

Service Service Service

Gaggia Unica



Service Manual

Revision 01 December 2012

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CHAPTER 1

INTRODUCTION

1.1 Documentation required

The following documentation is needed for repair procedures:

- Instruction booklet for specific model
- Technical documentation for specific model (diagrams, exploded drawings)

1.2 Tools and equipment required

As well as the standard equipment, the following is required:

Qty.	Description	Notes
1	Screwdriver	Torx T 8 - T 10 - T 20
1	Pliers for Oetiker clamps	
1	CC -A - Vdc tester	
1	Digital thermometer	Scale limit > 150°C
1	SSC (Saeco Service Center)	Programmer (for programming and diagnostics mode)

1.3 Material

Description	Notes
Thermal paste	Heating element > 200°C
Descaler	Saeco descaler
Grease solvent	Personal choice
Silicone grease	Safe to use with food

1.4 Safety warnings

We recommend you consult the technical manual of the machine before performing any maintenance work.

Observe all applicable standards relating to the repair of electrical appliances.

Always disconnect the power plug from the mains before beginning repair work.

Simply turning off the main machine power switch is not an adequate safety precaution.

This domestic appliance is rated as insulation class I.

On completion of the repair work, insulation and dielectric rigidity tests must be performed.

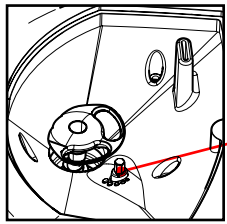
1.5 Service POLICY grid as used for coffee machine

For IN WARRANTY repairs is mandatory to use the single components (not the assembly) available in the exploded views of the coffee machines or of the specific components. If you find the information "SEE THE EXPLODED VIEW E....." in the assembly description field, it means that the single components of the assembly are available in the other pages of the exploded view. It's possible to use the assembly only if there is a specific Symptom Cure that include this possibility or when the single components are not available for the order.

List of principal assembly present in all our coffee machines

Components	Assembly use	Single components available
COFFEE GRINDER	<u>Only for OOW repairs</u>	YES , to consult the specific exploded-view of the machine or of the Coffee Grinder on website
BREWING UNIT	<u>Only for OOW repairs</u>	YES , to consult the specific exploded-view of the machine or of the Brewing unit on website
BOILER	<u>Only for OOW repairs</u>	YES , to consult the specific exploded-view of the machine on website
GEAR MOTOR	<u>Only for OOW repairs</u>	YES , to consult the specific exploded-view of the machine on website
FILTER HOLDER	<u>Only for OOW repairs</u>	YES , to consult the specific exploded-view of the machine on website
MILK CARAFE	<u>Only for OOW repairs</u>	YES , to consult the specific exploded-view of the machine on website
THERMAL CARAFE	<u>Only for OOW repairs</u>	YES , to consult the specific exploded-view of the Thermal Carafe on website
MILK ISLAND	<u>Only for OOW repairs</u>	YES , to consult the specific exploded-view of the Milk Island on website

1.6.1 External machine parts



Grinding adjustment

Coffee bean hopper with lid

Hot water/steam dispensing pipe

Dispensing pipe protection

Drip tray+grille

Service hatch

Brewing unit

Dreg drawer

Hot water/steam dispensing knob

Control panel

Coffee dispenser

Power supply socket

Water tank

LED display

Espresso dispensing button

Long coffee dispensing button

ON/OFF button

steam selection button

1.6.2 Internal machine parts

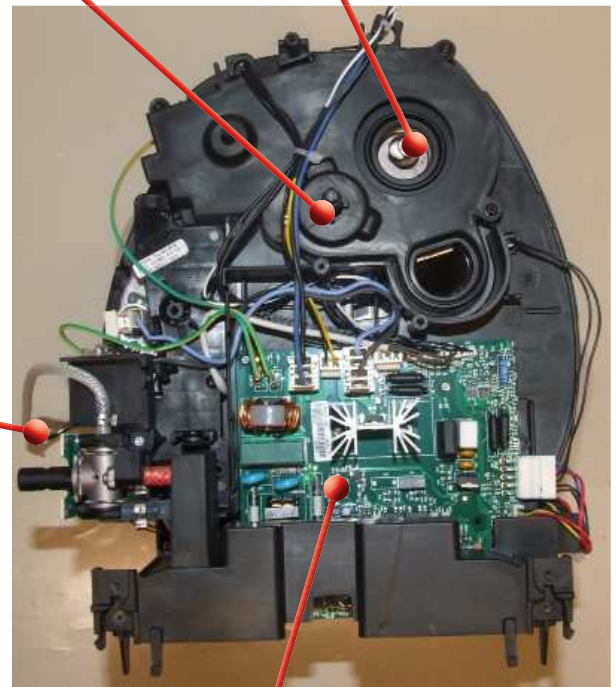


Pump

Power cable connector

Safety valve

Turbine



Grinding adjustment insert

Coffee grinder

Steam pipe

Power card



Hot water/steam valve

Hot water /steam cock card

Thermostats

Boiler



CHAPTER 2

TECHNICAL SPECIFICATIONS

2.1. Technical specifications

Power supply and output:	240 V~ 50 Hz 1400 W - 230 V~ 50/60 Hz 1400 W - 120 V~ 60 Hz 1500 W - 100 V~ 50/60 Hz 1300 W
Temperature monitoring:	(NTC) variable resistor sensor - transmits the value to the electronic card
Safety system:	2 thermostats at 175°C one shot
Coffee heat exchanger output: Stainless steel	(230/120 V~) 1300 W – (100 V~) 1100W for coffee, hot water and steam dispensing
Steam heat exchanger output: Stainless steel	As above
Gearmotor:	2 rotation directions; power supply 24VC
Pump	Ulka Type EP5/S GW approx. 13-15 bar with reciprocating piston and thermal switch 100°C 48 W, 230V, 50 Hz, 120V, 60Hz 100V, 50/60 Hz
Overpressure valve:	Opening at approx. 18-20 bar
Water filter:	In tank
Coffee grinder:	Direct current motor with flat ceramic grinder blades
Automatic dosage	Dose adjustment controlled by the electronic system
Power consumption:	During heating phase- approx. 5.6 A
Dimensions: W x H x D in mm:	320x372x461
Weight:	9 kg
Water tank capacity:	1.7 l.
Coffee bean hopper capacity	250 g. of coffee beans
Dreg drawer capacity	14
Heat exchanger capacity:	Approx. 10 cc
Water circuit filling time:	Approx. 15 sec Max. on first filling cycle
Heating time:	Approx. 45 sec.
Grinding time:	Approx. 8-10 sec.

2.2. Specification for the measurement of the coffee products temperature.

The temperature is influenced by the flow from the dispenser and stratification of temperatures in the glass. In order to consider these phenomena and to introduce measures that allow comparisons in controlled conditions, below guidelines must be followed:

Conditions:

- a) Water temperature in tank: 23°C (+/-2°C).
- b) It must be used a plastic cup (see picture N°1).
- c) It must be used a thermocouple thermometer (e.g. type K - see picture N°2).
- d) The coffee machine is tested without any change of parameters or calibrations, which may affect the temperature of products, so the measurement of temperature must be done with machine in default factory setting.

Procedure:

1. The temperature must be measured in the cup, immediately after dispensing. Cup has to be placed on a non-metal surface using a thermocouple thermometer.
2. The temperature in the cup is measured by immersing the probe of the thermometer up to touch the bottom. The probe then must be moved in a circular motion for 5/6 rotations. At the of the rotations, stop in the center of the cup.
3. The highest temperature measured during the rotations is the value we are searching for, and that must be reported;
4. Test measurement: from end of dispensing to the end of rotations must be completed within 12 seconds.

Limits of acceptability

The acceptance limits are divided by features and products and are the following:

Espresso Coffee Italy Q.ty 25/40 gr.

Temperature of 1st product 69°C ≤ 85°C

Temperature of 2nd product 72°C ≤ 85°C

Coffee Q.ty 70/120 gr.

Temperature of 1st product 69°C ≤ 85°C

Temperature of 2nd product 72°C ≤ 85°C



2.3. Machine parameters and performance

PRODUCT QUANTITY	Minimum quantity (Puls.)	Default quantity (Puls.)	Maximum quantity (Puls.)	User programmable	Programm. by Production / Service
Espresso	50	130 - 170	600	Yes	No
Long coffee	70	200 - 230	600	Yes	No
Pre-ground	No				
Hot water	Continues for 400 pulses				
Steam for frother	Continues until the water supply has been exhausted (capacitive sensor)				

RINSE	Initial rinse	Final rinse
When performed	When the machine is switched on and the boiler temperature is $\leq 50^{\circ}\text{C}$	When the machine is switched off electronically, manually or automatically after 60', if at least one coffee has been dispensed, before switching off
No. of pulses	130	100
Stopping option	Yes, by pressing any key	Yes, by pressing any key
User disable option	No	No
Production/Service department disable option	No	No
No. of pulses user adjustment option	No	No
No. of pulses Production/Service department adjustment option	No	No
Pulse range (Min. – Max.)	No	No

Descaling cycle frequency			
Hardness	Water hardness	Without water filter	With water filter
1	Soft (up to 7°dH)	240 litres (480,000 pulses)	480 litres (960,000 pulses)
2	Medium (7°-14dH)	120 litres (240,000 pulses)	240 litres (480,000 pulses)
3	Hard (15°-21°dH)	60 litres (120,000 pulses)	120 litres (240,000 pulses)
4	Very hard (over 21°dH)	30 litres (60,000 pulses)	60 litres (120,000 pulses)

The default water hardness level is 3. Each litre of water corresponds to approximately 2,000 pulses

DREG DRAWER	Description and values
Time-out for dreg drawer	5 sec.
Warning to empty dreg drawer after	Yes, after 14 lots of dregs
Reset dreg counter	The dreg drawer must be emptied only when prompted by the machine ensuring the machine is switched on and removing the drawer for more than 5 seconds.

STANDBY	Description and values
Inlet time (default)	60 minutes
Inlet time programmed by Production/ Service department	Yes
Boiler temperature during Standby	Boiler OFF

WATER TANK	Description
Water reserve (pulses) with water filter	200
Water reserve (pulses) with no water filter	200
Water reserve modifiable by Production/Service departments	No
"Fill tank" alarm	Yes
"No tray" alarm	Yes
Water mains	No



CHAPTER 3

USER INSTRUCTIONS

3.1. Customer and programming menu



Machine ready signals

	Machine ready for dispensing coffee with coffee beans and hot water		Machine dispensing steam
	Machine dispensing hot water		Machine dispensing espresso or long coffee
	Machine dispensing two espressos or two long coffees		The machine is being programmed with the coffee cup fill level

Notice signals

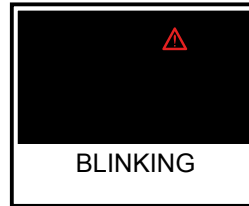
	Machine in pre-heating phase for coffee, hot water and steam dispensing.		The appliance requires a descaling cycle
	Machine in rinsing phase. Wait for the machine to end the operation		The machine requires a water circuit filling cycle
	Machine in steam heating phase		Machine overheated. Dispense water to take the machine to the ideal temperature for dispensing coffee and hot water

3.2. Machine indications

Alarm signals



Turn the hot water/steam valve knob to the correct position



- The Brewing unit must be inserted in the machine.
- Close the service door



Switch off the machine and carefully clean the dispensing unit.



- Empty the dregs drawer
- Empty the tray under the unit



Insert the dregs drawer




- No beans inside the coffee container.

After filling the container, the cycle can be restarted.



Fill the water tank

3.3. Operation, cleaning and maintenance

Operating the machine		
1	Fill water tank	
2	Fill the coffee bean hopper	
3	Switch on the appliance	
4	Press the key to switch the machine on	
5	Heating	When the heating phase begins, wait for it to finish
6	Rinse	Carry out a rinse cycle for the internal circuits
7	Machine ready	The machine is ready to dispense beverages

CLEANING AND TECHNICAL SERVICING		
A	Empty the dregs drawer	When indicated
B	Empty the drip tray	As necessary
C	Clean the water tank	Weekly
D	Clean the coffee bean hopper	As necessary
E	Clean the casing	As necessary
F	Clean the brewing unit	Every time the coffee bean hopper is filled or weekly
	Lubricate the brewing unit	After 500 dispensing cycles or when the grease is no longer present on the brewing unit
	Clean the unit housing	Weekly
H	Descaling	When indicated

Descaling cycle frequency			
Hardness	Water hardness	Without water filter	With water filter
1	Soft (up to 7°dH)	240 litres (480,000 pulses)	480 litres (960,000 pulses)
2	Medium (7°-14dH)	120 litres (240,000 pulses)	240 litres (480,000 pulses)
3	Hard (15°-21°dH)	60 litres (120,000 pulses)	120 litres (240,000 pulses)
4	Very hard (over 21°dH)	30 litres (60,000 pulses)	60 litres (120,000 pulses)

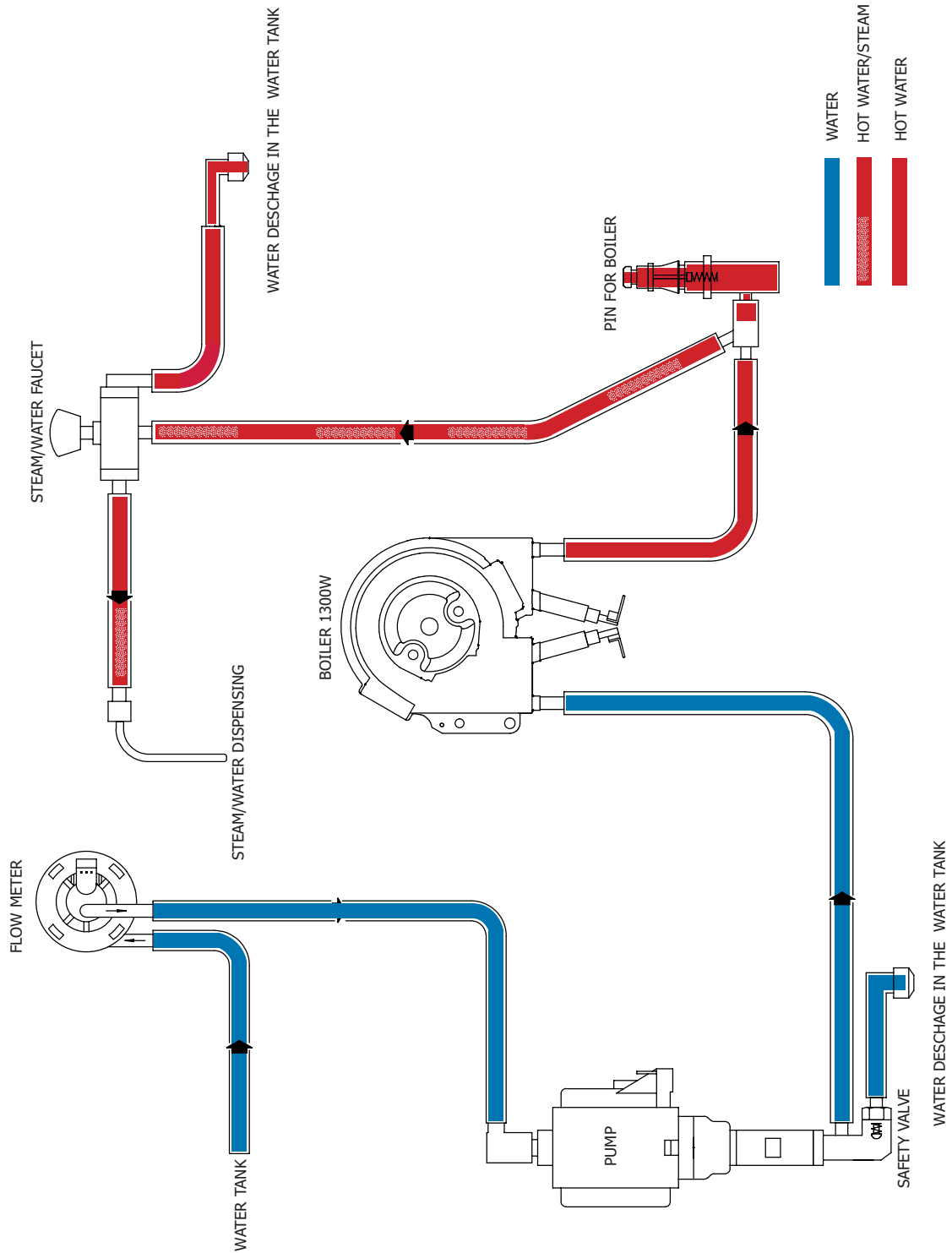
The default water hardness level is 3. Each litre of water corresponds to approximately 2,000 pulses



CHAPTER 4

OPERATING LOGIC

4.1. Water circuit



4.2. Coffee cycle

Main switch ON	START		STOP
Time			
Coffee grinder			Pulses (Dosage)
Heating	approx. 45 sec.		
Pump			Pump operation (turbine pulses) in accordance with the amount of product selected *
Brewing unit gear motor			
Status	Heating	Ready	Coffee cycle

Notes: * Only with Pre-brewing



Single microswitch gearmotor

Switching on

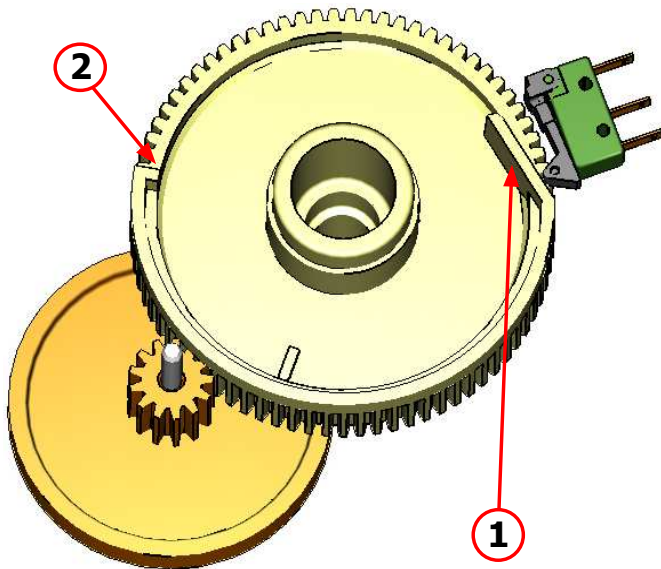
When the machine is switched on, the gearmotor repositions itself as follows:

- It acts on microswitch 1 (see following chapter)
- The gearmotor changes its rotation direction and moves upwards again by approx. 1-2 mm
- The boiler begins to heat the water for approx. 45 sec., at full power, in order to reach the optimal temperature. The temperature will then remain at a constant level.

Coffee cycle

1. The coffee grinder starts the grinding process (controlled by pulses generated by a sensor)
2. The gearmotor (brewing unit) moves to the dispensing position
3. Preliminary dispensing phase (short pump activity, short pause)
4. Product dispensing (the pump operation period is defined by the amount of product dispensed)
5. The gearmotor moves to its home position (the dregs are expelled automatically)

4.3. Single microswitch



The gearmotor is powered by a direct current motor that engages with the smaller double toothed wheel using a worm screw. The unit is mounted on the axle of the large gear wheel and when a coffee is requested, it moves from the standby position to the dispensing position, and then back to the standby position again.

- **Standby position: 1**

- **Dispensing position: 2**

4.4. Temperature sensor (adjustment)

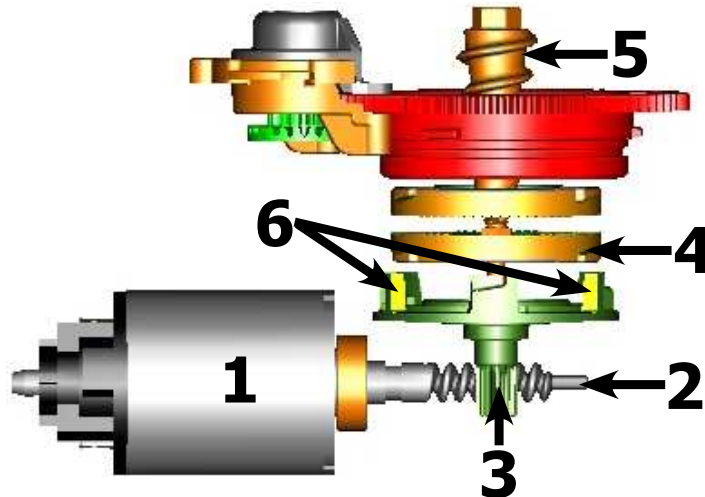
Temp. (°C)	R nom (kΩ)	ΔR (+/- %)
20	61.465	8.6
50	17.599	5.9
75	7.214	4.1
80	6.121	3.7
85	5.213	3.4
90	4.459	3.1
100	3.3	2.5
125	1.653	3.9
150	0.893	5.1

An NTC is used as a temperature sensor; in the event of overheating this reduces boiler element power consumption.

The electronic system detects the current boiler temperature from the drop in voltage of the sensor and adjusts it accordingly.

Heating element values and corresponding temperatures: see table

4.5. Coffee grinder

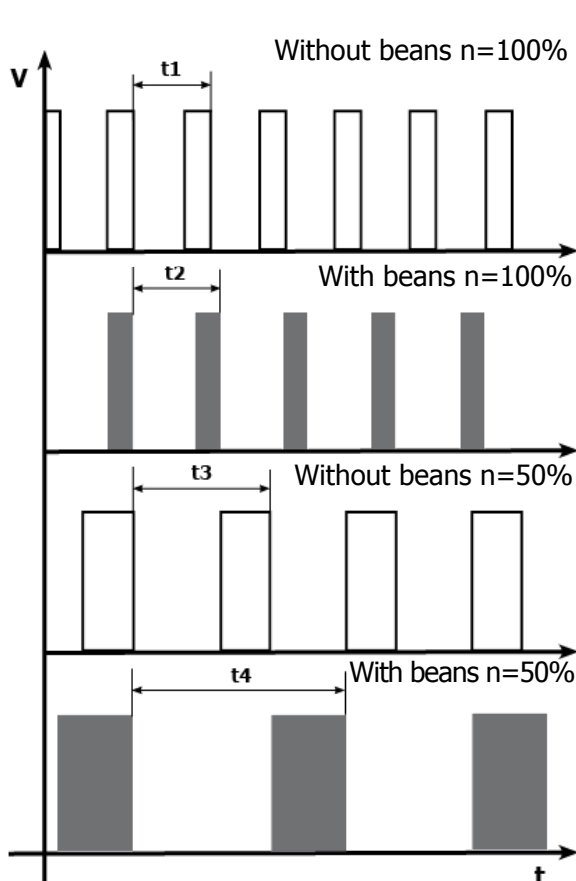


The coffee grinder is driven by a direct current motor (1) using a worm screw helicoidal wheel transmission (2).

The worm screw (2) drives a plastic gear wheel (3), which turns the lower grinder (4) and the increment pin (5)

There are two magnets (6) in the gear wheel; at every rotation these induce two pulses to a Hall sensor, which in turn transmits them to the electronic system.

4.6. Low bean level detection, dose quantity adjustment, coffee grinder blocked



No coffee

A low coffee bean level is detected by the Hall sensor, after variations in the pulse frequency (with or without coffee). If there are no coffee beans (operation while empty), the number of rotations – and therefore the number of pulses – will be greater

t1 = no coffee indication

If, however, there are coffee beans, the number of rotations will be lower due to the force created by the grinding

t2 = no indication

t3 and t4 = this measurement is performed at the end of each grinding process

Dose quantity adjustment

The dose quantity is adjusted in accordance with the pulses detected (number of rotations proportional to the weak/medium/strong aroma setting)

Coffee grinder blockage

If the coffee grinder becomes blocked for any reason, pulses will no longer be transmitted to the electronic system and the grinder will come to a stop

4.7. Dose self-learning (SAS)

The aim of this function is to automatically regulate the average dose of ground coffee (SELF-LEARNING); this takes place with an algorithm based on three pieces of data that the machine receives via the card:

1. Number of coffee grinder pulses during the grinding cycle
2. Max. average value of the power consumed by the group motor during the coffee brewing cycle
3. Aroma selected by the user

The algorithm compares the maximum average value of the power consumed by the group motor with the value listed in the table for the selected aroma, in order to calculate the new grinding pulse value for the next coffee produced.

If the power consumption value is less than the minimum current value, the grinding pulses will be increased by 2.

If the power consumption value is greater than the maximum current value, the grinding pulses will be decreased by 4.

If the power consumption value falls within the "over-torque" interval, the product will be dispensed and the grinding pulses will be decreased by 10.

If the power consumption value falls within the "abort cycle" interval, the pad will be expelled and the grinding pulses will be decreased by 10.

If the "pre-ground" flavour is selected by the user, no modification will be made.

This guarantees that, regardless of the coffee type used, the grinding level setting and the wear on the grinders always remains constant.

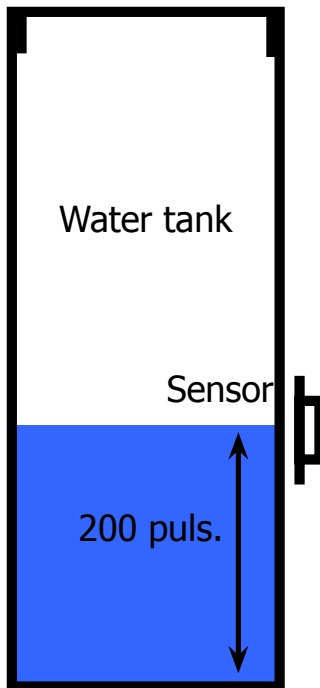
Setting/Status		Power consumption in mA	Pulses corrected in the next grinding process	
			Exceeded by	Deficient by
A	Mild aroma	200 - 300 mA	- 4	+2
B	Medium Aroma	301 - 450 mA	- 4	+2
C	Strong Aroma	451 - 600 mA	- 4	+2
D	Over-limit	601 - 800 mA	- 4	
E	Overwork	801 - 1000 mA	- 10	
F	Pad expulsion	> 1000 mA	- 10	

Important:

For perfect operation, machine adjustment should take place in the area of the fields highlighted in green (A, B, C). When the type or brand of coffee is changed, there may be variations in the size of the beans and their stickiness or roasting level. This leads to variations in power consumption (mA), with resulting excessive or insufficient doses (until the necessary adjustments have been made to compensate for this change).

Caution: In the case of excessive dosage, powder may be expelled into the dreg drawer. This is not a fault, but can occur during preliminary operation or after a service.

4.8. Water level detection (water tank)



“Water low” message (water reserve)

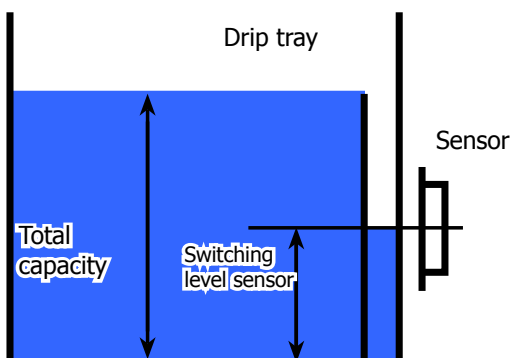
Function:

The water level is monitored by a capacitive sensor, located one third of the way up the water tank wall.

If the electronics assembly detects, by means of the sensor, that the amount of water in the tank has dropped below the above mentioned level, a water reserve remains available for the dispensing process underway (this will cover 200 turbine pulses). The product dispensing process will then come to an end.

If a dispensing cycle ends after the sensor has been triggered (in the reserve) then the display “Water low” continues to be displayed during the following dispensing cycle.

4.9. Water level detection (drip tray)

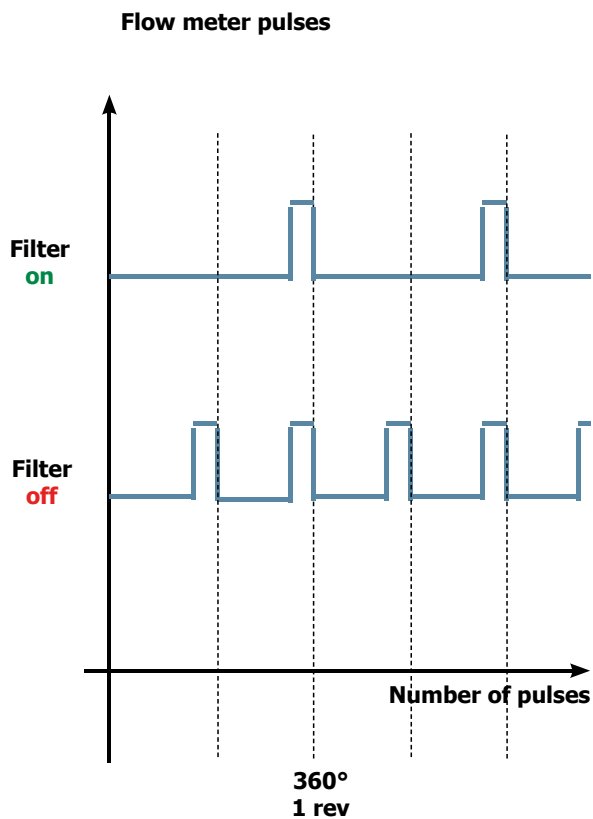


“Empty drip tray” - message

Function:

The residual water level is monitored using a capacitive sensor. The sensor is located approximately halfway up the upper edge of the drip tray. To ensure the best possible use of the drip tray capacity, the sensor is located near to a dam. Therefore, the drip tray fills up to the upper edge of the dam and overflows inside, triggering the sensor and thus the “Empty drip tray” message.

4.10. Descaling request



“Descaling” – message with water filter inserted

(appliances with display only)

The water hardness is set on the basis of the regional water hardness analysis (1, 2, 3, 4).

Filter off:

If the function is turned **off** the electronics assembly monitors the turbine pulses, recording **one pulse each turn**.

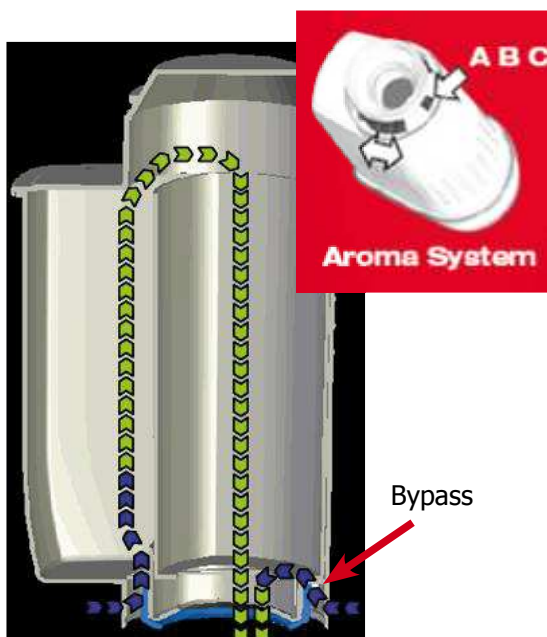
Filter on:

If the function is turned **on** the electronics assembly monitors the turbine pulses, recording **one pulse every two turns**.

“Change water filter” message

The electronics assembly uses the turbine impulses to keep track of the amount of water which has flowed through; after the specified amount (set in accordance with the water hardness level), the “Replace filter” message appears.

4.11. Water filter



Water filter

Function:

- Reduced limescale deposits which take longer to form.
- Improved water quality.
- Improved taste due to the ideal water hardness

Life span / descaling performance:

- - 10 ° dH
- 60 litres
- 2 months

To achieve the best possible operating mode consistency over the total life span, the water is channelled using a three-stage bypass (A, B, C) depending on the degree of hardness.

See small image.



CHAPTER 5

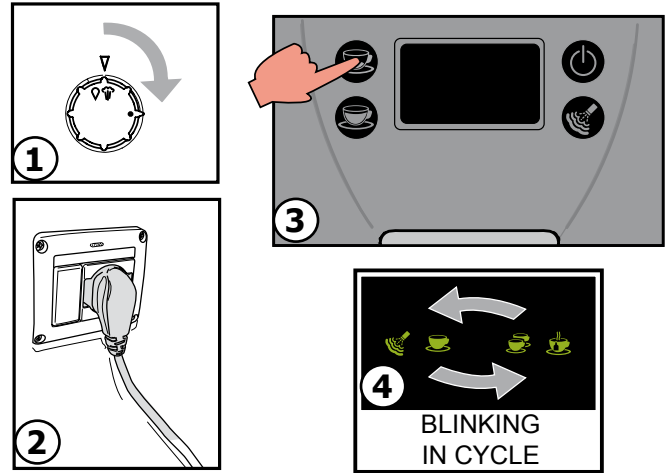
TROUBLESHOOTING

5.1. Test mode

To enter Test Mode

- 1) turn the hot water/steam knob to the ON position
- 2) switch on the machine by plugging it in and push the espresso coffee button (3)
- 4) the icons will blink cyclically

release the espresso coffee button and turn the hot water/steam knob back into the OFF position



Entry into Test Mode results in a screen divided into sections, as illustrated in the diagram below

Button functional test (level 01)					
PRESS	No key				
SETTINGS		STEADY	STEADY	STEADY	STEADY
					Release the ON/OFF button to move on to level 2



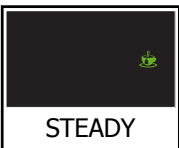






PRESS THE ON/OFF KEY TO ACCESS THE NEXT LEVEL UP

Operational check on microswitches and sensors (level 02)

Hot water/steam knob OFF		Hot water/steam knob ON	
	Initial LED status		If the LED does not turn on, check the knob card and the JP21 wiring
No water		RHS service door open or extracted water recovery tank open	
	If the LED does not turn on, check the capacitive sensor and the JP21 wiring		If the LED does not turn on, check the microswitch of the door or water recovery tank and the JP16 wiring
No dreg drawer		No unit	
	If the LED does not turn on, check the drawer microswitch and the JP16 wiring		If the LED does not turn on, check the brewing unit microswitch JP14






PRESS THE ON/OFF KEY TO ACCESS THE NEXT LEVEL UP

Brewing unit functional test (level 03)



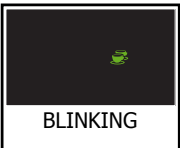





		Press  to take the brewing unit on to Work	
	Initial LED status at level 3		The brewing unit goes into the Work position and the LED lights up  . The  symbol turns on if strain is excessive. Check operation of the gearmotor and microswitch of the gear (broken or inserted incorrectly). Check the JP16 wiring
		Press  to take the brewing unit on to Work	
			The brewing unit goes into the Home position and the LED lights up  . The  symbol turns on if strain is excessive. Check operation of the gearmotor and microswitch of the gear (broken or inserted incorrectly). Check the JP16 wiring

PRESS THE ON/OFF KEY TO ACCESS THE NEXT LEVEL UP

Pump functional test (level 04)

		Press  to activate the pump	
	Initial LED status at level 4		The water is dispensed from the steam pipe and the  symbol blinks. The  symbol turns on if no water flows. Verify checks at the pump, pump wiring and/or connection on the CPU/Power card (JP24), turbine, turbine wiring and/or connection on the CPU/Power card (JP5). To check correct water flow from the coffee duct, return to level 03 (brewing unit functional check), put the unit in the "Work" position and proceed as above.

PRESS THE ON/OFF KEY TO ACCESS THE NEXT LEVEL UP

Functional check on coffee grinder and boiler (level 05)			
		Press  to activate the coffee grinder	
	Initial LED status at level 5		The brewing unit is activated and the  symbol starts blinking. If this does not occur and the  symbol turns on, check the sensor and/or the coffee grinder motor, the wiring of the sensor and/or the connection on the CPU/Power card (JP2), the wiring of the coffee grinder motor and/or the connection on the CPU/Power card (JP8)
		Press  to activate the boiler	
			If the  symbol appears, the boiler sensor is interrupted. Check the boiler sensor wiring and/or the connection on the CPU/Power card (JP13) If you connect the machine to an ammeter and on activating the boiler there is no power draw, check the power supply wiring and/or the connection on the CPU/Power card (JP17-3)

5.2. Error messages

ERROR CODES	DESCRIPTION
01	The coffee grinder is blocked (grinder blades jammed or sensor not reading properly)
03	The brewing unit is blocked in work position (microswitch not released in up position after 3", torque error trying to move down, descent time out exceeded)
04	The brewing unit is blocked in home position (microswitch not released in down position after 3", torque error trying to move up, ascent time out exceeded)
05	Water circuit / flow meter problems (water circuit blocked or no flow meter signal)
10	Boiler temperature sensor short circuited
11	Boiler temperature sensor open circuit
14	The boiler temperature has exceeded the maximum allowed value (165°C)
15	The boiler temperature has not increased by x°C in y sec (boiler power supply disconnected, incorrect boiler fitted must be a 1300W boiler, partial power supply to boiler, cut out thermostat tripped)
19	Mains voltage trouble



CHAPTER 6

STANDARD CHECKS

6.1. Repair schedule

	Action
1	Visual inspection (transport damage)
2	Machine data check (rating plate)
3	Operational check / problem analysis
4	Opening machine
5	Visual inspection
6	Operational tests
7	Repairing the faults encountered
8	Checking any modifications (view info, new sw, etc.)
9	Service activities in accordance with the operating schedule
10	Internal cleaning
11	Operational test while the appliance is open
12	Assembly
13	Final inspection test
14	Draining the circuit (in winter)
15	External cleaning
16	Lubricating the brewing unit with suitable grease
17	Insulation test HG 701 (dielectric)
18	Documentation

6.2. Service schedule

S	Replacement
ES	Visual inspection
D	Descaling

P	Cleaning
TR	Noise test
R	Adjustment

Component	Action	Support/tool
Water filter	P/S	
Water tank lip seal	S	
Boiler pin O-ring	S	
Brewing unit	ES/P	Grease solvent / Grease
Hoses, attachments and Oetiker clamps	ES	
Pump	ES/TR	
Gearmotor	ES/TR	
Coffee grinder	P/R	Vacuum cleaner / brush
Water circuit	D	Saeco descaler
Hot water/steam valve	ES/S	

6.3. Final test

Test	Procedure	Support/tool	Standard	Tolerance
Espresso	2-3 Espressos for adjustment purposes	Measuring scoop	Same amount	15%
Coffee	2-3 Coffees for adjustment purposes	Measuring scoop	Same amount	15%
Noise			Standard	
Amount of cream	Blow into the cup until the cream separates		The cream should come together again to form a complete layer	
Cream colour			Hazel brown	
Temperature	Reading taken while dispensing	Thermometer	84 °C	± 4 °C
Grinding level	Check the grain size of the ground coffee			
Hot water	Dispense water			
Steam	Dispense steam			
Dreg drawer missing indication	Remove the dreg drawer		Dreg drawer missing indication	
Low bean level indication	Start brewing a coffee while the coffee bean hopper is empty		Missing indication coffee beans	



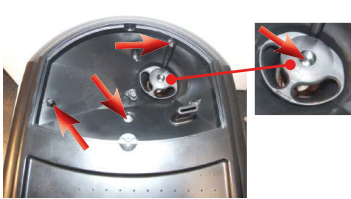
CHAPTER 7

DISASSEMBLY

7.1. Outer elements



Remove the water tank, coffee container cover, water recovery tray, dregs drawer, brewing unit, hot water/steam knob.



Unscrew the marked screws and remove the finger protection



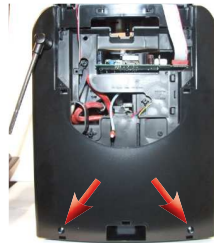
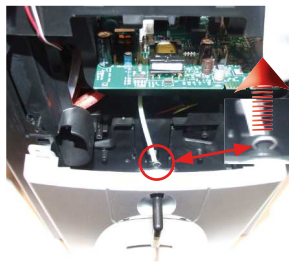
Firmly raise the top cover



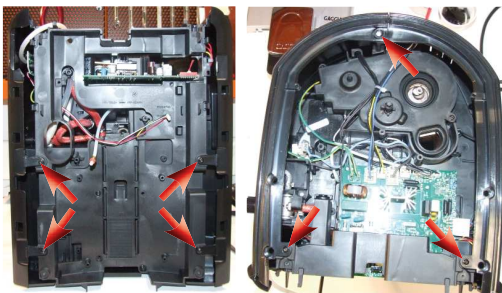
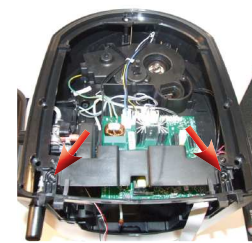
Unhook the front panel, raising it and extract the electric connections



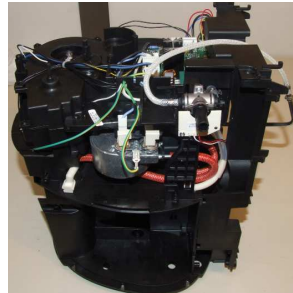
Unscrew the marked screws, remove the fork and extract the front casing cover



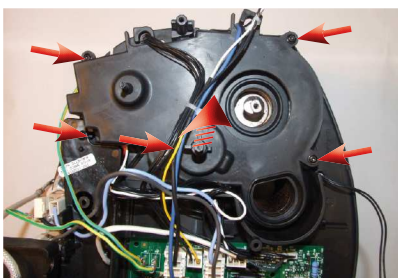
To remove the front casing, unscrew the marked screws, remove the fork spring and extract the cover and the fitting of the steam pipe and extract it from the casing.



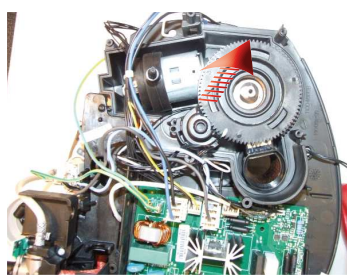
Undo the marked screws, remove the RH and LH side cover



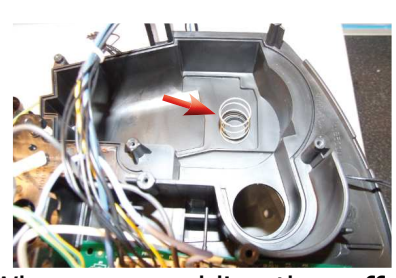
7.2. Coffee grinder



Loosen the screws as illustrated and remove the sound insulating cover of the coffee grinder

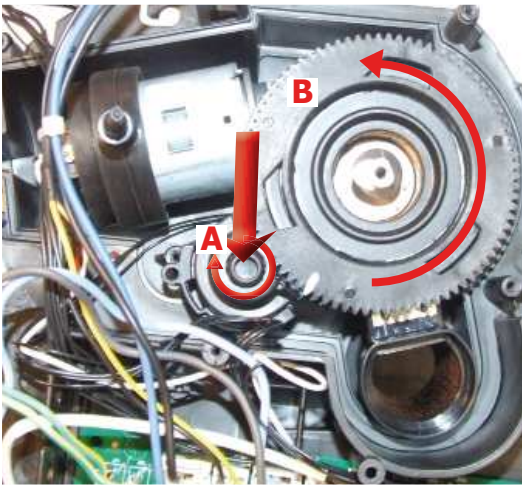


Raise the coffee grinder and remove the connections

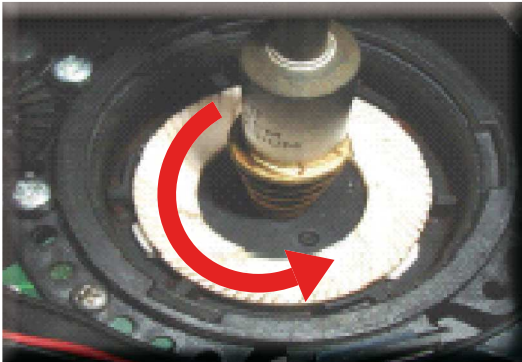


When reassembling the coffee grinder, make sure the spring is repositioned correctly (see photo)

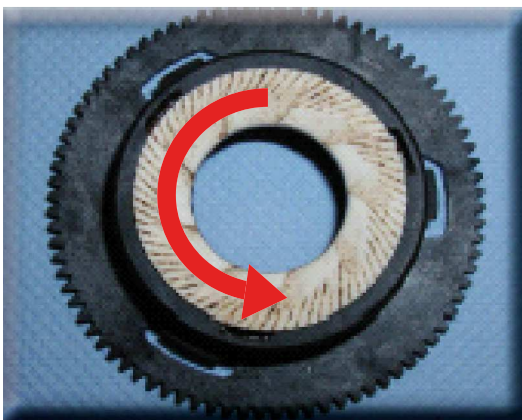
7.3. Grinder blades



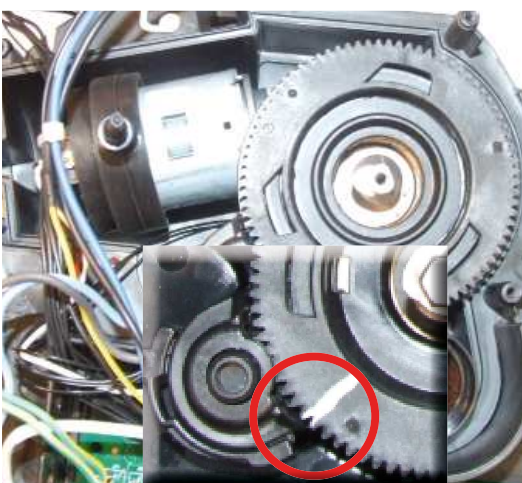
To extract the top support of the appliance, press on the grinding adjustment spindle (A) and turn the support anticlockwise until it unhooks.



Turn the grinder blades anticlockwise out of the support.



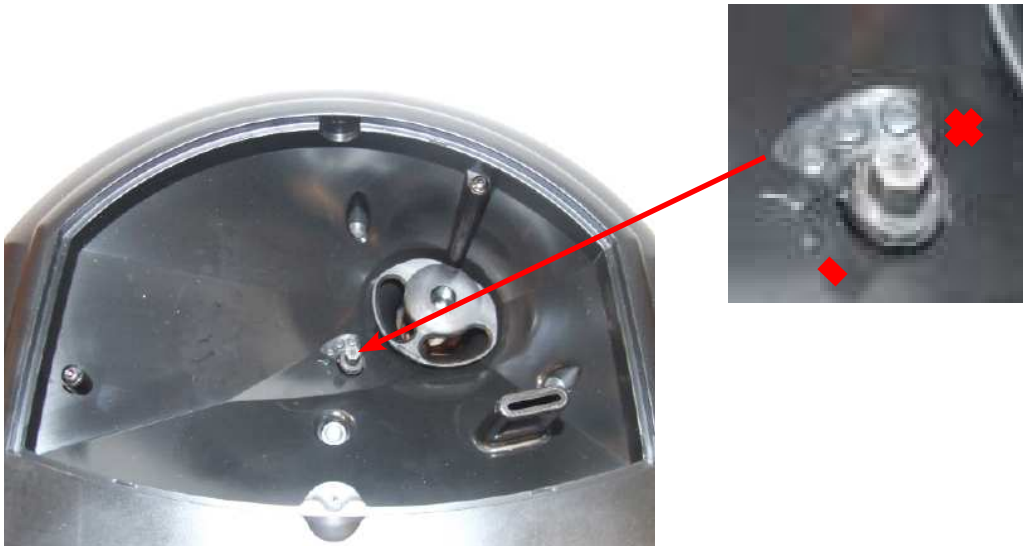
Turn the grinder blades clockwise out of the support. The bayonet connections can be accessed from the rear.



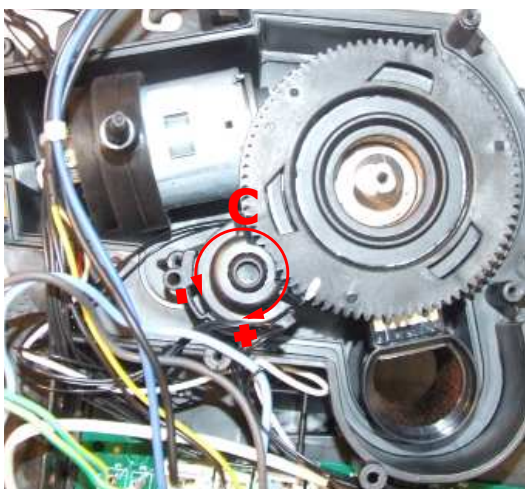
For a standard adjustment, both markings must be aligned.

7.4. Coffee grinder adjustment

The grinding adjustment can be set by the user (only with the coffee grinder in operation) by pressing and turning (only by one click at a time) the insert inside the coffee bean hopper with the aid of the wrench supplied.



Adjustment by a service centre

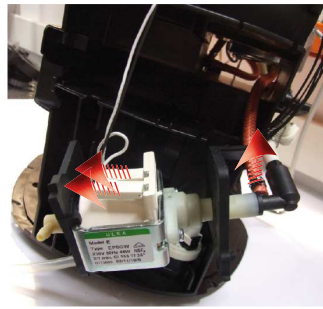
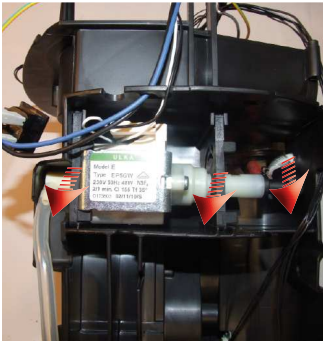


To adjust grinding further, the engineer can work directly on the coffee grinder by pressing and turning the ring nut (C) shown. (clockwise + to increase the particle size of the coffee and anticlockwise - to decrease it).

If there are any remains of coffee powder between the two grinding blades it is recommended to tighten by max. two marks at a time.

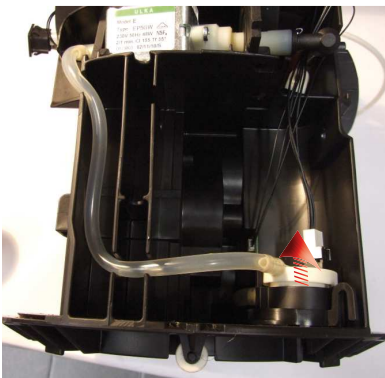
Lastly, move the arrow (A) on the adjustment knob to the centre of the adjustment dots on the cover (B).

7.5. Pump



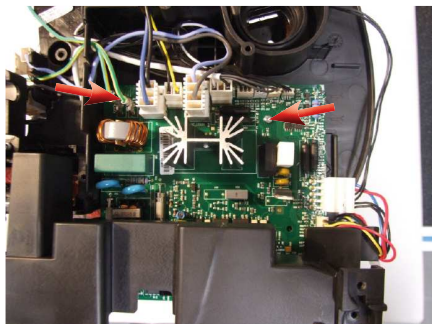
Slide out the two pump supports (highlighted) fixed to the housing, unhook the safety valve outlet and disconnect the electrical and water circuit connections

7.6. Turbine



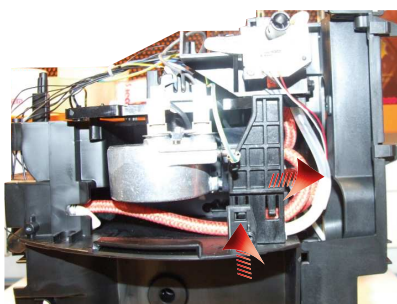
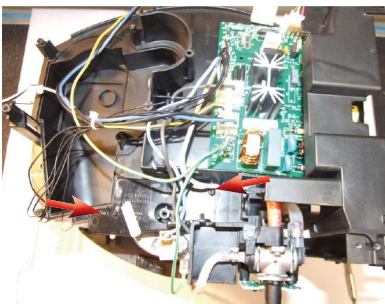
Lift the turbine out of the casing assembly and remove the electrical and water circuit connections

7.7. Power card



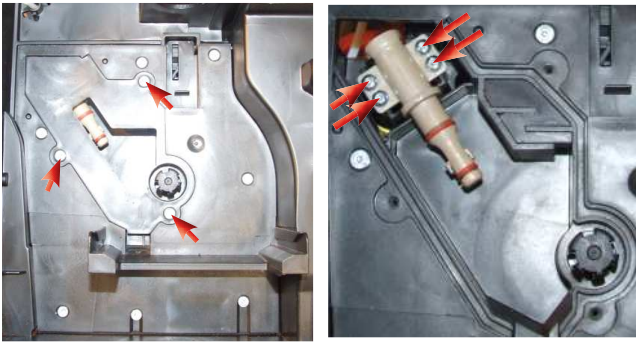
Loosen the screws as illustrated and remove the PWR card extracting the electrical connections

7.8. Boiler

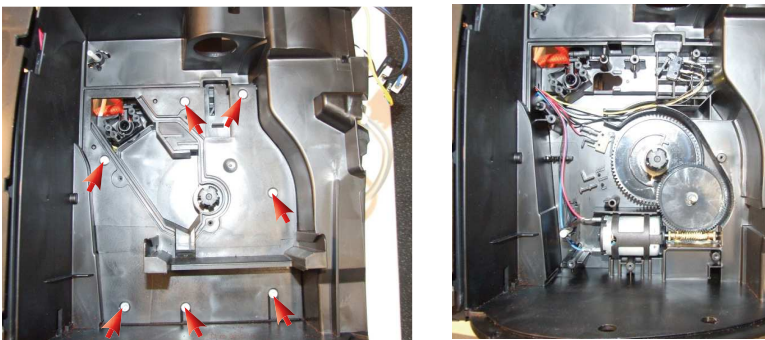


Loosen the screws as illustrated
 Unhook the boiler support
 Unscrew the marked screw and disconnect the electrical and water circuit connections

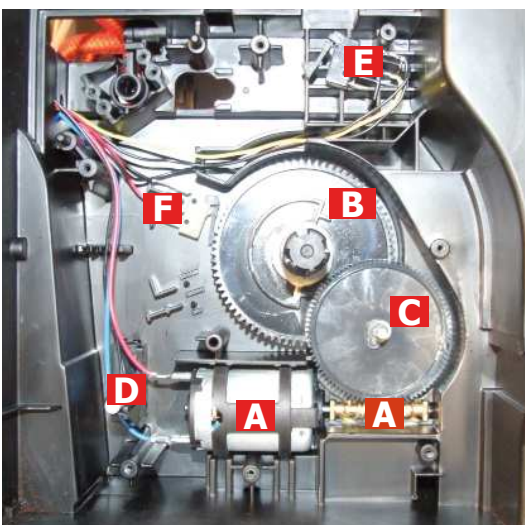
7.9. Gearmotor



Loosen the screws as illustrated and remove the boiler pin.

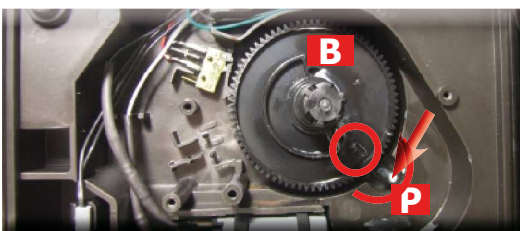


Loosen the screws as illustrated and remove the gearmotor cover.



The following are located inside the compartment protected by the casing:

- Electric motor (A) with gears (B) and (C) for transmission and timing of the dispensing unit.
- Dreg drawer presence sensor (D).
- Dispensing head present microswitch (E).
- Microswitch (F) detecting brewing unit home and work positions.
- Remove the gear (C) that meshes with the motor transmission shaft.
- Remove the large gear (B).
- Remove the motor (A), complete with transmission shaft.

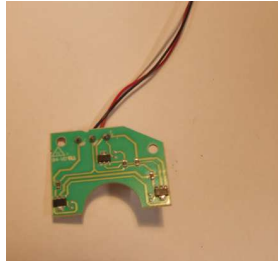
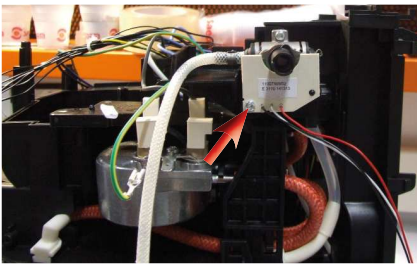


Replace the gear (B), making sure that the imprint of the arrow is aligned with the opening containing the pin (P).

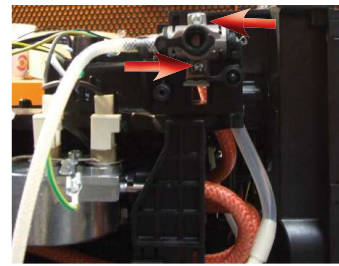


When replacing the motor and the transmission shaft, make sure the guide runners (L) are in the right position. Grease the shaft thoroughly and evenly.

7.10. Cock card and hot water/steam cock



Loosen the screw as illustrated to remove the cock card



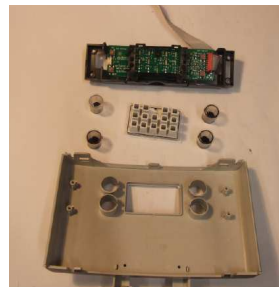
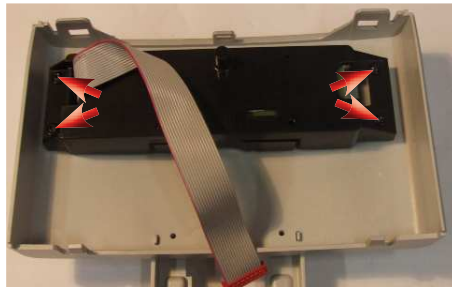
Unscrew the marked screws and extract the hydraulic connections to remove the hot water/steam cock

7.11. Dispenser assembly

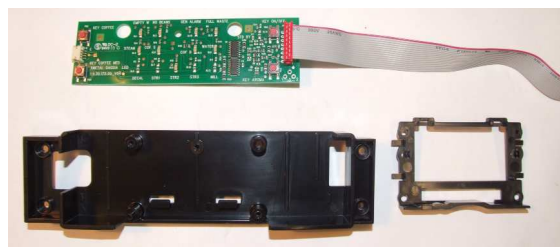


Press, extract the front cover of the dispenser and remove the movable part

7.12. CPU and display card

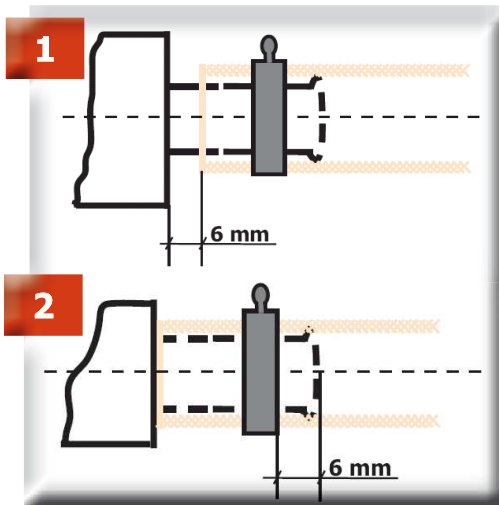


Loosen the screws as illustrated



Loosen the screws as illustrated

7.13. Fitting and removing Oetiker clamps

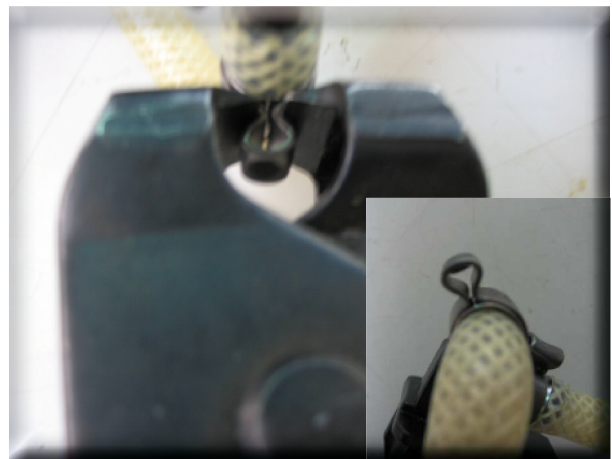


1) Boiler connection

2) Other connections



Use a suitable pair of pliers to remove the clamp (as illustrated)



Tighten the clamp as illustrated



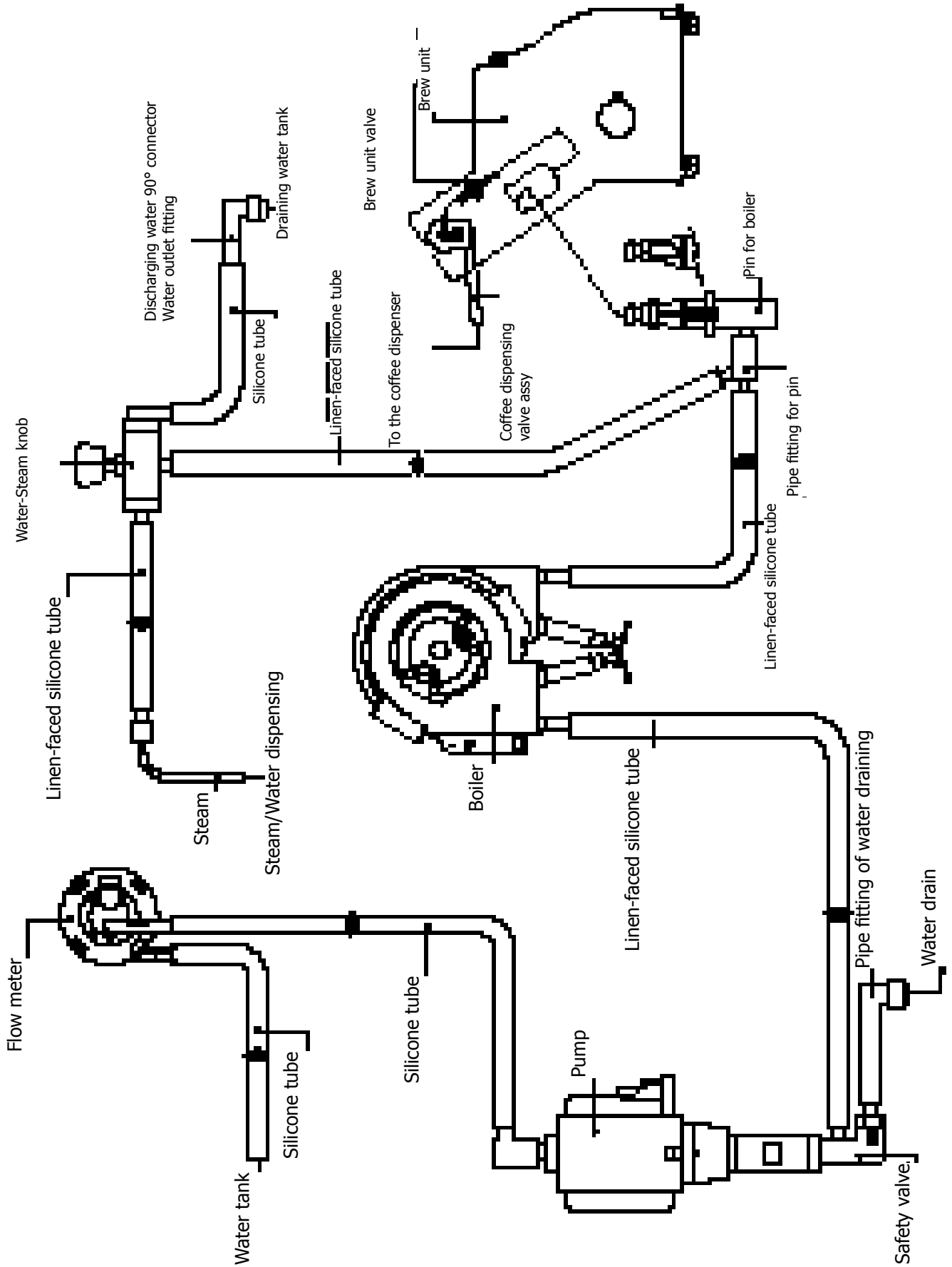
CHAPTER 8

NOTES



CHAPTER 9

WATER CIRCUIT DIAGRAM





CHAPTER 10

ELECTRICAL DIAGRAM

