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Williams®
WMS GAMING INC.

Gaming Device

Model 351 Service Manual

For Slant Top Video Gaming Devices

- Installation
- Play Adjustments
- Diagnostics
- Maintenance
- Troubleshooting
- Parts

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coins. The hopper responds by dispensing a coin or coins. A coin-out sensor detects each coin leaving the hopper. The sensor transmits this information back to the CPU Board.

Touch SHUT OFF HOPPER to disable the hopper motor and engage the brake. The CPU responds by deactivating the SSR. The SSR switches off the hopper motor and applies the brake.

Touch EXIT to leave the Hopper Test Window.

Sound

Touch SOUND to display the Sound Window. This window enables you to adjust GD sound volume and test the sound hardware.

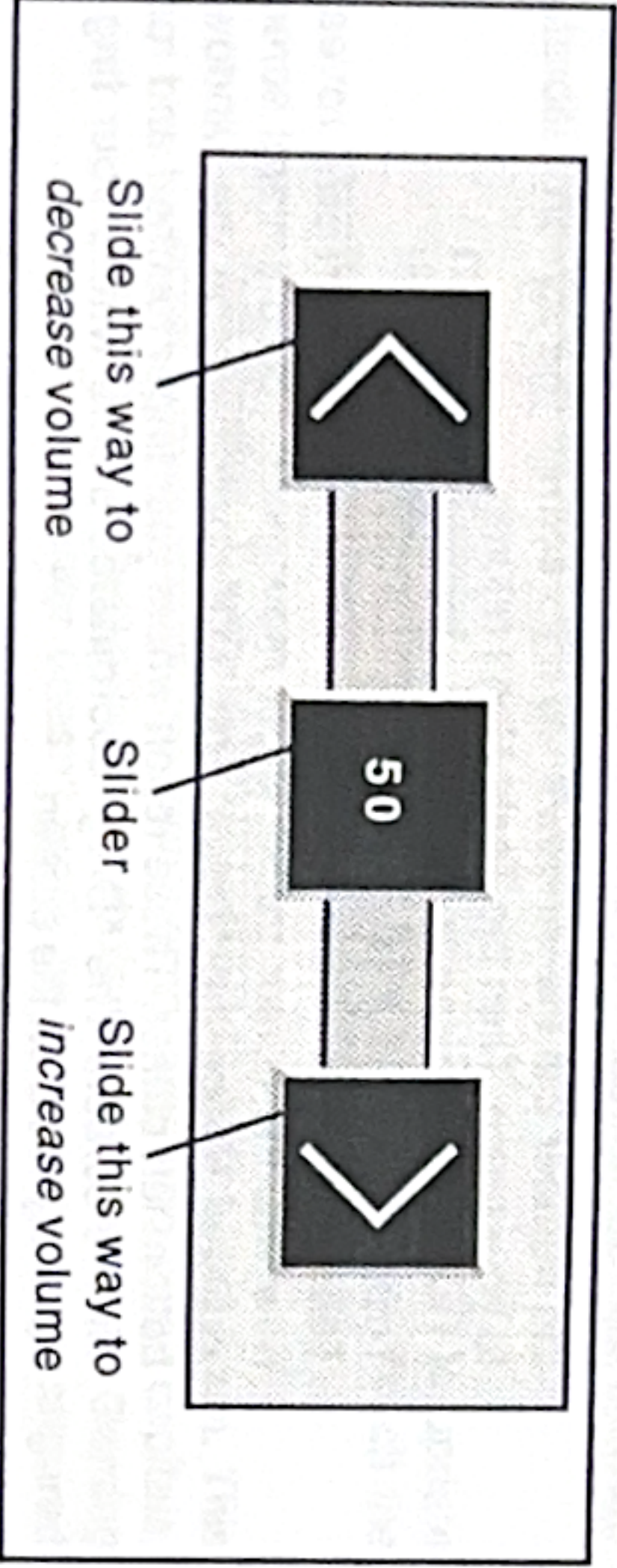
Sound Samples

The SOUND window contains four sound sample buttons...

- LOW TONE
- HIGH TONE
- WARNING TONE
- NOISE TONE

Touch LOW TONE, WARNING TONE or HIGH TONE for a test sound. The LOW TONE, WARNING TONE and HIGH TONE buttons each test one audio frequency band. The system should reproduce all sounds at about the same volume. Listen for volume changes, distortion, missing sounds or intermittent sounds.

Touch NOISE TONE, and the GD outputs noise across all audio bands. Listen for an absence or unusual emphasis of high, low or midrange sound.



Volume

Notice the two-pointed, "MASTER VOLUME" arrow below the sound sample buttons. Between the arrows is a slider box. Use the arrows and slider to set the GD's non-award sound volume. You can move the slider through the volume range of zero to 255...

- Touch the right arrowhead to raise the level in small steps.
- Touch the left arrowhead to reduce the level in small steps.
- Touch the arrow body beside the slider to change the volume in large steps.
- Drag the slider right to smoothly increase sound volume.
- Drag the slider left to smoothly reduce sound volume.

Award Volume

Touching Award Volume adds two sliders to the VOLUME window...

- Large Award Volume
- Top Award Volume

The MASTER VOLUME slide control that we described above continues to function the same way. The other two sliders operate in the same manner as the MASTER VOLUME slider. Use the other two sliders to raise or reduce the sound volume during awards.

Sound Call

Touch SOUND CALL to display a numeric keypad. This keypad allows you to test sounds at various EPROM locations by entering addresses. Typical addresses appear in the table Sound Call Test. Depending on which sound EPROMs it uses, your machine may include sounds at these addresses. As you may have guessed, sound calls are primarily factory tests. Yet you can use sound calls to check volume settings and audio hardware performance. Touch keypad keys to enter each digit of an address in decimal notation. Touch the arrow to advance to the next digit of the address.

Comm Status

Touching COMM STATUS opens the COMM STATUS window. In this window, choose the type of serial communications that your GD uses: RS-232 or RS-422/485. (Connectors for the two serial ports reside on the Backplane Board. You'll find the Backplane Board behind the Electronics Door.) Touching a button makes a selection and closes the window.

The LOOPBACK TEST checks the GD's communication port. This test requires some hardware preparation. Follow this procedure...

- 1. Find the GD's serial port on the Backplane Board inside the Electronics Door. The serial port uses a DB9 connector.
- 2. Connect GD serial port pins 2 and 3 together. Or connect the GD to a terminal (or a PC running a terminal program).
- 3. Touch LOOPBACK TEST to initiate the test. If you have a printer machine, the GD prints alphanumeric characters. The GD screen reports the message "COMM = BAUD 2400, 8,N,1."
- 4. Touch EXIT to quit the test.

I/O

I/O Test options allow you to test GD switches. This submenu includes six I/O (Input/Output) tests...

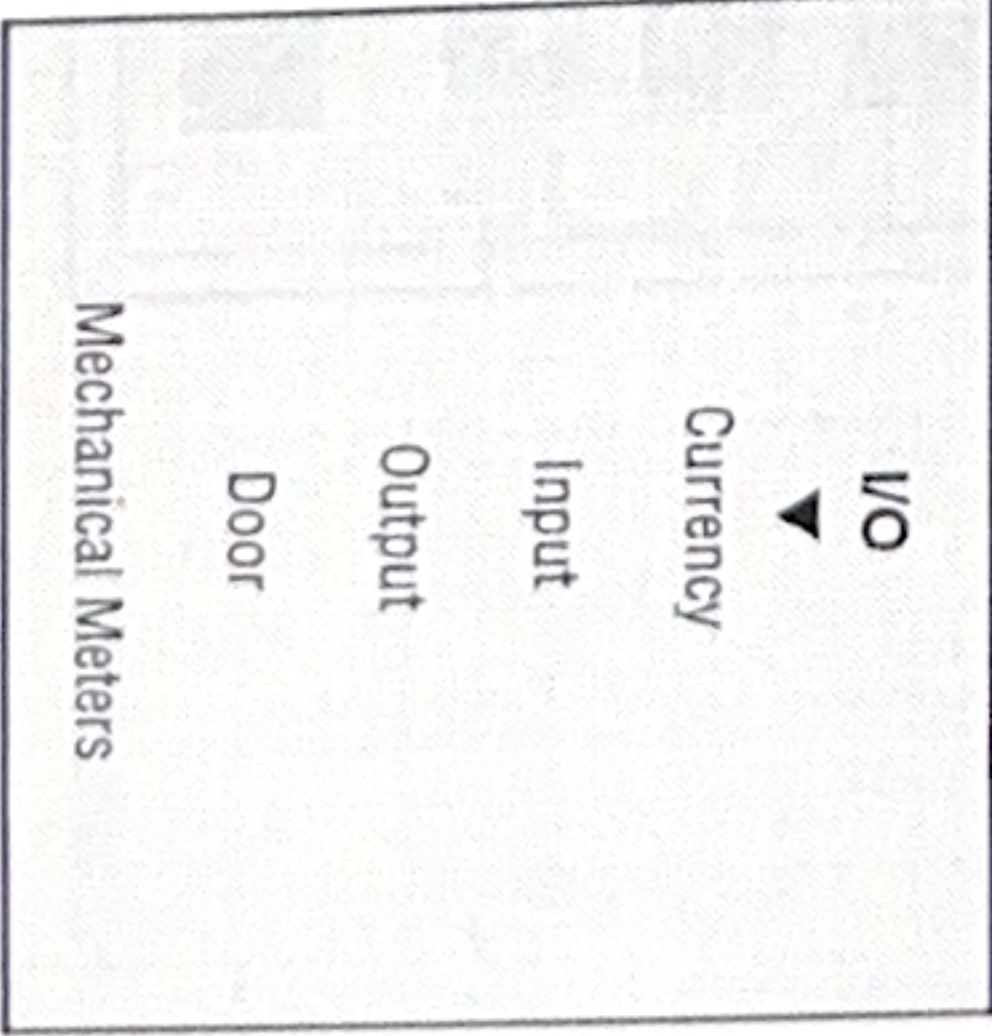
- CURRENCY
- DOOR
- INPUT
- MECHANICAL METERS
- OUTPUT

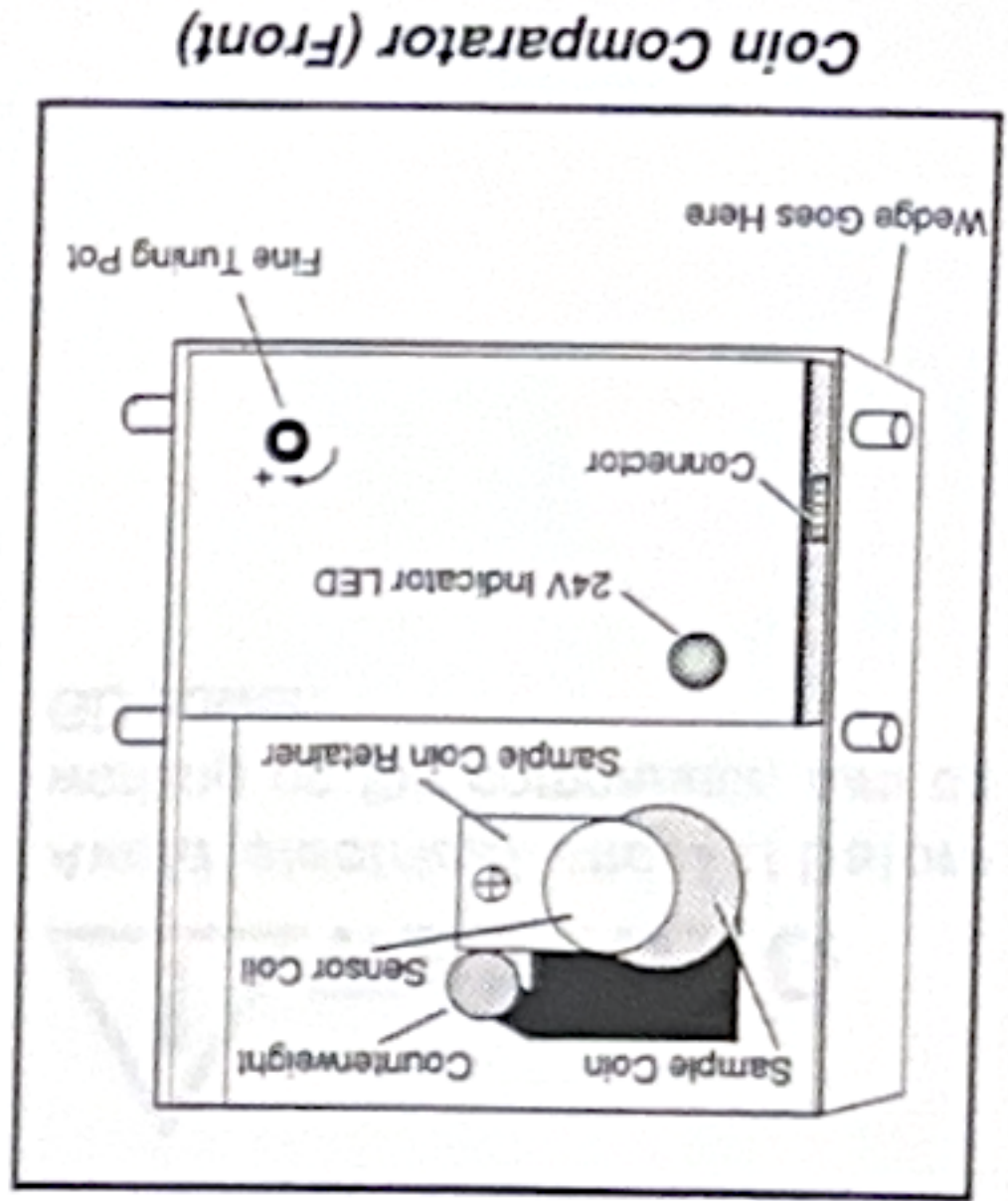
Currency

The CURRENCY Test checks coin and bill validators. Initiate this test by touching the CURRENCY screen button. Now select the type of coin and bill acceptors installed in your GD...

- CC16
- CC40
- NRI

Sound Call Test	
Sound	Address
Alert, Diagnostic	980
Bang, End	121
Bang, Start	122
Beep 1	985
Beep 2	986
Beep 3	987
Beep 4	988
Beep 5	989
Beep 6	990
Beep 7	991
Beep 8	992
Beep 9	993
Beep 10	994
Beep 11	995
Beep 12	996
Beep 13	997
Beep 14	998
Beep 15	999
Beep 16	1000
Beep 17	1001
Beep 18	1002
Beep 19	1003
Beep 20	1004
Beep 21	1005
Beep 22	1006
Beep 23	1007
Beep 24	1008
Beep 25	1009
Beep 26	1010
Beep 27	1011
Beep 28	1012
Beep 29	1013
Beep 30	1014
Beep 31	1015
Beep 32	1016
Beep 33	1017
Beep 34	1018
Beep 35	1019
Beep 36	1020
Beep 37	1021
Beep 38	1022
Beep 39	1023
Beep 40	1024
Beep 41	1025
Beep 42	1026
Beep 43	1027
Beep 44	1028
Beep 45	1029
Beep 46	1030
Beep 47	1031
Beep 48	1032
Beep 49	1033
Beep 50	1034
Beep 51	1035
Beep 52	1036
Beep 53	1037
Beep 54	1038
Beep 55	1039
Beep 56	1040
Beep 57	1041
Beep 58	1042
Beep 59	1043
Beep 60	1044
Beep 61	1045
Beep 62	1046
Beep 63	1047
Beep 64	1048
Beep 65	1049
Beep 66	1050
Beep 67	1051
Beep 68	1052
Beep 69	1053
Beep 70	1054
Beep 71	1055
Beep 72	1056
Beep 73	1057
Beep 74	1058
Beep 75	1059
Beep 76	1060
Beep 77	1061
Beep 78	1062
Beep 79	1063
Beep 80	1064
Beep 81	1065
Beep 82	1066
Beep 83	1067
Beep 84	1068
Beep 85	1069
Beep 86	1070
Beep 87	1071
Beep 88	1072
Beep 89	1073
Beep 90	1074
Beep 91	1075
Beep 92	1076
Beep 93	1077
Beep 94	1078
Beep 95	1079
Beep 96	1080
Beep 97	1081
Beep 98	1082
Beep 99	1083
Beep 100	1084





- 1. Open the Monitor Hatch and Electronics Door.
- 2. Turn off the GD at the Power Distribution Unit.
- 3. Lift the coin mechanism and remove it from the GD. Lay the coin mechanism down on the bolster. Be careful not to harm coin mechanism cables.
- 4. Remove the cable that connects the comparator and Hex Opto Board. Grasp the plug and pull it off the jack.
- 5. Remove the coin comparator. Push the coin comparator slightly toward the coin entry. Separate the base of the comparator from

Removing the Coin Comparator

- 1. Open the Monitor Hatch and Electronics Door.
- 2. Turn on the GD.
- 3. Lift the coin mechanism and remove it from the GD. Lay the coin mechanism down on the bolster. Be careful not to harm coin mechanism cables.
- 4. Adjust the fine tuning potentiometer counterclockwise by 1/8 turn. Use a #2 flatblade screwdriver.
- 5. Return the coin mechanism to the GD.
- 6. Close the Monitor Hatch and Electronics Door.
- 7. Insert a high quality slug in the coin slot. The coin comparator should reject the slug. If not, repeat steps 1 through 7.
- 8. Insert a coin of the correct denomination. If the coin comparator rejects the valid coin, advance the fine tuning potentiometer; Turn the pot slightly clockwise. Try the coin again. Repeat this step until the coin passes. As necessary, repeat steps 1 through 8

Coin Comparator Specs for CC-16 Model			
Pin	Function	Notes	
1	Lockout Enable		
2	"Coin In" Output Signal		
3	Not Connected		
4	Not Connected		
5	+12 VDC		
6	Ground		
Coin Diameter Range		0.705-1.575" (17.9-40mm)	2
Max. Coin Thickness		0.100" (2.54 mm)	

NOTES

1. Comparator requires regulated power supply for 12VDC operation. Current: idle, 40 mA; peak, 140 mA.
2. For coin diameters of 1.205 through 1.575" (22.61 through 40mm), use plug spacer.
3. Oversize protection beyond 0.040" (1.02mm) for sample coin requires coin entry slot control.

the mounting bracket. Then pull the coin comparator away from the coin entry and off the mounting bracket. Set the comparator aside for reassembly.

Reassembly

- 1. Mount the comparator. Slide the top comparator stud against the mounting bracket and toward the coin entry. Engage the top comparator stud with the top bracket notch. Pivot the comparator base until the comparator engages the bottom mounting bracket notch. Check to see that the comparator seats properly.
- 2. Replace the cable that connects the comparator and Hex Opto Board.
- 3. Return the coin mechanism to the GD.
- 4. Turn on the GD.
- 5. Close the Monitor Hatch and Electronics Door.

Changing the Coin Comparator Denomination

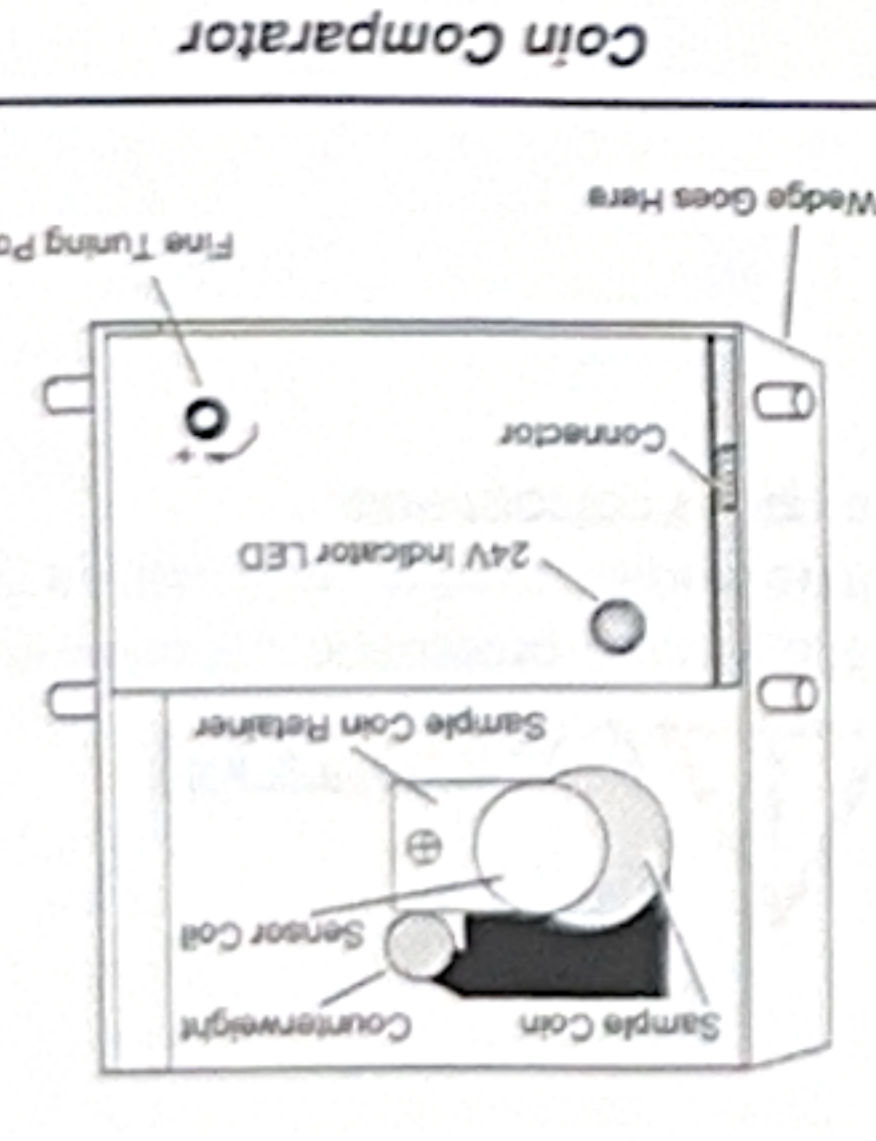
- 1. Slide the coin retainer toward its wires and remove the sample coin.
- 2. Look at the front of the comparator. Above the sample coin retainer, you'll find a thumbscrew. This thumbscrew is the coin counterweight. Unscrew and remove it. Save the counterweight for other conversions.
- 3. Turn the coin comparator upside down. Look at the coin exit, near the white cable connector. At the corner of this exit is a #4 Phillips screw. This screw fastens the plastic coin wedge in place. Remove the screw.
- 4. Use a small, flatblade screwdriver to remove the plastic wedge from the coin exit. Save the wedge for other conversions.

Reassembly

- 1. Be sure that you have the proper coin wedge for your denomination. (See the chart.) Turn the coin comparator upside down. Look at the face of the comparator with the spring. Position the wedge in the side of the coin chute nearest the cable connector. Before you slide in the wedge, locate its mounting screw hole. You'll find the hole at the connector edge

Coin Comparator Table

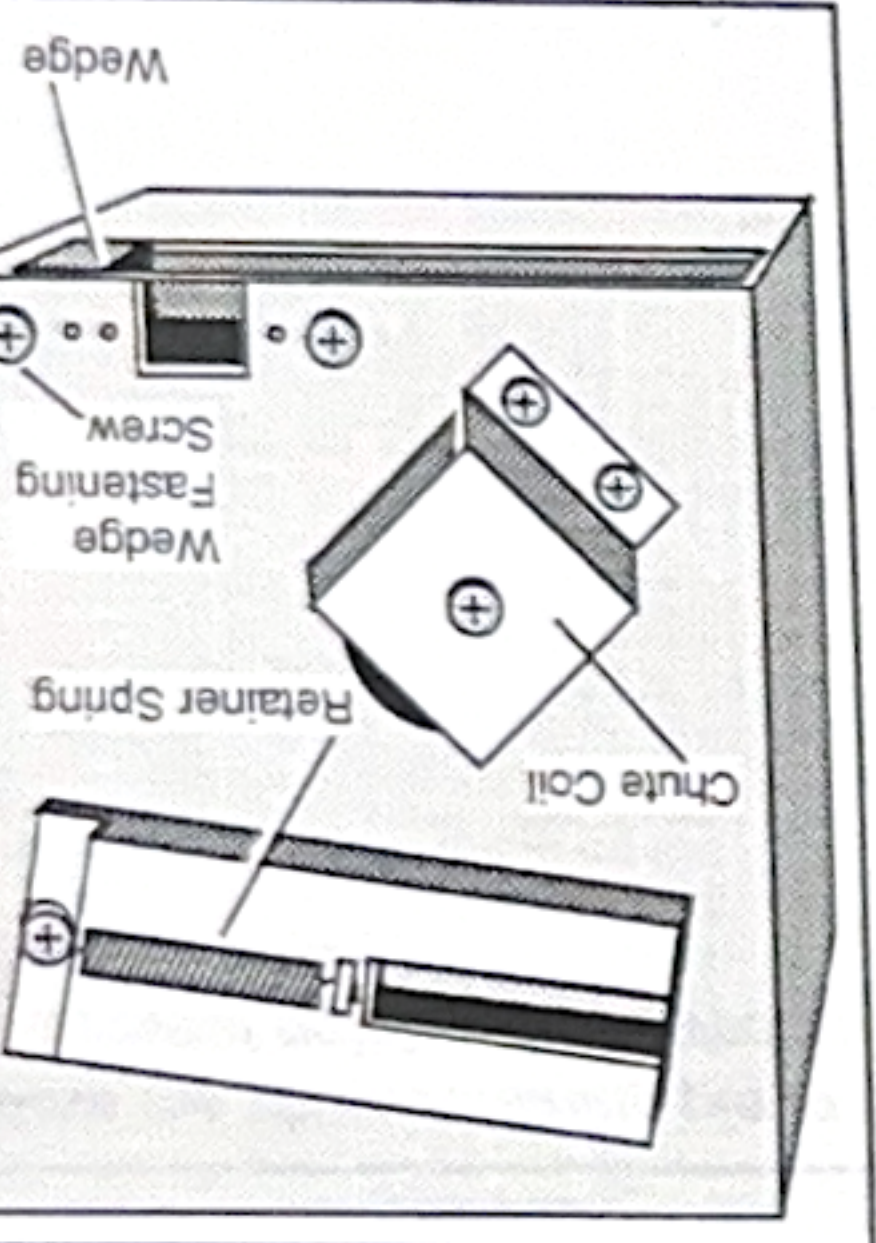
Denom-ination	Coin or Token?	Dia Range (G)	Weight Range (G)	Thickness Range	Comparator Part Number
•US 5¢	Coin	1.250-0.705-	4.4-6.8	0.05 - 0.086	09-42000-1
•SA \$1R	Token	1.250-	6.9-19.6	0.05 - 0.086	09-42000-3
•Can \$1	Token	1.250-	19.7 +	0.075 - 0.115	09-42000-2
•US 50¢					
•SA \$1R					
•US \$1					



Coin Comparator

Game	Part	Denom	Part Number
Wedge	5¢/25¢	03-9140	
Wedge	5¢/25¢	03-9146	
Weight	5¢/25¢	20-10032-01	
Weight	\$1	20-10032-02	

Wedge and Weight Table



Coin Comparator (Back)