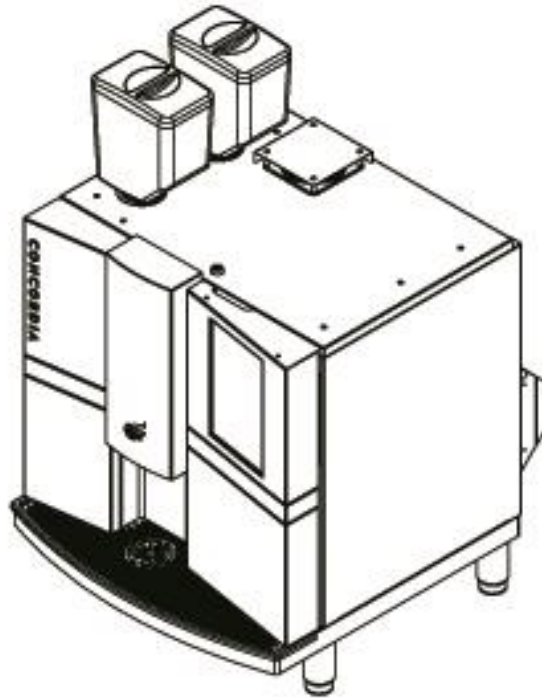




CONCORDIA

BEVERAGE SYSTEMS



Technician's Manual **XPRESS 2017 & XPRESS XT**

Concordia Beverage Systems

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- The Goods not being cleaned, maintained, and operated in accordance with instructions, as defined in the User Guide.
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- Internally affected or damaged components caused by poor water conditions, including water exceeding three grains of hardness per gallon.
- Use of non-dairy milk products in the milk system. The milk system is designed for use with whole, 2%, and non-fat cow milk.
- Use of unapproved syrup products in the syrup system. The syrup system is designed for Concordia-approved syrup products only.
- Jammed or impacted coffee grinder caused by foreign object in grinder, or improper cleaning of the grinder, as outlined in the User Guide.
- Plumbing issues [to include, but not limited to plugged drains or insufficient water supply].
- Ambient or intake air temperatures exceeding 85 degrees Fahrenheit.
- Installation of other equipment that affects operation of Concordia equipment.
- Consumable parts and wear items [to include, but not limited to o-rings, rollers, guide rings, air filters, and water filters].
- Inoperative brew group due to improper maintenance or cleaning.
- Incorrect or insufficient power supply.
- Necessary recalibration due to customer preferences [to include, but not limited to type of coffee, type of milk, size of cup].
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Section 1 :: Xpress 2017 and Xpress XT Overview

1. The Xpress Series of Machines – An Overview
2. Xpress XT Overview
3. Machine Components
4. Flavor System Overview
5. Flavor System Components

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The Xpress Series of Machines – An Overview

There are multiple versions of the Xpress machine, from the original, Classic Xpress 0 and 6 machines, to the Xpress XT and Xpress 2017. The machine is fundamentally the same, though the Xpress XT and Xpress 2017 have differences (from the Classic Xpress machines) that range from minor to major.

While it may appear there are several machines, there are really just two: the Classic Xpress and the Xpress 2017. The “XT” refers to the touch screen. The types of machines you may encounter in the field are as follows:

- **Classic Xpress** – the original Xpress machine, with the ability to serve espresso and flavored drinks. Serial numbers: 60006 to 61984.
- **Xpress 2017** – the Classic Xpress machine, but with updated internal components. Serial numbers: 61985, and higher.
- **Xpress XT** – the Classic Xpress machine, but with a touch screen and updated internal components. Serial numbers: XT000001, and higher.

There is a limited-edition version of the Xpress XT, which is not listed above. These machines are the Classic Xpress, with a touch screen instead of a touch pad, and the same internal components as the Classic Xpress. The serial number range is TB000001 to TB000010. If you happen to run across one of these in the field, especially if you need to repair or replace anything in the doors, please call Concordia Service for assistance. Please note that not all parts may be available and it may be necessary to replace the entire door.

This technical manual describes the XT and Xpress series of machines. The technical manual for the Classic Xpress is PN [2900-300](#).

Below is a description of the different components between the machines, in addition to a list of serial numbers. You must verify the serial number to know exactly which machine you are working on.

XT Components

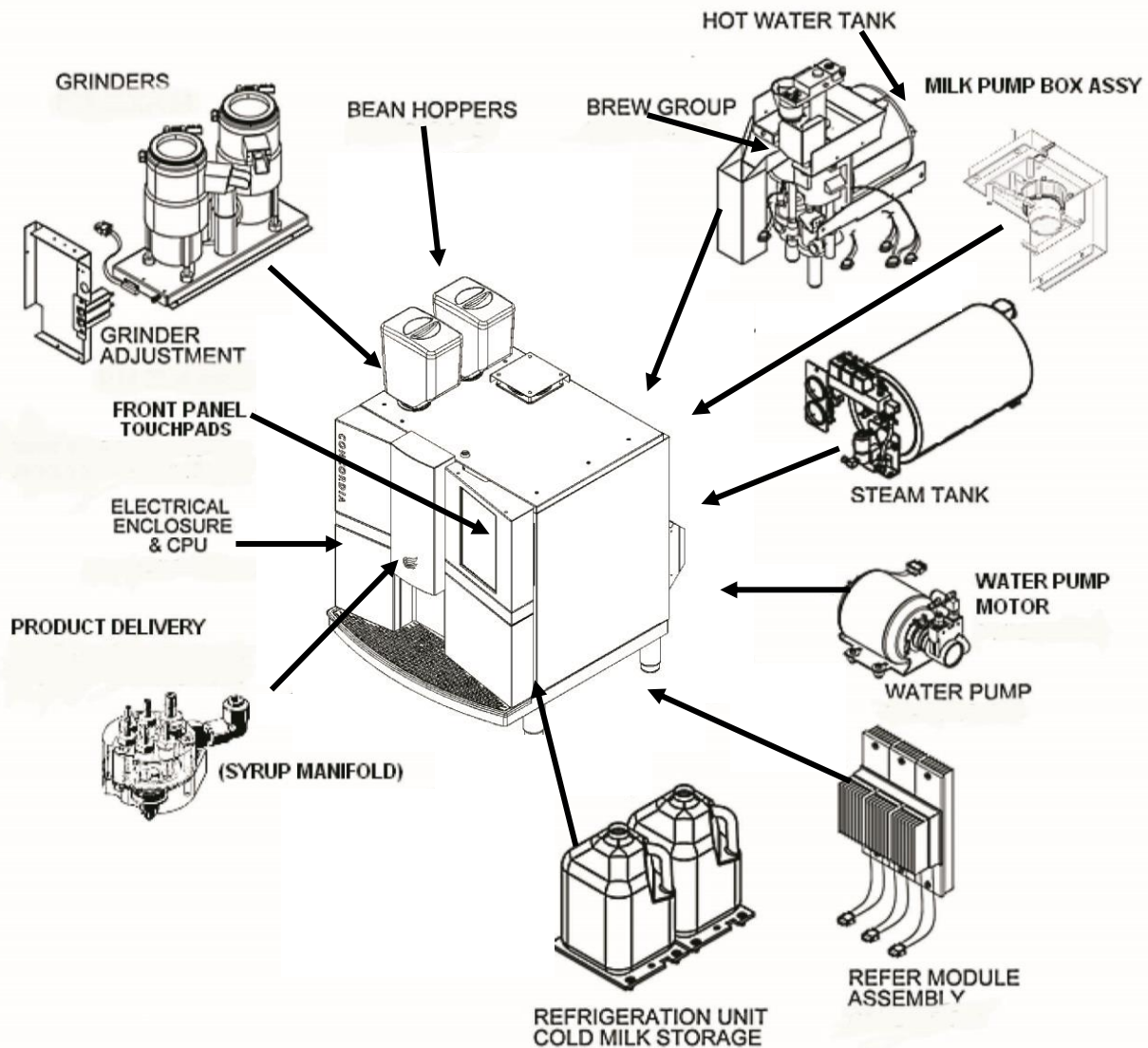
The internal components of the Xpress XT are the same as the internal components of the Classic Xpress. The only differences between the Classic Xpress and the Xpress XT are as follows:

- Front doors
- Touch screen (instead of a touch pad)
- Software
- Different drain tray
- Different drain grate

Xpress 2017 Components

The base components of the Xpress 2017 components are similar to the internal components of the Classic Xpress. There are several assemblies that have a different design, and thus a different part number. A few of these assemblies can be retrofitted to a Classic Xpress machine. For components that can be retrofitted to the Classic Xpress, instructions are included in the relevant section of this manual.

Xpress XT and Xpress 2017 Machine Overview



Machine Components

Touch Screen and Touch Pad

The touch screen and touch pad provide a user interface for selecting and pouring drinks, and for accessing the software menu.

Electrical Enclosure and CPU

The electrical enclosure houses the CPU, AC drawer, and DC board.

Bean Hoppers

Each bean hopper holds whole espresso roast beans and feeds the beans to the grinders.

Water Pump and Motor

The water pump regulates the water pressure to 135-140psi during the espresso extraction process. The motor supplies power to the pump.

Hot Water Tank

The hot water tank stores and heats the water used to brew espresso.

Brew Group

The brew group assembly brews espresso and automatically discards the used coffee into the grounds bin.

Steam Tank

The steam tank provides steam used for steaming the milk.

Grinders and the Grinder Adjustment Assembly

The grinders are calibrated to grind espresso beans according to the customer's recipe. The grinder adjustment assembly changes the grind of espresso beans.

Exhaust Fan

The exhaust fan removes excess heat build-up from the machine interior.

Refrigeration Unit

The refrigeration unit stores the milk used for drinks.

Refrigeration Module Assembly

The refrigeration module assembly regulates the temperature inside the refrigeration unit.

Milk Pump Assembly

The milk pump assembly draws milk from the milk container.

Syrup Manifold

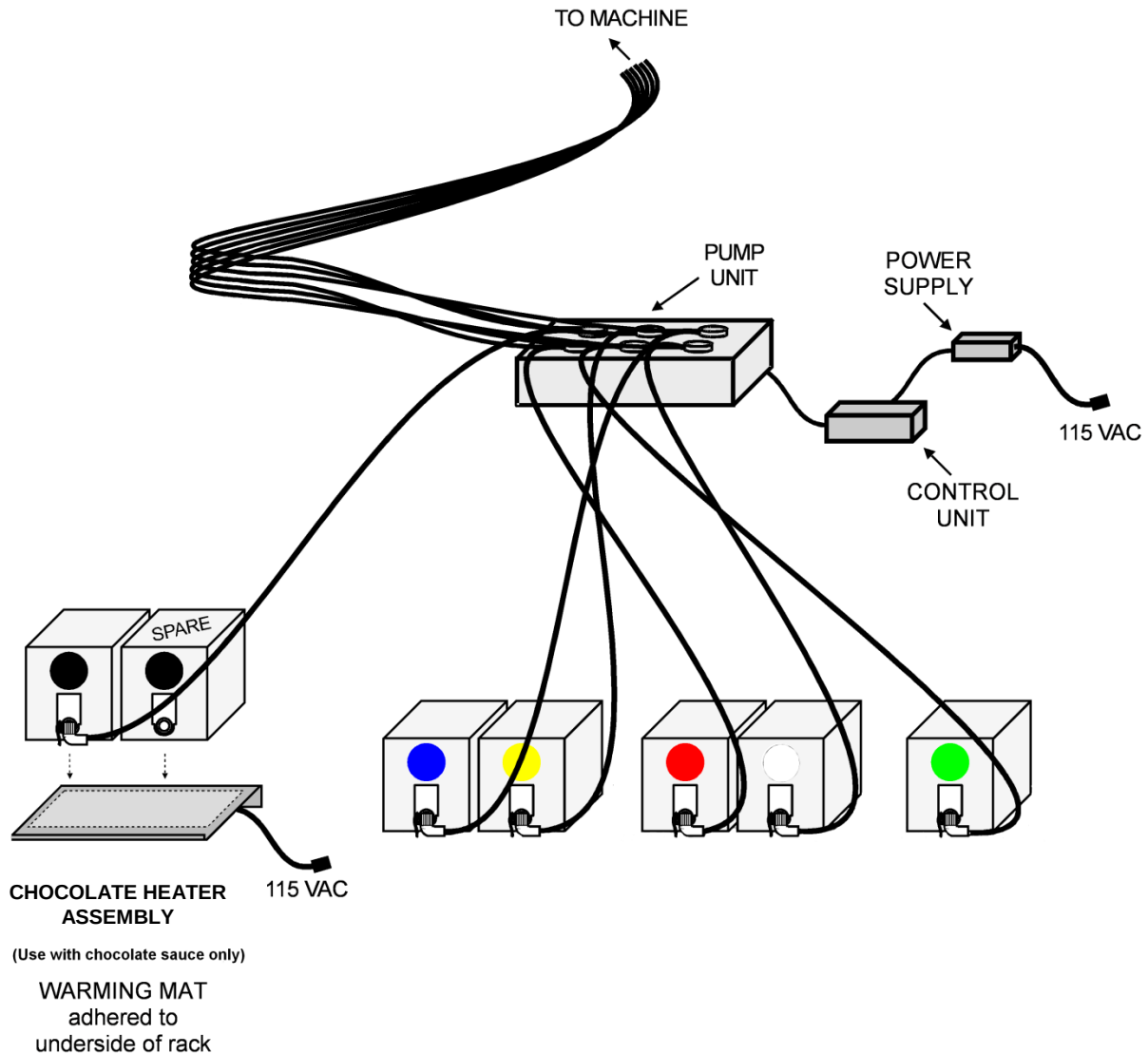
Xpress 6 only

Flavor is infused into drinks via the syrup manifold.

Product Delivery Nozzle

The finished drink is poured through the product delivery nozzle and into the customer's cup.

Flavor System Overview



Flavor System Components

Xpress 6 only

Pump Unit

The pump unit contains the six peristaltic pump assemblies that move the flavors from the boxes to the syrup manifold, and then to the product delivery outlet.

Control Unit

The control unit houses the electronic board that controls the syrup pumps.

Power Supply

The power supply provides 24Vdc power to the control unit.

Chocolate Heater Assembly

The chocolate heater assembly provides heat to the chocolate sauce, to ensure a minimum temperature of 85°F (29.4°C) is maintained.

Section 2 :: Installation, Removal, and Calibration

1. Technical Specifications and Site Requirements
2. Machine Dimensions
3. Installation
4. Plumbing
5. Flavor System – Bag-In-Box
6. Flavor System – On-Board
7. Machine Calibration
8. Espresso Extraction Pre-Treatment Options
9. Additional Tasks Required at Installation
10. Operational Configuration
11. Installation Checklist
12. Removal Procedures
13. Training the Customer

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Technical Specifications and Site Requirements

To ensure the site is ready, the customer is required to complete and return a pre-installation checklist. The customer is required to have electrical, water, and a drain located within a specified distance from the machine.

Technical Specifications

Weight:	300lbs/137kg
Operating Environment:	55°- 85°F (13°-29°C)
Power Consumption:	24 amps @ 208Vac max 8 amps @ 115Vac max
Compliance:	
FCC:	Part 15B, Class A, Part 68
UL Listed	
NSF Certified	

Location Requirements

Locate indoors only

Overall Space

23.79"W x 26.75"D x 36.13"H
59.64cm x 67.49cm x 91.44cm

Machine Counter Space

36"W x 29"D x 42"H
91.44cm x 73.66cm x 106.68cm

Flavor Delivery System – Bag In Box

30"W x 30"D x 27"H
76.2cmWx76.2Dx68.6H

Flavor Delivery System – On-Board

25"W x 30"D x 27"H
63.5cmWx76.2Dx68.6H

Drain

Connection for ¾"/1.9cm drain dose
Indirect drain required
Located within five feet/1.5 meters of machine

Power and Water Requirements

Power

Located within five feet (1.5 meters) of machine

Single Phase:

200-240Vac, 30amp dedicated circuit
NEMA L14-30 Receptacle

High Leg:

200-240Vac, 30amp, high leg dedicated circuit.

International machines are shipped without a power plug. A plug must be attached at the time of installation and meet with all local electrical codes.

Flavor Delivery System

Domestic

Chocolate Heater Assembly

(Bag-In-Box Flavor Delivery System only)

115Vac, 15amp
NEMA 5-15P

Control Unit

115Vac, 15amp
NEMA 5-15P

International

Chocolate Heater Assembly

230Vac

Control Unit

90-260Vac

Water

Cold water source with a 1/4" or 3/8" tube fitting with a shut-off valve, located within five feet (1.5 meters) of machine

Water hardness must be 3gpg or less, in order to maintain manufacturer's warranty on machine.

Pressure

Minimum: 30psi; Maximum: 100psi (min: 2 bar, max 7 bar)
25 gallons per hour (95 liters per hour)

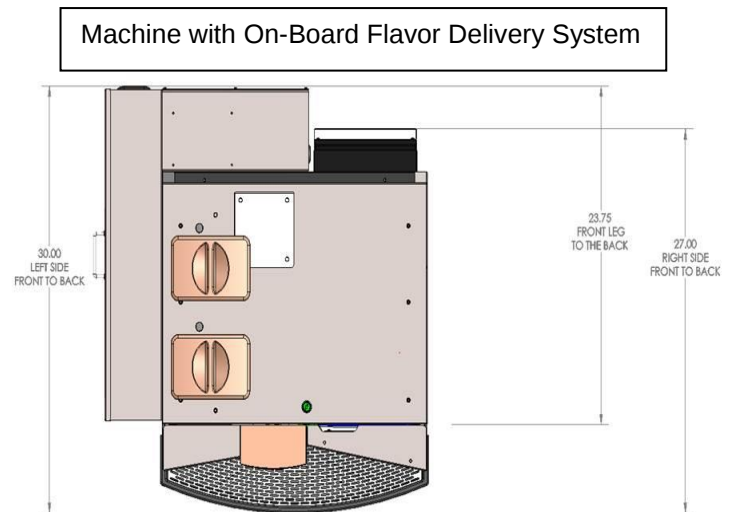
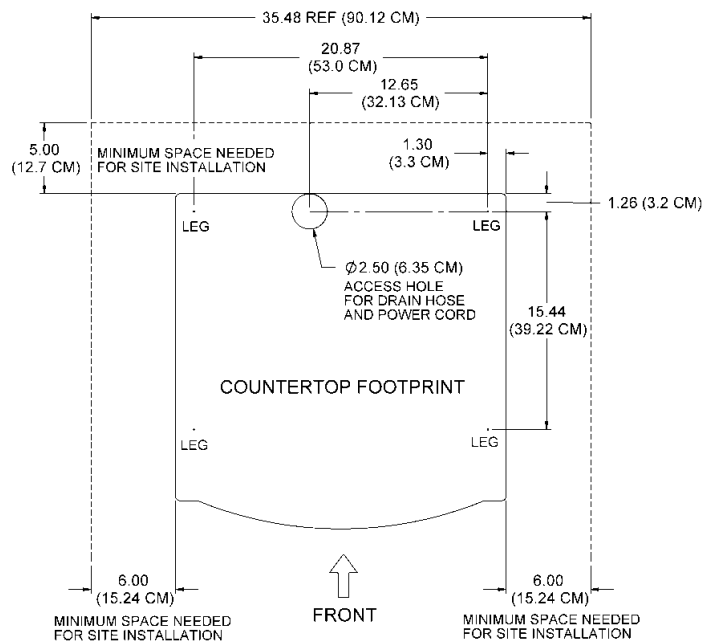
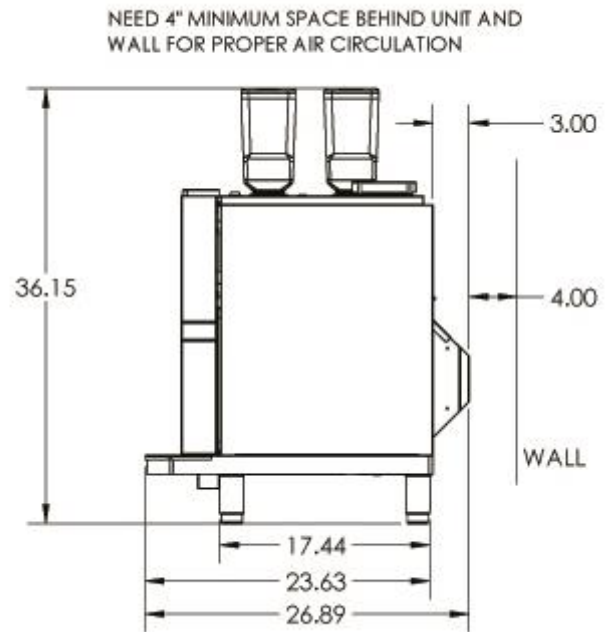
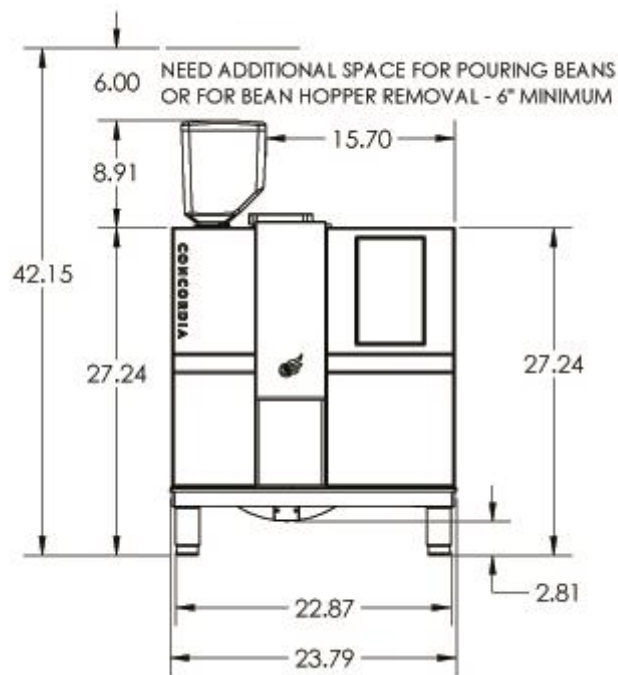
A fresh water bypass is required for sites with a reverse osmosis filter system

Scalex Water Treatment System

Included with the unit: two cartridges (one carbon, one softener)

25"H x 11"W x 5.25"D
63.5cmHx28cmWx13.34cmD

Machine Dimensions

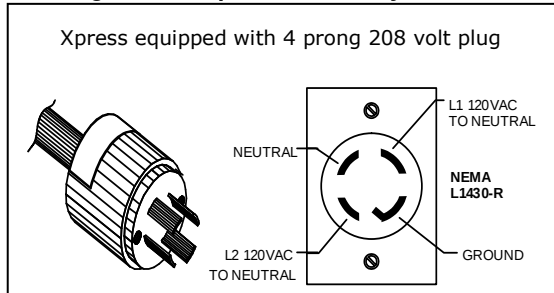


Installation

Configuring the Machine for Supply Voltage

Before connecting machine to the electrical supply, check and verify incoming power supply. The following chart displays the required voltages.

Plug and Receptacle – US only



Confirming Receptacle Voltages

Connections	Voltage
L1 to Ground	110Vac – 120Vac
L2 to Ground	110Vac – 120Vac
L1 to Neutral	110Vac – 120Vac
L2 to Neutral	110Vac – 120Vac
L1 to L2	200Vac – 240Vac
Ground to Neutral	0Vac

Espresso Machine Electrical Settings

Prior to connecting the machine to the power source, verify the electrical settings are correct. The DC jumper plug and transformer must be properly configured.

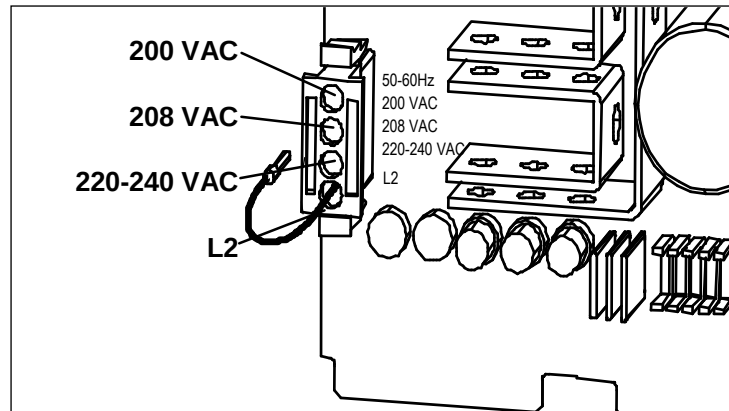
WARNING: Failure to properly set the DC jumper plug and the transformer connector can result in machine malfunction, short circuit, blown fuses, overheating, or damage to circuit boards.

Setting the DC Jumper Plug

1. Measure the source voltage at the NEMA L1430-R receptacle (refer to the chart above). Record the value in the electrical section of the installation checklist.
2. Remove the electrical enclosure cover to access the DC power supply board.

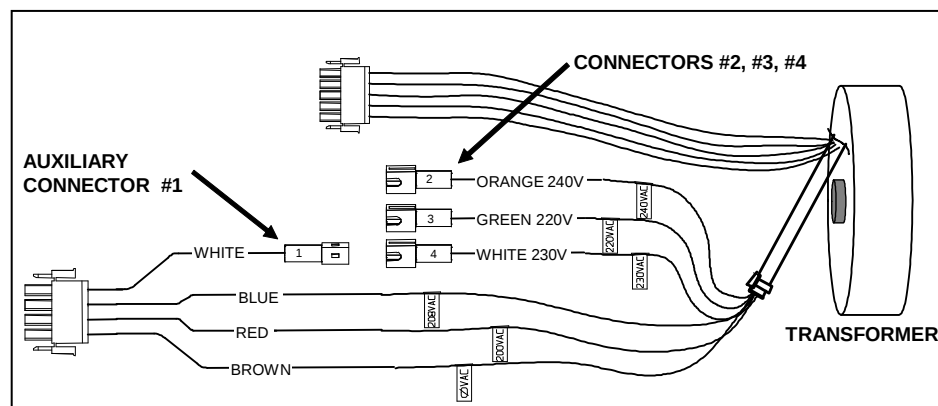
CAUTION: ESD protection required.

3. Remove the DC power supply board using the white ejector lever.
4. Use the diagram on the next page to configure the DC jumper plug to the measured source voltage.
5. Insert the free end of the yellow wire into the correct pinhole.
6. Insert the jumper plug into connector J1 located on the DC power supply board.
7. Re-install the DC power supply board. Ensure the board is fully seated by firmly pressing the board into connector on the backplane connector.
8. Re-install the electrical enclosure cover and verify the display cable is not stressed, pinched, or cut when front panel is lowered.

Configuring the DC Jumper Plug**Configuring Transformer Auxiliary Connector****#1**

It may be necessary to configure the auxiliary connector at the transformer, depending on the measured supply voltage.

1. Remove the machine back panel.
2. Locate the transformer and connectors.
3. Using the voltage table, connect the transformer auxiliary connector #1 to the appropriate connector labeled 220Vac, 230Vac, or 240Vac.
4. Reinstall the back panel and proceed with machine installation.

Transformer Auxiliary Connector Configuration**VOLTAGE TABLE**

MEASURED SOURCE CONNECTOR VOLTAGE RANGE	AUX CONNECTOR #1	SETTING
200 – 205	200	NO ADJUSTMENT
206 – 215	208	NO ADJUSTMENT
216 – 225	220-240	#3 GREEN WIRE
226 – 235	220-240	#4 WHITE WIRE
236 – 245	220-240	#2 ORANGE WIRE

Plumbing

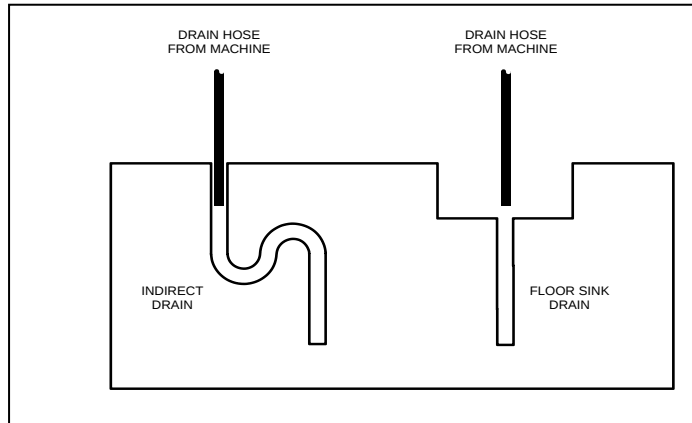
Connecting the External Drain

Only a qualified plumber complying with all local codes and requirements can install the drain at the site. You are responsible for connecting the machine to the drain.

The following requirements must be met:

- Drain accommodating a 3/4" (1.9cm) ID drain hose
- Drain must be located within five feet (1.5 meters) of machine

Approved Drain Configurations



The minimum rate of fall required is one inch (2.54cm) per foot, and the drain hose must have a continuous rate of fall. Ensure the drain hose is connected to the machine drain port.

If the drain has any low spots or any horizontal runs as it travels from the machine to the drain, water and other waste from the machine will back up and cause the drain hose and/or the drain tray to clog.

NOTE: When water and drain lines are connected, check for leaks.

Water Supply

To ensure proper operation of the machine, the following requirements must be met:

- Cold water source with a shut-off valve and 1/4" or 3/8" tube fitting
- Water pressure: minimum 30psi; maximum 100psi
- Water source must be located within five feet (1.5 meters) of machine
- All machines ship with a Scalex water treatment system

Prior to connecting the water filter to the machine, flush the water filtration system with 2 gallons (8 liters) of water.

Problems with Reverse Osmosis Water System

A fresh water bypass is required for sites with a reverse osmosis filter system. The machine water level sensors are inoperative when used with a reverse osmosis system without a bypass.

Flavor System– Bag-In- Box

For both flavor delivery systems, the flavor boxes and the flavor tubes are color-coded. It is important to verify the colors are correctly matched, to ensure customers receive the desired drink and that cross-contamination of flavors does not occur.

Flavor System Installation

1. Place the flavor boxes inside the flavor cabinet and ensure the chocolate sauce is on the chocolate heater assembly.
2. Attach the flavor delivery tubes to the appropriate boxes. For more information about color coding for flavor tubes, please see *Section 3: Flavor System*.

Flavor boxes containing one gallon of syrup can be stacked. Do not stack boxes of chocolate sauce, as the stacked box will not be the proper temperature when it is needed.

It is necessary to pre-warm the chocolate sauce to use; otherwise, it will not flow properly.

WARNING: If chocolate sauce is not heated to 85°F (29.4°C) at the time of installation, there is a high risk of the chocolate sauce flavor tubing exploding.

NOTE: Installation cannot be completed until the chocolate sauce is at the proper temperature.

Additional Flavor Installation Steps

After the flavor boxes are in the flavor cabinet and attached to the color-coded flavor tubes, do the following:

1. **Prime the Flavor System** – see the *Priming the Flavor Delivery System* topic in *Section 3: Flavor System*.
WARNING: The machine **MUST** be fully warmed up before priming the flavor system, or a false head of steam may occur in the steam tank.
2. **Verify the Flavor Pour Rate** – The flavor volume of drinks must meet the requirements and preferences of the customer. Please see the *Changing the Flavor Pour Rate* topic in *Section 3: Flavor System*, for information and directions for adjusting the time and volume of flavor pours.

Flavor System– On-Board

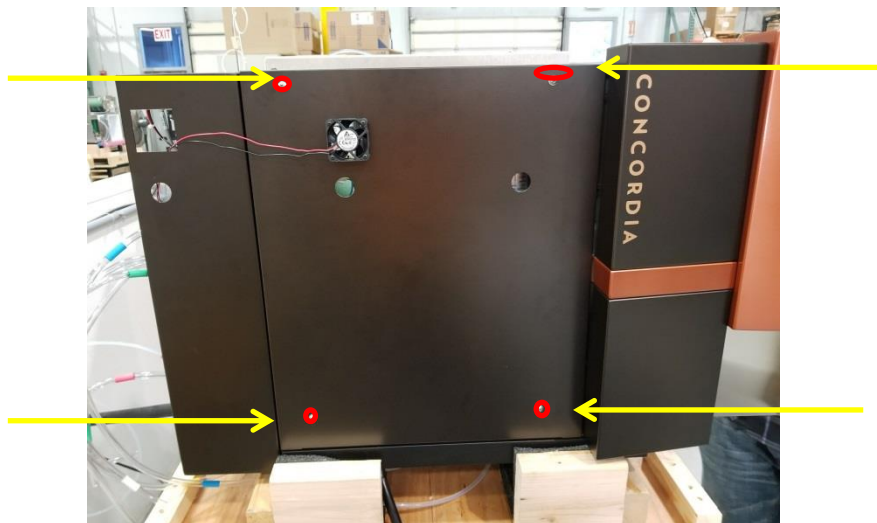
Machines with an On-Board Flavor Delivery System require assembly.

Attach the Flavor Enclosure to the Machine

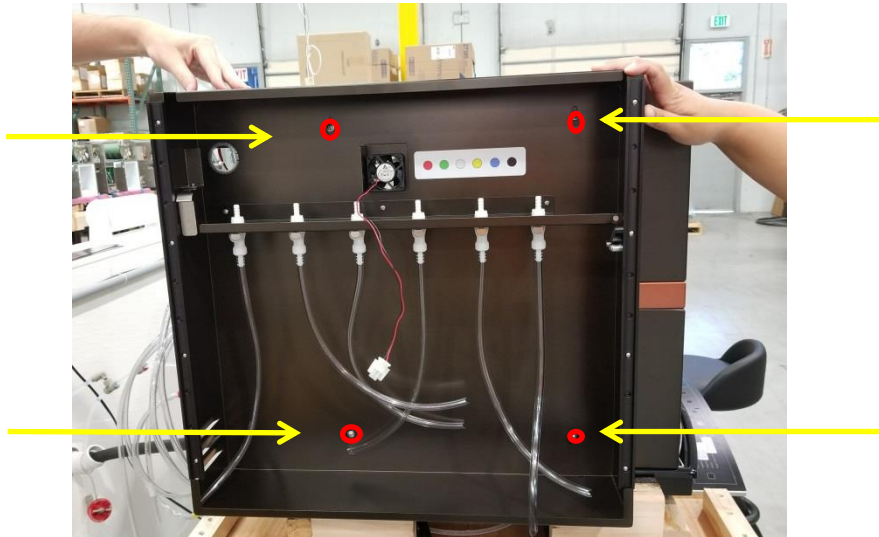
1. Remove the flavor enclosure box from its packaging.
2. Remove sliding cover from flavor enclosure box by lifting cover, and depressing the panel lock on left side of flavor enclosure, to slide panel up and off. Store cover in a safe place.



3. Loosen four screws on the left side of the machine.



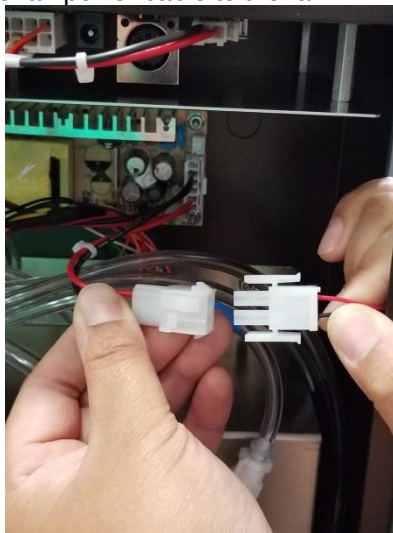
4. Using the four slotted screws, mount the flavor enclosure box on the left side of the machine.



5. Take care to dress fan cable to rear pump enclosure.



6. Connect the fan power cable to the fan.



7. Using the color-coded legend inside the flavor enclosure, attach the flavor hoses to the correct color fitting.



8. Replace the flavor enclosure door, taking care to fold the door latch on the right side of enclosure.



9. The finished enclosure should look like this:



Place Flavor Bottles in the Flavor Enclosure

Using the color-coding chart below, place the flavor bottles in the appropriate position inside the flavor enclosure, and insert the flavor tube into the flavor bottle.

Red	Green	White	Yellow	Blue	Black
Chai	Hazelnut	Vanilla	Caramel	Sugar-Free Vanilla	Chocolate



NOTE: If the bottle of chocolate sauce is not pre-warmed, dispense hot water from machine into a container that can fit the chocolate sauce bottle. The water should be 1" below the top of the chocolate sauce container. Heat the chocolate sauce for 20 minutes, then remove it from the hot water, hold the cap and shake to distribute the heat throughout the product.

NOTE: Unlike machines that utilize a Bag-In-Box Flavored Delivery System, the On-Board Flavor Delivery System does not have a separate heating unit for the chocolate sauce. The fan in the flavor enclosure directs heat from the machine to the flavor enclosure, and this heats the chocolate sauce.

Additional Flavor Installation Steps

After the flavor boxes are in the flavor cabinet and attached to the color-coded flavor tubes, do the following:

1. **Prime the Flavor System** – see the *Priming the Flavor Delivery System* topic in *Section 3: Flavor System*.
WARNING: The machine **MUST** be fully warmed up before priming the flavor system, or a false head of steam may occur in the steam tank.
2. **Verify the Flavor Pour Rate** – The flavor volume of drinks must meet the requirements and preferences of the customer. Please see the *Changing the Flavor Pour Rate* topic in *Section 3: Flavor System*, for information and directions for adjusting the time and volume of flavor pours.

Machine Calibration

Concordia refers to calibration as the process of adjusting machine settings so that the perfect drink can be poured.

The Xpress may require adjustment to perform within specific extraction parameters, by using the customer's choice of beans and settings. For instructions on how to load a customer-specific drink recipe, contact Concordia for assistance at 1-800-778-0990.

Calibration must be completed in the following order:

1. Pump Pressure (Plumbing System Section)
2. Espresso Extractions (Coffee System Section)
3. Milk Pump Speed Control (Electronics Section)
4. Milk Level Trays (Refrigeration Section)
5. Coffee Powder Dose (Coffee System Section)
6. Milk Volume (Milk System and Refrigeration Unit Section)
7. Water Volume (Plumbing Section)
8. Flavor Dose (Flavor System Section)

If a customer changes the type of beans they are using, their machine must be re-calibrated.

Calibration must be done with fresh espresso beans. Stale beans are dry and brittle and will grind more quickly than fresh beans. Ground espresso beans should be a bit finer than granulated sugar.

The items in the table below must be calibrated in the order listed.

Step 1: Verify Default Settings

Water Volume	Single 30mL
	Double 65mL
	Triple 105mL
Water Temperature	198°F (92°C)
Coffee Powder Dose	Single: 10 grams
	Double: 15 grams
	Triple: 18 grams
Grind	Ground coffee particles should be a bit finer than granulated sugar

Step 2: Visually Verify During Double Espresso Extraction

Water Pressure	135-140psi
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Calibrating Pump Pressure

This procedure must be done while extracting a double espresso.

- During the extraction, watch the water pressure gauge and ensure it maintains 135-140psi.
- If the pressure gauge does not read 135-140psi, adjust the adjustment screw, located on the water pump assembly, in quarter-turn increments (clockwise to increase setting, counterclockwise to decrease setting); the pump must be set at 135-140psi for proper brewing.
- Once 135-140psi is achieved, pour a double espresso to verify the setting.

Calibrating Espresso

If a customer-specific recipe exists, verify the recipe settings are programmed into the machine. Make any necessary adjustments and/or program them as necessary.

Configuring the Bean Hoppers

The Xpress and Xpress XT default to dispensing regular and decaffeinated espresso drinks. The bean hoppers only need to be configured if the machine will not be serving regular and decaffeinated espresso drinks.

However, each machine can also be programmed to serve both espresso drinks and coffee drinks. To do this, go to the following software menu:

- **XT:**
 1. Place coffee beans in the rear grinder.
 2. Calibrate the bean grind to customer specification.
 3. Navigate to **MACHINE SETTINGS > GRINDER SETTINGS > GRINDER CONFIG**, and then select **ESPRESSO & COFFEE**.
- **Xpress:**
 1. Place coffee beans in the rear grinder.
 2. Calibrate the bean grind to customer specification.
 3. Navigate to **SPECIAL FEATURES > COFFEE BUTTON**.

NOTE: The **GRINDER REGULAR ONLY** option will only draw beans from the front hopper. To protect the rear bean grinder, leave the empty rear bean hopper atop the machine. This will prevent debris from entering and damaging the bean grinder and brew group.

Espresso Extraction and Temperature Parameters

Unless otherwise specified, the calibration goal for the Concordia Xpress is to extract a double espresso in 18-23 seconds. The extraction time for a single shot of espresso is based on the extraction time for a double.

Once the machine has been calibrated, measure extraction time and drink temperatures to verify they are within operating parameters.

Espresso extraction times are defined as the time between the pump turning on and the pump turning off.

Espresso Extraction Time

Single Espresso Shot	15-18 seconds
Double Espresso Shot	18-23 seconds
Triple Espresso Shot	23-30 seconds

1. Tap **ESPRESSO**, and then tap **MAKE** to pour a single shot of espresso.
2. Tap **ESPRESSO**, tap **DOUBLE SHOT**, and then tap **MAKE** to pour a double shot of espresso.

Drink Temperatures

To ensure temperature readings are accurate, temperatures for milk-based drinks must be taken in the center of a paper cup, and espresso must be taken while the espresso is being poured.

Espresso	175° - 195°F (79° – 91°C)
Latte	160° - 170°F (71° – 77°C)
Mocha	150° - 165°F (66° – 74°C)
Chai	150° - 165°F (66° – 74°C)
Hot Chocolate	150° - 165°F (66° – 74°C)
Cappuccino	150° - 160°F (66° – 71°C)
Steamed Milk	160° - 170°F (71° – 77°C)

Verifying Espresso Extraction

1. Confirm water pump pressure is 135-140psi.
2. Verify coffee dose and water volume are set to customer expectations.
3. Pour a double espresso, and record the time between the pump turning on and off. The target extraction time is 18-23 seconds.
4. Adjust grind as needed (turn grinder adjustment assembly clockwise to increase extraction time and counterclockwise to decrease extraction time).

NOTE: When making adjustments to the grind, it is important to pour three double espressos before assessing the change on the fourth double espresso pour. Four double espressos must be poured to ensure the change of grind is fully implemented.

Calibrating Milk Timings

The milk volumes must be set for each specific beverage. Milk volume is set in seconds of pour time.

Each milk setup sub-category must be individually set. See the *Software Quick Reference Table* on page 4-4 for a detailed listing of settings for all hot and cold milk timings. It may be necessary to change the milk timing due to a specific customer recipe (e.g. different cup sizes).

The default drink settings are 12oz/360mL and 16oz/480mL.

To verify milk timing:

1. Place cleaning or measuring cup under product outlet.
2. Pour a single, small latte.
3. When pour is complete, verify drink level (in ounces/milliliters) in cup.

If the drink volume is correct after step three, then the milk timing for that specific drink does not need to be adjusted.

To adjust a milk timing that is too high or too low, go to the following software menu:

- **XT:** Navigate to **HOT/COLD MILK SETUP**.
- **Xpress:** Navigate to **MILK TIMINGS – HOT** or **MILK TIMINGS – COLD**.

Adjust the timing for the appropriate drink. Once the timing is adjusted, re-test the timing and verify that drink level until it is correct, before testing any other drinks.

EXAMPLE: If the drink volume is short by 1oz (30mL), increase the milk pour time by .5 second. Re-test the drink until proper volume is achieved.

Repeat this procedure for all sizes, and shot quantity, of lattes, mochas, chai latte, hot chocolate, and steamed milk.

NOTE: It is expected that there will be approximately 3/8"/10mm extra space at the top of the cup, when the drink is finished pouring. Finished drinks should not be filled to the rim of the cup.

Calibrating Brewed Coffee

The water volumes for brewed coffee are preset prior to machine delivery.

To calculate a brewed coffee volume into mL, multiply:

[The cup size in fluid ounces] x 30

One fluid ounce equals approximately 30mL.

For example, calculating the brewed coffee timing for a 12oz cup would be:

$$12 \times 30 = 360\text{mL}$$

The default settings for brewed coffee are 12oz/355mL and 16oz/475mL.

Calibrating Flavor Timings

Since customers can choose to change the flavors used for drinks, the headings in the flavor menu of the software sub-category are generic. For customers without custom flavor choices, the table below displays the software generic headings and the corresponding default flavors.

Flavor 1	Flavor 2	Flavor 3	Flavor 4	Flavor 5	Flavor 6
Chocolate	Caramel	Vanilla	Chai	Hazelnut	Sugar-Free Vanilla

For more information on how to calibrate flavor timings, please see the *Changing the Flavor Pour Rate* topic in *Section 3: Flavor System*.

Espresso Extraction Pre-Treatment Options

During pre-treatment, a small amount of water is infused into the ground beans. The grounds are then allowed to soak momentarily before the brewing process begins. This pre-infusion process enhances the quality of the espresso shot.

The Xpress and Xpress XT have eight pre-treatment options, each varying in the specific pressure used to pack the ground beans, the amount of water used to pre-infuse, and the delay between the pre-infusion and the brewing. The pre-treatment settings for single, double, and triple shots are individually adjustable. To adjust the pre-treatment settings, go to the following software category:

- **XT:** Navigate to **ESP/COFFEE SETUP**.
- **Xpress:** Navigate to **COFFEE PWDR PRE**.

For both machines:

- The default setting for a single espresso shot is pre-treatment option #4 (regular and decaf).
- The default setting for a double espresso shot is pre-treatment option #1 (regular and decaf).
- The default setting for a triple espresso shot is pre-treatment option #0 (regular and decaf).

Pre-Treatment Options

PRE-TREATMENT #0

- Pressure on the ground coffee is slightly reduced.
- No pre-infusion water added.
- No delay before brewing.

PRE-TREATMENT #1

- The ground coffee is lightly packed, and then the pressure is slightly reduced.
- Espresso grounds are pre-infused for 1/10 of a second.
- A half-second delay before brewing.

PRE-TREATMENT #2

- Pressure on the ground coffee is slightly increased.
- Espresso grounds are pre-infused for 2/10 of a second.
- A two-second delay before brewing.

PRE-TREATMENT #3

- Pressure on the ground coffee is slightly increased.
- Espresso grounds are pre-infused for 3/10 of a second.
- A two-second delay before brewing.

PRE-TREATMENT #4

- Pressure on the ground coffee is slightly increased.
- Espresso grounds are pre-infused for 3/10 of a second.
- A three-second delay before brewing.

PRE-TREATMENT #5

- Espresso grounds are pre-infused for 4/10 of a second.
- A three-second delay before brewing.
- Pressure on the ground coffee is slightly increased.

PRE-TREATMENT #6

- Espresso grounds are pre-infused for 4/10 of a second.
- A three-second delay before brewing.
- Pressure on the ground coffee is slightly increased.

PRE-TREATMENT #7

- Espresso grounds are pre-infused for 4/10 of a second.
- A four-second delay before brewing.
- Pressure on the ground coffee is slightly increased.

Additional Tasks Required at Installation

Power Up the Machine

1. Close both tank drain valves
2. Ensure the electrical cord is plugged in and twist-locked
3. Ensure water is supplied to unit
4. Ensure a drain is connected to the unit
5. Start the unit by turning on the main power switch located behind the grounds bin door
6. Warm-up will take 10-15 minutes

NOTE: The grounds bin must be in place and all doors must be closed.

Install Bean Hoppers

1. Install the bean hoppers.
2. Fill the bean hoppers with fresh, whole, espresso roast beans. For information on the bean hoppers, please see *Section 9: Coffee System*.

IMPORTANT: Ensure the hopper stoppers are removed, so that the beans can be delivered to the grinder.

Install Cup Stand (Optional)

Install the cup stand beneath the product outlet.

Operational Configuration

The Xpress and Xpress XT are configured with a default recipe. However, it may still be necessary to make minor adjustments to the grinder settings or milk levels, depending on an existing customer recipe or customer preference. For instructions on calibrating the grinder, please see *Section 10: Coffee System*, and for instructions on adjusting the milk levels, please see the *Machine Calibration* topic in *Section 2: Installation, Removal, and Calibration*. For instructions on adjusting flavor timings, please see *Section 3: Flavor System*.

At this time, set the time and date, using the software menu in the machine. To do this, go to the following software menu:

- **XT:** Navigate to **TIME/DATE CONFIGURATION**.
- **Xpress:** Navigate to **TIME & DATE**.

Placing Milk in the Refrigeration Unit

Place two gallons of milk in the upper refrigeration unit. Non-fat milk is placed in the rear position and regular milk (whole or 2%) in the front.

Installation Checklist

The installation checklist (PN [6000-075](#)) must be completed and emailed to Concordia within 24 hours of installation.

techsupport@concordiacoffee.com

Removal Procedures

Prepare and package machine and components following the procedure described in the Concordia Shipping Kit (PN 2900-142).

1. Record the drink grand total on the service invoice.
 - a. **XT**:
 - b. **Xpress**: Press **PROGRAM** three times. The grand total should be displayed on the screen.
2. Record the machine serial number.
3. Clean the grinders.
4. Run the daily clean cycle (brew group and milk system clean processes).
5. Clean the refrigeration unit.
6. Clean the flavor delivery system.
7. Clean all interior and exterior surfaces (drain tray and grate, grounds bin, cup holder).
8. Drain and disconnect the water supply, and drain the water and steam tanks.
9. Prepare the machine and components for shipping.
10. If Demo Machine: remove, clean, and pack water filtration system.
11. Ensure the *User Guide* and cleaning cards are included with the unit.
12. Coil the power cord, water supply line, and drain hose and secure with a Ty-Wrap®.

Training the Customer

Concordia requires complete customer training at the time of installation. Cleaning instructions must be reviewed during each service call.

Customer Training Includes:

1. Using the *User Guide*.
2. Starting and resetting the machine.
3. Filling machine with beans and milk.
4. Pouring drinks and canceling drinks.
5. Restocking and changing flavor boxes.
6. Complete daily cleaning using the cleaning cards.
7. Accessing the machine serial number.
8. Accessing the software menu.
9. Troubleshooting tips.
10. How to contact Concordia Beverage Systems.

User Guide

Use and refer to the *User Guide* and cleaning cards when training the customer. The customer's understanding of all information contained in these materials is essential to their success in maintaining the machine.

Starting and Resetting the Machine

Use the User Guide to show the customer how to start and reset the machine.

Stocking the Machine with Beans and Milk

Demonstrate and have customer fill the bean hoppers with espresso beans. Explain the front hopper is typically filled with caffeinated beans and the rear hopper with decaffeinated beans. Demonstrate how to use the hopper stopper.

Demonstrate and have the customer place milk in the refrigeration unit. Explain the importance of ensuring there are no kinks in the milk pick-up tubes. Demonstrate the correct placement of the milk weight trays in the refrigeration unit.

Pouring Drinks and Cancelling Drinks

Demonstrate and have customer make each beverage: espresso, double espresso, latte, double latte, and cappuccino. Also explain how to cancel a drink selection.

Restocking and Changing Flavor Supply

For units featuring a bag-in-box flavor delivery system, demonstrate checking the level of flavor in a flavor box and have the customer change and connect a flavor box.

For units with an on-board flavor delivery system, demonstrate how to swap out the flavor bottles.

Cleaning

Explain all cleaning products and cleaning procedures. Use the cleaning cards when training customer on the cleaning and maintenance of the machine.

Demonstrate and have customer:

1. Complete daily cleaning procedures
2. Complete monthly cleaning procedures
3. Clean the refrigeration unit
4. Clean the drain grate and tray
5. Wipe down the exterior of machine
6. Empty and clean the grounds bin

Ordering Cleaning Supplies

The customer is required to purchase Concordia cleaning supplies and clean their machine daily to maintain their warranty or service agreement. Failure to order adequate cleaning product and to clean the machine can void the warranty.

To order additional cleaning supplies or flavors, the customer needs to visit the Middleby Advantage website at:

<http://www.middlebyadvantage.com>

The customer needs to go the **Quick Parts Search** drop-down menu (upper-right corner), select **Concordia Coffee**, and then search by part number or product name.

Additionally, Concordia offers auto-shipment of cleaning supplies. Upon the customer's request, cleaning kits will be automatically shipped to their location every 4-6 months, depending on customer usage. Contact parts@concordiacoffee.com to schedule this.

Serial Number

Show customer the location of serial number on machine. Advise the customer that they must provide the serial number when calling Concordia Customer Service.

Accessing the Software Menu

Demonstrate and have customer access the software menu.

Troubleshooting Tips

Demonstrate simple troubleshooting tips, including:

- Correct placement of the milk weight tray(s)
- Correct placement of the milk pick-up tubes
- Checking and cleaning the air filter
- Correct placement of flavor boxes

Contacting Concordia for Assistance

In the *User Guide*, review the location of the Concordia Beverage Systems customer service number (1-800-778-0990) and advise the customer to call Concordia with any questions about their new machine.

Section 3 :: Flavor System

1. The Flavor System
2. Peristaltic Pumps
3. Syrup Manifold
4. Cleaning the Flavor Delivery System
5. Priming the Flavor Delivery System

CONCORDIA

BEVERAGE SYSTEMS

The Flavor System Overview

The Espressojet® flavor delivery system delivers syrups and sauces into the cup by using peristaltic pumps to move the product from the flavor container, through the flavor tube, to a poppet valve, and then to the product delivery assembly. The amount of time the pump and valve operate is adjustable in the flavor settings in the software menu.

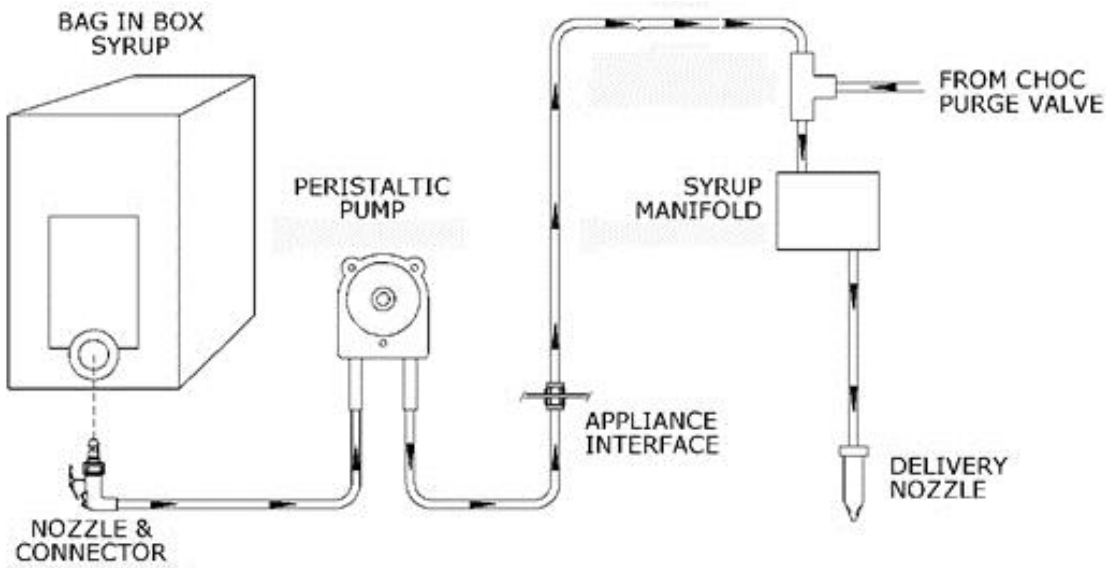
The output of the poppet valve feeds the flavor into the flow of steamed milk inside the syrup manifold, where the steam, milk and syrup/sauce are infused together and then delivered into the cup.

There are two types of flavor-delivery systems: Bag-In-Box (**BIB**) and Onboard Syrup (**OS**). Machines utilizing a BIB flavor-delivery system have flavor boxes stored on flavor trays, in a cabinet. Machines with an Onboard Syrup flavor-delivery system have a flavor enclosure on the side of the machine, and bottles of flavor are used.

Chocolate Sauce Delivery Path – Bag-In-Box

The tube for chocolate sauce is larger than the tubes for syrups, to accommodate the thicker consistency of the chocolate sauce.

Chocolate sauce flows from the flavor box, through the chocolate sauce tube and into the chocolate poppet valve. Once the flow of chocolate sauce ends, the chocolate poppet valve closes. Milk continues to flow into the syrup manifold, to mix the chocolate sauce with the milk and to flush residual chocolate from the syrup manifold.



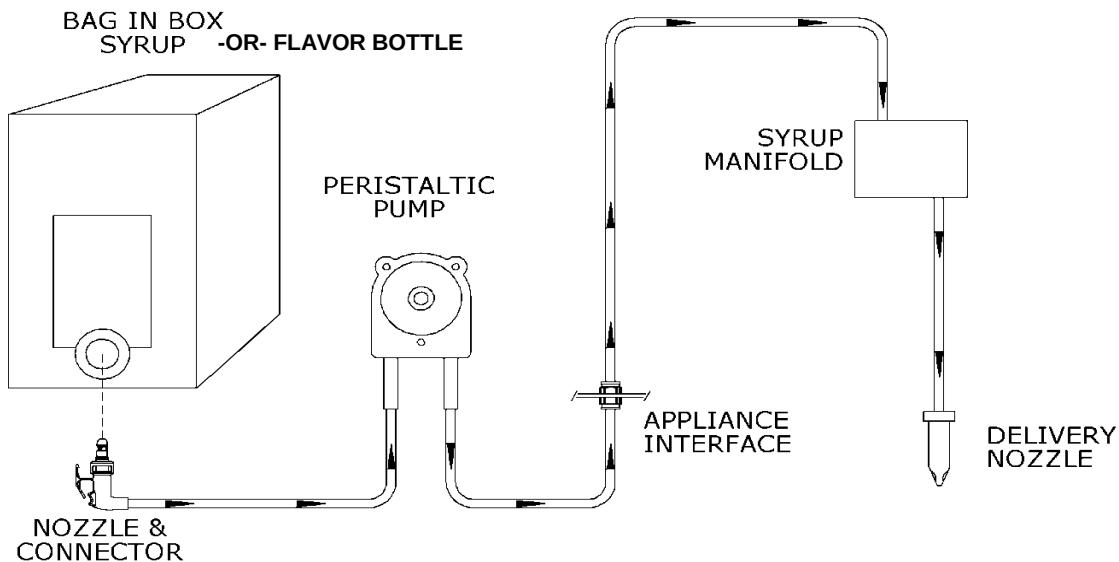
Before the poppet valve closes at the end of a chocolate-based drink pour, two pulses of hot water are flushed through the poppet valve, from a dedicated chocolate purge valve, to clear the poppet valve of chocolate sauce residue.

Syrup Delivery Path

The peristaltic pumps control the delivery of flavored syrup for a drink. The tubes for flavored syrups are smaller than the tube for chocolate sauce.

Flavored syrup flows from the flavor box, through the syrup tube and into the syrup manifold to mix with the milk flow. Once the flow of syrup ends, the poppet valve closes. Milk continues to flow into the syrup manifold, once the syrup poppet valve closes to rinse the syrup manifold of residual syrup and then steam is flushed through the syrup manifold, to clear the manifold of residual milk.

At the end of a syrup-based drink pour, a small amount of steam is flushed through the syrup manifold.



Flavor Tubes

There is a dedicated flavor tube for each flavor. Each flavor tube is color-coded for ease of use and to prevent cross-contamination of flavors. The same color-coding system exists for both types of flavor-delivery systems.

Each flavor tube begins at the flavor box, goes through the peristaltic pump assembly, and then to the syrup manifold. To reach the syrup manifold, the flavor tubes are routed through the back of the machine. The color coding of the flavor tubes is listed below.

Red	White	Yellow	Black	Blue	Green
Chai	Vanilla	Caramel	Chocolate	Sugar-Free Vanilla	Hazelnut

Bag to Pump Tubing					
Red	White	Yellow	Black	Blue	Green
2790-278	2790-275	2790-277	2790-276	2790-279	2790-280

Machine to Pump Tubing					
Red	White	Yellow	Black	Blue	Green
2790-204	2790-203	2790-202	2790-201	2790-206	2790-205

Flavor Storage Area – Bag-In-Box

Boxes of syrup can be laid flat on the floor of the flavor storage area and they can be stacked one atop another.

When placing a flavor box in the flavor storage area, verify the color on the box matches the color on the corresponding color-coded tube.

Flavor Storage Enclosure – On-Board

Bottles of syrup are stored in a compartment on the left side of the machine. The bottle of chocolate sauce does not have a warming mat, as a fan transfers heat from the machine to the flavor enclosure.

Chocolate Sauce

Chocolate sauce must be pre-warmed before use. The minimum temperature must be 85°F (29.4°C) for chocolate sauce flow properly. If the chocolate sauce is not flowing, and the flavor box is not empty, check the chocolate heater assembly. The chocolate sauce must be kept at the proper temperature.

At the time of installation, if the chocolate sauce is cold, it must be brought to a temperature of 85°F (29.4°C) or warmer. If the chocolate sauce is not warm enough to flow through the flavor tubes, you will not be able to finish installing the machine.

It is strongly recommended to always have to an extra box of chocolate sauce on the chocolate heater assembly, to ensure an uninterrupted supply of chocolate sauce is available.

Chocolate Heater Assembly

Bag-In-Box Flavor-Delivery Systems only

The chocolate heater assembly provides heat to the chocolate sauce box(es), to maintain a minimum temperature of 85°F (29.4°C) and to ensure a consistent rate of flow.

Connecting Flavor Tubing

Bag-In-Box Flavor-Delivery Systems only

1. Place the flavor box on the counter, with the connector facing up.
2. Open box at the “OPEN HERE” location, and extract the connector that the nozzle will be inserted into.
3. Remove protective foil from the connector.
4. Insert the nozzle into the connector, until it clicks.
5. Prime the flavor delivery system. See page 3-12 for instructions.

After verifying there are no air bubbles in the flavor tube, put the flavor box in the flavor storage area; verify the tubing is not pinched, kinked, or twisted.

Connecting Flavor Tubing

On-Board Flavor-Delivery Systems only

Simply place the flavor tube in the flavor bottle. Ensure the flavor tube is not kinked.

Changing the Flavor Pour Rate

1. Place a measuring cup under the product nozzle.
2. Press the service switch into the **CLEAN** position.
3. Enter the software menu and select the flavor to be adjusted.
 - a. **XT:** Navigate to **FLAVOR SETUP > REGULAR** or **LARGE FLAVORS**. Then touch the line next to the flavor, and adjust the pour time by seconds.
 - b. **Xpress:** Navigate to **FLAVOR TIMINGS**, select the desired flavor, and then adjust the pour time by seconds.
4. Exit the flavor category.
5. Pour a drink with the desired flavor, to ensure amount of flavor is to taste.

Software Sub-Category	Color Code	Corresponding Flavor
Small Flavor 1	Black	Chocolate
Large Flavor 1		
Small Flavor 2	Yellow	Caramel
Large Flavor 2		
Small Flavor 3	White	Vanilla
Large Flavor 3		
Small Flavor 4	Red	Chai
Large Flavor 4		
Small Flavor 5	Green	Hazelnut
Large Flavor 5		
Small Flavor 6	Blue	Sugar-Free Vanilla
Large Flavor 6		

Chocolate sauce flows at the rate of 0.28oz (8.31mL) per second.

Flavor syrups flow at the rate of 0.31oz (9.2mL) per second.

EXAMPLE: If the chocolate sauce timing is set for seven seconds, then 1.96oz (58.17mL) of sauce should be in the cup.

EXAMPLE: If the vanilla timing is set for ten seconds, 3.1oz (92mL) of flavor should be in the cup.

When the amount of flavor, or an additional flavor, is increased or decreased in a drink, the milk pour time must be adjusted to accommodate the change. To adjust the milk pour time, go to the following software menu:

- **XT:** Navigate to **FLAVOR SETUP**, then select **TALL MILK FLAVOR 1 ADJUST**, **TALL MILK FLAVOR 2 ADJUST**, **GRANDE MILK FLAVOR 1 ADJUST**, or **GRANDE MILK FLAVOR 2 ADJUST**.
- **Xpress:** Navigate to **MILK TIMINGS – HOT** or **MILK TIMINGS COLD**, then select **SMALL 1-FLAVOR ADJ**, **SMALL 2-FLAVOR ADJ**, **LARGE 1-FLAVOR ADJ**, or **LARGE 2-FLAVOR ADJ**.

Milk volume is reduced by 5 percent per shot of flavor. If one shot of flavor is added to a drink, the milk volume is adjusted to 95 percent of its normal setting, and 90 percent for two shots of flavor. When the amount of flavor is altered, adjust the milk volume in 1 percent increments.

NOTE: It is not possible to change the milk pour rate for a single flavor; making a change to one setting will affect the pour times for all drinks.

Flavor in Ounces	Flavor Pour Time in Seconds										
		1	2	3	4	5	6	7	8	9	10
	Chocolate Sauce	0.28	0.56	0.84	1.12	1.4	1.68	1.96	2.24	2.52	2.80
	All other flavors	0.31	0.62	0.93	1.24	1.55	1.86	2.17	2.48	2.79	3.10

Flavor in Milliliters	Flavor Pour Time in Seconds										
		1	2	3	4	5	6	7	8	9	10
	Chocolate Sauce	8.31	16.62	24.93	33.24	41.55	49.86	58.17	66.48	74.79	83.1
	All other flavors	9.2	18.4	27.6	36.8	46.0	55.2	64.4	73.6	82.8	92.0

Verifying Proper Syrup Flow

It is important to verify proper syrup flow. Properly flowing syrup will flow in an uninterrupted stream.

Possible causes of bad pours include:

- Flavor box exposed to temperature below 32°F (0°C)
- Flavor box exposed to temperature above 110°F (43°C)
- Loose nozzle and/or connector
- Damaged connector o-ring

Symptoms of flavor over-exposure to heat or cold:

- Flavor stream has cloudy appearance
- Flavor stream has appearance of crystallization
- Flavor dispensed has a weak flavor
- Burst peristaltic pump tubing

NOTE: There should never be any particles floating in the product. Particles generally indicate that the flavor tube is contaminated and that the flavor tube needs to be cleaned and primed.

NOTE: Syrups must not be used if they are, or have been, frozen. If the syrups have been at a temperature lower than 32°F (0°C), then they are unusable. Do NOT use any syrup that has been frozen.

Once the desired flavor button is pressed, the flavor will be dispensed for the time indicated.

NOTE: Do not use a flavor box if the box has been previously used.

Changing Flavor Boxes

Bag-In-Box Flavor-Delivery Systems only

Before replacing a flavor box, verify the bag is empty.

For chocolate syrup boxes, the bag inside the box may crease or partially collapse and block the flow of flavor. It may only be necessary to manipulate the bag for chocolate sauce to flow properly. For instructions on how to do this, please call Concordia Beverage Systems for assistance at 1-800-778-0990.

1. Place a cleaning rag under the nozzle, to catch any flavor drips.
2. Hold connector in place with one hand.
3. Grasp nozzle with other hand.
4. Using thumb, push on left side of nozzle handle to release the nozzle and then pull from connector.

NOTE: When removing an empty flavor box, DO NOT pull by grabbing the tubing or connector on a flavor box.



Once the nozzle is removed from the connector, remove the empty box from the flavor storage area. Do NOT place the nozzle on the floor.

NOTE: It is normal that there may still be a small amount of syrup or sauce in a bag when the bag is empty. A small amount of syrup or sauce may also drip when the nozzle is removed from the bag.

To replace syrup/sauce box

1. Place box on a flat surface, so that the “OPEN HERE” locations faces upward.
2. Open box at the “OPEN HERE” location, and extract the connector.
3. Remove protective seal from the connector.
4. Clean the nozzle thoroughly with a wet cloth, to remove any debris, provide lubrication, and remove syrup or sauce residue.
5. Hold connector firmly with hand.
6. Insert correct color-coded nozzle into connector firmly, until the nozzle handle clicks into place.

WARNING: Do not try to insert the nozzle without holding the connector, or the connector may be pushed into the box.

Changing Flavor Boxes

On-Board Flavor-Delivery Systems only

1. Place a cleaning rag on the shelf below the flavor bottle being changed, to catch any flavor drips.
2. Remove the empty bottle with a full bottle of flavor.
3. Insert the flavor tube inside the full bottle of flavor. Ensure the flavor tube is not kinked.

Peristaltic Pumps

Operating Voltage: 24Vdc
282rpm

A peristaltic pump has a roller assembly attached to a rotating armature that presses tubing against a rigid semicircular wall. The tube is filled with product and as the tube is compressed, the product is pushed through the tube, towards the syrup valve.

The amount of time the pump operates is adjustable in the software menu.

There is a dedicated peristaltic pump for each flavor, for a total of six pumps.

For **Bag-In Box** flavor delivery systems, the peristaltic pump assembly is located in the flavor storage cabinet.

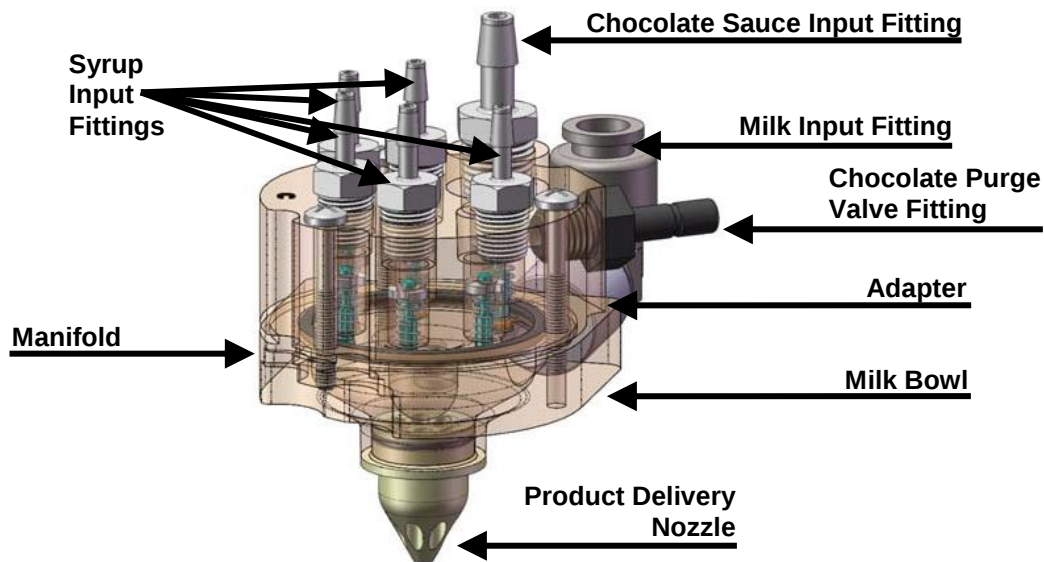
For **On-Board** flavor delivery systems, the peristaltic pump assembly is located in an enclosure on the back of the machine.

Syrup Manifold

The tubing from the peristaltic pumps connects to the syrup manifold, to deliver flavor syrup or chocolate sauce. The syrup manifold is located above the milk bowl and the drink output nozzles.

Poppet valves control the flavor flow and each flavor has a dedicated poppet valve. The pressure created when a flavor is chosen and dispensed opens the valve. The poppet valve is not electronically controlled. After the flavor is pumped into the syrup manifold, the pressure to the poppet valve equalizes and the poppet valve naturally closes.

When connecting the tubing to the manifold, ensure the color on the flavor tube matches the color for the connection point on the syrup manifold.



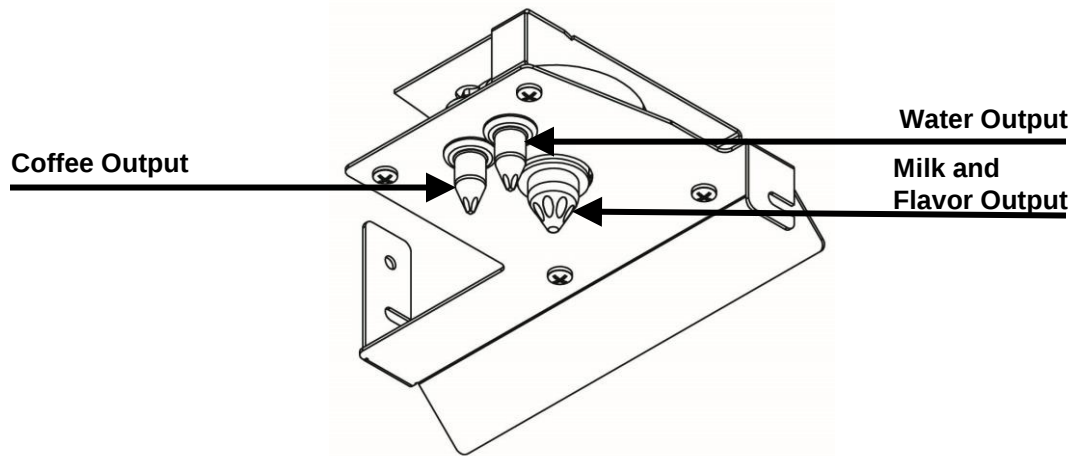
Chocolate Purge Valve

After a drink with chocolate sauce is poured, water is introduced to rinse the chocolate poppet valve, to prevent chocolate sauce build up on the poppet o-ring, which can cause it to leak.

Milk Bowl

The milk bowl is a mixing chamber where steamed milk and flavors are fully mixed before flowing through the product delivery nozzle and into the customer's cup.

Bottom View of Manifold



Removing the Syrup Manifold

Prior to removing and replacing a syrup manifold, perform a flavor system clean. It may be necessary to run more than one flavor system clean to ensure all tubes are clean and clear. See page 3-10 for instructions for cleaning the flavor system.

1. Remove the three screws attaching the syrup manifold to the milk bowl.
2. Disconnect the adapter.
3. Disconnect the elbow from the chocolate purge valve fitting.
4. Cut all flavor tubes just above the barbed fitting.

NOTE: Before cutting flavor tubes, note the placement of the colored tubes in the manifold, especially for the chocolate sauce tube. Doing this will ensure consistent placement of flavor tubing.

At this point, the syrup manifold can be removed.

Replacing the Syrup Manifold

1. Re-install all flavor tubing.

NOTE: Ensure the end of the tube goes completely over the barbed fitting.

2. Attach a Ty-Wrap to each tube, between the barbed end and the top of the hex fitting.
3. Re-install the elbow fitting.
4. Re-install the adapter.
5. Place the new syrup manifold assembly on top of the milk bowl.

NOTE: Ensure the o-ring between the milk bowl and syrup manifold is in the correct position. The o-ring should fit into the groove smoothly and should not be pinched.

6. Re-align the syrup manifold atop the milk bowl.
7. Re-attach the syrup manifold to the milk bowl, using the three screws.
8. Prime the syrup system. See the *Priming the Flavor Delivery System* topic on page 3-12 for instructions.

Cleaning the Flavor Delivery System

The flavor system must be cleaned under the following circumstances:

- Cross-contamination of a flavor tube
- During a Preventive Maintenance call
- Replacing the syrup manifold

The Flavor Delivery System Cleaning Process

Use rubber gloves, protective eye wear, and clothing protection while performing this process.

NOTE: There are two types of syrup-delivery systems: Bag-In-Box (**BIB**) and Onboard Syrup (**OS**).

- A. Press the service switch into the **CLEAN** position.
- B. Fill container(s) with hot water
 - a. **BIB Units:** Place a half-gallon container under the product outlet and press the **HOT WATER** button to fill the container with hot water
 - b. **OS Units:** Fill two 32-ounce containers with hot water from the unit by pressing the **HOT WATER** button.
- C. Mix Cleaner #1 with hot water.
 - a. **BIB Units:** Mix two packets of CLEANER #1 into the container of hot water. Stir until cleaner is dissolved.
 - b. **OS Units:** Mix one packet in each of the two 32-ounce container, stirring until cleaner is dissolved.
- D. Disconnect the flavor tubes.
 - a. **BIB Units** Disconnect the flavor tube nozzles from the flavor boxes and place them in the one-gallon container with CLEANER #1 cleaning solution.
 - b. **OS Units:** Remove all the bottles from the flavor storage area and place the first three tubes in the first 32-ounce container with the CLEANER #1 cleaning solution and the

second three tubes in the second 32-ounce container with the CLEANER #1 cleaning solution.

NOTE: To maintain a clean workspace, place a clean cloth under the flavor box connectors and/or bottles to catch any drips.

- E. Begin the syrup clean process.
 - a. **Xpress 6:** Navigate to **MISCELLANEOUS > RUN SYRUP CLEAN**. Press the upper right arrow button to start the syrup clean process.
 - b. **XT:** Navigate to **CLEANING > SYRUP CLEAN**.
NOTE: Ensure all flavor tube nozzles or bottle tubes remain completely submerged during the cleaning cycle.
- F. Once the cycle completes, place the flavor tube nozzles/tubes on a clean towel, and then empty and rinse the container or containers.
- G. Repeat steps C through G above, and use the CLEANER #2 packets.
- H. Repeat steps C through G above, except this time only use hot water. This is the final rinse cycle.
- I. Once the rinse cycle is complete, reconnect the flavor tube nozzles to the flavor box or bottle.

Priming the Flavor Delivery System

The flavor system must be primed under the following circumstances:

- Initial setup of flavor system
- When a new flavor is introduced
NOTE: The affected flavor tube **MUST** be cleaned before the new flavor is introduced.
- An air bubble needs to be purged from a tube
- When flavor tubing is replaced
- Replacing the syrup manifold

The Flavor Delivery System Priming Process (Automatic)

1. Press the service switch into the **CLEAN** position.
2. To start the syrup cleaning process, do the following:
 - a. **Xpress 6:** Navigate to **MISCELLANEOUS > RUN SYRUP CLEAN**.
 - b. **XT:** Navigate to **CLEANING SERVICE > SYRUP CLEANING**, and then follow the screen prompts.

NOTE: Ensure nozzles are connected to the appropriate flavor box connectors.

NOTE: To ensure tubes are properly primed, it may be necessary to run this procedure twice. Verify each syrup tube has a smooth flow of syrup at the dispensing nozzle.

NOTE: If flavor is not present at this point, run the syrup cleaning cycle again.

To ensure all the syrup tubes are primed and functioning properly, pour one drink per flavor.

Once all these steps are completed, stow all implements used, clean up the work area, and place the service switch in the **VEND** position.

Section 4 :: Software – Xpress XT

1. Software Overview
2. Service Switch
3. Software Quick Reference Table
4. CPU Board
5. Loading New Software to a Machine

CONCORDIA

BEVERAGE SYSTEMS

TECHNICAL SUPPORT

Software Overview

The Xpress XT user interface contains drink statistics, programming access, and diagnostic service information.

Software Menu Informational Screens

MACHINE SETTINGS

Changes the time and date settings, or the configuration settings for the following: milk system, grinders, buttons, country code, and the flavor system.

TEMPERATURE SETUP

Changes the temperatures for the refrigeration unit, alarms for the hot water and steam temperatures, and flavors.

ESPRESSO/COFFEE SETUP

Changes the dose, volume, and pre-treatment options for espresso drinks.

SHOT SELECT SETUP

Change the default number of shots per standard espresso drink.

HOT/COLD MILK SETUP

Changes the milk timings for all milk-based drinks.

FLAVOR SETUP

Changes the flavor dosage of drinks, in seconds of pour time. Change the amount of milk volume to a drink that has flavor added to it.

BEVERAGE PRICING

For machines with vending capability only.

Change the price of a vended drink.

SYSTEM TEST

Used for service diagnostic testing; each component of the machine can be tested independently.

RETRIEVE SETTINGS

Revert the machine settings to the pre-programmed system defaults.

CLEANING SERVICE

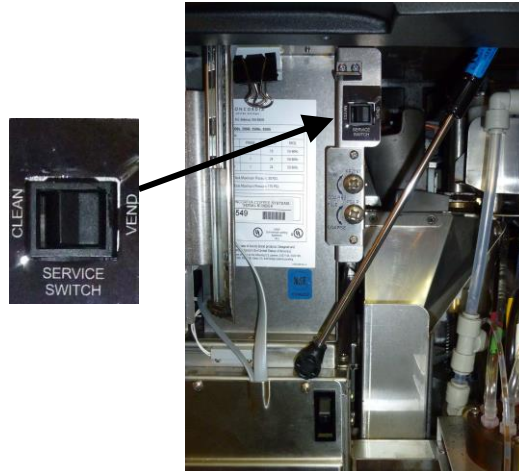
Initiate the daily or flavor system cleaning processes.

QUICK STATUS

Check the status of the various machine assemblies and functions.

Service Switch

Located behind the front panel, the service switch must be in the **CLEAN** position in order to access the programming menu.



With the service switch in the **CLEAN** position, the menu on the touch screen will change. Navigating the software menu or performing the daily clean cycle can be done.

With the service switch in the **VEND** position, drinks can be poured for customers. The service switch should be in the **VEND** position, unless accessing the software menu or performing the daily clean cycle are being done.

Navigating the Software Menu

To navigate through the software menu, use the touch screen.

Accessing a Sub-Category

From the main **SERVICE MENU** screen, tap the box of the sub-category that you wish to access.

When scrolling through the sub-categories of **SYSTEM TEST**, wait 1-2 seconds before tapping **PREV** or **NEXT**.

Some sub-categories have additional options when you tap the sub-category box.

Exiting the Menu System

To exit a sub-category, tap **CANCEL**. For sub-categories that appear in a white pop-up box, tap the screen outside of the white box.

To exit the menu system, tap **CANCEL** until the **SERVICE MENU** screen appears.

Software Quick Reference Table

The following table displays all minimum and maximum values and adjustable intervals for the software menu system.

NOTE: All machines are shipped with factory defaults. Default settings change periodically, so if you need to verify a specific default, please contact Concordia Beverage Systems for assistance at 1-800-778-0990.

NOTE: If the machine is configured for a non-US location, temperatures will be shown in Celsius and currency will be shown using either the euro or British pound symbol.

SERVICE MENU	
FLAVOR PRIME	Prime the flavor system.
DRINK STATS	View counts of drinks poured.
CLEANING SERVICE	Perform the milk and brew clean cycles.
SERVICE ACCESS	Provides access to the software menu.
PROMO ESPRESSO	Set the drinks.
PROMO MILK	Set the drinks.
MACHINE SETTINGS	
TIME/DATE CONFIGURATION	
CURRENT TIME SETUP	
CURRENT DATE SETUP	
START TIME SETUP	
AUTO RINSE INTERVAL	3/10/20/30/NEVER (minutes)
MILK SYSTEM CONFIGURATION	
SINGLE MILK AUTO	
SINGLE MILK	
DUAL MILK AUTO	
DUAL MILK	
GRINDER SETTINGS	
GRINDER CONFIG	Use Front Grinder, Use Both Grinders, Front Grinder Espresso/Back Grinder Coffee
BUTTONS CONFIGURATION	
COFFEE BUTTON CONFIG	Brewed coffee or Americano
COLD DRINK BUTTON CONFIG	Enable or disable
MISCELLANEOUS CONFIGURATION	
EXTRA ROOM	20/30/40/50/60/70/80/90 All mL
MACHINE ID	Create or change a custom ID for the machine.
VENDING	Enable or disable
COUNTRY CODE	US, UK, EU
LOW BEAN SENSOR	Enable or disable
FLAVOR SYSTEM	Enable or disable
HELP	
TERMINAL	
LOAD DEFAULT RECIPE	
CLEAR PM COUNT	

TEMPERATURE SETUP	
WATER SETPOINT	Slide control bar to adjust.
WATER HIGH ALARM	Slide control bar to adjust.
WATER LOW ALARM	Slide control bar to adjust.
REFRIGERATOR SETPOINT	Slide control bar to adjust.
REFRIGERATOR TEMP HIGH ALARM	Slide control bar to adjust.
STEAM TEMP (LATTE)	Slide control bar to adjust.
STEAM TEMP (CAPPUCCINO)	Slide control bar to adjust.
FLAVOR ADJUST TEMP	Slide control bar to adjust.
STEAM HIGH ALARM	Slide control bar to adjust.
STEAM LOW ALARM	Slide control bar to adjust.
ESP/COFFEE SETUP	
ESPRESSO REGULAR SETTINGS	
ESPRESSO SINGLE (DOSE)	Adjust by gram
ESPRESSO SINGLE (VOLUME)	Adjust by mL
ESPRESSO SINGLE (PRETREATMENT)	##
ESPRESSO DOUBLE (DOSE)	Adjust by gram
ESPRESSO DOUBLE (VOLUME)	Adjust by mL
ESPRESSO DOUBLE (PRETREATMENT)	##
ESPRESSO TRIPLE (DOSE)	Adjust by gram
ESPRESSO TRIPLE (VOLUME)	Adjust by mL
ESPRESSO TRIPLE (PRETREATMENT)	##
COFFEE REGULAR	
COFFEE REGULAR (DOSE)	Adjust by gram
COFFEE REGULAR (VOLUME)	Adjust by mL
AMERICANO REGULAR (VOLUME)	Adjust by mL
COFFEE LARGE (DOSE)	Adjust by gram
COFFEE LARGE (VOLUME)	Adjust by mL
AMERICANO LARGE (VOLUME)	Adjust by mL

ESPRESSO DECAF	
ESPRESSO SINGLE (DOSE)	Adjust by gram
ESPRESSO SINGLE (VOLUME)	Adjust by mL
ESPRESSO SINGLE (PRETREATMENT)	##
ESPRESSO DOUBLE (DOSE)	Adjust by gram
ESPRESSO DOUBLE (VOLUME)	Adjust by mL
ESPRESSO DOUBLE (PRETREATMENT)	##
ESPRESSO TRIPLE (DOSE)	Adjust by gram
ESPRESSO TRIPLE (VOLUME)	Adjust by mL
ESPRESSO TRIPLE (PRETREATMENT)	##
COFFEE DECAF	
COFFEE REGULAR (DOSE)	Adjust by gram
COFFEE REGULAR (VOLUME)	Adjust by mL
AMERICANO REGULAR (VOLUME)	Adjust by mL
COFFEE LARGE (DOSE)	Adjust by gram
COFFEE LARGE (VOLUME)	Adjust by mL
AMERICANO LARGE (VOLUME)	Adjust by mL
POUR DOUBLE ESPRESSO	
POUR DOUBLE DECAF	
SHOT SELECT SETUP	
ESPRESSO	Single/double/triple
LATTE	Single/double/triple
LARGE LATTE	Single/double/triple
CAPPUCCINO	Single/double/triple
LARGE CAPPUCCINO	Single/double/triple
MOCHA	Single/double/triple
LARGE MOCHA	Single/double/triple
AMERICANO	Single/double/triple
LARGE AMERICANO	Single/double/triple
HOT/COLD MILK SETUP	
HOT STEAMED	
LATTE	Adjust by ounce, mL, second
LARGE LATTE	Adjust by ounce, mL, second
CHAI LATTE	Adjust by ounce, mL, second
LARGE CHAI LATTE	Adjust by ounce, mL, second
MOCHA	Adjust by ounce, mL, second
LARGE MOCHA	Adjust by ounce, mL, second
STEAMED	Adjust by ounce, mL, second
LARGED STEAMED	Adjust by ounce, mL, second

CHOCOLATE	Adjust by ounce, mL, second
LARGE CHOCOLATE	Adjust by ounce, mL, second
SET ALL DRINKS	Adjust by ounce, mL, second

COLD STEAMED	
LATTE	Adjust by ounce, mL, second
LARGE LATTE	Adjust by ounce, mL, second
CHAI LATTE	Adjust by ounce, mL, second
LARGE CHAI LATTE	Adjust by ounce, mL, second
MOCHA	Adjust by ounce, mL, second
LARGE MOCHA	Adjust by ounce, mL, second
STEAMED	Adjust by ounce, mL, second
LARGED STEAMED	Adjust by ounce, mL, second
CHOCOLATE	Adjust by ounce, mL, second
LARGE CHOCOLATE	Adjust by ounce, mL, second
SET ALL DRINKS	Adjust by ounce, mL, second
HOT FOAMED	
CAPPUCCINO	Adjust by ounce, mL, second
LARGE CAPPUCCINO	Adjust by ounce, mL, second
SET ALL DRINKS	Adjust by ounce, mL, second
COLD FOAMED	
CAPPUCCINO	Adjust by ounce, mL, second
LARGE CAPPUCCINO	Adjust by ounce, mL, second
SET ALL DRINKS	Adjust by ounce, mL, second
FLAVOR SETUP	
REGULAR FLAVORS	
CHOCOLATE	Adjust by seconds
HOT CHOCOLATE	Adjust by seconds
CARAMEL	Adjust by seconds
VANILLA	Adjust by seconds
CHOCOLATE SYRUP	Adjust by seconds
PROMO FLAVOR 1	Adjust by seconds
PROMO FLAVOR 2	Adjust by seconds
MOCHA	Adjust by seconds
LARGE FLAVORS	
CHOCOLATE	Adjust by seconds
HOT CHOCOLATE	Adjust by seconds
CARAMEL	Adjust by seconds
VANILLA	Adjust by seconds
CHOCOLATE SYRUP	Adjust by seconds
PROMO FLAVOR 1	Adjust by seconds
PROMO FLAVOR 2	Adjust by seconds
MOCHA	Adjust by seconds
VOLUME REDUCTION	
TALL MILK FLAVOR 1 ADJUST	Adjust by percentage
TALL MILK FLAVOR 2 ADJUST	Adjust by percentage
GRANDE MILK FLAVOR 1 ADJUST	Adjust by percentage
GRANDE MILK FLAVOR 2 ADJUST	Adjust by percentage

SYSTEM TEST	
HOT WATER VALVE	
MILK PUMP/LATTE AIR GATE VALVE	
ALT MILK VALVE	
POST STEAM VALVE (LEFT)	
LATTE STEAM VALVE (CENTER)	
CAPPUCCINO STEAM VALVE (RIGHT)	
AIR VENT VALVES	
CAPPUCCINO GATE VALVE	
STEAM WATER PURGE VALVE	
STEAM FILL VALVE	
BREW WATER VALVE	
REFRIGERATOR CURRENT DRAW	
REFRIGERATOR POWER	
INSIDE REFRIGERATOR FAN	
FRONT PANEL POSITION SWITCH	
GROUND BIN POSITION SWITCH	
REFRIGERATOR DOOR POSITION SWITCH	
WATER HEATER	
STEAM HEATER	
WATER TANK LEVEL PROBE	
STEAM TANK LEVEL PROBE (UPPER)	
STEAM TANK SAFETY PROBE (LOWER)	
REAR COFFEE GRINDER	
FRONT COFFEE GRINDER	
WATER PUMP	
RIGHT PISTON DRIVE (UP DIRECTION)	
RIGHT PISTON DRIVE (DOWN DIRECTION)	
LEFT PISTON DRIVE (UP DIRECTION)	
LEFT PISTON DRIVE (DOWN DIRECTION)	
MILK LEVEL SENSOR	
EXTERNAL MILK PUMP REAR	

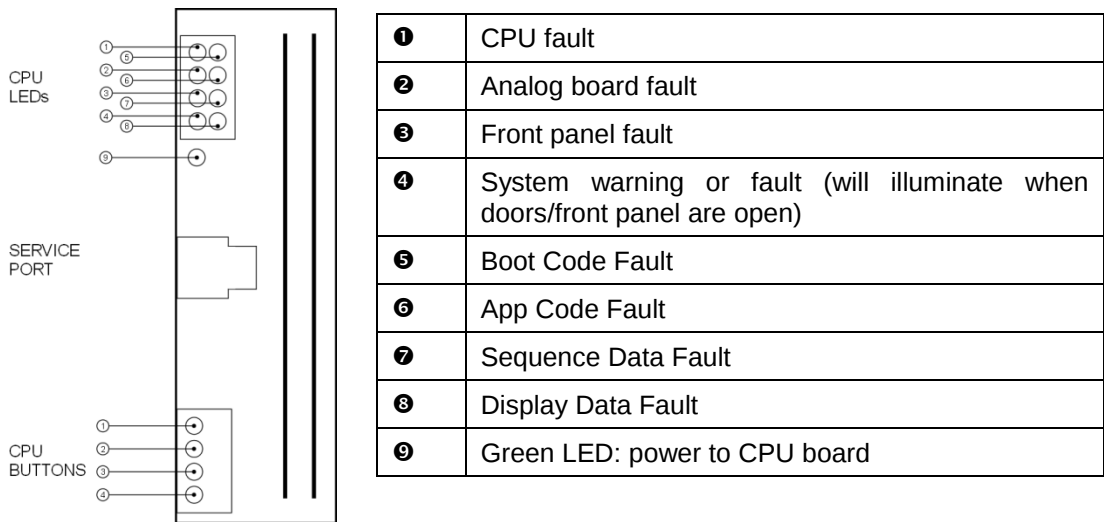
EXTERNAL MILK PUMP FRONT	
SYRUP PURGE VALVE	
FLAVOR PUMP TEST	
QUICK STATUS	Shows all warning and state-of-machine messaging.
SOFTWARE UPDATE	

CPU Board

The CPU board contains a series of LEDs and buttons that indicate the current state of the machine. When the green LED is illuminated, the CPU board is receiving power. When a red LED is illuminated, a particular subsystem is experiencing failure or it may be a warning condition. The display may reflect the fault.

Each CPU button has multiple functions based on the state of the machine when the button is pressed. The button may be held and the machine powered on or the button may be pressed after the machine is powered on.

NOTE: If ALL LEDs are lit, the software has been erased and the machine will not function.

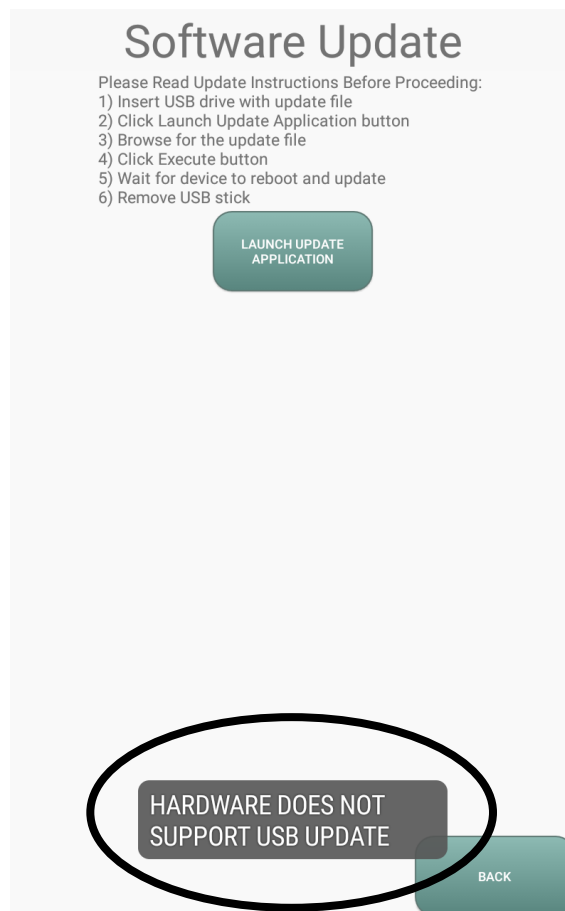


Loading New Software to a Machine

There are two possible display circuit cards that can be used for the touchscreen. This step outlines how to identify which hardware is installed.

1. Power up the machine.
2. Wait for touchscreen application to boot completely.
3. Turn the service switch to the **SERVICE** position.
4. Tap **SERVICE ACCESS**.
5. Enter the passcode **6812**.
6. Tap **SOFTWARE UPDATE**.
7. Tap **LAUNCH UPDATE**.

If the message **HARDWARE DOES NOT SUPPORT USB UPDATE** appears, as shown in Figure 4-1, then the machine contains a Dynazign



Display Card.

Figure 4-1: Dynazign card indication

If no message appears and another application appears to browse for a file, then the machine contains a Promate Display Card.

Required Programming Resources

Dynazign Display Card

Item	Description
Windows 7 computer	
Win32DiskImager	Windows application to write image files
USB-to-SD card reader	
4GB Micro SD card	
Xpress machine	DDC with display and touch hardware (could be standalone or in-machine)
SD card formatter	Windows application to reformat the SD card
Xpress Touchscreen Software Image (2820-053)	Image file containing the software

Promate Display Card

Item	Description
Xpress machine	DDC with display and touch hardware (could be standalone or in-machine)
USB flash drive	USB flash storage device with FAT32 formatting

Dynazign Programmer Setup

The following is the hardware/software setup to program the XTS onto a micro SD card. The Win32DiskImager program runs on the Windows computer. The micro SD card is inserted into the USB-to-SD adapter, which is connected to the Windows computer via USB.

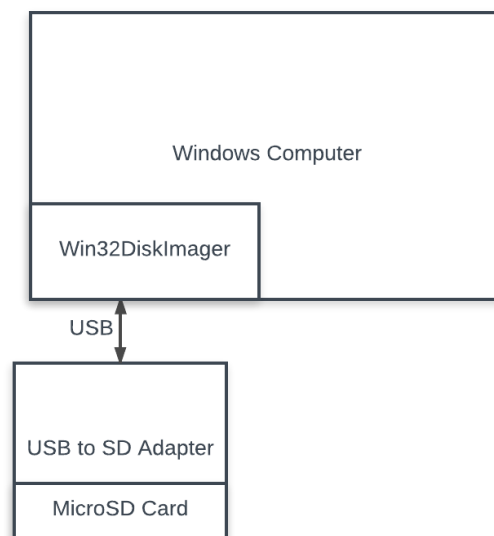


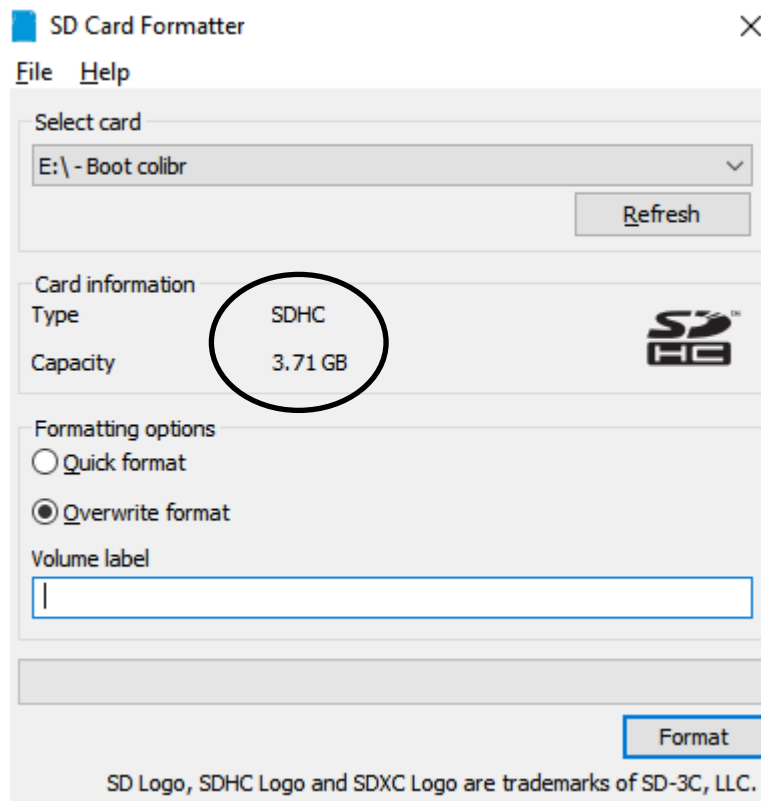
Figure 0-1: Programming Environment Setup

Installation Procedure

Dynazign SD Card Install

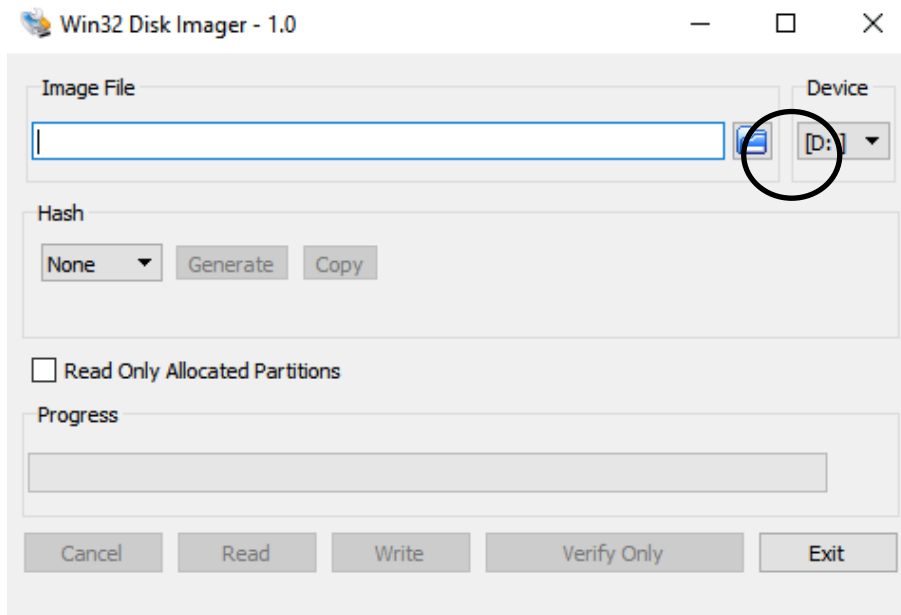
The Win32DiskImager and SD card formatter program must be installed on the Windows computer to proceed. The setup environment is outlined in Figure 0-1.

1. Connect the Micro SD card.
2. Connect the USB-to-SD adapter into the USB port of the Windows computer.
3. Open the SD card formatter application.
WARNING: THE FOLLOWING STEP CAN POTENTIALLY WIPE DATA FROM COMPUTER IF THE INCORRECT DRIVE IS CHOSEN.
4. Select the appropriate drive under the **SELECT CARD** option. The **TYPE** should read **SDHC** and the **CAPACITY** should be around 3.71 GB. Make a note of the chosen drive letter.

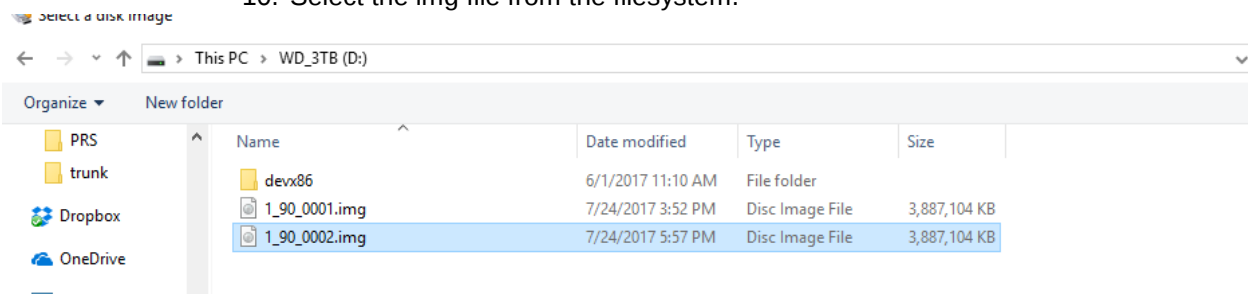


5. Check the **QUICK FORMAT** option.
6. Click **FORMAT** and wait for operation to complete. This will take approximately 20 seconds.
7. Close the SD card formatter application.
8. Open the Win32DiskImager application.

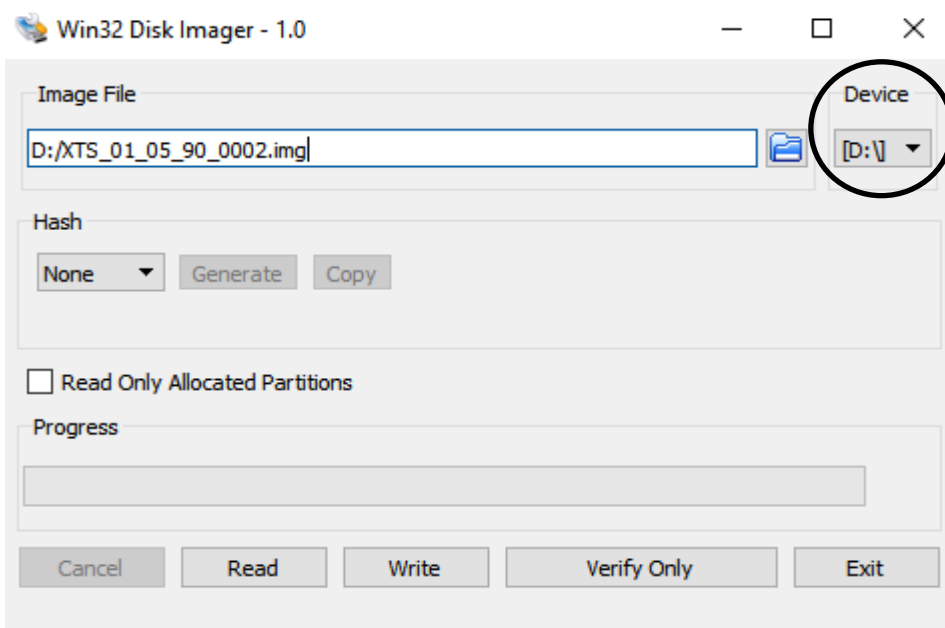
9. Click the **OPEN** icon.



10. Select the img file from the filesystem.



11. Select the same drive letter as step 5, under the drop-down menu for **DEVICE**.



12. Click **WRITE** and wait for operation to complete. This will take approximately five minutes.
13. Close the Win32DiskImager application.
14. Remove the USB-to-SD adapter from the Windows computer.
15. Remove the micro SD card from USB-to-SD adapter.
16. Power down the machine.
17. Open the back-panel access of the touchscreen door.
18. Remove the existing SD card from J4 of the DDC.
19. Insert the newly programmed micro SD card into J4 of the DDC.
20. Move on to the Verification Procedure.

Promate USB Install

1. Place the zip file onto the root directory of the USB flash drive.
2. Open the back-door panel access of the Xpress machine door.
3. Plug the USB flash drive into the USB cable connected to Promate Display Card.
4. Power up the Xpress machine.
5. Wait for the touchscreen unit to completely boot up.
6. Switch the service switch to the **SERVICE** position.
7. Tap **SERVICE ACCESS**.
8. Enter the passcode **6812**.
9. Tap **SOFTWARE UPDATE**.
10. Tap **BROWSE**.
11. Navigate to the root directory of the USB drive, and select the zip file.
12. Tap **EXECUTE**.
13. Wait for machine to restart and completely boot up to XTS again.
14. Remove the USB flash drive.
15. Move on to the Verification Procedure.

Verification Procedure

The following details how to verify the XTS is correctly written onto the micro SD card. The touchscreen assembly is required to proceed.

1. Power up the touchscreen assembly.
2. Verify the XTS boots up.
3. Verify the XTS version string corresponds to given file name.



Software Settings

Refer to the document “XTS Software Settings” for instructions on configuring software functionalities.

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Section 5 :: Software – Xpress

1. Software Overview
2. Service Switch
3. Software Quick Reference Table
4. CPU Board
5. Loading New Software to a Machine

CONCORDIA

BEVERAGE SYSTEMS

Software Overview

The Xpress user interface contains drink statistics, programming access, and diagnostic service information.

Software Menu Informational Screens

GRAND TOTAL

Displays the total number of drinks dispensed.

PART NUMBER

Displays the Concordia part number of the installed software.

Categories

TOTAL DRINK COUNTS

Displays the total number of drinks poured. This number is reset only when a new CPU board is installed.

DAILY DRINK COUNTS

Displays the total number of drinks poured, by drink type, since the last brew clean.

TIME & DATE

Contains settings for the internal clock, the automatic start, and the automatic rinse features.

CHK TEMPERATURES

Displays water, refrigerator, steam, and steam wand temperatures.

SET TEMPERATURES

Changes steam, water, and refrigerator temperature settings.

COFFEE PWDR DOSE

Changes the amount of ground coffee delivered into the brew chamber. Allows the grind adjustment indicators to be turned on or off.

COFFEE PWDR PRE

Changes coffee pre-treatment settings.

SHOT SELECT

Determines the default number of shots per espresso-based drink.

WATER VOLUME

Changes the water volume for the espresso extraction and brewed coffee.

MILK TIMINGS – HOT

Changes the milk timings for all hot milk-based drinks. This menu will also display the time of the last milk clean.

MILK TIMINGS - COLD

Changes the milk timings for all cold milk-based drinks.

FLAVOR TIMINGS

Changes the flavor dosage of drinks, in seconds of pour time.

DRINK PRICES

For machines with vending capability only.

Allows prices to be set for each type of vended drink.

SPECIAL FEATURES

This category allows configuration of the following features: vending, grounds bin, grinder configuration, espresso button assignment, hot water button, extra room volume, cold drink button, milk system configuration, country, and low beans sensing.

MISCELLANEOUS

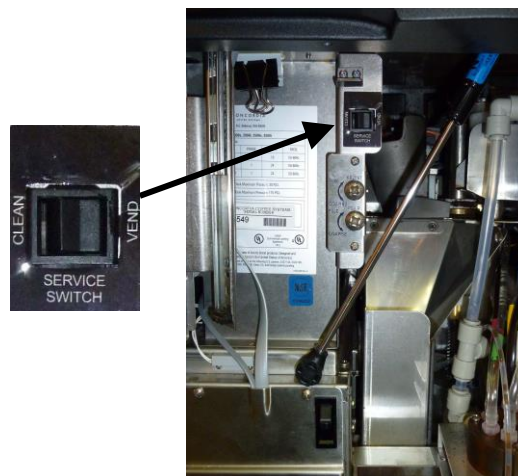
Displays the current software component version and machine ID, loads defaults, resets the Preventive Maintenance (PM) counter, and enables features such as run syrup clean.

TEST ROUTINES

Used for service diagnostic testing; each component of the machine can be tested independently.

Service Switch

Located behind the front panel, the service switch must be in the **CLEAN** position in order to access the programming menu.



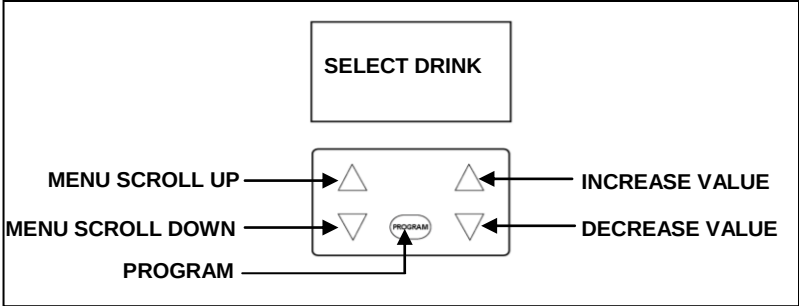
Once the service switch is in the **CLEAN** position, press the **PROGRAM** button three times. The display will change from **SELECT DRINK** to **SELECT CATEGORY**.

When not cleaning the machine or accessing the software menu, ensure the service switch is in the **VEND** position.

Navigating the Software Menu

To navigate through the software menu, use the unmarked buttons below the display.

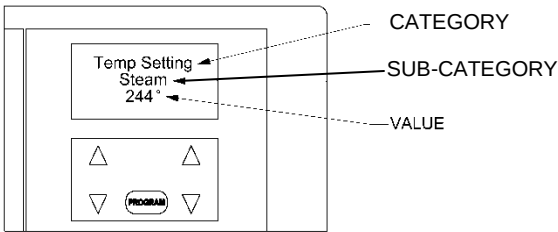
Touch Pad Menu Navigation



PROGRAMMING MENU NAVIGATION	MENU SCROLL UP	Scroll up in category and sub-category menus.
	MENU SCROLL DOWN	Scroll down in category and sub-category menus.
	PROGRAM BUTTON	Press once for GRAND TOTAL drink statistics. Press twice to view the software part number. Press once to exit a software category. Press three times to access SELECT CATEGORY .
	INCREASE VALUE	Increase value in sub-category.
	DECREASE VALUE	Decrease value in sub-category.

Accessing a Sub-Category

Press the rectangular **PROGRAM** button once when the desired category appears on the display, to access the sub-categories. The category will appear on the top line; the sub-category will appear on the middle line; and the value will appear on the lower line of the display.



EXAMPLE

- Viewing the **LAST MILK CLEAN** date and time
1. Press the **PROGRAM** button three times. **SELECT CATEGORY** will appear in the display.

2. Navigate to **MILK TIMINGS - HOT > LAST MILK CLEAN**.

Exiting the Menu System

To exit a sub-category, press the **PROGRAM** button once.

To exit the menu system, press the **CANCEL** button.

Accessing the Grand Total Drink Count

1. Press the **PROGRAM** button once
2. The drink **GRAND TOTAL** appears in the display

The display will automatically return to **SELECT DRINK** after a few seconds

The grand total drink statistic is only reset through the installation of a new CPU.

NOTE: Grand total drink statistics must be recorded at the start and end of each service call.

Accessing Total Drink Count Statistics

1. Press the **PROGRAM** button three times (press slowly, you will hear a beep after each press).
2. **SELECT CATEGORY** will appear in the display.
3. Scroll to the sub-category **TOTAL DRINK COUNTS**.
4. Press the **PROGRAM** button.
5. Press the **SCROLL UP** arrow to scroll through the drink count statistics.

To Exit:

1. Press the **PROGRAM** button once.
2. Press any drink button.

Accessing Daily Drink Count Statistics

Daily statistics are reset after a brew clean cycle is completed.

1. Press the **PROGRAM** button three times (press slowly, you will hear a beep after each press).
2. **SELECT CATEGORY** will appear in the display.
3. Scroll to the sub-category **DAILY DRINK COUNTS**.
4. Press the **PROGRAM** button.
5. Press the **SCROLL UP** arrow to scroll through the statistics.
6. Press the **PROGRAM** button once to exit.

To Exit:

1. Press the **PROGRAM** button once.
2. Press any drink button.

Software Quick Reference Table

The following table displays all minimum and maximum values and adjustable intervals for the software menu system.

NOTE: All machines are shipped with factory defaults. Default settings change periodically, so if you need to verify a specific default, please contact Concordia Beverage Systems for assistance at 1-800-778-0990.

NOTE: If the machine is configured for a non-US location, temperatures will be shown in Celsius and currency will be shown using either the euro or British pound symbol.

GRAND TOTAL	DISPLAY TOTAL DRINK COUNT - PRESS PROGRAM BUTTON ONCE -		
TOTAL DRINK COUNTS	Min	Max	Adjustable by
Grand Total	DISPLAY GRAND TOTAL DRINK STATISTICS BY DRINK		
Vended Total			
Small Latte			
Large Latte			
Small Cappuccino			
Large Cappuccino			
Small Mocha			
Large Mocha			
Small Americano			
Large Americano			
Sm Brewed Coffee			
Lg Brewed Coffee			
Espresso			
Small Hot Choc			
Large Hot Choc			
Small Chai Latte			
Large Chai Latte			
Sm Steamed Milk			
Lg Steamed Milk			
Flavor Total			
Drink Counting	OFF	ON	ON, OFF
DAILY DRINK COUNTS			
Daily Total	DISPLAY DAILY DRINK STATISTICS DAILY STATISTICS ARE RESET WHEN A BREW CLEAN IS RUN		
Latte			
Cappuccino			
Mocha			
Americano			
Brewed Coffee			
Hot Chocolate			
Chai Latte			
Steamed Milk			
Espresso			

TIME & DATE	Adjustable by		
Shutdown Machine	N/A		
Autostart	OFF, M-F, M-SUN		
Start Time: Hours	HOURS		
Start Time: Minutes	MINUTES		
Clock Set: Hours	HOURS		
Clock Set: Minutes	MINUTES		
Clock Set: Day	DAYS		
Clock Set: Month	MONTHS		
Clock Set: Year	YEARS		
Auto Rinse Time	OFF/ON, MINUTES		
CHK TEMPERATURES	Notes		
Steam	DISPLAY CURRENT STEAM TEMP		
Brew Water	DISPLAY CURRENT BREW WATER TEMP		
Refrigerator	DISPLAY CURRENT REFRIGERATOR TEMP		
Steam Wand	DISPLAY CURRENT STEAM WAND TEMP		
SET TEMPERATURES	Min	Max	Adjustable by
Steamed Milk	238°F	244°F	1.°F
Foamed Milk	235°F	239°F	1.°F
Flavor Offset	0°F	3°F	1.°F
Steam HI	260°F	265°F	1.°F
Steam LO	230°F	234°F	1.°F
Brew Water	185°F	200°F	1.°F
Brew Water HI	205°F	210°F	1.°F
Brew Water LO	160°F	180°F	1.°F
Refrigerator	36°F	40°F	1.°F
Refr HI	42°F	60°F	1.°F
Refr LO	30°F	35°F	1.°F
COFFEE PWDR DOSE	Min	Max	Adjustable by
Single Reg	6.5	23.0	0.5 gram
Double Reg	6.5	23.0	0.5 gram
Triple Reg	6.5	23.0	0.5 gram
Small Coffee Reg	6.5	23.0	0.5 gram
Large Coffee Reg	6.5	23.0	0.5 gram
Single Decaf	6.5	23.0	0.5 gram
Double Decaf	6.5	23.0	0.5 gram
Triple Decaf	6.5	23.0	0.5 gram
Small Coffee Decaf	6.5	23.0	0.5 gram
Large Coffee Dec	6.5	23.0	0.5 gram
Grind Adj Arrows	OFF	ON	ON, OFF

COFFEE PWDR PRE	Min	Max	Adjustable by
Single Reg	0	7	1
Double Reg	0	7	1
Triple Reg	0	7	1
Single Decaf	0	7	1
Double Decaf	0	7	1
Triple Decaf	0	7	1
Brw Cof Volume Sm	0%	20%	1%
Brw Cof Delay Sm	0	10	1 second
Brw Cof Volume Lg	0%	20%	1%
Brw Cof Delay Lg	0	10	1 second
SHOT SELECT	Min	Max	Adjustable by
Small Latte	Single	Triple	1 shot
Large Latte	Single	Triple	1 shot
Small Cappuccino	Single	Triple	1 shot
Large Cappuccino	Single	Triple	1 shot
Small Mocha	Single	Triple	1 shot
Large Mocha	Single	Triple	1 shot
Small Americano	Single	Triple	1 shot
Large Americano	Single	Triple	1 shot
Espresso	Single	Triple	1 shot
WATER VOLUME	Min	Max	Adjustable by
Single	20	150	5 mL
Double	20	150	5 mL
Triple	20	150	5 mL
Small Americano	50	800	5 mL
Large Americano	50	800	5 mL
Sm Brewed Coffee	5	500	5 mL
Lg Brewed Coffee	5	500	5 mL
Hot Water Time	5.0	60.0	1.0 second

MILK TIMINGS – HOT	Min	Max	Adjustable by
Sgl Sm Latte	4	60	0.5 second
Sgl Lg Latte	4	60	0.5 second
Dbl Sm Latte	4	60	0.5 second
Dbl Lg Latte	4	60	0.5 second
Tpl Sm Latte	4	60	0.5 second
Tpl Lg Latte	4	60	0.5 second
Sgl Sm Mocha	4	60	0.5 second
Sgl Lg Mocha	4	60	0.5 second
Dbl Sm Mocha	4	60	0.5 second
Dbl Lg Mocha	4	60	0.5 second
Triple Small Mocha	4	60	0.5 second
Triple Large Mocha	4	60	0.5 second
Sgl Sm Cappuccino	4	60	0.5 second
Sgl Lg Cappuccino	4	60	0.5 second
Dbl Sm Cappuccino	4	60	0.5 second
Dbl Lg Cappuccino	4	60	0.5 second
Tpl Sm Cappuccino	4	60	0.5 second
Tpl Lg Cappuccino	4	60	0.5 second
Small Chai Latte	4	60	0.5 second
Large Chai Latte	4	60	0.5 second
Small Hot Choc	4	60	0.5 second
Large Hot Choc	4	60	0.5 second
Sm Steamed Milk	4	60	0.5 second
Lg Steamed Milk	4	60	0.5 second
Last Milk Clean	N/A	N/A	TIME OF LAST MILK CLEAN
MILK TIMINGS – COLD	Min	Max	Adjustable by
Sgl Sm Latte	4	60	0.5 second
Sgl Lg Latte	4	60	0.5 second
Dbl Sm Latte	4	60	0.5 second
Dbl Lg Latte	4	60	0.5 second
Tpl Sm Latte	4	60	0.5 second
Tpl Lg Latte	4	60	0.5 second
Sgl Sm Mocha	4	60	0.5 second
Sgl Lg Mocha	4	60	0.5 second
Dbl Sm Mocha	4	60	0.5 second
Dbl Lg Mocha	4	60	0.5 second
Triple Small Mocha	4	60	0.5 second
Triple Large Mocha	4	60	0.5 second
Sgl Sm Cappuccino	4	60	0.5 second
Sgl Lg Cappuccino	4	60	0.5 second
Dbl Sm Cappuccino	4	60	0.5 second
Dbl Lg Cappuccino	4	60	0.5 second
Tpl Sm Cappuccino	4	60	0.5 second
Tpl Lg Cappuccino	4	60	0.5 second
Small Chai Latte	4	60	0.5 second
Large Chai Latte	4	60	0.5 second
Small Hot Choc	4	60	0.5 second
Large Hot Choc	4	60	0.5 second
Sm Steamed Milk	4	60	0.5 second
Lg Steamed Milk	4	60	0.5 second

FLAVOR TIMINGS	Min	Max	Adjustable by
Small Flavor 1	1	30	1 second
Large Flavor 1	1	30	1 second
Small Flavor 2	1	30	1 second
Large Flavor 2	1	30	1 second
Small Flavor 3	1	30	1 second
Large Flavor 3	1	30	1 second
Small Flavor 5	1	30	1 second
Large Flavor 5	1	30	1 second
Small Flavor 6	1	30	1 second
Large Flavor 6	1	30	1 second
Small Mocha	1	30	1 second
Large Mocha	1	30	1 second
Small Hot Choc	1	30	1 second
Large Hot Choc	1	30	1 second
Small Chai Latte	1	30	1 second
Large Chai Latte	1	30	1 second
Small 1-Flavor Adj	75%	100%	1%
Small 2-Flavor Adj	75%	100%	1%
Large 1-Flavor Adj	75%	100%	1%
Large 2-Flavor Adj	75%	100%	1%
DRINK PRICES	Min	Max	Adjustable by
Small Latte	0	99.00	0.05
Large Latte	0	99.00	0.05
Small Cappuccino	0	99.00	0.05
Large Cappuccino	0	99.00	0.05
Small Mocha	0	99.00	0.05
Large Mocha	0	99.00	0.05
Small Americano	0	99.00	0.05
Large Americano	0	99.00	0.05
Sm Brewed Coffee	0	99.00	0.05
Lg Brewed Coffee	0	99.00	0.05
Small Hot Choc	0	99.00	0.05
Large Hot Choc	0	99.00	0.05
Small Chai Latte	0	99.00	0.05
Large Chai Latte	0	99.00	0.05
Sm Steamed Milk	0	99.00	0.05
Lg Steamed Milk	0	99.00	0.05
Espresso	0	99.00	0.05
Extra Shot	0	99.00	0.05
Small Syrup	0	99.00	0.05
Large Syrup	0	99.00	0.05

SPECIAL FEATURES	Min	Max	Adjustable By
Vending	DISABLED	ENABLED	ENABLED, DISABLED
Grounds Bin	DISABLED	ENABLED	ENABLED, DISABLED
Grinder Config	DISABLED	ENABLED	REGULAR, DECAF
Coffee Button	DISABLED	ENABLED	ENABLED, DISABLED
Hot Water Button	DISABLED	ENABLED	Press and hold to activate
Extra Room Volume	N/A	N/A	
Cold Drink Button	DISABLED	ENABLED	ENABLED, DISABLED
Milk System	N/A	N/A	Dual Milk Auto Sel, Single Milk, Single Milk Auto Sel
Country	N/A	N/A	US, UK, Euro
Low Beans Sense	DISABLED	ENABLED	ENABLED, DISABLED
MISCELLANEOUS	Min	Max	Notes
Boot Code Version	N/A	N/A	Show Boot Code software version
App Code Version	N/A	N/A	Show Application Code software version
Seq Data Version	N/A	N/A	Show Sequence Data software version
Disp Data Version	N/A	N/A	Show Display Data software version
Machine ID	N/A	N/A	Show Machine Identifier
Load Defaults	N/A	N/A	Press CPU button #2 to load defaults
Reset PM	N/A	N/A	Press CPU button #2 to reset PM counter
Run Syrup Clean	N/A	N/A	Press right arrow to run syrup clean
STEAM WAND	Min	Max	Adjustable By
System	N/A	N/A	ENABLED/DISABLED
Kid Steamed	100°F	145°F	1°F
Normal Steamed	145°F	165°F	1°F
Extra Hot Steamed	165°F	180°F	1°F
Kid Frothed	100°F	145°F	1°F
Normal Frothed	165°F	165°F	1°F
Extra Hot Frothed	180°F	180°F	1°F
Froth Air Start	35%	85%	1%

TEST ROUTINES	Min	Max	Notes
Hot Water Valve			
Milk Pump/Air Gate			
Alt Milk Valve			
Left Steam Valve			
Center Steam Valve			
Right Steam Valve			
Air Vent Valves			
Cap Air Gate			
Water Purge Valve			
Steam Fill Valve			
Brew Water Valve			
Refr Current			DISPLAY CURRENT THROUGH REFER CHIPS MIN 10.0amps – MAX 14.5amps
Refr Power			
Inside Refr Fan			
Front Panel			STATE: OPEN, CLOSED
Grounds Bin			STATE: IN, OUT
Refrigerator Doors			Hi-Cap Configuration Only
5: A/D Reference			DISPLAY A/D CONVERTER CHANNELS REFERENCE PRESS RIGHT ARROW TO SCROLL THROUGH CHANNEL LIST
Water Heater			
Steam Heater			
Water Level			
Upper Steam Probe			STATE: WET, DRY
Lower Steam Probe			STATE: WET, DRY
Rear Grinder			
Front Grinder			
Water Pump			
Left/Right Drives			MOVES BOTH PISTONS SIMULTANEOUSLY
Right Drive			
Left Drive			
Milk Level			
Ext Milk Pump Rear			HI-CAP CONFIGURATION ONLY
Ext Milk Pump Frnt			HI-CAP CONFIGURATION ONLY
Syrup Purge Valve			
Syrup			
Wand Steam Valve			
Wand Vac Valve			
Wand Air Pump			WAND VACUUM VALVE

Calibration

Concordia refers to calibration as the process of adjusting the Xpress to extract the perfect drink.

The Xpress may require adjustment to perform within specific extraction parameters using the customer's choice of beans and settings. For instructions on how to load a customer-specific drink recipe, see the *Updating Software for Customers with Customer Drink Recipes* topic on page 5-30.

Calibration must be completed in the following order:

1. Pump Pressure (Plumbing System Section)
2. Coffee Powder Dose (Coffee System Section)
3. Espresso Grind (Coffee System Section)
4. Water Volume (Plumbing System Section)
5. Milk Volume (Milk System and Refrigeration Unit Section)
6. Flavor Dose (Flavor System Section)

If a customer changes the type of beans they are using, their machine must be re-calibrated.

Calibration must be done with fresh espresso beans. Stale beans are dry and brittle and will grind more quickly than fresh beans. Ground espresso beans should be a bit finer than granulated sugar.

The items in the table below must be calibrated in the order listed.

Step 1: Verify Default Settings

Water Volume	Single 30mL
	Double 65mL
	Triple 105mL
Water Temperature	198°F (92°C)
Coffee Powder Dose	Single: 10 grams
	Double: 15 grams
	Triple: 18 grams
Grind	Ground coffee particles should be a bit finer than granulated sugar

Step 2: Visually Verify During Double Espresso Extraction

Water Pressure	135-140psi
----------------	------------

Calibrating Pump Pressure

This procedure must be done while extracting a double espresso.

- During the extraction, watch the water pressure gauge and ensure it maintains 135-140psi.
- If the pressure gauge does not read 135-140psi, adjust the adjustment screw, located on the water pump assembly, in quarter-turn increments (clockwise to increase setting, counterclockwise to decrease setting); the pump must be set at 135-140psi for proper brewing.
- Once 135-140psi is achieved, pour a double espresso to verify the setting.

Calibrating Espresso

If a customer-specific recipe exists, verify the recipe settings are programmed into the machine. Make any necessary adjustments and/or program them as necessary.

Configuring the Bean Hoppers

The Xpress defaults to dispensing regular and decaffeinated espresso drinks. The bean hoppers only need to be configured if the machine will not be serving regular and decaffeinated espresso drinks.

However, the Xpress can also be programmed to serve both espresso drinks and coffee drink.

1. Place coffee beans in the rear grinder.
2. Calibrate the bean grind to customer specification.
3. Navigate to **SPECIAL FEATURES > GRIND CONFIG**, and then select **ESPRESSO & COFFEE**.

To configure the Xpress to deliver only regular beans, navigate to **SPECIAL FEATURES > GRIND CONFIG**, and then select **REGULAR ONLY**.

NOTE: The **REGULAR ONLY** option will only draw beans from the front hopper. To protect the rear bean grinder, leave the empty rear bean hopper atop the machine. This will prevent debris from entering and damaging the bean grinder and brew group.

Espresso Extraction and Temperature Parameters

Unless otherwise specified, the calibration goal for the Concordia Xpress is to extract a double espresso in 18-23 seconds. The extraction time for a single shot of espresso is based on the extraction time for a double.

Once the machine has been calibrated, measure extraction time and drink temperatures to verify they are within operating parameters.

Espresso extraction times are defined as the time between the pump turning on and the pump turning off.

Espresso Extraction Time

Single Espresso Shot	15-18 seconds
Double Espresso Shot	18-23 seconds
Triple Espresso Shot	23-30 seconds

1. Press **ESPRESSO**, and then press **START** to pour a single shot of espresso.
2. Press **ESPRESSO**, press **DOUBLE SHOT**, and then press **START** to pour a double shot of espresso.

Drink Temperatures

To ensure temperature readings are accurate, temperatures for milk-based drinks must be taken in the center of a paper cup, and espresso must be taken while the espresso is being poured.

Espresso	175° - 195°F (79° – 91°C)
Latte	160° - 170°F (71° – 77°C)
Mocha	150° - 165°F (66° – 74°C)
Chai	150° - 165°F (66° – 74°C)
Hot Chocolate	150° - 165°F (66° – 74°C)
Cappuccino	150° - 160°F (66° – 71°C)
Steamed Milk	160° - 170°F (71° – 77°C)

Verifying Espresso Extraction

1. Confirm water pump pressure is 135-140psi.
2. Verify coffee dose and water volume are set to customer expectations.
3. Pour double espresso, and record the time between the pump turning on and off.
4. Adjust grind as needed (turn grinder adjustment assembly clockwise to increase extraction time and counterclockwise to decrease extraction time).

NOTE: When making adjustments to the grind, it is important to pour three double espressos before assessing the change on the fourth double espresso pour. Four double espressos must be poured to ensure the change of grind is fully implemented.

Calibrating Milk Timings

The milk volumes must be set for each specific beverage. Milk volume is set in seconds of pour time.

Each **MILK TIMINGS – HOT/COLD** sub-category must be individually set. See the *Software Quick Reference Table* on page 4-6 for a detailed listing of settings for all hot and cold milk timings. It may be necessary to change the milk timing due to a specific customer recipe (e.g. different cup sizes).

The default drink settings are 12oz/360mL and 16oz/480mL.

To verify milk timing:

1. Place cleaning or measuring cup under product outlet.
2. Pour a single, small latte.
3. When pour is complete, verify drink level (in ounces/milliliters) in cup.

If the drink volume is correct after step three, then the milk timing for that specific drink does not need to be adjusted.

If the drink volume is too low/high, navigate to **MILK TIMINGS** and adjust the setting for that drink, as needed. Re-test the timing and drink level until it is correct, before testing other drinks.

EXAMPLE: If the drink volume is short by 1oz (30mL), increase the milk pour time by .5 second. Re-test the drink until proper volume is achieved.

Repeat this procedure for all sizes, and shot quantity, of lattes, mochas, chai latte, hot chocolate, and steamed milk.

NOTE: It is expected that there will be approximately 3/8"/10mm extra space at the top of the cup, when the drink is finished pouring. Finished drinks should not be filled to the rim of the cup.

Calibrating Brewed Coffee

The water volumes for brewed coffee are preset prior to machine delivery.

To calculate a brewed coffee volume into mL, multiply:

[the cup size in fluid ounces] x 30

One fluid ounce equals approximately 30mL.

For example, calculating the brewed coffee timing for a 12oz cup would be:

$$12 \times 30 = 360\text{mL}$$

The default settings for brewed coffee are 12oz/355mL and 16oz/475mL.

Calibrating Flavor Timings

Since customers can choose to change the flavors used for drinks, the headings in the **FLAVOR TIMINGS** software sub-category are generic. For customers without custom flavor choices, the table below displays the software generic headings and the corresponding default flavors.

Flavor 1	Flavor 2	Flavor 3	Flavor 4	Flavor 5	Flavor 6
Chocolate	Caramel	Vanilla	Chai	Hazelnut	Sugar-Free Vanilla

For more information on how to calibrate flavor timings, please see the *Changing the Flavor Pour Rate* topic in *Section 9: Flavor System*.

Espresso Extraction Pre-Treatment Options

During pre-treatment, a small amount of water is infused into the ground beans. The grounds are then allowed to soak momentarily before the brewing process begins. This pre-infusion process enhances the quality of the espresso shot.

The Xpress has eight pre-treatment options, each varying in the specific pressure used to pack the ground beans, the amount of water used to pre-infuse, and the delay between the pre-infusion and the brewing. The pre-treatment settings for single, double, and triple shots are individually adjustable. The software category for adjustment is **COFFEE PWDR PRE**. For directions on accessing the software menus, see page 4-4.

- The default setting for a single espresso shot is pre-treatment option #4 (regular and decaf).
- The default setting for a double espresso shot is pre-treatment option #1 (regular and decaf).
- The default setting for a triple espresso shot is pre-treatment option #0 (regular and decaf).

Pre-Treatment Options

PRE-TREATMENT #0

- Pressure on the ground coffee is slightly reduced.
- No pre-infusion water added.
- No delay before brewing.

PRE-TREATMENT #1

- The ground coffee is lightly packed, and then the pressure is slightly reduced.
- Espresso grounds are pre-infused for 1/10 of a second.
- A half-second delay before brewing.

PRE-TREATMENT #2

- Pressure on the ground coffee is slightly increased.
- Espresso grounds are pre-infused for 2/10 of a second.
- A two-second delay before brewing.

PRE-TREATMENT #3

- Pressure on the ground coffee is slightly increased.
- Espresso grounds are pre-infused for 3/10 of a second.
- A two-second delay before brewing.

PRE-TREATMENT #4

- Pressure on the ground coffee is slightly increased.
- Espresso grounds are pre-infused for 3/10 of a second.
- A three-second delay before brewing.

PRE-TREATMENT #5

- Espresso grounds are pre-infused for 4/10 of a second.
- A three-second delay before brewing.
- Pressure on the ground coffee is slightly increased.

PRE-TREATMENT #6

- Espresso grounds are pre-infused for 4/10 of a second.
- A three-second delay before brewing.
- Pressure on the ground coffee is slightly increased.

PRE-TREATMENT #7

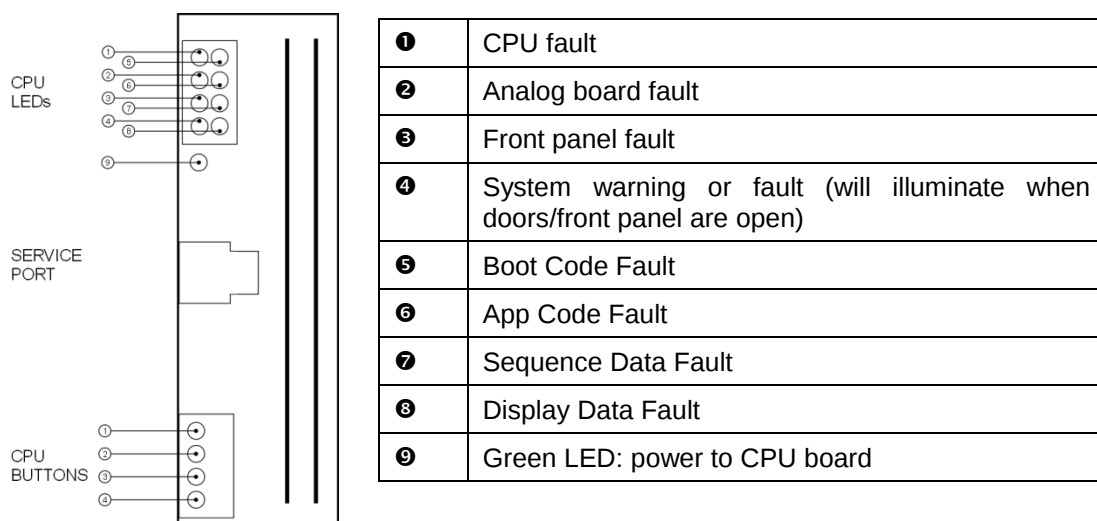
- Espresso grounds are pre-infused for 4/10 of a second.
- A four-second delay before brewing.
- Pressure on the ground coffee is slightly increased.

CPU Board

The CPU board contains a series of LEDs and buttons that indicate the current state of the machine. When the green LED is illuminated, the CPU board is receiving power. When a red LED is illuminated, a particular subsystem is experiencing failure or it may be a warning condition. The display may reflect the fault.

Each CPU button has multiple functions based on the state of the machine when the button is pressed. The button may be held and the machine powered on or the button may be pressed after the machine is powered on.

NOTE: If ALL LEDs are lit, the software has been erased and the machine will not function.



CPU BUTTON	POWER OFF Hold BUTTON & Turn on Power Supply and release button	POWER ON READY TO MAKE DRINK Press CPU button	ADDITIONAL FUNCTIONS
Top ➊	Load factory defaults	No current function	N/A
➋	Front panel keyboard test mode	Two Functions: 1. Load factory defaults 2. Reset PM counter	1. Press button once to enter READY MODE , regardless of message for group, water, or steam temperature. 2. Must be in the MISCELLANEOUS category to access.
➌	Inhibit auto-run of brew group initialization	Initialize brew group	At times, inhibiting brew group initialization is required.
Bottom ➍	Load software (Press button 1 at the same time)	Reserved (no current function)	Reserved. Factory use only.

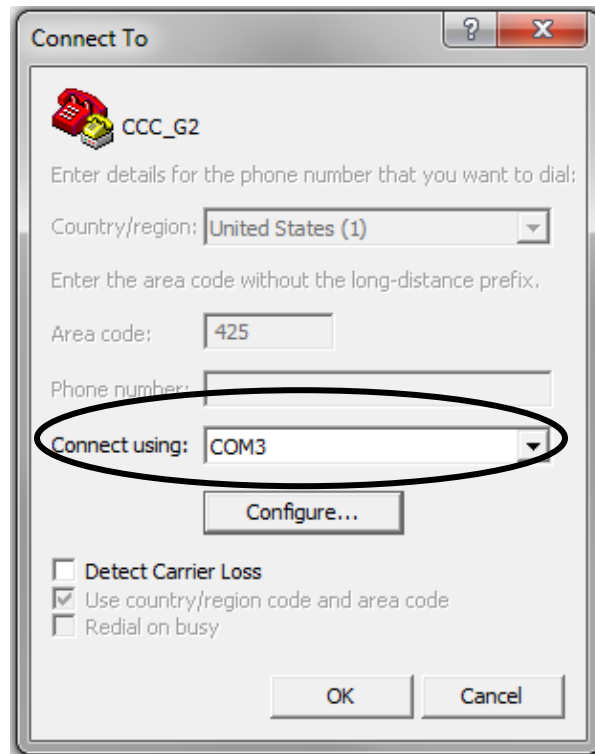
Loading New Software to a Machine

Required Equipment

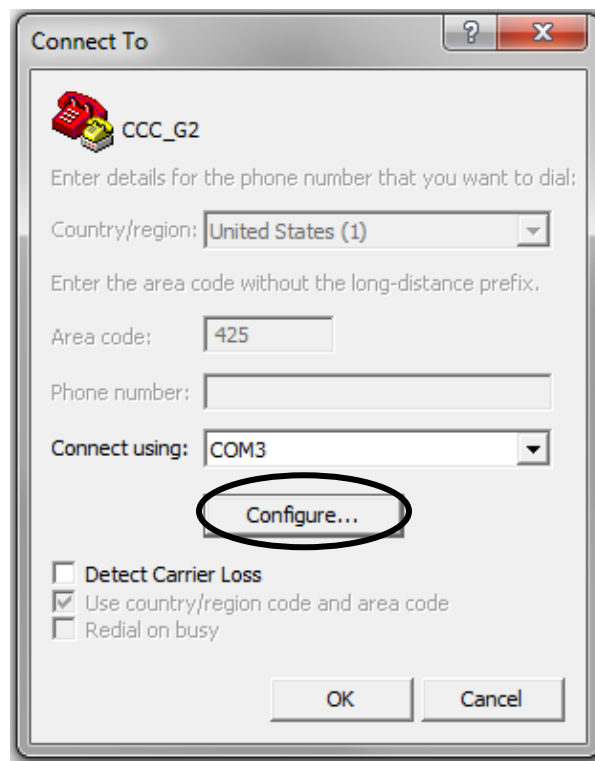
- Service port communications cable (9 pin D-sub to 6 pin modular Concordia PN [4300-013](#)).
- An IBM compatible PC with communications software installed that supports ANSI Terminal Emulation and the XMODEM file transfer protocol.
- If using a laptop with Windows Vista or Windows 7, please visit <http://www.hilgraeve.com/hyperterminal-trial/> to purchase HyperTerminal.

Configuring HyperTerminal

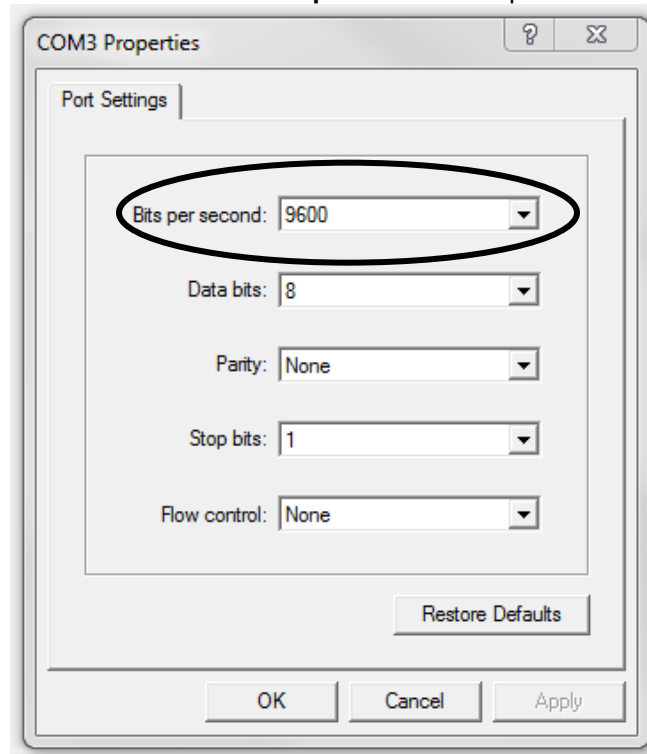
1. Open HyperTerminal.
2. Go to **File > New Connection**.
3. Select the COM port assigned to the serial adapter being used from the **Connect using:** drop-down menu.



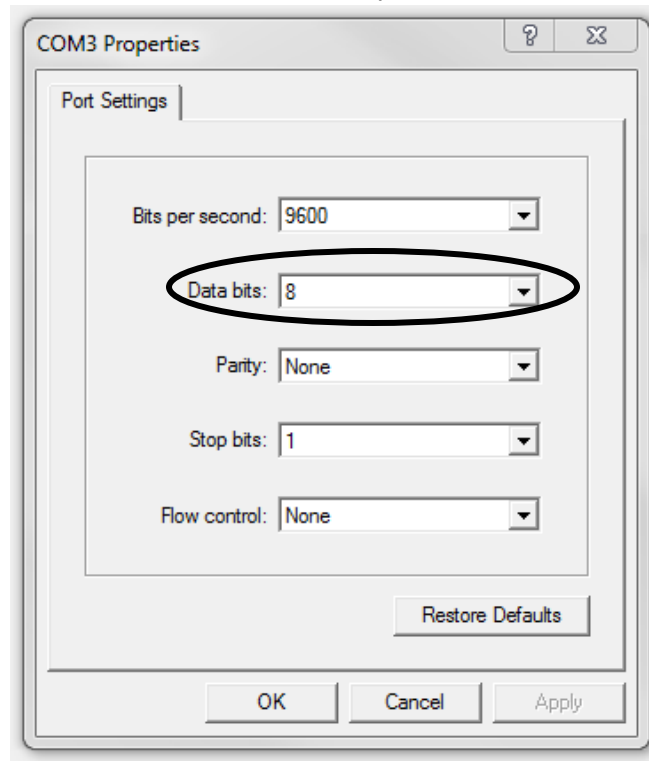
- Click **Configure**.



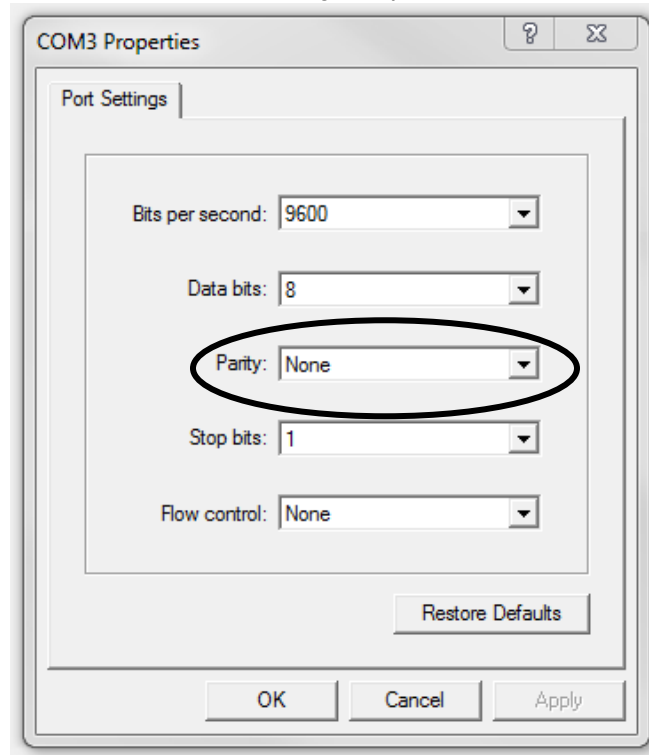
- Select **9600** from the **Bits per second:** drop-down menu



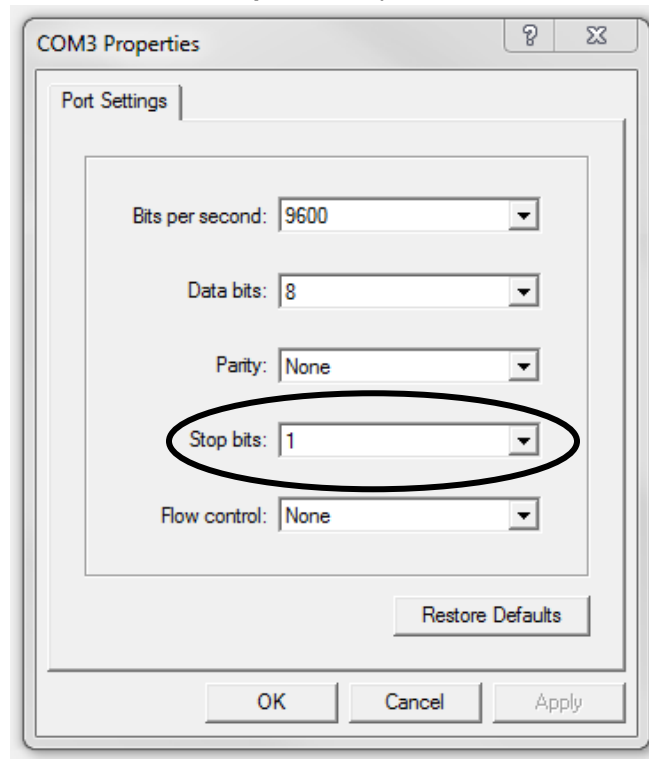
6. Select **8** from the **Data bits**: drop-down menu.



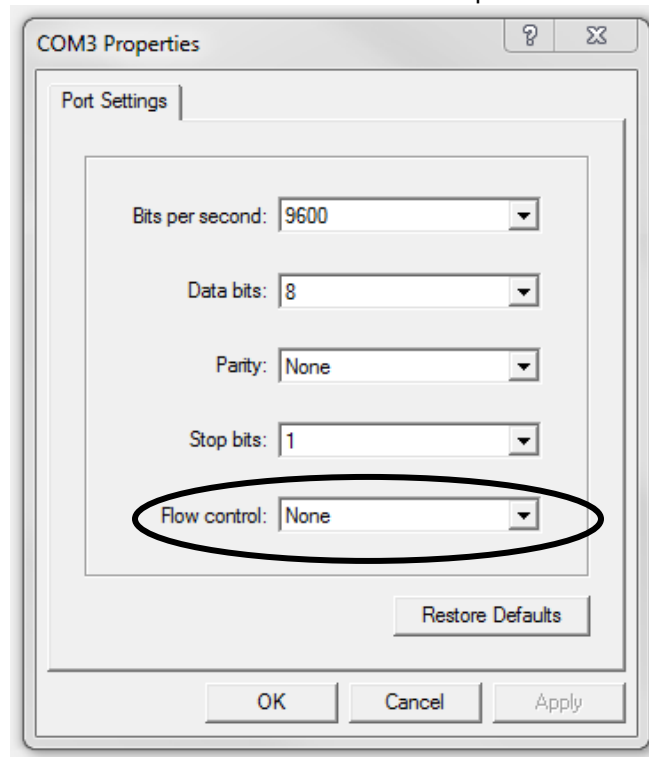
7. Select **None** from the **Parity**: drop-down menu.



8. Select **1** from the **Stop bits**: drop-down menu.

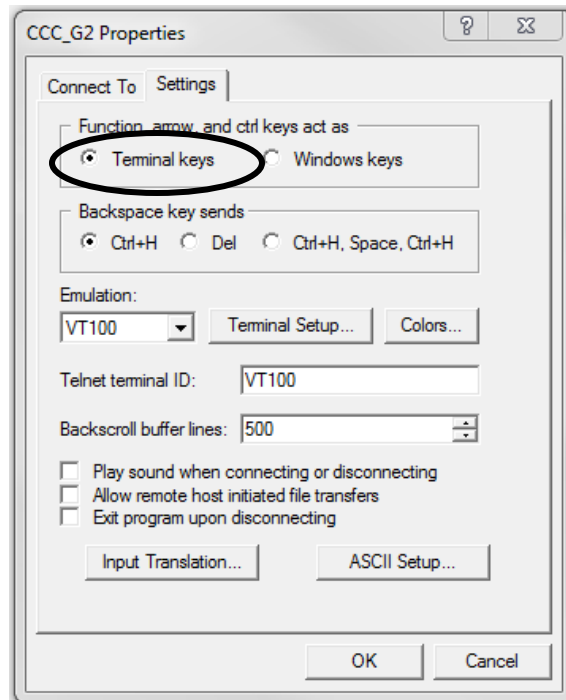


9. Select **None** from the **Flow control**: drop-down menu.

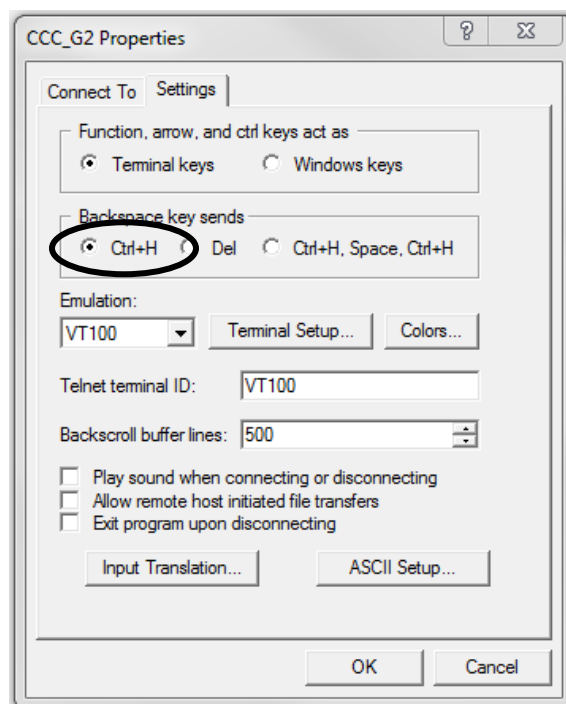


10. Click **OK**.

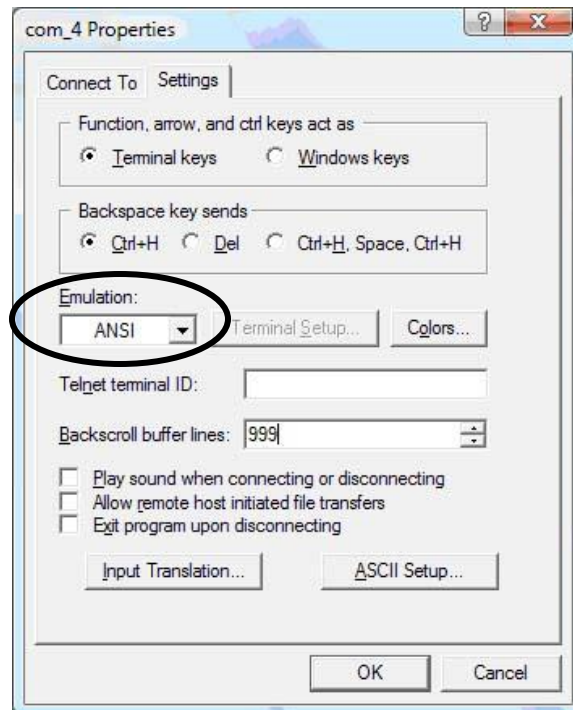
11. Select **Terminal keys** under the **Function, arrow and ctrl keys act as** section.



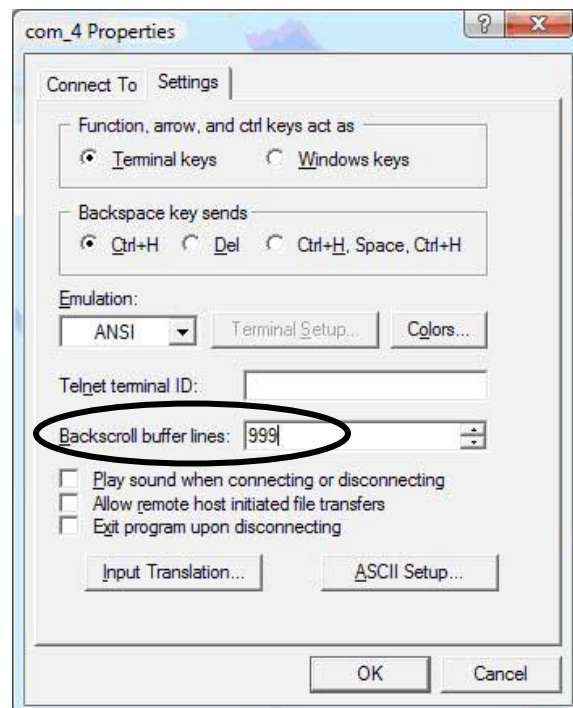
12. Select **Ctrl + H** under the **Backspace key sends** section.



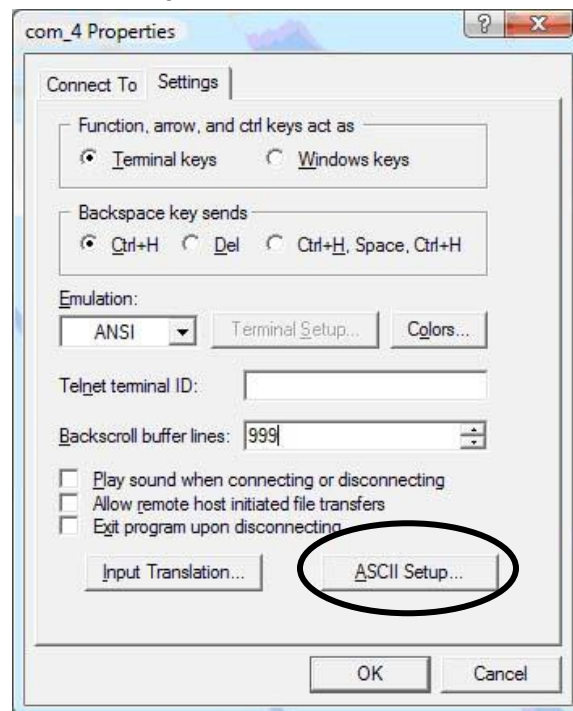
13. Select **ANSI** from the **Emulation:** drop-down menu.



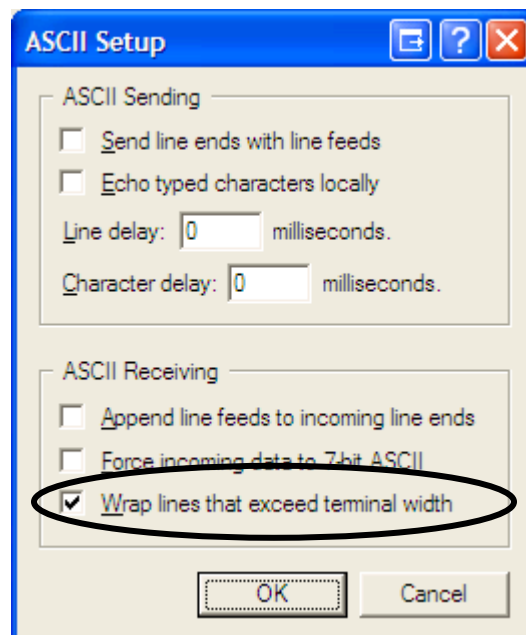
14. Enter **999** as the **Backscroll buffer lines** value.



15. Click **ASCII Setup....**



16. Check the box for **Wrap lines that exceed terminal width.**



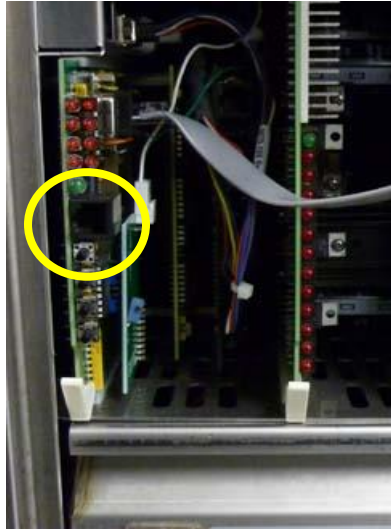
17. Click **OK**.

18. Click **OK**.

Connecting a Laptop to a Machine

NOTE: This process is for customers using the default drink recipes. For customers with custom drink recipes, see the *Updating Software for Customers with Customer Drink Recipes* topic on page 4-30.

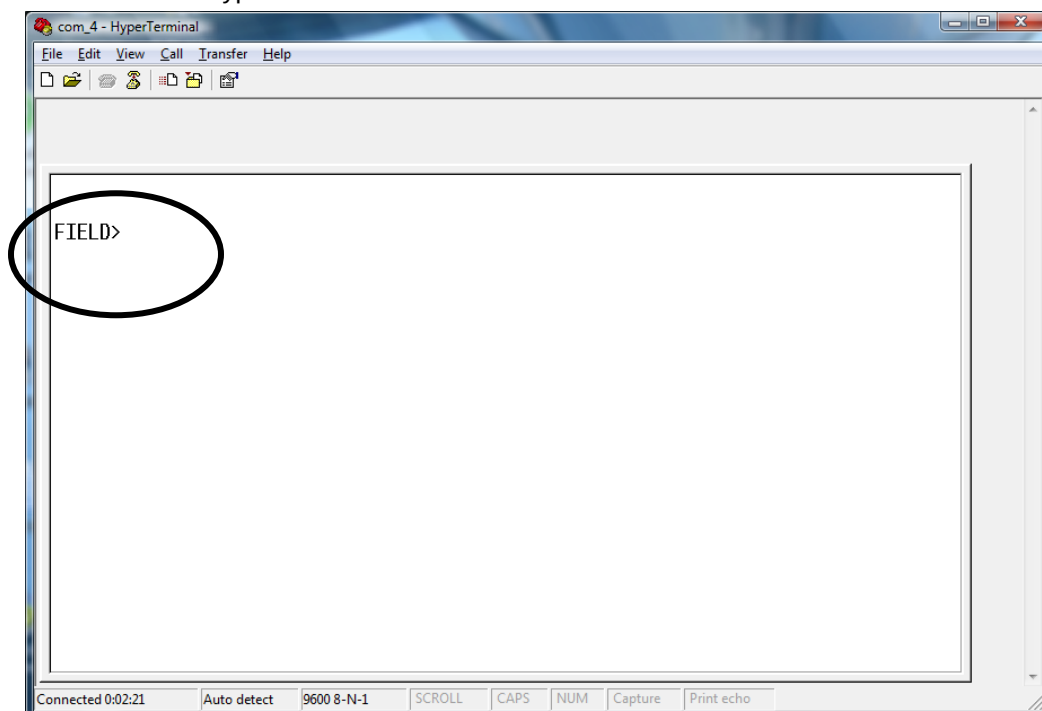
1. Connect the phone line end of the communications cable into the service port on the far left board in the CPU area of the machine.



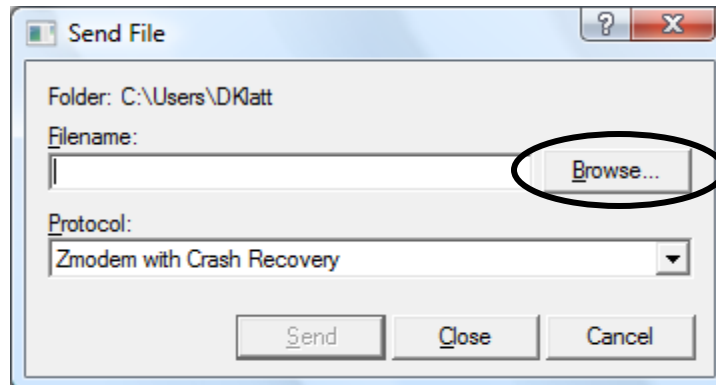
2. Connect the 9-pin D-Sub end of the communications cable into the RS232 serial port of the laptop.

NOTE: Newer laptops may require a USB-to-RS232 adapter.

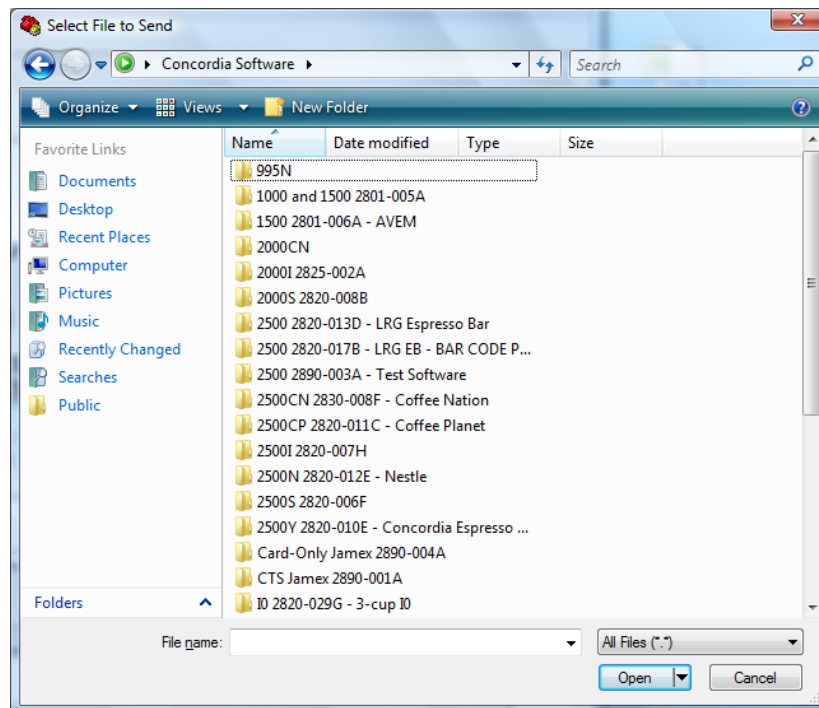
3. Press the service switch into the **SERVICE** position.
4. Open HyperTerminal and press **Enter**.
5. If the connection was successfully made, **Field** will appear in the HyperTerminal window.



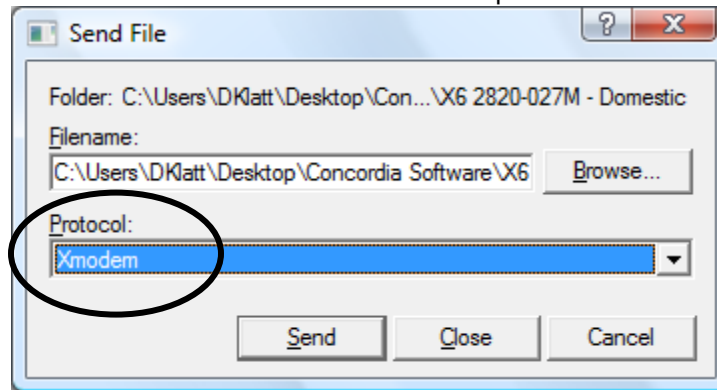
8. Select **Browse**, and then navigate to the directory with the file to download.



9. Highlight the file to download, and then click **Open**.



10. Select **Xmodem** from the **Protocol** drop-down menu.



11. Click **Send**.

NOTE: This process takes about eight minutes for an **app** file; five seconds for a **seq** file; and forty seconds for a **disp** file.

Updating Software for Customers with Custom Drink Recipes

Follow steps 1-5 of *Connecting the Laptop to the Machine* on page 4-26.

1. Type **LOAD CMD** at the **FIELD>** prompt.
2. Press **Enter**.
3. Select **Browse**, and then navigate to the directory with the file to download.
4. Select the recipe file to download.

NOTE: A recipe file has a Concordia part number as part of the file name. Ensure you select the correct part number for the customer.

5. Click **Send**.

NOTE: This process can take up to 30 seconds.

6. Check the event log afterwards to ensure the recipe file was read without errors. To access the event log, type the command "L" (without the quotes) at the **FIELD>** prompt.

NOTE: If errors are listed in the event log, call Concordia for assistance at 1-800-778-0990.

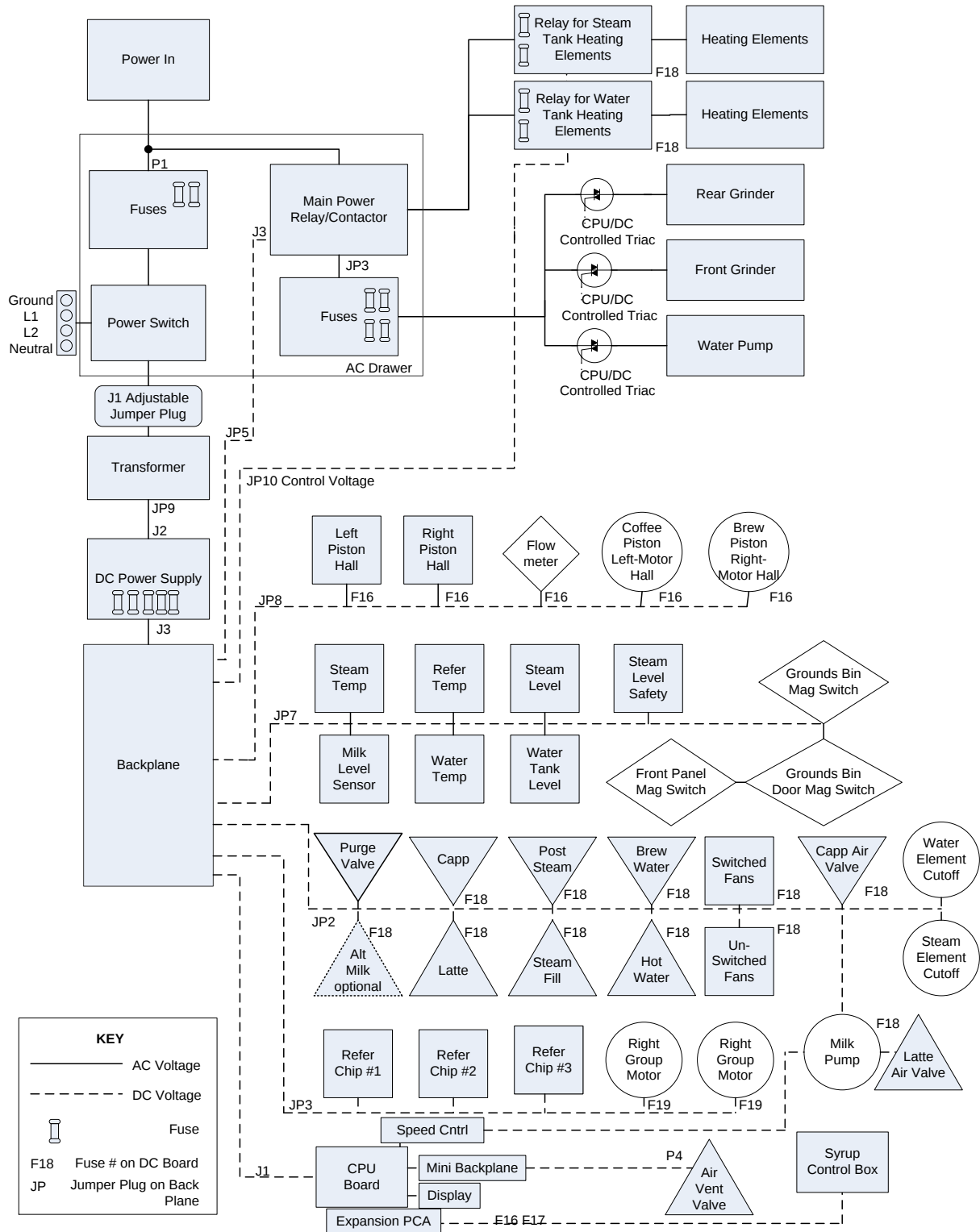
Section 6 :: Electrical

1. Electrical Block Diagram
2. Fuses
3. Backplane
4. AC Drawer Assembly
5. DC Power Supply Board
6. CPU Board
7. Peripheral Connections Configuration
8. Transformer
9. Power Into the Machine
10. DC Power Supply Board LEDs
11. Heater Element Wiring Diagrams
12. Jumper Plug Connector Detail

CONCORDIA

BEVERAGE SYSTEMS

Electrical Block Diagram



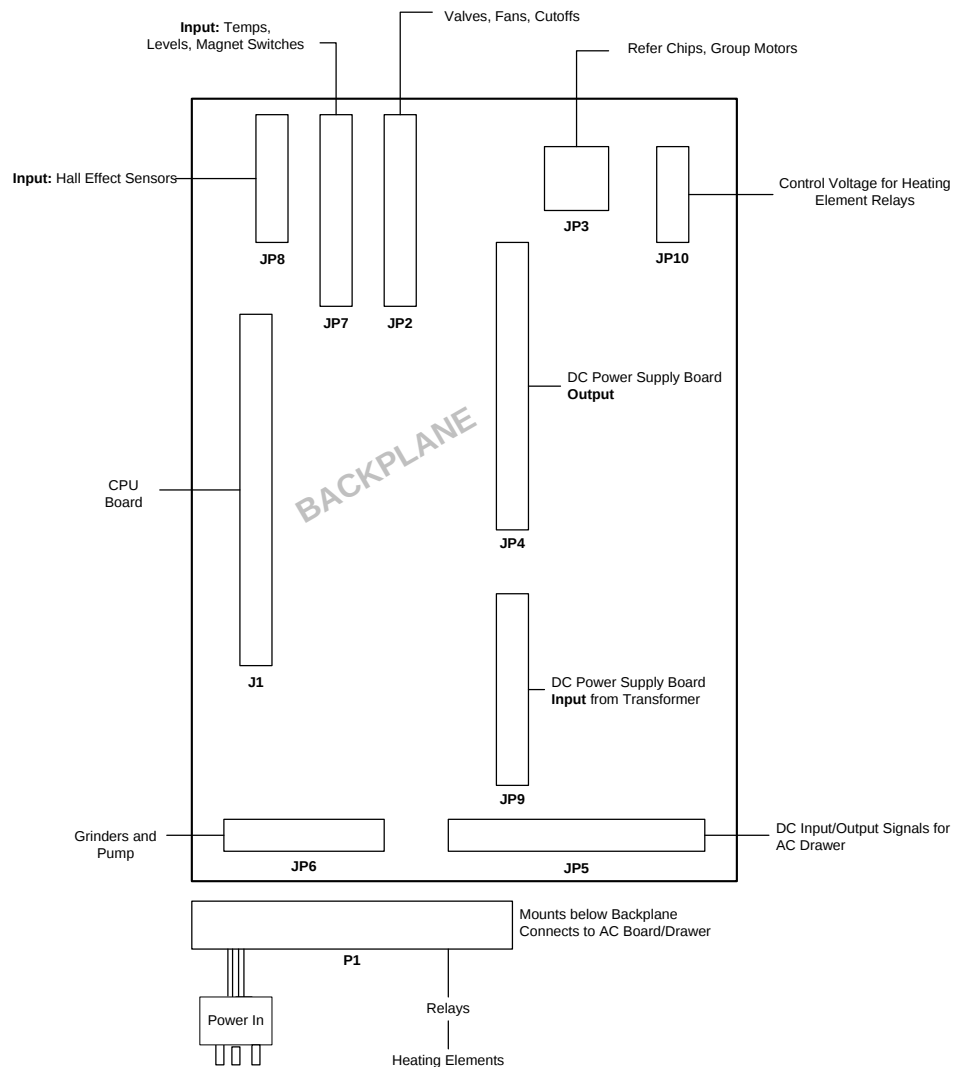
Fuses

Fuses are located on the lower AC board, middle AC board, DC board, and rear grinder panel.

Location/Purpose	Fuse
Lower AC Board Two 5amp fuses protect the transformer	F1 and F2
Middle AC Board Two 5amp Slo Blo Fuses protect the grinders Two 5amp Slo Blo Fuses protect pump	F1 and F2 F3 and F4
DC Board Five 5amp Fuses (can shaped) protect DC components	
CPU and Display CPU, ICs, Display, AC Interface, DC Board, Hall-Effect Sensors Display, CPU, Analog Board, Steam Tank, Level Sensor Fans, Valves, Relays, Main AC Contactor	F15 F16 F17 F18
Group Motors	F19
Rear Grinder Panel Two 20amp ceramic fuses per element protect the machine in the event the heating element shorts out.	Block

Backplane

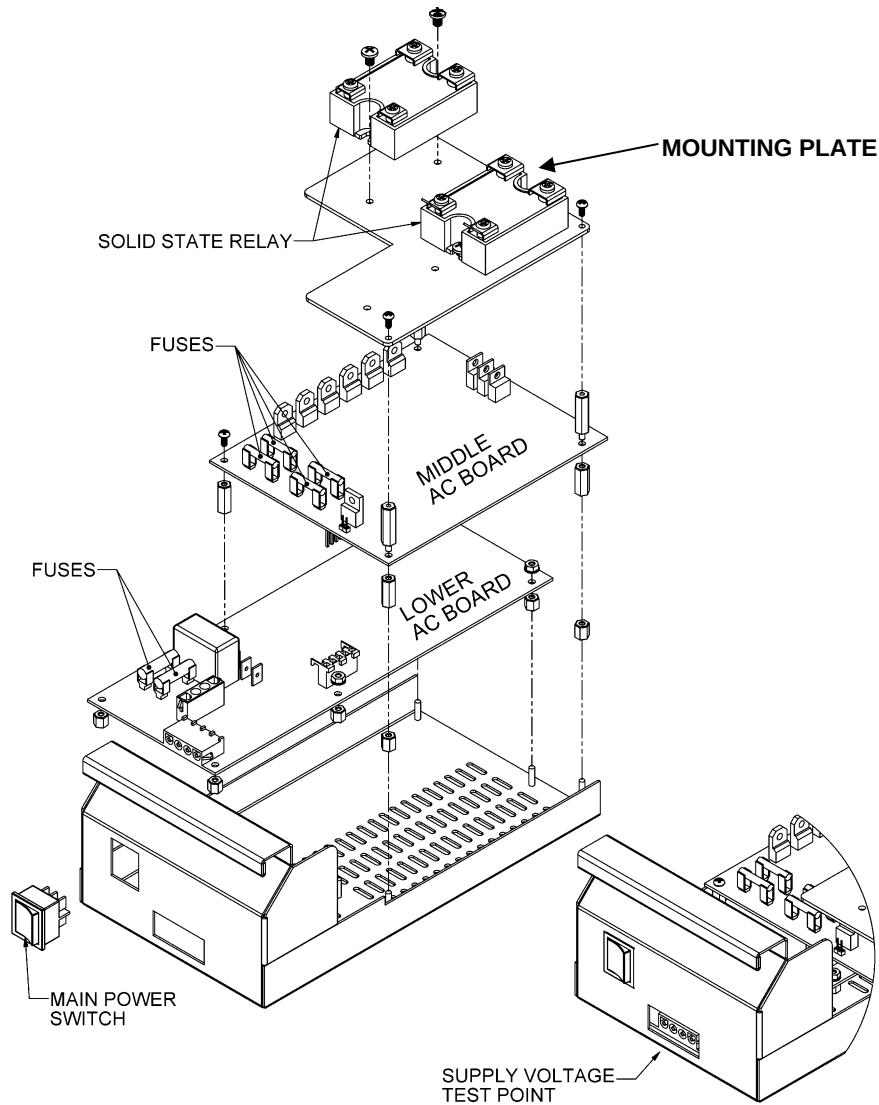
The backplane is located in the rear of the electrical enclosure.



AC Drawer Assembly

Solid state relays located in the AC drawer control AC voltage.

NOTE: Wiring not shown in diagram below.



Solid State Relay Configuration

The Solid State Relay configuration is based on the wiring configuration:

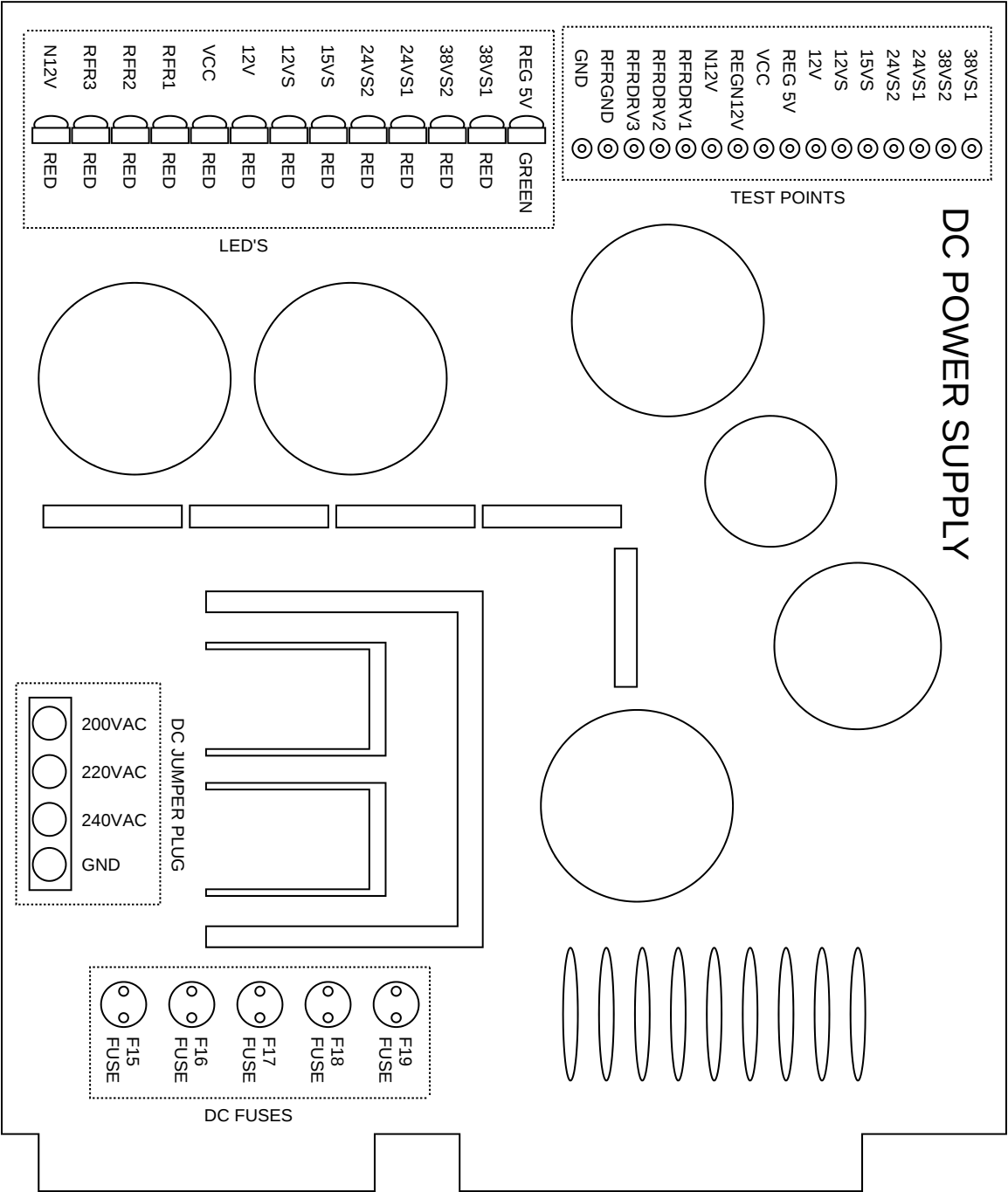
Single Phase: Two Relays

Triple Phase: Three Relays

High Leg: One Relay

Diagram is single phase configuration.

DC Board Assembly

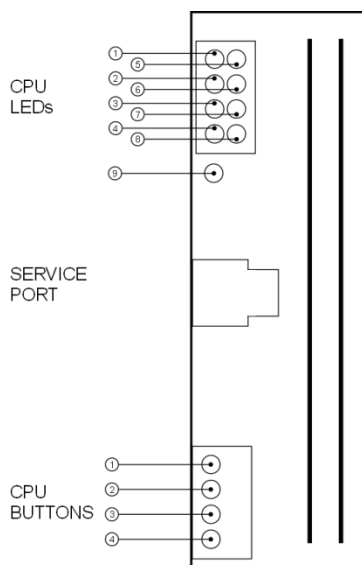


CPU Board

The CPU board contains a series of LEDs and buttons that indicate the current state of the machine. When the green LED is illuminated, the CPU board is receiving power. When a red LED is illuminated, a particular subsystem is experiencing failure or it may be a warning condition. The display may reflect the fault.

Each CPU button has multiple functions based on the state of the machine when the button is pressed. The button may be held and the machine powered on or the button may be pressed after the machine is powered on.

NOTE: If ALL LEDs are lit, the software has been erased and the machine will not function.



❶	CPU fault
❷	Analog board fault
❸	Front panel fault
❹	System warning or fault (will illuminate when doors/front panel are open)
❺	Boot Code Fault
❻	App Code Fault
❼	Sequence Data Fault
❽	Display Data Fault
❾	Green LED: power to CPU board

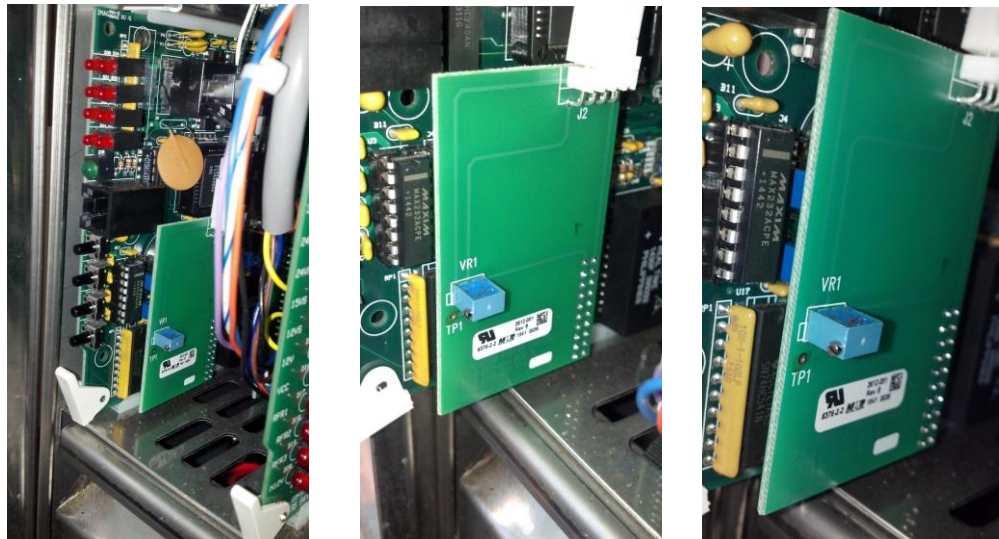
CPU BUTTON	POWER OFF Hold BUTTON & Turn on Power Supply and release button	POWER ON READY TO MAKE DRINK Press CPU BUTTON	ADDITIONAL FUNCTIONS
Top ❶	Load factory defaults	No current function	N/A
❷	Front panel keyboard test mode	Two Functions 1. Load factory defaults 2. Reset PM counter	1. Press button once to enter READY MODE , regardless of message for group, water, or steam temperature. 2. Must be in the MISCELLANEOUS category to access.
❸	Inhibit auto-run of brew group initialization	Initialize brew group	At times, inhibiting brew group initialization is required.
Bottom ❹	Load software (Press button 1 at the same time)	Reserved (no current function)	Reserved. Factory use only.

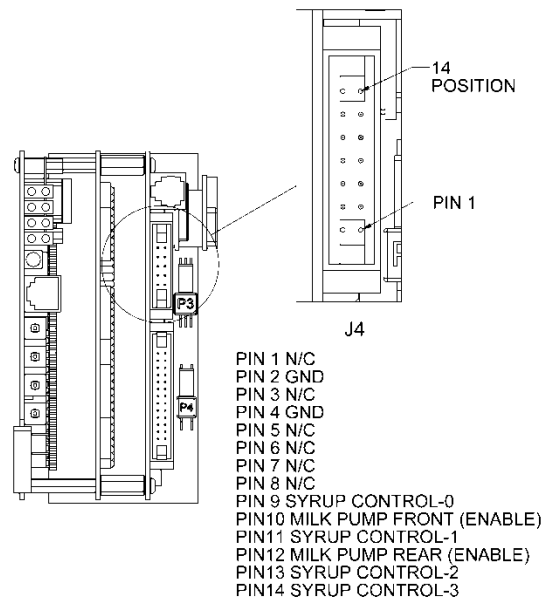
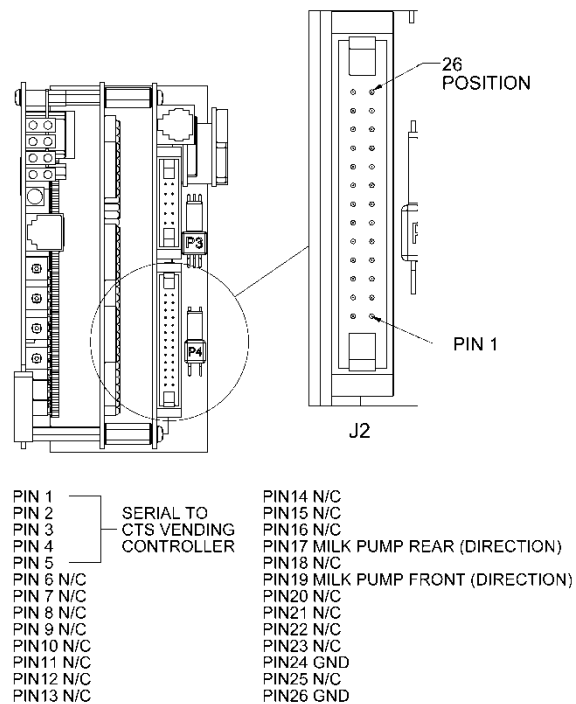
Milk Pump Speed Control Board

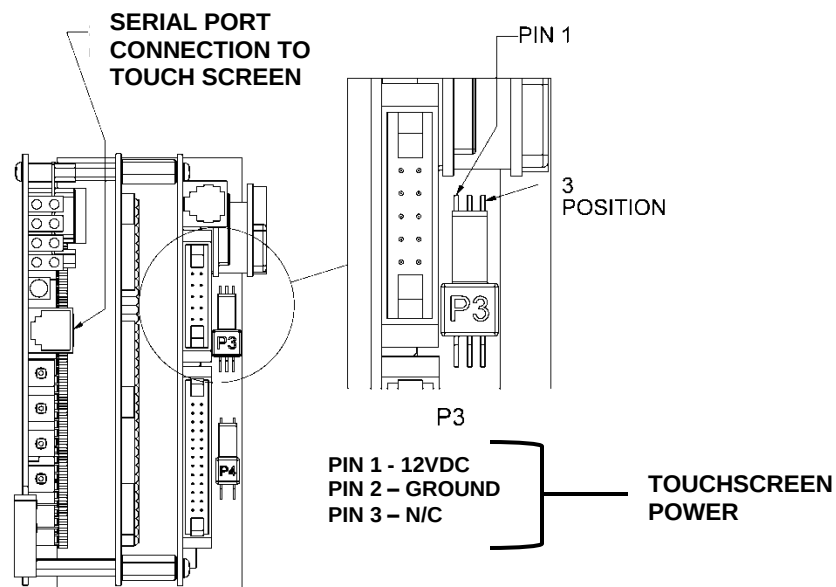
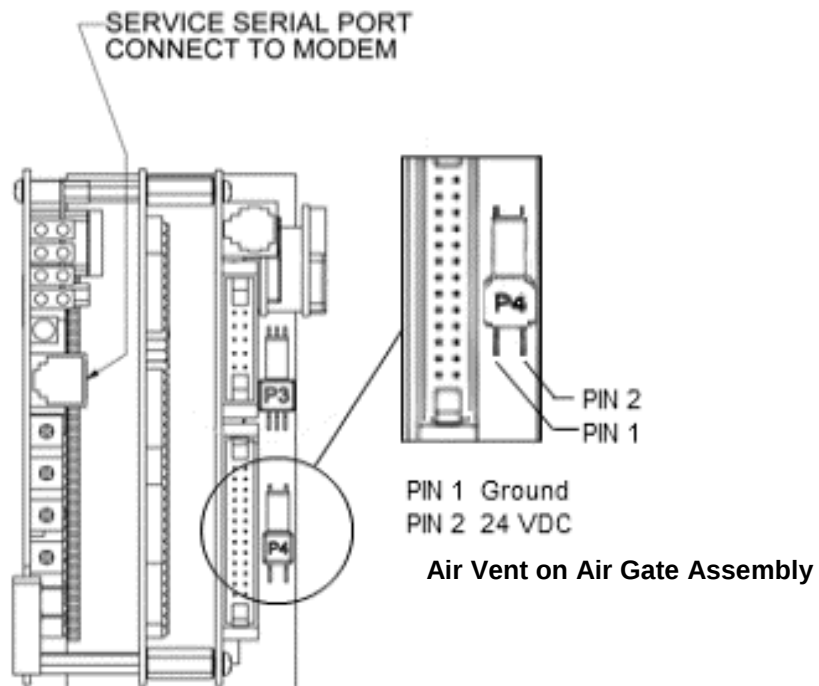
The milk pump speed control board ensures that the milk spends the proper amount of time, with the steam as the unit produces drinks. The speed control board is a piggy-back board attached to the CPU. This board consists of two components:

- **Test Point 1** – used for checking the control voltage.
- **Potentiometer** – used to adjust the control voltage.

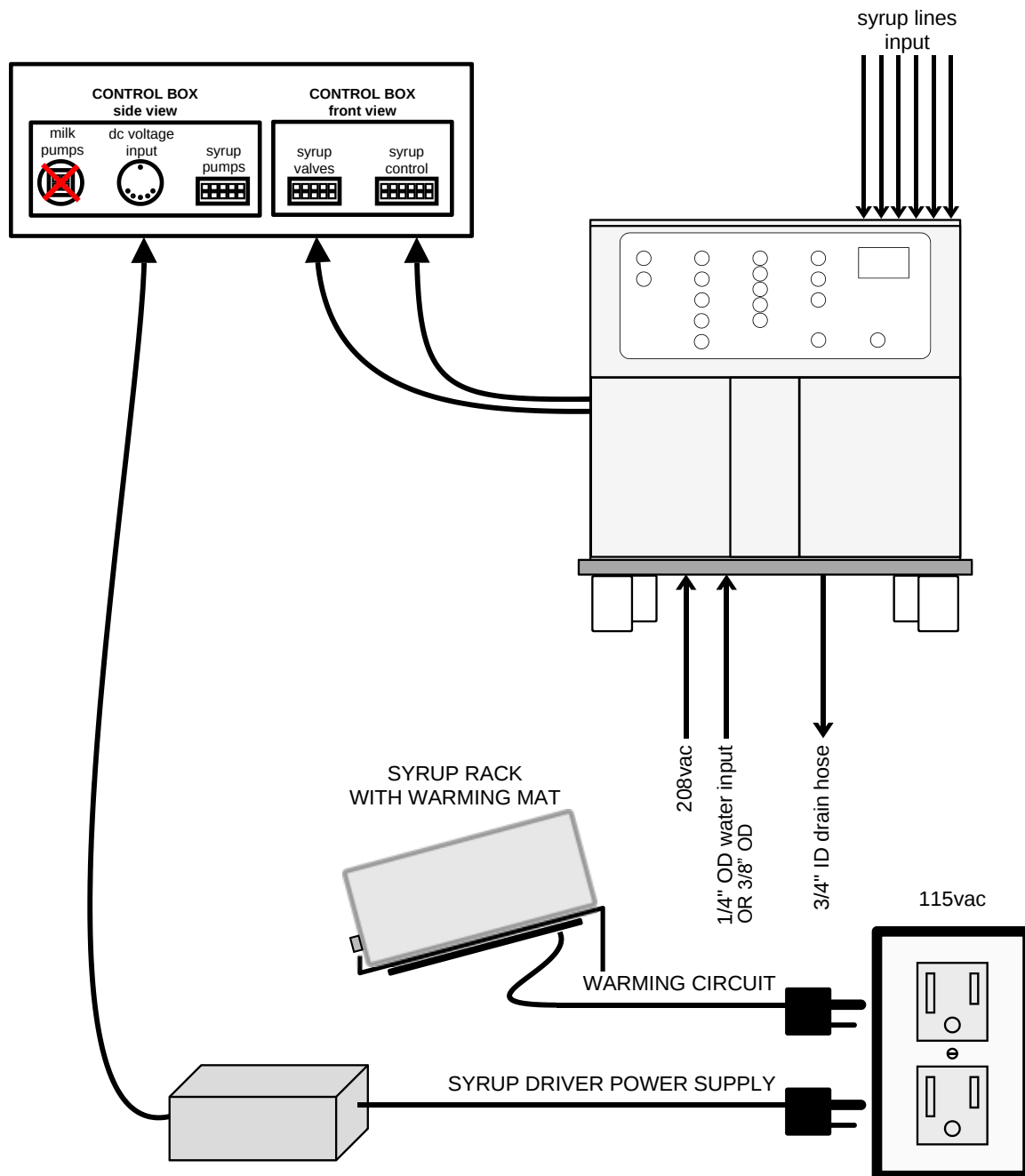
Voltage should be measured with respect to chassis ground. The factory setting is 2.30 volts DC. It can be adjusted as high as 2.50 in the field, to compensate for the wear of the milk pump. This should only be accomplished if you are unable to achieve the proper temperatures of the drinks, as measured in a paper cup.



J4**J2**

P3**P4**

Peripheral Connections Configuration



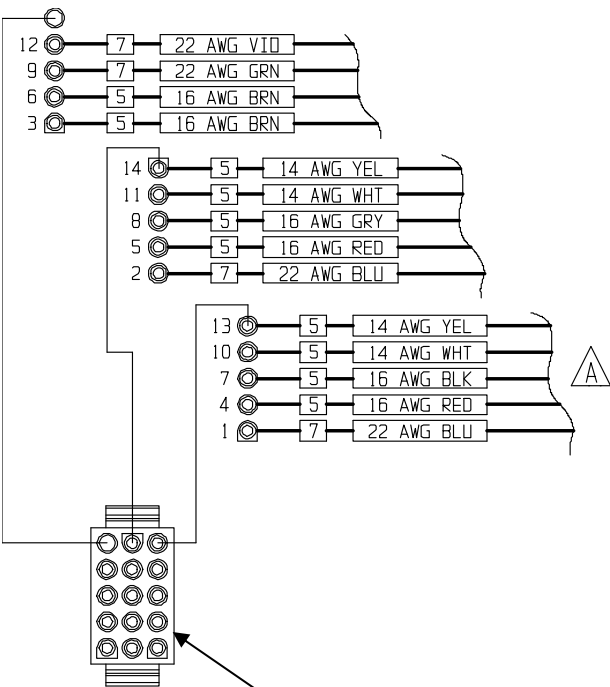
Transformer

The step down transformer uses two lines of AC voltage totaling 200-240Vac, and steps down that voltage to many separate lines of reduced AC voltage.

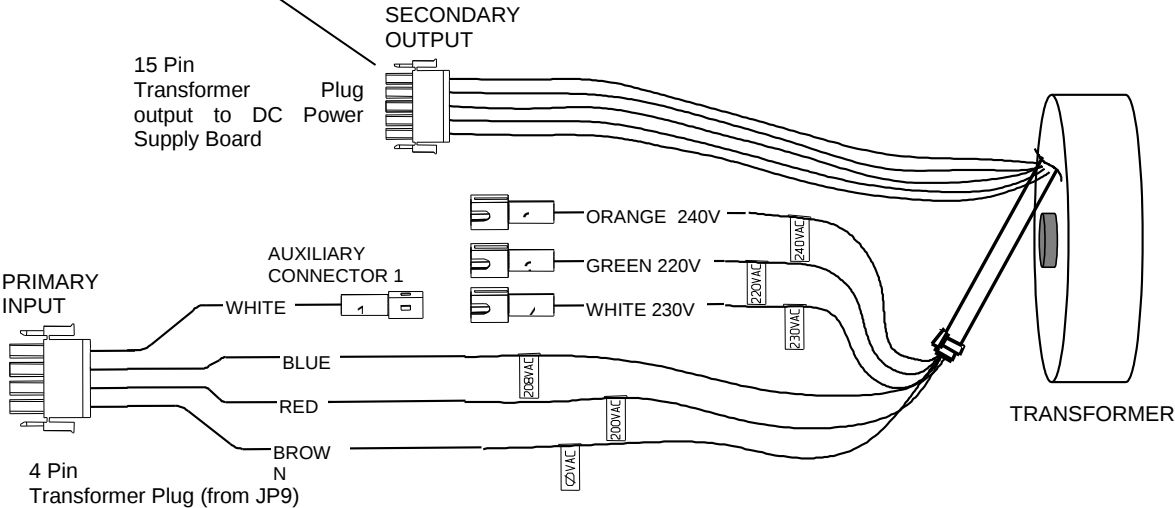
The machine will not operate correctly unless the jumper plug (located on the DC power supply board) and transformer connectors are set to line voltage.

Transformer Diagrams

Secondary Voltage on Transformer Output Plug (15 Pin)



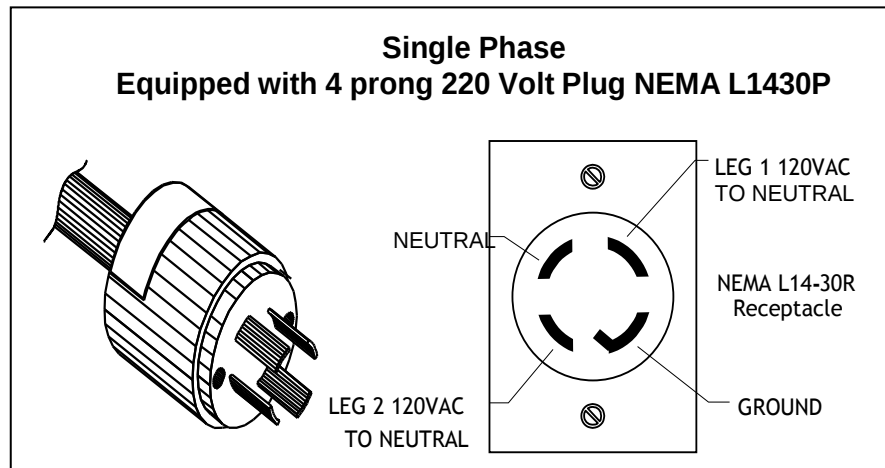
Wire Color	Transformer Output Voltage	Fuse	DC Power Supply Output Voltage
Violet Green	13.4Vac	15	-12Vdc
Blue Blue	13.4Vac	17	12 and 15Vdc
Brown Brown	20.6Vac	18	24Vdc
Red Red	30.0Vac	19	38Vdc
White Yellow	10.3Vac	No Fuse	11Vdc
Gray Black	9.3Vac	16	Ref 5Vdc & Vcc



Machine Operating Voltage

The minimum electrical requirements must be met to ensure proper operation of machine:

- 200-240Vac
- Single Phase: 30amp dedicated circuit
- Older machine use a NEMA L14-30R receptacle, a four-wire circuit with a neutral leg (U.S. machines are typically wired for single-phase operation. See Figure 1 below.



AC Voltage

Three components in the Xpress operate on AC voltage:

P	Water Pump Motor
E	Heating Elements
G	Grinders

DC Voltage

All remaining components operate on DC voltage. All control voltage is DC.

Valves

All water and steam valves in the Xpress and Xpress XT function using a negative switching circuit. Voltage is always present at the component. The drives for the valves are located on CPU board. The CPU provides the ground to close the circuit and energize the valve.

Diodes

Diodes are used throughout the Xpress and Xpress XT electrical connections to control the flow of electricity and eliminate electric noise from feeding back into the circuitry.

Flavor System

Water Valve: 24Vdc x1

Peristaltic Pump: 24Vdc, 282rpm x6

All flavor tubes are color-coded.

Syrup Driver Power: 115Vac

Chocolate Heater Assembly: 115Vac (US) 230Vac (international)

Software Sub-Category	Color Code	Corresponding Flavor
Small Flavor 1	Black	Chocolate
Large Flavor 1		
Small Flavor 2	Yellow	Caramel
Large Flavor 2		
Small Flavor 3	White	Vanilla
Large Flavor 3		
Small Flavor 4	Red	Chai
Large Flavor 4		
Small Flavor 5	Green	Hazelnut
Large Flavor 5		
Small Flavor 6	Blue	Sugar-Free Vanilla
Large Flavor 6		

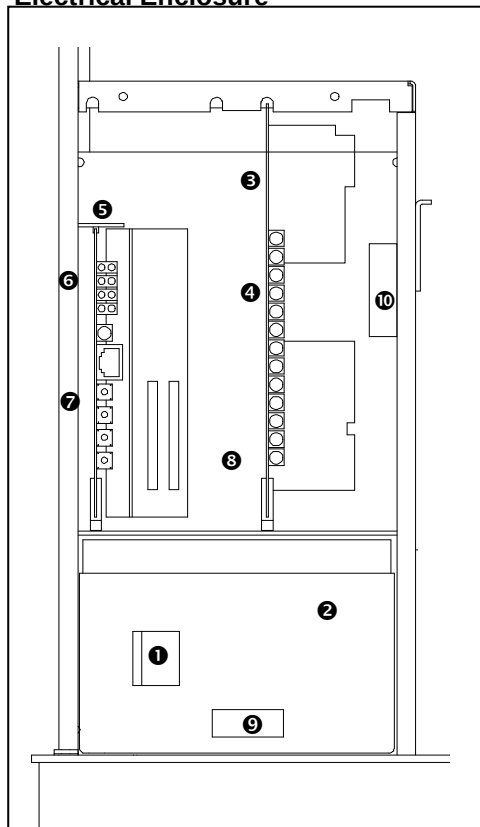
For additional information on the flavor system, please see *Section 3: Flavor System*.

Electrical Enclosure

Located behind the left door, the electrical enclosure houses:

- ❶ Power switch
- ❷ AC drawer
- ❸ DC power supply board
- ❹ LED display on DC power supply
- ❺ CPU boards
- ❻ LED display on CPU
- ❼ CPU buttons
- ❽ Backplane
- ❾ Line voltage test receptacle
- ❿ Electrical enclosure fan

Electrical Enclosure



Electrical Enclosure Fan

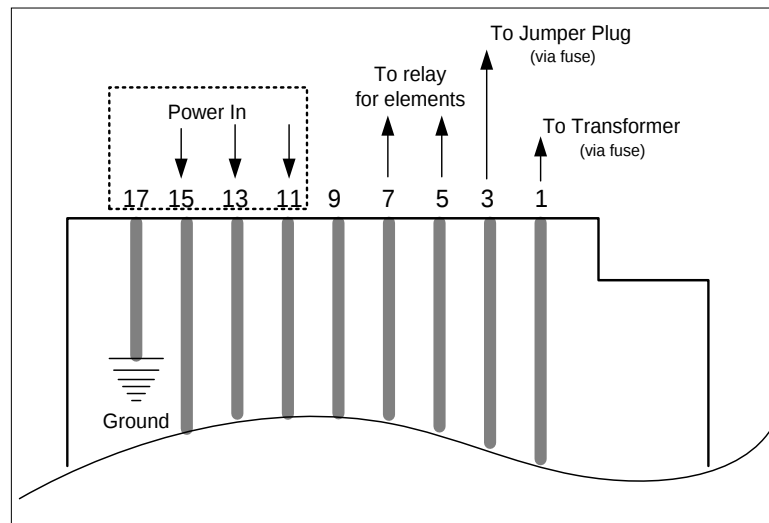
Operating Voltage: 24Vdc

The fan located in the electrical enclosure is used to maintain air circulation and cool the heat sinks on the DC power supply board. When the machine is in **SYSTEM TEST** or **TEST ROUTINES**, the electrical enclosure fan remains on. The fan removes heat from the enclosure. The direction of the air movement is always away from the DC board.

Power Into the Machine

Electrical Enclosure

Lower AC Drawer: Power Into the Machine



Power into DC Power Supply Board

1. Two legs of 110Vac come into the AC board via JP1 connector on the backplane. **US Machines Only**
2. AC travels down lower AC board on traces #15 and #13, through two 5amp fuses.
3. Power switch is turned on.
4. Voltage travels out traces #1 and #3.
5. One leg of power goes directly to transformer.
6. The other leg goes to the J1 located on the DC power supply board.
7. J1 and transformer connection are set to the appropriate voltage (determined at time of installation), and the voltage travels to transformer.
8. Output of the transformer plugs into JP9 at the backplane, then into the DC power supply board.
9. Power travels into DC power supply through five 5amp fuses, #15-19.
10. The DC power supply board converts the AC voltages to many legs of DC voltage.
11. DC voltages are distributed through the backplane, through JP4.
12. The backplane distributes voltage to the rest of the machine.

Power into AC Components

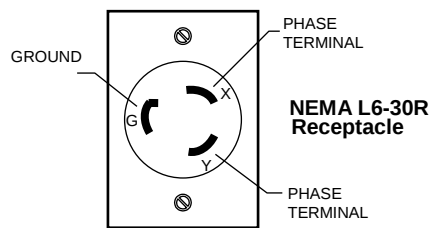
US Machines Only

- Two legs of 110Vac travel down AC board on traces #13 and #15 and are tapped and routed, prior to the fuses, to the main power relay (or contactor).
- When power switch is turned "ON," DC control voltage becomes available and closes the relays.
- AC voltage travels through main power relay out traces #5 and #7 directly to the solid state relays for steam and water tank heating elements.
- Power is also tapped and routed from lower AC board to the middle AC board through JP3 (power travels through fuses, and out JP1, supplying AC power to the pump and grinders).

WARNING: Never insert or remove the AC drawer with the power switch turned on. Inserting the drawer with the machine powered causes arcing across the copper traces and will damage the board.

Setting the DC Jumper Plug (J1)

Plug and Receptacle



Confirming Receptacle Voltages

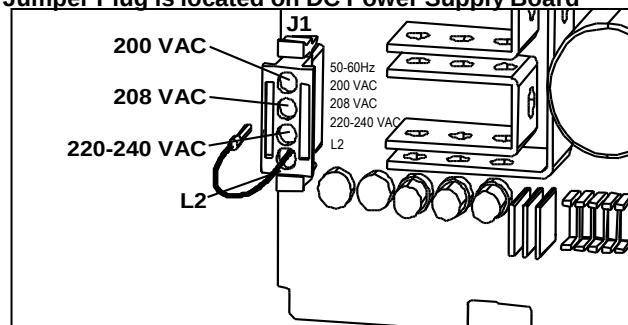
Connections	Voltage
L1 to Ground	110Vac -120vac
L2 to Ground	110Vac – 120Vac
L1 to Neutral	110Vac – 120Vac
L2 to Neutral	110Vac – 120Vac
L1 to L2	200Vac – 240Vac
Ground to Neutral	0Vac

1. Measure the source voltage at the NEMA L6-30-R receptacle.
2. Remove electrical enclosure cover to access DC power supply board.

CAUTION: ESD protection required.

3. Remove the DC power supply board using the white ejector lever.
4. Configure and insert J1 into jumper connection located on DC power supply board.

Jumper Plug is located on DC Power Supply Board



5. Use the voltage table below to set the jumper plug to the correct measured source voltage.
6. Re-install the DC power supply board.

IMPORTANT: Ensure the board is fully seated by pressing firmly on board.

- 7. Re-install electrical enclosure cover (verify display cable is not stressed, pinched or cut when front panel is lowered)

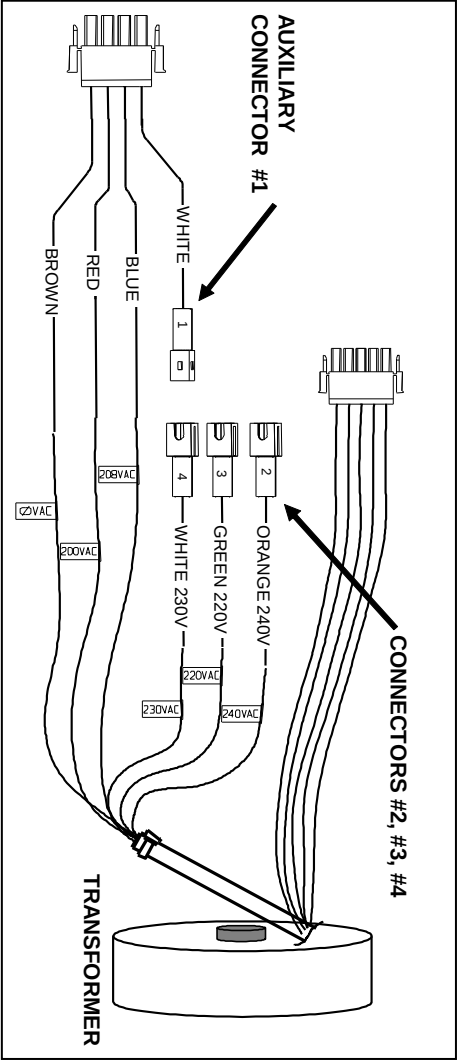
WARNING: Improper setting of the DC jumper plug connection can lead to machine malfunction, short circuit, blown fuses, overheating and/or damage to circuit boards.

Set Transformer Auxiliary Connector #1

VOLTAGE TABLE		
MEASURED SOURCE AUX CONNECTOR		
VOLTAGE	RANGE	SETTING
200 – 205	200	No Adjustment
206 – 215	208	No Adjustment
216 – 225	220-240	#3 Green Wire
226 – 235	220-240	#4 White Wire
236 – 245	220-240	#2 Orange Wire

- 1. If source voltage is between 200 – 215Vac, no adjustment is necessary.
- 2. If source voltage is between 216 – 245Vac, set transformer auxiliary connector.
- 3. Remove machine back panel.
- 4. Locate the power supply transformer and connectors.
- 5. Using the voltage table, connect transformer auxiliary connector #1 to appropriate transformer connector #2, #3, or #4.
- 6. Reinstall back panel and proceed with machine installation.

Transformer is accessible from the back of the machine



DC Power Supply Board LEDs

The LEDs on the power supply board indicate the presences of state DC voltage compared to the expected DC voltage. The LED will illuminate if there is a rise or drop in current.

Top of Board LED Color	Voltage Represented	Associated Fuse on DC Board	Related Components
○ GREEN Lit during normal operation	5Vdc	F16	CPU, ICs, Display, AC Interface, DC Board, Hall Effect Sensors
○ RED	38Vdc	F19	Group Motors
○ RED	38Vdc	F19	Group Motors
○ RED	24Vdc	F18	All Fans and Valves, Relays, Main AC Relays/Contactor
○ RED	24Vdc	F18	All Valves & Fans, Relays, Main AC Relays/Contactor
○ RED	15Vdc Unregulated	F17	No Specific Component. This supplies the 12Vdc
○ RED	12Vdc	F17	Display, CPU Analog Board, Steam Tank Level Sensor
○ RED	12Vdc	F17	Transducer, Display, CPU Analog Board, Steam Tank Level Sensor
○ RED	5 v vcc Varying Controlled Current	F16	CPU, Display, AC Interface, DC Board, Hall-Effect Sensors, Flowmeter
○ RED	11Vdc± 4amp	Non-Fused	Refer Chip 1
○ RED	11Vdc± 4amp	Non-Fused	Refer Chip 2
○ RED	11Vdc± 4amp	Non-Fused	Refer Chip 3
○ RED	-12Vdc	F15	CPU and Display

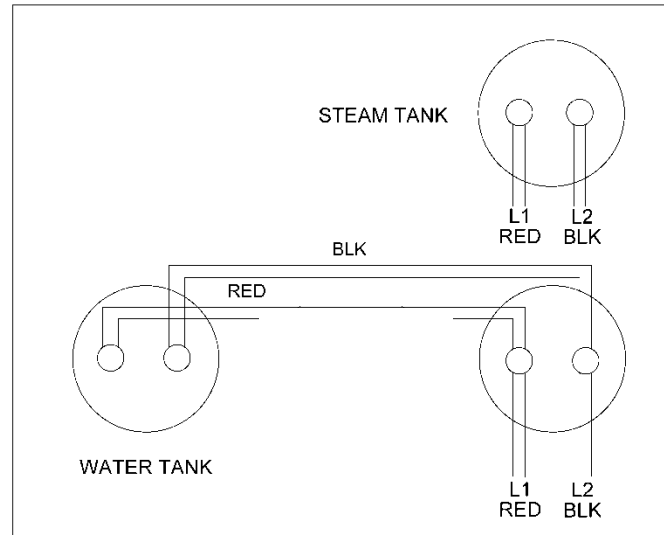
Heating Elements, Solid State Relays, and Fuse Blocks

Control Voltage: 24Vdc

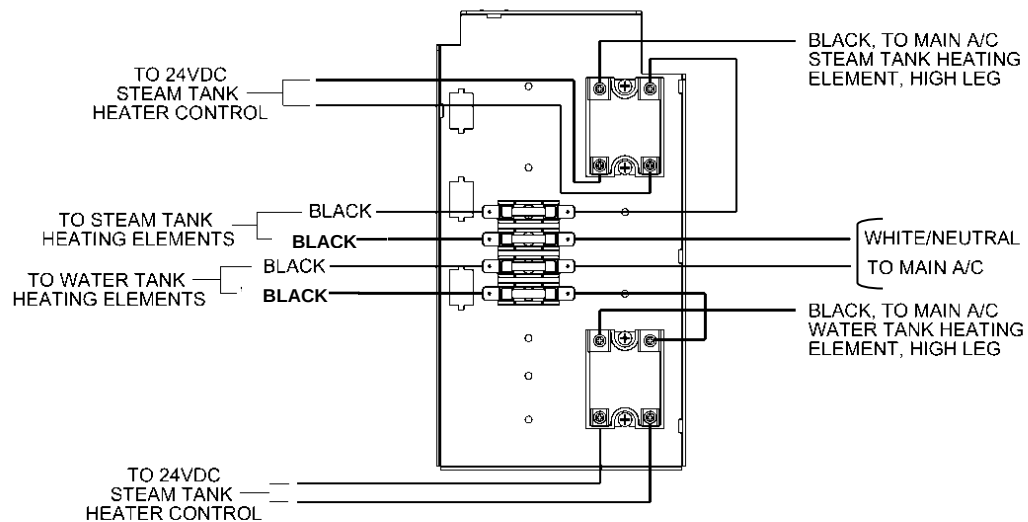
Solid state relays control voltage going to the water and steam tank heating elements. Single phase fuse blocks use four relays and high leg blocks use two.

A fuse block containing four 20amp ceramic Slo Blo fuses protects the machine in the event of a heating element short.

Steam and Water Tank Heater Connections



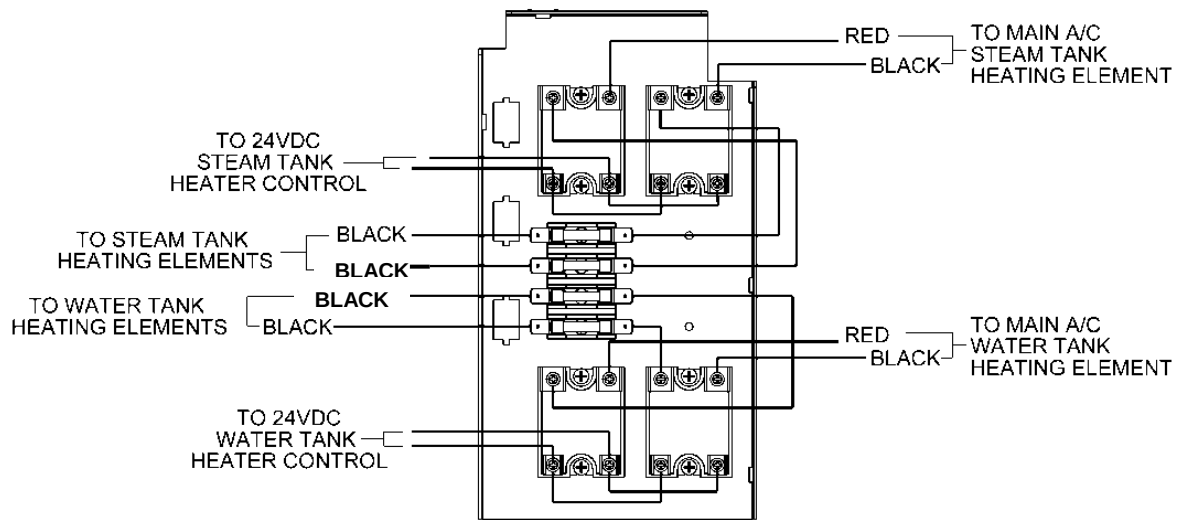
Fuse Block, CE High Leg



Heating Element Wiring Diagrams

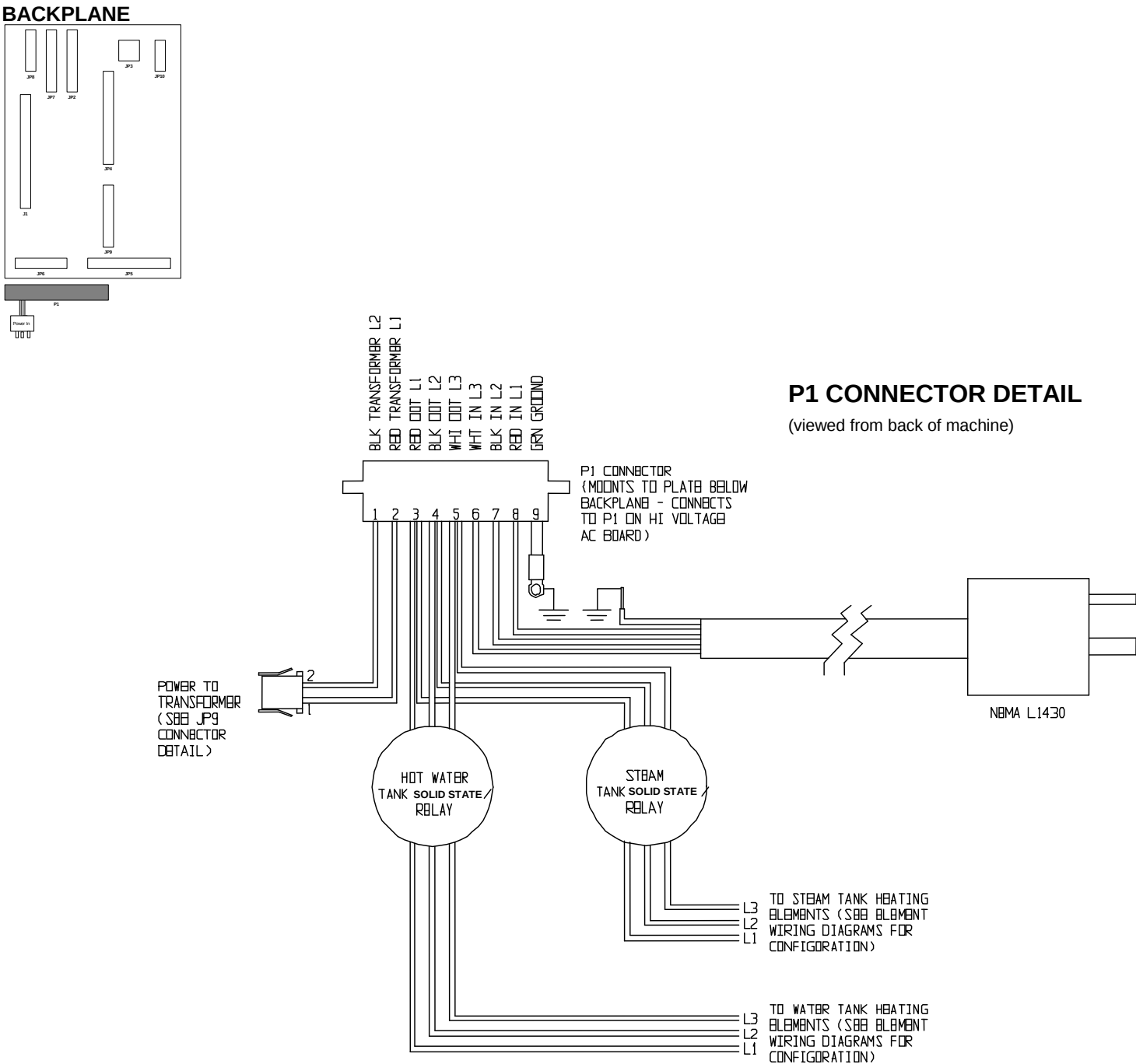
The water and steam tank heating elements must be wired in relation to the voltage configuration supplied to the machine.

The fuse block shown below is single phase.



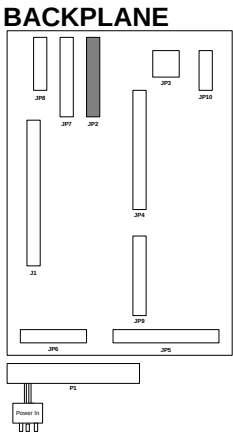
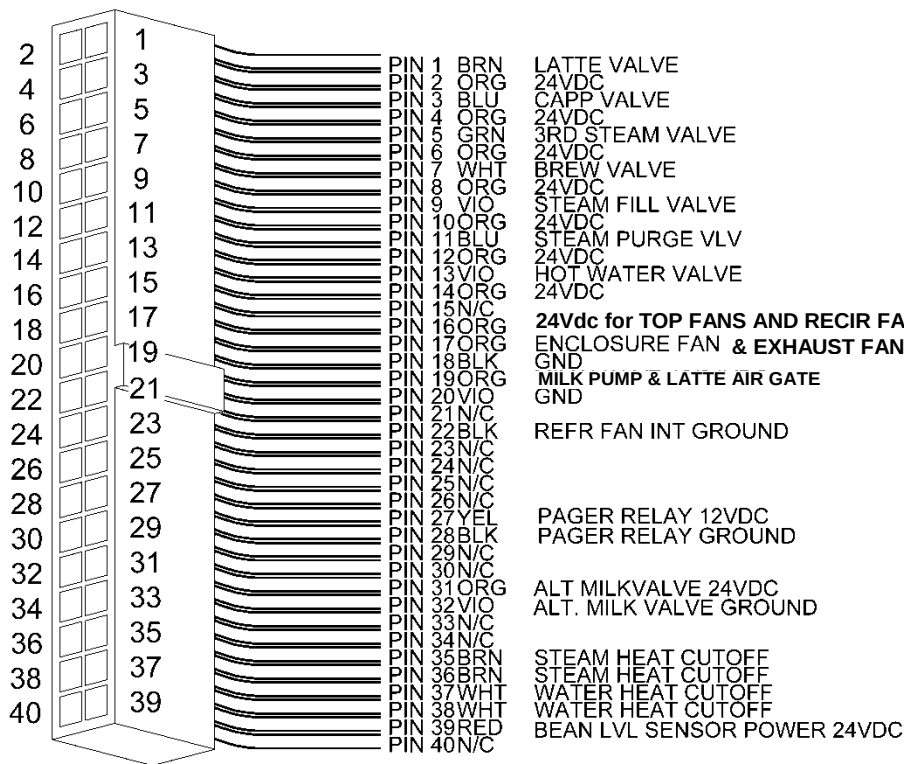
Jumper Plug Connector Detail

Jumper Plug 1



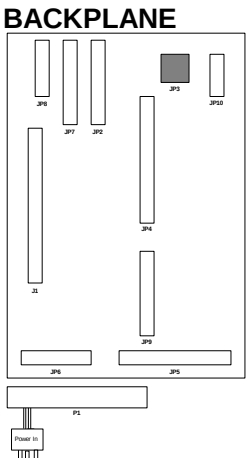
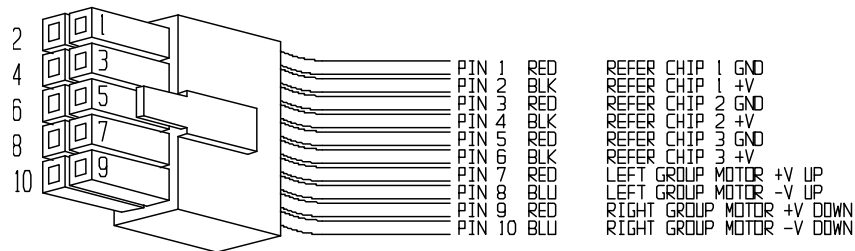
Jumper Plug 2

JP2



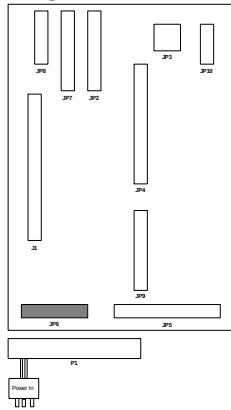
Jumper Plug 3

JP3

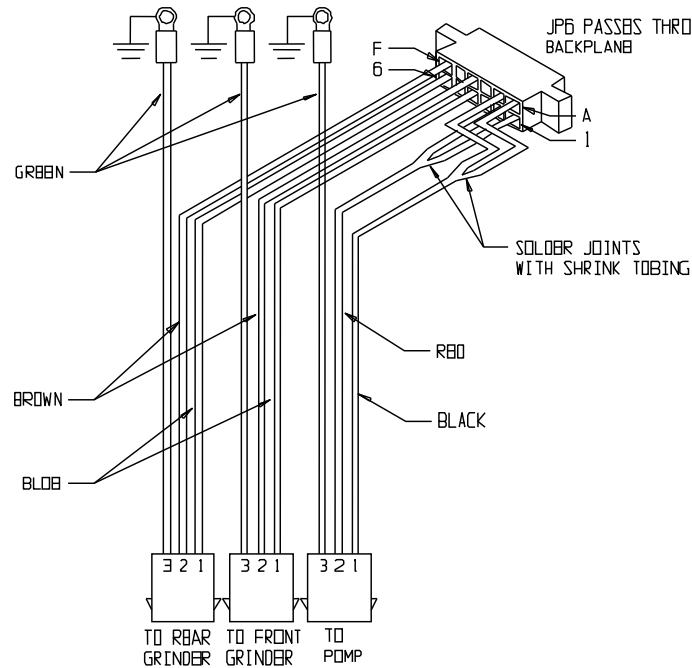


Jumper Plug 6

BACKPLANE

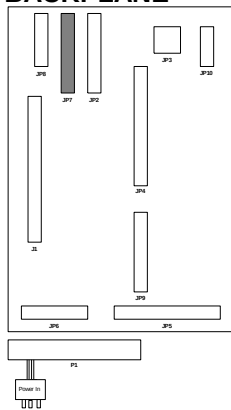


JP 6 CONNECTOR DETAIL

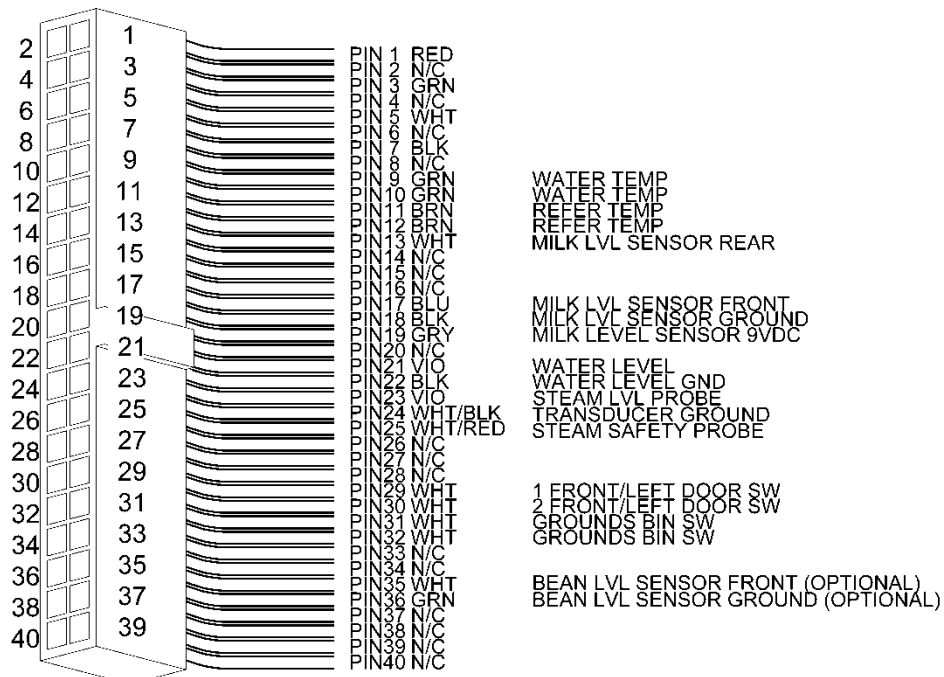


Jumper Plug 7

BACKPLANE

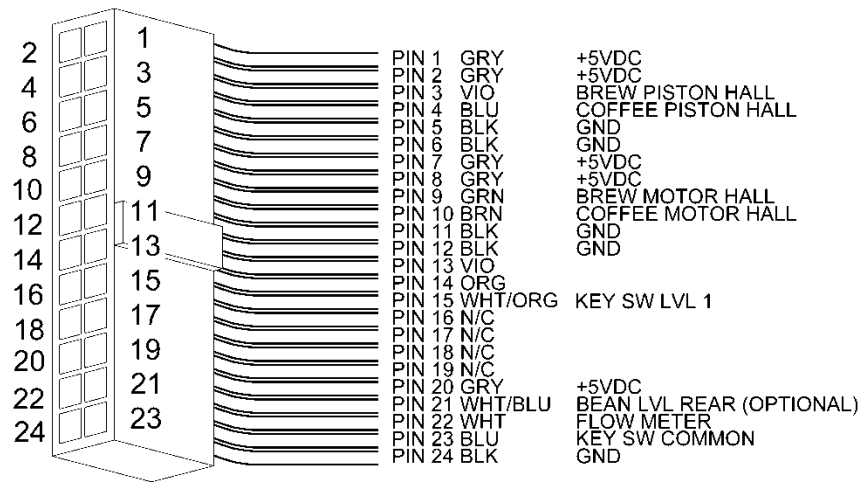


JP7

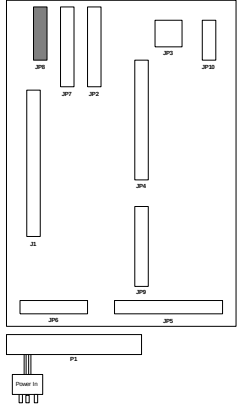


Jumper Plug 8

JP8

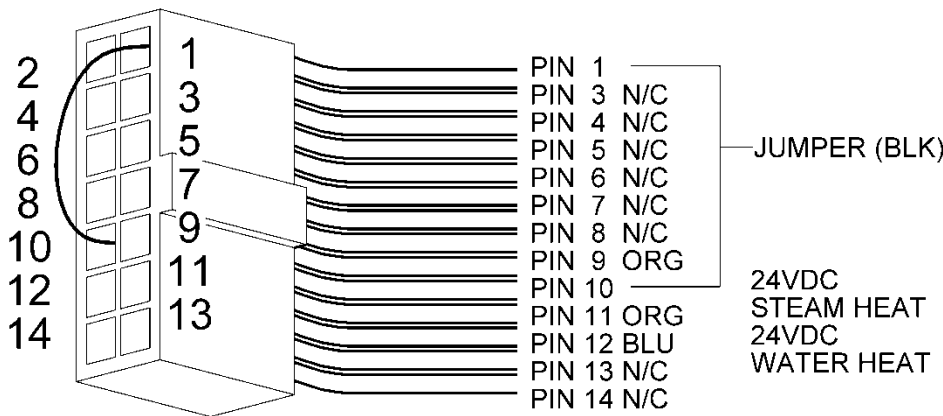


BACKPLANE

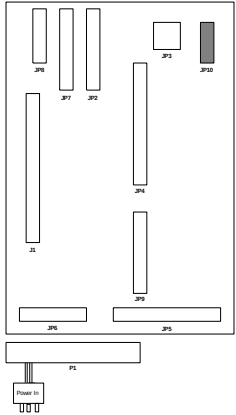


Jumper Plug 10

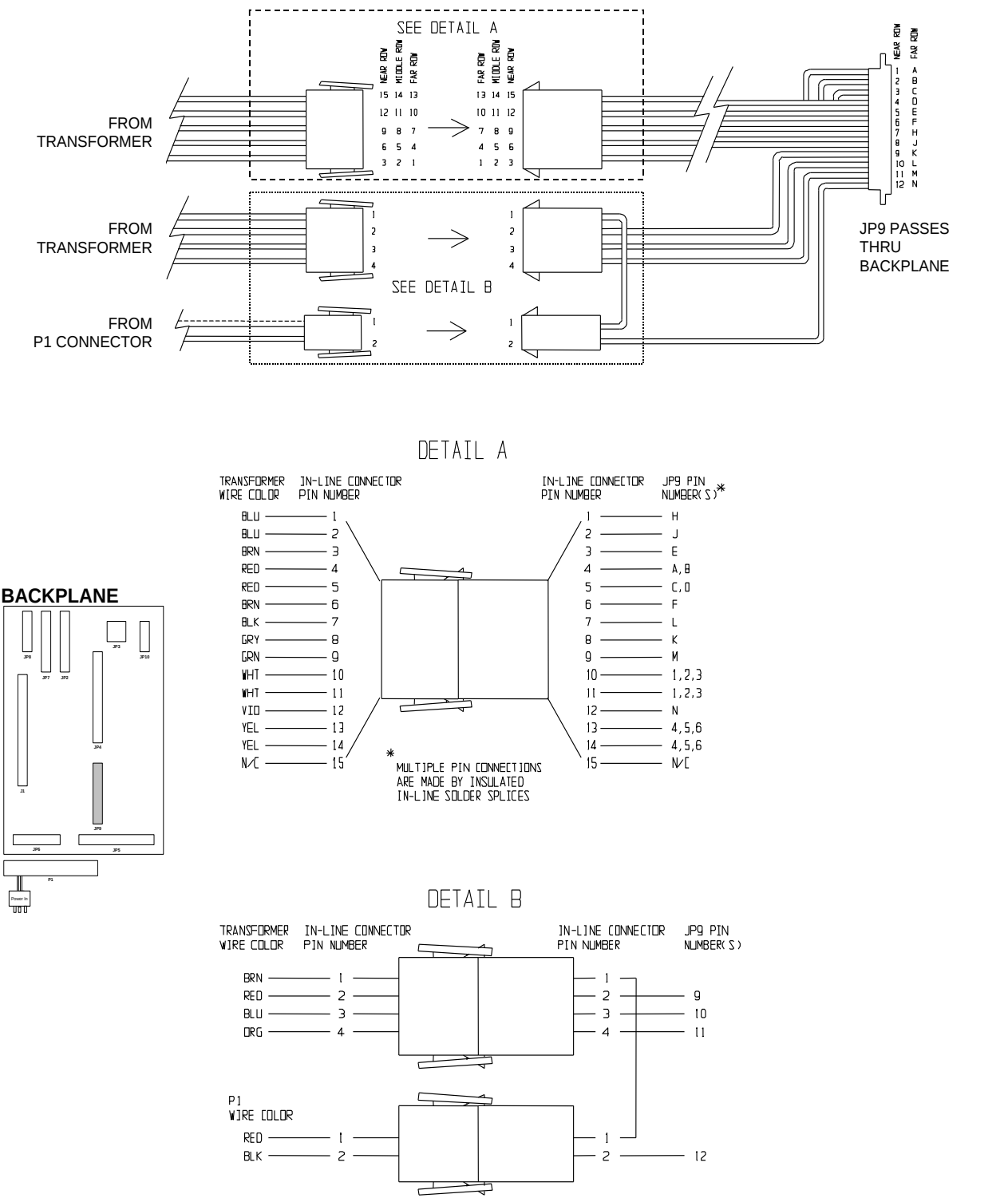
JP10



BACKPLANE



Jumper Plug 9



Section 7 :: Plumbing

1. The Water System
2. Hot Water Tank
3. Water Pump and Motor
4. The Steam System
5. Steam Wand Overview

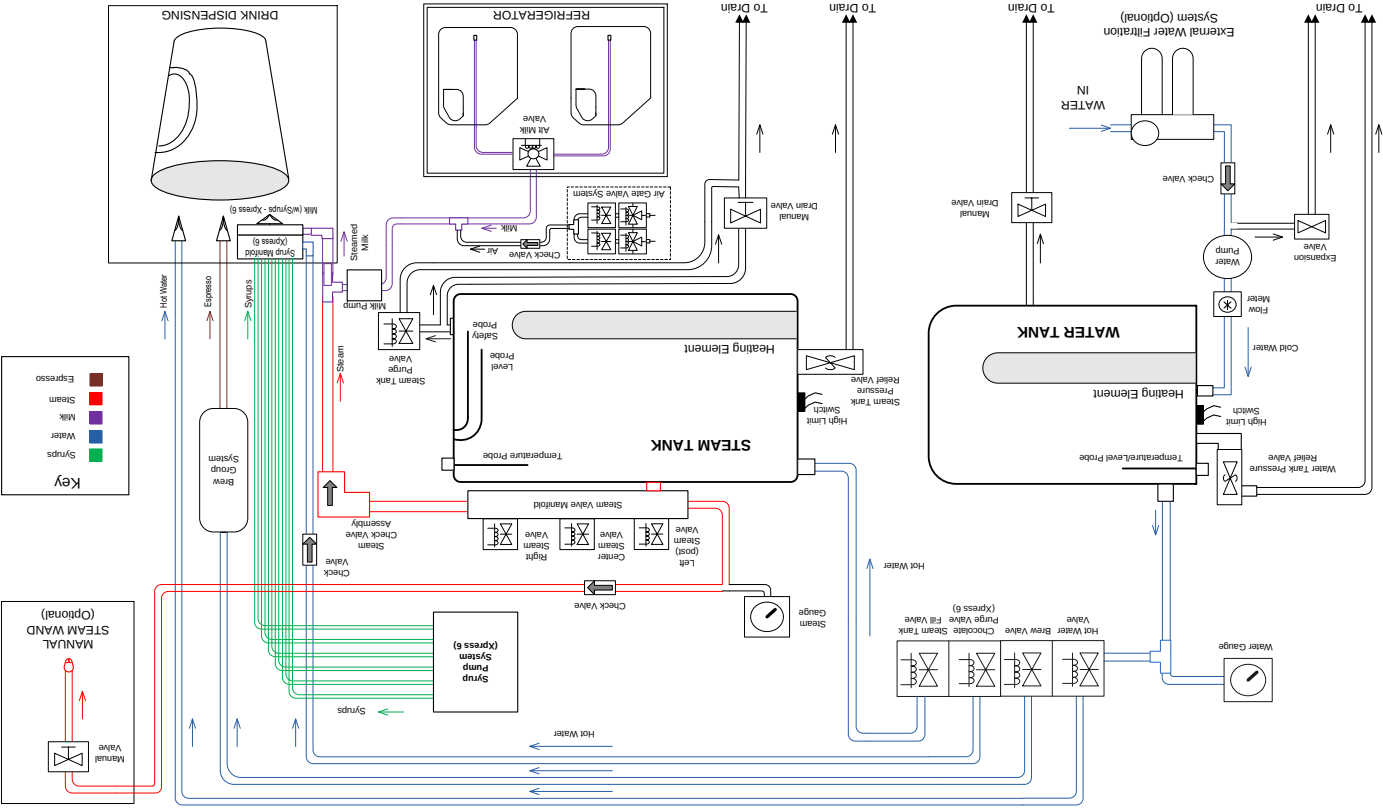
CONCORDIA

BEVERAGE SYSTEMS

The Water System

The water system provides hot water and steam for the production of drinks.

Hydraulics Diagram



Line Pressure

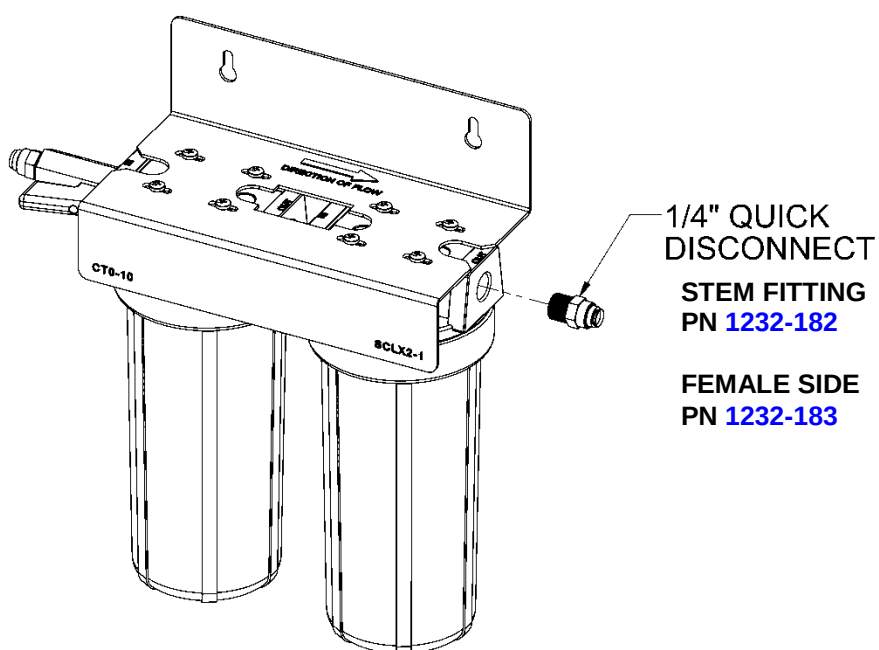
Pressure must be between 30-100psi at 25gph. Adequate pressure is needed to fill both the hot water and steam tanks.

Check Valve

The back-flow prevention device (check valve) is required by many state and local health codes and inhibits reverse water flow into the water supply.

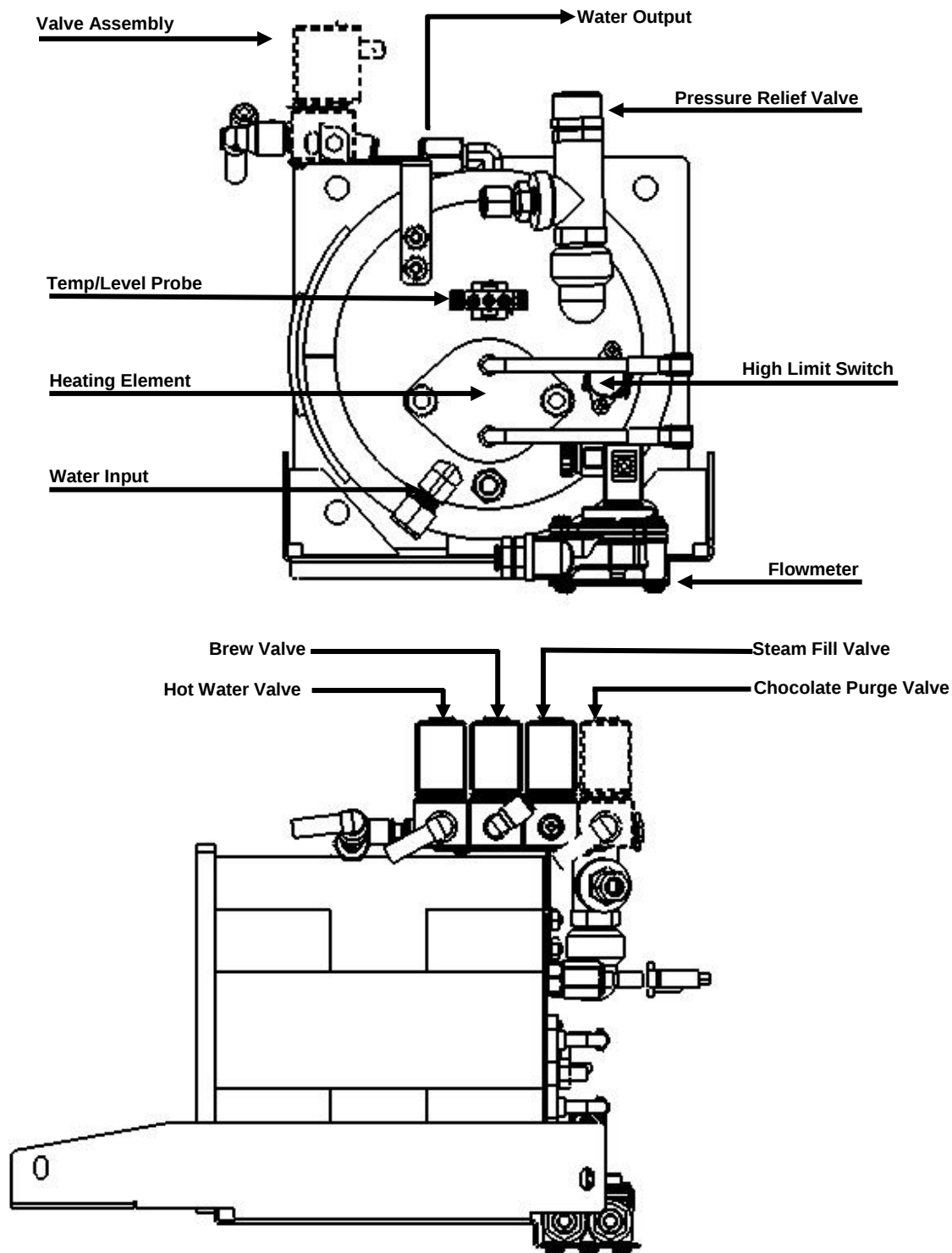
Water Filtration System

The Scalex® water treatment system includes a carbon filter cartridge and a water softener cartridge.



Hot Water Tank

The hot water tank heats the water used for drinks and supplies water to the steam tank. The water tank is located behind the brew group.



Temperature/Level Probe

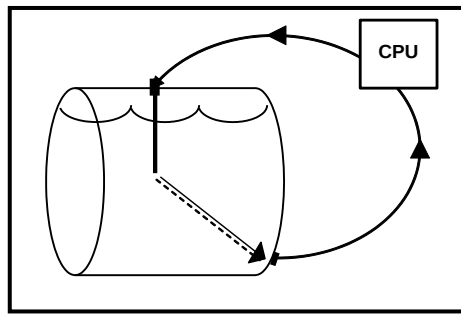
The temperature probe and level probe are combined into a single unit.

Level Probe

The CPU uses the level probe to verify the presence of water in the tank. To verify the presence of water, a pulsed 300mv signal is sent to the probe. The presence of water in the tank will cause the signal to shunt to ground. When the signal is grounded the CPU knows the tank has water and this allows the CPU to activate the heater (if needed).

If the signal is not shunted to ground, the CPU cannot activate the heater. If the level probe fails to detect water in the tank for a period of 60 seconds or more, the message **CHK WATER SUPPLY** is displayed. For information on troubleshooting the **CHK WATER SUPPLY** message, please see *Section 14: Troubleshooting*.

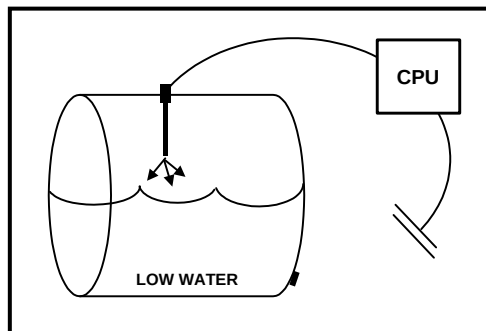
Water Tank and Level Probe Grounded



When the signal from the probe finds ground, the CPU assumes water is present in the tank.

If the water level in the tank is low and the circuit is open, the CPU activates the brew water valve, allowing line pressure to fill the tank.

Water Tank and Level Probe Not Grounded



When the circuit is open and the CPU detects low water, the brew water valve opens and allows water into the tank.

The heating elements are then inhibited.

Temperature Probe

The CPU uses the temperature probe to monitor the water tank temperature. The operating temperature of the tank is between 185-205°F (85-96°C). The minimum measurable temperature of this device is 146°F (64°C), while the maximum is 257°F (125°C).

- If the temperature is 146°F (64°C) or below, 146°F (64°C) will be displayed.
- If the temperature is 257°F (125°C) or above, 257°F (125°C) will be displayed.

Pressure Relief Valve

175psi

The pressure relief valve functions as a safety relief valve.

If the pressure in the water tank exceeds 175psi, the pressure relief valve opens to release excess pressure. A drain hose is routed from the pressure relief valve to the drain tray.

High Temperature Limit Switch

210°F (99°C)

In the event that the water tank temperature exceeds 209°F (98°C), the high temperature limit switch opens the control circuit to the solid state relays and cuts the voltage to the heating elements. The high temperature limit switch auto-resets, once the temperature cools, the high temperature limit switch will reset, allowing the heater to be activated.

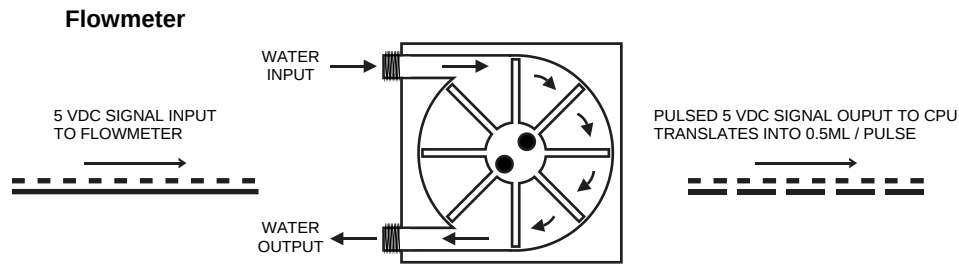
Water Inlet

Water is supplied from the wall source to the hot water tank through the water inlet fitting.

Flowmeter

The flowmeter is used to measure water flowing throughout the system.

The flowmeter contains a Hall-Effect Sensor. As the internal impeller spins, a fixed sensor located on the top of the flowmeter detects the passing of the magnets which interrupts (pulses) the DC signal flowing to the CPU. The CPU correlates .5mL of water per pulse to determine the total volume of water passing through the flowmeter. Water passing through the flowmeter is displayed in milliliters.



To activate the valve and view the amount of water flowing through the flowmeter, go to the following software menu:

- **XT:** Navigate to **SYSTEM TEST > BREW WATER VALVE**.
- **Xpress:** Navigate to **TEST ROUTINES > BREW WATER VALVE**.

The display will read “[X] mL” and increase as the valve is opened and water flows through the flowmeter.

Heating Elements

The water tank contains one 1839 watt – 23.5 Ω (ohm) heating element.

One solid state relay controls the AC voltage to the heating elements. Remember to isolate the element from the system prior to performing an ohms check.

Brew Valve

Operating Voltage: 24Vdc

The brew valve controls the water flow to the brew group, which is used to extract espresso. The brew valve is the second valve from the front of the three-stage manifold valve assembly located on top of the hot water tank.

Hot Water Valve

Operating Voltage: 24Vdc

The hot water valve is used for dispensing hot water into the cup. The hot water valve is the first valve from the front of the valve assembly located on top of the hot water tank.

Chocolate Purge Valve

Operating Voltage: 24Vdc

The chocolate purge valve is used to clear the poppet valve of chocolate residue, after a drink with chocolate sauce is poured. The hot water valve is the last valve from the front of the valve assembly located on top of the hot water tank.

Draining the Hot Water Tank

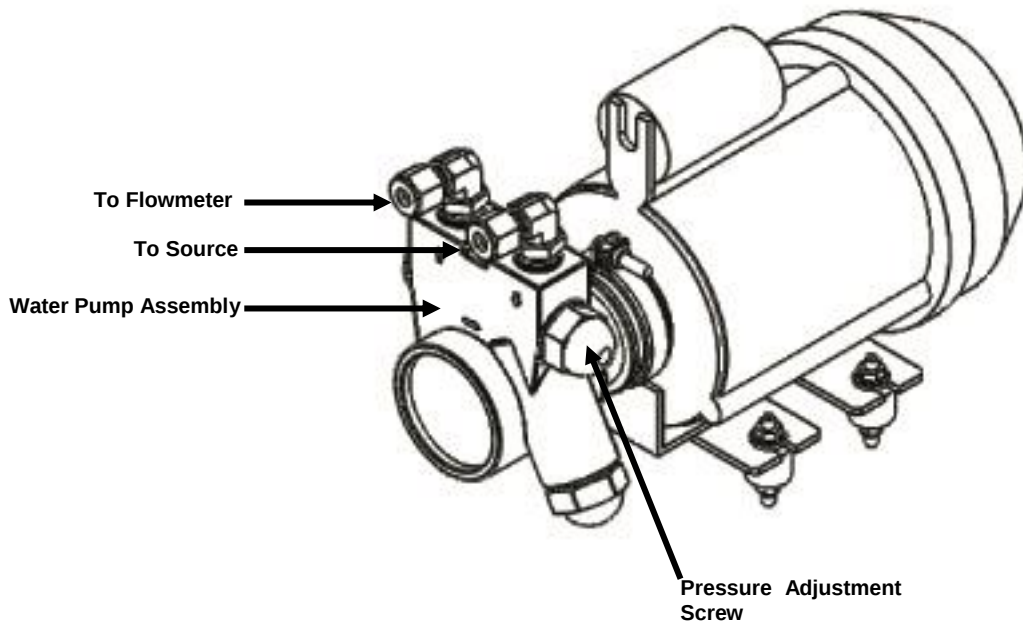
Prior to draining the water tank, the steam tank must be drained first. For instructions on draining the steam tank, please see page 6-15.

1. Disconnect the power supply to the machine.
2. Disconnect the water supply at the source.
3. Open the machine doors and remove the grounds bin.
4. Open the water drain valve (left side). The red handle should be vertical.
5. Loosen the line between the water tank and the brew and hot water valves. Use 1/2" wrench.
6. After the water finishes draining, tighten the line between the water tank and the brew and hot water valves. Use 1/2" wrench.
7. Close the water drain valve. The red handle should be horizontal.
8. Replace the grounds bin in the machine and close the machine doors.
9. Reconnect the water supply at the source.
10. Reconnect the power supply to the machine.

Water Pump and Motor

220Vac motor
140psi

The pump is *only* activated when brewing espresso, pouring hot water and filling steam tank. The pump *does not* inhibit line pressure or water flow. The water pump and motor is located behind the brew group and underneath the hot water tank.



Water Pressure Gauge

The water pressure gauge is located behind the front panel. As the pump is activated, the gauge will reflect the pump pressure.

The water pressure gauge does not necessarily reflect the line pressure when the pump disengages. The one-way check valve maintains an internal pressure.

Setting Pump Pressure

This procedure must be done while extracting a double espresso.

To set the pump pressure, turn the adjustment screw located on the water pump assembly. Adjust in quarter-turn increments. The pump must be set between 135-140psi for proper brewing.

To view pump pressure, go to the following software menu:

- **XT:** Navigate to **SYSTEM TEST > WATER PUMP**.
- **Xpress:** Navigate to **TEST ROUTINES > WATER PUMP**.

Activate the pump. The water gauge will display current pump pressure.

Expansion Valve

130psi

The expansion valve, located under the water pump and plumbed to the input side, allows pressure to escape when the pressure within the water tank exceeds 140psi due to thermal expansion. This provides a 35psi buffer between the expansion valve and the 175psi pressure relief valve.

Check Water Flow Message

The CPU is programmed with a 60 second “time out” feature. Specific water volumes are set for each espresso extraction.

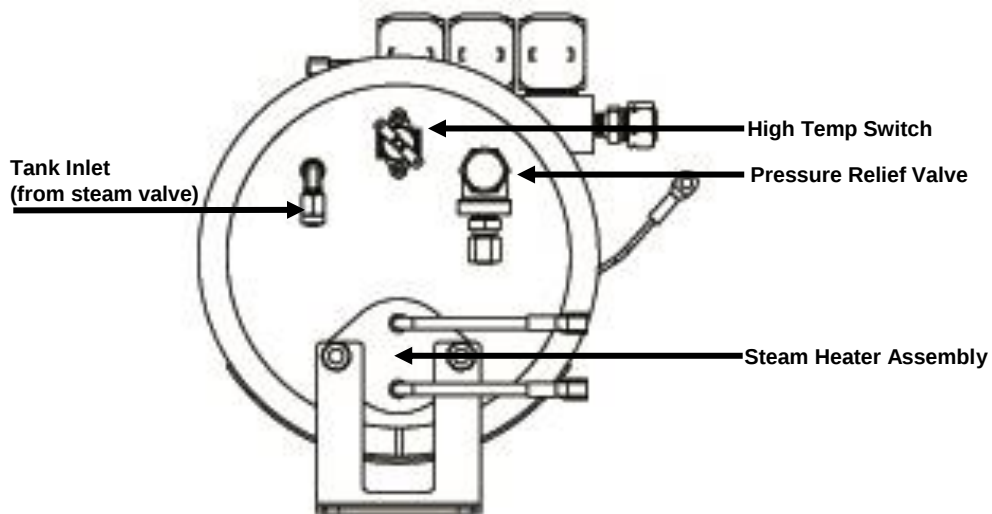
EXAMPLE: If the setting for a double espresso is 60mL and 60mL of water does not pass through the flowmeter within 60 seconds, the machine will time out and **CHK WATER FLOW** will appear on the machine’s display.

To troubleshooting this error message, please see the *Check Water Flow* troubleshooting tree in *Section 16: Troubleshooting*.

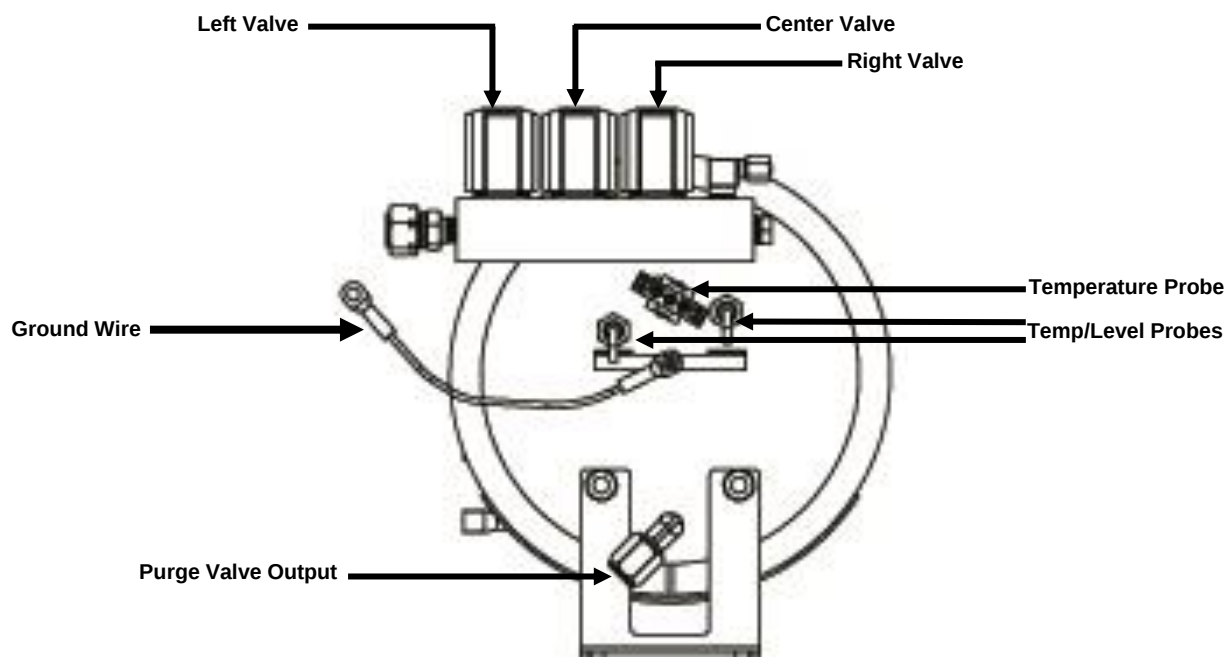
The Steam System

The steam system heats the water that is used to froth milk for drinks. The steam tank is located in the upper right side of the machine and is accessed by removing the right-side panel of the machine.

Steam Tank – Rear View



Steam Tank – Front View



Steam Tank Fill Valve

24Vdc, Solenoid type

The steam tank fill valve is the third valve from the front on the hot water tank assembly and allows water to enter the steam tank.

To activate the steam tank fill valve, go to the following software menu:

- **XT: SYSTEM TEST > STEAM FILL VALVE.**
- **Xpress: Navigate to TEST ROUTINES > STEAM FILL VALVE.**

Steam Tank

Temperature Probe

The temperature probe monitors the steam tank temperature. The temperature probe senses the steam temperature, relates it to a DC voltage and transmits the voltage to the CPU. The CPU uses the information to regulate the steam temperature.

The operating temperature of the steam tank is between 240-246°F (115-119°C). The minimum measurable temperature of this device is 146°F (64°C), while the maximum is 257°F (125°C).

- If the temperature is 146°F (64°C) or below, 146°F (64°C) will be displayed.
- If the temperature is 257°F (125°C) or above, 257°F (125°C) will be displayed

Water Level Probes

The water level probes monitor the water level inside the steam tank.

If the CPU does not detect ground through the lower safety probe, the heating element cannot be activated. Once the lower water level probe sees ground, the heating circuit is allowed to be active, if needed.

If the CPU does not detect ground through the upper safety probe, the steam tank fill valve is energized (open), allowing water into the tank until the water level reaches the upper probe, at which point the valve is de-energized (closed).

Measured voltage at the sensors when dry is 0.5Vac pulsed every second.

When wet, the lower (safety) probe will read approximately 0.006Vac and the upper (fill stop) will read approximately 0.014Vac.

To verify whether the water level probes are dry or wet, go to the following software menu:

- **XT: Navigate to SYSTEM TEST > STEAM TANK LEVEL PROBE (UPPER).**
- **Xpress: Navigate to TEST ROUTINES > UPPER STEAM PROBE.**

If **WET** is displayed, if probe is seeing ground.

Pressure Gauge

The steam pressure gauge is located behind the front panel and displays current steam tank pressure.

Heating Elements

The steam tank contains one 2250 watt – 19.2 Ω (ohm) heating elements.

One pair of solid state relays control the voltage to the heating element.

Pressure Relief Valve

30psi
PN [1210-064](#)

The pressure relief valve functions as a safety relief valve.

If the pressure in the water tank exceeds 30psi, the pressure relief valve opens to release excess pressure. A drain hose is routed from the pressure relief valve to the drain tray.

High Temperature Limit Switch

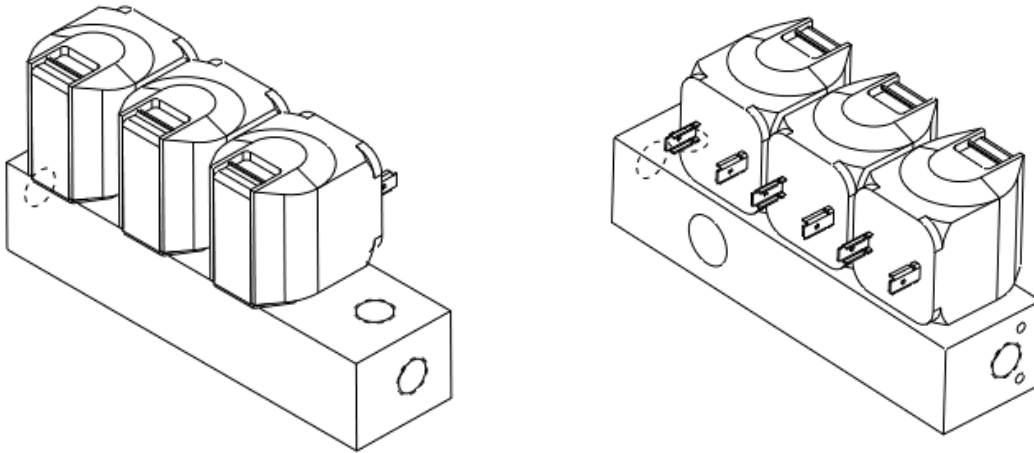
260°F (127°C)
PN [1311-022](#)

In the event that the steam tank should overheat, the high temperature limit switch cuts the 24Vdc control signal to the solid state relay, which opens the circuit to the heating elements.

Steam Valves — Three Stage Manifold

The Xpress and Xpress XT use three steam valves, referred to as the left, center, and right steam valves. Each steam valve operates on the same voltage and has a different orifice size for regulating the steam flow from the steam tank.

- During a latte pour, all three steam valves are activated and engaged.
- During a cappuccino pour, the left and right steam valves are activated and engaged.
- During a cold drink pour, only the left steam valve is activated and engaged.



Left Steam Valve

Operating voltage: 24Vdc
Orifice size: 0.024" (.06cm)
PN [98568](#)

This valve is open for both steamed and foamed milk production and the valve remains open for a period of time after milk production is complete, to clear milk from the tubing and the milk pump.

Center Steam Valve

Operating voltage: 24Vdc
Orifice size: 0.081" (21cm)

This valve controls the flow of steam during steamed milk production, and is open the entire time steamed milk is being produced.

Right Steam Valve

Operating voltage: 24Vdc
Orifice size: .120" (0.3cm)

This valve allows additional steam to flow during foamed milk production. It is open the entire time foamed milk is being produced.

Air Purge Process

When the unit is first powered on from a cold start, it is necessary to purge the air from the tank while the water is heating. If the air is trapped within the tank, a "false head of steam" will occur and cause the machine to think it is at operating temperature, when it isn't.

To prevent this from happening, the left steam valve is activated whenever the pressure within the tank is at or below 4psi/235°F (113°C).

Captive Water Purge System

The steam tank allows water in, but only steam exits the tank allowing a potential build-up of scale inside the tank that could dramatically affect the tank performance. The purge valve, located near the rear of the steam tank, opens during each brew clean cycle, flushing 0.3 liters of water through the system and removing any sediment.

Draining the Steam Tank

1. Disconnect the power to the machine.
2. Disconnect the water supply at the source.
3. Open the machine doors and remove the grounds bin.
4. Open the steam drain valve (right side). The red handle should be vertical.

NOTE: It takes approximately 2-5 minutes for the steam tank to drain. When the steam tank is no longer noisy and the steam gauge displays 0psi, the steam tank is drained.

5. Close the steam drain valve. The red handle should be horizontal.
6. Replace the grounds bin in the machine and close the machine doors.
7. Reconnect the water supply at the source.
8. Reconnect the power supply to the machine.

Steam Wand Overview

There is an optional steam wand feature for the Xpress machine. The steam wand can be used to steam liquids that cannot be run through the machine (e.g. eggnog, soy, or flavored milks).

The manual steam wand uses a knob to control the flow of steam.

NOTE: The steam wand option is *not* available for machines that have a touch screen (Xpress XT).

Removing a Steam Wand

Replacing the entire right door is required if a customer requests that the steam wand be removed from their machine(s). For instructions on replacing the door, call Concordia Beverage Systems for assistance at 1-800-778-0990.

Installing a Steam Wand

Steam wands are installed by the Concordia manufacturing team. Steam wands cannot be installed in the field by a service technician.

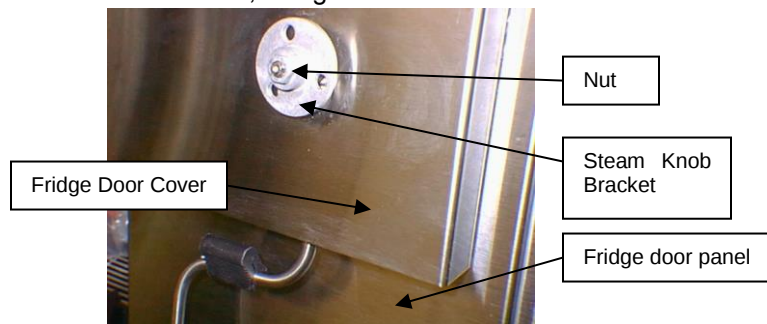
Cleaning a Steam Wand

To clean the steam wand, periodically wipe it down with a damp cloth to remove milk from the outside of the steam wand. Using a cleaner such as the Rinza cleaning tablets is also an option – just follow the instructions on the Rinza container.

WARNING: Do not leave a steam wand immersed in liquid when not being used for steaming. As the pressure inside the steam tank decreases, liquid will be drawn through the inactive steam wand and into the steam tank.

Replacing a Steam Wand

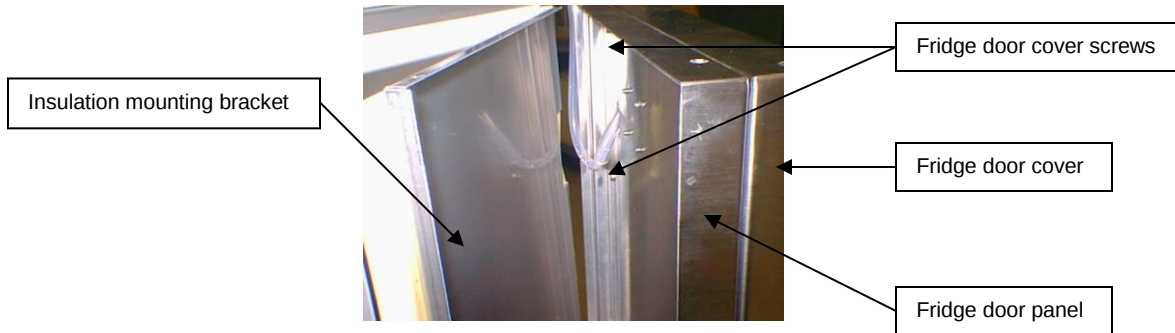
1. Power the machine down.
2. Disconnect the water supply from the machine.
3. Purge all steam from the steam tank.
4. Remove the black steam wand knob.
5. Remove the nut, using a 7/16" wrench.



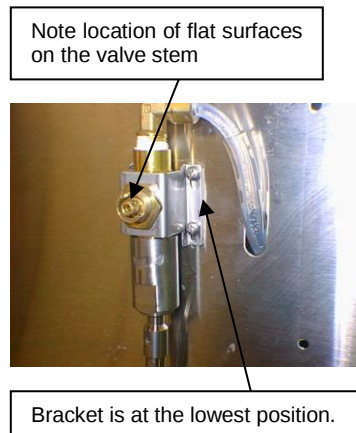
6. Remove the steam wand knob bracket, and then discard.
7. Remove the refrigerator door panel by removing the screws. Use a #1 Phillip's screwdriver.

IMPORTANT: Remove screws carefully to prevent stripping of the screw heads.

8. Separate the insulation-mounting bracket from the fridge door panel. See the photo in step 9.
9. Remove the four screws holding the refrigerator door cover. Use a Philips screwdriver. Remove the cover to gain access to the steam wand assembly.



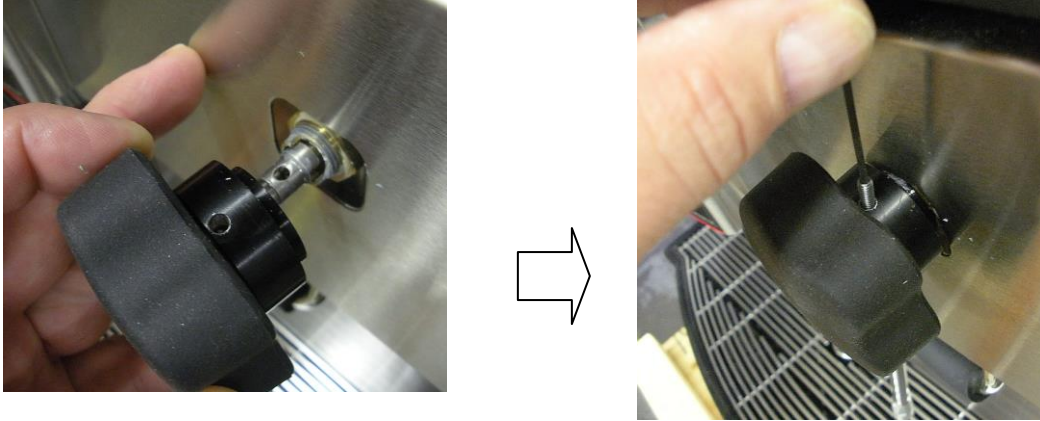
10. Unfasten the PFA tubing at the elbow fitting. Use a 1/2" wrench.
 11. Remove the four screws attaching the steam wand bracket. Use a #1 Phillip's screwdriver.
- NOTE:** Do not discard these screws.
12. Install the 2500 Steam Wand Assembly (PN [2790-107](#)) provided. Use the washers (PN [1430-037](#)) from the kit and the screws from step 11, to install the new steam wand.



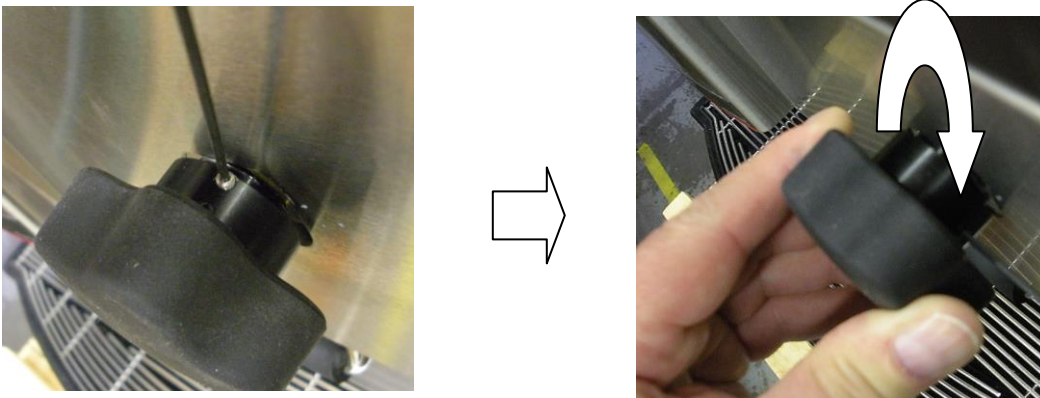
13. Align the steam wand valve in the center opening on the refrigerator door cover. Tighten the tube fitting onto the elbow.



14. Attach the refrigerator door cover to the refrigerator door panel using the screws from step 9. Verify that the valve stem is centered in the opening on the refrigerator door cover.
15. Align the hole in the supplier handle assembly (PN [2790-106](#)) with the hole in the lever adapter and install handle assembly. Tighten until flush. Use the long black 6-32 setscrew supplied (part of [2790-106](#)).



16. Rotate the handle until the inner short setscrew is lined up with the notched valve section. Once aligned, tighten setscrew (part of [2790-106](#)) to act as a stop to prevent the handle from being able to turn completely around. Check for dragging of setscrew and adjust out if needed. Turn knob to ensure it stops after about 1/4 turn.



17. Turn on the water supply.
18. Turn the machine on and allow steam tank to reach operating pressure.
19. Operate the steam wand to verify operation and check for leaks.

Section 8 :: Refrigeration Unit

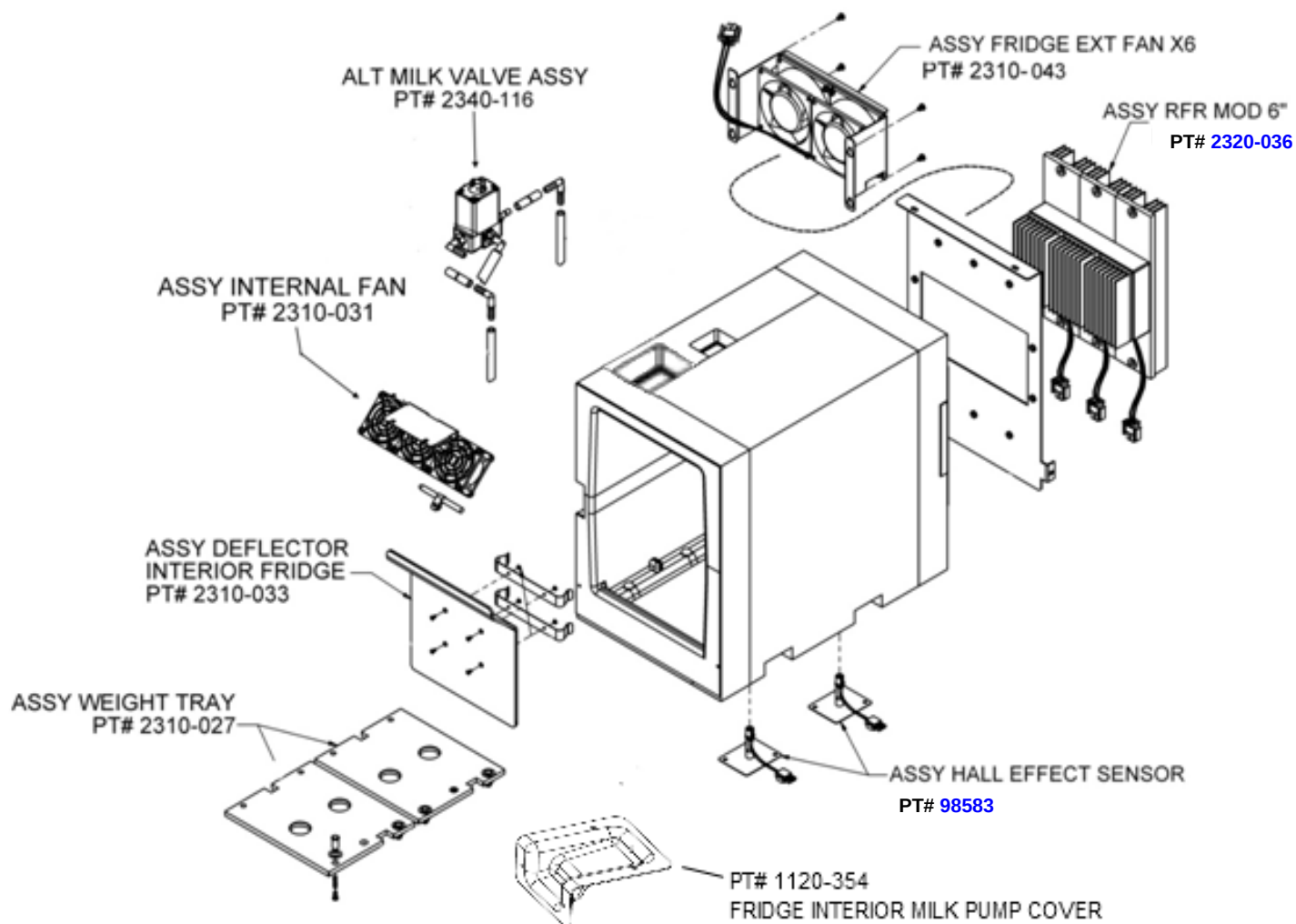
1. Refrigeration Unit Overview

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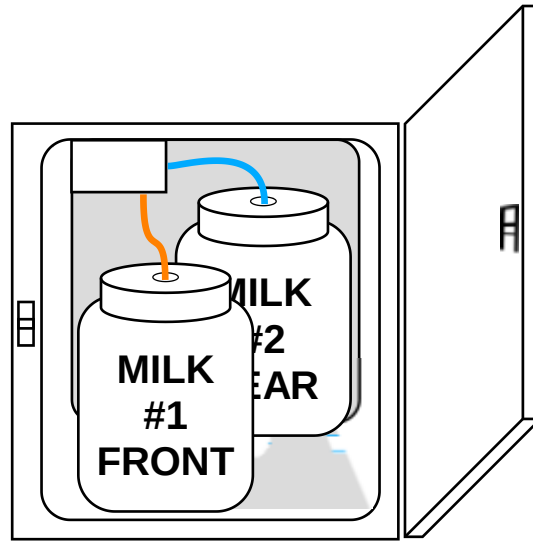
Refrigeration Unit Overview

The espresso machine features a refrigeration unit, to house the milk used for drinks. The refrigeration unit is designed to accommodate two standard off-the-shelf 1-gallon (4-liter) milk containers.



Placing Milk in the Machine

Milk #1 is placed in front, and Milk #2 is placed in rear. When pouring a drink, the machine uses Milk #1 by default.



1. Open the refrigeration unit door and place the opened Milk #2 container in the refrigeration unit.
2. Place the rear milk pick-up tube in milk container.
3. Slide the container into the rear of the refrigeration compartment while feeding the milk pick-up tube fully into the milk container.

DO ensure the milk pick-up tube is fed into the middle of the container.

DO NOT place the milk pick-up tube into the milk container handle.

DO NOT kink or bend the milk pick-up tubes.

DO NOT pull excessively on the milk pick-up tubes.

4. Repeat process using the front milk pick-up tube and Milk #1 container.
5. Close the front doors to the machine.

Checking the Refrigeration Unit Temperature

The temperature for the on-board refrigeration unit is always displayed in the machine's touch screen.

If the on-board refrigeration unit door has been open for an extended period, it is normal that the temperature will rise. To have the refrigeration unit return to the proper temperature, close the refrigeration unit door and check the temperature in an hour. If the temperature is not correct at that time, please contact Concordia Beverage Systems at 1-800-778-0990.

Refrigeration Cooling Module Assembly

Operating current approximately 12amps

The refrigeration cooling module assembly contains three Peltier/Thermoelectric chips. A Peltier chip contains semi-conductors sandwiched between ceramic sheets. When DC voltage is applied, one side of the chip becomes extremely hot while the other side becomes cold. This causes heat to transfer from the cold side to the hot side.

The refrigeration cooling module removes heat from the interior of the refrigerator, leaving only cold air.

The chips are wired in parallel. If one chip fails, the other two will continue to function. However, the performance of the refrigerator will degrade.

There is a direct correlation between the ambient air temperature around the exterior of the machine and the temperature of the interior of the refrigerator. To achieve an interior temperature of 36°F (2°C) inside the refrigerator, the ambient air temperature outside the machine must not exceed 81°F (27°C). There is a delta of 45°F (7°C) between the ambient temperature and the temperature of the refrigeration unit. This means that if the ambient temperature is greater than 81°F (27°C), the refrigeration unit will not be able to achieve a temperature of 36°F (2°C) or cooler, and the quality of milk will be jeopardized.

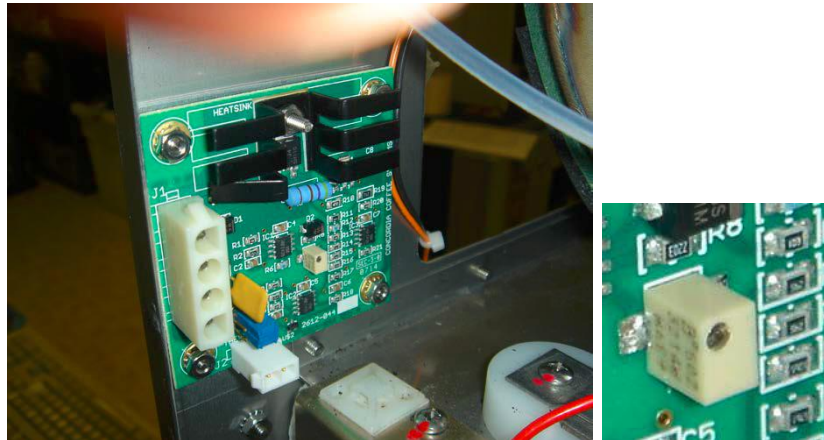
Fan Control Board

Operating Voltage: 24Vdc

The power for the heat sink fan is controlled by the fan control board, which is mounted on the back of the Xpress, behind the steam tank. The fan control board controls the speed of the heat sink fans by monitoring the internal temperature of the refrigeration unit. As the refrigeration unit becomes colder, the fans slow, which results in quieter machine operation. When the temperature rises inside the refrigeration unit, the fan control board increases the speed of the heat sink fans. If the refrigeration unit rises above 39°F (4°C), the fan control board uses the full 24Vdc; as the refrigeration unit temperature drops, the operating voltage lowers to 10Vdc.

Refrigerator Exhaust Fan Controller Adjustment

1. Gain access to the back of the machine and remove the back panel.
2. The fan speed control PCA is located right below the steam tank fill valve next to the rear of the steam tank.
3. Connect the leads of your voltmeter to the power connector for the rear fans.
4. Adjust the pot (small slot screw in the white component shown) so that the voltage to the fans starts dropping from maximum (24-25 VDC) only between the internal refrigerator temperature range of 38 and 39 degrees F (3.3-3.9 C). Turning the pot clockwise decreases the temperature at which the voltage starts to drop. Turning it counter-clockwise increases the temperature at which the voltage starts to drop.
5. You can change the temperature inside the refrigerator by opening and closing the door.
6. Once you have made to proper adjustment, verify by allowing the temperature to drop below 38 degrees and then open the door to note the temperature at which the maximum voltage to the fans is attained. If adjusted properly, that temperature should be between 38 and 39 degrees F.
7. Once verified, reinstall the back panel.



Cold Sink Deflector

Located at the rear of the on-board refrigerator unit, the cold sink deflector (CSD) protects the refrigerator cooling module assembly and guides air flow generated by the interior circulation fan assembly across the surface of the refrigerator cooling module assembly.

The cold sink deflector should be mounted directly under the circulation fan assembly. Faulty refrigeration temperature readings can result from:

- Too large of a gap between the CSD and the circulation fan.
- An improperly positioned CSD (e.g. a CSD allowed to rest on the floor of the refrigeration unit).

Example: Deflector off



Example: Deflector on



Interior Circulation Fan Assembly

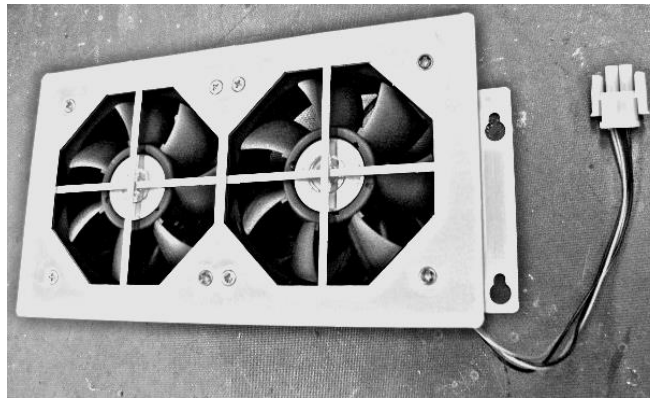
Operating Voltage: 24Vdc

The interior circulation fans (PN [2310-031](#)), located inside the on-board refrigeration unit above the cooling module assembly, are used to maintain air movement across the cold sinks, and to ensure a uniform temperature within the refrigerator.

Exterior Cooling Module Fan Assembly

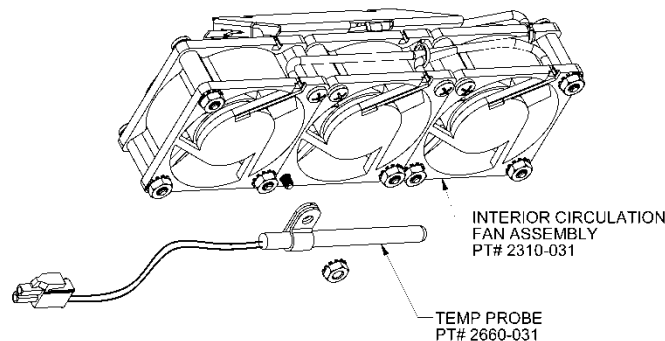
Operating Voltage: 24Vdc

The exterior cooling module fan assembly (PN [2310-043](#)) is located on the exterior of the refrigerator cooling module unit and it dissipates heat from the heat sink side of the cooling module.



Temperature Probe Assembly

The temperature probe (PN [2660-031](#)) is used to measure the internal temperature of the on-board refrigeration unit. The CPU monitors the temperature and adjusts the interior temperature through powering the Peltier chips in the refrigerator cooling module.



Milk Weight Trays

The Xpress machine monitors the available milk levels using two milk weight trays. Each milk container is weighed independently. Milk levels are monitored using the milk weight trays and a notification message is displayed when milk levels are low or empty.

The milk containers sit on the milk weight trays and as the milk level drops, the milk weight tray rises, increasing the gap between the milk weight tray sensor magnet and the sensor. A low milk level of approximately 25 percent of the milk container volume will result in the **LOW MILK – FRONT** or **LOW MILK – REAR** message to be displayed.

A single, large milk weight tray is available. This milk weight tray allows for two containers of a single type of milk to be used. If a large milk weight tray is in use, verify the following software setting is enabled:

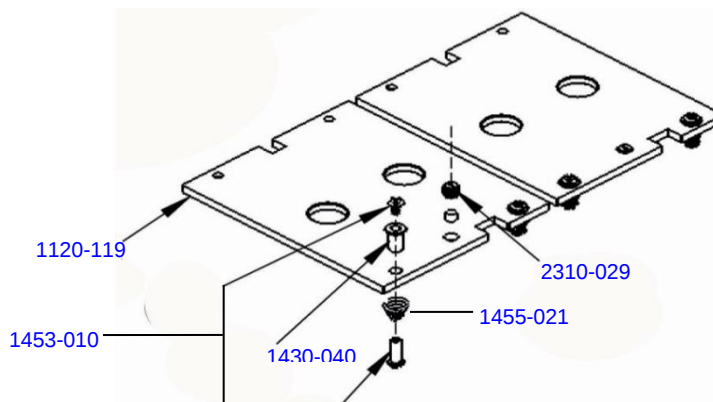
- **XT: MACHINE SETTINGS > MILK SYSTEM CONFIGURATION > SINGLE MILK AUTO**
- **Xpress: SPECIAL FEATURES > SINGLE MILK AUTO**

A small milk weight tray is designed to hold a single milk container, and a large weight tray is designed to hold two milk containers or one large container.

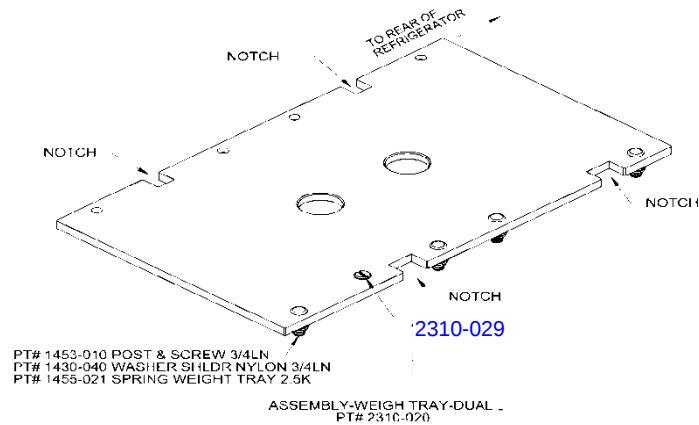
LOW MILK – FRONT	.25 gallon (.95 liter) of milk in front container remains.
NO MILK – FRONT	.10 gallon (.38 liter) of milk in front container remains.
MISSING FRONT TRAY	Tray sensors are not detecting the milk weight tray magnet. The milk weight tray is not installed correctly, is missing, or is incorrectly adjusted.
Similar messages appear for the rear milk weight tray.	

NOTE: When initially inserted into the on-board refrigeration unit, the milk weight tray does not lie flat. The springs on the right hand side of the milk weight tray naturally lift the right side up about 1/4" (.64cm). With a full milk container on the milk weight tray, it will lie flat.

Small Milk Weight Tray Assembly PN [2310-027](#)



Large Milk Weight Tray Assembly



The milk weight trays are notched to ensure they are properly placed within the on-board refrigeration unit.

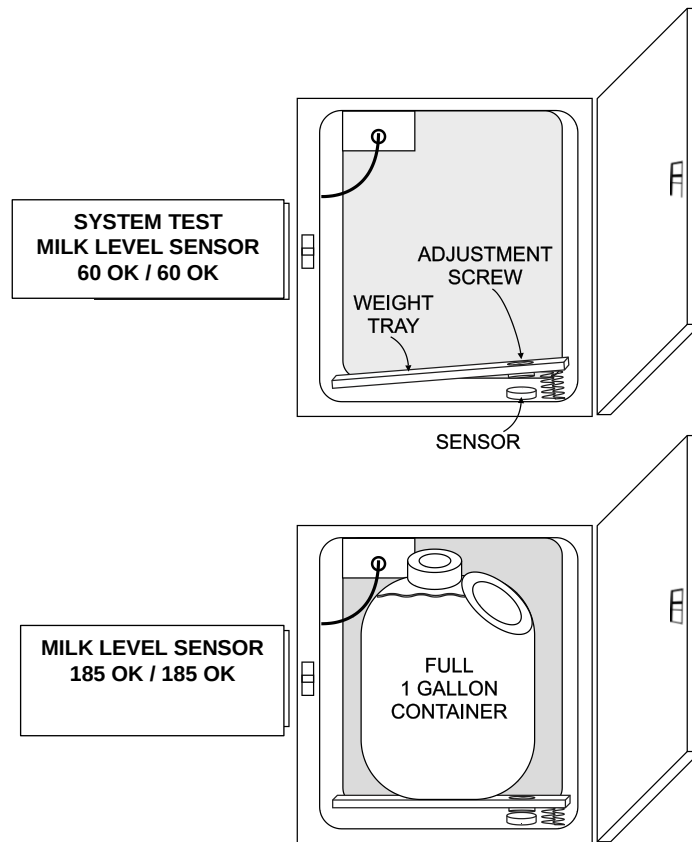
Adjustment to milk level monitoring can be done by adjusting the position of the magnet. To set the milk level set-point, go to the following software menu:

- **XT: SYSTEM TEST > MILK LEVEL SENSOR**
- **Xpress: TEST ROUTINES > MILK LEVEL**

IMPORTANT: When calibrating a milk weight tray, adjust the magnet and remove the screwdriver from the milk weight tray. The presence of the screwdriver will affect the magnet and skew the count shown.

Adjusting a Milk Weight Tray

The milk level should be 60 ± 1 with an empty milk weight tray in place. With a full, 1-gallon (4-liter) milk container in the center of the milk weight tray, the display should read: 185 ± 10 .



1. Remove the milk container from the refrigeration unit.
2. Verify the milk level set-point. Go to the following software menu:
 - a. **XT: SYSTEM TEST > MILK LEVEL SENSOR**
 - b. **Xpress: TEST ROUTINES > MILK LEVEL**
3. The display should read 60 ± 1 .
4. If the display is not 60 ± 1 , turn the adjustment screw until the display reads 60.

NOTE: Ensure the milk weight tray is properly placed in the refrigeration unit, prior to making any adjustment.

5. Place a full milk container on the milk weight tray and verify the display reads 185 ± 10 .

NOTE: The closer the milk container is to the left side of the milk weight tray, the less accurate the reading will be.

6. If either number is incorrect, remove the milk container and adjust the screw on the milk weight tray until the above numbers are achieved. If the milk count does not change, verify the sensor is operating.

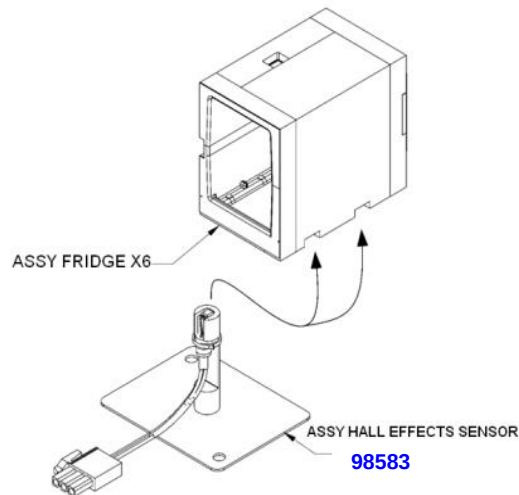
Milk Level Sensors

There are two identical sensors in the refrigerator used to detect the milk weight tray magnets. One of them is shown in the diagram below.

To view the milk level set-point, go to the following software menu:

- **XT: SYSTEM TEST > MILK LEVEL SENSOR**
- **Xpress: TEST ROUTINES > MILK LEVEL**

An empty tray should be set to 60 ± 1 . A full gallon should read approximately 185 ± 10 .



Auto Milk Select

To enable or disable the auto milk select feature, go to the following software menu:

- **XT: MACHINE SETTINGS > MILK SYSTEM CONFIGURATION**
- **Xpress: SPECIAL FEATURES > MILK SYSTEM**
-

The default setting for this feature is **OFF**.

Auto Milk Select Enabled

- If one of the milk containers is empty, the machine will automatically draw milk from the other container.
- If the rear container is empty, **NO MILK-REAR** is displayed on the touch screen.
- If the front milk container is empty, **NO MILK-FRONT** is displayed on the touch screen.
- The machine will not beep unless both containers are empty.

Auto Milk Select Disabled

If the chosen milk runs out during a drink pour, milk will stop being poured. The machine will not switch source milk containers during a drink pour.

- If the rear container is empty, the display will read **NO MILK-REAR**.
- If the front milk container is empty, the display will read **NO MILK-FRONT**.
- The machine will beep. (*Xpress only*)

Section 9 :: Milk System

1. Milk System Theory of Operation
2. The Milk Delivery System
3. Milk Delivery System Components
4. Air Gate Valve Assembly
5. Alt Milk Valve
6. Steam Delivery Components

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Milk System Theory of Operation

Basic Terminology

Milk Timings

The amount of time milk is poured for a specific drink.

Steamed Milk

Steamed milk is hot milk 160-170°F (71-77°C) with little-to-no foam that is produced to create a latte, mocha, chai latte, and steamed milk beverage (e.g. hot chocolate).

Foamed Milk

Foamed milk is warm aerated milk 150-160°F (65-71°C) used to create cappuccinos.

Flavor Adjust 1

This setting reduces the percentage of milk pour time when a beverage with one flavor is selected. The factory setting of 95 percent is acceptable in nearly all applications. It is only necessary to adjust this setting if the flavor timings are set significantly higher than the factory defaults.

Flavor Adjust 2

This setting is used to reduce the percentage of milk pour time when a beverage with two flavors is selected. The factory setting of 90 percent for a large beverage is acceptable in nearly all applications. It is only necessary to adjust this setting if the flavor timings are set significantly higher than the factory defaults.

Steam Tank Temperature (General)

The steam tank is always held at the temperature required to produce a flavored beverage. In most cases, this “standby temperature” is the steamed milk temperature plus the flavor offset.

- If a non-flavored steamed milk beverage is selected, the steam tank temperature is allowed to drop to the steamed milk temperature setting before the steam tank heater is activated.
- If a non-flavored cappuccino is selected, the steam tank temperature is allowed to drop to the foamed milk temperature setting before the steam tank heater is activated.
- At the end of the milk production the steam tank returns to the “standby temperature.”

Steamed Milk Temperature Setting

The default temperature of 243°F (117.2°C) is maintained by the steam tank during a latte or a steamed milk pour.

Foamed Milk Temperature Setting

The default temperature of 241°F (116.1°C) is maintained by the steam tank during a cappuccino pour.

Flavor Offset Temperature Setting

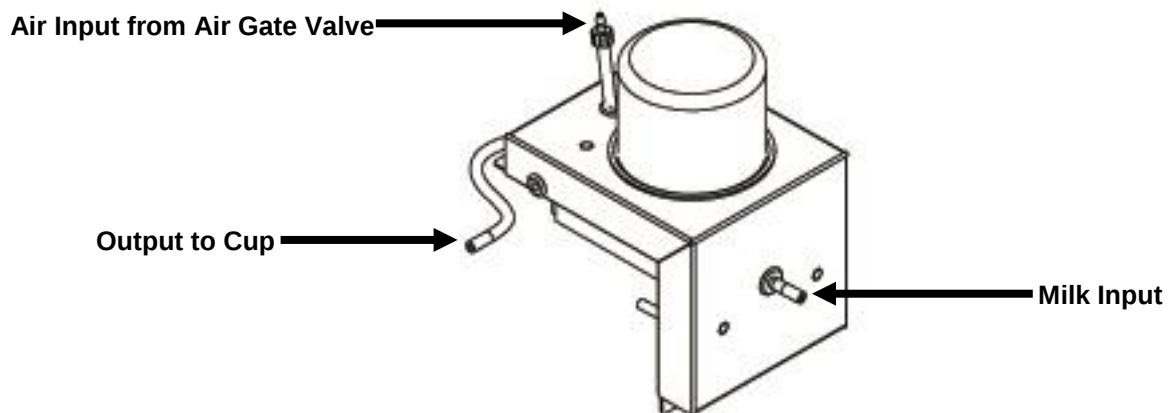
This setting is used to ensure that a flavored beverage is delivered at the same temperature as a non-flavored beverage. The default setting is 3°F (1.7°C) which means that the steam tank temperature will be held 3°F (1.7°C) hotter during a flavored beverage.

The Milk Delivery System

When a milk-based drink is selected, the milk pump draws milk from the milk container in the refrigerator, through the alt milk valve (if present), and into the milk pump assembly. In the milk pump assembly, air is introduced from the air gate valve assembly and mixed with milk, and then the milk and air mixture is transferred into the mixing TEE. In the mixing TEE, steam from the steam valves is introduced into the air and milk mixture, to heat the milk. The heated and frothed milk is then delivered to the milk bowl, and then dispensed into the cup via the product nozzle.

Milk Delivery System Components**Milk Pump Assembly**

The milk pump assembly is located behind the gauge panel.



Milk Pick-Up Tubes

The milk pick-up tubes transfer milk from the milk containers in the refrigeration unit to the milk pump. Each milk pick-up tube has a screen on the end, to prevent particles and solids from entering the milk pump.



Milk Pump

The milk pump uses a gear pump to draw milk from the milk container in the refrigeration unit and through the milk system. The milk pump uses a 24Vdc motor.

Initial Setup of the Milk System

During the initial setup of the milk system it is important to follow these steps in order to ensure reliable and consistent milk delivery.

1. Pour a small latte and measure the temperature of the beverage in a paper cup. The temperature should be between 160°F to 170°F (71°C to 77°C).
2. If the temperature is below the optimal range, increase the steam tank temperature setting, and then re-test the drink temperature. Repeat this process until the temperature is within 160°F to 170°F (71°C to 77°C). To do this, go to the following software menu:
 - a. **XT:** Navigate to **TEMPERATURE SETUP > STEAM TEMP (LATTE)**.
 - b. **Xpress:** Navigate to **SET TEMPERATURES > STEAMED MILK**.
3. If the temperature is above the optimal range, reduce the steam tank temperature setting, and then re-test the drink temperature. Repeat this process until the temperature is within 160°F to 170°F (71°C to 77°C). To do this, go to the following software menu:
 - a. **XT:** Navigate to **TEMPERATURE SETUP > STEAM TEMP (LATTE)**.
 - b. **Xpress:** Navigate to **SET TEMPERATURES > STEAMED MILK**.
4. Pour a small cappuccino and measure the temperature of the beverage in a paper cup. The optimal temperature should be 150 to 160°F (65°C to 71°C).

5. If the temperature is below the optimal range, increase the foamed milk temperature setting and re-test the drink temperature. Repeat this process until the temperature is within 150 to 160°F (65°C to 71°C). To do this, go to the following software menu:
 - a. **XT:** Navigate to **TEMPERATURE SETUP > STEAM TEMP (CAPPUCCINO)**.
 - b. **Xpress:** Navigate to **SET TEMPERATURES > FOAMED MILK**.
6. If the temperature is above the optimal range, reduce the foamed milk temperature setting and re-test the drink temperature. Repeat this process until the temperature is within 150 to 160°F (65°C to 71°C). To do this, go to the following software menu:
 - a. **XT:** Navigate to **TEMPERATURE SETUP > STEAM TEMP (CAPPUCCINO)**.
 - b. **Xpress:** Navigate to **SET TEMPERATURES > FOAMED MILK**.
7. Pour a small flavored latte and measure the temperature of the beverage in a paper cup. The optimal temperature should be 160 to 170°F (71 to 76°C).
8. If the temperature is below the optimal range, increase the flavor offset temperature setting and re-test the drink temperature. Repeat this process until the temperature is within 160 to 170°F (71 to 76°C). To do this, go to the following software menu:
 - a. **XT:** Navigate to **TEMPERATURE SETUP > FLAVOR ADJUST TEMP**.
 - b. **Xpress:** Navigate to **SET TEMPERATURES > FLAVOR OFFSET**.
9. If the temperature is above the optimal range, reduce the flavor offset temperature setting and re-test the drink temperature. Repeat this process until the temperature is within 160 to 170°F (71 to 76°C). To do this, go to the following software menu:
 - a. **XT:** Navigate to **TEMPERATURE SETUP > FLAVOR ADJUST TEMP**.
 - b. **Xpress:** Navigate to **SET TEMPERATURES > FLAVOR OFFSET**.

Milk System Capabilities

The Xpress and Xpress XT milk systems produce steamed milk at a rate of approximately 16.3mL per second up to 170°F (76°C) and dry cappuccino foam at a rate of approximately 10.4 mL per second up to 160°F (71°C).

A Common Milk Timing Mistake

A common mistake made when adjusting the milk volume is adjusting the timing for the incorrect drink. There are two reasons why this is so common;

1. There are 52 individual milk times that can be adjusted in the Xpress.
2. The **SHOT SELECT** settings can alter what milk time is used for a beverage.

EXAMPLE: The **SHOT SELECT** for a large latte is set to double.

In this scenario, changing the milk time for a large latte will have no effect on the drink the machine will produce. The milk timing must be changed via the milk timings menu.

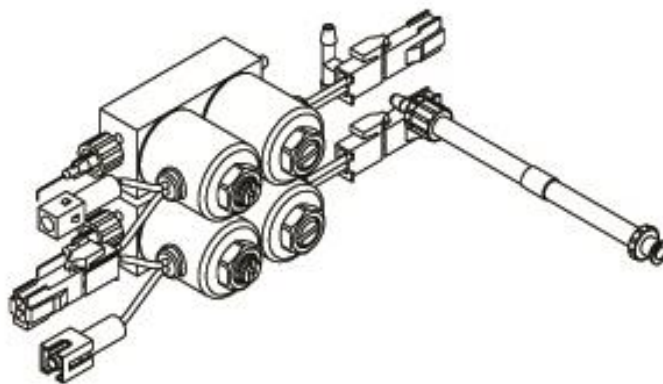
Air Gate Valve Assembly

The purpose of the air gate valve assembly is to allow a regulated supply of air to mix with the milk during the production of a milk-based drink.

The cappuccino gate valve, cappuccino air purge valve, and latte air purge valve are controlled by software, and the latte air gate valve is controlled by the milk pump.

The air gate valve assembly consists of two air gate valves and two air purge valves. During a latte drink pour, the latte air purge valve and latte air gate valves are used; and during a cappuccino drink pour, both assemblies of valves are used.

The air gate valve allows or stops air flow from the adjacent air purge valve. The air purge valve directs regulated air through the air vent needle when milk is poured or through the top port to purge residual milk after the production of a milk-based drink.



Air Gate Valves

Operating Voltage: 12Vdc

The air gate valves control the amount of air introduced into the milk pump during a milk-based drink pour. The amount of air allowed into the milk pump is controlled by software settings and the size of the air gate valve needles.

Air Purge Valves

Operating Voltage: 12Vdc

The air purge valves control the non-regulated air supply used to purge milk lines after drink production. The two air purge valves are connected in series to a single 24Vdc power source.

Air Vent Needles

The air vent needles regulate the amount of air allowed to mix with the milk and steam. During a latte pour, only one needle is engaged; during a cappuccino pour, both needles are engaged. This determines the amount of foam for cappuccino drinks.

The Xpress XT machines use two clear air vent needles (PN [1245-014](#)).

The Xpress NI machines use one red (PN [1245-014](#)) and one lavender needle (PN [1245-013](#)).

Connection of Milk Pump Assembly and Air Gate Valve Assembly

After the milk pump draws milk into the milk pump assembly, the air gate valve assembly is activated and allows air to be drawn into the milk pump assembly.

Alt Milk Valve

Operating Voltage: 24Vdc

The voltage for the alt milk valve is 24Vdc for 300 milliseconds and then reduces to 12Vdc to hold the valve in the desired state.

The alt milk valve is located within the on-board refrigeration unit and selects between the two supplies of milk (if two different milks are available). When the alt milk valve is energized, milk will be drawn from the front milk supply container. When the non-fat milk option is selected on the touch screen, the alt milk valve is not energized, and milk is drawn from the rear container.

EXAMPLE: When a milk-based drink is poured, voltage is sent to the alt milk valve to select the Milk #1 (front) container. When the **NON-FAT MILK** option is selected, the valve is not activated, and milk is drawn from the Milk #2 (rear) container.

Steam Delivery Components

The steam delivery components connect the steam valves with the steam mixing TEE.

Steam Valves

Steam valves transfer steam from the steam tank into the mixing TEE. For more information, see the *Steam Valves* topic in *Section 7: Plumbing*.

The Xpress espresso machine uses three steam valves, referred to as the Left, Center, and Right steam valves.

Left Steam Valve

Operating voltage: 24Vdc
Orifice size: 0.6mm (0.025")

Center Steam Valve

Operating voltage: 24Vdc
Orifice size: 2.1mm (0.081")

Right Steam Valve

Operating voltage: 24Vdc
Orifice size: 3mm (0.120")

- During a latte pour, all three steam valves are activated and engaged.
- During a cappuccino pour, the left and right steam valves are activated and engaged.
- During a cold drink pour, only the left steam valve is activated and engaged.
- After a milk-based drink is poured, the left steam valve remains activated for 15 seconds, to clean out the tubing.

Mixing TEE Assembly

The mixing TEE assembly is where steam is introduced into the milk and air mixture.

Section 10 :: Coffee System

1. The Coffee System
2. Grinders
3. Bean Hoppers
4. Brew Group
5. Brew Group Components
6. Gearbox Installation and Removal

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The Coffee System

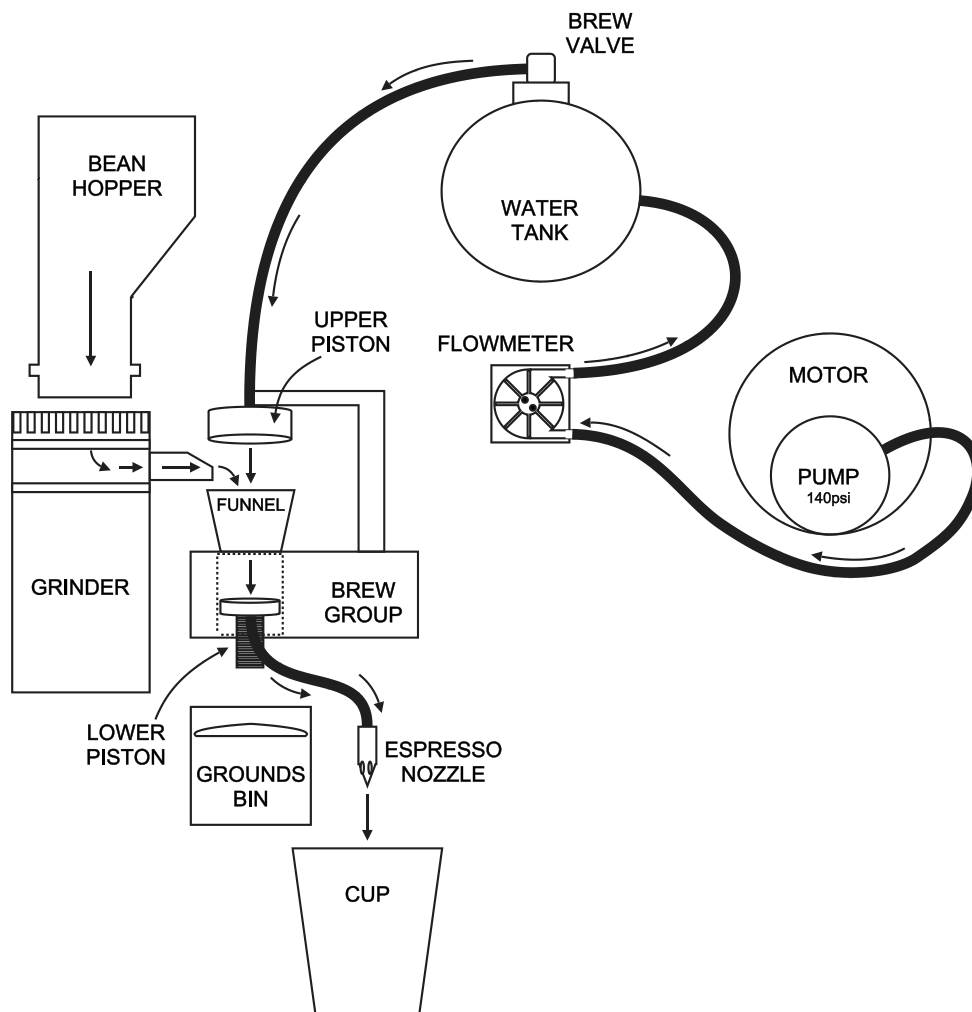
The process of delivering espresso into a cup begins with whole beans, stored in the bean hoppers, being fed to the grinders, ground to the desired consistency, and then delivered to the brew chamber within the brew group. Pressurized hot water is then introduced into the brew chamber where the coffee is extracted from the ground beans and delivered to the cup.

Only espresso-roast beans can be used in the Xpress 2017 and Xpress XT.

Espresso Path

With ground beans in the brew chamber, the chamber is sealed and hot water (195°F/85°C) between 135-140psi is forced through the ground beans and through the lower piston. The “espresso” coffee is then directed into the cup.

After the espresso is extracted, the used grounds are directed into the grounds chute and into the grounds bin.



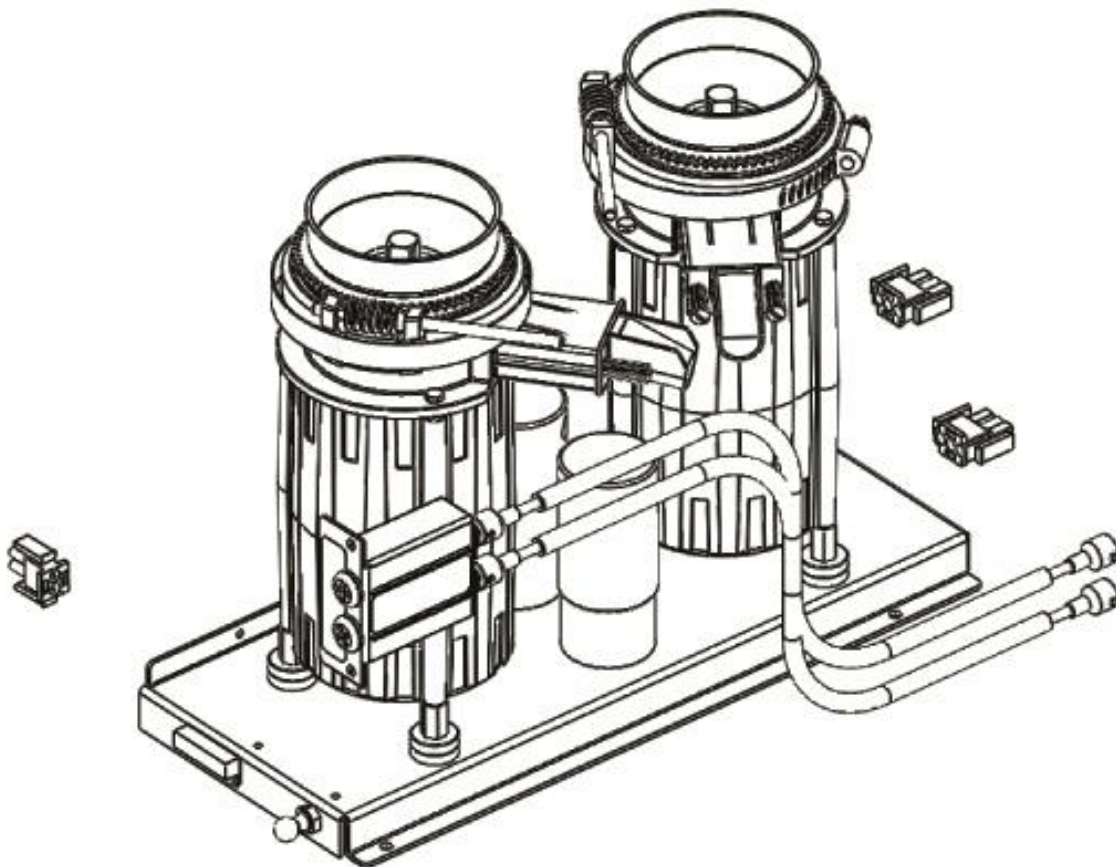
Grinders

Operating Voltage: 220Vac 50/60Hz

Beans are gravity fed to the grinders from the bean hoppers.

The blades (burrs) are the components which actually grind the whole beans to the desired particle size. The upper burr remains stationary as the lower burr spins and the coffee beans are ground. The burrs are made up of two identical halves: an upper and lower burr.

Double Grinder Assembly



Calibration: Espresso Grind

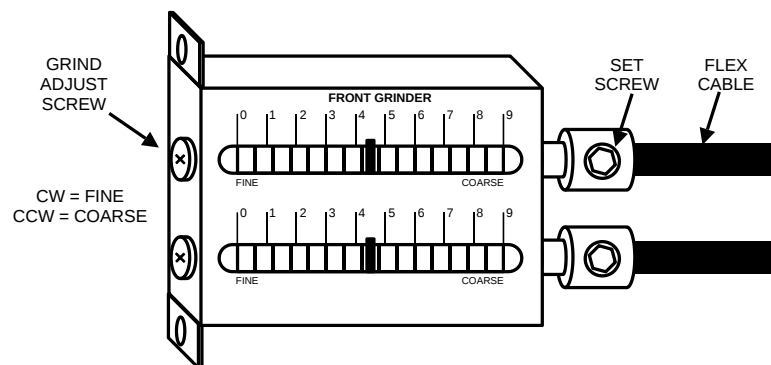
Over time, it may be necessary to adjust the grinder burr gap to ensure beans are ground to customer specification. The grinder adjustment panel is located behind the front panel. The grinder adjust screw is connected via cable to the grinder adjust worm gear located on each grinder.

When adjusting the grinder, turn the adjustment screw in single-turn increments.

The coffee powder channel and grinder body hold a volume of ground beans. When making adjustments to the grind, it is important to pour three double espressos before assessing the change on the fourth double espresso pour. Four double espresso pours must occur in order to ensure the change of grind is fully implemented.

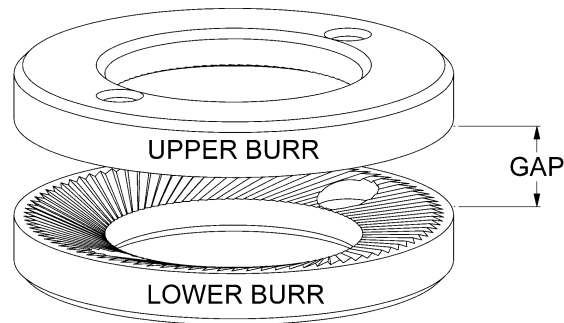
It is possible to calibrate the Xpress 2017 and Xpress XT for two different types of espresso-roast beans or for one espresso-based drink and one brewed coffee. See the *Calibrating Brewed Coffee* topic on page 2-11 for instructions. The secondary espresso bean type or beans for brewed coffee should be stored in the DECAF bean hopper and the machine needs to be programmed to access the DECAF hopper for that drink type.

Grinder Adjustment Panel



- Turning the grinder adjustment screw clockwise reduces the gap between the upper and lower burrs, resulting in a finer grind, increasing the extraction time
- Turning the grinder adjustment screw counter-clockwise increases the gap between the upper and lower burrs, resulting in a coarser grind, decreasing the extraction time

Grinder Adjustment Diagram



Measuring the Coffee Powder Dose

The CPU monitors the coffee powder dose using information obtained from the Hall-Effect sensors.

Once the beans are ground and delivered into the brew chamber, the upper piston lowers into the brew chamber to seal it. The lower piston moves up in the chamber to pack the ground coffee against the upper piston. The lower piston moves until it is stopped by the presence of the coffee in the chamber.

As the pistons move, the CPU monitors the number of motor rotations necessary to pack the ground coffee. The CPU is programmed to relate "X" number of rotations with ground coffee volume.

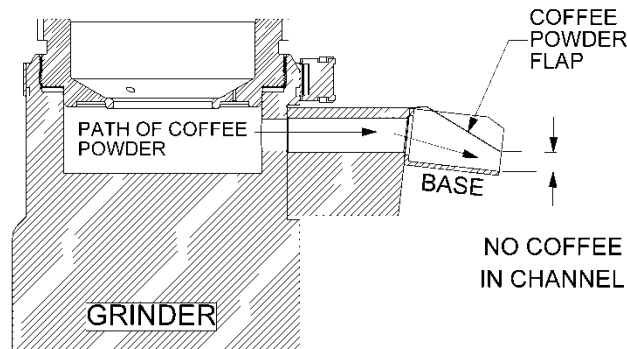
With each new extraction, the CPU automatically increases or decreases the grind time of the next coffee powder dose based on the amount of coffee detected during the previous extraction.

The software menu provides a visual display of the CPU monitoring the coffee powder dose. To view and adjust the grind time, go to the following software menu:

- **XT:** Navigate to **ESP/COFFEE SETTINGS**, select **ESPRESSO REGULAR**, **COFFEE REGULAR**, **ESPRESSO DECAF**, or **COFFEE DECAF**, and then touch the dose adjustment line next to the drink size (**SINGLE**, **DOUBLE**, **TRIPLE**) and adjust as necessary.
The line next to the drink type allows you to adjust whether the coffee powder dose will be increased, decreased, or remain the same during the next extraction. The shot time is briefly displayed in seconds on the touch screen.
- **Xpress:** Navigate to **COFFEE PWDR DOSE > GRIND ADJ ARROWS**, then press the INCREASE VALUE UP arrow to turn the arrows on.
The direction of the arrow indicates whether the coffee powder dose will be increased, decreased, or remain the same during the next extraction. The **GRIND ADJUST** option also activates a shot timer. After a double espresso is poured, the shot time is briefly displayed in seconds on the machine display. The **GRIND ADJUST** arrows and the espresso shot timer normally default to **OFF** when the Xpress machine is re-booted.

Coffee Powder Channel

The coffee powder channel flap opens when ground espresso moves through the channel, and it springs closed when the channel is empty. When the channel is empty, the gap between the coffee powder flap and the base should be less than 1/4" (6mm). If this flap is bent and the gap changes, the espresso extraction time will be negatively affected.



Removing the Grinder

1. Turn off the machine and unplug the machine from the wall power source.
2. Insert the hopper stopper(s).
3. Remove the hopper(s).
4. Remove the machine top panel.
5. Disconnect the front panel interlock switch.
6. Disconnect the display board cable from the front panel at the CPU.
7. Remove the front panel.
8. Remove the left side panel.
9. Disconnect the grinder electrical connection(s).
10. Remove the grinder adjustment panel assembly from the front panel.
11. Remove the grinder front panel.
12. Disconnect the left door interlock switch.
13. Remove the three screws from the inboard bottom edge of the grinder plate.
14. Remove the three outside screws from the left vertical panel.
15. Slide the grinder mounting plate forward out of the machine.

If the grinder adjustment flex cables are disconnected, the grinder adjustment should be set to mid-scale when reinstalled.

When reinstalling the grinder, ensure the electrical harness wires are not trapped under the grinder bottom plate.

Replacing the Grinder Burrs/Blades

From time to time, grinder burrs/blades become worn and dull and need to be replaced.

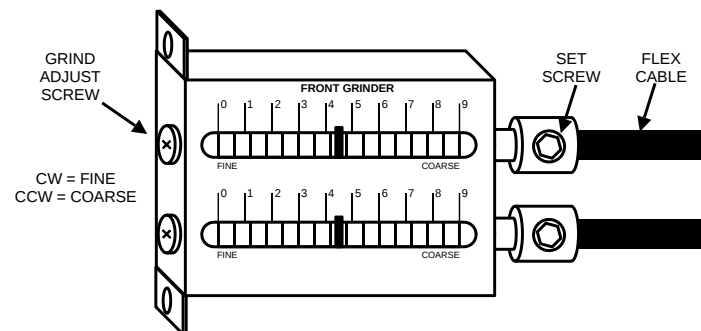
1. Insert the hopper stopper.
2. Remove the bean hopper(s).
3. Remove the top panel.
4. Open the front panel.
5. Unplug the grinder.
6. Loosen the band clamp and remove the grinder adjustment assembly.
7. Rotate the burr plate counter-clockwise until removed.
8. Remove and replace the burrs.
9. Install the burr plate until the top burr touches the bottom burr.
10. Turn the top plate counter-clockwise half a revolution.
11. Re-install the grinder adjustment assembly.
12. Re-secure the band clamp.

Once these steps are completed, the grinder adjustment assembly must be reset to mid-scale, in order to continue the grinder calibration process.

Setting the Grinder Adjustment Indicator to Mid-Scale

1. Disconnect the flex cable from the coupling at the rear of the grinder adjustment screw using a 3/32 Allen wrench.
2. Turn the grinder adjustment screw until the indicator is at mid-scale.
3. Reattach the flex cable(s) to the coupling(s) and secure the set screw.

Adjust the grinder to the desired grind. It may be necessary to reset the indicator to mid-scale a second time.



Bean Hoppers

The standard bean hopper holds approximately 2lbs/1kg of beans. One bean hopper is labeled DECAF.

Filling a Bean Hopper

1. Remove the bean hopper lid.
2. Pour fresh, whole espresso-roast beans into the bean hopper.
3. Replace the bean hopper lid.

NOTE: If it is necessary to remove the bean hopper, insert the hopper stopper first. Be sure to remove the hopper stopper when finished.

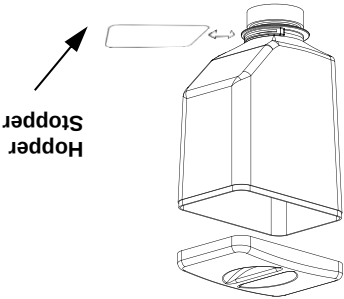
- | | |
|---------------|---|
| DO | Use fresh, whole, espresso roast beans. |
| DO NOT | Place ground coffee into the bean hopper. |
| DO NOT | Place foreign materials in the bean hopper. |
| DO NOT | Feed beans into the grinder by hand. |

Inserting the Hopper Stopper

The hopper stopper blocks the hopper chute when removing a full bean hopper.

1. Place the hopper stopper in the slot at the base of the bean hopper and push it into the bean hopper (see the hopper stopper card for insertion instructions).
2. With the hopper stopper in place, you can remove a full hopper from the machine.

To remove the hopper stopper once the bean hopper is back in its proper position on top of the espresso machine, simply pull the hopper stopper from the bean hopper.



Removing a Bean Hopper

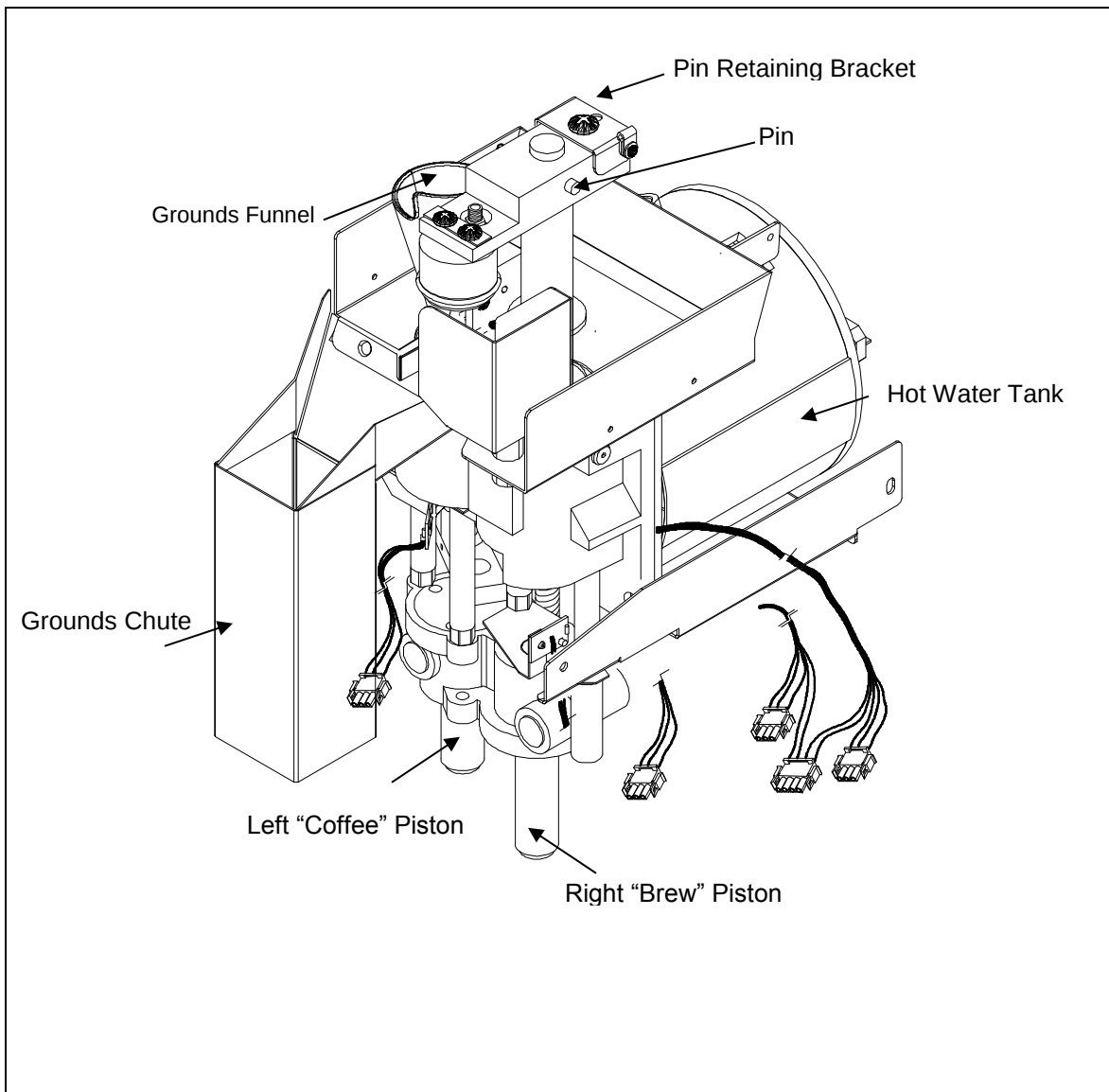
Once both hopper stoppers are in place, simply lift the bean hopper upwards.

Brew Group

The brew group is the assembly where espresso is made. In the brew group, ground espresso beans are tamped and hot water is forced through the ground espresso beans. This action creates espresso, which is then transferred through the product outlet and into the cup.

After the espresso is extracted, the used grounds are directed into the grounds chute and into the grounds bin.

Two 38Vdc motors drive the double-piston brew group.



Brew Group Initialization

Each time the Concordia Xpress is turned on, the brew group runs through 22 different steps to perform a self-calibration. The CPU monitors the coffee piston movement from the base of the brew chamber to the base of the brew piston.

As the CPU monitors the piston movement based on the rotational Hall-Effect sensors and locates the fixed Hall-Effect sensors, the CPU's piston positions are reset.

Upon completion of the group initialization, the pistons move to their home position.

During operation, the pistons move past the fixed sensors and the CPU's piston positions are reset.

Brew Group Components

Right Motor

Operating Voltage: approximately 38Vdc (unloaded)

The right motor drives the right piston up and down. A set of rotational Hall-Effect sensors located within the motor send electronic pulses to the CPU. The CPU correlates "X" pulses of motor rotation to piston movement.

Left Motor

Operating Voltage: approximately 38Vdc (unloaded)

The left motor drives the left piston up and down in the brew chamber. A set of rotational Hall-Effect sensors located within the motor send electronic pulses to the CPU. The CPU correlates "X" pulses of motor rotation to piston movement.

NOTE: The left and right motors are not interchangeable because they contain different worm drive gears.

Hall-Effect Sensors

Operating Voltage: 5Vdc

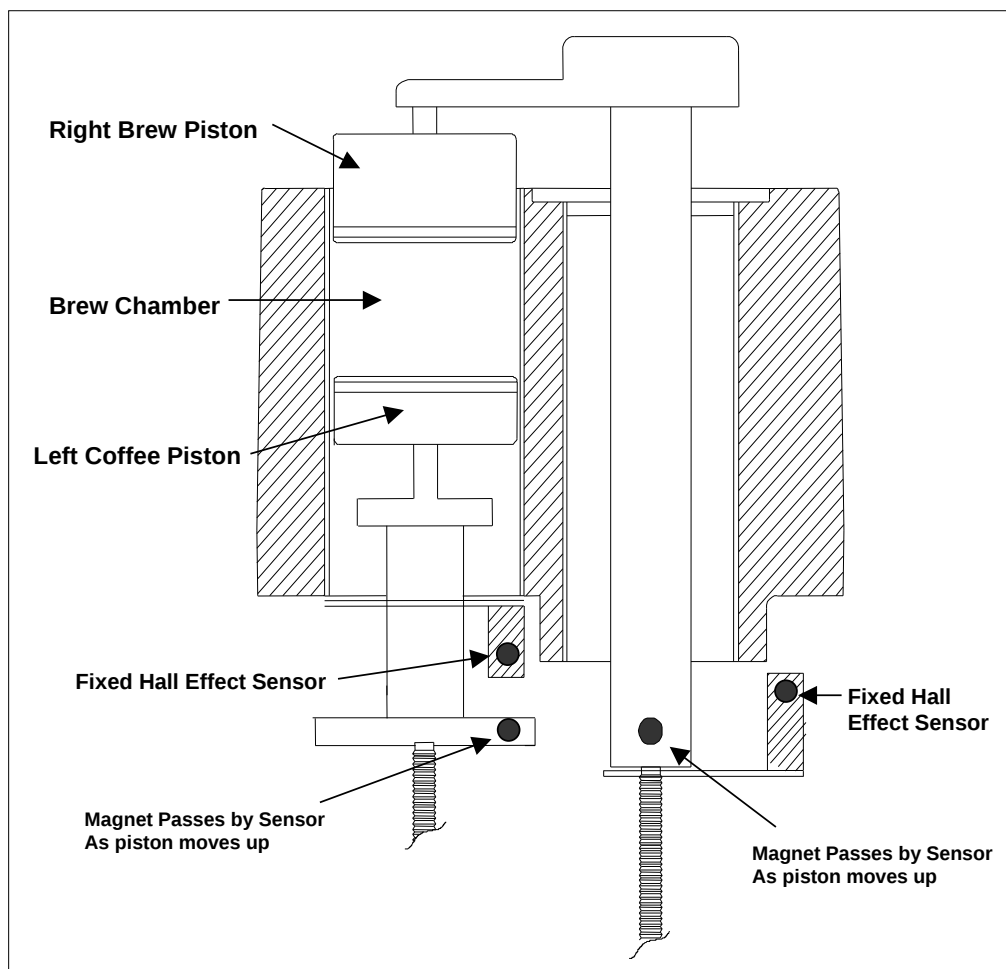
Hall-Effect sensors monitor the position of the pistons.

The brew group utilizes two Hall-Effect sensor circuits to monitor the position of the left and right pistons. When a magnet passes near the sensor, the circuit opens.

The two fixed Hall-Effect sensors are mounted to the body of the brew group, with a magnet mounted on each piston. As the piston moves and the magnet passes in front of the Hall-Effect sensor, the circuit opens. The CPU uses this open circuit to verify the location of the piston.

As the piston magnet moves across the Hall-Effect sensor, the sensor LED will illuminate.

For proper function, the gap between the Hall-Effect sensor and the magnet must be a minimum of 1mm (.04") and a maximum of 2mm (.089"). For reference, a credit card is approximately 1.5mm.



Left Piston

The left piston is also referred to as the coffee piston or the lower piston. When coffee is ground and delivered into the brew chamber, the left piston moves up to pack the coffee against the right brew piston.

Right Piston

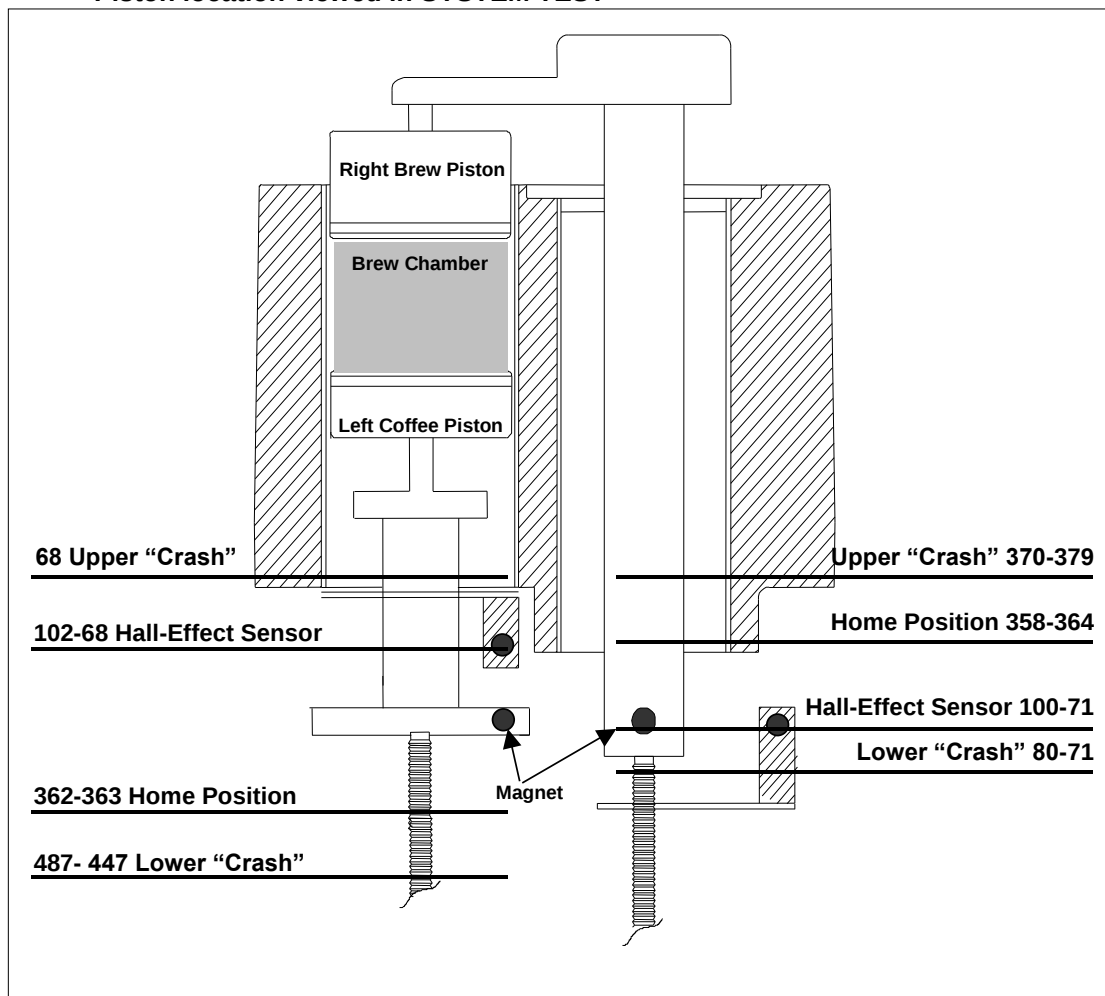
The right piston is also referred to as the brew piston or the upper piston. During an extraction, the brew water passes through this upper piston, through the ground coffee, through the coffee piston, and out of the brew chamber via tubing to be dispensed into the cup.

Piston Movement

Once the CPU detects the piston location using the fixed Hall-Effect sensors, it continues to monitor piston position using the rotational Hall-Effect sensors located in the motors.

The CPU monitors the rotations of the motor and is programmed to associate “X” number of rotations with piston movement.

Piston location viewed in SYSTEM TEST



Viewing the Left Piston Movement

1. To view the left piston movement, go to the following software menu:
 - a. **XT:** Navigate to **SYSTEM TEST > LEFT PISTON DRIVE (UP DIRECTION)** or **(DOWN DIRECTION)**.
 - b. **Xpress:** Navigate to **TEST ROUTINES > LEFT DRIVE**.
2. Under normal operating conditions, the piston location should display approx 362-363.
3. Use the increase value/decrease value arrows to move the piston.
4. As the piston moves, the piston location number will change.
5. As the piston magnet moves across the Hall-Effect sensor, an "L" will appear on the display and the sensor LED will illuminate.

Removing the Left Piston

1. Remove the bean hoppers.
2. Remove the top panel from the machine.
3. Remove the funnel.
4. Remove the grounds chute.
5. Using a 4mm Allen wrench, remove the lower piston set screw, located at the bottom end of the lower piston nylon shaft.
6. Disconnect the brew line from the product nozzle.
7. To move the left piston as far up and down as it will go, go to the following software menu:
 - a. **XT:** Navigate to **SYSTEM TEST > LEFT PISTON DRIVE (UP DIRECTION)** or **(DOWN DIRECTION)**, then touch **TEST** continuously until it moves down as far as it will go.
 - b. **Xpress:** Navigate to **TEST ROUTINES > LEFT DRIVE** and drive the lower piston up as far as it will go.
8. Insert your hand into the brew chamber from the bottom. You should feel the bottom of the nylon shaft. Push shaft upward until lower piston head has cleared top of chamber.
9. Using a towel, grab piston head and pull upward until brew line is clear of chamber.

Removing the Right Piston

NOTE: Before performing these steps, use a marker pen to place a mark on the brass sleeve of the upper piston, to aid in properly reinstalling upper piston assembly.

1. Remove the bean hoppers.
2. Remove the top panel from the machine.
3. Loosen the screw on top of the right drive assembly and remove the pin retaining bracket and pin.
4. Lift off the upper piston assembly; inspect the microscreen (remove, clean, and re-install); lay assembly on steam tank (assembly will still be connected to brew line).
5. Replace the upper piston o-ring.
6. Using a 4mm Allen wrench, remove the helical bolt from the right side of the group assembly.
7. To move the right piston as far up and down as it will go, go to the following software menu:
 - a. **XT:** Navigate to **SYSTEM TEST > RIGHT PISTON DRIVE (UP DIRECTION)** or **(DOWN DIRECTION)**, then touch **TEST** continuously until the right piston moves to the upper crash position.
 - b. **Xpress:** Navigate to **TEST ROUTINES > RIGHT DRIVE** and drive the upper piston to the upper crash position.
8. Using a towel, remove the upper piston assembly from the machine.

NOTE: The upper piston may be hot, so handle with care.
9. Replace both ring guides.
10. Reinstall the right drive assembly into the brew group, ensuring the drive assembly is correctly aligned with the bolt hole.
11. To drive the right piston assembly down, go to the following software menu:
 - a. **XT:** Navigate to **SYSTEM TEST > RIGHT PISTON DRIVE (UP DIRECTION)** or **(DOWN DIRECTION)**, and then touch **TEST** continuously until the right piston moves down as far as it will go, allowing the helical bolt to be re-inserted and tightened.
 - b. **Xpress:** Navigate to **TEST ROUTINES > RIGHT DRIVE** and drive the right piston assembly down, allowing the helical bolt to be re-inserted and tightened.
12. Reinstall the upper piston assembly.
13. Verify the brew group operates correctly.
14. Reinstall the top panel and the bean hoppers.

Gearbox Removal and Installation

Removing the Gearbox

1. Remove the grounds chute.
 2. Remove the lower piston as described on page 10-13.
 3. Move the left and right pistons into the upper crash position. To do this, go to the following software menu:
 - a. **XT:** Navigate to **SYSTEM TEST > LEFT or RIGHT PISTON DRIVE (UP DIRECTION) or (DOWN DIRECTION)**, and then touch **TEST** continuously until the left and right pistons move up as high as they will go (upper crash).
 - b. **Xpress:** Navigate to **TEST ROUTINES > LEFT or RIGHT DRIVE**, move the left and right pistons up as high as they will go (upper crash).
 4. Remove the two lower spindle cover caps.
 5. Remove the four gearbox mounting bolts underneath the gearbox and set aside.
 6. Move the left and right pistons into the lower crash position. To do this, go to the following software menu:
 - a. **XT:** Navigate to **SYSTEM TEST > LEFT or RIGHT PISTON DRIVE (UP DIRECTION) or (DOWN DIRECTION)**, and then touch **TEST** continuously until the left and right pistons move down as far as they will go (lower crash).
 - b. **Xpress:** Navigate to **TEST ROUTINES > LEFT or RIGHT DRIVE** and press the up arrow.
- NOTE:** As the motors run, the gearbox will move down and off the ends of the spindles.
7. Once the gearbox is free of the spindles, set it down on the drain tray.

NOTE: The right drive positional Hall-Effect sensor plate will no longer be secured. Note the position of sensor plate for reinstallation.
 8. Go to the back of the machine and disconnect the group motor power plugs and all Hall-Effect sensor plugs.
 9. Use an AMP pin remover to disconnect the red and black wires of either group motor from the shared group power plug.

NOTE: This will allow the connector to move past the hot water drain line as you pull it out from the front of the machine.
 10. Pull the gearbox out from the front of the machine through the grounds chute area.

Installing the Gearbox

1. Insert the gearbox through the grounds bin area until it sits under the brew group assembly. A new/replacement gearbox comes with a new left spindle.

NOTE: Ensure all wires and connectors from the Hall-Effect sensors and motors are clear and go to the back of the machine.

2. Go to the back of the machine and insert the free red and black wires from one of the motors into the shared group power plug.

NOTE: The proper pattern of wires is black, red, black, red; as viewed from the rear of the machine. There is a reference mark on the connector for pin #1 (1=black, red, etc).

3. Plug in the group motor power plug and rotational Hall-Effect sensors plugs to the assigned plugs.
4. Hold the gearbox under the spindles.
5. Move the left and right pistons into the lower crash position. To do this, go to the following software menu:
 - a. **XT:** Navigate to **SYSTEM TEST > LEFT or RIGHT PISTON DRIVE (UP DIRECTION) or (DOWN DIRECTION)**, and then touch **TEST** continuously until the left and right pistons move down as far as they will go (lower crash).
 - b. **Xpress:** Navigate to **TEST ROUTINES > LEFT or RIGHT DRIVE** and press the up arrow.

NOTE: Make sure the right positional Hall-Effect sensor plate has been properly placed.

6. Press the down arrow until the gearbox is drawn up to the brass spacers.
7. Re-check right positional Hall-Effect sensor plate location.
8. Insert the four gearbox mounting bolts up through the gearbox and finger-tighten.
9. Lower the right piston slightly and tighten the four mounting bolts.
10. Re-install the lower piston into the brew chamber and secure it to the spindle shaft, using a screw.
11. Run a brew group initialization to reset.
12. Re-install the grounds chute.

Section 11 :: Vending

1. Vending Overview
2. Replacing a Card Reader
3. Installing a Vending Unit
4. Removing a Vending Unit
5. Troubleshooting

CONCORDIA

BEVERAGE SYSTEMS

Vending Overview

An optional vending feature allows for customers to charge for drinks. Only cards (i.e. debit, credit, school swipe cards) can be used with this system.



Vending units are mounted on the refrigeration unit door, on the outside of the machine.

Vending Backpack

The vending backpack is located on the back of the machine and contains the following vending components:

- Modem
- Jamex vending controller
- Power supply
- Cable

An antenna is placed on the rear top edge of the machine.

Replacing a Card Reader

1. Remove the right front door assembly of the machine.
2. Remove the two upper and four lower screws on the inside panel of the door assembly.
3. Remove the inside panel of the door assembly.
4. Remove the door handle from the front of the door.
5. Remove the screws attaching the card reader to the door handle.
6. Remove the card reader from the door handle.
7. Attach a new card reader to the door handle with the screws previously removed.
8. Re-attach the door handle to the front of the door assembly.
9. Re-attach the inside panel of the door assembly, using the screws previously removed.
10. Re-attach the right front door assembly on the machine.

Installing a Vending Unit

Installation of vending units is done by Concordia, prior to a customer receiving the machine. Existing units cannot be upgraded in the field by a technician. If a customer wishes to add vending to an existing machine, please contact Concordia Beverage Systems for assistance at 1-800-778-0990.

Removing a Vending Unit

1. Follow steps 1 through 6 of the *Replacing a Card Reader* instructions on page 10-2.
2. Replace the door assembly handle with a non-vending handle.
3. Remove the vending backpack
 - a. Remove the back panel of the machine.
 - b. Remove the left panel of the machine.
 - c. Disconnect the harness wiring connecting the backpack to the left side bracket
4. Re-attach the left panel of the machine.
5. Re-attach the back panel of the machine.
6. Re-attach the right door assembly.
7. Ensure the vending option is disabled. To verify this, go to the following software menu:
 - a. **XT:** Navigate to **MISCELLANEOUS CONFIGURATION > VENDING SETTINGS.**
 - b. **Xpress:** Navigate to **SPECIAL FEATURES > VENDING.**

Troubleshooting

If a vending unit is not functioning as expected, do the following:

1. Check the power to the card reader.
2. Press the reset button, located inside the black box on the Jamex PCB.
3. If that fails, try rebooting the power to the machine.

If a vending unit is installed but does not appear to be working, verify that the vending option is enabled.

- a. **XT:** Navigate to **MISCELLANEOUS CONFIGURATION > VENDING SETTINGS.**
- b. **Xpress:** Navigate to **SPECIAL FEATURES > VENDING.**

For further assistance troubleshooting issues with the vending unit, see the vending system troubleshooting trees in *Section 15: Troubleshooting*.

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Section 12 :: Cleaning and Maintenance

1. Daily Maintenance
2. Cleaning Timers
3. Preventive Maintenance

CONCORDIA

BEVERAGE SYSTEMS

TECHNICAL SUPPORT

Daily Maintenance

In order to avoid mechanical failure and maintain cleanliness, the Xpress series of machines must be cleaned and maintained on a daily basis. If the machine is not cleaned as indicated below, the machine will be disabled and the customer will not be able to pour drinks. If the machine is disabled, a complete cleaning cycle must be performed in order to resume operation.

Daily Maintenance includes:

1. Perform the daily clean cycle (milk and brew clean cycles).
2. Empty the grounds bin.
3. Clean the drain grate and drain tray.
4. Clean the exterior surfaces.
5. Clean the interior of the refrigeration unit.
6. Refill beans, milk, and flavors.
7. Clean the product delivery nozzle.

Monthly Maintenance includes:

1. Check the air filter; replace if necessary.
2. Clean the bean hoppers.
3. Check the water filter; replace if necessary.

To perform cleaning procedures, the service switch must be in the **CLEAN** position. For more information about the service switch, please see page 4-3.

For detailed cleaning instructions for the espresso machine, please refer to the cleaning cards and/or the User Guide.

Concordia Cleaning Products

To maintain the machine warranty, Concordia cleaning products must be used.

The cleaning kit (PN [97016](#)) includes 130 each of the following items:

- Milk System Cleaner #1 Packets
- Milk System Cleaner #2 Packets
- Brew Group Cleaning Tablets

Cleaning products can discolor clothing and countertops, use with care. Wear eye protection and gloves while using the product and wash hands after handling. Read the complete cautionary statement on packaging.

Cleaning Timers

The milk system and brew group must be cleaned every 24 hours, or after every 300 drinks, whichever comes first. If these cleaning procedures are not completed within two hours of notification, the machine will be disabled and will stop dispensing drinks until cleaning is performed.

All timers start after the first drink is poured following a cleaning. For example, if the machine is cleaned on Friday night, and it is idle Saturday and Sunday, the timers are not started until the first drink is poured Monday morning.

Preventive Maintenance

A Preventive Maintenance (PM) call must be performed periodically, in order to service critical equipment functions and to minimize potential future failure and reduce down time. Every 40,000 drinks and also after three years, the message **REQUEST PM** will be displayed on the machine's display screen.

A PM kit (PN 5000-038), containing all the required replacement parts and procedures, is available from Middleby Advantage.

<http://www.middlebyadvantage.com>

The customer needs to go the **Quick Parts Search** drop-down menu (upper-right corner), select **Concordia Coffee**, and then search by part number or product name.

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Section 13 :: Concordia Procedures

1. Service Call Process
2. Complete Call Protocol
3. Service Call Checklist
4. Parts Return Policy

CONCORDIA

BEVERAGE SYSTEMS

TECHNICAL SUPPORT

Service Call Checklist

This checklist must be completed and submitted with each service invoice.

Customer Information			
Customer Name:	City:	Call Number:	Service Date:
Model:	Serial Number:	Drink Count:	Last Clean Cycle:
Machine Cleanliness		Cleaning Cycles	
☐ Verify Exterior of Unit is Clean ☐ Verify Interior of Unit is Clean		☐ Verify Cleaning Kit is Available ☐ Yes ☐ No ☐ Perform Milk Clean Cycle ☐ Perform Brew Clean Cycle	
Milk Pump & Drink Temps			
<u>Run a Latte and verify the following:</u> ☐ Verify Milk Flows Properly from Milk Dispensing Nozzle ☐ Verify No Milk Debris in Air Gate Tubing and Delivery Tubing ☐ Verify No Milk Remains in Pickup Tubing ☐ Check Latte Temperature is 160°F ± 10°		<u>Run a Cappuccino and verify the following:</u> ☐ Verify Milk Flows Properly from Milk Dispensing Nozzle ☐ Check No Milk Debris in Air Gate Tubing and Delivery Tubing ☐ Verify Cappuccino Steam Adjust is Properly Set (1500S/i I & Integra 0,1,4) ☐ Check Cappuccino Temperature is 150°F ± 10°	
Brew Group 2500S/I, IBS6, Xpress 0, 6, XT		Brew Group 1500S/I, Integra 0, 1, 4	
☐ Verify No Lower Piston Leakage & No Espresso Debris on Gearbox ☐ Verify Piston Travel Time using Test Routines, Option L Drive, from Lower to Upper Crash Point is less than 15 seconds ☐ Verify Crash Points are within Service Manual Tolerances ☐ Check No Holes or Tears in Lower Piston Micro-Screen ☐ Verify Upper Piston Sieve Undamaged ☐ Check No More than 1/8" Side-to-Side Free Play in Right Drive		☐ Verify No Holes or Tears in Upper and Lower Piston Micro-Screens ☐ Verify Lower Piston Bushing Seals Chamber Properly ☐ Replace Upper Piston O-Ring if Flat. Ensure Customer has O-Rings in Stock ☐ Verify Lower Piston Position is at Bottom of Chamber when Upper Piston is in Home Position ☐ Verify Group Heating Element Wiring is Clear of Piston Springs ☐ Verify Sweep Arm is Undamaged and Rides Smoothly over Sweep Plate	
Water Pump Settings			
☐ Check Water Pump Setting is 140 PSI ± 5% while a Dispensing Double Espresso			
Espresso Calibrations (Recipe may vary, always consult manager before adjusting)			
☐ Verify Espresso Extraction is 18-23 seconds for Double Espresso		☐ Verify Espresso Pour Temperature is 165°F ± 10%	
Water Hardness & Filters			
☐ Note Water Hardness Before Filter _____ GPG. ☐ Note Water Hardness After Filter _____ GPG.		What kind of water filter? ☐ Scalex2 ☐ Other ☐ None	
Refrigeration Unit			
☐ Check Operating Temperature 39°F or Lower ☐ Check No Gaps/Tears in Refer Door Seal & Latch Working ☐ Calibrate Empty Weight Trays to 60 Counts in Test Routines (2500i/s, IBS6, X0, X6, XT only) ☐ Calibrate Integra Milk Sensor (Vending Only)		☐ Verify Milk Sensor Option is in Disabled State, if applicable (Integra 0,1,4) ☐ Clean or Replace Air Filter ☐ Verify Fans are Working Freely ☐ Verify Air Deflector Plate/Plenum in Refrigerator is Properly Installed	
Syrup Pumps (Syrup Systems Only)			
☐ Verify All Syrup Pumps Function and Syrup Pours when activated from software menu.		☐ Inspect all Syrup Tubing Connections for Leaks ☐ Verify Chocolate Heater Rack is Functioning	
Milk Valve (Model 2500S/I, IBS6 Only)			
☐ Verify there is Zero Build-Up Milk Debris in Milk Valve, Milk Bowl and Nozzle ☐ Verify Plunger Movement and Lubricate with Super Lube® Pen			
COMMENTS			
Customer Signature		Date	
Technician Signature		Date	

Return Material Authorization

Requests for credit on returns for non-functional parts or unused parts (see criteria below) must be submitted to Parts@concordiacoffee.com for authorization and issuance of an RMA number. The ASAPD must record the RMA number on the outside of each box of parts that are being returned to Concordia. Only return the parts specified in the RMA. Used parts are not accepted in RMA return packages.

RMA Process

- Parts eligible for RMA include OBF parts, parts damaged upon receipt, incorrect parts received, nonmoving inventory parts, or any parts requested for return by Concordia.
- ASAPD must submit a list of parts to be returned to the Concordia Parts Manager.
- The Concordia Parts Manager will review the submitted parts list and supply an RMA number for the parts to be returned.
- ASAPD will securely package the parts for shipping, using due care and caution. The supplied RMA number must be adhered to the shipping container.
- Parts must be shipped to Concordia within seven (7) days of receipt of the RMA.
- Parts received will be reviewed to verify their condition, after which a credit will be applied to the ASAPD account.
- Credit will not be granted if the parts returned as damaged are found to be operational or if the RMA process was not followed. In such cases, the parts will be returned to the ASAPD at the cost of the ASAPD (UPS or FedEx ground).
- Credit will not be granted if the returned parts are damaged due to careless packaging.

Criteria for Unused Part Returns

- Unused parts must be the current revision and part number.
- Customized kiosk parts, touch pads, or customer-branded items are not available for return.
- Concordia may request pictures of parts to be returned to identify revision, status, and condition of the part.

Used Parts Return

Used parts will not be returned, unless requested by Concordia. If a part is requested to be returned, ASAPD will be issued an RMA, name of Concordia personnel requesting the return, and a call tag for shipping. The ASAPD must mark the shipping container with the name of the Concordia personnel who requested the return and RMA number.

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Section 14 :: Messages

1. Troubleshooting Display Messages

CONCORDIA
BEVERAGE SYSTEMS

Troubleshooting Display Messages

The warning messages listed below appear on the machine display screen and describe the state of the machine. Other operational messages exist, which do not require action. If you see a message which is not included on this list and need assistance, please call Concordia Beverage Systems at 1-800-778-0990.

This list contains display messages for both the Xpress 2017 and the Xpress XT machines. For more information about the software menus, see Section 4 for the Xpress XT, and Section 5 for the Xpress 2017.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
CHECK CLOCK	Time or date is invalid.	Enter the correct time and/or date in the auto start menu. When correcting the error, go through the menu from back to front by using the lower left down arrow.
CHECK STATS	The nonvolatile memory has become corrupted.	Clear the drink statistics and check all user parameters
CHK SENSOR VOLTAGE	Warns of a failure of the 9Vdc and/or -3Vdc used for the transducer and milk level sensors. A short in <i>either</i> one of these circuits will display this warning AND disable the steam tank heating element.	Unplugging the shorted circuit will reset the warning. To do this, unplug each milk level sensor and the transducer independently to determine which will cause the warning to go away. Replace shorted sensor. <i>See Section 15: Troubleshooting for detailed instructions.</i>
CHECK STEAM TANK	Steam tank fill valve failure.	Use the software menu to access the steam fill valve, and diagnose. Check coil. Check valve for foreign objects/mineral deposits. Worn plunger seal. <i>See Section 15: Troubleshooting for detailed instructions.</i>
	Level probe failure.	Use the software menu to access the level and safety probes, and the test sensor.
	Steam tank 10-minute fill timeout has been exceeded.	Verify water supply to steam tank. Verify steam tank drain valve is closed.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
CHK ANALOG BOARD	Missing supply voltages.	Verify transformer secondary output voltages. Replace DC supply board. Install/replace analog board. See <i>Section 15: Troubleshooting</i> for detailed instructions.
	Missing or bad analog board.	
CHK WATER FLOW	No incoming water supply.	Check that incoming water supply valve is open. Check for a clogged water filter. See <i>Section 15: Troubleshooting</i> for detailed instructions.
	Dirty lower piston.	Run the brew clean process. Repeat if required.
	Grind too fine.	Adjust grind coarser.
	Faulty flowmeter.	Verify flowmeter wiring is correct. Use the software menu to access the brew water valve, and verify counter increments. Ensure flowmeter is not clogged.
	Pump pressure.	Verify calibration.
CHK WATER SUPPLY	No incoming water supply.	Check that incoming water supply valve is open. Check for clogged filter. See <i>Section 15: Troubleshooting</i> for detailed instructions.
	Open circuit at level probe.	Use the software menu to diagnose the water tank level probe.
CLOCK FAIL	The Real Time Clock is missing or inoperative.	Replace the CPU board. Set the date and time.
EMPTY GRNDS BIN	Grounds bin is full.	Empty grounds bin. Bin must be removed for at least six seconds to reset message.
FRONT PANEL FAIL	Bad connection between CPU board and front panel.	Check cable from front panel to CPU board.
	Defective front panel (PCA).	Replace the front panel circuit board assembly.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
FRONT PANEL OPEN	Open interlock circuit at front panel or left door.	Close doors. Use the software menu to access the front panel position switch, and check by using an alternate magnet.
GROUND'S BIN OUT	Open interlock circuit at bin switch.	Ensure the grounds bin is pushed in completely and not inserted backwards.
	Grounds bin is not present.	Use the software menu to access the grounds bin position switch, and check by using an alternate magnet.
INVALID STOP L	The left piston was not able to complete its specified motion.	Check left drive components. See <i>Section 15: Troubleshooting</i> for detailed instructions.
INVALID STOP R	The right piston was not able to complete its specified motion.	Check right drive components. See <i>Section 15: Troubleshooting</i> for detailed instructions.
L DRIVE TIMEOUT	Left piston took too long to complete a movement.	Check left drive components. See <i>Section 15: Troubleshooting</i> for detailed instructions.
L SENSOR FAIL	Left piston reference sensor has failed or is out of position.	Check the left piston reference sensor for correct position and proper operation. See <i>Section 15: Troubleshooting</i> for detailed instructions.
LOW BEANS-FRONT	The bean level in the front hopper has dropped below the IR sensor beam line.	Refill beans. Verify the IR sensor is not affected by ambient light.
LOW BEANS-REAR	The bean level in the rear hopper has dropped below the IR sensor beam line.	Refill beans. Verify the IR sensor is not affected by ambient light.
NO MILK-FRONT	Front milk count is 75 or lower.	Verify milk level. Verify milk weight tray is properly installed and calibrated.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
NO MILK-REAR	Rear milk count is 75 or lower.	Verify milk level. Verify milk weight tray is properly installed and calibrated.
R DRIVE TIMEOUT	Right piston took too long to complete a movement.	Check right drive components.
R SENSOR FAIL	Right piston reference sensor has failed or is out of position.	Check the right piston reference sensor for correct position and proper operation.
REFR AMPS HI	Refrigeration unit current in excess of 14.5amps.	Verify DC supply voltage to refrigeration unit module. Verify refrigeration unit module operation.
REFR AMPS LO	Refrigeration unit current is below 10amp.	Verify DC supply voltage to refrigeration unit module. Verify refrigeration unit module operation.
REFR TEMP HI	Refrigeration unit door open.	Check door for proper seal.
	Refrigeration unit fan failure.	Replace fan. Verify fan is operating and unobstructed, replace if necessary. Verify ambient temperature is below 84°F (29°C). See <i>Section 15: Troubleshooting</i> for detailed instructions.
	Air filter blocked.	Change filter.
	Short circuit on refrigeration temperature sensor.	Put a thermometer in the refrigeration unit for 3-5 minutes and verify the temperature of the refrigeration unit. Shorted sensor = 67.3°F (20°C).
	Thermal chip failure.	Check DC board LEDs D17, D18, D19. Verify operation of thermal chip.
REFR TEMP LO	Open circuit on refrigeration unit temperature sensor.	Put a thermometer in the refrigeration unit for 3-5 minutes and verify the temperature of the refrigeration unit. Open sensor = 0.8°F (-17°C). See <i>Section 15: Troubleshooting</i> for detailed instructions.
REFR DOOR OPEN	Door to the refrigeration unit is open.	Close refrigeration unit door. Verify door seal is in good condition.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
EXT REFR TEMP HI	Ambient temperature outside refrigeration unit is above 85°F (29°C).	Check air filter for debris or build up. Lower ambient air temperature.
RTC BATT FAIL	The battery in the Real Time Clock has failed.	Replace the CPU board. Set the date and time.
SEQUENCE ERROR	Bad instruction in drink sequence.	Note under what conditions the error occurs (drink type, modifiers used). Call Concordia Beverage Systems for assistance. 1-800-778-0990
STEAM HI LIMIT SW	Open thermal limit switch on the steam tank.	Verify proper operation of the steam heating circuit. Verify wiring to thermal limit switch.
WATER HI LIMIT SW	Open thermal limit switch on the water tank.	Verify proper operation of the water heating circuit. Verify wiring to the thermal limit switch.
STEAM TEMP HI	Steam temperature setting higher than STEAM HI setting.	Call Concordia Beverage Systems for assistance. 1-800-778-0990
	Relay failed in CLOSED mode.	Verify relay operation, replace if necessary.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
STEAM TEMP LO	Thermal cutout switch failure.	Check for open switch. NOTE: Open switch may be caused if the steam tank temperature is higher than 250°F (121°C).
	Relay failed in OPEN mode.	Verify relay operation, replace if necessary.
WATER TEMP HI	Short circuit on water tank temperature sensor.	Manually pour a cup of hot water and insert a thermometer into the center of the cup, and check the temperature. Shorted sensor = 257°F (125°C). See <i>Section 15: Troubleshooting</i> for detailed instructions.
	Brew water temperature setting is higher than BREW WATER HI set point.	Call Concordia Beverage Systems for assistance. 1-800-778-0990
WASTE WATER FULL	Waste water container is full.	Empty waste water container.
WAIT WARMING UP constantly displayed	No or low water condition in steam tank.	Verify water supply is available. Verify steam tank drain valve is closed. Verify steam fill valve is operational. Verify steam tank inlet fitting is not clogged.
	Failed heater elements.	Check and replace if necessary.
	Failed solid-state relay or fuse.	Check and replace if necessary.
	Failed temperature limit switch.	Check and replace if necessary.
	Failed lower steam probe.	Verify probe assembly.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
WATER TEMP LO	Open circuit on water tank temperature sensor.	Manually pour a cup of hot water and insert a thermometer into the center of the cup, and check the temperature. Open sensor = 146°F (64°C). See <i>Section 15: Troubleshooting</i> for detailed instructions.
	Relay or fuse failure.	Use the software menu to access the water heater, and check.
	Thermal cutout switch failure.	Check for an open switch. NOTE: An open switch may be caused by if the water tank temperature is higher than 210°F (99°C).
	Heating element failure.	Check heating element.
	Brew water temperature is lower than BREW WATER LO setting.	Call Concordia Beverage Systems for assistance. 1-800-778-0990
	Leaking pressure relief valve.	Check pressure relief valve.
SERVICE SWITCH	Service switch is in the CLEAN position for an extended period of time.	If cleaning or maintenance are not being performed, place service switch in the VEND position.
CHK EXPANSION BD	Voltages are incorrect.	Replace.
MISSING FRONT TRAY	Front milk weight tray in the refrigeration unit missing or not placed in unit properly.	Verify existence and placement of milk weight tray.
MISSING REAR TRAY	Rear milk weight tray in the refrigeration unit missing or not placed in unit properly.	Verify existence and placement of milk weight tray.
CHK STEAM PROBES	Invalid steam probe state (upper dry, lower wet).	Verify correct wiring placement. See <i>Section 15: Troubleshooting</i> for detailed instructions.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
CHECK REFR MODULE	Refrigeration unit fan failure.	Replace fan. Verify fan is operating and unobstructed. Verify fan, and replace if necessary. Verify ambient temperature is below 82°F (27.7°C).
	Air filter blocked.	Change filter.
	Short circuit on refrigeration unit temperature sensor.	Put a thermometer in the refrigeration unit for 3-5 minutes and verify the temperature of the refrigeration unit. Shorted sensor = 67°F (20°C).
	Thermal chip failure.	Check DC board LEDs #D17, D18, D19. Verify operation of thermal chip.
	Refrigeration unit current below 10 amps <i>and</i> refrigeration unit temperature is above 41°F (5°C).	Verify DC voltage to module. Verify refrigeration unit module temperature physically. Check DC enclosure fan for proper operation.
INITIALIZE GROUP	Group initialization not done.	Verify brew group is functioning. <i>See Section 15: Troubleshooting</i> for detailed instructions.
PURGE IN PROCESS	Brew water tank not full; purging air.	Active when water tank level is below sensor.
REQUEST PM	Preventive maintenance due.	Perform preventive maintenance and reset message.
LOW MILK	Low milk level (single milk system).	Replenish milk supply.
LOW MILK-REAR	Low milk level in rear milk supply.	Replenish milk supply.
LOW MILK-FRONT	Low milk level in front milk supply.	Replenish milk supply.
REFILL LOWER MILK	Low milk level in lower milk supply.	Replenish milk supply.
MILK CLEAN DUE	Milk system needs to be cleaned.	Clean milk system.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
RUN MILK CLEAN!	Milk system clean required.	Clean the milk system.
RUN BREW CLEAN!	Brew clean required.	Clean the brew group.
BREW CLEAN DUE	Brew clean required.	Clean the brew group.
OUT OF MILK	No milk available in the refrigeration unit.	Replenish the milk supply. Verify the milk weight trays are functioning properly.
NO BEANS – FRONT	No espresso beans in front bean hopper.	Refill the bean hopper. Move/redistribute beans in the bean hopper. Remove the hopper stopper.
NO BEANS – REAR	No espresso beans in rear bean hopper.	Refill the bean hopper. Move/redistribute beans in the bean hopper. Remove the hopper stopper.
CHK FRONT CONTAINER	Front milk container in the refrigeration unit missing.	Replace the milk container in the refrigeration unit. Ensure correct placement of the milk weight tray. Verify the milk weight tray sensor is functioning properly.
CHK REAR CONTAINER	Rear milk container in the refrigeration unit is missing.	Replace the milk container in the refrigeration unit. Ensure correct placement of the milk weight tray. Verify the milk weight tray sensor is functioning properly.
VENDING NOT READY	Jamex payment controller interface failure.	Refer to vending documentation. See <i>Section 15: Troubleshooting</i> for detailed instructions. Call Concordia Beverage Systems for assistance. 1-800-778-0990

Section 15 :: Troubleshooting

1. Troubleshooting Quick Reference Guide
2. Troubleshooting Trees

CONCORDIA

BEVERAGE SYSTEMS

Troubleshooting Quick Reference Guide

Machine Failure

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
Water pump doesn't run	Blown F1 or F2 fuse on the AC control PCA.	Replace blown fuse. NOTE: Use 5amp fuse only.
	Main AC relay not working.	Check for 24Vdc on the main power relay.
	Pump may have seized.	Check and replace if necessary.
Grinder doesn't run	Blown F3 or F4 fuse on the AC control PCA.	Replace blown fuse. NOTE: Use 5amp fuse only.
	Main AC relay not working.	Check for 24Vdc on the main power relay.
Blank display and faint flashing of D17-D19 on the DC power supply	Blown F15 fuse on the DC power supply	Replace blown fuse. NOTE: Use 5amp fuse only.
No display, fans are running and no green LEDs are lit on the DC power supply	Blown F16 fuse on the DC power supply.	Replace blown fuse. NOTE: Use 5amp fuse only.
The 12Vdc and 5Vdc LEDs are lit on the DC power supply. (CHK ANALOG BOARD may be displayed)	Blown F17 fuse on the DC power supply.	Replace blown fuse. NOTE: Use 5amp fuse only.
No fans running and both 24Vdc LEDs are lit on the DC power supply	Blown F18 fuse on the DC power supply.	Replace blown fuse. NOTE: Use 5amp fuse only.
Group motors do not run and both 38Vdc LEDs are lit on the DC power supply	Blown F19 fuse on the DC power supply.	Replace blown fuse. NOTE: Use 5amp fuse only.

Coffee System

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
No beans in grinder	Jammed hopper.	Stir beans in hopper. Clear out grinder affected.
	Hopper stopper is installed.	Remove hopper stopper.
No coffee flow	Brew valve failure.	Check for open coil.
	Clogged brew line or product nozzles.	Check for clogged product output path.
	Grounds too fine.	Check coffee powder dose. Verify grinder setting.
No coffee grounds exit from grinder spout	No beans in hopper.	Add beans.
	Blocked grinder spout.	Check for blockage. Check for jammed or damaged coffee powder flap.
	Hopper stopper is installed.	Remove hopper stopper.
Insufficient amount of coffee grounds in brew chamber	Hopper stopper is installed.	Remove hopper stopper.
	No beans in hopper.	Add beans.
	Partially blocked grinder spout.	Clear blockage.
	Clogged funnel.	Clear blockage.
	Hopper stopper installed.	Remove hopper stopper.
Too much coffee being poured	Flowmeter failure	Diagnose using SYSTEM TEST > BREW WATER VALVE . Verify in mL count increments.
	Water volume setting is too high.	Verify proper setting for water volume.
Failing of coils or components in controls	Excessive voltage in control.	Confirm the stray voltage in site's neutral or ground circuit. Have customer resolve.

Flavor System

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
Air bubble(s) in flavor tube	Loose fitting.	Check all fittings are secure and properly connected.
	Flavor box problem.	Open flavor box and check to ensure bag has no punctures.
Leak in flavor tube(s)	Break in flavor tube.	Check flavor tube(s) for breaks.
	Faulty fittings.	Verify fittings properly connected.
	Puncture in flavor bag.	Check flavor bag for puncture.
Kink in flavor tube(s)	Incorrect placement of flavor tubes and/or flavor box.	Gently smooth out flavor tube(s). Remove flavor tube, first, if necessary.
	Box resting on tube	Lift box and remove tube from incorrect position; correctly position flavor tube.
Chocolate sauce not pumping	Chocolate sauce cold	Verify the heated chocolate sauce tray is turned on and warm.
		Verify that the power source to the chocolate sauce tray is consistent and that there are not interruptions to the power supply.

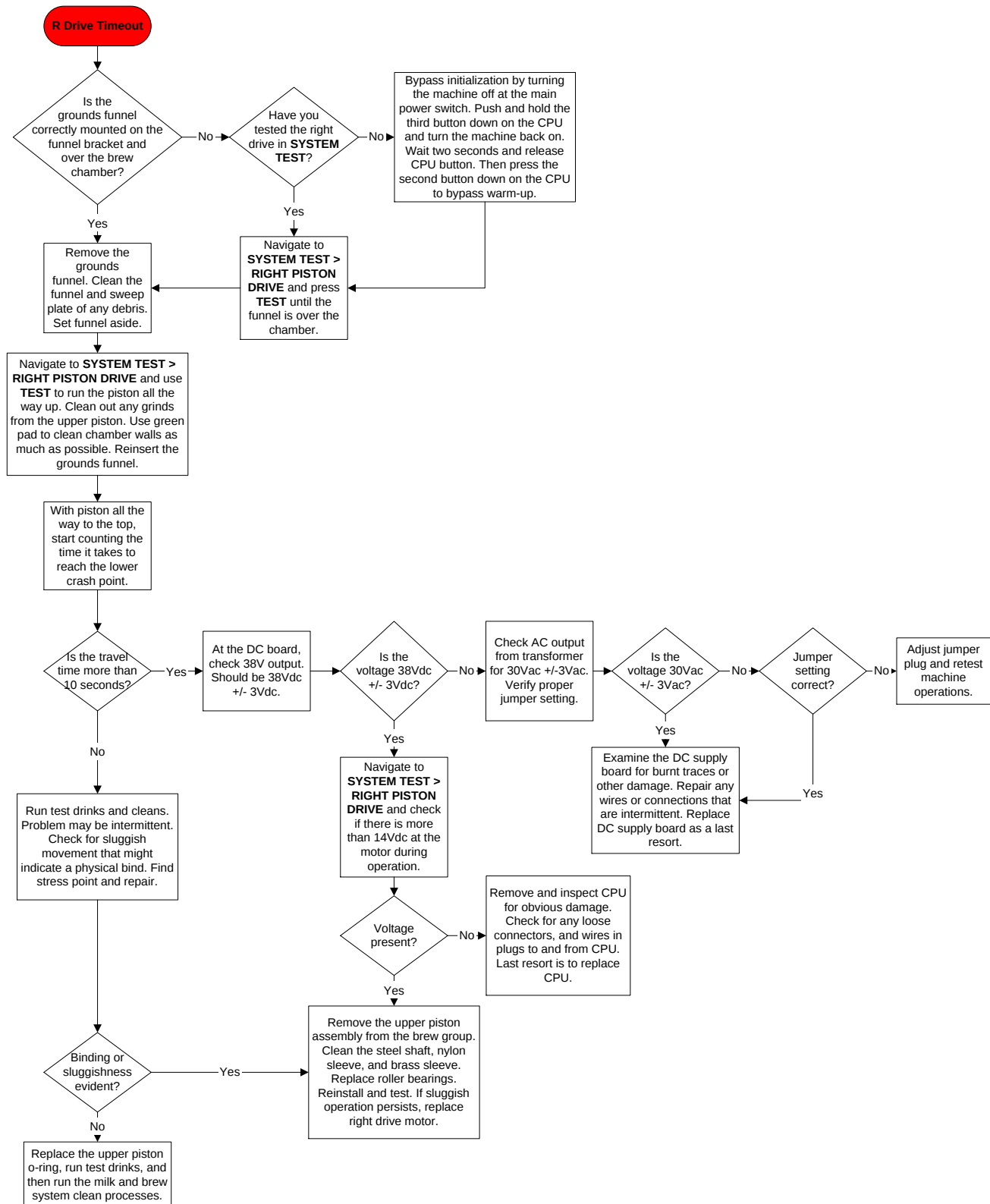
Milk System

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
Drinks poured too hot	Steam too high	Check steam pressure. Check steam setting.
	Open air flow	Check air flow.
Milk won't foam	Milk got too warm, then cold (shocked)	Replace milk supply with fresh milk. Ensure the milk is not past its expiration date. Restock as necessary.
	Air vent needle missing	Check to verify air vent needle is properly attached. Verify correct air vent needle is attached to valve.
	Out-of-date milk	Replace milk supply with fresh milk.
Milk spraying during dispensing	Dirty or clogged product nozzle	Check for restrictions to product nozzle. Check for dried milk or debris build-up in product nozzle.
Too much or too little foam	Air gate valve stuck	Check air, steam, and air gate valves.

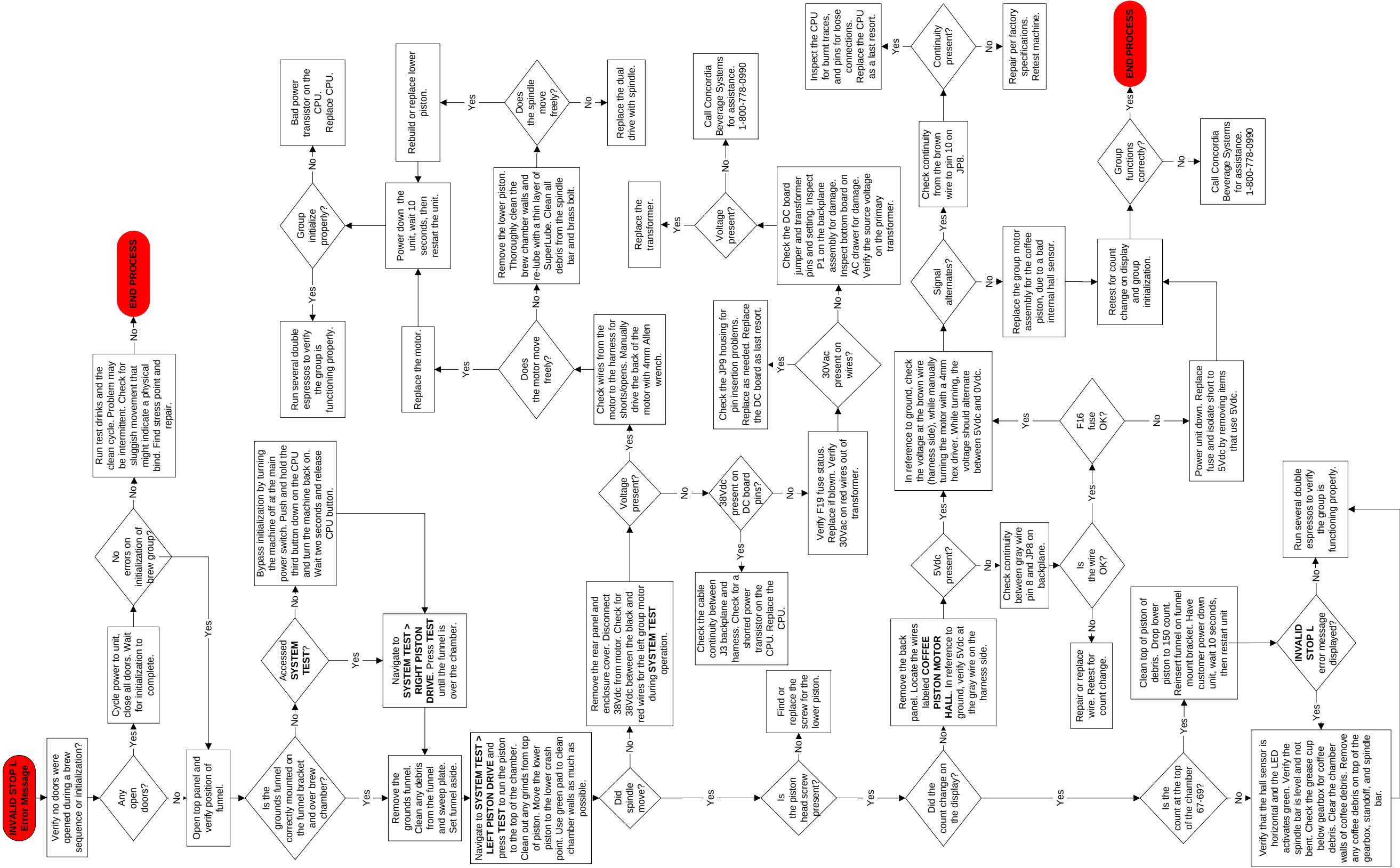
Troubleshooting Trees

BREW SYSTEM	Right Drive Timeout
	Invalid Stop L
	Invalid Stop R
	Left Drive Time Out
GRINDER SYSTEM	Out of Beans
MILK SYSTEM	Overpouring Milk
	Cold Milk Pour
	No Milk Pour
	Short Milk Pour
REFRIGERATION SYSTEM	Temp Above 40
STEAM SYSTEM	Steam Temp Hi
	Check Sensor Voltage
	Check Steam Probes
	Check Steam Tank
	Steam Temp Lo
WATER SYSTEM	Water Temperature High
	Water Temperature Low
	Check Water Supply
	Water Tank Limit Switch Open
FLAVOR SYSTEM	Cross Contamination of Syrup Lines
	Too Much Flavor in Drink
	Not Enough Flavor in Drink
	No Flavor in Drink
ELECTRICAL SYSTEM	Check Clock
	CPU Load Disp & Seq Error
	AC Voltage Error
	DC Voltage Error
	Check Analog Board
VENDING SYSTEM	Card Swipe or Tap Not Authorized
	Display Says Not Configured

Brew System: Right Drive Timeout

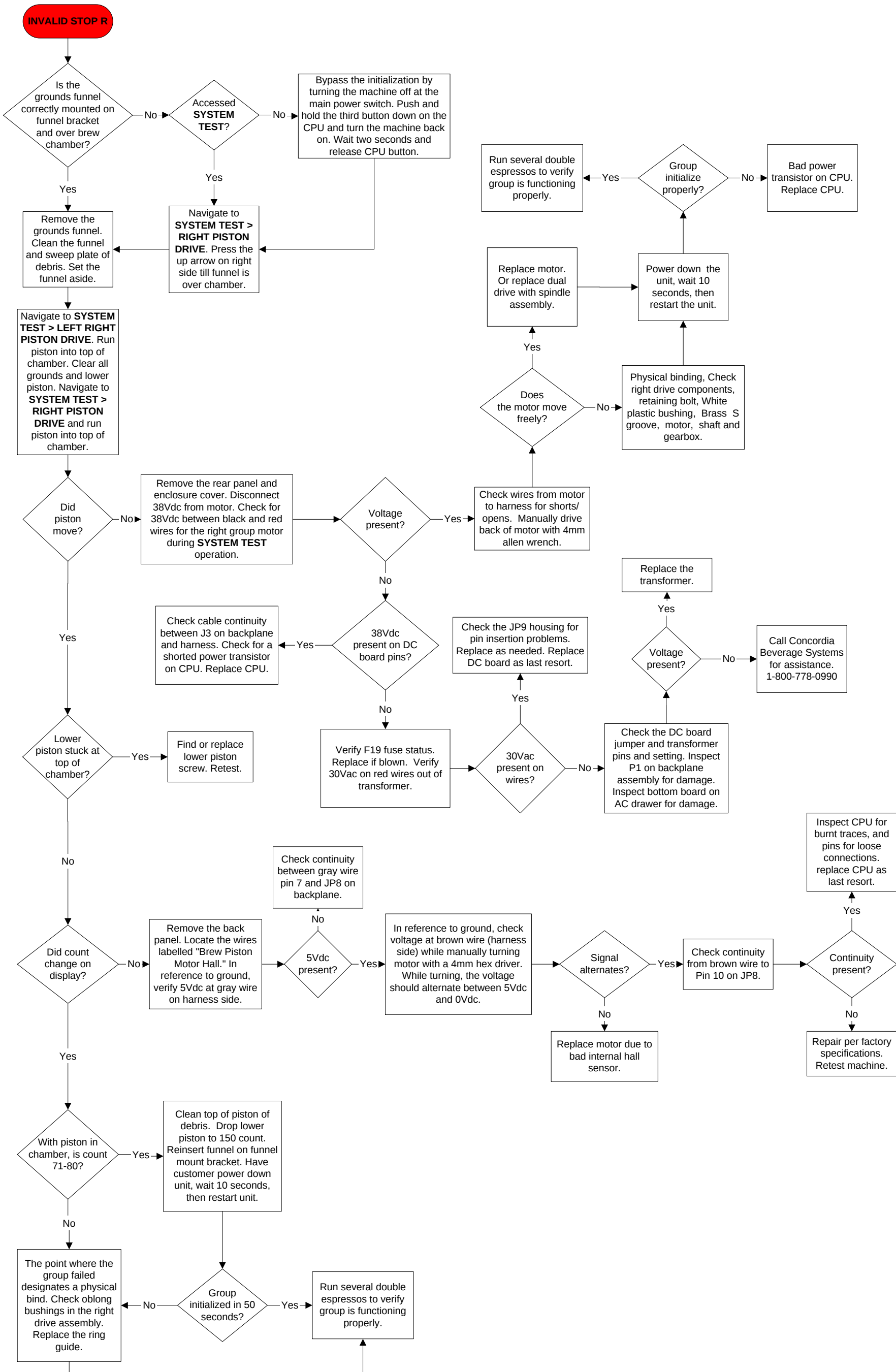


Brew System: Invalid Stop L



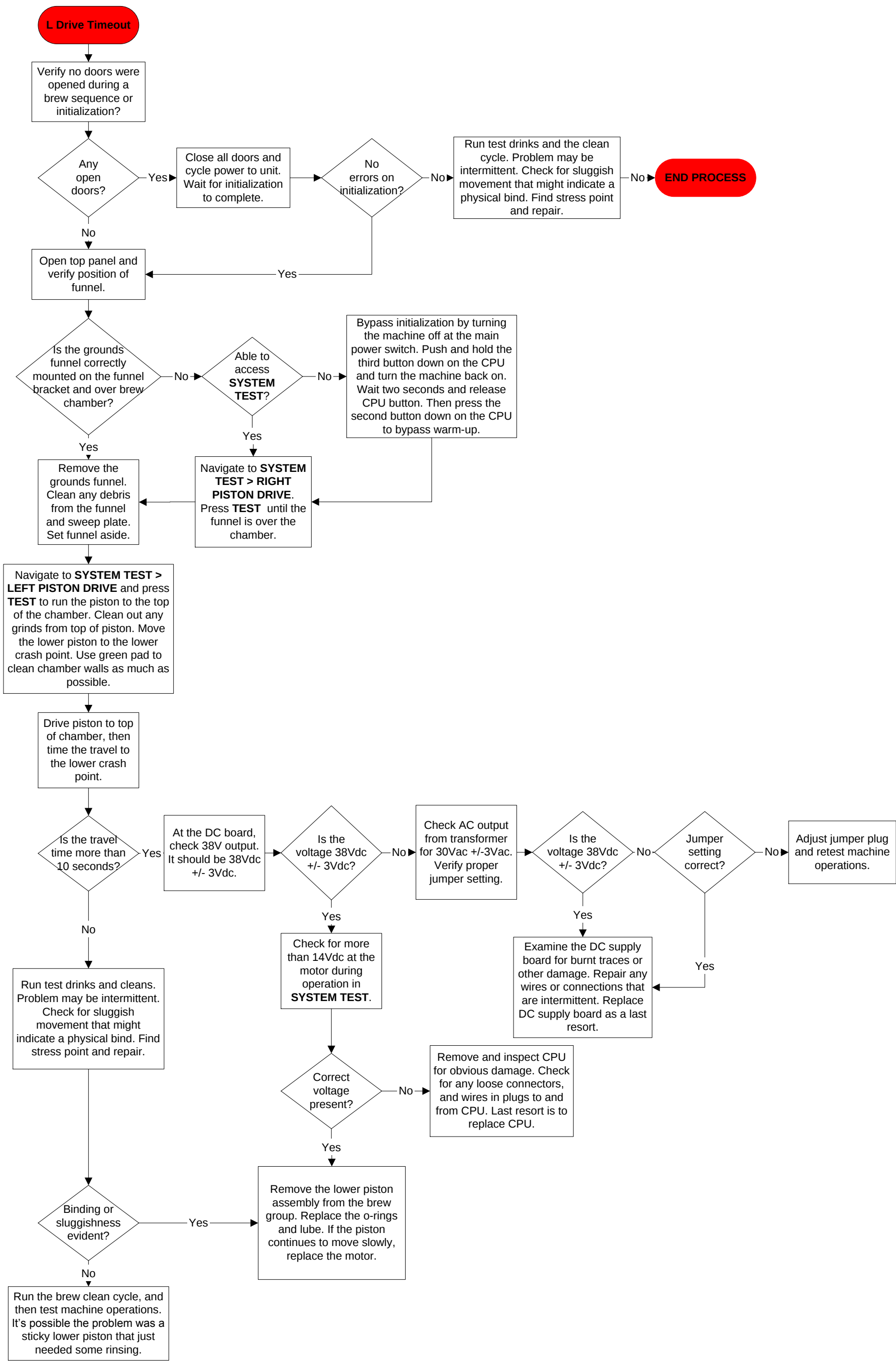
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Brew System: Invalid Stop R



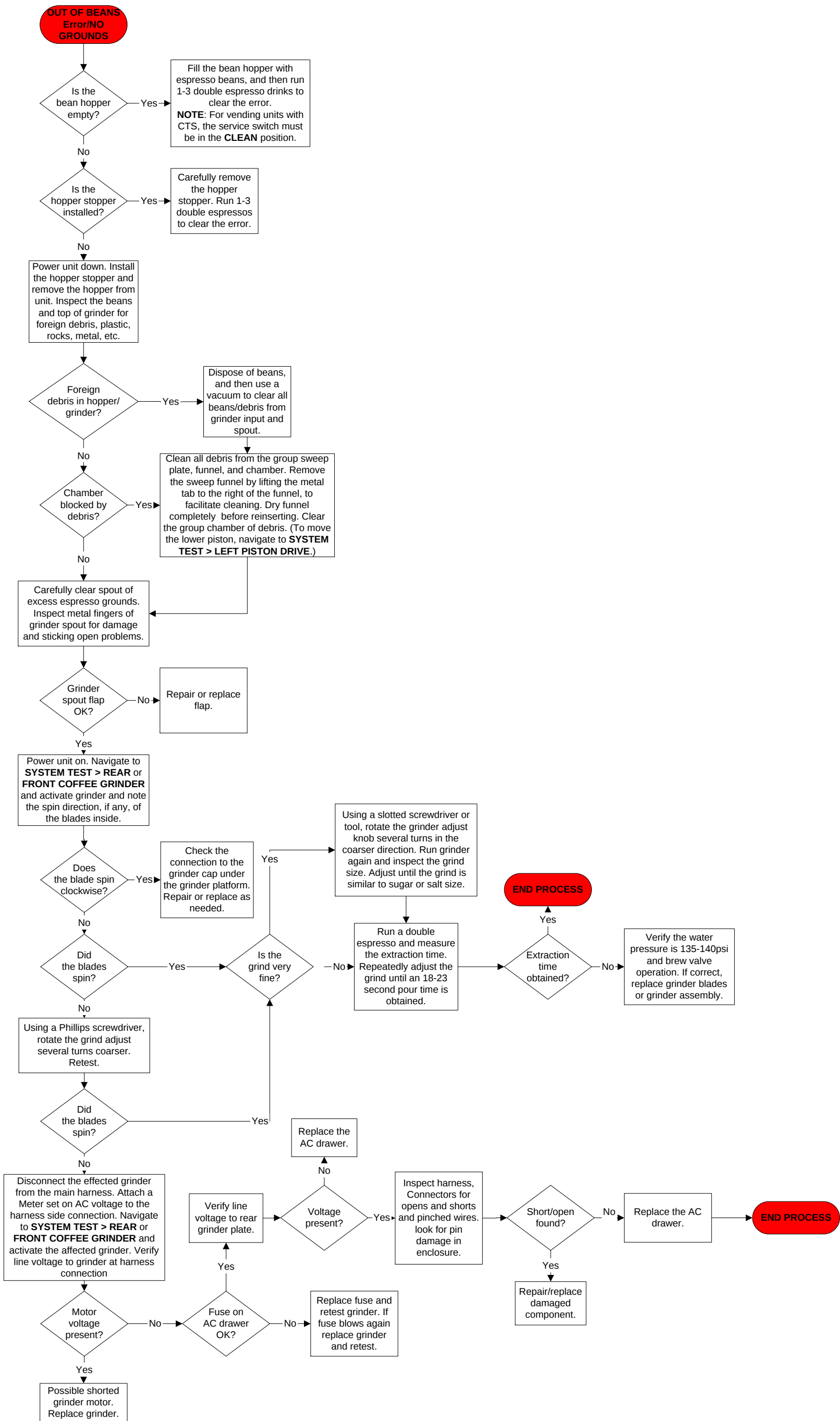
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Brew System: Left Drive Timeout



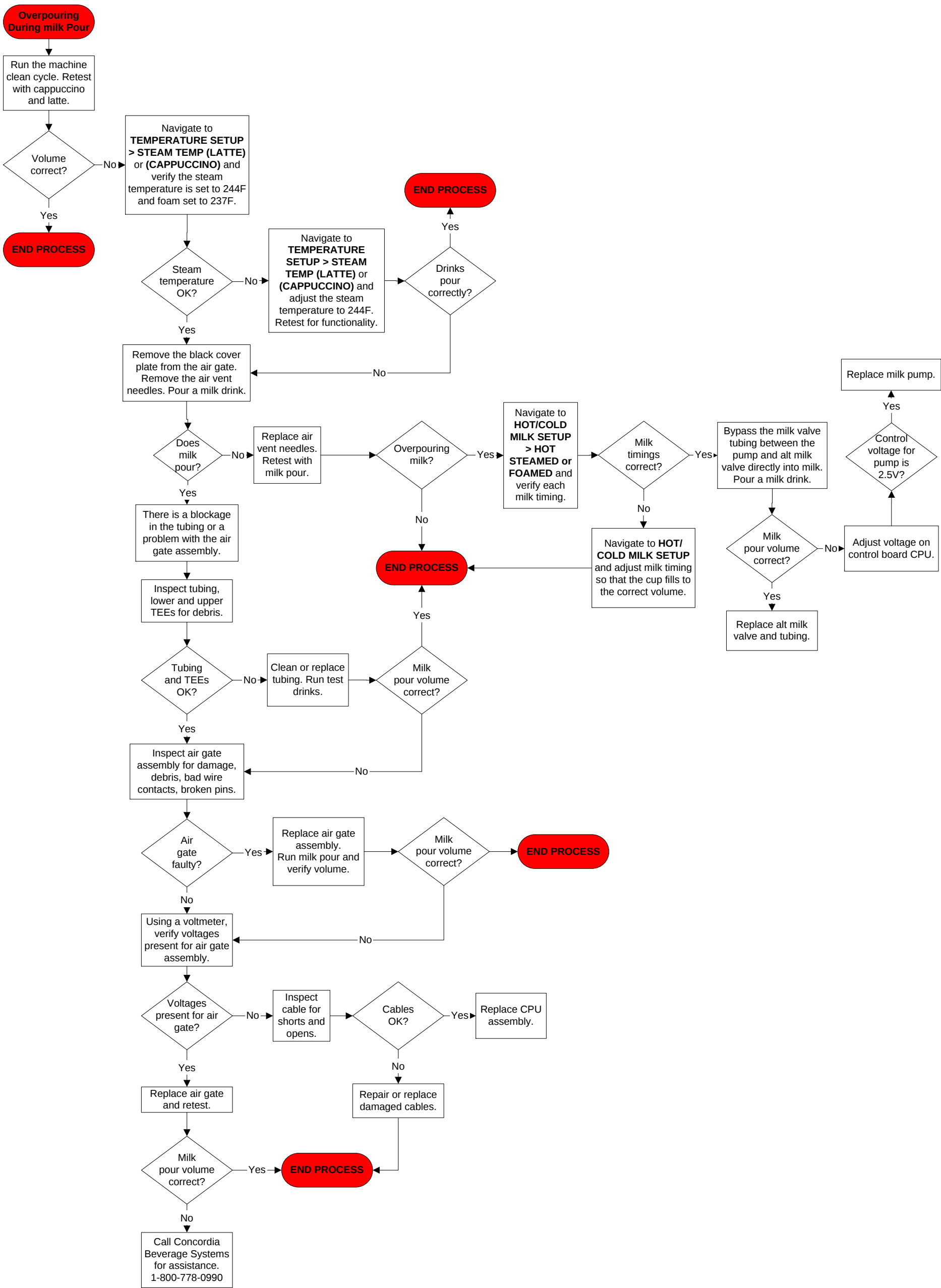
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Grinder System: Out of Beans



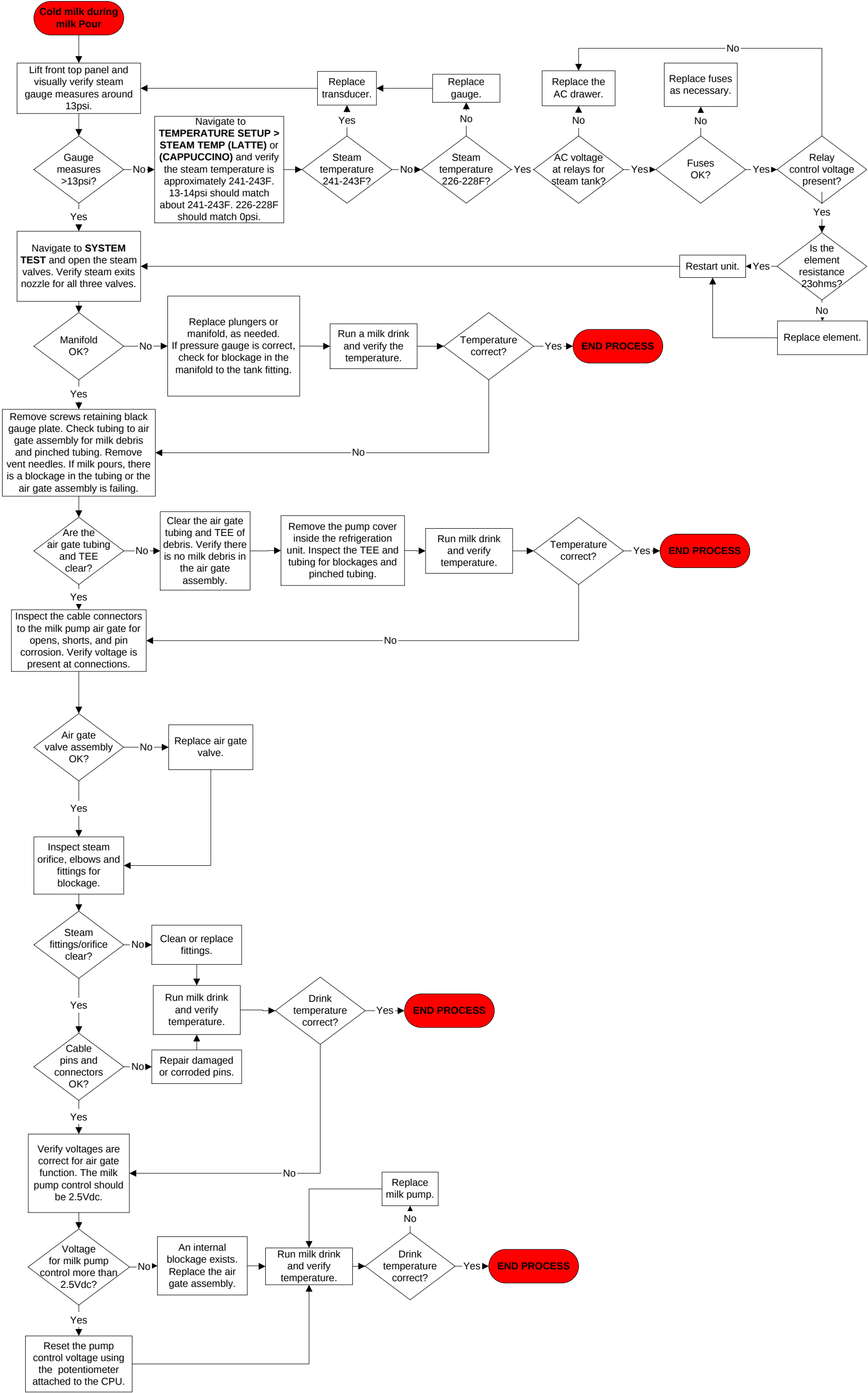
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Milk System: Overpouring Milk



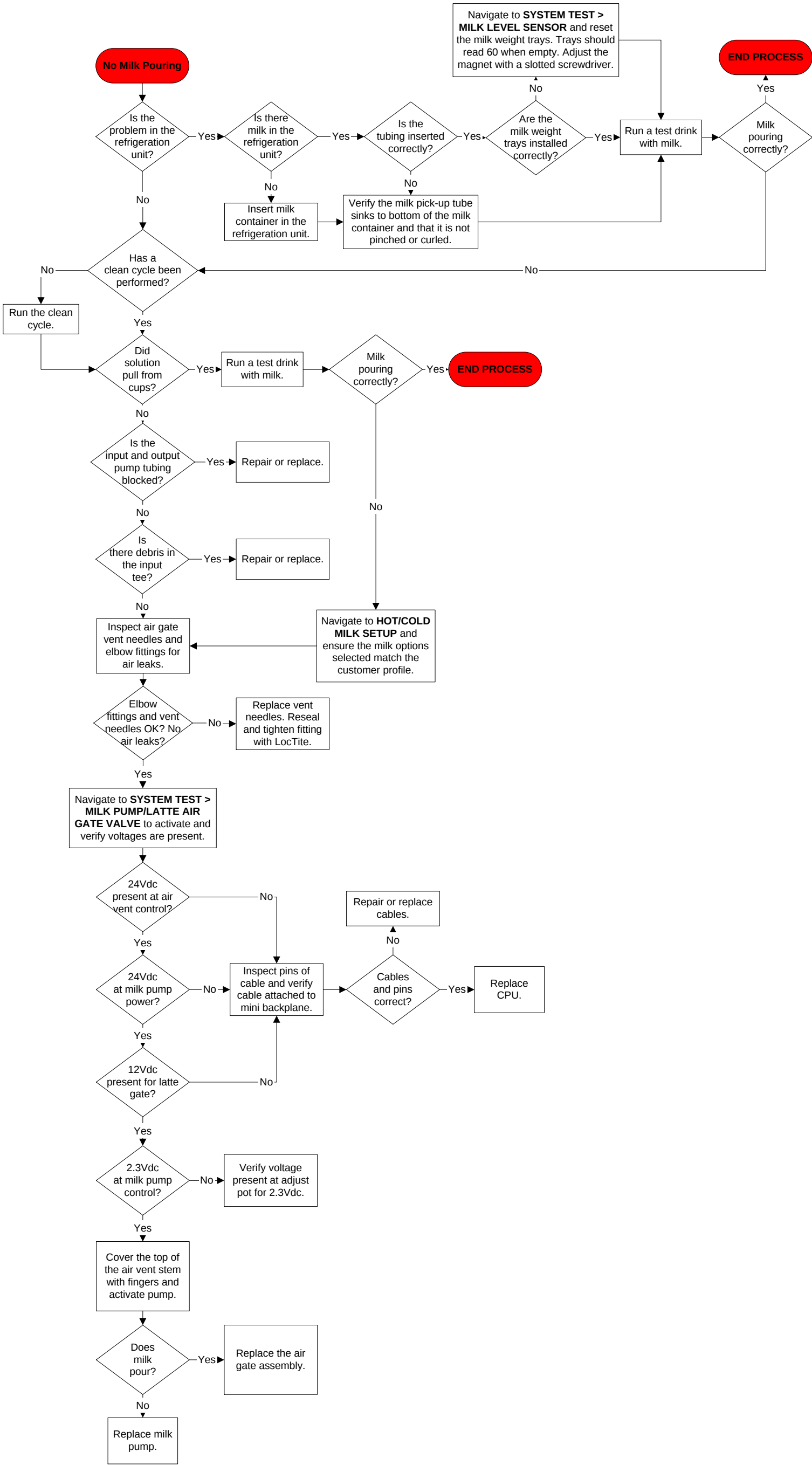
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Milk System: Cold Milk Pour



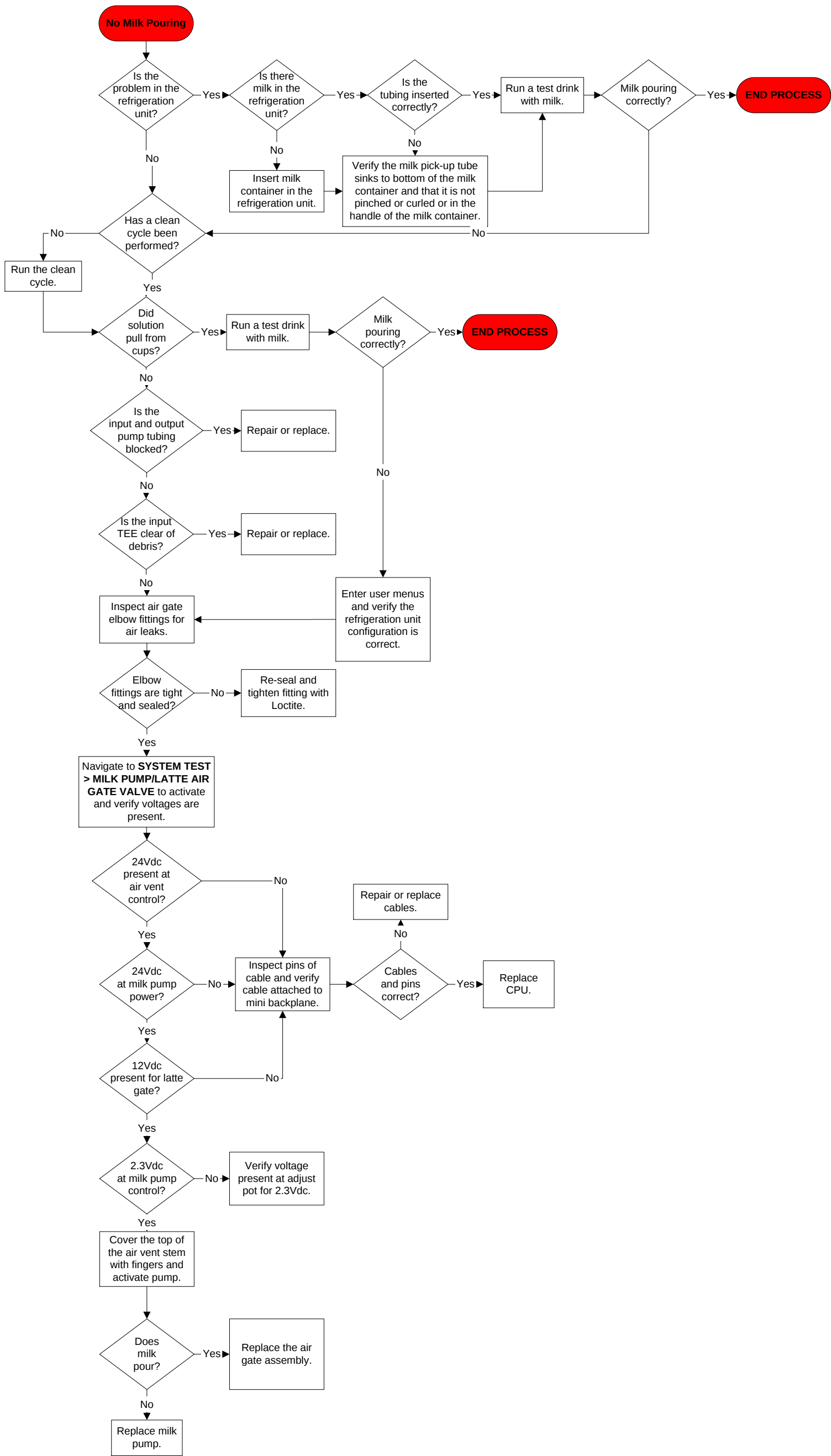
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Milk System: No Milk Pour



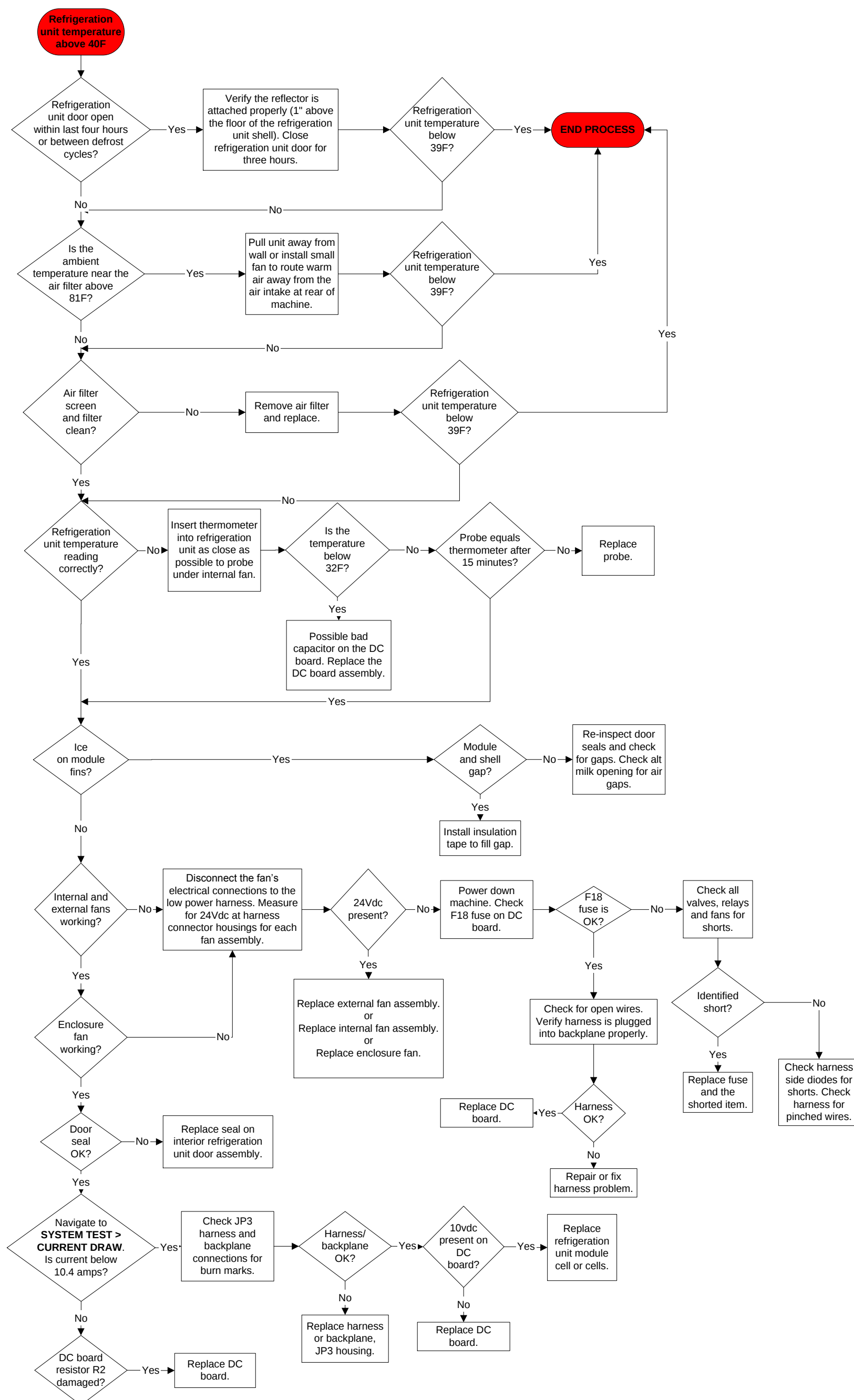
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Milk System: Short Milk Pour



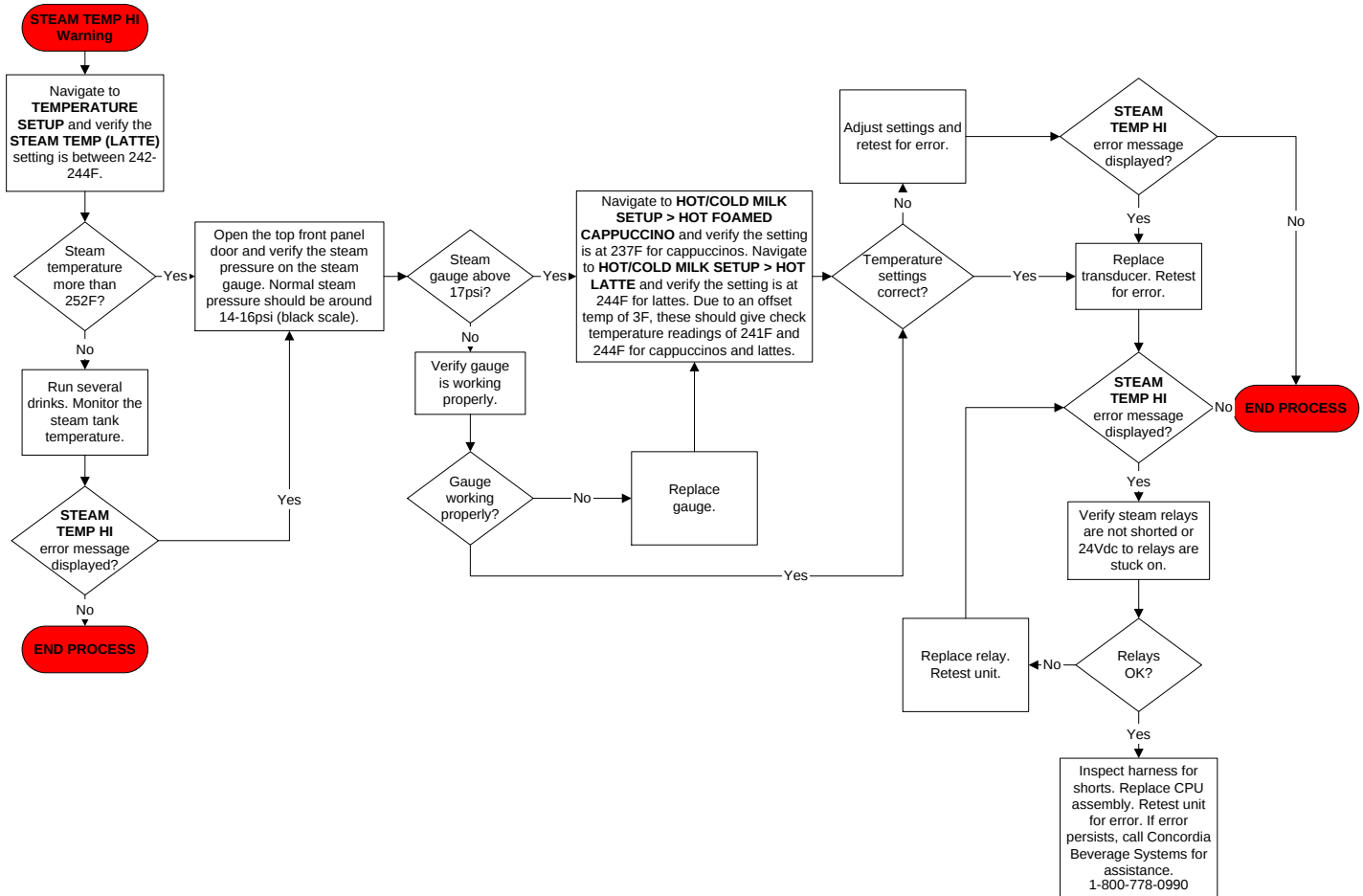
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Refrigeration System: Temperature Above 40°F

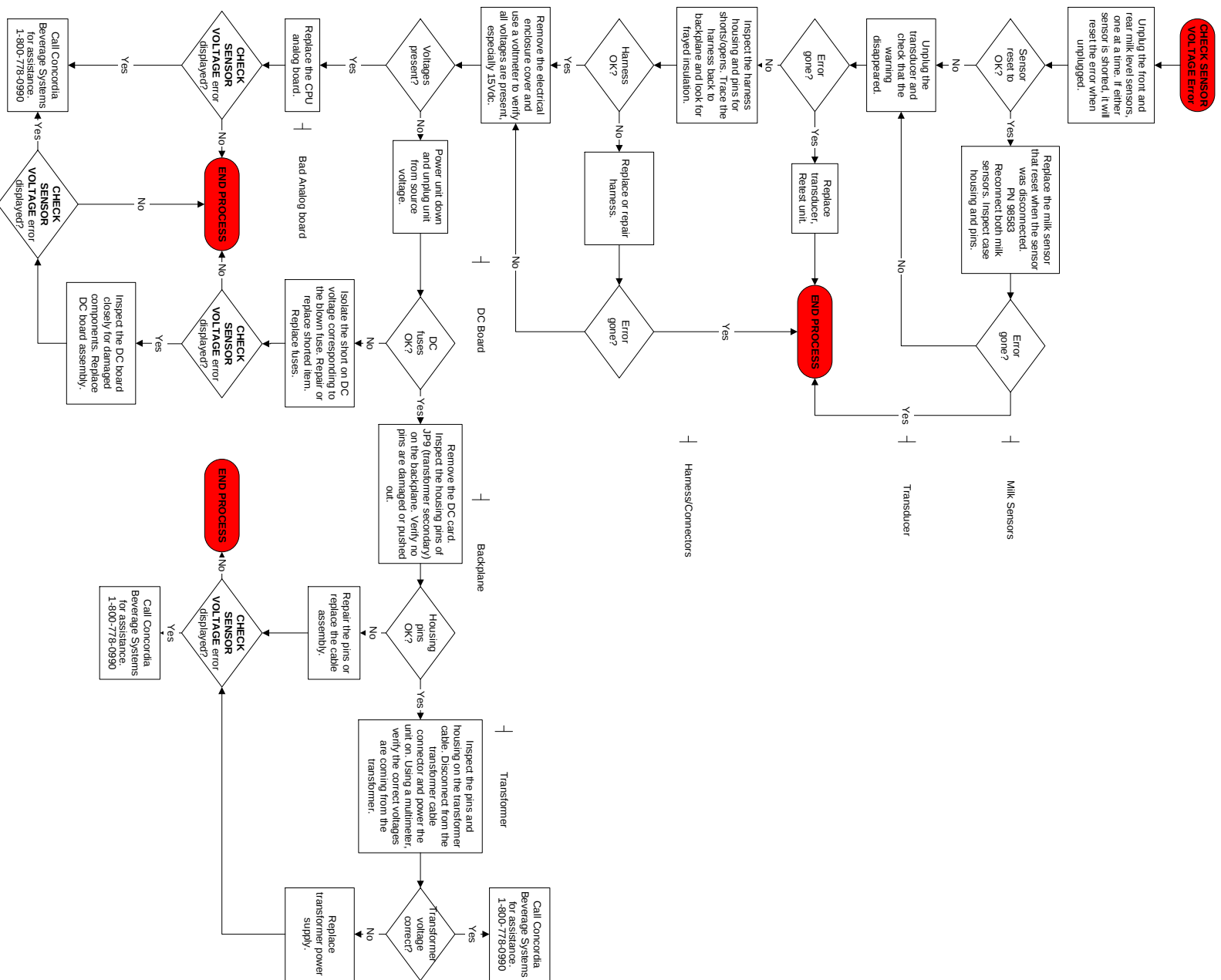


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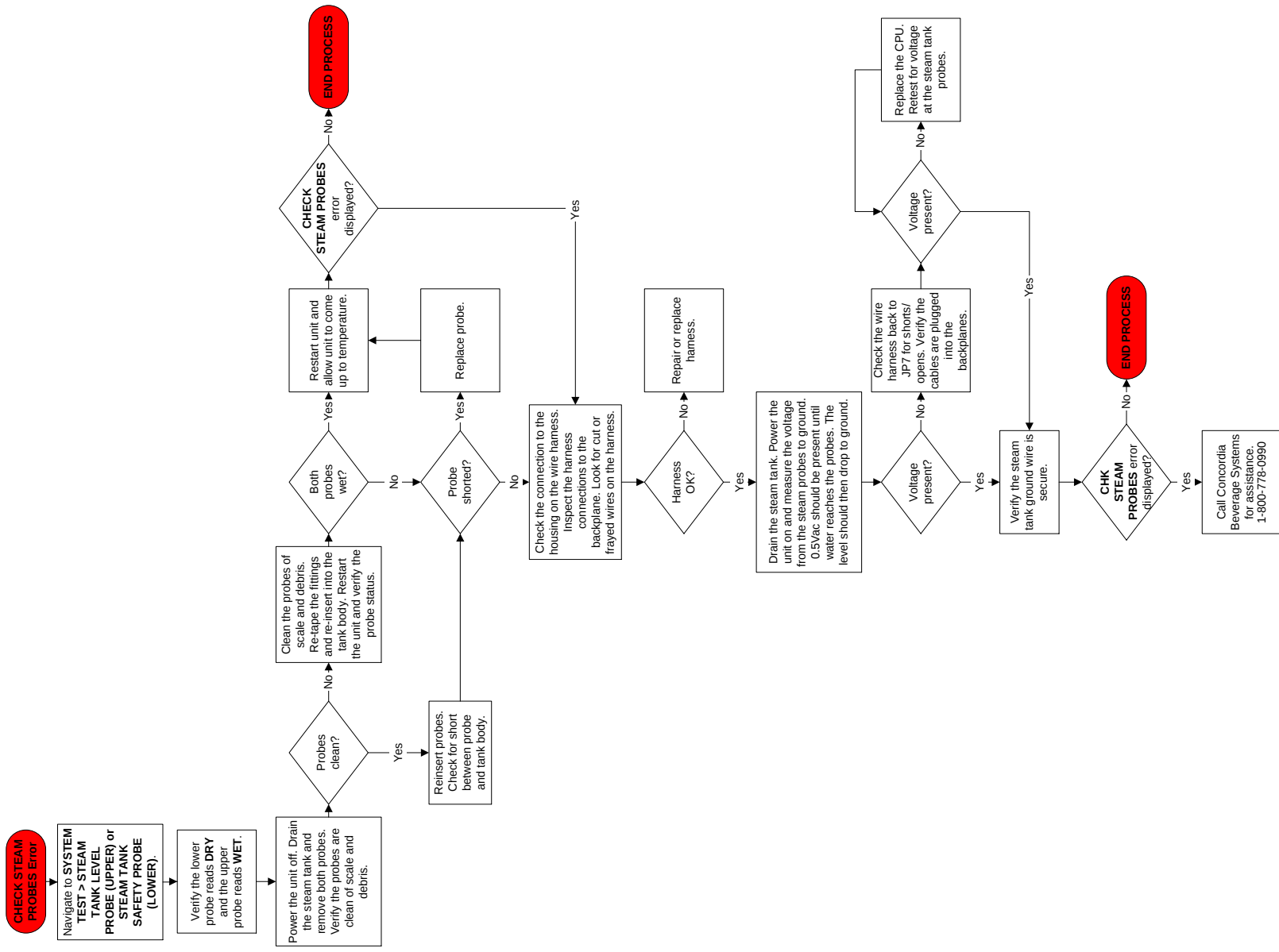
Steam System: Steam Temperature High



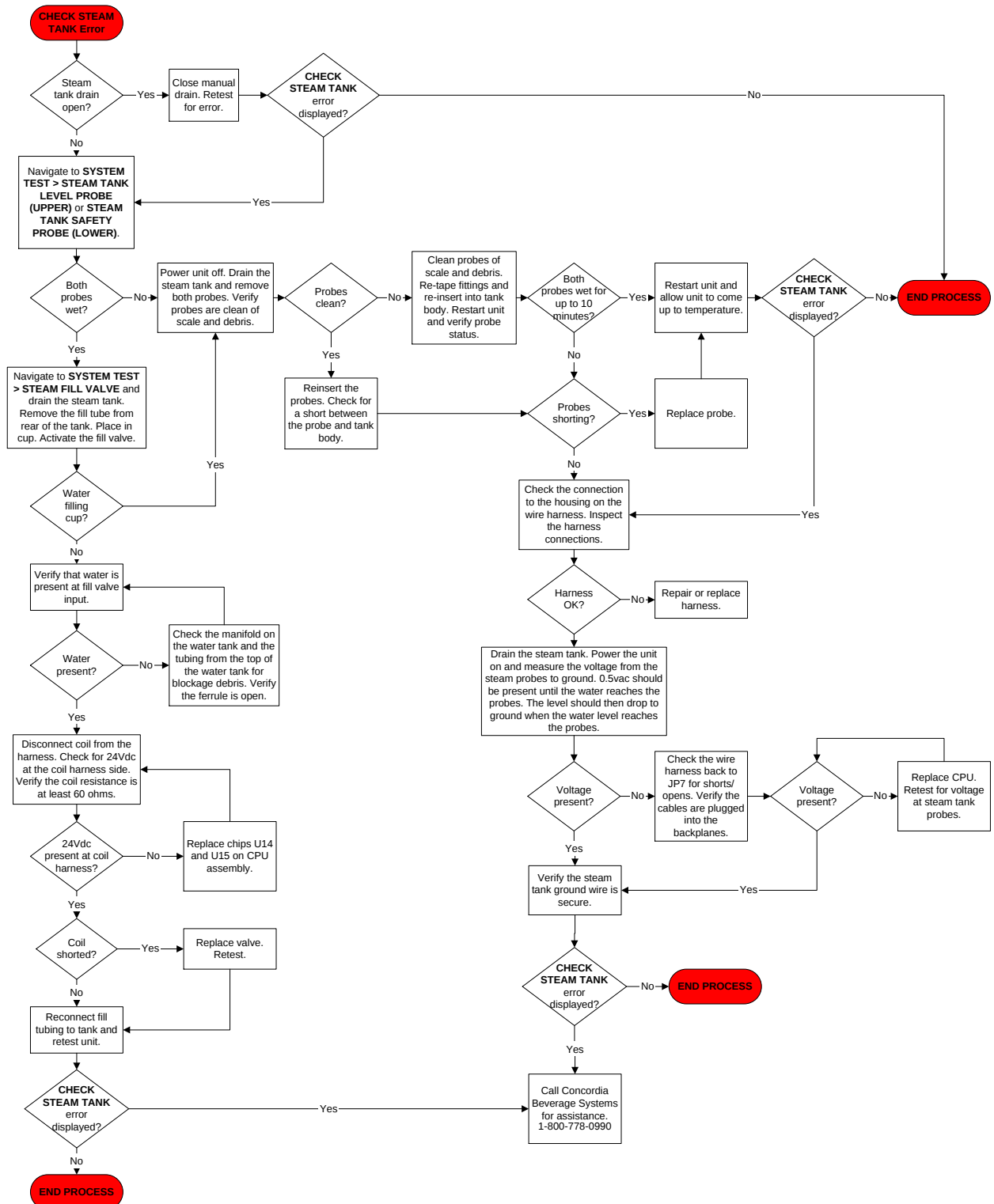
Steam System: Check Sensor Voltage



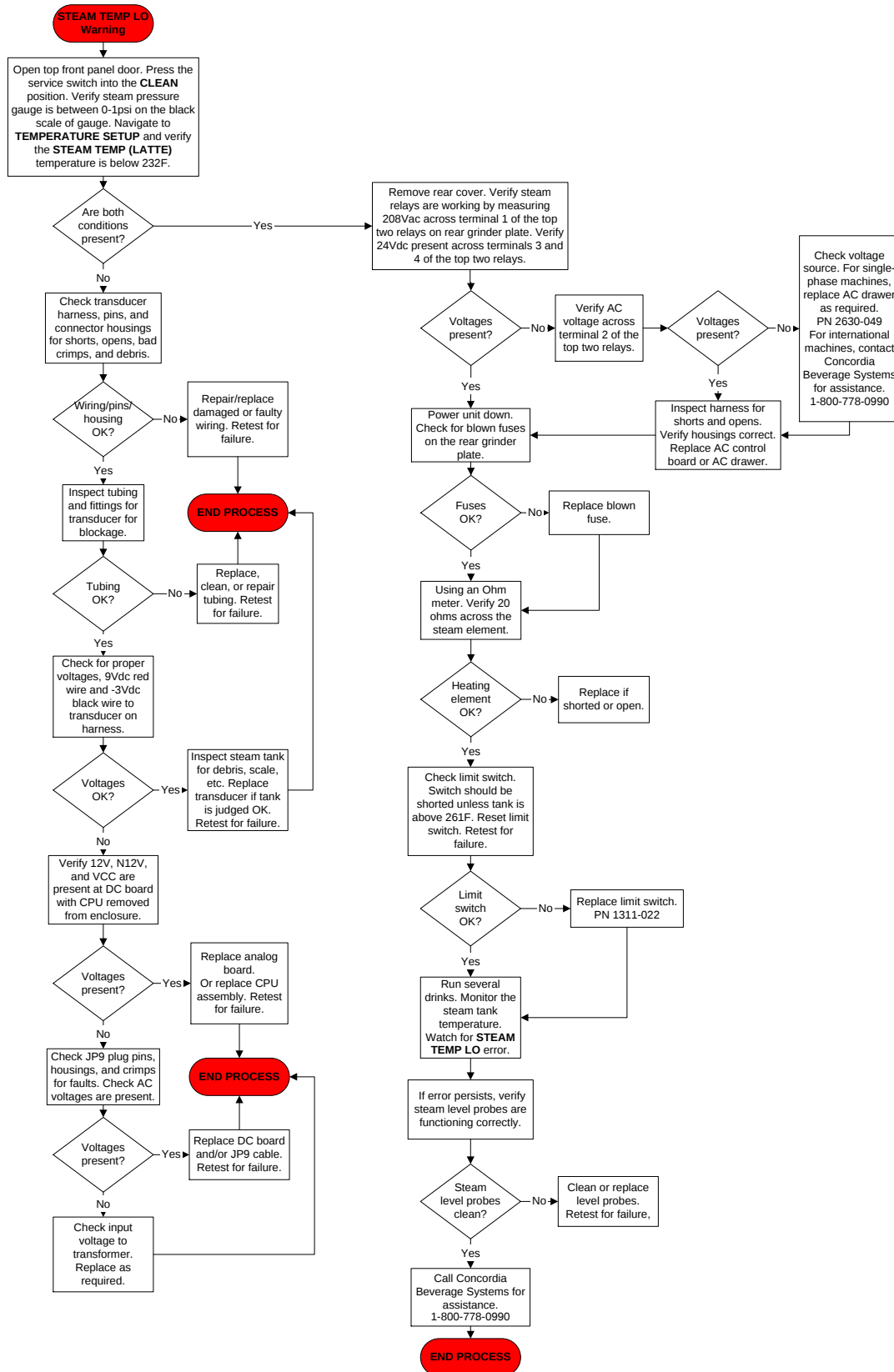
Steam System: Check Steam Probes



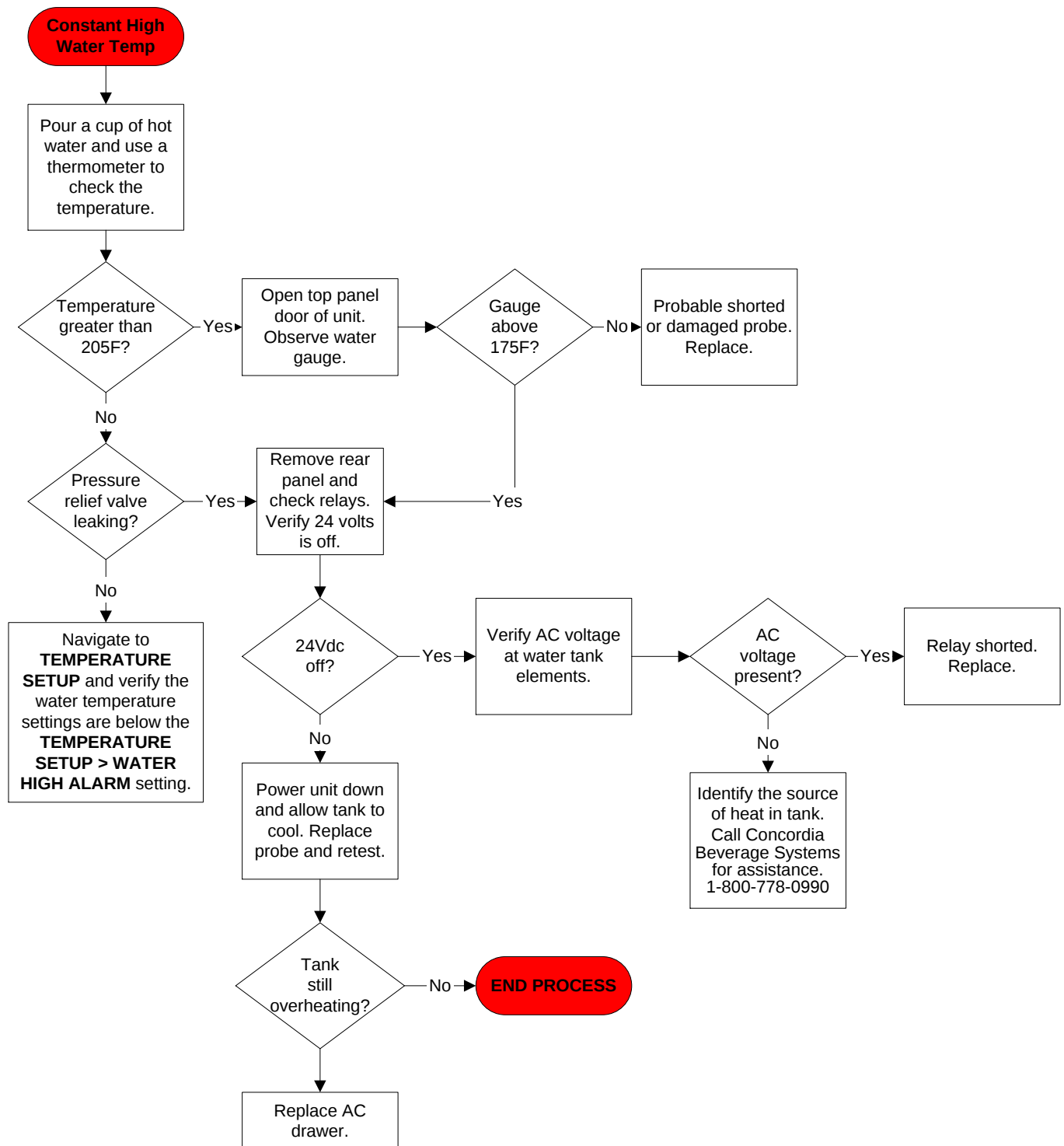
Steam System: Check Steam Tank



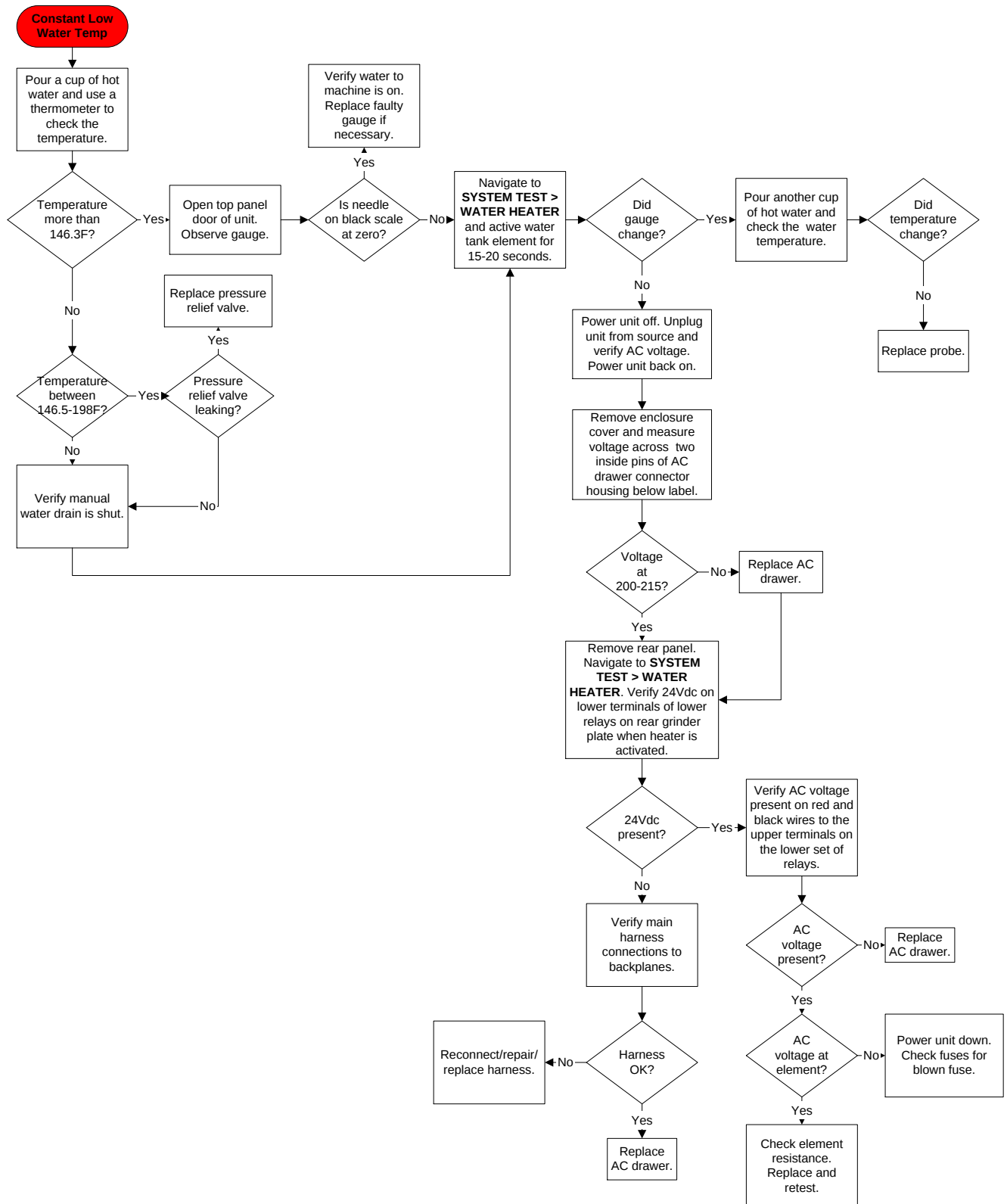
Steam System: Steam Temperature Low



Water System: Water Temperature Too High

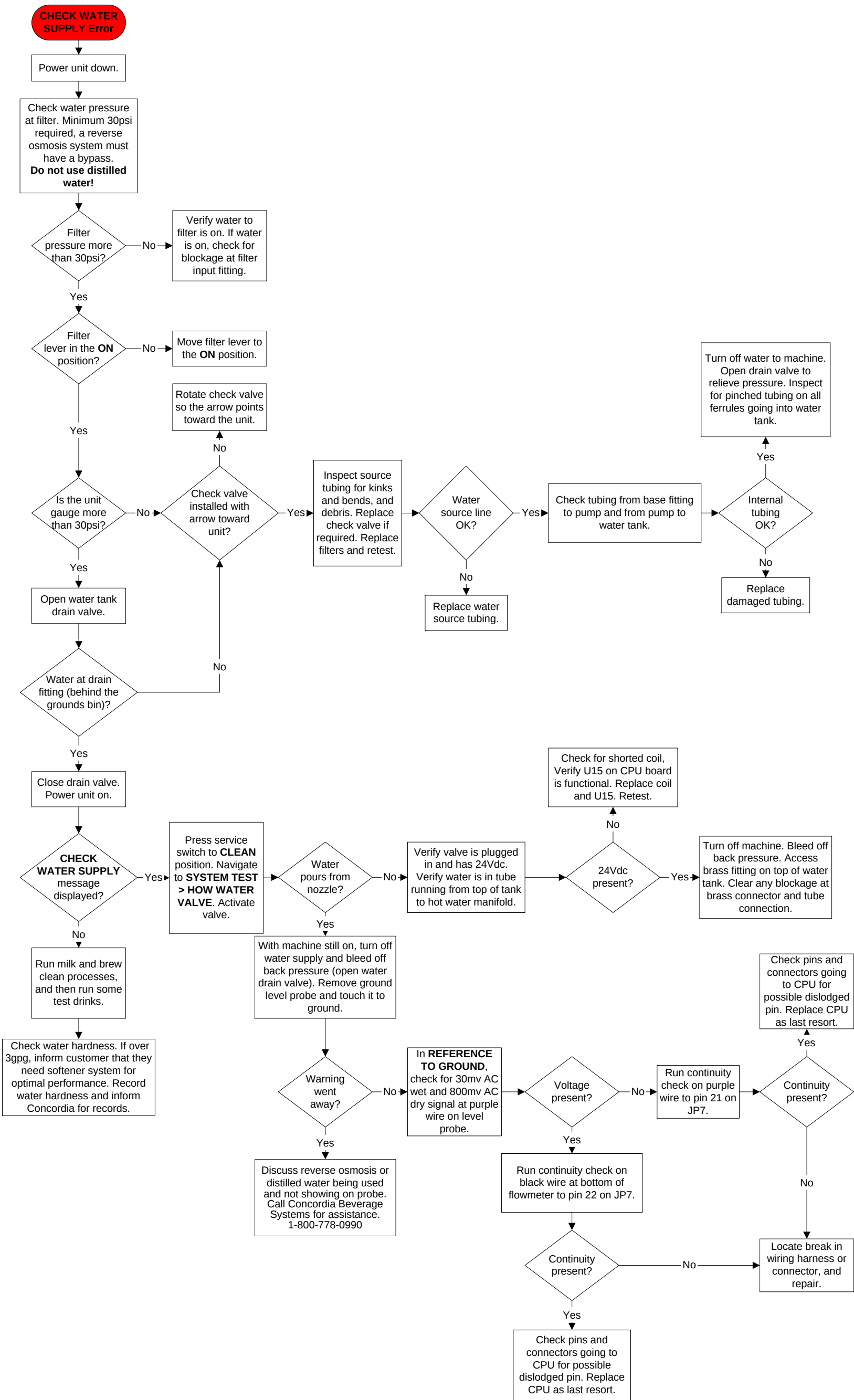


Water System: Water Temperature Too Low



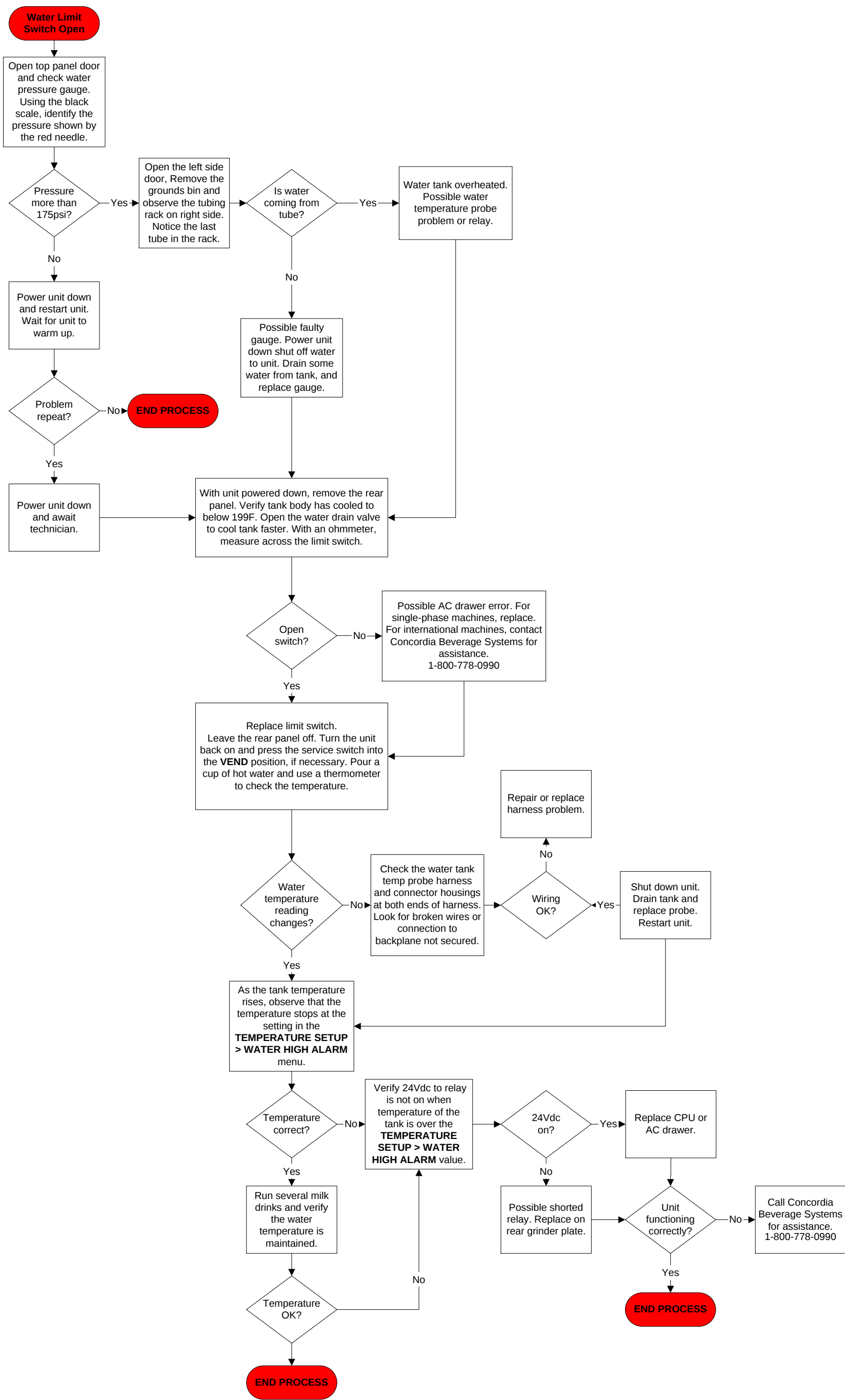
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Water System: Check Water Supply



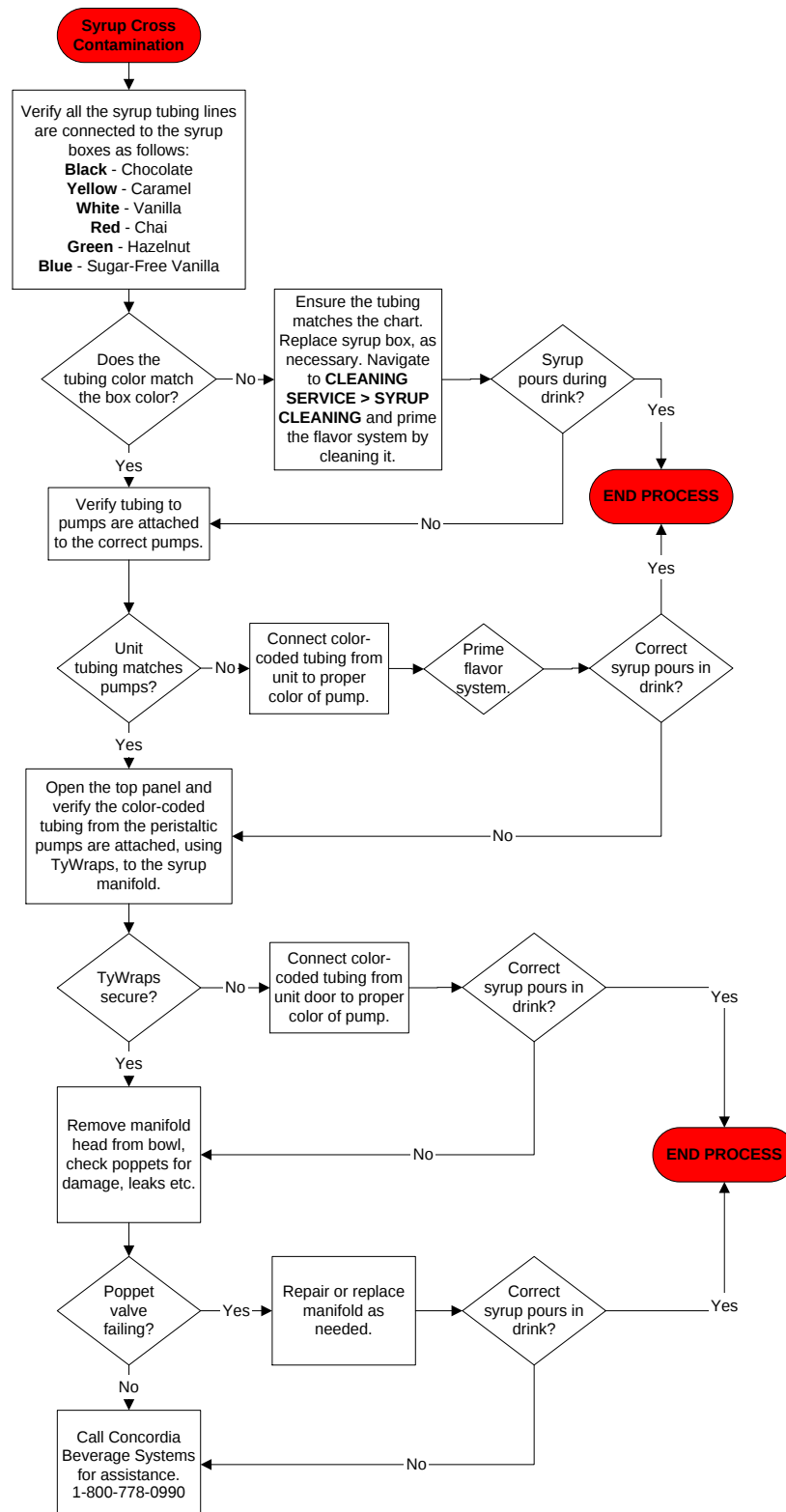
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Water System: Water Tank Limit Switch Open

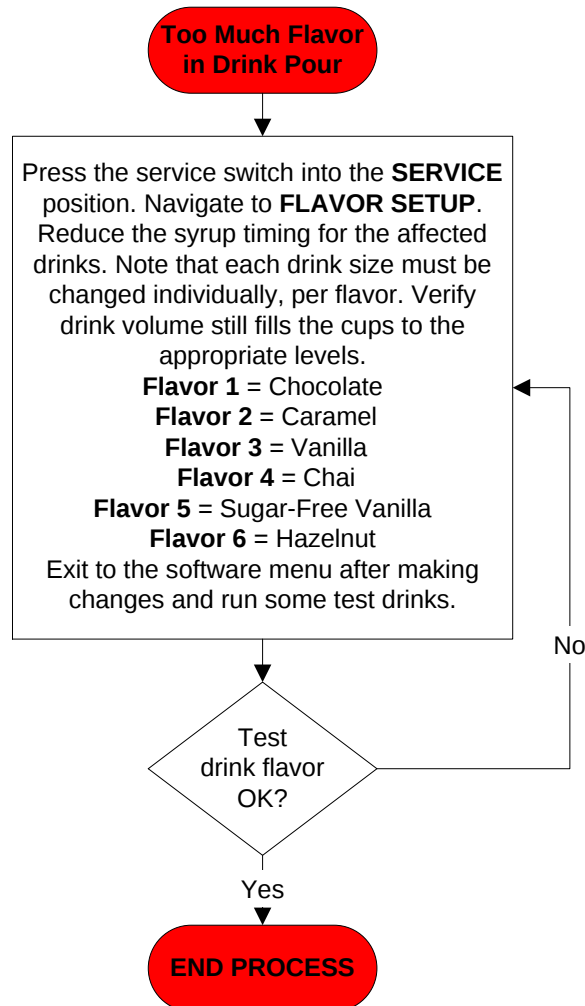


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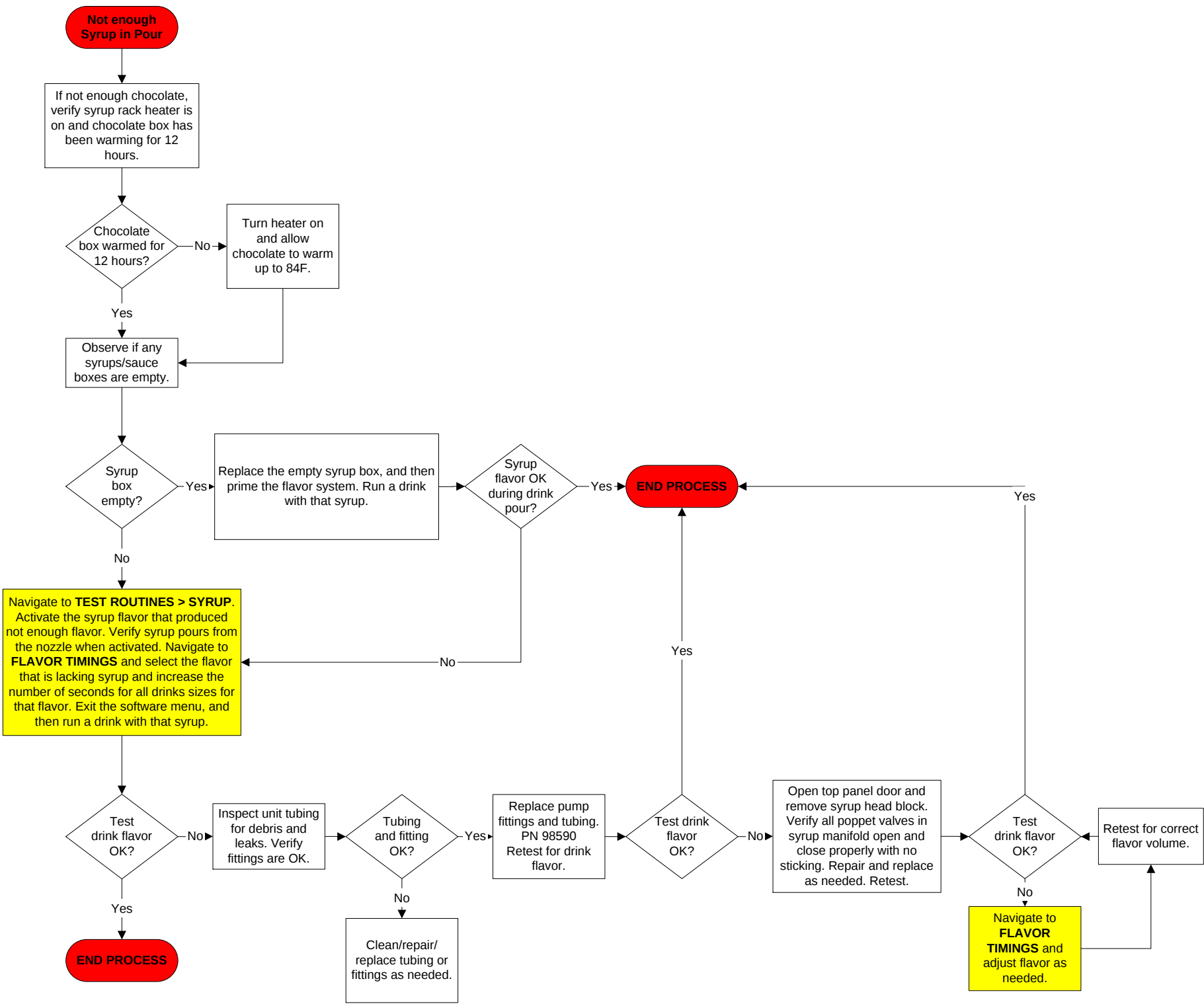
Flavor System: Cross-Contamination of Syrup Lines



Flavor System: Too Much Flavor in Drink

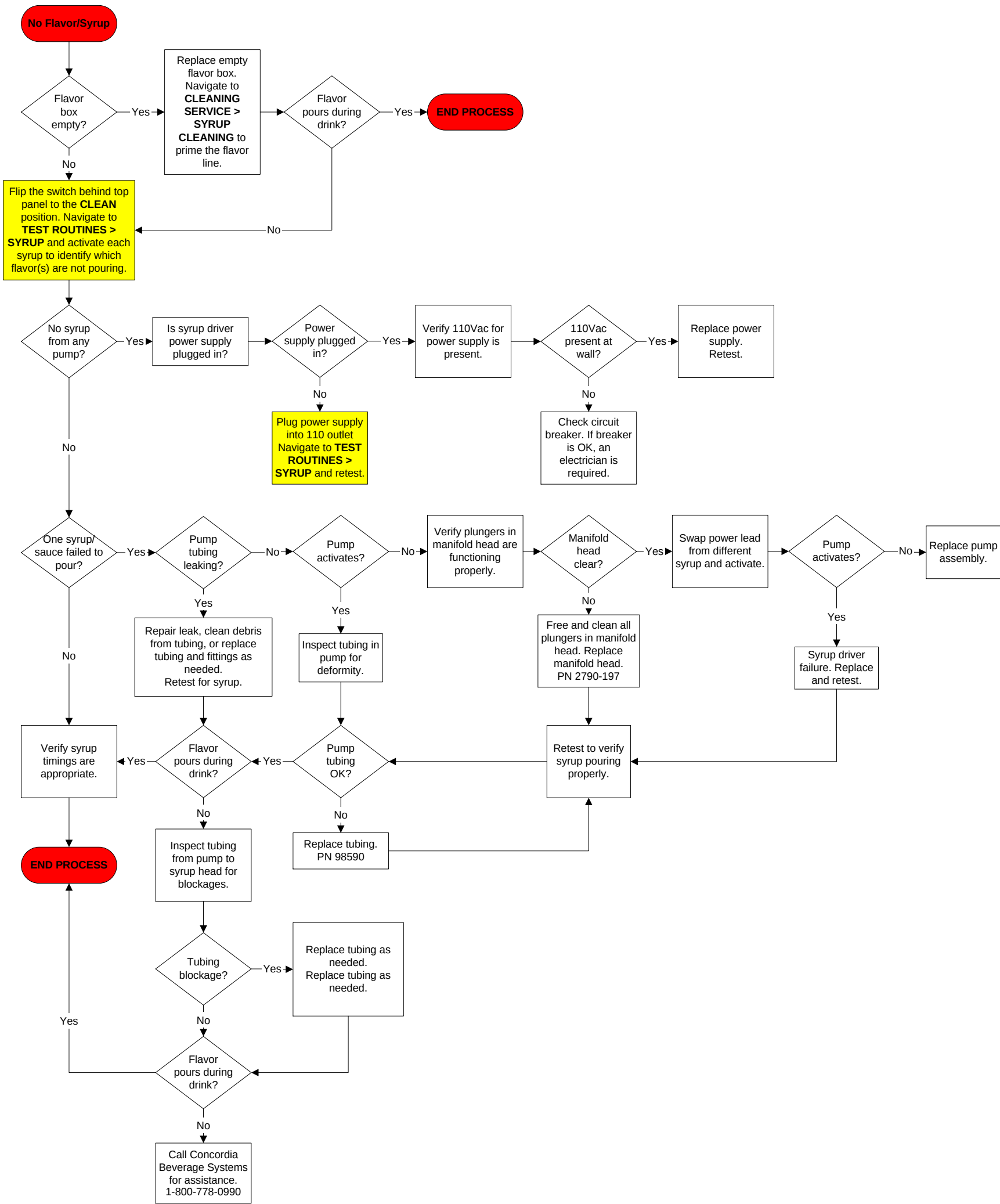


Flavor System: Not Enough Flavor in Drink



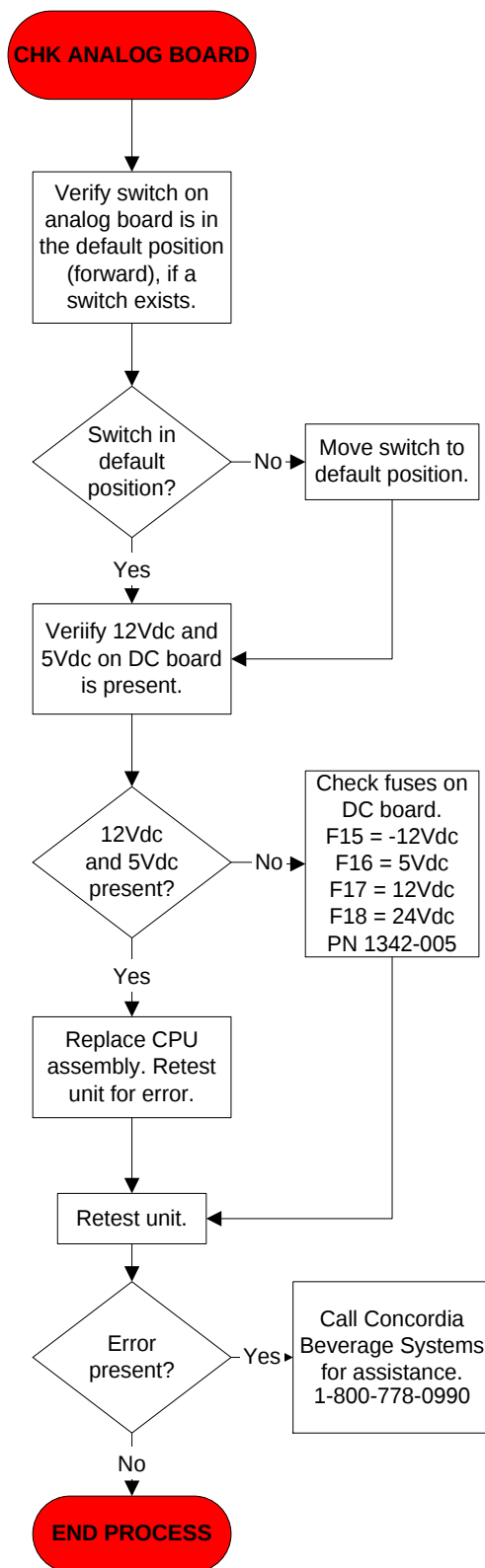
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Flavor System: No Flavor in Drink

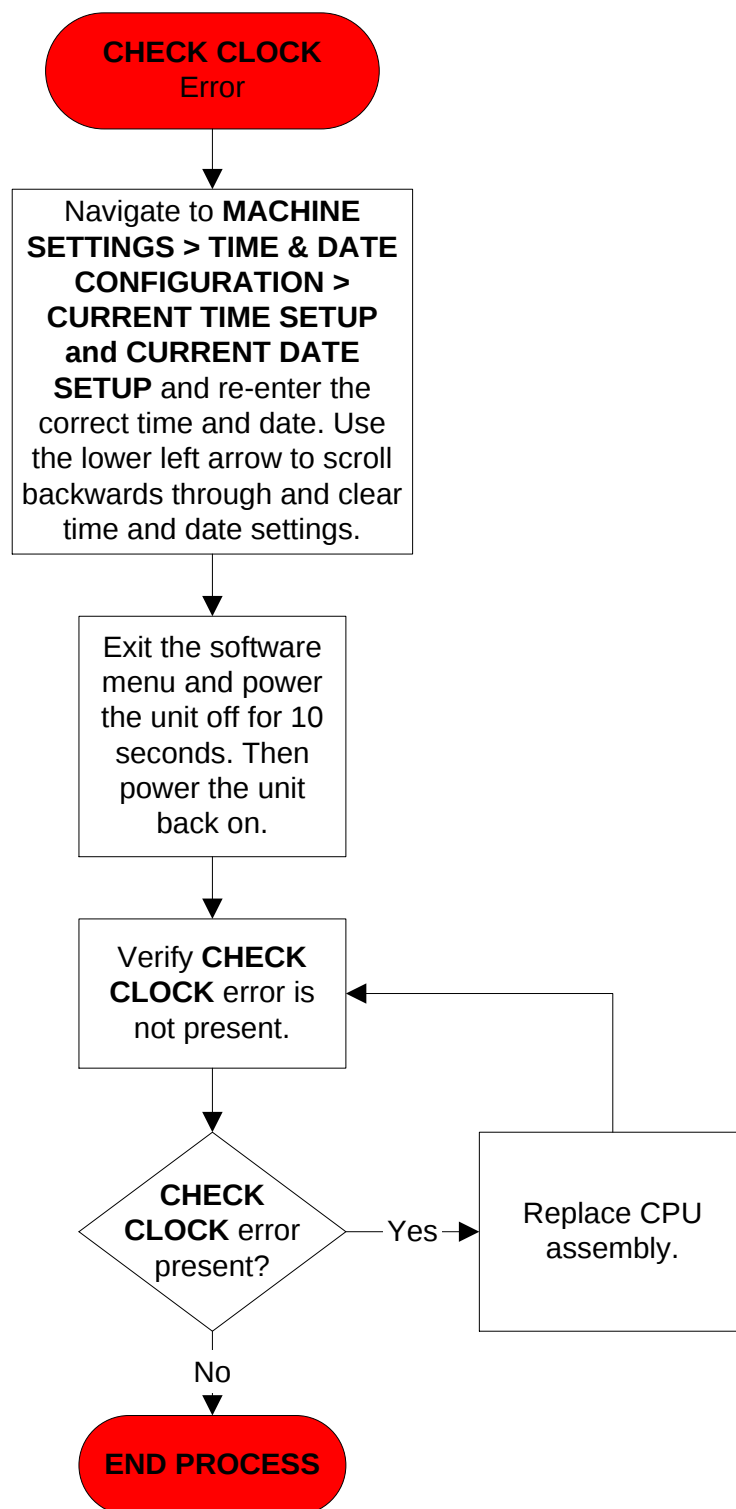


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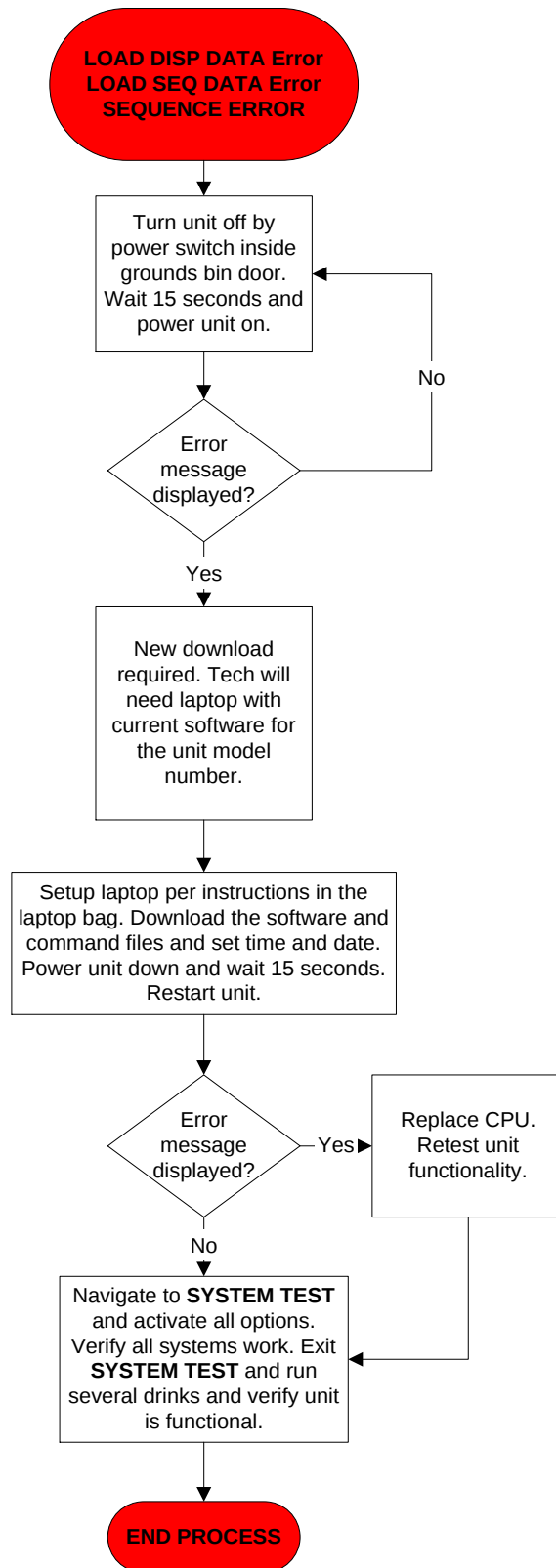
Electrical System: Check Analog Board



Electrical System: Check Clock

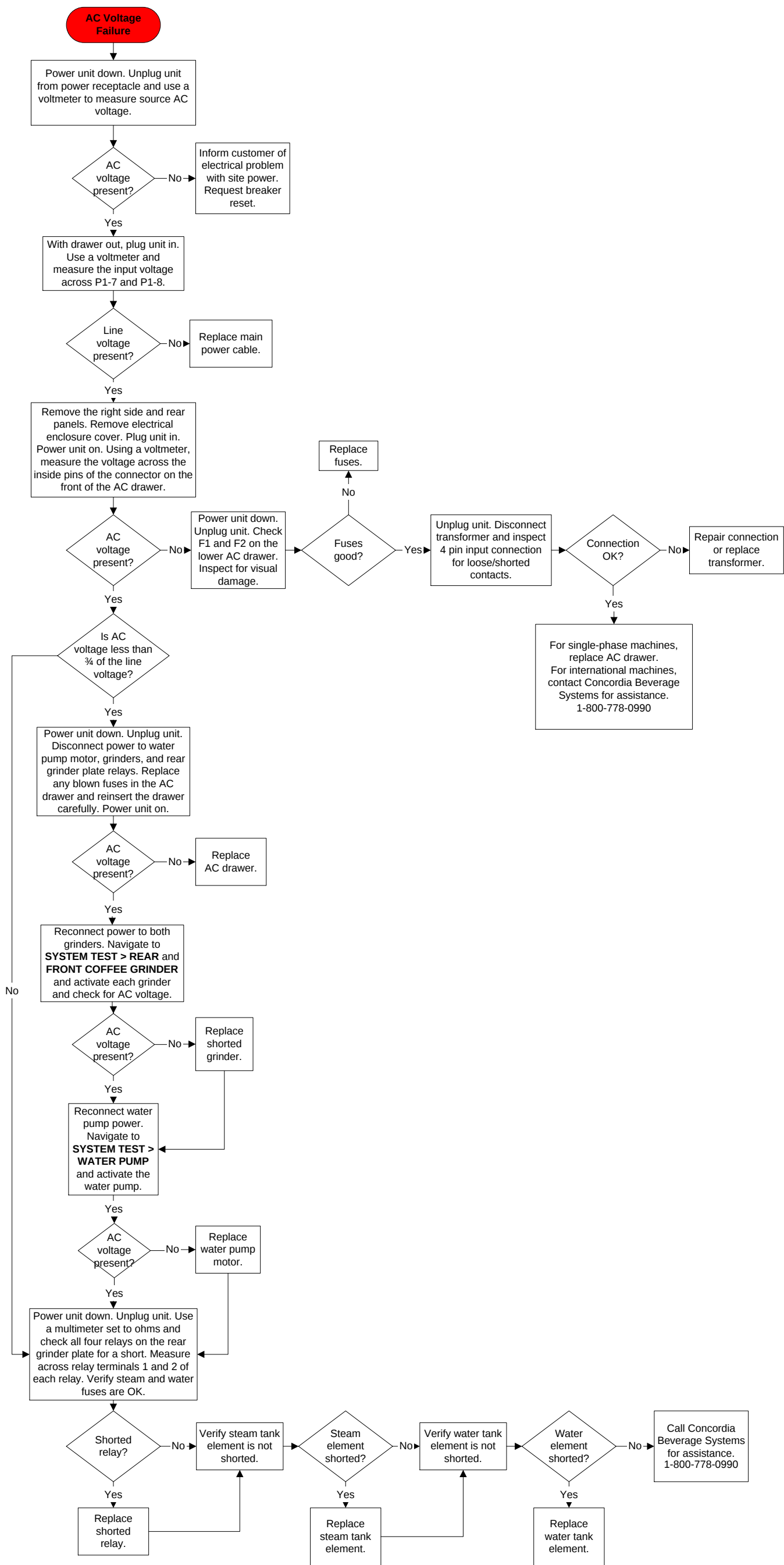


Electrical System: CPU Load Disp and Seq Error



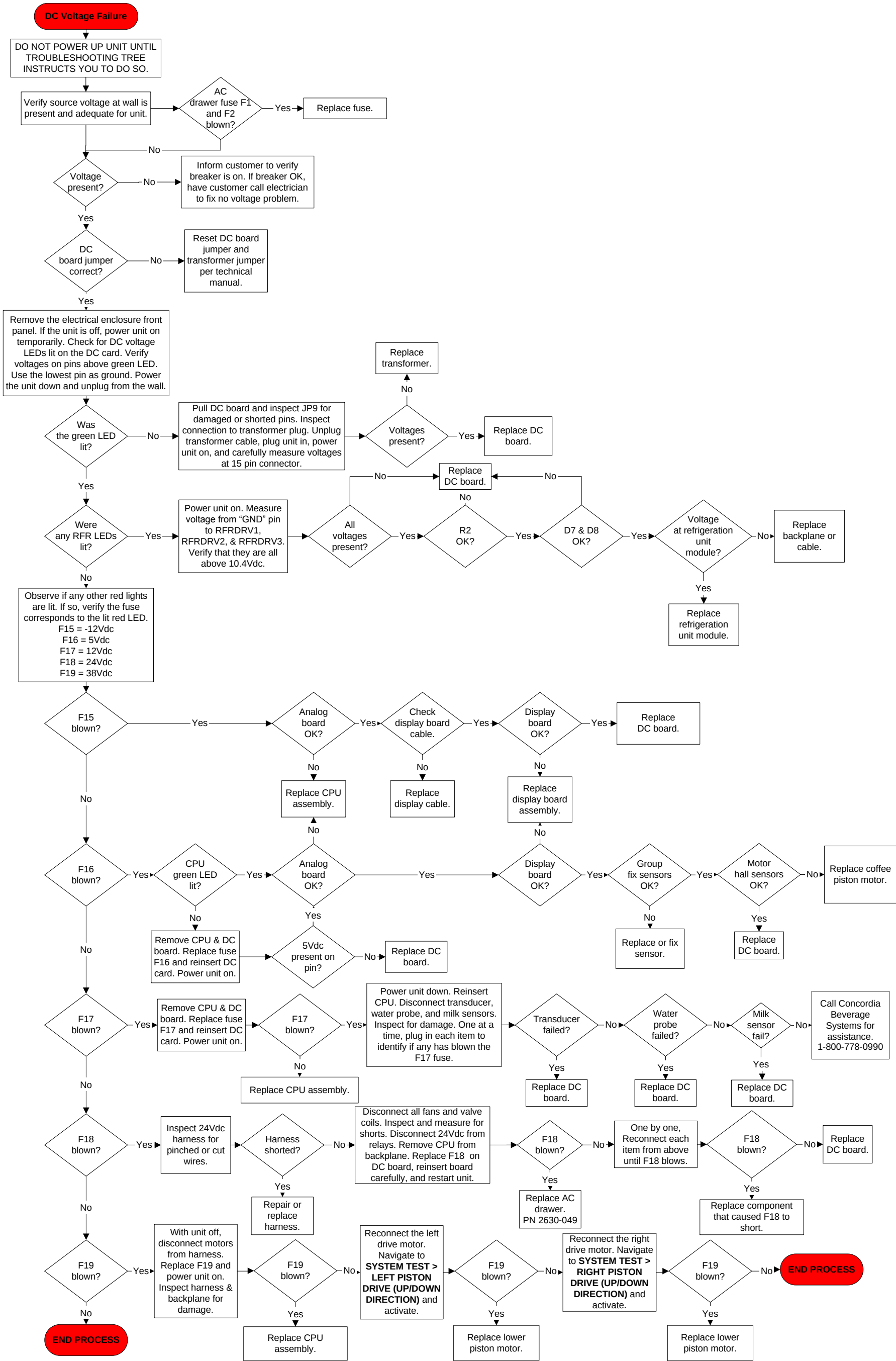
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Electrical System: AC Voltage Error



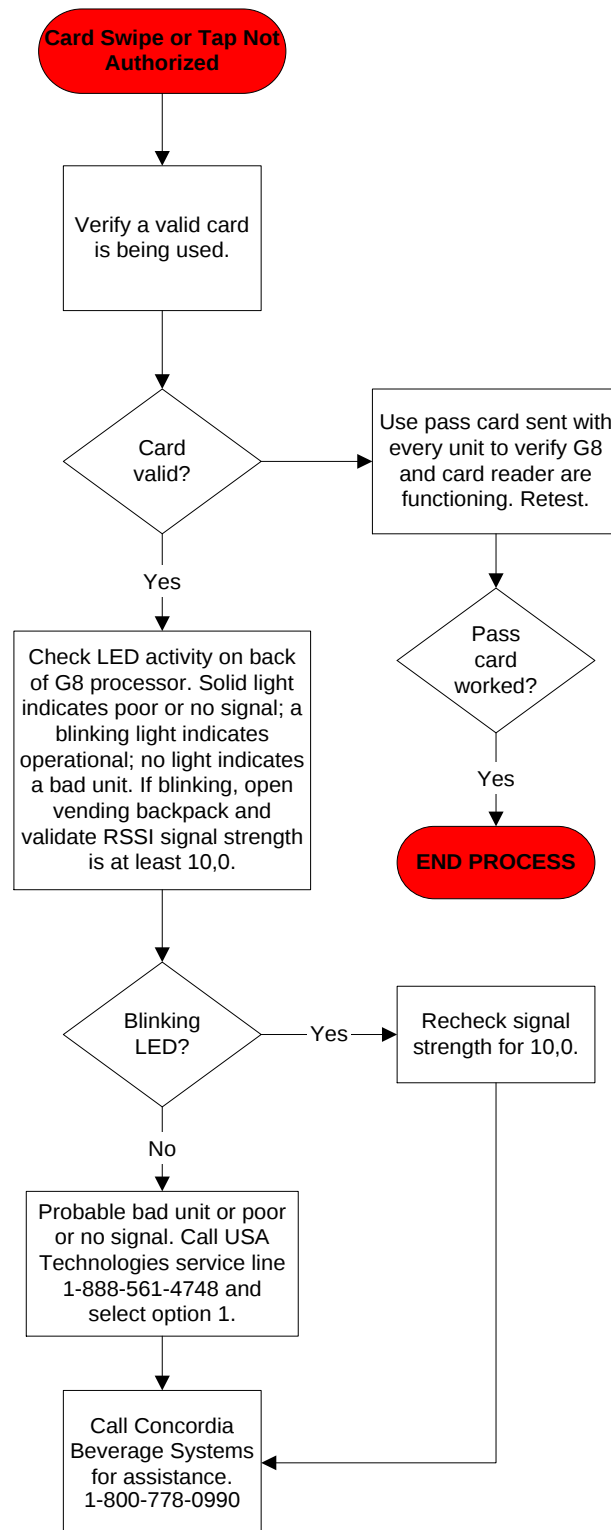
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Electrical System: DC Voltage Failure

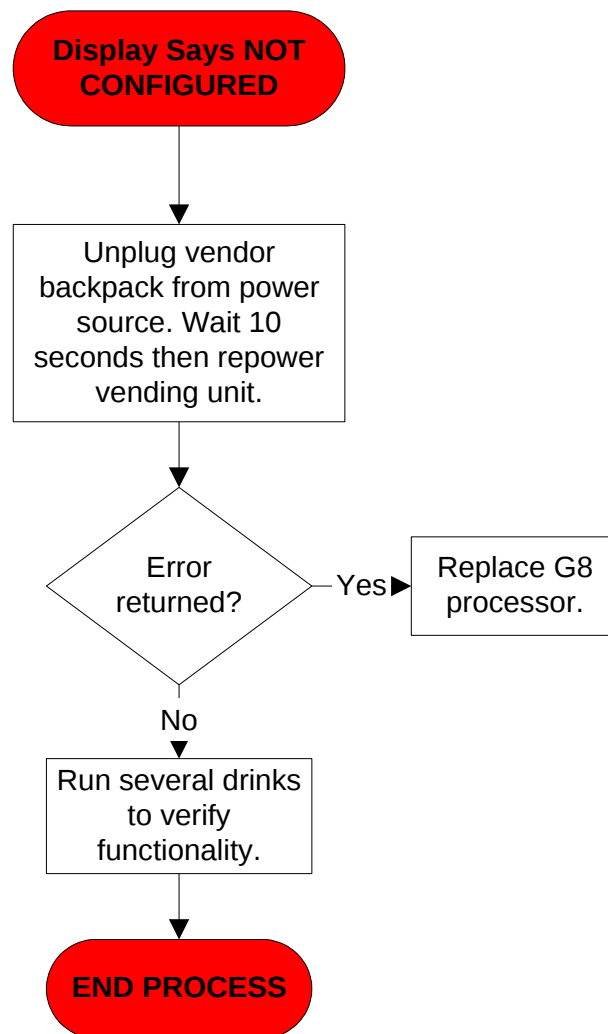


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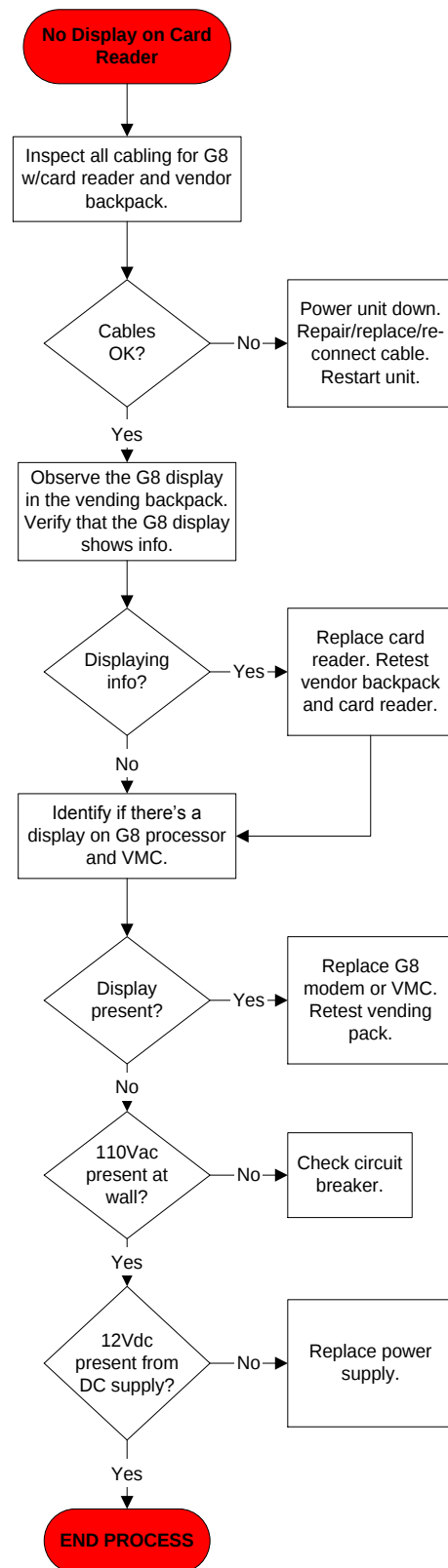
Vending System: Card Swipe or Tap Not Authorized



Vending System: Not Configured



Vending System: No Display on Card Reader



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Section 16 :: Parts Lists & Diagrams

1. Recommended Tools List
2. Parts Lists and Diagrams

CONCORDIA
BEVERAGE SYSTEMS

Recommended Tools List

Standard Tools

3" Socket extension 1/2" drive	Jeweler's Screwdriver
Complete set of Allen wrenches in metric/ASE	Snap-ring Pliers
11/32" Nut driver or socket	7/16" Wrench
1/4" Drive Socket wrench w/extension & universal joint	Torque wrench, up to 30 FP & Driver 10 CBS
3/32" Ball Driver	1/2" Wrench
#2 Phillips Screwdriver – 4"	9/16" Wrench
#2 Phillips Screwdriver – 10"	5/8" Wrench
#2 Flat Screwdriver	11/16" Wrench
Angled Driver - Skewdriver®	¾" Wrench
#2 Phillips Bit – 1/4" drive	11/32" Wrench
4mm Bit – 1/4" drive	10mm Wrench
Needle Nose Pliers	1.5" Socket
10" Channellocks®	Digital Thermometer
Combo Crimper/Stripper Tool	ESD Mat and Strap
6" Snippers/Flush Cutters	Socket adapter 1/2"F x 3/8M
Socket Wrench 1/2" drive	3/8" Wrench
#2 Square drive	Clamps

Concordia Stocked Tools

	CONCORDIA PART NUMBER
Pin Removal AMP – Medium	4100-003
Group Motor Removal Tool	4100-014
Small Pin Remover	4100-016
Temperature Probe	4300-010

Service Items

	CONCORDIA PART NUMBER
Heat sink compound	3900-003
Superlube grease	92003
Teflon tape – 1/4" & 1/2"	3300-013
Ty-Wrap (100)	1454-014
RTV silicone seal	3200-003
Test strips (each)	3400-017
Test strips (50 count)	3400-018
Beaker #1 green	3400-032
Beaker #2 red	3400-033
Beaker black	3400-034

Parts Lists and Diagrams

1	Machine Overview
2	Refrigerator Door Assembly
3	Refrigerator Door with Steam Wand Assembly
4	Steam Wand Assembly
5	Grounds Bin Door
6	Top Panel
7	Grinder Assembly
8	Grinder Adjustment Assembly
9	Group Upper and Lower Piston Assembly
10	Group Drive System
11	Milk Pump Assembly
12	Product Delivery Assembly Xpress 6
13	Refrigeration Unit Assembly
14	Chocolate Sauce Delivery System
15	Syrup Delivery System
16	Refrigeration Unit Cooling Assembly
17	Steam Tank
18	Water Pump and Motor
19	Hot Water Tank
20	Water/Steam Gauge/Air Valve Assembly
21	Drain Valve Bridge Web Assembly

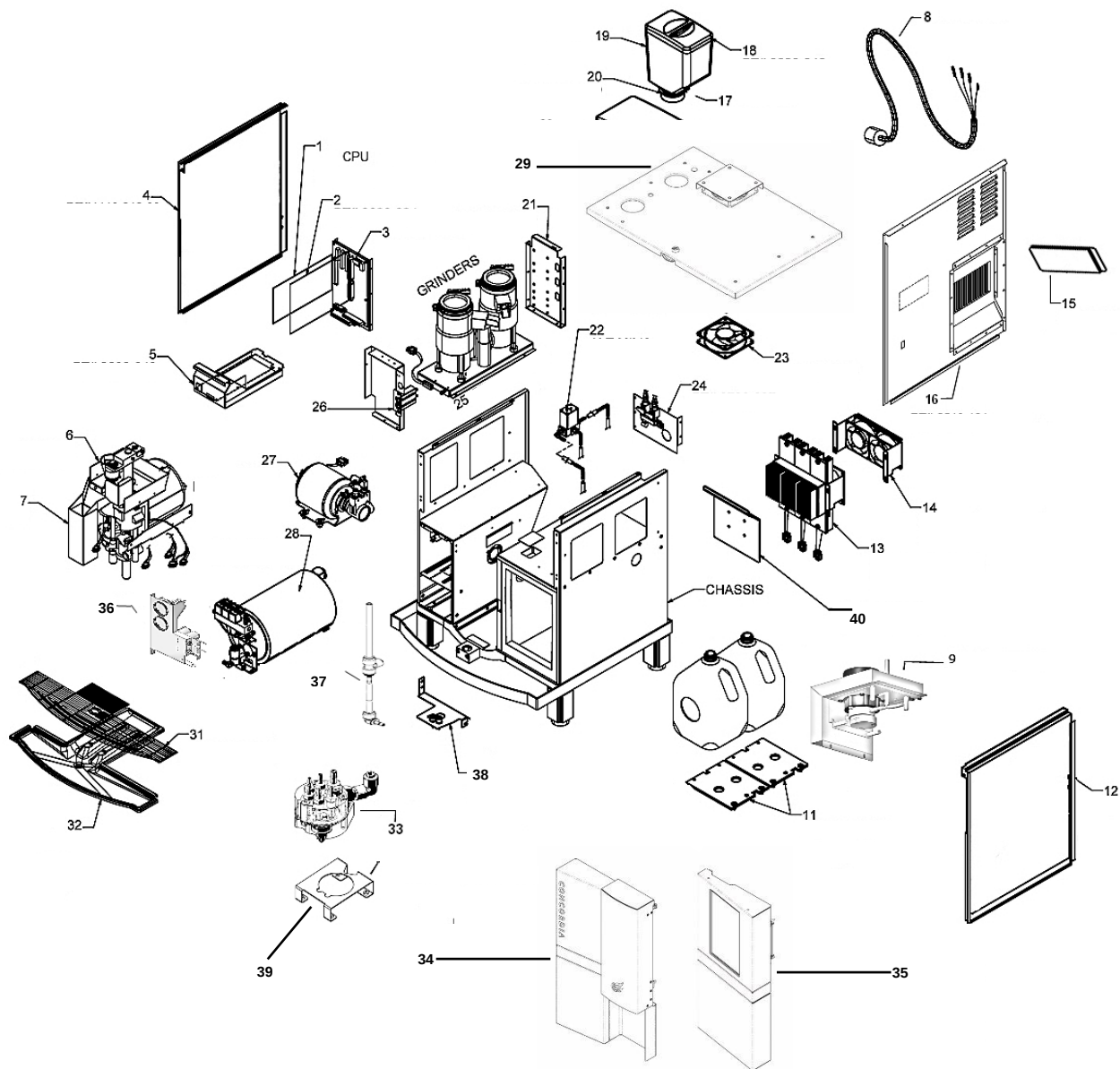
Diagram 1: Machine Overview

Diagram 1, Parts List: Machine Overview

Diagram 1 Item #	Description	Available	Concordia Part Number
1	ASSY CPU PROG NI XT		2630-118
2	ASSY – DC SUPPLY-995/2000		2630-034
3	ASSY- BACK PLANE 995/2000		2630-019
4	PNL SIDE LEFT BRONZE XT		1110-848-01
5	ASSY AC DRWR SGL PHASE		2630-049
6	ASSY GRP/TANK NI XT		2130-031
7	CHUTE DREGS 2000 NSF		1110-335
8	ASSY PWR CORD 4 COND STD		2670-120
9	ASSY MILK PUMP XT		2340-130
11	ASSY WEIGHT TRAY SMALL		2310-027
12	PNL SIDE RIGHT BRONZE XT		1110-849-01
13	ASSY RFR MODULE XPRESS		2320-036
14	ASSY FRIDGE EXT FAN X6		2310-043
15	FILTER AIR XPRESS		1120-362
16	ASSY BACK PANEL XT		2510-184
17	O-RING BEAN HOPPER XPRESS		1260-090
18	LID HOPPER XPRESS		2220-040
19	HOPPER XPRESS		2220-039
20	STOPPER HOPPER XPRESS		1120-486
21	ASSY PLATE REAR GRIND/SSR		2630-028
22	ASSY ALT MILK NI XPRESS		2340-131
23	EXHAUST FAN- 24VDC		2510-044
24	ASSY BRIDGE WEB XPRESS		2720-067
25	ASSY GRINDER DUAL XT		2230-017
26	ASSY-GRINDER DBL-ADJUST		2230-008
27	ASSY WTR PMP NI XPRESS		2710-024
28	ASSY TANK STEAM NI XPRESS		2730-050
29	ASSY TOP PANEL XT		2510-172
31	GRATE DRAIN TRAY XT		1110-871
31	GRATE DRAIN NI XPRESS		1110-966
32	TRAY DRAIN XT		1120-125
33	ASSY SYRUP MANIFOLD X6		2790-197
34	ASSY BIN DOOR XT		2510-142
35	ASSY FRIDGE DOOR XT		2510-148
36	ASSY GAUGE/AIR NI XT		2510-271
37	ASSY MLK/STM PLUMBING X6		2790-199
38	BRKT PROD DELIVERY XT		1111-188
39	BRKT SYRUP DISPENSE XT		1111-189
40	ASSY-DEFLECTOR-INT FRIDGE		2310-033

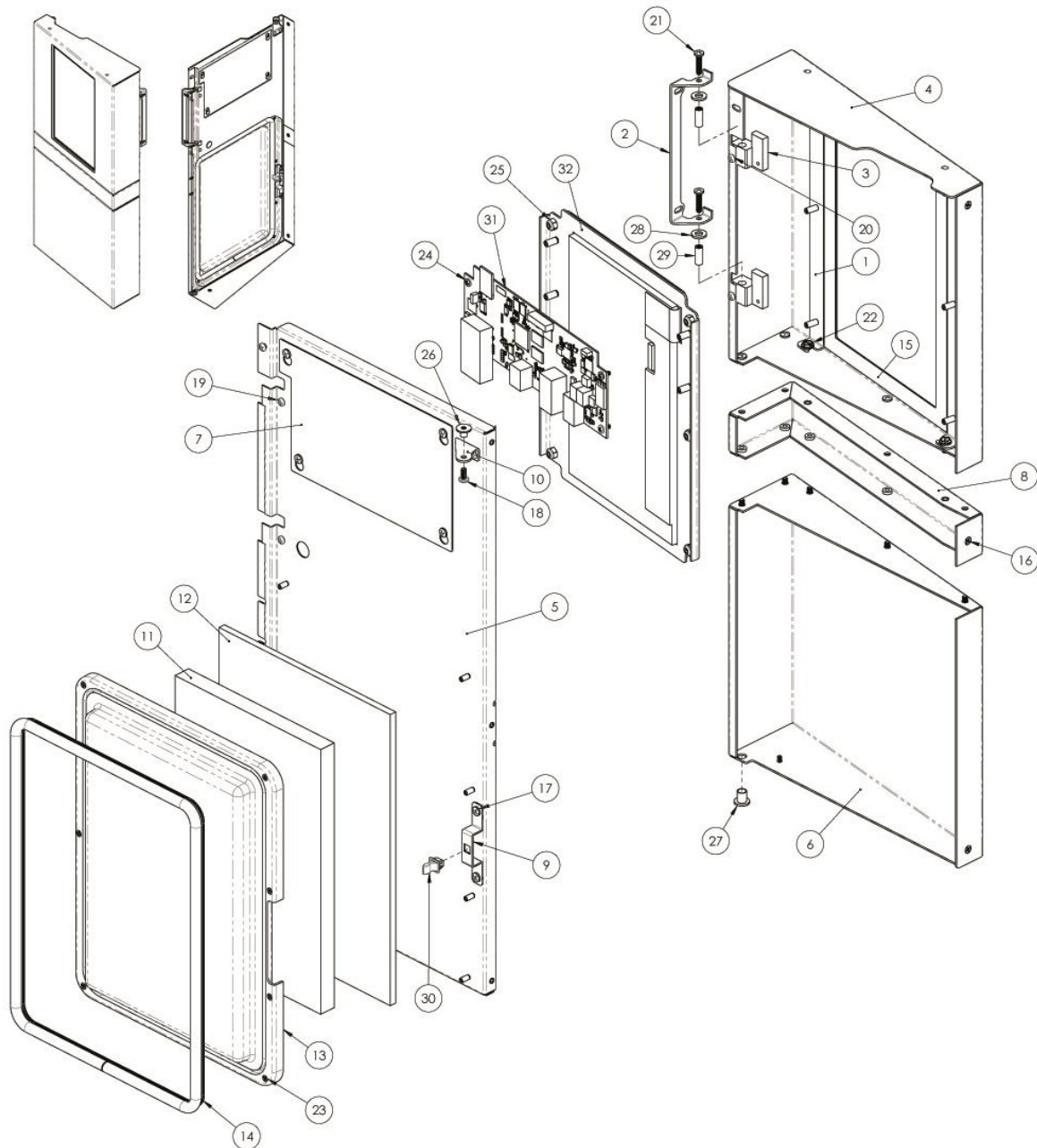
Diagram 2: Refrigerator Door Assembly

Diagram 2, Parts List: Refrigerator Door Assembly

Diagram 2 Item #	Description	Available	Concordia Part Number
1	STRUT TOUCHSCREEN XT		1110-878
2	BRKT HINGER RT DOOR XT		1110-962-2
3	BLOCK HINGE UPR RFR DR XT		1110-964
4	PNL UPR RFR DR XT		1110-969-01
5	PNL BACK RFR DR XT		1110-970
6	PNL LWR RFR DR XT		1110-972-01
7	COVER TOUCHSCREEN XT		1110-994
8	PNL MID RFR DR XT		1111-183-02
9	BRKT LATCH RFR DR XT		1111-187
10	BRKT LOCK RFR DR PIN XT		1111-191
11	INSUL FR DOOR .63" THICK		1120-088
12	INSUL FR DOOR .30" THICK		1120-093
13	LINER RFR DOOR XT		1120-126
14	SEAL EXTRUSION RFR DR I6		1260-113
15	SEAL BEZEL TOUCHSCREEN XT		1260-151
16	PHIL MS SS UCT 6-32 X ¼		1410-002
17	PH PHIL MS SS 8-32 X ¼		1410-010
18	PH PHIL SS 8-32 X 3/8		1410-069
19	PH PHIL SS 6-32 X 3/16		1410-094
20	PH PHIL MS SS 6-32 X 3/8		1410-107
21	PH PHIL SS 8-32 X ¾		1410-126
22	WH HEX SS 10-32 X .375		1410-156
23	FH PHIL MS SS 4-40 x 0.5		1410-202
24	PH PHIL SS 6-32 X 5/16		1410-274
25	NUT HEX NYLOC 10X32		1420-033
26	NUT WELD 8-32		1420-040
27	WSHR-SHLDR-3/8 X .513 X .312- NYLON		1430-025
28	WSHR FLAT 1/2X.257X.062		1430-026
29	SPCR NYL 8-32X1/4ODX3/4L		1451-055
30	STRIKE FASTEX		1456-024
31	PCA TOUCHSCREEN XT		2612-042
32	TOUCHSCREEN CHASSIS XT		2640-104
33	CBL SERIAL DOOR SIDE XT		2670-084
34	TAPE VHB 30 INCHES LNG X .005 THK X 1/2W		3300-028
35	SW UI TOUCHSCREEN XT		2820-053

Diagram 3: Refrigerator Door with Steam Wand Assembly

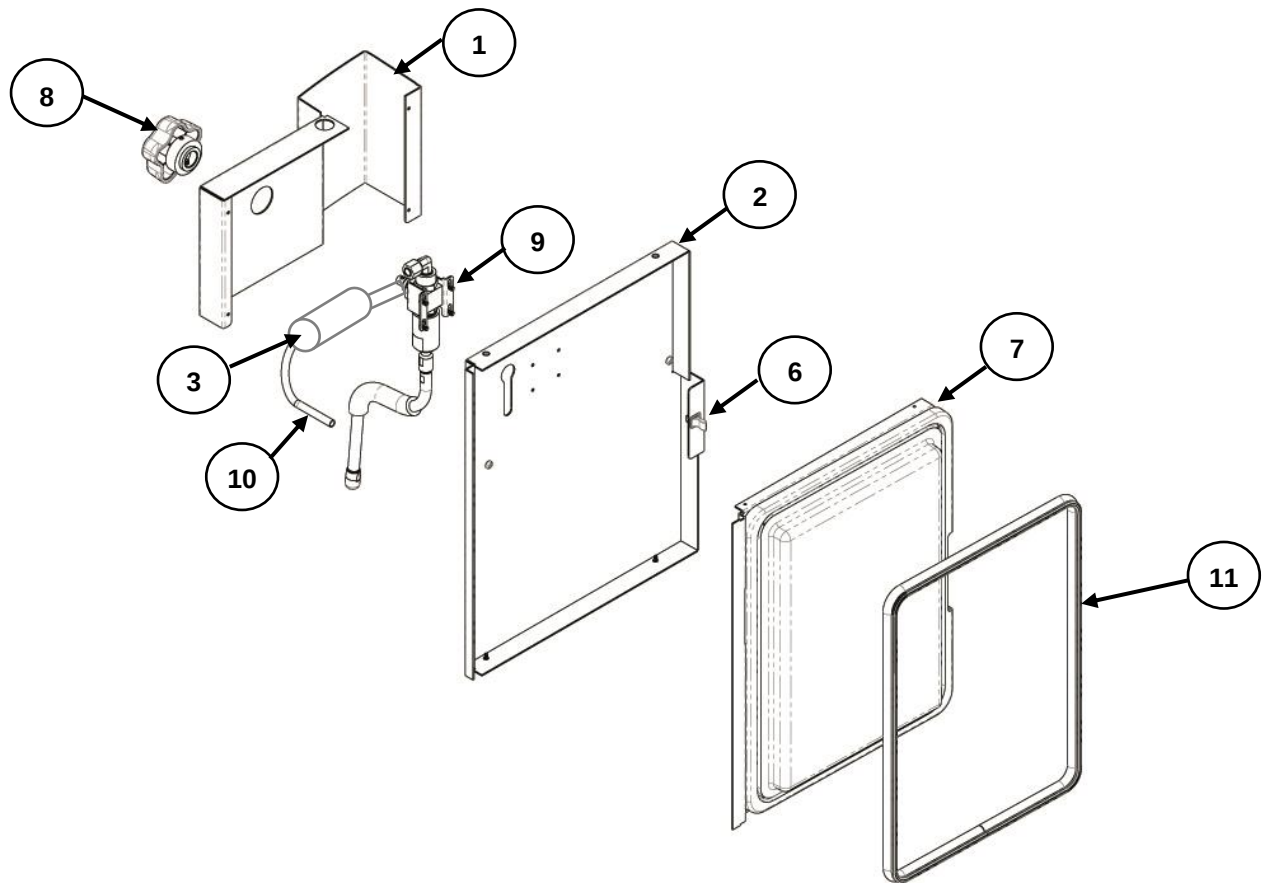


Diagram 3, Parts List: Refrigerator Door with Steam Wand Assembly

Diagram 3 Item #	Description	Available	Concordia Part Number
1	COVER REFER DOOR – XPRESS		1110-329
2	PNL RFR DOOR 2.5K		1110-860
3	TUBE PVC 1/4ID X 3/8OD		1250-008
4	FH PHIL MS-UCT 4-40X1/4 <i>NOT SHOWN</i>		1410-087
5	PH PHIL SS 6-32 X 3/16 <i>NOT SHOWN</i>		1410-094
6	STRIKE FASTEX		1456-024
7	ASSY-DOOR INTERIOR-2500		2510-004
8	ASSY KNOB STEAM WAND		2790-106
9	ASSY STM WAND 2500		2790-107
10	TUBE PFA 5/32ID X 1/4OD		1250-006
11	ASSY RFR DR SEAL EXPRESS		2310-038

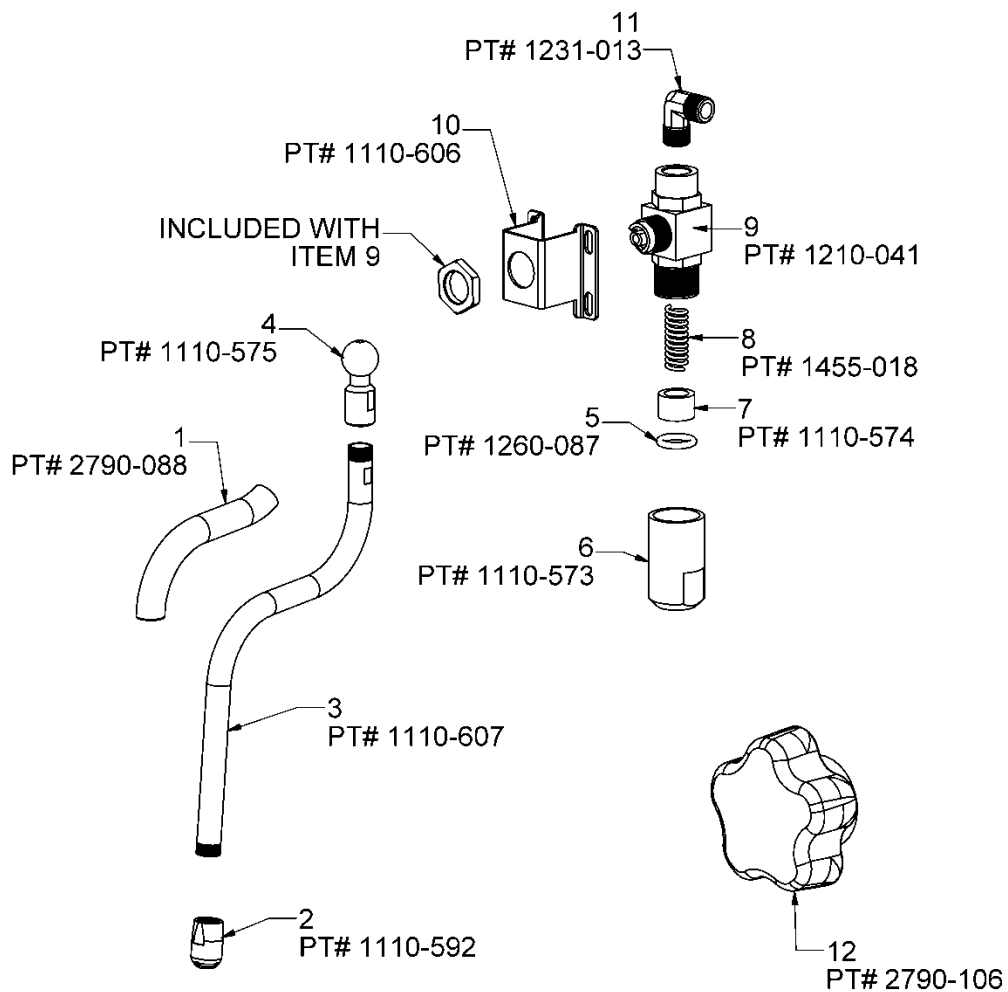
Diagram 4: Steam Wand Assembly

Diagram 4, Parts List: Steam Wand Assembly

Diagram 4 Item #	Description	Available	Concordia Part Number
	KIT STEAM WAND 2500	Yes	98543
1	HANDLE STM WAND TUBE 2.5K	Yes	2790-088
2	TIP STEAM WAND	Yes	1110-592
3	TUBE STEAM WAND 2500	Yes	1110-607
4	BALL JOINT STEAM WAND	Yes	1110-575
5	O RING STEAM WAND- 99X	Yes	1260-087
6	HOUSING STEAM WAND	Yes	1110-573
7	RETAINER BALL SOCKET	Yes	1110-574
8	SPRING- STEAM WAND- 99X	Yes	1455-018
9	VALVE BALL STM WAND 2500	Yes	1210-041
10	BRACKET STEAM WAND	Yes	1110-606
11	ELBOW BRASS 1/4M X 1/4T	Yes	1231-013
12	ASSY KNOB STEAM WAND	Yes	2790-106

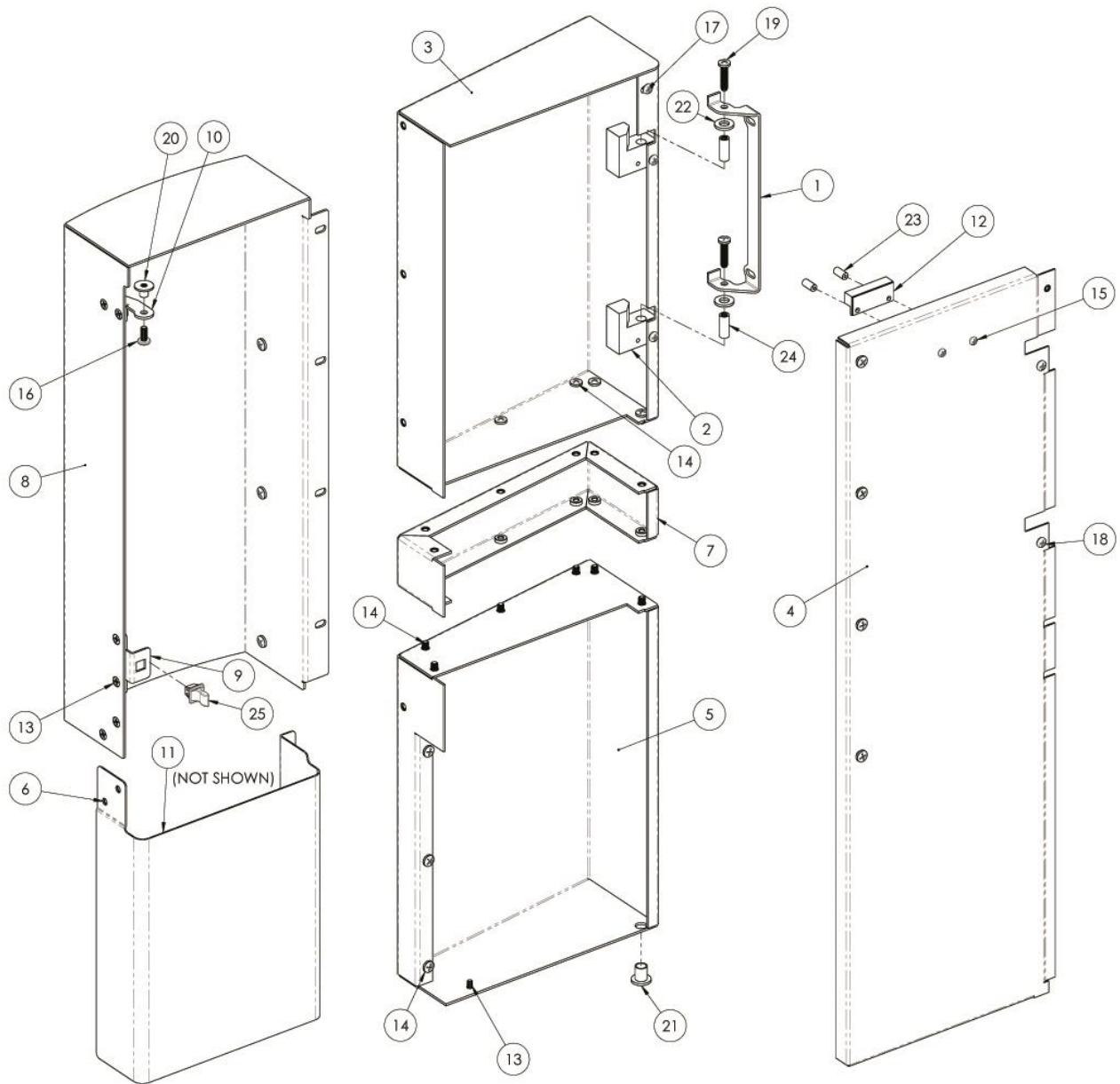
Diagram 5: Grounds Bin Door

Diagram 5, Parts List: Grounds Bin Door

Diagram 5 Item #	Description	Available	Concordia Part Number
1	BRKT HINGE LT DOOR XT		1110-962-1
2	BLOCK HINGE UPR BIN DR XT		1110-963
3	PNL UPR BIN LT DR XT		1110-967-01
4	PNL BACK BIN DR XT		1110-968
5	PNL LWR BIN LT DR XT		1110-971-01
6	PNL LWR BIN RT DR XT		1111-174
7	PNL MID BIN LT DR XT		1111-176-02
8	PNL UPR BIN RT DR XT		1111-180-02
9	BRKT LATCH BIN DR XT		1111-186
10	BRKT LOCK BIN DR PIN XT		1111-190
11	TRIM 3/8 EDGE RUBBER BLK		1240-078
12	MAGNET ONLY		1311-002
13	PHIL MS SS UCT 6-32 X ¼		1410-002
14	PH PHIL MS SS 8-32 X ¼		1410-010
15	PH PHIL MS SS 4-40x1/4		1410-065
16	PH PHIL SS 8-32 X 3/8		1410-069
17	PH PHIL SS 6-32 X 3/16		1410-094
18	PH PHIL MS SS 6-32 X 3/8		1410-107
19	PH PHIL SS 8-32 X ¾		1410-126
20	NUT WELD 8-32		1420-040
21	WSHR SHLDR 3/8 X .513 X .312		1430-025
22	WSHR FLAT 1/2X.257X.062		1430-026
23	SPACER .187RND 4-40X.375L		1451-035
24	SPCR NYL 8-32X1/4ODX3/4L		1451-055
25	STRIKE FASTEX		1456-024

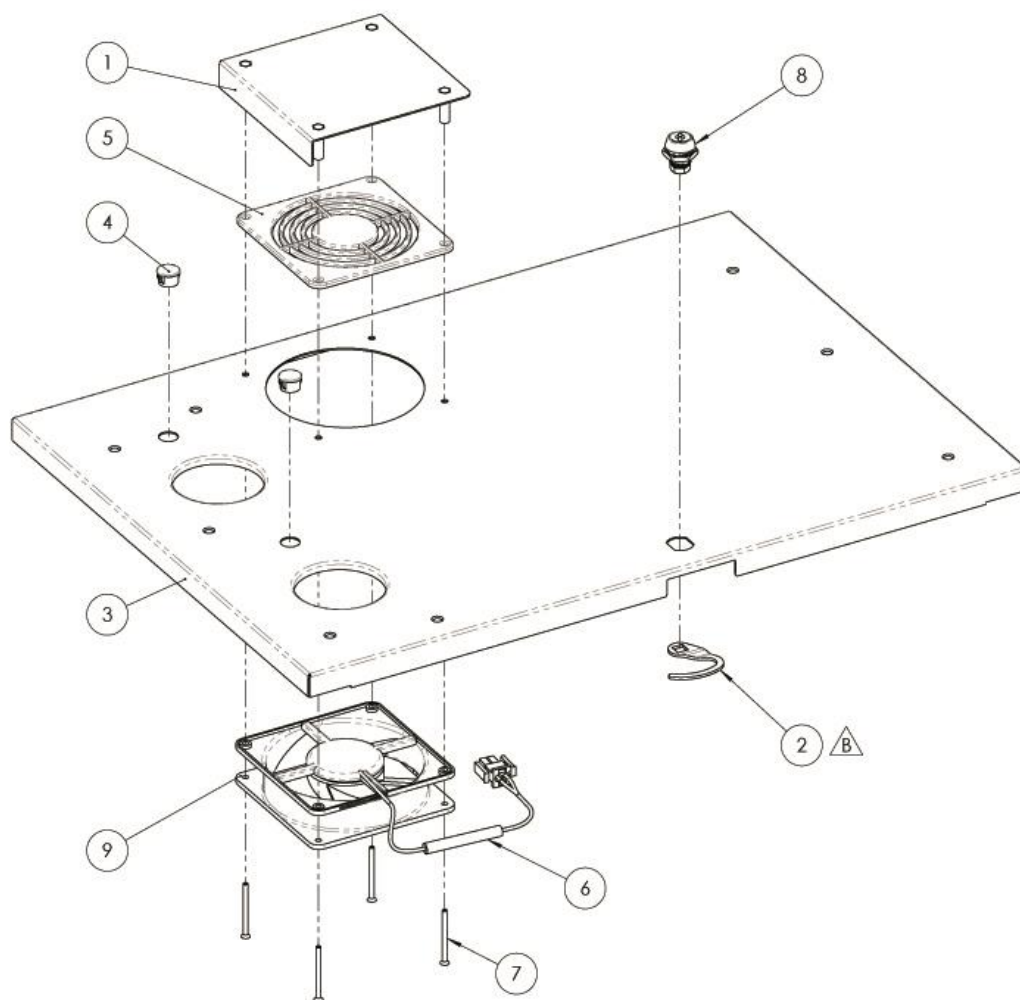
Diagram 6: Top Panel

Diagram 6, Parts List: Top Panel

Diagram 6 Item #	Description	Available	Concordia Part Number
	ASSY-PNL-TOP-MAIN	YES	2510-172
1	PNL TOP COVER XT	YES	1110-861-01
2	HOOK CAM LATCH XT	YES	1110-965
3	PNL TOP BRONZE XT	YES	1111-173-01
4	PLUG HOLE COVER .562	YES	1240-045
5	GUARD FAN THRU HOLE	YES	1330-007
6	TUBE HEAT SHR 1/8 CLR	YES	1383-002
7	FH PHIL SS 6-32 X 2	YES	1410-134
8	LOCK DOOR XT	YES	1456-019
9	EXHAUST FAN- 24 VDC	YES	2510-044

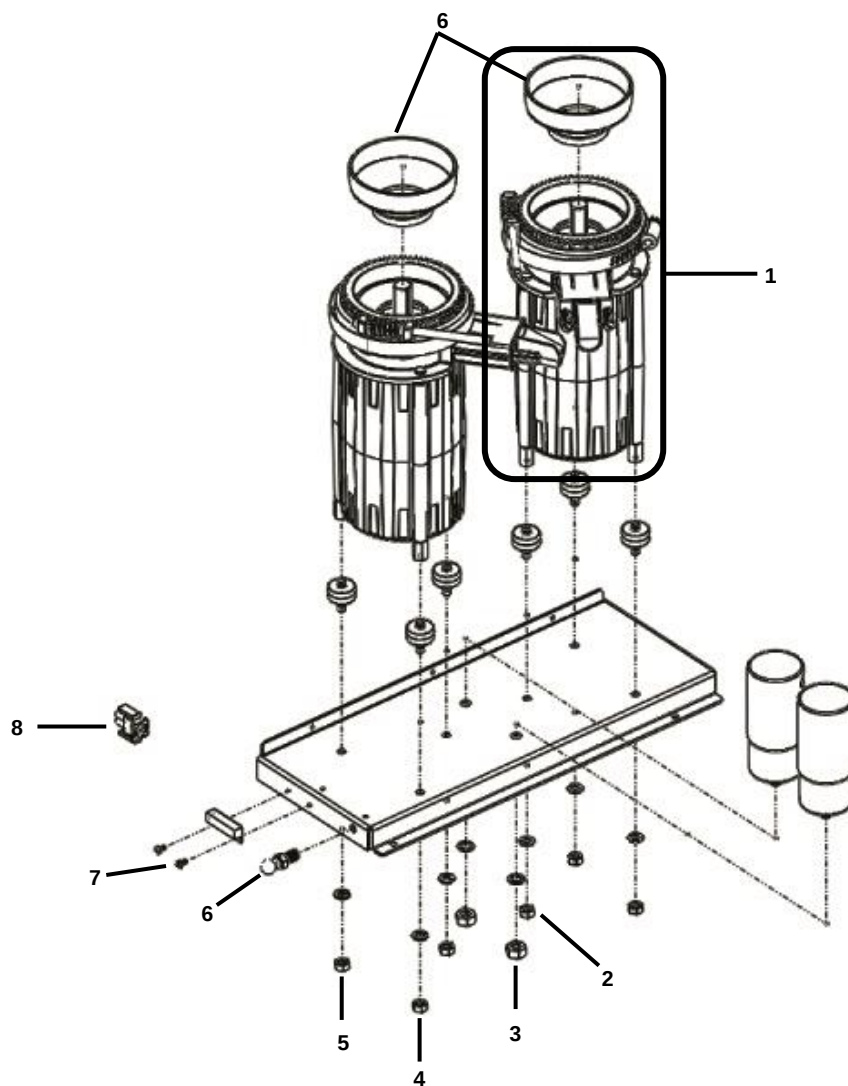
Diagram 7: Grinder Assembly

Diagram 7, Parts List: Grinder Assembly

Diagram 7 Item #	Description	Available	Concordia Part Number
1	ASSY GRINDER EMV-64/2		2230-108
2	WSHR SPLIT LOCK SS M8		1430-024
3	NUT HEX SS M8		1420-029
4	WASH LOCK LWR PISTON M6SS		2120-056
5	NUT HEX SS M6		2120-054
6	BOLT HEX SS 5/16-18 X 3/4		1410-079
7	PH PHIL MS SS 4-40x1/4		1410-065
8	ASSY-SWITCH-MAG-4		2510-027

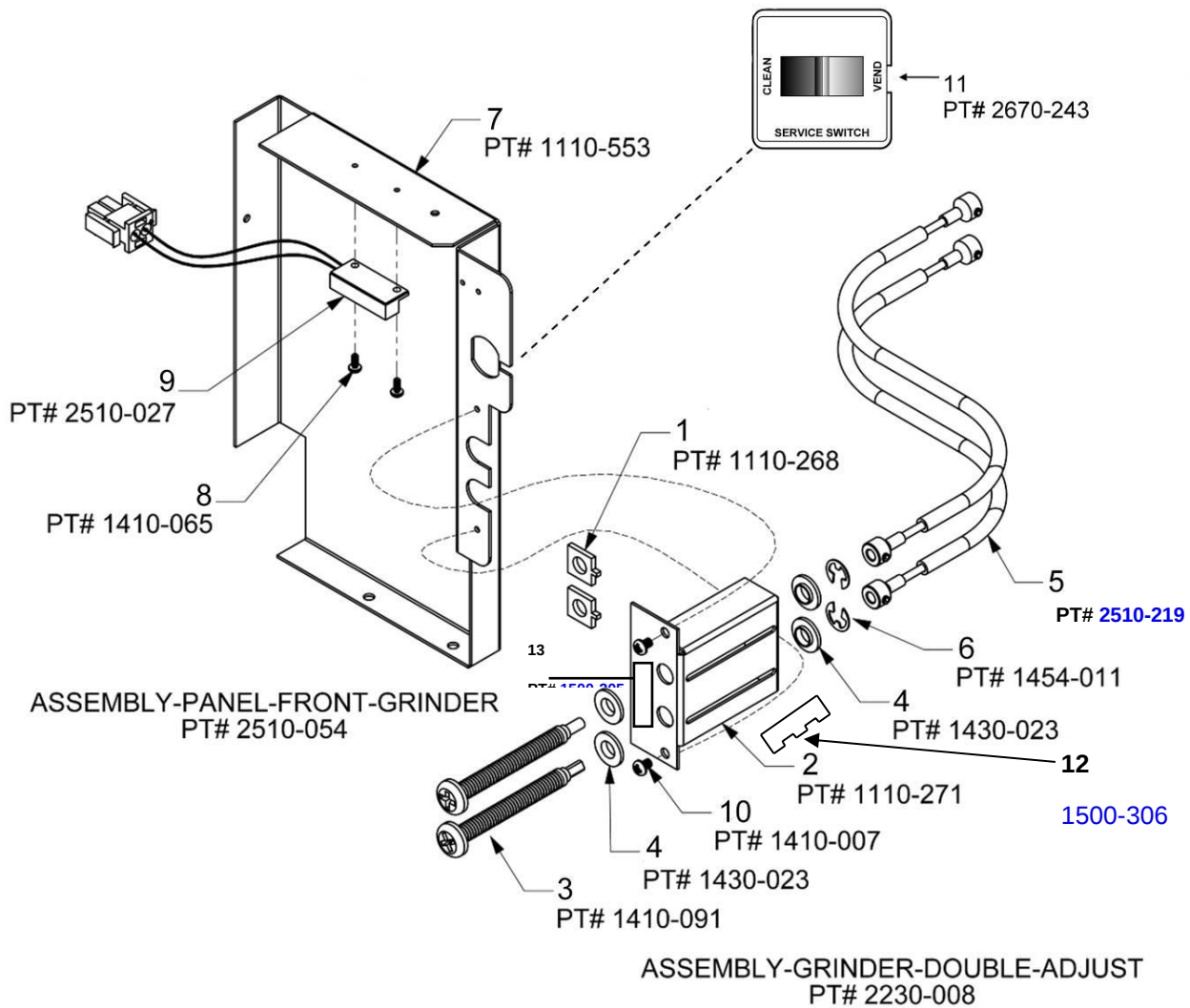
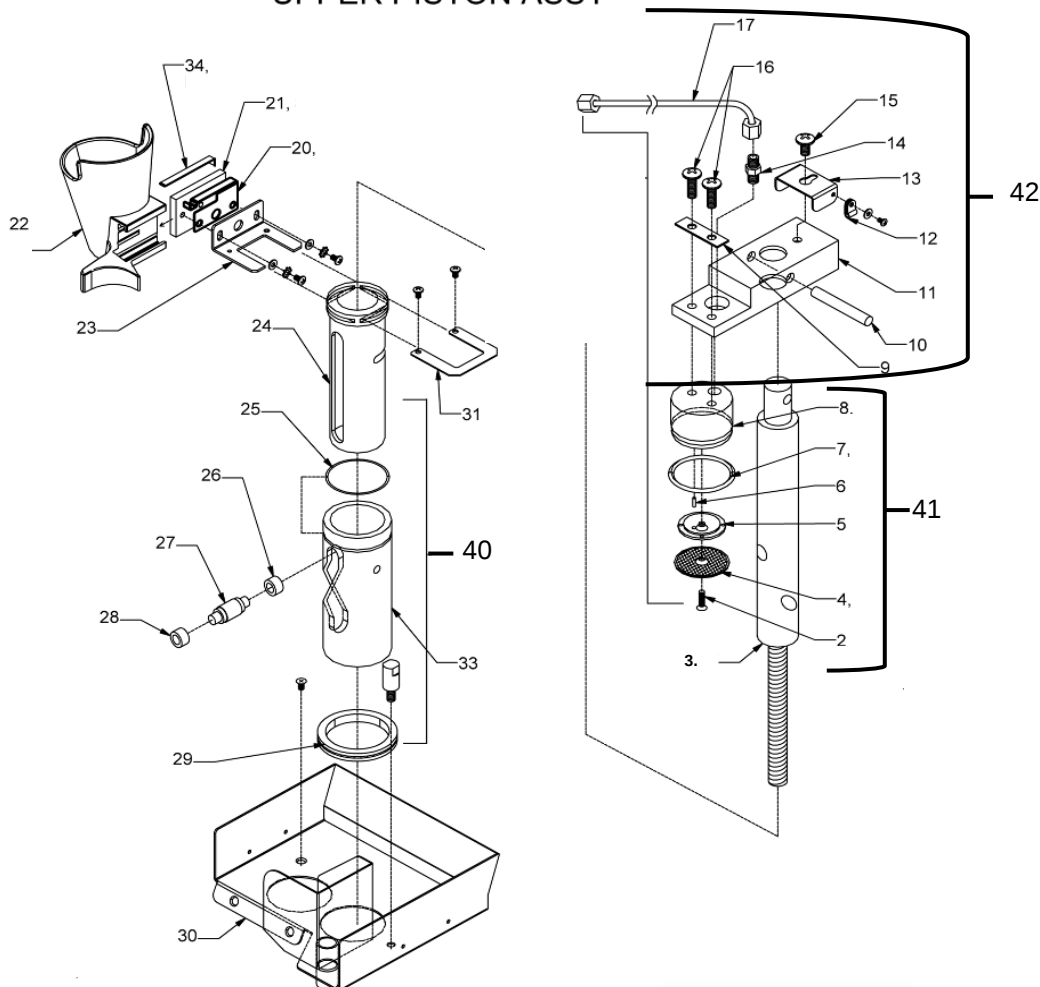
Diagram 8: Grinder Adjustment Assembly

Diagram 8, Parts List: Grinder Adjustment Assembly

Diagram 8 Item #	Description	Available	Concordia Part Number
	ASSY- GRINDER DBL- ADJUST	YES	2230-008
1	NUT INDICATOR GRIND ADJ	YES	1110-268
2	PNL GRINDER ADJUSTMENT	YES	1110-271
3	CUSTOM GRINDER ADJUST	YES	1410-091
4	WSHR SHLDR NYLON 5/16-4	YES	1430-023
5	ASSY FLX SHFT GRIND ADJ	YES	2510-219
6	CLIP E LWR PISTON	YES	1454-011
	ASSY PNL FNT GRIND 2000	YES	2510-054
7	PNL GRIND FRONT CN	YES	1110-553
8	PH PHIL MS SS 4-40x1/4	YES	1410-065
9	ASSY- SWITCH- MAG- 4	YES	2510-027
10	PH PHIL MS SS 6-32 X 1/4	YES	1410-007
11	CABLE MENU SWITCH	YES	2670-243
13	LBL GRNDR ADJ VRT XPRESS	YES	1500-305

Diagram 9: Group Upper and Lower Piston Assembly

UPPER PISTON ASSY



LOWER PISTON ASSEMBLY

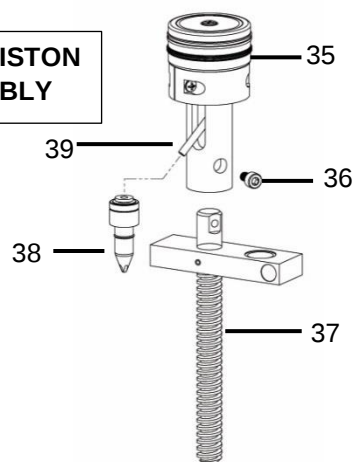


Diagram 9, Parts List: Group Upper and Lower Piston Assembly

Diagram 9 Item #	Description	Available	Concordia Part Number
	UPPER PISTON ASSEMBLY		
30	PLATE GROUP TOP 2000/2500	YES	1110-384
	KIT FUNNEL RETAINER	YES	98550
20	CLIP RETAINER FUNNEL	YES	1110-613
21	SLIDE MTG FUNNEL NSF	YES	1120-113
22	FUNNEL- GROUNDS- 2000s/i	YES	1110-357
23	BRKT FUNNEL MOUNTING 2000	YES	1110-359
40	ASSY- DRIVE- BREW PISTON	YES	2130-015
24	BUSHING- GROOVE RR GROUP	YES	2140-006
25	O-RING- 44.17 X 1.78	YES	2140-024
26	RING- GUIDE- RR GROUP	YES	2140-020
27	SHAFT- GUIDE- RR GROUP	YES	2140-019
29	SEAL- GROM BREW CAST NSF	YES	1260-051
33	BUSHING- BEARING RR GROUP	YES	2140-007
42	ASSY- UPPER PISTON SHAFT	YES	2130-010
9	PLATE- SWING BEAM	YES	2140-050
10	PIN- SWING BEAM- 8X40	YES	2140-046
11	SWING BEAM- BREWING	YES	2140-043
12	CLAMP WIRE 1/8	YES	1454-031
13	BRKT- SWING BEAM- BREW LINE	YES	1110-352
14	ASSY 1/8BSPPX6MMT FITTING		2790-282
15	PH PHIL SS M5 X 8	YES	1410-097
16	PH PHIL- SS- M6 X 25	YES	1410-096
17	TUBE PFA 3/32 ID X 5/32 OD (in)		1250-020
18	ELBOW LEGRIS 4MM FX6MM M		1232-126
41	ASSY- PISTON- UPPER- RR	YES	2130-009
2	FH PHIL- SS- M4 X 16	YES	1410-071
3	SHAFT- GROUP- UPPER PISTON	YES	2140-009
4	SIEVE- RR GROUP	YES	2140-013
5	PLATE-DISTRIB- UP PISTON	YES	2140-035
6	PIN- DOWEL 2X12- RR GROUP	YES	2140-027
7	O-RING- UPPER PISTON	YES	1260-093
8	PISTON- WATER- RR GROUP	YES	2140-008
	ASSY LWR PIST XPRESS		2170-006
35	ASSY LWR PIST XPRESS		2170-006
36	SPC CAP- M5 X 8		1410-170
37	SPINDLE- LWR PISTON DRIVE		2140-057
38	ASSY- NOZZLE- ESPRESSO		2790-090
39	TUBE PFA 3/32ID X 5/32OD		1250-020

Diagram 10: Group Drive System

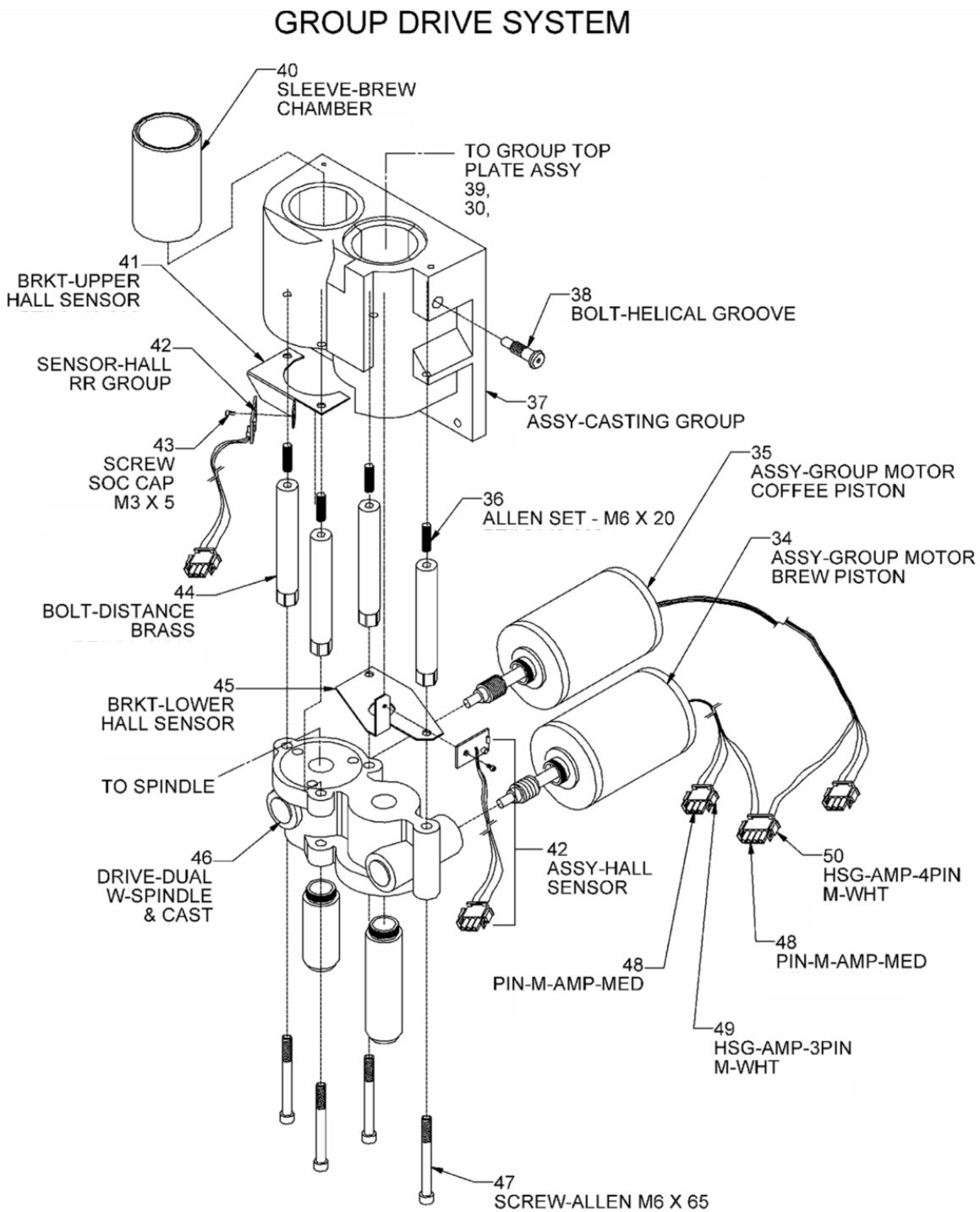


Diagram 10, Parts List: Group Drive System

Diagram 10 Item #	Description	Available	Concordia Part Number
34	ASSY- GRP MTR BREW PIST	YES	2130-013
35	ASSY- GRP MTR COFFEE PIST	YES	2130-012
36	SCREW- ALLEN SET- M6X20	YES	2140-002
37	ASSY- CASTING- GROUP	YES	2130-017
38	BOLT- HELICAL GROOVE	YES	2140-003
39	ASSY GROUP TOP PLATE 2000	YES	1110-299
30	PLATE- GROUP TOP- 2000	YES	1110-384
40	SLEEVE- BREW CHAMBER	YES	2140-065
41	HALL BRACKET	YES	2140-033
42	ASSY- HALL SENSOR- 995	YES	2130-003
43	SOC CAP SS M3 X 5	YES	1410-073
44	BOLT- DISTANCE- BRASS	YES	2140-032
45	PLATE- FASTENING	YES	2140-034
46	DRIVE DUAL W/SPINDLE & CAST	YES	2130-014
47	SCREW- ALLEN- M6X65	YES	2140-004
48	PIN- M- AMP- MED	YES	1353-009
49	HSG- AMP- 3PIN M- WHT	YES	1353-003
50	HSG- AMP- 4PIN M- WHT	YES	1353-004

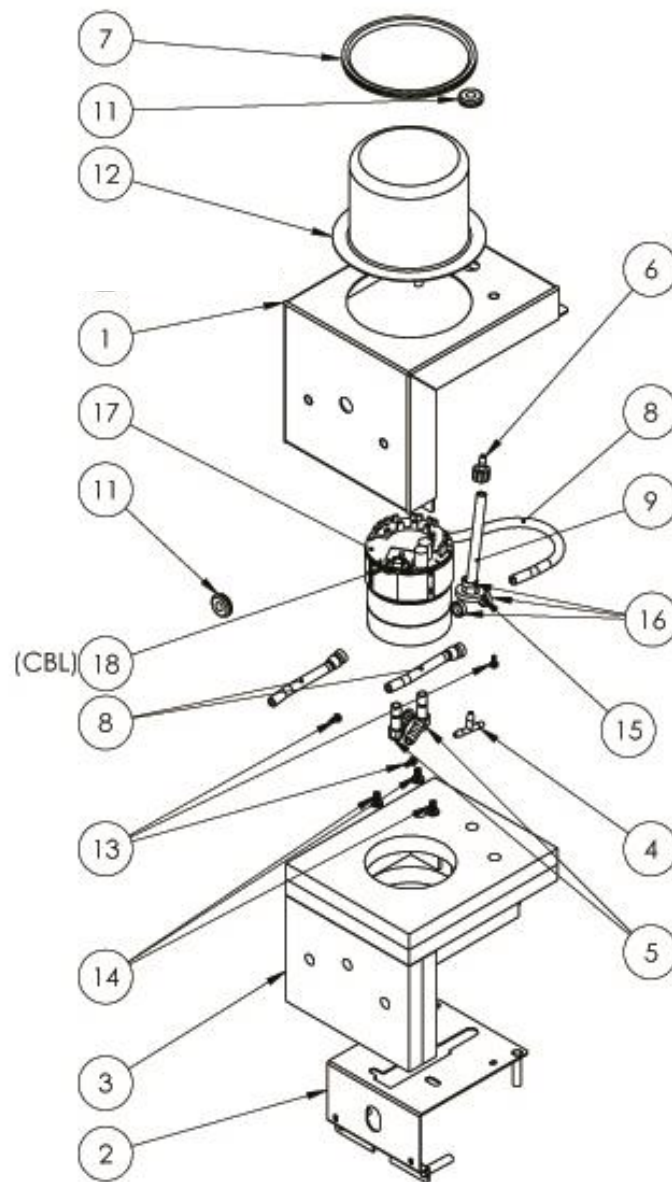
Diagram 11: Milk Pump Assembly

Diagram 11: Parts List, Milk Pump Assembly

Diagram 11 Item #	Description	Available	Concordia Part Number
	ASSY MILK PUMP XT		2340-130
1	CVR MILK PUMP OUTER XPRESS		1110-995
2	BRKT MILK PM INNER XPRESS		1110-996
3	INSUL SET MLK PMP BOX XT		1120-367
4	TEE NYLON 1/8 TUBE		1232-020
5	ELBOW 1/4 STEM X 1/4B		1232-086
6	CONN BARB 1/8 X LUER MALE		1232-140
7	TRIM 3/16 EDGE RUBBER BLK		1240-062
8	TUBE SILICN 1/8ID X 1/4OD		1250-016
9	TUBE PVC 1/8ID X 1/4OD		1250-019
11	GROM 1.4IDX5/8ODX1/16GR		1260-119
12	COVER PM0373 PUMP		1280-001
13	PH PHIL MS SS 4-40X1/4		1410-065
14	PH PHIL SS M4 X 8		1410-098
15	WSHR NUL.443IDX.75ODX1 8		1430-030
16	TY RAP 8 INCH LONG		1454-014
17	PMP MILK XPRESS		2340-129
18	CBL MILK PUMP CONTROL XT		2670-213

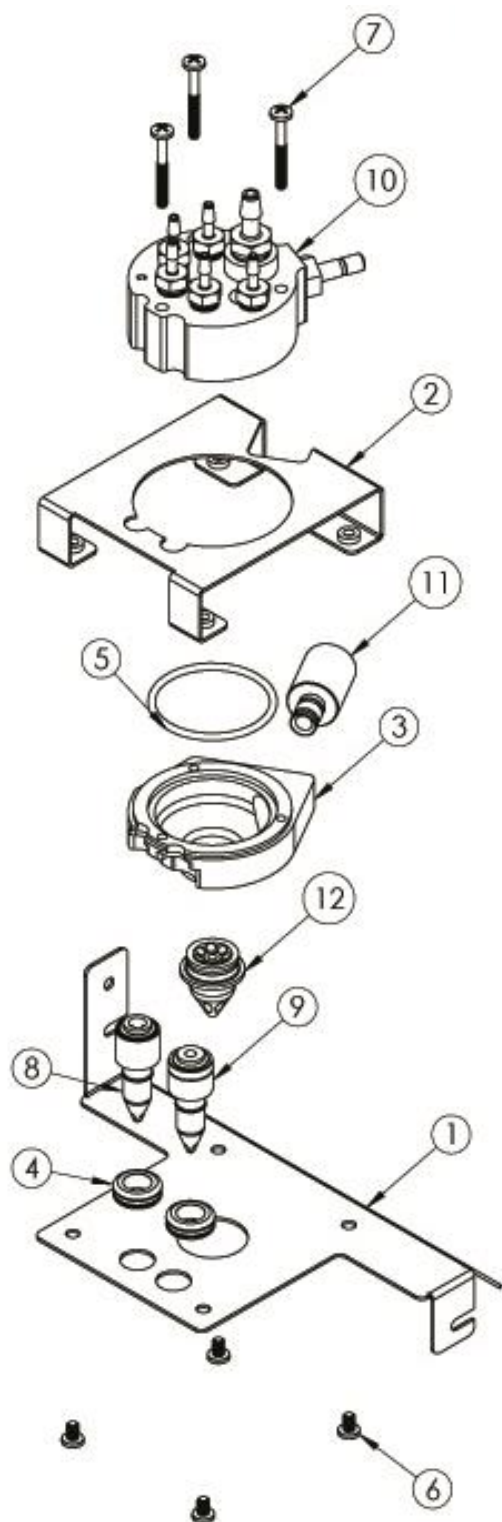
Diagram 12: Product Delivery Assembly

Diagram 12, Parts List: Product Delivery Assembly

Diagram 12 Item #	Description	Available	Concordia Part Number
	ASSY PROD DEL XT		2790-126
1	BRKT PROD DELIVERY XT		1111-188
2	BRKT SYRUP DISPENSE XT		1111-189
3	BOWL MILK MAN X6		1120-352
4	GROM 13/32 ID X 1/2 OD X 1/16 WALL		1260-081
5	O-RING – 130 BOWL IBS6P		1260-114
6	PH PHIL MS SS 8-32 X 1/4		1410-010
7	PH PHIL SS 8-32 X 1-1/4		1410-075
8	ASSY- NOZZLE- HOT WATER		2790-089
9	ASSY- NOZZLE- ESPRESSO		2790-090
10	ASSY SYRUP MANIFOLD X6		2790-197
11	ASSY ADAPT BOWL XPRESS		2790-208
12	ASSY PROD NOZZLE XPRESS		2790-209

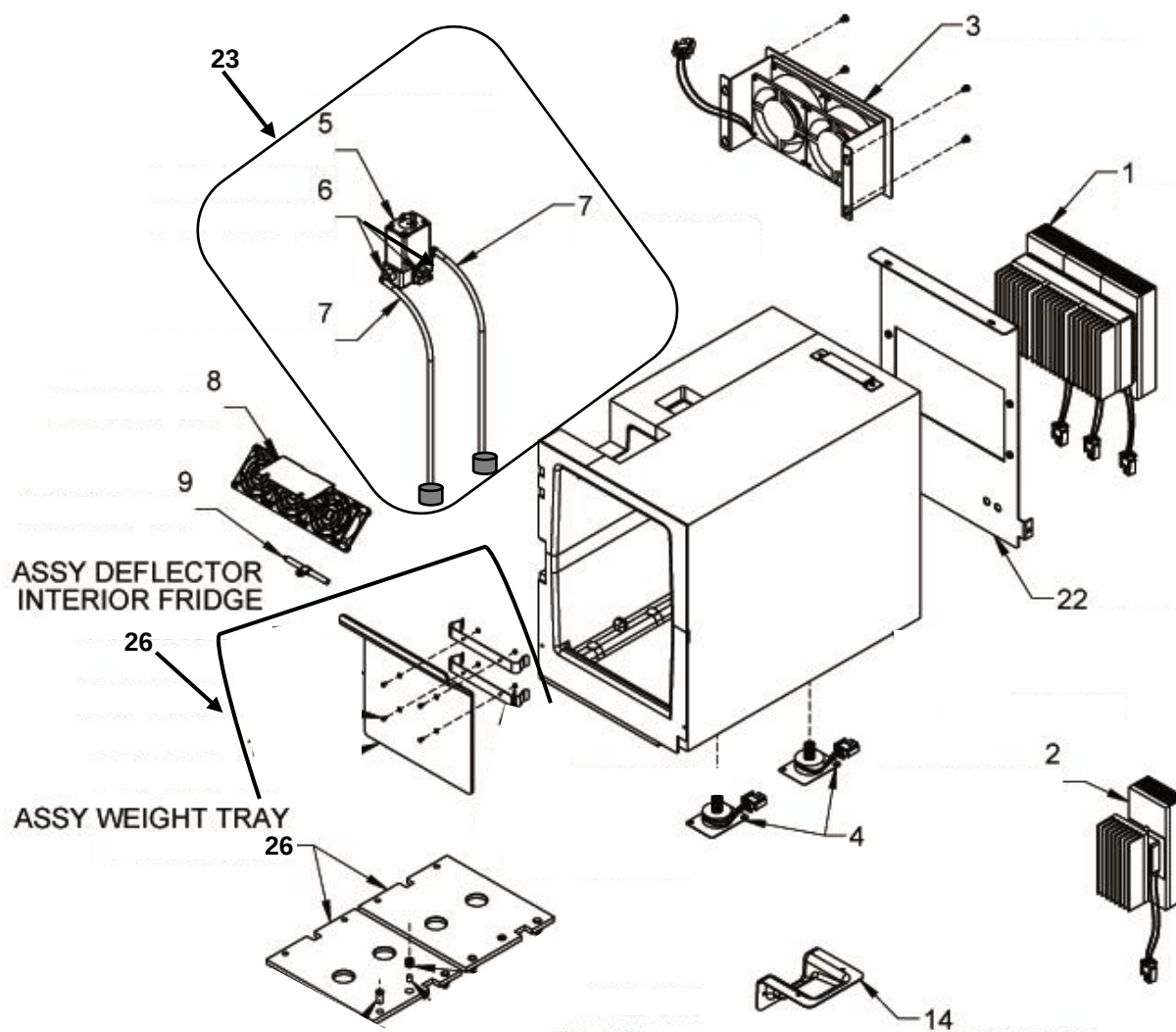
Diagram 13: Refrigeration Unit Assembly

Diagram 13, Parts List: Refrigeration Unit Assembly

Diagram 13 Item #	Description	Available	Concordia Part Number
1	ASSY RFR MODULE XPRESS		2320-036
2	ASSY RFR SGL TEC 6IN 2.5K		2320-032
3	ASSY FRIDGE EXT FAN X6		2310-043
4	ASSY-HALL EFFECT SENSOR		2310-028
8	ASSY- INTERNAL FAN-		2310-031
9	ASSY- PROBE- TMP- REFR-		2660-031
14	CVR MLK PMP RFR INT X6		1120-354
22	PNL SUPP RFR MODULE ASSY		1110-190
23	ASSY ALT MILK NI XPRESS		2340-131
5	VALVE ALT MILK 3 WAY PVDF		1210-046
6	ELBOW ¼ NPT X 3/16 BARB		1232-135
7	TUBE SILICN 1/8ID X 1/4OD		1250-016
24	SCREEN MILK PICKUP FILTER		1450-015
25	ASSY-DEFLECTOR-INT FRIDGE		2310-033
10	FH PH MS SS UCT 4-40x1/4		1410-087
11	DEFLCTR COLD SINK PLASTIC		1120-118
12	NUT HEX SS 4-40X3/16 FLAT		1420-020
13	BRKT COLD SINK DEFLECTOR		1110-351
26	ASSY WEIGHT TRAY SMALL		2310-027

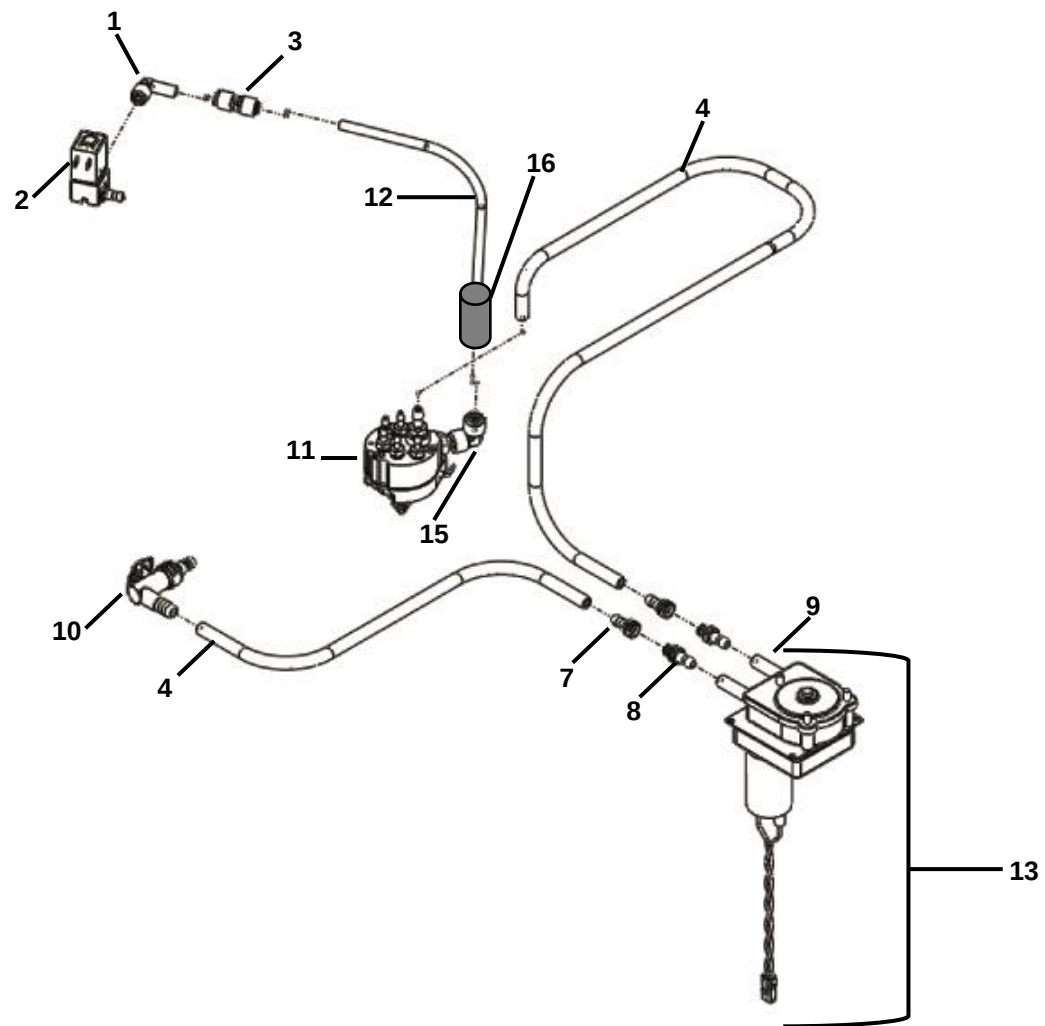
Diagram 14: Chocolate Sauce Delivery System

Diagram 14, Parts List: Chocolate Sauce Delivery System

Diagram 14 Item #	Description	Available	Concordia Part Number
1	ELBOW LEGRIS 6MM FX8MM M		1232-172
2	VALVE 16BAR BUSCHJOST		1210-061
3	CONN LEGRIS 8MM F X 1/4 F		1232-184
4	TUBE CLR PVC 1/4 X 3/8	YES	1250-008
7	CONN KENT 1/4 BARB F	YES	1232-119
8	CONN KENT 1/4 BARB M	YES	1232-120
9	KIT PERISTALTIC TUBING		98590
10	CONN SYRUP BAG SCHOLLE	YES	1232-104
11	ASSY PRODUCT DELIVERY X6	YES	2790-198
12	TUBE PFA 5/32 ID X 1/4 OD	YES	1250-006
13	ASSY PUMP SYR X6		2345-013
15	ELBOW UNION 1/4T QUICK		1232-134
16	VALVE CHECK 1/4" X 1/4"		1210-047

Diagram 15: Syrup Delivery System

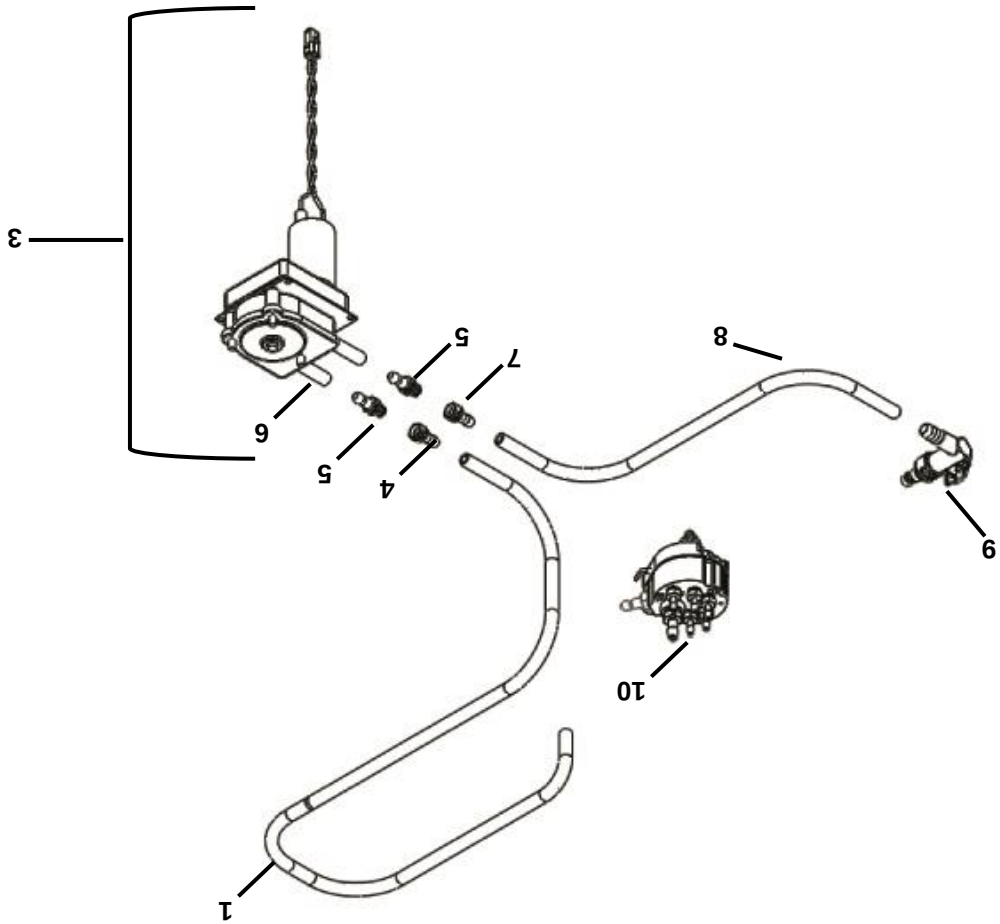
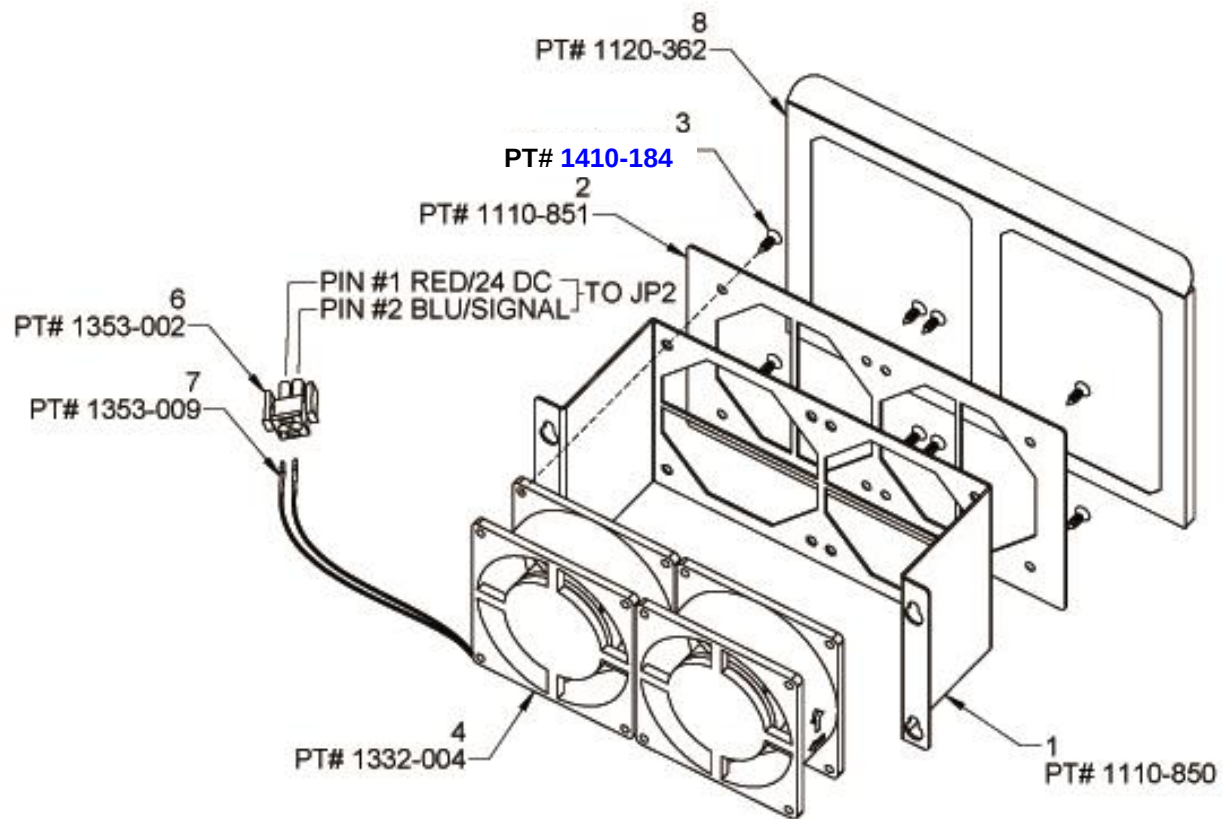


Diagram 15, Parts List: Syrup Delivery System

Diagram 15 Item #	Description	Available	Concordia Part Number
1	TUBE PVC 1/8ID X 1/4OD		1250-019
3	ASSY-MV BODY W/TUBE-99X		2340-013
4	CONN KENT 1/8 BARB F		1232-117
5	CONN KENT 1/4 BARB M		1232-120
6	KIT PERISTALTIC TUBING		98590
7	CONN KENT 1/4 BARB F		1232-119
8	TUBE PVC 1/4ID X 3/8OD		1250-008
9	CONN DISP QSS SCHOLLE		1232-151
10	ASST SYRUP MANIFOLD		2790-197

Diagram 16: Refrigeration Unit Cooling Assembly



PT# 2310-043 ASSEMBLY

Diagram 16, Parts List: Refrigeration Unit Cooling Assembly

Diagram 16 Item #	Description	Available	Concordia Part Number
	ASSY FRIDGE EXT FAN X6	YES	2310-043
1	BRKT FAN RFR HTSNK X6	YES	1110-850
2	BRKT SEAL FAN RFR X6	YES	1110-851
3	FH PHIL #10 X 5/8 FAN MNT	YES	1410-184
4	FAN EXTERNAL FRIDGE 2.5K	YES	1332-004
6	HSG AMP 2PIN M WHT	YES	1353-002
7	PIN M AMP MED	YES	1353-009
8	FILTER AIR X6	YES	1120-362

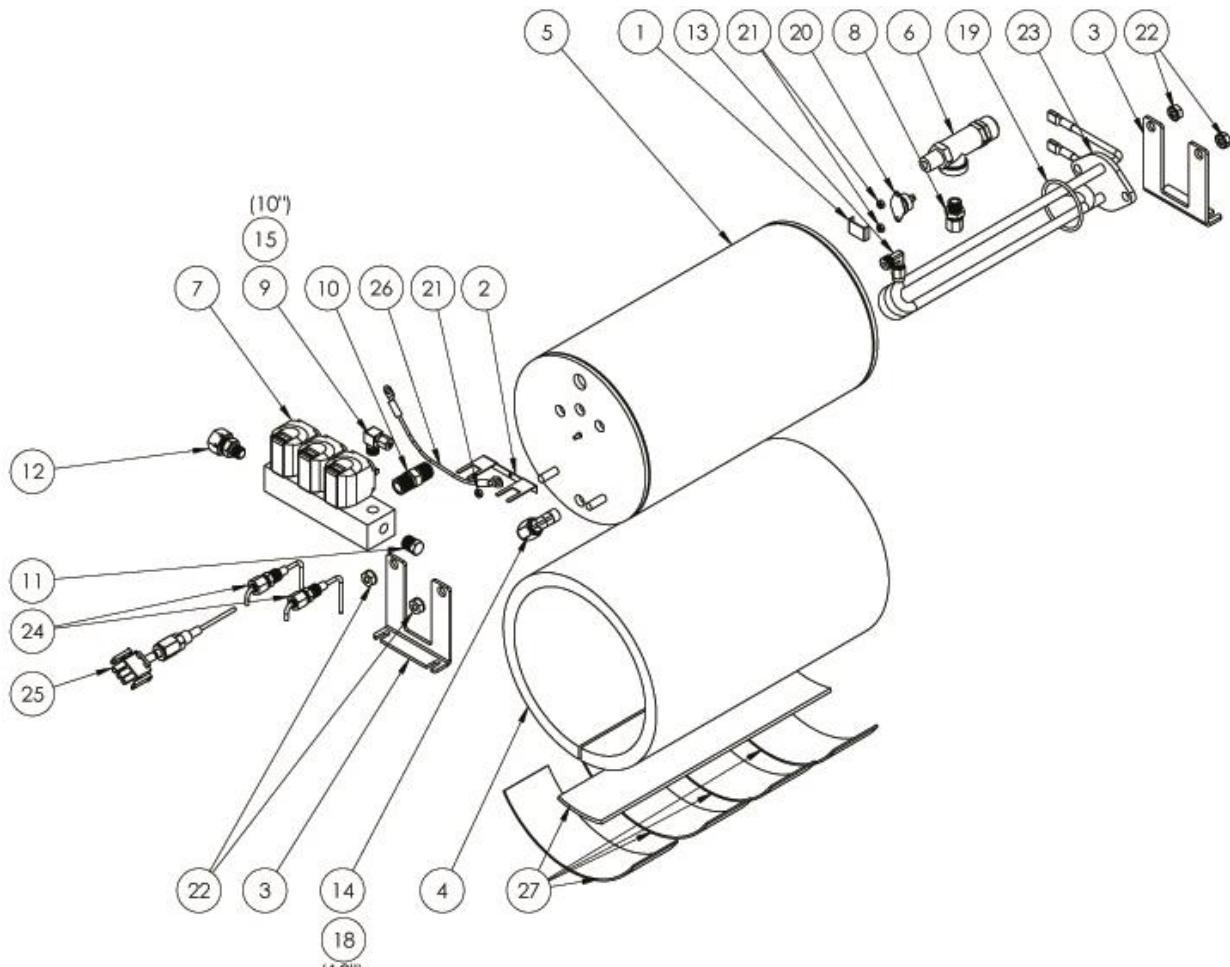
Diagram 17: Steam Tank

Diagram 17, Parts List: Steam Tank

Diagram 17 Item #	Description	Available	Concordia Part Number
	ASSY TANK STEAM XPRESS		2730-050
1	METAL FAB LIMITER SWITCH		1110-081
2	BRKT RTNR LVL PROBE		1110-247
3	BRKT MNT STM TANK XT		1110-863
4	INSUL STEAM TANK ROUND		1140-016
5	TANK STEAM XPRESS		1140-030
6	PRV 30PSI STEAM TANK		1210-064
7	VLV MANIFOLD 3 STN STM		1210-068
8	CONN BRA 1/4M X 1/4T		1231-010
9	ELBOW BRASS 1/8M X 1/8T		1231-015
10	CONN BRASS 1/4M X 1/4M		1231-019
11	PLUG BRASS 1/8M		1231-024
12	PLUG BRASS 1/8M		1231-059
13	ELBOW 1/8M X 4MM TUBE		1231-097
14	ELBOW SXL 1/8 NPT X 6MM		1233-041
15	TUBE PFA 1/16 ID X 1/8 OD		1250-005
16	TUBE PFA 5/32 ID X 1/4 OD (in)		1250-006
17	TUBE PFA 3/32 ID X 5/32 OD (in)		1250-020
18	TUBE PTFE 6MM X 4MM		1250-029
19	O-RING 2-130 5778-70 EPDM		1260-143
20	SW MAN TEMP LIMIT 260 DEG		1311-022
21	NUT KEP SS 4-40		1420-024
22	NUT KEP 1/4 20 SS		1420-031
23	ASSY HEATER STM XT		2650-033
24	ASSY-PRBLVL-STM TANK-BENT		2660-001
25	ASSY WATER/TEMP PROBE		2660-053
26	CBL GROUND STRAP 8-INCH 1 EA		2670-197
27	TAPE-INSULATION-1/8X2		3300-016

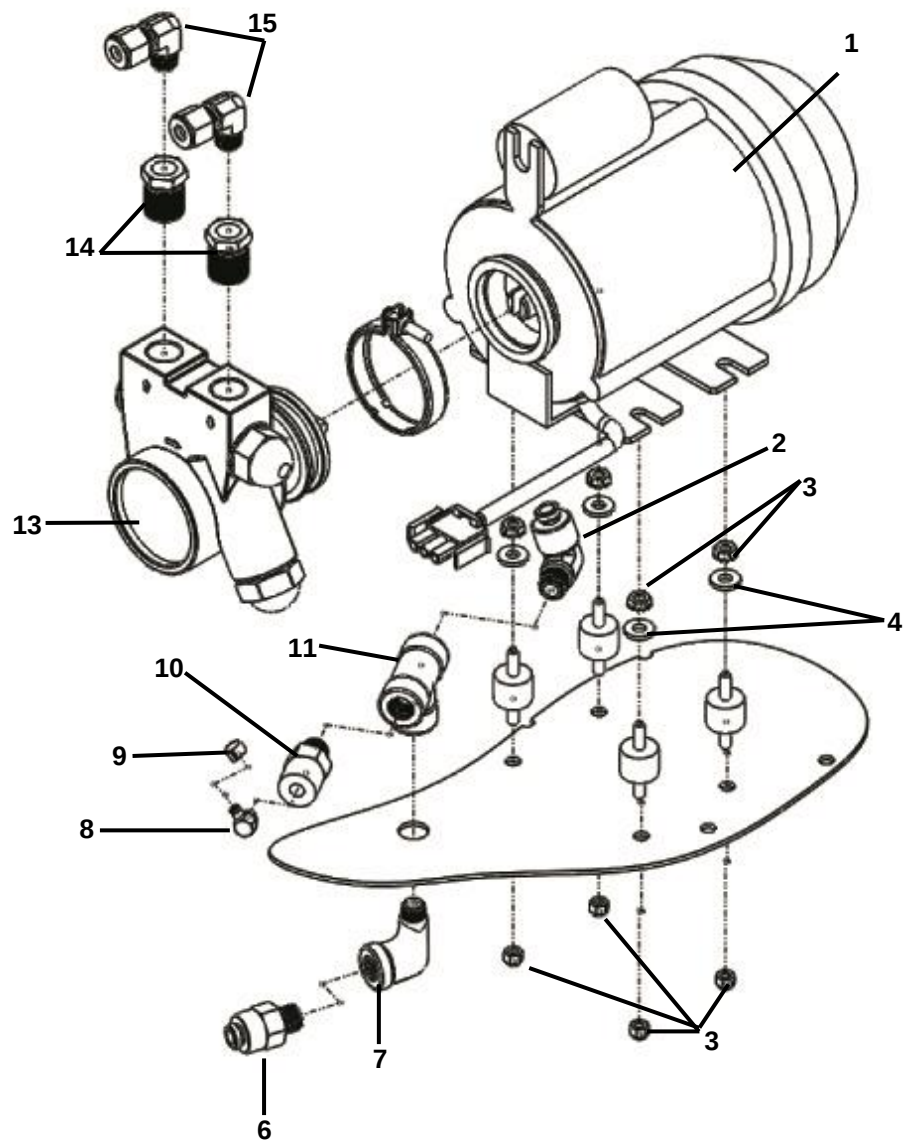
Diagram 18: Water Pump and Motor

Diagram 18, Parts List: Water Pump and Motor

Diagram 18 Item #	Description	Available	Concordia Part Number
1	ASSY WTR PMP MTR 2.5K		2400-023
2	ELBOW 1/8NPT X 1/4T		1232-097
3	NUT NYLOC M4		1420-039
4	WASHER FLAT SS #10		1430-002
6	CONN 1/8M X 1/4T		1232-071
7	ELBOW SS 1/8M X 1/8F		1233-029
8	ELBOW 3-32BARB X 10-32		1231-100
9	CLAMP BIN DOOR .232 .275		1454-043
10	VLV EXPANSION SS 130PSI		1210-054
11	TEE SS 1/8F X 1/8F X 1/8F		1233-030
13	PUMP WATER PA074Z 30-GPH		2710-013
14	BUSHING SS 3/8NPTX1/8NPT		1233-040
15	ELBOW SXL 1/8M X 1/4T		1233-037

Diagram 19: Hot Water Tank

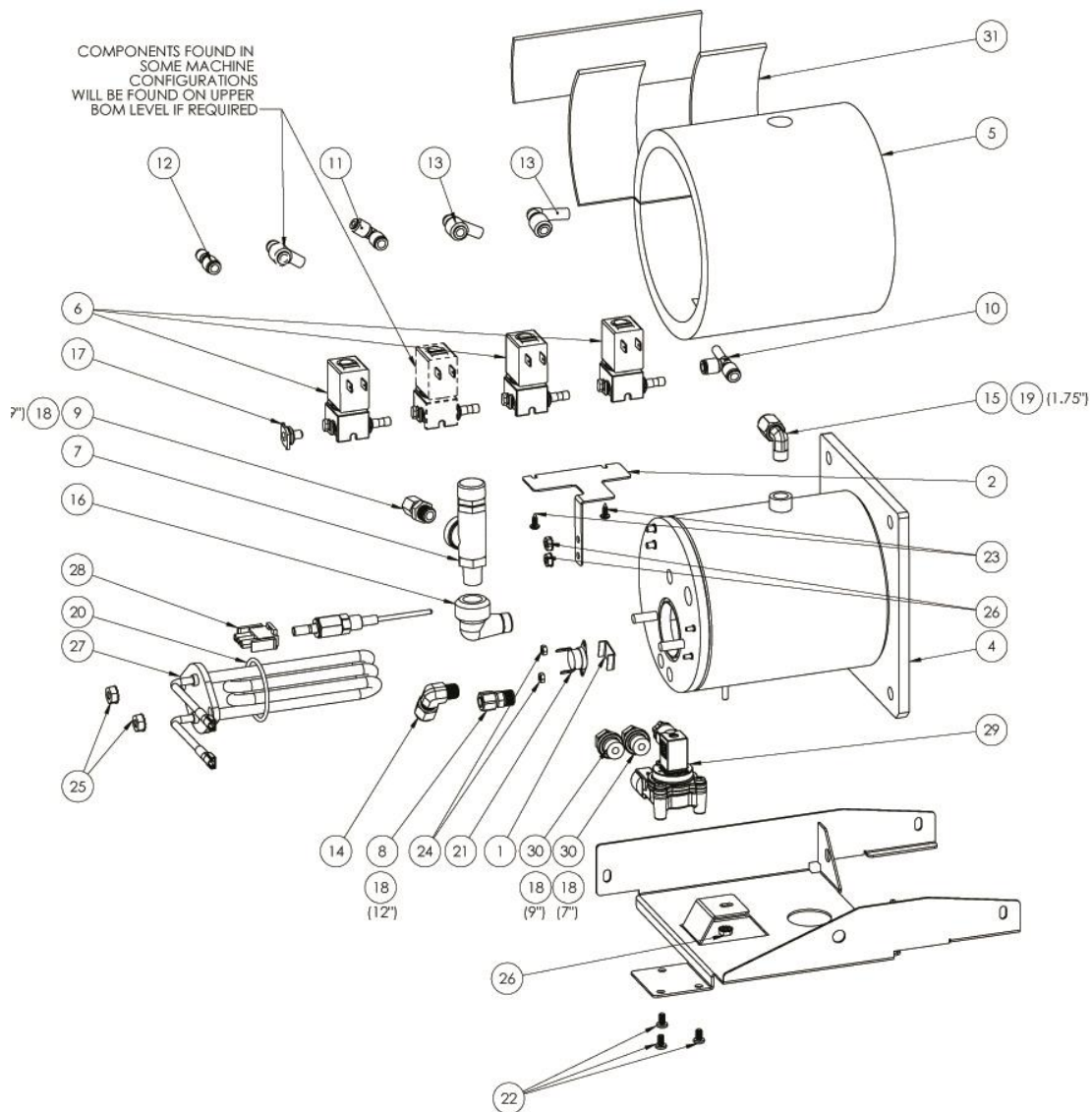


Diagram 19, Parts List: Hot Water Tank

Diagram 19 Item #	Description	Available	Concordia Part Number
	ASSY TANK WATER XPRESS		2720-068
1	METAL FAB LIMITER SWITCH		1110-081
2	BRKT VLV MNT TANK XPRESS		1110-864
3	BRKT CRADLE TANK XT		1110-912
4	TANK WATER XPRESS		1140-028
5	INSUL TANK WTR XT		1140-029
6	VLV 16BAR BUSCHJOST		1210-061
7	PRV 175PSI WATER TANK		1210-065
8	CONN BRASS 1/8M X 1/4T		1231-008
9	CONN BRA 1/4M X 1/4T		1231-010
10	TEE RUN LEGRIS 6MM		1232-144
11	ELBOW LEGRIS 6MM F X 4MM F		1232-147
12	UNION LEGRIS 4MM F X 6MM F		1232-152
13	ELBOW LEGRIS 6MM FX8MM M		1232-172
14	ELBOW SXL 1 8M X 1 4T		1233-037
15	ELBOW SXL 1/8 NPT X 6MM		1233-041
16	ELBOW SS 1/4M NPT X 1/4F NPT		1233-042
17	PLUG VLV BUSCHJOST		1240-067
18	TUBE PFA 5/32 ID X 1/4 OD		1250-006
19	TUBE PTFE 6MM OD X 4MM ID		1250-029
20	O-RING 2-130 5778-70 EPDM		1260-143
21	SW TEMP LIMIT 210F DEG		1311-005
22	PH PHIL SS M4 X 8		1410-098
23	PH PHIL TFS SS #6 3/8		1410-182
24	NUT KEP SS 4-40		1420-024
25	NUT – HEX – KEP – 1/4-20 – SS		1420-031
26	NUT KEP 8-32 SS		1420-032
27	ASSY HEATER WTR XT		2650-032
28	ASSY WATER/TEMP PROBE		2660-053
29	KIT FLOWMETER DIGMESA		98019
30	ASSY 1/4BSPPX1/4T FITTING		2790-166
31	TAPE-INSULATION-1/8X2		3300-016

Diagram 20: Water/Steam Gauge/ Air Valve Assembly

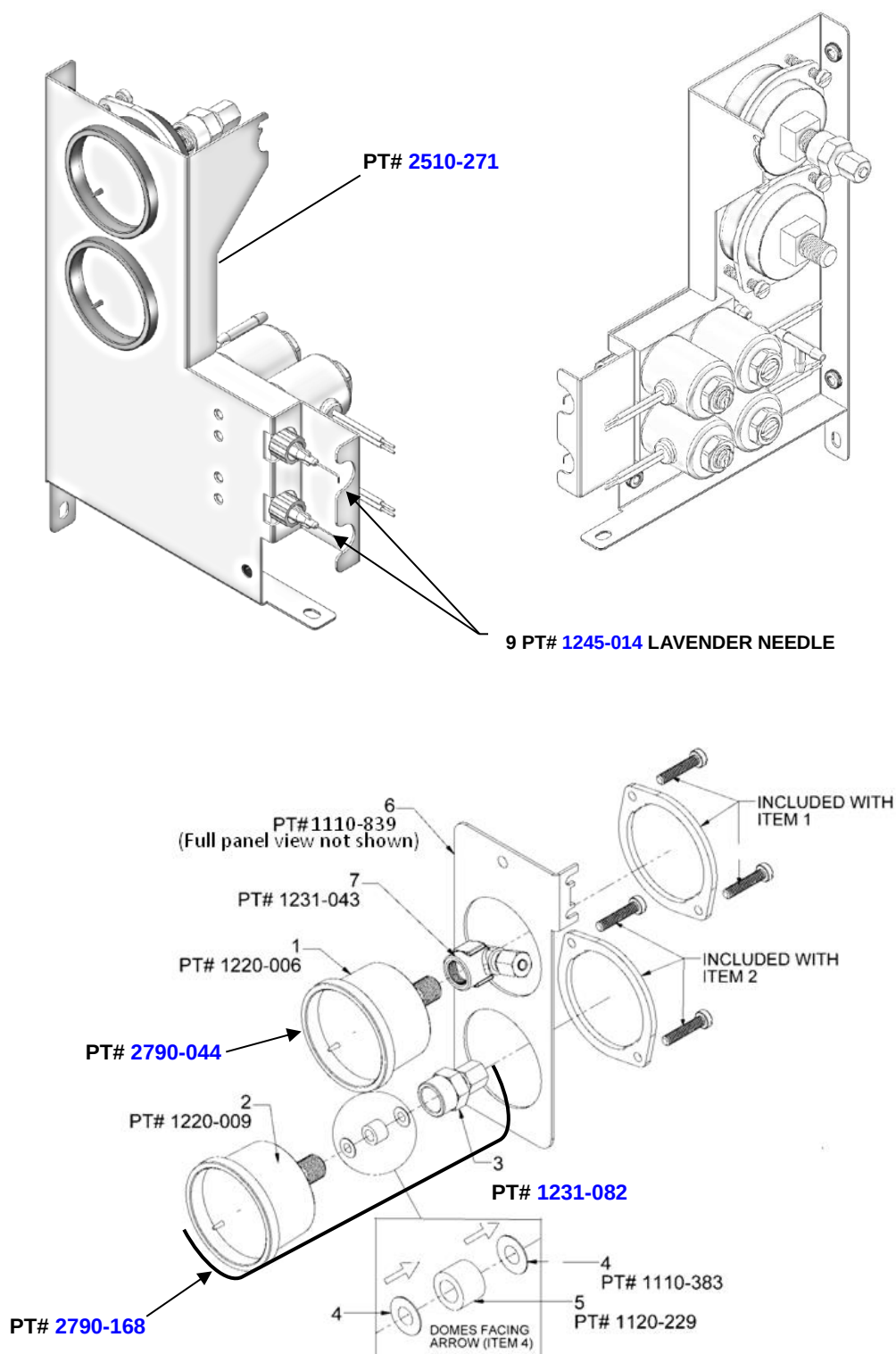


Diagram 20: Parts List: Water/Steam Gauge/Air Valve Assembly

Diagram 20 Item #	Description	Available	Concordia Part Number
	ASSY GAUGE/AIR NI XT	YES	2510-271
	ASSY GAUGE STEAM PRESS	YES	2790-044
	ASSY WTR GAUGE W/RESTR	YES	2790-038
1	GAUGE - STEAM - 30PSI	YES	1220-006
2	GAUGE 300PSI 1/8NPT PMNT	YES	1220-009
3	CONN 1/8F X 1/4T	YES	1231-082
4	DISK ORIFICE 5/16X.01X.01	YES	1110-383
5	ORIFICE SPACER	YES	1120-229
6	BRKT GAUGES AND AIR X6	YES	1110-839
7	ELBOW BRASS 1/8F X 1/8T	YES	1231-043
9	VENT AIR 27GA 9OD CLR	YES	1245-015

Diagram 21, Parts List: Drain Valve Bridge Web Assembly

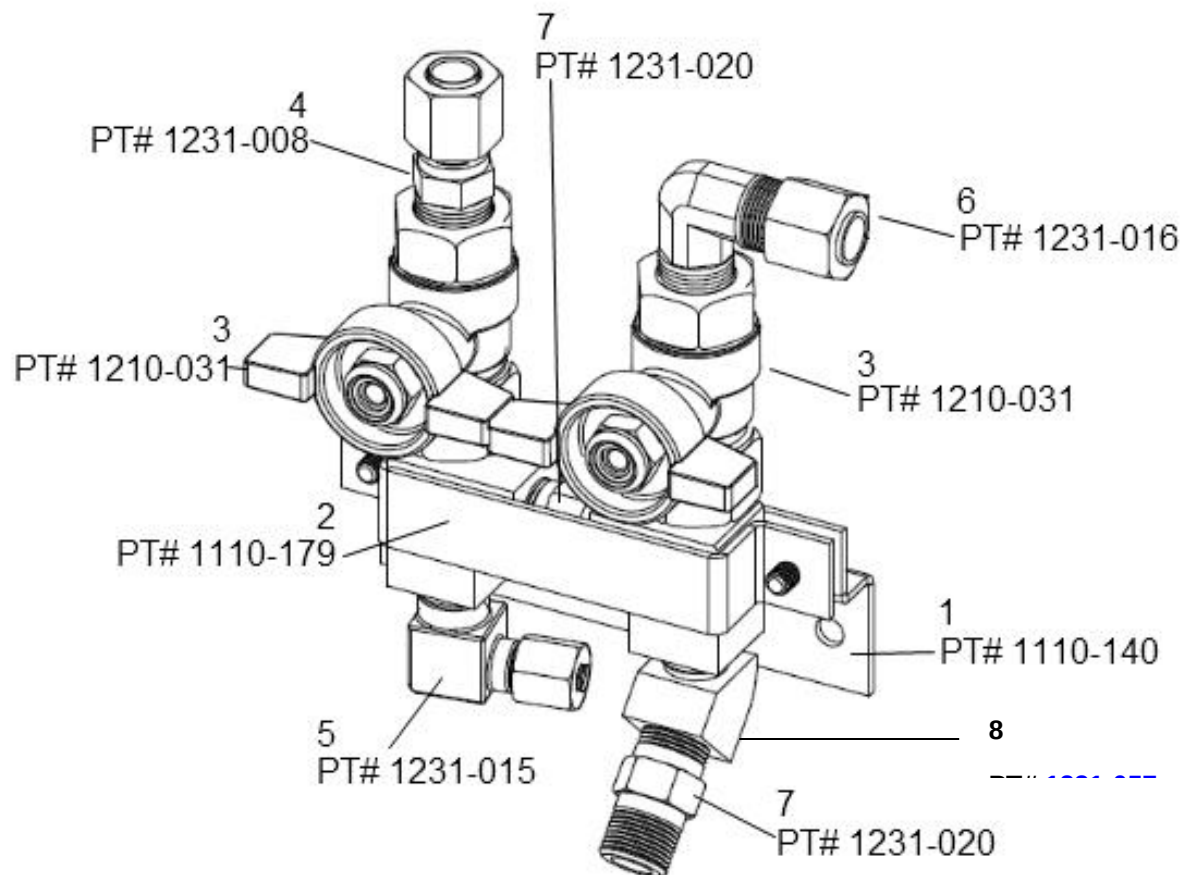


Diagram 21, Parts List: Drain Valve Bridge Web Assembly

Diagram 21 Item #	Description	Available	Concordia Part Number
	DRAIN VALVE BRIDGE WEB ASSEMBLY	YES	2720-027
1	BRACKET DRAIN TANK	YES	1110-140
2	BRKT BASE TANK DRAIN VLV	YES	1110-179
3	VALVE BALL 1/8 FPT	YES	1210-031
4	CONN BRASS 1/8M X 1/4T	YES	1231-008
5	ELBOW BRASS 1/8M X 1/8T	YES	1231-015
6	ELBOW BRASS 1/8M X 1/4T	YES	1231-016
7	CONN BRASS 1/8M X 1/8M	YES	1231-020
8	ELBOW 45 DEG STR-1/8	YES	1231-057

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TECHNICAL SUPPORT

CONCORDIA

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