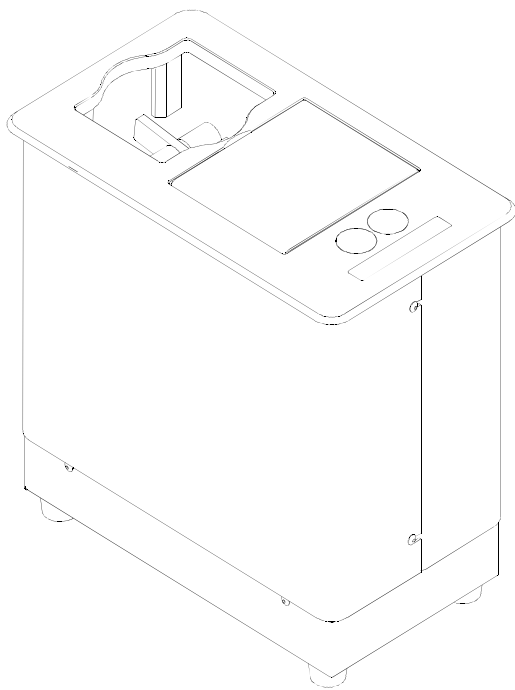
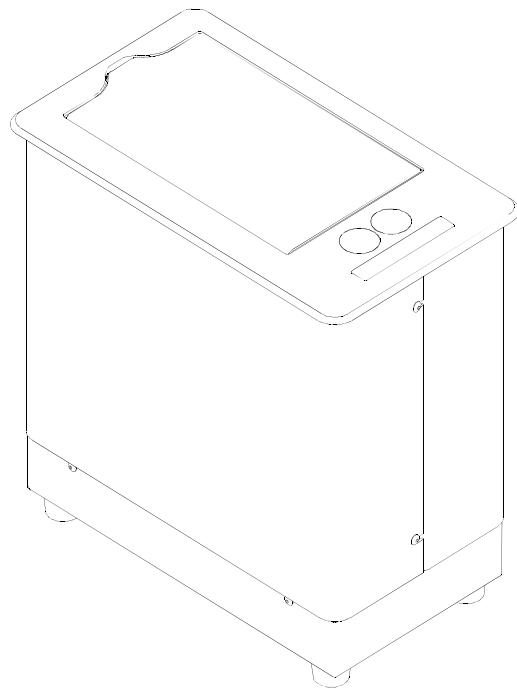


Service Manual

DECK MATE® Single and Double Deck Card Shuffler



BLACKJACK



POKER



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SHFL entertainment, Inc.
1106 Palms Airport Drive
Las Vegas, Nevada 89119

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General Safety Guidelines

The DECK MATE® single and double deck shuffler has ventilation slots in order to allow air to circulate through the shuffler to prevent overheating. Be certain that these ventilation slots are always kept open and free of any debris or blockage. You should be certain that the shuffler is connected to a grounded outlet when in use.

The shuffler which you received is equipped with a power cord which is appropriate for use in the U.S. In the event you are plugging the shuffler into a power outlet in other countries, please check the requirements of the country in which you are located to ensure that the power cord meets the country's requirements. At a minimum the power cords that you use with the shufflers must meet the following requirements: .5 amps, 100-240 volts.

When working on the shuffler you should use an anti-static device such as a wrist strap which is properly grounded. The shufflers come equipped with a battery. You should be careful that the battery is properly installed and if replaced, replaced with a battery of at least equal or equivalent type. Failure to follow these instructions may cause the battery to explode. When disposing of the batteries, do so in accordance with the battery manufacturer's instructions.

In order to help ensure the proper operation of the shuffler, you should avoid any liquid spills or the introduction of any other foreign objects into the shuffler. Such an introduction could cause fire, electrical shocks or other significant malfunctions.

When operating the shuffler, be sure all covers are properly in place and only operate the shuffler in accordance with the operating instructions. You should not make any adjustments to the controls on the shuffler except in accordance with the procedures set forth in this manual. When turning the shuffler on and off, please do so in a deliberate manner and try to avoid doing so in rapid succession.

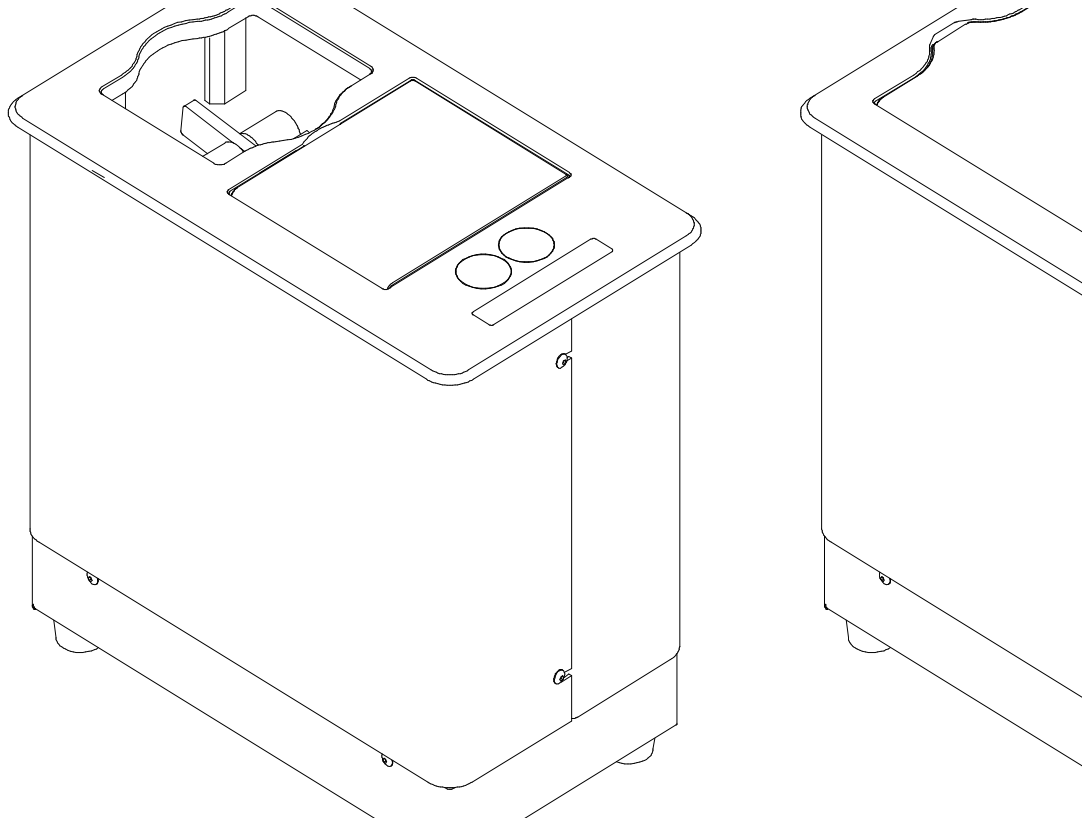
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1.0 Machine Characteristics



DECK MATE® Shuffler Specifications

Power Requirements:	100-240 VAC 50-60 HZ .5 AMP
Dimensions:	11.5" x 6.6" x 10.8" (129.2cm x 168cm x 27.4cm)
Weight:	17 lb (7.7kg)
Shuffle Time:	Single Deck: 30-40 seconds Double Deck: 80-90 seconds

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2.0 Principle of Operation

Principle of Operation

The DECK MATE® single and double deck card shuffler shuffles one or two decks of 52 cards. Two sets of cards are required (usually different color decks) for game play. While one is in play, the other is being shuffled.

Up to four cards can be added or subtracted from the total number of cards, i.e., 52 +/- 4 cards or 104 +/- 4 cards.

The cards are counted as they are shuffled in. The shuffle is aborted if the number of cards counted is different than the number of cards selected.

At the beginning of each cycle, the random number generator assigns a compartment location within a vertical rack to each card of the un-shuffled deck. The cards are loaded into a feeder. As the cards are feeding in (from the bottom of the deck), the program executes the outcomes determined by the RNG. A moveable platform positions the cards in the shuffling compartment to the correct location. A set of grippers will grip the cards at that location and the platform will move down creating a gap for the next card to be inserted.

When all the cards are inserted, the platform raises the shuffled deck to be used by the dealer.

Game Application

The DECK MATE® shuffler is used on card games requiring one or two decks of cards dealt by hand.

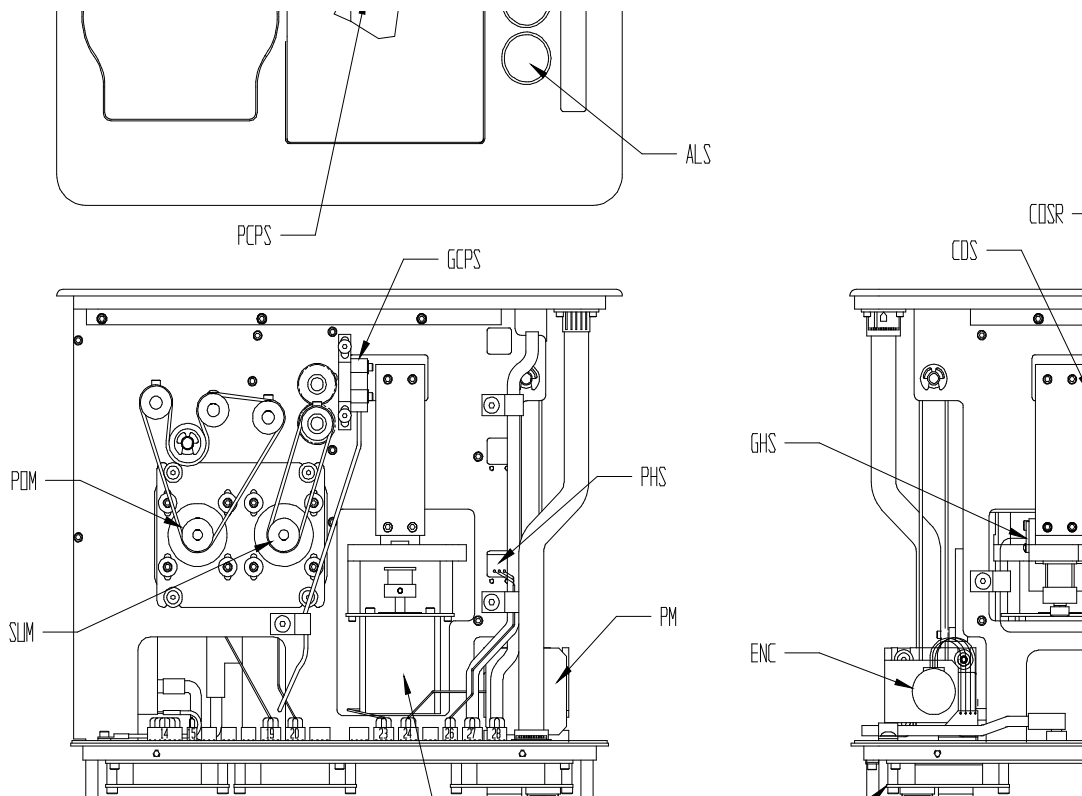
Application examples:

Single and Double Deck Blackjack

Specialty Games (such as Triple Shot Bonus™)

Poker Room Games

3.0 Machine Description/Switch Locations



Switches and Sensors				
Module #1	Module #2	Name	Description	Plug #
D3		ENC	Encoder	1
		GHS	Gripper Home Sensor	3
	D5	PCPS	Platform Card Present	4
		COST	Card Out Transmitter Sensor	5
	D8	COSR	Card Out Receiver	6
		CIST	Card In Transmitter	7
		D9+D22	CISR	Card In Receiving
D6		DHS	Door Home Sensor	9
	D7	FCPS	Feeder Card Present Sensor	10
D21+D24		GCPS	Gripper Card Present Sensor	12
	D23	CDS	Card Drop Sensor	13
D7		PHS	Platform Home Sensor	26
D23+SW2		ALS	Red Button Switch	27
D22+SW1		SS	Green Button Switch	28

Motors				
Name	Description	Module #1	Module #2	Plug #
POM	Pick Off Motor		M1	19
SUM	Speed Up Motor		M2	20
GM	Gripper Motor	M2		23
PM	Platform Motor	M1		24

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4.0 Operation

Start Up and Dealing Procedures

Plug the power cord into a 110V/60Hz or 220V/50Hz outlet. Turn the power switch at the shuffler to the ON position. The DECK MATE® shuffler will perform system initialization. If there are cards left in the machine it will expose them and present instructions regarding card removal.

Based on the number of decks and the number of cards selected, the VFD (Vacuum Fluorescent Display) message panel will show one of these messages:

Load Cards. Single Deck (52 Cards)

Load Cards. Double Deck (104 Cards)
--

The dealer will load the cards into the feeder compartment. After the cards are loaded, the shuffle begins automatically. The message panel will display:

Shuffling Single Deck (52 cards)

When the shuffle is complete the message panel will display:

Shuffle Complete Load Cards or Push Green
--

When the second deck is placed into the feeder the door automatically opens and raises the shuffled deck to be dealt. To close the game or to change both decks at the same time, press the GREEN button to unload the last shuffled cards.

For the poker room model, the GREEN button must be pressed to activate the door opening to gain access to the feeder area.

When the GREEN button is pressed, the door opens and the message panel will display:

Load Cards. Poker (52 Cards)

When the cards are loaded, the door will close and the message panel will display:

Shuffling Poker (52 cards)

4.0 Operation

The shuffle will start automatically.

When the shuffle is complete, the message panel will display:

Shuffle Complete Push Green button

Press the GREEN button to open the door. Load the un-shuffled deck then remove the shuffled deck, in that order. When the shuffled deck is removed from the platform, the shuffler door will immediately close.

Card Jam Recovery Procedures

The DECK MATE® shuffler has built in automatic jam recovery features to deal with certain types of card jams.

If manual interaction is required, remove the cards from the feeder side only. Follow the instructions on the message panel to remove cards from the shuffled side.

5.0 Setup Procedures and Adjustments

Entering the Setup Menu

To enter the Setup menu, hold down the RED button and turn power on. Hold the button down until the message panel displays "Setup Menu". Release the RED button.

Note: To move through the menu items, press the GREEN button. To change the menu item or to execute commands, press the RED button.

Selecting Game/Number of Decks

This menu option allows the operator to select the number of decks to be played and the game operating mode for the shuffler. Options are: Single Deck, Double Deck and Poker. Press the RED button to toggle through the selections. Press the GREEN button to save the selection.

Select Game. Red Btn
 Single Deck

Changing the Number of Cards

The number of cards option allows the operator to select a specific number of cards to be played in a deck. As many as four cards can be added or subtracted from the total number of cards, i.e., 52 +/- 4 cards or 104 +/- 4 cards.

To change the number of cards, press the RED button until the desired number is displayed. Press the GREEN button to advance to the next menu item.

Select # Cards. Red Btn
 Single Deck (52 Cards)

Total Cycles

This menu item allows you to view the total number of shuffle cycles made on the shuffler since it was last reset. The cycle count cannot be changed here.

Total Cycles
 xxxxxx

Setting Time and Date

This menu displays the Time and allows a new time to be entered. The time is displayed in a 24-hour format, also known as 'Military Time'.

Press the RED button to move the cursor to the left, one character at a time.

5.0 Setup Procedures and Adjustments

Press the GREEN button to change the character.

Set Time:
 Set Time: HH:MM:SS_

Return the cursor to the far right, after the changes have been made and press the GREEN button.

The seconds entry must reflect a number from '00' to '59' or the new time entry will not be saved.

The next message displays the Date and allows a new date to be entered. The date display format is MM:DD:YY.

Press the RED button to move the cursor to the left, one character at a time. Press the GREEN button to change the character.

Set Date:
 Set Date: MM:DD:YY_

Return the cursor to the far right, after the changes have been made and press the GREEN button.

The cursor must be returned to the far right or the new date entry will not be saved.

Password Entry

All options following the Password entry display require entry of a password. If the correct password is not entered, changes made will not be saved.

The message panel will display:

Enter Password
xxxxx_

To enter the password, press the RED button to advance the cursor to the desired character and press the GREEN button to change the value of the characters.

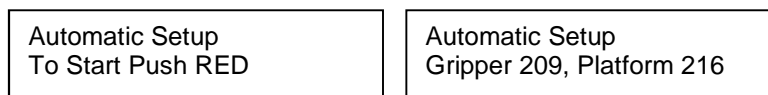
After entering the correct password, return the cursor to the far right and press the GREEN button. Failing to return the cursor will not allow the password to be accepted.

5.0 Setup Procedures and Adjustments

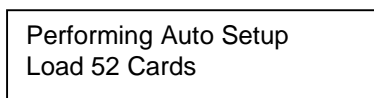
Automatic Setup

Use this menu item to automatically calibrate the platform and gripper settings for the specific card type and size to be shuffled.

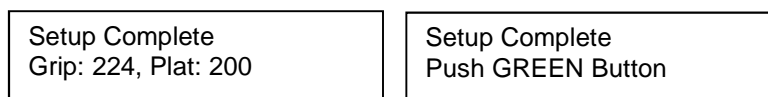
The message panel will alternate between the following displays:



To start, press the RED button. You will be prompted to load the correct number of cards, as previously selected. Place the cards in the feeder compartment.



The shuffler will automatically begin the setup operation.



When these alternating messages appear, the Setup is complete. Press the GREEN button to raise the platform in order to obtain the cards and to move to the next menu option.

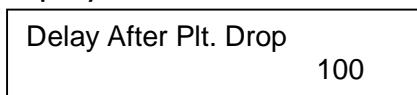
Seed RNG

This menu allows you to manually re-seed the random number generator. Push the RED button to access the function, then press the GREEN button four times.

Delay After Platform Drop

This setting adjusts the delay time in milliseconds (msec) between the time the platform is lowered and the gap is created to when the next card is inserted.

The message panel will display:



The delay should be set to the highest setting without causing delay to the game. The delay can be set from 0 to 500 msec, in 100 msec increments.

5.0 Setup Procedures and Adjustments

Resetting Shuffle Cycles

This menu item shows you the total number of cycles on the shuffler since the previous reset and allows you to reset the cycle count to 0. Press the RED button to reset. Press the GREEN button to advance to the next menu item.

Reset Cycles 005924

Resetting History Log

Press the GREEN button to advance to the Reset History Log display.

Reset History Logs

Press the RED button to reset all data stored in the history log to date.

IMPORTANT: Resetting this log will permanently erase all stored data.

Resetting Serial Number

Press the GREEN button to advance to the Serial Number menu item. The message panel will display the serial number currently entered in the shuffler's memory.

Serial Number: 100705

To change the number, press the RED button to advance the cursor and press the GREEN button to change the digits.

Return the cursor to the far right after all changes have been made. Press the GREEN button to save the entry.

The cursor must be returned to the far right or you will not be able to save the new number entry.

IMPORTANT: The serial number should only be changed to match the serial number stamped inside of the platform compartment.

To exit the Setup menu, turn off the power to the shuffler.

6.0 Service Menu

Service Menu

To enter the Service Mode, turn the power switch on while pressing the GREEN button down until the message panel displays:

Service Menu

Press the GREEN button to step through each Service Menu item.

Software Version

This message will indicate the current version of installed software.

Deck Mate 1.11

Cleaning Mode

Pressing the RED button in Cleaning Mode activates the pick-off and speed-up motors at a low speed with increased torque to allow for hand cleaning of the rollers. Pressing the RED button will cycle from FWD to STOP to REV to STOP. Press the GREEN button to advance to the next menu item.

Cleaning Mode

Sensors

This mode identifies the on/off state of the switch and sensor inputs.

Sensors:
000 011 010

<u>Position</u>	<u>Sensor/Switch</u>	<u>Normal State</u>	<u>I/O Module 1</u>	<u>I/O Module 2</u>
1	CIS	0		D9+D22
2	COS	0		D8
3	FCPS	0		D7
4	PCPS	0		D5
5	PHS	1	D7	
6	GHS	1	D3	
7	GCPS	0	D21+D24	
8	DHS	1	D6	
9	CDS	0		D23

6.0 Service Menu

Download to PC

This menu item allows retrieval of machine history, if the operator is equipped with the proper cable, adapter, PC and software, by connecting to the COM port of the PC.

Download To PC

Platform Position Test

Press the RED button to move the platform to two different locations from the zero (0) home position, typically 1043 and 1343. Monitor the encoder readout to verify proper operation.

Platform Up/Middle/Dn
Encoder = 0

Gripper Position Test

Press the RED button repeatedly to test the grippers' in and out movement.

Gripper In/Out

Speed Up Motor Test

Press the RED button to control the speed-up motor: Forward - Stop - Reverse.

Speed Up:
FWD - STOP - REV

Pick-Off Motor Test

Press the RED button to control the pick-off motor: Forward - Stop - Reverse.

Pick Off:
FWD - STOP - REV

To exit the Service menu, turn off the power to the shuffler.

7.0 Cleaning and Preventative Maintenance

2 Week Maintenance

- Remove side covers and blow out or vacuum top of machine
- Clean rollers with 99% isopropyl alcohol
- Brush or blow off all sensors
- Check for debris on shaft between CIS and COS and clean if needed
- Clean grooves in gripper blocks
- Check brake roller clearance
- Run auto setup with the casino's cards
- Test run with casino's cards and check for proper operation

1 Month Maintenance

- Perform 2 week maintenance
- Remove bottom cover and blow out or vacuum bottom of machine and filter
- Check that the platform is level with the grippers using fixture F1094
- Remove CIS/COS sensor assembly and clean transmitters and receivers
- Clean the linear guide between the gripper mounting blocks

6 Month Maintenance

- Perform 2 week and 1 month maintenance
- Clean and lubricate inside diameter of gripper idler pulley
- Replace the 2 urethane rollers on each side of lower brake roller
- Check Red And Green buttons for tightness

12 Month Maintenance

- Perform 2 week, 1 month and 6 month maintenance
- Replace all urethane rollers
- Replace gripper blocks

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8.0 Mechanical Setup and Adjustments

Platform Maintenance

If the platform and the grippers are not level with one another the result could be that the grippers will not hold the cards up and the falling cards could cause crashing, flipped cards or cards “wedged” against the inside of the platform compartment.

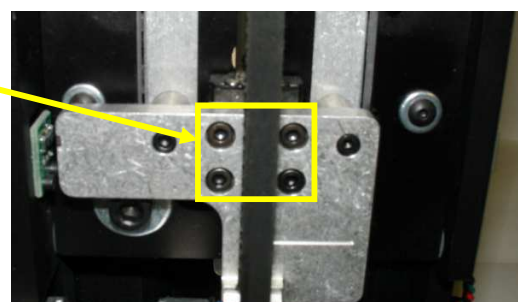
Platform level should be checked on a monthly basis during routine Preventative Maintenance.

Platform Level Check

1. Turn the power to the shuffler ‘Off’.
2. Hold the door open using the DECK MATE® shuffler Door Prop, part number F1097.
3. Open the grippers as far out as possible.
4. Raise the platform by pulling down on the Platform Motor Belt.
5. Place the Platform Fixture, part number F1094, on the platform.
6. Carefully lower the platform and gauge below the grippers. Avoid ‘wedging’ the gauge in the platform area.
7. Push the grippers all the way in.
8. Raise the platform and the fixture up to contact the bottom of the grippers. The gripper pads should not move side-to-side if the platform is level.

Leveling the Platform

1. Slightly loosen the four socket head screws on the Platform Carriage using a 2.5 mm hex wrench.
2. Raise the platform and the fixture up to contact the bottom of the grippers.
3. Tighten the four screws while holding the fixture tightly against the grippers. The grippers should not move side-to-side when the platform is leveled.
4. Open the grippers all the way out.
5. Raise the platform and remove the fixture.



Test for Broken #4 PCPS Harness

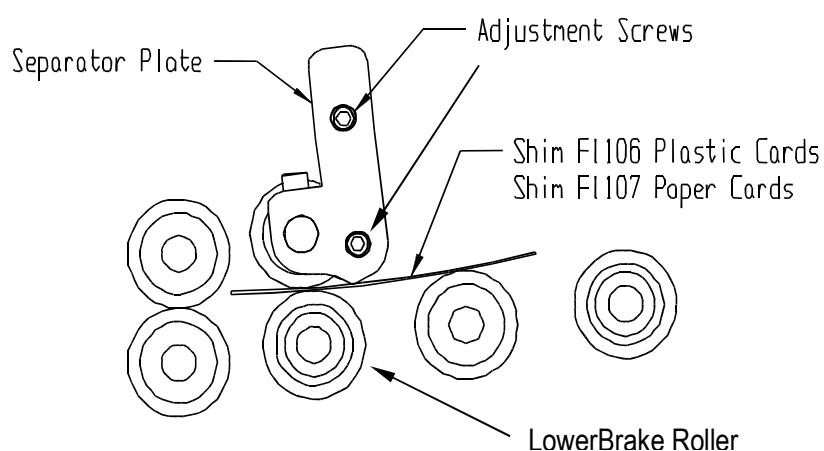
1. Power up the shuffler while pressing the GREEN button to enter the Service Mode.
2. Press the GREEN button to page through to the Sensors display.

8.0 Mechanical Setup and Adjustments

3. Disconnect Molex pin #24 which frees up the platform motor, allowing the platform to move.
4. From the left, observe the 4th binary code.
5. Holding the platform belt, raise and lower the platform in a rapid up-and-down motion.
6. If the '0' changes to a '1' at any time during platform movement, the harness has an unseen break in the conductive wire causing intermittent breaks in the electric current. The harness should be replaced.

Brake Roller Assembly Adjustment

1. Loosen the four Separator Plate Adjustment Screws.
2. Insert shim F1106 or F1107 between upper and lower brake rollers.
3. Press firmly on the separator plate while tightening the screws.
4. Remove the shim and check the clearance by inserting two cards between the brake rollers. Definite resistance must be felt with two cards.
5. If the brake roller clearance changes as the rollers turn, the lower brake roller shaft (DU1043) may not be straight and will need to be replaced.



9.0 Troubleshooting

Symptom	Cause	Remedy
Shuffler will not power up.	Bad 24v fuse	Replace the fuse.
	Bad power source.	Check power source, power cord and connections.
	Faulty power supply.	Replace power supply.
Stuck in autosetup (Platform reads from 0 to 335 then returns to 0).	Platform Home Switch is set too low.	Adjust Platform Home Switch.
Platform raises and lowers but encoder reading does not change.	Faulty encoder.	Replace encoder.
	Faulty encoder harness/PC board.	Replace faulty encoder harness/PC board.
	Flexible coupler is broken or loose.	Replace broken coupler.
Aborts shuffle (w/ cards left in the feeder).	#4 wire harness (PCPS) has an internal break (intermittent).	Replace #4 harness.
Cards flipping over in the platform.	Card Separator is too loose.	Adjust the separator assembly.
	Gripper belt is too loose.	Adjust (Tighten) the gripper belt.
	Delay After Platform Drop is too fast - cards crashing.	Increase Delay time.
"Missing Cards" error message.	Card separator is too loose.	Adjust the separator assembly.
	CI/CO sensor is dirty or faulty	Clean or replace sensor
Gripper drops cards.	Gripper pads are dirty, worn or not free-moving.	Clean or replace gripper pads.
	Platform is not level.	Level the platform to the grippers.
	Gripper belt is too loose.	Adjust (Tighten) the gripper belt.
At power up, grippers cycle continuously.	Faulty Gripper Home Switch (GHS).	Replace switch.
Feeds 2 cards only; message reads "Shuffling....."	Faulty Gripper Card Present sensor (GCPS).	Replace sensor.
Pickoff motor stalls.	Card separator is too loose.	Adjust the separator assembly.
	Main belt is too tight.	Adjust the belt.

9.0 Troubleshooting

Green or Red switch will not work.	Switch is faulty.	Replace switch
	Faulty I/O board.	Swap and/or replace the I/O board.
VFD message panel is blank.	Faulty VFD message panel	Replace the VFD.
	Faulty I/O board.	Replace the I/O board.
Red light and "Close Door" message at power up.	Faulty Door Home Sensor (DHS).	Replace Sensor
"Remove Cards" message at power up.	Faulty Platform Card Present Sensor (PCPS).	Replace sensor.
	Broken #4 PCPS harness.	Replace harness.
Poker version door will not open.	Single Deck or Double Deck game is selected.	Select "Poker" as game in Setup Menu.
"Jam. Open Door Manually. Remove Feeder Cards" message.	Faulty Feeder Card Present Sensor (FCPS) sensor.	Replace sensor.
	Broken FCPS harness	Replace harness.

