Control System

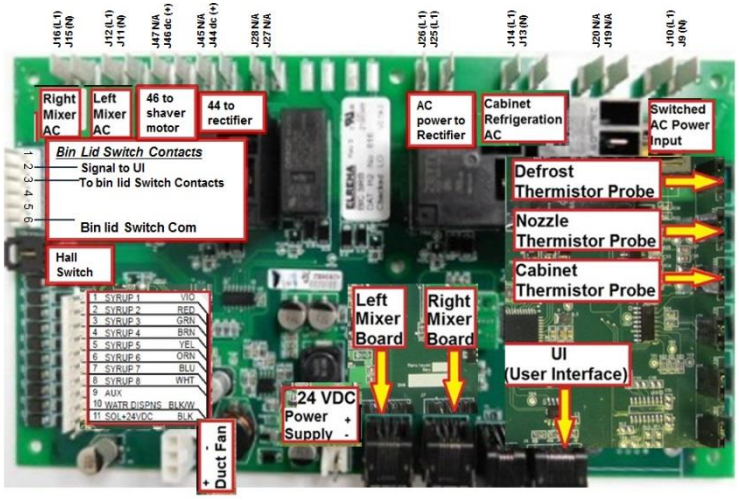
Control system – Control Boards

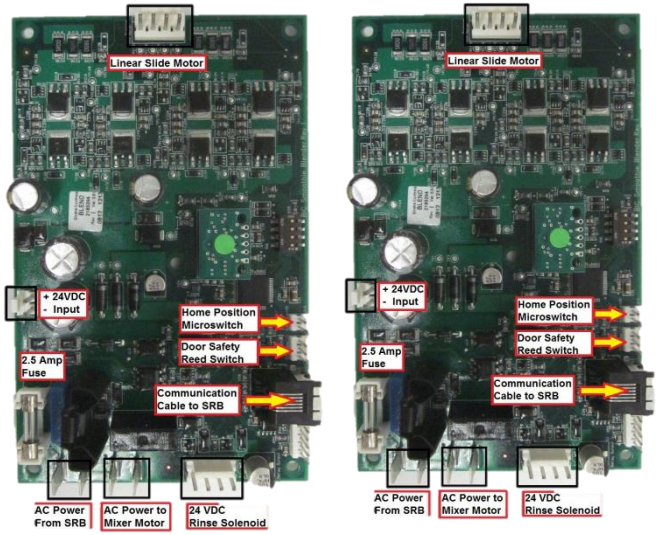
There are 4 control boards on the MF BIC.

- **1 - UI = User Interface (Touch Screen)**
- **1 - SRB = Smart Relay Board**
- **2 - Blender or Mixer Board = LH and RH**

User Interface

Smart Relay Board





Left and Right Mixer Boards

Control system - User Interface (UI)

- The UI (User Interface) or Touch Screen is the ‘brain’. The UI is the command Center of the operation and sends signals according to user input to the appropriate board(s) for the function selected
- The UI provides a method for the user to instruct the machine to a specific task, such as making drinks and providing cleaning instructions.
- The UI receives inputs from the user via screen touches and executes the function based on the current firmware.
- The UI processes inputs and sends signals to the SRB relay board to energize and de-energize components. The UI is the main control board of the BIC unit.

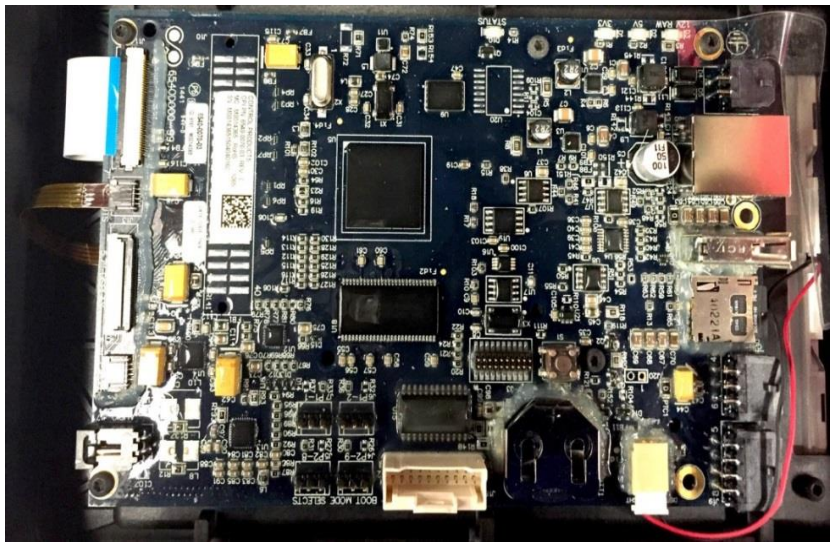
Back of UI

User Interface board is located behind the touchscreen.

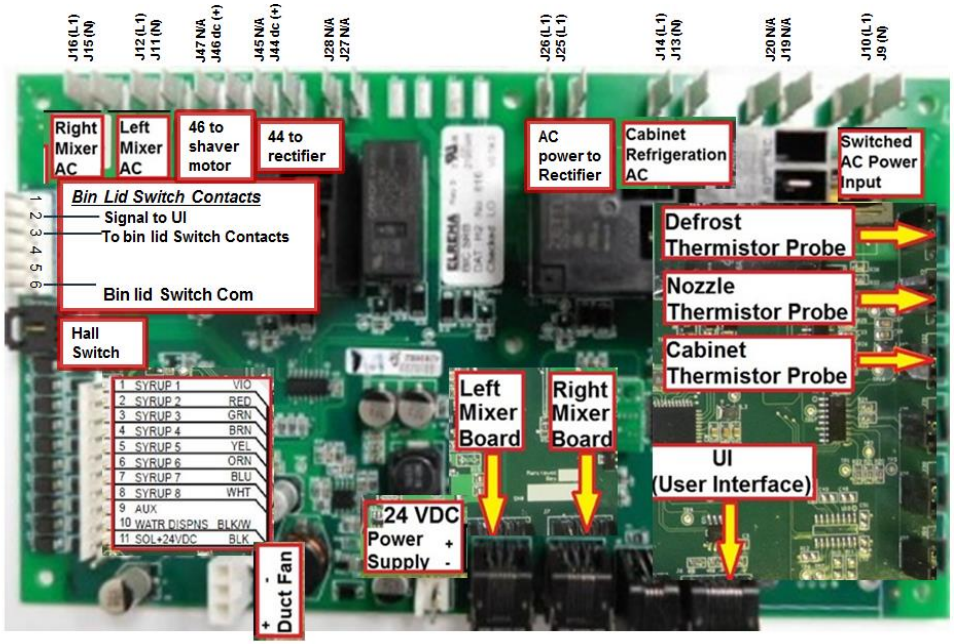
Control system - UI

- A Modbus communication cable provides the path of communication to and from the SRB as well as the 24v dc power supply from the SRB to the UI.
- The UI is also equipped with a USB port for uploading firmware to each of the system boards as well as the customer's recipe file.

The UI is the brain and sends commands to the SRB.



The SRB is the heart and sends the commands based on the input from the UI



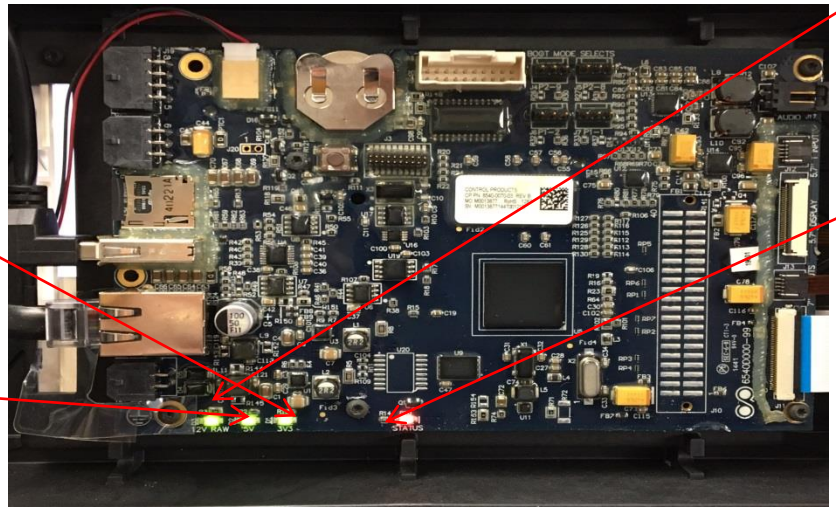
Control system - UI- Check procedure

Check Procedure

1. **Reboot machine by moving toggle switch off/on or disconnecting and reconnecting main power supply.**
2. **With the power off, remove the UI from the front of the unit. Verify the communication cable connection is secure by removing and reinserting the connector. Safely position the UI assembly, power up and check display.**
3. **With the power off, remove the UI from the front of the unit but do not disconnect the cables. With the UI safely positioned power up the unit and check the LED indicator lights on the integrated control board of the UI assembly. There are a total of 4 that will illuminate.**

D1 12V RAW Power- GREEN from power Supply

D2 5V Power- GREEN Power is available on UI to USB

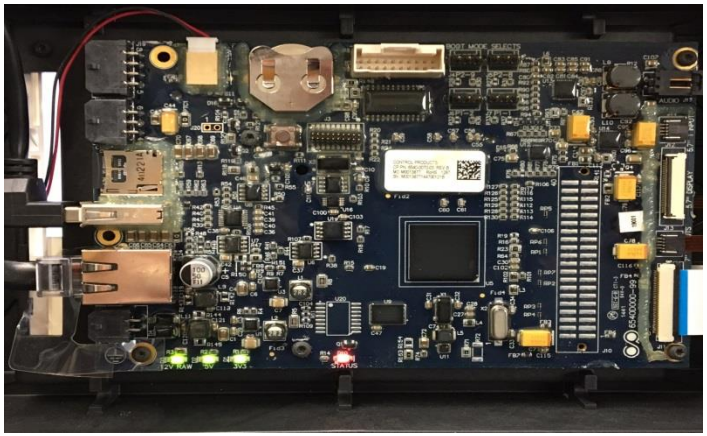


D3 3.3V- GREEN Power is available on the UI to USB

D10 RED (Status) Microprocessor is active and operational

Control system - UI- Check procedure

Check Procedure

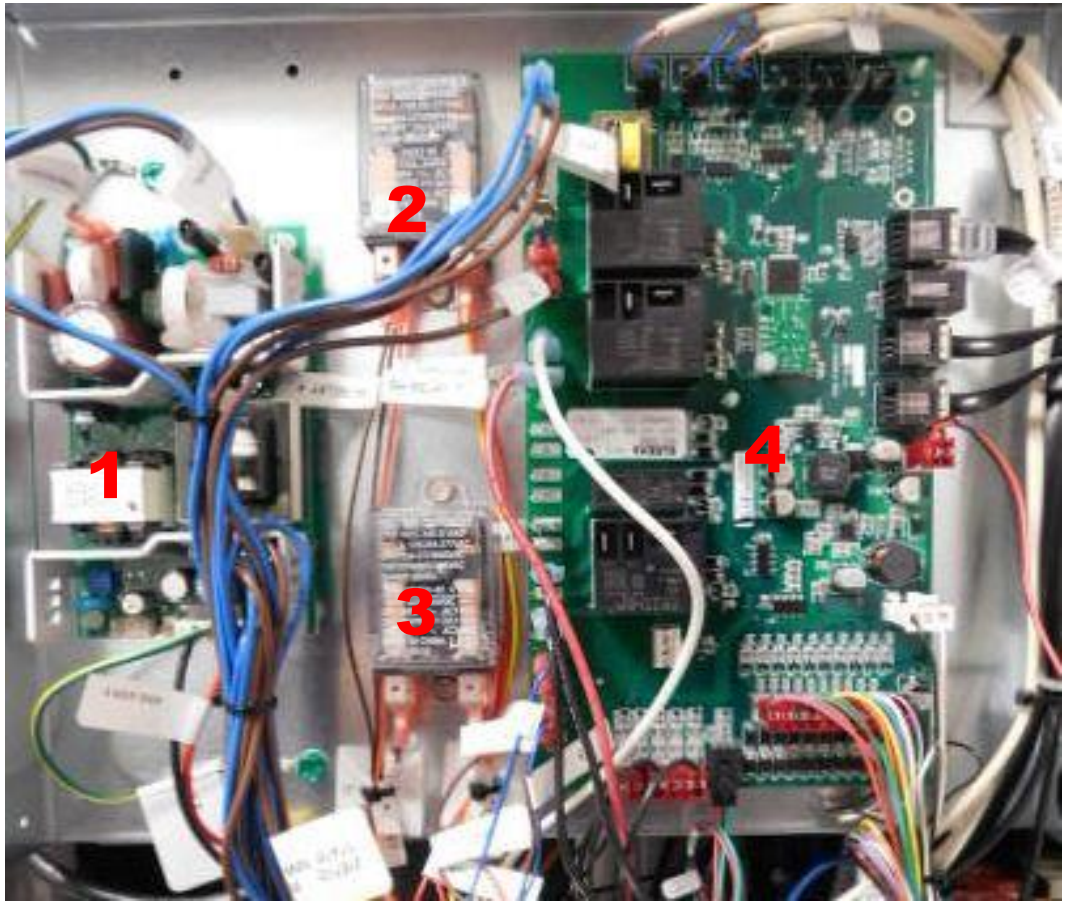


4. If no LED lights are illuminated, turn the power off and disconnect the power supply cord. Inspect the ribbon cables and power supply connection between the integrated control board and touchscreen panel. Ensure connections are secure, safely position the UI assembly and connect the power cord and power up the unit. Again check the LEDs for activity.
5. If no LED lights are illuminated, turn the power off and disconnect the power supply cord. Remove back panel. Check the UI communication cable connection at the SRB board - J6. Verify the connection is secure by removing and reinserting the connector.
6. With the power supply cord disconnected, disconnect the 24 VDC power input from the SRB board at J35. Connect the leads of your multi meter to the 24 VDC connector and properly set the meter to test for the anticipated DC voltage. Power the unit back up and check for 24 VDC supply.
7. If 24 VDC power is verified at the connector, turn the power off and disconnect the power supply cord. Disconnect the 24 VDC connector from the multi meter and reconnect to the SRB board at J35. Power up the unit and check the UI LEDs. If no LED activity - Replace the UI.

Control system- Board location

Back of Machine

1. 24 VDC Power supply
2. RH blender station power interrupt relay
3. LH blender station power interrupt relay
4. SRB



Control system - Power supply

1- POWER SUPPLY

Function

Reduces and converts voltage for use on the control circuit.

Specifications

Steps down voltage from:

90 - 264/50-60/1 VAC to 24 VDC 8.4 A

Input voltage terminal J1

Blue is neutral Brown is line voltage AC

Caution! Live Heat sinks

24VDC voltage terminal J2

Check voltage at first and 5th pin. Should be 24 VDC.

Control system - Power supply- Check Procedure

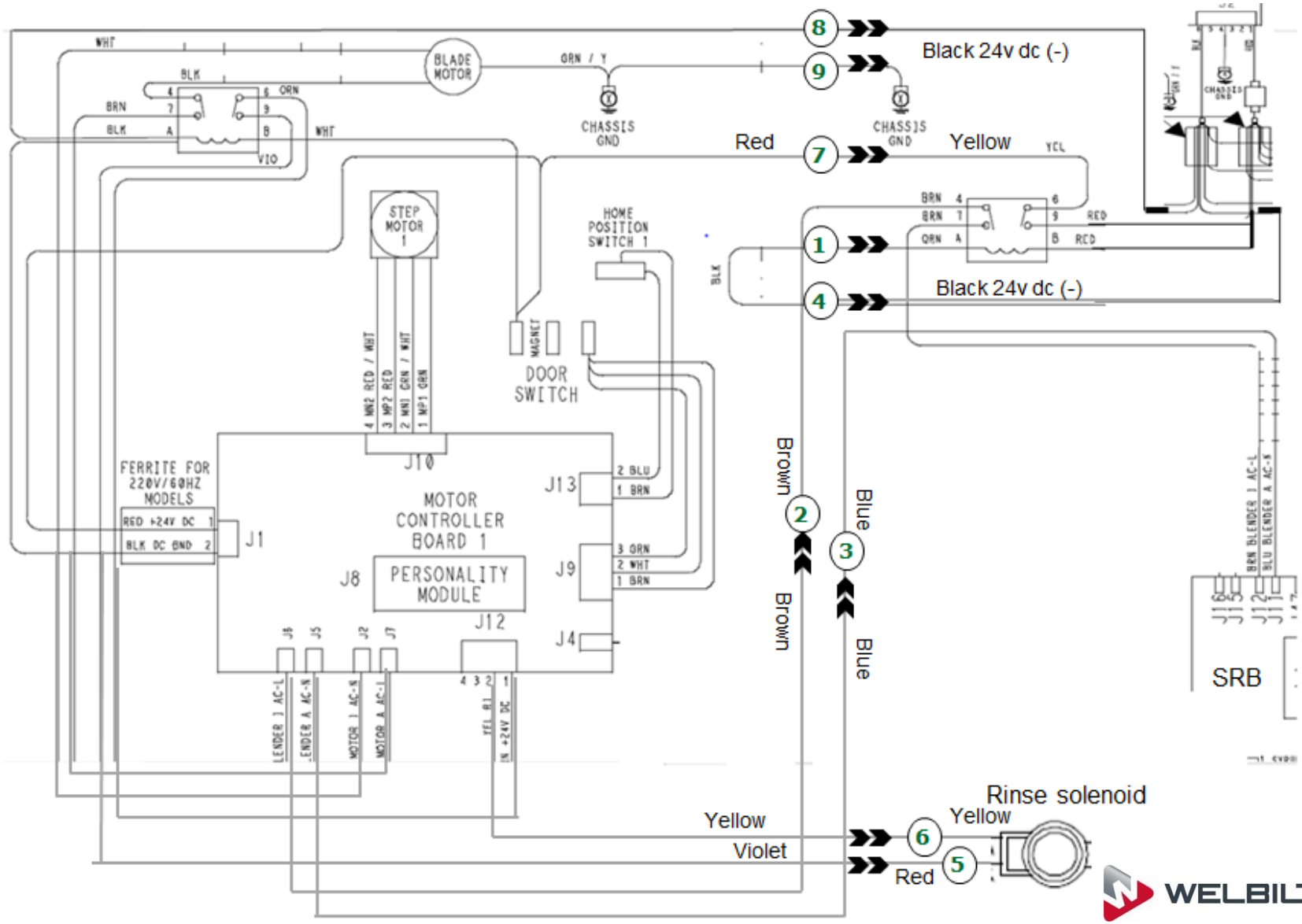
Check Procedure

1. Inspect for correct wiring.
2. Check for line voltage at transformer primary J1.
3. No line voltage present - Refer to power relay and toggle switch check procedures.
4. Line voltage present - Continue diagnostics.
5. Check voltage at transformer secondary J2.
6. 24 VDC present – Power Supply is OK.
7. 24 VDC is not present - Replace Power Supply
8. Repair wiring
9. 24 VDC present – Check Power to SRB Terminal J35

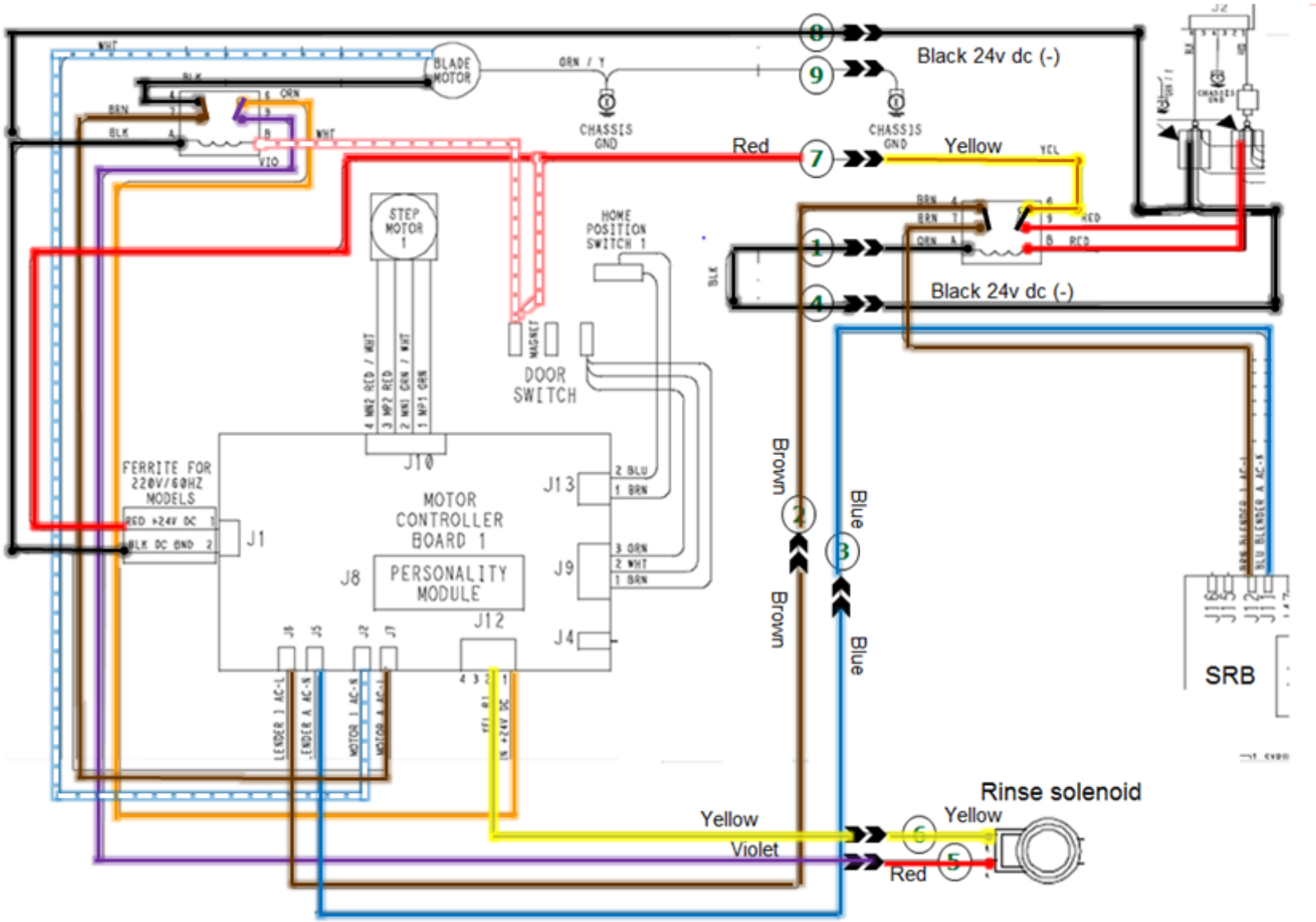
Input voltage terminal J1

24VDC voltage terminal J2

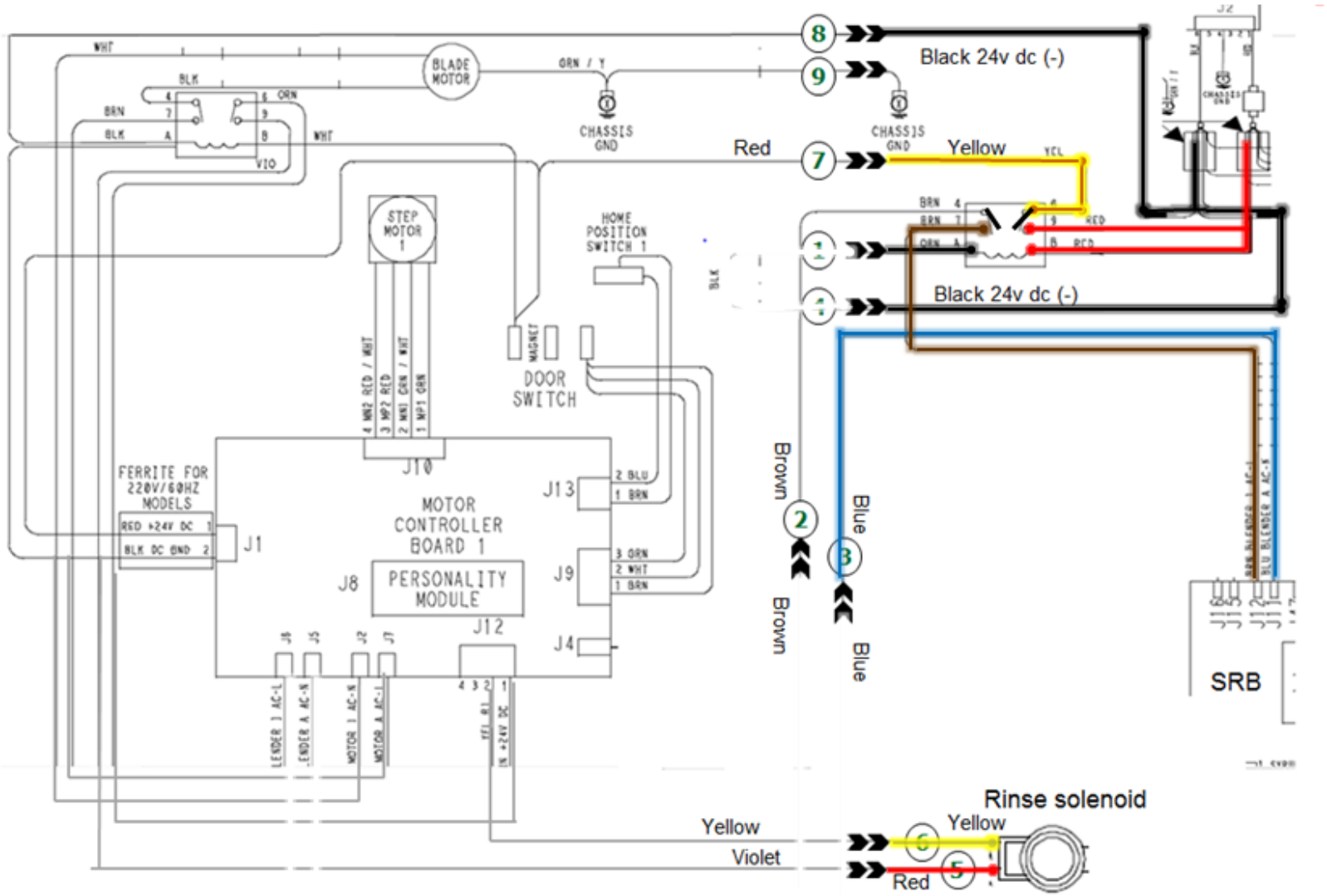
Control system – Power interrupt Relay - Wiring



Control system – Power interrupt Relay - Wiring Color Coding



Control system – Power interrupt Relay - Wiring Blender station Disconnected



Control system – Power interrupt Relay

2&3 Blender station power interrupt relay

Function

Removes power from the blender station terminal plug when Blender station is disconnected

Specifications

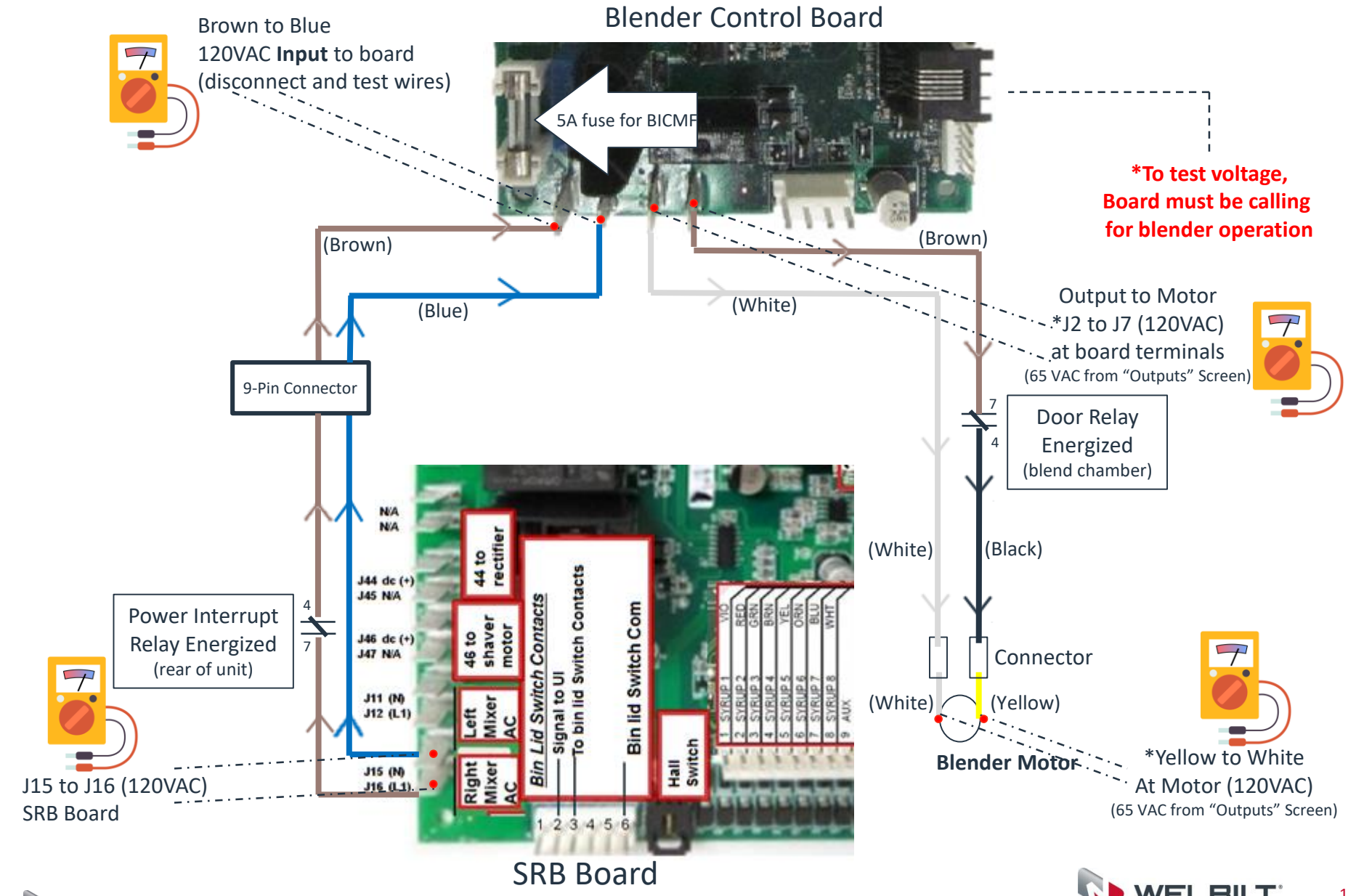
When power switch is energized, relay receives 24 VDC across coil. DPDT relay closes circuit to terminal connector at blender station. If terminal connector at blender station is disconnected, power to relay coil is removed, opening contacts, and will not send power to blender station terminal plug.

Check Procedure

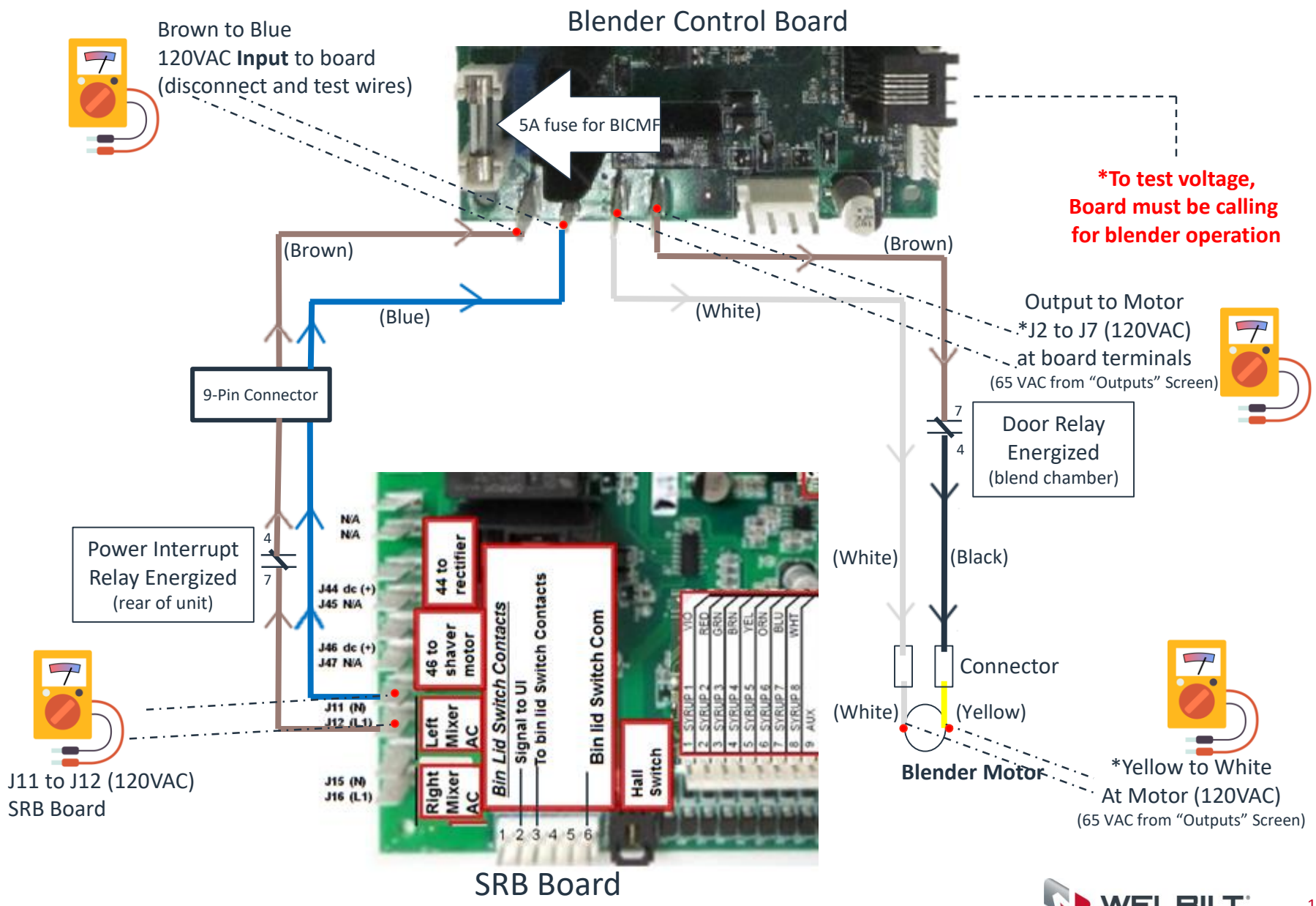
If one blender station does not have power, check associated relay for 24 VDC at terminals A (orange wire) B (Red wire).

- 24 VDC present – Power Supply is OK
- 24 VDC is not present - Replace Power Supply
- 24 VDC present - Check terminals at Blender station connector

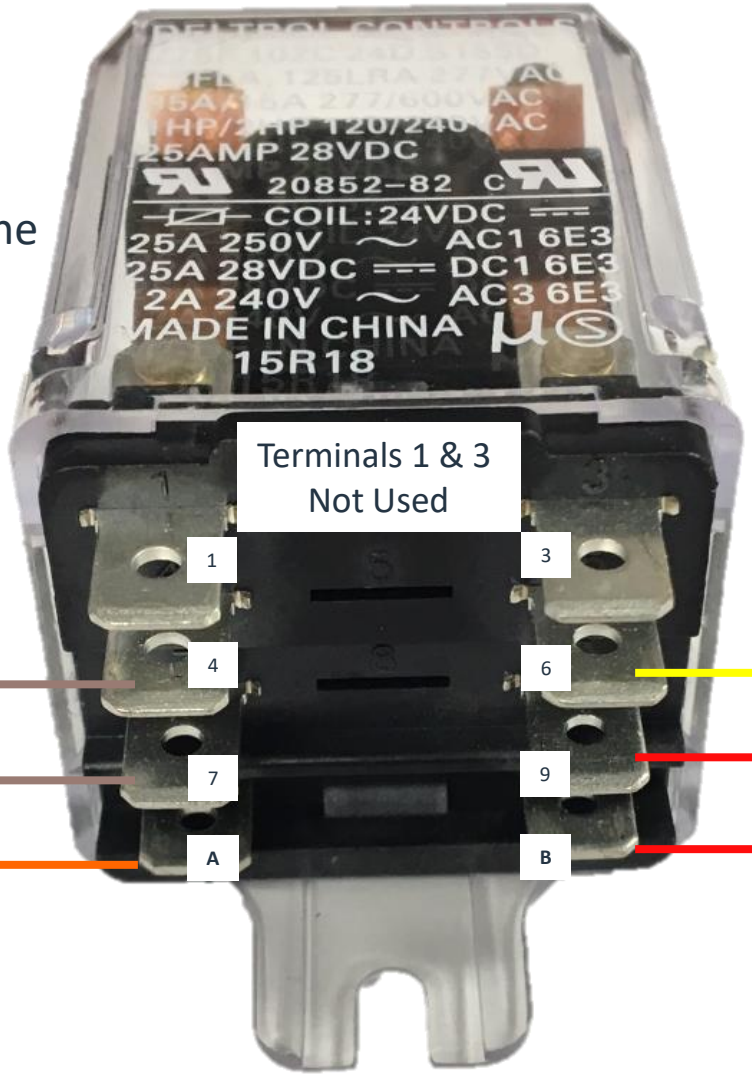
BICMF *** RIGHT SIDE MIXER WHEN FACING THE UNIT ***



BICMF *** LEFT SIDE MIXER WHEN FACING THE UNIT ***



Upper position Relay on the rear of the unit – Interrupts power to the **RIGHT** side (when facing the unit).



Blender Control J6 120V (L1) — Brown — 4

SRB J16 120V (L1) — Brown — 7

-24VDC Power Supply — Orange — A

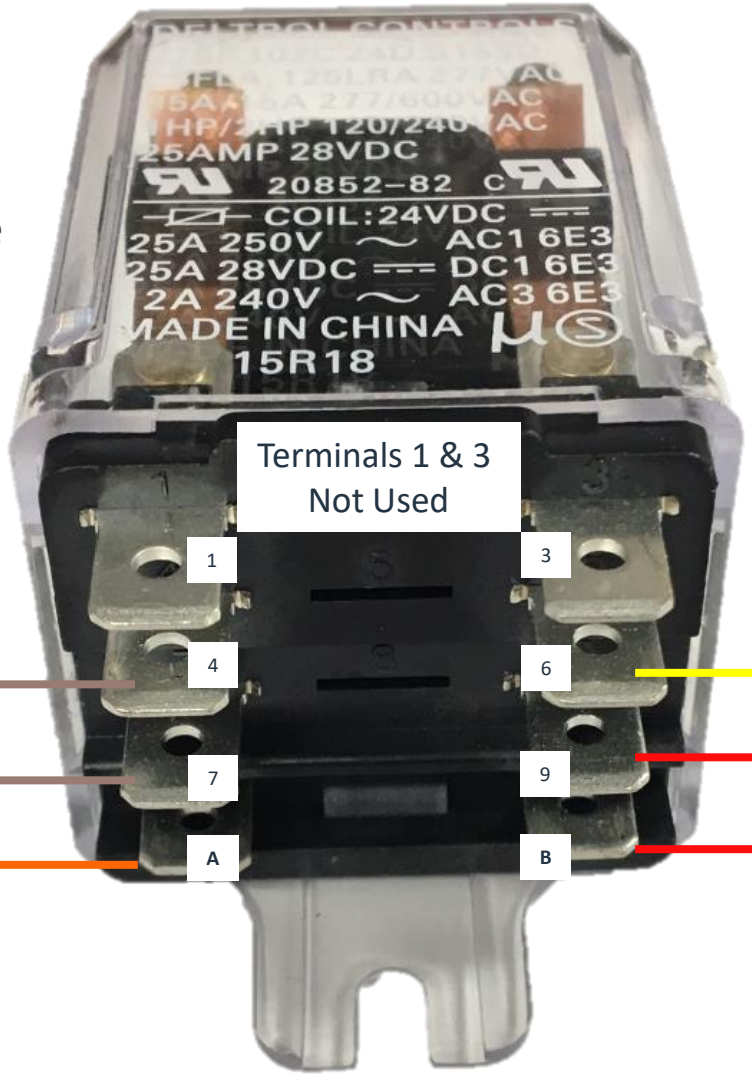
Yellow — 6 — +24VDC To Red J1 & Reed Switch (white)

Red — 9 — +24VDC Power Supply

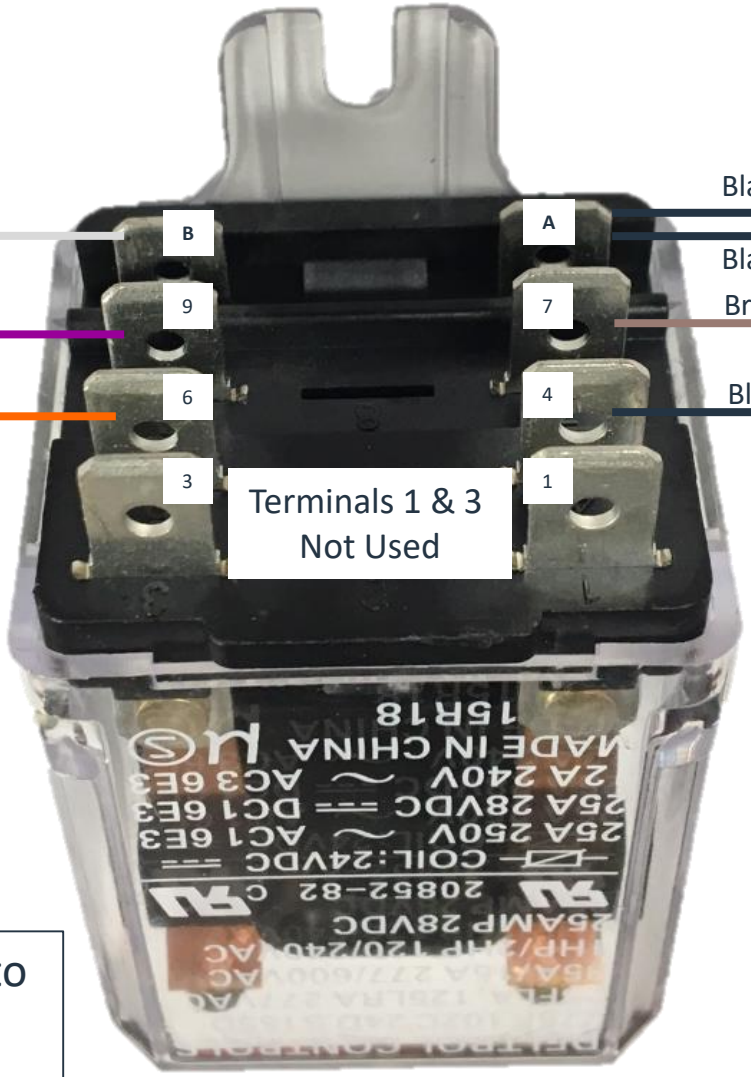
Red — B — +24VDC Power Supply

Power Interrupt Relay
(Back of Unit)
- As Mounted -

Lower position Relay on the rear of the unit – Interrupts power to the **LEFT** side (when facing the unit).



Power Interrupt Relay
(Back of Unit)
- As Mounted -

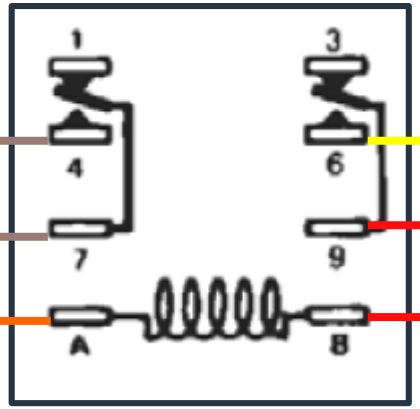


Right side relay connects to right side blender control, Left side relay connects to left side blender control.

Door Safety Relay
(Blend Chamber)
- As Mounted -

Upper position Relay on the rear of the unit – Interrupts power to the **RIGHT** side (when facing the unit).

Power Interrupt Relay



Blender Control J6
120V (L1)
Brown

SRB J16
120V (L1)
Brown

-24VDC
Power Supply
Orange

Yellow
+24VDC
To Red J1 & Reed Switch (white)

Red
+24VDC
Power Supply

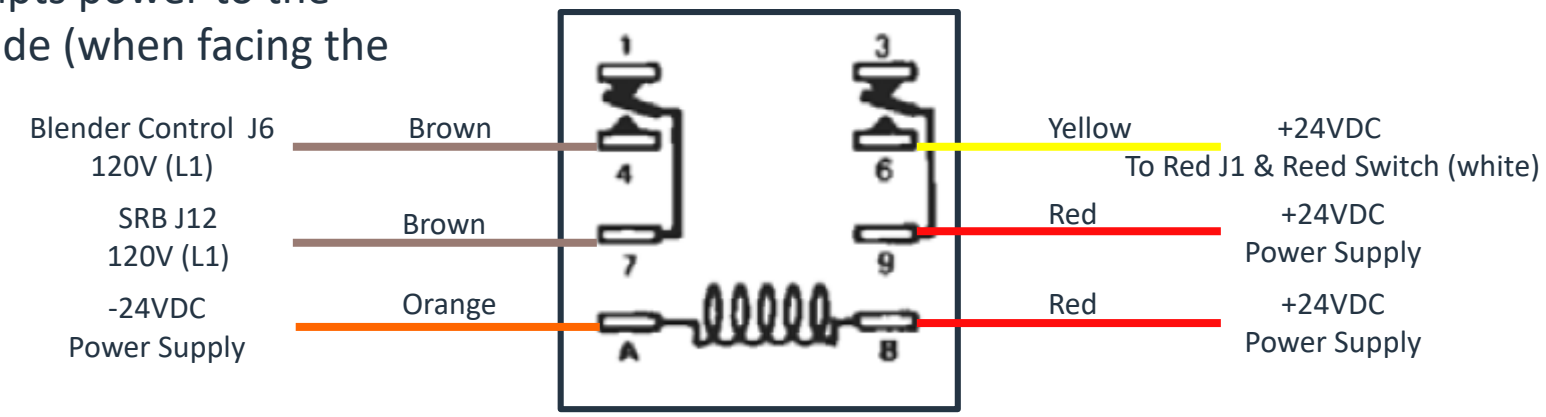
Red
+24VDC
Power Supply

2196069 Relay
RELAY,24VDC COIL,DPDT

24VDC Coil – Terminals A & B
When energized, closes 7 to 4 and 9 to 6

Lower position Relay on the rear of the unit – Interrupts power to the **LEFT** side (when facing the unit).

Power Interrupt Relay

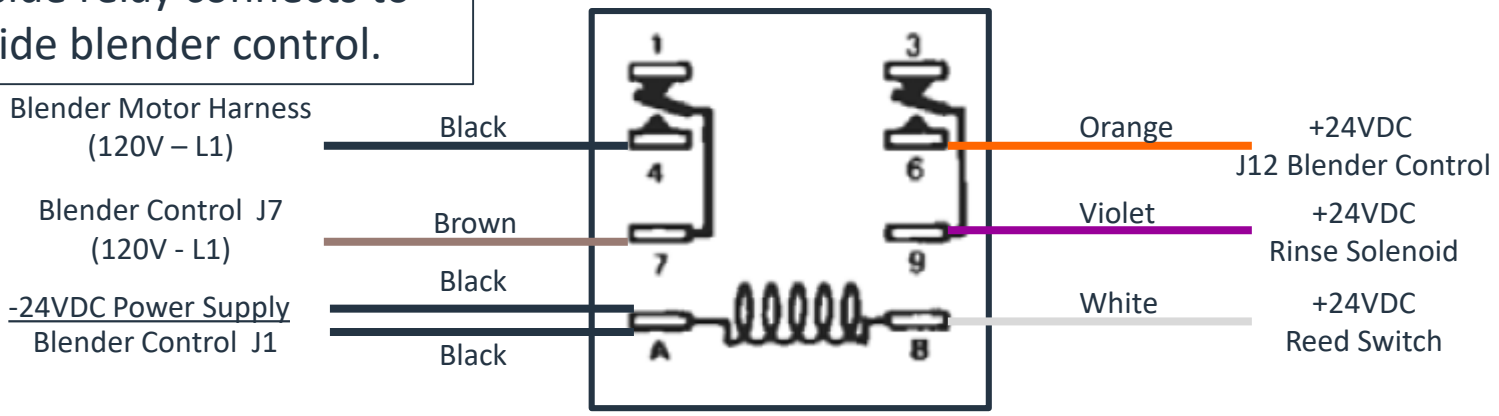


2196069 Relay
RELAY,24VDC COIL,DPDT

24VDC Coil – Terminals A & B
When energized, closes 7 to 4 and 9 to 6

Right side relay connects to right side blender control, Left side relay connects to left side blender control.

Door Safety Relay

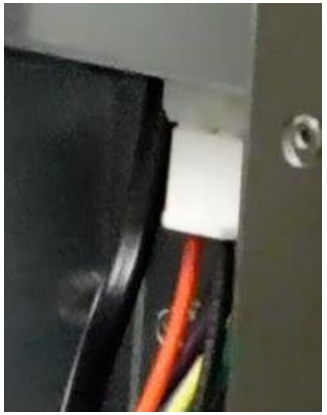


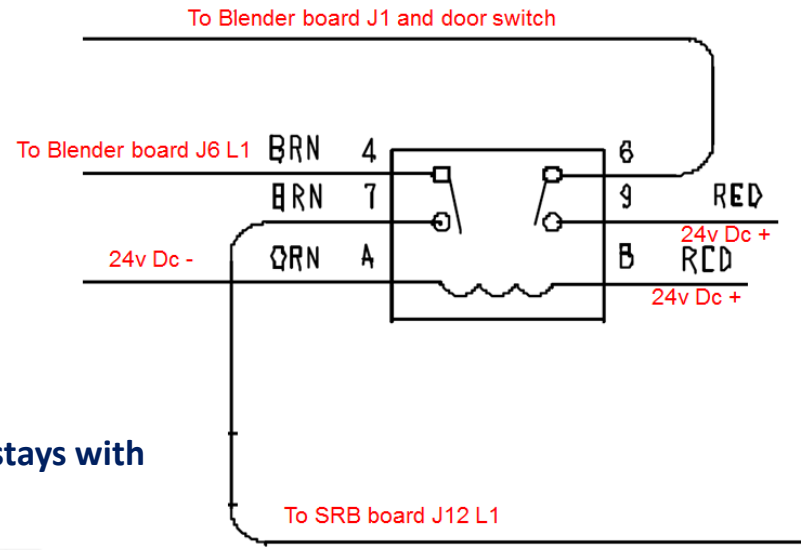
2196069 Relay
RELAY,24VDC COIL,DPDT

24VDC Coil – Terminals A & B
When energized, closes 7 to 4 and 9 to 6

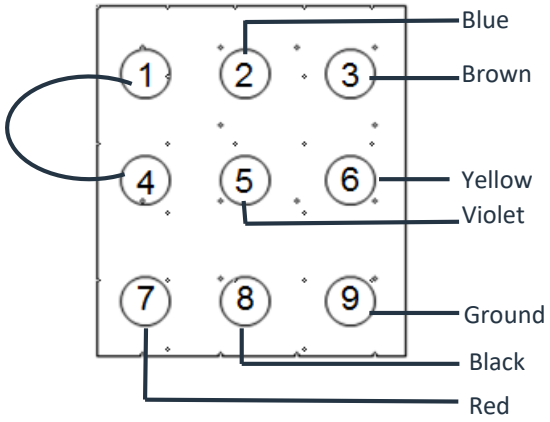
Control system – Power interrupt Relay connector

To Access the blender station connector the modular blender station must be disassembled

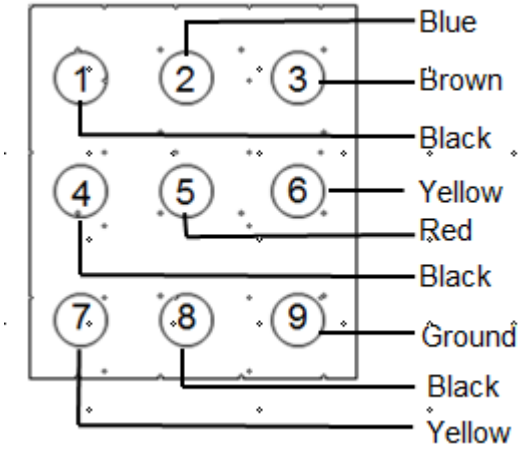




Male Connector stays with Blender station



Female Connector stays with Machine



Control system - Smart relay board – (SRB)

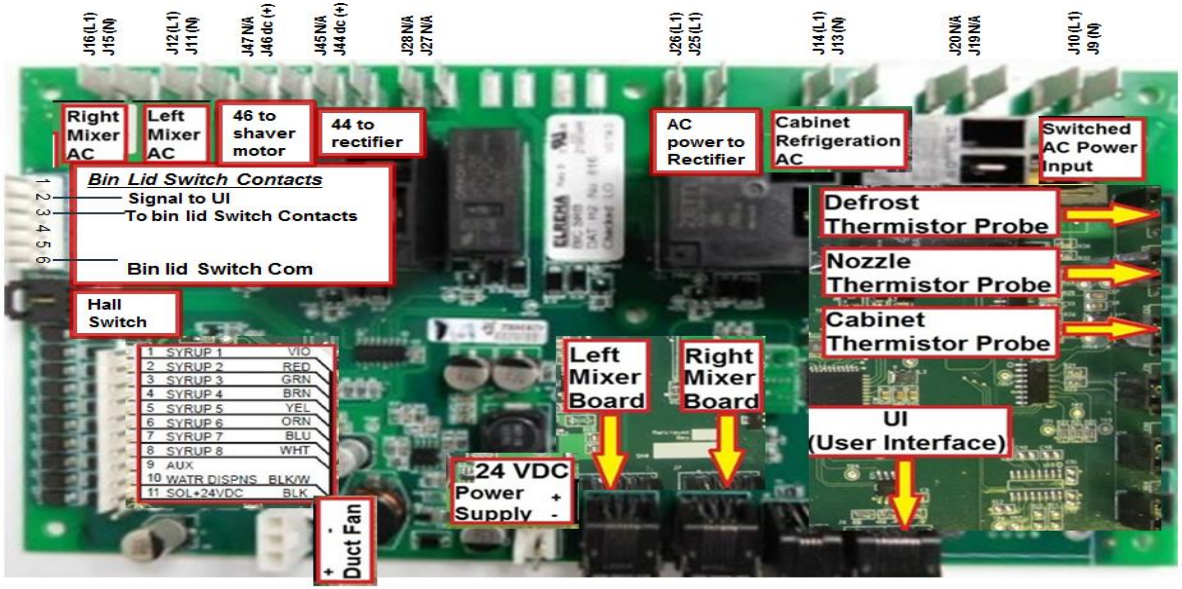
4- SRB

Function

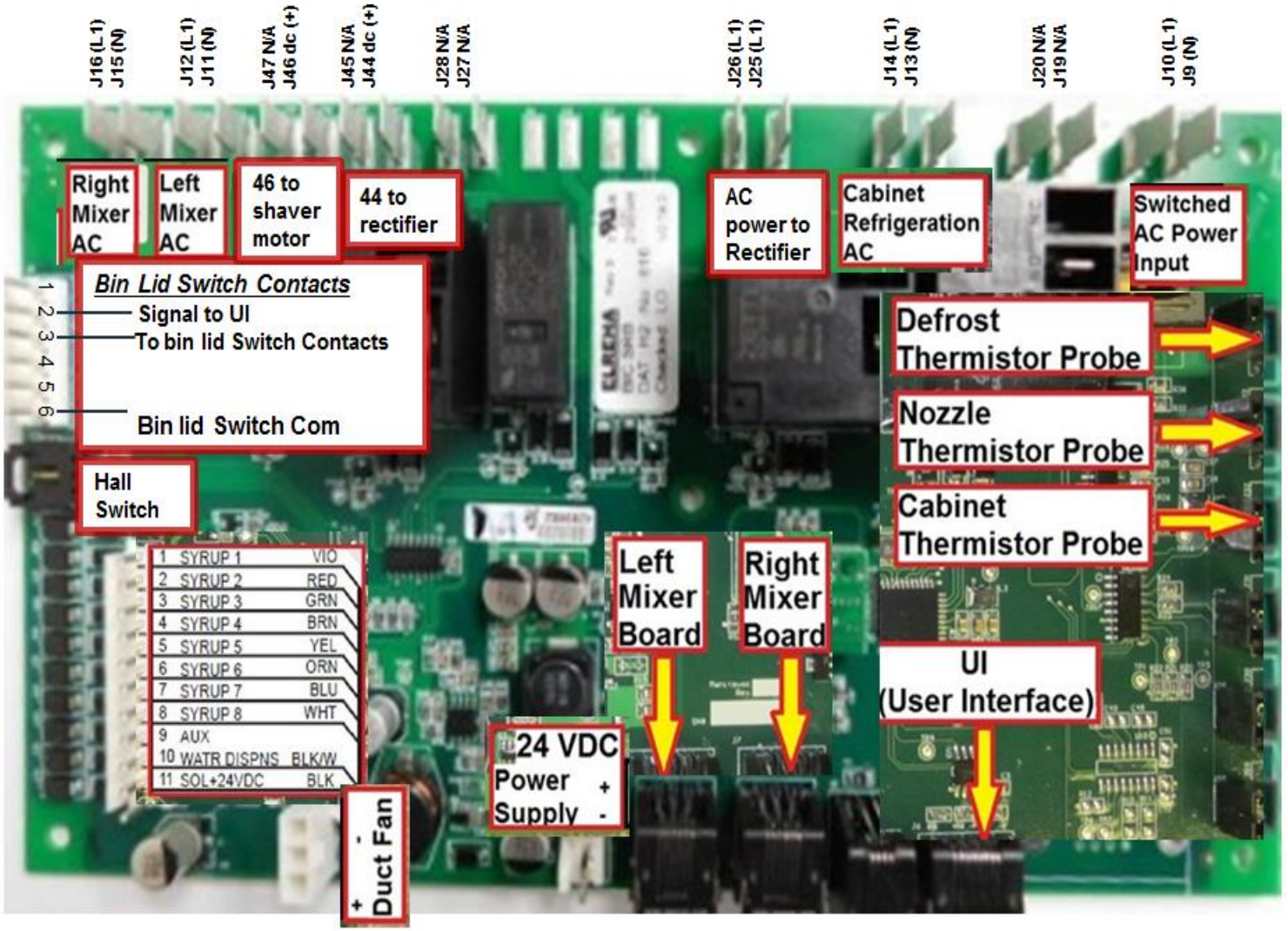
The SRB board receives inputs from various controls and outputs power as needed to various components at specific times based on the current firmware and activity of components. The SRB board is the central hub of operations. Communications and power distribution all connect through the SRB board.

Specifications

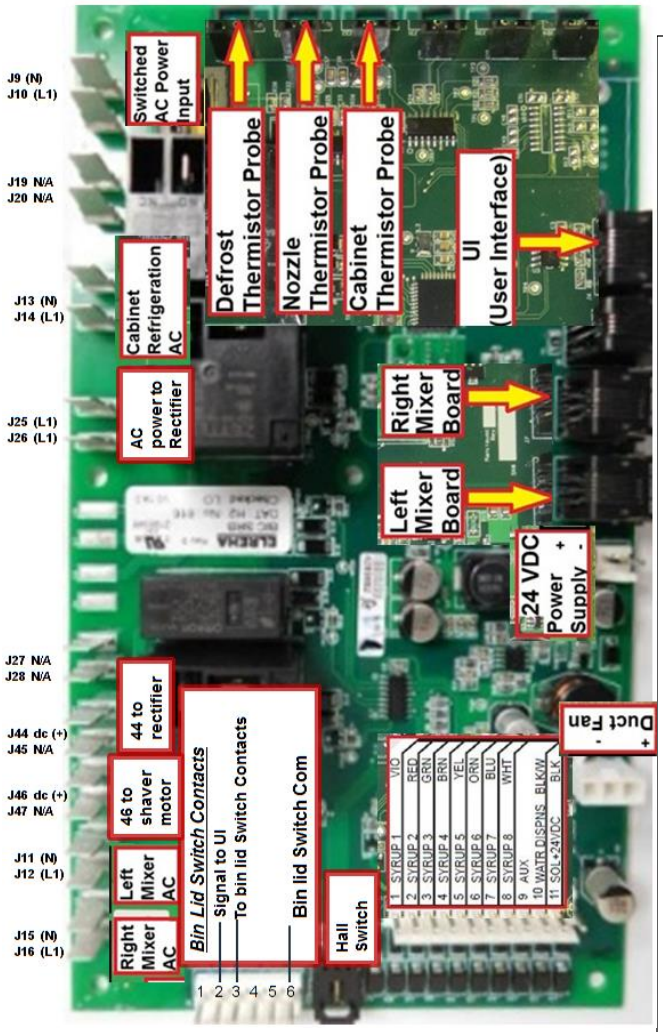
The SRB board receives and distributes line voltage, 24 VDC, & Modbus communication capabilities to various components. The SRB functions are controlled by the onboard firmware in conjunction with signal inputs from the UI, the blender boards, thermistor probes, Hall Effect switch, and ice Bin lid switch. SRB (Dispenser) firmware can be uploaded via the USB port near the power switch on the left side of the unit.



Control system - SRB



Control system - SRB



LEFT BOTTOM TO TOP

J15 (N) / J16 (L1) - Right Blender Control 120 VAC
J11 (N) / J12 (L1) - Left Blender Control 120 VAC
J47 Blank
J46 Shaver motor DC 120 V (+) Switched from J44
J45 Blank
J44 Rectifier DC 120 V (+)
J28-J27 Not used
J26 (L1) 120 VAC Input to rectifier
J25 (N) 120 VAC Input to rectifier
J14 (L1) - 120 VAC Compressor
J13 (N) - 120 VAC Compressor
J20- J19 Blank
J10 (L1) J9 (N) - 120 VAC Input Voltage

BOTTOM RIGHT TO LEFT

J1 - Pins 1-9 Switched -24 VDC Product solenoids
Pin 10 dispense water valve
Pin 11 (+)24 VDC to product solenoids
J43 - Sensor hall effect
J2 - Signal Inputs – Top cover Switch Pin 3 from left Common connect to Pin 6 switches shaver motor on Pin 2 sends signal to UI Ice Bin Lid Open

TOP LEFT TO RIGHT

J34 - Defrost Thermistor Probe
J33 - Nozzle Thermistor Probe
J32 - Cabinet Probe
J31 – J30- J29 Not Used

RIGHT SIDE TOP TO BOTTOM

J6 - Modbus / UI Communication
J5 - Future Use
J7 - Modbus / Right Blender Communication
J8 - Modbus / Left Blender Communication
J35 - 24 VDC Input
J36 - Duct Fan / 24 V

Control system – Blender Control Boards

Location

Each blend chamber has a dedicated Blender Control Board. The Blend Chamber Assembly needs to be separated from the frame in order to access the blender control board.

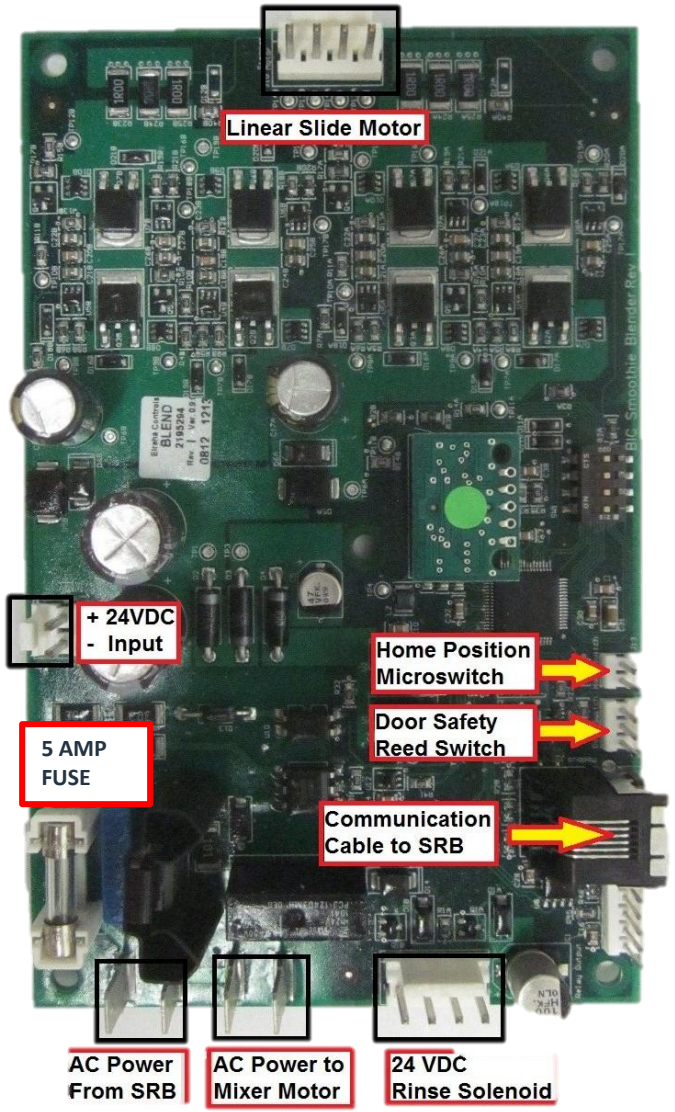
Control system – Blender Control Boards

Function

The Blender Control Board provides control of:

1. **The blender position, up/down movement of the linear slide**
2. **On/off motor operation.**
3. **The rinse operation of the blend station**

The Blender Control Board is software-driven and retains firmware which can be updated via the USB port, near the power switch on the left side of the unit.



Control system – Blender Control Boards

Specifications

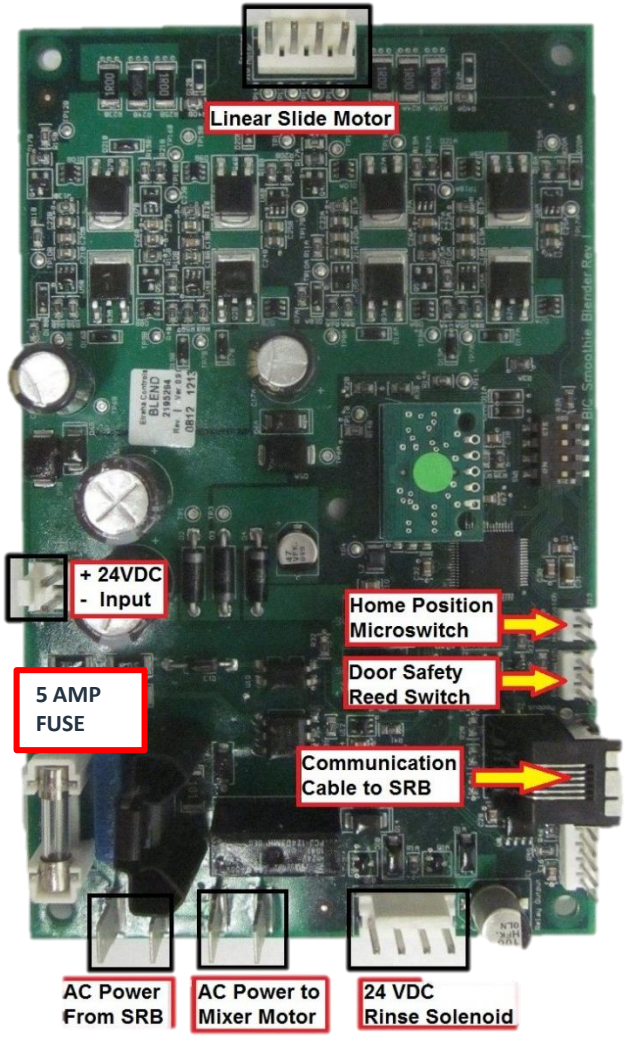
The Blender Control Board receives 120 VAC line voltage and 24 VDC low voltage.

The blender board executes the blend profile of the customer's recipe when a drink is selected.

The board will distribute voltage to the blender motor, linear slide, or the rinse water solenoid as instructed according to the current firmware and instruction from the UI.

Instruction from the UI is transmitted via Modbus communication cable connected at J4.

The blender also receives input from the blender door reed switch and the blender home position switch.



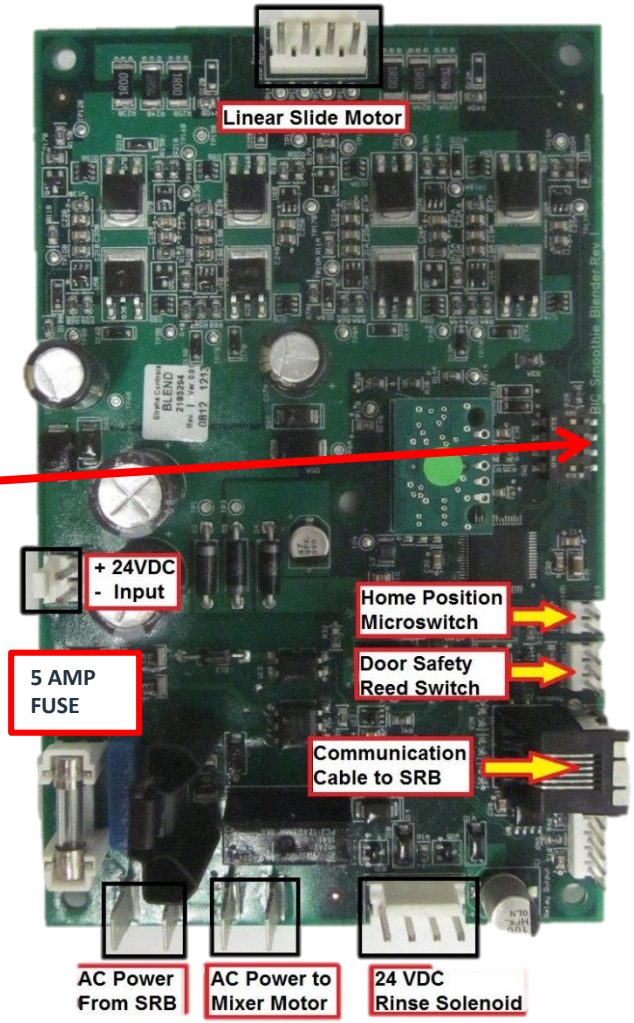
Control system – Blender Control Boards

Configure right and left boards

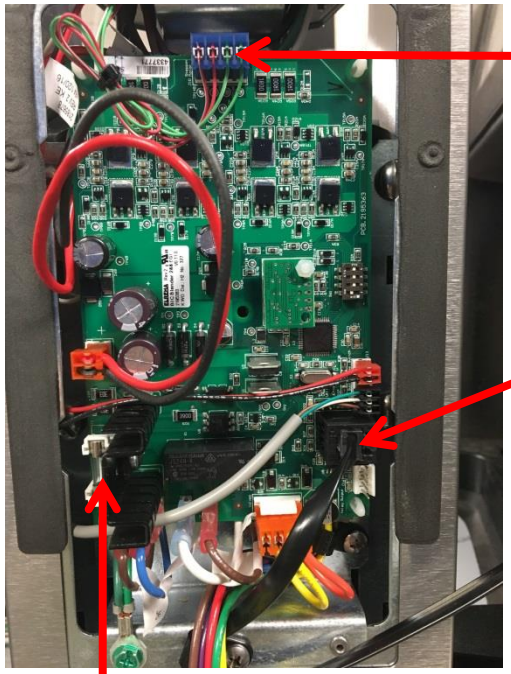
The Blender control board has four dip switches to set:

- **Left Hand Board (looking from BIC front):all to the right, looking at the front of the board**

- **Right Hand Board (looking from BIC front): top 3 to the right, looking at front of the board & the bottom to the left**



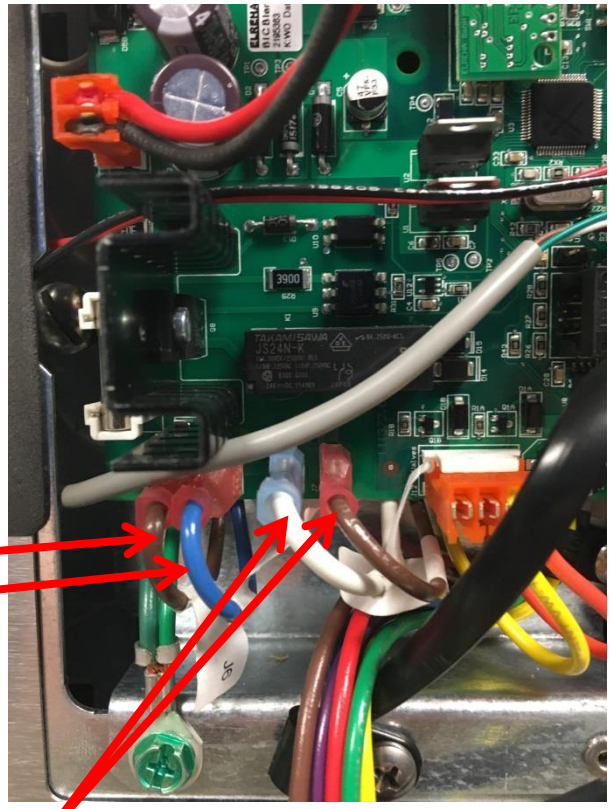
Control system – Blender Control Boards



Linear Bearing harness

Communication Cable Blender Board to SRB

5 Amp Fuse

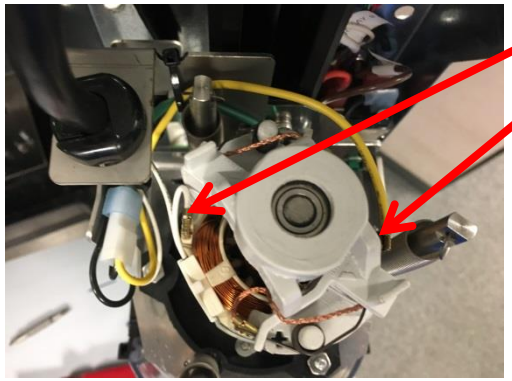


(J6) (J5) 120 volts in from SRB board

(J2) (J7) 120 volts out to relay then blender motor

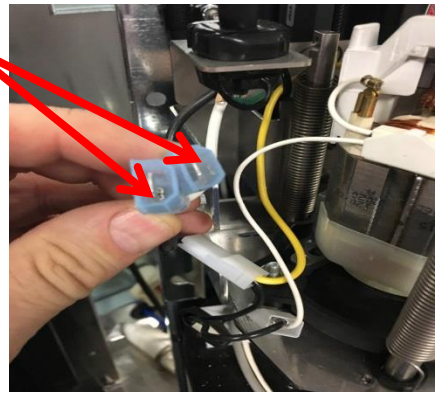
Control system – Blender Motor

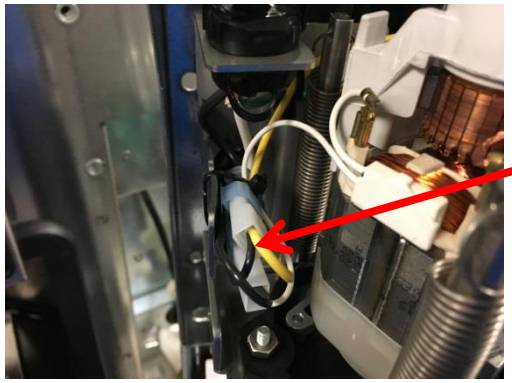
Check Procedure



Check voltage at yellow and white wire terminals. If checked from output menu will be 65 volts. 120 during drink production.

You can also verify voltage from relay, by checking for 120v at harness while in drink making mode.





Wiring harness from relay

Blender Control Relay

Control system – Blender Control Boards

Check Procedure

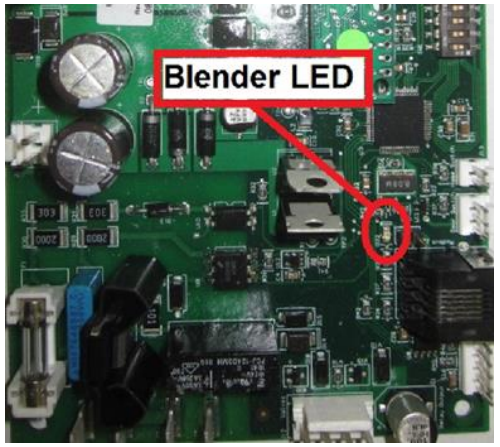
Single LED

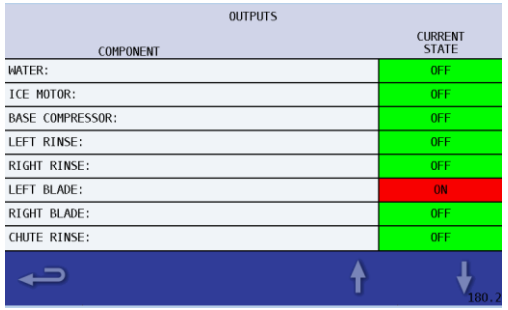
- Constant when first powered on.
- Blinks when linear slide reaches home.
- Heartbeat after homing is accomplished.

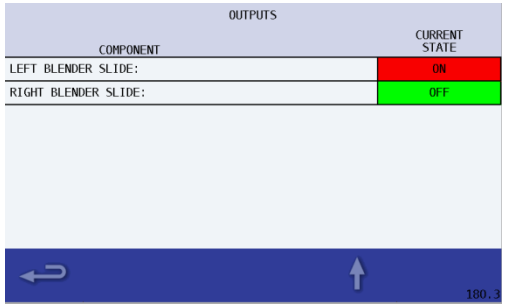
The Blender Control Board function can be tested via the “Outputs” in the UI service screen. (Managers Menu> Service> OUTPUTS).
Operate the blender blade to verify blade operation and/or the blender slide to verify linear slide operation.

To test the motor blade it’s best to place a cup of water in the blend chamber to be tested, activate the blender slide on the side to be tested, and then activate the blender blade. This will allow for a better visual of the blade turning.

NOTE: The blender blade will only operate for 3 seconds at half voltage in this test function.







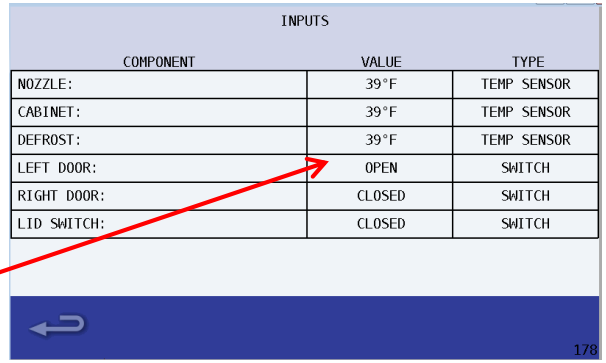
Control system – Blender Control Boards

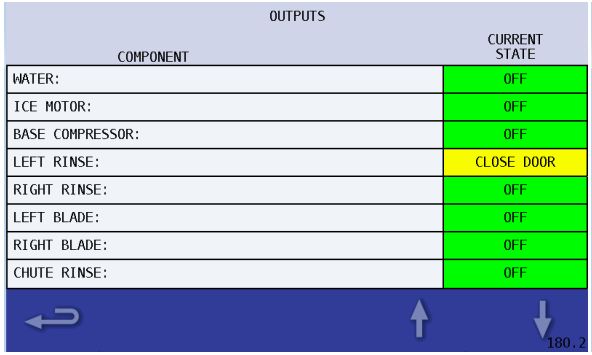
Check Procedure

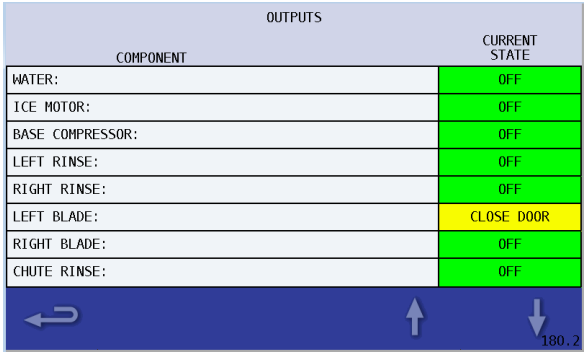
The blender door must be fully closed to allow blender operation. The door position can be confirmed using the “Inputs” screen - Managers Menu> Service> INPUTS.

This will verify the software is correctly reading the door position.

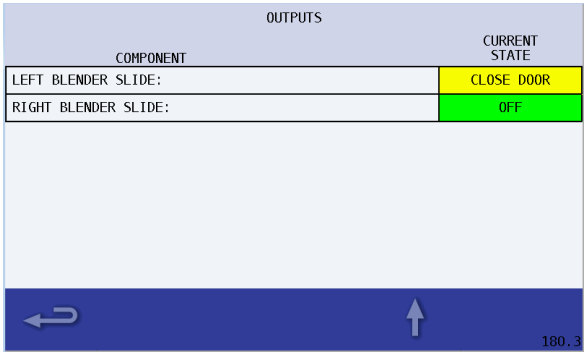
Open the perspective door (left / right) and the Input should report the current condition, “open” or “closed”.







In the output screen it will also not allow you to operate the rinse valve, Blender motor, or linear slide.



Control system – Blender Control Safety

Door switches

The Blender board function is protected by 2 micro switches. These are normally open contacts, that close when a magnet is in the proximity, (proximity switches) or reed switches

There are 2 reed switches mounted behind the blender station cover. These are stacked one on top of the other.

When the blender door is open both reed switches are opened.

The Bottom switch with the grey wire connects to the Blender board terminal J9, and interrupts the signal from the blender board. This actions:

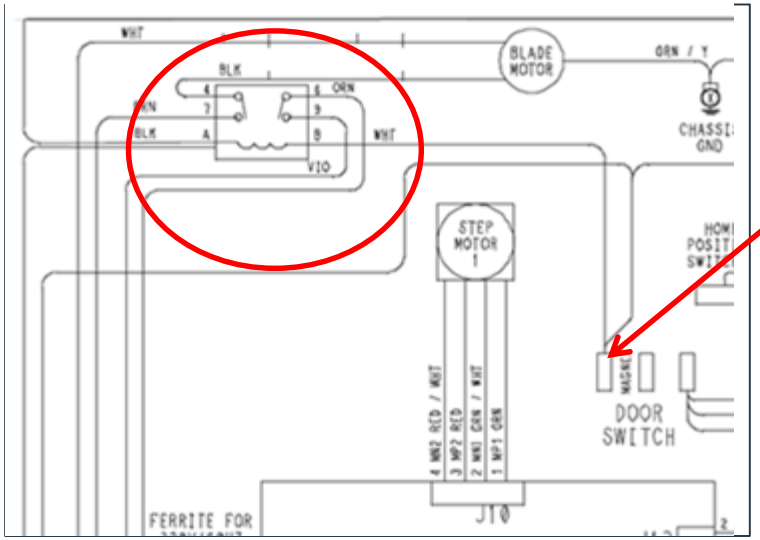
1. Blender motor deactivated
2. Rinse solenoid is deactivated.

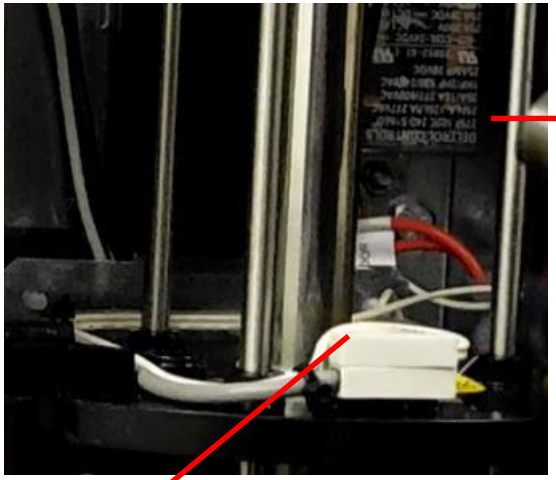
Control system – Blender Control Safety

Door switch and Relay

The top reed switch with white wire, is a secondary safety in case the first reed switch does not deactivate the blender board.

This switch deactivates the blender relay, disconnecting power from the blender motor, and the rinse solenoid





Blender relay located on back wall of blender station.

Component Identification

Component Identification – Ice System

Ice Bin and Ice Bin Lid

Ice shelf

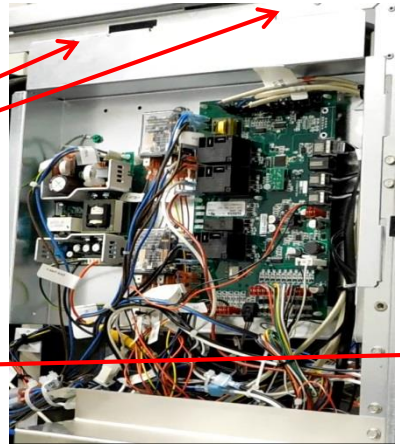
Shaver wheel and nut

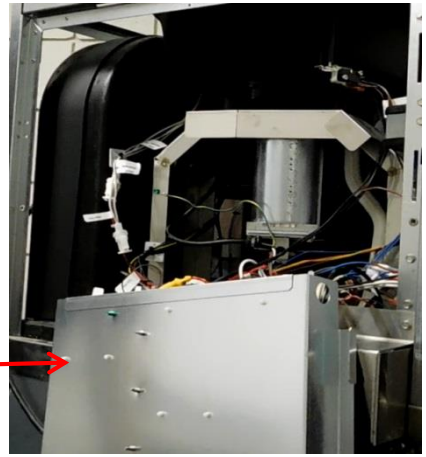
Shaver blade and shims

Rod actuator and switch. Switch is DPST.

Component Identification – Ice System

Access to bin lid switch, shaver motor, belt, and hall sensor is by removing back panel and two screws holding electrical panel. Panel drop down as shown.





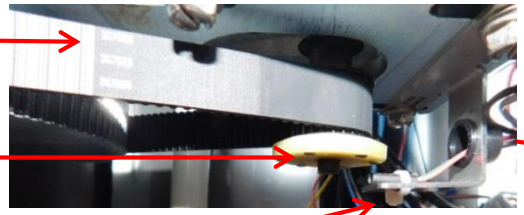
Bin lid switch

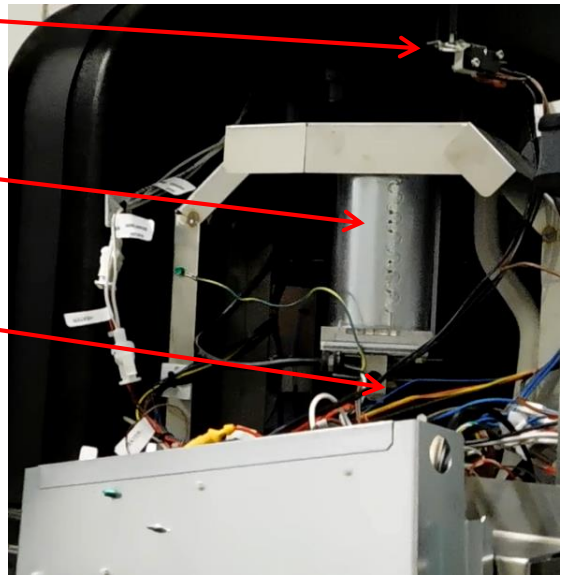
Ice Shaver motor

Belt

6 magnets under drive wheel

Hall sensor switch





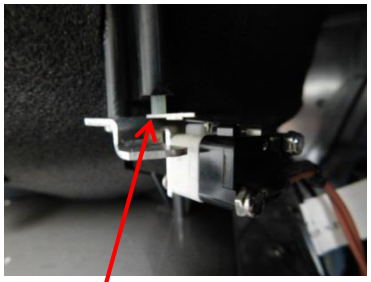
Component Identification - Ice System - Operation

For the Ice system to start, the bin lid must be in place.

The bin lid closes a normally open DPST switch by depressing the actuator rod with the extended ridge on the cover. Switch #1, cuts AC power to the rectifier, where switch #2, sends a fault to the UI screen.

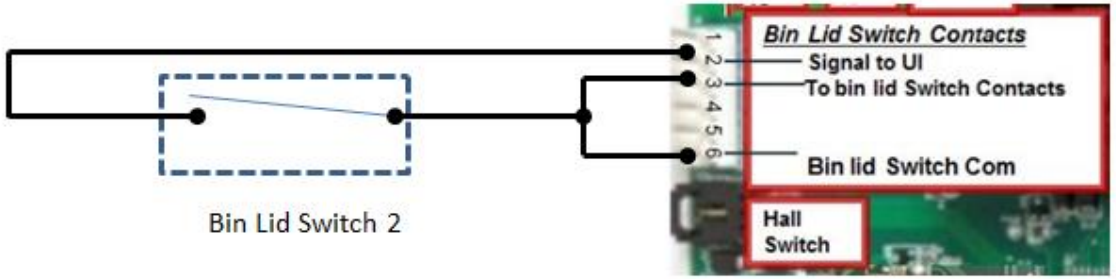
Actuator ridge on Ice Bin lid

Actuator rod in ice bin



Actuator rod and switch

Signal Inputs Switch #2.
Pin 3 and Pin 6 connect to switch #2 common terminal.
Switch #2 completes circuit to Pin 2.

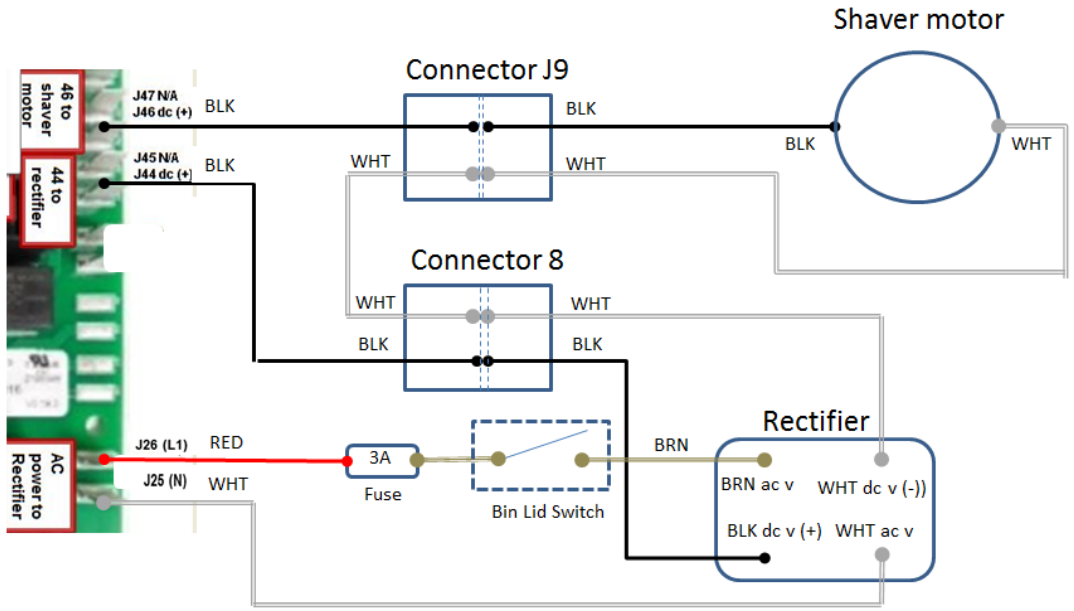


Component Identification – Ice System - Operation

The UI signals the SRB to dispense. The ice shaver system operates when a drink selection is made. The system will deliver 1/3 of ice into the cup, then product, then the remainder of the ice.

During calibration, the hall sensor monitors how many revolutions are needed to deliver 6 oz. of ice. It will then deliver the required amount of ice for the drink size and recipe selected.

The Ice shaver motor operates on DC voltage. It is line voltage converted to DC volts by a rectifier. For a 110 volt system the DC output voltage will be 110v DC.



Component Identification – Ice System- Errors

Errors associated with the shaver system.

No ice = No errors on UI Screen

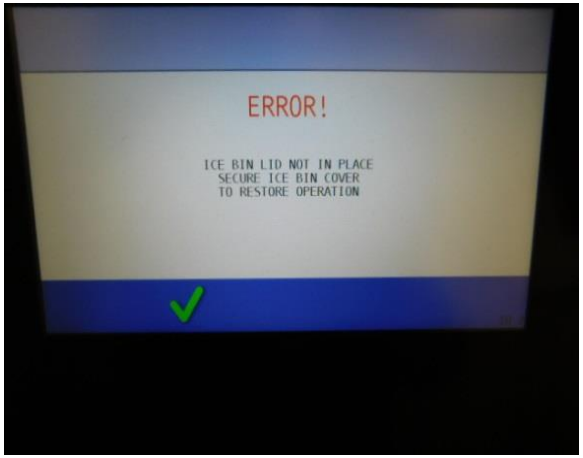
1. **Check bin is full of ice**
2. **Check for obstructions in shaver assembly, This would also have a noticeable sound, calibration will be off.**
3. **Ice built up blocking outlet of dispense nozzle. Press Ice nozzle rinse button to clear.**
4. **Belt is broken.**
5. **Shaver reset has tripped (rear left corner of unit).**

No Ice = Error on UI "Ice Dispense Failed"

1. **No power to rectifier, check at terminals J25 & 26 at SRB**
2. **Power at SR B, check for DC volts at Connector 8 (see diagram on slide 36)**

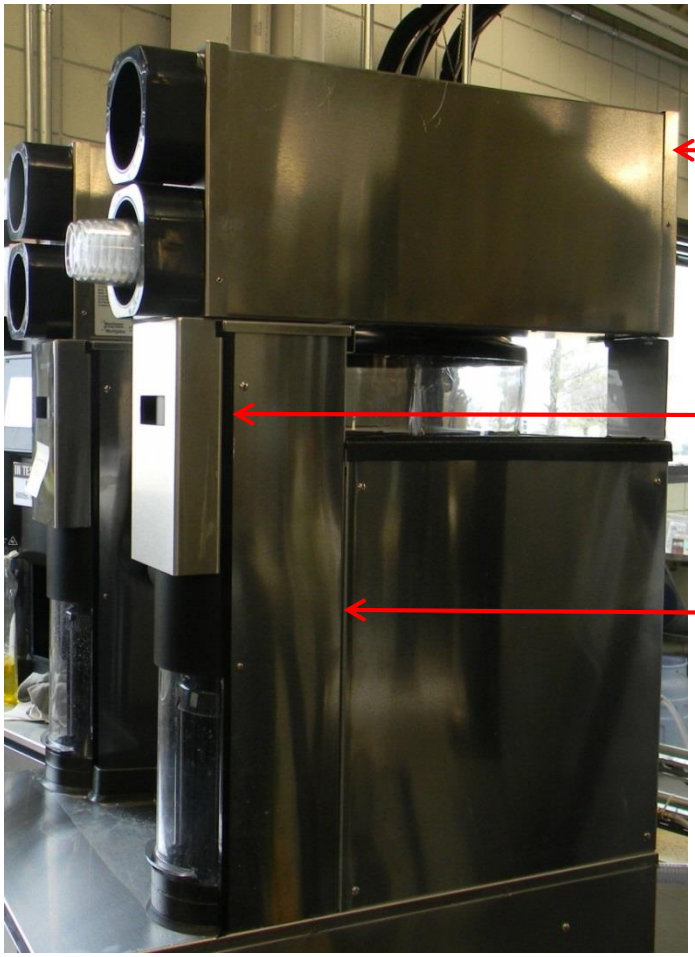
No Ice = Error on UI "ICE BIN LID Not in Place"

1. **Check that BIN LID is firmly in place and activation ridge is intact.**
2. **Check terminals at Bin LID switch for continuity.**
3. **Check that actuator rod is not broken.**



Component Identification – Modular Blender

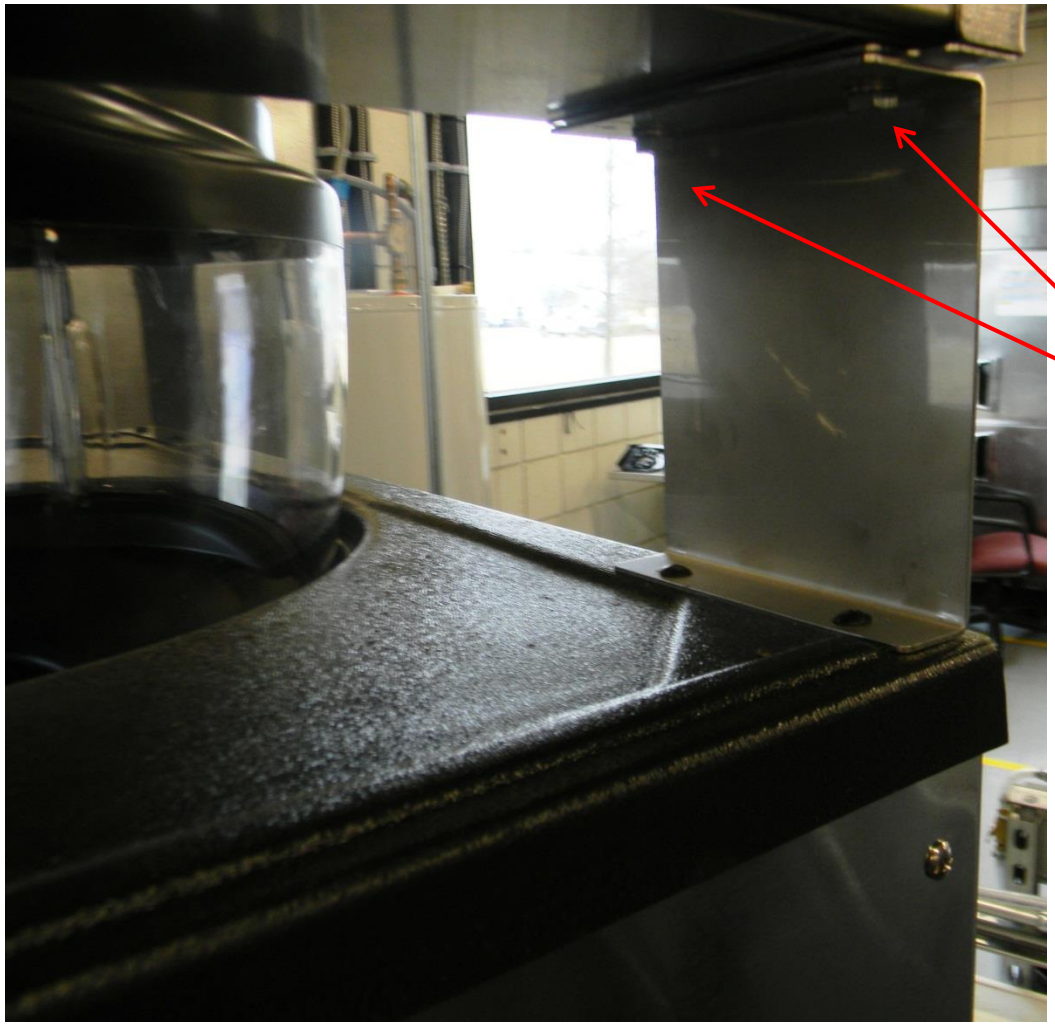
Modular Blender station removal



Turn off electrical service or disconnect unit. Shut off water or disconnect prior to servicing.

Component Identification – Modular Blender

Modular Blender station removal

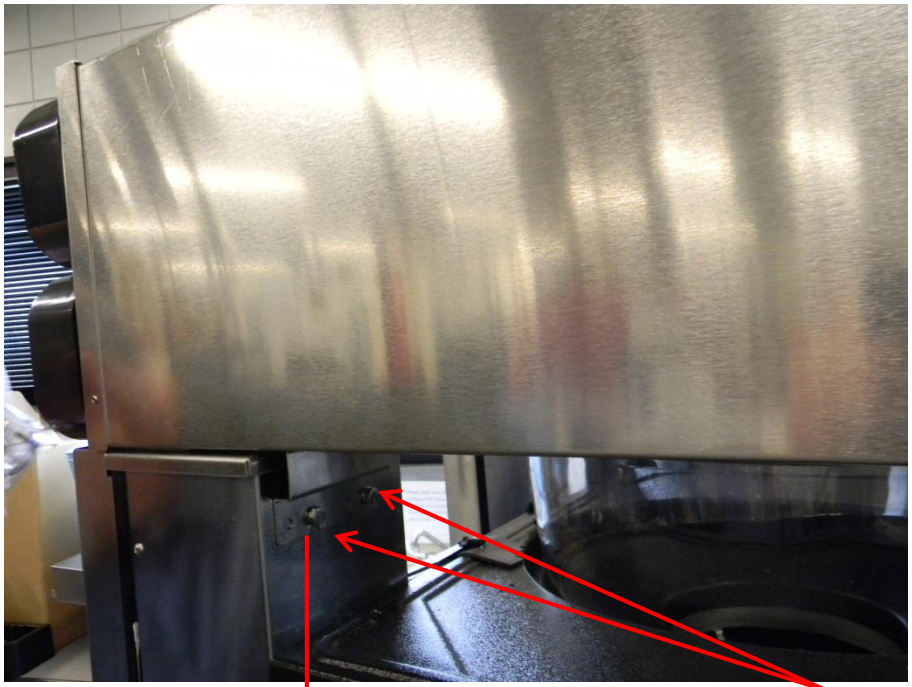


Remove the cup holder from the unit

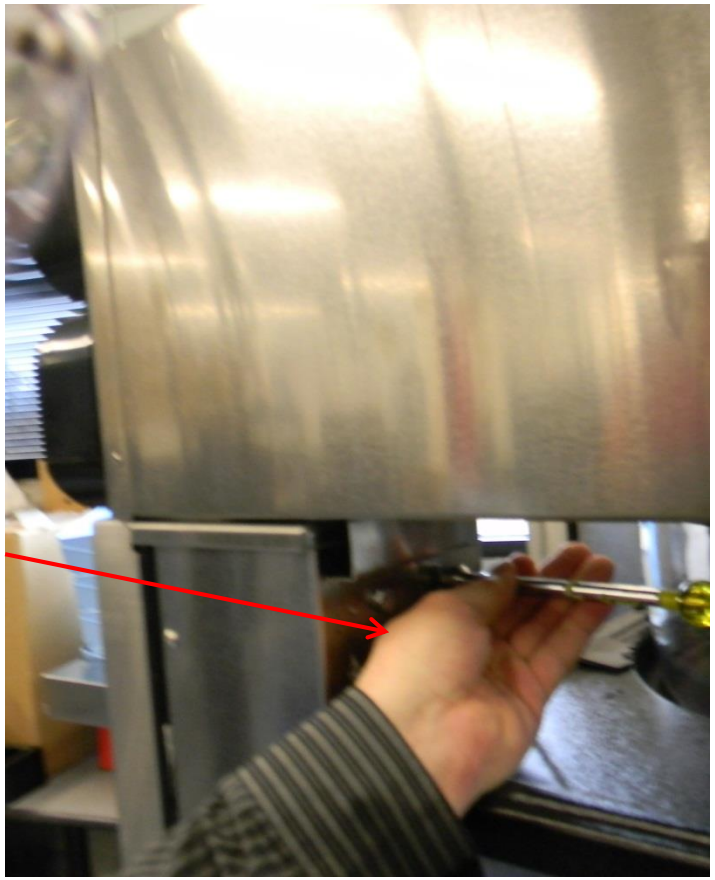
Remove these bolts

Component Identification – Modular Blender

Modular Blender station removal



Remove these bolts



Component Identification – Modular Blender

Modular Blender station removal

Remove cup holders

Component Identification – Blender station removal

Modular Blender station removal

Remove the cup lid holder bracket

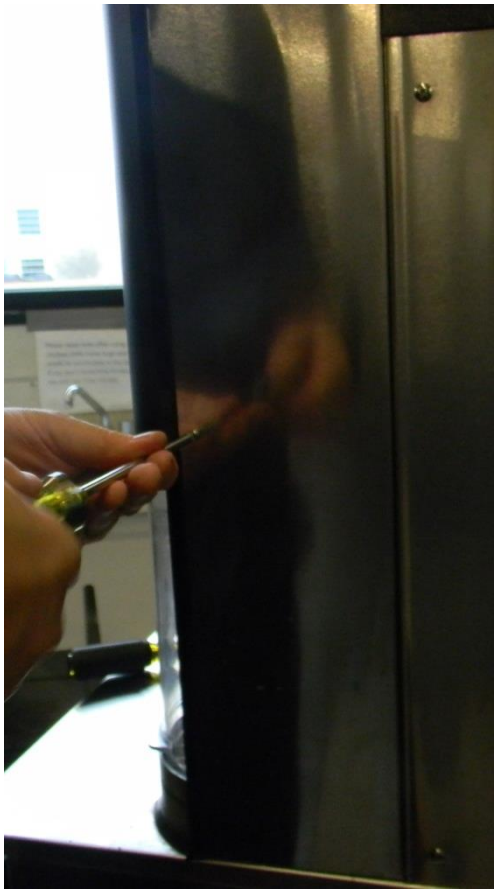
Component Identification – Modular Blender

Modular Blender station removal

Remove blender tower cap

Component Identification – Modular Blender

Modular Blender station removal

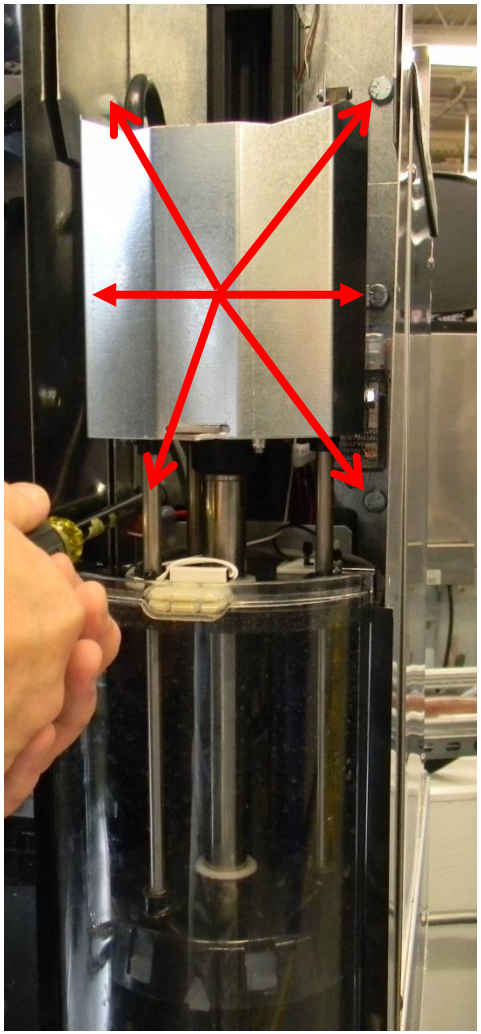


Remove blender tower safety cover

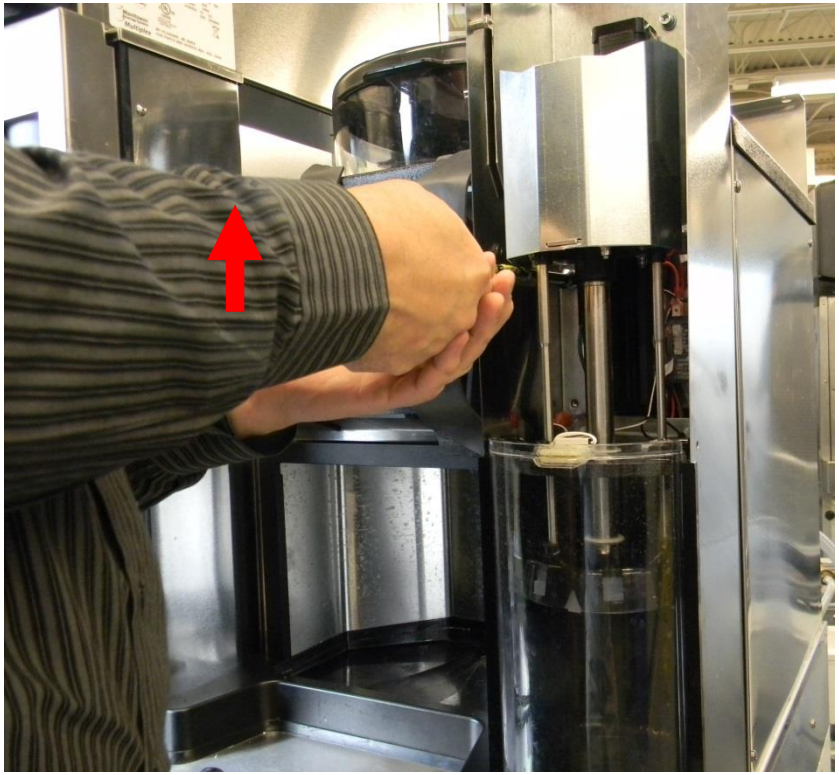
Component Identification – Modular Blender

Modular Blender station removal

Remove these 6 tower bolts (3 each side)



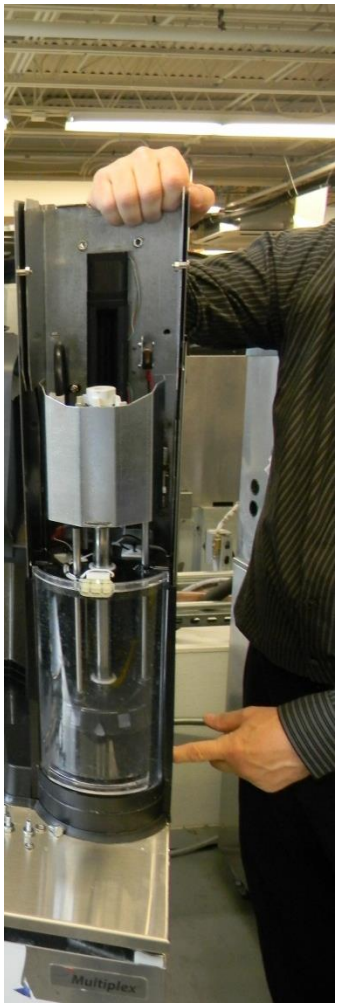
To remove the center bolts you will have to raise the blender carriage. It is best to support the blender, as it will slowly return to the bottom



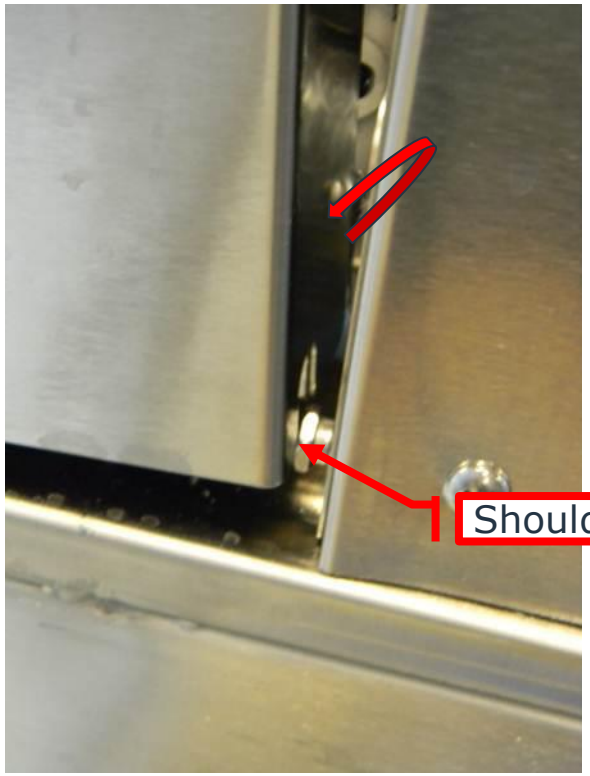
Component Identification – Modular Blender

Modular Blender station removal

Grasping the top of the blending chamber module lean the tower forward.



When the tower is leaned forward, the module bottom will release itself from the bottom shoulder bolts

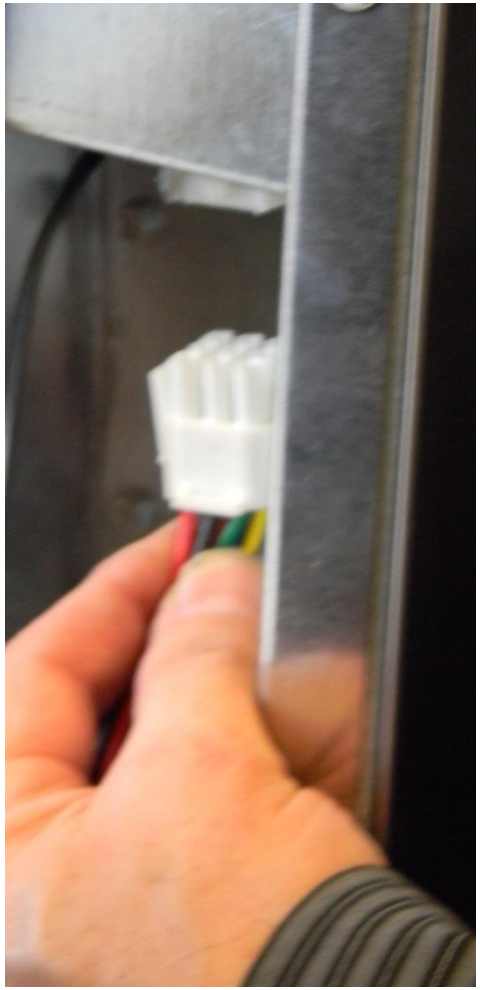


Locate the main electrical connection

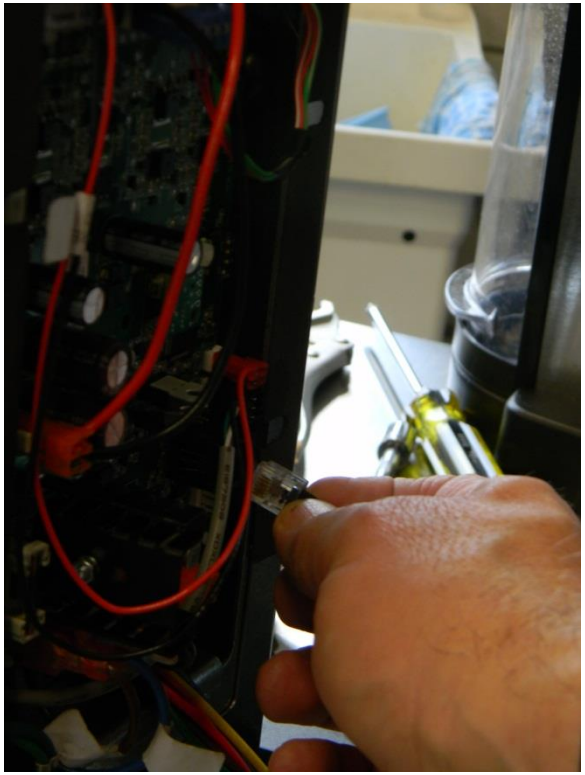
Component Identification – Modular Blender

Modular Blender station removal

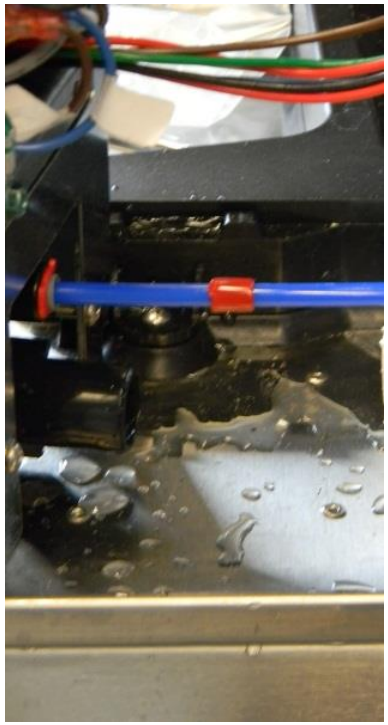
1. Disconnect the main electrical connection between the tower and base unit



2. Disconnect the communication line



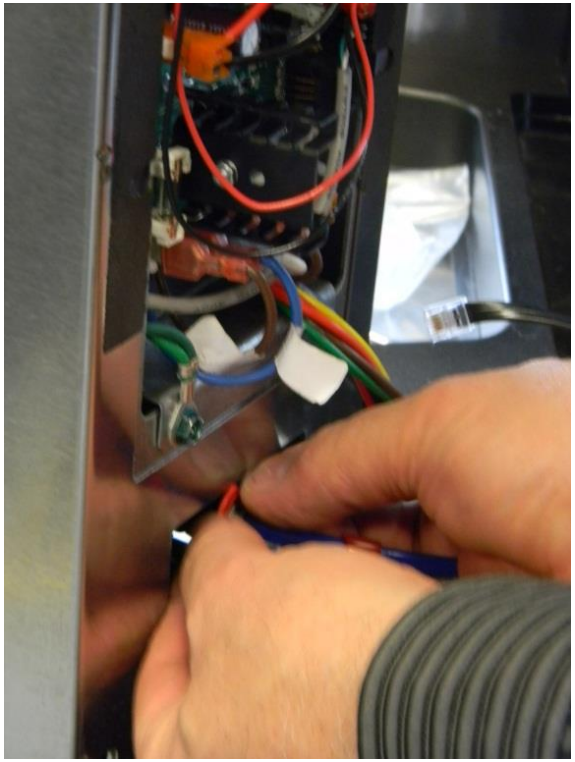
3. Disconnect water line, by removing the red clip, pushing in the gray collar, pulling water line out of fitting



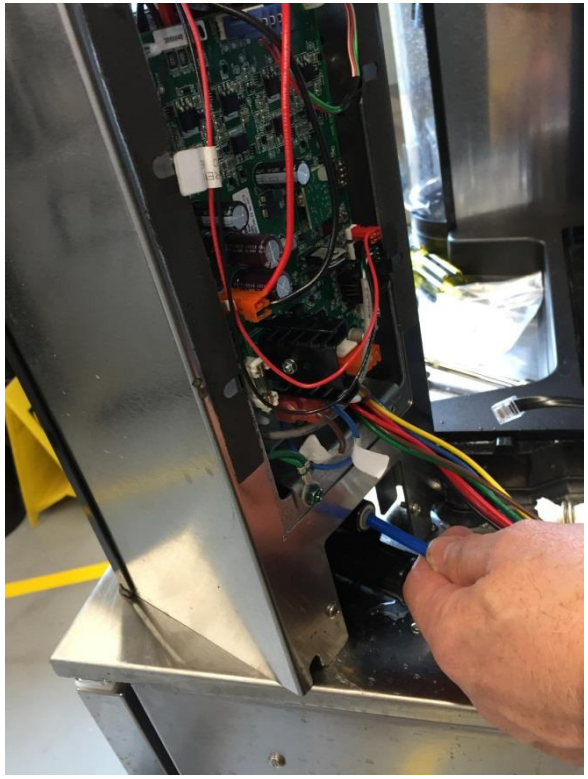
Component Identification – Modular Blender

Modular Blender station removal

3a. Slide the red clip to unlock the grey collar



3b. Push the collar in to release the water line and pull it out

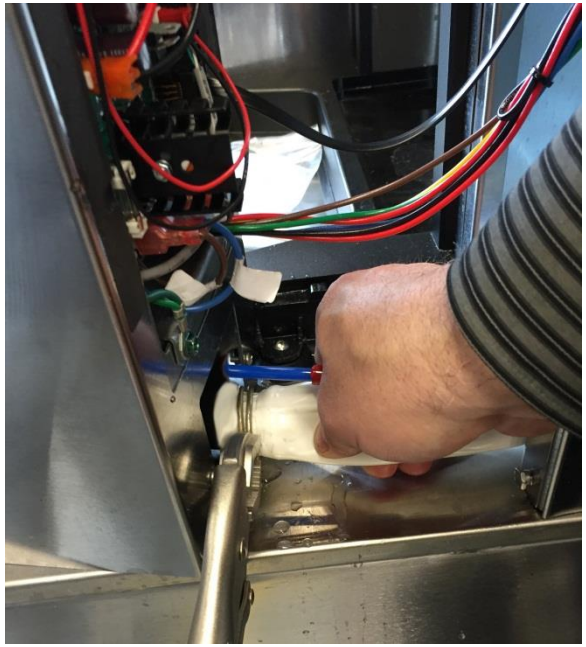


Component Identification – Modular Blender

Modular Blender station removal

4c. Remove the spring clamp.

4d.Use pliers or clamping tool to release the spring clamp and remove drain hose

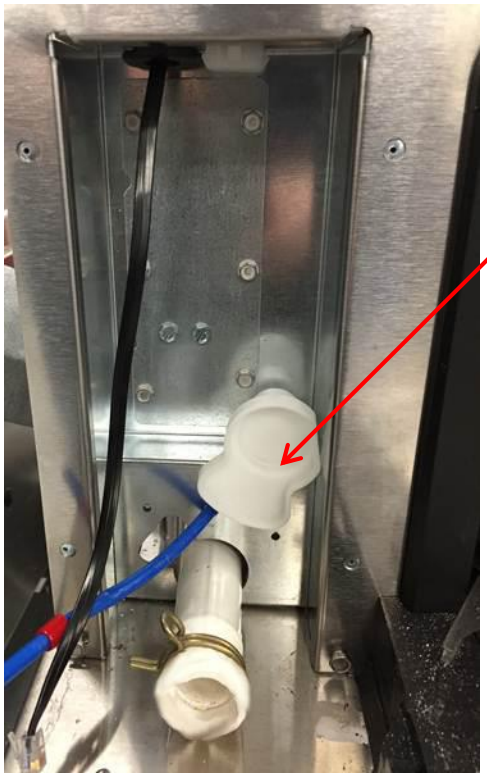


Remove the blender tower.
Plug the drain hose with supplied drain plug

Component Identification – Modular Blender

Modular Blender station removal

Remove plug that is supplied with the unit, mounted on a steel pin on the bulkhead.



Drain plug and pin

Insert plug into drain tube and secure using spring clamp if a replacement module is not available. This will prevent leakage from the drain line while blender module is being repaired.

Component Identification – Modular Blender

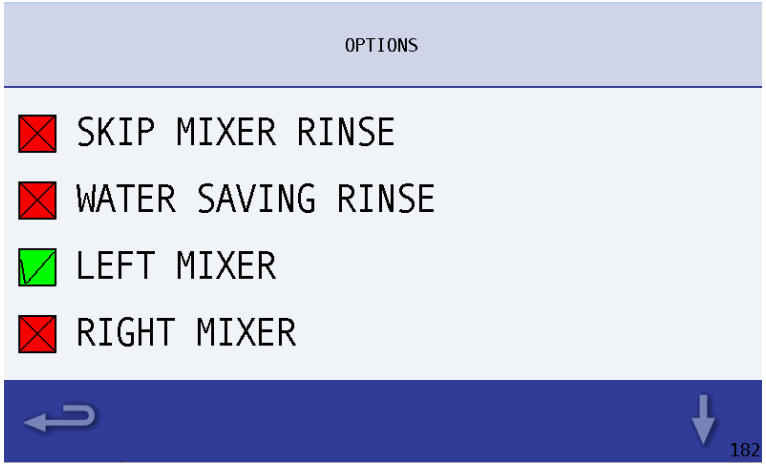
Modular Blender station removal

You can take the Blender Station to the back room for repair.

The machine can be operated during the repair but the side that was removed must be deactivated. This is done in the service screen options, deactivate right or left mixer.

Managers Menu> Service Screen> Options.

The machine can now be used while the repair is being made.



Component Identification – Modular Blender

Modular Blender station removal

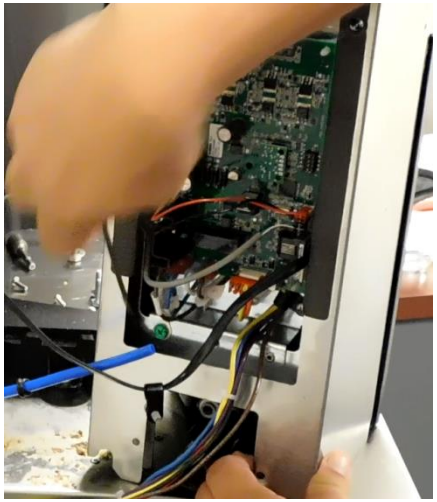
To access the blender board, the back skin of the blender station must be removed.

To access the blender board or change linear slide, the back skin of the blender station must be removed.

Remove 2 screws fastening skin to Blender station

Remove Skin by lifting up and off station

Using a screwdriver, gently pry self adhesive tape securing skin to Station body.



Component Identification – Modular Blender

Blender board replacement

To replace the blender board remove all the wiring from the board.

Using a tool (remove the ink cartridge from a Bic pen) insert the tip depressing the standoff holding the board to the frame or squeeze each side of the standoff with your fingers or pliers. There are 4 standoffs, one on each corner.

Component Identification – Modular Blender

Linear Slide Operation

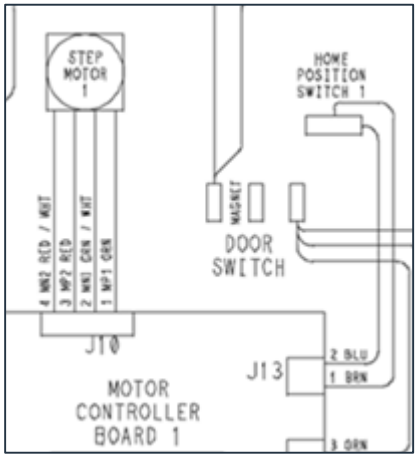
The Linear Slide provides the up and down movement of the blender shaft/motor assembly, and is controlled by the Blender board.

There is a micro switch that stops the movement of the Linear Slide in the up position or home position.

The Linear Slide is powered to stay in the up positon. When power is removed the Linear Slide will gradually lower.

It should take no more than 2 seconds for the Linear Slide to reach the home position.

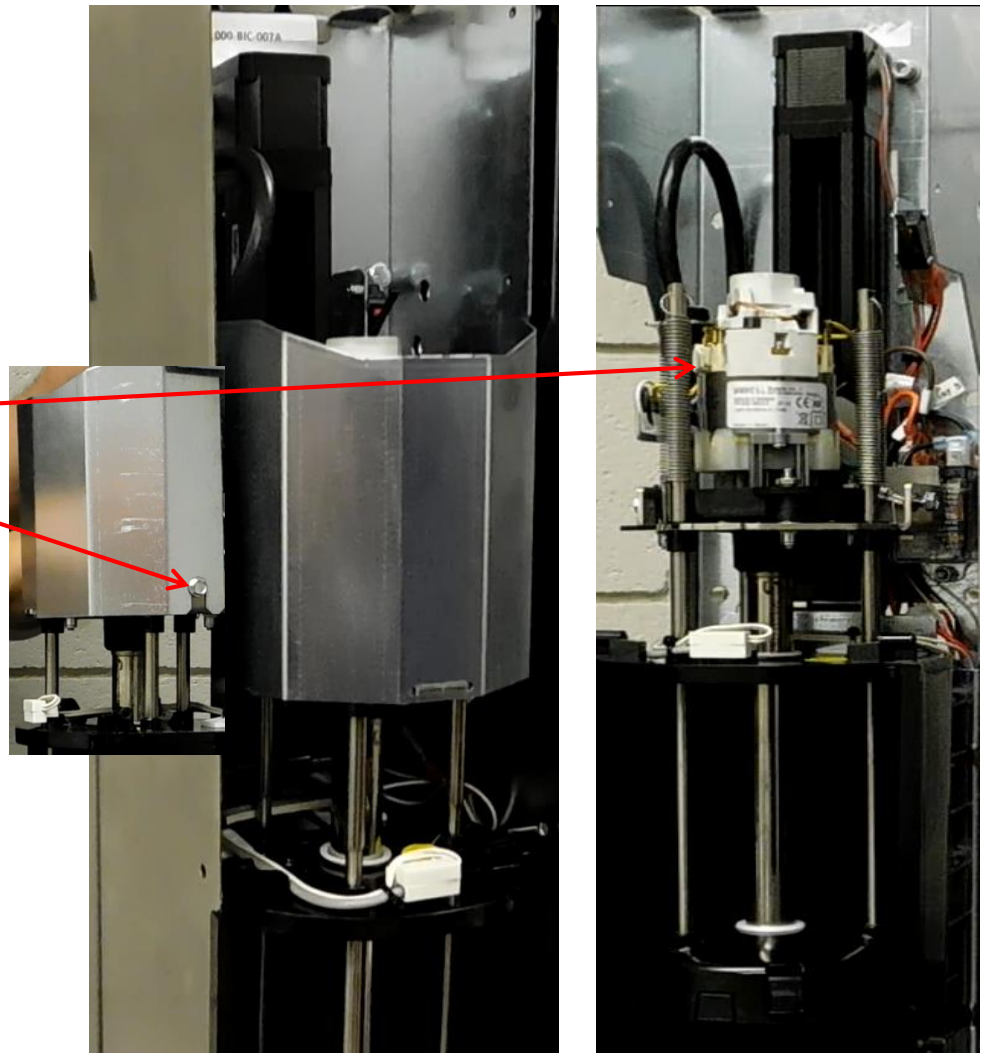
If the micro switch does not close within 3 seconds, the power to the Linear Slide is removed by the Blender control board.



Component Identification – Modular Blender

Linear slide Replacement

To replace the linear slide first we must remove the motor shield. There are 2 screws holding this in place. This exposes the motor.

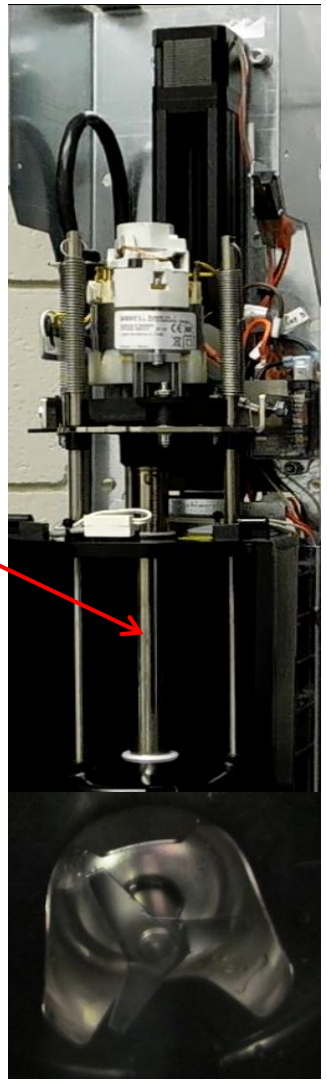


The next step is to remove the motor.

Component Identification – Modular Blender

Linear slide Replacement

To remove the motor we must first remove the Blender shaft.



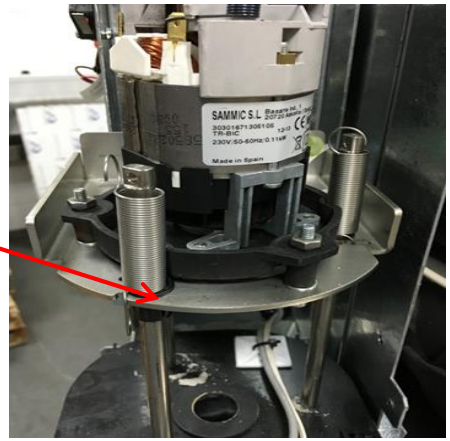
The shaft is left threaded, so it needs to be turned clockwise to remove. Turn shaft clockwise until disengaged from the motor.

Caution! the blade underneath is sharp, wear gloves and use a towel to cover blade and bell housing before handling.

Component Identification – Modular Blender

Linear slide Replacement

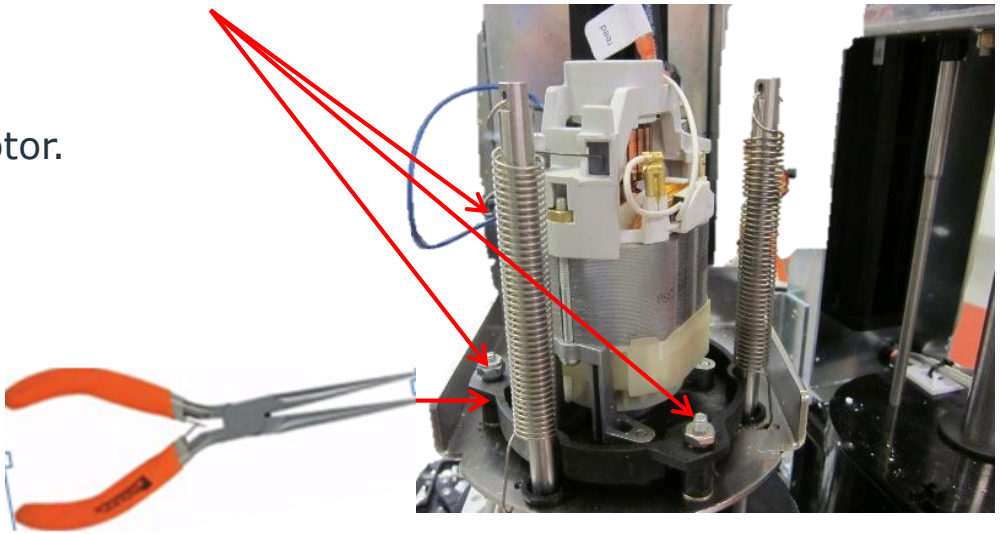
We then need to remove the springs and rods holding the blender cap in position.
Note: When replacing a motor we do not need to remove the rods and springs.



Note: 3 springs, 3 rods. New alignment coming.

Remove the three nuts holding the isolation mounts. Use needle nose pliers to hold bottom nut, do not damage rubber grommet.

Disconnect wiring and remove motor.



Component Identification – Modular Blender

Linear slide Replacement

The linear slide is mounted to the frame using captive nuts.
Remove these 4 screws.

The Motor carriage is mounted to the linear slide by 6 screws.
Remove these.

The linear slide can now be replaced.

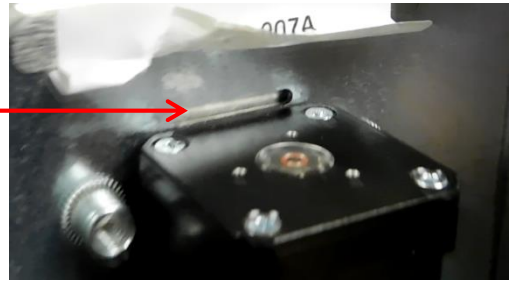
Component Identification – Modular Blender

Linear slide Replacement

To Install the linear slide to the frame use the reverse order of the dismantling.

The captive nuts in the linear slide are free to move so using cork tape to capture makes it easy to start the thread. Attach all screws 4 screws do not tighten.

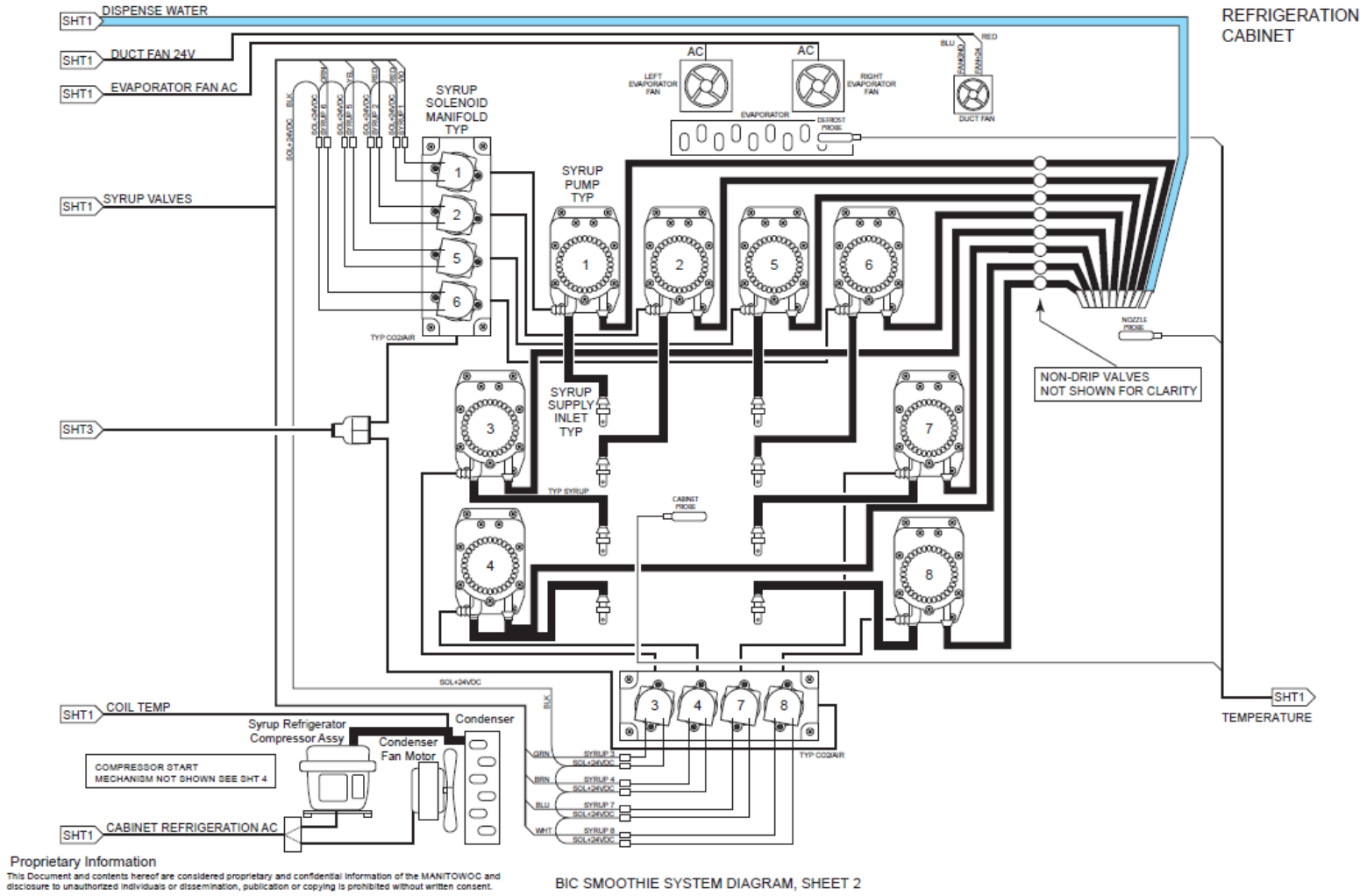
The Linear slide must be put back at the correct height, align with the notch on the frame bracket and tighten all screws.



Component Identification – Refrigerated Cabinet

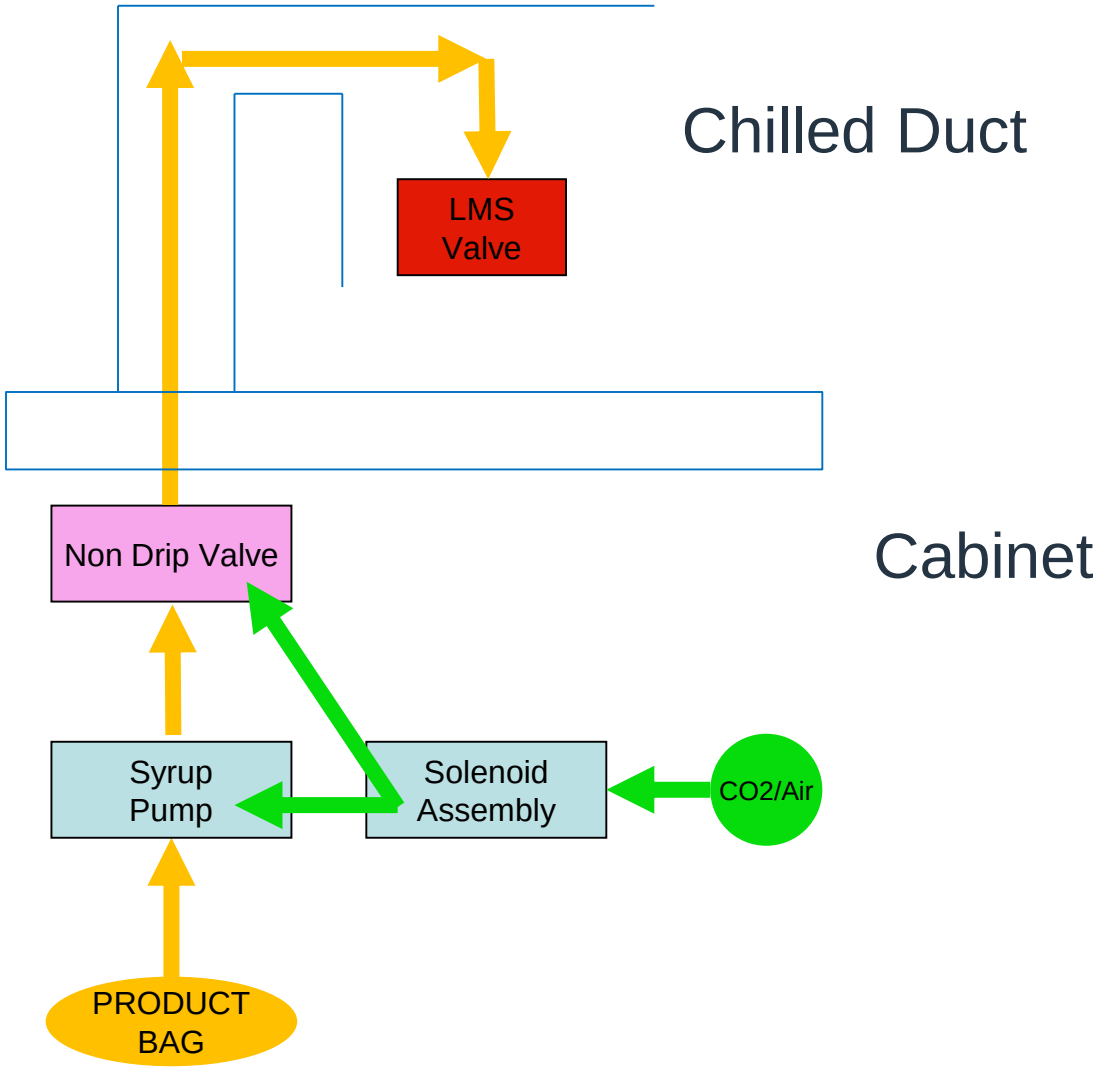
Component Identification – Refrigerated Cabinet

Wiring and pump connections



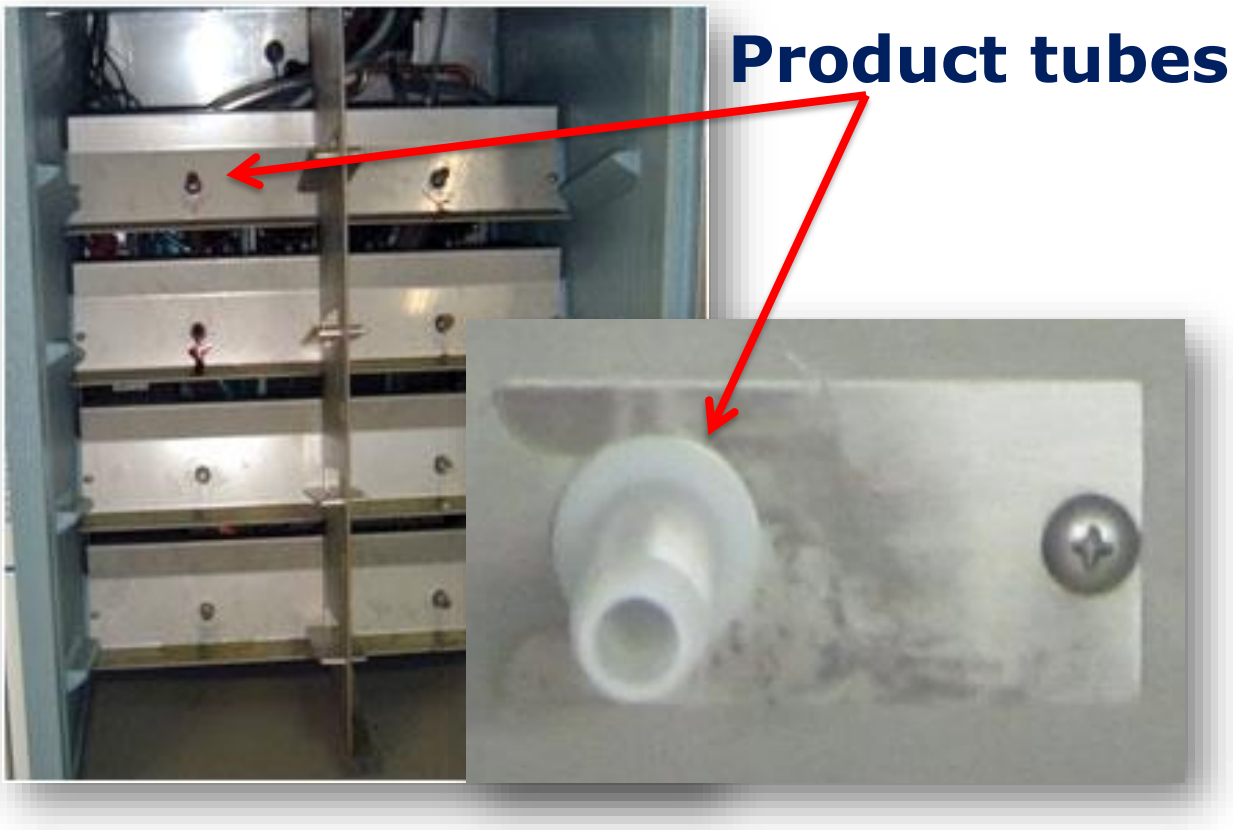
Component Identification – Refrigerated Cabinet

Tubing Schematic



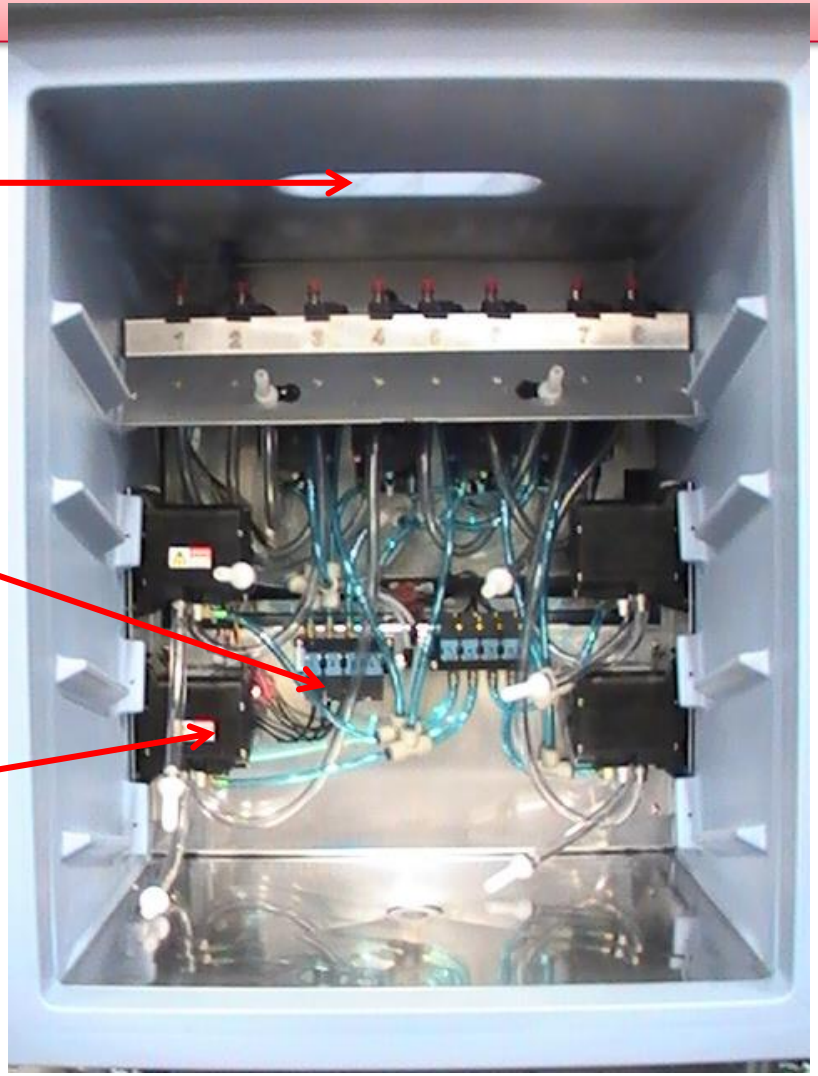
Component Identification – Refrigerated Cabinet

Product tubes



Component Identification – Refrigerated Cabinet

Product compartment



Component Identification – Refrigerated Cabinet

Solenoid valves

Solenoid Valves (can be replaced individually)

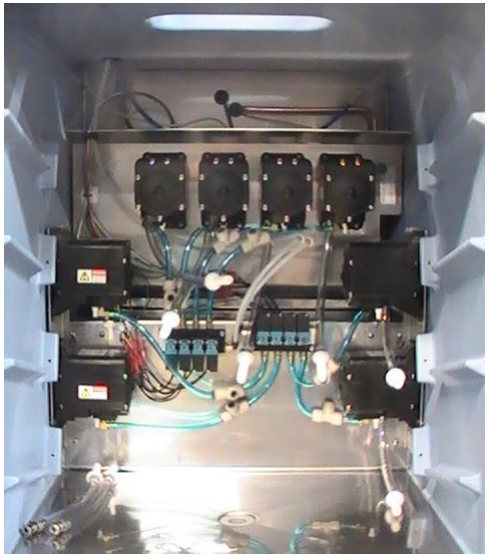
Control the flow of Air / CO_2 to the pump.

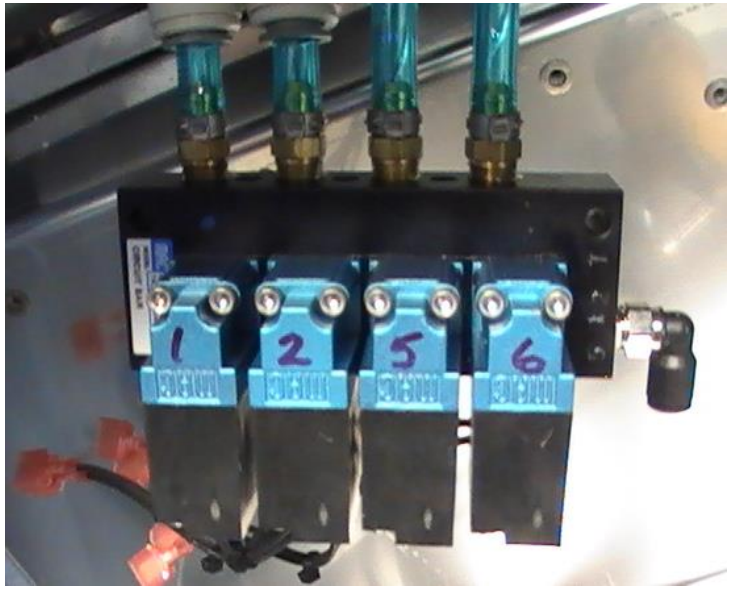
Instantaneously stop flow when power stopped.

4 valves per block, two blocks

1, 2, 5 & 6 Top 4 pumps

3, 4, 7, & 8 Bottom 4 pumps

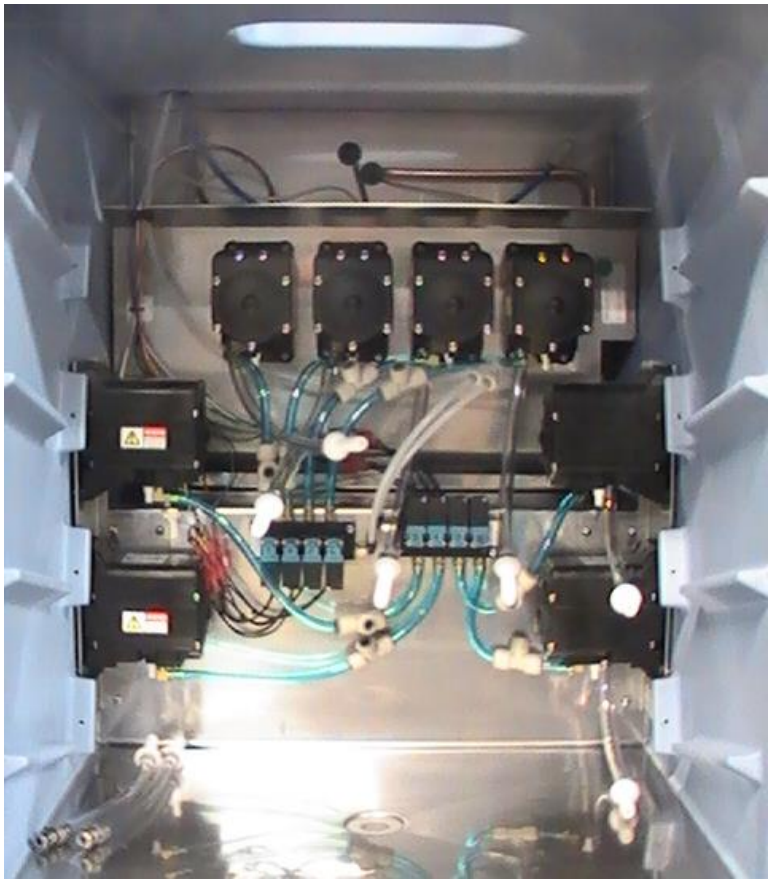




Component Identification – Refrigerated Cabinet

Wiring and pump connections

Product Pumps require 35PSIg (dynamic) of Air / CO2 operation pressure



Component Identification – Refrigerated Cabinet

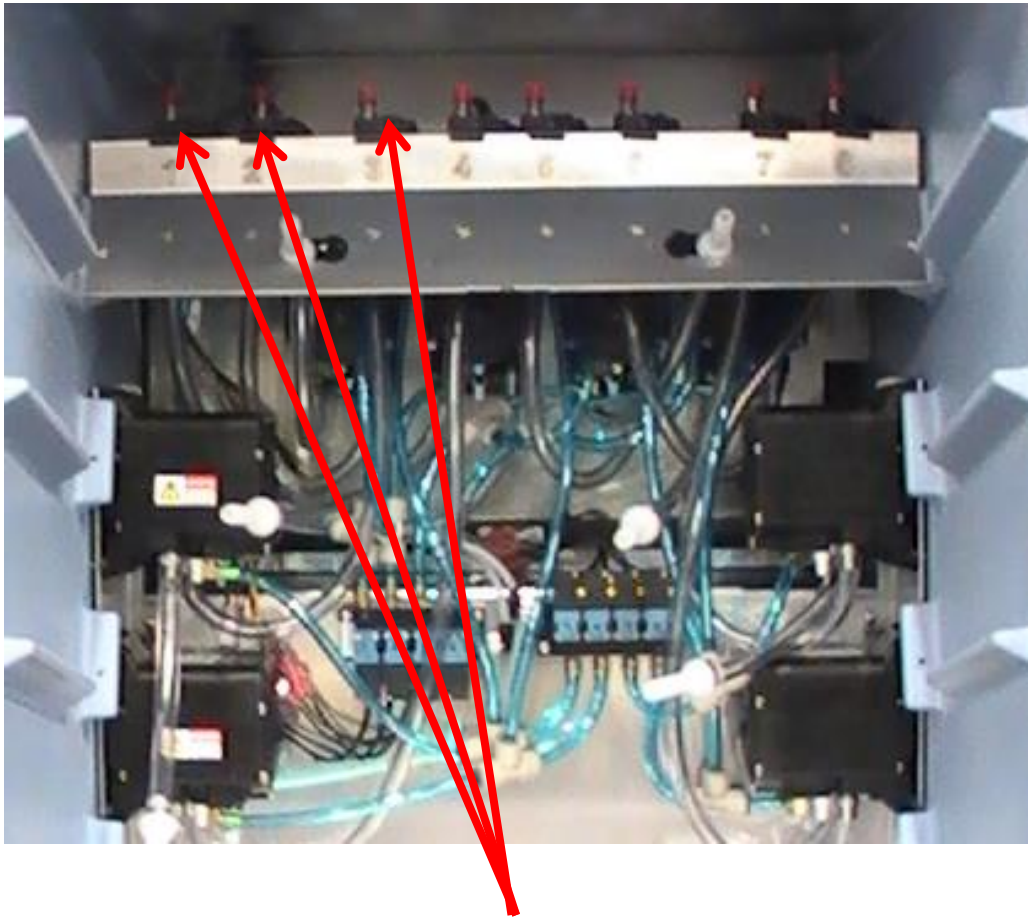
Product pumps

- One pump per product line.
- Muffler controls the flow rate of Air / CO_2
- Important to install correct muffler with correct product pump.
- Hose connections are clip in, (O rings and locking clip)

Component Identification – Refrigerated Cabinet

Non - Drip valves

- The Valves Are Attached To The Top Product Shelf
- The Valve Prevents Product Dripping After Dispense

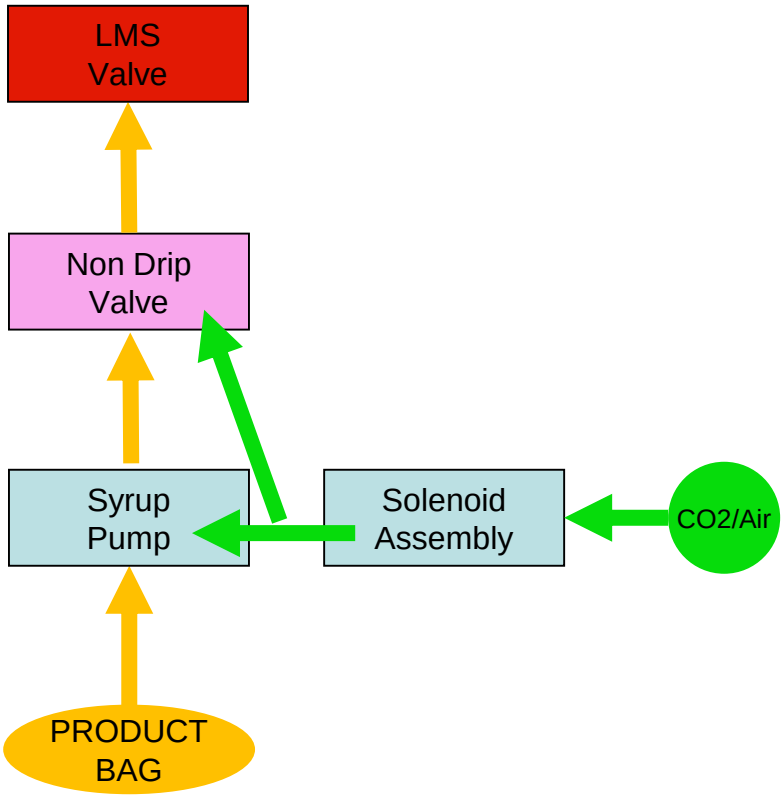


One Valve Per Product Slot (Eight Total)

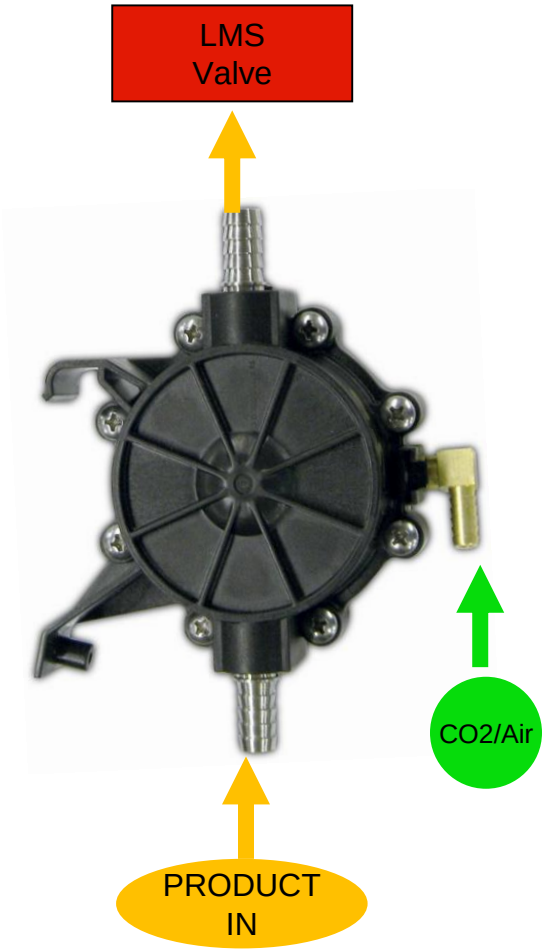
Component Identification – Refrigerated Cabinet

Non - Drip valves

Dispense System Diagram



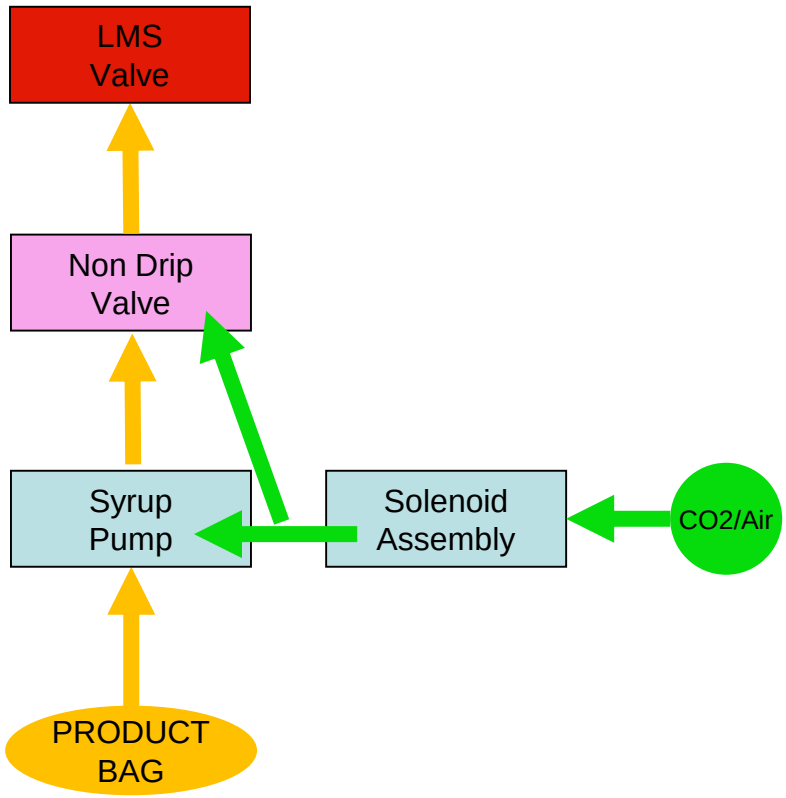
Non Drip Valve



Component Identification – Refrigerated Cabinet

Non - Drip valves

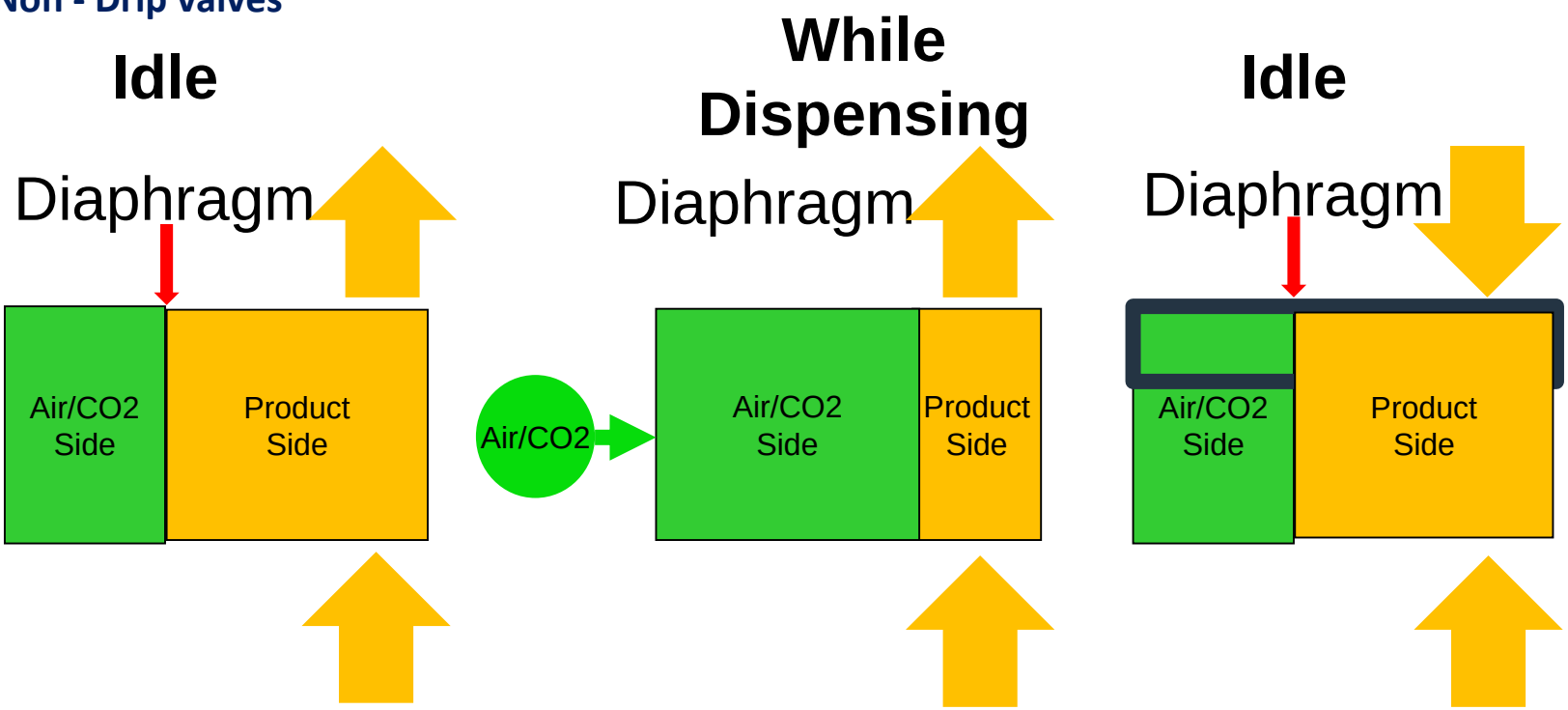
Dispense System Diagram



- Solenoid activates and supplies pressurized Air/CO2 to both the pump and the non drip valve simultaneously.
- The pump starts the flow of product. At the same time the non drip valve diaphragm travels to reduce the product side chamber volume.
- Solenoid de-activates and relieves pressure to both the pump and non drip valve.

Component Identification – Refrigerated Cabinet

Non - Drip valves

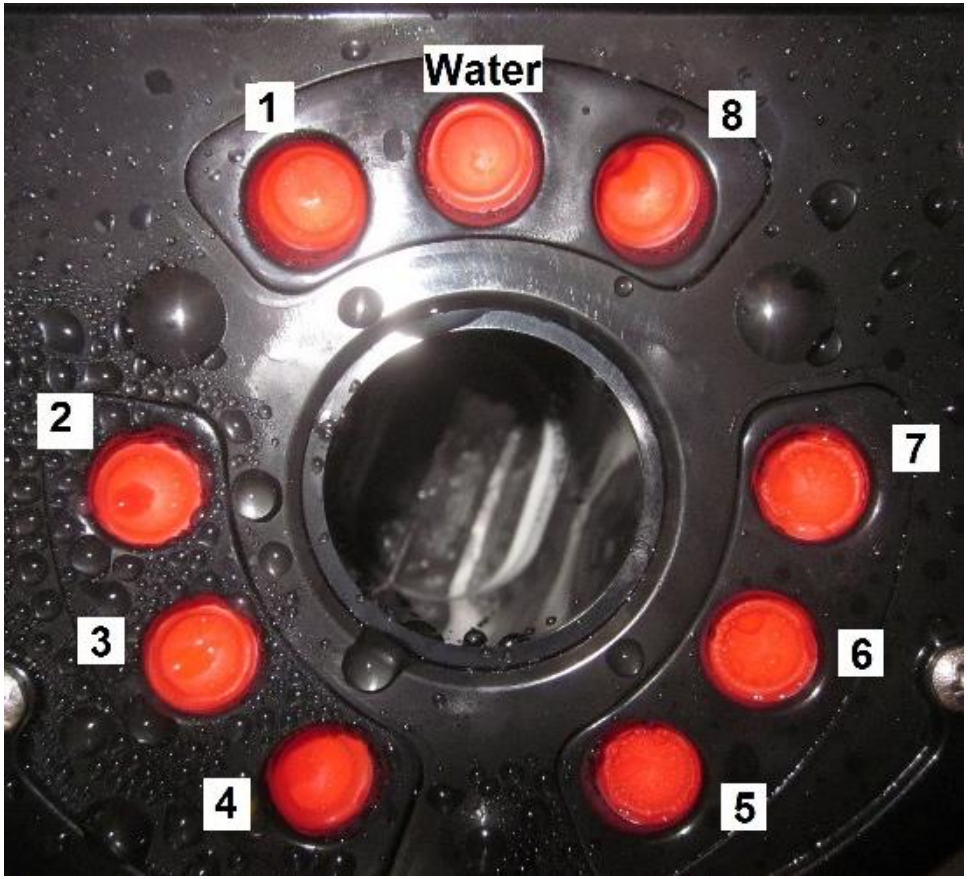


As Air/CO2 pressure is applied, the diaphragm will flex to decrease the product volume inside the valve.
As Air/CO2 pressure is stopped, the diaphragm returns, to increase the product volume inside the valve.

Component Identification – Refrigerated Cabinet

LMS Valves

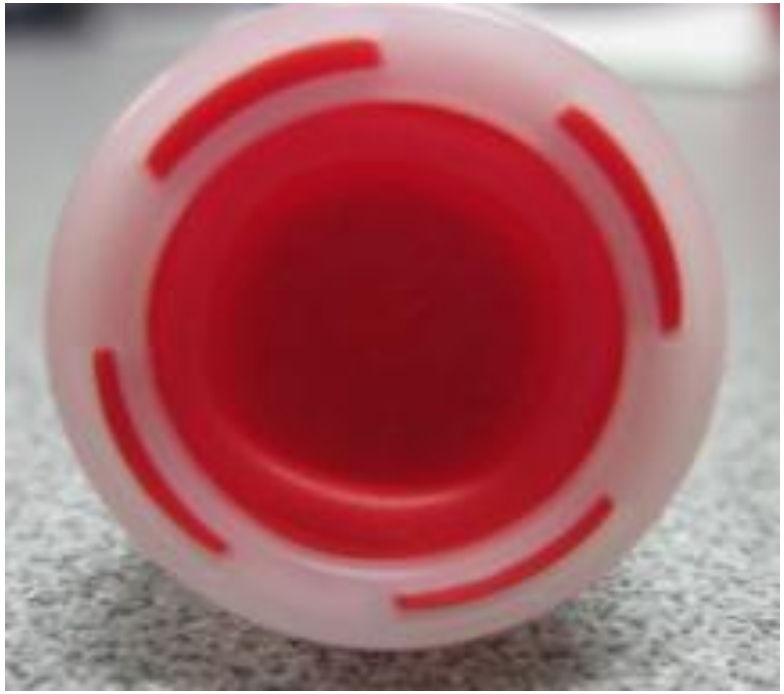
- Water is delivered through the front center LMS valve.
- The eight product LMS valves are arranged in a CCW sequence.
- Ice is delivered from the center ice chute.



Component Identification – Refrigerated Cabinet

LMS Valves

Close up

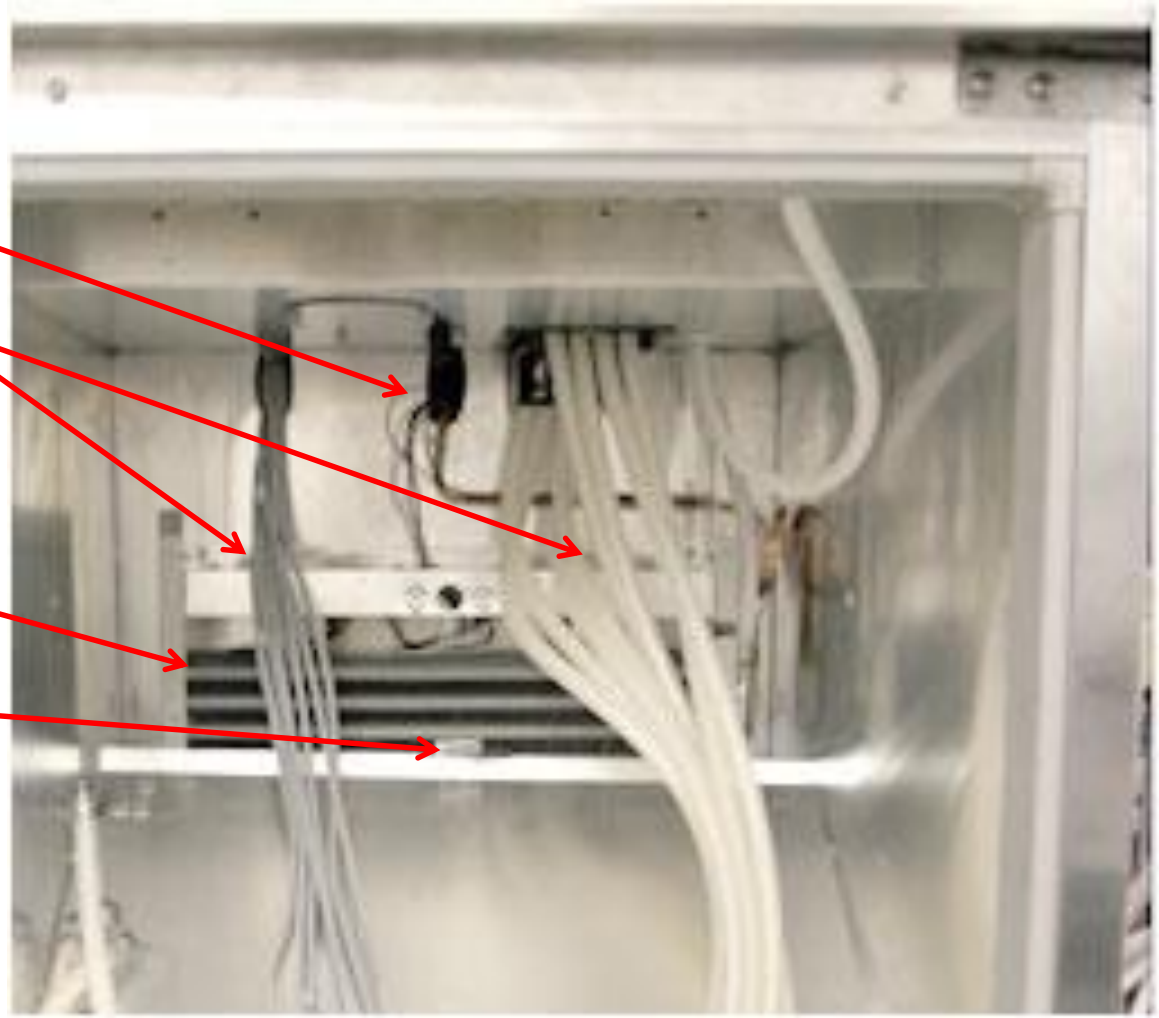


Diaphragm

Retaining cap

Component Identification – Refrigerated Cabinet

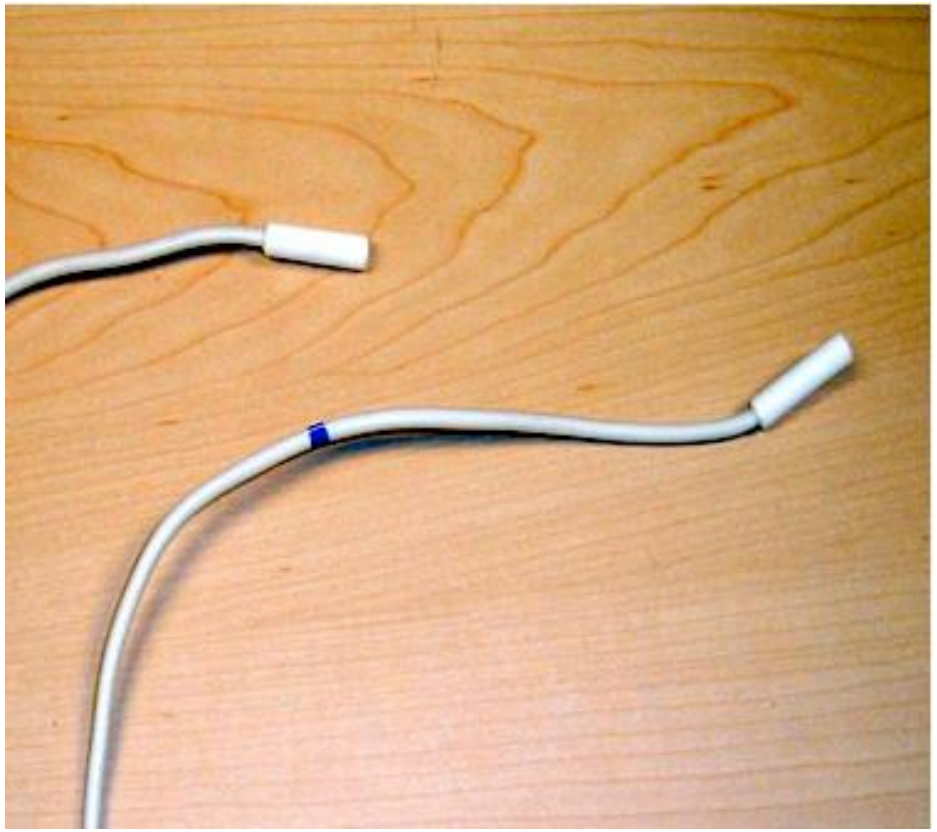
Evaporator



Component Identification – Refrigerated Cabinet

Temperature thermistors

- Temperature probe in return air of the evaporator controls the cabinet temperature. (no stripe)
- Set point 2.2˚C with Diff 2.2, Range (1.1 to 3.3 ˚C)
- A second temperature probe in the evaporator coil is used to end de-frost. (one stripe)
- Resistance reading for all probes is 16330 at 0˚C. See table or resistances in Technicians Handbook



Component Identification – Refrigerated Cabinet

Temperature thermistors

There is a third temperature probe in return Attached to the product tube in the dispense area.

This probe senses the temperature in the insulated duct and is displayed as nozzle temperature.

Component Identification – Refrigerated Cabinet

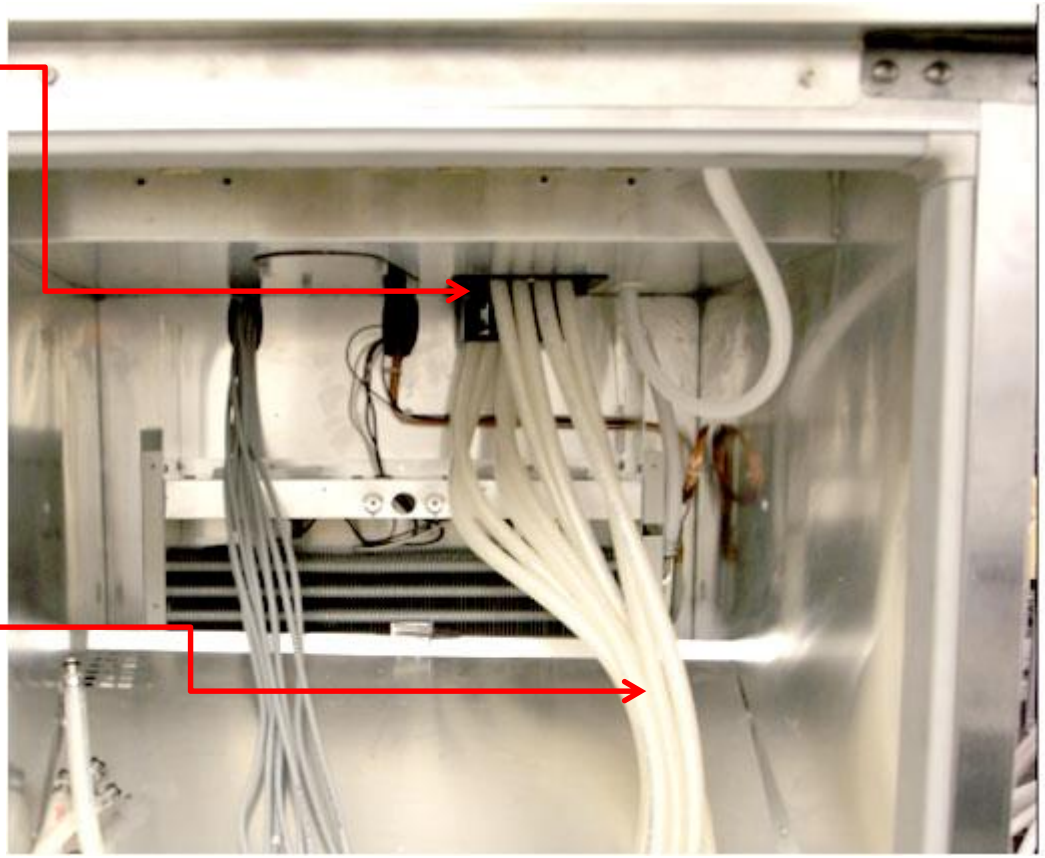
Evaporator

- **Duct Fan:**

Forces cold air from cabinet into duct to cool product tubes.

Product tubes:

Carries product to dispensing nozzle.



BASIC TROUBLESHOOTING

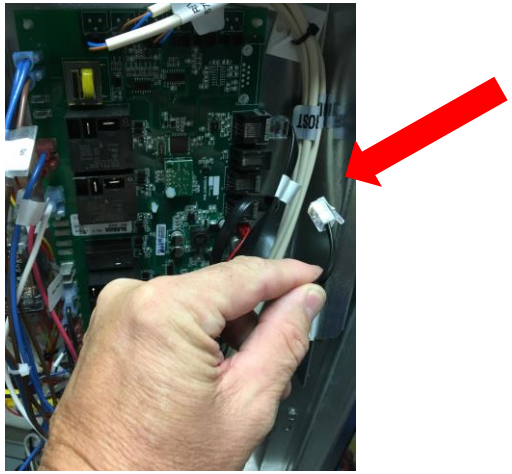
BASIC TROUBLESHOOTING

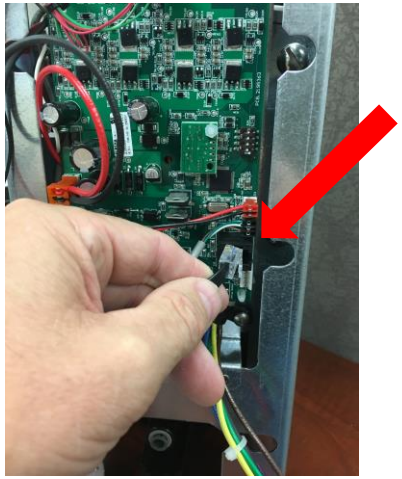
SYMPTOM BLENDER ERROR

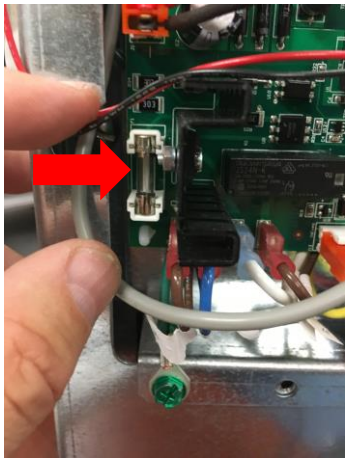
Verify mixer firmware (Managers Menu/Enter password “A” and arrow down twice.

If mixer reads 0.0.0 the unit does not recognize the blender board. If it reads either 0.10.0 or 0.11.0 it needs firmware loaded to it. DOOR MUST BE IN PLACE ON POWER UP TO READ FIRMWARE

If mixer does not recognize the board, check connection of the communication cable at SRB and Blender Board. Also check to make sure the 2.5 amp fuse on the blender board is not blown.



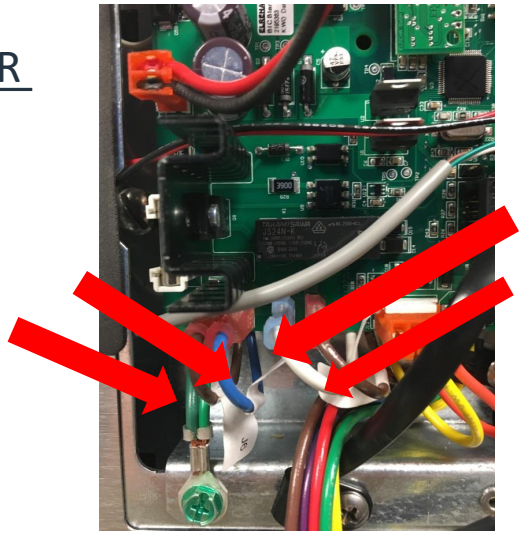




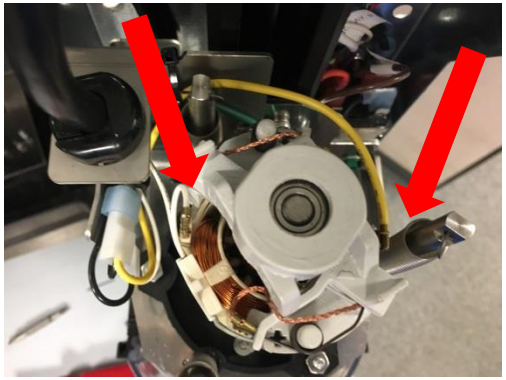
BASIC TROUBLESHOOTING

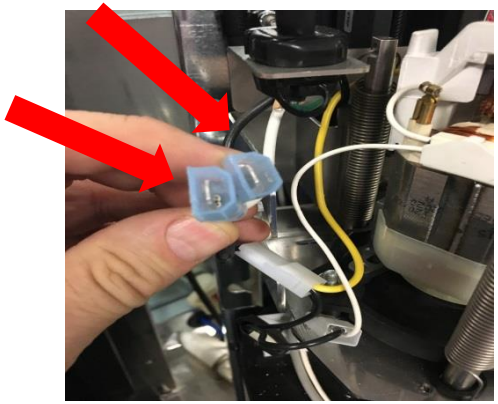
SYMPTOM BLENDER ERROR

Verify voltage into board at J6-J5 (brown/blue) 120 AC



Verify voltage out of board J2-J7 (white/brown) 120 AC





Verify voltage to motor. 120 AC while blending; 65 in outputs screen.

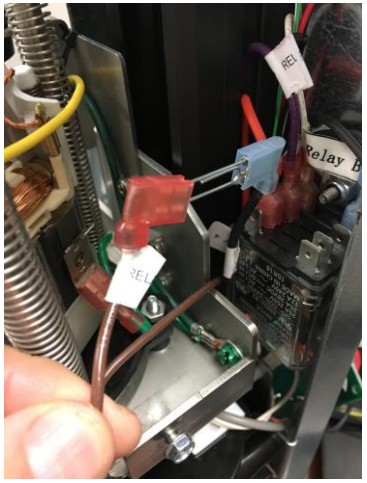
BASIC TROUBLESHOOTING

SYMPTOM BLENDER ERROR

2 relays on back of unit beside the SRB board

CHECKING THE 24 VDC RELAYS

One relay each in the blender modules

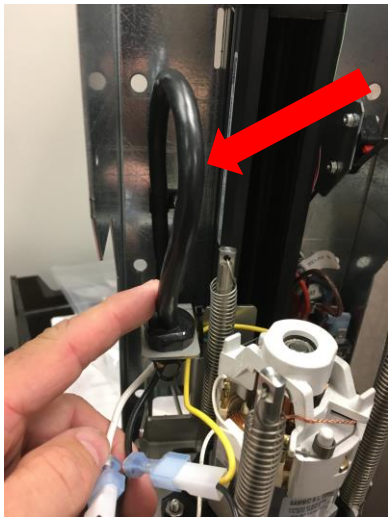


To by-pass the relay in the blender module, use a piece of wire or paper clip and direct wire the black wire (relay 4) on the right hand side 2nd terminal to the brown wire (relay 7) 3rd terminal right hand side. You can verify if the relay is working this way.

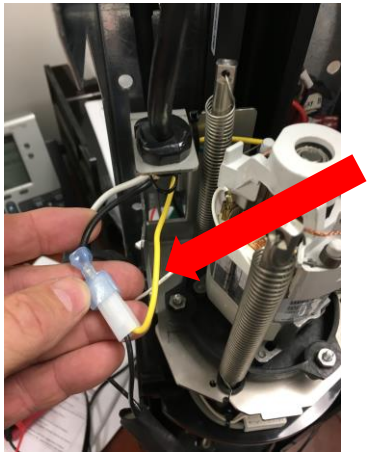
BASIC TROUBLESHOOTING

OHM out the Power Cord (Black Wire)

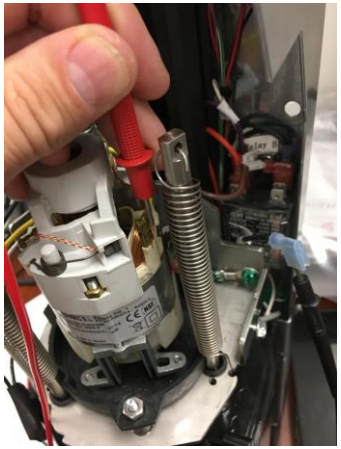
SYMPTOM BLENDER ERROR



Place meter lead in black wire (relay 4)



Identify where black wire attaches to motor leads.



Set meter to OHMS and test black wire at the relay connection and the motor terminal.

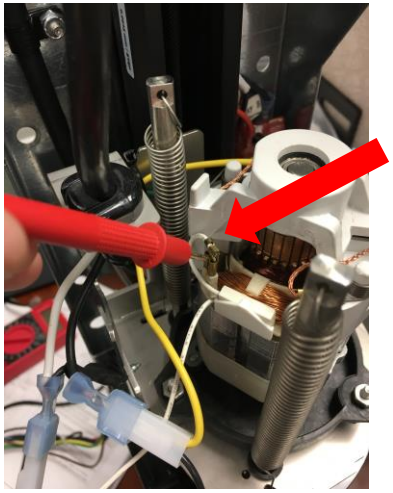
BASIC TROUBLESHOOTING

OHM out the Power Cord (White Wire)

SYMPTOM BLENDER ERROR

Locate the white wire (J2) on the back of the board

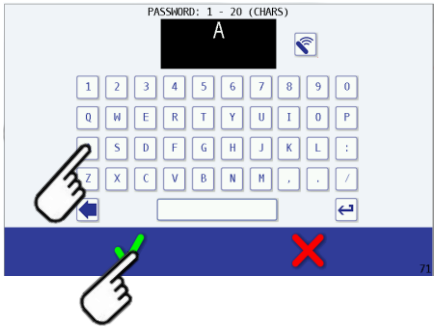
Trace the white wire up to the motor wiring harness and identify which terminal on the motor it connects to.

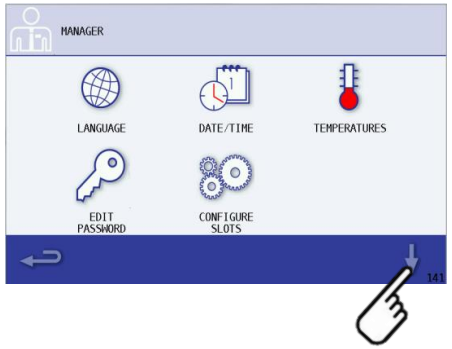


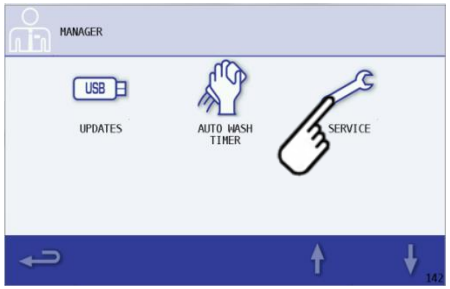
Set meter to OHMS and test the white wire at the back of the blender board (J2) and the connection and the motor terminal.

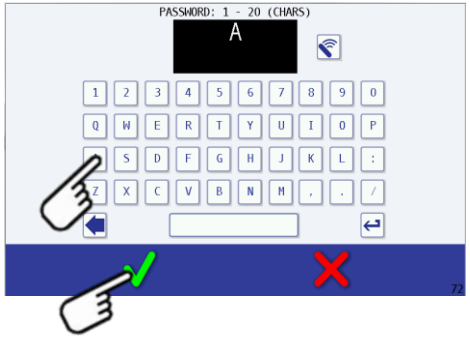
BASIC TROUBLESHOOTING

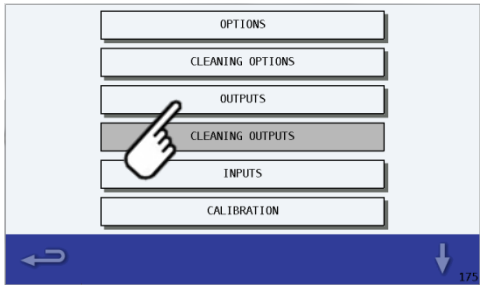
SYMPTOM ICE DISPENSE ERROR / NOT TURNING AUGER WHEEL

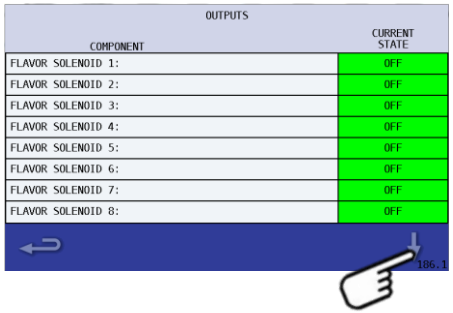


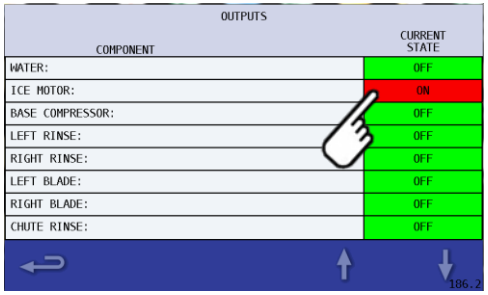










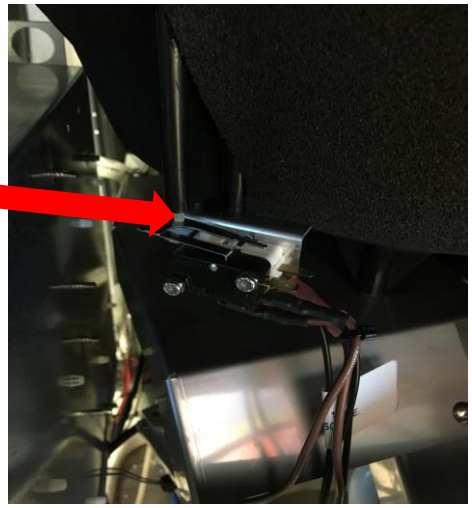


Select ice motor to validate whether shaver motor is working.

BASIC TROUBLESHOOTING

SYMPTOM ICE DISPENSE ERROR / NOT TURNING AUGER WHEEL

Verify lid is down all the way and the actuator rod closes micro switch.



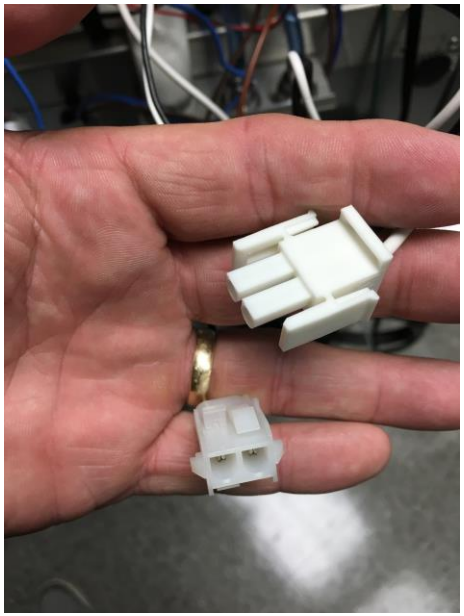
Inspect the shaver belt for wear and tear and tightness.

BASIC TROUBLESHOOTING

3 Amp Breaker reset

SYMPTOM ICE DISPENSE ERROR / NOT TURNING AUGER WHEEL

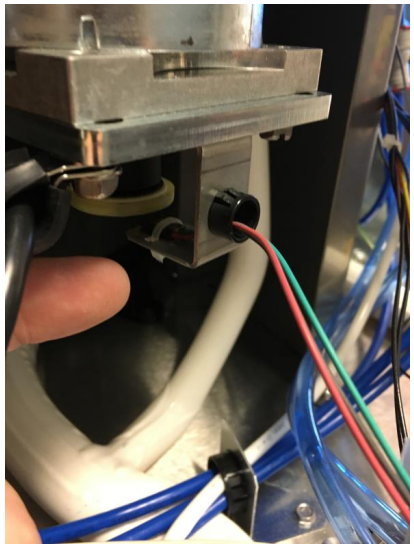
1. Check 3 amp breaker on back to make sure it is not tripped.
2. Inspect ice bowl for foreign objects.
3. Verify voltage to the rectifier at J25 and J26 on SRB board.



5. Verify 120 DC voltage at connection 8 from rectifier at white and black wires from male plug in.

BASIC TROUBLESHOOTING

SYMPTOM ICE DISPENSE FAILURE / DISPENSING TOO MUCH ICE.



SYMPTOM: 3 long dispenses of ice practically emptying bin. Sensor should be about 1/16 of an inch back from the edge of the bracket and in good condition. PART # VMP00175.

Checking the HALL EFFECT SENSOR. Inspect connection at SRB board and condition and placement of sensor on bracket.

If unit is just dispensing too much ice, refer to calibrating instructions. If needed, perform a factory reset. Calibration check can be viewed in SERVICE / CALIBRATION.

CALIBRATION

COMPONENT	DISPENSE	VALUE	UNITS
WATER	4.0 OZ	2.50	SEC
ICE	4.1 OZ	178	REVS

Value on ice should be 178 on factory reset

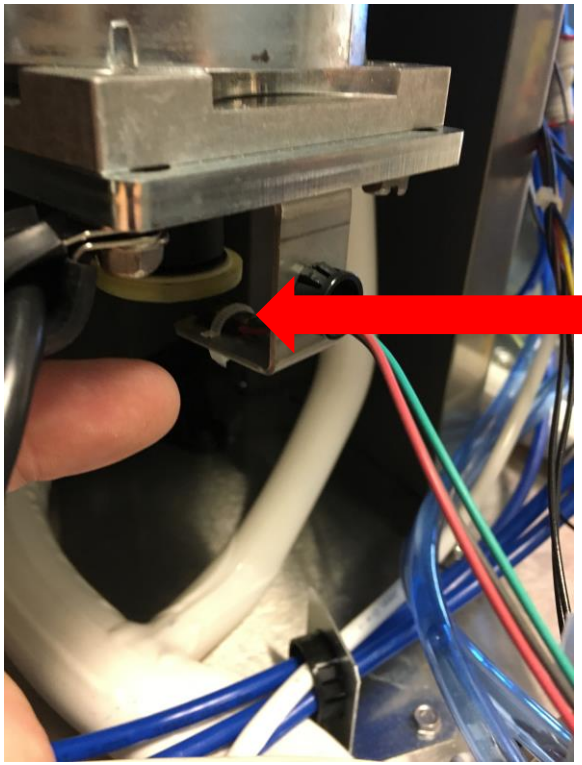
CALIBRATION

COMPONENT	DISPENSE	VALUE	UNITS
WATER	4.0 OZ	2.50	SEC
ICE	4.1 OZ	244	REVS

Value on ice should be between 200 and 250 after calibration

BASIC TROUBLESHOOTING

SYMPTOM ICE DISPENSE FAILURE / DISPENSING TOO MUCH ICE.



Detach the hall sensor from the bracket and try drying out the sensor and applying Dielectric grease to the top and bottom of the eye of the hall effect sensor. Reattach the sensor to the bracket with a zip tie. Condensation will cause the sensors not to read correctly and dispense all of the ice.

BASIC TROUBLESHOOTING

SYMPTOM: Linear bearing struggles to reach home Position. Grinding Noise .

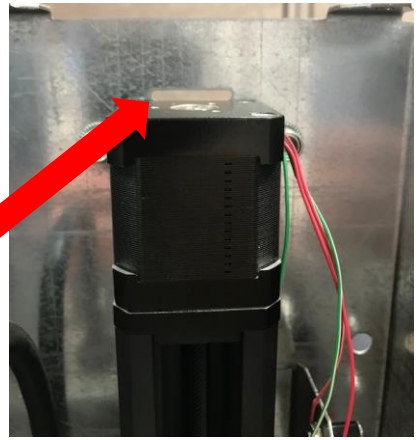
How to determine if pins on board are good.

Linear Slide Voltage Measurements without the Slide Running

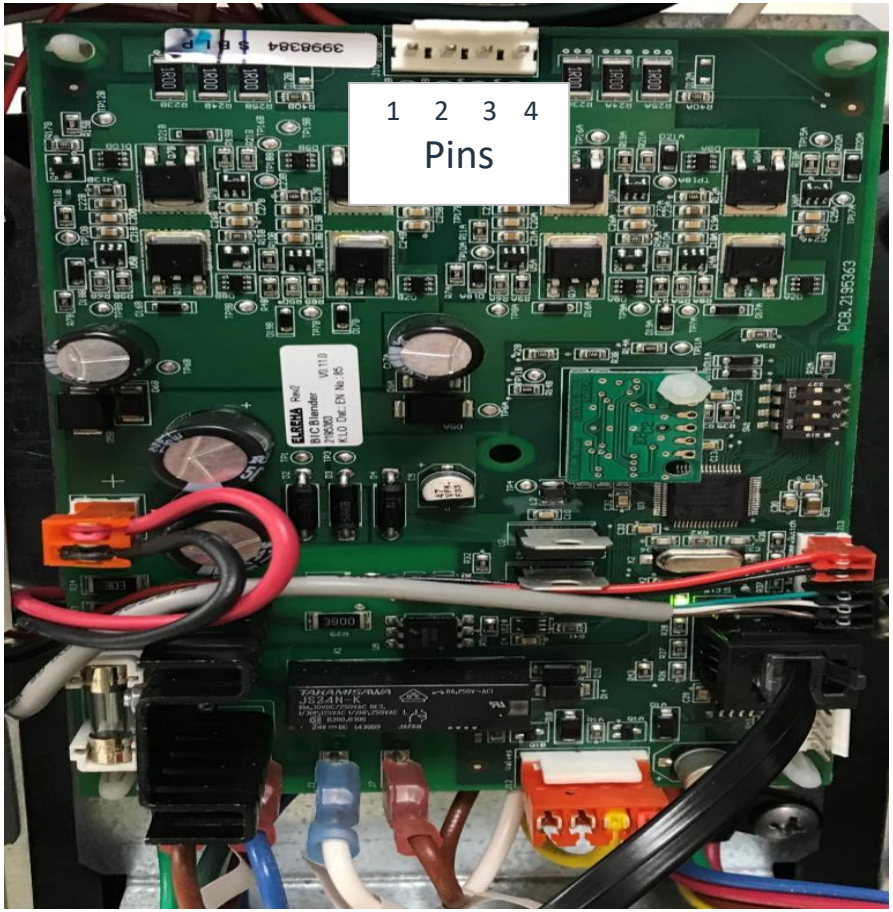
Pin(s)	VDC
1 & 2	23.9
1 & 3	0
1 & 4	23.3
2 & 3	23.4
2 & 4	0
3 & 4	23.3

If voltage checks out, verify slide is even with the cutout on the back plate. Also check for an obstruction in the bearing.

Pins to Ground	VDC
1	0
2	23.5
3	0
4	23.5

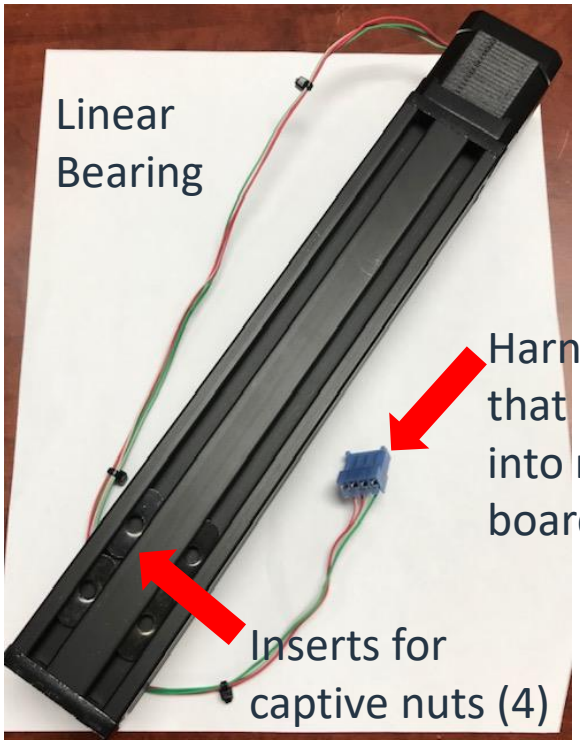


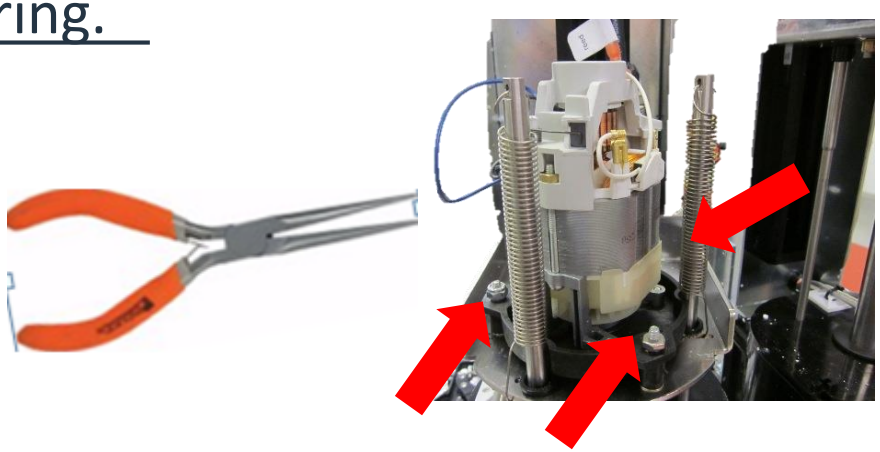
Top of Bearing must be even with bottom of slot



BASIC TROUBLESHOOTING

Removing the old Linear bearing.





To remove the old bearing, loosen the three nuts holding the isolation mounts. Use needle nose pliers to hold bottom nut, do not damage rubber grommet. Unhook the wires holding the motor to the carriage and lift the motor straight up.

The Motor carriage is mounted to the linear slide by 6 screws. Remove these.

Remove these 4 screws in the back of the module to release the bearing from the metal frame.

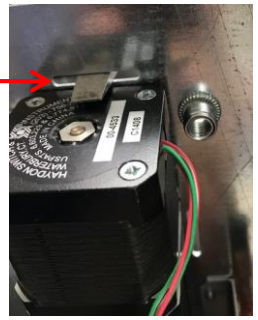
BASIC TROUBLESHOOTING

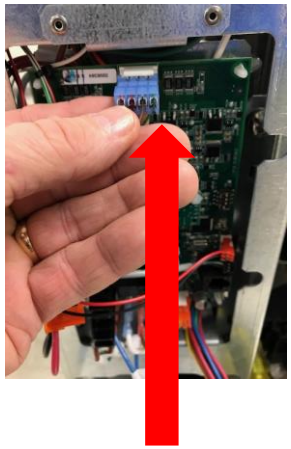
Installing New Linear bearing.

To Install the linear slide to the frame use the reverse order of the dismantling. You will need to take off the outer skin of the module to access the 4 holes.

The captive nuts in the linear slide are free to move so using cork tape to HOLDthem in place makes it easy to start the thread. Attach all screws 4 screws do not tighten. It will be easier to take the module off the chassis of the machine and turn it on its side to help line up the screws with the captive nuts.

The Linear slide must be put back at the correct height, align with the notch on the frame bracket and tighten all screws. You can use a flat head screwdriver to help with the positioning of the bearing.





Remember to plug feed the Bearing harness to the back of the mixer board and plug it in once you are done.

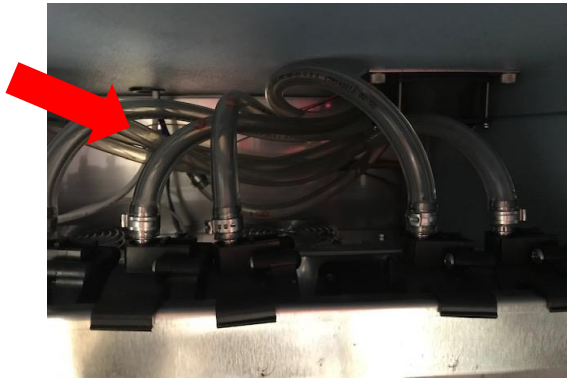
BASIC TROUBLESHOOTING

Changing out the evaporator fan motor

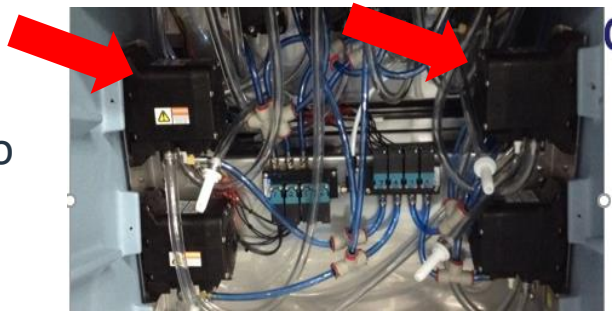
1. Remove the middle dividing plate

2. Remove the top two product plates.

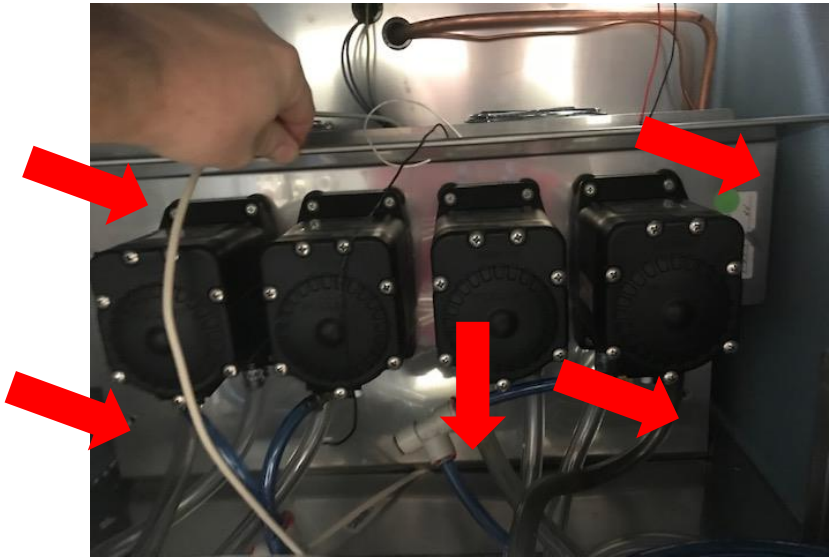
3. Remove the eight non-drip valves from the top plate so you can access the evaporator fans.



4. You will also need to remove the top 2 Flojet Pumps.



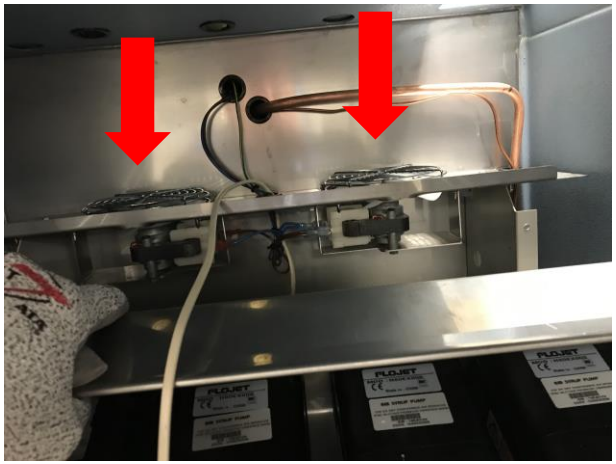
5. Remove the 5 screws holding the plate in front of the evaporator.



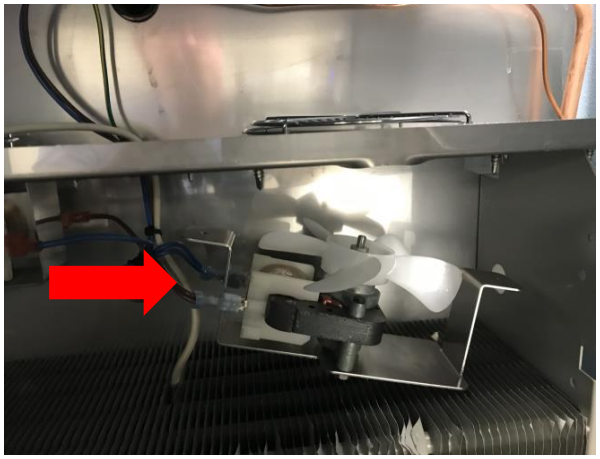
BASIC TROUBLESHOOTING

Changing out the evaporator fan motor

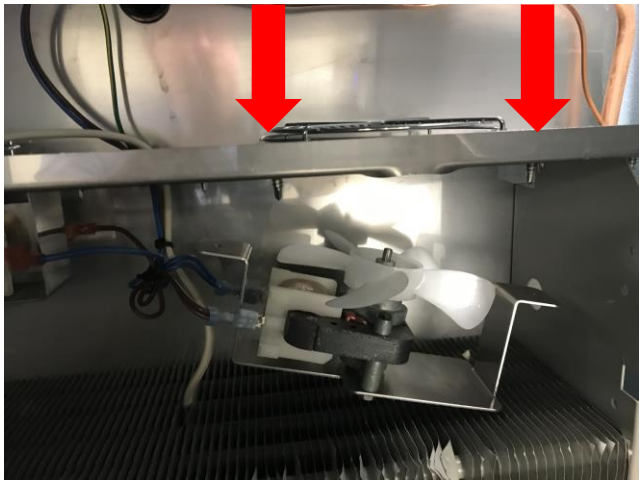
6. From here you can access the evaporator fans.



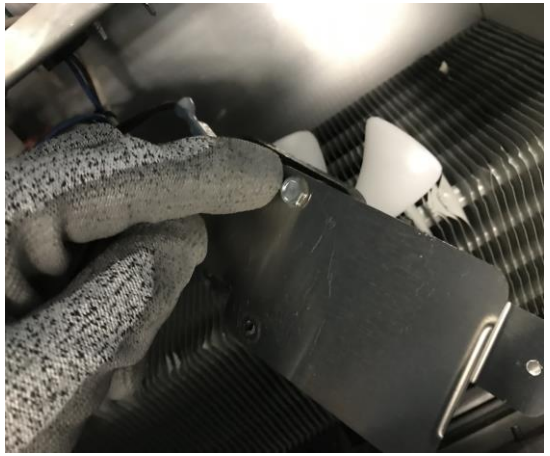
8. Remove the two wire leads.



7. Remove the two screws holding the evaporator fan bracket.



9. And the screws holding the bracket to the motor.



BASIC TROUBLESHOOTING

Changing out the evaporator fan motor

10. Pry the compression fitting off the evaporator fan. Use a pair of needle nose pliers and pry from underneath.

11. Secure the fan on the <u>new evaporator</u> motor using the compression fitting.

12.Mount the evaporator fan and motor to the holding bracket.

13. Reattach the motor bracket to the upper evaporator plate.