

OWNER'S MANUAL

SEGA ENTERPRISES, LTD.

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UPRIGHT TYPE

SPECIFICATIONS -

INSTALLATION SPACE: 630 mm (24.8 in.) W × 860 mm (33.9 in.) D

HEIGHT : 1850 mm (72.8 in.)

POWER : 240 W

C.R.T. : 20" MONITOR WEIGHT : 124 kg (273 lbs.)

NOTE

· Descriptions herein contained may be subject to improvement changes without notice.

INTRODUCTION TO THE OWNER'S MANUAL

SEGA ENTERPRISES, LTD., supported by its high electronic technology of LSIs, microprocessors, etc. and a wealth of experience, has for more than 30 years been supplying various innovative and popular game machines to the world market. This OWNER'S manual is intended to provide detailed comments together with all the necessary information covering the operation in general of electronic assemblies, electromechanicals, servicing control, spare parts, etc. as regards the AFTER BURNER U/R, a new SEGA product. The manual is intended for those who have knowledge of electricity and technical expertise especially in ICs, CRTs, microprocessors, etc. Carefully read so as to acquire sufficient knowledge before working on the machine. Should there be a malfunction, non-technical personnel should under no circumstances touch the interior system.

1. HANDLING PRECAUTIONS

When installing or inspecting, be very careful of the following points and pay attention to ensure that the player can enjoy the game safely.

- Be sure to turn the power off before working on the machine.
- To insert or pull out the plug quickly is dangerous.
- It is necessary to make sure that the power cord or the grounding wire is not exposed on the road, etc. in a manner so as to be dangerous. Make sure that grounding connections are made safely at the position where so specified.
- Do not use any fuse that does not meet the specified rating.
- Make complete connections for the IC board and other connectors. Insufficient insertion is very dangerous.

Also, for the IC board circuit inspections, only the logic tone is allowed. The use of a tester is not permitted, so be careful in this regard. After confirming that there are no irregularities, turn the power ON.

2. PREVENTION OF COUNTERFEITING AND CONVERSION

LABELLING

To prevent counterfeits and conversions, the following labels are put on all the SEGA products. When handling such goods, be sure to confirm the labels. They are used to prevent illegal acts such as the unauthorized copying of the products and the printed circuit boards thereof or carrying on business by manufacturing similar merchandise or by converting, selling or using such products or printed circuit boards.

ORIGINAL SEAL

The following seal is put on the machines manufactured by SEGA.



LICENSE SEAL

The following seal is put on the kits, such as the printed circuit boards, of SEGA products.



COPYRIGHT NOTICE

This SEGA product has the copyright notice as follows:

© SEGA 1987

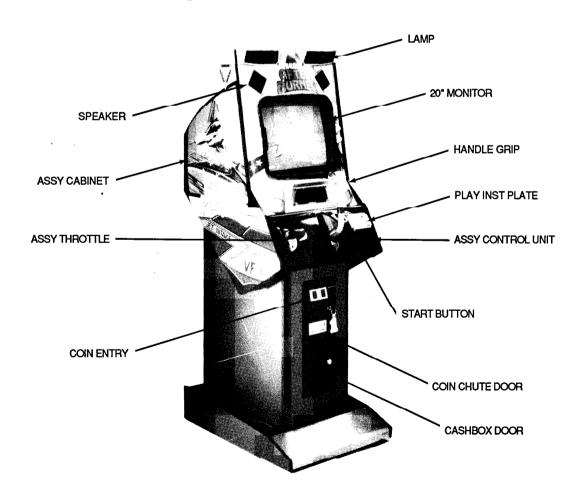
This signifies that this work was disclosed in 1987 and is the property of SEGA ENTERPRISES, LTD.

3. PRECAUTIONS CONCERNING THE PLACE OF INSTALLATION

The SUPER AFTER BURNER U/R is an indoor game machine. Absolutely do not install it outside. Even indoors, avoid installing in places mentioned below so as to ensure proper usage:

- Places subject to rain or water leakage, or condensation due to humidity.
- In the proximity of an indoor swimming pool and/or shower.
- Places subject to direct sunlight.
- Places subject to heat sources from heating units, etc., or hot air.
- Vicinity of highly inflammable/volatile chemicals or hazardous matter.
- · Sloped surfaces.
- · Vicinity of anti-disaster facilities such as fire exits and fire extinguishers.
- Places subject to any type of violent impact.
- · Dusty places.

4. NAME OF PARTS ①



TOOLS

(TAMPERPROOF WRENCH)

M 4 540-0006-01

M 5 540-0007-01

M 8 540-0009-01

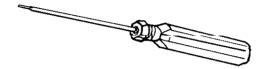
(TAMPERPROOF DRIVER)

M4 540-0018

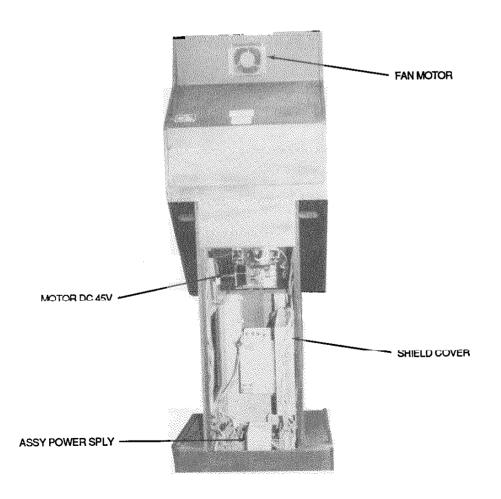
M5 540-0017

M8 540-0011

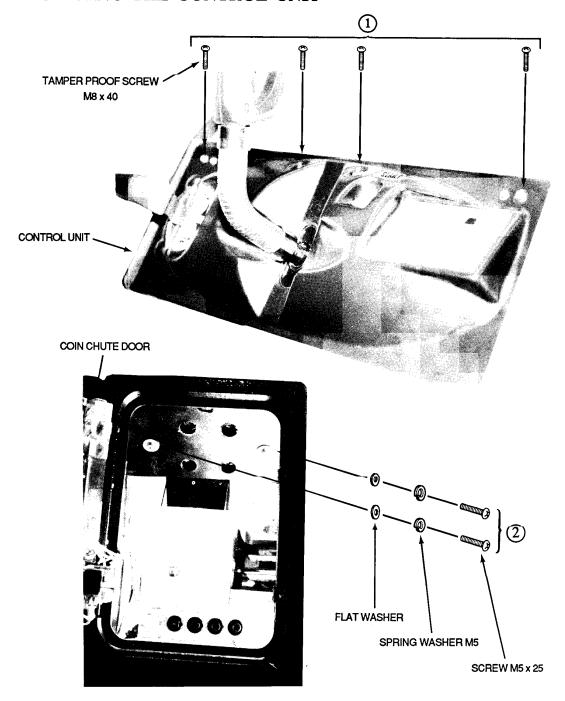




5. NAME OF PARTS ②



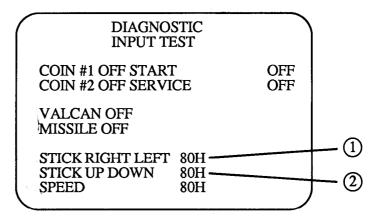
6. OPENING THE CONTROL UNIT



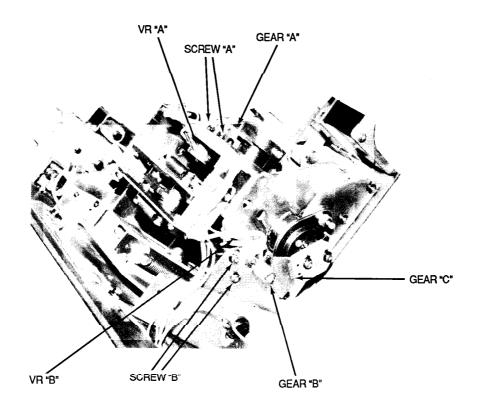
- To open the CONTROL UNIT, take off the 4 TAMPERPROOF SCREWS 1, open the COIN CHUTE DOOR, take off the 2 (M5 \times 25) SCREWS 2, and the entire CONTROL UNIT will open towards you.
- Opening the CONTROL UNIT allows for spring replacements, handle centering V.R. adjustments, motor brush replacements and THROTTLE UNIT centering adjustments.

7. HANDLE UNIT ADJUSTMENT

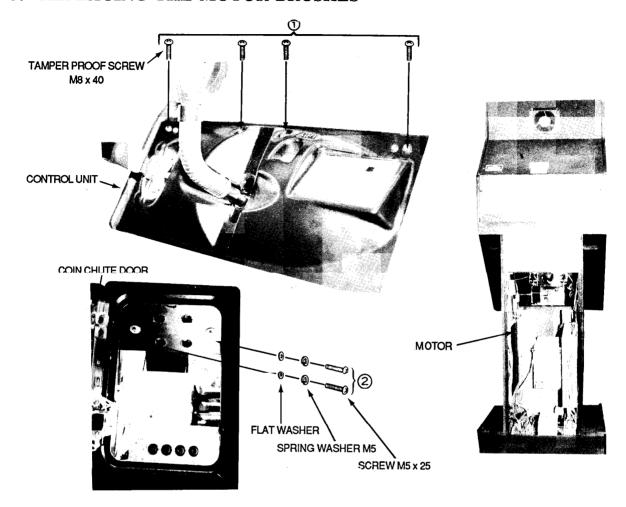
In the test mode, cause the DIAGNOSTIC INPUT DISPLAY to appear on the screen (to select it, push the test switch and move the handle upward and downward).



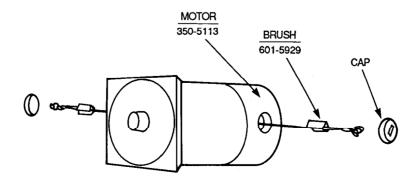
- 1 To make VR adjustments in a horizontal direction (RIGHT/LEFT), release the VR "A" bracket's "A" screws and turn gear "A" in a manner so that when the handle grip is in an unoperated status, 80H ± 2H is obtained. At this time, also make backlash adjustments.
- 2 When making vertical (UP/DOWN) adjustments, while maintaining the present inclination of the handle unit, unfasten the gear "C" bracket's "B" screws and fasten the gear "C" bracket when the monitor display shows 80H ± 2H. For backlash adjustments, loosen the VR "B" bracket.



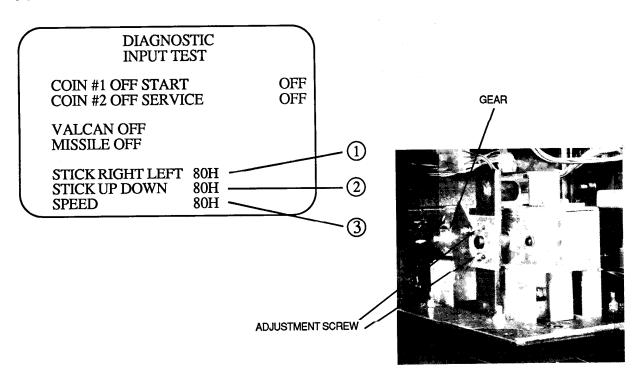
8. REPLACING THE MOTOR BRUSHES



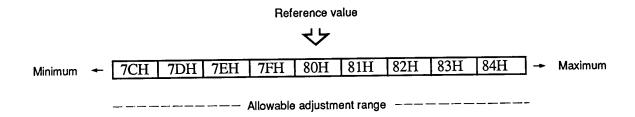
To replace the motor brushes, release the cap with a screwdriver, etc., and take out the brushes. Replacement once every 6 months is recommended. Make sure that both brushes are replaced at the same time.



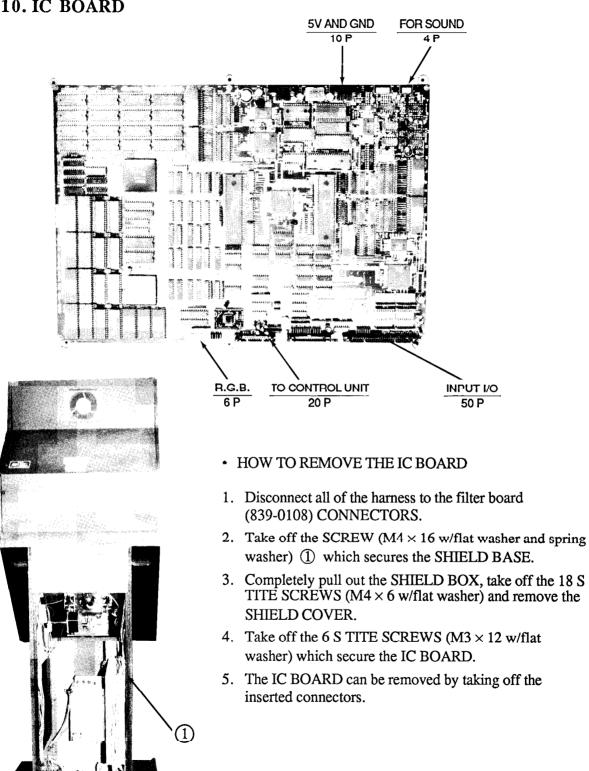
9. THROTTLE UNIT ADJUSTMENT



(3) Unfasten the 2 adjustable screws to loosen the volume bracket, making sure that in relation to the gear engagement, the variable value in the test mode is within the allowable adjustment range, and then refasten the adjustment screws.

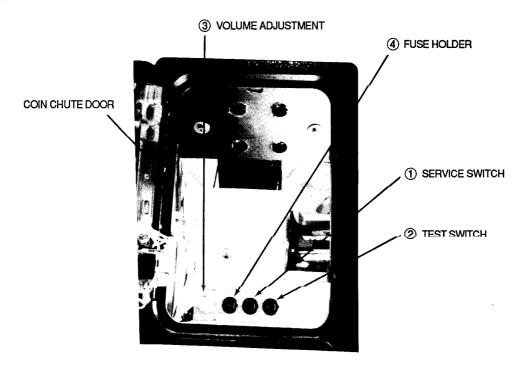


10. IC BOARD



11. SERVICE SWITCH FUNCTIONS

The layout as shown below can be viewed by opening the coin chute door.



INSTRUCTIONS

1		Used for the purpose of servicing and increasing the credits without registering on the meter (this allows you to check the game).
2	TEST SWITCH	For operating this switch, see SELF-TESTING.
3		The volume of the speaker inside the cowl can be adjusted.
4		When the motor is overloaded, the fuse will be burned out, causing the motor which is connected with the handle, to stop. To restart it, replace the fuse with same current limit.

12. DIP SWITCH SETTING

COIN/CREDIT OPTION SWITCH SETTING

DIP SW A

DIP SW B

OPT	ION	1	2	3	4	5	6	7	8
1 COIN 1 COIN 1 COIN 5 COINS 6 COINS 7 COINS 2 COINS 3 COINS 4 COINS	1 CREDIT 2 CREDITS 3 CREDITS 1 CREDIT	R 2 F 2 F 2 F 2 F	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	# ± # # 5 5 5 5 #	29599959	# 5 # 5 # 5 # 5 # 5 # 5 # 5 # 5 # 5 # 5	452945254	9 2 2 2 2 E E	OFF OFF OFF OFF OFF OFF
2 COINS 2 COINS 3 COINS 5 COINS 6 COINS	3 CREDITS 1 CREDIT 2 CREDITS 3 CREDITS 4 CREDITS	OFF	OFF	OFF	08	OFF	OFF OX	OFF	ON
2 COINS 4 COINS	1 CREDIT 3 CREDITS	ON	ON	OFF	ON	ON	ON	OFF	ON
1 COIN 2 COINS 3 COINS 4 COINS 5 COINS	1 CREDIT 2 CREDITS 3 CREDITS 4 CREDITS 6 CREDITS	OFF	OFF	ON	ON	OFF	OFF	ON	ON
1 COIN 2 COINS 3 COINS 4 COINS	1 CREDIT 2 CREDITS 3 CREDITS 5 CREDITS	ON	OFF	ON	ON	ON	OFF	ON	ON
1 COIN 2 COINS	1 CREDIT 3 CREDITS	OFF	ON	ON	ON	OFF	ON	ON	ON
FREE	FREE PLAY		ON	ON	ON	ON	ON	ON	ON
			COIN	SW. #1			COIN	SW. #2	

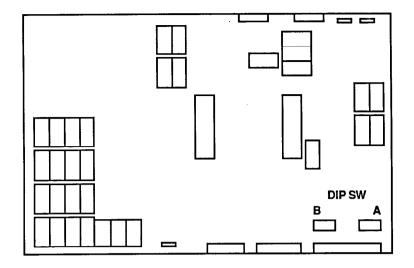
COIN SW 1

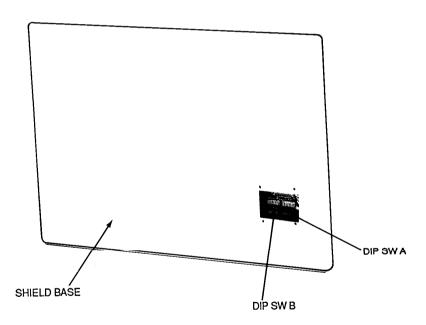
COIN SW 2

COIN METER

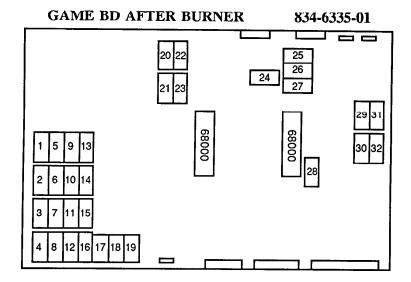
GAME OPTION SETTING

3 OPTION 2 5 4 6 8 MOVING DX OFF OFF OFF CABINET MOVING STD ON UP RIGHT TYPE OFF ON NOT USED ON ON ADVERTISE OFF OFF ON SOUND SHIPS PER 3 PLAYERS CREDIT 4 PLAYERS ON NO OFF INCREASE YES CONTINUE NO OFF PLAY YES ON NORMAL OFF OFF GAME EASY ΟN OFF DIFFICULTY HARD OFF ON HARDEST



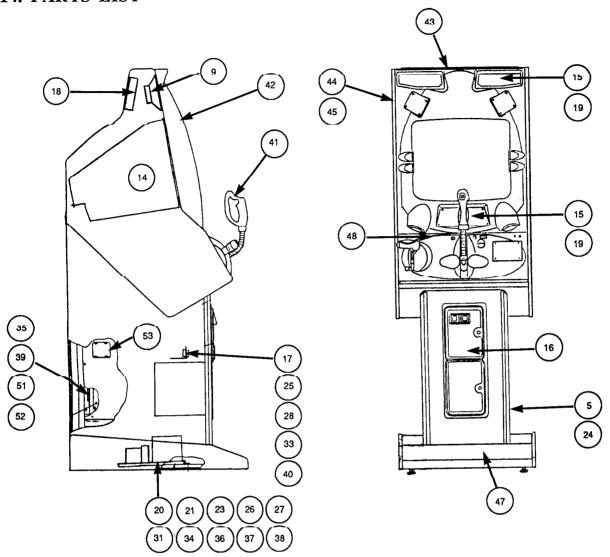


13. EPROM/MASK ROM LOCATIONS



	ICLOCATION	MAIN WORK
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	IC 93 IC 97 IC 101 IC 105 IC 92 IC 96 IC 100 IC 104 IC 91 IC 95 IC 99 IC 103 IC 90 IC 94 IC 98 IC 102	OBJECT (CHARACTER & SCENE SCENERY)
17 18 19	IC 154 IC 153 IC 152	FIX SCROLL CHARACTER
20 21 22 23	IC 58 IC 63 IC 57 IC 62	MAIN PROGRAM
24	IC 17	SOUND PROGRAM
25 26 27	IC 11 IC 12 IC 13	SOUND DATER
28	IC 40	ROAD
29 30 31 32	IC 21 IC 30 IC 20 IC 29	SUBPROGRAM

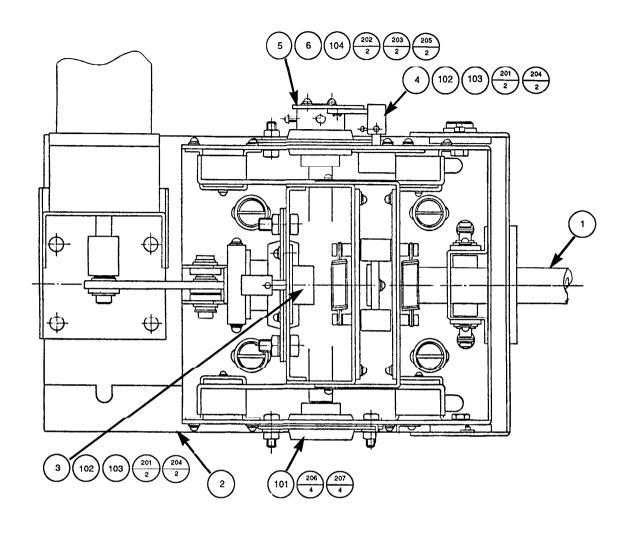
14. PARTS LIST



ASSEMBLY CABINET PARTS LIST

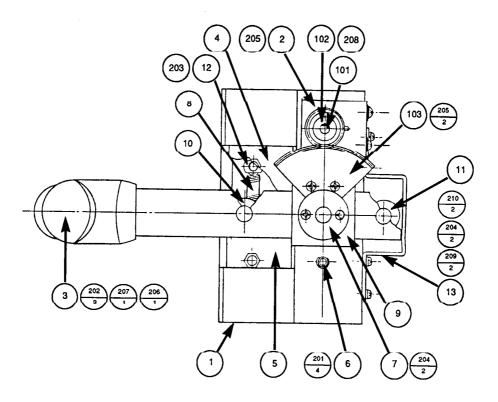
ITEM	PARTS NUMBER	DESCRIPTION
1	000-0525	M SCR PH M5X25 (PANEL)
2	008-0516	TMP SCR M5X16 (PANEL)
3	008-0535	TMP SCR M5X35 (TV DOOR)
4	029-0099	TMP SCR M8X40 (PANEL)
5	1050-0064	MAIN SW. BRACKET
6	1170-0184	TERMINAL BLOCK, 4P
7	1170-5131	TERMINAL BLOCK, 5P
8	1170-5131A	TERMINAL LUG
9	130-5018	SPFAKER 8-OHM 10W W/SHIELD
10	1500-0173	CAPACITOR, 4700 uF 50V
11	1500-0173A	CLAMP, CAP .
12	1502-0000	POWER CORD RETAINER
13	1710-5151	FAN SCREEN COVER

14	2000-5090	TV MONITOR
15	2141-5064	LAMP SOCKET
16	2200-0000	COIN DOOR
17	2200-5179	VOL CONT B-5K
18	2600-0011-01	FAN 110V
19	3901-5167	LAMP 110V 30W
20	400-5070	DC/DC CONVERTER
21	400-5071	SW REGULATOR, 5V/7A
22	4211-6671	STICKER, DANGER
23	4810-0157	RECTIFIER, BRIDGE 2A
24	5090-0039	PUSH BUTTON POWER SW
25	5090-5028	PUSH BUTTON SW
26	5140-0031	FUSE 6A, FAST
27	5240-0034	FUSE 5A, FAST
28	5140-0036	FUSE 3A, FAST (MOTOR)
29	5140-0064	FUSE HOLDER 2P
30	5142-0000	FUSE HOLDER, PANEL
31	5600-5115	TRANSFORMER (160P6)
32	6010-0001	FUSE COVER ` ´
33	6010-0042	KNOB 22m
34	6010-0429	LINE FILTER
35	834-6335	GAME BOARD
36	839-0035-01	POWER AMP DC12V 10W
37	839-0048	SSR BOARD, MOTOR
38	839-0051	SSR BOARD, LAMP
39	839-0108	FILTER BOARD
40	KRO-1721	SW BRACKET
41	TX-13001	CONTROL PANEL ASSY
42	TX-1616	WINDOW MASK ASSY
43	TX0-1623	BRACKET, WINDOW MASK, TOP
44	TX1-1601-D	STICKER, SIDE R
45	TX1-1601-E	STICKER, SIDE L
46	TX1-1601-F	STICKER, SEGA
47	TX1-1605	ORNAMENT PLATE, TOE GUARD
48	TX1-1608	MAIN BRACKET, CONTROL ORNAMENT SASH L
49	TX1-1609	ORNAMENT SASH L
50	TX1-1610	ORNAMENT SASH R
51	TX1-1617	SHIELD COVER
52	TX1-1618	SHIELD BASE
53	TX1-1619	ACCESS PLATE
54	TX2-0000	CORNER PROTECTOR, LEFT
55	TX2-0001	CORNER PRIOECTOR, RIGHT
56	220-5130	
		VOL CONT B-5K (SPARE PARTS)
57 50	509-0058	PUSH SW VALCUN (SPARE PARTS)
58 50	510-5009 540-006-01	PUSH SW MISSILE (SPARE PARTS)
59	540-006-01	WRENCH, M4 (SPARE PARTS)
60	540-0007-01	WRENCH, M5 (SPARE PARTS)
61 62	540-0009-01	WRENCH, M8 (SPARE PARTS)
62	601-5929	MOTOR BRUSHES (SPARE PARTS)
63	TX-1317	EXT. SPRING (SPARE PARTS)
64 65	TX-1330	EXT. SPRING (SPARE PARTS)
65	TX-1423	EXT. SPRING (SPARE PARTS)



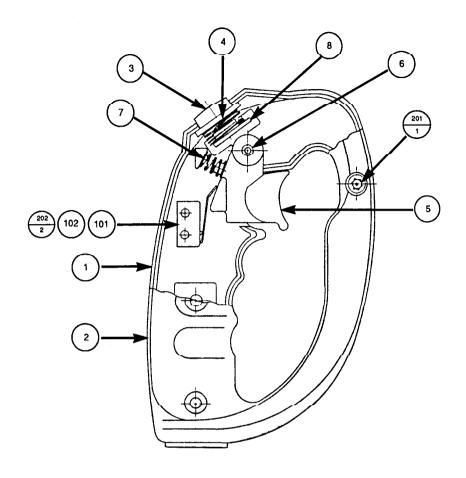
CONTROLLER UNIT ASSEMBLY PARTS LIST

ITEM	PARTS NUMBER	DESCRIPTION
1	TX-1351	SUB ASSEMBLY CONTROLLER
2	TX-1352	ASSEMBLY SHOCK MECHANISM
3	TX-1318	VR BRACKET A
4	TX-1334	VR BRACKET B
5	TX-1307	ADJUST PLATE
6	MX-2017	ADJUSTER
101	100-5042	BEARING D=12
102	220-5130	VOL CONT 5KOHM
103	601-5410	GEAR 15 D=16
104	601-5423	GEAR 1/6
201	000-0408-FS	M SCR W/FS M4 X 8
202	000-0408-S	M SCR W/FS M4 X 8
203	000-0412-FS	M SCR W/FS M4 X 12
204	028-0003	SET SCR PH SPECIAL M3 X 8
205	028-0021	SET SCR PH SPECIAL M4 X 16
206	061-0006	SPR WSHR M6
207	054-0006	U NUT M6



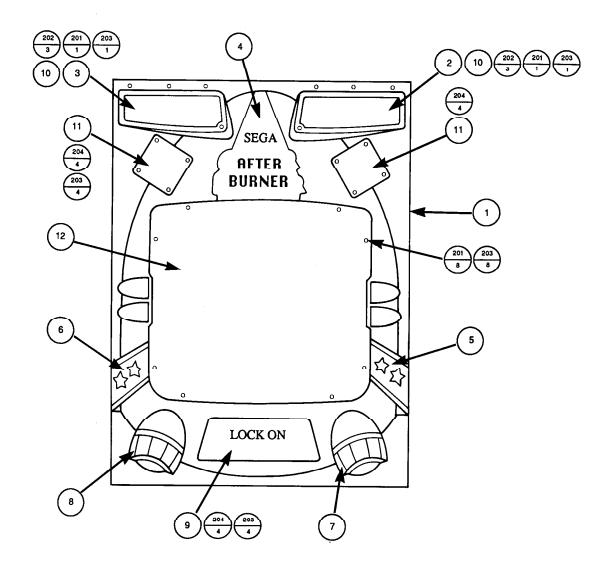
THROTTLE ASSEMBLY PARTS LIST

ITEM	PARTS NUMBER	DESCRIPTION
1	TX-1418	THROTTLE BASE
2	TX-1419	VR BRACKET
3	TX-1402	THROTTLE LEVER
4	TX-1403	SWING ARM A
5	TX-1404	SWING ARM B
2 3 4 5 6 7	TX-1405	SHAFT SWING ARM
7	TX-1406	GUIDE RING
8 9	TX-1423	EXT. SPRING
	TX-1003	ADJUST PLATE
10	CY-2307	ROLLER
11	KR-1303	STOPPER PLATE
12	TX-1422	STUD
13	TX-1430	STOPPER BRACKET U/R
101	220-5130	VOL CONT B-5K OHM
102	601-5424	GEAR 30
103	601-5863	GEAR 1/4
201	065-0004	E RING 4mm
202	065-0008	E RING 8 mm
203	054-0006	U NUT M6
204	000-0414-S	M SCR PH W/S M4 X 14
205	000-0408-FS	M SCR PH W/FS M4 X 8
206	060-0010	FLT WSHR M 10
207	045-0022	COT PIN 2.5 X 20
208	028-0014	SET SCR HEX SKT CP M4 X 4
209	000-0406-S	M SCR PH W/S M4 X 6
210	054-0004 - S	U NUT M4



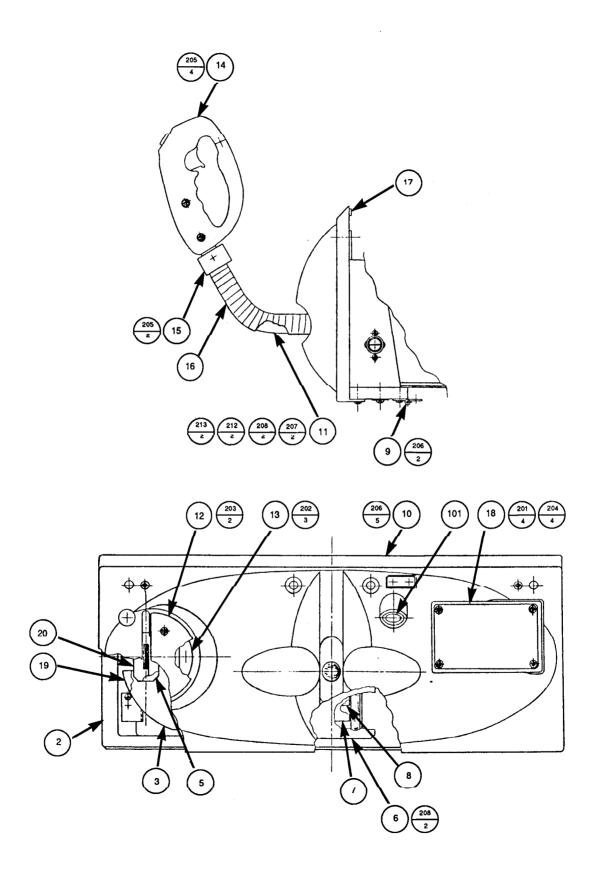
HANDLE GRIP ASSEMBLY PARTS LIST

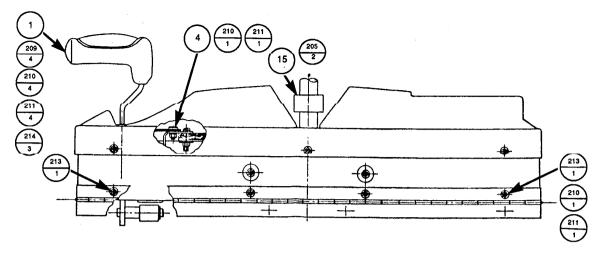
ITEM	PARTS NUMBER	DESCRIPTION
1	TX-1336	HANDLE GRIP LEFT
2	TX-1337	HANDLE GRIP RIGHT
3	TX-1338	BUTTON
4	TX-1339	COMPRESSION SPRING
5	CD-2041	TRIGGER
6	CD-2042	SHAFT TRIGGER
7	125-0011	COMPRESSION SPRING
8	839-0087	SWITCH BOARD
9	600-5521	WIRE HARNESS, HANDLE GRIP
101	509-0058	MICRO SWITCH
201	029-0052	TMP PRF SCR PH M5 X 10
202	029-0134	M SCR PH M2 X 10



FRONT MASK ASSEMBLY PARTS LIST

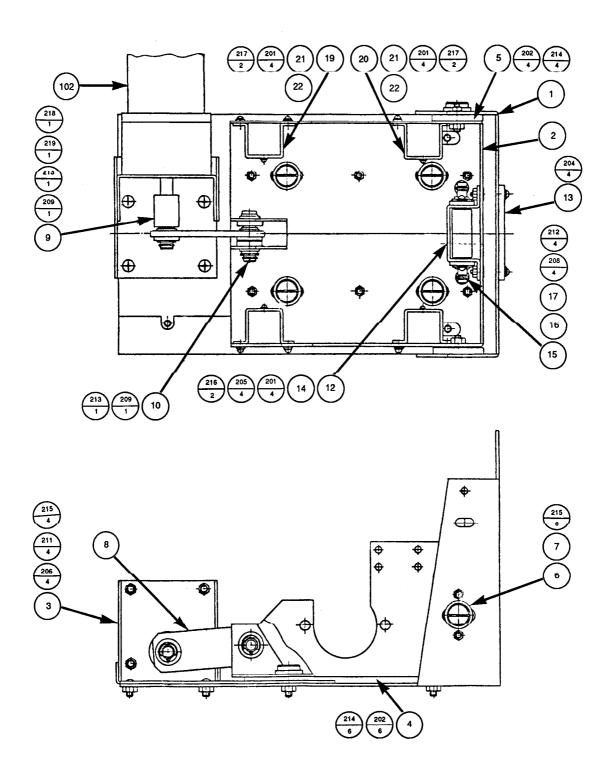
ITEM	PARTS NUMBER	DESCRIPTION
1	TX1-1616-A TX1-1616-B TX1-1616-C TX1-1616-E TX1-1616-E TX1-1616-F TX1-1616-G TX1-1616-H TX1-1616-J TX1-1616-K TX1-1616-L TX1-1616-AX 008-0416 031-0414-B	FRONT PANEL W/OUT MASK PLATE R PLATE L STICKER, AFTER BURNER STICKER, SIDE R STICKER, SIDE L STICKER, JET NOZZLE R STICKER, JET NOZZLE L PLATE, LOCK-ON BRACKET GUARD PLATE, SPEAKER SCREEN, CLEAR SMOKE TMP SCR M4X16 CARRIAGE BOLT BLACK M4X14
203	051-0004	FLANGE NUT M4





CONTROL PANEL ASSEMBLY PARTS LIST

1 TX-14001 ASSEMBLY THROTTLE 2 TX-1341 CON PANEL BASE 3 TX-1342 FLAG PLATE 4 TX-1343 SHLDER SCREW 5 TX-1344 COVER 6 TX-1345 GUIDE PLATE 7 TX-1346 SLIDE PLATE B 8 TX-1347 SLIDE PLATE B 9 TX-1346 SLIDE PLATE B 10 TX-1348 CONTROL PANEL COVER 11 TX-1348 CONTROL PANEL COVER 11 TX-1348 CONTROL PANEL COVER 12 TX-1348 CONTROL PANEL COVER 13 TX-1348 CONTROL PANEL COVER 14 TX-1349 THROTTLE COVER 13 TX-1349 THROTTLE COVER 14 TX-1335 ASSEMBLY CONTROLLER 15 TX-1310 HOLDER A 16 TX-1335 ASSEMBLY HANDLE GRIP 17 HN-1069 RUBBER CUSHION 18 422-0209 PLAY INSTRUCTION PLATE	ITEM	PARTS NUMBER	DESCRIPTION
4 TX-1343 SHLDER SCREW 5 TX-1344 COVER 6 TX-1345 GUIDE PLATE 7 TX-1346 SLIDE PLATE B 8 TX-1347 SLIDE PLATE B 9 TX-1366 HINGE 590 10 TX-1348 CONTROL PANEL COVER 11 TX-1350 ASSEMBLY CONTROLLER 12 TX-1349 THROTTLE COVER 13 TX-1357 COVER HOLDER 14 TX-1335 ASSEMBLY HANDLE GRIP 15 TX-1310 HOLDER A 16 TX-1356 PROTECT TUBE 17 HN-1069 RUBBER CUSHION 18 422-0209 PLAY INSTRUCTION PLATE 19 TX-1369 FLAG 20 TX-1370 COVER A 101 509-5050 START SWITCH W/LMAP 201 059-0014 WELL NUT M4 202 001-0406 M SCR FH M4 X 6 203 008-0408 TMP PRF SCR M5 X 10 205 <td< td=""><td></td><td></td><td></td></td<>			
4 TX-1343 SHLDER SCREW 5 TX-1344 COVER 6 TX-1345 GUIDE PLATE 7 TX-1346 SLIDE PLATE B 8 TX-1347 SLIDE PLATE B 9 TX-1366 HINGE 590 10 TX-1348 CONTROL PANEL COVER 11 TX-1350 ASSEMBLY CONTROLLER 12 TX-1349 THROTTLE COVER 13 TX-1357 COVER HOLDER 14 TX-1335 ASSEMBLY HANDLE GRIP 15 TX-1310 HOLDER A 16 TX-1356 PROTECT TUBE 17 HN-1069 RUBBER CUSHION 18 422-0209 PLAY INSTRUCTION PLATE 19 TX-1369 FLAG 20 TX-1370 COVER A 101 509-5050 START SWITCH W/LMAP 201 059-0014 WELL NUT M4 202 001-0406 M SCR FH M4 X 6 203 008-0408 TMP PRF SCR M5 X 16 205 <td< td=""><td>2</td><td></td><td></td></td<>	2		
5 TX-1344 COVER 6 TX-1345 GUIDE PLATE 7 TX-1346 SLIDE PLATE A 8 TX-1366 HINGE 590 10 TX-1348 CONTROL PANEL COVER 11 TX-1350 ASSEMBLY CONTROLLER 12 TX-1349 THROTTLE COVER 12 TX-1349 THROTTLE COVER 13 TX-1367 COVER HOLDER 14 TX-1335 ASSEMBLY HANDLE GRIP 15 TX-1310 HOLDER A 16 TX-1356 PROTECT TUBE 17 HN-1069 RUBBER CUSHION 18 422-0209 PLAY INSTRUCTION PLATE 19 TX-1369 FLAG 20 TX-1370 COVER A 101 509-5050 START SWITCH W/LMAP 201 059-0014 WELL NUT M4 202 001-0406 M SCR FH M4 X 6 203 008-0408 TMP PRF SCR M5 X 10 206 08-0516 TMP PRF SCR M5 X 20 208	3		
6 TX-1345 GUIDE PLATE 7 TX-1346 SLIDE PLATE A 8 TX-1347 SLIDE PLATE B 9 TX-1366 HINGE 590 10 TX-1348 CONTROL PANEL COVER 11 TX-1348 CONTROL PANEL COVER 12 TX-1349 THROTTLE COVER 12 TX-1349 THROTTLE COVER 13 TX-1367 COVER HOLDER 14 TX-1335 ASSEMBLY HANDLE GRIP 15 TX-1310 HOLDER A 16 TX-1356 PROTECT TUBE 17 HN-1069 RUBBER CUSHION 18 422-0209 PLAY INSTRUCTION PLATE 19 TX-1369 FLAG 20 TX-1370 COVER A 101 509-5050 START SWITCH W/LMAP 201 059-0014 WELL NUT M4 202 001-0406 M SCR FH M4 X 6 203 008-0416 TMP PRF SCR M5 X 10 206 08-0516 TMP PRF SCR M5 X 20 2			
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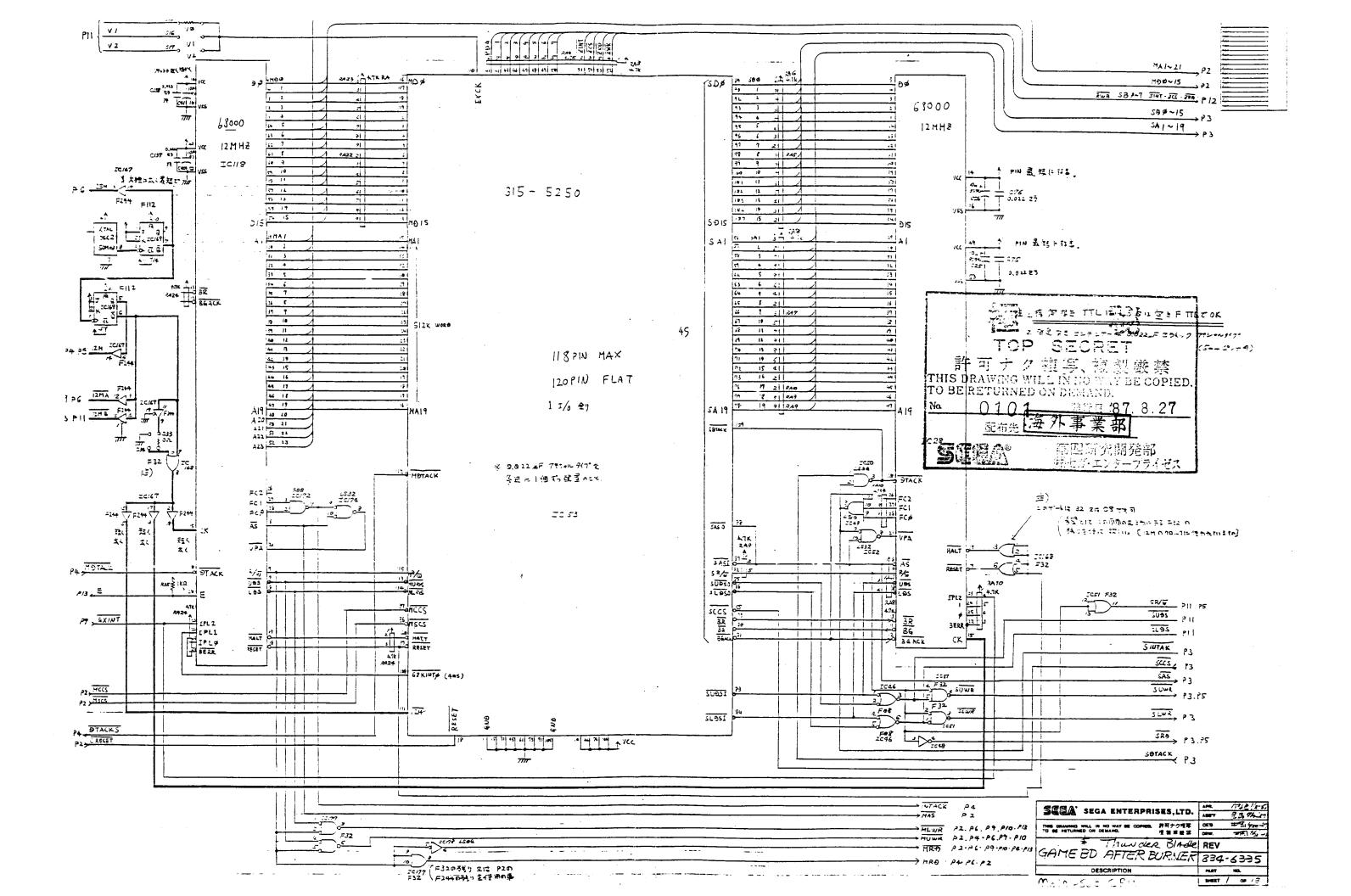
SHOCK MECHANICAL UNIT PARTS LIST

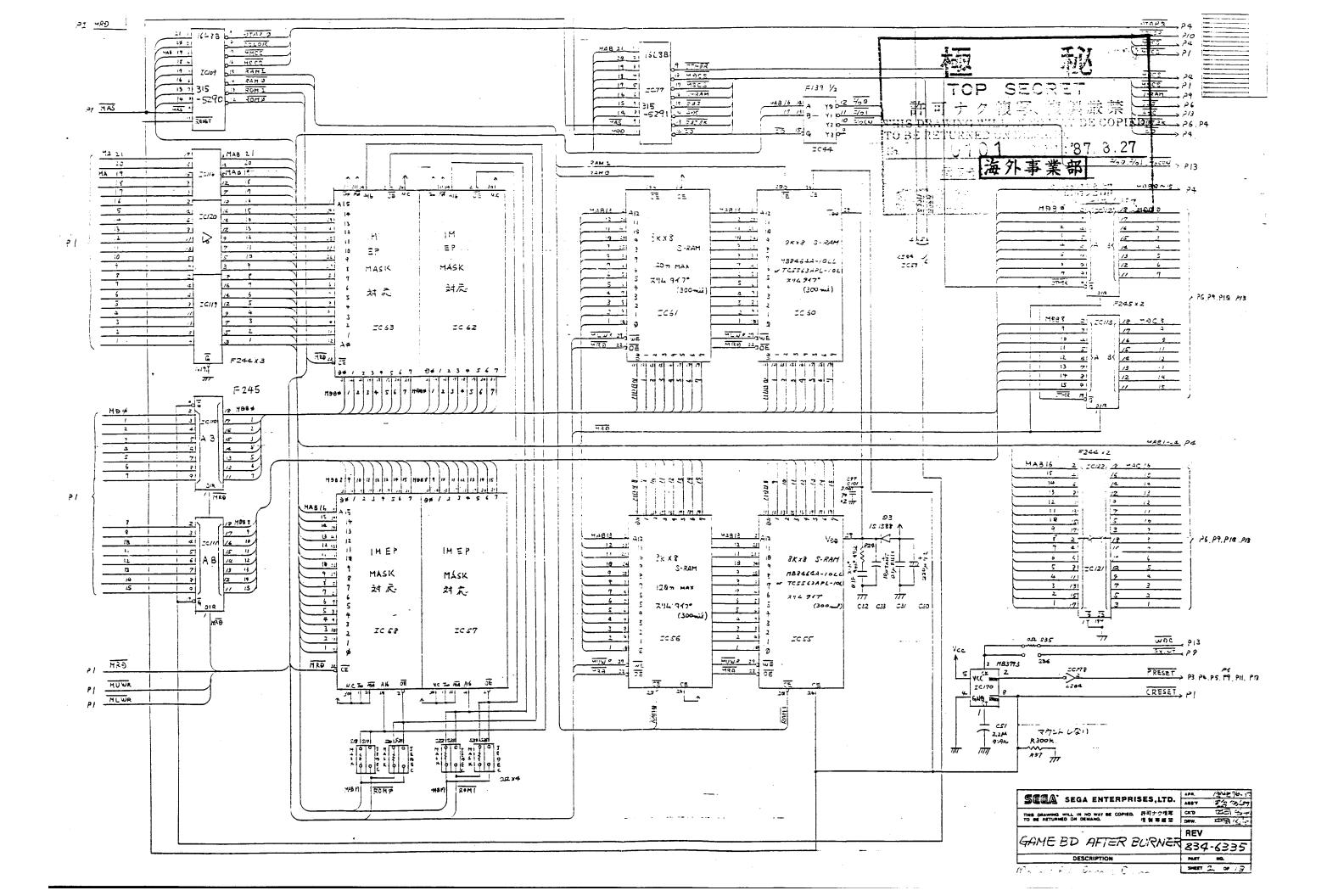
ITEM	PARTS NUMBER	DESCRIPTION
1	TX-1353	MAIN BASE
2	TX-1354	MOVING BASE
3	TX-1357	MOTOR BRACKET
4	TX-1358	SLIDE PLATE BOTTOM
5	TX-1359	SLIDE PLATE SIDE
2 3 4 5 6 7	TX-1360	GUIDE WASHER
	TX-1361	SHOULDER SCREW
8	TX-1362	ROD
9	TX-1363	CAM
10	TX-1364	SHAFT
12	TX-1325	SPRING BRACKET
13	TX-1326	FRONT GUIDE
14	TX-1327	SIDE PLATE
15	TX-1328	SHAFT B
16	TX-1329	PIPE
17	TX-1330	EXT. SPRING
19	TX-1331	HOLDER L
20	TX-1332	HOLDER R
21	TX-1333	BUMPER B
102	350-5113	MOTOR DC45V
201	000-0412-FS	M SCR M4 X 12
202	001-0414	M SCR M4 X 14
204	000-0510-FS	M SCR M5 X 10
205	000-0512	M SCR M5 X 12
206	029-0035	M SCR M6 X 12
208	060-0008	FLT WSHR M8
209	060-0010	FLT WSHR M10
211	061-0006	SPR WSHR M6
212	065-0006	E RING 6mm
213	045-0022	COT PIN 2.5 X 20
214	054-0004	U NUT M4
215	054-0006	U NUT M6
216	054-0005	U NUT M5
217	000-0305-S	M SCR M3 X 5
218	028-0012	SET SCREW SPECIAL M5 X 12
219	045-0014	SPR PIN 3 X 26

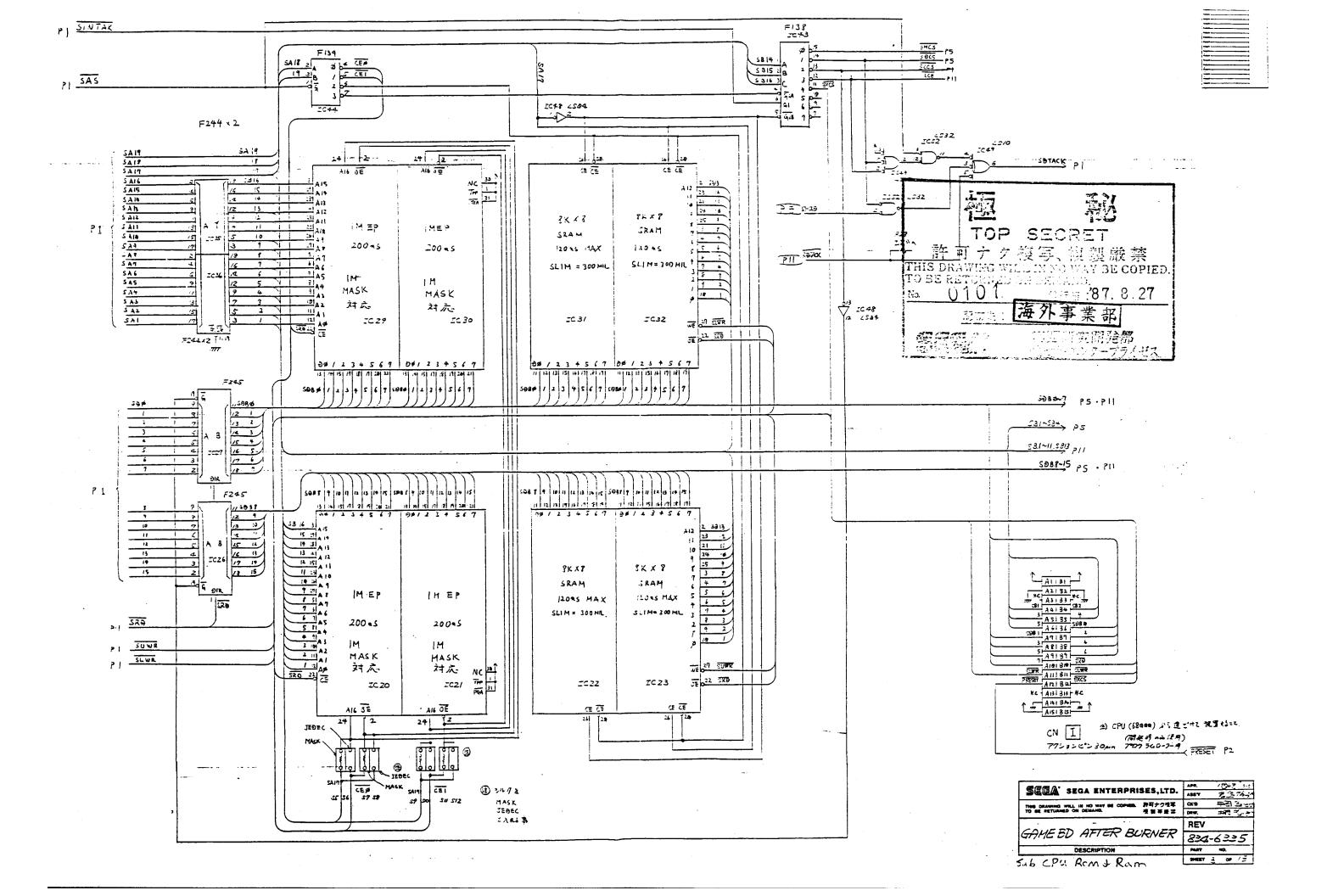
WIRING DIAGRAM

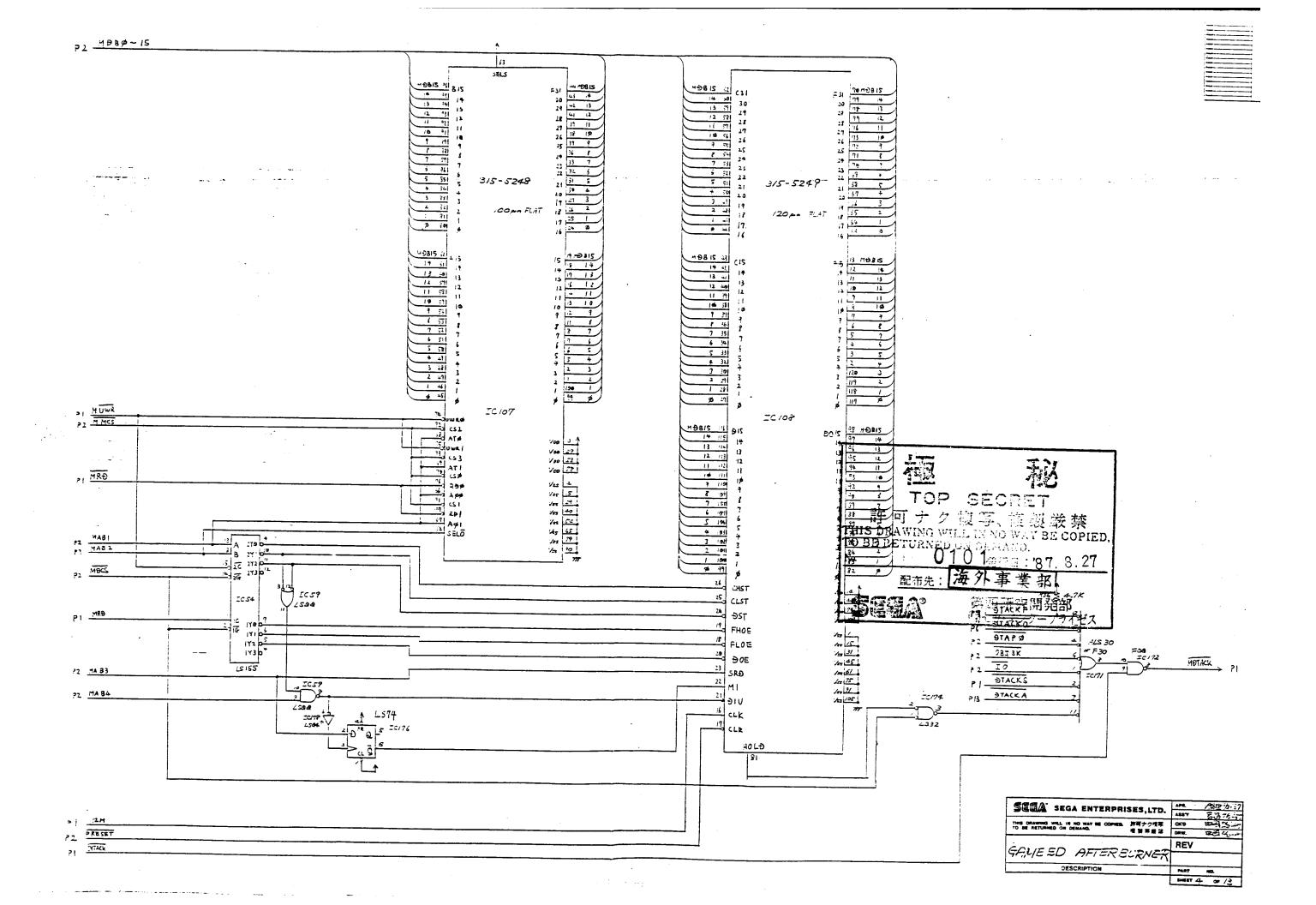
SEGA ENTERPRISES, INC. (USA)

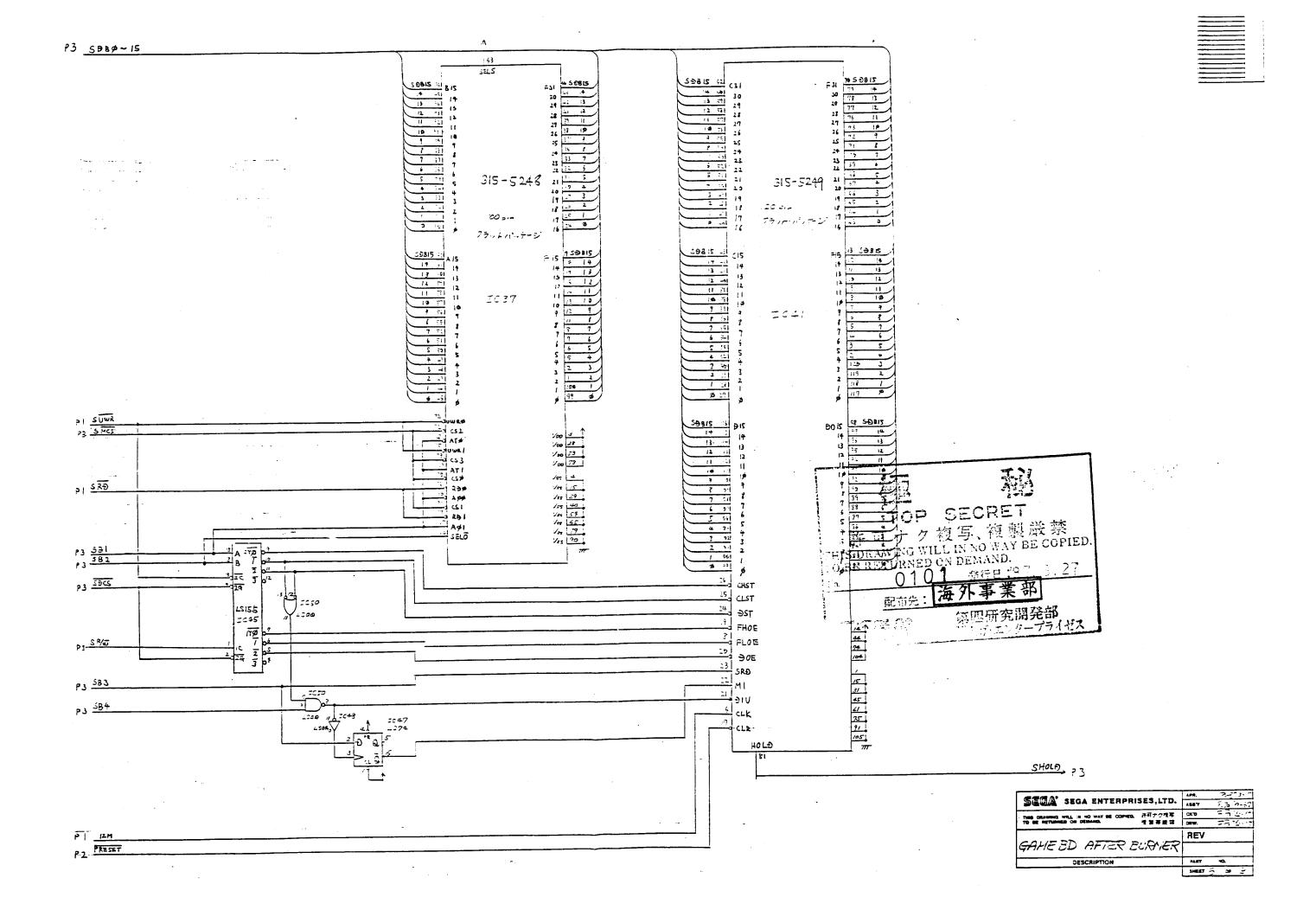
2149 Paragon Drive San Jose, CA 95131 Tel (408) 435-0201 ©SEGA 1987

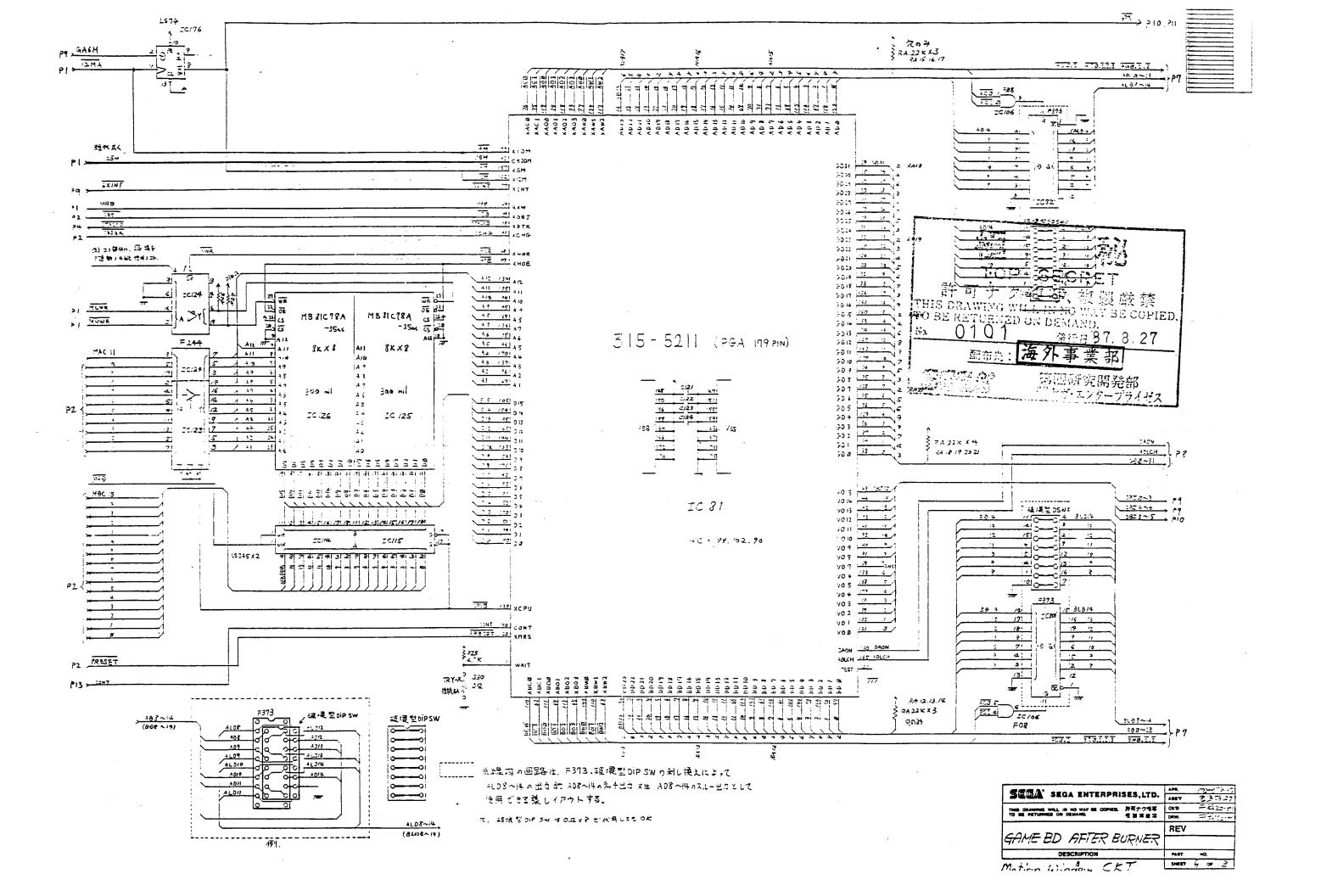


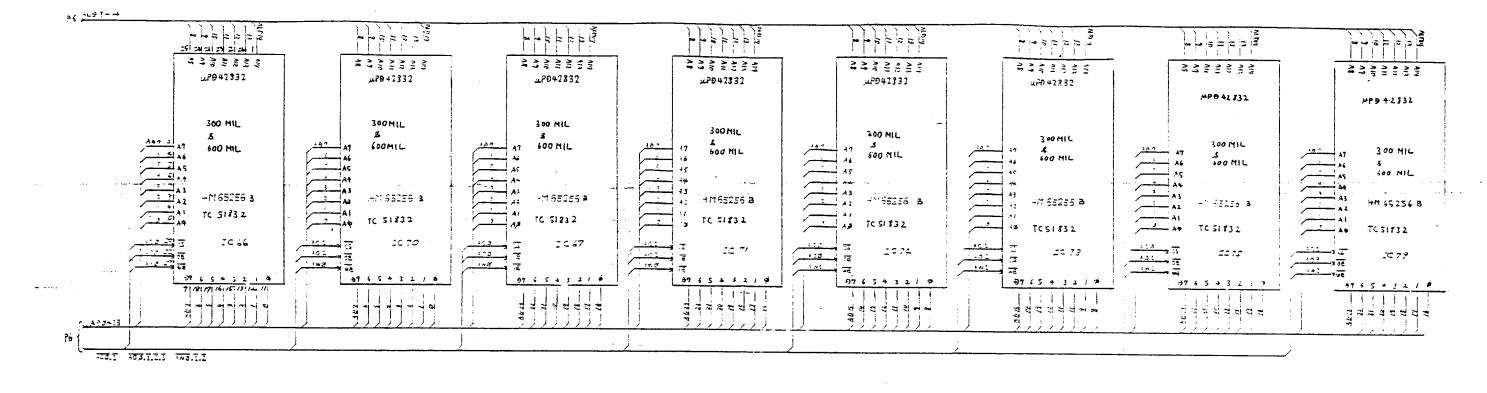


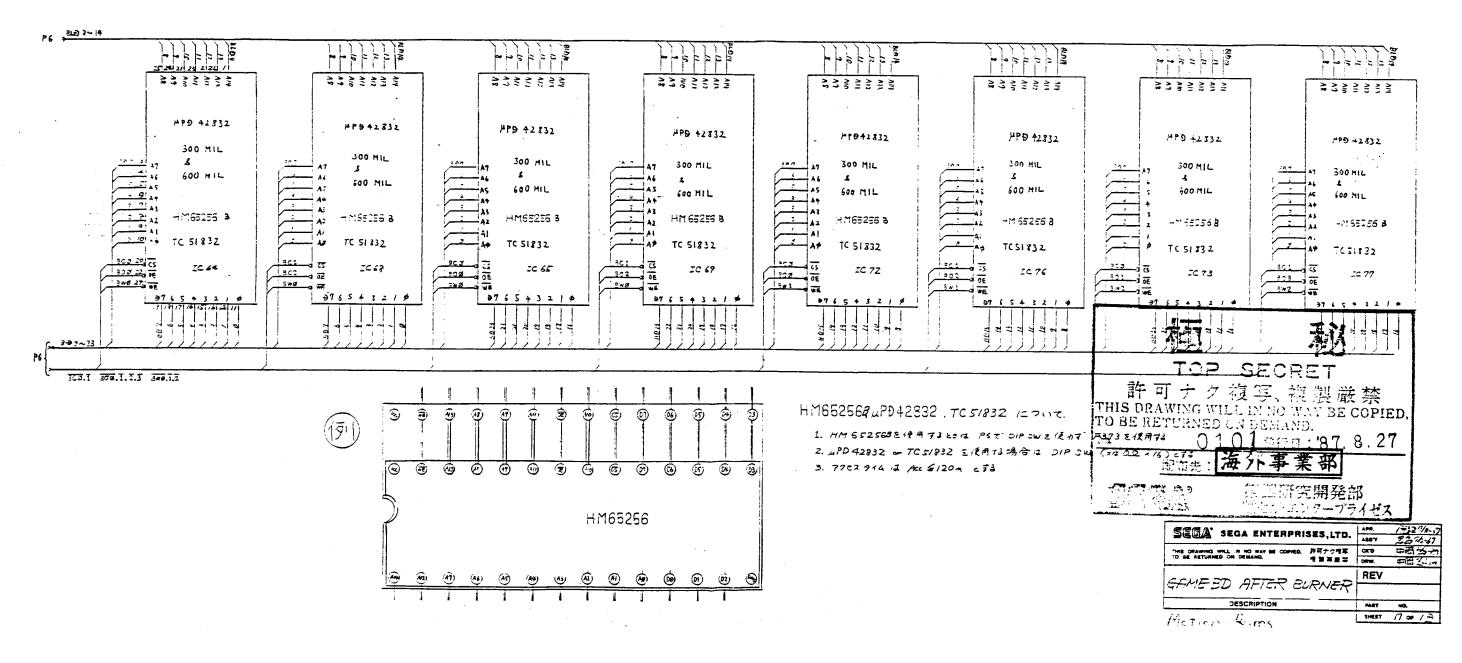


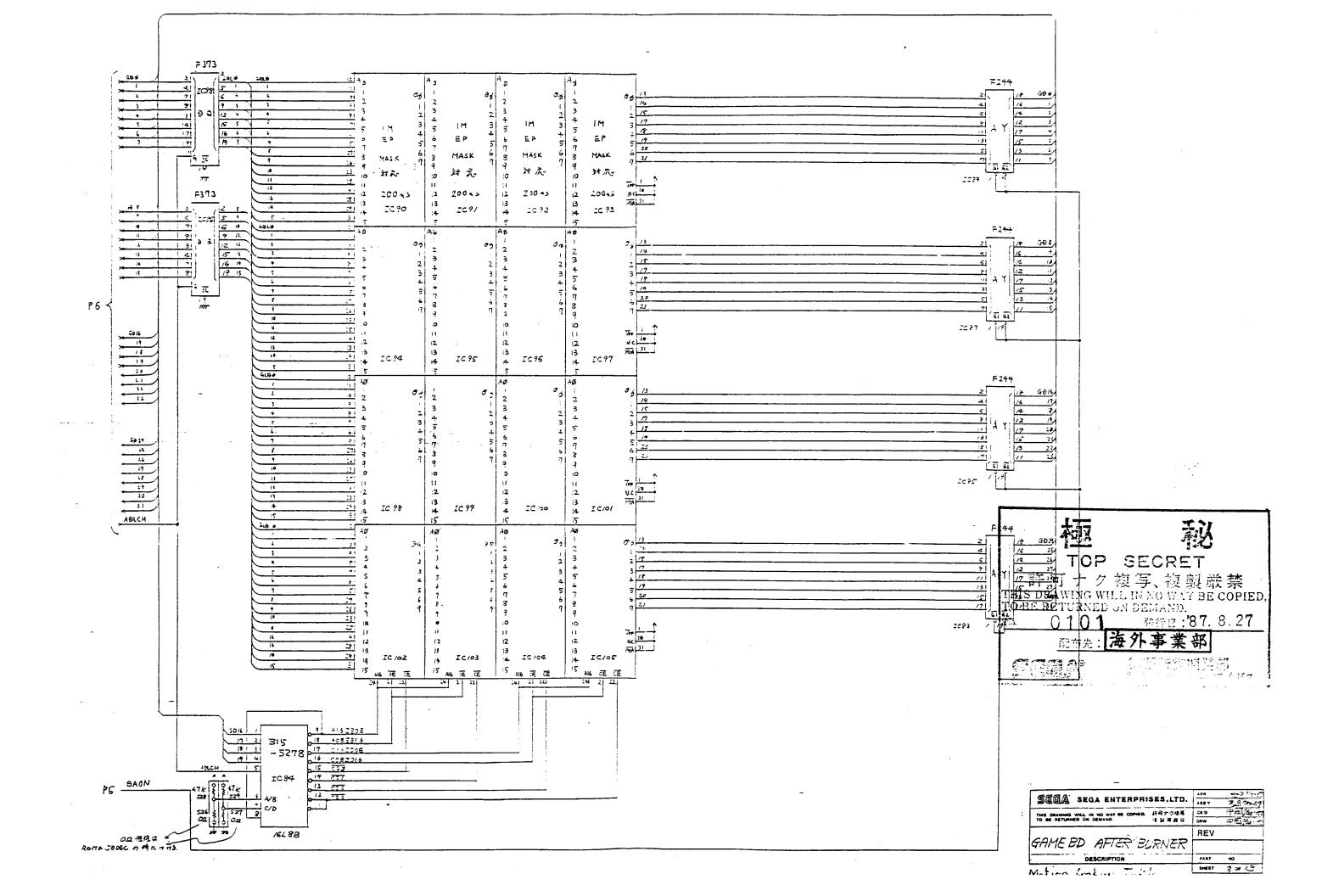


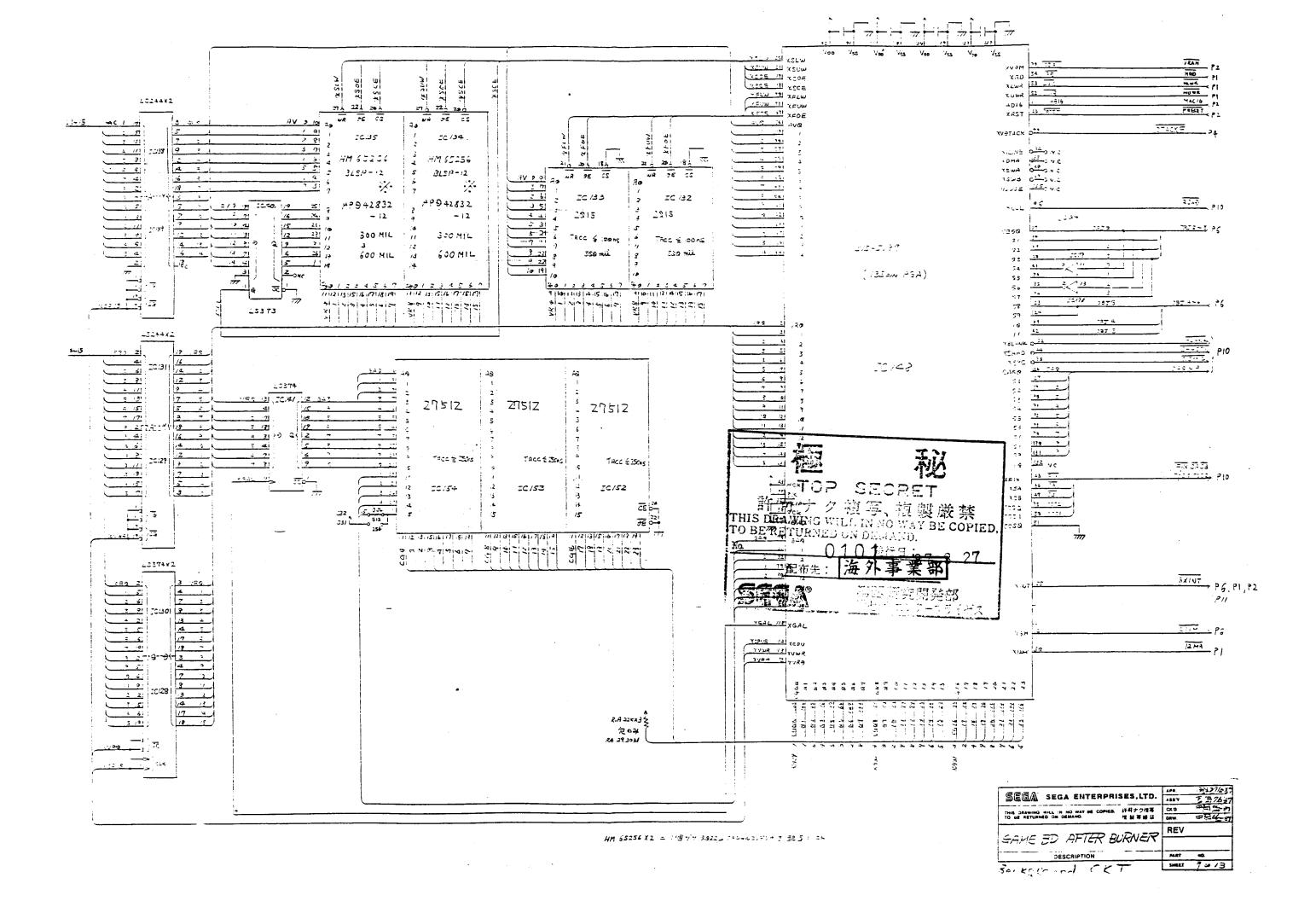


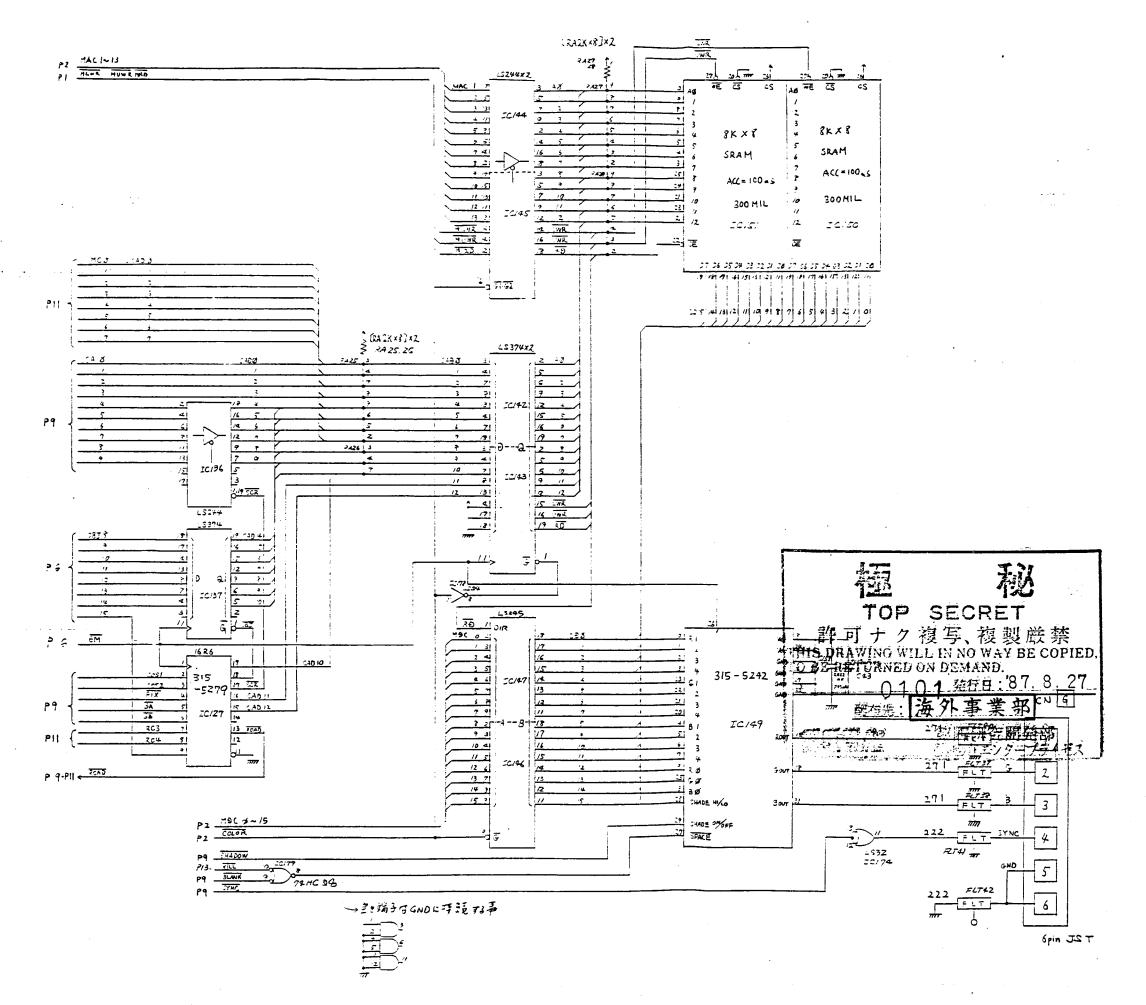












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