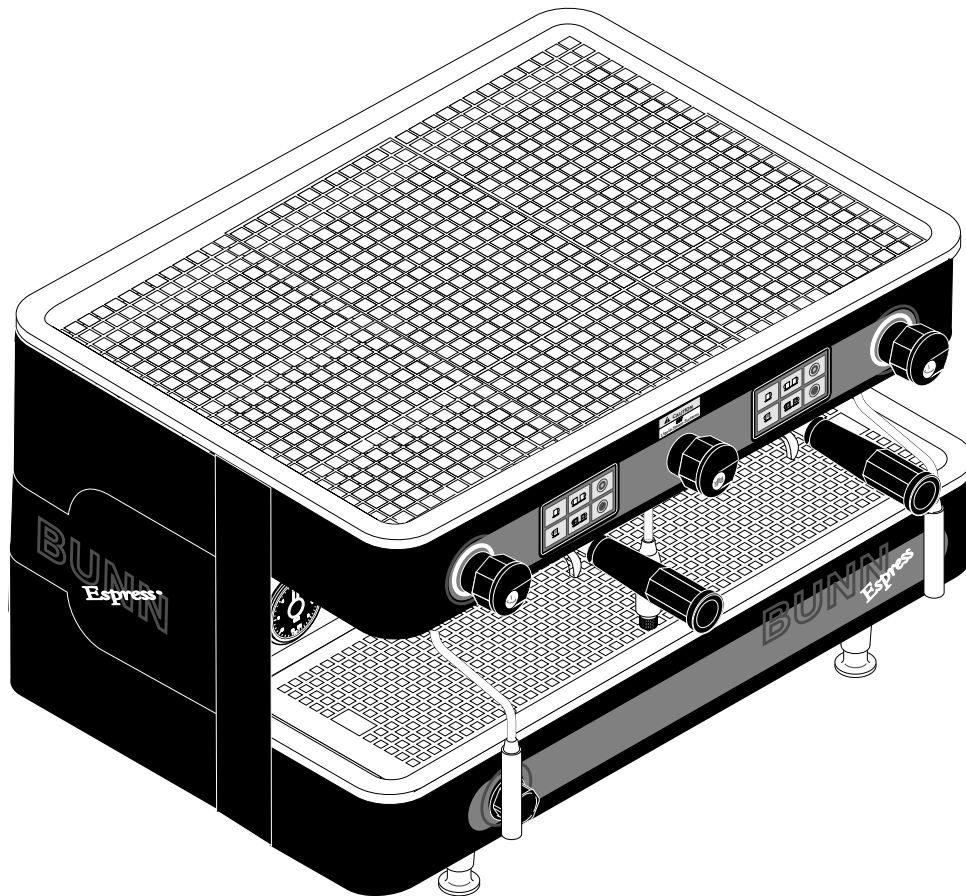


# BUNN *Espresso*®

## *ES•2C*™



## Espresso Brewer

### OPERATING & SERVICE MANUAL

**BUNN-O-MATIC CORPORATION**

POST OFFICE BOX 3227

SPRINGFIELD, ILLINOIS 62708-3227

PHONE: (217) 529-6601 FAX: (217) 529-6644

|                          |    |
|--------------------------|----|
| User notices .....       | 3  |
| Site Requirements .....  | 4  |
| Installation .....       | 5  |
| Operating Controls ..... | 6  |
| Adjustments .....        | 7  |
| Operation .....          | 8  |
| Brewing tips .....       | 9  |
| Cleaning .....           | 10 |
| Alarms .....             | 11 |
| Troubleshooting .....    | 12 |
| Plumbing Diagram .....   | 16 |
| Wiring Diagram .....     | 17 |

## INTRODUCTION

This compact, easy-to-operate equipment produces consistently fine espresso and related beverages with the push of a button. The brewer has two group heads, each selectable to deliver one of four different programmed amounts of beverage. It has two milk steam wands and a hot water wand. All of the critical functions of the brewer are electronically controlled.

## WARRANTY

Bunn-O-Matic Corp. ("Bunn") warrants the equipment manufactured by it to be commercially free from defects in material and workmanship existing at the time of manufacture and appearing within one year from the date of installation. This warranty does not apply to any equipment, component or part that was not manufactured by Bunn or that, in Bunn's judgement, has been affected by misuse, neglect, alteration, improper installation or operation, improper maintenance or repair, damage or casualty.

**THE FOREGOING WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY OTHER WARRANTY, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF EITHER MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** The agents, dealers or employees of Bunn are not authorized to make modifications to this warranty or to make additional warranties that are binding on Bunn. Accordingly, statements by such individuals, whether oral or written, do not constitute warranties and should not be relied upon.

The Buyer shall give Bunn prompt notice of any claim to be made under this warranty by telephone at (217) 529-6601 or by writing to Post Office Box 3227, Springfield, Illinois, 62708-3227. If requested by Bunn, the Buyer shall ship the defective equipment prepaid to an authorized Bunn service location. If Bunn determines, in its sole discretion, that the equipment does not conform to the warranty, Bunn shall repair the equipment with no charge for parts during the one year warranty period and no charge for labor by a Bunn Authorized Service Representative during the one year warranty period. If Bunn determines that repair is not feasible, Bunn shall, at its sole option, replace the equipment or refund the purchase price for the equipment.

**THE BUYER'S REMEDY AGAINST BUNN FOR THE BREACH OF ANY OBLIGATION ARISING OUT OF THE SALE OF THIS EQUIPMENT, WHETHER DERIVED FROM WARRANTY OR OTHERWISE, SHALL BE LIMITED, AS SPECIFIED HEREIN, TO REPAIR OR, AT BUNN'S SOLE OPTION, REPLACEMENT OR REFUND.** Bunn shall not be liable for any other damage or loss, including, but not limited to, lost profits, lost sales, loss of use of equipment, claims of Buyer's customers, cost of capital, cost of down time, cost of substitute equipment, facilities or services, or any other special, incidental or consequential damages.

The notices on this brewer should be kept in good condition. Replace unreadable or damaged labels.

This equipment is to be installed to comply with the Basic Plumbing Code of the Building Officials and Code Administrators International, Inc. (BOCA) and the Food Service Sanitation Manual of the Food and Drug Administration (FDA).

00656.0000

**⚠ WARNING**

- ◆ Fill water tank before turning -on thermostat or connecting appliance to power source.
- ◆ Use only on a properly protected circuit capable of the rated load.
- ◆ Electrically ground the chassis.
- ◆ Follow national/local electrical codes.
- ◆ Do not use near combustibles.

FAILURE TO COMPLY RISKS EQUIPMENT  
DAMAGE, FIRE, OR SHOCK HAZARD

READ THE ENTIRE OPERATING MANUAL  
BEFORE BUYING OR USING THIS PRODUCT

THIS APPLIANCE IS HEATED WHENEVER  
CONNECTED TO A POWER SOURCE

00831.0000F 3/98 © 1988 BUNN-O-MATIC CORPORATION

00831.0000

**CAUTION**

***HOT***  
**Liquid-Steam-Surfaces**

24246.0000

**NOTICE**

160 psig max operating pressure

24247.0000

**PHYSICAL**

The brewer is for indoor use only on a sturdy counter. It is 26½" (67 cm) wide, 16" (40.5 cm) tall, and 19½" (49 cm) deep. The brewer weighs approximately 142 pounds (64.5 kg) when the water tank is filled.

**PLUMBING**

The brewer must be connected to a cold water source with operating pressure between 20 and 90 psi (1.5-6.5 bar) from a ½" or larger supply line. Install a valve in the water line before the brewer. Install a regulator before the brewer when the pressure is greater than 100 psi (7 bar) to reduce it to 45-60 psi (3-4 bar). The enclosed water strainer and either of the two enclosed water inlet hose assemblies must be installed before the brewer.

**NOTE**-Only softened or demineralized water should ever be used in this espresso brewer to reduce the service problems caused by naturally occurring elements in your local water supply. A polyphosphate feeder is not recommended because it does not remove minerals.

**NOTE**-Bunn-O-Matic recommends ¾" copper tubing for no more than 25 feet from the ½" water supply line. Bunn-O-Matic does not recommend the use of a saddle valve to install the brewer. The size and shape of the hole made in the supply line by this type of device may restrict water flow.

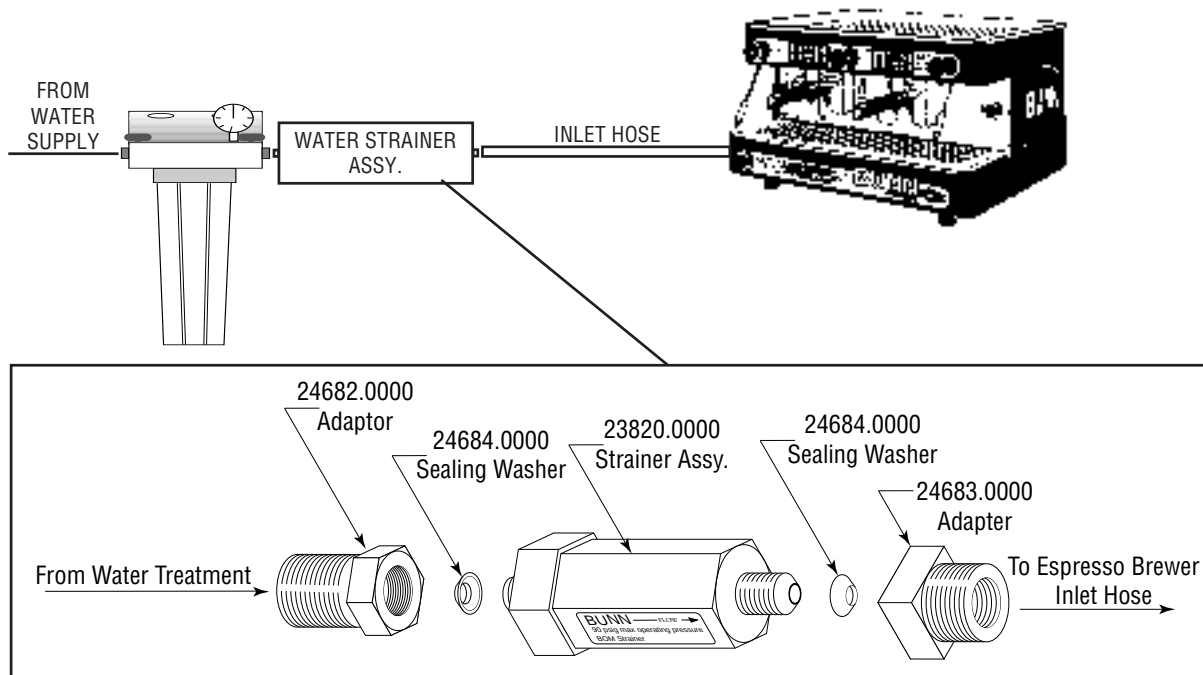
**ELECTRICAL**

The brewer is equipped with an attached cordset and requires a 2-wire, grounded mating receptacle rated 208-240 volts ac, 20 amp, single phase, 60 Hz. An electrician must properly install a NEMA L6-20R connector to the appropriate electrical service on an individual branch circuit to install this brewer.

**CAUTION**-The brewer must be properly grounded. A plumbing line will not provide an adequate ground.

**PLUMBING**

Install the brewer as indicated below

**ELECTRICAL**

**CAUTION**-The brewer must be disconnected from the power source until specified. Improper electrical installation will damage electronic components.

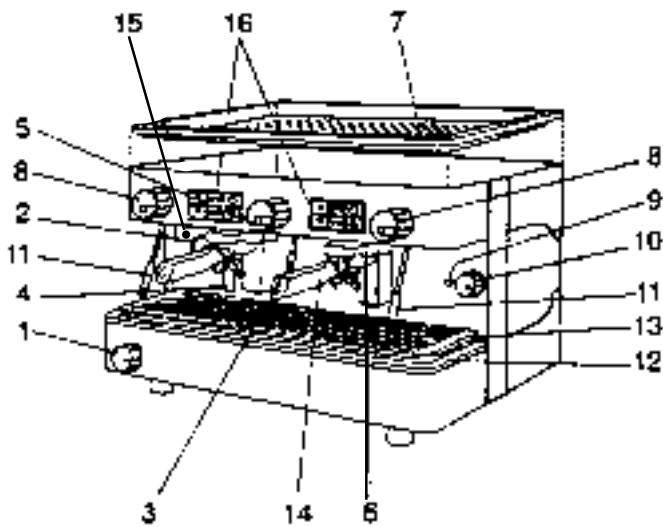
1. Using a voltmeter, check the voltage and color coding of each conductor at the electrical source.
2. When instructed to proceed, connect the brewer to the power source.

**CAUTION**-The brewer must be properly grounded. A plumbing line will not provide an adequate ground.

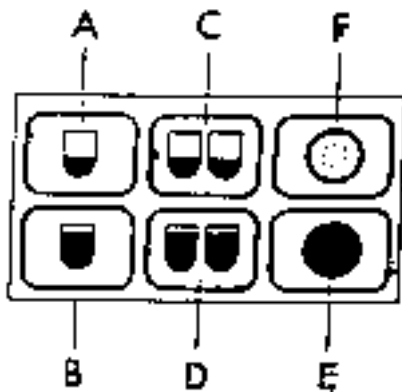
**INITIAL FILL & HEAT**

**CAUTION**-The brewer must be disconnected from the power source until specified. Improper electrical installation will damage electronic components. Plumbing must be connected to the brewer before proceeding.

1. Watch the tank water level gage and push the tank/boiler manual fill button. Hold the button until the water level is visible in the sight gage.
2. Connect the brewer to the power source.
3. Place the main power switch in the "ON" position. The automatic refill function of the electronic control system will engage at this time. The refill indicator will glow and the tank will automatically fill with water. This switch also initiates the heating of the water in the tank/boiler.
4. Press the continuous flow button on each of the group control panels just until water flows from the group heads. This will purge air from the lines and allow faster heating of the group heads.



- 1 ..... Tank/Boiler Manual Fill Button
- 2 ..... Pressure Gage
- 3 ..... Hot Water Wand
- 4 ..... Tank Water Level Gage
- 5 ..... Hot Water Wand Control Knob
- 6 ..... Espresso Group Head
- 7 ..... Cup Warmer Tray
- 8 ..... Steam Wand Control Knob
- 9 ..... Power Indicator Lamp
- 10 ..... Main Power Switch
- 11 ..... Steam Wand
- 12 ..... Drip Tray
- 13 ..... Drip Tray Grate
- 14 ..... Filter Holder
- 15 ..... Program Switch
- 16 ..... Group Control Panel



- A ..... One Half-Cup Selector
- B ..... One Full-Cup Selector
- C ..... Two Half-Cups Selector
- D ..... Two Full-Cups Selector
- E ..... Continuous Flow Button
- F ..... Brew Indicator

**INFUSION**

The brewer leaves the factory set to yield these approximate amounts of water:

One Half-Cup ..... 50 cc.

Two Half-Cups ..... 100 cc.

One Full-Cup ..... 100 cc.

Two Full-Cups ..... 200 cc.

To change the factory set amounts:

1. Place the program switch in the “Program” (right) position. The brew indicators may glow (see preinfusion section below).
2. Place the desired amount of espresso grind coffee in the appropriate filter holder (1 or 2 cups). Lock the filter holder into the group head.
3. Place a measuring vessel beneath the filter holder dripouts. The amounts may be set from 0 to 500 cc.
4. Press and hold the desired selector button until water flows from the filter holder (approximately 3 seconds). The brew indicator will begin flashing.
5. Press any of the selector buttons when the desired amount of coffee is measured. This saves the new setting in memory only for the selection in step #4.
6. Repeat steps 2-5 for each amount selection you want to reset. Those not reset will retain their old settings.
7. Place the program switch in the “Run” (left) position.

**NOTE** - The continuous flow button is not programmable.

**PREINFUSION**

Preinfusion releases a small nonadjustable amount of water into the filter holder at the beginning of the brew cycle, wetting the coffee. This is followed by a short delay, then the programmed amount of infusion water. Preinfusion may be enabled or disabled on either or both sides of the brewer.

To determine whether or not preinfusion is enabled, place the programming switch in the “Program” (right) position. If either brew indicator glows, preinfusion is enabled on that side.

To enable preinfusion on either side, press the continuous flow button of the desired side until the brew indicator glows .

To disable preinfusion on either side, press the continuous flow button of the desired side until the brew indicator goes out.

Place the program switch in the “Run” (left) position.

**ESPRESSO BREWING**

1. Determine the batch size to be made.
2. Place the desired amount of espresso grind coffee in the appropriate filter holder (1 or 2 cups), shake it gently to level the bed, and using a tamper, compress the coffee.
3. Clean all coffee particles from the edge of the filter holder.
3. Raise the prepared filter holder up into the desired group head and twist it to the right (counterclockwise) until tight. Do not use excessive force.
4. Press the appropriate batch selector button for the selection made in step #1. (The continuous flow button may also be used.)
5. Brewing stops automatically when the predetermined amount of water has been used. The flow may be stopped at any time by pressing one of the five dispensing buttons.
6. Rinse the filter holder after each use.

**HOT WATER & STEAM**

**CAUTION** - Water, steam, and wands are hot. Be very careful!

Rotate the the steam or hot water control knobs to the left (counterclockwise) to dispense steam or hot water from the associated wands.

Rotate the steam or hot water control knobs to the right (clockwise) to stop the flow of steam or hot water from the associated wands.

Wipe the wands with a damp cloth immediately after each use.

**GENERAL**

Good espresso is identified by its taste, aroma, and the manner in which it is served. All of these elements can be improved-upon to serve your customers a better product.

**BEAN SELECTION**

The selection of a blend of coffee is a matter of personal choice. A blend with a high proportion of Central and/or South American beans results in a beverage with a soft and agreeable flavor. A blend with a high proportion of African, Arabian, or Indonesian beans results in a beverage with a stronger flavor.

**BEAN STORAGE**

Roasted beans begin to lose their flavor and aroma shortly after roasting. It is not advisable to keep large quantities of coffee beans. Roasted beans should always be stored in an airtight container in a cool, dry place to retain these qualities for as long as possible.

**GRIND**

Make sure the grinder is functioning properly and delivering the correct grind. Place a small amount of ground coffee in the palm of your hand and spread it out some. The particles should be small and for the most part, uniform in size. There should be almost no really large grains. If the grind doesn't look right, try adjusting the grinder. The true test of the grind, though is when you brew.

**GROUND COFFEE STORAGE**

Do not store quantities of ground espresso coffee, even overnight. The use of freshly ground espresso coffee is always advisable for better flavor extraction and aroma.

**ACCESSORIES & TOOLS**

Keep a supply of serving cups warming on top of the brewer, even when not a busy time. This assures the customer a hot cup of espresso each time. The cups will draw heat from the beverage if they are too thick. Medium-sized cups improve the presentation of the served beverage by allowing a slight amount of turbulence in the cup as the espresso falls from the filter holder. The crema can then rise easily to the surface.

Store all mixing tools, ie: spoons, etc. in hot water so they will not draw the heat from the beverage.

**CLEANLINESS**

Keep all items used in the preparation of espresso and related beverages clean. It improves the presentation of the product served and it's just a good sanitary practice.

**FILTER HOLDER CLEANING**

Bunn-O-Matic recommends daily cleaning for your espresso brewer using the following steps:

1. Place the one-cup basket into the filter holder.
2. Put a teaspoon of any granular espresso cleaner or automatic dish washing detergent (such as Cascade®) into the basket.
3. Lock the filter holder into the right group head. As if you were brewing espresso.
4. Press the right continuous flow button to begin the cleaning process. After about 20 seconds, press the button again to stop the flow of water.
5. Repeat step 4, six times. Decreasing the time to about ten-seconds for each cleaning process.
6. Remove the filter holder from the right group head.
7. Rinse the right group head thoroughly by repeating step 4 a few times without a filter holder installed.
8. Repeat steps 2 through 7 using the left group head.
9. Remove the basket and filter support wire from the filter holder.
10. Use a damp cloth rinsed in any mild, non-abrasive liquid detergent to wipe the inside and outside surfaces of the filter holder, basket, and support wire.
11. Rinse all parts in hot water and reassemble the filter holder.  
**NOTE:** Your hands must be clean before reassembling the filter holder.
12. Repeat steps 2 through 11 with the two-cup filter basket.

**EXTERIOR CLEANING**

The use of a damp cloth rinsed in any mild, non-abrasive, liquid detergent is recommended for cleaning all surfaces on Bunn-O-Matic equipment.

**ONE BREW INDICATOR FLASHING (EITHER SIDE)**

This alarm flashes when either flow meter has not sent impulses to the electronic control unit for more than five seconds. All functions will stop and the lamp will begin to flash if brewing a programmed amount. Check the following:

- A. Coffee ground too fine.
- B. Obstruction in the group head (dirty screen, blocked orifices, etc.)
- C. Flow meter and electrical connections.
- D. Solenoid valve and electrical connections.
- E. Pump not operating properly.

Turn the alarm off by attempting another programmed brew or by placing the program switch in the “Program” (right) position and simultaneously pressing the ‘two half-cup’ and ‘two full-cup’ selector buttons on the appropriate control panel. Place the program switch in the “Run” (left) position.

If the problem persists, the alarm will flash every time a programmed button is pressed.

**BOTH BREW INDICATORS FLASHING**

This alarm flashes when the boiler does not refill to the required level within 60 seconds. All functions except continuous brew will stop and the lamps will begin to flash if brewing a programmed amount. Check the following:

- A. Level probe and electrical connections
- B. Water connections and pressure loss
- C. Solenoid valve and electrical connections.

Turn the alarm off by placing the program switch in the “Program” (right) position and simultaneously pressing the ‘one half-cup’ and ‘two half-cup’ selector buttons on the left control panel. Place the program switch in the “Run” (left) position, the boiler will resume refilling.

This alarm does not affect operations when using the continuous flow button.

**NOTE** - This alarm will flash when attempting to entirely fill the tank/boiler without using manual fill.

A troubleshooting guide is provided to suggest probable causes and remedies for the most likely problems encountered. If the problem remains after exhausting the troubleshooting steps, contact the Bunn-O-Matic Technical Service Department at (800) 637-8606.

- Inspection, testing, and repair of electrical equipment should be performed only by qualified service personnel.
- Solenoid removal requires interrupting the water supply to the valve. Damage may result if solenoids are energized for more than ten minutes without a supply of water.
- The use of two wrenches is recommended whenever plumbing fittings are tightened or loosened. This will help to avoid twists and kinks in the tubing.
- Make certain that all plumbing connections are sealed and electrical connections tight and isolated.
- This brewer is heated at all times unless disconnected from the power source. Keep away from combustibles.
- All electronic components have 208-240 volt ac and low voltage dc potential on their terminals. Shorting of terminals or the application of external voltages may result in board failure.
- Intermittent operation of electronic circuit boards is unlikely. Board failure will normally be permanent. If an intermittent condition is encountered, the cause will likely be a loose connection at a terminal or crimp.

## **WARNINGS**

- Exercise extreme caution when servicing electrical equipment.
- Disconnect the brewer from the power source when servicing, except when specified.
- Follow recommended service procedures.
- Replace all protective shields and safety notices.

| <b>PROBLEM</b>             | <b>PROBABLE CAUSE</b>         | <b>REMEDY</b>                                                                                       |
|----------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------|
| Equipment will not operate | No power or incorrect voltage | Connect the brewer to the power source.<br>Check for proper voltage.<br>Check circuit breaker/fuse. |
|                            | Power switch                  | Must be in the "ON" position.<br>Power indicator will glow.                                         |
|                            | No water                      | Check plumbing and shut off valves.                                                                 |
| Brew cycle will not start  | Water treatment or strainer   | Direction of flow arrows must be pointing toward the brewer.                                        |
|                            |                               | Remove the strainer and/or water softener and check for obstructions.<br>Clear or replace.          |

**PROBLEM****PROBABLE CAUSE****REMEDY**

Will not brew when any of the batch buttons is pressed. (Continuous brew works as well as automatic refill.)

Flowmeter

Check connections between the flowmeter and electronic control unit. Replace flowmeter.

Solenoid valve

Check voltage at terminals. If voltage is present when the dose switch is pressed, disconnect power supply, remove wires from coil terminals and check coil terminal continuity. If there is continuity replace solenoid.

Pump

When start switch is pressed, pump should turn on immediately. If this does not happen, check voltage at terminal block on the pump. If correct voltage is present, use a flat-blade screwdriver to turn the motor shaft on the rear end of the motor to see if the pump is locked. If the shaft does not turn, replace pump assembly.

Water is not hot or long recovery time.

Solenoid valve

Remove the solenoid valve and clear it of any obstructions. Rebuild or replace the valve if necessary.

Limit thermostat(s)

Disconnect power supply, remove all wires check across limit terminals for continuity. If no continuity, replace limit thermostat(s).

Tank heater

Check tank heater terminals for correct voltage. If voltage is present and machine is not heating properly, replace tank heater.

**PROBLEM**

Short brew time(less than approximately 20 seconds per half-cup). Weak coffee. No crema.

**PROBABLE CAUSE**

Coffee ground too coarse

Coffee not fresh

Too little coffee used

Coffee not tamped into filter basket

**REMEDY**

Check coffee grind

Use fresh coffee

Adjust amount to taste

Use tamper to press coffee into basket

Brewer does not reach operating pressure or does so very slowly.

**PROBLEM**

problem

**PROBABLE CAUSE**

problem

**REMEDY**

problem

