EQUATOR
Swiss made coffee machines

Bolivia 2.0

Technician manual

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1 Introduction

Please read this technician manual carefully before putting the machine into operation, and keep it in a safe place for future reference.

This technician manual provides information about operating and maintaining the coffee machine. It explains how to use the machine correctly and safely.

The machine must be operated and maintained in accordance with the instructions in this manual. We do not accept any liability for damage resulting from improper use or failure to observe these instructions.

If you require more information, please contact your service partner.

1.1 Explanation of symbols

	**Warning: potential danger**
	**Warning: dangerous voltage**
<Coffee>	Display field
▪	List item indicating an action to be performed within a series of step-by-step instructions

1.2 Intended use

This machine is designed to make hot drinks from coffee and/or milk and/or powder and to dispense them into suitable receptacles.
It is intended for commercial use and for use by specialists or trained users in shops, offices, the catering and hospitality industries, or similar applications.
It may be used in self-service areas if trained personnel are on hand to supervise.
Intended use also covers observing all of the instructions supplied with the machine. If the machine is used in any way that goes beyond the intended use, this is considered to be improper.
Also observe the local accident prevention regulations and general safety regulations.

Foreseeable misuse

The machine is not designed to produce other liquids.

1.3 General safety information

DANGER
Failing to observe the safety information can lead to serious injuries or damage to the machine.
Read the safety information below and make sure that you understand it and observe it.

Electrical hazards

Improper handling of the machine can result in electrical shock, which poses a risk to life.

- Only authorised service technicians may connect, install, maintain, repair and dispose of the machine.
- Always disconnect the mains plug when working inside the machine.
- Connect the machine to a fused circuit. Ensure that the connection has been properly earthed and fused.
- The machine may only be operated with the side panels installed.
- Unauthorised alterations or modifications to the machine are prohibited.
- Observe the relevant guidelines regarding low voltage and/or the national or local safety regulations and provisions.
- Never touch live parts.

Hazards arising from improper use of the machine

Improper handling of the machine can result in a risk of injury.

- The machine is to be used exclusively for preparing hot drinks with coffee or instant powder. Do not use any other liquids.
- Only use the machine if it is working perfectly and is not damaged.
- Only authorised service technicians may transport, connect, install, maintain, repair and dispose of the machine.
- For self-service applications and applications with an operator, make sure that trained personnel are available to supervise the machine so that compliance with the care measures can be ensured and someone is available to answer questions on use.
- Do not place cups or other objects on the machine.
- Ensure that the machine is always operated with the side panels installed.

Hazards arising from hot liquids and steam

There is a risk of scalding from contact with hot liquids and steam.

- Do not reach under the spout when switching on, rinsing, preparing drinks and cleaning.
- Do not touch the spout.

Hazards arising from hot machine parts

There is a risk of burns from contact with hot machine parts.

- Do not touch the spout when switching on, rinsing, preparing drinks and cleaning.
- Let the machine cool down before any service or repair work, or wear gloves.

Hazards arising from moving machine parts

There is a risk of crushing and injury if you come into contact with moving machine parts.

- Ensure that the machine is always operated with the bean container lid closed.
- Only trained personnel may clean or fill the machine.

Hazards for children and specific people

- Ensure that the following people, including children, are supervised when using the machine: people who, as a result of their physical, sensory or mental capabilities or due to inexperience or lack of awareness, are not able to operate the machine safely or understand the dangers of incorrect operation.
- Keep children under 8 years old away from the machine.
- Do not let children play with the machine.
- Children may only carry out cleaning work if they are supervised by a responsible person.

Hazards for people with pacemakers and implanted defibrillators

Functional influence of pacemakers and implanted defibrillators by magnets.

- People with such electro-medical devices must maintain a distance of at least 10 cm from the machine.

Hazards arising from pressurised machine parts

Certain machine parts are pressurised.

- Ensure that the machine is always operated with the side panels installed.

1.4 Prerequisites for use

- Only use the machine at operating temperatures between 5 and 40°C.
- Only install the machine inside (IP20) in spaces with a maximum relative humidity of 80%.
- The installation location must be less than 2000 m above sea level.
- Only operate the machine if the water supply pressure is between 1 and 6 bar. The water pressure in the machine must not exceed 16 bar.
- Only connect the machine to sockets with their own fuse.
- The machine is a counter-top model and must not be operated on the floor.
- The machine must not exceed an inclination of 2° when installed in its operating position. It can be aligned by means of the adjustable feet.

Ensure compliance with the following directives and regulations – as applicable in your country – when transporting, installing, maintaining and repairing the machine:

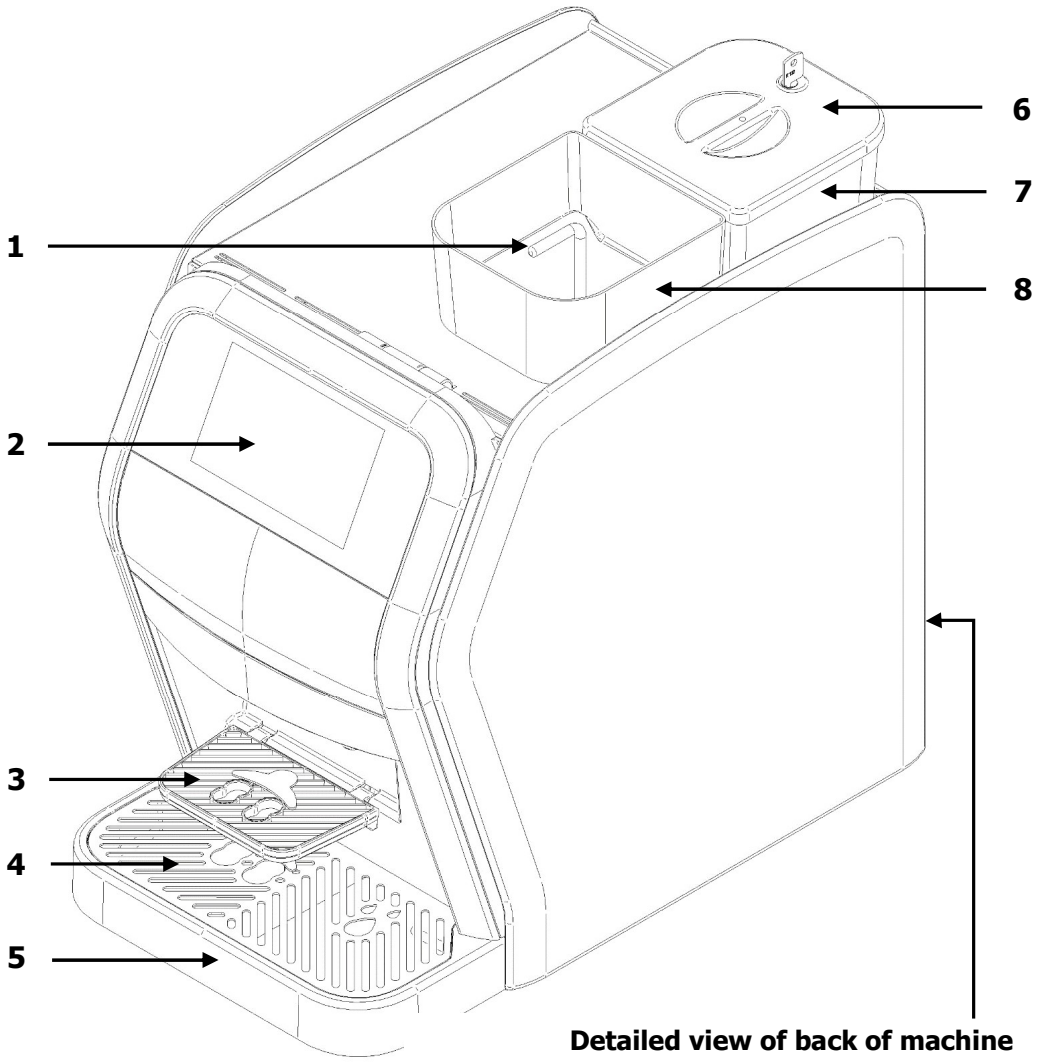
- Regulations from electrical associations, e.g. VDE, SEV, etc.
- EC directives (in EU countries)
- Accident prevention regulations
- Guidelines from employers' liability insurance associations
- Trade regulations

1.5 User authorisation

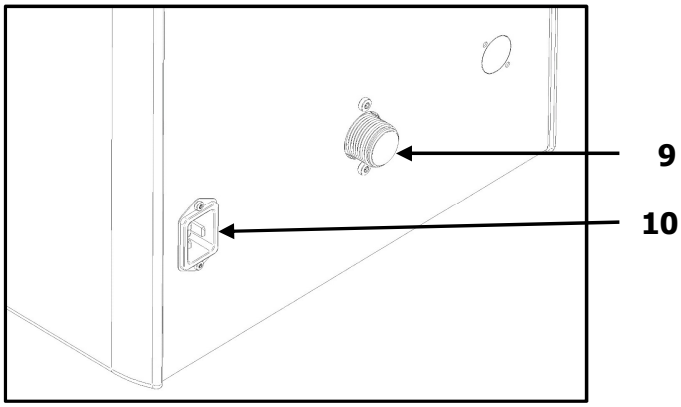
The machine may only be installed and serviced by qualified, trained and authorised service technicians. These people must:

- be employed by one of the manufacturer's authorised service partners.
- have taken part in a product training session held by the manufacturer
- or have been instructed accordingly on the machine by their supervisor / employer.
- be familiar with the HACCP regulations.

1.6 Machine overview: Door closed

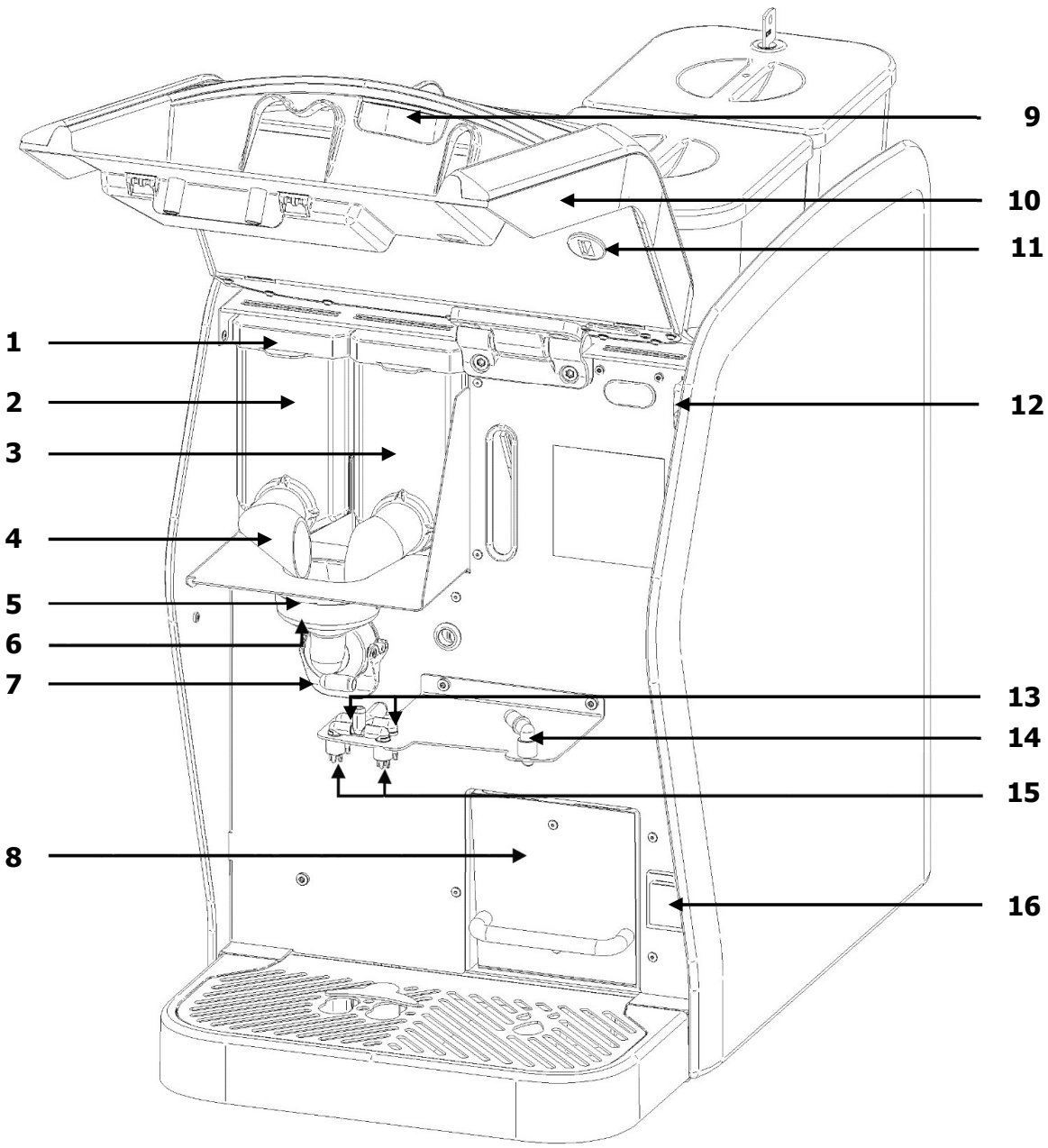


Detailed view of back of machine



1 Locking handle for bean container
2 Touch display
3 Cup table
4 Drip tray plate
5 Drip tray
6 Bean container lid
7 Bean container 2
8 Bean container 1
9 Water connection
10 Machine plug for power connection

1.7 Machine overview: Door open



1	Instant powder container lid	9	Recessed door grip
2	Instant powder container 1	10	Door
3	Instant powder container 2	11	USB interface
4	Chute	12	Door switch
5	Mixer lid	13	Instant dual outlet (rear)
6	Mixer bowl	14	Hot water outlet
7	Mixer mounting bracket	15	Coffee dual outlet (front)
8	Coffee grounds container	16	Main switch

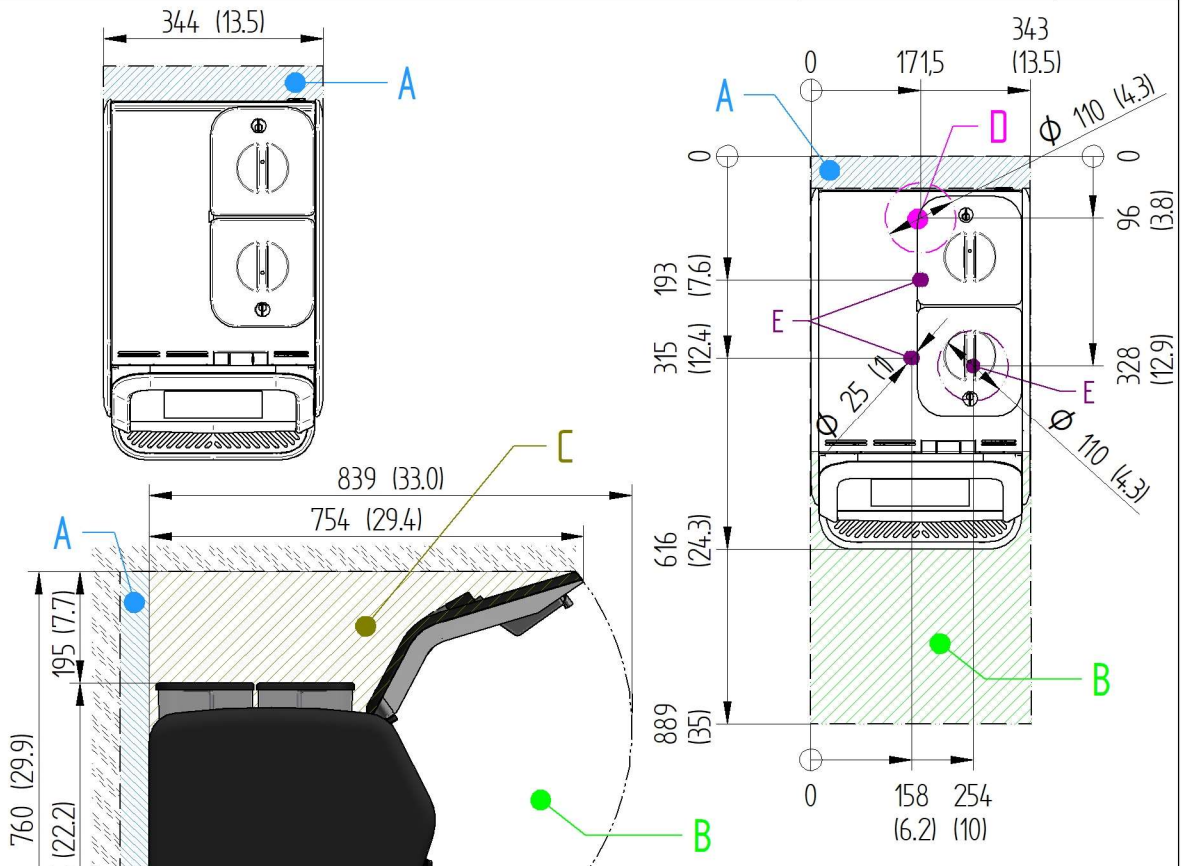
1.8 Dimensional drawing

Massblatt / Dimension / Mesures

Bolivia

Aequator AG St. Gallerstrasse 229 CH-9320 Arbon

Zeichnungsnummer / drawing number	Revision / revision
1007594	**001**



Dimension unit mm (inch)

Legende / legend / légende

A: Freiraum für Belüftung / free space for ventilation / espace pour ventilation
B: Freiraum zum öffnen der Türe / Free space to open the door / espace pour ouvrir la porte
C: empfohlener Freiraum für Bohnenbefüllung / recommended free space to fil in beans / espace recommandé pour remplir grains à cafe 200mm (7.9")
D: Ausschnitt für Anschlüsse / opening for connections / overture pour connexions
E: Ausschnitt für Direktsatzabwurf / opening for direct drop waste disposal / overture pour éjection directe du marc
1: Haupthahn (Rohwasser) / water connection / branchement d'eau 1-6bar
2: Entkalkungsgerät mit Partikelfilter / de-scaling device with particle filter / appareil anticalcaire avec filtre à particules
3: Elektrospeisung / electric supply / prise de courant 230V / 50 Hz / 3000W / 13A
4: Ablauf / waste water / eau usée ø25mm (1.0")

1.9 Technical data

Dimensions

Width	345 mm
Depth	570 mm
Height	565 mm

Weight

Total weight	27 kg

Water

Water connection	¾" gas
Water pressure	0.1–0.6 MPa (1–6 bar)

Electrics

Connection	230 V 50/60 Hz
Machine plug type	C19
Fuse rating	13 A
Connected load	3000 W

Ambient conditions

Working temperature	5–40°C
Humidity	Max. 80% (non-condensing)

2 Operation

2.1 Preparing to put the machine into operation

The manufacturer accepts no liability for damage resulting from a failure to observe the instructions below.

DANGER
Risk to life from electric shock.
The machine contains live parts. There is a risk to life from the mains voltage if you come into contact with conductive liquids.

- Only authorised service technicians may open the machine.
- If liquid is accidentally spilt over the machine housing, disconnect the mains plug and contact your service partner.
- Do not place any receptacles containing liquids on the machine.

Installation

Prior to installation, check the on-site conditions based on the information below with regard to the following areas:

- Water
- Electrics
- Water hardness

Unpacking the machine

CAUTION
Packaging material with sharp edges can cause cuts and eye injuries.

- Wear protective glasses and gloves when unpacking the machine and cutting the straps.

CAUTION
If you do not position the machine correctly, it may tip over, thereby creating a crushing risk.

- Observe the prerequisites for positioning the machine. Ensure that the machine is not tilting by more than 2°.

After removing the packaging, check that the machine is undamaged. If in doubt, do not put the machine into operation.
The packaging materials must be recycled or disposed of as appropriate.

Prerequisites for positioning the machine:

- A level and stable installation surface must be available.
- Never position the machine on the floor.
- The installation surface must be wide enough that there is at least 10 cm of space between the front edge of the machine and the front edge of the installation surface.
- Position the machine in such a way
- that it is not tilted by more than 2°.

Water supply

The machine is connected to the drinking water supply and the applicable regulations of the relevant country must be observed.
The water supply pressure must be between 1–8 bar.
Before the machine is connected, the lines must be flushed until the water coming out is clean and clear without any traces of impurities. Connect the machine using the hose included with the delivery. The water line on the outside of the machine must be fitted with a stopcock in an accessible position.

Water filter / Softening

The machine is supplied without a softener or filter as standard.
Phosphate filters can be used if the water is hard, and ion exchangers can be used if it is very hard.
Generally, a suitable water filter should be installed between the water connection and the machine.
The manufacturer accepts no liability for damage to the machine resulting from a failure to take appropriate protective measures with regard to water quality.
Only one filter may be used per machine. Do not use one large filter for multiple machines.

Electrics

The machine is designed for operation with a single-phase voltage of 230 V AC.
The connection socket must be in an accessible position. The use of adapters, multi-plugs or extension cables is prohibited.
Before switching the machine on, make sure that the information on the data plate corresponds to that of the mains supply:

- Is the supply voltage within the limits stipulated for the connection point?
- Does the fuse rating correspond to the maximum load required?
- Does the circuit ensure that phase and neutral can be disconnected from the mains with a distance of at least 3 mm between the contacts?
- Have the earth connections been inserted correctly?

The electrical safety of the machine is only guaranteed if it is connected to a mains supply with an effective and compliant earthing system.

The machine connection cable may only be replaced by qualified personnel. Original Aequator spare parts must be used.

2.2 Putting the machine into operation

CAUTION
Contact with hot liquids and steam can cause scalding.
- Do not reach under the spout when switching on, rinsing, preparing drinks and cleaning.
- Do not touch the spout.

The key steps for putting the machine into operation and calibrating the drinks are described below. For more information on putting the machine into operation, please refer to the separate checklist on the dealer platform.

Switching the machine on and off

The power supply is switched on and off at the main switch.
- Open the door forwards using the recessed door grip (between the hot water and coffee outlets).
- Press the main switch.
- Close the door.
- The machine prompts you to fill the water system. Confirm the message with **<Next>**.
- Start the mixer rinsing process by pressing **<Execute now>**.

Accessing the technician overview

- Open the door and wait until **<Operator overview>** appears on the touch display.
- Close the door.
- Select **<Login>**.
- Key in the password and confirm by pressing **<Login>**.

Filling the machine

Before putting the machine into operation, check that the water connection has been established correctly and the stopcock is open.

The machine is supplied with an empty water circuit ex works. The machine must be filled with water before it is put into operation.
- Connect the water.
- Connect the machine connection cable.
- Switch on the machine.
- Close the door.
- The machine prompts you to fill the water system.
- Place a receptacle under the hot water outlet.
- Confirm the message by pressing **<Execute now>**. The water system will be filled.
- Start the mixer rinsing process by pressing **<Execute now>**.
- The machine is ready for operation.

2.3 Calibrating the machine

WARNING
Risk of crushing for hands and fingers due to moving machine parts.
- Do not reach into the brewing unit.
- Do not reach into the instant conveyor unit.

CAUTION
Hot liquids and steam are discharged frequently during the calibration process. Contact with hot liquids and steam can cause scalding.
- Do not reach under the spout.
- Do not touch the spout.

Adjusting the grinding setting

As a general rule:
- The finer the grinding setting, the lower the flow speed. The coarser the grinding setting, the higher the flow speed.
- The following applies to the recipe parameters:
  - High value = fine grinding setting
  - Low value = coarse grinding setting
- Optimum grinding setting for coffee 1: flow rate of a coffee is 15–20 s for 120 ml (= 6–8 ml/s)
- Optimum grinding setting for coffee 2: flow rate of an espresso is 12–15 s for 40 ml without pre-brewing (= 2.5–3.5 ml/s)

You can set the grinding setting individually for each recipe. For more information, see "Drinks recipes and parameters".

Calibrating instant products

The amount of ground coffee dispensed must be weighed several times during calibration. The variation between two measurements must not exceed +/-0.2 g.
- Make sure you have a set of scales to hand and a receptacle to collect the instant powder.
- Access the technician overview.
- Select **<Manage products>, <Calibrate instant powder 1>**.
- Select **<Start>.**
- **Follow the instructions on the touch display** until instant powder 1 has been calibrated.
- Select **<Calibrate instant powder 2>** and proceed in the same way as for **<Calibrate instant powder 1>**.

Calibrating coffee

Before the coffee is calibrated, the grinding setting must be adjusted correctly (see "Adjusting the grinding setting" section).

The amount of ground coffee dispensed must be weighed several times during calibration. The variation between two measurements must not exceed +/-0.5 g.
- Make sure you have a set of scales to hand and a receptacle to collect the ground coffee.
- Access the technician overview.
- Select **<Manage products>, <Calibrate coffee 1>**.
- Select **<Start>** and follow the prompts on the touch display until coffee 1 has been calibrated.
- Select **<Calibrate coffee 2>** and proceed in the same way as for **<Calibrate coffee 1>**.

Setting drinks recipes and parameters

You can manage drinks recipes on an individual basis. This means that you can set the parameters independently for each drinks recipe.

- Access the technician overview.
- Select **<Recipes>.**
- Select the recipe in question.
- Activate and edit the required parameters.
- Press the **<save>** icon to confirm your changes.

If the settings are changed for a particular drink (e.g. "Coffee Normal"), the other varieties of the drink ("Coffee Schwächer", "Coffee Stärker") will not be affected. The settings must be configured individually in each drink recipe.

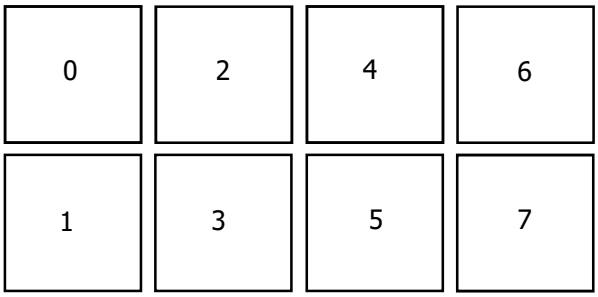
If drinks parameters have been changed, a test drink can be prepared in order to check the settings. Proceed as follows to prepare the test drink correctly.

- Access the technician overview.
- Select **<Cleaning>, <Rinse mixer>**.
- Start the mixer rinsing process by pressing **<Next>**.
- Exit **<Cleaning>** and select **<Recipes>**.
- Select the desired drink and **<Next>**.
- Set the drinks parameters and prepare a test drink by pressing the **<cup>** icon.
- If you are happy with the test drink, select **<Save>**, otherwise repeat the process.

2.4 Editing the drink card

You can edit the drink card as follows:

- Position:
  - Determines the position at which the drink is displayed in the drinks menu:



- Name
  - Display name for the drink on the tile
- Recipe assignment
  - Indicates the recipe that is accessed when a drink reference is made to this tile
- Drink information
  - Edit information about the drink
- Image
  - Change the icon for the tile (not currently possible directly on the machine)

- Access the technician overview.
- Select **<Drink card>**.
- Start adjusting the settings.
- Press the **<save>** icon to confirm your changes.
- Press **<Back>** to exit the menu.

2.5 Maintenance

Warranty claims will be invalidated if the machine is not maintained properly.
For more information on maintenance, please refer to the separate checklist on the dealer platform.

2.6 Cleaning

Rinse the machine at least once a day and clean it once a week. Follow the instructions for this on the cleaning flyer.

WARNING
Risk of crushing for hands and fingers in the event of contact with the bean screw conveyor.

- Switch the machine off before cleaning the bean container.
- Remove the bean container for cleaning.
- Do not reach into the area under the bean container.
- Close the bean container lid again after cleaning and ensure that untrained people cannot access the key.

CAUTION
The cleaning tablets contain toxic substances. If the machine is not cleaned properly, there is a risk of poisoning or chemical burns.

- The machine may only be cleaned by trained personnel.
- Follow the instructions on the cleaning flyer and the information on the cleaning tablet packaging.

CAUTION
Hot liquids and steam are discharged frequently during the cleaning process. Contact with hot liquids and steam can cause scalding.

- Do not reach under the spout during the cleaning process.
- Do not touch the spout.

2.7 Repairs

DANGER
There are live parts inside the machine. There is a risk to life from electric shock if you touch these.

- Before opening the machine, set the main switch to "Off" and disconnect the mains plug.

IMPORTANT! Sensitive electronic parts inside the machine can be damaged by electrostatic discharge.
Wear conductive work clothing.

Before any repair work:

- Empty the machine's water circuit.
- Safely disconnect the machine from the electricity supply. Set the mains switch to "Off" and disconnect the mains plug.

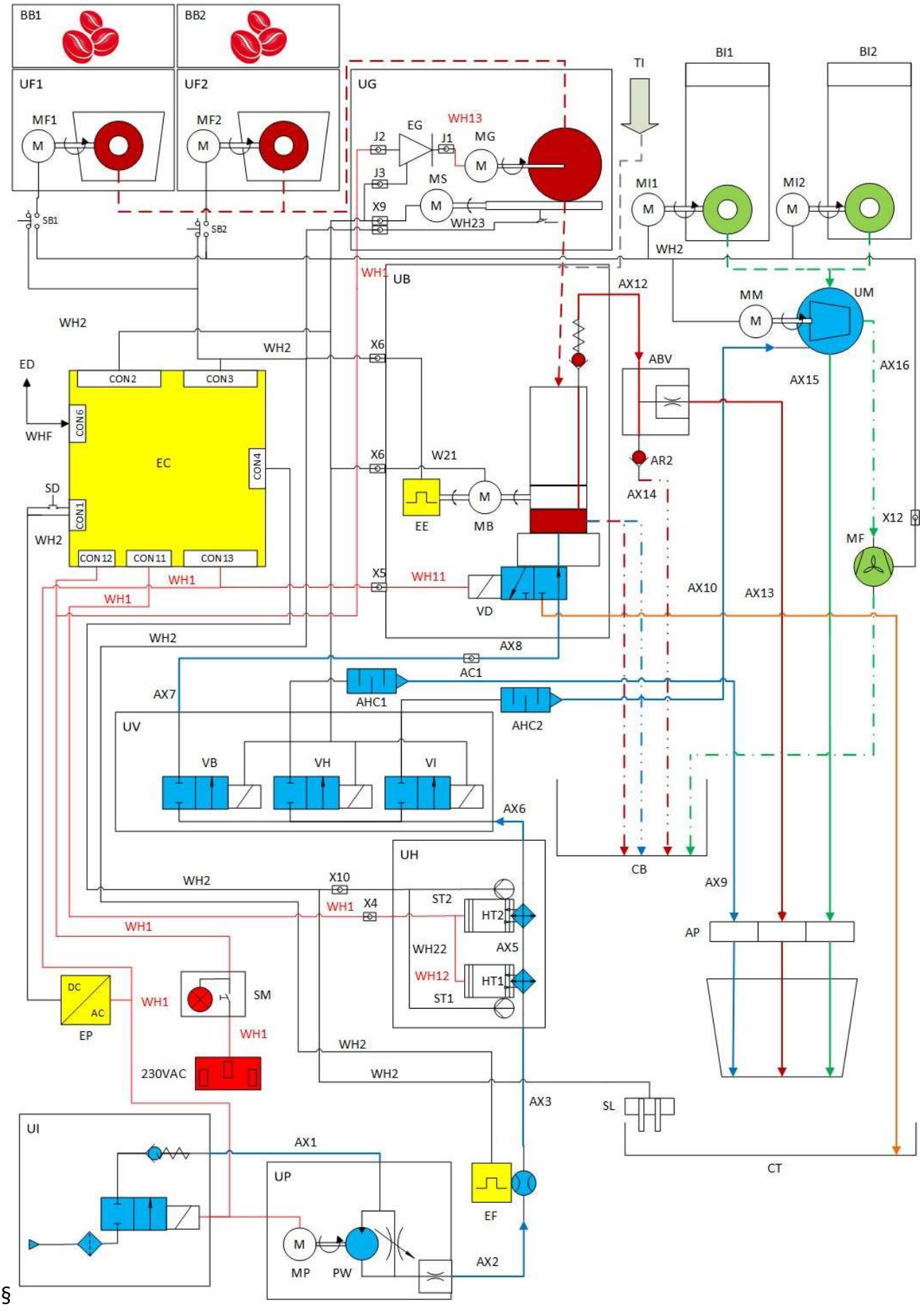
3 Diagrams

3.1 Key to machine and wiring diagram

Element	Function
UI	Water intake with intake valve, 230 V AC, with filter and non-return valve
UP	Water pump, 230 V AC
UH	Thermoblock module, 230 V AC
UV	Valve block, complete
UB	Brewing unit with drive and encoder
UF1	Bean conveyor module 1, 24 V DC
UF2	Bean conveyor module 2, 24 V DC
UG	Grinder module, 230 V AC, motor with rectifier and servo adjustment, 24 V DC
UM	Mixer module
AX1	Hose connection: intake valve – pump
AX2	Hose connection: pump – flow meter
AX3	Hose connection: flow meter – thermoblock module
AX5	Hose connection: thermoblock module – internal connection
AX6	Hose connection: thermoblock module – valve block
AX7	Hose connection: valve block – through-type coupling
AX8	Hose connection: through-type coupling – brewing unit module
AX9	Hose connection: valve block (hot water smoother) – hot water outlet
AX10	Hose connection: valve block (hot water smoother) – mixer
AX10	Hose connection: valve block (hot water smoother) – mixer module
AX12	Hose connection: brewing unit module – T-piece with nozzle
AX13	Hose connection: T-piece with nozzle – coffee drink outlet
AX14	Hose connection: T-piece with nozzle – coffee grounds container
AX15	Hose connection: mixer module – instant drink outlet
AX16	Hose connection: mixer module – air extraction filter
AC1	Hose coupling piece for brewing water
AR1	Non-return valve with spring (fresh water)
AR2	Non-return valve without spring (coffee ventilation)
ABV	T-piece with nozzle
AHC1	Hot water smoother 1 for hot water
AHC2	Hot water smoother 2 for instant water
AP	Spout
BB1	Bean container 1
BB2	Bean container 2
BI1	Instant powder container 1 (chocolate powder)
BI2	Instant powder container 2 (milk powder)
CB	Coffee grounds container
CT	Drip tray
TI	Tablet slot (cleaning)
VB	Brewing valve, 230 V AC
VD	Drainage valve, 24 V DC
VH	Hot water valve, 24 V DC
VI	Instant valve, 24 V DC
PW	Water pump (pump head with pressure adjustment)

Element	Function
MG	Motor for grinder (integrated in grinder), 230 V AC rectified
MF1	Motor for bean conveyor 1, 24 V DC
MF2	Motor for bean conveyor 2, 24 V DC
MP	Motor for pump, 230 V AC
MS1	Motor for grinding setting, 24 V DC
MI1	Motor for instant conveying 1, 24 V DC PWM
MI2	Motor for instant conveying 2, 24 V DC PWM
MM	Motor for mixer, 24 V DC
MF	Motor for fan (extracting instant dust), 24 V DC
MB	Motor for brewing unit, 12 V DC (24 V DC PWM)
SM	Switch for mains (with control indicator), 230 V AC
SD	Switch for door
SL	Sensor for drip tray
ST1	Sensor for thermoblock 1, NTC
ST2	Sensor for thermoblock 2, NTC
SB1	Sensor for bean jar 1
SB2	Sensor for bean jar 2
HT1	Thermoblock 1, 230 V AC
HT2	Thermoblock 2, 230 V AC
EC	Control board G2.5, 24 V DC / 5 V DC
EP	Switching power supply, 230 V AC / 24 V DC
EE	Encoder for brewing unit module, 5 V DC
EF	Flow meter, 5 V DC
ER	Grinder control
CON1	Connector for 24 V DC power supply, door switch (safety switch)
CON2	Connector for outputs, 24 V
CON3	Connector for digital sensor inputs
CON4	Connector for analogue sensor inputs
CON6	Connector for 24 V DC, RS232 bus (for operation)
CON11	Connector for 230 V AC power supply
CON12	Connector for heater outputs, 230 V AC
CON13	Connector for outputs, 230 V AC
WH1	Cable harness for high-voltage current
WH11	Cable harness for drainage valve
WH12	Cabling for thermoblock heaters, 230 V AC
WH13	Cabling for Motor for grinder230VDC
WH2	Cable harness for low-voltage current
WH21	Cable harness for brewing unit module
WH22	Cabling for thermoblock NTC sensors
WH23	Cabling for grinder module, 24 V DC
WHF	Ribbon cable connection for operation (display), 24 V DC/RS232
X3	Plug connection for pump, 230 V AC
X4	Plug connection for thermoblock heaters, 230 V AC
X5	Plug connection for drainage valve, 230 V AC
X6	Plug connection for brewing unit module, 24 V DC / 5 V DC
X9	Plug connection for grinder module, 24 V DC
X10	Plug connection for thermoblock NTC sensors
X12	Plug connection for fan
J1	Plug connection Motor for grinder
J2	Plug connection Grinder PCBA 230V
J3	Plug connection Grinder PCBA 24V

3.2 Machine diagram



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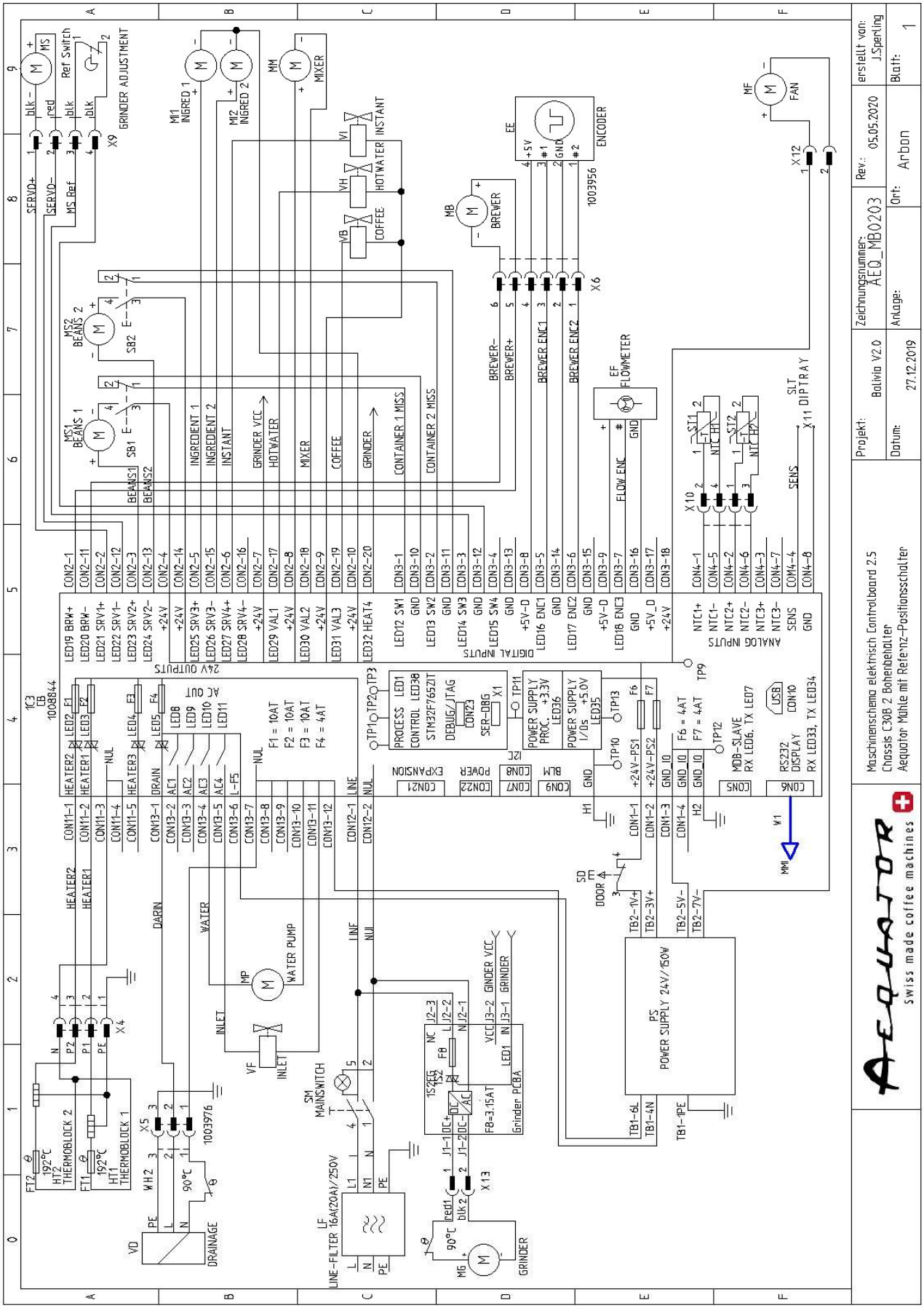
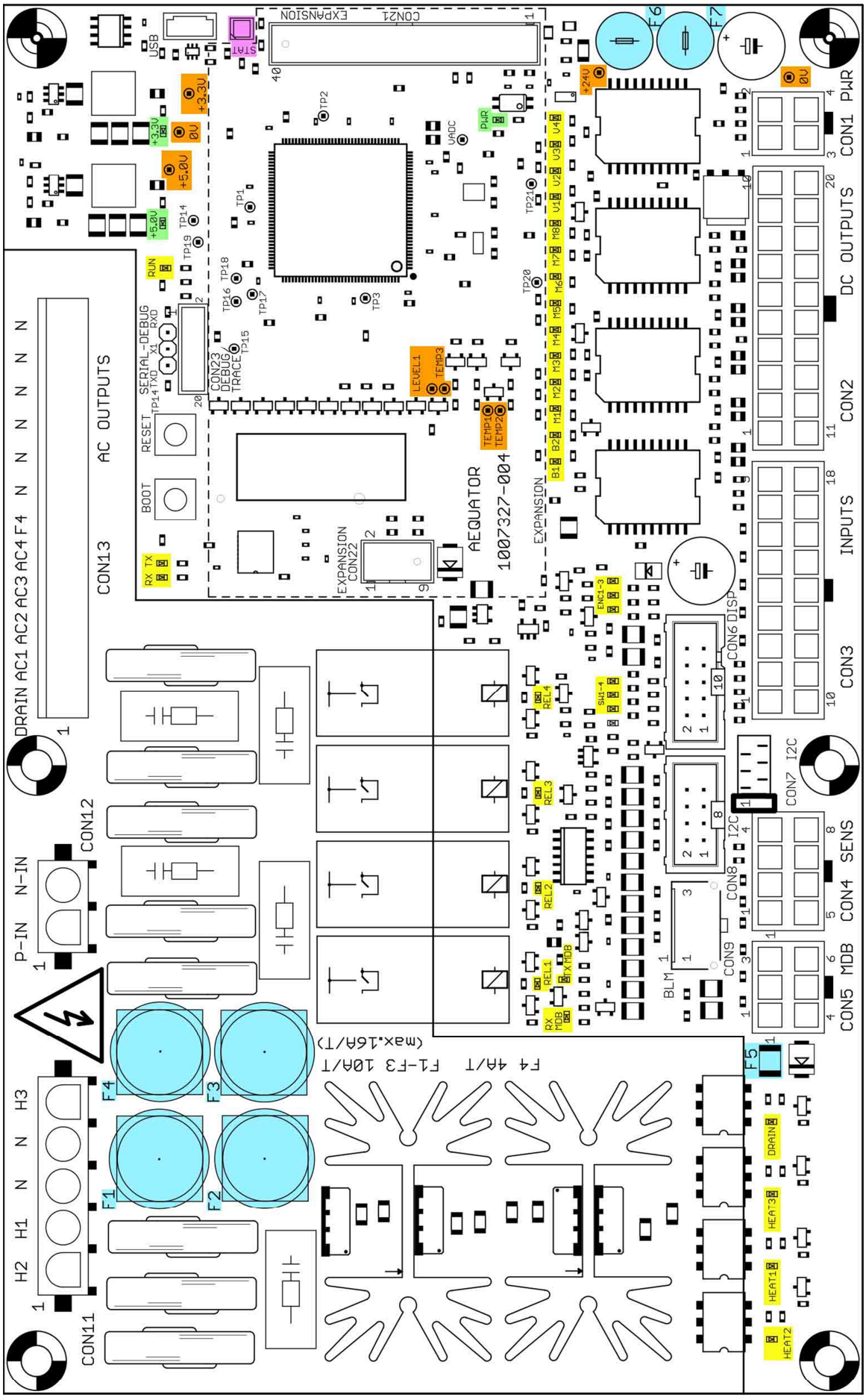
Colour	Function
	Coffee components
	Water components
	Instant components
	Electronic components
	230 V AC components
	Coffee flow
	Water flow
	Instant flow
	Drainage water
	230 V AC
	24 V DC
	Ground coffee
	Instant powder
	Cleaning tablet
	Mixer extraction

3.3 Wiring diagram for control board 2.5



3.4 Component diagram for control board 2.5



3.5 Component diagram legend for control board 2.5

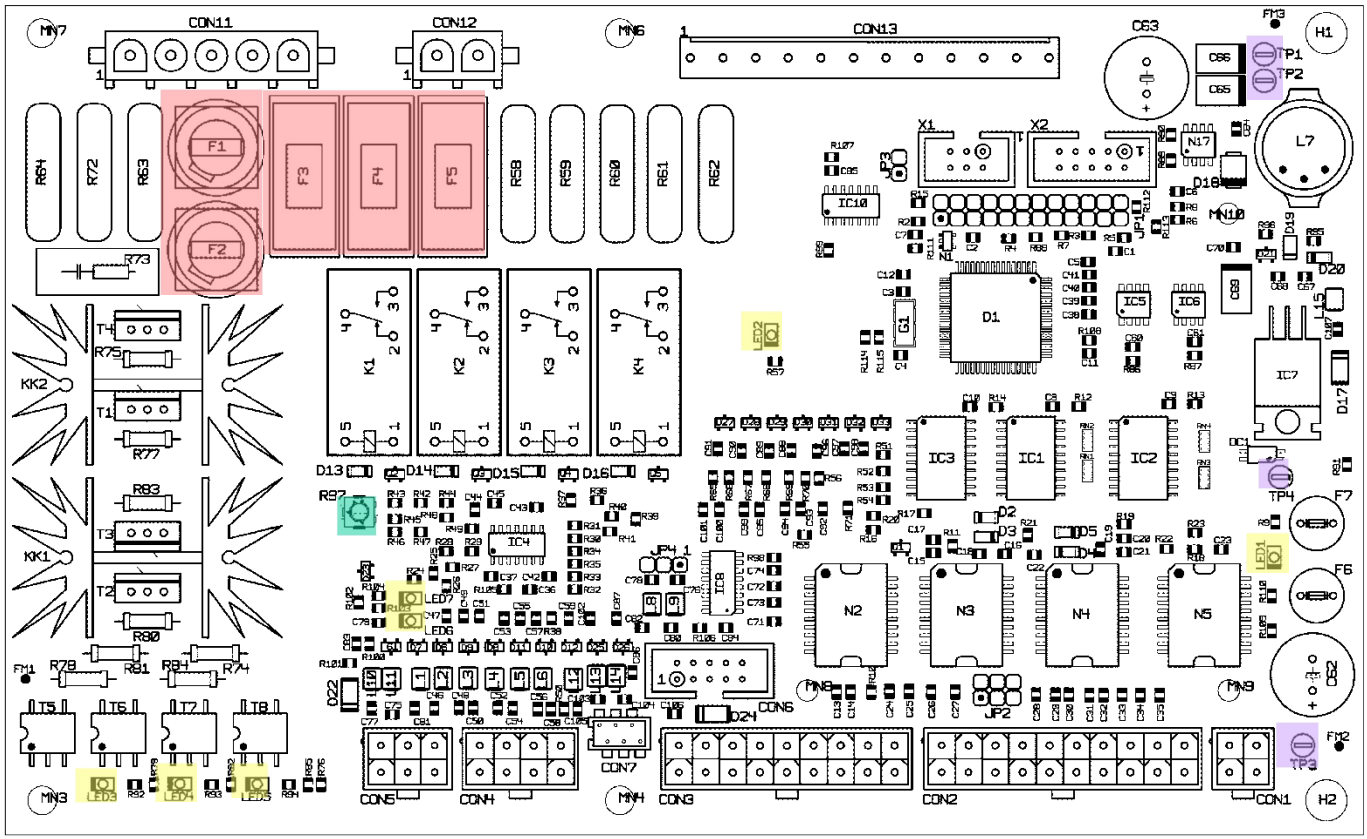
Element	Colour	Name	Function
LED1	Yellow	RUN	System running
LED2	Yellow	HEAT2	Thermoblock 2 (active High)
LED3	Yellow	HEAT1	Thermoblock 1 (active High)
LED4	Yellow	HEAT3	Thermoblock 3 (active High)
LED5	Yellow	DRAIN	Drainage valve (active High)
LED6	Yellow	RX MDB	MDB receive
LED7	Yellow	TX MDB	MDB transmit
LED8	Yellow	REL1	Relay 1 (active High)
LED9	Yellow	REL2	Relay 2 (active High)
LED10	Yellow	REL3	Relay 3 (active High)
LED11	Yellow	REL4	Relay 4 (active High)
LED12	Yellow	SW1	Switch input 1 (active Low)
LED13	Yellow	SW2	Switch input 2 (active Low)
LED14	Yellow	SW3	Switch input 3 (active Low)
LED15	Yellow	SW4	Switch input 4 (active Low)
LED16	Yellow	ENC1	Encoder 1 (active Low)
LED17	Yellow	ENC2	Encoder 2 (active Low)
LED18	Yellow	ENC3	Encoder 3 (active Low)
LED19	Yellow	B1	BRW+ (active Low)

Element	Colour	Name	Function
LED20	Yellow	B2	BRW- (active Low)
LED21	Yellow	M1	SRV 1+ (active Low)
LED22	Yellow	M2	SRV 1- (active Low)
LED23	Yellow	M3	SRV 2+ (active Low)
LED24	Yellow	M4	SRV 2- (active Low)
LED25	Yellow	M5	SRV 3+ (active Low)
LED26	Yellow	M6	SRV 3- (active Low)
LED27	Yellow	M7	SRV 4+ (active Low)
LED28	Yellow	M8	SRV 4- (active Low)
LED29	Yellow	V1	VAL1 (active Low)
LED30	Yellow	V2	VAL2 (active Low)
LED31	Yellow	V3	VAL3 (active Low)
LED32	Yellow	V4	VAL4 (active Low)
LED33	Yellow	RX	RS232 RX (data Low)
LED34	Yellow	TX	RS232 TX (data High)
LED35	Green	+5.0V	+5.0 V DC Power
LED36	Green	+3.3V	+3.3 V DC Power
LED37	Green	PWR	24 V DC Power on
LED38	RGB	STAT	System status

Element	Name	Function	Service function
TP5	TEMP1	NTC1 voltage	Thermoblock 1 temperature measurement voltage
TP6	TEMP2	NTC3 voltage	Thermoblock 1 temperature measurement voltage
TP7	TEMP3	NTC3 voltage	Thermoblock 1 temperature measurement voltage
TP8	LEVEL1	SENS voltage	Water level detector voltage
TP9	+24V	24 V DC	+24 V DC for all actuators (on if door closed)
TP10	0V	GND	Ground (3.3 V system)
TP11	+3.3V	+3.3 V DC	+3.3 V DC for processor
TP12	0V	GND IO	Ground (24 V system)
TP13	+5.0V	+5.0 V DC	+5.0 V DC for digital I/O and analogue interface

Element	Name	Function	Comment
F1	F1	Thermoblock 1	Fuse type d5x20 mm, T 10 A (active High)
F2	F2	Thermoblock 2	Fuse type d5x20 mm, T 10 A (active High)
F3	F3	Thermoblock 3	Fuse type d5x20 mm, T 10 A (active High)
F4	F4	230 V AC outputs / power supply 24 V	Fuse type d5x20 mm, T 4 A (active High)
F5	F5	+24 V-MDB / Payment system	SMD fuse, self reset, 1 A, 24 V (Littlefuse/TE MINISMDC110F/24-2), not replaceable
F6	F6	+24 V OUTPUTS Outputs/actuators	Fuse type TR5, 4 A, 250 V (Schurter MST0034.6621), not replaceable
F7	F7	+24 V INTERNAL Control board	Fuse type TR5, 4 A, 250 V (Schurter MST0034.6621), not replaceable

3.6 Component diagram and legend for control board 2.5



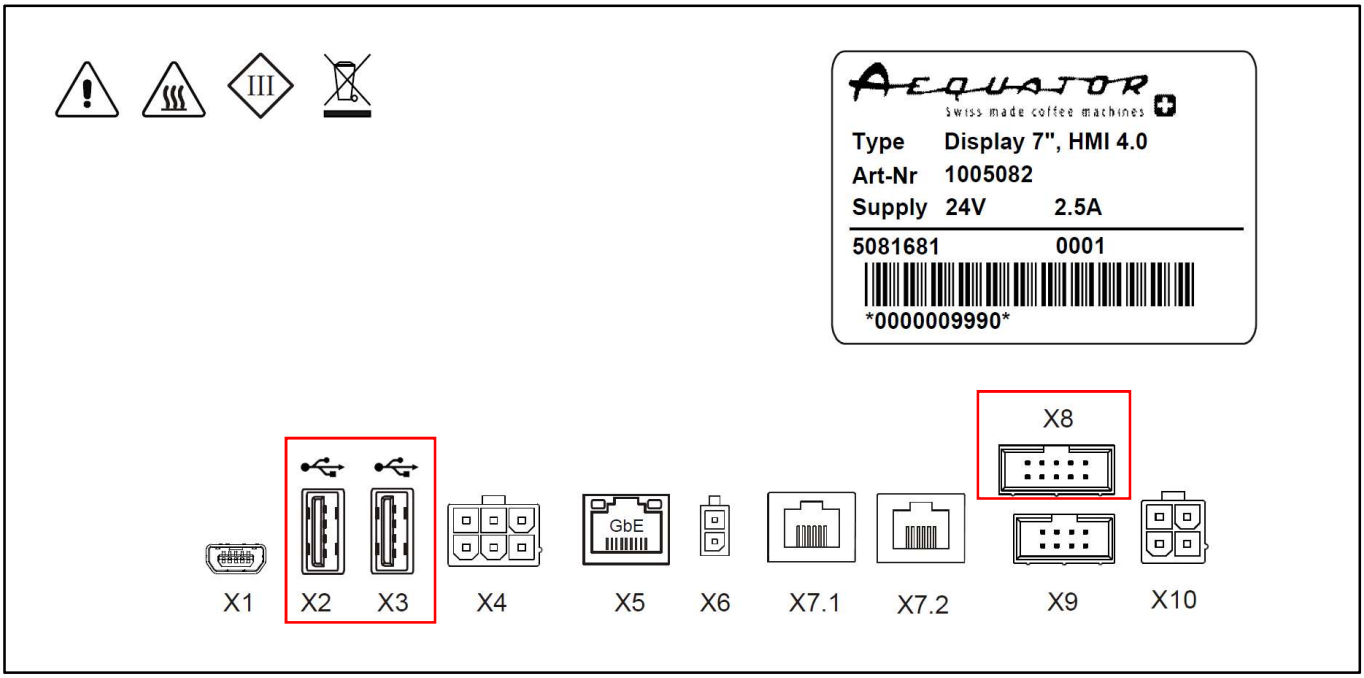
LEDs			
Element	**Name**	**Function**	**Colour**
LED1	RUN	System running 1 Hz pulse	Yellow
LED2	FLOW METER	Flow meter pulses (water flow)	Yellow
LED3	HEATER 1	Heater 1 ON	Yellow
LED4	HEATER 2	Heater 2 ON	Yellow
LED5	HEATER 3	Heater 3 ON	Yellow
LED6	RXD	Serial receive data active	Yellow
LED7	TXD	Serial transmit data active	Yellow

Potentiometer		
Element	**Name**	**Function**
R97	DRIP TRAY	Calibration of drip tray sensor

Test points			
Element	**Name**	**Function**	**Level**
TP1	GND	System earth	0 V DC
TP2	+5V_D	+5 V DC supply for digital part	+5.0 V DC
TP3	+24V	+24 V DC supply for output stages downstream of fuse	+24 V DC
TP4	TEST	Test output	5 V logic

Fuses			
Element	**Name**	**Function**	**Value**
F1	HEATER 2	Fuse for heater 2	T 16 A H 250 V
F2	HEATER 1	Fuse for heater 1	T 16 A H 250 V
F3	HEATER 3	Fuse for heater 3, not in use	T 10 A L 250 V
F4	AC OUT	Fuse for remaining AC outputs (drainage valve, pump, grinder, intake valve)	T 4 A E 250 V
F5	POWER SUPPLY	Fuse for 24 V switching power supply	T 4 A E 250 V

3.7 Display unit connections



Interface	Description
X2	USB interface
X3	USB interface
X8	Serial interface (RS232) and power supply, 24 V DC

4 Software

4.1 Update software

Requirement: To successfully upload the software update, the USB stick on which the new software version is stored must be formatted as FAT32.

- Access the technician (or operator) overview.
- Insert the USB stick with the update file on the inside of the door.
- Select the **<Software update>** tile.
- Follow **the instructions**.
- Select the update file. To select the update file on the USB stick, navigate through the dialogue box that appears.
- Once you have finished, **remove the USB stick**.

4.2 Technician overview menu structure

Menu items: Level 1	Menu items: Level 2		Menu items: Level 3	Explanation
Installation	Fill machine	- Connecting - Filling		Fill water system
	Empty machine	- Disconnecting - Emptying - Switching off		Empty water system
Manage products	Calibrate instant powder 1	3 cycles: - Preparing - Dosing - Weighing		Calibrate instant powder in instant powder container 1
	Calibrate instant powder 2	Same as "Calibrate instant powder 1"		Calibrate instant powder in instant powder container 2
	Calibrate coffee 1	- Preparing - Grinding - Weighing - Repeating		Calibrate coffee in bean container 1
	Calibrate coffee 2	Same as "Calibrate coffee 1"		Calibrate coffee in bean container 2
Recipes	Drinks recipes	- Coffee - Cappuccino - Espresso - etc.	Drinks parameters	Set the drinks parameters for the individual recipes (see section 2.2 "Setting drinks recipes and parameters")
Drinks counter				Read out and reset the overall counter for all drinks and the daily counters for each individual drink

Menu items: Level 1	Menu items: Level 2	Menu items: Level 3	Explanation
System settings	Change backlight		Set display backlight
	Change language		Set language
	System info		View system information
	Manage popups		Which messages/events should appear as popups
	Drink positions		Set user view: - Select positions for individual drinks - Number of drinks - With/without advertisement image **Important:** If the drink in a particular position is changed, the setting must be saved to the relevant position by pressing **<Accept recipe>**. If the advertisement image and the number of drinks are changed, the setting must be adopted by pressing **<Save>**.
	Machine parameters - Change coffee grounds message counter - Temperature		Full message after certain quantity of coffee grounds Counter = 0 for direct drop waste disposal Generally increase / reduce machine temperature
	Change password		Set the password used to access the technician overview
	Personalise		Export and import parameter settings
	Reset all settings		Reset all settings

Menu items: Level 1	Menu items: Level 2		Menu items: Level 3	Explanation
Alarms	Alarms			Read and confirm all alarms
Cleaning	Rinse mixer	- Emptying - Initialising		Start mixer rinsing
	Empty coffee grounds container	- Emptying - Initialising		Confirm emptying of coffee grounds container
	Empty drip tray	- Emptying - Initialising		Confirm emptying of drip tray
	Rinse brewer	- Emptying - Rinsing - Emptying - Initialising		Start brewer rinsing
	Clean brewer	- Emptying - Rinsing - Inserting - Cleaning - Emptying - Initialising		Start brewer cleaning with cleaning tablet
Filling	Fill coffee 1	- Filling - Initialising		Confirm filling of bean container 1
	Fill coffee 2	- Filling - Initialising		Confirm filling of bean container 2
	Filling instant powder 1	- Filling - Initialising		Confirm filling of instant powder container 1
	Filling instant powder 2	- Filling - Initialising		Confirm filling of instant powder container 2
Software update		-		Load new software onto machine

5 Troubleshooting

Always use original spare parts for any troubleshooting or repair work.

DANGER
Risk of serious injuries from improper use of the machine. Risk of scalding from hot water.
- Before any work where the side panels need to be removed, set the mains switch to "Off" and disconnect the mains plug.

5.1 Rectifying errors

Problem	Measures
No display Everything is dark	- Switch on the main switch. - Plug in the machine connection cable. - Check the mains connection.
Main switch lights up but display is dark	Internal fuse defective May only be replaced by authorised service technician: Inform service partner.
Machine is working but no drink is dispensed	- Open the stopcock. - Check the water connection. - Fill the water canister (in the case of canister operation)
Dispensed instant drink is too watery or the machine only dispenses water instead of the instant drink	- Fill instant powder container - Carry out cleaning - Adjust water volume
"Empty coffee grounds container" message appears even though the container has already been emptied	Reset the counter.

5.2 Resolving messages on the display

Message	Measures
Door open	Close the door.
ESC30 Beans shortage in coffee 1.	Fill bean container 1.
ESC30 Beans shortage in coffee 2.	Fill bean container 2.
ES121 Brewer cleaning required.	Clean the brewer.
ES194 Empty coffee grounds container.	Drinks can no longer be prepared. Empty the coffee grounds container immediately.
ES173 Drip tray is full.	Empty the drip tray.
Machine cleaning required	Drinks can still be prepared. Clean the brewer soon.
Fill machine	Drinks cannot be prepared. Fill the machine (see section 2.2).

EW184 Water flow produces timeout error.	Drinks cannot be prepared. - Check the water connection, water flow and water system. - Check the flow meter. - Check for limescale deposits.
Message	**Measures**
EHN01 Heater deactivated.	Drinks cannot be prepared. Check the thermoblocks.
EHE01 Thermoblock 1 not responding – no temperature increase. The heater has been deactivated. EHE02 Thermoblock 2 not responding – no temperature increase.	Drinks cannot be prepared. - Check fuse on control board. - Check overtemperature protection on flow heater. - Check flow heater for interruption. - Check control board. - Fill the machine once repairs are complete.
EH181 Excess temperature control triggered. EH281 Excess temperature control triggered. EH253 NTC temperature sensor out of range.	Drinks cannot be prepared. - Check control board. - Check thermoblock overtemperature protection. - Check NTC sensors.
EBI03 Positioning error while brewer was starting up.	- Check brewing unit for mechanical jamming. - Check brewing unit motor and encoder. - Check drainage valve. - If the brewing unit moves up and down and the encoder LED is flashing, clean the brewing unit or replace it if necessary. - If the brewing unit moves up and down and the encoder LED is not flashing, replace the encoder.
EM181 Motion error: timeout while brewer was moving.	Drinks cannot be prepared. - Check brewing unit. - Check brewing motor. - Check encoder.
Instant powder 1 overflowing	Reduce the concentration of the instant powder.
Instant powder 2 overflowing	Reduce the concentration of the instant powder.

6 Your service partner