



## SERVICE MANUAL

*SmartServe™ Drink Mixers*

*MIC2000*

*BIC2000*

### – NOTICE –

This Manual is prepared for the use of trained Service Technicians and should not be used by those not properly qualified.

This Manual is not intended to be all-encompassing. You should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments, and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments, and skills should be performed by a trained Service Technician.

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## SAVE THESE INSTRUCTIONS

**REVIEW ALL SERVICE INFORMATION IN THE APPROPRIATE SERVICE MANUAL AND TECHNICAL SHEETS BEFORE BEGINNING REPAIRS.**

Pride and workmanship go into every product to provide our customers with quality products. It is possible, however, that during its lifetime, a product may require service. Products should be serviced only by a qualified service technician who is familiar with the safety procedures required in the repair and who is equipped with the proper tools, parts, testing instruments, and the appropriate service manual.

### Safety Information

We have provided many important safety messages in this manual and on the appliance. **ALWAYS** read and obey all safety messages.

This is the safety alert symbol.



This symbol alerts you to hazards that can kill or hurt you and others. All safety messages will be preceded by the safety alert symbol and the word “DANGER”, “WARNING”, or “CAUTION”. These words mean:

#### **DANGER**

**IMMEDIATE HAZARDS THAT WILL RESULT IN SEVERE PERSONAL INJURY OR DEATH.**

#### **WARNING**

Hazards or unsafe practices that **COULD** result in severe personal injury or death.

#### **CAUTION**

Hazards or unsafe practices that **COULD** result in minor personal injury or product or property damage.

All safety messages will identify the hazard, describe how to reduce the chance of injury, and describe what can happen if the instructions are not followed.

### **WARNING**

To avoid risk of serious injury or death, repairs should not be attempted by unauthorized personnel.

### **CAUTION**

Hamilton Beach will not be responsible for any injury or property damage from improper service procedures. If performing service on your own product, you must assume responsibility for any personal injury or property damage that may result.

## Technical Services

Visit [www.commercial.hamiltonbeach.com](http://www.commercial.hamiltonbeach.com) for technical service information.

To change your program or create a new one, contact your salesperson.

For assistance, copy of an existing program, or replacement parts, call our Technical Services phone number:

866-285-1087 or 910-693-4277

8 a.m. – 5 p.m. EST Monday – Friday

## Introduction

This manual covers the MIC2000 and BIC2000 Drink Mixer. Detailed information about the operation and cleaning of these machines can be found in the Use & Care Manual. Contact your salesperson to obtain a copy or visit [www.commercial.hamiltonbeach.com](http://www.commercial.hamiltonbeach.com).

The operating specifications are as follows:

Model	Volts	Hertz	Phase
MIC2000	120	60	1
BIC2000	120	60	1
MIC2000-CE	230	50/60	1
BIC2000-CE	230	50/60	1

## Tools and Materials

### CAUTION

Do not use power tools to remove hardware. Damage to the hardware or the machine may occur. Do not lose hardware.

- Standard set of hand tools
- VOM with AC current tester (any quality VOM with a sensitivity of at least 20,000 ohms per volt can be used)
- Loctite No. 242
- Adhesive remover

## Preventative Maintenance

To keep the machine operating properly, it is essential that the machine is cleaned regularly. Whenever service is performed on the machine, a visual inspection of the components should be performed to ensure optimal operating conditions.

### General Cleaning

The shield will need to be cleaned depending on the application and how many cycles are completed in a given period.

1. Clean SmartServe™ using a cleaning solution of hot water (less than 115°F/46°C) and a nonsudsing detergent according to the package directions.
2. Turn ON (I) by pressing the power switch under the control panel on the right side.
3. Remove cup holder.

**NOTE:** MIC models do not require daily cup holder removal.

4. Press MENU and select “LOWER SHIELD.” Press START.
5. Turn power OFF (O).
6. Remove the two thumbscrews from the door assembly and pull off the door assembly.
7. Push the tab on the front of the cup guard assembly while turning the splash shield to the left. Let splash shield rest in the wash chamber.
8. Lift the cup guard assembly upward approximately 3” to allow room to remove the splash shield.

### CAUTION

Blades are sharp.

9. Wipe the wash chamber, cup lid, and upper part of cup guard assembly with a soft cloth, bottle brush, or sponge dampened with the cleaning solution.
10. Immerse cup holder, door assembly, and splash shield in cleaning solution and wipe with a soft cloth or sponge.

**NOTE:** PARTS ARE NOT DISHWASHER-SAFE.

11. Rinse cup holder, door assembly, and splash shield in clean water; allow to dry.
12. Reassemble the cup holder, splash shield, and door assembly.
13. Turn power ON (I) and allow the machine to return to its HOME position; press the FLUSH button to flush the water lines.
14. Following the flush cycle, insert a cup filled with cleaning solution and run any pre-programmed cycle. **DO NOT OPEN DOOR WHILE CYCLE IS IN PROGRESS!**
15. When cycle is finished, open the door, remove the cup, and pour the solution into the wash chamber. Close the door. The unit will automatically run through a rinse cycle.
16. Follow sanitizing instructions.

## Sanitizing

The SmartServe™ must be sanitized before daily use.

1. Wash SmartServe™ following instructions in “General Cleaning.”
2. Sanitize using 1 Tablespoon (15 mL) of bleach per 1 gallon (3.8 liter) of clean, cool water (60°F/16°C), mixed according to the instructions on the bleach. (If using a sanitizing solution other than bleach, test the concentration using commercial test strips. Concentration levels should be between 100 and 200 parts per million of bleach to water.)
3. Turn ON (I) by pressing the power switch under the control panel on the right side and flush system as prompted.
4. Insert a cup filled with sanitizing solution and run any pre-programmed cycle (using the 1–3 and A–C buttons). **DO NOT OPEN DOOR WHILE CYCLE IS IN PROGRESS!**
5. Allow cycle to finish. Open the door, remove the cup, and pour the solution into the wash chamber.
6. **NOTE:** For MIC models, use the sanitizing syringe to inject at least 50 mL of sanitizing solution into the sanitizing port. Remove syringe and set aside.
7. Remove the two thumbscrews from the door assembly and pull off the door assembly to allow the equipment to dry overnight. If equipment is needed immediately, press FLUSH button before programming equipment for a drink.

## Inspection Checklist

Whenever service is performed on the machine, review this checklist to ensure the machine operates efficiently.

Date	Inspection	Action
	Check all water lines and connections for leaks.	Repair or replace any items found leaking.
	Check all drain connections for leaks.	Repair or replace any items found leaking.
	Visually inspect all wires and wire harnesses for wear.	Repair or replace any damaged wires.
	Ensure all necessary wire ties are secure and in place.	Replace any missing or broken wire ties.
	Observe the travel of the motor on the linear actuator. The motor should move freely without obstruction or resistance.	Clean slide rods and apply a food safe lubricant to the lead screw and reroute any wire harnesses or water lines that interfere with operation.

## Component Functions

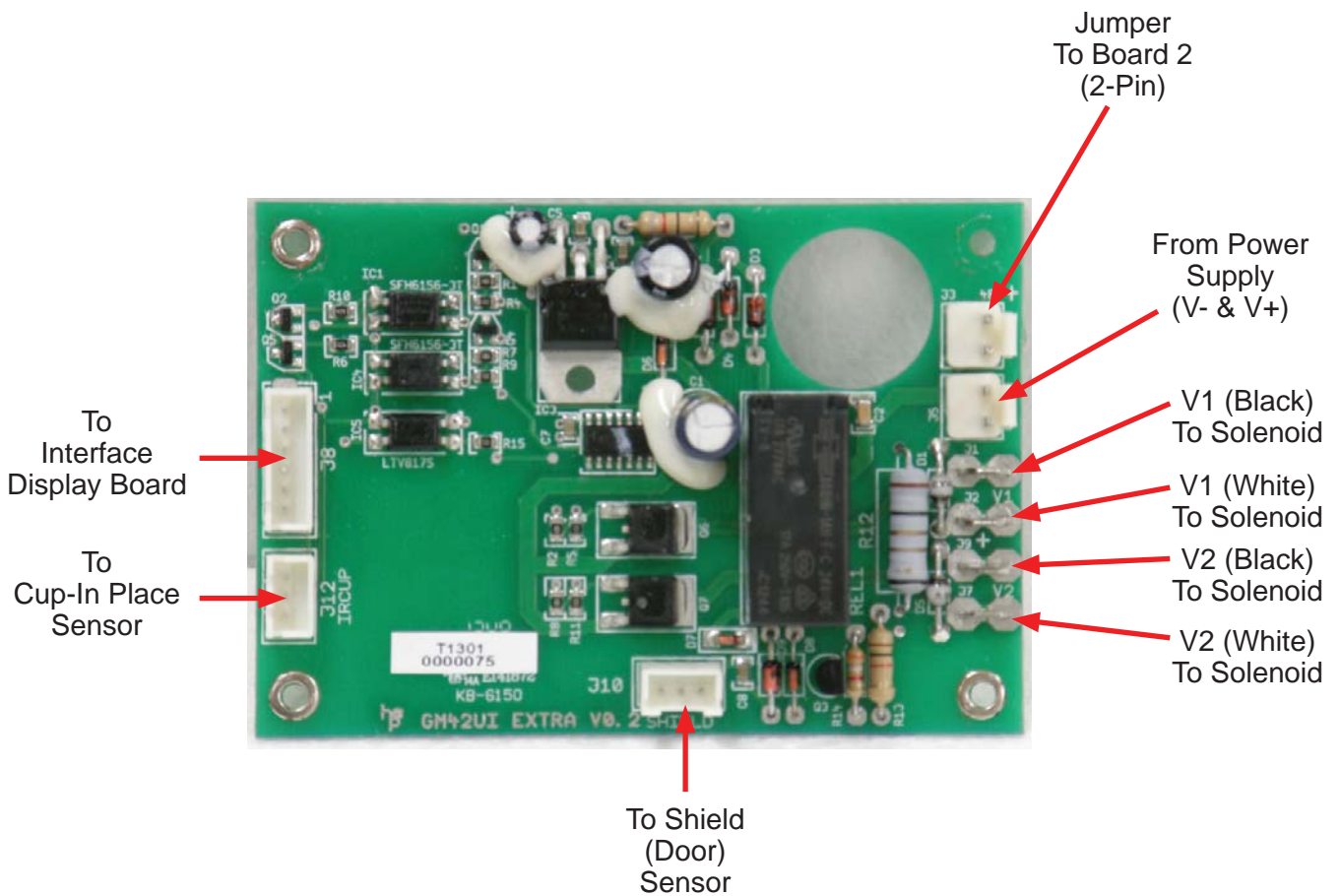
<b>Motor</b>	The motor is used to turn the blade assembly. It receives power through the control board.
<b>Linear Actuator</b>	The linear actuator is used to lower and raise the motor and cup guard/shield assembly during use. It receives power and is controlled by the control board.
<b>Power Supply</b>	The power supply distributes 48VDC power to the control board to operate the linear actuator motor and the valve(s).
<b>Control Board</b>	The control board is the brain of the machine. It receives power from the power supply and provides command logic to operate the machine.
<b>Home Sensor</b>	The home sensor determines the highest position of the motor and cup guard/shield assembly and establishes a starting point for the linear actuator.
<b>Cup Present Sensor</b>	The cup present sensor lets the machine know if the linear actuator has reached a position where it is acceptable to flush, rinse, or blend.
<b>Cup-In-Place Sensor</b>	The cup-in-place sensor is an infrared sensor designed to determine the presence of a cup in the mixing chamber.
<b>Wash Chamber Sensors</b>	The wash chamber sensors are embedded in the wash chamber assembly. They are designed to sense when the cup guard is in the wash chamber. These sensors are not present on all models.
<b>Shield Sensor</b>	The shield sensor is located under the wash chamber area. A magnet in the safety shield assembly interacts with the sensor and requires that the door be closed in order for the machine to operate. Some models have two sensors.
<b>Interface Display Board</b>	The interface display board is located in the interface control panel. The board receives input from the touch pad and sends the commands to the control board.
<b>Touch Pad</b>	The touch pad is on the interface control panel. It is connected to the interface panel control board with a ribbon style cable.
<b>Control Panel Breaker Switch</b>	The breaker switch is located on the interface control panel. It controls power to the power supply and main control board.
<b>Water Solenoid Valve (1)</b>	This water solenoid controls the flow of water to the wash chamber during RINSE and FLUSH cycles.
<b>Water Solenoid Valve (2)</b>	This water solenoid controls the flow of water to the drink mixing area.

# Control Board Connections

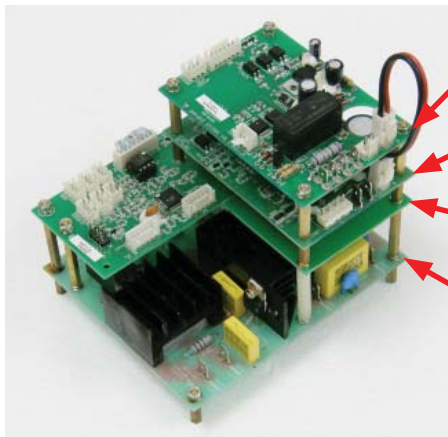


- Control Board 1 (Solenoid and Sensor)
- Control Board 2 (Linear Motor)
- Control Board 3 (Command Logic)
- Control Board 4 (Motor Power)

Control Board Assembly



Control Board 1 (Solenoid and Sensor)



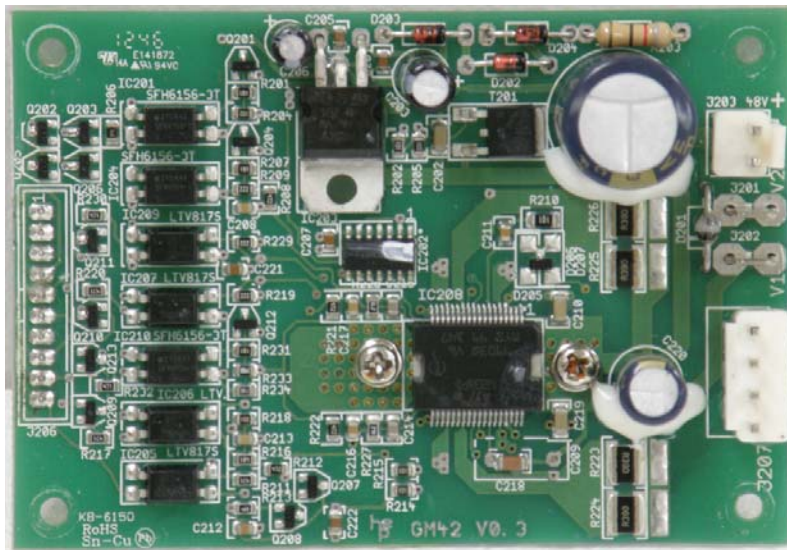
Control Board 1 (Solenoid and Sensor)

Control Board 2 (Linear Motor)

Control Board 3 (Command Logic)

Control Board 4 (Motor Power)

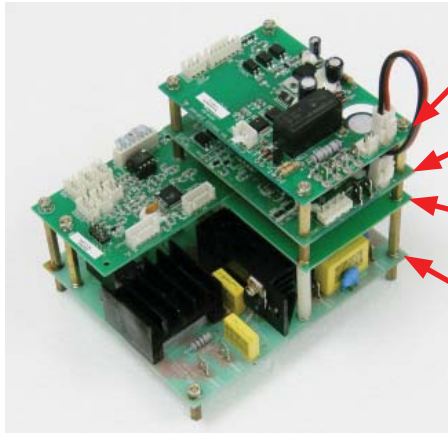
Control Board Assembly



Jumper  
From Board 1  
(2-Pin)

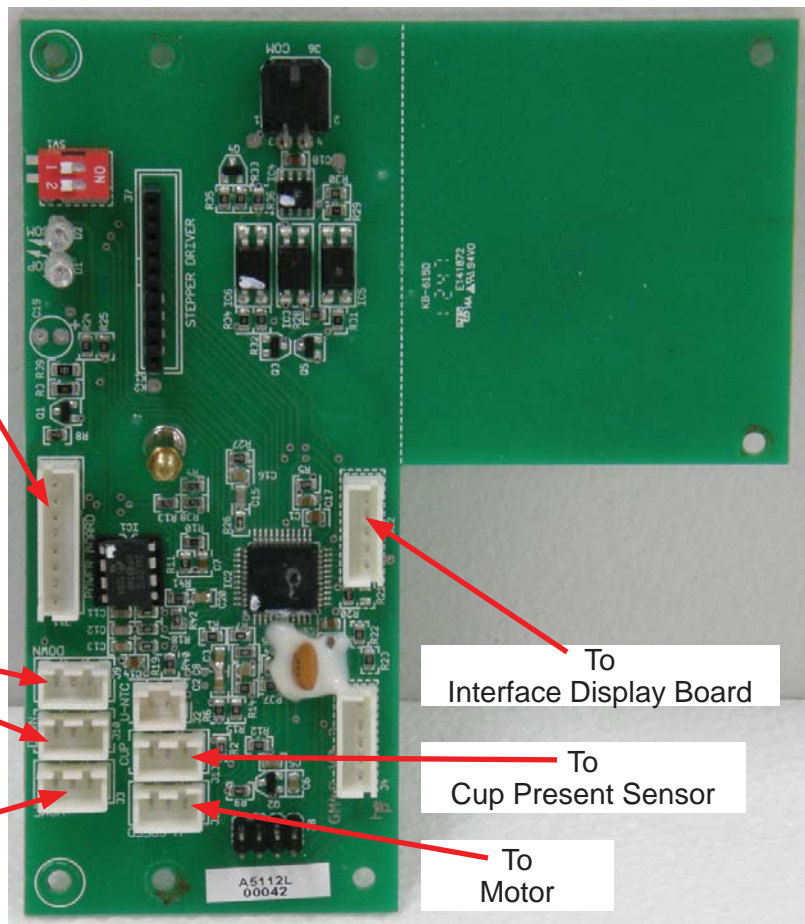
To Linear  
Actuator  
Motor

Control Board 2 (Linear Motor)



- Control Board 1 (Solenoid and Sensor)
- Control Board 2 (Linear Motor)
- Control Board 3 (Command Logic)
- Control Board 4 (Motor Power)

Control Board Assembly



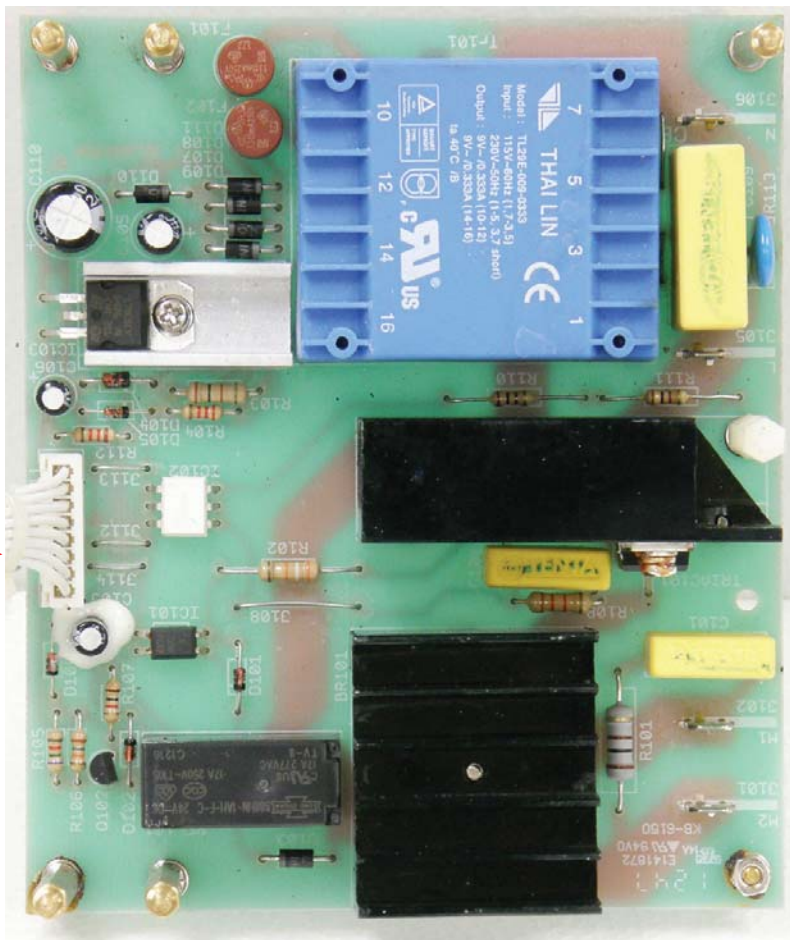
- Jumper From Board 4 (8-Pin)
- To Wash Chamber Sensor
- OR
- To second Shield (Door) Sensor and Jumper
- To Home Sensor
- To Interface Display Board
- To Cup Present Sensor
- To Motor

Control Board 3 (Command Logic)



- Control Board 1 (Solenoid and Sensor)
- Control Board 2 (Linear Motor)
- Control Board 3 (Command Logic)
- Control Board 4 (Motor Power)

Control Board Assembly



Jumper To Board 3 (8-Pin)

N (White)

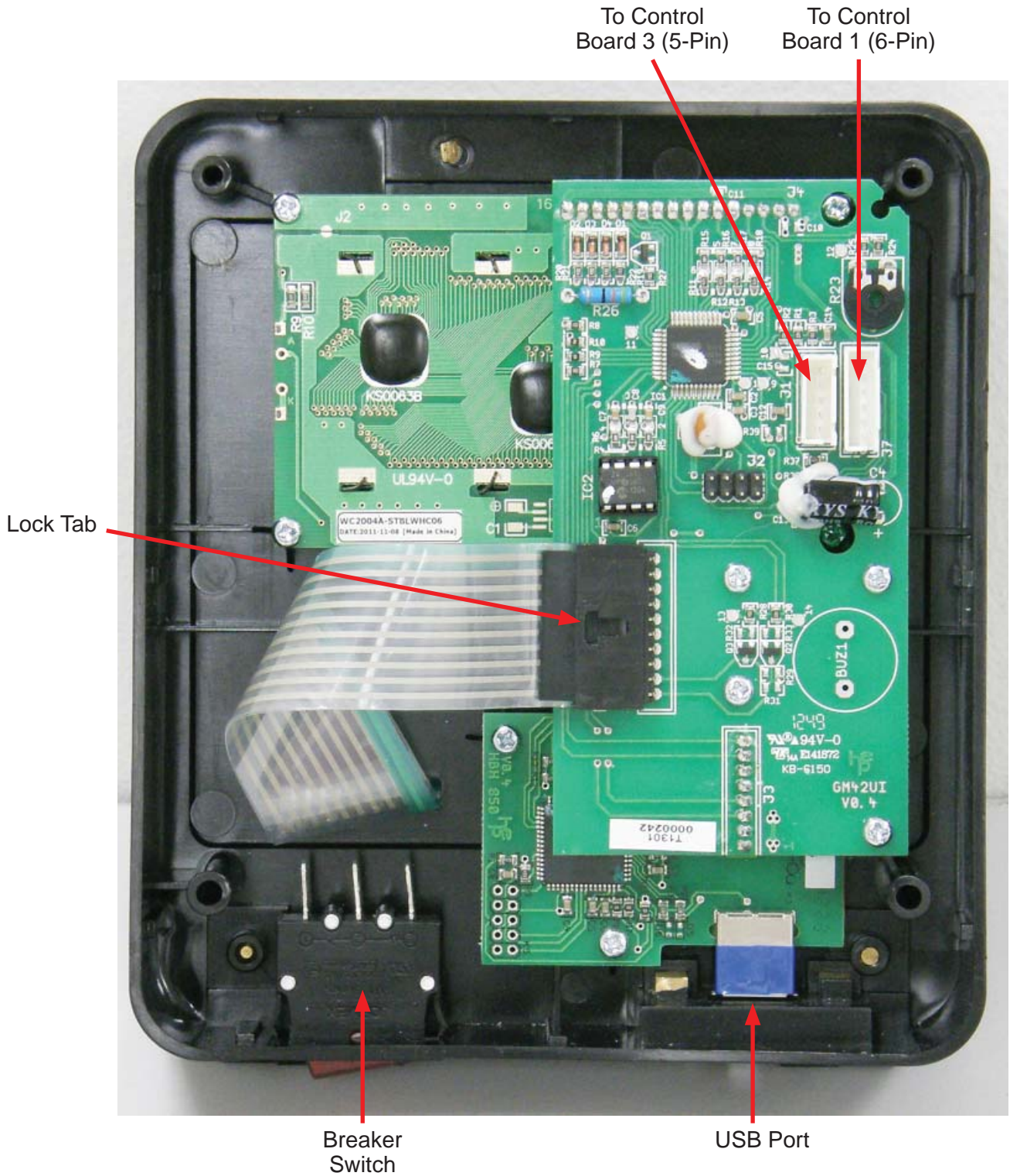
L (Black) From Main Breaker Switch

M1 (Black) Motor

M2 (White) Motor

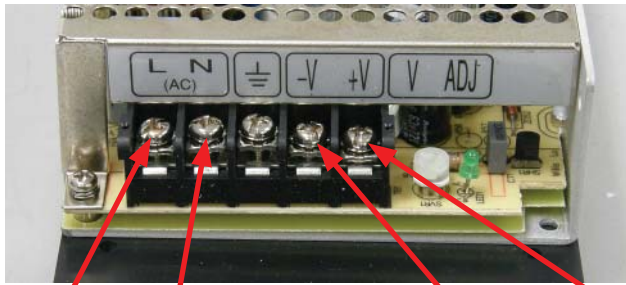
Control Board 4 (Motor Power)

# Interface Display Board Connections

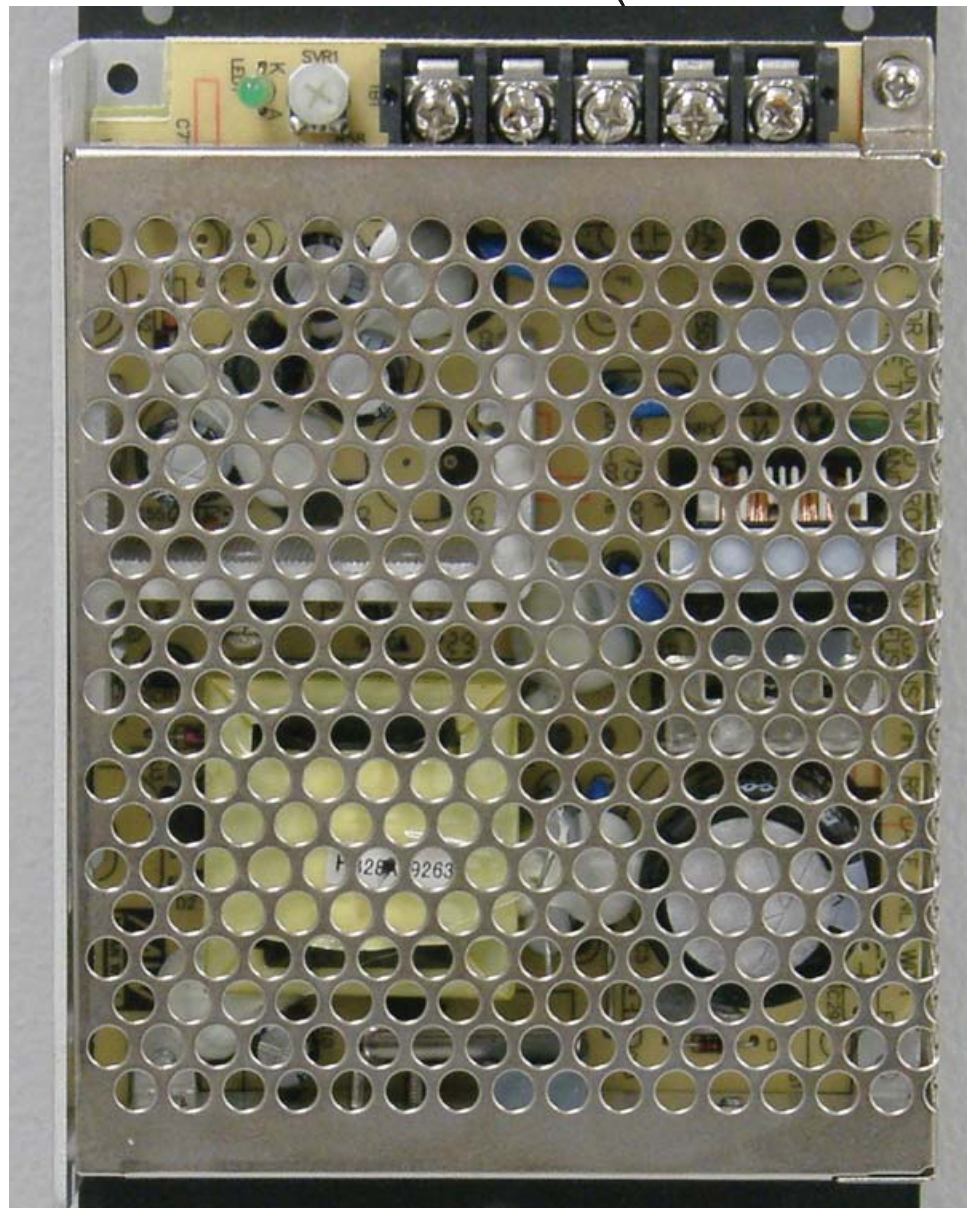


# Power Supply Connections

## 48 VDC POWER SUPPLY

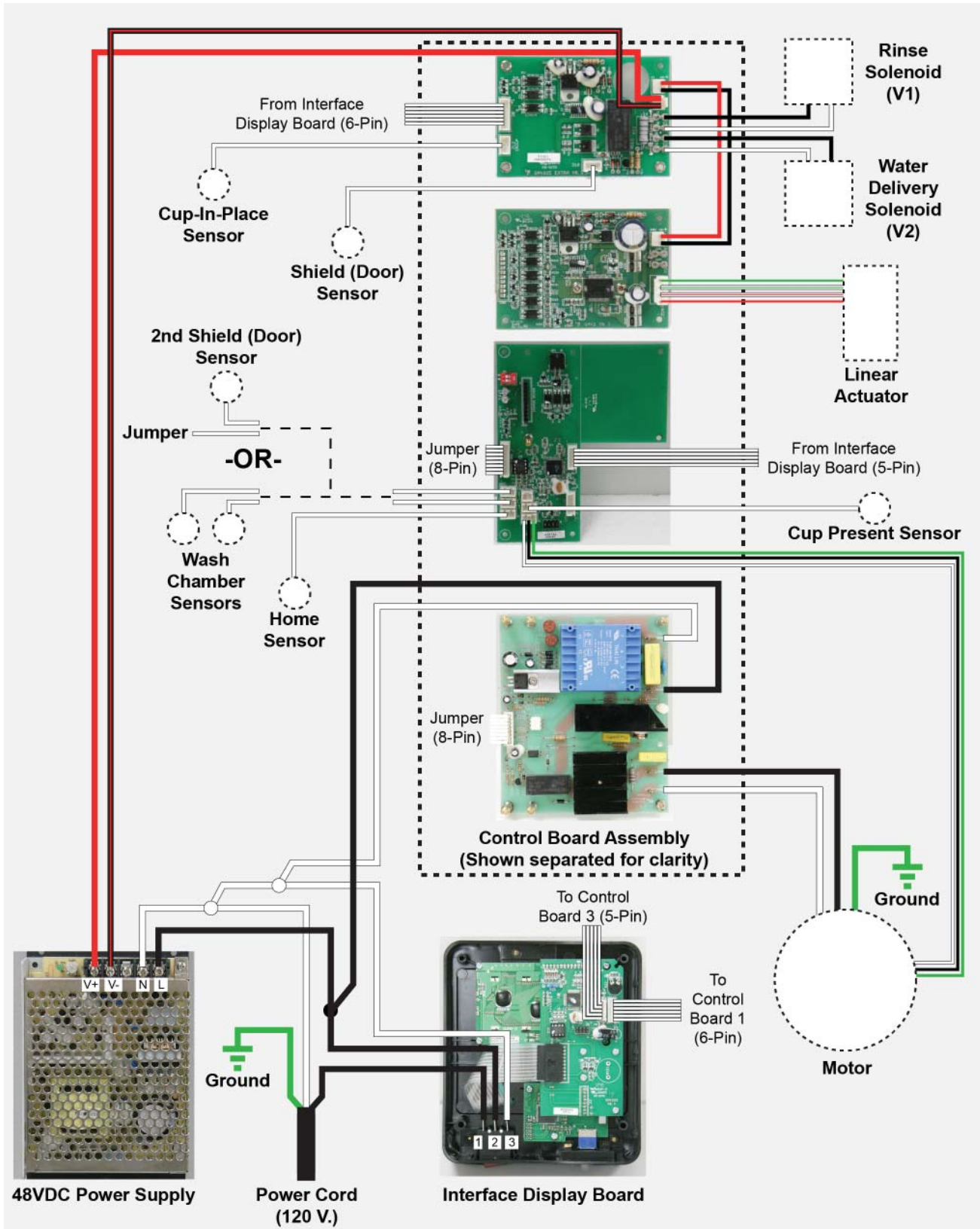


L (Black)    N (White)    -V (Black/Red)    +V (Red)

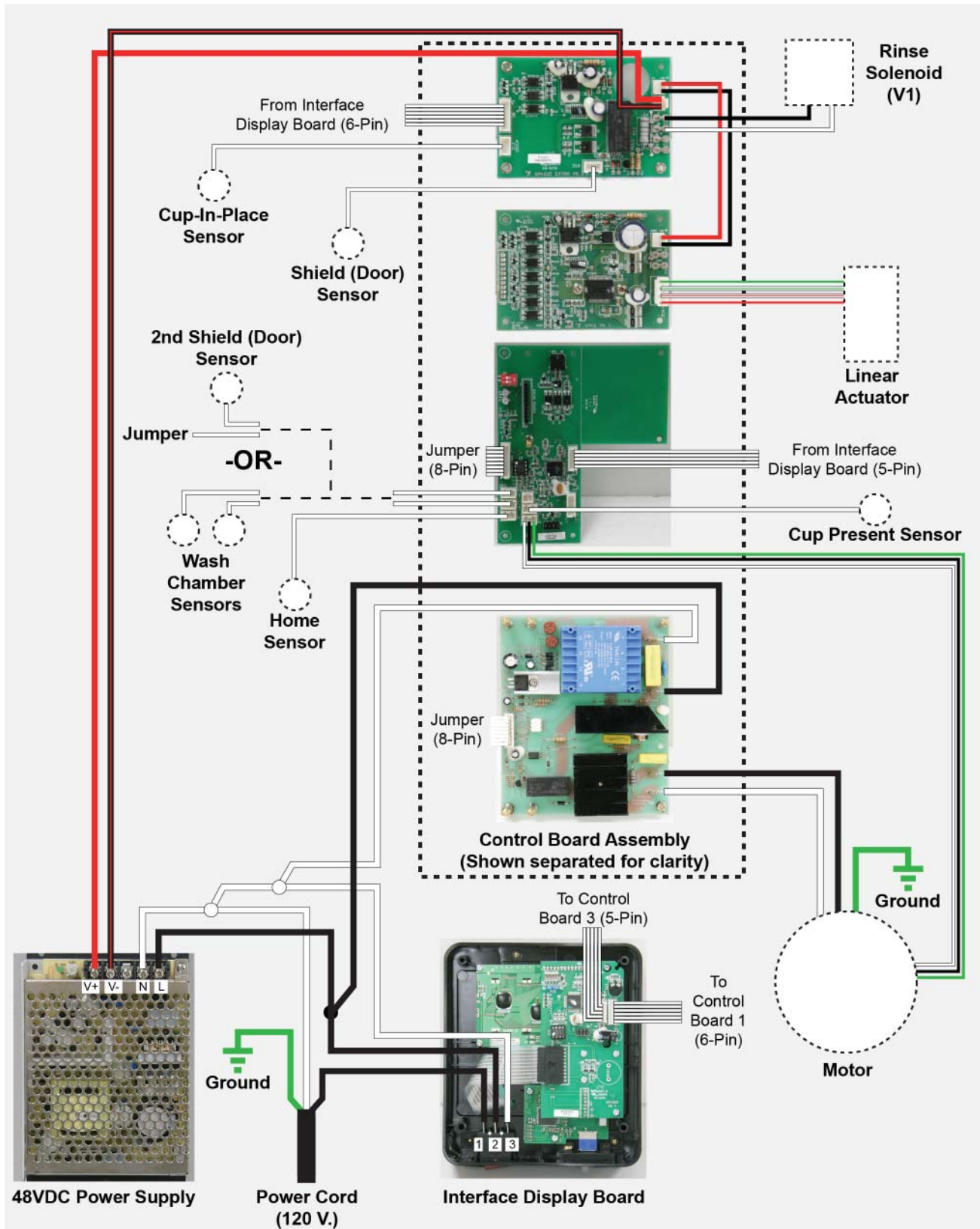


# Wiring Diagrams

## MIC2000

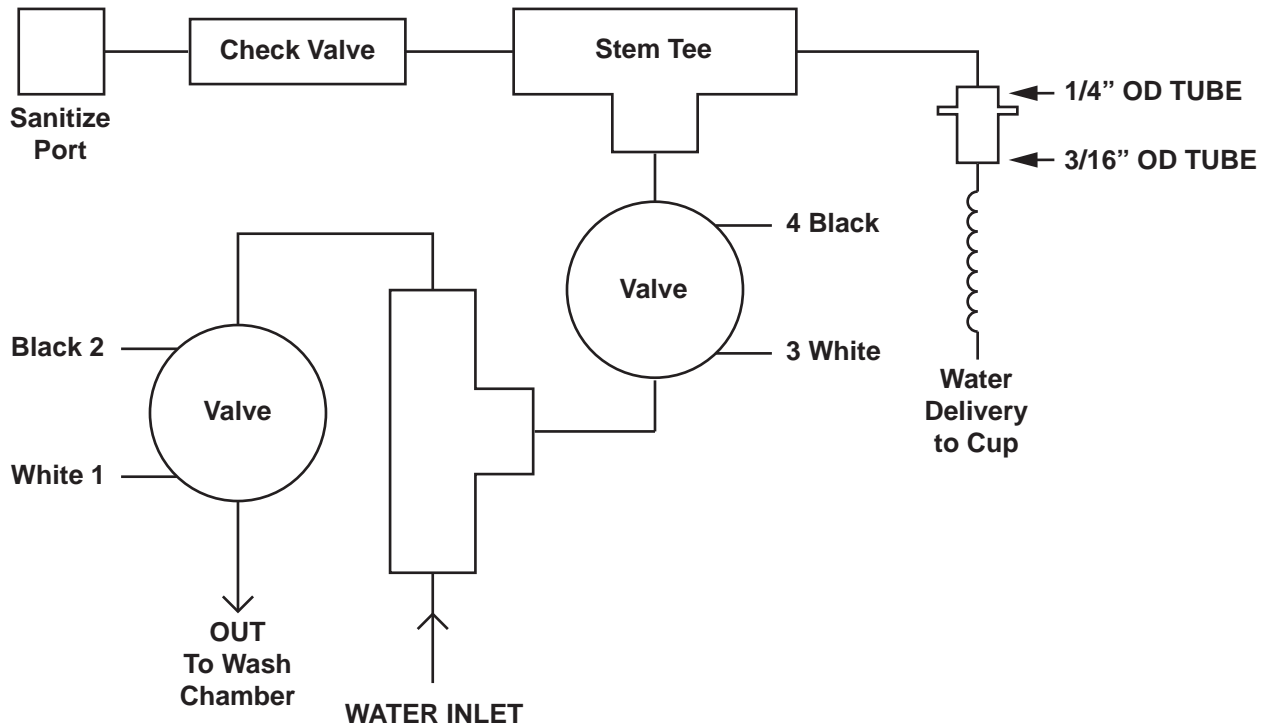


BIC2000

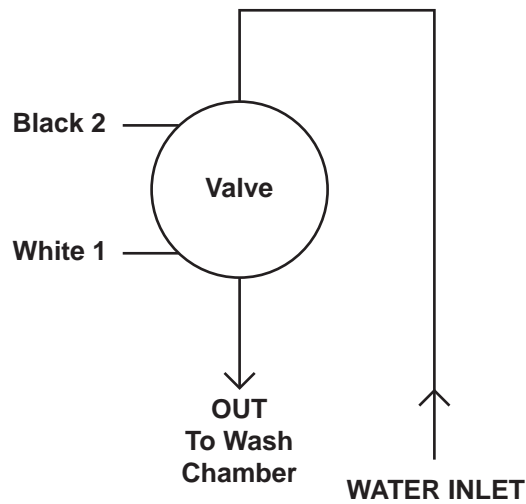


# Water and Valve Diagrams

## MIC2000



## BIC2000



## Component Testing

COMPONENT	OPERATING VOLTAGE	RESISTANCE (Approximate)	TEST LOCATION
Motor	85 VDC	4.4 Ω	WHT to BLK
Linear Actuator	48 VDC	2.7 Ω	RED/WHT to RED
		2.7 Ω	GRN/WHT to GRN
Power Supply	120 VAC	N/A	L to N
	48 VDC	N/A	V- to V+
Water Solenoid Valve	24 VDC	92 Ω	at valve

## Troubleshooting Guide

If SmartServe™ is not operating properly, identify the problem and use the tables below:

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION	
Product too thick after blending (MIC Only)	Water is turned off	Turn water on.	
	Not enough water pressure (less than 45 psi)	Ensure location has sufficient water pressure.	
	Obstruction in water supply line	Repair kinks or replace line.	
	Clogged water filter (if applicable)	Check in-store water filtration system.	
	Improperly calibrated water		Use operator interface panel to check WATER SCALE percentage. Record reading. Contact Technical Services.
			Check if SmartServe™ is using factory settings or if customized settings were implemented via USB port during installation. If factory settings are being used, contact sales representative to have SmartServe™ custom-programmed.
	Product is too cold or being stored at incorrect temperature	Check temperature of freezer unit. Adjust as necessary.	
Water solenoid valve malfunction (stuck closed)	Test water solenoid valve. Replace as necessary.		

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Product too thin after blending (MIC Only)	Product is too warm or being stored at incorrect temperature	Check temperature of freezer unit. Adjust as necessary.
	Improperly calibrated water	Use operator interface panel to check WATER SCALE percentage. Record reading. Contact Technical Services.
		Check if SmartServe™ is using factory settings or if customized settings were implemented via USB port during installation. If factory settings are being used, contact sales representative to have SmartServe™ custom-programmed.
	Hot water is being used for water supply	Ensure water supply is connected to cold water.
	Water solenoid valve malfunction (stuck open)	Test water solenoid valve. Replace as necessary.
Cup holder is loose or missing	Failed cup holder	Replace cup holder.
Water leaking from bottom of SmartServe™	Loose or damaged water lines	Repair or replace water lines.
	Leaking water solenoid valve	Replace water solenoid valve.
	Leaking water delivery manifold assembly (MIC only)	Replace water delivery manifold assembly. Check boards for signs of shorting because the boards probably got wet.
	Leaking drain line or fitting	Replace drain line(s) and fitting(s) as necessary.
	SmartServe™ isn't level	Ensure SmartServe™ is mounted on a level surface.
Water leaking from top of SmartServe™ (MIC only)	Leaking water delivery coil tube	Repair loose connection or replace water delivery coil tube.
	Leaking water delivery manifold assembly (MIC only)	Replace water delivery manifold assembly. Check boards for signs of shorting because the boards probably got wet.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Clicking noise at start of blend cycle	Stepper motor lead screw needs lubrication	Apply lubricant to stepper motor lead screw. Linear actuator slides should only be cleaned, never lubricated.
	Water delivery coil tube cover getting caught while moving down (MIC only)	Reroute or move coil tube and cover as necessary.
Smell coming from SmartServe™	Wash cycle wasn't initiated	Run wash cycle.
	Sanitize cycle wasn't initiated	Run sanitize cycle.
	SmartServe™ and surrounding area requires cleaning	Clean around and under machine.
	Obstructed drain line	Clear drain line.
Buttons on touch pad do not work	Loose connection at user interface display	Check connections at user interface display.
	Loose connection at control board	Check connections at control board.
	Failed touch pad	Replace touch pad.
Wash chamber filling up with water during rinse and/or flush cycles	Obstructed drain line	Clear drain line. Check drain line to ensure it is pitched and vented correctly, if applicable.
	Too much soap suds in wash chamber	Use less soap.
	SmartServe™ isn't level	Ensure SmartServe™ is mounted on a level surface.
Flashing lights inside SmartServe™ on control board	Normal operation	No corrective action necessary.
SmartServe™ not rinsing	Auto-rinse disabled	Enable auto-rinse using user interface display.
	Obstruction inside safety shield	Ensure there are no obstructions inside safety shield.
	Loose connection on control board	Ensure there are no loose connections on control board.
	Not enough water pressure (less than 45 psi)	Ensure location has sufficient water pressure.
	SmartServe™ needs to be rebooted	Power down SmartServe™ and turn back on.
	Rinse valve not operable	Diagnose and replace rinse valve as required.

## Error Code Troubleshooting

If Operator Interface Panel displays an error code message, press STOP button repeatedly until error code message clears or power down SmartServe™ and turn back on to reboot. If error code message remains, use the table below:

ERROR CODE MESSAGE	POSSIBLE CAUSE	CORRECTIVE ACTION
U-Interface Error	Shake cup not in place	Ensure shake cup is placed inside cup holder properly.
	Obstruction in safety shield	Ensure there are no obstructions inside safety shield preventing machine from rinsing or flushing.
	Disrupted blend, rinse, flush, wash, or sanitize cycles.	Ensure there were no disruptions during blend, rinse, flush, wash, or sanitize cycles.
	SmartServe™ needs to be rebooted	Press STOP button repeatedly until error code messages clear or power down SmartServe™ and turn back on to reboot.
	Loose connection or failed shield sensor	Check connection on shield sensor. Test shield sensor if connection is good. Repair or replace as necessary.
	Power supply problem	Check power supply connections. Check voltage at power supply. Check harness between power supply and control board. Repair or replace as necessary.
	Loose or missing shield magnet in base of door	Repair or replace door assembly as required.

ERROR CODE MESSAGE	POSSIBLE CAUSE	CORRECTIVE ACTION
Motor Control Error	Shake cup not in place	Ensure shake cup is placed inside cup holder properly.
	Obstruction in safety shield	Ensure there are no obstructions inside safety shield preventing machine from rinsing or flushing.
	Loose connection at user interface display	Check connections at user interface display.
	Loose connection at control board	Check connections at control board.
	SmartServe™ needs to be rebooted	Press STOP button repeatedly until error code messages clear or power down SmartServe™ and turn back on to reboot.
Motor Control Error Stepper Motion Error	Loose connection or failed home sensor	Check connection on home sensor. Test home sensor if connection is good. Repair or replace as necessary.
	Loose connection or failed cup present sensor	Check connection on cup present sensor. Test cup present sensor if connection is good. Repair or replace as necessary.
	Failed control board	Test control board. Replace as necessary.
	SmartServe™ needs to be rebooted	Press STOP button repeatedly until error code messages clear or power down SmartServe™ and turn back on to reboot.
Motor Control Error Hall Sensor	Loose connection at control board	Check connections at control board.
	Failed motor	Test motor. Replace as necessary.
	Failed control board	Test control board. Replace as necessary.
	SmartServe™ needs to be rebooted	Press STOP button repeatedly until error code messages clear or power down SmartServe™ and turn back on to reboot.
	Program ramp rate conflict	Contact sales to supply or verify any new custom program.

ERROR CODE MESSAGE	POSSIBLE CAUSE	CORRECTIVE ACTION
Communication Error	Shake cup not in place	Ensure shake cup is placed inside cup holder properly.
	Disrupted blend, rinse, flush, wash, or sanitize cycles.	Ensure there were no disruptions during blend, rinse, flush, wash, or sanitize cycles.
	Lower cup shield is assembled improperly or not installed on cup guard housing properly	Ensure lower cup shield is assembled correctly and installed on cup guard housing properly. Magnets go to rear.
	Loose connection at user interface display	Check connections at user interface display.
	Loose connection at control board	Check connections at control board.
	Loose connection or failed wash chamber sensor	Check connection on wash chamber sensor. Test wash chamber sensor if connection is good. Repair or replace as necessary.
	SmartServe™ needs to be rebooted	Press STOP button repeatedly until error code messages clear or power down SmartServe™ and turn back on to reboot.
Shield Obstruction Error	Obstruction in safety shield	Ensure there are no obstructions inside safety shield preventing machine from rinsing or flushing.
	Shake cup not in place	Ensure shake cup is placed inside cup holder properly.
	Lower cup shield is assembled improperly or not installed on cup guard housing properly	Ensure lower cup shield is assembled correctly and installed on cup guard housing properly. Magnets go to rear.
	Loose connection at control board	Check connections at control board.
	SmartServe™ needs to be rebooted	Press STOP button repeatedly until error code messages clear or power down SmartServe™ and turn back on to reboot.

ERROR CODE MESSAGE	POSSIBLE CAUSE	CORRECTIVE ACTION
Interlock Error	Product is too cold or being stored at incorrect temperature	Check temperature of freezer unit. Adjust as necessary.
	Obstruction in safety shield	Ensure there are no obstructions inside safety shield preventing machine from rinsing or flushing.
	SmartServe™ needs to be rebooted	Press STOP button repeatedly until error code messages clear or power down SmartServe™ and turn back on to reboot.
Replace Cup	Cup sensor is disabled	Use operator interface panel to see if cup sensor is enabled. If disabled, set to enabled.
	Loose connection or failed cup sensor	Check connection on control board. Test cup sensor if connection is good. Repair or replace as necessary.
	SmartServe™ needs to be rebooted	Press STOP button repeatedly until error code messages clear or power down SmartServe™ and turn back on to reboot.
Hamilton Beach Commercial (screen froze, touch pad doesn't work)	SmartServe™ needs to be rebooted	Press STOP button repeatedly until error code messages clear or power down SmartServe™ and turn back on to reboot.
	Failed linear actuator	Test linear actuator. Replace as necessary.
	Failed motor	Test motor. Replace as necessary.
	Failed touch pad	Test touch pad. Replace as necessary.

## Safety Shield Assembly

The safety shield assembly is located on the front of the machine. The assembly includes a shield door that can be serviced separately. A magnet embedded in the assembly interacts with the shield sensor. Some models have two door magnets and sensors. The machine will not operate if the safety shield assembly is not installed and the door is not closed properly.

### **! WARNING**

To avoid risk of serious injury or death, disconnect power to the machine before cleaning, servicing, or removing parts.

### **! CAUTION**

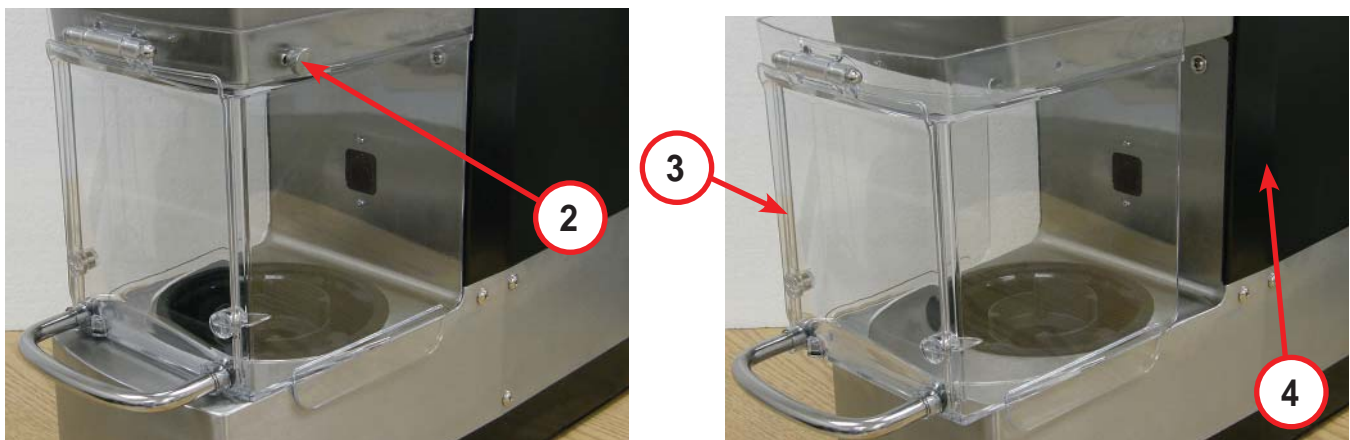
Do not use power tools to remove hardware. Damage to the hardware or the machine may occur. Do not lose hardware.

To remove the safety shield assembly:

1. Ensure the control panel power switch (1) is in the OFF position and unplug the machine.



2. Remove two thumb screws (2) from the safety shield assembly (3).
3. Slide the safety shield assembly (3) forward to remove from the machine (4).



To install the safety shield assembly:

1. Slide the safety shield assembly (3) onto the machine (4).
2. Install a thumb screw (2) on each side of the safety shield assembly (3).



3. Plug in the power cord to the machine, turn the control panel power switch (1) to the RESET position, and verify machine operates.



## Top Cover

The top cover is located on the top of the machine. Removal of the top cover allows access to various components of the machine.

### ⚠ WARNING

To avoid risk of serious injury or death, disconnect power to the machine before cleaning, servicing, or removing parts.

### ⚠ CAUTION

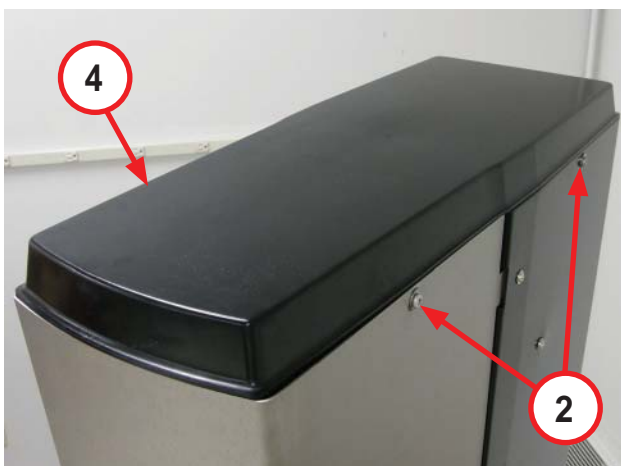
Do not use power tools to remove hardware. Damage to the hardware or the machine may occur. Do not lose hardware.

To remove the top cover:

1. Ensure the control panel power switch (1) is in the OFF position and unplug the machine.

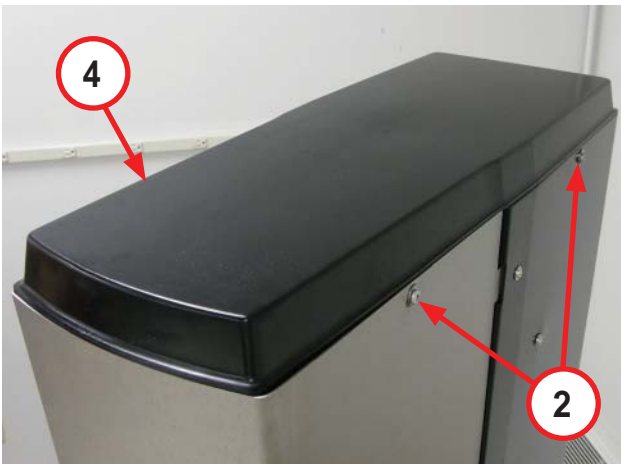


2. Remove two screws (2) from each side of the machine (3).
3. Lift the top cover (4) from the machine (3).



To install the top cover:

1. Place the top cover (4) onto the machine (3) as shown.
2. Install two screws (2) on each side of the machine (3).



3. Plug in the power cord to the machine, turn the control panel power switch (1) to the RESET position, and verify machine operates.



## Operator Interface Panel Assembly

The operator interface panel assembly is located on the front of the machine and is used to operate the machine. The assembly has a breaker switch, control board, touch pad, and access door that are serviceable.

### **⚠ WARNING**

To avoid risk of serious injury or death, disconnect power to the machine before cleaning, servicing, or removing parts.

### **⚠ CAUTION**

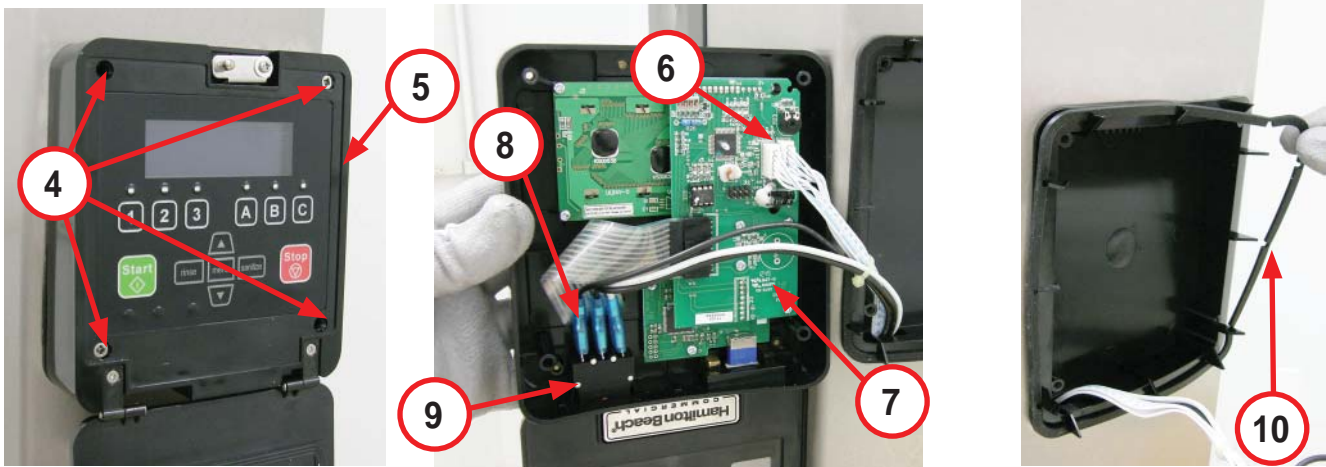
Do not use power tools to remove hardware. Damage to the hardware or the machine may occur. Do not lose hardware.

To remove the operator interface panel assembly:

1. Ensure the control panel power switch (1) is in the OFF position and unplug the machine.
2. Lift the metal tab (2) on the panel to lower the access door (3).



3. Remove four screws (4) from the panel (5).
4. Carefully lift the panel (5) from the machine.
5. Mark and disconnect two connectors (6) from the interface control board (7).
6. Mark and disconnect three wires (8) from the breaker switch (9).



To install the operator interface panel assembly:

1. Ensure the panel gasket (10) is on the machine.
2. Connect three wires (8) to the breaker switch (9).
3. Connect two connectors (6) to the interface control panel (7).
4. Position the panel (5) on the machine and ensure the gasket (10) is seated properly.
5. Install four screws (4) on the panel (5).
6. Close the access door (3).
7. Plug in the power cord to the machine, turn the control panel power switch (1) to the RESET position, and verify machine operates.

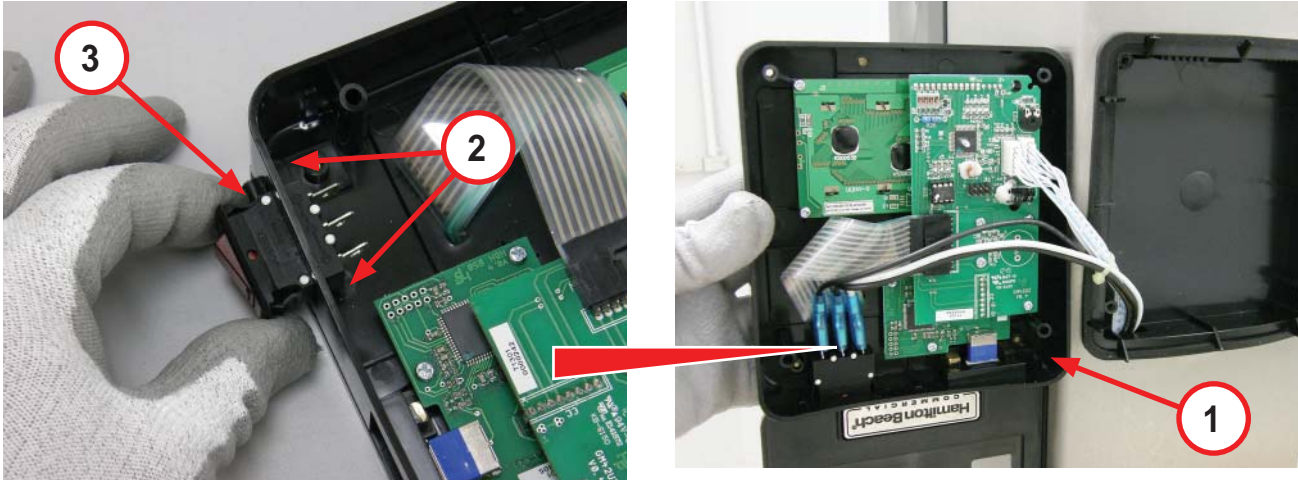


## Breaker Switch

The breaker switch is located on the operator interface panel and is used to turn the main power on or off.

To remove the breaker switch:

1. Remove the operator interface panel assembly (1) as outlined in this manual.
2. Depress the tabs (2) on the switch (3) and remove the switch from the operator interface panel assembly (1).



To install the breaker switch:

1. Push the switch (3) into the operator interface panel assembly (1) until the tabs (2) lock the switch (3) in place.
2. Install the operator interface panel assembly (1) as outlined in this manual and verify operation.

## Interface Display Board

The interface display board is located on the operator interface panel and is used to display information to the user and relay input commands to the control board assembly.

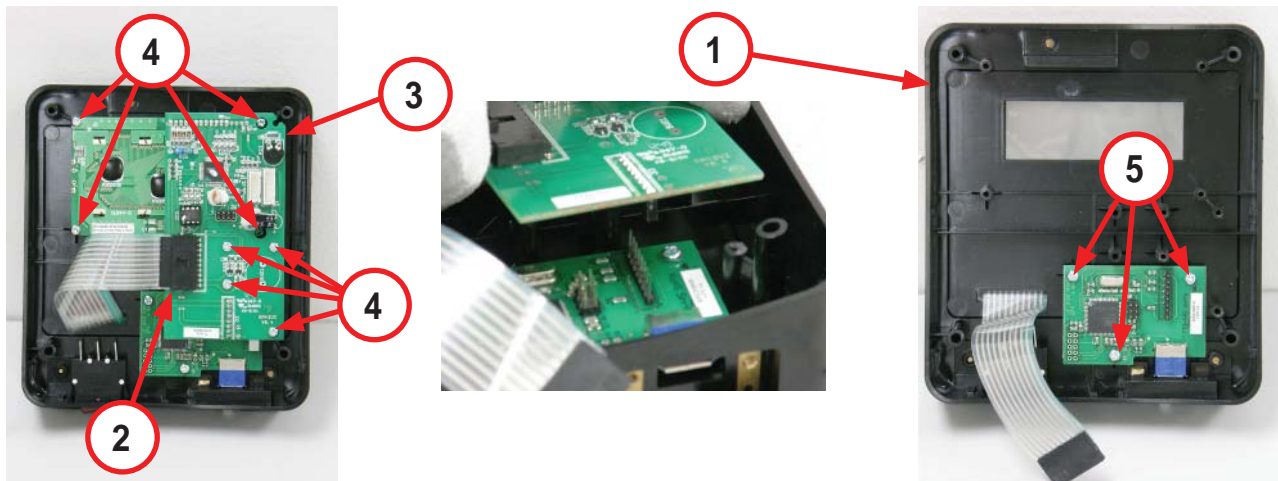
To remove the interface display board:

1. Remove the operator interface panel assembly (1) as outlined in this manual.
2. Disconnect the touch pad ribbon cable (2) from the display board (3).
3. Remove eight screws (4) and gently pull upper boards from lower board.

### CAUTION

Use care when removing the upper boards from the lower board to avoid damage to the pins.

4. Remove three screws (5) and lower board from panel.



To install the interface display board:

1. Separate the display board assembly.
2. Install the lower board with three screws (5) to the operator interface panel assembly (1).

### CAUTION

Use care when installing the upper boards on the lower board to avoid damage to the pins.

3. Gently place the upper boards on the lower board. Ensure the pins line up.
4. Install eight screws (4).
5. Connect the touch pad ribbon cable (2) to the display board (3).
6. Install the operator interface panel assembly (1) as outlined in this manual and verify operation.

## Touch Pad

The touch pad is located on the operator interface panel and is used by the operator to control the machine.

To remove the touch pad:

1. Remove the operator interface panel assembly (1) as outlined in this manual.
2. Disconnect the touch pad ribbon cable (2) from the display board (3).
3. Using a flat tool, such as a razor, start at the corner and peel the touch pad (4) off the operator interface panel assembly (1).
4. Pull the ribbon cable (2) through the slot on the operator interface panel assembly (1).



To install the touch pad:

1. Clean the surface thoroughly to remove any adhesive residue.
2. Clean the LCD screen to remove any smudges or fingerprints.
3. Insert the ribbon cable (2) through the slot of the operator interface panel assembly (1).

**NOTE:** The adhesive on the touch pad will adhere to the plastic instantly. It will be very difficult to reposition the touch pad if not aligned properly. Be careful to avoid air pockets/bubbles. Do not remove the protective paper all at once.

4. Apply the touch pad (4) starting on the upper left side and slowly roll the protective paper off the touch pad (4) while applying the touch pad (4) to the panel. Continuously feed the ribbon cable (2) through the slot.
5. Connect the touch pad ribbon cable (2) to the display board (3).
6. Install the operator interface panel assembly (1) as outlined in this manual and verify operation.

## Cup Guard & Shield Assembly

The cup guard & shield assembly is lowered over the cup during operation and cleaning cycles. It is mounted on the motor assembly.

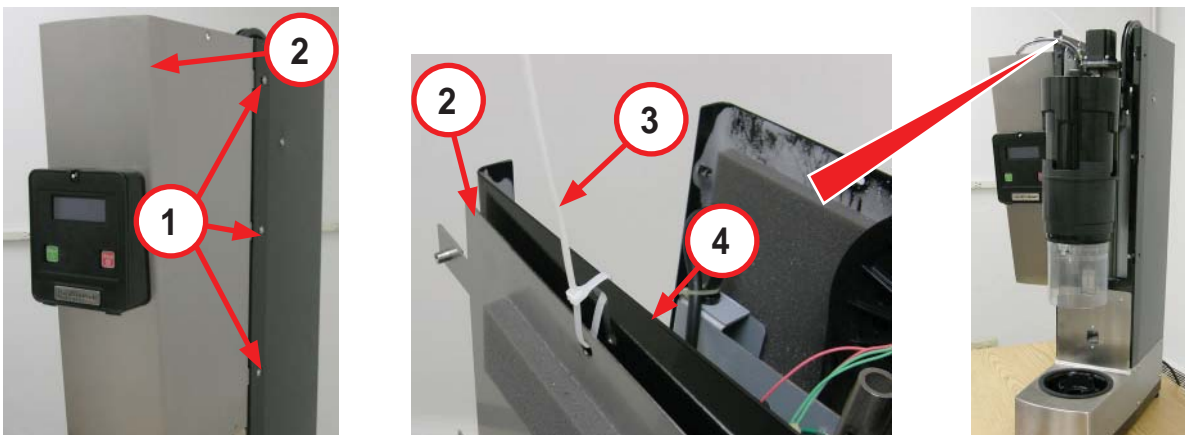
To remove the cup guard & shield assembly:

1. Remove the safety shield assembly as outlined in this manual.
2. Remove the top cover as outlined in this manual.
3. Remove the blades using the removal tool (PN 9900167800). The threads are right hand and it may be necessary to strike the tool with a hammer to loosen the blades.
4. Remove three screws (1) from each side of the machine.
5. Lift the front panel wrap (2) from the machine.

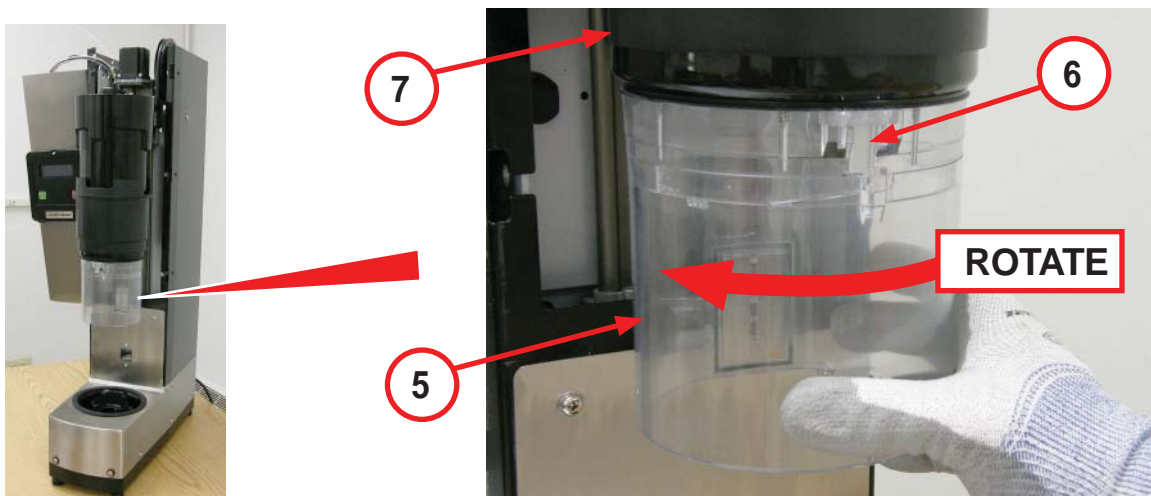
**NOTE:** Avoid overextending the wire harness attached to the interface panel on the wrap.

**NOTE:** Cover front panel wrap to avoid scratches/damage from contact with side of machine.

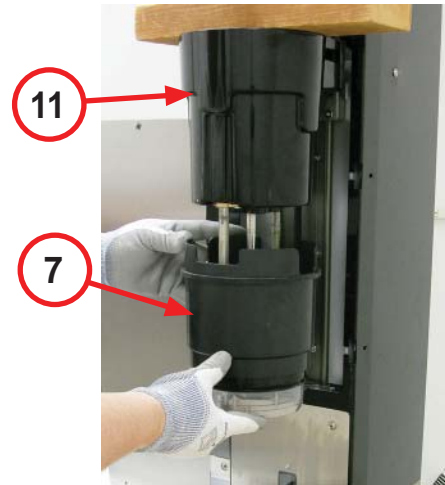
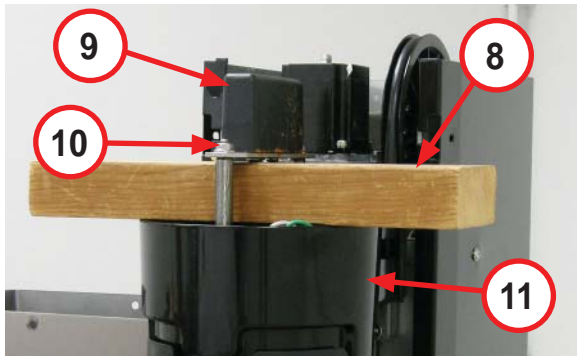
6. Using a large wire tie (3), secure the wrap (2) to the machine using the hole in the top of the side panel (4).



7. Remove the cup shield (5) by pressing the tab (6) in the cup guard and shield assembly (7) and turn the cup shield (5) clockwise.



8. Raise the cup guard and shield assembly (7) and place a support block (8) under the shield block (9).
9. Remove two flange nuts (10), shield block (9), and cup guard and shield assembly (7) from the motor assembly (11).

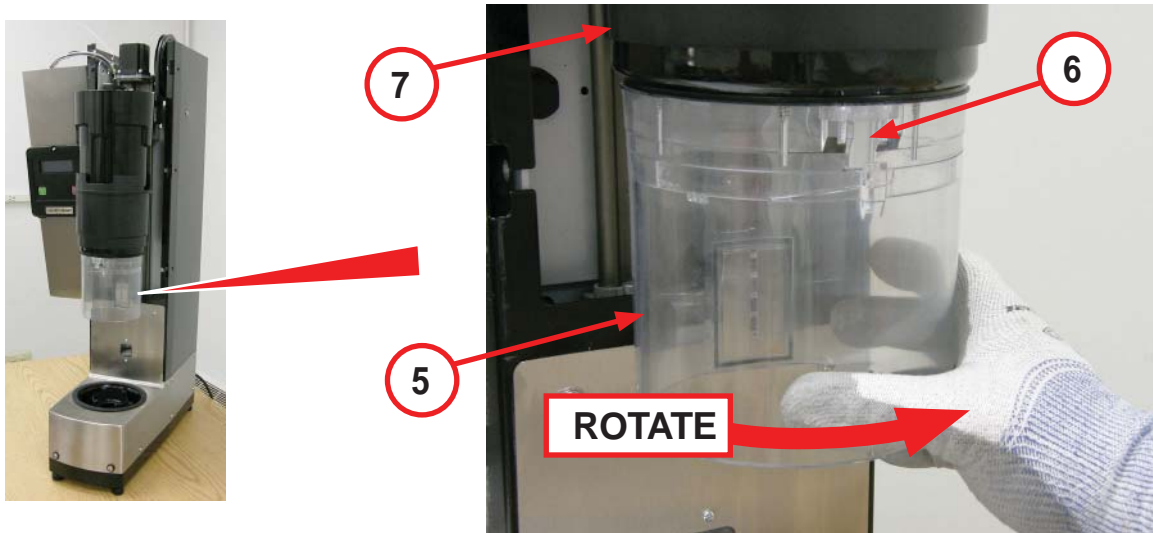


To install the cup guard & shield assembly:

1. Install the cup guard and shield assembly (7) with two flange nuts (10) and shield block (9) on the motor assembly (11).

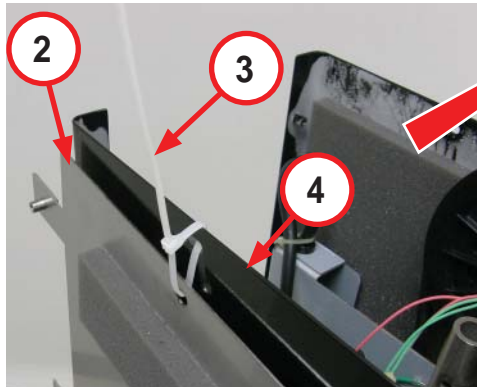
**NOTE:** Take care to align motor shaft with shaft seal so bearing grommet and shaft seal are not pushed out of place by motor shaft during installation.

2. Install the cup shield (5) on the cup guard and shield assembly (7) until the tab (6) locks into place.



3. Remove the wire tie (3) holding the wrap (2) to the side panel (4).
4. Position the wrap (2) on the machine and secure the wrap with six screws (1).

**NOTE:** Ensure the wire harness is positioned in a way to avoid interference with the movement of the cup guard and shield assembly.



5. Install the blade assembly. It is not necessary to tighten the blades with a tool. The operation of the machine will tighten the bladed assembly sufficiently.
6. Install the top cover as outlined in this manual.
7. Install the safety shield assembly as outlined in this manual.
8. Plug in the power cord to the machine, turn the control panel power switch to the RESET position, and verify machine operates.

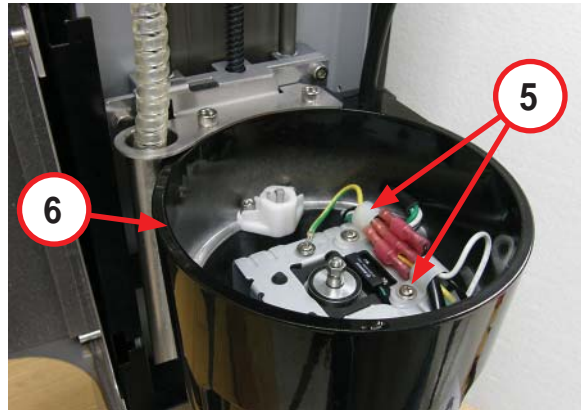
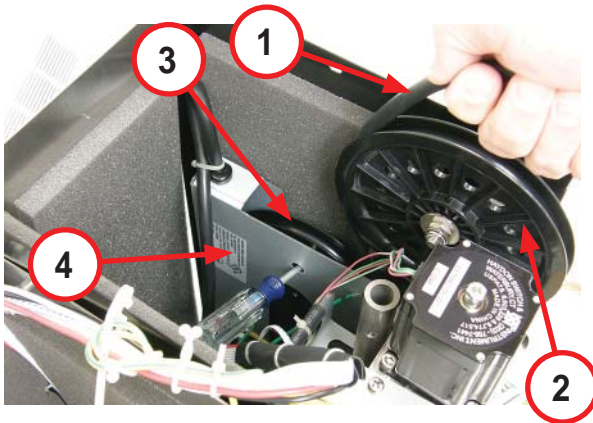
## Motor Assembly

The motor assembly is used to turn the blade assembly. It receives power through the control board.

To remove the motor assembly:

**NOTE:** This removal procedure is for the BIC2000. The removal procedure for the MIC2000 is similar and will require the water supply to be disconnected and the system purged before removing the motor assembly.

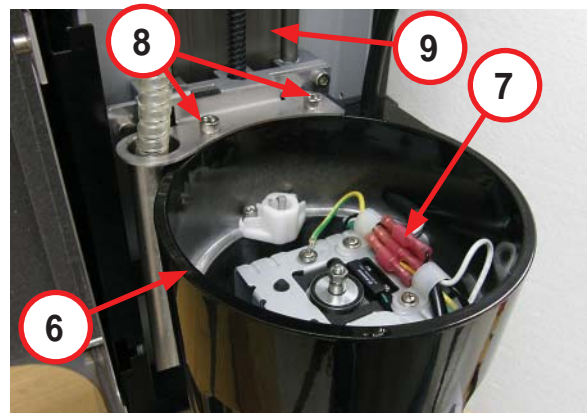
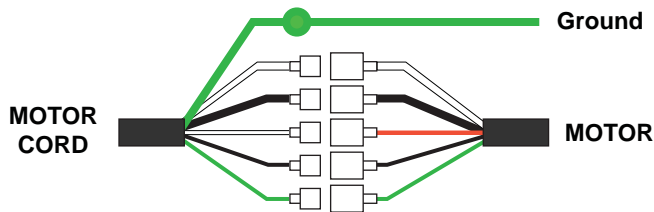
1. Remove the blades using the removal tool (PN 9900167800). The threads are right hand and it may be necessary to strike the tool with a hammer to loosen the blades.
2. Remove the shield assembly as outlined in this manual.
3. Pull up on the motor cord (1) just under the top pulley (2). This will raise the lower pulley (3). Position a punch or screwdriver through the hole in the upper portion of the festoon sheet metal (4) and one of the holes in the lower pulley (3). This will hold the spring force and create slack in the motor cord (1).
4. Remove two clamps (5) from the motor assembly (6).



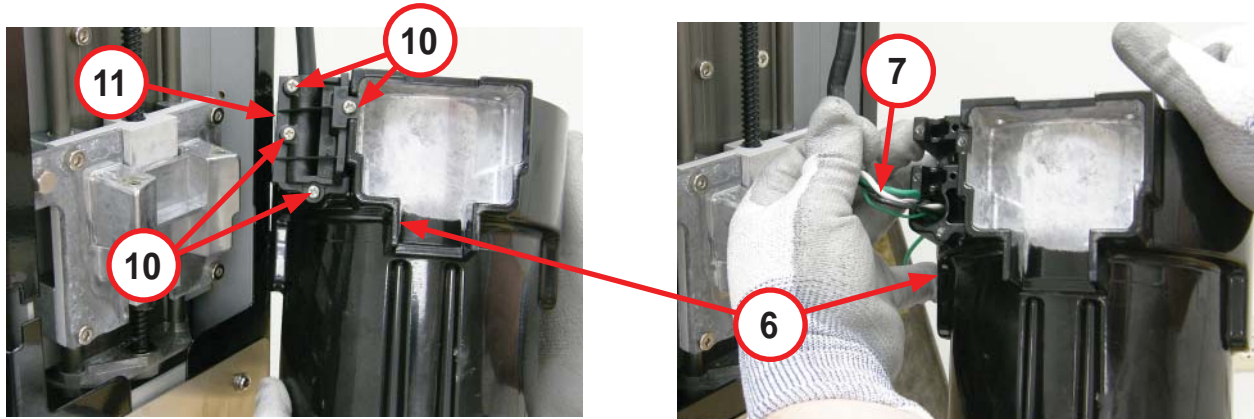
5. Mark and disconnect six wires (7).

**NOTE:** On the MIC2000, disconnect the spiral water line from the water delivery manifold before step 5.

6. Remove two screws (8) and motor assembly (6) from the linear actuator assembly (9).

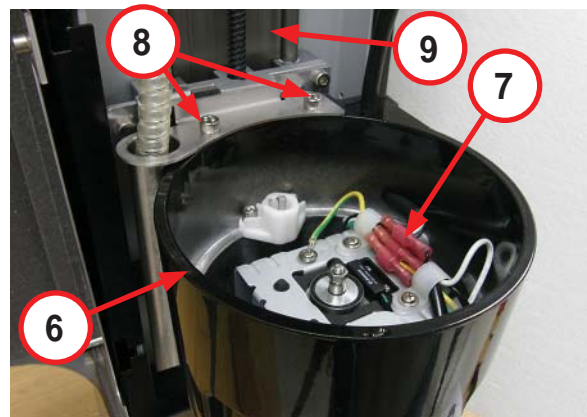
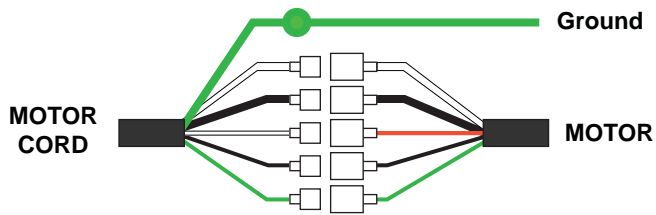


7. Remove four screws (10) and harness cover (11) from motor assembly (6).
8. Pull six wires (7) from the motor assembly (6).



To install the motor assembly:

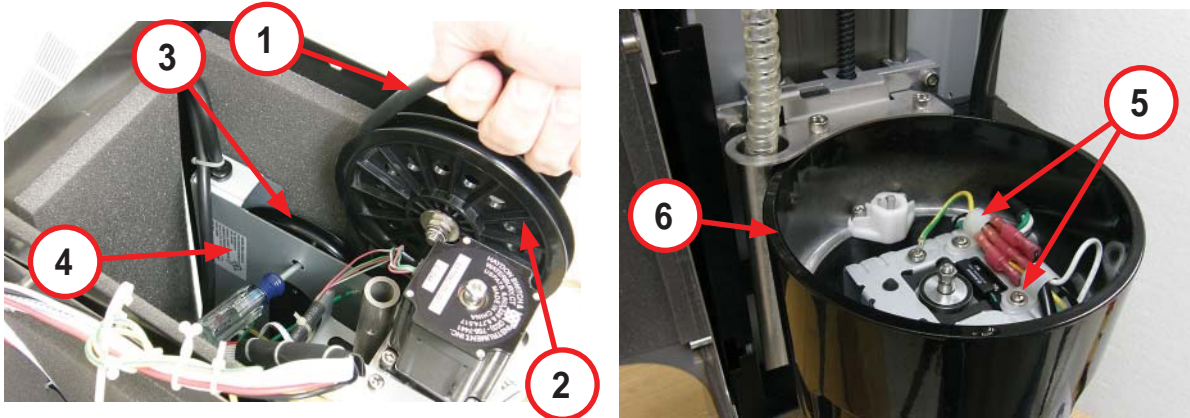
1. Feed six wires (7) into the motor assembly (6).
2. Secure the wire harness in place with the harness cover (11) and four screws (10).
3. Install the motor assembly (6) on the linear actuator assembly (9) with two screws (8).
4. Connect six wires (7).



5. Secure the wires (7) with two clamps (5) on the motor assembly (6).

**NOTE:** On the MIC2000, connect the spiral water line to the water delivery manifold after step 5.

6. Pull up on the motor cord (1) just under the top pulley (2). This will raise the lower pulley (3). Remove the punch or screwdriver holding the lower pulley (3) and gently lower the motor cord (1) into place.



7. Install the shield assembly as outlined in this manual.
8. Install the blade assembly. It is not necessary to tighten the blades with a tool. The operation of the machine will tighten the bladed assembly sufficiently.
9. Plug in the power cord to the machine, turn the control panel power switch to the RESET position, and verify machine operates.

## Linear Actuator Assembly

The linear actuator assembly is used to lower and raise the motor carriage during use.

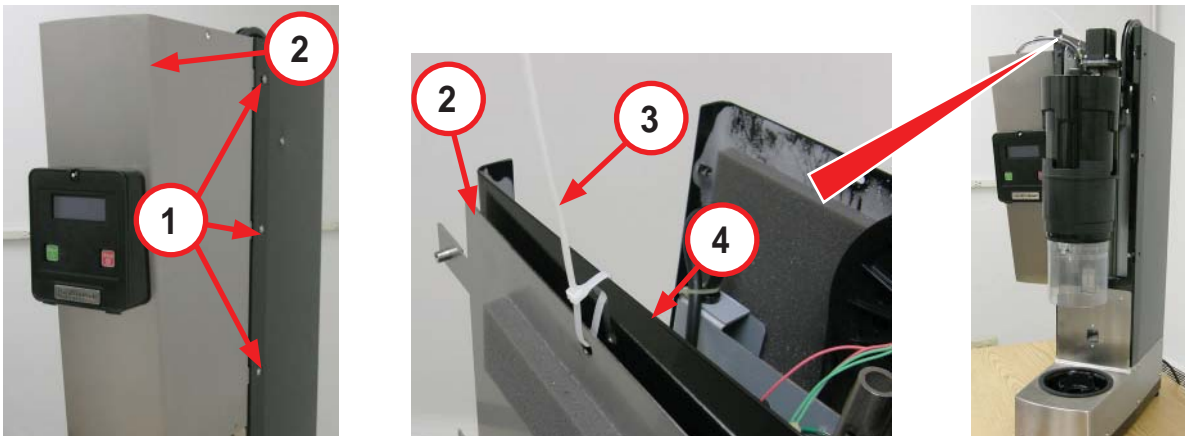
To remove the linear actuator assembly:

1. Remove the safety shield assembly as outlined in this manual.
2. Remove the top cover as outlined in this manual.
3. Remove three screws (1) from each side of the machine.
4. Lift the front panel wrap (2) from the machine.

**NOTE:** Avoid overextending the wire harness attached to the interface panel on the wrap.

**NOTE:** Cover front panel wrap to avoid scratches/damage from contact with side of machine.

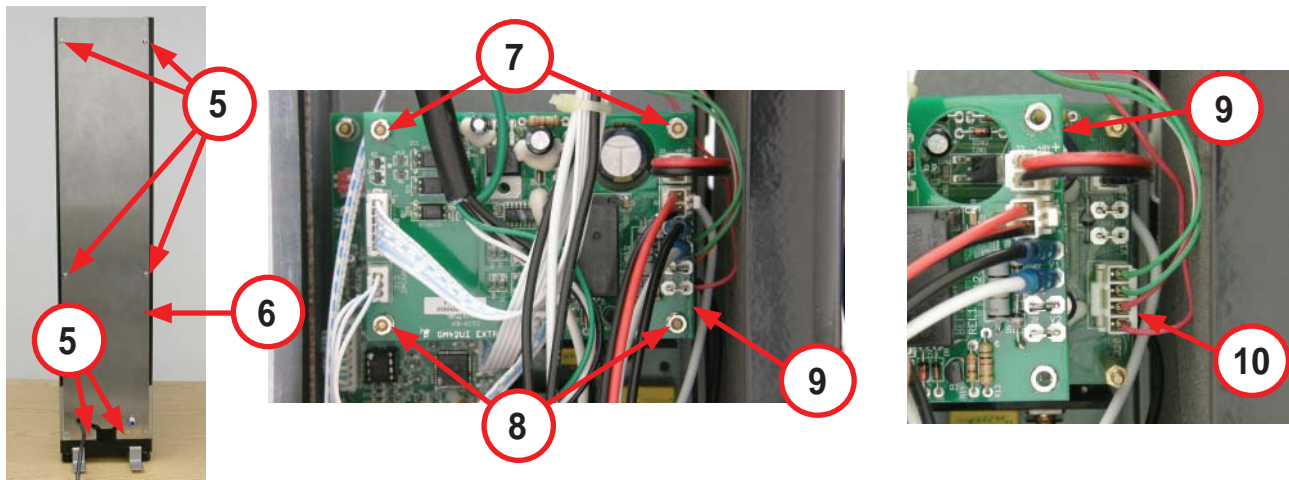
5. Using a large wire tie (3), secure the wrap (2) to the machine using the hole in the top of the side panel (4).



6. Remove six screws (5) and back cover (6) from machine.

**NOTE:** Remove any wire ties as required.

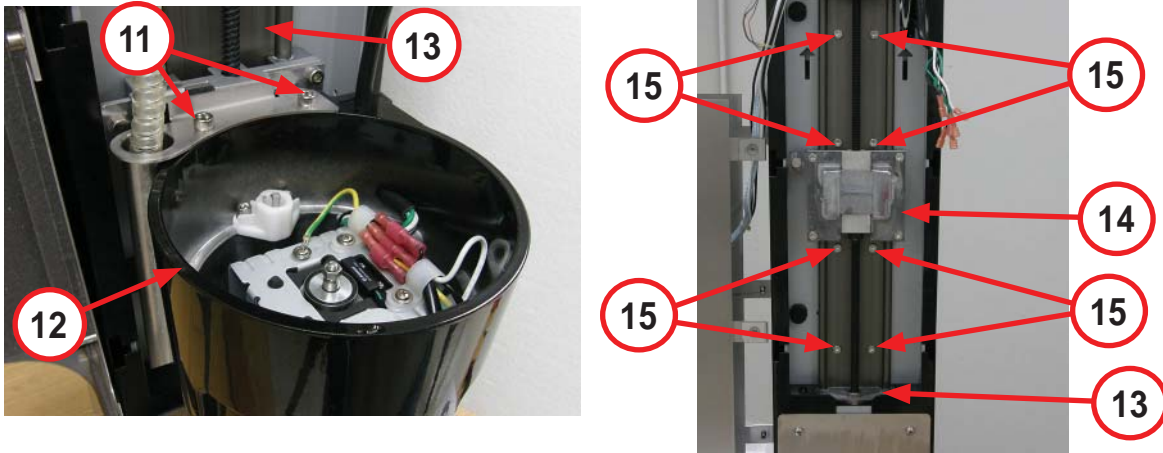
7. Remove four nuts (7) and lockwashers (8) from control board (9).
8. Position the control board (9) to the left to access and disconnect the linear motor connector (10).



**NOTE:** On the MIC2000, disconnect the spiral water line from the water delivery manifold before step 9.

9. Remove two screws (11) and lift motor assembly (12) from the linear motor assembly (13). Allow the motor assembly to hang by the motor cord.
10. Position the motor mount (14) so that all eight screws (15) are accessible.
11. Remove eight screws (15) and linear motor assembly (13) from machine.

**NOTE:** Motor shown removed for clarity.



To install the linear actuator assembly:

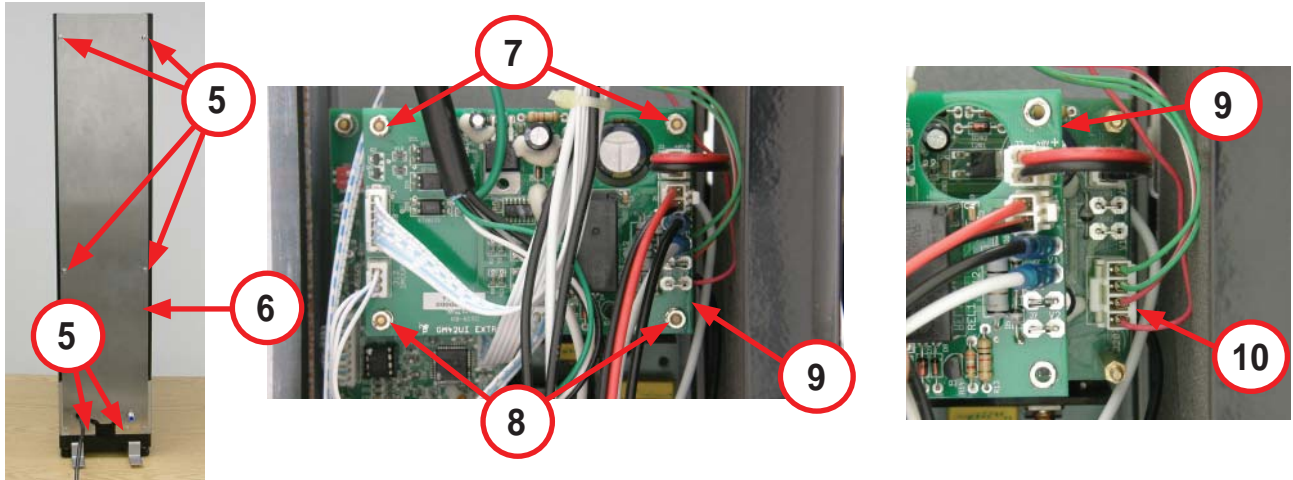
1. Install the linear motor assembly (13) on the machine with eight screws (15).
2. Place the motor assembly (12) on the linear motor assembly (13) and secure in place with two screws (11).

**NOTE:** On the MIC2000, connect the spiral water line to the water delivery manifold after step 2.

3. Connect the linear motor connector (10) to the control board (9).
4. Position the control board (9) on the standoffs and install lockwashers (8) and nuts (7).

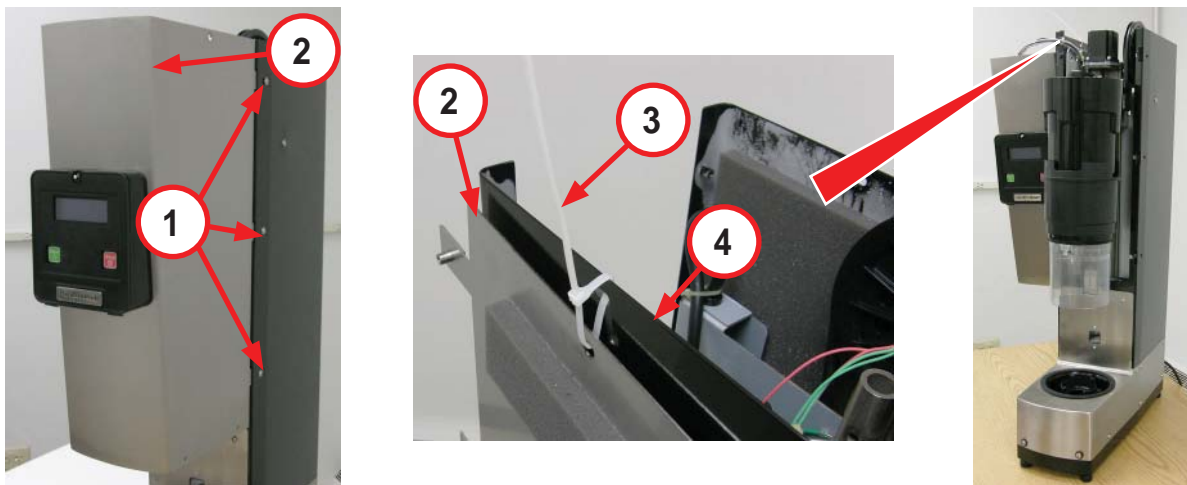
**NOTE:** Secure any loose wires with wire ties as required.

5. Install six screws (5) and back cover (6) on the machine.



6. Remove the wire tie (3) holding the wrap (2) to the side panel (4).
7. Position the wrap (2) on the machine and secure the wrap with six screws (1).

**NOTE:** Ensure the wire harness is positioned in a way to avoid interference with the movement of the cup guard and shield assembly.



8. Install the top cover as outlined in this manual.
9. Install the safety shield assembly as outlined in this manual.
10. Plug in the power cord to the machine, turn the control panel power switch to the RESET position, and verify machine operates.

## 48VDC Power Supply

The 48VDC power supply is located behind the back panel and distributes power to control board #1 and jumps to control board #2 to supply power for valves and linear actuator motor.

### ⚠ WARNING

To avoid risk of serious injury or death, disconnect power to the machine before cleaning, servicing, or removing parts.

### ⚠ CAUTION

Do not use power tools to remove hardware. Damage to the hardware or the machine may occur. Do not lose hardware.

To remove the power supply:

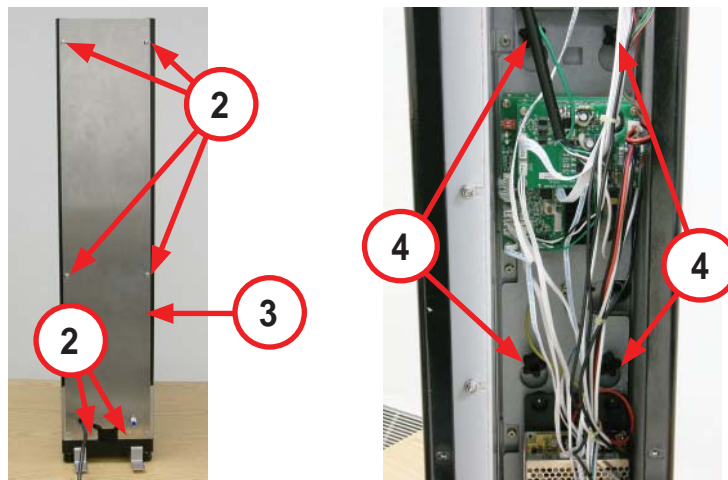
1. Ensure the control panel power switch (1) is in the OFF position and unplug the machine.



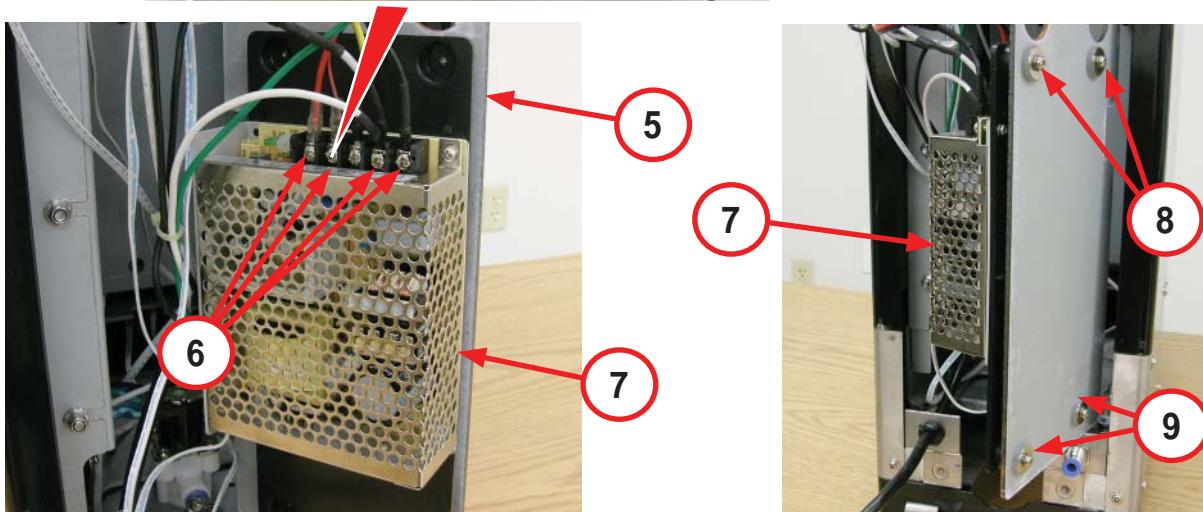
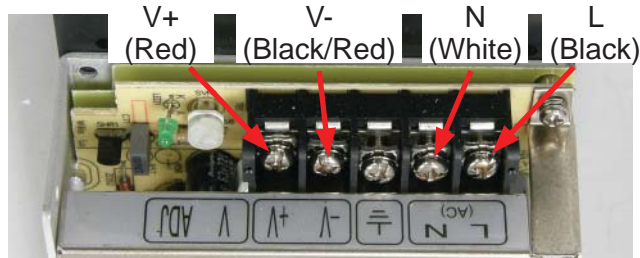
2. Remove six screws (2) and back cover (3) from machine.

**NOTE:** Remove any wire ties as required.

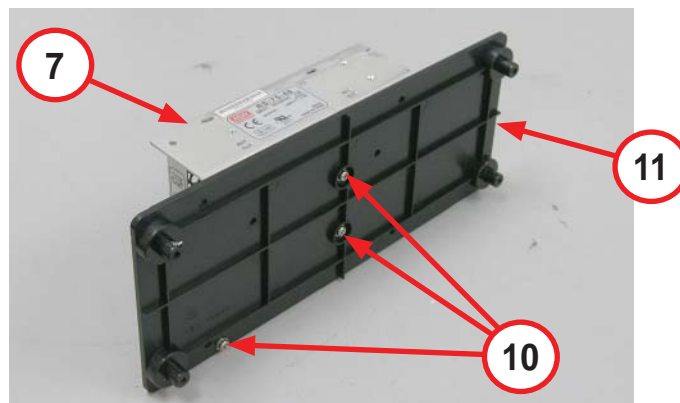
3. Loosen four knobs (4). Do not remove the knobs.



4. Lift and rotate clockwise the power control assembly (5) until you are able to access the rear of the power control assembly (5).
5. Mark and disconnect four wires (6) from the power supply (7).
6. Remove four screws (8), washers (9), and power supply (7) from the power control assembly (5).



7. Remove four screws (10) and power supply (7) from the isolation panel (11).



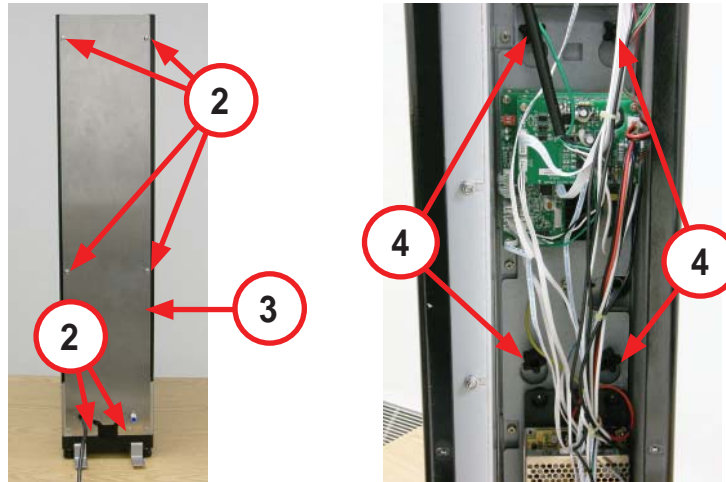
To install the power supply:

1. Install four screws (10) and power supply (7) on the isolation panel (11).
2. Install the power supply (7) on the power control assembly (5) with four washers (9) and screws (8).
3. Connect four wires (6) to the power supply (7).

- Carefully position the power control assembly (5) on the four knobs (4).

**NOTE:** Ensure all connections on the power supply and control board are secure. Replace any wire ties as required.

- Hand-tighten the four knobs (4).
- Install the back cover (3) with six screws (2).



- Plug in the power cord to the machine, turn the control panel power switch (1) to the RESET position, and verify machine operates.



## Control Board Assembly

The control board assembly is located behind the back panel and controls all functions of the machine.

### ⚠ WARNING

To avoid risk of serious injury or death, disconnect power to the machine before cleaning, servicing, or removing parts.

### ⚠ CAUTION

Do not use power tools to remove hardware. Damage to the hardware or the machine may occur. Do not lose hardware.

To remove the control board assembly:

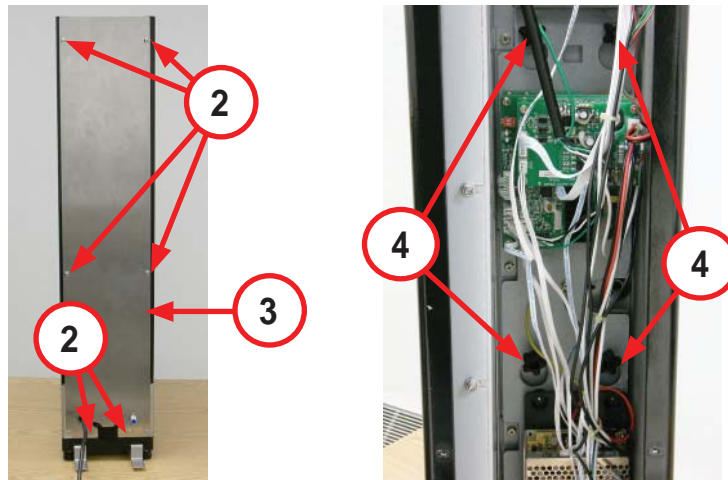
1. Ensure the control panel power switch (1) is in the OFF position and unplug the machine.



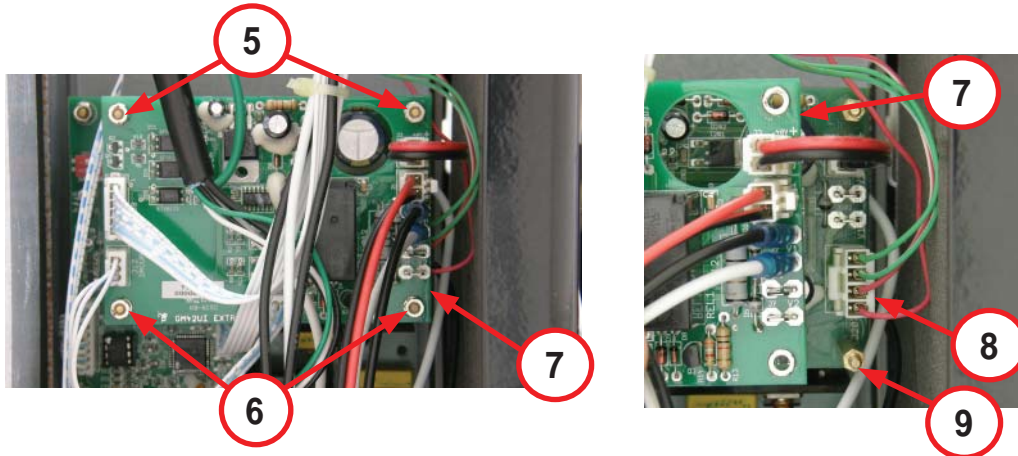
2. Remove six screws (2) and back cover (3) from machine.

**NOTE:** Remove any wire ties as required.

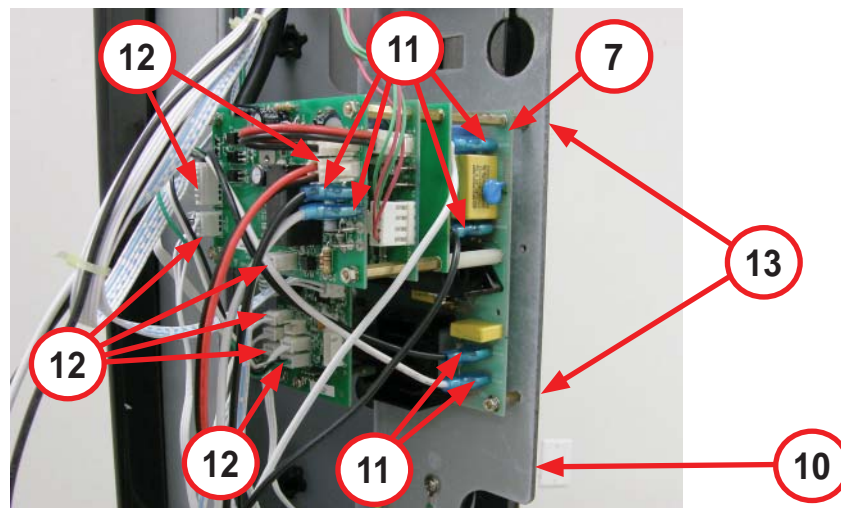
3. Loosen four knobs (4). Do not remove the knobs.



4. Remove four nuts (5) and lockwashers (6) from control board (7).
5. Position the control board (7) to the left to access and disconnect the linear motor connector (8).
6. Position the control board (7) on the standoffs (9) and install lockwashers (6) and nuts (5).



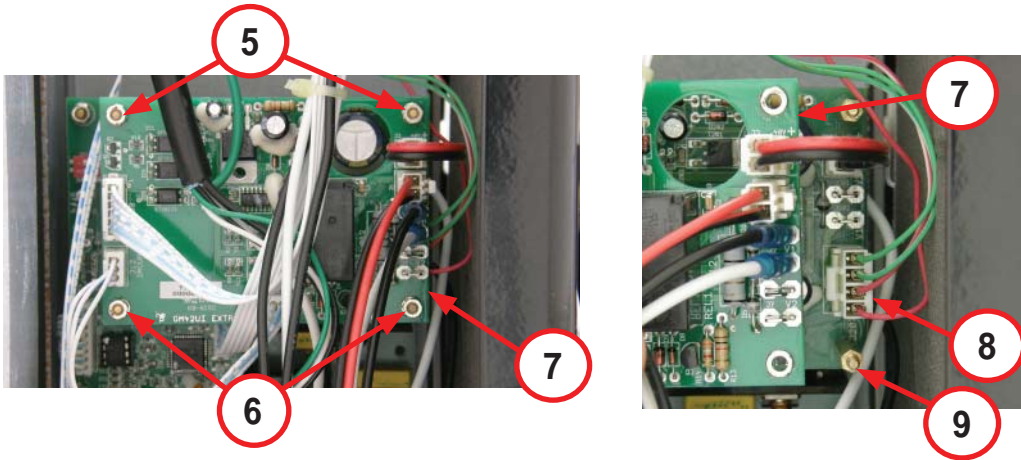
7. Lift and rotate clockwise the power control assembly (10) until you are able to access the rear of the power control assembly (10).
8. Mark and disconnect all wires (11) and connectors (12) from the control board (7).
9. Remove four screws (13) and control board (7) from the power control assembly (10).



To install the control board assembly:

1. Install the control board (7) on the power control assembly (10) with four screws (13).
2. Connect all wires (11) and connectors (12) to the correct location on control board (7).

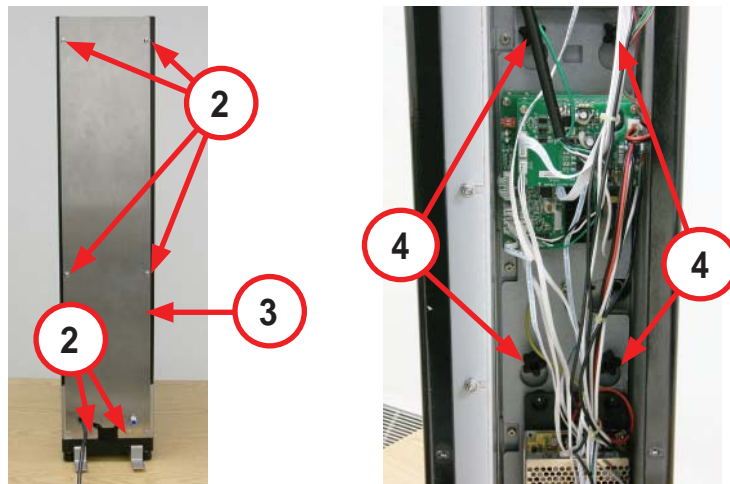
3. Remove four nuts (5) and lockwashers (6) from control board (7).
4. Position the control board (7) to the left to connect the linear motor connector (8).
5. Position the control board (7) on the standoffs (9) and install lockwashers (6) and nuts (5).



6. Carefully position the power control assembly (10) on the four knobs (4).

**NOTE:** Ensure all connections on the power supply and control board are secure. Replace any wire ties as required.

7. Hand-tighten the four knobs (4).
8. Install the back cover (3) with six screws (2).



9. Plug in the power cord to the machine, turn the control panel power switch (1) to the RESET position, and verify machine operates.



## Sensor Assembly (Home Position)

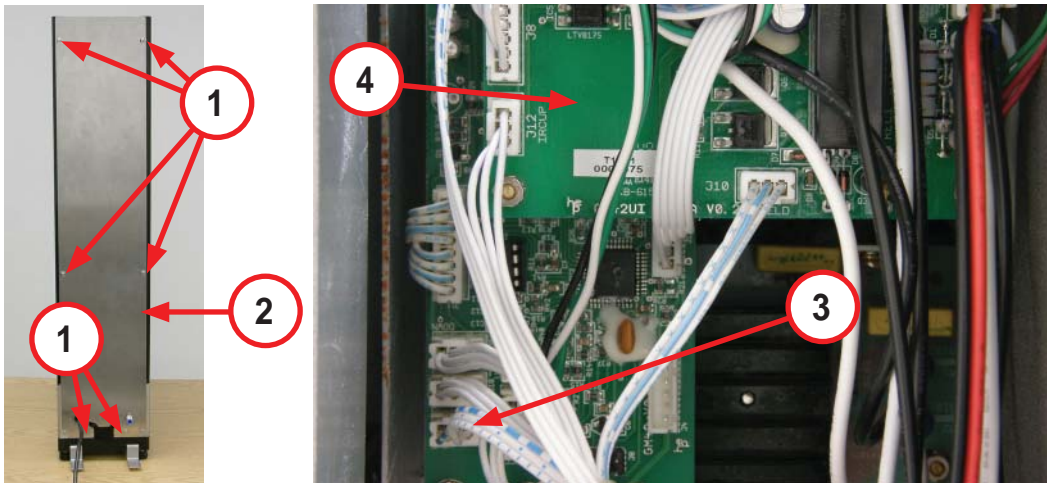
The sensor assembly (home position) is located on the frame near the top of the machine. The sensor determines the highest position of the motor and cup guard/shield assembly.

To remove the sensor assembly (home position):

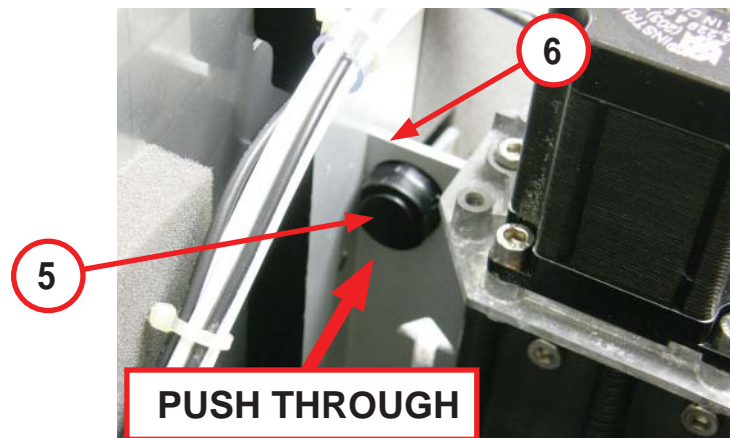
1. Remove the top cover as outlined in this manual.
2. Remove six screws (1) and back cover (2) from machine.

**NOTE:** Remove any wire ties as required. Note the routing of the sensor wiring being replaced.

3. Disconnect sensor connector (3) from control board (4).

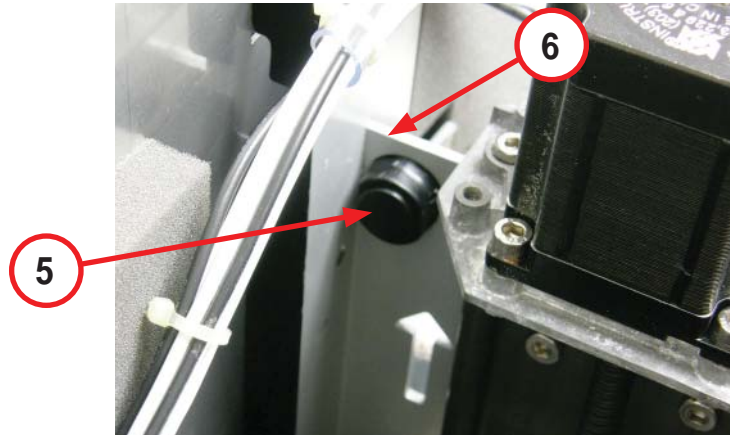


4. Use a screwdriver to depress the tabs on the side of the sensor assembly (5) and push the sensor assembly (5) through the hole in the frame (6) and remove the sensor assembly (5). The black plastic housing is part of the sensor assembly.



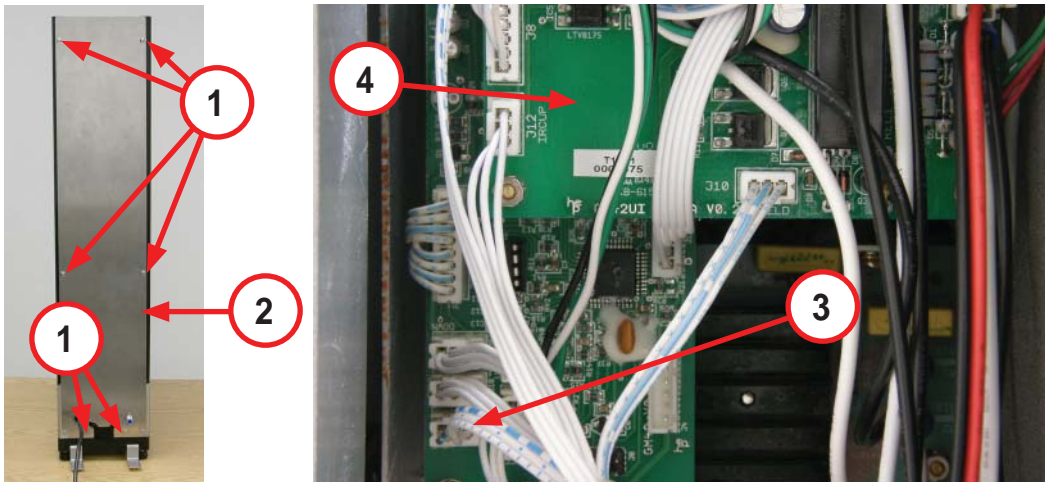
To install the sensor assembly (home position):

1. Push the sensor assembly (5) into the hole in the frame (6).



**NOTE:** Route the wire harness for the sensor to the control board in a way that will avoid any chance of pinching or fraying of the wires. Replace any wire ties as required.

2. Connect sensor connector (3) to the control board (4).
3. Install the back cover (2) with six screws (1).



4. Install the top cover as outlined in this manual.
5. Plug in the power cord to the machine, turn the control panel power switch to the RESET position, and verify machine operates.

## Sensor Assembly (Cup Present)

The sensor assembly (cup present) is located on the frame near the motor assembly. The sensor determines the lowest position of the motor and cup guard/shield assembly.

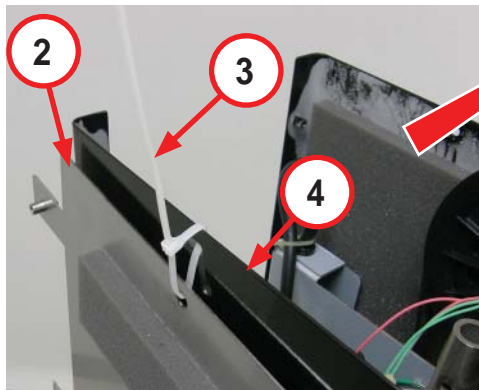
To remove the Sensor Assembly (Cup Present):

1. Remove the safety shield assembly as outlined in this manual.
2. Remove the top cover as outlined in this manual.
3. Remove three screws (1) from each side of the machine.
4. Lift the front panel wrap (2) from the machine.

**NOTE:** Avoid overextending the wire harness attached to the interface panel on the wrap.

**NOTE:** Cover front panel wrap to avoid scratches/damage from contact with side of machine.

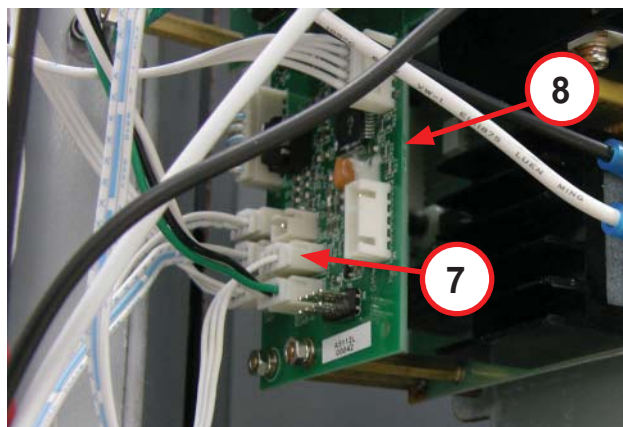
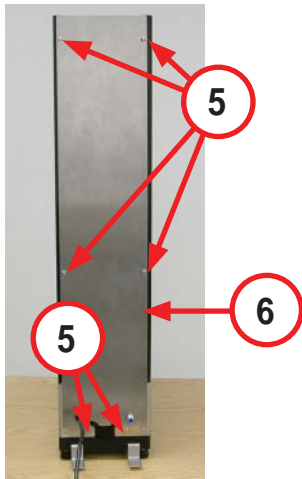
5. Using a large wire tie (3), secure the wrap (2) to the machine using the hole in the top of the side panel (4).



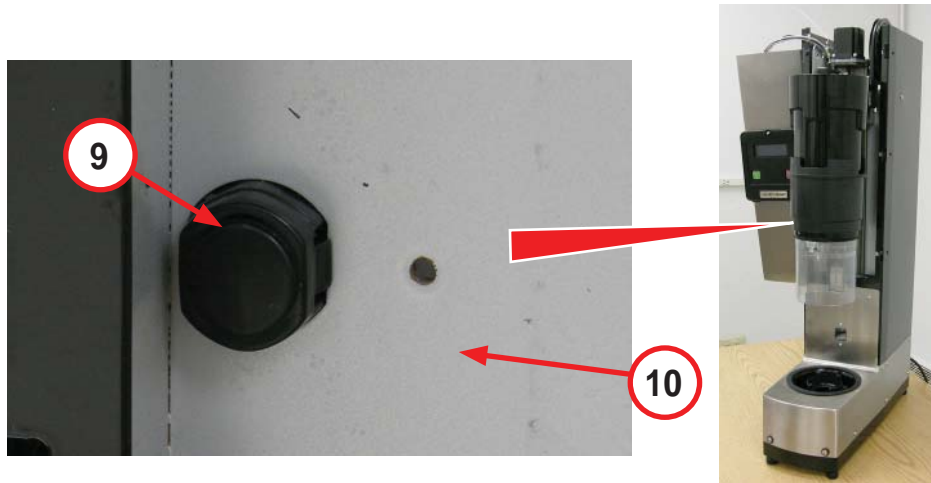
6. Remove six screws (5) and back cover (6) from machine.

**NOTE:** Remove any wire ties as required. Note the routing of the sensor wiring being replaced.

7. Disconnect sensor connector (7) from control board (8).



- Use a screwdriver to depress the tabs on the side of the sensor assembly (9) and push the sensor assembly (9) through the hole in the frame (10) and remove the sensor assembly (9). The black plastic housing is part of the sensor assembly.

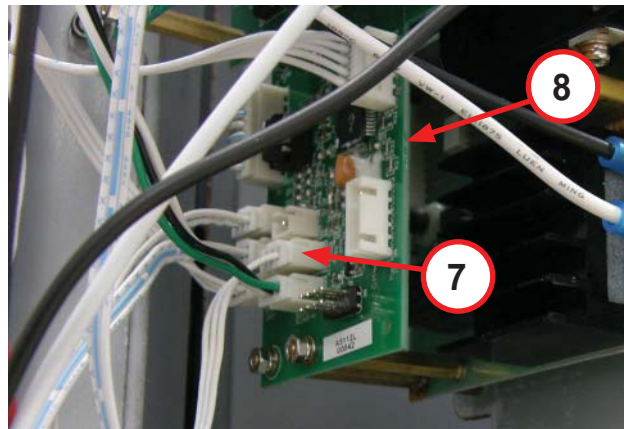
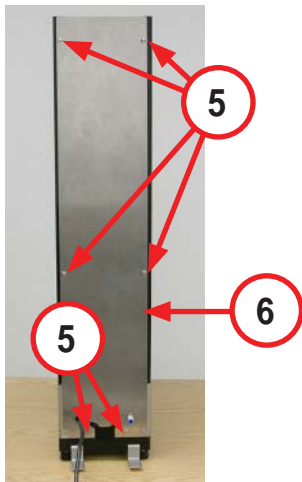


To install the sensor assembly (cup present):

- Push the sensor assembly (9) into the hole in the frame (10).

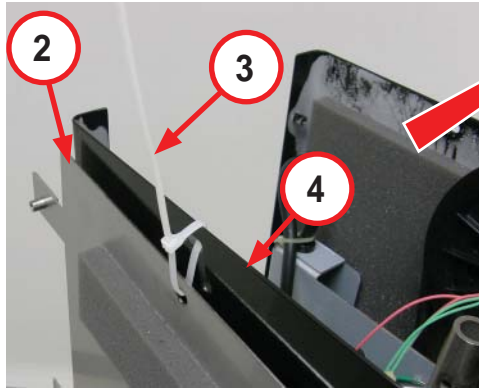
**NOTE:** Route the wire harness for the sensor to the control board in a way that will avoid any chance of pinching or fraying of the wires. Replace any wire ties as required.

- Connect sensor connector (7) to the control board (8).
- Install the back cover (6) with six screws (5).



4. Remove the wire tie (3) holding the wrap (2) to the side panel (4).
5. Position the wrap (2) on the machine and secure the wrap (2) with six screws (1).

**NOTE:** Ensure the wire harness is positioned in a way to avoid interference with the movement of the cup guard and shield assembly.



6. Install the top cover as outlined in this manual.
7. Install the safety shield assembly as outlined in this manual.
8. Plug in the power cord to the machine, turn the control panel power switch to the RESET position, and verify machine operates.

## Cup-In-Place Sensor (Infrared)

The cup-in-place sensor is located on the front of the machine in the mixing chamber.

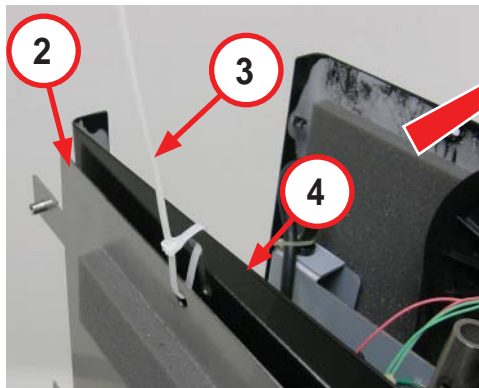
To remove the cup-in-place sensor:

1. Remove the safety shield assembly as outlined in this manual.
2. Remove the top cover as outlined in this manual.
3. Remove three screws (1) from each side of the machine.
4. Lift the front panel wrap (2) from the machine.

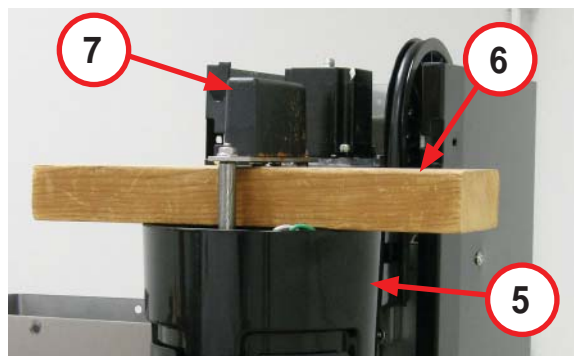
**NOTE:** Avoid overextending the wire harness attached to the interface panel on the wrap.

**NOTE:** Cover front panel wrap to avoid scratches/damage from contact with side of machine.

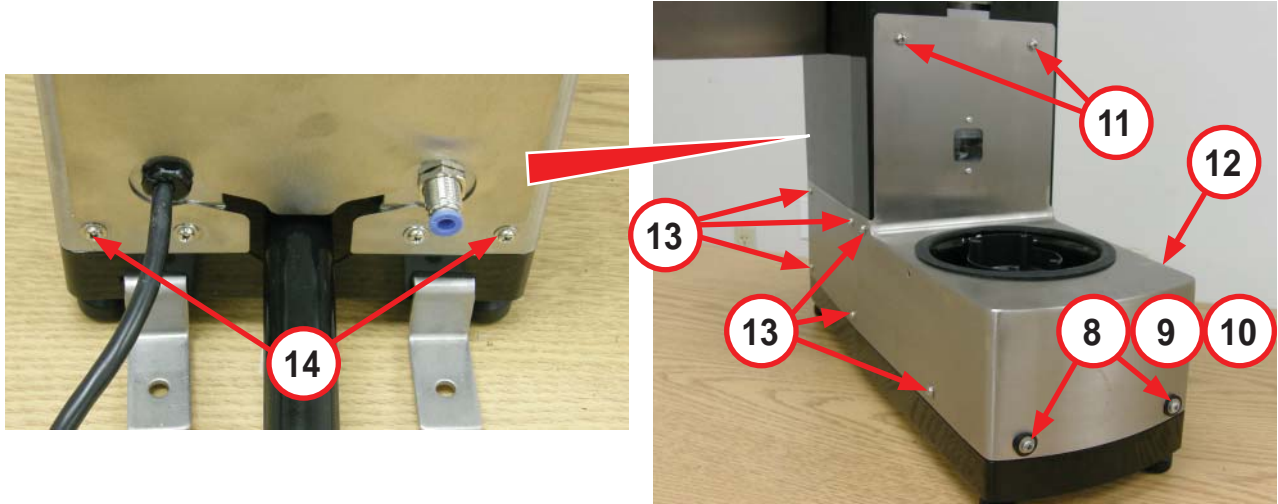
5. Using a large wire tie (3), secure the wrap (2) to the machine using the hole in the top of the side panel (4).



6. Raise the cup guard and shield assembly (5) and place a support block (6) under the shield block (7).



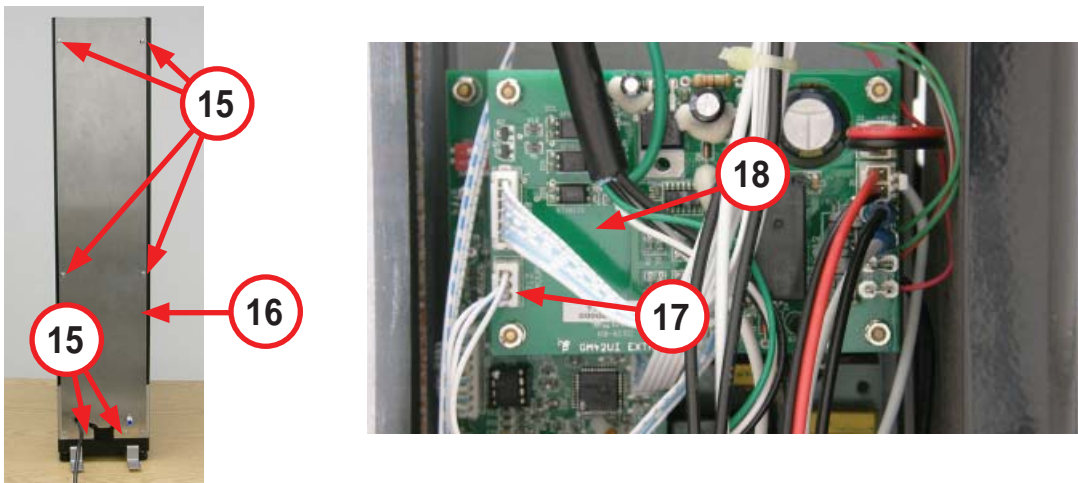
7. Remove two screws (8), washer (9), and plastic spacers (10).
8. Remove two screws (11) from the top of the wash chamber cover (12).
9. Remove six screws (13) from each side of the wash chamber cover (12).
10. Remove two screws (14) from the back of the machine.



11. Remove six screws (15) and back cover (16) from machine.

**NOTE:** Remove any wire ties as required. Note the routing of the sensor wiring being replaced.

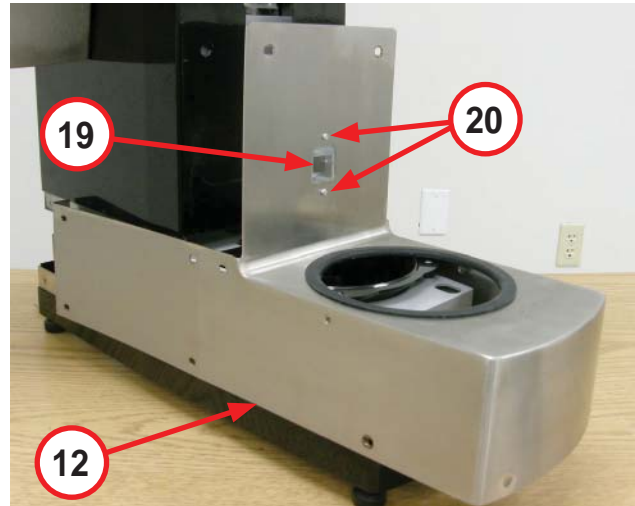
12. Disconnect sensor connector (17) from control board (18).



13. Grasp both sides of the wash chamber cover (12) and gently pull the ends away from the machine.

**NOTE:** Cover back sides of wash chamber cover to avoid scratches/damage to side of machine.

14. Slide the wash chamber cover (12) forward to access the sensor (19).
15. Remove two screws (20) and sensor (19) from the wash chamber cover (12).



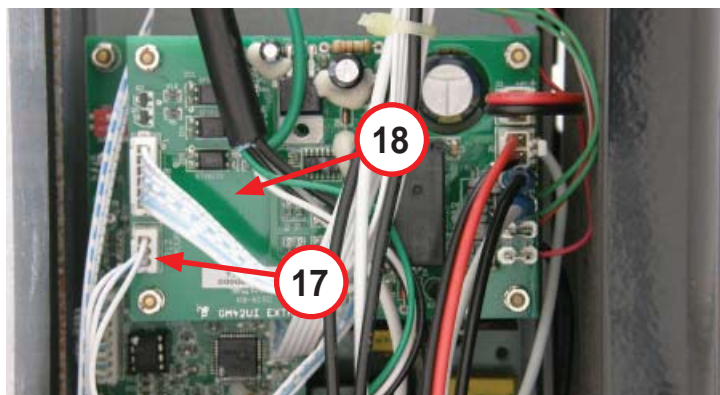
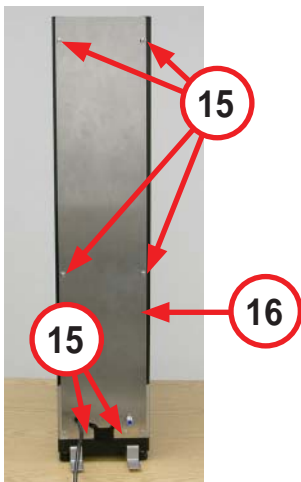
To install the cup-in-place sensor:

1. Install the sensor (19) on the wash chamber cover (12) with two screws (20).
2. Slide the wash chamber cover (12) onto the machine and make sure the tab ends wrap around the back of the machine.

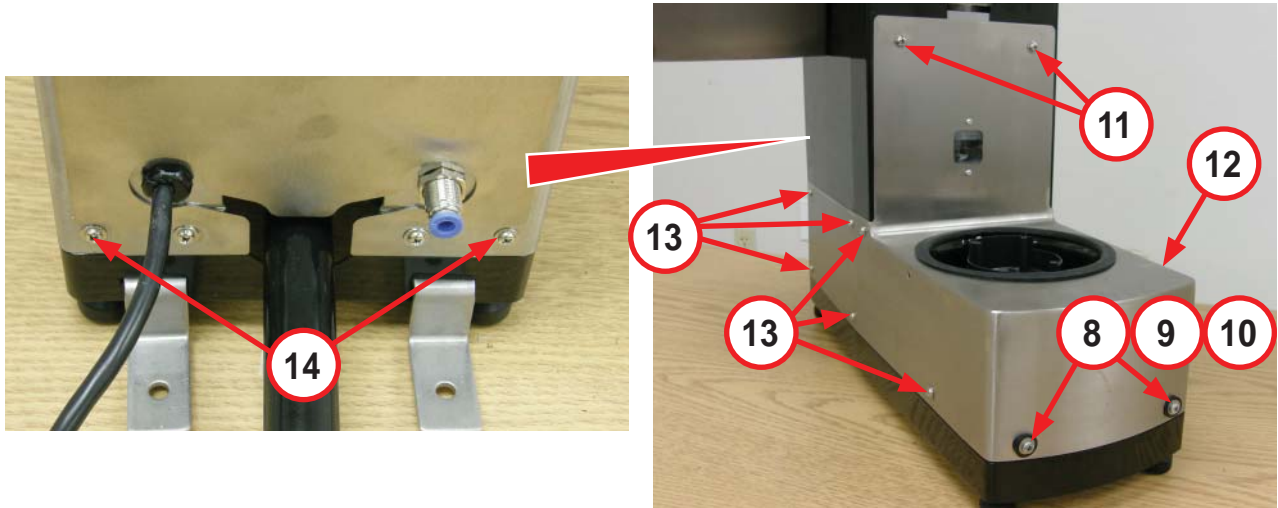
**NOTE:** Use food grade grease to ease the wash chamber cover back onto machine. Cover back sides of wash chamber cover to avoid scratches/damage to side of machine.

**NOTE:** Route the wire harness for the sensor to the control board in a way that will avoid any chance of pinching or fraying of the wires. Replace any wire ties as required.

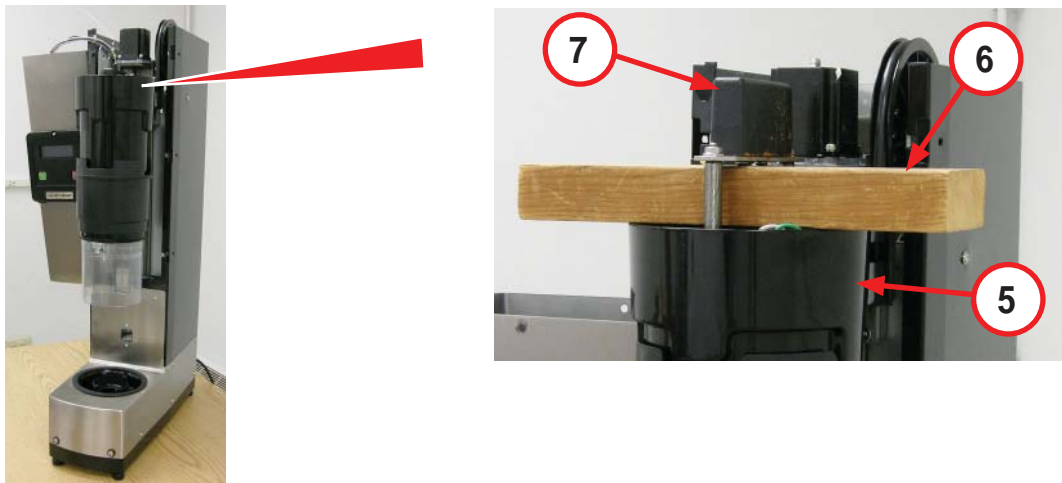
3. Connect sensor connector (17) to the control board (18).
4. Install the back cover (16) with six screws (15).



5. Install two screws (8), washers (9), and plastic spacers (10) on the wash chamber cover (12).
6. Install two screws (11) on the top of the wash chamber cover (12).
7. Install six screws (13) on each side of the wash chamber cover (12).
8. Install two screws (14) on the back of the machine.



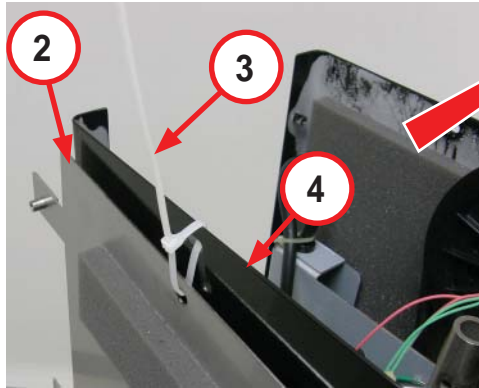
9. Raise the cup guard and shield assembly (5) and remove the support block (6) from under the shield block (7).



10. Remove the wire tie (3) holding the wrap (2) to the side panel (4).

11. Position the wrap (2) on the machine and secure the wrap with six screws (1).

**NOTE:** Ensure the wire harness is positioned in a way to avoid interference with the movement of the cup guard and shield assembly.



12. Install the top cover as outlined in this manual.

13. Install the safety shield assembly as outlined in this manual.

14. Plug in the power cord to the machine, turn the control panel power switch to the RESET position, and verify machine operates.

## Shield Door Sensor

The shield door sensor is located under the wash chamber area. A magnet in the safety shield assembly interacts with the sensor and requires that the door be closed in order for the machine to operate. Some models may have two shield door sensors, one on each side of the door assembly.

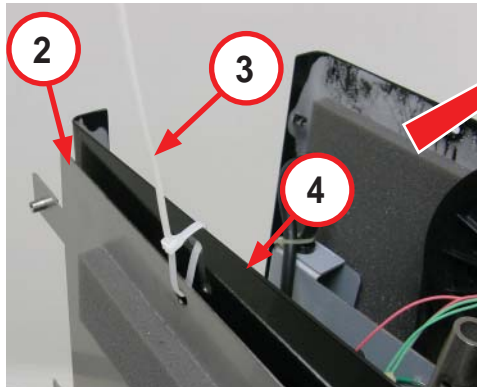
To remove the shield door sensor:

1. Remove the safety shield assembly as outlined in this manual.
2. Remove the top cover as outlined in this manual.
3. Remove three screws (1) from each side of the machine.
4. Lift the front panel wrap (2) from the machine.

**NOTE:** Avoid overextending the wire harness attached to the interface panel on the wrap.

**NOTE:** Cover front panel wrap to avoid scratches/damage from contact with side of machine.

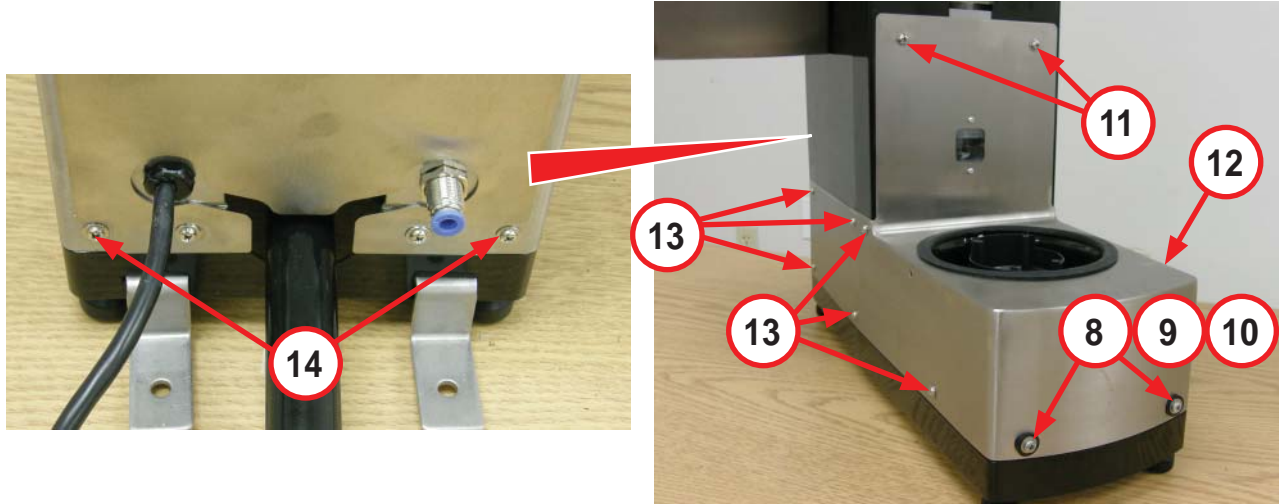
5. Using a large wire tie (3), secure the wrap (2) to the machine using the hole in the top of the side panel (4).



6. Remove the cup shield (5) by pressing the tab (6) in the cup guard and shield assembly (7) and turn the cup shield (5) clockwise.



7. Remove two screws (8), washer (9), and plastic spacers (10).
8. Remove two screws (11) from the top of the wash chamber cover (12).
9. Remove six screws (13) from each side of the wash chamber cover (12).
10. Remove two screws (14) from the back of the machine.

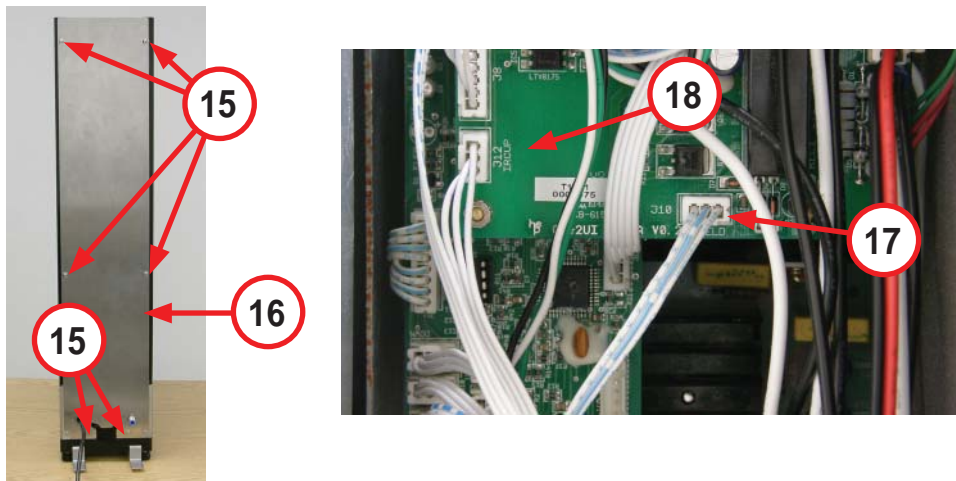


11. Remove six screws (15) and back cover (16) from machine.

**NOTE:** Remove any wire ties as required. Note the routing of the sensor wiring being replaced.

12. Disconnect sensor connector (17) from control board (18).

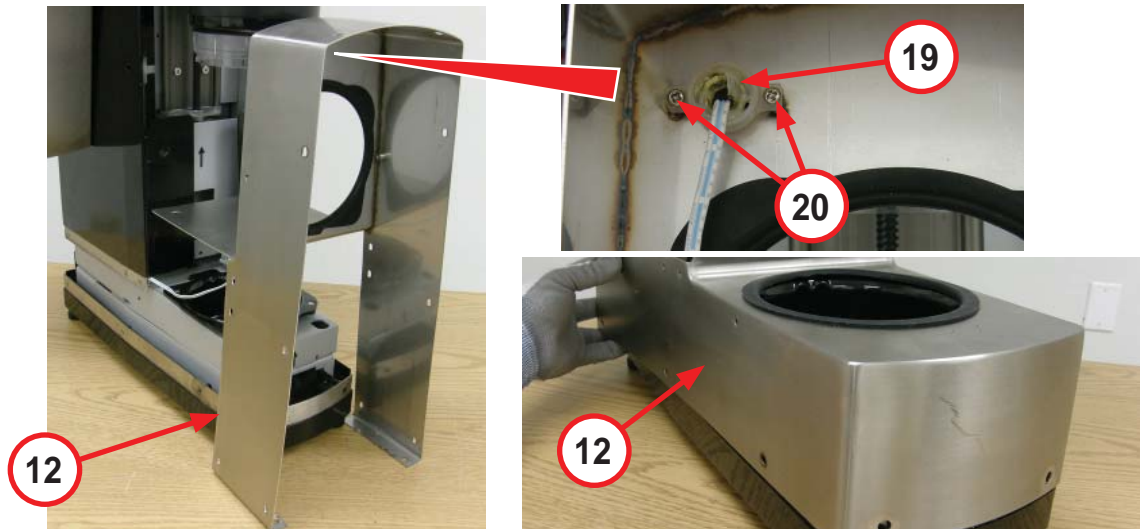
**NOTE:** See wiring diagram for models with two shield door sensors.



- Grasp both sides of the wash chamber cover (12) and gently pull the ends away from the machine.

**NOTE:** Cover back sides of wash chamber cover to avoid scratches/damage to side of machine.

- Slide the wash chamber cover (12) forward and rotate as shown to access the sensor (19).
- Remove two screws (20) and sensor (19) from the wash chamber cover (12).



To install the shield sensor:

- Install the sensor (19) on the wash chamber cover (12) with two screws (20).
- Slide the wash chamber cover (12) onto the machine and make sure the tab ends wrap around the back of the machine.

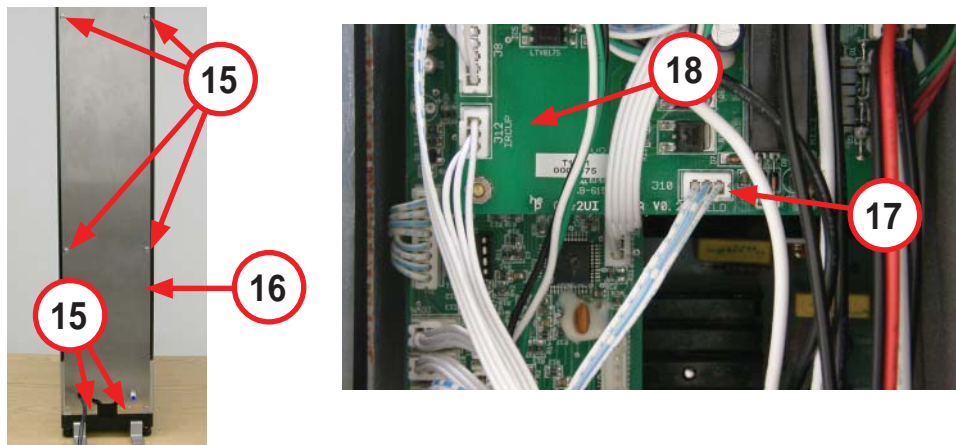
**NOTE:** Use food grade grease to ease the wash chamber cover back onto machine. Cover back sides of wash chamber cover to avoid scratches/damage to side of machine.

**NOTE:** Route the wire harness for the sensor to the control board in a way that will avoid any chance of pinching or fraying of the wires. Replace any wire ties as required.

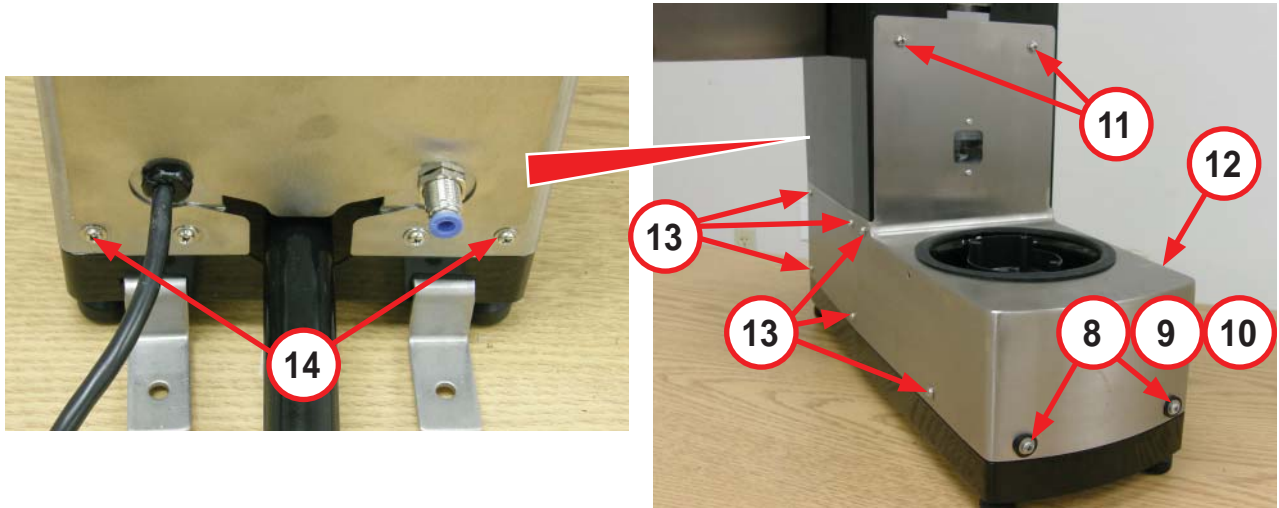
- Connect sensor connector (17) to the control board (18).

**NOTE:** See wiring diagram for models with two shield door sensors.

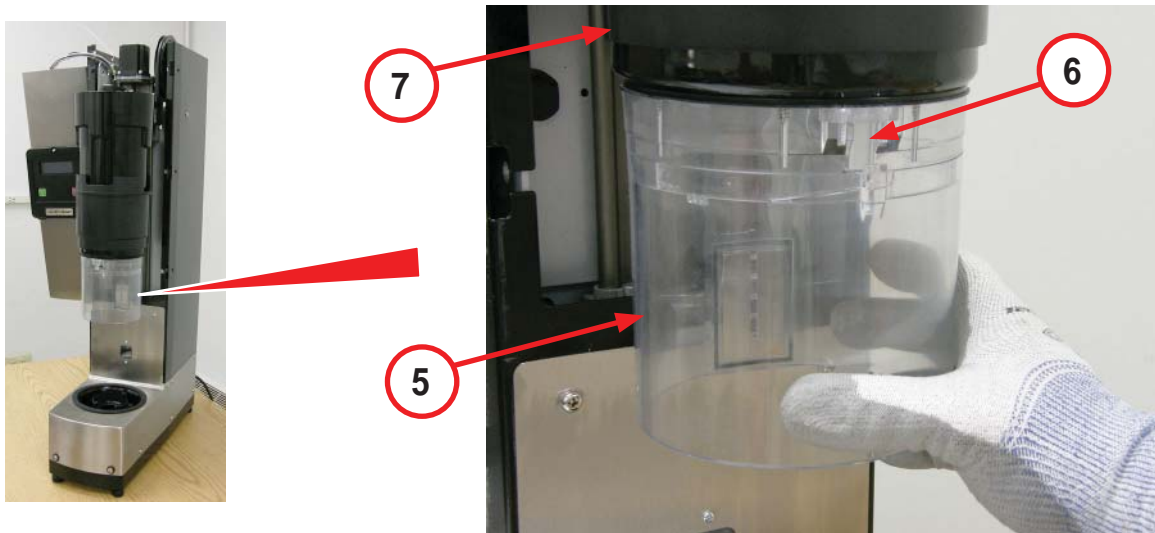
- Install the back cover (16) with six screws (15).



5. Install two screws (8), washer (9), and plastic spacers (10) on the wash chamber cover (12).
6. Install two screws (11) on the top of the wash chamber cover (12).
7. Install six screws (13) on each side of the wash chamber cover (12).
8. Install two screws (14) on the back of the machine.



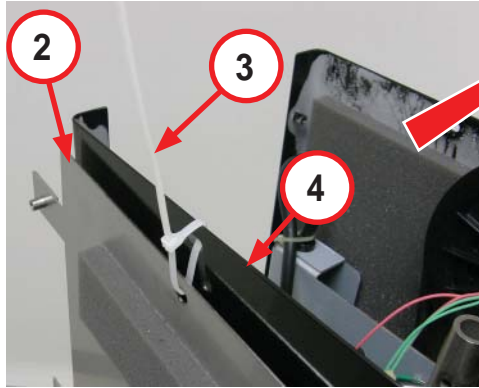
9. Install the cup shield (5) on the cup guard and shield assembly (7) until the tab (6) locks into place.



10. Remove the wire tie (3) holding the wrap (2) to the side panel (4).

11. Position the wrap (2) on the machine and secure the wrap with six screws (1).

**NOTE:** Ensure the wire harness is positioned in a way to avoid interference with the movement of the cup guard and shield assembly.



12. Install the top cover as outlined in this manual.

13. Install the safety shield assembly as outlined in this manual.

14. Plug in the power cord to the machine, turn the control panel power switch to the RESET position, and verify machine operates.

## Wash Chamber Assembly

The wash chamber assembly is located under the wash chamber cover.

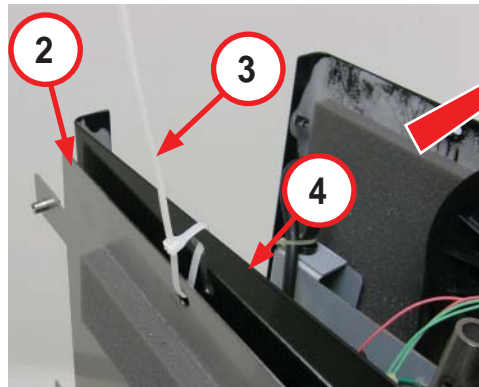
To remove the wash chamber assembly:

1. Shut off water supply, disconnect water line from machine, and purge the system to remove water from the lines.
2. Remove the safety shield assembly as outlined in this manual.
3. Remove the top cover as outlined in this manual.
4. Remove three screws (1) from each side of the machine.
5. Lift the front panel wrap (2) from the machine.

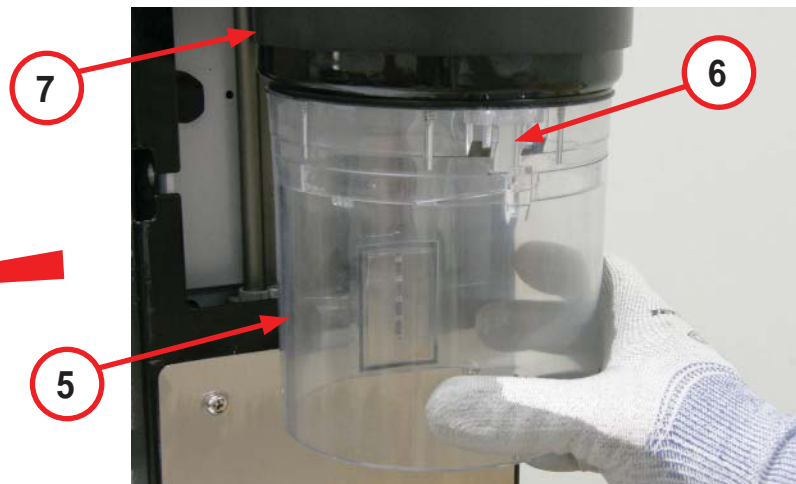
**NOTE:** Avoid overextending the wire harness attached to the interface panel on the wrap.

**NOTE:** Cover front panel wrap to avoid scratches/damage from contact with side of machine.

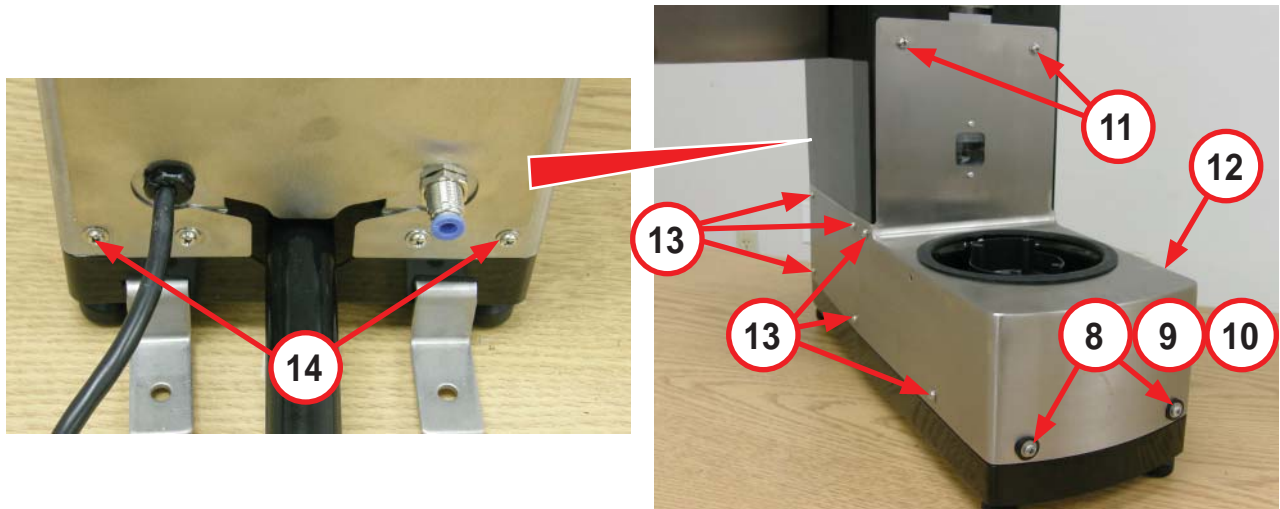
6. Using a large wire tie (3), secure the wrap (2) to the machine using the hole in the top of the side panel (4).



7. Remove the cup shield (5) by pressing the tab (6) in the cup guard and shield assembly (7) and turn the cup shield (5) clockwise.



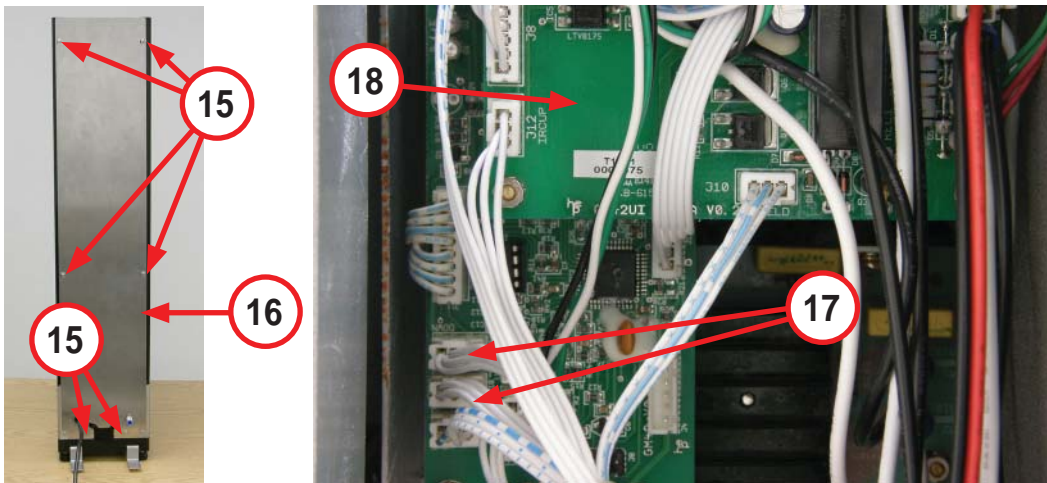
8. Remove two screws (8), washer (9), and plastic spacers (10).
9. Remove two screws (11) from the top of the wash chamber cover (12).
10. Remove six screws (13) from each side of the wash chamber cover (12).
11. Remove two screws (14) from the back of the machine.



12. Remove six screws (15) and back cover (16) from machine.

**NOTE:** Remove any wire ties as required. Note the routing of the sensor wiring being replaced.

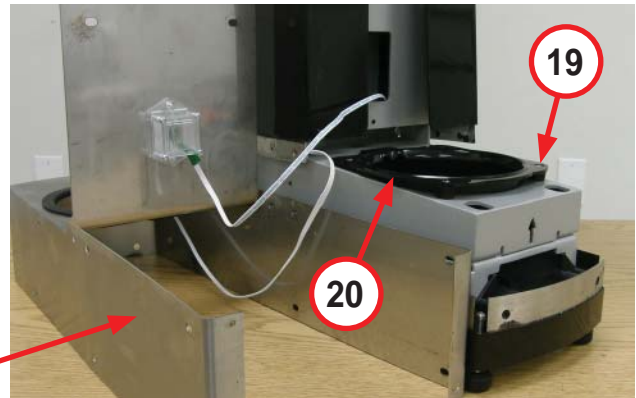
13. Disconnect two sensor connectors (17) from control board (18).



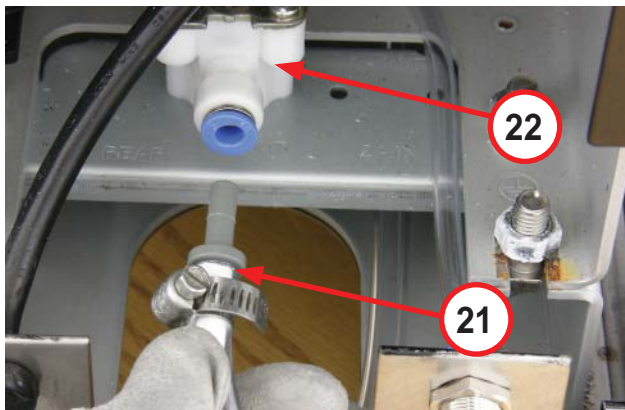
14. Grasp both sides of the wash chamber cover (12) and gently pull the ends away from the machine.

**NOTE:** Cover back sides of wash chamber cover to avoid scratches/damage to side of machine.

15. Slide the wash chamber cover (12) forward and rotate as shown.
16. Remove four screws (19) from wash chamber assembly (20).



17. Disconnect water line (21) from solenoid (22).
18. Remove the wash chamber assembly (20) from the machine and pull the sensor harness (23) and water line (21) through the frame cavity.



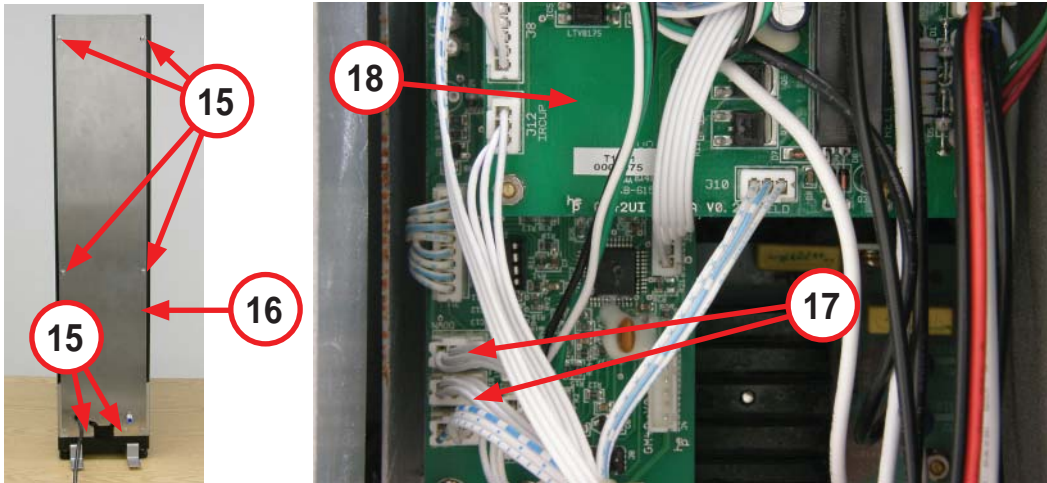
To install the wash chamber assembly:

1. Feed the sensor harness (23) and water line (21) through the frame cavity and position the wash chamber assembly (20) on the frame.
2. Connect water line (21) to the solenoid (22).
3. Install the wash chamber assembly (20) with four screws (19).
4. Slide the wash chamber cover (12) onto the machine and make sure the tab ends wrap around the back of the machine.

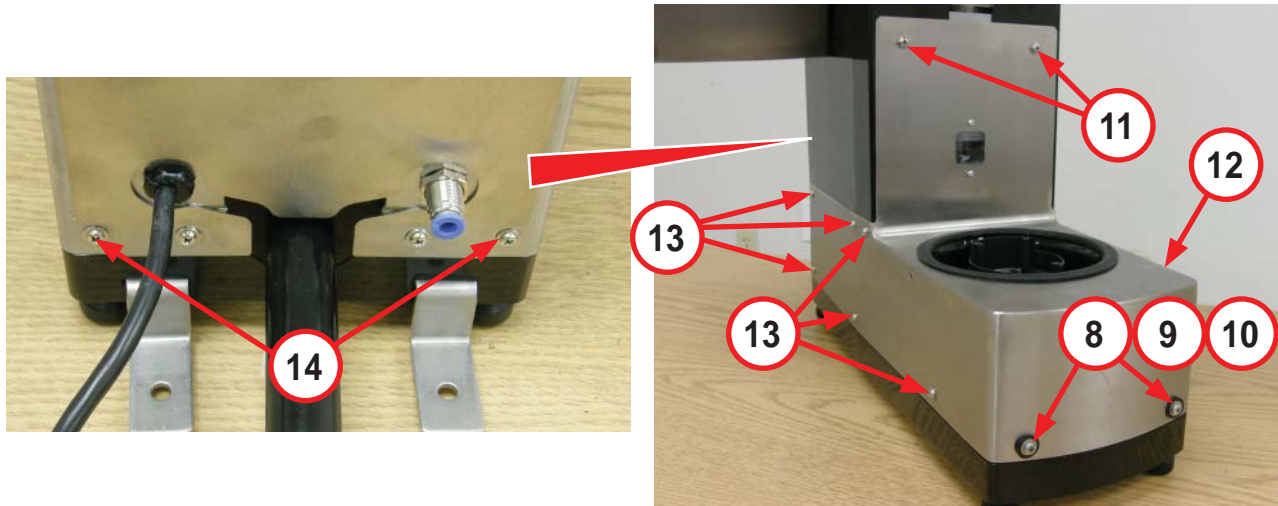
**NOTE:** Use food grade grease to ease the wash chamber cover back onto machine. Cover back sides of wash chamber cover to avoid scratches/damage to side of machine.

**NOTE:** Route the wire harness for the sensor to the control board in a way that will avoid any chance of pinching or fraying of the wires. Replace any wire ties as required.

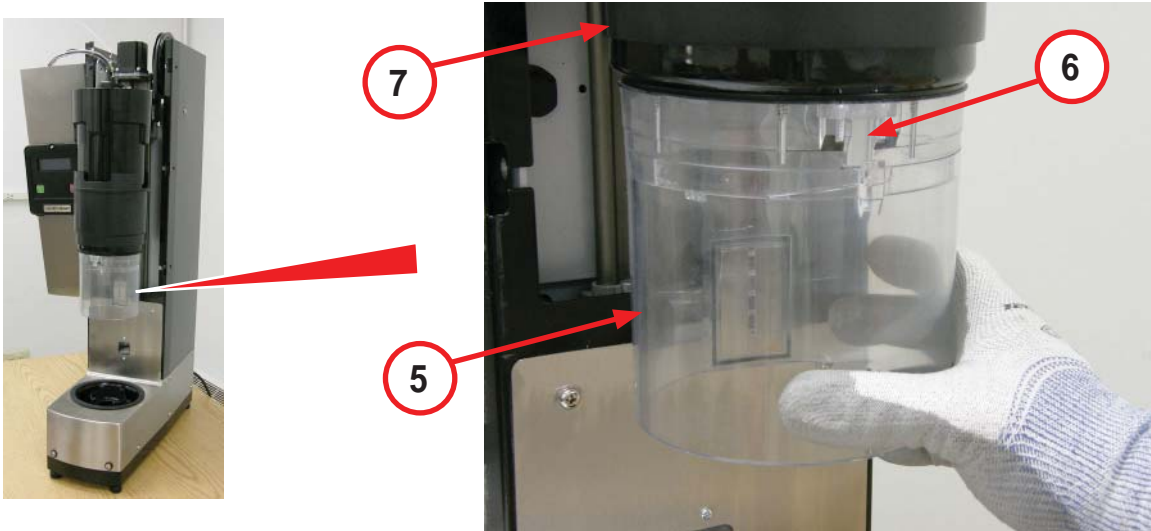
5. Connect sensor connector (17) to the control board (18).
6. Install the back cover (16) with six screws (15).



7. Install two screws (8), washer (9), and plastic spacers (10) on the wash chamber cover (12).
8. Install two screws (11) on the top of the wash chamber cover (12).
9. Install six screws (13) on each side of the wash chamber cover (12).
10. Install two screws (14) on the back of the machine.

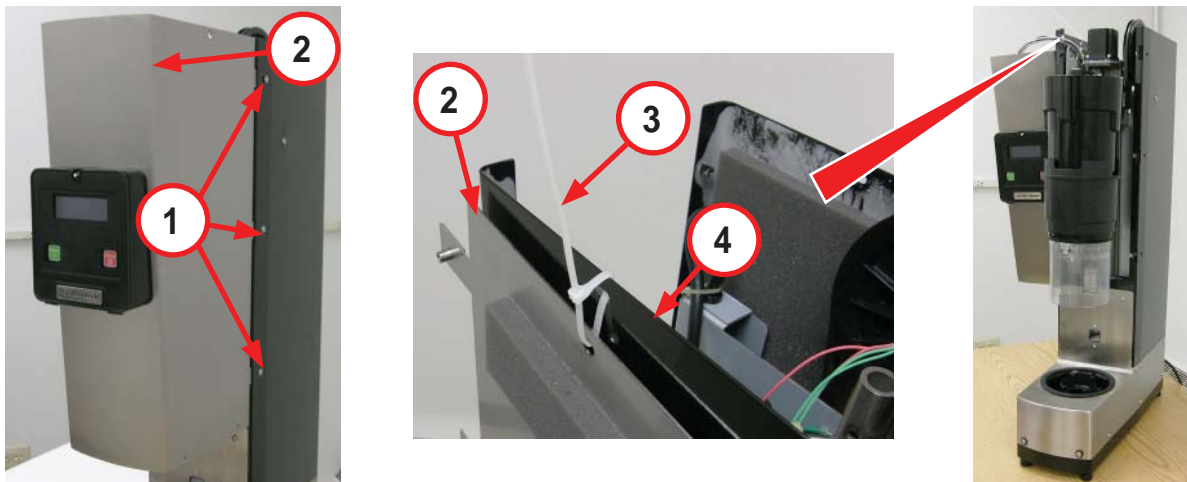


11. Install the cup shield (5) on the cup guard and shield assembly (7) until the tab (6) locks into place.



12. Remove the wire tie (3) holding the wrap (2) to the side panel (4).
13. Position the wrap (2) on the machine and secure the wrap with six screws (1).

**NOTE:** Ensure the wire harness is positioned in a way to avoid interference with the movement of the cup guard and shield assembly.



14. Install the top cover as outlined in this manual.
15. Install the safety shield assembly as outlined in this manual.
16. Reconnect the main water line to the machine.
17. Plug in the power cord to the machine, turn the control panel power switch to the RESET position, and verify machine operates.

## Water Solenoid

The MIC2000 has two water solenoids and the BIC2000 only has one water solenoid. The BIC2000 is the model shown. Removal procedure for both is similar. See the Water and Valve Diagrams for hose and valve positions.

**NOTE:** Make note of water flow indicators on solenoid (small arrow on underside of intake side) and water flow directions on solenoid support (IN, OUT, and REAR stamped into metal to indicate flow direction and solenoid support orientation) to install new solenoid and water lines in correctly.

### ⚠ WARNING

To avoid risk of serious injury or death, disconnect power to the machine before cleaning, servicing, or removing parts.

### ⚠ CAUTION

Do not use power tools to remove hardware. Damage to the hardware or the machine may occur. Do not lose hardware.

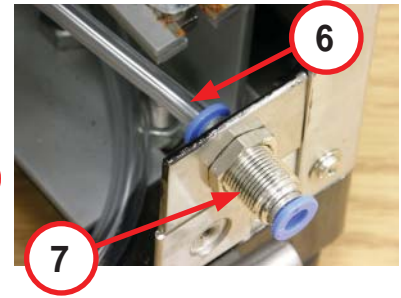
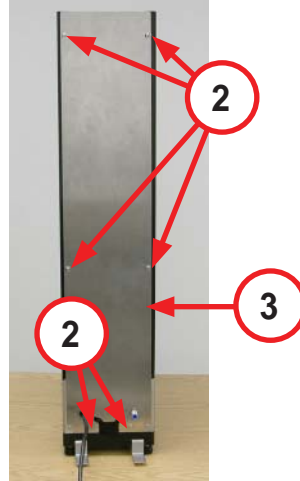
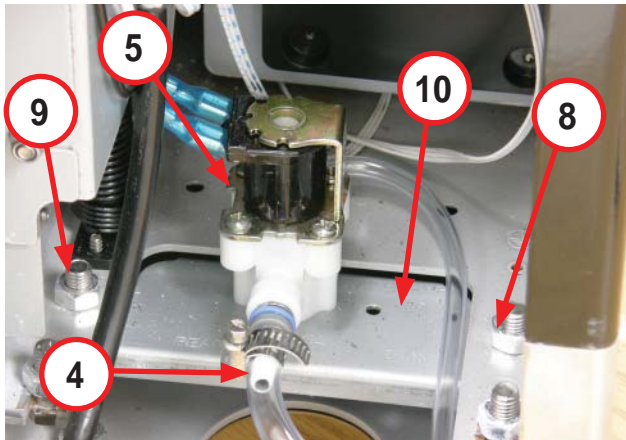
To remove the water solenoid:

1. Shut off water supply, disconnect water line from machine, and purge the system to remove water from the lines.
2. Ensure the control panel power switch (1) is in the OFF position and unplug the machine.

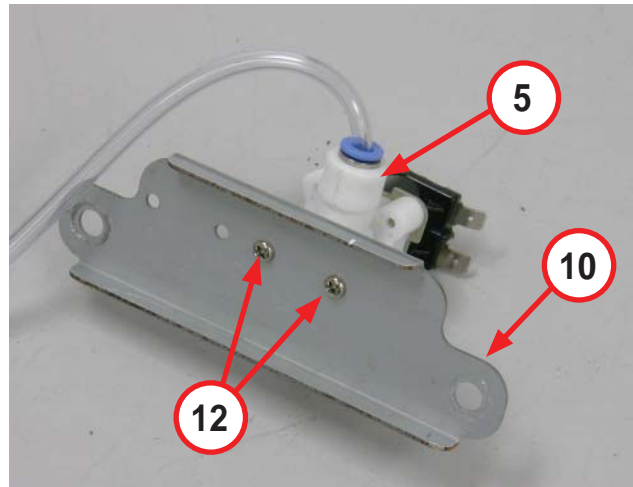
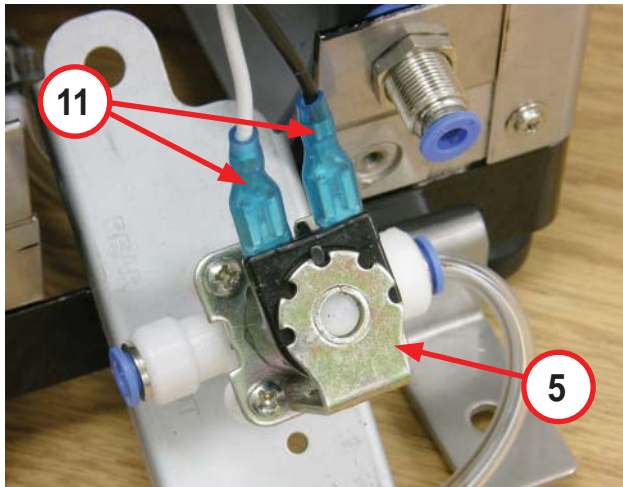


3. Remove six screws (2) and back cover (3) from machine.
4. Disconnect water line (4) from solenoid (5).
5. Disconnect inlet water line (6) from inlet port (7).
6. Remove two nuts (8), screws (9), and solenoid support (10) from the frame.

**NOTE:** Remove any wire ties as required.



7. Mark and disconnect two wires (11) from the solenoid (5).
8. Remove two screws (12) and solenoid (5) from solenoid support (10).



To install the water solenoid:

1. Install solenoid (5) on the solenoid support (10) with two screws (12).
2. Connect two wires (11) to the solenoid (5).

**NOTE:** Replace any wire ties as required.

3. Position the solenoid support (10) on the frame and install two nuts (8) and screws (9).
4. Connect inlet water line (6) to inlet port (7).
5. Connect water line (4) to solenoid (5).
6. Install the back cover (3) with six screws (2).

7. Reconnect the main water line to the machine.
8. Plug in the power cord to the machine, turn the control panel power switch (1) to the RESET position, and verify machine operates.



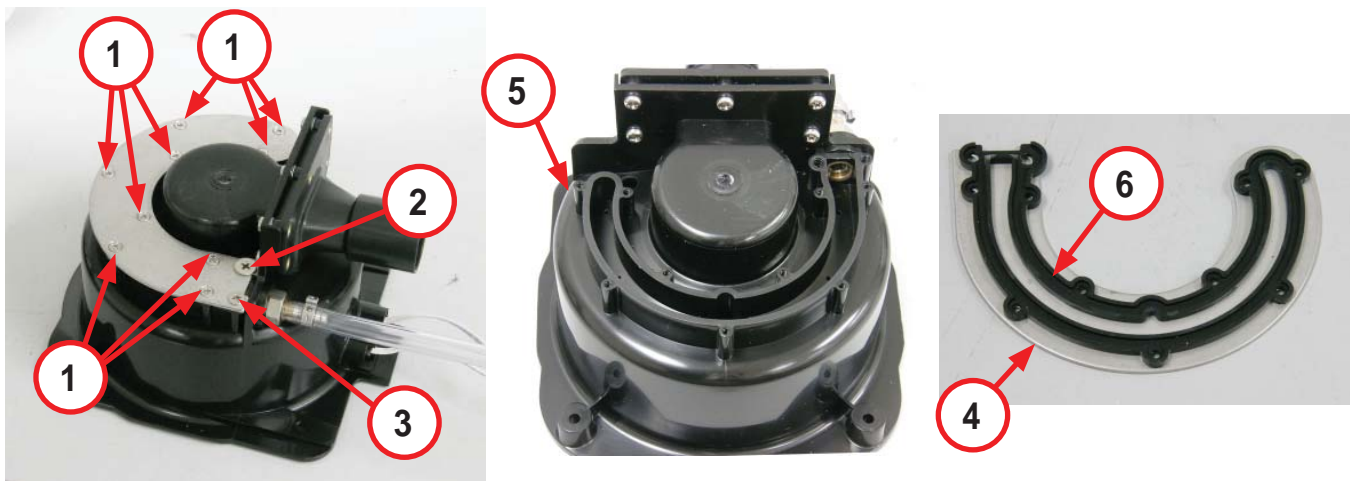
## Wash Chamber Gasket

The wash chamber gasket provides a seal to prevent water from leaking from the wash chamber.

To replace the wash chamber gasket:

1. Remove the wash chamber assembly as outlined in this manual.
2. Place the wash chamber on a suitable work surface.
3. Remove nine screws (1), screw (2), screw (3), and gasket cover (4) from wash chamber assembly (5).
4. Remove gasket (6) from gasket cover (4) and wash chamber assembly (5).

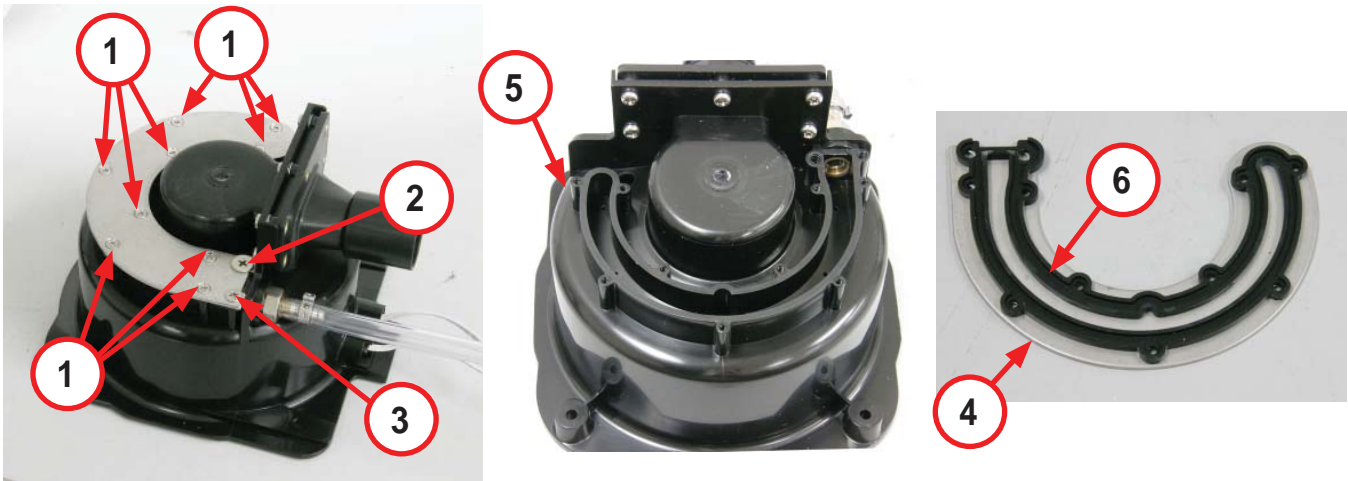
**NOTE:** Ensure all old gasket material is removed before installing a new gasket.



To install the wash chamber gasket:

**NOTE:** Ensure all old gasket material is removed before installing a new gasket.

1. Place the gasket (6) on the wash chamber assembly (5).
2. Place the gasket cover (4) on the gasket (6) and wash chamber assembly (5).
3. Install screw (2) and screw (3). DO NOT TIGHTEN.
4. Install nine screws (1). DO NOT TIGHTEN.
5. Using an alternating pattern, tighten screw (2), screw (3), and nine screws (1) to ensure the gasket (6) is sealed evenly between the gasket cover (4) and wash chamber assembly (5).
6. Install the wash chamber assembly as outlined in this manual.

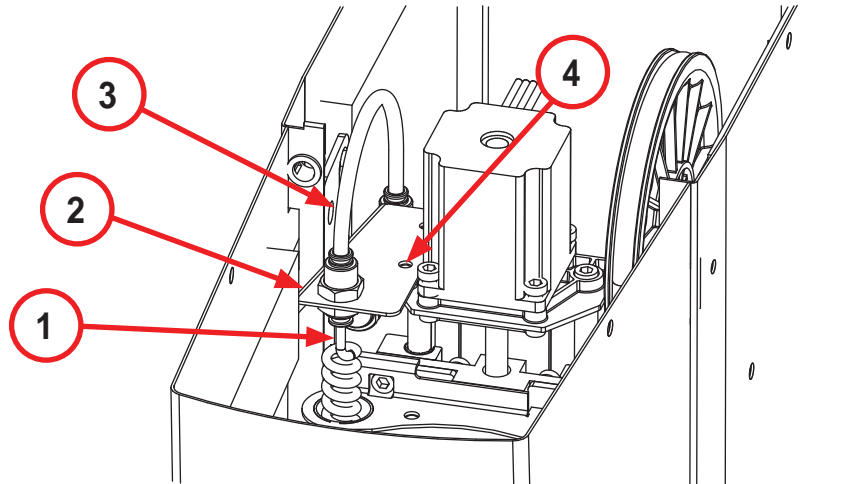


## Water Manifold (MIC2000 Only)

The water manifold is located near the top of the machine.

To remove the water manifold:

1. Shut off water supply, disconnect water line from machine, and purge the system to remove water from the lines.
2. Remove the top cover as outlined in this manual.
3. Disconnect the spiral water line (1) from the manifold (2).
4. Disconnect the supply water line (3) from the manifold (2).
5. Remove two screws (4) and manifold (2) from the frame.



To install the water manifold:

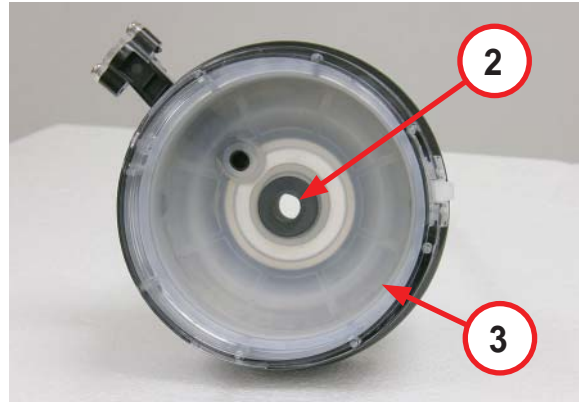
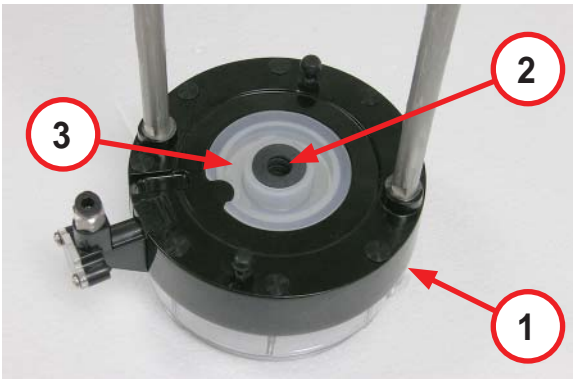
1. Install manifold (2) on the frame with two screws (4).
2. Connect the spiral water line (1) to the manifold (2).
3. Connect the supply water line (3) to the manifold (2).
4. Reconnect the main water line to the machine.
5. Install the top cover as outlined in this manual.
6. Plug in the power cord to the machine, turn the control panel power switch to the RESET position, and verify machine operates.

## Cup Shield Gasket

The cup shield gasket is located in the shield assembly.

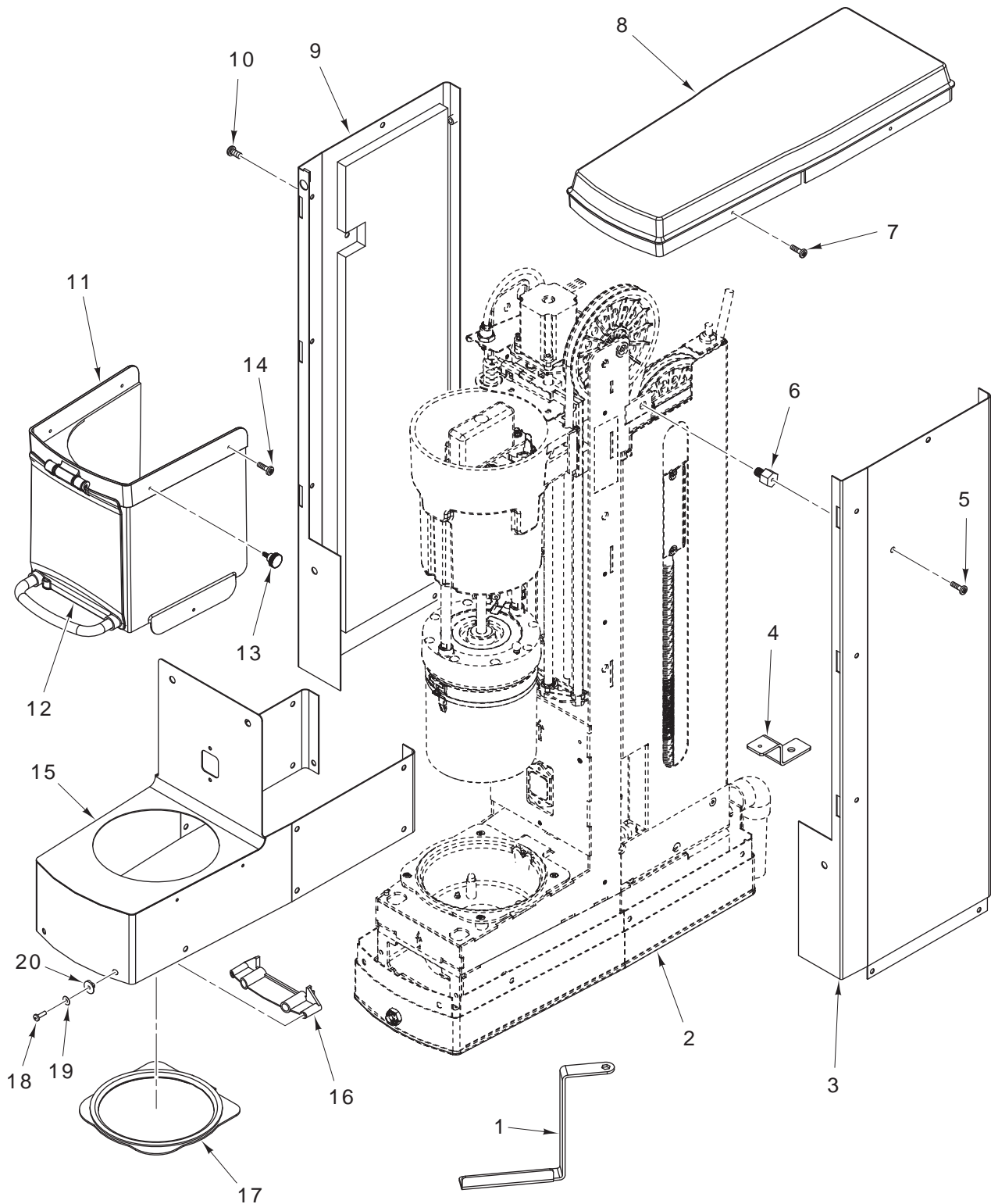
To replace the cup shield gasket:

1. Remove the shield assembly as outlined in this manual.
2. Place the shield assembly (1) on a suitable work surface.
3. From the top, push the shaft seal (2) through the cup gasket (3).
4. Pull the cup gasket (3) from the shield assembly (1).



To install the cup shield gasket:

1. From the bottom, place the cup gasket (3) into the shield assembly (1). Make sure the cup gasket is seated properly.
2. From the bottom, push the shaft seal (2) through the cup gasket (3). Make sure the shaft seal is seated properly.
3. Install the shield assembly as outlined in this manual.
4. Plug in the power cord to the machine, turn the control panel power switch to the RESET position, and verify machine operates.



fig\_1\_HB

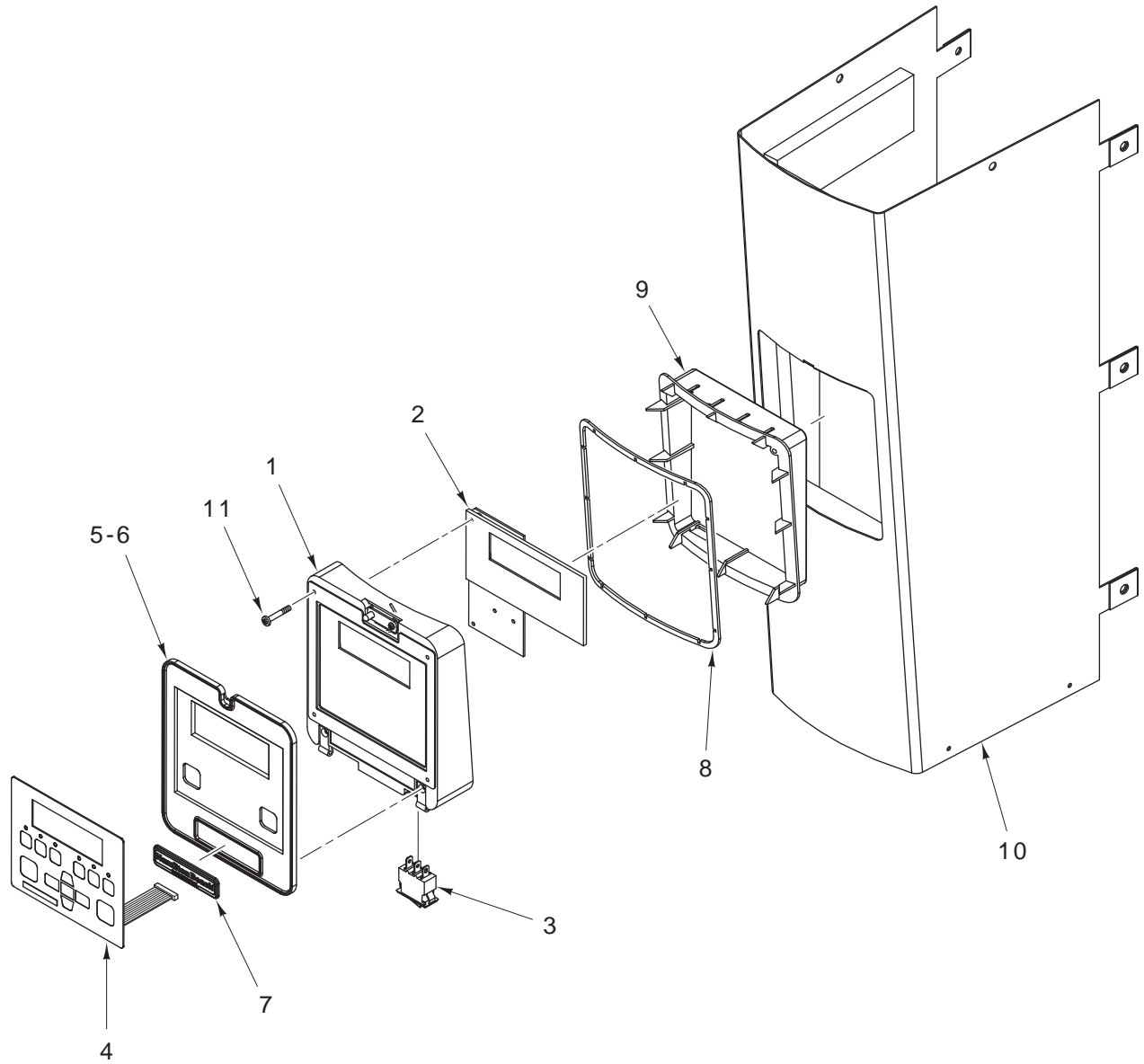
## SHIELD DOOR ASSEMBLY & PANELS



## SHIELD DOOR ASSEMBLY & PANELS

ITEM #	PART NO.	NAME OF PART	AMT.
1	<a href="#">990167800</a>	Tool – Blade Removal.....	1
2	<a href="#">990172500</a>	Gasket – Base .....	1
3	*	Panel – Right Side (Painted).....	1
4	*	Bracket – Hold Down .....	2
5	*	Screw .....	AR
6	*	Standoff.....	2
7	*	Screw .....	4
8	*	Cover – Top.....	1
9	*	Panel – Left Side (Painted).....	1
10	*	Screw .....	AR
11	<a href="#">990153230</a>	Front Shield Door Assembly (Includes Item 12).....	1
12	<a href="#">990153240</a>	Door – Shield .....	1
13	<a href="#">990172300</a>	Thumb Screw.....	2
14	*	Screw .....	4
15	*	Cover – Wash Chamber .....	1
16	*	Reinforcement.....	1
17	*	Seal – Wash Chamber.....	1
18	*	Screw .....	2
19	*	Washer.....	2
20	*	Grommet (Plastic).....	2

\* Reference Fastener Kit, Cladding Assembly, GM43: [990173000](#)



fig\_2\_HB

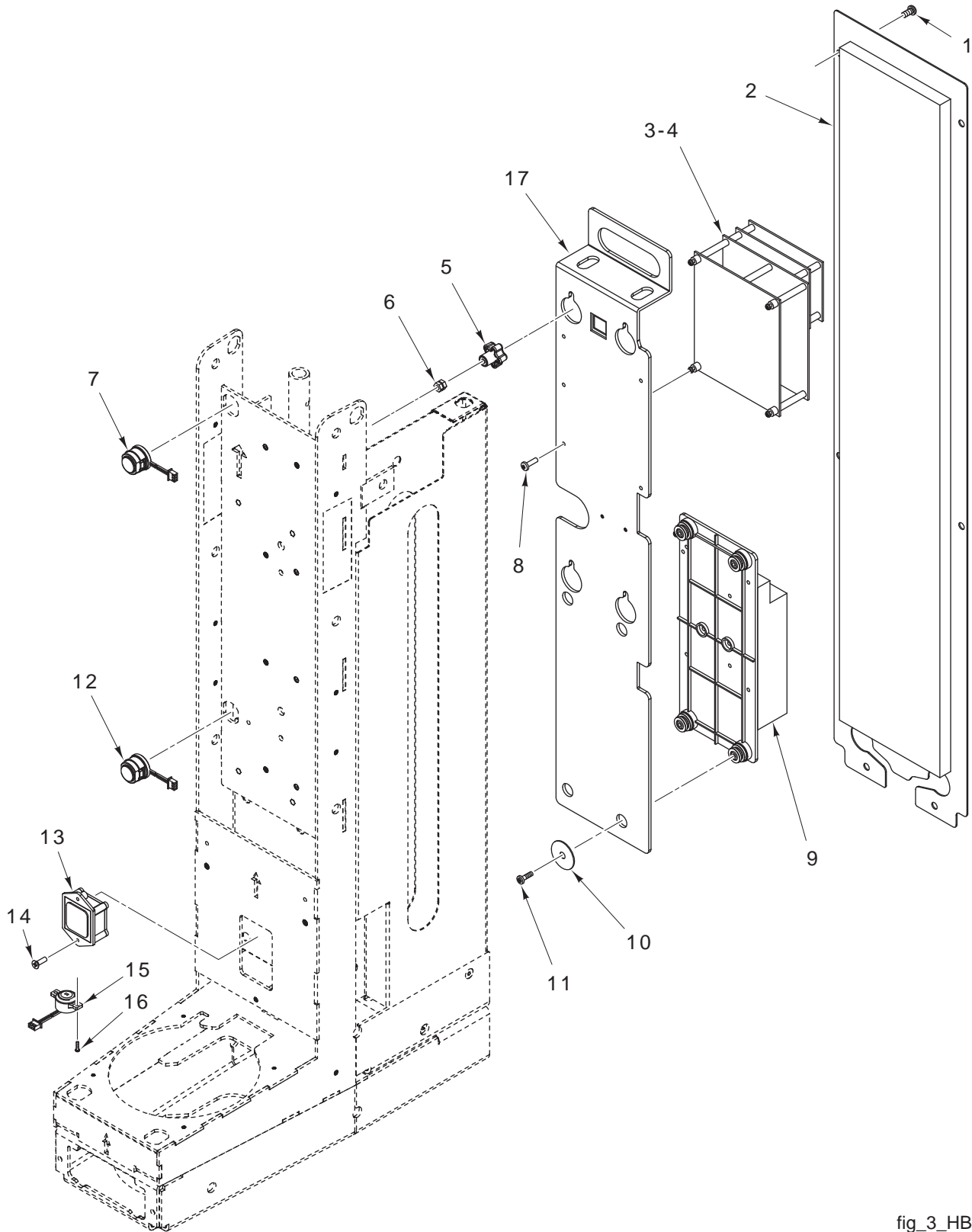
## OPERATOR INTERFACE PANEL ASSEMBLY



## OPERATOR INTERFACE PANEL ASSEMBLY

ITEM #	PART NO.	NAME OF PART	AMT.
1	<a href="#">990153200</a>	Enclosure – Operator Interface Assembly .....	1
2	<a href="#">990153290</a>	Display Board – Interface.....	1
3	<a href="#">990153280</a>	Switch – Breaker (Control Panel).....	1
4	<a href="#">990153210</a>	Touch Pad (Generic).....	1
5	990153270	Door – Interface (Generic) .....	1
6	<a href="#">990153220</a>	Door – Interface .....	1
7	*	Logo.....	1
8	*	Gasket – Operator Interface Assembly .....	1
9	*	Housing – Operator Interface.....	1
10	*	Front Panel Wrap (Stainless Steel).....	1
11	*	Screw .....	4

\* Reference Fastener Kit, User Interface, GM43: [990178500](#)



fig\_3\_HB

## CONTROL BOARD ASSEMBLY AND SENSORS

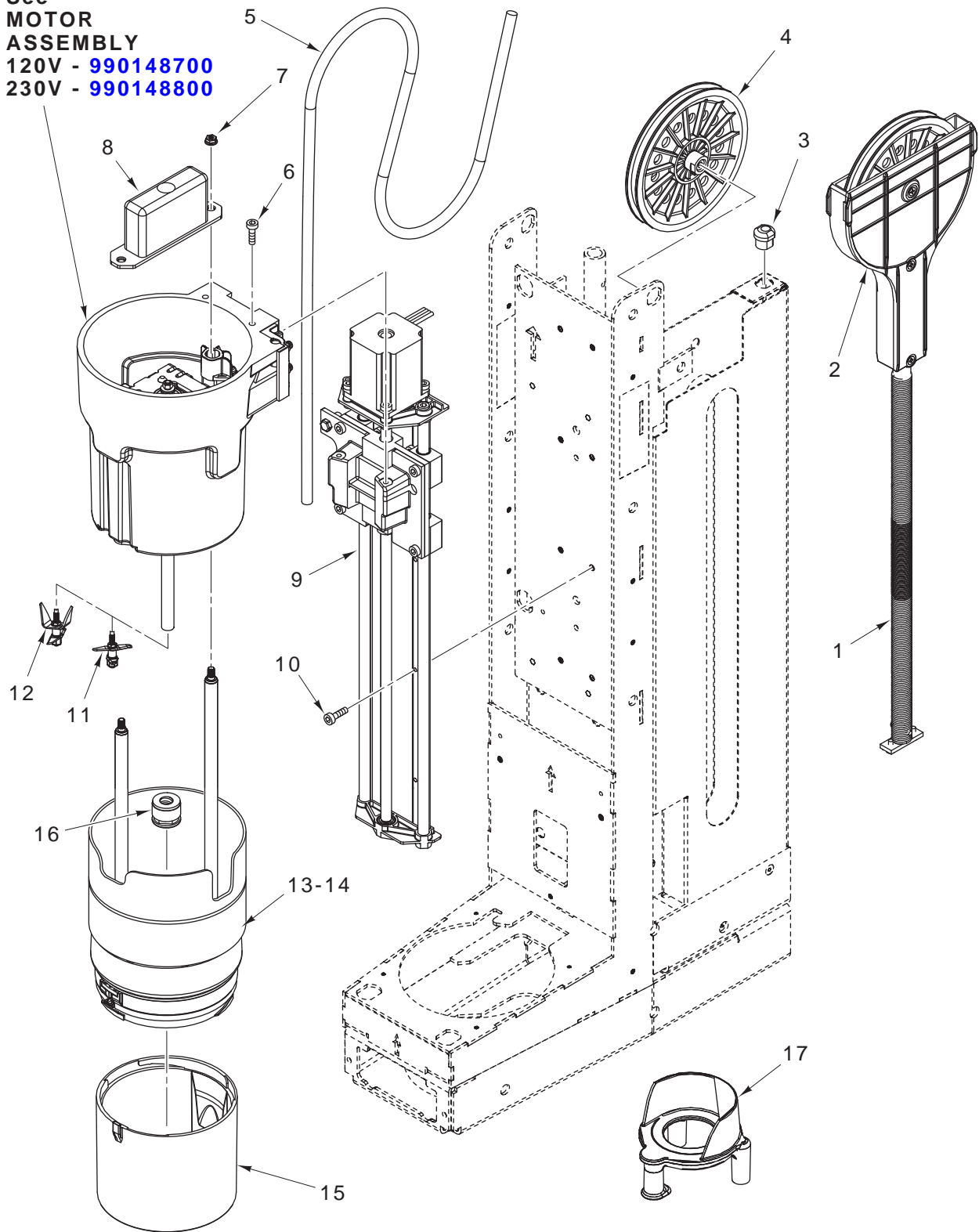


## CONTROL BOARD ASSEMBLY AND SENSORS

ITEM #	PART NO.	NAME OF PART	AMT.
1	*	Screw .....	6
2	*	Panel – Back.....	1
3	<a href="#">990150000</a>	Control Board Assembly (120V).....	1
4	<a href="#">990152800</a>	Control Board Assembly (230V).....	1
5	*	Knob.....	4
6	*	Nut – Jam.....	8
7	<a href="#">990149400</a>	Carriage Sensor Assembly (Home Position).....	1
8	*	Screw .....	4
9	<a href="#">990149900</a>	Power Supply.....	1
10	*	Washer.....	4
11	*	Screw .....	4
12	<a href="#">990149400</a>	Carriage Sensor Assembly (Cup -In-Place) .....	1
13	<a href="#">990153250</a>	Sensor Assembly (Infrared) (Cup-In-Place) .....	1
14	*	Screw .....	2
15	<a href="#">990172900</a>	Sensor Assembly (Shield) (Some units have quantity of 2) .....	1
16	*	Screw .....	2
17	*	Mount – Control Board & Power Supply .....	1

\* Reference Fastener Kit, Controls Assembly, GM42/GM43: [990178400](#)

See  
MOTOR  
ASSEMBLY  
120V - 990148700  
230V - 990148800



fig\_4\_HB

**LINEAR ACTUATOR, MOTOR, & CUP GUARD (BIC2000)**

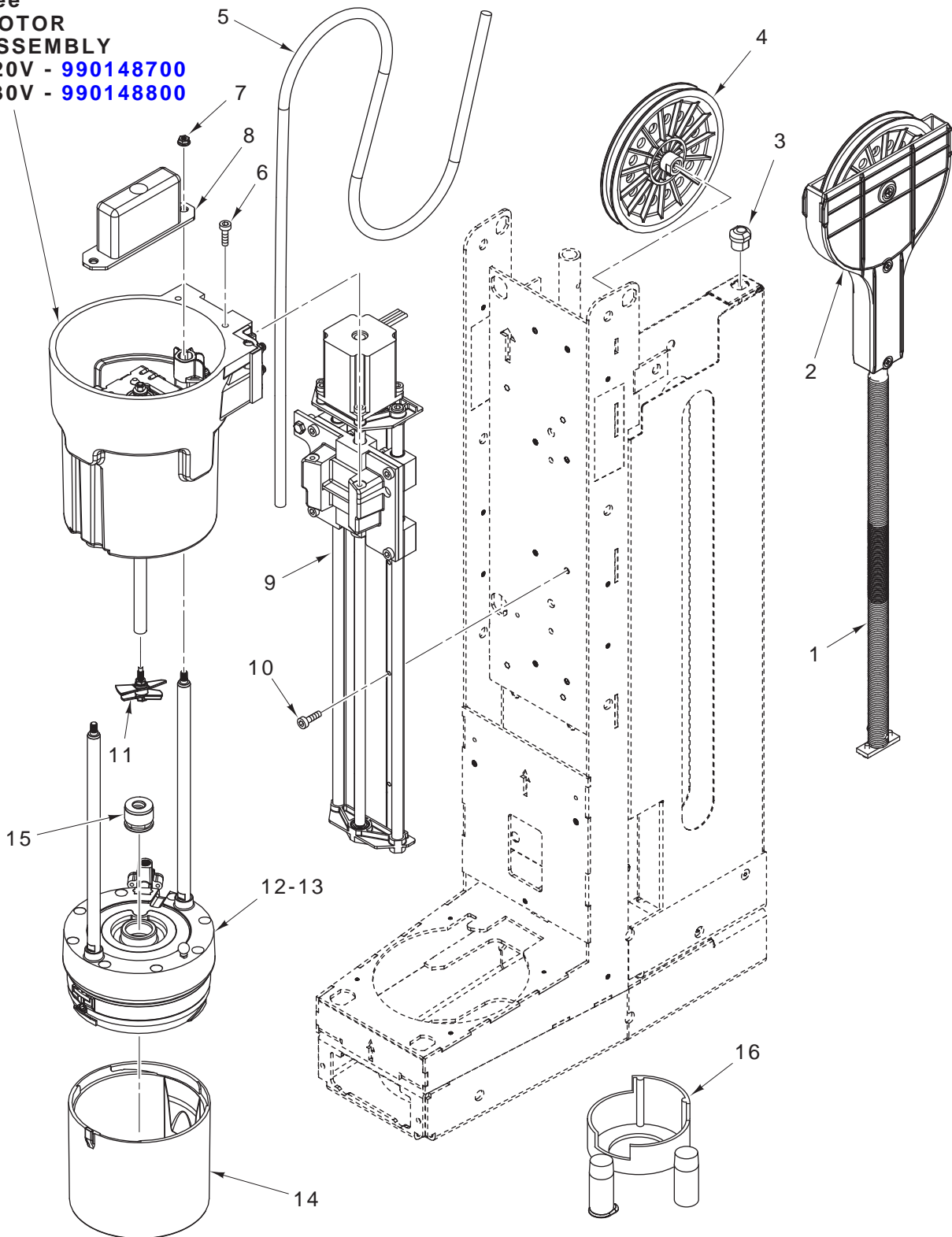


## LINEAR ACTUATOR, MOTOR, & CUP GUARD (BIC2000)

ITEM #	PART NO.	NAME OF PART	AMT.
1	<a href="#">990152700</a>	Spring – Festoon.....	1
2	<a href="#">990148600</a>	Lower Pulley Assembly.....	1
3	*	Relief – Strain .....	1
4	<a href="#">990149500</a>	Upper Pulley Assembly.....	1
5	<a href="#">990149600</a>	Cord – Motor .....	1
6	*	Screw .....	2
7	*	Nut – Lock.....	2
8	*	Block .....	1
9	<a href="#">990149300</a>	Linear Actuator Assembly .....	1
10	*	Screw .....	8
11	<a href="#">990149100</a>	Blade Assembly (Double Flat) (BIC2000) .....	1
12	<a href="#">990148900</a>	Blade Assembly (V-Flat) (BIC2000) .....	1
13	<a href="#">990148200</a>	Cup Guard & Shield Assembly (BIC2000) (Includes Items 7, 8, 14, 15, & 16) .....	1
14	<a href="#">990171600</a>	Bearing Grommet (BIC2000) .....	1
15	<a href="#">990152000</a>	Shield – Cup .....	1
16	<a href="#">990167000</a>	Seal – Shaft .....	1
17	<a href="#">990149700</a>	Holder – Cup.....	1

\* Reference Fastener Kit, Linear Actuator Assembly, GM42/GM43: [990178000](#)  
 Reference Fastener Kit, Shield Assembly, GM43: [990178100](#)

See  
MOTOR  
ASSEMBLY  
120V - 990148700  
230V - 990148800



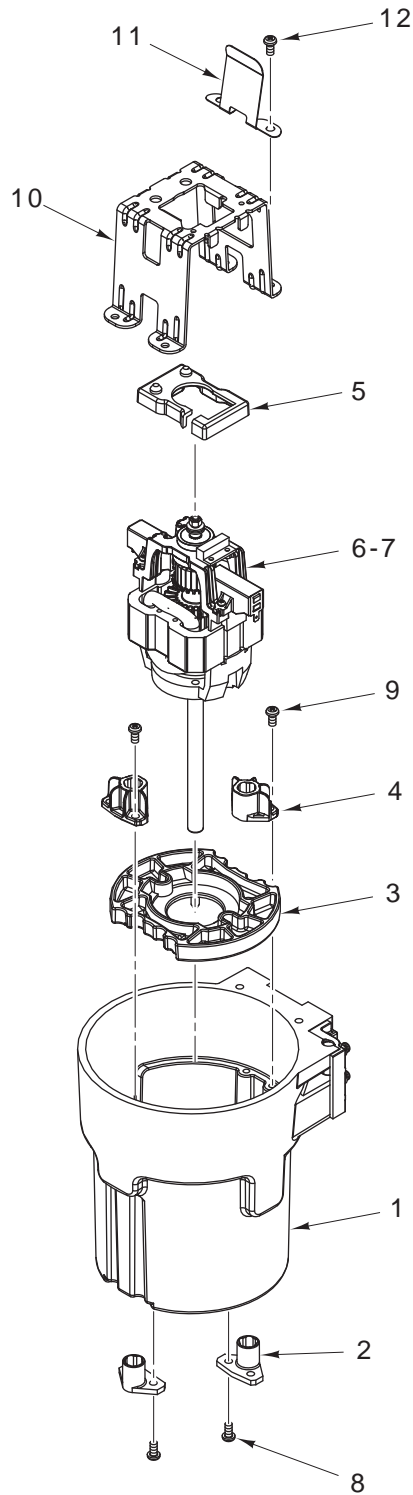
fig\_8\_HB

**LINEAR ACTUATOR, MOTOR, & CUP GUARD (MIC2000)**

## LINEAR ACTUATOR, MOTOR, & CUP GUARD (MIC2000)

ITEM #	PART NO.	NAME OF PART	AMT.
1	<a href="#">990152700</a>	Spring – Festoon.....	1
2	<a href="#">990148600</a>	Lower Pulley Assembly.....	1
3	*	Relief – Strain .....	1
4	<a href="#">990149500</a>	Upper Pulley Assembly.....	1
5	<a href="#">990149600</a>	Cord – Motor .....	1
6	*	Screw .....	2
7	*	Nut – Lock.....	2
8	*	Block .....	1
9	<a href="#">990149300</a>	Linear Actuator Assembly .....	1
10	*	Screw .....	8
11	<a href="#">990149200</a>	Blade Assembly (Dual) (Ice Cream) (MIC2000).....	1
12	<a href="#">990148300</a>	Cup Guard & Shield Assembly (MIC2000) (Includes Items 7, 8, 13, 14, & 15).....	1
13	<a href="#">990171500</a>	Bearing Grommet (MIC2000).....	1
14	<a href="#">990152000</a>	Shield – Cup .....	1
15	<a href="#">990167000</a>	Seal – Shaft .....	1
16	<a href="#">990149800</a>	Holder – Cup.....	1

\* Reference Fastener Kit, Linear Actuator Assembly, GM42/GM43: [990178000](#)  
 Reference Fastener Kit, Shield Assembly, GM43: [990178100](#)



fig\_5\_HB

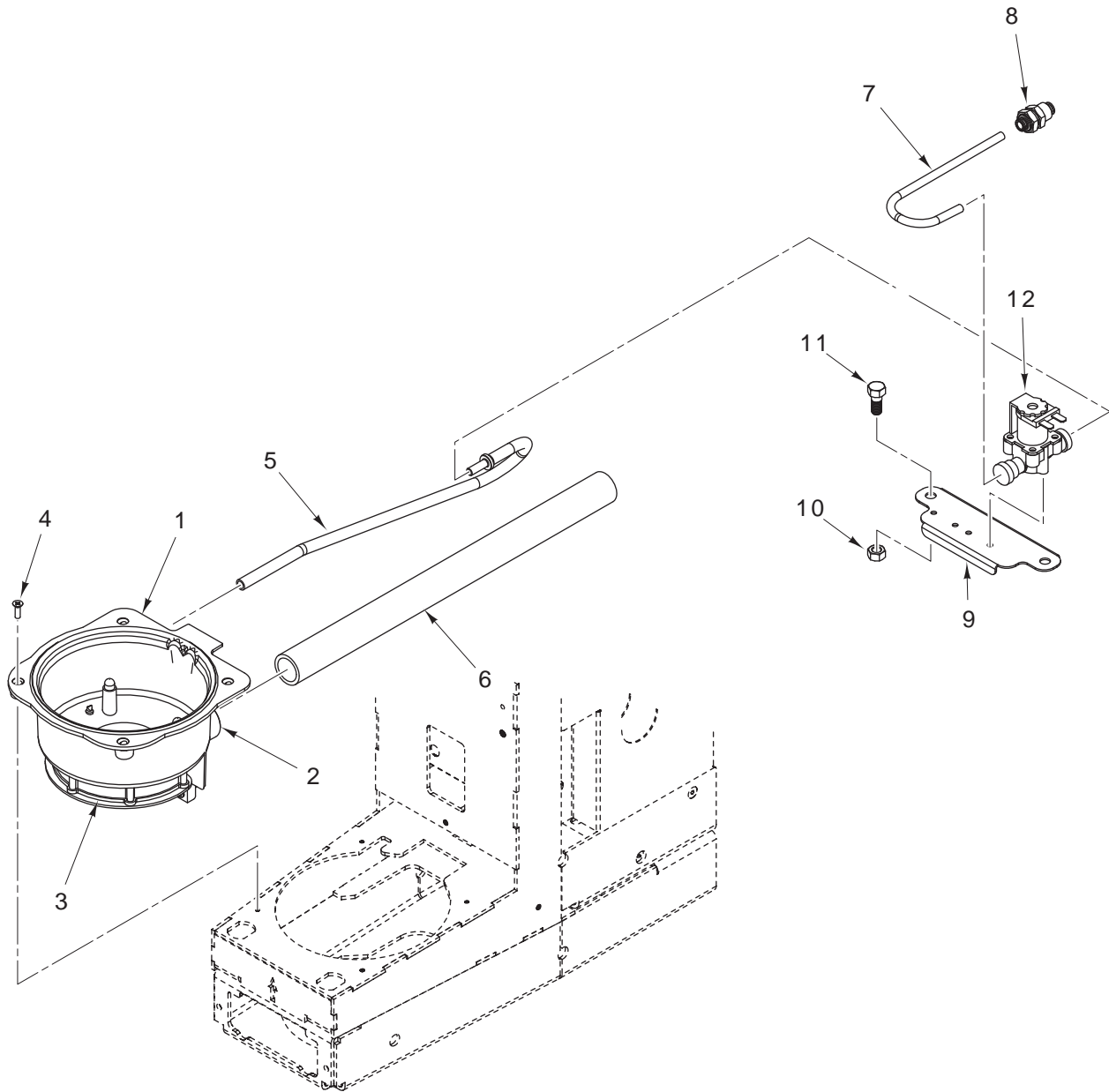
## MOTOR ASSEMBLY



**MOTOR ASSEMBLY**  
**(120V – 990148700)**  
**(230V – 990148800)**

ITEM #	PART NO.	NAME OF PART	AMT.
1	*	Motor Housing.....	1
2	990171000	Bushing – Rod (Lower) .....	2
3	990171200	Pad – Motor Mount (Lower) .....	1
4	990170900	Bushing – Rod (Upper) .....	2
5	990171100	Pad – Motor Mount (Upper) .....	1
6	990171300	Motor (120V) .....	1
7	990171400	Motor (230V) .....	1
8	*	Screw .....	4
9	*	Screw .....	4
10	*	Bracket.....	1
11	*	Shield.....	1
12	*	Screw .....	4

\* Reference Fastener Kit, Motor Can Assembly, GM42/GM43: [990173100](#)



fig\_7\_HB

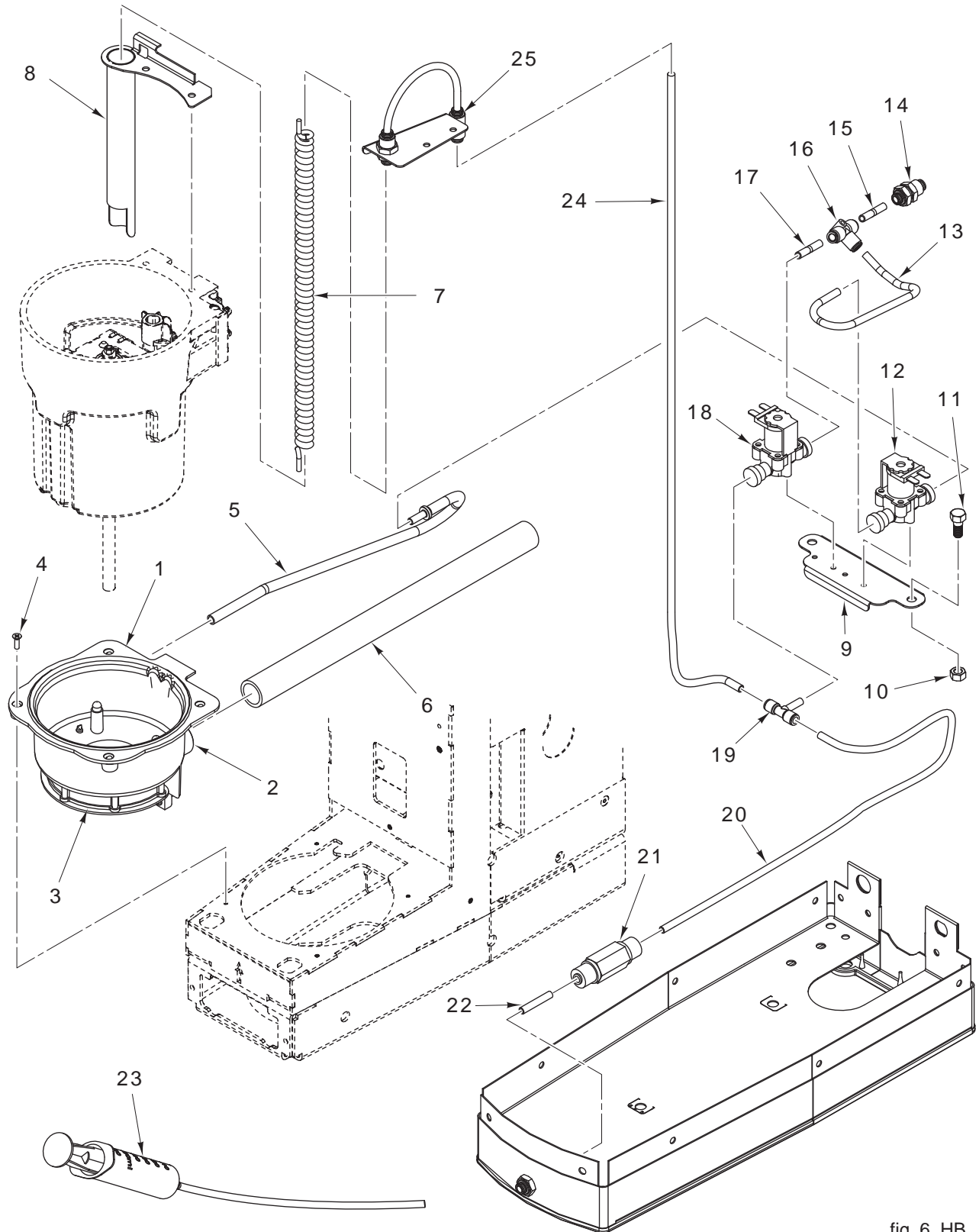
## WASH CHAMBER & WATER LINES (BIC2000)



## WASH CHAMBER & WATER LINES (BIC2000)

ITEM #	PART NO.	NAME OF PART	AMT.
1	<a href="#">990148400</a>	Wash Chamber Assembly (Includes Items 2, 3, & Sensors) .....	1
2	<a href="#">990152600</a>	Adapter – Drain.....	1
3	<a href="#">990152500</a>	Gasket – Wash Chamber Manifold.....	1
4	*	Screw .....	4
5	*	Tubing (Cut-To-Length) (Valve to Wash Chamber).....	1
6	*	Tube – Drain (Long).....	1
7	*	Tubing (Cut-To-Length) (Inlet to Valve).....	1
8	*	Connector – Water Line .....	1
9	*	Plate – Solenoid Mounting.....	1
10	*	Nut .....	2
11	*	Screw .....	2
12	<a href="#">990153260</a>	Valve – Water (For Wash Chamber).....	1

\* Reference Fastener Kit, Wash Chamber Assembly, GM42/GM43: [990173100](#)



fig\_6\_HB

**WASH CHAMBER & WATER LINES (MIC2000)**

## WASH CHAMBER & WATER LINES (MIC2000)

ITEM #	PART NO.	NAME OF PART	AMT.
1	<a href="#">990148400</a>	Wash Chamber Assembly (Includes Items 2, 3, & Sensors) .....	1
2	<a href="#">990152600</a>	Adapter – Drain.....	1
3	<a href="#">990152500</a>	Gasket – Wash Chamber Manifold .....	1
4	*	Screw .....	4
5	*	Tubing (Cut-To-Length) (Valve to Wash Chamber).....	1
6	*	Tube – Drain (Long) .....	1
7	<a href="#">990150200</a>	Tube – Coil (Water Delivery).....	1
8	*	Sleeve (Coil Tube) .....	1
9	*	Plate – Solenoid Mounting.....	1
10	*	Nut .....	2
11	*	Screw .....	2
12	<a href="#">990153260</a>	Valve – Water (For Wash Chamber) .....	1
13	*	Tubing (Cut-To-Length) (Tee to Valve).....	1
14	*	Connector – Water Line .....	1
15	*	Tubing (Cut-To-Length) (Inlet to Tee) .....	1
16	*	Tee .....	1
17	*	Tubing (Cut-To-Length) (Tee to Valve) .....	1
18	<a href="#">990153260</a>	Valve – Water (Water Delivery) .....	1
19	*	Tee .....	1
20	*	Tubing (Cut-To-Length) (Check Valve to Tee).....	1
21	*	Check Valve .....	1
22	*	Tubing (Cut-To-Length) (Sanitize Port to Check Valve) .....	1
23	<a href="#">990170800</a>	Sanitizer Syringe Assembly .....	1
24	*	Tubing (Cut-To-Length) (Valve to Delivery Manifold) .....	1
25	<a href="#">990172400</a>	Manifold Assembly – Water Delivery .....	1

\* Reference Fastener Kit, Wash Chamber Assembly, GM42/GM43: [990173100](#)

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— C O M M E R C I A L —