

Cabinet	Type of cabinet (set to UR)
Difficulty	Game difficulty (Select EASY, NORMAL, HARD or HARDEST.) In accordance with the 1P side setting, the game difficulty is selected from among the four levels of EASY, NORMAL, HARD and HARDEST. Normally, set to NORMAL.
Exit	Returning to the menu mode

Perform the setting of CAR COLOR, LINK ID, COUNTRY, MONITOR and CABINET in a manner as specified. If the setting is made in a manner other than specified, the game machine will not effectively function.

#### Changing the method of the game setting

1. In the game setting mode, press either the SERVICE SW or VR1 (red) and bring the \* mark to the desired item.
2. Press the VR2 (blue)/VR3 (yellow) or SHIFT UP/DOWN lever and select the desired setting item. The Coin Setting is as shown in the table. (Refer to the next page.) COIN CHUTE 2 setting is disregarded.
3. to return to the menu mode, bring the \* mark to EXIT and press the TEST SW or VR4 (green). at this time, Yes or No as to the content of change is required to be determined. Use the SERVICE SW or VR1 (red) to select it.
4. Pressing the TEST SW or VR4 (green) causes the screen to return back to the menu mode.

Type of Setting	Coin Chute 1		Coin Chute 2	
	Coins	Credits	Coins	Credits
#1	1	1	1	1
2	1	1	1	2
3	1	1	1	3
4	1	1	1	4
5	1	1	1	5
6	1	2	1	2
7	1	2	1	5
8	1	3	1	3
9	1	4	1	4
10	1	5	1	5
11	1	6	1	6
12	2	1	2	1
13	2	1	1	1
14	2	1	1	2
15	1 2	1 3	1 2	3 3
16	1 2	1 3	1	3
17	3	1	3	1
18	4	1	4	1
19	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
20	1 2 3 4	1 2 3 5	1	5
21	5	1	5	1
22	3 5	1 2	1	2
23	2 4 5	1 2 3	2 4 5	1 2 3
24	2 4 5	1 2 3	1	3
25	1 2 3 4 5	1 2 3 4 6	1 2 3 4 5	1 2 3 4 6
26	1 2 3 4 5	1 2 3 4 6	1	6
27	FREE PLAY FREE PLAY FREE PLAY FREE PLAY COIN CHUTE 2 SETTING IS DISREGARDED			

## Input Test

In this test, each input device is tested.

### INPUT TEST

Coin 1	OFF	Shift Down	OFF
Coin 2	OFF	Shift Up	OFF
Test-SW	OFF	Board 0	OFF
Service SW	OFF	Board 1	OFF
Start	OFF	Board 2	OFF
VR1 (Red)	OFF	Board 3	OFF
VR2 (Blue)	OFF	Handle	80
VR3 (Yellow)	OFF	Accel.	30
VR4 (Green)	OFF	Brake	30

### VERIFY SWITCHES REACTION.

The SW system allows, when each SW is pressed (SHIFT DOWN/UP is to be pushed towards you), the display to indicate ON. The VR system allows the present VR value to be displayed. The following shows the correct values:

Handle: Under 2DH ←———— 7DH – 83H —————→ Over D3H  
(Centering position)

Accel: Under 30H —————→ Over CDH

Brake Under 30H —————→ Over A7H  
(Pedal OFF) (Pedal ON)

Pressing the TEST SW or the VR4 (green) causes the screen to return back to the menu mode.

The four SWs (BOARDS 0–3) on the I/O BOARD are normally not used.

## Output Test

This test is comprised of 3 pages and displays the following contents. Use the SERVICE SW or the VR1 (red) to cause a following page to be displayed. On any page, pressing the TEST SW or VR4 (green) causes the screen to return back to the menu mode.

**CRT Size Test:** Cross hatch screen

This page is for checking the monitor size.

**CRT Color Rest:** Color bar screen

This page is for adjusting the monitor color.

## Drive BD Test (Handle Test)

This page allows the handle mechanisms VR, motor, clutch, etc., to be checked. Pressing the TEST SW causes the MENU mode to return back to the screen. Note that pressing VR4 (green) will not allow it to return.

**HANDLE TEST (DRIVE BD)**

[ Dip SW ]

	1	2	3	4	5	6	7	8
Dip SW 1:	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Dip SW 2:	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Handle Vol. =	80							
Now Send Code =	10							
					↓			
						* SPRING		
						CLUTCH		
						CENTERING		
						UNCENTERING		
						ROLL LEFT		
						ROLL RIGHT		
Shift:		[DOWN]			[FREE]			[UP]
		↓			↓			↓
Power:		[DOWN]			[HOLD]			[UP]

**PUSH TEST SW TO ESCAPE**

[Dip SW]

Dip SW Status Table: Displays the status of the Dip SW on the DRIVE BD.

HANDLE VOL: Refers to the handle VR value



- NOW SEND CODE:** The setting code selected by using the START BUTTON
- SPRING:** The setting in which the motor and clutch will not be operated.
- CLUTCH:** The setting in which the clutch is operated.
- CENTERING:** The setting in which the motor and clutch are operated so as to allow for handle centering.
- UNCENTERING:** The setting in which the motor and clutch are operated so as not to allow for handle centering.
- ROLL LEFT:** The setting in which the motor and clutch are operated so as to cause the handle to turn LEFT.
- ROLL RIGHT:** The setting in which the motor and clutch are operated so as to cause the handle to turn RIGHT.

Press the START BUTTON to move the \* cursor and select the applicable motor & clutch operation setting. Ascertain that the steering wheel moves in accordance with the selected setting. In the case where "SPRING" is selected, the handle centering is performed merely by the force of the HANDLE MECHA interior's SPRING mechanism. Also, controlling the revolution torque subjected to the handle by the motor is performed by the clutch. Operating the SHIFT UP increases the revolution torque and operating SHIFT DOWN decreases it. In the status where the setting in which the motor is operated, ascertain the revolution torque changes by holding the handle by hand and operating SHIFT UP as well as SHIFT DOWN.

## Dip SW Setting

By using the DIP SW on the DRIVE BD., set the handle weight via "feeling" and select ON or OFF of POWER ON CHECK. DIP SW1 controls the 1P side and DIP SW2, the 2P side.

### Common Setting for Dip SW1 & Dip SW2

Handle weight ("feeling") setting			
1	2	3	Function
* OFF	OFF	OFF	Light ↑ Handle weight "feeling" ↓ Heavy
ON	OFF	OFF	
OFF	ON	OFF	
ON	ON	OFF	
OFF	OFF	ON	
ON	OFF	ON	
ON	ON	ON	
ON	ON	ON	
POWER ON CHECK			
4	Function		
* OFF	Performed		
ON	Not performed		
Not used			
5	6	Function	
* OFF	OFF	Not used (always OFF)	

### Setting the Operation & Display Mode

Operation mode setting		
DIP SW1		
7	8	Function
* OFF	OFF	Always OFF
On-BD 7SEG. LED display		
DIP SW2		
7	8	Function
* OFF	OFF	Displays the handle VR value (00-80-FF)
ON	OFF	Signal value presently given to the clutch
OFF	ON	Data from the I/O BD. (00-FF)
ON	ON	Data to the I/O BD. (00-FF)

NOTE: The \* mark refers to the setting at the time of shipment.

When DIP SW setting changes are made, be sure to turn the power off and then back on again. The new setting is not effective unless the power is turned back on again.

Due to the handle mecha's secular change, the handle weight (via "feeling") may somewhat vary. In such a case, change the DIP SW setting for handle weight to obtain an appropriate weight.

The on-BD 7-SEG. display normally indicates, as shown in the above table, the handle VR value or data to and from the I/O BD. After power up, one of the on-BD 7-SEG. displays will flash. This is normal for the upright.

### Drive Bd. Error Display

When malfunctioning occurs in the DRIVE BD., testing will not be performed even if the DRIVE BD. TEST is selected in the menu mode. In this case, the ERROR number will be displayed by the 7-SEG. display on the DRIVE BD. (when the status is satisfactory, the handle's VR value is displayed in the decimal numeration system.) Also, when a POWER-ON CHECK ERROR occurs, the 7-SEG. display data repeatedly flashes. First check the handle mecha's VR, the motor, clutch, etc.



## Sound Test

In this test, operate the following switches to determine the selection and hear the sound. This test is comprised of 3 pages, each performing a different sound test.

**PAGE 1: MUSIC TEST**

BGM during game is played.

**PAGE 2: VOICE TEST**

Announcement and comment voices during game play are emitted.

**PAGE 3: EFFECTS TEST**

Sound effects during game play emitted.

**START BUTTON**

Check the sound just selected.

**SHIFT UP/DOWN**

Select the desired item.

**VR2 (blue)/VR3 (yellow)**

**SERVICE SW. VR1 (red)**

Proceed to the next page.

**TEST SW. VR4 (green)**

Return to the menu mode.

## TGP Test

In this test, the TGP (the on-screen display related IC) is checked. "GOOD" is displayed for normal ICs and "BAD" is displayed for abnormal ICs.

Press the TEST SW or VR4 (green) to return to the menu mode.

## Memory Test

This test is for checking the memory IC operations on the board. "GOOD" is displayed for normal ICs and "BAD" is displayed for abnormal ICs.

In this test, irregular status will be seen on the screen for the time being. However, this is a part of the testing and continues approx. one minute.

Pressing the TEST SW or VR4 (green) causes the menu mode to return on to the screen.

## Backup RAM Clear

This page is for erasing the contents of BOOKKEEPING. To erase the contents of BOOKKEEPING, bring the \* mark to "YES" and press the TEST SW or VR4 (green).

After the contents of BOOKKEEPING are erased, "COMPLETED" appears on the screen. The menu mode returns back to the screen.

Also note that the game setting contents are not affected by BACKUP RAM CLEAR operation.

## Accelerator & Brake

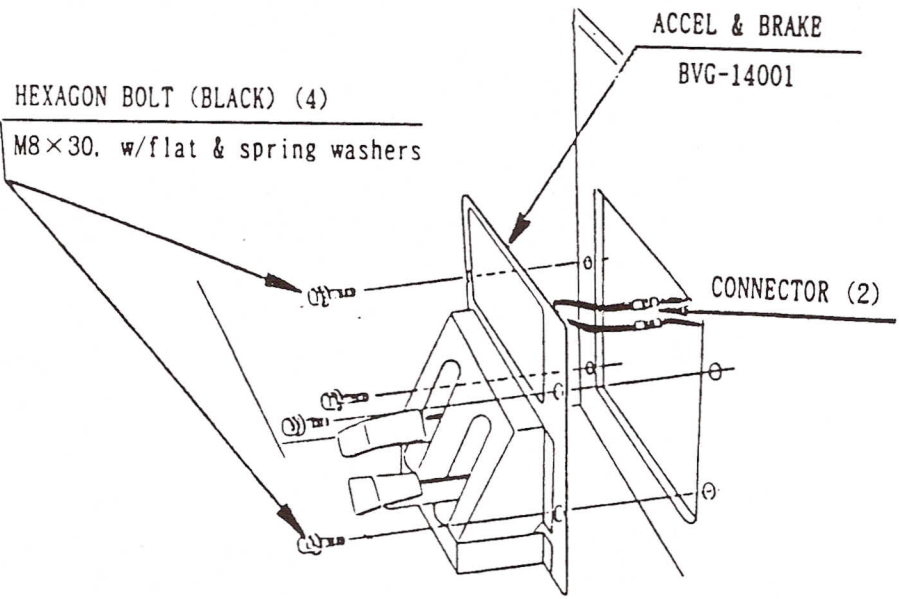
Check the VR value in the test mode (INPUT TEST)

The appropriate value of each VR is as follows:

	OFF	ON
VR for ACCELERATOR:	Under 30H	Over CDH
VR for BRAKE	Under 30H	Over A7H

### Removing the Accelerator & Brake

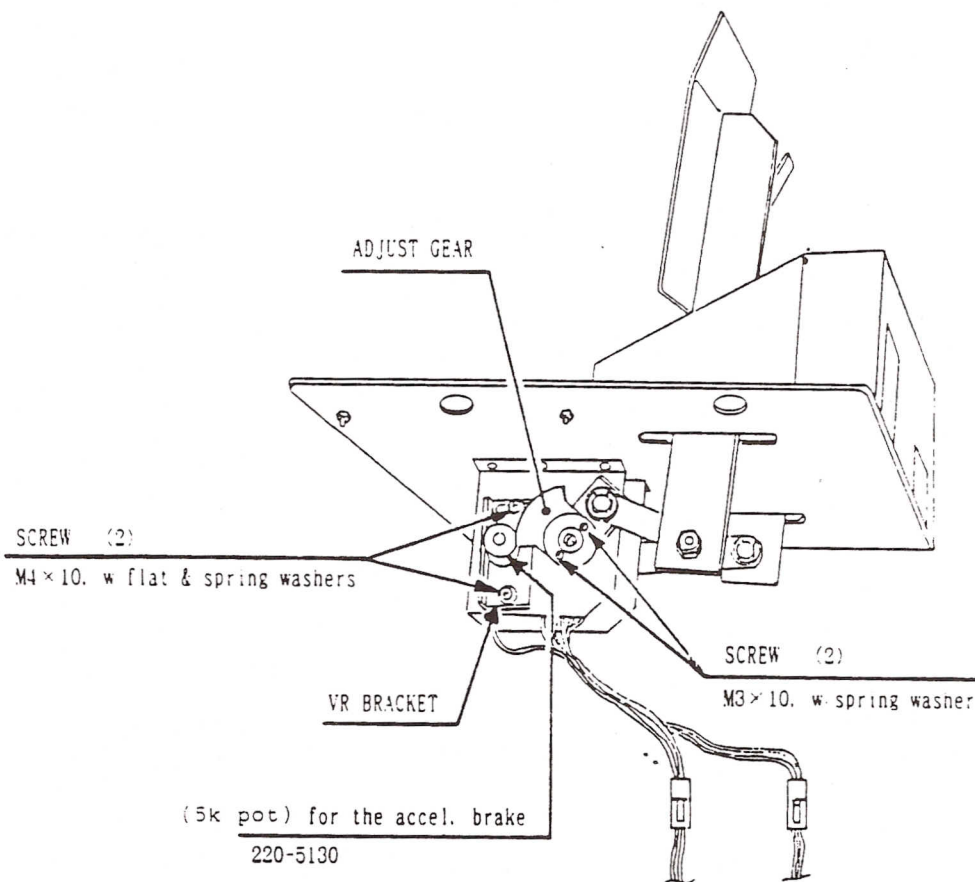
1. Remove the 4 hex bolts (black) which secure the ACCELERATOR & BRAKE.
2. Lift up the ACCELERATOR & BRAKE.
3. Disconnect the two connectors, and remove the ACCELERATOR & BRAKE. Adjust the VR while the connectors are in their connected state, by watching the VR value shown on the monitor.





## Replacing and Adjusting the VR for the Accelerator & Brake

The following procedure applies to both the accelerator and brake. After taking off the connector from the VR to be replaced (accelerator: 3P red; brake: 3P blue), take out the 2 screws which secure the VR bracket, and remove the VR together with the bracket.



## Adjustment Procedure

When making the VR adjustments, before causing the gears to be engaged, first make sure that the VR value is approximately 30H and secure the VR BRACKET. At this time, make sure that the appropriate backlash is obtained.

After securing the VR, check to see that the VR value is within the above mentioned appropriate value range, by stepping on the pedal and releasing it. If the value is not within the range, make adjustment by loosening the 2 screws which secure the ADJUST GEAR.

## Greasing

Grease the gears and bearings once every three months.

## Handle Control Panel To Remove

1. Take off the 3 tamperproof screws and remove the GLASS HOLDER
2. Take off the 2 hex bolts.
3. Disconnect the 2 connectors and remove the CONTROL PANEL.

When the HANDLE (CONTROL PANEL) is removed, the monitor adjustment knobs appear. For the monitor adjustment, refer to the following section.

## Replacing and Adjusting the Handle (Steering Wheel) VR

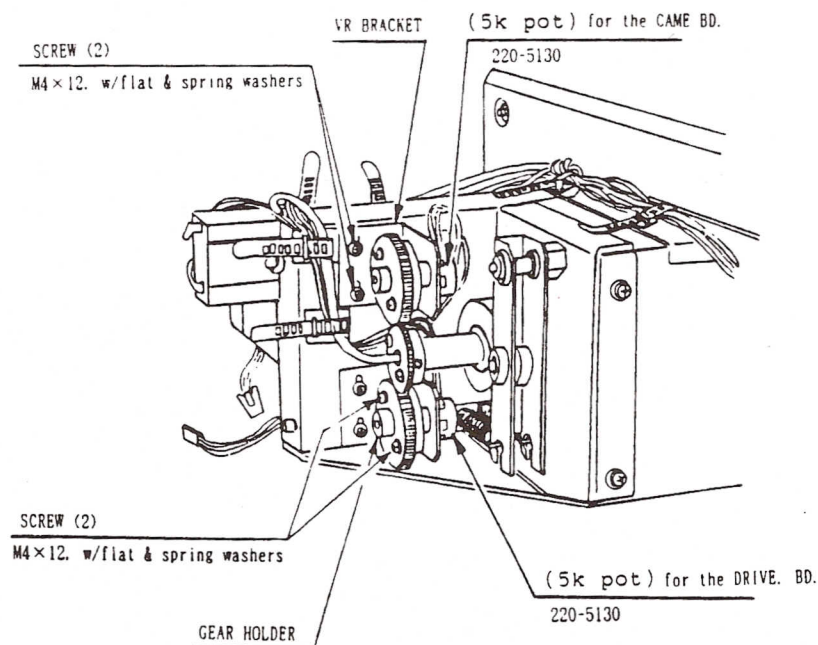
The upper side VR of the HANDLE MECHA is for the GAME BD., and the lower side one, for the DRIVE BD. Check the value of the VR for the GAME BD., by watching the INPUT TEST screen in the test mode; and check the value of the VR for the DRIVE BD., by watching the HANDLE TEST (DRIVE BD. TEST) in the test mode.

The appropriate value of each VR is as follows:

When the steering wheel is turned to or positioned at

	Left	Center	Right
VR for the GAME BD.	Under 2DH	← 7DH-83H →	Over D3H
VR for the DRIVE BD.	Under 2DH	← 7DH-83H →	Over D3H

To replace the VR, after taking off the connector from the VR to be replaced, take out the 2 screws which secure the VR BRACKET, and remove the VR together with the bracket and gear.



### **Method of VR Adjustment**

1. Loosen the 2 screws which secure the VR BRACKET, move the VR BRACKET and detach the gears.
2. Adjust the VR so that it is consistent with the value near the center.
3. Cause the gears to be engaged and secure the VR BRACKET. At this time, make sure that an appropriate backlash is obtained.
4. If the VR value exceeds the allowable value when the steering wheel is at the center, loosen the 2 screws, and turn the gear holder to adjust the VR value so that it is within the above allowable range.

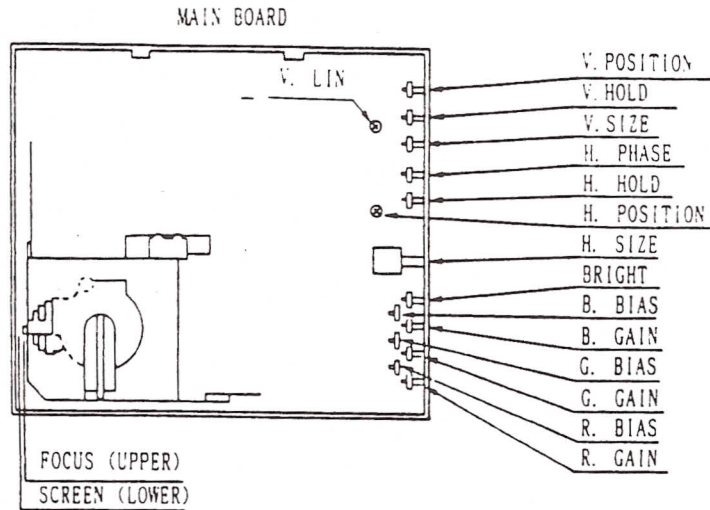
### **Greasing**

Grease the gears and bearings once every three months.



## Adjustment of the 26" Monitor

Remove the MONITOR GLASS to make the monitor adjustments.



Do not operate the ADJUSTMENT knobs without good reason.

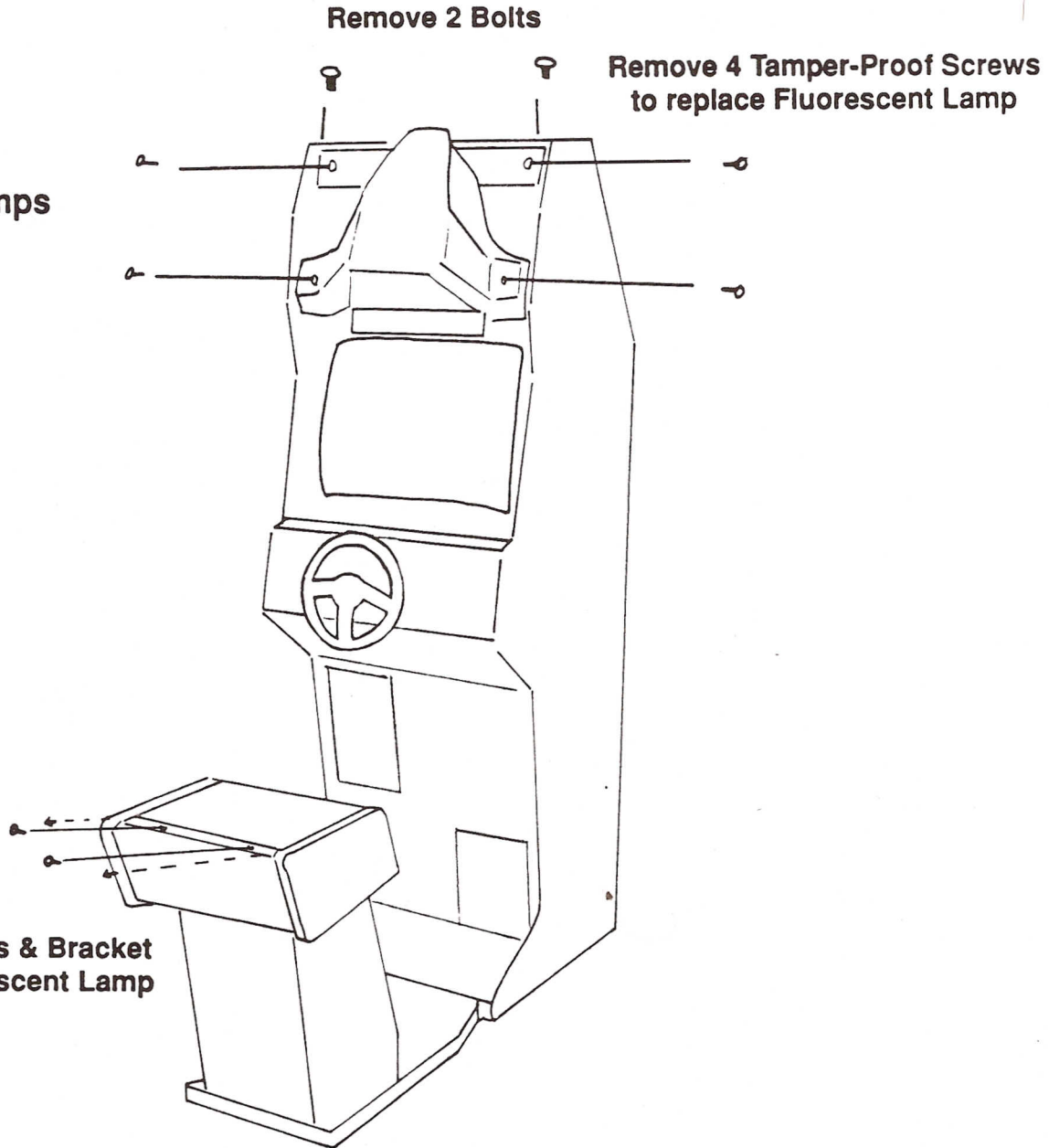
1. V. POSI (Vertical position control)  
Controls the vertical display position of the image.
2. V. HOLD (Vertical synchronization control)  
Controls the image running from left to right.
3. V. SIZE (Vertical size control)  
Controls the length of the screen.
4. H. PHASE (Horizontal position control)  
Controls the horizontal display position of the image.
5. H. HOLD (Horizontal synchronization control)  
Controls the image running from left to right.
6. H. SIZE (Horizontal size control)  
Controls the width of the screen. For adjustments, utilize the Alignment Screwdriver.
7. BRIGHT (Brightness control)  
Controls the brightness of the screen.
8. B. GAIN, 9. G. GAIN, 10. R. GAIN  
Control colors  
\* Ordinarily BGR BIAS should not be touched.
11. FOCUS (Focus control)
12. SCREEN—Ordinarily, SCREEN should not be touched.

## Periodic Check

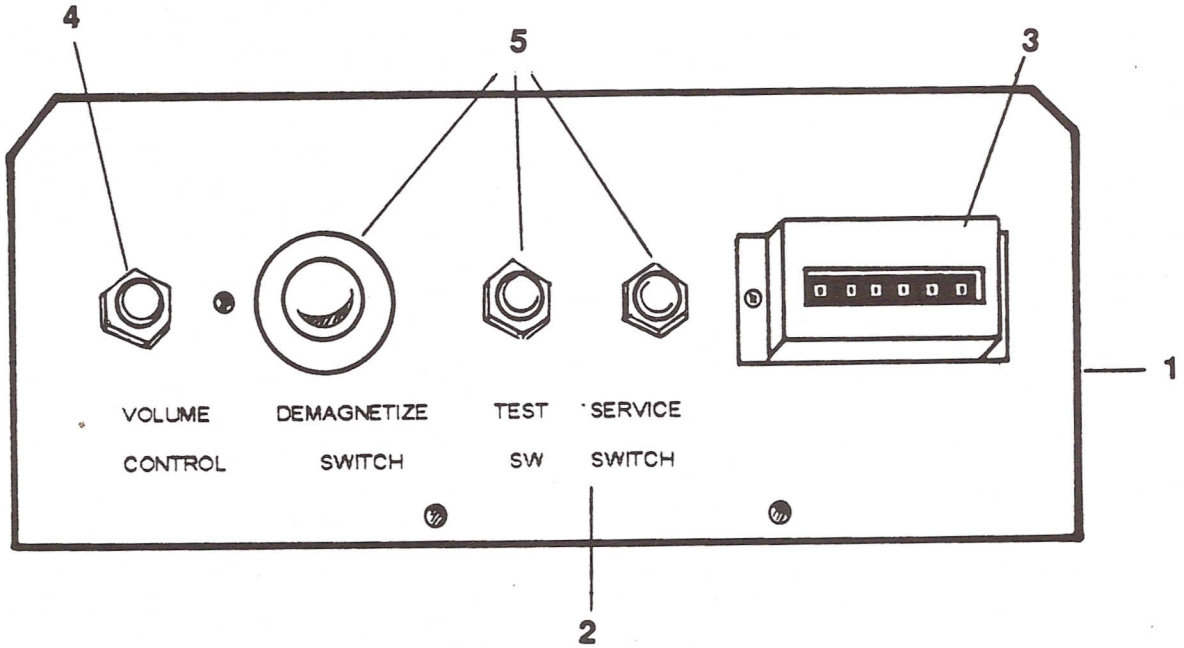
The items listed below require periodic check and maintenance to retain the performance of this machine.

	Item	Interval
CONTROL DEVICE	Check of adjust gear engagement	Trimonthly
	Greasing of adjust gear and bearing	Trimonthly

## Replacement of Fluorescent Lamps



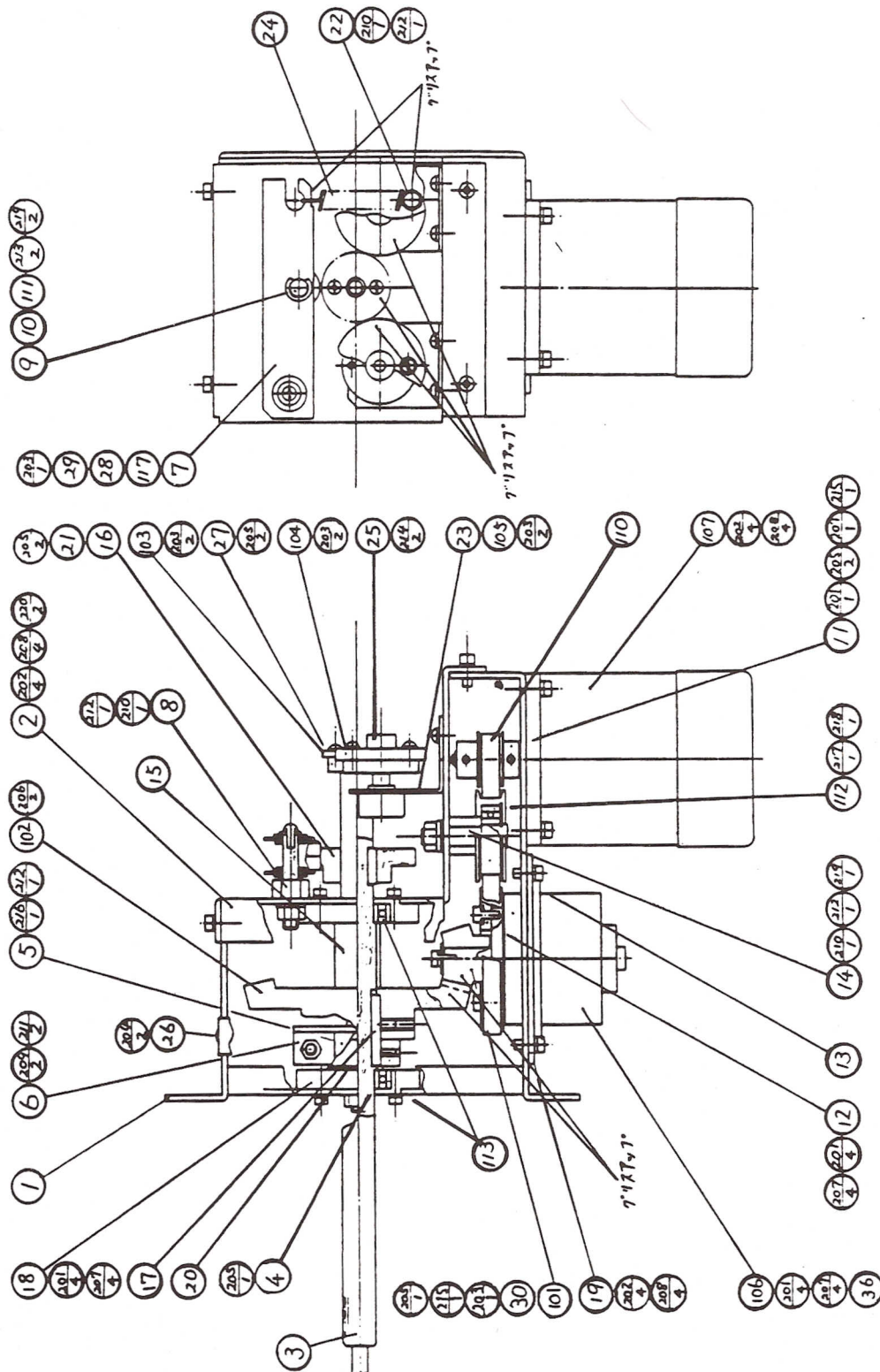
**SW Unit UR**



ITEM NO.	DESCRIPTION
1	Switch Bracket
2	Sticker SW Instr.
3	Coin Meter
4	Vol. Cont. B-5K Ohm
5	SW PB 1M



# Handle Mechanism Assembly



ITEM NO.	PART NO.	DESCRIPTION	ITEM NO.	PART NO.	DESCRIPTION
1	BVG-1311	Handle Base	106	601-6946	Particle Clutch Brake (Ogura OPC-20)
2	BVG-1312	Handle Lid	107	350-5235	Motor AC 100V 1250/1550rpm W/H
3	BVG-1313	Handle Shaft	108	280-5008	Cord Clamp ø15
4	BVG-1314	Stopper Arm	109	601-0460	Plastic Tie Belt 10mm
5	BVG-1315	Stopper Rubber	110	350-5240	Timing Velt 5M Type (375-5M-9)
6	BVG-1316	Stopper Bracket	111	100-5018	Ball Bearing ø8
7	BVG-1317	Swing Arm	112	100-5133	Bearing ø32 (NSK 6201 ZZ)
8	BVG-1318	Swing Arm Shaft	113	100-5112	Bearing ø17 (NSK 6003 ZZ)
9	BVG-2112	Bearing Shaft	114	209-0023	Conn. Closed End
10	SOR-2113	Spacer	115	310-5029-F10	Sumitube F F10MM
11	BVG-1319	Drive Pulley	116	310-5029-G20	Sumitube F G20MM
12	BVG-1320	Driven Pulley	117	100-50041	Bearing (NSK F688 ZZ)
13	BVG-1321	Tensioner Pulley	201	029-0427	Hex Socket H Cap Screw M4 x 10
14	BVG-1322	Tensioner Shaft	202	029-0428	Hex Socket H Cap Screw M5 x 12
15	BVG-1323	Center Collar	203	000-0412-FS	M Screw PH W/FS M4 x 12
16	SLC-1141X	White Cam	204	000-0310-FS	M Screw PH W/FS M3 x 10
17	BVG-1324	Stopper Key	205	028-0019	Set Scr. Hx Skt Cp UNBR M4 x 8
18	BVG-1325	Bearing Housing	206	028-0053	Set Scr. Hx. Skt Cp M6 x 8
19	BVG-1326	Clutch Plate	207	061-0004	Spr. Washer M4
20	BVG-1327	Spacer 20-26 x 2	208	061-0005	Spr. Washer M5
21	POW-2008	Key	209	061-0006	Spr. Washer M6
22	BVG-1329	Spring Hook	210	061-0008	Spr. Washer M8
23	BVG-1330	VR Bracket	211	050-0006	Spr. Washer M6
24	BVG-1331	Ext. Spring	212	050-0008	Spr. Washer M8
25	BVG-1221	Gear Holder	213	065-0007	E Ring 7mm
26	BVG-1339	Wire Lid	214	028-0034	Set Screw Hex Sockt Cup M3 x 8
27	SLC-1130	Adjust Ring	215	069-0007	Flat Washer 4.4-16 x 1.6
28	BVG-1340	Flat Washer 8.1-12 x 2	216	030-0845	Bex Bolt M8 x 45
29	BVG-1341	Flat Washer 4.1-12 x 2	217	069-0144	Stp Ring S12
30	BVG-1342	Key 4 x 3.7 x 16	218	069-0145	Stp Ring H32
31	BVG-1344	Adjust Plate 0.2	219	060-0008	Flat Washer M8
32	BVG-1345	Adjust Plate 0.4	220	060-0005	Flat Washer M5
33	BVG-1346	Adjust Plate 0.6	221	069-0148	Flat Washer 200-26 x 0.2
34	BVG-1347	Adjust Plate 0.8	301	600-6190-37	Wire Harn. Handle VR
35	BVG-1348	Adjust Plate 1.0	302	600-6190-139	Wire Harn. Handle VR2
36	BVG-1349	Spacer Plate	303	600-6190-140	Wire Harn. Motor
101	601-6957-92	Bevel Gear 15			
102	601-6958	Bevel Gear 60			
103	601-6172	Gear 48			
104	601-6959	Gear 64			
105	220-5373	Vol. Cont. B-5K Ohm			