

# Technical Manual

## MODULE OVERVIEW

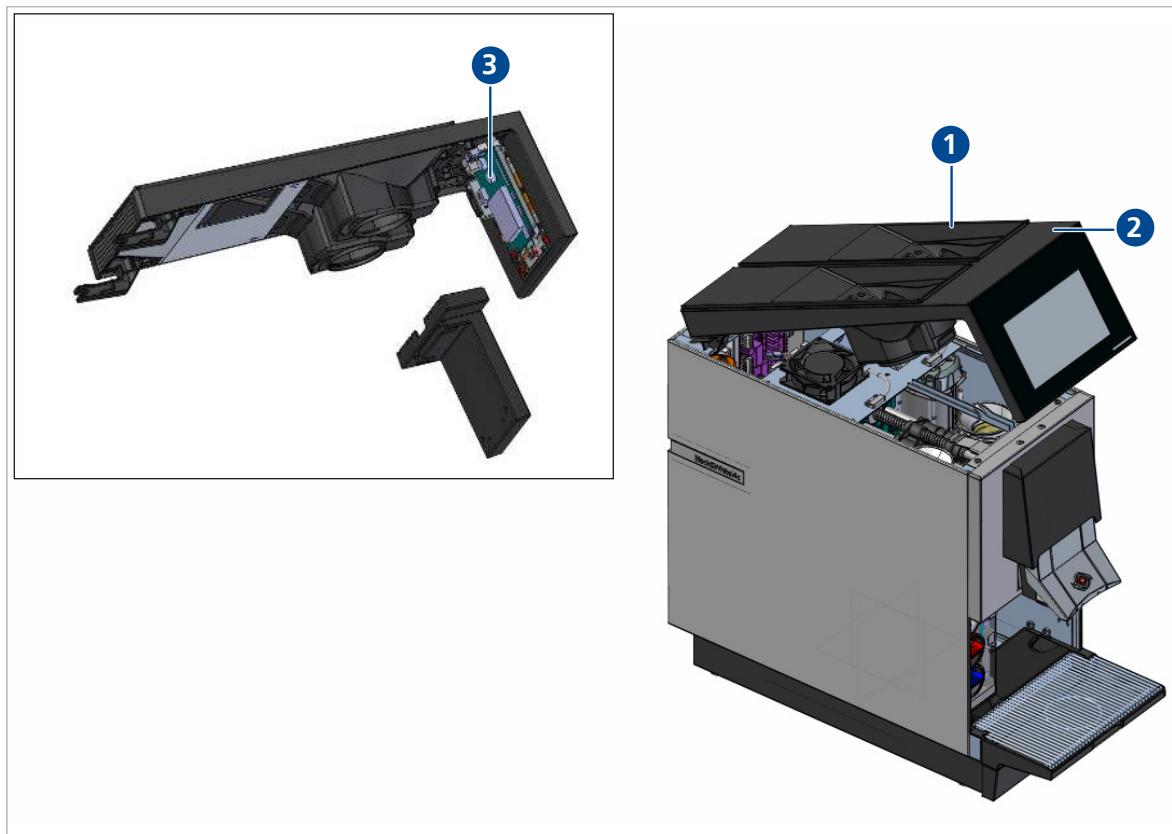


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# 1 Chassis 126.348

## 1.1 Front view

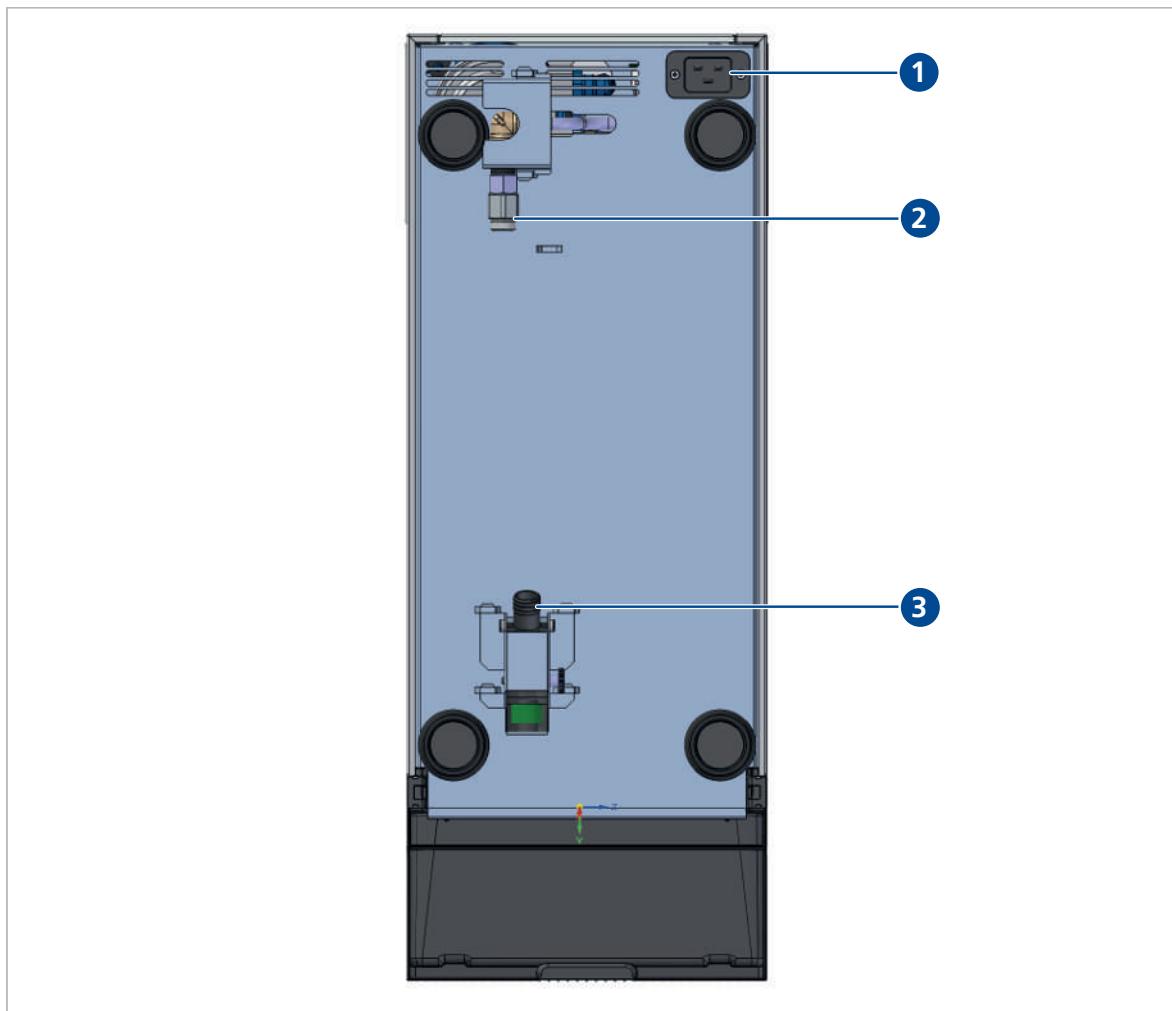


1 Service unit

2 Display/User interface

3 Single board computer

## 1.2 View from underneath (connections)

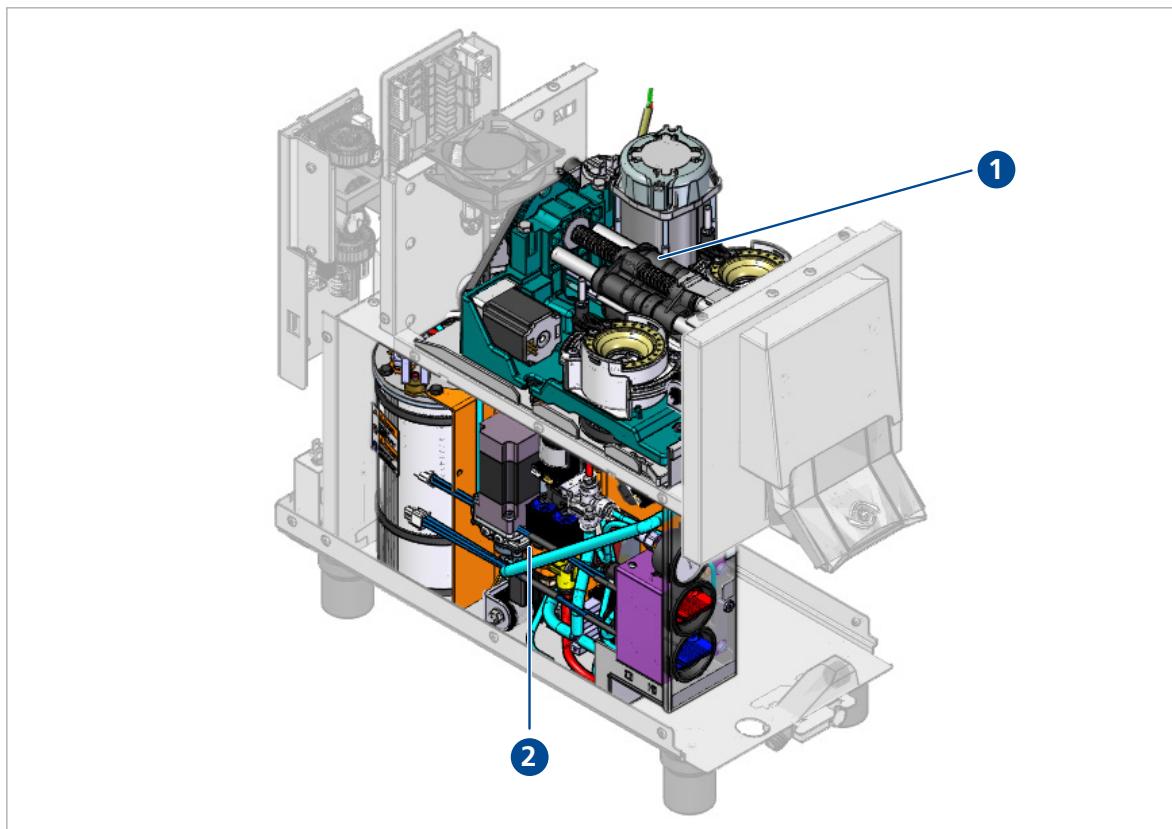


1 Mains cable connection

3 Drain connection

2 Water supply

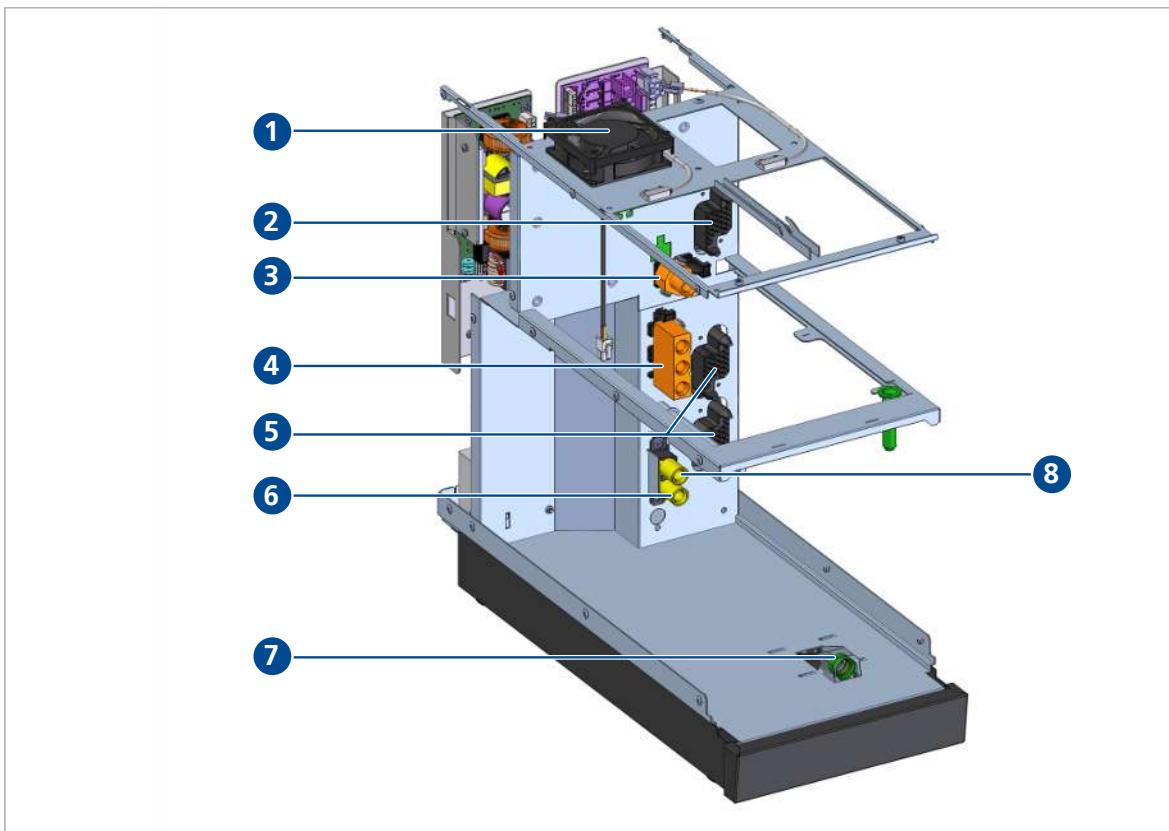
### 1.3 Front view without service unit



1 Mechanical module

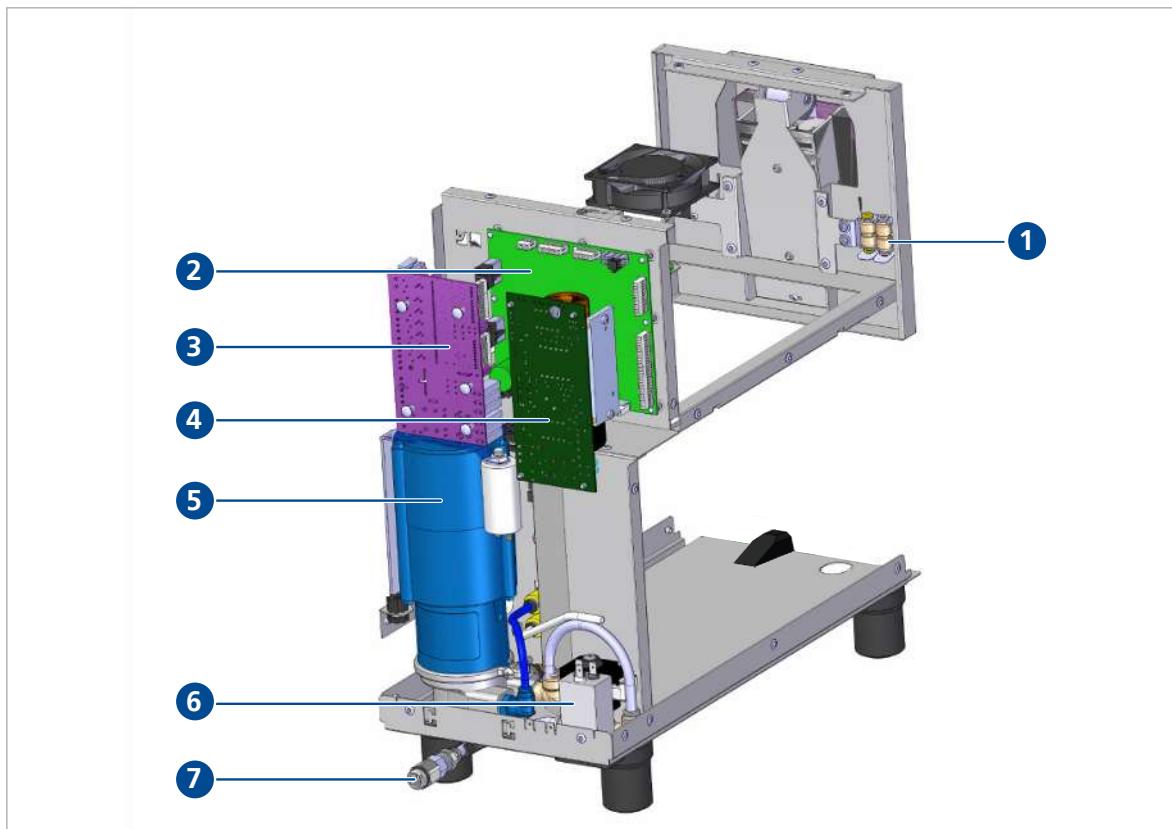
2 Hydraulics module

## 1.4 Front view without mechanics/hydraulics



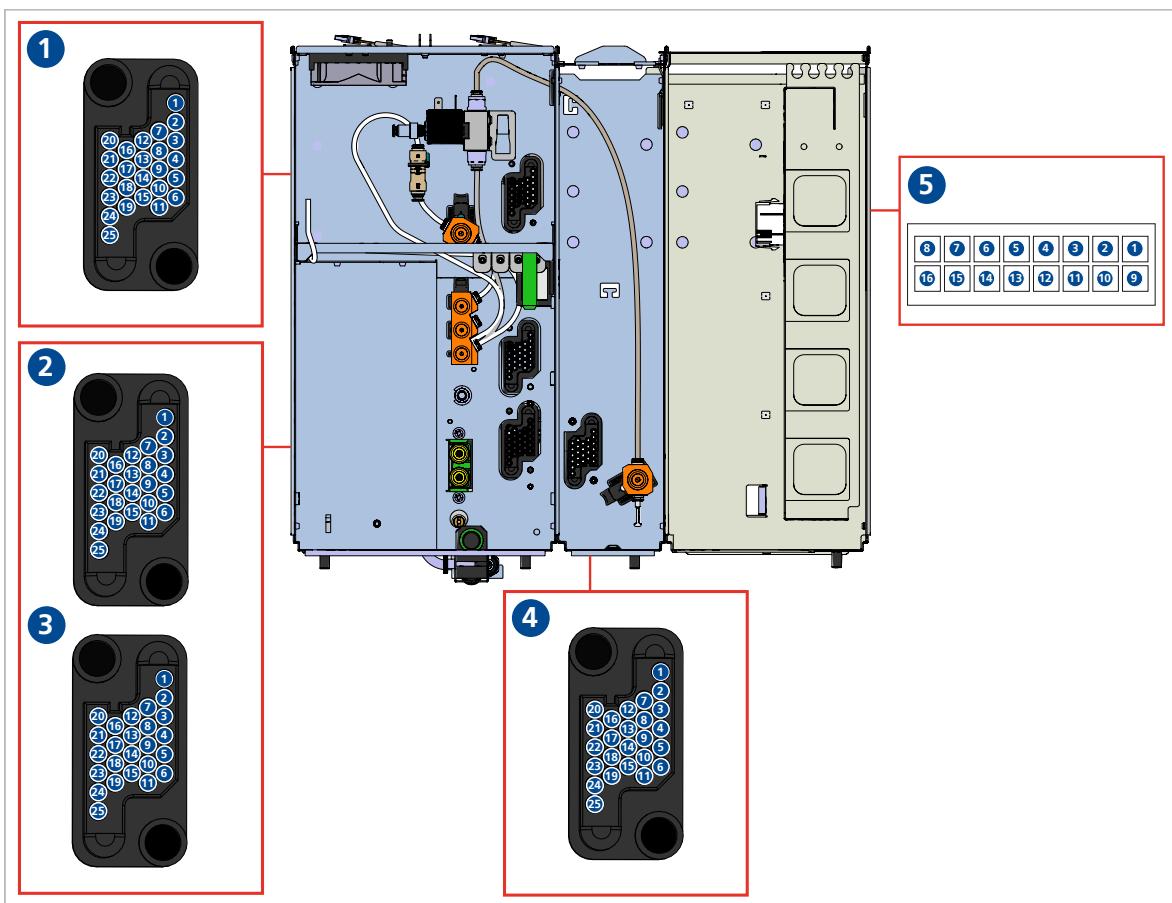
- |   |                               |
|---|-------------------------------|
| 1 Fan                                     | 5 Hydraulic module connection |
| 2 Mechanical module connection            | 6 Hydraulic connector water   |
| 3 Hydraulic connector single (mechanics)  | 7 Drain connection            |
| 4 Hydraulic connector triple (hydraulics) | 8 Hydraulic connector milk    |

## 1.5 Rear view without mechanics/hydraulics



- |   |                                |   |                |
|---|--------------------------------|---|----------------|
| 1 | Outlet coupling milk/hot water | 5 | Water pump     |
| 2 | Control board components       | 6 | Network filter |
| 3 | Power board                    | 7 | Water supply   |
| 4 | Switching power supply         |   |                |

## 1.6 Mechanical/hydraulic/power/syrup connections



1 Mechanics

4 Powder connection

2 Hydraulic connection above

4 Syrup connection

3 Hydraulic connection below

CC= Component Control Board

PB= Power Board

### Hydraulic connection above

|   |         |    |          |    |          |    |          |    |          |
|---|---------|----|----------|----|----------|----|----------|----|----------|
| 1 | PB-Y2   | 7  | CC-J16-7 | 12 | CC-J16-2 | 16 | CC-J16-3 | 20 | CC-J8-1  |
| 2 | -       | 8  | CC-J16-6 | 13 | CC-J16-1 | 17 | CC-J16-4 | 21 | CC-J8-11 |
| 3 | -       | 9  | CC-J16-5 | 14 | CC-J5-8  | 18 | CC-J16-8 | 22 | CC-J8-12 |
| 4 | PB-X8-1 | 10 | CC-J8-4  | 15 | CC-J5-9  | 19 | CC-J5-3  | 23 | CC-J5-2  |
| 5 | PB-X8-2 | 11 | CC-J5-7  |    |          |    |          | 24 | CC-J8-9  |
| 6 | CC-J8-5 |    |          |    |          |    |          | 25 | CC-J8-10 |

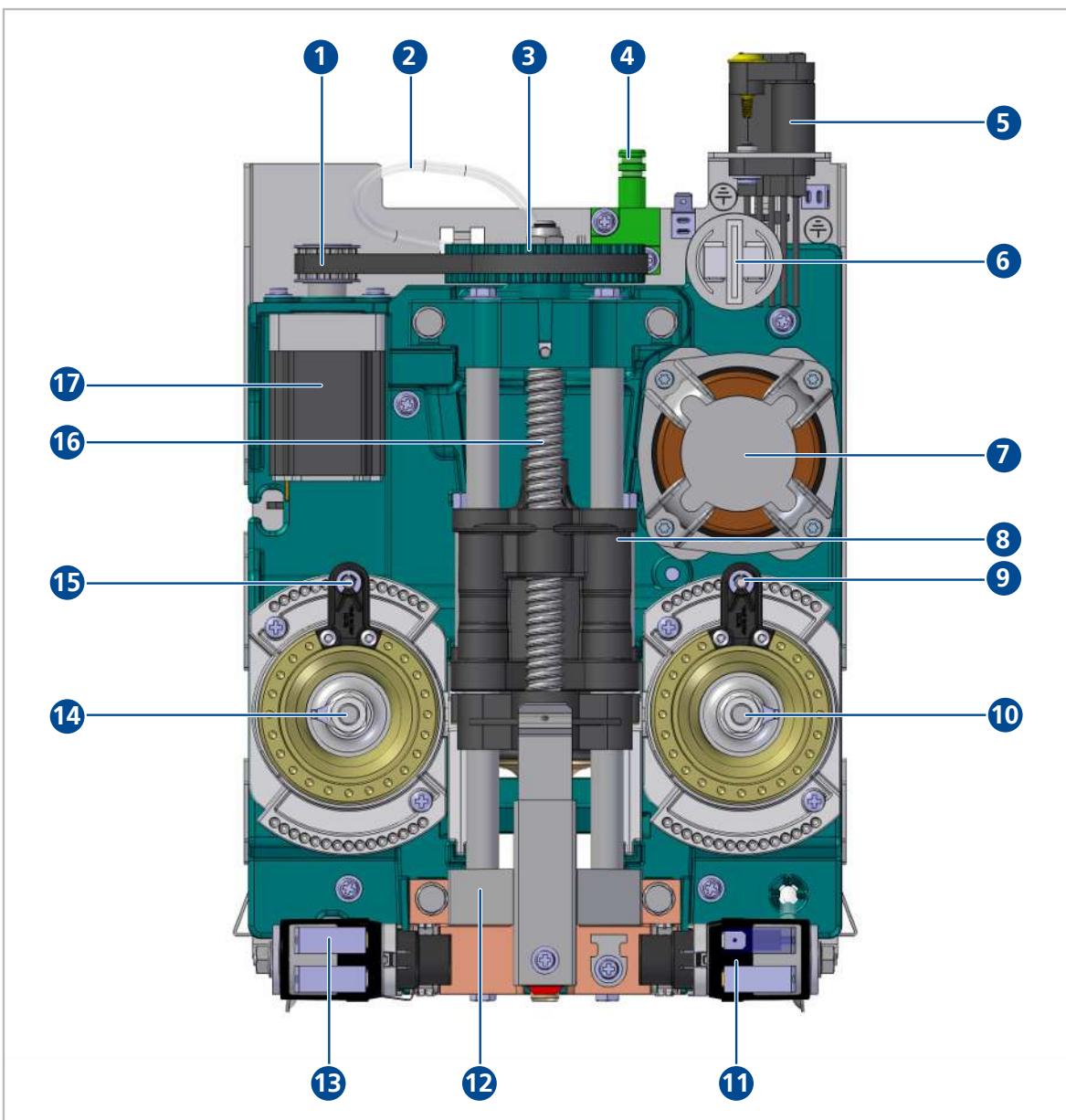
### Hydraulic connection below

|   |         |    |   |    |          |    |         |    |          |
|---|---------|----|---|----|----------|----|---------|----|----------|
| 1 | PB-Y5   | 7  | - | 12 | CC-J4-2  | 16 | CC-J4-3 | 20 | CC-J4-4  |
| 2 | -       | 8  | - | 13 | CC-J5-6  | 17 | CC-J5-1 | 21 | CC-J4-5  |
| 3 | PB-X5-2 | 9  | - | 14 | CC-J5-10 | 18 | CC-J5-5 | 22 | CC-J8-14 |
| 4 | PB-X5-1 | 10 | - | 15 | CC-J4-1  | 19 | CC-J5-4 | 23 | CC-J8-3  |

| <b>Hydraulic connection below</b> |            |    |          |    |            |    |         |    |         |
|-----------------------------------|------------|----|----------|----|------------|----|---------|----|---------|
| 5                                 | -          | 11 | CC-J5-11 |    |            |    |         | 24 | CC-J8-2 |
| 6                                 | PE         |    |          |    |            |    |         | 25 | CC-J8-8 |
| <b>Mechanics connection</b>       |            |    |          |    |            |    |         |    |         |
| 1                                 | PE         | 7  | CC-J17-7 | 12 | CC-J3-6    | 16 | CC-J3-3 | 20 | -       |
| 2                                 | PB-X4-1    | 8  | CC-J17-6 | 13 | CC-J3-5    | 17 | CC-J3-8 | 21 | -       |
| 3                                 | PB-X4-2    | 9  | CC-J17-5 | 14 | CC-J17-1   | 18 | CC-J3-2 | 22 | -       |
| 4                                 | PB-X4-6    | 10 | CC-J17-4 | 15 | CC-J17-2   | 19 | -       | 23 | -       |
| 5                                 | -          | 11 | CC-J17-8 |    |            |    |         | 24 | -       |
| 6                                 | CC-J17-3   |    |          |    |            |    |         | 25 | -       |
| <b>Powder connection</b>          |            |    |          |    |            |    |         |    |         |
| 1                                 | CC-J3-1    | 7  | CC-J3-2  | 12 | -          | 16 | -       | 20 | -       |
| 2                                 | CC-J3-5    | 8  | CC-J3-66 | 13 | -          | 17 | -       | 21 | -       |
| 3                                 | CC-J3-3    | 9  | -        | 14 | -          | 18 | -       | 22 | -       |
| 4                                 | CC-J3-7    | 10 | -        | 15 | -          | 19 | -       | 23 | -       |
| 5                                 | CCMU-J4-9  | 11 | -        |    |            |    |         | 24 | -       |
| 6                                 | CCMU-J4-1  |    |          |    |            |    |         | 25 | PE      |
| <b>Syrup connection</b>           |            |    |          |    |            |    |         |    |         |
| 1                                 | CCMU-J4-1  |    |          | 9  | CCMU-J4-3  |    |         |    |         |
| 2                                 | CCMU-J4-10 |    |          | 10 | CCMU-J4-11 |    |         |    |         |
| 3                                 | CCMU-J4-12 |    |          | 11 | CCMU-J4-13 |    |         |    |         |
| 4                                 | -          |    |          | 12 | -          |    |         |    |         |
| 5                                 | CC-J3-4    |    |          | 13 | CC-J3-8    |    |         |    |         |
| 6                                 | CC-J3-3    |    |          | 14 | CC-J3-7    |    |         |    |         |
| 7                                 | CC-J3-2    |    |          | 15 | CC-J3-6    |    |         |    |         |
| 8                                 | CC-J3-1    |    |          | 16 | CC-J3-5    |    |         |    |         |

## 2 Mechanics 125.033

### 2.1 View from above

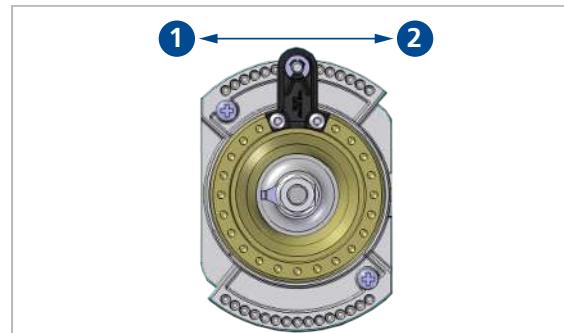


- |   |   |    |   |
|---|---|----|---|
| 1 | Toothed belt brewing chamber drive        | 10 | Right grinder   |
| 2 | Hose brewing line                         | 11 | Coffee drain valve  |
| 3 | Brewing chamber drive pulley              | 12 | Spring plate for mobile powder window (finger protection) |
| 4 | Water inlet                               | 13 | Coffee outlet valve                                       |
| 5 | Electronic connection (mechanical module) | 14 | Left grinder  |
| 6 | Capacitor to grinder motor                | 15 | Grinder setting left grinder                              |
| 7 | Grinder motor 230 VAC                     | 16 | Drive spindle to brewing chamber                          |

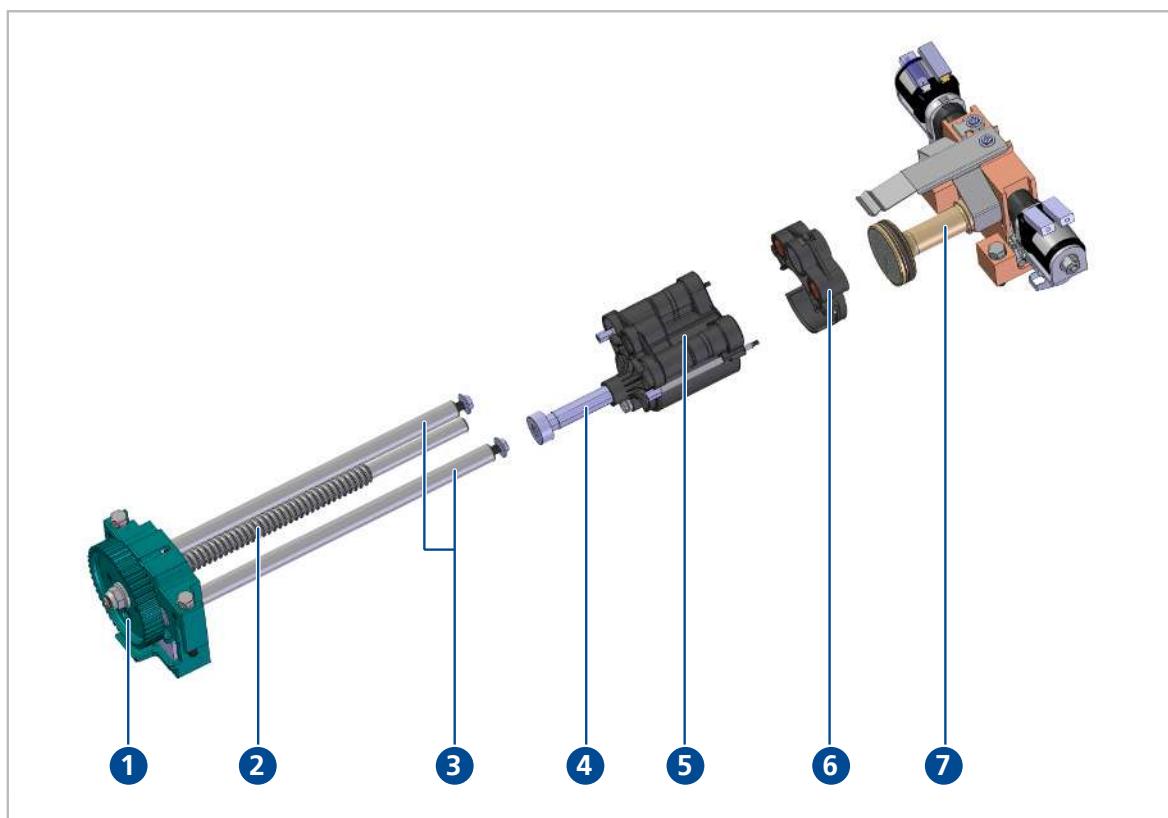
- |   |                               |    |                              |
|---|-------------------------------|----|------------------------------|
| 8 | Brewing chamber               | 17 | Brewing chamber motor 24 VDC |
| 9 | Grinder setting right grinder |    |                              |

## 2.2 Setting grinder

- Coarser grinding: Move slide to the left (1).
- Finer grinding: Move slide to the right (2).  
⇒ Applies to left and right grinder.

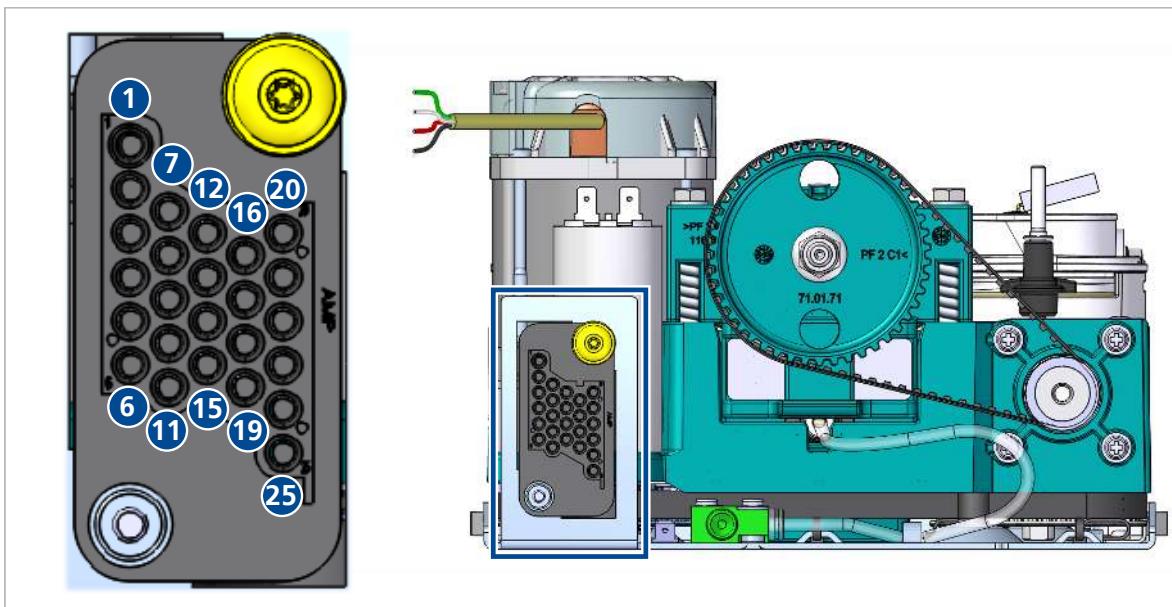


## 2.3 Brewing group



- |   |                                  |   |                                 |
|---|----------------------------------|---|---------------------------------|
| 1 | Rear bearing block               | 5 | Brewing chamber                 |
| 2 | Drive spindle to brewing chamber | 6 | Mobile powder window            |
| 3 | Guide rods to brewing chamber    | 7 | Fixed piston with bearing block |
| 4 | Mobile piston                    |   |                                 |

## 2.4 Connection



### Plug mechanics

|   |   |    |  |    |   |    |                        |    |   |
|---|---|----|--|----|---|----|------------------------|----|---|
| 1 | PE<br>(green-yellow)                    | 7  | Brewing chamber motor phase A<br>(brown) | 12 | Coffee drain valve<br>(orange)              | 16 | GND<br>(black)         | 20 | - |
| 2 | Grinder CW<br>(red)                     | 8  | Brewing chamber motor phase B<br>(grey)  | 13 | Coffee outlet valve<br>(brown)              | 17 | (ID_Signal)<br>(black) | 21 | - |
| 3 | Grinder CCW<br>(white)                  | 9  | Brewing chamber motor phase C<br>(black) | 14 | Brewing chamber motor Hall 24 V DC<br>(red) | 18 | (ID_GND)<br>(grey)     | 22 | - |
| 4 | N<br>(black)                            | 10 | Brewing chamber motor Hall B<br>(grey)   | 15 | Brewing chamber motor Hall GND<br>(black)   | 19 | -                      | 23 | - |
| 5 | -                                       | 11 | Brewing chamber motor Hall C<br>(black)  |    |   |    |                        | 24 | - |
| 6 | Brewing chamber motor Hall A<br>(brown) |    |  |    |   |    |                        | 25 | - |

### 2.4.1 System check/Test position

Reed switch for bean hopper and grounds drawer must be closed.

| Component             | Pin | Pin | Result       |
|-----------------------|-----|-----|--------------|
| Coffee drain valve    | 12  | 16  | 0 VDC/24 VDC |
| Coffee outlet valve   | 13  | 16  | 0 VDC/24 VDC |
| Brewing chamber motor | 14  | 15  | 24 VDC       |
| Grinder motor CW      | 2   | 4   | 230 VAC      |
| Grinder motor CCW     | 3   | 4   | 230 VAC      |

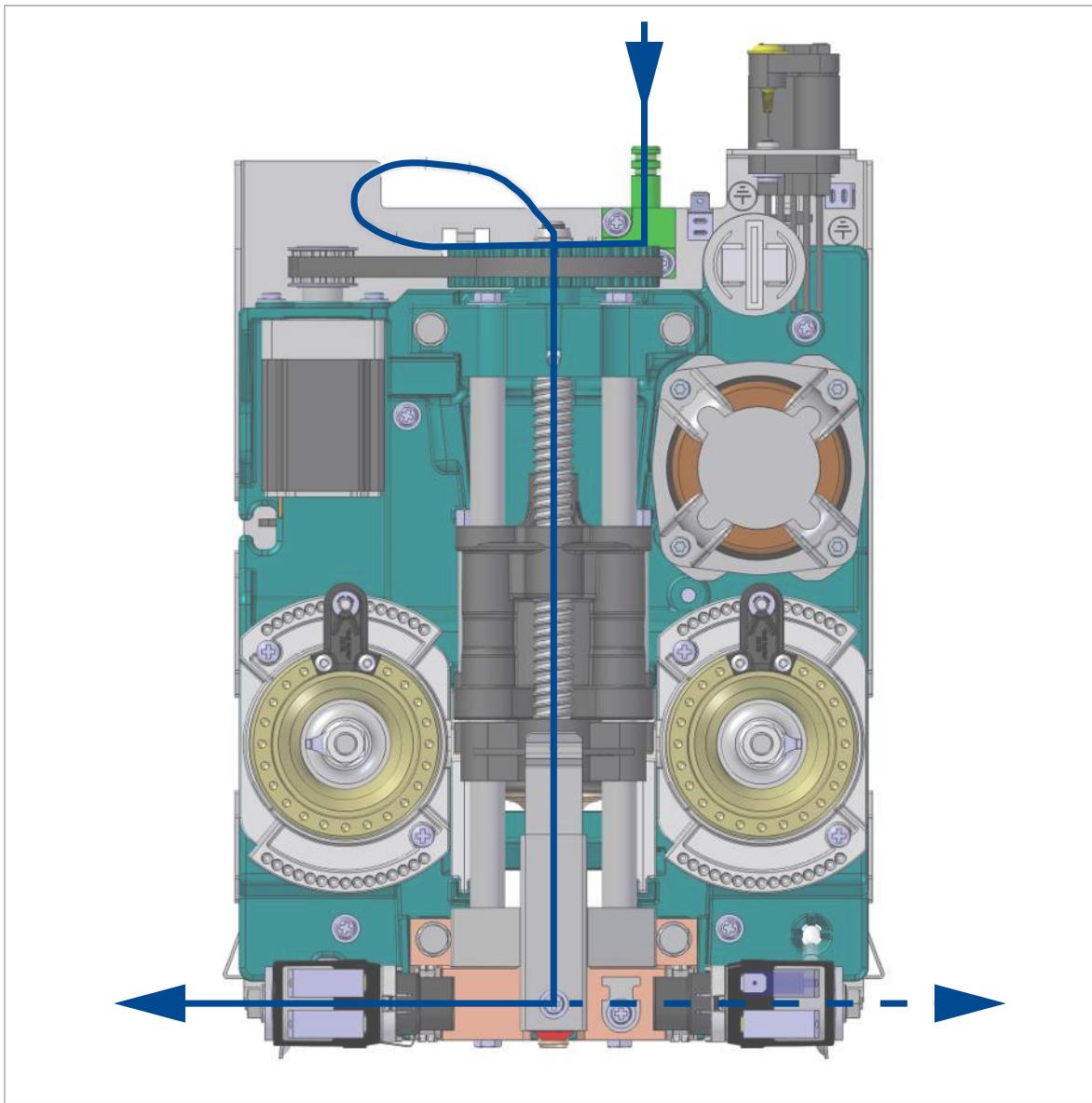
## 2.5 Water Channel

### Brewing cycle

To avoid coffee splashes, the air in the brewing group is dispensed into the drip tray via the coffee drain valve at the beginning of brewing and during pre-brewing:

*Brewing valve > Mechanical module water inlet > Brewing chamber > Mobile piston > Fixed piston > Coffee outlet valve > Coffee outlet*

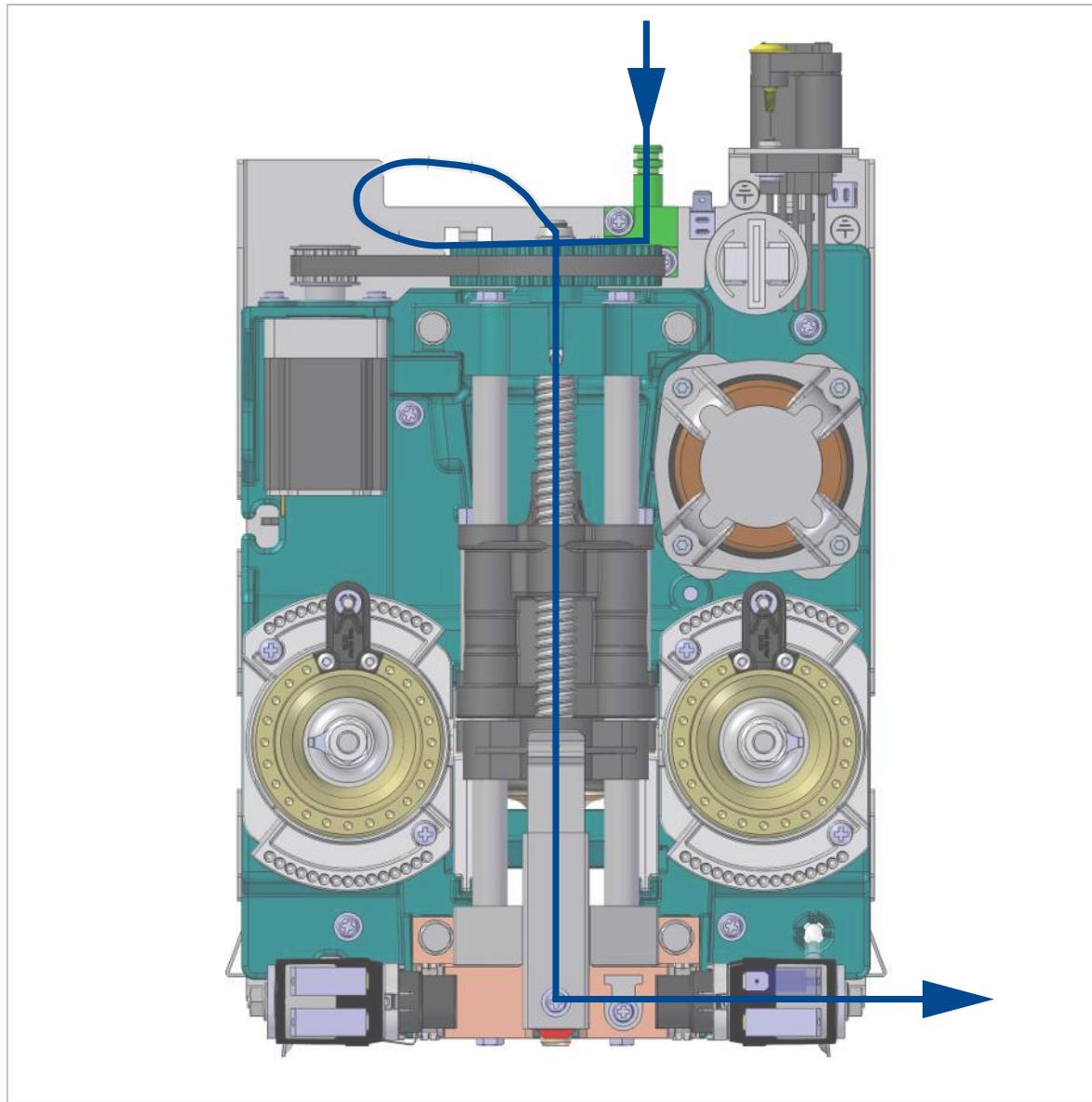
At the end of brewing, the coffee outlet valve is switched on again so that the coffee hose can be drained.



### Pre-rinsing cycle

To preheat the brewing chamber after a longer break:

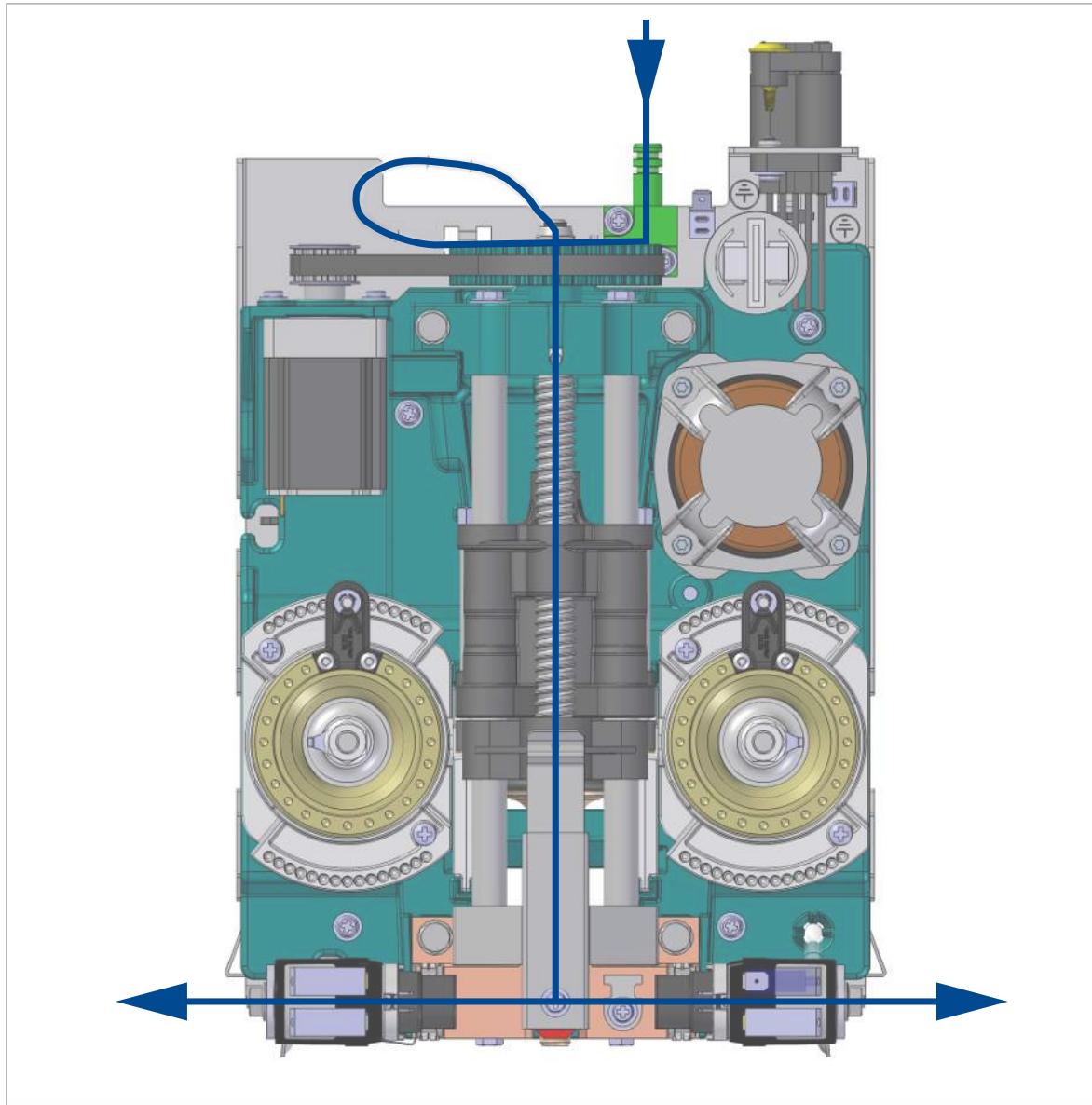
*Brewing valve > Mechanical module water inlet > Brewing chamber > Mobile piston > Fixed piston > Coffee drain valve > Drip tray*



### Rinsing cycle

During the rinsing cycle, all components that came into contact with coffee water previously are rinsed with hot water.

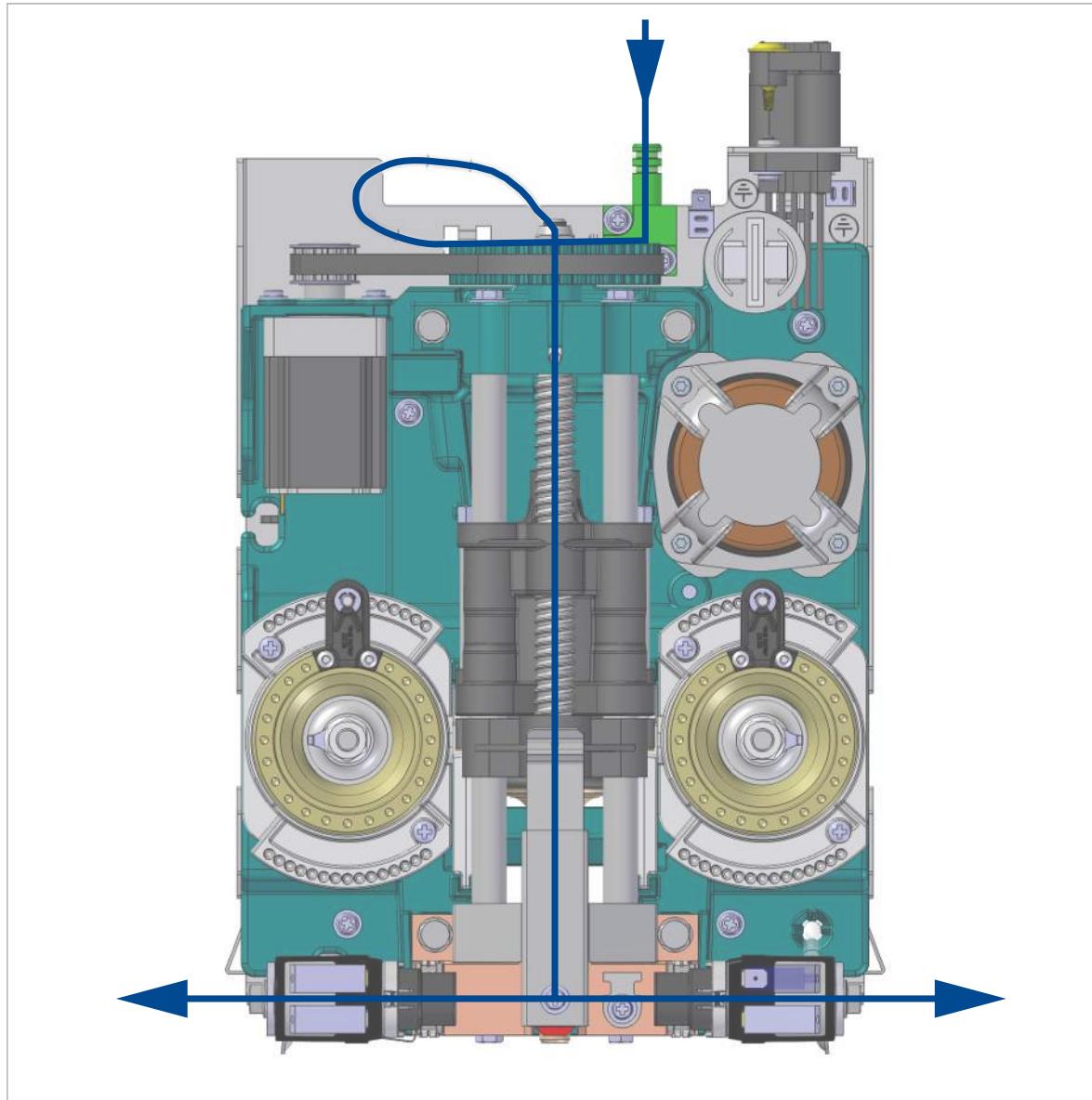
*Brewing valve > Mechanical module water inlet > Brewing chamber > Mobile piston > Fixed piston > Coffee drain valve > Drip tray > Coffee outlet valve > Coffee outlet*



### Cleaning cycle

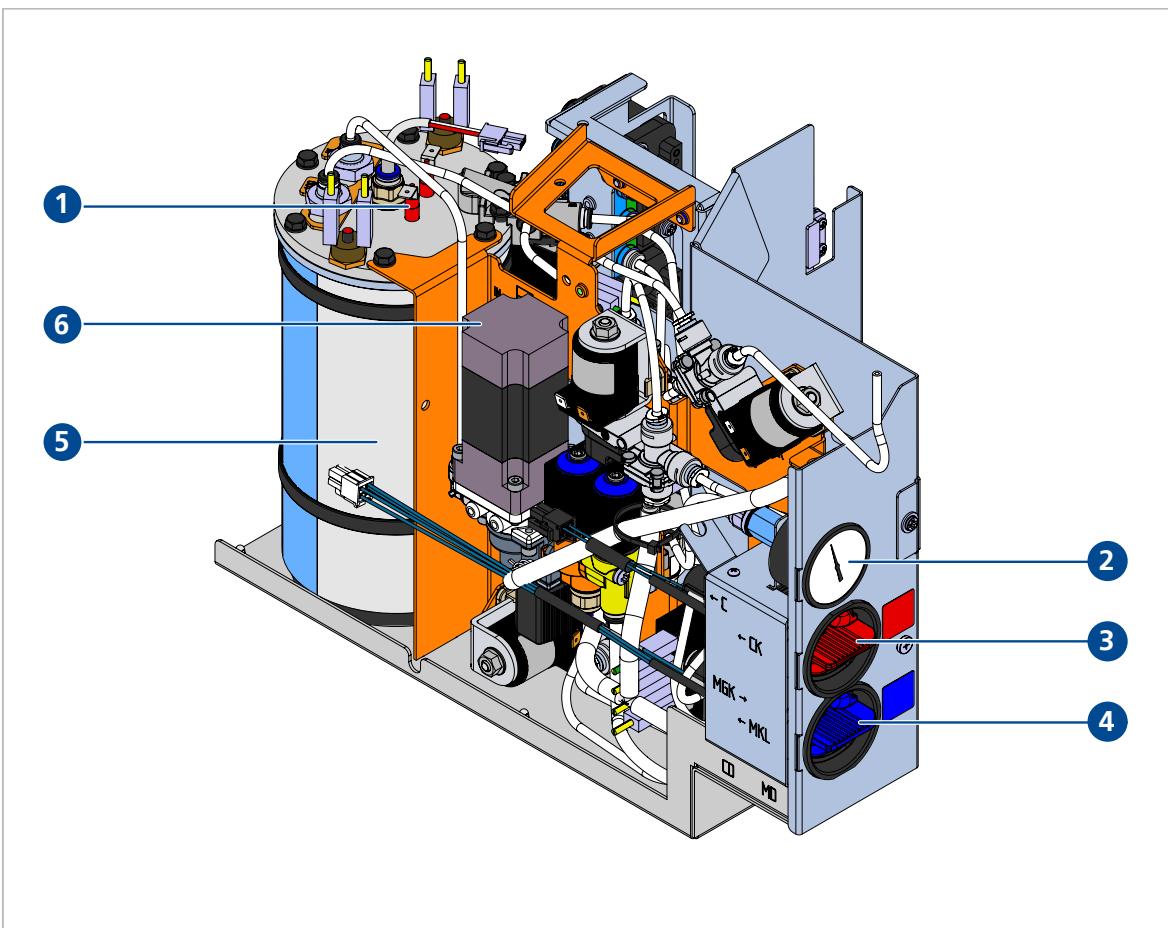
During the cleaning cycle, all components that came into contact with coffee water previously are cleaned and then rinsed with hot water.

*Coffee cleaning valve > Mechanical module water inlet > Brewing chamber > Mobile piston > Fixed piston > Coffee drain valve > Drip tray > Coffee outlet valve > Coffee outlet*

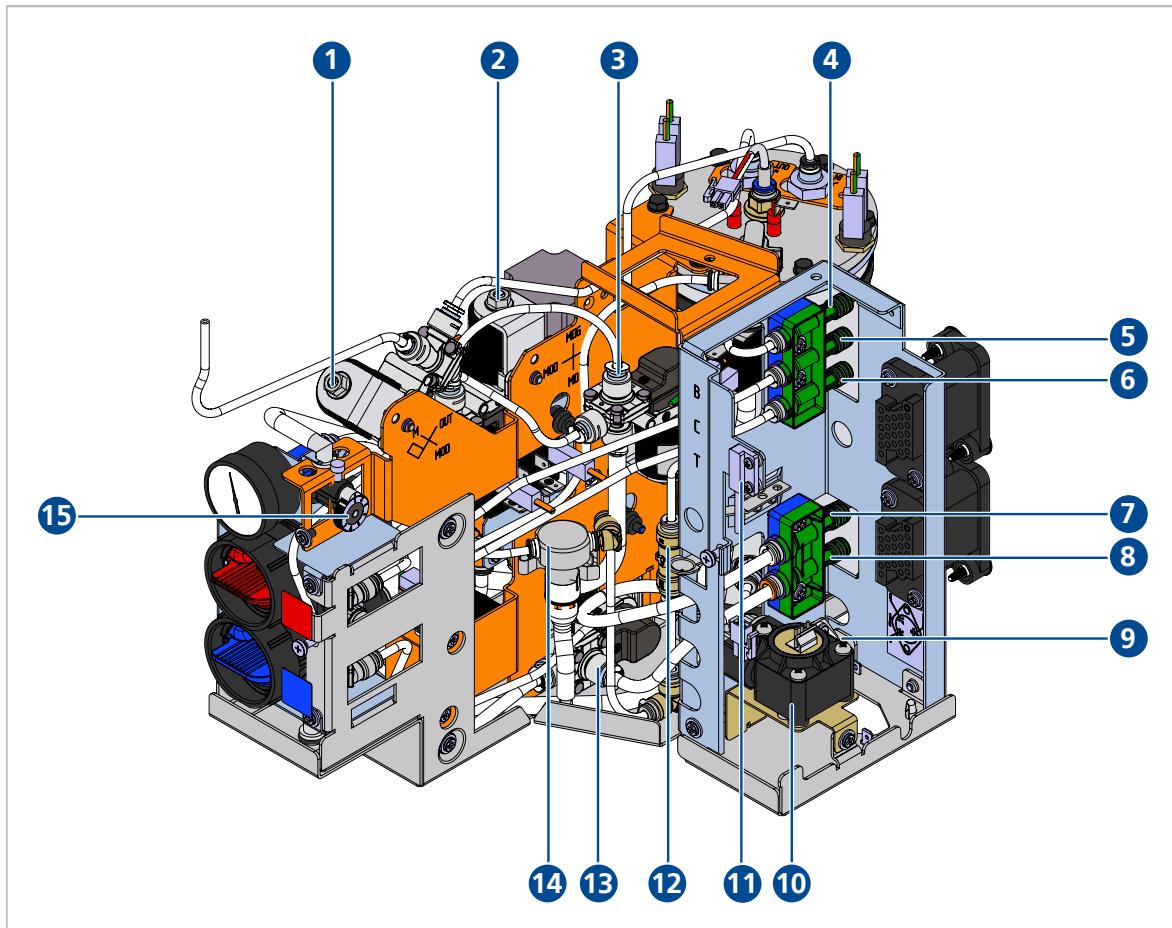


### 3 Hydraulics 126.285/131.802 (cold milk)

#### 3.1 Overview 126.285

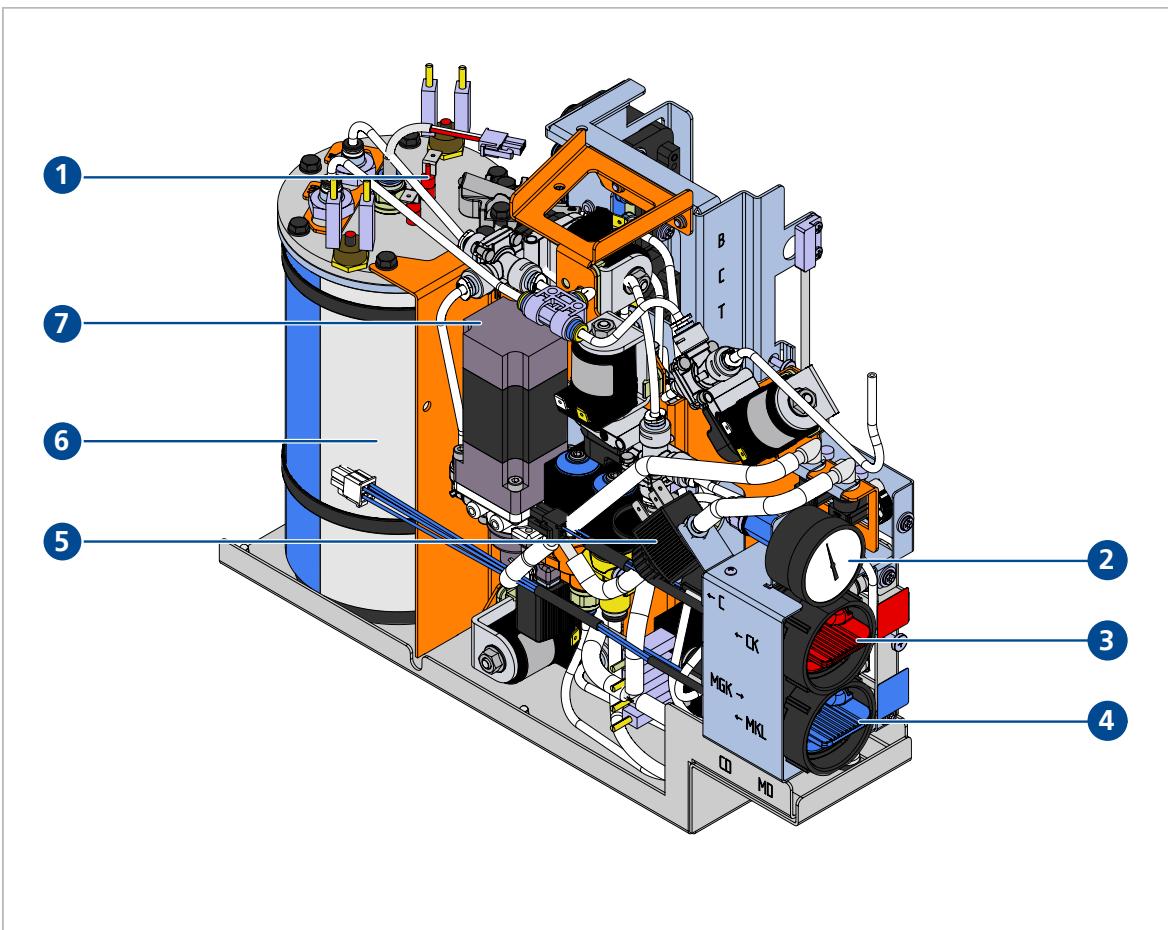


- |   |                     |   |                                      |
|---|---------------------|---|--------------------------------------|
| 1 | Heater              | 4 | Milk cleaning key                    |
| 2 | Pressure gauge      | 5 | Coffee boiler with milk heating coil |
| 3 | Coffee cleaning key | 6 | Milk pump unit                       |

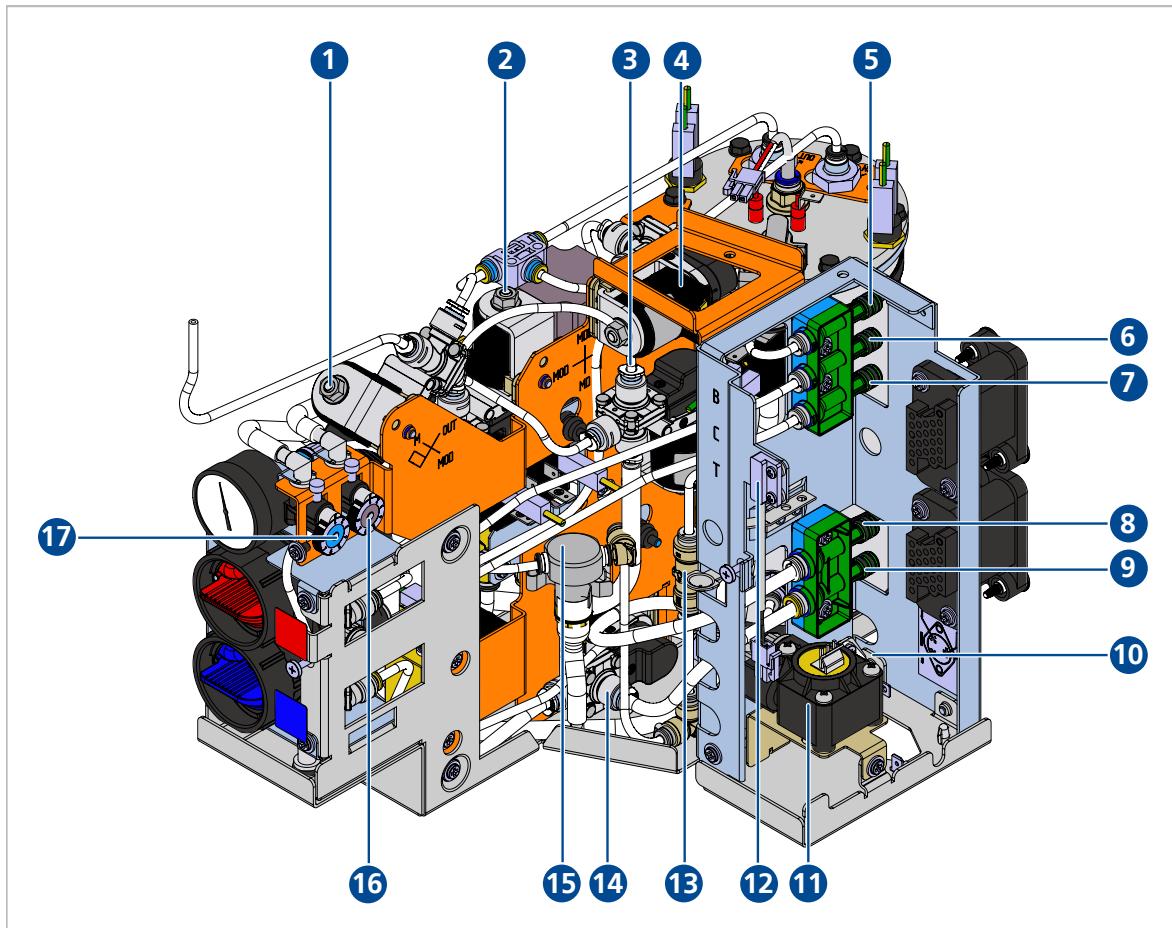


- |                                |                                   |
|--------------------------------|-----------------------------------|
| 1 Milk outlet valve            | 9 Triac                           |
| 2 Milk gate valve              | 10 Flowmeter                      |
| 3 Milk drain valve             | 11 Reed switch for grounds drawer |
| 4 Brewing valve outlet         | 12 Non-return valve               |
| 5 Coffee cleaning valve outlet | 13 Milk loop valve                |
| 6 Tea valve outlet             | 14 Overpressure valve             |
| 7 Water inlet                  | 15 Air regulator                  |
| 8 Milk inlet                   |                                   |

### 3.2 Overview 131.802 (cold milk)

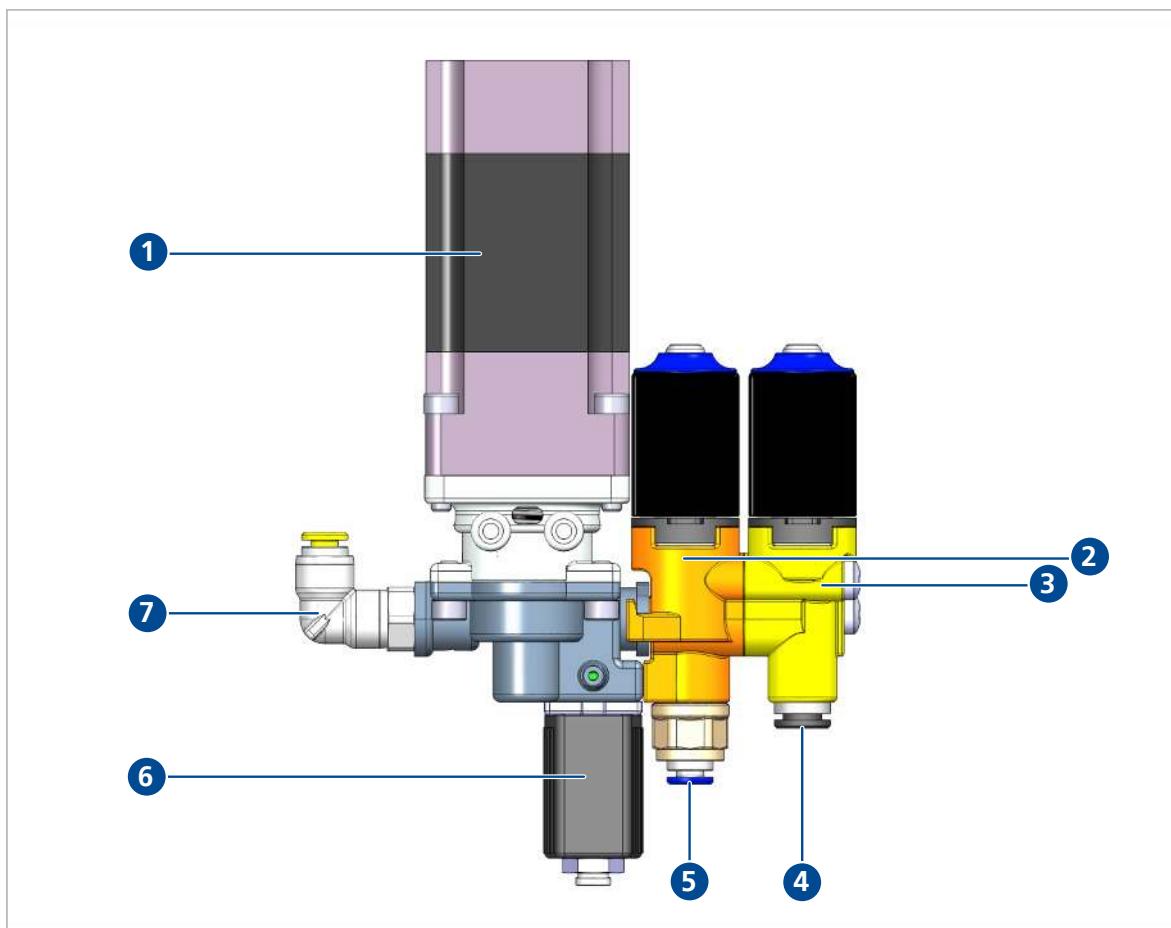


- |   |                     |   |                                      |
|---|---------------------|---|--------------------------------------|
| 1 | Heater              | 5 | Cold milk air valve                  |
| 2 | Pressure gauge      | 6 | Coffee boiler with milk heating coil |
| 3 | Coffee cleaning key | 7 | Milk pump unit                       |
| 4 | Milk cleaning key   |   |                                      |



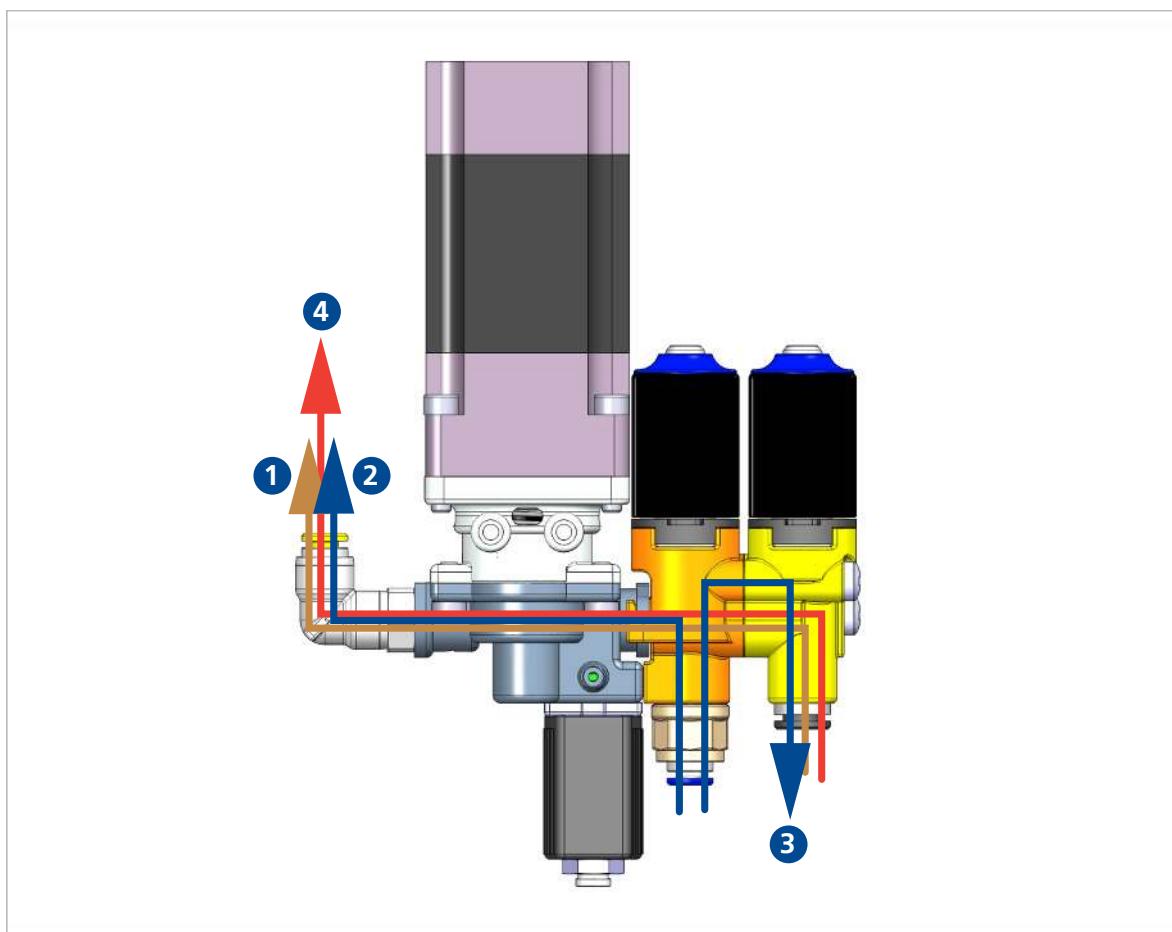
- |                                |                                   |
|--------------------------------|-----------------------------------|
| 1 Milk outlet valve            | 10 Triac                          |
| 2 Milk gate valve              | 11 Flowmeter                      |
| 3 Milk drain valve             | 12 Reed switch for grounds drawer |
| 4 Cold milk valve              | 13 Non-return valve               |
| 5 Brewing valve outlet         | 14 Milk loop valve                |
| 6 Coffee cleaning valve outlet | 15 Overpressure valve             |
| 7 Tea valve outlet             | 16 Air regulator warm             |
| 8 Water inlet                  | 17 Air regulator cold             |
| 9 Milk inlet                   |                                   |

### 3.3 Milk pump unit



- |   |                                  |   |                           |
|---|----------------------------------|---|---------------------------|
| 1 | Milk pump                        | 5 | Water inlet               |
| 2 | Milk rinse valve (rinse)         | 6 | Air valve                 |
| 3 | Milk cleaning valve (back rinse) | 7 | Milk outlet pressure-side |
| 4 | Milk inlet suction-side          |   |                           |

### 3.3.1 Water/milk channel



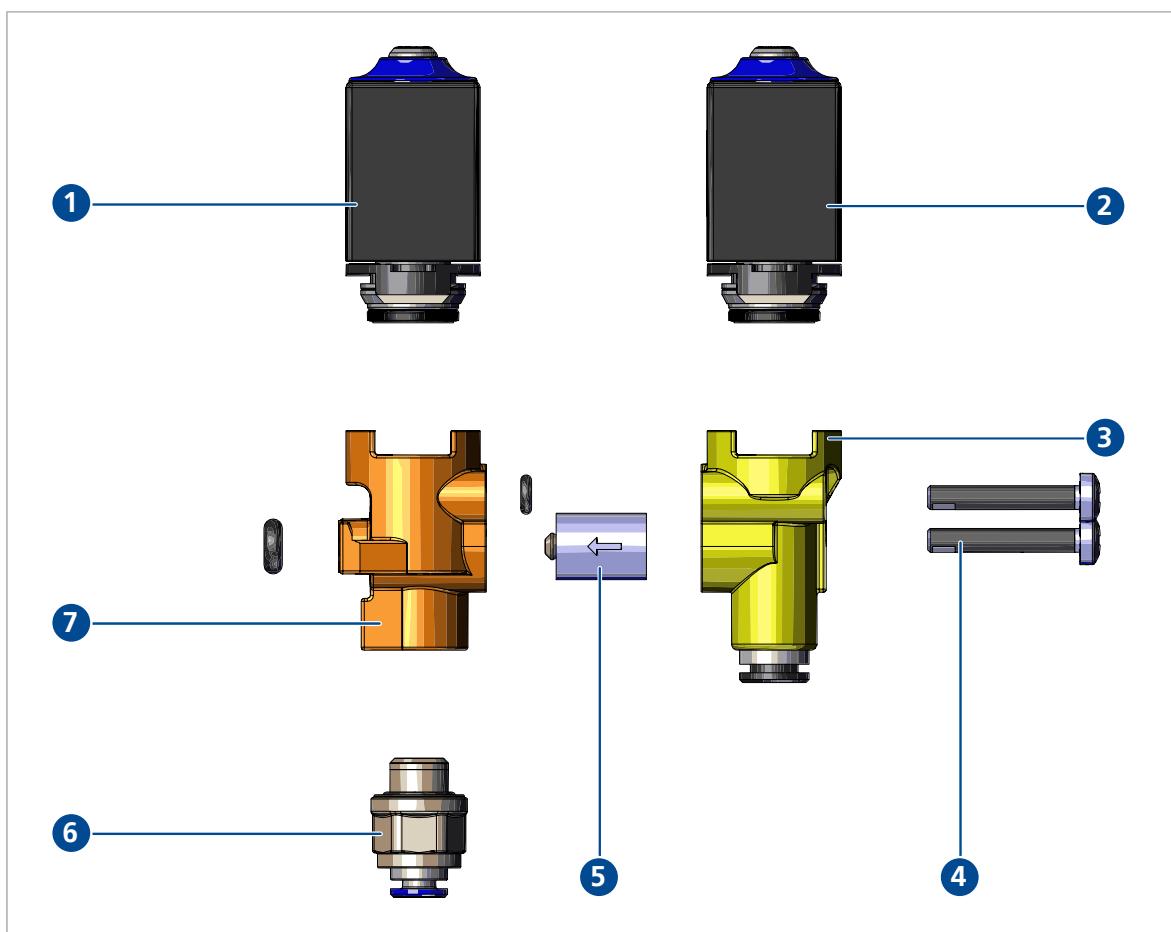
1 Milk channel

3 Rinsing channel refrigerator (back rinse)

2 Rinsing channel milk heating coil (rinse)

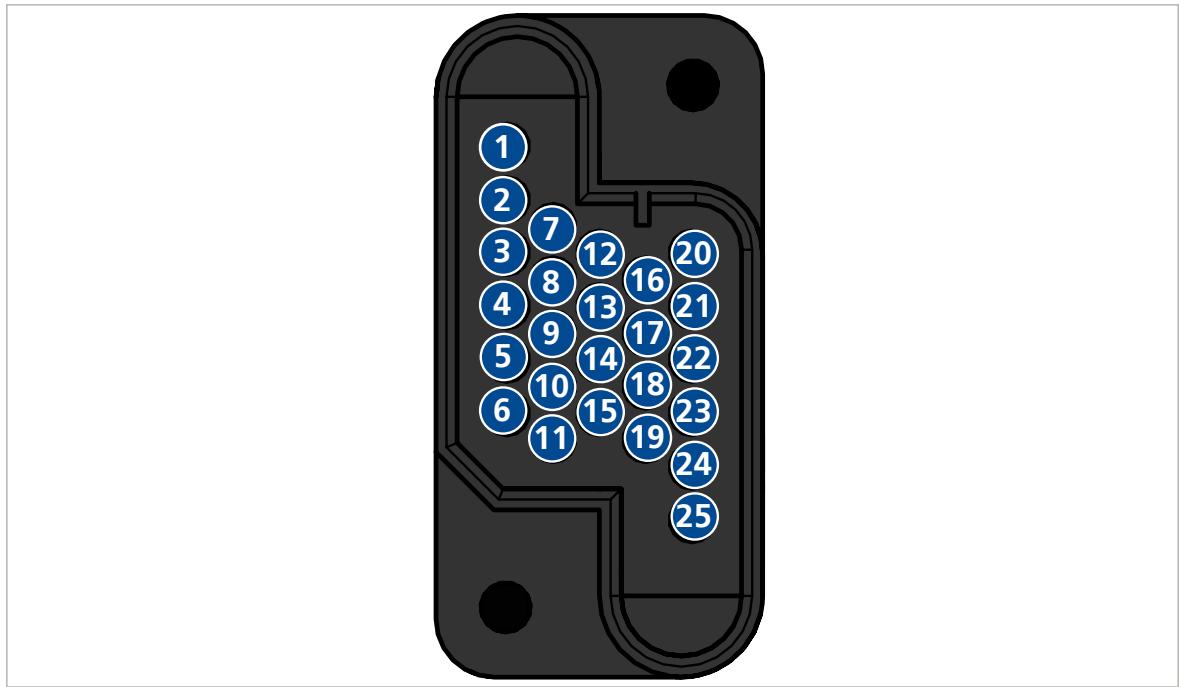
4 Milk cleaning channel

### 3.4 Cleaning block



- |   |                                  |   |                       |
|---|----------------------------------|---|-----------------------|
| 1 | Milk rinse valve (rinse)         | 5 | Milk non-return valve |
| 2 | Milk cleaning valve (back rinse) | 6 | Flow limiter          |
| 3 | Housing back rinse               | 7 | Housing rinse         |
| 4 | Fillister head screws (2x)       |   |                       |

### 3.5 Connection above



**Plug hydraulics above**

|   |                                  |    |                                  |    |                                   |    |                              |    |  |
|---|----------------------------------|----|----------------------------------|----|-----------------------------------|----|------------------------------|----|--|
| 1 | N<br>(blue)                      | 7  | Milk pump<br>phase A<br>(red)    | 12 | Milk pump Hall<br>GND<br>(black)  | 16 | Milk pump Hall A<br>(red)    | 20 | 24 V (cleaning<br>key)<br>(red)              |
| 2 | -                                | 8  | Milk pump<br>phase B<br>(violet) | 13 | Milk pump Hall<br>24 VDC<br>(red) | 17 | Milk pump Hall B<br>(violet) | 21 | Reed coffee<br>cleaning tablet<br>(brown)    |
| 3 | -                                | 9  | Milk pump<br>phase C<br>(orange) | 14 | Milk gate valve<br>(black-white)  | 18 | Milk pump Hall C<br>(orange) | 22 | Reed coffee<br>cleaning key<br>(white-brown) |
| 4 | Reed grounds<br>drawer<br>(grey) | 10 | NTC boiler<br>signal<br>(yellow) | 15 | Milk loop valve<br>(blue)         | 19 | GND<br>(black)               | 23 | GND<br>(black)                               |
| 5 | Reed grounds<br>drawer<br>(grey) | 11 | Milk outlet<br>valve<br>(white)  |    |                                   |    |                              | 24 | Reed milk<br>cleaning tablet<br>(white)      |
| 6 | NTC boiler<br>GND<br>(black)     |    |                                  |    |                                   |    |                              | 25 | Reed milk<br>cleaning key<br>(black-white)   |

#### 3.5.1 System check/Test position

| Component                         | Pin | Pin | Result       |
|-----------------------------------|-----|-----|--------------|
| Milk outlet valve                 | 11  | 19  | 0 VDC/24 VDC |
| Milk gate valve                   | 14  | 19  | 0 VDC/24 VDC |
| Milk loop valve                   | 15  | 19  | 24 VDC       |
| Reed switch for grounds<br>drawer | 4   | 5   | 24 VDC       |

| Component                              | Pin | Pin | Result  |
|--|-----|-----|---------|
| Reed switch for coffee cleaning tablet | 20  | 21  | 24 VDC  |
| Reed switch for coffee cleaning key    | 20  | 22  | 24 VDC  |
| Reed switch for milk cleaning tablet   | 20  | 24  | 24 VDC  |
| Reed switch for milk cleaning key      | 20  | 25  | 24 VDC  |
| NTC boiler                             | 6   | 10  | 3.2 VDC |
| Milk pump                              | 12  | 13  | 24 VDC  |

### 3.6 Connection below



| Plug hydraulics below |                       |    |   |    |                              |    |   |    |                                      |  |
|-----------------------|-----------------------|----|---|----|------------------------------|----|---|----|--------------------------------------|--|
| 1                     | L1<br>(brown)         | 7  | -   | 12 | GND<br>(black)               | 16 | Brewing valve<br>(brown)                  | 20 | Coffee cleaning<br>valve<br>(violet) |  |
| 2                     | -                     | 8  | -   | 13 | Milk drain valve<br>(orange) | 17 | (ID_GND)                                  | 21 | Tea valve<br>(white-green)           |  |
| 3                     | Triac_Gate<br>(black) | 9  | -   | 14 | Milk air-valve<br>(blue)     | 18 | Milk flushing<br>valve<br>(pink)          | 22 | (ID_Signal)<br>(grey)                |  |
| 4                     | Triac A2<br>(black)   | 10 | -   | 15 | GND<br>(black)               | 19 | Milk<br>backflushing<br>valve<br>(violet) | 23 | Flowmeter GND<br>(black)             |  |
| 5                     | -                     | 11 | Cold milk<br>valve and air<br>selection valve |    |                              |    |   | 24 | Flowmeter 24<br>VDC<br>(red)         |  |

| <b>Plug hydraulics below</b> |                      |  |  |  |  |  |                              |
|------------------------------|----------------------|--|--|--|--|--|------------------------------|
| 6                            | PE<br>(green-yellow) |  |  |  |  |  | 25 Flow meter signal (brown) |

### 3.6.1 System check/Test position

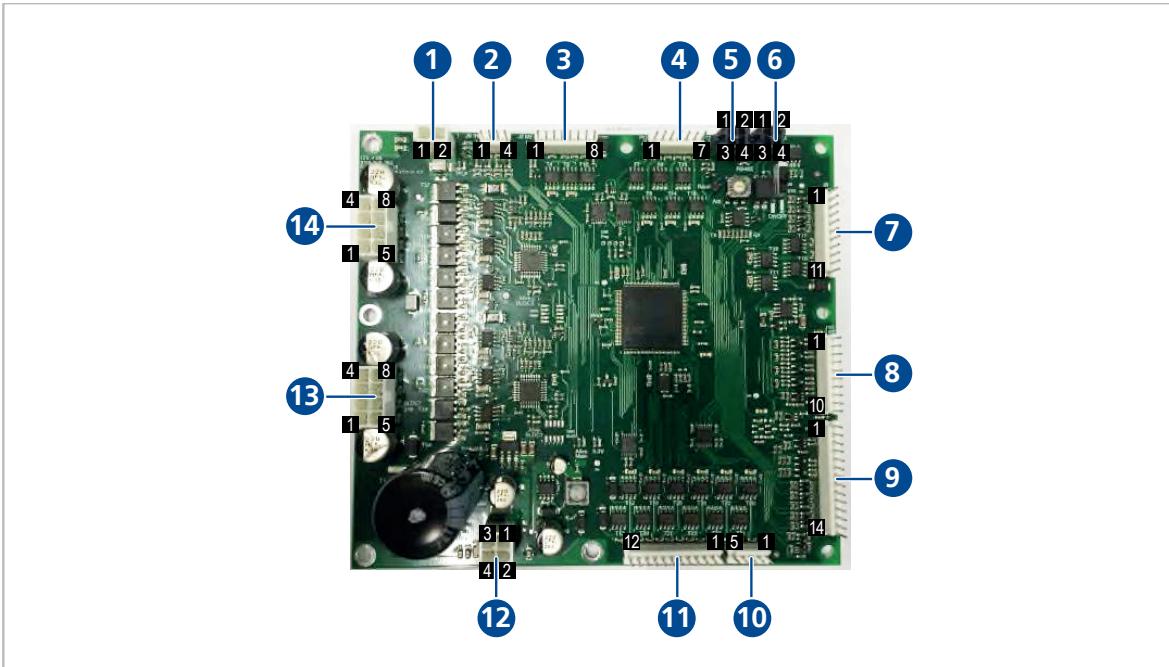
| <b>Component</b>        | <b>Pin</b> | <b>Pin</b> | <b>Result</b> |
|-------------------------|------------|------------|---------------|
| Milk drain valve        | 15         | 13         | 0 VDC/24 VDC  |
| Milk air-valve          | 15         | 14         | 0 VDC/24 VDC  |
| Brewing valve           | 15         | 16         | 0 VDC/24 VDC  |
| Milk flushing valve     | 15         | 18         | 0 VDC/24 VDC  |
| Milk backflushing valve | 15         | 19         | 0 VDC/24 VDC  |
| Coffee cleaning valve   | 15         | 20         | 0 VDC/24 VDC  |
| Tea valve               | 15         | 21         | 0 VDC/24 VDC  |

## 4 Electronics

### 4.1 Overview of boards

All slots and LEDs of the control board and the power board components are described below. A function check can be carried out based on this information.

#### 4.1.1 Control board components: Pinout of the slots

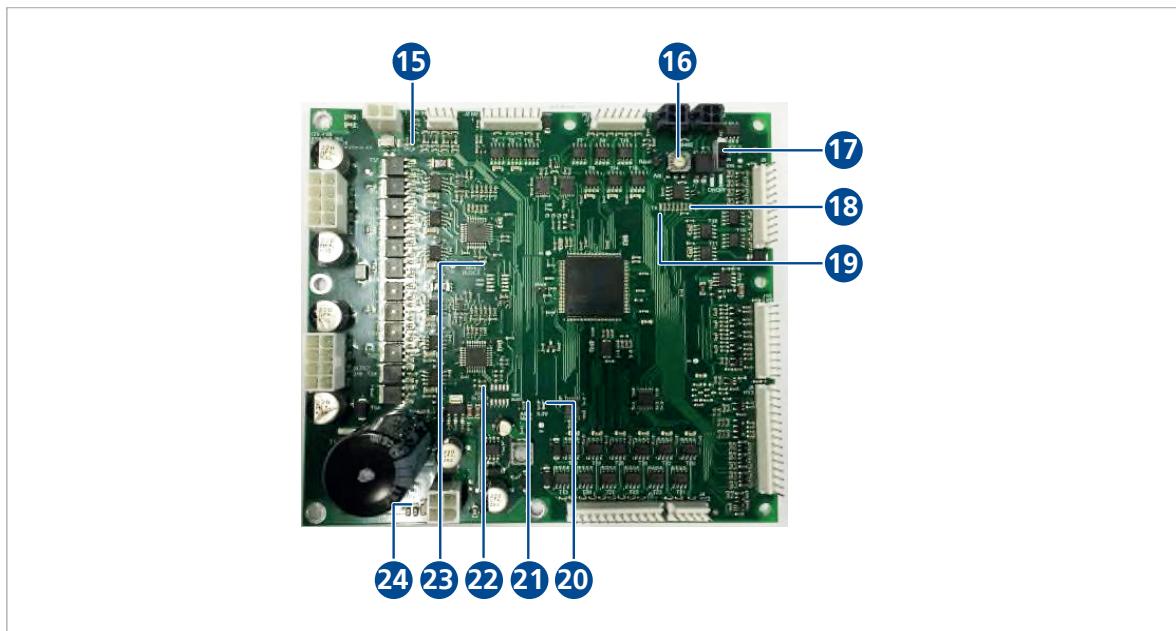


| Position | Name                                 |   |
|----------|--------------------------------------|---|
| 1        | J2: Input from power board interlock | Pin01: +24V<br>Pin02: GND   |
| 2        | J6: Input from power board interlock | Pin01: Reed bean hopper 1<br>Pin02: Reed bean hopper 2<br>Pin03: Reed front cover<br>Pin04: Reed grounds drawer   |
| 3        | J3: Output to the mechanical module  | Pin01: +24V A<br>Pin02: GND<br>Pin03: GND<br>Pin04: RPM measurement fan<br>Pin05: Coffee outlet valve<br>Pin06: Coffee drain valve<br>Pin07: Fan<br>Pin08: Mechanics ID                     |
| 4        | J7: Output to the power board        | Pin01: Grinder change 1 clockwise<br>Pin02: Grinder change 2 anticlockwise<br>Pin03: Water pump<br>Pin04: Boiler 1<br>Pin05: Boiler 2<br>Pin06: Brewing tank heater<br>Pin07: Zero crossing |

| Position | Name                                |  |
|----------|-------------------------------------|--|
| 5        | J12: BUS to the interface           | Pin01: +12V D<br>Pin02: Data-<br>Pin03: GND<br>Pin04: Data+  |
| 6        | J13: BUS to additional modules      | Pin01: +12V D<br>Pin02: Data-<br>Pin03: GND<br>Pin04: Data+  |
| 7        | J9: Outlet to optional components   | Pin01: +24V A<br>Pin02: GND<br>Pin03: GND<br>Pin04: Bean hopper 1 level<br>Pin05: Bean hopper 2 level<br>Pin06: Reed POD reserve<br>Pin07: Water tank level<br>Pin08: Water inlet valve<br>Pin09: Reserve<br>Pin10: Milk selection valve<br>Pin11: Reserve fan   |
| 8        | J10: Output to the refrigerator     | Pin01: +24V A<br>Pin02: +24V A<br>Pin03: GND<br>Pin04: GND<br>Pin05: Milk 1 level empty<br>Pin06: Milk 1 level low<br>Pin07: Milk 2 level empty<br>Pin08: Milk 2 level low<br>Pin09: NTC Milk 1<br>Pin10: NTC Milk 2k  |
| 9        | J8: Outlet to the hydraulics module | Pin01: +24V A<br>Pin02: +24V A<br>Pin03: GND<br>Pin04: NTC Boiler<br>Pin05: NTC Boiler GND<br>Pin06: Reserve<br>Pin07: Reserve<br>Pin08: Flowmeter<br>Pin09: Reed milk cleaning tablets<br>Pin10: Reed milk cleaning key<br>Pin11: Reed coffee cleaning tablets<br>Pin12: Reed coffee cleaning key<br>Pin13: Pressure switch<br>Pin14: Hydraulics ID |
| 10       | J4: Outlet to the hydraulics module | Pin01: GND<br>Pin02: GND<br>Pin03: Brewing valve<br>Pin04: Coffee cleaning valve<br>Pin05: Tea/mixing valve  |
| 11       | J5: Outlet to the hydraulics module | Pin01: GND<br>Pin02: GND<br>Pin03: GND   |

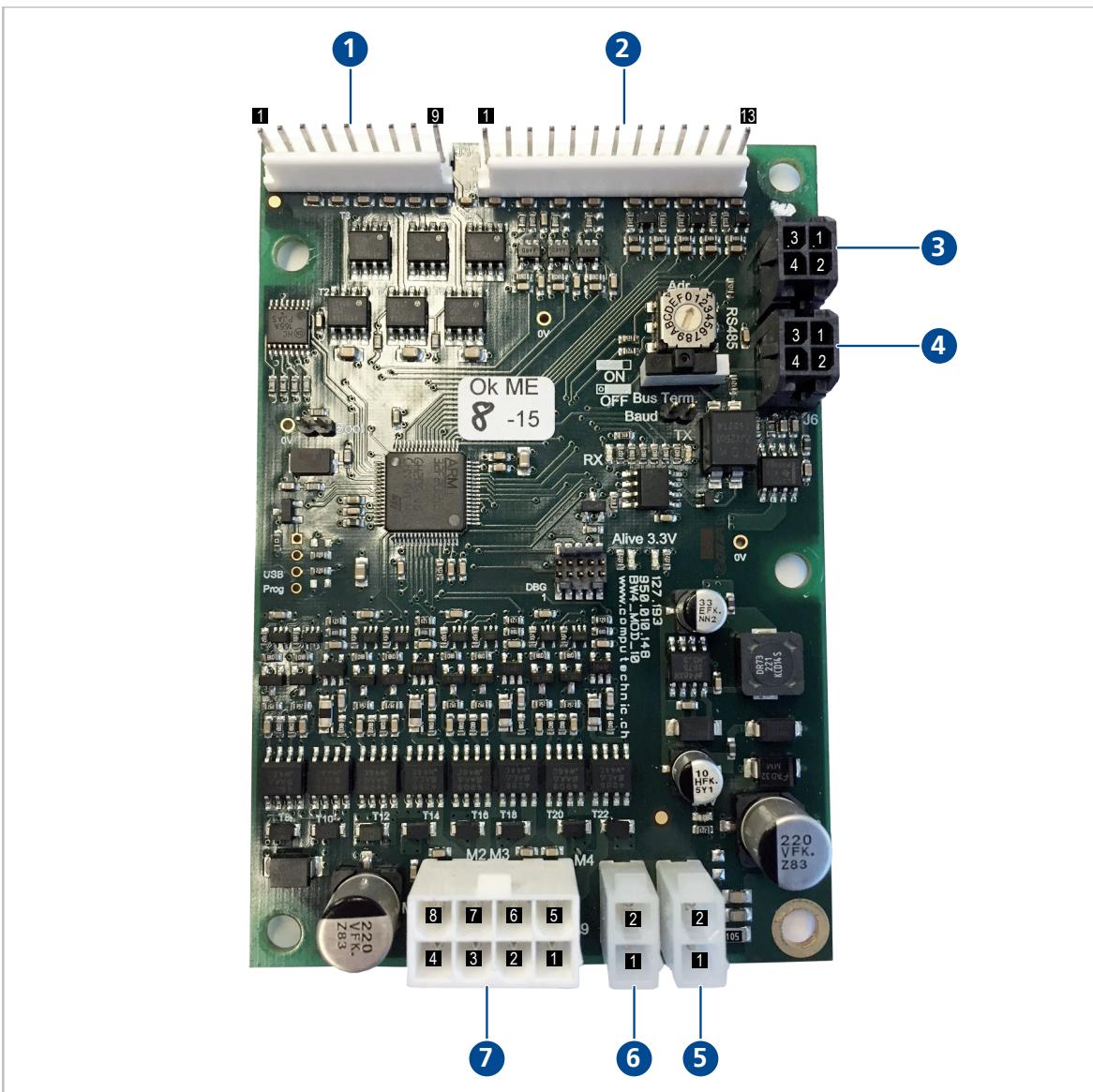
| Position | Name                                      |   |
|----------|---|---|
|          |   | Pin04: Milk back rinse/filling valve<br>Pin05: Milk back rinse/steam valve<br>Pin06: Milk back rinse<br>Pin07: Milk outlet valve<br>Pin08: Milk gate valve<br>Pin09: Milk loop valve<br>Pin10: Milk air-valve<br>Pin11: Cold milk valve & Cold milk air selection valve<br>Pin12: Reserve valve |
| 12       | J1: Output to the interface               | Pin01: +24 V_A<br>Pin03: GND  |
|          | J1: Input from power supply               | Pin02: +24 V_A<br>Pin04: GND  |
| 13       | J16: Output to the milk pump motor        | Pin01: +24 V A<br>Pin02: GND<br>Pin05: Phase C<br>Pin06: Phase B<br>Pin07: Phase A  |
|          | J16: Input from the milk pump motor       | Pin03: HALL A<br>Pin04: HALL B<br>Pin08: HALL C   |
| 14       | J17: Output to the brewing chamber motor  | Pin01: +24 V A<br>Pin02: GND<br>Pin05: Phase C<br>Pin06: Phase B<br>Pin07: Phase A  |
|          | J17: Input from the brewing chamber motor | Pin03: HALL A<br>Pin04: HALL B<br>Pin08: HALL C   |

#### 4.1.2 Control board components: LED-indicators



| Position | Name                             |   |
|----------|----------------------------------|---|
| 15       | Input from power board interlock | <ul style="list-style-type: none"> <li>• LED ON, if +24 V B available</li> </ul>  |
| 16       | Rotary switch in position "0"    | <ul style="list-style-type: none"> <li>• Address R485 BUS, DO NOT TURN!</li> </ul>  |
| 17       | Terminating resistor RS485 BUS   | <ul style="list-style-type: none"> <li>• No additional modules = ON</li> <li>• An additional module is connected = OFF</li> </ul> |
| 18       | LED6: RS485 BUS                  | <ul style="list-style-type: none"> <li>• Flashes when data is received</li> </ul>   |
| 19       | LED5: RS485 BUS                  | <ul style="list-style-type: none"> <li>• Flashes when data is sent</li> </ul>   |
| 20       | LED3: Supply for processor       | <ul style="list-style-type: none"> <li>• ON, if 3.3 V available</li> </ul>  |
| 21       | LED4: Main processor             | <ul style="list-style-type: none"> <li>• ON, if main processor is active</li> </ul>   |
| 22       | LED7: BLDC1 motor                | <ul style="list-style-type: none"> <li>• ON, if milk pump processor is active</li> </ul>  |
| 23       | LED8: BLDC2 motor                | <ul style="list-style-type: none"> <li>• ON, if brewing chamber processor is active</li> </ul>                                    |
| 24       | Input from power supply          | <ul style="list-style-type: none"> <li>• LED ON, if +24 V A is available</li> </ul>   |

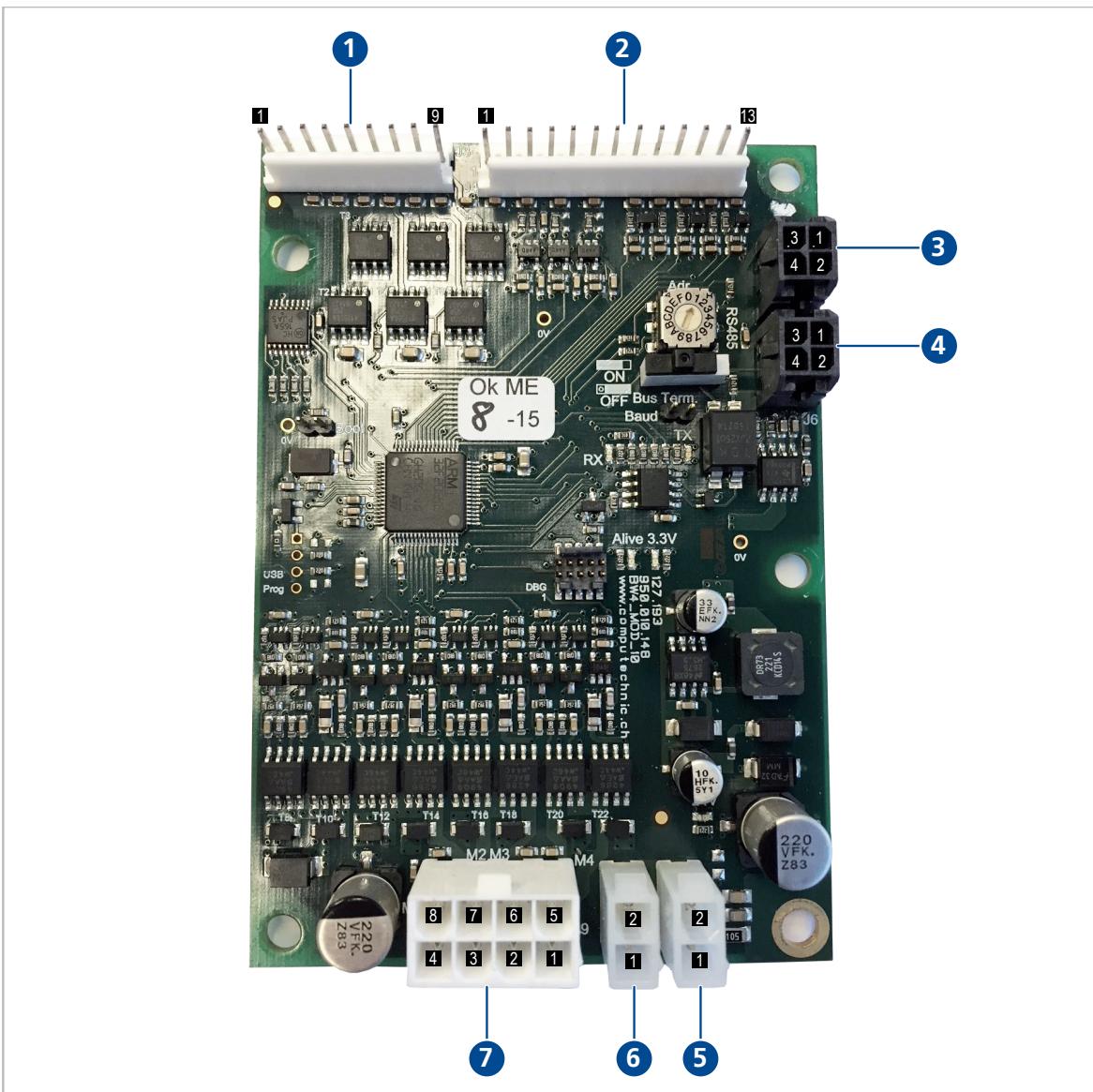
#### 4.1.3 Control board components: Flavour module unit



| Position | Name        |  |
|----------|-------------|--|
| 1        | J3: Outputs | Pin01: +24 V<br>Pin02: GND<br>Pin03: GND<br>Pin04: Reserve<br>Pin05: Reserve<br>Pin06: Reserve<br>Pin07: Reserve<br>Pin08: Reserve<br>Pin09: Reserve |
| 2        | J4: Inputs  | Pin01: +24 V<br>Pin02: +24 V<br>Pin03: GND<br>Pin04: GND<br>Pin05: Reserve<br>Pin06: Reserve<br>Pin07: Reserve                                       |

| Position | Name                               |  |
|----------|------------------------------------|--|
|          |                                    | Pin08: Reserve<br>Pin09: Reserve<br>Pin10: Reserve<br>Pin11: Reserve<br>Pin12: Reserve   |
| 3        | J7: BUS to another module unit     | Pin01: +12 V<br>Pin02: Data –<br>Pin03: GND<br>Pin04: Data +   |
| 4        | J6: BUS to another module unit     | Pin01: +12 V<br>Pin02: Data –<br>Pin03: GND<br>Pin04: Data +   |
| 5        | J2: Input/output from power supply | Pin01: +24 V<br>Pin02: GND   |
| 6        | J1: Input/output from power supply | Pin01: +24 V<br>Pin02: GND   |
| 7        | J9: Outputs of motors              | Pin01: Flavour Pump 4<br>Pin02: Flavour Pump 3<br>Pin03: Flavour Pump 2<br>Pin04: Flavour Pump 1<br>Pin05: Flavour Pump 4<br>Pin06: Flavour Pump 3<br>Pin07: Flavour Pump 2<br>Pin08: Flavour Pump 1 |

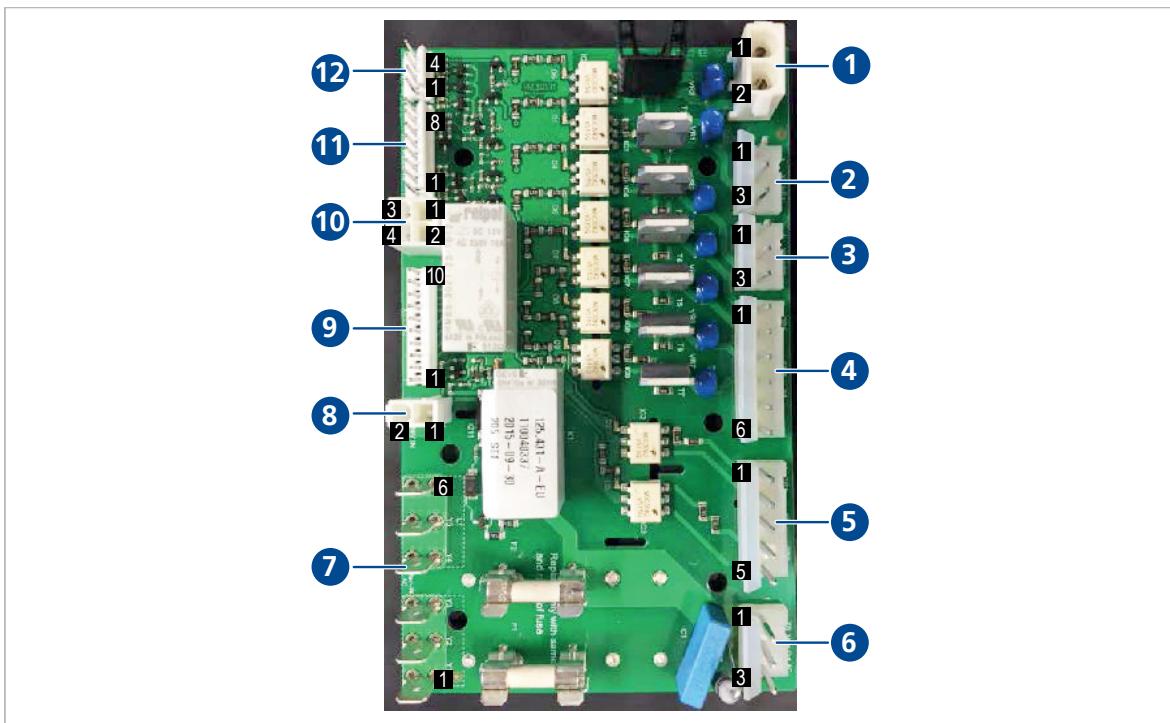
#### 4.1.4 Control board components: Powder module unit



| Position | Name        |   |
|----------|-------------|---|
| 1        | J3: Outputs | Pin01: +24 V<br>Pin02: GND<br>Pin03: GND<br>Pin04: Water valve powder<br>Pin05: Reserve<br>Pin06: Reserve<br>Pin07: Reserve<br>Pin08: Reserve<br>Pin09: Reserve |
| 2        | J4: Inputs  | Pin01: +24 V<br>Pin02: +24 V<br>Pin03: GND<br>Pin04: GND<br>Pin05: Reserve<br>Pin06: Reserve<br>Pin07: Reserve  |

| Position | Name                           |  |
|----------|--------------------------------|--|
|          |                                | Pin08: Reserve<br>Pin09: Reed powder modulu<br>Pin10: Reserve<br>Pin11: Reserve<br>Pin12: Reserve  |
| 3        | J7: BUS to another module unit | Pin01: +12 V<br>Pin02: Data –<br>Pin03: GND<br>Pin04: Data +   |
| 4        | J6: BUS to another module unit | Pin01: +12 V<br>Pin02: Data –<br>Pin03: GND<br>Pin04: Data +   |
| 5        | J2: Input/output               | Pin01: +24 V<br>Pin02: GND   |
| 6        | J1: Input/output               | Pin01: +24 V<br>Pin02: GND   |
| 7        | J9: Outputs of motors          | Pin01: Motor Powder<br>Pin02: Fan Powder<br>Pin03: Motor Mixer<br>Pin04: Reserve<br>Pin05: Motor Powder<br>Pin06: Fan Powder<br>Pin07: Motor Mixer<br>Pin08: Reserve |

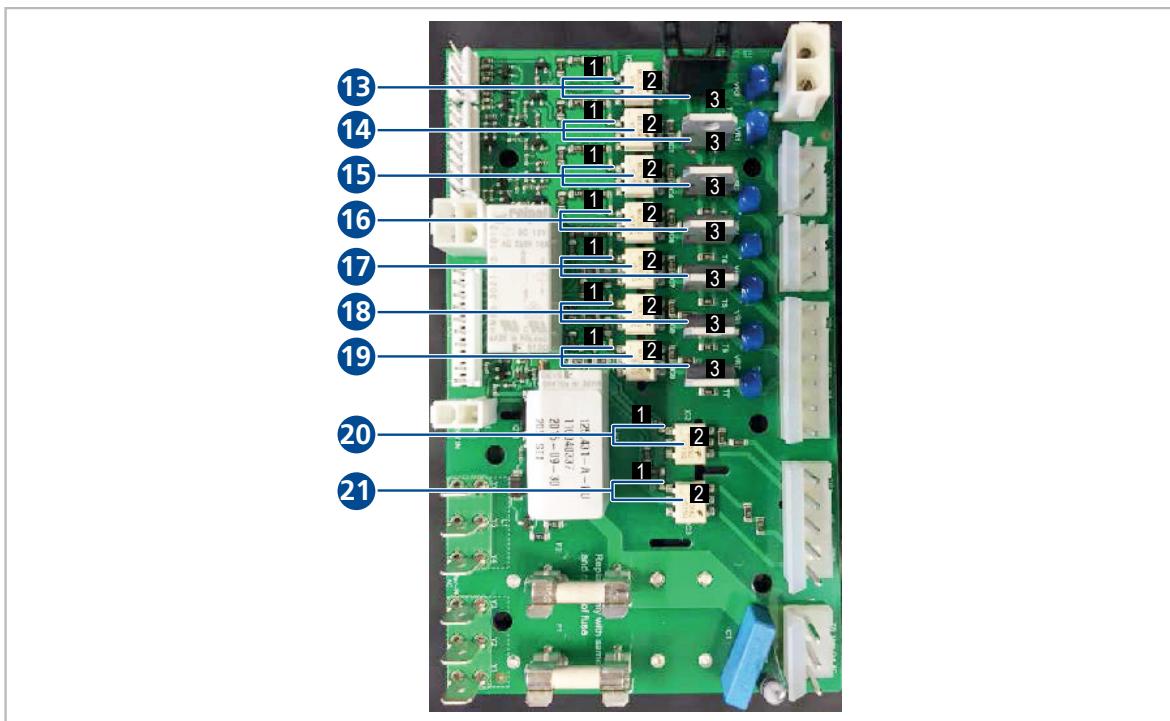
#### 4.1.5 Power board components: Pinout of the slots



| Position | Name                       |   |
|----------|----------------------------|---|
| 1        | X3: Water pump             | 1: Water pump N<br>2: Water pump L 230VAC   |
| 2        | X1: Brewing chamber heater | 1: Brewing chamber heater N<br>2: Not used<br>3: Brewing chamber heater L 230 VAC   |
| 3        | X2: Brewing tank heater    | 1: Brewing chamber heater N<br>2: Not used<br>3: Brewing chamber heater L 230 VAC   |
| 4        | X4: Grinder                | 1: Grinder 1 UZS L 230 VAC<br>2: Grinder 1 GUZS L 230 VAC<br>3: Grinder 2 UZS L 230 VAC<br>4: Grinder 2 GUZS L 230 VAC<br>5: Not used<br>6: Grinder N |
| 5        | X5: Boiler heater          | 1: Boiler heater 1<br>2: Boiler heater 1 Gate<br>3: Not used<br>4: Boiler heater 2<br>5: Boiler heater 2 Gate   |
| 6        | X6: Main OUT               | 1: Main Out L<br>2: Not used<br>3: Main Out N   |
| 7        | Y1-6: Main IN              | 1: Main IN N<br>2: Main IN N<br>3: Main IN N<br>4: Main IN L<br>5: Main IN L<br>6: Main IN L  |

| Position | Name               |   |
|----------|--------------------|---|
| 8        | X7: 24VDC IN       | 1: 24 VDC IN<br>2: GND  |
| 9        | X11: Control input | 1: Zero crossing<br>2: Brewing chamber heater<br>3: Brewing tank heater<br>4: Boiler heater 2<br>5: Boiler heater 1<br>6: Water pump<br>7: Grinder 2 anticlockwise<br>8: Grinder 2 clockwise<br>9: Grinder 1 anticlockwise<br>10: Grinder 1 clockwise |
| 10       | X10: 24VDC OUT     | 1: 24 VDC Out<br>2: 24 VDC Out<br>3: GND<br>4: GND  |
| 11       | X8: Reeds          | 1: Reed grounds drawer<br>2: Reed grounds drawer<br>3: Reed front cover<br>4: Reed front cover<br>5: Reed bean hopper 2<br>6: Reed bean hopper 2<br>7: Reed bean hopper 1<br>8: Reed bean hopper 1  |
| 12       | X9: Reeds          | 1: Reed grounds drawer<br>2: Reed front cover<br>3: Reed bean hopper 2<br>4: Reed bean hopper 1   |

#### 4.1.6 Power board: LED-indicators, position of the triacs/optocouplers



| Position | Name                    |  |
|----------|-------------------------|--|
| 13       | Water pump              | 1: LED5: ON if the water pump is activated<br>2: IC5: Opto-coupler to the water pump<br>3: T3: Triac to the water pump               |
| 14       | Brewing chamber heater  | 1: LED1: ON if brewing chamber heater activated<br>2: IC1: Opto-coupler to brewing chamber heater<br>3: T1: Triac to brewing chamber |
| 15       | Brewing tank heater     | 1: LED4: ON if brewing tank heater activated<br>2: IC4: Opto-coupler to brewing tank heater<br>3: T2: Triac to brewing tank          |
| 16       | Grinder 1 clockwise     | 1: LED6: ON if clockwise rotation<br>2: IC6: Opto-coupler to clockwise rotation<br>3: T4: Triac to clockwise rotation                |
| 17       | Grinder 1 anticlockwise | 1: LED7: ON if anticlockwise rotation<br>2: IC7: Opto-coupler to anticlockwise rotation<br>3: T5: Triac to anticlockwise rotation    |
| 18       | Grinder 2 clockwise     | 1: LED8: ON if clockwise rotation<br>2: IC8: Opto-coupler to clockwise rotation<br>3: T6: Triac to clockwise rotation                |
| 19       | Grinder 2 anticlockwise | 1: LED9: ON if anticlockwise rotation<br>2: IC9: Opto-coupler to anticlockwise rotation<br>3: T7: Triac to anticlockwise rotation    |
| 20       | Boiler heater 1         | 1: LED2: ON if boiler 1 heater activated<br>2: IC2: Opto-coupler to boiler 1 heater (Triac is positioned on hydraulics module)       |

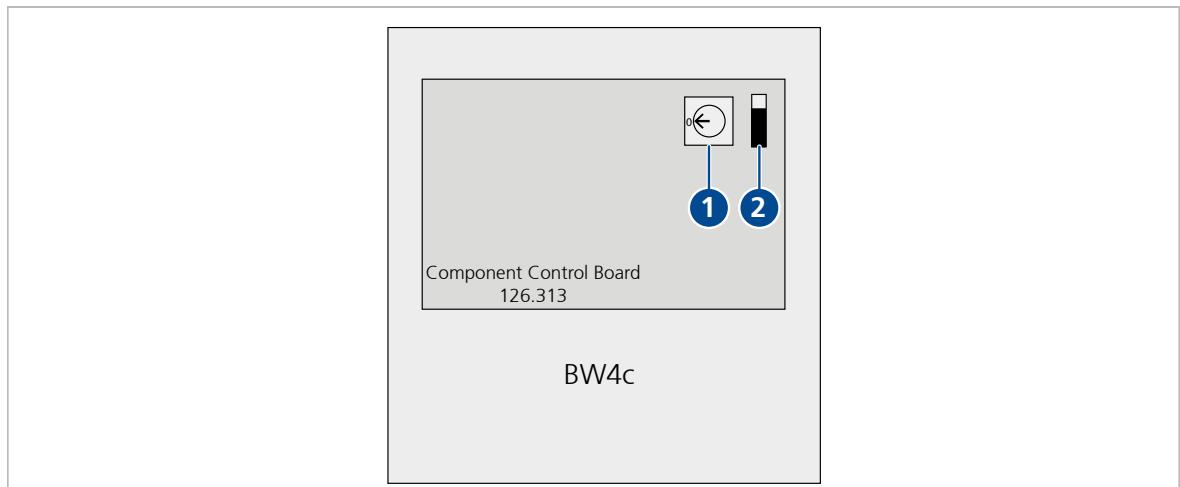
| Position | Name            |  |
|----------|-----------------|--|
| 21       | Boiler heater 2 | 1: LED3: ON if boiler 2 heater activated<br>2: IC3: Opto-coupler to boiler 2 heater (Triac is positioned on hydraulics module) |

## 4.2 Rotary Switch/Dip Switch Settings

The control board 126.313 component and control boards 129.991 auxiliary module are each equipped with a rotary switch (address switch) and a dip switch (BUS communication).

These must be set correctly according to the machine extension or according to the replacement of this board to ensure that all extensions work/communicate correctly.

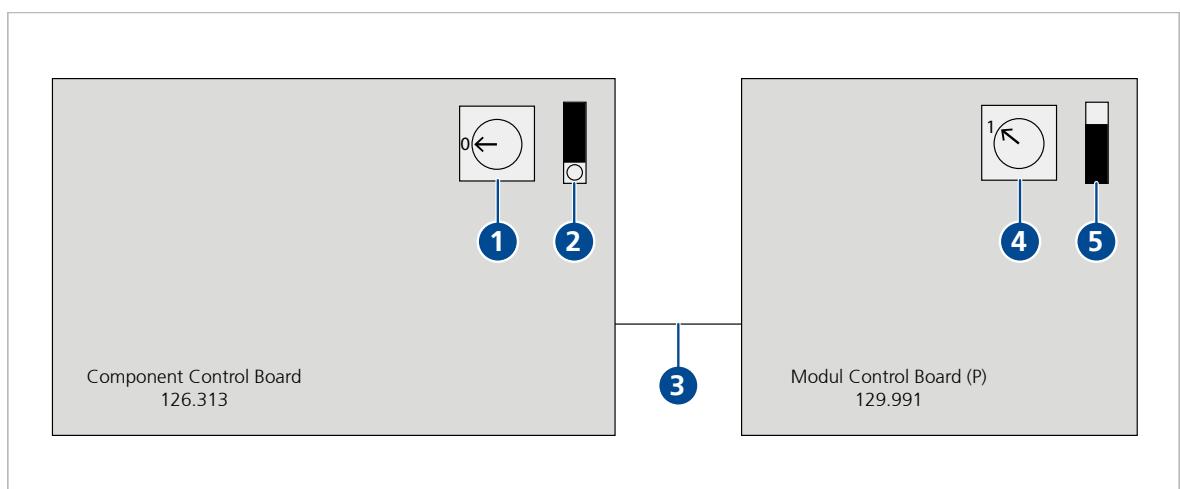
### 4.2.1 CTM/CTM RS



1      Rotary switch = 0

2      Termination resistor RS485 bus = ON

### 4.2.2 CTM-P/CTM-P-RS



1      Rotary switch = 0

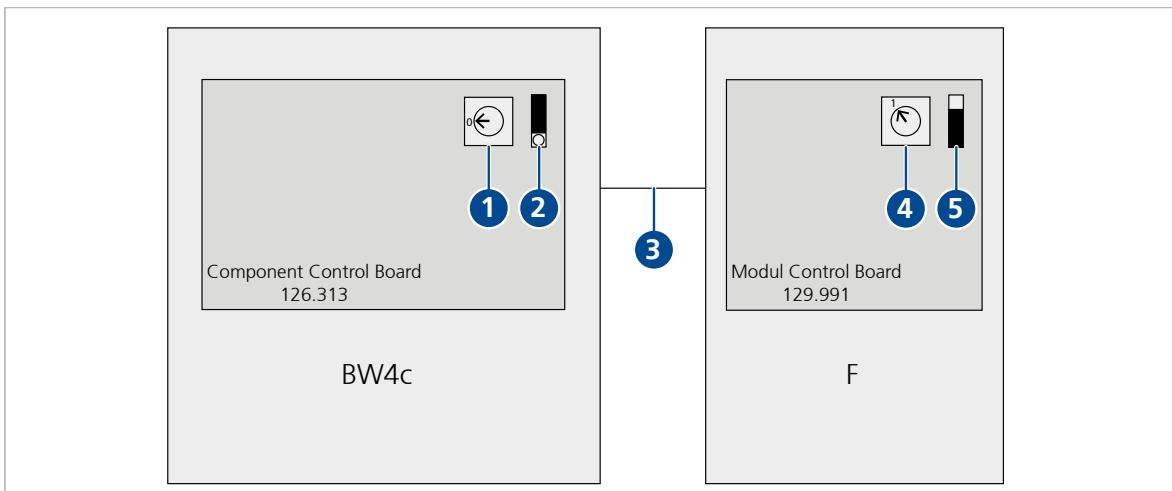
4      Rotary switch = 1

2      Termination resistor RS485 bus = OFF

5      Termination resistor RS485 bus = ON

3      RS485 Bus

#### 4.2.3 CTM-F/CTM-F-RS



1 Rotary switch = 0

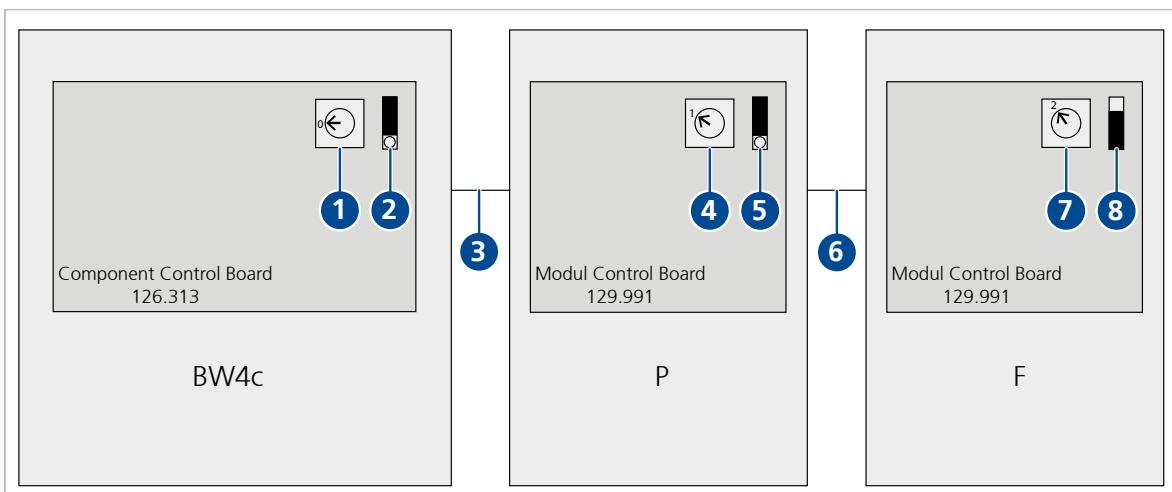
2 Termination resistor RS485 bus = OFF

3 RS485 Bus

4 Rotary switch = 1

5 Termination resistor RS485 bus = ON

#### 4.2.4 CTM-P-F/CTM-P-F-RS



1 Rotary switch = 0

2 Termination resistor RS485 bus = OFF

3 RJ485 Bus

4 Rotary switch = 1

5 Termination resistor RS485 bus = OFF

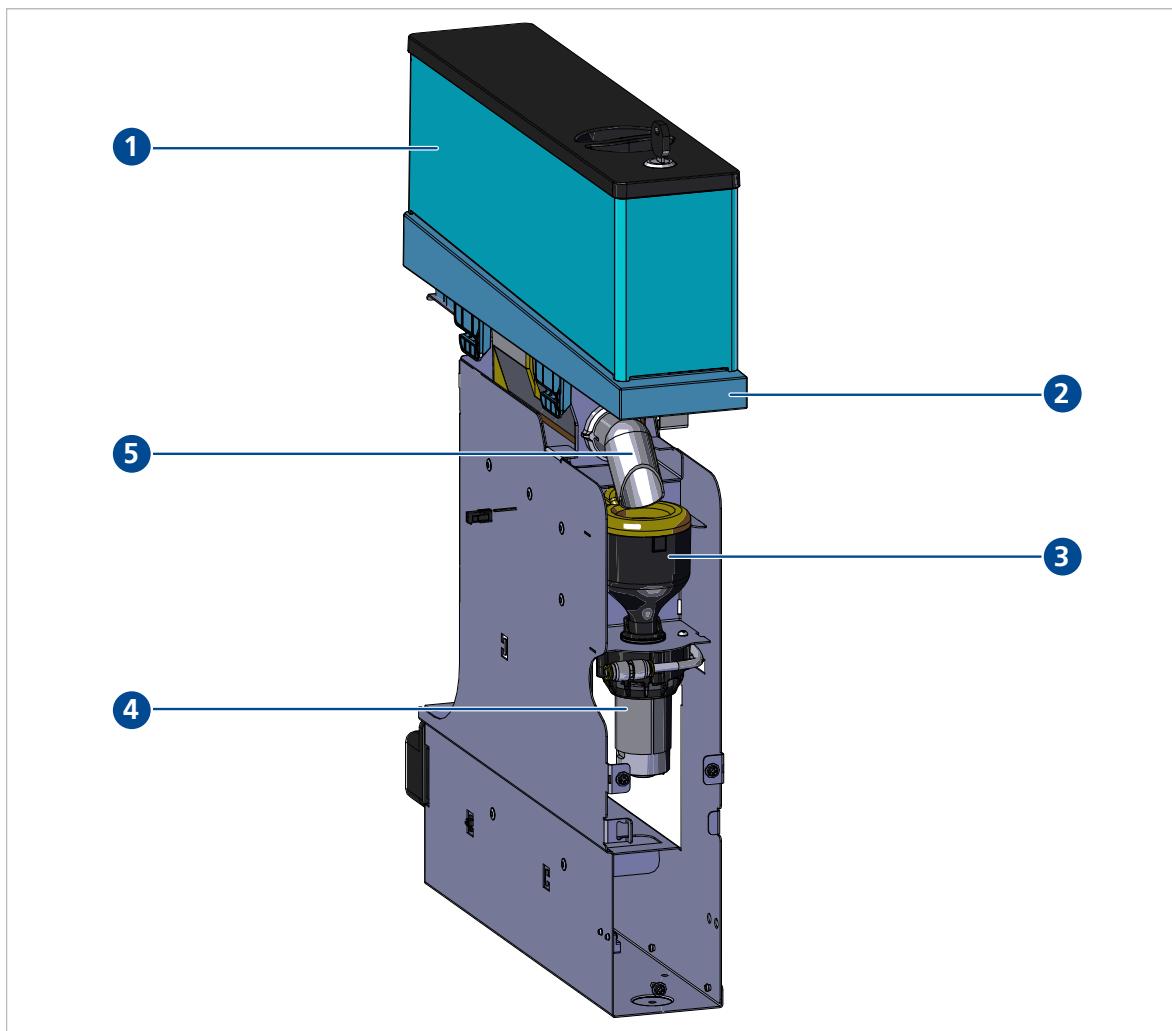
6 RJ485 Bus

7 Rotary switch = 2

8 Termination resistor RS485 bus = ON

## 5 Powder 129.830

### 5.1 Front view



1 Power container

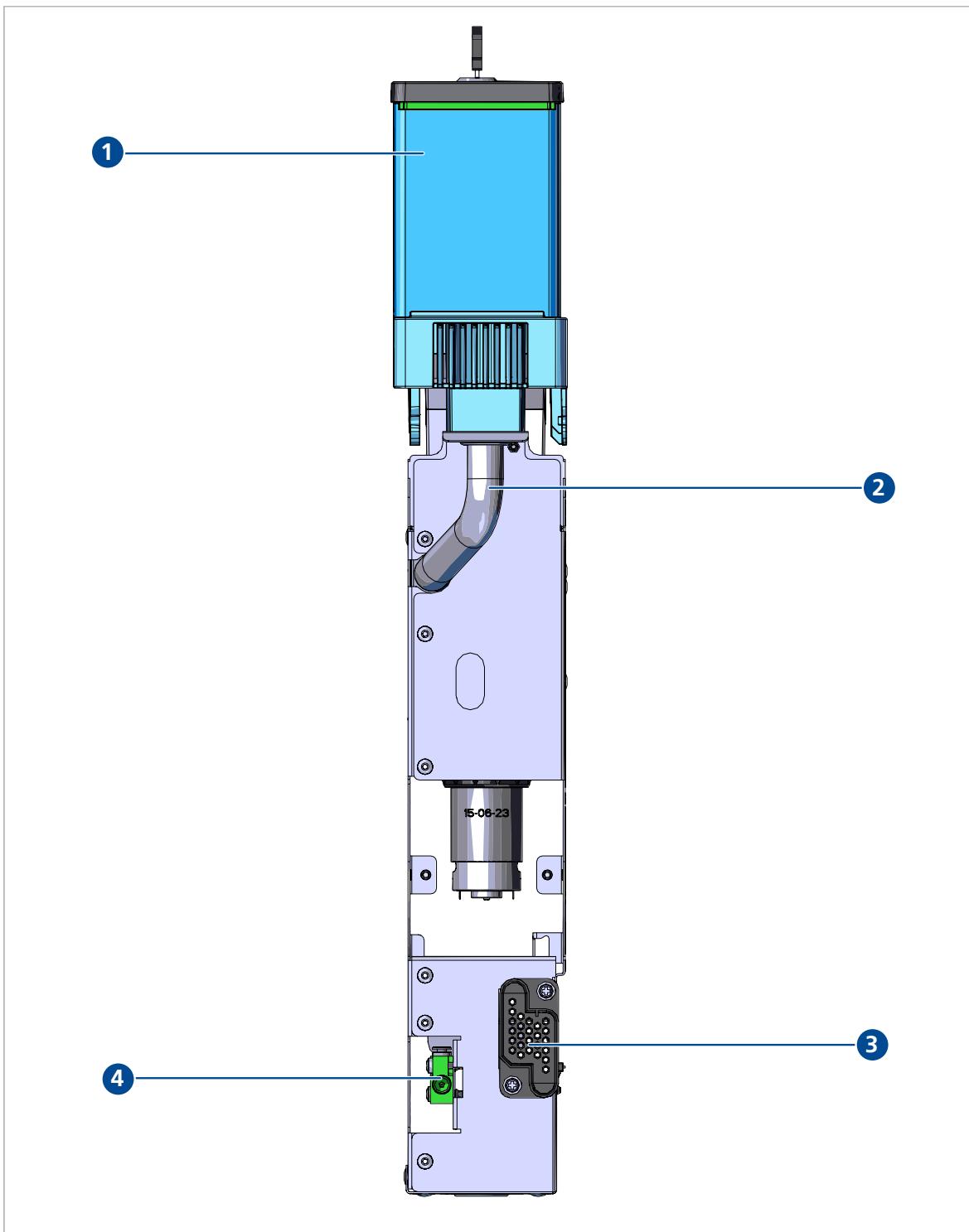
4 Pump

2 Powder module cover

5 Powder chute

3 Mixer

## 5.2 View rear



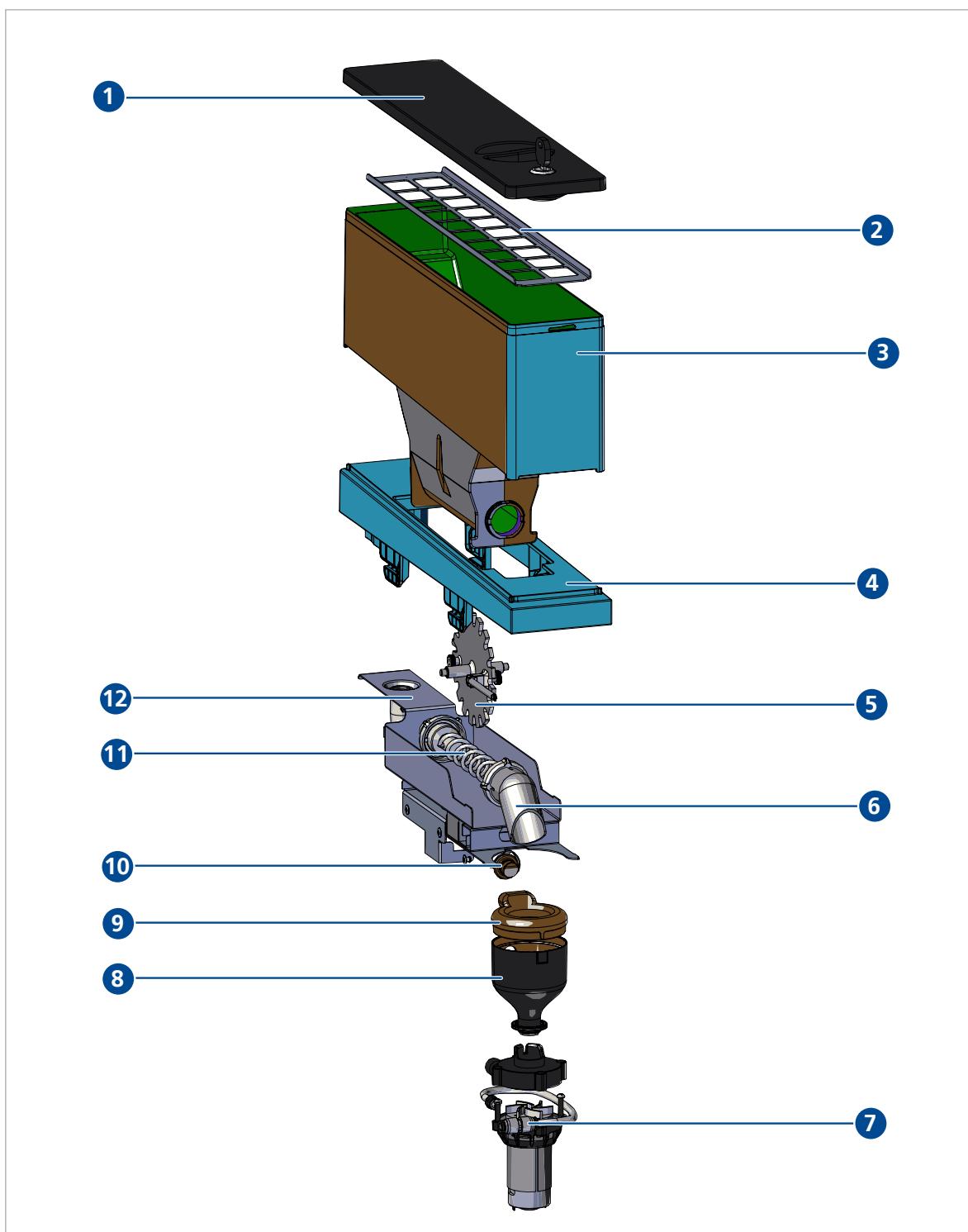
1 Power container

3 Electronic connection (powder module)

2 Exhaust hose

4 Water inlet

### 5.3 Detailed view



- |   |                                  |    |                               |
|---|----------------------------------|----|-------------------------------|
| 1 | Power container cover            | 7  | Pump with magnetic coupling   |
| 2 | Safety plate (finger protection) | 8  | Mixer housing                 |
| 3 | Power container                  | 9  | Mixer cover                   |
| 4 | Powder module cover              | 10 | Water nozzle to mixer housing |
| 5 | Agitator                         | 11 | Screw conveyor                |
| 6 | Screw conveyor                   |    |                               |

6 Powder chute      12 Container tub with exhaust air connection

## 5.4 Connection



### Powder plug

|   |                                |    |                      |    |   |    |   |    |                      |
|---|--------------------------------|----|----------------------|----|---|----|---|----|----------------------|
| 1 | Powder motor<br>(brown)        | 7  | Fan<br>(white)       | 12 | - | 16 | - | 20 | -                    |
| 2 | Powder motor<br>(brown-white)  | 8  | Fan<br>(black-white) | 13 | - | 17 | - | 21 | -                    |
| 3 | Powder mixer<br>(blue)         | 9  | -                    | 14 | - | 18 | - | 22 | -                    |
| 4 | Powder mixer<br>(blue-white)   | 10 | -                    | 15 | - | 19 | - | 23 | -                    |
| 5 | Reed front<br>cover<br>(brown) | 11 | -                    |    |   |    |   | 24 | -                    |
| 6 | Reed front<br>cover<br>(white) |    |                      |    |   |    |   | 25 | PE<br>(green-yellow) |

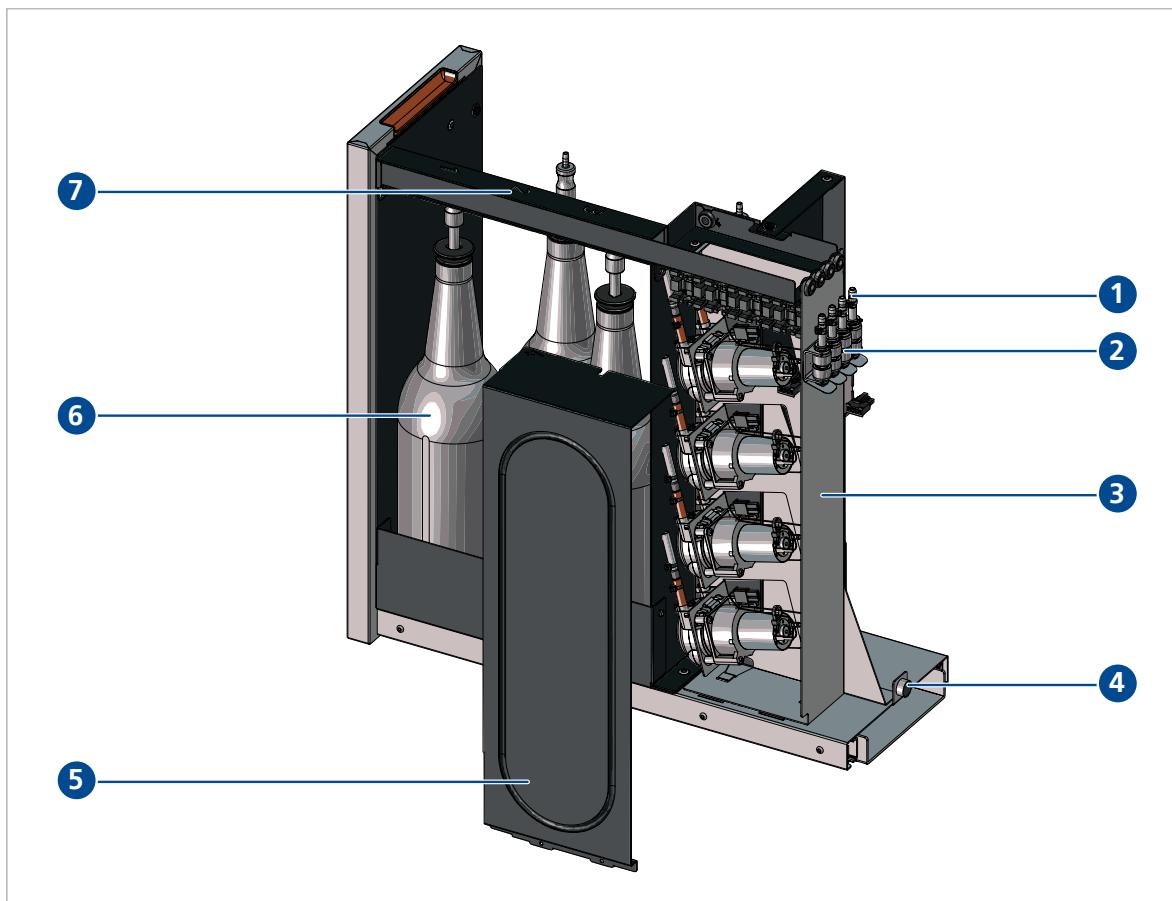
### 5.4.1 System check/Test position

Reed switch for front cover must be closed.

| Component                      | Pin | Pin | Result          |
|--------------------------------|-----|-----|-----------------|
| Powder motor                   | 1   | 2   | 0 VDC/24 VDC    |
| Powder mixer                   | 3   | 4   | 0 VDC/14 VDC    |
| Reed switch for front<br>cover | 5   | 6   | 24 VDC          |
| Fan                            | 7   | 8   | 10 VDC – 14 VDC |

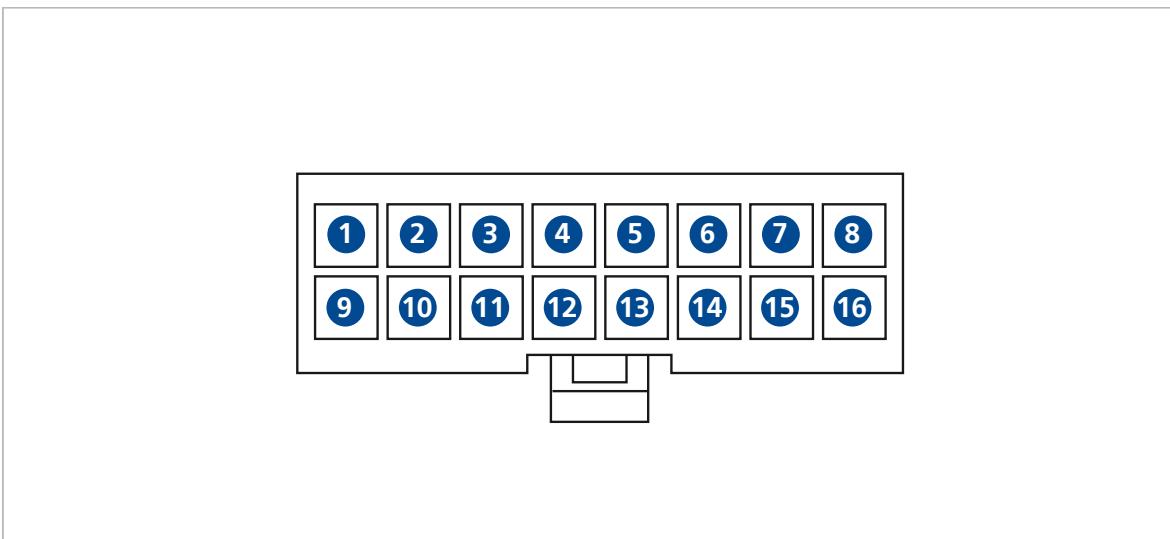
## 6 Syrup 128.701

### 6.1 Side view



- |   |                       |   |                       |
|---|-----------------------|---|-----------------------|
| 1 | Syrup plug connection | 5 | Pump module cover     |
| 2 | Quad adapter          | 6 | Syrup bottle          |
| 3 | Pump module           | 7 | Syrup position number |
| 4 | Syrup drawer magnet   |   |                       |

## 6.2 Connection



**Syrup module plug**

|   |                               |    |                               |
|---|-------------------------------|----|-------------------------------|
| 1 | 24 VDC<br>(red)               | 9  | GND<br>(black)                |
| 2 | Not used<br>(violet)          | 10 | Not used<br>(blue)            |
| 3 | Not used<br>(grey)            | 11 | Not used<br>(orange)          |
| 4 | -                             | 12 | -                             |
| 5 | Syrup pump 1<br>(blue-white)  | 13 | Syrup pump 1<br>(black-white) |
| 6 | Syrup pump 2<br>(red-white)   | 14 | Syrup pump 2<br>(black-white) |
| 7 | Syrup pump 3<br>(brown-white) | 15 | Syrup pump 3<br>(black-white) |
| 8 | Syrup pump 4<br>(grey-white)  | 16 | Syrup pump 4<br>(black-white) |

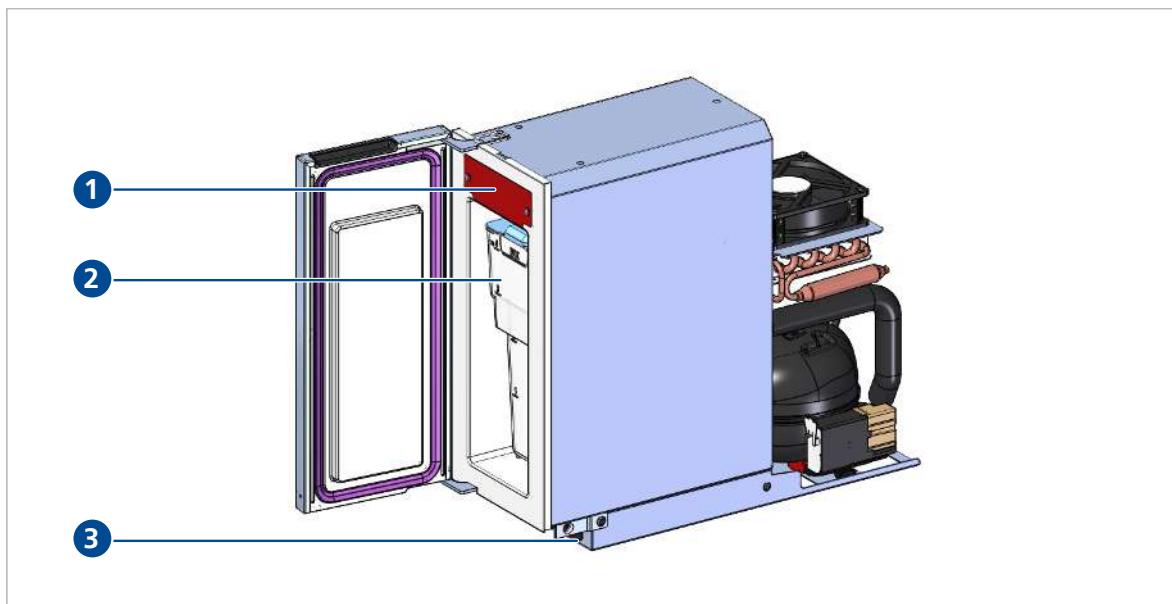
### 6.2.1 System check/Test position

Reed switch for syrup module must be closed.

| Component  | Pin      | Pin      | Result       |
|--|----------|----------|--------------|
| 24 VDC   | 1        | 9        | 24 VDC       |
| Syrup pump 1   | 5        | 13       | 24 VDC       |
| Syrup pump 2   | 6        | 14       | 24 VDC       |
| Syrup pump 3   | 7        | 15       | 24 VDC       |
| Syrup pump 4   | 8        | 16       | 24 VDC       |
| Reed switch for syrup module closed/open<br>(connected to the component board) | J4 Pin 2 | J4 Pin 9 | 0 VDC/24 VDC |

## 7 Refrigerator 127.445

### 7.1 Front view

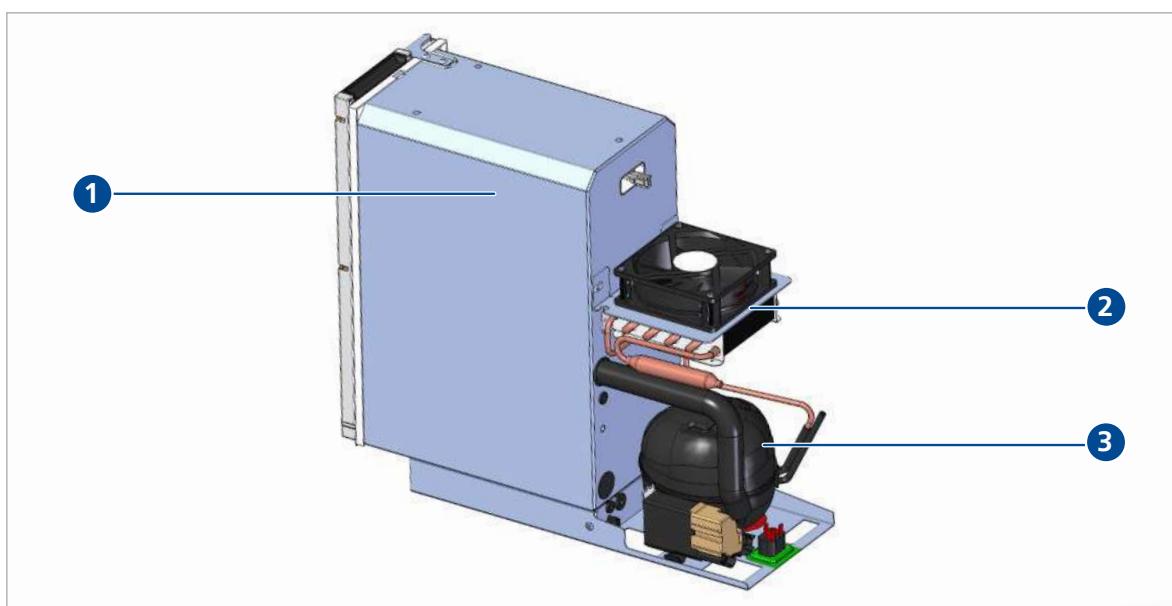


1 RF-Box

2 Milk container

3 Main switch

### 7.2 View rear

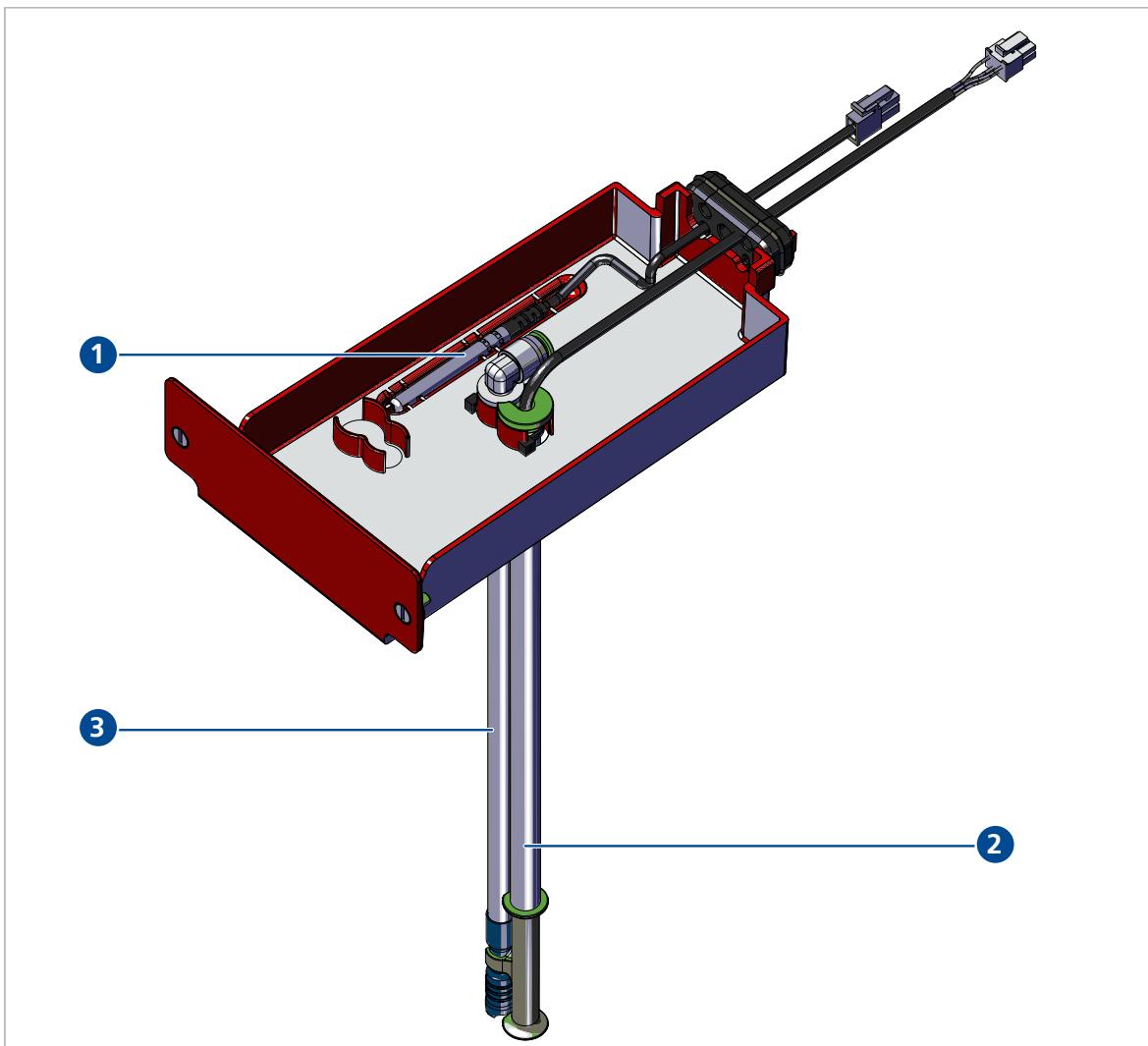


1 Refrigerator housing

2 Heat exchanger with fan

3 Compressor

## 7.3 RF-Box



1 NTC Sensor

3 Milk suction hose

2 Milk level/temperature probe









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