

OptiBean OptiBean XL



service boek
service book



servicehandbuch
manuel de service

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FOREWORD

Purpose of this document

This document is intended as a service appendix in addition to the user manual with which **authorised trained service personnel** can install, program and maintain this machine.

- By **authorised trained service personnel** is meant: persons who can install, program, maintain and carry our repairs on the machine.

Most of the settings, including the product settings are secured by a PIN code. This PIN code is intended to prevent the user accessing the service menu.

It is recommended not to leave this document with the user after installation and to change the standard factory PIN code.

All chapters and sections are numbered. The various figures referred to in the text can be found in the illustrations at the front of this booklet or with the subjects concerned.

Pictograms and symbols



NOTE

General instructions for: WARNING, CAUTION or NOTE.



CAUTION !

Warning of possible damage to the machine, other equipment or the environment.



WARNING

Warning of serious damage to the machine or physical injury.



WARNING

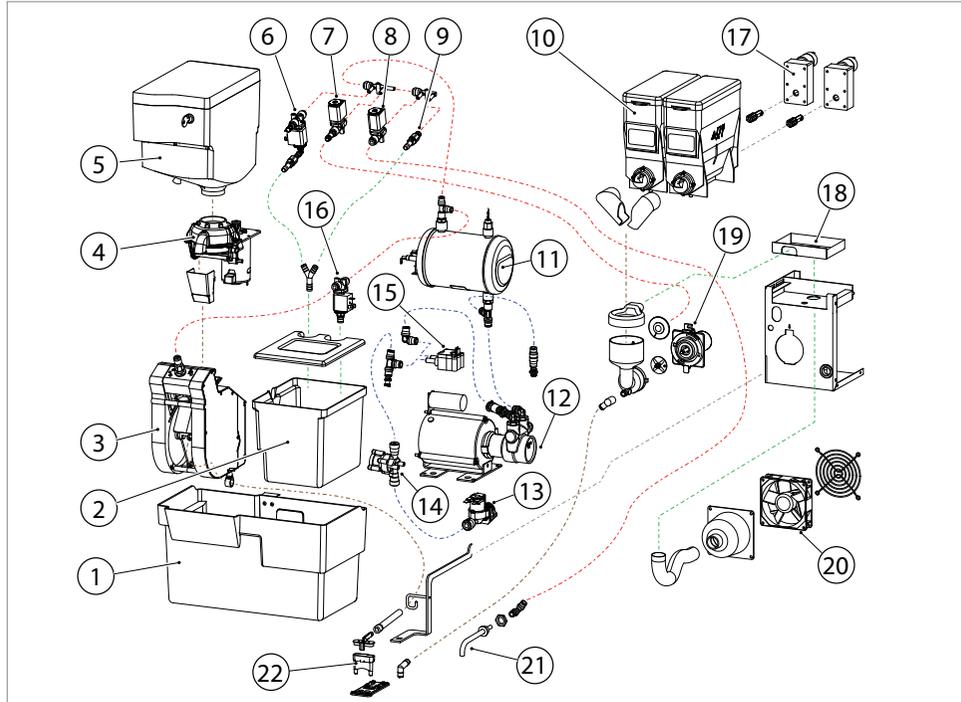
Warning of an electrical or steam hazard.



WARNING

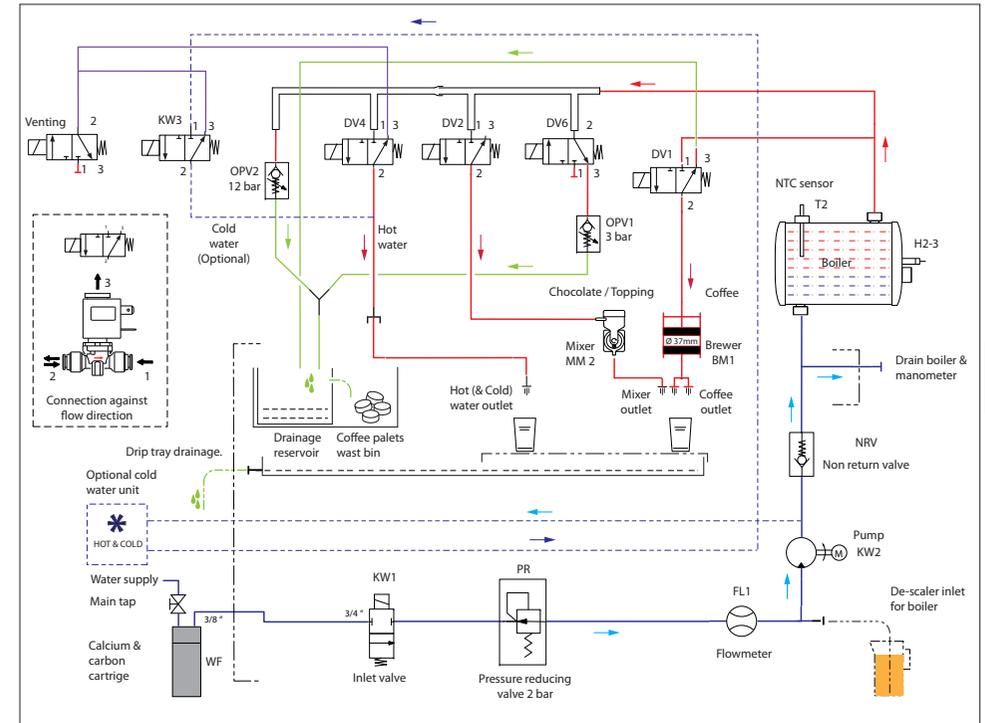
Warning of electrostatic discharge (ESD) to electronics.

1. PRINCIPLES OF OPERATION



Item	Description	Item	Description
1.	Coffee waste bin	12.	KW2 Pump 10 bar
2.	Drainage reservoir	13.	KW1 Inlet valve
3.	BM1 Espresso group	14.	PR Pressure reducer 2 bar
4.	IM1 Coffee grinder	15.	FL1 Flow meter
5.	Coffee bean canister	16.	DV1 Brewer valve
6.	DV7 Expansion water valve + OPV 3 bar	17.	IM2-3 Canister drive motor
7.	DV2 Mixer valve 3/2 way	18.	Cassette moisture extraction
8.	DV4 Hot water valve 3/2 way	19.	MM2 Mixer system
9.	OPV2 Pressure relief valve 12 bar	20.	Fan
10.	Instant canisters	21.	Hot water outlet
11.	H2-3 Pressure boiler	22.	Coffee / Drink outlet

1.1 Water management

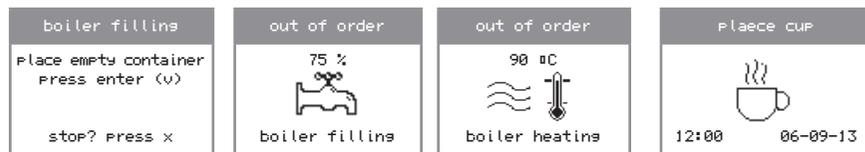


Code	Description
WF	Water filter
KW1	Inlet valve
PR	Pressure reducer 2 bar
FL1	Flow meter
KW2	Pump 10 bar
NRV	Non-return valve
H2-3	Pressure boiler
T2	NTC sensor
DV1	Brewer valve 3/2 way

Code	Description
DV2	Mixer valve 3/2 way
DV4	Hot water valve 3/2 way
DV6	Water expansion valve 3/2 way
KW3	Cold water valve (H&C optional)
OPV1	Pressure relief valve 3 bar water expansion
OPV2	Pressure relief valve 12 bar
BM1	Espresso group
MM2	Mixer system
Venting	Venting valve 3/2 way (H&C optional)

1.1.1 Commissioning

Switch the machine on using the ON/OFF switch. The display illuminates with the text; 'Position drip tray and press start'. The inlet valve [KW1] opens, the water flows via the Pressure reducer [PR], Flow meter [FL1], Pump [KW2] to the Pressure boiler [H2-3], which is filled. Inlet valve [KW1] closes when Flow meter [FL1] has measured 1.3L. The excess water (approx. 0.2 litres) flows via Pressure relief valve [DV1] to the coffee outlet and drip tray. When the boiler has reached temperature, the machine is ready for use. Once the commissioning menu has been activated, the control remembers that the water system has been filled. If the machine must be taken out of use for an extended period, the water system must be drained, 1.1.2 shut down.



1.1.2 Shut down

Activate the shut down menu in the service menu and following the instructions on the display. To drain the boiler, an Ø 8 mm drain hose must be connected to the boiler supply. To do this, remove the rear panel of the machine. The control now knows that the water system is empty and reconnection will automatically activate the commissioning menu.



1.1.3 No preparation

When no drinks are dispensed by the machine, the pressure in the pressure boiler [H2-3] is maintained at 3 bar. Any expansion water from the boiler drains away via valve [DV6] which is switched as an NO valve. The 3 bar overpressure relief valve OVP1 drains any boiler expansion water to the drainage reservoir.

1.1.4 Coffee preparation

When a coffee is chosen, the coffee grinder measures approx. 7.5 g coffee (9.5 g OptiBean XL) into the espresso group, which then turns to the set position (brew). Inlet valve [KW1], coffee valve [DV1] and expansion valve [DV6] are activated. Note; the expansion valve [DV6] is connected as an NO valve (normally open). Once activated, the pressure relief valve [OPV1] is closed, as a result of which it is possible to increase the pressure to 10 bar while the coffee is made. The ground coffee is first (PI-time) moistened with a small quantity of water (Pre-infusion). This is done at a low water pressure of 2 bar. After a short soak interval (PI-pause) the water pump [KW2] starts, the pressure is increased to 10 bar and the actual coffee-making process begins. Depending on how fine the coffee is ground and the addition of water, the coffee-making process takes between 15 and 25 seconds. After the flow

meter [FL1] has measured the set amount of water, the coffee-making process is stopped. +KW1 and DV1 close and DV6 opens. While the brewer turns to the start position [fill], the coffee residue (pellet) is ejected into the waste bin.

1.1.5 Chocolate preparation

For preparing instant, only the water pressure is used.

When a chocolate is chosen, inlet valve [KW1] and mixer valve [DV2] open. The pressure in the mains water supply is reduced to 2 bar by the pressure reducer [PR] and flows via the pressure boiler [H2-3] and mixer valve [DV2] to the mixer system [MM2]. The chocolate ingredient is measured by ingredient motor 4 [IM4]. After the flow meter [FL1] has measured the set amount of water, the water dispensing process is stopped. KW1 and DV2 close. Shortly thereafter the pressure boiler is brought back up to the operating pressure of 3 bar by the pump.

1.1.6 Coffee with Milk preparation

The pressure boiler system does not allow two pressure valves to be opened at the same time. This means that for a combination drink such as Coffee with milk first the coffee is made and then the milk can be added to it. For the preparation of Cappuccino and Latte Macchiato, first the milk (froth) and then the coffee (espresso) is prepared. The preparation of the coffee with milk proceeds in the same way as for the coffee and the chocolate preparation. In the software the required unit sequence can easily be specified. For Coffee Milk this is Unit 1-2 (coffee first, then milk), for Cappuccino and Latte Macchiato this is Unit 2-1 (milk first, then coffee).

1.1.7 Hot water preparation

For dispensing hot water, only the water pressure is used.

When hot water is chosen, inlet valve [KW1] and hot water valve [DV4] open. The pressure in the mains water supply is reduced to 2 bar by the pressure reducer [PR] and flows via the pressure boiler [H2-3] and hot water valve [DV4] to the water outlet. After the flow meter [FL1] has measured the set amount of water, the water dispensing process is stopped. KW1 and DV4 close. Shortly thereafter the pressure boiler is brought back up to the operating pressure of 3 bar by the pump.

1.1.8 Cold water preparation (optional)

For dispensing cold water, only the water pressure is used.

When cold water is chosen, inlet valve [KW1] and cold water valve [KW2] opens, and the 'venting' valve closes. The pressure in the mains water supply is reduced to 2 bar by the pressure reducer [PR] and flows via the external cooler unit and cold water valve [KW2] to the water outlet. After the flow meter [FL1] has measured the set amount of water, the water dispensing process is stopped. KW1 and KW3 close, and the 'venting' valve opens.

1.2 Components

Component	Image
<p>Inlet valve KW1 [1001161] Opens and closes the water supply, 24 Vdc coil closure.</p>	
<p>Pressure reducer DR [1000702] Reduces the water supply pressure to 2 bar. The water pressure is not adjustable. Pay attention for the flow direction!</p>	
<p>Flow meter FL [1000530] Measures the supplied quantity of water using rotating magnets and a bi-polar Hall sensor. Pay attention for the flow direction!</p>	
<p>Solid State Relais (SSR) [02799] The heating element is controlled by a solid state relay. Pay attention for the polarity of the 24Vdc side!</p>	<p>SSR 12-30 Vd 230 Vac</p>
<p>Pump KW2 [1000696] Non-return valve [1000748] Rotary membrane pump; increases the water supply pressure to an espresso pressure of 10 bar.</p> <p>The rotating membrane cells increase the outlet water pressure. An internal bypass valve pumps the water round in the pump housing if no pressure decrease occurs.</p> <p>See Section 5.4 Check / set the pump pressure.</p>	
<p>Pressure boiler H2-3 [1000530] Closed pressure boiler manufactured entirely from material AISI 316L</p> <p>Temperature sensor [1000740] Screw thread M12x1 / material AISI 316L / 100 kΩ/25°C</p> <p>Boil-dry protection [1000736] Activation temperature 135°C / 2 pole / manual reset</p>	

Component	Image
<p>Brewer valve DV1 [1000699] Supplies the brewer with hot water at 10 bar. When the valve is energised, the hot water supply to the brewer is opened. When this closes, the brewer is vented.</p>	
<p>Expansion water valve DV6 [1000699] Pressure relief valve 3 bar [1000734] This valve is switched as an NO valve. When the coil is not energised, the supply to the 3 bar pressure relief valve is open. When coffee is being made, this valve closes off the 3 bar pressure relief valve so that pump can increase the pressure to 10 bar. After the coffee has been made, this valve opens again and the excess water pressure is fed to the drainage reservoir.</p>	
<p>Mixer valve DV2 [1000699] Supplies the mixer system with hot water. During the water measurement, use is made of the 2 bar water pressure that is reduced by the pressure reducer DR. The valve has an internal meter of 1.5 mm, which results at a supply pressure of 2 bar in a measurement speed of 14 ml/sec. When the valve closes, the mixer supply hose is vented and drains.</p>	
<p>Hot water valve DV 4 [1000699] Supplies the hot water outlet with hot water. During the water measurement, use is made of the 2 bar water pressure that is reduced by the pressure reducer DR. The valve has an internal meter of 1.5 mm, which results at a supply pressure of 2 bar in a measurement speed of 14 ml/sec. When the valve closes, the mixer supply hose is vented and drains.</p>	
<p>Pressure relief valve 12 bar [1000735] Over-pressure protection for the boiler.</p>	
<p>Coffee grinder [1000665] The coffee grinder grinds the beans and fills the brewer with a precisely measured quantity of coffee. See Section 1.4 for the operation.</p>	

Component	Image
<p>Espresso group [1000088] The brewer is filled with ground coffee from the coffee grinder. Then the coffee is compacted, the pump starts and pumps hot water at a pressure of 10 bar through the coffee. The drink flows via the splitter into the cup. After the coffee has been made, the coffee pellet is ejected into the waste bin.</p> <p>See Section 1.3 for the operation.</p>	
<p>Ingredient and mixer system Each of the ingredient canisters is driven by a motor running at 130 rpm. The instant product (ingredient) is pushed out of the canister by a worm screw and falls via the dispensing nozzle into the mixer unit. At the same time, hot water is measured into the mixer unit by measuring valve DV2. The instant product and the water are mixed together by the mixer impeller driven by the mixer motor running at 10,700 rpm. The drink flows via the drink outlet into the beaker.</p>	
<p>Water vapour drain system Most of the water vapour given off during the mixing is collected by the vapour drain ring and extracted via the extraction tray by the fan. The instant residue is collected by the extraction tray. The extraction tray can be easily removed (for cleaning) by dismantling the mixer unit. This largely prevents water vapour getting into the canister outlet and the ingredient becoming moist.</p>	
<p>Door switches There are two door switches on the inside of the right side wall. Switch A is activated when the door is closed, and switches the machine off when the door is opened. Switch B is operated when the door lock is locked and switches the hot water valve DV4 when the lock is opened.</p>	

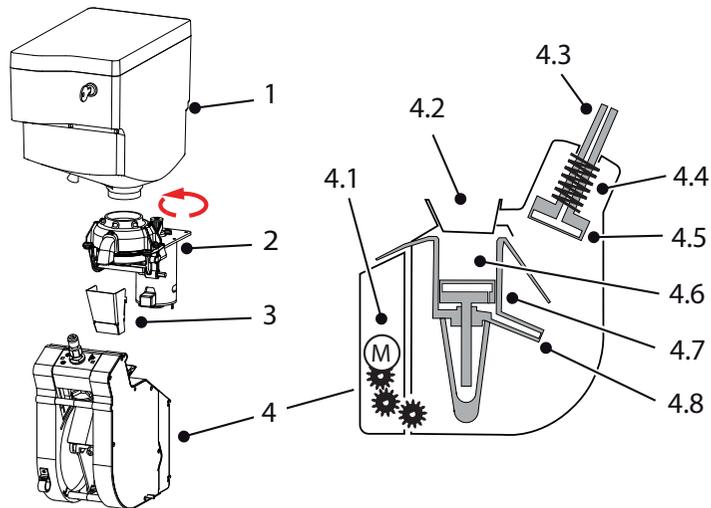
Component	Image
<p>Quick release coupling In this machine various components are used that have quick release couplings. To remove the Teflon hose from this connection, the outer ring [A] must be pushed in first to release the hose [B]. This outer ring does not have to be pushed in when inserting the hose.</p>	
<p>Telfon® pressure hose High quality Teflon pressure hose is used in this machine. Never shorten this hose with side cutters. This will deform the hose and when it is inserted into the quick release connection it can damage the internal o-ring, resulting in leaks. Always shorten a new hose using the special cutting tool (see the illustration) or cut through it with a sharp knife without exerting too much pressure on the hose.</p>	

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1.3 Espresso group

The espresso group consists of a drive unit [4.1] and an espresso unit [4].
 The DC motor [4.1] in the drive unit drives the espresso unit.
 The upper [4.5] and lower piston [4.7] are moved up and down by the drive wheels located in the side walls. Their operation is explained in detail in the next chapter.

Major components	Technical data	Material
1. Bean canister	Content 1.5 kg	PC
2. Coffee grinder	See 1.4 Coffee grinder	
3. Coffee guide		stainless steel
4. Espresso group		
4.1 Drive unit	DC motor 24Vdc	
4.2 Filler opening		
4.3 Water supply	4 mm quick release coupling	
4.4 Spring		stainless steel
4.5 Upper piston	315 µm bore	stainless steel
4.6 Brewer chamber	Ø 37mm Standard / Ø 44mm XL	
4.7 Lower piston	150 µm bore	stainless steel
4.8 Coffee outlet		

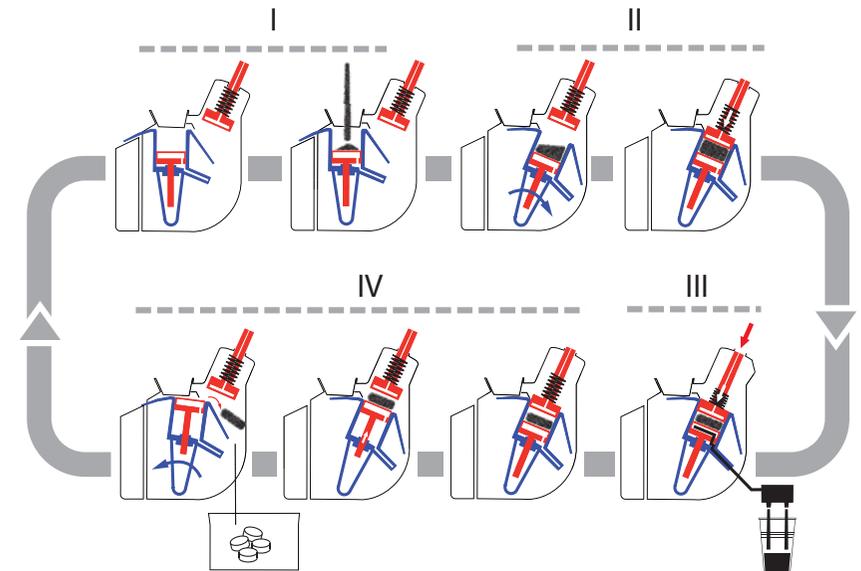


1.3.1 Operation

The ground coffee is measured into the espresso group and then the group closes. Hot water is forced at high pressure through the layer of coffee. The complete espresso cycle is described and illustrated below. This also explains the function of the position switches 1 & 2 (see Section 1.3.2) located in the drive unit.

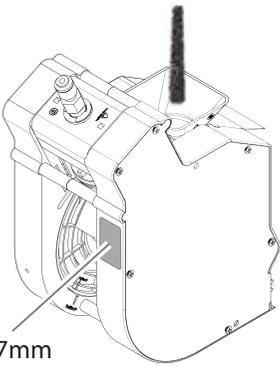
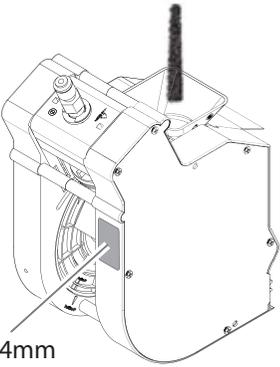
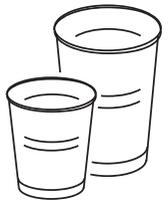
Position	Action	Switch position	2	1
I	Start / fill	Idle position of the espresso group. Ground coffee is measured into the brewer chamber	0	0
II	Compact	The espresso group moves to the brew position. The upper piston compacts the ground coffee.	0	1
III	Brew	A very small quantity of low pressure hot water is added to the coffee pellet (pre-infusion). Then the pump starts and pumps hot water at a pressure of 10 bar through the compacted coffee.	1	1
IV	Eject	The espresso group moves back to the start position and ejects the coffee residue.	0	1
	Error E24	If the switch position shown here occurs, an error E24 brewer error occurs	1	0

GB



1.3.2 Espresso brewer spec's

From year 2013 the OptiBean can be executed with following brewers:

Standard brewer	XL Brewer
min. 6,5 - max. 9,5* gram	min. 9,5 - max 13,4* gram
	
Ø 37mm	Ø 44mm
	
120-150ml	150-230ml
	
Standard 20-30 sec.	XL 30-40 sec.
min. 50 - max. 150 ml	min. 150 - max. 230 ml
   * max. 9,0 gram   * max. 9,5 gram	   * max. 12,5 gram   * max. 13,4 gram

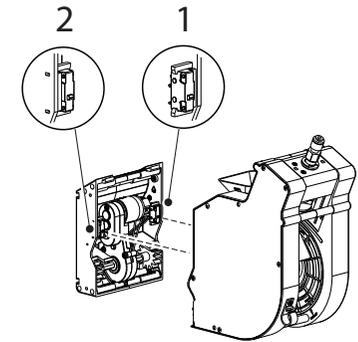
1.3.3 Position switches

When the machine is switched on, the software checks the espresso group by running it through a complete cycle.

In the drive unit there are two micro switches that check the position of the espresso group.

Switch [1] checks (white lever, right) whether the espresso group is in the Brew position (brewing coffee).

Switch [2] checks (grey lever, left) whether the espresso group is in the Load position (filling ground coffee).



1.3.4 Dismantling

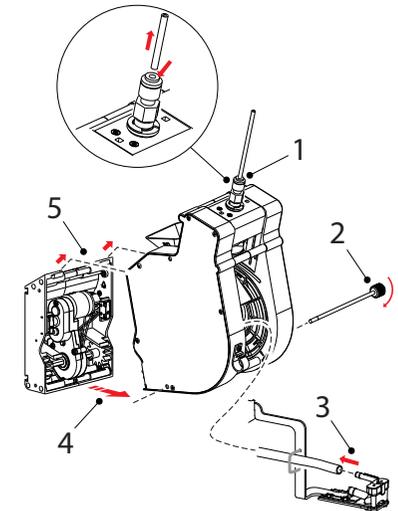
Espresso group

The espresso group can easily be disconnected from the drive unit

1. Switch the machine off.
2. Remove the water supply hose [1] from the espresso group.
3. Unscrew the locking pin [2].
4. Remove the hose leading to the coffee splitter [3].
5. Move the bottom part forwards [3] and lift the espresso group [4] off the drive unit.
6. Remove any coffee residue from the group by rinsing it with warm water.
7. After the espresso group is placed back, the group will initialize automatically when the machine switched on.



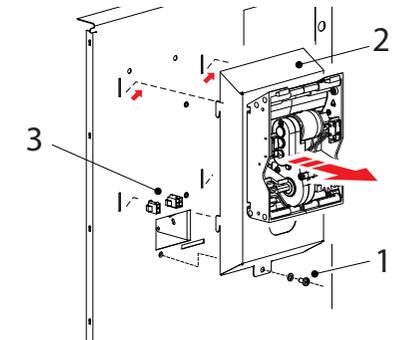
Do not clean the espresso group in the dishwasher.



Drive unit

The drive unit can simply taken out

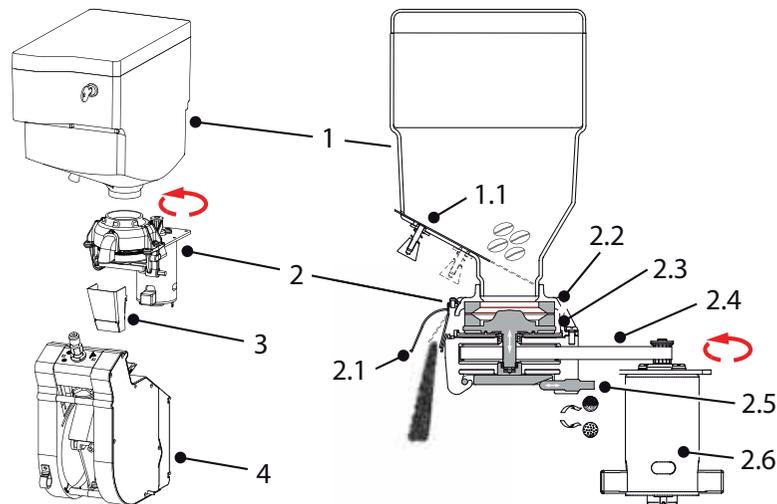
1. Remove the mounting screw [1] on the underside of the motor plate [2].
2. Lift the motor plate [2] and remove it from the rear wall.
3. Disconnect the connectors [3] from the drive unit.



1.4 Grinder

The grinder is driven by a powerful DC motor [2.6]. The upper grinding disk [2.2] is fixed. The lower grinding disk [2.3] is driven by a drive belt [2.4]. The grind fineness can be set with an adjustment screw [2.5]. When the screw is turned clockwise, the distance from the upper grinding disk reduces; anti-clockwise it increases. The ground coffee leaves the grinder via the coffee outlet [2.1]. A rubber flap prevents the entry of moisture.

Major components	Technical data	Material
1. Bean canister	Content 1.5 kg	PC
2. Coffee grinder	Sound level < 70 dB(A)	
2.1 Coffee outlet		ABS
2.2 Upper grinding disk	Ø 65 mm	Ceramic
2.3 Lower grinding disk	Ø 65 mm	Ceramic
2.4 Drive belt		Rubber
2.5 Fine adjustment	Hex. screw +	
2.6 DC motor	230Vdc	
3. Coffee guide		stainless steel
4. Espresso group	See Section 1.3	



1.4.1 Basic adjustment

The coffee grinder is factory set for an average grind fineness.

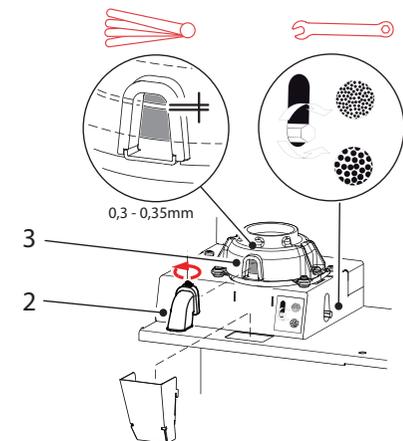
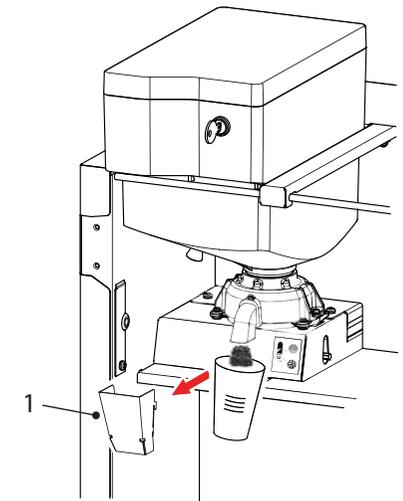
WARNING

- Keep your fingers away from the grinding mechanism when the machine is in operation.

WARNING

- If there is a sound of two stones rubbing against each other, make the grind coarser.
- The grinding disks must never come into contact with one another.
- The grind fineness and grind capacity depends on the type of coffee beans and the roasting.
- Always adjust the coffee grinder from coarse to fine with the grinder running or empty. Adjusting from fine to coarse can be done when the grinder is stationary.

1. Close the bean canister plug.
 2. Remove the stainless steel coffee guide [1].
 3. Hold a beaker under the coffee grinder outlet and run the grinder until it is empty.
- Tip; go to the service menu: **2.7 Hardware test / Outputs / IM1** Press recipe key 11 until the coffee grinder is empty (the speed increases).
5. Unscrew the black plastic coffee outlet [2] on the grinder.
 6. Set the distance between the grinding disks [3] so that a 0.30 / 0.35 mm feeler gauge fits between them.
 7. After adjusting the grind fineness, carefully check the operation of the brewer, see Section 2.0 Adjust the grind fineness as necessary!



1.4.3 Service life

The service life of the ceramic grinding disks is approximately 3x longer than steel grinding disks. The service life depends on the type of coffee beans* and is approx. 3,000 kg of coffee beans. With an average measure of 7.5 g/cup. that makes approx. 400,000 shots (XL=300,000 shots 9.5 g/cup)

When you reach these grind quantities, we advise you to replace the complete grinder. Not only the grinding disks need to be replaced, but the bearings, carbon brushes and drive belt have also reached their maximum service life. In case of a damaged grinding disk (due to stones or other foreign objects) they can be ordered and replaced as a separate set.

* *light to dark roast, dry or oily, caramelized*

1.4.2 Run in period grinding discs

Tests have shown that new ceramic grinding discs have a run in period of 10 kg of coffee beans (about 1350 cups at 7.5 g / XL=1000 cup at 9.5 g.). We recommend to re-adjust (finer) the grinder after this period.

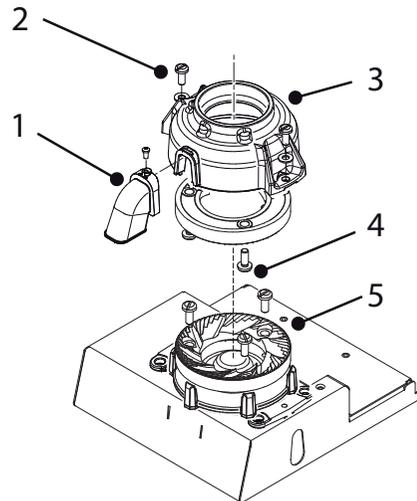


1.4.4 Replacing grinding disks

1. Close the bean canister plug.
2. Hold a beaker under the coffee grinder outlet.
3. Run the grinder until it is empty.

 Tip: go to the service menu: **2.7 Hardware test / Outputs / IM1**. Press recipe key 11 until the coffee grinder is empty (the speed increases).

4. Lift the bean canister off the coffee grinder.
5. Switch the machine off.
6. Loosen the screws [1] and dismantle the grinder head [2].
7. Remove the grinding disks [5] by loosening the three screws [4].
8. Thoroughly clean all parts.
9. Fit the new grinding disks in reverse order.



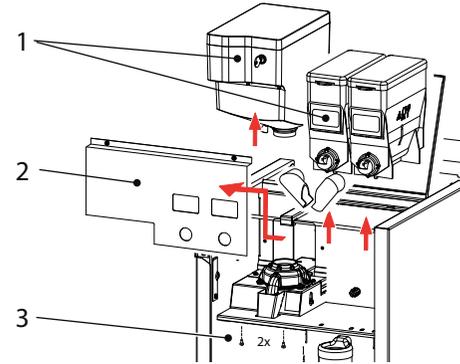
WARNING

- Do not drop the ceramic grinding disks
- The grinding disks must never come into contact with one another.
- After assembly, adjust the grind fineness.

1.4.5 Replacement drive belt

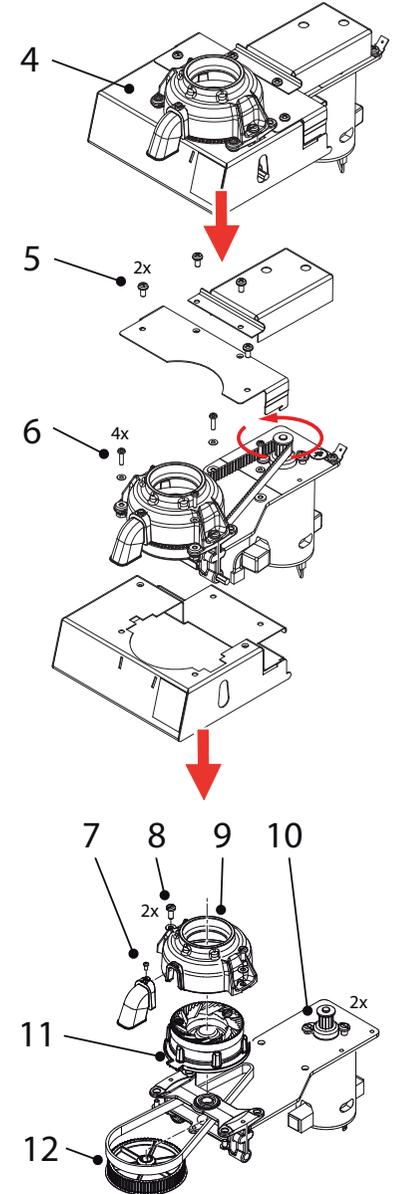
Coffee grinder housing disassembly

1. Remove the bean- and instant canister [1] and remove the cover plate [2] behind it.
2. Disconnect the electrical connections to the small coffee grinder circuit board (via the rear wall).
3. Remove the two screws [3] on the underside of the housing.



Drive belt removal

4. The whole assembly [4] can now be removed from the machine.
5. Remove the three screws [5] and remove the belt cover plate.
6. Remove the four screws [6] from the mounting rubbers and remove the coffee grinder with motor plate.
7. Loosen the screen [7] on the coffee outlet and remove it.
8. Remove the two screws [8] from the grinder housing [9].
9. Remove the grinder housing [9].
10. Slightly loosen the motor screws [10] so that the drive belt tension is released.
11. Pull the grinding disk [11] carrier vertically upwards.
12. Remove the belt disk and belt [12] and replace these parts.
13. Fit the new belt disk and drive belt [12] in reverse order.
14. Tension the belt disk and re-tighten the motor screw [10].



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1.4.6 Cleaning

Depending on the fineness of the grind and the intensity of use, coffee residue collects in the grinder housing and on the grinding disks (fine particles, coffee oil, coffee residue), which can affect the grinding capacity, the measuring accuracy and also the taste.

Cleaning frequency

To guarantee a constant grind quality, it is recommended to clean the coffee grinder at least every 6 months.

Recommended cleaning agent

- Coffee grinder cleaner 430 g. GRINDZ™
- Art. no. 1000151
- Shelf life 18-24 months
- Gluten free

What is GRINDZ™? Is it harmful?

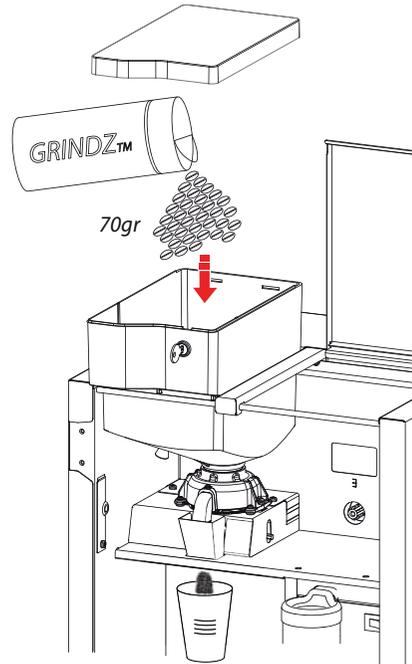
GRINDZ™ consists of 100% biological, natural materials (including grain, starch) and is absolutely harmless for the health. It binds the coffee oil and cleans the grinder housing and grinding disks by friction. If small residual particles mix into the follow-up shots, this does not affect the extraction or the taste.

Cleaning with GRINDZ™

1. Close the bean canister plug.
2. Hold a beaker under the coffee grinder outlet.
3. Run the grinder until it is empty.

Tip; go to the service menu: **2.7 Hardware test / Outputs / IM1**. Press recipe key 11 until the coffee grinder is empty (the speed increases).

4. Lift the bean canister off the coffee grinder and remove the coffee beans.
5. Place 70 g GRINDZ™ (2x content of the cover) in the bean canister.
6. Grind the GRINDZ™ with the grinder and collect the ground product.
7. Grind approx. 6 shots of coffee to 'flush' the GRINDZ™ residue out of the grinder housing.

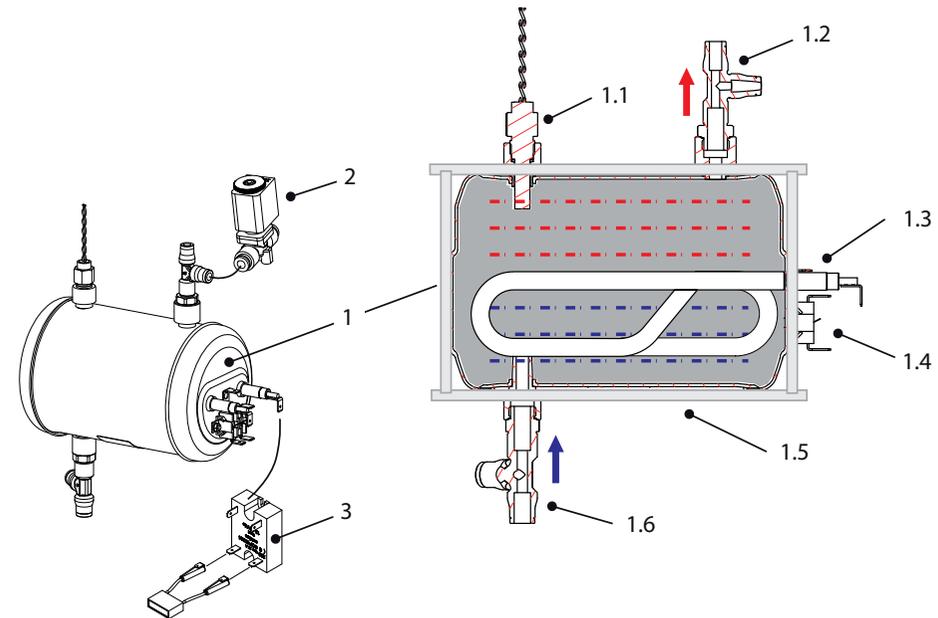


1.5 Boiler system

Turn on the device using the ON/OFF switch. The display will light up. If the boiler [1] is empty (first installation or after running the shut down menu) the commissioning menu will automatically starts and will guides you trough the filling up sequence. If the boiler is filled the heating element [1.3] will be switched on by the solid state rails (SSR) [3]. As soon as the NTC sensor [1.1] measures the set temperature, the heating element [1.3] will be switched off. The insulation [1.5] prevents the boiler from cooling down. The boiler is tested at a overpressure of 13 Bar (1,3MPa) constructed for working pressures of 10 bar (1,0 MPa).

Major parts	Technical data	Art.No.	Material
1. Boiler system	1,1 Litre	1000530	st.st.
1.1 Temperature sensor NTC	100 kΩ/25°C / M12x1	1000740	st.st.
1.2 Boiler outlet	G1/4" x Ø 6mm (2x)		st.st.
1.3 Boiler & heating element	230V 1800W / art.nr.	1000530	st.st.
1.4 Dry boil protection	230V 16A / art.nr.	1000736	st.st.
1.5 Insulation			PEC
1.6 Boiler inlet	G1/4" x Ø 8mm (2x)		st.st.
2. Dispensing valve (3 way)	See 1.6.1 Dispensing valve	1000699	
3. Solid State Relay (SSR)	12-30Vdc / ~230V 16A	02799	

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Dry boil protection

This double pole dry boil protection [1.4] protects the heating element [1.3] against dry boiling. When the switch detects a temperature above 135°C both contacts switch off and disconnect both heating connection from the electric mains. Reset is only possible after the boiler has cooled down and both contacts are manually reset by hand.

⚠ WARNING; Always disconnect the machine from the mains, the reset buttons are life!

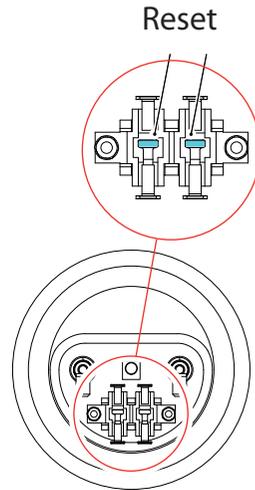
If the dry boiler protection [1.4] is activated a Error 21 shall appear on the display after 6 minutes.

The reason from activating the protection can be caused by air in the waters main which is transported to the boiler, or an other malfunction of the heating system

Temperature regulation

The heating element [1.5] is turned on when the water temperature falls below the temperature setting. The temperature in the water reservoir is measured using an NTC precision sensor [1.4] mounted through the wall of the boiler.

The heating element always switches off when the maximum boiler temperature of 99°C is reached.



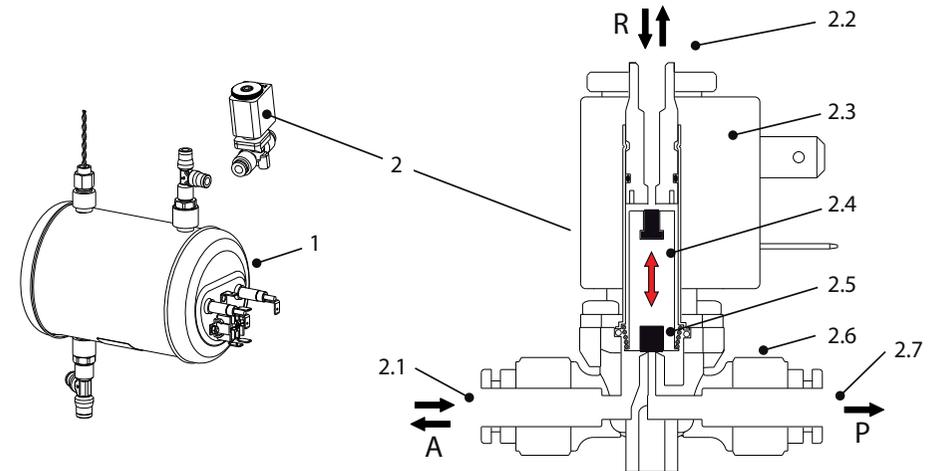
1.5.1 Dispensing valves

The dispensing valves [2] used in the OptiBean are all the same and are so called 3-way valves. Brewer valve DV1, mixer valve DV2 and hot water valve DV4 are used as N.C. valve (Normally Closed). The connection P [2.1] is connected to the pressurised side. At a de-energized valve, outlet A [2.7] is in open connection with the outlet R [2.2], so the tubes towards the mixer and hotwater outlet always runs empty. During a drink selection one of the dispensing valves [DV] is ACTIVATED and opens. Outlet R [2.2] closes and pressurised water flow from connection P to A.

The (expansion) dispensing valve DV6 is build-in as a N.O. valve (Normally Open). Connection A [2.7] is connected to the pressurised side. Expansion water from the boiler can escape from connection R [2.2]. The valve DV6 will be closed when a coffee (10 bar) is made.

Major parts	Technical data	Material
1. Boiler system	1,1 Liter	AISI 316
2. Dispensing valve 12 bar (3-2 way)	art.no. 1000699	
2.1 Inlet (P)	Ø 6mm push fit	
2.2 Aeration (R)	M5	
2.3 Coil	24Vdc - 8,3W - 100% ED	
2.4 Plunger		St.St.
2.5 Seal		EPDM
2.6 Body	DN 1,5 (Diameter Nominal)	PPSU
2.7 Outlet (A)	Ø 6mm push fit	VMQ

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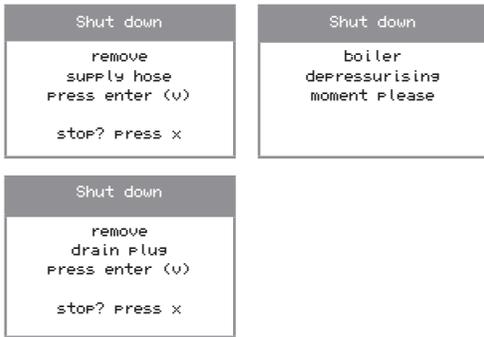
Printed-on black arrow: Flow in direction of the arrow on the valve body

White arrow: Flow against the arrow on the valve body

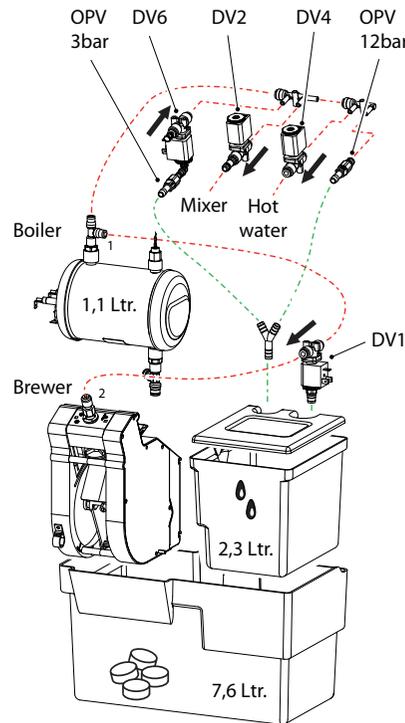
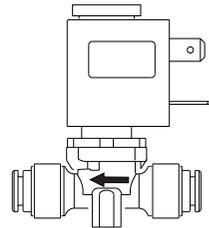
1.5.2 Removing / replacing valves

Most valves (DV1, DV2, DV4) are accessible by dismantling the back cover. The brewer valve (DV1) is accessible by dismantling the right side of the machine.

1. Activate the shut down menu in the service menu **2.14 Installation / Shut down** and following the instructions on the display.
2. For just releasing the pressure in the boiler it is not necessary to disconnect the supply hose. Press enter (v)



3. Stop the process, the boiler is now depressurised.
4. Remove a valve by pressing the outer ring of the push fit couplings.
5. Replace the valve for a repaired or new one. Check the flow direction before fitting it in place.

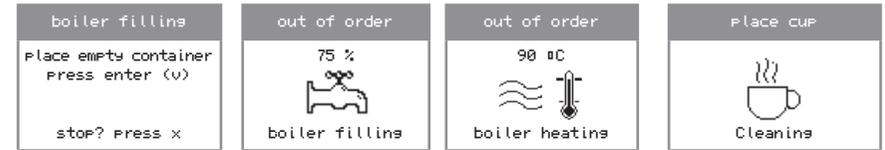


1.6 First menu settings after installation

The following data must be set in the operator and service menus immediately after the machine's first use. The language factory setting is English.

Switch ON the machine

- Follow the instructions on the display



Operatormenu (Page 39-40)

- 1.1 Clock Time (set)
Date (set)
- 1.7 PIN-code 2 - 2 - 2 - 2 (PIN-Code)

Service menu (Page 41-52)

- 2.4 Settings Language (set)
- 2.6 Service boiler Service moment (set)

We strongly recommend to use a water filter. Calculate your filter capacity by using the capacity information provided with the filter. Set the amount of cups into the menu so the signal [Service Boiler] appears on the display.

Reaching the service boiler moment indicate that the machine must be descaled. If a water filter is used (recommended), this is the signal that the filter has to be replaced.



Water hardness table

Water quality	Hardness				Service moment after (cups)
	°D	°F	mmol/l	mgCaCo3/l	
Very hard	18-30	32-55	3,2-5,3	321- 536	5,000
Hard	12-18	22-32	2,2-3,2	214-321	12,500
Average	8-12	15-22	1,4-2,2	268-214	20,000*
Soft	4-8	7-15	0,7-1,4	72-268	40,000
Very soft	0-4	0-7	0- 0,7	0-72	0 = off

• 2.2 *Button settings* <Recipe name> (set)

First program the desired recipes under each key on the control panel. Which recipes are factory-set can be found in the table on page ???. The same table also indicates which additional recipes are available in the software.

• 2.1 <i>Quick recipe Pro</i>	<Recipe name>	Cup volume (ml)	(set)
		Coffee (sec.)	
		Topping (sec.)	
		Cocoa (sec.)	

The Coffee(bean) setting is the real grinding time from the grinder in seconds. This setting is not linked to the cup volume setting.

The Topping and Cocoa setting is a dispensing time in seconds for a 100ml drink. When increasing the cup volume the Topping and/or Cocoa dispensing will be automatically proportional increased (not visible in the display).

See chapter 1.6.1 how to check the weight

• *Run the cleaning program (without cleaning tablet) to reset the cleaning message*



1.6.1 **Coffee adjustment**

After installation, the machine must always be adjusted for the coffee beans to be used. Use this chapter to help you do this. Once the coffee-making process has been set, the user must always use the same bean melange (mixture).

From year 2013 the OptiBean can be executed with following brewers:

Standard espresso group

- Suitable for a maximum of 9.0 g ground coffee (1 cup of coffee).
- Not suitable to **brew** a double cup of coffee in one brew cycle.
- There is a double-cup recipe available in the software, but this is really a double brew cycle!

(imp)

Standard (0,23 oz)
min. 6,5 - max. 9,5* gram (0,34 oz)

Ø 37mm

min. 50 ml (1,8 fl oz)
max. 150 ml (5,3 fl oz)

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XL espresso group

- Suitable for a maximum of 12,5 gr ground coffee (1 cup of coffee).
- Suitable to **brew** a double cup of espresso (2x 70ml) or double cup coffee (2 x 115ml) in one single cycle.
- Not suitable to **brew** a double cup of coffee > 115ml in one cycle.
- There is a double-cup recipe available in the software, but this is really a double brew cycle!

XL (0,34 oz)
min. 9,5 - max 13,4* gram (0,47 oz)

Ø 44mm

min. 150 ml (5,3 fl oz)
max. 230 ml (8,1 fl oz)

How check the weight?

Only the grinder / ingredient motor will be driven (no water is dispensed).

It is strongly recommended to check the coffee measurement using a set of mini scales. These are simple to order via the Internet.

2.1 Quick recipe pro

2.1.01 Coffee (drink)

Coffee
Coffee beans (ingredient) TEST

2.1.04 Cappuccino (drink)

Cappuccino
Coffee beans (ingredient) TEST

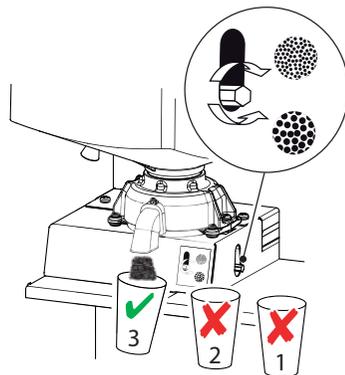
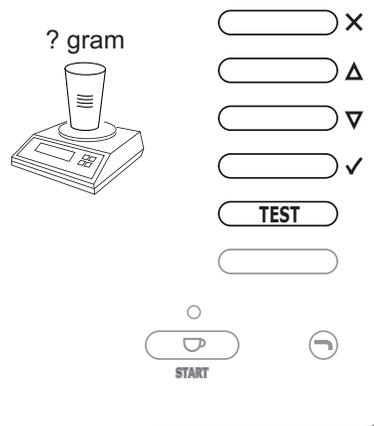
Cappuccino
Topping (ingredient) TEST

1. Navigate to above service menu item
2. Hold a empty cup under the outlet.
3. Press the TEST button, only the chosen ingredient will be dispensed.
4. Measure the weight of the ingredient*

*Coffee
Standard espresso group: min. 6,5 - max. 9,0 g.
XL espresso group: min. 9,5 - max. 12,5 g.

Rules for the adjustment

- There are two factors that affect the output of the coffee grinder. The grinder rotation time (2.1 Quick recipe pro / Coffee) and the grinding fineness of the coffee grinder.
- When the coffee grinder is set coarser, the volume of the grind increases.
- When the coffee grinder is set finer, the volume of the grind decreases.
- Only adjust the grinder finer when the grinder is running! Adjustment from fine to coarse can be done when the grinder is stationary.
- Only adjust the grind setting in steps of 1/4 turn. Note: only the 3rd cup of coffee is 100% made with the changed grind fineness! (do not measure the first 2 cups).
- The coffee brewing process time is from the moment when the pump starts until the moment the pump stops.



How to check a drink?

Easy way to check the dispensed drink- volume and taste without leaving the menu!

2.1 Quick recipe pro

2.1.01 Coffee (drink)

Coffee
Coffee beans (ingredient) START

2.1.04 Cappuccino (drink)

Cappuccino
Cup volume

Cup volume 120ml START

Cappuccino
Coffee (ingredient)

Coffee 1,45s. START

Cappuccino
Topping (ingredient)

Topping 2,50s. START

1. Navigate to above service menu item
2. Change one or more settings and confirm (v), (START led blinks).
3. Place a empty cup under the outlet and press the START button. Your drink is made.

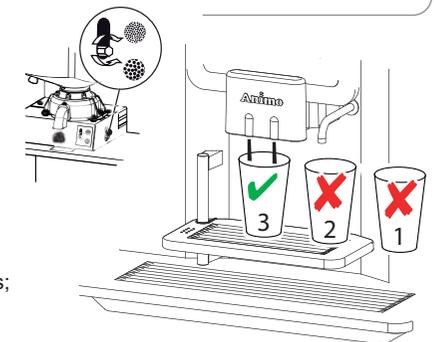
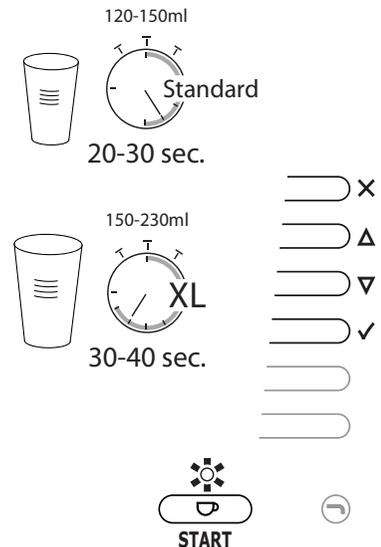
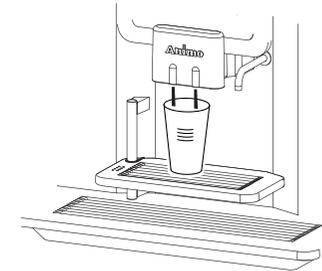
When the Cup volume (menu parameter) is increased, instant products Topping and Chocolate will be automatically proportional increased. The coffee however will not automatically increased!

Only adjust the grind setting in steps of 1/4 turn. Note: only the 3rd cup of coffee is 100% made with the changed grind fineness! (do not examine the first 2 cups).

Try to find a balance between:

- Cup volume (menu setting)
- Amount ground coffee (menu setting)
- Ground coffee coarse or fine (grinder adjustment)

If the optimum settings are found for the first coffee button copy the set grinder time for all the coffee drinks; Coffee Milk, Espresso, Cappuccino, Latte Macchiato, etc.



1.6.2 Espresso

Once the base drink (**Coffee**) has been set, there is not much more to be set for the Espresso.

Because the same coffee grind is used for an **Espresso based drink**, the brew time for an **Espresso** (50 ml) will be much shorter than a normal coffee.

If there is still volume left in the brew chamber from the espresso group (Standard: max. 9,0 g. / XL: max.12,5 g.) its possible to increase the grinding time.

By increasing the grinder time for the espresso drink in small steps, **2.1 Quick recipe pro / Espresso / Coffee**, more coffee will be dispensed into the brewer chamber. This created more resistance and a longer brewing time.

2.1 Quick recipe pro

2.1.03 Espresso (drink)

Espresso
Coffee beans (ingredient) **START**

If the perfect setting for the espresso has been found just copy this setting to all espresso based drinks, like Cappuccino, Latte Macchiato.

1.6.3 Milk based drinks

Milk based drinks are drinks such as Coffee Latte, Cappuccino and Latte Macchiato.

We strongly advice to increase the **Mixer 2** time for milk based drinks >150ml. The mixer will run longer so the topping shall foam much better. Use the easy **START** function to optimise all you milk based drinks while staying in the menu!

If no water runs trough the mixer anymore, the mixer time must end preventing the internal seal runs dry.

2.3 Recipe settings

2.3.06 Cappuccinno (drink)

Unit 2

Mixer 2

Mixer 2 4,5s. **START**



Espresso

Coffee Latte



Cappuccino



Latte Macchiato



1.6.4 Adjustment tips

Cream layer too low	Cream layer perfect	Cream layer missing or too light
<ul style="list-style-type: none"> - Grind too fine - Bitter - Preparation too long - Too much ground dosing - Coffee drips from splitter <p>The coffee is ground too fine, or the dispensed coffee is too high. The extraction is too extreme due to a too long contact time. (to many bitter substances).</p>	<ul style="list-style-type: none"> - The right grind - Perfect coffee taste - The right preparation time - The right coffee measurement - Coffee sprays full and parallel <p>The coffee is ground well, the taste extraction is optimal. The cream layer is firm and persists for a long time.</p>	<ul style="list-style-type: none"> - Grind too coarse - Weak - Preparation too short - To low ground coffee dosing - Coffee sprays bent outwards <p>The ground coffee is too coarse for reaching a good extraction. The coffee will be under-extracted. Little or no cream layer.</p>
<p>Advice: set the coffee grinder coarser (adjustment anti-clockwise). Also shorten the coffee dosing by 0.1 sec.</p> <p>Note! When setting the grinder coarser there is a risk of excess measurement (coffee volume/ weight increases) as a result of which the espresso group can jam (Error E7).</p>	<p>Advice: enjoy your coffee</p>	<p>Advice: set the coffee grinder finer (adjustment clockwise). Adjust the grind setting only in steps of a maximum 1/4 turn each time. Only the 3rd cup of coffee is 100% made with the changed grind fineness! (do not measure the first 2).</p>

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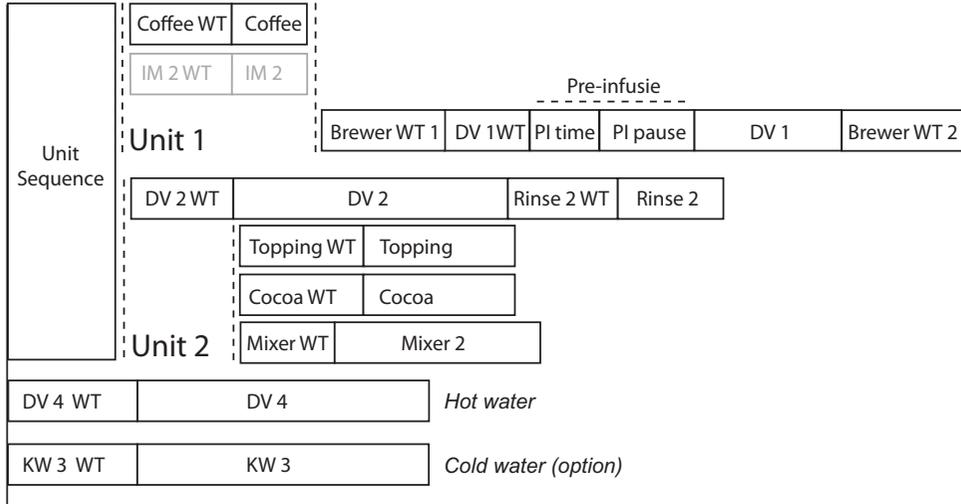
1.6.5 Advanced recipe settings

Before changing the advanced recipe settings (service menu 2.3) you should first know how the various parts such as valves, coffee grinder, ingredient motors and mixers work together, see Section 3.5 Timeline recipe settings.

Keep to the following guidelines:

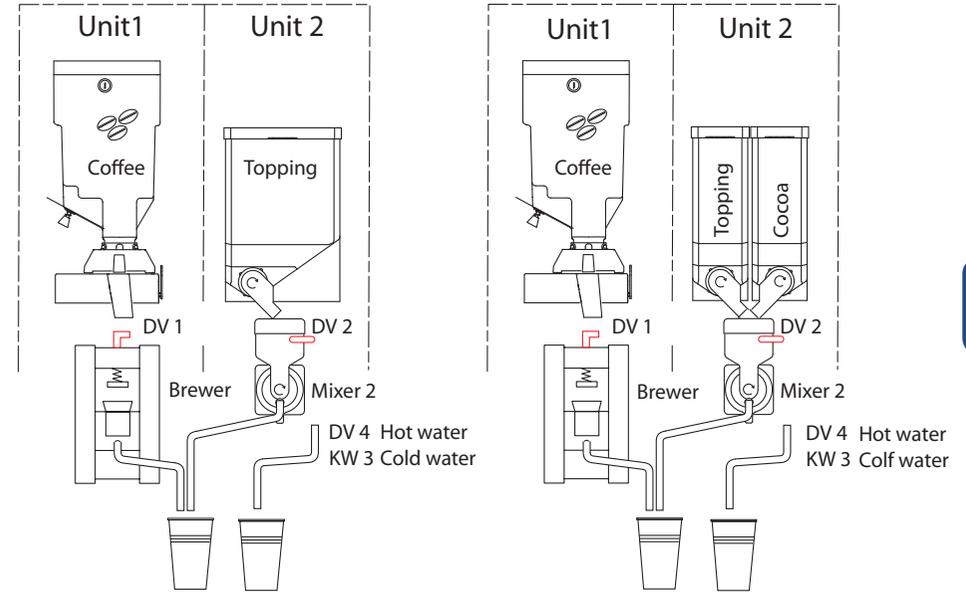
- Unit sequence means: Coffee with milk: Unit 1-2 first coffee (unit 1) then milk (unit 2).
Cappuccino and/or Latte macchiato: Unit 2-1 first milk (unit 2) then espresso (unit 1).
- Ingredient dispensing times are set in seconds (steps of 0.01 sec.)
- All parameters (water and ingredients such as topping and cocoa) are based on a 100 ml drink and converted **automatically** in the programme to the cup volume as set in 1.4 Quick recipe / 2.1 Quick recipe pro 2) and 2.2 Key settings.
Note: The coffee measurement (coffee grinder) is not linked to the cup volume setting.
- When a drink consists of **DV1** and **DV2**, the sum of these water quantities must always be 100 ml.
- A rinse parameter is used to ensure that the mixer is properly rinsed after the mixers is almost empty a small amount of hot water is dispensed to the mixer so that it is clean as possible on completion. A realistic rinse value is 8 ml. Note; this does not have to be deducted from the water quantity. The programme calculates this automatically! Example: set parameter DV2 = 100 ml, Rinse 2 = 8 ml --> Programme carries out action as follows: DV2 = 92 ml, Rinse 2 = 8 ml

1.6.6 Time line recipe settings



OptiBean 2 (XL)

OptiBean 3 (XL)



GB

1.6.7 Calculation examples

Coffee recipe

		Drink parameter		x	variable	=	result
		basic recipe 100ml	Cup volume				
Unit 1	Dispensing valve brewer	DV1	100 ml	x	1,2 (120ml)	=	120 ml
	Coffee dispensing time	Coffee	1,40sec.		—————		1,40 sec.

Cappuccino recipe

Unit 1	Dispensing valve brewer	DV1	42 ml *	x	1,2 (120ml)	=	50,4 ml
	Coffee dispensing time	Coffee	1,43sec.		—————		1,43 sec.
Unit 2	Dispensing valve mixer 2	DV2	58 ml *	x	1,2 (120ml)	=	69,6 ml.
	Topping dispensing time	Topping	2,6 sec.	x	1,2 (120ml)	=	3,12 sec.
	Mixer 2 time	Mixer 2	4,5 sec.		—————		4,5 sec.
	Unit sequence	Unit 2-1	First Coffee (unit 2) than Milk (unit 1)				

* Ratio of water to brewer / mixer = 42/58 can be adjusted as desired

Latte Macchiato recipe

Unit 1	Dispensing valve brewer	DV1	42 ml *	x	1,2 (120ml)	=	50,4 ml
	Coffee dispensing time	Coffee	1,43sec.		—————		1,43 sec.
	Pressure WT 1	10,5	Waiting time (Delay time) between Topping (unit 2) and Coffee (unit 1)				
Unit 2	Dispensing valve mixer 2	DV2	58 ml *	x	1,2 (120ml)	=	69,6 ml.
	Topping dispensing time	Topping	3,0 sec.	x	1,2 (120ml)	=	3,6 sec.
	Mixer 2 time	Mixer 2	4,5 sec.		—————		4,5 sec.
	Unit sequence	Unit 2-1	First Coffee (unit 2) than Milk (unit 1)				

* Ratio of water to brewer / mixer = 42/58 can be adjusted as desired

Chocolate recipe

Unit 2	Dispensing valve mixer 2	DV2	100 ml	x	1,5 (150ml)	=	150ml
	Chocolate dispensing time	Chocolate	3,0 sec.	x	1,5 (150ml)	=	4,5 sec.
	Mixer 2 time	Mixer 2	9,5 sec.		—————	=	9,0 sec.

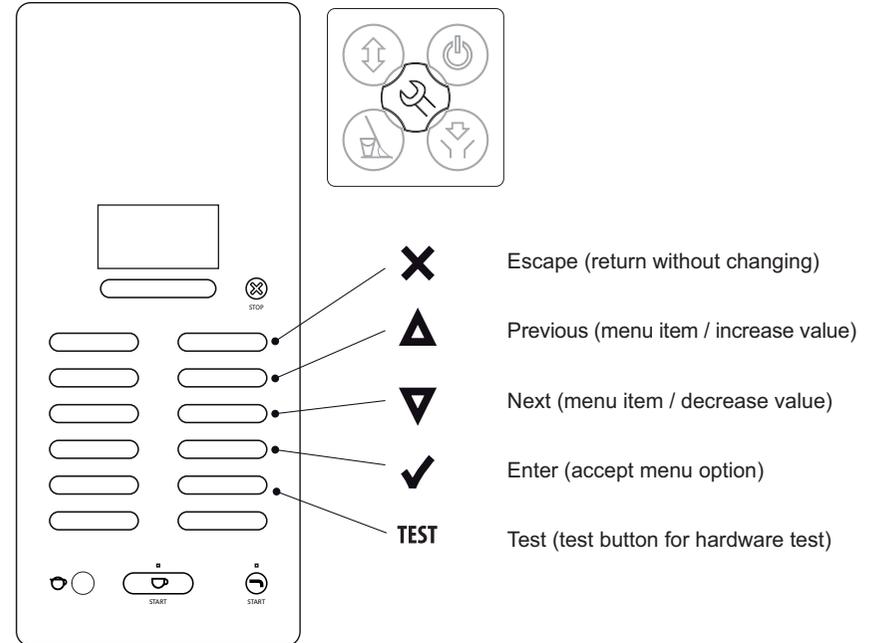
2. MENU STRUCTURE

2.1 The operator / service menu

Most of the settings, including the product settings are secured by a PIN code. This PIN code is intended to prevent the user accessing the service menu.

It is recommended not to leave this document with the user after installation and to change the standard factory PIN code.

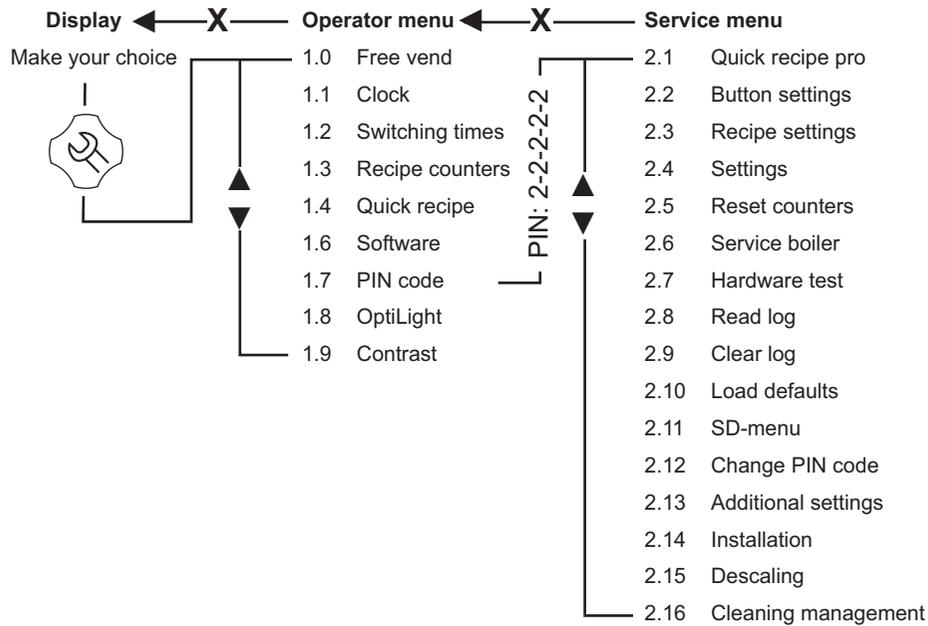
This chapter describes the various settings that can be changed by **trained, authorised service personnel**. How you gain access to the **service menu** is described below. Once in the service menu, the control panel has the following functions:



GB

- Menu items are connected to each other in a 'loop'.
- Exit the Operator menu; press the X key 1x.
- Exit the Service menu; press the X key 2x.
- After exiting the service menu, a long peep signal follows as a sign that changed settings are being stored in the memory.
- If the service menu has to be opened again within 5 minutes, the machine will not ask for a PIN code again.

Menu overview:



The operator and service menu of the OptiBean is constructed almost the same as the OptiVend and OptiFresh and OptiFresh NG machines.

2.2 The operator menu

Operator menu					
Main item	Sub-item		Range	Set	Description
1.0 Free vend			yes-no	yes	Set the machine for free or paid vending.
1.1 Clock	Time		HH:MM		Set the clock to the correct local time.
	Date		DD-MM-YYYY		Set the clock to the correct local date.
1.2 Switching times	Mo-Fri	Mon-Fri 1 Mon-Fri 2 Mon-Fri 3	On time 00:00 Off time 00:00		Set the time (max. 3 timers) when the machine must be in operation. When the timer switches the machine off it automatically goes into stand-by and/or power save (if activated). Stand-by: blocks keys and switches off. Energy save mode; see below.
	sat	sat 1 sat 2 sat 3	On time 00:00 Off time 00:00		
	sun	sun 1 sun 2 sun 3	On time 00:00 Off time 00:00		
	Energy save mode	Active	yes-no	yes	
	Time	15-240 min.	30 min.		
	LCD	yes-no	yes	Backlight LCD display during energy save mode.	
	OptiLight	0-100%	15%	OptiLight during energy save mode. 0=off	
	Boiler temp.	off / 60-80°C	off	Boiler temperature during power save.	
Example: Three switching times set Machine automatically switches from Stand-by to ON at 9 am. At 11am back to Stand-by, etc., etc. During stand-by the key panel is switched off and the boiler temperature drops to the set stand-by temperature (menu 2.4 Instellingen (settings) / Stand-by temp / off - 60-80°C (by default the stand-by temp is set to 'off'))					
Three switching times set & Energy save mode activated. When the machine is ON and it is not in use, it switches to power save after 30 min. The boiler temperature decreases by 5°C every 30 minutes. If a product is chosen after 2 hours, the machine springs back into life. In this way, less energy is used if the machine is switched on but is used little or if someone forgot to switch it off.					
Energy save mode activated (no switching times set) If there is no dispensing, the machine switches to power save after 30 min. The boiler temperature decreases by 5°C every 30 minutes. If a product is chosen after 2 hours, the machine springs back into life. In this way, less energy is used if the machine is switched on but is used little or if someone forgot to switch it off.					

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Operator menu continued...						
Main item	Sub-item		Range	Set	Description	
1.3 Recipe counters	Recipe 1 Recipe 12	Total	cups		Total count per recipe (free-paid-pots).	
		Free	cups		Number of free drinks made per recipe	
		Paid	cups		Number of paid drinks made per recipe	
		Pot	cups		Number of pots made per recipe	
	Recipes total	Total	cups			Total count for all recipes
		Free	cups			Total count for all free recipes
		Paid	cups			Total count for all paid recipes
		Pot	cups			Total count for all pots made
	service counters	Rinse				Rinse programme counter
		Clean				Cleaning programme counter
	Reset counters					Reset all counters if activated
	Save counters					Copy your counter readings to an SD card - Place an SD memory card in the slot - Press enter; save as: file.CNT - Press Enter → please wait → saved - Remove the SD card - Place the SD card in your computer and open the file.CNT with notepad or wordpad. See the example on page 31 Error messages: SD card error: lock function on SD card ON No SD card present: no SD card inserted
	1.4 Quick recipe	Recipe name 1 Recipe name 12	Cup volume	25-350 ml	120 ml	Here you can easily set the volume and strength of coffee, milk, sugar, cocoa yourself for each recipe (drink key). Only the ingredients for the recipe concerned are visible.
			Coffee (1)	-5 / +5%	0%	
Topping (3)		-5 / +5%	0%			
Cocoa (4)		-5 / +5%	0%			
1.6 Software					Software version can be read out here	
1.7 PIN-code			2-2-2-2-2		Pin code is press the 2 key 5x	
1.8 OptiLight	Red		0-100%	0%	Set your LED lighting colour yourself by setting the colours red, green and blue. When Random is set, the LED mood lighting cycles through the whole colour spectrum at the set time. 0= off	
	Green		0-100%	0%		
	Blue		0-100%	100%		
	Random		0-60 min.	10 min.		
1.9 Contrast			0-100%	25%	Set the contrast of the LCD display	

OptiLight colour recipes

OptiLight	red	green	blue	OptiLight	red	green	blue
Red	100%	0%	0%	Light blue	0%	100%	100%
Green	0%	100%	0%	White	100%	100%	100%
Blue	0%	0%	100%	Pink	100%	0%	10%
Yellow	100%	50%	0%	Orange	100%	15%	0%
Purple	100%	0%	100%				

Table 1

2.3 The service menu

Service menu					
Main item	Sub-item	Item	Range	Set	Description
2.1 Quick recipe pro	<Recipe name> 1 <Recipe name> 12	Cup volume	25-350 ml	120 ml	Here you can easily set the volume and strength of coffee, milk, sugar, cocoa yourself for each recipe (drink key). Only the ingredient for the recipe concerned is visible.
		Coffee (1)	0,0 - 5,00 s		
		Topping (3)	0,0 - 5,00 s		
		Cocoa (4)	0,0 - 5,00 s		
2.2 Button settings	Button 1 Button 12	Recipe name	Coffee ↓ List ↓		Change the standard recipes programmed for the keys at the factory. All the settings belonging to the chosen recipe are loaded automatically.
		Recipe active	yes-no	yes	Disable the product key concerned
		Price	0.05-2.00	0.10	For paid issue a price can be set for each product key
		Cup volume	25-350 ml	120 ml	Set the required cup volume here. All other parameters (such as coffee measurement) are adjusted automatically. This parameter is linked to the quick recipe cup volume!
		Multicup	0-10	0	Set the number of cups that must be measured when the key switch is set to the jug switch position.
		Key switch	0-1-2-3-4		Set the required operation of the key switch. See table 2
		Push & Hold	yes-no	no	If set to yes; when this key is held the dispensing of the hot/cold* water starts and stops when it is released. Use this option only with DV 4 and KW3 in combination with a hot/cold* water recipe key. * Cold water is optional
		Drip time	0-10 sec.	2 sec.	The time that the product continues to run out of the brewer or mixer. After this interval has elapsed a new drink selection can be made.
		Pre-infusion	yes-no	yes	Pre-infusion for optimum espresso extraction. Pre-infusion is the advance moistening of the ground coffee just before the coffee is made. This ensures an even better extraction and creaming of the coffee. This option only works for the coffee and espresso recipes.

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Key switch

Software menu parameter				Key switch	
Key switch	Multicup	Free vend	Payment system G13 / MDB	⏻ (off)	⏻ (on)
0	0	Yes	n.a.	free cup	free cup
		No	Yes	paid cup	free cup
		No	No	free cup	free cup
	>1	Yes	n.a.	free jug	free jug
		No	Yes	paid jug	free jug
		No	No	free jug	free jug
1	0	Yes	n.a.	free cup	free cup
		No	Yes	paid cup	free cup
		No	No	free cup	free cup
	>1	Yes	n.a.	free cup	free jug
		No	Yes	paid cup	paid jug
		No	No	free cup	free jug
2	0	Yes	n.a.	not possible	free cup
		No	Yes	not possible	free cup
		No	No	not possible	free cup
	>1	Yes	n.a.	not possible	free jug
		No	Yes	not possible	paid jug
		No	No	not possible	free jug
3	0	Yes	n.a.	free cup	free cup
		No	Yes	paid cup	free cup
		No	No	free cup	free cup
	>1	Yes	n.a.	free cup	free jug
		No	Yes	paid cup	free jug
		No	No	free cup	free jug
4	0	Yes	n.a.	free cup	free cup
		No	Yes	paid cup	free cup
		No	No	free cup	free cup
	>1 (2)	Yes	n.a.	free jug	free jug
		No	Yes	paid jug	free jug
		No	No	free jug	free jug

Table 2

Service menu continued ...

Main item	Sub-item	Sub	Item	Range	Set	Description
2.3 Recipe settings	<Recipe name> 1	Unit 1	DV 1 WT	0.0-30.0 s		Waiting time Water 1
			DV 1	0-100 ml		Pressure valve measurement quantity)
			Coffee WT	0.0-30.0 s	0.5 s	Coffee grinder delay time
			Coffee	0.00-5.00 s		Coffee grinder coffee dispensing time
			Brewer WT1	0.0-30.0 s	0.5 s	Brewer delay time 1 after grinding coffee.
			PI time	0.0-15.0 s	2.0 s.	Pre-infusion time (PI time). The brewer valve is open for the set PI time, the coffee powder is moistened at water supply pressure (approx. 2 bar). Note: if coffee is still coming out of the brewer, the PI time is too long.
			PI pause	0.0-15.0 s	0.5 s.	Pre-infusion pause (PI pause). The brewer valve is kept closed during the set PI pause; the coffee swells up. Note: the Pre-infusion function can simply be turned ON/OFF in menu 2.2 Button settings) / Pre-infusion).
			Brewer WT2	0.0-15.0 s	3.0 s.	Brewer delay time 2 after making coffee. This affects the residual moisture in the coffee pellet.
			Pressure WT1	0.0-15.0 s		Delay time between unit 2 and unit 1 Mainly used for extending the time between topping and coffee for Latte macchiato.
			Pressure time	0.0-15.0 s		The pressure boiler is brought to low pressure.
	Pressure WT2	0.0-15.0 s		Delay time 2 after the pressure boiler is reduced to low pressure again.		
	<Recipe name> 12	Unit 2	DV 2 WT	0.0-30.0 s		Pressure valve delay time 2
			DV 2	0-100 ml		pressure valve measurement quantity 2
			Rinse 2 WT	0.0-20.0 s		Pressure valve rinse water delay time 2
			Rinse 2	0-15 ml		Pressure valve rinse water quantity). Is automatically offset by DV 2
			Topping WT	0.0-30.0 s		Topping delay time
			Topping	0.00-5.00 s		Topping product dispensing time
			Cacao WT	0.0-30.0 s		Cocoa delay time
			Cacao	0.00-5.00 s		Cocoa product dispensing time
			Mixer 2 WT	0.0-30.0 s		Delay time Mixer 2
Mixer 2			0.0-50.0 s		Running time for Mixer 2	

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Service menu continued ...							
Main item	Sub-item	Sub	Item	Range	Description		
2.3 Recipe settings (continued....)	<Recipe name> 1	DV 4 WT		0.0-30.0 s	Pressure valve 4 delay time		
		DV 4		0-100 ml	Pressure valve 4 dispensing quantity (hot water dispensing)		
		DV 5 WT		0.0-30.0 s	n.a.		
		DV 5		0-100 ml	n.a.		
		Range ing.	Coffee strength		0-10%	With the strength range item an ingredient can be added to the strength control. Ingredient strength control: 0 = off / >1 = on Example: [coffee] 5% 	
			Topping strength		0-10%		
			Cocoa strength		0-10%		
		Unit sequence			Unit 1-2 Unit 2-1	Set the unit sequence here. For example, Coffee with Milk: Unit 1-2 first Coffee (unit 1) then milk (unit 2). Cappuccino and/or Latte macchiato: Unit 2-1 first Milk (unit 2) then Espresso (unit 1).	
		KW 3 WT				0.0-30.0 s	Cold water valve 3 delay time *
		KW 3				0-100 ml	Cold water valve 3 dispensing quantity * (* Optional cold water dispensing)
<Recipe name> 12							

Service menu continued ...					
Main item	Sub-item	Item	Range	Set	Description
2.4 Settings	Language	English			Display language selection. English is factory set. Other languages on request (if available)
		Dutch			
		German			
		French			
		Svenska (Swedish)			
		Norsk (Norwegian)			
		Suomi (Finnish)			
	Dansk (Danisch)				
	Temperature	Temperatuur boiler	70-97°C *	90°C *	Boiler temperature
		Temperatuur hysteresis	0-10°C	0°C	Temperature decrease after which the boiler must heat up again
		Output block	70-80°C	70°C	Boiler temperature at which no more vending can take place. Display: [Out of service, boiler heating]
		Output release	80-90°C	80°C	Boiler temperature at which vending can be released again
		Standby temperature	off / 60-80°C	off	Boiler temperature during stand-by
		Display	Display clock	yes-no	yes
	Display date		yes-no	yes	Show the date in the display
	Use beeper		yes-no	yes	Sound signal on or off
	Ventilator	Fan time	0-300 sec.	60 s.	Duration of fan speed 2 after dispensing.
		Fan speed 1	40-100%	40%	Fan speed when idle
Fan speed 2		40-100%	70%	Fan speed during dispensing	

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# Coin channel settings foreign currencies		Danish Krone	Swedish Krone	Norwegian Krone	South African Rand	Jordanian Dinar
		DK	SKR	NOK	ZAR	JOD
CH 1	0,50	0,50	1,00	0,50	0,50	
CH 2	1,00	1,00	5,00	1,00	1,00	
CH 3	2,00	5,00	10,00	2,00	25,00	
CH 4	5,00	10,00	20,00	5,00	50,00	
CH 5	10,00	1,00	10,00	5,00	1,00	
CH 6	20,00	0,00	20,00	0,00	0,00	
Max coin accep.	10,00	10,00	10,00	2,00	50,00	

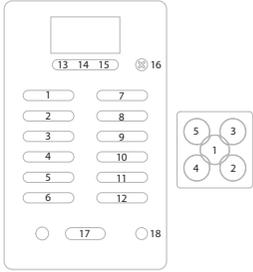
Service menu continued ...						
Main item	Sub-item	Item	Range	Set	Description	
2.4 Settings (continued...)	Coin system	None			No payment system connected	
		G13	Coin channel 1 Coin channel 6	0-100.00 + Token	€ 0.05	Coin value per channel setting. Resp. € 0.05 to € 2.00. 0.00 = free TOKEN = coffee coin.
					€ 0.10	
			€ 0.20			
			€ 0.50			
			€ 1.00			
			€ 2.00			
		Single vend	yes-no	yes	Yes; any excess money inserted is not kept for the following drink. No: is kept for the following drink.	
		Max coin acceptance	€ 0.05-100.00	€ 2.00	Insertions higher than, for example, € 2.00 will be refused and returned via the coin groove of the coin mechanism. Set to the highest recipe product price.	
		Point position	0-2	2	The position of the decimal point in the amount.	
		Show credit	yes-no	yes	Display credit (Cr.) on the display	
		MDB	Single vend	yes-no	yes	Yes; any excess money inserted is not kept for the following drink. No: is kept for the following drink.
	Max coin acceptance		€ 0,05-100,00	€ 2,00	Insertions higher than, for example, € 2.00 will be refused and returned via the coin groove of the coin mechanism. Set to the highest recipe product price.	
	Point position		0-2	2	The position of the decimal point in the amount.	
	Show credit		yes-no	yes	Show credit (Cr.) on the display.	
	Purchase obligation		yes-no	yes	Whether money is returned or not when the return handle is pressed.	
	Pre paid		yes-no	no	Whether or not a drink selected can be made after sufficient money has been inserted.	
		Cash and Card	Yes/no	No	yes: when Y-cable is used for coin- and card system on one MDB connection	
	I/O reset counters		yes-no	no	Add menu item Reset counters to the operator menu.	
	I/O Quick recipe		yes-no	no	Menu item Snelrecept aan het operatormenu toevoegen	
	Drip tray signal		yes-no	yes	Deactivate the drip tray sensor warning in the software.	
	Demo modus		yes-no	no	This function can be used when the machine is in a showroom or at a trade fair. The machine does not then need to be connected to a water supply. In the display, DEMO is shown on the bottom line. Keys, LEDs and the Display operate normally.	

Service menu continued ...						
Main item	Sub-item	Item	Range	Set	Description	
2.4 Settings (continued...)	Stop button		yes-no	yes	If this function is set to Yes, the instant products can be stopped using the stop button. Hot water (and cold water) can also be stopped. If fresh coffee is being made (brewer) the recipe will simply be completed.	
	Direct choice		yes-no	no	If this function is set to Yes, the chosen product will be started immediately, without the start key being pressed. Strength setting is possible.	
	Free vend		yes-no	yes	Set the machine for free or paid vending.	
	I/O Free vend		yes-no	yes	Add/remove menu item 1.0 Free vend to the operator menu.	
	2.5 Reset counters	Service counters	Rinse counter?			Reset rinse counter.
Clean counter?					Reset cleaning counter.	
Recipe counters		Recipe counter 1 Recipe counter 12				Reset recipe counters for each recipe.
		Reset total counter				Reset total counters.
Reset all counters					Reset all counters at once.	
2.6 Service boiler	Service moment		0-50.000	12.500	After reaching the set service moment, the message Service boiler appears in the display on switching on. See also Chapter 5 Service.	
	Service counter			12.500 ↓ 0 ↓ -12.500	The total number of drinks vended is counted down here. It can be checked here at any time how far waya the machine is from periodic maintenance (boiler descaling or water filter replacement). When the counter reaches 0 it continues with a negative count.	
	Reset service counter				After periodic maintenance has been carried out (boiler descaled or filter replaced) the service counter must be set to zero.	

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Water hardness table

Water quality	Hardness					Scale indicator cups
	°D	°F	°K	mmol/l	mgCaCo3/l	
Very hard	18-30	32-55	11-18	3.2-5.3	321- 536	5,000
Hard	12-18	22-32	7-18	2.2-3.2	214-321	8,500
Average	8-12	15-22	5-7	1.4-2.2	268-214	12,500*
Soft	4-8	7-15	2-5	0.7-1.4	72-268	20,500
Very soft	0-4	0-7	0-2	0- 0.7	0-72	0 = off

Service menu continued ...						
Main item	Sub-item	Sub	Range	Description		
2.7 Hardware test	Inputs	Temp	Boiler temp °C	Shows the status of the sensors/switches concerned 		
		Drip tray sensor	yes/no			
		Waste bin	yes/no			
		Door switch 1 (pin)	yes/no			
		key switch	yes/no			
		brewer switch 1 (right)	yes/no			
		brewer switch 2 (left)	yes/no			
		Door switch 2 (lock)	yes/no			
		Key panel				
		Service panel				
	Outputs	KW1	500mA	Inlet valve (Boiler)		
					DV1	DoseerVentiel (measuring valve) 1 (Brewer)
					DV2	DoseerVentiel (measuring valve) 2 (Mixer 2)
					DV4	DoseerVentiel (measuring valve) 4 (Hot water)
					DV5	Measuring valve 5 (n.a.)
					DV6	NO valve
		IM1 #	600mA	Grinder motor 1		
					IM3 #	Ingredient motor 3
					IM4 #	Ingredient motor 4
					BM #	900mA
		MM2 #	1000mA	Mixer motor 2		
		Ventilator	200mA	Fan		
		LED's		LED's		
		KW2	500mA	Pump (via SSR)		
					KW3	Measuring valve KW3 cold water
		OptiLight	Red, Green, Blue			
		Calibration water system	Flow meter	1.850 p/ml (1.700-2.000)	With this (if necessary) the flow meter can be calibrated. The calibration is not described because it is not expected that it will ever have to be carried out.	
			KW1			
			Pump		Check/set the pump pressure (10 bar). Connect the manometer to the boiler inlet. Caution! Release the pressure in the boiler first using 2.14 Installation / Shut down. Press the test key, activate KW1 (inlet valve), KW2 (pump) and DV6 (NO valve). Adjust the pump pressure (see Section 5.4) with the adjustment screw on the pump housing. Stop measurement; press any key.	

Service menu continued ...				
Main item	Sub-item	Sub	Item	Description
2.7 Hardware test (continued...)	Operating hours	Brewer/Mixer(s)	Brewer	<p>Day - Hour : Min.</p> <p> </p> <p>0 - 00 : 00</p> <p>Number x activated</p> <p> </p> <p>- - - - X</p>
			Mixer 2	
		Ingredient motor(s)	IM 1 (grinder)	
			IM 3 (topping)	
			IM 4 (cocoa)	
		Pump	KW2 (pump)	
		Valves	DV1 (brewer)	
			DV2 (mixer)	
			DV4 (hot water)	
			DV5	
			DV6 (NO valve)	
		Element	KW1 (inlet valve)	
			KW3 (cold water)	
			Element 1	
			Element 2	

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