

## Lattiz

# Technical Manual

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Author : SLE

Aequator AG  
St. Gallerstrasse 229  
CH-9320 Arbon

www.aequator.ch  
sales@aequator.ch

## Prüfungen:



### Normen:

EN 50581:2012  
EN 55014-1:2015  
EN 55014-2:2015  
EN 55022:2010



EN 60335-1:2012  
EN 60335-75:2012  
EN 61000-3-2:2014  
EN 61000-3-3:2014



*Vending Verband Schweiz  
Vending Association Suisse  
Vending Associazione Svizzera*



*Bundesverband der Deutschen  
Vending-Automatenwirtschaft e. V.*



*European Vending Association*



*Speciality Coffee Association of Europe*

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Software : 1407

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# 1 Introduction

Welcome to our service team. Reading this manual you will find out how easy it is to take care of this modern machine. The installation, service and repairing work must be done by a mechanical engineer authorized by Aequator.

Operating, programming, servicing and maintenance are explained in this manual. You will learn about safe and correct handling of the machine.

We do not assume any liability for damages caused by non-observance of the instructions or by improper handling of the machine.

It is impossible to treat all problems in this technical manual. If you need additional information or do not find your problem in the manual, do not hesitate to contact us at [support@aequator.ch](mailto:support@aequator.ch) or via fax.



**Generic warning**



**Hazard symbol High Voltage**

## 1.1 Safety Instructions



**For safety purposes, unplug the power connector for any operation inside the unit, e.g. cleaning!**

**To reduce to the risk of electric shock, do not remove or open cover. No user-serviceable parts inside.**



**The machine complies with IP20 and must be operated in dry rooms only!**

**This table top machine must not be operated on the floor!**

**The machine must be placed on a horizontal surface, not exceeding 2 degrees inclination. Adjust the position with the adjustable feet.**

**Machine needs a minimum distance to micro wave ovens and inductive devices of minimum 1m**

This machine is **FOR PROFESSIONAL USE IN BUSINESS ESTABLISHMENTS ONLY**, e.g. in restaurants, hotels, motels, cafeterias, shops, offices etc.

The machine is **NOT FOR OPEN-AIR USE**.

The machine is constructed for safe operation, meeting advanced engineering standards.  
The machine is produced in accordance with the valid CE regulations and ISO 9001.

**However, the use of the machine may be dangerous if**

- you do not follow the present instructions of operation carefully
- unauthorised staff installs, maintains or repairs the machine
- there is improper use of the machine, not according to the original purpose thereof

**The above may cause**

- danger to correct, efficient, and reliable working of the machine
- danger to the payment system and to further assets of the operator or the user
- danger to life and limb

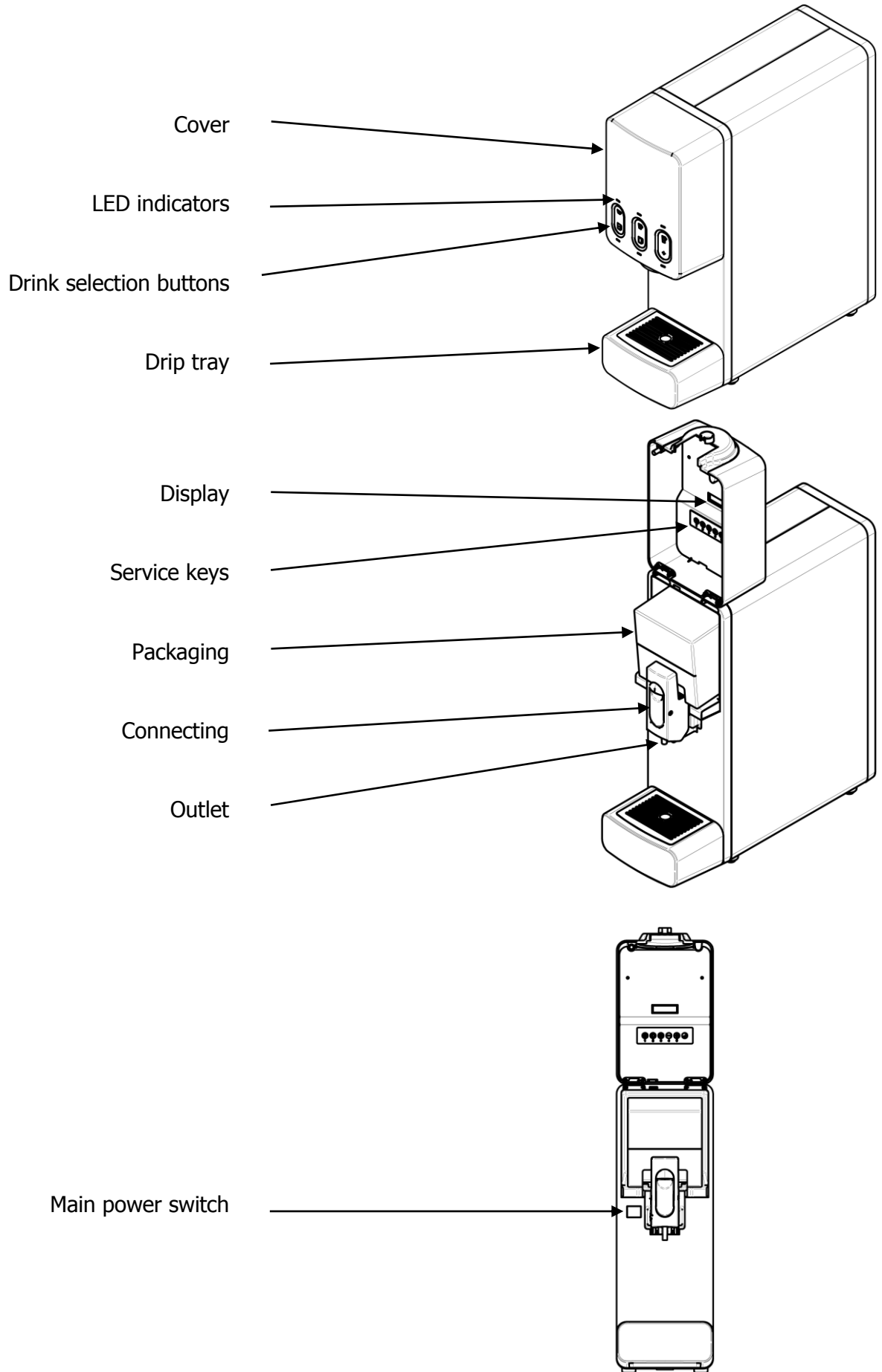
**Concerning transport, installation, maintenance and repair please consult the latest edition of the following regulations and guidelines of your country:**

- Regulations of the federation of electro-technology
- EU – guidelines (in EU - countries)
- Regulations concerning the prevention of accidents
- Guidelines of the professional union
- Trade regulations

**The following points are to be considered:**

- The prepared drinks are hot
- Some parts of the machine are hot
- Some parts of the machine are under high pressure (Hot water)
- The water flowing out during the cleaning process is hot
- Any change or modification of the machine is prohibited
- **AEQUATOR AG does not assume any liability in such a case**
- Store the machine in dry rooms and never in frosty environment
- Transport it only in the original packing

## 1.2 Drawing of the Machine



## 1.3 Dimension

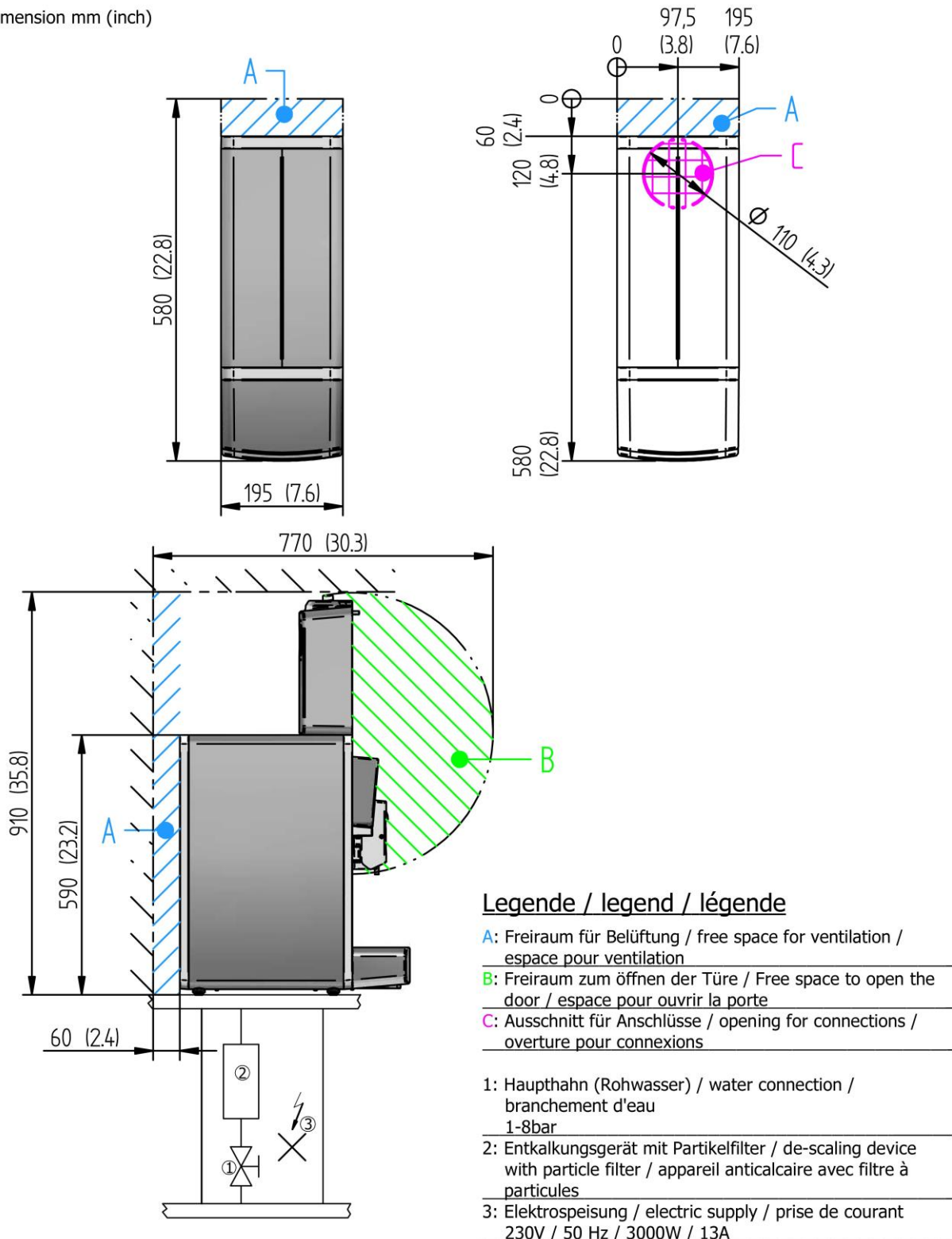
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Massblatt / Dimension / Mesures

**Aequator**  
Swiss made coffee machines 

# Lattiz

Dimension mm (inch)



## 2 Handling



**The manufacturer does not assume any liability for damages caused by non-observance of the instructions below.**

### 2.1 Installation

Please check before installing the machine:

- water connection
- electricity
- degree of hardness of the water

#### Unpacking the Machine

Check whether the machine is undamaged. If you have any doubts, do not operate the machine.

Recycle the packaging material.

**The machine complies with IP20 and must be operated in dry rooms only!**



**This table top machine must not be operated on the floor!**

**The machine must be placed on a horizontal surface, not exceeding 2 degrees inclination. Adjust the position with the adjustable feet.**

#### Water Connection

Connect the machine to your drink water system (Filter menu 2.1.4), observing the legal regulations of your country. The water pressure must be 0.1 to 0.6 MPa (1 to 6 bars).

Rinse the water tubes before connecting the machine, until the water is clean and clear, without dirt. Connect the machine using the hose delivered with the machine. Outside the machine there must be an easily accessible water tap to turn the water on and off.

#### Electricity

The machine is constructed for a one phase voltage of 230V AC. Before operating the machine, make sure the specifications indicated on the label correspond to your electricity network:

- Is the voltage range within the legal limits?
- Can the fuses take the required maximum load, and is the disconnection from the net between phase and neutral conductor guaranteed with a distance of a minimum of 3 mm between the wires?

#### The main plug must be easily accessible.

The power cord is firmly connected to the machine and must only be removed and replaced by electrical engineers. The exclusive use of cables of type HO5 RR-F, HO5 RN-F, HO5 VV-F, HO7 RN-F, with wire size of 3 x 1.5 mm<sup>2</sup> is a must.

The electric safety of the machine is only guaranteed if duly connected to a network with proper earth connection.



**This safety measure must be guaranteed. If you have any doubts, have your connection checked by an electrical engineer. It is strictly forbidden to use adapters, multiple plugs or extension power cords.**

Before operating the machine make sure that the water connection is properly installed and that the water tap is open.



## Water Filter / Water Softener

The standard machine is delivered without filter nor softener.

Phosphate filters may be used in case of hard water, or ion exchangers in case of very hard water.

A suitable water and particle filter must be placed between the water tap and the machine.

The manufacturer does not assume any liability for damages caused due to missing or improper use of water filters or softeners respectively.

A volume counter is integrated in the machine to facilitate timely replacement of the filters.

## Operation Steps

### 1. Filling water system:

- Press rinse key
- If water flows out of the outlet, you can stop by pressing any button



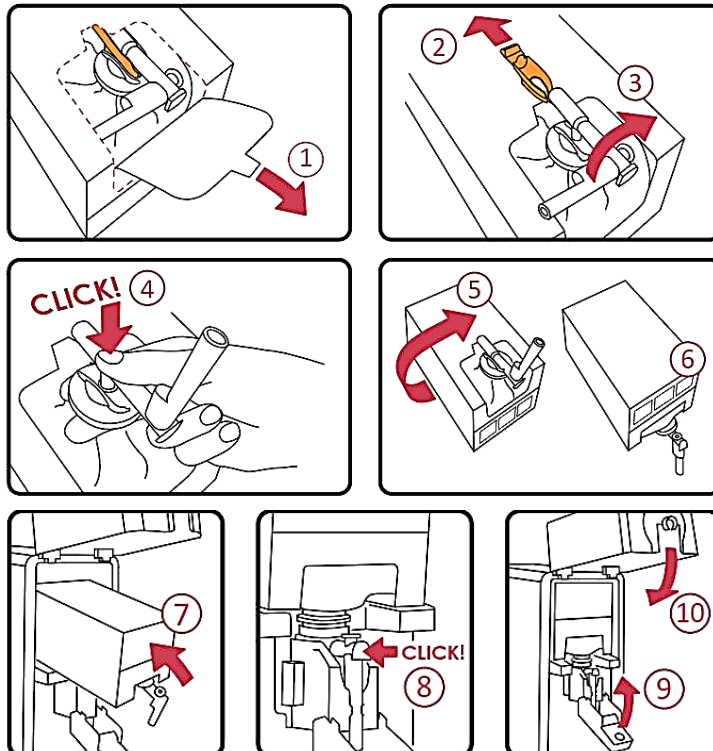
**Water will come out of the outlet, max. 0.6 l**

### 2. Insert the Milk Box

See individual steps on the milk box!




Open the machine door

1. Tear off flap of milk box, take out spout
2. Remove orange lock
3. Rotate outlet to vertical (upright) position
4. Push outlet into cap
5. Turn over box
6. See the next steps on the front of the milk box
7. Place box in machine
8. Click outlet in position
9. Close handle, read display
10. Close the machine door, the machine is ready for use









## 2.2 Operation

### Button assignment

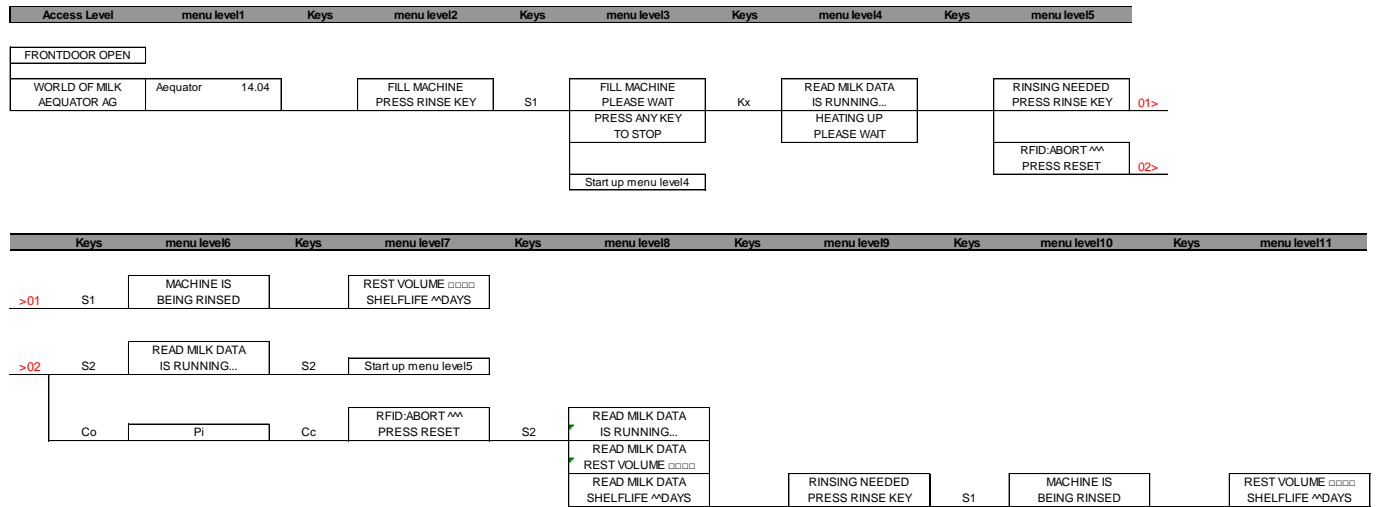
Drink 1	Drink 3	Drink 5
		
Drink 2	Drink 4	Drink 6

### Service keys

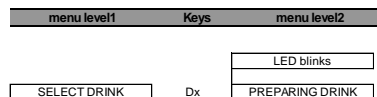
					
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
<b>S1</b>	<b>S2</b>	<b>S3</b>	<b>S4</b>	<b>S5</b>	<b>S6</b>
Rinse	Reset	Cancel	Minus menu navigation / backward	Plus menu navigation / forward	Enter

## 2.3 User Menu

### Start Up

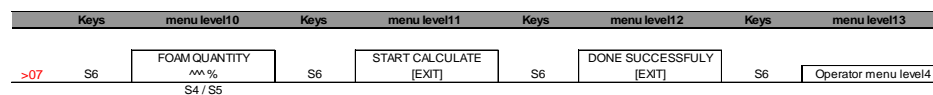
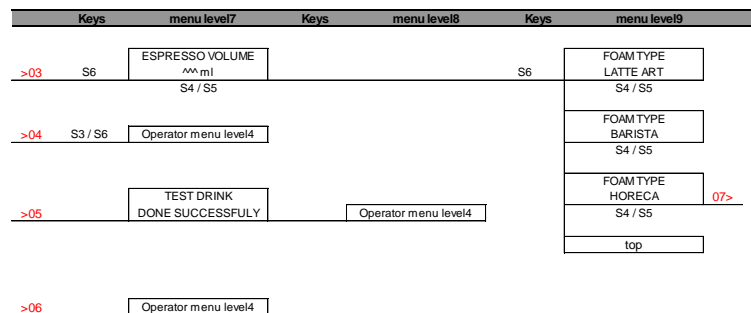
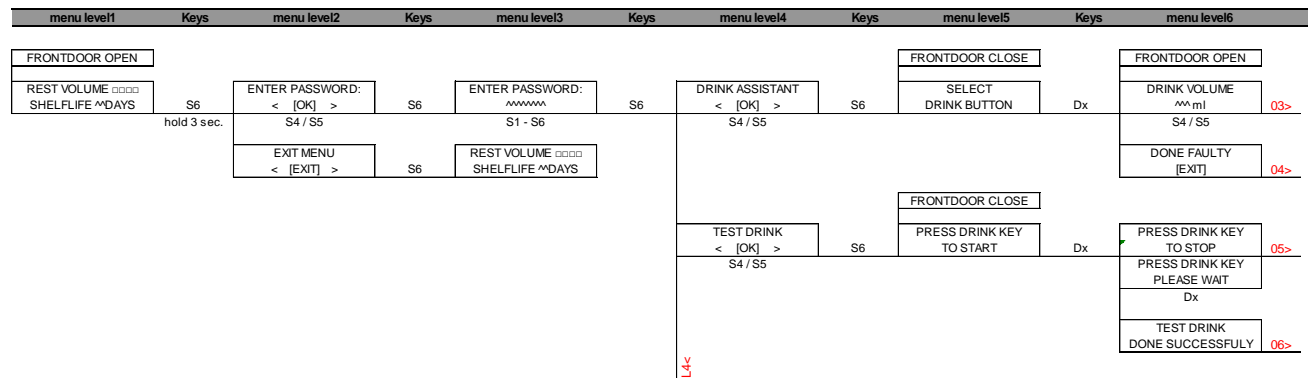


### User

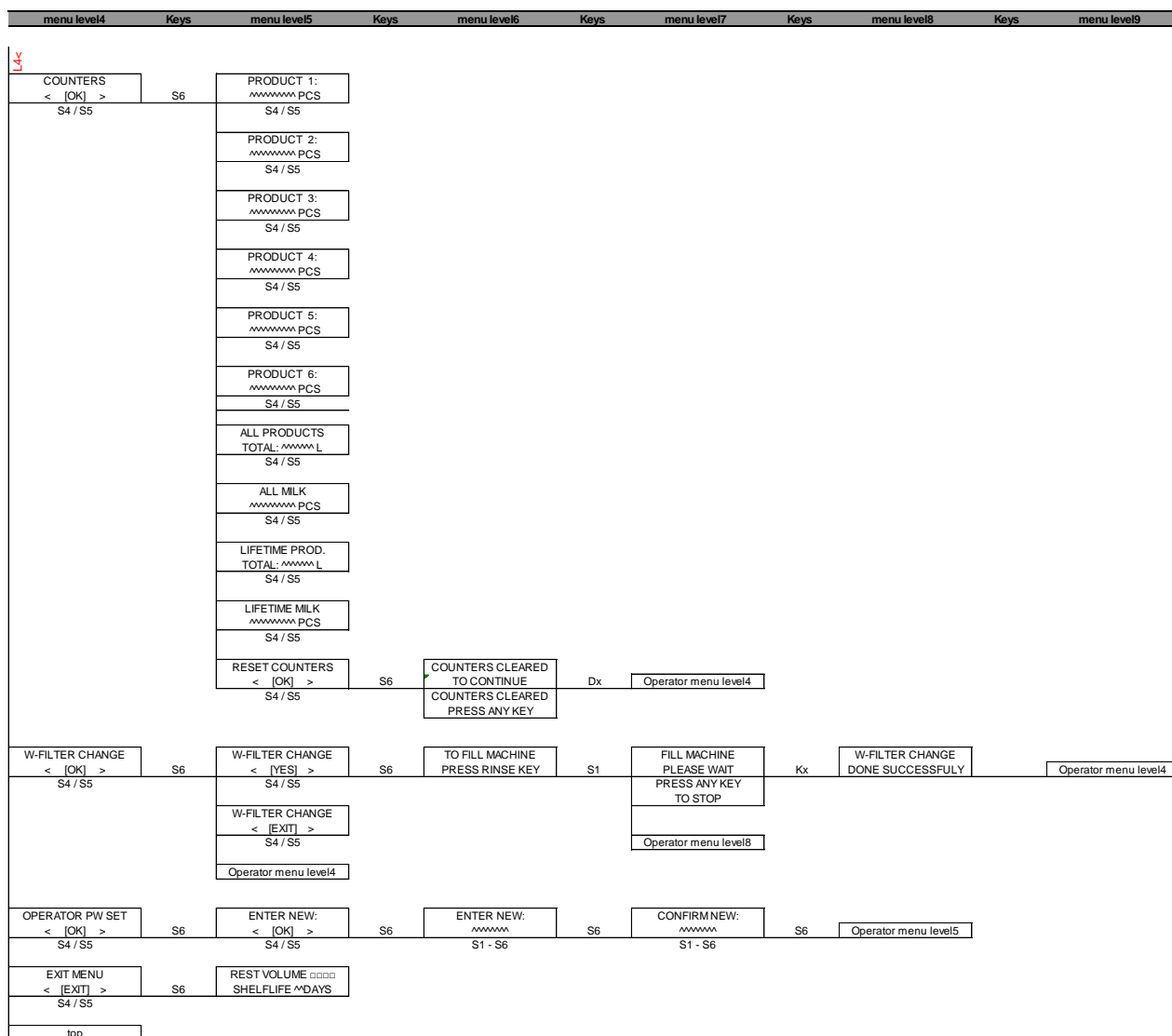


Menu	Description
FILL MACHINE PRESS RINSE KEY	According to the machines software the machine hasn't been filled yet. Due to this fact the heaters are switched off too avoiding to overheat.
RINSING NEEDED PRESS RINSE KEY	According to the machines software the machine needs a rinsing.
REST VOLUME 0000 SHELFLIFE ^^DAYS	According to the product tag you see the bags rest volume and also the shelf-life in days of the bag.

## Operator Menu Default Password = 1234

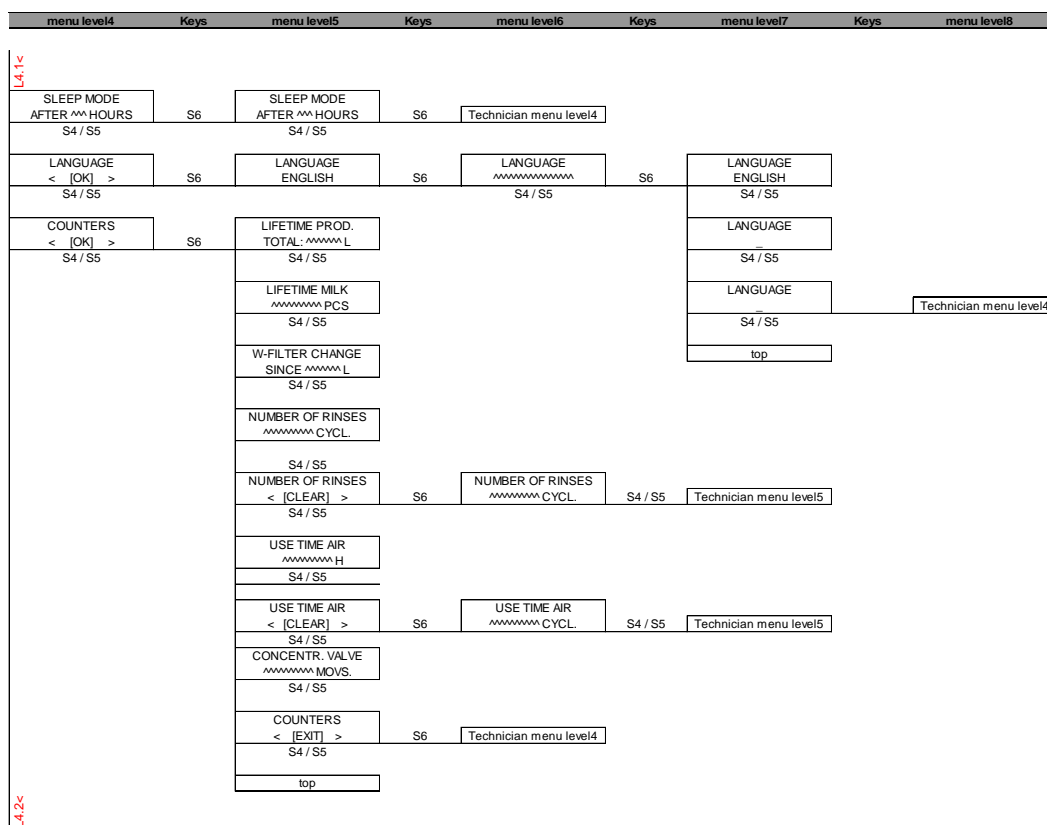


Menu	Description
REST VOLUME □□□□ SHELFLIFE ^^DAYS	After replacing the milk box, you will see the rest volume in the box, and the shelf life of the milk in days.
DRINK ASSISTANT < [OK] >	Menu to set up the drink recipes.
SELECT DRINK BUTTON	Select the drink recipe you wish to change pressing the corresponding drink button.
DRINK VOLUME ^^^ ml	Set the total volume of the drink.
ESPRESSO VOLUME ^^^ ml	Set the espresso volume.
FOAM TYPE LATTE ART	Select the milk foam quality LATTE ART.
FOAM TYPE BARISTA	Select the milk foam quality BARISTA.
FOAM TYPE HORECA	Select the milk foam quality HORECA.
FOAM QUANTITY ^^^ %	Set the amount of milk foam in % of the drink volume.
TEST DRINK < [OK] >	Have a test drink of the current recipe.



Menu	Description
PRODUCT 1: ^^^^^^^^^ PCS	Shows the number of drinks of the indicated product (number 1 up to 6) since last reset.
ALL PRODUCTS TOTAL: ^^^^^^ L	Shows the number of all dispensed products since last reset.
ALL BOXES ^^^^^^^^^ PCS	Shows the total number of milk boxes used since last reset.
LIFETIME PROD. TOTAL: ^^^^^^ L	Shows the total life time production of the machine in litres.
LIFETIME BOXES ^^^^^^^^^ PCS	Shows the total number (pieces) of milk boxes used in the machine's lifetime.
RESET COUNTERS < [OK] >	Resets all the counters (without the lifetime counters)
W-FILTER CHANGE < [OK] >	Reset the litre counter of the water filter after replacing it.
OPERATOR PW SET < [OK] >	Menu to set a new operator password.





Menu	Description
LANGUAGE < [OK] >	Menu to set the machine language.
COUNTERS < [OK] >	Menu to check the machine counters.
LIFETIME PROD. TOTAL: ^^^^^ L	Menu to show the counter in litres of all the produced products (in the machine's lifetime).
LIFETIME MILK ^^^^^^^^ PCS	Menu to show the counter in pieces of all the milk boxes used (in the machine's lifetime).
W-FILTER CHANGE SINCE ^^^^^ L	Menu to show the litres the current filter has descaled until now.
NUMBER OF RINSES ^^^^^^ CYCL.	Menu to show the number of rinses since the last reset.
NUMBER OF RINSES < [CLEAR] >	Menu to reset the rinsing counter.
USE TIME AIR ^^^^^^^^ H	Menu to show the number of hours the air pump has been running.
USE TIME AIR < [CLEAR] >	Menu to reset the air pump running counter.
CONCENTR. VALVE ^^^^^^ MOVS.	Menu to show the number of movements of the concentrate valve.

L4.3&lt16



menu level4	Keys	menu level5	Keys	menu level6	Keys	menu level7	Keys	menu level8
L4.3<		W-FILTER WARNING LIMIT: ^^^^ L	S6	W-FILTER WARNING LIMIT: ^^^^ L	S6	Technician menu level5		
		S4 / S5		S4 / S5				
		INSTALLATION < [EXIT] >	S6	Technician menu level4				
		S4 / S5						
		top						
	RFID READER TYPE V2 G2_MINI	S6	RFID SYSTEM V2 G2_MINI					
	S4 / S5		S4 / S5					
			RFID SYSTEM V1 57.6Kb					
			S4 / S5					
			RFID SYSTEM V1 115.2Kb	S6	Technician menu level4			
			S4 / S5					
			top					
OPERATOR PW SET < [OK] >	S6	ENTER NEW: < [OK] >	S6	ENTER NEW: *****	S6	CONFIRM NEW: *****	S6	Technician menu level4
S4 / S5		S4 / S5		S1 - S6		S1 - S6		
PASSWORD CHANGE < [OK] >	S6	ENTER NEW: < [OK] >	S6	ENTER NEW: *****	S6	CONFIRM NEW: *****	S6	Technician menu level4
		S4 / S5		S1 - S6		S1 - S6		
ACTIVATION < [OK] >	S6	ACTIVATION < [YES] >	S6	NR: ***** CODE: *****	S6	ACTIVATION DONE SUCCESSFULLY		Technician menu level4
S4 / S5		S4 / S5						
		ACTIVATION < [EXIT] >	S6	Technician menu level4				
DEACTIVATION < [OK] >	S6	DEACTIVATION < [YES] >	S6	DEACTIVATION DONE SUCCESSFULLY				
S4 / S5		S4 / S5						
		DEACTIVATION < [EXIT] >	S6	Technician menu level4				
EXIT MENU < [EXIT] >	S6	Operator menu level6						
S4 / S5								
		top						

Menu	Description
W-FILTER WARNING LIMIT: ^^^^ L	Menu to set the water filter capacity in litres (a filter warning will be shown at the display 200L before the end).
RFID READER TYPE V2 G2_MINI	Menu to change the different kind of RFID readers.
PASSWORD CHANGE < [OK] >	Menu to change the technician's password.
ACTIVATION < [OK] >	Menu to activate the machine (please note that the machine only works for 168 hours without the activation code).
DEACTIVATION < [OK] >	Menu to deactivate the machine.

## 3 Servicing

### 3.1 Cleaning

Cleaning is compulsory with each servicing in order to prevent malfunctions and to enable the machine to work perfectly, without problems.

- Clean the interior of the machine

### 3.2 Service Work

Service Checklist:

- ☐ **Ask customer for any irregularities or remarks**
- ☐ **Error messages:** check/delete
- ☐ **Outlet:** check
- ☐ **Machine cleaning:** do a whole machine cleaning
- ☐ **Modifications:** install available modification kits
- ☐ **Water hardness:** check it, check **filter** (capacity exceeded, setting, over 1 year old)
- ☐ **De-scaling counter:** reset if **filter** was replaced
- ☐ **Check water flow** as fouling may have occurred
  - ☐ Execute 3-5 rinses & weigh grammage
  - ☐ Average must be in between 73.5 – 75.5 g > **optimal performance on 74.5 g**
  - ☐ If not achieved, clean orifices and recheck
- ☐ **Error counter** read/check/delete
- ☐ **Colour damage:** repair if possible
- ☐ **Test drinks,** let the customer try them
- ☐ **Customer/staff training:** Show them how to clean, change milk box etc.
- ☐ **Read error counter again**

### 3.3 Maintenance

**Maintenance interval:**

CF will work out this information according to their contract with FC.

**Maintenance work:**

CF will work out this information according to their contract with FC.

**Maintenance parts:**

CF will work out this information according to their contract with FC.

### 3.4 Required Service Tools

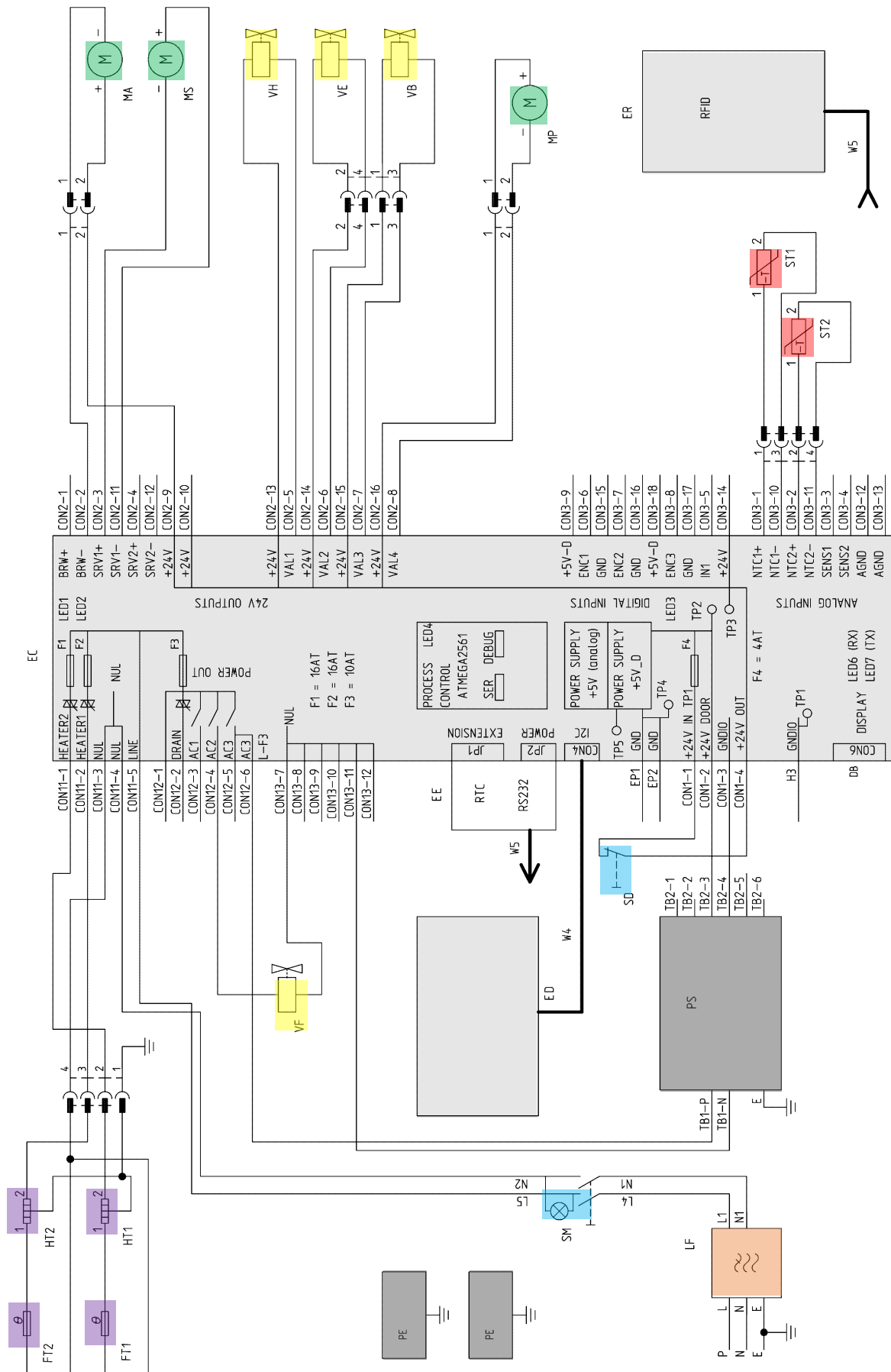
- Screw driver torx 10/15
- Philips screwdriver
- Spanner wrench 5.5/10/12/14

## 4 Error Messages and how to solve them

### 4.1 Error Messages

Error message	Description / Meaning	Solution
ERR:LEAD NOTINIT	control software initialisation failure	-restart machine -upload control board software -exchange control board
HEATERS DISABLED	control software initialisation failure	-restart machine -upload control board software -exchange control board
ERR:W-SYS.EMPTY	water system isn't filled start condition failure -> -after machine has been emptied -after machine has been set to default -after machine software has been uploaded	-fill water system (running time 40sec)
ERR:HEAT1 N.RDY	heater 1 status failure	-restart machine -check over temperature fuses -check NTC sensors -check control board -check heater 1 cables -check thermo block coil
ERR:HEAT1 FREEZE	heater 1 sensor value too low	see solution ERR:HEAT1 N.RDY
ERR:HEAT1 COLD	heater 1 sensor value is cold	see solution ERR:HEAT1 N.RDY
ERR:HEAT1 LOW	heater 1 sensor value is cold	see solution ERR:HEAT1 N.RDY
ERR:HEAT1 GEN	heater 1 sensor value is cold	see solution ERR:HEAT1 N.RDY
ERR:HEAT1 HIGH	heater 1 sensor detected over temperature	-check solid state relay on control board -check over temperature fuses -check heater 1 NTC-sensor -check heater 1 cables
ERR:HEAT1 NTC	heater 1 sensor NTC failure	-check heater 1 NTC-sensor -check over temperature fuses -check control board
ERR:HEAT1 RANGE	heater 1 sensor range failure	see solution ERR:HEAT1 NTC
ERR:HEAT1 TMOUT	no temperature reaction heater 1	see solution ERR:HEAT1 NTC
ERR:HEAT2 N.RDY	heater 2 status failure	see solution ERR:HEAT1 N.RDY
ERR:HEAT2 FREEZE	heater 2 sensor value too low	see solution ERR:HEAT1 FREEZE
ERR:HEAT2 COLD	heater 2 sensor value is cold	see solution ERR:HEAT1 COLD
ERR:HEAT2 LOW	heater 2 sensor value is cold	see solution ERR:HEAT1 LOW
ERR:HEAT2 GEN	heater 2 sensor value is cold	see solution ERR:HEAT1 GEN
ERR:HEAT2 HIGH	heater 2 sensor detected over temp.	see solution ERR:HEAT1 HIGH
ERR:HEAT2 NTC	heater 2 sensor NTC failure	see solution ERR:HEAT1 NTC
ERR:HEAT2 RANGE	heater 2 sensor range failure	see solution ERR:HEAT1 RANGE
ERR:HEAT2 TMOUT	no temperature reaction heater 2	see solution ERR:HEAT1 TMOUT
ERR:WATER BUSY	water function not finished	-restart machine -upload control board software -exchange control board
ERR:WATER TOUT	water function not finished	see solution ERR:WATER BUSY
ERR:WATER	water function not finished	see solution ERR:WATER BUSY
ERR:WATER GEN.	water function not finished	see solution ERR:WATER BUSY
ERR:PROC.TIMEOUT	water function not finished	see solution ERR:WATER BUSY
FAULTY RTC CLOCK	clock failure	-check RTC piggyback board
NO RFID READER	no communication to RFID reader	-restart machine -check RFID reader -check RFID reader cable -check position of left hand side machine panel
CORRUPT TAG DATA	incorrect data from product tag	-restart machine -check RFID tag position -replace product box
RFID:ABORT xxx	incorrect data from product tag	see solution CORRUPT TAG DATA
DATAUPDATE FAULT	tag data writing failed	see solution CORRUPT TAG DATA
TIMEOUT	RFID response timeout	see solution NO RFID READER
FAULTY RESPONSE	RFID response failure	see solution TIMEOUT
READER ERROR	RFID response error	see solution TIMEOUT
TIMEOUT	RFID response timeout	see solution TIMEOUT
ERR:RFID SYSTEM	RFID reader error	see solution NO RFID READER
CLOCK DESELECTED	time and date data missing	-set time and date -charge RTC battery (4h) -exchange RTC board

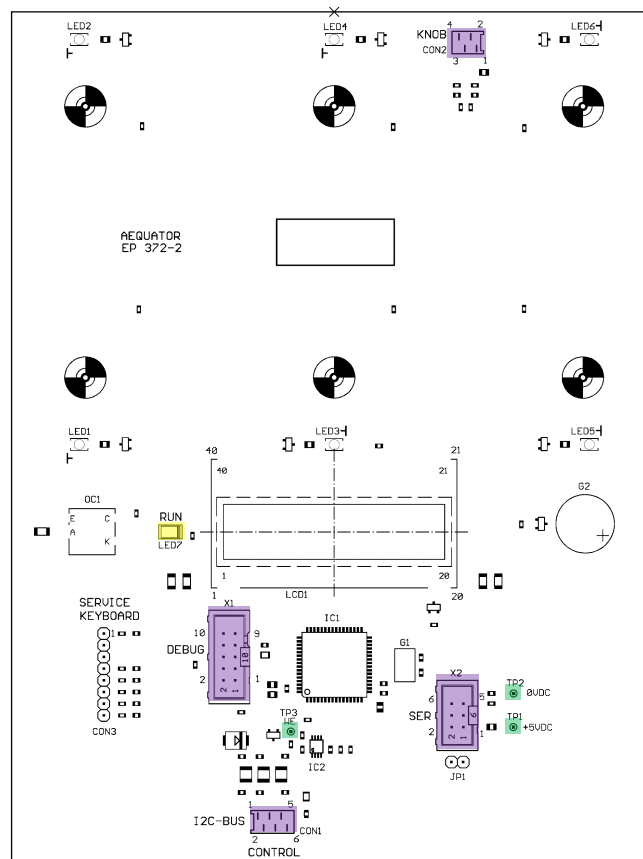
## 4.2 Electrical Connection Diagram



Description of the Electrical Connection Diagram	
Pos.	Item
EC	Control board 3
ED	Display board
ER	RFID interface
FT1	Thermo fuse heater1
FT2	Thermo fuse heater2
HT1	Thermo block 1
HT2	Thermo block 2
LF	Mains connector incl. filter
MA	Air pump
MP	Water pump
MS	eBooster motor
PE	Machine side cover
PS	Power supply 90-240 VAC
SD	Door switch
SM	Main switch
ST1	Temperature sensor thermo block 1
ST2	Temperature sensor thermo block 2
VB	Air valve 1
VE	Air valve 2
VF	Inlet valve
VH	Hot water valve



## 4.4 Display Board Rear View



### LED's

Pos.	Name	Function	Coulour
LED7	RUN	System running 1Hz interrupt	yellow

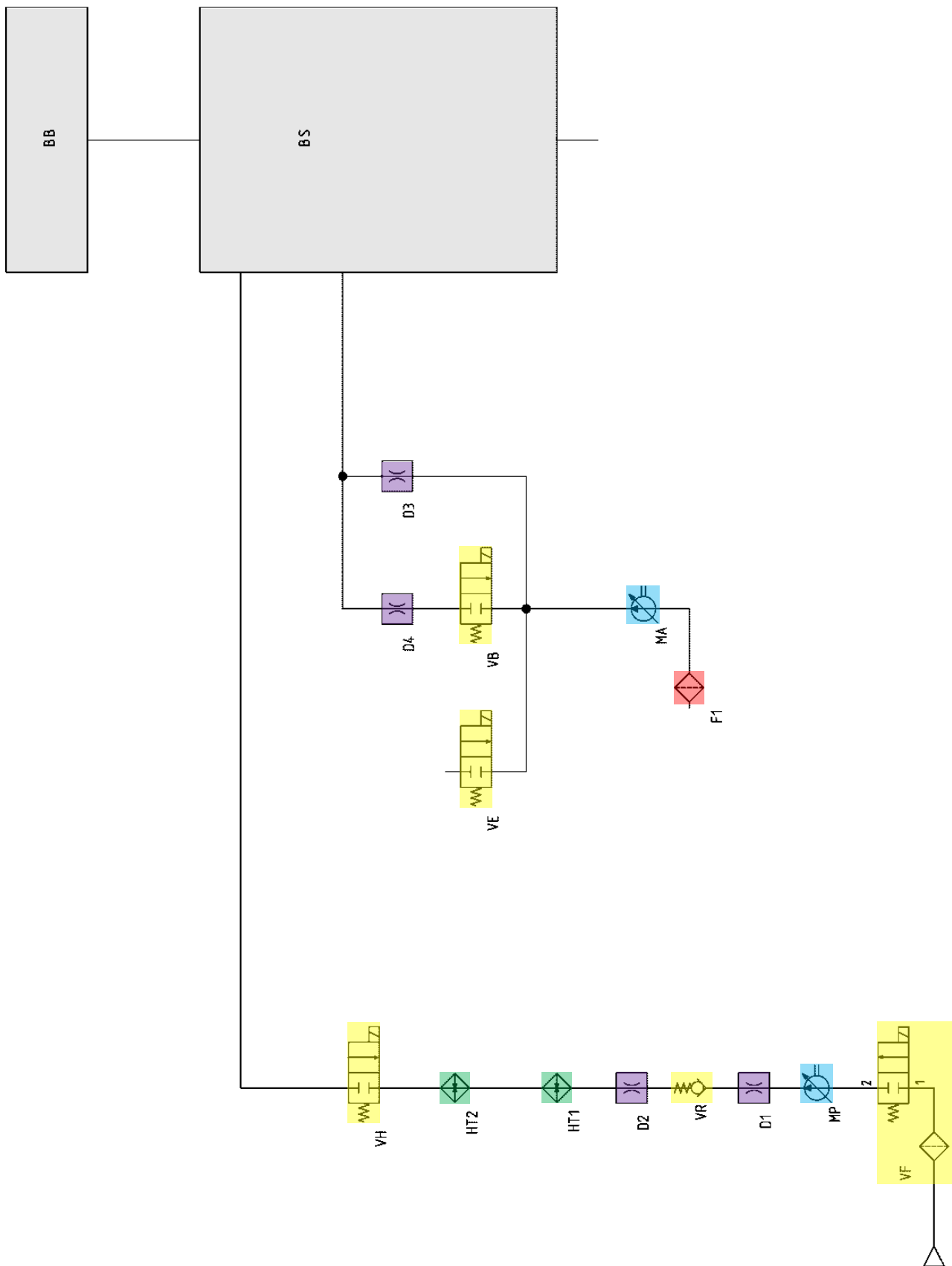
### Test points

Pos.	Name	Function	Level
TP1	+5 VDC	enable	5 VDC
TP2	Ø VDC		GND
TP3	WE	Write EEPROM	0-5 VDC

### Connectors

Pos.	Name	Function	Level
CON1	CONTROL	I2C Bus	0-5 VDC
CON2	not assembled		
CON3	SERVICE KEY BOARD		0-5 VDC
X1	DEBUG	SPI interface for boot loader	0-5 VDC
X2	SER	Serial interface for upload/download	0-5 VDC

## 4.5 Water Flow Diagram





Description of the Water Flow Diagram		
Pos.	Description	
BB	Bag-in-box	
BS	eBoost / coupling	
D1	Water nozzle	Ø 0.68mm
D2	Water nozzle	Ø 0.68mm
D3	Air nozzle	Ø 0.1mm
D4	Air nozzle	Ø 0.1mm
F1	Air filter	
HT1	Thermo block 1	1400W
HT2	Thermo block 2	1400W
MA	Air pump	
MP	Water pump	
VB	Air valve (dry)	
VE	Air valve (wet)	
VH	Hot water valve	Ø 1.3mm
VF	Water inlet valve	¾" Gas
VR	Non return valve	

## 5 Technical Data

<b>Dimensions:</b>	
Width	195 mm
Depth	510 mm
Height	586 mm
<b>Weight:</b>	
Total weight	15kg
<b>Water connection:</b>	
Fresh water connection	3/4 gas thread
Input water pressure	0.1-0.6 MPa (1-6 bar)
System pressure max.	1.6 MPa (16 bar)
<b>Electricity:</b>	
Operating voltage	230 V 50 Hz
Power connection	3000 W (13A)
<b>Conditions:</b>	
Working temperature	5-40°C
<b>Never expose your machine to temperatures below freezing.</b>	

## 6 Declaration of Conformity



### EU DECLARATION OF CONFORMITY EU KONFORMITÄTSERKLÄRUNG UE DÉCLARATION DE CONFORMITÉ

**Product model/product:**

Produktmodell/ Produkt:  
Modèle de produit/produit:

**HOT MILK MACHINE F50**  
Lattiz

**Name and address of the manufacturer or his authorised representative:**

Name und Anschrift des Herstellers oder seines Bevollmächtigten:  
Nom et adresse du fabricant ou de son mandataire:

AEQUATOR AG  
St. Gallerstrasse 229  
CH-9320 Arbon  
SWITZERLAND

**This declaration of conformity is issued under the sole responsibility of the manufacturer.**

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.  
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.

**Object of the declaration:**

Gegenstand der Erklärung:  
Objet de la déclaration :

**Machine for dispensing hot drinks**  
Maschine zur Ausgabe heisser Getränke  
Machine pour la distribution de boissons chaudes

**The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:**

Der oben beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften der Union:  
L'objet de la déclaration décrit ci-dessus est conforme à la législation d'harmonisation de l'Union applicable:

EMC Directive 2014/30/EU  
LVD 2014/35/EU  
RoHS Directive 2011/65/EU

**References to the relevant harmonised standards used or references to the other technical specifications in relation to which conformity is declared:**

Angabe der einschlägigen harmonisierten Normen, die zugrunde gelegt wurden, oder Angabe der anderen technischen Spezifikationen, in Bezug auf die die Konformität erklärt wird:  
Références des normes harmonisées pertinentes appliquées ou des autres spécifications techniques par rapport auxquelles la conformité est déclarée:

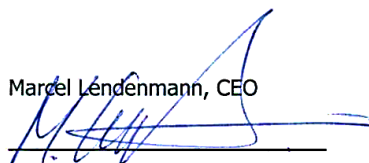
EN 50581:2012	EN 60335-1:2012
EN 55014-1:2015	EN 60335-75:2012
EN 55014-2:2015	EN 61000-3-2:2014
EN 55022:2010	EN 61000-3-3:2014

**Signed for and on behalf of:**

Unterzeichnet für und im Namen von:  
Signé par et au nom de:

Arbon, 14.04.2016

Marcel Lendenmann, CEO



## 7 Your Service Partner

