

# Schaerer Coffee Art Service Manual



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# Safety Warnings

## General Safety Instructions

**CAUTION:** The warnings throughout this document are listed here and you must familiarize yourself before opening, maintaining, or servicing the coffee machine.

### Risk of electrocution—Components carrying mains voltage

The coffee machine is not fully disconnected from mains voltage when only switched off. Prior to any internal work be sure to disconnect the power cord from the mains supply.

**Caution:** Mains voltage is present at the mains connection, mains terminal block, GFCI switch, power supply, relay board, temperature limiters, heating elements, water pump, and their corresponding lines.



### Depressurize the machine

**Caution:** The boiler(s), valves, and media-carrying pipes are under pressure with a potential of high temperatures. Release the pressure and allow system to cool prior to carrying out any work or maintenance.



### Burn Hazard

**Caution:** Any components that come into contact with media present a burn hazard.



### Scalding Hazard

**Caution:** There is a risk of scalding at spouts and at disconnected or faulty connections due to egress of medium



### Handling of cleaning agents

**Caution:**  
Health hazard through contact and swallowing.  
Consult information in safety data sheets



### Bruising or crushing hazard

**Caution:** There is a risk of bruising or crushing associated with the following components

- Brewer (automat)
- Grinders
- Grounds container
- Drip tray
- Front panel



## Safety Warnings



**CAUTION**  
Hazards to the machine



**CAUTION**  
Hot liquid



**CAUTION**  
Hazards to the user



**CAUTION**  
Hot surface



**CAUTION**  
Hot steam



**CAUTION**  
Bruising or crushing  
hazard

## Revision Control

- Revision 20210514 — First edition 14 May, 2021
- Revision 20220418 — Corrected machine offerings for model 51 on pg. 6
  - Added Front Grinder Relay on pg. 49
  - Added header callout on pg. 51 for front grinder relay
  - Corrections applied to pg. 49 for the front grinder relay
  - Integration of 'Conditions for replacement' pg. 20, 23, 24, 27, 30, 36, 41, 47, 50
  - Addition of USB Structuring pg 64-65

## Coffee Art Model Descriptions Chart

SAP		User Interface			Voltage		Telemetry	Hopper + Grinders + Coffee			Wands and Add Ons		
Model Type	Material No.	Touch Screen	Buttons	External Buttons	220V 30A	220V 20A	Capable	Oval or Round Hopper	2 Grinder	3 Grinder	Hot Water	Steam Arm	Hi-capacity Spout
Espresso	040381-00020EUS		8 + 4	✓	✓			Oval	✓		✓	Auto Steam	
Espresso	040381-00021EUS		16 + 4	✓	✓			Oval	✓		✓	Auto Steam	
Espresso	040381-00022EUS	✓	+ 4	✓	✓		✓	Oval	✓		✓	Auto Steam	
Espresso	040381-00090EUS	✓	+ 4	✓	✓		✓	Oval	✓		✓	Auto Steam	
Espresso	040381-00095EUS	✓	+ 4	✓	✓		✓	Round	✓		✓	Auto Steam	
Bean-to-Cup	040381-00050EUS	✓				✓	✓	Round		✓	✓		
Bean-to-Cup	040381-00051EUS	✓				✓	✓	Round		✓	✓		
Bean-to-Cup	040381-00052EUS	✓	+ 2 (right)	✓		✓	✓	Round		✓	✓		
Bean-to-Cup	040381-00053EUS	✓	+ 2 (right)	✓		✓	✓	Round		✓	✓		
Bean-to-Cup	040381-00071EUS	✓				✓	✓	Round		✓	✓		✓

**040381-00090EUS**



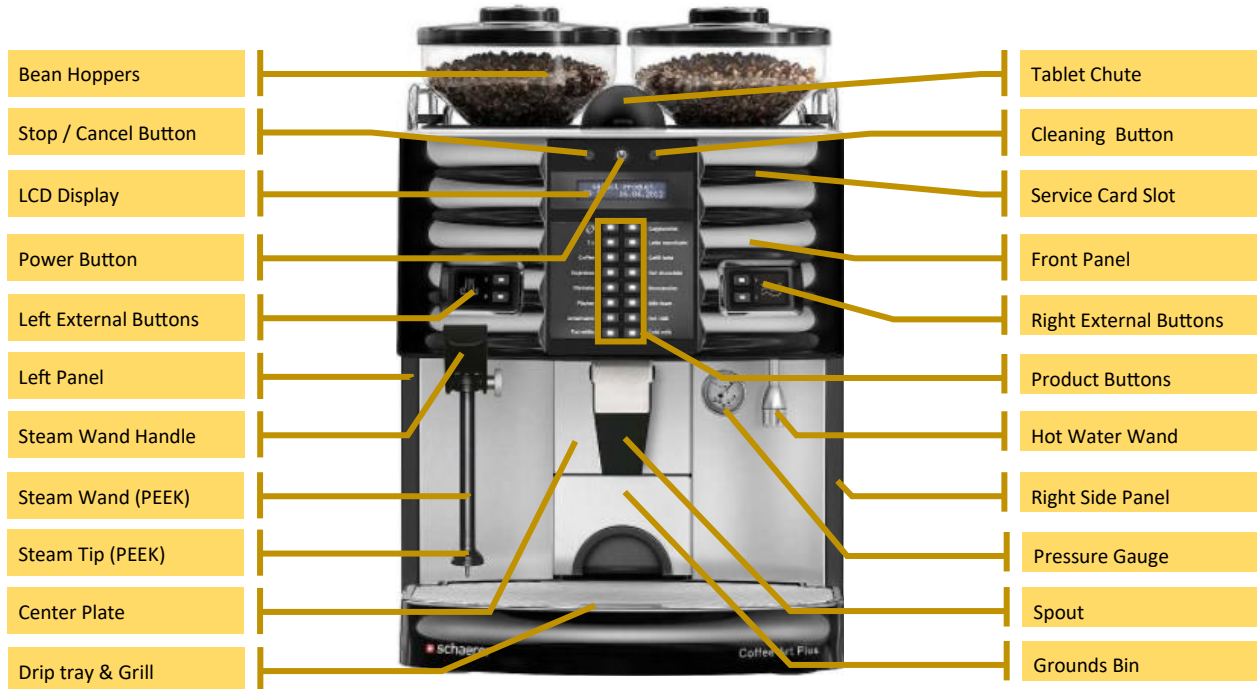
**040381-00021EUS**



**040381-00050EUS**



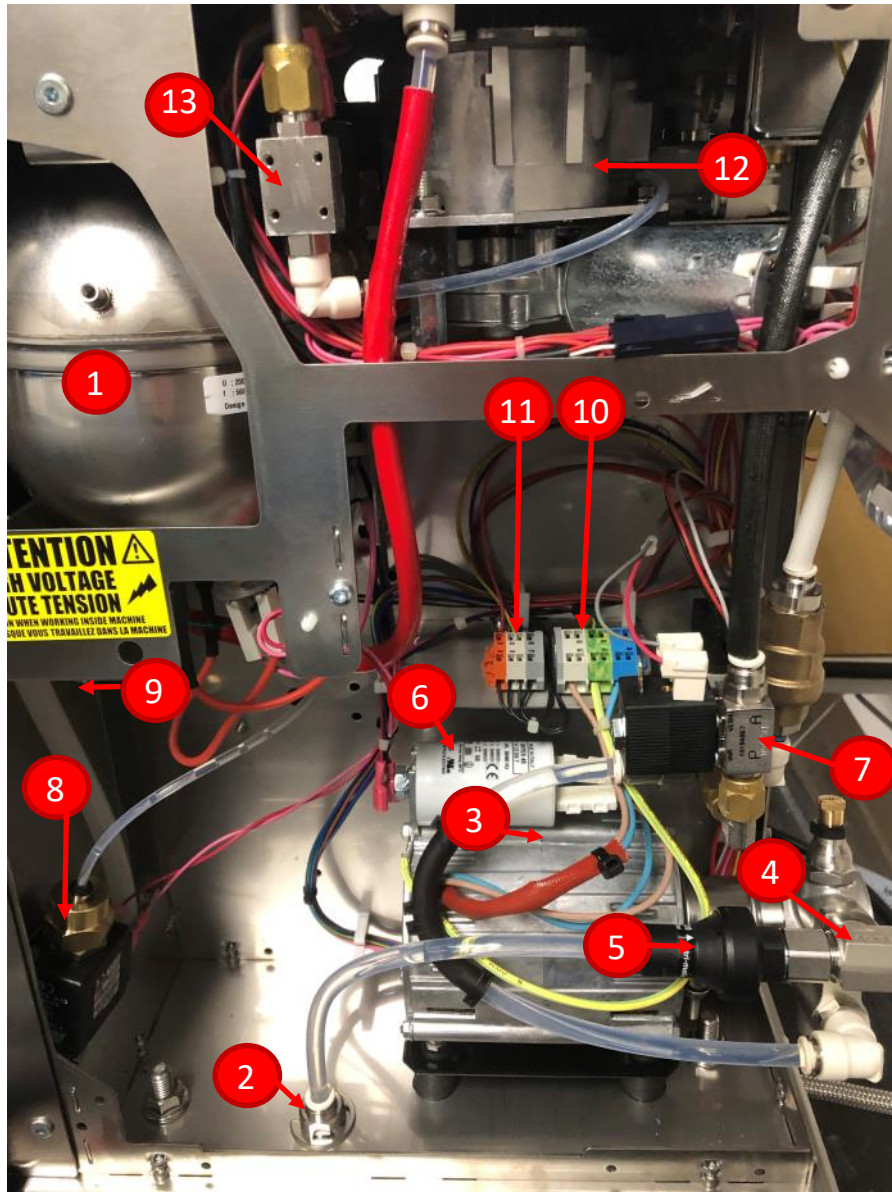
# Front View





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Internal Layout: Right Side View (SCA Coffee)

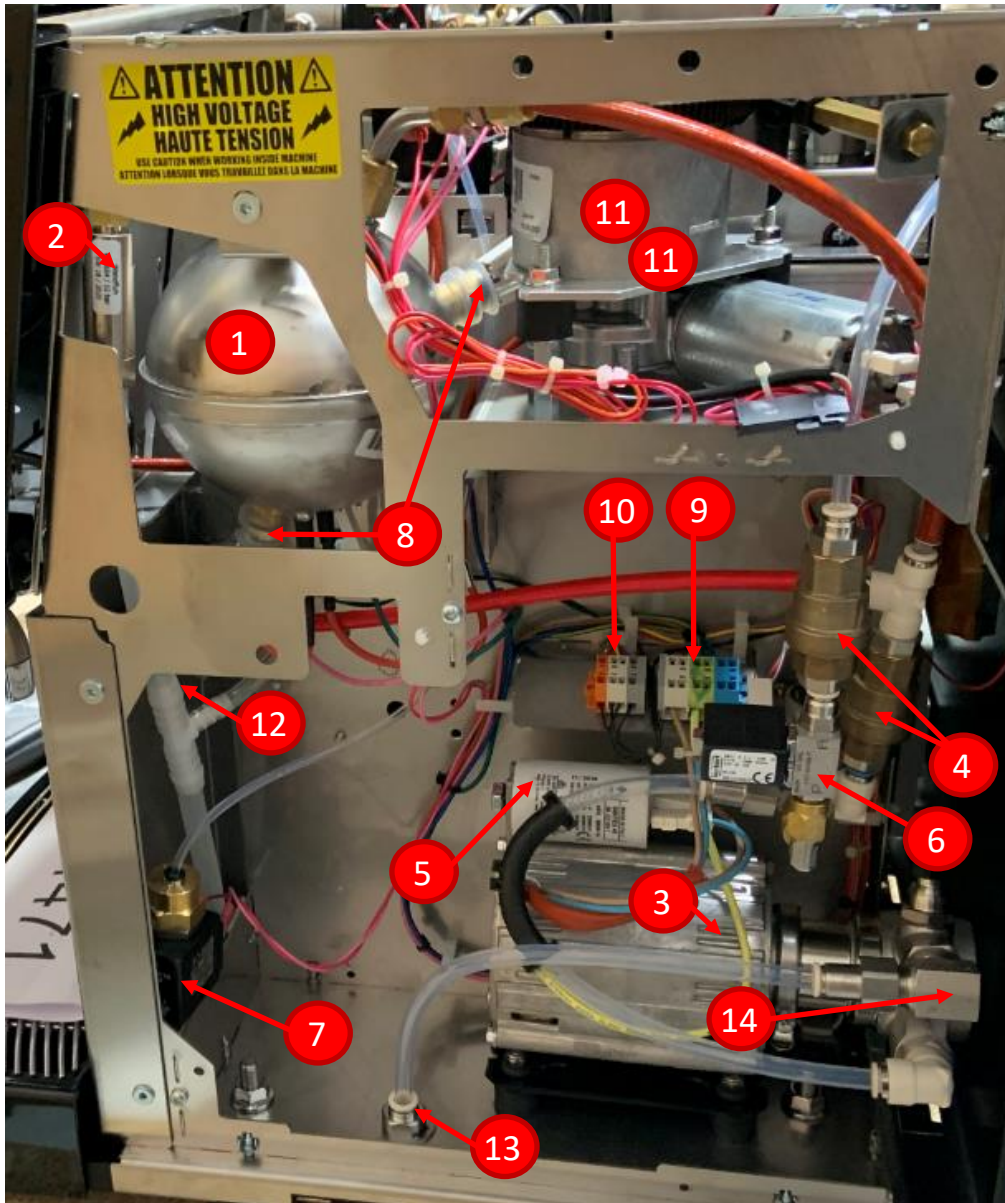


- |                               |   |   |
|-------------------------------|---|---|
| 1. Coffee Boiler 1L 3kW       | 7. Heat Exchanger Supply Valve (flushes to drip tray) | 11.Safety Switches Terminal Block (30VDC) |
| 2. Incoming Water Supply      | 8. Flush Valve  | 12.Right Grinder                          |
| 3. Pump & Motor               | 9. Pressure Gauge                                     | 13.Hot Water Bypass Valve                 |
| 4. Check Elbow                | 10.Pump Motor Terminal Block (230VAC)                 |   |
| 5. Pressure Regulator 2.0 bar |   |   |
| 6. Capacitor                  |   |   |



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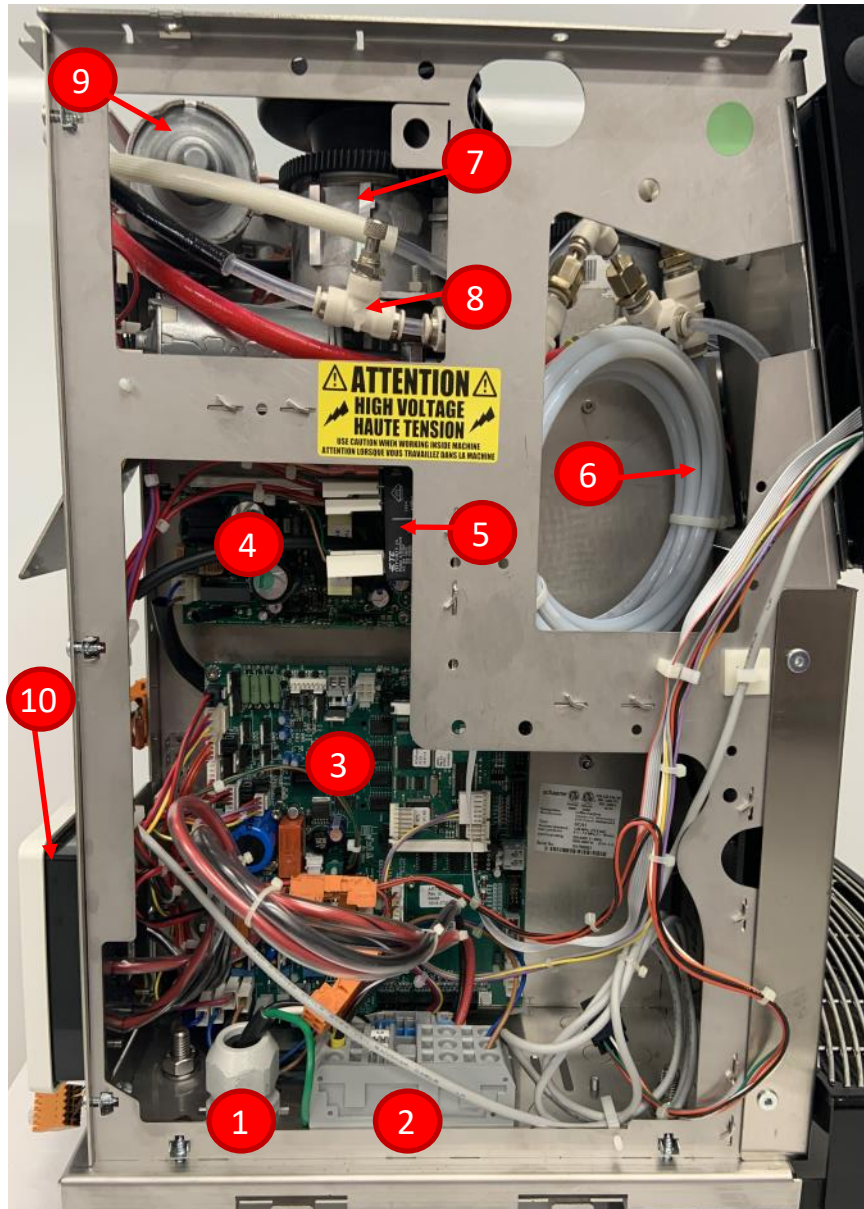
Internal Layout: Right Side View SCA Plus (Espresso)



- |                             |  |                           |
|-----------------------------|--|---------------------------|
| 1. Coffee Boiler 0.8L 3kW   | 7. Flush Valve                             | 11. Right Grinder         |
| 2. Overpressure Valve       | 8. Klixon 155°C                            | 12. Pressure Gauge        |
| 3. Pump & Motor             | 9. Pump Motor Terminal Block (230VAC)      | 13. Incoming Water Supply |
| 4. Check Valve              | 10. Safety Switches Terminal Block (30VDC) | 14. Check Elbow           |
| 5. Capacitor                |  |                           |
| 6. Steam Boiler Inlet Valve |  |                           |

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Internal Layout: Left Side View (SCA Coffee)

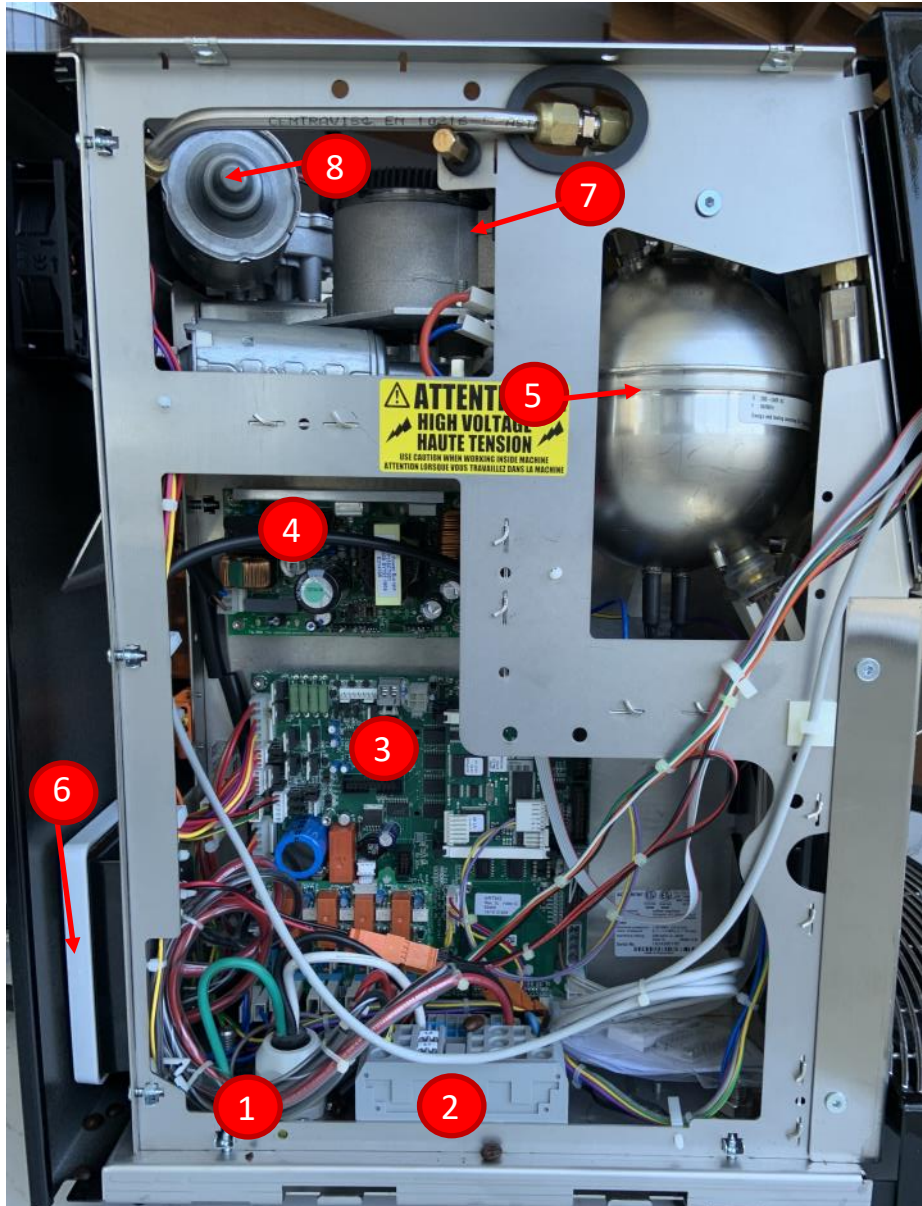


- |                         |  |
|-------------------------|--|
| 1. Power Cord           | 7. Left Grinder                              |
| 2. Mains Terminal Block | 8. Heat Exchanger Waste Water Flow Regulator |
| 3. Main Board           | 9. 36VDC Automat Motor                       |
| 4. Power Supply         | 10. GFCI Switch                              |
| 5. Front Grinder Relay  |  |
| 6. Heat Exchanger       |  |



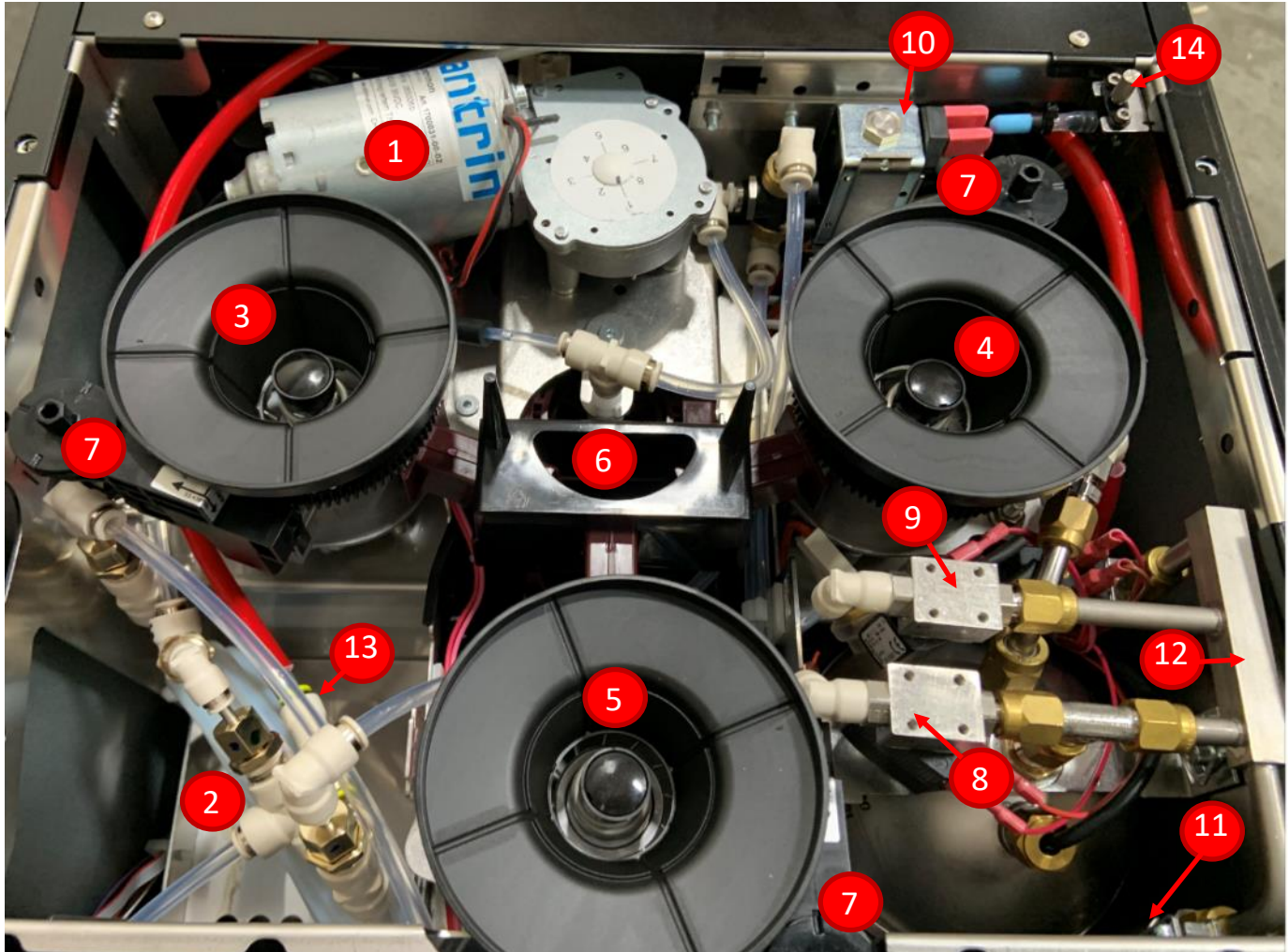
SEB PROFESSIONAL

Internal Layout: Left Side View SCA Plus (Espresso)



- |                         |                                  |
|-------------------------|----------------------------------|
| 1. Power Cord           | 5. Steam Boiler 1L 2 x 3kW (6kW) |
| 2. Mains Terminal Block | 6. GFCI Switch                   |
| 3. Main Board           | 7. Left Grinder                  |
| 4. Power Supply         | 8. 36VDC Automat Motor           |

## Internal Layout: Top View SCA Coffee

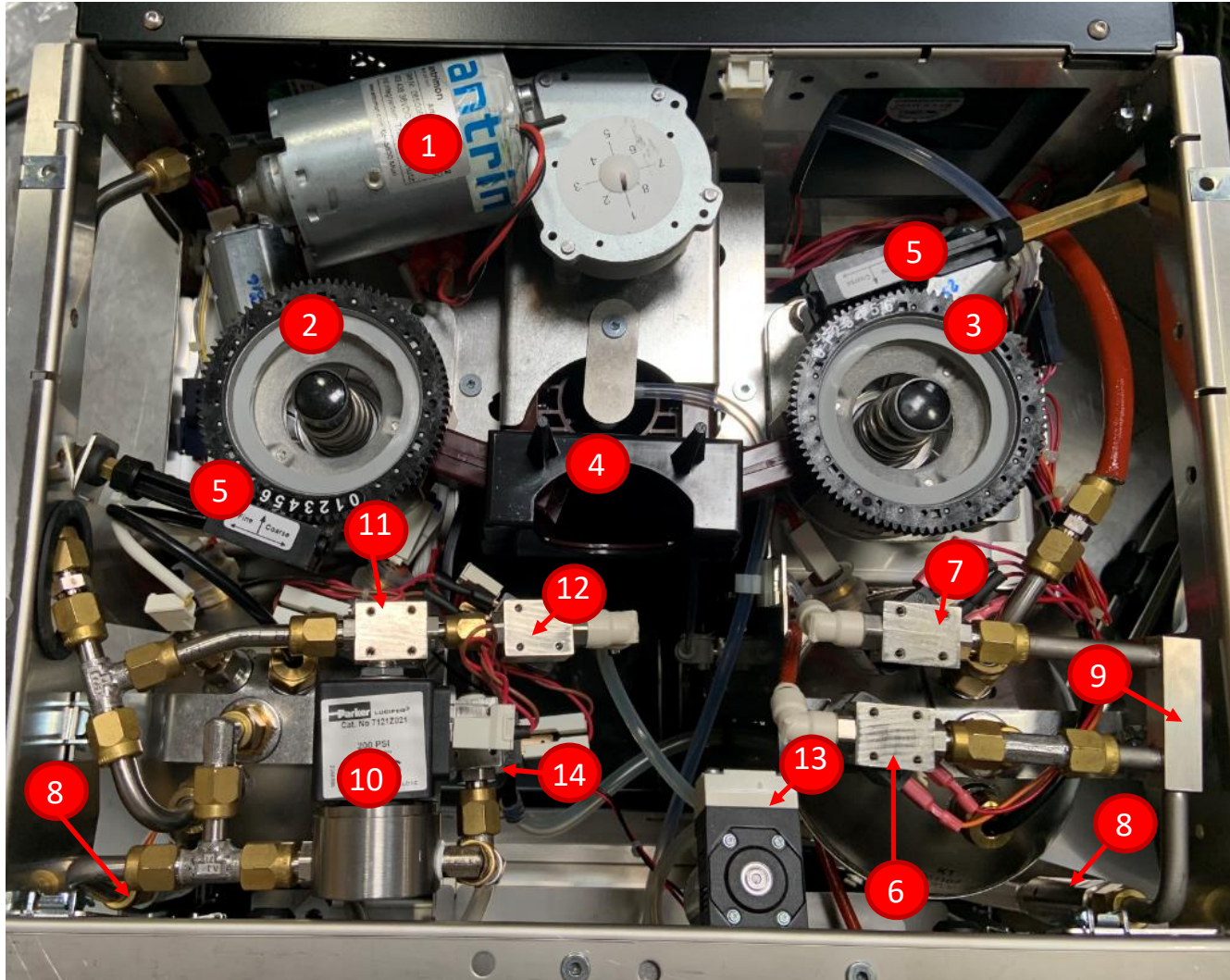


- |                            |  |
|----------------------------|--|
| 1. Automat Motor           | 8. Hot Water Valve                       |
| 2. Heat Exchanger          | 9. Brew Valve                            |
| 3. Left Grinder            | 10. Diverter Valve (iced / hot coffee)   |
| 4. Right Grinder           | 11. Overpressure Valve                   |
| 5. Front Grinder           | 12. Outlet Manifold                      |
| 6. Automat                 | 13. Check Valve                          |
| 7. Grinder Adjustment Gear | 14. Air Restrictor Valve (new placement) |



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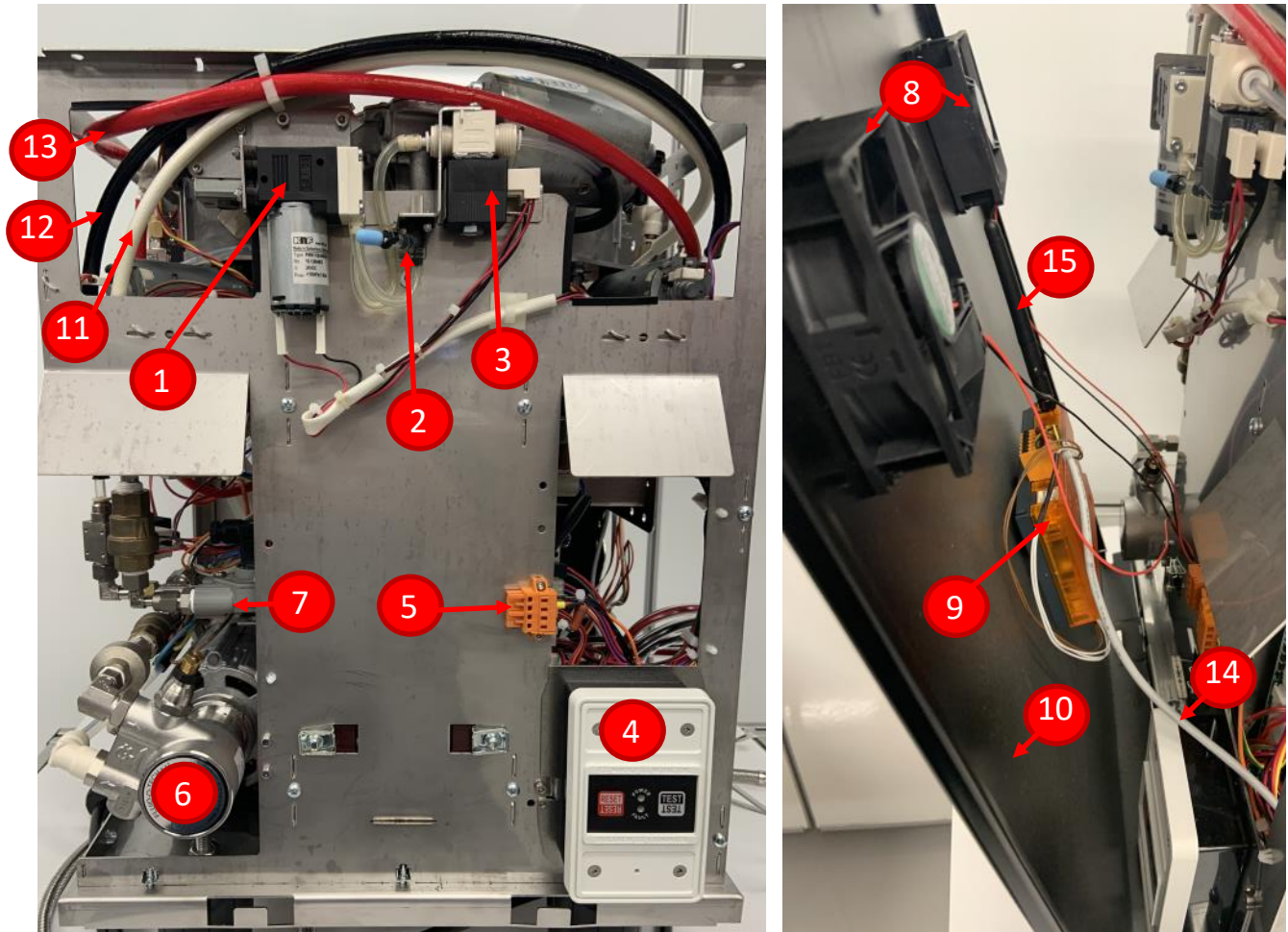
Internal Layout: Top View SCA Plus (Espresso)



- |                            |                                    |
|----------------------------|------------------------------------|
| 1. Automat Motor           | 8. Overpressure Valve              |
| 2. Left Grinder            | 9. Coffee Boiler Outlet Manifold   |
| 3. Right Grinder           | 10. Steam Valve                    |
| 4. Automat                 | 11. Air Delivery Valve (2/2-way)   |
| 5. Grinder Adjustment Gear | 12. Air Delivery Valve (3/2-way)   |
| 6. Hot Water Valve         | 13. Air Pump                       |
| 7. Brew Valve              | 14. Vacuum Breaker Valve (3/2-way) |

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Internal Layout: Rear View SCA Coffee

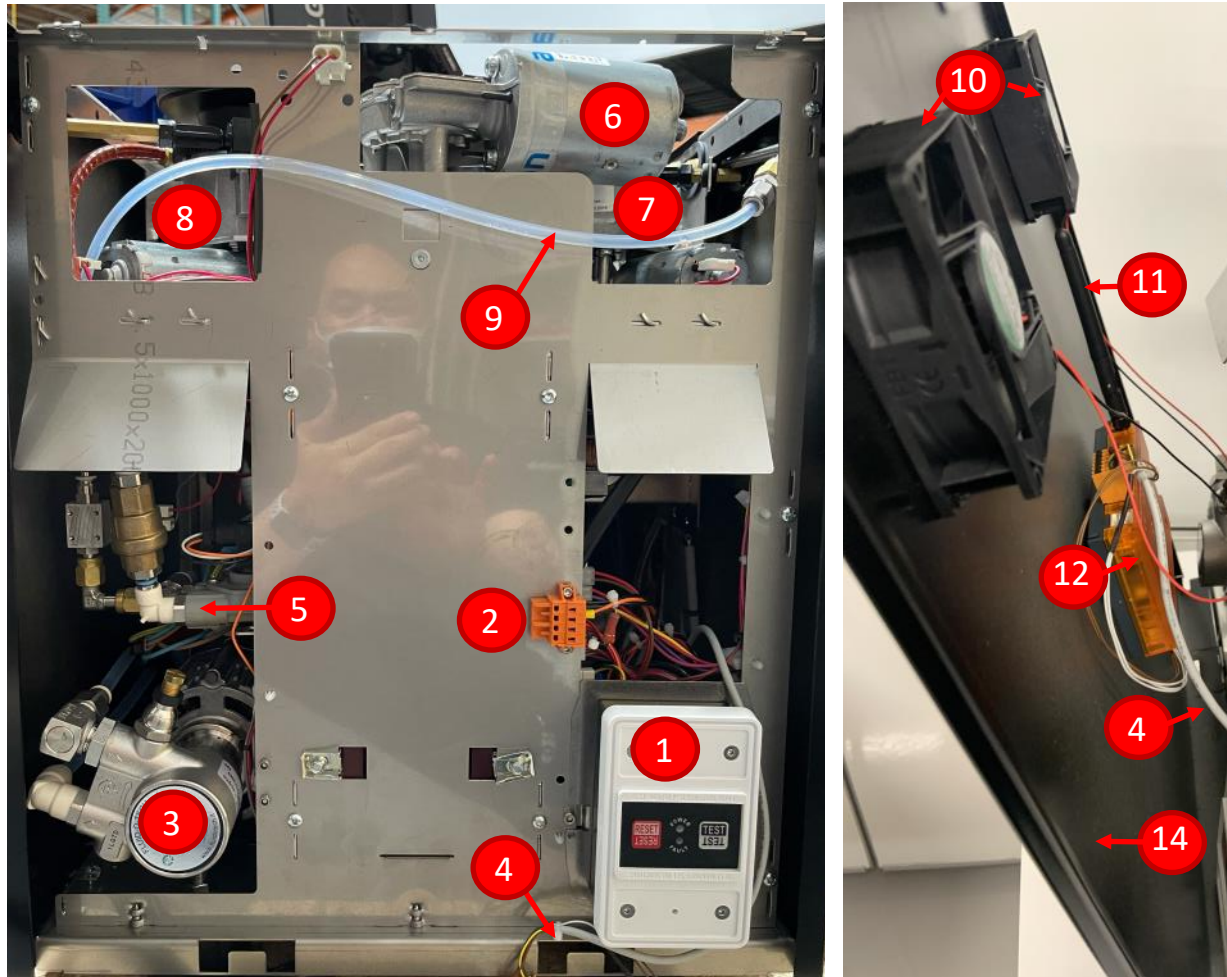


- |  |  |
|--|--|
| 1. Air Pump                            | 10. Back Panel                                   |
| 2. Air Restrictor Valve (old location) | 11. Non-valved Water Supply to Heat Exchanger    |
| 3. Air Valve                           | 12. Valved Water Supply to Heat Exchanger        |
| 4. GFCI Switch                         | 13. Water Supply Heat Exchanger to Coffee Boiler |
| 5. Fan Connector                       | 14. Telemetry Cable                              |
| 6. Water Pump                          | 15. Telemetry Antenna                            |
| 7. Flowmeter                           |  |
| 8. Fans                                |  |
| 9. Telemetry Module                    |  |



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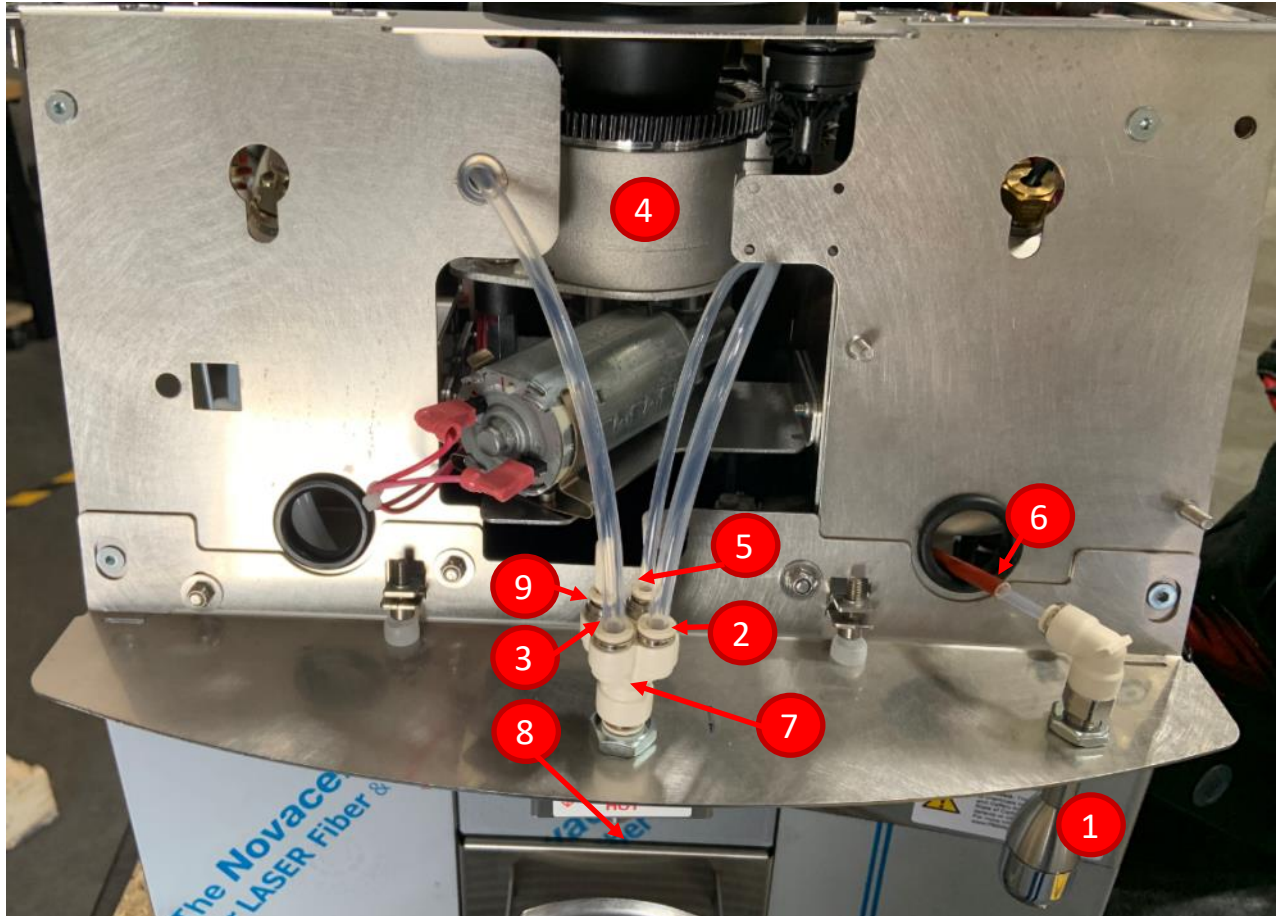
Internal Layout: Rear View SCA Plus (Espresso)



- |                    |                            |
|--------------------|----------------------------|
| 1. GFCI Switch     | 8. Right Grinder           |
| 2. Fan Connector   | 9. Steam Boiler Inlet Tube |
| 3. Water Pump      | 10. Fans                   |
| 4. Telemetry Cable | 11. Telemetry Antenna      |
| 5. Flowmeter       | 12. Telemetry Module       |
| 6. Automat Motor   | 13. Back Panel             |
| 7. Left Grinder    |                            |



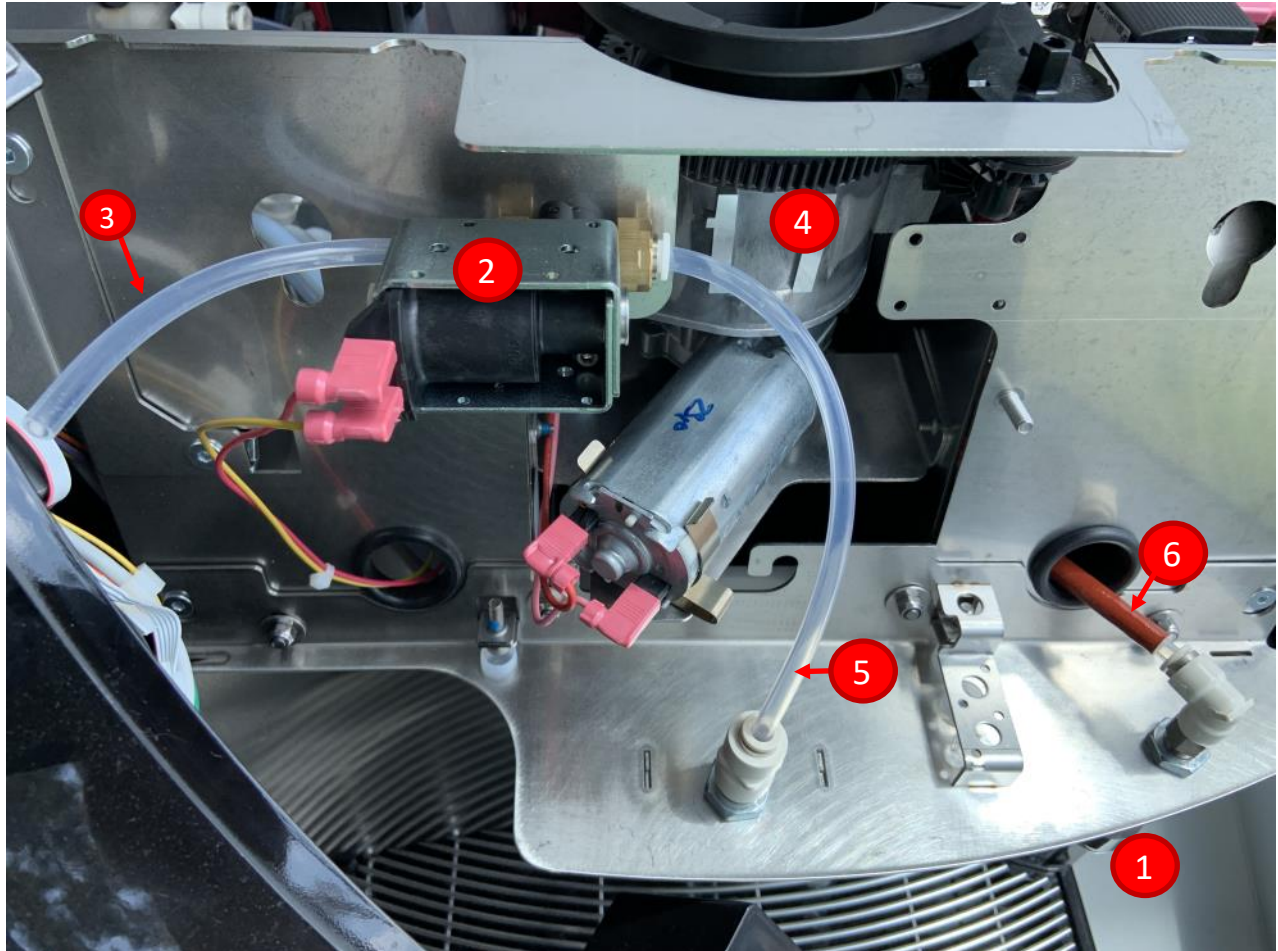
## Internal Layout: Outlet Frame SCA Coffee



- |                              |  |
|------------------------------|--|
| 1. Hot Water Wand            | 6. Hot Water Delivery Tube                       |
| 2. Hot Coffee Delivery Tube  | 7. Outlet Manifold                               |
| 3. Cold Coffee Delivery Tube | 8. Coffee Spout                                  |
| 4. Front Grinder             | 9. Cold Bypass Delivery Tube (not shown) or Plug |
| 5. Hot Bypass Delivery Tube  |  |



## Internal Layout: Outlet Frame SCA Coffee (Thermos)

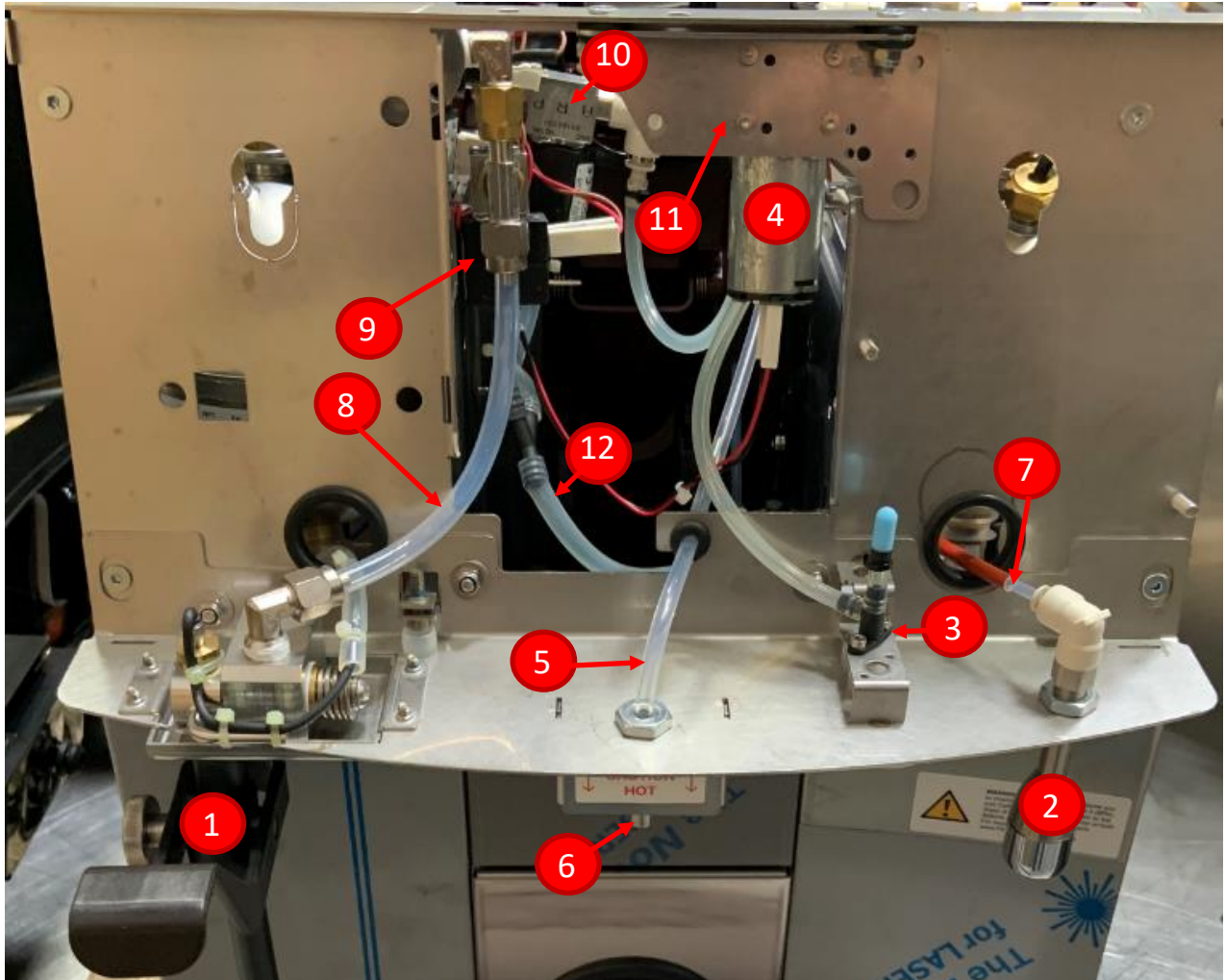


- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| 1. Hot Water Wand                   | 4. Front Grinder                     |
| 2. Hi / Center Spout Diverter Valve | 5. Center Spout Coffee Delivery Tube |
| 3. Hi Spout Coffee Delivery Tube    | 6. Hot Water Delivery Tube           |



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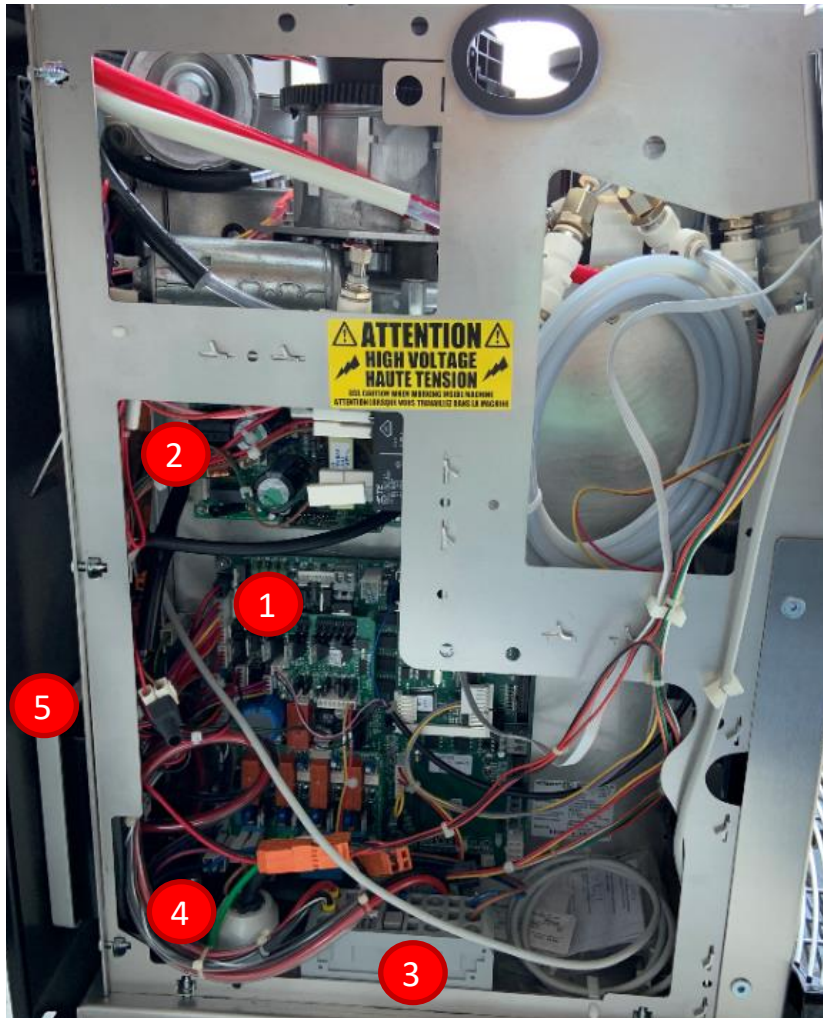
Internal Layout: Outlet Frame SCA Plus (Espresso)



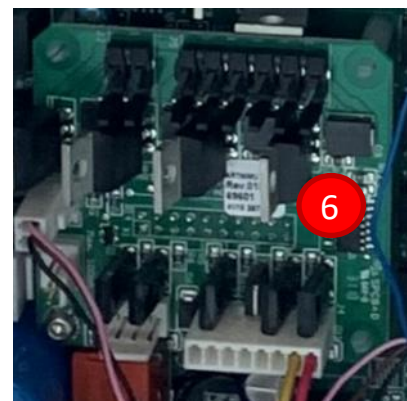
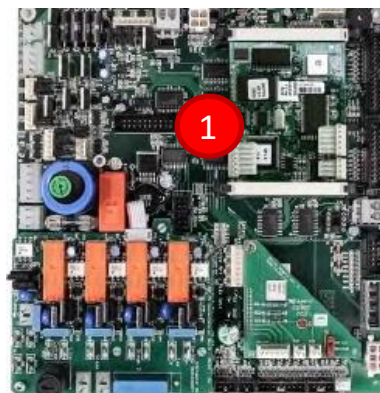
- |                         |                                 |
|-------------------------|---------------------------------|
| 1. Steam Wand           | 7. Hot Water Delivery Tube      |
| 2. Hot Water Wand       | 8. Steam Delivery Tube          |
| 3. Air Restrictor Valve | 9. 3/2 way Vacuum Breaker Valve |
| 4. Air Pump             | 10. 3/2 way Air Valve           |
| 5. Coffee Delivery Tube | 11. Air Pump Mounting Plate     |
| 6. Coffee Spout         | 12. Steam and Air Exhaust Tube  |

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Internal Layout: Electronic Components (Coffee)



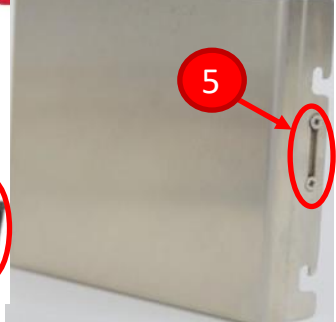
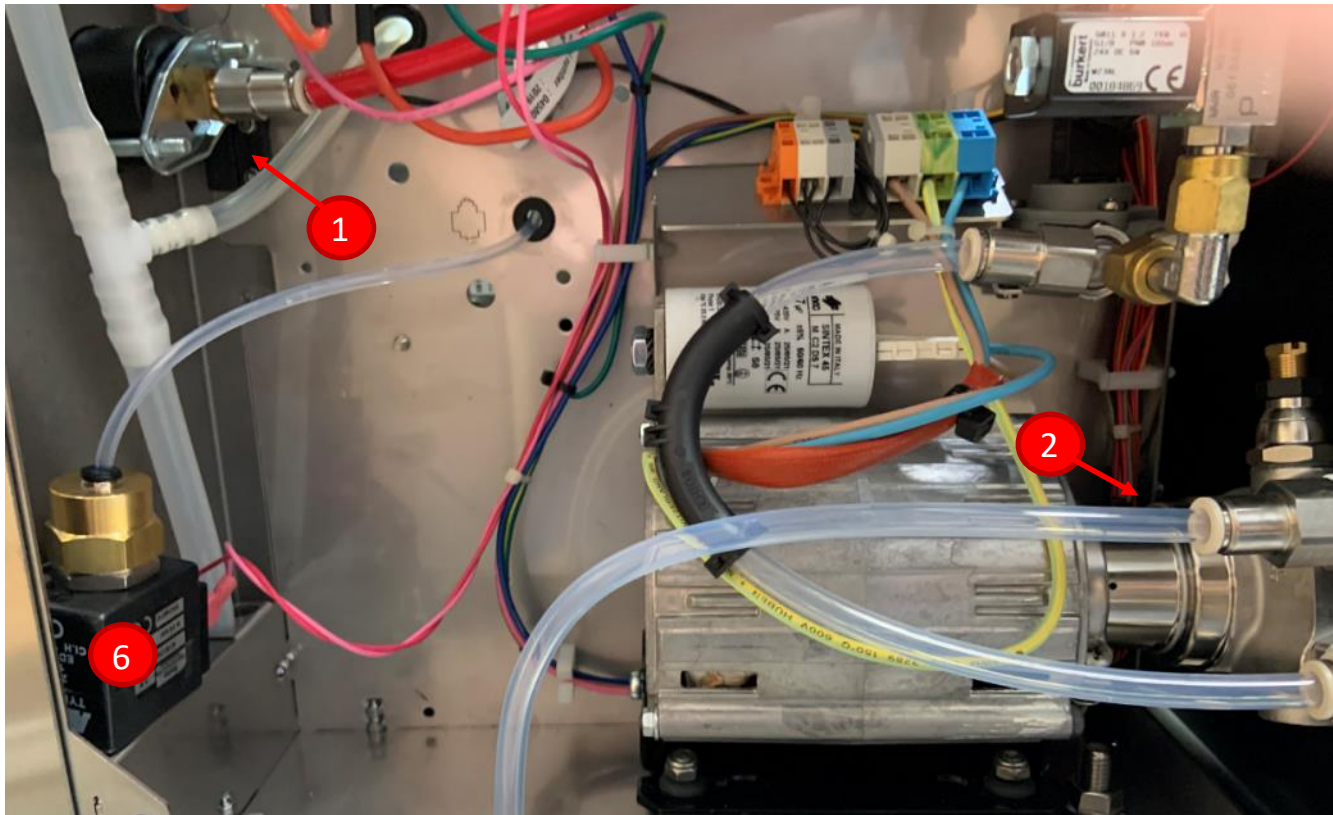
1. Main Board
2. Power Supply
3. Main Terminal Block
4. Power Cord
5. GFCI Switch
6. PCB Extension Control Unit (model 71 cup sensor)







## Internal Layout: Safety Switches



1. Center Plate Magnetic Read Switch
2. Grounds Bin Magnetic Read Switch
3. Magnetic Read Switch
4. Grounds Bin Magnet
5. Center Plate Magnet
6. Flush Valve

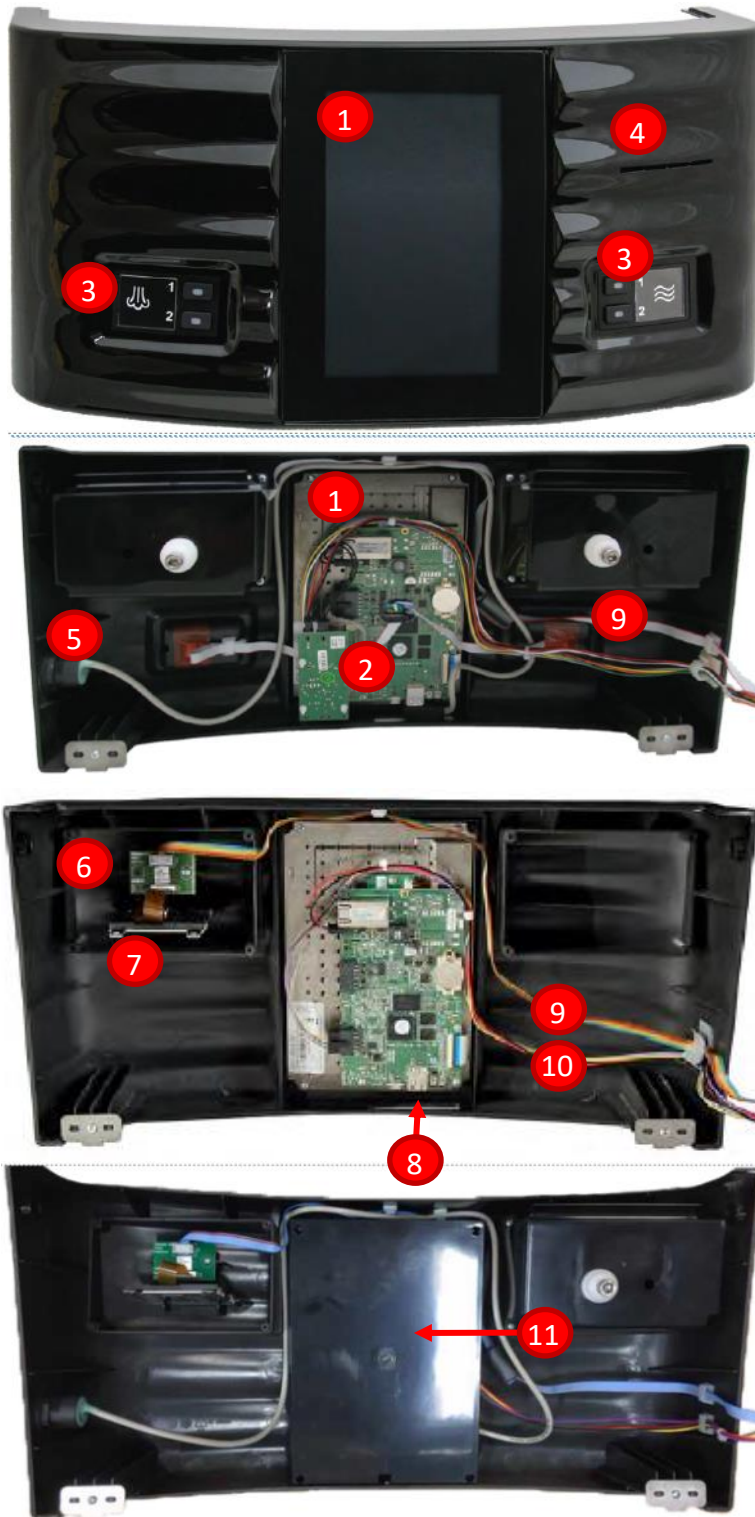
### Conditions for Replacement for Flush Valve

- Every 75,000 shots dispensed
- Clogged with coffee grounds (usually found while troubleshooting inconsistent brew times and intermittent water flow blocked error messages)
- Usually replaced at the same time as the Automat
- Corrosion or oxidation around the solenoid coil





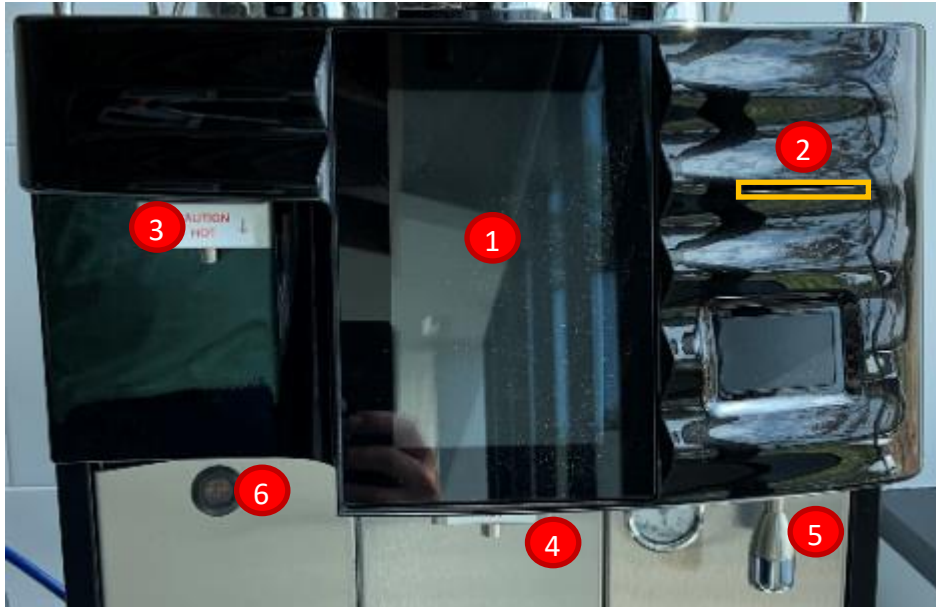
## Internal Layout: Front Panel (Touch Screen)



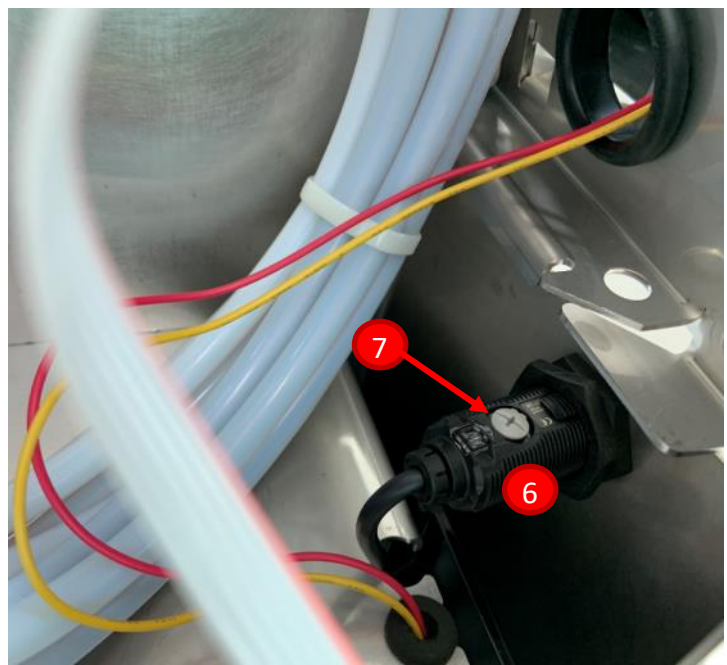
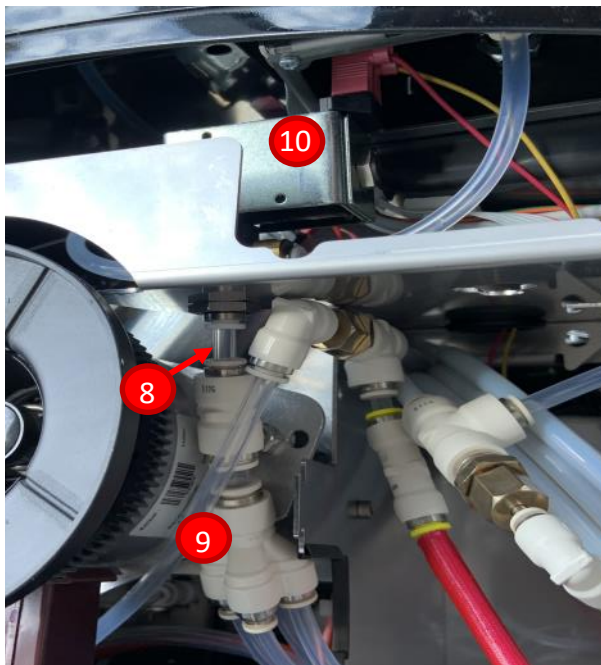
1. Touch Screen
2. External Buttons  
CAN node
3. External Buttons
4. Card Reader Slot
5. External USB Port
6. Card Reader CAN  
node
7. Card Reader
8. Internal USB Port
9. Card Reader commu-  
nication cable
10. Touch Screen com-  
munication and pow-  
er cable
11. Touch Screen back  
cover



## Internal Layout: Thermos Front Panel (Coffee)

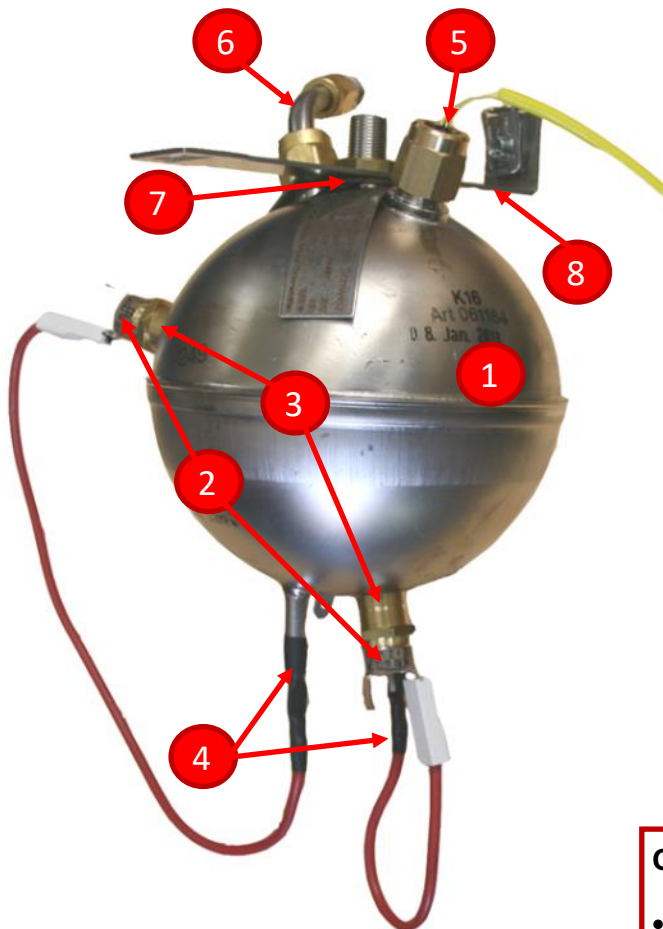


1. Touch Screen
2. Card Reader Slot
3. Hi Capacity Coffee Spout (Thermos)
4. Center Coffee Spout
5. Hot Water Wand
6. Cup Sensor
7. Sensor Sensitivity Adjustment Screw
8. Coffee Delivery Tube
9. Outlet Manifold
10. Hi / Center Spout Diverter Valve



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# Major Components: Coffee Boiler SCA Plus (Espresso)



1. Coffee Boiler (0.8L 3kW)
2. Klixon 155C (2 per element)
3. Klixon Support
4. Heating Element + wires
5. Temperature Sensor (NTC)
6. Inlet Pipe
7. Fiber Gasket (prevents seizing of the nut and bracket)
8. Mounting bracket

### Conditions for Replacement—Coffee Boiler

- Cannot be completely rinsed
- Large Chunks of Scale found inside
- Improper Ohm readings through element wires

### Additional Actions

Inspect brew valve for scale build up

If Coffee boiler is replaced, technician may also replace

- Temperature Sensor
- Inlet Pipe
- Klixon Qty2
- Washer for Temp Sensor

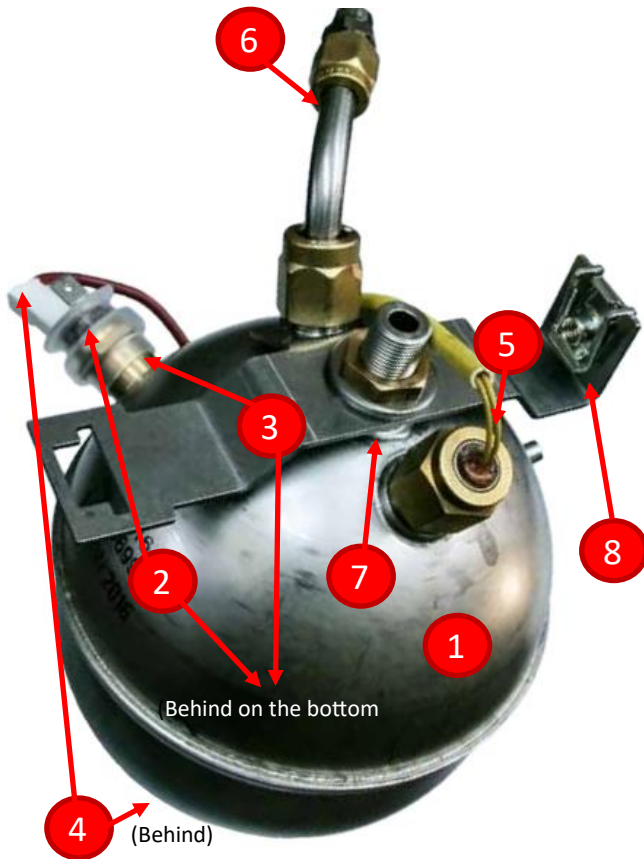
### Technical data

Volume:	0.8 l
Operating pressure:	7.5 bar / max 12 bar
Heater rating:	3.0 kW
Voltage/current:	230 V AC, 13A
Winding resistance:	15.1 (230 V; at 20 °C)
Operating temperature coffee:	86 °C - 102 °C
Operating temperature tea:	90-98 °C
Max. over-temperature:	192 °C
Heating time:	10 ° --> 86 ° approx.: <3Min.



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## Major Components: Coffee Boiler SCA Coffee



1. Coffee Boiler (1.0L 3kW)
2. Klixon 155C (2 per element)
3. Klixon Support
4. Heating Element + wires
5. Temperature Sensor (NTC)
6. Inlet Pipe
7. Fiber Gasket (prevents seizing of the nut and bracket)
8. Mounting bracket

### Conditions for Replacement—Coffee Boiler

- Cannot be completely rinsed
- Large Chunks of Scale found inside
- Improper Ohm readings through element wires

### Additional Actions

Inspect brew valve for scale build up

If Coffee boiler is replaced, technician may also replace

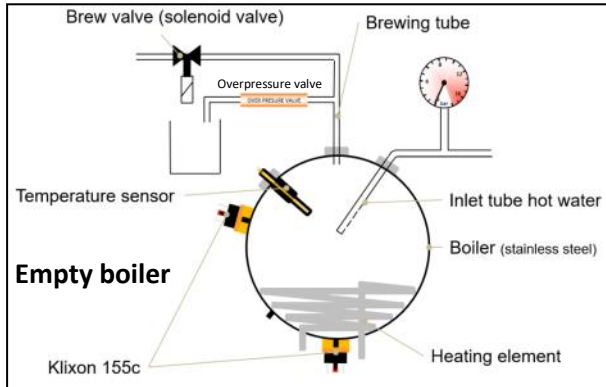
- Temperature Sensor
- Inlet Pipe
- Klixon Qty2
- Washer for Temp Sensor

### Technical data

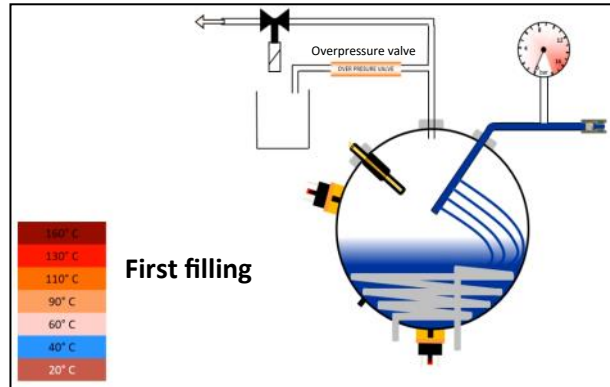
Volume:	1.0 l
Operating pressure:	5 bar / max 12 bar
Heater rating:	3.0 kW
Voltage/current:	230 V AC, 13A
Winding resistance:	15.1 (230 V; at 20 °C)
Operating temperature coffee:	86 °C - 102 °C
Operating temperature tea:	90-98 °C
Max. over-temperature:	192 °C
Heating time:	10 ° --> 86 ° approx.: <3Min.

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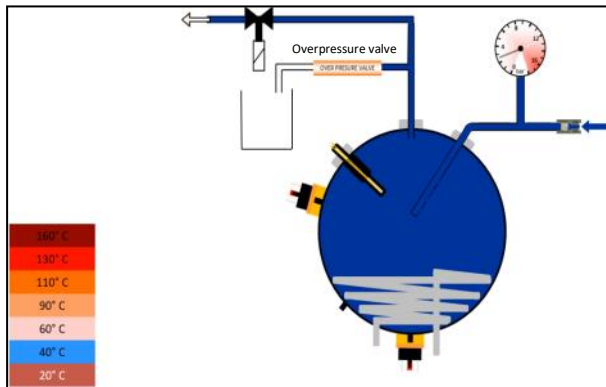
# Major Components: Coffee Boiler Operation (Coffee & Espresso)



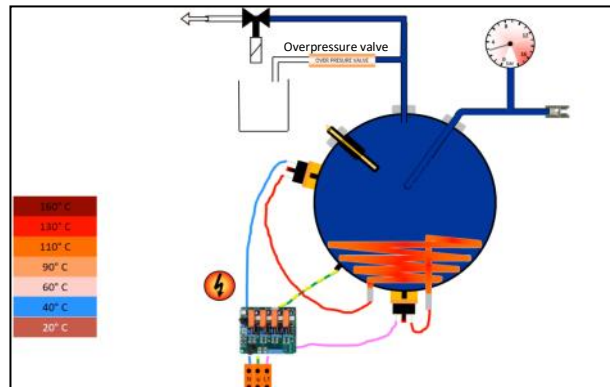
The empty boiler must be filled before it can be heated. If the element is heated before water is introduced it will likely cause damage.



The perforated inlet pipe introduces water into the system without the use of any solenoid valves. The system will prompt for a fill up when started for the first time or when you perform a water drainage routine. The perforations are designed to mix the cold water with the hot water to evenly change the temperature for optimum temperature reading.

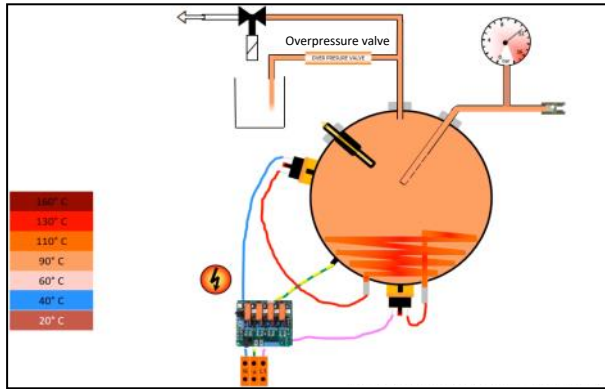


Once the boiler is full it will stay pressurized with line pressure and the valves prevent water from escaping. However, during the first fill cycle this filling has the assistance from the water pump.

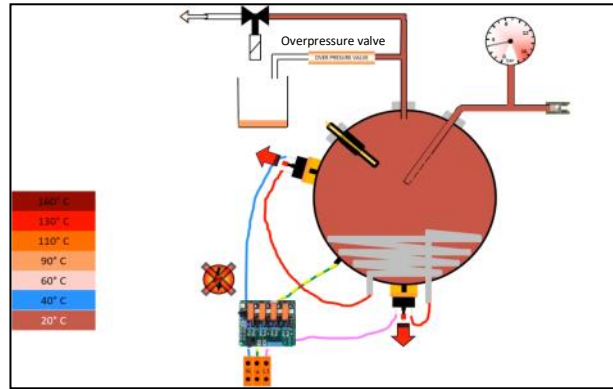


After the first fill cycle is complete the machine always assumes the boiler is full. When the temperature is below the set temperature the boiler will close the appropriate relay to apply a complete circuit to the heating element and the temperature will rise.

## Major Components: Coffee Boiler Operation (Coffee & Espresso)



As the temperature rises the water will expand increasing the pressure inside the boiler which will push past the overpressure valve at 12 bar and drip into the drip tray. This function is a mandatory check during every service visit.

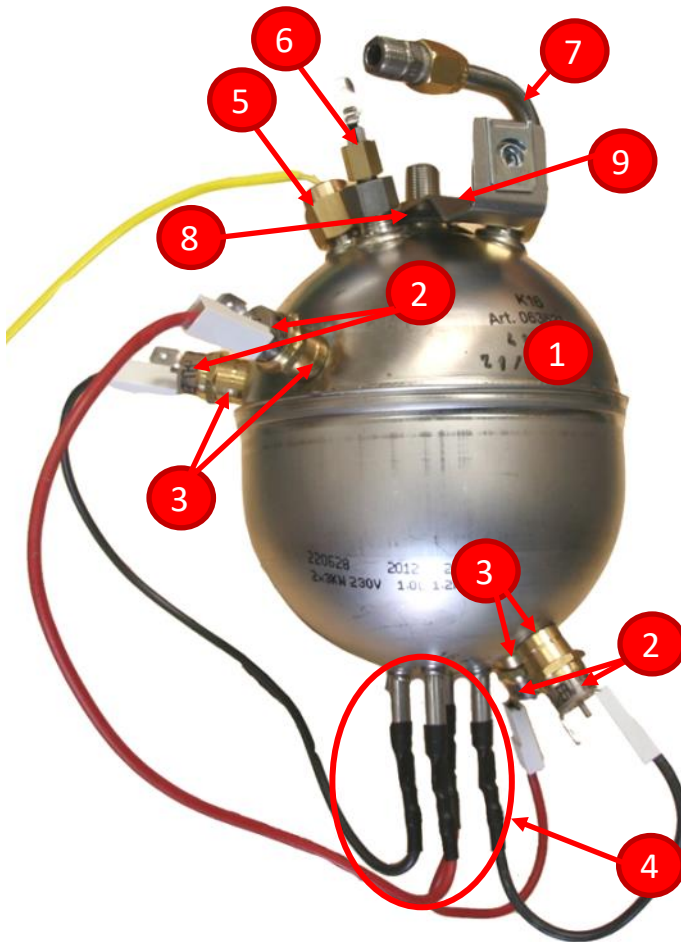


The temperature probe reads the rise in temperature and should stop at the appropriate set temperature. But, if there's an issue with the heating system the boiler could over-temp. If the temperature increases over 155°C the klixon will trigger and open the electrical circuit for the heating element preventing further heating.



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Major Components: Steam Boiler SCA Plus (Espresso)



1. Steam Boiler (1L 2 x 3kW)
2. Klixon 155C (2 per element)
3. Klixon Support
4. Heating Element + wires
5. Temperature Sensor (NTC)
6. Level Probe
7. Inlet Pipe
8. Fiber Gasket (prevents seizing of the nut and bracket)
9. Mounting bracket

**Conditions for Replacement—Steam Boiler**

- Cannot be completely rinsed
- Large Chunks of Scale found inside
- Repeated continuous steam complaints
- Improper Ohm readings through element wires

**Additional Actions**

If Steam boiler is replaced, technician may also replace

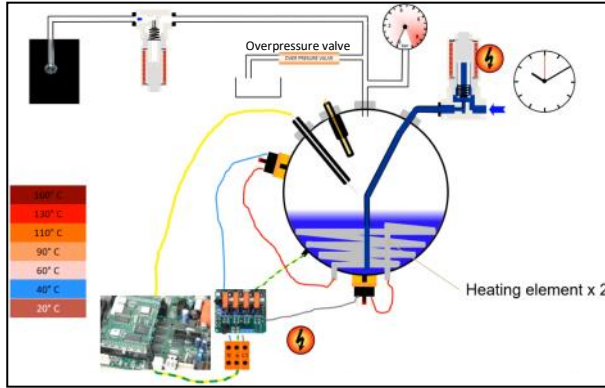
- Temperature Sensor
- Inlet Pipe
- Klixon Qty 4
- Level Probe
- Washer for Temp Sensor
- Washer on Level Probe

**Technical data**

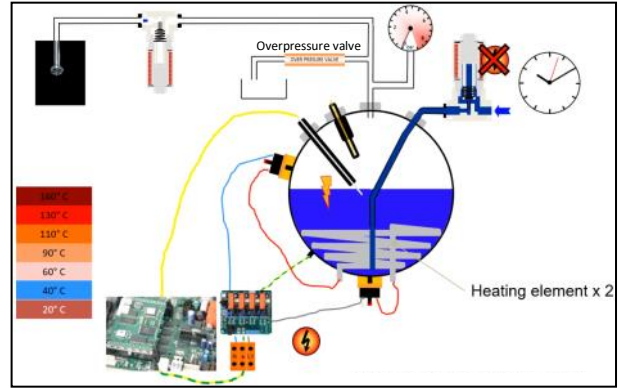
Volume:	1.0 l
Operating pressure:	2.8 bar / max 12 bar
Heater rating:	6.0 kW (2 x 3kW)
Voltage/current:	230 V AC, 13.0 A
Winding resistance:	15.1 (230 V; at 20 °C)
Operating temperature:	130-135 °C
Max. over-temperature:	192 °C
Heating time:	10°-->135°C: < 2 Min.

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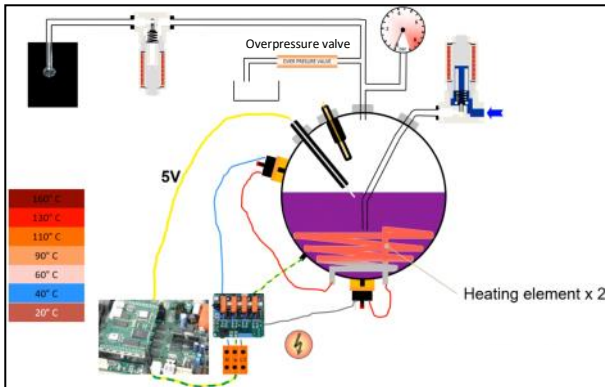
# Major Components: Steam Boiler Operation



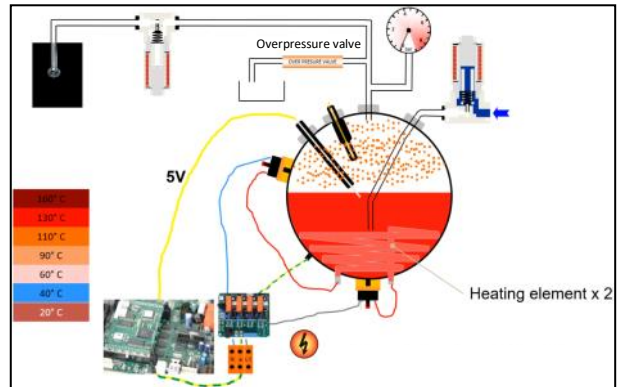
The empty boiler must be filled before it can be heated. If the element is heated before water is introduced it will likely cause damage. The inlet pipe introduces water into the system with the use of a solenoid valve called the steam boiler inlet valve. This is to maintain a level which will allow room for the production of steam.



The system will prompt for a fill up when started for the first time or when you perform a water drainage routine. Once the water level reaches the level probe the steam boiler inlet valve will close and stop the fill.

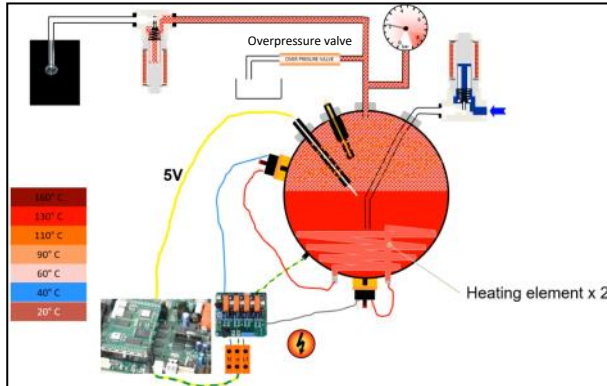


The appropriate heater (s) will then close and start to heat the boiler until it reaches its set temperature. There are two heating elements rated at 3kW to help this boiler heat quickly. But, due to amperage restrictions the logic may turn one of the elements off in order to heat the coffee boiler.

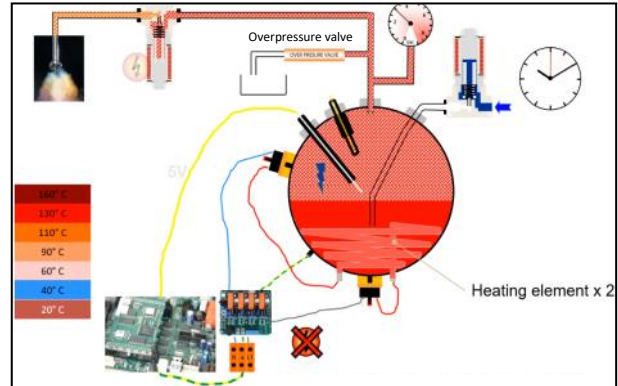


Once the set temperature is reached the corresponding relays will open and the boiler will no longer heat.

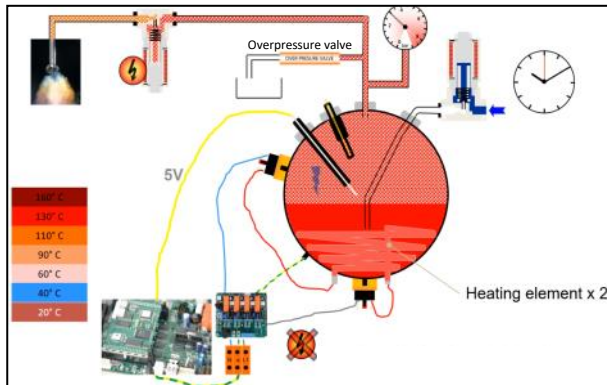
# Major Components: Steam Boiler Operation



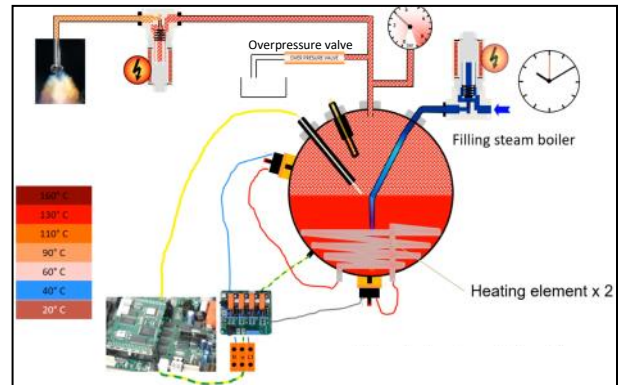
The steam will now pressurize the piping until the steam and overpressure valves.



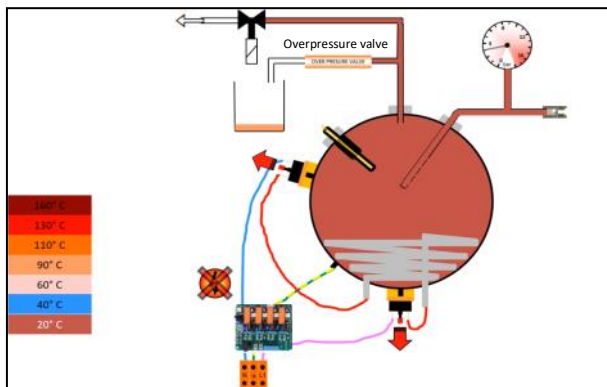
When the steam button is pressed the steam valve will energize and the steam will egress through the steam wand.



During this process you will lose some water in the boiler and the level will drop away from the level probe.



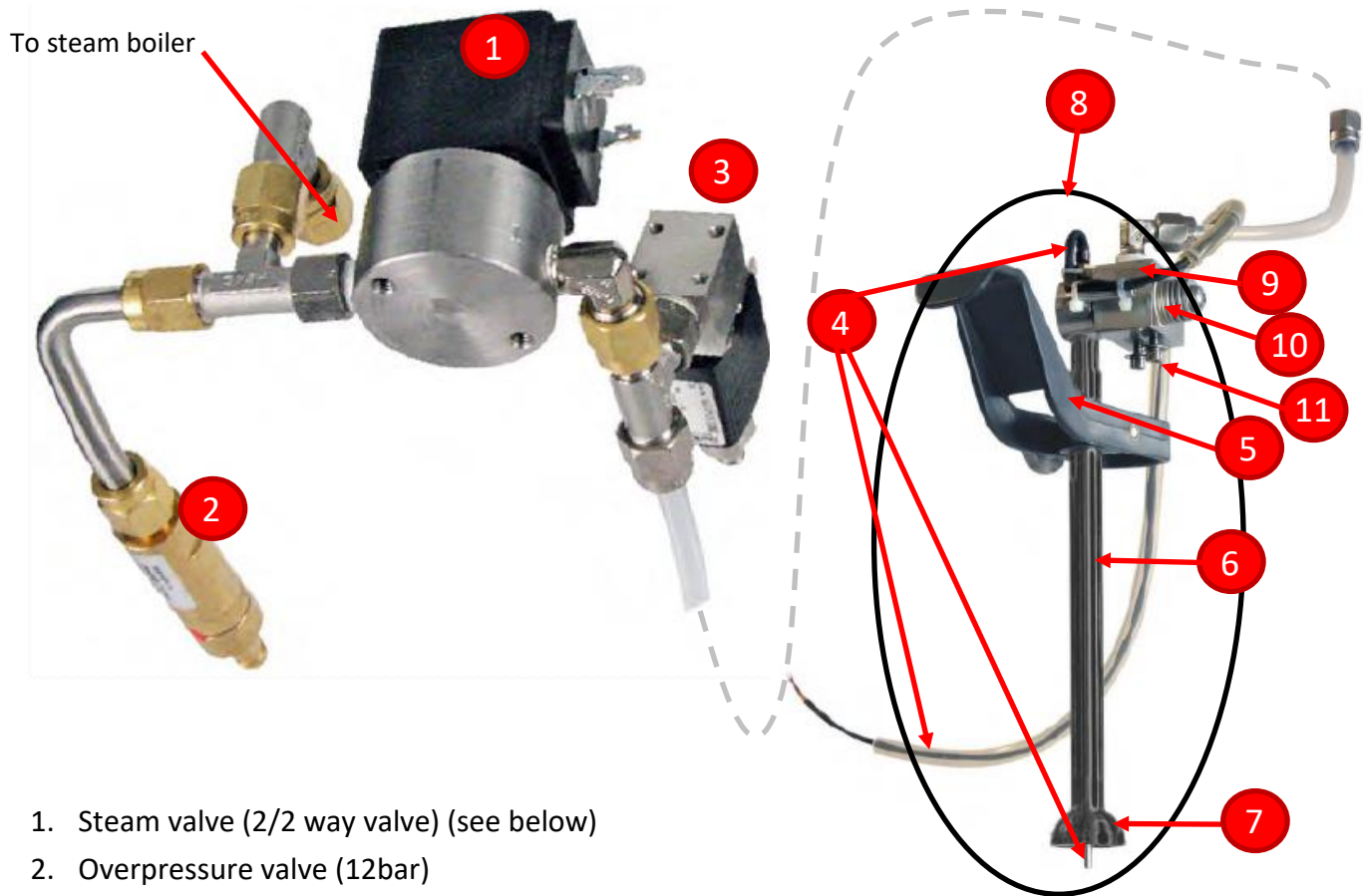
The steam boiler inlet valve and pump will energize to maintain the appropriate water level. The heating elements will recover the temperature during steaming and refilling of the boiler.



As demonstrated with the coffee boiler, if the temperature exceeds 155°C the klixon will trigger and break the electrical circuit for the heating element(s). This will prevent the heating elements from overheating / overpressurizing the boiler even further.

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# Major Components: Steam Outlet (Espresso)



1. Steam valve (2/2 way valve) (see below)
2. Overpressure valve (12bar)
3. Vacuum breaker valve (3/2 way valve) (see below)
4. Steam wand temperature probe (NTC)
5. Steam wand handle
6. Steam wand tube
7. Finesteam tip
8. Steam wand complete (without support block)
9. Steam wand support block
10. Steam wand seal set w/compression spring
11. Steam wand mounting hardware

### Conditions for Replacement - #1 Steam Valve

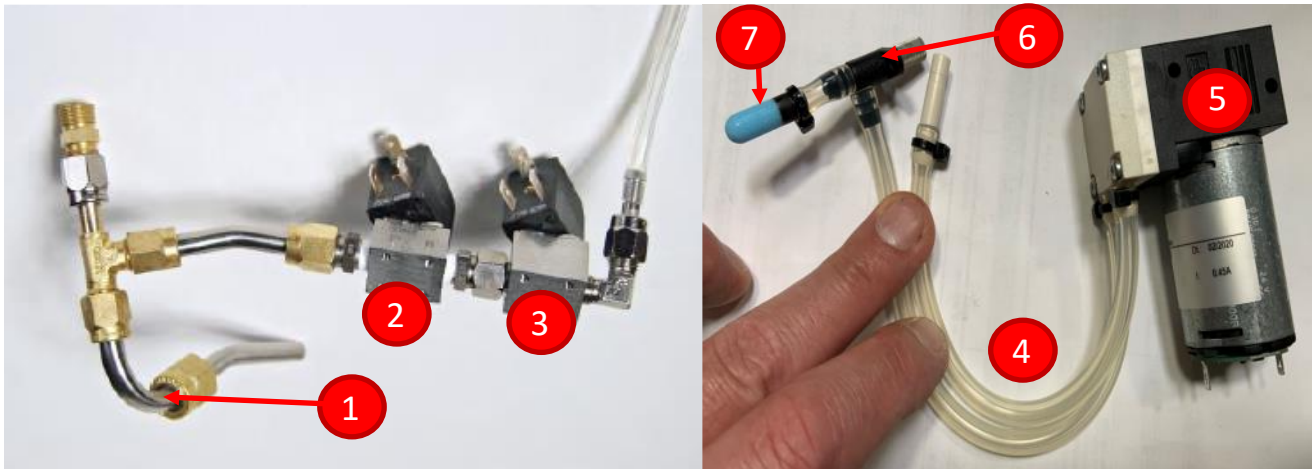
- Every 75,000 Shots dispensed
- Leaking from the valve (can also demonstrate as steam taking a few extra seconds to shut off after button is pressed)
- Corrosion at the inlet / outlet ports
- Oxidation / Cracking around the solenoid coil

### Conditions for Replacement - #3 SOLENOID VALVE REP.SET 3/2 MODEL 6012

- Every 75,000 Shots dispensed
- Leaking from the valve



## Major Components: Air Injection System (Espresso)

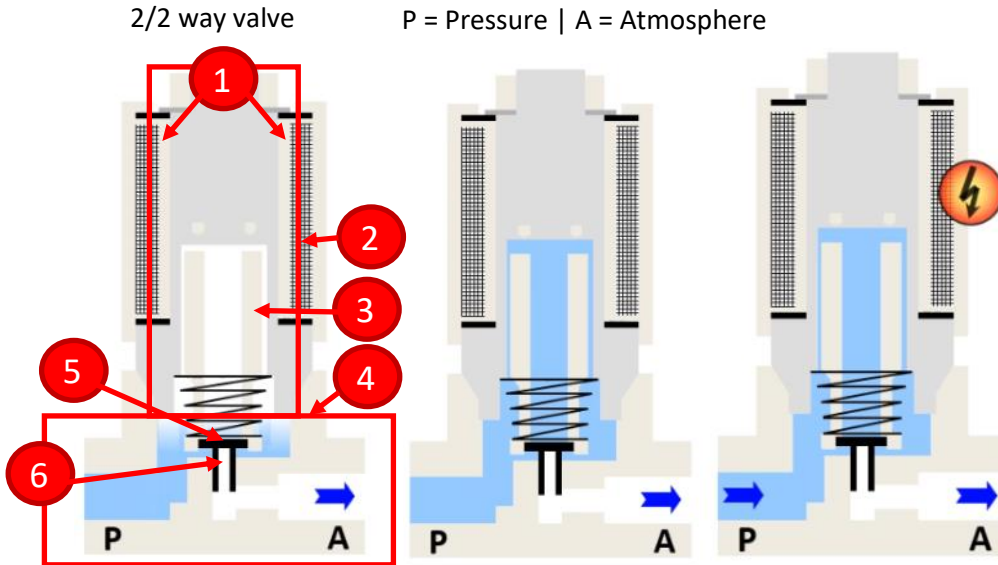


1. Steam boiler inlet pipe
2. 2/2 way air valve
3. 3/2 way air valve
4. Silicon hose for air delivery
5. Air pump
6. Air restrictor valve
7. Air Filter

In order to create foam with the touch of a button the air is delivered to the steam boiler through the inlet pipe. Considering air is lighter than steam it leaves the boiler quickly and goes through the steam wand to the milk. The steam tip will then mix the air with the milk, thus creating the desired amount of foam every time as long as the system is clean and free of high amounts of calcium deposits.

The foam volume is controlled via programming using a setting called 'Foam quality'. Therefore, a latte with less foam is set to a lower setting compared to a cappuccino which has a lot of foam. The foam quality is adjusted using the air restrictor valve which will course or fine up the air bubbles.

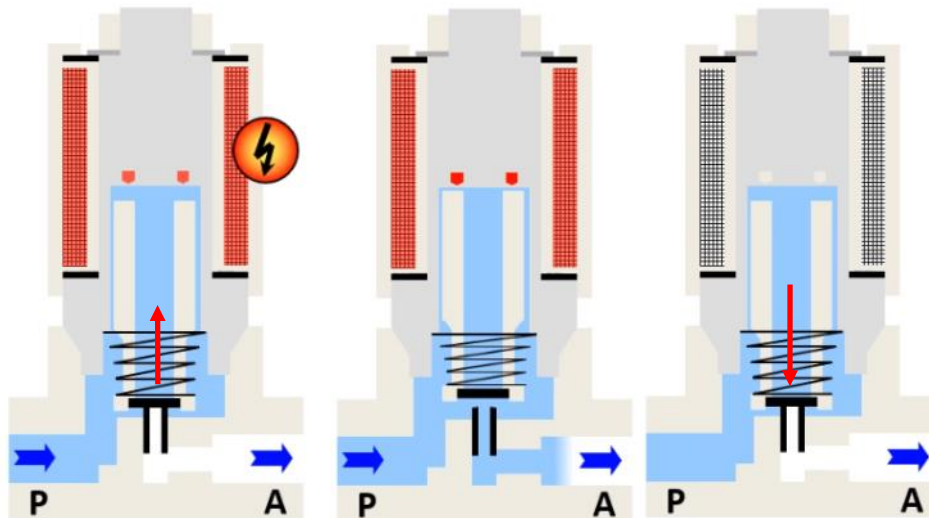
# Major Components: 2/2-Way Valve Operation



- 1. Coil
- 2. Valve shaft
- 3. Plunger
- 4. Valve body
- 5. Valve seat
- 6. Orifice

Medium enters the P side of the valve and encompasses the plunger. It does not flow through because the valve seat is sealing the orifice.

When the valve is to open the coil energizes with 30v DC and creates an electromagnet.



Once the coil spools up and the electromagnet has enough pull the plunger will raise up off the orifice.

Once the plunger has risen the medium can now pass through to the A side of the valve.

Once the desired operation is complete the coil will de-energize and the spring will push the plunger back down. The valve seat will close the orifice

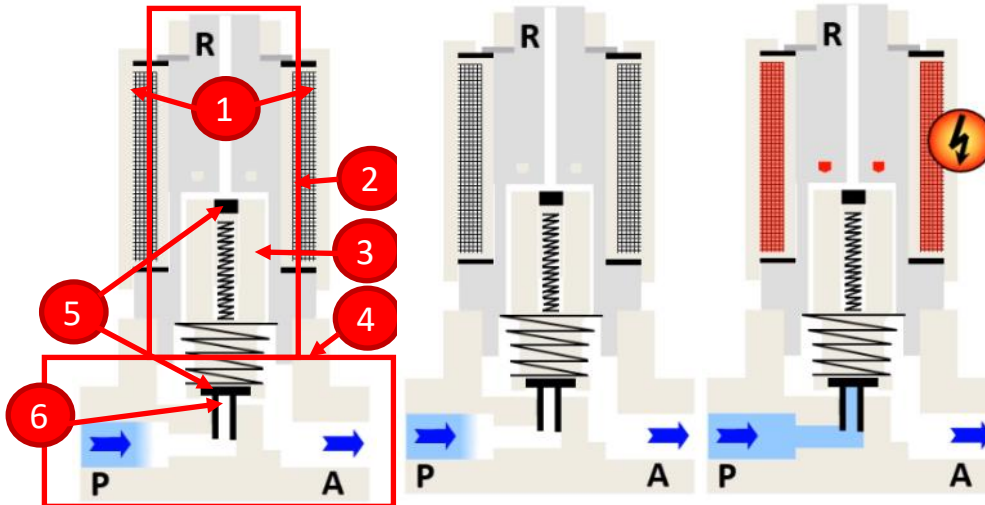


# Major Components: 3/2-Way Valve Operation



3/2 way valve

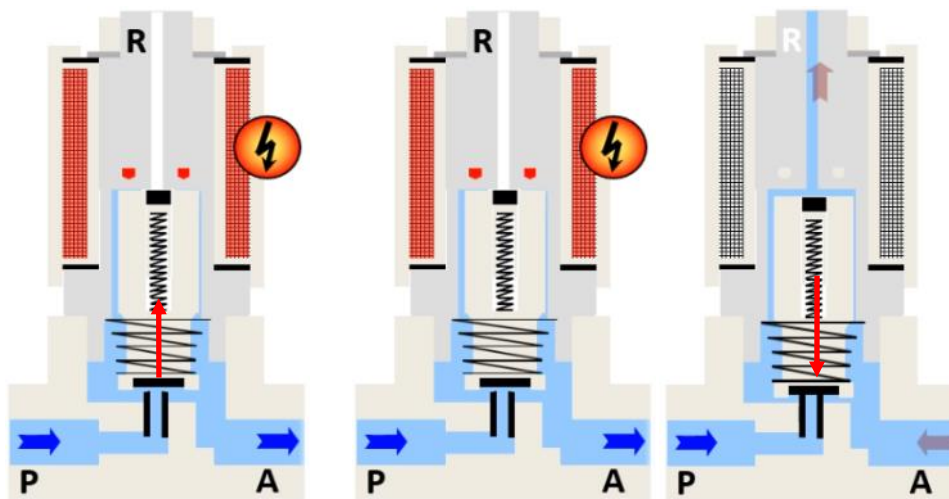
P = Pressure | A = Atmosphere | R = Relief



- 1. Coil
- 2. Valve shaft
- 3. Plunger
- 4. Valve body
- 5. Valve seat
- 6. Orifice

Medium enters the P side of the valve and stops at the plunger due to the valve seat.

When the valve is to open the coil energizes with 30v DC and creates an electromagnet.

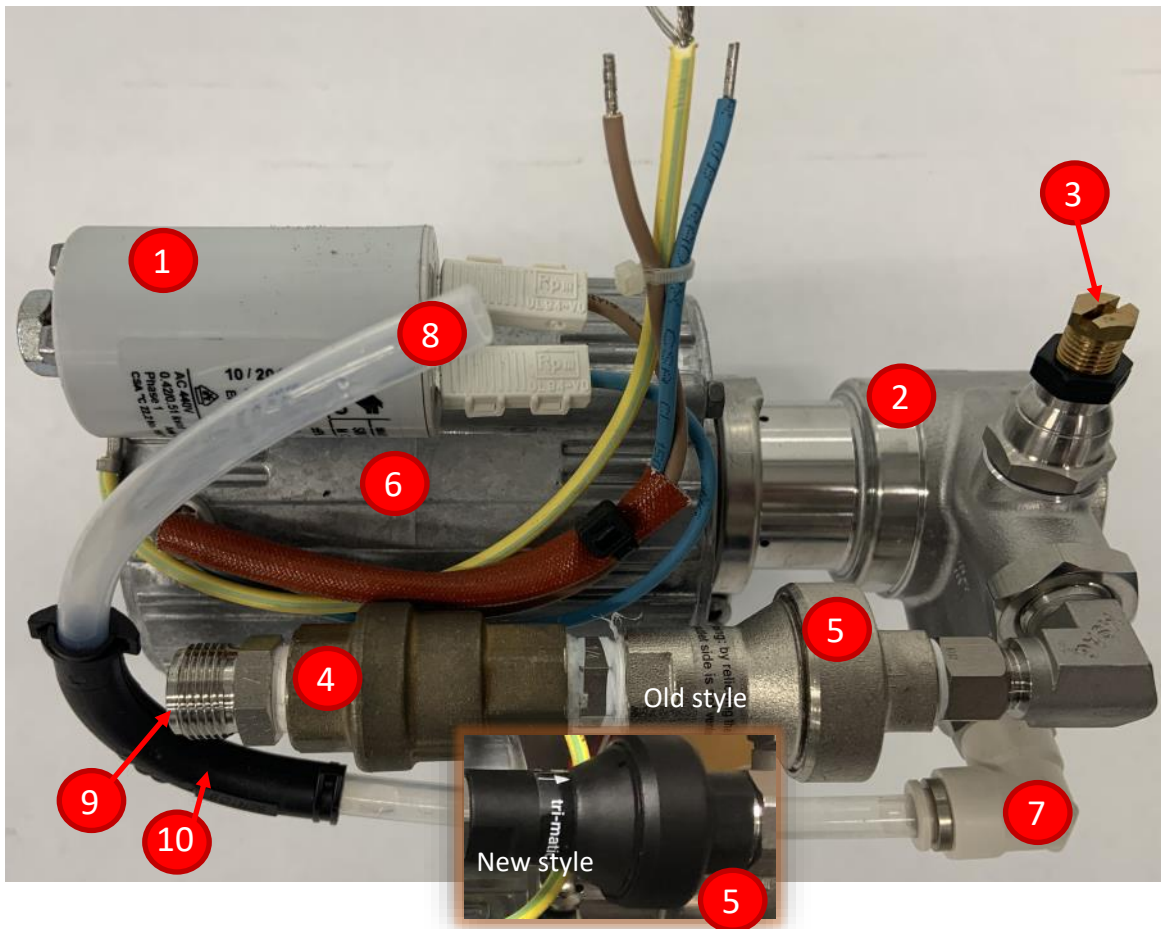


Once the coil spools up and the electromagnet has enough pull the plunger will raise up off of the orifice and seal the relief side.

Once the plunger has risen the medium can now pass through to the A side of the valve.

Once the desired operation is complete the coil will de-energize and the spring will push the plunger back down. The valve seat will close the orifice and the residual will flow through the relief.

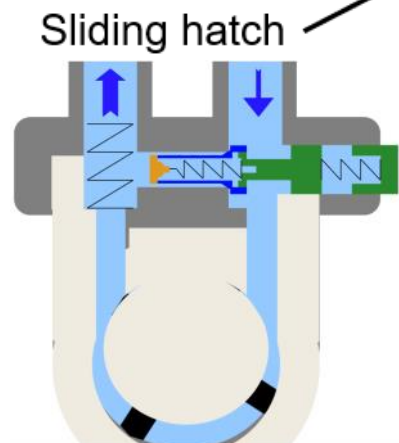
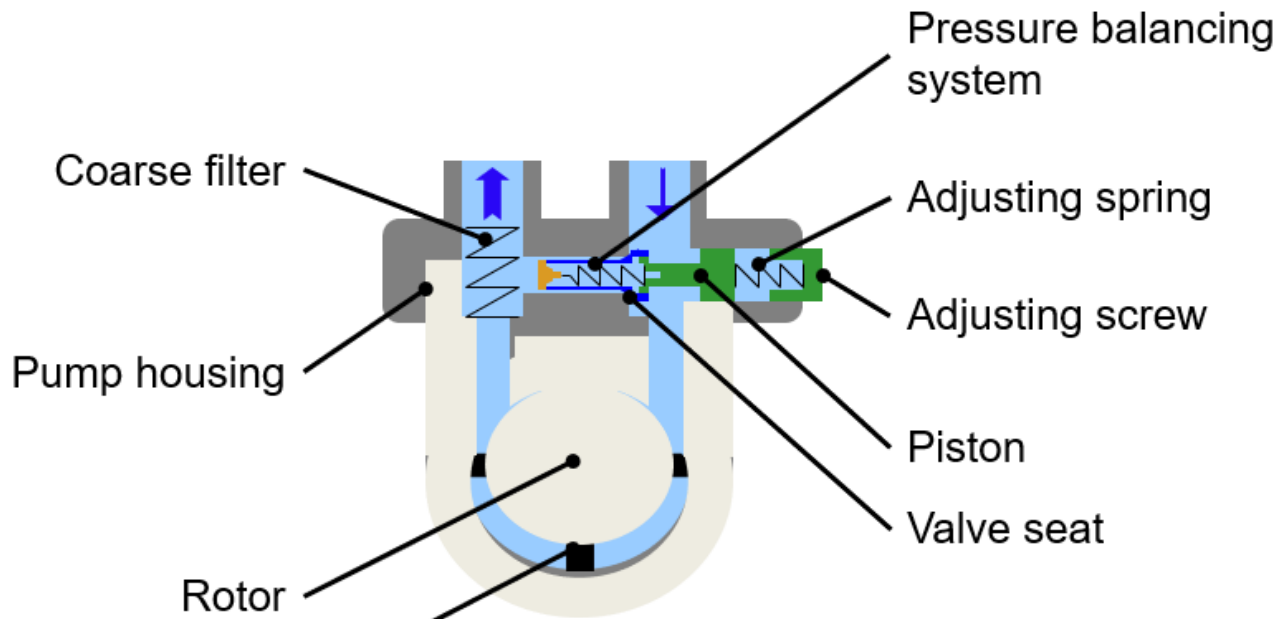
## Major Components: Water Pump



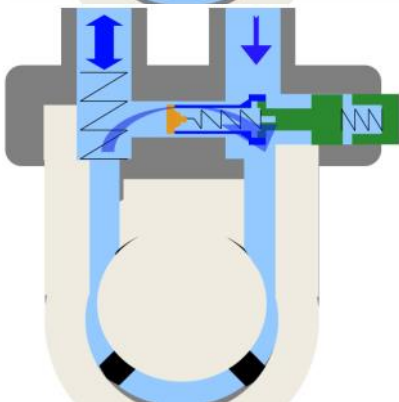
- |                                       |                                 |
|---------------------------------------|---------------------------------|
| 1. Capacitor                          | 6. Pump Motor                   |
| 2. Pump Head                          | 7. Outgoing Elbow               |
| 3. Pressure Adjustment Screw          | 8. Tube to Flowmeter PTFE 8x6mm |
| 4. Check Valve                        | 9. Incoming Water Supply        |
| 5. Pressure Regulator (C models only) | 10. Angle Brace                 |

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# Major Components: Water Pump Operation

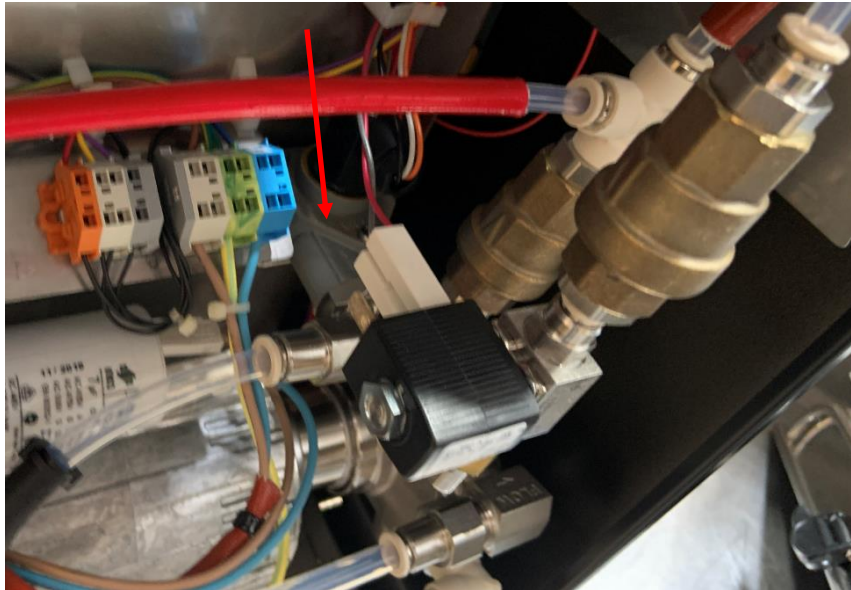


Water is introduced through the inlet (right) side of the pump head. As the motor spins the rotor the pressure is increased according to the setting of the adjusting spring tension. The tension of the adjusting spring can be changed by making changes to the adjusting screw. The more tension applied (screwed in) the higher the pressure. The less tension applied (screwed out) the lower the pressure.

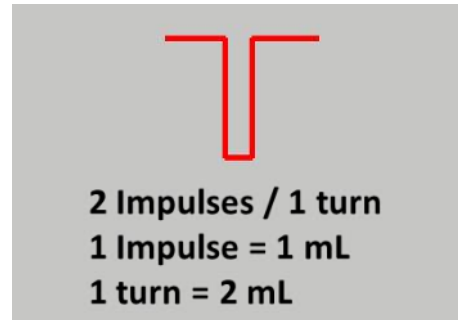


If the pressure becomes excessive it will push past the valve and recycle the water through the pump rotor. Pressure adjustments must be made while the machine is dispensing a coffee based beverage (if applicable: while the bypass valve (hot or cold) is not active).

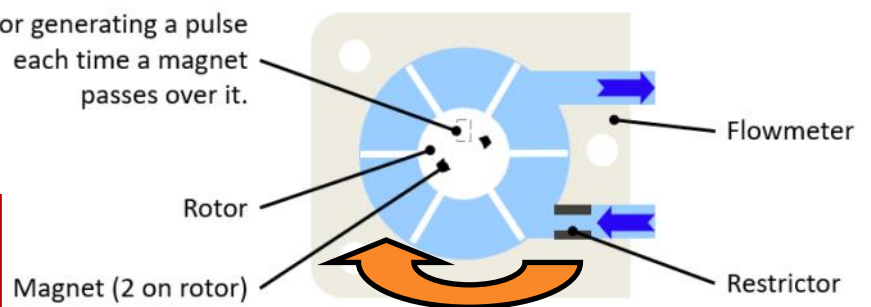
## Major Components: Flowmeter



The flowmeter is fastened to a bracket against the automat compartment wall with 2 x 3mm hex screws. Its location is above the pump head, to the right of the two terminal blocks. The two screws can be accessed from underneath the flowmeter with a 3mm hex key.



Sensor generating a pulse each time a magnet passes over it.

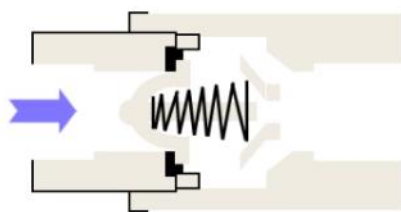
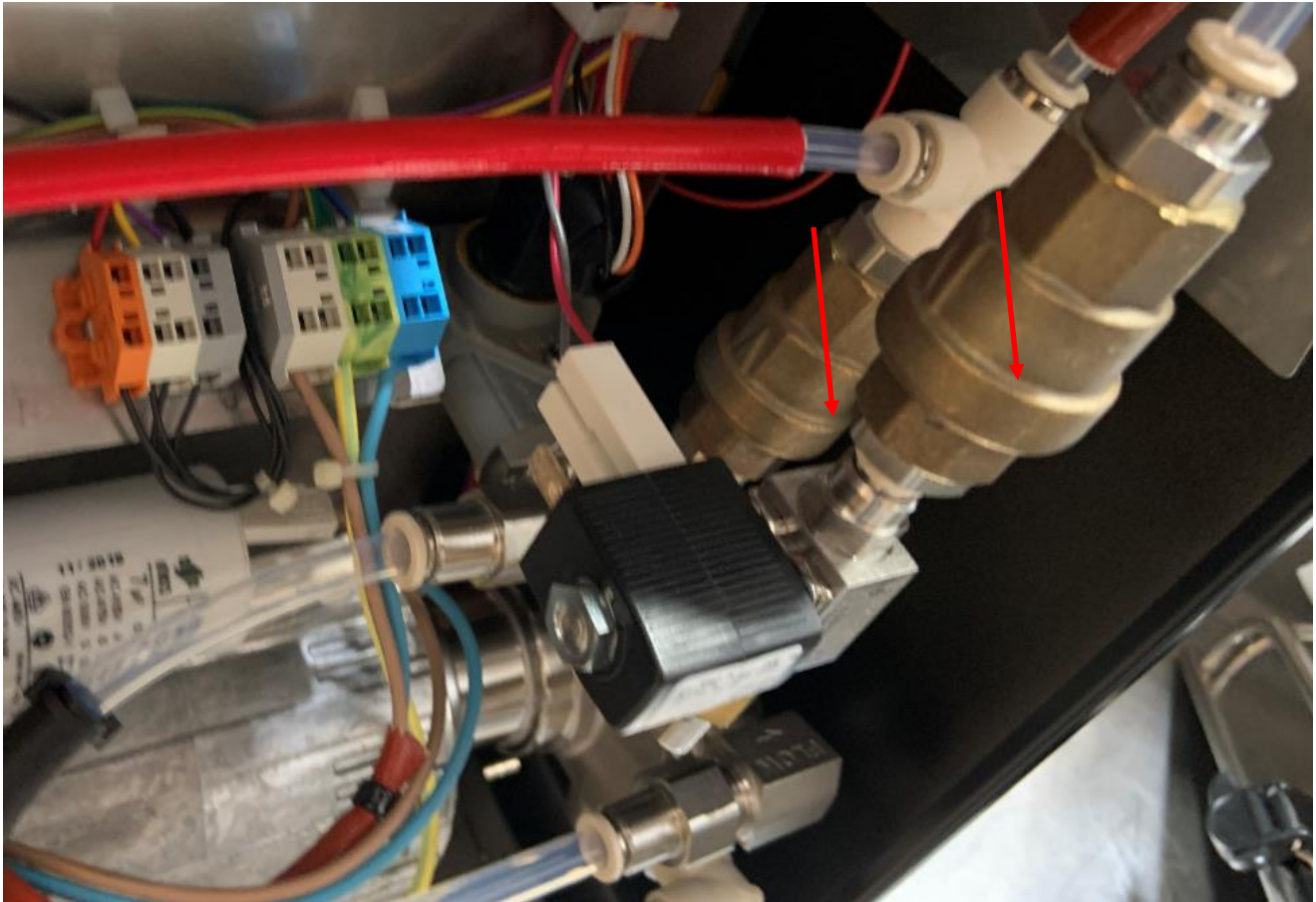


### 1. Conditions for Replacement for Flow Meter

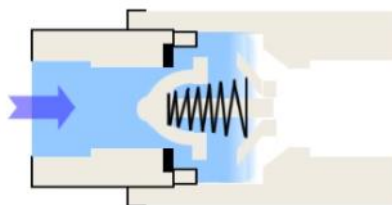
- Leaking
- Scaling internally
- Multiple water flow blocked errors while water is still flowing through the system



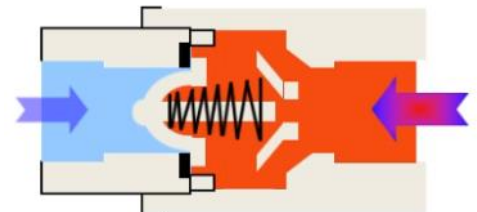
## Major Components: Check Valves



The ball is pushed against an oring by the spring and will not allow anything to pass from the opposite direction



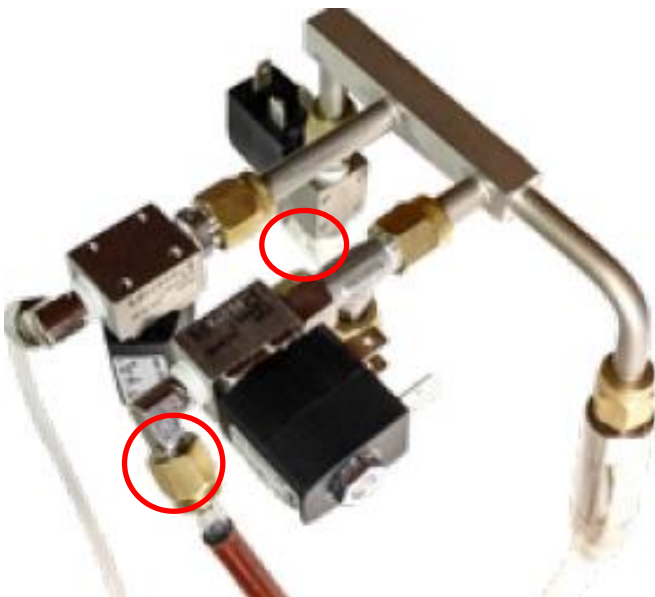
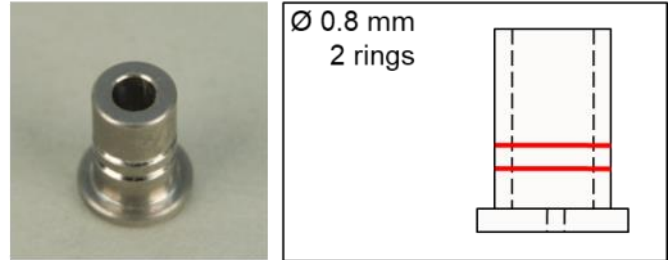
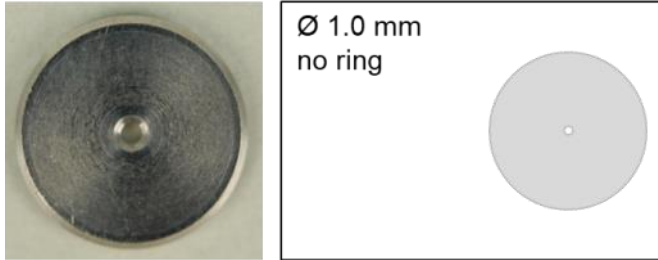
The medium is introduced through the inlet side of the check valve and pushes the ball with the spring off of the orifice and oring to allow the medium to pass



When pressure builds on the outlet side of the check valve it will push against the ball and seal it against the oring. This is especially important because the steam and coffee boilers create pressure as they heat that will push against the check valves.

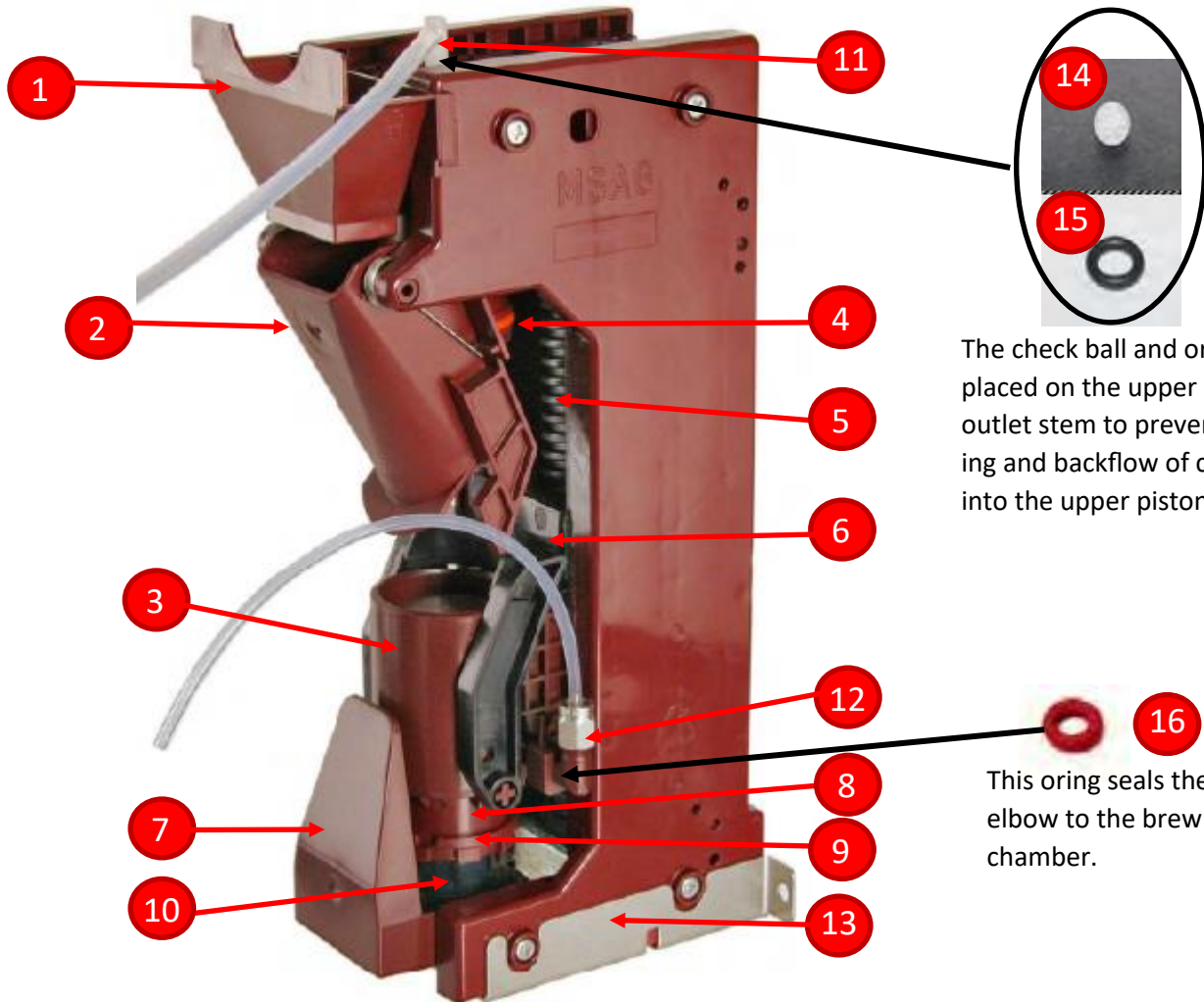


## Major Components: Flow Restrictors



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Major Components: 16-Gram Automat (Espresso)



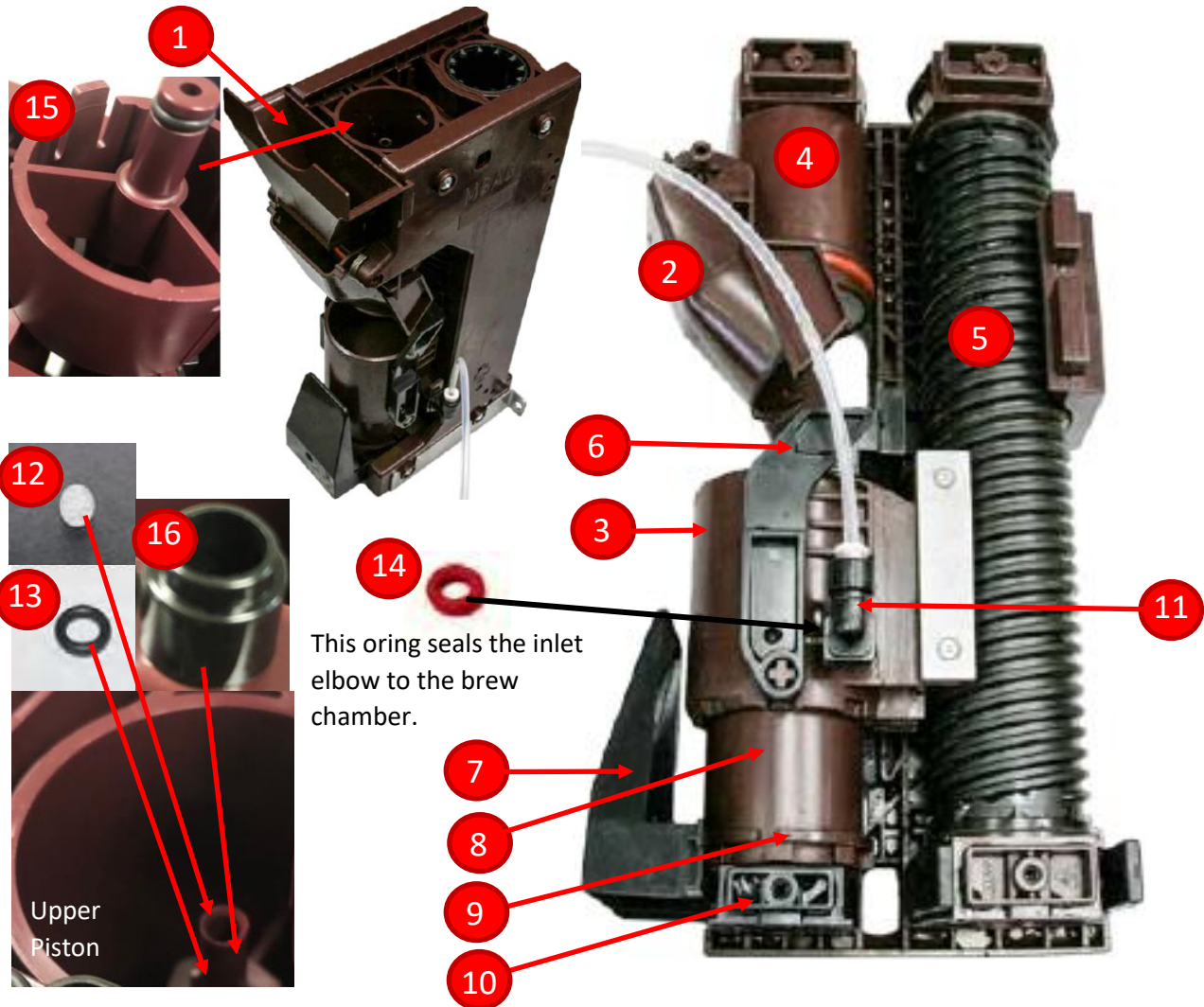
The check ball and oring are placed on the upper piston outlet stem to prevent leaking and backflow of coffee into the upper piston.

This oring seals the inlet elbow to the brew chamber.

- |  |                                |
|--|--------------------------------|
| 1. Coffee Funnel                         | 9. Lower Piston Retaining Ring |
| 2. Coffee Chute                          | 10. Lower Piston Flange        |
| 3. Brew Chamber                          | 11. Outlet Elbow               |
| 4. Upper Piston w/ oring (0.6mm orifice) | 12. Inlet Tube and Elbow       |
| 5. Spindle                               | 13. Support Bracket            |
| 6. Scraper                               | 14. Check Ball                 |
| 7. Protection Plate                      | 15. Oring                      |
| 8. Lower Piston w/ oring                 | 16. Oring                      |

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Major Components: 30-Gram Automat (Coffee)



- |  |                                |
|--|--------------------------------|
| 1. Coffee Funnel                         | 9. Lower Piston Retaining Ring |
| 2. Coffee Chute                          | 10. Lower Piston Flange        |
| 3. Brew Chamber                          | 11. Inlet Tube and Elbow       |
| 4. Upper Piston w/ oring (2.5mm orifice) | 12. Check Ball                 |
| 5. Spindle                               | 13. Oring                      |
| 6. Scraper                               | 14. Oring                      |
| 7. Protection Plate                      | 15. Automat Outlet Coupling    |
| 8. Lower Piston w/ oring                 | 16. Outlet Coupling Spacer     |

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Major Components: Automat (30g & 16g)



30g Automat (coffee)



16g Automat (espresso)



**Conditions for Replacement - 30g Automat**

- Every 75,000 Shots dispensed
- Warped brew chamber

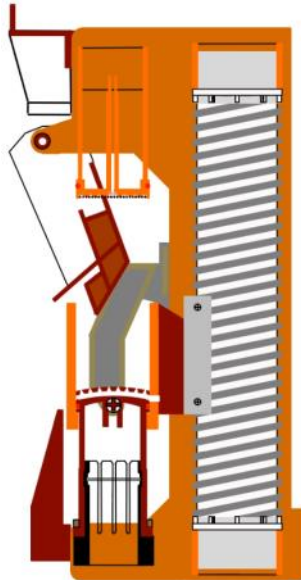
**Conditions for Replacement - 16g Automat**

- Every 75,000 Shots dispensed
- Warped brew chamber

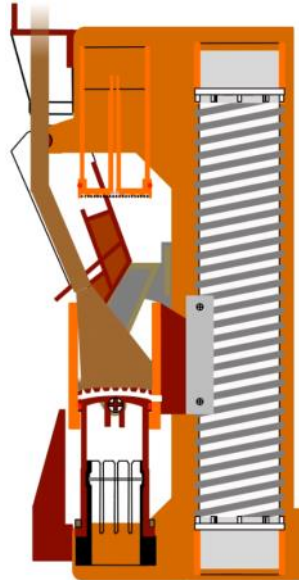


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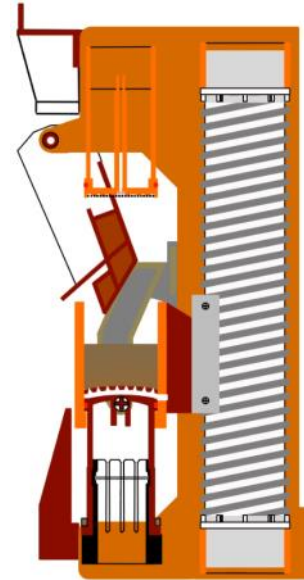
Major Components: Automat Operation



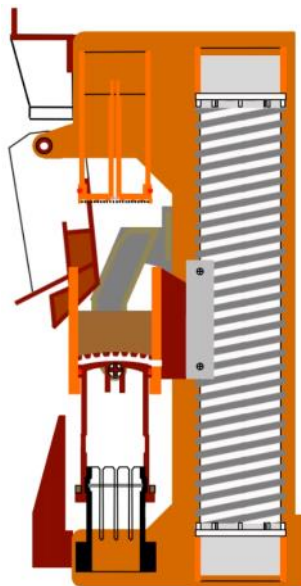
The automat starts in the home position with a gap in the brew chamber to allow for coffee grounds to fill.



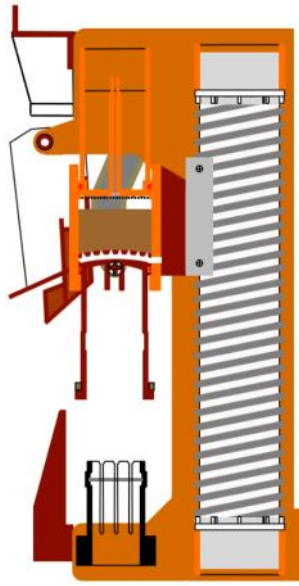
The grinder actuates and coffee grounds fall through the funnel and chute into the brew chamber.



Once the desired amount of coffee is ground the grinder turns off.



The automat moves upward to seal the brew chamber on the upper piston and press the coffee.

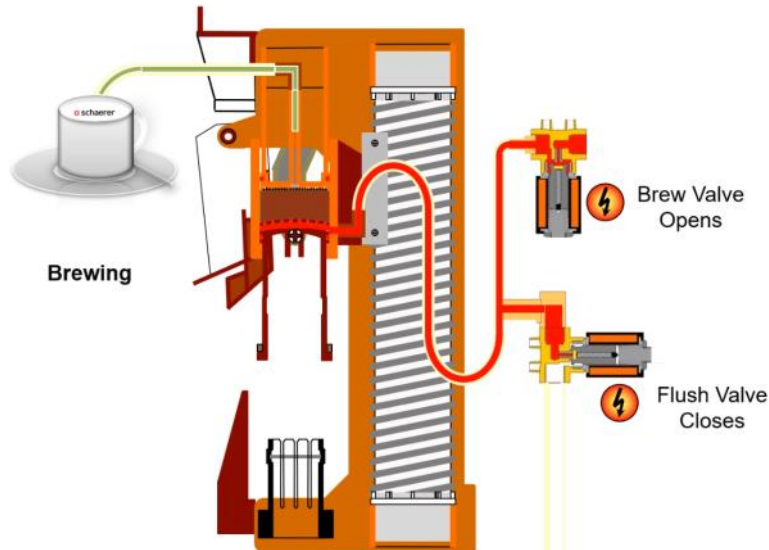


The main board reads the amperage from the automat motor and stops moving the automat when it reaches the appropriate amperage

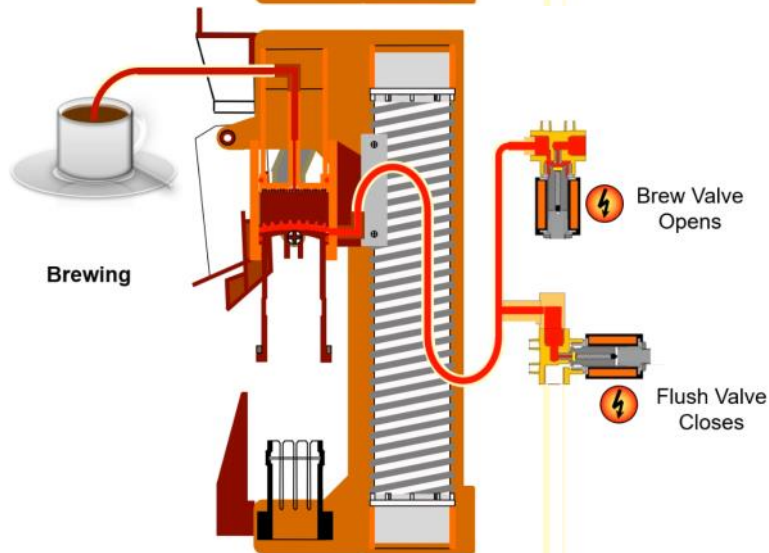


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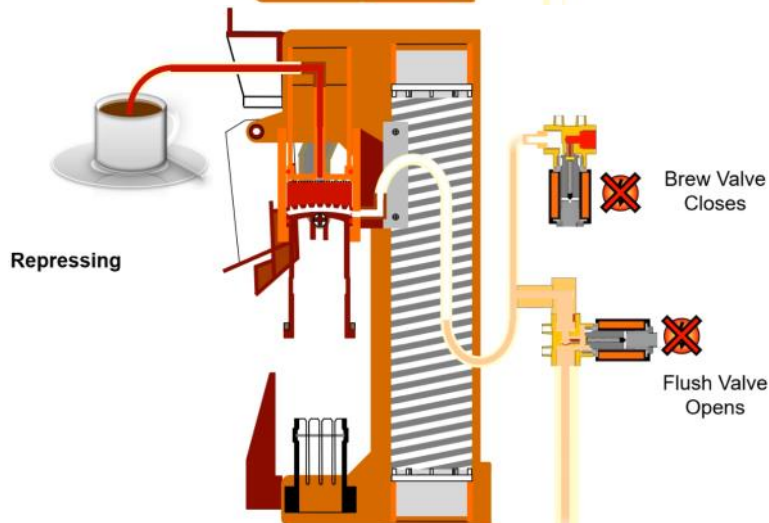
## Major Components: Automat Operation



Once the automat reaches the brewing position and the appropriate pressure is applied to the coffee grounds the brew and flush valves are energized. This allows hot water to flow into the brew chamber and wet the grounds.

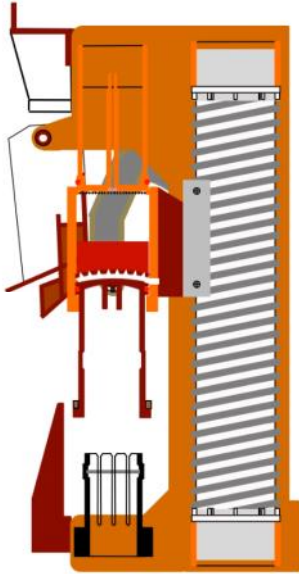


The upper piston has a 0.6mm orifice which creates a back pressure to ensure the entire puck of coffee is extracted evenly. The espresso is then dispensed through the upper piston, through the dispense tube, and drips out of the front spout.

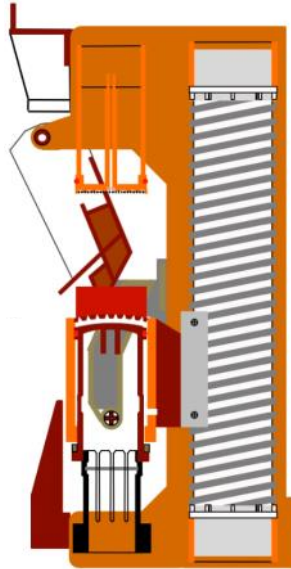


Once the desired amount of volume has been reached using pulses from the flow-meter, the brew and flush valves de-energize. The brew valve closes and the flush valve opens. This allows for the pressure in the brew chamber to release through the flush valve as the automat motor drives the automat upward to press the coffee dry and push the remainder of the coffee out of the upper piston.

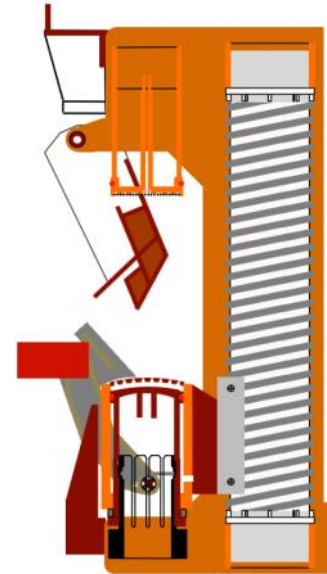
## Major Components: Automat Operation



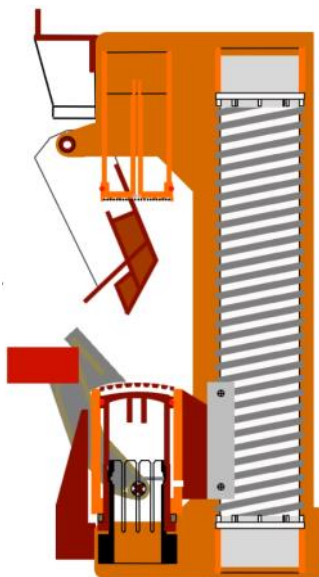
The automat motor will now drive the brew unit the opposite direction



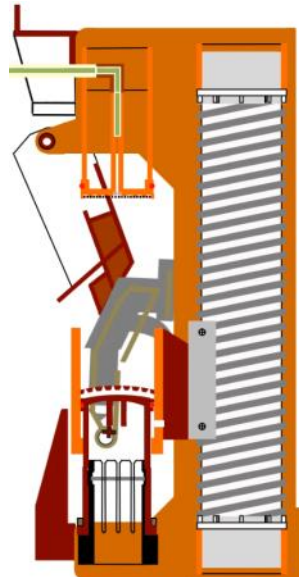
Once the lower piston reaches the lower piston flange it is pushed upwards inside the brew chamber exposing the spent coffee puck.



The scraper then swings forward to expel the spent coffee puck into the grounds bin.



Simultaneously, the lower piston flange grabs the lower piston to hold it in the lower position to create the gap for the next cycle.

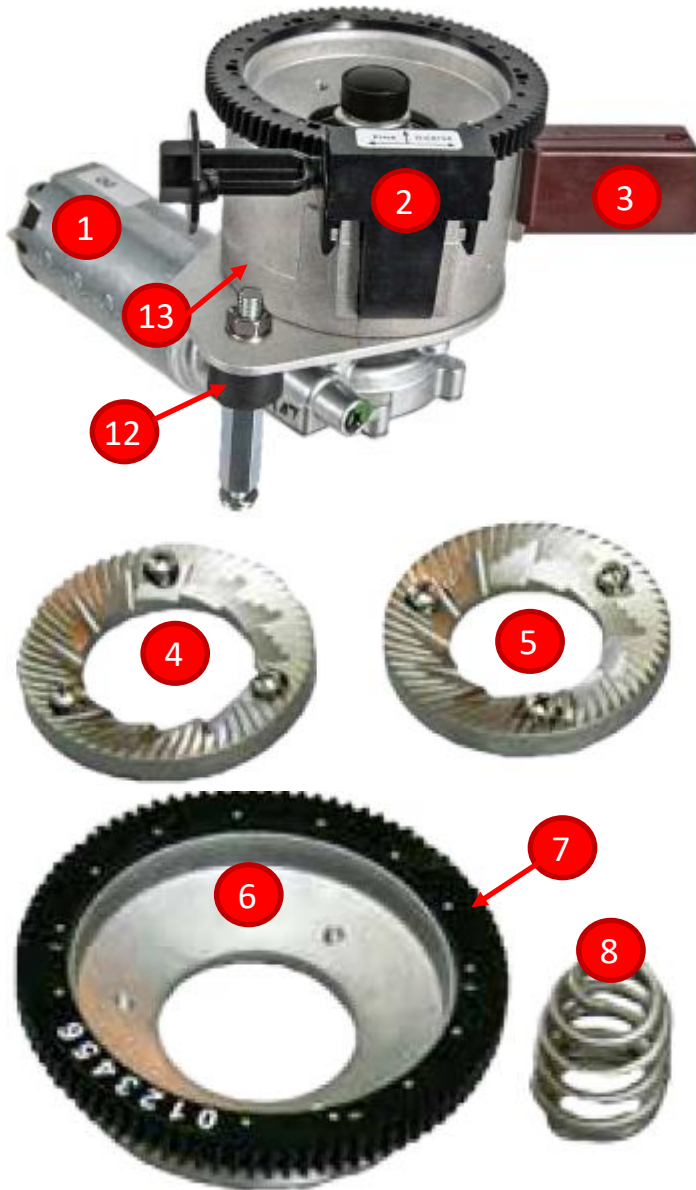


The automat then returns to the home position and awaits the next order for coffee.



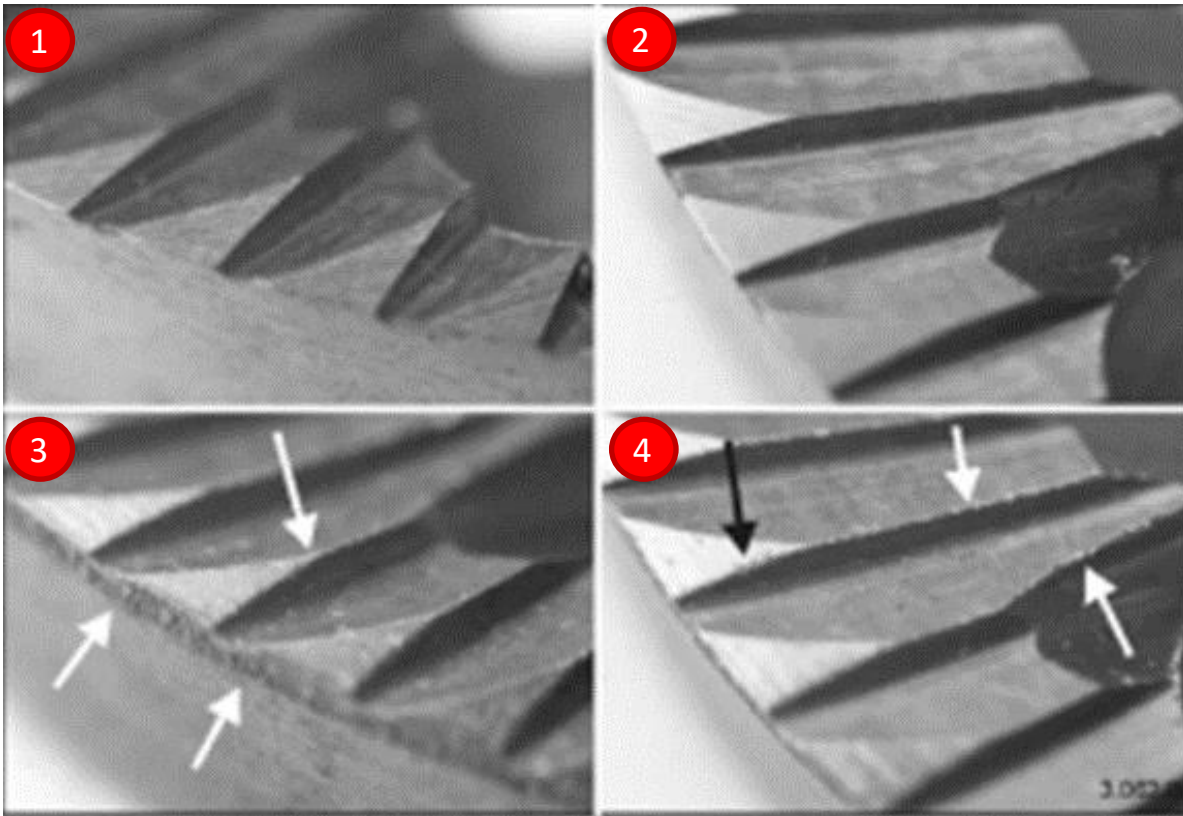
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# Major Components: Grinder



1. 24 VDC motor
2. Grinder adjust gear
3. Grinder outlet
4. Upper grinder blade (larger internal diameter)
5. Lower grinder blade (smaller internal diameter)
6. Upper burr
7. Grinder adjustment ring
8. Spring (used as an auger)
9. Finger protection
10. Finger protection cap
11. Finger protection screw
12. Mounting foot (vibration damper)
13. Grinder casing

## Major Components: Grinding Mills



The illustration above shows brand new grinding mills (#1 & 2), whereas 3 & 4 are dull and worn out. The worn out grinding mills will cause issues with coffee quality. The beans are no longer consistently cut, the excess friction causes heating of the grounds, and all will cause excess wear on the 24v DC grinder motors.

Nominal voltage:	24 V DC
Operating voltage:	30 V DC
Operating current:	5-6 A
Current when "grinder empty":	< 1.45 A
Current when "grinder blocked":	>8A for 1 second or >8.4A for 0.2 seconds

## Major Components: Grinding Mills & Motor



### Conditions for Replacement - Grinder Motor

- Every 75,000 Shots dispensed from a single grinder
- It is recommended to replace the Grinder Motor during the same service visit when the Grinding Discs are replaced (to eliminate common return trip scenarios)

### Conditions for Replacement - Grinding Discs

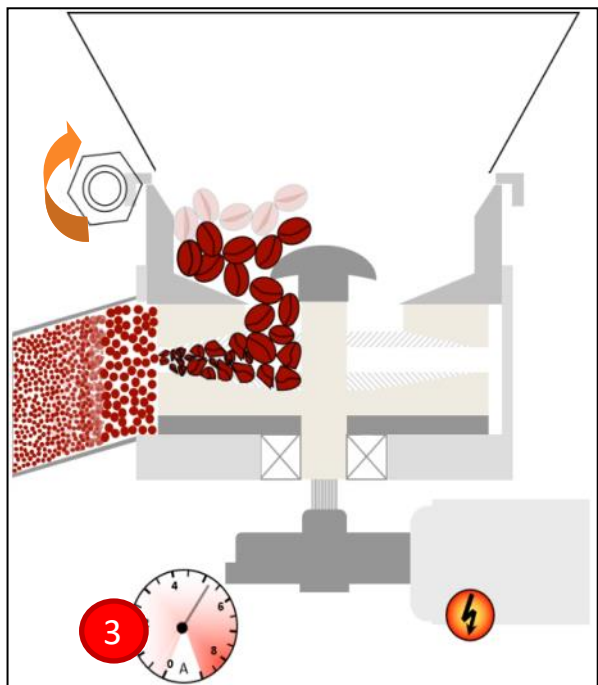
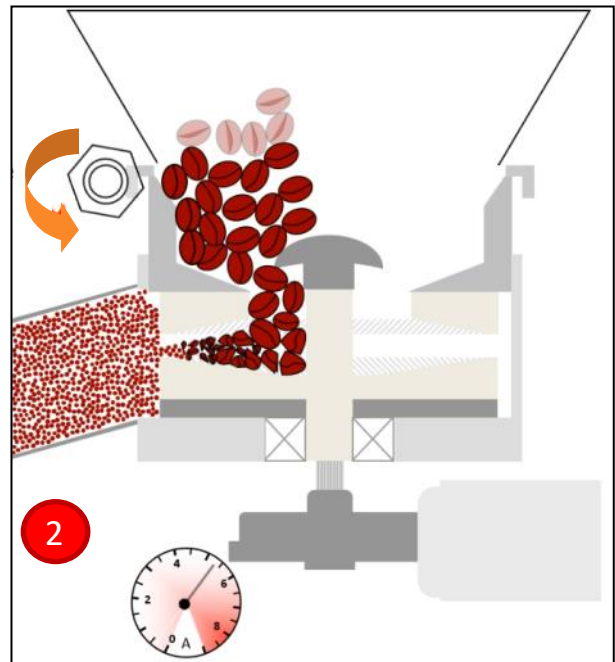
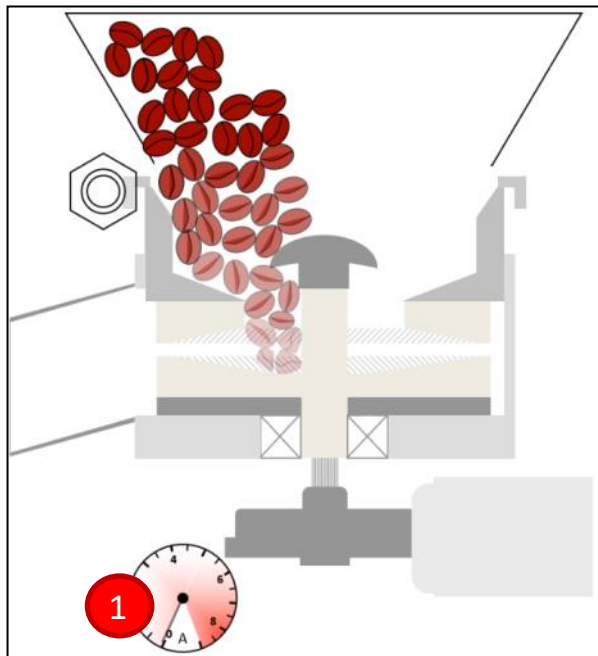
- Every 75,000 Shots dispensed from a single grinder
- Wear and Tear during inspection will appear, and will likely result in inconsistent shot times and difficulty calibrating the machine

### Additional Actions

- It is recommended to replace the Grinder Motor during the same service visit (to eliminate common return trip scenarios)

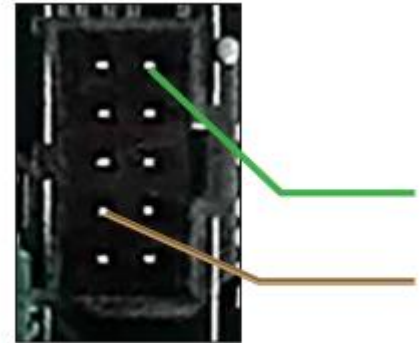


## Major Components: Grinder Operation

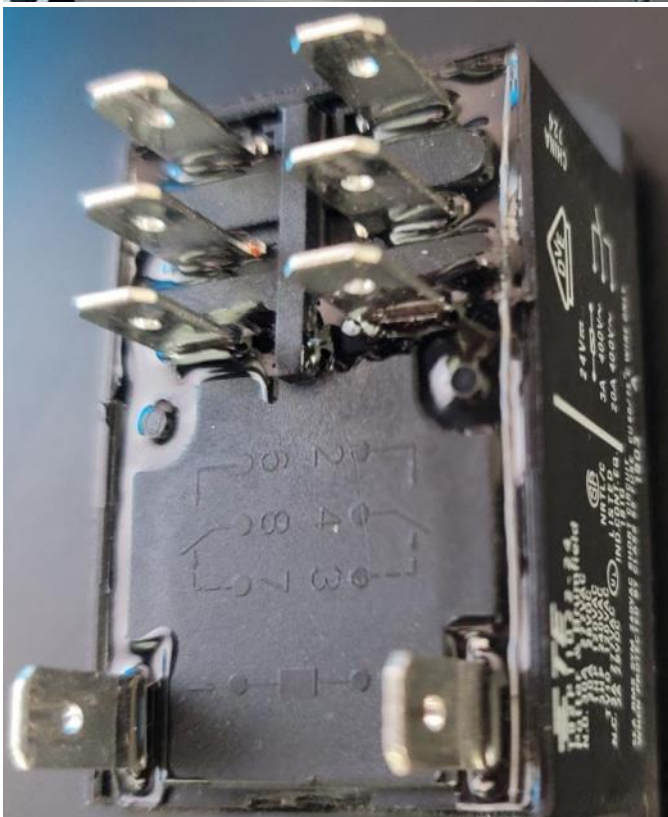
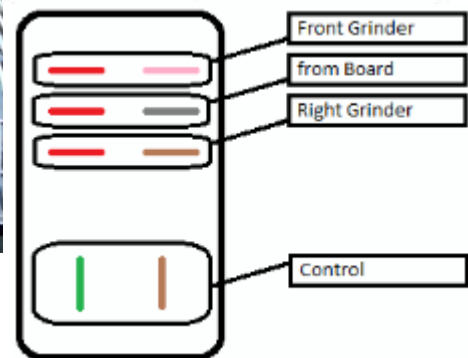


1. When beans are introduced the auger assists the grinder with a constant flow of beans into the blades.
2. The beans start grinding course and get finer as the blades are tapered by design. By rotating the adjustment gear **clockwise** you make the grounds finer. **Note:** if you plan to make adjustments finer more than 2-3 clicks it is recommended to make those adjustments while the blades are moving as the blades are coming closer together and could jam / damage the grinder. You must purge the grounds in the outlet before changes take affect
3. By rotating the adjustment gear **counter-clockwise** the grounds get courser. As shown, the outlet must be purged before the changes take affect. This is true for both directions.

## Major Components: Front Grinder Relay (SCA C)



Main Board Terminal X17



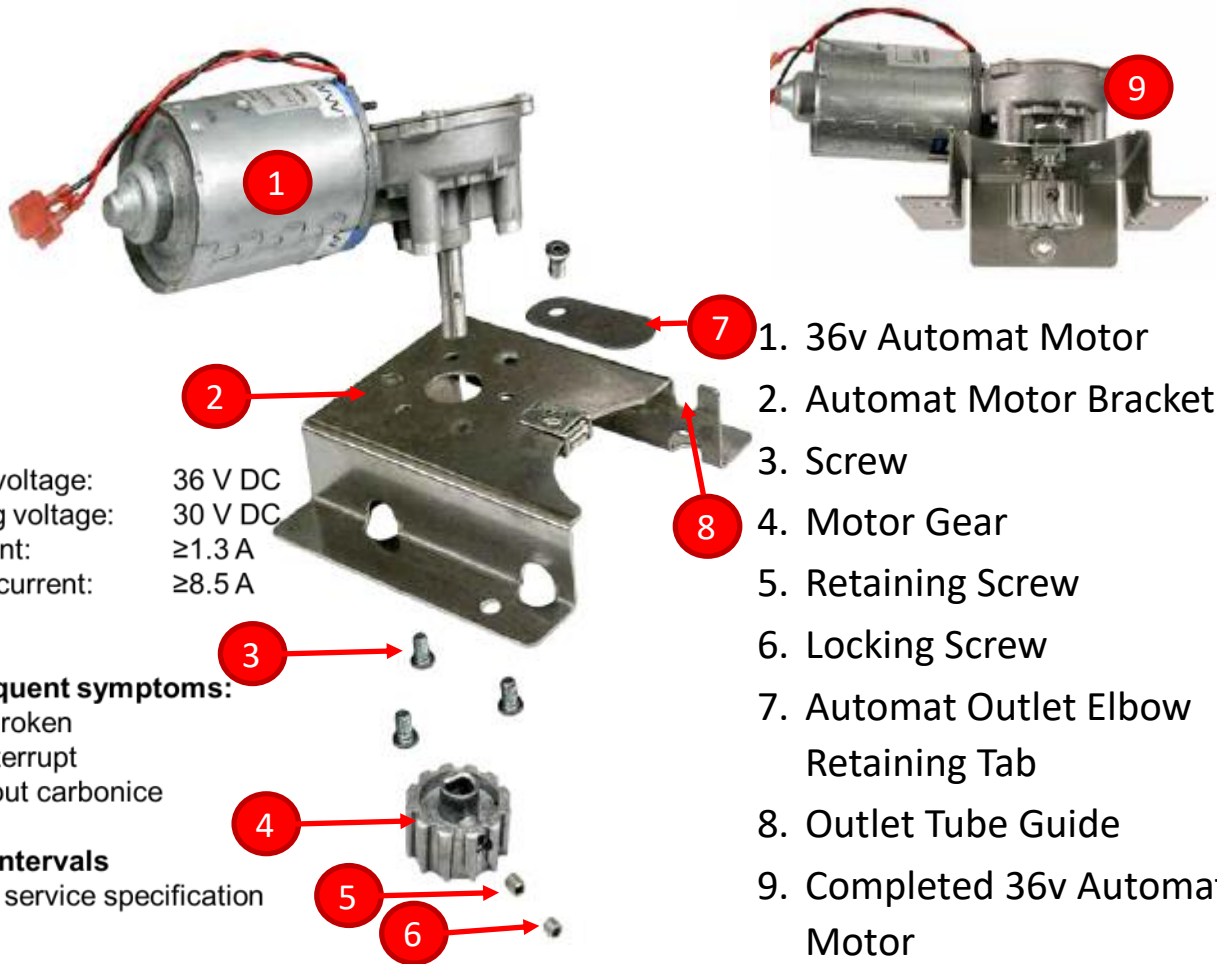
When the front grinder is present (Coffee Art C only), the right grinder wiring is supplied to the relay and the relay is always closed to the Red and Brown wires to the right grinder. When a recipe is chosen which utilizes the front grinder, the relay coil is energized via green and brown with 29VDC and switches to the pole positions for Red and Pink. The red wires should always be on the same side of the relay as the DC voltage motors are polarity dependent for which direction the grinder will turn. If wired incorrectly, it could result in the grinder spinning the wrong direction and not grinding beans.

In order to test these components through the Output Test function, activate the following outputs in order:  
 Output 24—external heating  
 Output 16—right grinder

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# Major Components: Automat Motor 36V



Nominal voltage: 36 V DC  
 Operating voltage: 30 V DC  
 Idle current:  $\geq 1.3$  A  
 Blocking current:  $\geq 8.5$  A

**Most frequent symptoms:**

- Gear broken
- Coil interrupt
- Wear out carbonice

**Service intervals**

→ Check service specification

1. 36v Automat Motor
2. Automat Motor Bracket
3. Screw
4. Motor Gear
5. Retaining Screw
6. Locking Screw
7. Automat Outlet Elbow Retaining Tab
8. Outlet Tube Guide
9. Completed 36v Automat Motor

**Conditions for Replacement - Automat Motor**

- History of Brew Unit Timeout error codes in the info screen
- History of Over Current Brew Motor error codes in the info screen
- Automat motor should not be making any strange noises (e.g. squealing, grinding) during regular operation

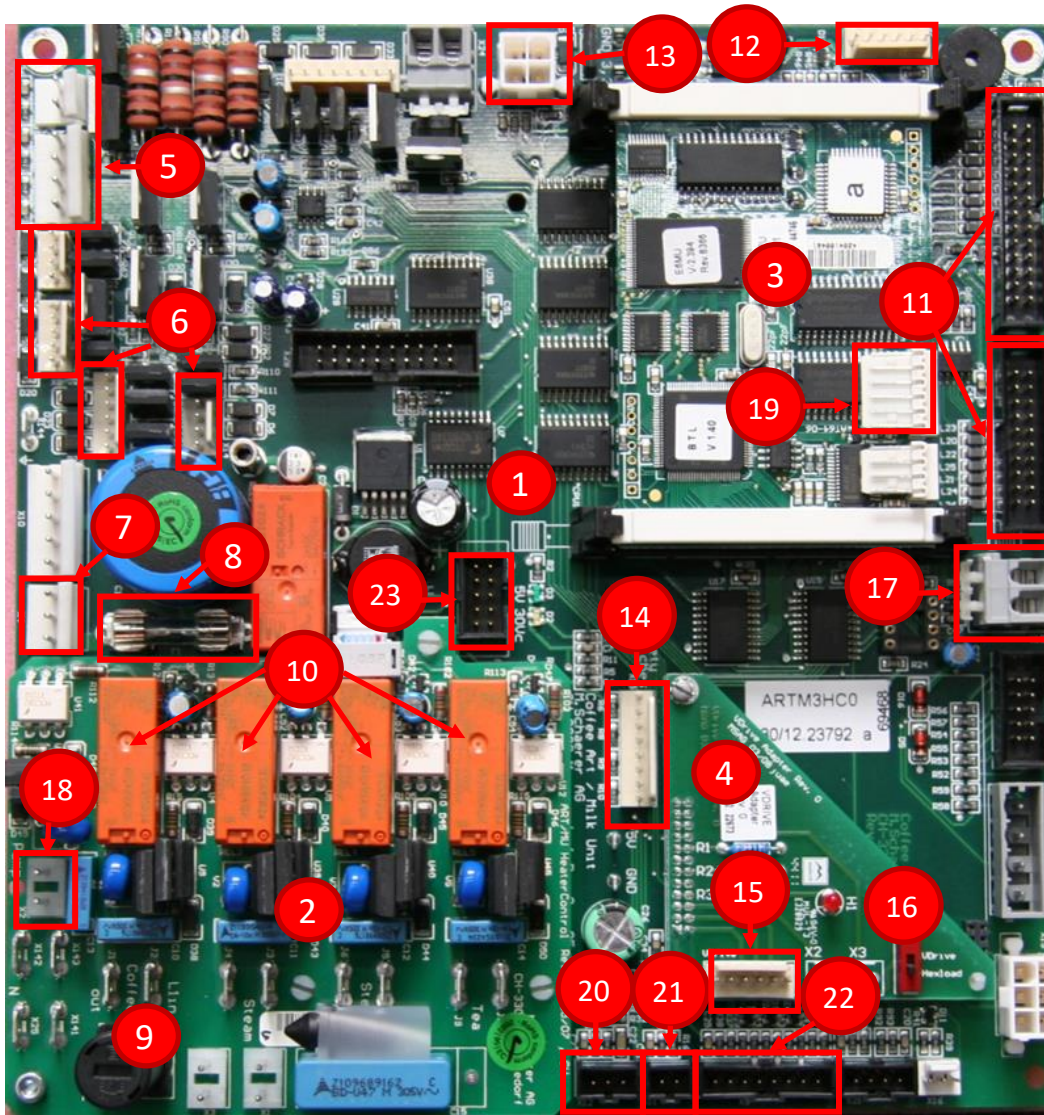
**Additional Actions**

- If replacing the Automat Motor, it is recommended to also replace the Automat during the same visit (to eliminate common return trip scenarios)
- Recommended to have on-hand the motor bracket (#2 above) and screws (#3 above) during the motor replacement





## Main Board: Layout

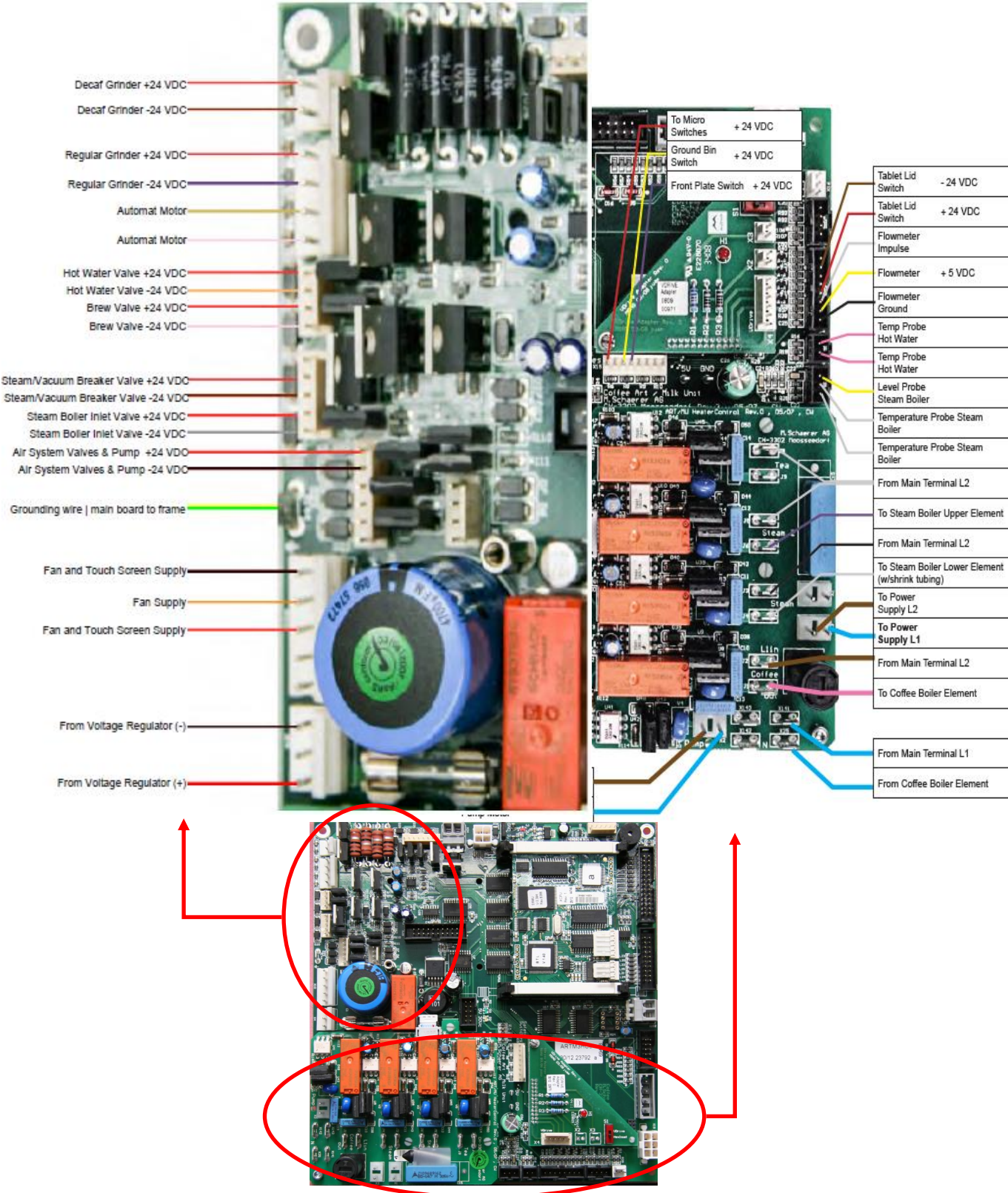


- |                                     |   |   |
|-------------------------------------|---|---|
| 1. Main Board                       | 11. Button interface headers                      | 19. CPU communication header                                  |
| 2. Relay Board                      | 12. Card reader header                            | 20. Steam boiler temp sensor / level probe header             |
| 3. CPU                              | 13. Booster sensor header (requires jumper in US) | 21. Coffee boiler temp sensor header                          |
| 4. Vdrive Board                     | 14. Safety switches header                        | 22. Flowmeter and tablet sensor header (tablet sensor unused) |
| 5. Low voltage high current headers | 15. USB port header (button interface)            | 23. Header for front/right grinder relay (SCA C specific)     |
| 6. Low voltage low current headers  | 16. Vdrive dip switch                             |   |
| 7. 30vDC supply header              | 17. Steam wand temp probe header                  |   |
| 8. 8A fuse (low voltage)            | 18. Pump motor header                             |   |
| 9. 2A fuse (high voltage)           |   |   |
| 10. Heater relays                   |   |   |





# Main Board: Pin-outs



## Parts Replacement Instructions: Steam Boiler

**Note 1: All Instructions assume basic removal of necessary panels is already completed and machine is in a safe mode for maintenance (Power and Water in correct status for particular maintenance operation)**

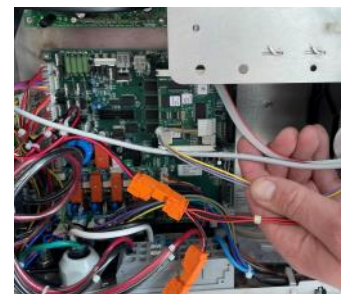
**Note 2: Before beginning this operation, turn water off to the machine and perform an empty cycle to ensure safety**



1. Remove the (2) 10 mm hex nuts from the left grinder using a socket wrench, 3" extension, and



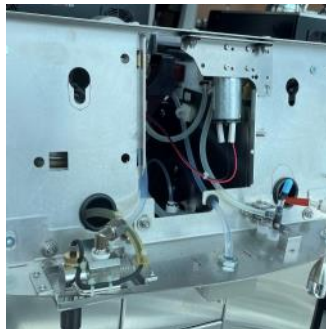
2. Lift the grinder off of the mounting feet and out of the machine while disconnecting the



3. Disconnect cables related to front panel



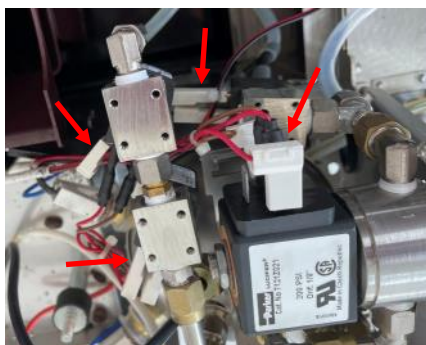
4. Disconnect cables from telemetry modem if one is installed



5. Remove the front panel and set aside



6. Disconnect tube from steam valve to steam wand



7. Disconnect electric connections for the valves



8. Disconnect the air injection extension tube from the inlet T Fitting using a 14 mm wrench



9. Disconnect the center 14mm nut



## Parts Replacement Instructions: Steam Boiler

**Note 1: All Instructions assume basic removal of necessary panels is already completed and machine is in a safe mode for maintenance (Power and Water in correct status for particular maintenance operation)**

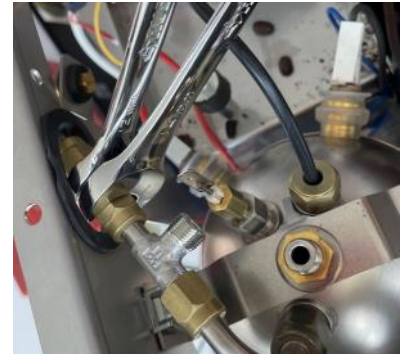
**Note 2: Before beginning this operation, turn water off to the machine and perform an empty cycle to ensure safety**



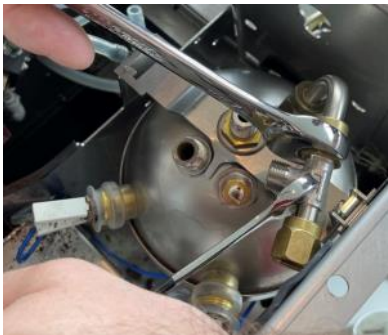
10. While lifting the steam valve



11. Disconnect the silicone hose from the bottom of the vacuum



12. Using a 12mm and 14mm wrench, disconnect the T Fitting



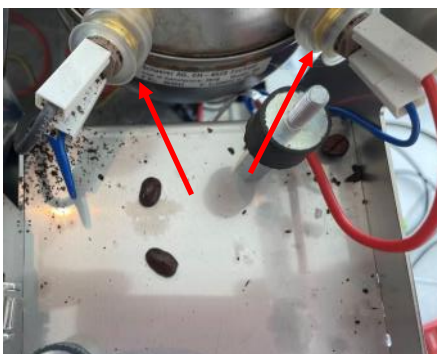
13. Using a 10mm and 14mm wrench, disconnect the T Fitting



14. Using a 17mm wrench, remove the temp sensor and inlet pipe



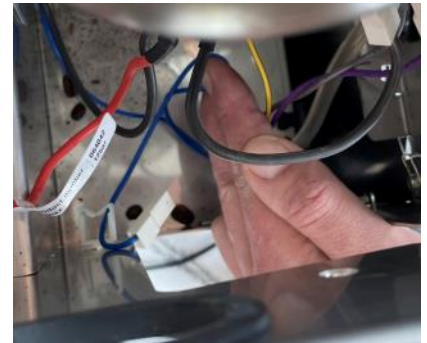
15. Using a 14mm wrench, remove the level probe (note: do not lose the washer)



15. Remove the 4 wires from the upper klixons



16. Remove the fastening screw for the boiler support bracket



16. While lifting the boiler from the machine, remove the cables from the security cuff

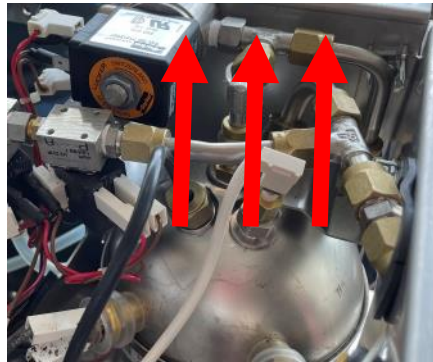
## Parts Replacement Instructions: Steam Boiler

**Note 1: All Instructions assume basic removal of necessary panels is already completed and machine is in a safe mode for maintenance (Power and Water in correct status for particular maintenance operation)**

**Note 2: Before beginning this operation, turn water off to the machine and perform an empty cycle to ensure safety**



17. Disconnect the lower klixon and element wires and ground wire.



18. Boiler will lift straight up to remove from machine



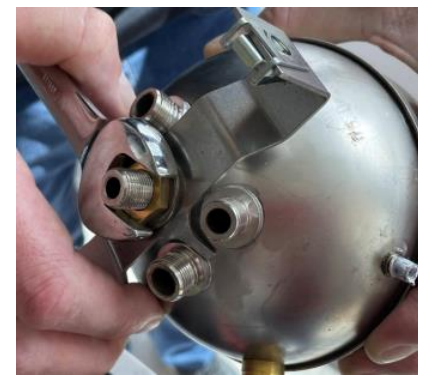
19. Remove the silicone covers from the klixons



20. Use a 17mm wrench to loosen the klixons, then remove



21. Remove the klixon supports



22. Use a 17mm wrench to remove the boiler support bracket. Set aside old boiler for disposal.



23. Transfer Fiber Gasket, Bracket, washer and nut to new boiler



24. Clean dried thermal paste from used klixon support



25. Apply a very thin layer of thermal paste to the klixon support



## Parts Replacement Instructions: Steam Boiler

**Note 1: All Instructions assume basic removal of necessary panels is already completed and machine is in a safe mode for maintenance (Power and Water in correct status for particular maintenance operation)**

**Note 2: Before beginning this operation, turn water off to the machine and perform an empty cycle to ensure safety**



26. Apply a thin layer of thermal paste to top of the support and reinstall klixon.

**Do not use tools to tighten the klixons, only hand tighten**



### Reassemble the boiler using the following steps

- Re-install the silicone covers from the klixons
- Lower the boiler into place and connect the lower klixon and element wires and ground wire (photo on right for reference).
- While lowering the boiler to the machine, replace the cables into the security cuff
- Replace the fastening screw for the boiler support bracket
- Reconnect the 4 wires to the upper klixons (photo on right for reference)
- Using a 14mm wrench, replace the level probe
- Using a 17mm wrench, replace the temp sensor and inlet pipe
- Using a 10mm and 14mm wrench, connect the T Fitting to the inlet pipe
- Using a 12mm and 14mm wrench, connect the T Fitting to the inlet extension pipe
- Connect the silicone hose to the bottom of the vacuum breaker valve
- While lowering the steam valve assembly, route the silicone hose to the drip tray
- Reconnect the center 14mm nut
- Reconnect the air injection extension tube to the inlet T Fitting using a 14 mm wrench
- Reconnect electric connections for the valves
- Reconnect tube from steam valve to steam wand (Caution: Do not over tighten)
- Remount the front panel (Caution: ensure wire routing is managed)
- Reconnect cables from telemetry modem if one is installed on unit
- Reconnect cables related to front panel
- Re-install new zip ties to clean up wire routing
- Lower the left grinder onto the mounting feet in the machine and reconnect the electrical supply
- Replace the (2) 10 mm hex nuts and (2) lock washers to the grinder using a socket wrench, 3" extension, and 10 mm socket

## Parts Replacement Instructions: Coffee Boiler

**Note 1: All Instructions assume basic removal of necessary panels is already completed and machine is in a safe mode for maintenance (Power and Water in correct status for particular maintenance operation)**

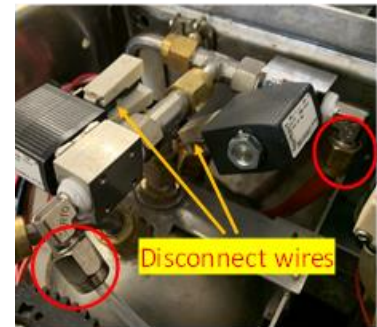
**Note 2: Before beginning this operation, turn water off to the machine and perform an empty cycle to ensure safety**



1. Remove the (2) 10 mm hex nuts from the right grinder using a socket wrench, 3" extension, and 10 mm



2. Using a 12mm and 14mm wrench, disconnect the incoming



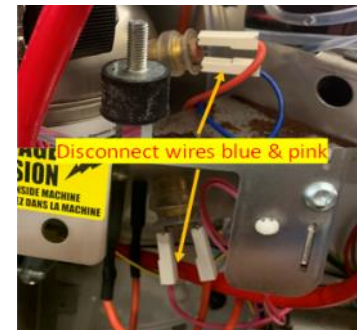
3. Disconnect the 12mm nuts from the hot water and brew valves. Also disconnect the wiring.



4. Disconnect the center nut with a 14mm wrench and pull the valve



5. Using a 17mm wrench, remove the temperature sensor and inlet pipe. Use caution not to lose the



6. Disconnect the klixon wires



7. Remove the fastening screw for the boiler support bracket and



8. Remove the silicone covers from the klixons



9. Use a 17mm wrench to loosen the klixons, then remove



## Parts Replacement Instructions: Coffee Boiler

**Note 1: All Instructions assume basic removal of necessary panels is already completed and machine is in a safe mode for maintenance (Power and Water in correct status for particular maintenance operation)**

**Note 2: Before beginning this operation, turn water off to the machine and perform an empty cycle to ensure safety**



10. Remove the klixon supports



11. Use a 17mm wrench to remove the boiler support bracket. Set



12. Clean dried thermal paste from used klixon support



13. Apply a very thin layer of thermal paste to the klixon support



14. Transfer Fiber Gasket, Bracket, washer and nut to new boiler



15. Apply a thin layer of thermal paste to top of the support and



**16. Do not use tools to tighten the klixons, only hand tighten**

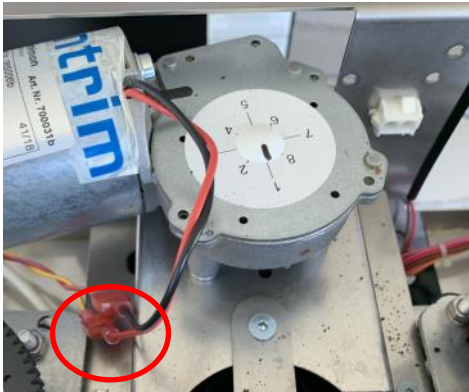
### Reassemble the boiler using the following steps

- Reinstall the silicon klixon covers
- Reinstall the boiler into the machine using the fastening screw
- Reconnect the heating wires (red and pink to bottom klixon, blue and red to top klixon)
- Reinstall the temp sensor and inlet pipe with 17mm wrench
- Reinstall the valve assembly and secure the 14mm nut onto the boiler
- Reconnect the two 12mm nuts onto the valves
- Reinstall the wiring onto the valves (red + orange = hot water)
- Reconnect incoming water supply using 12mm and 14mm wrenches
- Reinstall the right grinder and secure using the (2) 10mm nuts and (2) lock washers
- Turn on water and check for leaks, correct any found

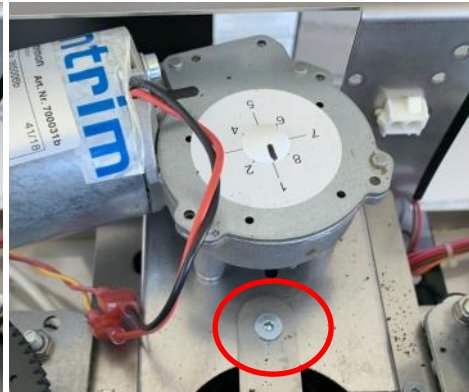
## Parts Replacement Instructions: Automat Motor

**Note 1: All Instructions assume basic removal of necessary panels is already completed and machine is in a safe mode for maintenance (Power and Water in correct status for particular maintenance operation)**

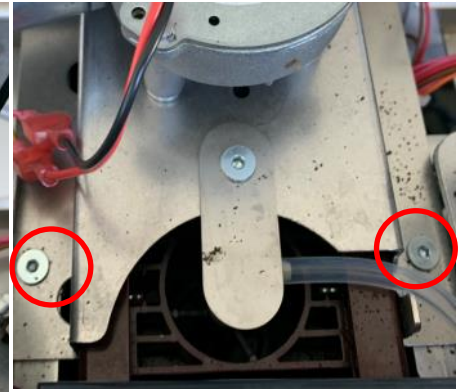
**Note 2: Before beginning this operation, turn water off to the machine and perform an empty cycle to ensure safety**



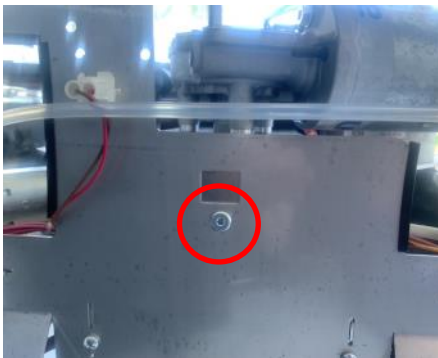
1. Disconnect the electrical wires



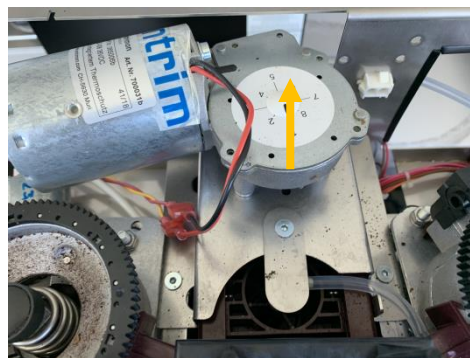
2. Remove the 3mm Allen screw



3. Remove the 3mm Allen screws



4. Remove the short 3mm Allen screw



5. Lift the motor out of the machine. This may require slight flexing of the grinders on their mounts to get out



6. Using the long Schaerer screwdriver, remove the two set screws from the gear and slide it off the shaft



4. Remove the (3) 3mm Allen screws holding the motor to the

### Reassemble the Drive Motor using the following steps

- Reinstall the 3mm screws onto the new motor and old bracket using 1 drop of red thread locker to prevent disassembly during operation
- Reinstall the gear onto the shaft using the (2) set screws (shorter, rounded screw before the longer pointed screw)
- Place the motor onto the frame and install the (2) longer 3mm screws to secure. Install the short 3mm screw to the back of the bracket
- Reinstall the retaining tab with a 3mm screw
- Reconnect the electrical wires



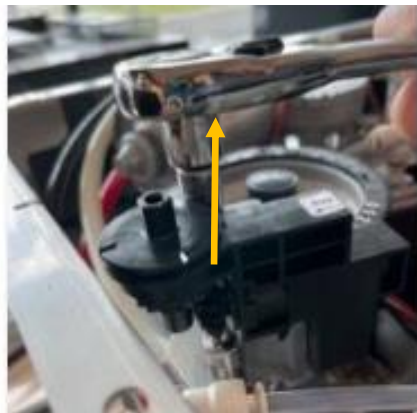
## Parts Replacement Instructions: Grinder Blades & Motor

**Note 1: All Instructions assume basic removal of necessary panels is already completed and machine is in a safe mode for maintenance (Power and Water in correct status for particular maintenance operation)**

**Note 2: Before beginning this operation, turn water off to the machine and perform an empty cycle to ensure safety**



1. Remove the (2) 10 mm hex nuts from the grinder using a socket



2. Lift the grinder off of the mounting feet and out of the



3. Make a mark on the grinder motor brackets to assist with motor



4. Remove the two screws holding the bracket to the grinder casing and separate the grinder casing from the bracket, do not lose the serrated washers.



5. Make another mark on the top-side of the bracket to assist with

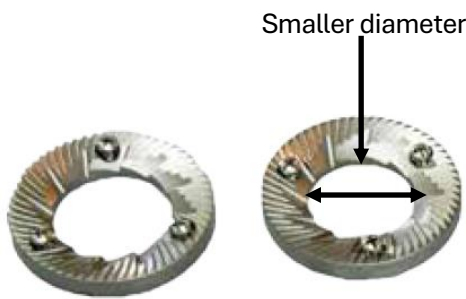


6. Using the screw gun with extension and P2 phillips bit, unscrew the (3) mounting screws, but leave them in their holes.

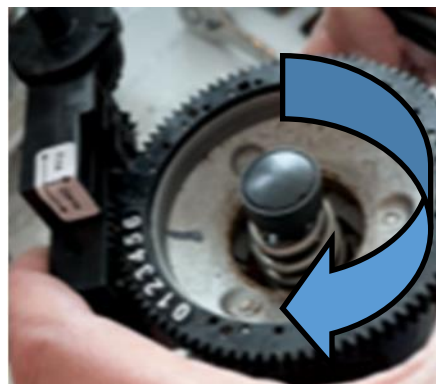
# Parts Replacement Instructions: Grinder Blades & Motor

**Note 1: All Instructions assume basic removal of necessary panels is already completed and machine is in a safe mode for maintenance (Power and Water in correct status for particular maintenance operation)**

**Note 2: Before beginning this operation, turn water off to the machine and perform an empty cycle to ensure safety**



12. Install the new grinding mills. The mill with the smaller inner diameter goes on the lower, revolving plate. Ensure the screws



13. Reinstall the upper burr by screwing it onto the casing clockwise.



14. Screw the upper burr onto the grinder casing until the mills touch, then back it off by slightly. When the adjustment gear is reinstalled, the arrow should point to 2 1/2.



15. Reconnect the electrical supply to the motor.



16. Reinstall the grinder into the machine. Secure the grinder with the (2) nuts and (2) lock washers.

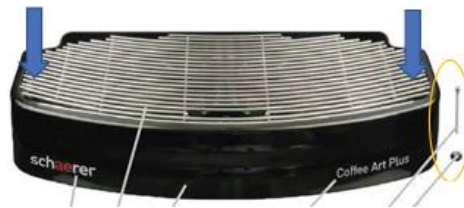
## Parts Replacement Instructions: Flush Valve

**Note 1: All Instructions assume basic removal of necessary panels is already completed and machine is in a safe mode for maintenance (Power and Water in correct status for particular maintenance operation)**

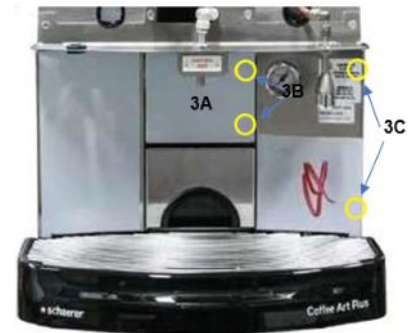
**Note 2: Before beginning this operation, turn water off to the machine and perform an empty cycle to ensure safety**



1. Remove drain hose clamp and drain hose from the drip tray.



2. Remove screw and knurling nut from both sides of the drip tray, remove drip tray from machine.



3. Remove the center plate and grounds bin. Remove the 2.5mm screws allen screws and 3mm allen screws as circled in yellow



4. Gently swivel the flush valve bracket back toward the pump and remove the brass fittings from the flush valve



5. Disconnect the Teflon tube from the top of the flush valve and the electrical wires from the side, then set valve aside

### Reassemble the flush valve using the following steps

- Place the flush valve onto the bracket and reinstall the brass fittings onto the bottom port
- Install the Teflon tube and electrical wires, swivel the bracket back into place
- Reinstall the (2) 2.5mm and (2) 3mm allen screws to secure the right side cover plate
- Reinstall the drip tray and secure with the screws and knurling nuts
- Reinstall the grounds bin and center plate
- Reinstall the drain hose and clamp (**note: the hose clamp should be parallel with the drip tray to reduce risk to the user**)

## Common Repair Tools

	<p>Short Schaerer Hex Screwdriver Part number: 3370065320</p>
	<p>Long Schaerer Hex Screwdriver Part number: 3370065321</p>
	<p>Food Grade Lubricant Part Number: 3370067399</p>
	<p>Thermal Paste (for Klixons) Part Number: 3370067391</p>
	<p>Automat Adjustment Knob Part Number: 3370062985</p>
	<p>Save Data USB Stick (512MB) Part Number: 3370071917</p>
	<p>Service Card Part Number: 3370063935</p>



# USB Structuring

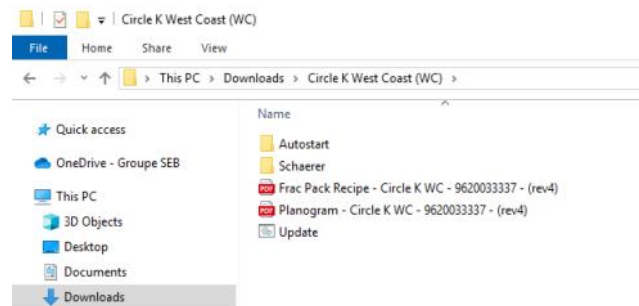
The following are instructions to make sure your USB is set correctly:  
Please make sure to place all files extracted into a USB drive (Maximum capacity 8GB ) If need be, format the USB to either FAT, or FAT32

**Step 1) Download and locate Zip file. Double click to open**

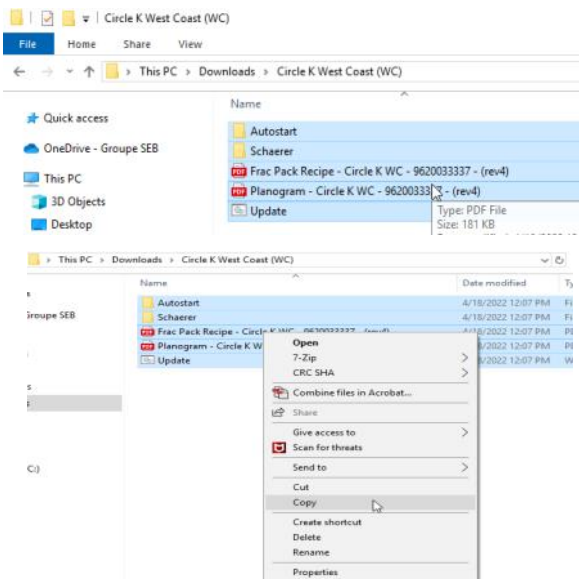


**Please Note:** name of zip file may be different, please refer to your browser download list to confirm

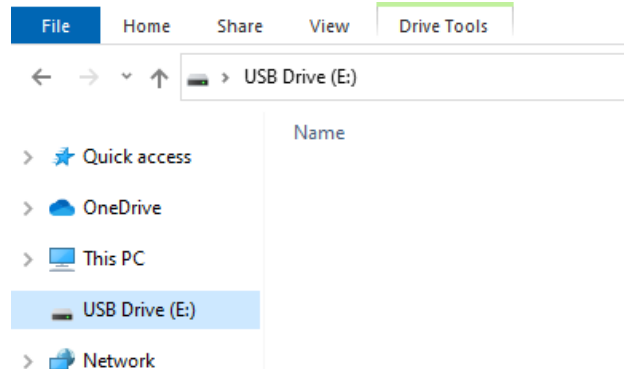
**Step 2) Locate the files you need to transfer**



**Step 3) Highlight all files. Then right click to copy files.**

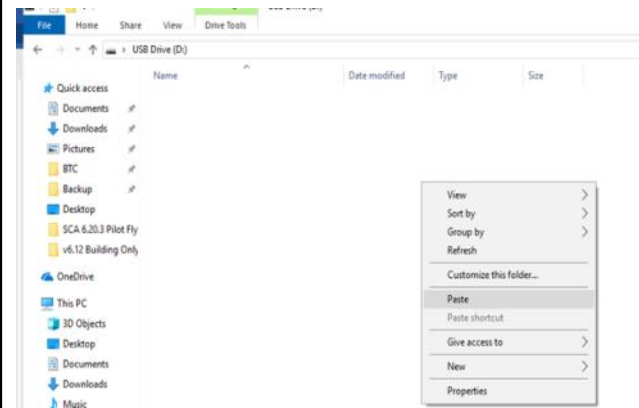


**Step 4) Select (USB Drive). Do not create or open any folders as the files need to be in the “root directory” of the USB.**

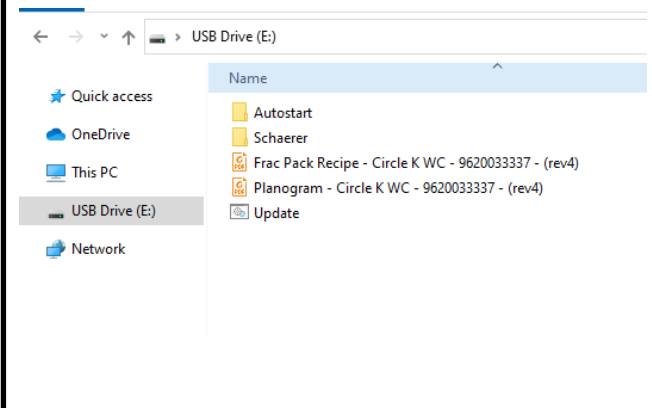


## USB Structuring Cont.

**Step 5) Right-click in an open space as shown below and paste the files/folders into the flash drive (USB DRIVE).**



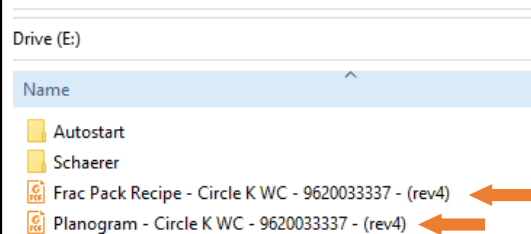
**Step 6) After successful completion, your new folders are saved under (USB DRIVE).**



**Frac Pack Recipe - Customer specific recipes**

**Planogram - Machine layout on the counter**

These two are for printing and reference during the customer visit.



If at any time you don't understand how to perform any of these steps please reach out to our technical support team at (888) 989-3004 x1021.

## Event & Error List

Displayed Message	Cause	What to do
Water Flow Error	While dispensing a beverage, the flowmeter transmits fewer than the pre-defined number of pulses. Possible blockage in the hydraulic system.	<i>The water flow error is only shown in the first 5 sec if the flow quantity is less than 1ml/3 sec</i>
	Water supply issues	Check the water supply for sufficient volume and ensure the water is turned on.
	The upper piston of the automat is blocked.	Perform 2-3 cleaning cycles with the tablet. If unsuccessful, replace the upper piston.
	Water pump pressure is too low.	Ensure gauge operation is accurate and make adjustments to the pump pressure. Replace pump head, if necessary.
	The brewing valve is blocked or not opening	Check for 30v DC to the valve. Check the screen before the brew valve for blockage Inspect valve for corrosion. Remove and open valve to inspect for blockages. Inspect coffee boiler for scale
	Clogging due to scale build-up in the hydraulic system	Check the water supply line to the coffee boiler
	The grinding degree is set too fine	Adjust the grinding degree courser
	The flowmeter is faulty or has an impediment	Open the flowmeter to assess scale and magnet cleanliness Replace flowmeter
Overcurrent Brew Motor	-	The automat motor has exceeded 4 A
	The automat is dirty	Pull, dismantle, and clean the automat with special attention to the back of the brew chamber where it meets the spindle
	The motor is faulty	Replace the motor
	The main board is faulty (extremely rare)	Replace the main board

## Event & Error List

Displayed Message	Cause	What to do
Brew Unit Timeout	The positions of the brew chamber are detected by measuring the current consumption. The following two positions are detected by means of a current consumption peak:  Top brew chamber position.  Bottom brew chamber position.	<i>If a current consumption peak is not detected after a brew chamber movement of 10 sec, the message appears.</i>
	The automat motor gear is out of place or broken	Check / replace the gear
	The motor is faulty	Replace the motor (generally accompanied by a loud noise coming from the motor).
	The main board is faulty (extremely rare)	Replace the main board (plain).
Brew Motor Current	Measure whether there is a short circuit in the motor, including the wiring to the motor.	<i>An overcurrent of 0.6 A is detected although no automat movement has been triggered.</i>
	The motor / wiring is faulty	Detach the motor connector from the main board. Check the wiring and the motor for a short circuit, beginning with the connector.
	The main board is faulty (extremely rare)	Replace the main board
Grinder Left Blocked Grinder Right Blocked Grinder Front Blocked	The "Grinder ____ Blocked" message is displayed and the machine cannot be used until the beverage is cancelled.	<i>The board has read an overcurrent while operating the grinder motor. The operation is stopped and the message is displayed.</i>
	The grinder is blocked by a foreign body.	Open grinder and remove foreign body.
	Excessive coffee residue inside the grinder	Dismantle and clean the grinder
	Worn grinding discs.	Replace grinding discs.
	Poor electrical connection to the motor	Inspect the spade connectors to ensure a tight fit onto the spades.
	Grinding degree too fine	Coursen the grinding degree.
	Moisture in the grinder	Dismantle and clean the grinder



## Event & Error List

Displayed Message	Cause	What to do
Coffee Sensor Defect Steam Sensor Defect SteamWand Sensor Defect	The main board does not detect a resistance through the sensor. Dispensing of related product is blocked.	Check the electrical connection between the sensor and main board Measure resistance of the NTC sensor.  The following resistance must be measured at the sensors at the corresponding temperatures. 25' C = 10,000 ohms 90' C = 910 ohms 100' C = 678 ohms Replace the sensor if the value does not correspond to the values above.
Booster Sensor Defect	The booster is not utilized in North America. If you are receiving this message it is likely the main board was recently replaced.	Swap the booster resistor from the old main board to the new main board. If not present, order a new boost resistor and install. (see main board diagram earlier in this document)
Timeout Coffee Heater Steam Heater Timeout	The heating was switched on and the set temperature was not reached within 5 minutes.	
	The "Klixon" safety thermostat was tripped due to overheating.	Reset the Klixon and assess the corresponding temperature sensor.
	Broken heating element.	Measure the resistance through the heating element. The reading must be 16-20 ohms.  Measure the resistance from each element wire to ground to ensure there is <u>no</u> continuity.  If either of these is out of spec, a boiler replacement is necessary
	Bad relay board (relay / thyristor).	Measure the voltage across the two wires at the heater relay while closed and open. Readings must be as follows: Closed relay (heating) = 0 VAC Open relay (not heating) = 205-245 VAC If the value varies, replace the relay board.
	Poor / broken contact	Inspect the wiring and spade connectors through the corresponding heating circuit for breaks, burns, or oxidation. Replace with OEM parts only, if necessary. (See parts catalog)
	Assess scale buildup in corresponding boiler and check for leaking valves.	Flush out or replace the boiler. <i>Descaling the boiler with chemicals is not an approved method to resolve this issue.</i>

## Event & Error List

Displayed Message	Cause	What to do
Over temperature coffee	A boiler temp of 110'C or higher was detected. If the raised temperature persists, the Klixon is triggered	
	Temperature sensor (NTC) is faulty.	<p>Check the electrical connection between the sensor and main board</p> <p>Measure resistance of the NTC sensor.</p> <p>The following resistance must be measured at the sensors at the corresponding temperatures.</p> <p>25' C = 10,000 ohms            90' C = 910 ohms            100' C = 678 ohms</p> <p>Replace the sensor if the value does not correspond to the values above.</p>
	Broken heating element.	<p>Measure the resistance through the heating element. The reading must be 16-20 ohms.</p> <p>Measure the resistance from each element wire to ground to ensure there is <u>no</u> continuity.</p> <p>If either of these is out of spec, a boiler replacement is necessary</p>
	Bad relay board (relay / thyristor).	<p>Measure the voltage across the two wires at the heater relay while closed and open. Readings must be as follows:</p> <p>Closed relay (heating) = 0 VAC            Open relay (not heating) = 205-245 VAC</p> <p>If the value varies, replace the relay board.</p>
	Bad main board (extremely rare)	<p>Unplug the machine and test continuity across the two heating wires for corresponding heating circuit at the relay.</p> <p>If all other checks are okay, the below is appropriate.</p> <p>No continuity = main board faulty            Continuity found = man board okay</p>

## Event & Error List

Displayed Message	Cause	What to do
Timeout Steam Supply	The level in the steam boiler detected by the level monitoring is too low. This causes the boiler filling to begin. Filling was not detected by the level sensor after 60 sec. The filling process is stopped and the error message appears. Dispensing of steam beverages is blocked.	<i>If a level increase is not detected after steam boiler filling is active for 60 sec, the "Timeout steam supply" message appears.</i>
	No water supply	Check the following components in supplying water to the steam boiler: Check the flow restrictor at the steam boiler refill valve. Check the steam boiler inlet pipe and tubing from refill valve for scale restrictions. Check the steam valve to ensure proper operation
	Pump pressure too low	Ensure gauge operation is accurate and make adjustments to the pump pressure. Replace pump head, if necessary.
	Faulty level probe	Check the level probe for breaks Check the level probe for scale
	Missing or poor earth grounding	Check the mains voltage supply for proper grounding and reconnect, if necessary



## Event & Error List

Displayed Message	Cause	What to do
Steam temperature too low	The sensor for temperature monitoring at the steam boiler detects a lower temperature than 115°C. Dispensing of the beverage is stopped to prevent milk from entering the steam system.	<i>The standard setting of the steam temperature is 135°C</i>
	The steam temperature setting is too low.	Adjust the steam temperature in general parameters. The set minimum temperature must not be less than 120°C.
	The temperature sensor (NTC) is faulty	Check the electrical connection between the sensor and main board Measure resistance of the NTC sensor.  The following resistance must be measured at the sensors at the corresponding temperatures. 25° C = 10,000 ohms 90° C = 910 ohms 100° C = 678 ohms Replace the sensor if the value does not correspond to the values above.
	The heating element is faulty.	Measure the resistance through the heating element. The reading must be 16-20 ohms.  Measure the resistance from each element wire to ground to ensure there is <u>no</u> continuity.  If either of these is out of spec, a boiler replacement is necessary

## Event & Error List

Displayed Message	Cause	What to do
Empty grounds container Grounds container full	The grounds container is full or almost full. If the grounds container is almost full you can continue to produce beverages. If the grounds container is full all beverage dispensing is blocked.	<i>The grounds container must be removed for no less than 4 seconds.</i>
	The grounds container is almost full	Empty the grounds container
	The grounds container is full	Empty the grounds container
Grounds container missing	The grounds container is missing	Insert the grounds container
	The grounds container is present but is not detected	Check the magnet at the rear right of the container. Check the function of the magnetic read sensor. Check the safety switches connection on the main board. (refer to main board diagram earlier in this document)
Grinder Left No Beans Grinder Right No Beans Grinder Front No Beans	The current consumption from the motor is below the preset value. The grinder is identified as "empty" and the message appears.	
	The bean hopper is empty.	Fill the bean hopper
	The bean hopper is closed	Open the bean hopper
	The message appears frequently regardless of bean level in the hopper.	Assess for moisture in the grinder and clean. Bean hopper is too dirty and requires cleaning No voltage to the motor due to poor connection to the motor or worn down brushes on the armature, replace the motor or repair the poor connection to the motor.

## Event & Error List

Displayed Message	Cause	What to do
Clean Machine	A cleaning request (Mandatory setting) is set in the Date / Time / Alarm menu. The message appears in accordance with the settings. Beverages can still be dispensed.	Clean if necessary.
	A cleaning request (Message Only setting) is set in the Date / Time / Alarm menu. The message appears in accordance with the settings. Beverages can still be dispensed. The message reappears after 1 min.	Confirm the message and clean if necessary
Cleaning	A cleaning request (Mandatory / Message Only setting) is set in the Date / Time / Alarm menu. The message appears 1 hr after the first cleaning message "Clean machine" appears. Beverages can no longer be dispensed.	Perform a cleaning procedure
Filter Change	The "Filter exchange" message was set in the Date / Time / Alarm menu. The actual liter count (or number of months) has exceeded the set number	Change the filter and change the following setting to the date the filter was exchanged. <b>Date / Time / Alarm   0) Last filter change</b>
Service Request	The Service request message was set in the "Date / Time / Alarm" menu. The actual number of dispensed coffees (or number of months) has exceeded the set number.	Perform the maintenance. Change the date of last service in the following menu to the date the service was performed. <b>Date / Time / Alarm   1) Last service</b>

## Event & Error List

Displayed Message	Cause	What to do
Heating Coffee Water	The current temperature in the coffee boiler is more than 8'C below the set temperature. Dispensing of coffee beverages is blocked.	
	The boiler element is switched on	The message should disappear after a short time (once the boiler heats to set temp.)
	The machine was switched off for an extended period of time.	Allow the machine to heat the coffee boiler to the set temperature, could be 5 minutes.
	The Klixon thermal safety was triggered	<p>The boiler has overheated and triggered the klixon. Assess the condition of the temperature sensor (NTC) and fill level.</p> <p>Measure the resistance through the heating element. The reading must be 16-20 ohms.</p> <p>Measure the resistance from each element wire to ground to ensure there is no continuity.</p> <p>If either of these is out of spec, a boiler replacement is necessary</p>
Heating Steam	The current temperature in the steam boiler is more than 7'C below the set temperature. Dispensing of steam beverages is blocked	
	The boiler element is switched on.	The message should disappear after a short time (once the boiler heats to set temp.)
	The machine was switched off for an extended period of time.	Allow the machine to heat the steam boiler to the set temperature, could be 5 minutes.
	The Klixon thermal safety was triggered	<p>The boiler has overheated and triggered the klixon. Assess the condition of the temperature sensor (NTC) and fill level.</p> <p>Measure the resistance through the heating element. The reading must be 16-20 ohms.</p> <p>Measure the resistance from each element wire to ground to ensure there is no continuity.</p> <p>If either of these is out of spec, a boiler replacement is necessary</p>



## Event & Error List

Displayed Message	Cause	What to do
Front Panel Missing	The center plate above the grounds bin is missing	Reinstall the center plate
	The magnet on the inner right side of the center plate is missing.	Replace the magnet
	The magnet is no longer magnetized	Replace the magnet
	The magnetic read switch is no longer recognizing the magnet.	Replace the magnetic read switch.
Initialising	When the machine is switched on, it first initializes the automat. To do this, the brewing piston is moved to the upper and lower positions.	
	It was not possible to initialize the piston positions	Wait for the piston to move to the positions again after reboot.
	The error message does not reset itself automatically. The piston of the automat is blocked.	Observe the movement of the automat and assess. Remove and clean if necessary.
Machine Drained	The drainage process with the "Water drainage" menu is complete. The machine can now be switched off. The boilers must be drained manually. The next time the machine is switched on, the filling process starts automatically.	Ensure the water supply is working when the machine is switched on.
Service Button Error	The service field is blocked or has hung up. The message is output after 120 sec.	Switch machine off and back on.
Product Button Error	The beverage field is blocked or has hung up. The message is output after 120 sec.	Switch machine off and back on.
Machine Not Ready	The machine must be cleaned but the coffee boiler has not reached the set temperature and must heat up first	Wait for the coffee boiler to heat up.

## Event & Error List

Touch Screen Specific Messages		
SYS_ERROR_1	Software version conflict between the TouchIt and machine software  This message appears up to version 5.24.  As of version 5.24, the SYS_ERROR_14 message appears.	Update the system software  Service menu   System   Exit Application   Hex Load (Update SCA Software).
SYS_ERROR_2	See display message SYS_ERROR_1	See display message SYS_ERROR_1
SYS_ERROR_3	See display message SYS_ERROR_1	See display message SYS_ERROR_1
SYS_ERROR_4	See display message SYS_ERROR_1	See display message SYS_ERROR_1
SYS_ERROR_5	See display message SYS_ERROR_1	See display message SYS_ERROR_1
SYS_ERROR_6	See display message SYS_ERROR_1	See display message SYS_ERROR_1
SYS_ERROR_7	See display message SYS_ERROR_1	See display message SYS_ERROR_1
SYS_ERROR_8	The machine cannot communicate with the TouchIt during a function. Communication is aborted	Switch off the machine and restart it. Check the connection cables of the TouchIt and CPU Replace the CPU Replace the TouchIt
SYS_ERROR_9	See display message SYS_ERROR_1	See display message SYS_ERROR_1
SYS_ERROR_10	See display message SYS_ERROR_1	See display message SYS_ERROR_1
SYS_ERROR_11	See display message SYS_ERROR_1	See display message SYS_ERROR_1
SYS_ERROR_12	See display message SYS_ERROR_1	See display message SYS_ERROR_1
SYS_ERROR_13	See display message SYS_ERROR_1	See display message SYS_ERROR_1
SYS_ERROR_14	The software version is not compatible. As of version 5.24, this error message appears in place of SYS_ERROR_1-7, 9-13 and 15 16	Update the system software  Service menu   System   Exit Application   Hex Load (Update SCA Software).
SYS_ERROR_15	See display message SYS_ERROR_1	See display message SYS_ERROR_1
SYS_ERROR_16	See display message SYS_ERROR_1	See display message SYS_ERROR_1

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