

**SEGA<sup>®</sup>**

**THUNDER  
BLADE**

ECONOMY UPRIGHT TYPE

**OWNER'S MANUAL**



**SEGA ENTERPRISES, LTD.**

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### SPECIFICATIONS

INSTALLATION SPACE	: 700 mm (27.6 in.) W X 550 mm (21.6 in.) D
HEIGHT	: 1650 mm (65.0 in.)
POWER	: 145 W
C.R.T.	: 20" MONITOR
WEIGHT	: 95 kg (209.4 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 THUNDER BLADE ECONOMY UPRIGHT, 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 kits, such as the printed circuit boards SEGA products.



#### LICENSE SEAL

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



### COPYRIGHT NOTICE

This SEGA product has the copyright notice as follows:

© SEGA 1987

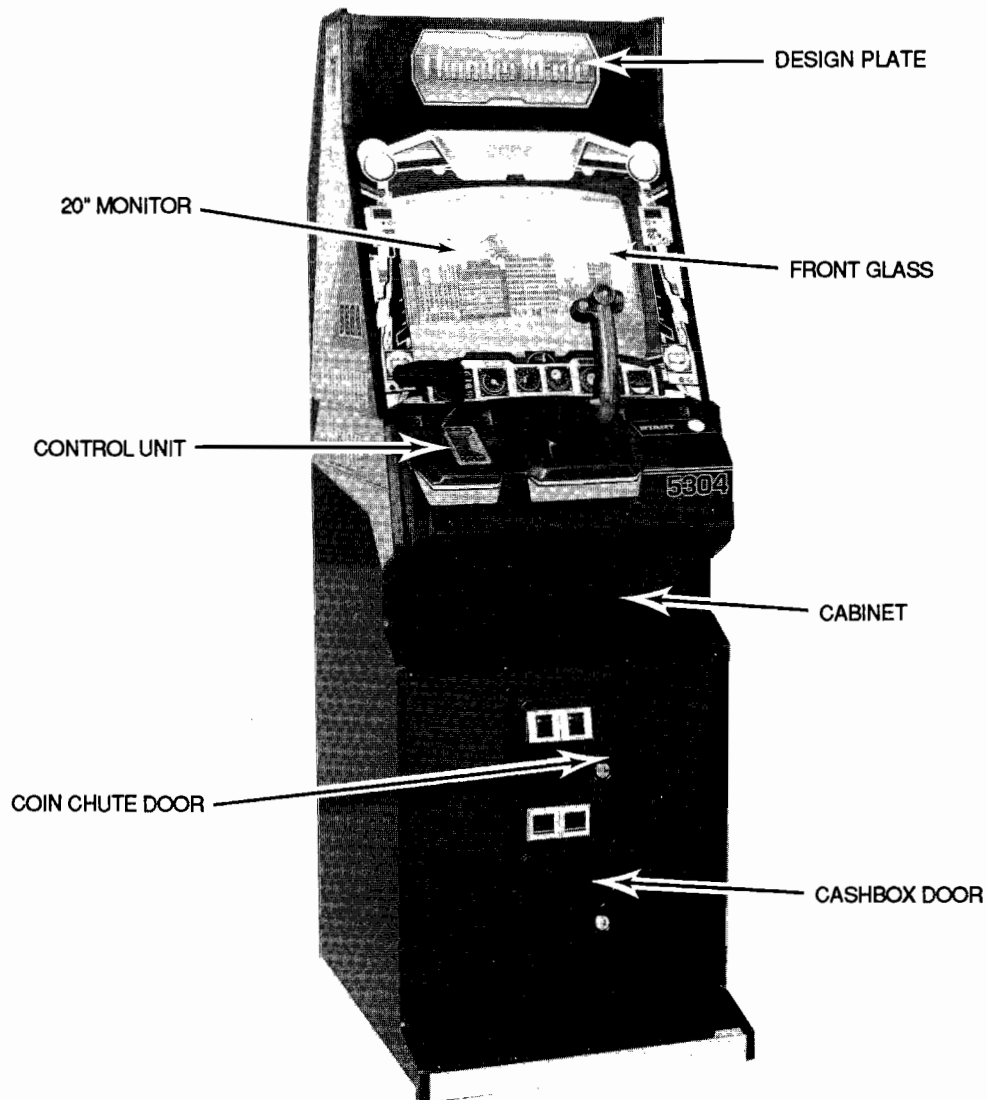
This signifies that this work was disclosed in 1987 and is the property of SEGA ENTERPRISES, LTD.

### 3. PRECAUTIONS CONCERNING THE PLACE OF INSTALLATION

The THUNDER BLADE ECONOMY UPRIGHT 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.

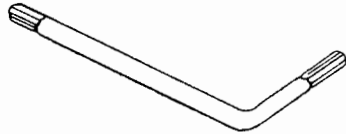
### 4. NAME OF PARTS ①



**TOOLS**

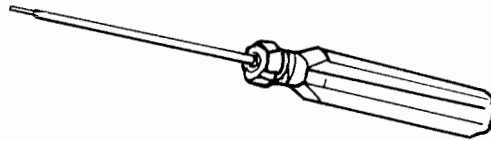
(TAMPERPROOF WRENCH)

- M4 540-0006-01
- M5 540-0007-01
- M6 540-0015-01

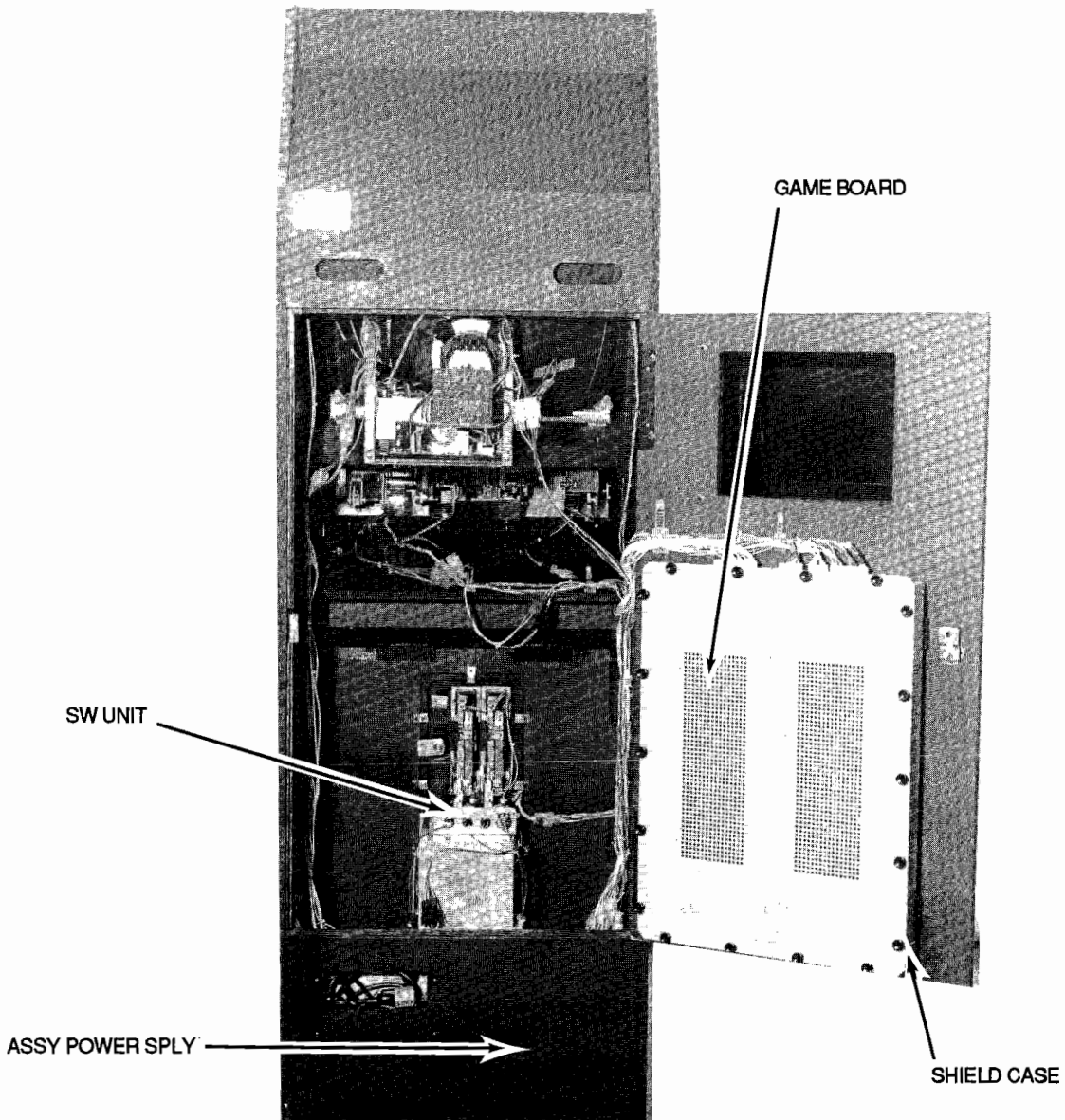


(TAMPERPROOF DRIVER)

- M4 540-0018
- M5 540-0017
- M8 540-0011

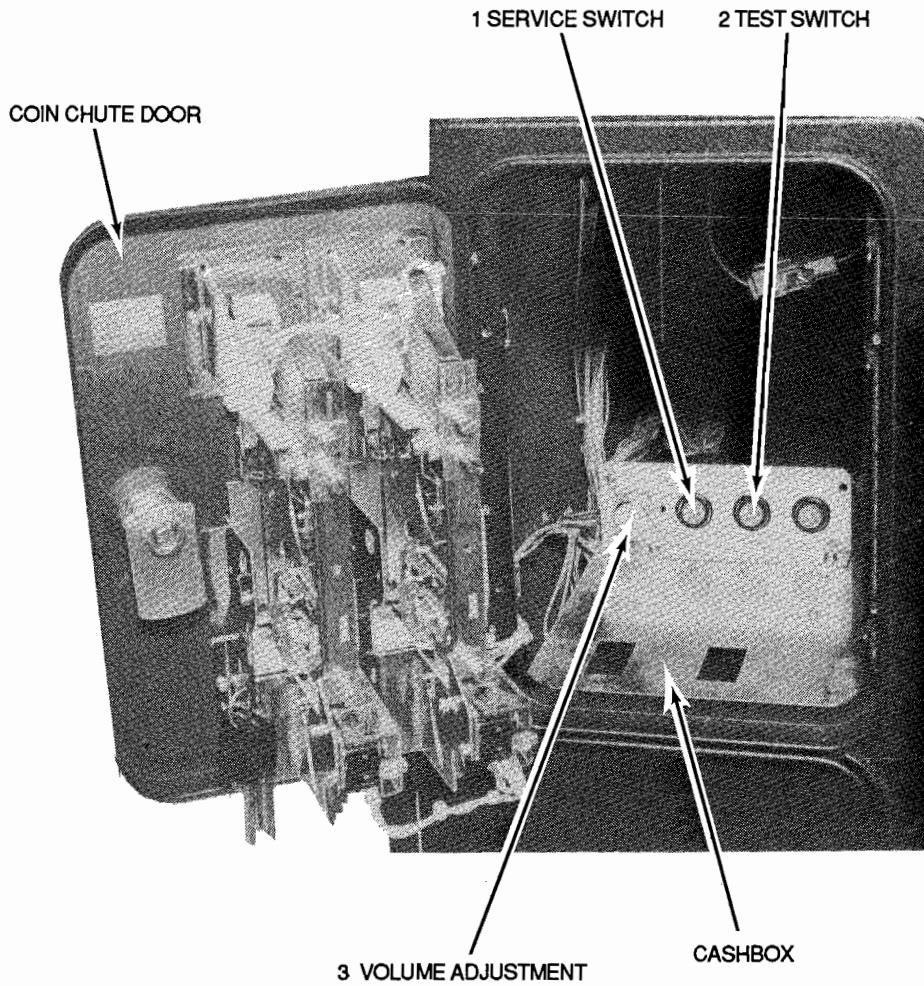


**4. NAME OF PARTS ②**



## 5. SERVICE SWITCH FUNCTION

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

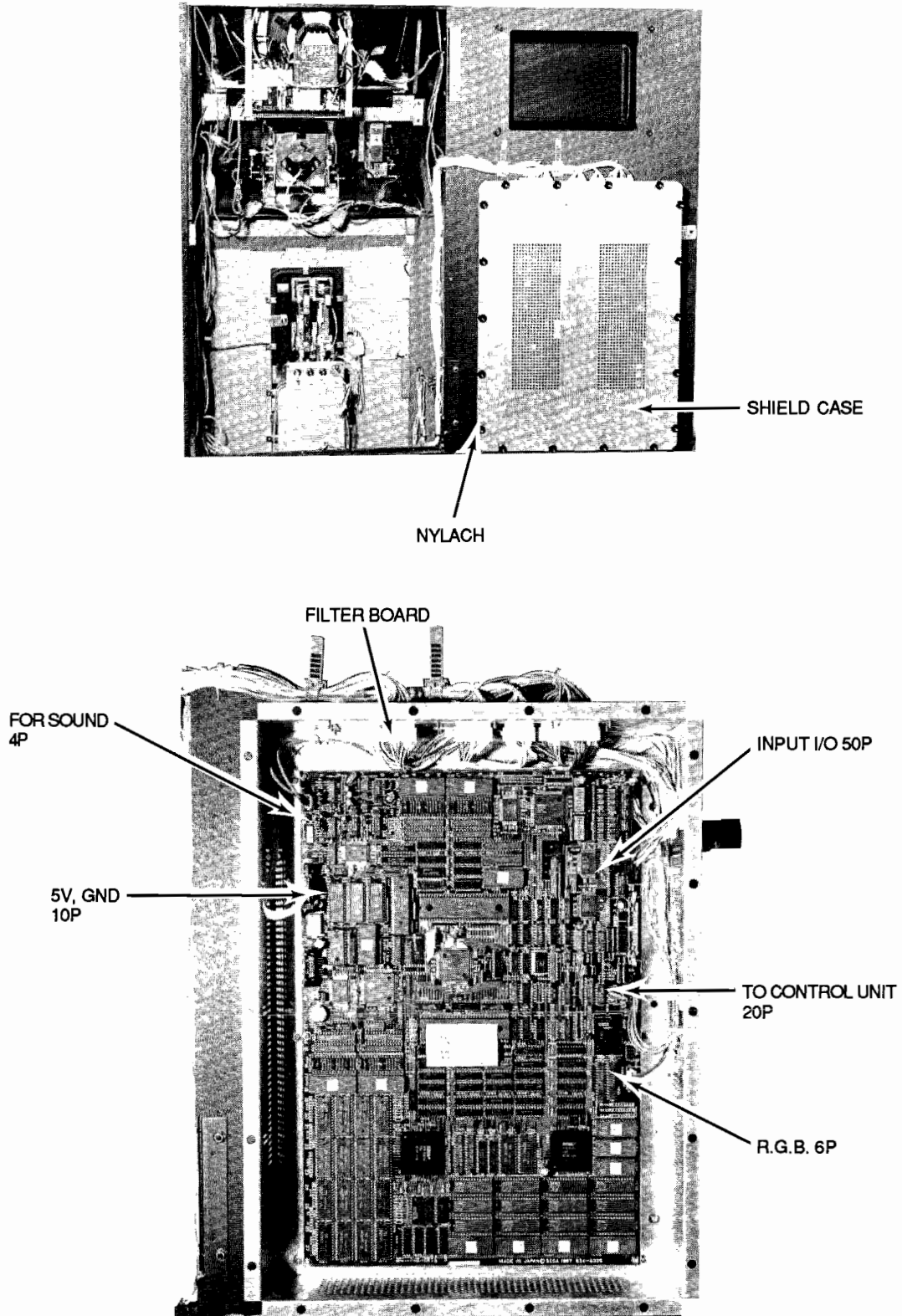


### INSTRUCTIONS

- ① SERVICE SWITCH .....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-TEST.
- ③ VOLUME ADJUSTMENT

## 6. IC BOARD

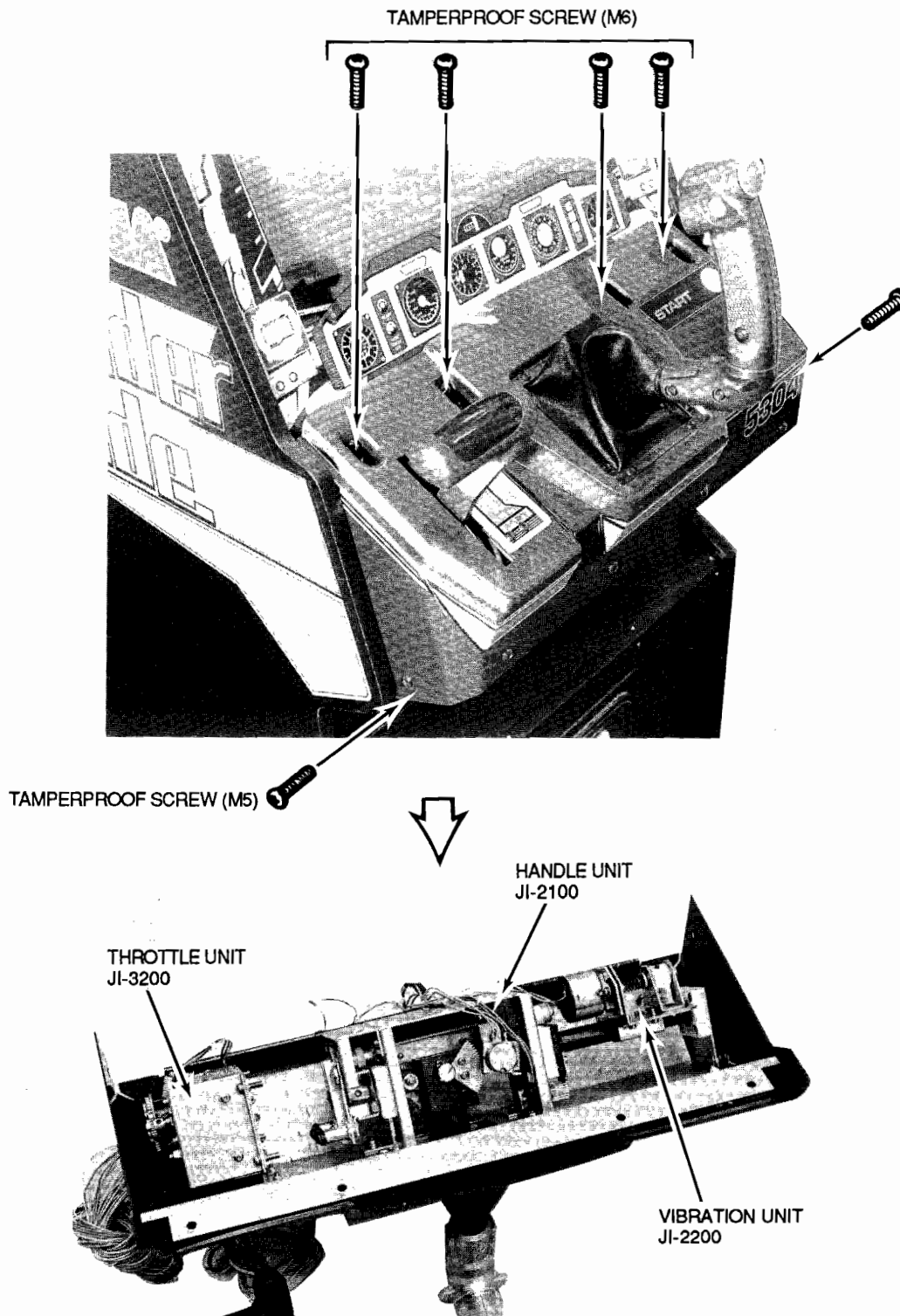
Open the back door of the cabinet, and take off the shield plate to perform game board maintenance.



## 7. OPENING THE CONTROL UNIT AND ADJUSTMENT

### 1. OPENING THE CONTROL UNIT

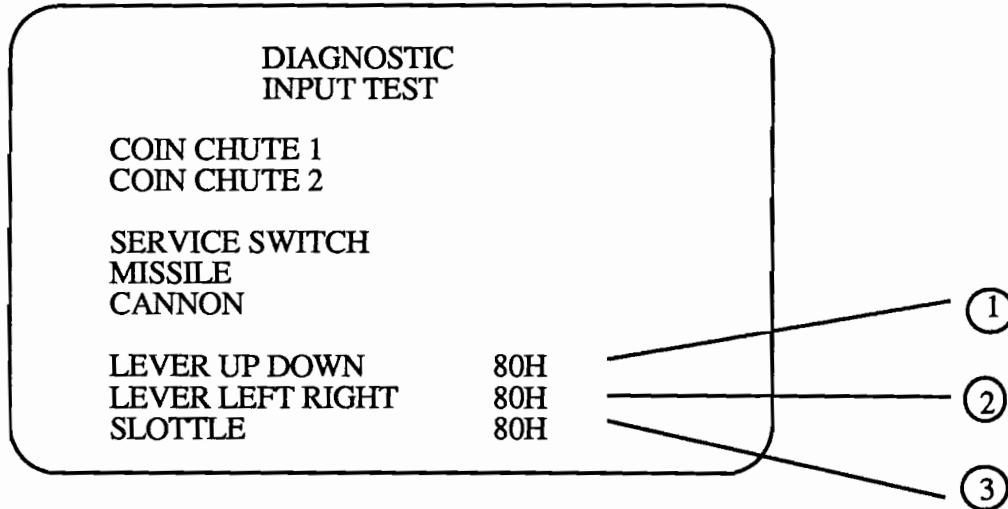
The CONTROL UNIT can be manually opened towards you by taking off the 4 (M6) TAMPERPROOF SCREWS in front of the control panel, and the 2 (M5) TAMPERPROOF SCREWS, one on each side.





## 2. HANDLE & THROTTLE UNIT ADJUSTMENT

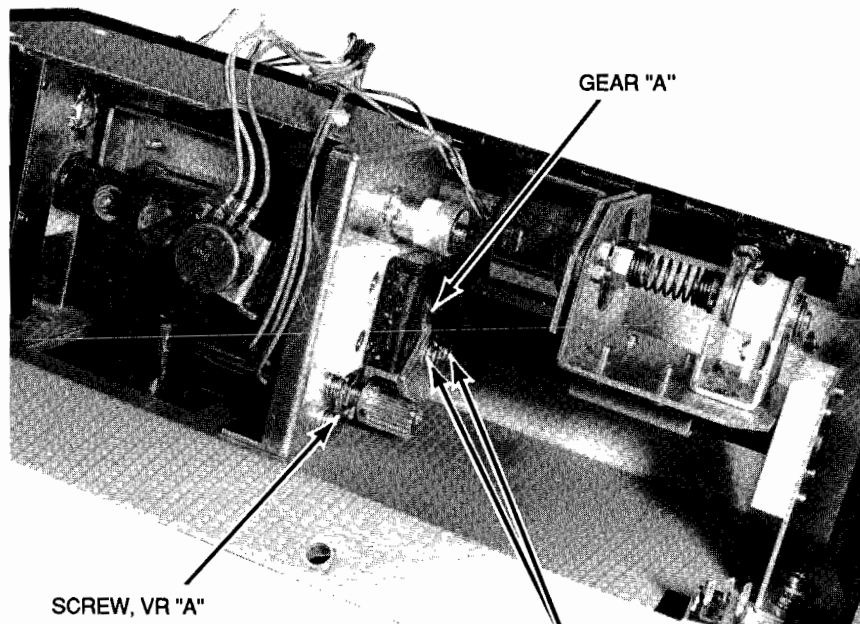
In the test mode, cause the DIAGNOSTIC INPUT DISPLAY to appear on the screen (to select it, push the test switch and move the handle upward and downward).



- ① To make vertical adjustments, maintain the handle unit's inclination in relation to the control panel as it was originally positioned, loosen the 2 screws of GEAR "A" and then refasten when the monitor display shows 80H+4H.

7CH, 7DH, 7EH, 7FH 80H, 81H, 82H, 83H, 84H

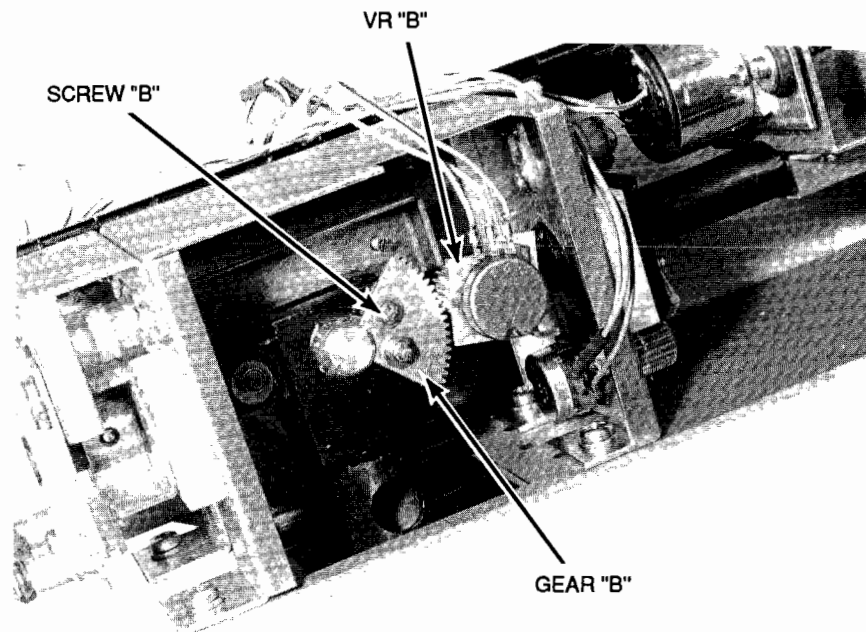
To make backlash adjustments, loosen the VR "A" BRACKET and move it upward and downward.



Volume value setting  
B0 over (UP), 50 under (DOWN)

- ② For horizontal adjustments, loosen the 2 "B" SCREWS on GEAR "B" and refasten them when the value is within the above allowable range of  $80\text{Hz}+4\text{H}$ , with the hand grip positioned in the center.

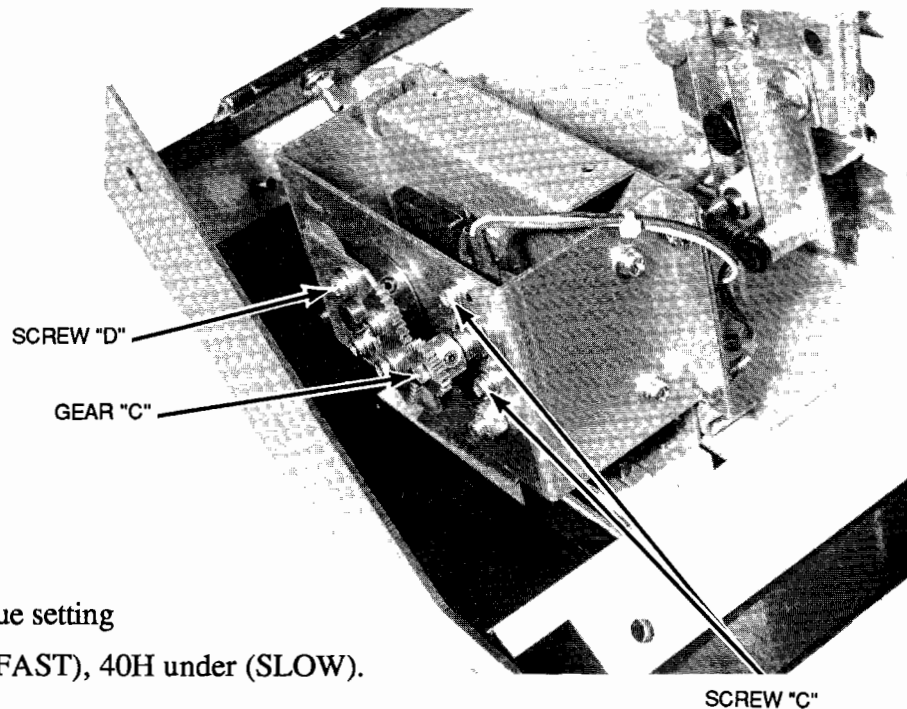
Make backlash adjustments by loosening the VR "B" BRACKET.



Volume value setting 80 over (LEFT), 50 under (RIGHT)

- ③ With the THROTTLE LEVER in the neutral position, loosen the 2 SCREWS, manually turn GEAR "C" and make adjustments within the allowable range of  $80\text{H}\pm 4\text{H}$

Make backlash adjustments by loosening SCREW "D."



Volume value setting  
COH over (FAST), 40H under (SLOW).

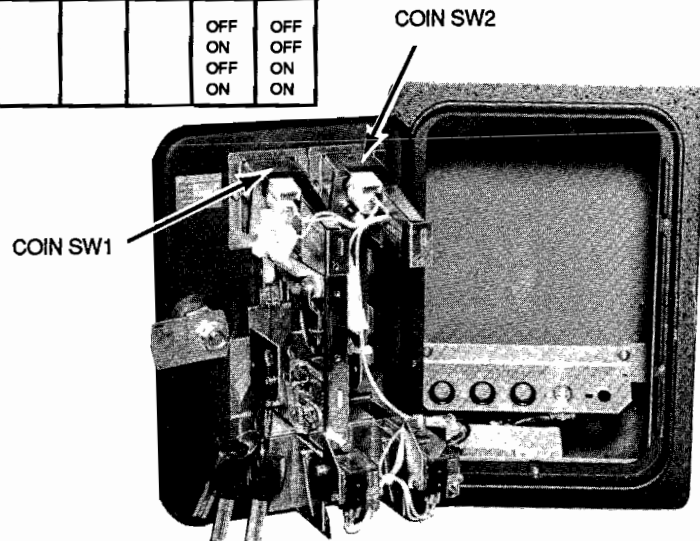
## 9. DIP SWITCH SETTING

COIN/CREDIT OPTION SWITCH SETTING		DIP SW A							
OPTION		1	2	3	4	5	6	7	8
1 COIN	1 CREDIT	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1 COIN	2 CREDITS	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
1 COIN	3 CREDITS	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
1 COINS	4 CREDIT	ON	ON	OFF	OFF	ON	ON	OFF	OFF
1 COINS	5 CREDIT	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF
1 COINS	6 CREDIT	ON	OFF	ON	OFF	ON	OFF	ON	OFF
2 COINS	1 CREDIT	OFF	ON	ON	OFF	OFF	ON	ON	OFF
3 COINS	1 CREDIT	ON	ON	ON	OFF	ON	ON	ON	OFF
4 COINS	1 CREDIT	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
2 COINS	3 CREDITS	ON	OFF	OFF	ON	ON	OFF	OFF	ON
2 COINS	1 CREDIT	OFF	ON	OFF	ON	OFF	ON	OFF	ON
4 COINS	3 CREDITS	ON	ON	OFF	ON	ON	ON	OFF	ON
1 COIN	1 CREDIT	OFF	OFF	ON	ON	OFF	OFF	ON	ON
2 COINS	2 CREDITS								
3 COINS	3 CREDITS								
4 COINS	4 CREDITS								
5 COINS	6 CREDITS								
1 COIN	1 CREDIT	ON	OFF	ON	ON	ON	OFF	ON	ON
2 COINS	2 CREDITS								
3 COINS	3 CREDITS								
4 COINS	5 CREDITS								
1 COIN	1 CREDIT	OFF	ON	ON	ON	OFF	ON	ON	ON
2 COINS	3 CREDITS								
FREE PLAY		ON	ON	ON	ON	ON	ON	ON	ON
		COIN SW. #1				COIN SW. #2			

### GAME OPTION SWITCH SETTING

### DIP SW B

OPTION		1	2	3	4	5	6	7	8
*CABINET TYPE	ECONOMY UPRIGHT	OFF							
	MINI UPRIGHT	ON							
ADVERTISE SOUND	OFF		OFF						
	ON		ON						
TIME 30 SEC	TIME 0 SEC			OFF					
				ON					
NUMBER OF SHIPS	3				OFF	OFF			
	2				OFF	ON			
	4				ON	OFF			
	5				ON	ON			
CONTINUE	NOT CONTINUE						OFF		
							ON		
GAME DIFFICULTY	NORMAL							OFF	OFF
	EASY							ON	OFF
	HARD							OFF	ON
	HARDEST							ON	ON

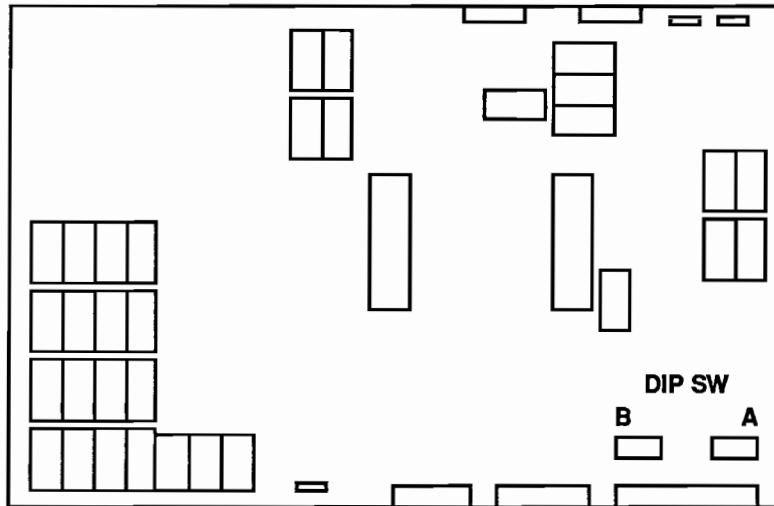


The TIME 30 SEC signifies that the allotted number of player helicopters does not decrease regardless of how many are lost within said 30 second period.

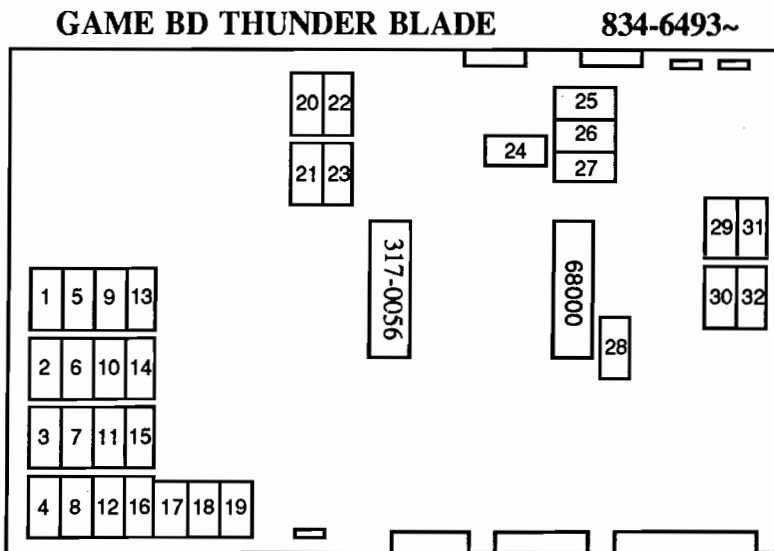
**CABINET TYPE**

**ECONOMY U/R:** For the THUNDER BLADE NEW CABINET, No. 1 of DIP SW B should be OFF.

**MINI U/R:** For the CABINET converted from the AFTER BURNER MINI U/R and also for the CITY TYPE CABINET, No. 1 of DIP SW B should be ON.



**10. EPROM/MASK ROM LOCATIONS**



	IC LOCATION	GAME BD NO.		MAIN WORK
		834-6493-03	834-6493-05	
1	IC 93	EPR-11395	EPR-11395	OBJECT (CHARACTER & SCENE SCENERY)
2	IC 97	EPR-11394	EPR-11394	
3	IC 101	EPR-11393	EPR-11393	
4	IC 105	EPR-11392	EPR-11392	
5	IC 92	MPR-11331	EPR-11331	
6	IC 96	MPR-11330	EPR-11330	
7	IC 100	MPR-11329	EPR-11329	
8	IC 104	MPR-11328	EPR-11328	
9	IC 91	MPR-11327	EPR-11327	
10	IC 95	MPR-11326	EPR-11326	
11	IC 99	MPR-11325	EPR-11325	
12	IC 103	MPR-11324	EPR-11324	
13	IC 90	MPR-11323	EPR-11323	
14	IC 94	MPR-11322	EPR-11322	
15	IC 98	MPR-11321	EPR-11321	
16	IC 102	MPR-11320	EPR-11320	
17	IC 154	EPR-11314	"	FIX SCROLL CHARACTER
18	IC 153	EPR-11315	"	
19	IC 152	EPR-11316	"	
20	IC 58	EPR-11405	"	MAIN PROGRAM
21	IC 63	EPR-11406	"	
22	IC 57	EPR-11306	"	
23	IC 62	EPR-11307	"	
24	IC 17	EPR-11396	"	SOUND PROGRAM
25	IC 11	EPR-11318	"	SOUND DATA
26	IC 12	EPR-11318	"	
27	IC 13	EPR-11319	"	
28	IC 40	EPR-11313	"	ROAD DATA
29	IC 21	EPR-11310	"	SUB PROGRAM
30	IC 30	EPR-11311	"	
31	IC 20	EPR-11380	"	
32	IC 29	EPR-11391	"	

## 11. SELF-TEST

This test mainly checks the operation of game PCB's discovers defects if any, and also checks monitor colors and audio quality. In addition, the test indicates DIP SW assignment and has a Bookkeeping function.

### TEST PROGRAM

- |                            |   |
|----------------------------|---|
| (1) Memory Test:           | Checks the EPROM programs and RAM Area.                               |
| (2) Input Test:            | Tests the operation of COIN, CANNON, MISSILE, SERVICE switches, etc.  |
| (3) Output Test:           | Tests the operation of each lamp.                                     |
| (4) Sound Test:            | Checks the quality of the synthesized sound transmitted from the PCB. |
| (5) CRT Test:              | Checks colors displayed.  |
| (6) Dip Switch Assignment: | Indicates dip switch assignments.                                     |
| (7) Bookkeeping:           | Indicates data on average score and play time.                        |
| (8) Backup RAM Clear:      | Clears Bookkeeping memory.  |

## 1. TEST OPERATION

- (1) Push the TEST SW button to display the test menu (Fig. 1).
- (2) Move the lever upward or downward and bring the arrow to the desired position. Press the TEST SW button again to display the desired test
- (3) When each test is finished, press the TEST SW button again to display the test menu (Fig. 1). To end the test program, bring the arrow to EXIT and push the TEST SW button.

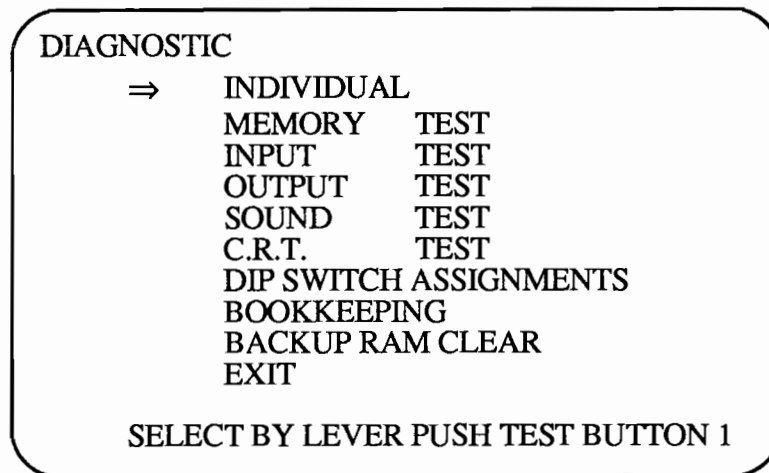


FIG. 1

- \* INDIVIDUAL and CONTINUE can be selected by pushing the start button when the arrow is at the top position.

**INDIVIDUAL:** Indicates only the item which the arrow points to. Push the TEST SW button again to display the test menu (Fig. 1).

**CONTINUE:** After displaying the item which the arrow points to, push the TEST SW button again to proceed to the following test in the order as indicated in the Fig. 1 test menu.

## 2. TEST ITEMS AND DESCRIPTION

### (1) MEMORY TEST

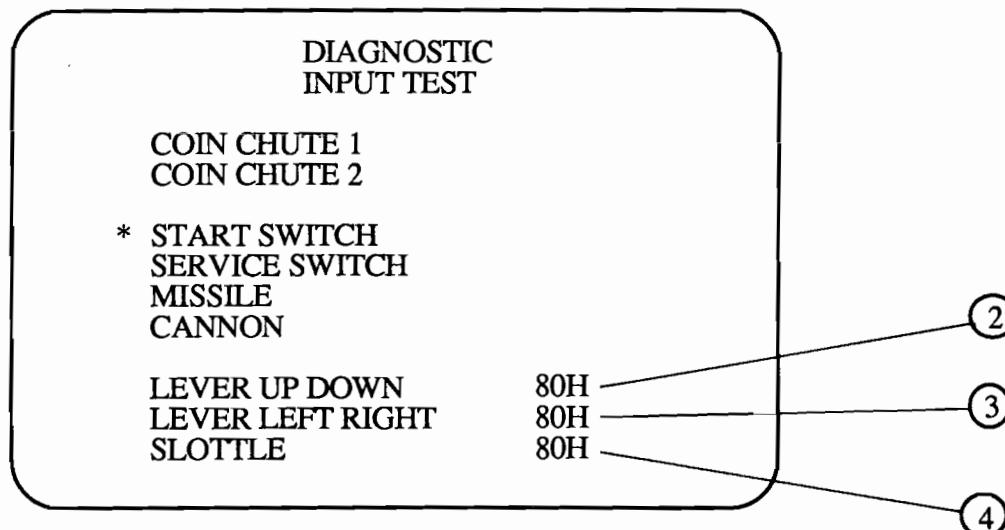
DIAGNOSTIC					
MEMORY TEST					
** ROMS TEST **					
IC. 20	GOOD	IC. 29	GOOD	IC. 57	GOOD
IC. 21	GOOD	IC. 30	GOOD	IC. 58	GOOD
IC. 62	GOOD				
IC. 63	GOOD				
** RAMS TEST **					
IC. 22	GOOD	IC. 31	GOOD	IC. 38	GOOD
IC. 23	GOOD	IC. 32	GOOD	IC. 39	GOOD
IC. 55	GOOD	IC. 60	GOOD	IC. 125	GOOD
IC. 56	GOOD	IC. 61	GOOD	IC. 126	GOOD
IC. 132	GOOD	IC. 134	GOOD	IC. 150	GOOD
IC. 133	GOOD	IC. 135	GOOD	IC. 151	GOOD
CUSTOM IC TEST					
IC. 37	GOOD	IC. 41	GOOD	IC. 53	GOOD
IC. 107	GOOD	IC. 108	GOOD		

Checks the game PCB's 8 main ROMs, 18 RAMs and 5 CUSTOM IC's.

GOOD means the IC is in "GOOD" operating condition.

If there exists any malfunctioning of the ICs, "BAD" will be indicated.

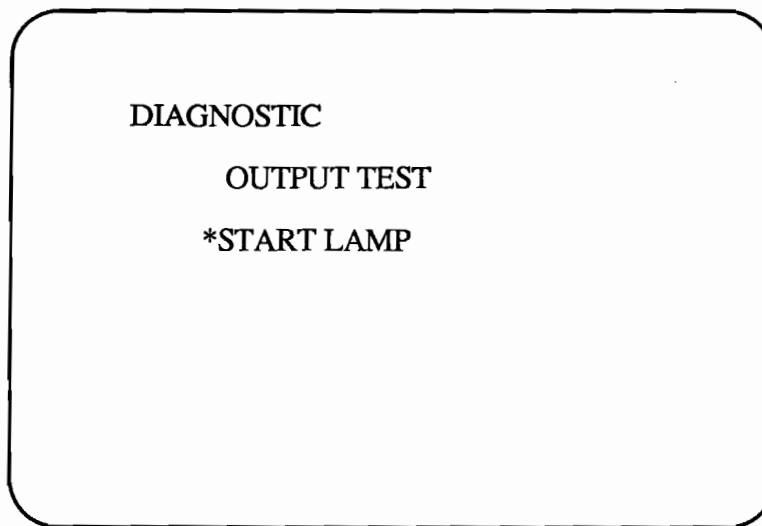
### (2) INPUT TEST



- ① Operate each switch. When the "OFF" condition is changed to "ON", the corresponding switch is in good working order.
- ② Data values should increase when the handle grip is moved upward, decrease when it is moved downward, and indicate 80 ( $\pm 4$ ) H when released.
- ③ Data values should increase when the handle grip is moved to the right, decrease when it is moved to the left, and indicate 80 ( $\pm 4$ ) H when released.
- ④ Data value should increase when the throttle lever is moved backward, decrease when it is moved forward, and indicate 80 ( $\pm 4$ ) H when released.

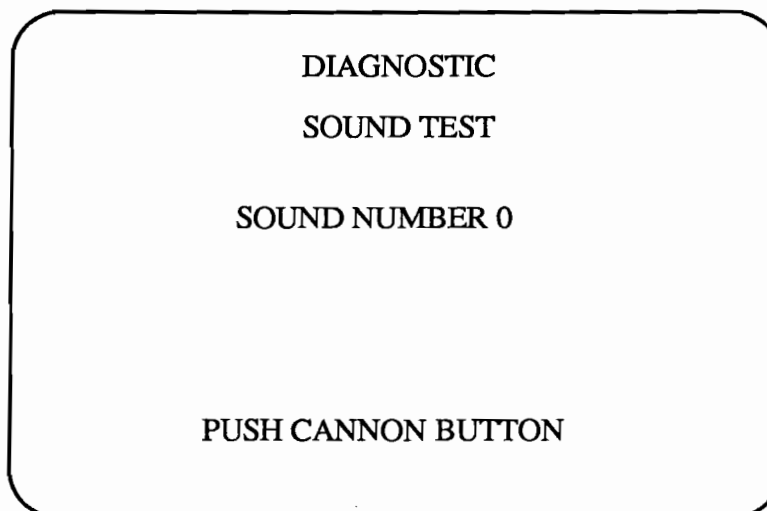
### (3) OUTPUT TEST

Each lamp will flash if it is working properly.



### (4) SOUND TEST

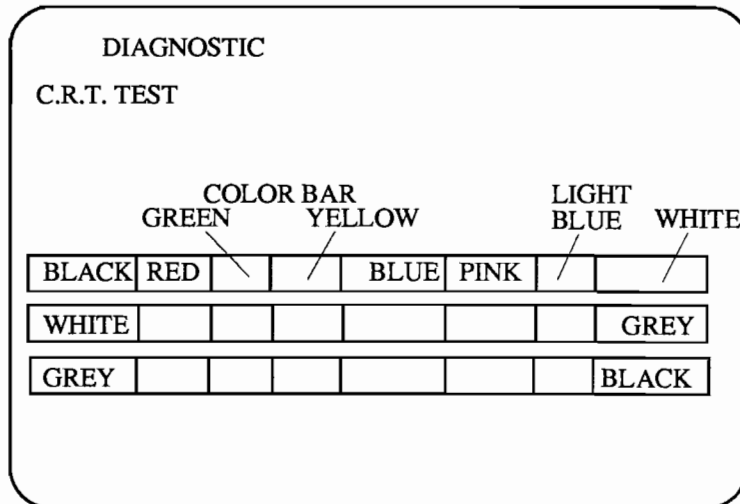
When the test has been completed, push CANNON button.





### (5) C.R.T. TEST

- 1 Checks the C.R.T. position. Make sure that the on-screen corners are consistent, and then make size adjustments.
- 2 Color check.



### (6) DIP SWITCH ASSIGNMENTS

DIAGNOSTIC		DIP SWITCH ASSIGNMENTS								
		1	2	3	4	5	6	7	8	
DIP SW A		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	① Preset setting of each dip switch
DIP SW B		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
• A 1 2 3 4	COIN SW #1	1 COIN					1 CREDIT			② Coin switch setting
• A 5 6 7 8	COIN SW #2	1 COIN					1 CREDIT			③ Cabinet type
• B 1	TYPE						DELUXE			④ Advertise sound
• B 2	ADVERTISE SOUND						OFF			⑤ Enabled
• B 3	TIME 30 SEC						30 SEC			⑥ Players helicopter(s)
• B 4 5	NUMBER OF SHIPS						3			⑦ To continue game or not
• B 6	CONTINUE						OFF			⑧ Game difficulty
• B 7 8	GAME DIFFICULTY						NORMAL			

(7) BOOKKEEPING

DIAGNOSTIC  
 BOOKKEEPING

COIN CHUTE #1	8
COIN CHUTE #2	0
COIN CREDITS	141
SERVICE CREDITS	5727
TOTAL CREDITS	5888
TOTAL TIME	15 H 28 M 11 S

PUSH CANNON BUTTON

- ① Operation frequency of coin chute 1
- ② Operation frequency of coin chute 2
- ③ Number of coin credits
- ④ Usage frequency of service switch
- ⑤ Number of credits in total
- ⑥ Total working time (00 H 00 M 00 S)

Press the CANNON button to display the following:

DIAGNOSTIC  
 BOOKKEEPING

NUMBER OF GAME	203
AVE. SCORE	7230
TOP-SCORE	123456
LOW-SCORE	54321
** GAME TIME **	
TOTAL	00H00M00S
AVERAGE	00H00M00S
LONGEST	00H00M00S

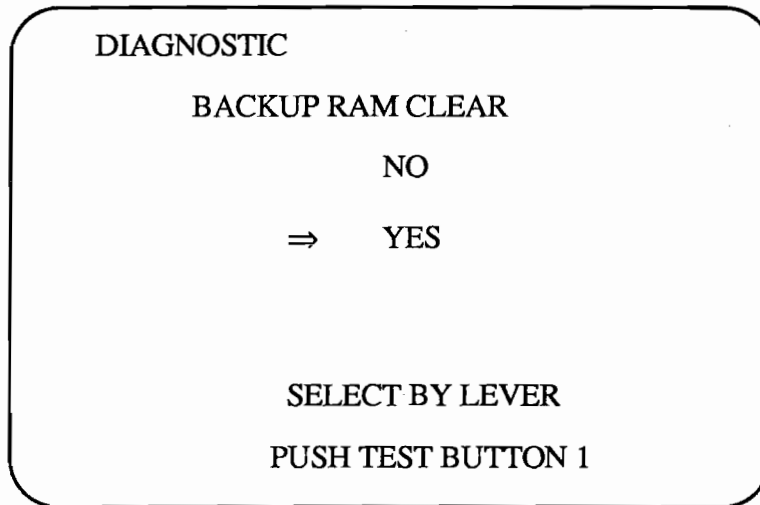
PUSH CANNON BUTTON

- ① Total number of game plays
- ② All players' average score
- ③ Highest score
- ④ Lowest score
- ⑤ Total game play time
- ⑥ Average game play time
- ⑦ Longest game play time

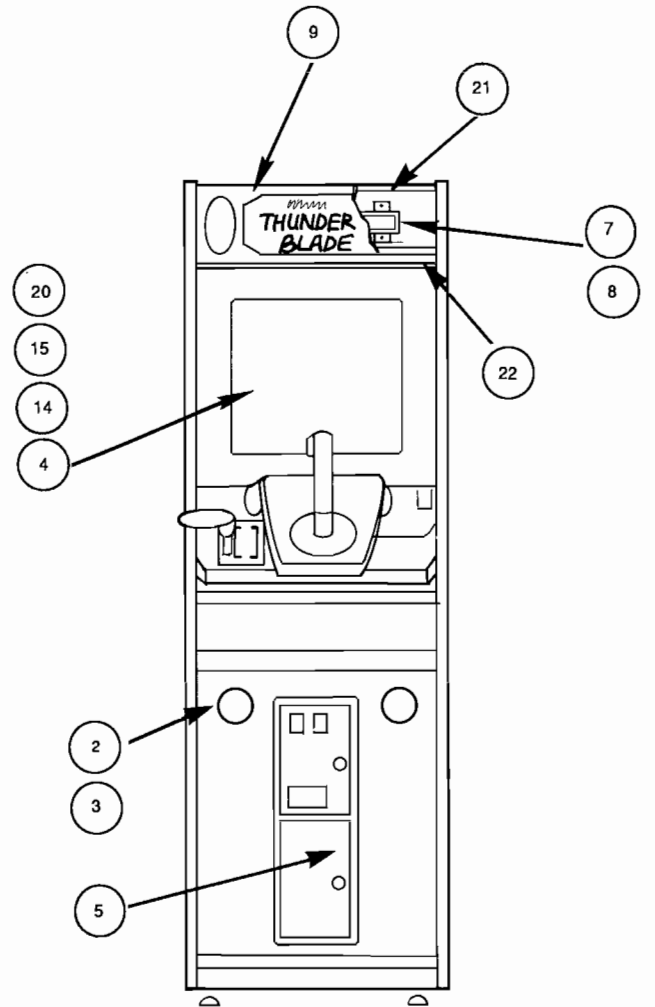
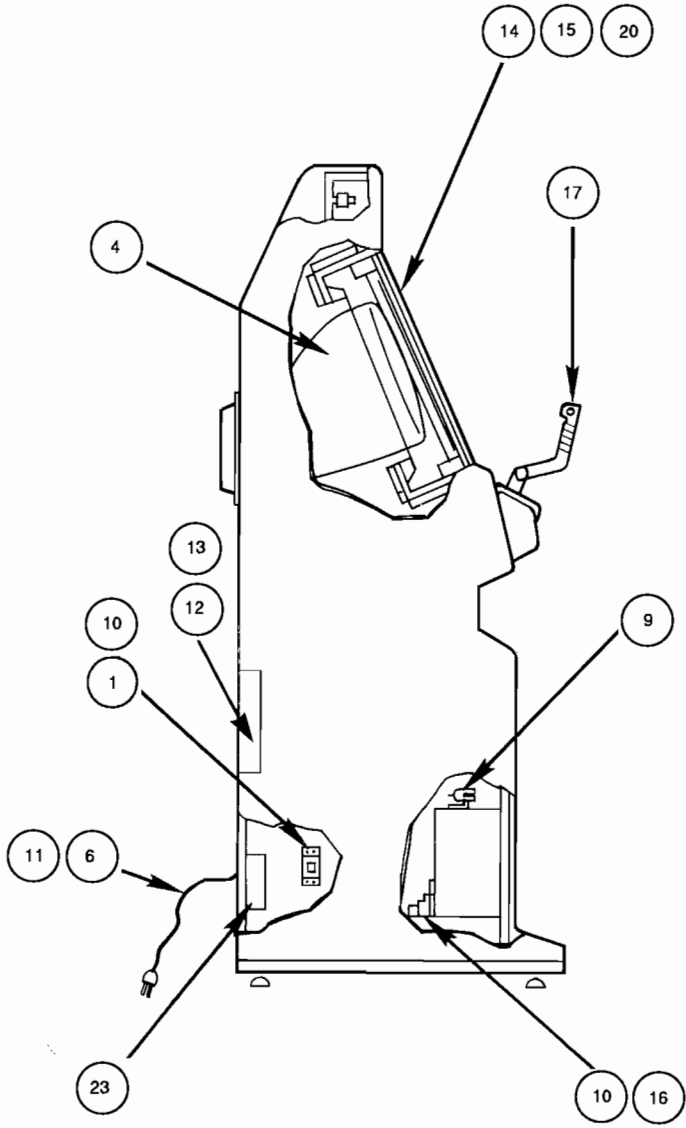
Note: When any data exceeds the capacity, "OVERFLOW" will be shown on the screen. At this time, perform BACKUP RAM CLEAR.

(8) BACKUP RAM CLEAR

Bookkeeping data is stored for at least 3 days after the power is turned off. When clearing, bring the arrow to YES and push the TEST button.

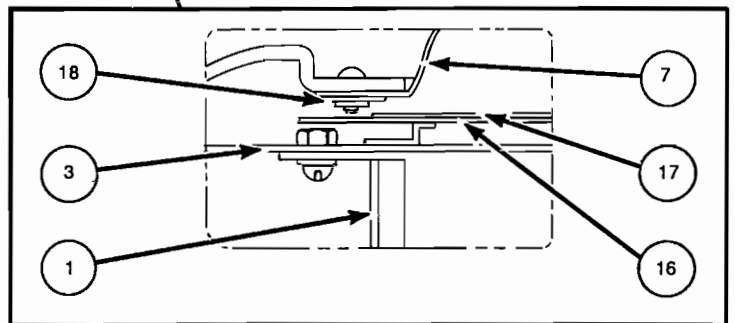
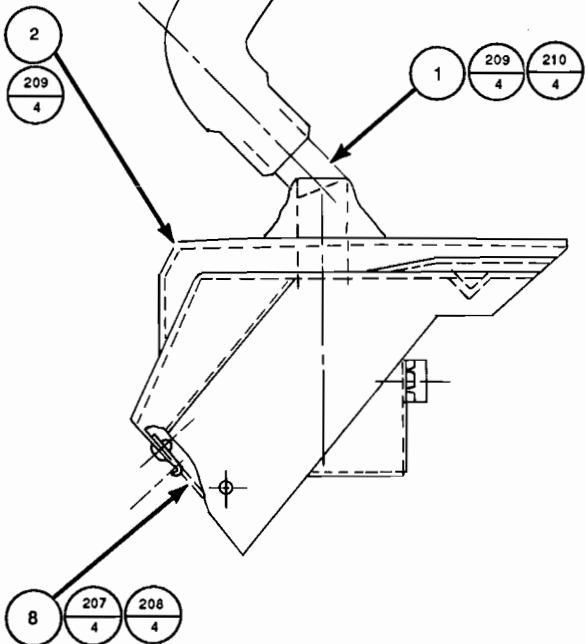
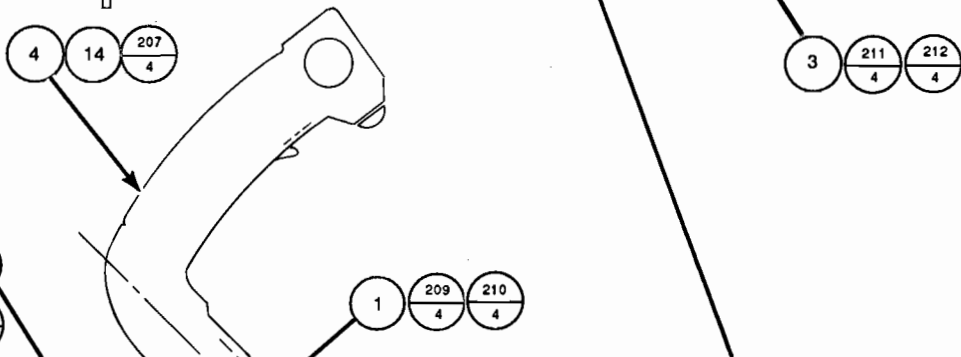
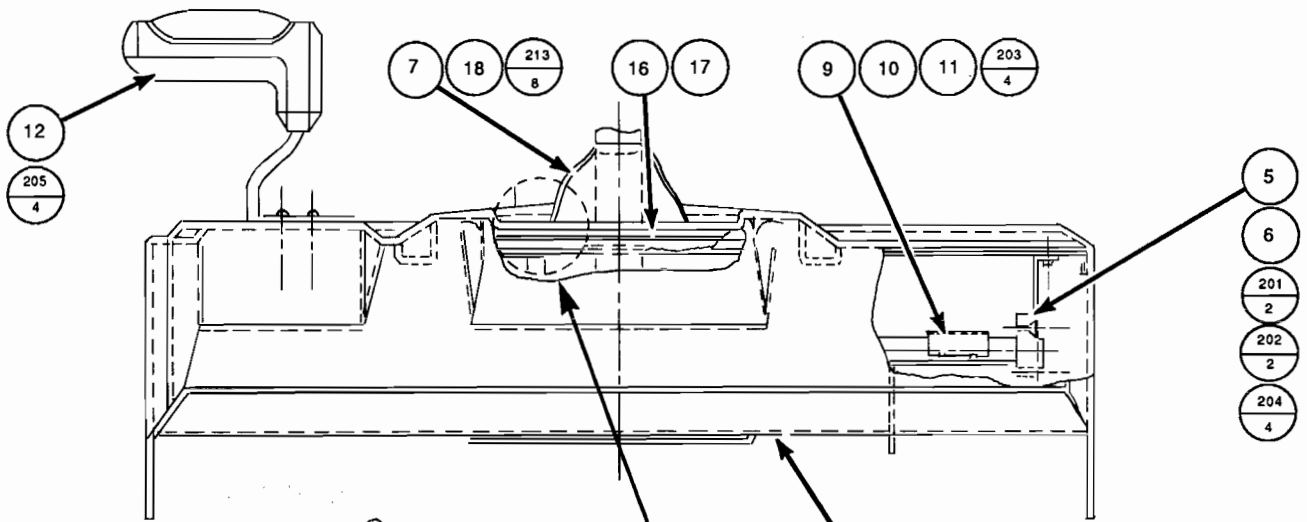
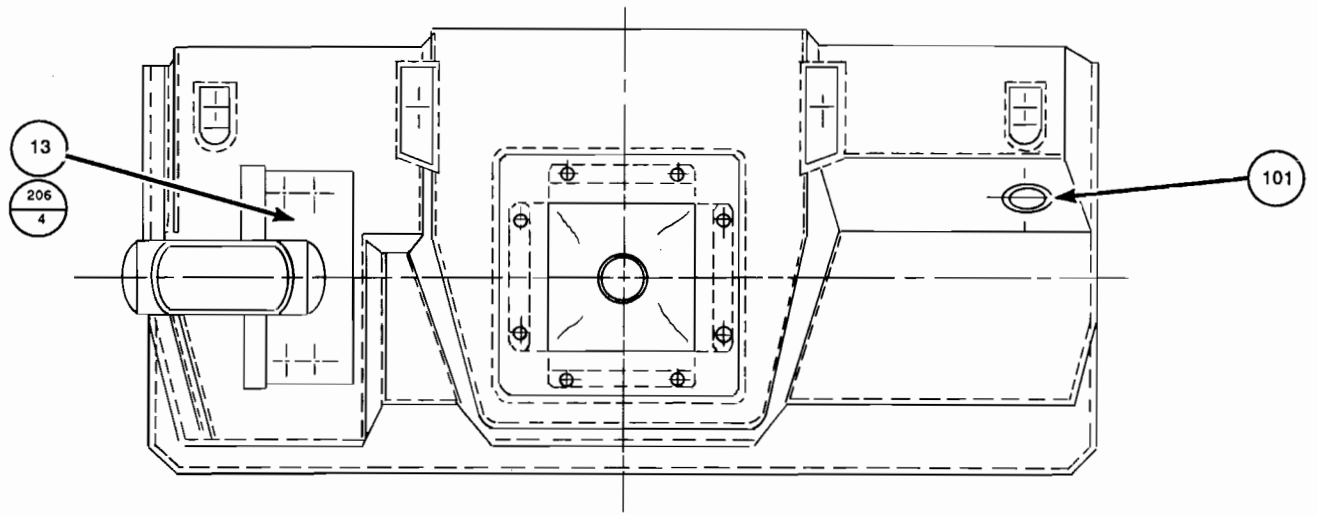


## **12. PARTS LIST**



CABINET ASSEMBLY PARTS LIST

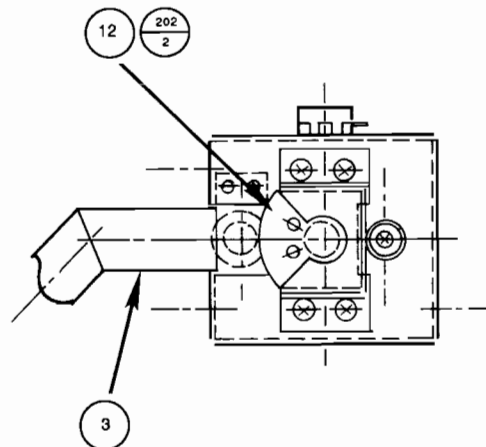
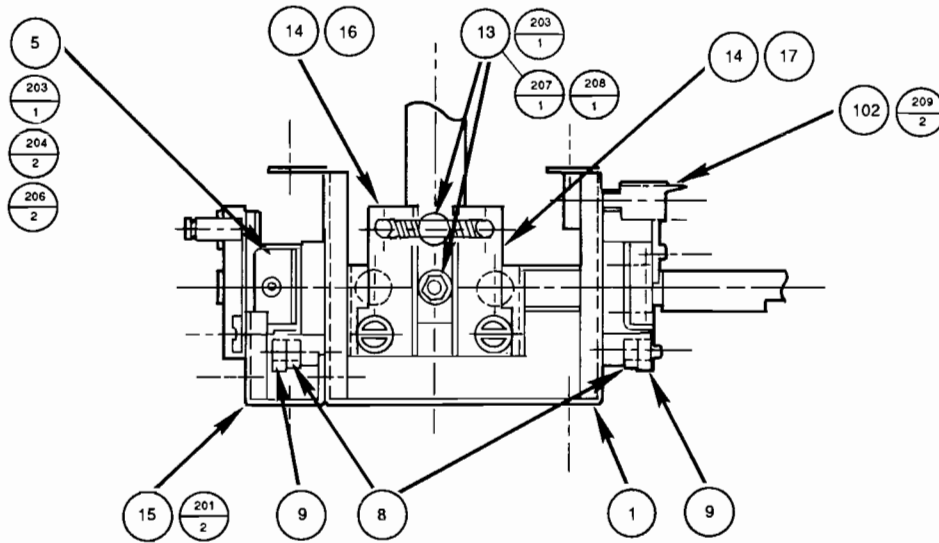
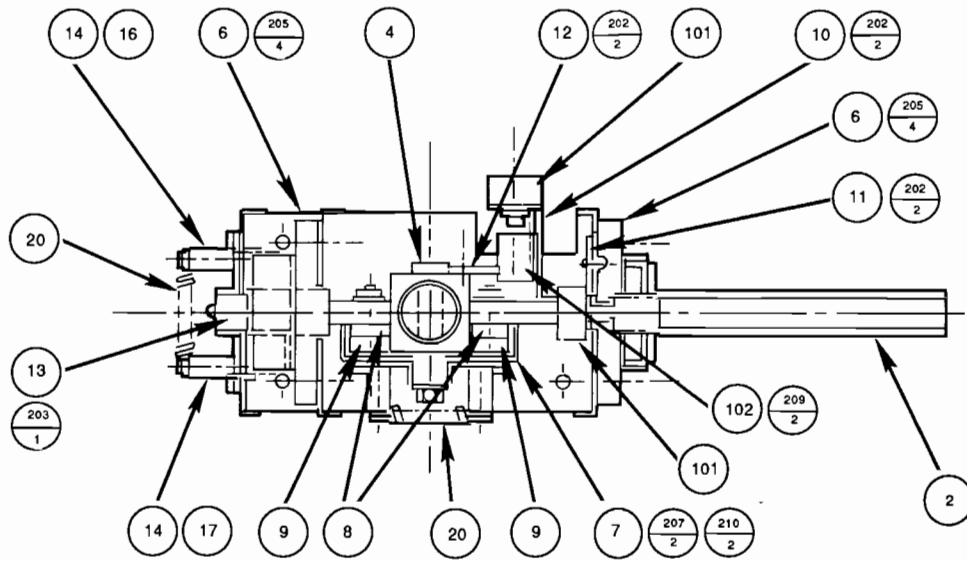
ITEM	PARTS NUMBER	DESCRIPTION
1	1050-0064	MAIN SWITCH BRACKET
2	1300-5018	SPEAKER 5" RD 8-OHM/10W
3	1300-5018A	SPEAKER COVER
4	2000-5090	MONITOR, 19" RGB
5	2200-0000	COIN DOOR ASSY
6	2800-0418	STRAIN RELIEF BUSHING
7	3901-5099A	FLUOR. FIXTURE 15"/8W
8	3901-5099B	FLUOR. LAMP 12"/8W
9	4231-0085	MARQUEE, FULL SIZE
10	5090-0039	MAIN SWITCH, ON/OFF
11	6000-0078	POWER CORD, 10FT
12	834-6493-03	GAME BOARD THUNDER BLADE
13	839-0129-01	FILTER BOARD
14	AB1-1151Y	SMOKED SCREEN, MONITOR
15	AB1-1166Z	TV MASK
16	HG1-1622	HINGE 148
17	JI-20001	ASSY CONTROL PANEL
18	JI1-1701A	SIDE DECAL, LEFT
19	JI1-1701B	SIDE DECAL, RIGHT
20	JI1-1702	FRONT GLASS W/ SILKSCREEN
21	JI1-1706A	UPPER PLEX BLANKET
22	JI1-1706B	LOWER PLEX/GLASS BRACKET
23	M00-1215Y	POWER CORD BOX
24	TX1-0027	SHIELD ASSY
25	TX1-1703	SUPPORT BRACKET, FRONT
26	TX1-1704-1	PROTECTOR, BOTTOM LEFT
27	TX1-1705-1	PROTECTOR, BOTTOM RIGHT
28	TX1-1717	PROTECTOR, FRONT EDGE
29	029-0038	TMP PRF SCR M6X20
30	008-0512	TMP PRF SCR M5X12



CONTROL UNIT ASSEMBLY PARTS LIST

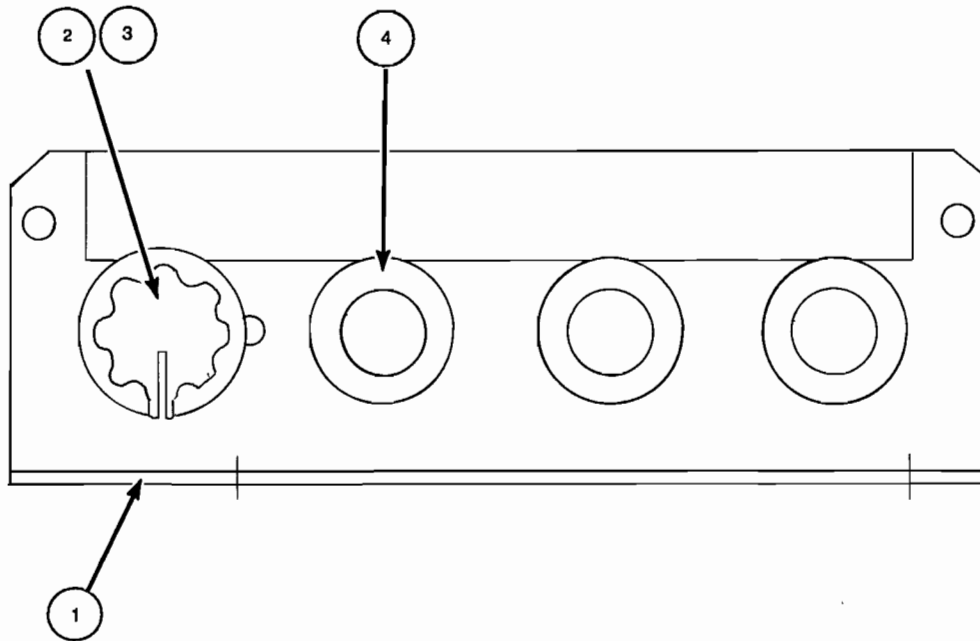
ITEM	PARTS NUMBER	DESCRIPTION
1	JI-2100	ASSY HANDLE SHAFT
2	JI-2103	CONTROL PANEL COVER
3	JI-2104	CONTROL PANEL BASE
4	JI-2003	ASSY HANDLE GRIP
5	JI-2105	SHAFT GUIDE
6	JI-2106	GUIDE BRACKET
7	JI-2107	HANDLE COVER
8	JI-2108	HINGE 430
9	JI-2200	ASSY VIBRATION
10	JI-2109	BRACKET
11	JI-2110	RUBBER PLATE
12	JI-3200	ASSY THROTTLE
13	JI-3104	DESIGN PLATE
14	117-5161	EMBLEM THUNDER BLADE
15	600-5654	CONN PLUG 2P, 3P & PLUG JST 2P, 3P
16	JI-2128	SLIDE PLATE LOWER
17	JI-2129	SLIDE PLATE UPPER
18	JI-2130	HANDLE COVER PLATE
101	509-5050	PUSH BUTTON SWIT YELLOW W/LAMP
102	280-0425	CORD CLAMP DIA.10
213	08-0406	TMP PRF SCR TH M4X6
201	000-0406-S	N SCR PH W/S M4X6
202	060-0004	FLT WSHR M4
203	000-0408-S	M SCR PH W/S M4X8
204	001-0414	M SCR FH M4X14
205	000-0514-S	M SCR PH W/S M5X14
206	008-0416	TMP PRF SCR TH M4X16
207	008-0512	TMP PRF SCR TH M5X12
208	051-0005	FLG NUT M5
209	029-0166	M SCR PH M6X10
210	061-0006	SPR WSHR M6
211	001-0410	M SCR FH M4X10
212	051-0004	FLG NUT M4





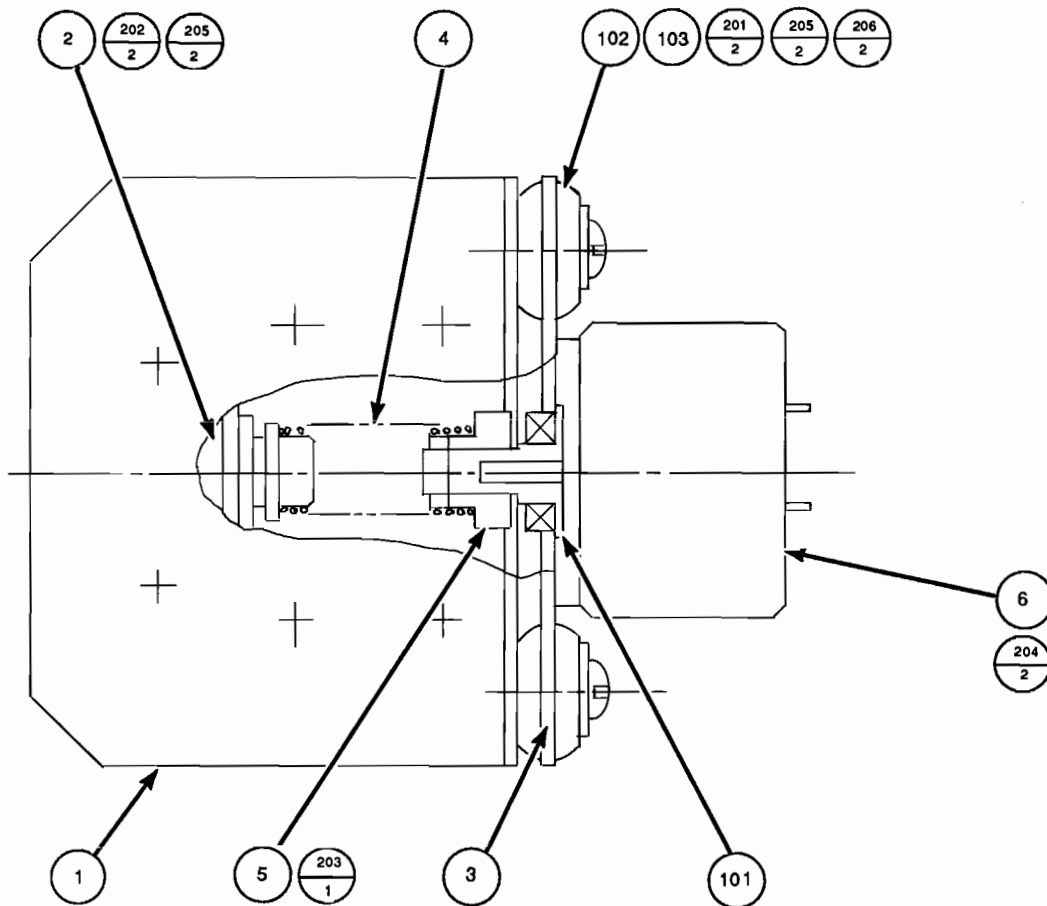
HANDLE SHAFT ASSEMBLY PARTS LIST

ITEM	PARTS NUMBER	DESCRIPTION
1	JI-2111	HANDLE BASE
2	JI-2112	SHAFT
3	JI-2113	HANDLE SHAFT
4	JI-2114	CENTER PIN
5	JI-2115	STOPPER BRACKET FR
6	JI-2116	SHAFT GUIDE
7	JI-2117	STOPPER BRACKET LR
8	JI-2118	STOPPER
9	JI-2119	RUBBER STOPPER
10	JI-2120	VOL BRACKET LR
11	JI-2121	VOL PLATE FR
12	JI-2122	GEAR 1/4
13	JI-2122	CENTERING GUIDE
14	JI-2124	SHOULDER SCREW
15	JI-2125	BRACKET FR
16	JI-2126	CENTERING BRACKET RIGHT
17	JI-2127	CENTERING BRACKET LEFT
20	JI-2131	EXT SPRING
101	220-5130	VOL CONT B-5K OHM
102	601-5943	GEAR 20. DIA.15
201	000-0410-S	M SCR PH W/S M4X10
202	000-0408-FS	M SCR PH W/FS M4X8
203	000-0525-FS	M SCR PH W/FS M5X25
204	001-0410	M SCR FH M4X10
205	001-0414	M SCR FH M4X14
206	054-0004	U NUT M4
207	054-0005	U NUT M5
208	060-0005	FLT WSHR M5
209	028-0040	SET SCR HEX SKT CUP M3X6 UNBR
210	069-0022	FLT WSHR 5.5-14X1
211	069-0007	FLT WSHR 4.4-16X1.6



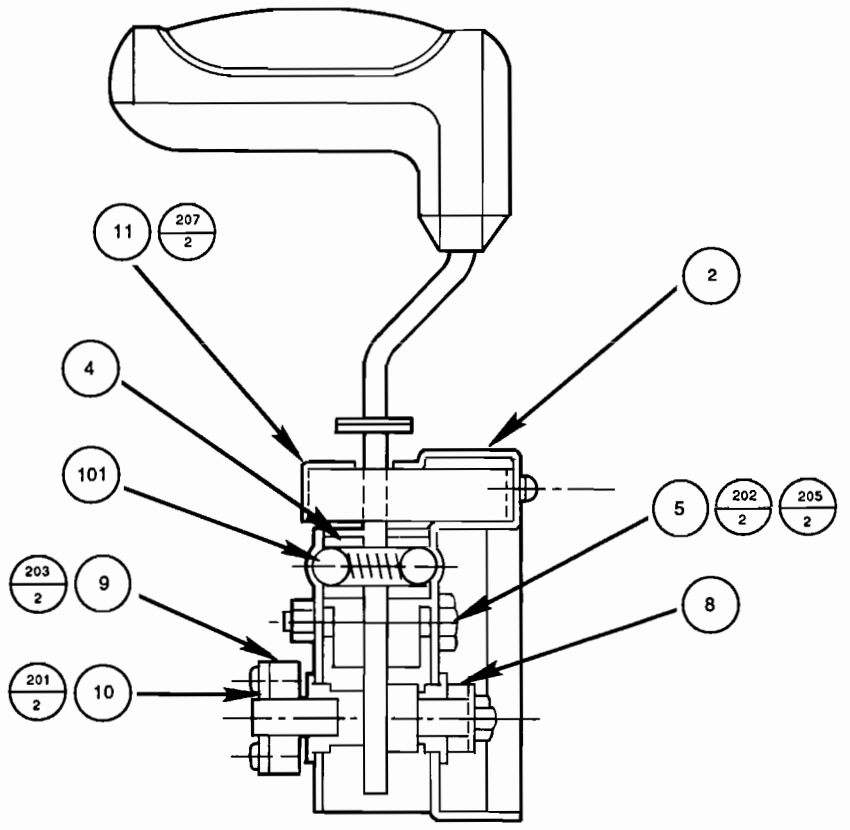
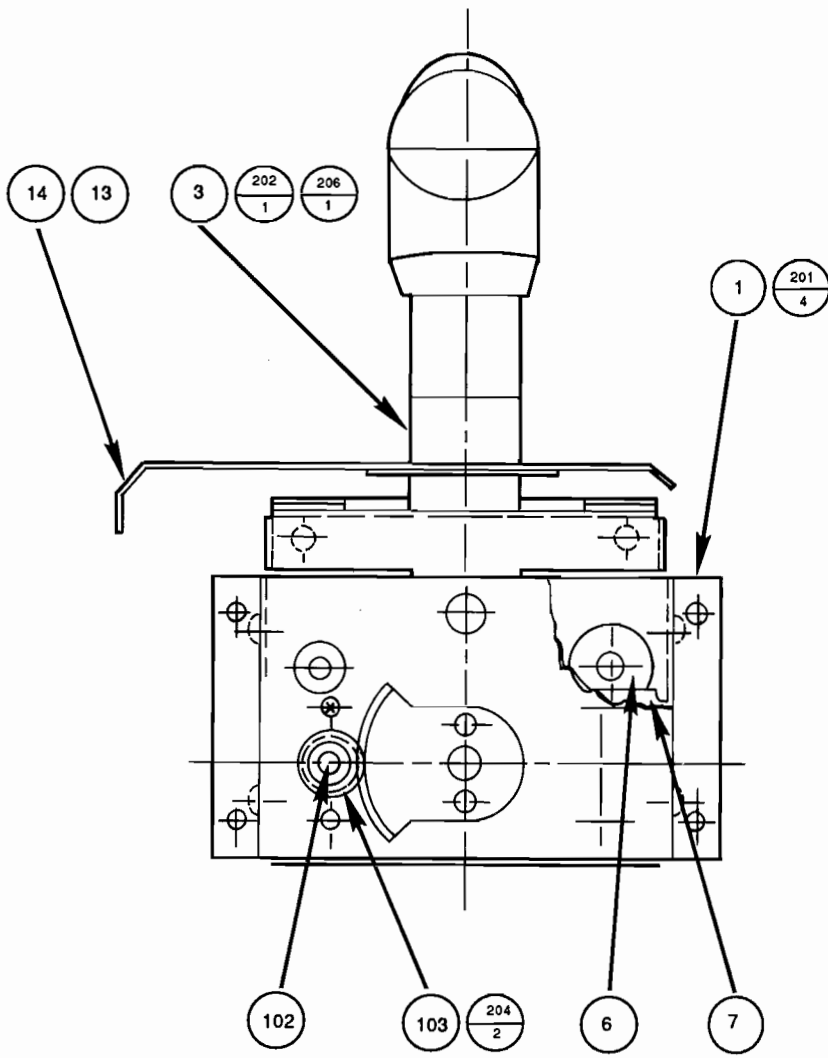
**SERVICE SWITCH ASSEMBLY PARTS LIST**

ITEM	PARTS NUMBER	DESCRIPTION
1	KR0-1721	SERVICE SWITCH BRACKET
2	6010-0042	KNOB
3	2200-5179	VOL CONT, 5K-B
4	5090-5028	MOMENTARY SWITCH



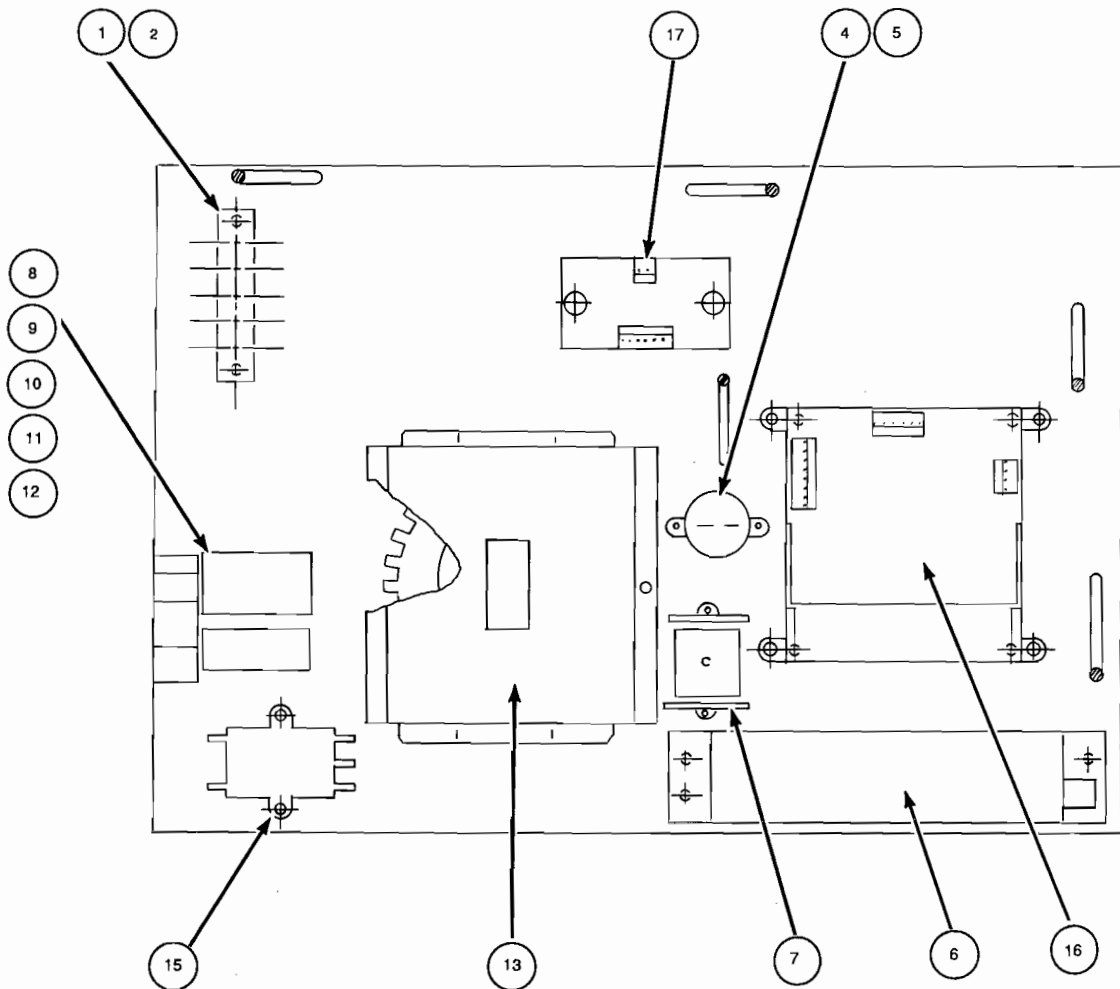
VIBRATION ASSEMBLY PARTS LIST

ITEM	PARTS NUMBER	DESCRIPTION
1	J1-2201	BRACKET
2	HG-5102	ASSY VIBRATION CAM
3	J1-2202	MOTOR HOLDER
4	HG-5107	JOINT SPRING
5	HG-5108	BOSS
6	350-5104	MOTOR DC 12V 4500 rpm
101	100-5041	BEARING NSK F688ZZ
102	280-5078	RUBBER GROMET I.D.8X O.D.14X8 (TAKIGEN BW-8-2)
103	280-5056	ONE TOUCH COLLAR e=7.5
104	280-0425	CORD CLAMP DIA.10
201	000-0420	M SCR PH M4X20
202	001-0410	M SCR FH M4X10
203	028-0001	SET SCR HEX SKT CP UNBR M3X4
204	029-0131	M SCR PH W/S M2.6X10
205	054-0004	U NUT M4
206	069-0007	F WSHR 4.4-16X1.6
301	SGB-3864-6	WIRE HARN DC MOTOR
	211-0043	CONN PLUG AMP 2P WHITE
	211-0041	CONN PIN AMP
	601-0460	TIE BELT 85mm



THROTTLE ASSEMBLY PARTS LIST

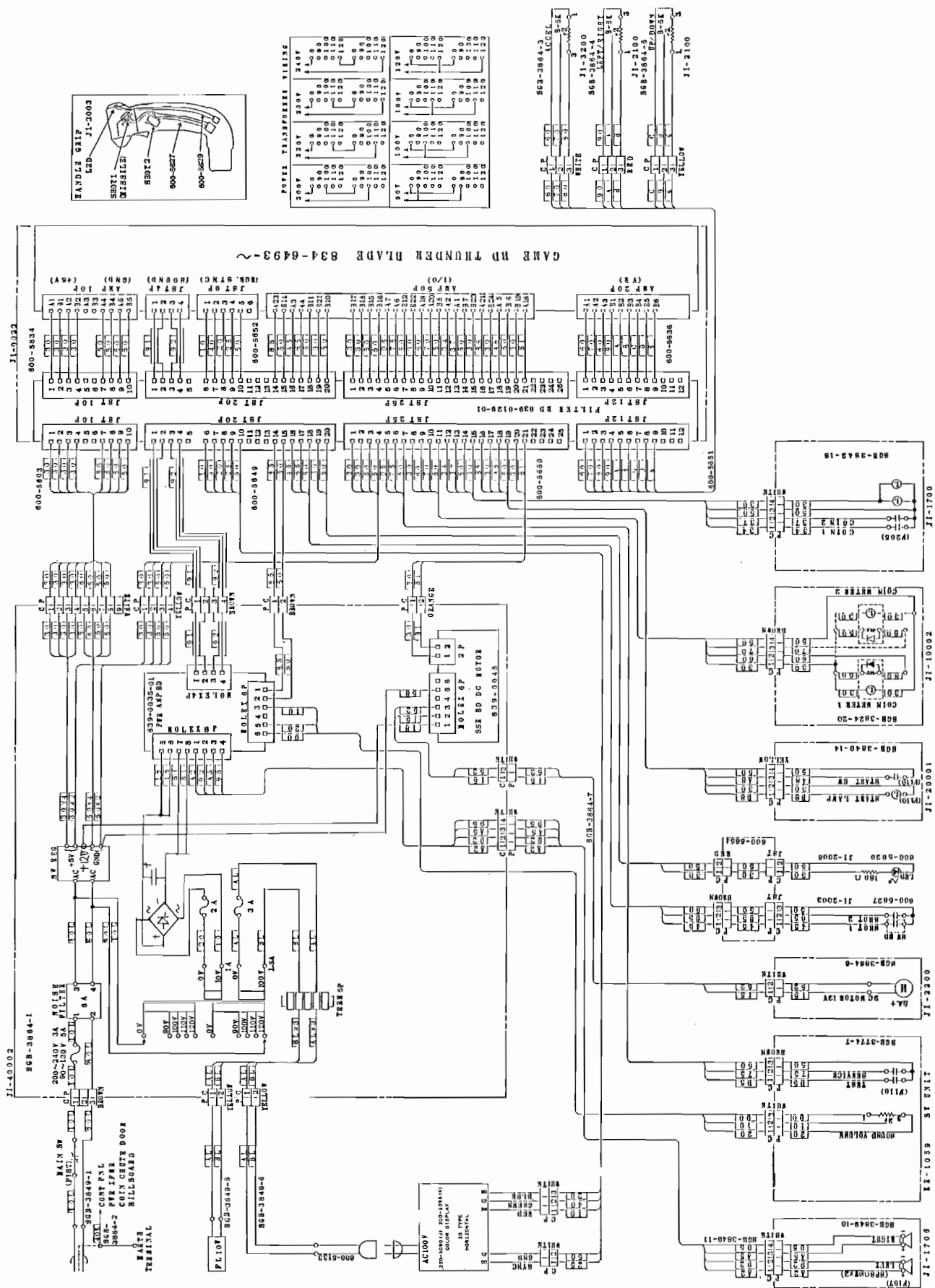
ITEM	PARTS NUMBER	DESCRIPTION
1	JI-3101X	THROTTLE BASE A
2	JI-3102	THROTTLE BASE B
3	JI-3103	THROTTLE LEVER
4	JI-3107	COM. SPRING
5	JI-3108	STOPPER SCREW
6	JI-3109	STOPPER
7	JI-3110	VOL. BRACKET
8	JI-3111	RUBBER RING
9	JI-3113	GUIDE RING
10	601-6005	ADJUST GEAR
11	JI-3201	MASK PLATE
13	JI-3106X	MASK B
14	JI-3202	MASK UPPER
101	101-5004	STEEL BALL DIA.8.7312
102	220-5130	VOL CONT B-5K OHM
103	601-5415	GEAR 20
104	280-0425	CORD CLAMP DIA.10
201	000-0408-FS	M. SCR PH W/FS M4X8
202	054-0006	U NUT M6
203	038-0021	SET SCR PH SPECIAL M4X16
204	023-0014	SET SCR HEX SKT M4X4
205	060-0006	FLT WSHR M6
206	069-0002	FLT WSHR 6.5-19X1.2
207	000-0508-S	M SCR PH W/S M5X8



POWER SUPPLY ASSEMBLY PARTS LIST

ITEM	PARTS NUMBER	DESCRIPTION
1	1170-0184	TERMINAL PLATE, 8P
2	1170-5131	TERMINAL PLATE, 5P
3	1170-5131A	TERMINAL
4	1500-0265	CAP. 22000uF/50V
5	1500-0265A	CAP. MOUNT
6	4001-5072	POWER SUPPLY, 5V/11A
7	4810-0157A	DIODE BRIDGE, 8A
8	5140-0031	FUSE, 6A
9	5140-0034	FUSE, 5A
10	5140-0036	FUSE, 3A
11	5140-0045	FUSEHOLDER, 1P
12	5140-0064	FUSEHOLDER, 2P
13	5600-5115	TRANSFORMER 115/115/10
14	6010-0001	FUSE COVER
15	6010-0420	LINE FILTER
16	839-0035-01	POWER AMP DC 12V 10W
17	839-0048	SSR BOARD DC MOTOR

# 13. WIRING DIAGRAM





# THUNDER BLADE

(834-6493-~)

## COIN / CREDIT OPTION SWITCH SETTING

DIP SW A

OPTION	1	2	3	4	5	6	7	8
1COIN 1CREDIT	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1COIN 2CREDITS	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF
1COIN 3CREDITS	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
1COIN 4CREDITS	ON	ON	OFF	OFF	ON	ON	OFF	OFF
1COIN 5CREDITS	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF
1COIN 6CREDITS	ON	OFF	ON	OFF	ON	OFF	ON	OFF
2COINS 1CREDIT	OFF	ON	ON	OFF	OFF	ON	ON	OFF
3COINS 1CREDIT	ON	ON	ON	OFF	ON	ON	ON	OFF
4COINS 1CREDIT	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
2COINS 3CREDITS	ON	OFF	OFF	ON	ON	OFF	OFF	ON
2COINS 1CREDIT 4COINS 2CREDITS 5COINS 3CREDITS 6COINS 4CREDITS	OFF	ON	OFF	ON	OFF	ON	OFF	ON
2COINS 1CREDIT 4COINS 3CREDITS	ON	ON	OFF	ON	ON	ON	OFF	ON
1COIN 1CREDIT 2COINS 2CREDITS 3COINS 3CREDITS 4COINS 4CREDITS 5COINS 6CREDITS	OFF	OFF	ON	ON	OFF	OFF	ON	ON
1COIN 1CREDIT 2COINS 2CREDITS 3COINS 3CREDITS 4COINS 5CREDITS	ON	OFF	ON	ON	ON	OFF	ON	ON
1COIN 1CREDIT 2COINS 3CREDITS	OFF	ON	ON	ON	OFF	ON	ON	ON
FREE PLAY	ON	ON	ON	ON	ON	ON	ON	ON
	COIN SWITCH #1				COIN SWITCH #2			

## GAME OPTION SWITCH SETTING

DIP SW B

OPTION	1	2	3	4	5	6	7	8
※ CABINET ECONOMY U/R	OFF							
TYPE MINI U/R	ON							
ADVERTISE SOUND OFF		OFF						
ON		ON						
TIME 30 SEC			OFF					
TIME 0 SEC			ON					
NUMBER OF SHIPS 3				OFF	OFF			
2				OFF	ON			
4				ON	OFF			
5				ON	ON			
CONTINUE NOT CONTINUE						OFF		
						ON		
GAME DIFFICULTY NORMAL							OFF	OFF
EASY							OFF	ON
HARD							ON	OFF
HARDEST							ON	ON

- ★ TIME 30 SEC とは、30 秒間の間は何回やられても PLAYER 機は減らないということ。
- ★ The above TIME 30 SEC signifies that the allotted number of player's helicopters does not decrease regardless of how many are lost within said 30 second period.

※ CABINET TYPE

ECONOMY U/R : サンダーブレード新筐体の場合は DIP SW #B の 1 を OFF にして下さい。

THUNDER BLADE NEW CABINET

MINI U/R : アフターバーナー MINI U/R からの CTV 及び CITY 筐体の場合は DIP SW #B の 1 を ON にして下さい。

CONVERT FROM AFTER BURNER MINI U/R CABINET

**SEGA ENTERPRISES, INC. (USA)**

2149 Paragon Drive

San Jose, CA 95131

Tel (408) 435-0201

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