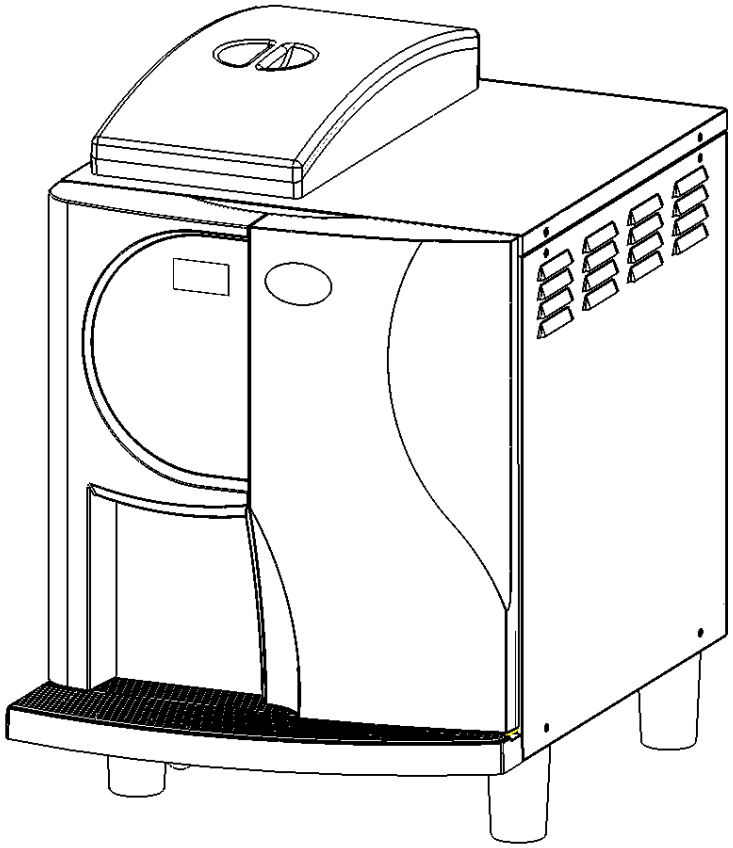
CONCORDIA

COFFEE SYSTEMS



Integra

Technician's Manual

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Welcome to Concordia Coffee Systems!

We are very pleased to have you join our team of professionals, united in the common pursuit of excellence on behalf of our customers.

Concordia Coffee Systems is a leader in the design, development and manufacture of fully automated espresso systems, serving thousands of customers throughout the world. Our goal is to continuously achieve the highest imaginable levels of quality, service, and technological performance for our customers. We believe that it is the ability, talent and spirit of people like you that will enable Concordia Coffee Systems to reach this goal.

The basic objectives of Concordia Coffee Systems are:

- Deliver quality and value to our customers through leadership and excellence in everything that we do.
- Provide a strong seamless network of service to all Concordia Coffee Systems customers while, exceeding their expectations from us.
- Build value in our employees and agents through experience, training and the provision of opportunities for success.
- Build long term value in our Company.
- Be strong contributing members of the communities in which we conduct business.

You are an important part of our team. We want to do our best to help you find your work with Concordia Coffee Systems satisfying, rewarding and personally meaningful. The material in this manual has been designed to be used as a training aid, reference resource and updated library of Concordia Coffee Systems Policies and Procedures.

It is important that you keep your manual updated to reflect our current revisions to ensure we have provided you with the tools necessary to facilitate **YOUR** success!

Revision Change Log

Replace Old Section	With New Section	Brief Description	Date	2900-255 Revision

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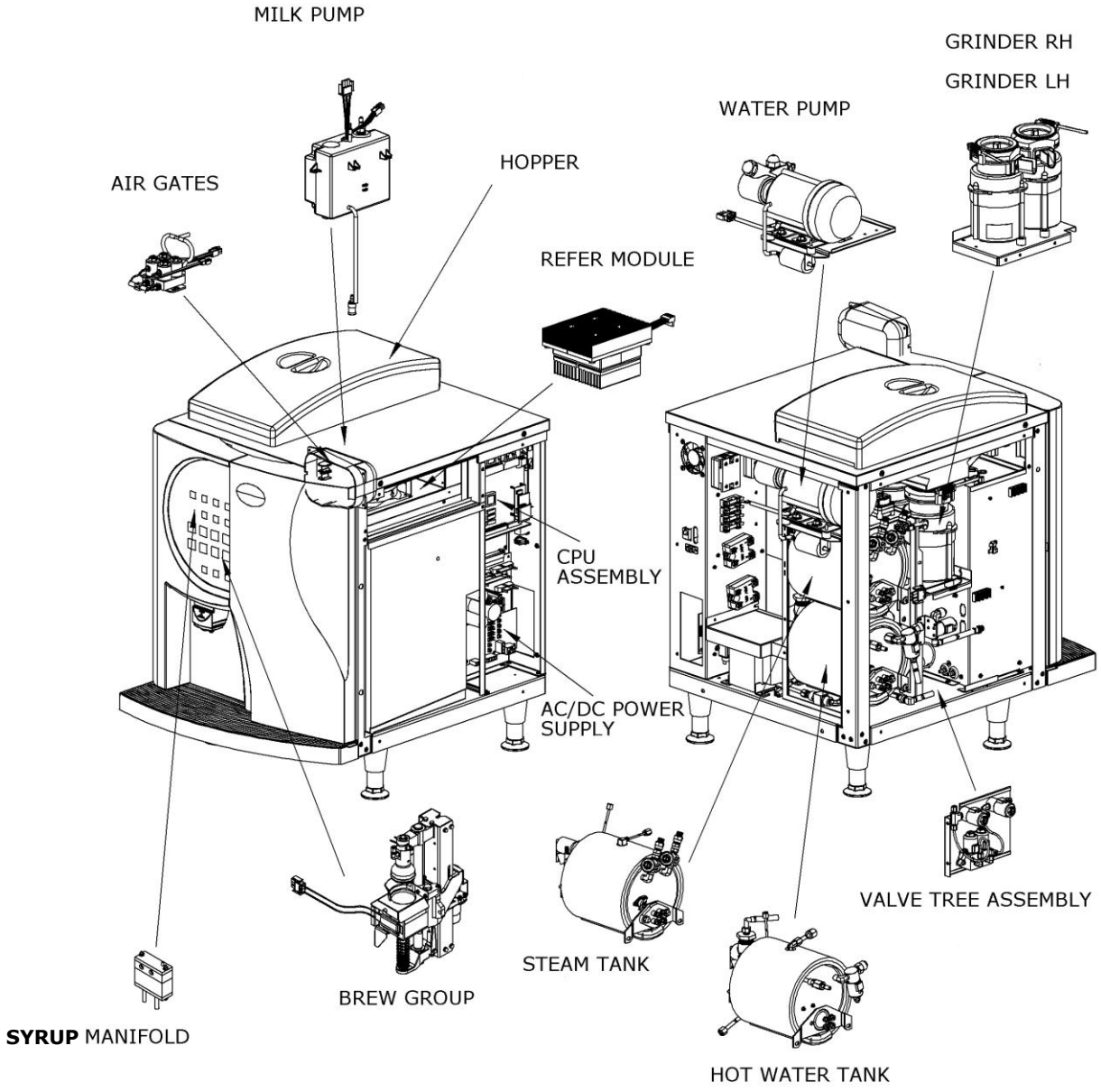
TECHNICAL SUPPORT

CONCORDIA
COFFEE SYSTEMS

Integra Overview



Integra Components

Air Gate Valve Assembly
The air gate valve assembly allows a regulated supply of air to mix with the milk inside the milk pump assembly.

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

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

Refrigeration Module Assembly
The refrigeration module assembly regulates the temperature inside the refrigeration unit.

CPU Assembly
The CPU assembly controls all machine functions.

AC/DC Power Supply
The AC/DC power supply board provides the voltage for the machine.

Syrup Manifold
Syrup is infused into drinks via the syrup manifold.

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

Water Pump
The water pump regulates the water pressure to 140psi during the espresso extraction process.

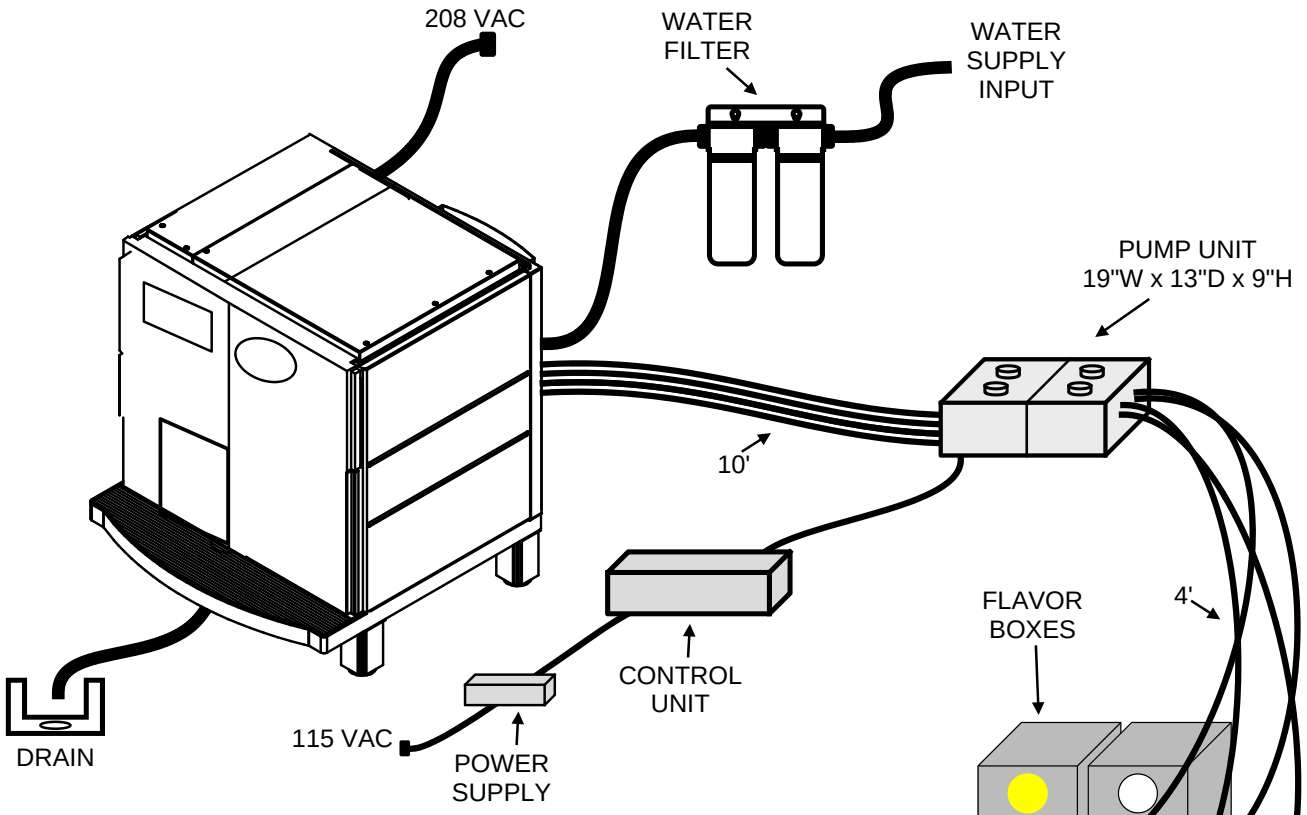
Grinders (Left and Right)
The grinders are calibrated to grind espresso beans according to the customer's recipe.

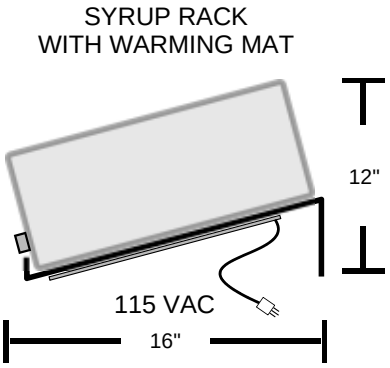
Valve Tree Assembly
The valve tree assembly houses the hot water valve, steam fill valve, chocolate purge valve, and steam tank purge valve.

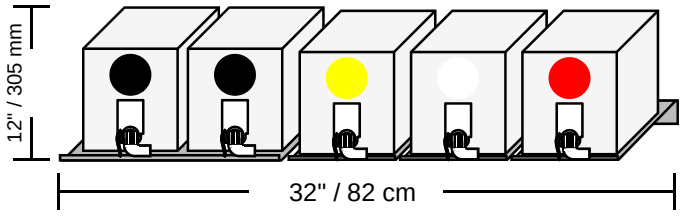
Hot Water Tank
The hot water tank stores and heats the water used to brew espresso.

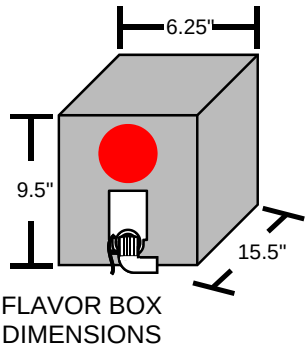
Steam Tank
The steam tank provides steam used for steaming the milk.

Flavor System Overview









Flavor System Components

Integra 1 and Integra 4 only

Pump Unit
The pump unit is the assembly of peristaltic pumps that moves the product from the box to the syrup manifold.

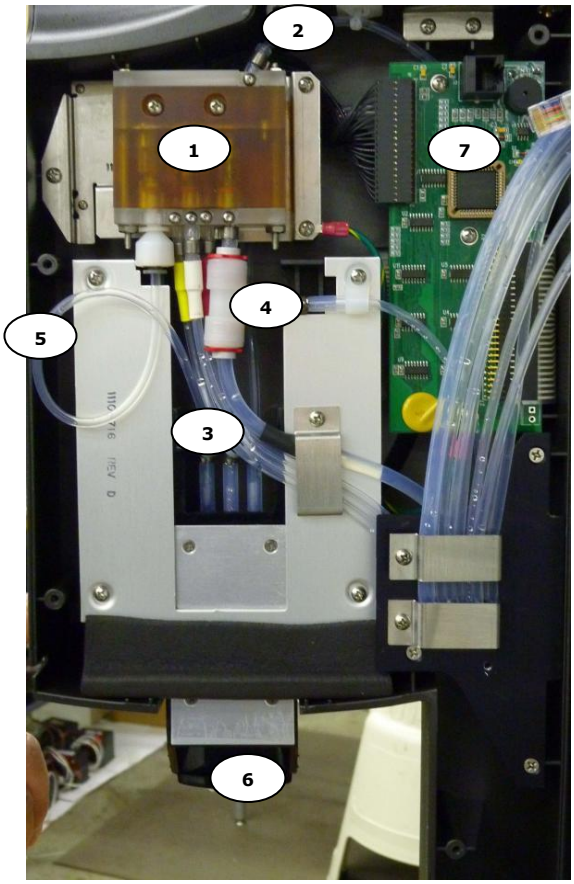
Control Unit
The control unit houses the electronic board, which controls the syrup pumps.

Power Supply
The power supply provides power to the control unit.

Chocolate Heater Assembly
The chocolate heater assembly provides heat to the flavor tray used for chocolate sauce, to ensure a minimum temperature of 85°F/29°C is maintained.

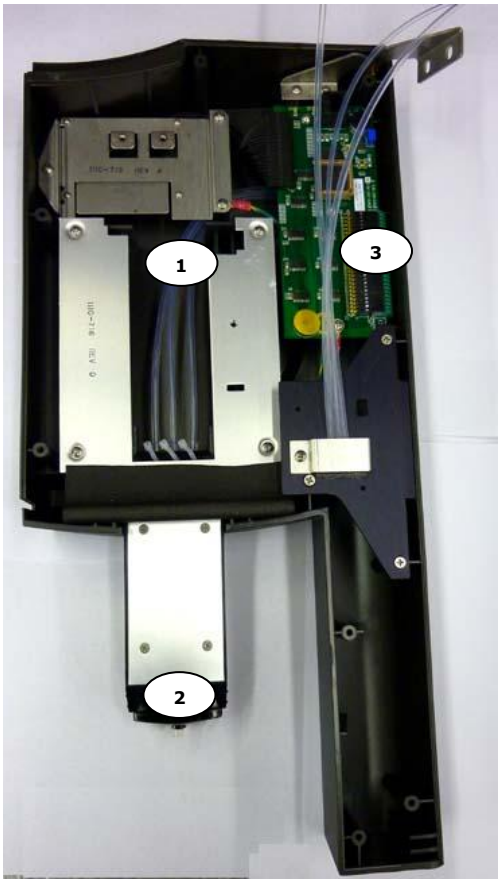
Syrup Rack
The flavor boxes are placed on syrup racks, in the designated flavor storage area.

Bin Door Assembly Components – Integra 1 and Integra 4



1. **Syrup Manifold** – Steam, air, milk, and syrup are mixed in the syrup manifold.
2. **Milk Input Tube –** The milk input tube introduces milk to the syrup manifold.
3. **Flavor Tubes** – *INTEGRA 4 ONLY*
   The syrup tubes transfer syrup from the flavor boxes to the syrup manifold. The flavor lines utilize the same color coding that is present on the flavor boxes.
4. **Chocolate Sauce Tube** – The chocolate sauce tube transfers chocolate sauce from the chocolate sauce box to the syrup manifold. The chocolate sauce tube utilizes the same color coding that is present on the chocolate sauce box.
5. **Milk Output Tube** – Once milk and any flavor have been mixed on the syrup manifold, the milk output tube transfers the milk mixture to the product delivery output and into the customer's cup.
6. **Product Delivery Outlet** – The product delivery outlet dispenses drinks and hot water.
7. **Display Board** – The display board provides power to the menu board on the front of the machine.

Bin Door Assembly Components – Integra 0



1. **Milk Input Tube –** The milk input tube introduces milk to the syrup manifold.
2. **Product Delivery Outlet** – The product delivery outlet is where drinks and hot water are dispensed.
3. **Display Board** – The display board provides power to the menu board on the front of the machine.

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Section 2 :: Installation and Removal

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

TECHNICAL SUPPORT

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Technical Specifications and Site Requirements

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

Technical Specifications

Weight: 200lbs/137kg
Operating Environment: 55°- 85°F (13°-29°C)
Maximum ambient temp: 85°F /29°C

Power Consumption: 19 amps @ 208vac max
4 amps @ 115vac max

Compliance:
FCC: Part 15B, Class A, Part 68
UL Listed
NSF Listed
CE Compliant

Location Requirements
Locate indoors only

Overall Space
20" W x 28" D x 28" H
49cm W x 71cm D x 71cm H

Flavor System
30" W x 30" D x 27" H
76cm W x 76cm D x 69cm H

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 L6-30P 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 System
Chocolate Heater Assembly
115vac, 15amp
NEMA 5-15P
Flavor Control Box
115vac, 15amp
NEMA 5-15P

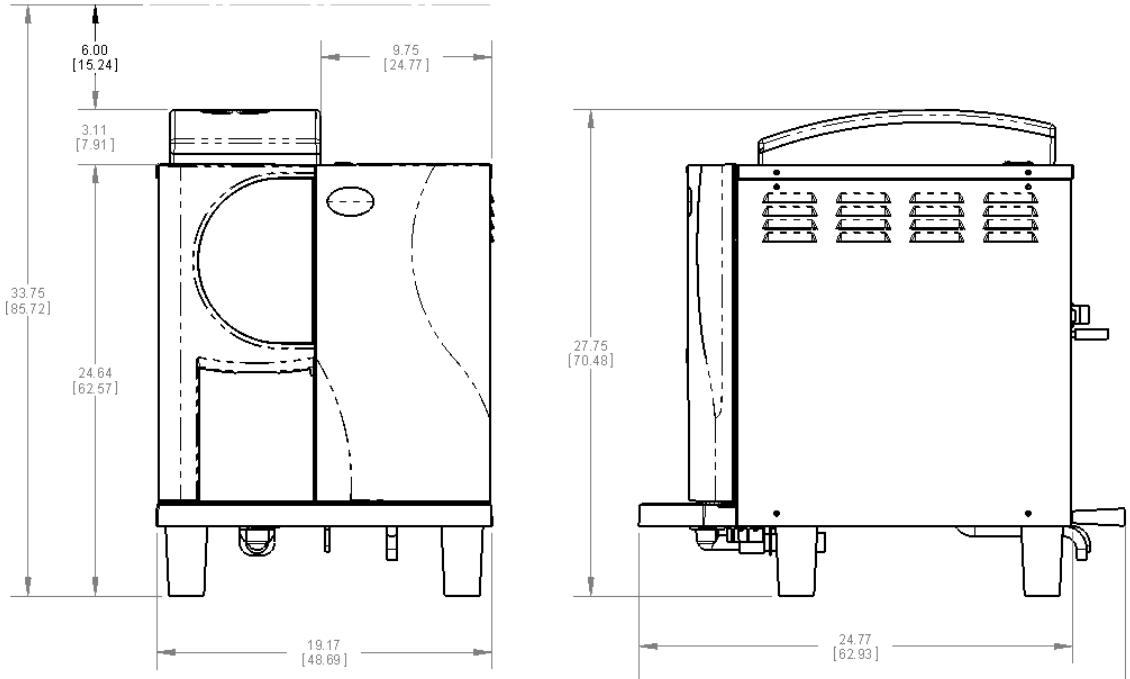
Water
Cold water source with a ¼" or 3/8" tube with a shut-off valve, located within five feet/1.5 meters of machine

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

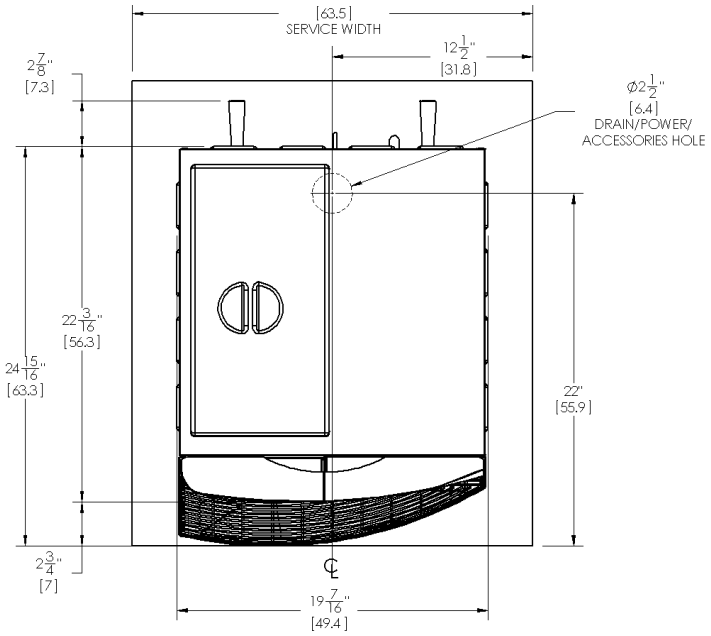
A fresh water bypass is required for sites with a reverse osmosis filter system

Scalex® Water Treatment System
Included with the unit: two cartridges (one carbon, one softener)
20.5"H x 11.5"W x 5"D
52cm Hx29cm Wx13cm D

Machine Dimensions



FRONT VIEW RIGHT SIDE VIEW



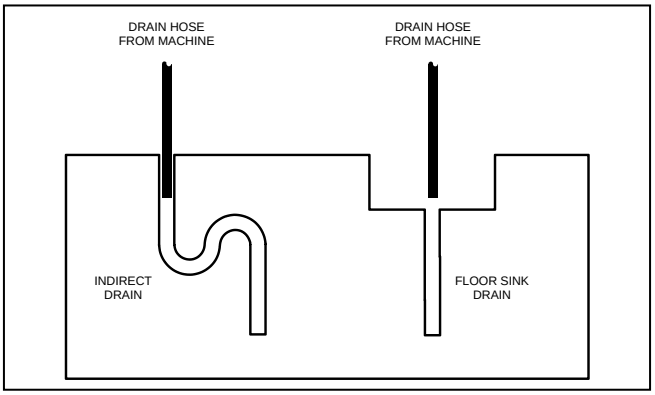
Plumbing

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 ¾"/1.9cm ID drain hose
- Drain must be located within 5 feet/1.5 meters of machine



The minimum rate of fall required is 1 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 create clogs in either the drain hose and/or the drain tray.

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 female ¼" or 3/8" tube fitting.
- Minimum Pressure: 30psi; Maximum 100psi.
- Water source must be located within 5 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. Using a reverse osmosis water system will negatively affect the flavor of espresso drinks.

Flavor System

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 cross-contamination of flavors does not occur.

Prior to installing the flavor system, ensure that the designated location for the flavor system has adequate space for the chocolate heater assembly, the peristaltic pump assembly, flavor tubing, and control box.

Control Box Installation

The control box is responsible for supplying power to the peristaltic pump assemblies.

1. Mount/position the control box within the designated flavor location.
2. Connect the two cables from the machine.
3. Connect the control cable from the peristaltic pump assembly.
4. Connect the power supply cable.
   NOTE: The power supply cable must be plugged into a power source appropriate for the location (this varies by country).

Peristaltic Pump Assembly Installation

Each peristaltic pump assembly houses two pumps. All tubing should already be connected and installed in the peristaltic pump(s).

1. Place the peristaltic pump assembly in the designated location for the flavor system.
2. Attach the tubing that connects the peristaltic pump assembly to the machine – this is the tubing connected to the output side of the peristaltic pump assembly.
3. Attach the tubing that connects the peristaltic pump assembly to the flavor boxes – this is the tubing connected to the "input" side of the peristaltic pump assembly.

When positioning the peristaltic pump assembly, it is important to position it in such a way that the tubing will comfortably reach both the machine and flavor boxes, and that the tubing will not be damaged, twisted, bent, or kinked. The assembly needs to be within 10 feet of the machine, and within four feet of the flavor boxes.

Chocolate Heater Assembly Installation

Plug the power cord for the chocolate heater assembly into a wall plug outlet (115vac domestic, 230vac international). The chocolate heater assembly can reach full operating temperature within 15 minutes.

NOTE: It can take more than 24 hours for a box of chocolate sauce to warm up to the proper temperature, depending on the temperature of the chocolate sauce at the time it is put on the chocolate flavor rack. For this reason, 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.

Once the chocolate heater assembly is situated, place the chocolate sauce boxes on it, and then place the remaining flavor boxes next to them. Ensure all tubing is free from kinks or bends.

NOTE: The chocolate heater assembly can only be used for chocolate sauce. Placing a non-chocolate flavor box on the chocolate heater assembly will degrade the quality of the flavor syrup.

Flavor Tubing Installation

1. Connect the tubing from the peristaltic pump(s) to the flavor box(es).
2. Connect tubing from the machine to the peristaltic pump assembly.

NOTE: Re-inserting a dry o-ring may result in leaks. See the *Connecting Flavor Tubing* topic in *Section 8: Flavor System*.

The Integra 1 and Integra 4 are shipped with the flavor tubing pre-installed.

When attaching and arranging the tubing in the flavor area, ensure all tubing will not be damaged, twisted, bent, or kinked.

Priming the Flavor System

The flavor system must be primed under the following circumstances:

- Initial setup of flavor system
- Changing a flavor (e.g. replacing caramel with almond)
  NOTE: The affected flavor tube MUST be cleaned before the new flavor is introduced.
- Purging an air bubble from a tube
- Replacing flavor tubing
- Replacing the syrup manifold

Please see the *Priming the Flavor System* topic in *Section 8: Flavor System*.

Verify Flavor Pour Rate

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

Please see the *Changing the Flavor Pour Rate* topic in *Section 8: Flavor System*, for information about adjusting the time and volume of flavor pours.

Additional Tasks Required at Installation

Power Up the Machine

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

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

Bean Hopper

1. Install the bean hopper.
2. Fill each bean hopper compartment with fresh, whole, espresso roast beans. For information on the bean hopper, please see *Section 6: Coffee System*.

   IMPORTANT: Ensure the hopper stoppers are removed, so that beans are delivered to the grinders.

Operational Configuration

The Integra may be configured with a default recipe, depending on customer requirements. If a customer-specific recipe exists, it may be pre-programmed into the machine prior to delivery at the customer site. 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.

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

Placing Milk in the Refrigeration Unit

Place a one-gallon/four-liter container of milk in the refrigeration unit and insert the milk pick-up tube into the milk container.

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 correct machine calibration, verify the following:

1. Pump Pressure
2. Espresso Times
3. Espresso Volumes
4. Milk Volumes
5. Temperature of Tanks
6. Drink Temperatures
7. Syrup Volumes

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

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 8: Flavor System*.

Customer Training

Complete customer training is required at the time of installation. Please see *Section 11: Concordia Procedures*, for complete instructions.

Customer Training Includes:

- How to turn the machine on and off
- How to refill the milk supply, bean hoppers, and consumables
- How to select drinks and drink options
- Showing the location of the serial number
- How to clean the machine (including cleaning cards)
- How to change flavor boxes
- How to replace the upper piston o-ring

Installation Checklist

The installation checklist must be completed and faxed to Concordia Coffee Systems within 24 hours of installation.

Removal Procedures

Prepare and package machine and components using the Concordia Shipping Kit.

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 brew group and milk system clean processes.
6. Clean the refrigeration unit.
7. Clean the flavor system.
8. Clean all interior and exterior surfaces (drain tray and grate, grounds bin, cup holder).
9. Completely drain and disconnect the water supply and drain tanks.

   WARNING: Failure to drain tanks completely can result in serious damage to the tanks and to the machine (i.e. if the machine is in a cold environment and the excess liquid freezes – the fittings will break).
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 with Ty Wrap®.

Section 3 :: Electrical

1. Electrical Block Diagram
2. Electrical Enclosure
3. Fuses
4. AC/DC Power Supply Board
5. CPU Board
6. Peripheral Connections Configuration
7. Transformer
8. DC Power Supply Board LEDs
9. AC Distribution Panel
10. Jumper Plug Connector Detail

TECHNICAL SUPPORT

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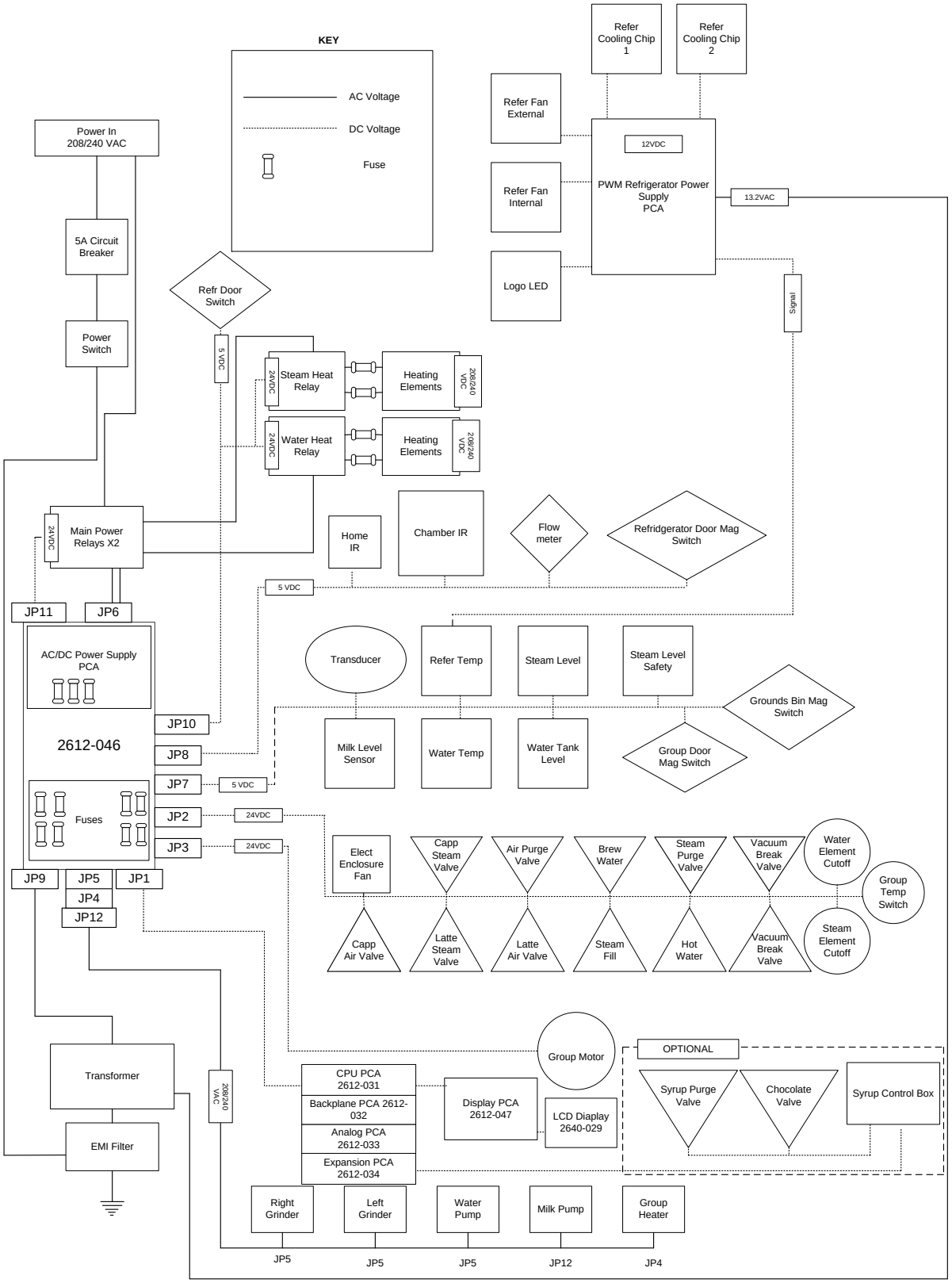
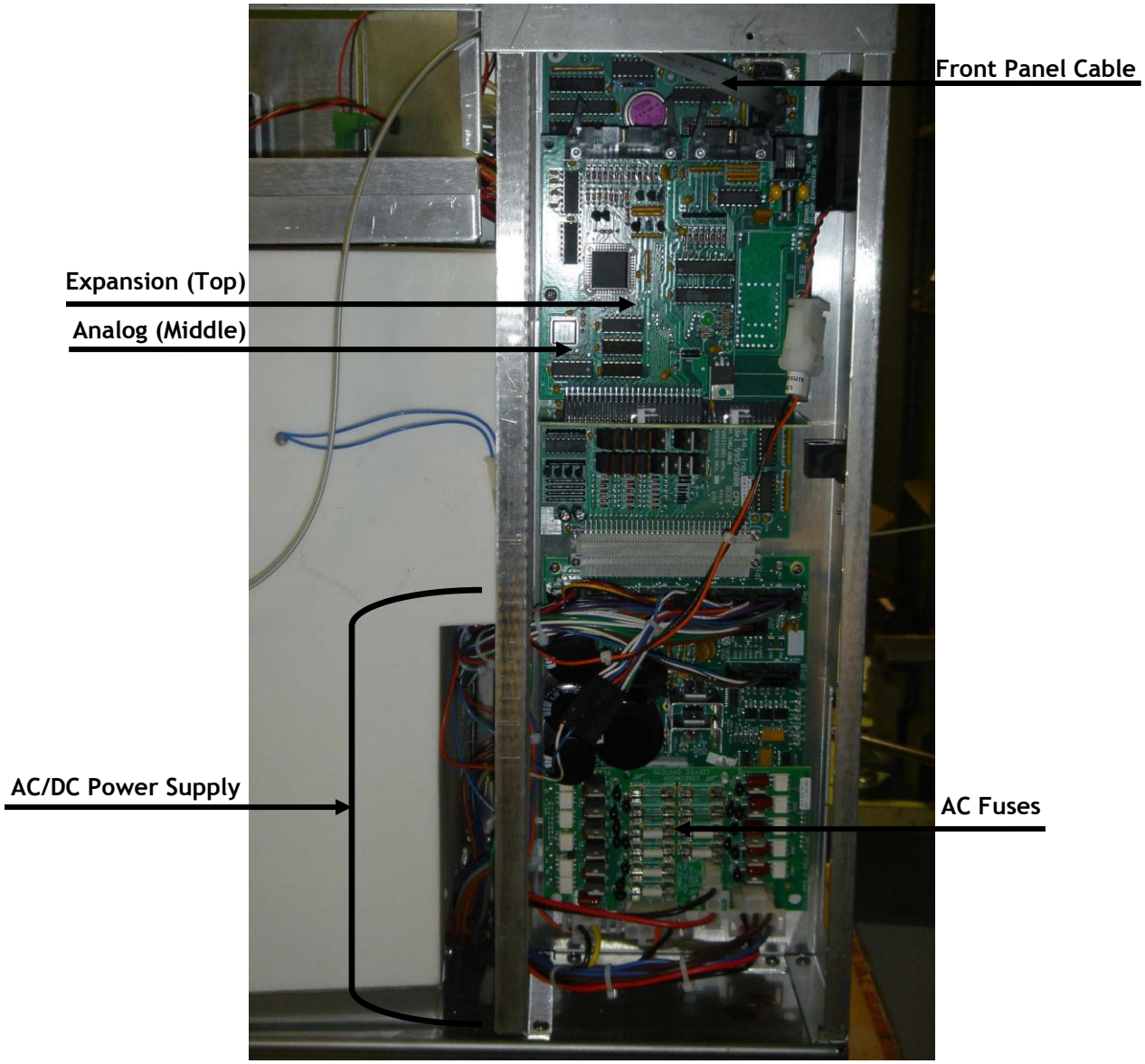
Electrical Block Diagram



Electrical Enclosure

The electrical enclosure is located on the rear right side of the machine. It is necessary to remove the right-side machine panel wall to access the electrical enclosure.



Electrical Enclosure Fan

Operating Voltage 24vdc

The fan located in the electrical enclosure is used to maintain air circulation and cool the electrical components. When the machine is in **TEST ROUTINES**, the electrical enclosure fan remains on. The fan removes heat from the enclosure.

Front Panel Cable

The front panel cable connects the CPU to the front panel display board.

AC Fuses

The AC fuses provide circuit protection for all devices using AC power.

Expansion Board (Top)

INTEGRA 1 AND INTEGRA 4 ONLY
The expansion board connects the flavor system and vending components.

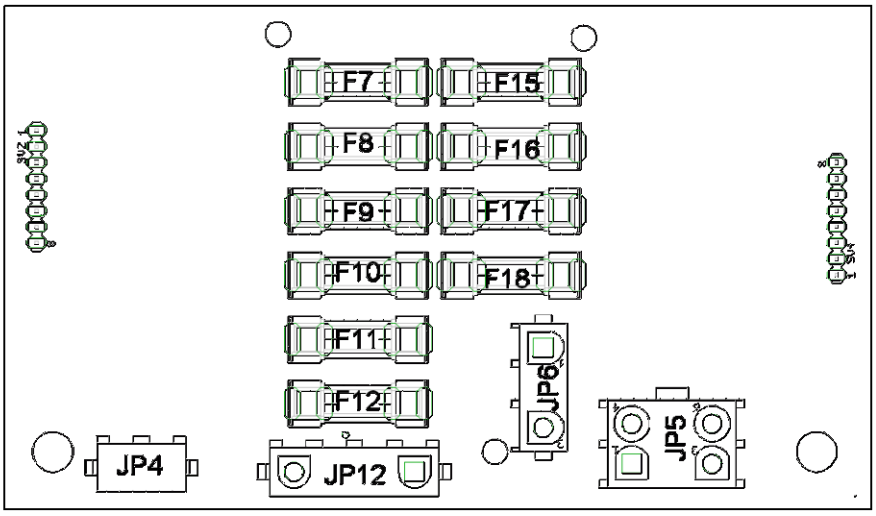
Analog (Middle)

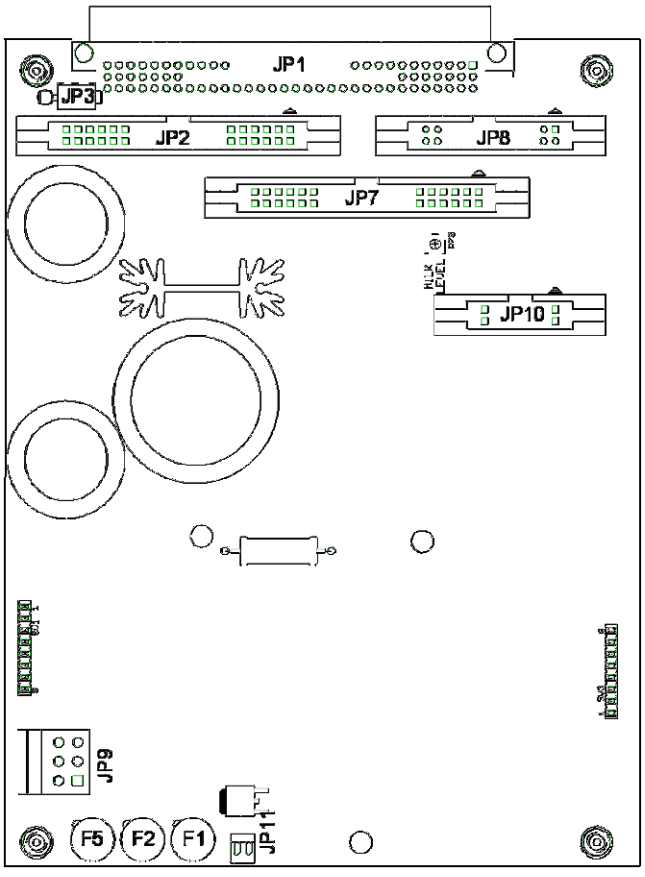
Handles all analog inputs and converts them to digital.

AC/DC Power Supply

The AC/DC power supply provides switched AC and DC power to operate the machine components.

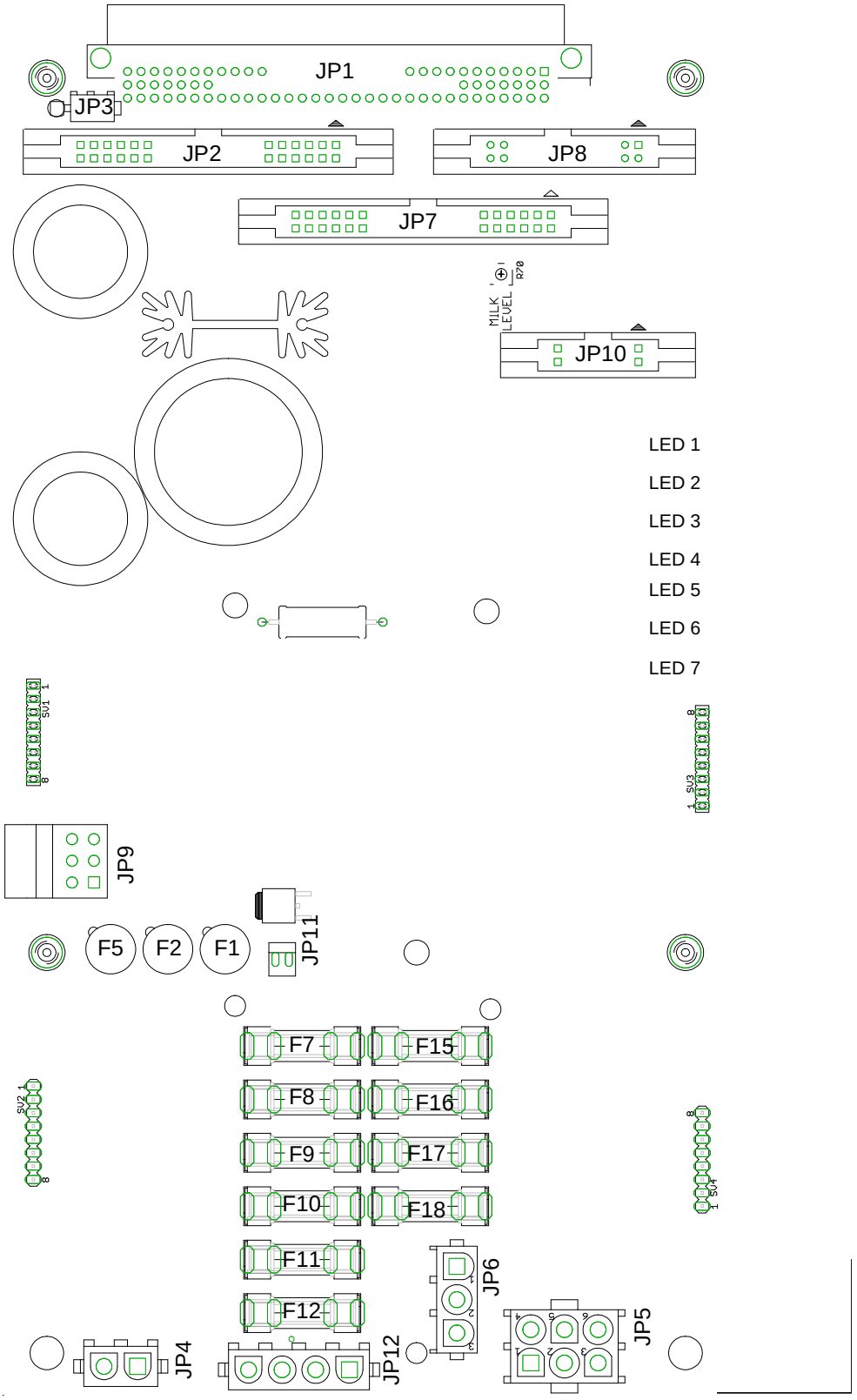
Fuses





F1	5 AMP / 250VAC - NEG 12VDC SUPPLY
F2	5 AMP / 250VAC - 5VDC SUPPLY
F5+	6.3 AMP / 250VAC - 24VDC SUPPLY
F7	5 AMP / 250VAC - BREW GROUP HEATER L1
F8	5 AMP / 250VAC - BREW GROUP HEATER L2
F9	1 AMP / 250VAC - MILK PUMP L1
F10	1 AMP / 250VAC - MILK PUMP L2
F11	1 AMP / 250VAC - SPARE
F12	1 AMP / 250VAC - SPARE
F15	5 AMP / 250VAC - GRINDER L1
F16	5 AMP / 250VAC - GRINDER L2
F17	4 AMP / 250VAC - WATER PUMP L1
F18	4 AMP / 250VAC - WATER PUMP L2

AC/DC Power Supply Board

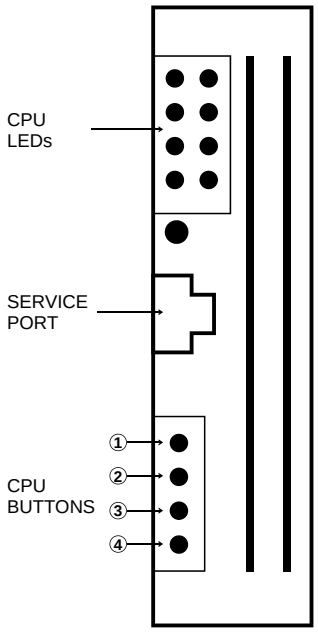


CPU Board

The CPU board contains a series of LEDs and buttons. When the green LED is illuminated, the CPU board is receiving voltage. It is normal for the red LEDs to flicker.

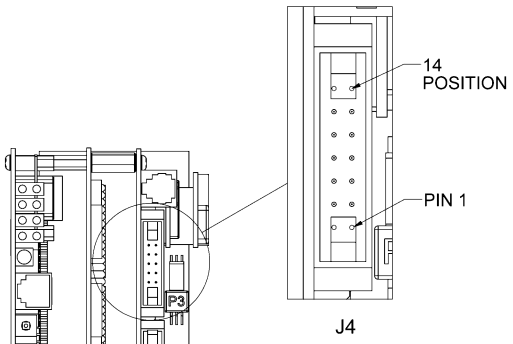
Each CPU button has multiple functions based on the state of the machine when the button is pressed. The button may be held and the machine powered on ***or*** the button may be pressed after the machine is powered on.

NOTE: If ALL LEDS are lit, the machine probably will not function.



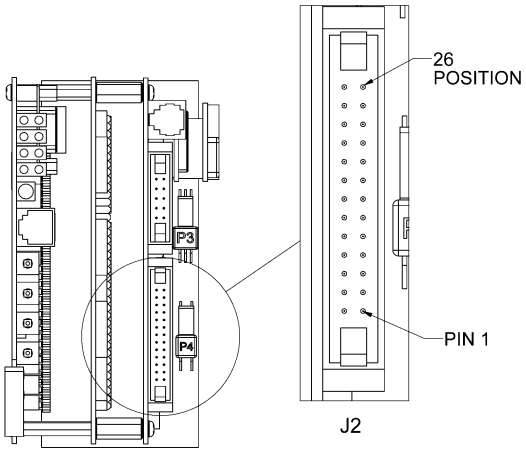
CPU BUTTON	POWER OFF Hold BUTTON & Turn on Power	POWER ON READY TO MAKE DRINK Press BUTTON	ADDITIONAL FUNCTIONS
Top ❶	Reserved (internal use only)		N/A
❷	Front panel touchpad test mode		While machine is warming up, press button once to force the **READY MODE**, regardless of message for group, water or steam temperature.
❸	Blocks auto-run of brew group initialization	Initialize brew group	At times, inhibiting brew group initialization is desired.
❹ Bottom	Reserved (internal use only)	Reserved (no current function)	

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

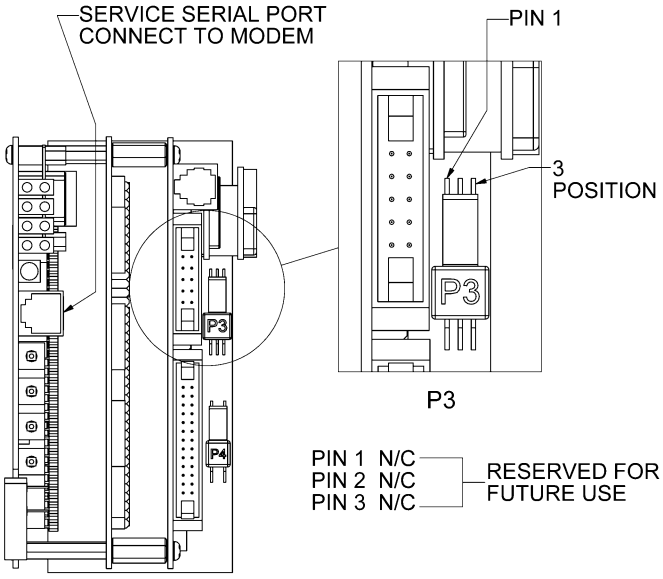
J2



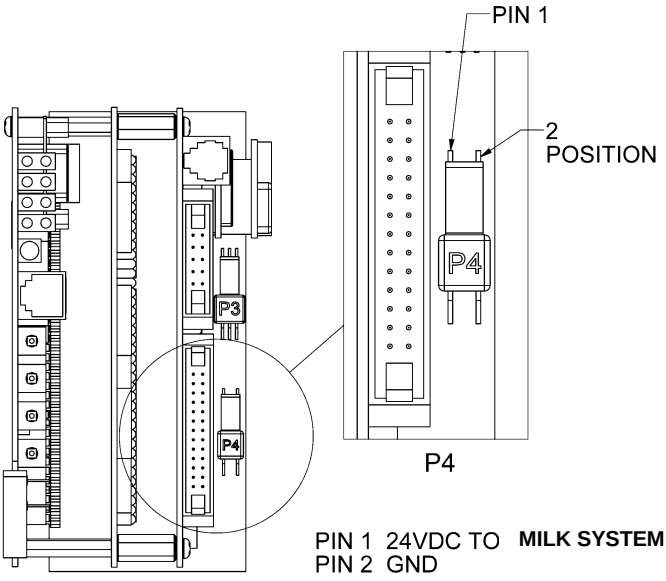
PIN 1
PIN 2
PIN 3
PIN 4
PIN 5
SERIAL TO CTS VENDING CONTROLLER

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

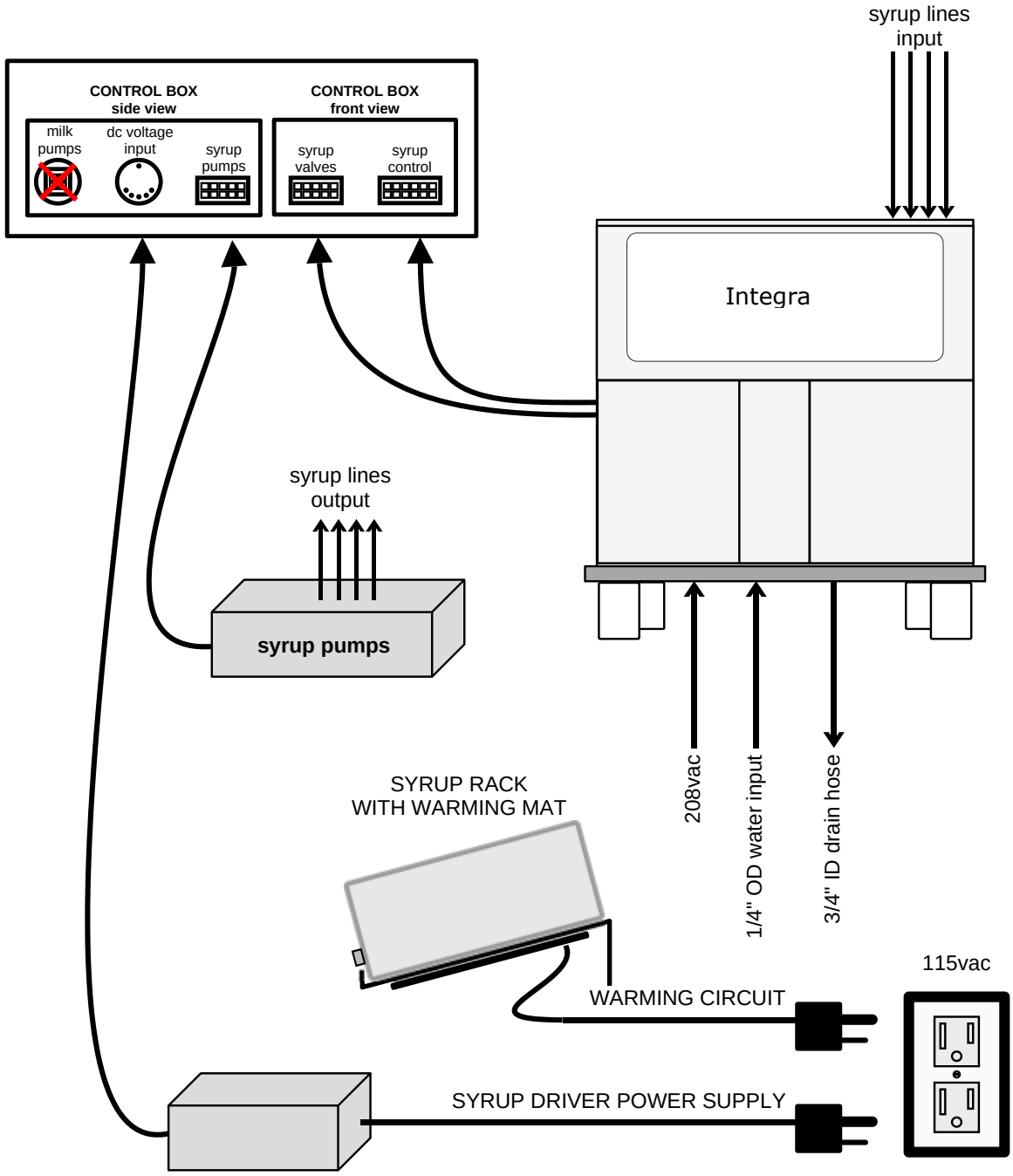
P3


SERVICE SERIAL PORT
CONNECT TO MODEM
PIN 1
3
POSITION
P3
P3
P4
P3
PIN 1 N/C
PIN 2 N/C
PIN 3 N/C
RESERVED FOR
FUTURE USE

P4


PIN 1
2
POSITION
P4
P3
P4
P4
PIN 1 24VDC TO
PIN 2 GND
MILK SYSTEM VACUUM BREAK VALVE

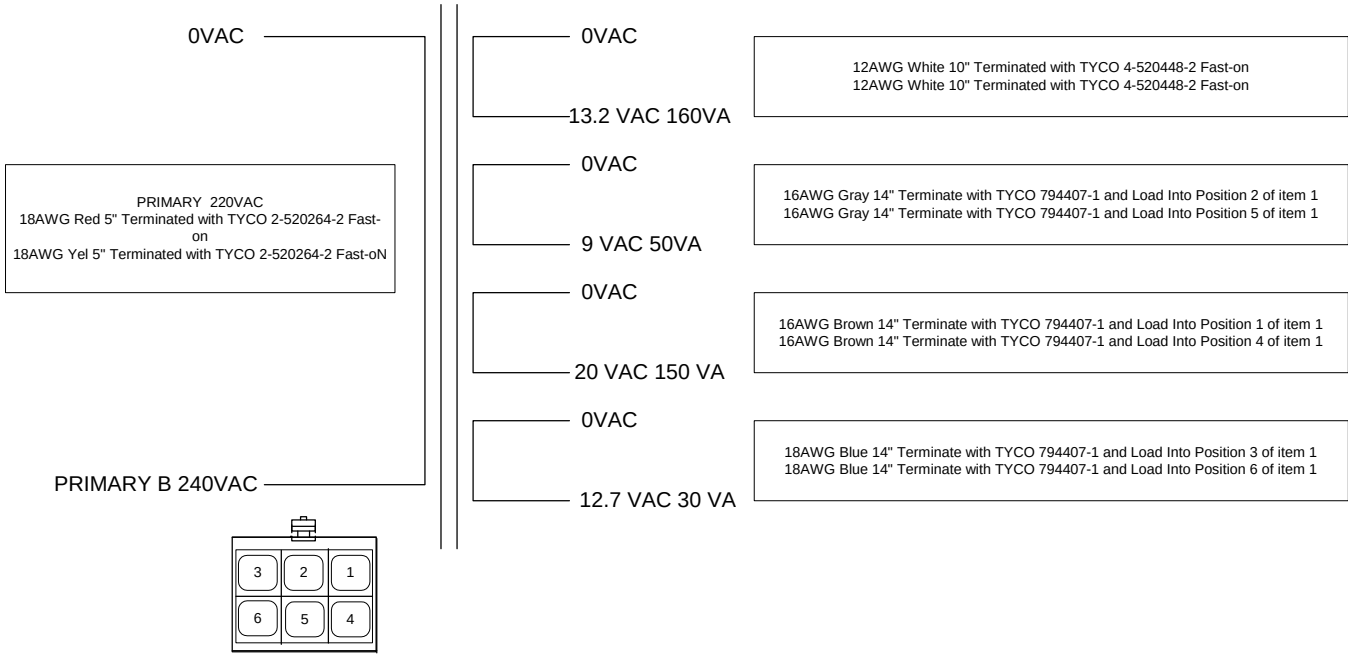
Peripheral Connections Configuration



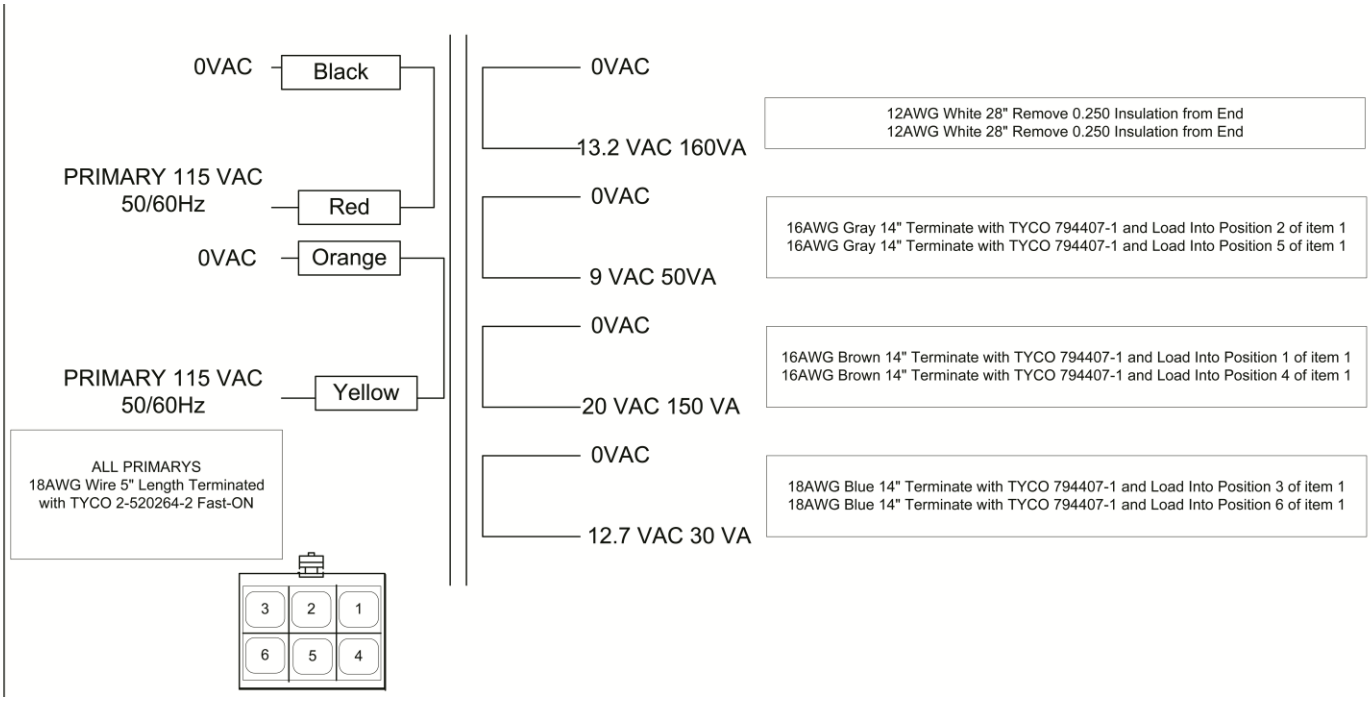
Transformer

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.

Transformer Diagram – PN 1320-023



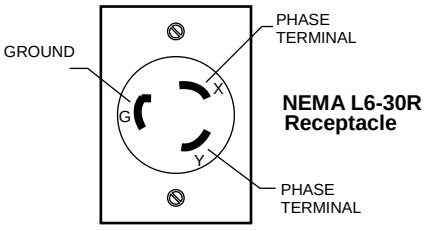
Transformer Diagram – PN 1320-025



Machine Operating Voltage

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

- 200-240vac
- Single Phase: 30amp dedicated circuit
- NEMA L6-30 receptacle, a three wire circuit.
- (U.S. machines are typically wired for single-phase operation)



AC Voltage

The following components in the Integra operate on AC voltage:

- Tank Heaters
- Group Heater
- Transformer
- Milk Pump
- Water Pump
- Grinders

DC Voltage

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

Valves

All water and steam valves on the Integra 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

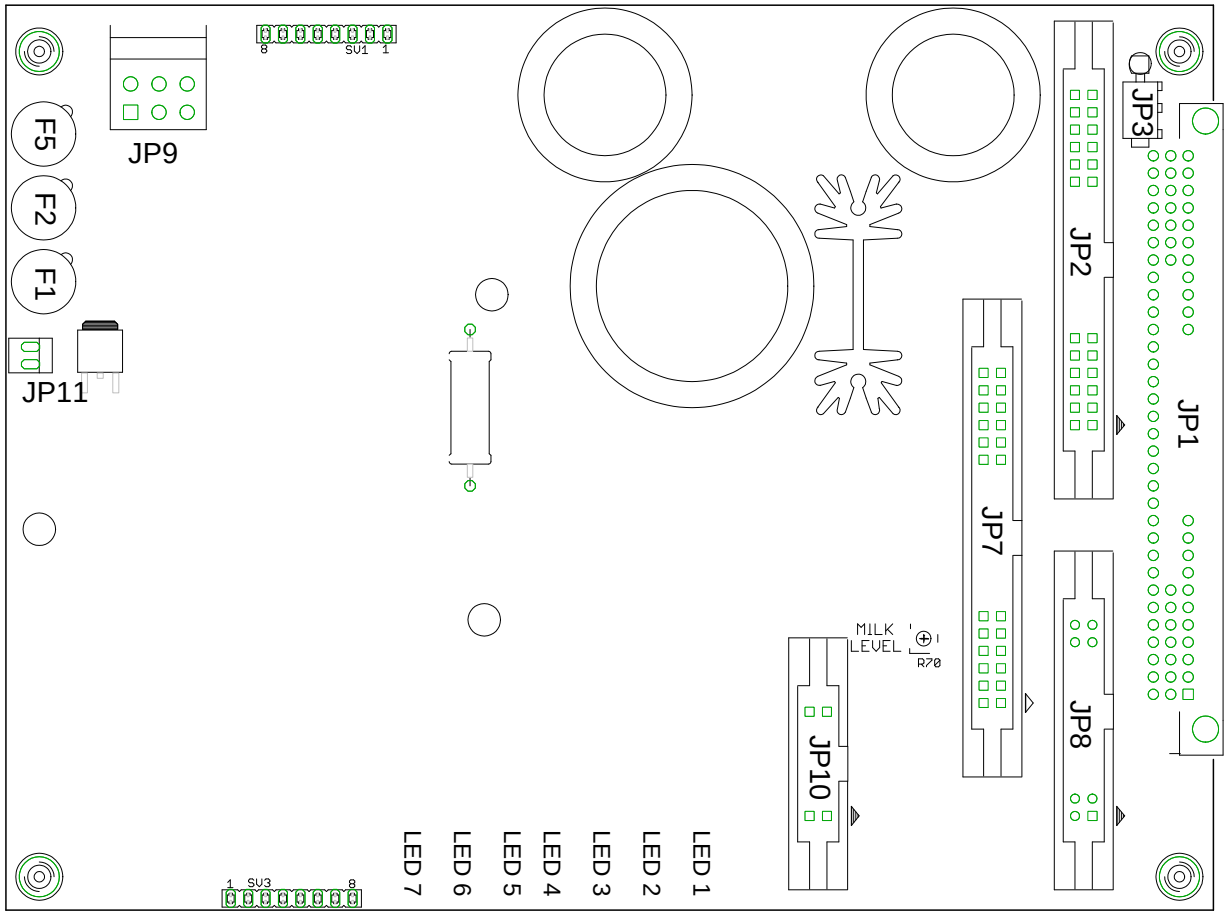
Diodes are used throughout the Integra electrical connections to control the flow of electricity and eliminate electric noise from feeding back into the circuitry.

Flavor System

Syrup Valves: 24vdc x1
Water Valve: 24vdc x1
Peristaltic Pump Assembly : 24vdc, 75rpm x4 (all flavor tubes are color-coded)
Syrup Driver Power: 115vac
Chocolate Heater Assembly: 115vac

DC Power Supply Board LEDs

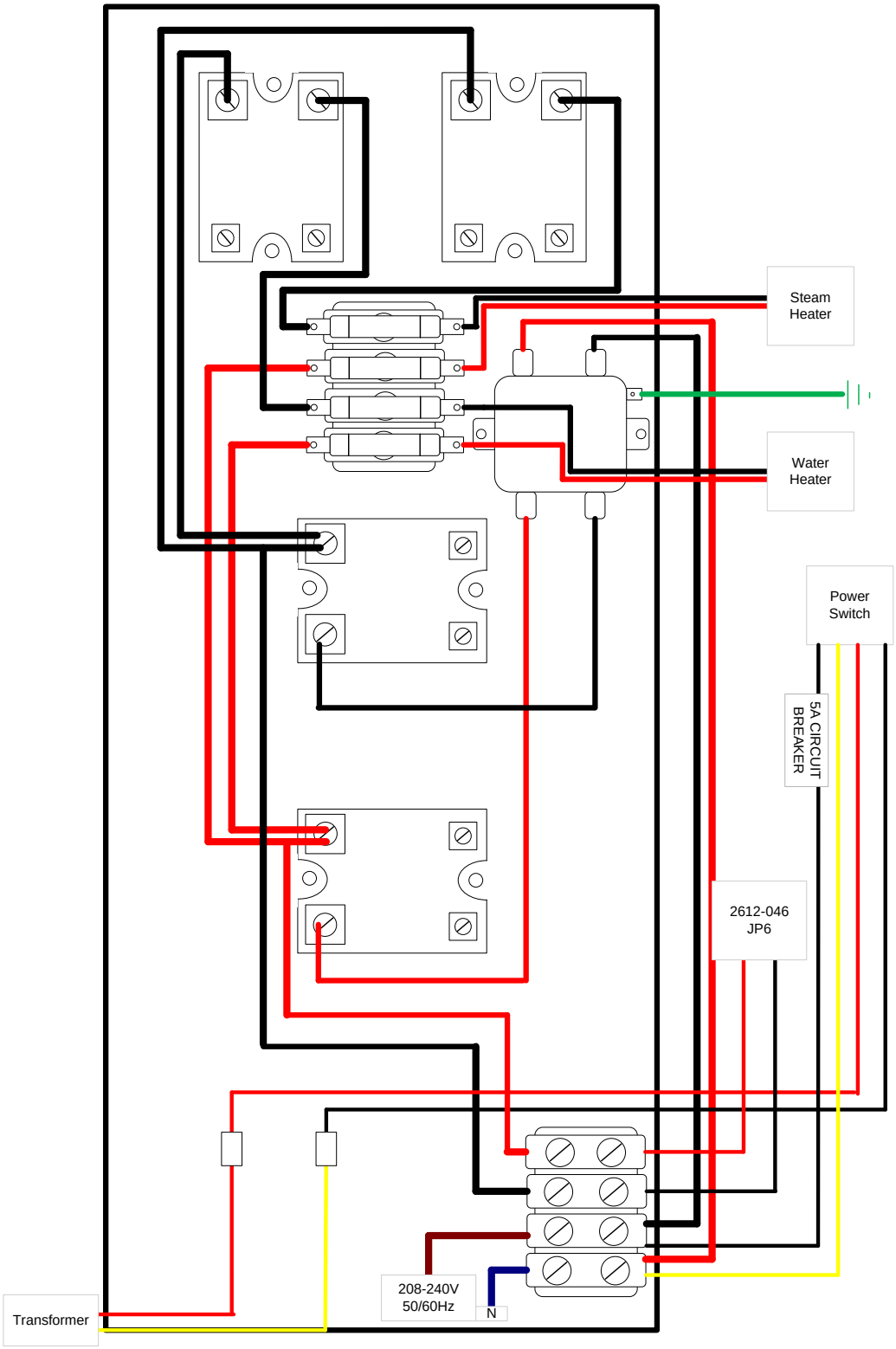
During proper machine operation, only the green LED (#1) is lit. If any red LEDs are lit, that indicates a fault in machine operation.



LED 1	VCC - GREEN
LED 2	12VDC – RED
LED 3	12VS – RED
LED 4	24VDC – RED
LED 5	24VS – RED
LED 6	NEG 12VDC – RED
LED 7	REGULATED 5VDC - RED

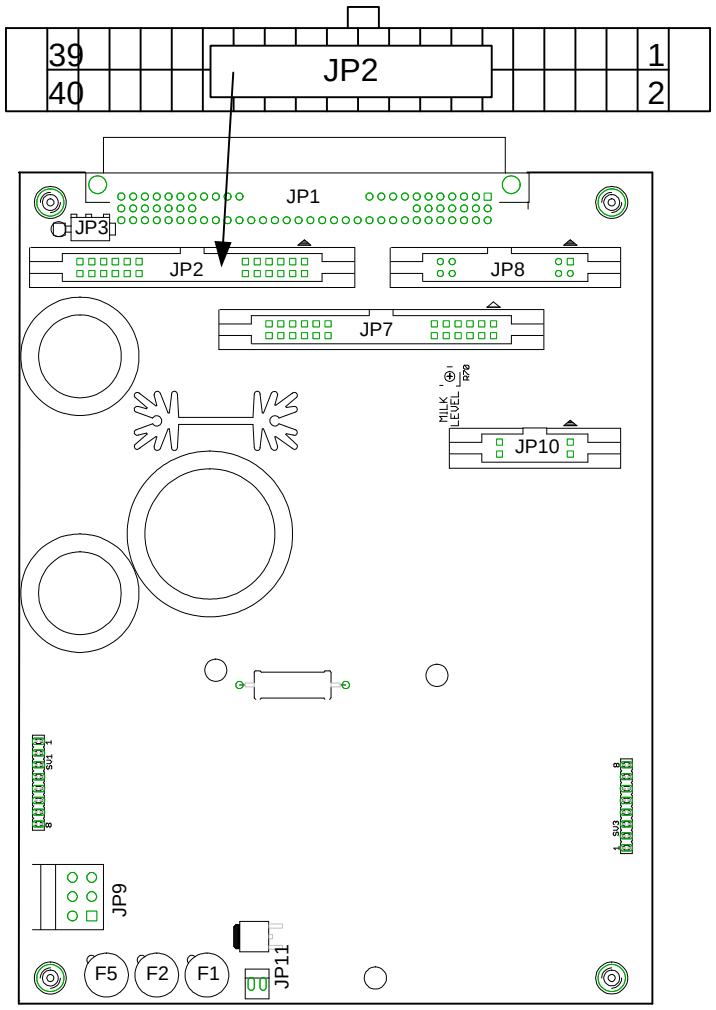
Top of Board LED Color	Voltage Represented	Associated Fuse on DC Board	Related Components
❍GREEN Lit during normal operation	5vdc	F2	CPU, ICs, Display, AC Interface, DC Board, Hall Effect Sensors
❍ RED	24vdc	F5	All Fans and Valves, Relays, Main AC Relays/Contactor
❍ RED	24vdc	F5	All Fans and Valves, Relays, Main AC Relays/Contactor
❍ RED	12vdc	F1	Transducer, Display, CPU Analog Board, Steam Tank Level Sensor
❍ RED	12vdc	F1	Transducer, Display, CPU Analog Board, Steam Tank Level Sensor
❍ RED	5 v vcc Varying Controlled Current	F2	CPU, Display, AC Interface, DC Board, Hall-Effect Sensors, Flowmeter
❍ RED	-12vdc	F5	CPU, Display, and Transducer

AC Distribution Panel



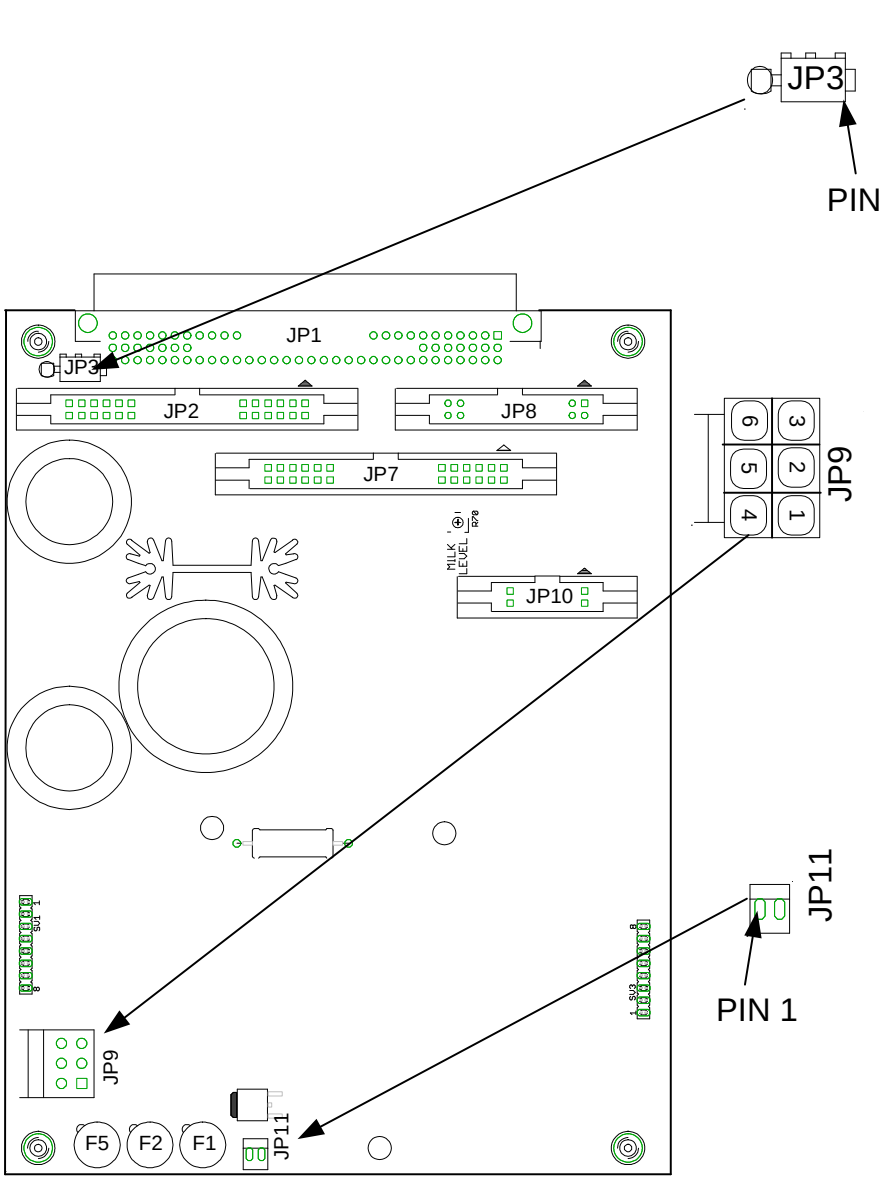
Jumper Plug Connector Detail

Jumper Plug 2



1	LATTE STEAM VALVE GND - BROWN
2	24VDC - ORANGE
3	CAPPUCCINO STEAM VALVE GND - BLUE
4	24VDC - ORANGE
5	MILK AIR PURGE VALVE GND - GREEN
6	24VDC - ORANGE
7	BREW WATER VALVE GND - WHITE
8	24VDC - ORANGE
9	STEAM TANK FILL VALVE GND - PURPLE
10	24VDC - ORANGE
11	STEAM TANK PURGE VALVE GND - BLUE
12	24VDC - ORANGE
13	HOT WATER VALVE GND - PURPLE
14	24VDC - ORANGE
15	N/C
16	CPU FAN 24VDC - ORANGE
17	N/C
18	CPU FAN GND - BLACK
19	LATTE AIR CONTROL VALVE - ORANGE
20	LATTE AIR CONTROL VALVE - BROWN
21	N/C
22	N/C
23	N/C
24	N/C
25	N/C
26	N/C
27	FUTURE USE - YELLOW
28	FUTURE USE - BLACK
29	N/C
30	N/C
31	CAPPU AIR CONTROL VALVE - ORANGE
32	CAPPU AIR CONTROL VALVE - BLUE
33	JUMPER FROM PIN 34 - GREY
34	JUMPER FROM PIN 33 - GREY
35	STEAM TANK LIMIT SWITCH - BROWN
36	STEAM TANK LIMIT SWITCH - BROWN
37	WATER TANK LIMIT SWITCH - WHITE
38	WATER TANK LIMIT SWITCH - WHITE
39	FUTURE USE - RED
40	N/C

Jumper Plug 3, 9, 11

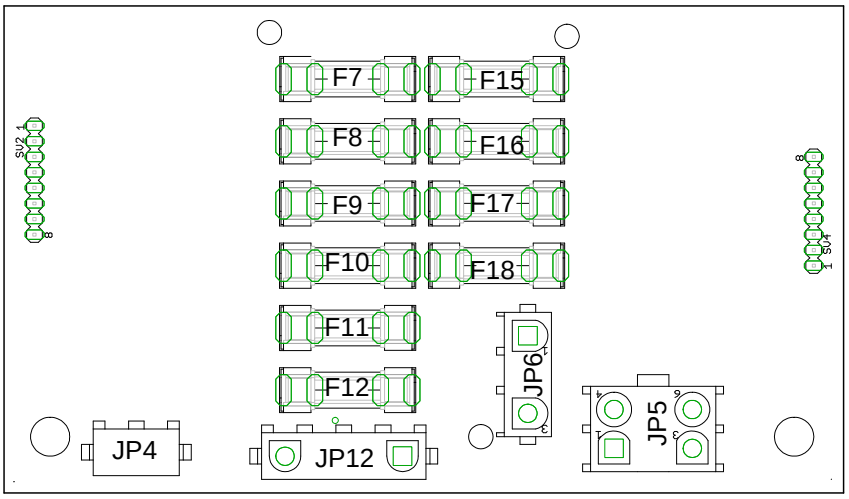


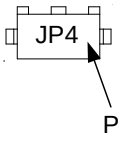
1	GROUP MOTOR 24vdc - BLACK
2	GROUP MOTOR 24vdc - RED

1	TRANSFORMER 20vac BROWN
2	TRANSFORMER 9vac GREY
3	TRANSFORMER 12.7vac BLUE
4	TRANSFORMER 20vac BROWN
5	TRANSFORMER 9vac GREY
6	TRANSFORMER 12.7vac BLUE

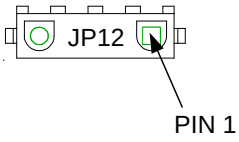
1	AC INPUT RELAYS 24vdc - ORANGE
2	AC INPUT RELAYS GND - BLUE

Jumper Plug 4, 5, 6, 12

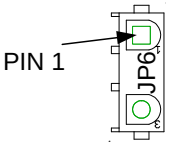




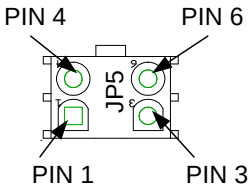
1	GROUP HEAT 208-240VAC L2 YELLOW
2	GROUP HEAT 208-240VAC L1 BLACK



1	MILK PUMP 208-240VAC L1 BLACK
2	MILK PUMP 208-240VAC L2 ORANGE
3	N/C
4	N/C

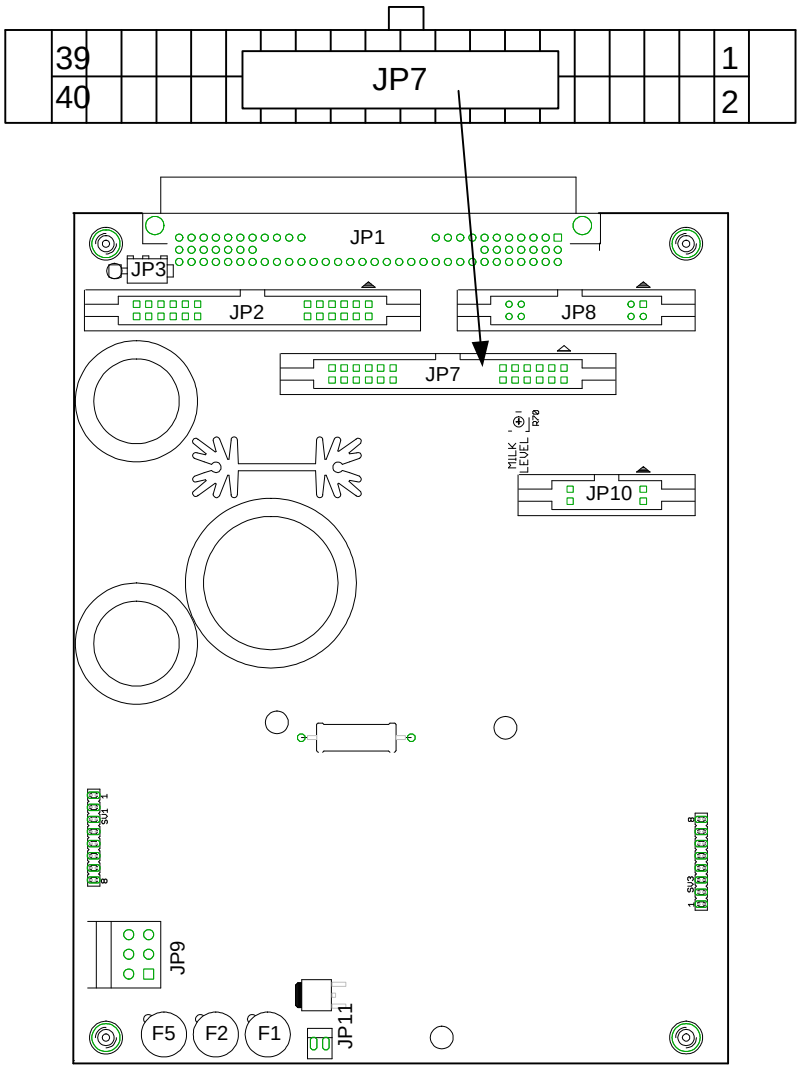


1	MAIN AC 208-240VAC L1 BLACK
2	N/C
3	MILK PUMP 208-240VAC L2 RED



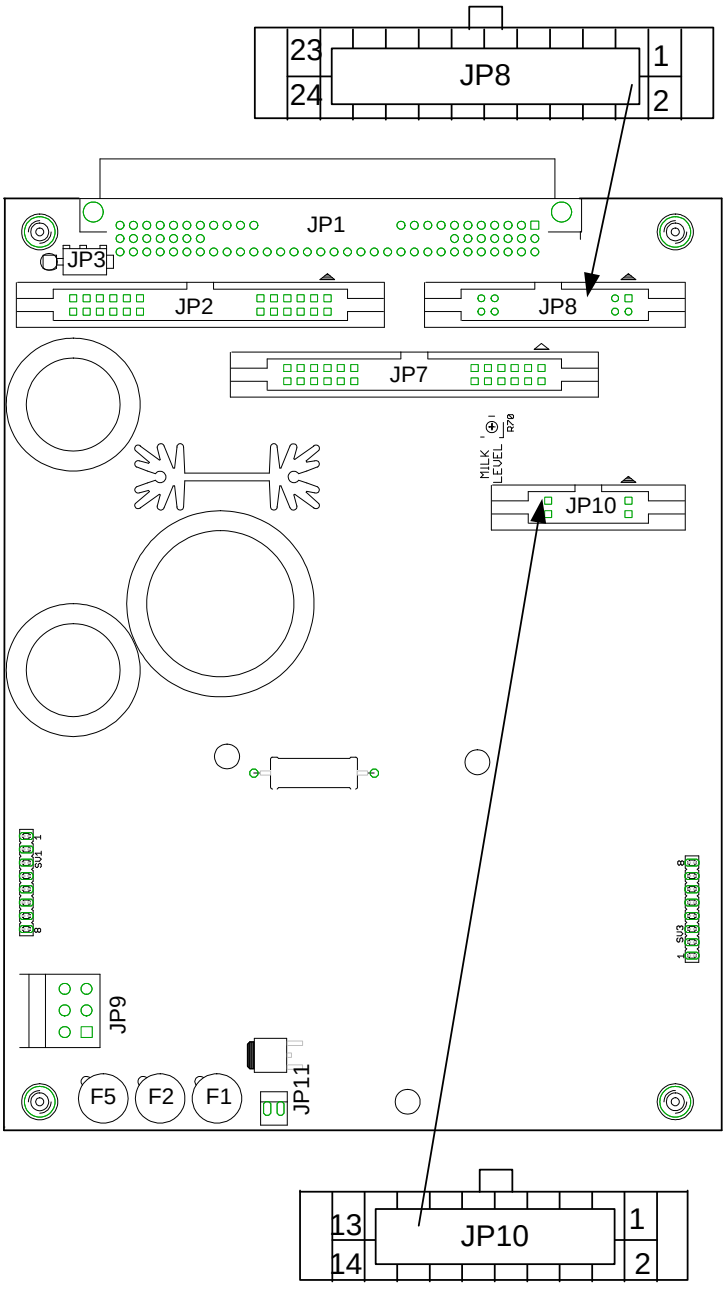
1	WATER PUMP 208-240VAC L2 - RED
2	GRINDER RT 208-240VAC L2 - BLUE
3	GRINDER LT 208-240VAC L2 - BLUE
4	WATER PUMP 208-240VAC L1 - BLACK
5	GRINDER RT 208-240VAC L1 - BROWN
6	GRINDER lT 208-240VAC L1 - BROWN

Jumper Plug 7



1	TRANSDUCER 6VDC - RED
2	N/C
3	TRANSDUCER SIGNAL - GREEN
4	N/C
5	TRANSDUCER SIGNAL - WHITE
6	N/C
7	TRANSDUCER GND - BLACK
8	N/C
9	WATER TANK TEMP PROBE - GREEN
10	REFR TEMP PROBE - GREEN
11	WATER TANK TEMP PROBE - GREEN
12	REFR TEMP PROBE - BROWN
13	OUT OF MILK SENSOR SIGNAL - WHITE
14	N/C
15	N/C
16	N/C
17	OUT OF MILK SENSOR RETURN - BLUE
18	OUT OF MILK SENSOR GND - BLACK
19	OUT OF MILK SENSOR VDC - GREY
20	N/C
21	WATER TANK LEVEL PROBE - VIOLET
22	WATER TANK LEVEL GND - BLACK
23	STEAM TANK LEVEL PROBE - VIOILET
24	TRANSDUCER - 3VDC - BLACK/WHITE
25	STEAM TANK SAFETY LVL RED / WHITE
26	N/C
27	N/C
28	N/C
29	GROUP DOOR SWITCH INPUT - WHITE
30	GROUP DOOR SWITCH INPUT - WHITE
31	GROUNDS BIN SWITCH INPUT - WHITE
32	GROUNDS BIN SWITCH INPUT - WHITE
33	BREW GROUP TEMP SWITCH - GREY
34	BREW GROUP TEMP SWITCH - GREY
35	FUTURE USE - WHITE
36	FUTURE USE - GREEN
37	N/C
38	N/C
39	N/C
40	N/C

Jumper Plug 8, 10



1	BREW GROUP IR 5VDC - GREY
2	BREW GROUP IR 5VDC - GREY
3	BREW GROUP HOME IR - PURPLE
4	BREW GROUP CHAMBER IR - BLUE
5	BREW GROUP IR GND - BLACK
6	BREW GROUP IR GND - BLACK
7	N/C
8	N/C
9	N/C
10	N/C
11	N/C
12	N/C
13	FUTURE USE - PURPLE
14	FUTURE USE - ORANGE
15	FUTURE USE - WHITE/ORANGE
16	N/C
17	N/C
18	N/C
19	N/C
20	FLOWMETER 5VDC - GREY
21	ACCESS SWITCH LEVEL1 - WHITE/BLUE
22	FLOWMETER SIGNAL - WHITE
23	ACCESS SWITCH COMMON - BLUE
24	FLOWMETER GND - BLACK

1	REFR DOOR SWITCH - GREY
2	N/C
3	N/C
4	N/C
5	N/C
6	N/C
7	N/C
8	N/C
9	STEAM HEAT RELAY 24VDC - BLUE
10	REFR DOOR SWITCH - GREY
11	WATER HEAT RELAY 24VDC - BROWN
12	TANK HEAT RELAY GND - WHITE/BLACK
13	N/C
14	N/C

Troubleshooting

For assistance troubleshooting issues with the electrical system, please see the electrical troubleshooting trees in *Section 14: Troubleshooting*.

Section 4 :: Software

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

TECHNICAL SUPPORT

CONCORDIA
COFFEE SYSTEMS

Software Overview

The Concordia Integra user interface contains drink totals, programming access, and diagnostic service information.

Software Menu Informational Screens

- **GRAND TOTAL**
  Displays the total number of drinks dispensed.

- **PART NUMBER**
  Displays the part number of the installed software.

Categories

- **TOTAL DRINK COUNTS**
  Displays the total number of drinks poured since the CPU board was installed. 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 and the automatic start feature.

- **CHK TEMPERATURES**
  Displays water, refrigerator, steam, and brew group temperatures.

- **SET TEMPERATURES**
  Changes steam and water temperature settings.

- **GRIND TIMES**
  Sets the coffee grind time for espresso shots and brewed coffee.

- **SHOT SELECT**
  Determines the quantity of espresso shots per drink.

- **WATER VOLUME**
  Changes water volume for espresso extraction, brewed coffee (long black), and hot water button.

- **MILK TIMINGS**
  Changes milk timings for all drinks and milk buttons.

- **FLAVOR TIMINGS**
  Displays the flavor dosage of drinks, in seconds of pour time.

- **DRINK PRICES**
  Displays the prices for each drink, an extra shot, and flavor.

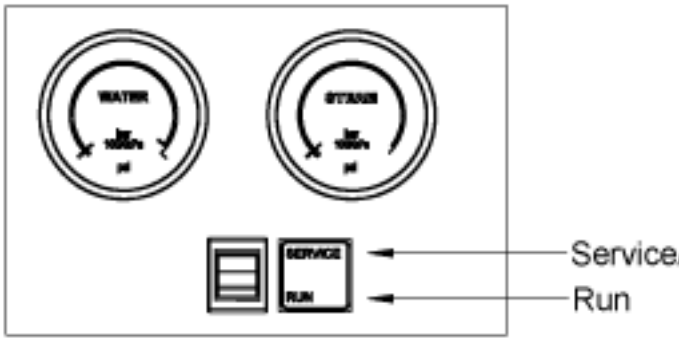
- **SPECIAL FEATURES**
  Enables or disables the following features: vending, country setting, low beans sensing, o-ring message reset, priming the flavor system, milk flow sensor, and the decaf button.

- **MISCELLANEOUS**
  Displays the machine ID and current software component versions, load defaults, resets the Preventative Maintenance (PM) counter, and the syrup clean process.

- **TEST ROUTINES**
  Used for service diagnostic testing; each component of the machine can be run independently.

Service Switch

The service switch is located behind the left door, below the gauges, and controls the state of the machine. For the machine to dispense drinks, the service switch must be in the **RUN** position. For operations such as cleaning or entering the software programming menu, the service switch must be in the **SERVICE** position.



Service Switch in the RUN position

- Normal operating position.
- Cleaning and programming buttons are disabled.

Service Switch in the SERVICE position

- Cleaning and programming buttons are enabled.
- Machine cannot dispense drinks.

The Service Switch and Cleaning the Machine

During cleaning, the service switch must be in the **SERVICE** position. Once the clean cycles are complete, press the service switch into the **RUN** position to enable the machine to dispense drinks.

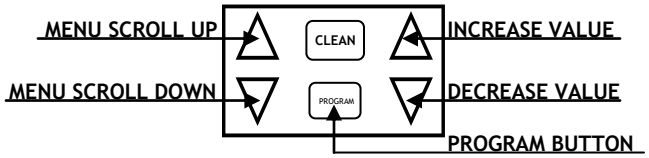
When not cleaning the machine or accessing the software menu, ensure the service switch is in the **RUN** position.

Drink counting continues when the service switch is in the **SERVICE** position. To disable drink counting, navigate to **TOTAL DRINK COUNTS > DRINK COUNTING**, and then press one of the right arrow buttons.

Navigating the Menu System

Press the service switch into the **SERVICE** position, and then press the **PROGRAM** button three times. The display will change from **SELECT DRINK** to **SELECT CATEGORY**.

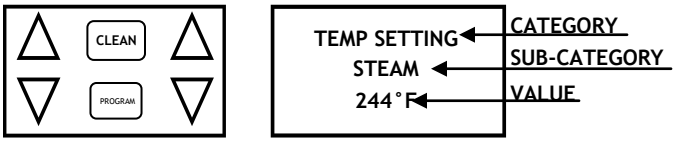
To navigate through the menu system, use the unmarked buttons below the display.



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

Accessing a Sub-Category

Press the **PROGRAM** button once to access a sub-category. 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.



Exiting the Menu System

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

To exit a category, press the **CANCEL** button.

Accessing the Grand Total Drink Count

Press the **PROGRAM** button once to display the drink **GRAND TOTAL**.

SELECT DRINK will automatically reappear on the display after a few seconds.

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

NOTE: It is required to record the grand total drink statistics at the start and end of each service call. This information is required to close the 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 statistics.

To Exit

- Press the **PROGRAM** button once.
- Press any drink button.

Accessing Daily Drink Count Statistics

Daily statistics are reset after a brew group/shut down clean 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.

To Exit

- Press the **PROGRAM** button once.
- 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. The same software is used for the Integra 0, Integra 1, and Integra 4, even though the Integra 0 does not utilize the flavor-related options.

NOTE: All machines are shipped with current defaults. Default settings change periodically, so if you need to verify a specific default, please call Concordia Coffee Systems for assistance.

NOTE: Software menus for customers with customized software may vary from the software settings outlined in the table below. For questions about customized software, please call Concordia Coffee Systems.

NOTE: If the machine is configured for a non-U.S. location, temperatures will be shown in Celsius and prices may be shown using the local currency.

<table>
<tr><td></td><td colspan="3">TO DISPLAY TOTAL DRINK COUNT STATISTIC:
PRESS PROGRAM BUTTON 1 TIME</td></tr>
<tr><td>TOTAL DRINK COUNTS</td><td colspan="3"></td></tr>
<tr><td>Grand Total</td><td colspan="3" rowspan="16">DISPLAY TOTAL DRINK COUNT STATISTICS</td></tr>
<tr><td>Vended Total</td></tr>
<tr><td>Small Latte</td></tr>
<tr><td>Large Latte</td></tr>
<tr><td>Small Cappuccino</td></tr>
<tr><td>Large Cappuccino</td></tr>
<tr><td>Small Mocha</td></tr>
<tr><td>Large Mocha</td></tr>
<tr><td>Sm Brewed Coffee</td></tr>
<tr><td>Lg Brewed Coffee</td></tr>
<tr><td>Espresso</td></tr>
<tr><td>Sm Hot Chocolate</td></tr>
<tr><td>Lg Hot Chocolate</td></tr>
<tr><td>Small Chai Latte</td></tr>
<tr><td>Large Chai Latte</td></tr>
<tr><td>Sm Steamed Milk</td></tr>
<tr><td>Lg Steamed Milk</td></tr>
<tr><td>Flavor Total</td></tr>
<tr><td>Drink Counting</td><td>ON</td><td>OFF</td><td>ON/OFF</td></tr>
<tr><td>DAILY DRINK COUNTS</td><td colspan="3"></td></tr>
<tr><td>Daily Total</td><td colspan="3" rowspan="10">DISPLAY DAILY DRINK STATISTICS

DAILY STATISTICS ARE RESET WHEN A BREW CLEAN IS RUN</td></tr>
<tr><td>Latte</td></tr>
<tr><td>Cappuccino</td></tr>
<tr><td>Mocha</td></tr>
<tr><td>Brewed Coffee</td></tr>
<tr><td>Hot Chocolate</td></tr>
<tr><td>Chai Latte</td></tr>
<tr><td>Steamed Milk</td></tr>
<tr><td>Espresso</td></tr>
</table>

TIME & DATE	Adjustable by
Shutdown Machine	N/A
Autostart	OFF/ON
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	MINUTES (3-30)
CHK TEMPERATURES	
Steam	DISPLAY CURRENT STEAM TEMP
Brew Water	DISPLAY CURRENT WATER TEMP
Refrigerator	DISPLAY CURRENT REFER TEMP
Group	DISPLAY CURRENT GROUP HEAT STATE
SET TEMPERATURES	**Adjustable by**
Steam	0.2°F
Brew Water	1.0°F

GRIND TIMES	Min	Max	Adjustable by
Single Reg	2.0 sec	4.2 sec	0.1 sec
Single Decaf	2.0 sec	4.2 sec	0.1 sec
Double Reg	2.0 sec	4.2 sec	0.1 sec
Double Decaf	2.0 sec	4.2 sec	0.1 sec
Small Coffee Reg	2.0 sec	4.2 sec	0.1 sec
Small Coffee Decaf	2.0 sec	4.2 sec	0.1 sec
Large Coffee Reg	2.0 sec	4.2 sec	0.1 sec
Large Coffee Dec	2.0 sec	4.2 sec	0.1 sec
SHOT SELECT	**Min**	**Max**	**Adjustable by**
Small Latte	Single	Dbl	Single Shot
Large Latte	Single	Dbl	Single Shot
Small Cappuccino	Single	Dbl	Single Shot
Large Cappuccino	Single	Dbl	Single Shot
Small Mocha	Single	Dbl	Single Shot
Large Mocha	Single	Dbl	Single Shot
Sm Brewed Coffee	Single	Dbl	Single Shot
Lg Brewed Coffee	Coffee Single	Coffee Double	Single Shot
Espresso	Coffee Single	Coffee Double	Single Shot
WATER VOLUME	**Min**	**Max**	**Adjustable by**
Single	30mL	150mL	5mL
Double	30mL	150mL	5mL
Sm Coffee Pre-Soak	5mL	500mL	5mL
Sm Cof Hot Water	5mL	500mL	5mL
Lg Coffee Pre-Soak	5mL	500mL	5mL
Lg Cof Hot Water	5mL	500mL	5mL

MILK TIMINGS	Min	Max	Adjustable by
Sgl Sm Hot Latte	4.0 sec	120.0 sec	0.5 sec
Sgl Lg Hot Latte	4.0 sec	120.0 sec	0.5 sec
Dbl Sm Hot Latte	4.0 sec	120.0 sec	0.5 sec
Dbl Lg Hot Latte	4.0 sec	120.0 sec	0.5 sec
Sgl Sm Cold Latte	4.0 sec	120.0 sec	0.5 sec
Sgl Lg Cold Latte	4.0 sec	120.0 sec	0.5 sec
Dbl Sm Cold Latte	4.0 sec	120.0 sec	0.5 sec
Dbl Lg Cold Latte	4.0 sec	120.0 sec	0.5 sec
Sgl Sm Hot Mocha	4.0 sec	120.0 sec	0.5 sec
Sgl Lg Hot Mocha	4.0 sec	120.0 sec	0.5 sec
Dbl Sm Hot Mocha	4.0 sec	120.0 sec	0.5 sec
Dbl Lg Hot Mocha	4.0 sec	120.0 sec	0.5 sec
Sgl Sm Cold Mocha	4.0 sec	120.0 sec	0.5 sec
Sgl Lg Cold Mocha	4.0 sec	120.0 sec	0.5 sec
Dbl Sm Cold Mocha	4.0 sec	120.0 sec	0.5 sec
Dbl Lg Cold Mocha	4.0 sec	120.0 sec	0.5 sec
Sgl Sm Hot Cap	4.0 sec	120.0 sec	0.5 sec
Sgl Lg Hot Cap	4.0 sec	120.0 sec	0.5 sec
Dbl Sm Hot Cap	4.0 sec	120.0 sec	0.5 sec
Dbl Lg Hot Cap	4.0 sec	120.0 sec	0.5 sec
Sm Cap Boost Dly	4.0 sec	30.0 sec	1 sec
Lg Cap Boost Dly	4.0 sec	30.0 sec	1 sec
Sm Hot Chocolate	4.0 sec	120.0 sec	0.5 sec
Lg Hot Chocolate	4.0 sec	120.0 sec	0.5 sec
Sm Cold Chocolate	4.0 sec	120.0 sec	0.5 sec
Lg Cold Chocolate	4.0 sec	120.0 sec	0.5 sec
Sm Hot Chai Latte	4.0 sec	120.0 sec	0.5 sec
Lg Hot Chai Latte	4.0 sec	120.0 sec	0.5 sec
Sm Cold Chai Latte	4.0 sec	120.0 sec	0.5 sec
Lg Cold Chai Latte	4.0 sec	120.0 sec	0.5 sec
Sm Hot Stm Milk	4.0 sec	120.0 sec	0.5 sec
Lg Hot Stm Milk	4.0 sec	120.0 sec	0.5 sec
Sm Cold Stm Milk	4.0 sec	120.0 sec	0.5 sec
Lg Cold Stm Milk	4.0 sec	120.0 sec	0.5 sec
Hot Add Milk	4.0 sec	120.0 sec	0.5 sec
Cold Add Milk	4.0 sec	120.0 sec	0.5 sec
FLAVOR TIMINGS	**Min**	**Max**	**Adjustable by**
Small Flavor 1	1	60	1 second
Large Flavor 1	1	60	1 second
Small Flavor 2	1	60	1 second
Large Flavor 2	1	60	1 second
Small Flavor 3	1	60	1 second
Large Flavor 3	1	60	1 second
Small Mocha	1	60	1 second
Large Mocha	1	60	1 second
Sm Hot Chocolate	1	60	1 second
Lg Hot Chocolate	1	60	1 second
Small Chai Latte	1	60	1 second
Large Chai Latte	1	60	1 second
Small 1-Flavor Adj	70	100	1 %
Small 2-Flavor Adj	70	100	1 %
Large 1-Flavor Adj	70	100	1 %
Large 2-Flavor Adj	70	100	1 %

DRINK PRICES	Min	Max	Adjustable by
Small Latte	0.00	99.00	0.05
Large Latte	0.00	99.00	0.05
Small Cappuccino	0.00	99.00	0.05
Large Cappuccino	0.00	99.00	0.05
Small Mocha	0.00	99.00	0.05
Large Mocha	0.00	99.00	0.05
Sm Brewed Coffee	0.00	99.00	0.05
Lg Brewed Coffee	0.00	99.00	0.05
Small Hot Chocolate	0.00	99.00	0.05
Large Hot Chocolate	0.00	99.00	0.05
Small Chai Latte	0.00	99.00	0.05
Large Chai Latte	0.00	99.00	0.05
Sm Steamed Milk	0.00	99.00	0.05
Lg Steamed Milk	0.00	99.00	0.05
Espresso	0.00	99.00	0.05
Extra Shot	0.00	99.00	0.05
Small Flavor	0.00	99.00	0.05
Large Flavor	0.00	99.00	0.05
SPECIAL FEATURES	**Min**	**Max**	**Adjustable by**
Vending	DISABLED	ENABLED	ENABLED/DISABLED
Decaf	DISABLED	ENABLED	ENABLED/DISABLED
Prime Flavor			
Country			AUSTRALIA, US, UK, EURO
Low Beans Sense	DISABLED	ENABLED	ENABLED/DISABLED
Reset O-Ring Msg			
Milk Sensor	DISABLED	ENABLED	ENABLED/DISABLED
MISCELLANEOUS	**Notes**		
Machine ID	Show Machine Identifier		
App Code Version	Show Application Code software version		
Disp Data Version	Show Display Data software version		
Seq Data Version	Show Sequence Data software version		
Boot Code Version	Show Boot Code software version		
Reset PM	Press right arrow to reset PM counter		
Load Defaults	Press right arrow to load defaults		
Run Syrup Clean	Press right arrow to run syrup clean		

TEST ROUTINES	
Hot Water Valve	
Milk Pump	
Vacuum Break Vlv	
Cap Air Valve	
Milk Purge Valve	
Latte Steam Valve	
Cap Steam Valve	
Water Purge Valve	
Steam Fill Valve	
Brew Water Valve	
Front Panel	
Grounds Bin	
5: A/D Reference	DISPLAY A/D CONVERTER CHANNELS
Group Heater	
Water Heater	
Steam Heater	
Water Level	
Upper Steam Probe	
Lower Steam Probe	
Left Grinder	
Right Grinder	
Water Pump	
Group Piston	
Syrup Purge Valve	

Calibration

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

The Integra may require adjustment to perform within specific extraction parameters using the customer's choice of beans and settings.

Calibration must be completed in the following order:

1. Pump Pressure (Plumbing Section)
2. Espresso Dose (Coffee Section)
3. Espresso Grind (Coffee Section)
4. Water Volume (Plumbing Section)
5. Milk Volume (Milk 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.

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

Step 1: Verify Default Settings

Water Volume	Single 40mL Double 80mL
Water Temperature	198°F
Coffee Powder Dose	Single: 2.5 seconds Double: 3.4 seconds
Grind	Ground coffee particles should be a bit finer than granulated sugar

Step 2: Visually Verify During Double Espresso Extraction

Water Pressure	135psi

Pump Pressure

This procedure must be done while extracting a double espresso.

1. During the extraction, watch the water pressure gauge – it must be 135psi ±5psi.
2. If the pressure gauge does not read 135psi, 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 135psi for proper brewing.
3. Once 135psi is achieved, pour a double espresso to verify the setting.

Espresso

While a customer-specific recipe may exist, initial calibration should be done according to the default settings. Once the defaults are verified, then adjustments to achieve the customer-specific recipe should be completed.

Espresso Extraction and Temperature Parameters
Unless otherwise specified, the calibration goal for the Concordia Integra 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	12-18 seconds
Double Espresso Shot	18-23 seconds

- Press the **ESPRESSO** button on the touchpad, to pour a single shot of espresso
- Press the **EXTRA SHOT** button, and then the **ESPRESSO** button on the touchpad, 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	150 - 170°F (66 – 77°C)
Latte	155 - 165°F (68 – 74°C)
Mocha	155 - 165°F (68 – 74°C)
Chai	155 - 165°F (68 – 74°C)
Hot Chocolate	155 - 165°F (68 – 74°C)
Cappuccino	155 - 165°F (68 – 74°C)
Steamed Milk	145 - 165°F (63 – 74°C)

Verifying Espresso Extraction

1. Confirm pump pressure is 135psi ±5psi.
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 (*for regular drinks*: turn grinder adjustment assembly clockwise to increase extraction time and counterclockwise to decrease extraction time; *for decaffeinated drinks*: turn grinder adjustment assembly counterclockwise to increase extraction time and clockwise 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 espresso pours must occur in order to ensure the change of grind is fully implemented.

Milk Timings

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

Each **MILK TIMINGS** sub-category must be individually set. See the *Software Quick Reference Guide* on page 4-6 for a detailed listing of all 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 8oz/240mL and 12oz/360mL.

To verify milk timing:

1. Place a cleaning or measuring cup under product outlet.
2. Pour a single, small latte.
3. When the drink pour is complete, verify the drink level (in ounces/milliliters) in the 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, access the software menu and adjust the milk timing 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, then increase the milk pour time by three seconds. Re-test the drink until proper volume is achieved.

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

For cappuccinos:

1. Determine the cappuccino delay setting (see below)
2. Follow the procedure listed above for lattes, etc.

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.

Cappuccino Foamed Milk Timing
The cappuccino milk timing has additional variables due to the cappuccino delay feature.

Cappuccino Boost Delay
The cappuccino boost delay determines the ratio of steamed milk to foamed milk. A lower cappuccino boost delay value increases the amount of foamed milk, and a higher cappuccino delay value decreases the amount of foamed milk.

Increasing the cappuccino boost delay time will increase the overall cappuccino temperature. This is because steamed milk (160°F/71°C) is hotter than foamed milk (130°F/54°C).

NOTE: In order to create foamed milk, the cappuccino boost delay must be set to less than the total drink time.

Brewed Coffee (Long Black)

The water timings for brewed coffee (long black) are preset prior to machine delivery.

To calculate the brewed coffee (long black) timing, multiply:

[cup size in ounces] x 30

One ounce equals 30mL.

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

12 x 30 = 360mL

The default settings for brewed coffee (long black) are 8oz/240mL and 12oz/360mL.

Flavor Timings

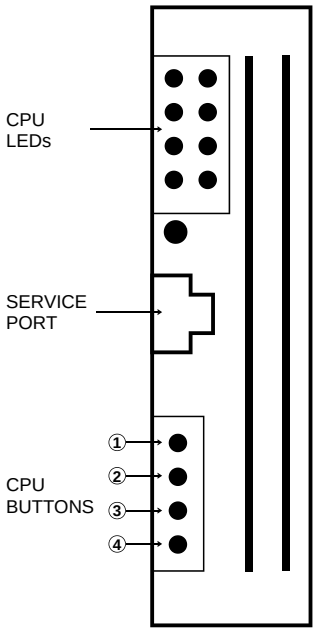
For instructions on how to change the amount of flavor added to a drink, please see the *Changing the Flavor Pour Rate* topic on page 8-8, in *Section 8: Flavor System*.

CPU Board

The CPU board contains a series of LEDs and buttons. When the green LED is illuminated, the CPU board is receiving voltage. It is normal for the red LEDs to flicker.

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 machine probably will not function.



CPU Button Functions

CPU BUTTON	POWER OFF Hold BUTTON & Turn on Power	POWER ON READY TO MAKE DRINK Press BUTTON	ADDITIONAL FUNCTIONS
Top ❶	Reserved (internal use only)		N/A
❷	Front panel touchpad test mode		While machine is warming up, press button once to force the **READY MODE**, regardless of message for group, water or steam temperature.
❸	Blocks auto-run of brew group initialization	Initialize brew group	At times, inhibiting brew group initialization is desired.
❹ Bottom	Reserved (internal use only)	Reserved (no current function)	

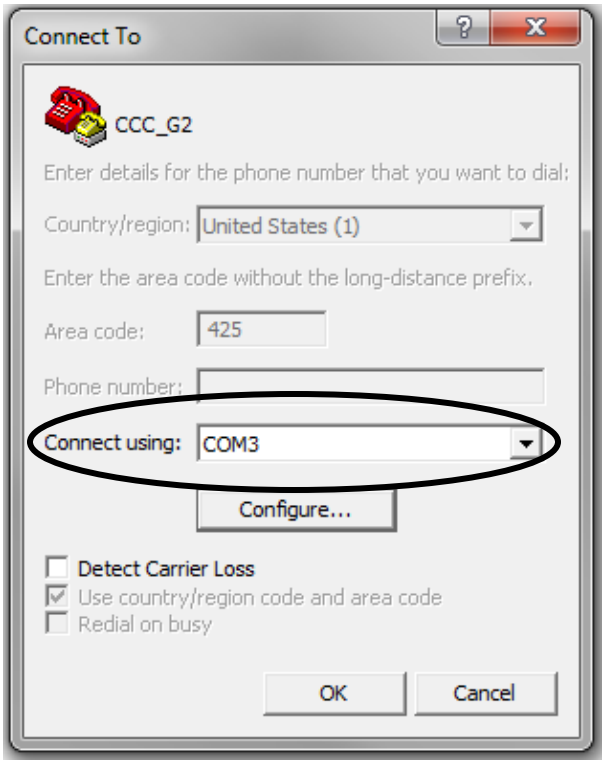
Loading New Software to a Machine

Required Equipment

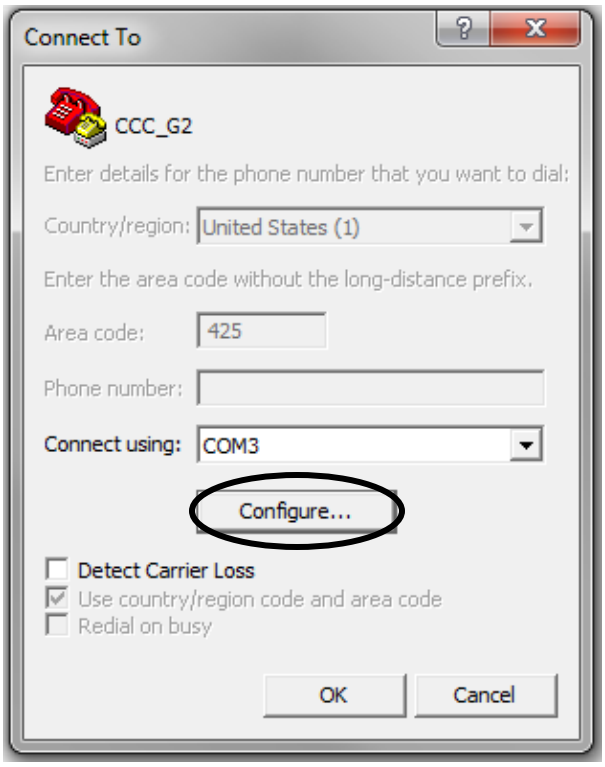
- Service port communications cable (9 pin D-sub to 6 pin modular Concordia PN 4300-013).
- An IBM compatible PC with communications software installed that supports ANSI Terminal Emulation and the XMODEM file transfer protocol.
- If using a laptop with Windows Vista or Windows 7, please visit http://www.hilgraeve.com/hyperterminal-trial/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

Configuring HyperTerminal

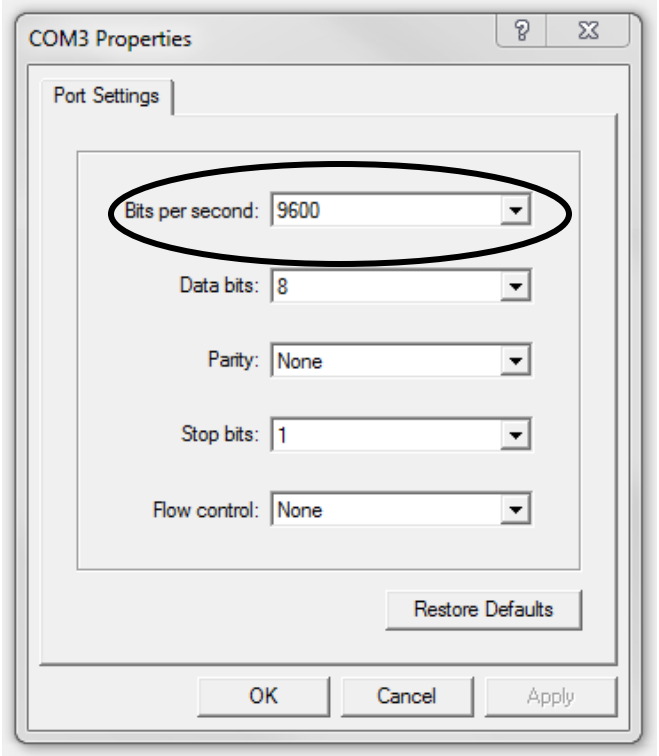
1. Open HyperTerminal.
2. Go to **File > New Connection**.
3. Select the com port assigned to the serial adapter being used from the **Connect using:** drop-down menu.



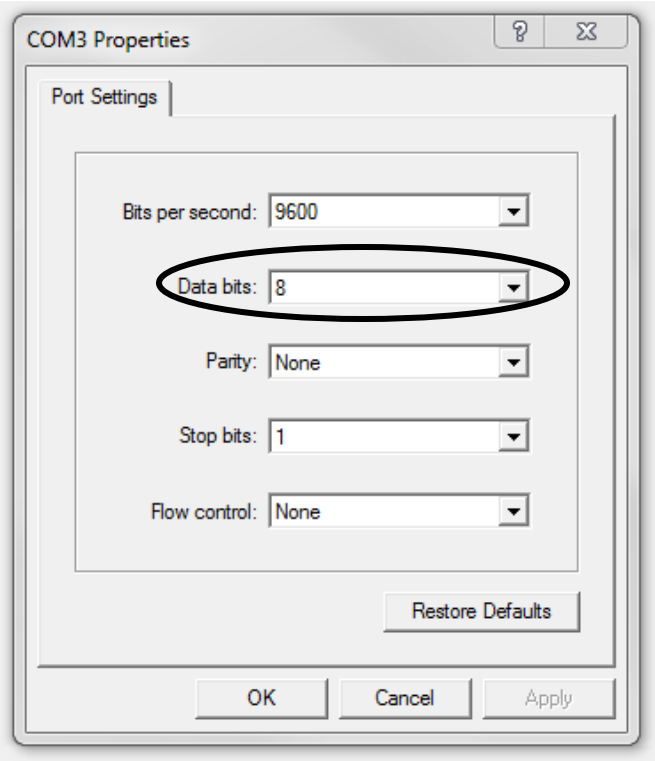
4. Click **Configure**.



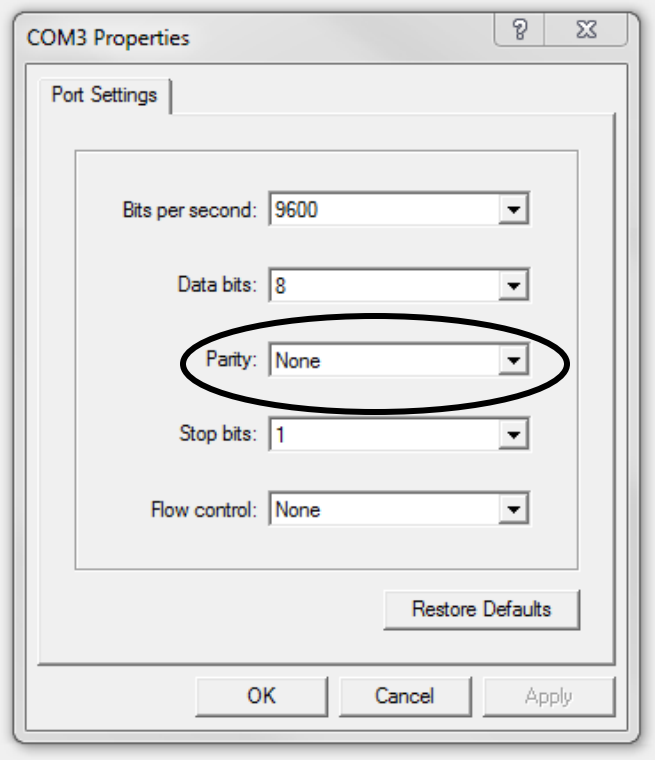
5. Select **9600** from the **Bits per second:** drop-down menu



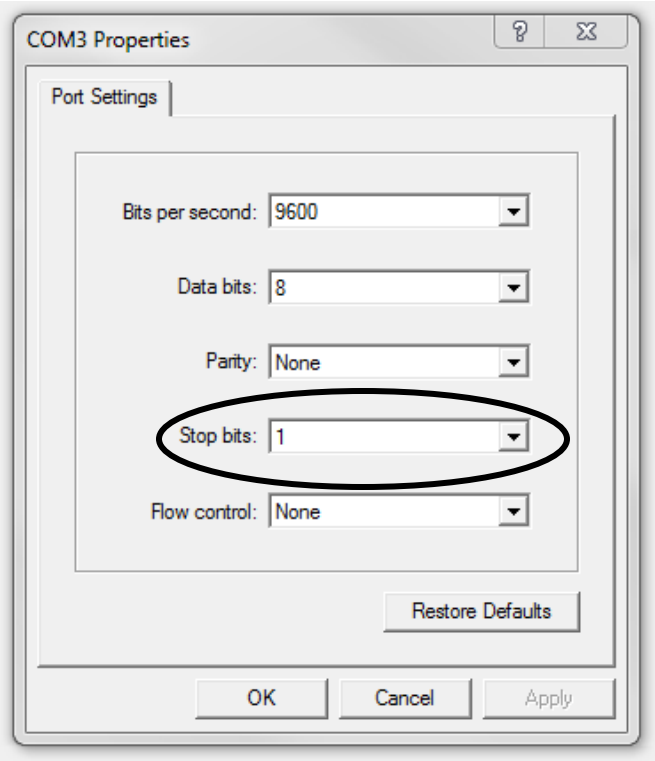
6. Select **8** from the **Data bits:** drop-down menu.



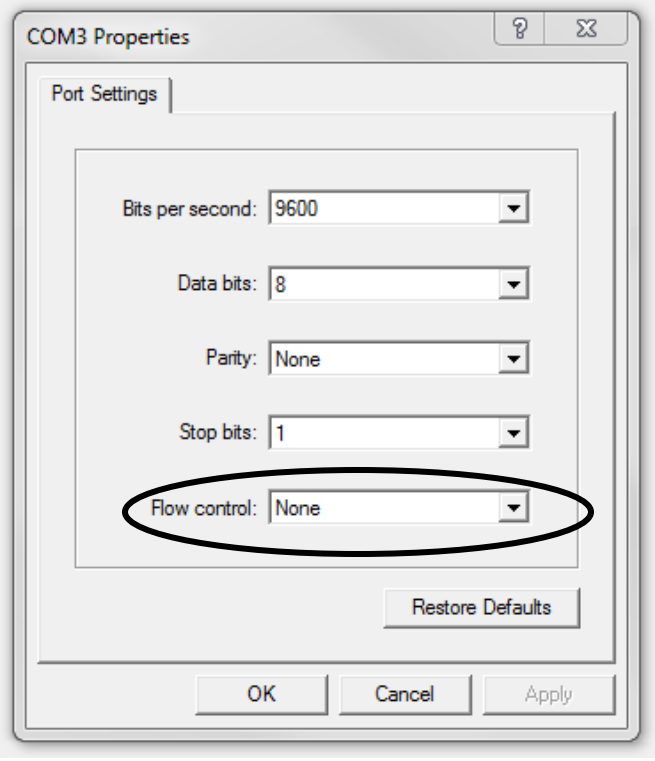
7. Select **None** from the **Parity:** drop-down menu.



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

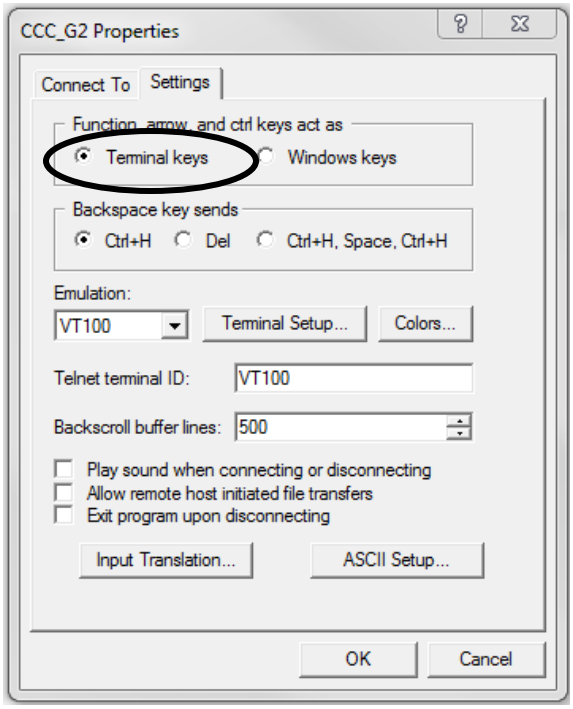


9. Select **None** from the **Flow control:** drop-down menu.

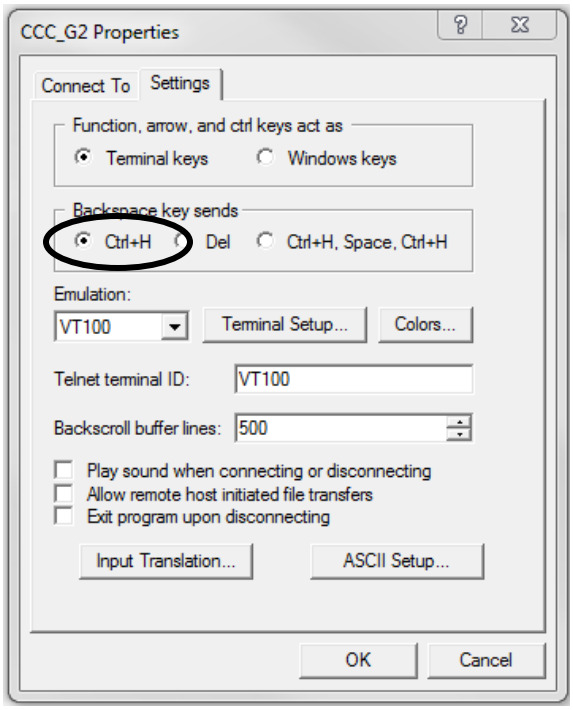


10. Click **OK**.

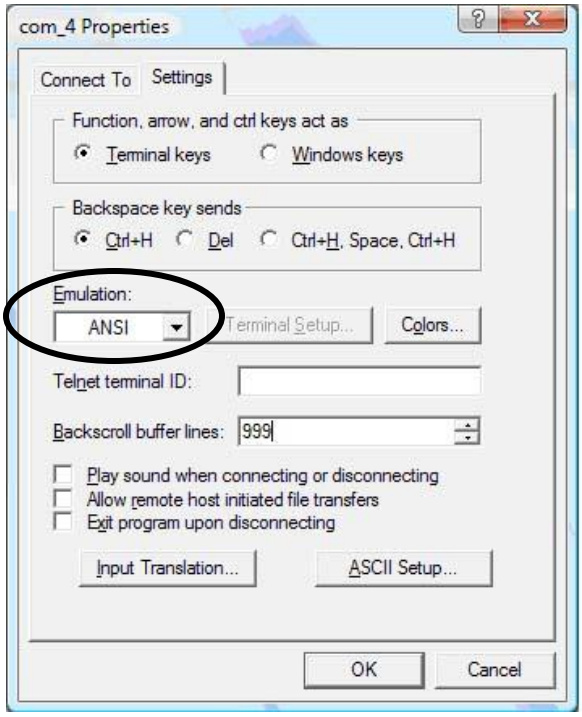
11. Select **Terminal Keys** under the **Function, arrow and ctrl keys act as** section.



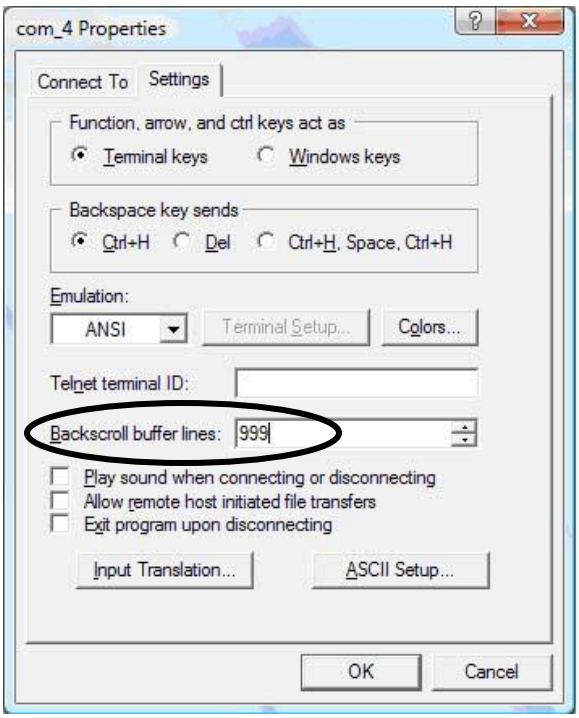
12. Select **Ctrl + H** under the **Backspace key sends** section.



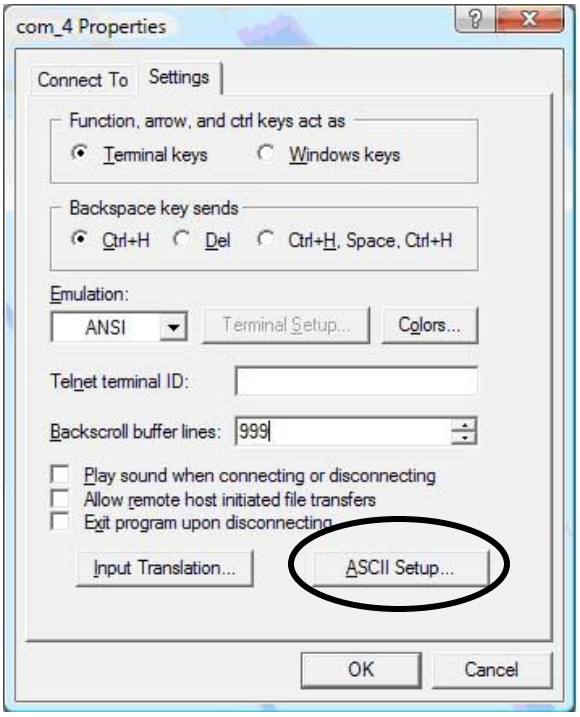
13. Select **ANSI** from the **Emulation:** drop-down menu.



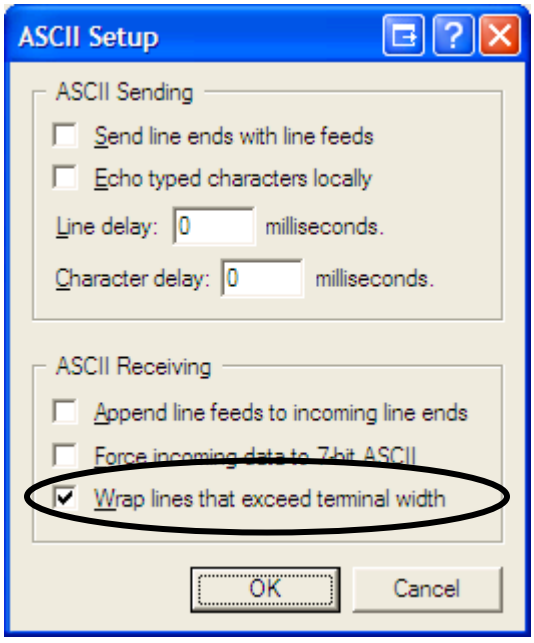
14. Enter **999** as the **Backscroll buffer lines** value.



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



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

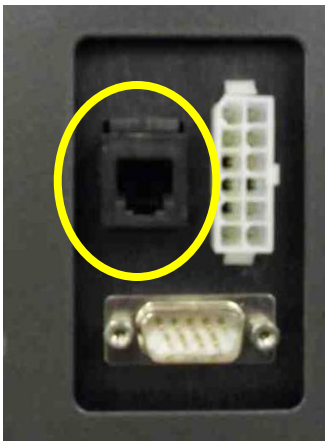


17. Click **OK**.
18. Click **OK**.

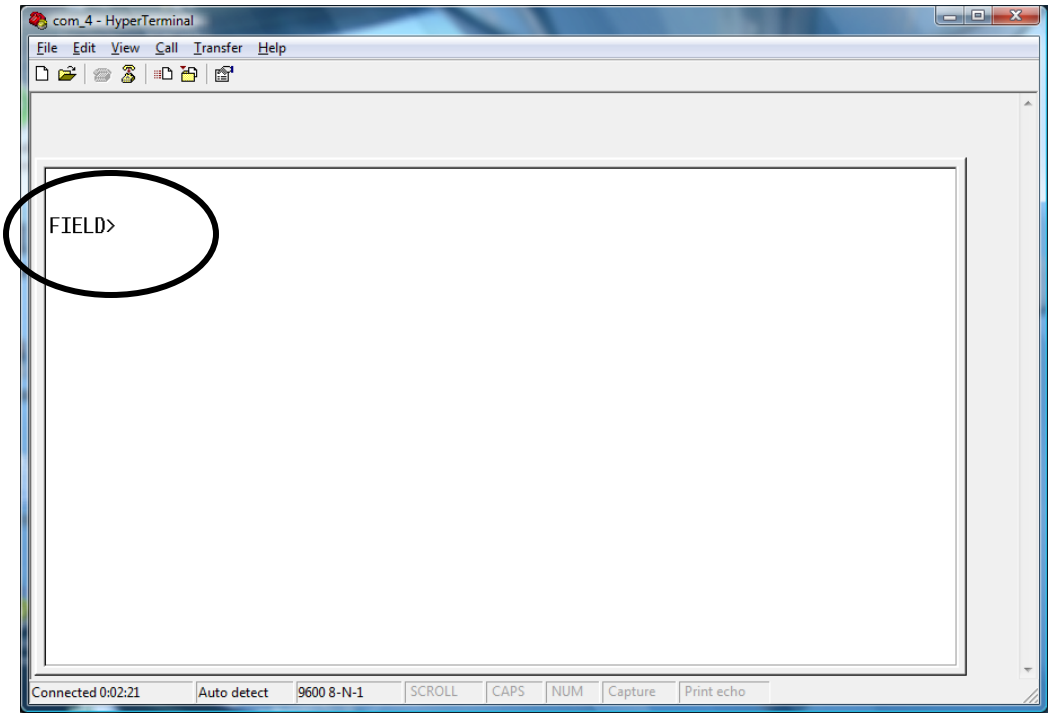
Connecting the Laptop to the Machine

NOTE: *This process is for customers using the default drink recipes. For customers with custom drink recipes, see page 4-27.*

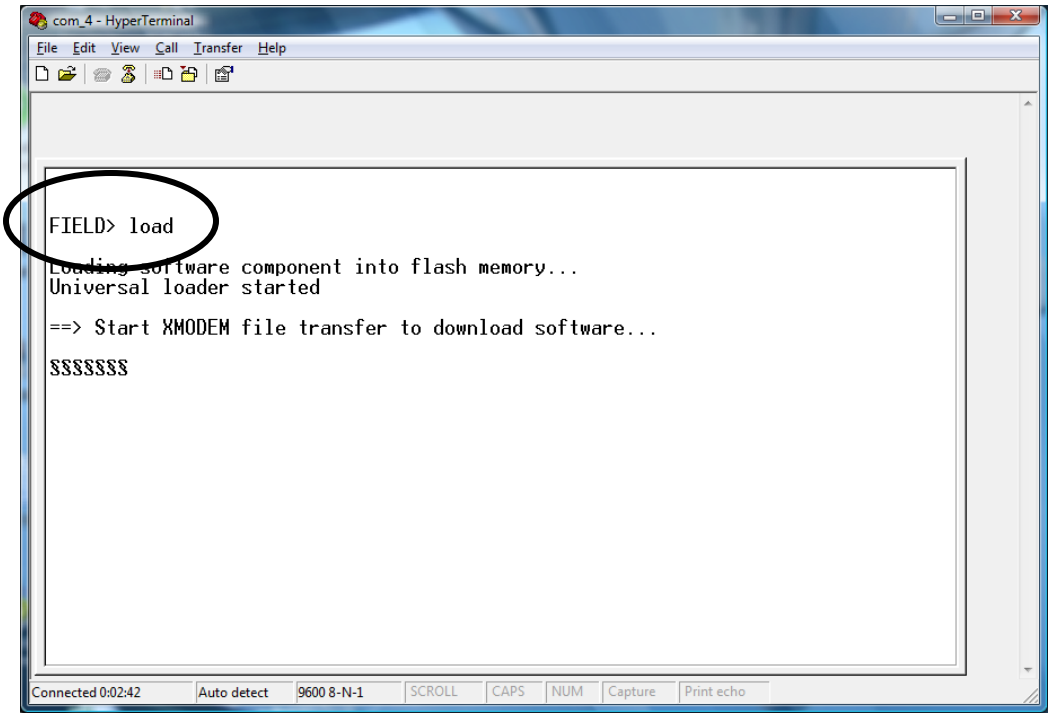
1. Connect the phone line end of the communications cable into the service port on the back of the Integra.



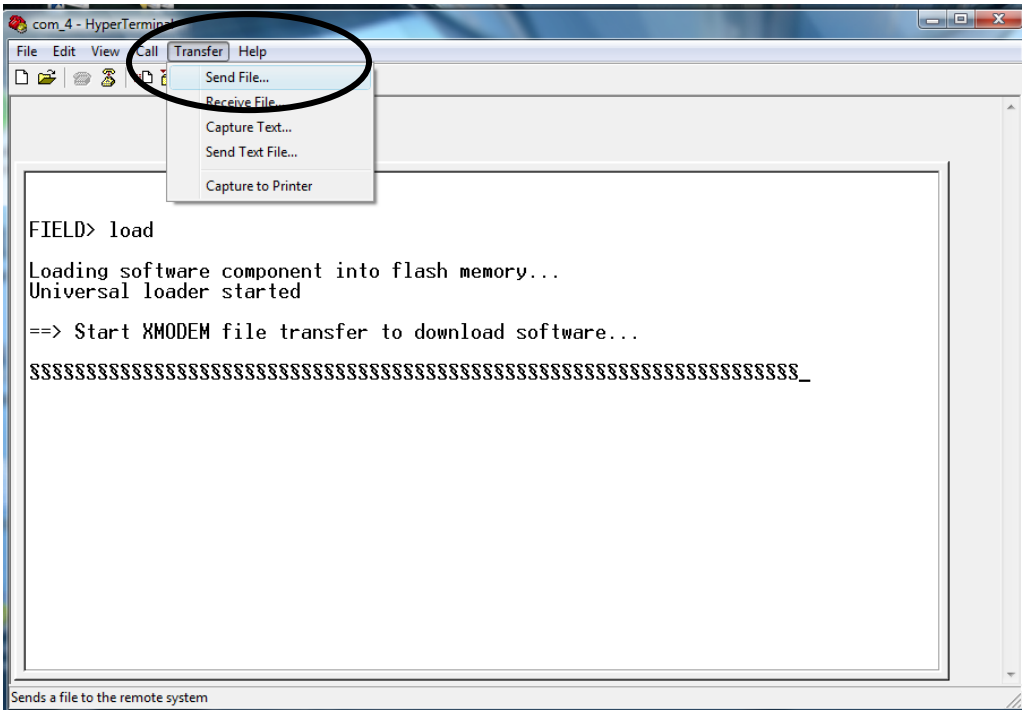
2. Connect the 9-pin D-Sub end of the communications cable into the RS232 serial port of the laptop. ***NOTE***: Newer laptops may require a USB-to-RS232 adapter.
3. Press the service switch into the **SERVICE** position.
4. Open HyperTerminal and press **Enter**.
5. If the connection was successfully made, **Field** will appear in the HyperTerminal window.



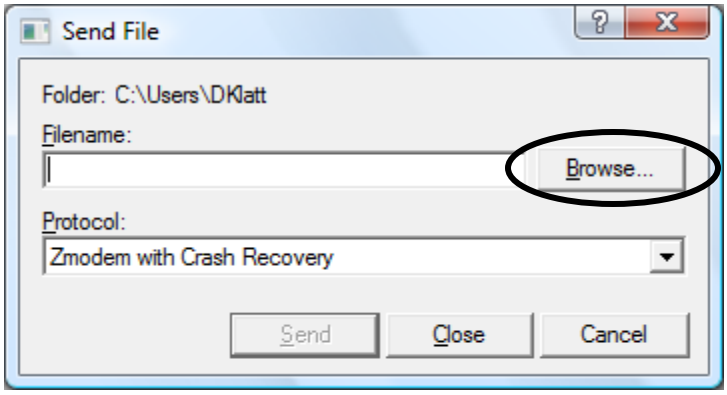
6. Type **Load**, and then press **Enter**.



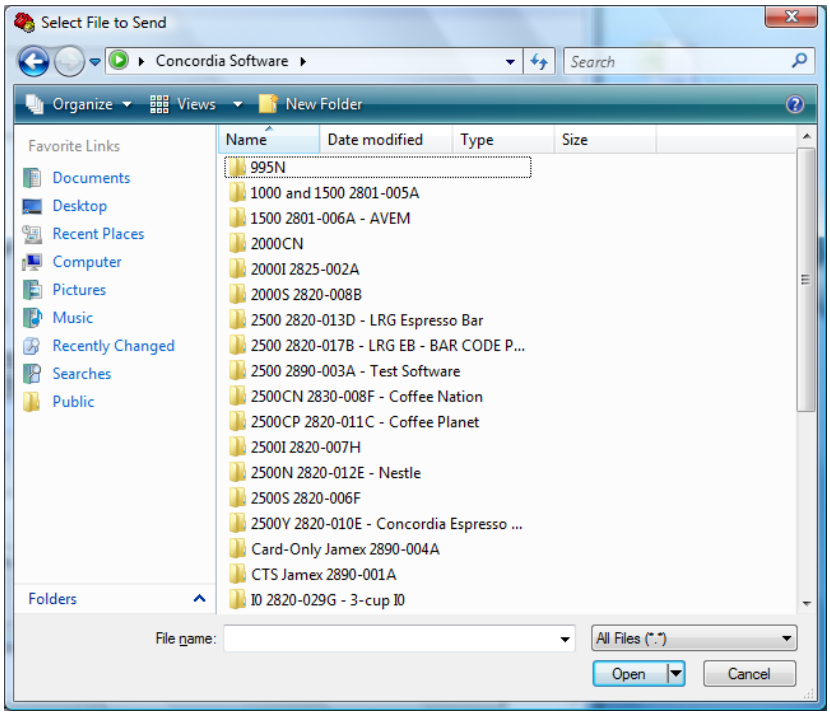
7. Go to **Transfer > Send file**.



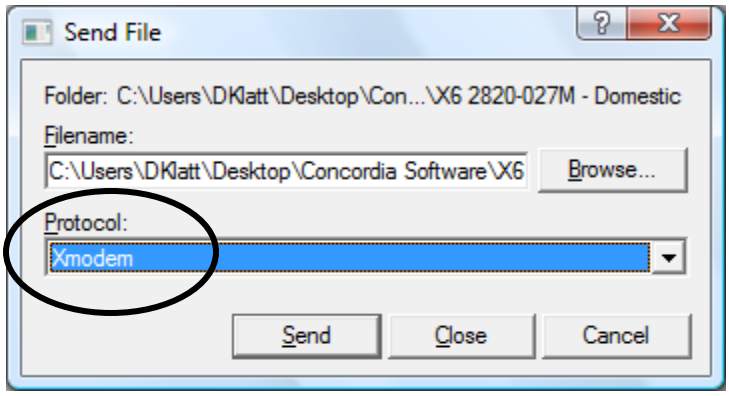
8. Select **Browse**, and then navigate to the directory with the file to download.



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*.

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 **.cmd** file to download.

   NOTE: A .cmd file has a Concordia part number as the file name. Ensure you select the correct part number for the customer.
5. Click **Send**.

   NOTE: This process takes about 30 seconds.
6. Check the event log afterwards to ensure the command 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.

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Section 5 :: Plumbing

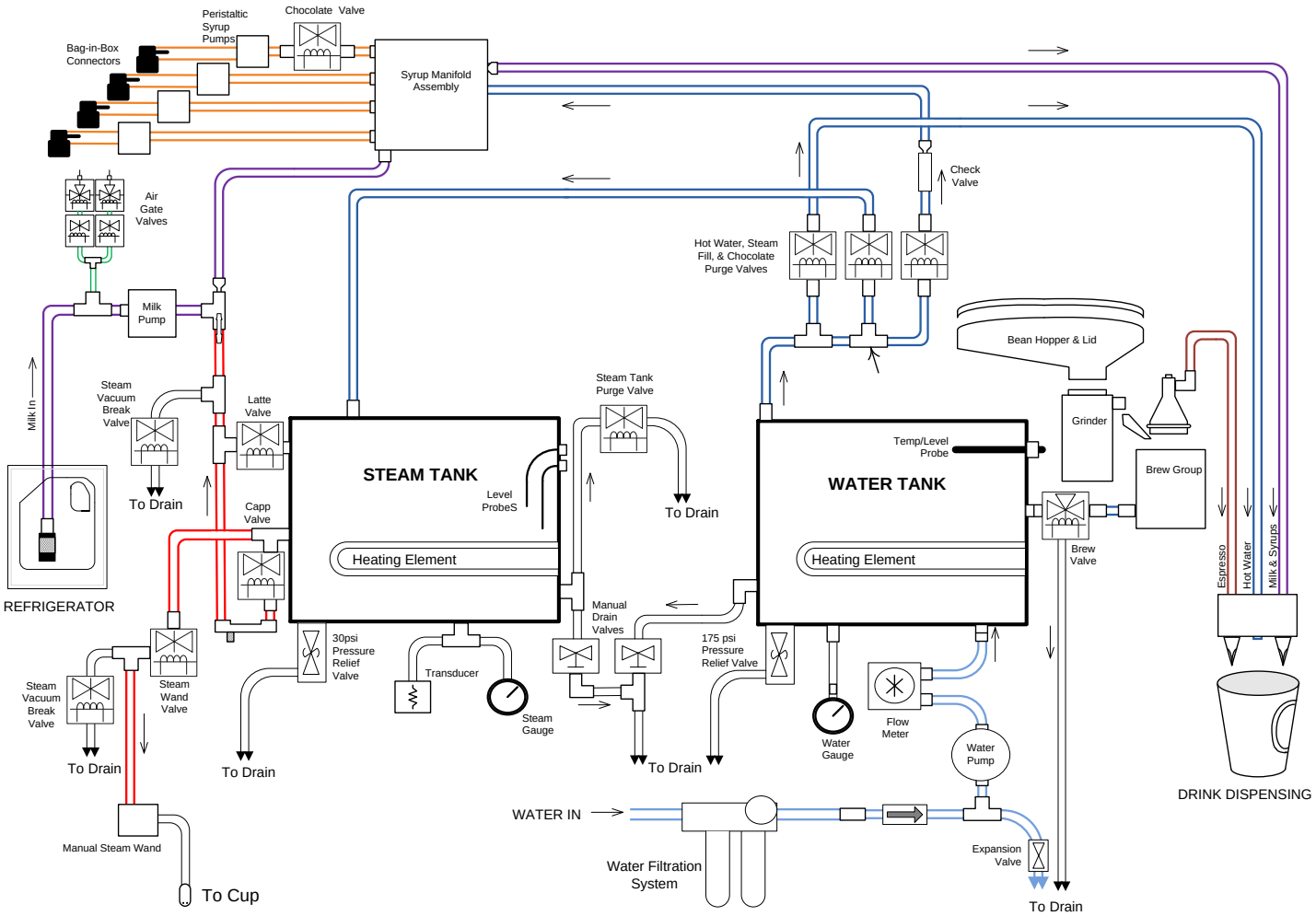
1. The Water System
2. Water Supply
3. Expansion Valve Assembly
4. Water Pump and Motor Assembly
5. Flowmeter
6. Hot Water Tank
7. Valve Tree
8. The Steam System
9. Steam Tank
10. Front Panel Assembly

TECHNICAL SUPPORT

CONCORDIA
COFFEE SYSTEMS

The Water System

Integra Hydraulics Diagram



Water Supply

Line Pressure

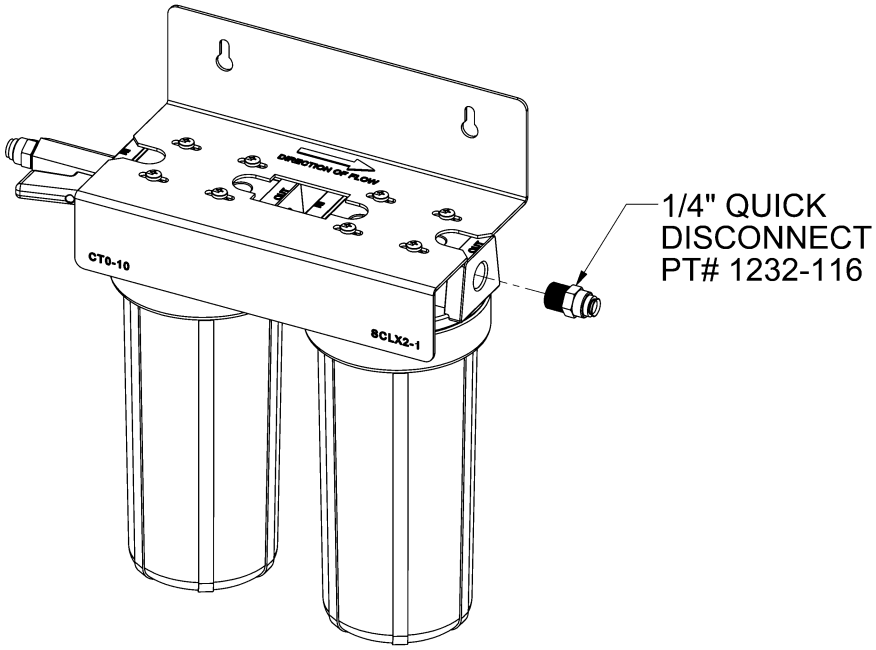
Line pressure must be between 30-100psi at 25gph. Adequate line pressure is needed to fill both the hot water and steam tanks.

Check Valve

The check valve is a back-flow prevention device which inhibits reverse water flow into the water supply. Check to ensure the check valve meets state and local health codes. Some local codes may require a different type of back-flow prevention device.

Water Filtration System

The Scalex® Water Treatment System includes a carbon filter cartridge and a water softener cartridge.



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.

Expansion Valve

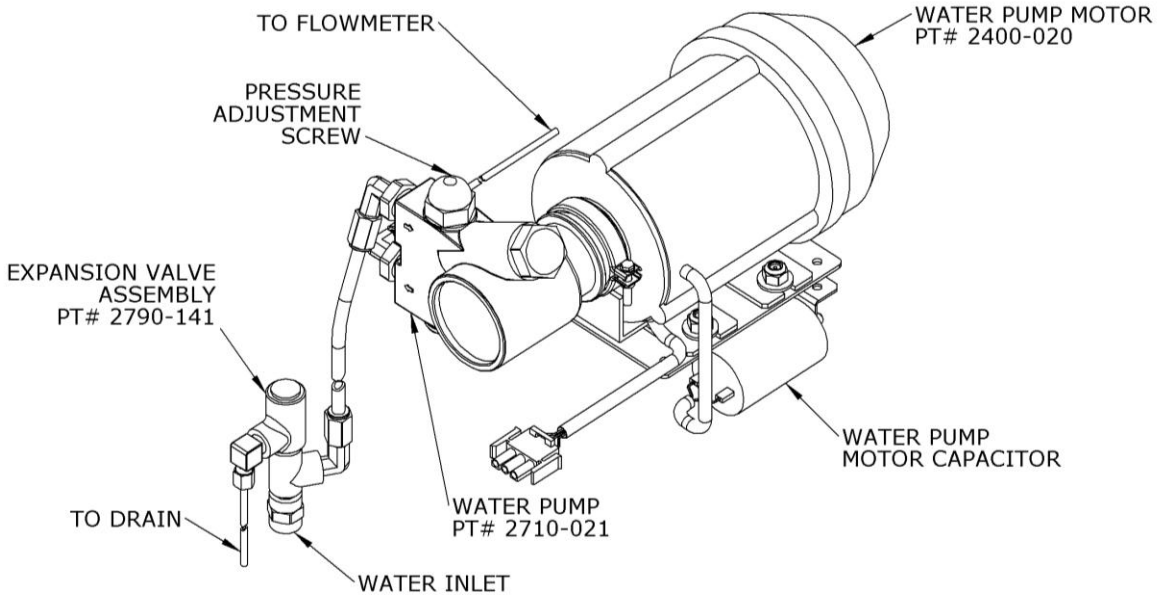
The expansion valve, located between the source line and the water inlet side of the water pump, allows pressure to be released when the pressure within the water tank exceeds approximately 130psi due to thermal expansion. This provides a 45psi buffer between the expansion valve and the 175psi pressure relief valve.

The expansion valve functions when the water pump is not in operation.

Water Pump and Motor Assembly

208vac/60hz motor (230vac/50hz)
Factory Setting 135-140psi

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



Water Pump Motor

The water pump motor physically turns on the water pump and controls how fast the water pump turns.

Water Pump Motor Capacitor

When the motor is activated, the capacitor discharges extra stored power. This starts operation of the motor.

Water Pump
The water supply is fed to the water pump, and the water pump increases pressure of the water fed to the machine.

Water Inlet
The water inlet is where water is introduced into the water pump.

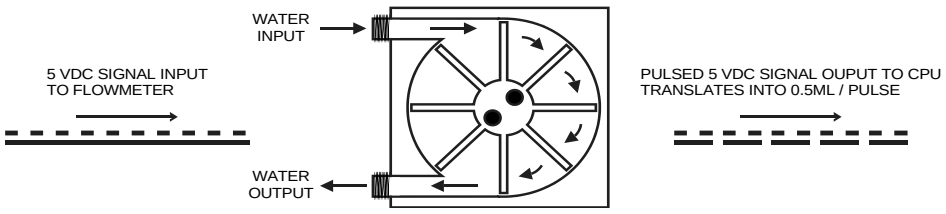
Pressure Adjustment Screw
The pressure adjustment screw allows adjustment of the water pump pressure.

Flowmeter

The flowmeter measures the 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 that 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



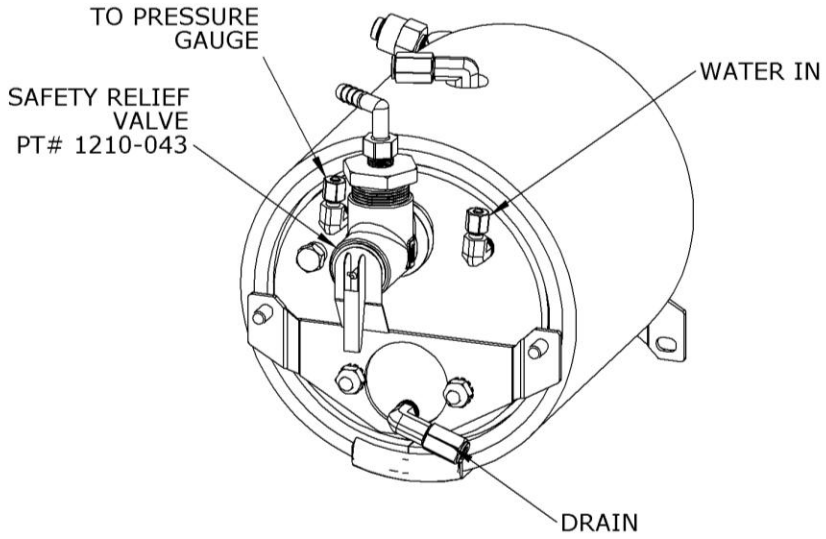
Quick Tip

Viewing water flowing through the flowmeter

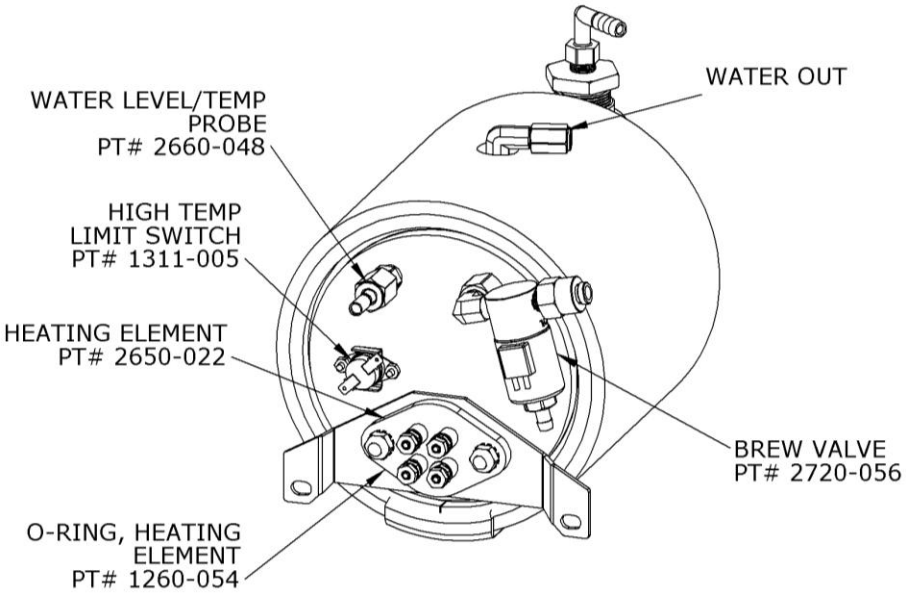
1. Navigate to **TEST ROUTINES > BREW WATER VALVE**.
2. Activate the valve. Display will read "**[X] mL**" and increase as the valve is opened and water flows through the flowmeter.

Hot Water Tank

Hot Water Tank – Right Side



Hot Water Tank – Left Side



Pressure Relief Valve

175psi Pressure Relief Valve

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.

Temperature/Level Probe

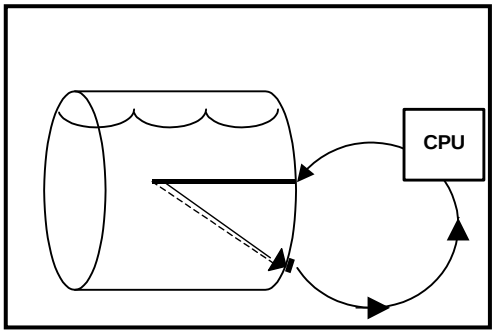
The temperature probe and level probe are a single unit.

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.

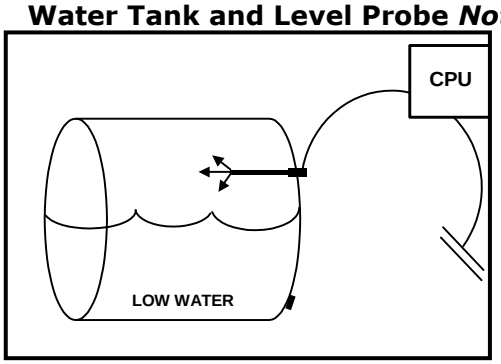
Water Tank and Level Probe Grounded



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/63°C, while the maximum is 257°F/125°C.

- If the temperature is 146°F/63°C or below, the display will read 146°F/63°C
- If the temperature is 257°F/125°C or above, the display will read 257°F/125°C

Quick Tip

Viewing the temperature of the hot water tank

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

Drain Valve

The manual water tank drain valve is under the machine on the left rear side. Ensure the water supply is off when draining the tank.

NOTE: There are two drain valves – the one closest to the back of the machine is the drain valve for water, and the one closer to the front of the machine is the drain valve for the steam tank.

Water Out

This is the conduit for hot water to move from the hot water tank to the hot water valve.

Brew Valve

Operating Voltage: 24vdc

The brew valve controls the water flow to the brew group, which is used to extract espresso, and it also functions as a drain valve for the water squeezed from the coffee grounds after production of an espresso-based drink. The brew valve is located above the heating element on the left side of the water tank.

Heating Elements

The water tank contains one 2000 watt - 29Ω(ohm) heating element.

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

High Temperature Limit Switch – Water

Rated at 210°F/99°C

In the event that the water tank temperature exceeds 210°F/99°C ±5°F/3°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 is auto-reset capable, so when the temperature cools to 180°F/82°C ±10°F/5°C, the high temperature limit switch will be reset and allow the heater to be activated.

Draining the Water Tank

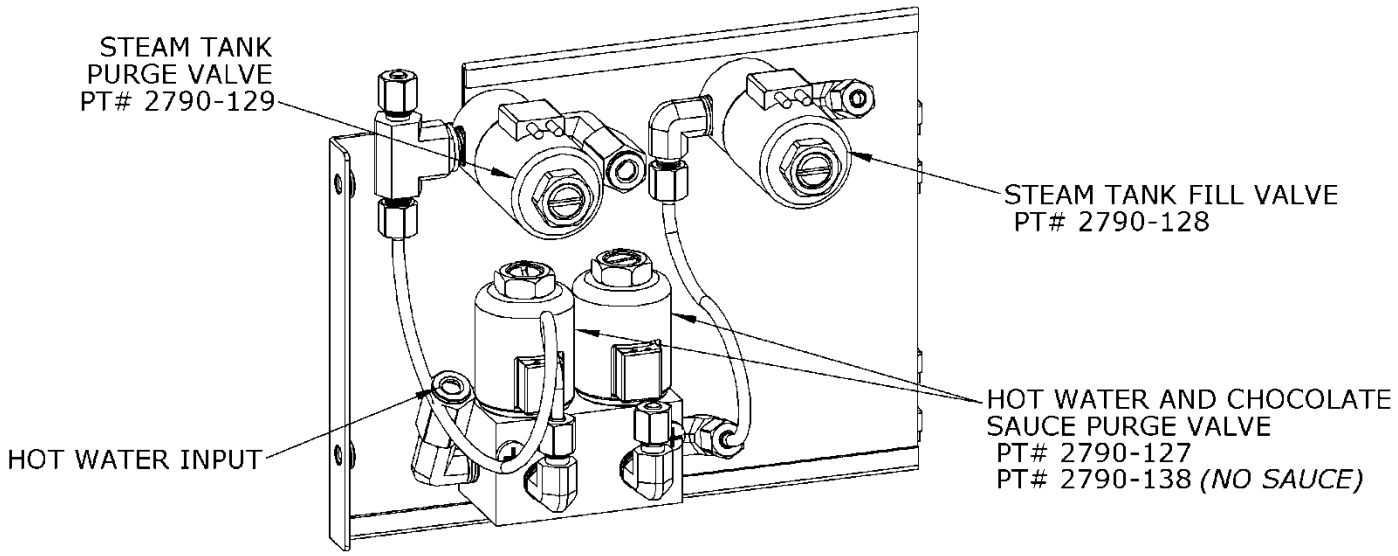
The steam tank must be drained prior to draining the water tank. For instructions on draining the steam tank, please see page 5-18.

1. Disconnect the power supply to the machine.
2. Disconnect the water supply at the source.
3. Open the water drain valve under the machine (left side). The black handle should be vertical.
4. Loosen the line between the water tank and the brew water valve input. Use a ½" wrench.
5. After the water finishes draining, tighten the line between the water tank and the brew water valve. Use a ½" wrench.
6. Close the water drain valve. The black handle should be perpendicular to the machine.
7. Reconnect the water supply at the source.
8. Reconnect the power supply to the machine.

Valve Tree

The valve tree, which houses the four valves below, is located behind the brew group.

NOTE: The chocolate sauce purge and hot water valves are part of a dual station manifold.



Steam Tank Fill Valve
Operating Voltage: 24vdc, Solenoid type

The steam tank fill valve allows water to enter the steam tank.

Hot Water Valve
Operating Voltage: 24vdc, Solenoid type

The hot water valve is used for dispensing hot water into the cup.

Chocolate Sauce Purge Valve
Operating Voltage: 24vdc, Solenoid type

The chocolate sauce purge valve is used to rinse the syrup manifold assembly after each chocolate-based drink pour.

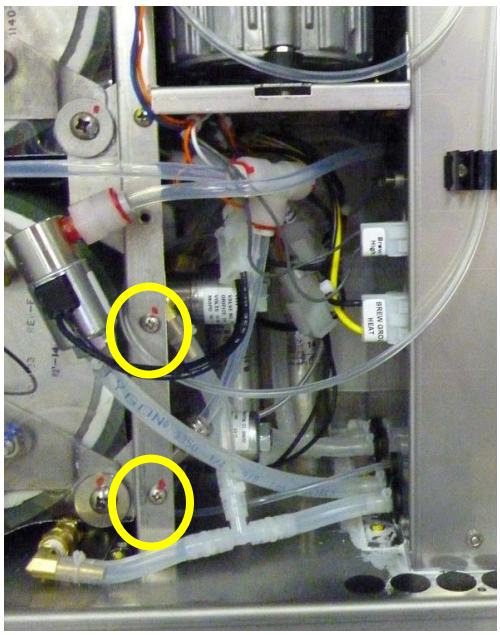
NOTE: For the Integra 0, the outlet for the chocolate sauce purge valve is plugged.

Steam Tank Purge Valve
Operating Voltage: 24vdc, Solenoid type

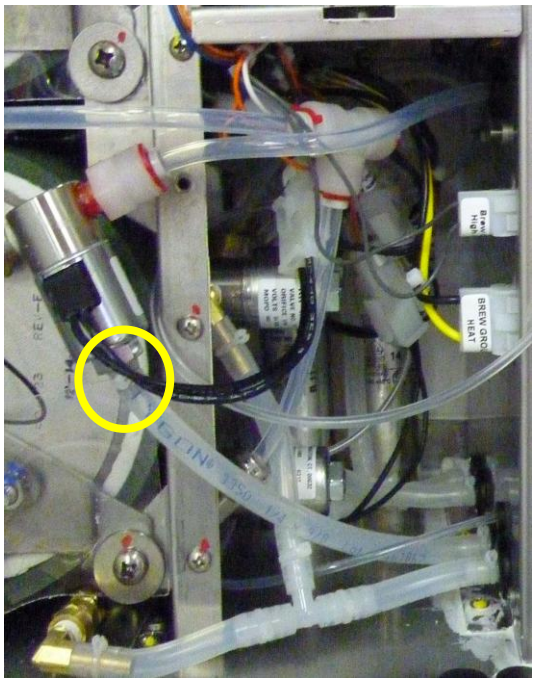
The steam tank purge valve drains the steam tank during the clean cycle to get rid of buildup.

Valve Tree Removal

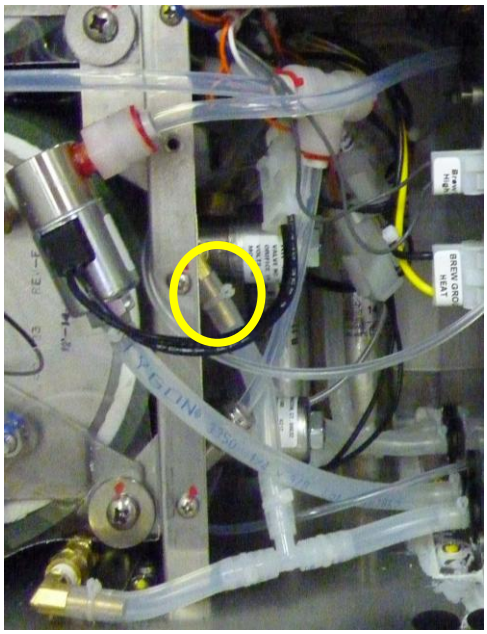
1. Power down the machine.
2. Remove the left-side panel on the machine.
3. Remove the two screws on the outside of the valve tree assembly.



4. Disconnect the tubing from the brew valve barb.



5. Disconnect the tubing from the purge valve barb.

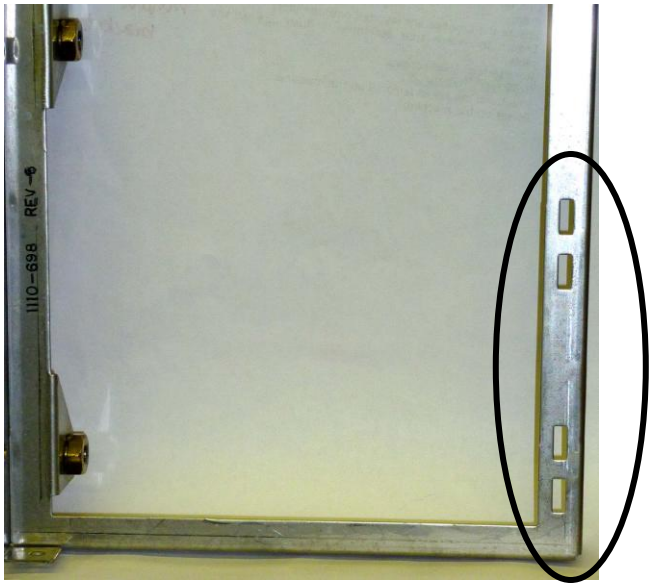


6. Carefully lift the valve tree assembly up, out, and to turn it to the right (towards the inside of the machine).
   NOTE: There are L-shaped hooks on the right side of the back of the valve tree assembly which are used to connect it to the mounting plate, so it is important to follow this step to avoid damaging the assembly.

7. Remove the valve tree assembly from the enclosure. The tubing and electrical harness are long enough to allow access to the rear of the valve tree plate without disconnecting that tubing.
8. Use a Phillips #2 screwdriver to remove the valve or valve assembly that needs replacing.
9. Attach the new valve or valve assembly and re-install into the machine.

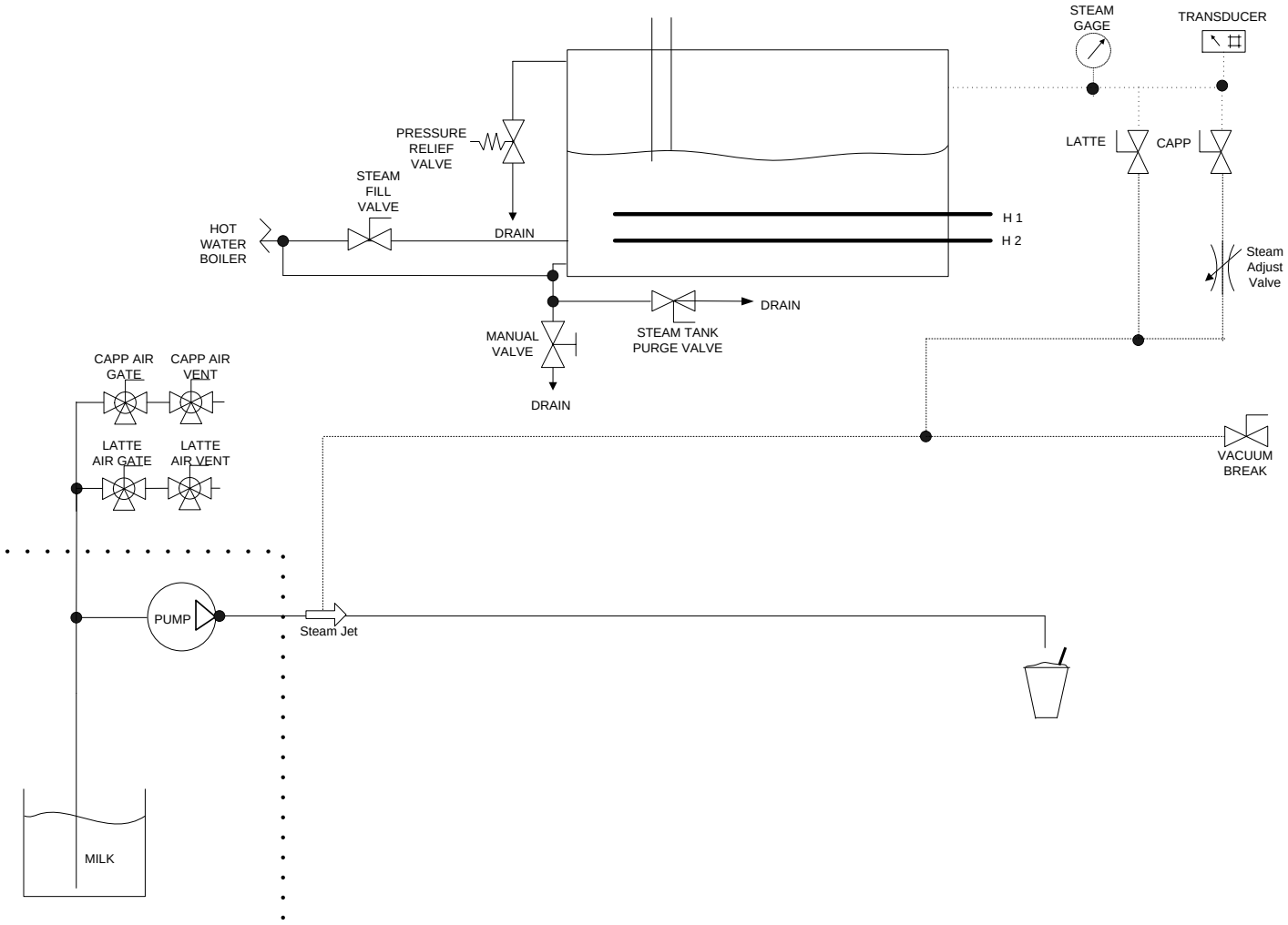
Valve Tree Replacement

1. Line up the valve tree assembly plate with the holes on the tank mount bracket to install it on.



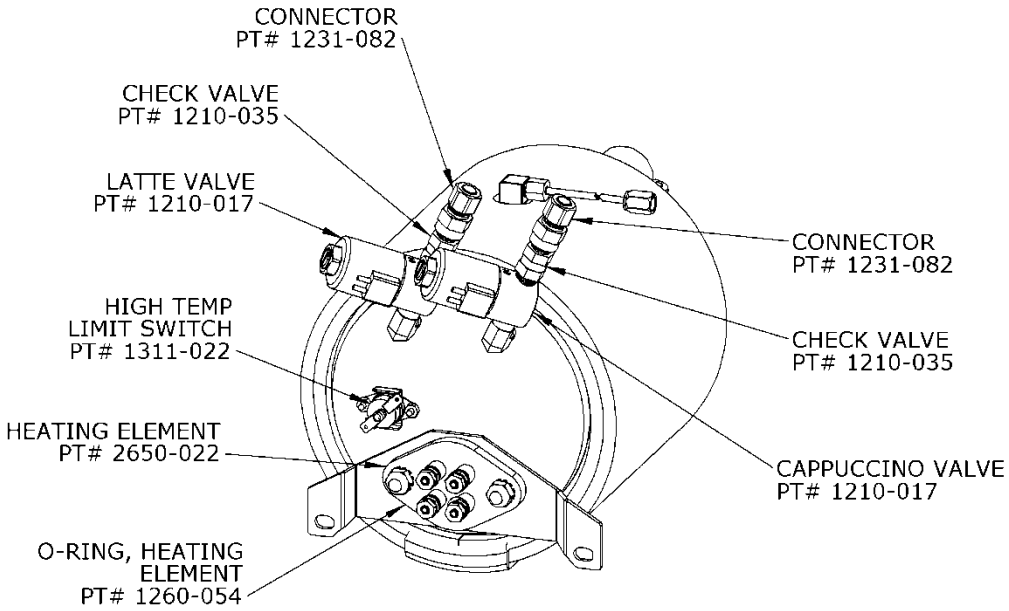
2. Ensure the L-hooks are inserted onto the plate.
3. Ensure the valve tree assembly is flush against the mounting plate.
4. Re-attach the two screws.
5. Re-attach the brew valve tube to the brew valve barb.
6. Re-attach the purge valve tube to the purge valve barb.
7. Re-attach the left-side panel on the machine.
8. Power up the machine.

The Steam System

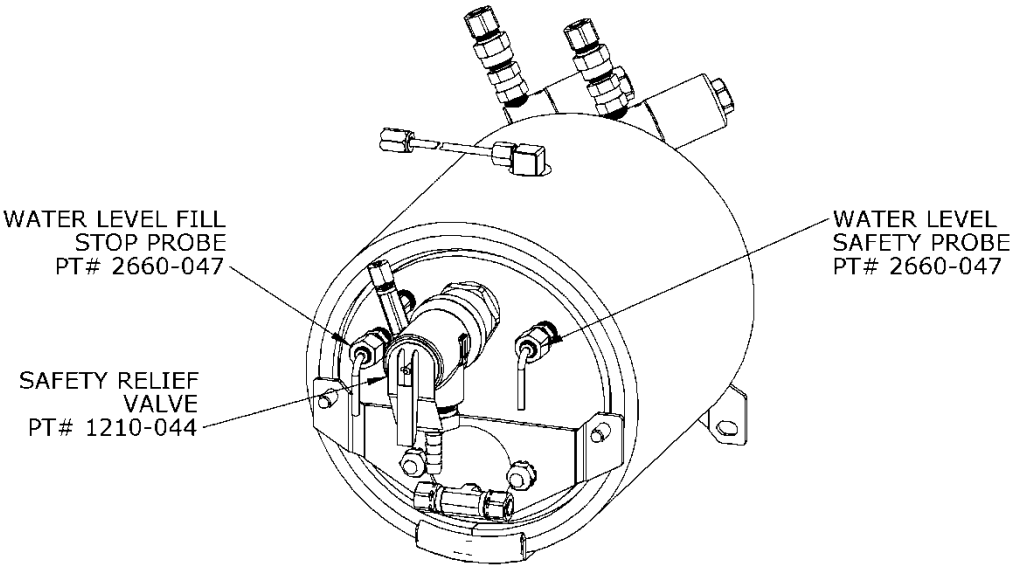


Steam Tank

Steam Tank – Left Side



Steam Tank – Right Side



Steam Valves

Both steam valves are identical.

Latte Steam Valve
Operating Voltage: 24vdc
Orifice Size: .125”

The latte steam valve controls the flow of steam during steamed milk production.

Cappuccino Steam Valve
Operating Voltage: 24vdc
Orifice Size: .125”

The cappuccino steam valve controls the flow of steam during foamed milk production.

High Temperature Limit Switch – Steam

Rated at 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. After being activated, the high temperature limit switch must be manually reset.

Heating Elements

The steam tank contains one 2000 watt - 29Ω(ohm) heating element.

One solid state relay controls the voltage to the heating element.

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 safety 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 level 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 .5vac pulsed every second.

When wet, the lower (safety) probe will read approximately .006vac and the upper (fill stop) will read approximately .014vac. In **TEST ROUTINES**, the probes will read either dry or wet.

Quick Tip

Viewing 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.

Quick Tip

Verifying the steam tank fill valve

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

Pressure Relief Valve

30psi Pressure Relief Valve

The pressure relief valve functions as a safety relief valve.

If the pressure in the steam 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.

Safety Probe

The safety probe ensures water exists in the tank before allowing power to be sent to the heating element. If there is no water in the tank, the safety probe prevents the heating element from receiving power.

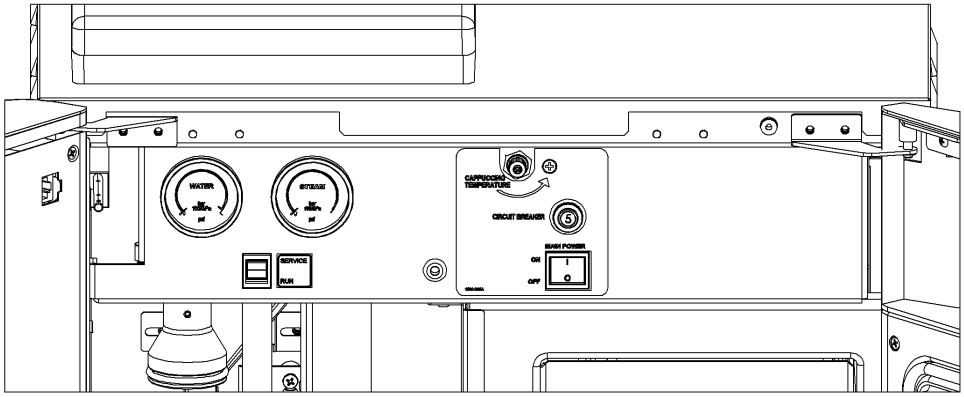
Vacuum Break Valve

After a drink has been poured, steam is run through the product delivery tubing to clear residual milk. To ensure that milk is not drawn back into the steam system, the vacuum break valve equalizes pressure in the product delivery tubing.

Draining the Steam Tank

1. Disconnect the power to the machine.
2. Disconnect the water supply at the source.
3. Carefully open the steam drain valve (under the machine, left side). The black 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.
4. Close the steam drain valve. The black handle should be horizontal.
5. Reconnect the water supply at the source.
6. Reconnect the power supply to the machine.

Front Panel Assembly



Steam Pressure Gauge

The steam pressure gauge is located behind the left door and displays current steam tank pressure. Normal steam tank pressure is 17psi.

Air Purge Process

When the unit is first powered 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 is not.

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

Steam Tank 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.

Water Pressure Gauge

The water pressure gauge is located behind the left door. 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 in the water line maintains an internal pressure.

Quick Tip

Viewing Pump Pressure

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

Check Water Flow Message

The CPU is programmed with a 120 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 fails to pass through the flowmeter within 120 seconds, the machine will time out and **CHK WATER FLOW** will appear on the machine's display.

Troubleshooting

For assistance troubleshooting issues with the plumbing system, please see the water system troubleshooting trees in *Section 14: Troubleshooting*.

Section 6 :: Coffee System

1. Coffee System Overview
2. Grinders
3. Bean Hoppers
4. Brew Group Overview

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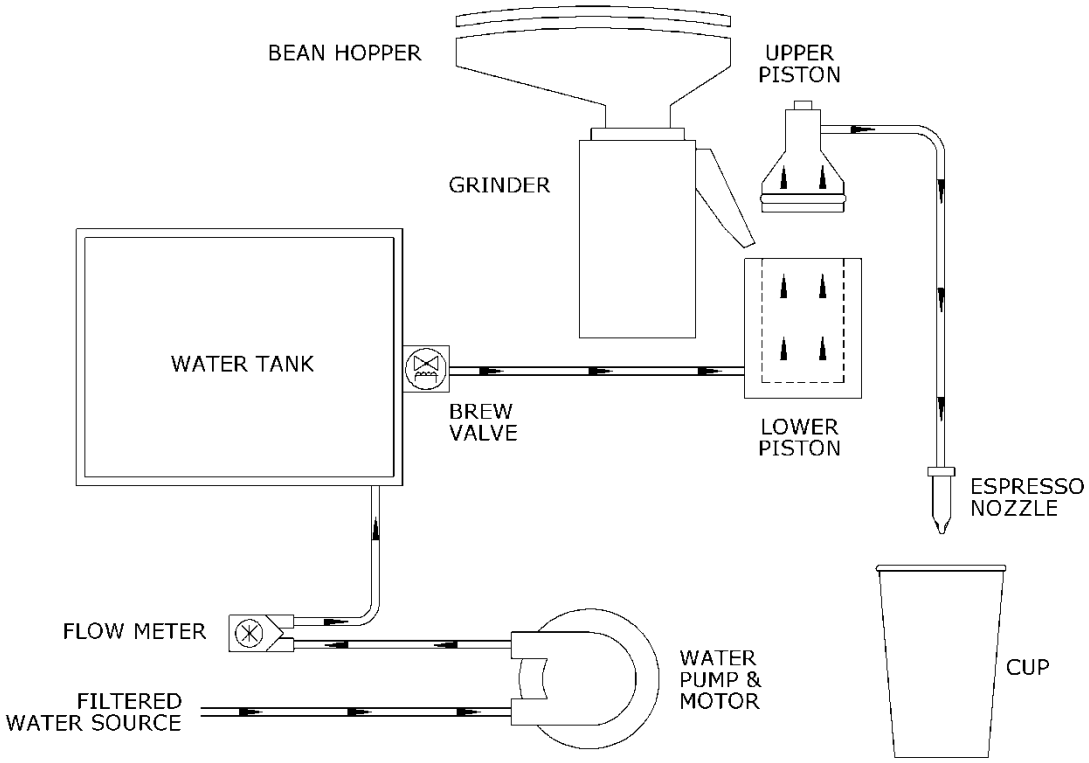
Coffee System Overview

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 espresso is extracted from the ground beans and delivered to the cup.

With ground beans in the brew chamber, the chamber is sealed and hot water (195°F/85°C) at 135-140psi is forced through the ground beans and through the upper piston. The "espressed" coffee is then directed into the cup.

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

Only espresso roast beans can be used in the Integra.



Fresh Water Supply

The fresh water supply is fed through the check valve to the water pump.

Water Pump / Motor Assembly

A 220vac motor drives the water pump rated at 25gph, 140psi. The output of the water pump is fed to the input of the flowmeter and then runs to the water tank.

Flowmeter

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

For more information on the flowmeter, please see page 5-5 in *Section 5: Plumbing*.

Hot Water Tank

The hot water tank heats water to a temperature between 185°-205°F (85°-96°C).

For more information on the water tank, please see page 5-6 in *Section 5: Plumbing*.

Brew Valve Assembly

The brew valve assembly is mounted on the exterior of the water tank. This placement allows the brew valve assembly to absorb heat from the water tank, reducing heat loss as water flows through this assembly. The brew valve (24vdc) is a 3-way valve. When the brew valve is energized water can flow from the water tank to the brew group assembly. When the brew valve is de-energized water can flow from the brew group to the brew valve and down to the drain.

Brew Group

Espresso is brewed in the brew group. For detailed information on the brew group, see page 6-9 in *Section 6: Plumbing*.

Grounds Chute

The grounds chute is located between the grinder and the brew group.

Once the grinder has ground the espresso beans, the coffee powder is directed down the grounds chute into the brew chamber where it is pressed into a puck and water is introduced to espress the coffee.

Upper Piston

In conjunction with the lower piston, the upper piston tamps the ground espresso before hot water is introduced and brewing begins.

Lower Piston

The lower piston provides a "backstop" for the ground coffee inside the brew chamber.

Bean Hopper

For US machines, the bean hopper is a single unit, with two compartments – one for regular and one for decaffeinated espresso roast beans.

Grinder

Fresh, espresso roast beans are ground to the desired particle size in the grinder.

Machines using regular and decaffeinated beans have two grinders, and machines with a single type of bean have a single grinder.

Grounds Bin

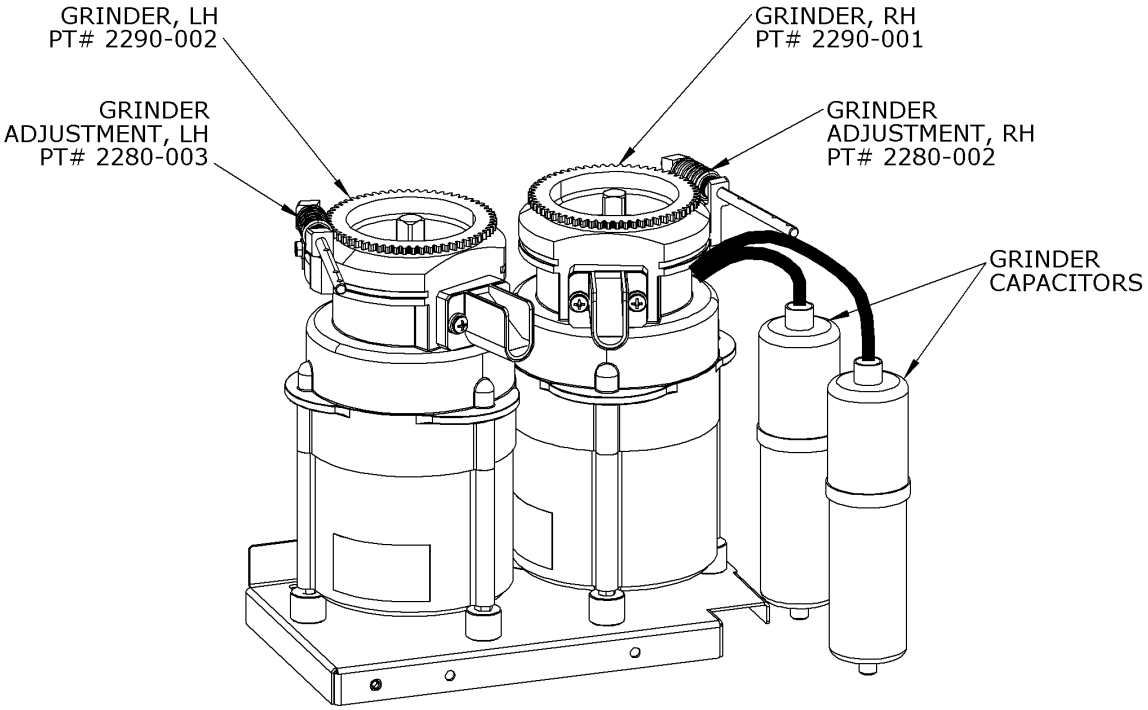
After espresso is brewed, the used espresso grounds (puck) are pushed into the grounds bin.

Espresso Nozzle

Once espresso is finished being brewed, it flows through the espresso nozzle and into the customer's cup.

Bean Grinders

Operating Voltage: 208-230vac 50/60Hz



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

The blades (burrs) are the components that 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.

The right grinder is used for regular espresso beans, and the left grinder is used for decaffeinated espresso beans.

NOTE: International machines have a single (right side) grinder. Single grinder machines are available in the U.S., though the double grinder machine is more common in the U.S.

Calibration: Espresso Grind

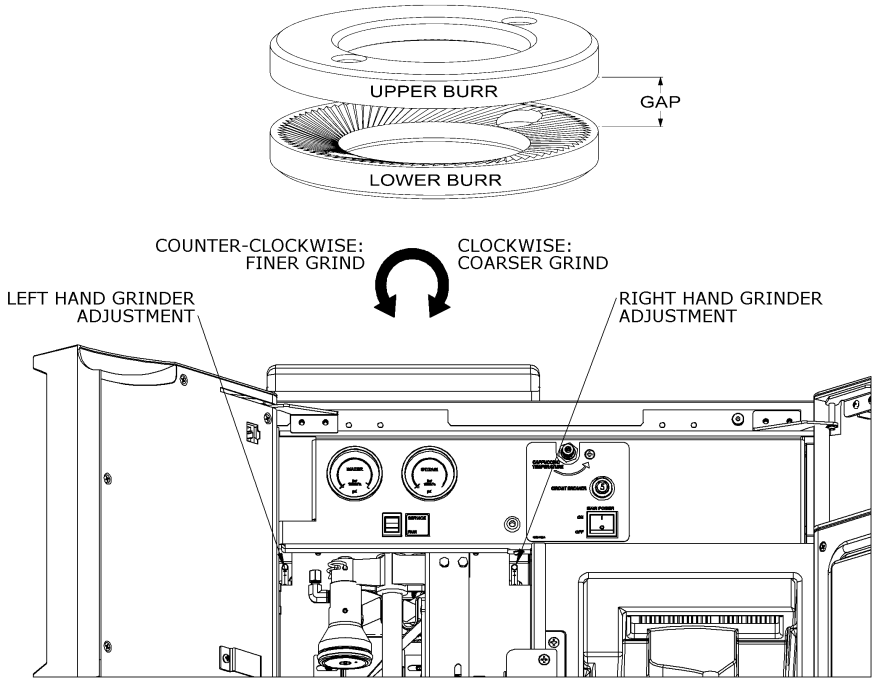
Over time, it may be necessary to adjust the grinder burr gap to ensure beans are ground to customer specification. The grinder adjustment panel is located behind the grounds bin door to the upper left and right of the brew group. The grinder adjust screw is connected to the grinder adjust worm gear located on each grinder.

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

The 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 espressos must be poured in order to ensure the change of grind is fully implemented.

See *Section 4: Software* for more information on calibration.

Grinder Adjustment Diagram



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

Replacing Bean Grinder Burrs/Blades

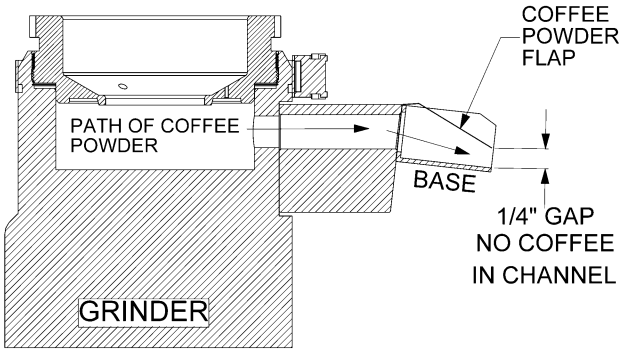
From time to time, grinder burrs/blades become worn and dull and need to be replaced.

To replace:

1. Remove the grinder adjustment screw.
2. Remove the grinder adjustment mechanism.
3. Unscrew and remove the top burr plate assembly from the top of the grinder.
4. Remove top burr/blade from the bottom half of the burr plate assembly and replace with a new burr/blade.
5. Remove the bottom burr/blade from inside the grinder and replace with a new burr/blade.
6. Install the burr plate until the top burr touches the bottom burr.
7. Turn the top plate counter-clockwise one revolution.
8. Re-install the grinder adjustment screw and mechanism.

Coffee Powder Channel

The gap between the coffee powder channel flap and the base is preset by the factory at ¼”/6mm. If this flap is bent and the gap changes, the espresso extraction time will be negatively impacted.



Bean Hoppers

The large bean hopper compartment (right side) holds approximately 3lbs/1.5kg of beans, and the small bean hopper compartment (left side) holds approximately 2lbs/1kg of beans.

The bean hopper must be placed on the machine with the large bean hopper compartment on the right side, or the hopper will not properly feed beans into the machine.

Filling Bean Hoppers

1. Remove the hopper lid.
2. Pour the beans into hopper.
3. Replace the hopper lid.

NOTE: If it is necessary to remove a bean hopper with beans, insert both hopper stoppers first. Be sure to remove the hopper stoppers when finished.

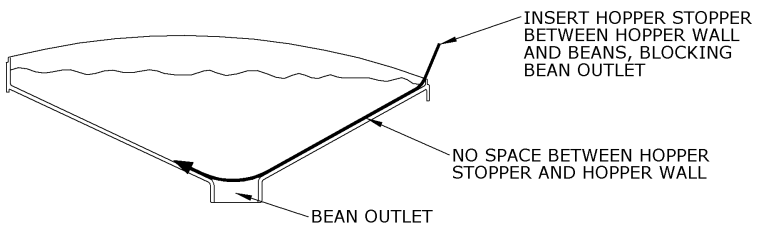
DO	Use fresh, whole, espresso roast beans.
DO NOT	Place ground coffee into the bean hopper.
DO NOT	Place foreign materials in the bean hopper.
DO NOT	Feed beans into the grinder by hand.

Inserting the Hopper Stopper

1. Slide the hopper stopper down the front of the bean hopper, as shown in the diagram below.
   NOTE: To remove the bean hopper, a hopper stopper must be used in each bean hopper.
2. Use pressure when inserting the hopper stopper, to ensure that there is no space between the wall of the bean hopper and the hopper stopper.
3. With both hopper stoppers in place, you can remove a full hopper from the machine.

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

NOTE: Be sure to remove excess beans from the top of the grinder, prior to placing the bean hopper back on the top of the machine.



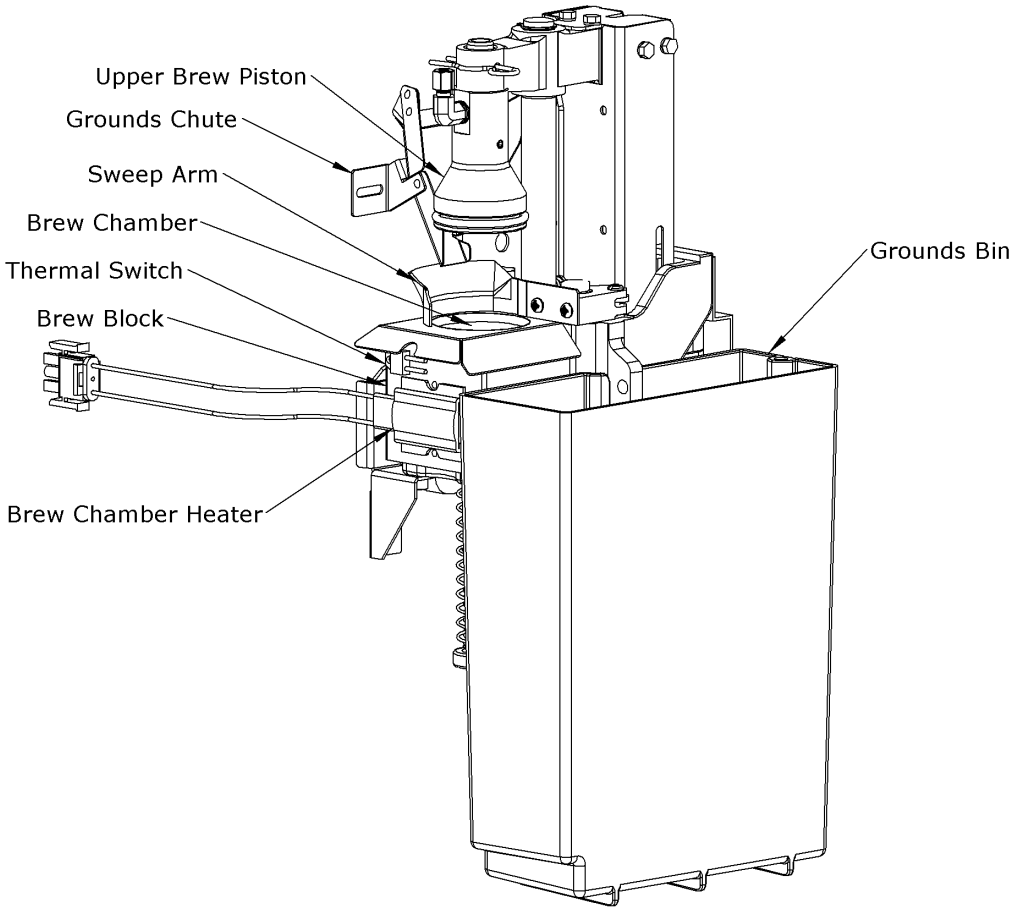
Brew Group Overview

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

The brew group assembly consists of a 24vdc group motor, IR assembly (infrared position sensors), upper and lower piston assemblies, the group body (brew block and brew chamber), brew chamber heater, 180°F/82°C thermal switch, and the sweep arm assembly.

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

The brew group must be cleaned every 150 drinks or 24 hours, whichever comes first. For complete directions on cleaning the brew group, please see the cleaning card included with the machine.



Upper Piston

The upper piston assembly includes the piston body, micro-screen, o-ring, and ball valve. When the upper piston is positioned inside the brew chamber, the water flows through the ground coffee and then through the micro-screen and into the piston body. A ball valve located in the espresso pathway of the inside of the piston will move up allowing the espresso to flow out of the piston body into the brew line and then into the product delivery tube and into the cup. The o-ring provides a seal between the upper piston and the interior of the brew chamber to ensure the pressurized water will flow through the piston body.

Grounds Chute

After the espresso is brewed, the puck of used grounds is directed through the grounds chute and into the grounds bin.

Sweep Arm

At the end of the brew cycle, the lower piston is raised, causing the ground coffee puck to rise to the surface of the brew group assembly where the sweep arm can push the puck of used grounds into the grounds bin.

Brew Chamber

In the brew chamber, hot water is forced through ground espresso roast beans, and espresso is brewed.

Thermal Switch

The thermal switch measures the temperature in the brew block to ensure the brew block reaches the correct operating temperature, before allowing the machine to pour a drink.

Brew Block

The brew block houses the brew chamber and is heated by the brew chamger heater.

Brew Chamber Heater

The heating element heats the brew block to a set point of 160°F/71°C.

Grounds Bin

Once the espresso brewing process is complete, the used coffee grounds (puck) are deposited into the grounds bin.

Empty Grounds Bin

The grounds bin holds the used espresso grounds. The **EMPTY GRNDS BIN** message will appear on the display every 35 drinks.

To empty the grounds bin:

1. Open the left machine door.
2. Remove the grounds bin.
3. Discard the used grounds into a waste receptacle. To clear the **EMPTY GRNDS BIN** message, keep the grounds bin out of machine for at least six seconds.
4. Wipe out residue from the grounds bin. Rinse as necessary.
5. Replace the grounds bin into the machine. Be sure to push it in all the way!
   NOTE: There is a magnet on the grounds bin that allows the machine to verify the grounds bin is in place.
6. Close the front machine door.

   NOTE: To avoid overfilling the grounds bin, always empty the grounds bin each time it is removed. Each time the grounds bin is removed for more than six seconds, the grounds bin counter is reset to zero.

Troubleshooting

For assistance troubleshooting issues with the coffee system, please see the brew system troubleshooting trees in *Section 14: Troubleshooting*.

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Section 7 :: Milk System and Refrigeration System

1. Milk Delivery System Overview
2. Milk Delivery System Components
3. The Drink Pour Process
4. Milk System Theory of Operation
5. Air Gate Valve Assembly
6. Milk Flow Sensor
7. Cappuccino Temperature Adjustment Valve
8. Refrigeration Unit
9. On-Board Refrigeration Unit Overview

TECHNICAL SUPPORT

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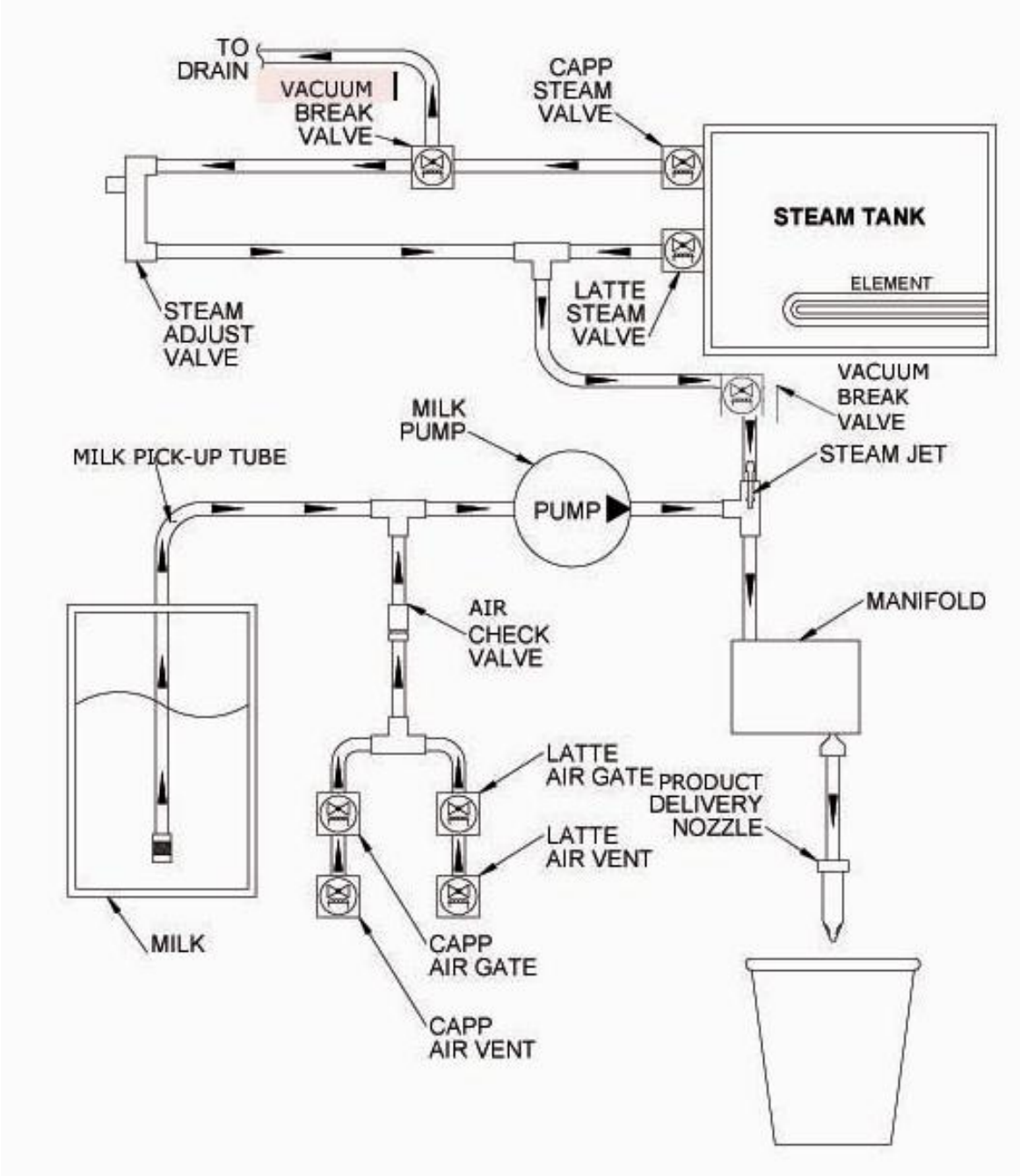
Milk Delivery System Overview



Milk Delivery System Components

Milk Pump Assembly

When a milk-based drink is selected, the milk pump draws milk from the milk container in the refrigerator, 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 syrup manifold, and then dispensed into the cup via the product nozzle.

Pick-Up Screen

The pick-up screen prevents unwanted particles from entering the milk pump assembly.

Air Check Valve

The air check valve prevents milk from entering the air gate valves and the air vent valve assemblies.

Milk Pick-Up Tube

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

Product Delivery Nozzle

The product delivery nozzle directs the milk flow into the drink cup.

Vacuum Break Valve

Post-drink production, steam is run through the product delivery tubing to clear residual milk. To ensure the milk is not drawn back into the steam system, the vacuum break valve equalizes pressure in the product delivery tubing.

The Drink Pour Process

Latte

During a latte pour, the latte steam valve and post-steam valve are opened on the steam tank, introducing steam to the milk valve. The resulting steamed milk has a temperature of roughly 165°F/74°C and is approximately 80 percent milk and 20 percent air/steam.

Cappuccino

During a cappuccino pour, the latte steam valve and the post-steam valve open for a time determined by the cappuccino boost delay. Then the cappuccino steam valve opens, causing milk, air, and steam to flow, and changing the drink flow from turbulent to smooth. The change between the turbulent and smooth flow is called "flipping."

The cappuccino pour begins the same as a latte, then the flipping occurs and foamed milk is added to the drink.

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 (165°F/74°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 (145°F/63°C) used to create cappuccinos.

Cappuccino Boost Delay
The cappuccino boost delay is the length of time milk is poured before foamed milk is poured. For example, if a latte has a milk pour time of 10 seconds, a cappuccino may have a cappuccino boost delay of three seconds. This means the cappuccino pour includes seven seconds of steamed milk, and then three seconds of foamed milk.

The cappuccino boost delay can be tailored for customer-specific recipes. A short delay time will produce a "wet" cappuccino (more milk than foam), and a long delay time will produce a "dry" cappuccino (more foam than milk). To change a cappuccino boost delay, navigate to **MILK TIMINGS > SM CAP BOOST DLY** or **LG CAP BOOST DLY** in the software menu.

NOTE: The cappuccino boost delay time must never exceed the cappuccino milk pour time!

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 95 percent for a small beverage and 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.

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.

- 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).
    - If the temperature is below the optimal range, navigate to **SET TEMPERATURES > STEAM**, 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).
    - If the temperature is above the optimal range, navigate to **SET TEMPERATURES > STEAM**, 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).
- Navigate to **MILK TIMINGS > SM CAP BOOST DLY** set the small cappuccino boost delay to **4**, and then pour a cappuccino and measure the temperature of the beverage in a paper cup. The temperature should be between 140°F to 150°F (60°C to 66°C).
    - If the temperature is below the optimal range, turn the manual cappuccino temperature adjustment valve located behind the refrigerator door clockwise one half turn, and then re-test the drink temperature. Repeat this process until the

temperature is within 140°F to 150°F (60°C to 66°C).

- If the temperature is above the optimal range or if the milk pour starts but ends prior to the set pour time, turn the manual cappuccino temperature adjustment valve located behind the refrigerator door counterclockwise one half turn, and then re-test the drink temperature. Repeat this process until the temperature is within 140°F to 150°F (60°C to 66°C).

  WARNING: Never close the manual cappuccino temperature adjustment valve completely during milk delivery. Serious damage to the equipment may result.

- If a hotter cappuccino is desired, navigate to **MILK TIMINGS > SM CAP BOOST DLY** and increase the cappuccino boost delay until the desired temperature is achieved.

  NOTE: This delay time must never exceed the cappuccino milk pour time!

Milk System Capabilities

The Integra milk system produces steamed milk at a rate of approximately 8.6mL per second, up to 170°F/77°C, and dry cappuccino foam at a rate of approximately 6.5mL per second, up to 150°F/66°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 up to 34 individual milk times that can be adjusted in the Integra.
2. The **SHOT SELECT** settings can alter the milk pour time used for a beverage

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

In this scenario, changing milk time using **SHOT SELECT > LARGE LATTE** milk time will have no effect on any drink the machine is able to produce. The milk timing must be changed via the **MILK TIMINGS > DBL LG HOT LATTE**.

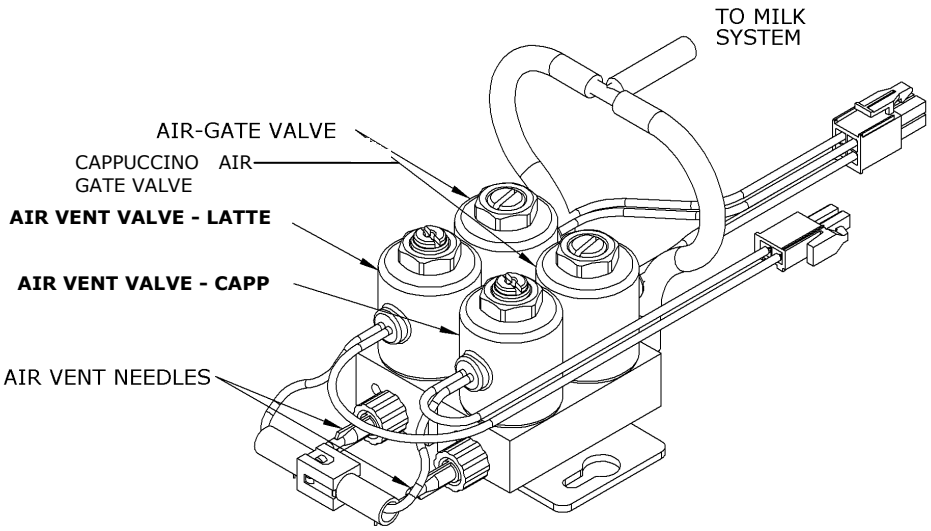
Air Gate Valve Assembly

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

The cappuccino air gate valve, cappuccino air vent valve, and latte air vent 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 sets of valves; two air gate valves and two air vent valves. During a latte drink pour, the latte air vent valve and latte air gate valves are actuated. During a cappuccino drink pour, both valve assemblies are actuated.

The air gate valve allows or stops air flow from the adjacent air vent valve. The air vent 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 Vent Valves

Operating Voltage: 12vdc

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

When actuated, the air vent valves regulate air flow from the air vent needs.

When not actuated, non-regulated air flows from the valve top port.

Air Vent Needles

Operating Voltage: 12vdc

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.

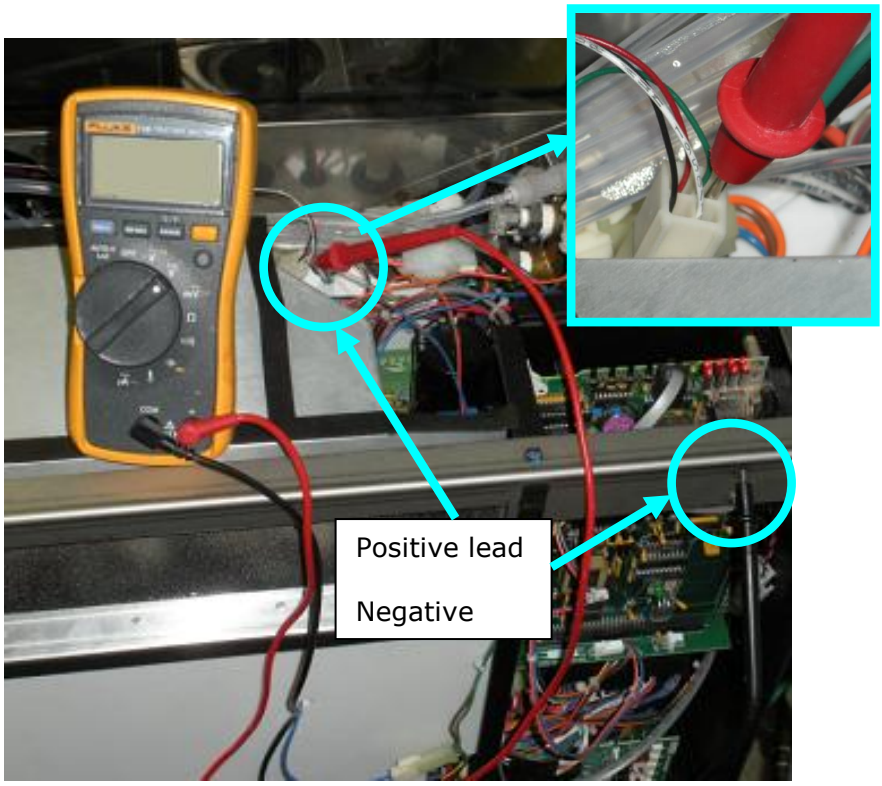
Milk Flow Sensor

This feature is only available on machines utilizing the vending feature.

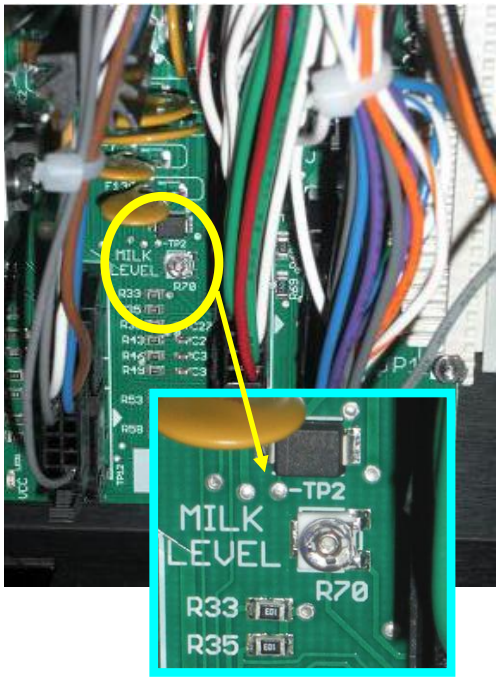
The milk flow sensor is an IR sensor, which monitors the milk supply in the refrigeration unit. When the milk supply is empty, **OUT OF MILK** will appear on the machine's LED. When the **OUT OF MILK** message is displayed, the refrigerator door must be opened for six seconds, and then closed before the message will reset.

Adjusting the Milk Flow Sensor

1. Perform a milk system clean.
2. Using a voltmeter set to the millivolt scale, attach the negative meter lead to the machine chassis, and then touch the positive meter lead to the green wire in the 4-pin milk sensor connector located near the milk pump. ***WARNING***: Do not damage the pin or connect while inserting the meter probe into the connector.



3. Locate the Milk Level Adjustment pot on the AC/DC power supply board. Using a 1/8" slotted screwdriver, turn the pot counterclockwise slowly until the maximum possible voltage is displayed on the meter. Then, back off the voltage by 20mV (.02V) by turning the pot clockwise.



WARNING: Be sure not to adjust the motor current pot, which is located near the Milk Level Adjustment pot.

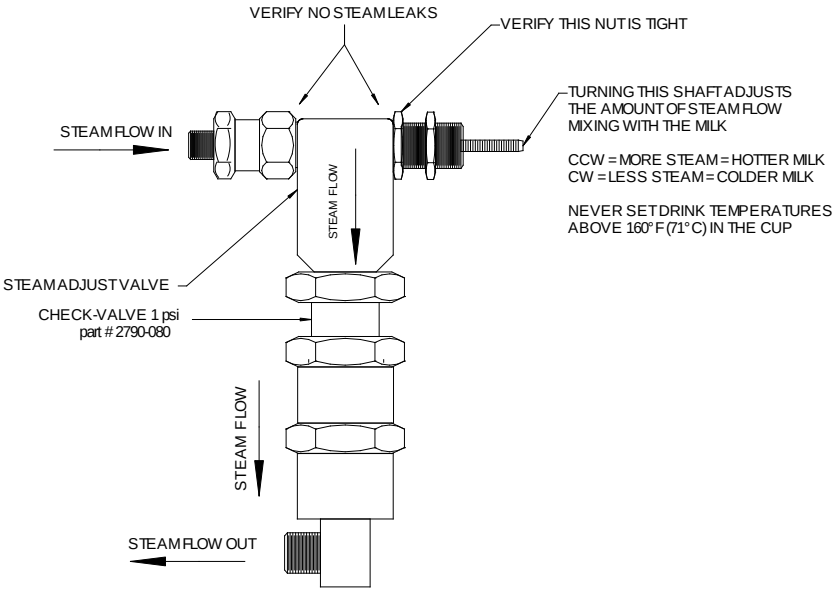
4. Navigate to **TEST ROUTINES > A/D REFERENCE**. Scroll to **7: Milk Flow** and note the value (xxx counts). A reading of 100 or below is considered good. If the value is 255 counts at the end of the milk clean cycle, there is a bad sensor or the tube is not cleaned properly.
5. Run test milk drinks. Remove the milk pick-up tube from the milk container during a milk drink pour to verify that **OUT OF MILK** appears on the machine display. Replace the milk pick-up tube into the milk container and keep the door of the refrigeration unit open for seven or more seconds for the system to recover and the display to return to **SELECT DRINK**.

Cappuccino Temperature Adjustment Valve

If the cappuccino temperature adjustment valve is adjusted fully open / counter-clockwise, a maximum amount of steam is sent through the milk line, and this will overpower the milk pump, resulting in the **OUT OF MILK** message being displayed.

If the cappuccino temperature adjustment valve is adjusted fully closed / clockwise, no steam will be available to clear the milk line after a drink pour, which will result in the **MILK CLEAN** message being displayed.

WARNING: Never run the machine with the cappuccino temperature adjustment valve completely closed.



Mixing TEE

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

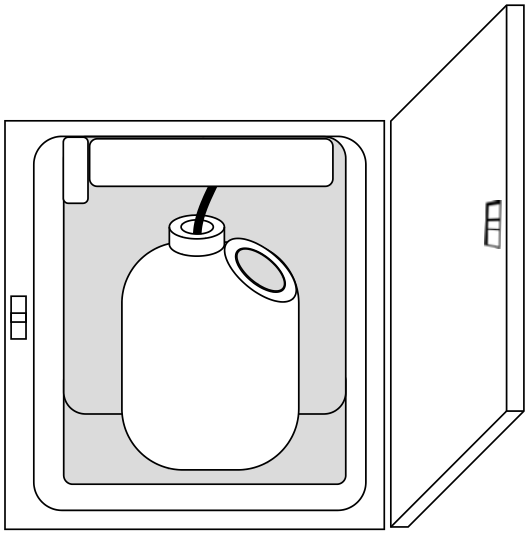
Refrigeration Unit

The Integra features a refrigeration unit, to house the milk used for drinks. The refrigeration unit is designed to accommodate one standard off-the-shelf one gallon/four liter milk container.

Placing Milk in the Machine

Milk is placed in the refrigerator and the milk pick-up tube is inserted into the milk container. The milk pick-up tube hangs below the refrigeration cooling unit plenum on the upper back wall of the refrigerator.

1. Open the refrigeration unit door, place the milk pick-up tube in the milk container, and place the opened milk container in the refrigeration unit.
2. Slide the container into the refrigeration compartment while feeding the milk pick-up tube fully into the milk container.
3. Close refrigeration unit door.



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 tube.

DO NOT pull excessively on milk pick-up tube.

DO NOT remove milk container during a drink pour.

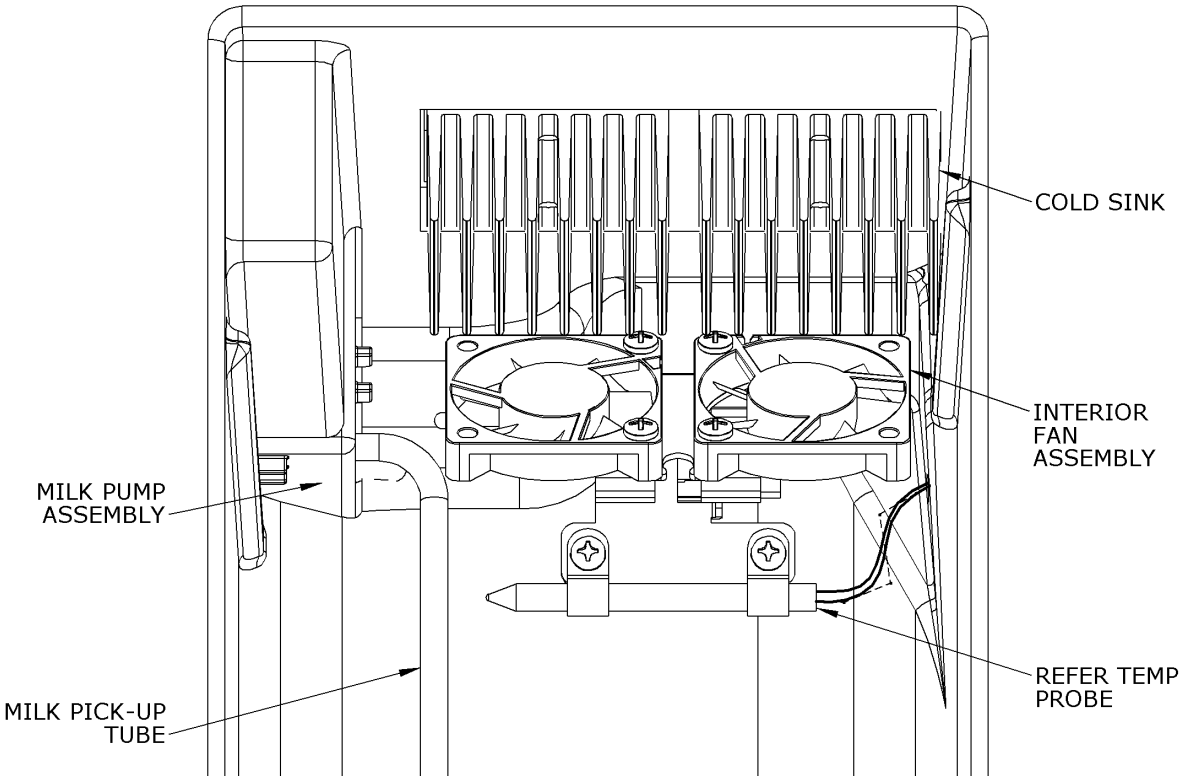
Checking the Refrigeration Unit Temperature

The temperature for the on-board refrigeration unit is always displayed on 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 and for the fan to speed up. 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 call Concordia Coffee Systems at 1-800-778-0990.

Refrigeration Unit Overview

The refrigeration unit holds the milk used for drinks, and ensures milk is kept at the proper temperature.

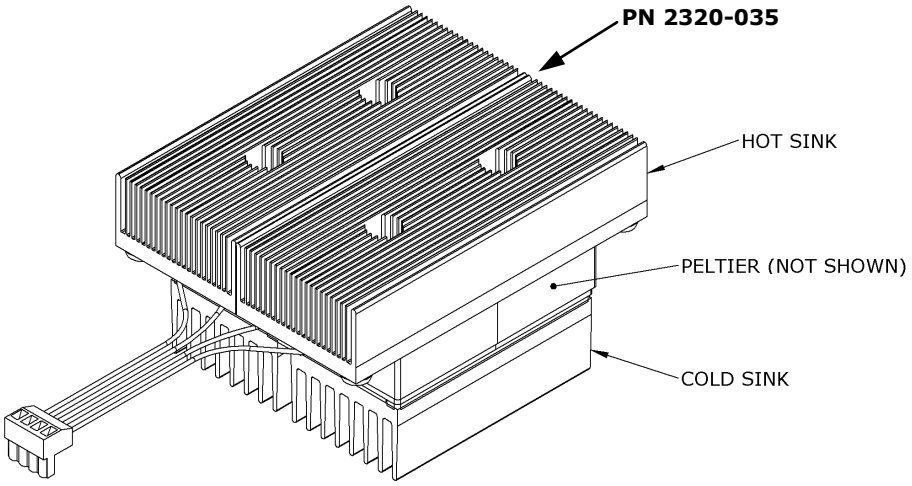


Milk Pump Assembly

Please see page 7-3 for a detailed description of the milk pump assembly.

Refrigeration Cooling Module Assembly

Operating current: approx. 8amps



The refrigeration cooling module assembly contains two Peltier chips. The Peltier chip contains semi-conductors sandwiched between ceramic sheets. When a 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 Peltier chips are wired in parallel. If one chip fails, the other one will continue to function. However, the performance of the refrigerator will degrade.

A direct correlation exists between the ambient air temperature and the temperature of the interior of the refrigerator. Ambient air temperature is defined as the air temperature surrounding the machine. To achieve an interior temperature of 40°F/4°C inside the refrigerator, the ambient air temperature must not exceed 84°F/29°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 air temperature is greater than 84°F/29°C, the refrigeration unit will not be able to achieve a temperature of 40°F/4°C or cooler, and the quality of milk will be jeopardized.

Cold Sink Plenum

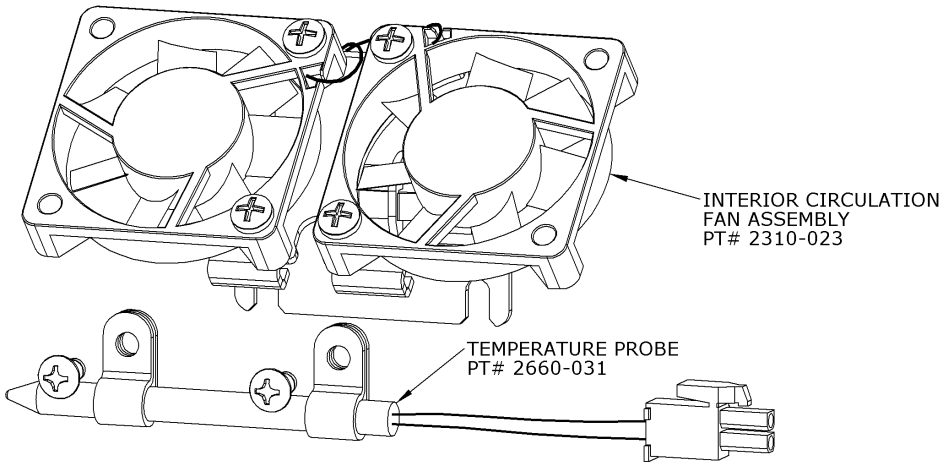
Not pictured in Refrigeration Unit Overview diagram
The cold sink plenum protects the refrigerator cooling module assembly and guides airflow generated by the interior fan assembly across the surface of the refrigerator cooling module assembly. The cold sink plenum is located at the top of the inside of the refrigeration unit.

To remove the cold sink plenum, pull it forward.

To reinstall the cold sink plenum, line it up with the groove feature on the sides of the refrigeration unit, and then slide it in until it clips into the fan bracket.

Interior Fan Assembly

Operating Voltage: 12vdc



The interior circulation fans, 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.

Refrigeration Unit Temperature Probe Assembly

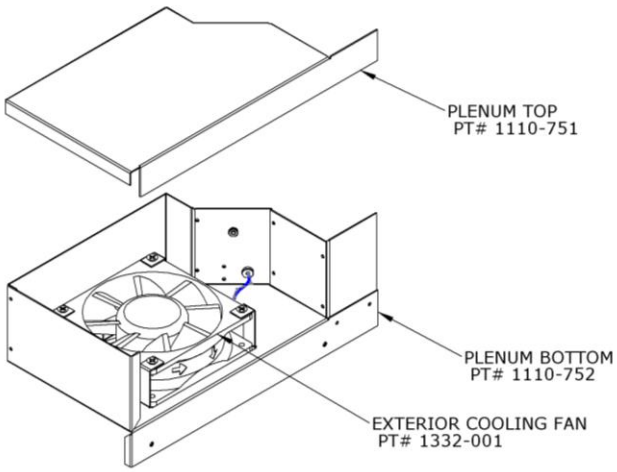
The temperature probe is used to measure the internal temperature of the on-board refrigeration unit. The CPU monitors the temperature and adjusts the interior temperature through powering the Peltier chips in the refrigerator cooling module.

Milk Pick-Up Tube

The milk pick-up tube transfers milk from the milk container to the milk pump assembly.

Exterior Cooling Module Fan Assembly

Operating Voltage: 12vdc



The exterior cooling module fan assembly, located on the top of the refrigerator cooling module unit, is used to dissipate heat from the heat sink side of the cooling module.

Troubleshooting

For assistance troubleshooting issues with the milk system, see the milk system troubleshooting trees in *Section 14: Troubleshooting*.

Section 8 :: Flavor System

1. Flavor System Overview
2. Flavor Storage Area
3. Changing the Flavor Pour Rate
4. Peristaltic Pumps
5. Syrup Manifold
6. Cleaning the Flavor Delivery System
7. Priming the Flavor Delivery System

TECHNICAL SUPPORT

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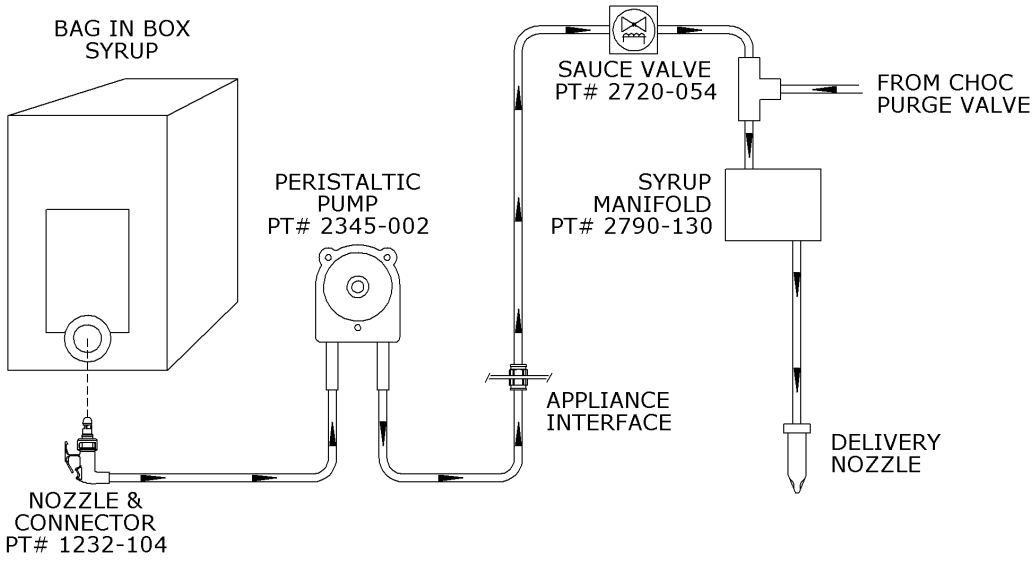
Flavor System Overview

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 line, to a poppet valve, and then to the product delivery assembly. The amount of time the pump and valve operate is adjustable in the **SYRUP 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

A 24vdc solenoid type valve controls the delivery of chocolate sauce for a drink. The line for chocolate sauce is larger than the lines for syrups, to accommodate the thicker consistency of the chocolate sauce.



Chocolate sauce flows from the flavor box, through the chocolate sauce line, to the 24vdc chocolate sauce valve, 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 chocolate sauce valve.

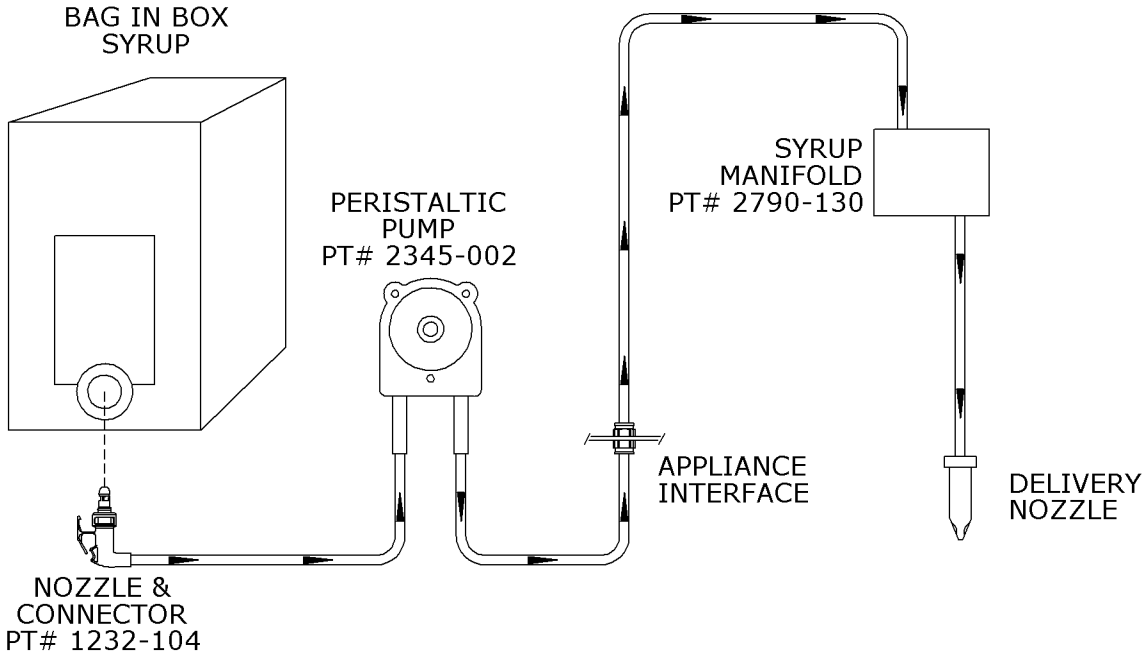
Before the poppet valve closes, two pulses of hot water are flushed through the poppet valve, from a dedicated chocolate purge valve, to clear the poppet valve of chocolate sauce residue.

Syrup Delivery Path

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

Flavored syrup flows from the flavor box, through the syrup line 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.

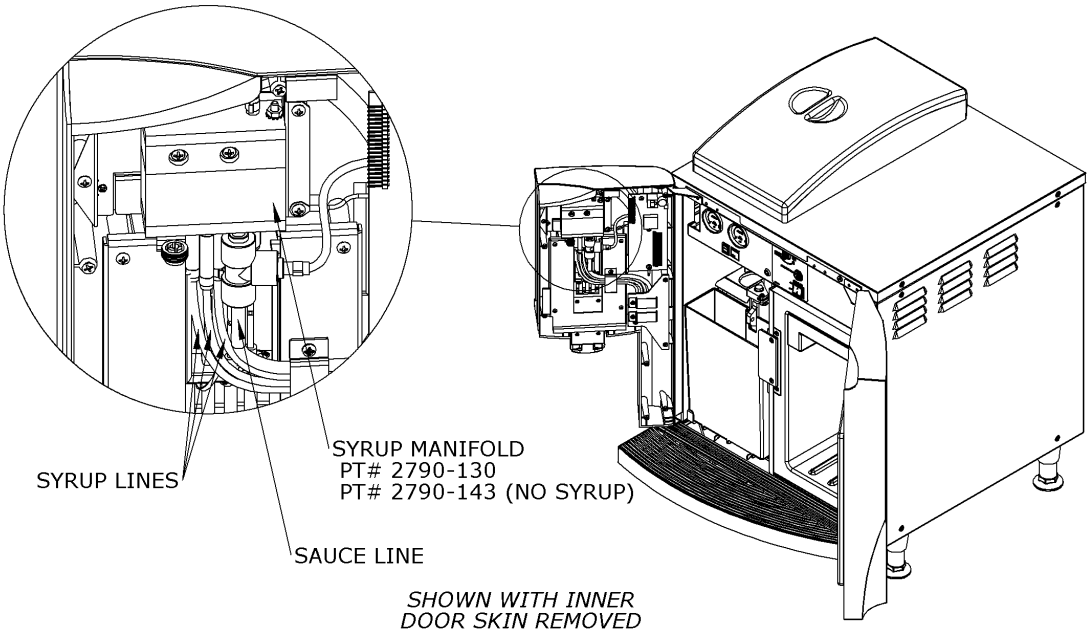


Flavor Lines

There is a dedicated flavor line for each flavor. Each flavor line is color-coded for ease of use and to prevent cross-contamination of flavors.

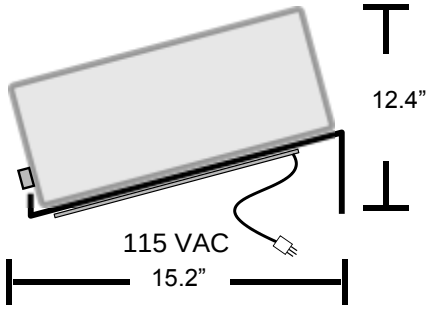
The path of a flavor line starts at the flavor box, continues through the back of the machine, through the peristaltic pump assembly, and then into the syrup manifold. The table below details the color coding used for the flavor lines.

Red	White	Yellow	Black
Chai	Vanilla	Caramel	Chocolate



Chocolate Heater Assembly

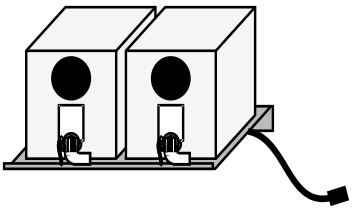
The chocolate heater assembly heats the chocolate sauce so that a minimum temperature of 85°F/29°C is maintained and to ensure a consistent rate of flow. To reach the minimum temperature, a box of chocolate needs to be on the chocolate heater assembly for a minimum of 12 hours before it can be used.



Chocolate Sauce

Chocolate sauce must be pre-warmed before use. The minimum temperature must be 85°F/29°C for chocolate sauce flow properly. If the chocolate sauce is not flowing, and the flavor box is not empty, check the warming mat on the chocolate sauce flavor rack. The chocolate sauce must be kept at the proper temperature.

Chocolate Sauce
85°F / 29°C



At the time of installation, if the chocolate sauce is cold, it must be brought to a temperature of 85°F/29°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 Integra 1 or the Integra 4.

Due to the length of time required to fully heat a box of chocolate sauce, it is strongly recommended to always have to an extra box on the chocolate heater assembly. Keeping an extra box will ensure an uninterrupted supply of chocolate sauce for customer drinks.

Flavor Storage Area

When placing the flavor box on the shelf, verify the color on the box matches the color on the corresponding color-coded tube.

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

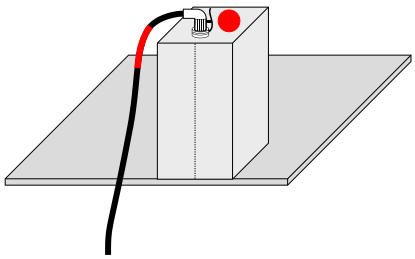
Connecting Flavor Tubing

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

   NOTE: Re-inserting a dry o-ring may result in leaks.
4. Hold the connector firmly with your hand.
5. Insert the correct color-coded nozzle into the connector firmly, until the nozzle handle clicks into place.
6. Purge the flavor tube to remove all air from the flavor bag and the flavor tube.

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

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.

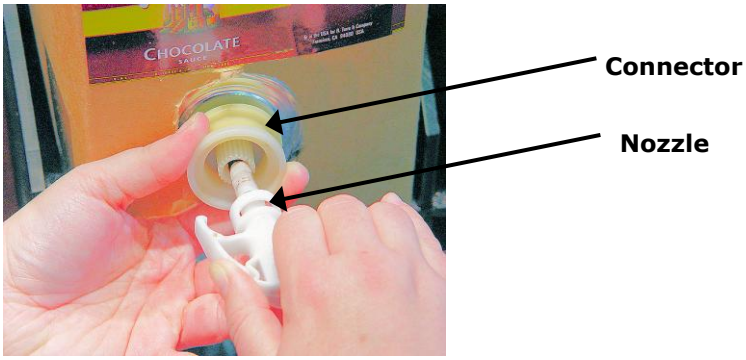


Changing Flavor Boxes

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 Coffee Systems for assistance.

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.



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.

Changing the Flavor Pour Rate

1. Place a measuring cup under the product nozzle.
2. Press the service switch into the **SERVICE** position.
3. Press the **PROGRAM** button three times, and then navigate to **FLAVOR TIMINGS**.
4. Press the **PROGRAM** button once, and then scroll to the desired flavor.
5. Press the upper right arrow to increase the amount of flavor or press the lower right arrow to decrease the amount of flavor.
6. Press the **PROGRAM** button once to exit the **FLAVOR TIMINGS** category.
7. Press the **CANCEL** button to exit the menu system.
8. Press the service switch into the **RUN** position.
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		

Chocolate sauce flows at the rate of 0.07oz/2.1mL per second.

Flavor syrups flow at the rate of 0.10oz/3mL per second.

EXAMPLE: If the chocolate sauce timing is set for 13 seconds, then the result should be 0.91oz/31.2mL of sauce in the cup. See the *Chocolate Sauce* topic on page 8-5 for information on the importance of maintaining the correct chocolate sauce temperature.

EXAMPLE: If the vanilla timing is set for 10 seconds, then the result should be 1oz/30mL of flavor 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 ADJ**, **LARGE 2-FLAVOR ADJ**.

Milk volume is reduced by 5% per shot of flavor. If one shot of flavor is added to a drink, the milk volume is adjusted to 95% of its normal setting, and 90% for two shots of flavor. When the amount of flavor is altered, adjust the milk volume in 1% 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	0.07	0.14	0.21	0.28	0.35	0.43	0.49	0.56	0.63	0.70
All other flavors	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0

Flavor in Ounces	Pour Time in Seconds									
	11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Chocolate Sauce	0.77	0.84	0.91	0.98	1.05	1.12	1.19	1.26	1.33	1.40
All other flavors	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0

Flavor in Ounces	Pour Time in Seconds							
	21	**22**	**23**	**24**	**25**	**26**	**27**	**28**
Chocolate Sauce	1.47	1.54	1.61	1.68	1.75	1.82	1.89	1.96
All other flavors	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8

Flavor in Milliliters	Pour Time in Seconds									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Chocolate Sauce	5.1	10.2	15.3	20.4	25.5	30.6	35.7	40.8	45.9	60.0
All other flavors	3	6	9	12	15	18	21	24	27	30

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:

- Syrup box exposed to temperature below 32°F/0°C
- Chocolate sauce box exposed to temperature below 85°F/29°C
- Flavor box exposed to temperature above 110°F/43°C
- Loose nozzle and/or connector

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

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

Peristaltic Pumps

24vdc, 75rpm

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 four pumps.

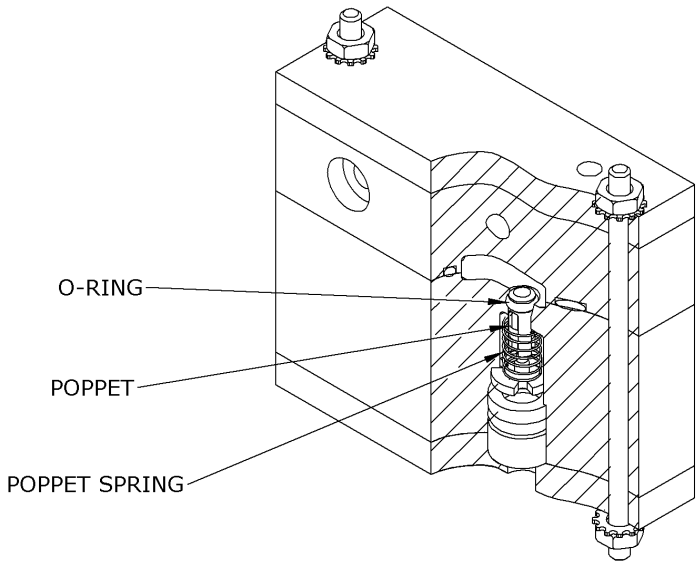
Syrup Manifold

This is where the tubing from the output of the peristaltic pumps connects to the tubing feeding to the syrup manifold located above the milk bowl and the drink output nozzles.

The syrup manifold controls the amount of flavor added to a drink by using poppet valves. Each flavor has a dedicated poppet valve, and the pressure created when a flavor is chosen and dispensed opens the valve. The poppet valve is not electronically controlled. When the flavor is distributed into the syrup manifold, the pressure to the poppet valve equalizes and the poppet valve will naturally close.

When connecting the tubing to the manifold, be certain to correctly match the tubing, based on the color-coding scheme. The color-coding scheme is consistent throughout the flavor system.

It is not necessary to replace the syrup manifold when a poppet o-ring needs to be replaced, as the o-rings can be individually replaced.



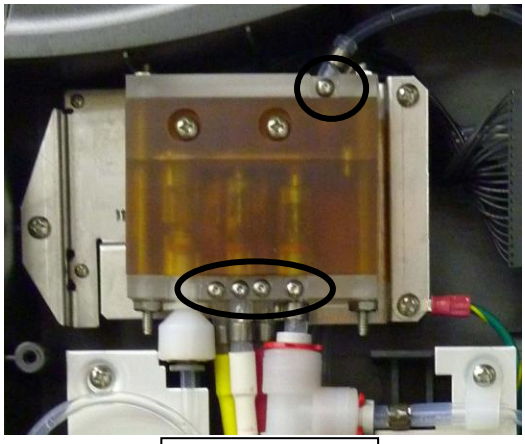
Replacing the Syrup Manifold

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 8-14 for instructions for how to clean the flavor system.

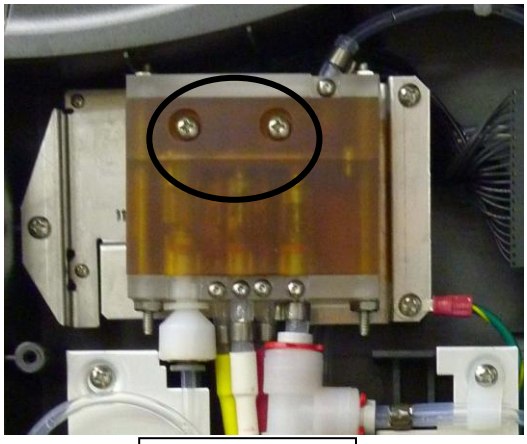
PICTURE 1

PICTURE 2

PICTURE 3



PICTURE 4



PICTURE 5

1. Power off the machine.
2. Remove the eight screws from the interior door panel. See *Picture 1*.
3. Loosen the screw on the top flavor tube bracket. See *Picture 2*.
4. Carefully remove data cable from inside front door. See *Picture 3*.
5. Slide the door panel to the left.
6. Loosen the four screws for the flavor tubes, and one screw for the milk tube, from the syrup block. See *Picture 4*.
7. Remove the two screws mounting the syrup manifold in place. See *Picture 5*.
8. Replace the syrup manifold.

9. Push all milk and flavor tubes securely back into position on the manifold tube fittings, and then tighten the four screws for the flavor tubes and the one screw for the milk tube.
10. Re-attach the two screws to the front of the manifold.
11. Re-attach door panel with the eight screws previously removed.
12. Re-attach data cable, power up machine.
13. Tighten the screw on the top flavor tube bracket.
14. Ensure the flavor output tubes lie flat and smooth.
15. Run test drinks to ensure there are no leaks in the manifold block or connections.

Prime the flavor delivery system. See the *Priming the Flavor System* topic on page 8-15 for instructions.

Cleaning the Flavor System

The flavor system must be cleaned under the following circumstances:

- Cross-contamination of a flavor tube
- The PM cleaning process
- 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 **SERVICE** position.
2. Place a 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 the cleaning card for the milk system).
17. Once the milk clean cycle is complete, wipe the product delivery outlet with a clean cloth soaked in a sanitizer approved by State and Local Health Department regulations, such as a bleach solution with concentration of chlorine not to exceed 200ppm chlorine. 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 below for instructions.

Priming the Flavor System

The flavor system must be primed under the following circumstances:

- Initial setup of the flavor system
- When a new flavor is introduced (e.g. caramel is replaced by almond)

  NOTE: The affected flavor line MUST be cleaned before the new flavor is introduced.
- An air bubble needs to be purged from a line
- Replacing flavor tubing
- Replacing the syrup manifold
- The PM cleaning process

The Flavor Delivery System Priming Process (Automatic)

1. Place the service switch in the **SERVICE** 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 lines are properly primed, it may be necessary to run this procedure twice. Verify each syrup line 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 lines 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 **RUN** position.

Troubleshooting

For assistance troubleshooting issues with the flavor system, please see the flavor system troubleshooting trees in *Section 14: Troubleshooting*.

Section 9 :: Steam Wand

1. Steam Wand Overview
2. Installation
3. Replacing the Steam Wand Button
4. Replacing a Steam Wand
5. Troubleshooting
6. Cleaning the Steam Wand

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Steam Wand Overview

The Integra has an optional steam wand feature. The steam wand is used to steam liquids that cannot be run through the machine (e.g. eggnog, chai, flavored milks).

ON/OFF Button

The button directly above the steam wand controls the steam wand. To activate the steam wand, press the button once. To de-activate the steam wand, press the button so that it pops back into the up position.

Installation

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

Valves

The steam wand utilizes the steam and vacuum break valves. The steam valve is located on the left, back side of the machine frame, below the air filter. The vacuum break valve is located on the top back edge of the machine frame.

Replacing the Steam Wand Button

1. Power down the machine.
2. Open the left machine door.
3. Remove the eight screws attaching the door plate to the door.
4. Loosen the screw for the top bracket holding the flavor tubes.
5. Remove the door by carefully sliding the door plate to the left.
6. Remove the tubing guide plate.
7. Cut the steam wand wiring.
8. Remove the nut on the inside of the door.
9. From the outside of the left door, remove the steam wand button from the front of the door.
10. Thread the wire for the new steam wand button through the button hole.
11. Attach the steam wand button wiring to the header connector housing on the left side of the machine.
12. Ensure the steam wand button fits flush to the front of the left machine door.
13. Tighten the nut on the inside of the bin door.
14. Re-attach the top bracket holding the flavor tubes.
15. Slide the door plate back into position, and then re-attach it to the door using the eight screws.
16. Power the machine on.
17. Test the wand to ensure it is functioning properly.

Replacing a Steam Wand

Typically, to replace a steam wand, the entire left door of the machine must be replaced.

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

Removing a Steam Wand

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

Troubleshooting

If liquid is being sucked into the steam wand, the vacuum break valve should be inspected, and then rebuilt or repaired as needed.

If the steam wand has only a weak steam flow, the vacuum break valve should be inspected, and then rebuilt or repaired as needed.

If steam is flowing constantly (can't be shut off) or not flowing at all, the steam valve should be inspected, and then rebuilt or repaired as needed.

Cleaning the Steam Wand

Simply press the steam wand button and run steam through the steam wand for cleaning. It is recommended that this is done several times a day.

After using the steam wand, it is recommend to run steam through the wand for 1-3 seconds and to wipe down the length of the steam wand to prevent build-up of milk.

If there is a build-up of residue on the steam wand, place the steam wand in a container of hot water and let it soak for 5-10 minutes. Then, remove the steam wand from the water, wipe it down thoroughly, and then run steam for 5-10 seconds.

Section 9 :: Steam Wand

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CONCORDIA
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Valves

The steam wand utilizes the steam and vacuum break valves. The steam valve is located on the left, back side of the machine frame, below the air filter. The vacuum break valve is located on the top back edge of the machine frame.

Replacing the Steam Wand Button

1. Power down the machine.
2. Open the left machine door.
3. Remove the eight screws attaching the door plate to the door.
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5. Remove the door by carefully sliding the door plate to the left.
6. Remove the tubing guide plate.
7. Cut the steam wand wiring.
8. Remove the nut on the inside of the door.
9. From the outside of the left door, remove the steam wand button from the front of the door.
10. Thread the wire for the new steam wand button through the button hole.
11. Attach the steam wand button wiring to the header connector housing on the left side of the machine.
12. Ensure the steam wand button fits flush to the front of the left machine door.
13. Tighten the nut on the inside of the bin door.
14. Re-attach the top bracket holding the flavor tubes.
15. Slide the door plate back into position, and then re-attach it to the door using the eight screws.
16. Power the machine on.
17. Test the wand to ensure it is functioning properly.

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If the steam wand has only a weak steam flow, the vacuum break valve should be inspected, and then rebuilt or repaired as needed.

If steam is flowing constantly (can't be shut off) or not flowing at all, the steam valve should be inspected, and then rebuilt or repaired as needed.

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Simply press the steam wand button and run steam through the steam wand for cleaning. It is recommended that this is done several times a day.

After using the steam wand, it is recommend to run steam through the wand for 1-3 seconds and to wipe down the length of the steam wand to prevent build-up of milk.

If there is a build-up of residue on the steam wand, place the steam wand in a container of hot water and let it soak for 5-10 minutes. Then, remove the steam wand from the water, wipe it down thoroughly, and then run steam for 5-10 seconds.

Section 10 :: Cleaning and Maintenance

1. Routine Machine Maintenance
2. Cleaning Timers
3. Preventive Maintenance

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Routine Machine Maintenance

In order to avoid mechanical failure and maintain cleanliness, the Integra espresso machine must be cleaned and maintained on a regular 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

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

To perform the milk and brew clean procedures, the service switch must be in the **SERVICE** position. For more information about the service switch, please see page 4-3. For complete instructions on the brew and milk cleaning processes, please see the cleaning cards included with the machine.

Monthly Maintenance

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

Concordia Cleaning Products

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
- Gloves
- MSDS Information

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 and the MSDS information provided with the cleaning kit.

Cleaning Timers

The milk system and brew group must be cleaned every 24 hours, or after every 100 drinks, whichever comes first. If these cleaning procedures are not completed within two hours or 50 drinks 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 every 10K drinks in order to service critical equipment functions and to minimize potential future failure and reduce down time.

A PM kit containing all the required replacement parts and procedures is available from Concordia Coffee Systems.

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

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Section 11 :: Concordia Procedures

1. Concordia Coffee Systems Service Call Process
2. Complete Call Protocol
3. Service Call Checklist
4. Parts Return Policy for Non-Consignment Agents
5. Parts Return Policy for Consignment Agents
6. Parts Replenishment Form

TECHNICAL SUPPORT

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Concordia Coffee Systems Service Call Protocol

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 customers 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 Coffee 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 Coffee 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

Brew Group

- Condition of upper and lower piston microscreens: No tears or holes
- Check upper o-ring for abrasion and/or wear
- Check sweep arm for build-up and/or mis-alignment

Water Tank

- Operating temperature: ± 3°F/2°C of temperature setting
- Check for leakage

Water Pump

- Set to 135-140psi

Steam Tank

- Operating temperature: ± 2°F/1°C of temperature setting
- Ensure there is no leakage

Refrigeration Unit

- Operating temperature: No higher than 39°F/4°C
- Condition of air filter
- Cleanliness

Espresso Extraction

- Double extraction time of 18-23 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°F ± 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)	BREW GROUP (1500s/i, Integra 0, 1, 4)
□ Verify exterior of unit is clean. □ Verify interior of unit is clean.	□ Verify cleaning kit is available. **YES** / **NO** □ Perform milk clean cycle. □ Perform brew clean cycle.

MILK PUMP & DRINK TEMPS	
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)	BREW GROUP (1500s/i, Integra 0, 1, 4)
□ 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.	□ 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	ELECTRICAL
□ Water hardness before filter. _____GPG □ Water hardness after filter. _____GPG □ Filter System: **Scalex2** / **Other System** / **None**	□ 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 for 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 Coffee 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 Coffee Systems for additional returned authorization supplies.

Parts Return Policy for Consignment Agents

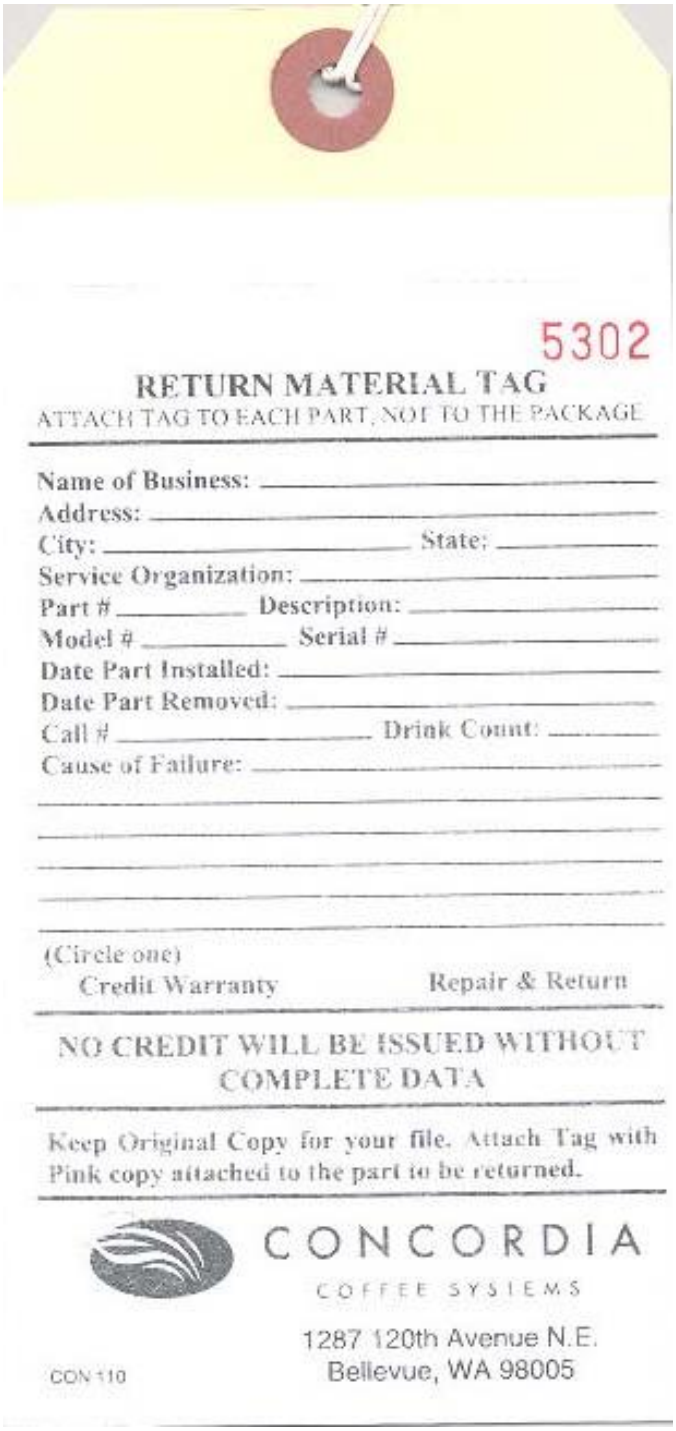
Part returns for consignment agents should be performed as detailed in their service agreement.

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.



5302

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 Coffee Systems provides a parts replenishment form for agents to submit. This form should be filled out weekly and submitted to Concordia Coffee 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.

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Section 12 :: Customer Service and Training

1. Training the Customer
2. Concordia Coffee Systems' Value Added Service
3. G.U.E.S.T.

TECHNICAL SUPPORT

CONCORDIA
COFFEE SYSTEMS

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. Use of the *User Guide* and cleaning cards
2. Starting and resetting the machine
3. Filling the machine with beans and milk
4. Pouring drinks and canceling drinks
5. Restocking and changing the flavor boxes
6. Complete daily cleaning (using Cleaning Cards) and operator maintenance
7. Accessing the machine serial number and how to call Concordia Customer Service for assistance
8. Accessing the programming menu
9. Replacing the upper piston o-ring
10. Troubleshooting tips

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.

Filling Machine with Beans and Milk

Demonstrate and have customer load beans. Explain the right bean hopper is typically filled with caffeinated beans and the left bean hopper with decaffeinated beans. Explain the use of 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 tube.

Making a Drink

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

Serial Number

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

Accessing the Software Menu

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

Cleaning

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

Demonstrate and have customer:

- Complete daily cleaning procedures
- Complete monthly cleaning procedures
- Clean refrigeration unit
- Clean drain grate and tray
- Wipe down exterior of machine
- Empty and clean 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 clean the machine regularly can void the warranty.

To order additional cleaning supplies, the customer needs to call Concordia Customer Service.

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.

Troubleshooting Tips

Demonstrate simple troubleshooting tips, including:

- Correct placement of the milk pick-up tube
- Checking the air filter
- Replacing the upper piston o-ring in the brew group

Calling Concordia for Assistance

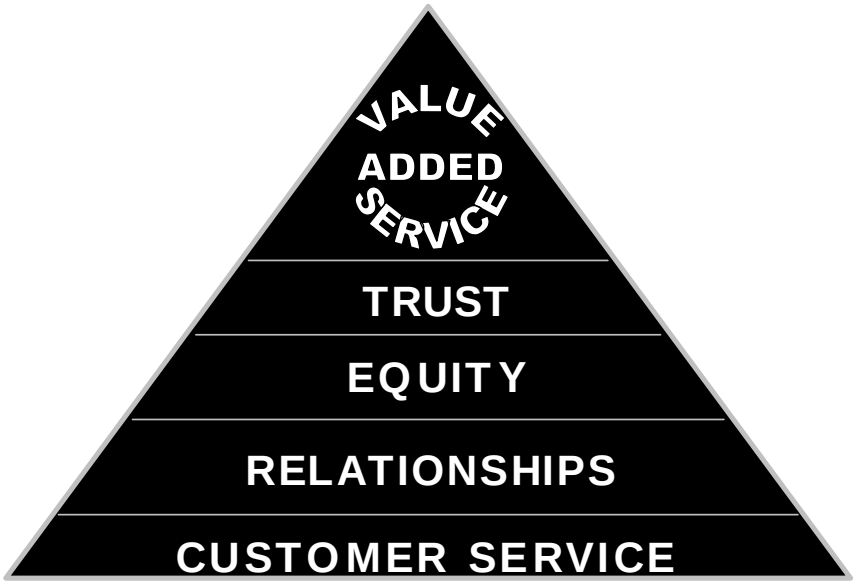
Review the location of the Concordia 800 number and advise the customer to call Concordia with any questions about their new machine. Explain that when calling, customer needs to provide the machine serial number, the LCD message being displayed, symptoms of the issue with the machine.

Concordia Coffee 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 technician servicing Concordia machines, you will see Concordia customers on average 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

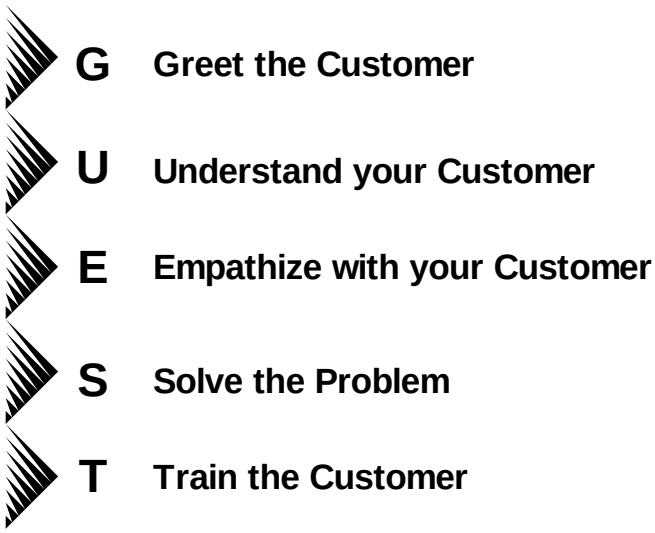
to tell their customers that the machine is broken, not to mention their lost revenue. To further illustrate the level of indebtedness, consider how many times you have been offered something in return for the service you provided (e.g. "Can I get you some lunch?").

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.



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 the 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 and ensuring they have an accurately filled out and signed copy of your work order for their records.

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Section 13 :: Messages

1. Troubleshooting Display Messages

TECHNICAL SUPPORT

CONCORDIA
COFFEE 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 not included on this list call Concordia Coffee Systems for assistance at 1-800-778-0990.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
CHECK CLOCK	Time or date is invalid.	Navigate to the **TIME & DATE** menu, and then enter the correct time and/or date.
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 14: Troubleshooting* section for more 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. Check for worn plunger seal. See *Section 14: Troubleshooting* section for more detailed instructions.
	Level probe failure.	Navigate to **TEST ROUTINES / UPPER STEAM PROBE** and **TEST ROUTINES / LOWER STEAM PROBE** and test the sensor.
	Steam tank 10-minute fill timeout has been exceeded.	Verify water supply to steam tank. Verify steam fill valve is working. 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. Verify SW1 on analog board is in **DEFAULT** position. Replace DC supply board. Install/replace analog board. See *Section 14: Troubleshooting* section for more detailed instructions.
	Missing or bad analog board.	
CHK WATER FLOW	No incoming water supply.	Check that incoming water supply valve is open. Check for clogged water filter.
	Dirty lower piston.	Run brew group/shutdown clean, repeat if required.
	Grind too fine.	Adjust grind coarser.
	Faulty flowmeter.	Verify flowmeter wiring is correct. Navigate to **TEST ROUTINES / BREW WATER VALVE**, and then verify counter increments. Ensure flowmeter is not clogged. See *Section 14: Troubleshooting* section for more detailed instructions.
	Pump pressure.	Verify calibration.
	Leaking pressure relief valve.	Replace.
CHK WATER SUPPLY	No incoming water supply.	Check that incoming water supply valve is open. Check for clogged water filter. See *Section 14: Troubleshooting* section for more 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.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
FRONT PANEL FAIL	Bad connection between CPU board and front panel.	Check cable from front panel to CPU board. See *Section 14: Troubleshooting* section for more detailed instructions.
	Defective front panel.	Replace the front panel circuit board assembly.
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.
	Grounds bin is not present.	Navigate to **TEST ROUTINES / FRONT PANEL** and check using alternate magnet.
LOW BEANS-REGULAR	The bean level in the front hopper has dropped below the I.R. sensor beam line.	Refill beans. Verify the I.R. sensor is not affected by ambient light.
LOW BEANS-DECAF	The bean level in the rear hopper has dropped below the I.R. sensor beam line.	Refill beans. Verify the I.R. sensor is not affected by ambient light.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
REFR TEMP HI	Refrigerator door open.	Check door for proper seal.
	Refrigerator fan failure.	Replace Refrigerator fan. Verify Refrigerator fan is operating and unobstructed. Verify fan, and replace if necessary. Verify ambient temperature is below 84˚F/29˚C. See *Section 14: Troubleshooting* section for more 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 check the temperature. Open sensor = 0.8°F/-17°C. See *Section 14: Troubleshooting* section for more detailed instructions.
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 Coffee 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. See *Section 14: Troubleshooting* section for more detailed instructions.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
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. See *Section 14: Troubleshooting* section for more detailed instructions.
STEAM TEMP HI	Pressure transducer failure.	Navigate to **CHK TEMPERATURES / STEAM** and check the temperature. Failed transducer = 278.6°F/137°C. See *Section 14: Troubleshooting* section for more detailed instructions.
	Steam temperature setting higher than **STEAM TEMP HI** setting.	Call Concordia Coffee Systems for assistance. 1-800-778-0990
	Relay failed in CLOSED mode.	Verify relay operation, replace if necessary.
STEAM TEMP LO	Pressure transducer failure.	Navigate to **CHK TEMPERATURES / STEAM** and check the steam temperature. Open transducer = 227.6°F/109°C. See *Section 14: Troubleshooting* section for more detailed instructions.
	Thermal cutout switch failure.	Check for open switch. ***NOTE*:** An open switch may be caused by steam tank temperature 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 the brew water temperature. Shorted sensor = 57°F/125°C. See *Section 14: Troubleshooting* section for more detailed instructions.
	Brew water temperature setting is higher than **BREW WATER HI** set point.	Call Concordia Coffee Systems for assistance. 1-800-778-0990

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
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.
WATER TEMP LO	Open circuit on water tank temperature sensor.	Navigate to **CHK TEMPERATURES / BREW WATER** and check the brew water temperature. Open sensor = 146°F/64°C See *Section 14: Troubleshooting* section for more detailed instructions.
	Relay or fuse failure.	Navigate to **TEST ROUTINES / WATER HEATER** and check.
	Thermal cutout switch failure.	Check for open switch. ***NOTE***: Open switch may be caused by water tank temperature higher than 210°F/99°C.
	Heating element failure.	Check heating element.
	Brew water temperature is lower than **BREW WATER LO** setting.	Call Concordia Coffee Systems for assistance. 1-800-778-0990
	Leaking pressure relief valve.	Check the pressure relief valve.
SERVICE SWITCH	Service switch is in the **SERVICE** position for an extended period of time.	If cleaning or maintenance are not being performed, place service switch in the **RUN** position.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
CHK EXPANSION BD	Voltages are incorrect.	Replace.
CHK STEAM PROBES	Invalid steam probe state (upper dry, lower wet).	Verify correct wiring placement.
INITIALIZE GROUP	Brew group initialization not done.	Verify brew group is functioning. See *Section 14: Troubleshooting* section for more 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 PM and reset message.
MILK CLEAN DUE	Milk system needs to be cleaned.	Clean milk system.
RUN MILK CLEAN!	Milk system clean required in order to dispense drinks.	Clean milk system.
RUN BREW CLEAN!	Brew clean required in order to dispense drinks.	Clean brew group.
BREW CLEAN DUE	Brew group needs to be cleaned.	Clean brew group.
CHECK MILK	No milk available in the refrigeration unit.	Replenish milk supply. Check milk flow sensor. Open and close refrigerator door (must be open for at least six seconds).
NO BEANS – REGULAR	No espresso beans in right bean hopper.	Refill bean hopper. Move/redistribute beans in bean hopper.
NO BEANS – DECAF	No espresso beans in left bean hopper.	Refill bean hopper. Move/redistribute beans in bean hopper.
CHK FRONT CONTAINER	Front milk container in the refrigeration unit missing.	Replace milk container in refrigeration unit.

DISPLAY MESSAGE	PROBABLE CAUSE	CORRECTIVE ACTION NEEDED
REFR DOOR OPEN	Refrigerator door open.	Firmly close refrigerator door. Verify interlock circuit functioning properly. Verify seal on refrigerator door is in good condition. See *Section 14: Troubleshooting* section for more detailed instructions.

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Section 14 :: Troubleshooting

1. Troubleshooting Quick Reference Guide
2. Troubleshooting Trees

TECHNICAL SUPPORT

CONCORDIA
COFFEE SYSTEMS

Troubleshooting Quick Reference Guide

Machine Failure

Symptom	Probable Cause	Corrective Action Needed
Water pump doesn't run	Blown F17 or F18 fuse on the DC PCA.	Replace blown fuse. ***NOTE*:** Use 4amp fuse only.
	Main AC Solid State relay not working.	Check for 24vdc on the main power solid state relay.
	Pump may have seized.	Check and replace if necessary.
Grinder doesn't run	Blown F5 or F16 fuse on the DC 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 F1 or F2 fuse on the DC PCA.	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 F1 or F2 fuse on the DC PCA.	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 F1 or F2 fuse on the DC PCA.	Replace blown fuse. ***NOTE*:** Use 5amp fuse only.
No fans running and both 24vdc LEDs are lit on the DC power supply	Blown F3 fuse on the AC/DC PCA.	Replace blown fuse. ***NOTE*:** Use 6.3amp fuse only.
Group motor does not run	Blown F3 fuse on the AC/DC PCA.	Replace blown fuse. ***NOTE***: Use 6.3amp fuse only.

Coffee System

Symptom	Probable Cause	Corrective Action Needed
No beans in grinder	No beans in hopper.	Add beans.
	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	No beans in hopper.	Add beans.
	Partially blocked grinder spout.	Clear blockage.
	Clogged funnel.	Clear blockage.
Excessive pour time for drink	Ground coffee too fine.	Check grinder setting.
	Coffee delivery system clogged	Run brew clean cycle.
Too much coffee being poured	Flowmeter failure	Navigate to **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)	Tear in flavor tube.	Check flavor tube(s) for tears.
	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.

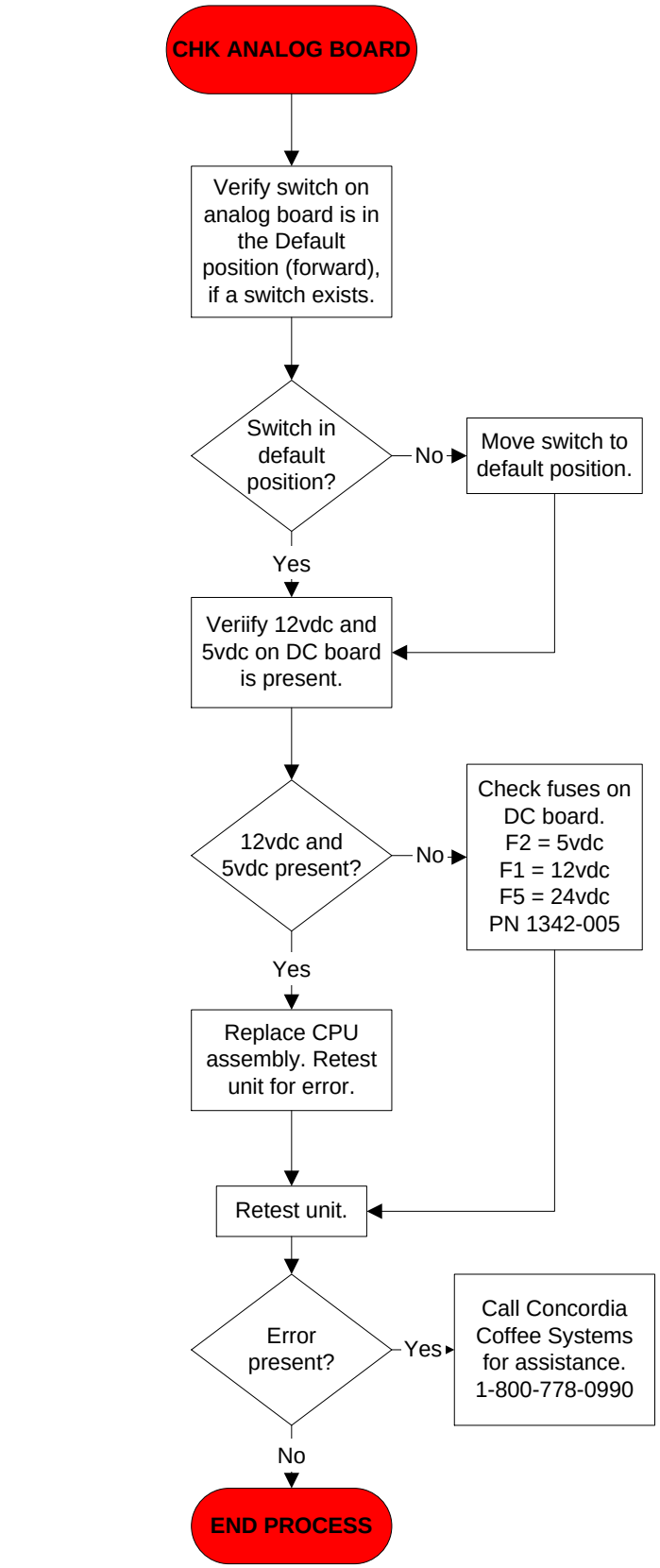
Milk System

Symptom	Probable Cause	Corrective Action Needed
Drinks poured too hot	Steam	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.
	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	Ensure the milk is not past its expiration date. Restock as necessary.
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.

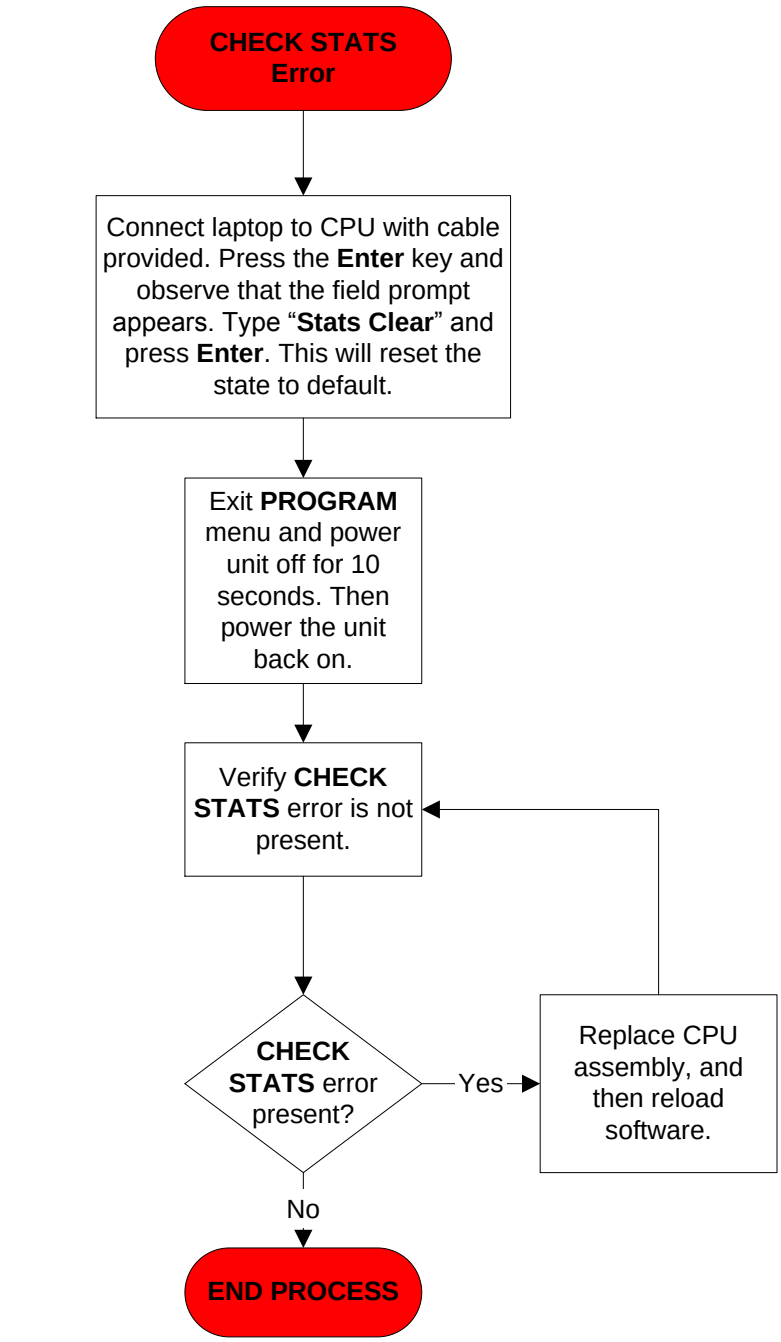
Troubleshooting Trees

ELECTRICAL SYSTEM	**CHK ANALOG BOARD**
	CHECK STATS
	CHECK CLOCK
	AC Board Failures
	Incorrect Software for Touchpad
	Repeated **CHECK MILK** Error
	NOT CONFIGURED
	Card Swipe or Tap Not Authorized
	No Display on Card Reader
	LOAD DISP DATA or **LOAD SEQ DATA**
	DC Board Failures
	FRONT PANEL FAIL
COFFEE SYSTEM	Initialize Group
	Extended **PLEASE WAIT**
	CHECK WTR FLOW
	OUT OF BEANS /**NO GROUNDS**
	Slow Espresso Pour
	Upper Piston Stuck in Up/Chamber Position
MILK SYSTEM	No Steam During Milk Pour
	Cold Milk Pour
	Milk Overpour
	No Milk Pour
	Short Pour Milk
REFRIGERATION SYSTEM	**REFR TEMP HI**
	REFR TEMP LO
	REFR DOOR OPEN
STEAM SYSTEM	**CHECK SENSOR VOLTAGE**
	CHK STEAM PROBES
	Steam High Limit
	STEAM TEMP HI
	STEAM TEMP LO
	CHECK STEAM TANK
FLAVOR SYSTEM	Cross Contamination of Flavors
	Not Enough Flavor
	Too Much Flavor
	No Flavor in Drink
WATER SYSTEM	**CHK WATER SUPPLY**
	Water Tank Limit Switch Open
	WATER TEMP HI
	WATER TEMP LO

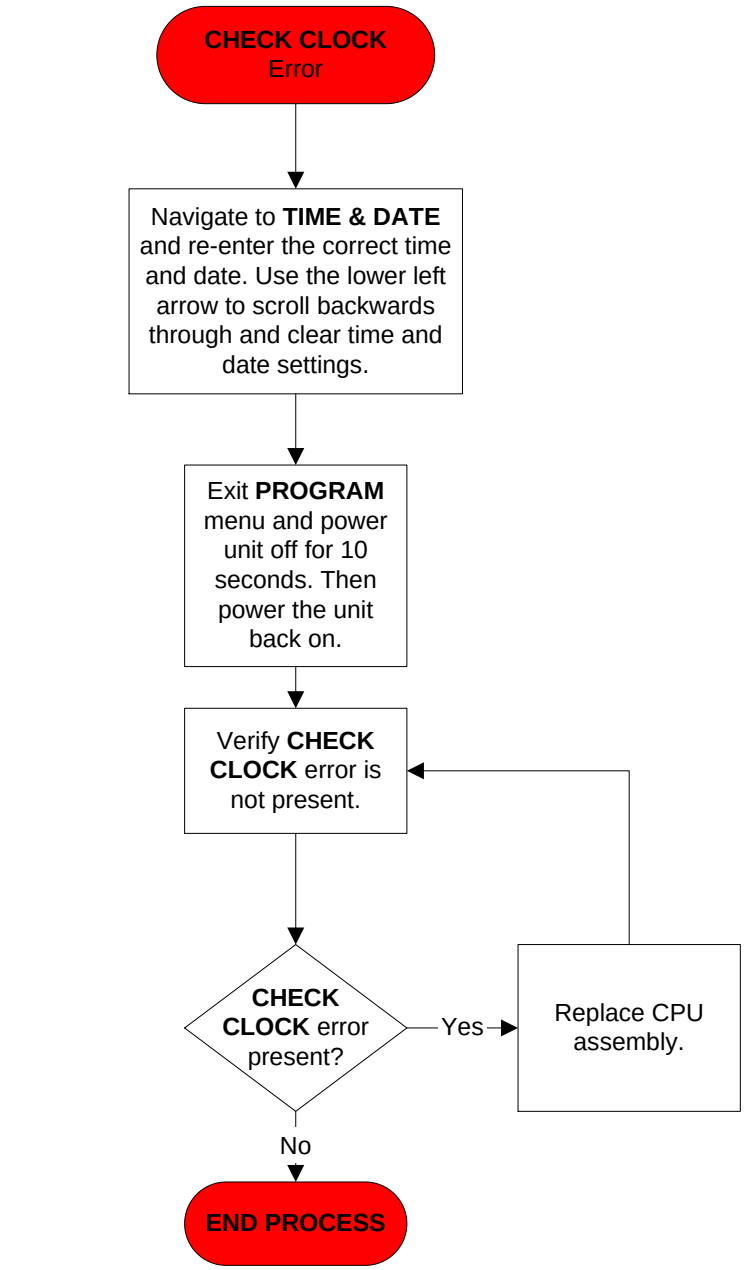
Electrical System – CHK ANALOG BOARD



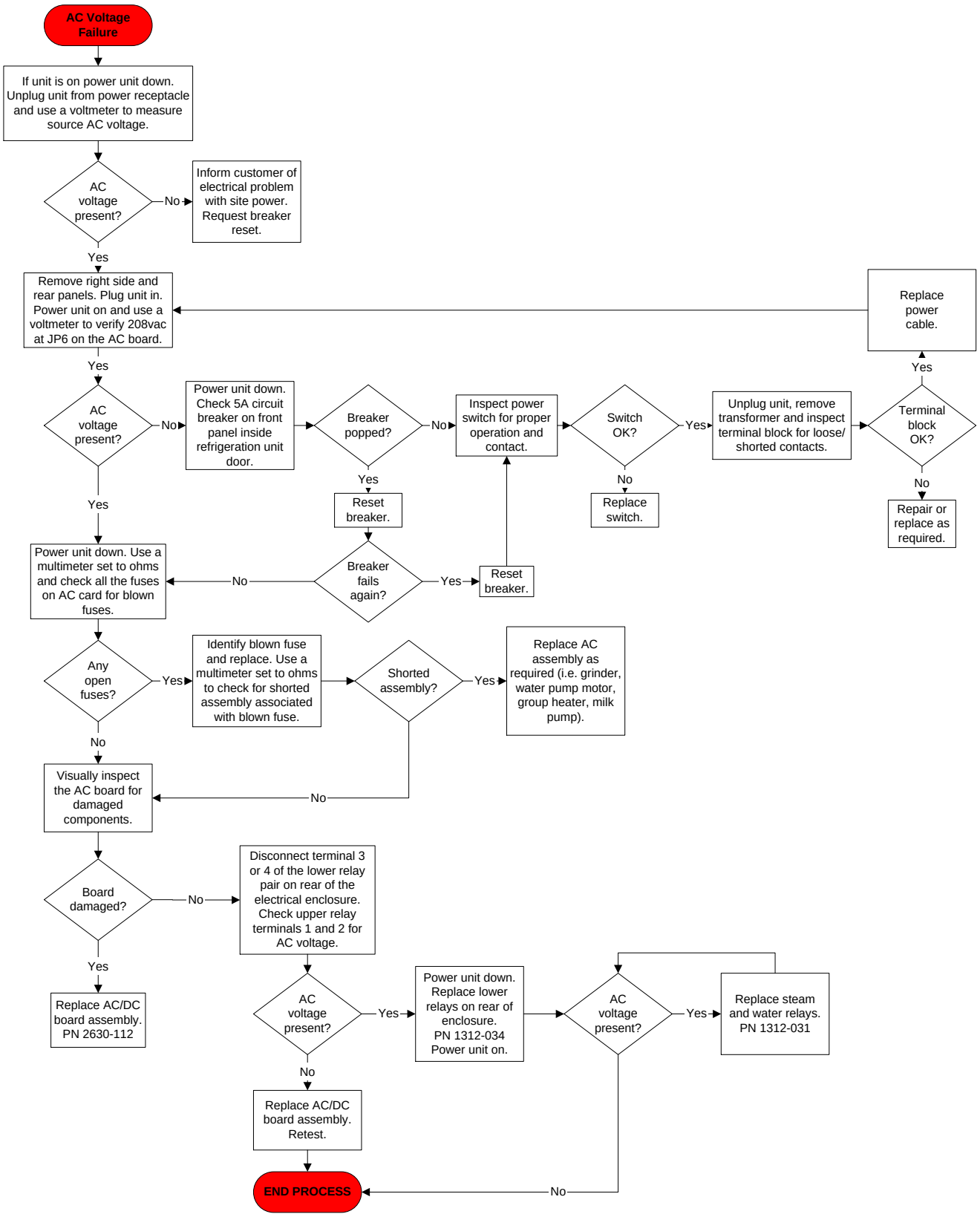
Electrical System – CHECK STATS



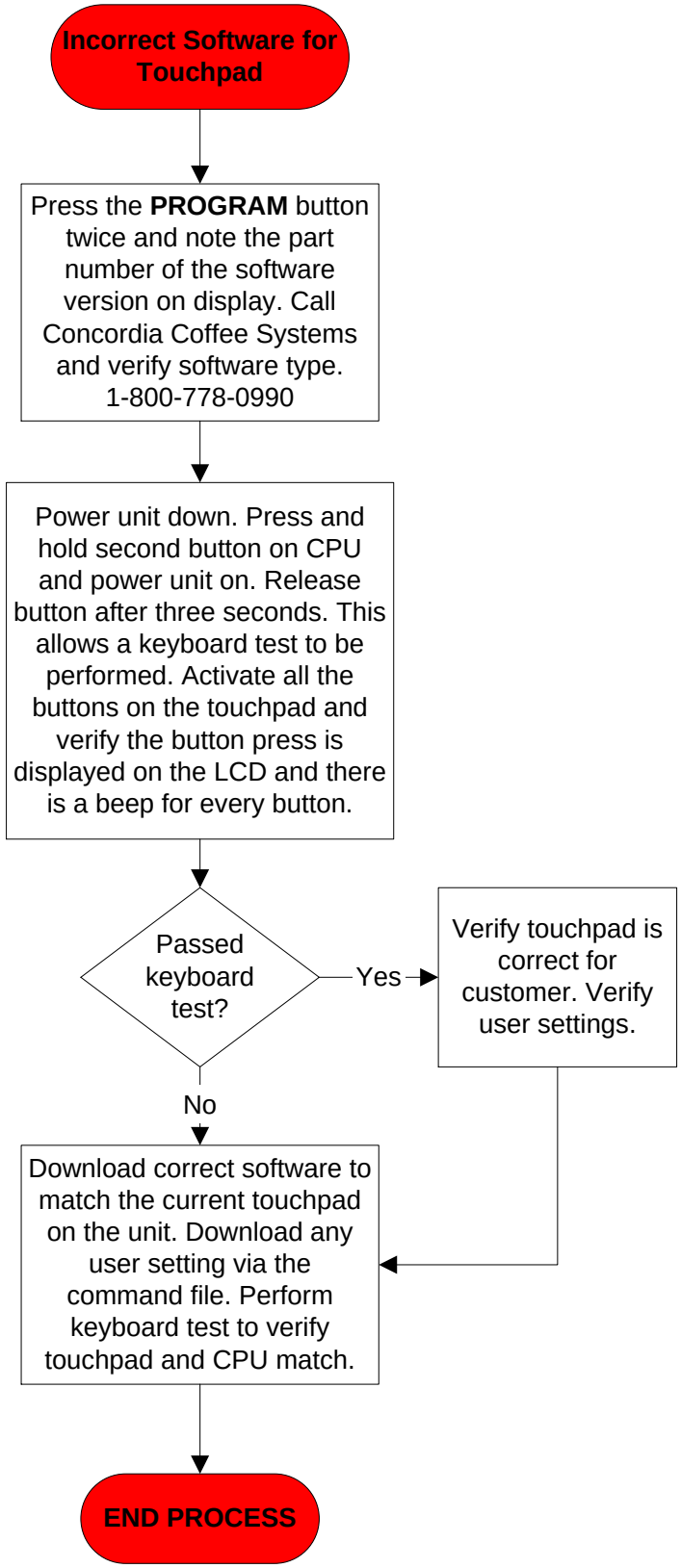
Electrical System – CHECK CLOCK



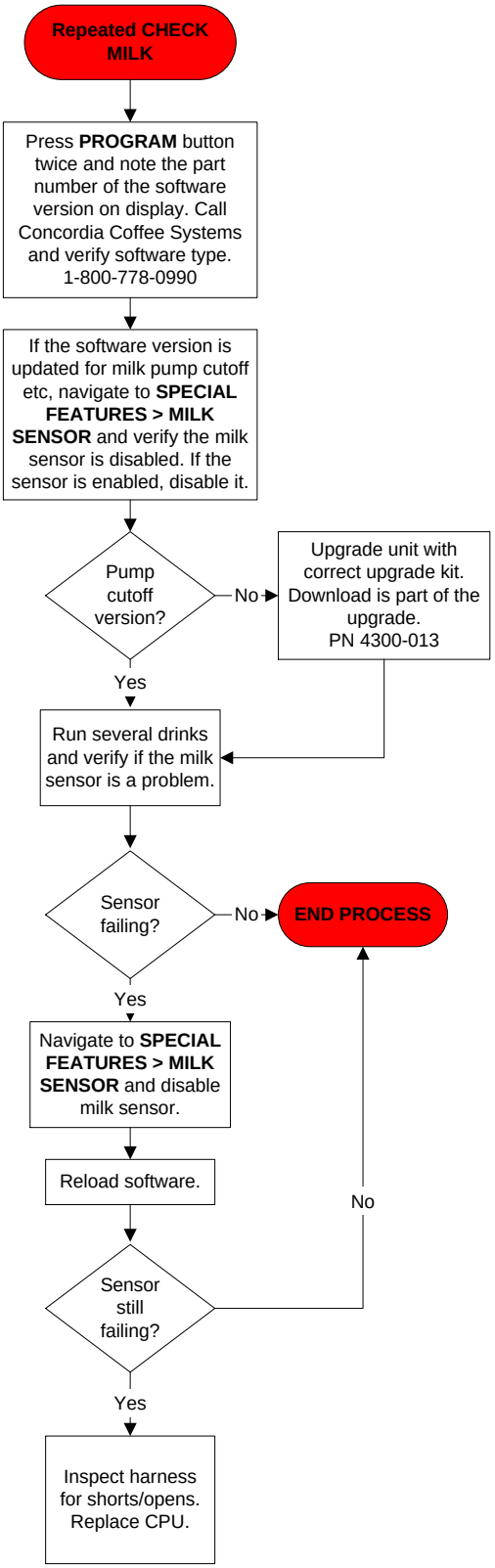
Electrical System – AC Board Failures



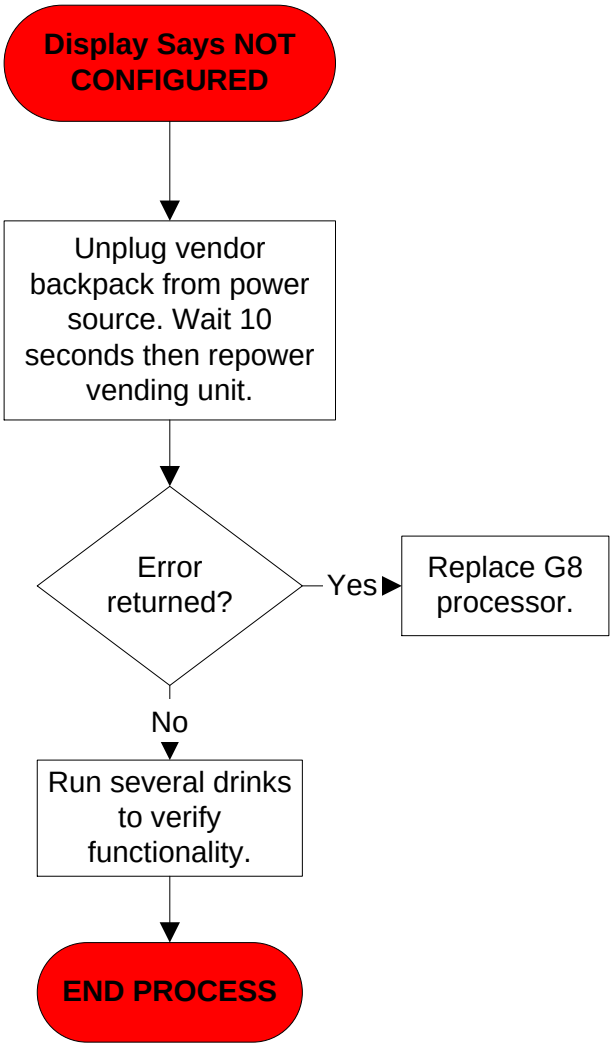
Electrical System – Incorrect Software for Touchpad



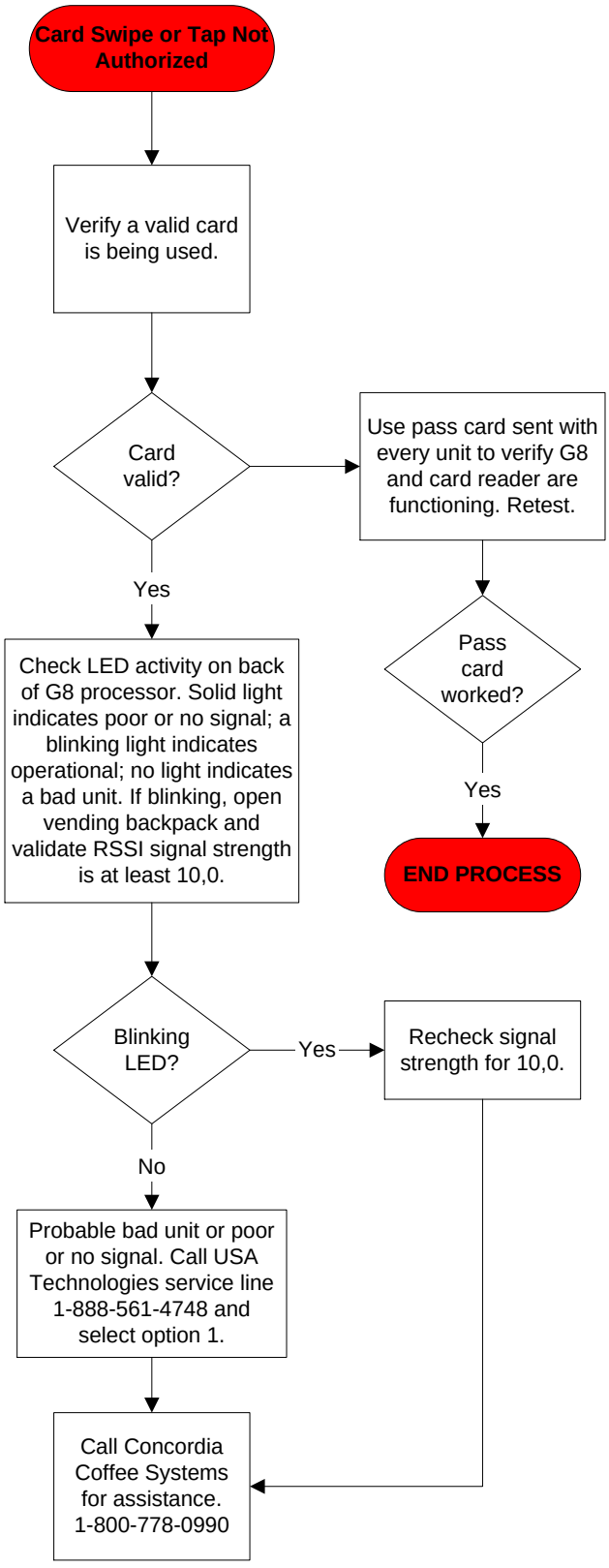
Electrical System – Repeated CHECK MILK Error



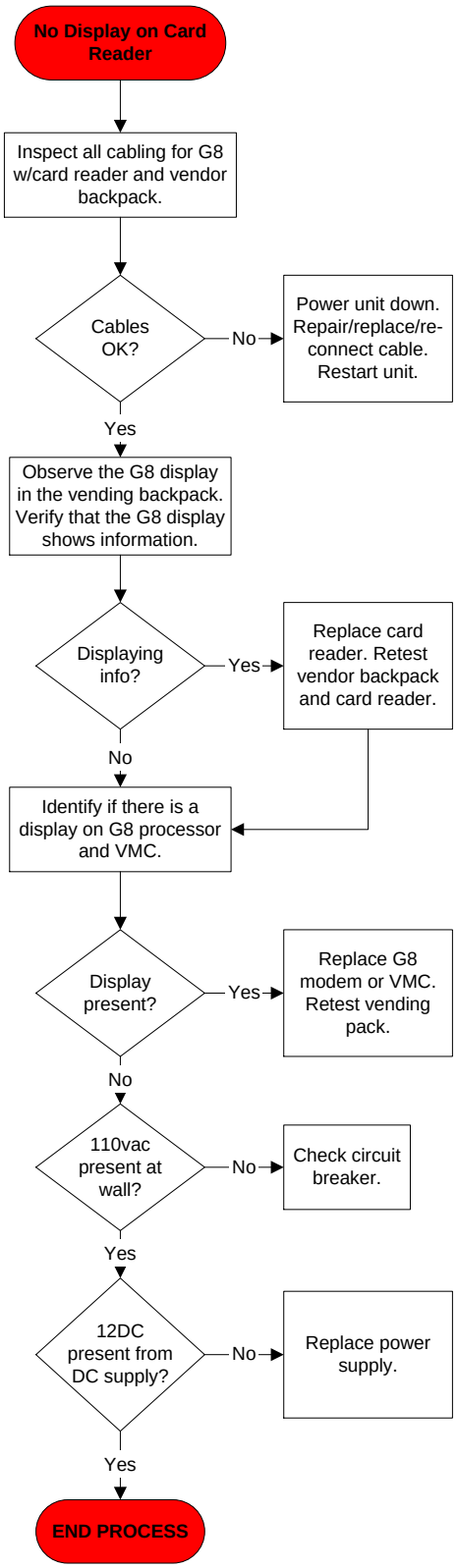
Electrical System – NOT CONFIGURED



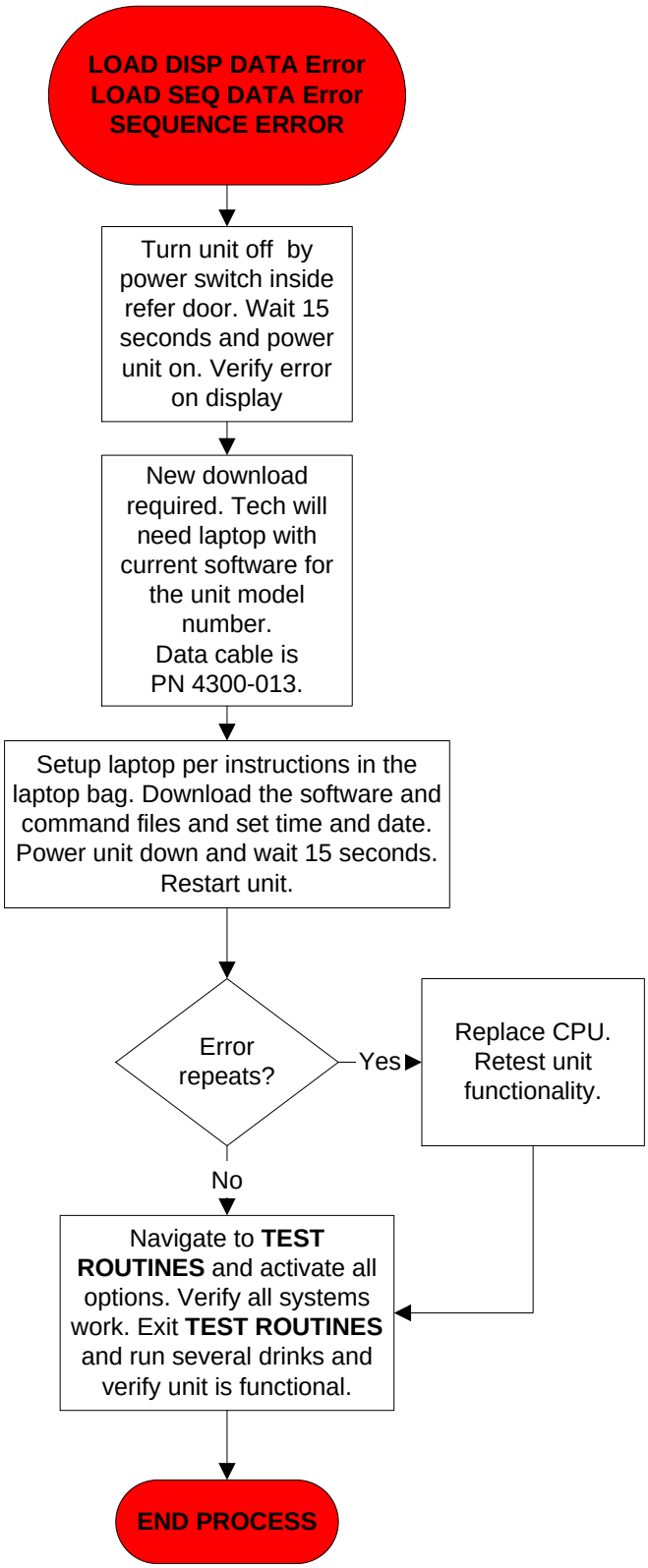
Electrical System – Card Swipe or Tap Not Authorized



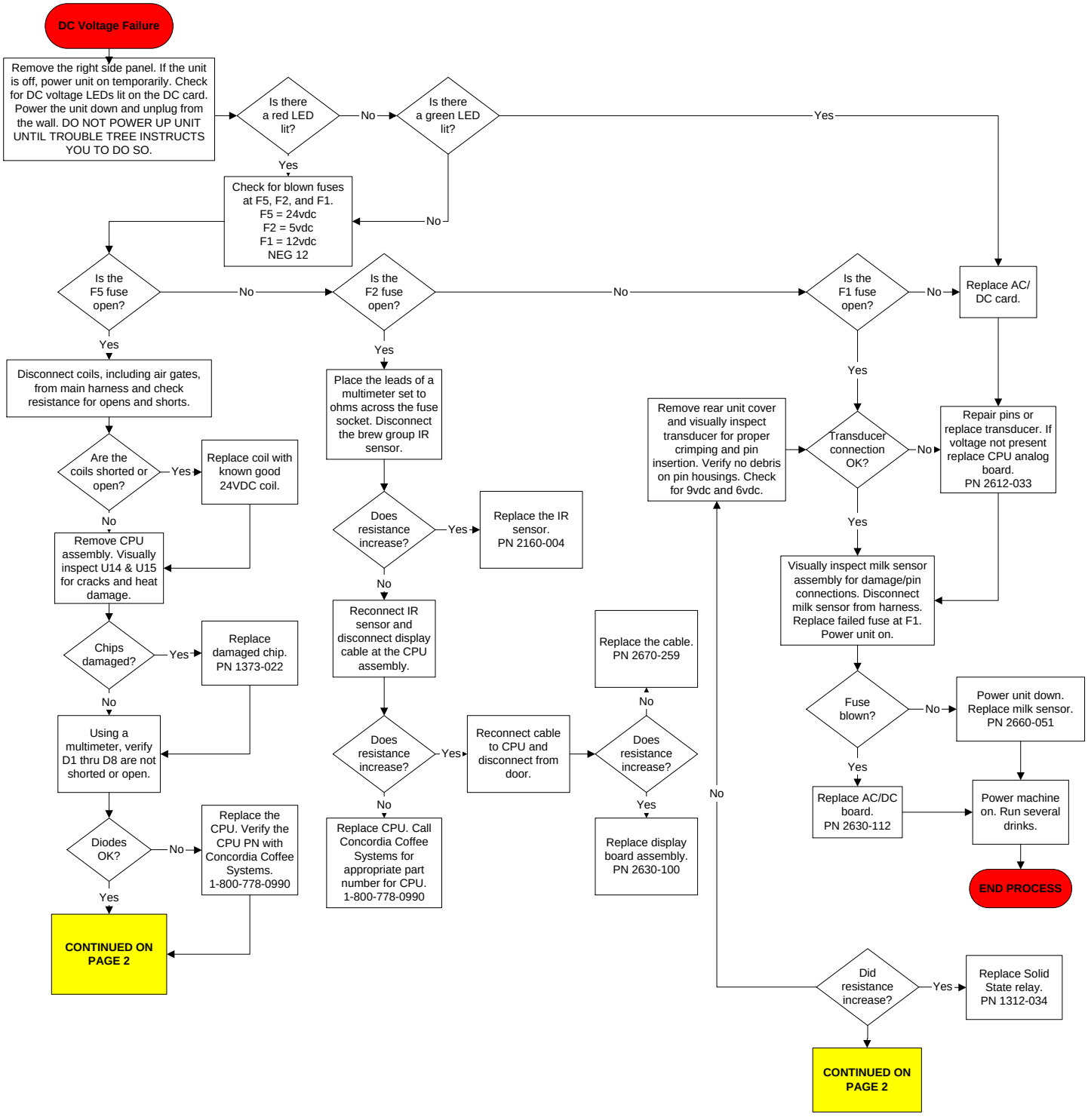
Electrical System – No Display on Card Reader



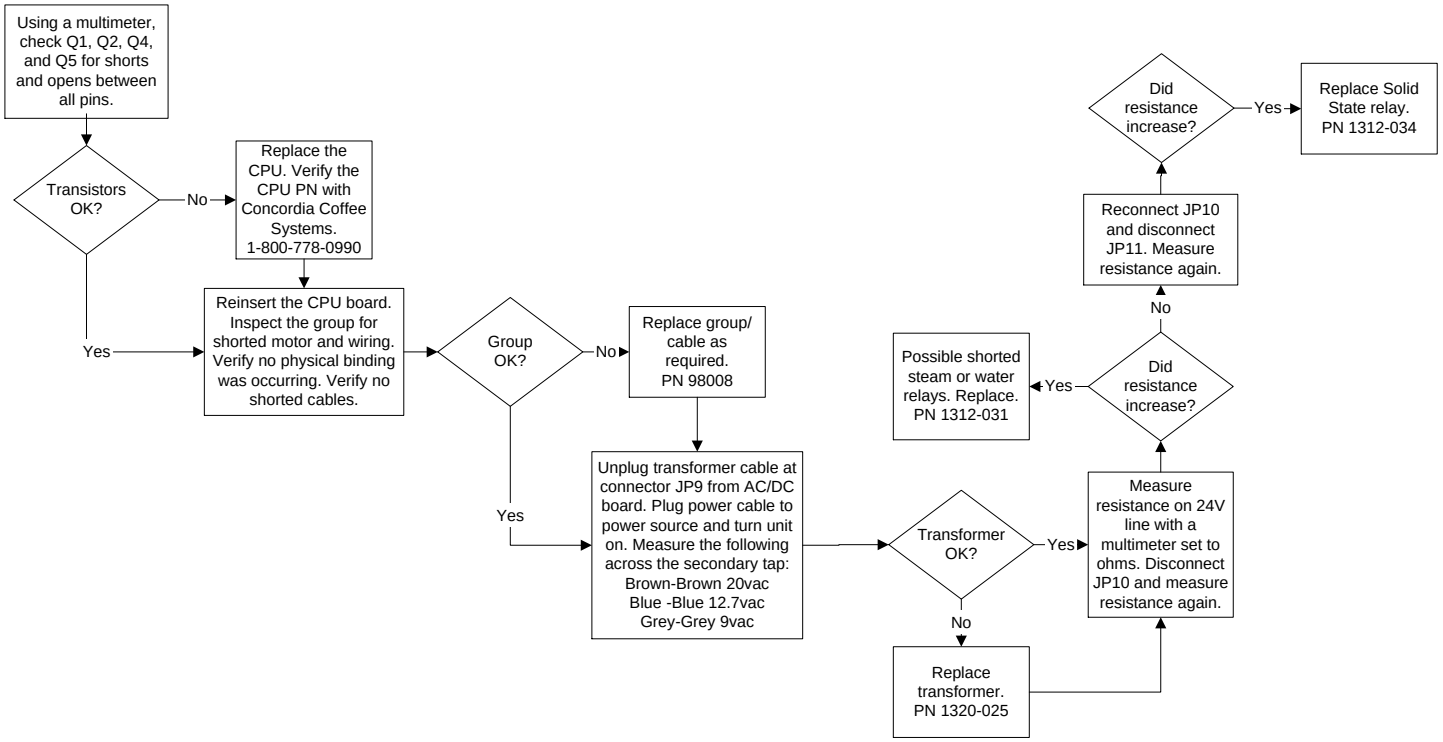
Electrical System – LOAD DISP DATA and LOAD SEQ DATA



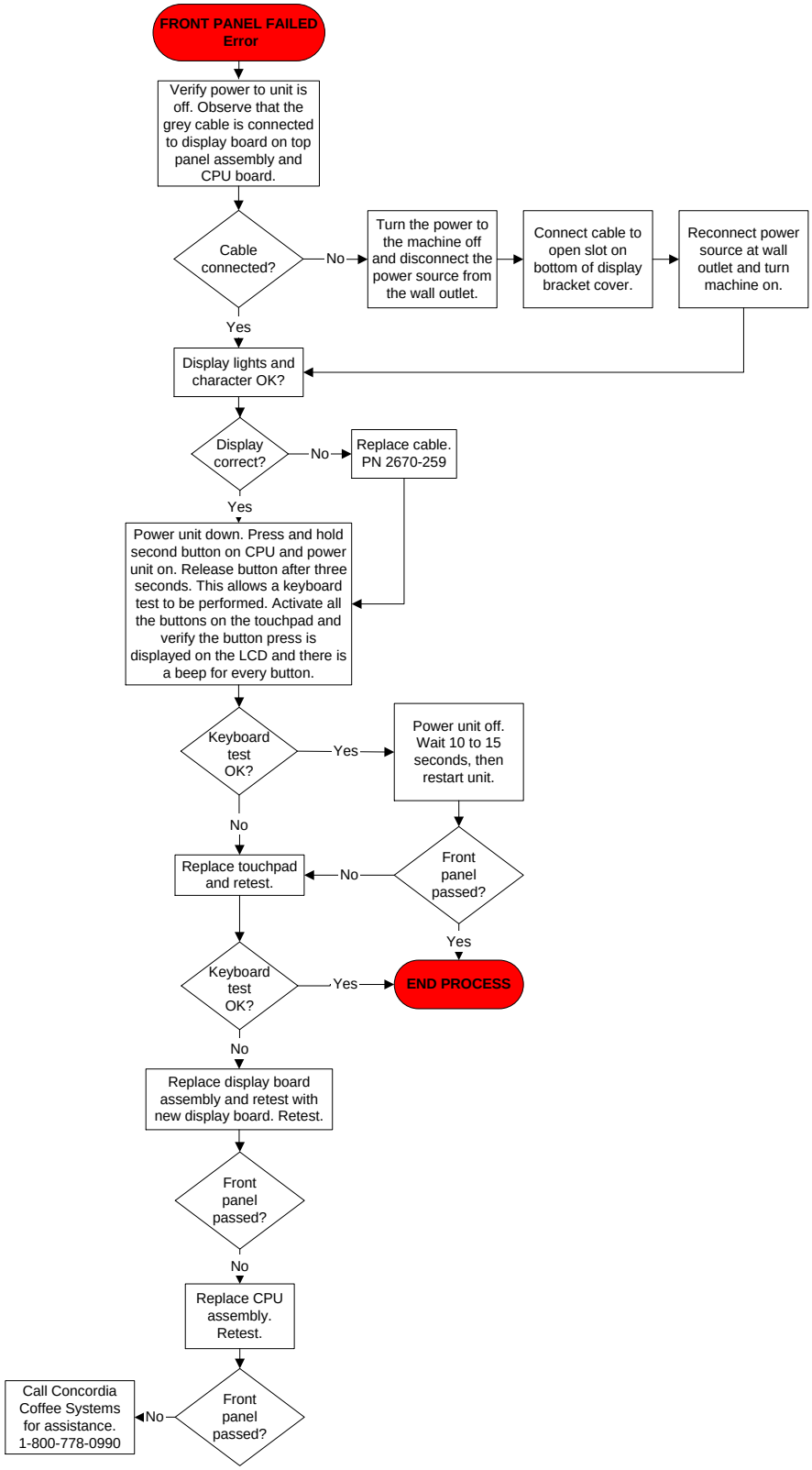
Electrical System – DC Board Failures – PAGE 1



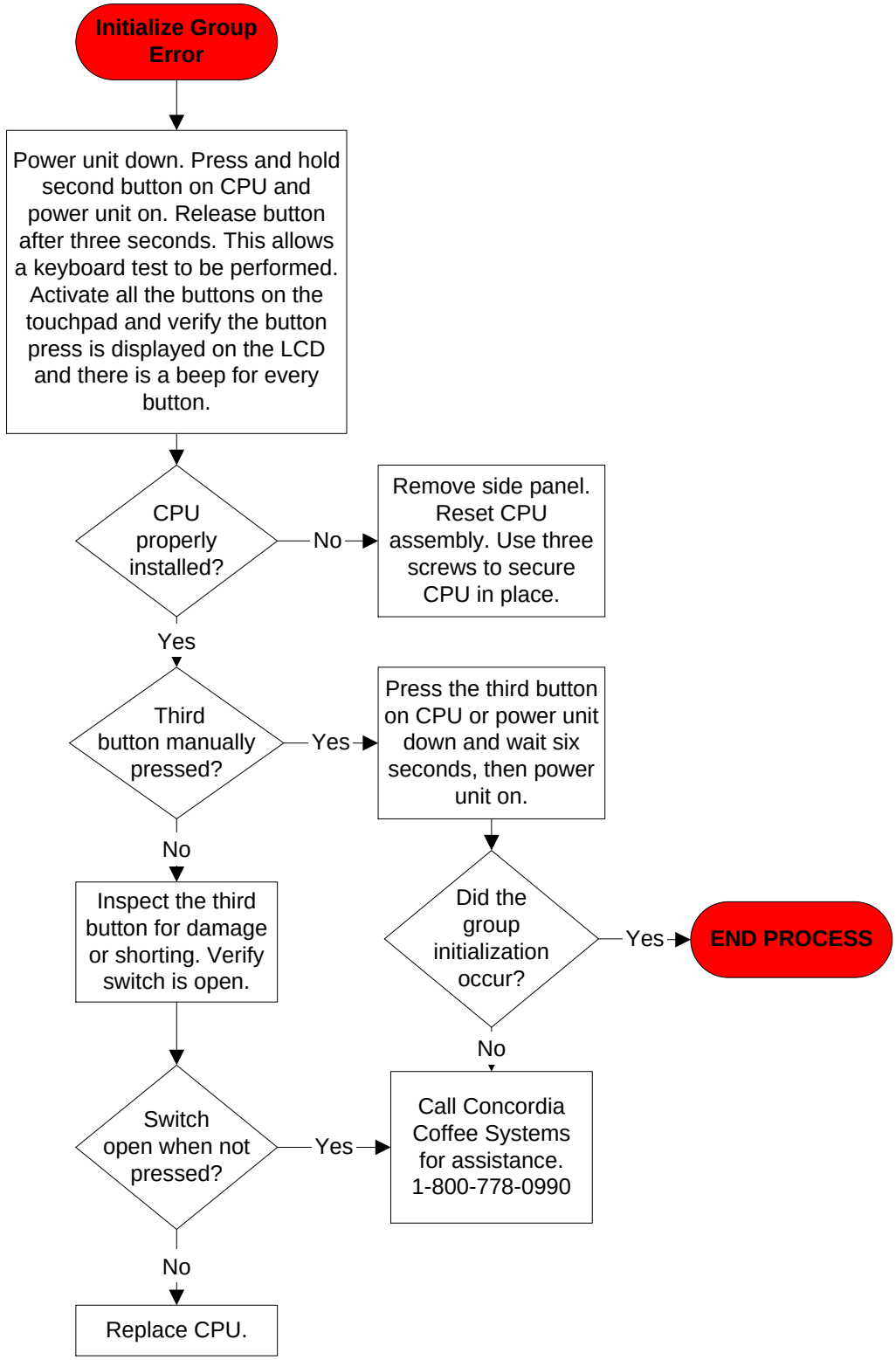
Electrical System – DC Board Failures – PAGE 2



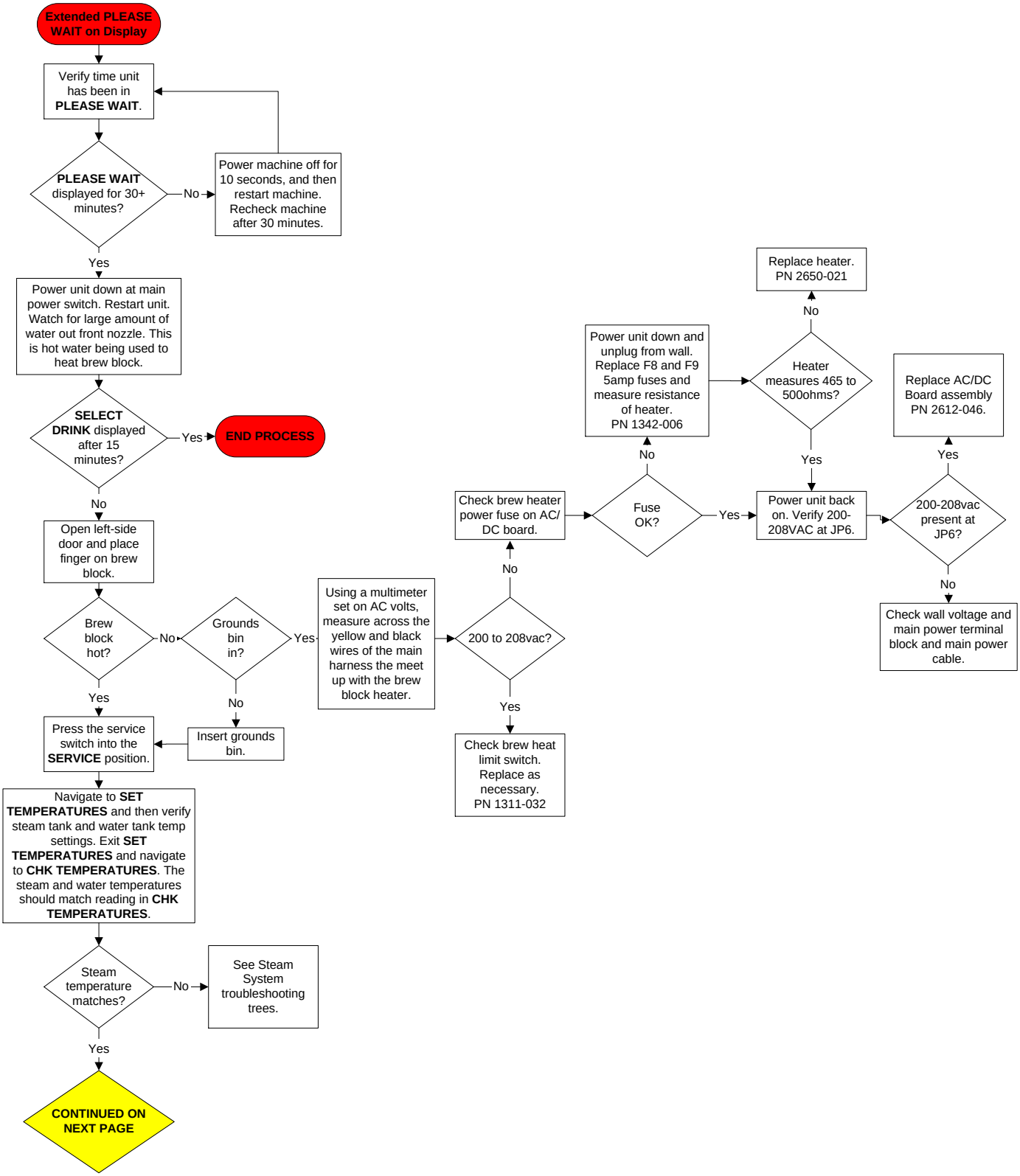
Electrical System – FRONT PANEL FAILED



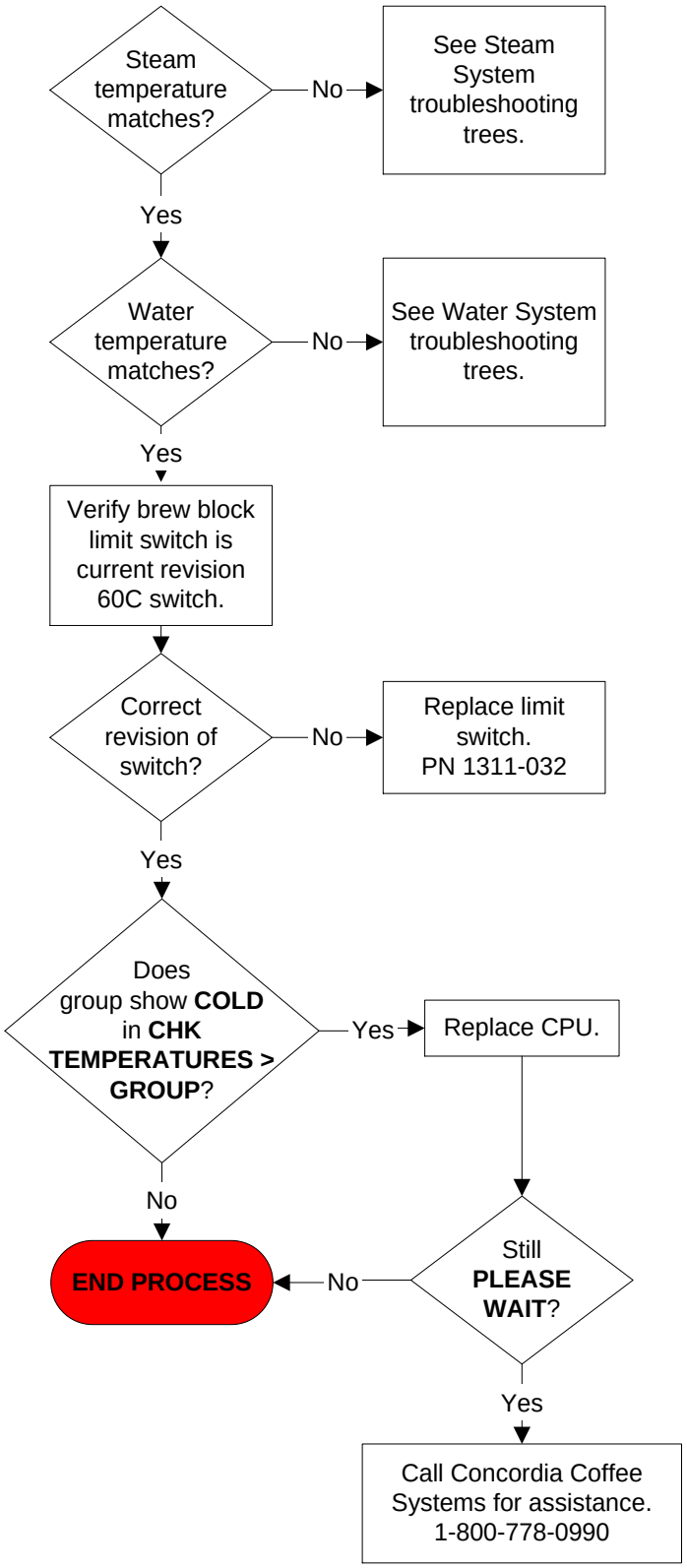
Coffee System – Initialize Group



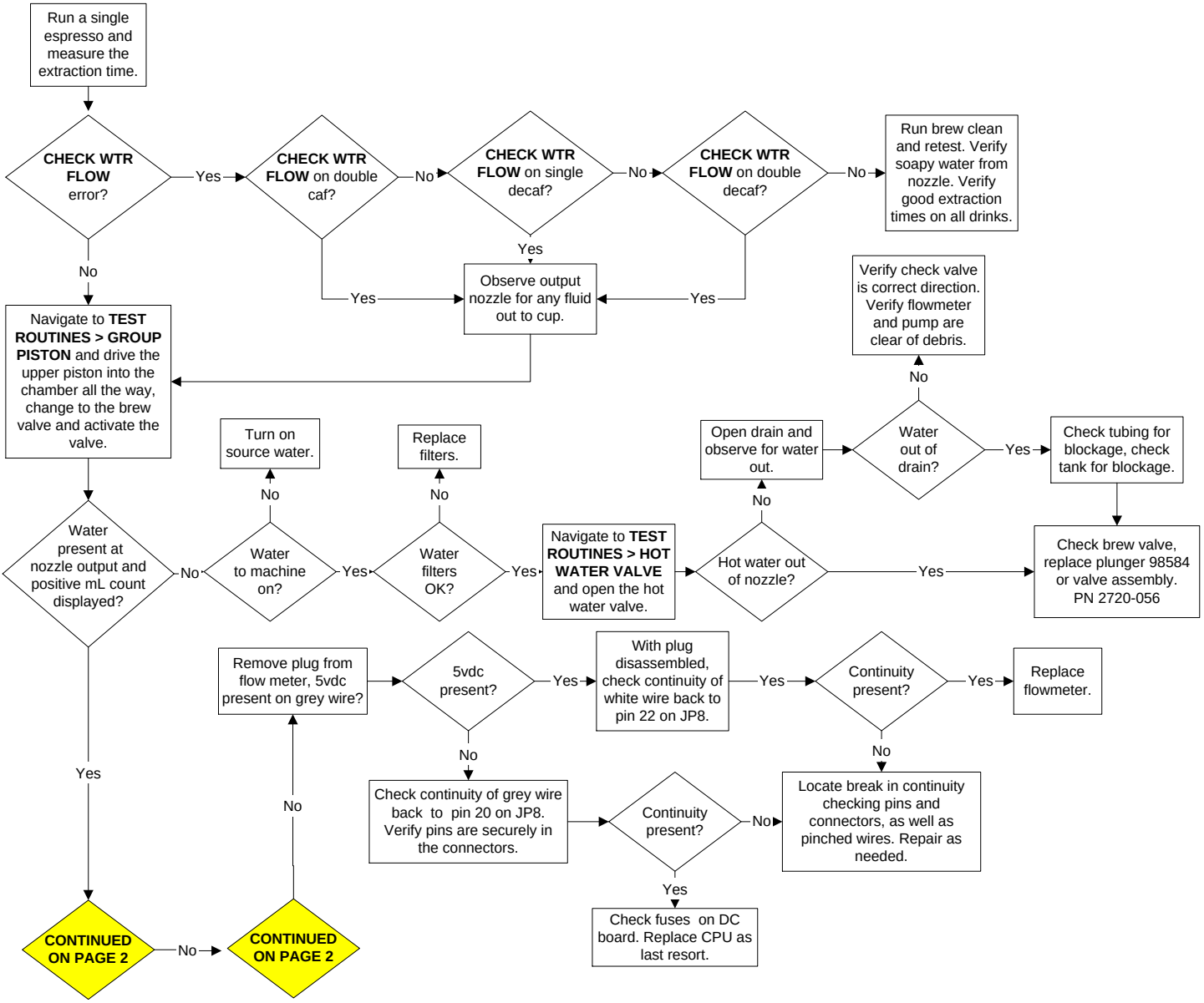
Coffee System – Extended PLEASE WAIT Message – PAGE 1



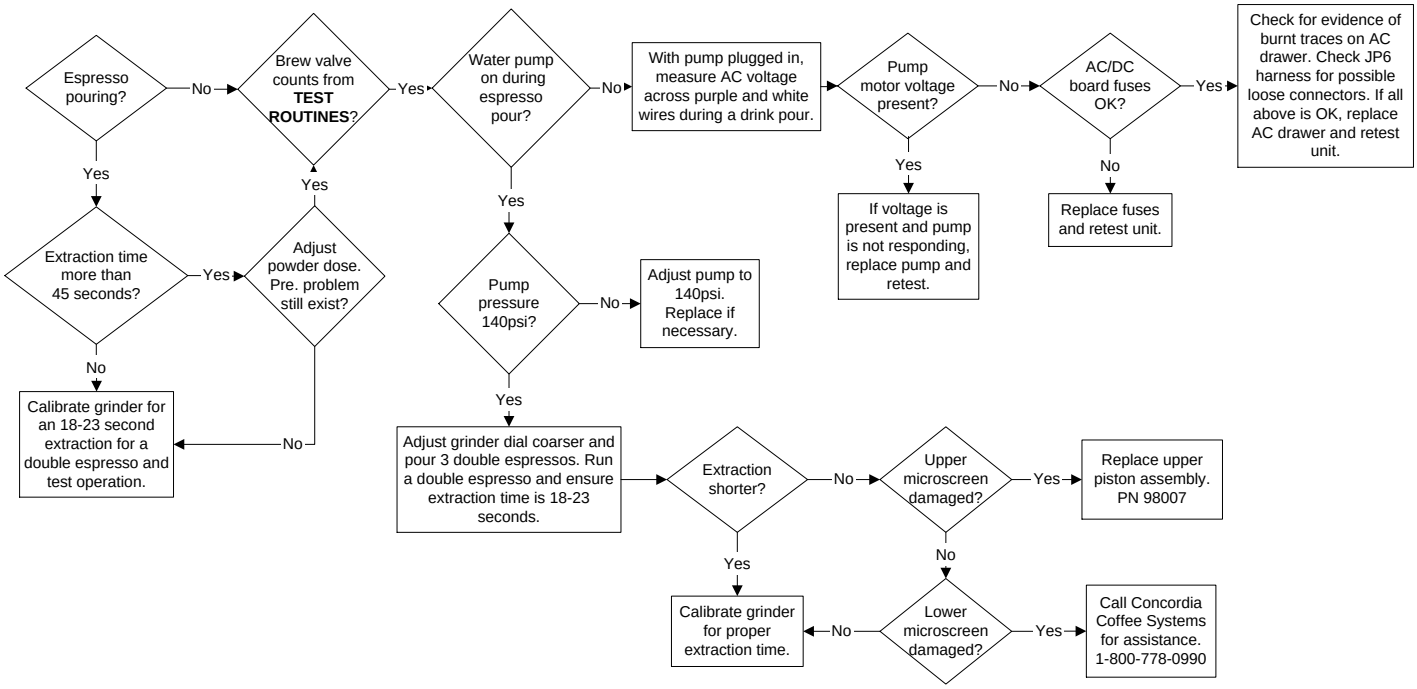
Coffee System – Extended PLEASE WAIT Message – PAGE 2



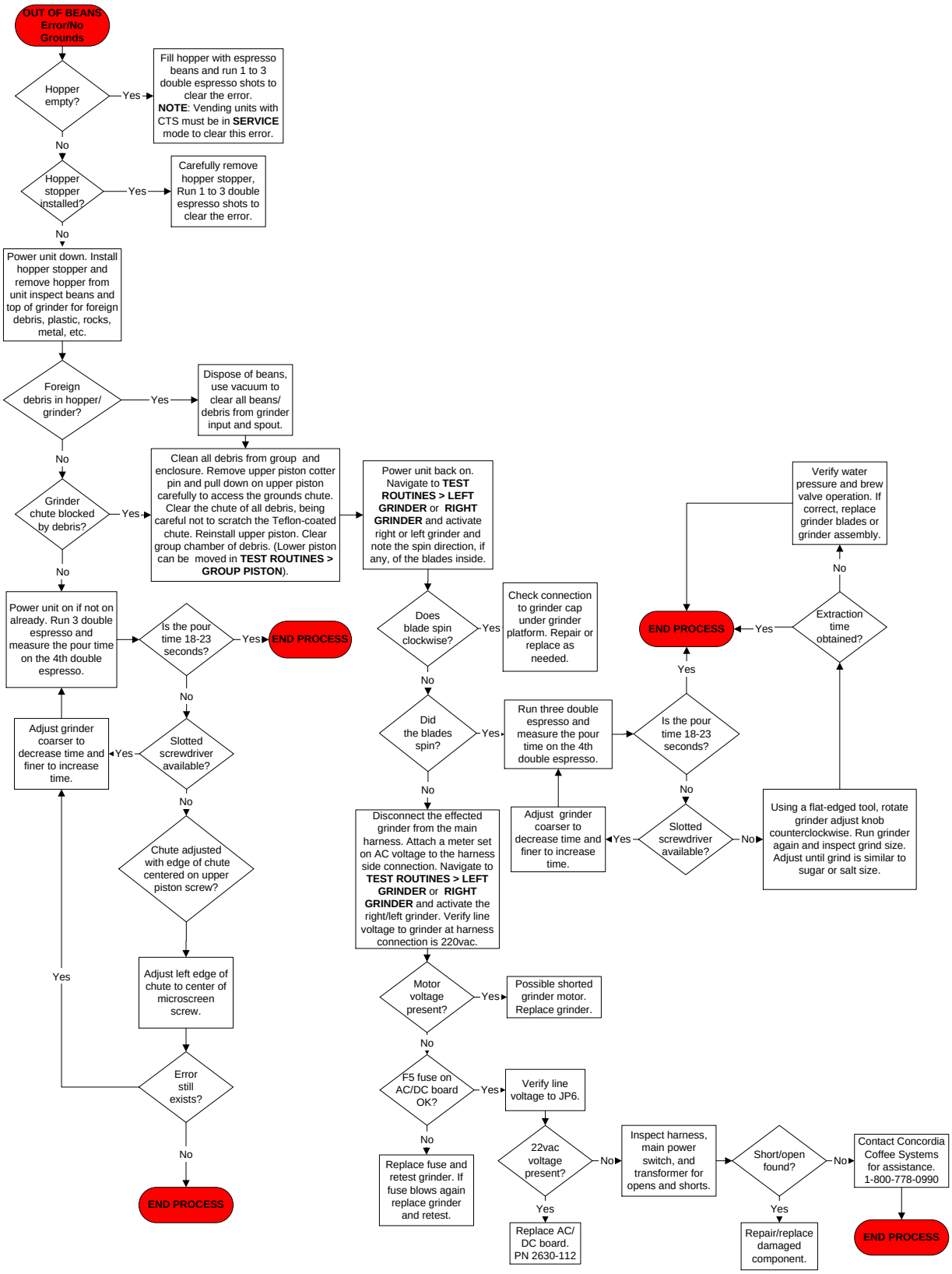
Coffee System – CHECK WTR FLOW – PAGE 1



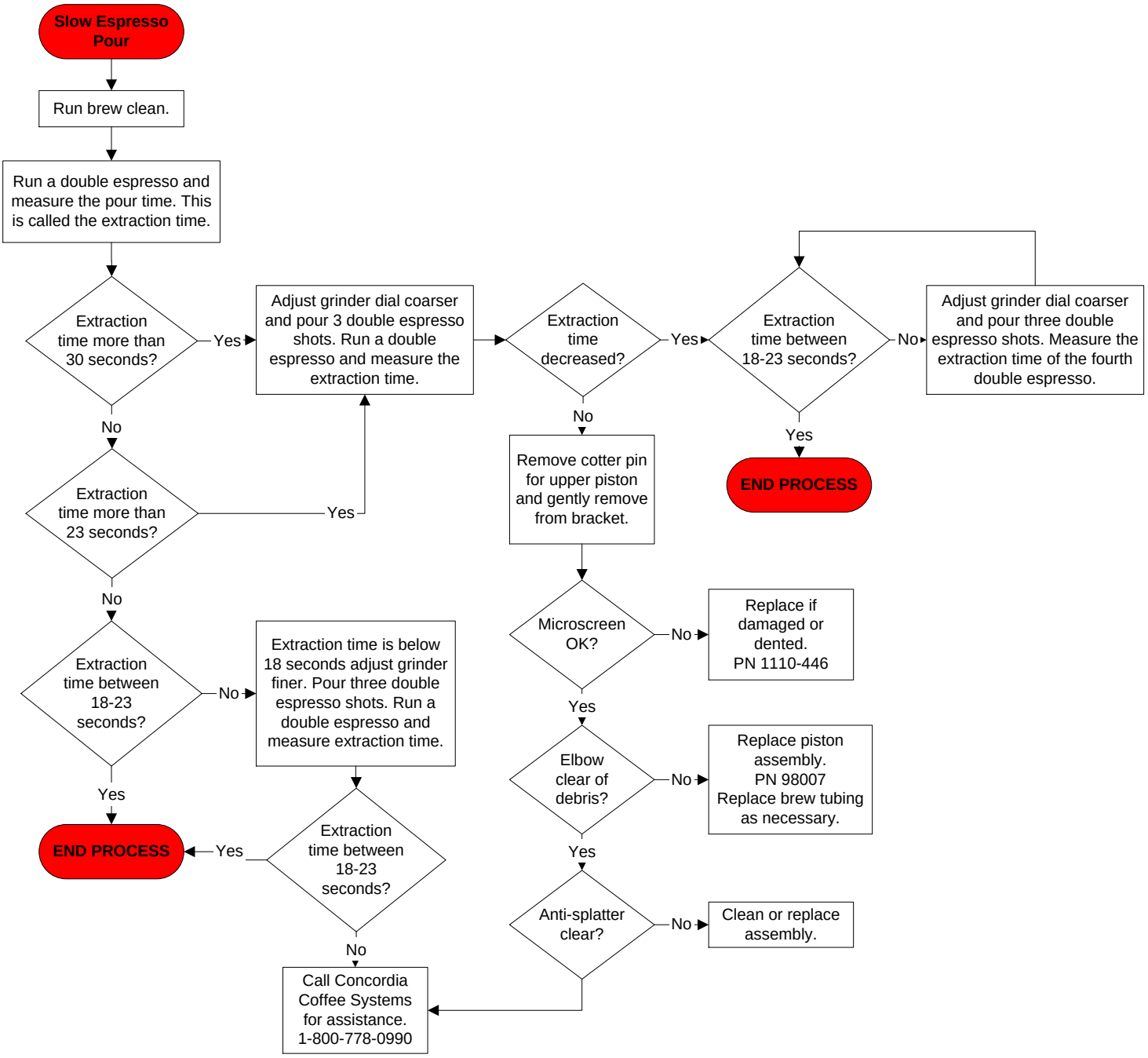
Coffee System – CHECK WTR FLOW PAGE 2



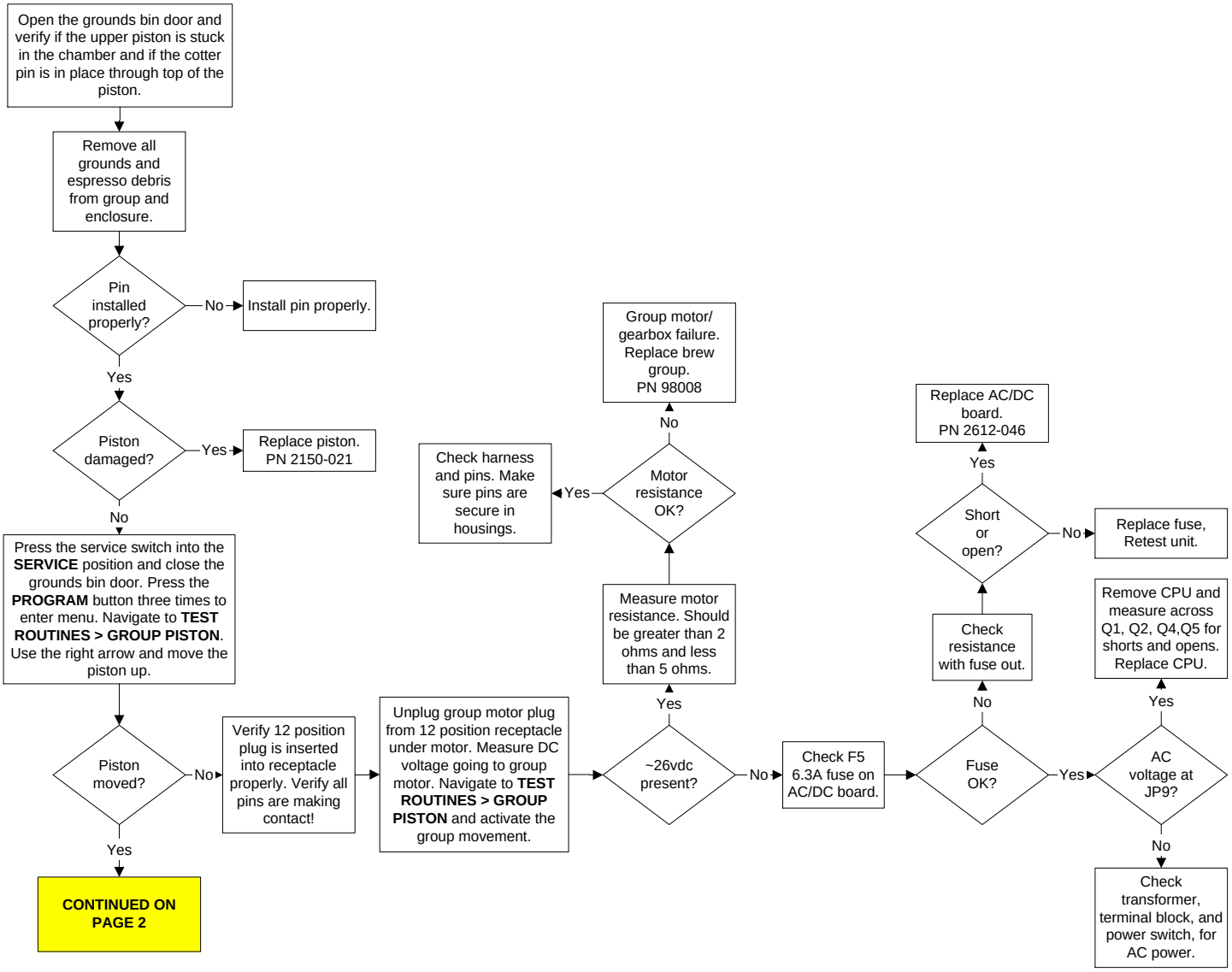
Coffee System – OUT OF BEANS / NO GROUNDS



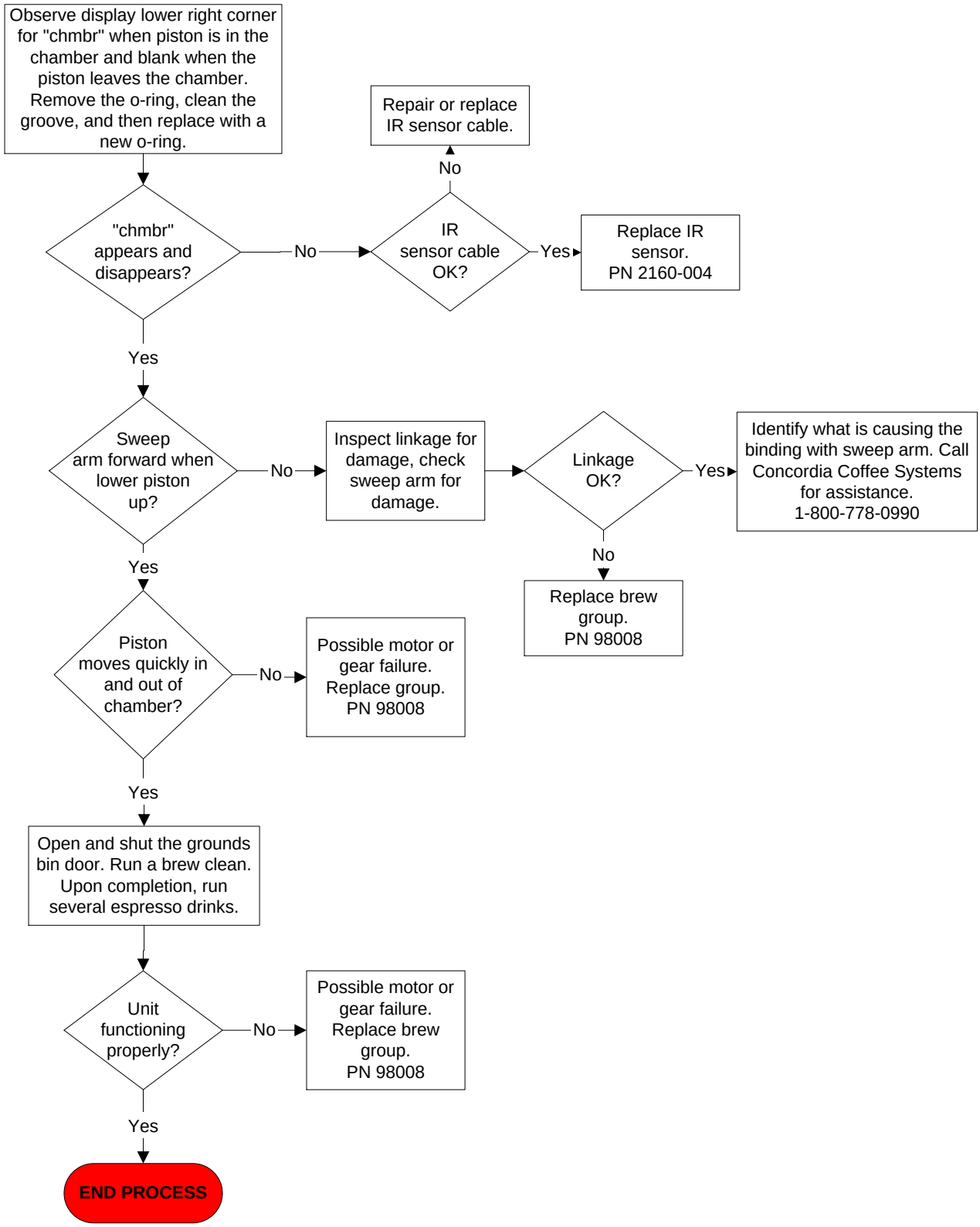
Coffee System – Slow Espresso Pour



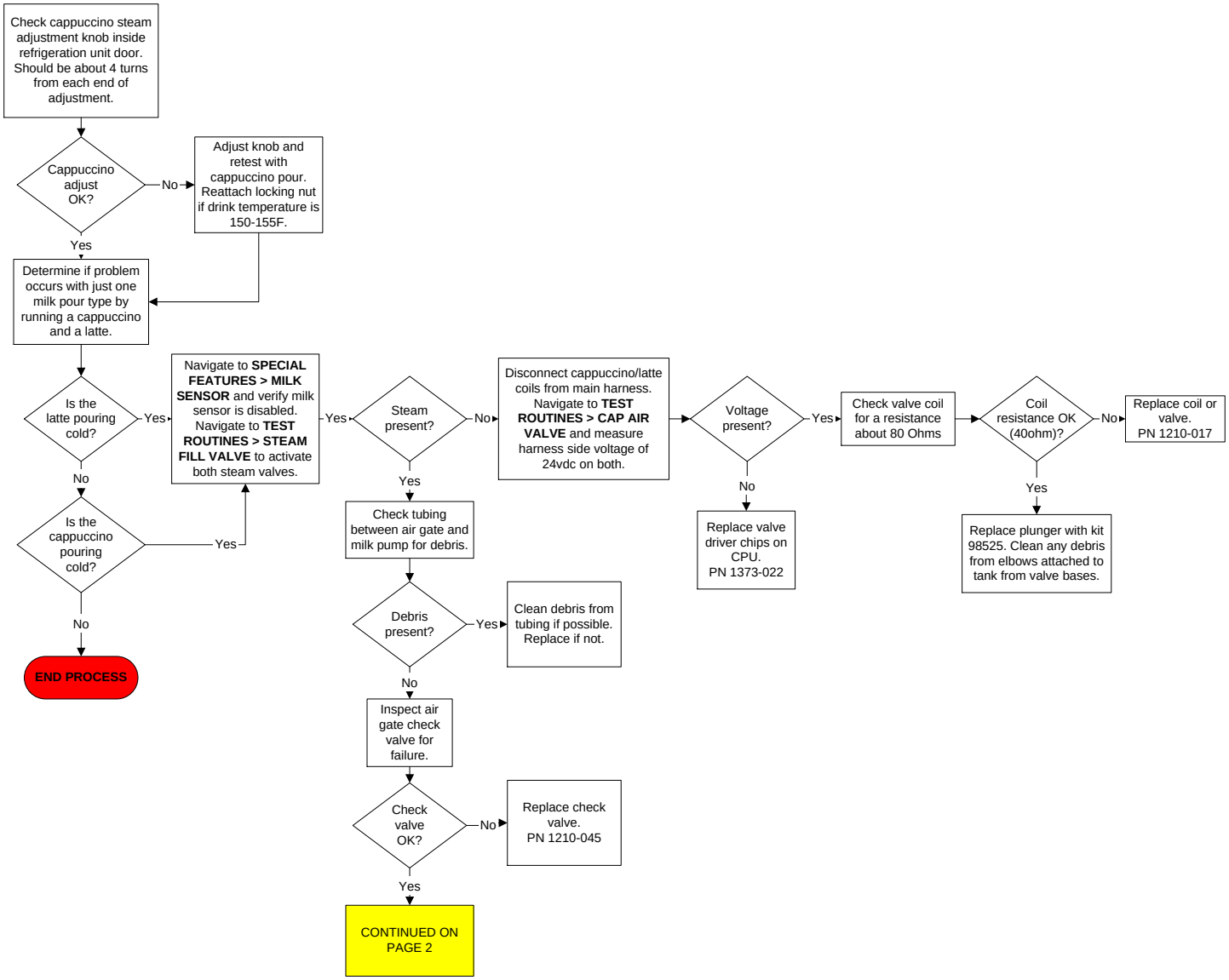
Coffee System – Upper Piston Stuck in Up/Chamber Position – PAGE 1



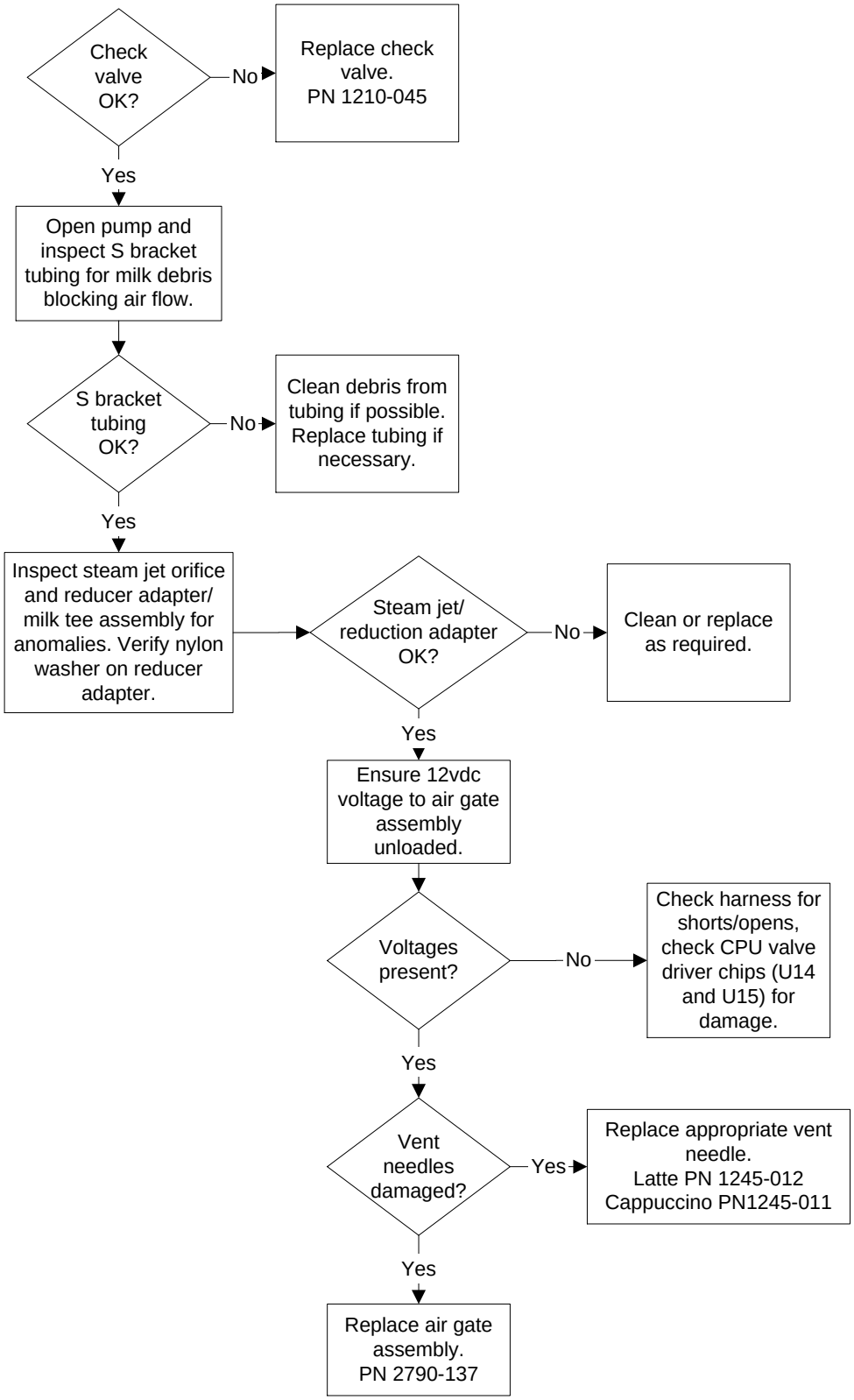
Coffee System – Upper Piston Stuck in Up/Chamber Position – PAGE 2



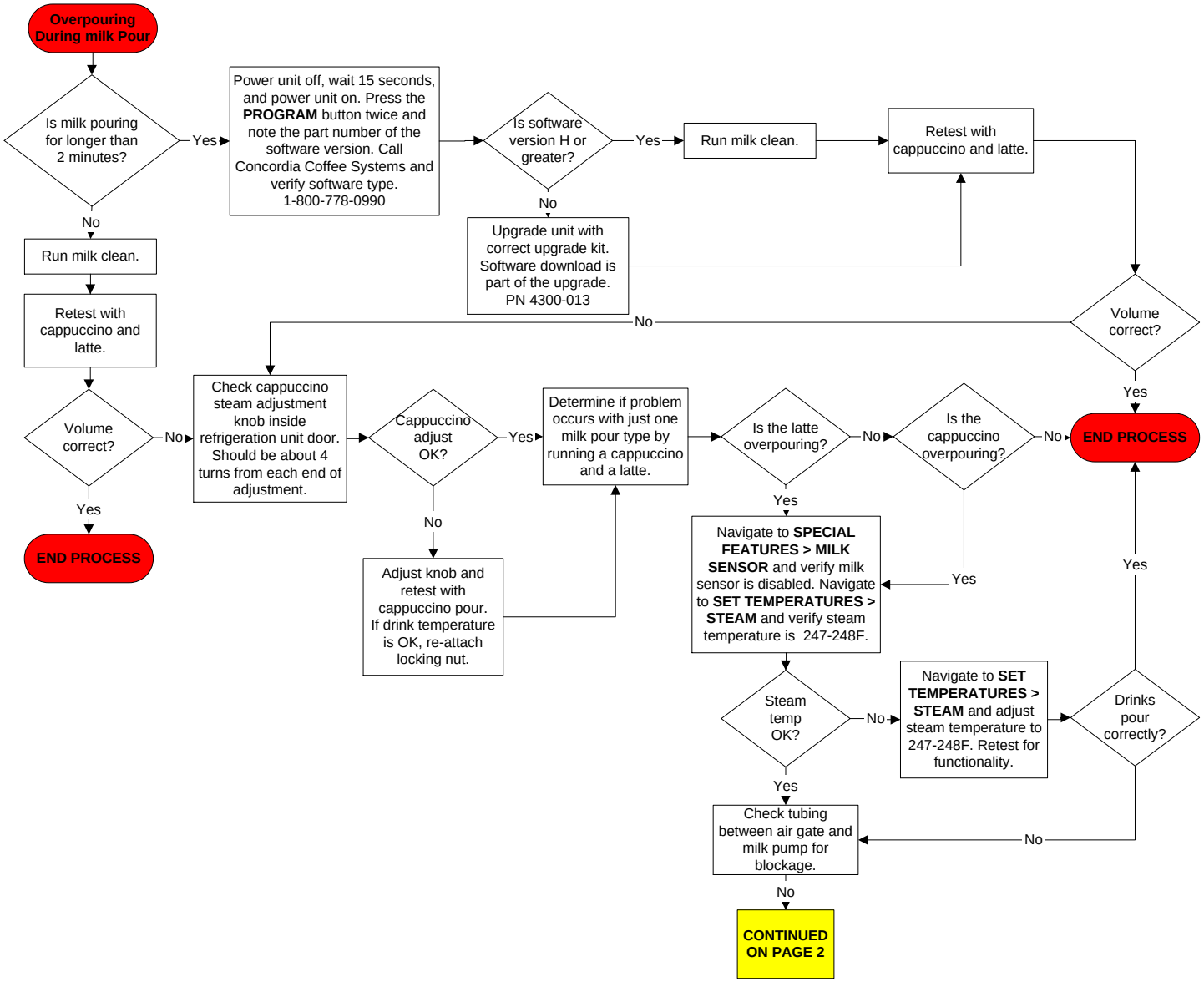
Milk System – Cold Milk Pour – PAGE 1



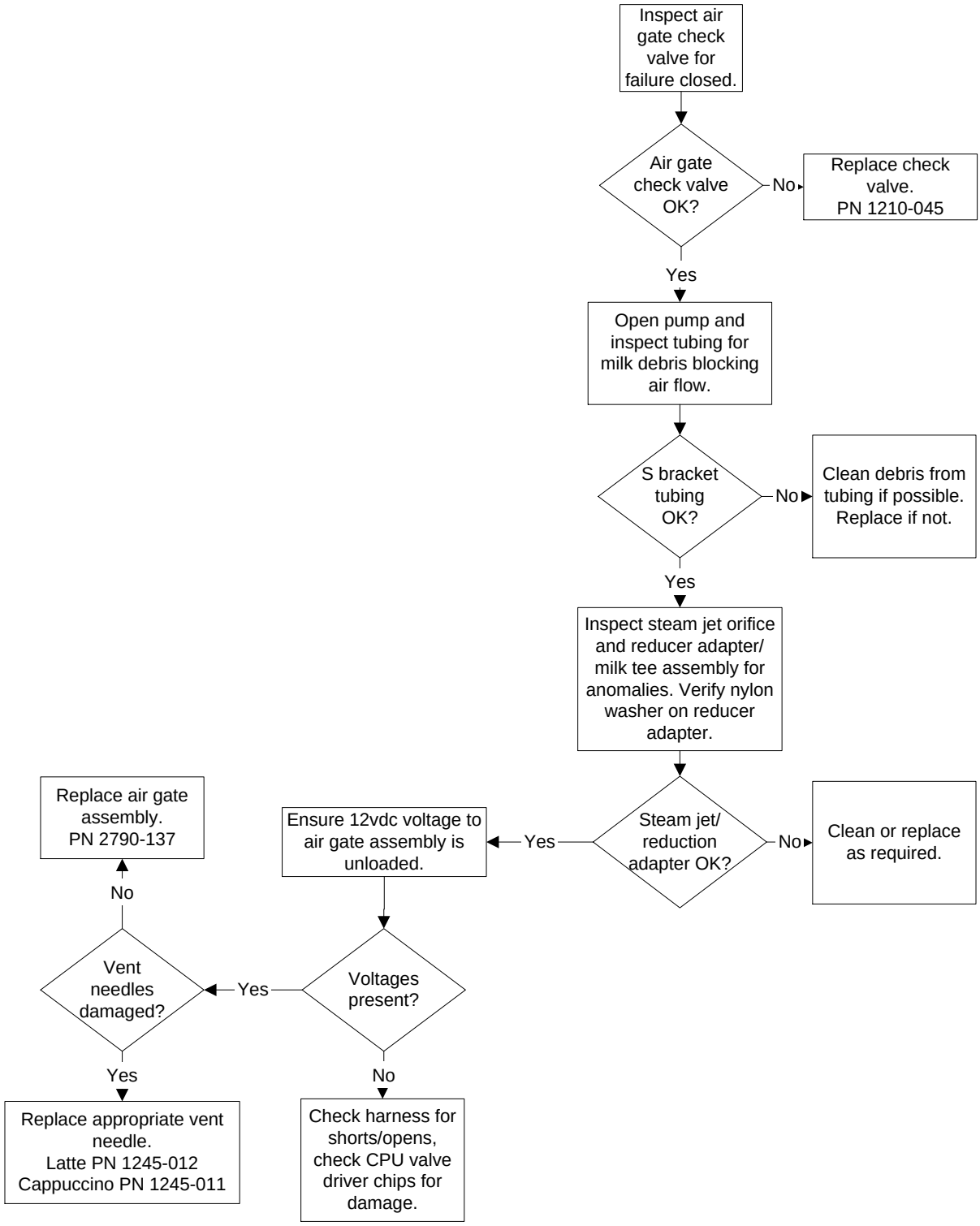
Milk System – Cold Milk Pour – PAGE 2



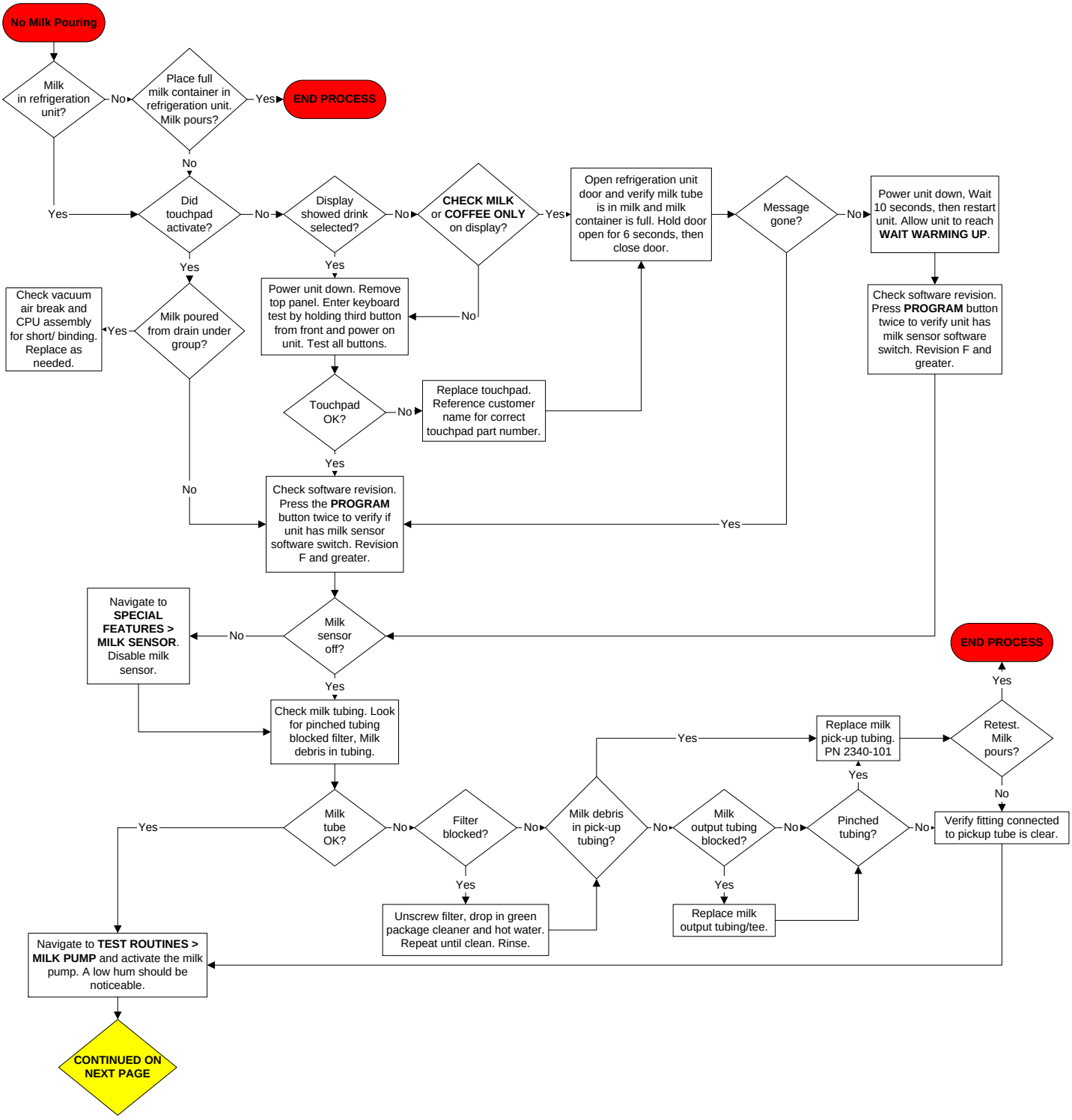
Milk System – Milk Overpour – PAGE 1



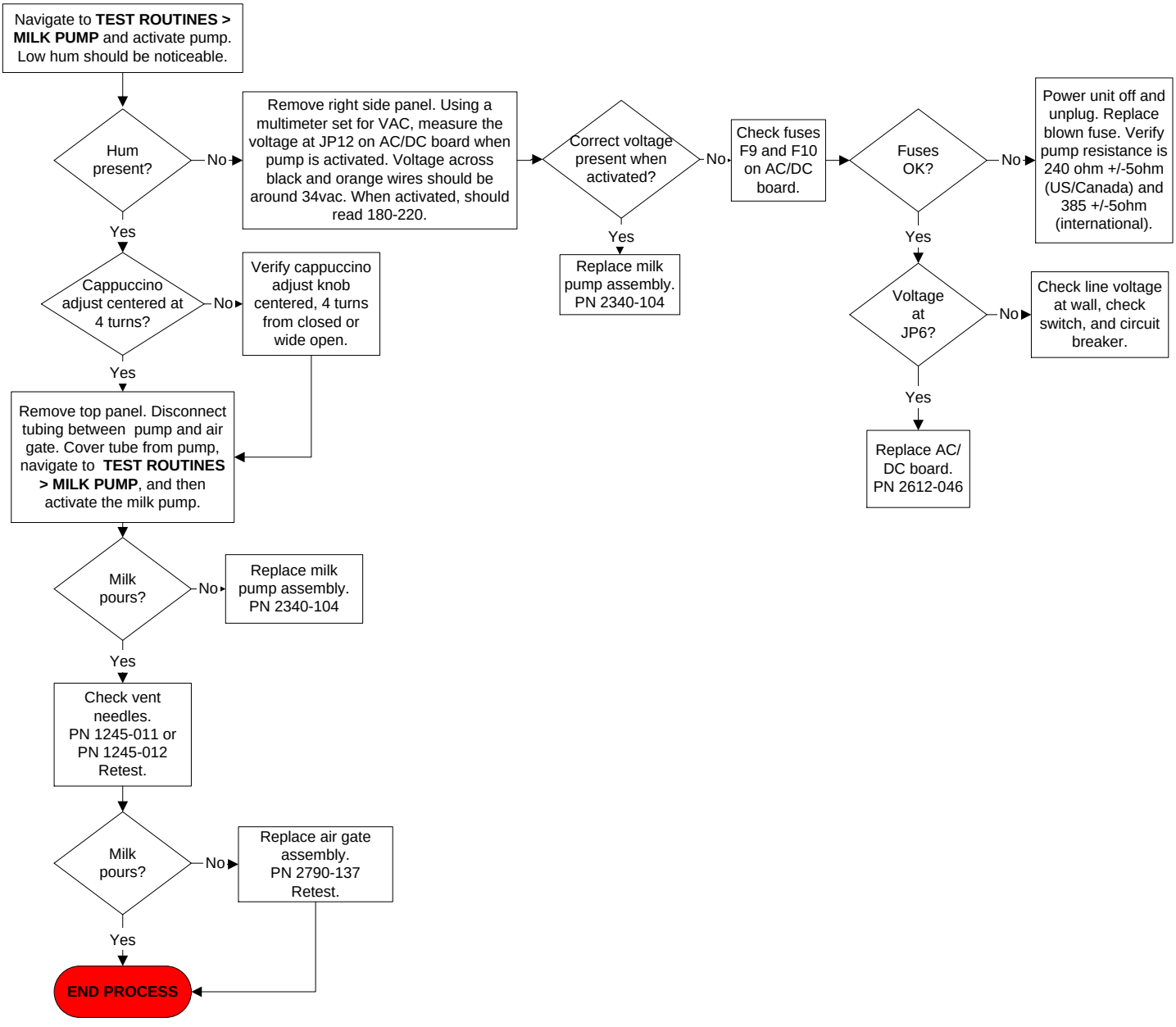
Milk System – Milk Overpour PAGE 2



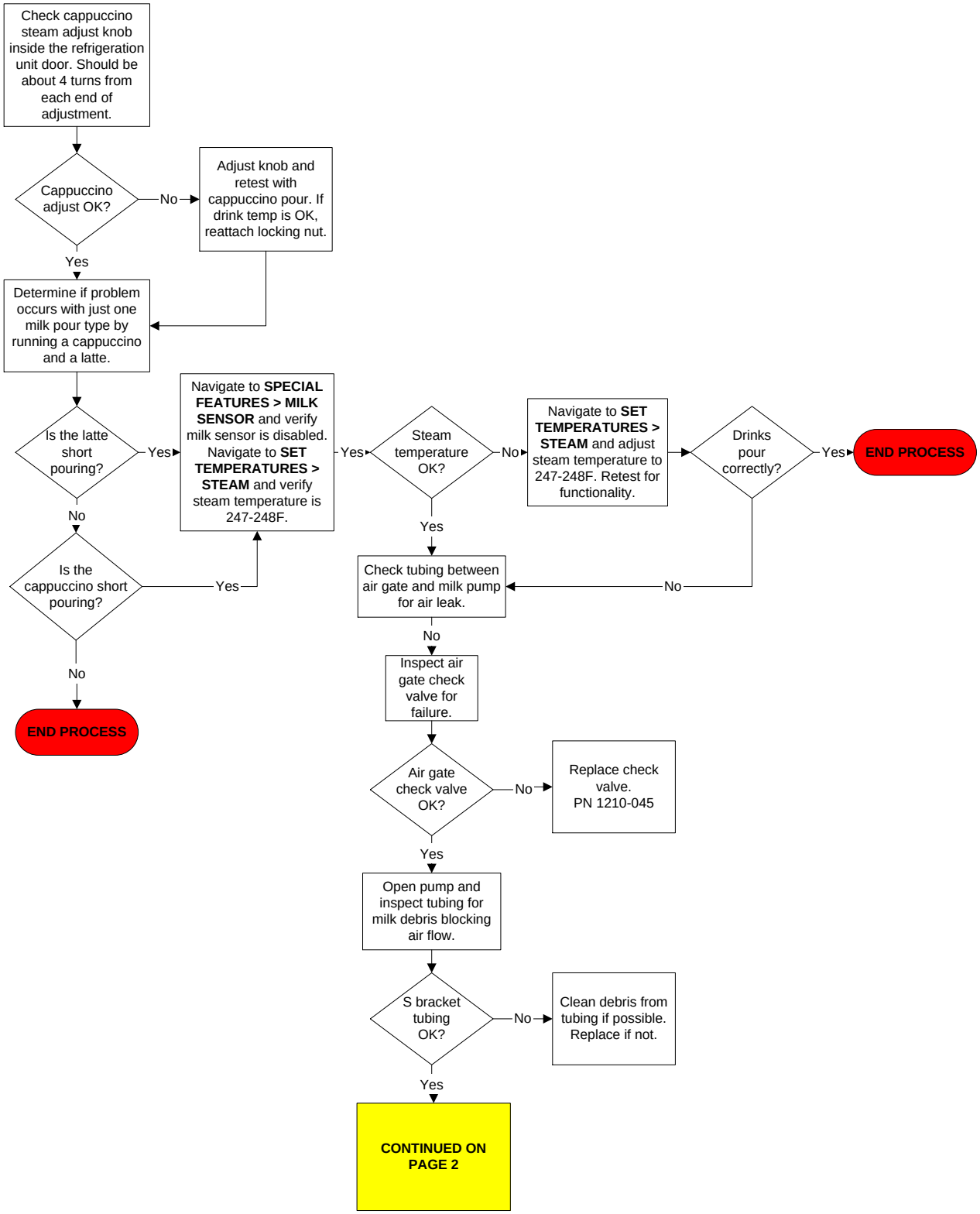
Milk System – No Milk Pour – PAGE 1



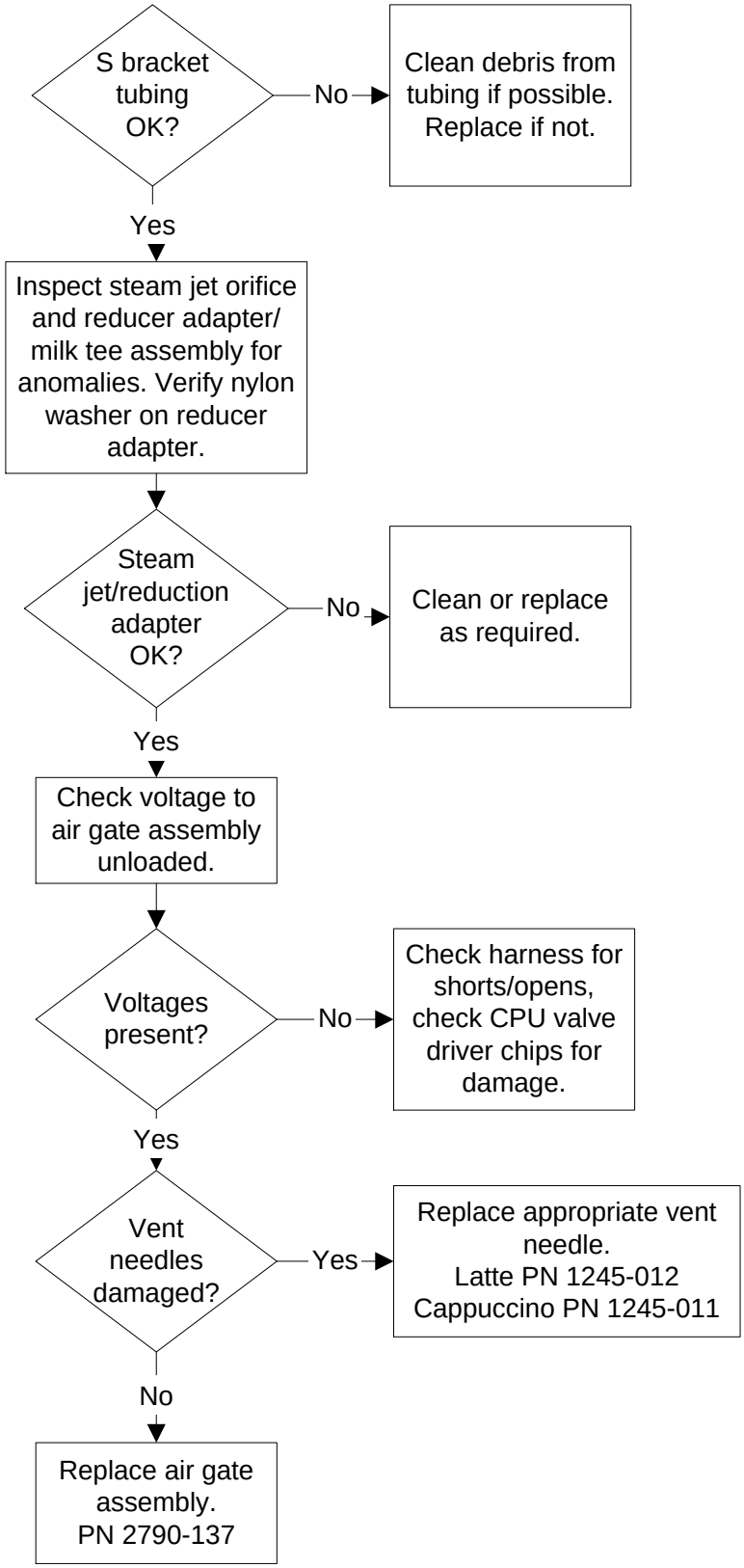
Milk System – No Milk Pour – PAGE 2



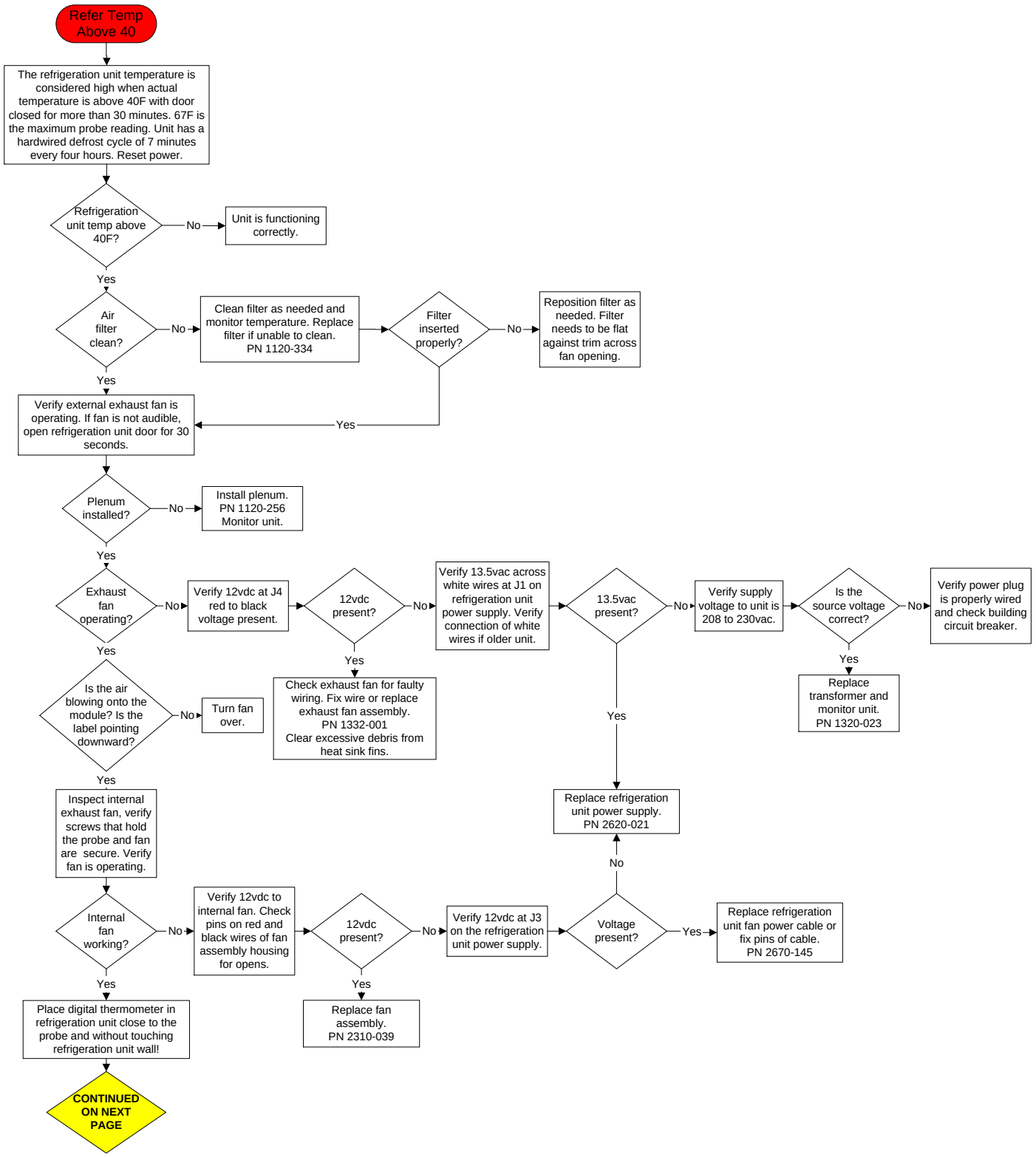
Milk System – Short Pour Milk – PAGE 1



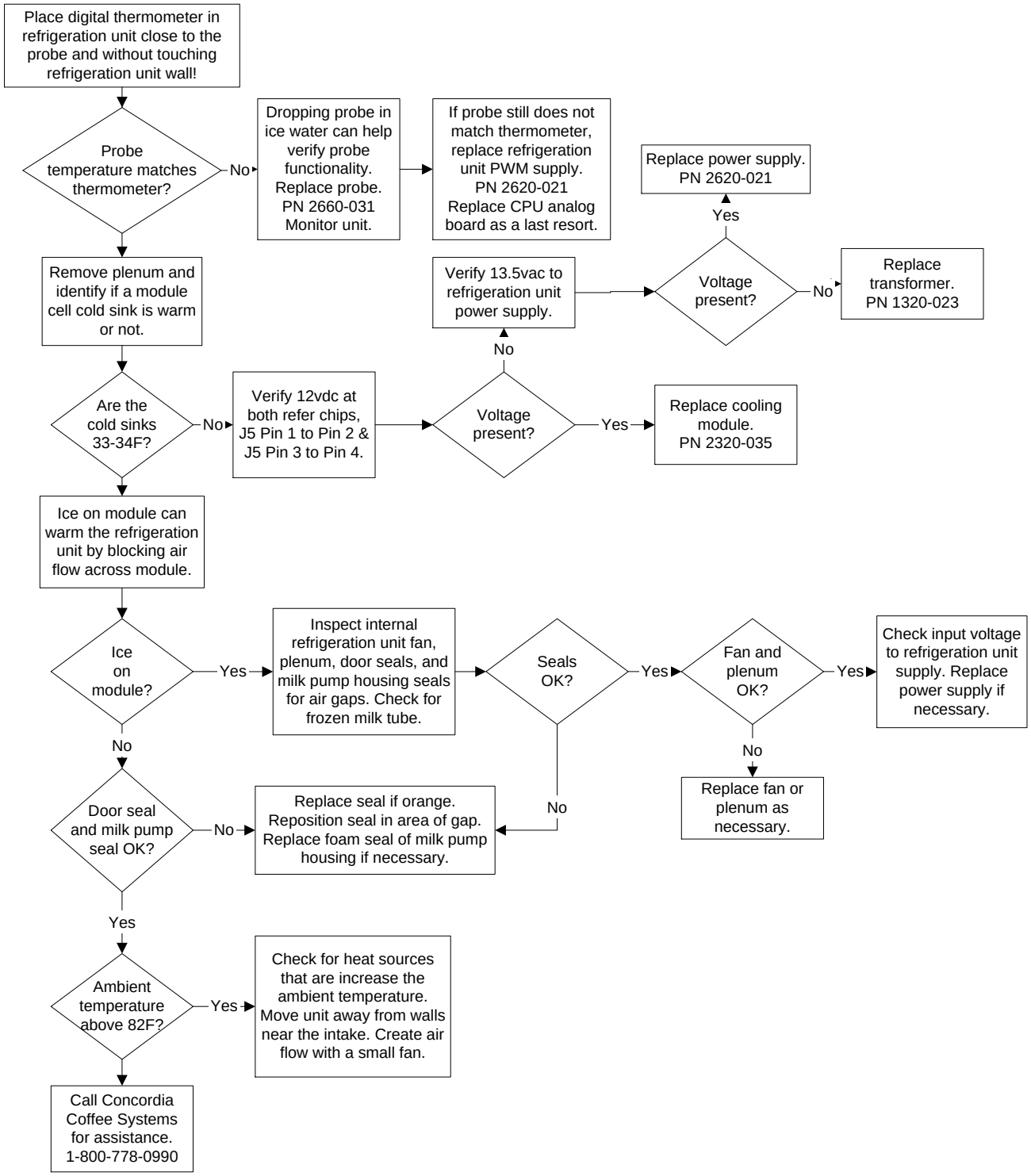
Milk System – Short Pour Milk – PAGE 2



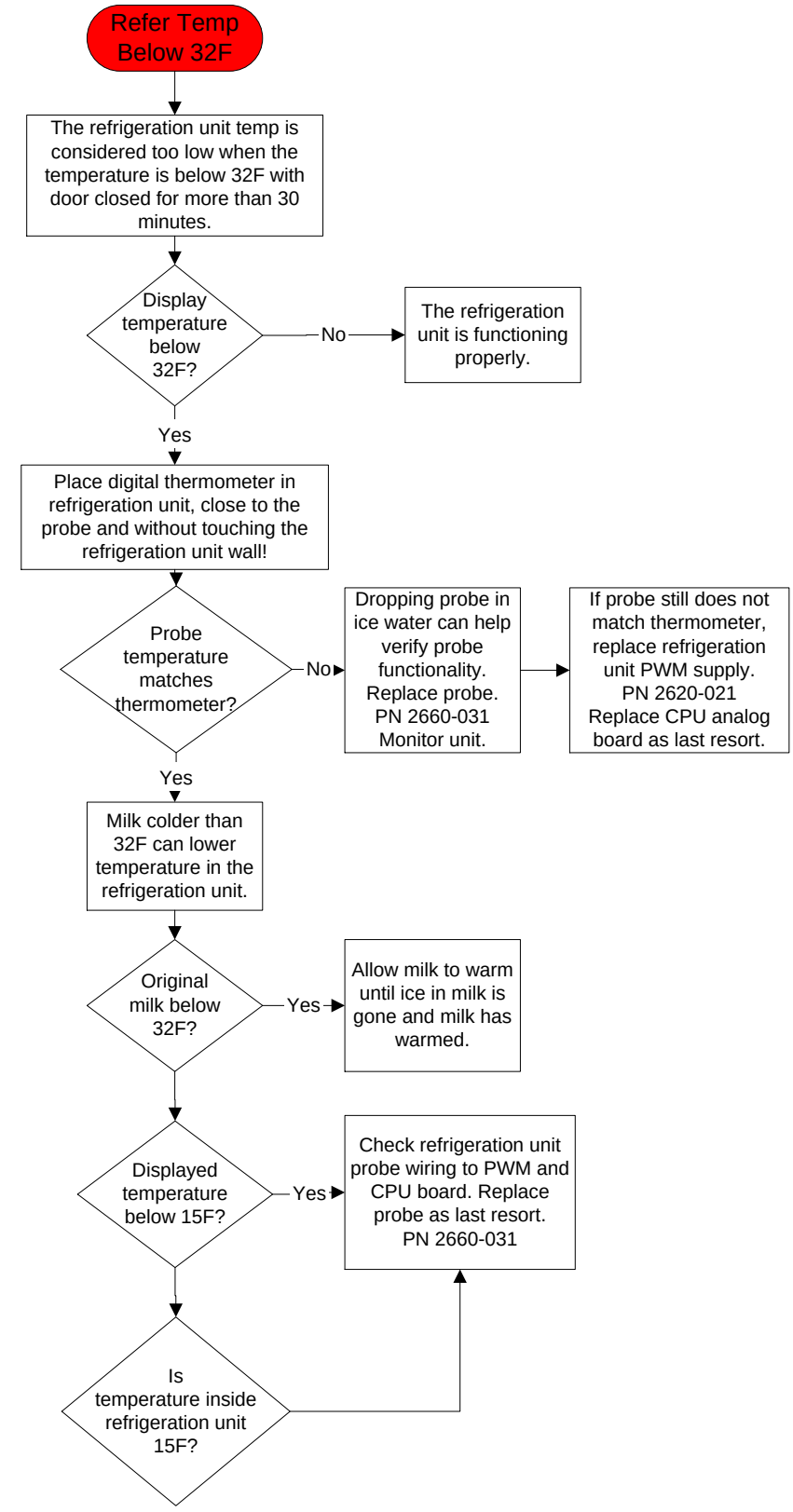
Refrigeration System – REFR TEMP HI – PAGE 1



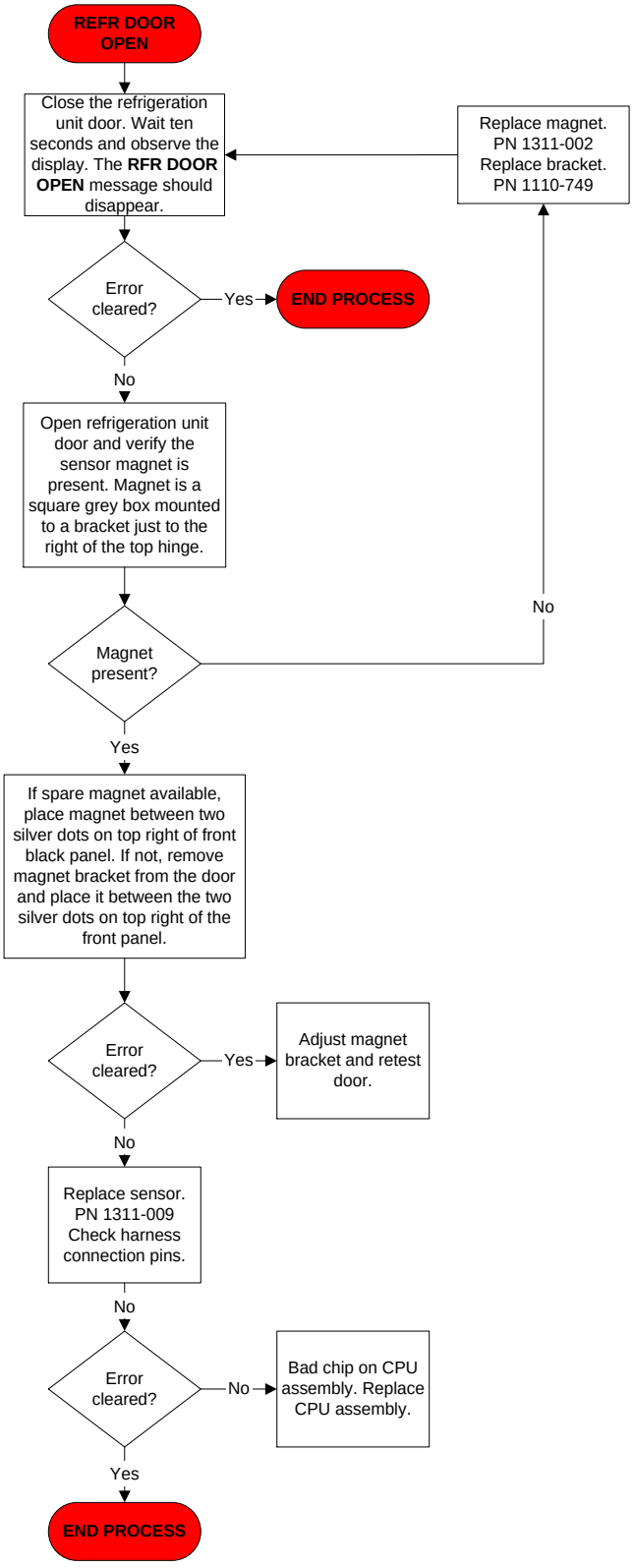
Refrigeration System – REFR TEMP HI – PAGE 2



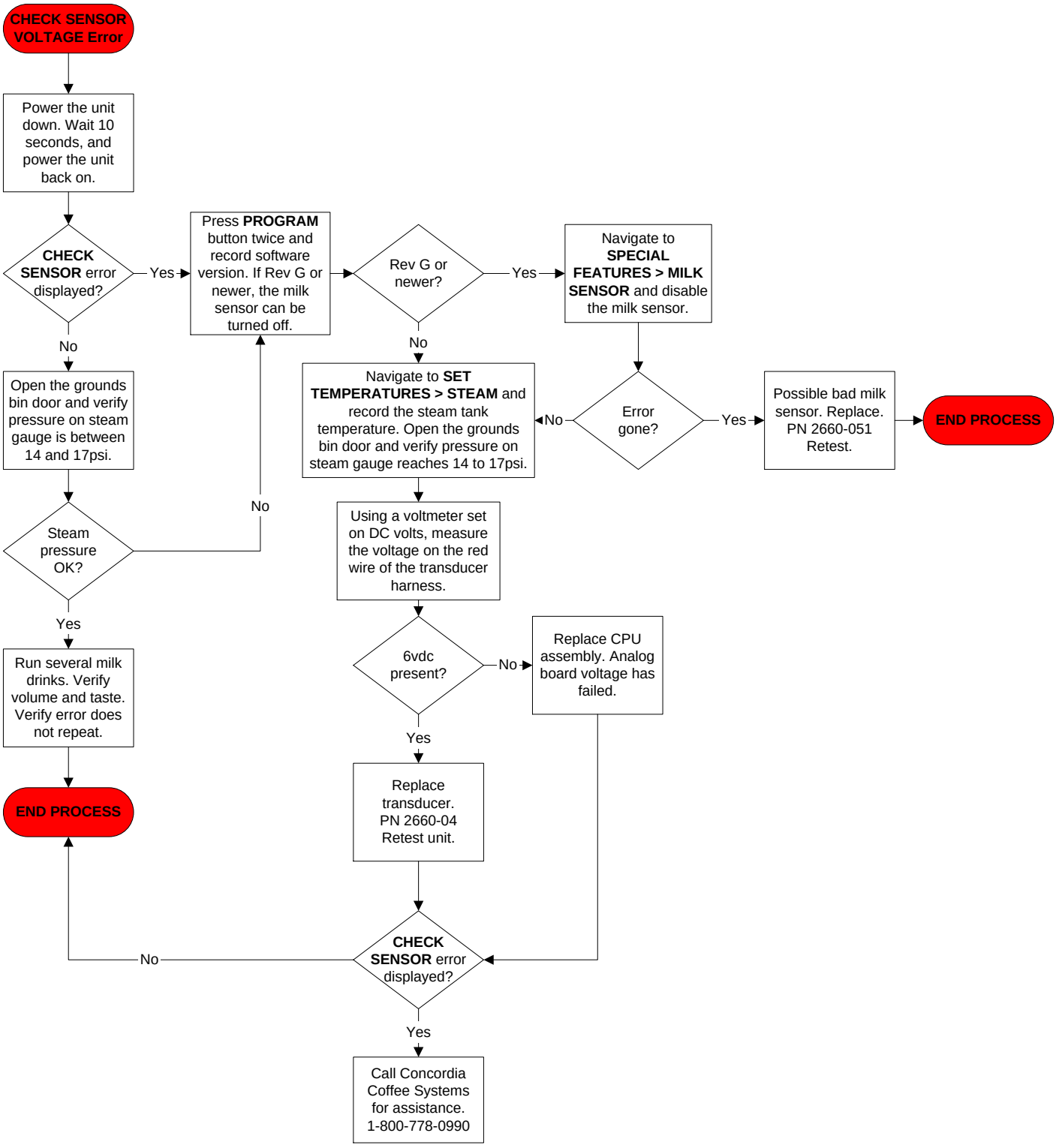
Refrigeration System – REFR TEMP LO



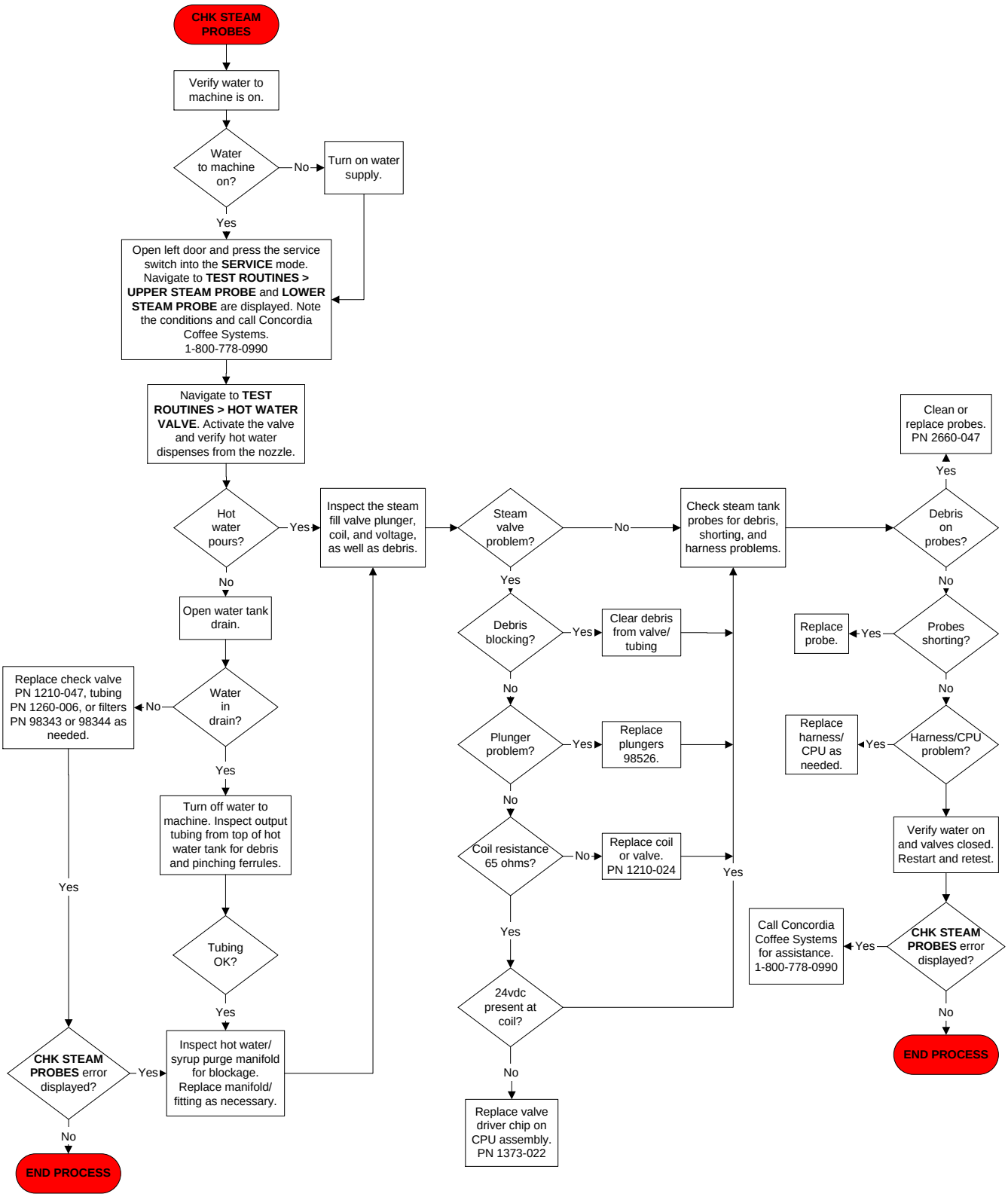
Refrigeration System – REFR DOOR OPEN



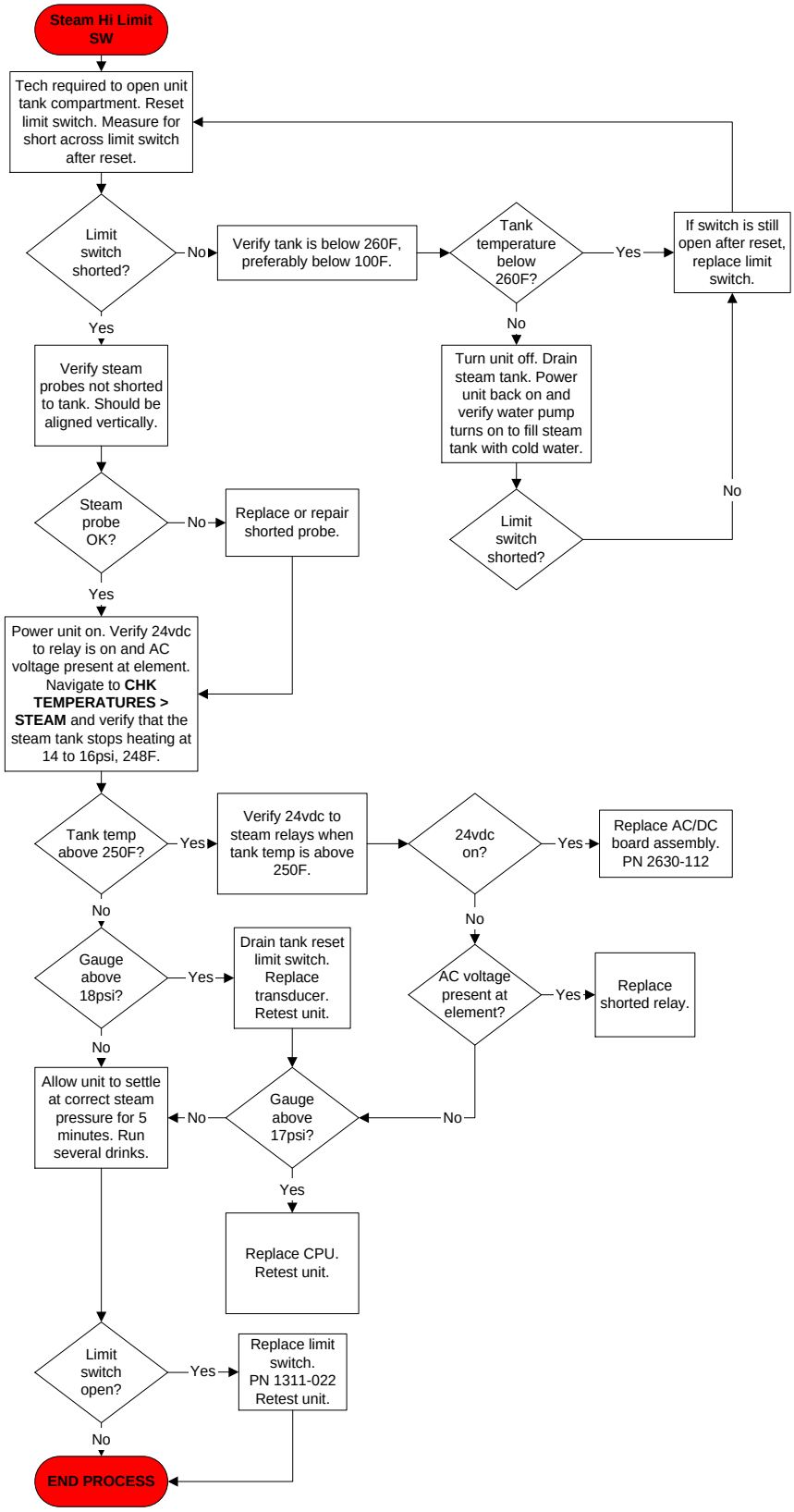
Steam System – CHK SENSOR VOLTAGE



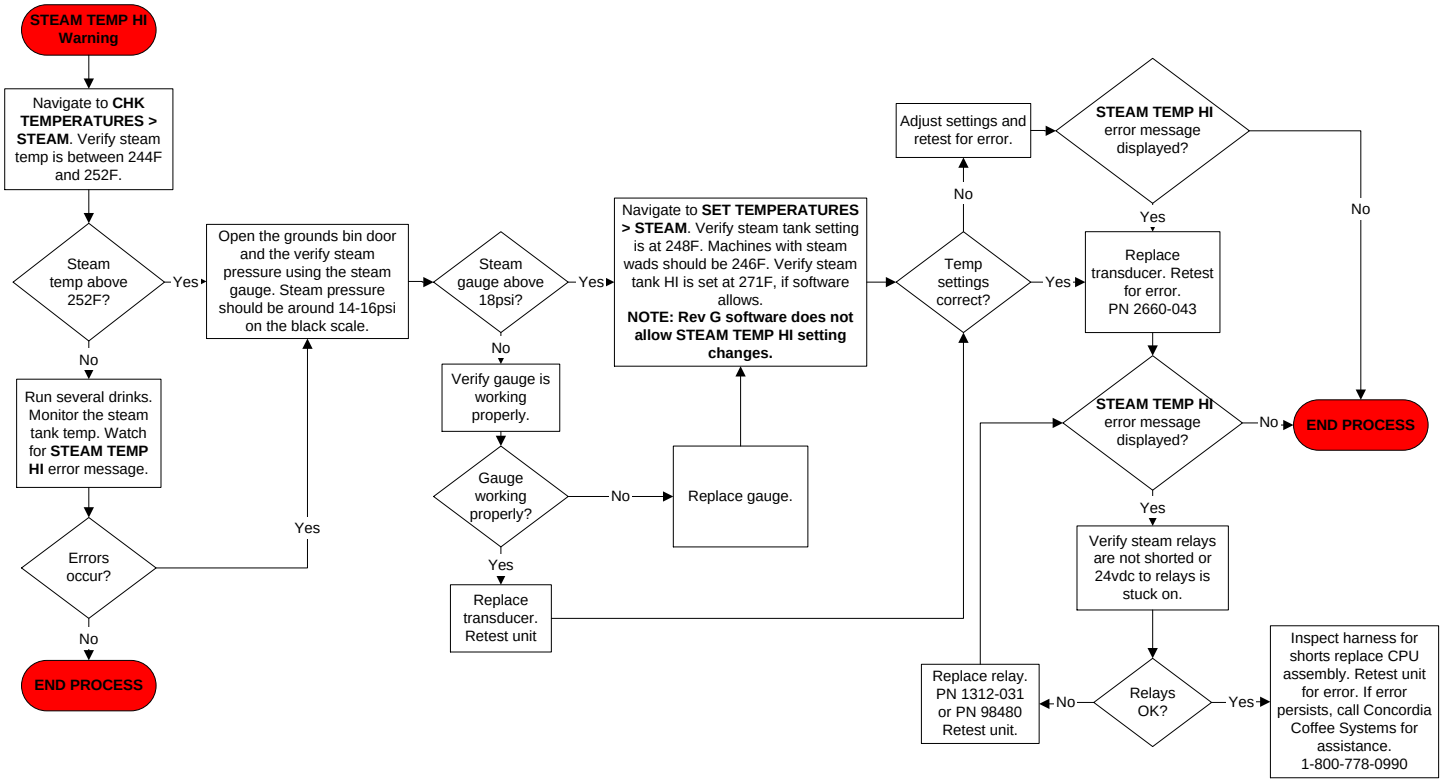
Steam System – CHK STEAM PROBES



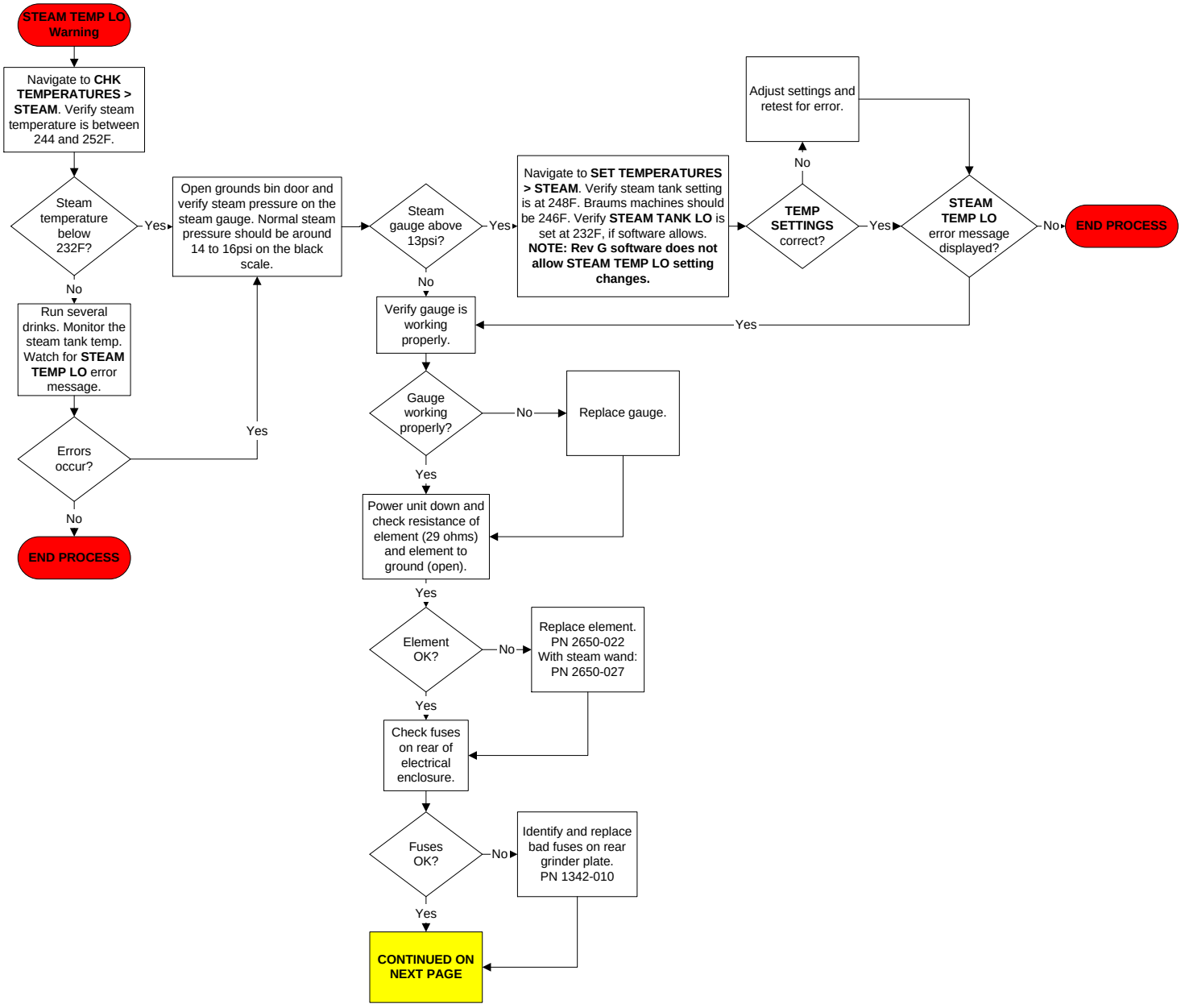
Steam System – Steam High Limit



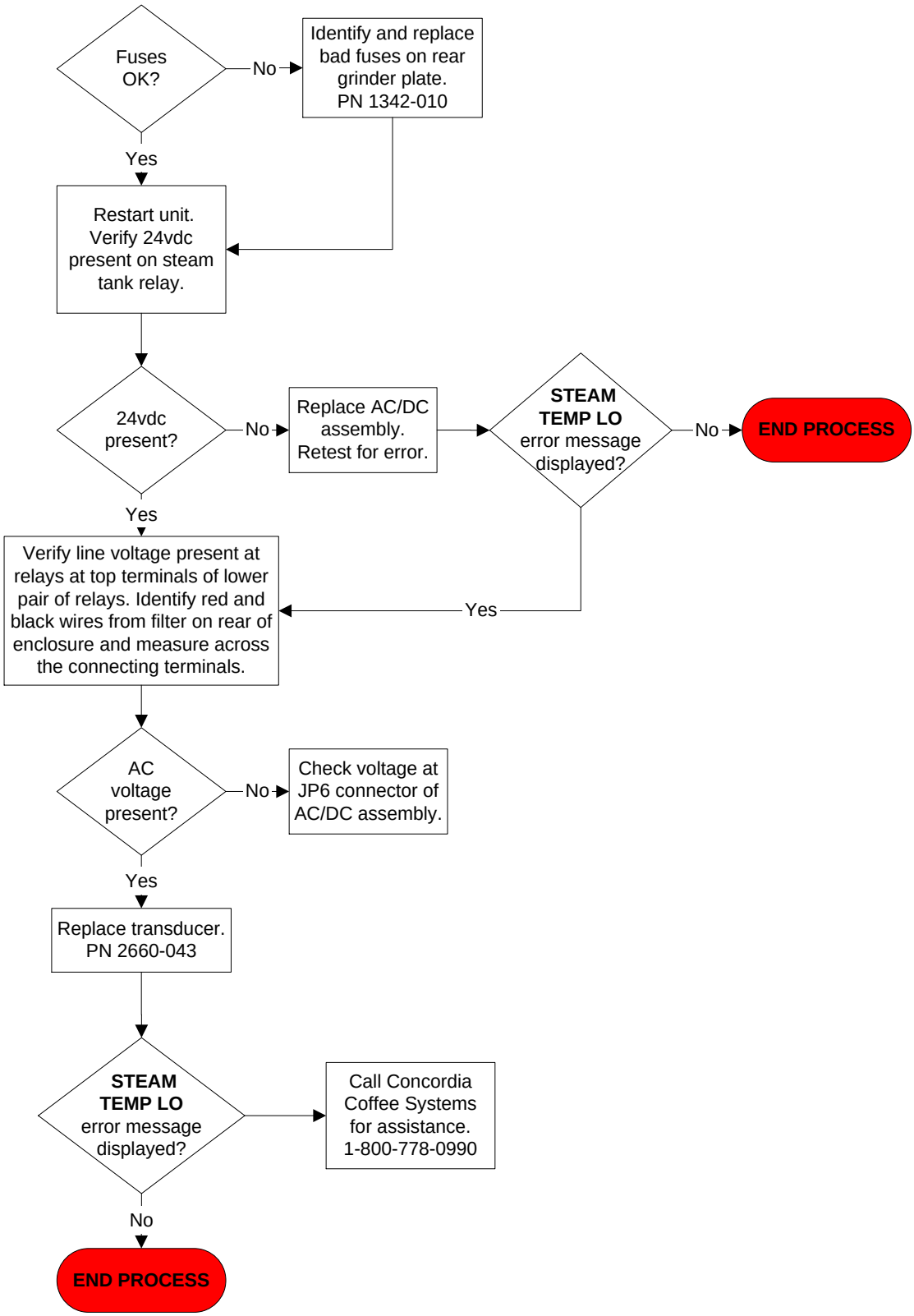
Steam System – STEAM TEMP HI



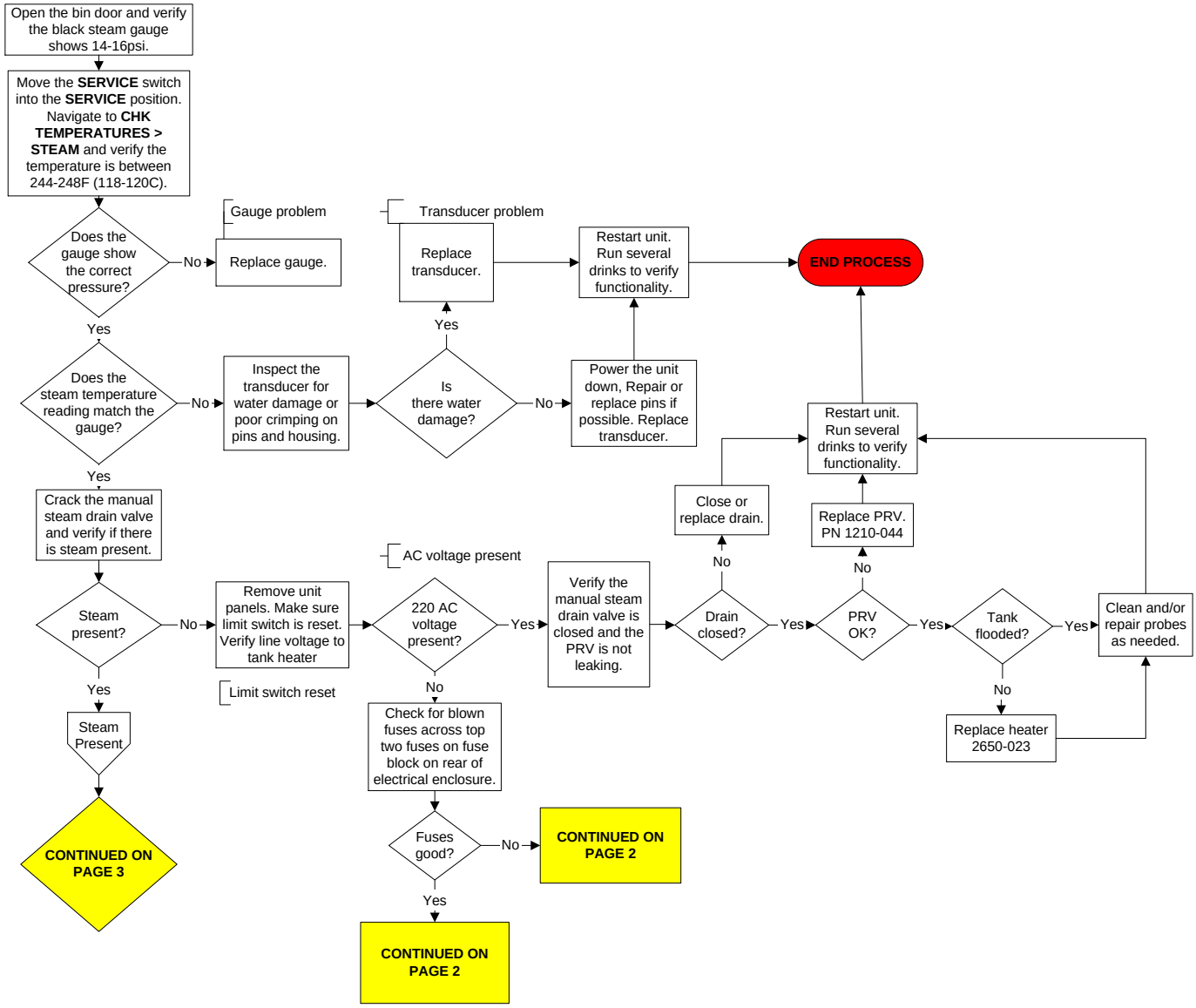
Steam System – STEAM TEMP LO – PAGE 1



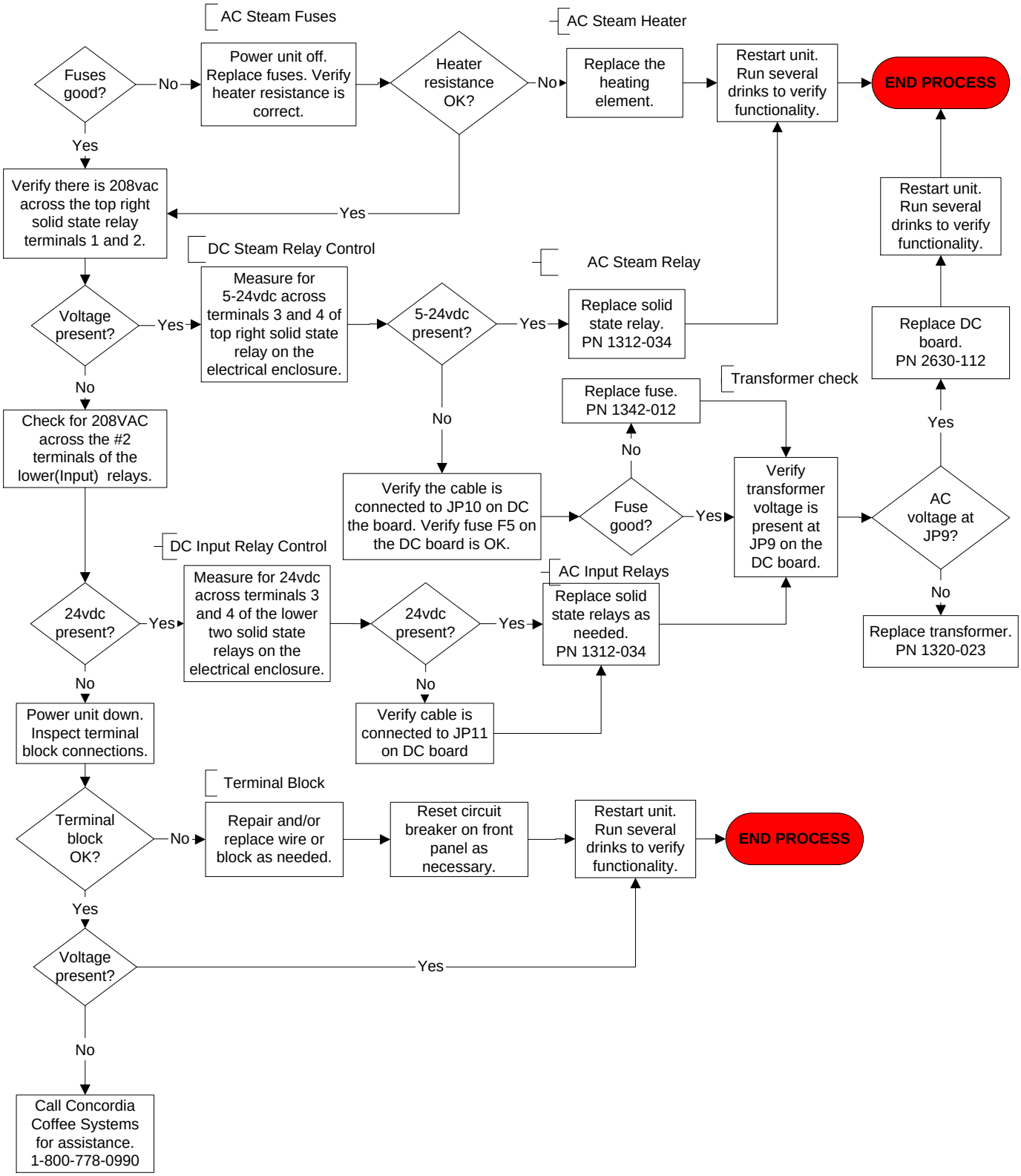
Steam System – STEAM TEMP LO – PAGE 2



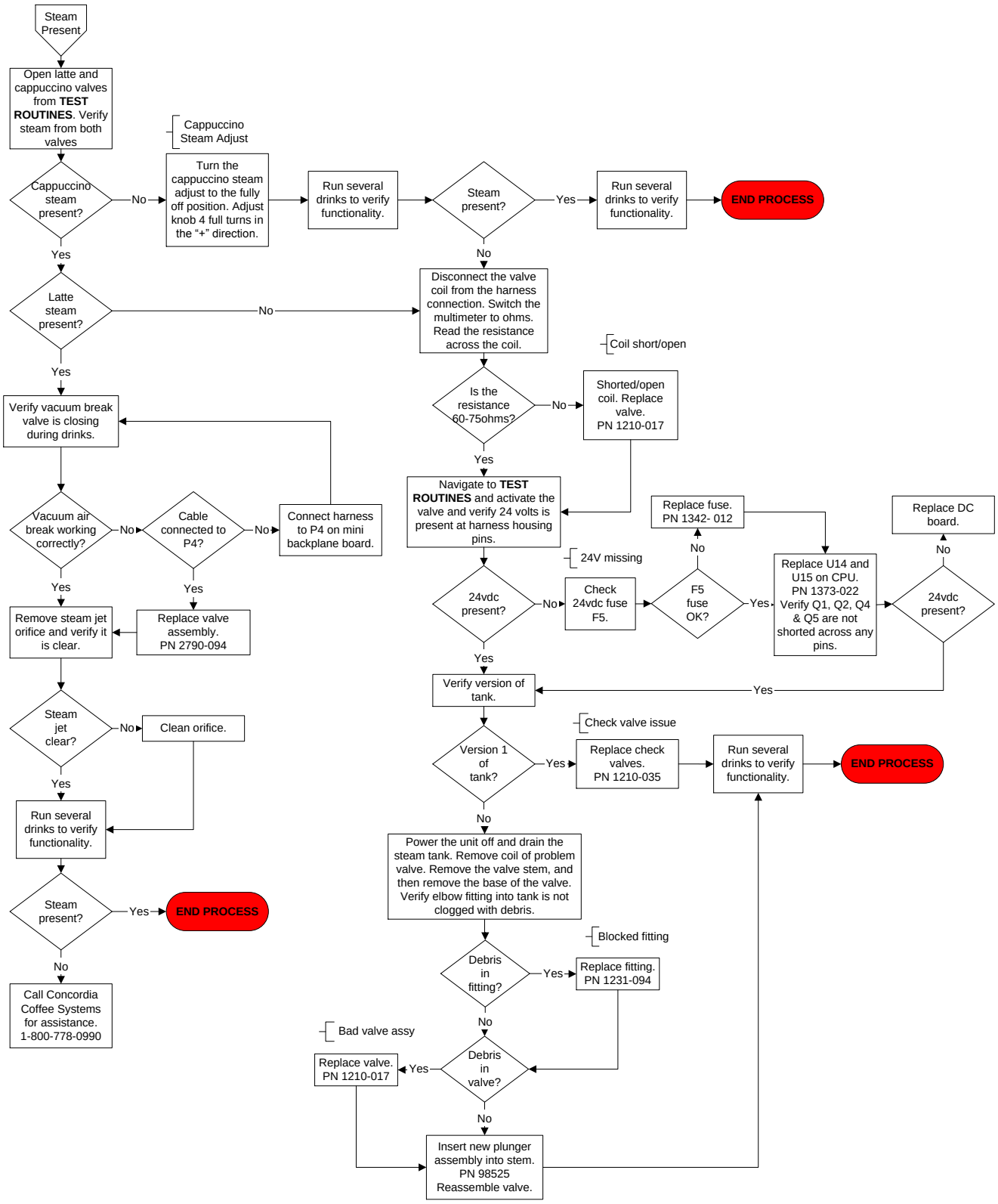
Steam System – No Steam During Milk Pour – PAGE 1



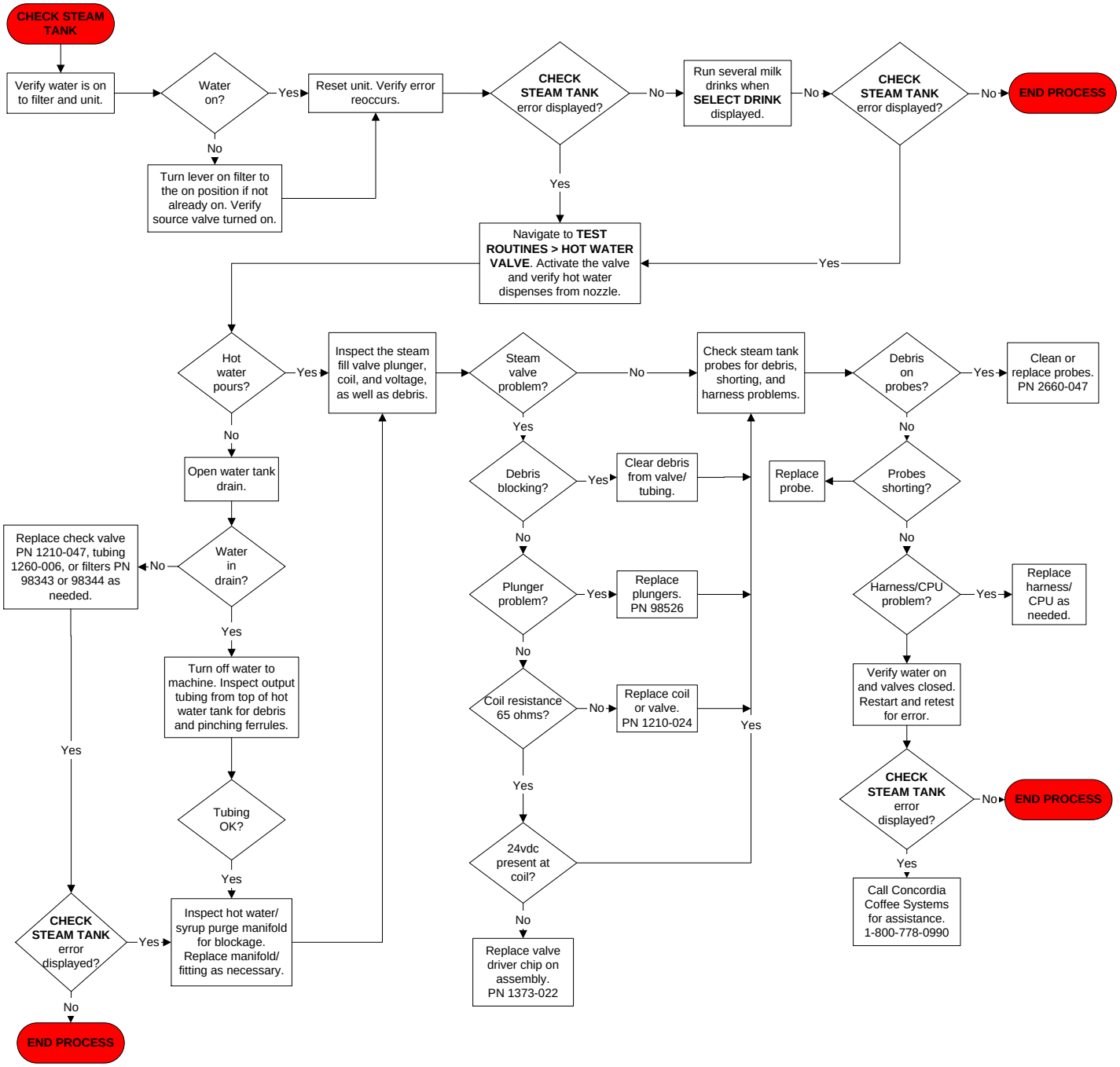
Steam System – No Steam During Milk Pour – PAGE 2



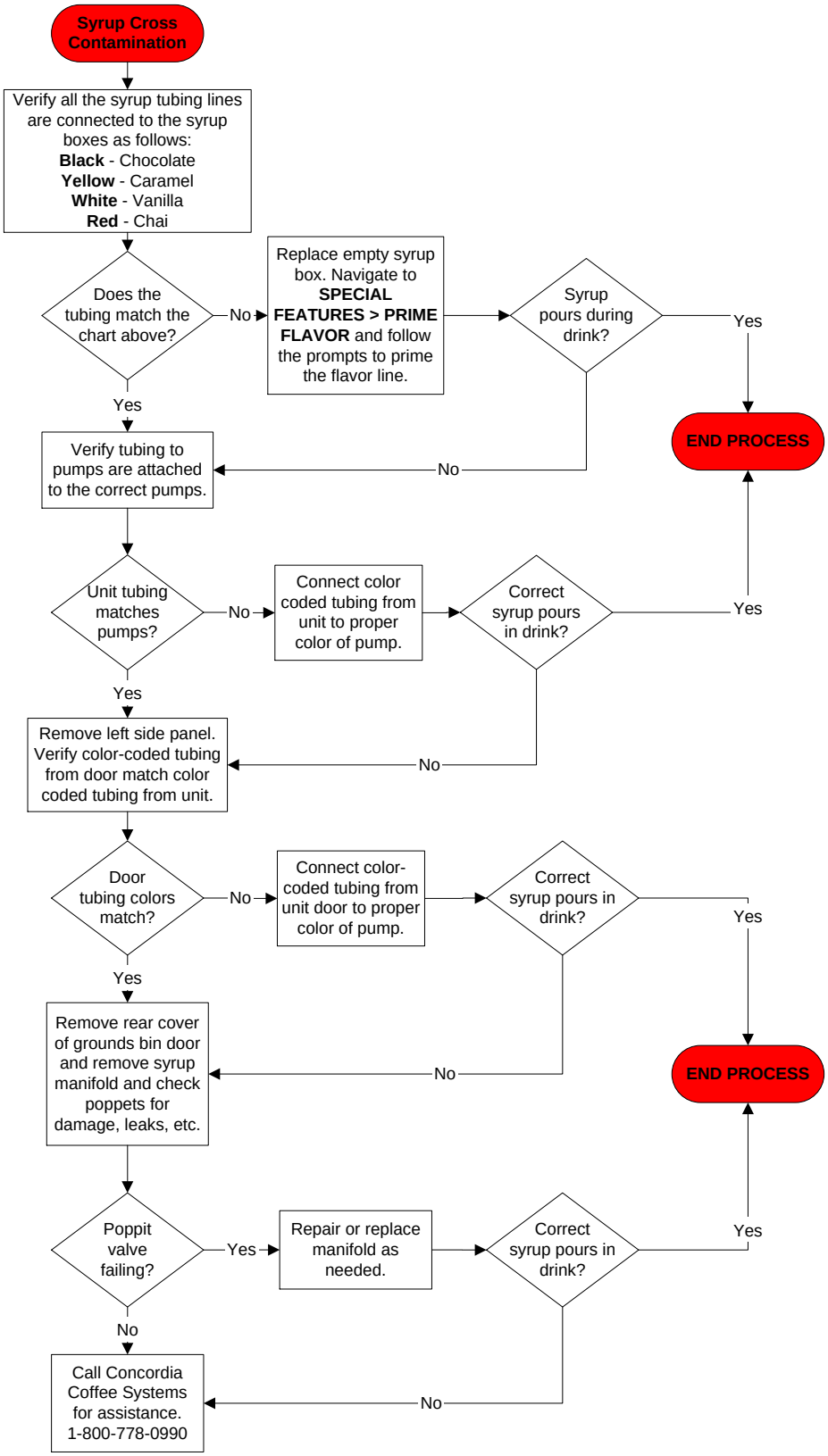
Steam System – No Steam During Milk Pour – PAGE 3



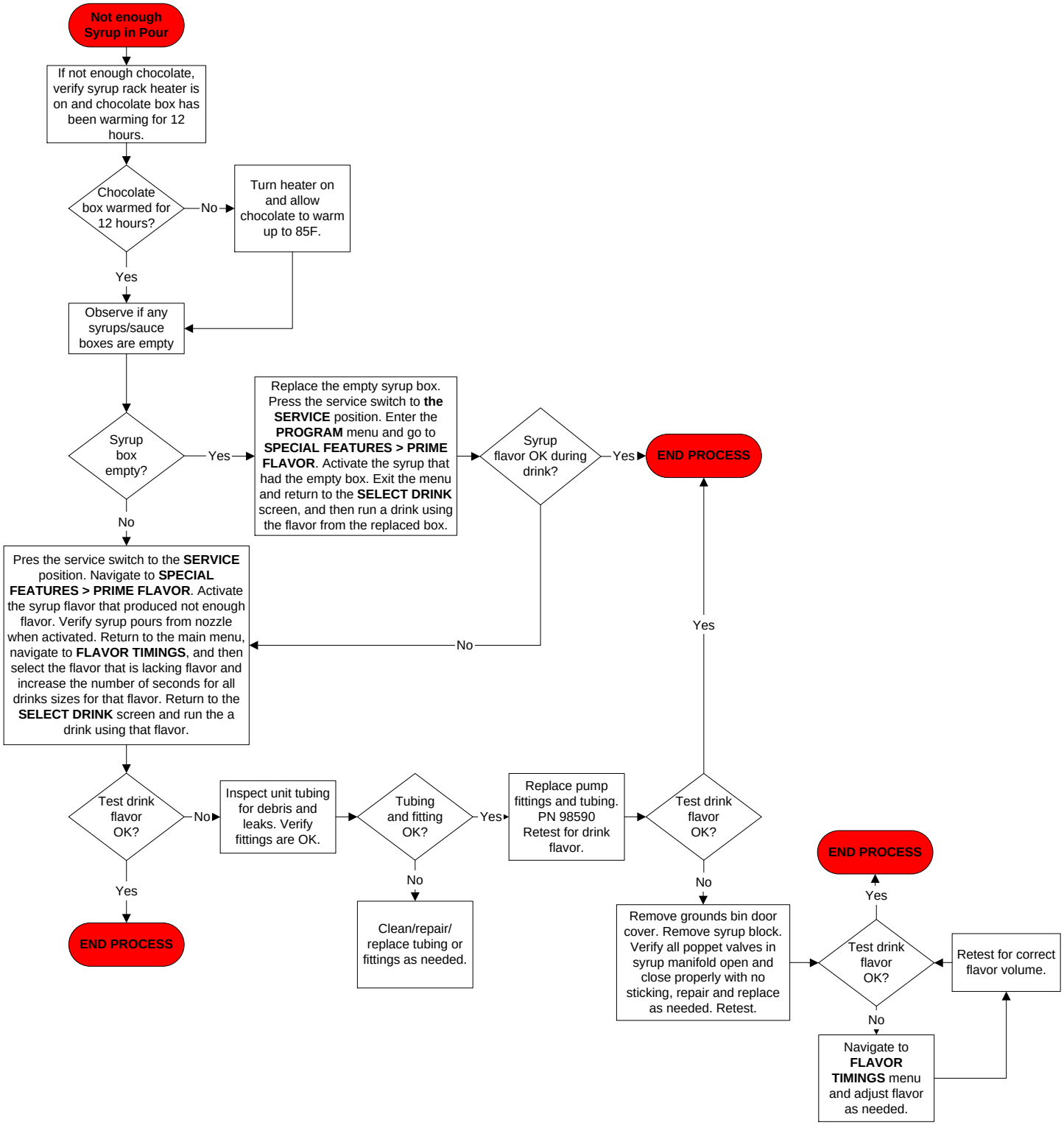
Steam System – CHECK STEAM TANK



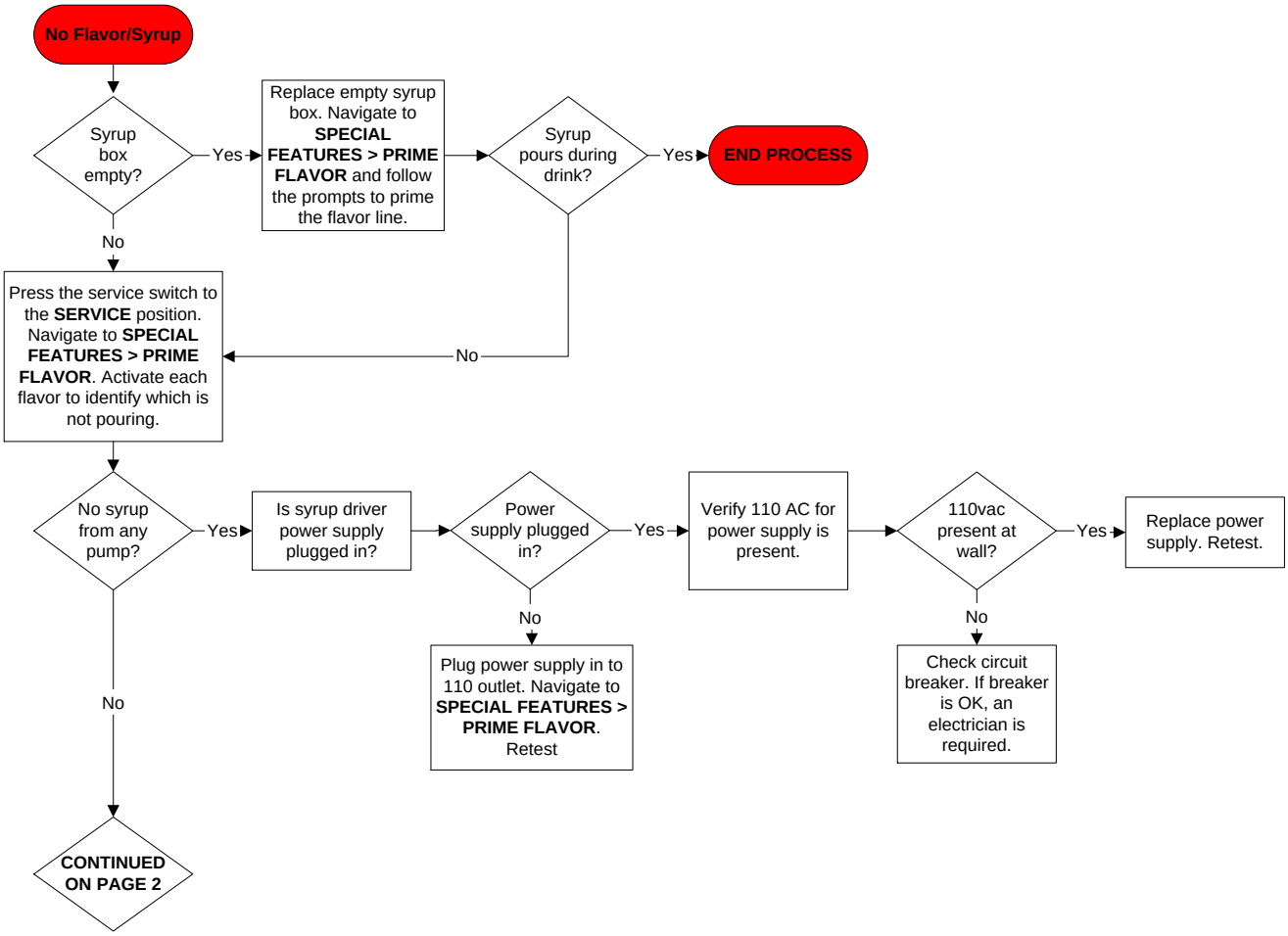
Flavor System – Cross-Contamination of Flavors



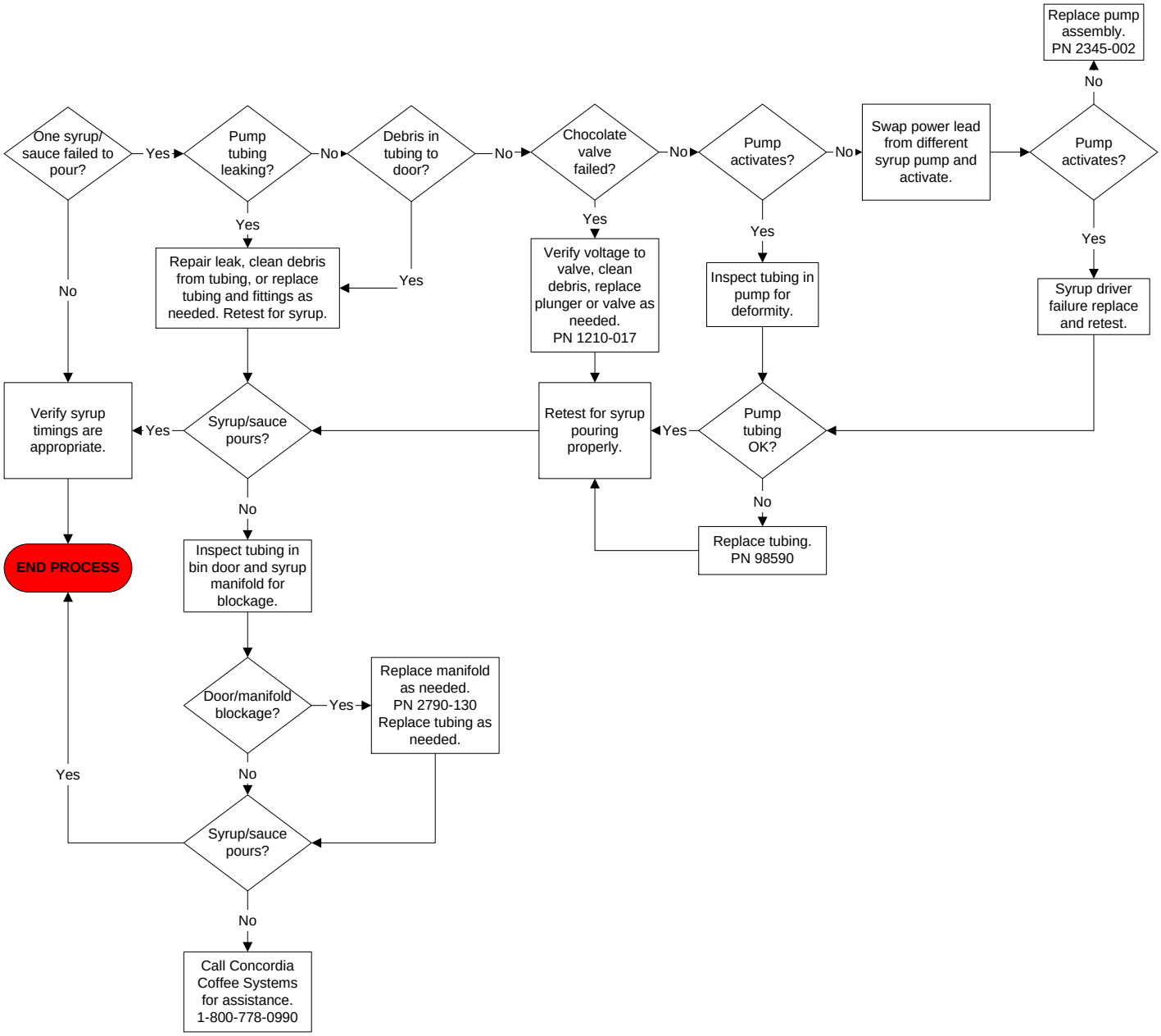
Flavor System – Not Enough Flavor



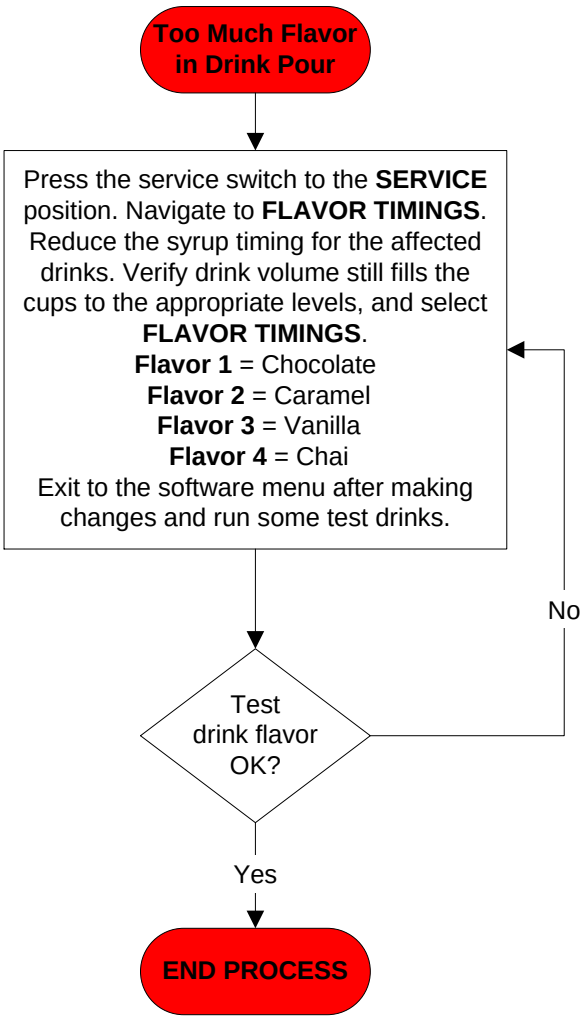
Flavor System – No Flavor in Drink – PAGE 1



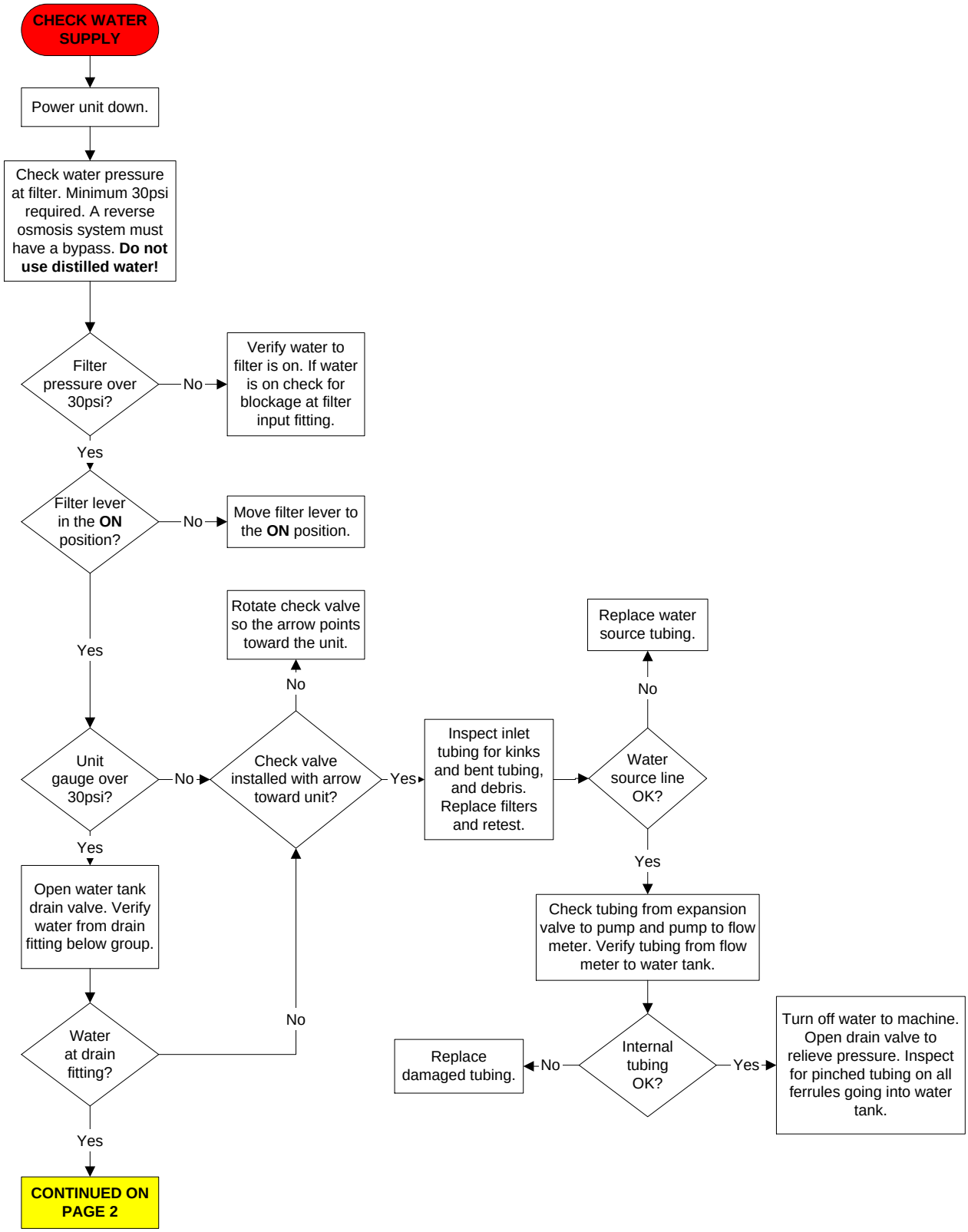
Flavor System – No Flavor in Drink– PAGE 2



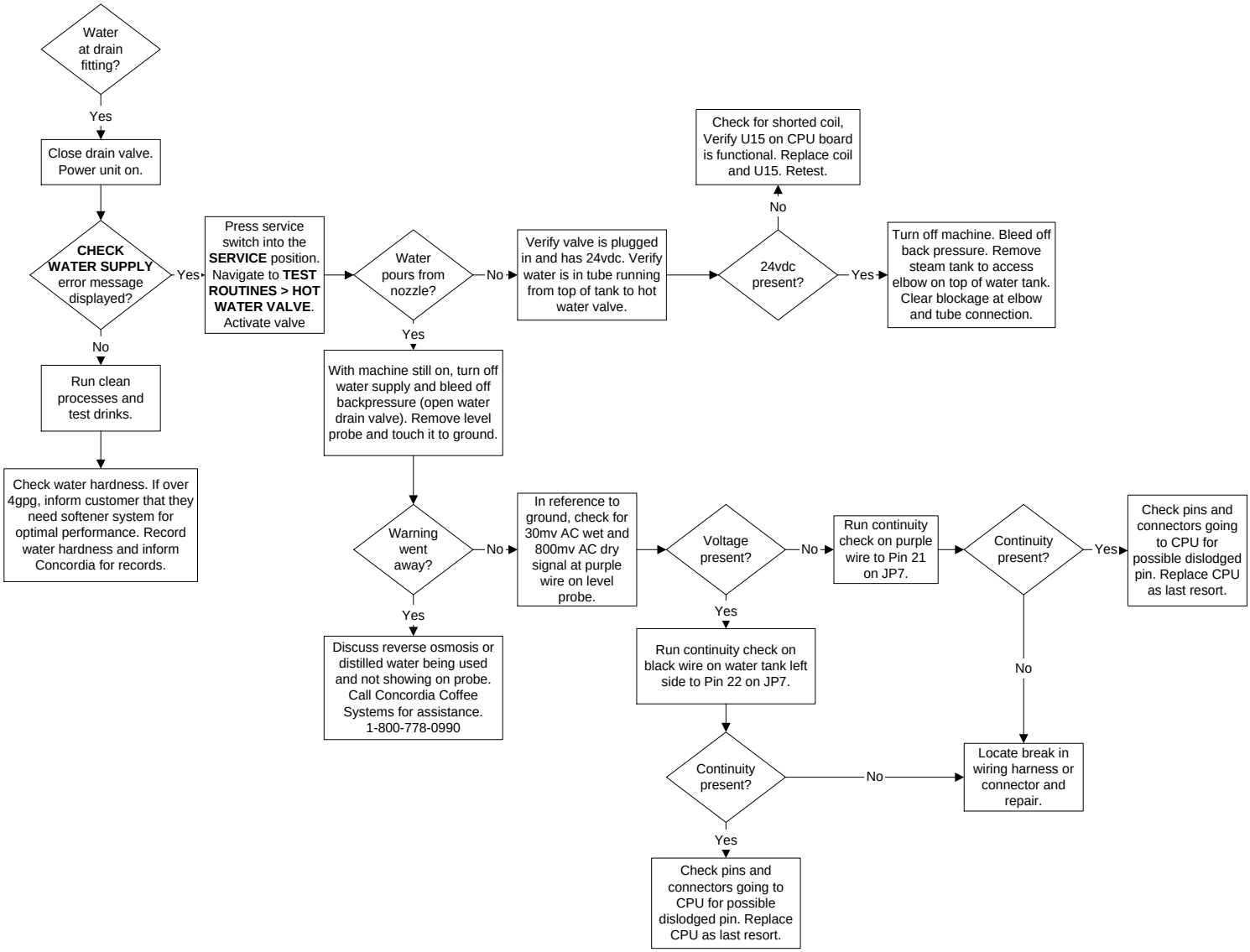
Flavor System – Too Much Flavor in Drink



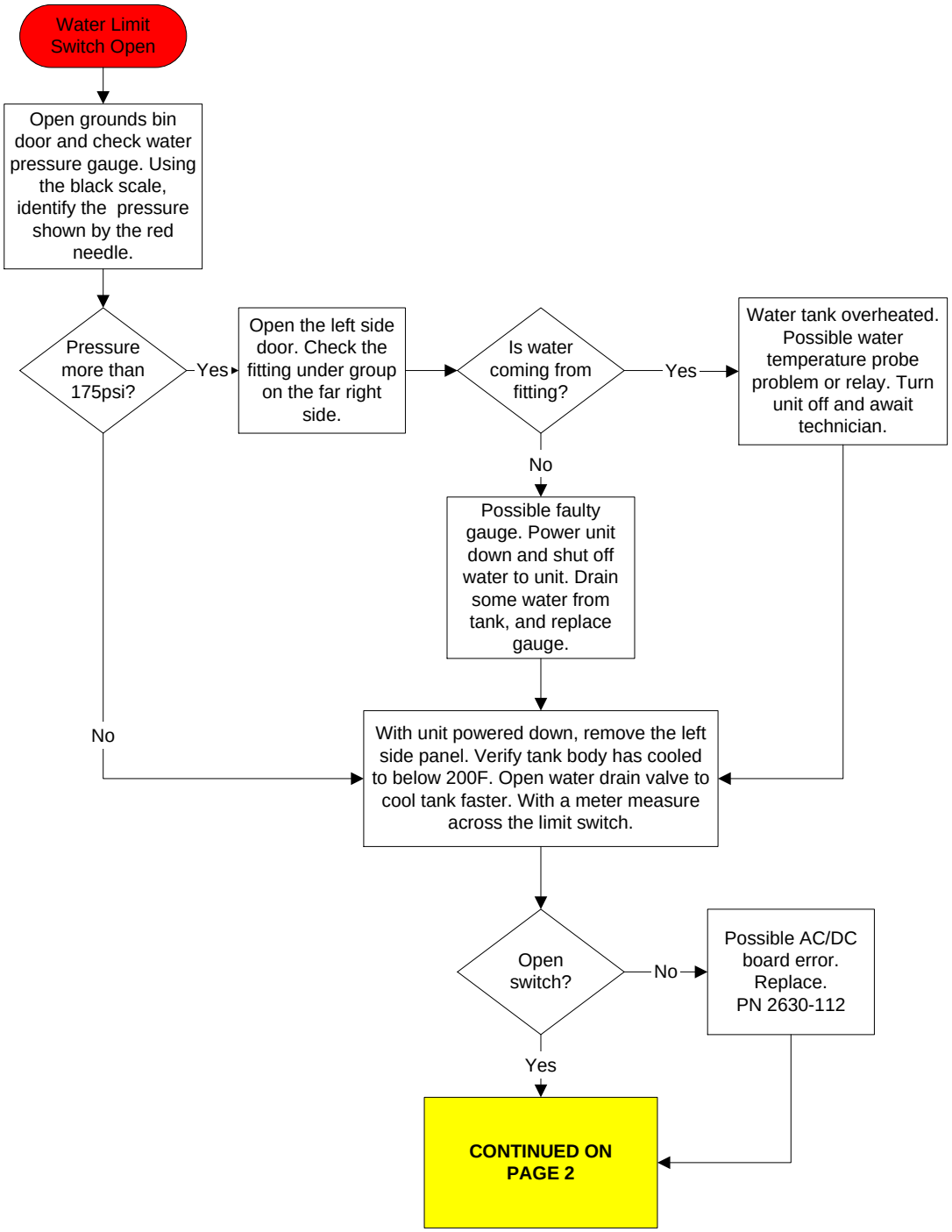
Water System – CHK WATER SUPPLY – PAGE 1



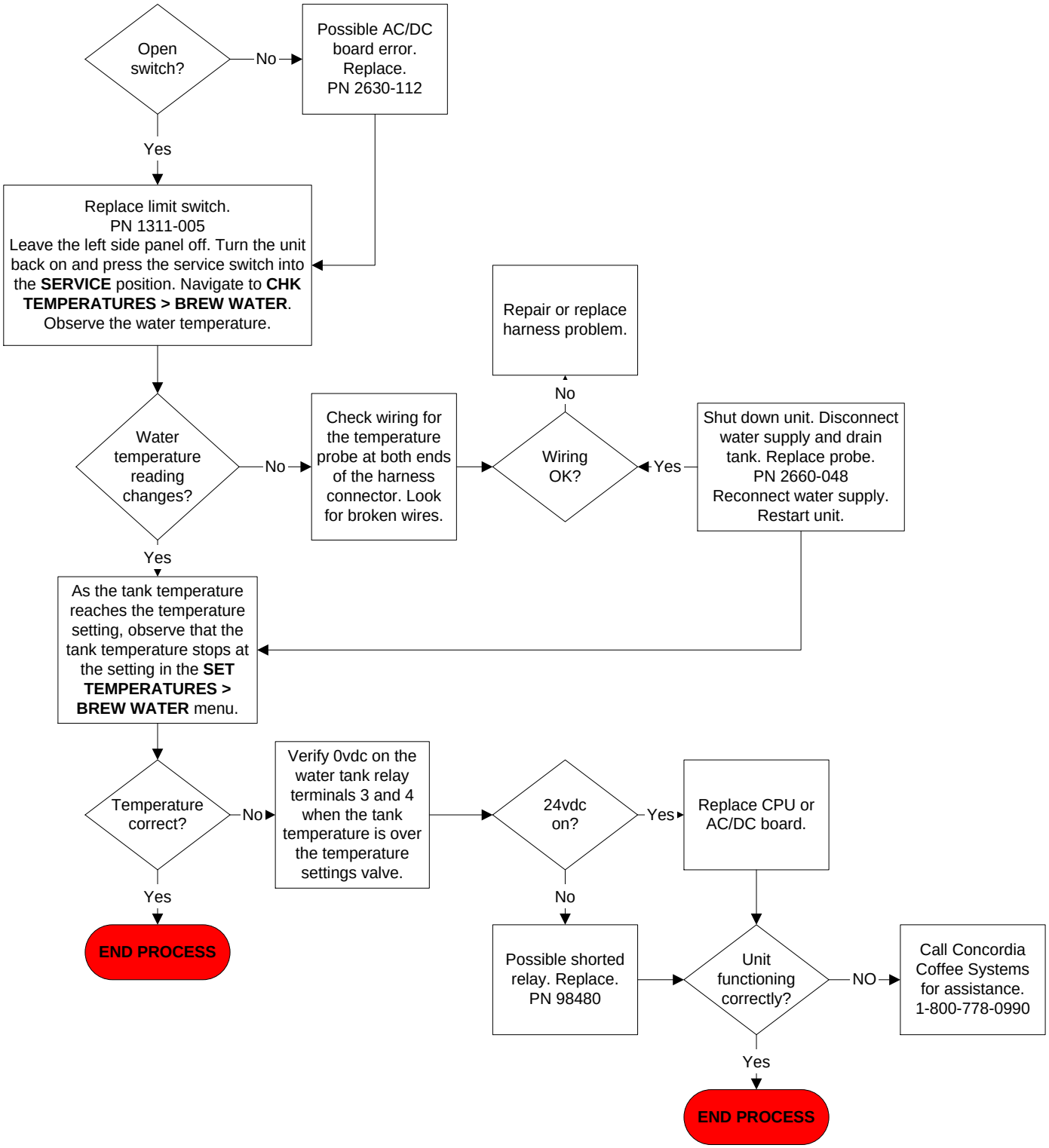
Water System – CHK WATER SUPPLY – PAGE 2



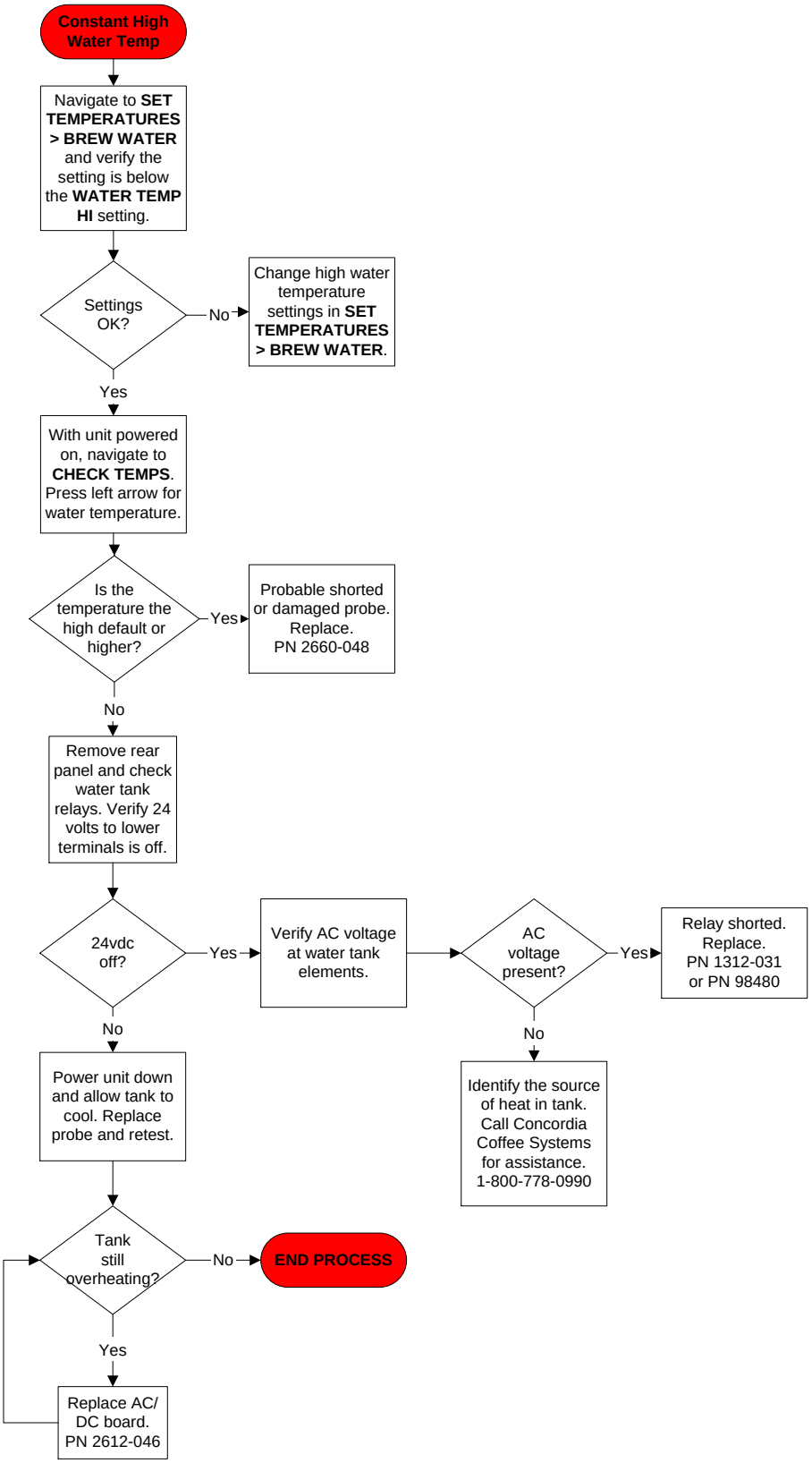
Water System – Water Tank Limit Switch Open – PAGE 1



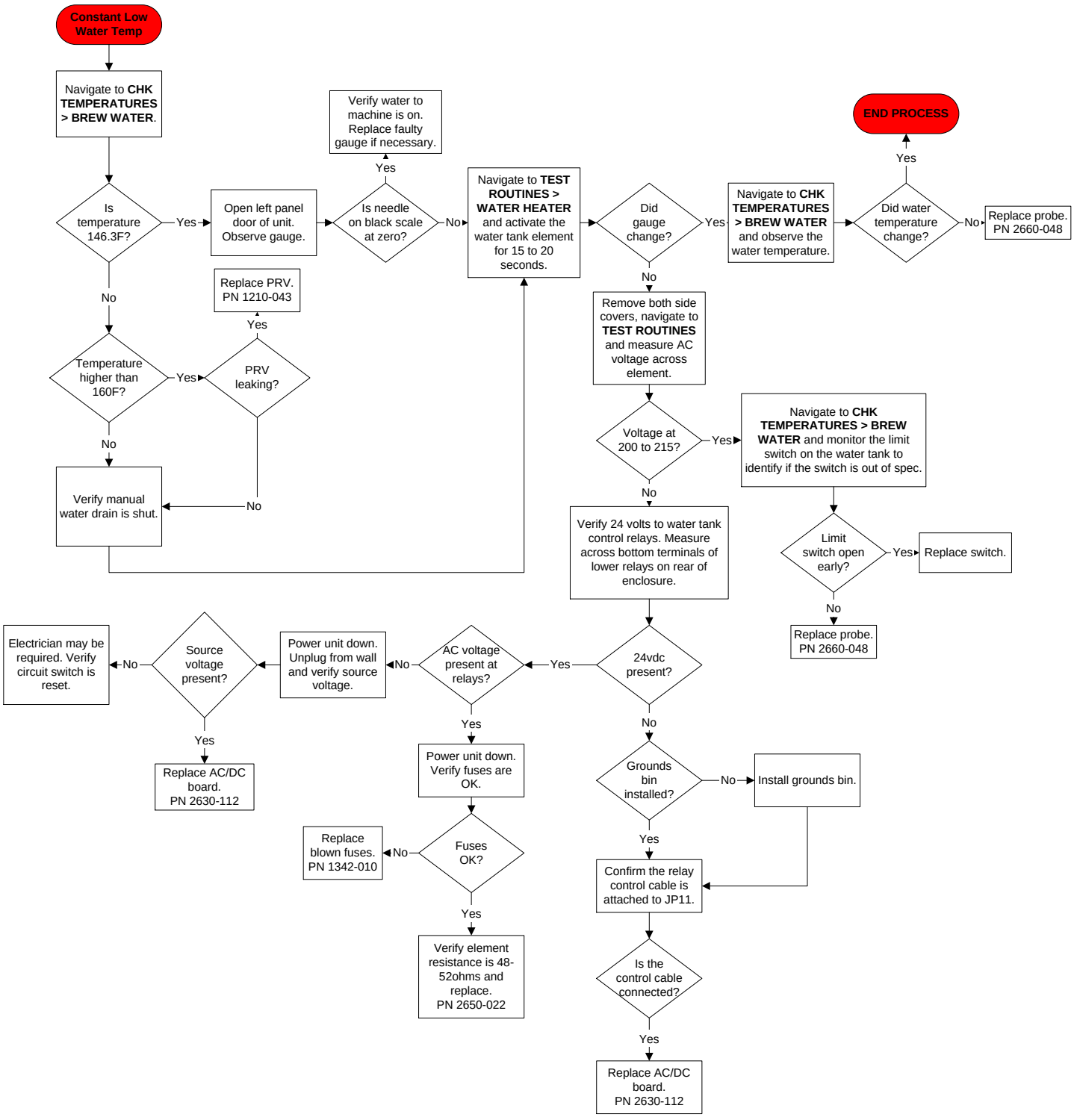
Water System – Water Tank Limit Switch Open – PAGE 2



Water System – WATER TEMP HI



Water System – WATER TEMP LO



Section 15 :: Parts List & Diagrams

1. Recommended Tools List
2. Parts Lists and Diagrams

TECHNICAL SUPPORT

CONCORDIA
COFFEE SYSTEMS

Recommended Tools List

Standard Tools

3" Socket extension ½" drive	Jeweler's Screwdriver
Clamps	Snap-ring Pliers
11/32" Nut driver or socket	7/16" Wrench
¼" Drive Socket wrench w/extension & universal joint	Torque wrench, up to 30 FP & Driver 10 CBS
3/32" Ball Driver	½" Wrench
#2 Phillips Screwdriver – 4"	9/16" Wrench
#2 Phillips Screwdriver – 10"	5/8" Wrench
#2 Flat Screwdriver	11/16" Wrench
#2 Square drives	¾" Wrench
#2 Phillips Bit – ¼" drive	11/32" Wrench
4mm Bit – ¼" 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 ½"F x 3/8M
Socket Wrench ½" drive	3/8" Wrench

Concordia Stocked Tools

	CONCORDIA PART NUMBER
Pin Removal AMP – Medium	4100-003
Group Motor Removal Tool	4100-014

Consumables

	CONCORDIA PART NUMBER
Heat sink compound	3900-003
Superlube® tube	3200-017
Superlube® pen	3100-002
Teflon tape – ¼" & ½"	3330-013
Ty-wraps (100)	1454-014
RTV silicone seal	3200-003

Parts List and Diagrams

Diagram 1: Machine Overview

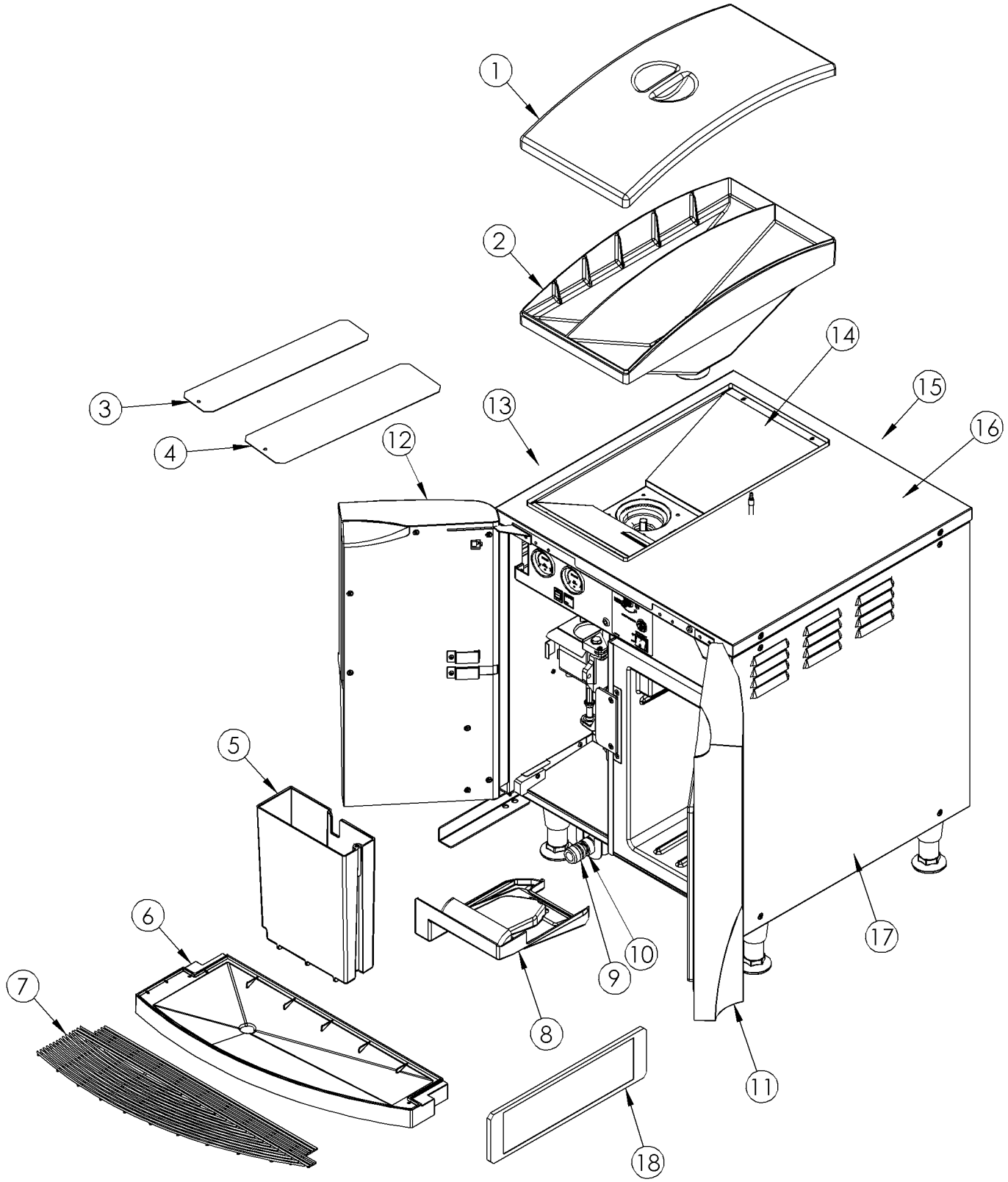


Diagram 1, Parts List: Machine Overview

Diagram 1 Item #	Description	Available	Concordia Part Number
1	HOPPER COVER I4	YES	1120-304
2	HOPPER DUAL CAVITIES I4	YES	1120-303
	HOPPER SINGLE CAVITY I4	YES	1120-316
3	STOPPER DECAF HOPPER I4	YES	1120-326
4	STOPPER CAF HOPPER I4	YES	1120-327
5	ASSY DREGS BIN I4	YES	2510-136
6	ASSY DRAIN TRAY I4	YES	2510-213
7	GRATE DRAIN TRAY I4	YES	1110-709
8	PLENUM RFR INTERNAL I4	YES	1120-256
9	O RING DRAIN TRAY - 995N/I4	YES	1260-080
10	O-RING 2-312 EPDM	N/A	1260-108
11	ASSY RFR DOOR I4	YES	2310-036
12	ASSY BIN DOOR SKIN I4	YES	2510-137
13	PANEL LEFT I4	YES	1110-727
14	SHIELD HEAT HOPPER I4	YES	1110-701
15	PANEL BACK I4	YES	1110-690
16	PANEL TOP I4	YES	1110-691
17	PANEL RIGHT I4	YES	1110-728
18	FILTER AIR I4	YES	1120-334

Diagram 2: Bin Door Assembly

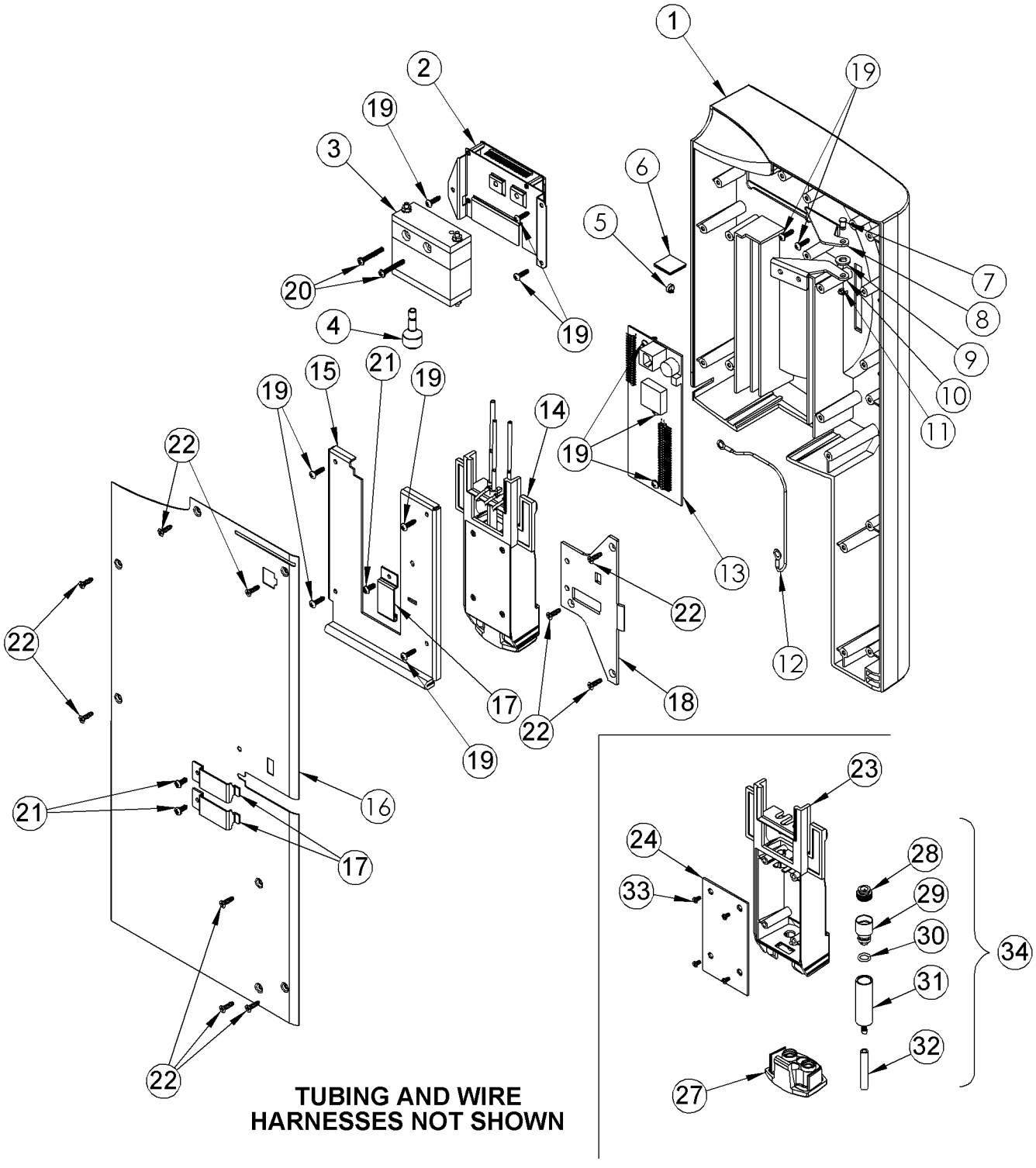


Diagram 2, Parts List: Bin Door Assembly

Diagram 2 Item #	Description	Available	Concordia Part Number
	ASSY DR BIN INTEGRA 4	YES	2510-195
1	ASSY BIN DOOR SKIN I4	NO	2510-137
2	ASSY DISPLAY LCD I4	YES	2630-094
3	ASSY SYRUP MANIFOLD	YES	2790-130
	ASSY SYRUP MANIFOLD CHOC ONLY	YES	2790-143
4	ASSY- ADAPT- 5/32T X 1/4T	YES	2340-034
5	TY RAP 8 INCH LONG	YES	1454-014
6	TY RAP ANCHOR	YES	1454-013
7	HINGE PIN GRP DR TOP I4	YES	1110-758
8	HINGE GROUP DOOR TOP I4	YES	1110-708
9	WSHR FLAT 1/2X.257X.062	YES	1430-026
10	HINGE FRAME TOP I4	YES	1110-707
11	E-CLIP 3/16" X 0.025" SS	YES	1454-054
12	CBL GROUND STRAP 8-INCH	YES	2670-197
13	ASSY PCA W/PROG CHIP I4	YES	2630-100
14	ASSY PROD DEL W/SYR I4	YES	2510-133
15	PLATE NOZZLE RETAIN I4	NO	1110-716
16	PLATE DOOR GRP BACK I4	NO	1110-715
17	CLIP RETAINER TUBING I4	YES	1110-755
18	BRKT DR PS-THRU TUBING I4	YES	1110-756
19	PH PHIL TFS SS #6 1/2	YES	1410-181
20	PH PHIL MS SS 6-32 X 1	YES	1410-187
21	PH PHIL SS 6-32 X 3/8	YES	1410-107
22	FH PHIL TFS SS #6 1/2	YES	1410-180
23	ASSY SLD PROD OUTLET I4	YES	2510-132
24	PLATE OUTLET COVER	YES	1110-436
27	ASSY NOZZLE DISP 1500	YES	2790-084
28	HALF CARTRIDGE	YES	1232-099
29	CAP ANTI SPLAT	YES	1120-250
30	O-RING MILK BOWL NECK	YES	1260-018
31	TUBE ANTI SPLAT	YES	1120-255
32	TUBE PFA 5/32 ID X 1/4 OC	YES	1250-006
33	FH PH MS SS UCT 4-40X1/4	YES	1410-087
34	ASSY CHAMBER ANTI SPLAT	YES	2790-083
*	ASSY DOOR BIN I4	YES	2510-122

Diagram 3: Refrigeration Unit Door

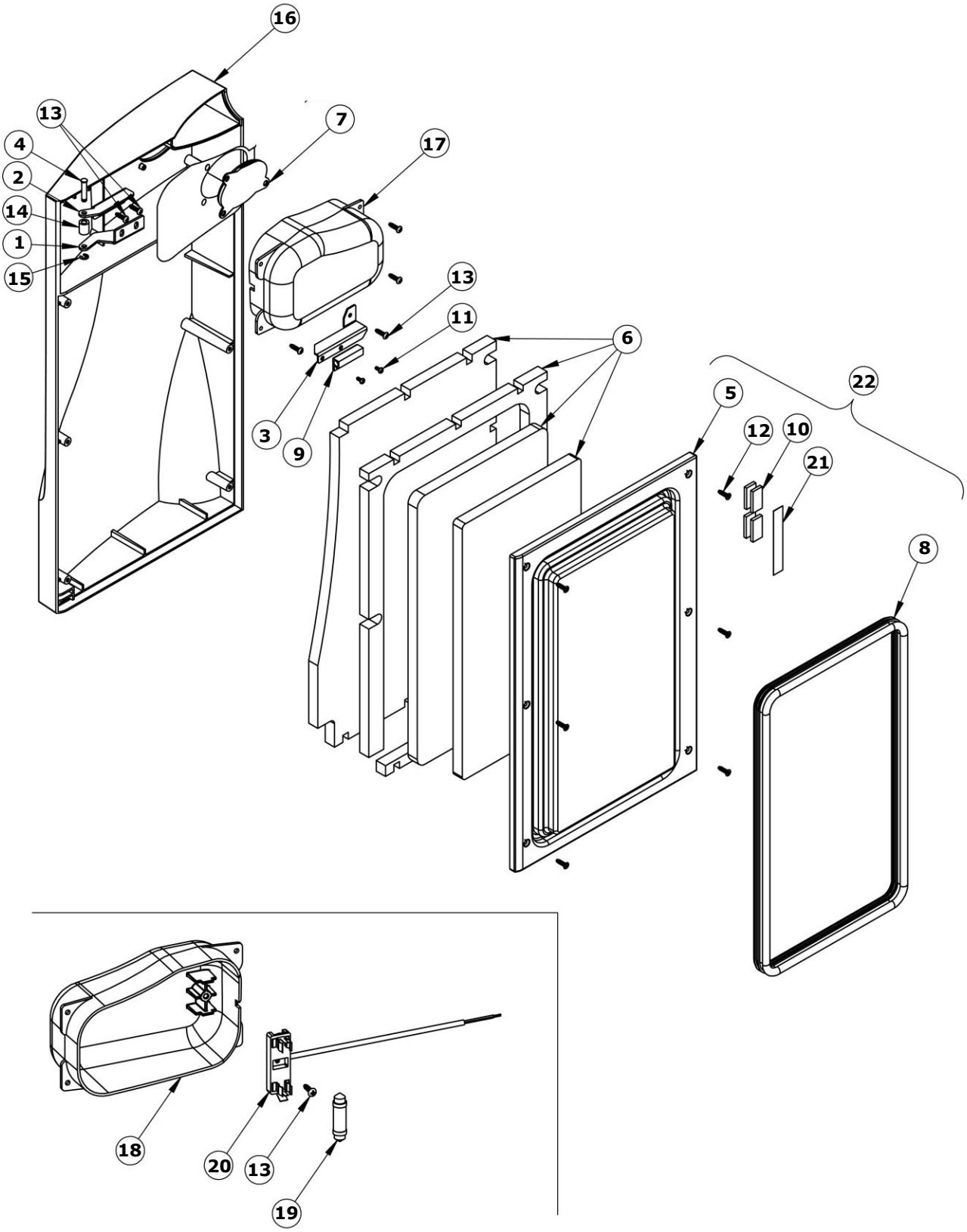


Diagram 3, Parts List: Refrigeration Unit Door

Diagram 3 Item #	Description	Available	Concordia Part Number
	ASSY RFR DOOR I4	YES	2310-036
1	HINGE FRAME TOP I4	YES	1110-707
2	HINGE RFR DOOR TOP I4	YES	1110-717
3	BRKT RFR MAGNET I4	YES	1110-749
4	HINGE PIN RFR DR TOP I4	YES	1110-757
6	INSUL RFR DOOR IBS	YES	1120-325
7	INSRT RFR DR EXT LOGO IBS	YES	1120-348
9	MAGNET ONLY	YES	1311-002
11	PH PHIL MS SS 4-40X1/4	YES	1410-065
13	PH PHIL TFS SS #6 1/2	YES	1410-181
14	SPCR RFR DR TOP PIVOT I4	YES	1451-047
15	E-CLIP 3/16” X 0.025” SS	YES	1454-054
16	ASSY RFR DOOR SKIN IBS4	YES	2510-138
17	ASSY WHT LED RFR DR I4	YES	2510-162
18	RFR DR LOGO LIGHT RFLTR	YES	1120-332
19	BULB WHITE LED LOGO I4	YES	1365-005
20	CBL LOGO LIGHT I4	YES	2670-266
22	KIT RFR DOOR SEAL I4		98597
5	PNL RFR INTERIOR DR I4	YES	1120-297
12	FH PHIL TFS SS #6 1/2	YES	1410-180
10	MAGNET DOOR I4	YES	1311-027
21	TAPE VHB .01”THK X 1/2”W	YES	3300-024
8	SEAL EXTRUSION RFR DR I4	YES	1260-112

Diagram 4: Front Panel

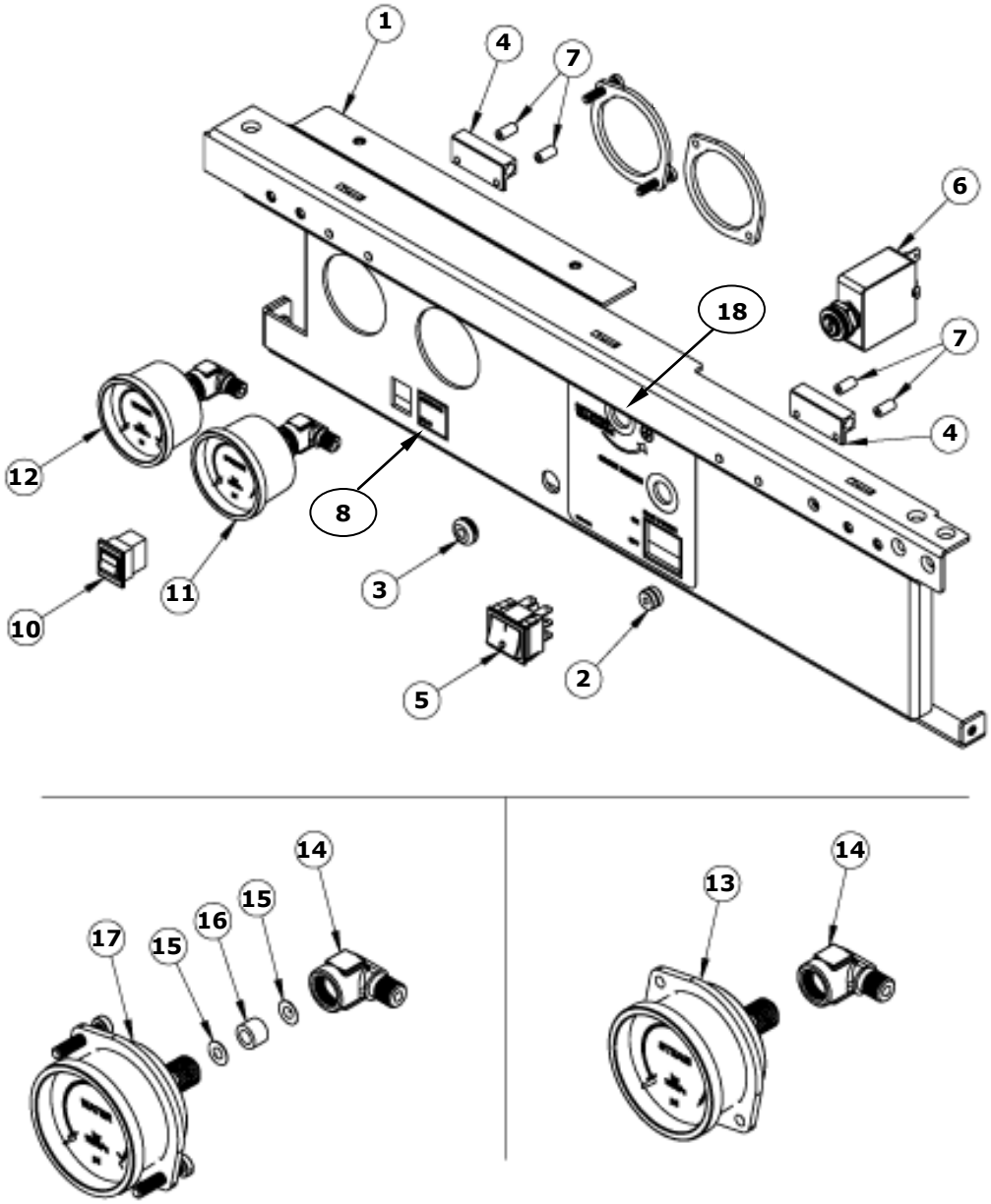
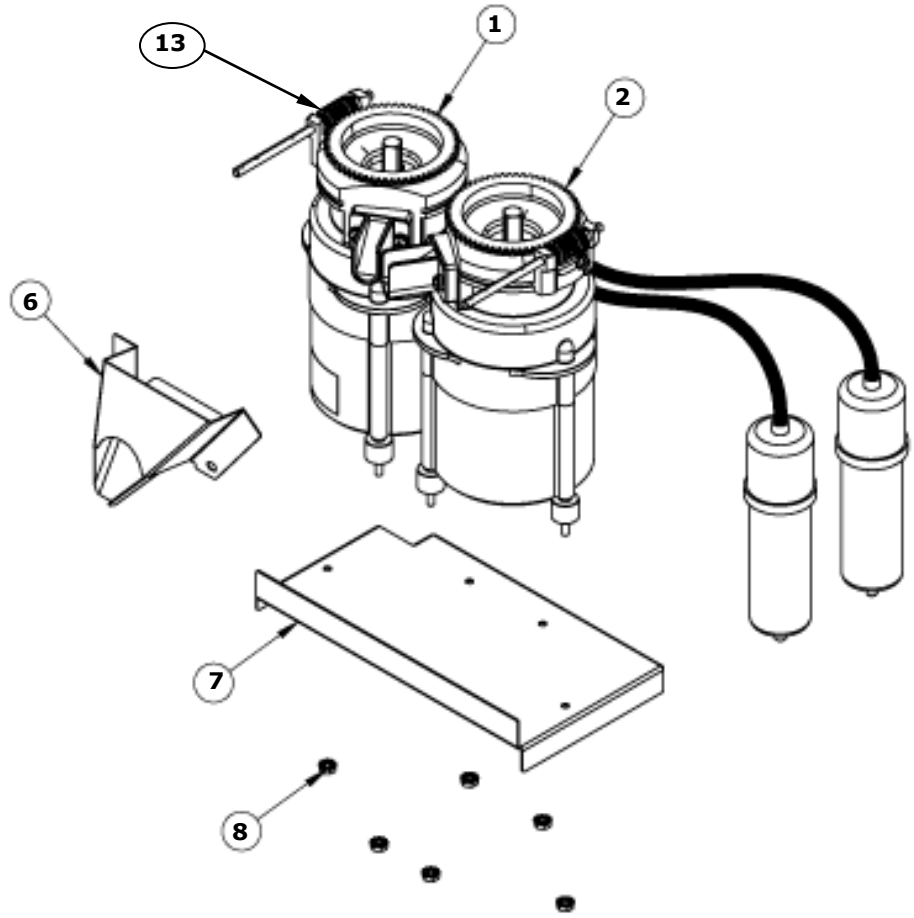


Diagram 4, Parts List: Front Panel

Diagram 4 Item #	Description	Available	Concordia Part Number
	ASSY GAUGE PANEL	YES	2510-134
1	PLATE GAUGE & SWITCH I4	YES	1110-726
2	GROM 3/8ODX1/8IDX1/4G	YES	1260-079
3	GROM 5/16IDX.44GDX1/16GRV	YES	1260-083
NS	SEAL SWITCH MAIN POWER	YES	1260-117
4	SW MAGNET	YES	1311-009
5	SW MAIN POWER – 995/2000	YES	1311-012
6	CKT BRKR 5 AMP SLO BLO	YES	1341-003
NS	FH PH MS SS UCT 4-40X1/4	YES	1410-087
7	SPACER .187RND 4-40X.375L	YES	1451-035
8	LBL MENU SWITCH I4	YES	1500-204
10	CBL MENU SWITCH	YES	2670-243
11	ASSY GAUGE STEAM I4	YES	2790-135
12	ASSY GAUGE WATER I4	YES	2790-136
13	GAUGE 30PSI 1/8 NPT PMNT	YES	1220-006
14	ELBOW BRASS 1/8F X 1/8T	YES	1231-043
15	DISK ORIFICE 5/16X/01X.01	NO	1110-383
16	ORIFICE SPACER	NO	1120-229
17	GAUGE 300PSI 1/8NPT PMNT	NO	1220-009
14	ELBOW BRASS 1/8F X 1/8T	YES	1231-043
18	VALVE FLOW CONTROL STEAM	YES	1210-030

Diagram 5: Grinder Assembly



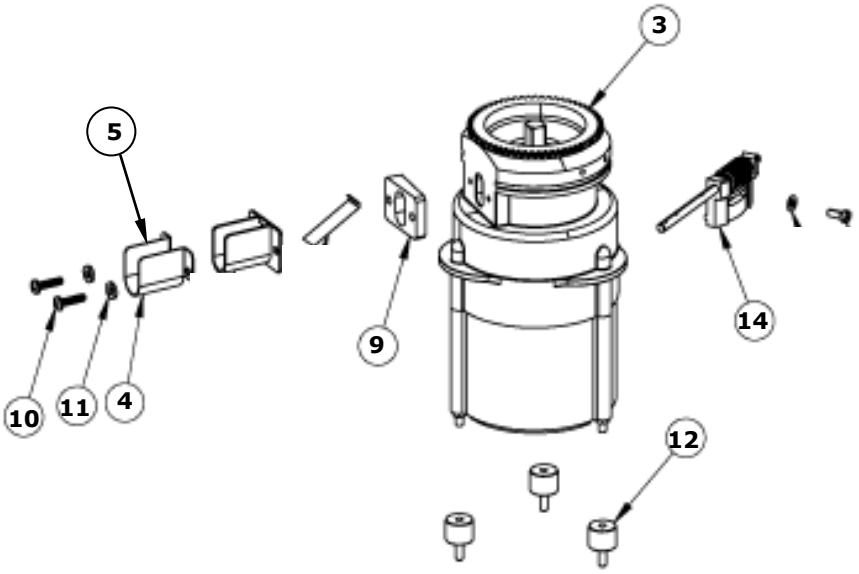


Diagram 5, Parts List: Grinder Assembly

Diagram 5 Item #	Description	Available	Concordia Part Number
3	ASSY GRINDER SINGLE I4	YES	2290-003
5	SHIELD SNOUT SGL GRND I4	YES	1110-785
9	SPCR GRINDER SNOUT I4	YES	1120-339
NS	HSG AMP 3PIN M WHT	YES	1353-003
NS	PIN M AMP LONG	YES	1353-034
NS	PIN M AMP LARGE	YES	1353-043
10	PH PHIL M4X0.7X16MM SS	YES	1410-188
11	WSHR NYLON 3/16ID X 3/8OD	YES	1430-021
12	MOUNT IDOL M/F M4X0.7	YES	1450-019
NS	GRINDER DITTING I4	YES	2280-001
14	ADJUSTER GRINDER RT I4	YES	2280-002
2	ASSY GRINDER RIGHT I4	YES	2290-001
4	SHIELD GRINDER SNOUT I4	YES	1110-781
9	SPCR GRINDER SNOUT I4	YES	1120-339
NS	HSG AMP 3PIN M WHT	YES	1353-003
NS	PIN M AMP LONG	YES	1353-034
NS	PIN M AMP LARGE	YES	1353-043
10	PH PHIL M4X0.7X16MM SS	YES	1410-188
11	WSHR NYLON 3/16ID X 3/8OD	YES	1430-021
12	MOUNT ISOL M/F M4X0.7	YES	1450-019
NS	GRINDER DITTING I4	YES	2280-001
14	ADJUSTER GRINDER RT I4	YES	2280-002
1	ASSY GRINDER LEFT I4	YES	2290-002
4	SHIELD GRINDER SNOUT I4	YES	1110-781
9	SPCR GRINDER SNOUT I4	YES	1120-339
NS	HSG AMP 3PIN M WHT	YES	1353-003
NS	PIN M AMP LONG	YES	1353-034
NS	PIN M AMP LARGE	YES	1353-043
10	PH PHIL M4X0.7X16MM SS	YES	1410-188
11	WSHR NYLON 3/16ID X 3/8OD	YES	1430-021
12	MOUNT ISOL M/F M4X0.7	YES	1450-019
NS	GRINDER DITTING I4	YES	2280-001
13	ADJUSTER GRINDER LT I4	YES	2280-003
6	CHUTE GROUND W FRONT I4	YES	1110-800
7	PLATE GRINDER SUPPORT I4	YES	1110-697
8	NUT SS HEX KEP M4 X .07	YES	1420-036

Diagram 6: Brew Group Assembly

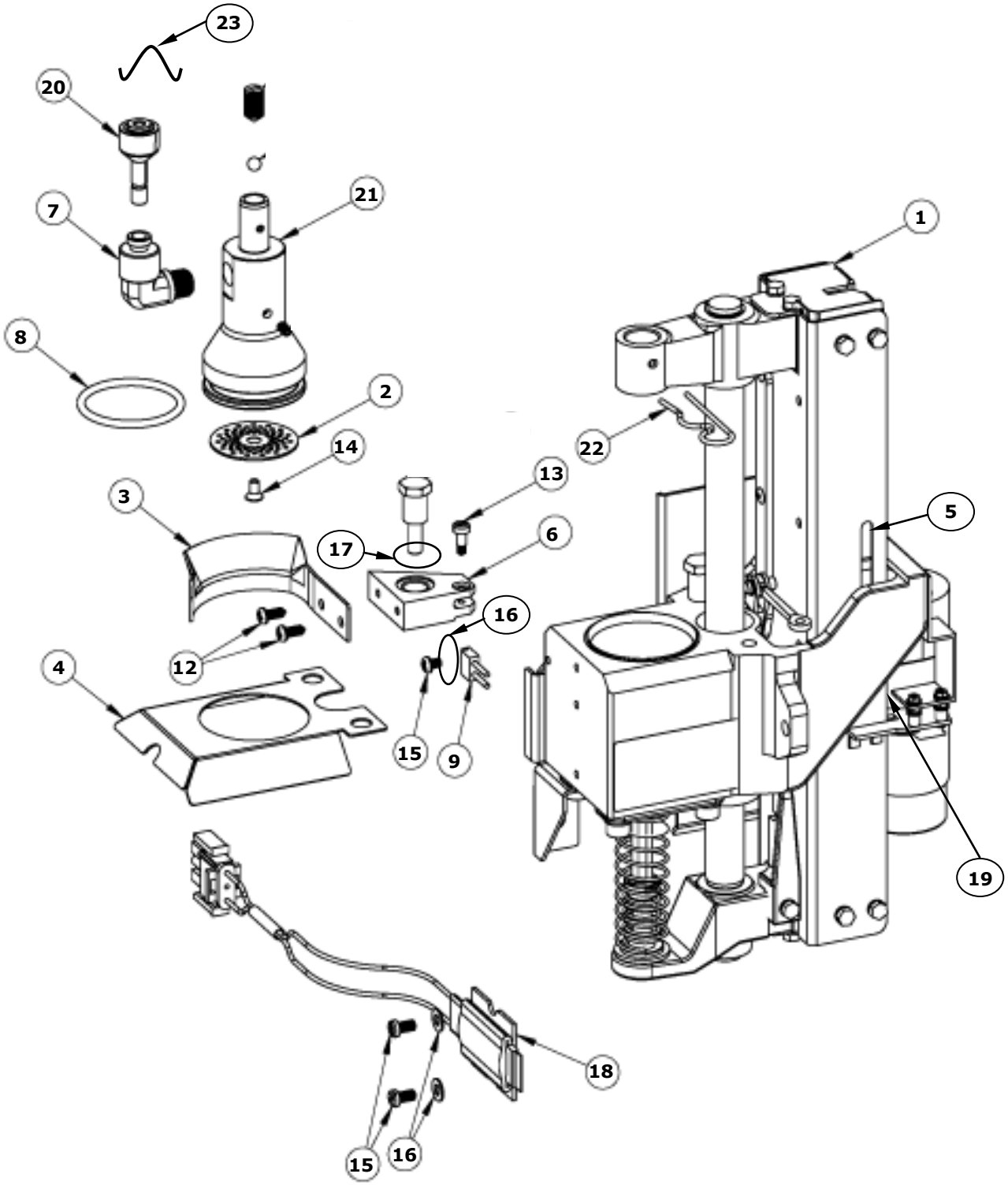


Diagram 6, Parts List: Brew Group Assembly

Diagram 6 Item #	Description	Available	Concordia Part Number
1	ASSY BREW GROUP I4	YES	2150-020
2	MICRO SCREEN UPPER PISTON	YES	1110-446
3	ARM SWEEP 1.5K	YES	1110-611
NS	PLATE GROUP ADAPTER I4	YES	1110-714
4	PLATE BREW GRP TOP I4	YES	1110-750
5	BRKT NO-BEAN SENSING I4	YES	1110-780
6	BASE PIVOT SWEEP ARM	YES	1120-230
7	ELBOW 1/8NPT X 1/4T	YES	1232-097
NS	HALF CARTRIDGE 1/4	YES	1232-099
NS	ADAPT 1/8BSPP X 1/4JG	YES	1233-019
NS	TUBE PFA 5/32 ID X 1/4 OD	YES	1250-006
8	O RING UPR PISTON 1K/1.5K	YES	1260-072
9	SW TEMP GROUP 60C	YES	1311-032
NS	PIN M AMP MED	YES	1353-009
NS	TUBE HEAT SHR 1.5 BLK	YES	1383-021
10	PH PHIL MS SS 6-32 X 1/4	YES	1410-007
12	PH PHIL SMS SS 6 X 3/8	YES	1410-121
13	SHLDR SS 1/4LX5/32WX6-32	YES	1410-129
14	FH PHIL SS M4X12	YES	1410-135
15	CH SLOT SS- M4 X 8	YES	1410-169
16	WASHER FLAT #8	YES	1430-011
17	WSHR WAVE .40ID X .61OD	YES	1430-039
18	ASSY GRP HTR I4	YES	2150-021
19	SENSOR-GROUP-IR-1000i	YES	2160-004
20	ASSY- ADAPT- 5/32T X 1/4T	YES	2340-034
24	CBL-GROUP IR-1000i	YES	2670-132
21	KIT F3 GRP UPPER PISTON	YES	2150-019 or 98007
22	COTTER PIN	YES	1451-036
23	CLIP LOCKING 1/4	YES	1454-055
NS	CBL-GROUP IR-1000i	YES	2670-132

Diagram 7: Milk Delivery System

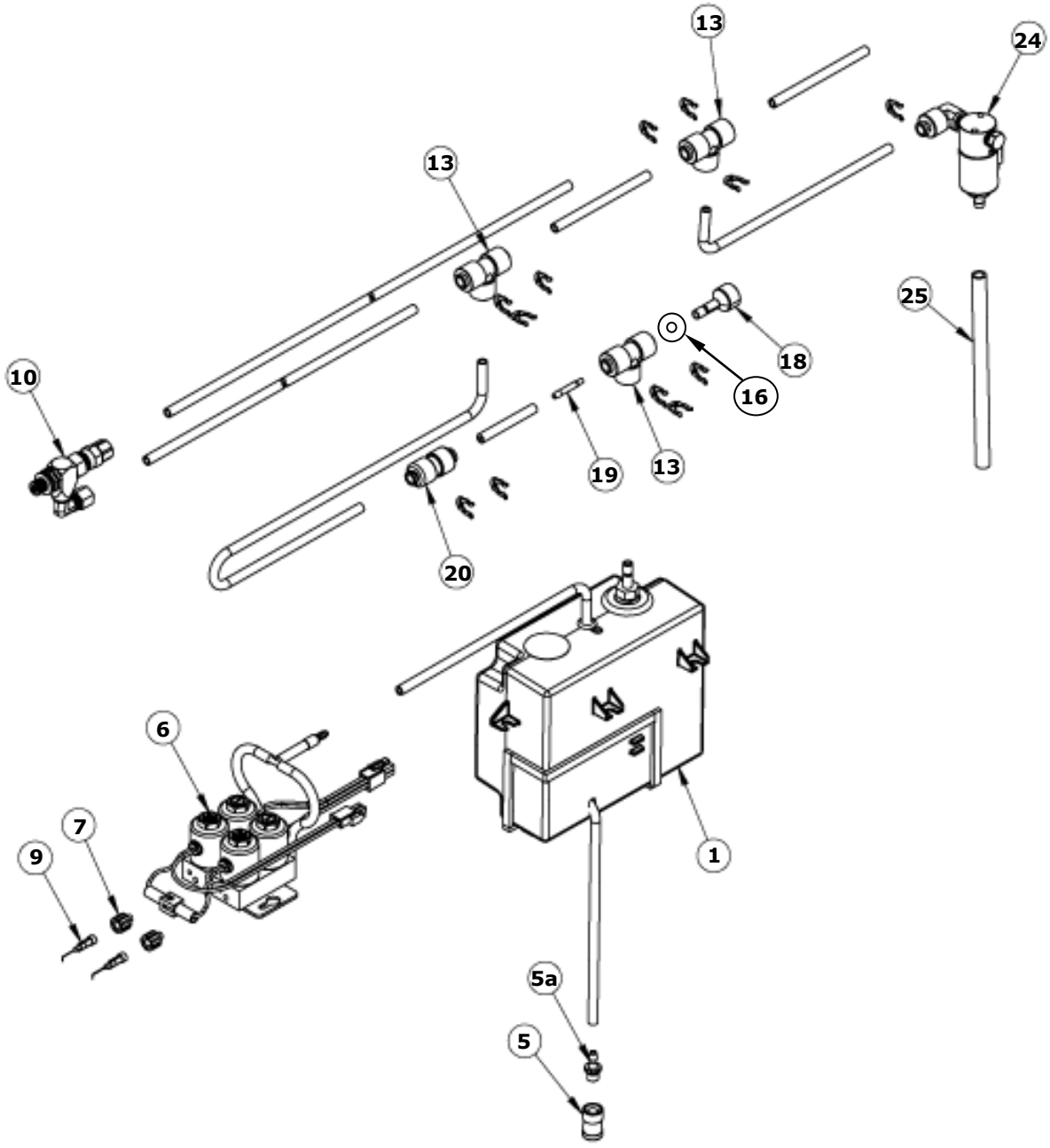


Diagram 7, Parts List: Milk Delivery System

Diagram 7 Item #	Description	Available	Concordia Part Number
1	ASSY PMP MLK 210/60 V2 I4	YES	2340-104
5	ADAPT 5/32B X 5/16-24 THR	YES	1232-114
5a	SCREEN MILK PICKUP FILTER	YES	1450-015
6	ASSY VLV AIR GATE I4	YES	2790-137
7	CONN LUER VENT 1000i	YES	1232-079
9	VENT AIR 30GA 90D LAVENDR	YES	1245-012
10	VALVE FLOW CONTROL STEAM	YES	1210-030
13	TEE 1/4T X 1/4T X1/4T	YES	1232-084
16	WSHR SHLDR NYLON 5/16 4	YES	1430-023
18	ASSY- ADAPT- 5/32T X 1/4T	YES	2340-034
19	ASSY STEAM JET I4	YES	2790-161
20	CONN UNION 1/4T	YES	1232-098
24	ASSY VAC BREAK VLV I4	YES	2790-194
25	TUBE SILICONE 1/4 X 3/8	YES	1250-018

Diagram 8: Refrigeration Unit Module Assembly

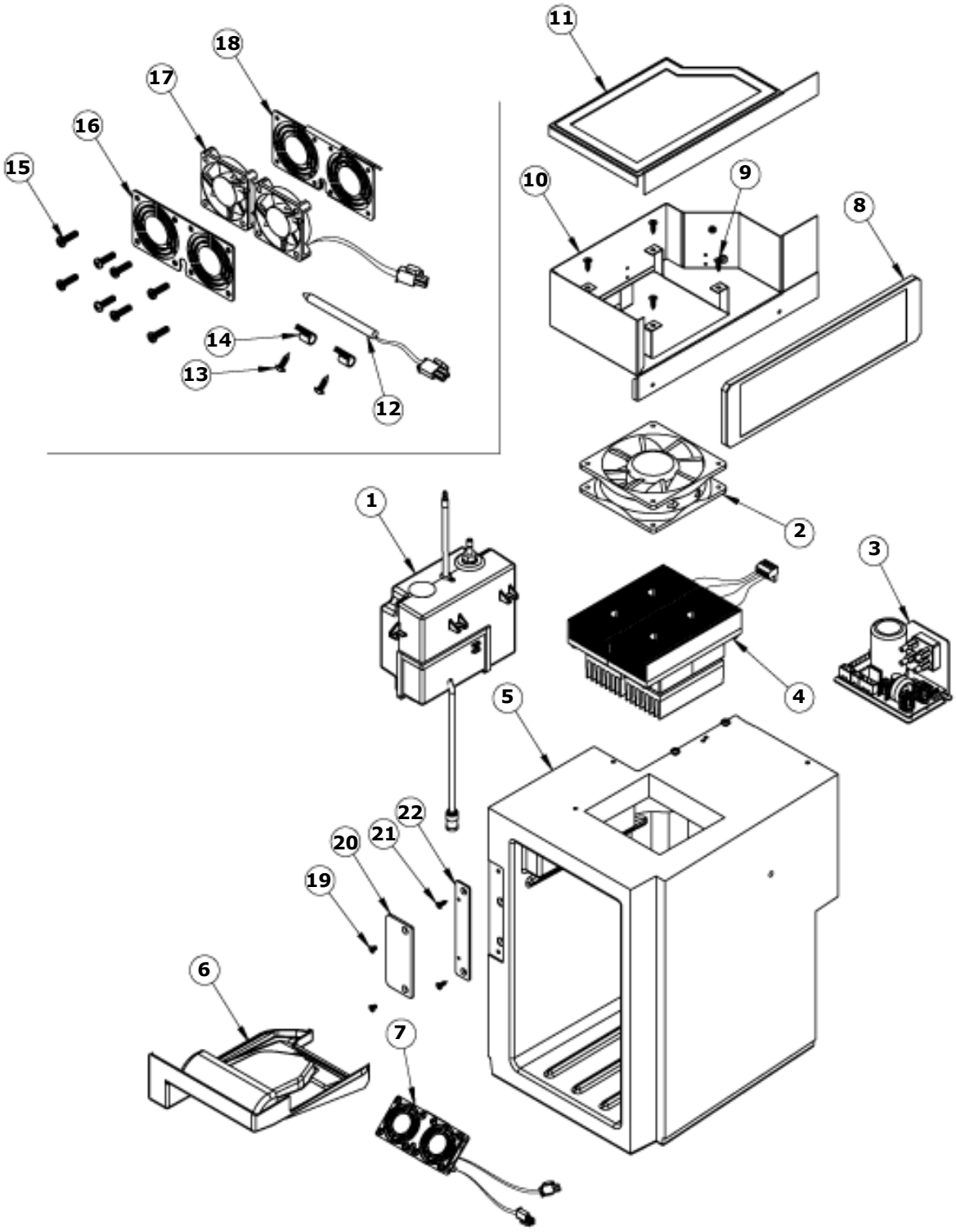


Diagram 8, Parts List: Refrigeration Unit Module Assembly

Diagram 8 Item #	Description	Available	Concordia Part Number
1	ASSY PMP MLK 210V/60HZ I4	YES	2340-097
2	FAN HEATSINK 12VDC 4.5	YES	1332-001
3	ASSY RFR SPL PWM I4	YES	2620-021
4	ASSY RFR MODULE-1K/I4	YES	2320-038
5	SHELL REFER 1000I/1500S	NO	1120-211
6	PLENUM RFR INTERNAL I4	YES	1120-256
7	ASSY FAN CIRC REFER I4	YES	2310-039
8	FILTER AIR I4	YES	1120-334
9	FH PHIL #10 X 5/8 FAN MNT	YES	1410-184
10	PLENUM HOT SIDE BOT I4	YES	1110-752
11	PLENUM HOT SIDE TOP I4	YES	1110-751
12	PROBE TMP RFR 1500	YES	2660-031
13	PH PHIL SMS SS 8 X ½	YES	1410-066
14	CLAMP CABLE NYLON ¼	YES	1454-022
15	PH PHIL SS 8-32 X 5/8	YES	1410-105
16	GUARD FAN REFER I4	YES	1110-807
17	FAN 12VDC 50X50X10MM 9CFM	YES	1332-003
18	BRACKET FAN GUARD INT RFR	YES	1110-808
19	FH PHIL U/C 8-32 X 3/8 SS	YES	1410-057
20	STRIKE DOOR I4	YES	1110-731
21	FH PHIL SMS SS 8 X 1/2	YES	1410-125
22	ADAPTER PLATE RFR SHELL	YES	1110-766

Diagram 9: Steam Tank Assembly

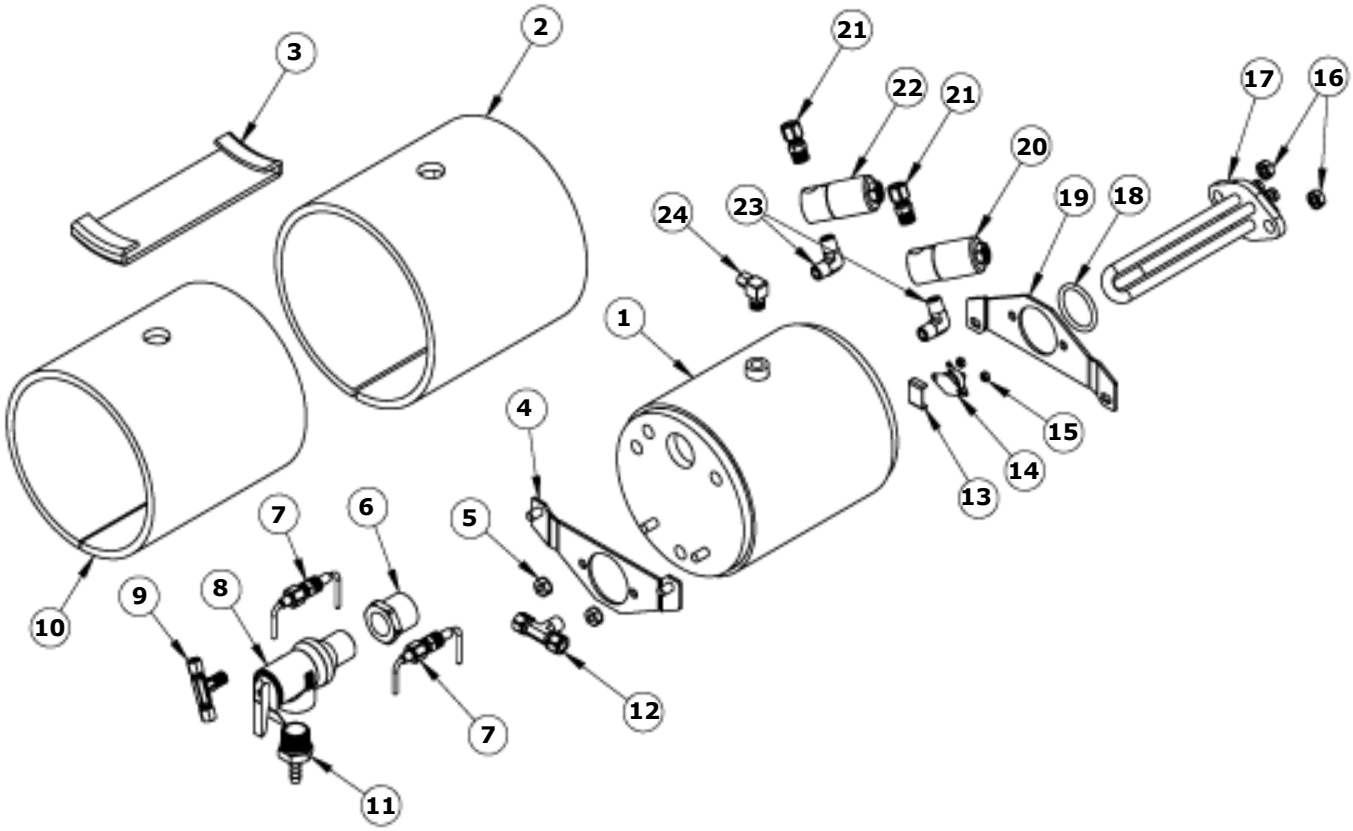


Diagram 9, Parts List: Steam Tank Assembly

Diagram 9 Item #	Description	Available	Concordia Part Number
	ASSY TANK STEAM INTEGRA	YES	2730-045
1	TANK WATER/STEAM I4	YES	1140-023
2	INSUL TANK COVER I4	YES	1140-025
3	TAPE-INSULATION-1/8X2X30’	YES	3300-016
4	BRKT TANK SUPPORT LT I4	YES	1110-713
5	NUT KEP 1/4 20 SS	YES	1420-031
6	BUSHING 3/4M X 1/2F	YES	1231-095
7	PROBE STM I4	YES	2660-047
8	VALVE PRV 30 PSI	YES	1210-044
9	TEE 1/8MX1/8TX1/8T	YES	1231-056
10	INSUL TANK UNDR PAD I4	YES	1140-024
11	CONN BRASS 1/2M X 1/4B	YES	1231-084
12	TEE 1/8M X 1/4T X 1/4T	YES	1231-044
13	METAL FAB LIMITER SWITCH	YES	1110-081
14	SW MAN TEMP LIMIT 260 DEG	YES	1311-022
15	NUT KEP SS 4-40	YES	1420-024
16	NUT KEP 1/4 20 SS	YES	1420-031
17	HEATER TANK I4	YES	2650-022
18	O-RINT- HTG ELEMENT	YES	1260-054
19	BRKT TANK SUPPORT RT I4	YES	1110-710
20	VALVE STEAM HIGH TEMP	YES	1210-017
21	CONN BRASS 1/8M X 1/4T	YES	1231-008
22	VALVE STEAM HIGH TEMP	YES	1210-017
23	ELBOW 1/8M X 1/8M	YES	1231-094
24	ELBOW BRASS 1/8M X 1/8T	YES	1231-015

Diagram 10: Water Tank

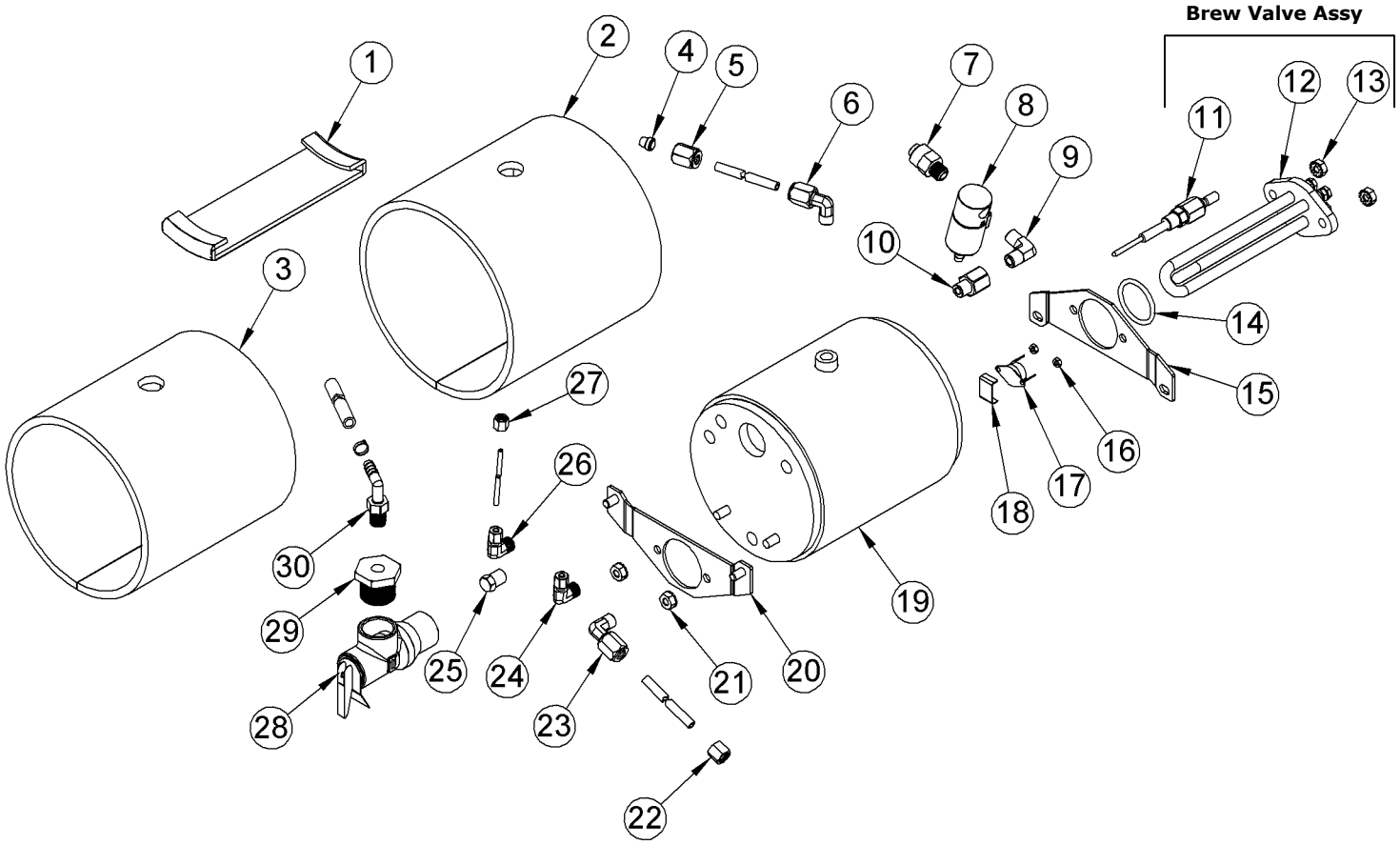


Diagram 10, Parts List: Water Tank Assembly

Diagram 11 Item #	Description	Available	Concordia Part Number
	ASSY TANK WATER I4	YES	2720-053
1	TAPE-INSULATION-1/8X2X30'	N/A	3300-016
2	INSUL TANK COVER I4	N/A	1140-025
3	INSUL TANK UNDR PAD I4	N/A	1140-024
4	FERRULE SS 1/4	YES	1233-026
5	NUT SS 1/4 TUBE FITTING	YES	1233-027
6	ELBOW SS 1/8M X 1/4T	YES	1233-021
	ASSY VALVE BREW I4	YES	2720-056
7	CONN 1/8M X 1/4T	YES	1232-071
8	VALVE 3-WAY BREW I4	YES	1210-052
9	ELBOW SS 1/8M X 1/8F	YES	1233-029
10	NIPPLE SS HEX 1/8M	YES	1233-031
11	ASSY WATER/TEMP PROBE	YES	2660-053
12	HEATER TANK I4	YES	2650-022
13	NUT KEP 1/4 20 SS	YES	1420-031
14	O RING- HTG ELEMENT	YES	1260-054
15	BRKT TANK SUPPORT LT I4	N/A	1110-710
16	NUT KEP SS 4-40	YES	1420-024
17	SW TEMP LIMIT 210F DEG	YES	1311-005
18	METAL FAB LIMITER SWITCH	YES	1110-081
19	TANK WATER/STEAM I4	N/A	1140-023
20	BRKT TANK SUPPORT RT I4	N/A	1110-713
21	NUT KEP 1/4 20 SS	YES	1420-031
22	FERRULE BRASS 1/4IN	YES	1231-022
23	ELBOW SS 1/8M X 1/4T	YES	1233-021
24	ELBOW SS 1/8T X 1/8M	YES	1233-002
25	PLUG SS 1/8M	YES	1233-022
26	ELBOW SS 1/8T X 1/8M	YES	1233-002
27	FERRULE BRASS 1/8IN	YES	1231-021
28	VALVE WTR PRV 175 PSI	YES	1210-043
29	CONN PVC 1/4F X 3/4M	YES	1232-002
30	CONN ELBOW 1/4BARBX1/4MP	YES	1232-014

Diagram 11: Electrical Enclosure

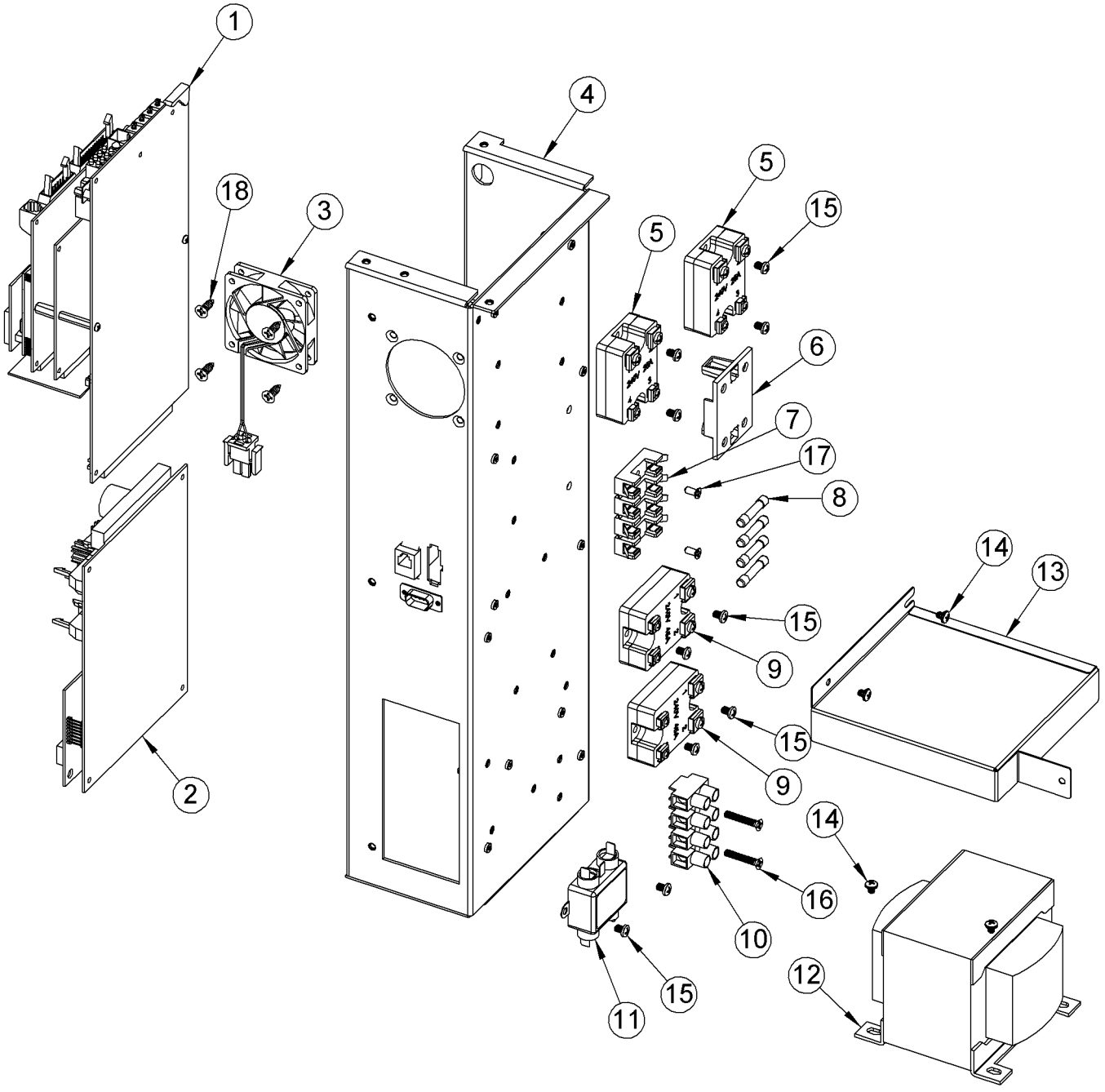


Diagram 11, Parts List: Electrical Enclosure

Diagram 12 Item #	Description	Available	Concordia Part Number
	ASSY AC PWR SYR I4	YES	2630-095
1	ASSY CPU W/SYR I4	YES	2630-097
2	ASSY PCA ACDC W/ADJ	YES	2630-112
3	ASSY FAN AC PWR I4	YES	2510-135
4	ENCL ELECTRONICS MNTG I4	N/A	1110-721
5	RELAY SS 25A OPTO	YES	1312-031
6	COVER RELAY OPTO	YES	1312-032
7	FUSE BLOCK 4 POS 20AMP	YES	1343-004
8	FUSE 20A CERAMIC TIME DLY	YES	1342-010
9	RELAY SS 45 AMP AC DRW	YES	1312-034
10	TERMINAL 4 POLE 2 ROW	YES	1359-024
11	FILTER EMC POWER LINE	YES	1366-002
12	XFMR I4	YES	1320-023
13	BRKT PWR SUPP SHIELD I4	YES	1110-720
14	PH PHIL MS SS 8-32 X 3/16	YES	1410-009
15	PH PHIL MS SS 8-32 X 1/4	YES	1410-010
16	FH PHIL MS SS 8-32 X 1	YES	1410-076
17	FH PHIL U/C 8-32 X 3/8 SS	YES	1410-057
18	FH PHIL #10 X 5/8 FAN MNT	YES	1410-184

Diagram 12: Sauce Delivery System

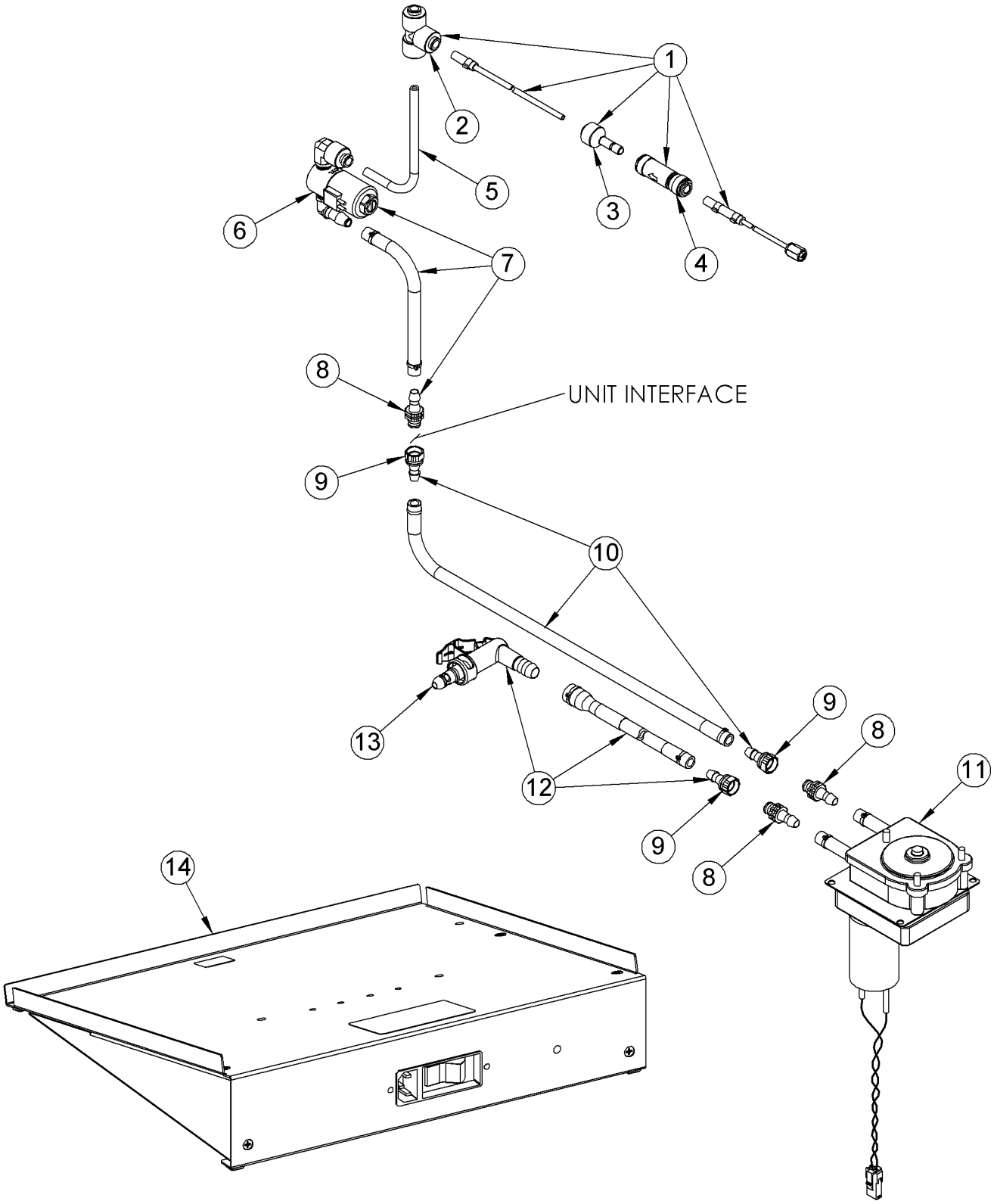


Diagram 12, Parts List: Sauce Delivery System

Diagram 14 Item #	Description	Available	Concordia Part Number
1	ASSY CHOC PURGE LINE I4	YES	2790-148
2	TEE 1/4T X 1/4T X1/4T	YES	1232-084
3	ASSY- ADAPT- 5/32T X 1/4T	YES	2340-034
4	VALVE CHECK 1/4" X 1/4"	YES	1210-047
5	TUBE PFA 5/32 ID X 1/4 OD	YES	1250-006
6	VALVE STEAM HIGH TEMP	YES	1210-017
7	ASSY VALVE CHOC I4	YES	2720-054
8	ASSY SYR TUBING BLK I4	YES	2790-151
9	ASSY SYR TUBING BLK I4	YES	2790-151
10	ASSY TUBE SYR PMP BLK I4	YES	2790-155
11	ASSY PARISTALTIC SYR PUMP	YES	2345-002
12	ASSY SYR TUBING BLK I4	YES	2790-151
13	ASSY SYR TUBING BLK I4	YES	2790-151
14	ASSY SYR RACK HTR 120VAC	YES	2510-120

Diagram 13: Milk Pump Assembly

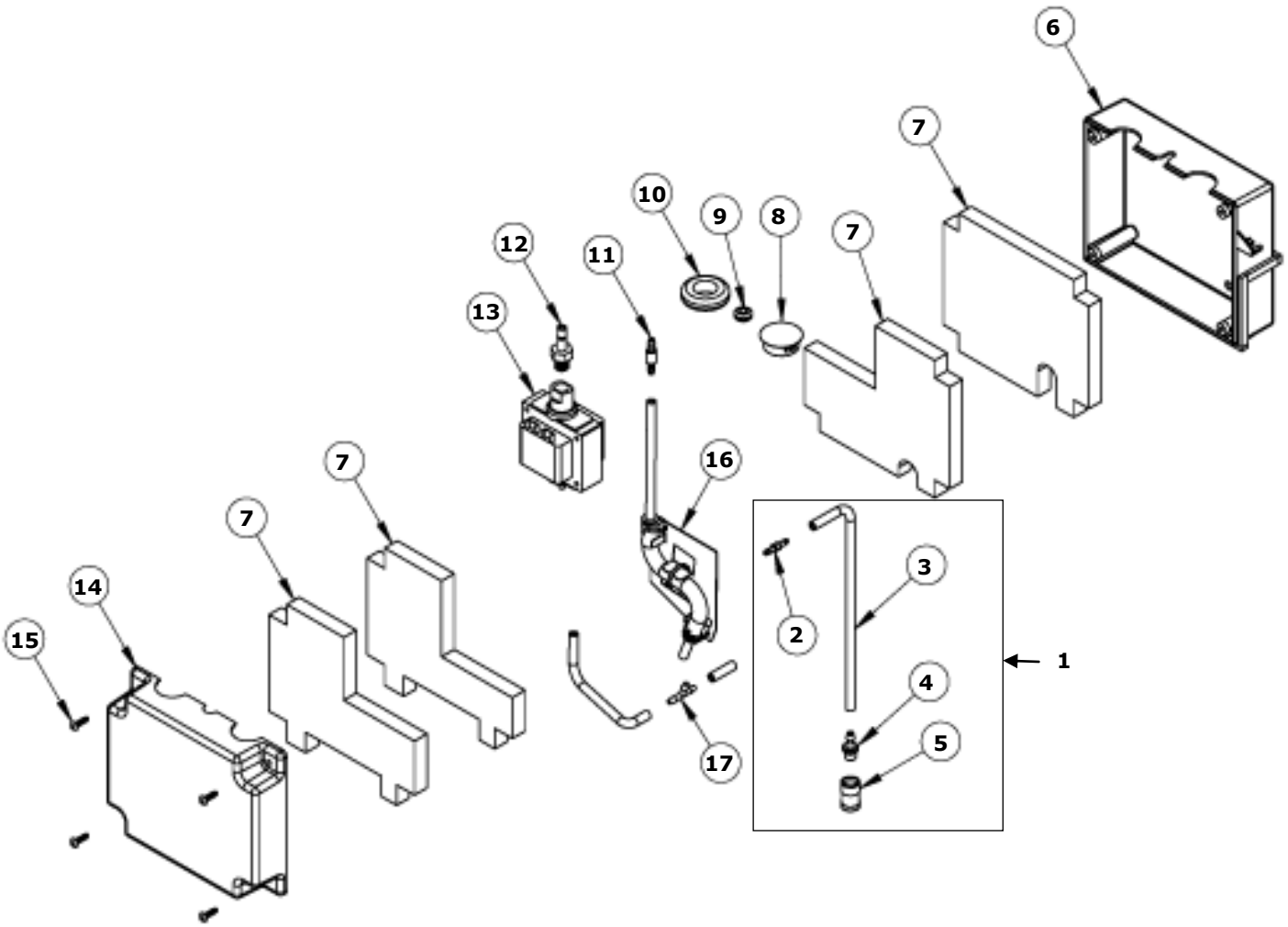


Diagram 13, Parts List: Milk Pump Assembly

Diagram 16 Item #	Description	Available	Concordia Part Number
	ASSY PMP MLK 210/60 V2 I4	YES	2340-104
1	ASSY MILK PICK UP DOM I4	YES	2340-101
2	CONN BARB STRGHT 1/8	YES	1232-028
3	TUBE CLR PVC 1/8 X 1/4	YES	1250-019
4	ADAPT 5/32B X 5/16-24 THR	YES	1232-114
5	SCREEN MILK PICKUP FILTER	YES	1450-015
6	HSG MLK PMP RFR SIDE I4	YES	1120-309
7	INSUL MLK PMP I4	YES	1120-320
8	PLUG HOLE COVER 1"	YES	1240-054
9	GROM 5/16IDX.44GDX1/16GRV	YES	1260-083
10	GROMM 11/16IDX1ODX1/8GR	YES	1260-089
11	VALVE AIR CHECK 1-PSI	YES	1210-045
12	ASSY TUBE STEM ADAPT CAPP	YES	2340-048
13	PUMP MILK T21 210V	YES	2340-095
14	HSG MLK PMP I4	YES	1120-310
15	PH PHIL TFS SS #6 1/2	YES	1410-181
16	ASSY MLK PMP AIR TUBE I4	YES	2340-100
17	TEE NYLON 1/8 TUBE	YES	1232-020

Diagram 14: Flowmeter

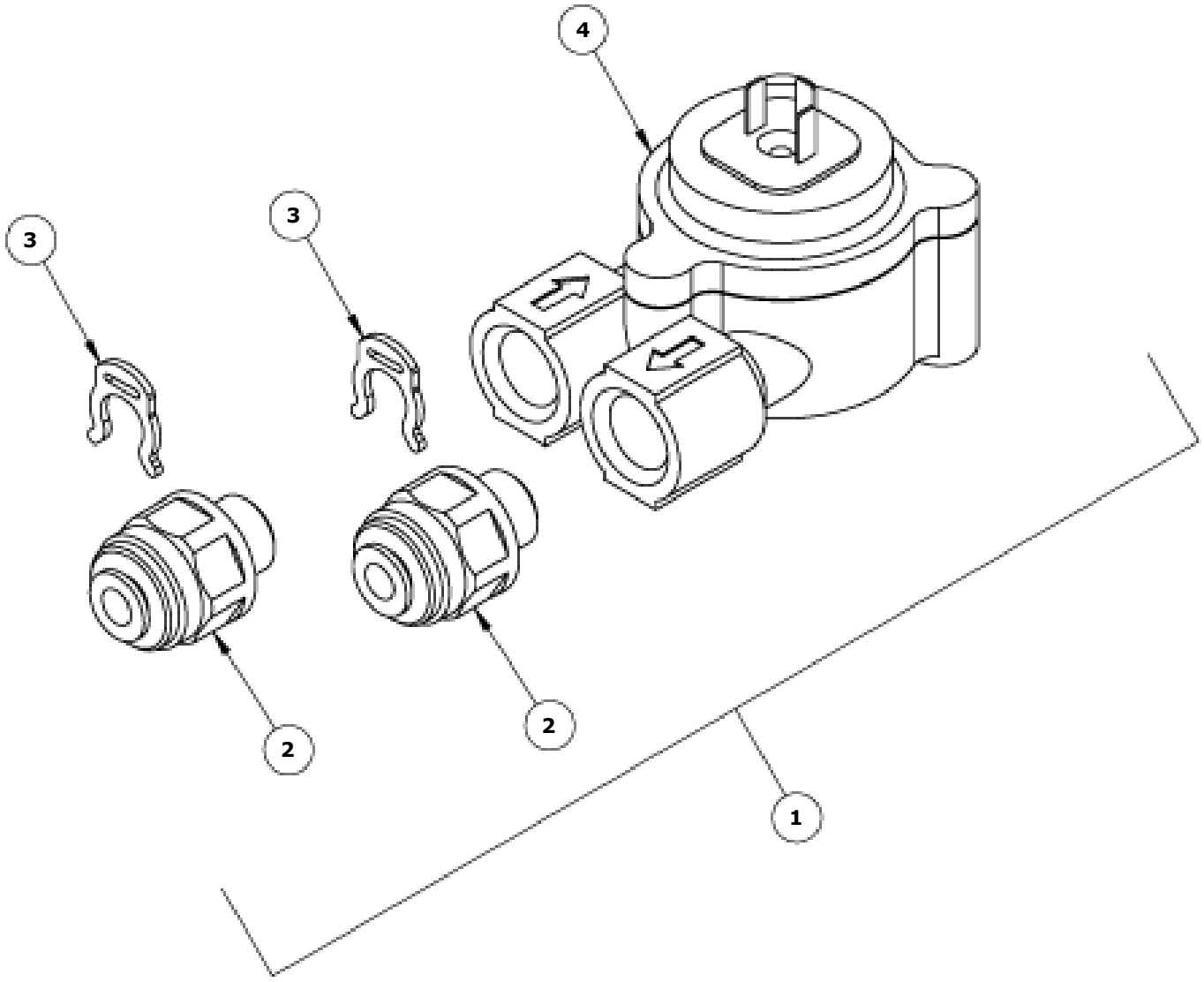


Diagram 14, Parts List: Flowmeter

Diagram 17 Item #	Description	Available	Concordia Part Number
1	ASSY FLOWMETER DIGMESA	YES	2660-056
2	CONN 1/4T X 1/4 BSPP JG	YES	1232-124
3	CLIP LOCKING 1/4	YES	1454-055
4	FLOWMETER DIGMESA 1.2MM	YES	2660-057
NS	PH PHIL SS M4 X 8	YES	1410-098

Diagram 15: Water Pump Assembly

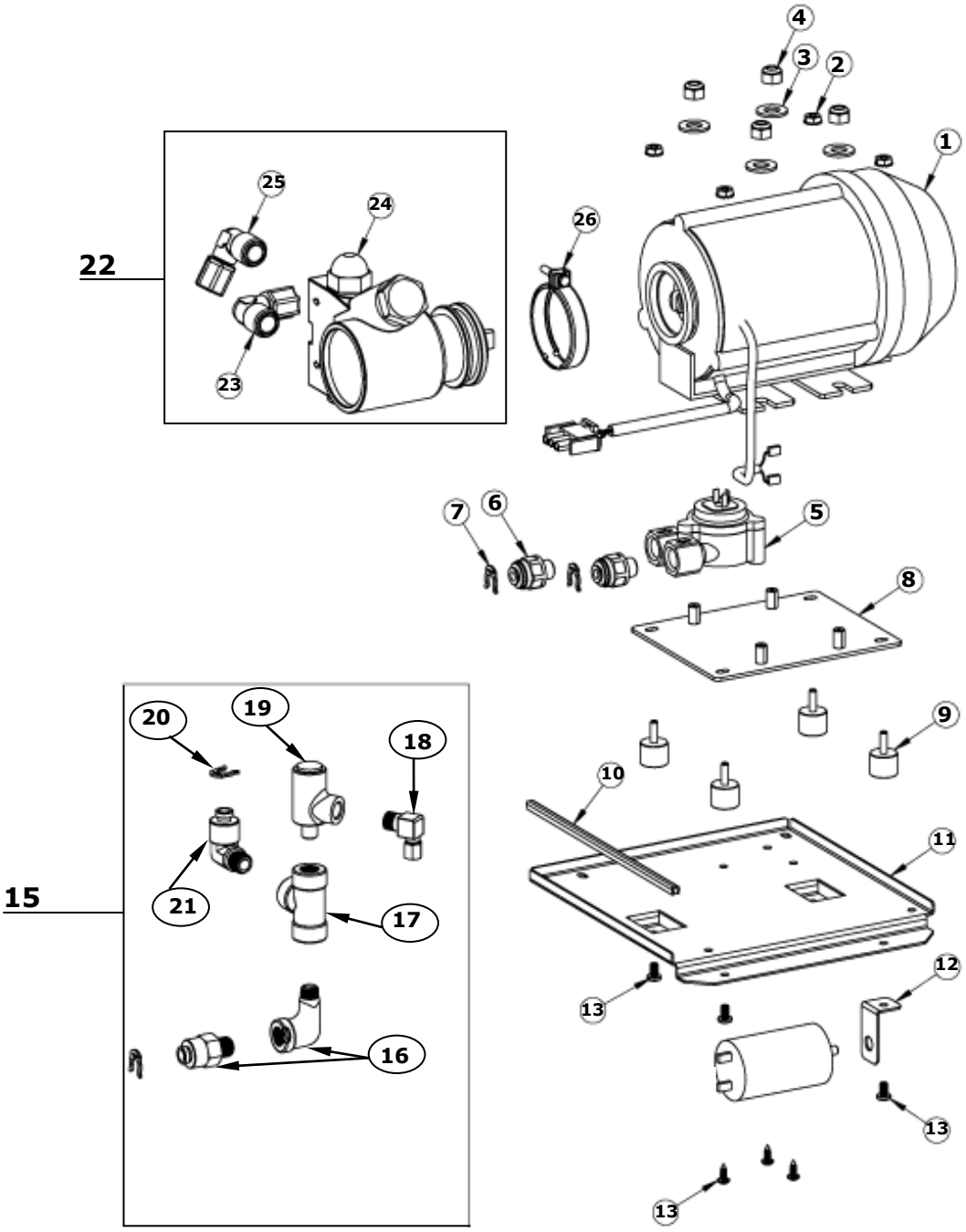


Diagram 15, Parts List: Water Pump Assembly

Diagram 18 Item #	Description	Available	Concordia Part Number
	ASSY WTR PMP &MTR 208V I4	YES	2710-022
1	ASSY MTR WTR PMP MOD I4	YES	2400-021
2	NUT SS HEX KEP M4 X .07	YES	1420-036
3	WSHR FLAT SAE SS 5/16	YES	1430-016
4	NUT NYLOC 1/4-20	YES	1420-008
5	FLOWMETER DIGMESA 1.2MM	YES	2660-057
6	CONN 1/4T X 1/4 BSPP JG	YES	1232-124
7	CLIP LOCKING ¼	YES	1454-055
8	ADAPTER PLATE PUMP MOTOR	YES	1110-765
9	MOUNT ISOL M/F M4X0.7	YES	1450-019
10	MOLDING EDGE SERRATED WHT	YES	1240-014
11	PLATE WTR PMP SUPPORT I4	YES	1110-699
12	BRKT CAP WTR PMP MTR I4	YES	1110-778
13	PH PHIL SS M4 X 8	YES	1410-098
15	ASSY EXPANSION VALVE I4	YES	2790-141
16	ELBOW SXL 1/8M X 1/4T	YES	1233-037
17	TEE SS 1/8F X 1/8F X 1/8F	YES	1233-030
18	ELBOW BRASS 1/8M X 1/8T	YES	1231-015
19	VLV EXPANSION 1/8M X 1/8F	YES	1210-032
20	CLIP LOCKING ¼	YES	1454-055
21	ELBOW 1/8NPT X 1/4T	YES	1232-097
22	ASSY PUMP WATER I4	YES	2710-021
23	ELBOW SXL 1/8M X 1/4T	YES	1233-037
23a	BUSHING SS 3/8NPTX1/8NPT	YES	1233-040
24	PUMP WATER PAO74Z 30-GPH	YES	2710-013
25	ELBOW SXL 1/8M X 1/4T	YES	1233-037
25a	BUSHING SS 3/8NPTX1/8NPT	YES	1233-040
26	CLAMP- MTR/PUMP	YES	2710-006

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