



SERVICE MANUAL

Comet PV

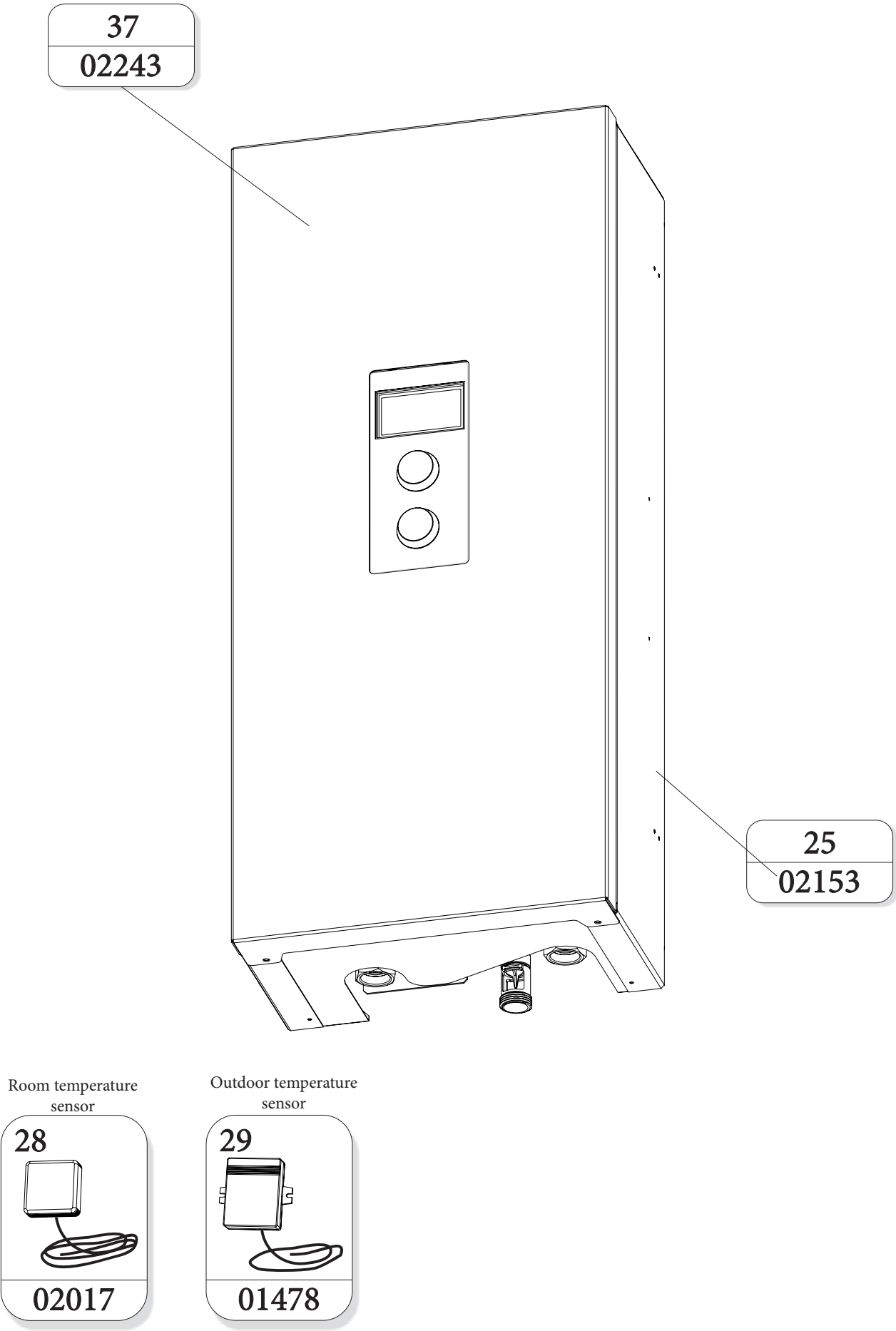
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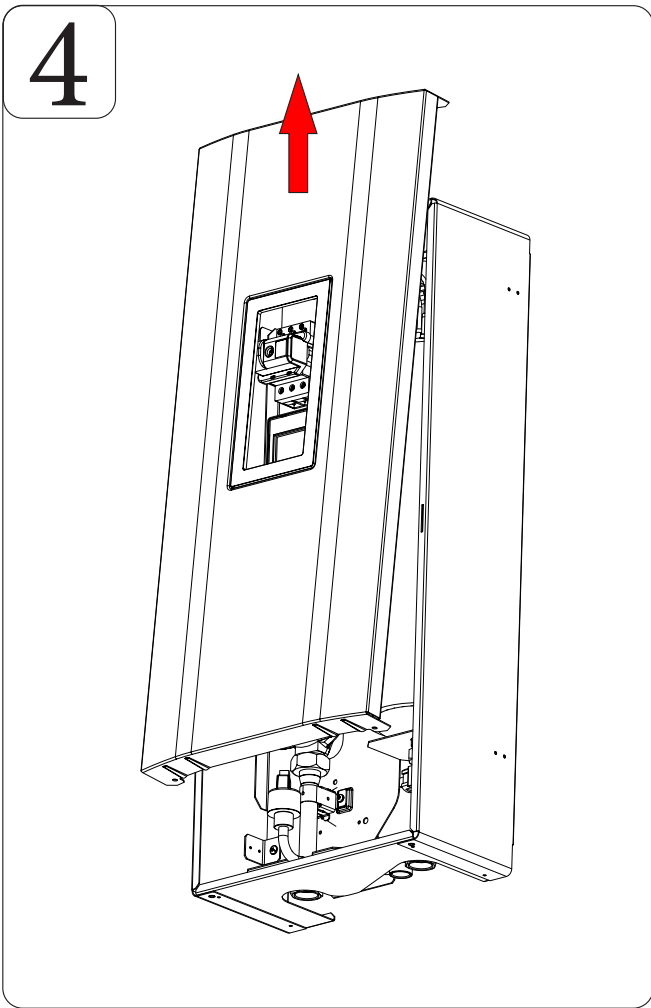
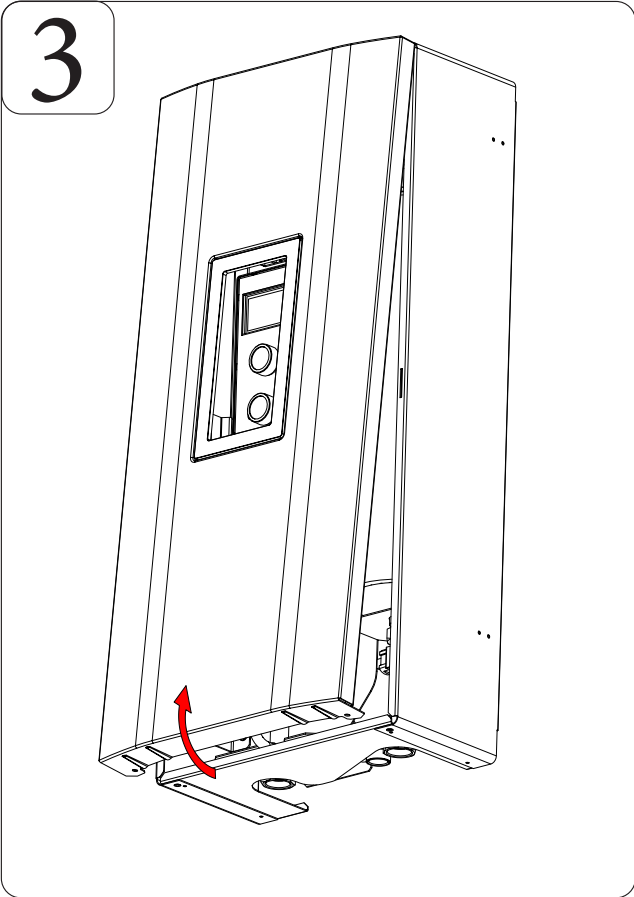
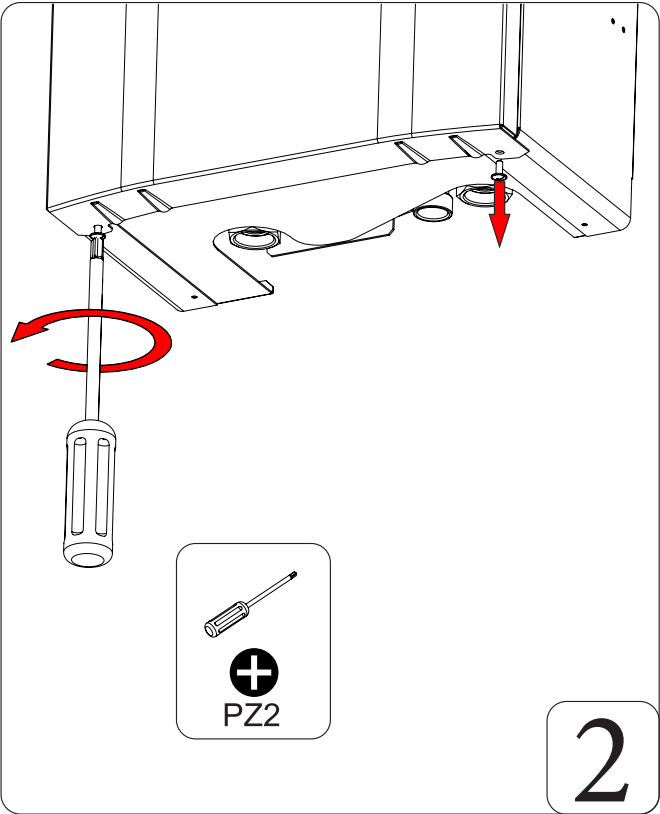
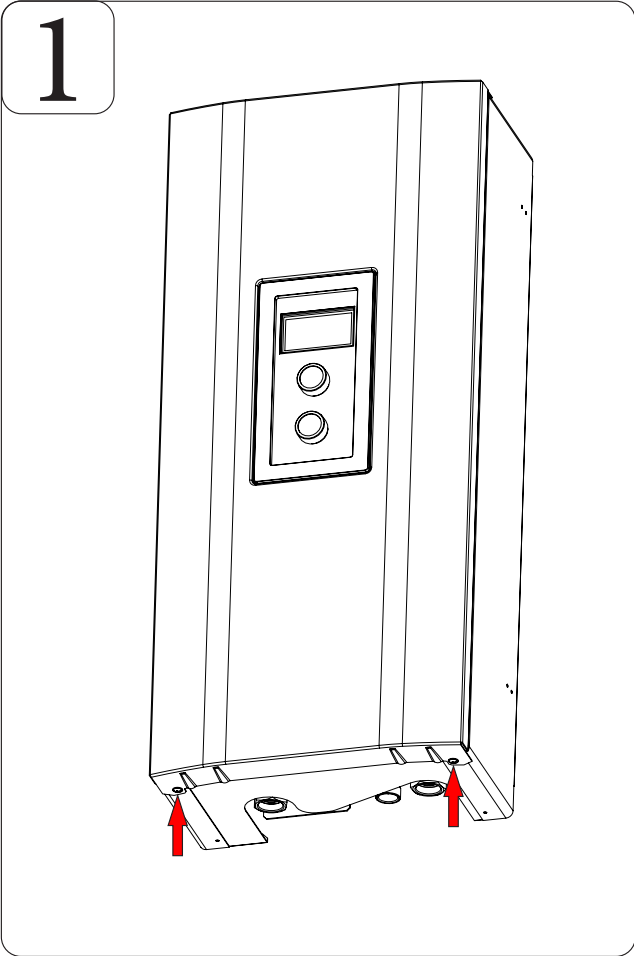
1. Exterior view Comet PV

Pic.1. Exterior view Comet PV



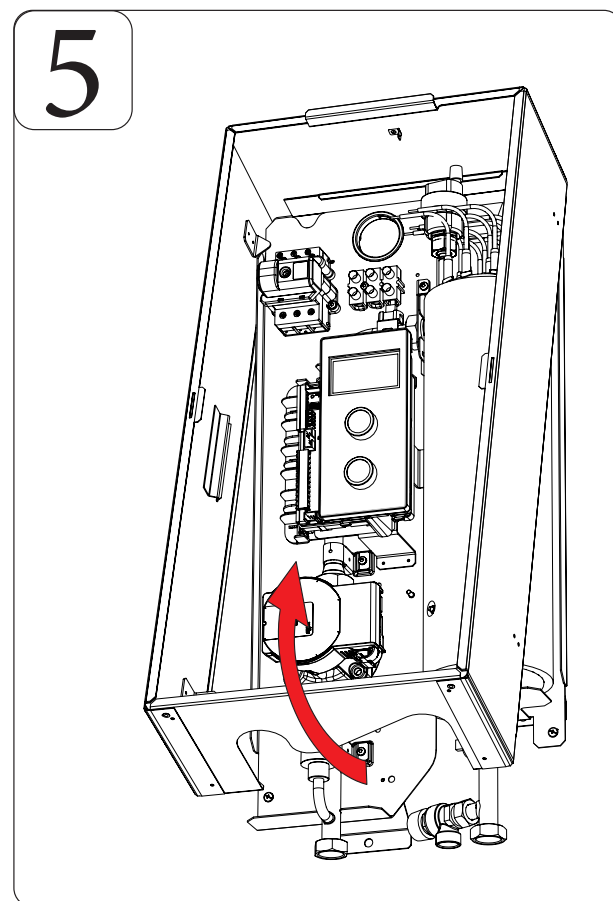
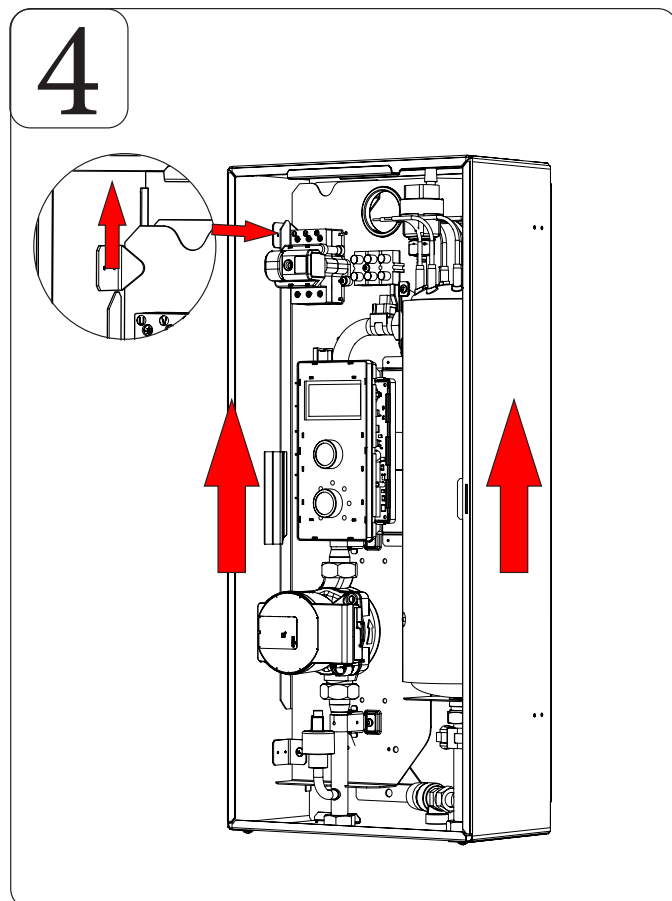
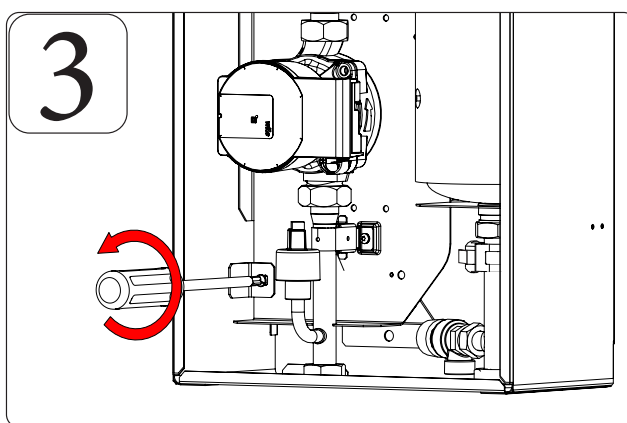
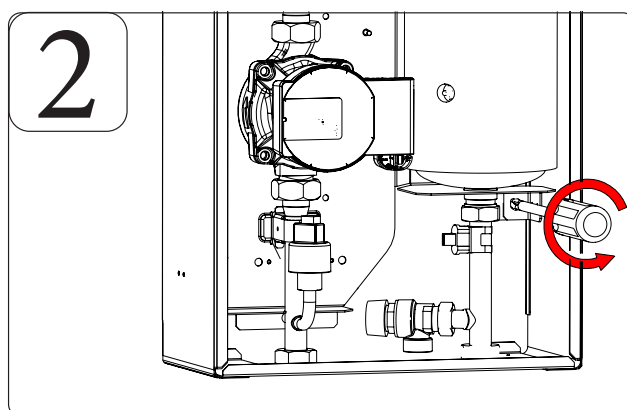
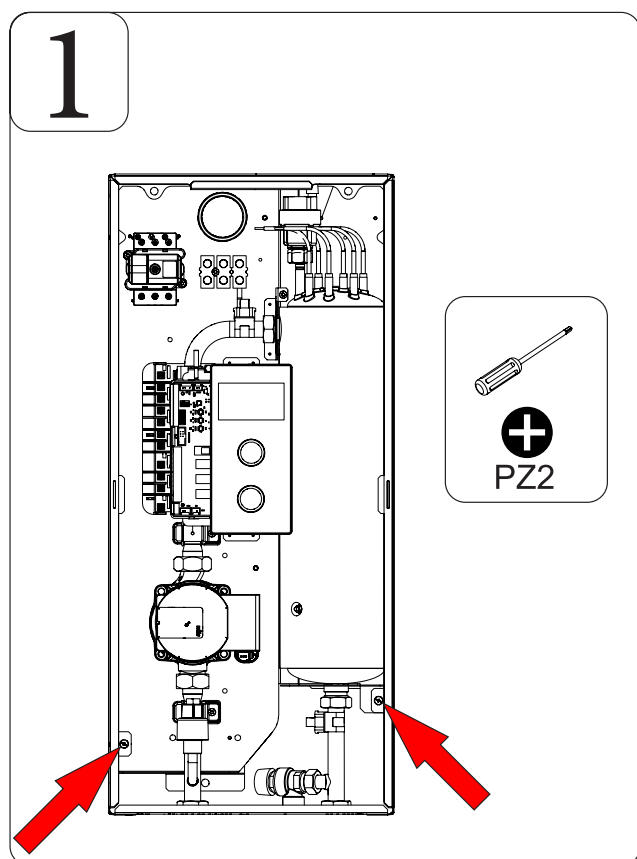
2. Disassembly of the front cover

Pic.2. Disassembly of the front cover.



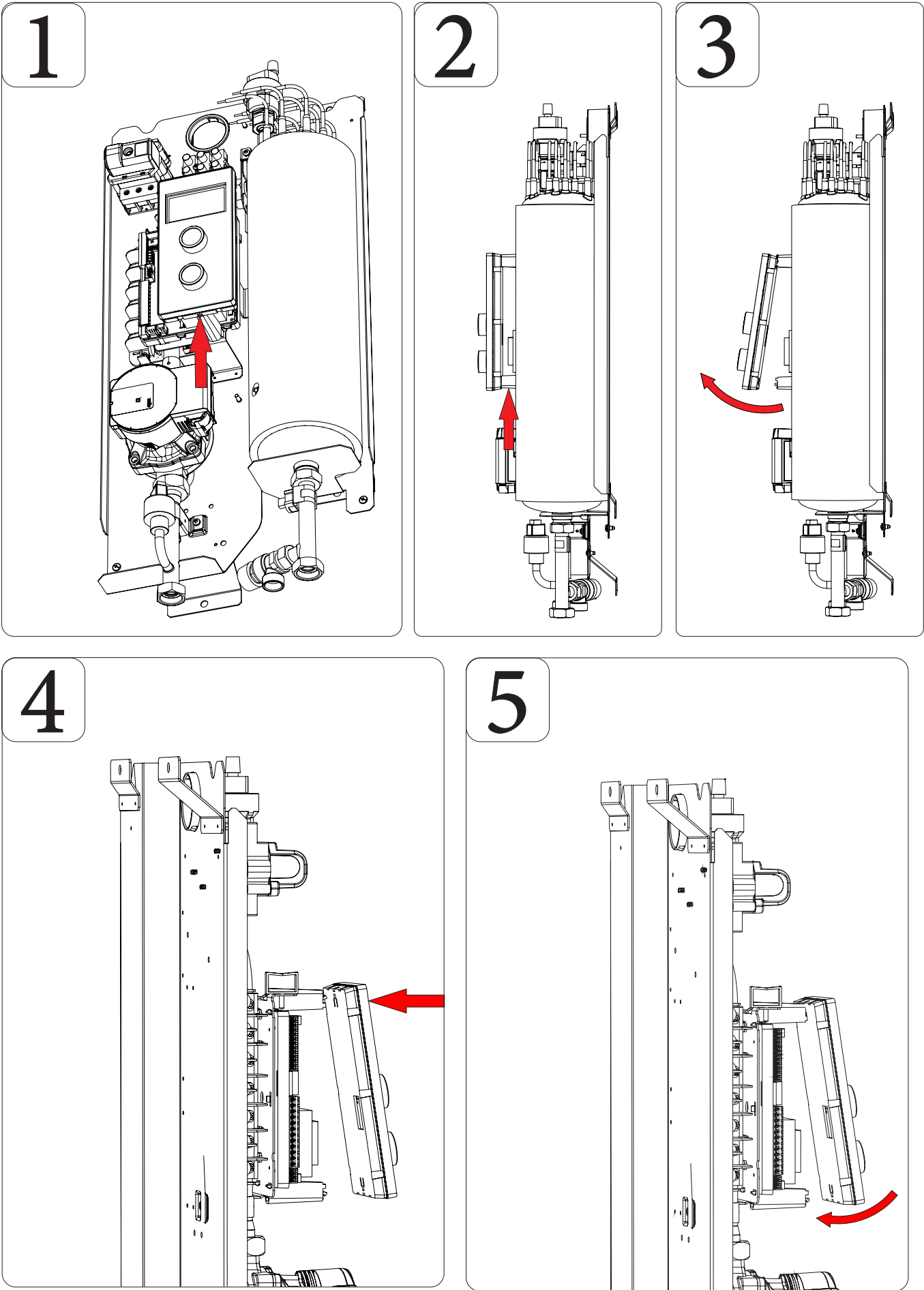
2.1 Disassembly of the side cover

Pic.2.1 Disassembly of the side cover.



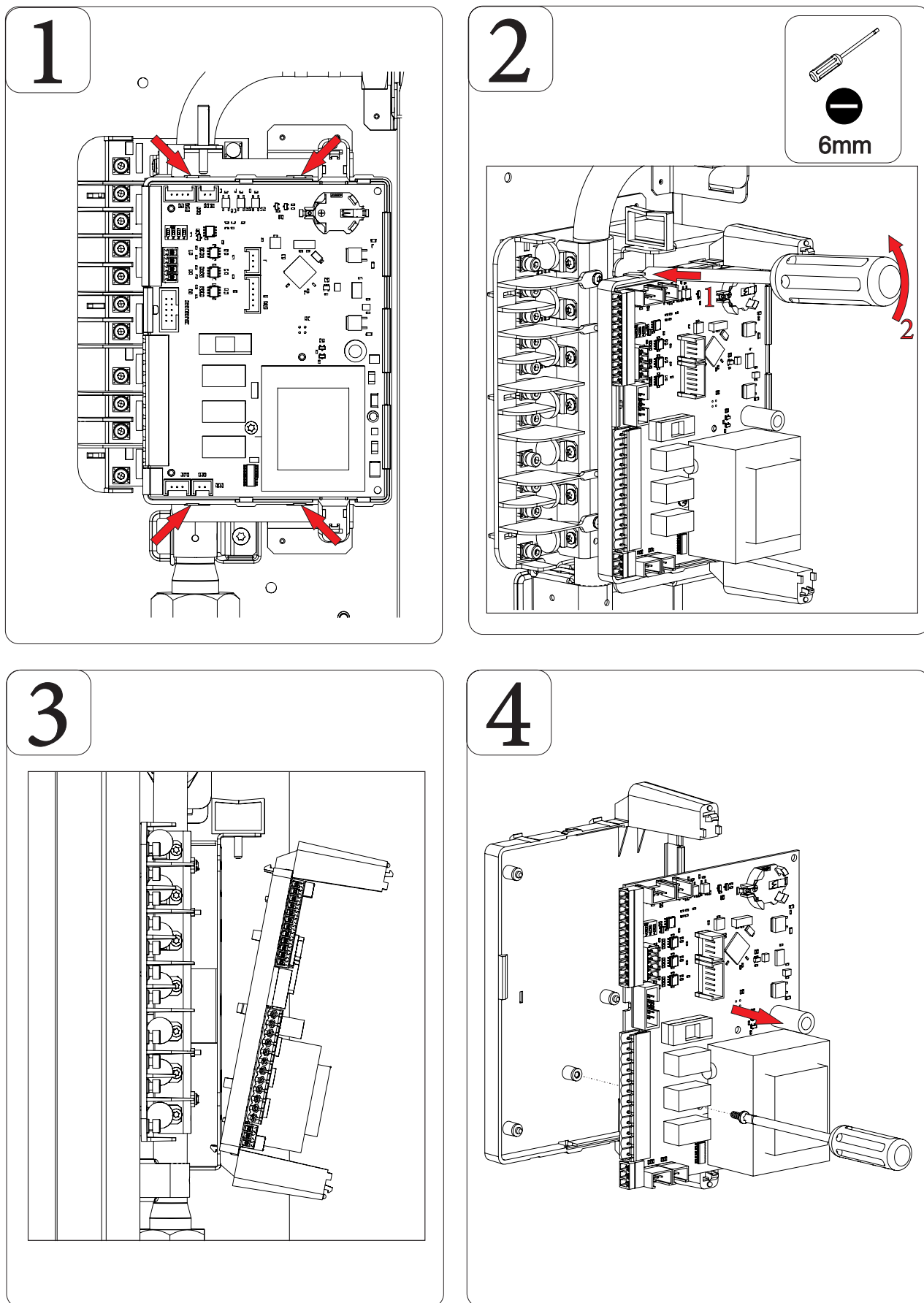
2.2 Disassembly of control panel

Pic.2.2 Disassembly of control panel.



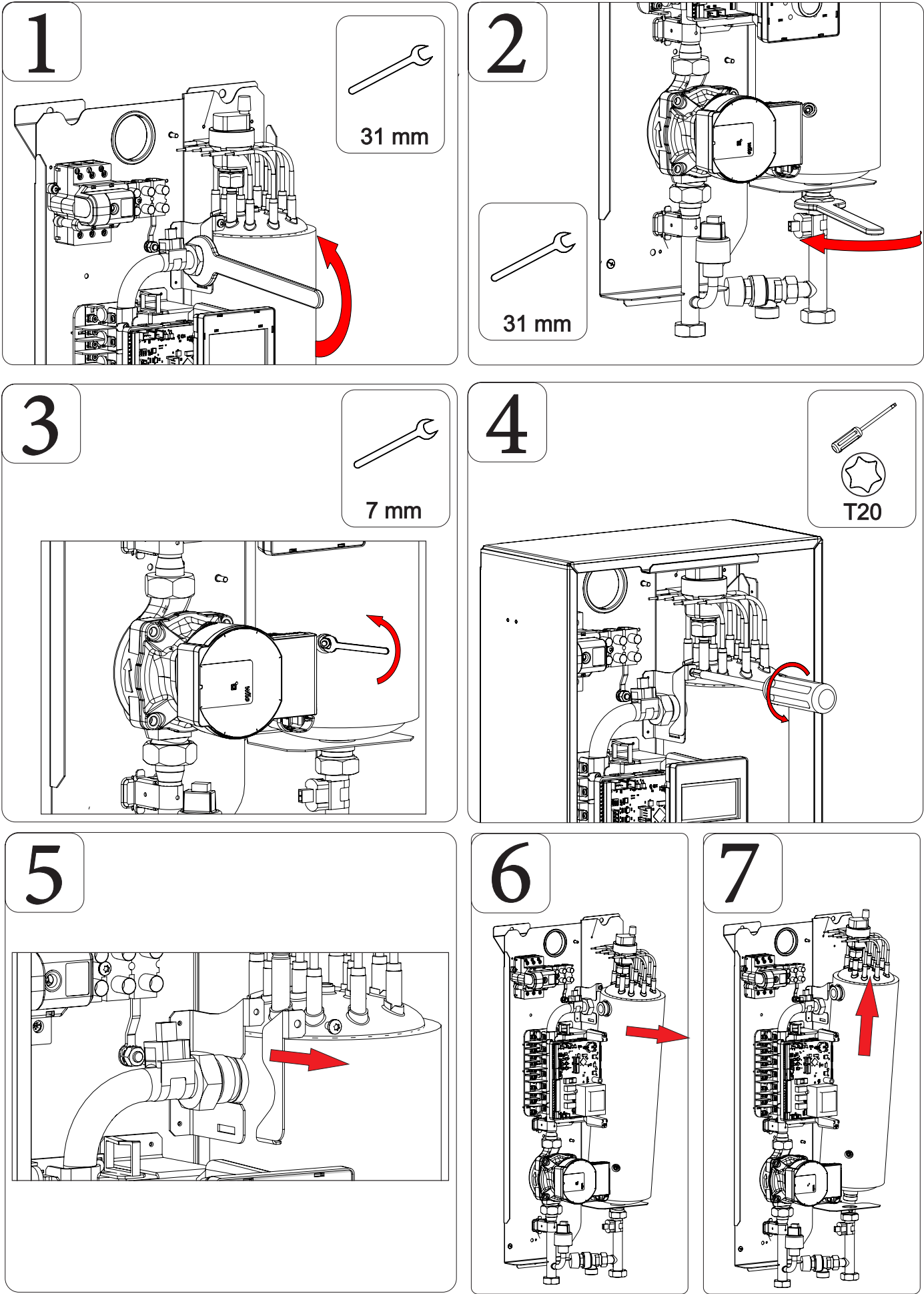
2.3 Disassembly of the MSK board

Pic.2.3 Disassembly of the MSK board



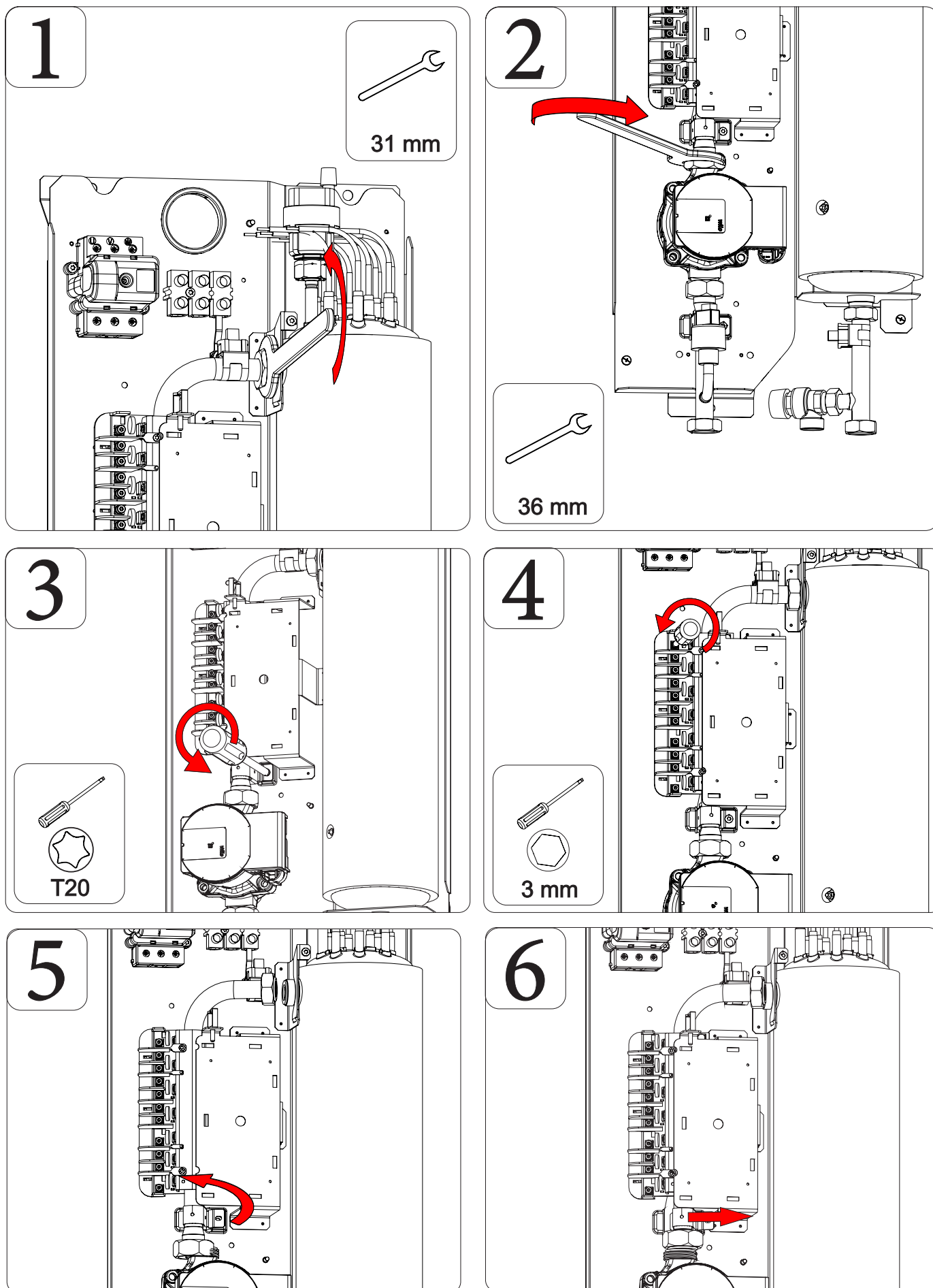
2.4 Disassembly of the heating box

Pic.2.4 Disassembly of the heating box.



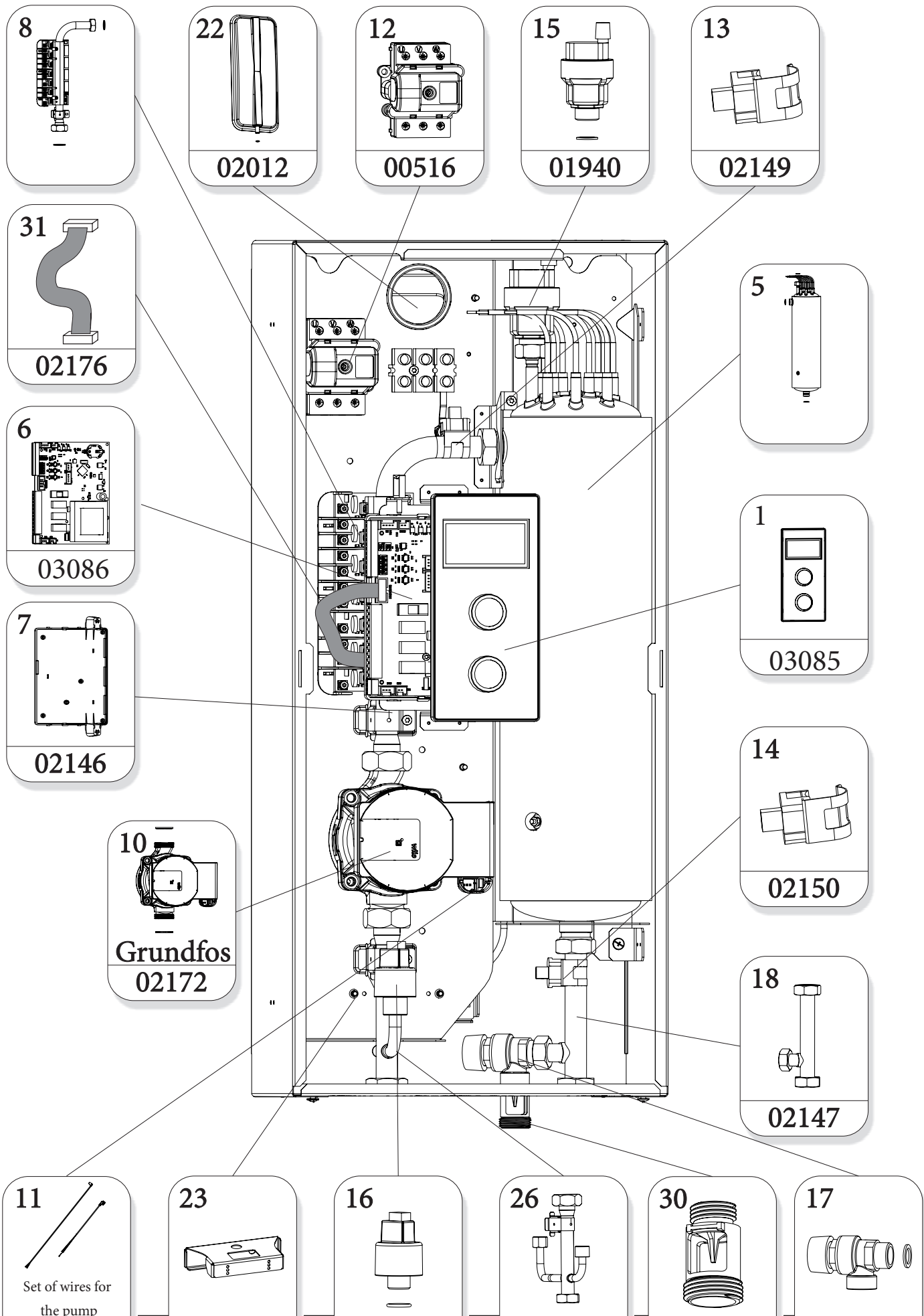
2.5 Disassembly of the power board.

Pic.2.5 Disassembly of the power board

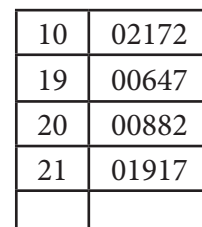


3 Interior view of boiler

Pic. 3. Interior view of boiler



Pic.3.1 Construction of boiler Comet PV - water part



4. Heating box Comet PV

Pic. 4. Heating box

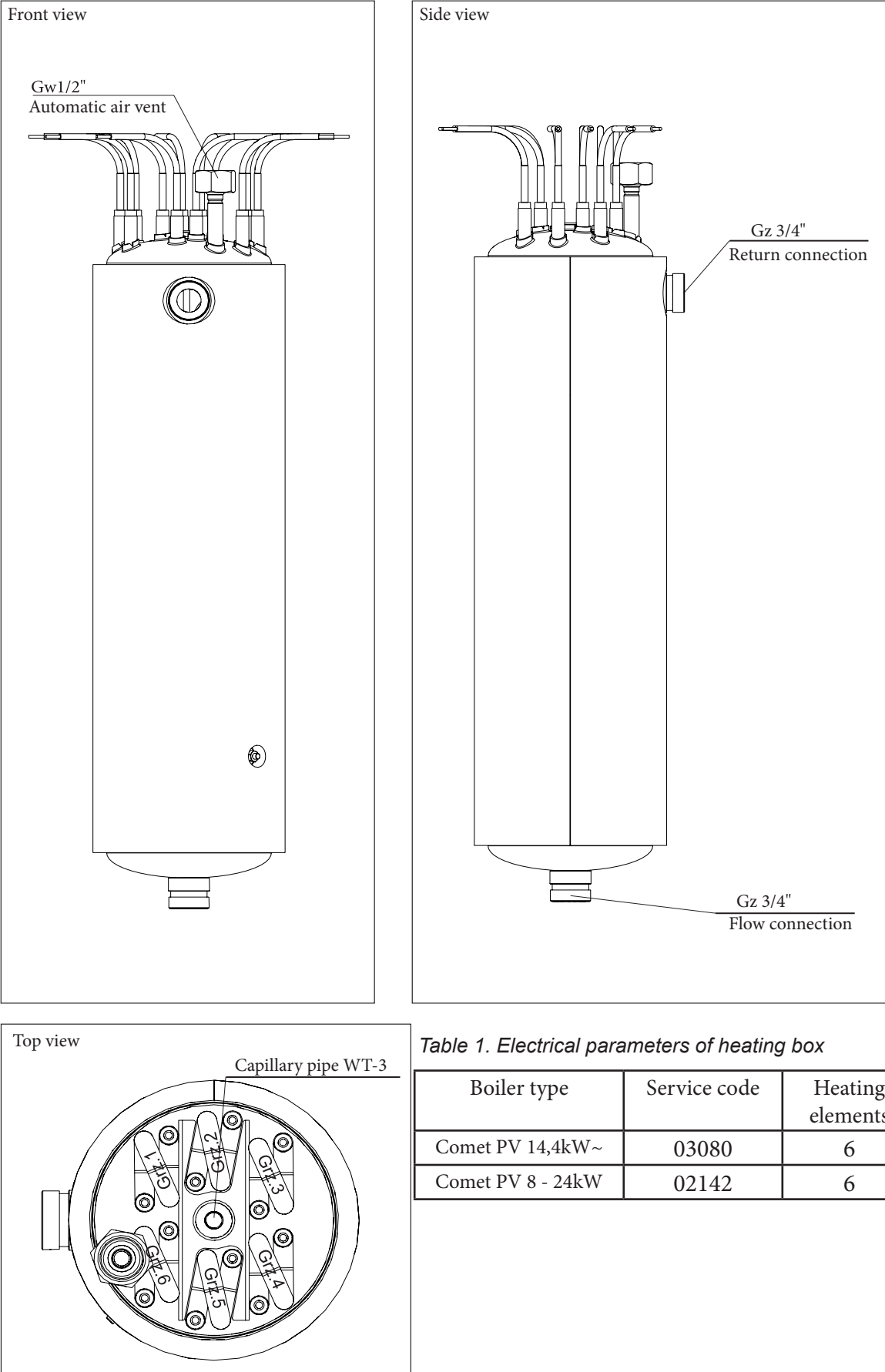


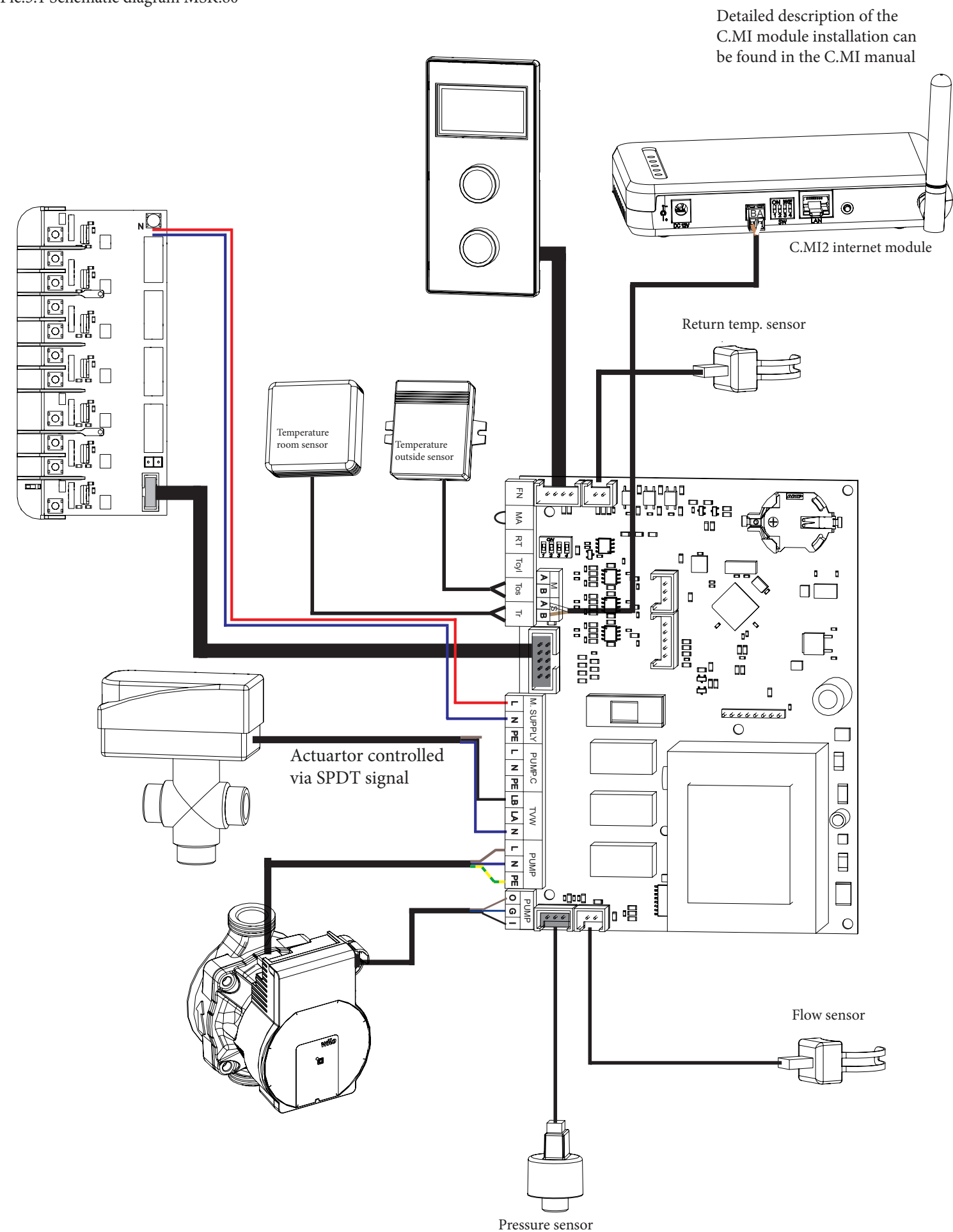
Table 1. Electrical parameters of heating box

Boiler type	Service code	Heating elements	Resistance [Ohm]
Comet PV 14,4kW~	03080	6	22,7 - 26,6 Ω
Comet PV 8 - 24kW	02142	6	37,5 – 43,8 Ω

Service manual Comet PV

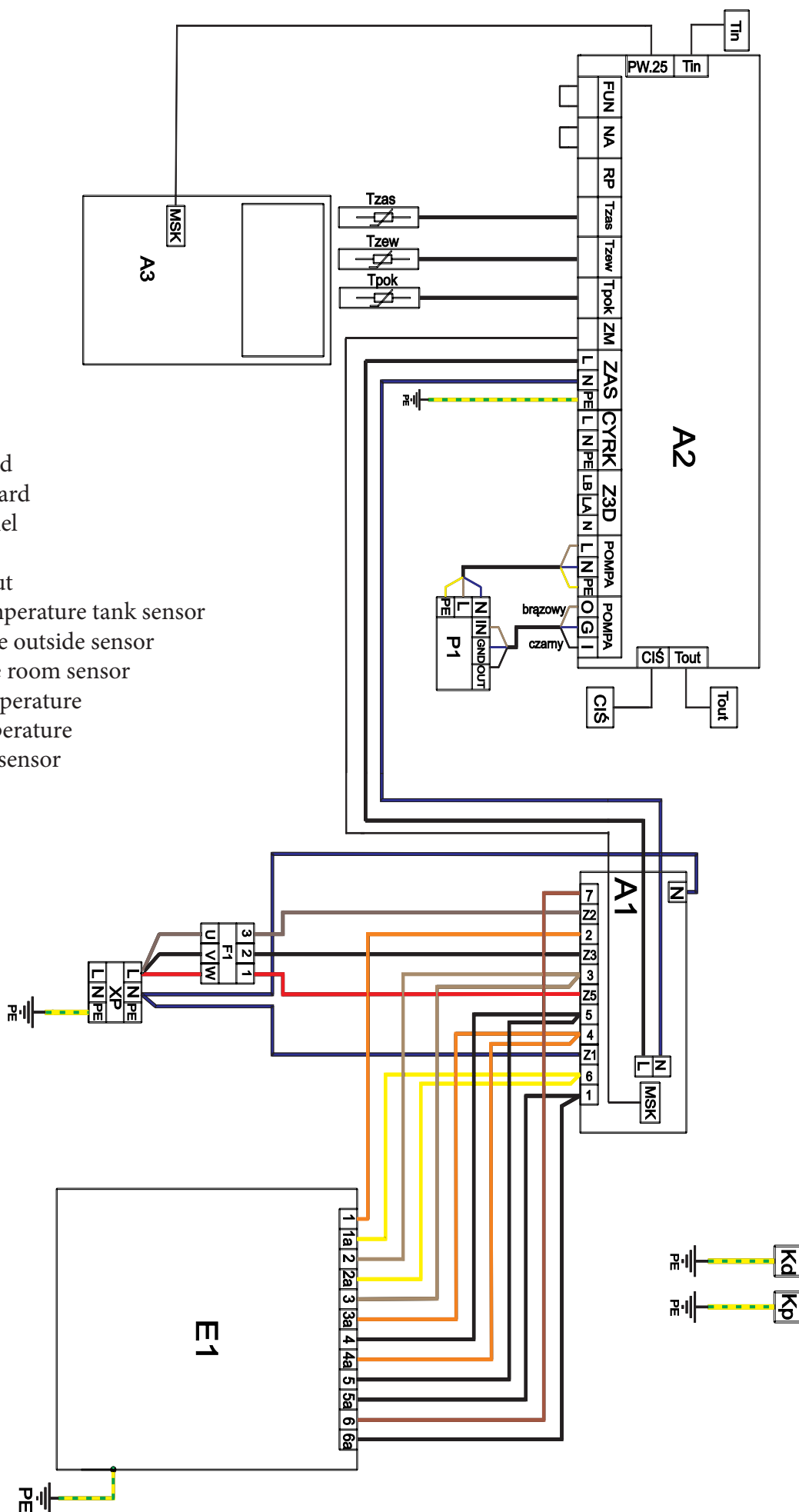
5.1 Schematic diagram MSK.80

Pic.5.1 Schematic diagram MSK.80



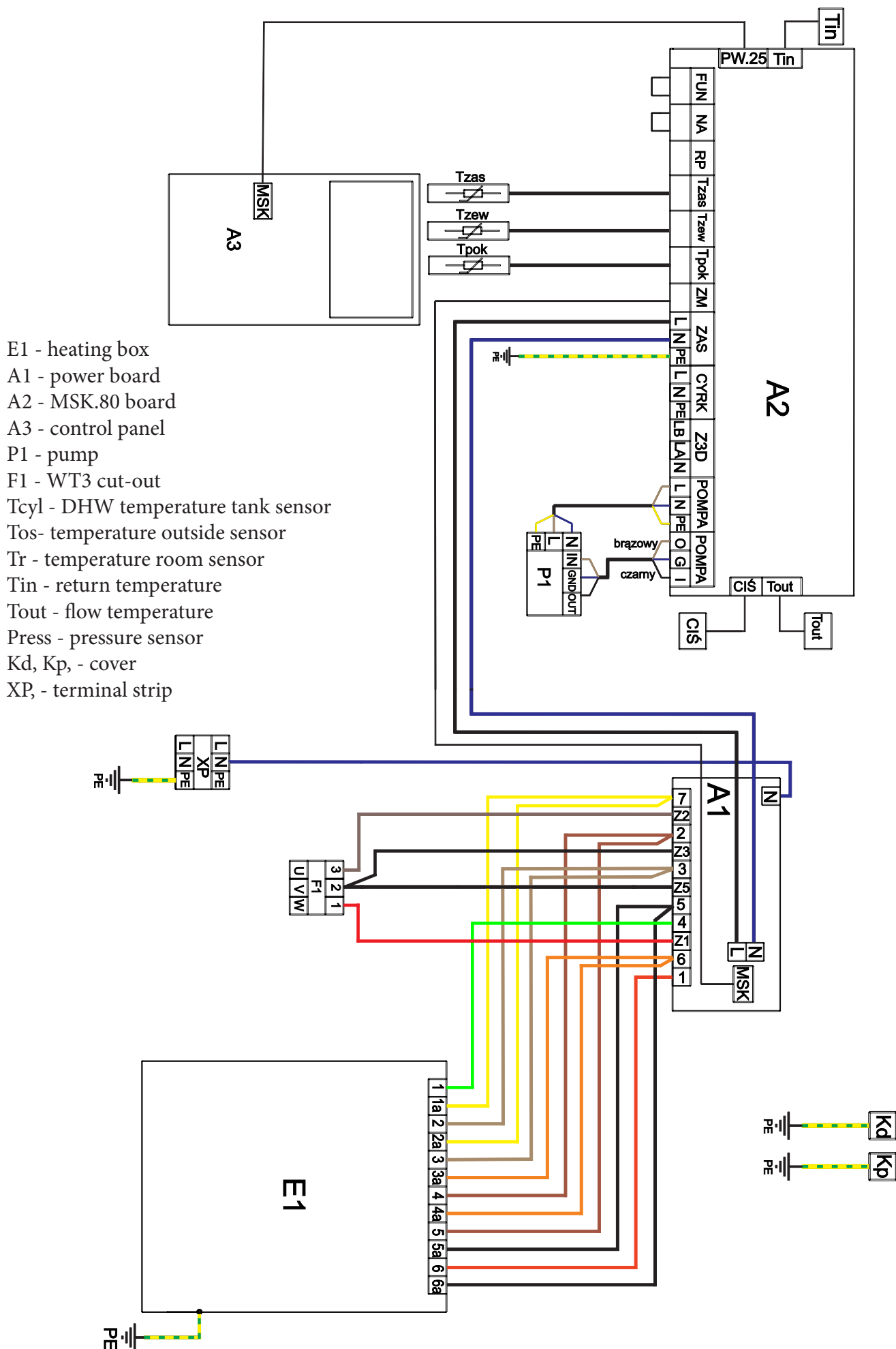
6. Wiring diagram Comet PV - 8 kW 230V

Pic. 6. Electric diagram Comet PV 4-8 kW



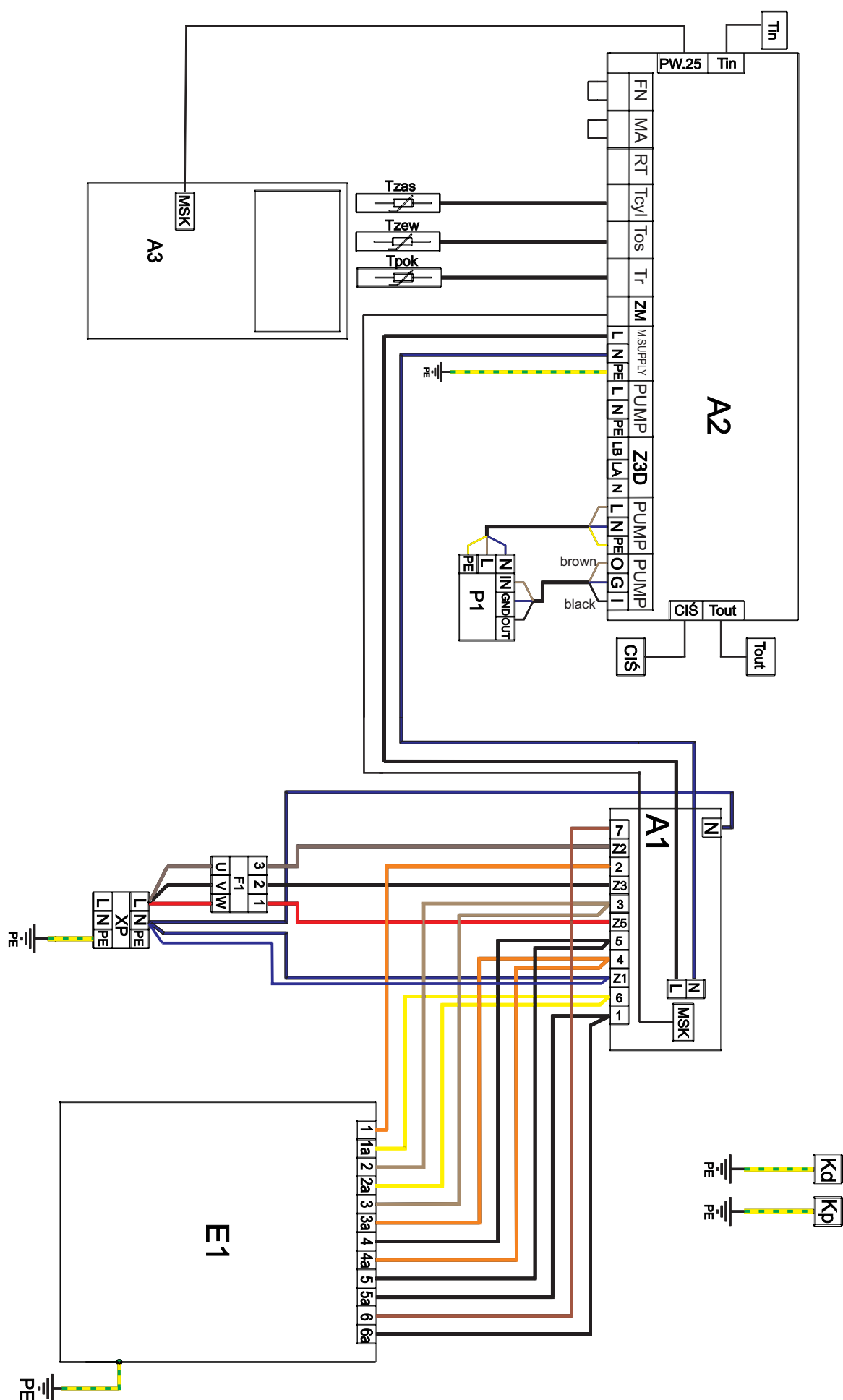
6.1 Wiring diagram Comet PV - 24 kW 400V

Rys 6.1 Electric diagram Comet PV 12-24 kW



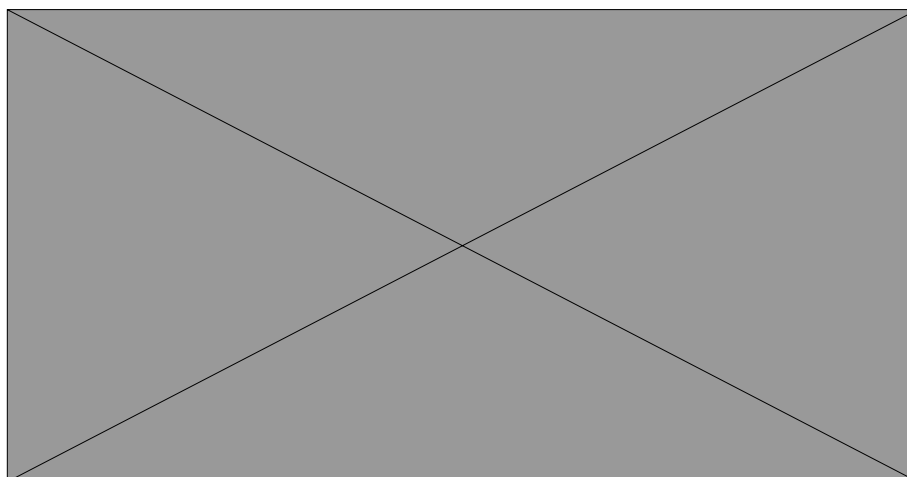
6.1 Wiring diagram Comet PV - 14,4 kW 240V

Pic 6.1 Electric diagram Comet PV 14,4 kW 240V



7. Error messages

Pic.7 Error messages



The appearance of an error in the boiler is signalled on the main functional screen "Err" after pressing the dial there is available list of errors.

Symbol	Description	Possible causes
NO PRESSURE	Low pressure on C.H installation	- pressure below 0,6 bar - pressure sensor failure -MSK.80 board failure
TEMP SENSOR ERROR Tpcb	temperature sensor on PCB failure	- MSK.80 board failure
TEMP SENSOR ERROR Tout	flow temperature sensor failure	- Tout sensor failure -MSK.80 board failure
TEMP SENSOR ERROR Tin	return temperature sensor failure	- Tin sensor failure -MSK.80 board failure
TEMP SENSOR ERROR Thw	DHW tank temperature sensor failure	- Tcyl sensor failure - MSK.80 board failure
TEMP SENSOR ERROR Tr	room temperature sensore failure	- Tr sensor failure - MSK.80 board failure
TEMP SENSOR ERROR Tos	outside temperature sensor failure	- Tos sensor failure - MSK.80 board failure
PUMP ERROR PO	Pump failure	- Pump failure - defective fuse on MSK.80 board - MSK.80 board failure
LOW BATTERY	low battery on MSK80 board	- low battery on MSK80 board

Table 4. Error messages

8. Test mode "Service"

The test mode „Service" is available in:

SERVICE\CONFIGURATION -> CONFIGURATION -> SERVICE

Enter code: 15

P- calculated power [kW]. An approximate value calculated on the basis of the flow value and the difference in salting and return temperatures.

Q - current flow rate [l/min]

T_{in} – the actual value of the return temperature [°C]

T_{out} – the actual value of the flow temperature [°C]

T – The triac test function

h – The pump head [m] preset (this change applies only to the SERVICE mode)

Z3D – current setting of the flow direction of the three-way valve [CH, DHW]

EXIT – from the SERVICE mode

Using the SERVICE mode:

1. Setting the pump head – h (flow rate test)

A change in the pump head height affects the flow value directly. The flow value should be selected appropriately

for the heating installation.

In general, the following flow rate converters can be adopted:

radiator installation - about 0.8l / min / kW

floor installation - around 1.5l / min / kW.

To get the same flow value for normal boiler operation, set the same pump head height in Configuration / Pump> Head height

2. T – power module test

The "T" parameter enables manual control of the power unit.

To evaluate the operation of the power module, use a clamp ammeter when performing phase current measurements.

a) T = 0 – all triacs are disconnected.

Valid phase currents should be close to 0. Possible values of current consumption result from the operation of the circulation pump and supply of control systems (small values).

b) T = 5 – a single triac will be switched on. Only phase L1 will be connected to the heating unit.

Valid phase currents should be close to 0.

In case of failure of any of the other triacs connected to the other phases, there will be a significant increase in power consumption (large value).

In this case, the power unit must be replaced.

c) T = 7 - a single triac will be switched on. Only phase L2 will be connected to the heating unit.

Valid phase currents should be close to 0.

In case of failure of any of the other triacs connected to the other phases, there will be a significant increase in power consumption (large value). In this case, the power unit must be replaced.

8. Test mode "Service"

d) $T = T1 + T2$ [G1] - switching on a single heater [GX] for full power.

The parameter [X] (from 1 to 6) indicates the number of the heater attached.

Valid currents should be around:

8kW boiler - 5,3A per phase for each heater

24kW boiler - 9.2A per phase for each heater

The actual values of the currents depend on the value of the supply voltage and the actual resistance of the heating elements.

If the current flows for individual heaters are definitely different, this indicates damage to the power unit.

The power unit must be replaced.

If the electrical installation is not equipped with a residual current circuit breaker, it may also mean damage to the heating assembly (breakdown of the heater insulation resistance).

Heater insulation resistance test should be performed.

The heating assembly must be replaced.

In the case of an installation equipped with an earth-leakage circuit breaker, connecting the power supply to the damaged heating assembly will immediately turn the power off.

The heating assembly must be replaced.

3. T_{in} , T_{out} – T_{in} , T_{out} - preview of supply and return temperature values.

Both values should be within real values, appropriate for current conditions.

Incorrect readings or lack of displayed temperature value means damage to the appropriate sensor.

The appropriate temperature sensor must be replaced.

4. Z3D –CO, DHW manual control of three-way valve setting.

Enables checking of valve operation.

If the valve actuator does not react to parameter changes, check the fuse on the MSK 80 (1A) board and the supply voltage between N and the power connectors:

CO - Correct voltage on LA 230VAC connector

CWU - The correct voltage at the LB 230VAC connector

No actuator reaction to changes in function settings means damage to the actuator or three-way valve.

The actuator or three-way valve must be replaced

9. Spare part list

Table 5. Spare parts list

Pos.	Service code	Pic. number	Name	Quantity(pcs)	Notice
1	03085	C.PW.02-02.00.00/09	Control panel Comet PV	1	
2	02141	EKCO.M3-01.00.00/01	Case EKCO.M3	1	
3	02148	OK.B11-00.00	Front cover EKCO.M3	1	
4	02143	EKCO.M3-03.00.00	Side housing EKCO.M3	1	
5	02142	EKCO.M3-02.00.00	Heating box EKCO.M3	1	
6	03086	PCP-MSK.80	MSK.80 board	1	
7	02146	WP-197	Bracket	1	
8	02145	EKCO.M3-05.00.00/01	Power board Comet PV (with connection pipe)	1	8-24 kW 240V
	03082	EKCO.M3-05.00.00/05	Power board Comet PV (with connection pipe)		14,4 kW 240V
9	02144	EKCO.M3-04.00.00	Inlet connection pipe EKCO.M3	1	
10	02172		Pump GRUN UPM3 15-75 130 AZA EUX9	1	
11	02310	WE-035/07 + WE-035/08	Set of wires for the Grundfos UPM3 pump		
12	00516	WT3a-00.00.00/02	WT-3 safety cut-out	1	
13	02149	WE-029/09	Return temperature sensor EKCO.M3	1	
14	02150	WE-029/10	Flow temperature sensor EKCO.M3	1	
15	01940	01.305.0008.0	Automatic air-vent"	1	
16	01194	01.000.0007.1	Pressure sensor	1	
17	00144	01.303.0020.0	Diaphragm safety valve EPCO / EKCO	1	
18	02147	EKCO.M3-07.00.00	Outlet connection pipe EKCO.M3	1	
19	00647	01.233.0052.0	Gasket 2x30x21 (1")	2	
20	00882	WP-054/12	Gasket 1,5x16x24	2	
21	01917	WP-054/10	Gasket 1,5x13x18,6	2	
22	02012	01.302.0013.0	Expansion vessel	1	
23	02155	EKCO.MN3-00.00.01	Expansion vessel support EKCO.MN3	1	
24	02152	EKCO.MN3-01.00.00	Case EKCO.MN3	1	
25	02153	EKCO.MN3-02.00.00	Side housing EKCO.MN3	1	
26	02154	EKCO.MN3-03.00.00	Inlet connection pipe EKCO.MN3	1	
27	00253	WP-054/02	Gasket 1,5x8x14,8	1	
28	02017	WE-033/02	Room temperature sensor	1	
29	01478	WE-027	Outdoor temperature sensor	1	
30	02175	WP-205	Drain funnel L3, M3	1	
31	02176		Bus cable MSK80 - power board M3	1	0,45cm
32	02177	2EDGK-5.08-12P-14	Pluggable terminal block 12 MSK80 (ZAS,CYRK,Z3D _s)	1	
33	02178	15EDGK-3.81-12P-14	Pluggable terminal block 12 MSK80 (FUN,NA,RP,TZAS)	1	
34	02179	EKCO.M3-00.00.01	Heating box lock L3 M3	1	
35	02180		Set of wires L3,M3 8kW	1	
36	02181		Set of wires L3,M3 24kW	1	
37	02243	OK.B13-00.00	Front cover EKCO.L3/M3/LN3/MN3 (without frame)	1	
38					
39					
40					
41					

10. Technical data

Table 6. Technical data

Max. pressure	MPa	0,3 (3 bar)
Min. pressure	MPa	0,05 (0,5 bar)
Outlet flow temperature	°C	20 ÷ 85
Max. temperature	°C	100
Dimensions (height x width x depth)	mm	716 x 316 x 235
Weight	kg	~20,5
Boiler's connections		G 3/4" (inside thread)
Expansion vessel	l	~5
Safety class		IP 22

10.1 Technical data

Table 7. Technical data

Boiler		2 / 4 / 6 / 8			
Rated power	kW	2	4	6	8
Rated voltage		230V~			
MCB rating		16	20	32	40
Load current	A	8,7	17,4	26,1	34,8
Min. power supply cable cross-section**	mm ²	2,5		4	6
Max. power supply cable cross-section	mm ²	16			
Max. allowed network impedance	Ω		0,27	0,17	0,15

Boiler		12 / 16 / 20 / 24			
Rated power	kW	12	16	20	24
Rated voltage		400V 3N~			
MCB rating		20	32	32	40
Load current	A	3x17,4	3x23,1	3x28,8	3x34,6
Min. power supply cable cross-section**	mm ²	5 x 2,5	5 x 4		5 x 6
Max. power supply cable cross-section	mm ²	5 x 16			
Max. allowed network impedance	Ω			0,27	0,13

Boiler		7,2 / 9,6 / 12,0 / 14,4			
Rated power	kW	7,2	9,6	12,0	14,4
Rated voltage		240V 1N~			
MCB rating		40	50	63	63
Load current	A	30,0	40,0	50,0	60,0
Min. power supply cable cross-section**	mm ²	4	6	10	
Max. power supply cable cross-section	mm ²	16			
Max. allowed network impedance	Ω			0,24	0,22



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