as on left	Integrated with op amp.
MEMORY FOR MAIN CPU	TC51832FL-10 (※)	Same as on left	
MEMORY FOR SUB CPU	MB8464A-80 (※)	Same as on left	
MEMORY FOR VDP	UPD41264V-12 (※)	Same as on left	
OSCILLATOR	XTAL OSC 53.693175 (※)	Same as on left	
SUB BOARD FOR HEADPHONE JACK	Yes	No	As the headphone jack is omitted.

● Features

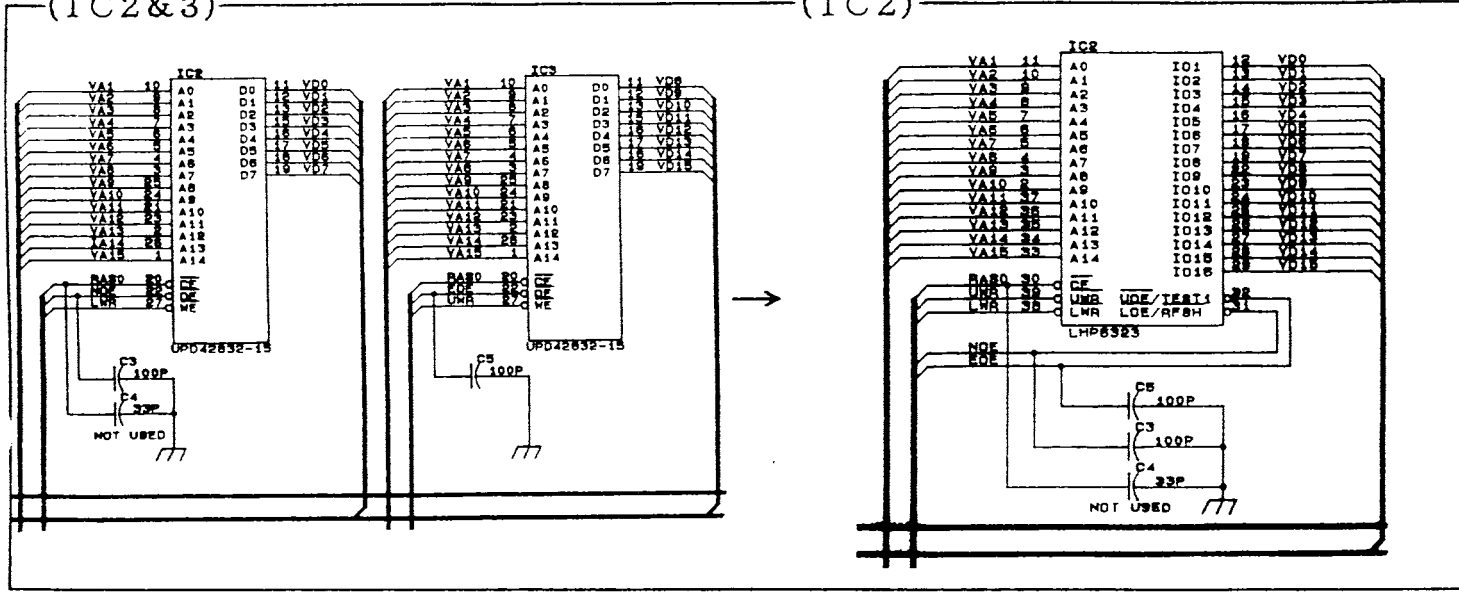
Item	GENESIS	GENESIS 2	Remarks
HEADPHONE JACK	Yes	No	
HEADPHONE VOLUME	Yes	No	
RF OUT/CH SWITCH	Yes	No	Integrated with RF unit.
POWER SWITCH	Slide switch	Push-button	
DC JACK	Pin plug for DC/NP	CONN DC JACK EIAJ 3 HEC3100	Changed as the AC adapter has been changed.
RESET SWITCH	Tact push button	Same as on left	
AC ADAPTER	1.2 A	0.85 A	Same as for MASTER SYSTEM II.

DIFFERENCES BETWEEN Ver.0 AND Ver.1
FOR MEGA DRIVE 2/GENESIS 2

1) Schematic Diagram

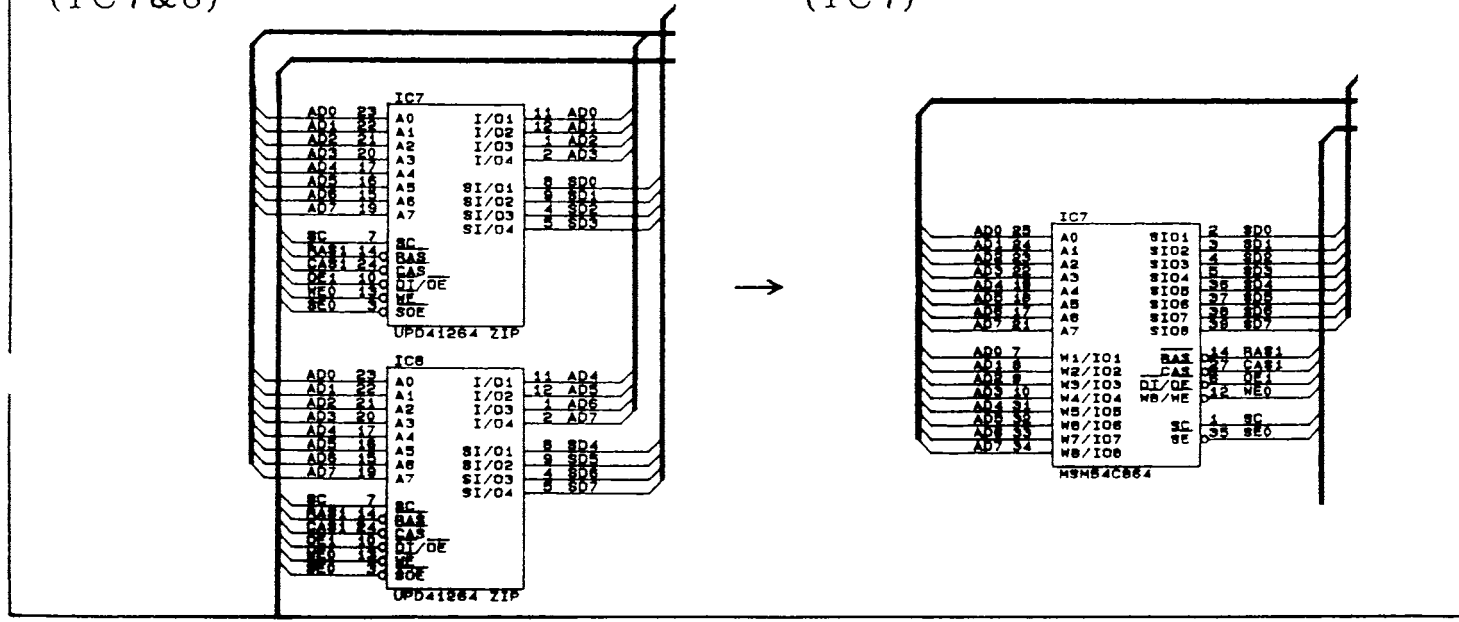
MEGA DRIVE 2/GENESIS 2 (Ver.0)
(IC2&3)

MEGA DRIVE 2/GENESIS 2 (Ver.1)
(IC2)



(IC7&8)

(IC7)



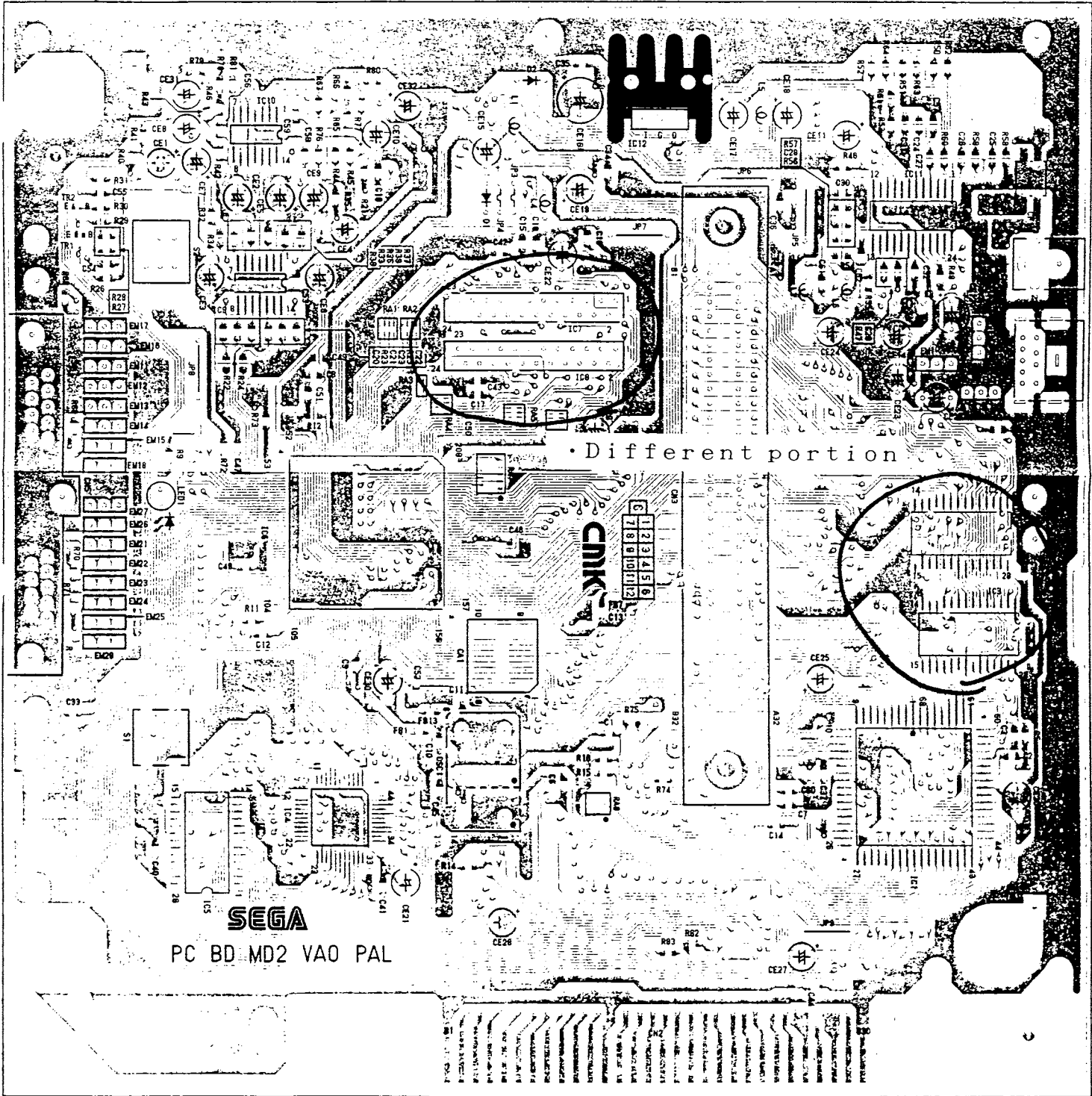
2) Circuit Board Diagram

·See the attached.

*RAM INTO
CUSTOM PACK
UNL-)
MEGA PARTS NUMBERS*

MEGA DRIVE 2 / GENESIS 2 (Ver. 0)

in dir

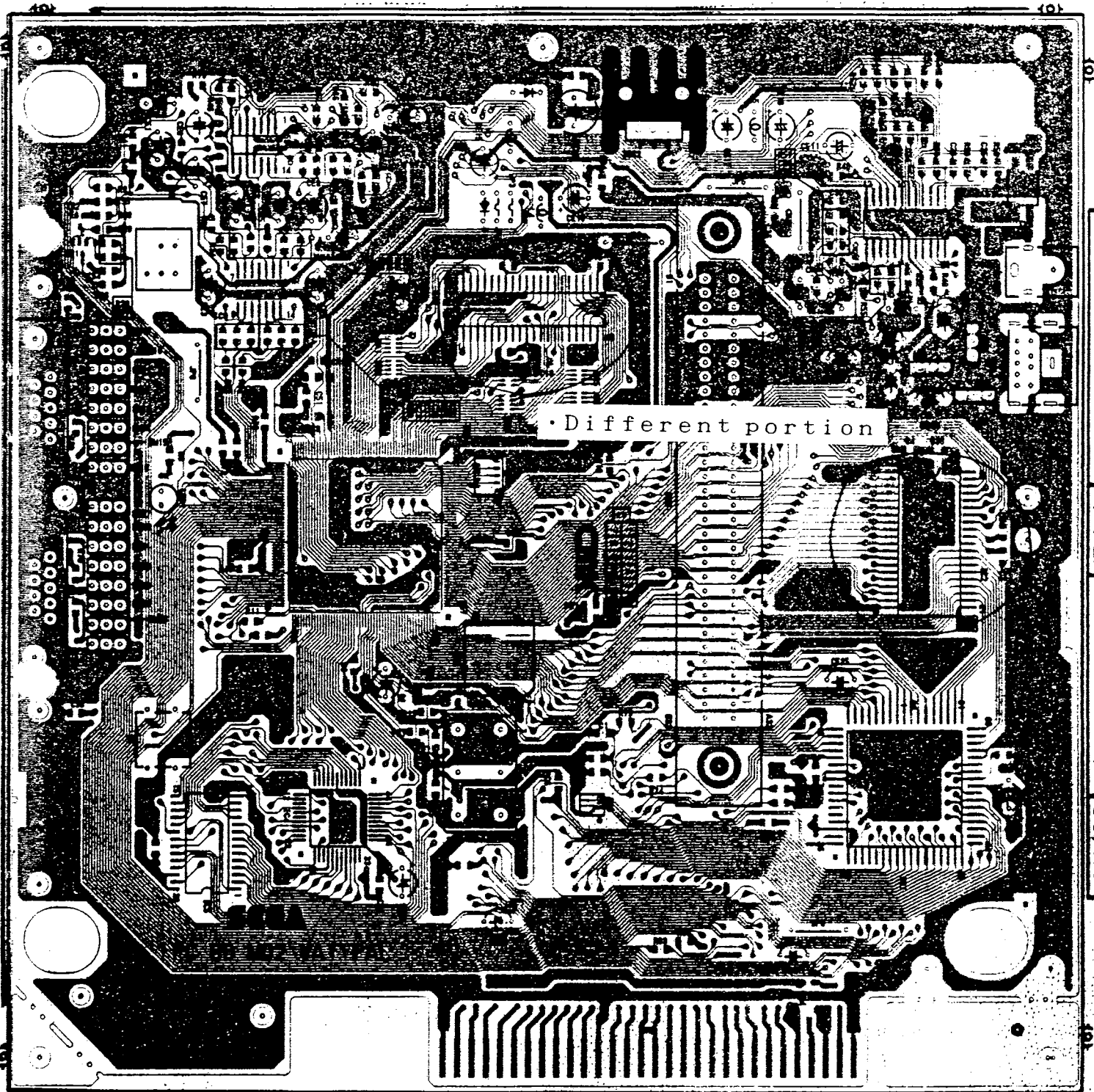


• Different portion

SEGA
PC BD MD2 VAO PAL

MEGA DRIVE 2 / GENESIS 2 (Ver. 1)

NEW VERSION
R-64 CUT MEMBER

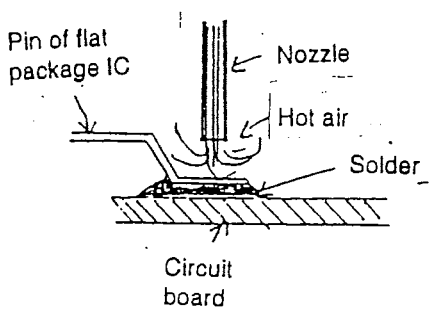


Different portion

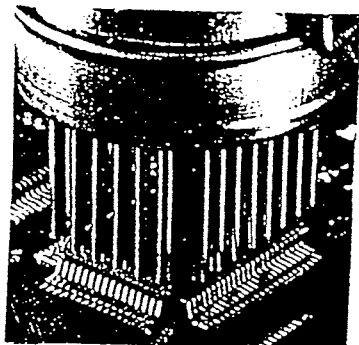
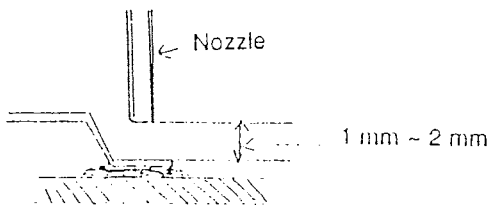
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Flat Package IC Removal

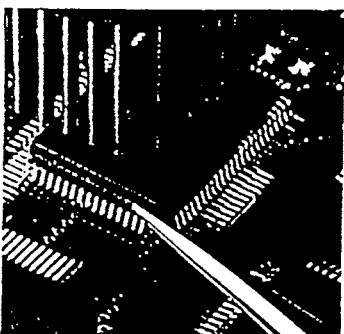
(1) Use a hot-air IC unsoldering machine to remove the flat package IC.



(2) Keep a space of approx. 1-2 mm between the IC remover's nozzle and flat package IC.

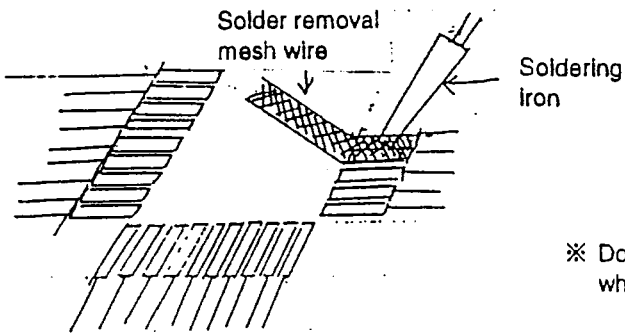


(3) After 20-30 seconds, the solder starts to melt; use tweezers to remove the IC.



※ The time required to melt the solder depends on the diameter of the nozzle.

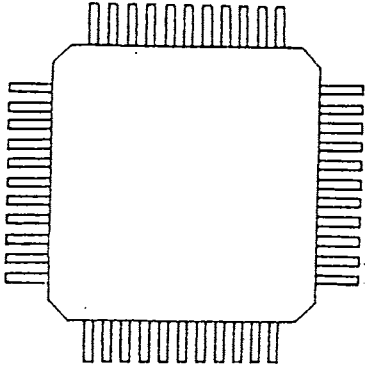
(4) After removing the IC, use the soldering iron and solder removal mesh wire to absorb the solder remaining on the circuit board.



※ Do not apply force to the solder removal mesh wire and soldering iron when removing the solder since the pattern is likely to peel off.

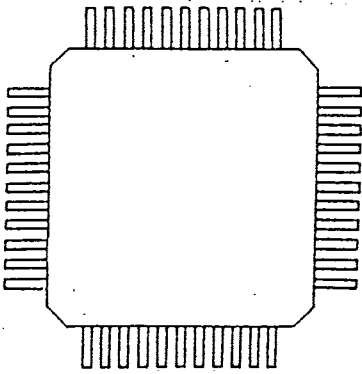
Flat Package IC Installation

- (1) Coat the circuit board from which the flat package IC has been removed with flux.

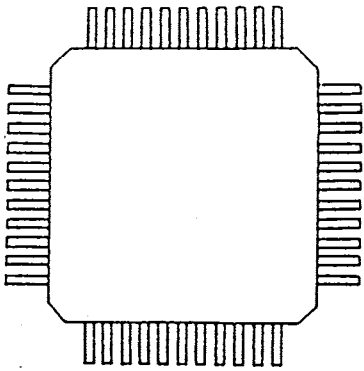


- (2) Place the good flat package IC to match the pattern on the board.

- (3) Temporarily fix the flat package IC at the four corners so it does not move.



- (4) Solder all pins of the flat package IC.



※ Be careful not to short the pins since the spaces between the pins are very narrow.

- (5) After soldering, use thinner to rinse away the remaining flux.

- (6) Use a magnifying glass to check that there is no short-circuit.