

SEGA

***Rad
Mobile***

OWNER'S MANUAL

UPRIGHT TYPE

Owner's Manual

SEGA ENTERPRISES, INC.

420-5976-02

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* SPECIFICATIONS *

- INSTALLATION SPACE	:	900mm(35.4")(D) x 630mm(25.2")(W)
- HEIGHT	:	1890mm(74.4")
- POWER	:	140 Watt
- C.R.T.	:	19 INCH
- WEIGHT	:	120Kg(266.7 lbs)

INTRODUCTION OF 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 RAD MOBILE 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 circumstance touch the interior system.

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.

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 1991

This signifies that this work was disclosed in 1991 and is the property of SEGA ENTERPRISES, LTD.

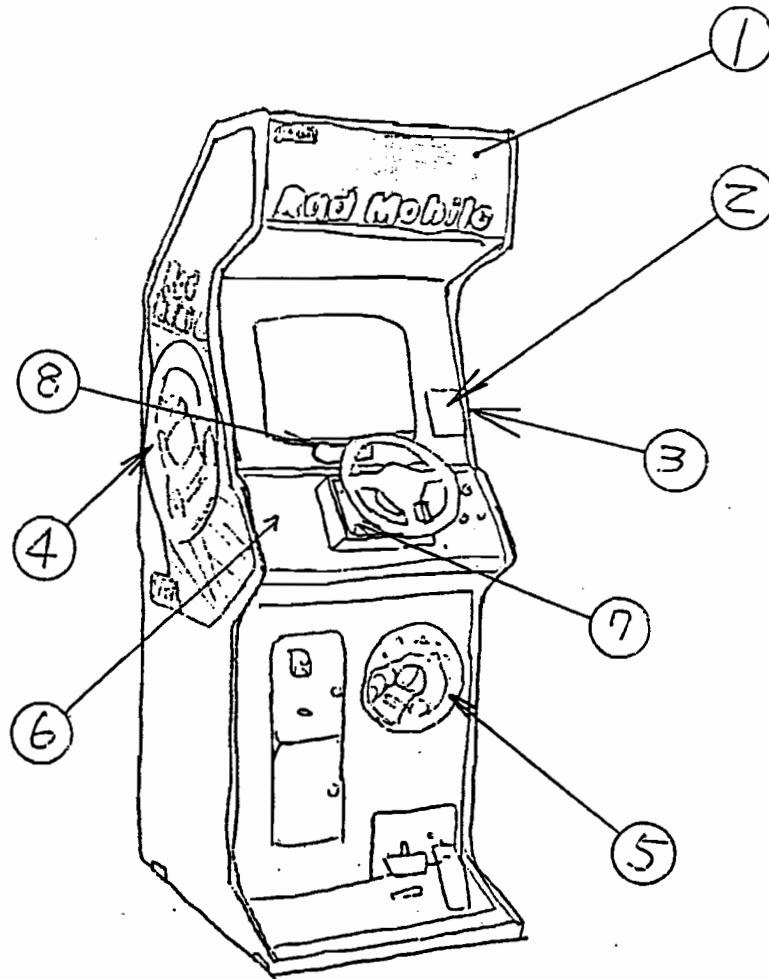
PRECAUTIONS CONCERNING THE PLACE OF INSTALLATION

The RAD MOBILE 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.

	AC120V	AC220V	AC240V
RATED CURRENT	2 A	1 A	1 A

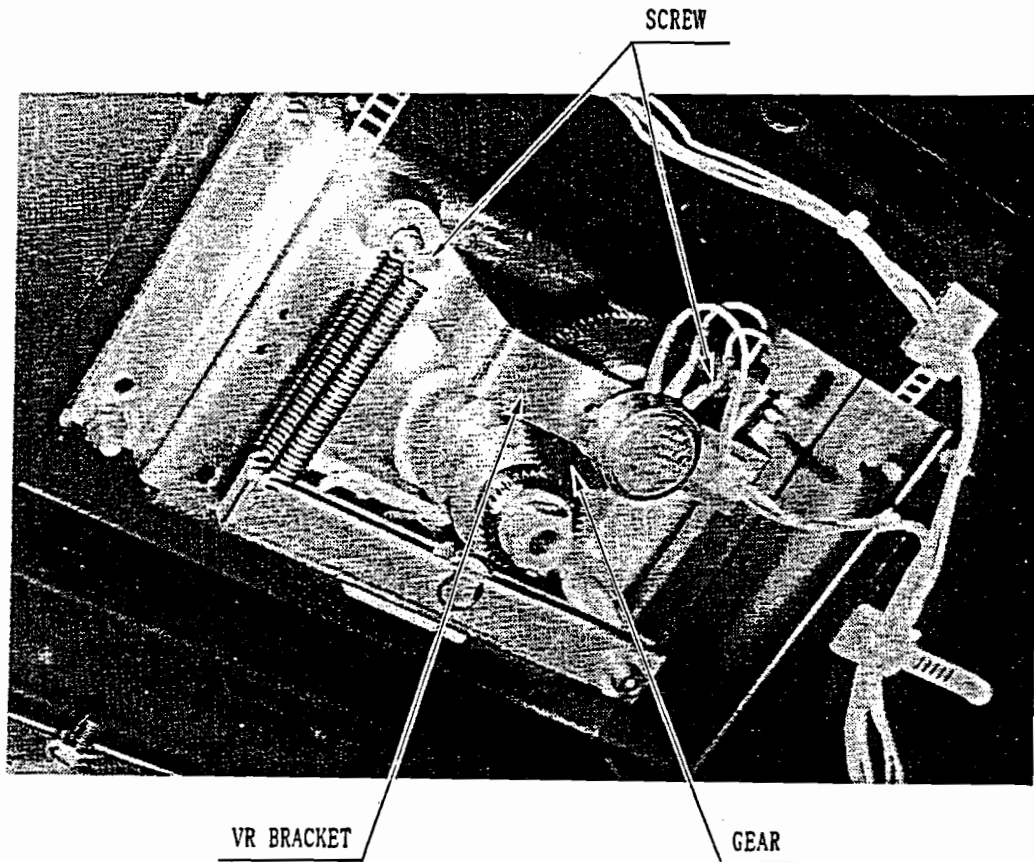
NAME OF PARTS



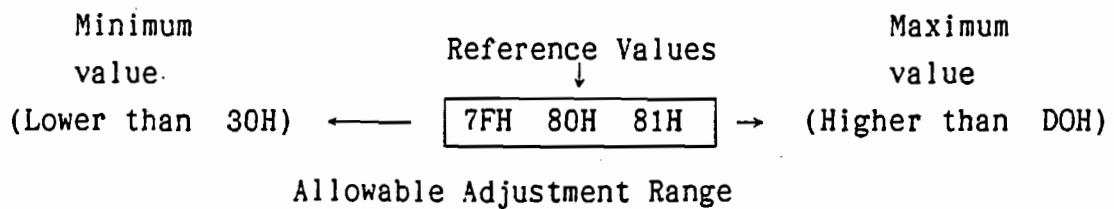
ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	423-0156	DESIGN PLATE RAD MOBILE U/R	
2	422-0365	PLAY INSTR SH RAD MOBILE U/R	
3	421-7828	STICKER RAD MOBILE U/R L	
4	421-7827	STICKER RAD MOBILE U/R R	
5	421-7829	STICKER RAD MOBILE U/R S	
6	RDM-2101Y-C	CONTROL PANEL SHEET	
7	RDM-2101-D	STICKER CONT PANEL	
8	422-0373-01	SUBPLAY INST STICKER RDM ENG NEW	

STEERING HANDLE VR ADJUSTMENTS

VR adjustments will be made in the TEST MODE's INPUT TEST screen.

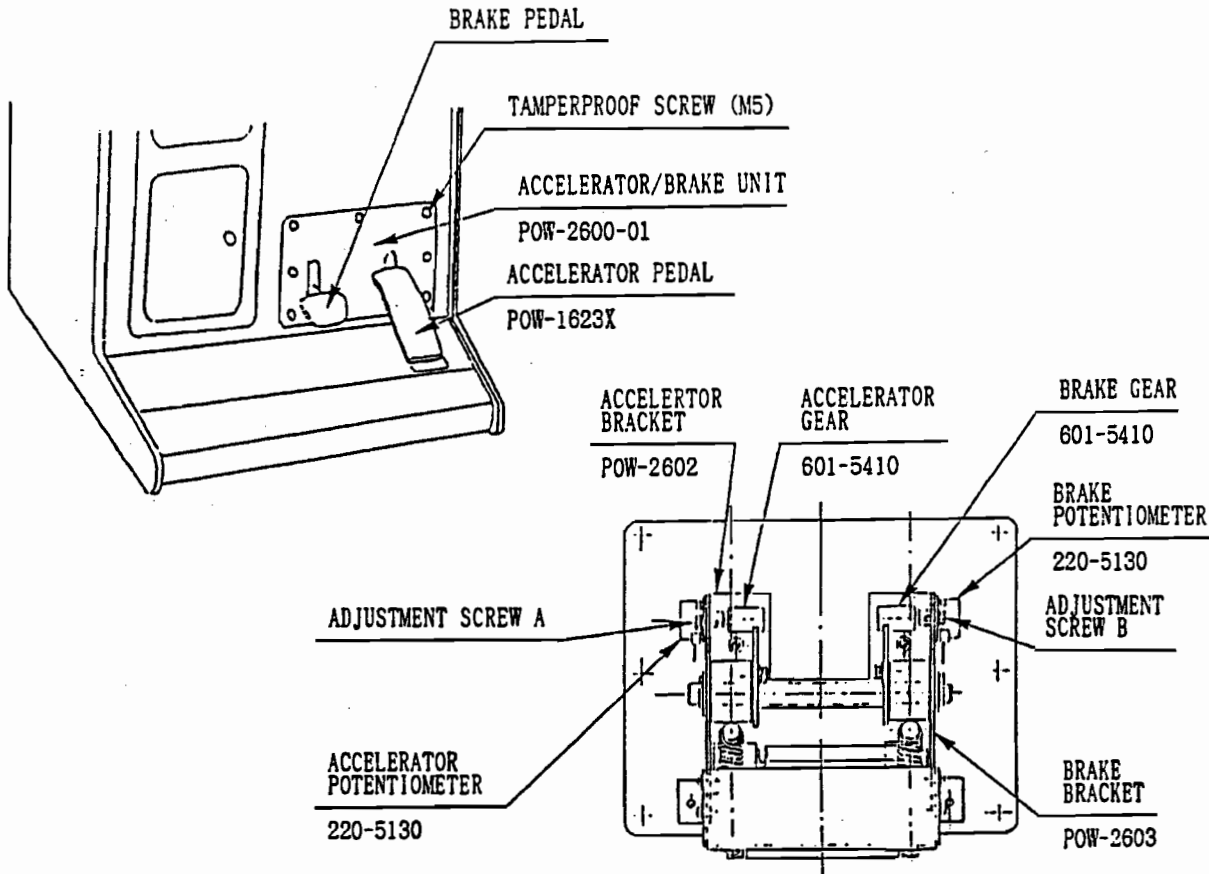


Loosen the 2 SCREWS (M 4 × 8) of the VR BRACKET turn GEAR, and make sure that the on-screen numerical value becomes approximately 80H. When loosening the screws, adjust the gear backlash.



REMOVING THE ACCELERATOR / BRAKE UNIT AND ADJUSTING THE VR

To remove the accelerator/brake unit, take off the 7 M5 TAMPERPROOF SCREWS.

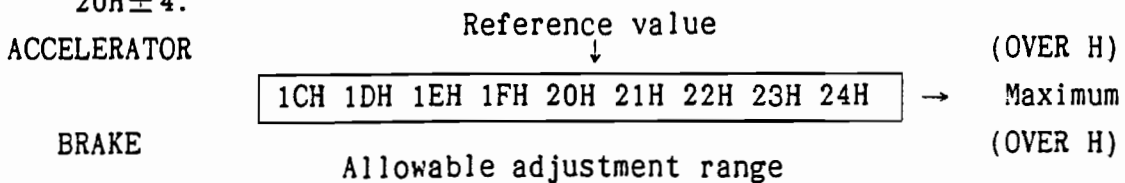


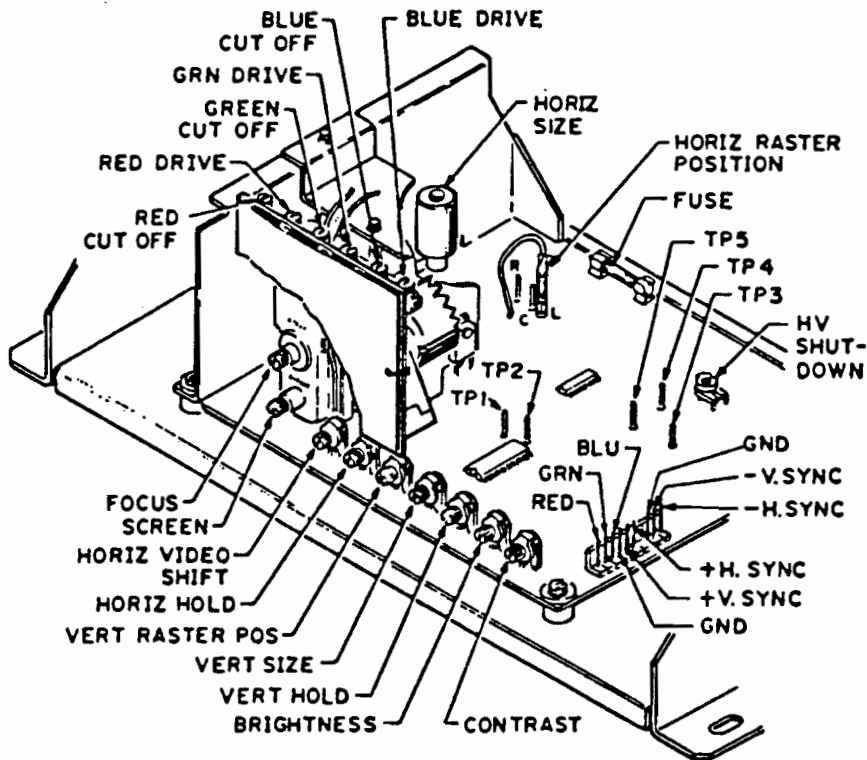
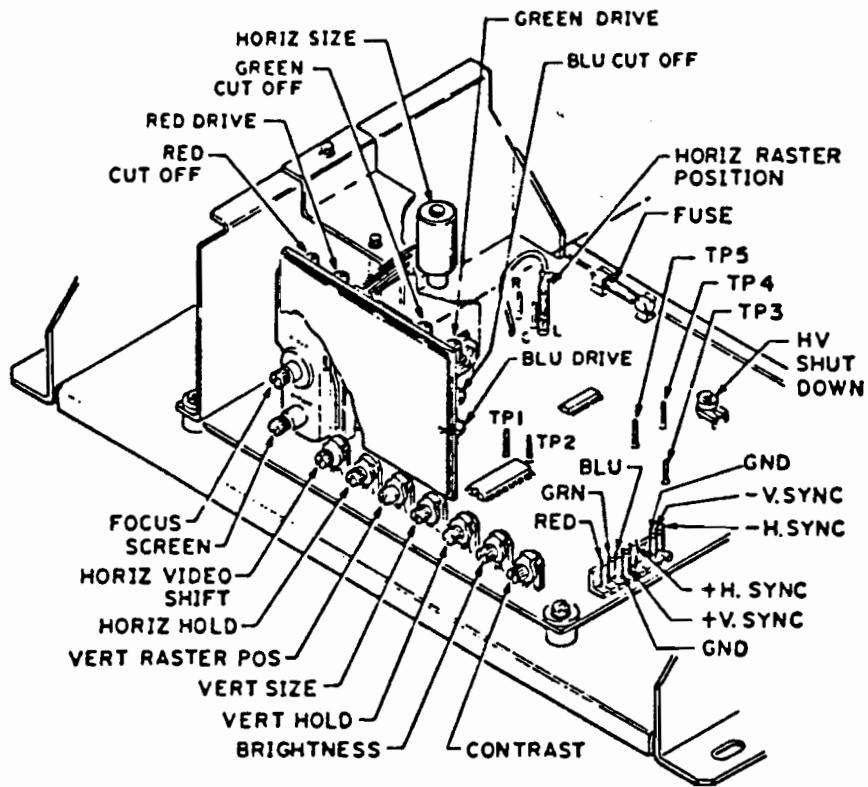
Adjusting the Accelerator/Brake

Make adjustments of the Accelerator/Brake by using the following procedure:

Perform the V.R. numerical adjustments in the test mode's INPUT TEST screen.

- ① Loosen SCREW A of VR BRACKET, turn GEAR A and make sure that the on-screen numerical value becomes approximately 20H. When fastening the screw, adjust the gear backlash.
- ② Then, loosen SCREW B, turn GEAR B and make fine adjustments to $20H \pm 4$.

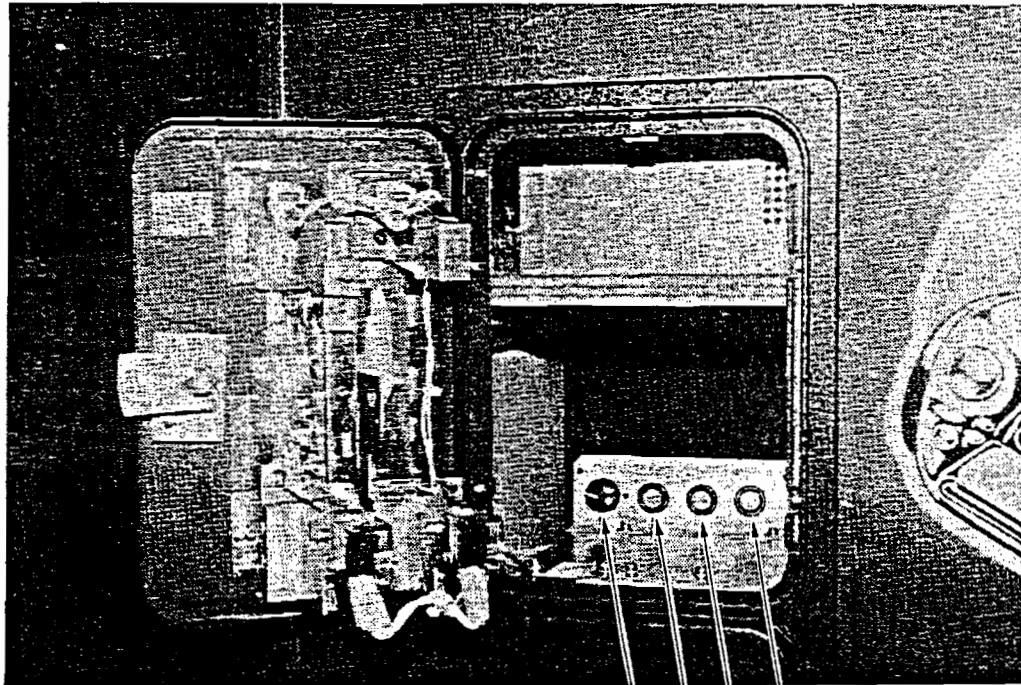




MONITOR ADJUSTMENTS

SERVICE SWITCHES

Open the COIN CHUTE DOOR, and the following SERVICE SWITCHES' layout will appear:



NOT USED

④ DEMAGNETIZING SWITCH

③ TEST SWITCH

② SERVICE SWITCH

① VOLUME ADJUSTMENT

- | | |
|------------------------------|--|
| ① VOLUME ADJUSTMENT | Used for adjusting the volume of the speaker. |
| ② SERVICE SWITCH | Used for the purpose of servicing and increasing the credits without registering on the meter (this allows you to check the game). |
| ③ TEST SWITCH | For the operation of this switch, see SELF-TEST. |
| ④ DEMAGNETIZING SWITCH | Not Used |

TEST MODE

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 Coin mode and has a Bookkeeping function.

- Selection of test ITEMS
 - (1) Push the TEST SW to cause the following TEST ITEM MENU to appear :

```

                                     Test mode
                                     Individual
                                     Bookkeeping
                                     Game & system setting
                                     Coin assignment
                                     Input test
                                     Output test
                                     Motor test
                                     Memory test
                                     Backup RAM clear
                                     > Exit
                                     Select by SERVICE and push TEST
```

- (2) By pushing the SERVICE SW, bring the arrow mark ">" to the desired item and press the TEST button.
- (3) When the test has been completed, bring ">" to EXIT and push the TEST button.

Bring ">" to "INDIVIDUAL" and push the TEST button to change it to "CONTINUE."

Bringing ">" to "CONTINUE" and pushing the TEST button without pressing the SERVICE button will change the screen sequentially.

1 Bookkeeping

Credit Report		page1/2
Coin chute #1	54	} ①
#2	0	
Coin credits	54	— ②
Service credits	6	— ③
Total credits	60	— ④

Push TEST to return menu
Push SERVICE to other page

- ① Usage frequency of each COIN CHUTE
- ② Total COIN CHUTE usage frequency
- ③ Usage frequency of each SERVICE SW.
- ④ Total credits

Press the SERVICE SW button to display the following :

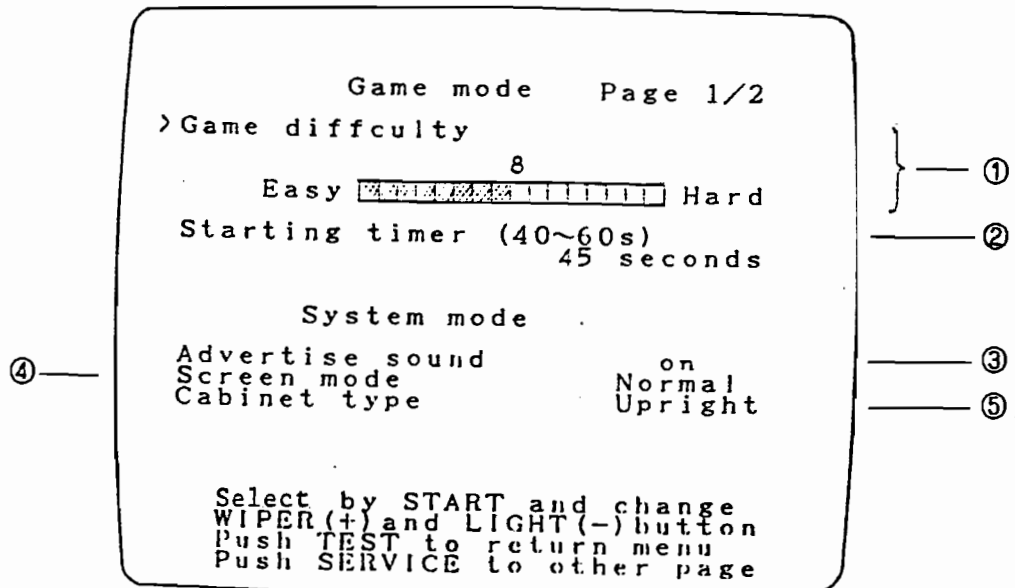
Timer Report		page2/2
Total time	8h 36m 0s	— ①
Total play time	5h 30m 44s	
Average play time	0h 1m 46s	
Longest play time	0h 9m 0s	
Game Report		
Now games	42	
Continue games	58	
Total play games	100	

Push TEST to return menu
Push SERVICE to other page

- ① Machine's total energized time

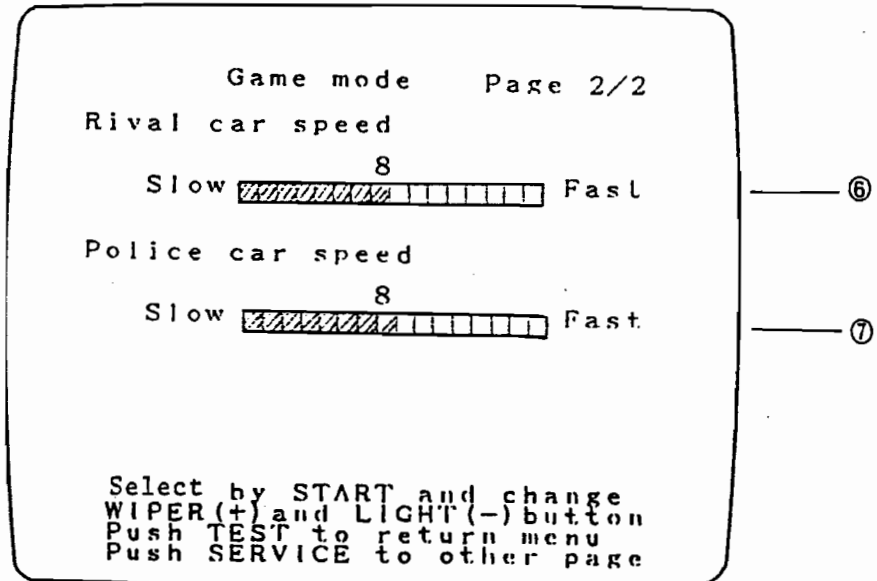
2 Game&system setting

Game difficulty adjustment and the cabinet type are displayed.



- ① Game difficulty
Normally, 8
- ② Play times setting
Normally, 45 sec.
- ③ Advertise sound
Normally, on
- ④ Type of Screen mode
Normally, Normal
- ⑤ Type of Cabinet
Normally, Upright

Press the START button,
bring the ">" to the item for which you
desire to make a change, and then
change the numerical value by using
either the WIPER SW. or the LIGHT SW.



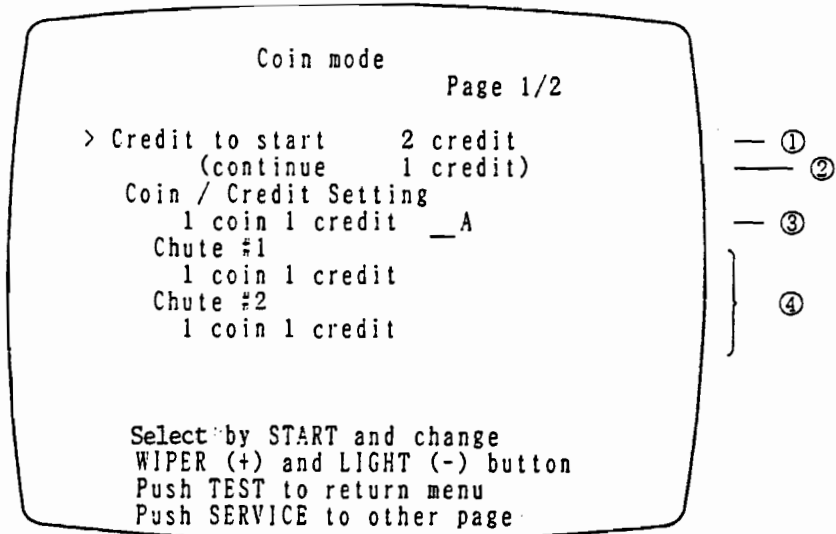
⑥ Rival car speed
Normally, 8

⑦ Police car speed
Normally, 8

Press the START button,
bring the ">" to the item for which you
desire to make a change, and then
change the numerical value by using
either the WIPER SW. or the LIGHT SW.

3 Coin assignment

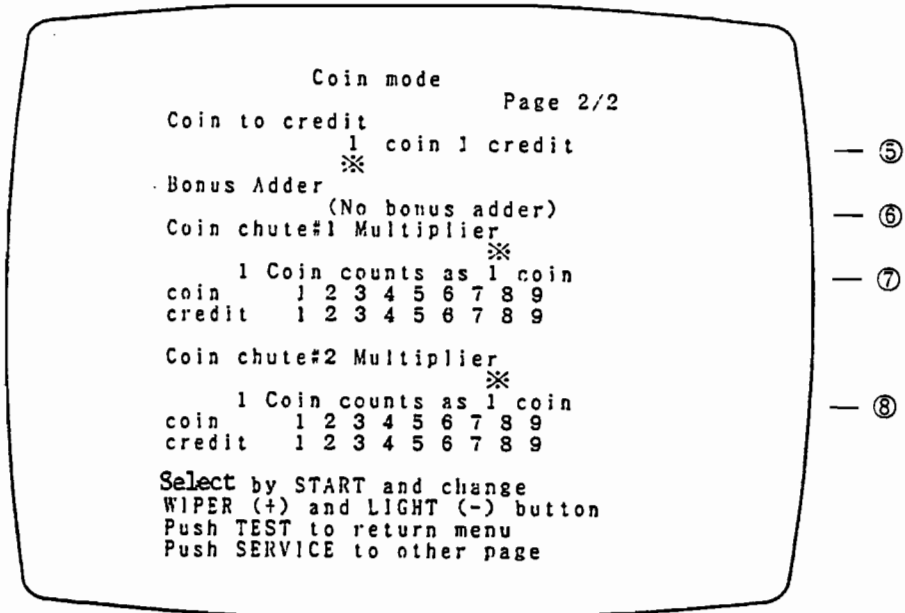
Shows the number of credit(s) to start, and number of credit(s) to CONTINUE.



- ① Number of credit(s) to start
- ② Refers to the number of credits CONTINUE.
- ③ Twenty seven kinds of standerd coin modes can be selected.
- ④ Displays the COIN modes for COIN CHUTE#1 and #2

By pressing the START button, select the desired item, and the numeral can be increased or decreased by using either the WIPER SW, or the LIGHT SW.

Press the SERVICE button, and the following screen will appear (this is applicable in cases other than standard COIN modes).



※ Increase and decrease in numerals

- ⑤ The number of coins required for one credit.
- ⑥ Lets you choose from various kinds of bonuses or no bonus.
- ⑦ The number of coins each counts as in the coin chute#1.
- ⑧ The number of coins each counts as in the coin chute#2.

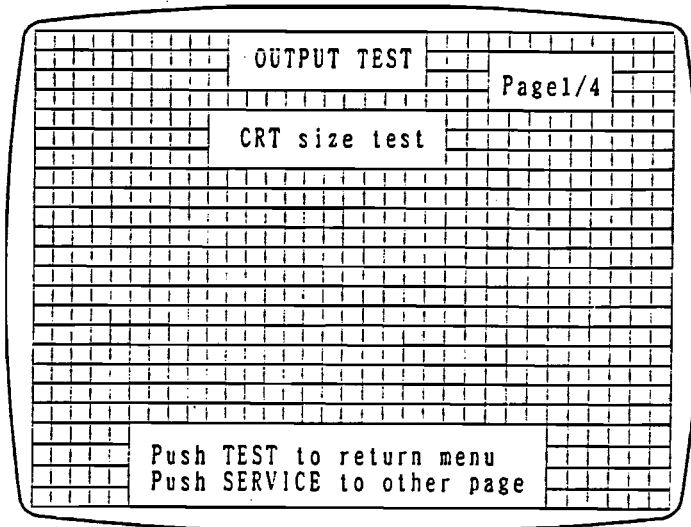
- ③ If the data value increases when pressure is applied to the accelerator's or brake's pedal, it tests out satisfactorily.

← Accelerator	← Brake
24H 25H 26H 27H 28H	24H 25H 26H 27H 28H
Low 28H — C8H High	Low 28H — B0H High

5 Output test

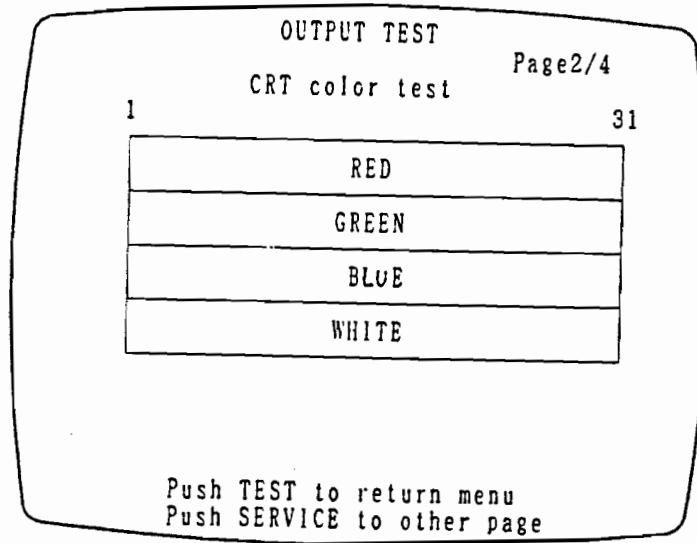
(1) C. R. T. TEST

- ① Monitor adjustment check



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

② RGB color check

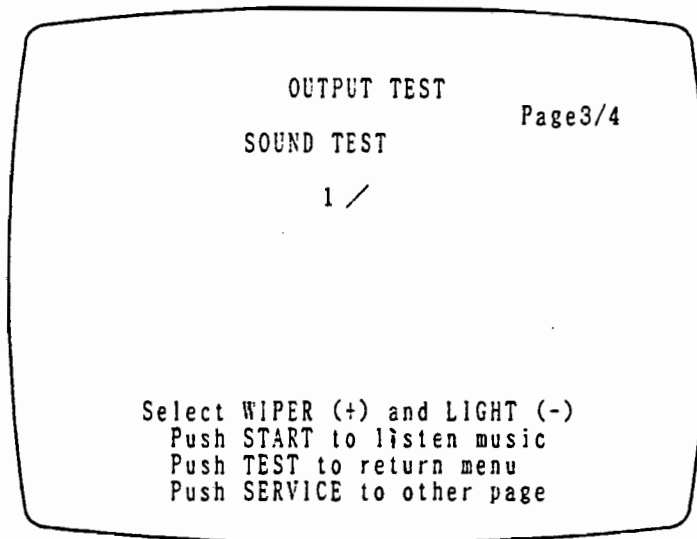


The color becomes brighter from the left to the right.

③ Brightness check

Becomes brighter from the left (black) to the right (white).

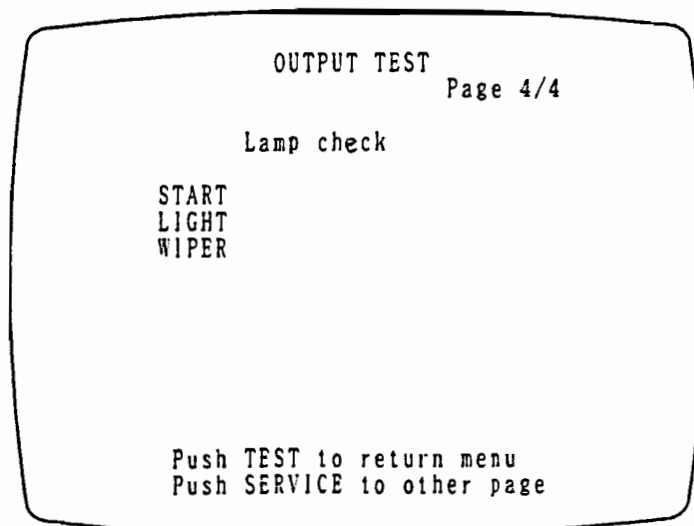
(2) SOUND TEST



Pushing WIPER SW. increases the number and pushing LIGHT SW. decreases the number.

Push the START SW. when the desired number is shown.

(3) LAMP TEST



The LIGHT, WIPER and START LAMP will flash.

6 Memory test

Check the PCB's MEMORY ICs.

When the IC is in good operating condition, "GOOD" will be indicated.

If there exists any malfunctioning of the IC's, "BAD" will be indicated.

```

      MEMORY TEST
* * * ROM TEST * * *
IC 21 GOOD
IC 37 GOOD   IC 38 GOOD
* * * RAM TEST * * *
IC 16 GOOD   IC 36 GOOD
IC 37 GOOD   IC 61 GOOD
IC 62 GOOD   IC 63 GOOD
IC 64 GOOD   IC 65 GOOD
IC 66 GOOD   IC 68 GOOD
IC 69 GOOD   IC 70 GOOD
IC 71 GOOD   IC 74 GOOD
IC 75 GOOD
Push TEST to return menu

```

7 Backup RAM clear

The BOOKKEEPING data can be cleared. When clearing, bring ">" to "YES" and when not clearing, to "NO," by using the SERVICE SW, and then push the TEST button.

```

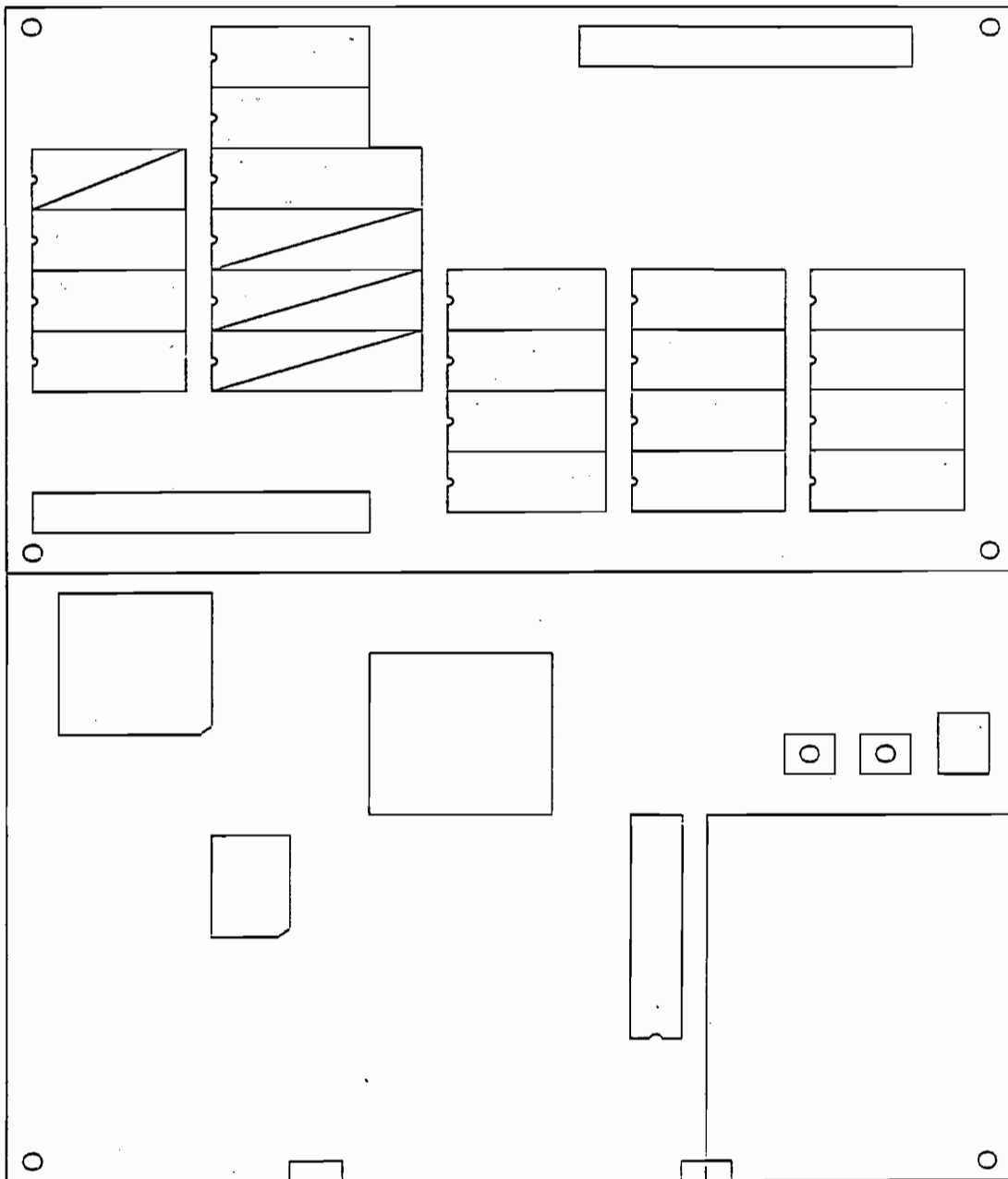
      BACKUP RAM CLEAR
      YES (Clear)
> NO (Cancel)
Select by SERVICE and push TEST

```

IC BOARD

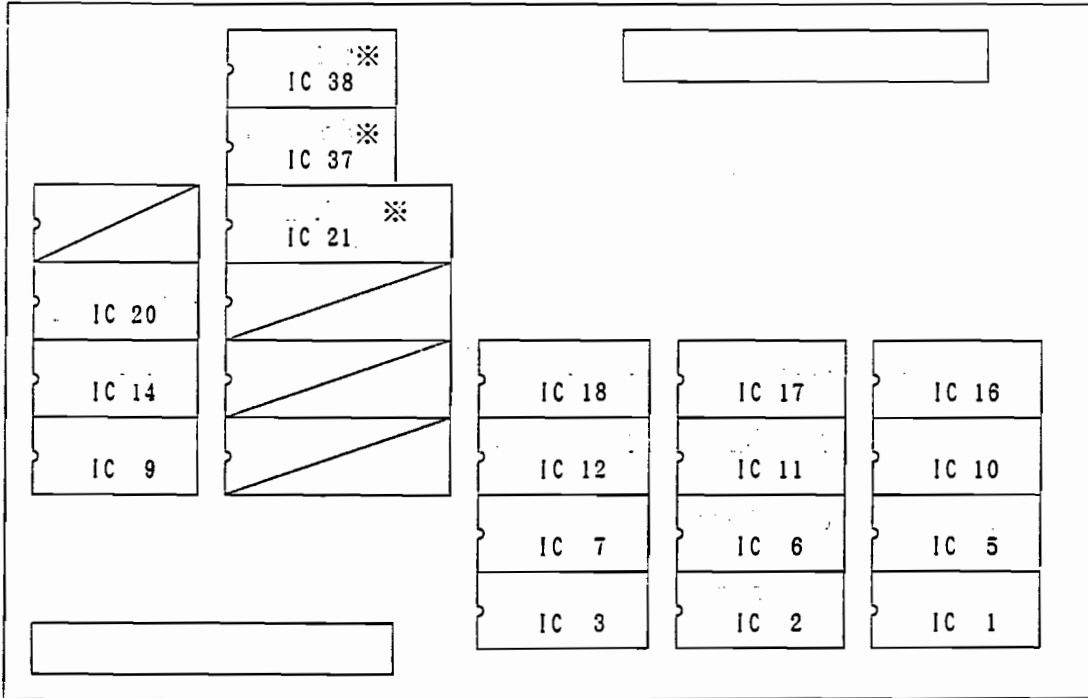
833-7738-~ GAME BD RAD MOBILE ~

USA	VERSION
833-7738-01	837-7428 MAIN BD
	834-7739-01 ROM BD



ROM LOCATIONS

SY 32 ROM BD

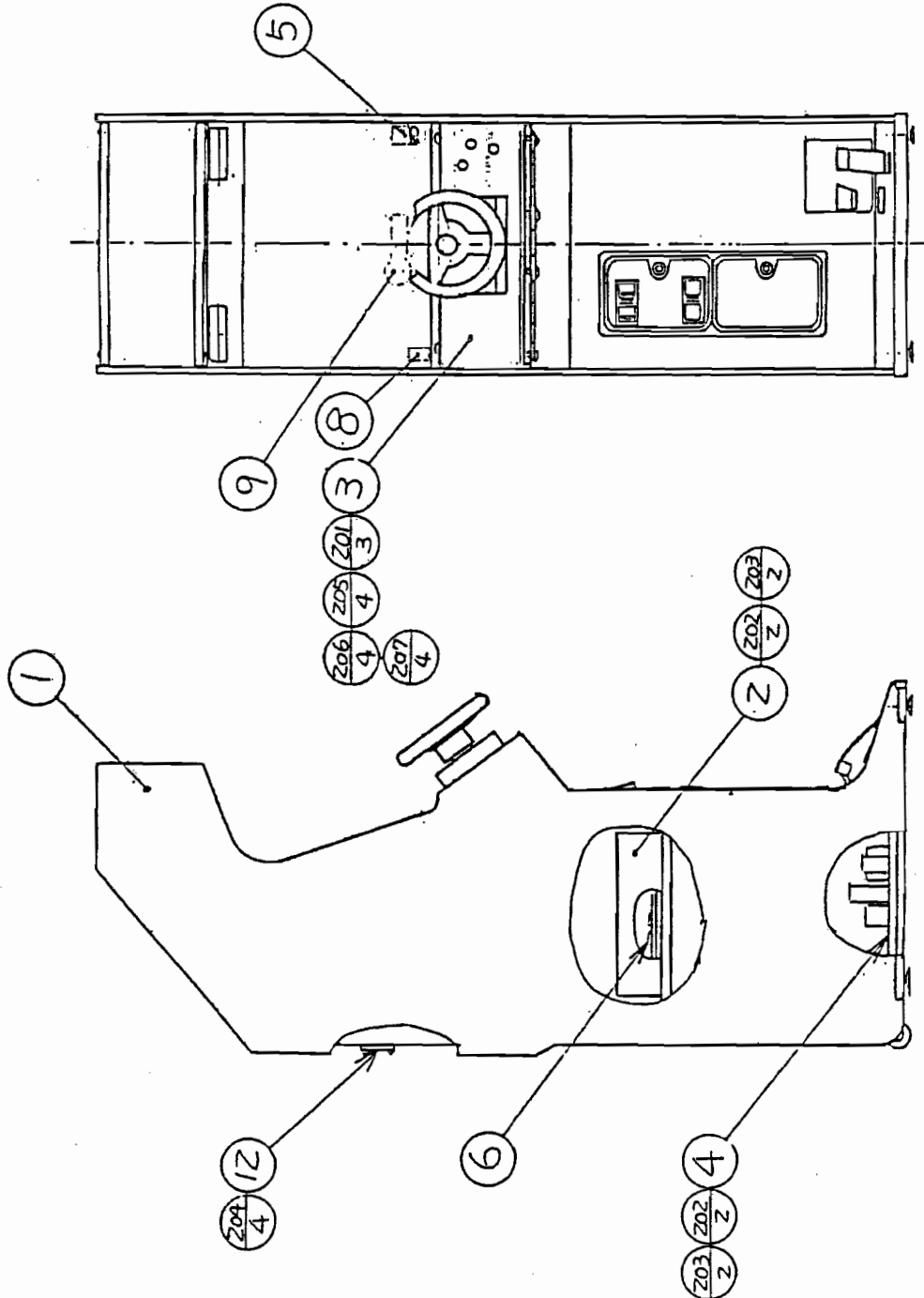


RAD MOBILE				
IC LOCATION		ROM NUMBER		MAIN WORK
1	IC 1	MPR-13511		OBJECT
2	IC 5	MPR-13512		
3	IC 10	MPR-13513		
4	IC 16	MPR-13514		
5	IC 2	MPR-13515		
6	IC 6	MPR-13516		
7	IC 11	MPR-13517		
8	IC 1	MPR-13518		
9	IC 3	MPR-13519		SCROLL
10	IC 7	MPR-13520		
11	IC 12	MPR-13521		
12	IC 18	MPR-13522		
13	IC 9	EPR-13527		SOUND
14	IC 14	EPR-13523		
15	IC 20	EPR-13699		
16	IC 37	EPR-13691	EPR-13694	MAIN PROGRAM
17	IC 38	EPR-13692	EPR-13695	
18	IC 21	EPR-13690	EPR-13693	
BOARD PART NO.		USA ROM BD 834-7739-01		

*Rom Numbers subject to change without notice






PARTS LIST

TOP ASSY RAD MOBILE U/R USA (RDM-00001) (D-1/3)



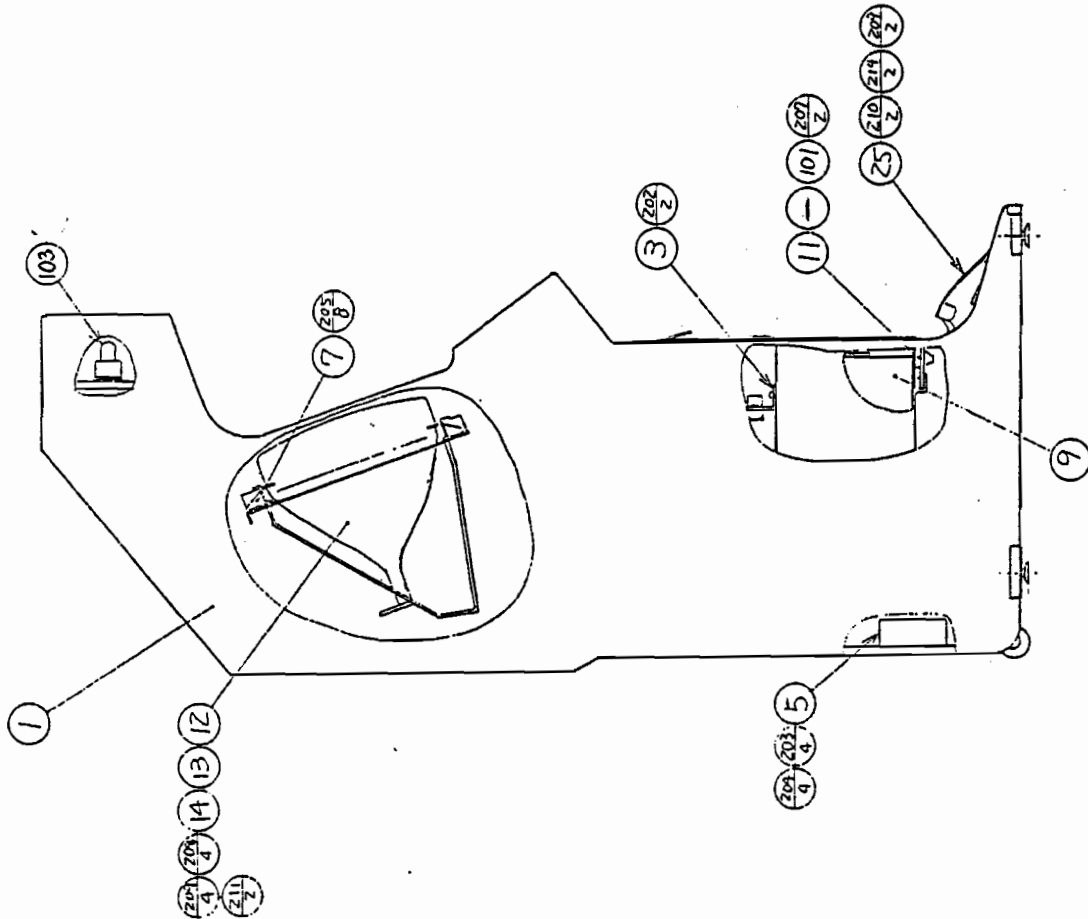
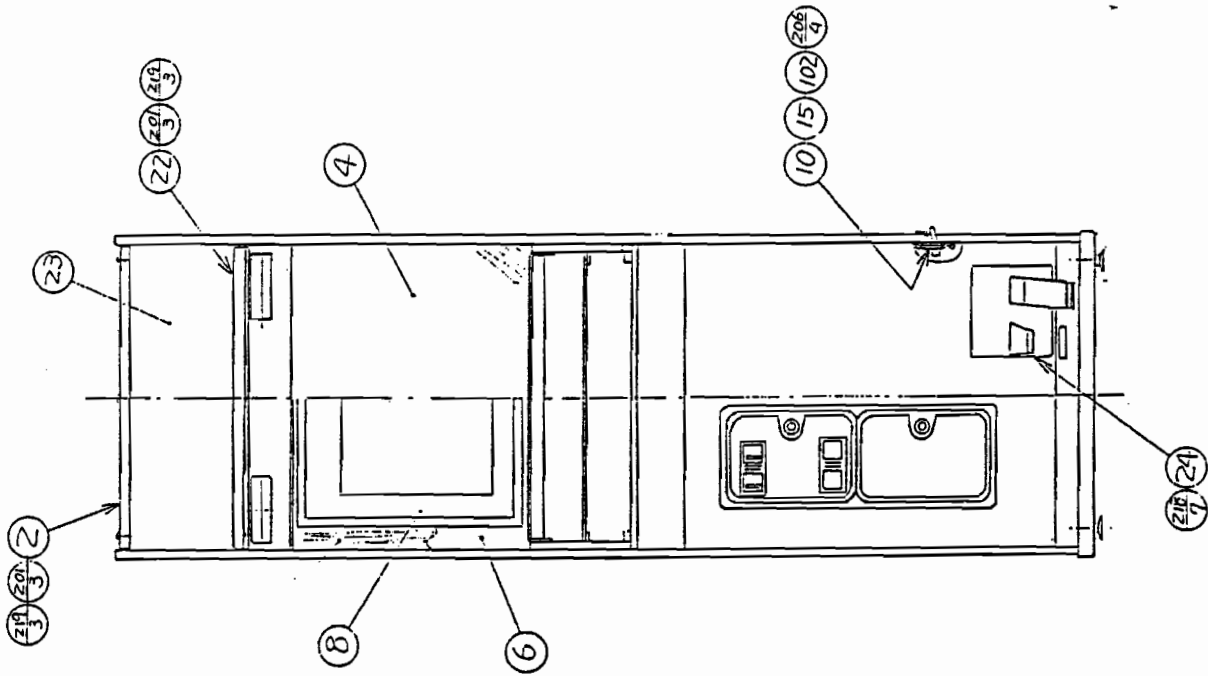
TOP ASSY RAD MOBILE U/R USA (RDM-00001)

(D-2/3)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	RDM-10001	ASSY CABINET U/R	
2	RDM-0120	ASSY SHIELD CASE U/R	
3	RDM-20001	ASSY CONTROL PANEL	
4	RDM-40001	ASSY PWR SPLY U/R	
5	422-0365	PLAY INSTR SH RAD MOBILE U/R	
6	833-7738-01	GAME BD RAD MOBILE USA	
7	SGM-3640	POLYETHYLENE COVER HN UPRIGHT	
8	421-5800-142	ORIGINAL SEAL RAD MOBILE	
9	422-0373-01	SUBPLAY INST STICKER RDM ENG. NEW	
10	421-7835-01	ADJUST INSTR SH RAD MOBILE U/R	
11	421-6594	STICKER SERIAL NO INFO	
12	117-5123	NAME PLATE ELEC SPEC USA	
13	421-6120	STICKER SEGA USA	
14	999-0047	FCC PLATE	
201	009-0816	TMP PRF SCR BH M8x16	
202	000-0530-S	M SCR PH W/S M5x30	
203	069-0001	FLT WSHR 5.5-20x1.6	
204	046-0001	SCR NAIL THH STNLS 1.5x16	
205	039-0099	CRG BLT BLK M6x25	
206	051-0006	FLG NUT M6	
207	069-0002	FLG WSHR 6.5-19x1.2	



















ASSY CABINET U/R (RDM-10001)

(D-1/4)






ASSY CABINET U/R (RDM-10001)

(D-2/4)

ITEM NO.	PART NO.	DESCRIPTION	- NOTE
1	RDM-1500	ASSY SUB CABINET U/R	
2	RDM-1053	BILLBOARD HOLDER UPPER	
3	RDM-1056	SW UNIT	
4	RDM-1052	WINDOW GLASS	
5	RDM-1057	AC CORD UNIT	
6	RDM-1051	MASK BOARD	
7	AB-0023	BRACKET, TV	
8		TV MASK 20	
9	KR-1607X	CASH BOX	
10	105-0064	BRACKET MAIN SWITCH	
11	RA-1016	METER BRACKET	
12	200-5090	ASSY CLR DSPL 20 TYPE	
13	280-5112	BUSH FOR TV	
14	280-5113	COLLAR FOR TV	
15	509-0049	SWITCH STOPPER 12ø	
18	421-6526	STICKER ON OFF	
19	421-6709	STICKER SERVICE INSTR ENG	
20	421-7308-02	DENOMINATION SHEET 1 GAME 2x25¢	
21	421-6671	STICKER, DANGER HIGH VOLTAGE	
22	RDM-1054	BILLBOARD HOLDER LOWER	
23	423-0156	DESIGN PLATE RAD MOBILE U/R	
24	POW-2600-01	ASSY ACCEL & BRAKE BLACK TYPE	
25	POW-1623X	ASSY ACCEL PEDAL	

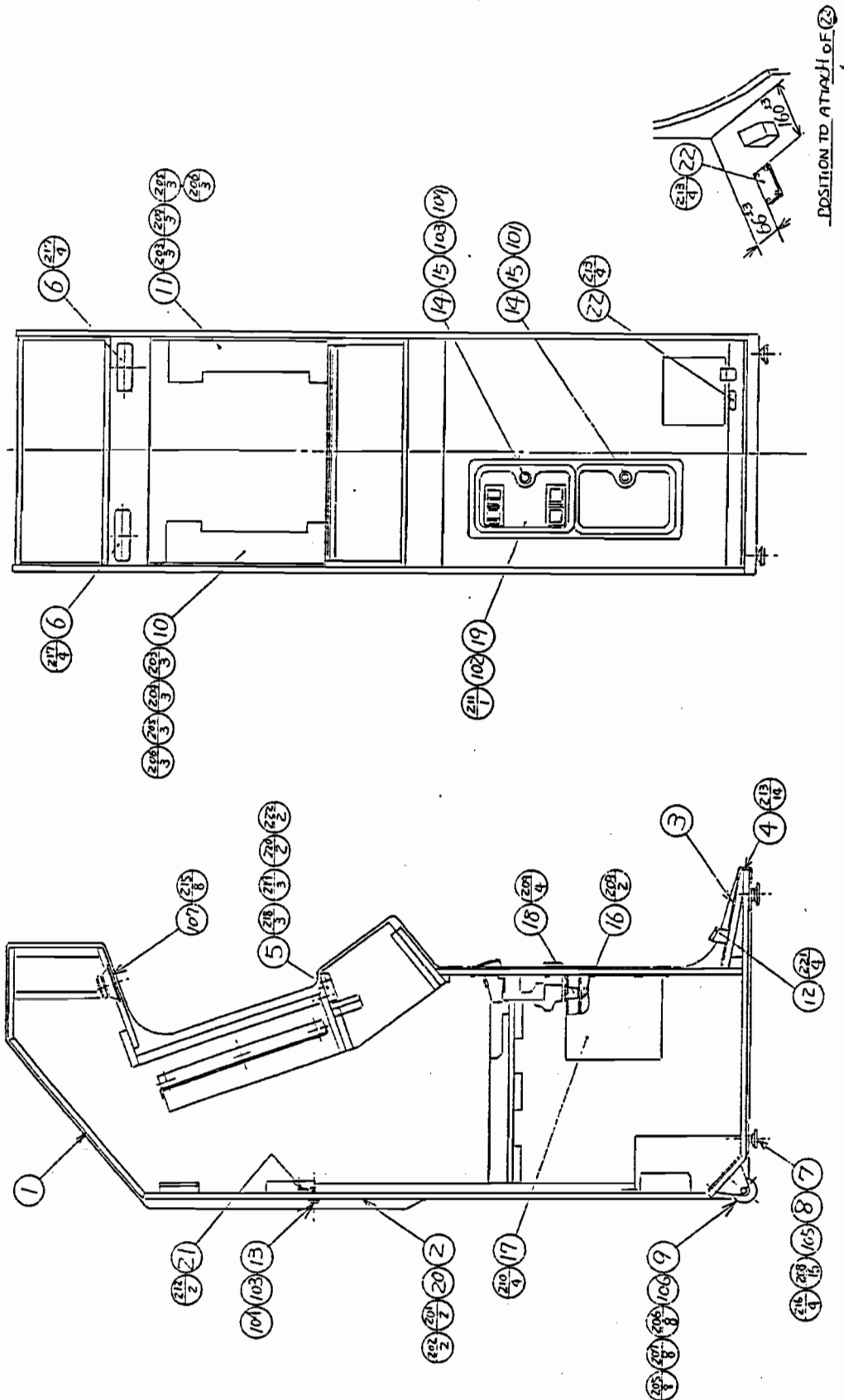
ASSY CABINET U/R (RDM-10001)

(D-3/4)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
101	220-5064	MAG CNTR 6DIG DC5V W/L & D10	
102	509-5234	SW TOGGLE	
103	390-5108-03	ASSY FL LIGHT 15W	
201	029-0172	M SCR PH BLK M4x16	
202	000-0408-S	M SCR PH W/S M4x8	
203	031-0425-B	CRG BLT BLK M4x25	
204	051-0004	FLG NUT M4	
205	000-0510-S	M SCR PH W/S M5x10	
206	005-3513	W SCR RH 3.5x13	
207	000-0408-FS	M SCR PH W/FS M4x8	
208	000-0530-S	M SCR PH W/S M5x30	
209	069-0001	FLT WSHR 5.5-20x1.6	
210	031-0530	CRG BLT M5x30	
211	010-0406-F	S-TITE SCR PH W/F M4x6	
212	005-3113-F	W SCR RH W/F 3.1x13	
213	006-3110	W SCR FH 3.1x10	
214	051-0005	FLG NUT M5	
218	008-0520	TMP PRF SCR TH M5x20	
219	069-0024	FLT WSHR BLK M4	
301	600-6012-01	WIRE HARN +5V	





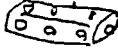
















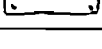
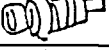


ASSY SUB CABINET U/R (RDM-1500)

(D-1/4)







ASSY SUB CABINET U/R (RDM-1500)

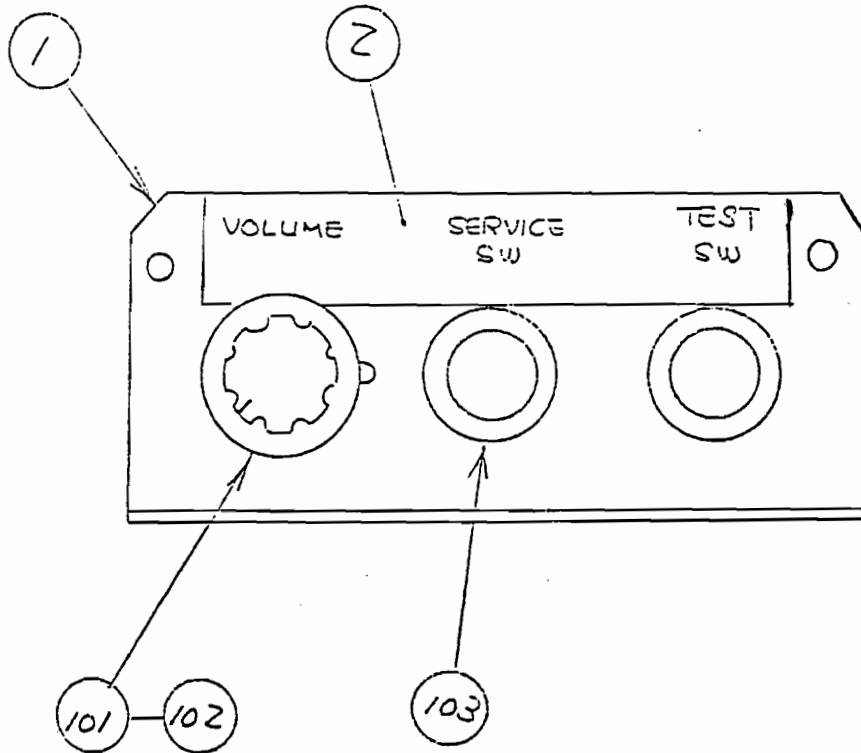
(D-2/4)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	RDM-1501	WOODEN CABINET	
2	RDM-1502	BACK DOOR	
3	RDM-1503	FLOOR MAT	
4	RDM-1504	SUPPORT BRACKET	
5	RDM-1505	MOUNTING BRACKET	
6	GUN-1507	GUARD PLATE	
7	TX-1704	PROTECTOR A	
8	TI-1079	LEG ADJUSTER BRACKET	
9	TA-1065X	NUT PLATE	
10	POW-1604X	TV MOUNTING BRACKET LEFT	
11	POW-1605X	TV MOUNTING BRACKET RIGHT	
12	POW-1610	RUBBER SPACER	
13	DP-1148X	LKG TNG	
14	DP-1167	TNG LKG	
15	HN-1050	SPACER RING	
16	KR-1608	LOCK BRACKET	
17	105-5106	CASH BOX COVER	
18	105-5107	CHUTE	
19	109-0045	KEY HOLDER	
20	117-0062	PLATE LOCK RETAINER	
21	117-5098	TNG RETAINER PLATE	
22	KR-1611	PLATE	
101	220-5046-91	MAGNETIC LOCK W/KEYS	
102	220-5128-01	ASSY COIN CHUTE 2DOOR USA 25¢	
103	220-5253	MAGNETIC LOCK MASTER W/O KEY	

ASSY SUB CABINET U/R (RDM-1500)

(D-3/4)

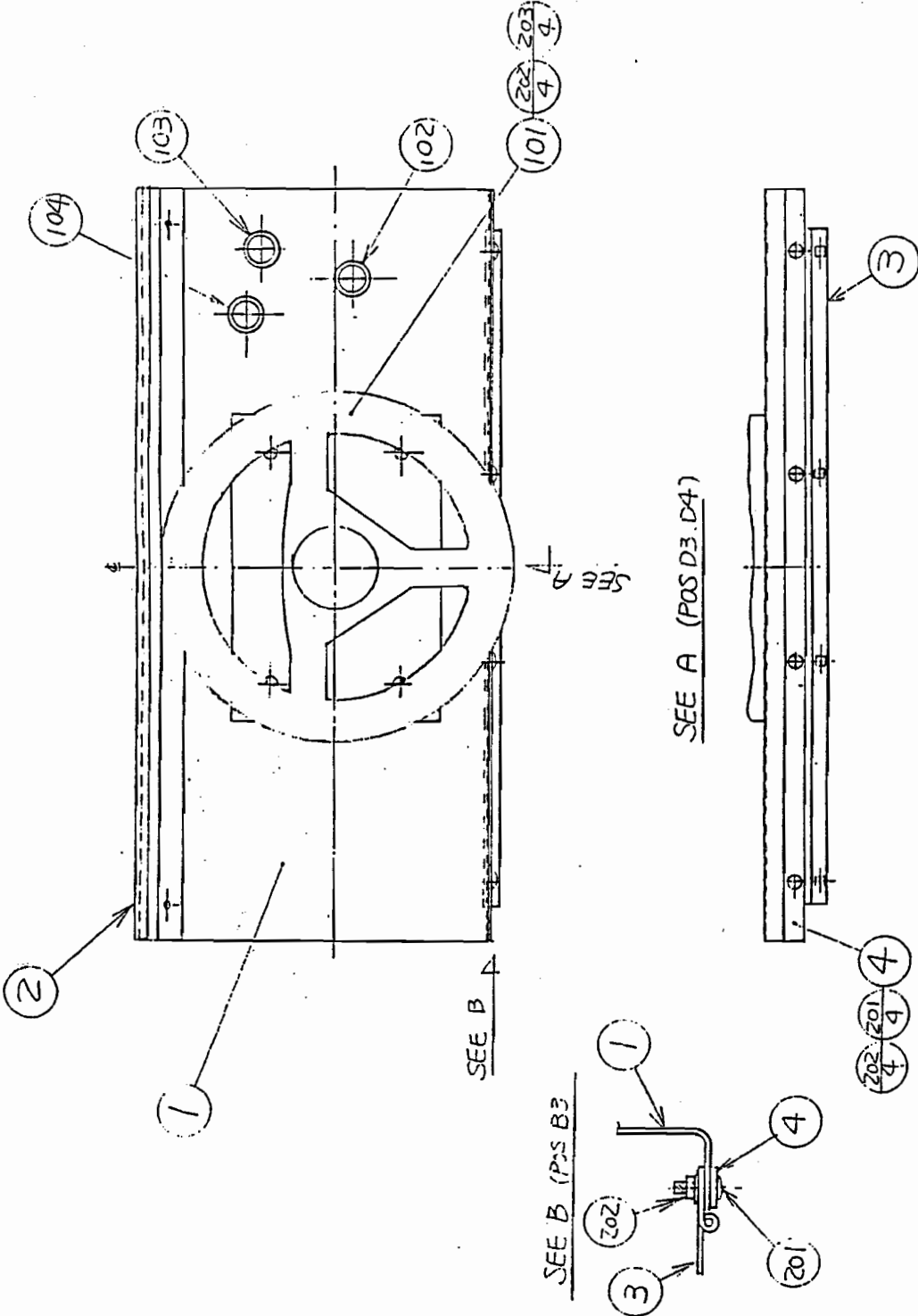
ITEM NO.	PART NO.	DESCRIPTION	NOTE
104	220-5254	KEY MASTER FOR 220-5253	
105	601-0455	LEG ADJUSTER	
106	601-0391	CASTER	
107	130-5018	SPEAKER 8Ω 10W	
201	000-0550	M SCR PH M5×50	
202	060-0005	FLT WSHR M5	
203	031-0630-B	CRG BLT BLK M6×30	
204	050-0006	HEX NUT M6	
205	060-0006	FLT WSHR M6	
206	061-0006	SPR WSHR M6	
207	030-0630	HEX BLT M6×30	
208	000-0525-FS	M SCR PH W/FS M5×25	
209	000-0408-FS	M SCR PH W/FS M4×8	
210	000-0406-S	M SCR PH W/S M4×6	
211	000-0306-F	M SCR PH W/F M3×6	
212	005-3113-F	W SCR RH W/F 3.1×13	
213	046-0001	SCR NAIL THH STNLS 1.5×16	
214	005-3110	W SCR RH 3.1×10	
215	000-0414-FS	M SCR PH W/FS M4×14	
216	059-0007	HEX NUT 3/8-16	
217	008-0416	TMP PRF SCR TH M4×16	
218	000-0525-S	M SCR PH W/S M5×25	
219	069-0001	FLT WSHR 5.5-20×1.6	
220	000-0516-FS	M SCR PH W/FS M5×16	



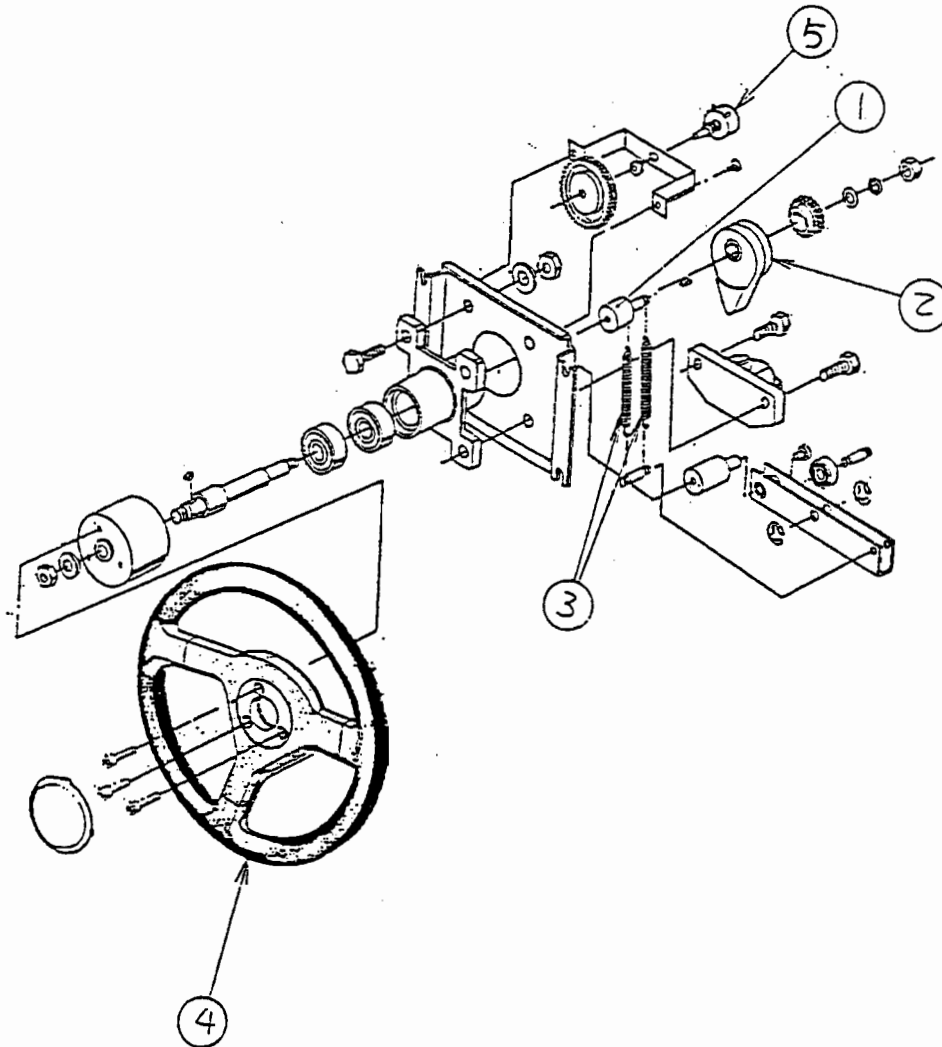
SW UNIT (RDM-1056)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	KR-1060	SW BRACKET	
2	421-6481	STICKER SW	
101	220-5179	VOL CONT B-5K OHM	
102	601-0042	KNOB	
103	509-5028	SW PB 1M	
301	SGB-4073-9	WIRE HARN SW UNIT	



ASSY STEERING UNIT (610-0267) (HAPP CONTROLS)

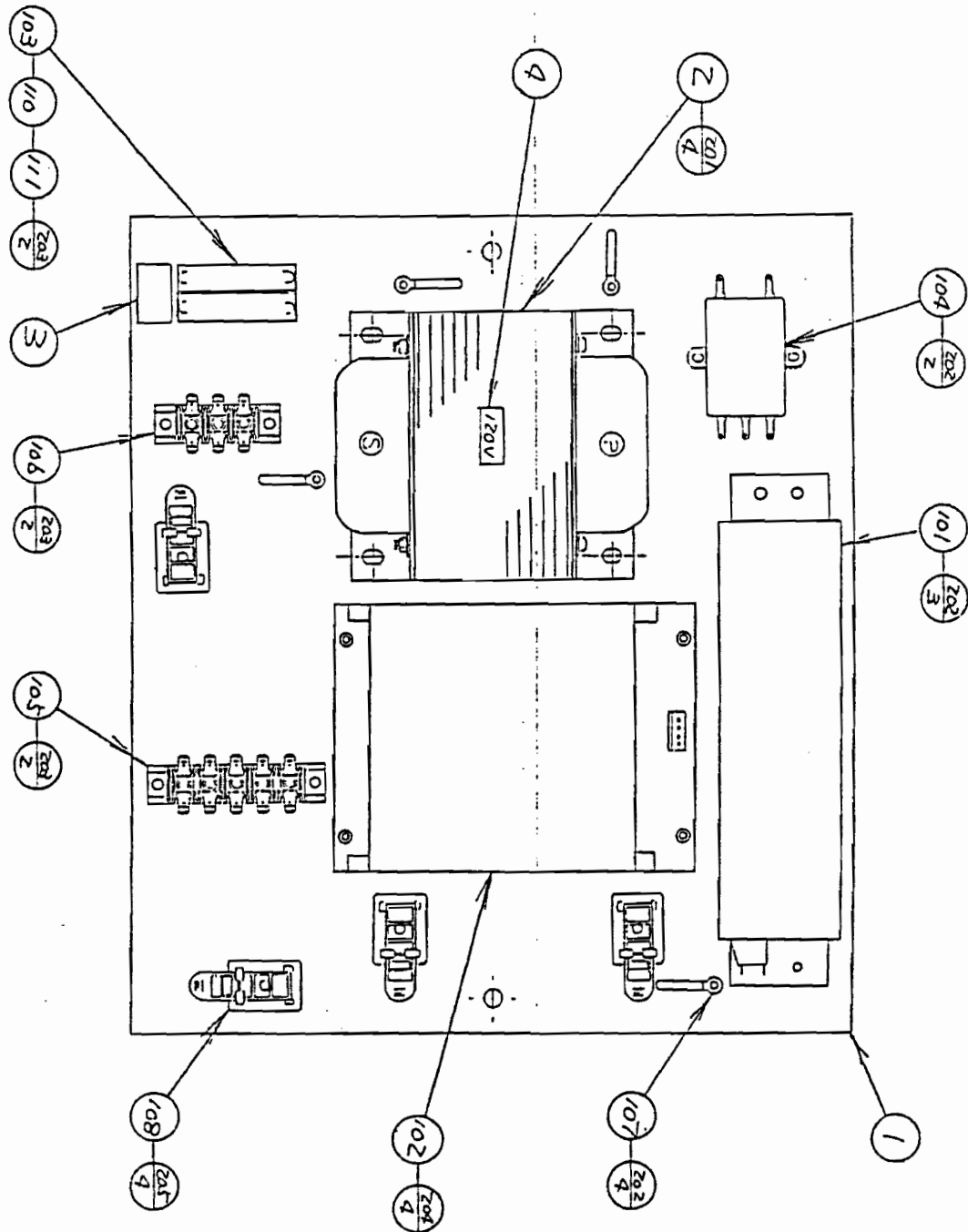


APPROVED DRAWING NO. OR CATALOG	270° Steering wheel with pot (50-8070-00)
PART NO. AND MAKER'S NAME	HAPP CONTROLS 社 (U.S.A)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	123-5076	SPRING HOLDER SHAFT (HAPP CONTROLS 50-8365-00)	
2	601-6699	CAM (HAPP CONTROLS 50-8366-00)	
3	125-5095	EXT SPRING (HAPP CONTROLS 50-8143-00)	
4	109-5020	3-SPOKE (HAPP CONTROLS 50-8125-00)	
101	220-5361	VOL CONT 5K OHM (HAPP CONTROLS 50-8056-00)	









ASSY PWR SPLY U/R (AC120V) (RDM-40001)

(D-1/2)



ASSY PWR SPLY U/R (AC120V) (RDM-40001)

(D-2/2)

ITEM NO.	PART NO.	DESCRIPTION	NOTE
1	RDM-4010	WOODEN BASE	
2	560-5141	PWR XFMR 90-240V 18.5V5A 100V1.5A	
3	421-7427	STICKER FUSE INSTR	
4	421-6690-01	STICKER 120V	
101	400-5080	SW REGU AC90-240V +5V7A 12V1.5A	
102	601-6227-01	PWR AMP W/SW REGU 12V5A	
103	514-5029-02	FUSE HOLDER 2P W/COVER	
104	270-5020	NOISE FILTER AC250V 6A	
105	117-5167	TERMINAL 5P-2P×2 SHORT	
106	117-5172	TERMINAL PLATE 3P	
107	280-0419	HARNESS LUG	
108	280-5008	CORD CLAMP ϕ 15	
109	601-0460	PLASTIC TIE BELT 85mm	
110	514-5036-3	FUSE 3A	
111	514-5036-4	FUSE 4A	
201	000-0414-FS	M SCR PH W/FS M4×14	
202	005-3113-F	W SCR RH W/F 3.1×13	
203	005-3516	W SCR RH 3.5×16	
204	029-0173	W SCR RH 2.7×25	
205	006-3110	W SCR FH 3.1×10	
301	600-6012-05	WIRE HARN PWR AMP	
303	SGB-4073-1	WIRE HARN PWR SPLY	

