

BUNN® TECHNICAL TRAINING

My Cafe® AP



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Unit Objectives

Given a realistic scenario depicting a new site install, the learner will be able to install and setup the brewer for customer turnover without error.

Given a new machine, all the necessary tools and safety equipment, the learner will be able to install the brewer without error.

The learner will be able to verify that the site requirements have been met.

The learner will be able to locate and document the serial number.

The learner will be able to hook up the water supply to the My Café AP.

The learner will be able to power up and perform the initial set-up of the brewer.

Installation

Site Requirements

Space

- My Café AP is only for indoor use on a sturdy counter or shelf
- My Café AP dimensions are 15.79”H x 9.5” W x 18.4” D (40.1cm H x 24.13cm W x 46.73cm D)
- Weight 30 lbs (13.6 kg.)

Water Treatment

- Sediment filtration to reduce large particles
- Taste and odor filter to remove chlorine
- Scale filtration as needed
- For best results a BUNN® Easy Clear® filtration system should be used

Plumbing

- Elbow adapter fitting provided to convert to ¼” male flare fitting
- Dedicate water supply with shut-off
- Connected to the cold water supply
- Water pressure 20-90psi, set to 50psi if regulator is needed
- If a backflow preventer is required by code, a shock arrestor should be installed close to the machine between the backflow preventer and the machine

Electrical

- 120VAC, 2 wire plus ground
- Dedicated 15Amp circuit breaker
- Receptacle within 5 feet of machine

Location of the Serial Number

The machine's serial number is located on the data plate which is located on the lower front panel behind the waste bin and drip tray. The serial number half tag can be found on the inside of the machine attached to the left side wall. Removing top lid will give you access to the serial number only tag.

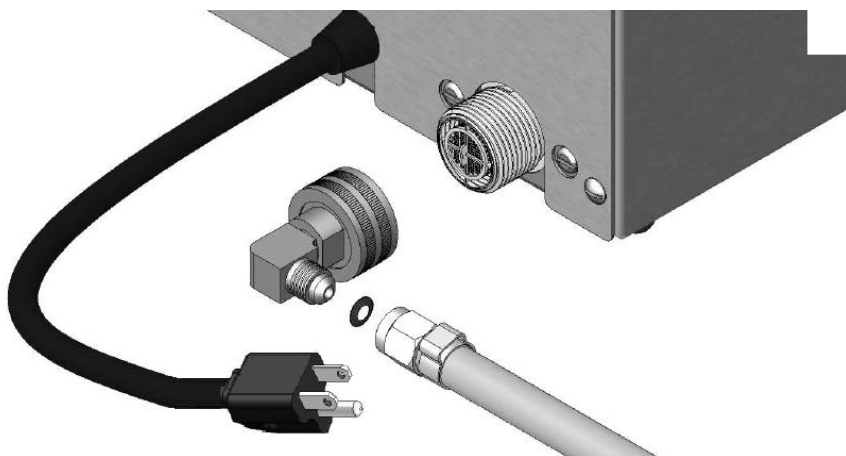
Water Supply Install

Step 1: Check water pressure, if above 90 psi, install pressure regulator and set to 50 psi before water filter.

Step 2: Install water filter and purge before installation.

Step 3: Securely attach the adaptor elbow assembly to the ¼” water supply line from the filter.

Step 4: Securely attach adapter elbow assembly to the .75-11.5 NH (Hose Thread) fitting at the rear of the brewer and turn on the water supply.



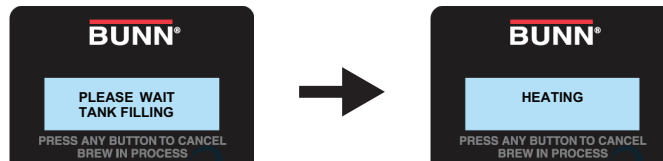
Initial Start-Up

Step 1: Place a large empty cup (10 oz. or more) under the brew chamber.

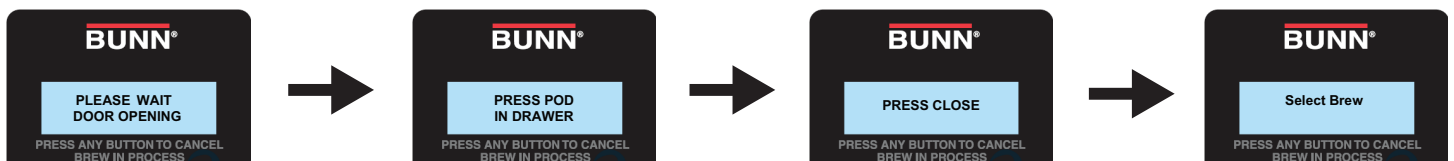
Step 2: Connect the brewer to the power source.

Step 3: Water will flow into the tank and stop when the tank is filled to its capacity.

Step 4: Wait approximately ten minutes for the water in the tank to heat to the proper temperature. Display will show HEATING until tank reaches its operating temperature.

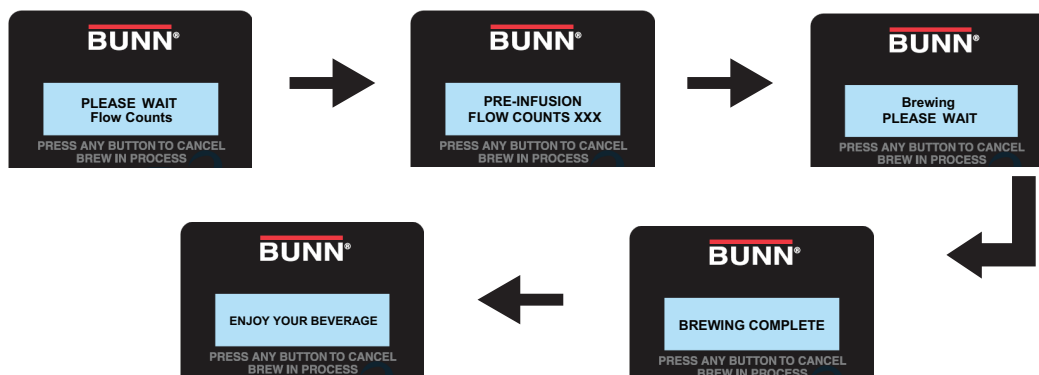


Step 5: When heated, press and release the open door switch and close door by pressing the same switch.



Step 6: Press the large Brew Switch. Water will flow into the cup. When finished, discard contents of cup.

Step 7: Water volumes and flow settings have been preset at the factory. Refer to adjustments for the Set Brew Volumes section of this manual should the volume need to be increased or decreased.



8. The brewer is now ready for use in accordance with instructions for coffee brewing.



UNIT 2 SETUP



Unit Objectives

Given a realistic scenario depicting a new site install, the learner will be able to install and setup the brewer for customer turnover without error.

Given an installed machine, all the necessary tools and safety equipment, the learner will be able to set the machine up for initial operation.

The learner will be able to operate the switch controls.

The learner will be able to enter programming.

The learner will be able to perform the brew inlet flow calibration.

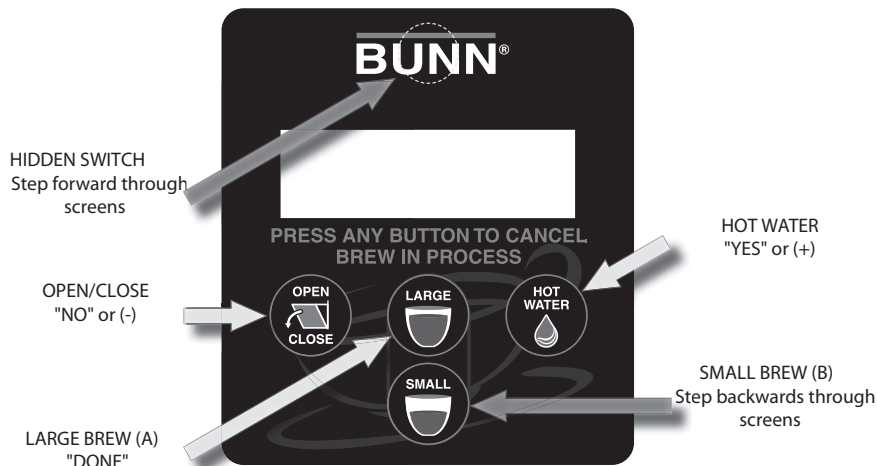
The learner will be able to perform a brew process.

Setup and Programming

User Interface

The switch decal adheres to the front housing over the electronic switch and LCD (Liquid Crystal Display) board. The mechanical switches are mounted directly onto the electronic board with a button mounted on the stem for product actuation. The switch decal is nothing more than an overlay with description of the buttons. The user interface allows the user to program the brewer for product recipes and begin the brew process with the selection of large or small cup. The My Café AP brewer also gives the user the option of a Hot Water dispense.

Switch Operation “Programming”



Switch Operation “Operating Controls”

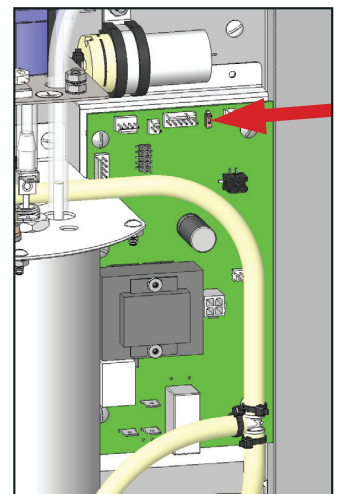


Programming Lockout Switch

The programming lockout switch is located on the main control board. This switch can be set to prevent access to the programming settings of the brewer. Once all the correct brew settings are programmed, the operator can set the switch to the “On” position to prohibit anyone from changing the settings. With the switch in the “On” position, the programming menus can still be accessed to view the current settings. However, no changes will be saved.

To access the lockout switch:

- Step 1:** Disconnect brewer from power source before removing any panel.
- Step 2:** Access the rear of the machine.
- Step 3:** Remove the rear panel by removing six standard screws.



“On Position/Locked”

The following menu screens will appear to inform you that programming is locked, but still can be accessed to view current settings.

!!!Caution!!!
Memory is Locked

Constant Change
Is Not Possible

Programming Menus

BREW LOCKOUT ?
NO DONE YES

Brew Lockout

Prevents brewing if the water temperature is less than the “SET READY” temperature.

Brew Oz (A/B) (1-16)
(-) DONE (+)

Brew Oz (A/B) (1-16)

Adjusts the brew volume.

Brew Meter (A/B) (1-5)
(-) ■■■ (+)

Brew Meter (A/B) (1-5)

Simplified pulse brew adjustment. 1=Preinfusion, 2-5=Pulse brew. 2 being the shortest pulse brew cycle and 5 being the longest.

ENTER SERVICE #?
NO YES

Enter Service

Program service phone number to be displayed anytime there is a fault message.

ENTER PASSWORD
0 0 0

Enter Password

User must enter a 3 digit password to access remainder of adjustments. If no number has been pre-programmed (000), then access is allowed.

SET PASSWORD
0 0 0

Set Password (001-999)

Program any 3 digit number as a password.

SET LANGUAGE ?
NO YES

Set Language

Chose between English or French.

UNITS
METRIC DONE ENG

Units

Chose between English (Oz, °F) or Metric (ML, °C).

SET TEMP: 200°
(-) DONE (+)

Set Temp

Adjust tank temperature 185° F to 205° F (85° C to 96° C).

SET READY: 195°
(-) DONE (+)

Set Ready

Sets the minimum temperature allowable to start a brew cycle. If BREW LOCKOUT is enabled. Range: (2° F to 20° F) or (2° C to 10° C) below the set temperature.

HOT H2O LOCKOUT ?
NO DONE YES

Hot H2O Lockout

Prevents a hot water dispense if water is not up to the H2O Ready temperature, if enabled. Setting to “YES” will only allow dispensing of hot water at or above the “H2O READY” temp screen.

H2O READY: 195°
(-) DONE (+)

Hot H2O Ready

Sets the minimum temperature allowable to start dispensing hot water.

ENTER ASSET # ? NO YES	Enter Asset # This function allows you to enter an optional asset number. This can be useful for tracking the usage or service of an individual machine within a group.
SetPulseBrew A/B NO DONE YES	Set Pulse Brew (A/B) Individually adjust on/off times. This will override BREW METER.
AIR TIME A/B: 15.0 (-) DONE (+)	Air Time (A/B) Time the air pump runs after the brew pump shuts off. This air extracts any excess water remaining in the pod. Range: 1-60, Default: 15
BREWS TO EMPTY (-) 25 (+)	Brews To Empty Sets number of used pods needed in bin to display “Empty Bin” message. Range: Disable/15-25
EnablEnergySavr NO DONE YES	Enable Energy Saver Choose to have the tank heaters turn off, or reduce the tank temp to 140°F, (60°C) once the “Set Idle Time” has expired. Range: .5 hours - 50.0 hours
BREW COUNT NEXT	Brew Count, Next Life counter with no resettable brew count.
BREW COUNT ## RESET NEXT	Brew Counts Retains the total number of brew cycles completed. There is one counter and one life counter that cannot be reset.
CALIBRATE FLOW ? NO YES	Calibrate Flow Allows you to test the dispense flow rate out of the sprayhead for one minute and prompts an ounce adjustment menu for entry of ounces delivered during test. New ounces entered in menu will calculate the number of flow counts needed to deliver 10 ounces.
FLOW COUNTS/10 OZ. 225	Flow Counts/10 oz. Informational and adjustable menu displaying the calibrated flow count number in relation to a 10 ounce dispense.
NUMBER OF EJECTS SINGLE DOUBLE	Number of Ejects Option of setting how many times the brewer tries to eject coffee pod after a brew cycle.
Brews On This Seal Reset Next ##	Brews On This Seal Informational and resettable menu to be used as a guide to tell the user or technician when a preventive maintenance needs to be performed.
SERVICE TOOLS ? NO YES	Service Tools Allows testing of load components and switches. It should be used only by a trained technician.
FACTORY DEFAULTS NO YES	Factory Defaults Resets all brew settings and calibrations back to factory presets.
AutoPOD Brewer Single Tank V.09	AutoPOD Brewer Single Tank V.09 Informational menu displaying software version number.

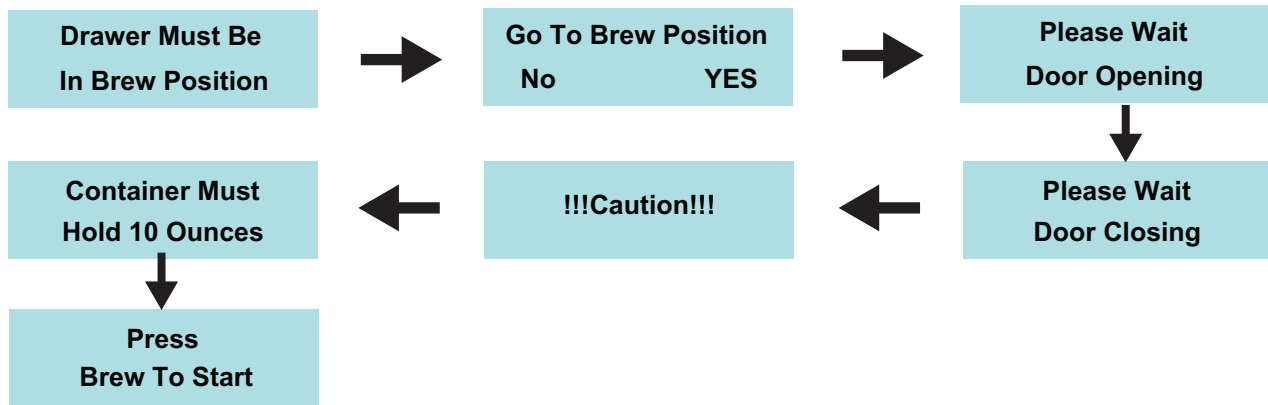
Calibrate Brew Inlet Flow

After initial start-up, a flow rate calibration may need to be performed.

Note: Follow the 8 steps below twice to complete a calibration process.

Step 1: Enter the program mode and scroll to the CALIBRATE FLOW menu and select YES.

Step 2: Menu screens will scroll to the following messages:

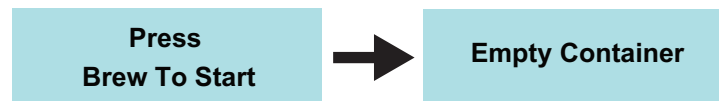


Press large or small button to begin the two stop calibration process.

Step 3: The machine will display a series of informational menus along with the FLOW COUNT number counting down during dispense routine. When the flow count number reaches zero, dispense will stop.

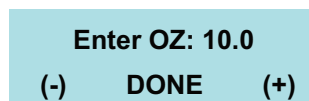
Step 4: The machine will prompt a message to the user or technician "HEATING". The tank must be at set temperature before you can start the second part of the calibration process.

Step 5: Once set temperature has been achieved, the machine will display messages to prompt the user to do the following:



Step 6: The machine will repeat step 3, the flow countdown dispense routine. Measure the captured hot water in ounces.

Step 7: The machine will display the following menu after the second dispense routine. Use the (-) or (+) buttons on the switch pad to enter the amount of ounces captured in your graduated measuring container. Press "DONE" when finished.



Step 8: The ounces entered in Step 7 will calibrate a new flow count number in relation to a 10 ounce dispense. The flow count number changes and will be set as the new calibration flow number.

Note: Reloading FACTORY DEFAULTS will erase the calibrated flow number and go back to the factory default number for 10 ounces.

Coffee Brewing Process

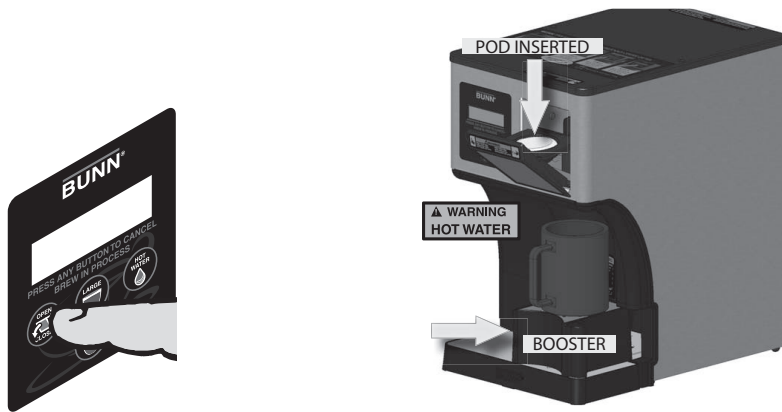
Step 1: The home screen will display a total of three messages.



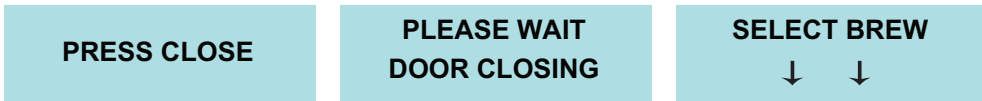
Step 2: Place cup under the brew chamber and onto the booster tray or drip tray.



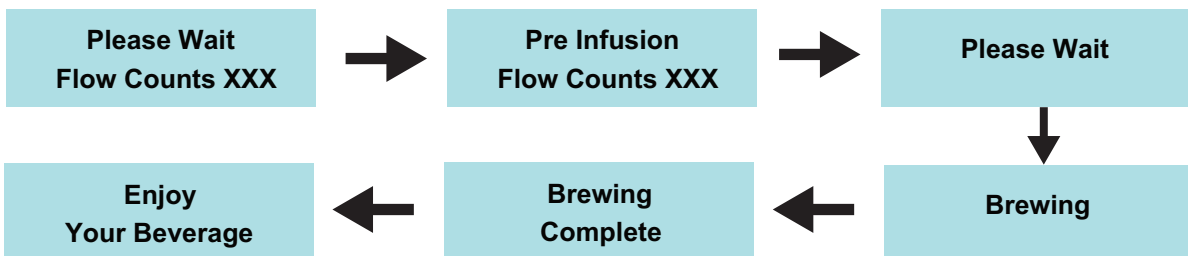
Step 3: Press the Open/Close switch to open the pod door and press a coffee pod firmly down into the pod holder. menu screens will guide you through the process. The pod holder will accommodate a variety of pods and different sizes from 50 to 61mm (1.97" - 2.40") diameter.



Step 4: Press the Open/Close switch to close the pod door. The following menu screens will prompt you to close the pod door and select a brew size.



Step 5: After selecting large or small brew, the menu screens will scroll brewing messages during the brew process and inform you when brewing is complete. The system will automatically dispense the pod into the pod bin, reset back to standby position and be ready for next brew command.



UNIT 3 MACHINE COMPOSITION

Unit Objectives

Given a realistic scenario in which the learner has access to the machine's internal components the learner will understand the composition and functions of the brewer.

Given a realistic scenario requiring the learner to access the internal components of the machine the learner will be able to remove the housing and panels.

The learner will disconnect the electrical and water supply.

The learner will remove the housing and panels.

Given an operating machine the learner will be able to give a general explanation of how the unit operates.

The learner will be able to identify the functions of the main control board and identify the components that correspond to each triac.

The learner will be able to identify the components and functions of the fill system.

The learner will be able to identify the components and functions of the hot water dispense system.

The learner will be able to identify the components and functions of the brew dispense system.

The learner will be able to identify the components and functions of the heating system.

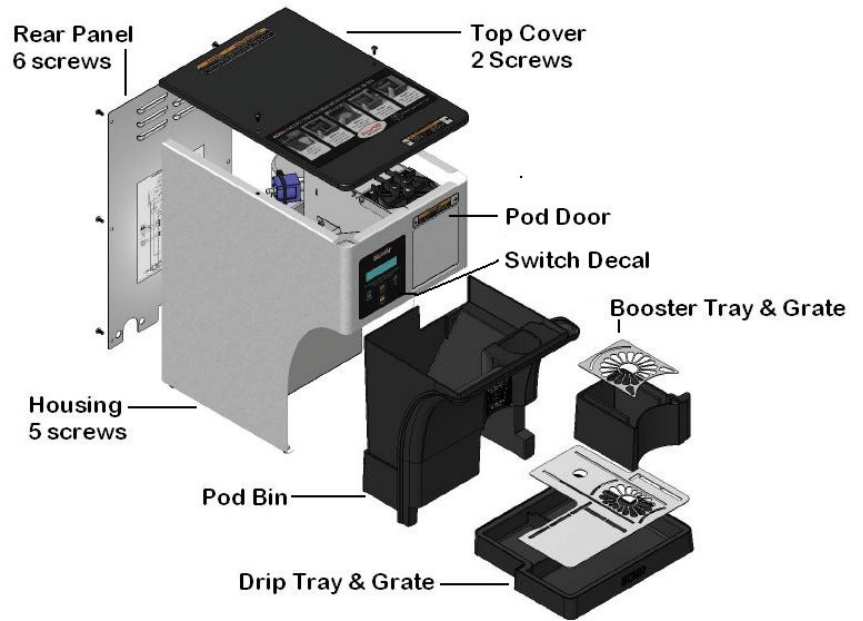
The learner will be able to identify the components and functions of the ejector assembly.

Machine Composition

Exterior Overview

Product Outlets and Removable Parts

- Pod Door
- Drip Tray and Grate
- Booster Tray and Grate
- Pod Bin
- Top Cover
- Rear Panel
- Main Housing
- Switch Decal



Accessing the Inside of the Brewer

The majority of service work done to the My Café AP brewer will require the service technician to access the inside of the unit. The brewer has three removable panels to facilitate access- the main housing, top cover and rear panel. Depending on the type of repair, the technician may have to remove one or more of these panels.

In order to work safely the power should be disconnected prior to removal of any body panel. Once the panels are removed the power can be reconnected in order to troubleshoot the machine.

Removing the Top Cover, Rear Panel and Housing

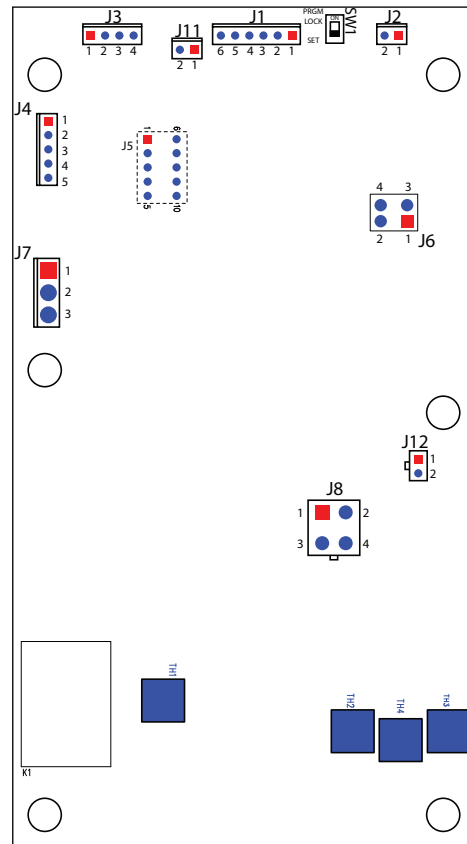
- Step 1:** Disconnect unit from power.
- Step 2:** Use a standard screwdriver and remove the two screws from the top cover of the unit. Lift the top cover up and away from the unit.
- Step 3:** Move to the rear of the unit and remove the six standard screws securing the back panel. Pull the panel back and away from the unit.
- Step 4:** Return to the front of the unit and pull the drip tray and pod bin out and set aside.
- Step 5:** Remove the black plastic door bezel by lifting upward and set aside.
- Step 6:** Locate and remove the three standard screws found on the bottom edge of the unit below the user interface.
- Step 7:** Turn the unit so that the right side is facing you. Tilt the unit upward to access the underside and remove the right side standard screw.
- Step 8:** Turn the unit so that the left side is facing you. Tilt the unit upward to access the underside and remove the left side standard screw.
- Step 9:** Remove the black plastic door bezel by lifting upward and set aside.
- Step 10:** Disconnect the harness with the 4 pin connector going to the display board.
- Step 11:** Turn the unit so that the front is facing you and then slide the main outer housing out away from the unit frame.

Machine Function and Operations

Main Control Board

The main control is the brain of the brewer. The control board is the single component that contains all of the programming software, it interprets all the data it receives from the level and temperature sensors and activates components to fulfill those demands. The main control board responds to the users input through the switch/display board and activates/controls the brew process, pod eject process and hot water dispense.

J1	Bin Reed Switch and H2O Refill Probe
J2	Brew Tank Thermistor
J3	Heater Relay Coil and Air Vent Coil
J4	Index Sensor and Pressure Switch
J5	xxxxx
J6	Switch/Display Board
J7	Flow Meter
J8	Index Motor & Air Pump Brew Tank
J9	BR- Brew Inlet Valve Coil HW – Hot Water Valve Coil BST Pmp – Brew pump
J11	Not Used
J12	Air Pump Hot Water Tank (H2O)



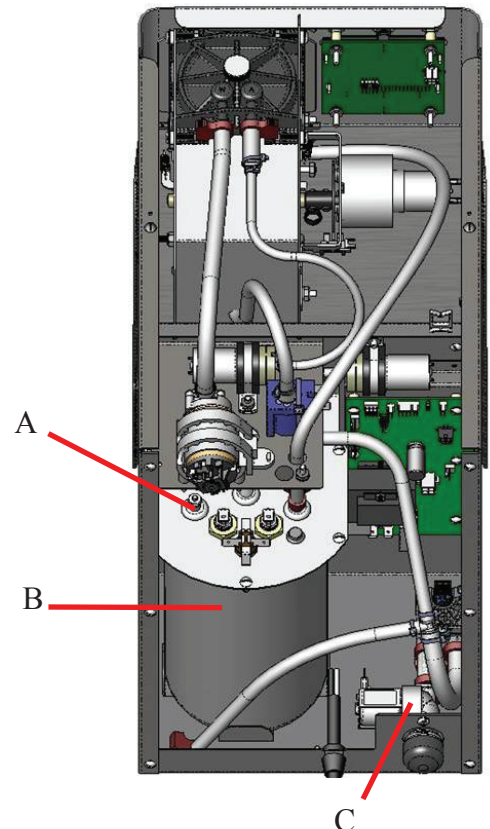
Filling System

The fill system maintains the level of water in the brewer's tank. Any-time water is drawn off of the tank during a brew cycle or from the hot water outlet, the fill circuit activates to refill the tank.

The fill system consists of:

- (A) - Fill Probe
- (B) - Tank
- (C) - 120VAC inlet valve with outlet flow restrictor

Water enters the rear of the brewer from the supply line and first goes through a plastic strainer mounted in the inlet valve assembly. The CBA will activate the fill valve and allow water flow past the valve plunger through a .8 liter flow restrictor located in the outlet of the fill valve. The regulated water then flows through a flow meter and through the fill tube located on top of the tank. The fill tube outlet is located approximately 5 to 6 inches under the water surface, introducing the cold water to the bottom of the tank. The control board monitors the level of water in the tank through a low voltage level probe mounted in the top of the tank. When water touches the fill probe, the circuit loses its low voltage potential to ground and the CBA will turn the output off to the inlet valve.



Dispense Systems

The My Café AP brewer has two dispense systems, one for hot water dispense and brew dispense.

Hot Water Dispense

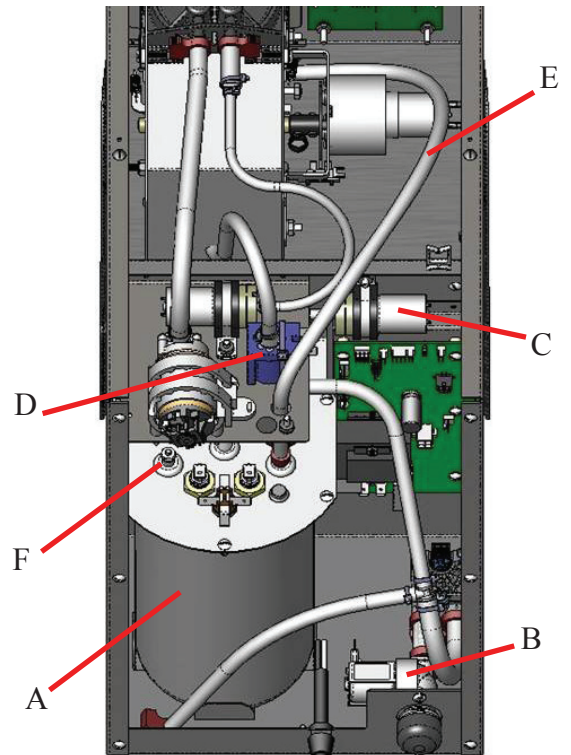
The hot water dispense system consists of:

- (A) - 68 Ounce Hot Water Tank with Element
- (B) - Fill Inlet Valve
- (C) - Hot Water Air Pump
- (D) - Vent Valve
- (E) - Silicone Outlet Hot Water Tube
- (F) - Refill Probe

The hot water tank is maintained by a refill circuit. The hot water button on the front is used as a push and hold function for hot water delivery with a maximum of 13 second hold time before shutting off the dispense. The approximate amount of ounces delivered in a single dispense is 10 ounces. The delivery of hot water is accomplished by pressuring the hot water tank to push hot water through the stainless tube that is positioned far under the water surface.

The hot water dispense path starts with water entering the inlet valve and is regulated by an orifice located in the outlet of the fill valve. The regulated water passes through a flow meter and travels to the top of the tank and connects to a fill tube that is held in place with a grommet. The fill tube is approximately 6 inches in length going into the tank. The tank will fill with water to the refill probe level and will heat to the set temperature. When a user presses the momentary hot water button, the vent valve will close and the air pump will turn on for a period of time to pressurize the tank to start the hot water dispense. The hot water exits out of a separate nozzle located on the stream guide housing and into the receiving cup.

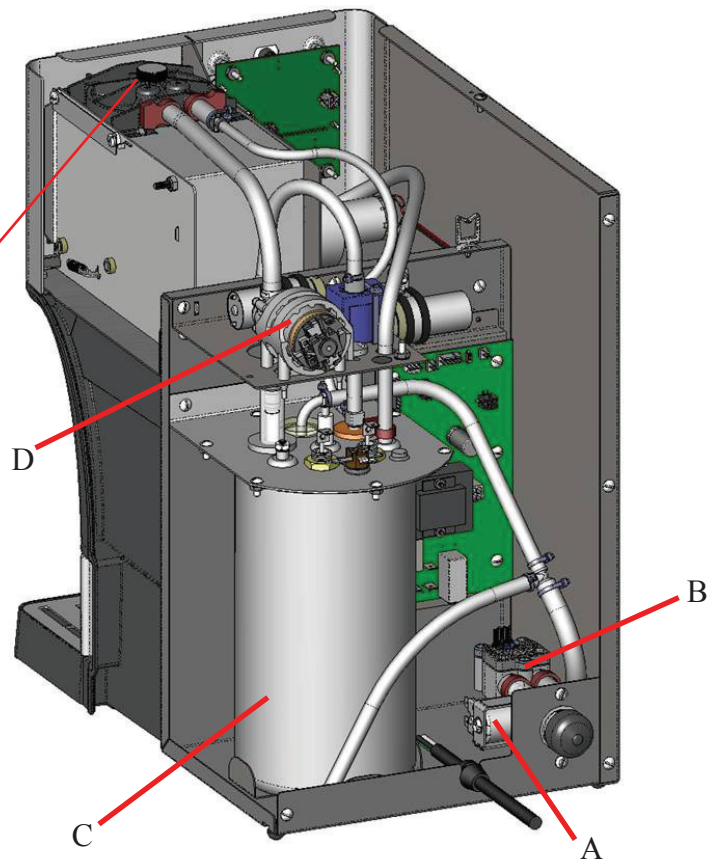
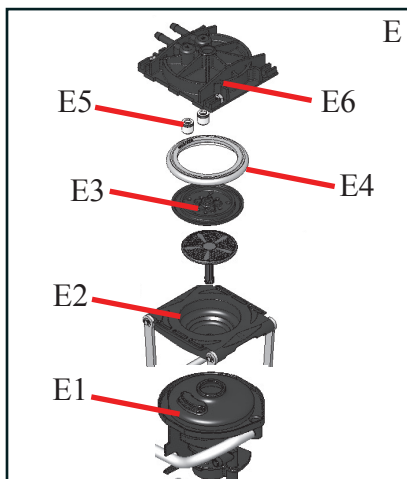
Note: Unlike the air check valve, the water check valve doesn't have an internal return spring.



Brew Dispense

The brew tank dispense system consists of:

- (A) - Fill Inlet Valve
- (B) - Flow Meter
- (C) - 68 Ounce Water Tank
- (D) - 120VDC Brew Pump
- (E) - Sprayhead assembly
 - E1 - Stream Guide
 - E2 - Pod Holder
 - E3 - Sprayhead
 - E4 - Sprayhead Seal
 - E5 - Air Check Valve (Left)
 - Water Check Valve (Right)
 - E6 - Sprayhead Top



The tank is initially filled upon startup and is monitored by a refill or level probe. When commanded by the large or small brew button, the CBA will activate the fill solenoid allowing the regulated water to enter the inlet of the flow meter and exit out the flow meter going to the fill tube located on top of the tank. The paddle within the flow meter created an input signal to the CBA, the CBA generates a logical number on the display during a brew dispense called Flow Counts. The flow count is the calibrated volume of brew water entering the tank, rising past the level probe.

The brewer will display a series of informational screens during the brew process while the brew pump is activated to draw the calibrated water from the tank through the check valve, sprayhead, coffee pod, pod holder, stream guide and into the receiving cup. The brew pump will deactivate when the water drops below the level probe and the air pump will turn on creating a minimal amount of pressure above the coffee pod to push out any remaining coffee, reducing drip out time.

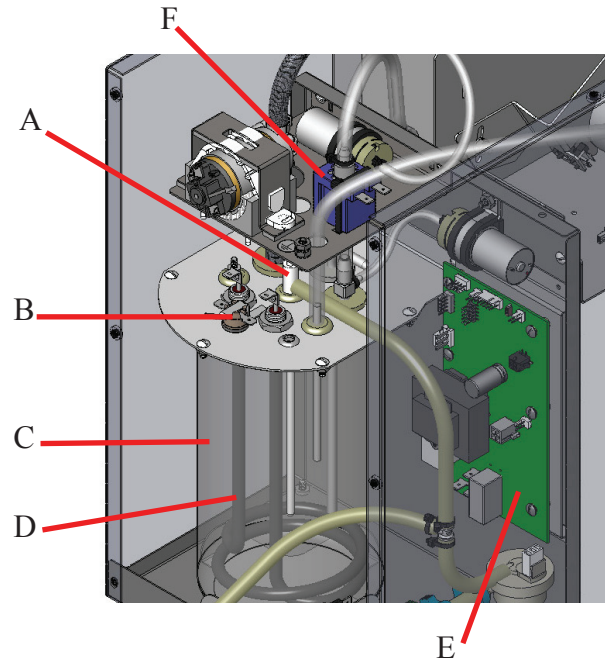
The brewer will begin heating the water back to set temperature. Once temperature is achieved and the heater turns off, the refill circuit will activate and fill the tank with water until it reaches the level probe.

Heating Circuit

The heat circuit consists of:

- (A) - Temperature Sensor
- (B) - Limit Thermostat
- (C) - Tank
- (D) - Tank Heater 1425 watt, 120vac
- (E) - Control Board with Hybrid Heating Components
- (F) - Vent Valve

The vent valve is located above the water tank and is normally open to allow venting during heating. The heating element is protected when the brewer is powered on to prevent dry firing of the tank element, which occurs when there is no water in the tank. The fill probe must be satisfied with water before the CBA activated the heating element. Once the fill probe is satisfied, the CBA monitors the tank thermistor/temp sensor (resistance/voltage) and will activate the heater triac (TH1) and pass power through the limit thermostat and to the heating element.

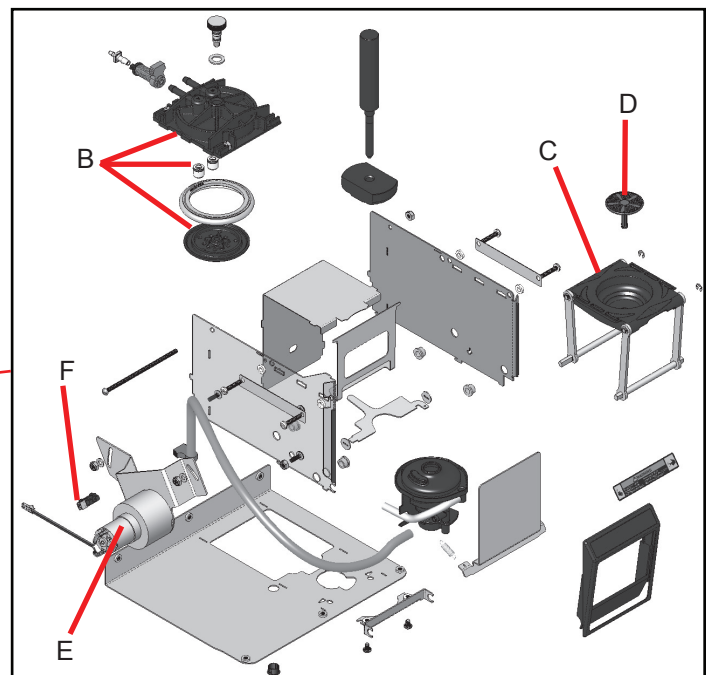
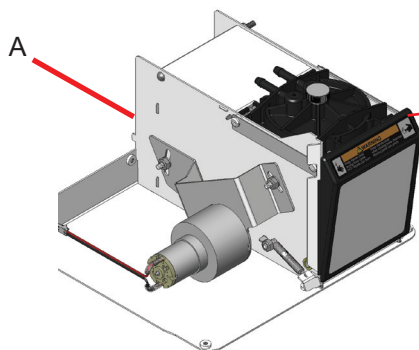


The limit thermostat is used as a precautionary device in the event of a tank over heating. The limit is rated to open at a temperature of 230° F. and will reset around 170° F.

Ejector Assembly

Ejector assembly consists of:

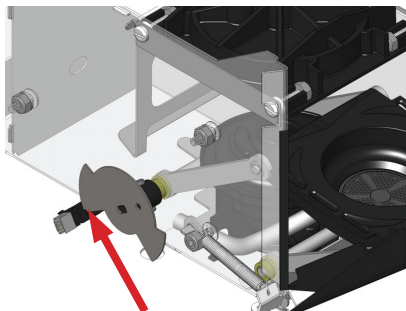
- (A) - Housing
- (B) - Brew head assembly with check valves
- (C) - Pod holder assembly with linkage
- (D) - Pod screen assembly
- (E) - Index motor with position disc
- (F) - Index sensor



The Ejector assembly is a critical component used to align the pod holder in different placement positions. The placement positions are: load, brew, eject and set back positions. The index motor rotates the position disc and pod holder forward and backward at different intervals. The position disc is slotted and rotates between the index sensor. The index sensor monitors the slots and stops the index motor at the correct placement position for the pod holder during the entire brew process from start to finish.

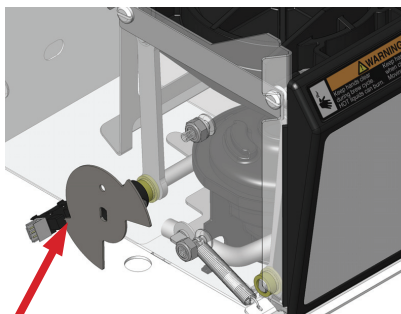
Pod Holder or Index Motor Position during Brew Cycle

Step 1: Depress the open/close button and pod holder rotates outward to coffee pod load position.



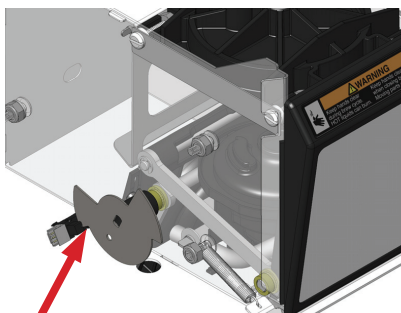
Load Position - Sensor Unblocked

Step 2: Depress the open/close button and the pod holder rotates back in and stops in the brew position (under sprayhead assembly).



Brew or Home Position - Sensor Unblocked

Step 3: After brewing is complete, the pod holder rotates further back and down to coffee pod eject position.



Dump Position - Sensor Blocked

Note: The coffee pod eject has an option of making a single or double attempt of ejecting the pod in the programming menu.

Step 4: After ejecting the coffee pod, the pod holder rotates forward by a set time built in the software (approx. 5 seconds) and stops at the set back position from the sprayhead assembly and is ready for the next brew command.



UNIT 4 PREVENTIVE MAINTENANCE

Unit Objectives

Given a realistic scenario depicting a machine requiring a preventive maintenance, the learner will be able to identify which elements of a component need to be serviced without error.

Given a machine, all the necessary tools and safety equipment, the learner will be able to identify the components that need to be serviced for the PM.

Preventive Maintenance

In order to maintain proper operation and long service life, BUNN® recommends performing the preventive maintenance every 6 months. Individual customers will vary with some customers choosing not to receive preventive maintenance. Some of the PM items may require more frequent maintenance depending on the site conditions.

Tools Required:

- 2 standard screwdrivers (1 small tip & 1 medium tip)
- Needle nose pliers
- Pliers
- 2, 8 inch crescent wrench
- Graduated measuring container
- Tube Brush (.25 OD), BUNN P/N: 26367.0000
- Hook Pick

PM Parts:

- Water filter or cartridge
- Sprayhead seal, BUNN PN: 42310.0000 - rated 25,000 brews

Optional Advanced PM Parts Upon Inspection:

Advanced service parts may be needed during suggested inspection of related areas during a PM process.

- Dezcal™, Activated Scale Remover, BUNN PN: 37306.0000 (individual pack)
- Check valve kit, BUNN PN: 36379.1001

Prior to servicing the brewer:

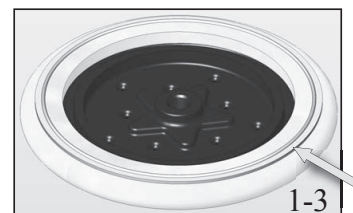
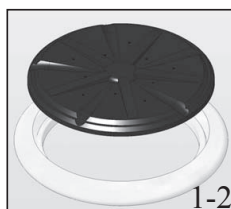
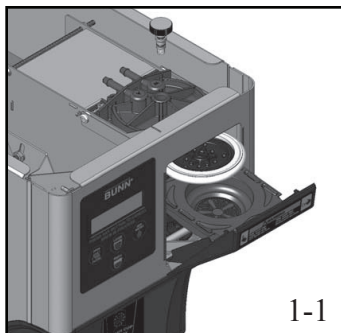
- Use service tools to move pod drawer back to dump position.
- Disconnect the water and electrical supply.
- Assess placement of brewer to perform PM process.
- Allow brewer tank time to cool down.
- Remove top cover and rear panel.

6 Month PM Steps

Step 1: If customer has a BUNN® water filtration system installed before the brewer, replace the filter or filter cartridge and purge before installing to the brewer. Write next change date on filter decal.

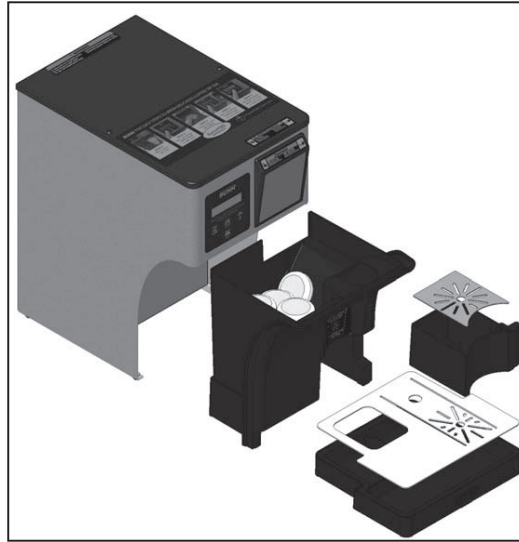
Step 2: Clean sprayhead.

- Enter “Service Tools” and move pod drawer to dump position to give adequate space for sprayhead removal.
- Check the number of brews on the sprayhead seal by entering programming and scrolling to “Brews On This Seal” menu. The seal is recommended to be replaced at 25,000 brews if achieved before a 6 month period.
- Disconnect brewer from power source and allow to cool.
- Remove two screws and top cover.
- Slip one hand through pod door opening. With your other hand, turn the thumbscrew counterclockwise. (Fig. 1-1)
- Remove the sprayhead assembly through the front.
- Remove the seal from sprayhead.
- Check and clean the sprayhead. The sprayhead holes must always remain open.
- Clean all of the holes in the plastic sprayhead to remove any mineral deposits. Wash and rinse in the sink. (Fig. 1-2)
- When reassembling the sprayhead, be sure to have the seal installed with the ridge facing up. (Fig 1-3)



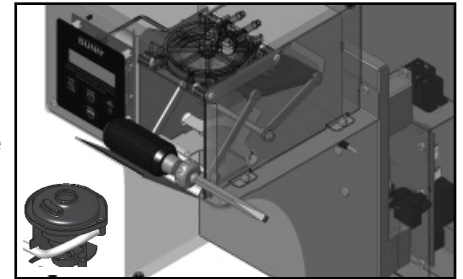
Step 3: Clean pod bin and drip tray.

- Pull the drip tray assembly straight towards you.
- Pull the bin straight out and empty as required.
- Separate the parts and wash with a mild, non-abrasive liquid detergent.



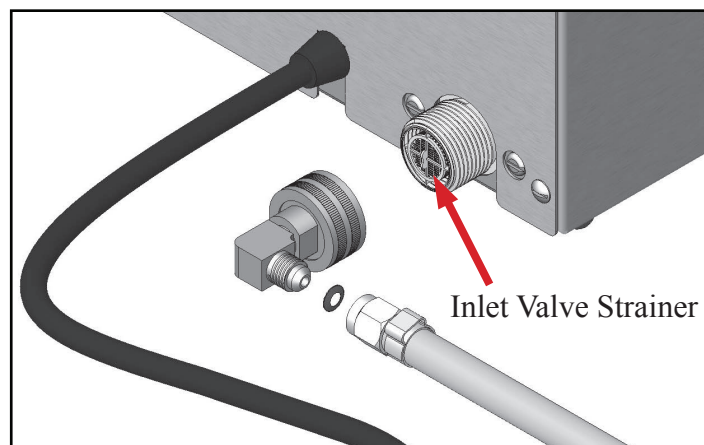
Step 4: Clean the stream guide bowl.

- Access programming and scroll to “Service Tools” menu. Depress the button under yes.
- Select “Yes” under “Test Outputs” menu and select “Yes” under “Test Index Motor” menu.
- Use a screwdriver or similar object to hold door open.
- Press and hold “Dump” (Open/Close) button until pod holder moves back and clears the stream guide bowl for cleaning.
- Disconnect brewer from power supply.
- Insert a small standard blade screwdriver in the seam and pry up to remove bowl cap.
- Use clean wash cloth to clean cap and lower stream guide bowl.
- Insert 26367.0000 cleaning brush from the underside into the coffee outlet hole (rear) and work back and forth.
- Reinstall bowl cap by aligning the tab and notch then put back into position.
- Remove the object holding the door open and return the pod drawer back to home position by exiting program mode and simply depressing the open/load button a couple of times.



Step 5: Remove the inlet valve connector fitting and clean inlet valve strainer.

- Using your hand, unscrew the valve adapter fitting and set aside.
- Using the needle nose pliers, gently grab the strainer tab and pull the strainer out of the valve.
- Clean and rinse the strainer of any sediment or mineral build-up.
- Reassembly is the opposite of disassembly.



Step 6: Perform flow calibration.

- Install the top cover and rear cover.
- Reinstall water and connector fitting.
- Reinstall power.
- Reinstall pod bin and drip tray.
- Access programming and go to “CALIBRATE FLOW” menu.
- Depress YES button.
- Place a graduated measuring cup (minimum of 10 ounces) under the coffee outlet.
- Follow the instruction on the display.
- After the dispense finishes, read the number of ounces collected and enter the amount into the brewer using the +/- switches, then press DONE. The brewer will automatically recalculate the flow counter to achieve a 10 ounce dispense.

Step 7: Perform a coffee brew test.

- Follow “Operation” procedure in the installation and Operating Guide for coffee brewing.
- Check volume against large and small brew ounce settings located in programming under “Brew OZ. A and Brew OZ B” menu.
- If ounces are off, then repeat the calibration procedure in step 6.

Optional Advanced Inspection PM

Removing the mineral deposit buildup from the suggested components can help increase the longevity performance of the brewer.

Step 1: Inspect the following parts for mineral deposit buildup.

- Stainless fill tube, temperature and fill sensor: Use a solution called Dezcal™ to help dissolve the scale from the sensors. Follow the directions outlined by the product manufacture.

Note: Do not submerge the temperature sensor wires or use any abrasive material to help assist the removal of lime scale from any metal surface.

- Pump and hot water silicone pickup tubes: The pickup tubes are flexible enough to squeeze and break-up mineral deposits that may be adhered to the material. Dezcal™ is still an option to use if needed.

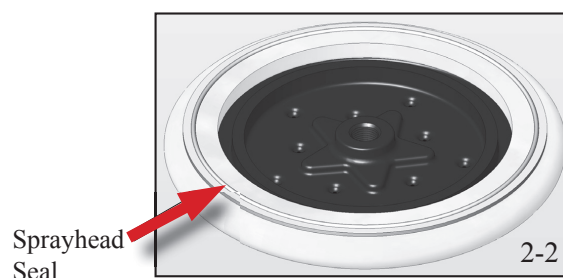
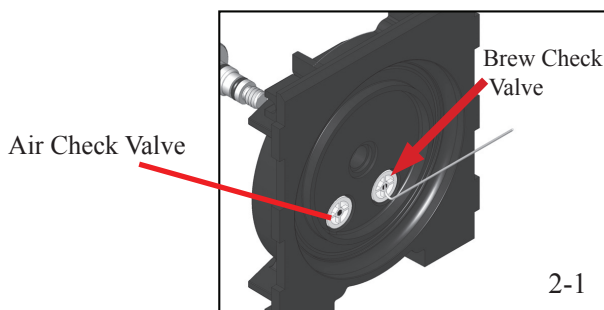
Step 2: Replace the brew outlet check valve located in the sprayhead assembly.

Check Valve Installation

- Connect brewer to power source. Use the “TEST OUTPUTS/TEST INDEX MOTOR” to move it to “DUMP POSITION”).
- Unplug brewer.
- Remove top cover. Remove thumbscrew and catch sprayhead. Verify sprayhead seal is also removed.
- Remove check valve with hook pick tool. (Fig. 2-1)
- If check valve pulls apart, remove remaining piece with a hook pick tool.
- Install new brew/water check valve with O-ring end in first. This valve is different from the air check valve.

Note: Never re-use check valve after it has been pulled out.

- Install seal on sprayhead (FIG 2-3). When reassembling sprayhead, be sure to have seal installed with ridge facing up (A). Install sprayhead and thumbscrew if equipped.
- Install covers.
- Power up brewer and Press “OPEN/CLOSE” button to reset pod holder to home position.



UNIT 5 TROUBLESHOOTING

Unit Objectives

Given a realistic scenario depicting one of several possible machine malfunctions, the learner will be able to effectively troubleshoot, diagnose and repair the malfunction before returning the machine to normal operation.

Given a machine displaying an error or warning message, all the necessary tools and safety equipment, the learner will be able to access the software and use “Service Tools” menu as a tool to assist in the diagnosing process.

- The learner will be able to access the programming menu.
- The learner will be able to navigate to the Service Tools menu.
- The learner will be able use the Service Tools menu to test inputs or outputs.
- The learner will be able use the Test Switches menu for testing.

Given a list of error and warning messages, the learner will be able to explain the error and warning messages.

Given a realistic scenario requiring diagnosis and the learner to remove the assemblies, the learner will be able to remove the assembly without error.

- The learner will be able to remove and re-install the hot water tank.
- The learner will be able to remove and re-install the ejector assembly.
- The learner will be able to perform the index motor alignment procedure

Troubleshooting and Repair

The My Café AP brewer features on-board troubleshooting. Since all of the machine's components are controlled or activated by the control board, you can access various service tool menus to test load components or sensors.

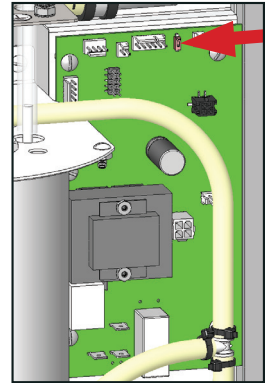
The troubleshooting menus give you control to activate load components for the purpose of seeing operation or testing of load components with a volt meter. Input sensors and switches can also be tested with a volt meter but usually can be viewed for correct operation by means of viewing symbols or wording on the test menu to show the sensor or switches are operating correctly.

Programming Lockout Switch

The programming lockout switch is located on the main control board. This switch can be set to prevent access to the programming settings of the brewer. Once all the correct brew settings are programmed, the operator can set the switch to the "On" position to prohibit anyone from changing the settings. With the switch in the "On" position, the programming menus can still be accessed to view the current settings. However, no changes will be saved.

To access the lockout switch:

- Step 1:** Disconnect brewer from power source before removing any panel.
- Step 2:** Access the rear of the machine.
- Step 3:** Remove the rear panel by removing six standard screws.



"On Position/Locked"

The following menu screens will appear to inform you that programming is locked, but still can be accessed to view current settings.

!!! CAUTION !!!
MEMORY IS LOCKED

CONSTANT CHANGE
IS NOT POSSIBLE

Service Tools

To access SERVICE TOOLS enter Level 1 Programming without lockout switch activated. Once the BREW LOCK-OUT menu is displayed, you will navigate to the SERVICE TOOLS by pressing and releasing the "Hidden Switch" consecutively. If you pass the intended menu, you can step backwards in the programming by pressing and releasing the "Small Brew" switch while you are in Level 1 Programming.

SERVICE TOOLS ?

NO

YES

Select YES to enter into the SERVICE TOOLS function. Under the Service Tools menu are three menus that can be used to help assist the troubleshooting process: Test Outputs, Test Switches and Set Refill.

Test Outputs

TEST OUTPUTS?

NO

YES

TEST OUTPUTS will give you the option of turning On and Off the output voltage to the load component individually. A voltmeter can be used across the load component to measure the output voltage when commanded.

Load Components

- Test Index Motor - 12vdc
- Water Inlet xxx - 120vac
- Air Pump - 12vdc
- Vent Valve - 12vdc
- Hot Water Air Pump - 12vdc
- Water Pump - 120vdc
- Tank Heater Relay - Surface mounted on CBA. Listen for activation (click sound).

Sensors

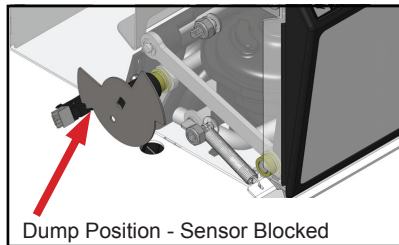
Sensor signals from the Index Sensor and Flow Meter can be tested and viewed from the following load components testing menus under “Test Outputs”.

Index Sensor

You can use the “Test Index Motor” menu to view the signal operation of the index sensor. The filled in black square means the position disc is interrupting the index sensor (blocked). The unfilled square means the position disc is not interrupting the index sensor or the position disc slot is lined up with the index sensor (unblocked). The “Dump” and “Load” switches are used as a momentary button to check the positioning of the pod holder. You will need to press and hold the switch to rotate the index motor, which will automatically stop at the corresponding dump, load and brew position.

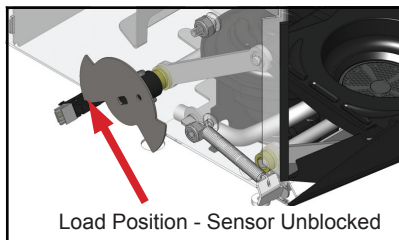
Index D Black Square Motor - Dump position, sensor signal blocked.

INDEX D MOTOR
DUMP NEXT LOAD



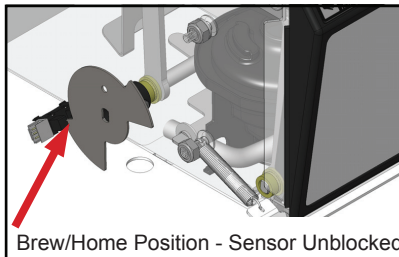
Index L Hollow Square Motor - Load position, sensor signal unblocked.

INDEX L MOTOR
DUMP NEXT LOAD



Index B Hollow Square Motor - Brew position, sensor signal unblocked.

INDEX B MOTOR
DUMP NEXT LOAD



Flow Meter

You can use the “Water Inlet xxx” menu to view the signal operation of the flow meter. Drain the tank partially before testing of the water inlet by turning off the water supply and activating the hot water dispense. Once the partial draining of the tank is complete, turn the water supply back on before continuing with the flow meter test. Access the “Water Inlet xxx” test screen. Activate the water inlet and watch the flow count number to increase at a rapid pace. Water will flow through the flow meter and into the brew tank. The volumetric meter uses a paddle wheel with magnets. The wheel rotates when water flows through the meter generating a pulse signal for every amount of milliliters passing through. The flow meter is the primary component for determining the amount of brew water also know as the flow count number.

WATER INLET 0
ON NEXT OFF

WATER INLET 657
ON NEXT OFF

Test Switches

TEST SWITCHES?
NO YES

TEST SWITCHES will give you the option of pressing the control switch individually and displaying the switch name on the display screen for switch recognition. Pressing the "Hidden Switch" will exit and advance you to the next screen.

Enter the "TEST SWITCHES" menu by selecting "Yes". Depress the corresponding switch to be tested and the display will show the switch name on the display. The switch is working properly when the name of the switched being pressed displays on the LCD. When a switch name doesn't appear on the LCD while pressing the switch, the switch on the display/switch board is defective. The pod bin magnetic reed switch can be checked by removing the pod bin from the unit. The display will read "Pod Waste Bin Removed"/ You exit the menu by depressing the hidden program menu button.

Set Refill

XXX REFILL 155
(-) DONE (+)

This function allows the operator to adjust the sensitivity of the refill circuit and to view the condition of water and refill probe of lime scale build-up. This is mainly a troubleshooting feature. Water in different geographical locations can have different conductivities. By adjusting (range 20 - 230) the sensitivity of the refill circuit, this will allow the brewer to operate under various water conditions.

The level probe senses the water level in the tank by the conductance of minerals in the water grounding out the very low AC voltage applied to the probes. A high reading (approximately 255) indicates water is not touching, or not conductive enough to ground the circuit. A low reading (0-2) indicates the probe is grounded. Left side is the actual reading and the right side is the adjustable refill threshold. BUNN constant refill threshold is set at 155 from the factory.

How to set a new refill threshold number when water is less conductive or has low TDS.

The highest known number is 255 for an open circuit. Take the actual water reading number and subtract it from 255. Now take the difference and divide it by two = xx. Add the divided number onto the actual reading number and now this becomes your new refill threshold setting number. See example below. Water reads 80 and factory refill threshold is set at 155.

$255 - 80 = 175$
 $175/2 = 87.5$
 $87 + 80 = 167$ (This now becomes the new Refill Threshold number)

Note: Always make sure the number on the right is larger than the number on the left when water is contacting the tank refill probe.

Level 3 Programming

Access level 3 programming menus by pressing and holding the hidden switch for approximately 13 seconds or until the menu changes from "Brew Lockout" menu to "Cal Temperature" menu.

CAL TEMPERATURE
NO SENSORS YES

Used to accurately set the temperature along with a calibrated thermometer when replacing the tank thermistor.

Reduced Power Level
(-) 15 (+)

When pump runs refill process, power to the pump is reduced to this setting.

Brews On This Seal
Reset Next ##

Brew seal warning indicator.

Warning Messages

Pod Waste Bin Almost Full

Occurs when you are within 5 brews of the programmable BREWS TO EMPTY setting.

Pod Waste Bin Full Please Empty

Occurs when you are at the BREWS TO EMPTY program setting.

Replace Seal

The REPLACE SEAL SOON message occurs at 25,000 brews.

Pod Waste Bin Removed Please Install

Occurs when J1-4 connector terminal has a low input when trying to start a brew cycle.

Low Temperature Press Brew To Brew Anyway

Occurs, (if brew lockout is disabled), when the water temperature in the brew tank is not up to temperature.



Error Messages

The brewer has several error messages for problems that may occur in the machine. The error screen is basic information for getting you started in diagnosing the actual failure. Some error messages will need resetting by following the screen prompts to reset error fault (erase) or you will need to fix the problem and the machine will automatically reset the error fault.

Brew Temp Sensor Out Of Range

This message appears if the control board loses contact with the temperature sensor or senses shorted connection.

Brew Tank Heating Too Long

The heater relay has been activated for more than 6 minutes.

NO FLOW COUNTS DURING BREW

This message appears if the flow meter has not metered any pulses or flow counts for more than 5 seconds during a brew.

INDEX MOTOR FAULT

This message appears if the index motor has not encountered a slot for more than 15 seconds.

Water Pump Fault Check Water Pump

Water does not drop below the level probe during the brew in 90 seconds.

FILL TIME TOO LONG

This message appears if the tank takes longer than 90 seconds to refill with water.

**PROGRAM SWITCH
STUCK FAULT**

This message appears if a button on the switch board is pressed or stuck for more than 15 seconds.

**OPEN CLOSE SWITCH
STUCK FAULT**

This message appears if the Open/Close switch is pressed or stuck for more than 15 seconds.

**BREW A SWITCH
STUCK FAULT**

This message appears if the Brew A switch is pressed or stuck for more than 15 seconds.

**BREW B SWITCH
STUCK FAULT**

This message appears if the Brew B switch is pressed or stuck for more than 15 seconds.

**HOT WATER SWITCH
STUCK FAULT**

This message appears if the Hot Water switch is pressed and stuck for more than 25 seconds.

**PATH CLEAR ?
ANY SWITCH**

The error will appear after the Open/Close switch has been depressed and the pod drawer cannot close completely because of an obstruction. The Path Clear threshold is actually a self-programmed threshold based upon the last successful closing of the drawer. The starting default .27 amps and the self-programmed value is raised and lowered depending on the last

successful closing of the drawer. The Path Clear message comes up when the self-programmed value .1 amps for 20ms (one thousandth of a second) has been exceeded.

How to Drain the Hot Water Tank

Step 1: Disconnect the power and water supply to the brewer. Allow the brewer to cool before proceeding.

Step 2: Remove 6 screws securing the rear panel. Remove the panel. Place the brewer next to the sink.

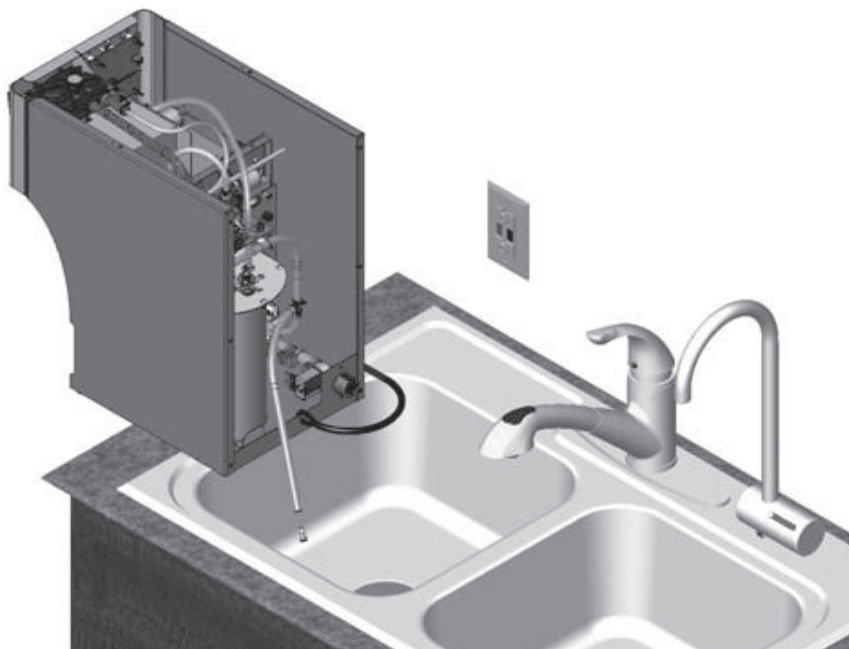
Step 3: Direct the drain hose into the sink. Remove the clamp and plug.

Step 4: Allow water to siphon out of the tank.

Note: A small amount of water will remain below the fill tube. If necessary, insert a siphon hose through one of the grommet holes to remove the remaining water.

Step 5: Replace the plug and clamp onto the drain hose.

Step 6: Replace the rear panel and tighten the 6 screws.



Index Motor Alignment Procedure

An alignment tool kit will be needed for the following symptoms:

- a) Replacing a failed index motor
- b) Door is partially open during brew
- c) Water is leaking around sprayhead seal during brew

Index Motor Assembly Removal

Step 1: Press Open/Close button to open the pod door. If you cannot operate the motor assembly, then manually move the pod holder assembly out to the load position.

Step 2: Unplug Brewer.

Step 3: Remove top cover.

Step 4: Disconnect the motor and sensor harness to the new motor assembly.

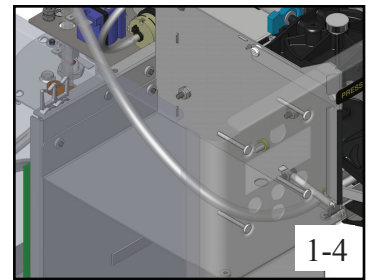
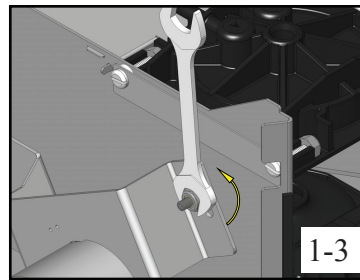
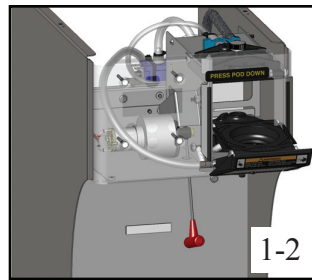
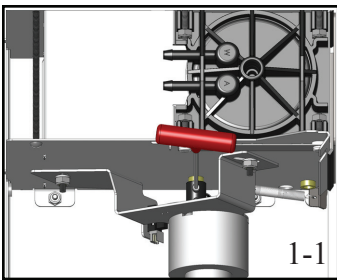
Step 5: Loosen the top Allen screw. (farthest from the motor, Fig. 1-1)

Step 6: Remove the plastic plug from the ejector floor.

Step 7: Insert the Allen wrench through the hole and loosen bottom Allen screw. (farthest from motor, Fig. 1-2)

Step 8: Remove 2 nuts from the motor mounting bracket. (Fig. 1-3)

Step 9: Remove the motor assembly. (Fig. 1-4)



Index Motor Assembly Replacement

Step 1: Connect the motor and sensor harness to the new motor assembly.

Step 2: Connect the brewer to a power source. Press Open/Close button to open the pod door.

Step 3: Unplug the brewer.

Step 4: Verify the motor assembly is in the Open/Load position. (Fig. 2-1)

Step 5: Install the motor assembly and ensure the mounting nuts are snug.

Step 6: Verify that the door assembly is open. Tighten the Allen screws with 3-32 Allen wrench. Move drawer back and forth to find center of flats on shaft when tightening Allen screws.

Note: Do not tighten Allen screws until the motor bracket is secure against the ejector wall.

Step 7: Install "puck" into pod holder. (Fig. 2-2)

Step 8: Remove thumbscrew and sprayhead. If necessary, use an alignment tool to push the sprayhead out.

Note: It will be easier to get your hand inside if you use the "Test Index Motor" to move pod holder all the way to the back position. After sprayhead is removed, return pod holder to the load position.

Step 9: Connect the brewer to a power source. Press Open/Close button to close the pod door.

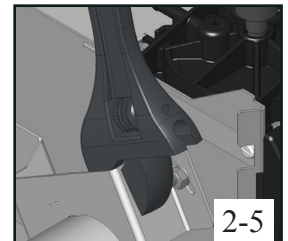
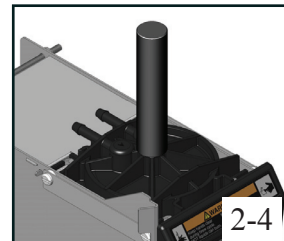
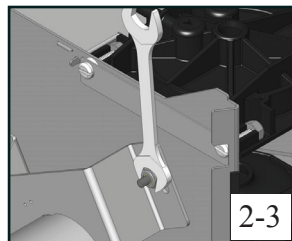
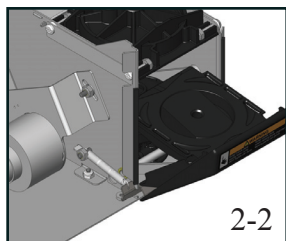
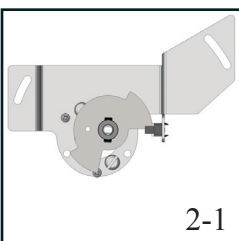
Step 10: Slightly loosen the 2 nuts securing the motor mounting bracket to ejector wall. (Fig. 2-3)

Step 11: Insert alignment tool (Fig. 2-4). Rotate the motor assembly (Fig. 2-5) with an adjustable wrench until alignment tool slips into puck, then tighten the nuts.

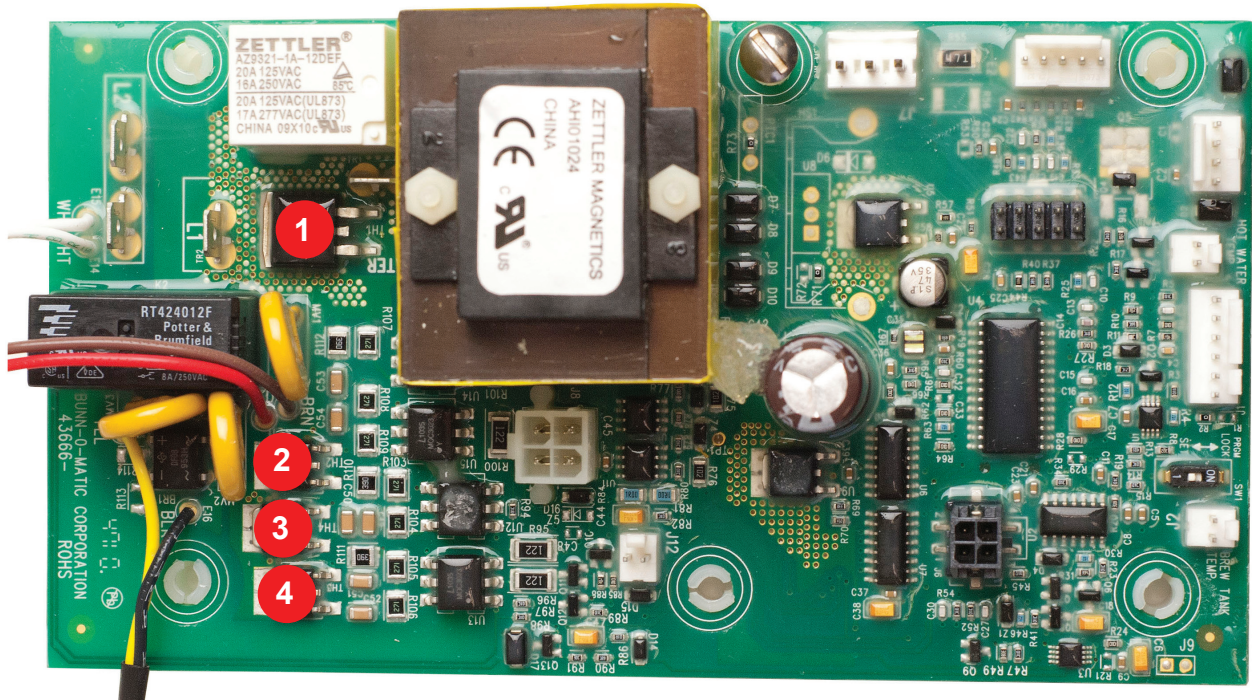
Note: Alignment tools should drop into alignment puck with little to no force. If force is required, repeat step 11.

Step 12: Remove tools. Cycle door Open/Close a few times and test for proper operation. If any error codes are displayed, repeat the alignment procedure.

Step 13: Install the sprayhead and thumbscrew.



Triac Map



1. Heater (TH1)
2. Inlet Valve (Brown Wire) (TH2)
3. Brew Pump (TH4)
4. Not Used (Red Wire) (TH3)

Symptom Reference Guide

Problem	Probable Cause
No Heat	Tank Heater Limit Thermostat Temperature Sensor CBA
Over Heating (Steaming)	Temperature Sensor CBA
No Refill	Main Water Source Inlet Valve Fill Circuit Grounded CBA Water Flow Path Restricted (flow meter or tank fill tube)

Problem	Probable Cause
No Brew	See Problem for “No Refill” Brew Pump Sprayhead Check Valve Large or Small Brew Switch
Leak Around Sprayhead/Seal	Sprayhead Seal Pod Holder Misaligned Defective Sprayhead
No Hot Water Dispense	Hot Water Switch Vent Valve Hot Water Air Pump Restricted Hot Water Pickup Tube CBA
Excessive Water or Coffee in Drip Tray	Air pump not working (pods soaked). Not blown out correctly Air time set too low Leaking sprayhead seal Stream guide plugged Brewer over heating
Pod Door Partially Open	Index Motor Misaligned During Brew Position Sprayhead loose Failed motor
Brew Volume Incorrect or Inconsistent	Flow meter Calibration is Off Brew volume set incorrectly Air time too low
Trips GFCI/Breaker	Heater Leak

Additional Resources



Visit the BUNN Online Learning Center for technical information on BUNN equipment.

- Go to URL: <http://training.bunnserve.com/>
- Go to the menu bar and place your cursor over Courses, then choose "Commercial".
- Browse the list of available courses.
- From the course introduction, use the menu on the left to find instruction sheets, manuals, key learnings, checklists and updates on equipment.
- BUNN also has a wide range of instructional videos posted on the Online learning center and iTunes. You may subscribe to these videos via email, RSS, or as a podcast. After subscribing, you will be notified when a new video is posted.

QR Code Reader

For quick and direct access to technical resources on the BUNN Online Learning Center, you can download a QR-Reader application for your SmartPhone .

- Download QRReader Application for your SmartPhone.
- Open the QRReader application on your SmartPhone.
- Aim your SmartPhone Camera as if you are taking a picture of the QR code image. (image on the right)
- The QRReader Application will direct you to the BOLC, where you will have access to many resources relating to BUNN beverage equipment.



Technical Service & Support Contact Information

- Technical Service Department can be reached at: 1-800-286-6345
(Operators are available from 6:30 am to 5:30 pm CT. Monday - Friday)
Calls received after hours or weekends will go through our Telemessaging Service. You will then be connected to the first available service representative.
Email: tech.service@bunn.com

