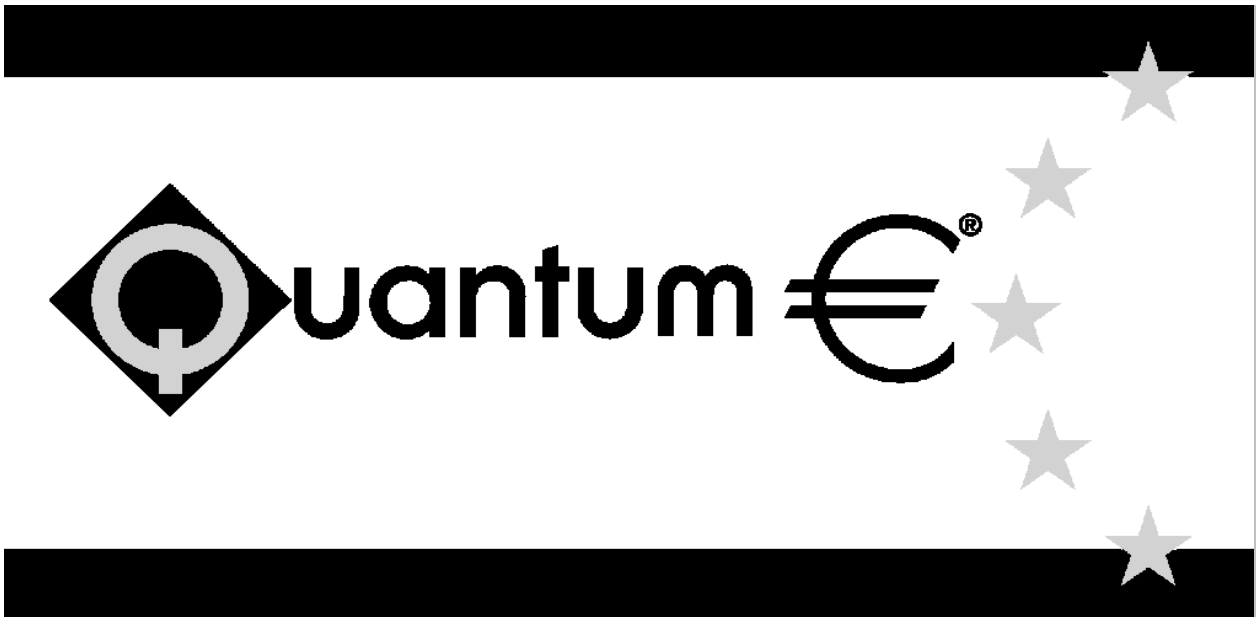


COINCO QUANTUM •®
FOUR TUBE
OPERATION AND SERVICE MANUAL

TABLE OF CONTENTS

SECTION 1: GENERAL INFORMATION

Introduction

This manual contains information on installing, operating and maintaining your COINCO Quantum • four tube coin changer. This manual is intended for owners, route operators and technicians as a primary source of information. Taking time to read this manual and becoming familiar with this information will help you obtain the best performance from your COINCO Quantum• coin changer.

COINCO Quantum • 900 Series changers can accept and validate up to16 different coins or tokens ranging in diameter from 15.0 to 28.0 mm and 1.07 to 2.40 mm in thickness.

For You Records

A label indicating the changer's model number and serial number can be found on the side of the coin changer. Refer to the model number and serial number whenever you call your Coinco Service Center for information or service.

The first four digits of the serial number indicate when the unit was built which is also the beginning of the warranty period. The first two digits indicate the week of manufacture; the third and fourth digits indicate the year of manufacture. For example, Serial Number 030307053 would indicate the unit was manufactured in the 3rd week of 2003.
The model number indicates the country, currency, interface type and payout configuration of the coin changer.

The first three letters of the model number indicate the Country Code (EUQ= European Union).
The fourth letter indicates the changer model (G = MDB).

The first digit of the model number indicates the series of changer (9= 900), and the last two digits represent the changer's payout configuration.

Payout Configuration

	Tube Location			
	A	**B**	**C**	**D**
901	.50	.10	.05	.20
902	.02	.01	.05	.20
904	2.00	.50	1.00	2.00
906	.50	.10	.20	1.00
907	2.00	1.00	1.00	2.00

Example:EUQ-G901= European Union Euro, MDB 900 series, .50-.10-.05-.20 payout

SECTION 1: GENERAL INFORMATION

Features

- The COINCO Quantum • coin changer has a modular design for easy service.
- Individual tubes snap in and out for easy customization.
- Coin tubes are clearly marked with coin denomination in bold white numbers.
- Programmable acceptor allows for easy reconfiguration of coin tubes in the field.
- Hinged front cover simplifies tube removal and serviceability.
- Acceptor "Park Position" allows easy access to the coin tubes.
- Pays change from self-loading high capacity change tubes.
- Two motors provide fast accurate payout.
- All models equipped with the MDB protocol.
- Lightweight, rugged plastic construction.
- State-of-the-art electronic logic system is designed for reliability and performance.

After Unpacking

After unpacking the unit, inspect it for any possible shipping damage. If the unit is damaged, notify the shipping company immediately. Only the consignee (the person or company receiving the unit) can file a claim against the carrier for shipping damage. We recommend that you keep the original carton and packing materials to reuse if you need to transport or ship your changer in the future.

If the coin changer is being stored or used as a spare, always keep it in its shipping carton when not in use. This will keep it clean and offer the best protection for the unit.

Specifications

Power Requirements (by model)

EUQ-G9XX ..... 34V DC
EUQ-G92X ..... 12V DC

Operating Temperature

0 to 150 Degrees Fahrenheit
-18 to 65 Degrees Celsius

Storage Temperature

-22 to 160 Degrees Fahrenheit
-30 to 72 Degrees Celsius

Relative Humidity

20% to 98% Noncondensing

Operating Attitude

Vertical $^{+}$3 degrees

Physical Dimensions

Height: 14.77 inches (base to top of coin return lever)
Width: 5.47 inches
Depth: 3.25 inches (gateopen)
3.00 inches (gate closed)

Shipping Weight

Approximately 3.1 Kilos

Coin Tube Capacity

	Low Sensor Level	Full Sensor Level	Hand Load Level
.01	6	76	86
.02	6	74	86
.05	6	73	86
.10	4	64	75
.20	4	57	68
.50	3	50	61
1.00	3	52	62
2.00	4	56	69

Installing The Changer

1. Remove power from vendor.
2. Remove the acceptor from the changer by pressing down on the acceptor latch, releasing the acceptor. Rotate the top of the acceptor forward, away from the changer (see figures 1 and 2). Unplug the ribbon cable from changer. Free the lower acceptor studs from the changer housing. Place the acceptor in a clean area.
3. With the acceptor removed, set the mounting holes in the back of the changer housing over the mounting screws in the vendor. Tighten snugly (see figure 3).
4. Re-install the acceptor by inserting the lower acceptor studs into the changer housing guides. Plug the ribbon cable into the changer (see figure 2).
5. Plug changer harness into vendor socket.
6. Press top of the acceptor into the changer housing until the acceptor latch locks.
7. Load the tubes with coins (see "Hand Loading" and "Loading Through the Acceptor"). (see figure 4).
8. (Optional) Set the coin tube float levels (refer to "Setting The Float Mode Levels").
9. Check to make sure the front cover and acceptor are properly installed.
10. Apply power to the vendor.
11. Set the desired vend price and options on the machine (refer to "Machine Manual)
12. Test the changer with a variety of coins to ensure proper operation.

SECTION 2: INSTALLATION

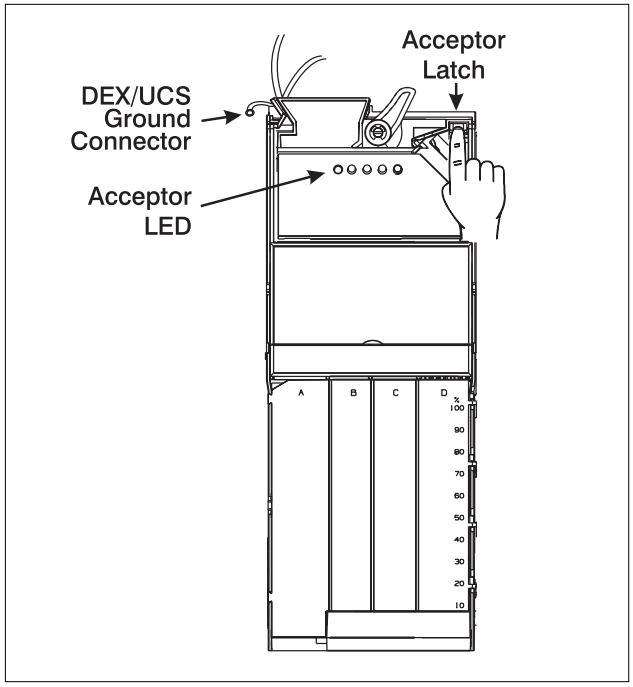


Figure 1

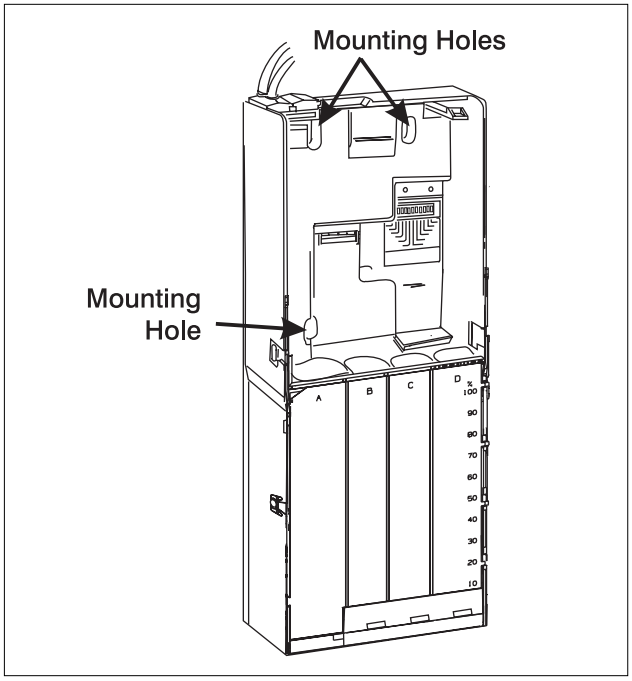


Figure 3

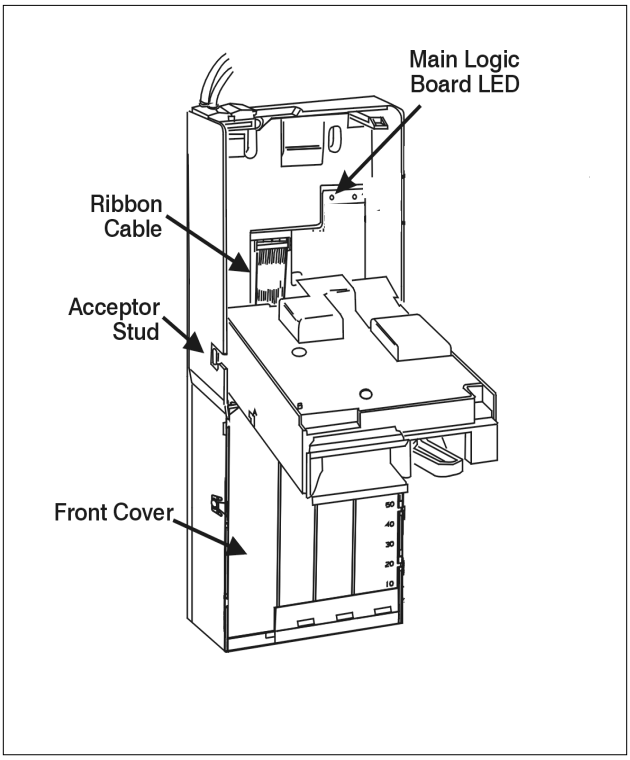


Figure 2

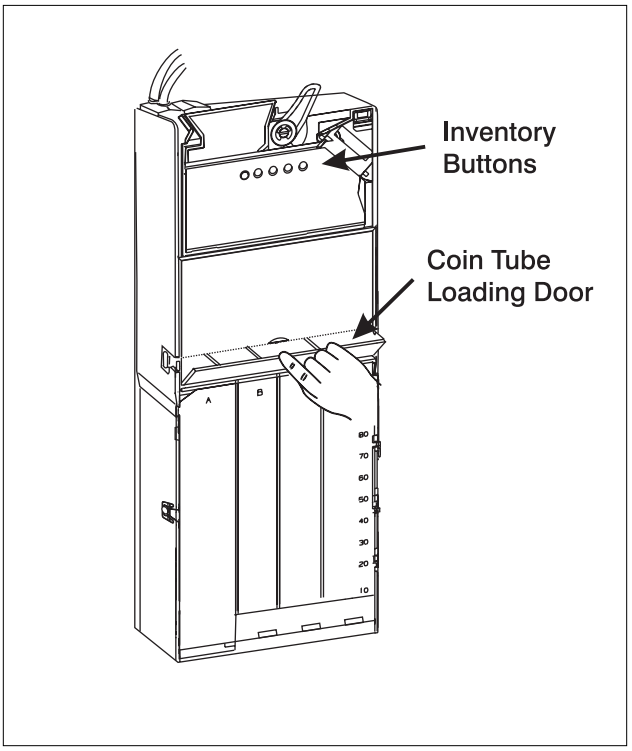
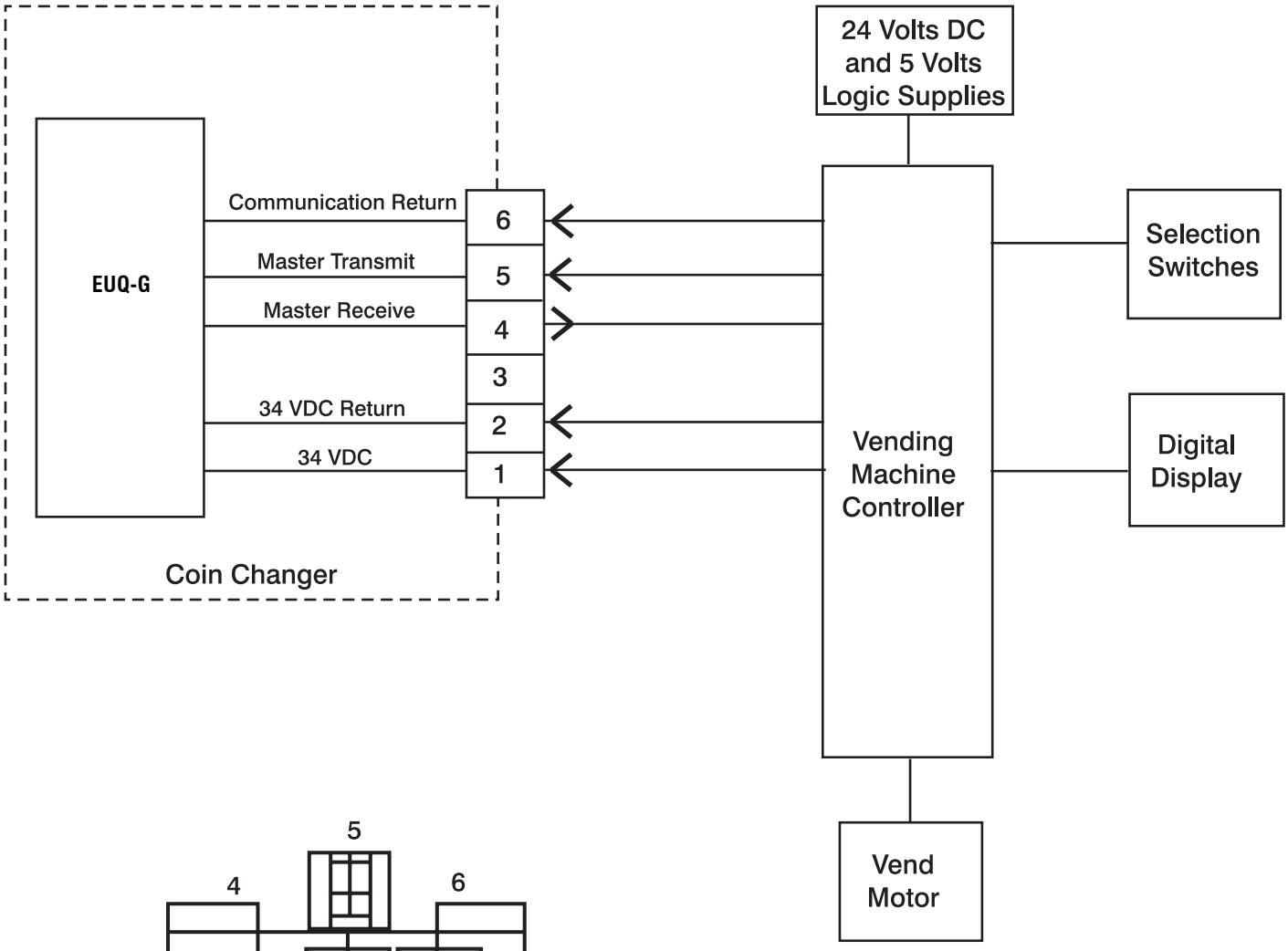
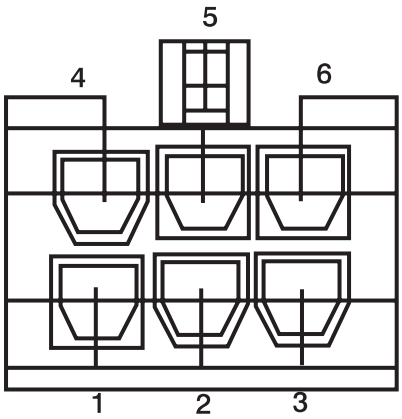


Figure 4

"G" Moddel Controller/Vendor Interface





MDB Coin Changer Plug

MDB

SETTING THE VEND PRICE

Vend prices for MDB coin changers are set through the vending machine controller (VMC). See vending machine manual for details.

Filling the Coin Tubes

HAND LOADING

To hand load the coin tubes, tilt the coin tube loading door open, load the four tubes with appropriate coins. **Make sure all coins lay flat** and that each tube is filled at least to the 20% mark

.01 = 15-16 coins **.02 = 15-16 coins**
.05 = 15-16 coins **.10 = 23-24 coins**
.20 = 18-19 coins **1.00 = 15-16 coins**
2.00 = 18-19 coins

Payout at least two coins from each tube to verify tubes are loaded correctly.

LOADING THROUGH THE ACCEPTOR

Hand laoding coins directly into the coin tubes and making sure they lay flat is one way to fill the Four Tube changer with coins. If you are keeping track of the DEX information for accounting purposes, the coins loaded into the tubes need to be counted by the VMC.

- Use the vending machine controller board's "Tube Fill" or "Coin Fill" mode. Refer to the vending machine manual for details.

MANUAL FILL MODE

Manual fill mode can be used to fill the tubes of the coin changer, through the acceptor, without accumulating credit and having to vend the credit away.

To enter the Manual Fill Mode, press inventory buttons C and D at the same time. The acceptor LED will flash an equal pattern of ON and OFF to indicate the Manual Fill Mode is active. Coins inserted through the acceptor will be routed to their proper tubes. When the upper tube sensor is reached, coins will be directed to the cash box or to the next tube of like coins.

The changer will automatically exit Manual Fill Mode after 45 seconds of no actitivty, or if an inventory switch is pressed and released.

Float Mode

Float Mode is used to reduce the number of coins kept in a tube to a level anywhere between the upper and lower tube sensors.

The Quantum changer supports one of two factory programmed Float Mode operations. They are Float Level and Float Pay-Down..

FLOAT LEVEL (standard on EUQ models)

In Float Level, coins are filled to a chosen level betweeen the upper and lower tube sensors. Once the Float Level is set, coins will only be routed to the tube if a coin was paid out for change. Accepted coins normally routed to that tube will be sent to the cash box.

FLOAT PAY-DOWN (Optional, can be set in the factory or via Quantum Tools)

In Float Pay-Down, coins are filled to a chosen level between the upper and lower tube sensors. Once the level is set, coins will continue being routed to the tube until the upper sensor is covered, then they will be routed to the cash box. Activating the Float Pay-Down by pressing inventory buttons A and B simultaneously will pay down any coins above the level you previously set. After the coins are paid down, the acceptor will automatically go into manual fill mode. In manual fill mode, the acceptor will only route coins to tubes that are below the set level. Once the level is reached, the coins will be rejected.

SETTING THE FLOAT MODE LEVELS

The Float Mode Levels for both Float Level and Float Pay-Down are set for all four tubes using the acceptor inventory buttons.

1. Using "Tube Fill", "Coin Fill", or Manual Fill mode, fill the four tubes to the float level you want the changer to maintain.
2. Press and release the A and D inventory buttons simultaneously. The acceptor LED will flash an equal ON and OFF pattern.
3. Within two seconds, press and release inventory buttons B and C at the same time to store the tube levels and turn the Tube Float Mode ON. The acceptor LED will now display a flash pattern of 10% ON and 90% OFF to indicate the levels are set.

Note: To turn off the Float Mode, repeat steps 2 and 3.

ACTIVATING FLOAT PAY-DOWN

Press and release acceptor inventory buttons A and B simultaneously. After the tubes pay down, Manual Fill Mode is automatically entered to allow low tubes to be replensihed through the acceptor. When the float levels are reached, coins are directed to the coin return. The changer will automatically return to operating mode after 45 seconds of no activity or if any inventory button is pressed and released.

Changing the Coin Tubes

REMOVING/REPLACING THE TUBES

To change the coin tubes, remove the acceptor from the changer housing. Next, open the front cover by gently pulling outward on the left side, swinging it open to the right.

Remove the four inventory tubes one at a time (starting from the left side and working to the right) by pulling upward.

Replace the tube and shim assemblies by inserting the tube's dovetails into the guides in the housing and push down.

SECTION 3: CONFIGURATION

TUBES AND SHIMS

The coin tubes for your Quantum changer are diffdifferent sizes to accommodate the different diameter coins.

Each coin tube has a removable, color-coded shim which adjusts the tube for the coin's thickness.

For **EUQ** coin changers, the COIN/TUBE/SHIM combinations areas follows:

COIN	TUBE#	PART#	SHIM	PART#	TUBE/SHIM ASSY#
.01	#10	408270-1	(Blue)	921462	408282-1
.02	#9	408270-2	(Blue)	921462	408282-2
.05	#7	408270-3	(Blue)	921462	408282-3
.10	#8	408270-4	(Lt. Gray)	921802	408282-4
.20	#7	408270-5	(Lt. Gray)	921802	408282-5
.50	#5	408270-6	(Lt. Gray)	921802	408282-6
1.00	#6	408270-7	(Dk. Gray)	922023	408282-7
2.00	#4	408270-8	(Lt. Gray)	921802	408282-8

The shims are removed and replaced by sliding them on or off of the bottom of the tube. Do not reuse shims. Continuous installation and removal can stress the plastic, causing the shims to lose their ability to stay firmly in place. The shim is installed correctly if tits part number is visible looking at it from the rear of the tube.

Rerouting the Coins

Whenever the coin tubes are rearranged, the programmable acceptor has to be reconfigured to route accepted coins to either the correct tube or vendor cashbox.

To reconfigure the acceptor, apply power to the Quantum • changer.

· Press inventory buttons A B and D simultaneously for 2 seconds (until the acceptor LED goes out).

· Release the inventory buttons, and the LED will flash an alternating pattern of 1-second ON/ 1second OFF, then 2 seconds ON/ 2 seconds OFF. This indicates the rerouting process is waiting for a coin destination (coin tube or cashbox) to be selected.

· To select a coin tube, press and release its inventory button. Once the coin destination has been selected, the LED will flash a 1-second-50% ON / 50% OFF sequence.

· Drop the appropriate coin for the tube you have chosen into the acceptor. An accepted and validated coin will be routed and assigned to the tube you've chosen.

Example: For a payout configuration of
.50 – .10 – .05 – .20 (EUQ-901)

-Press and release inventory button A, insert a .50 coin through the acceptor.
-Press and release inventory button B, insert a .10 coin through the acceptor.
-Press and release inventory button C, insert a .05 coin through the acceptor.
-Press and release inventory button D, insert a .20 coin through the acceptor.

Any coin dropped through the acceptor before a coin tube is selected will be routed to the vendor's cashbox. Valid coins not assigned to a tube will also be routed to the cashbox.

· To save the new routing information and exit the routing mode, hold the coin return lever down for 4-5 seconds (until the acceptor LED returns to its normal pattern) or wait 45 seconds and the changer will automatically save the routing information and exit this mode.

NOTE: If power is removed from the changer before the rerouting information is saved, all new routing information will be lost.

SECTION 4: MAINTENANCE

Routine Maintenance

Routine maintenance will improve performance and extend the life of your Quantum changer and reduce the need for more involved repairs. Frequency of maintenance will depend on environment and number of transactions.

The coin changer should be kept in its original shipping carton when not in use. This will keep the changer clean and offer the best protection for the unit.

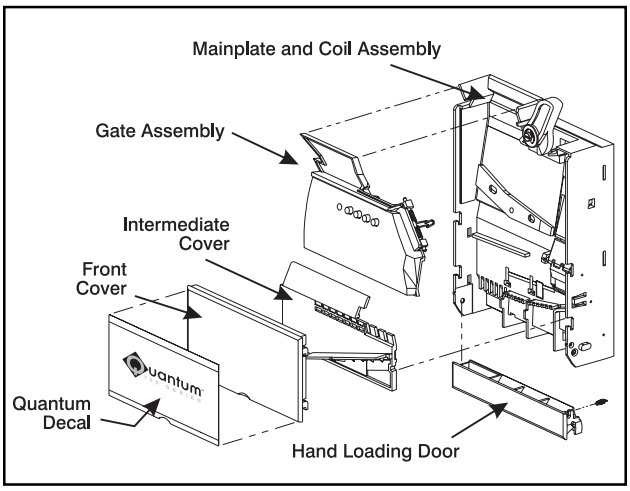


Figure 6

Cleaning

The majority of your Quantum changer is manufactured from a high-quality plastic, which should be cleaned with a warm water and mild detergent solution.

CAUTION:
- **Never submerge changer in water.**
- **Do NOT use petroleum solvents, steel wool, scouring pads, or metal brushes for cleaning.**
- **Do not spray any part of the changer with any type of lubricant.**

Since all coins share a common coin ramp, heavy usage or a dirty environment can result in dirt build-up in the acceptor. To clean the coin ramp, lift the acceptor gate upward and diagonally to the right. Hold the gate to prevent it from snapping back. Wipe the exposed coin ramp and inner surfaces with a damp cloth. Be cautious not to harm the coin stabilizer (clear, thin piece of film). If the coin stabilizer looks buckled, wrinkled, or is peeling off, replace it at this time.

For excessively dirty units, use a damp cloth with a mild detergent***. DO NOT SUBMERGE UNIT IN WATER.***
For more detailed cleaning of the acceptor, remove the front cover by opening the coin tube loading door and wedge your thumb underneath the front cover. To remove the cover, push out and up. Next, remove the intermediate cover using a small screwdriver to release tab on the right side of the acceptor. Pivot the intermediate cover out towards the left. Lift the metal debounce rail out of the acceptor. You are now able to fully clean the interior coin rail, gates and the intermediate cover (pay attention to the mirrored surface on the intermediate cover). Reassemble the acceptor in the reverse order.

NOTE: When installing the intermediate cover, make sure the metal debounce rail is in place and raise the anti-stringing door on the accept/ reject gate before snapping the cover in place.

Removing/Replacing Individual Assemblies

ACCEPTOR

To remove the acceptor, press down on the acceptor latch and pull the top of the acceptor forward and away from the changer housing. Unplug the ribbon cable from the changer. Raise the acceptor and pull outward until the acceptor clears the housing slots.

FRONT COVER AND TUBE SHIELD

Remove the front cover by swinging the door open to the right. Lift the front cover off of the hinges on the changer housing. Lift the tube shield off the top of the coin tubes.

REMOVING THE TUBES

The tubes are held in place by 3 sets of tabs that secure it to the payout base.
To remove the tubes, start with the tube on the left side and pull it straight up. Working your way to the right, remove all four individual tubes.

REMOVING THE LOGIC BOARD COVER

To remove the logic board cover, first remove the strain relief bracket and screw. Next, remove the screw in the lower center portion of the logic board cover. Lift the cover out.

REMOVING THE UPPER TUBE SENSOR BOARD

Connected to the bottom of the main logic board is the upper tube sensor board. To remove the sensor board, release the locking tab and gently pull the sensor board out. As you pull the sensor board out, hold the main logic board in place and the sensor board will unplug from the main logic board.

REMOVING THE LOGIC BOARD

Unplug the remaining harnesses from the main logic board and lift it out of the housing.

REMOVING THE PAYOUT BASE ASSEMBLY

With the harnesses disconnected from the main logic board, remove the two screws (one on each side) from the changer housing. Lay the changer on its back and spread the sides of the housing apart. Pull up and out on the payout base assembly.

REMOVING THE CASHBOX CHUTE

From the backside of the changer housing, remove the tape seal from the cashbox chute. Lift the bottom of the chute up and slide the cashbox chute out.

Clearing Coin Jams

Should a coin jam occur in the cash box chute area, use the following steps to help dislodge the coins:

1. Remove changer from vendor.
2. From the backside of the changer housing, remove the tape seal from the cashbox chute. Lift the bottom of the chute up and slide the cashbox chute out.
3. Remove any lodged coins.
4. Replace the cashbox chute by pressing in and up to snap into place.

SECTION 5: TROUBLESHOOTING

TROUBLESHOOTING GUIDE

TROUBLE	POSSIBLE CAUSE	PROCEDURE	REMEDY
No Coin Acceptance	No power	Make sure changer is plugged into vendor.	Plug changer into vendor.
	Acceptor	Check Acceptor LED. If LED is on, replace acceptor.	Replace acceptor.
		If still no coin acceptance,	Replace changer's main logic board.
		If still no coin acceptance,	Replace changer's main power harness.
		If Acceptor LED is off, check to see that acceptor cable and changer power harness are properly connected to changer's main logic board.	Plug acceptor cable and/or changer power harness into changer main logic board.
		If still no coin acceptance,	Replace changer's acceptor logic board.
		If still no coin acceptance,	Replace changer's main power harness.
	No vend price set	Set vend prices (see "Setting The Vend Price" section of this manual)	
No Coin Acceptance Rejects Percentage of Good Coins	Coin Return Lever	Make sure changer is mounted correctly and coin return lever is in proper position	Reposition changer and/or vendor coin return.
	Acceptor is dirty or foreign matter in coin accept path	Check to see that acceptor coin path is clean and free of matter	Clean acceptor and remove any foreign matter.
		If still rejects good coins,	Replace acceptor.
		If still rejects good coins,	Replace changer's main logic board.
Accepts Coins But Gives No/Or Erratic Credit	Acceptor	Replace acceptor with good acceptor and test to see if changer functions properly.	Replace defective acceptor.
		If still no/erratic credit,	Replace changer's main logic board.
		If still no/erratic credit,	Replace changer's main power harness.

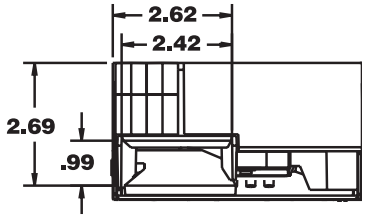
SECTION 5: TROUBLESHOOTING

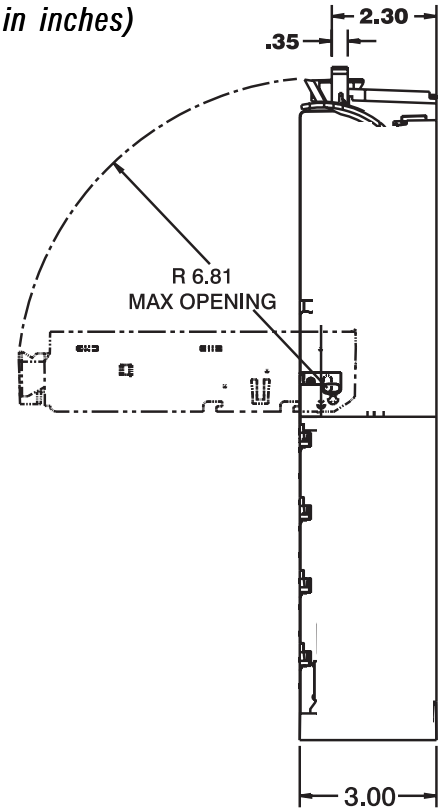
TROUBLESHOOTING GUIDE

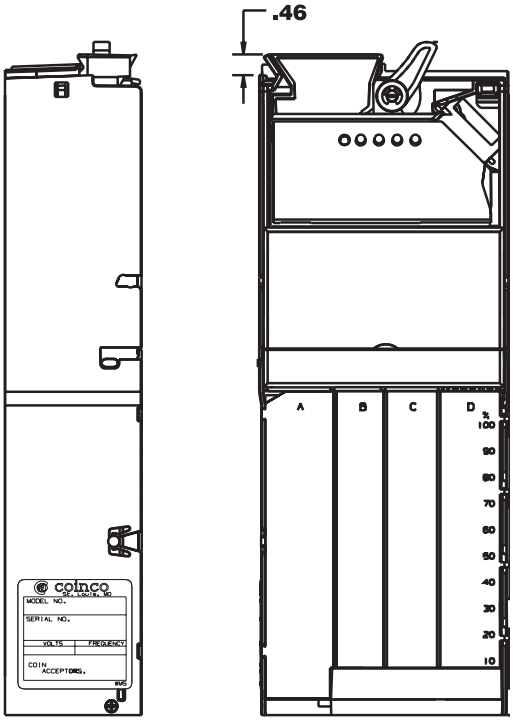
TROUBLE	POSSIBLE CAUSE	PROCEDURE	REMEDY
Accepted Coins Always Go to Cashbox	Front Cover	Check front cover for proper installation, check the mirrors	Clean or replace front cover.
	Acceptor	If coin still goes to cashbox, replace acceptor with good acceptor and test to see if changer functions properly.	Reprogram acceptor coin routing.
		If coin still goes to cashbox,	Replace acceptor.
	Tube Sensor Board	Check the sensor board for loose components. Make sure tube sensor board is properly secured to main logic board. Check cable from sensor board for damage or improper connection.	Replace tube sensor board.
		If coin still goes to cashbox,	Replace changer's main logic board.
Accepted Coins Always Go To Coin Tubes	Coin tube gate is in the open position	Remove acceptor back cover and check solenoid for free operation.	Replace acceptor.
	Tube Sensor Board	Replace tube sensor board with good board and test to see if changer functions properly.	Replace tube sensor board.
		If coins still go to tubes,	Replace changer's main logic board.
Changer Credits Coins But Does Not Escrow	Vendor	Make sure VMC is set to allow escrow	See vendor set up manual
	Coin return lever	Make sure changer is mounted correctly and acceptor gate opens when vendor coin return lever is operated.	Reposition changer and/or vendor coin return lever.
	Acceptor	Replace acceptor with good acceptor and test to see if changer operates correctly.	Replace defective acceptor.
No Payout	Payout Motor	Make sure motor wires are properly connected to changer's main logic board.	Plug motor wires into main logic board.
		If still no payout, replace motor with good motor and test to see if changer operates properly.	Replace defective payout motor.
		Make sure coin is routed to that tube.	

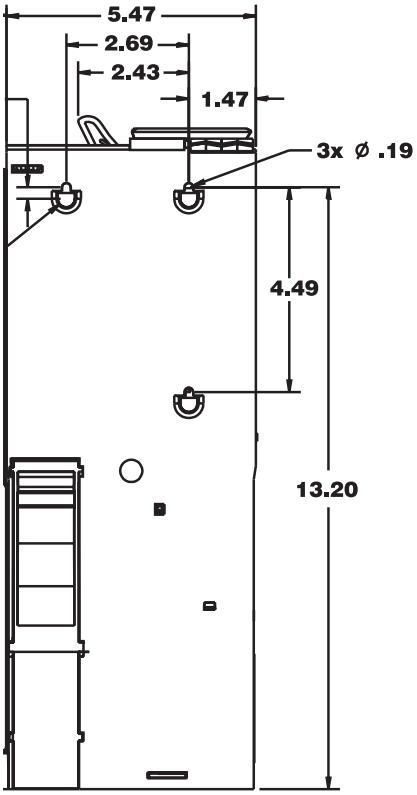
900 Series Dimensional View

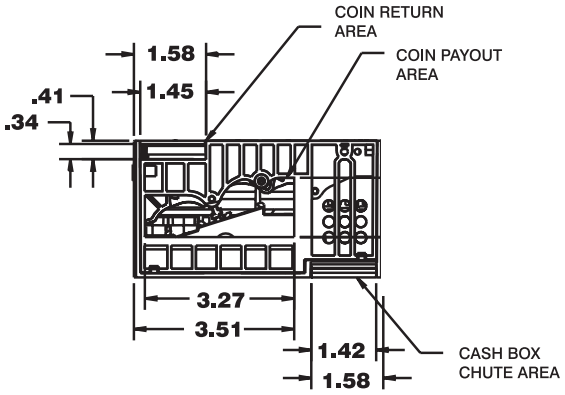
(All measurements are shown in inches)





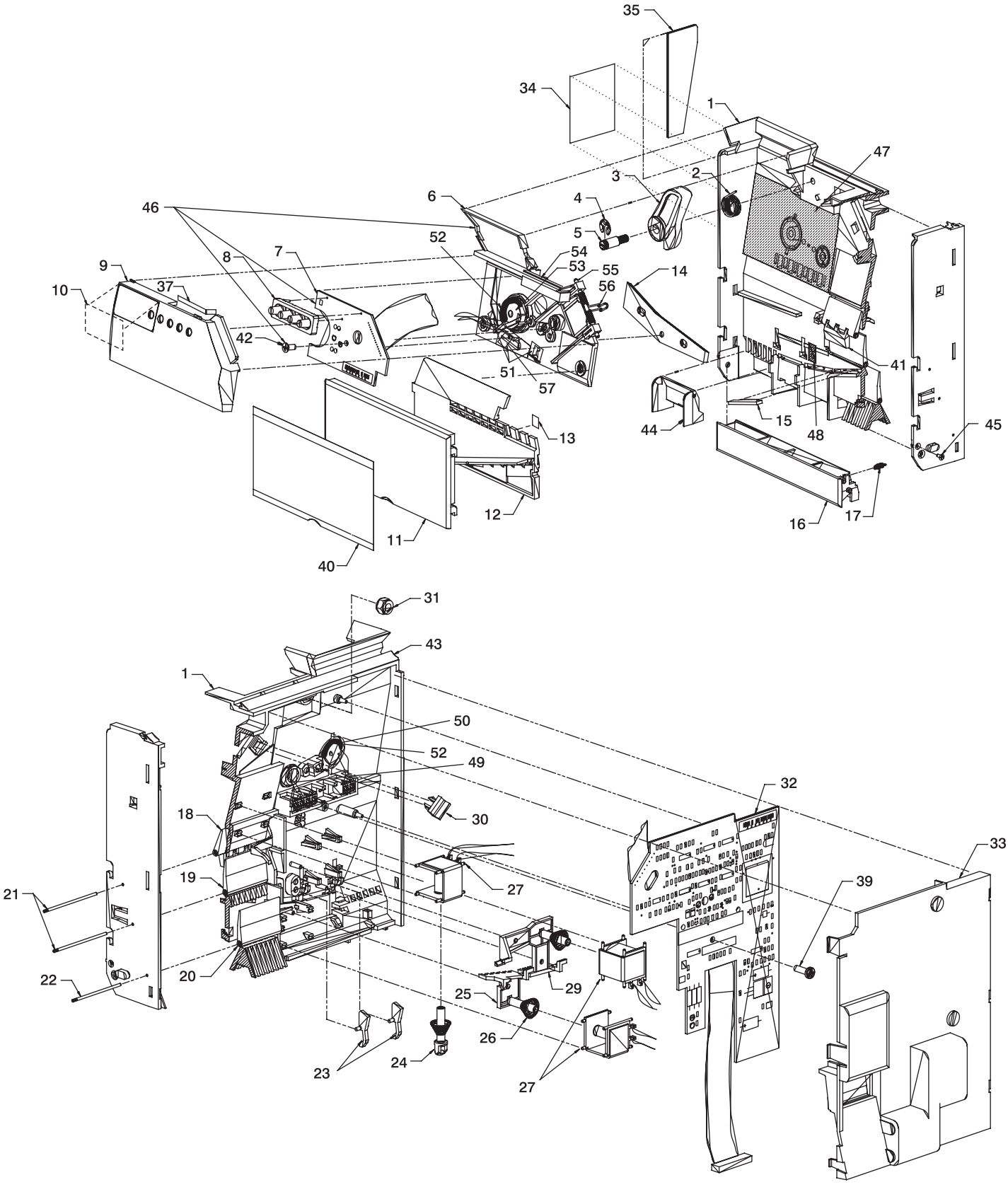






SECTION 6: EXPLODED VIEWS

900 Series Acceptor Assembly



SECTION 6: EXPLODED VIEWS

ITEM		DESCRIPTION	QTY
1		Mainplate and Coil	1
2		Operating Lever Spring	1
3		Operating Lever	1
4		Retaining Ring	1
5		Gate Lever Pivot Screw	1
6		Gate and Coil Assembly	1
7		Gate Board (700 Series)	1
8		Keypad	1
9		Gate Cover Assembly	1
10		Economy Label	1
11		Front Cover	1
12		Intermediate Cover and Mirror	1
13		Mirror (.450~.375)	1
14		Validation Debounce	1
15		Sorting Debounce	1
16		Hand Loading Door	1
17		Hand Loading Door Spring	1
18		Accept/Reject Door	1
19		Sort Door	1
20		Cashbox Door	1
21		Diverter Pivot Pin	2
22		Short Diverter Pin	1
23		Coin Stop	2
24		Plunger and Yoke Assembly	1
25		Tube “C” Gate and Plunger Assy.	1
26		Solenoid Spring (Copper)	3
27		Solenoid and Frame Assembly	3
28		Solenoid Frame	1
29		Tube “B” Gate and Plunger Assy.	1
30		Spring Retention Plug	1
31		Self Locking Hex Nut (8-32)	1
32		Acceptor Logic Board	1
33		Rear Cover	1
34		Acceptor Label	1
35		Debounce Plate	1
36	--------	--------	
37		Foam	1
38	--------	--------	
39		Screw, Pan head #4-5/16	1
40		Quantum Front Cover Decal	1
		Global Decal	1
41		Anti-Stringing Lever	1
42		Screw, Flat Head #4-5/16	1
43		Acceptor Gasket	1
44		Mainplate Insert	1
45	--------	--------	
46	--------	Gate/Board Assembly	1
47		Mainplate Textured Lens	1
48		Sorting Lens	1
49		Multifrequency Coil Assembly	1
50		TAU Coil Assembly	1
51		Saltwater Protection Decal	5
52		TAU Coil Insert	2
53		TAU Coil Assembly	1
54		Gate Lens	1
55		Gate Pin	1
56		Gate Spring	1
57		Water Protection Decal	1

SECTION 6: EXPLODED VIEWS

Payout Base Assembly

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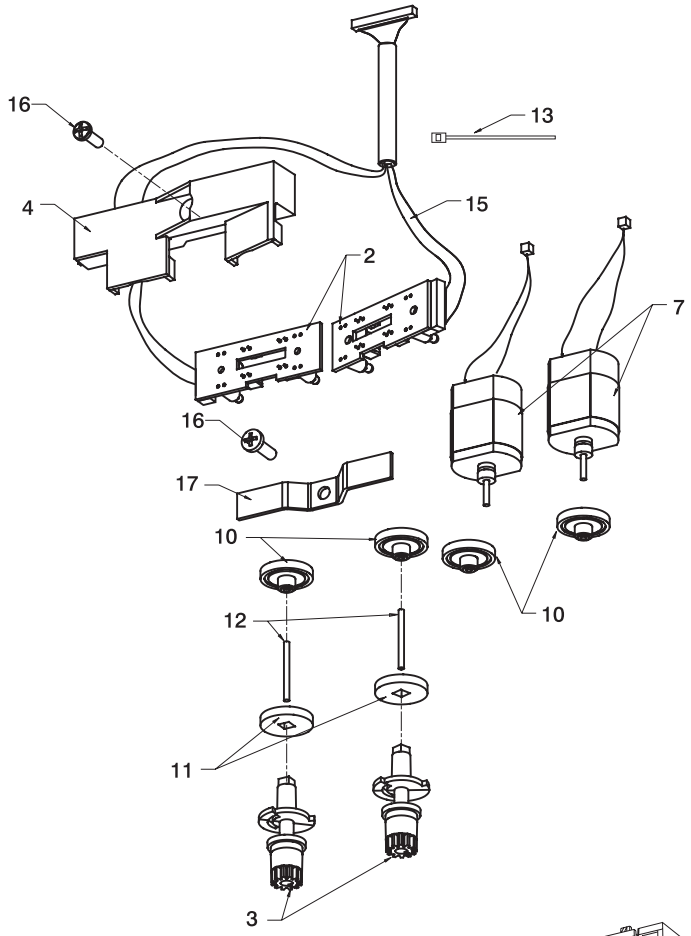
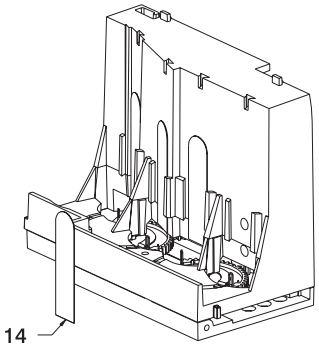
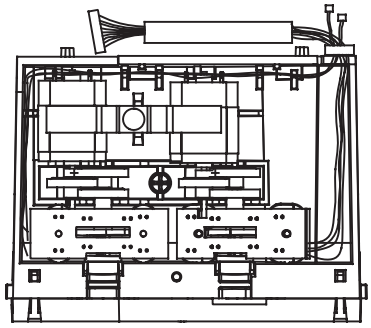


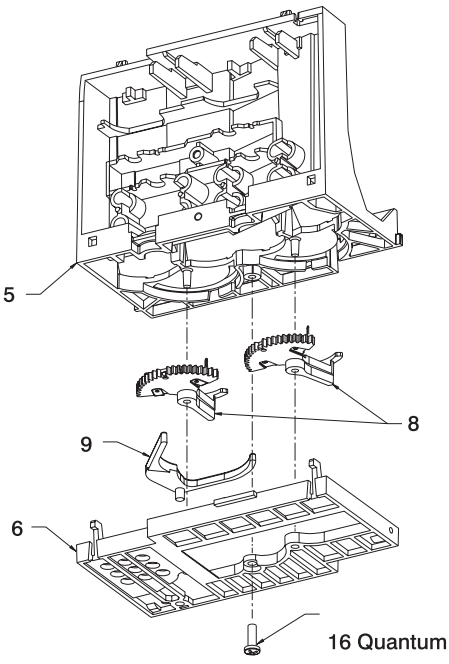
Exploded View

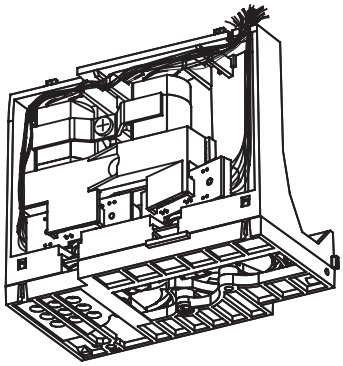


Front View



Back View



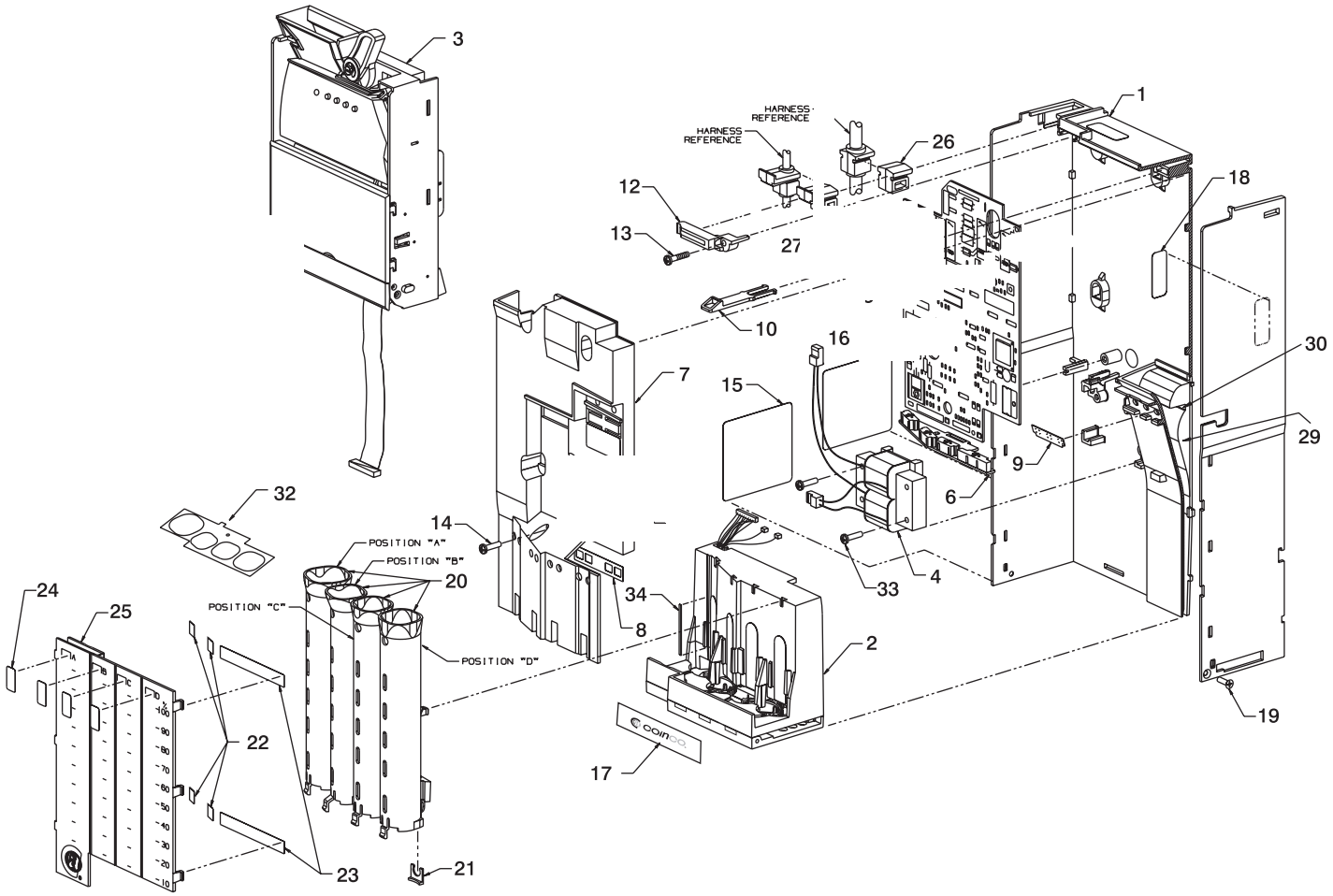


SECTION 6: EXPLODED VIEWS

ITEM NO.	DESCRIPTION	QTY.
1	Screw, Pan Head 6-7/16 PH Plas	1
2	Lower Tube Sense Board	1
3	Encoder Gear	2
4	Gearbox Cover	1
5	Upper Payout Base	1
6	Motor/Harness Assembly	2
8	Sweeper Assembly	2
9	Coin Clearing Arm	1
10	Reduction Gear	4
11	Pinion Gear	2
12	Gear Shaft	2
13	Cable Tie, 4”	1
14	Lower Tube Sense Lens	4
15	Lower Tube Sense Harness	1
16	Screw, Pan Head 8-1/2 Plas	3
17	Motor Retainer	1

SECTION 6: EXPLODED VIEWS

900 Series Final Assembly

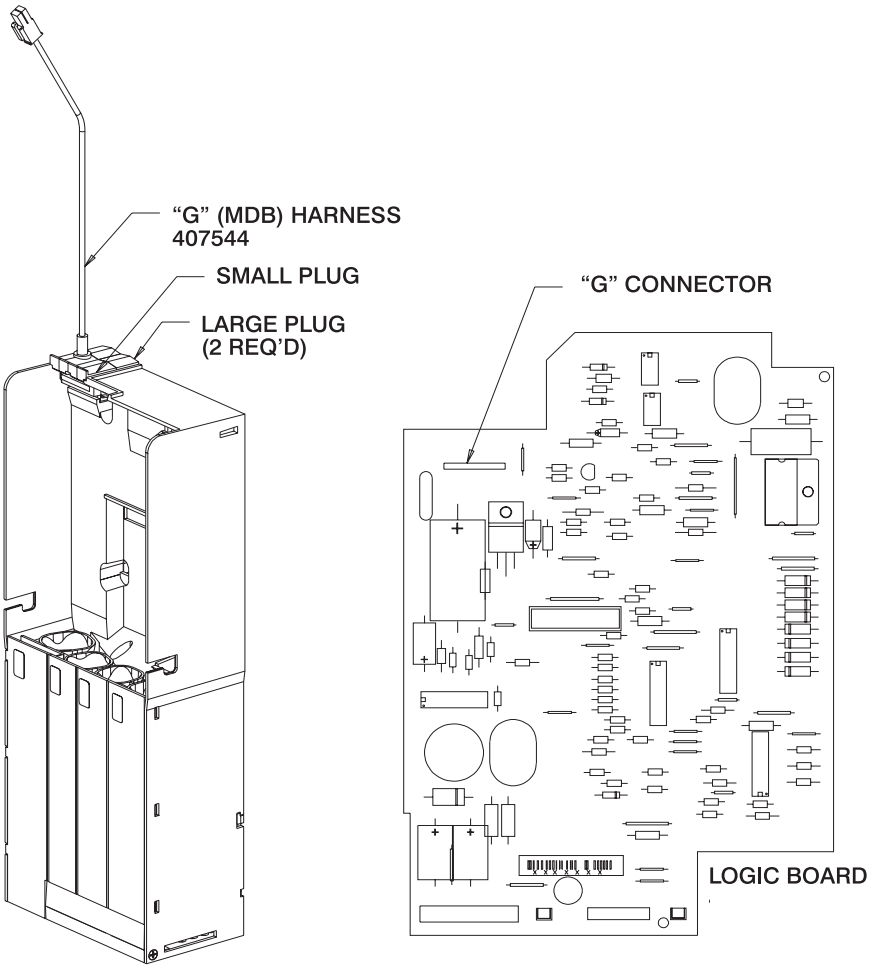


SECTION 6: EXPLODED VIEWS

ITEM #	DESCRIPTION	QTY	NOTES
1	Quantum Housing Assembly	1	Includes #9, 10, 29, 30
2	Payout Assembly	1	
3	Acceptor Assembly	1	
4	------	--	
5	"G" Logic Board	1	
6	Upper Tube Sense Board	1	
7	Logic Board Cover	1	
8	Upper Tube Sense Lens	2	
9	Cashbox Lens	1	
10	Latch	1	
11	------	-	
12	Strain Relief Bracket	1	
13	Screw, Pan Head #6-11/16	1	
14	Screw, Pan Head #6-1/2	1	
15	Identification Label	1	
16	Patent Label	1	
18	Configuration Label	1	
19	Screw, Flat Head #4-5/16	2	
20	See Tubes and Shims (Page 11)		
21	See Tubes and Shims (Page 11)		
22	Tube A & B Mirror	4	
23	Tube C & D Mirror	2	
24	----------		
25	Front Cover & Mirror Asesmbly	1	
26	Lg. Strain Relief Plug	*	
27	Sm. Strain Relief Plug	*	
28	Price Setting Label	1	
29	Cashbox Chute	1	
30	Cashbox Mirror	1	
31	Clear Tape 3/4"	-	
34	Pad	1	

SECTION 6: EXPLODED VIEWS

900 Series Harness and Logic Board Configuration



"G" (MDB) CONFIGURATION

NOTES

CE

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Coinco Publication No. 925544 Rev. 1
6/03 Printed in the U.S.A.