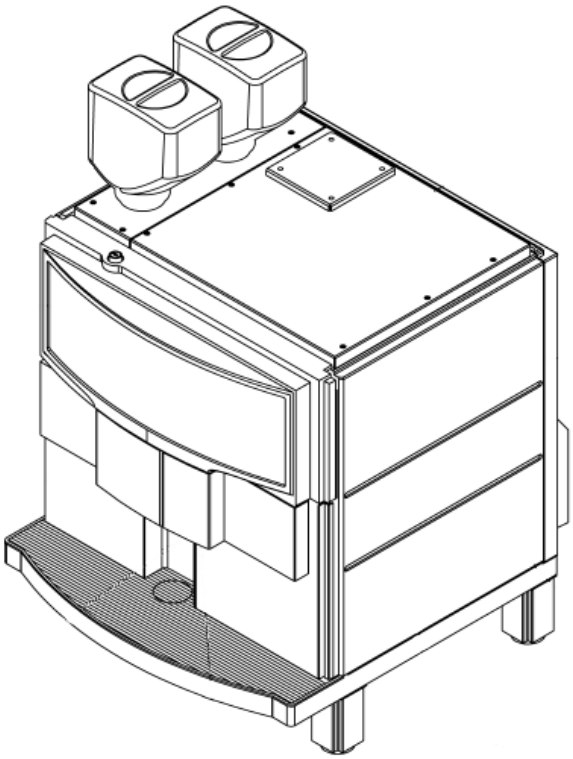
CONCORDIA

BEVERAGE SYSTEMS



XPRESS

Technician's Manual

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Section 1 :: Xpress Overview

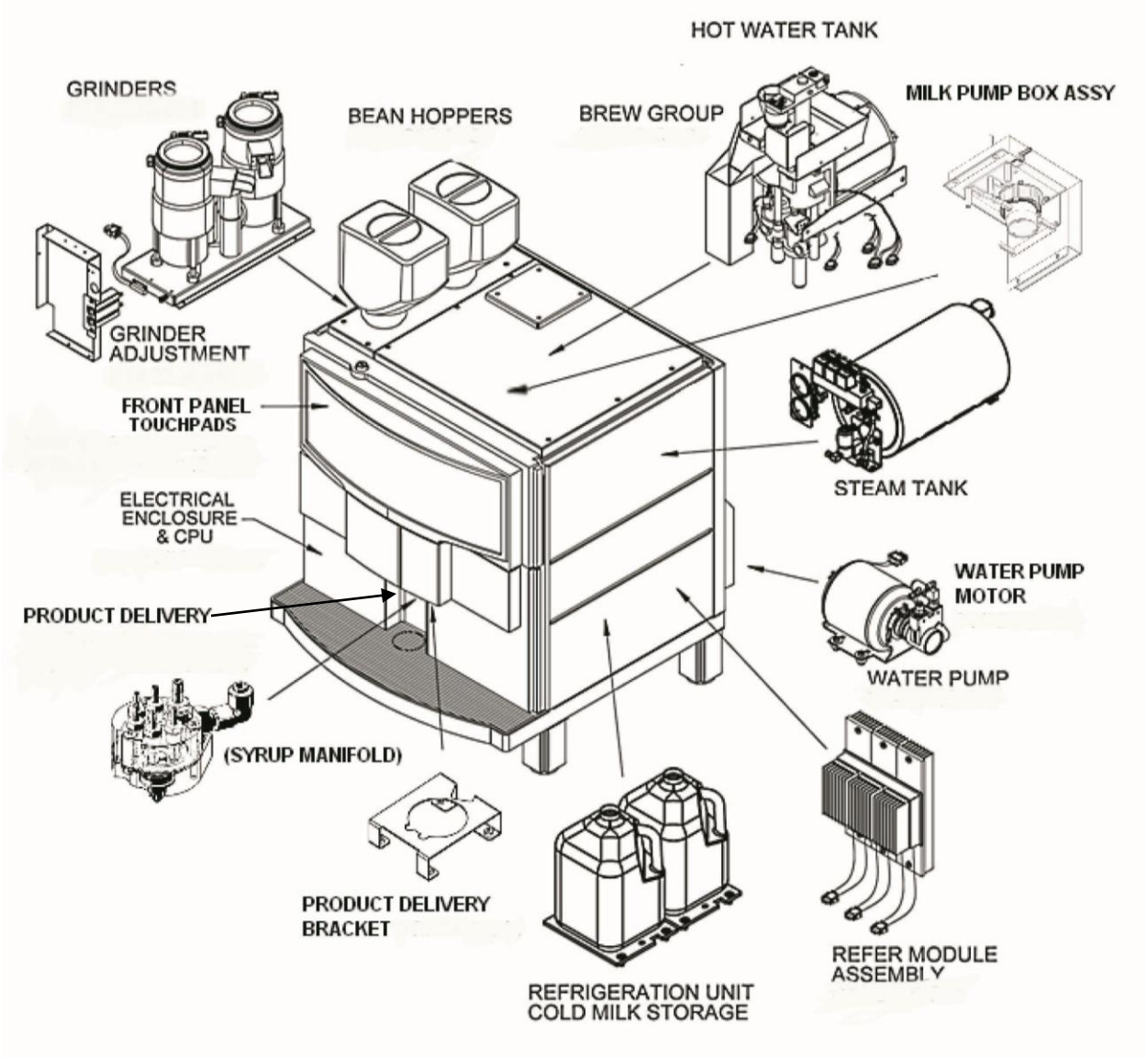
1. Xpress Overview
2. Xpress Components
3. Flavor System Overview
4. Flavor System Components

TECHNICAL SUPPORT

CONCORDIA

BEVERAGE SYSTEMS

Xpress Overview



Xpress Components

Front Panel Touch Pad
The front panel touch pad provides a user interface for selecting and pouring drinks.

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
NOT SHOWN
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.

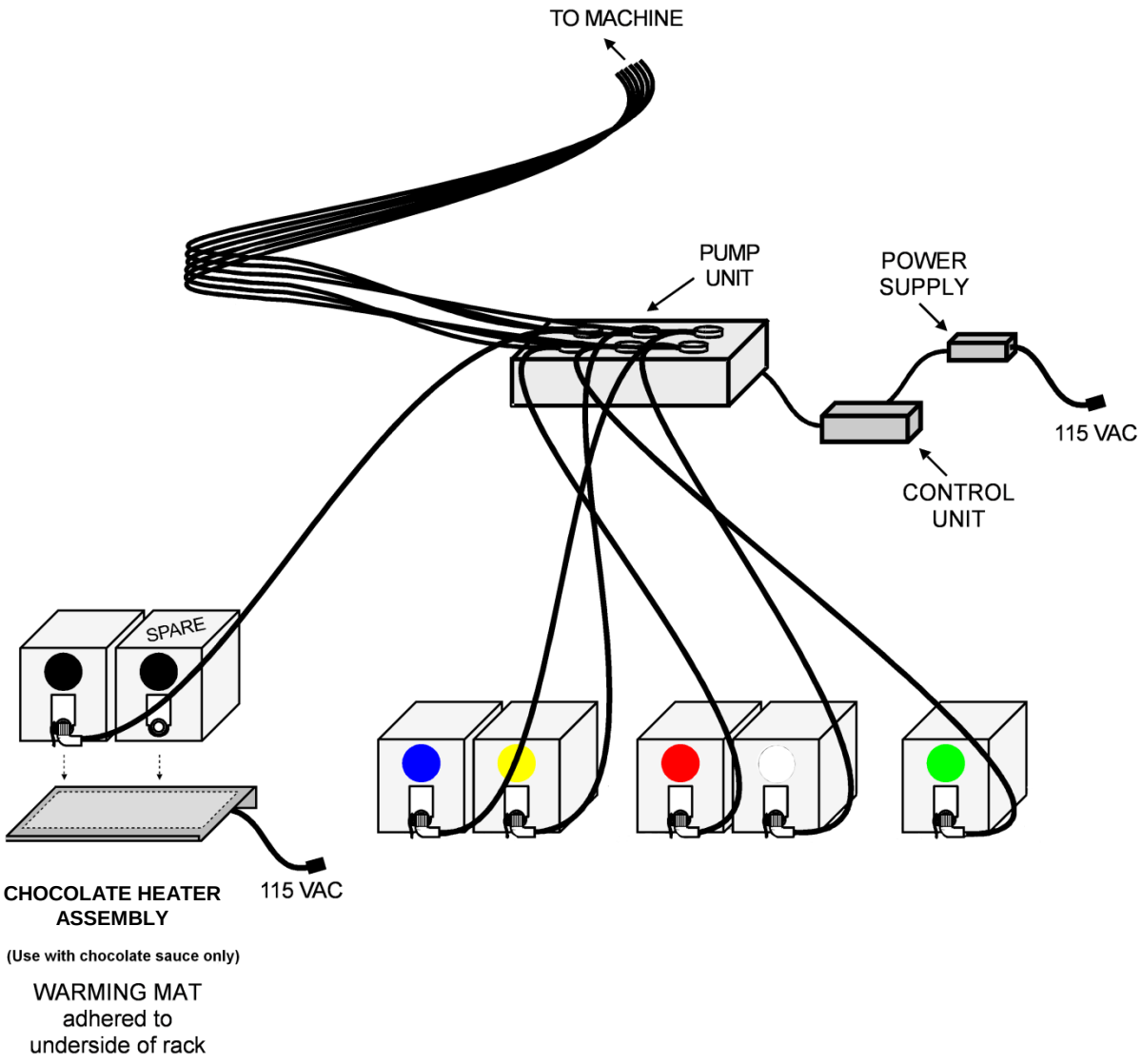
Milk Pump and Milk Pump Box Assembly
The milk pump assembly draws milk from the milk container.

Syrup Manifold
Xpress 6 only
Flavor is infused into drinks via the syrup manifold.

Product Delivery Bracket
The product delivery bracket holds the milk bowl (not shown) and 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.

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Section 2 :: Installation and Removal

1. Technical Specifications and Site Requirements
2. Machine Dimensions
3. Installation
4. Plumbing
5. Flavor System
6. Additional Tasks Required at Installation
7. Operational Configuration
8. Machine Calibration
9. Customer Training
10. Installation Checklist
11. Removal Procedures

TECHNICAL SUPPORT

CONCORDIA

BEVERAGE SYSTEMS

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

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
115Vac, 15amp
NEMA 5-15P
Control Unit
115Vac, 15amp
NEMA 5-15P

International

Chocolate Heater Assembly
230Vac
Control Unit
90-260Vac

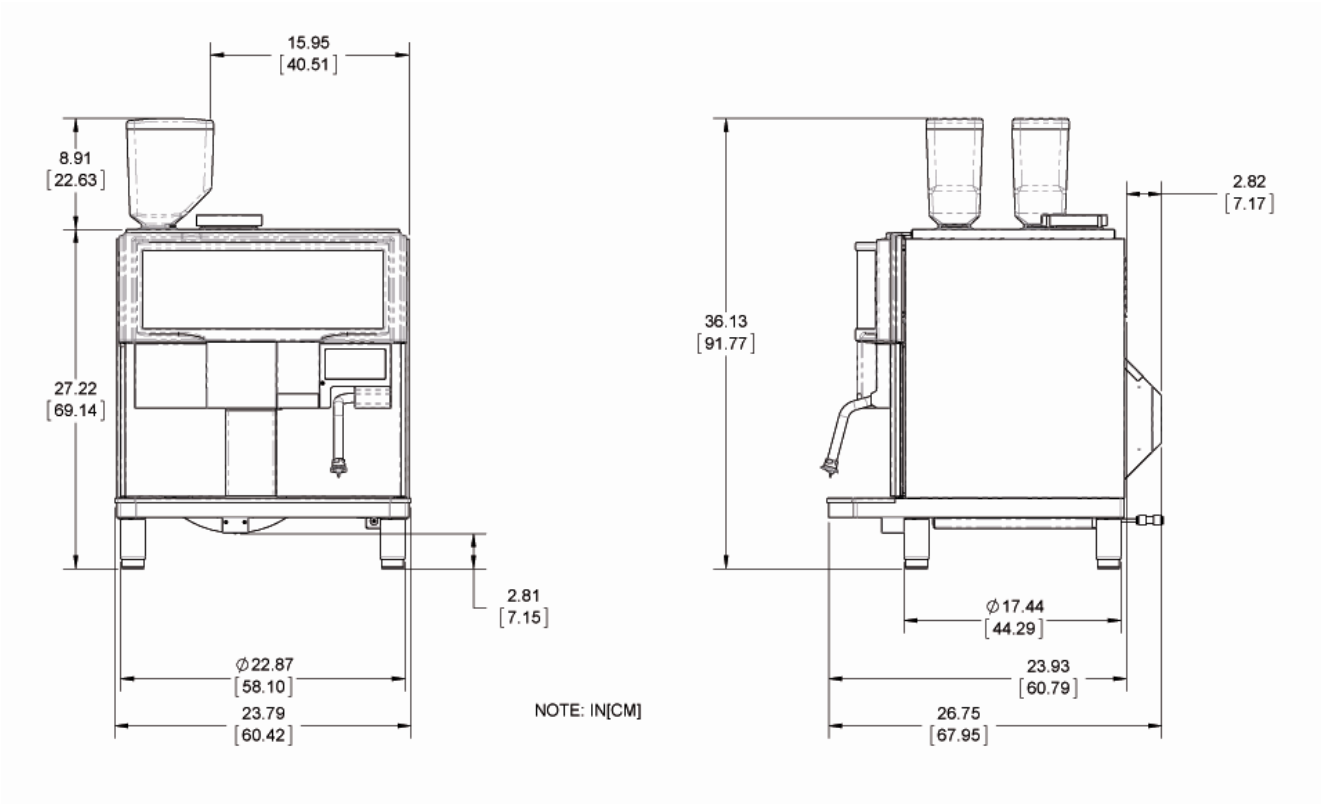
Water
Cold water source with a 1/4" or 3/8" tube fitting with a shut-off valve, located within five feet (1.5 meters) of machine

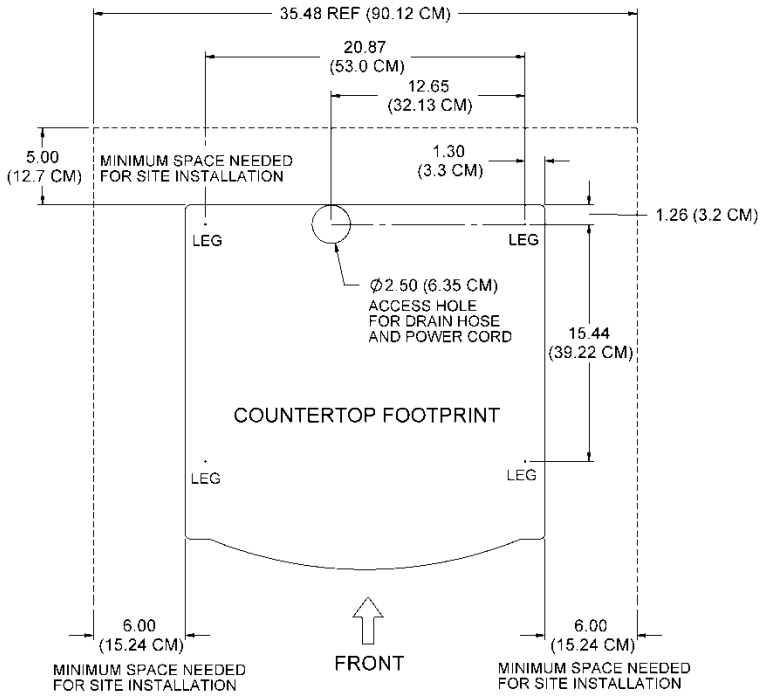
Pressure
Minimum: 30psi; Maximum: 100psi (min: 2 bar, max 7 bar)
25 gallons per hour (95 liters per hour)

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



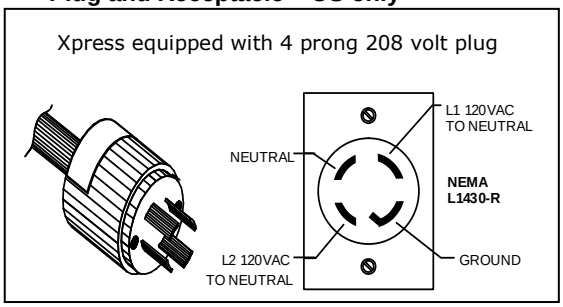


Installation

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.

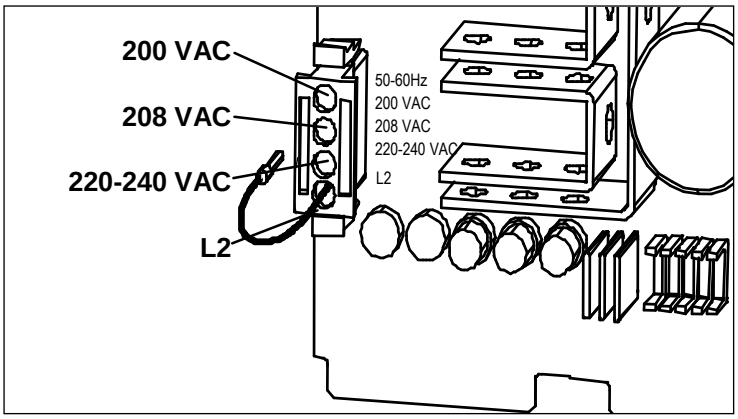
***WARNING*:** Failure to properly set the DC jumper plug and the transformer connector can result in machine malfunction, short circuit, blown fuses, overheating, or damage to circuit boards**.**

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

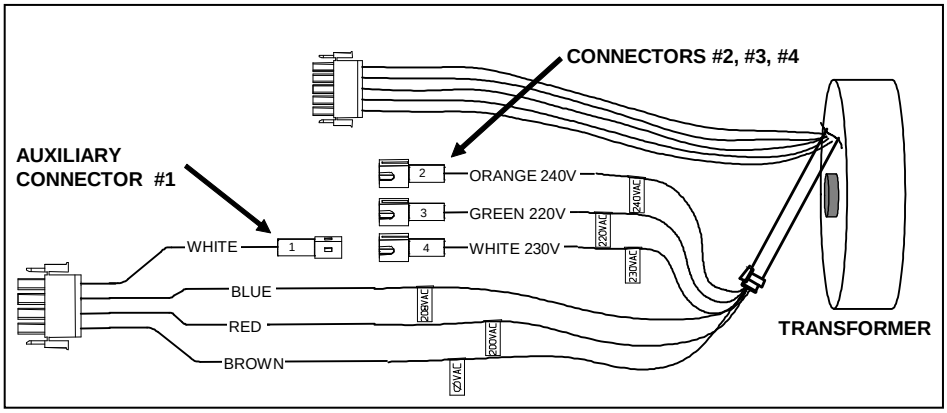


Configuring Transformer Auxiliary Connector #1

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

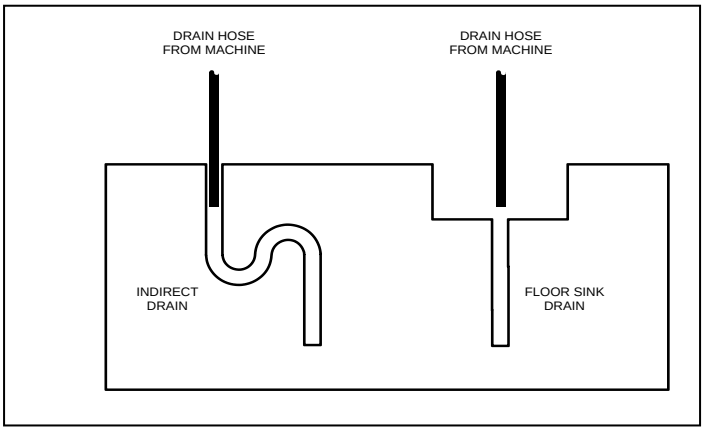
Connecting the External Drain

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 this system.

Flavor System

Flavor System Installation

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 boxes containing one gallon of syrup can be stacked. Boxes of chocolate sauce should not be stacked, as the chocolate sauce box must be on the chocolate heater assembly to ensure it maintains the correct temperature.

Prime the Flavor System

Once the flavor boxes are positioned and connected, the flavor system must be primed. Please see the *Priming the Flavor Delivery Tubes* topic in *Section 9: 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.

Chocolate Sauce

It is necessary to pre-warm the chocolate sauce to 85°F (29.4°C) before use; otherwise, it will not flow properly.

WARNING: If chocolate sauce is not heated to the required temperature, there is a high risk of the chocolate sauce flavor tubing exploding. This is due to the viscosity of cold chocolate sauce.

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

Verify Flavor Pour Rate

It is important to verify flavor volume and ensure it meets the requirements and preferences of the customer.

Please see the *Changing the Flavor Pour Rate* topic in *Section 9: Flavor System*, for information and directions for adjusting the time and volume of flavor pours.

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 6: 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 is 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 6: Coffee System*, and for instructions on adjusting the milk levels, please see the *Calibration* topic in *Section 4: Software*. For instructions on adjusting flavor timings, please see *Section 9: Flavor System*.

At this time, set the time and date, using the software menu in the machine. Please see *Section 4: Software* for detailed instructions on accessing and using the **TIME & DATE** menu.

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.

Machine Calibration

The calibration process is the same regardless if the setup includes the default recipe, or if it includes a customer-specific recipe.

To ensure the machine is properly calibrated, verify the following:

1. Water Pump Pressure
2. Espresso Extraction Times
3. Drink Temperatures
4. Drink Levels
5. Syrup Volumes
6. Taste Profile

If necessary, adjust the bean grind to achieve the appropriate extraction times.

Customer Training

Complete customer training is required at the time of installation. Refer to *Section 12: Concordia Procedures*, for complete instructions.

Customer Training Includes:

- How to turn machine on/off
- How to refill milk supply, bean hoppers, consumables
- How to select drinks and drink options
- Show location of serial number
- How to clean the machine (including cleaning cards)
- How to change flavor boxes
- How to empty the grounds bin

Installation Checklist

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

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.
2. Record the machine serial number.
3. Clean the grinders.
4. Clean the brew group.
5. Run the daily clean cycle (brew group and milk system clean processes).
6. Clean the refrigeration unit.
7. Clean the flavor delivery system.

8. Clean all interior and exterior surfaces (drain tray and grate, grounds bin, cup holder).
9. Drain and disconnect the water supply, and drain the water and steam tanks.
10. Prepare the machine and components for shipping.
11. If Demo Machine: remove, clean, and pack water filtration system.
12. Ensure the *User Guide* and cleaning cards are included with the unit.
13. Coil the power cord, water supply line, and drain hose and secure with a Ty-Wrap®.

Section 3 :: Electrical

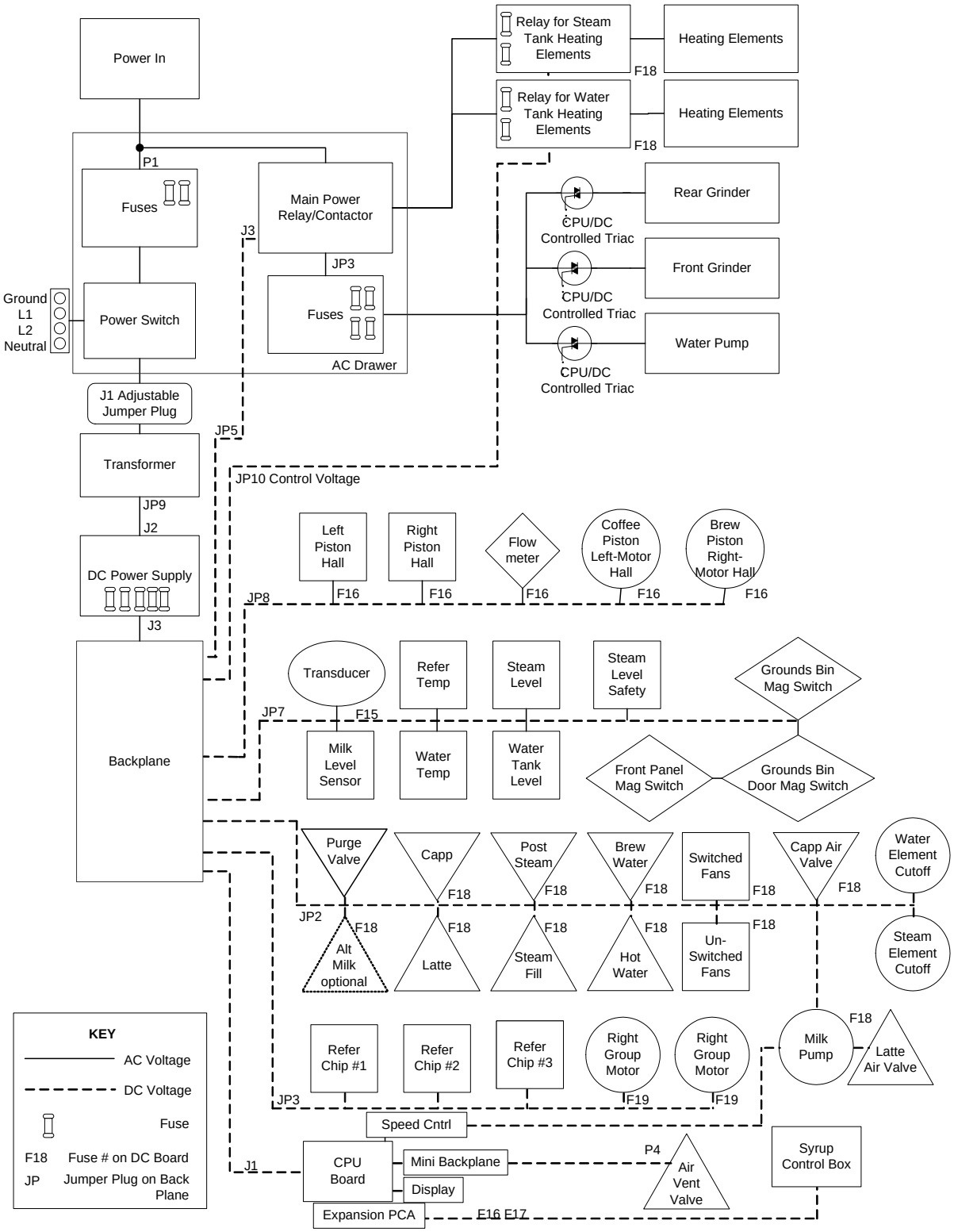
1. Electrical Block Diagram
2. Fuses
3. Backplane
4. AC Drawer Assembly
5. DC Power Supply Board
6. CPU Board
7. Peripheral Connections Configuration
8. Transformer
9. Power Into the Machine
10. DC Power Supply Board LEDs
11. Heater Element Wiring Diagrams
12. Jumper Plug Connector Detail

TECHNICAL SUPPORT

CONCORDIA

BEVERAGE SYSTEMS

Electrical Block Diagram



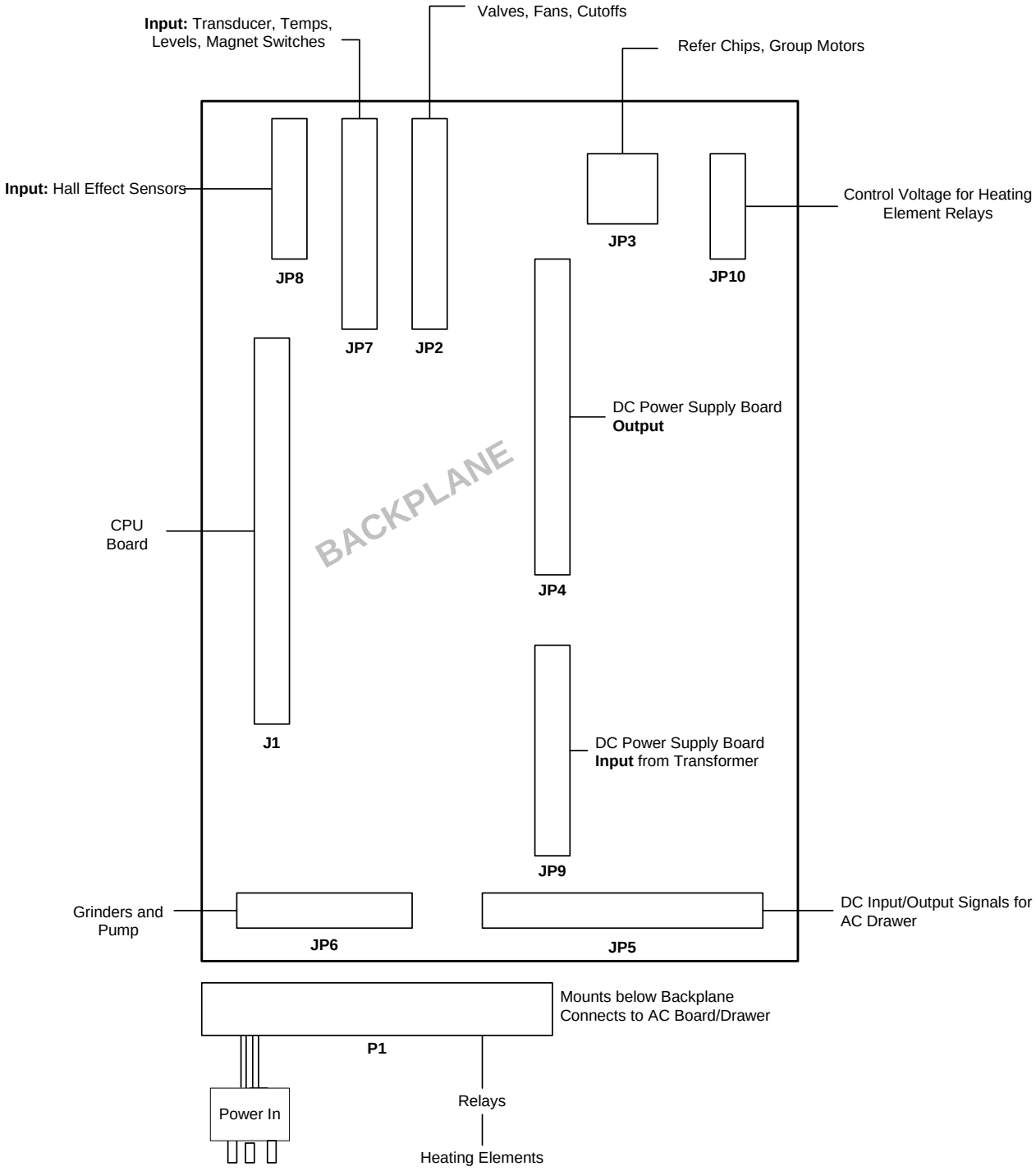
Fuses

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, Display, and Transducer CPU, ICs, Display, AC Interface, DC Board, Hall-Effect Sensors Transducer, 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

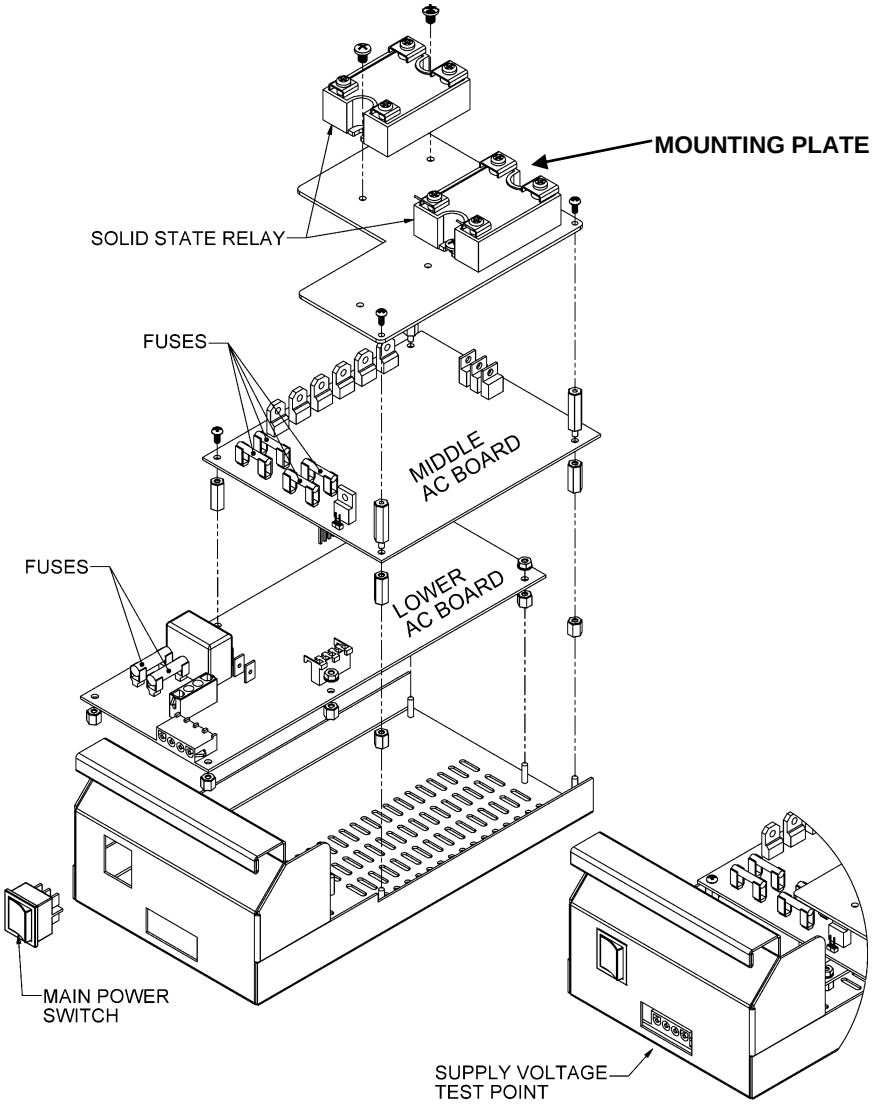
The backplane is located in the rear of the electrical enclosure.



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:

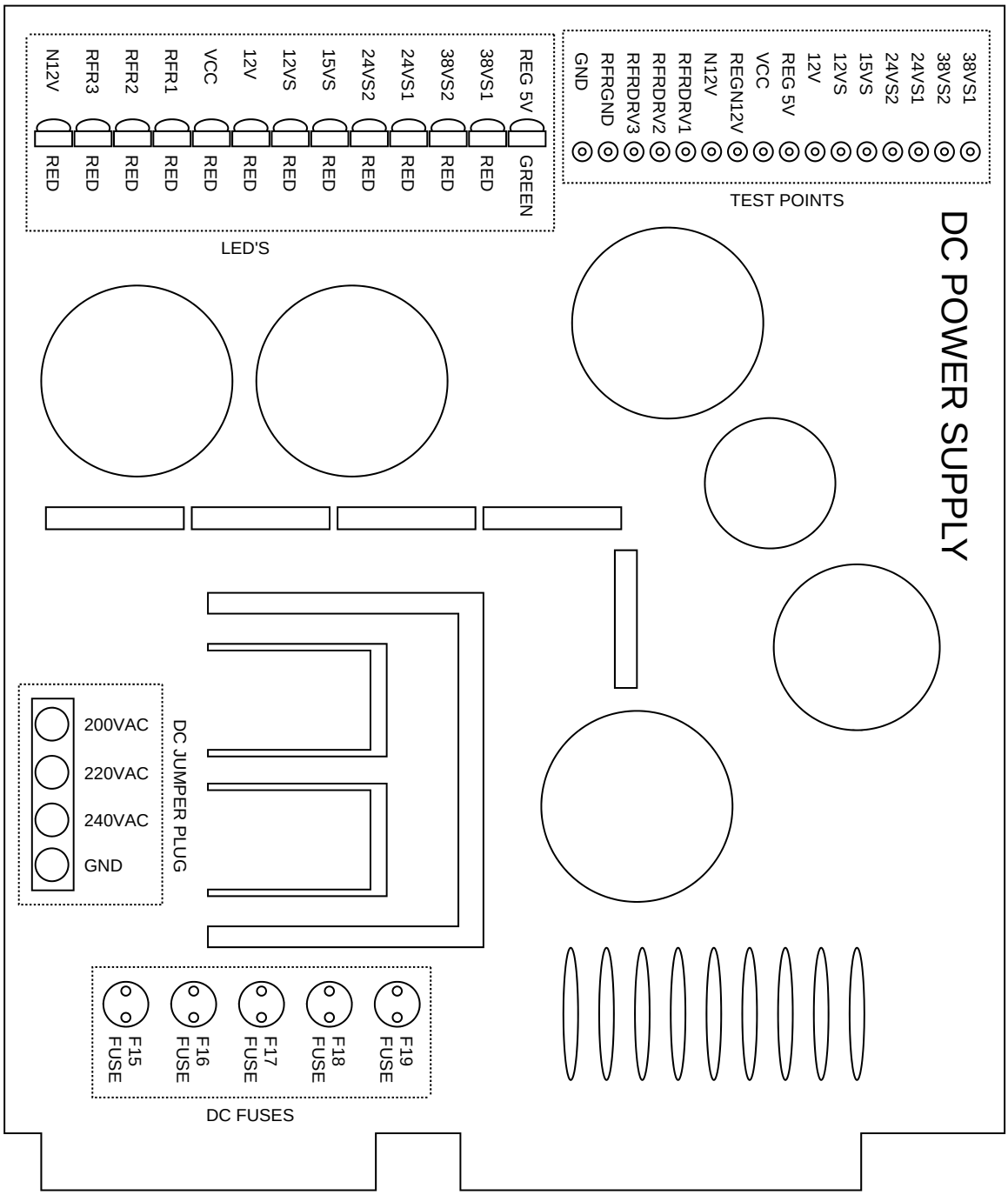
Single Phase: Two Relays

Triple Phase: Three Relays

High Leg: One Relay

Diagram is single phase configuration.

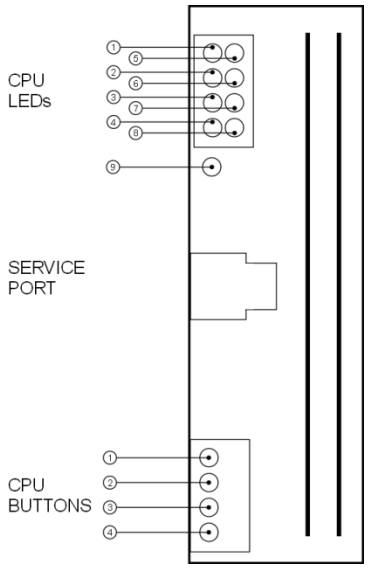
DC Board Assembly



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.

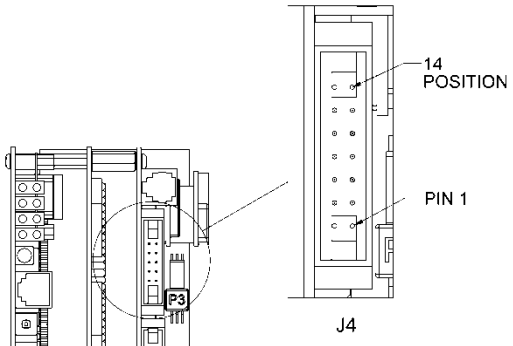


❶	CPU fault
❷	Analog board fault
❸	Front panel fault
❹	System warning or fault (will illuminate when doors/front panel are open)
❺	Boot Code Fault
❻	App Code Fault
❼	Sequence Data Fault
❽	Display Data Fault
❾	Green LED: power to CPU board

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

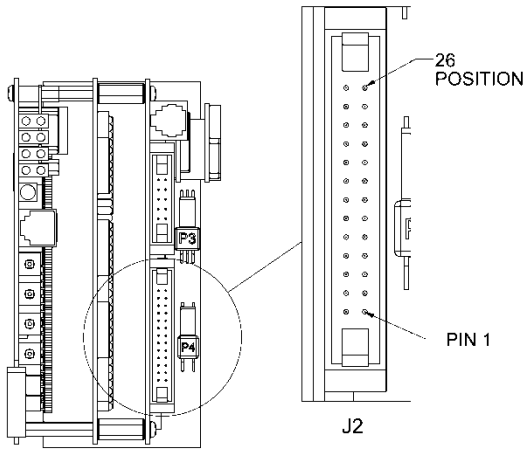
CPU BUTTON	**POWER OFF** **Hold BUTTON &** **Turn on Power Supply and release button**	**POWER ON** **READY TO MAKE DRINK** **Press CPU BUTTON**	**ADDITIONAL FUNCTIONS**
Top ❶	Load factory defaults	No current function	N/A
❷	Front panel keyboard test mode	Two Functions 1. Load factory defaults 2. Reset 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.
❹ Bottom	Load software (Press button 1 at the same time)	Reserved (no current function)	Reserved. Factory use only.

J4



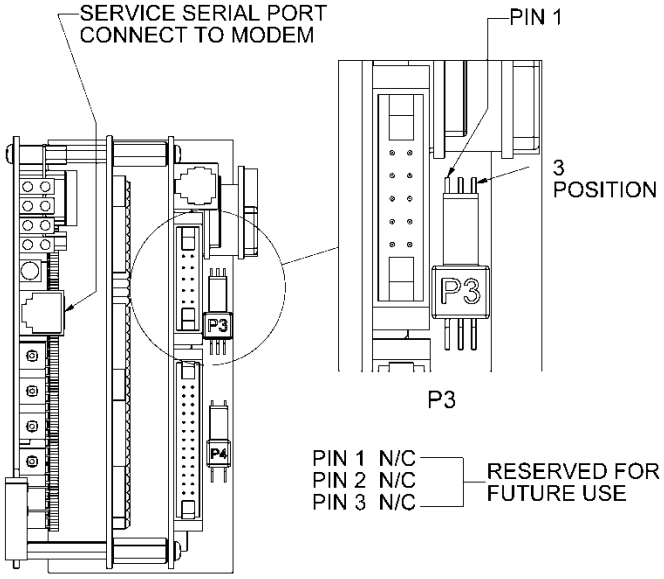
PIN 1 N/C
PIN 2 GND
PIN 3 N/C
PIN 4 GND
PIN 5 N/C
PIN 6 N/C
PIN 7 N/C
PIN 8 N/C
PIN 9 SYRUP CONTROL-0
PIN10 MILK PUMP FRONT (ENABLE)
PIN11 SYRUP CONTROL-1
PIN12 MILK PUMP REAR (ENABLE)
PIN13 SYRUP CONTROL-2
PIN14 SYRUP CONTROL-3

J2

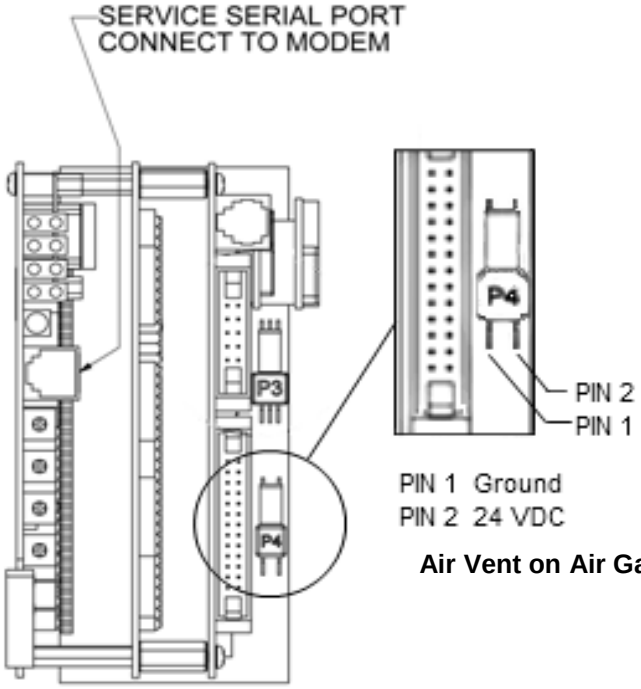


PIN 1 — SERIAL TO CTS VENDING CONTROLLER
PIN 2
PIN 3
PIN 4
PIN 5
PIN 6 N/C
PIN 7 N/C
PIN 8 N/C
PIN 9 N/C
PIN10 N/C
PIN11 N/C
PIN12 N/C
PIN13 N/C
PIN14 N/C
PIN15 N/C
PIN16 N/C
PIN17 MILK PUMP REAR (DIRECTION)
PIN18 N/C
PIN19 MILK PUMP FRONT (DIRECTION)
PIN20 N/C
PIN21 N/C
PIN22 N/C
PIN23 N/C
PIN24 GND
PIN25 N/C
PIN26 GND

P3

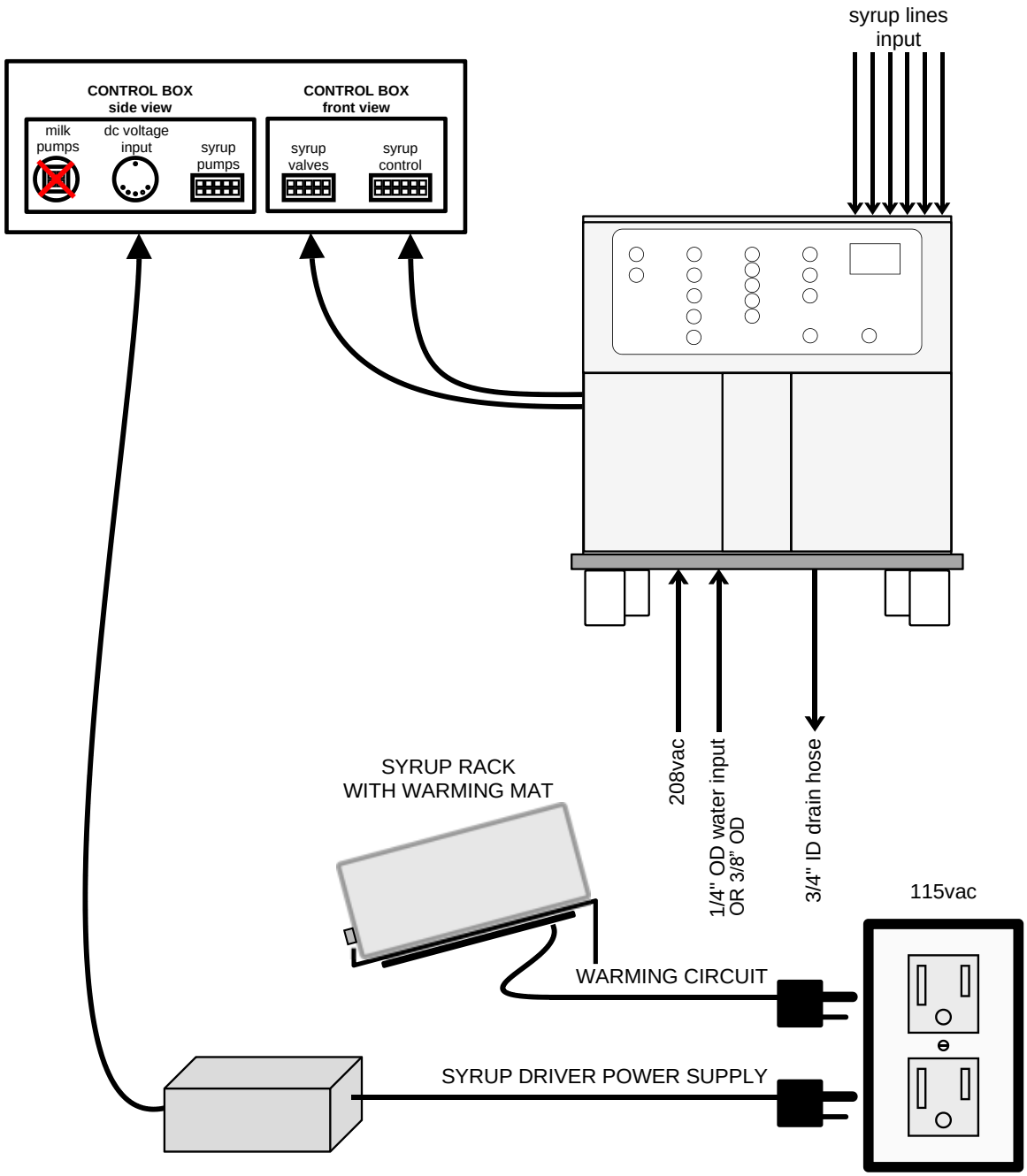


P4



Air Vent on Air Gate Assembly

Peripheral Connections Configuration



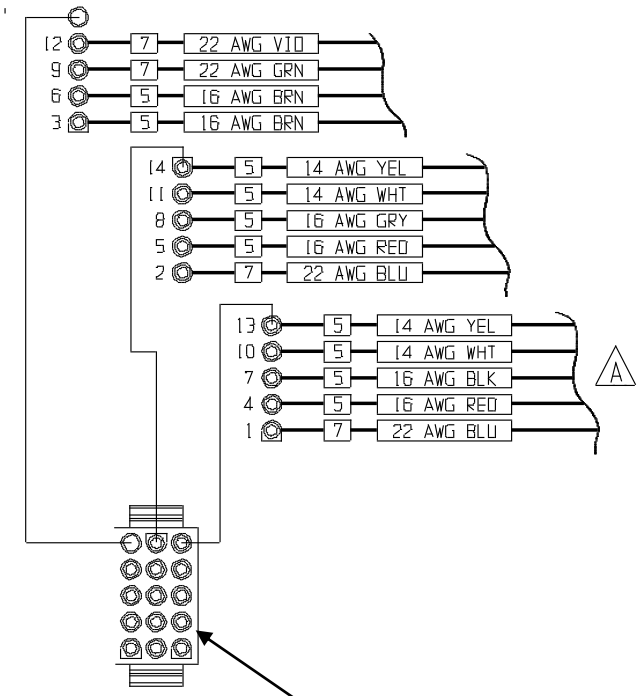
Transformer

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.

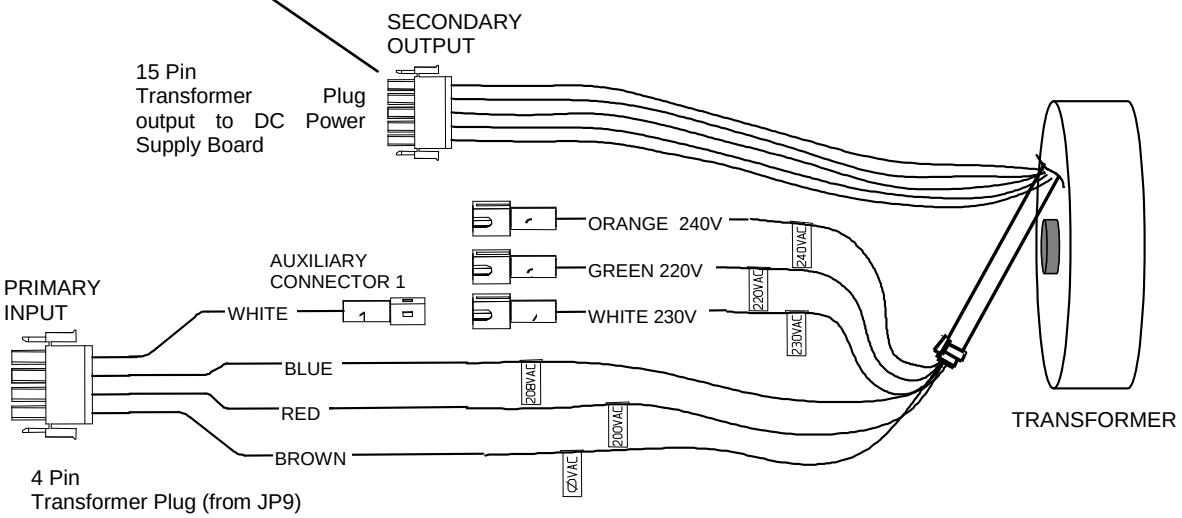
The machine will not operate correctly unless the jumper plug (located on the DC power supply board) and transformer connectors are set to line voltage.

Transformer Diagrams

Secondary Voltage on Transformer Output Plug (15 Pin)



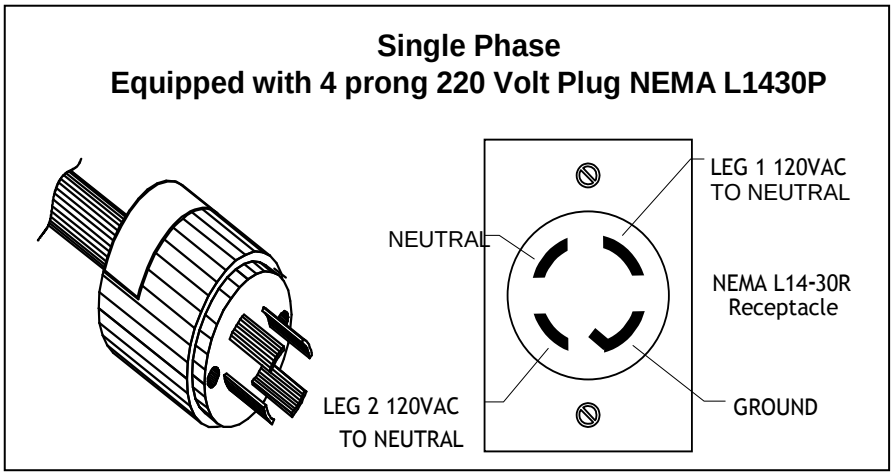
Wire Color	Transformer Output Voltage	Fuse	DC Power Supply Output Voltage
Violet Green	13.4Vac	15	-12Vdc
Blue Blue	13.4Vac	17	12 and 15Vdc
Brown Brown	20.6Vac	18	24Vdc
Red Red	30.0Vac	19	38Vdc
White Yellow	10.3Vac	No Fuse	11Vdc
Gray Black	9.3Vac	16	Ref 5Vdc & Vcc



Machine Operating Voltage

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

- 200-240Vac
- Single Phase: 30amp dedicated circuit
- NEMA L14-30 receptacle, a four wire circuit with a neutral leg (U.S. machines are typically wired for single-phase operation)



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 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 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

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		

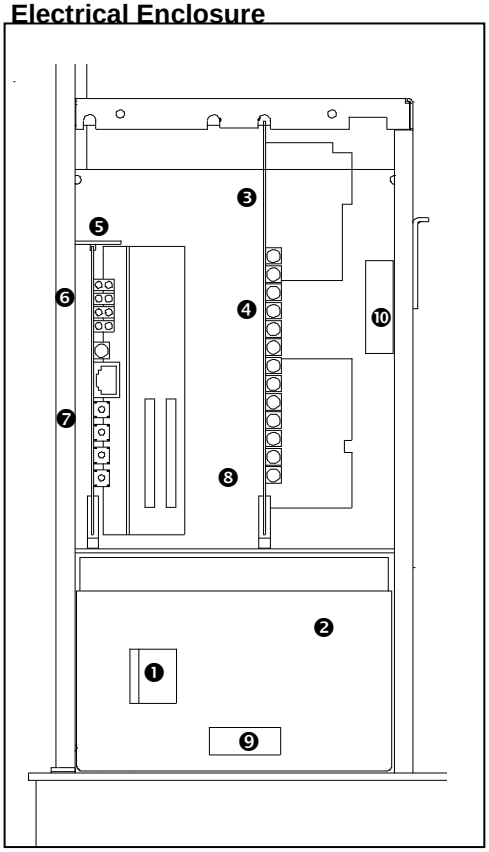
For additional information on the flavor system, please see *Section 9: Flavor System*.

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



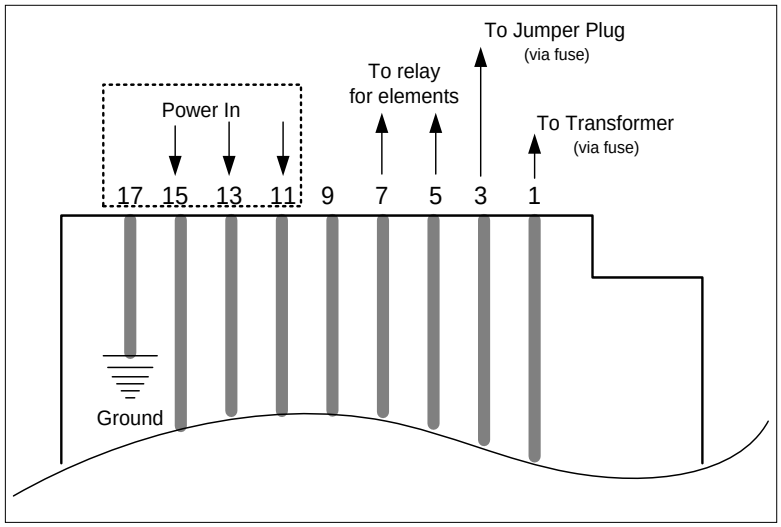
Electrical Enclosure Fan
Operating Voltage: 24Vdc

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 **TEST ROUTINES**, the electrical enclosure fan remains on. The fan removes heat from the enclosure.

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.
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.

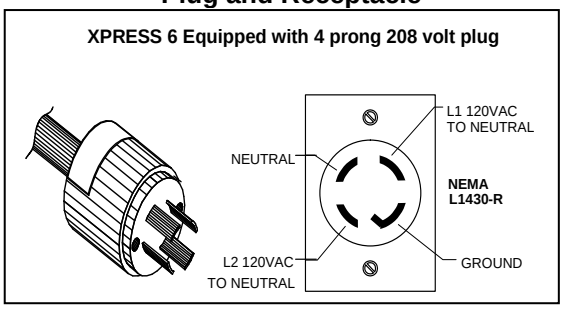
Power into AC Components

- 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



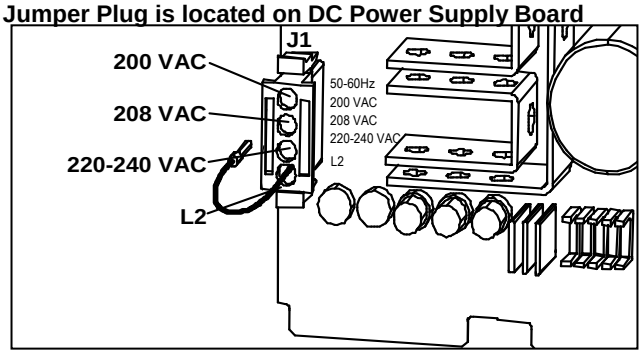
Confirming Receptacle Voltages

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 L1430-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.

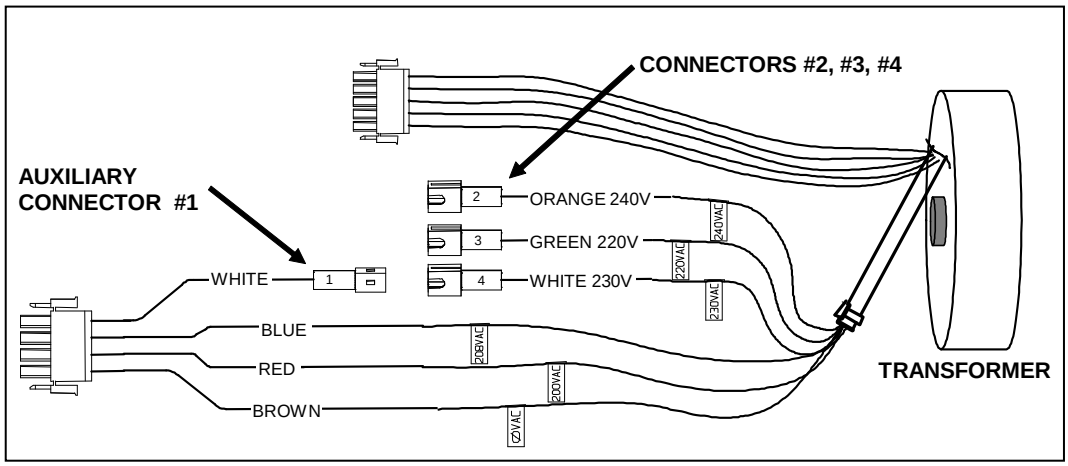
Set Transformer Auxiliary Connector #1

VOLTAGE TABLE

MEASURED SOURCE VOLTAGE RANGE	AUX CONNECTOR	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

8. If source voltage is between 200 – 215Vac, no adjustment is necessary.
9. If source voltage is between 216 – 245Vac, set transformer auxiliary connector.
10. Remove machine back panel.
11. Locate the power supply transformer and connectors.
12. Using the voltage table, connect transformer auxiliary connector #1 to appropriate transformer connector #2, #3, or #4.
13. 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	Transducer, 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, Display, and Transducer

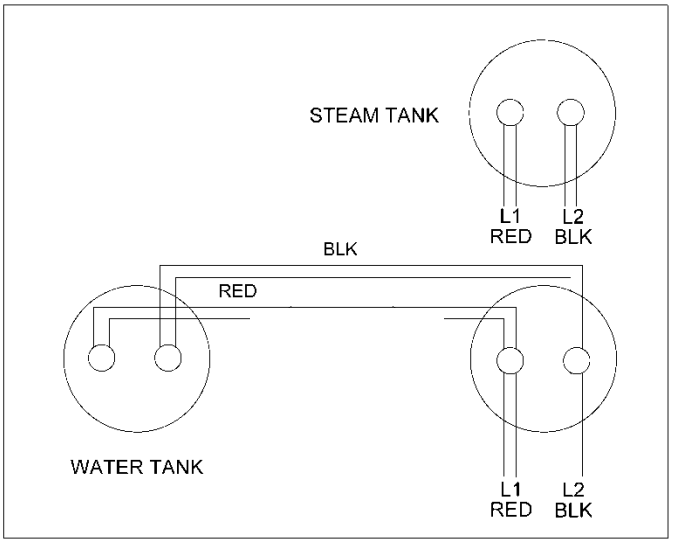
Heating Elements, Solid State Relays, and Fuse Blocks

Control Voltage: 24Vdc

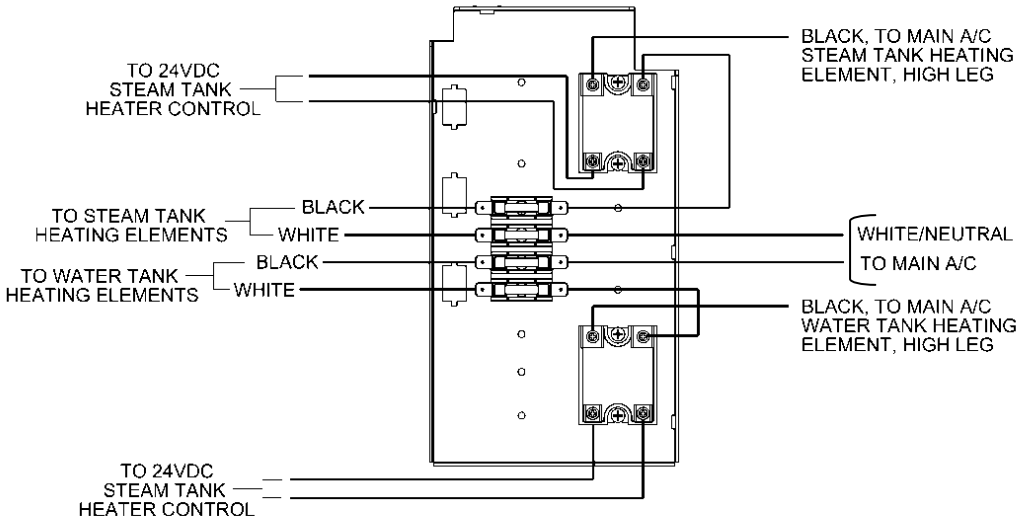
Solid state relays control voltage going to the water and steam tank heating elements. Single phase fuse blocks use four relays and high leg blocks use two.

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



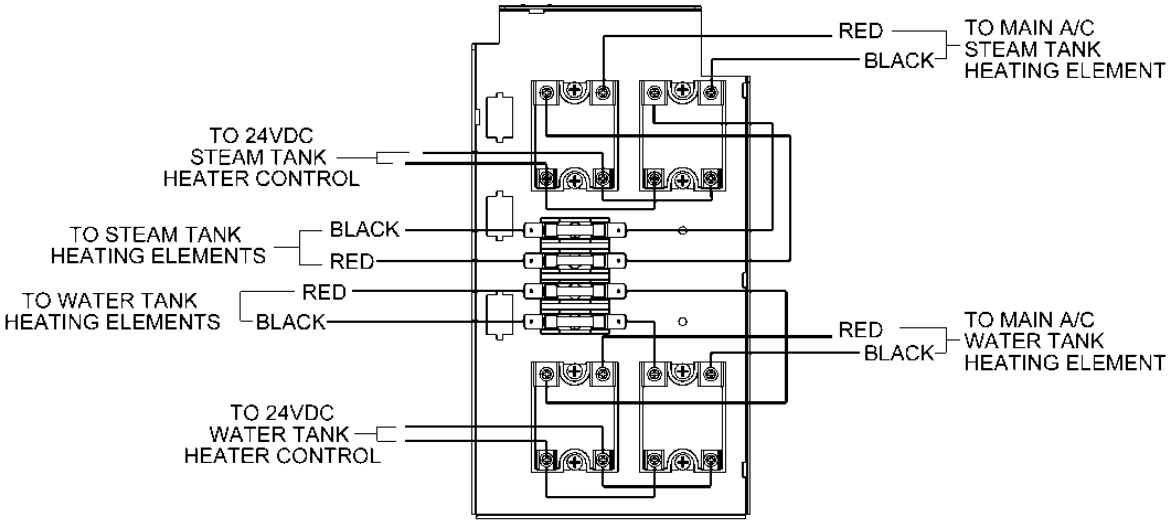
Fuse Block, CE High Leg



Heating Element Wiring Diagrams

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

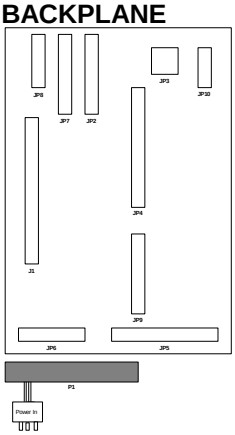
The fuse block shown below is single phase.



Jumper Plug Connector Detail

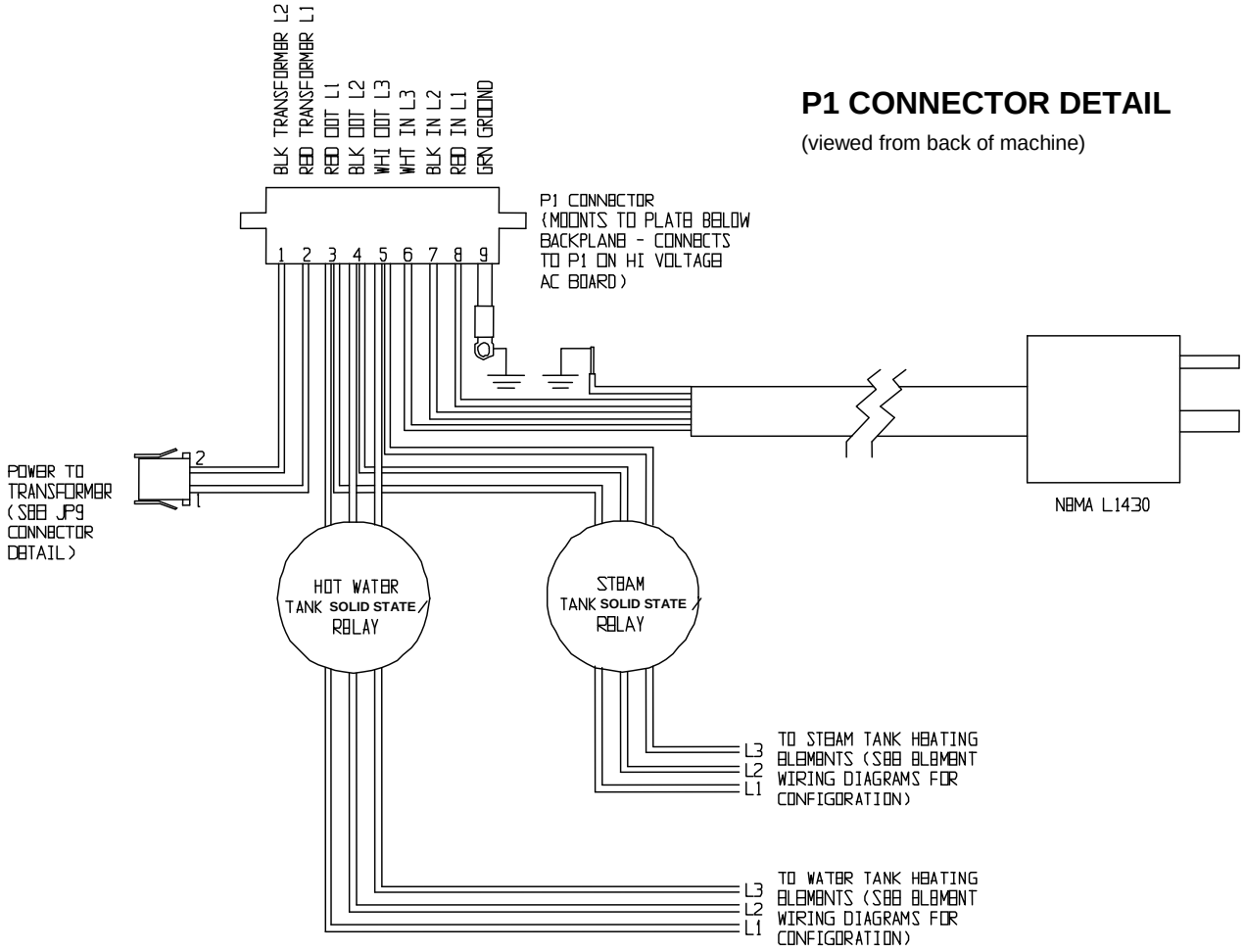
Jumper Plug 1

BACKPLANE



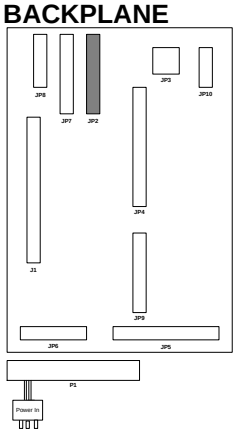
P1 CONNECTOR DETAIL

(viewed from back of machine)

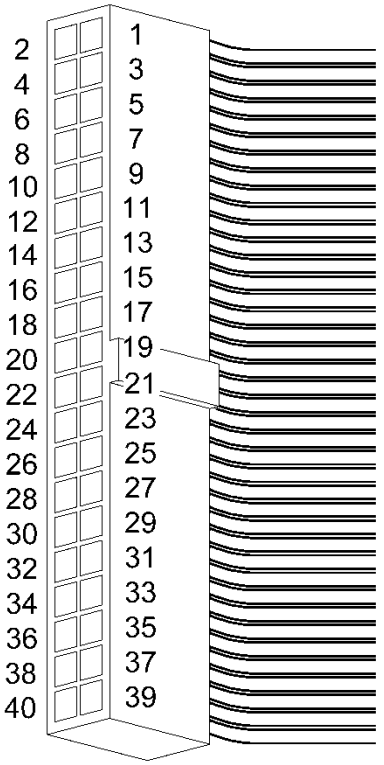


Jumper Plug 2

BACKPLANE



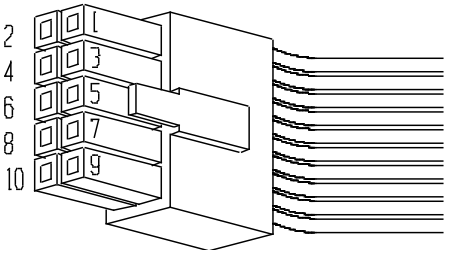
JP2



PIN 1	BRN	LATTE VALVE
PIN 2	ORG	24VDC
PIN 3	BLU	CAPP VALVE
PIN 4	ORG	24VDC
PIN 5	GRN	3RD STEAM VALVE
PIN 6	ORG	24VDC
PIN 7	WHT	BREW VALVE
PIN 8	ORG	24VDC
PIN 9	VIO	STEAM FILL VALVE
PIN 10	ORG	24VDC
PIN 11	BLU	STEAM PURGE VLV
PIN 12	ORG	24VDC
PIN 13	VIO	HOT WATER VALVE
PIN 14	ORG	24VDC
PIN 15	N/C	
PIN 16	ORG	**24Vdc for TOP FANS AND RECIR FAN SHARE 24Vdc**
PIN 17	ORG	ENCLOSURE FAN **& EXHAUST FAN**
PIN 18	BLK	GND
PIN 19	ORG	**MILK PUMP & LATTE AIR GATE**
PIN 20	VIO	GND
PIN 21	N/C	
PIN 22	BLK	REFR FAN INT GROUND
PIN 23	N/C	
PIN 24	N/C	
PIN 25	N/C	
PIN 26	N/C	
PIN 27	YEL	PAGER RELAY 12VDC
PIN 28	BLK	PAGER RELAY GROUND
PIN 29	N/C	
PIN 30	N/C	
PIN 31	ORG	ALT MILKVALVE 24VDC
PIN 32	VIO	ALT. MILK VALVE GROUND
PIN 33	N/C	
PIN 34	N/C	
PIN 35	BRN	STEAM HEAT CUTOFF
PIN 36	BRN	STEAM HEAT CUTOFF
PIN 37	WHT	WATER HEAT CUTOFF
PIN 38	WHT	WATER HEAT CUTOFF
PIN 39	RED	BEAN LVL SENSOR POWER 24VDC
PIN 40	N/C	

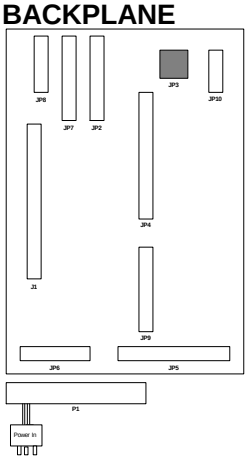
Jumper Plug 3

JP3



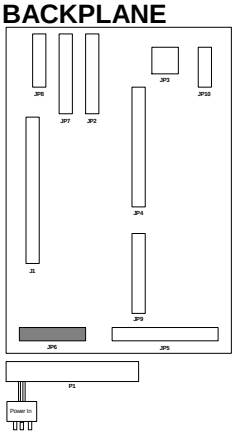
PIN 1	RED	REFER CHIP 1 GND
PIN 2	BLK	REFER CHIP 1 +V
PIN 3	RED	REFER CHIP 2 GND
PIN 4	BLK	REFER CHIP 2 +V
PIN 5	RED	REFER CHIP 3 GND
PIN 6	BLK	REFER CHIP 3 +V
PIN 7	RED	LEFT GROUP MOTOR +V UP
PIN 8	BLU	LEFT GROUP MOTOR -V UP
PIN 9	RED	RIGHT GROUP MOTOR +V DOWN
PIN 10	BLU	RIGHT GROUP MOTOR -V DOWN

BACKPLANE

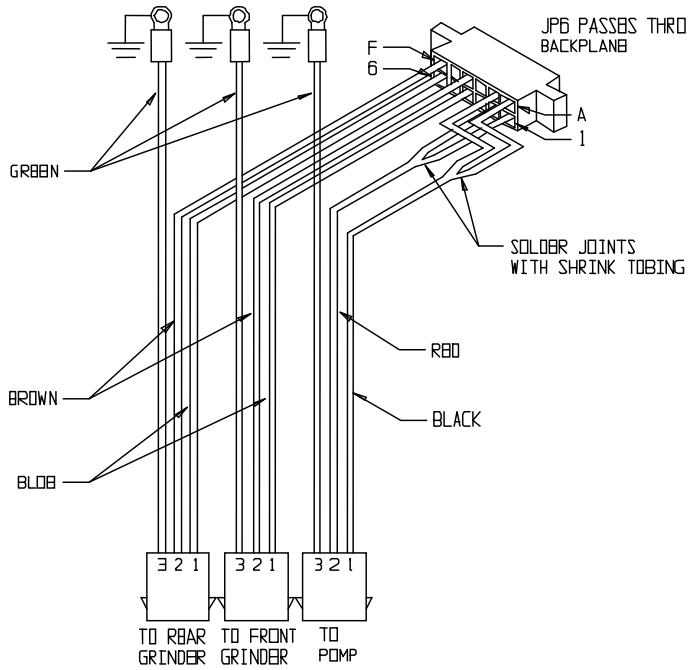


Jumper Plug 6

BACKPLANE

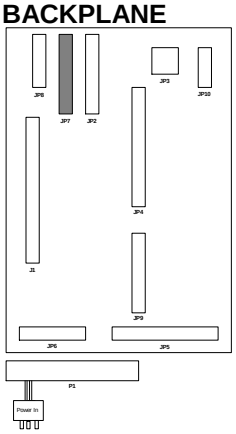


JP 6 CONNECTOR DETAIL

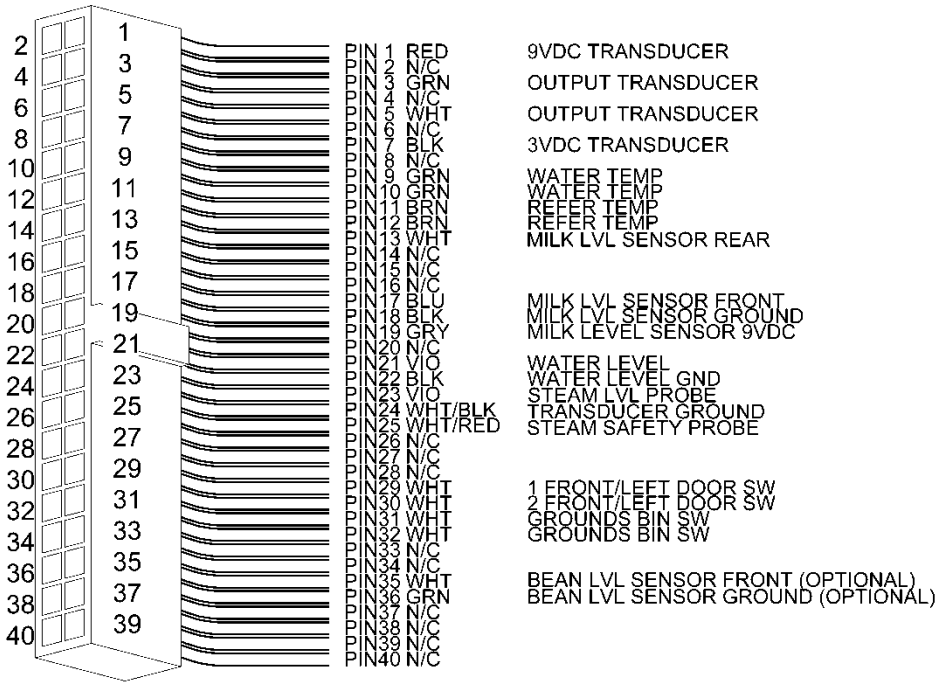


Jumper Plug 7

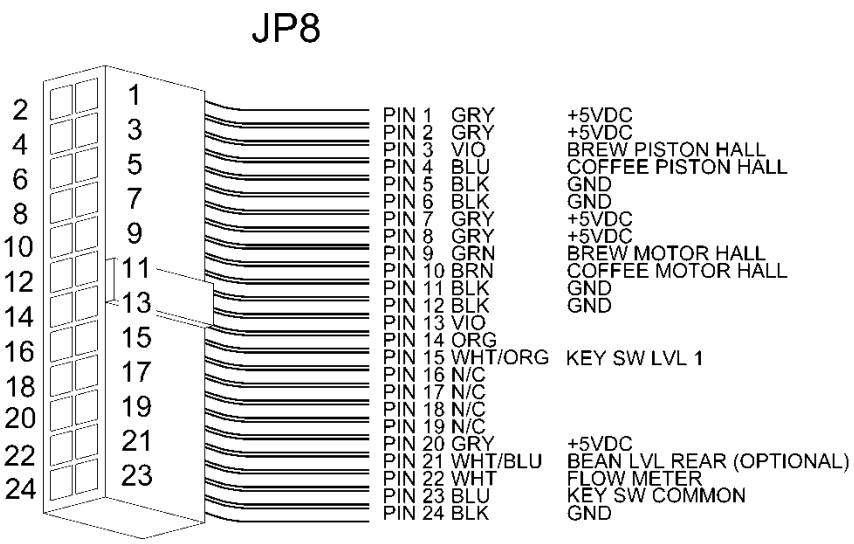
BACKPLANE



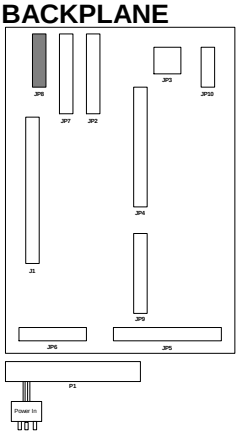
JP7



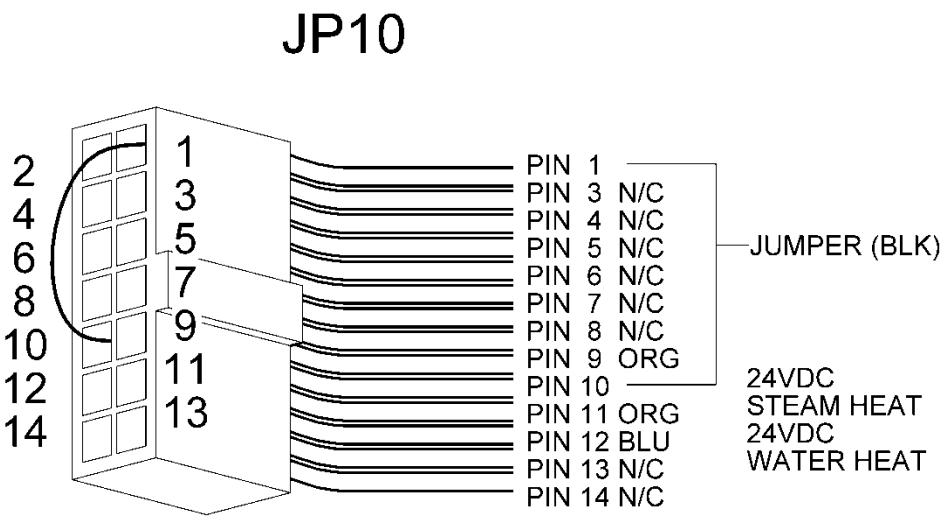
Jumper Plug 8



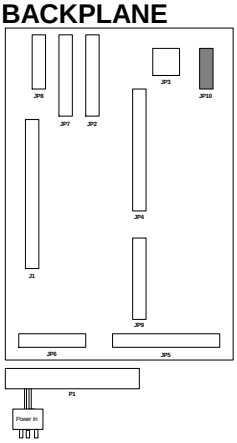
BACKPLANE



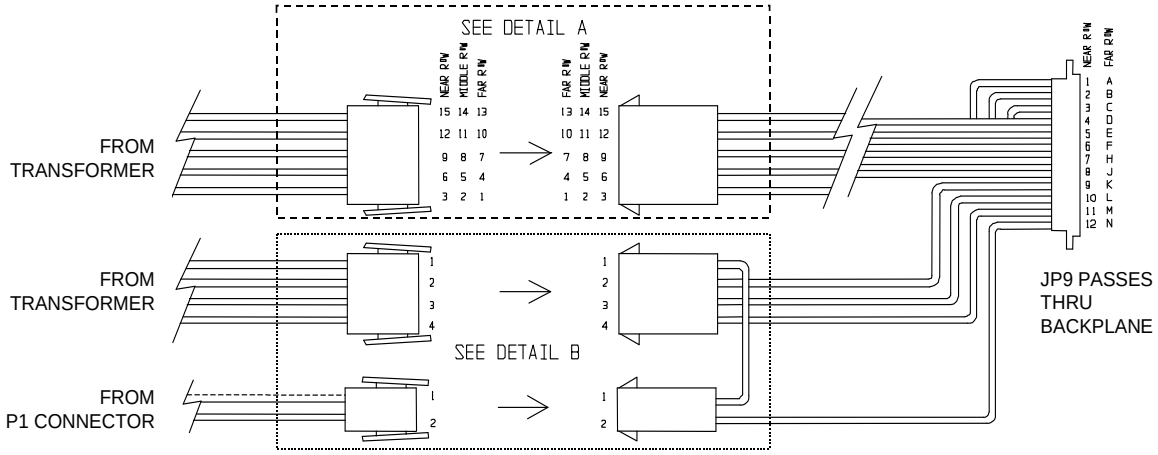
Jumper Plug 10

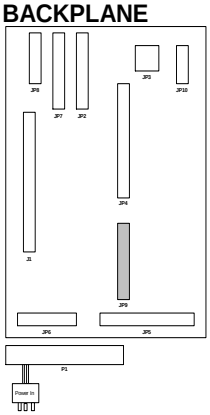


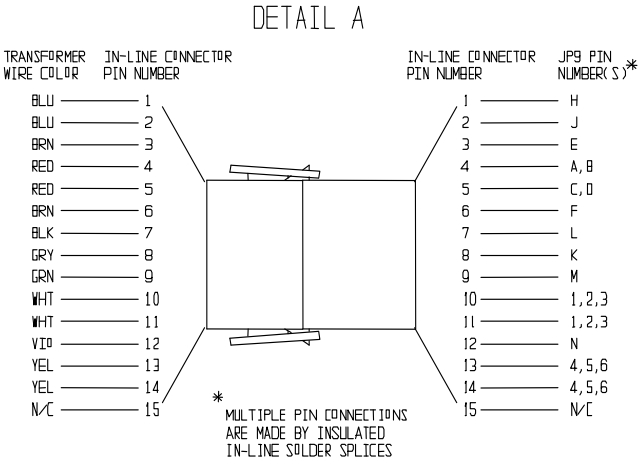
BACKPLANE

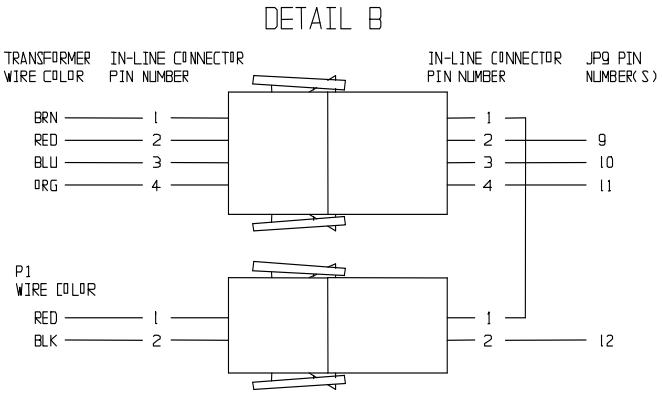


Jumper Plug 9









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Section 4 :: Software

1. Software Overview
2. Service Switch
3. Software Quick Reference Table
4. Calibration
5. Espresso Extraction Pre-Treatment Options
6. CPU Board
7. Loading New Software to a Machine

TECHNICAL SUPPORT

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.

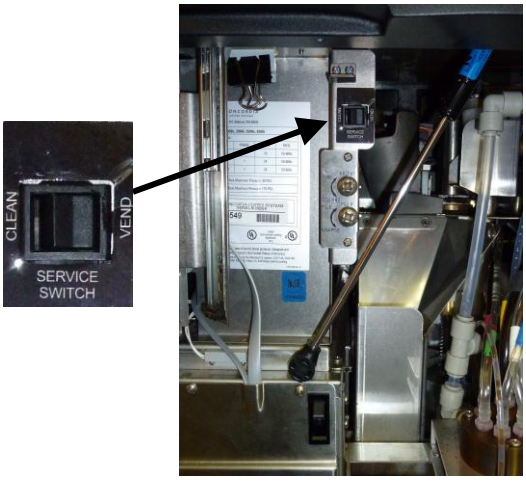
SPECIAL FEATURES
This category allows configuration of the following features: vending, grounds bin, grinder configuration, espresso button assignment, hot water button, extra room volume, cold drink button, milk system configuration, country, and low beans sensing.

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.



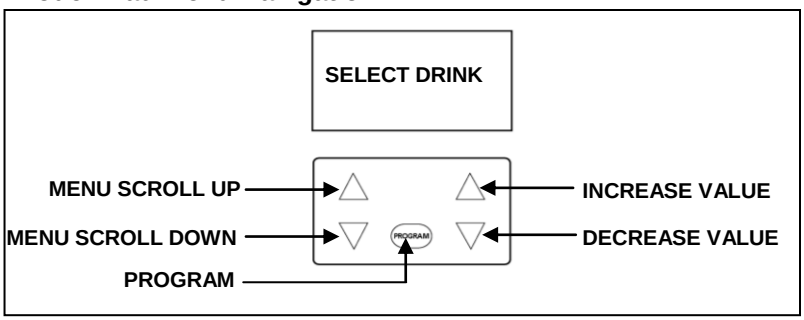
Once the service switch is in the **CLEAN** position, press the **PROGRAM** button three times. The display will change from **SELECT DRINK** to **SELECT CATEGORY**.

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.

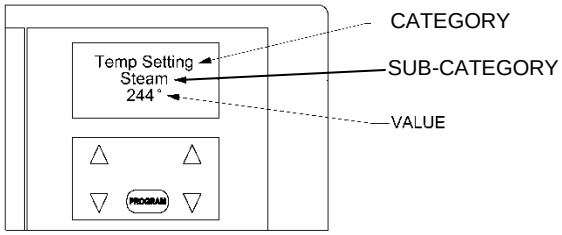
Touch Pad Menu Navigation



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 4-30.

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 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 x 30 = 360mL

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

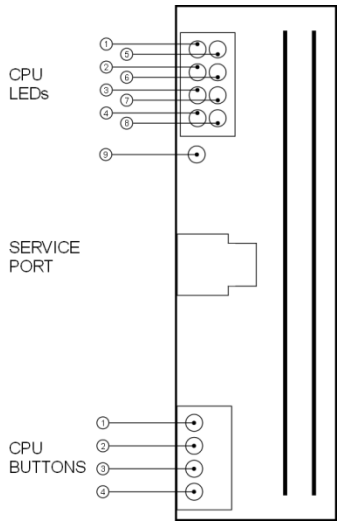
- Espresso grounds are pre-infused for 4/10 of a second.
- A four-second delay before brewing.
- Pressure on the ground coffee is slightly increased.

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.



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.
❹ Bottom	Load software (Press button 1 at the same time)	Reserved (no current function)	Reserved. Factory use only.

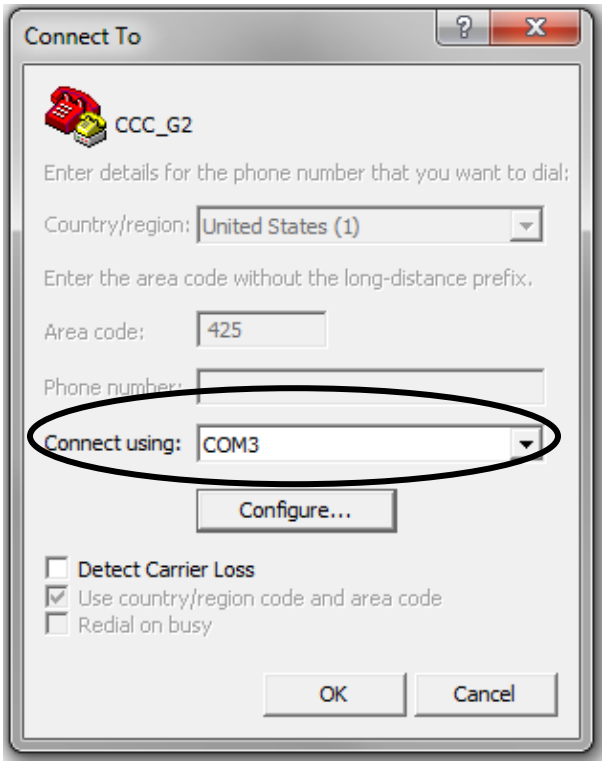
Loading New Software to a Machine

Required Equipment

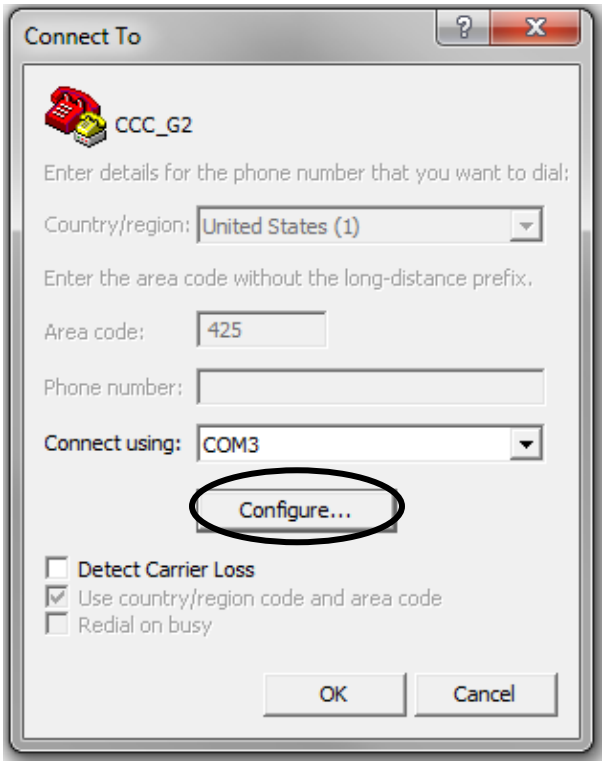
- Service port communications cable (9 pin D-sub to 6 pin modular Concordia PN 4300-013).
- An IBM compatible PC with communications software installed that supports ANSI Terminal Emulation and the XMODEM file transfer protocol.
- If using a laptop with Windows Vista or Windows 7, please visit http://www.hilgraeve.com/hyperterminal-trial/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

Configuring HyperTerminal

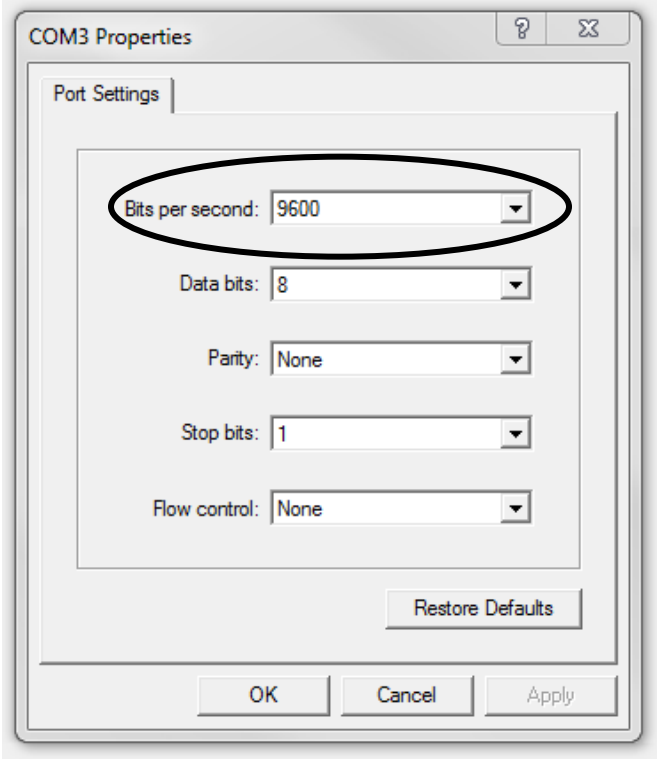
1. Open HyperTerminal.
2. Go to **File > New Connection**.
3. Select the COM port assigned to the serial adapter being used from the **Connect using:** drop-down menu.



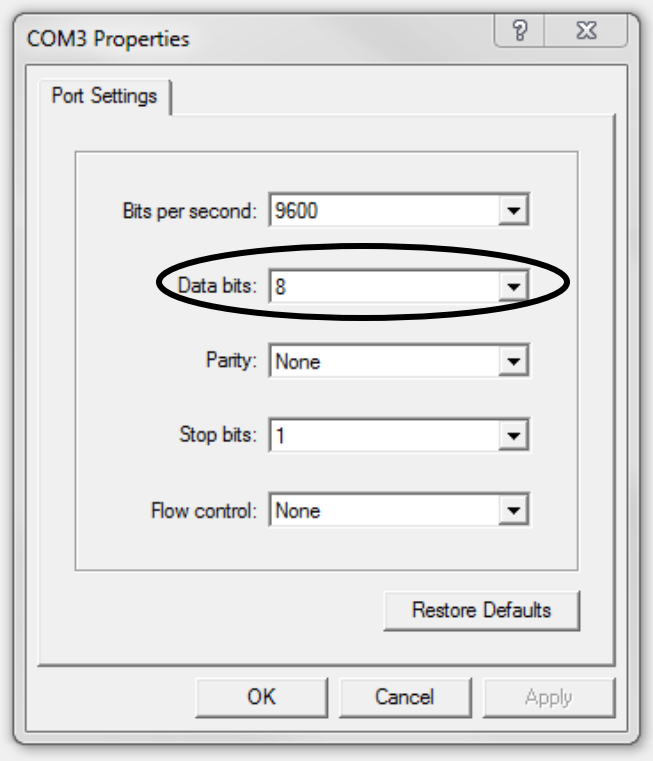
4. Click **Configure**.



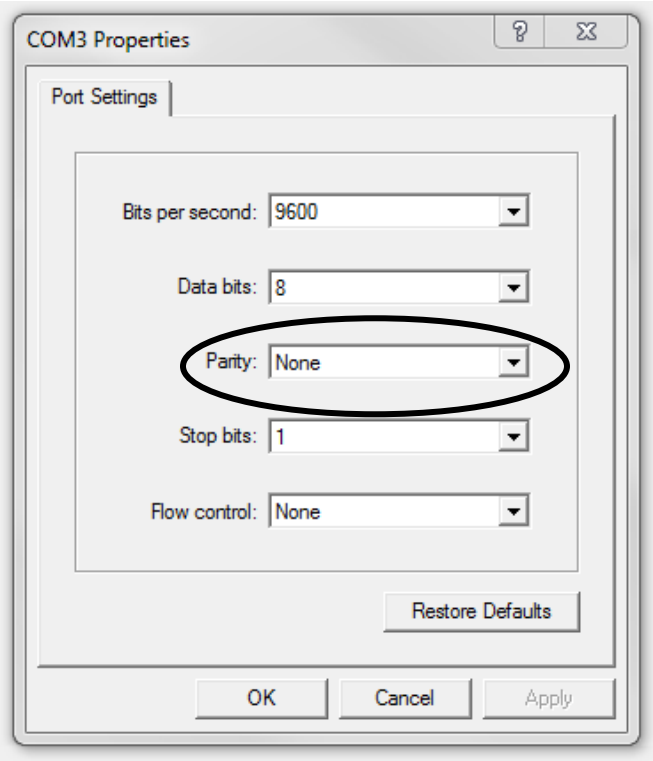
5. Select **9600** from the **Bits per second:** drop-down menu



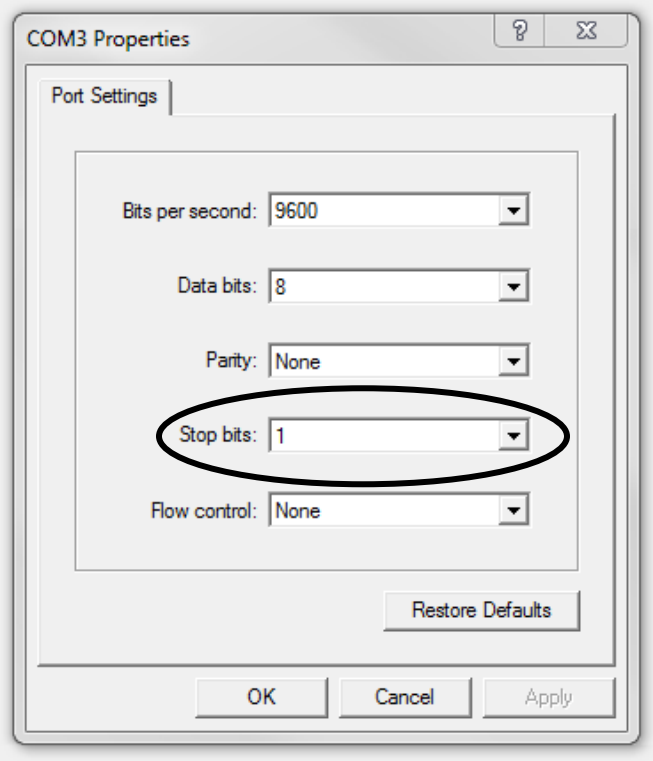
6. Select **8** from the **Data bits:** drop-down menu.



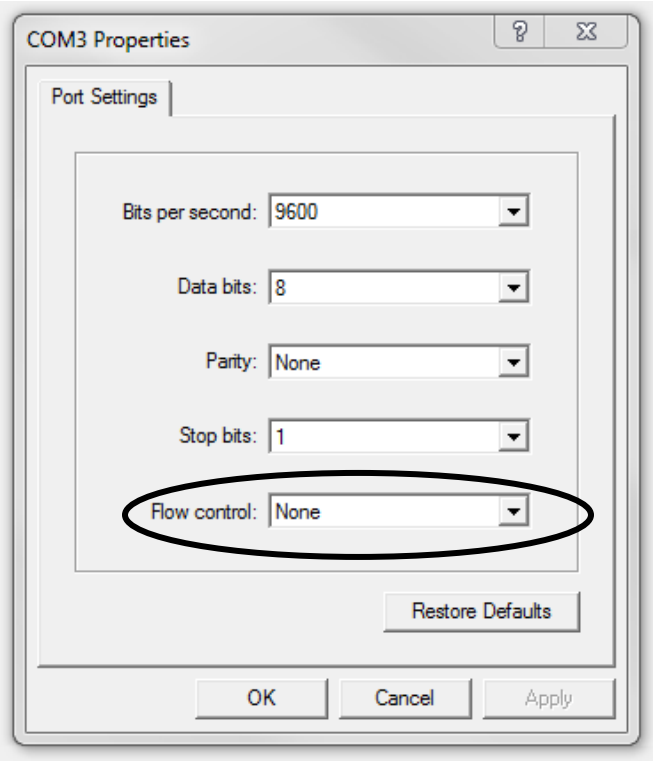
7. Select **None** from the **Parity:** drop-down menu.



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

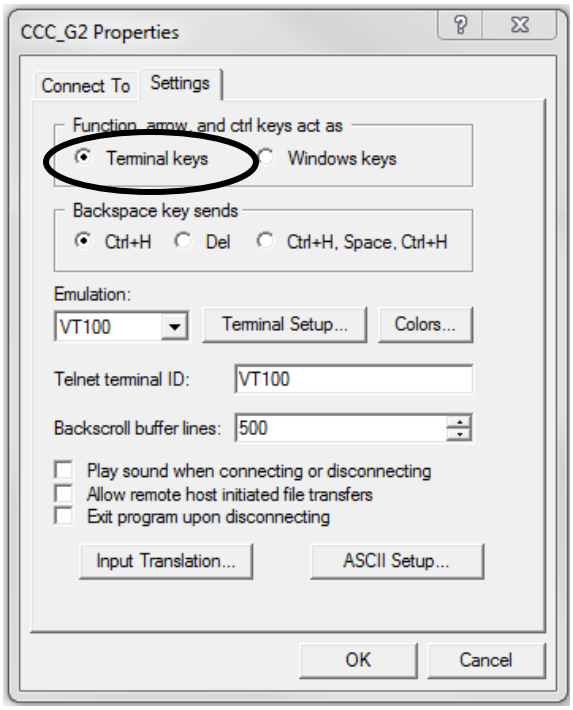


9. Select **None** from the **Flow control:** drop-down menu.

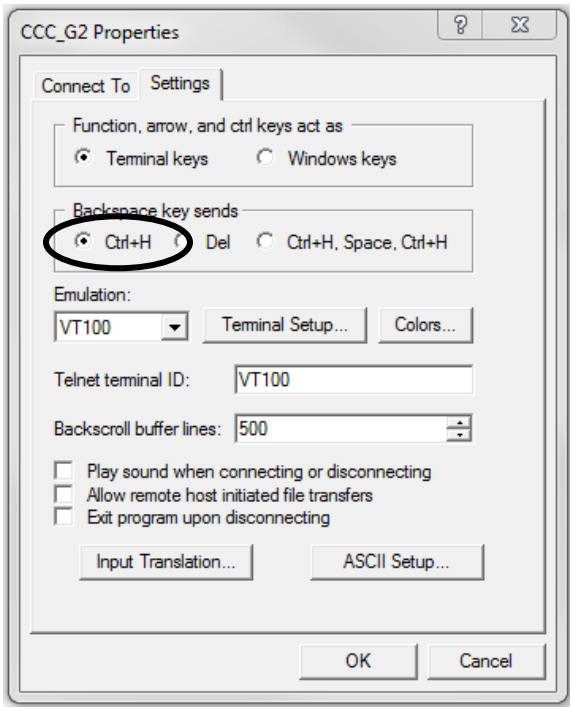


10. Click **OK**.

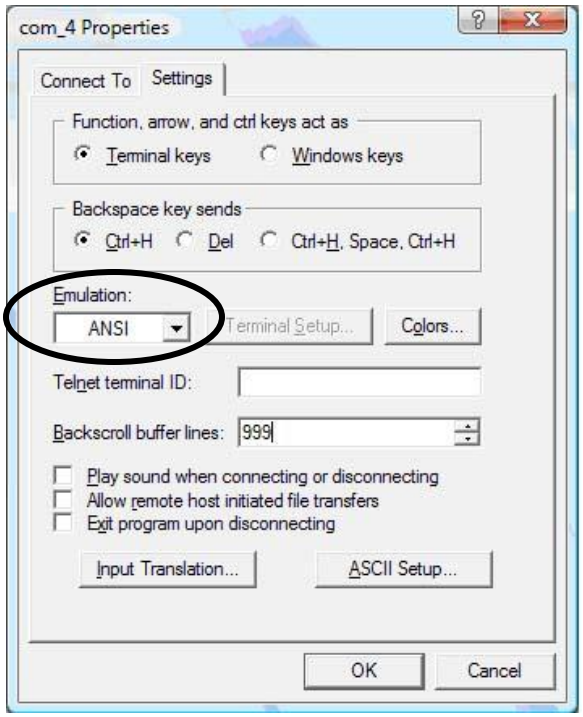
11. Select **Terminal Keys** under the **Function, arrow and ctrl keys act as** section.



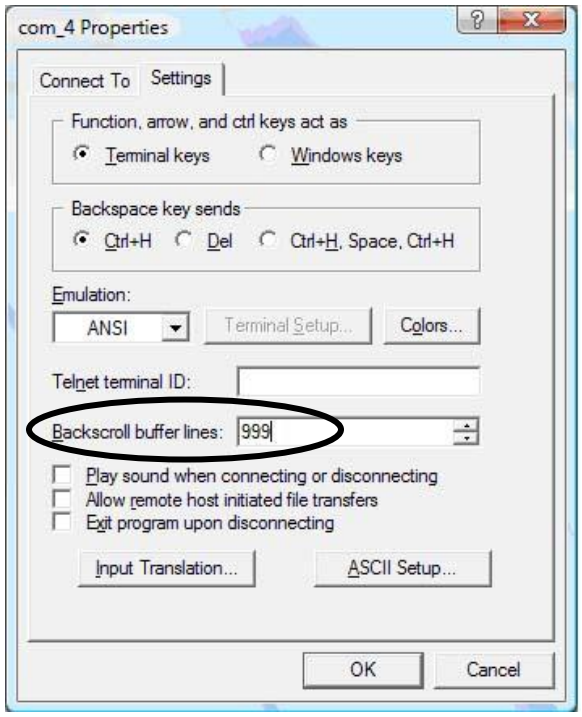
12. Select **Ctrl + H** under the **Backspace key sends** section.



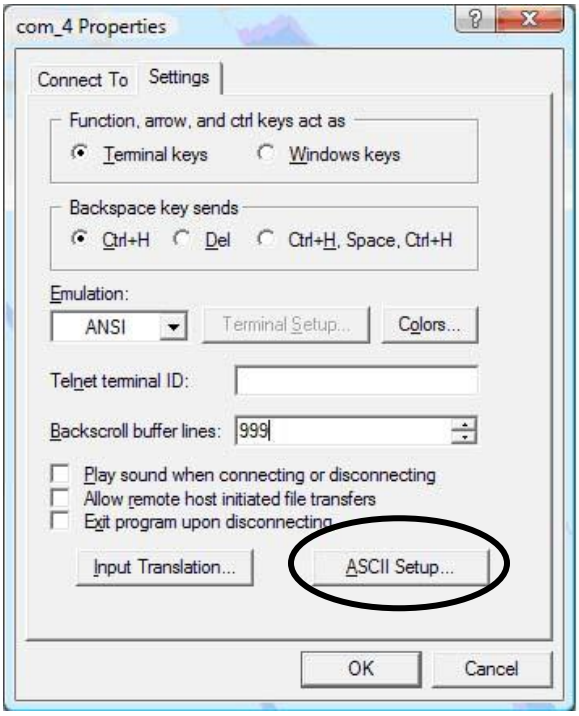
13. Select **ANSI** from the **Emulation:** drop-down menu.



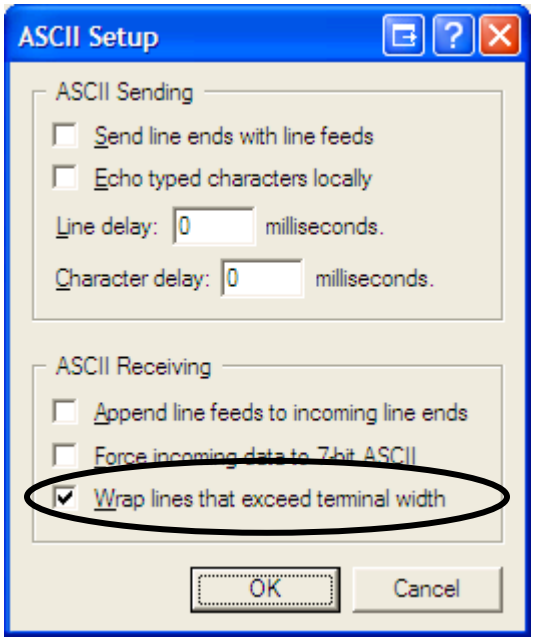
14. Enter **999** as the **Backscroll buffer lines** value.



15. Click **ASCII Setup…**.



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

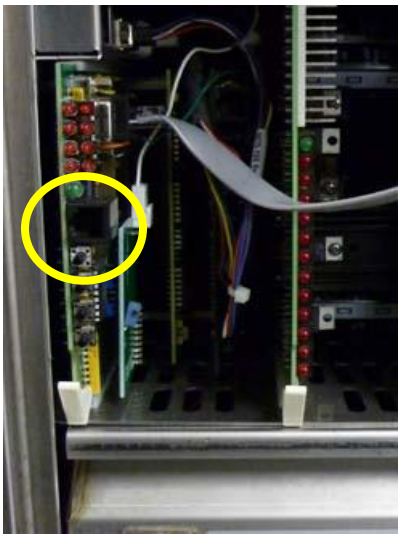


17. Click **OK**.
18. Click **OK**.

Connecting a Laptop to a Machine

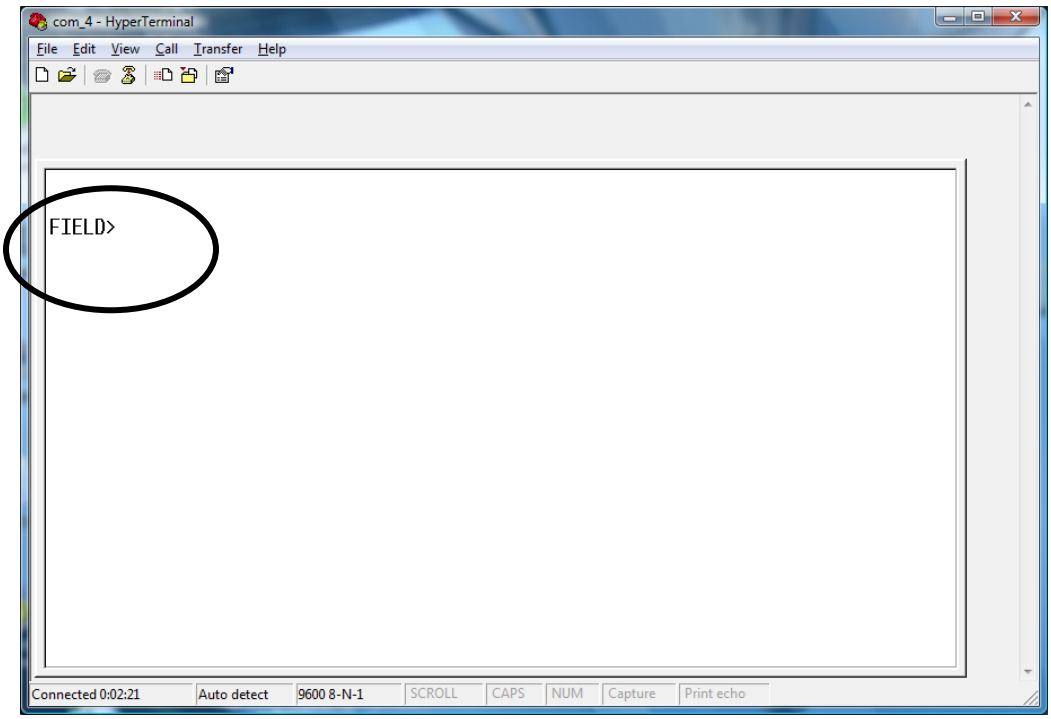
NOTE: This process is for customers using the default drink recipes. For customers with custom drink recipes, see the *Updating Software for Customers with Customer Drink Recipes* topic on page 4-30.

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.

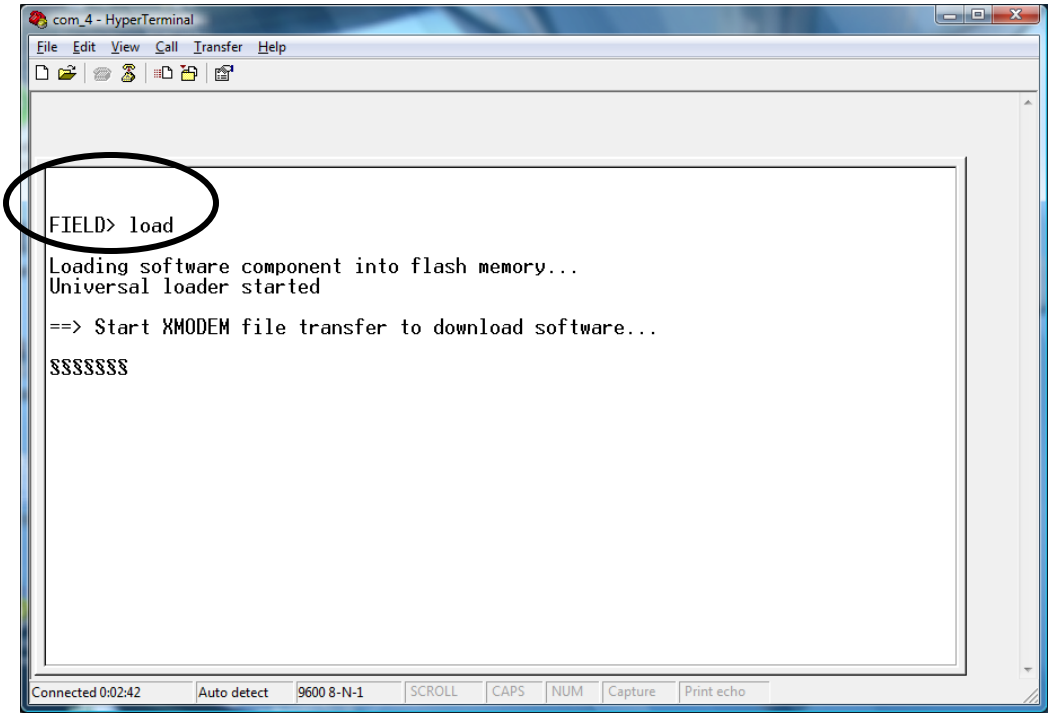


2. Connect the 9-pin D-Sub end of the communications cable into the RS232 serial port of the laptop.

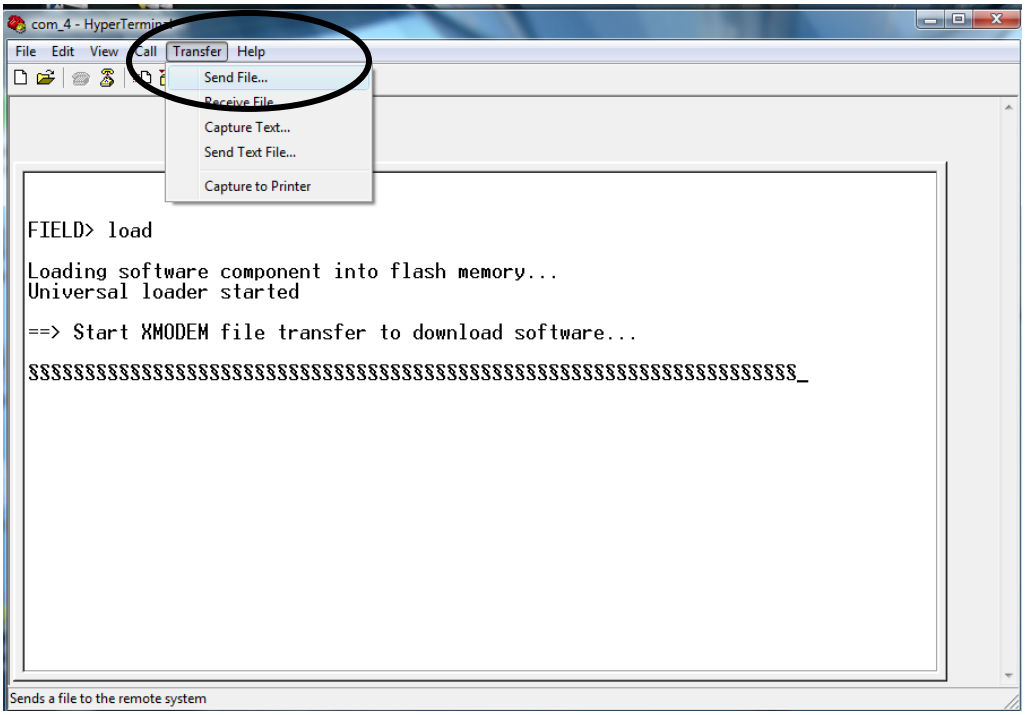
   NOTE: Newer laptops may require a USB-to-RS232 adapter.
3. Press the service switch into the **SERVICE** position.
4. Open HyperTerminal and press **Enter**.
5. If the connection was successfully made, **Field** will appear in the HyperTerminal window.



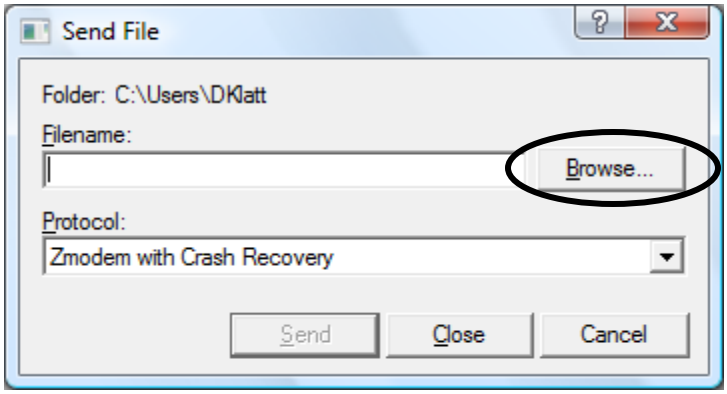
6. Type **Load**, and then press **Enter**.



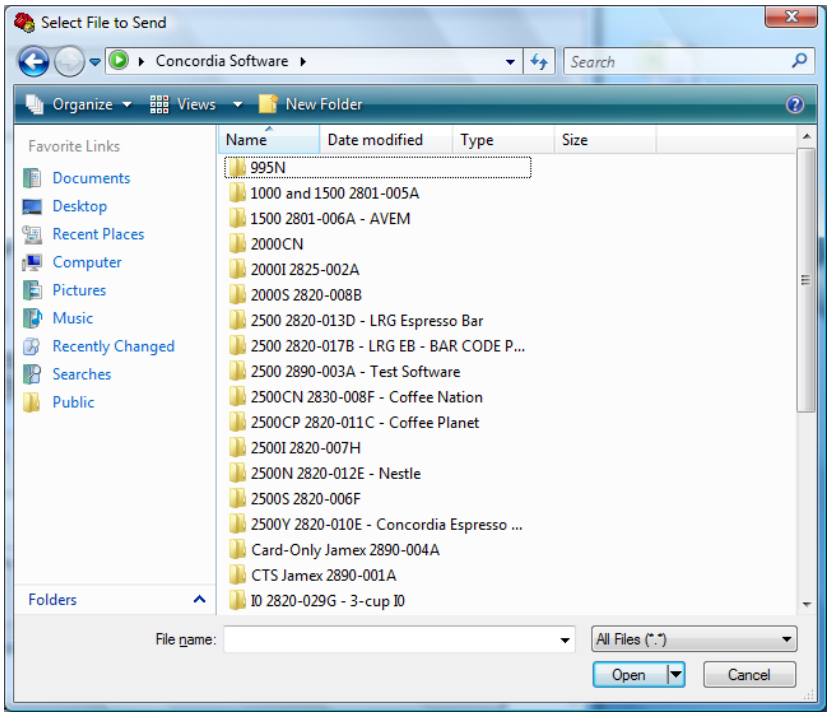
7. Go to **Transfer > Send File**.



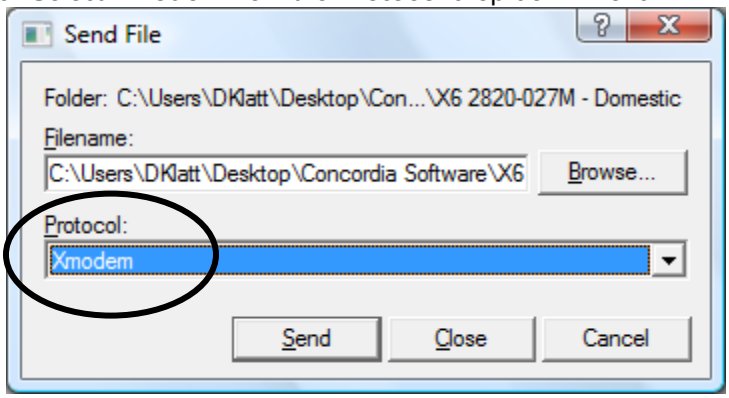
8. Select **Browse**, and then navigate to the directory with the file to download.



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 5 :: Plumbing

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

TECHNICAL SUPPORT

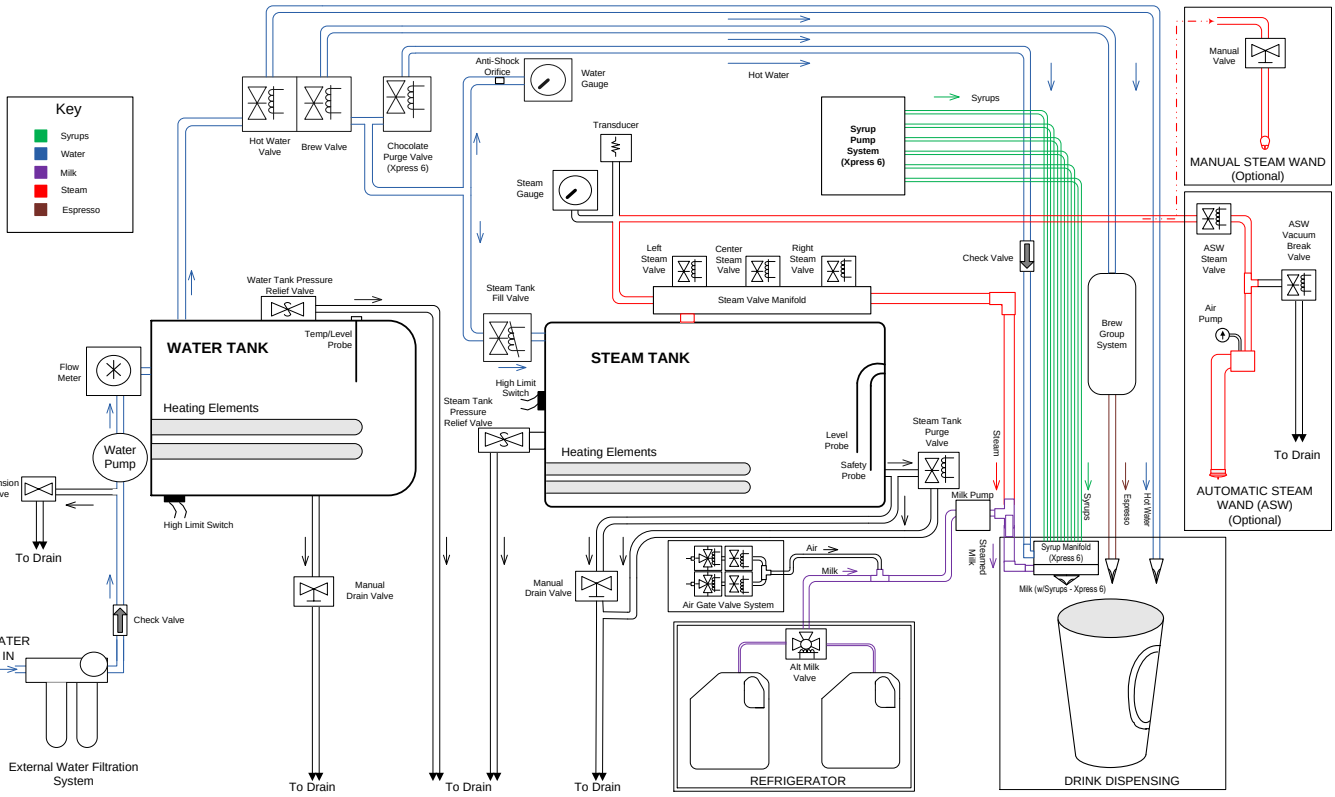
CONCORDIA

BEVERAGE SYSTEMS

The Water System

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

Xpress Hydraulics Diagram



Line Pressure

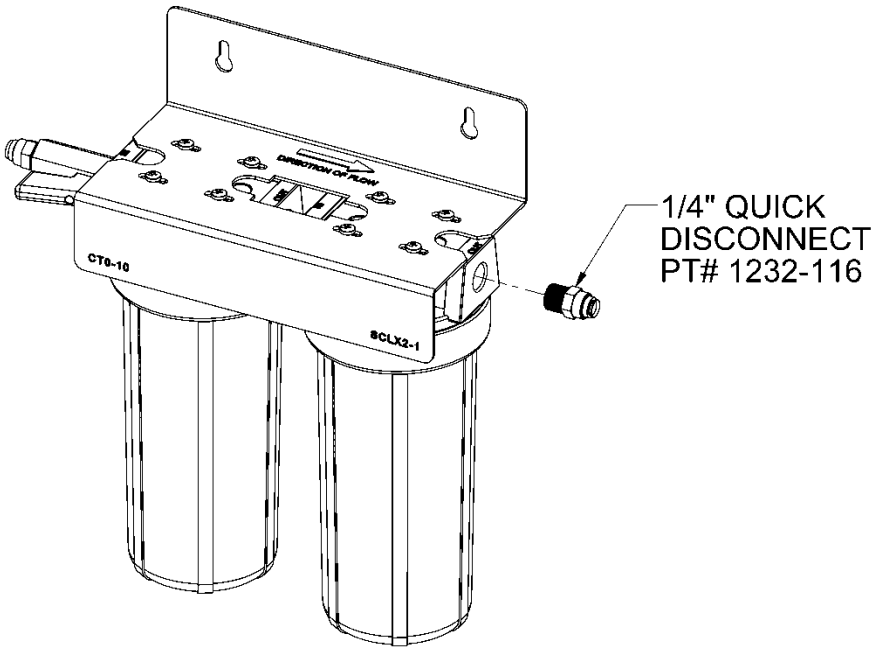
Pressure must be between 30-100psi at 25gph. Adequate pressure is needed to fill both the hot water and steam tanks.

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.

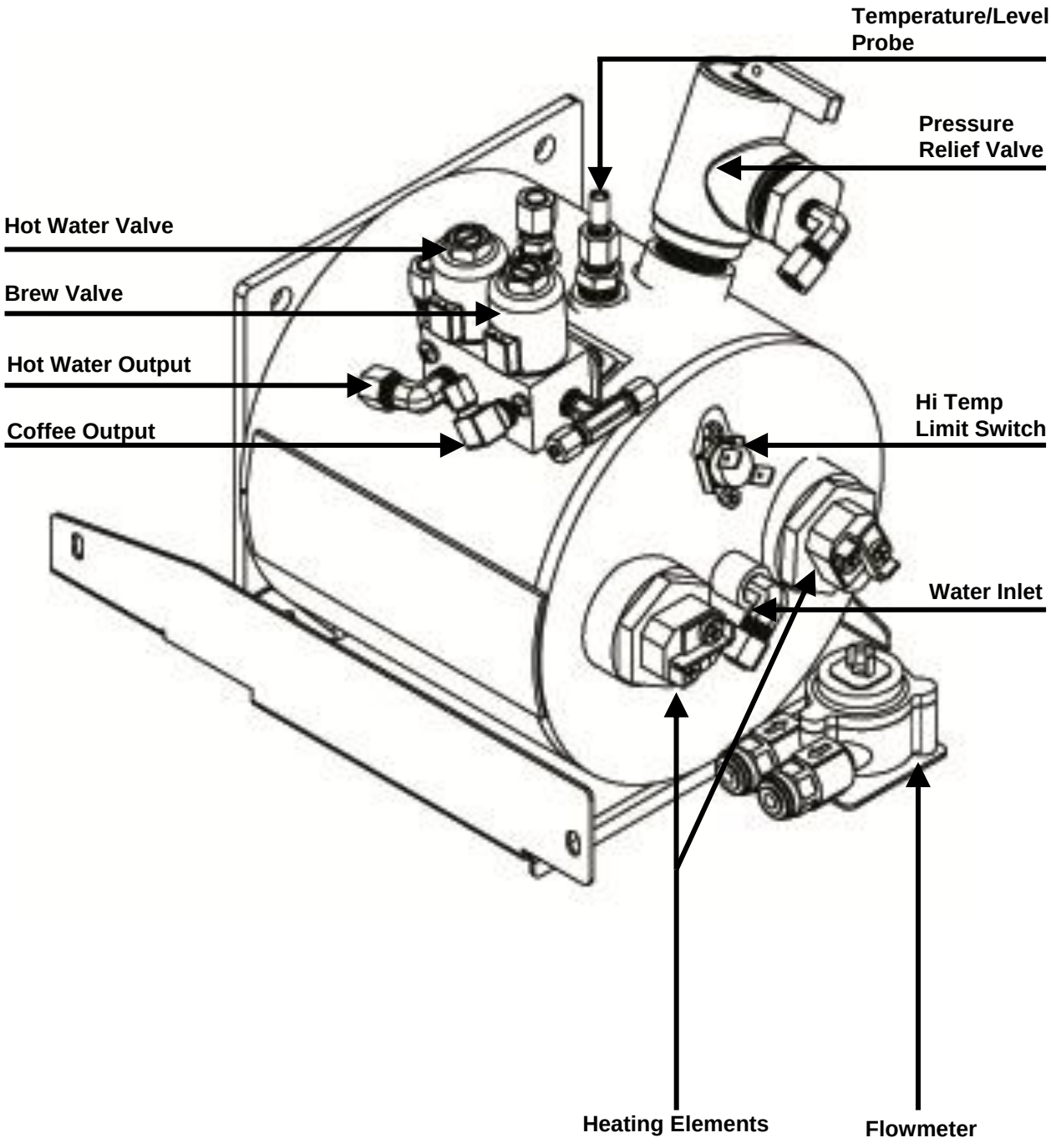
Water Filtration System

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

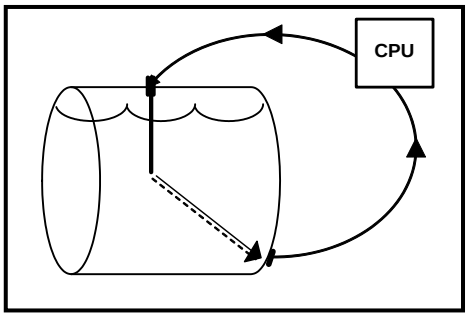
The temperature probe and level probe are combined into a single unit.

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 15: Troubleshooting*.

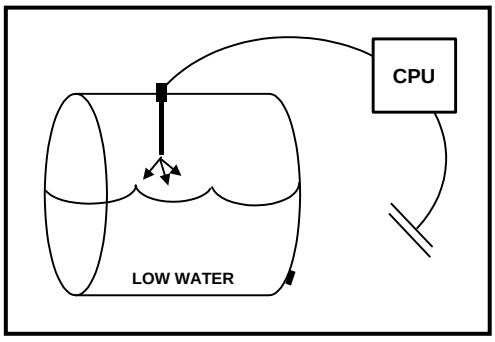
Water Tank and Level Probe Grounded



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.

Quick Tip

Viewing the hot water tank temperature

1. Navigate to **CHK TEMPERATURES > BREW WATER**.
2. The tank temperature is 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

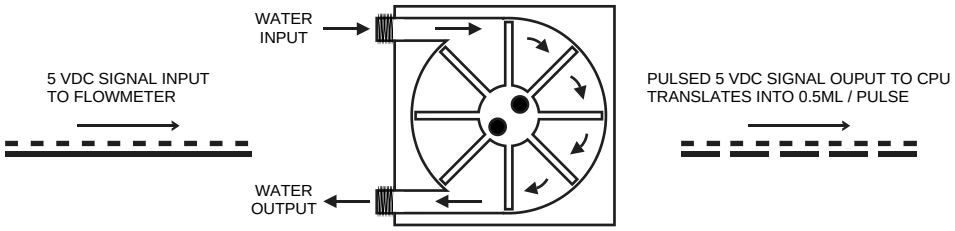
Water is supplied from the wall source to the hot water tank through the water inlet fitting.

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.

Flowmeter



Quick Tip

Viewing amount of water flowing through the flowmeter

1. Navigate to **TEST ROUTINES > BREW WATER VALVE**.
2. Activate the 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 three 850 watt - 48Ω (ohm) heating elements. Only two heating elements are used on single-phase and high leg-configured machines. Use the third heating element as a spare.

One pair of solid state relays control the AC voltage to each of the heating elements. The heating elements are wired in parallel, so when reading the resistance you will see approximately 24Ω. 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 top rear solenoid on the dual 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 top front solenoid on the dual manifold valve assembly located on top of the hot water tank.

Draining the Hot Water Tank

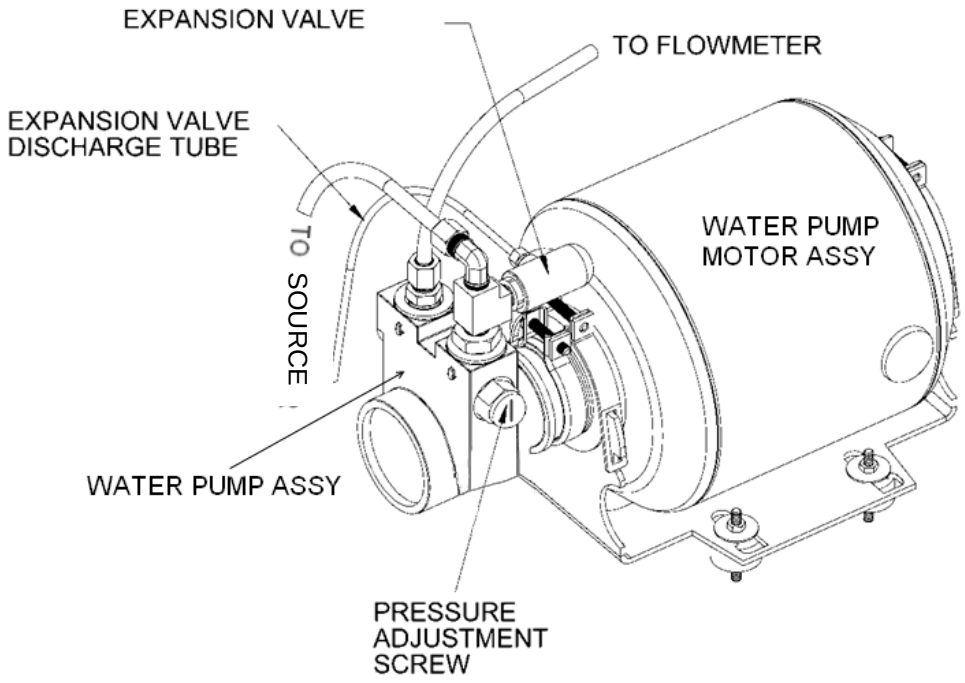
Prior to draining the water tank, the steam tank must be drained first. For instructions on draining the steam tank, please see page 5-15.

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.

Quick Tip

Viewing pump pressure

1. Navigate to **TEST ROUTINES > WATER PUMP**.
2. Activate the pump. The water gauge will display current pump pressure.

Expansion Valve

The expansion valve, located at the input side of the water pump, 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.

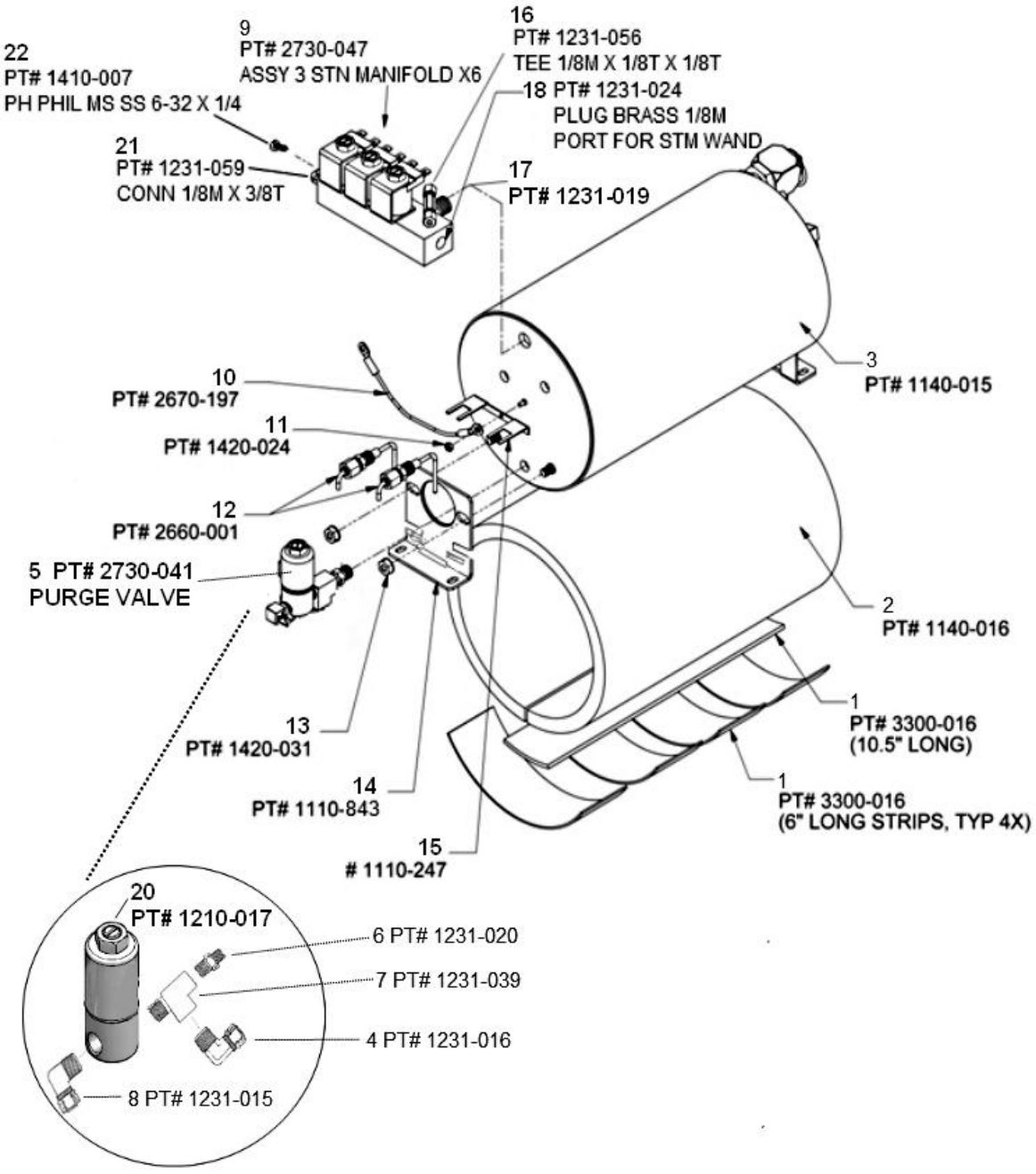
EXAMPLE: If the setting for a double espresso is 60mL and 60mL of water does not pass through the flowmeter within 60 seconds, the machine will time out and **CHK WATER FLOW** will appear on the machine’s display.

To troubleshooting this error message, please see the Check Water Flow troubleshooting tree in *Section 15: Troubleshooting*.

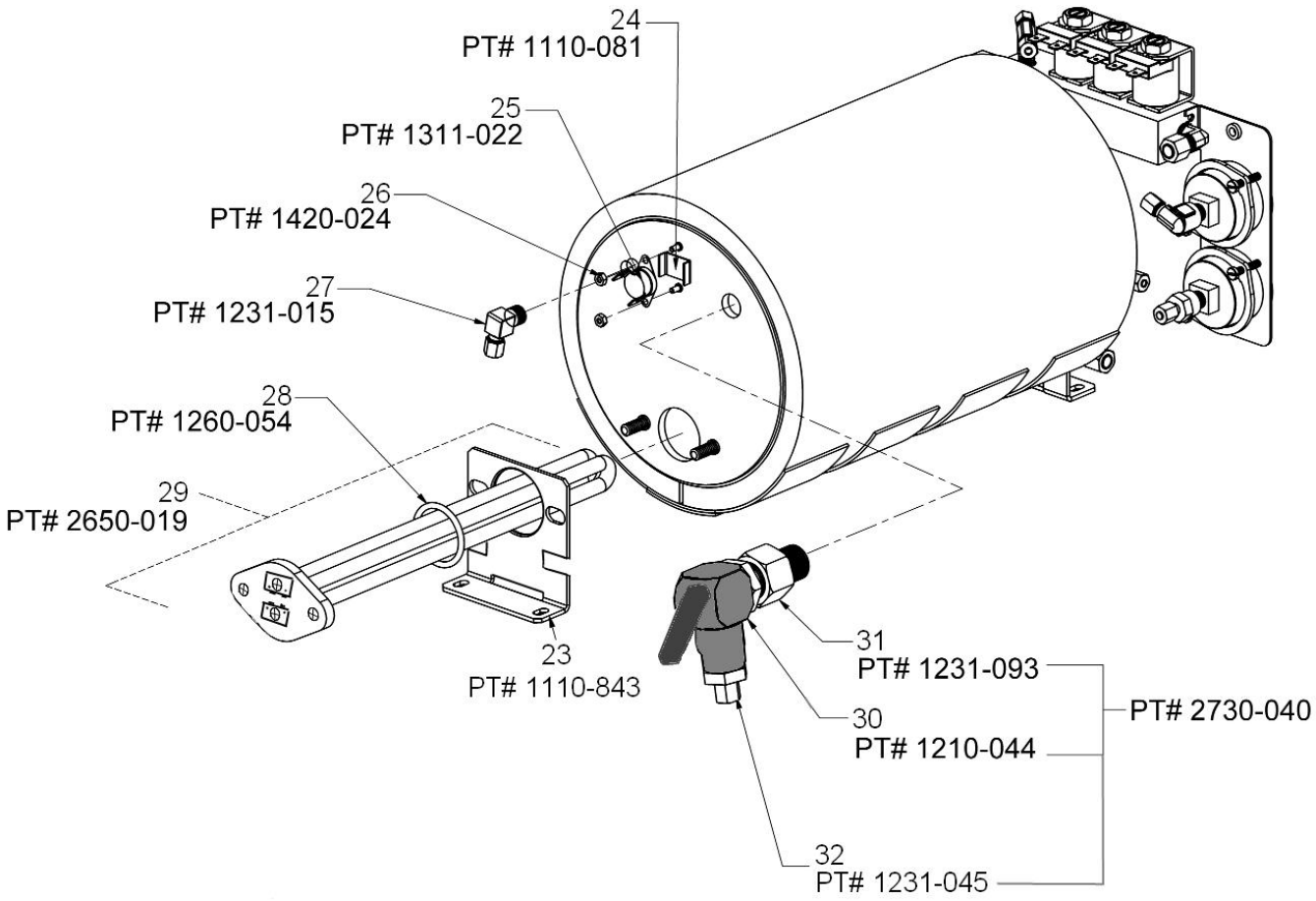
The Steam System

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 Xpress machine.

Steam Tank – Front View



Steam Tank – Rear View



Steam Tank Fill Valve

24Vdc, Solenoid type

The steam tank fill valve is located behind the steam tank and allows water to enter the steam tank.

Quick Tip

Verifying steam tank fill valve

1. Navigate to **TEST ROUTINES > STEAM FILL VALVE**.
2. Press the upper right arrow to activate the valve.

Steam Tank

Transducer

The transducer monitors the steam tank pressure. The transducer detects tank pressure, relates it to a DC voltage and transmits the voltage to the CPU. The CPU uses the information to regulate tank pressure and display an associated steam temperature. For example, 12.5psi equals approximately 244°F (118°C).

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. In **TEST ROUTINES**, the probes will read either dry or wet.

Quick Tip

Verifying the water level probes in the steam tank

1. Navigate to **TEST ROUTINES > UPPER STEAM PROBE**.
2. **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 two 1500 watt - 38 Ω (ohm) heating elements.

The heating elements are wired in parallel, so when reading the resistance you will see approximately 19 Ω. One pair of solid state relays control the voltage to the heating element.

Pressure Relief Valve

30psi

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.

NOTE: Do not use the safety relief valve to release pressure from the steam tank. This weakens the valve and will cause the valve to fail.

High Temperature Limit Switch

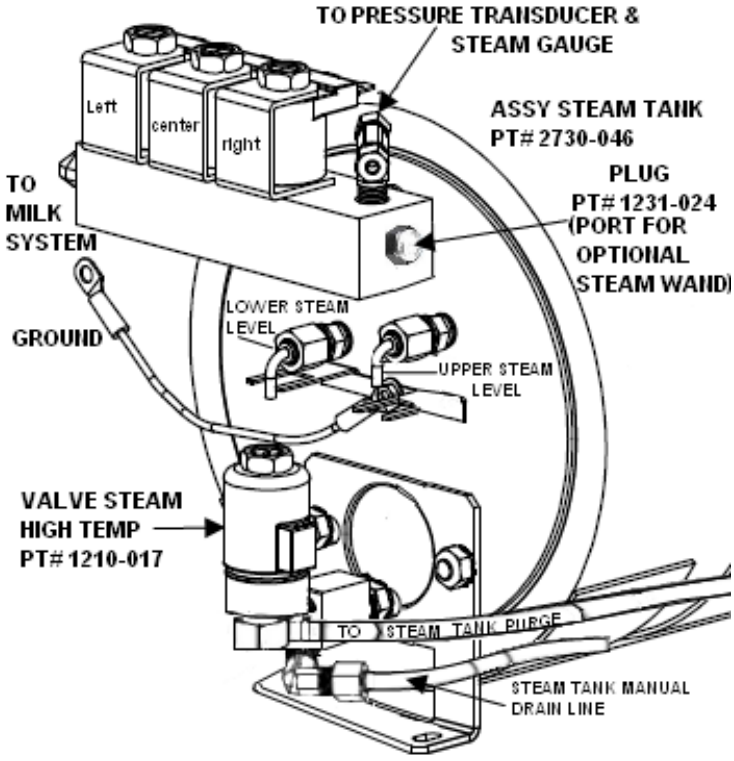
260°F (127°C)

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

The Xpress uses 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)

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 on the front of the steam tank, opens during each brew clean cycle, flushing 0.3 liters of water through the system and removing any sediment.

IMPORTANT: The steam tank purge valve is rated at 30psi. While this valve looks similar to the steam fill valve, it is not the same. These valves are not interchangeable. Be sure to verify the psi rating on the valve solenoid prior to replacement of either the purge valve or the steam fill valve.

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.

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Section 6 :: Coffee System

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

TECHNICAL SUPPORT

CONCORDIA

BEVERAGE SYSTEMS

The Coffee System

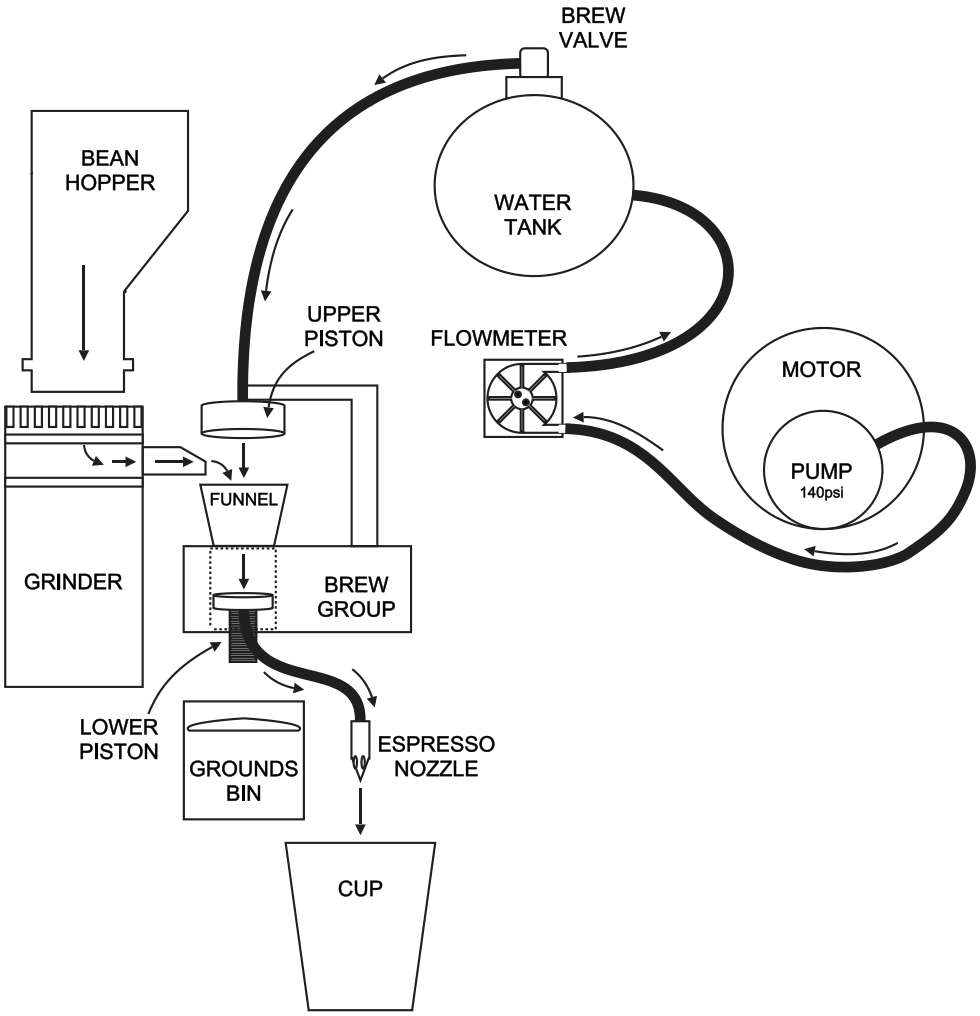
The process of delivering espresso into a cup begins with whole beans, stored in the bean hoppers, being fed to the grinders, ground to the desired consistency, and then delivered to the brew chamber within the brew group. Pressurized hot water is then introduced into the brew chamber where the coffee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

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

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 “espressed” 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.



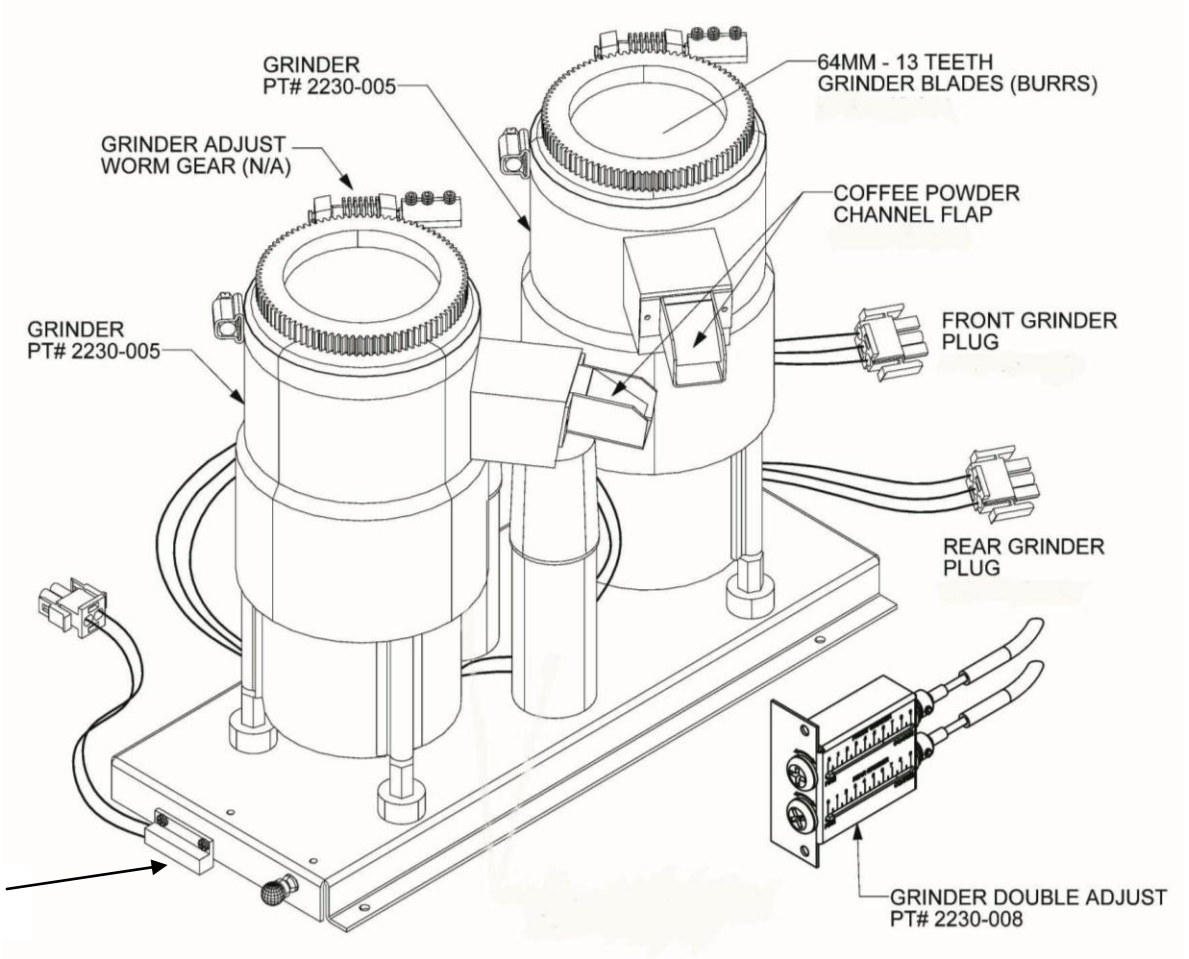
Grinders

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

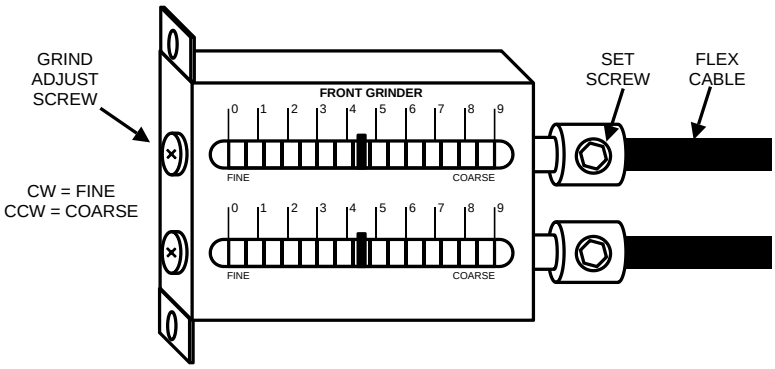
Over time, it may be necessary to adjust the grinder burr gap to ensure beans are ground to customer specification. The grinder adjustment panel is located behind the front panel. The grinder adjust screw is connected via cable to the grinder adjust worm gear located on each grinder.

When adjusting the grinder, turn the adjustment screw in ¼ 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.

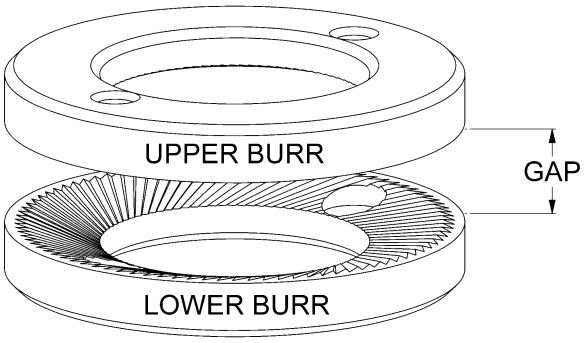
It is possible to calibrate the Xpress for two different types of espresso-roast beans or for one espresso-based drink and one brewed coffee. See the *Calibrating Brewed Coffee* topic on page 4-18 for instructions. The secondary espresso bean type or beans for brewed coffee should be stored in the DECAF 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 **GRIND ADJUST** arrows provide a visual display of the CPU monitoring the coffee powder dose. 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.

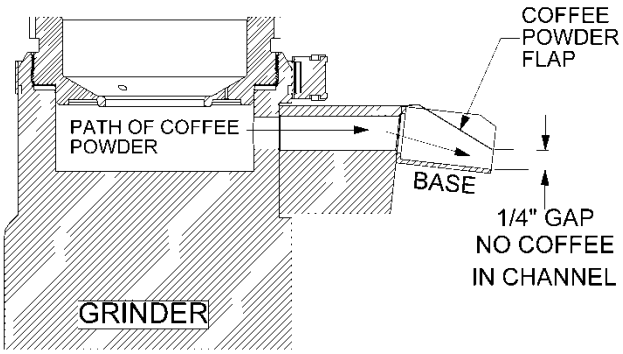
Quick Tip

Viewing the **GRIND ADJUST** arrows

1. Navigate to **COFFEE PWDR DOSE > GRIND ADJ ARROWS**.
2. Press the **INCREASE VALUE UP** arrow to turn arrows on.

Coffee Powder Channel

The gap between the coffee powder channel flap and the base is preset by the factory at 1/4” (6mm). If this flap is bent and the gap changes, the espresso extraction time will be negatively impacted.



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 and grounds chute.
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.

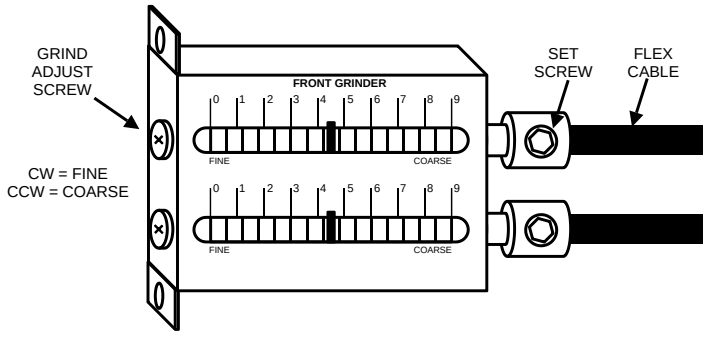
1. Insert the hopper stopper.
2. Remove the bean hopper(s).
3. Remove the top panel.
4. Open the front panel.
5. Unplug the grinder.
6. Loosen the band clamp and remove the grinder adjustment assembly.
7. Rotate the burr plate counter-clockwise until removed.
8. Remove and replace the burrs.
9. Install 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.

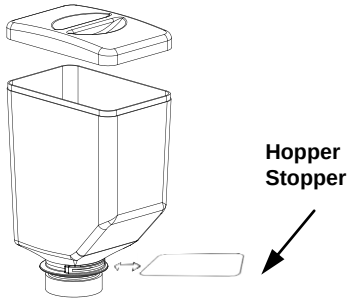
DO	Use fresh, whole, espresso roast beans.
DO NOT	Place ground coffee into the bean hopper.
DO NOT	Place foreign materials in the bean hopper.
DO NOT	Feed beans into the grinder by hand.

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

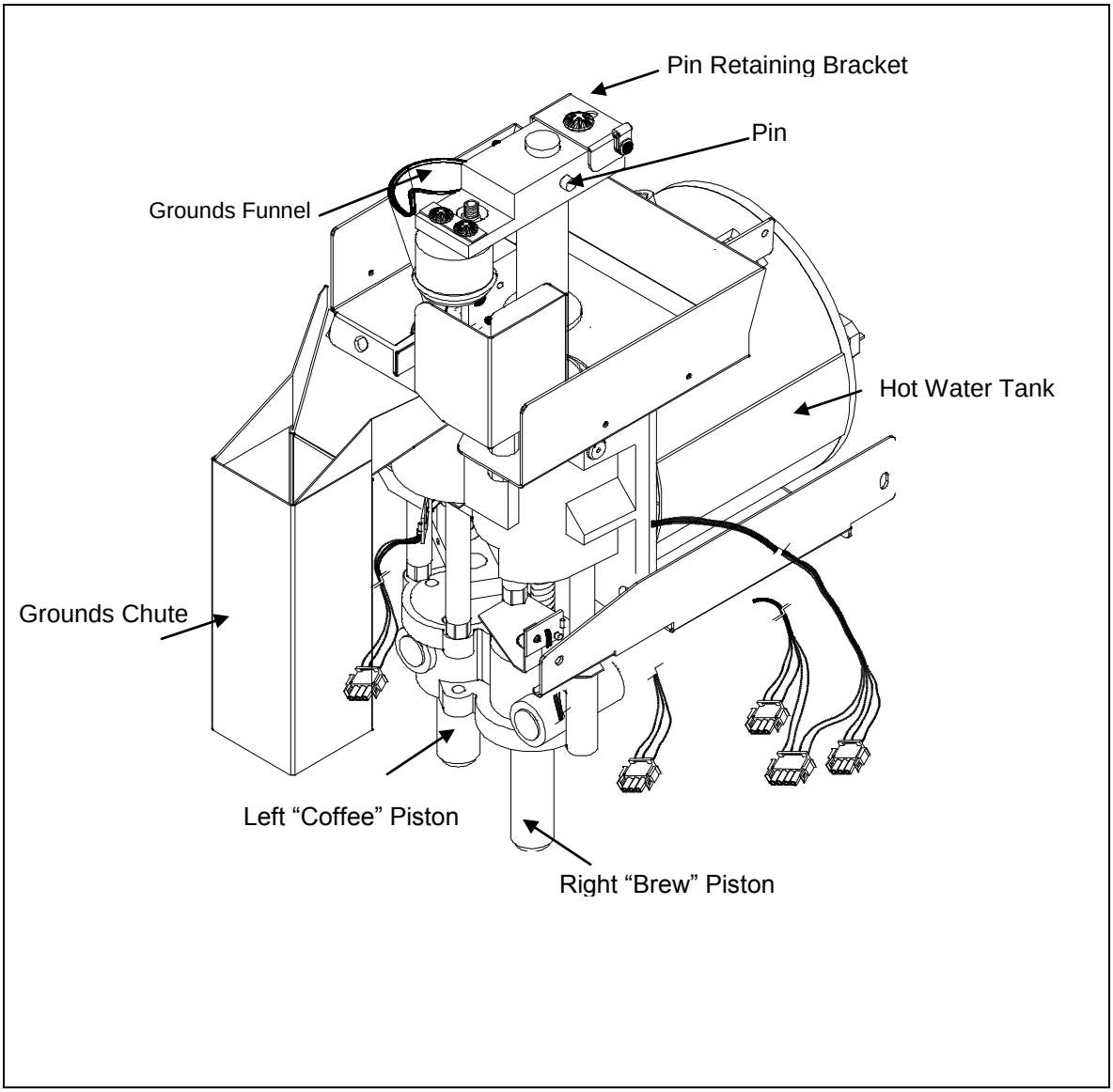
Once both hopper stoppers are in place, simply lift the bean hopper upwards.

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

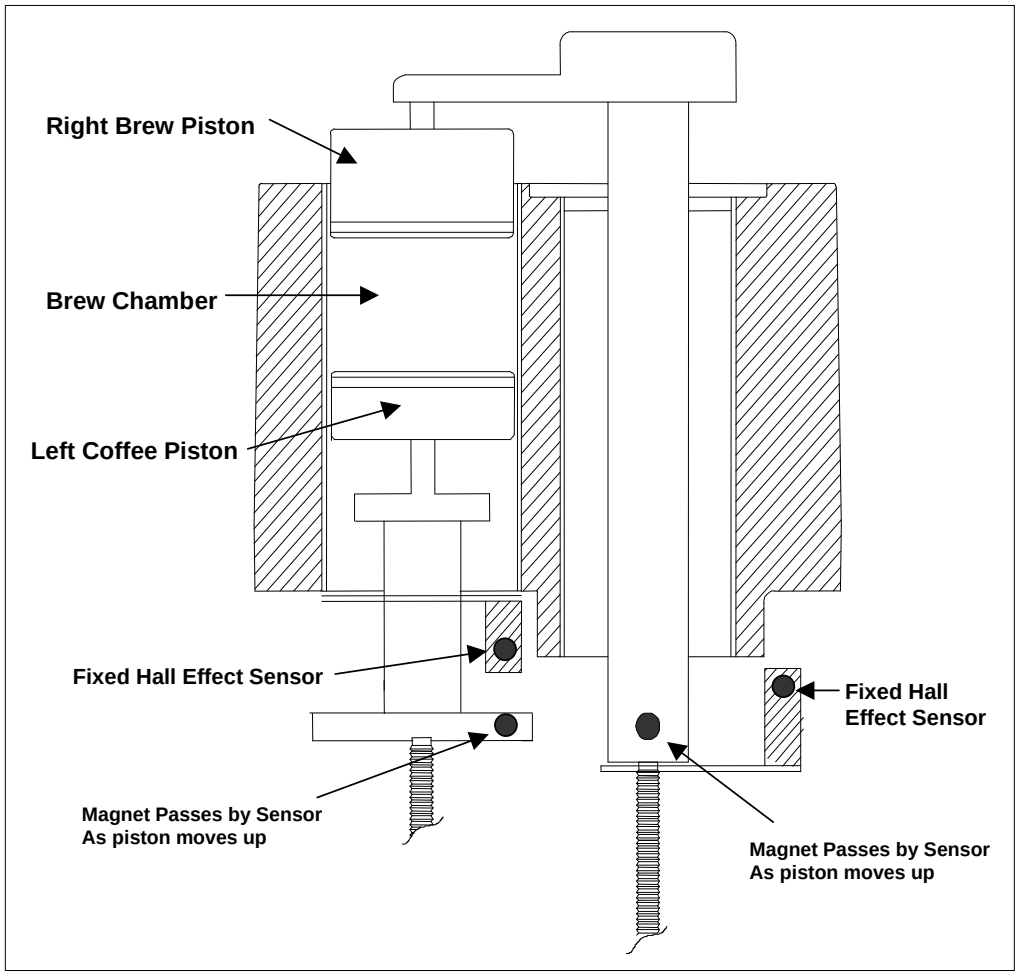
Hall-Effect sensors monitor the position of the pistons.

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

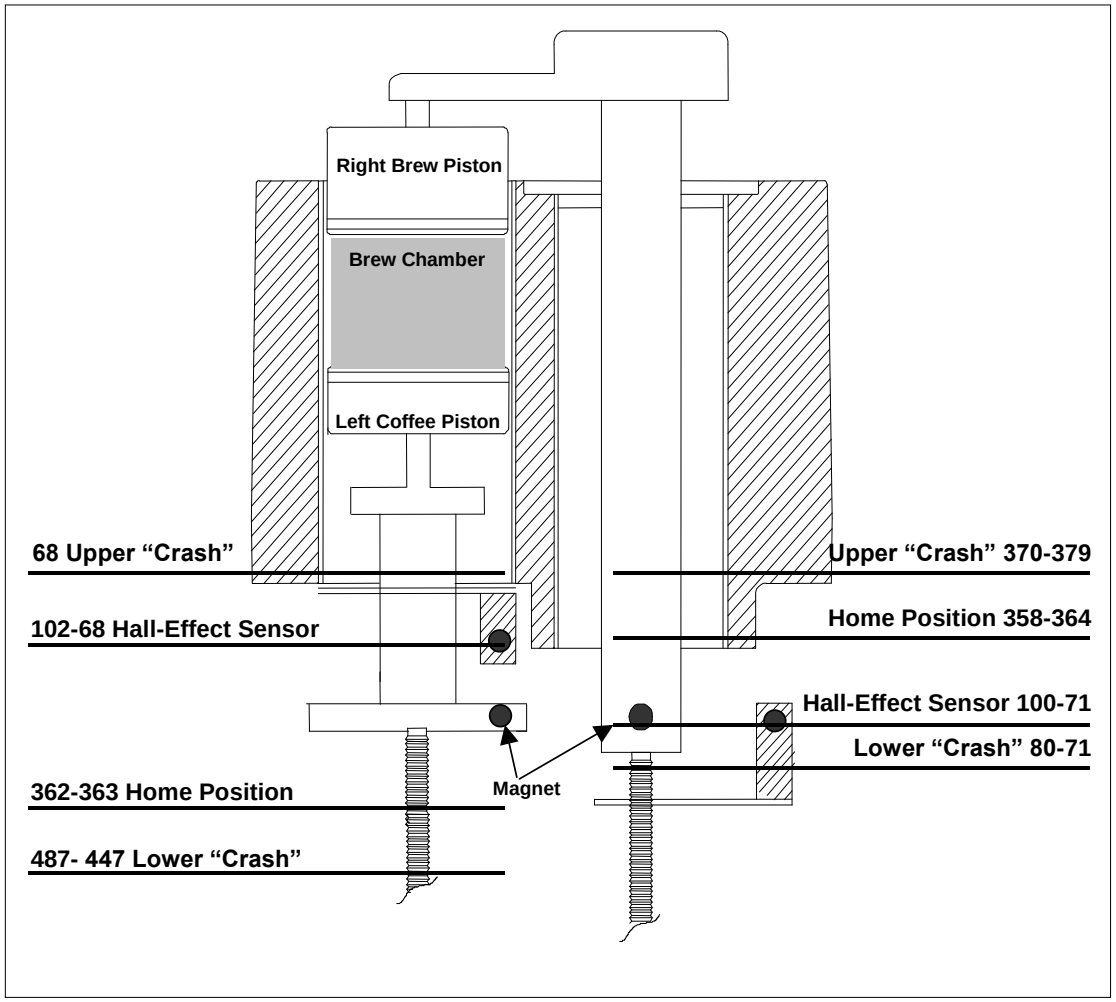
The right piston is also referred to as the brew piston or the upper piston. During an extraction, the brew water passes through this upper piston, through the ground coffee, through the coffee piston, and out of the brew chamber via tubing to be dispensed into the cup.

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 TEST ROUTINES



Viewing the Left Piston Movement

1. 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. Navigate to **TEST ROUTINES > LEFT DRIVE** and drive the lower piston up as far as it will go, then down 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. Navigate to **TEST ROUTINES** > **RIGHT DRIVE**. Drive the piston up 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. 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 8-9.
3. 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. 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. Navigate to **TEST ROUTINES > RIGHT DRIVE** and press the down arrow until the right spindle starts to feed into the gearbox.

   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 7 :: Milk System and Refrigeration Unit

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

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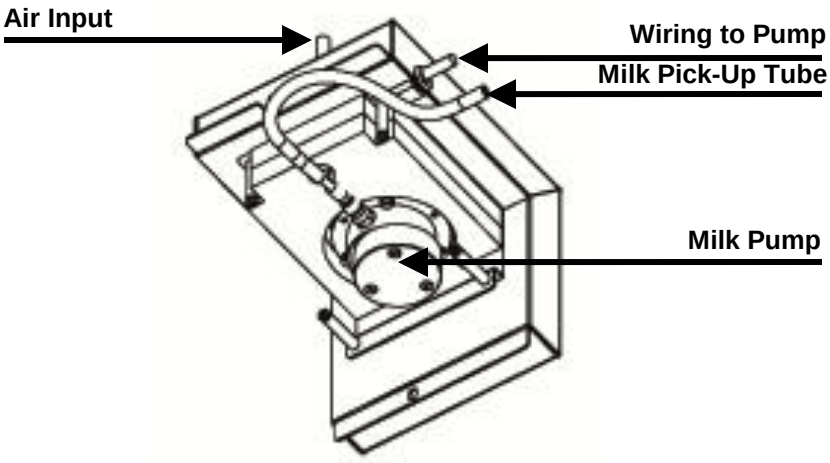
The Milk Delivery System

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 Tube

The milk pick-up tube transfers milk from the milk container in the refrigeration unit to 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.

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 241°F (116.1°C) is maintained by the steam tank during a latte or a steamed milk pour.

Foamed Milk Temperature Setting
The default temperature of 237°F (113.9°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.

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, navigate to **SET TEMPERATURES > STEAMED MILK** and 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).
3. If the temperature is above the optimal range, navigate to **SET TEMPERATURES > STEAMED MILK** and 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).
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, navigate **to SET TEMPERATURES > FOAMED MILK** and 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).
6. If the temperature is above the optimal range, navigate to **SET TEMPERATURES > FOAMED MILK** and 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).
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, navigate to **SET TEMPERATURES > FLAVOR OFFSET** and 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).
9. If the temperature is above the optimal range, navigate to **SET TEMPERATURES > FLAVOR OFFSET** and 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).

Milk System Capabilities

The Xpress milk system produces 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 **LARGE LATTE** will have no effect on the drink the machine will produce. The milk timing must be changed via the **MILK TIMINGS - HOT > DBL LG LATTE**.

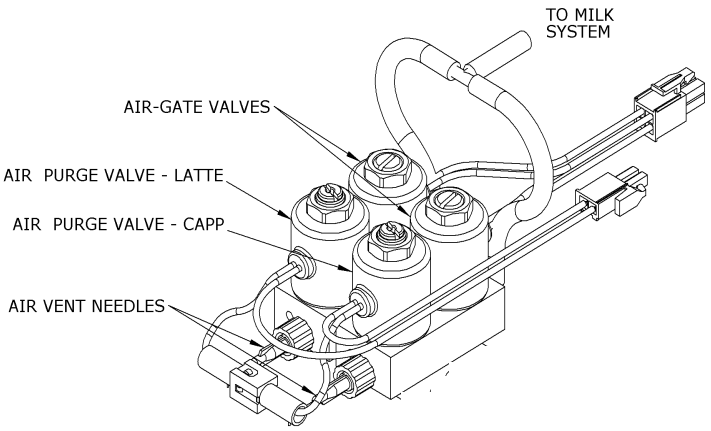
Air Gate Valve Assembly

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.

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 sends air 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 keypad, 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 5: 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”)

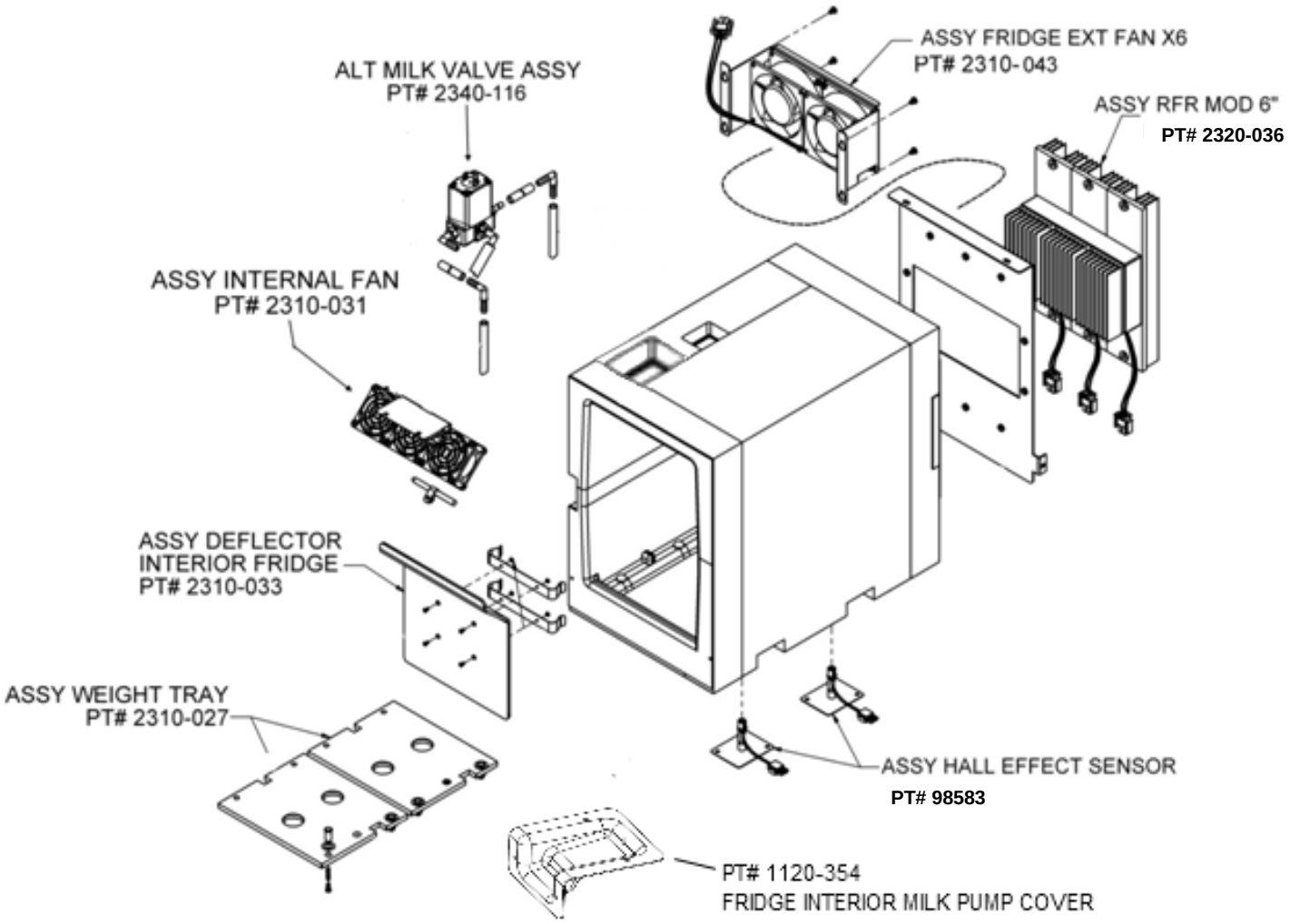
- During a latte pour, all three steam valves are activated and engaged.
- During a cappuccino pour, the left and right steam valves are activated and engaged.
- During a cold drink pour, only the left steam valve is activated and engaged.
- After a milk-based drink is poured, the left steam valve remains activated for 30 seconds, to clean out the tubing.

Mixing TEE Assembly

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

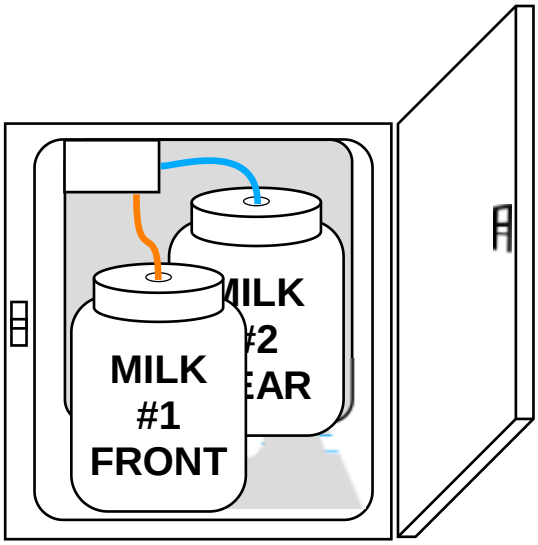
Refrigeration Unit Overview

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.



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

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

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

DO NOT pull excessively on milk pick-up tubes.

1. Repeat process using front milk pick-up tube and Milk #1 container.
2. Close refrigeration unit door.
3. Close the front panel and menu board.

Checking the Refrigeration Unit Temperature

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

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.

Quick Tip

Viewing the current (amperage) draw of the refrigeration/cooling module assembly

1. Navigate to **TEST ROUTINES > REFR CURRENT**.
2. The current amperage across the refrigeration chips is displayed
3. If the current reading is less than 10amps, it's possible one of the Peltier chips has failed

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.

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

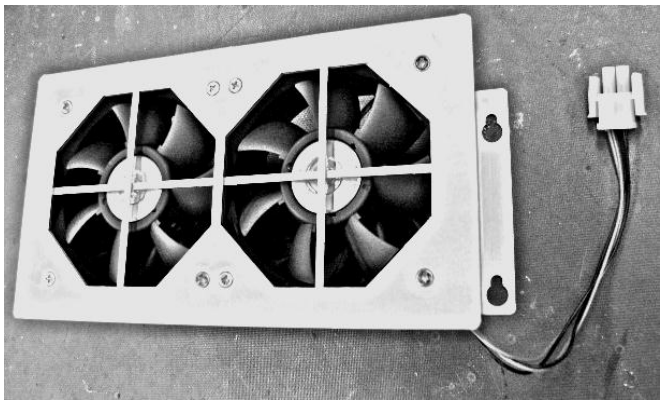
Operating Voltage: 24Vdc

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

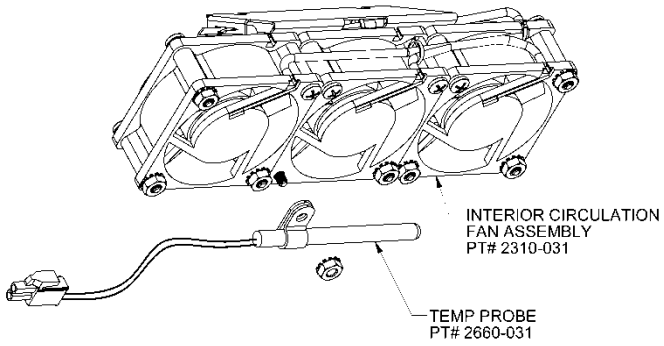
Operating Voltage: 24Vdc

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.

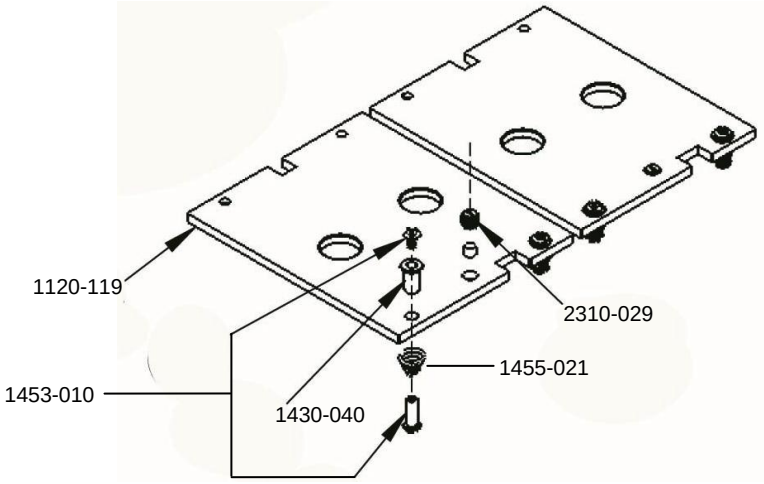
A single, large milk weight tray is available. This milk weight tray allows for two containers of a single type of milk to be used. If a large milk weight tray is in use, ensure that **SPECIAL FEATURES > SINGLE MILK AUTO SEL** is selected.

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.

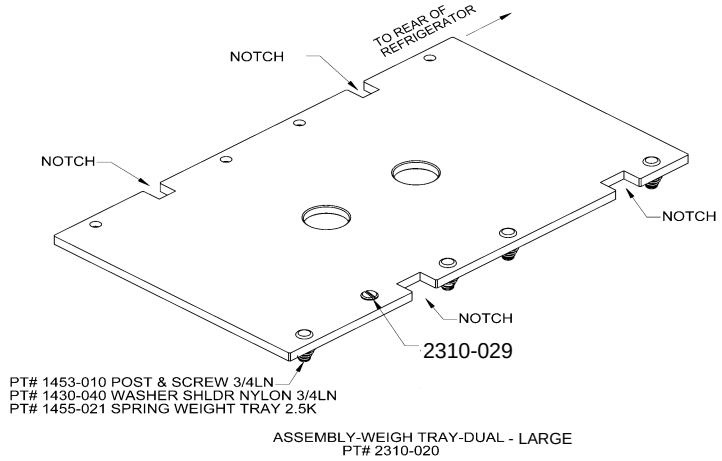
LOW MILK – FRONT	.25 gallon (.95 liter) of milk in front container remains.
NO MILK – FRONT	.10 gallon (.38 liter) of milk in front container remains.
MISSING FRONT TRAY	Tray sensors are not detecting the milk weight tray magnet. The milk weight tray is not installed correctly, is missing, or is incorrectly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



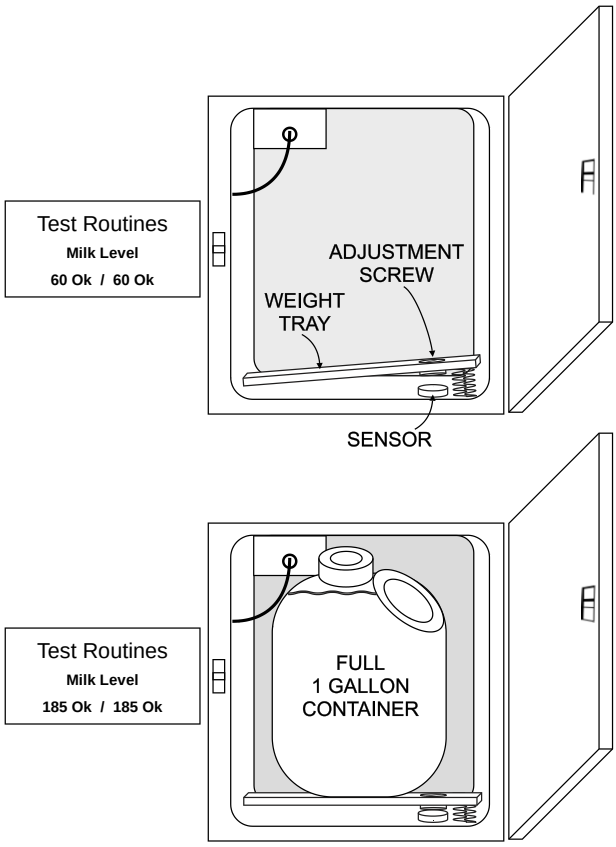
The milk weight trays are notched to ensure they are properly placed within the on-board refrigeration unit.

Adjustment to milk level monitoring can be done by adjusting the position of the magnet. The milk level set-point in **TEST ROUTINES** can be used as a reference.

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 in **TEST ROUTINES**.

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. Navigate to **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.

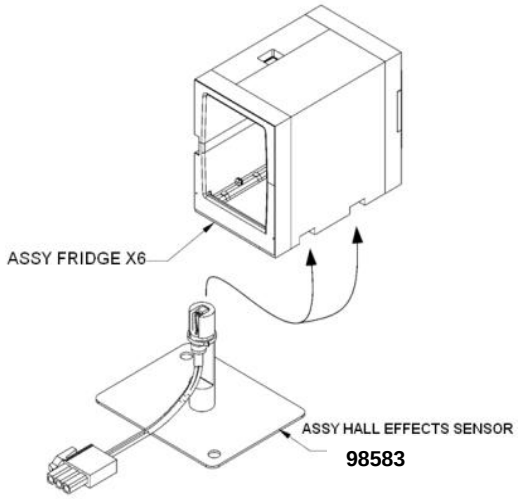
   NOTE: Ensure the milk weight tray is properly placed in the refrigeration unit, prior to making any adjustment.
5. Place a full milk container on the milk weight tray and verify the display reads 185±10.

   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.

The output signal is viewable in **TEST ROUTINES** for easy troubleshooting. An empty tray should be set to 60±1. A full gallon should read approximately 185±10.



Auto Milk Select

The Auto Milk Select feature can be enabled or disabled in the **SPECIAL FEATURES > MILK SYSTEM** category. **OFF** is the default setting for this feature.

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 LCD.
- If the front milk container is empty, **NO MILK-FRONT** is displayed on the LCD.
- 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.

Section 8 :: Steam Wands

1. Steam Wand Overview
2. Automatic Steam Wand
3. Automatic Steam Wand Wiring
4. Replacing an Automatic Steam Wand
5. Manual Steam Wand
6. Replacing a Manual Steam Wand
7. Installing a Steam Wand
8. Cleaning a Steam Wand

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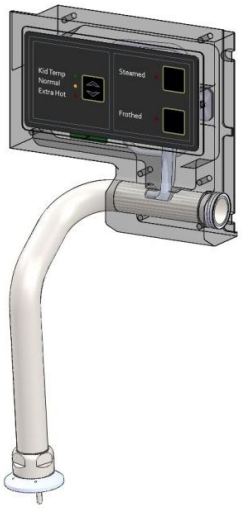
Steam Wand Overview

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

There are two types of steam wands available: the manual steam wand and the automatic steam wand. The manual steam wand uses a knob to control the flow of steam and the automatic steam wand has a touch pad for selecting the temperature and type of steam.

Automatic Steam Wand

The automatic steam wand allows a customer to select the heat and type of steam for their drink.



Automatic Steam Wand Theory of Operation

When a steam wand selection is made, steam will begin to flow through the wand and the system will begin to monitor and display the milk temperature. The temperature is displayed on the top line of the Xpress machine display.

When a frothed selection is chosen, air will be introduced near the tip of the steam wand to produce frothed milk.

When the milk reaches the preset temperature the steam flow will terminate.

If steam wand operation and automated milk beverage are simultaneously selected the automated milk beverage will be created and the steam wand will be disabled.

The steam wand function will allow automated coffee and espresso production to occur simultaneously.

The system is capable of producing three temperature selections for both steamed milk and frothed milk

Automatic Steam Wand Selections

To select a temperature for steamed or frothed milk, press the arrow button until the desired temperature selection lights up. The liquid in the steam pitcher will be steamed or frothed until it reaches the programmed temperature for that setting. The high/low temperature settings are listed in the *Software Quick Reference Table* in *Section 4: Software*.

KID TEMP + STEAMED
A reduced temperature steamed milk will be poured.

KID TEMP + FROTHED
This selection will create reduced temperature frothed milk.

NORMAL + STEAMED
This selection will create industry standard temperature steamed milk.

NORMAL + FROTHED
This selection will create industry standard temperature frothed milk.

EXTRA HOT + STEAMED
This selection will create above standard temperature steamed milk.

EXTRA HOT + FROTHED
This selection will create above standard temperature frothed milk.

Press any steamed or frothed option button to end the manual steam process.

Automatic Steam Wand Programming

Navigate to the **STEAM WAND** software menu to complete the following tasks:

1. Enable or disable the steam wand.
2. Verify the **KID TEMP** steamed milk temperature is 130°F (54°C).
3. Verify the **KID TEMP** frothed milk temperature is 130°F (54°C).
4. Verify the **NORMAL** steamed milk temperature is 160°F (71°C).
5. Verify the **NORMAL** frothed milk temperature is 160°F (71°C).
6. Verify the **EXTRA HOT** steamed milk temperature is 175°F (79°C).
7. Verify the **EXTRA HOT** frothed milk temperature is 175°F (79°C).
8. Verify the frothed milk-air percentage is 55 percent.

The **FROTH AIR START** setting determines the amount of air used in the production of frothed milk.

Air Pump

Operating Voltage: 24Vdc

The air pump assembly adds a metered quantity of air to achieve frothed milk. It is located inside the refrigerator door assembly.

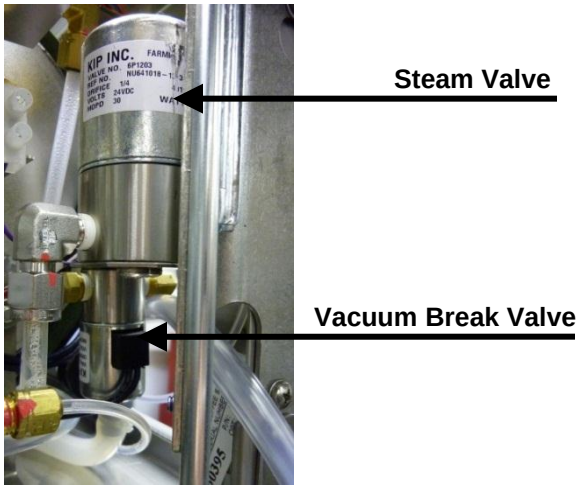
Steam and Vacuum Valve Assembly

Operating Voltage: 24Vdc

The steam valve provides steam to the steam wand.

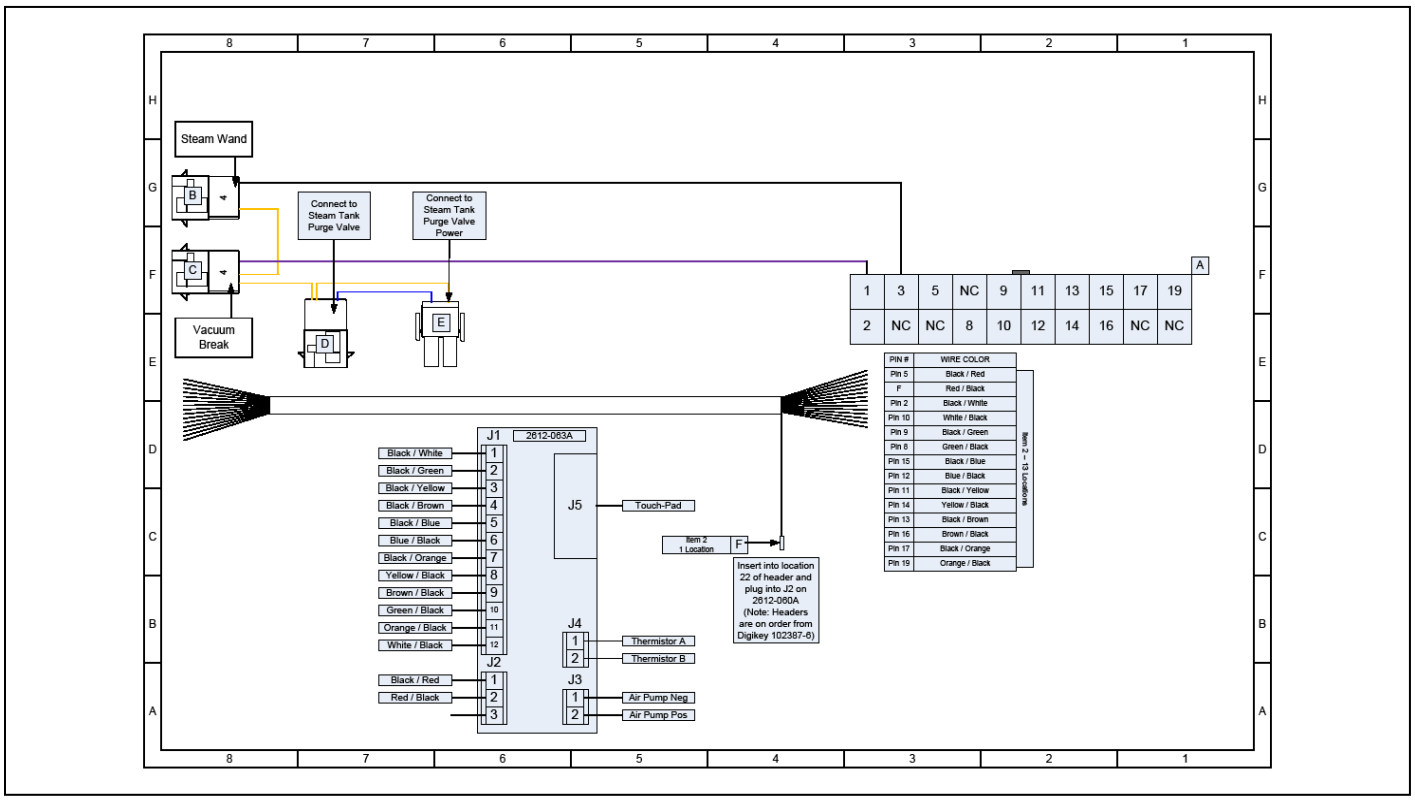
The vacuum break valve prevents milk from entering the steam system by opening the steam line to atmosphere after the steam cycle is complete.

These valves are located behind the front panel. They are attached to the interior from on the right side of the machine. To remove and replace these valves, it is necessary to first remove the right side panel.



Automatic Steam Wand Wiring

The steam wand wiring is designed to pass through the refrigerator door hinge to connect the touch-pad, air pump, and LEDs. The harness also connects the steam and Vacuum break valves to the control system and to the steam tank purge valve to provide the 24Vdc for the valves.



Replacing an Automatic Steam Wand

Typically, to replace an automatic steam wand, the entire right door of the machine must be replaced.

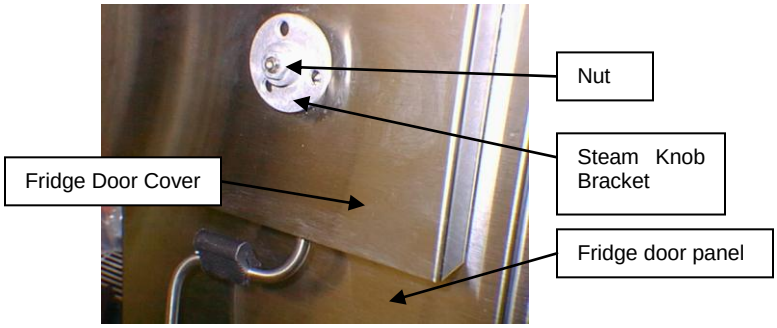
Call Concordia Beverage Systems for assistance at 1-800-778-0990.

Manual Steam Wand

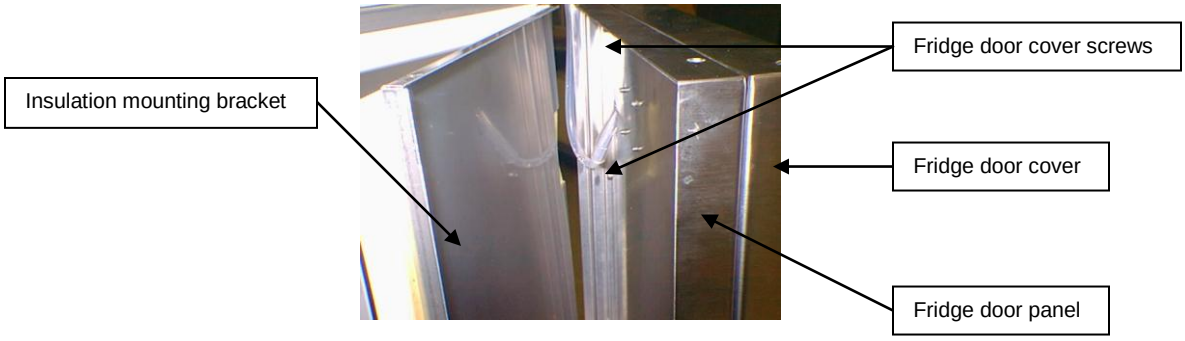
A knob controls the flow of steam on the manual steam wand.

Replacing a Manual 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.

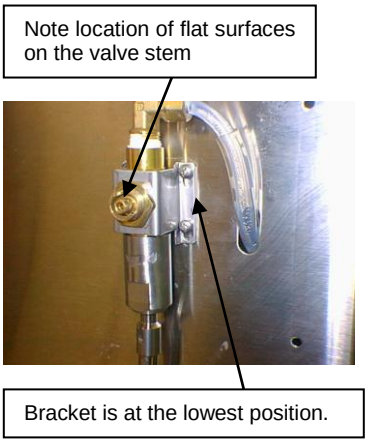


6. Remove the steam wand knob bracket, and then discard.
7. Remove the refrigerator door panel by removing the screws. Use a #1 Phillip’s screwdriver.
   IMPORTANT: Remove screws carefully to prevent stripping of the screw heads.
8. Separate the insulation-mounting bracket from the fridge door panel. 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.



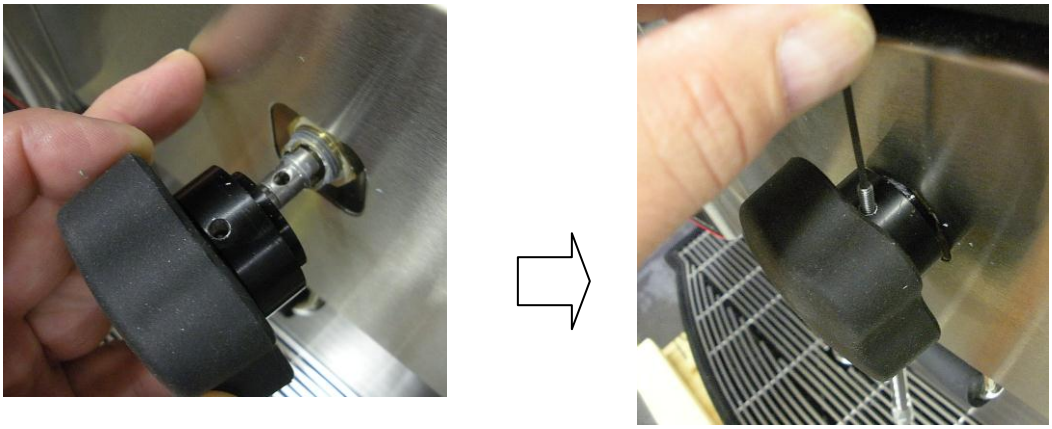
10. Unfasten the PFA tubing at the elbow fitting. Use a 1/2" wrench.
11. Remove the four screws attaching the steam wand bracket. Use a #1 Phillip’s screwdriver.
    NOTE: Do not discard these screws.

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.

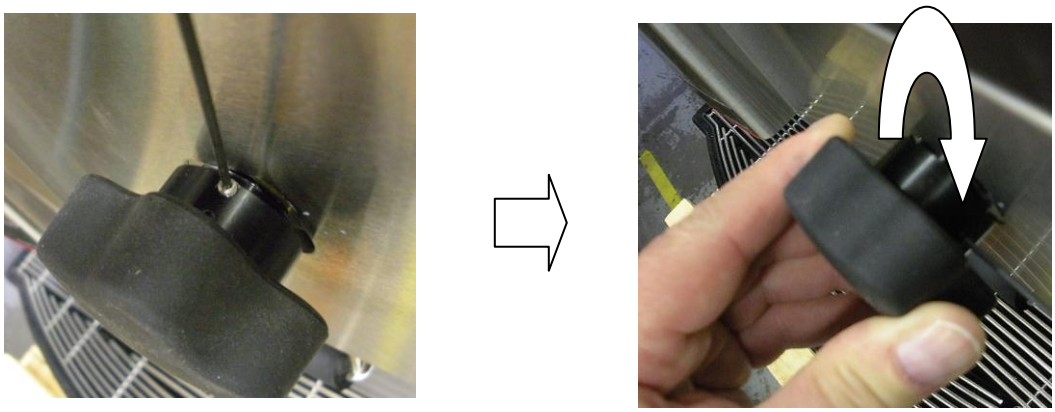


13. Align the steam wand valve in the center opening on the refrigerator door cover. Tighten the tube fitting onto the elbow.

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.

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

Both types of 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 automatic steam wand, please see the steam wand cleaning card (PN 2900-316) that comes with the machine.

To clean the manual 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 Rinzer cleaning tablets (PN 3400-031) is also an option – just follow the instructions on the Rinzer 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.

Section 9 :: Flavor System

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

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The Flavor System

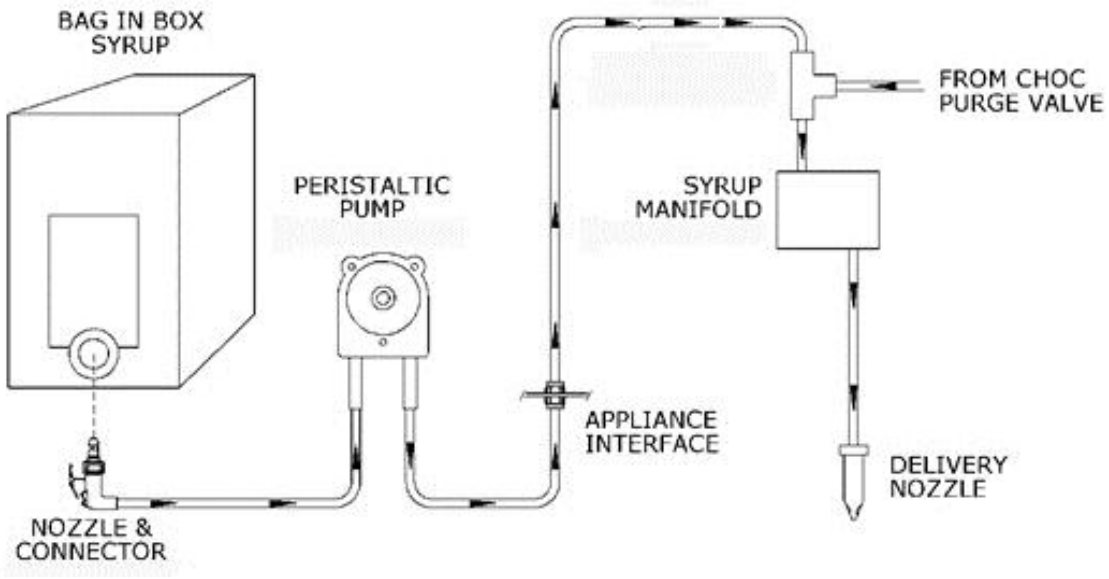
The Espressjet® flavor delivery system delivers syrups and sauces into the cup by using peristaltic pumps to move the product from the flavor box, through the flavor tube, to a poppet valve, and then to the product delivery assembly. The amount of time the pump and valve operate is adjustable in the **FLAVOR TIMINGS** sub-category of 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.

Chocolate Sauce Delivery Path

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

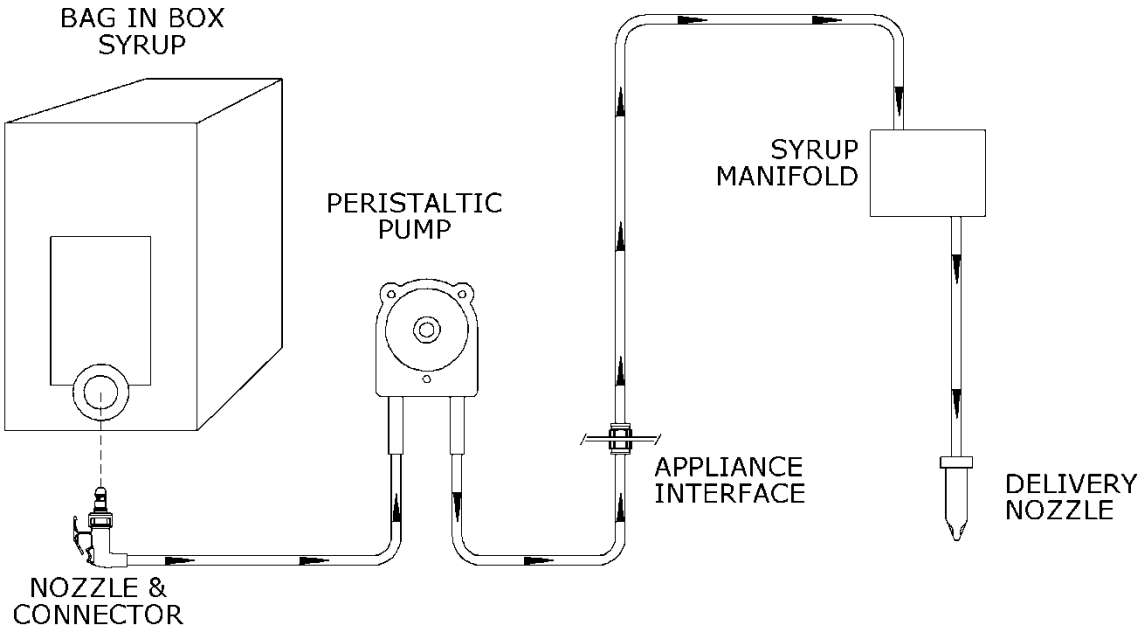
Chocolate sauce flows from the flavor box, through the chocolate sauce tube and into the chocolate poppet valve. Once the flow of chocolate sauce ends, the chocolate poppet valve closes. Milk continues to flow into the syrup manifold, to mix the chocolate sauce with the milk and to flush residual chocolate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

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

Flavor Storage Area

Boxes of syrup can be laid flat on the floor of the flavor storage area and they can be stacked one atop another. Boxes of chocolate sauce are placed on a chocolate heater assembly, and chocolate sauce boxes must be placed side-by-side.

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.

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 installation of the Xpress.

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

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

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. Using a wet cloth, moisten the o-ring on the nozzle.
5. Insert the nozzle into the connector, until it clicks.
6. Purge flavor tube (to remove all air from the flavor bag and the flavor tube).

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.

Changing the Flavor Pour Rate

1. Place a measuring cup under the product nozzle.
2. Press the service switch into the **CLEAN** position.
3. Press the **PROGRAM** button three times.
4. Navigate to **FLAVOR TIMINGS**.
5. Press the **PROGRAM** button once, and then scroll to the desired flavor.
6. Press the upper right arrow to increase the amount of flavor or press the lower right arrow to decrease the amount of flavor.
7. Press the **PROGRAM** button once to exit the **FLAVOR TIMINGS** category.
8. Press the **CANCEL** button to exit the menu system.
9. 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. The adjustment to the milk pour time is controlled in the **FLAVOR TIMINGS** sub-category by the values **SMALL 1-FLAVOR ADJ**, **SMALL 2-FLAVOR ADJ**, **LARGE 1-FLAVOR**, **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.

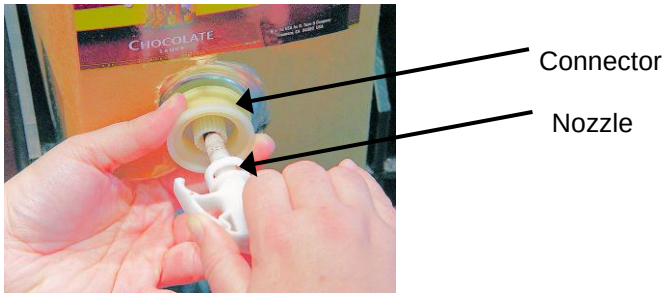
Changing Flavor Boxes

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. Open box at the “OPEN HERE” location, and extract the connector.
2. Remove protective seal from the connector.
3. Clean the nozzle and o-ring thoroughly with a wet cloth, to remove any debris, provide lubrication, and remove syrup or sauce residue.

   NOTE: Re-inserting a dry o-ring may result in leaks.
4. Hold connector firmly with hand.
5. 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.

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 **FLAVOR TIMINGS** sub-category of the software menu.

When replacing the pump or tubing, be certain to correctly route the tubing, to ensure proper flow. Also, verify tubing is not twisted or binding.

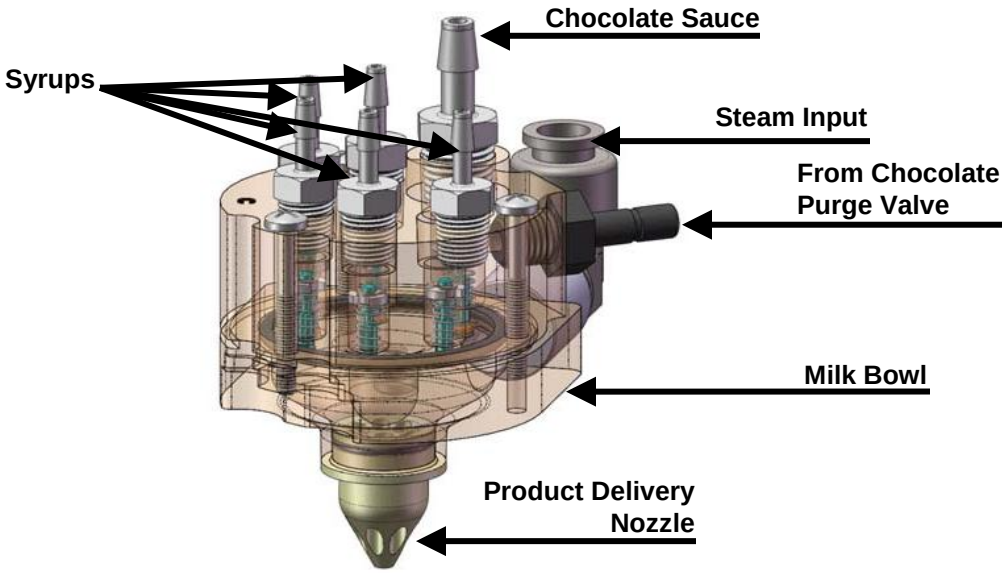
There is a dedicated peristaltic pump for each flavor, for a total of six pumps.

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. The color-coding scheme is consistent throughout the flavor delivery system and must be followed to prevent cross-contamination of syrup tubes.



Chocolate Rinse Purge Valve

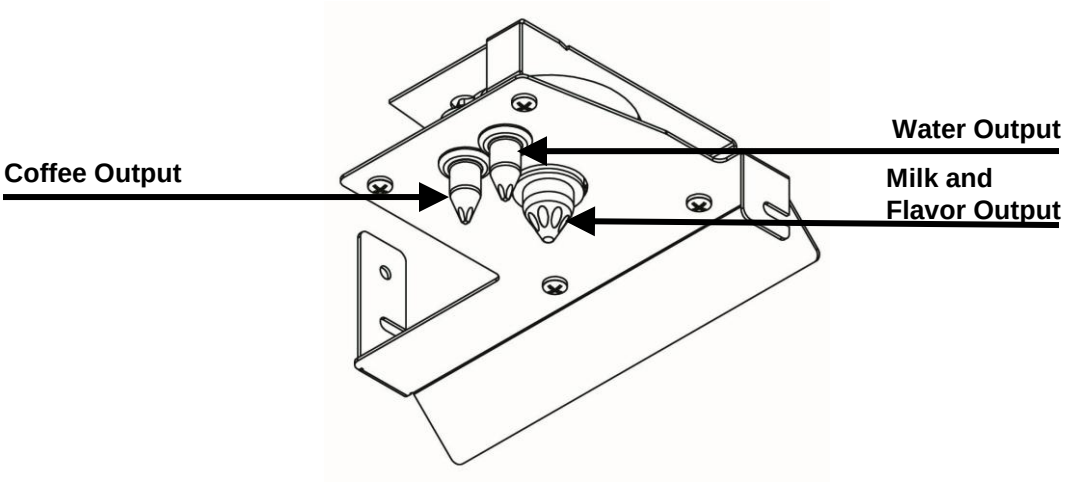
After a drink with chocolate sauce is poured, water is introduced to rinse the chocolate poppet valve, to prevent chocolate sauce build up on the poppet o-ring, which can cause it to leak.

Milk Bowl

Both the Xpress and Xpress 6 machines have a 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 9-10 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.
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 9-12 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.

1. Press the service switch into the **CLEAN** position.
2. Place an open half-gallon container under the product outlet and press the **HOT WATER** button on the right door to fill the container with hot water. If the machine has a steam wand, navigate to **TEST ROUTINES > HOT WATER VALVE** and press the upper right arrow to fill the container with hot water.
3. Mix two packets of **CLEANER #1** into the container of hot water. Stir until cleaner is dissolved.
4. Disconnect the flavor tube nozzles from the flavor boxes and place them in the **CLEANER #1** cleaning solution.

   NOTE: To maintain a clean workspace, place a clean cloth under the flavor box connectors to catch any drips.
5. Enter the software menu and navigate to **MISCELLANEOUS > RUN SYRUP CLEAN**. Press the upper right arrow button to start the syrup clean process.

   NOTE: Ensure all flavor tube nozzles remain completely submerged during the cleaning cycle.
6. Once the cycle completes, place the flavor tube nozzles on a clean towel, and then empty and rinse the container.
7. Refill the container with hot water as in step 2 above.

8. Mix two packets of **CLEANER #2** into the container of hot water. Stir until cleaner is dissolved.
9. Place the flavor tube nozzles into the **CLEANER #2** cleaning solution.
10. Run the **RUN SYRUP CLEAN** process.

    NOTE: Ensure all flavor tube nozzles remain completely submerged during the cleaning cycle.
11. Once the cycle completes, place the flavor tube nozzles on a clean towel, and then empty and rinse the container.
12. Refill the container with hot water as in step 2 above.
13. Place the flavor tube nozzles into the container with the hot water.
14. Run the **RUN SYRUP CLEAN** process.

    NOTE: Ensure all flavor tube nozzles remain completely submerged during the cleaning cycle.
15. Once the cycle completes, place the flavor tube nozzles on a clean towel, and then empty and rinse the container.
16. Run a milk clean cycle (see milk clean instructions).
17. Once the milk clean cycle is complete, wipe the product nozzle with a clean cloth soaked in a sanitizer approved by your State and Local Health Department regulations. Spraying the solution onto and around the nozzle and then wiping it down with a soaked clean cloth is quite effective.
18. Reconnect the flavor tube nozzles to the appropriate bag-in-box flavors.
19. Prime the syrup system. See the *Priming the Flavor Delivery System* topic on page 9-12 for instructions.

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 (e.g. caramel is replaced by almond)

  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. Navigate to **MISCELLANEOUS > RUN SYRUP CLEAN** and follow the screen prompts to begin the syrup clean cycle.

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

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

   NOTE: If flavor is not present at this point, run the **RUN SYRUP CLEAN** 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.

The Flavor Delivery System Priming Process (Manually)

To manually prime an individual syrup tube, navigate to **TEST ROUTINES > SYRUP** and press the appropriate syrup button on the touch pad menu. Press and hold the flavor button until the flavor comes out continuously and smoothly.

If you are purging a flavor tube because of an air bubble, continually press the appropriate flavor button until the air bubble passes. You will know when this happens because the flavor will splutter, and then run continuously and smoothly.

Section 10 :: Vending

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

TECHNICAL SUPPORT

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. Navigate to **SPECIAL FEATURES > VENDING** and ensure the vending option is disabled.

Troubleshooting

If a vending unit is not functioning as expected, first try rebooting the power to the machine.

If a vending unit is installed but does not appear to be working, navigate to **SPECIAL FEATURES > VENDING** and ensure the vending option is enabled.

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

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Section 11 :: Cleaning and Maintenance

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

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BEVERAGE SYSTEMS

Daily Maintenance

In order to avoid mechanical failure and maintain cleanliness, the Xpress espresso machine 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. Clean the milk system.
2. Clean the brew group.
3. Empty the grounds bin.
4. Clean the drain grate and drain tray.
5. Clean the exterior surfaces.
6. Clean the interior of the refrigeration unit.
7. Refill beans, milk, and flavors.
8. Clean the product delivery nozzle.

Monthly Maintenance includes:

1. Check the air filter; replace if necessary.
2. Clean the bean hoppers.
3. Replace the upper piston o-ring, and then reset the o-ring counter.

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.

Concordia Cleaning Products

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

The cleaning kit 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 30,000 drinks, the message **REQUEST PM** will be displayed on the message screen.

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

Navigate to **MISCELLANEOUS > RESET PM** to reset the PM counter.

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Section 12 :: Concordia Procedures

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

TECHNICAL SUPPORT

CONCORDIA

BEVERAGE SYSTEMS

Service Call Process

The following steps should be taken on every service call dispatched by Concordia.

Arrival to Site

- Park in a space that will not impede customers from visiting the business you are servicing.
- Find the primary contact listed on your call. If possible, contact the caller identified on your service call. Ensure you close out your service call with the same contact.

Machine Repair

- Determine the repair necessary and complete service on the machine.
- Do not spread tools and parts around in the business.
- Respect the customer's business while you repair their machine.
- Record current quantity on hand of Concordia cleaning products; recommend ordering or signing up for auto-shipment of cleaning products if account is low on supplies.
- Repair identified problem, if you have any questions about repairing the machine, call Concordia Beverage Systems for assistance at 1-800-778-0990.
- Follow Concordia's Complete Call Protocol, ensuring all aspects of the machine are functioning.

Hold for Parts Procedures

- When the machine cannot be repaired due to part needs, every effort should be made to leave the machine functioning.
- Verify parts availability and communicate estimated return date/time to the customer.
- If a machine is not operational, ensure parts are ordered Next Day Air.

Departing from Site

- Review with customer the service provided and items repaired.
- Review future troubleshooting procedures, any possible preventative maintenance the customer may perform, and review the daily cleaning procedures.
- Obtain customer signature on work order.

Required Immediately for Call Closeout

- Complete the **SERVICE CALL CHECKLIST** and fax or email it to Concordia Beverage Systems.
- Closing a service call requires the following information: Time Started, Time Completed, and Service Codes for the repair.

Complete Call Protocol

On each service call, Concordia requires the entire machine be inspected to ensure continued operation.

Machine Appearance

- Interior/exterior clean

Milk System

- Cleanliness: **ZERO INTERNAL BUILD-UP**
- Calibration: Proper temperatures and levels

Brew Group

- Lower piston leakage: evidence would be indicated by espresso on the gearbox
- Piston travel times: Using **TEST ROUTINES**, from lower to upper crash should require no more than 15 seconds
- Condition of lower piston microscreen: No tears or holes
- Free-play of right drive: No more than 1/8"/.38cm side to side

Water Tank

- Operating temp: ± 1°F (.5°C) of temperature setting

  NOTE: The temperature setting should be the highest setting for either the latte or cappuccino setting, *plus* the setting of the flavor offset temperature. For example, if the latte setting is 242°F (117°C) and the cappuccino setting is 243°F (117°C), and the flavor offset temperature is 3°F (-16°C), then the steam temperature would be 246°F (119°C).
- Check for leakage

Water Pump

- Set to 135-140psi

Steam Tank

- Operating temperature: ± 2°F (1°C) of temperature setting
- Leakage: none
- During latte pour, pressure should not drop below 8psi.

Refrigeration Unit

- Operating temperature: No higher than 39.9°F (4.4°C)
- AMP Draw: 11-13amps
- Condition of filter
- Cleanliness

Espresso Extraction

- Double extraction time of 18-23 seconds
- Single extraction time of 15-18 seconds
- Triple extraction time of 23-30 seconds
- Pour temperature of 175°F (79°C) ± 10°F (6°C)

Milk Pour

- Latte temperature: 160°F (71°C) ± 5°F (3°C)
- Cappuccino temperature: 155°F (68°C) ± 5°F (3°C)

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:

BREW GROUP (2500s/i, X0, X6)

□ Verify exterior of unit is clean.
□ Verify interior of unit is clean.

BREW GROUP (1500s/i, Integra 0, 1, 4)

□ Verify cleaning kit is available. **YES** / **NO**
□ Perform milk clean cycle.
□ Perform brew clean cycle.

MILK PUMP & DRINK TEMPERATURES

Run a latte and verify the following:
□ Milk flows properly from milk dispensing nozzle.
□ No milk debris in air gate tubing and delivery tubing.
□ No milk remains in pickup tubes after drink.
□ Latte temperature: 160°F/71°C ± 5°F/3°C

Run a cappuccino and verify the following:
□ Milk flows properly from milk dispensing nozzle.
□ No milk debris in air gate tubing and delivery tubing.
□ Verify cappuccino steam adjust is properly set.
□ Cappuccino temperature: 155°F/68°F ± 5°F/3°C

BREW GROUP (2500s/i, X0, X6)

□ No lower piston leakage, no espresso debris on gearbox.
□ Use **TEST ROUTINES** to measure piston travel time (from lower to upper crash point should be under 15 seconds or less).
□ Crash points within service manual tolerances.
□ No holes or tears in lower piston micro-screen.
□ Upper piston sieve undamaged.
□ No more than 1/8" side-to-side free play in right drive.

BREW GROUP (1500s/i, Integra 0, 1, 4)

□ No holes or tears in upper and lower piston microsceens.
□ Lower piston bushing seals chamber properly.
□ Replace upper piston o-ring if side is flat. Ensure customer has more o-rings.
□ Lower piston position at bottom of chamber when upper piston is in home position.
□ Verify the brew group heating element wiring is clear of piston springs.
□ Sweep arm undamaged, rides smoothly over sweep plate.

WATER PUMP SETTINGS

□ Set to 140psi ±5% while dispensing double espresso.

ESPRESSO CALIBRATIONS (Recipe may vary, always consult manager before adjusting)

□ Espresso extraction of 18-23 seconds for double, 12-16 seconds for single.
□ Espresso pour temperature of 165°F ±10%.

WATER HARDNESS & FILTERS

□ Water hardness before filter. _____GPG
□ Water hardness after filter. _____GPG
□ Filter System: **Scalex2** / **Other System** / **None**

ELECTRICAL

□ Check line voltage at wall. _____Volts
□ Check jumper settings on DC board and transformer.

REFRIGERATION UNIT

□ Operating temperature 39°F or lower.
□ No gaps/tears in door seal; latch working.
□ Calibrate empty weight trays to 60. (2500s/i, X0, X6).
□ Calibrate Integra milk sensor for units with vending.
□ Verify the milk sensor is disabled for Integra machines without vending.
□ Clean or replace air filter.
□ Verify the fans are working freely.
□ Verify the air deflector/plenum is properly installed.

SYRUP PUMPS (Syrup Systems Only)

□ Verify all syrup pumps function. Syrup pours when activated from **TEST ROUTINES**, **MISCELLANEOUS**, or **SPECIAL FEATURES**.
□ Inspect all syrup tubing connections for leaks.
□ Verify the chocolate heater rack is functioning.

MILK VALVE (Model 2500 s/i Only)

□ Verify there is zero build-up in the milk valve, milk bowl, and nozzle.
□ Verify plunger movement; lubricate with Superlube® pen.

Customer Signature	Date
Technician Signature	Date

Parts Return Policy

Non-Consignment Agents

To qualify for reimbursement on warranty and/or contract parts, the servicing agency must maintain a basic stock of parts as listed on the recommended parts list. The servicing agency must place an order to replenish a part within seven (7) days of a part being used. If a servicing agency has to order and/or return a part not on the recommended parts list, Concordia will pay for shipping the part back to Concordia.

The warranty for new parts from Concordia is for 90 days. This applies to both new machines and replacement parts. The warranty for a new machine is one year.

Concordia has determined that some items are consumable and do not need to be returned.

Returned parts must be shipped UPS Ground. The shipping fees are reimbursed. To qualify for reimbursement, parts must be returned within 30 days of removal.

Return requests for unused new parts are subject to management review. Authorization is given for current parts; obsolete parts cannot be returned.

To qualify for reimbursement for parts returned under warranty, the servicing entity must request a Return Material Authorization (RMA) from the Concordia Beverage Systems Parts Coordinator. The part(s) returned must have a completed Return Material Tag (RMT) attached with the RMA number written on the RMT.

Call Concordia Beverage Systems at 1-800-778-0990 for additional returned authorization supplies.

Consignment Agents

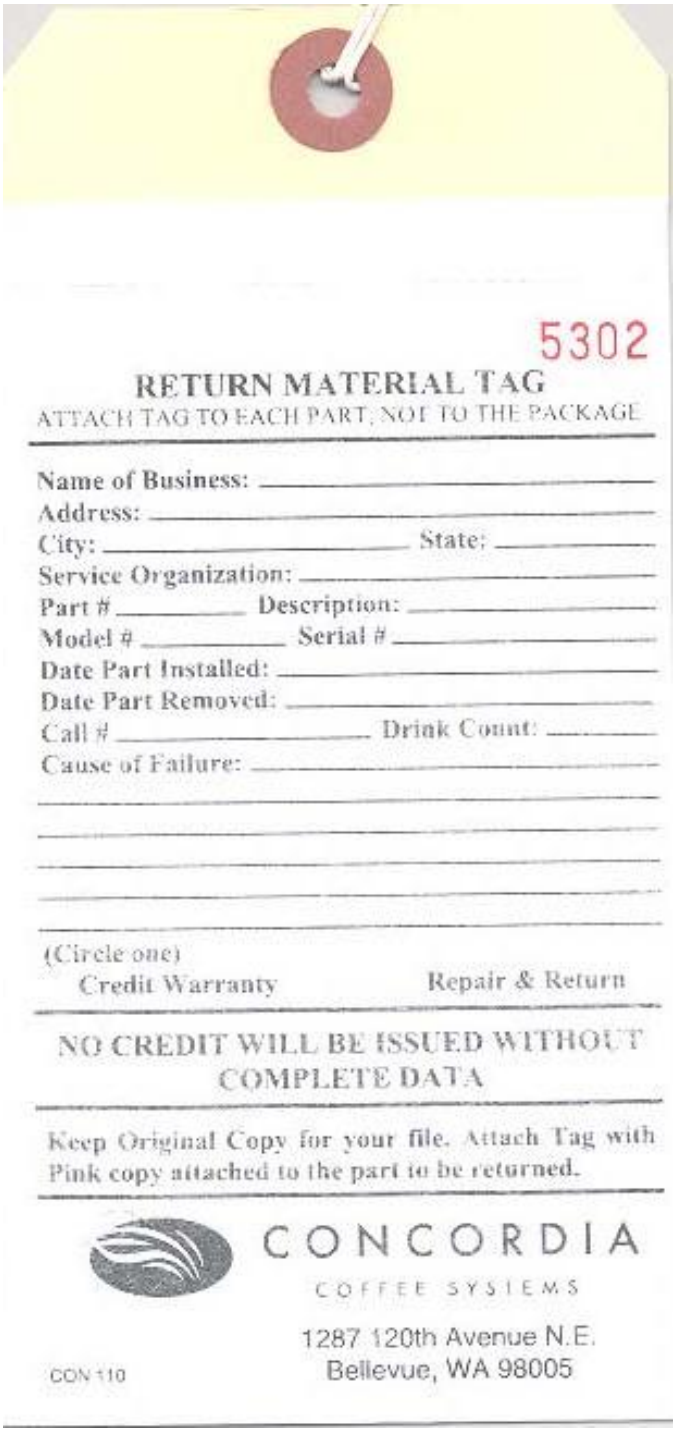
Part returns for consignment agents should be performed as detailed in their service agreement.

Any used parts returned must have a completed Return Material Tag attached.

Return Material Tag

Each part must have a Return Material Tag filled out properly**.** If the tag is not complete, parts will not be replaced or credited.

A 15% handling fee will be charged for any tags or forms not filled out completely on non-consignment returns.



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RETURN MATERIAL TAG

ATTACH TAG TO EACH PART, NOT TO THE PACKAGE

Name of Business: _____

Address: _____

City: _____ State: _____

Service Organization: _____

Part # _____ Description: _____

Model # _____ Serial # _____

Date Part Installed: _____

Date Part Removed: _____

Call # _____ Drink Count: _____

Cause of Failure: _____

(Circle one)

Credit Warranty Repair & Return

NO CREDIT WILL BE ISSUED WITHOUT COMPLETE DATA

Keep Original Copy for your file. Attach Tag with Pink copy attached to the part to be returned.

CONCORDIA

COFFEE SYSTEMS

1287 120th Avenue N.E.

Bellevue, WA 98005

CON-110

Parts Replenishment Form

Concordia Beverage Systems provides a parts replenishment form for agents to submit. This form should be filled out weekly and submitted to Concordia Beverage Systems, detailing each part used during service calls over the previous week.

Submitting this form will generate a sales order so that items that were used are replaced within one week.

It is the service agent's responsibility to use and regularly submit the parts replenishment form so that proper inventory levels are maintained.

Section 13 :: Customer Service and Training

1. Training the Customer
2. Concordia Beverage System's Value Added Service
3. G.U.E.S.T.

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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.

Filling 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 Boxes

Demonstrate checking the level of flavor in a flavor box and have the customer change and connect a flavor box.

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 call or email Concordia Customer Service. To order by email, the customer should write to:

Customer_service@concordiacoffee.com

Order forms are available by writing to the email address above.

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.

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 Software Menu

Demonstrate and have customer access the software menu. Review how to view daily and grand total drink statistics.

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

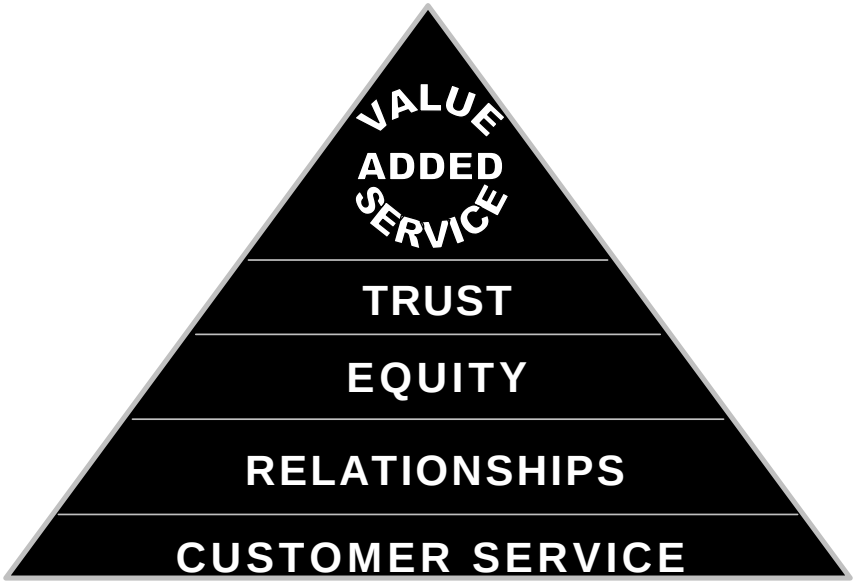
In the *User Guide*, review the location of the Concordia Beverage Systems customer service number (1-800-778-0990) and advise the customer to call Concordia with any questions about their new machine.

Concordia Beverage Systems' Value-Added Service

VALUE-ADDED SERVICE is the foundation of Concordia's success. The growth of any service organization depends upon providing quality service and building solid relationships with customers. Service technicians are the key to building and maintaining customer relationships. Technicians are the ambassadors of the companies they represent.

As a Concordia technician, you will see Concordia customers to perform routine maintenance an average of 3-5 times per year; *more than any other representative of Concordia.*

This is why Customer Service is the foundation of all that we do on a day-to-day basis. While Concordia manufactures Concordia Espresso machines, our ability to grow depends upon our relationship with our customers.



Value-Added Service

Equipment repair is the basic responsibility of a technician. The technician's responsibility is to master the ability to troubleshoot and solve difficult problems. This, however, only addresses one aspect of the repair. The most important job of a technician is to understand the customer's perception of the problem. Only when you address what the customer perceives as the problem have you provided customer Service.

Forming a strong relationship depends on your ability to provide effective customer service. Most customers are indebted by the service you provide. After all, they have customers too, and it is a difficult conversation when they have to tell their customers that the machine is broken, not to mention their lost revenue. To further illustrate the level of indebtedness, consider how many times you have been offered something in return for the service you provided (e.g. "Can I get you some lunch?").

Each time you contact a customer, you have potential to build equity. Equity is like a bank account. When you have a positive experience with a customer, you make a deposit. Customers remember you and your ability to provide what is right for them. Each opportunity to service a customer must be capitalized in the most constructive means possible.

As you provide solid customer service, establish a good relationship and build equity, you will find that your customers begin to *trust* you. Trust is important when making decisions that you know are in the customer's best interest. Would you recommend a piece of equipment to a customer who you know had no faith in your abilities? Maybe, but you probably would not be successful.

CUSTOMER SERVICE, RELATIONSHIPS, EQUITY and **TRUST** are the foundations the true goal: A **VALUE-ADDED SERVICE.** Partnerships are give and take. You give great service; you take the benefit of being able to suggest new ideas. The customer gives your ideas credence; they take the benefit of your customer service. When added all together, the customer wins because their equipment is working and making money. You win because you can recommend more reliable equipment and make your job a more enjoyable. Your company wins because they reap the benefits of a solid reputation and potential new sales.

G.U.E.S.T.

G **Greet the Customer**

U **Understand your Customer**

E **Empathize with your Customer**

S **Solve the Problem**

T **Train the Customer**

Greet the Customer

How you greet the customer sets the tone the entire service call. The remainder of the communication, for both today's service call and future service calls, will be affected by this initial meeting with the customer.

Providing a professional image is the first step in building a solid relationship with the customer. Image includes professional attire and greeting the customer in a professional manner.

When greeting the customer, make sure you:

- Provide a well-groomed appearance – preferably wearing a uniform
- Introduce yourself: Include your name, the company you represent and the reason for your visit
- Offer a business card if you have one
- Ask to speak to the person who requested service

Greeting

"Hi, I'm Alex with Awesome Service XYZ Company, is Bob here? He reported a problem with your Concordia espresso machine."

(going to get caller)

"Hi Bob, (Hand out business card if you have one) I'm Alex with Awesome Service XYZ Company. I'm here to repair the problem with your espresso machine, what can you tell me about it?"

Greeting your customer is the first step in creating open dialogue between you and the customer.

The last phrase in the above example is the most important phrase you can ever remember. “What can you tell me?” “How can I help you?” Through their answer to this phrase you begin to understand your customer’s concern.

Understand your Customer

Asking open-ended questions is the first step in understanding the customer. Open-ended questions increase communication and your understanding of the customer’s needs.

Is the machine working? This is not an open-ended question. The customer will typically answer with Yes or No. Once the answer is provided, dialogue will stop.
What is happening with your machine? This question will provide an open door for communication and understanding of the customer’s concerns.

Additional open-ended questions you may find helpful:

What can you tell me about your machine?
How can I help you?
What is the machine doing?
When did it start?
What have you tried?
How do you clean your machine?

LISTEN

To truly understand your customer, you must listen to what they have to say. A customer may call in for one issue, but have several concerns that need to be addressed.

ASK Again

Ask clarifying questions to ensure that you understand. When? Where? How often? Asking additional questions will accomplish three very important things:

1. Provide information related to the problem area in the machine
2. Verify what you may have already expected
3. Provide you an invaluable tool that you can use to verify the repair back to the customer

Use the information the customer provides as clues to a puzzle. Piece together every event until you have a clear picture of what has happened, when it happened, and how it happened. These factors will help lead you to a path of discovery and machine repair.

REPEAT BACK

One of the best ways to ensure you understand your customer's concern is to repeat back what you have been told.

> **"So, Sam, if I understand you correctly, every time you pour a latte the cup overflows, but the cappuccinos pour fine?"**

You will find that simply seeking to understand your customer is a powerful relationship-building tool. Not only will you more readily understand what is happening with their machine, but also you will begin to **empathize** with their experience.

Through showing care and concern you can more easily gather information.

Empathize with Your Customer

Empathy is simply the act of identifying with the emotional experience of another person. When speaking with your customer, addressing their feelings is important, especially when those feelings are of frustration, anger or exasperation.

The quickest way to defuse the frustrated or angry ranting of another person is to simply acknowledge and identify with them.

Here are two key phrases that will help you empathize with your customer:

> I *understand* how you feel. I would feel the same way under those circumstances.
>
> I *appreciate* your situation. I would not like that to happen to me. Let me see what I can do to resolve this for you.

Notice the key in both of the phrases: *address emotion*. As a result of these two simple phrases, the customer will recognize that he or she is being heard.

Through using words like *understand* and *appreciate* you let the customer know you have **heard** what they just said.

Next, you address your identification with the customer's emotional response to a given situation. You are letting them know, "I **feel** what you **feel**."

Empathy helps build the relationship with your customer. It broadens the communication pipeline allowing you to understand their needs and get your message across. Now that you've got their attention, earn their trust and respect.

Solve the Problem

This is where you earn your stripes. First and foremost in solving the customer's problem is to repair the customer's machine. Once you have clearly identified the customer's concern and expectations, you can focus your energy on repairing the machine.

Solving the problem, however, goes beyond making the repair. You must communicate with the customer as well.

Review with the customer what you found, how you addressed their particular problem, and how the repair you made will help prevent the problem from happening in the future.

Train the Customer

Your job as a service technician is to fix today's problem and prevent problems from happening in the future. In a large number of cases, future mechanical problems can be prevented by properly educating the customer.

This will require you to fully understand the nature of machine use by the account. Ask questions that will help you piece together who is primarily responsible for machine care. This is the person you want to educate.

Discuss the nature of the mechanical failure, and ways to prevent the problem from happening in the future. Always emphasize the importance of daily cleaning and the reduction of service that can be expected as a result. Other important factors are:

- Airflow around the re-circulating fans
- Keeping the refrigeration compartment free of foreign objects
- Changing water filter/softener cartridges at regular intervals
- Simple lubrication points
- Daily cleaning requirements

Always end your conversation by thanking the customer for their business.

Section 14 :: Messages

1. Troubleshooting Display Messages

TECHNICAL SUPPORT

CONCORDIA

BEVERAGE SYSTEMS

Troubleshooting Display Messages

Warning messages appear on the machine display. 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.

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 *either* 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. See *Section 15: Troubleshooting* for detailed instructions.
CHECK STEAM TANK	Steam tank fill valve failure.	Navigate to **TEST ROUTINES > STEAM FILL VALVE** and diagnose. Check coil. Check valve for foreign objects/mineral deposits. Worn plunger seal. See *Section 15: Troubleshooting* for detailed instructions.
	Level probe failure.	Navigate to **TEST ROUTINES > UPPER STEAM PROBE** and **TEST ROUTINES > LOWER STEAM PROBE** and 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 *Section 15: Troubleshooting* 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 *Section 15: Troubleshooting* 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. Navigate to **TEST ROUTINES > 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 *Section 15: Troubleshooting* for detailed instructions.
	Open circuit at level probe.	Navigate to **TEST ROUTINES > WATER LEVEL** and diagnose.
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. Navigate to **TEST ROUTINES > FRONT PANEL** and check using alternate magnet.
GROUNDS 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.	Navigate to **TEST ROUTINES > GROUNDS BIN** and check using alternate magnet.
INVALID STOP L	The left piston was not able to complete its specified motion.	Check left drive components. See *Section 15: Troubleshooting* for detailed instructions.
INVALID STOP R	The right piston was not able to complete its specified motion.	Check right drive components. See *Section 15: Troubleshooting* for detailed instructions.
L DRIVE TIMEOUT	Left piston took too long to complete a movement.	Check left drive components. See *Section 15: Troubleshooting* 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 *Section 15: Troubleshooting* 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 *Section 15: Troubleshooting* for detailed instructions.
	Air filter blocked.	Change filter.
	Short circuit on refrigeration temperature sensor.	Navigate to **CHK TEMPERATURES > REFRIGERATOR** and verify temperature. 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.	Navigate to **CHK TEMPERATURES > REFRIGERATOR** and verify temperature. Open sensor = 0.8°F (-17°C). See *Section 15: Troubleshooting* 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	Pressure transducer failure.	Navigate to **CHK TEMPERATURES > STEAM** and verify temperature. Failed transducer = 278.6°F (137°C). See *Section 15: Troubleshooting* for detailed instructions.
	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	Pressure transducer failure.	Navigate to **CHK TEMPERATURES > STEAM** and check temperature. Open transducer = 227.6°F (109°C). See *Section 15: Troubleshooting* for detailed instructions.
	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.	Navigate to **CHK TEMPERATURES > BREW WATER** and check temperature. Shorted sensor = 257°F (125°C). See *Section 15: Troubleshooting* 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.	Navigate to **CHK TEMPERATURES > BREW WATER** and check temperature. Open sensor = 146°F (64°C). See *Section 15: Troubleshooting* for detailed instructions.
	Relay or fuse failure.	Navigate to **TEST ROUTINES > 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 *Section 15: Troubleshooting* for detailed instructions.
CHECK STEAM WAND	Steam temperature too high/low. Steam wand not physically connected to machine.	Verify steam temperature. Adjust as needed. Check wiring to steam wand.
MISSING ASW PCB	PCB not installed.	Install PCA expansion board (PN 2612-060).

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.	Navigate to **CHK TEMPERATURES > REFRIGERATOR** and verify the temperature. 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 *and* 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. See *Section 15: Troubleshooting* 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 milk system.
RUN BREW CLEAN!	Brew clean required.	Clean brew group.
BREW CLEAN DUE	Brew clean required.	Clean brew group.
OUT OF MILK	No milk available in the refrigeration unit.	Replenish milk supply. Check milk weight trays are functioning properly.
NO BEANS – FRONT	No espresso beans in front bean hopper.	Refill bean hopper. Move/redistribute beans in bean hopper. Remove hopper stopper.
NO BEANS – REAR	No espresso beans in rear bean hopper.	Refill bean hopper. Move/redistribute beans in bean hopper. Remove hopper stopper.
CHK FRONT CONTAINER	Front milk container in the refrigeration unit missing.	Replace milk container in refrigeration unit. Ensure correct placement of milk weight tray. Verify milk weight tray sensor functioning properly.
CHK REAR CONTAINER	Rear milk container in the refrigeration unit is missing.	Replace milk container in refrigeration unit. Ensure correct placement of milk weight tray. Verify milk weight tray sensor functioning properly.
DRINK COUNTING OFF	The drink counting featured is disabled.	Navigate to **TOTAL DRINK COUNTS > DRINK COUNTING** and enable the drink counting feature.
VENDING NOT READY	Jamex payment controller interface failure.	Refer to vending documentation. See *Section 15: Troubleshooting* for detailed instructions. Call Concordia Beverage Systems for assistance. 1-800-778-0990

Section 15 :: Troubleshooting

1. Troubleshooting Quick Reference Guide
2. Troubleshooting Trees

TECHNICAL SUPPORT

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 **TEST ROUTINES / 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.

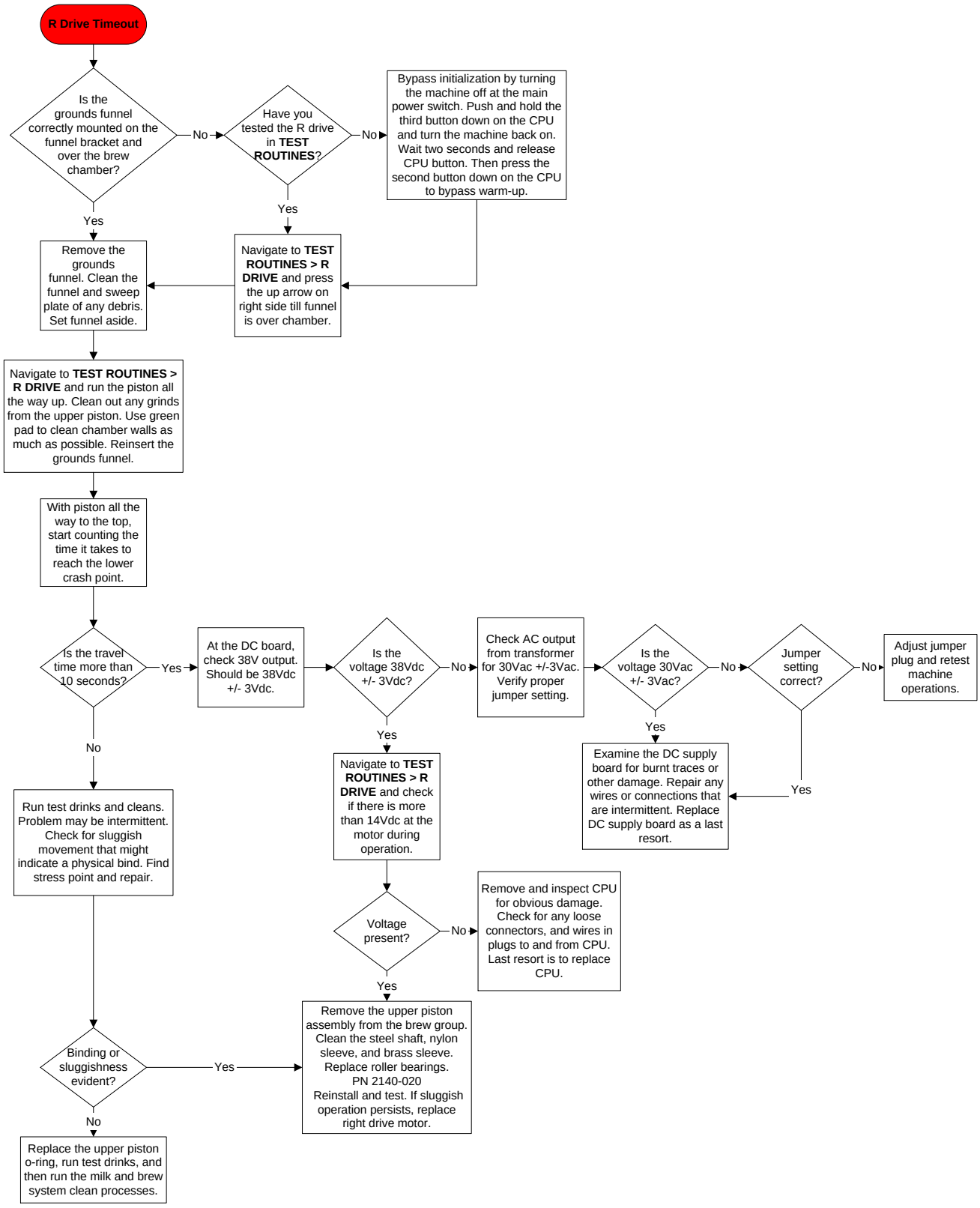
Milk System

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.

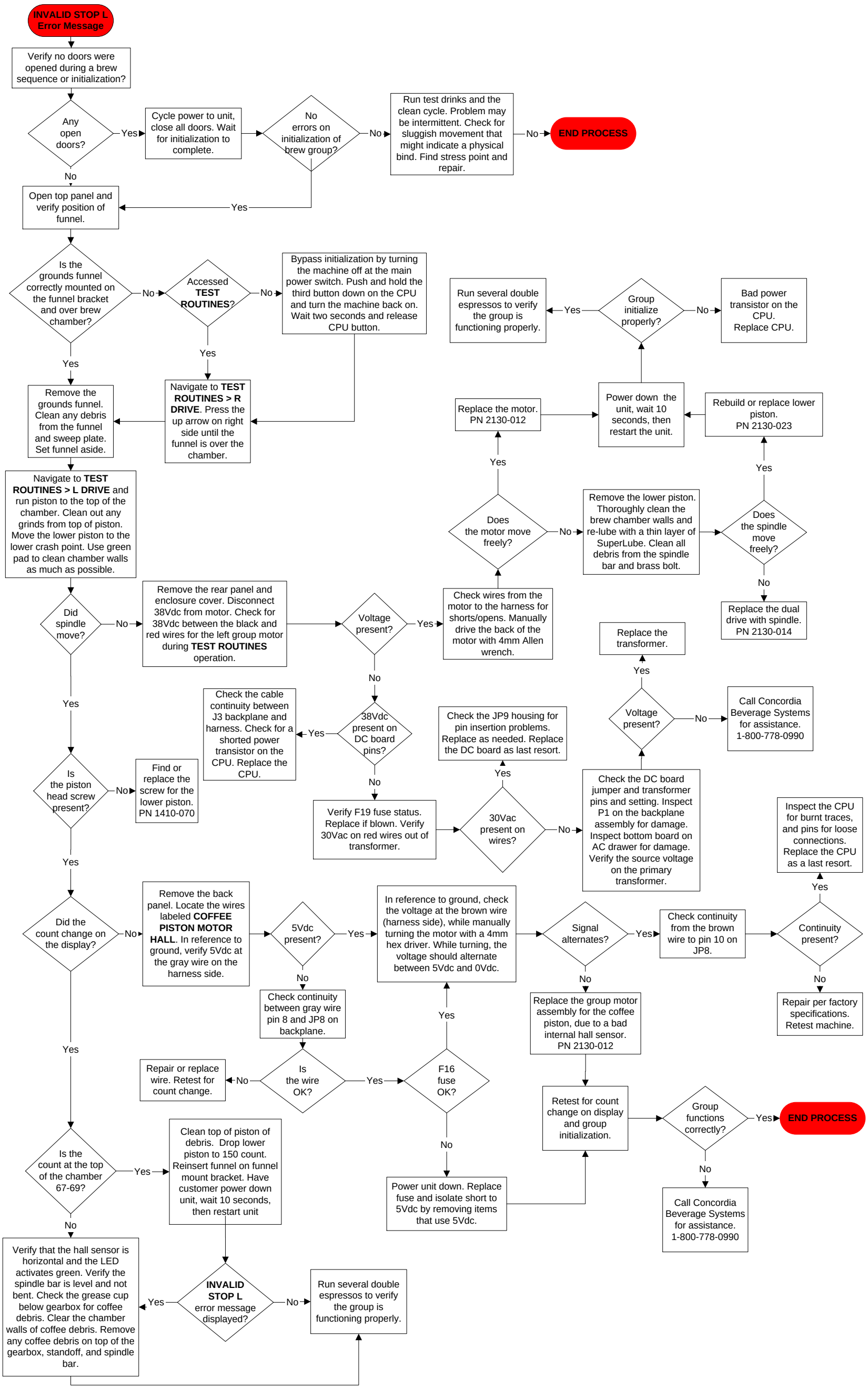
Troubleshooting Trees

BREW SYSTEM	Right Drive Timeout
	Invalid Stop L
	Invalid Stop R
	Left Drive Time Out
	Right Drive Time Out
	Slow Espresso Pour & No Water Flow
GRINDER SYSTEM	Out of Beans
MILK SYSTEM	Overpouring Milk
	Cold Milk Pour
	No Milk Pour
	Short Pour
REFRIGERATION SYSTEM	Temp Above 40
STEAM SYSTEM	Steam Temp Hi
	Steam Temp Lo
	Check Sensor Voltage
	Check Steam Probes
	Check Steam Tank
WATER SYSTEM	Check Water Supply
	High Water Temp
	Low Water Temp
	Water Tank Limit Switch Open
FLAVOR SYSTEM	Cross Contamination of Syrups
	Not Enough Flavor in Drink
	Too Much Flavor
ELECTRICAL SYSTEM	Check Analog Board
	Incorrect Software for Touchpad
	Milk Pump Running Continuously
	Card Swipe or Tap Not Authorized
	Display Says Not Configured
	No Display on Card Reader
	Front Panel Failed
	AC Voltage Error
	Check Clock
	Check Stats
	CPU Load Disp & Seq Error
	DC Board Failure

Brew System: Right Drive Timeout



Brew System: Invalid Stop L



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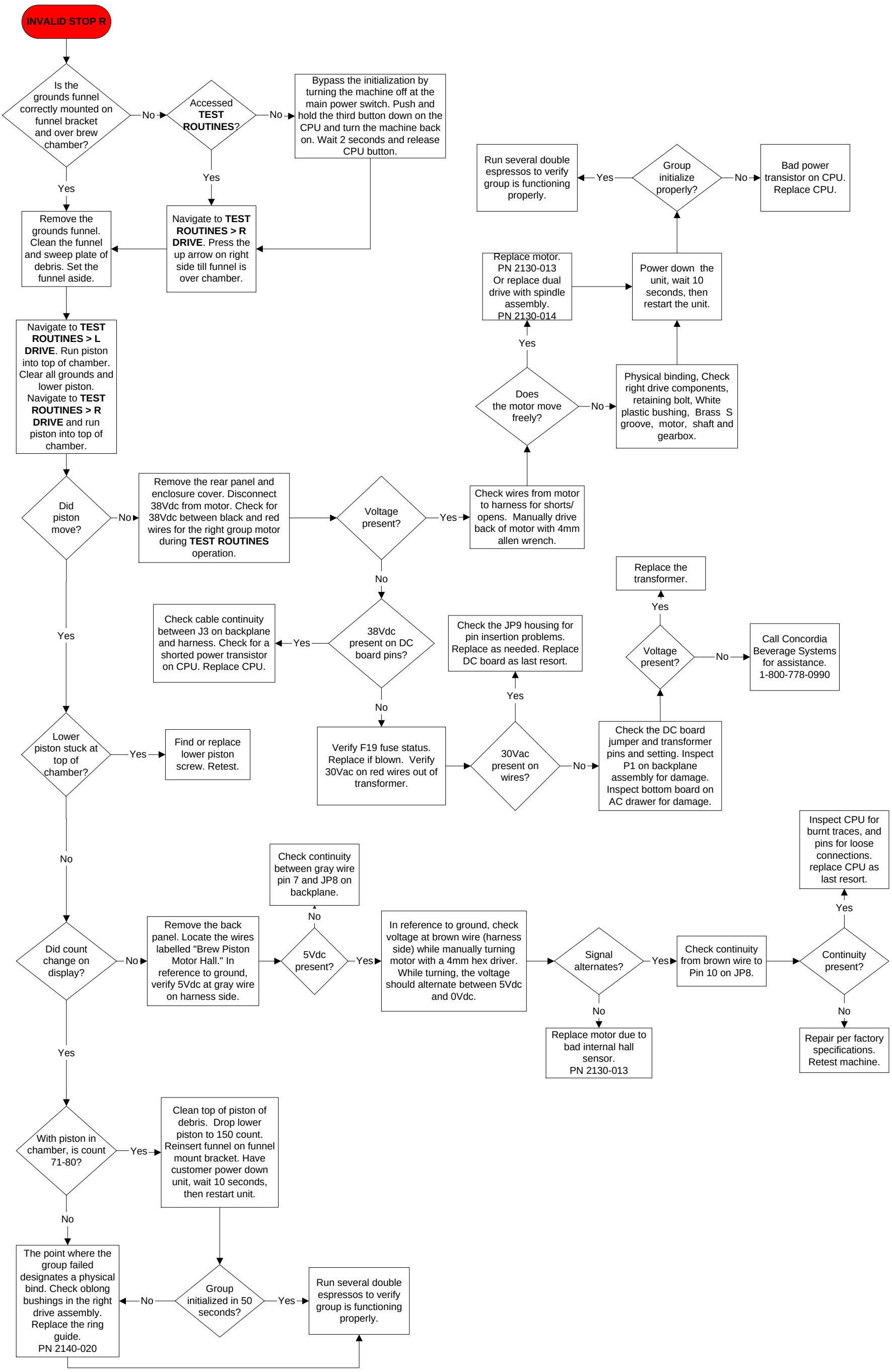
Brew System: Invalid Stop R



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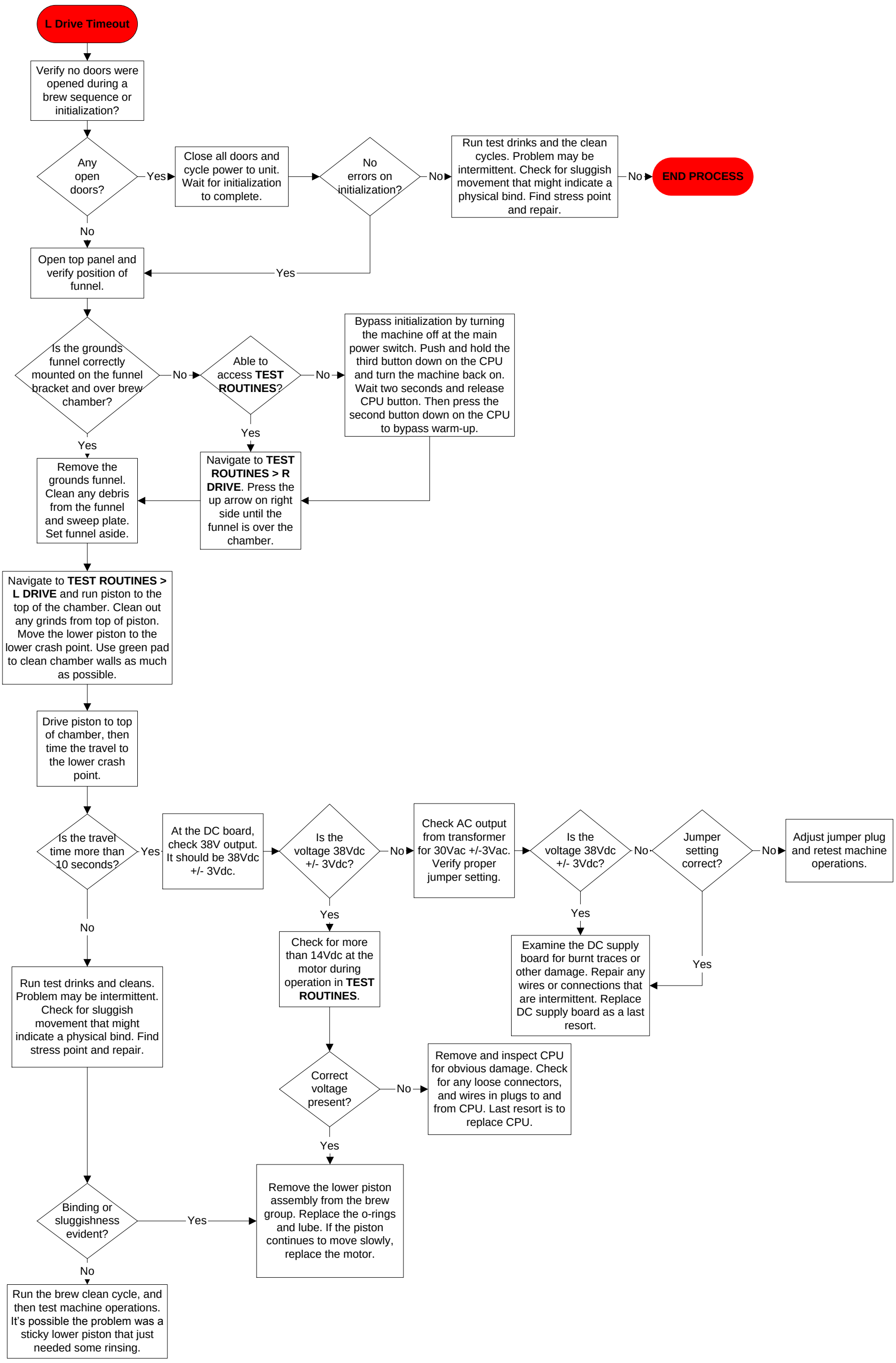
Brew System: Left Drive Timeout



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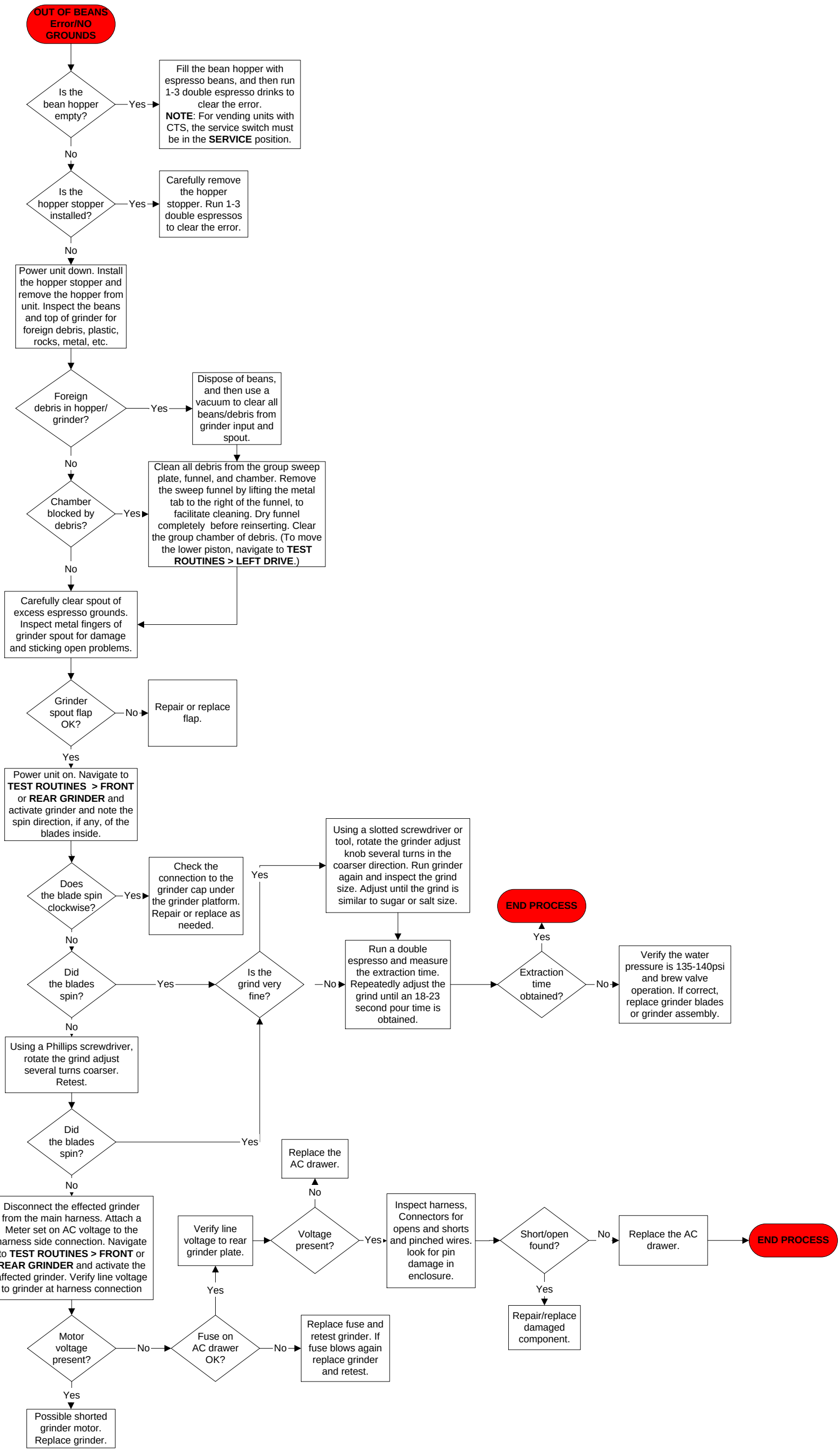
Grinder System: Out of Beans



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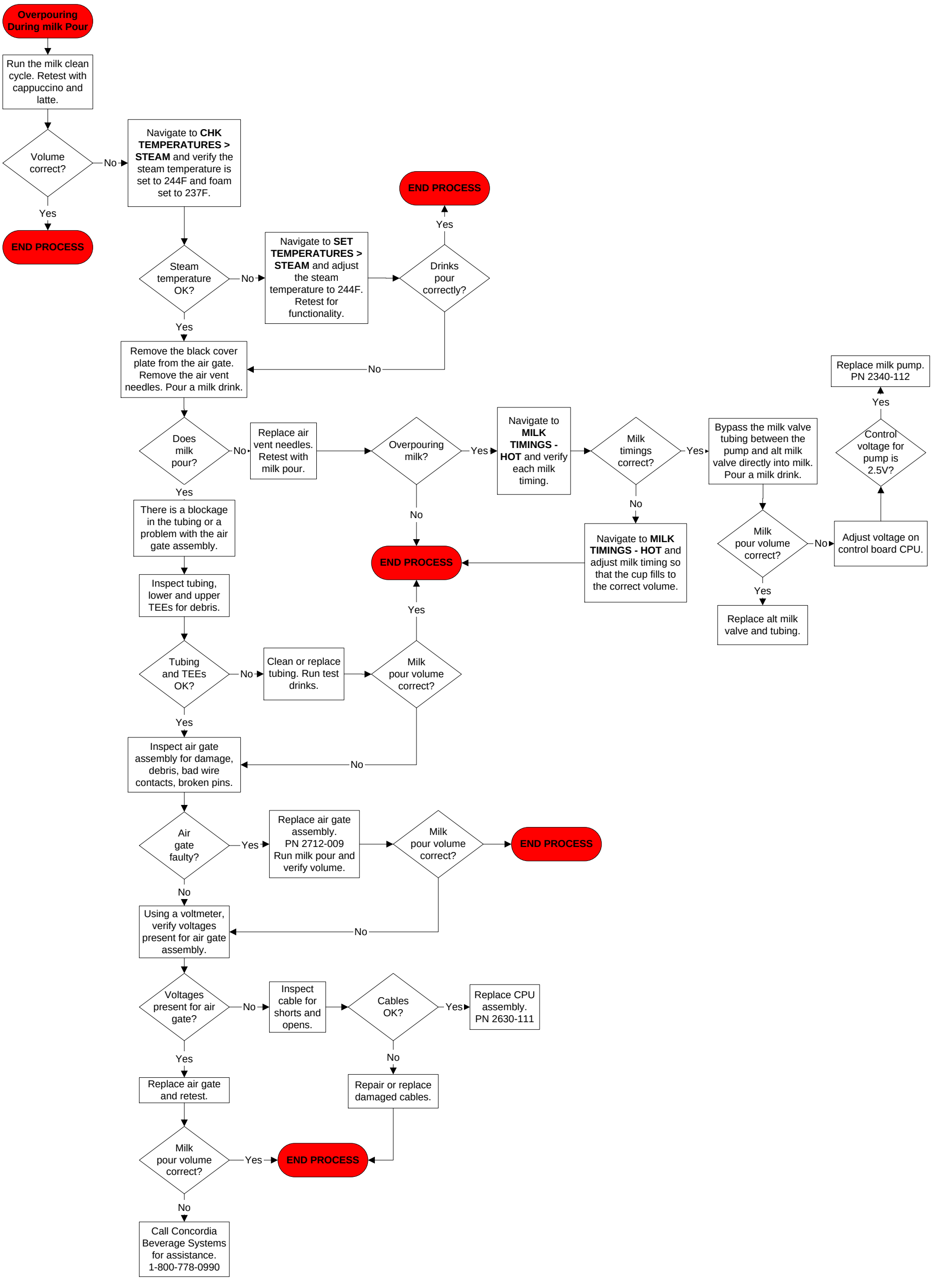
Milk System: Overpouring Milk



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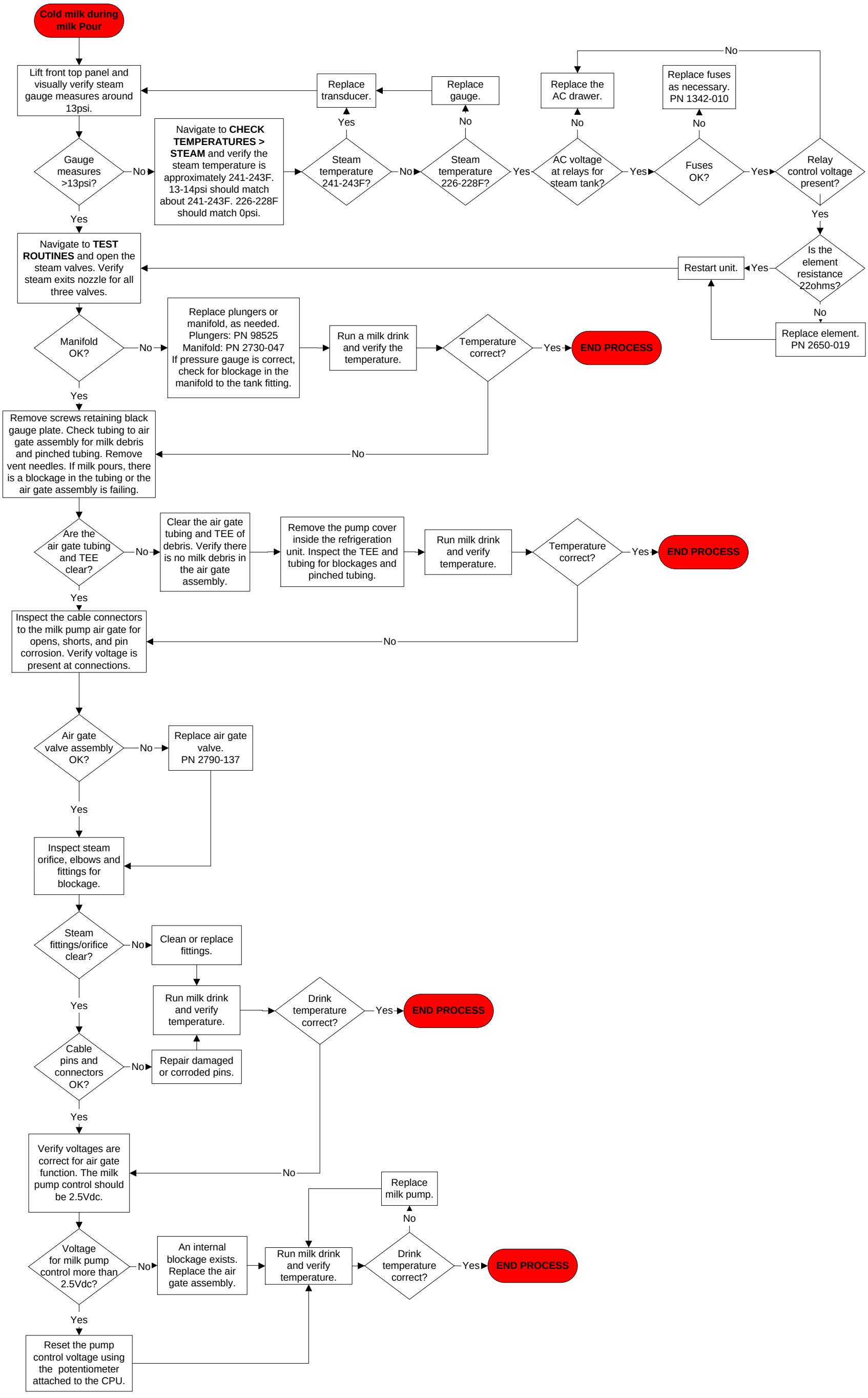
Milk System: Cold Milk Pour



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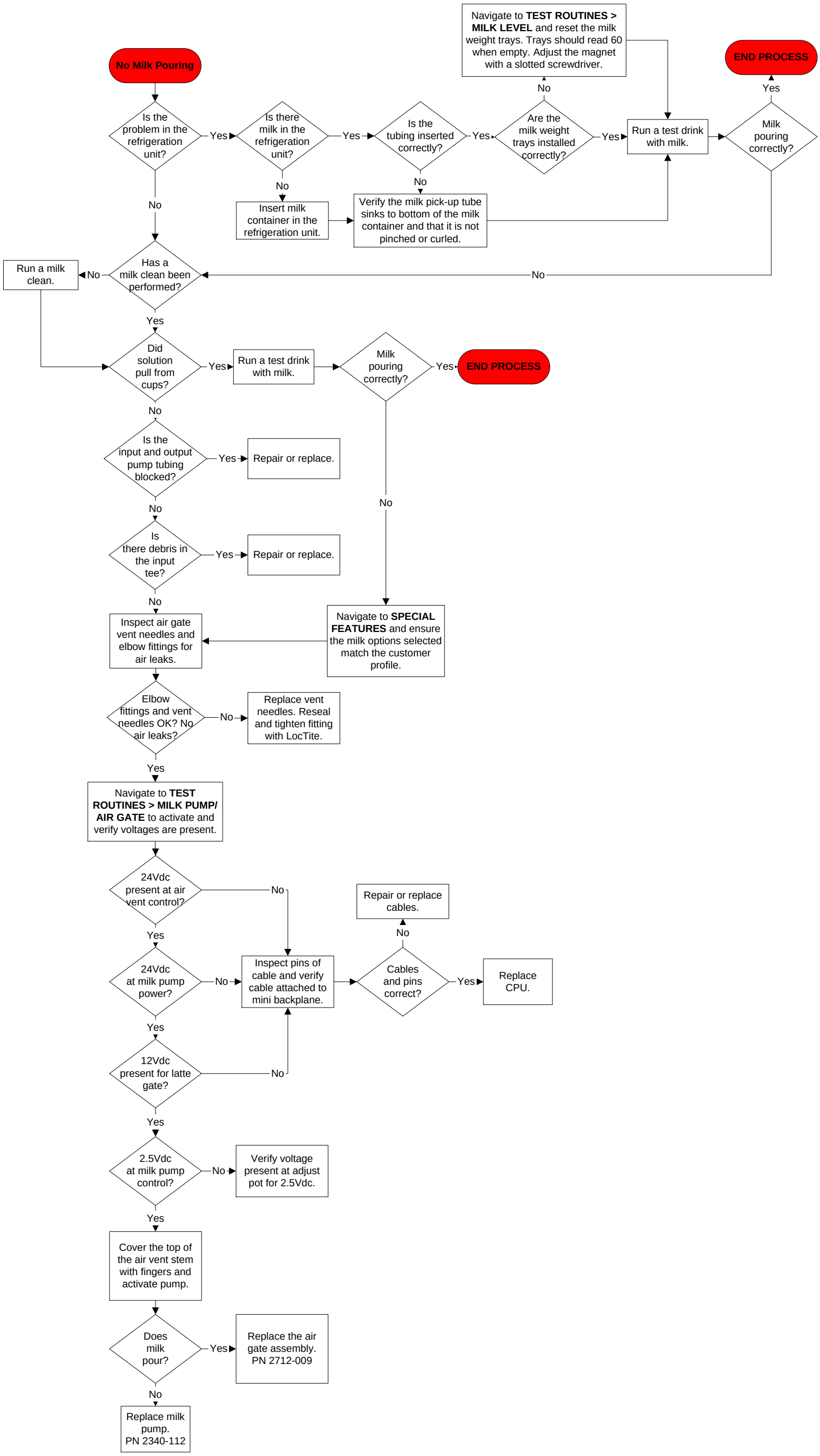
Milk System: No Milk Pour



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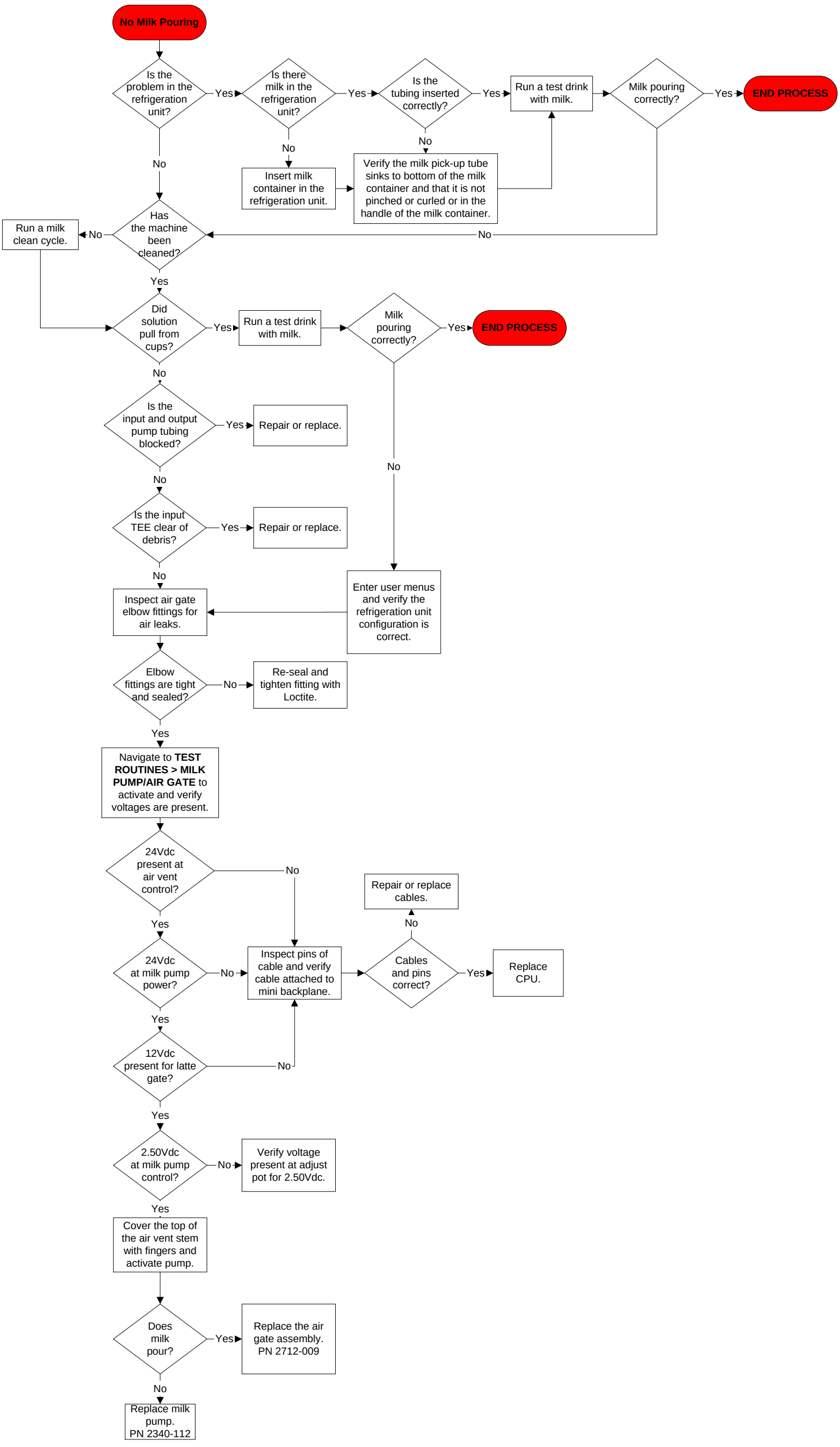
Milk System: Short Milk Pour



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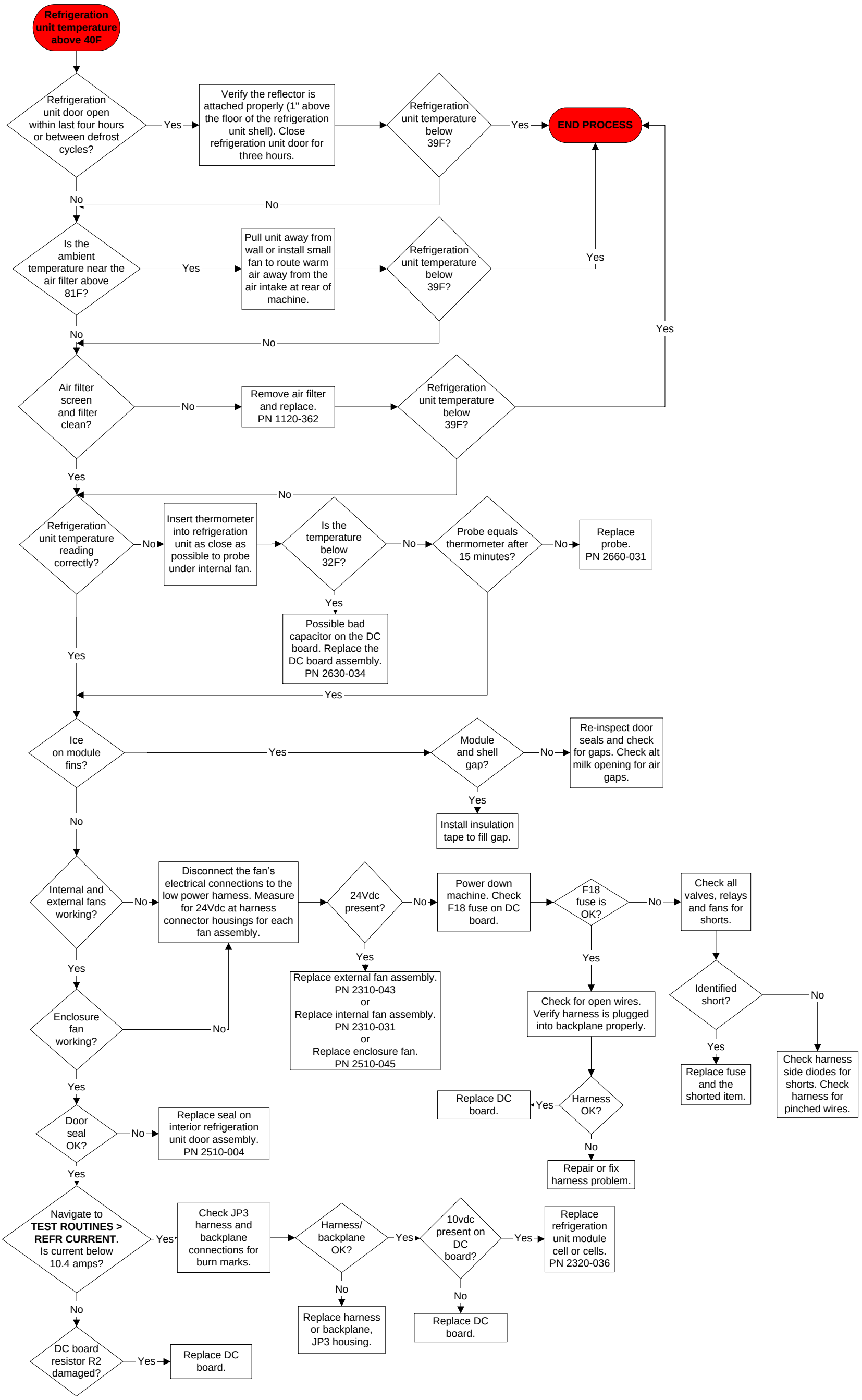
Refrigeration System: Temperature Above 40˚F



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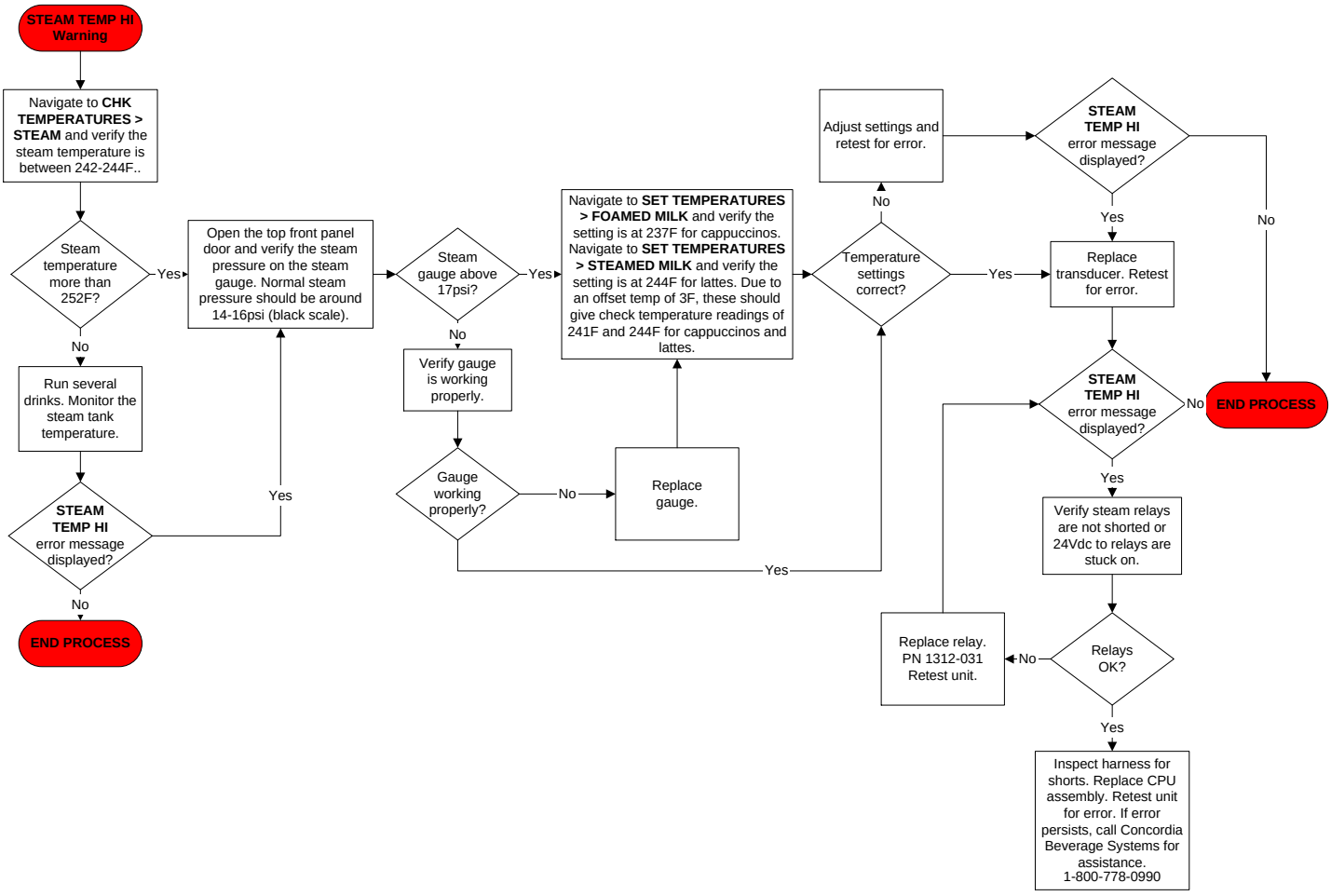
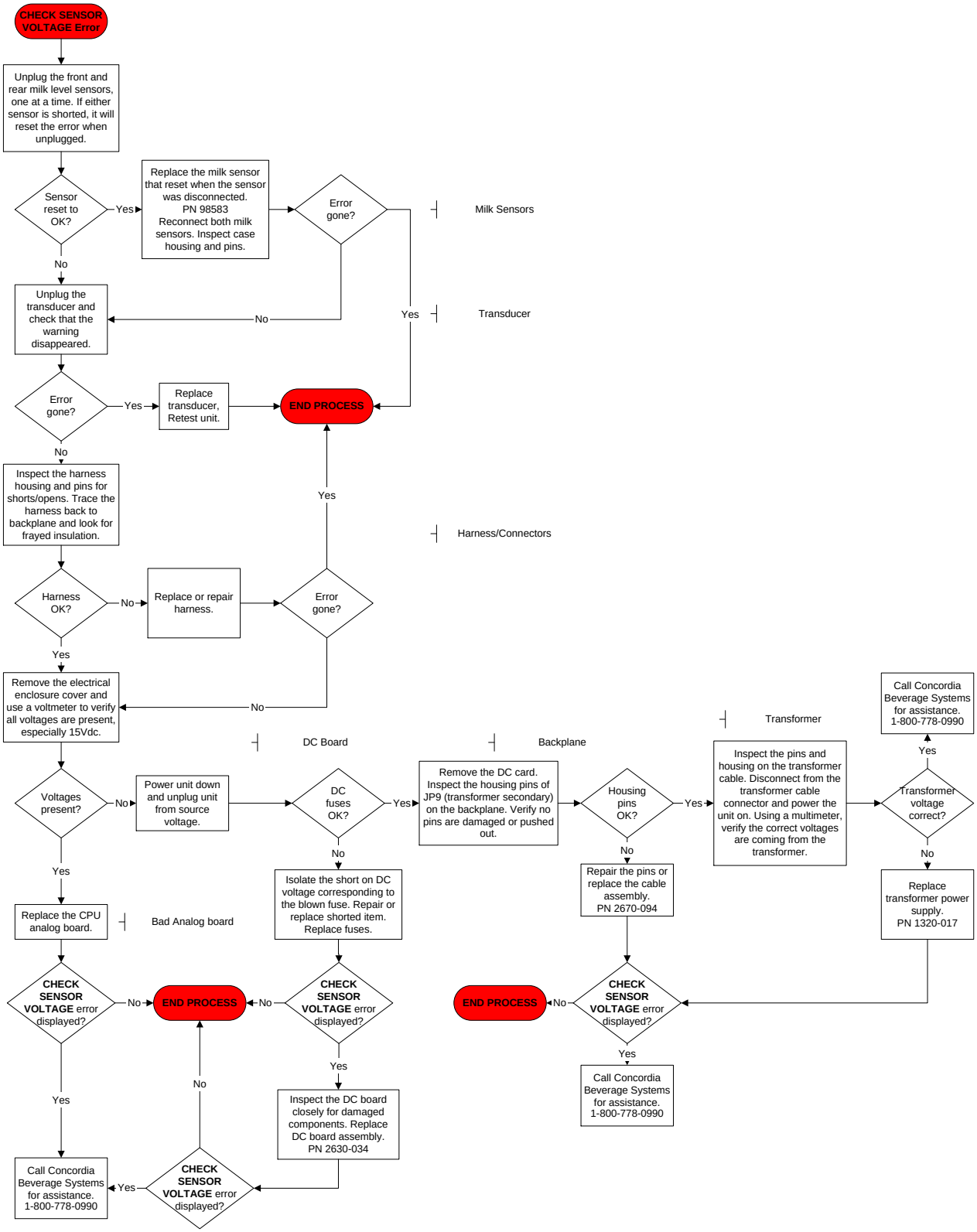
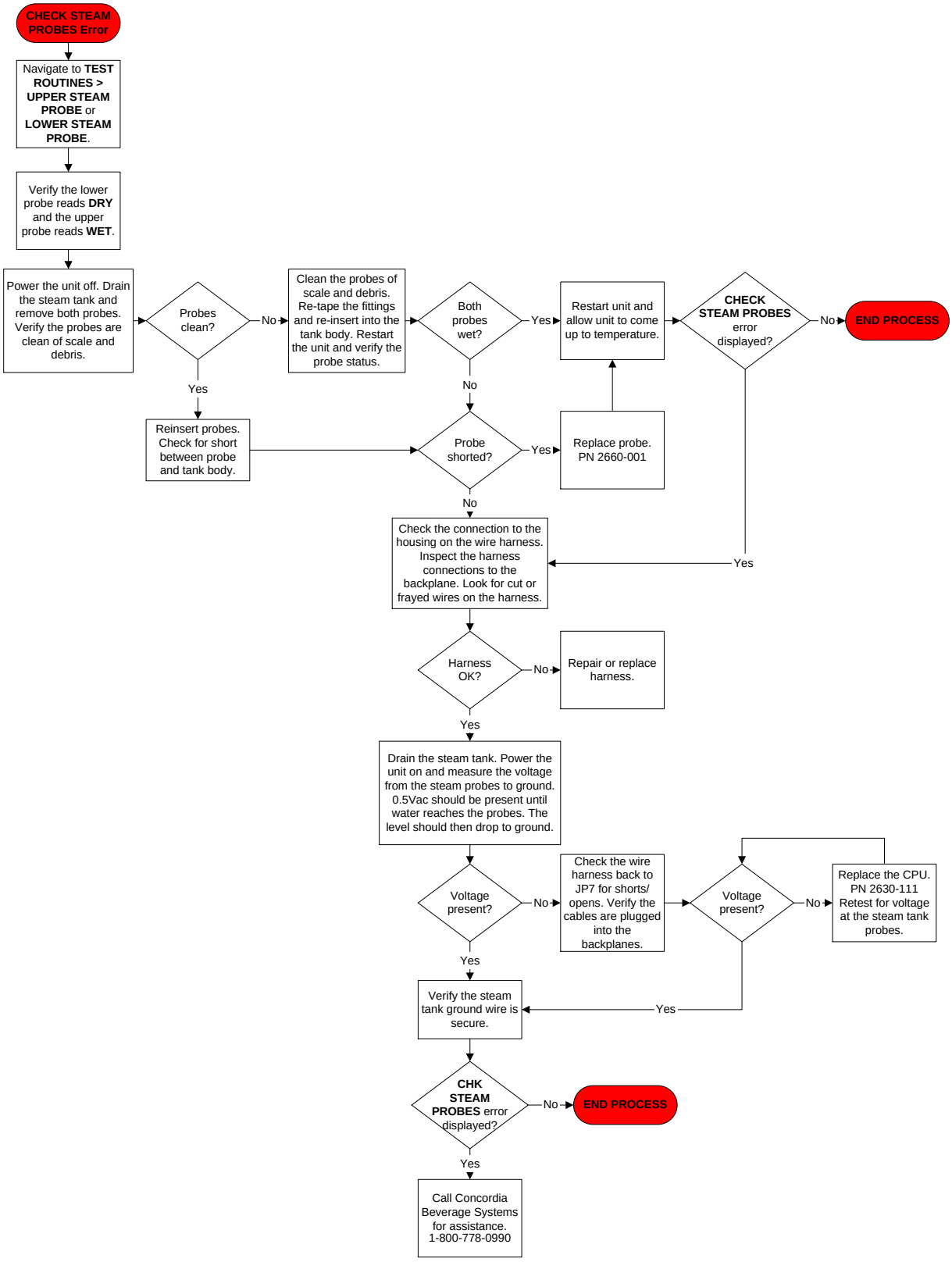
Steam System: Steam Temperature High



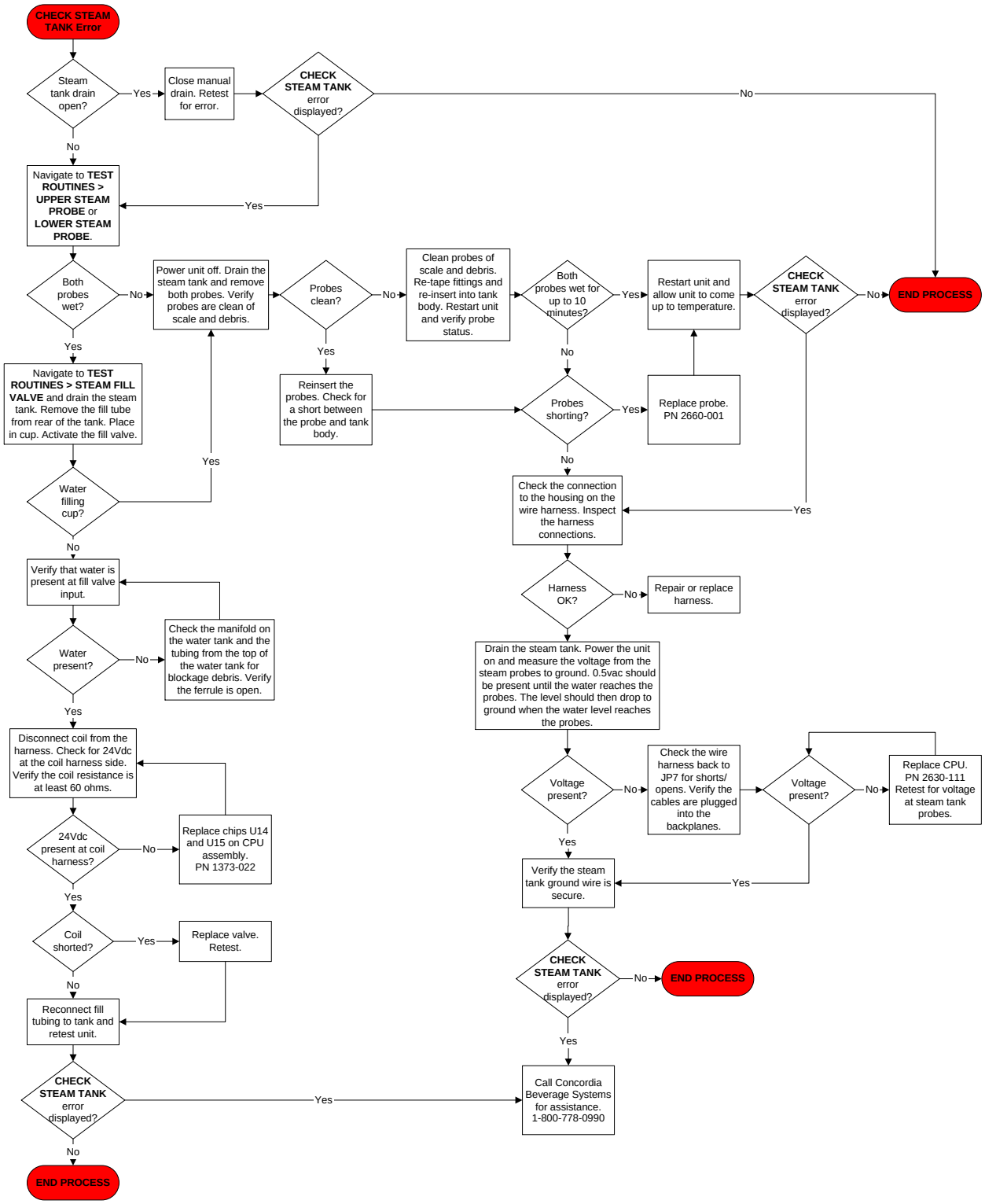
Steam System: Check Sensor Voltage



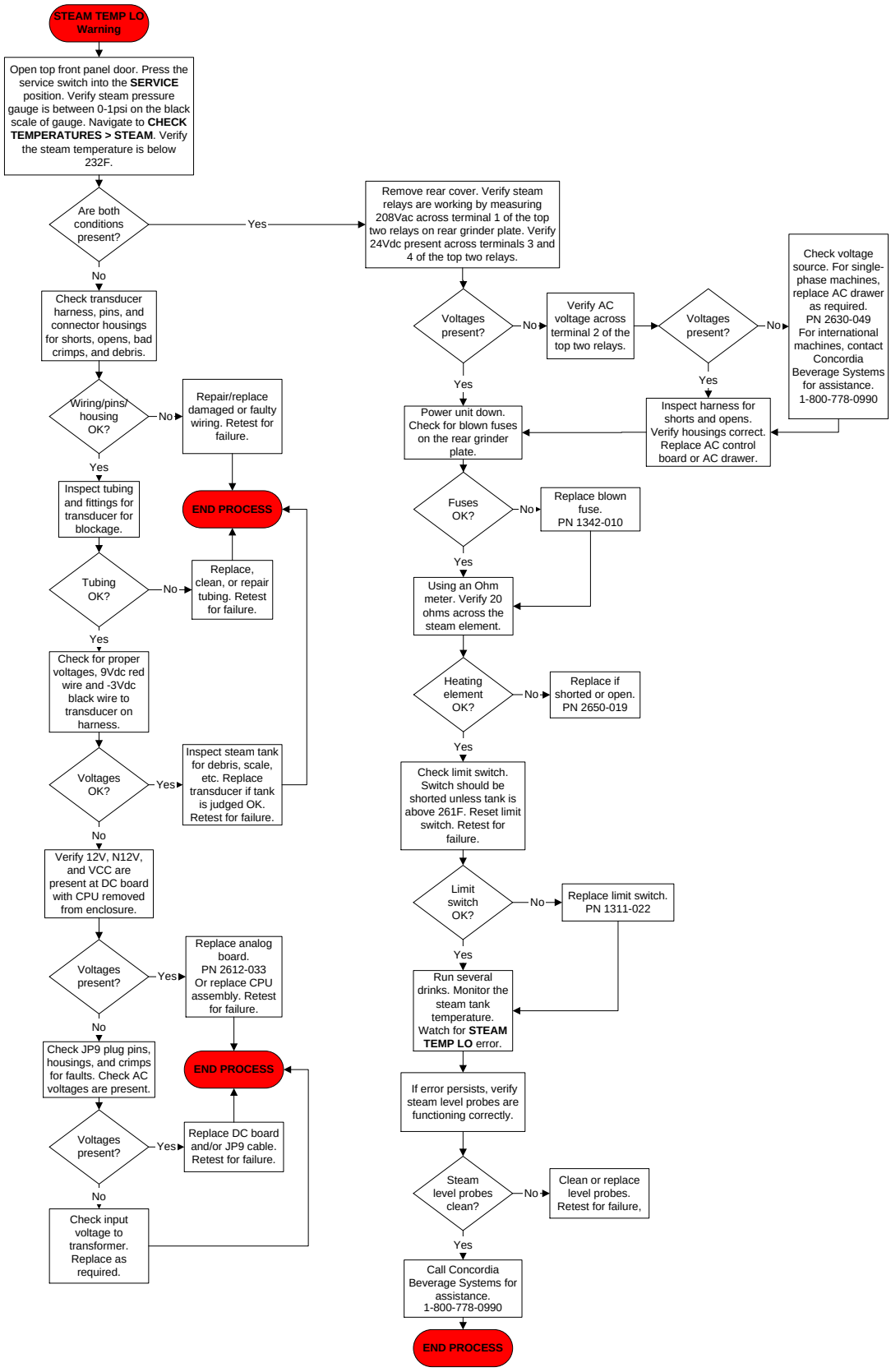
Steam System: Check Steam Probes



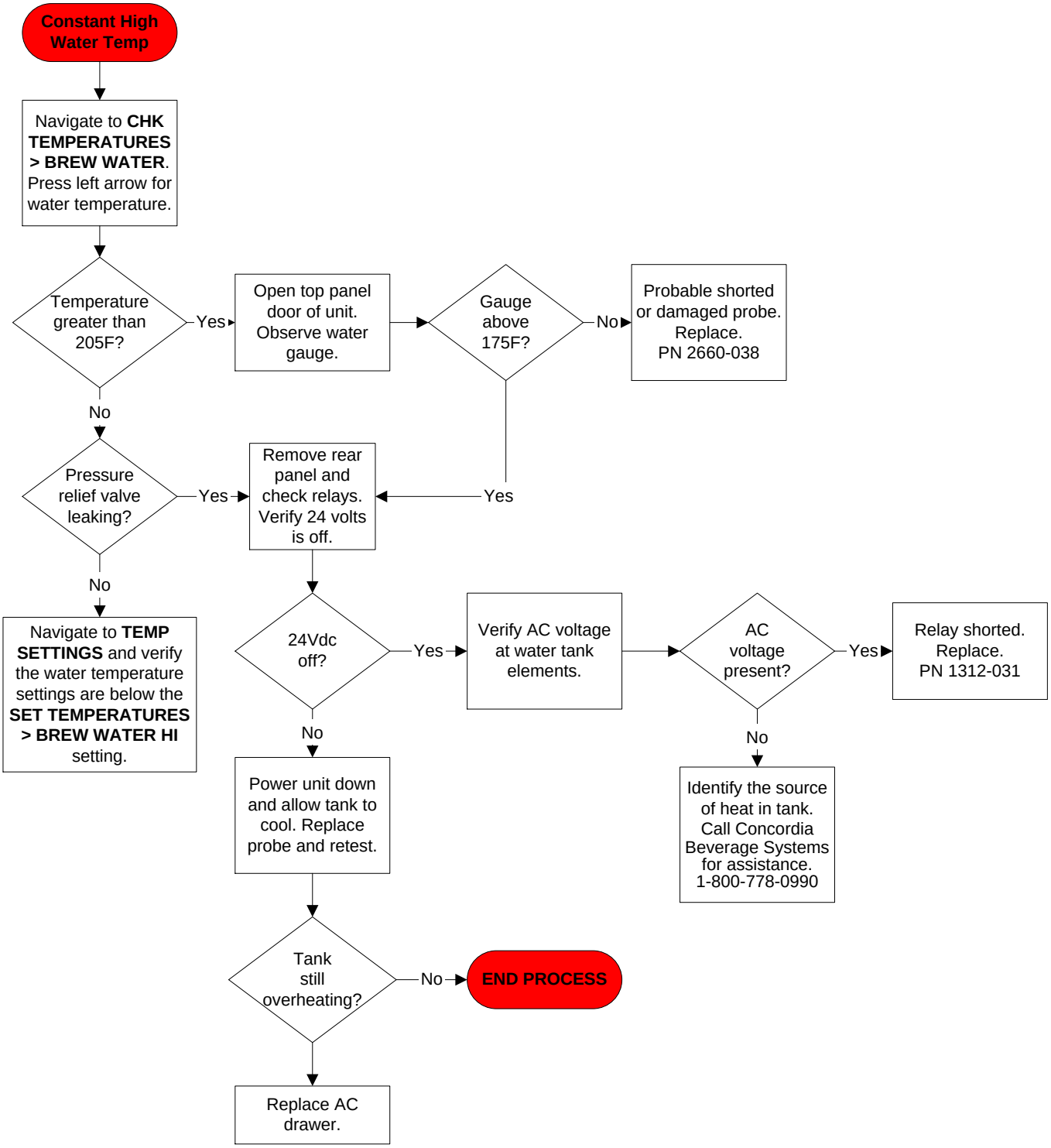
Steam System: Check Steam Tank



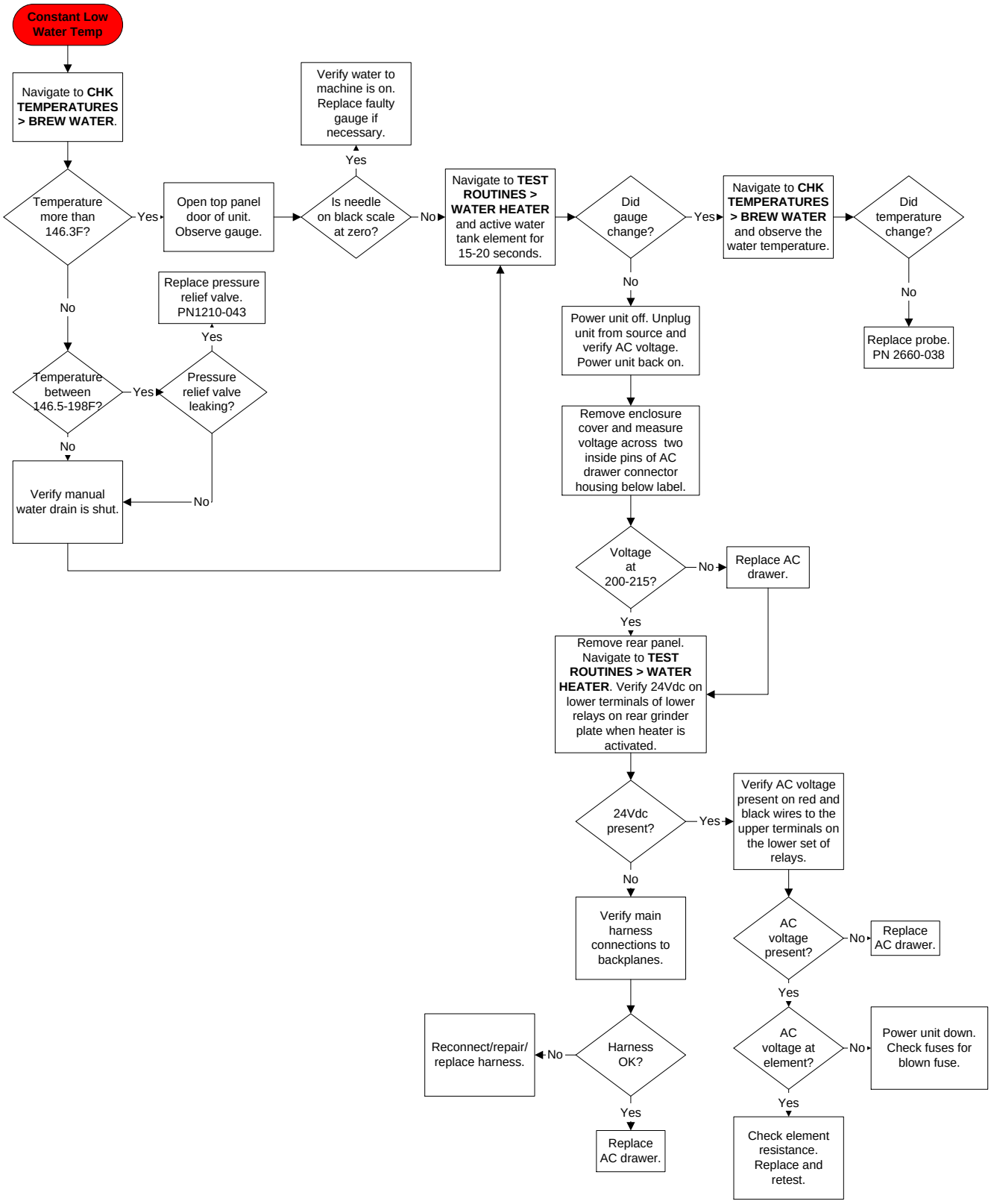
Steam System: Steam Temperature Low



Water System: Water Temperature Too High



Water System: Water Temperature Too Low



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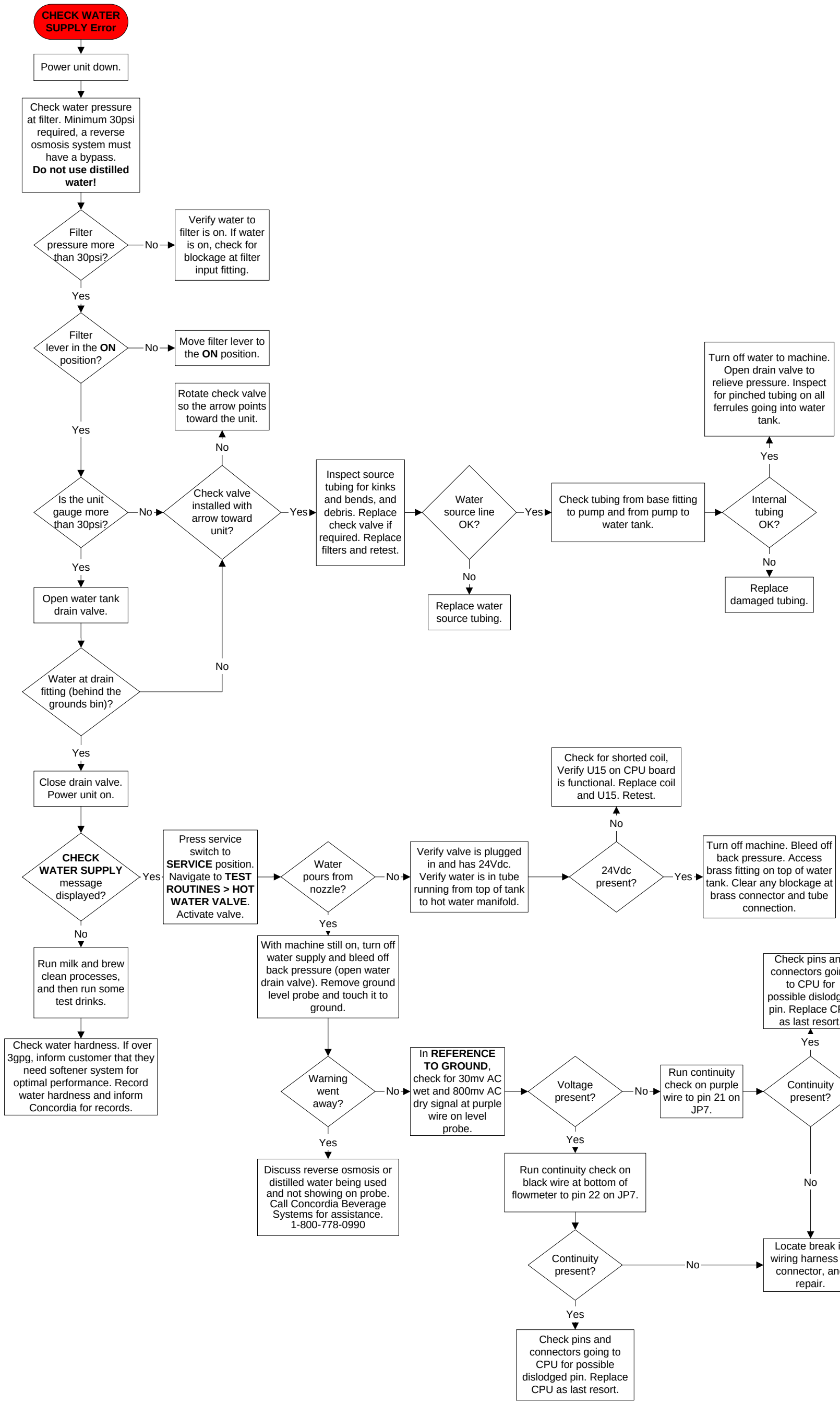
Water System: Check Water Supply



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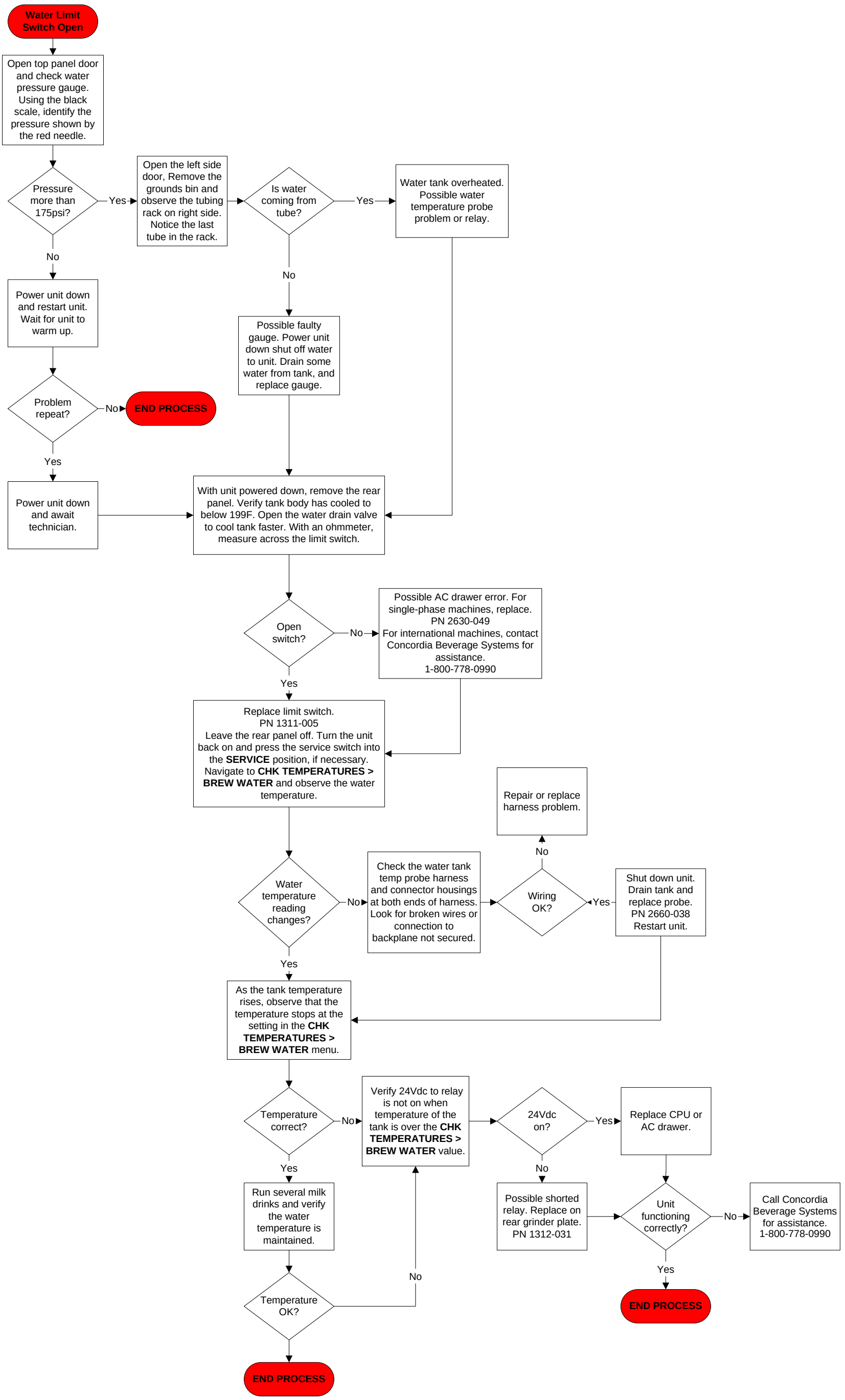
Water System: Water Tank Limit Switch Open



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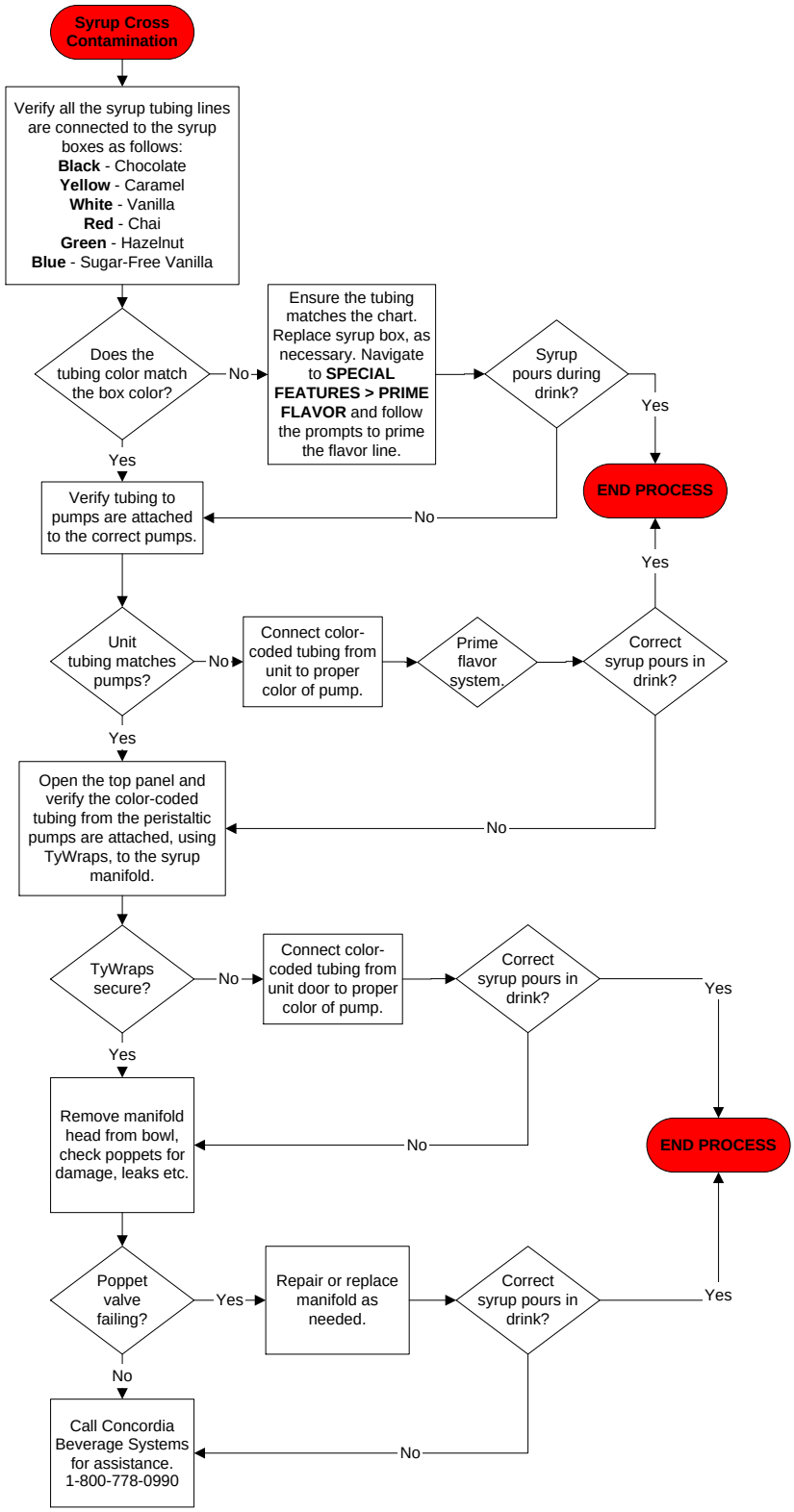
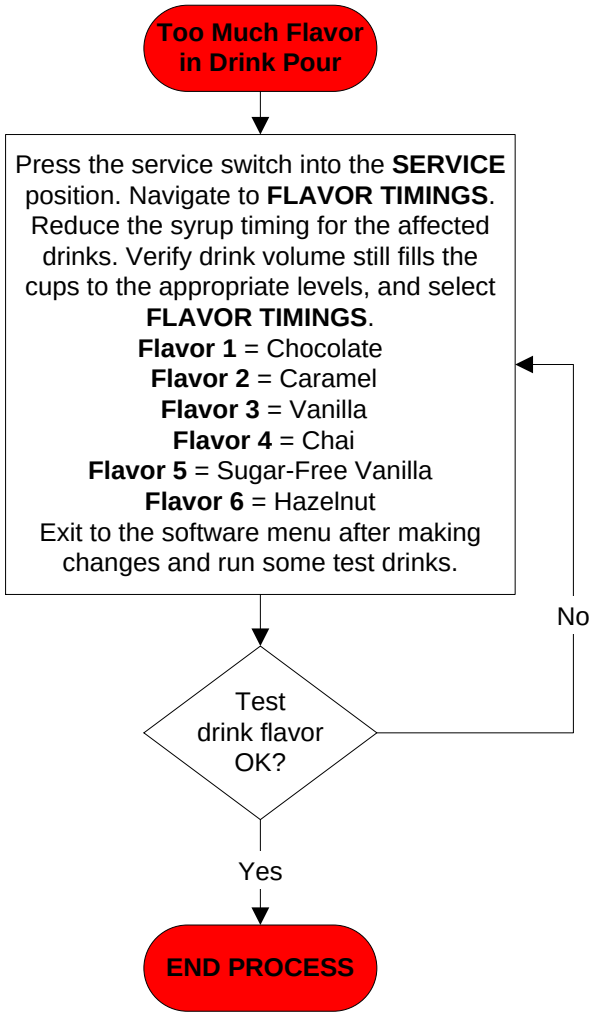
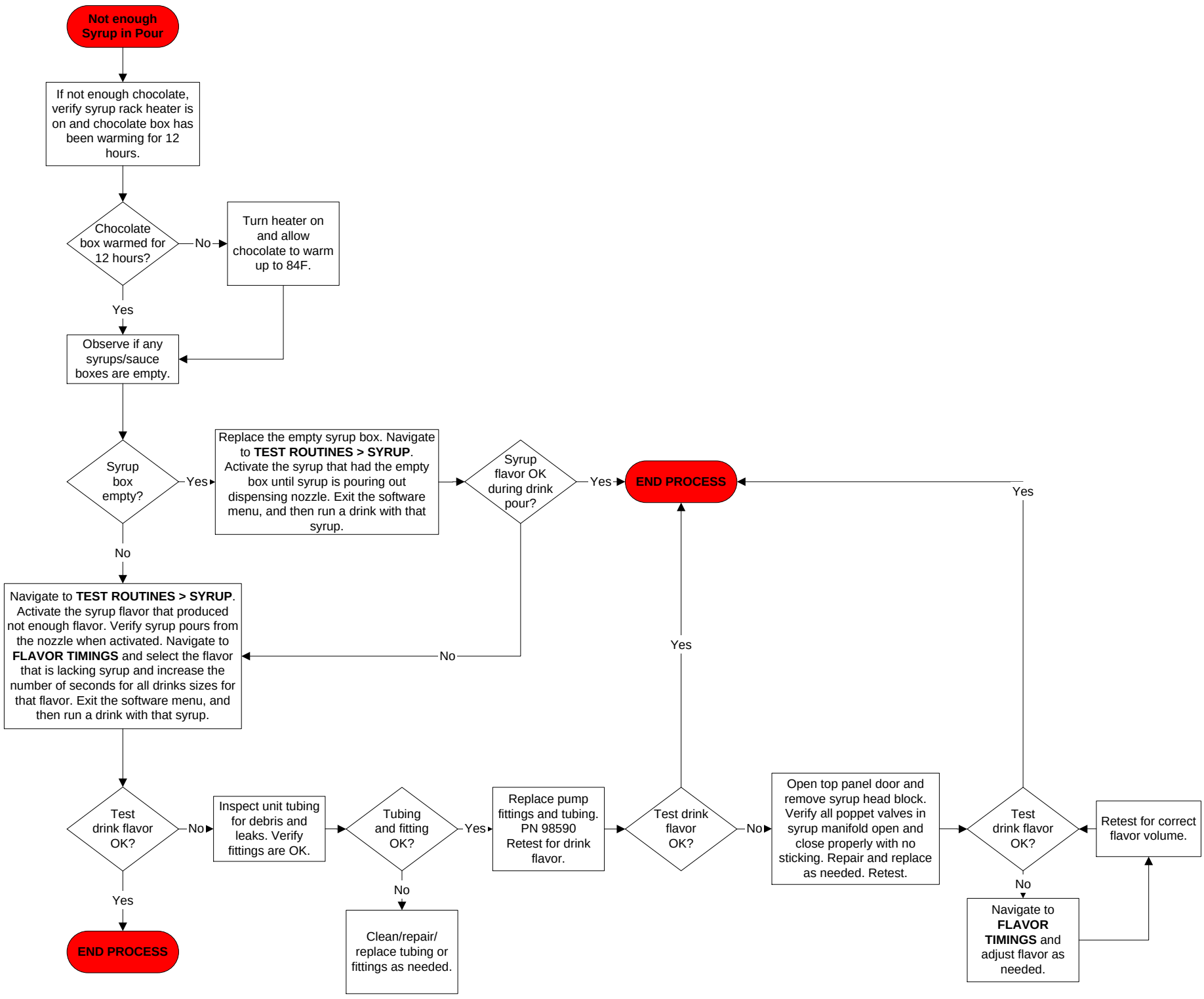
Flavor System: Cross-Contamination of Syrup Lines



Flavor System: Too Much Flavor in Drink



Flavor System: Not Enough Flavor in Drink



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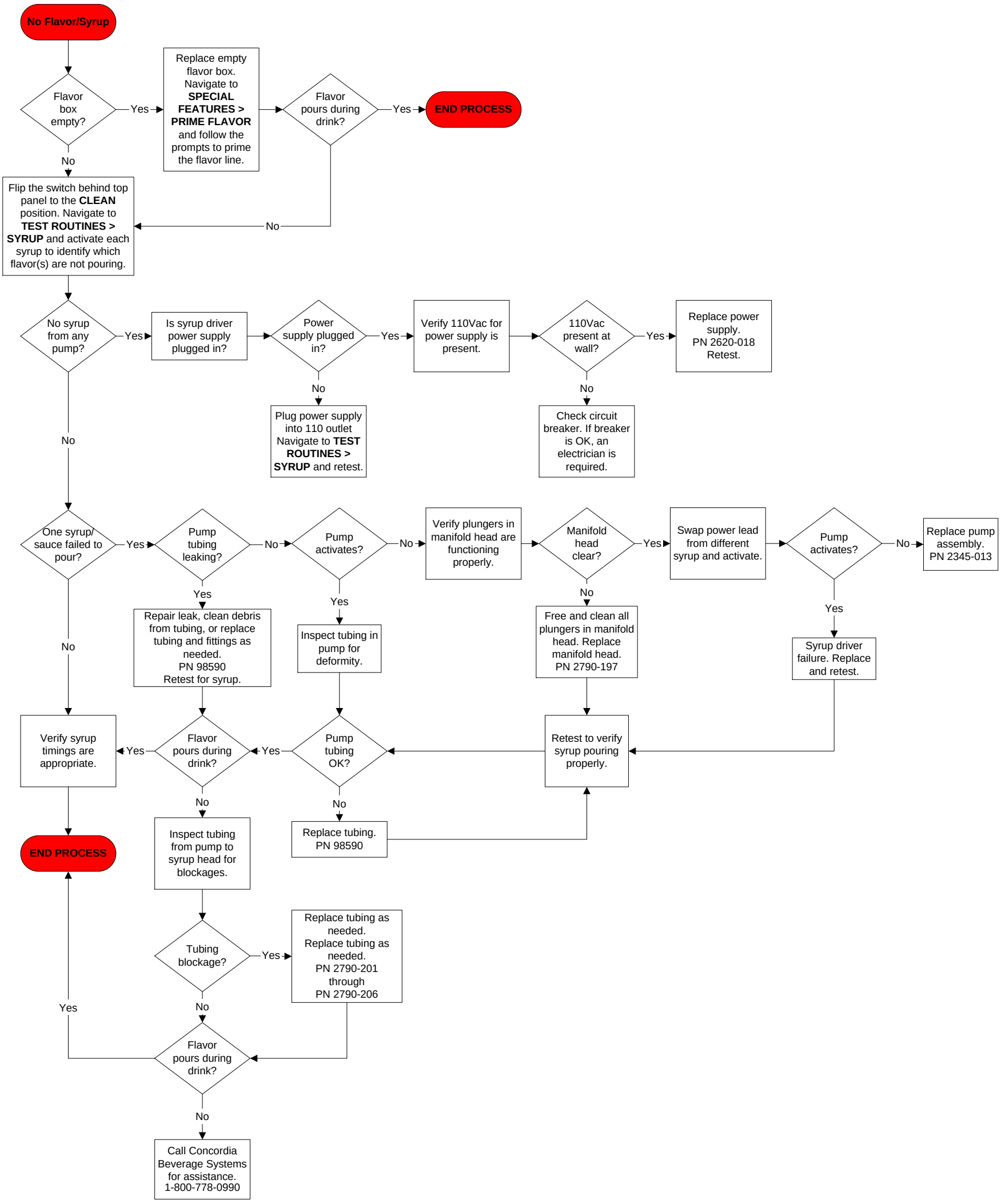
Flavor System: No Flavor in Drink



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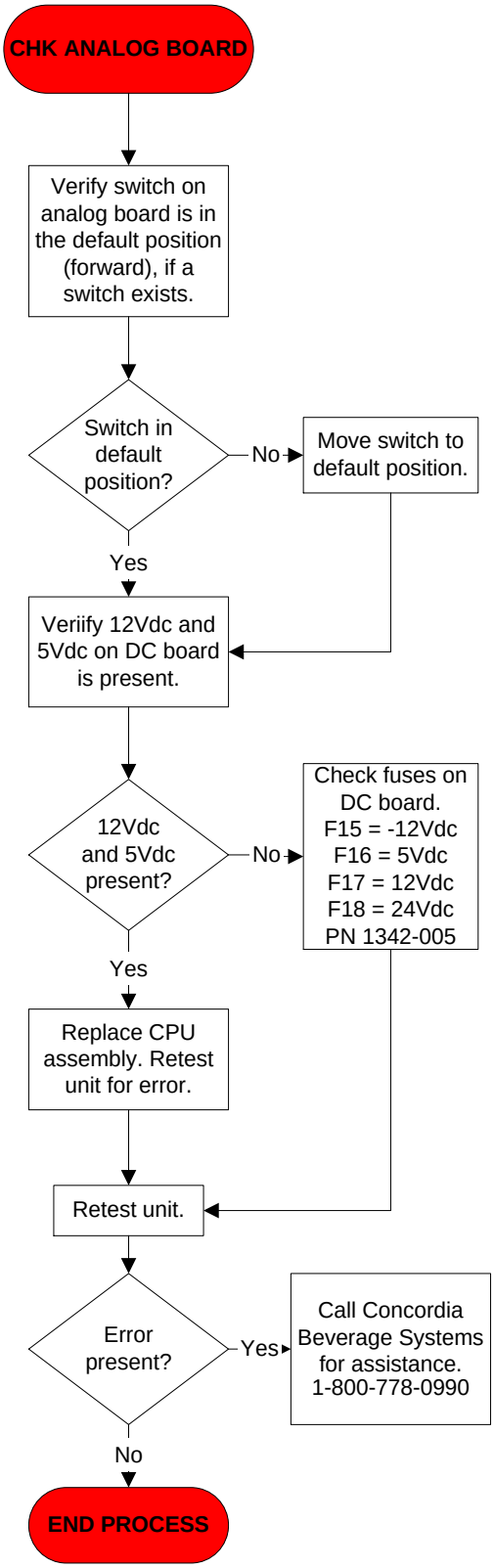
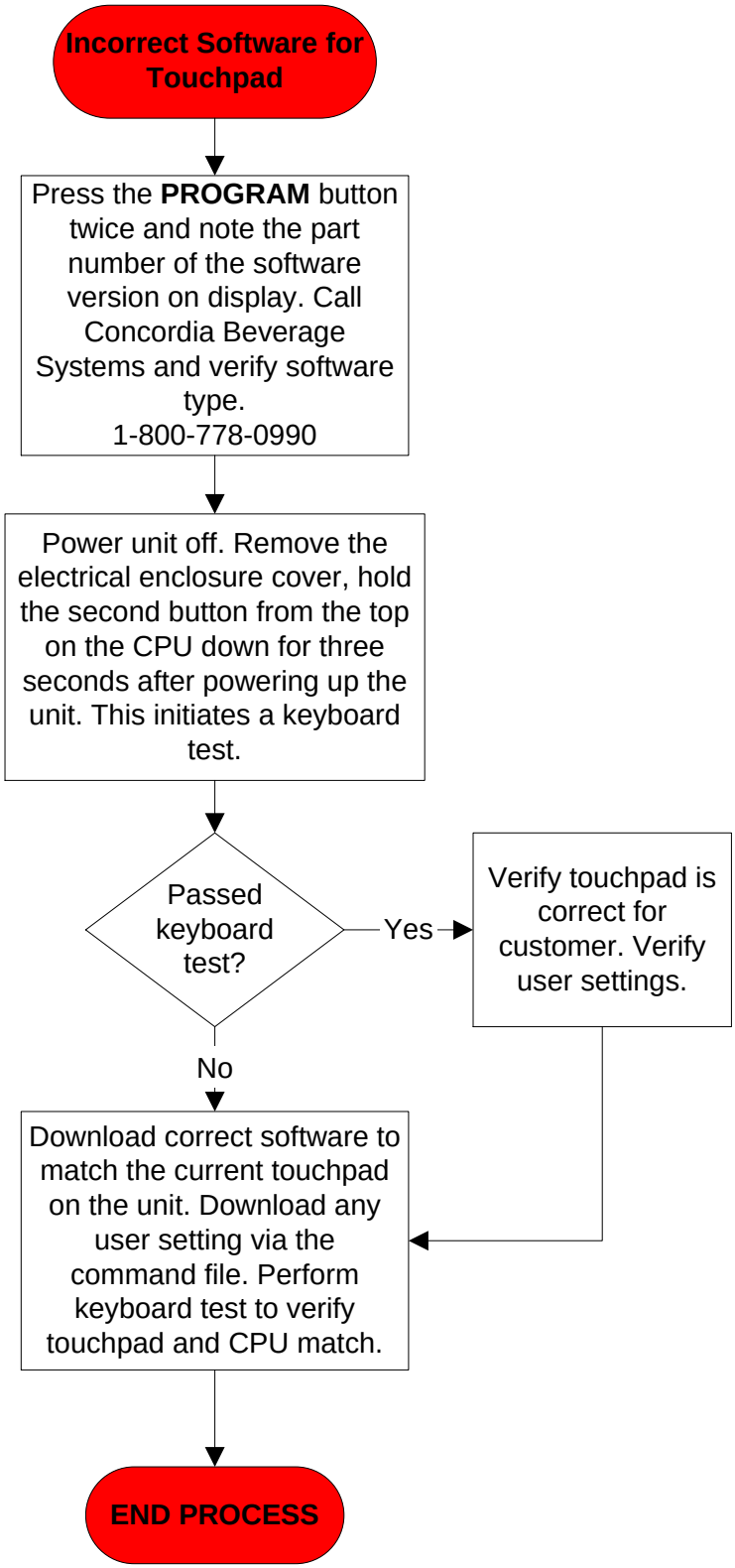
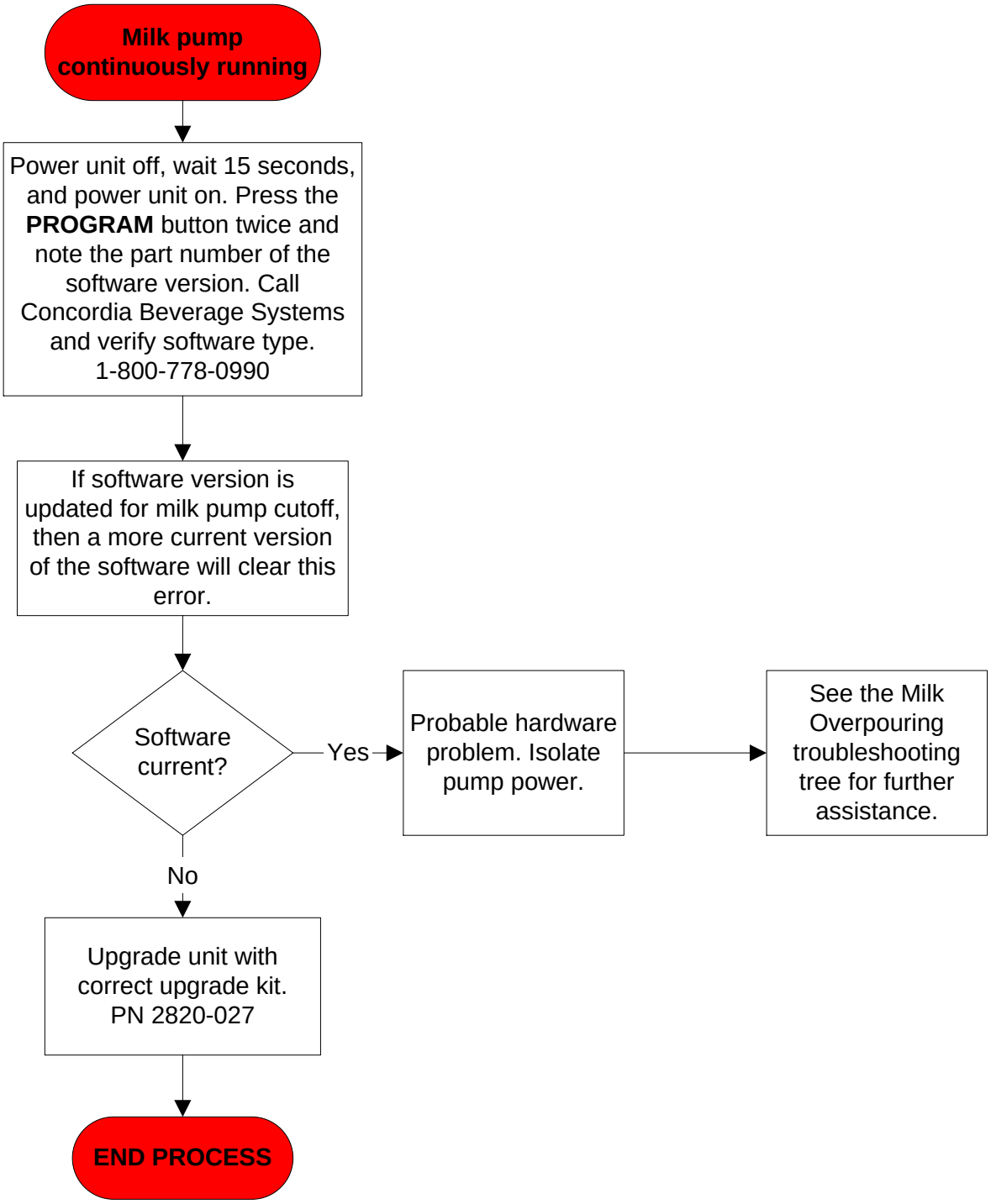
Electrical System: Check Analog Board



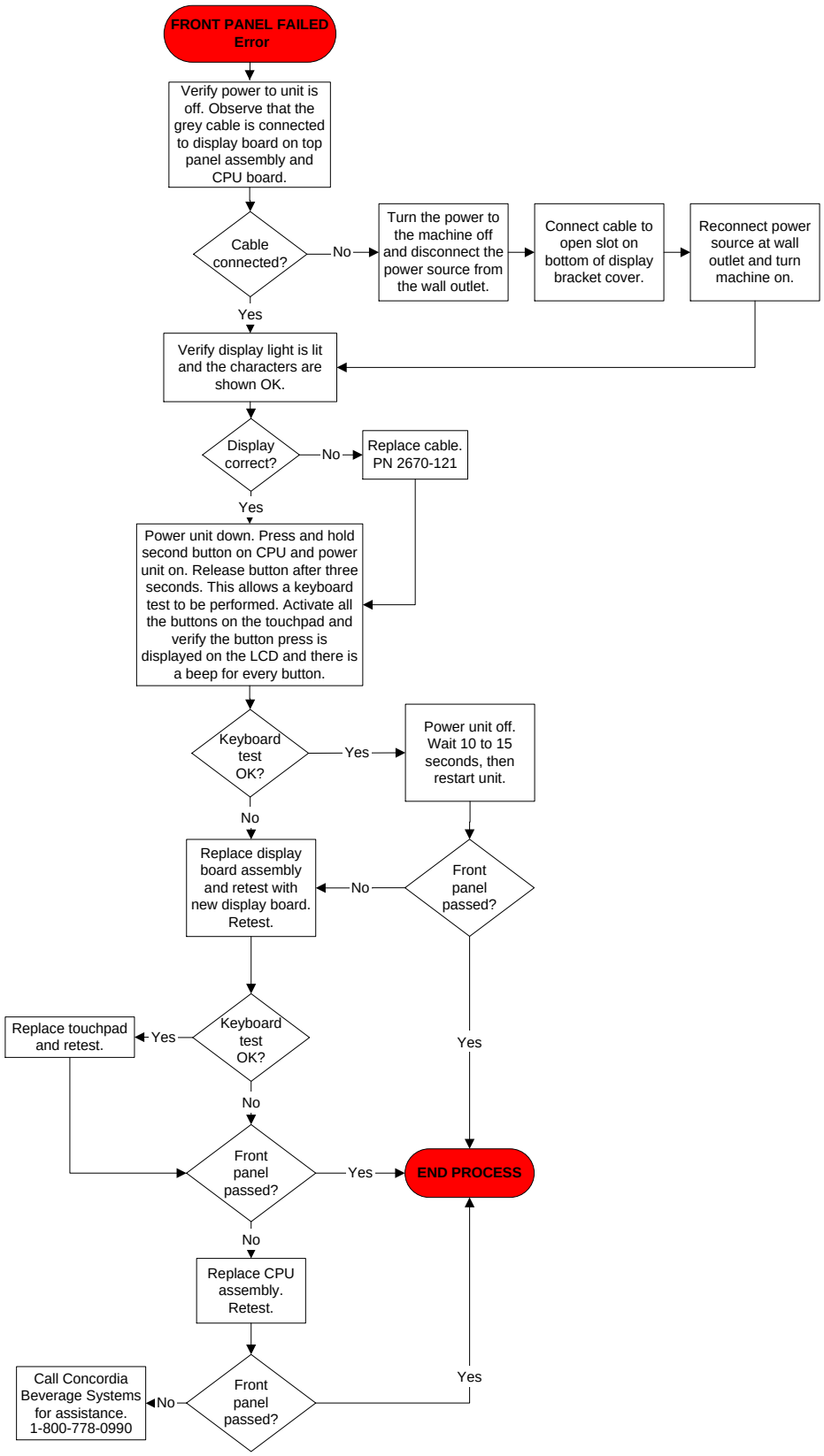
Electrical System: Incorrect Software for Touchpad



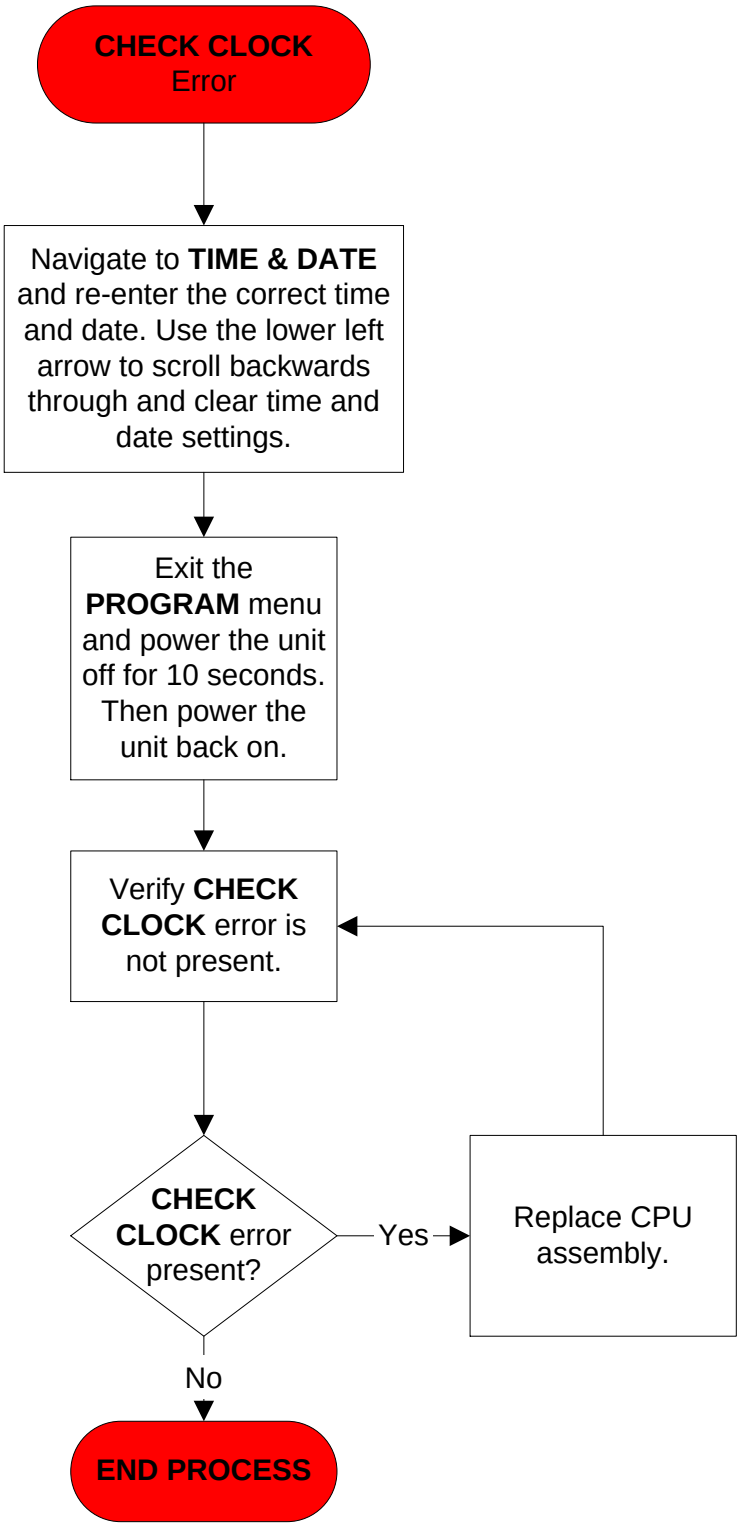
Electrical System: Milk Pump Running Continuously



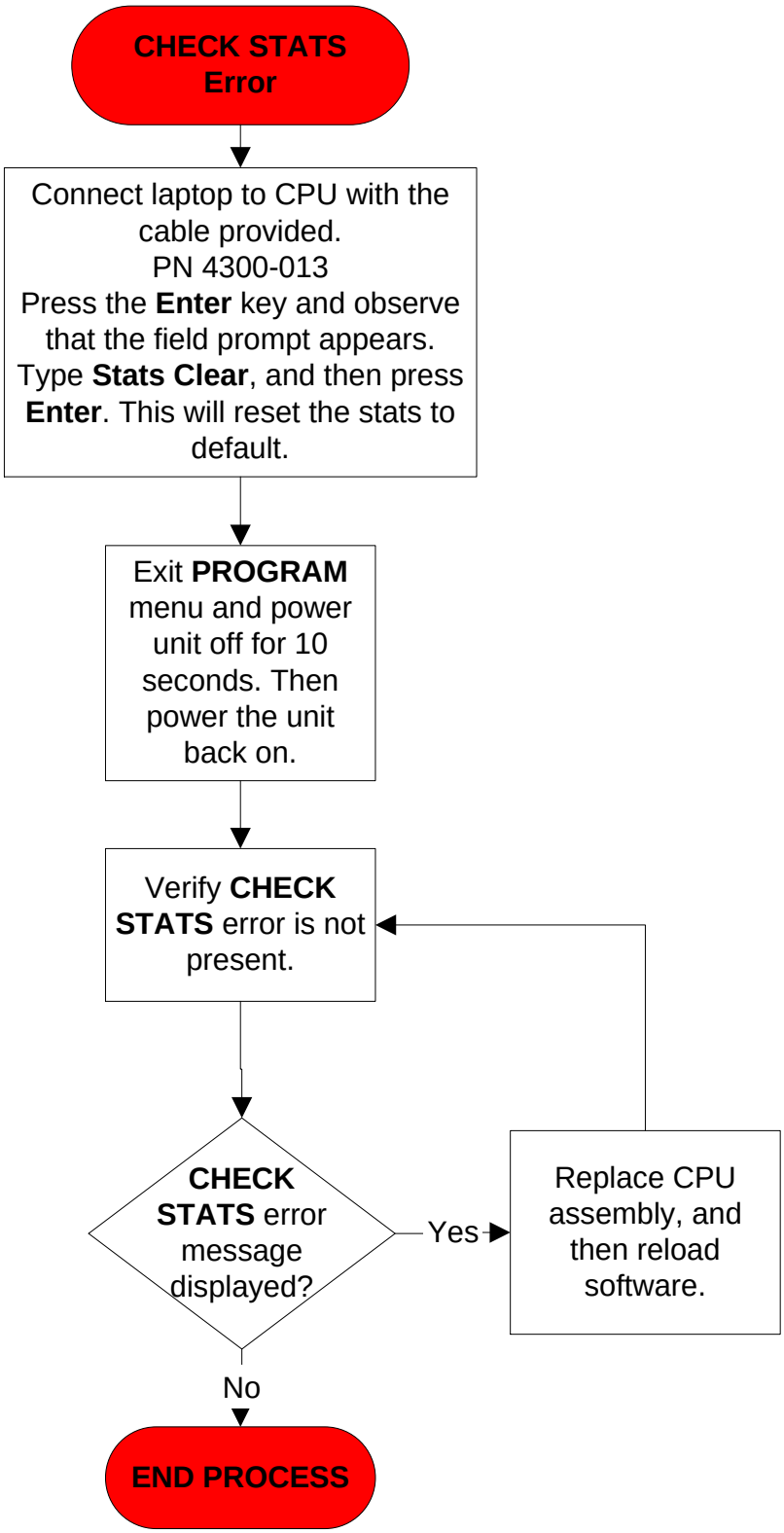
Electrical System: Front Panel Failed



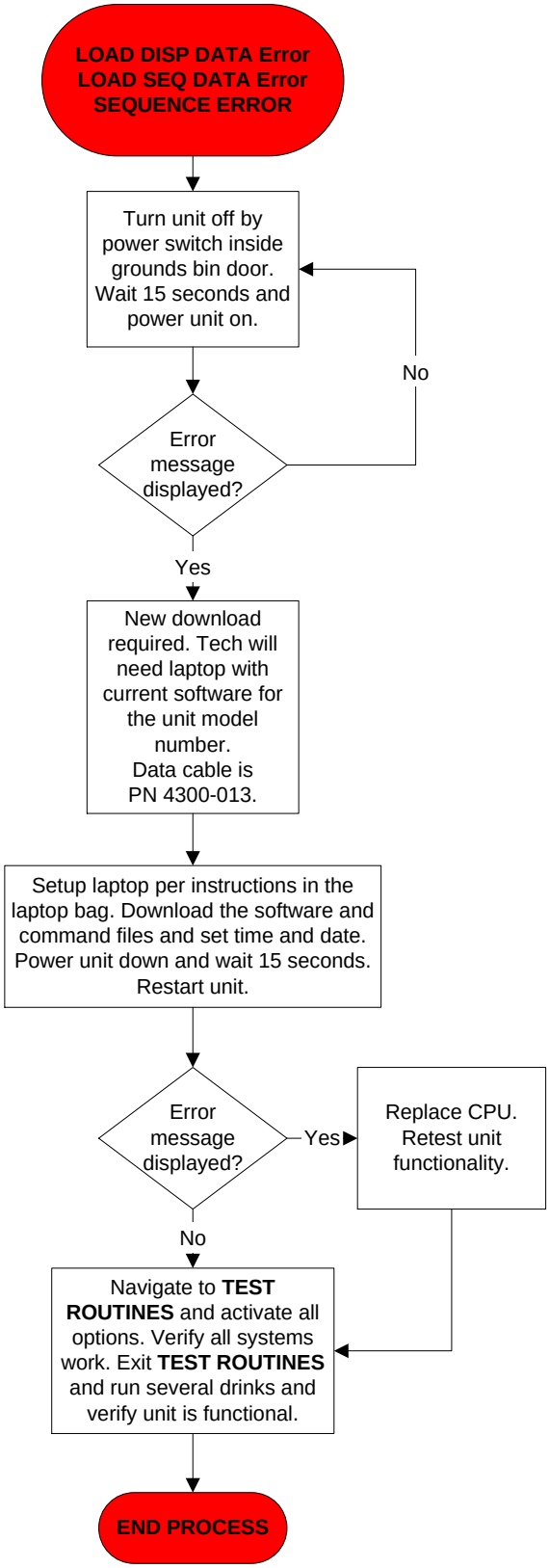
Electrical System: Check Clock



Electrical System: Check Stats



Electrical System: CPU Load Disp and Seq Error



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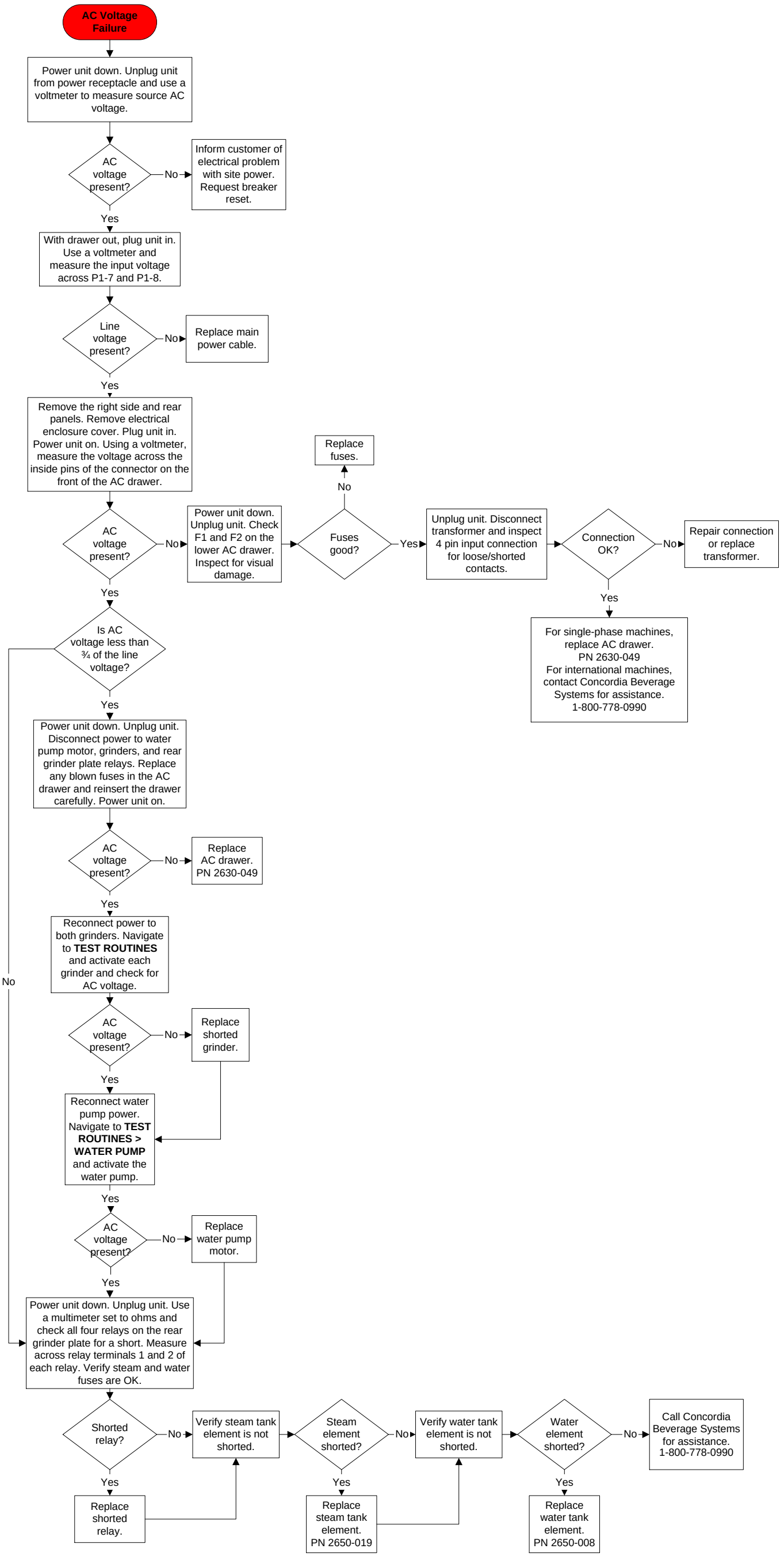
Electrical System: AC Voltage Error



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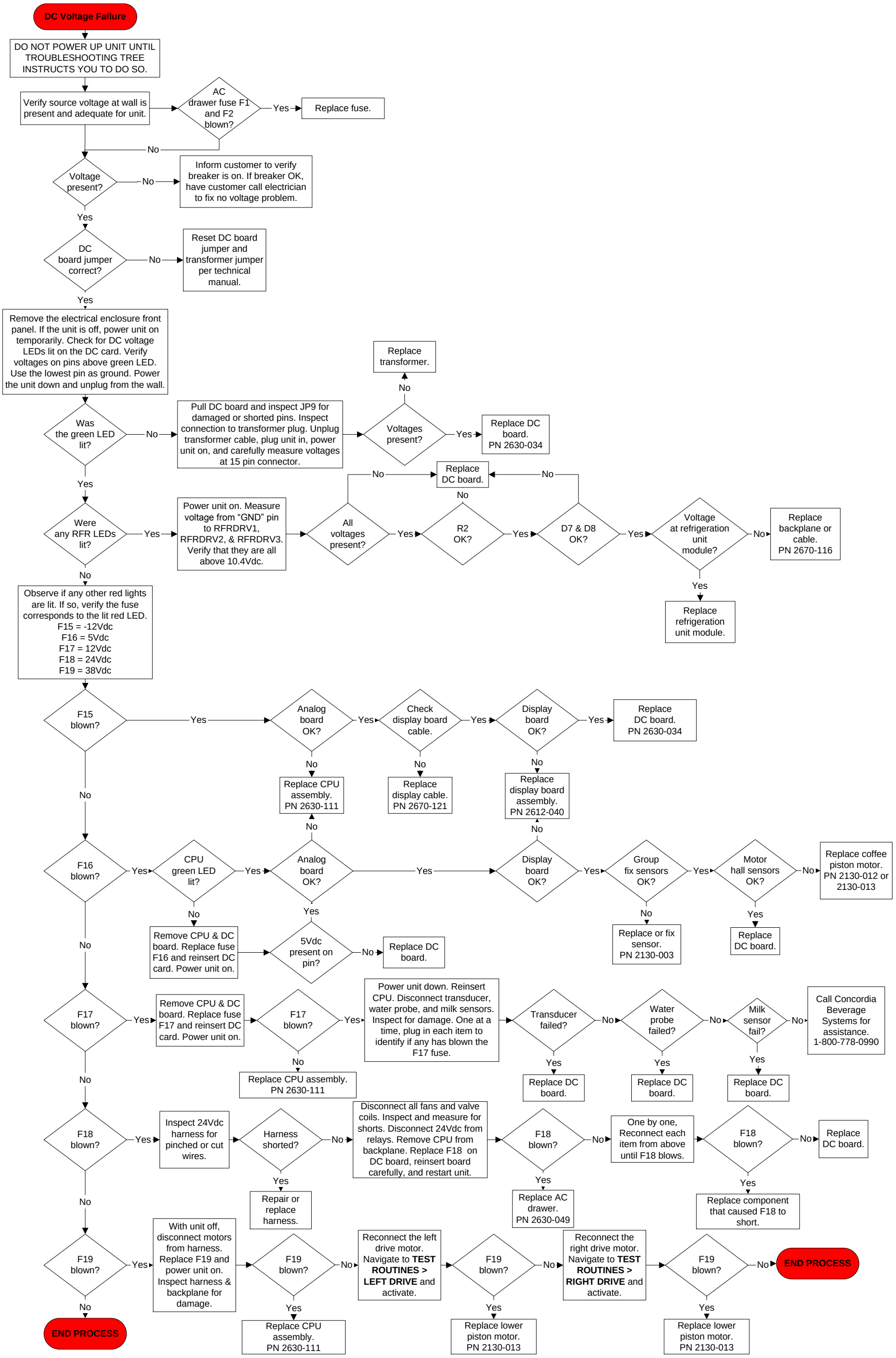
Electrical System: DC Voltage Failure



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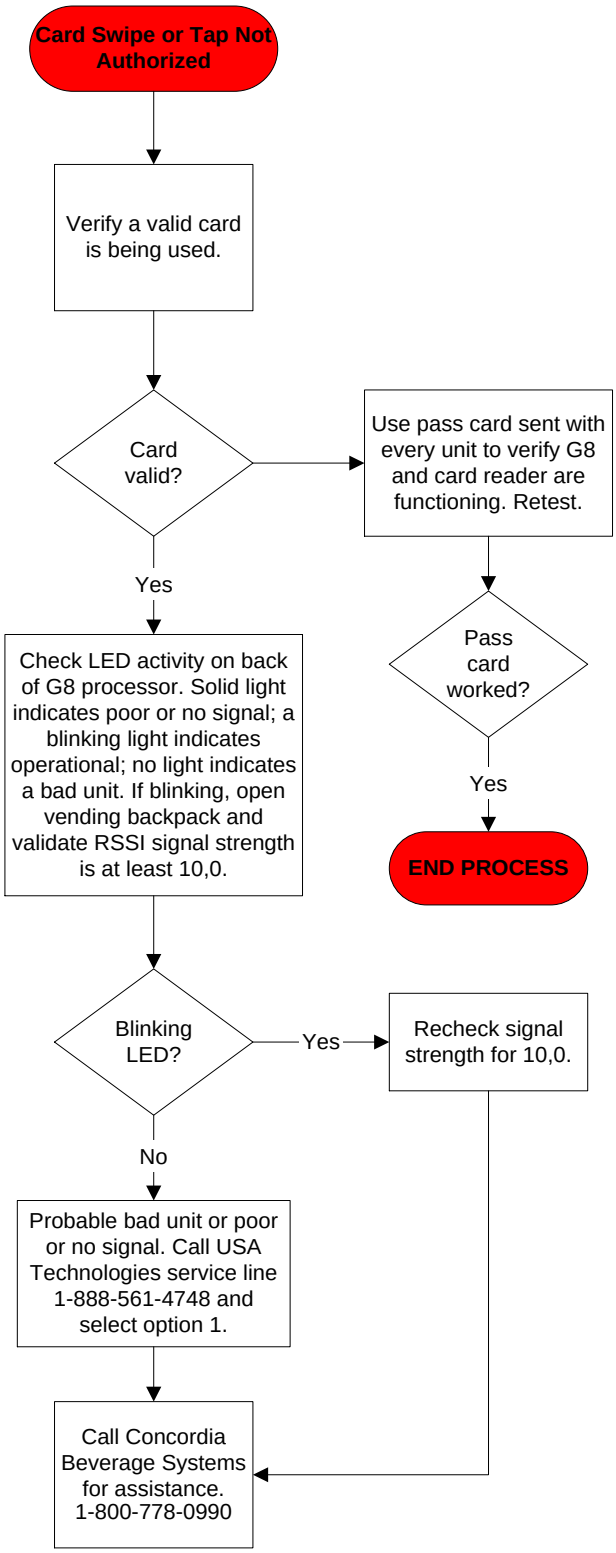
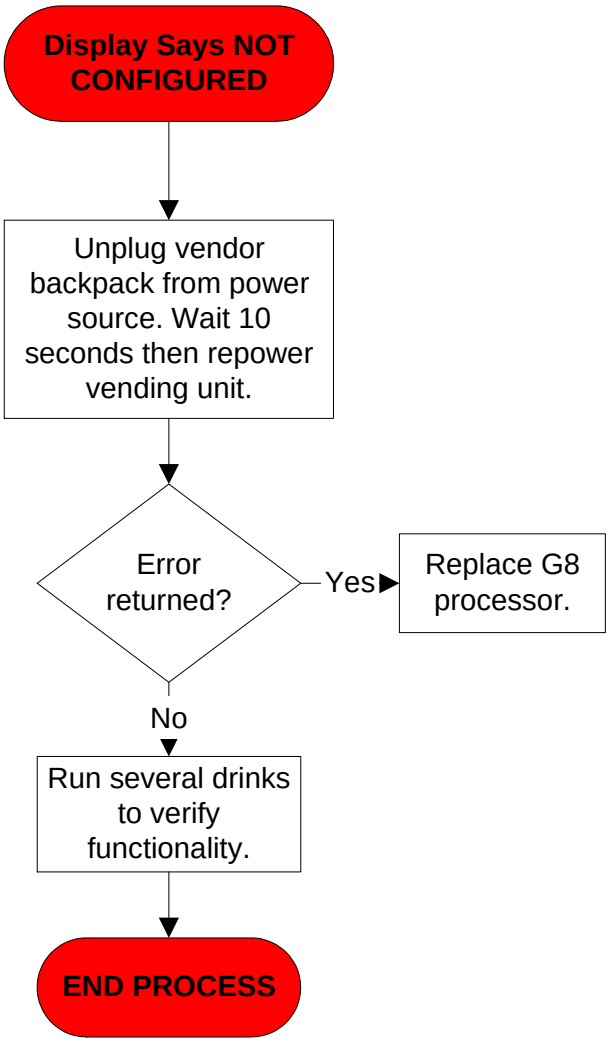
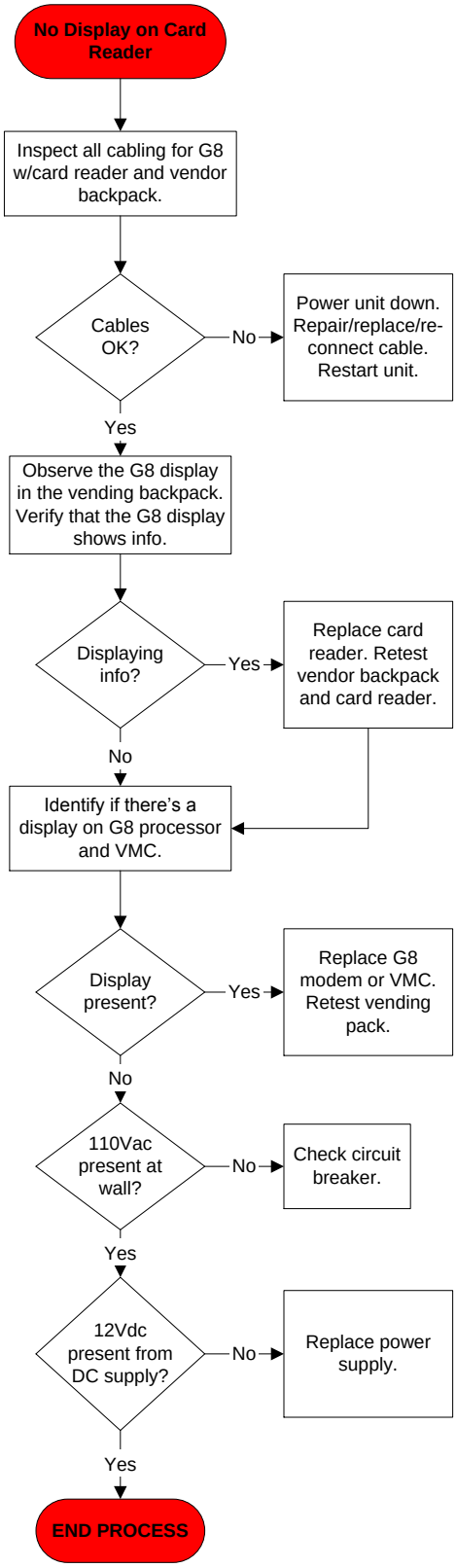
Vending System: Card Swipe or Tap Not Authorized



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

TECHNICAL SUPPORT

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” Channelocks®	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

Consumables

	CONCORDIA PART NUMBER
Heat sink compound	3900-003
Superlube pen	3100-002
Teflon tape – 1/4” & 1/2”	3300-013
Ty-Wrap (100)	1454-014
RTV silicone seal	3200-003

Parts Lists and Diagrams

1	Machine Overview
2	Grounds Bin Door, Refrigerator Door with Hot Water Button Assembly
3	Refrigerator Door with Steam Wand Assembly
4	Front Panel
5	Top Panel
6	Grinder Assembly
7	Grinder Adjustment Assembly
8	Group Upper and Lower Piston Assembly
9	Group Drive System
10	Milk Pump Assembly
11	Product Delivery Assembly Xpress 6
12	Product Delivery Assembly Xpress 0
13	Refrigeration Unit Cooling Assembly
14	Chocolate Sauce Delivery System
15	Syrup Delivery System
16	Refrigeration Unit Cooling Assembly
17	Steam Tank, Front
18	Steam Tank, Rear
19	Water Pump and Motor
20	Hot Water Tank
21	Water/Steam Gauge/Air Valve Assembly
22	Drain Valve Bridge Web Assembly

Diagram 1: Machine Overview

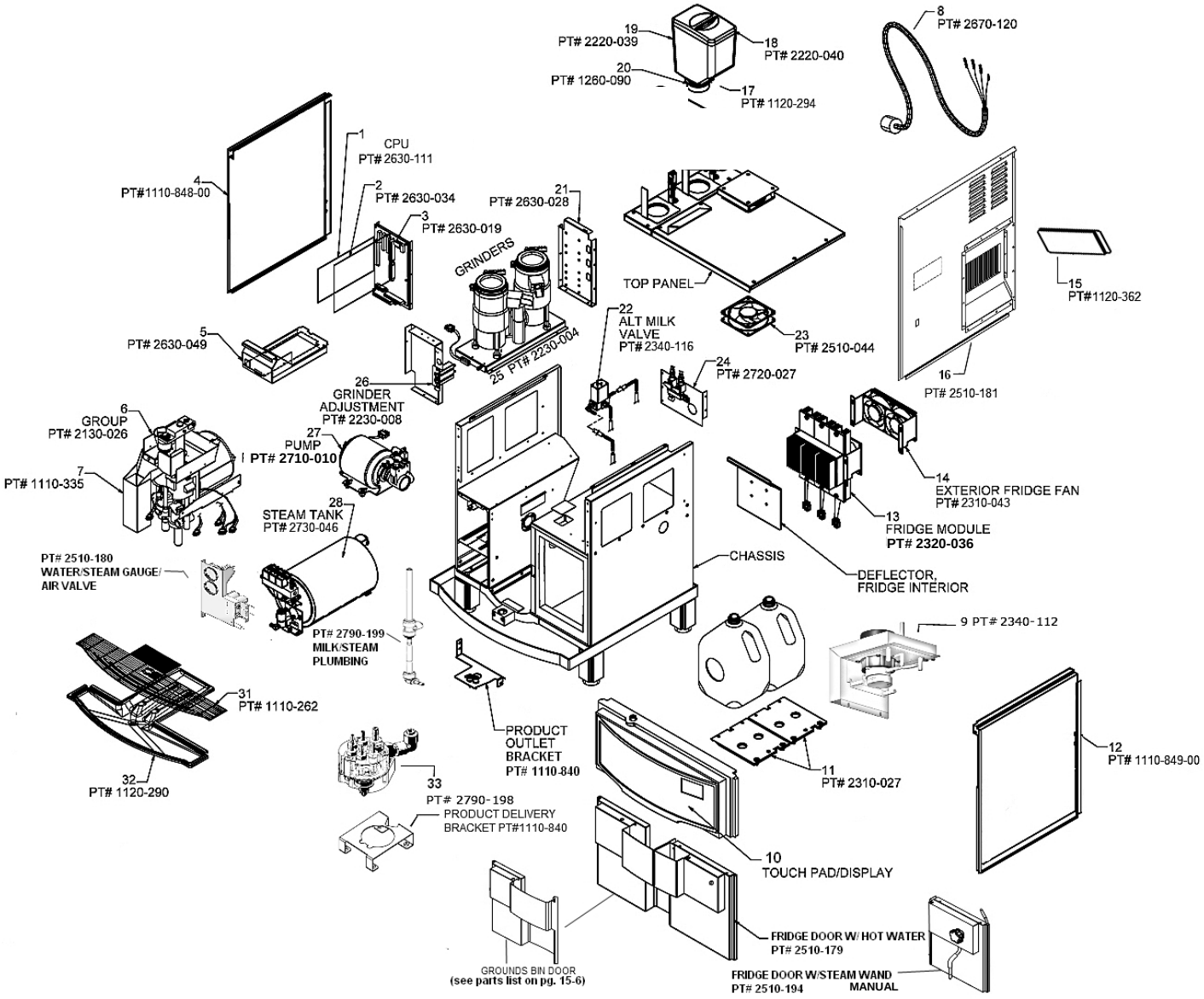
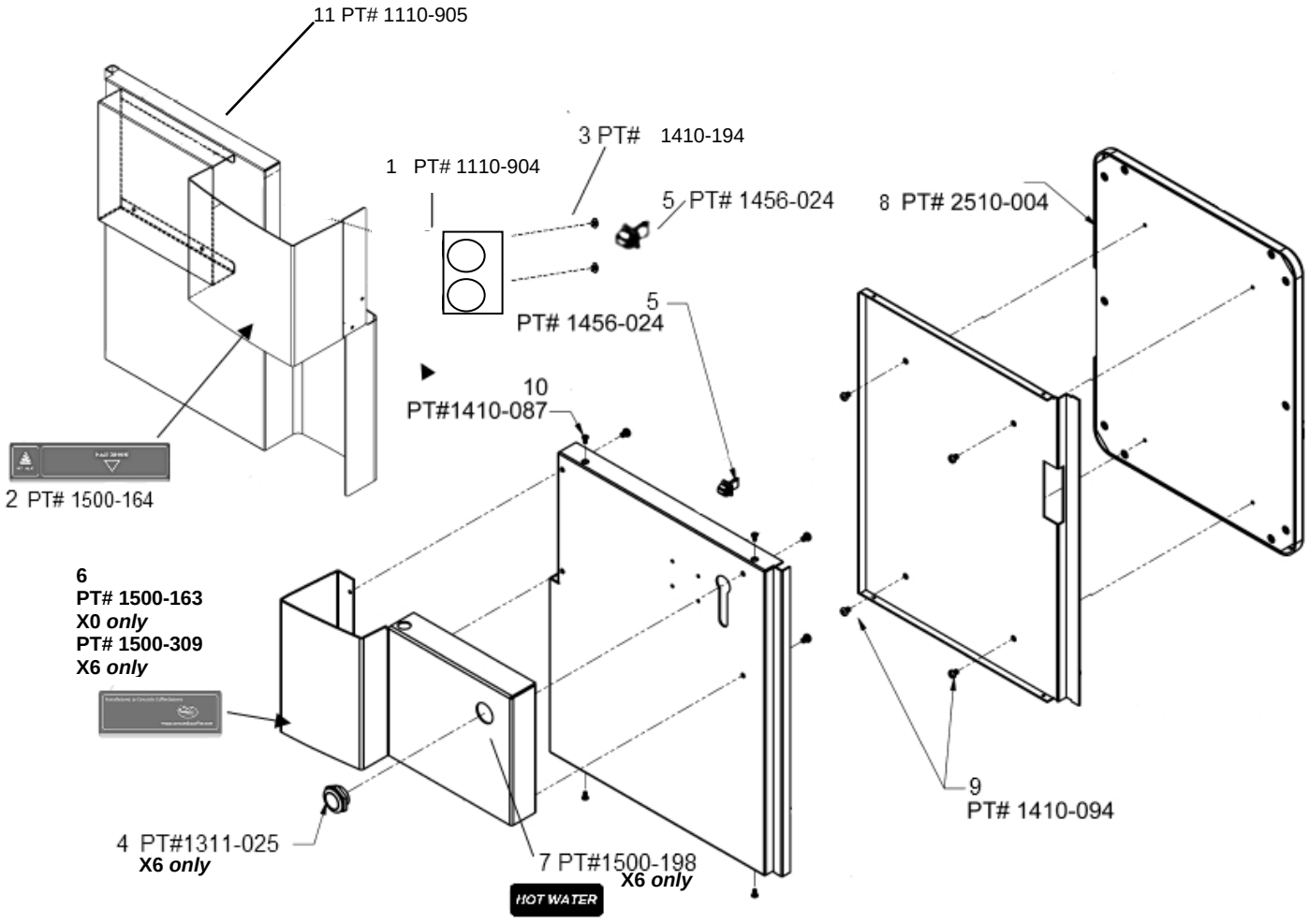


Diagram 1, Parts List: Machine Overview

Diagram 1 Item #	Description	Available	Concordia Part Number
1	ASSY CPU PROGRAMMED	YES	2630-111
2	ASSY- DC SUPPLY	YES	2630-034
3	ASSY- BACK PLANE	YES	2630-019
4	PANEL SIDE LEFT	YES	1110-848-00
5	ASSY AC DRWR SGL PHASE	YES	2630-049
6	ASSY GRP/WTR TANK	YES	2130-026
7	CHUTE DREGS 2000 NSF	YES	1110-335
8	POWER CORD 4 COND STD (L14 30P)	YES	2670-120
9	ASSY MILK PUMP BOX	YES	2340-112
10	TOUCH PAD XPRESS 6	YES	2640-078
11	ASSY WEIGHT TRAY SMALL	YES	2310-027
12	PANEL SIDE RIGHT	YES	1110-849-00
13	ASSY RFR MODULE XPRESS	YES	2320-036
14	ASSY FRIDGE EXTERNAL FAN	YES	2310-043
15	FILTER FOAM	YES	1120-362
16	ASSY- PNL- REAR	YES	2510-181
17	STOPPER BEAN HOPPER	YES	1120-294
18	LID HOPPER	YES	2220-040
19	HOPPER	YES	2220-039
20	O RING BEAN HOPPER	YES	1260-090
21	ASSY PLATE REAR GRIND/SSR	YES	2630-028
22	ASSY ALT MILK VALVE PV	YES	2340-116
23	EXHAUST FAN- 24VDC	YES	2510-044
24	ASSY- DRAIN VLV/BRIDGE WEB	YES	2720-027
25	ASSY- GRINDER DBL 200V	YES	2230-004
26	ASSY- GRINDER DBL- ADJUST	YES	2230-008
27	ASSY WTR PMP/MTR 2.5K	YES	2710-010
28	ASSY STM TANK	YES	2730-046
31	GRATE DRAIN TRAY NSF	YES	1110-262
32	TRAY DRAIN	YES	1120-290
33	ASSY – PRODUCT DELIVERY	YES	2790-198

Fuses and Relays: *not shown*	**Available**	
RELAY-SOLID STATE 45 AMP	YES	1312-034
FUSE- 5 AMP- TR5- DC SPLY	YES	1342-005
FUSE- 5 AMP 5X20MM AC LOW	YES	1342-006
FUSE 20A CERAMIC TIME DLY	YES	1342-010

Diagram 2: Grounds Bin Door, Refrigerator Door with Hot Water Button Assembly



ASSY RFR DR W/HOT WATER SWITCH
PT # 2510-179
X6 *only*

ASSY FRG DR W/STM XPRESS MANUAL STEAM WAND
PT# 2510-194
X0 *only*

ASSY FRG DR XPRESS 6
PT# 2510-179

ASSY FRG DR XPRESS 0
PT# 2510-193

Diagram 2, Parts List: Refrigerator Door with Hot Water Button Assembly

Diagram 2 Item #	Description	Available	Concordia Part Number
	ASSY BIN DOOR XPRESS	YES	2510-216
1	BRKT BIN DR LATCH	YES	1110-904
2	LBL DREGS DOOR	YES	1500-164
3	PH PHIL MS SS 6-32 X 1/8	YES	1410-194
	ASSY RFR DR W/HOT WTR SW *(X6 only)*	YES	2510-179
	ASSY FRG DR W/STM XPRESS *(X0 only)*	YES	2510-194
4	SW HOT WATER I6 *(X6 only)*	YES	1311-025
5	STRIKE FASTEX	YES	1456-024
6	LBL RFR DOOR 2.5K *(X0 only)*	YES	1500-163
6	LBL ALLERGEN RFR DOOR X6	YES	1500-309
7	LBL HOT WATER *(X6 only)*	YES	1500-198
8	ASSY-DOOR INTERIOR-2500	YES	2510-004
9	*NOT SHOWN* PH PHIL SS 6-32 X 3/16	YES	1410-094
10	*NOT SHOWN* FH PH MS SS UCT 4-40 X ¼	YES	1410-087
11	DOOR BIN XPRESS	YES	1110-905

Diagram 3: Refrigerator Door with Steam Wand Assembly

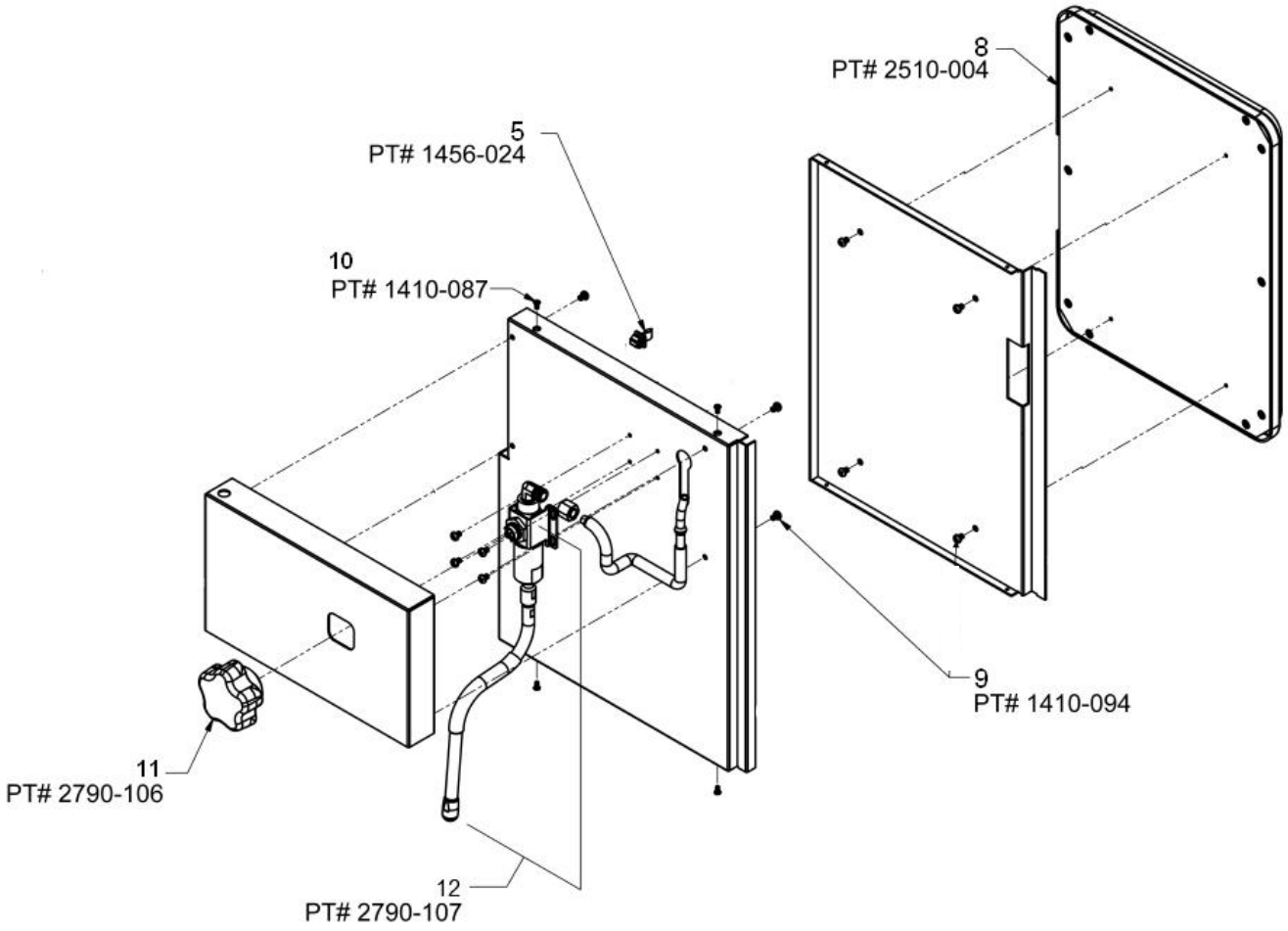


Diagram 3, Parts List: Refrigerator Door with Steam Wand Assembly

Diagram 3 Item #	Description	Available	Concordia Part Number
	ASSY RFR DR W/STEAM WAND	YES	2510-194
5	STRIKE FASTEX	YES	1456-024
8	ASSY-DOOR INTERIOR-2500	YES	2510-004
9	PH PHIL SS 6-32 X 3/16	YES	1410-094
10	FH PH MS SS UCT 4-40x1/4	YES	1410-087
11	ASSY KNOB STEAM WAND	YES	2790-106
12	ASSY STM WAND 2500	YES	2790-107

Diagram 4: Front Panel

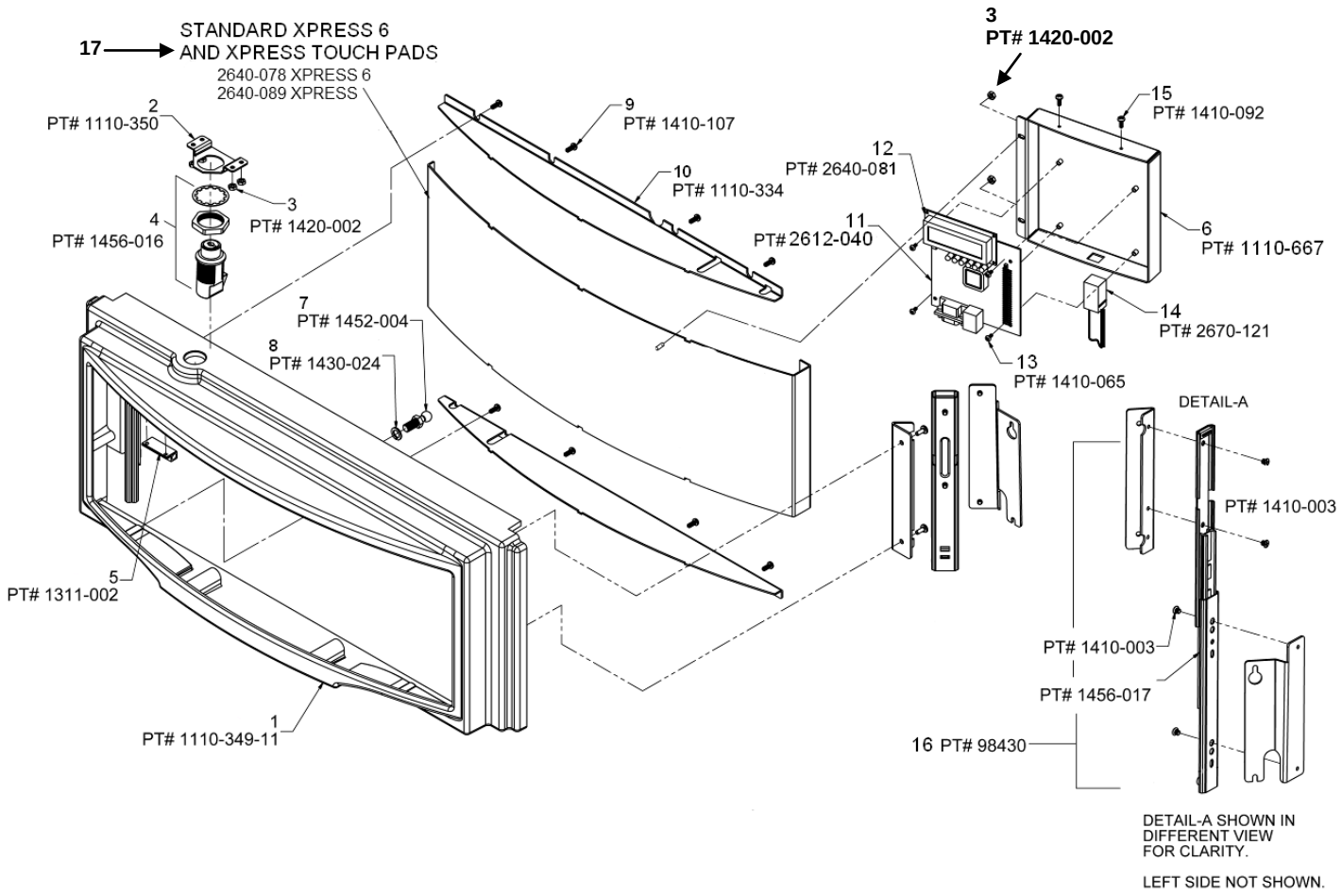


Diagram 4, Parts List: Front Panel

Diagram 4 Item #	Description	Available	Concordia Part Number
	ASSY – FRONT PANEL X6	YES	2640-086
	ASSY – FRONT PANEL X0	YES	2640-094
1	PNL FNT CAST BLACK	YES	1110-349-11
2	BRKT MTG KEY LATCH 2000	YES	1110-350
3	NUT HEX SS 6-32	YES	1420-002
4	LATCH-KEY-LOCKING	YES	1456-016
5	MAGNET ONLY	YES	1311-002
6	COVER DISPLAY DUAL TP	YES	1110-667
7	STUD BALL MOUNT	YES	1452-004
8	WSHR SPLIT LOCK SS M8	YES	1430-024
9	PH PHIL SS 6-32 X 3/8	YES	1410-107
10	BRKT MNT TOUCHPAD	YES	1110-334
11	PCA DISPLAY EXPANDED	YES	2612-040
12	DISPLAY BLUE	YES	2640-081
13	PH PHIL MS SS 4-40X ¼	YES	1410-065
14	CBL-FRONT DOOR	YES	2670-121
15	PH PHIL NYLON 6-32 X 3/8	YES	1410-092
16	KIT – FRONT PANEL SLIDES	YES	98430
17	XPRESS 6 TOUCHPAD	YES	2640-078
17	XPRESS 0 TOUCHPAD	YES	2640-089

Diagram 5: Top Panel

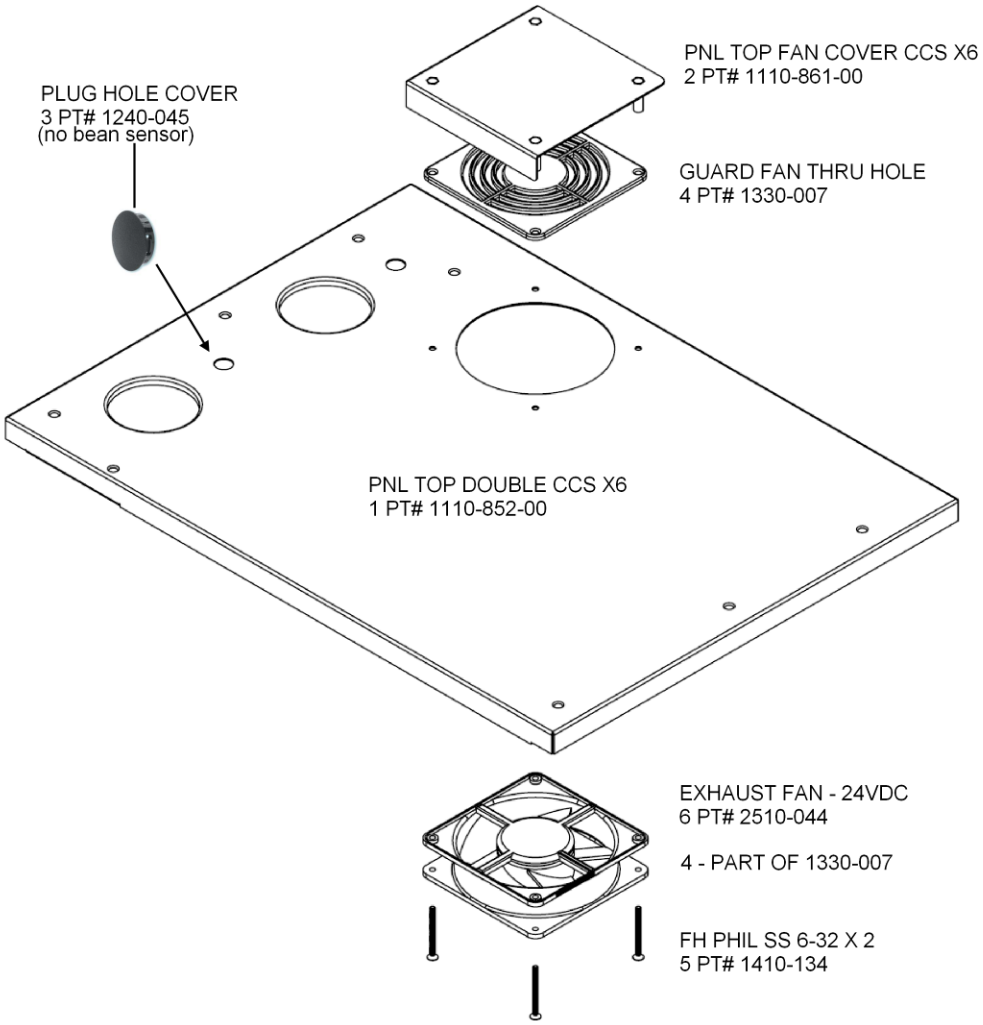


Diagram 5, Parts List: Top Panel

Diagram 5 Item #	Description	Available	Concordia Part Number
	ASSY-PNL-TOP-MAIN	YES	2510-177
1	PNL TOP DOUBLE CCS X6	YES	1110-852-00
2	PNL TOP FAN COVER CCS X6	YES	1110-861-00
3	PLUG HOLE COVER .562	YES	1240-045
4	GUARD FAN THRU HOLE	YES	1330-007
5	FH PHIL SS 6-32 X 2	YES	1410-134
6	EXHAUST FAN- 24VDC	YES	2510-044

Diagram 6: Grinder Assembly

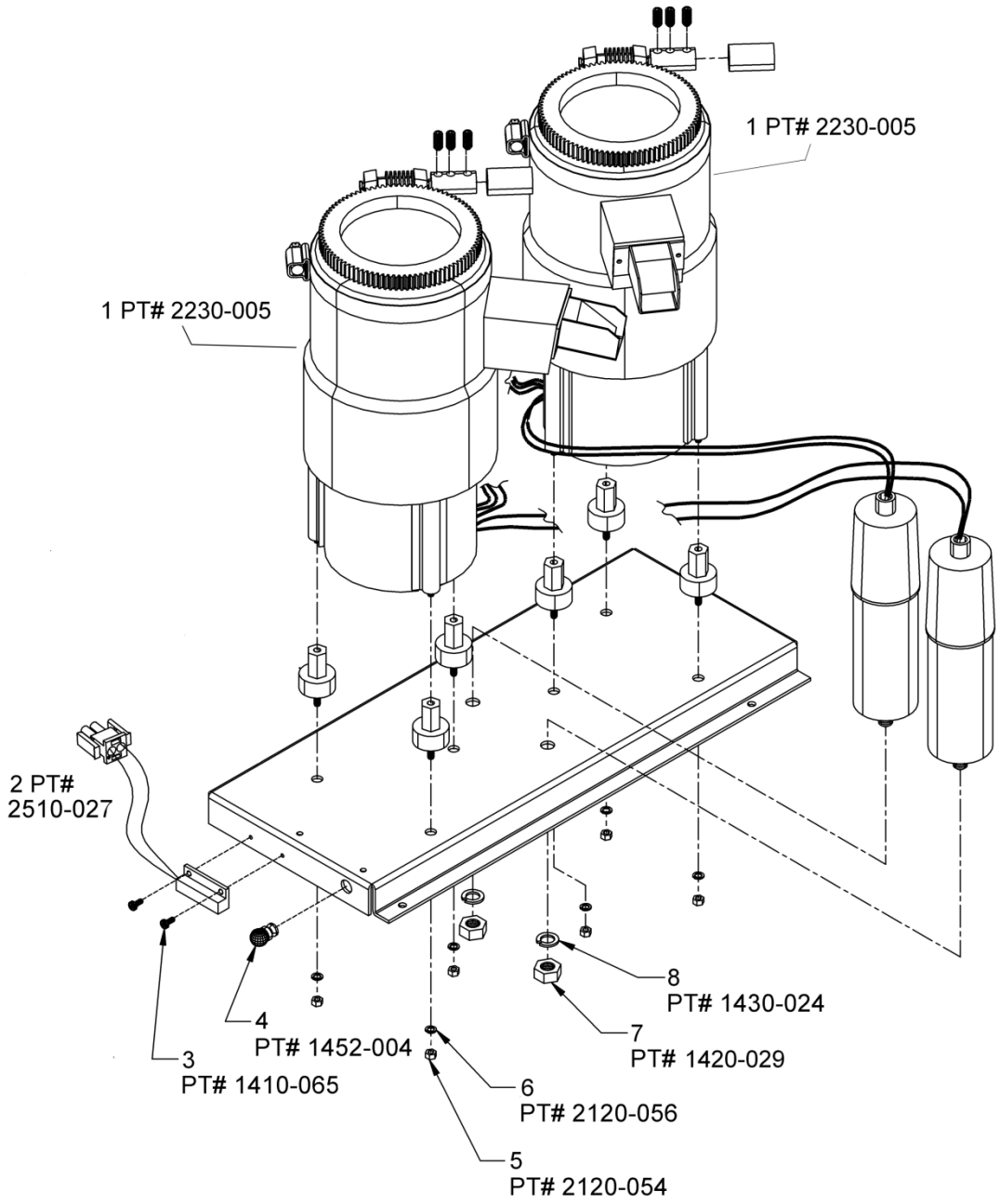


Diagram 6, Parts List: Grinder Assembly

Diagram 6 Item #	Description	Available	Concordia Part Number
	ASSY-GRINDER DBL-200V	YES	2230-004
1	ASSY-GRINDER-200V	YES	2230-005
2	ASSY-SWITCH-MAG-4	YES	2510-027
3	PH PHIL MS SS 4-40x1/4	YES	1410-065
4	STUD BALL MOUNT	YES	1452-004
5	NUT HEX SS M6	YES	2120-054
6	WASH LOCK LWR PISTON M6SS	YES	2120-056
7	NUT HEX SS M8	YES	1420-029
8	WSHR SPLIT LOCK SS M8	YES	1430-024

Diagram 7: Grinder Adjustment Assembly

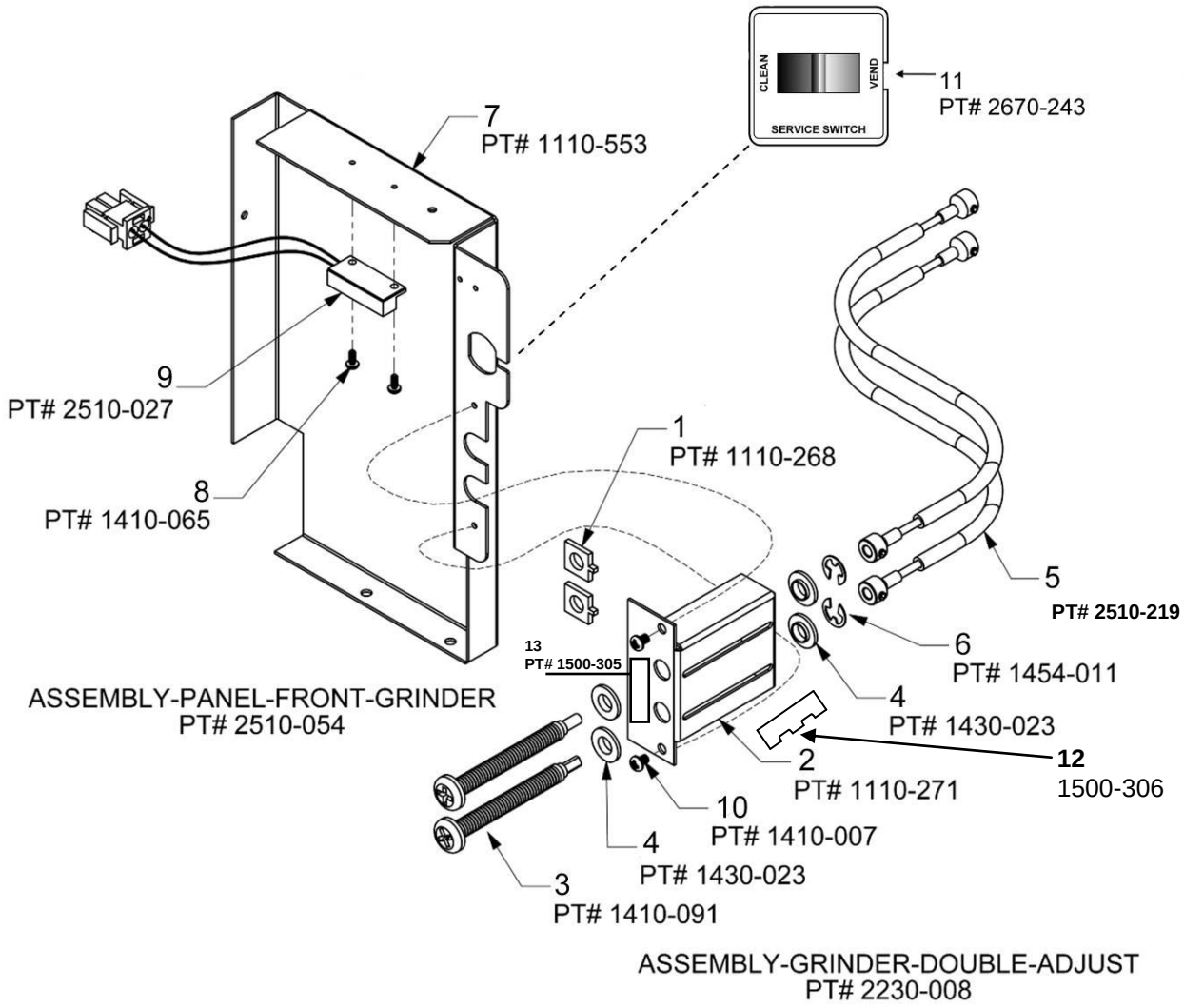


Diagram 7, Parts List: Grinder Adjustment Assembly

Diagram 7 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 8: Group Upper and Lower Piston Assembly

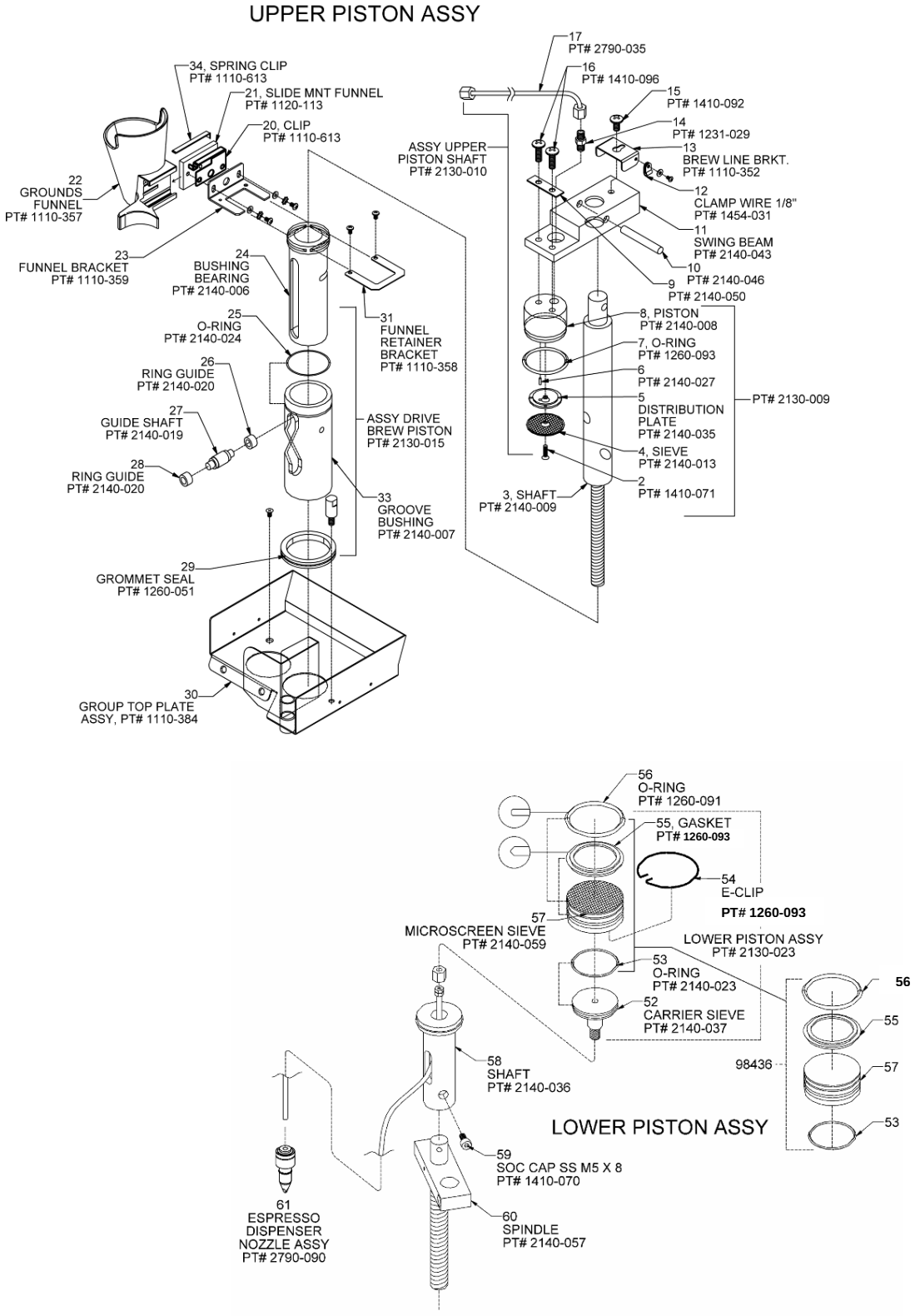


Diagram 8, Parts List: Group Upper and Lower Piston Assembly

Diagram 8 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
	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
	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	CONN BRASS 1/8M X 1/8T	YES	1231-029
15	PH PHIL SS M5 X 8	YES	1410-097
16	PH PHIL- SS- M6 X 25	YES	1410-096
17	ASSY- BREW LINE- 2000	YES	2790-035
	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
	LOWER PISTON ASSEMBLY		
58	TUBE- SHAFT- RR GROUP	YES	2140-036
59	SPC CAP- M5 X 8	YES	1410-070
60	SPINDLE- LWR PISTON DRIVE	YES	2140-057
61	ASSY- NOZZLE- ESPRESSO	YES	2790-090
	ASSY PISTON LOWER SGL	YES	2130-023
52	CARRIER- SIEVE- RR GROUP	YES	2140-037
54	E-CLIP- LOWER PISTON	YES	2140-048
	KIT- LWR PISTON SIEVE	YES	98436
53	O-RING-LWR PISTON-CARRIER	YES	2140-023
55	SEAL PISTON 2.5K	YES	1260-093
56	RING- WIPING- LWR PISTON	YES	1260-091
57	HOLDER- LWR PISTON SIEVE	YES	2140-059

Diagram 9: Group Drive System

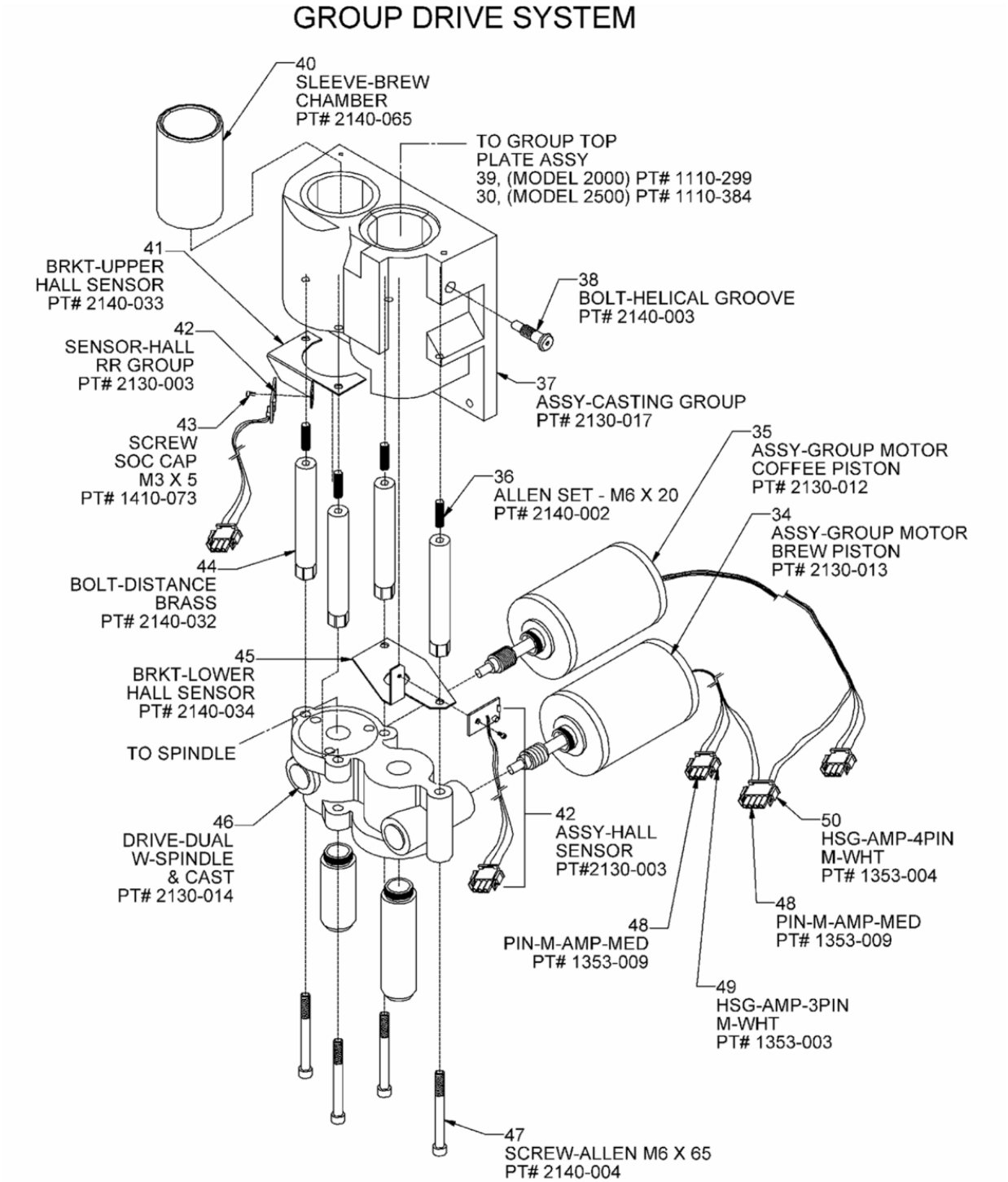


Diagram 9, Parts List: Group Drive System

Diagram 9 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 10: Milk Pump Assembly

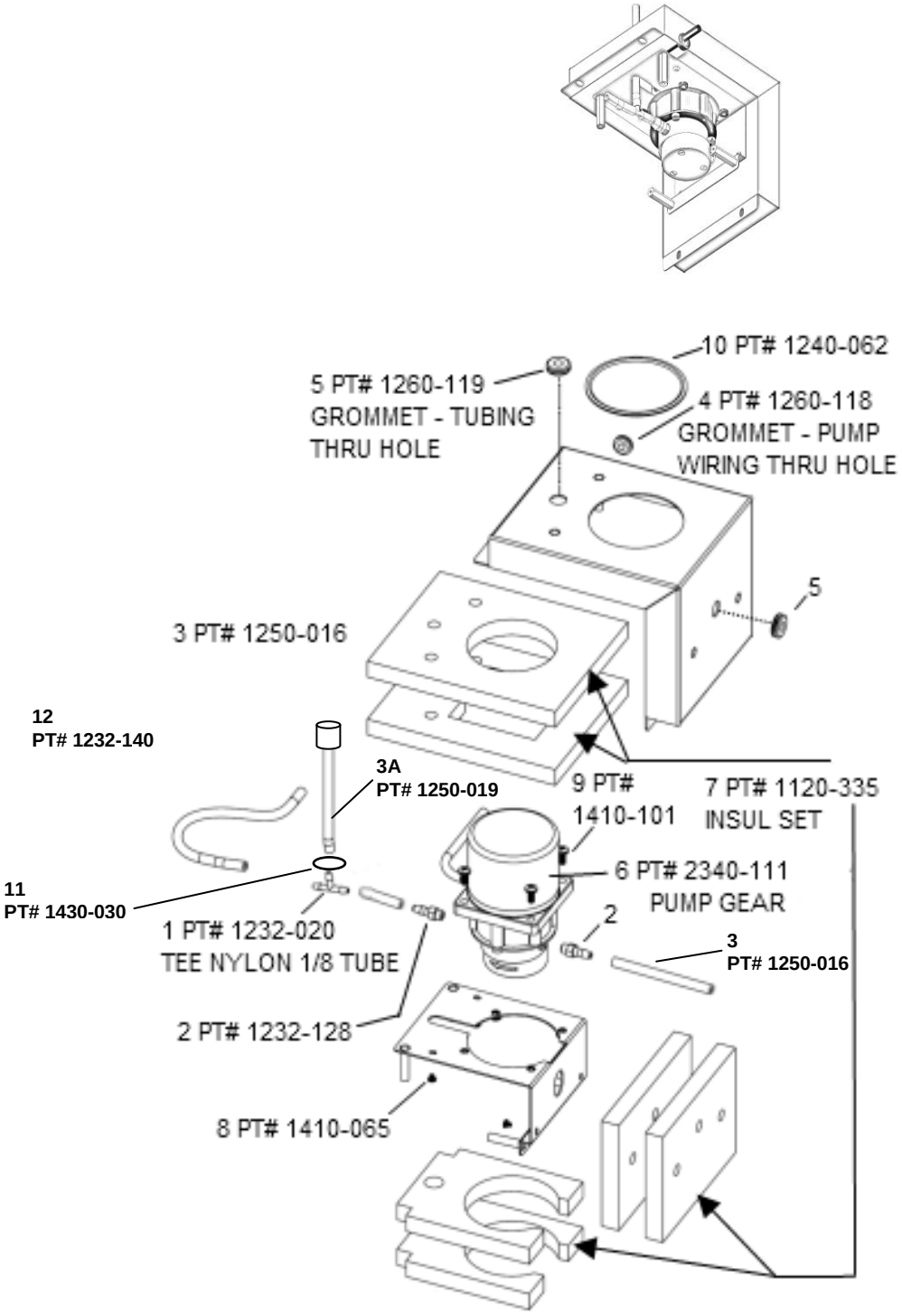


Diagram 10: Parts List, Milk Pump Assembly

Diagram 10 Item #	Description	Available	Concordia Part Number
	ASSY MILK PUMP BOX X6	YES	2340-112
1	TEE NYLON 1/8 TUBE	YES	1232-020
2	CONN ¼-28 UNF X 5/32 BARB	YES	1232-128
3	TUBE SILICONE 1/8 X 1/4	YES	1250-016
3A	TUBE CLR PVC 1/8 X 1/4	YES	1250-019
4	GROM 3/16ID X 1/2OD X 1/16 GR	YES	1260-118
5	GROM 1/4ID X 3/16OD X 1/16GJ	YES	1260-119
6	PUMP GEAR MILK X6	YES	2340-111
7	INSUL SET MLK PMP BOX X6	YES	1120-335
8	PH PHIL MS SS 4-40 X ¼	YES	1410-065
9	PH PHIL MS SS 8-32 X ½	YES	1410-101
10	TRIM 3/16 EDGE RUBBER BLK	YES	1240-062
11	*NOT SHOWN* WASH NYL.443IDX.750X1/8	YES	1430-030
12	*NOT SHOWN* CONN BARB 1/8 X LUER MALE	YES	1232-140

Diagram 11: Product Delivery Assembly, Xpress 6

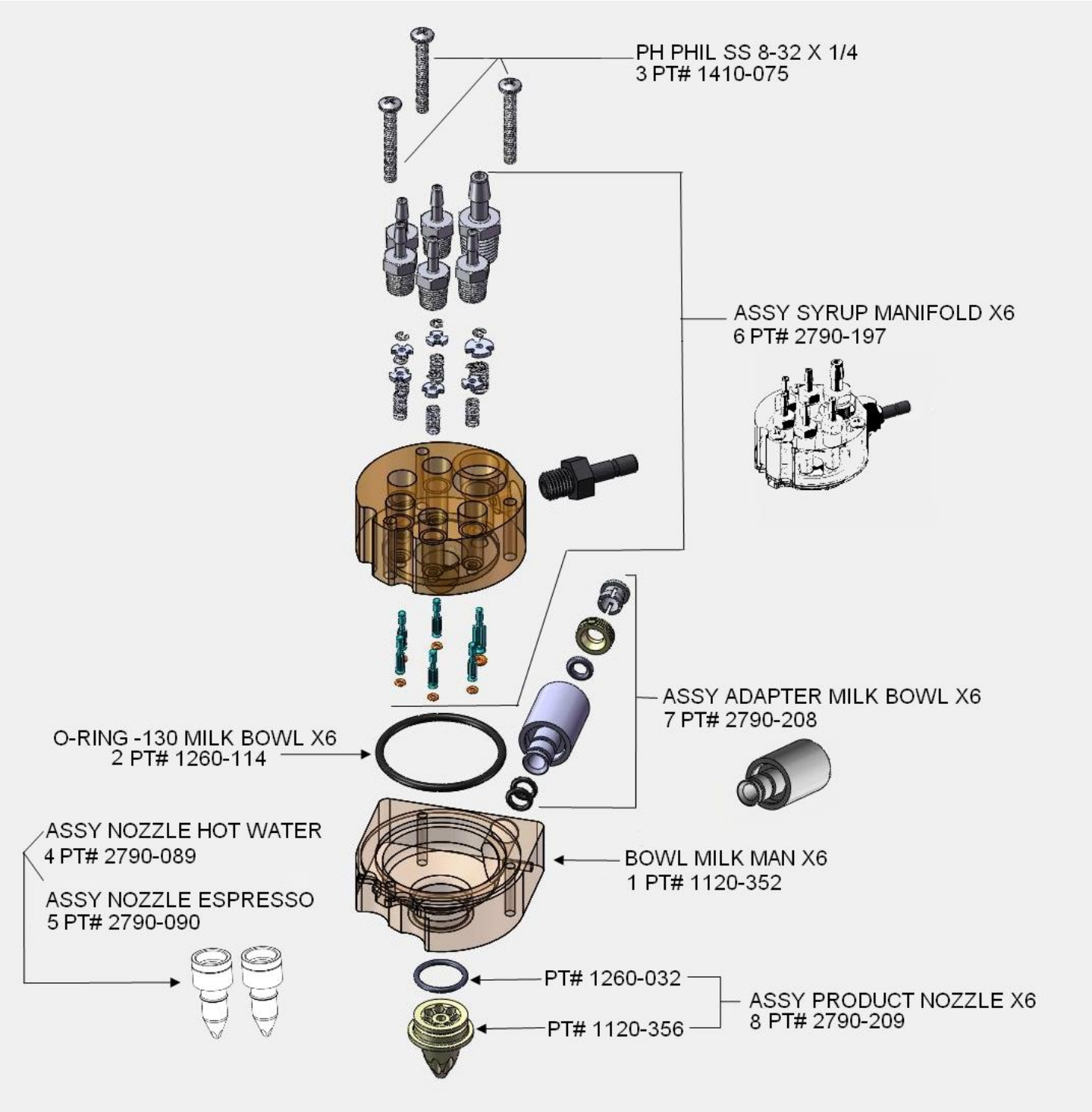


Diagram 11, Parts List: Product Delivery Assembly, Xpress 6

Diagram 11 Item #	Description	Available	Concordia Part Number
	ASSY PRODUCT DELIVERY X0	YES	2790-216
	ASSY PRODUCT DELIVERY X0-X6	YES	2790-198
1	BOWL MILK MAN X6	YES	1120-352
2	O-RING -130 MILK BOWL X6	YES	1260-114
3	PH PHIL SS 8-32 X 1-1/4	YES	1410-075
4	ASSY- NOZZLE- HOT WATER	YES	2790-089
5	ASSY- NOZZLE- ESPRESSO	YES	2790-090
6	ASSY SYRUP MANIFOLD X6	YES	2790-197
7	ASSY ADAPTER MLK BOWL X6	YES	2790-208
8	ASSY PRODUCT NOZZLE X6	YES	2790-209

Diagram 12: Product Delivery Assembly, Xpress o

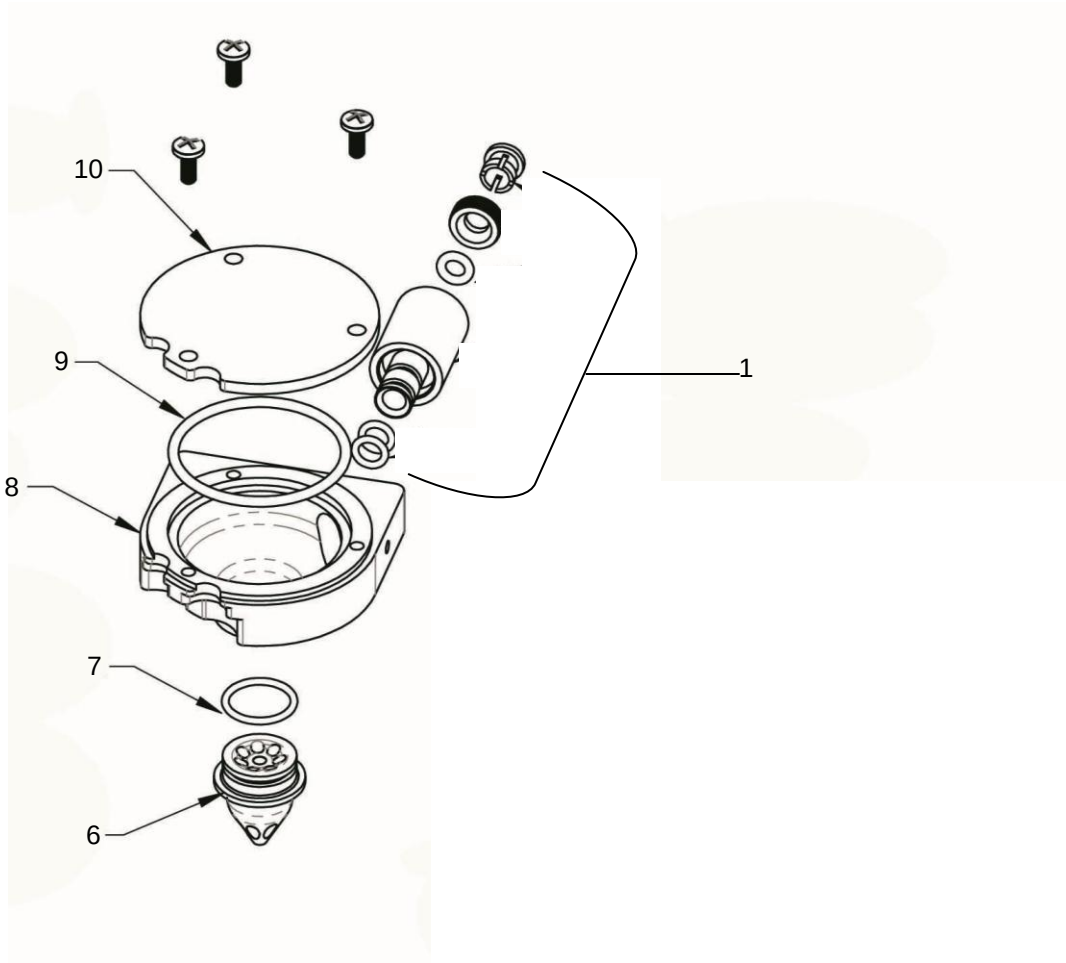


Diagram 12, Parts List: Product Delivery Assembly, Xpress

Diagram 12 Item #	Description	Available	Concordia Part Number
1	ASSY ADAPTER MLK BOWL X6	YES	2790-208
6	NOZZLE MILK DEL XPRESS	YES	1120-356
7	O RING- MILK VALVE-NOZZLE	YES	1260-032
8	BOWL MILK MAN X6	YES	1120-352
9	O-RING -130 MILK BOWL X6	YES	1260-114
10	CVR BOWL MILK XO	YES	1120-366

Diagram 13: Refrigeration Unit Assembly

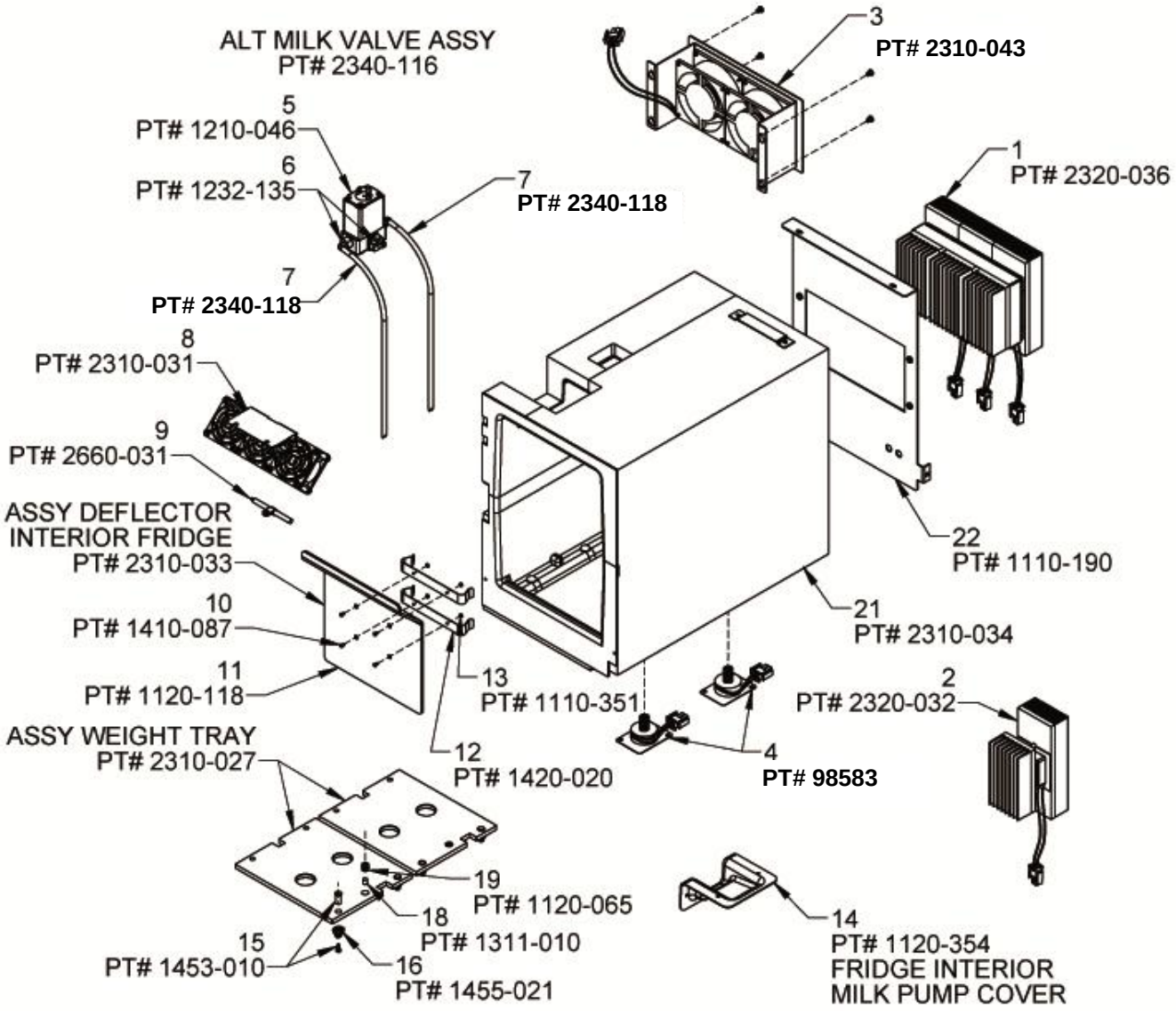


Diagram 13, Parts List: Refrigeration Unit Assembly

Diagram 13 Item #	Description	Available	Concordia Part Number
1	ASSY RFR MODULE XPRESS	YES	2320-036
2	ASSY RFR SGL TEC 6IN 2.5K		2320-032
3	ASSY FRIDGE EXT FAN X6	YES	2310-043
4	KIT WT TRAY SENSOR 2.5K	YES	98583
	ASSY ALT MILK VLV X6	YES	2340-116
5	VALVE ALT MILK 3 WAY PVDF	NO	1210-046
6	ELBOW ¼ NPT X 3/16 BARB	YES	1232-135
7	ASSY MILK DBL PICK-UP X6	YES	2340-118
8	ASSY- INTERNAL FAN-	YES	2310-031
9	ASSY- PROBE- TMP- REFR-	YES	2660-031
	ASSY- DEFLECTOR- INT FRIDGE	YES	2310-033
	ASSY WEIGHT TRAY SMALL	YES	2310-027

Diagram 14: Chocolate Sauce Delivery System

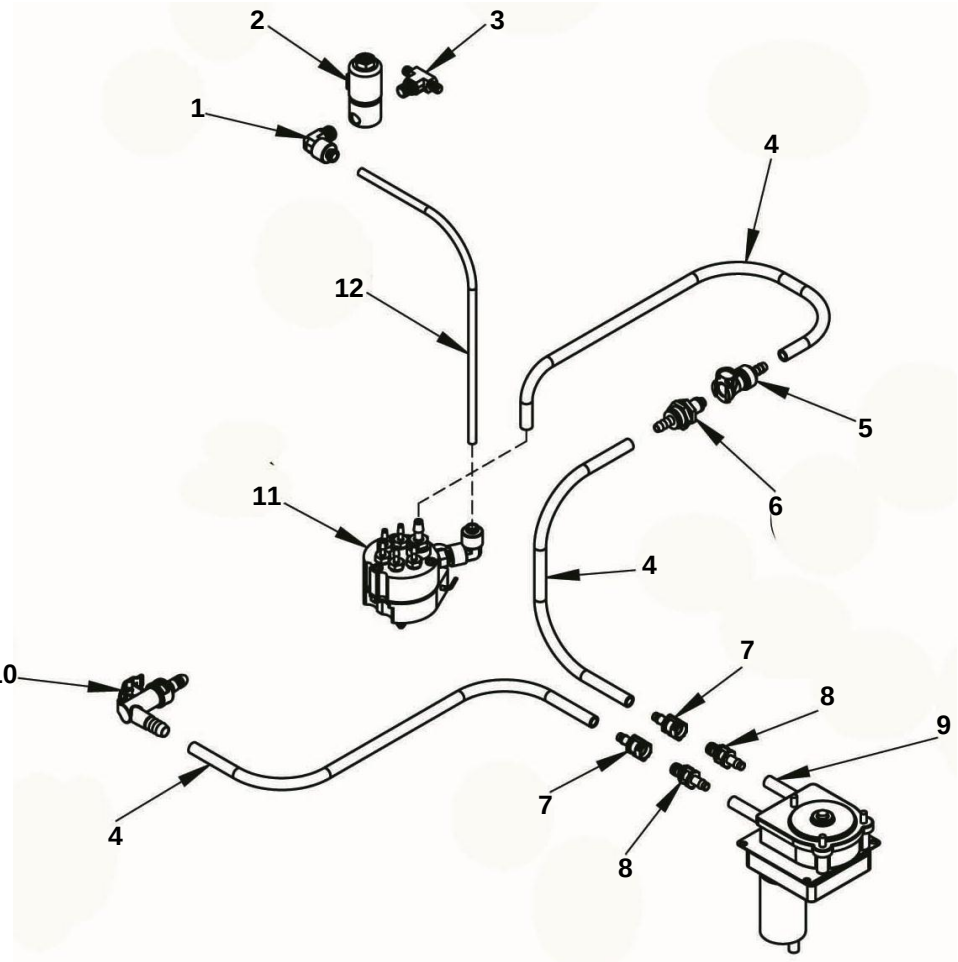


Diagram 14, Parts List: Chocolate Sauce Delivery System

Diagram 14 Item #	Description	Available	Concordia Part Number
1	ELBOW 1/8NPT X 1/4T	YES	1232-097
2	VALVE SINGLE STATION	YES	1210-024
3	TEE SS 1/8MX1/8MX1/8M	YES	1233-017
4	TUBE CLR PVC 1/4 X 3/8	YES	1250-008
5	TEE 1/4 BARB	YES	1232-018
6	CONN 1/8NPT SYRUP HEAD	YES	1232-111
7	CONN KENT 1/4 BARB F	YES	1232-119
8	CONN KENT 1/4 BARB M	YES	1232-120
9	TUBE .187X.375 NORPRENE	YES	1250-023
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

Diagram 15: Syrup Delivery System

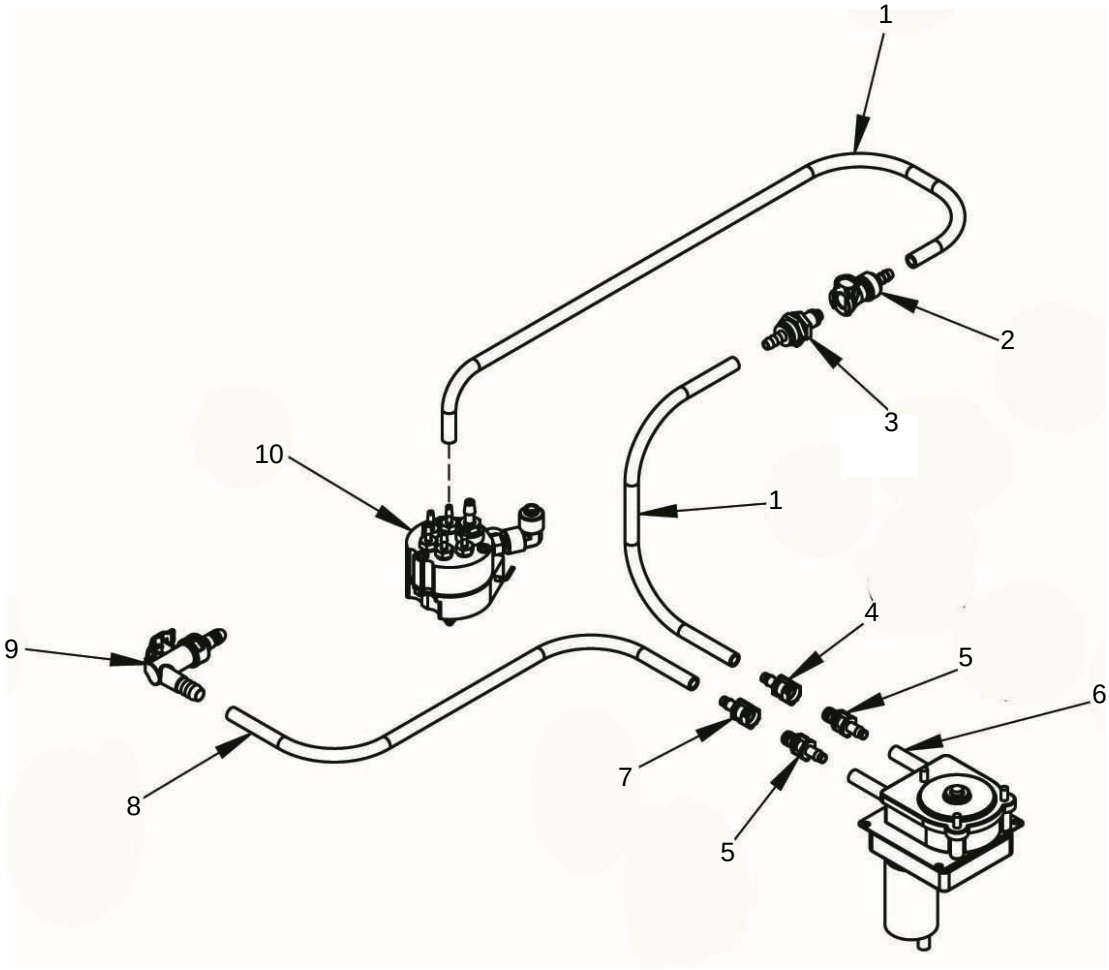
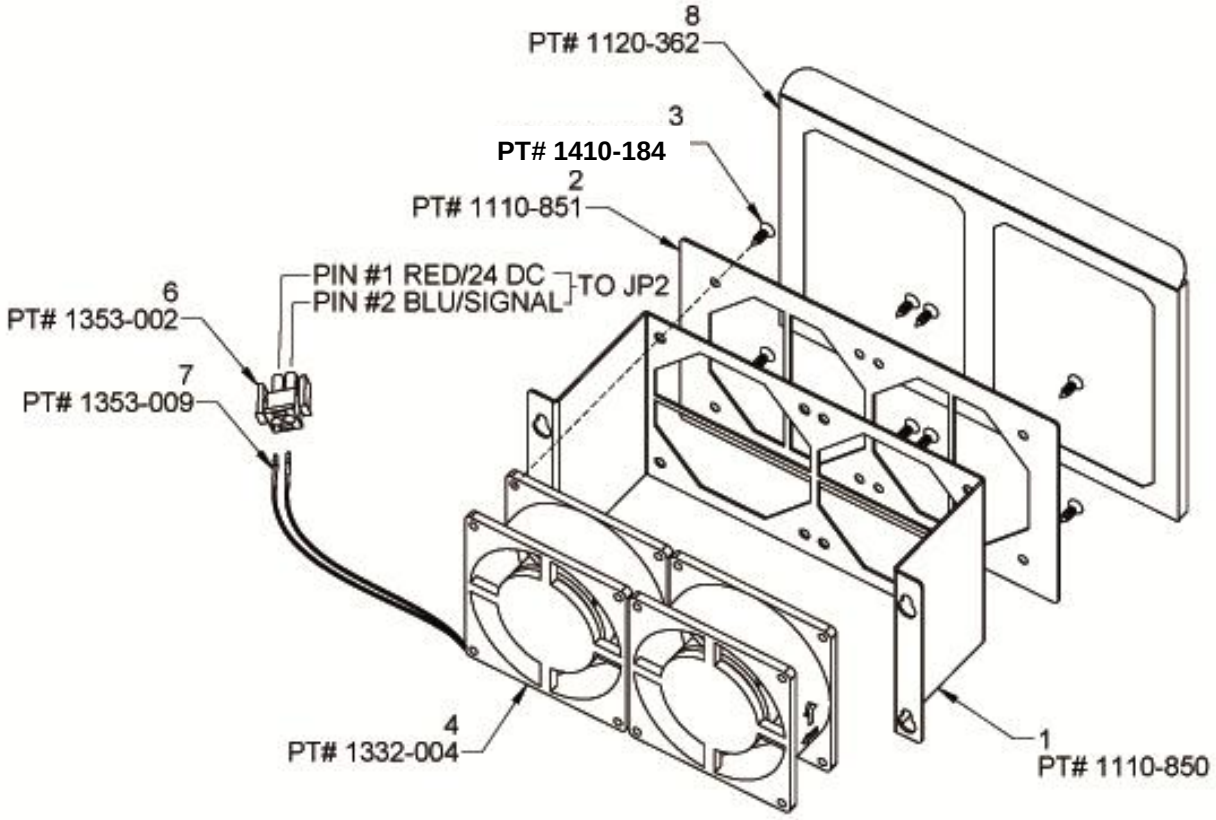


Diagram 15, Parts List: Syrup Delivery System

Diagram 15 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 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, Front

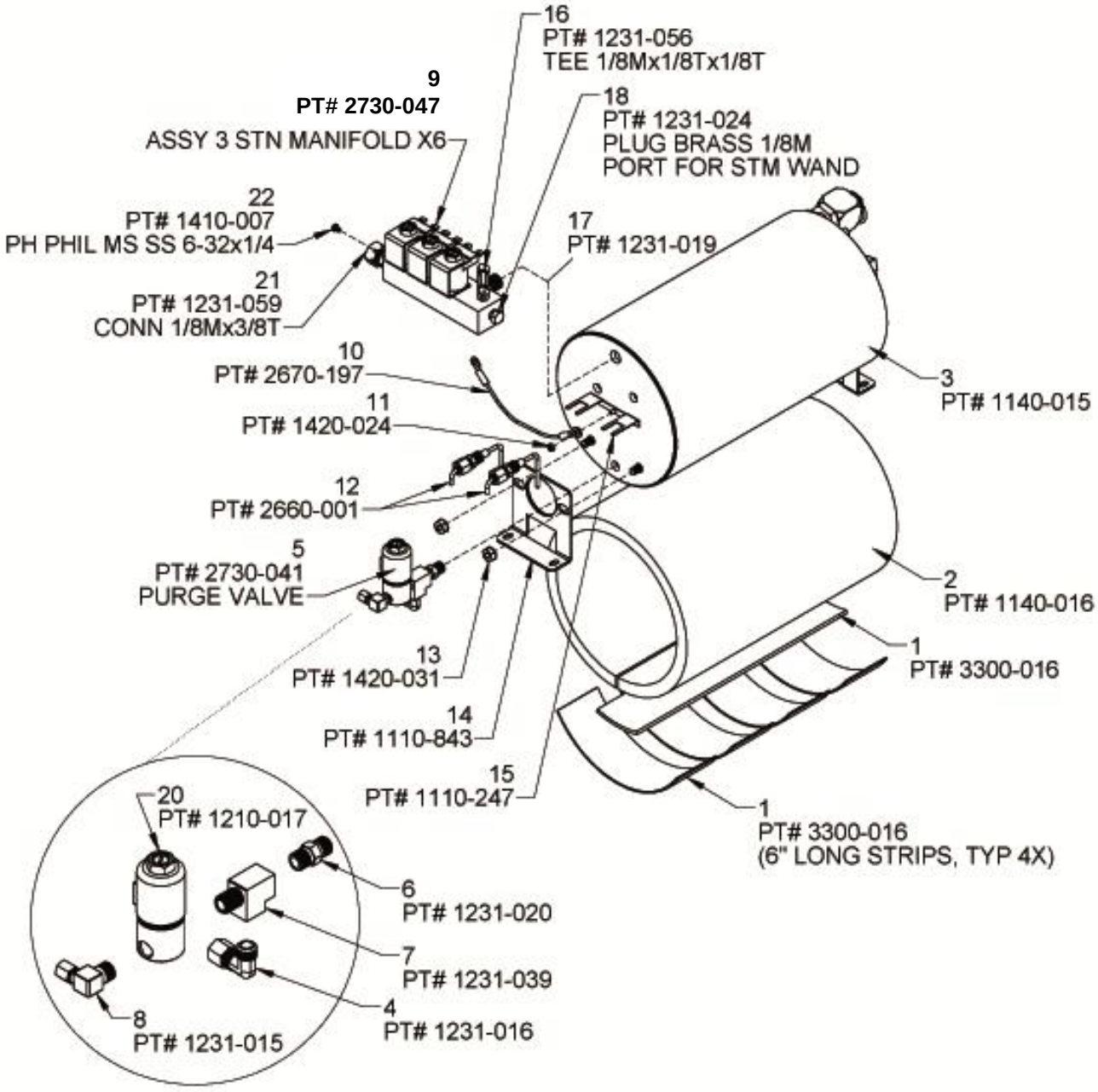


Diagram 17, Parts List: Steam Tank, Front

Diagram 17 Item #	Description	Available	Concordia Part Number
	ASSY STM TANK 2.5K	YES	2730-046
1	TAPE INSULATION- 1/8 X 2 30’	YES	3300-016
2	INSUL STEAM TANK ROUND	YES	1140-016
3	TANK STEAM ROUND	YES	1140-015
4	ELBOW BRASS 1/8M X 1/4T	YES	1231-016
5	ASSY PURGE VLVSGLSTN	YES	2730-041
6	CONN BRASS 1/8M X 1/8M	YES	1231-020
7	TEE 1/8F X 1/8F X 1/8M	YES	1231-039
8	ELBOW BRASS 1/8M X 1/8T	YES	1231-015
9	ASSY 3 STN MANIFOLD 2500	YES	2730-047
10	CBL GROUND STRAP 8-INCH	YES	2670-197
11	NUT KEP SS 4-40	YES	1420-024
12	ASSY- PRBLVL- STM TANK- BENT	YES	2660-001
13	NUT KEP ¼ 20 SS	YES	1420-031
14	BRKT MOUNT STEAMTANK X6	YES	1110-843
15	BRKT RTNR LVL PROBE	YES	1110-247
16	TEE 1/8M X 1/8T X 1/8T	YES	1231-056
17	CONN BRASS 1/4M X 1/4M	YES	1231-019
18	PLUG BRASS 1/8M	YES	1231-024
19	*NOT SHOWN* KIT KIPVLV STEAM 30PSI	YES	98525
20	VALVE STEAM HIGH TEMP	YES	1210-017
21	CONN 1/8M X 3/8T	YES	1231-059
22	PH PHIL MS SS 6-32 X 1/4	YES	1410-007

Diagram 18: Steam Tank, Rear

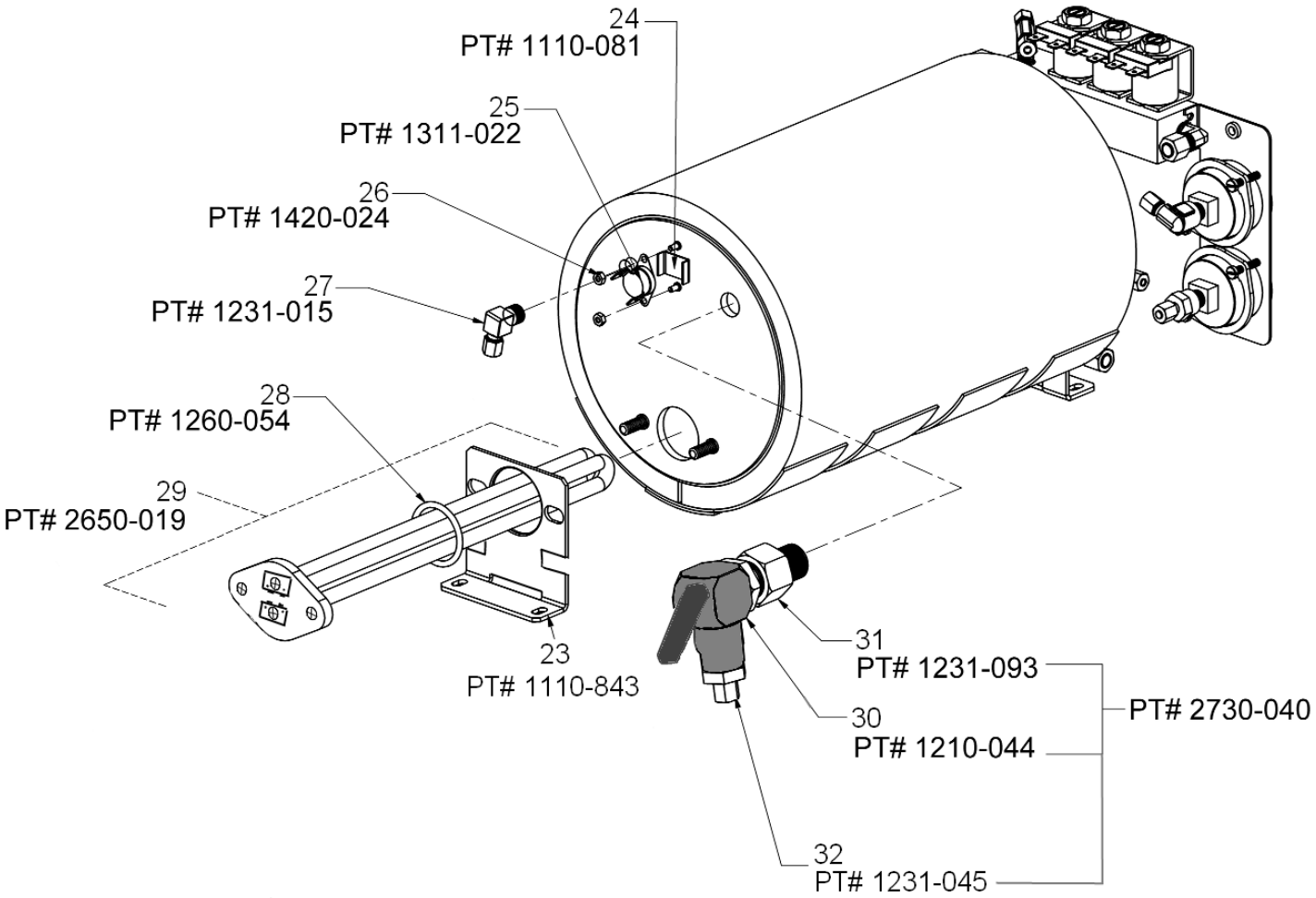


Diagram 18, Parts List: Steam Tank, Rear

Diagram 18 Item #	Description	Available	Concordia Part Number
	ASSY STM TANK 2.5K	YES	2730-046
23	BRKT MOUNT STEAM TANK X6	YES	1110-843
24	METAL FAB LIMITER SWITCH	YES	1110-081
25	SW MAN TEMP LIMIT 260DEG	YES	1311-022
26	NUT KEP SS 4-40	YES	1420-024
27	ELBOW BRASS 1/8M X 1/8T	YES	1231-015
28	O RING- HTG ELEMENT	YES	1260-054
29	ELEMENT HTG 3KW CHROMALOX	YES	2650-019
	ASSY PRESS RLV VLV	YES	2730-040
30	VLV PRESS RLF STM 30PSI	YES	1210-044
31	ELBOW 1/2F X 3/8M	YES	1231-093
32	CONN 1/2M X 1/4T	YES	1231-045

Diagram 19: Water Pump and Motor

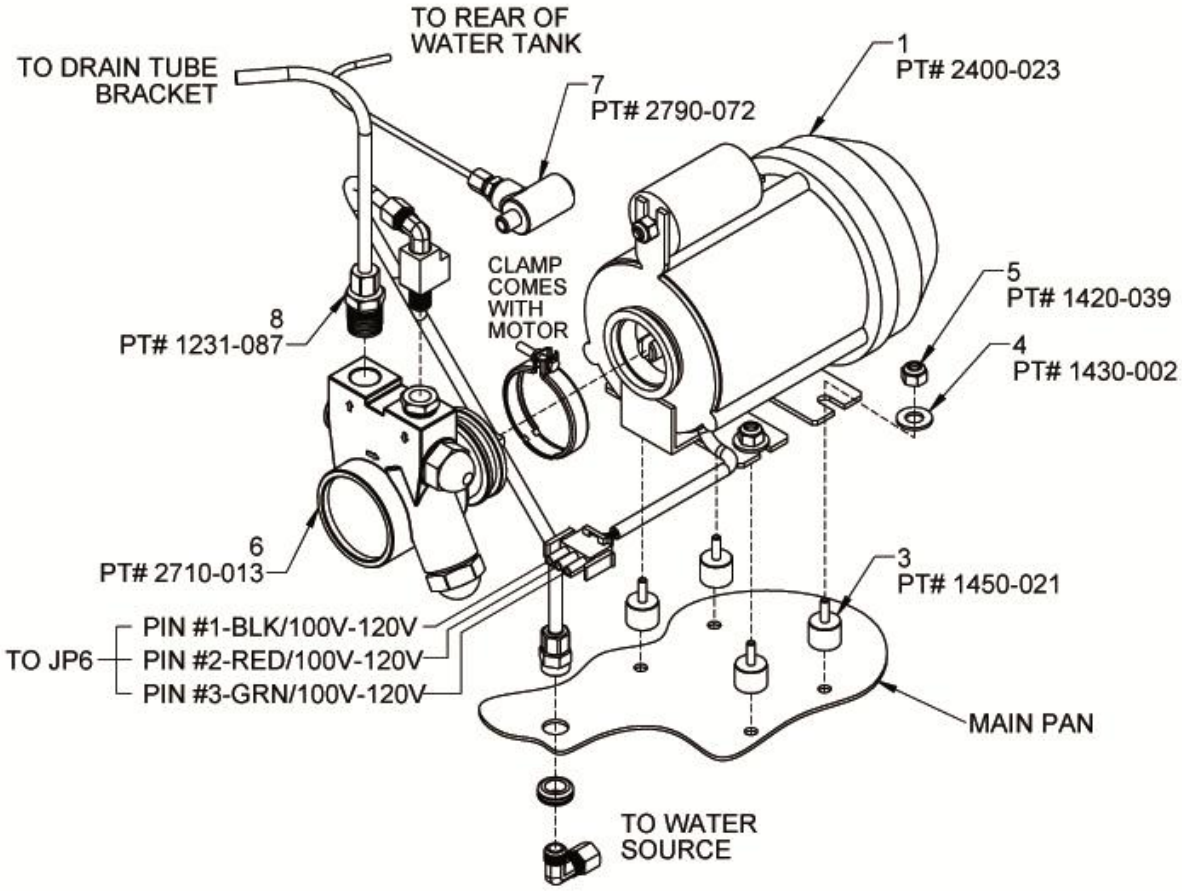


Diagram 19, Parts List: Water Pump and Motor

Diagram 19 Item #	Description	Available	Concordia Part Number
	ASSY WTR PMP/MTR 2.5K		2710-010
1	ASSY WTR PMP MTR 2.5K		2400-023
3	MOUNT ISOL M/M M4X0.7		1450-021
4	WASHER FLAT SS #10		1430-002
5	NUT NYLOC M4		1420-039
6	PUMP WATER PAO74Z 30-GPH		2710-013
7	ASSY- EXPANSION VLV		2790-072
8	CONN 3/8M X 1/4T		1231-087

Diagram 20: Hot Water Tank

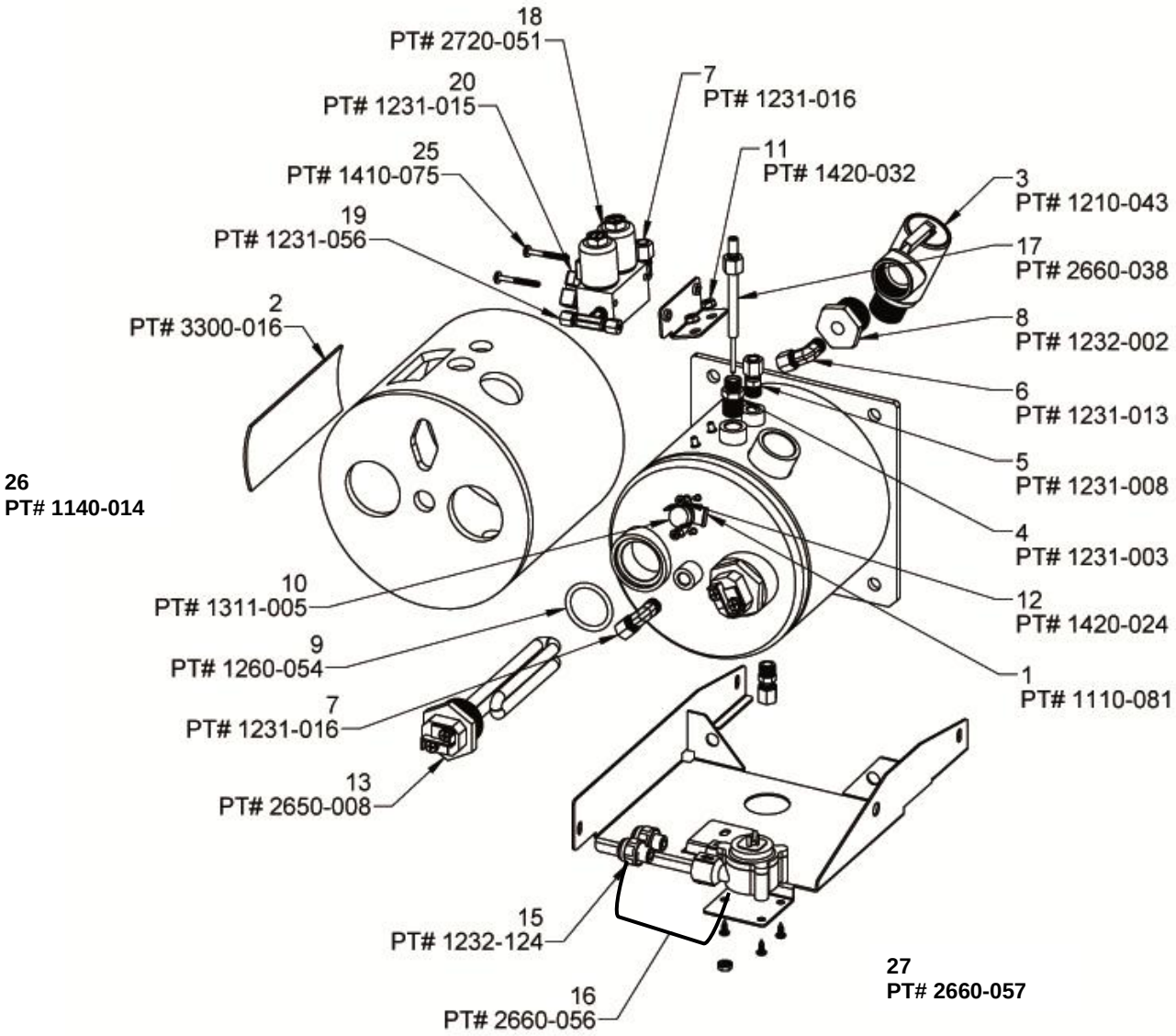
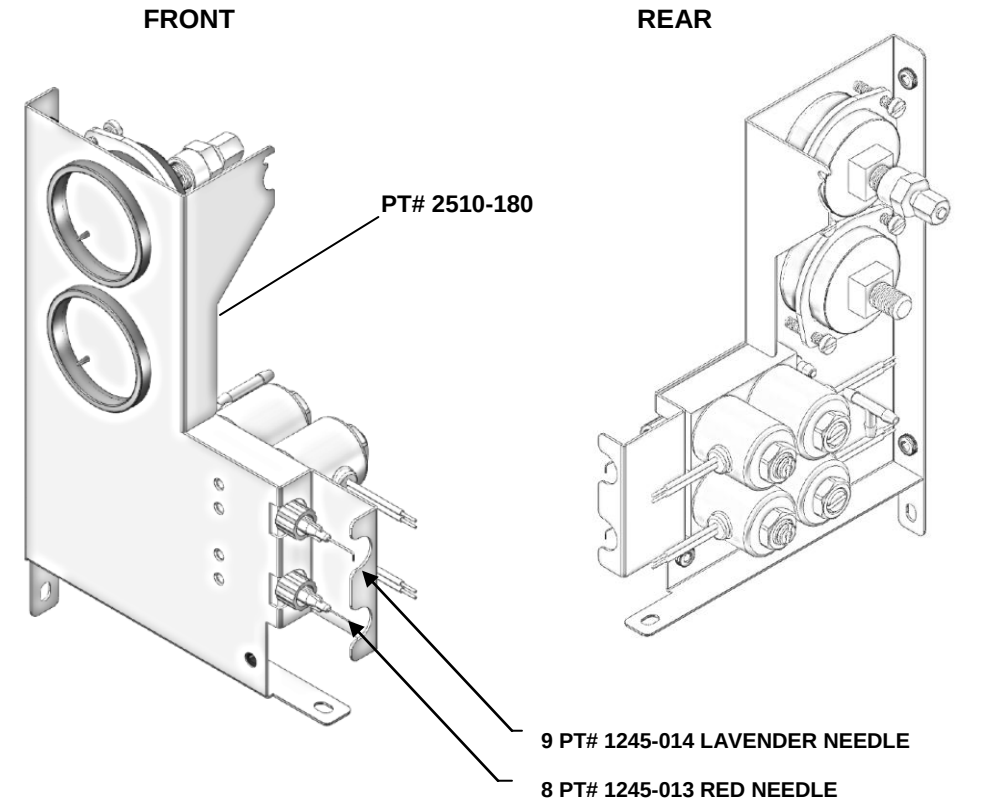


Diagram 20, Parts List: Hot Water Tank

Diagram 20 Item #	Description	Available	Concordia Part Number
	ASSY TANK WATER 2500	YES	2720-052
1	METAL FAB LIMITER SWITCH	YES	1110-081
2	TANK INSULATION TAPE	YES	3300-016
3	VALVE WTR PRV 175PSI	YES	1210-043
4	CONN BRASS TEMP PROBE	YES	1231-003
5	CONN BRASS 1/8M X 1/4T	YES	1231-008
6	ELBOW BRASS 1/4M X 1/4T	YES	1231-013
7	ELBOW BRASS 1/8M X 1/4T	YES	1231-016
8	CONN PVC 1/4F X 3/4M	YES	1232-002
9	O RING- HTG ELEMENT	YES	1260-054
10	SW TEMP LIMIT 210F DEG	YES	1311-005
11	NUT KEP 8-32 SS	YES	1420-032
12	NUT KEP SS 4-40	YES	1420-024
13	HTR- WTR/STM- STD	YES	2650-008
15	CONN 1/4T X 1/4 BSPP JG	YES	1232-124
16	ASSY FLOWMETER DIGIMESA	YES	2660-056
17	ASSY- PROBE TEMP/LVL WATER	YES	2660-038
18	ASSY- MANIFOLD WTR 2500	YES	2720-051
19	TEE 1/8M X 1/8T X 1/8T	YES	1231-056
20	ELBOW BRASS 1/8M X 1/8T	YES	1231-015
21	TEE SS 1/8BX1/8MX1/8M	YES	1233-017
22	*NOT SHOWN* CONN BRASS 1/8F	YES	1231-053
23	*NOT SHOWN* VALVE SINGLE STATION	YES	1210-024
24	*NOT SHOWN* ELBOW 1/8NPT X X1/4T	YES	1232-097
25	PH PHIL SS 8-32 X 1-1/4	YES	1410-075
26	COVER WATER TANK 2000/995	YES	1140-014
27	FLOWMETER GICAR PLASTIC	YES	2660-057

Diagram 21: Water/Steam Gauge/ Air Valve Assembly



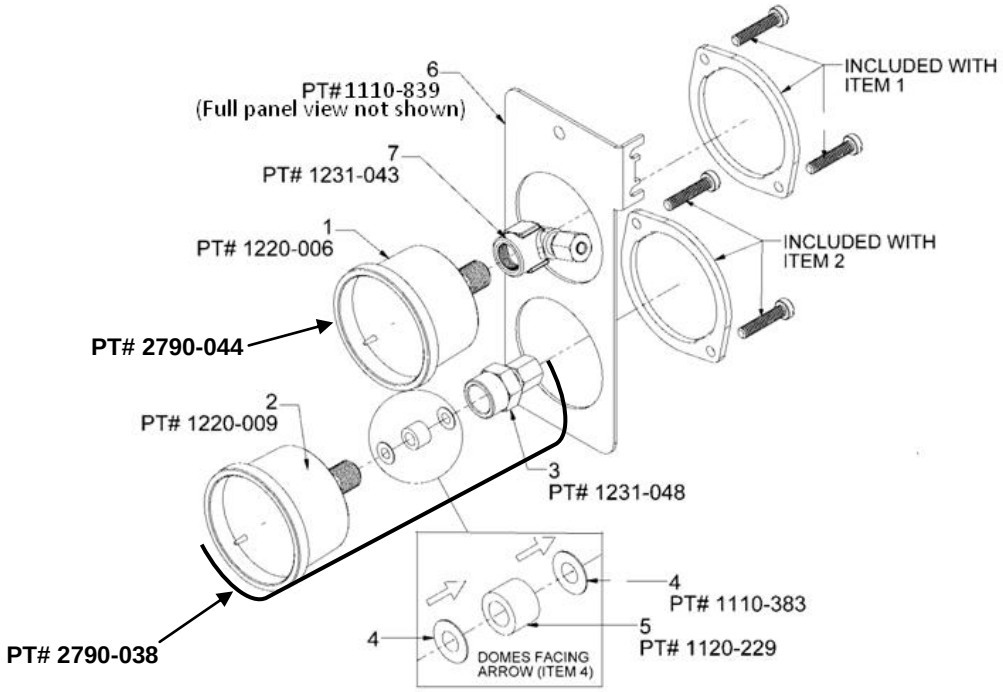


Diagram 21: Parts List: Water/Steam Gauge/Air Valve Assembly

Diagram 21 Item #	Description	Available	Concordia Part Number
	ASSY STM GAUGE/AIR VL X6	YES	2510-180
	ASSY GAUGE STEAM PRESS	YES	2790-044
	ASSY AUGE WATER PRESS	YES	2790-038
1	GAUGE - STEAM - 30PSI	YES	1220-006
2	GAUGE 300PSI 1/8NPT PMNT	YES	1220-009
3	CONN BRASS 1/8F X 1/8T	YES	1231-048
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
8	VENT AIR 25GA ¼ RED	YES	1245-013
9	VENT AIR 30GA ¼ LAV	YES	1245-014

Diagram 22, Parts List: Drain Valve Bridge Web Assembly

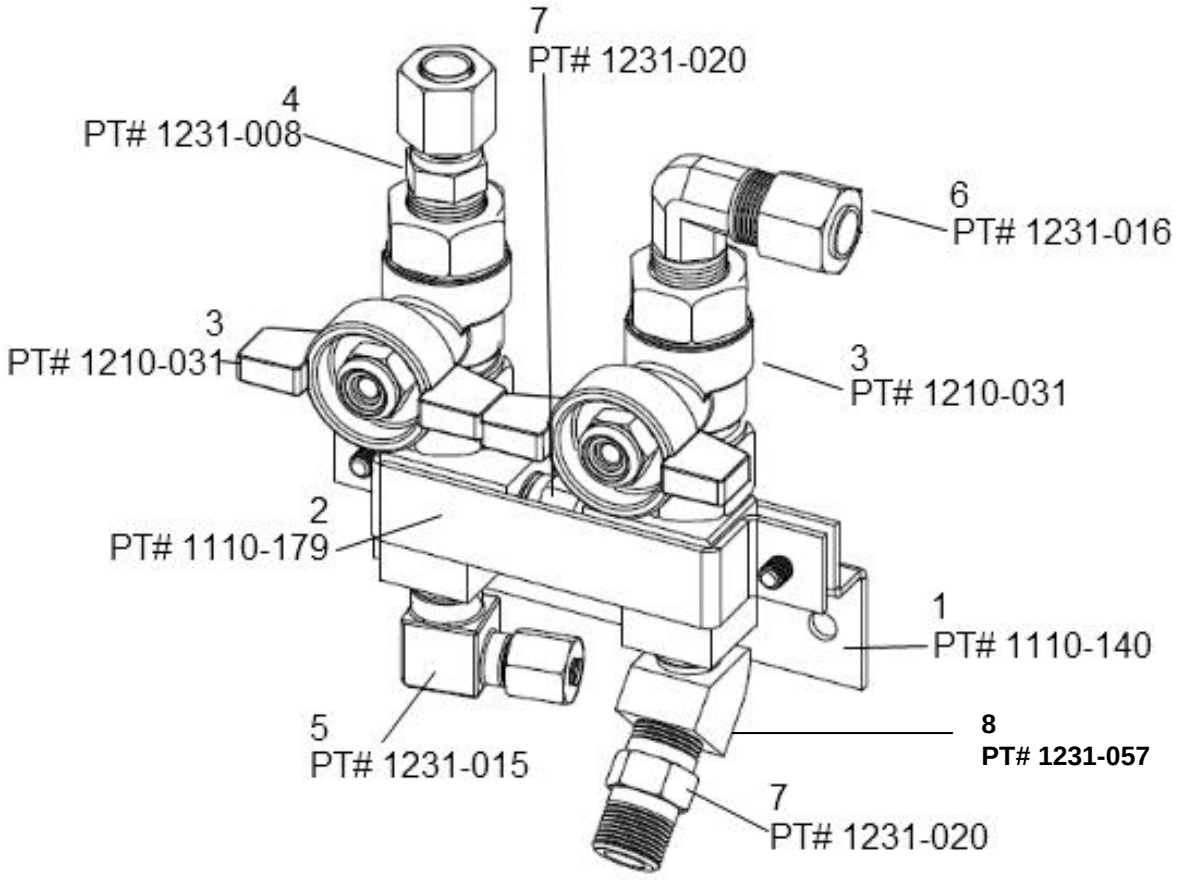


Diagram 22, Parts List: Drain Valve Bridge Web Assembly

Diagram 22 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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Section 17 :: Index

TECHNICAL SUPPORT

CONCORDIA

BEVERAGE SYSTEMS

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