Technical Manual
MODEL “LINEA” - FB70/ VERSION “EE” - “AV”

SECTIONS

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Installation Guidelines and Requirements

It is important that your customer supplies the proper environment for the La Marzocco to perform correctly. Listed below are charts to help determine the needs of each model espresso machine. Your customer will need to supply the following items:

Countertop that is able to support the machine (see weight chart next page)
Adequate and safely supplied electrical power (23 & 24)
Clean drinking water with a minimum of 2 bar pressure (18)
Sanitary drain (26)

1) Main power switch  
2) Water level glass for steam boiler  
3) Pressure gauge  
4) Coffee brewing groups  
5) Coffee dispensing switch or control panel  
6) Cup warmer switch  
7) Hot water switch  
8) Emergency water fill button  
9) Steam nozzle  
10) Steam knob  
11) Hot water nozzle  
12) Dosage control panel  
13) Manual brew switch  
14) Water inlet fitting 3/8 BSPP (Gas)  
15) Motor pump  
16) Water condition system or filter outlet  
17) Water condition system or filter inlet  
18) Water supply stop valve  
19) Drain sump box fitting  
19A) Expansion Valve  
20) Group access panel  
21) Group bleed screw  
22) Thermostat adjustment screw  
23) Power supply receptacle  
24) Power supply plug  
25) Motor pump electrical connector  
26) Sanitary drain
Installation Guidelines continued

**Weight Chart**

<table>
<thead>
<tr>
<th>Group</th>
<th>Weight (kg)</th>
<th>Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>44</td>
<td>97</td>
</tr>
<tr>
<td>2</td>
<td>58</td>
<td>128</td>
</tr>
<tr>
<td>3</td>
<td>74</td>
<td>163</td>
</tr>
<tr>
<td>4</td>
<td>92</td>
<td>203</td>
</tr>
</tbody>
</table>

**Power Requirement Chart**

La Marzocco espresso machines are available in 220v and 380v configurations. Be certain your line voltage is compatible with the machine you ordered and have on site. Cup warmer heaters are an addition 400, 600, or 800 watts.

<table>
<thead>
<tr>
<th></th>
<th>Total Watts</th>
<th>Coffee Boiler only</th>
<th>Steam Boiler only</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 group</td>
<td>2600 watts</td>
<td>1000 watts</td>
<td>1300 watts</td>
</tr>
<tr>
<td>2 group</td>
<td>3400 watts</td>
<td>1400 watts</td>
<td>2000 watts</td>
</tr>
<tr>
<td>2 group (High)</td>
<td>4400 watts</td>
<td>1400 watts</td>
<td>3000 watts</td>
</tr>
<tr>
<td>3 group</td>
<td>4600 watts</td>
<td>1600 watts</td>
<td>3000 watts</td>
</tr>
<tr>
<td>3 group (High)</td>
<td>5900 watts</td>
<td>1900 watts</td>
<td>4000 watts</td>
</tr>
<tr>
<td>4 group</td>
<td>6600 watts</td>
<td>1400 watts x 2</td>
<td>3800 watts</td>
</tr>
<tr>
<td>4 group (High)</td>
<td>7800 watts</td>
<td>1400 watts x 2</td>
<td>5000 watts</td>
</tr>
</tbody>
</table>

**Water Connection**

1) Flush water supply system for a minimum of 19 liters (5 gallons) to insure the removal of any construction impurities such as filings, soldering and flux compounds or pipe fitting compounds.
2) Connect water in-let fitting (part #14) with a high pressure flexible tube (this reduces vibration from the motor pump) to the motor pump water out-let fitting.
3) Connect the motor pump in-let fitting to the water purifier outlet (#16)
4) Connect the water purifier inlet to the drinking water supply by means of a tap or stop valve. (#18)

The motor pump is volumetric and has been designed to be used exclusively with cold water. Make sure that water is always present while the pump is operating, otherwise its reliability will be compromised.

**Bleeding Groups**

All La Marzocco espresso machines require bleeding or the release of trapped air from the brewing group. This must be done after the water connections are complete and turned on. Remove the group cover panel (#20) and locate the black 5mm allen screw on the top of the group (#21). **Loosen this screw to allow air to escape.** Close screw and tighten once water emerges from the bleed screw. Bleed all groups individually.
**Drain Connection**

The drain sump of the espresso machines (#19) are connected by means of the special plastic tube to the facilities drain piping or floor sink (#26). In case such piping is not available, drained liquids may be collected in a suitable covered bucket and any necessary drain pipe extensions shall be made using steel coiled PVC tubing and suitable hose clamps.

**Electrical Connections**

Two synthetic rubber cables protrude from the machine:
1) One main power cable consisting of 5-core cable with 2.5mm² cross section for all 380v versions. Or 3-core cable with 2.5mm², or 4mm², or 10mm² cross section for 220v machines depending on the model and size of the machine.
2) One motor and pump cable consisting of 3-core cable with 1.5mm² cross section for all versions. The first cable, with the larger diameter, is required for connecting to main power through a five-pole three phase or 220v single-phase plug. The second, smaller diameter cable is required for the motor pump, operating at 220v and 50 or 60 Hz connected via male and female connectors.

Before making any connections be certain that the 2 cable grommets are firmly secured to the body of the machine in order to prevent people from inadvertently tugging away the cable. The first cable must be connected to main power supply downstream of a magneto-thermal switch and by means of a protected plug for omnipolar switches equipped with 20 amp fuses suitable to bear power of the coffee machine.

**WARNING**

The manufacturer declines any responsibility for any event leading to liability suits whenever GROUNDING HAS NOT BEEN COMPLETED according to current regulations, or other electrical parts have been connected improperly.

A qualified electrician must install the electrical service and connections.
Installation Checklist

Proper electrical service within 5 feet or 1.5 meters of machine location.

- 380 volt
- 200volt - 240volt
- Water Supply within 5 feet or 1.5 meters
- Drain piping downhill and with in 8 feet or 2 meters of machine
- Counter top height ______
- Counter able to support _____kg.

Unpack machine

- Attach legs, for high clearance applications (higher legs are required in some countries. Check local codes and regulations).
- Place in position on counter
- Mark counter for electrical and pumping connection access
- Install counter top grommet

Hydraulic Connections

- Purge water lines of building (at least 15 liters of water)
- Mount motor pump (If you are mounting vertically always mount pump down)
- Connect water lines to filtered or softened water supply
- Connect to motor pump
- Connect to espresso machine
- Open water supply
- Bleed groups
- Connect drain
- Adjust expansion valve to release at 12 bar

Electrical Connections

- Locate smaller diameter cable and connect to motor pump
- Locate larger diameter cable and attach proper plug
- Check all water connections for leaks and address if necessary
- Turn power switch to position 1
- Machine should fill with water
- Wait for fill to complete
- If machine does not fill, switch off & check troubleshooting section of this guide
- Turn power switch to position 2

Grinder Set-up

SWIFT

- Remove packaging and assemble bean hoppers
- Store tools and spare parts
- Replace coffee filter with the special coffee filter that are supplied
- Connect to power supply and locate power switch
- Fill coffee bean hoppers (generally decaf on right) Note which is decaf and which is regular
- Insert portafilter and press button to initiate grinding. Adjust grinder according to your preferences.
**Initial Start-up and Operation**

Once the machine has been properly installed:

1) Turn water supply on.
2) Coffee boiler will fill automatically. The automatic water shut off timer will activate while filling 3 and 4 group machines. To complete the fill cycle, turn master switch to “0” or off and then back to “1.” The fill cycle will now complete.
3) Locate group caps (#21). Loosen the bleed screw 1/4 turn until water bead is visible. Retighten once water bead appears. Bleed each group individually.
4) Once groups have been bled turn main power switch to the FILL or “1” position. Within 6 seconds, the rear boiler will begin to fill automatically.
5) Once rear boiler has filled (check sightglass (# 2) to ensure proper filling), turn main power switch to “Run” or “2”position.
6) While boilers are heating press any dispense switch and ensure pump pressure (bottom scale of gauge (#3) reads 9 bar while dispensing).
7) Wait 15 to 20 minutes for boilers to heat fully. This is indicated by the coffee boiler pilot light (red light on control panel) going off and the top scale pf gauge reaching 1.2 - 1.5 bars.
8) Set pump pressure to 9 bar while machine is brewing. The pump adjustment screw is located on the side of the pump. Clockwise turns increase pressure and counter clockwise turns decrease pressure.
9) Check and adjust the expansion valve (#19A). For shipment the expansion valve is loosened at the factory. It must be readjusted once the machine is full of water and at operating temperature. Adjust the expansion valve so that it begins to drip at 10-11 bar. It should relieve any pressure above 12 bar. It should not drip at 9 bar during brewing or backflushing. Turn the expansion valve cylinder clockwise to close the valve or make it release at a higher pressure.

**Programming**

**Model AV with 3D5 or 4D5 microprocessor (Wizard)**

1) Using the left most keypad depress and hold the continuos pour (spiral) button for about 5 seconds. The LEDs of the spiral button will light up and blink, which means that the computer is in the program mode. The LED will stay on for 5 seconds after which, if no button has been pressed, they turn off, and the computer returns to normal operating mode. If this happens you must begin again and depress and hold the spiral button for 5 seconds.
2) Once the spiral button LED on the keypad begins blinking, press the button you wish to program. Measure the quantity of espresso and press the same button again to stop the flow at the desired level. The LED will then turn off and this button will remain programmed for the dose previously brewed.
3) Repeat step 2 for the other three buttons. As you proceed the LEDs of the programmed buttons will no longer illuminate. The computer will automatically return to normal mode and memorize the quantities of each selection.
4) The programs of the left group will become the default programs for the remaining groups, although it is possible to override this default by following the above steps on each group you wish to alter.
5) Each button also works as an on/off switch and therefore, you may stop the coffee brewing at any level and at any time.
PRE-INFUSION SETTING
Pre-infusion wets the coffee grinds prior to actually brewing the espresso. The process may improve the extraction of some coffee blends. To accomplish this the machine opens the brewing group solenoid valve monetarily, closes it then opens it again. This saturates the coffee grinds and allows the coffee to swell before the pressure of the brewing cycle is applied to the extraction.

To turn this feature on you must turn the master switch off. Hold the single short dosage button on the left group (first dosage button on left) while turning the master switch back to the on position. The LED over the continuous (spiral) switch will light up. Switch the machine off, and then back to on. To turn this feature off, hold the single normal dosage button on the left group (second dosage button on left) while turning the master switch back to the on position. The LED over the continuous (spiral) switch will light up. Switch the machine off, and then back to on. If you program the left most group in this fashion it will memorize the feature for each group. If you desire this feature for some groups, but not all the groups, you may program each group individually.

FAULT WARNINGS
If the flowmeter does not send any signals to the electronic module for more than 3-4 seconds, the LED of the button which has been pressed will start flashing. This indicates:

A) Water is not flowing over the wheel in the flowmeter and is therefore not reaching the coffee groups. This may be due to the following factors:

1) The ground coffee is too fine. This causes the water to flow too slowly to the flowmeter to read and the result of the coffee would be very bitter.

2) Insufficient water flow past the groups due to
   - partial blockage in tubing or group orifices
   - a malfunctioning motor pump
   - a malfunctioning group solenoid valve
   - partial blockage of diffuser or filter
   - faulty setting of the expansion valve

B) There are calcium deposits inside the water flowmeter which prevents the wheel from turning properly.

C) The wheel itself and the field (top part with wires) of the flowmeter may be faulty
**Temperature Adjustments**

Your La Marzocco espresso machine has been factory adjusted to heat and brew water for espresso at 93 degrees Celsius. If you prefer to adjust the temperature to fit your coffee roast, perform the following procedure:

1) Confirm preset operating temperature has been achieved. This is indicated in the espresso brewing boiler by the extinguishing of the red pilot light on the upper front panel.
2) Remove the top cover from the machine and locate the thermostat (#22) between the groups.
3) Turn the main switch to the off position.
4) Using a long insulated screwdriver and turn the adjustment screw clockwise to increase temperature and counter-clockwise to lower temperature.
5) **Never make adjustments greater than 1/4 turn at a time. Each 1/4 turn represents about 2 degrees celsius.**
6) Turn main switch back to Run or “2” position. Wait 10 minutes before making another temperature reading and readjust if necessary.
7) If temperature is to be reduced, you must flush at least 1 litre of water from the groups and wait 10 minutes before checking temperature.
La Marzocco Systems Overview

The La Marzocco owes a good part of its superiority to the careful and thoughtful engineering that focuses on coffee perfection. Nearly every other espresso machine manufacturer uses a single boiler and heat exchanger located inside the steam boiler. Water for brewing espresso is solely dependent on the temperature of the steam boiler and the appropriateness of the heat exchanger for the brewing conditions that exist on a predetermined average. This creates inconsistent brewing and steaming conditions, thus producing inconsistent drinks.

The La Marzocco espresso machine uses a unique two-boiler systems to isolate and perform operations in the best possible conditions. The rear boiler is dedicated to the steam and hot or tea water functions. The front boiler has the sole purpose of providing brewing water at the correct temperature and pressure for the coffee the barista is going to brew. These temperature and pressure parameters are adjustable independently of any other function of the espresso machine. They are also consistent though most any level of operation. The Four group la Marzocco uses two front boilers and one steam boiler, but the overall results are the same.

Since the La Marzocco is built to a different principal than other espresso machines, let’s look at the individual systems that make up the entire machine. We will find the greatest differences in the hydraulic system:

**Boilers**

There are two stainless steel boilers that work independently to provide steam and hot water or hot water for brewing espresso. The rear boiler provides steam pressure and the front boiler provides hot water for brewing espresso. The rear boiler operates partially filled and above boiling. The front boiler operates completely full and just below boiling.

**Groups**

The groups are the actual brewing chambers that house the coffee to be brewed. The La Marzocco uses a hollow cast group that attaches to the stainless steel boiler. It is critical to prevent the machine or group from freezing. Hot water is constantly circulating in the group any time the machine is hot. This enables the group to maintain the correct brewing temperatures at all times. The group is designed for the flow of water during brewing cycles, so it is also important to limit any rinsing from the group to protect the thermal stability of the group.

Once the dispense button is depressed, hot water that has been circulating though the group is released by means of a solenoid valve. Water flows from the left side of the group (as you are facing it) to the flowmeter (AV models) or to directly to the solenoid valve (EE models). The water then travels back into the group on the right side and through a tube before it is dispersed onto the fresh coffee grounds.

**Group Valves**

Each group has a solenoid valve mounted underneath to allow water to flow through the group. Group valves are three way valves that allow water to flow in a specific direction and that direct any back pressure to be discharged into the drain box. Each valve consists of a housing or body, which contains the valve seat, and a piston, that travels within a valve stem. The piston is spring
loaded to create a seal when the valve is at rest. The valve is opened with a coil that creates a magnetic charge and draws the piston away from the valve seat and is closed with spring pressure.

**Flowmeter**
The flowmeter measures the volume of water passing through the groups. The flowmeter consists of an electromagnetic field, an impeller or wheel that contains two small magnets, and a body or housing that contains a precision orifice or jet that controls the amount of water that can flow into the flowmeter. When water enters the flowmeter, the impeller spins and the magnets pass under the electromagnetic field. Each time a switch in the field closes a pulse is sent to the microprocessor to be counted.

**Autofill System**
The autofill system maintains the water level in the rear or steam boiler. The autofill system consists of an electronic control box (EE version) or shares the microprocessor (AV version), sensor or probe, and a two-way solenoid valve. The sensor is a metal post that is insulated from surrounding metal with a teflon seal and is inserted into the boiler. The microprocessor reads this post through a lead or wire. The microprocessor is programmed to detect a ground or earth signal from this sensor. If it does not, it opens the two way solenoid valve and allows water to fill the boiler. When the water level reaches the metal post the microprocessor can detect the ground or earth signal and closes the two way solenoid valve.

**Vacuum Valve**
The vacuum valve allows air to escape from the boiler until sufficient steam pressure develops to lift the cone and seal the boiler. This valve prevents a false pressure reading when a machine is initially heating. As hot water heats, the water expands. The pressure switch cannot detect the difference between air pressure or steam pressure. By allowing the air pressure that develops from the expanding water to escape, a true steam pressure can build as the machine continues to heat. This reduces any possibility of drawing contaminants into the steam boiler.

**Expansion Valve**
The expansion valve relieves front boiler pressure at about 12 bar. The expansion valve is located in the drain box, which is underneath the drip tray. The expansion valve consists of a valve body or housing, and a valve seal and spring which are enclosed in an adjustable, brass barrel. The expansion valve is adjusted by adding or relieving pressure on the spring by means of turning the brass barrel. It should begin to drip at 10-11 bar and release fully above 12 bar.

**Safety Relief Valve**
The safety relief valve relieves boiler pressure at 1.8 bar thus preventing the steam boiler from over-pressurizing. It is factory adjusted and sealed. It cannot be adjusted.

**Motor Pump**
The motor pump increases existing water pressure to 135psi or 9 bar. This is the optimum pressure for brewing espresso. An adjustment screw is located on the side of the pump inside the cap screw. Some pumps have accessible screws and some pumps have a cap screw that must be removed to make an adjustment. Turning the screw clockwise will increase the pump pressure and counterclockwise will decrease pressure. Make pump pressure adjustments while simultaneously brewing
Espresso. Check that your water supply pressure is stable before making an adjustment. A fluctuating water supply pressure will affect the final result. If your water pressure does fluctuate it is required to install a water pressure regulator or floating bypass rotating pump.

### Electrical System

**Overview**

Power enters the machine through the power cord, which then enters a large terminal block, and then to the main power switch. The main power switch has three positions:

- **“0”** This is the “off” position
- **“1”** This is the “fill” position. It activates all systems except the heating elements.
- **“2”** This is the “run” position. It provides power to all systems.

**Main High Voltage Wiring**

The main wiring harness begins with the power cord and continues throughout the machine. Two wires (one red, other blue) provide AC power to the microprocessor as well as the valve coils, brew switches, etc. One leg is attached to all components at all times (unswitched leg). The other leg is switched on either by the brew switch or microprocessor to activate the component (switched leg). Each solenoid valve coil and the pump are supplied with one phase at all times. The control box and manual override switches provide the coils and pump with the second phase necessary to complete the circuit and activate them.

**Rocker Switches**

All the rocker switches on the La Marzocco are double pole single throw. Contact is always made from the top to the bottom. Left and right sides are isolated from one another. Test rocker switches by turning the machine off and disconnecting the wires from the suspect switch. Use a multi-meter to measure ohms from top to bottom with the switch on. A reading of 0 ohms indicates a functional switch.

**Solenoid Coils**

The solenoid valves operate by energizing an electromagnetic coil that causes a valve piston to move away for the valve seat, opening the valve. Test the coil by turning the machine off and disconnecting the wires, then read between the left and right terminal with a multi-meter. The reading of a good coil should be between .7k ohms and .8k ohms.

**Thermostat**

The thermostat controls the temperature of the front boiler. The thermostat resides in a well that isolates it from the water but allows the temperature of the water to transfer. The thermostat contains a bellows filled with a thermal fluid that expands and contracts depending on the surrounding temperature. As the water heats in the coffee boiler it causes the fluid in the bellows to expand, which drives a piston up. When the piston rises, it eventually activates a switch, which turns off the heating elements. As the water cools the piston will fall and allow the switch to turn on again and repeat the heating cycle.

The thermostat contains an adjustment screw that adjusts the distance the piston must travel to
activate the switch, thus adjusting the temperature. To increase temperature turn the screw clockwise; to decrease turn counterclockwise. Each 1/4 turn of the adjustment screw represents approximately 2 degree Celsius temperature change.

There are two safety thermostats one located on the top of the left brewing group and one on the rear or steam boiler. Each thermostat activates at different temperatures, so they are not interchangeable. These thermostat may be reset by depressing the red post on top. Before resetting it should be determined what caused the safety thermostat to activate. It activates only if the temperature exceeds the normal operating temperatures.

**HEATING ELEMENT**

Each boiler has independently operated heating elements. The element for the steam boiler receives electrical power from the pressure switch. The elements for the coffee boiler receive electrical power from the thermostat. As electrical power is applied to the element it heats the surrounding water in the boiler. To determine amp draw:

- If your incoming supply is 200 - 240 volt , watts / voltage = amps
- If your incoming supply is 340 - 380 volts, watts/1.5/voltage = amps

**PUMP MOTOR**

The pump motor turns the pump, which boosts the existing water supply pressure. La Marzocco uses motors that are thermally protected. These motors rely on a capacitor to provide the initial push required to start the motor spinning. Over time the capacitor may weaken, causing a slight delay in the motor turning on after the group is activated.

**CONTROL BOX**

The control box is the most complicated component in the machine. It can be divided into the following systems:

1) Power supply: Converts high voltage AC into 18 volts DC (to power the relays) and 5 volts DC (to power the microprocessor and logic circuits).
2) Autofill system: This circuit monitors the signal from the autofill sensor and determines if it has established a ground.
3) Input system: These are the ribbon cables that carry information between the menu button pads and the control box.
4) High voltage output: This provides power to the coils and pump motor when the machine is called to brew espresso, fill the steam boiler or dispense hot water for brewing espresso.
5) Power supply: This consists of a transformer, and a40mA fuse. The fuse protects the components in the event that something has failed or shorted in the DC system. The transformer is the cube on the board. Its purpose is to reduce the high AC voltage to 18 volts AC. with the help of a series of diodes it is converted to DC voltage. This DC voltage goes though a1000mfd capacitor, which filters out any remaining AC signal. The best test point to verify DC voltage is on connector #2, pins 5 and 6 or from the red flowmeter wire to the chassis ground.

There are currently three different versions of control boxes that have been used with the La Marzocco. Until 1990, there was a “non-mask” control box. It has 8 pin connectors and colored ribbon cables. Until 1995, the “mask” control box was in use. It has 10 pin connectors and grey ribbon
cables. After 1995, the “3d5” & “4d5” control boxes were introduced. They have 16 pin connectors and grey ribbon cables.

**FLOWMETER**
There are three electrical connections on the top of the flowmeter. They are marked on the housing of the flowmeter field:

“+” corresponds to the DC power supply and should always read 16 - 22 volts DC

“−” corresponds to the ground or earth wire. It should be connected directly to the ring terminal and attached to the housing of the flowmeter. This should always read 0 volts.

“0” corresponds to the output signal in the control box. This terminal will switch rapidly from 18 to 0 volts when the group is activated.

To test the flowmeter, disconnect the red and white wires and measure the terminals (not the wires) of the flow meter field. A reading of 1.8 to 2.4k ohms is acceptable. A reading of 0 ohms indicates a problem requiring replacement of the sensor.

**PRESSURE SWITCH**
The pressure switch controls the steam pressure in the rear boiler by opening and closing the electrical circuit to the heating element. The pressure switch receives power generally through the bottom set of input leads. When the steam pressure lowers in the boiler (usually 1.1 or 1.2 bar) the contacts close allowing power to flow from the bottom leads through the top leads and then to the heating element. As the steam pressure builds and reaches 1.5 bar the contacts open and cut the power to the heating elements.

Later models are supplied with a micro pressure switch that works in a similar manner except the micro pressure switch activates a contactor which in turn supplies power to the heating elements.
Quick Guide to Testing Electronic and Electrical Components

**Capacitor**
Set your multi-meter to its highest ohms setting. Place multi-meter leads on the capacitor terminals. The tester’s display should read a value that rapidly decreases then suddenly begins increasing after reaching zero. Reverse the leads on the capacitor terminals if the same decreasing then increasing readout occurs the capacitor is good.

**Flowmeter**
1.8 to 2.4k Ohms between the “-” and “+” terminals indicates a good field.

**Solenoid Coils**
.7 to .8k Ohms between the terminals means the coil is good.

**Fuses**
Continuity between fuse ends means the fuse is good.

**Sirai Pressure Switch**
High voltage (100v or 240v depending on supply configuration) between the top and bottom terminals while the contacts are closed means the switch is good. (There may be problems in the membrane section of the pressure switch however).

**Micro Pressure Switch**
The micro pressure switch uses a stainless steel membrane that expands or contracts to open or close a micro switch. This micro switch opens or closes a contactor that supplies or withholds electricity to the heating elements. The micro pressure switch is adjusted by the small screw in the center of the switch.

**Heating Elements**
Appropriate amp draw while pressure switch is closed means element is good.

**Rocker Switches**
“0” Ohms reading from top to bottom means switch is good.
Periodic Maintenance

**SAFETY & TOOLS**

**Maintenance must be performed by a qualified technician.** Before performing maintenance on any espresso machine check that the power switch is off, the machine is unplugged, the water valve is off and that the steam boiler is depressurized. There are exceptions to this rule, but when in doubt always perform the checks above.

Steam valve maintenance may be done with the steam valve pressurized if the ball valve located on the steam tank is turned off first. In some instances you may wish to rebuild the steam valve and allow the operator to continue making drinks. A steam shut off valve is provided to allow the complete removal of the steam valve while the steam boiler is pressurized.

Coffee boiler maintenance should not be attempted until the machine is switched off, unplugged and the coffee boiler is depressurized.

Electrical maintenance and troubleshooting should be done with the machine unplugged. If it is necessary to take a volt or amp reading on a live machine be sure to remove jewelry and work cautiously, attentively and safely.
## Preventative Maintenance Spare Parts List

<table>
<thead>
<tr>
<th>Qty</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Portafilter gaskets 8mm</td>
<td>L105B 8mm</td>
</tr>
<tr>
<td>5</td>
<td>Portafilter gaskets 9mm</td>
<td>L105B 9mm</td>
</tr>
<tr>
<td>10</td>
<td>Portafilter spring clip</td>
<td>L113</td>
</tr>
<tr>
<td>10</td>
<td>Double coffee filter</td>
<td>L116/A</td>
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<tr>
<td>10</td>
<td>Single coffee filter</td>
<td>L115/A</td>
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<tr>
<td>10</td>
<td>Diffuser screens</td>
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<td>Diffuser screws</td>
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<td>Flowmeter impellers</td>
<td>LAD070/V</td>
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<td>15</td>
<td>Flowmeter O-Ring</td>
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<td>1</td>
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<td>3</td>
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<td>Sight glass fiber gasket</td>
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<td>Pressure relief valves</td>
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<td>Vacuum relief valve</td>
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<tr>
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<td>Steam valves</td>
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<tr>
<td>1</td>
<td>Expansion valve</td>
<td>L140/C</td>
</tr>
<tr>
<td>1</td>
<td>Pressure switch (Sirai)</td>
<td>L270</td>
</tr>
<tr>
<td>1</td>
<td>Micro Pressure Switch</td>
<td>L277</td>
</tr>
<tr>
<td>3</td>
<td>Gasket for heating element</td>
<td>LR360</td>
</tr>
<tr>
<td>10</td>
<td>Steam valves rebuild kit</td>
<td>L165/K</td>
</tr>
<tr>
<td>3</td>
<td>Steam valve knob</td>
<td>L165/V</td>
</tr>
<tr>
<td>10</td>
<td>Steam valve washer</td>
<td>L165/9</td>
</tr>
<tr>
<td>5</td>
<td>Steam valve knob cover</td>
<td>L165/MV</td>
</tr>
<tr>
<td>15</td>
<td>Steam valve cotter pin</td>
<td>L165/8</td>
</tr>
<tr>
<td>20</td>
<td>steam valve o-rings</td>
<td>L165/6</td>
</tr>
<tr>
<td>10</td>
<td>steam valve spring</td>
<td>L165/4</td>
</tr>
<tr>
<td>20</td>
<td>Steam wand O-Rings</td>
<td>L171/2</td>
</tr>
<tr>
<td>10</td>
<td>Steam wand snap ring</td>
<td>L165/3</td>
</tr>
<tr>
<td>5</td>
<td>Group cover O-Ring</td>
<td>L103/A</td>
</tr>
<tr>
<td>5</td>
<td>Teflon insulator for auto fill sensor</td>
<td>LA052/1</td>
</tr>
<tr>
<td>5</td>
<td>Fiber Gasket</td>
<td>L103/b</td>
</tr>
</tbody>
</table>

### Special Tools

- Diffusor Tool: UT 105
- Sight Glass Tool: UT 120
- Element Tool: UT 360/42
Technician’s Tool Kit

Special La Marzocco Tools

- Diffusor Tool UT 105
- Sight Glass Tool UT 120
- Element Tool UT 360/42

Common Tools

- Combination Open/Closed end wrenches 7mm to 26mm
- Metric Allen wrench set 3mm to 10mm with ball end for odd angle access
- Multi-meter that measures amps, ohms, AC/DC voltage and temperature
- Straight screwdriver 12” long insulated shaft
- Straight screwdriver 4” long
- Stubby standard screwdriver
- #2 Phillips screwdriver
- #1 Phillips screwdriver
- Mini screwdriver set
- Fuse puller
- Small wire brush
- Wire stripper/crimper
- Vice grips
- Diagonal pliers
- Slip-joint pliers
- Adjustable pliers
- Needle-nose pliers and snap-ring pliers
- 6”, 8” & 10” Adjustable wrenches
- Small hammer
- Shrink tube
- Blow dryer
- Propane/butane torch
- Gloves
- Safety goggles
- Teflon tape
- Food grade silicon lubricant such as Dow 111 Compound
- Flashlight or head lamp
- Assorted electrical terminals rate for high temperature
- SAE Allen wrenches for Swift EPS
- Fuses - size: 5mm x 20mm. Amp ratings: 40mAmp, 125mAmp, 1Amp, 10Amp, 6.3Amp
- Water Test Kit (HACH 5B) Hach World Headquarters USA +303 669 3050
  Hach Europe (Belgium) + (32) (81) 44.13.00

Preventative maintenance kits
Pre installation inspection form
Preventative maintenance checklist
Preventative Maintenance Procedures

Preventative maintenance procedures are based on replacing normal wear parts and taking a thorough look at each of the four systems, that control the entire espresso machine: hydraulic, electric, electronic, and mechanical. The objective of the prevention program is to replace parts that we know will wear, and to replace them before they fail and to search extensively for problems or symptoms that will lead to service issues in the near future. To help you complete this service we have included a checklist that will guide you through the procedures. This checklist should be followed at least twice per year. In some busy locations you may wish to carry out these procedures three times per year. Below we will walk you through each step of the checklist:

**Change Portafilter Gaskets**

These gaskets are located under the brewing group, (figure 1, page 20). They seal the portafilter to the group so that the water will not escape when brewing. To change them it is necessary to remove the diffuser screen screw and screen. Using a small straight screwdriver and a small hammer, split the gasket in two and wedge the screwdriver underneath. Wiggle the torn gasket out of the group. Clean this area of the group before installing a new gasket. Also clean the diffuser screen. If the diffuser screen has heavy deposits of coffee you may wish to burn the residue with a propane torch and then clean the screen or replace the screen. Always replace a torn screen.

To install new gaskets it is important to determine the size. The factory only installs 8mm portafilter gaskets, but as this bayonet arrangement wears it may be necessary to install an oversize 9mm gasket. Please see drawing on next page.
CHECK COFFEE FILTERS

Clean the coffee filters and inspect for clogging or wear. Hold coffee filters to light and peer though to determine if the holes are clear. If not they may need to be heated with a propane torch to clear the holes or replace them. Also check for any cracks. If there are cracks in the filters they will need to be replaced. While brewing espresso these filter are under high pressure (9 - 10 bar). After a while the bottom portion of the basket will begin to expand outward. This is an indication that they need to be replaced.

CLEAN GROUPS AND PORTAFILTERS

Using an espresso machine cleaner such as Puro Caff, soak the portafilters and clean under the groups with a small brush.

REBUILD STEAM VALVES AND LUBRICATE

Turn machine off and depressurize by opening steam valves or shut steam valve supply valve off at steam (rear) boiler. Remove black bezel on steam valve by twisting counter clockwise with palm of hand. remove cotter pin. Remove steam valve knob. Loosen fitting on back of valve loosen lock nut on control panel (#10) and remove valve from machine. Separate valve by turning with wrench on #1 and #7. Clean and inspect parts for wear. Install parts from rebuild kit #31. Lubricate shaft #4 and threads on #8. Remove circlip from steam delivery tube #19 remove steam delivery tube and replace O-rings #15 and reassemble. Check for wear or seat damage (scars or cracks) on steam valve body #1. Also check groove that the circlip fits into for wear. Replace valve body or entire steam valve if excessive wear is noticeable. See drawing below for reference.
CLEAR DRAIN BOX AND DRAIN LINES
Coffee grinds often build up in the drain box and may build up in the drain lines. Check that your customer is cleaning the drain box and running hot water through the drains at the end of the day. Clean the drain box and remove drain lines if water travels through drain slowly.

CHECK SIGHT GLASS FOR SIGNS OF LEAKAGE
The sight glass seals will last about one year. They should be changed regularly. It will be easier to change these seals if they are changed annually. If there are signs of leakage it is past time to rebuild the sight glass.

CHECK PRESSURE SWITCH OPERATION
Cycle the pressure switch by opening and closing the steam valve. The heating elements of the steam boiler should turn on and off at consistent pressures. You should also unplug the machine and check the contacts of the pressure switch by removing the grey or black cover and visually check the condition of the contacts. Replace pressure switch if these contacts are badly worn or excessively black.

CHECK AUTOFILL OPERATION
Cycle autofill system by removing water through the tea valve. The autofill system should respond to a lower water volume consistently. It should fill as soon as the water level falls low the sensor. If there is a delay or if the water level falls more than halfway before filling you may need to replace the autofill sensor.

CHECK TOUCH PADS AND BREW SWITCHES
Operate each group brewing switch to make sure it functions correctly. Measure the quantity of each dosage level and check to see that the quantity is consistent between each group. A small discrepancy is acceptable, but a large discrepancy indicates a problem with a flowmeter. In most cases mineral deposits may cause an obstruction that limits the amount of water flow.

If the touch pad shows excessive wear replace the protective decal. If there is moisture damage or if the customer complains of a group activating on its own look for steam or water leaks and repair. Check the ribbon cable for heat damage and cracking or brittleness. Replace if necessary.

CHECK FOR LEAKS
Visually check fittings, boilers and joints for signs of leakage. Note evidence of leakage on checklist. Consult with customer as to the severity of leak and make a decision on repair. As a machine ages it may leak very gradually. This may be determined by white fluffy growth around joints and gaskets. It is always better to attend to these leaks before they start leaking aggressively. Always address these leaks during any overhaul procedures.

CHECK EXPANSION VALVE
Run 1 liter of water from groups by activating brew switches. This should cool the brewing boiler slightly. As the water reheats it will expand, thus creating excess pressure. At or near 10 bar the expansion valve should begin to relieve this pressure. The expansion valve should open to prevent the pressure rising above 12 bar. Adjust or replace expansion valve as necessary.
**CHECK BREWING PARAMETERS**

Your customer may have brewing standards that they want to achieve. Check with your customer before making adjustments. If they have not established their own, general optimums are listed on the maintenance checklist. Using a portafilter and modified blank filter, insert a thermal couple into the portafilter to accurately measure temperature. Thermostat is very sensitive and should be adjusted only if necessary. One quarter turn equals 2°C.

Group pressure should be between 8 and 9 Bar. Use the lower indicator on the pressure gauge and adjust the pump to the appropriate pressure.

Using a measuring cup sample each group and each dosage selection. Consult the operating manual if a dosage adjustment is necessary.

Check each group for flow consistency. A group that dispenses slowly may have mineral deposits that need to be cleaned.

**CHECK WATER HARDNESS**

Water hardness is determined by parts per million of calcium and other minerals that are present in the water. We recommend using the Hach model 5B test kit to accurately check the level of hardness present. Water hardness should be maintained at a level below 4 grains or 68 parts per million. If water hardness is higher than this either a water softener or reverse osmosis systems are necessary. Filters are not able to remove dissolved mineral and are inadequate for levels above 4 grains hardness.

**REPLACE FLOWMETER O-RING**

Shut off water supply, turn main power switch to position “1” and press dispense button momentarily to relieve water pressure. Turn main power switch to off or position “0”. remove three cap screws and lift off flowmeter field (#1) remove O-Ring and discard. Remove impeller (#3) clean any scale deposits. Clean scale from flowmeter body (#5) and clear jet. Re-install or replace impeller and replace O-Ring andreassemble flowmeter.
REPLACE VACUUM VALVE SEALS
Locate vacuum valve on top of boiler and remove from machine. There are several styles. Most are one of the two illustrated below. Disassemble by separating cap (#1), remove seal (#2), clean cone (#3) or clean teflon sealant replace o-ring and reassemble. Pay attention to remove scale on sides of cone and be sure it move freely with in the housing (#4). It may be necessary to replace the entire vacuum valve. Reinstall into boiler with new gasket (#5).

REBUILD SIGHT GLASS
Switch machine off and depressurize by opening a steam valve. Open sight glass drain fitting and drain water from steam boiler. Disconnect sightglass at the boiler fittings. Place entire sightglass assembly in padded vise. remove sightglass bezel # 26 with special sight glass tool. remove and clean residue of fiber gasket (#25) from bezel. Remove and discard O-Ring (#23). Inspect glass for thinning at water level and cracks or pits. Replace glass if necessary. Reassemble with new O-ring, Fiber seal and glass. Reinstall in machine, fill with water, check for leaks.
**Espresso Grinder Service**

Check specific manufacturer’s recommendations for additional service requirements. Remove coffee beans and ground coffee. Clean bean hoppers in warm water and a coffee or espresso machine cleaner such as Puro Caff. With a vacuum cleaner remove residual coffee beans and partially ground coffee. Remove grinding burrs and check for wear. Replace if necessary. Steel burrs last about 325 kilos (650lbs). The cutting surfaces of the burr plates should have a sharp edge. Replace burrs if they feel dull, create excessive heat while grinding, or make high pitched noises while grinding.

Reassemble grinder after cleaning. Dry any surfaces you washed and do not lubricate the grind adjustment collar threads. Brush and vacuum away all coffee grounds from the grind chamber to reassemble the grinding burrs, and adjustment collar.

**Swift Espresso Preparation System**

Follow cleaning procedure found in Swift operating manual. Clean hoppers and vacuum residual coffee beans and grounds from the throat of each grinder. Disassemble and clean impeller and impeller cylinder. Using tool provided with your Swift EPS clean ground coffee chamber and vacuum any loosened coffee through the throat of the grinder. Worn ceramic burrs are difficult to determine by touch or sight. Check burrs for cracks and chips. These burrs should last for about 1500 kilos. If espresso brewing extraction is inconsistent from drink to to drink, it may be time to install new burrs.
Preventative Maintenance Checklist
Perform Every 4 Months

Name of Establishment _______________________________ Date ________________
Location ______________________ ____________________ Tel. _________________
__________________________________________ Contact _____________

Machine Model _________________ Serial # ________________
Grinder Model _________________ Serial # ________________

- Change portafilter gaskets clean dispersion screens & group diffuser
  - L105/8mm  L105/9mm
- Check coffee filters for wear and/or cracks.
- Rebuild steam valves and lubricate
- Clean groups and portafilters
- Check sight glass for signs of leakage
- Check pressure switch operation
- Check autofill operation
- Check Touch pads and brew switches
  - Dosages levels consistent
  - Cracks or wear
  - Moisture damage
  - Cables and connections
- Clear drain box and drain lines
- Check and repair leaks
  - Noticed leaks and/or hissing at following locations:

- Check expansion valve

2) Check brewing parameters
- Group temp existing ______ adjusted to _____ optimum 93°C - 96°C
- Group pressure existing ______ adjusted to _____ optimum 9 bar
- Volume existing ______ adjusted to _____ optimum 1 oz. to 2 oz.
  - Check group flow and consistency of volume

3) Check water hardness ______ grains hardness
4) Recommendations to customer on water quality:

- Machine and water supply must be switched off and depressurized to proceed.
- Replace flowmeter o-ring and clean and inspect impeller
- Replace vacuum valve seals or  replace vacuum valve
- Rebuild sight glass
- Repair leaks
Preventative Maintenance Checklist

GRINDER SERVICE
- Check and/or replace burrs
- Clean doser
- Adjust doser
- Check doser return spring

SWIFT EPS SERVICE
- Clean hoppers
- Brush and vacuum loose coffee from grind chamber
- Clean impeller
- Clean ground coffee passage to tamp chamber
- Clean tamp chamber

Recommended Repairs:
__________________________________________________________________________________________
__________________________________________________________________________________________
__________________________________________________________________________________________

Authorized Service Technician: _______________________________________________
# Troubleshooting Chart

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leaks</strong></td>
<td>Steam boiler overfilled</td>
<td>Depressurize machine, remove fill tube on top of steam boiler check for constant drip. If so replace autofill valve or remove and clean any sand or scale that may prevent valve from closing securely.</td>
</tr>
<tr>
<td>Clear water is leaking below</td>
<td>Leaking autofill valve</td>
<td>It is possible to overfill the steam boiler by activating the emergency fill button. If the operator did was not aware of the purpose of this button he/she may have overfilled the machine manually.</td>
</tr>
<tr>
<td>machine</td>
<td>Operator error</td>
<td>Check and repair autofill sensor wire and or connectors</td>
</tr>
<tr>
<td></td>
<td>Disconnected autofill sensor wire</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leak from group to boiler gasket</td>
<td>Check closely around boiler where groups are bolted in place. If leak originates from this area the group to boiler gasket must be replaced.</td>
</tr>
<tr>
<td></td>
<td>Leak from tubing</td>
<td>Replace tubing. In most instances it is not possible to repair a leaking tube. Some bandage ideas such as teflon tape may help in the short term only. It is not recommended to use such a solution as a permanent fix.</td>
</tr>
<tr>
<td>Symptom</td>
<td>Probable Cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Leaks</strong></td>
<td>Dirty Water is leaking under machine</td>
<td>Clean Drain box of coffee grounds. Use a piece of wire or pipe cleaner to clear drain box fitting. Remove and clear drain tubing with water.</td>
</tr>
<tr>
<td></td>
<td>Constant Hissing</td>
<td>Replace seals or replace vacuum valve</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check for overpressurized steam boiler. If so replace pressure switch.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Using a plastic hose, hold on end near your ear and guide the other end in the area of the hiss. In this manner you will be able to isolate the hissing location and address it.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If leaking occurs at the tube that connects to the steam valve, you may need to replace the tube. This can occur if the steam valve is not properly installed after it has been service. Remove tube and inspect the flare end of the tube for cracks or any deformations. If so replace tube.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Change portafilter gasket</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check portafilter for fit in group, If portafilter travels past perpendicular to control panel by 30° it may need to be replaced or an oversize portafilter gasket is necessary</td>
</tr>
<tr>
<td><strong>Leaks While Brewing</strong></td>
<td>Worn portafilter gasket</td>
<td>Inspect coffee tamped in coffee filter after it has been inserted into brewing group. If there is an indentation of the dispersion screen screw, the excess coffee may be preventing the gasket from sealing properly.</td>
</tr>
<tr>
<td>From around portafilter</td>
<td>Worn portafilter assembly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Too much ground coffee in filter</td>
<td></td>
</tr>
<tr>
<td>Symptom</td>
<td>Probable Cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Boiler fill problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steam boiler overfills</td>
<td>Leak in auto fill solenoid</td>
<td>Depressurize machine, remove fill tube on top of steam boiler check for constant drip. If so replace autofill valve or remove and clean any sand or scale that may prevent valve from closing security.</td>
</tr>
<tr>
<td></td>
<td>Problem with computer</td>
<td>Cycle autofill system by lowering water level and watch operation and level of water recovery. If machine consistently overfills, replace autofill sensor. Recheck operation of autofill system. If there is no change, the computer must be replaced. Check for causes of this problem such as blackened computer boards, wet computer, insects in computer, or excessive dust. If computer is wet it may work correctly once dry, but fix the problem that is causing the computer to get wet.</td>
</tr>
<tr>
<td>Steam boiler will not fill or Steam boiler nearly empties before refilling</td>
<td>Built-up mineral deposits on sensor</td>
<td>Check sensor for scale accumulation and replace if scale is attached to sensor</td>
</tr>
<tr>
<td></td>
<td>Worn sensor seal</td>
<td>Replace teflon seal and clean sensor with emery cloth.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replace autofill sensor.</td>
</tr>
<tr>
<td>Symptom</td>
<td>Probable Cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>---------</td>
<td>----------------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Brewing problems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touch pads not responding</td>
<td>Water supply is off or obstructed</td>
<td>On AV models there is a safety feature that disconnects the touch pads if the machine attempts to add water for more than 90 seconds. Check water supply and turn master switch off and back on to reset computer</td>
</tr>
<tr>
<td>Light above brew dispense button blinks while brewing</td>
<td>Loose connection</td>
<td>Check ribbon cable connection to touch pad control boxes and to the computer.</td>
</tr>
<tr>
<td>Water does not dispense from group</td>
<td>Flowmeter is not receiving a signal.</td>
<td>Grind is too fine adjust grind coarser. Impeller is not moving freely. Depressurize machine, turn water off. Remove flowmeter field and check impeller. Also check flowmeter port and clear any obstructions. Wire is disconnected from flowmeter. Check and repair.</td>
</tr>
<tr>
<td></td>
<td>Group Solenoid valve is not opening.</td>
<td>Check solenoid operation and replace if necessary.</td>
</tr>
<tr>
<td></td>
<td>Group clogged. Due missing or damaged dispersion screen</td>
<td>If the dispersion screen is missing or badly torn coffee grounds may clog the group tubing. To clear the group the machine must be depresurized and the water supply must be off. Remove group top cap, loosen banjo bolt on top. Remove group tubing on right side of group. Remove nut on right side of group. Remove tube and clear by heating tube until coffee grounds are burned away. Reassemble group with new O-rings.</td>
</tr>
</tbody>
</table>
## Troubleshooting Chart

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<tr>
<th>Symptom</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Espresso pours unevenly from portafilters</td>
<td>Flow regulator on portafilter is out of adjustment</td>
<td>With a straight screwdriver turn adjustment screw on bottom of portafilter until flow is even on both sides of spout.</td>
</tr>
<tr>
<td>Espresso extraction times fluctuate erratically</td>
<td>Worn grinder burrs</td>
<td>Check grinder burrs for wear and replace.</td>
</tr>
<tr>
<td><strong>Temperature Problems</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Espresso is cool or cold</td>
<td>Thermal cutout has activated</td>
<td>On the group top check the thermal cutout switches. Reset by pressing the red button on top. Check for water supply or thermostat problems to determine cause of activation.</td>
</tr>
<tr>
<td></td>
<td>Thermal cutout switch has activated</td>
<td>Using an volt meter check voltage at micro switch on thermostat. Check that thermostat bellows are functioning to engage or disengage micro switch. If not replace thermostat.</td>
</tr>
<tr>
<td></td>
<td>Check thermostat</td>
<td>With an Amp meter check that the thermostat is turning off properly.</td>
</tr>
<tr>
<td></td>
<td>Check brew boiler heating element</td>
<td>With an amp meter check amp draw of heating element.</td>
</tr>
<tr>
<td></td>
<td>Thermal cutout switch has activated</td>
<td>Unplug machine, disconnect heating element wires and perform continuity test and a short to ground test of heating element. Replace if necessary.</td>
</tr>
<tr>
<td>Espresso foams greatly while brewing and tastes burnt</td>
<td></td>
<td>Check and reset thermal cutout switch. Check for water fill problems or overheating problems to determine cause of thermal cutout activation.</td>
</tr>
<tr>
<td>No steam pressure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Symptom</th>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No steam pressure (cont.)</td>
<td>Pressure switch not functioning</td>
<td>Check pressure switch operation and replace if necessary.</td>
</tr>
<tr>
<td>Low steam pressure</td>
<td>Clogged steam tube nozzle</td>
<td>Use a paper clip to open hole in nozzle and soak in dairy cleaning product. Rinse before using.</td>
</tr>
<tr>
<td></td>
<td>Faulty or partially damage heating element</td>
<td>Check steam pressure gauge to confirm it is reaching 1.5 bar. If not perform Amp test and continuity test.</td>
</tr>
<tr>
<td><strong>Noises</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banging noise while heating</td>
<td>Mineral deposit build-up on heating elements and within boiler</td>
<td>No remedy. If symptom worsens or if element fails, boiler must be descaled with acid.</td>
</tr>
<tr>
<td>High pitched whistle or squeal</td>
<td>Expansion valve releasing</td>
<td>Check expansion valve in drain box for leakage. Adjust or replace if necessary. Over time mineral deposits may build up in expansion valve and allow it to release slightly and prematurely. This will create loud harmonic whistle.</td>
</tr>
<tr>
<td>Grading Noise</td>
<td>Pump is not receiving adequate water</td>
<td>Check water supply to pump and machine. Change filter if necessary. Look for obstructions in water supply.</td>
</tr>
<tr>
<td>Pump runs continuously</td>
<td>Stuck pump relay</td>
<td>Check pump relay in electronic control box.</td>
</tr>
<tr>
<td></td>
<td>Short in pump circuit</td>
<td>Isolate and trace with multimeter for a short in the circuit.</td>
</tr>
<tr>
<td>Symptom</td>
<td>Probable Cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>---------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Flashing Lights</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touch pad light blinks while brewing.</td>
<td>Grind too fine</td>
<td>Check extraction time of brew cycle. If it is over 30 seconds the grind of the coffee needs to be adjusted.</td>
</tr>
<tr>
<td></td>
<td>Faulty flow meter</td>
<td>If a flowmeter is faulty the flashing light symptom will occur only on one group not all groups. If this the case check flowmeter wheel for free travel, magnets and clean scale deposits. The flowmeter field may also be faulty in which case it should be replaced.</td>
</tr>
<tr>
<td>All touch pad lights flash</td>
<td>Water supply is off or severely restricted</td>
<td>If all the LED lights above the group flash and then go out you will notice that the touch pad will no longer work. This indicates that the machine needed water to fill the rear boiler and that was not able to fill it self within 90 seconds. Look for an obstruction in the water supply system and correct. Possible locations are filters, water line obstructions, a water valve that was shut off, or mineral deposits near the inlet tube to the rear boiler.</td>
</tr>
<tr>
<td>Programming Problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Espresso volumes are inconsistent</td>
<td>Restricted flow meter</td>
<td>Check jet in flowmeter for partial obstruction. Check that flowmeter wheel spins freely. Check flowmeter body for scale deposits and clean or replace.</td>
</tr>
<tr>
<td></td>
<td>Leaking expansion valve or solenoid valve</td>
<td>Check drain box for water leakage though solenoid discharge tube or expansion valve while brewing.</td>
</tr>
<tr>
<td>Symptom</td>
<td>Probable Cause</td>
<td>Remedy</td>
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<tr>
<td>Espresso volume changes after programming</td>
<td>Check for air in group</td>
<td>Loosen 5 mm allen screw on top of groups and release any trapped air.</td>
</tr>
<tr>
<td></td>
<td>Faulty flowmeter</td>
<td>The far left flowmeter provides the default setting for all other groups. If there is a problem with the far left flowmeter it may cause the other groups to register different quantities.</td>
</tr>
<tr>
<td>Symptom</td>
<td>Probable Cause</td>
<td>Remedy</td>
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<td>---------------------------------------------</td>
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<tr>
<td>Start buttons do not respond</td>
<td>Electrical supply problem</td>
<td>Check connection at wall. Check main switch on the side of the Swift grinder. (light on) Check fuses</td>
</tr>
<tr>
<td>Lights flash when the start button is depresed.</td>
<td>Portafilter not engaging properly</td>
<td>Check that the portafilter is aligned properly change the coffee filter basket</td>
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<tr>
<td></td>
<td>Portafilter is already full</td>
<td>Empty portafilter and start again</td>
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<tr>
<td></td>
<td>Safety timer has run out due to inadequate supply of coffee beans</td>
<td>Check bean supply Check bean gate Clean hopper chute</td>
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<tr>
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<td>Safety micro switch is not functioning</td>
<td>Check mechanical operation of microswitch and check electrical function of microswitch.</td>
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<tr>
<td>One grinding motor does not run.</td>
<td>Fuse activated</td>
<td>Press reset button on back of grinder. If it activates again, turn adjustment knob 5 - 6 times in the faster pour direction. Remove bean hopper check that the motor spins freely (if not turn adjustment knob until it does. Insert cleaning rod, REMOVE CLEANING ROD, and vacuum out any beans grounds and impurities. Restart the grinder. If fuse activates again, remove</td>
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<tr>
<td></td>
<td>Incorrect adjustment of grind</td>
<td>Adjust grind slightly finer</td>
</tr>
<tr>
<td></td>
<td>Incorrect adjustment of tamper</td>
<td>Adjust the two lock nut that determine the final coffee volume.</td>
</tr>
<tr>
<td>Espresso gushes and slows</td>
<td>Worn burrs</td>
<td>Remove grinder collar and check condition of burrs. Replace if necessary.</td>
</tr>
<tr>
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<td>Probable Cause</td>
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# Troubleshooting Notes

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<tr>
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<th>Remedy</th>
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