



SERVICE MANUAL

Mercury

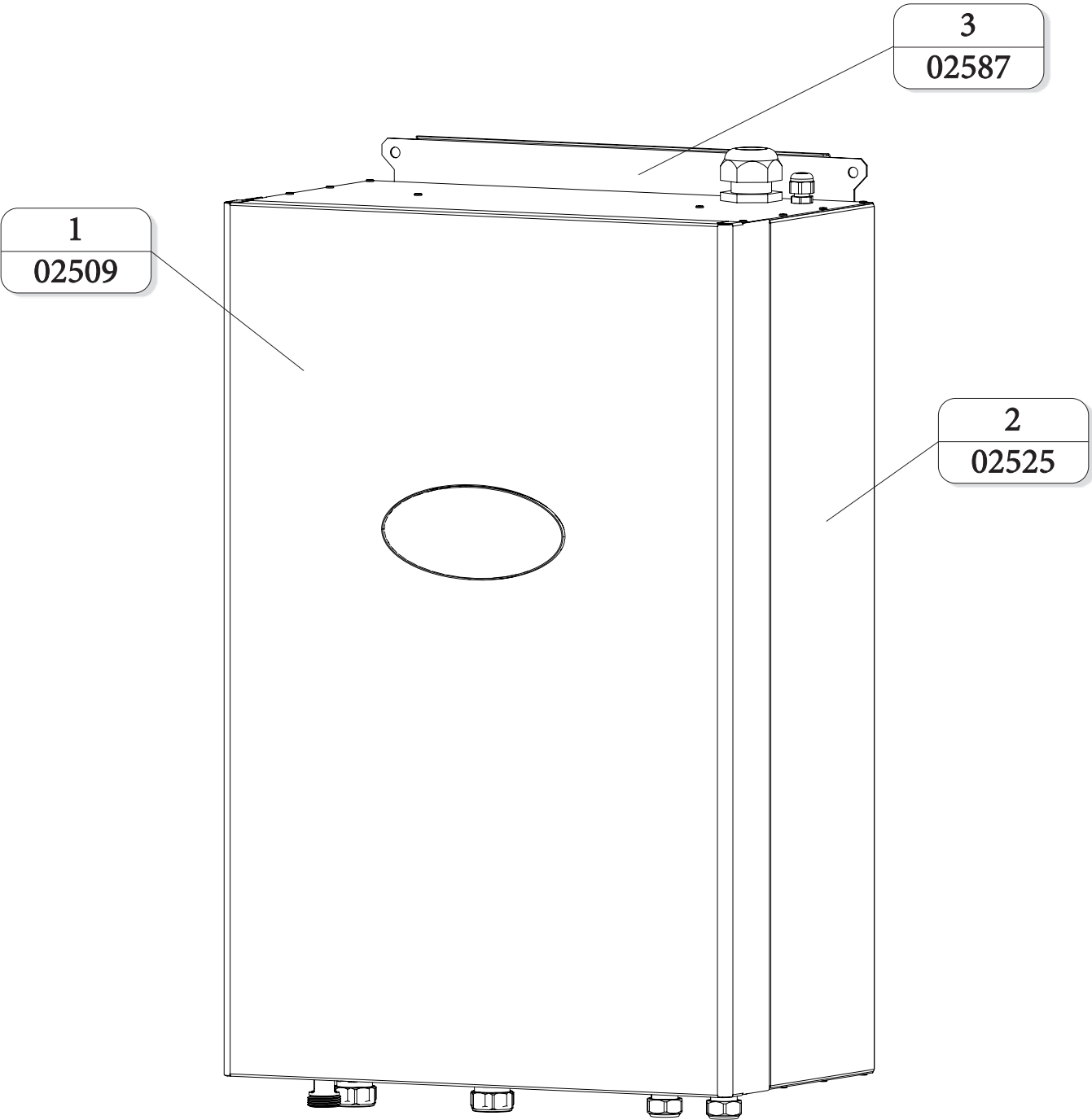
17-07-2022

Content

1. Exterior view of Mercury	3
Pic.1. Exterior view of Mercury	3
2. Construction of Mercury	4
Pic.2. Interior view of Mercury	4
Pic.2.1 D.H.W heating box	5
Pic.2.2 Construction of D.H.W heating box	6
Pic.2.3 Assembly of safety cut out WTC-3	7
Pic.2.4 Construction of C.H heating box 12 - 19,5 kW	8
Pic.2.5 Construction of C.H heating box 26 kW	9
Pic.2.6 Construction of Mercury - water part	10
3. Description of control panel PSK.P12	11
Pic.3. Control panel PSK.P12	11
Tab.2 Description of indicators and icons	13
Tab.3 Fault finding	14
4. Description of MSP-81 board.	15
Pic.4. MSP-81 board.	15
Pic.4.1 Configuration of F switches.	15
5. Electric connection of D.H.W heating box 240V.	16
Pic.5. Electric connection of D.H.W heating box 240V .	16
5.1 Electric connection of D.H.W heating box 415V	17
Pic.5. Electric connection of D.H.W heating box 415V	17
6. Dismantling of power board.	18
Pic.6. Dismantling of power board.	18
7. Wiring diagram - 12kW/240V, 14.4kW/240V 1N~.	19
Pic.7. Wiring diagram.	19
7.1 Wiring diagram - - 19.5kW/415V, 18kW/400V 3N~.	20
Pic.7.1 Wiring diagram.	20
7.2 Wiring diagram - Wiring diagram - 25.8kW/415V, 24kW/400V 3N~.	21
Pic.7.2 Wiring diagram.	21
8. Heating box C.H connection - 12kW/240V, 14.4kW/240V 1N~.	22
Pic.8. Wiring diagram 12kW/240V, 14.4kW/240V 1N~.	22
8.1 Heating box C.H connection - 19.5kW/415V, 18kW/400V 3N.	23
Pic.8.1 Wiring diagram 19.5kW/415V, 18kW/400V 3N~	23
9. Spare parts list.	24
Tab.4. Parts list.	24

1. Exterior view of Mercury

Pic.1. Exterior view of Mercury



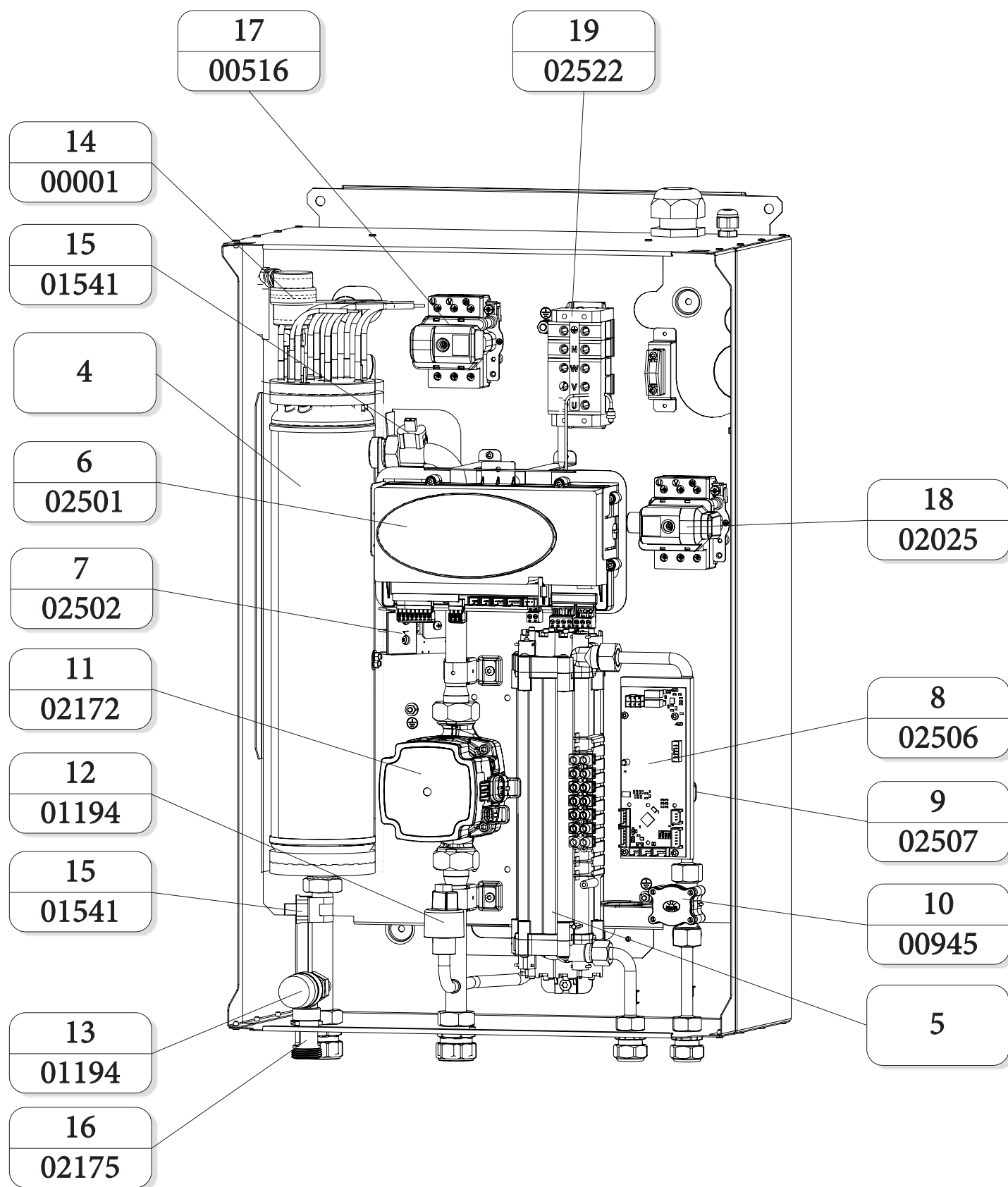
Legend

Part number in table of parts

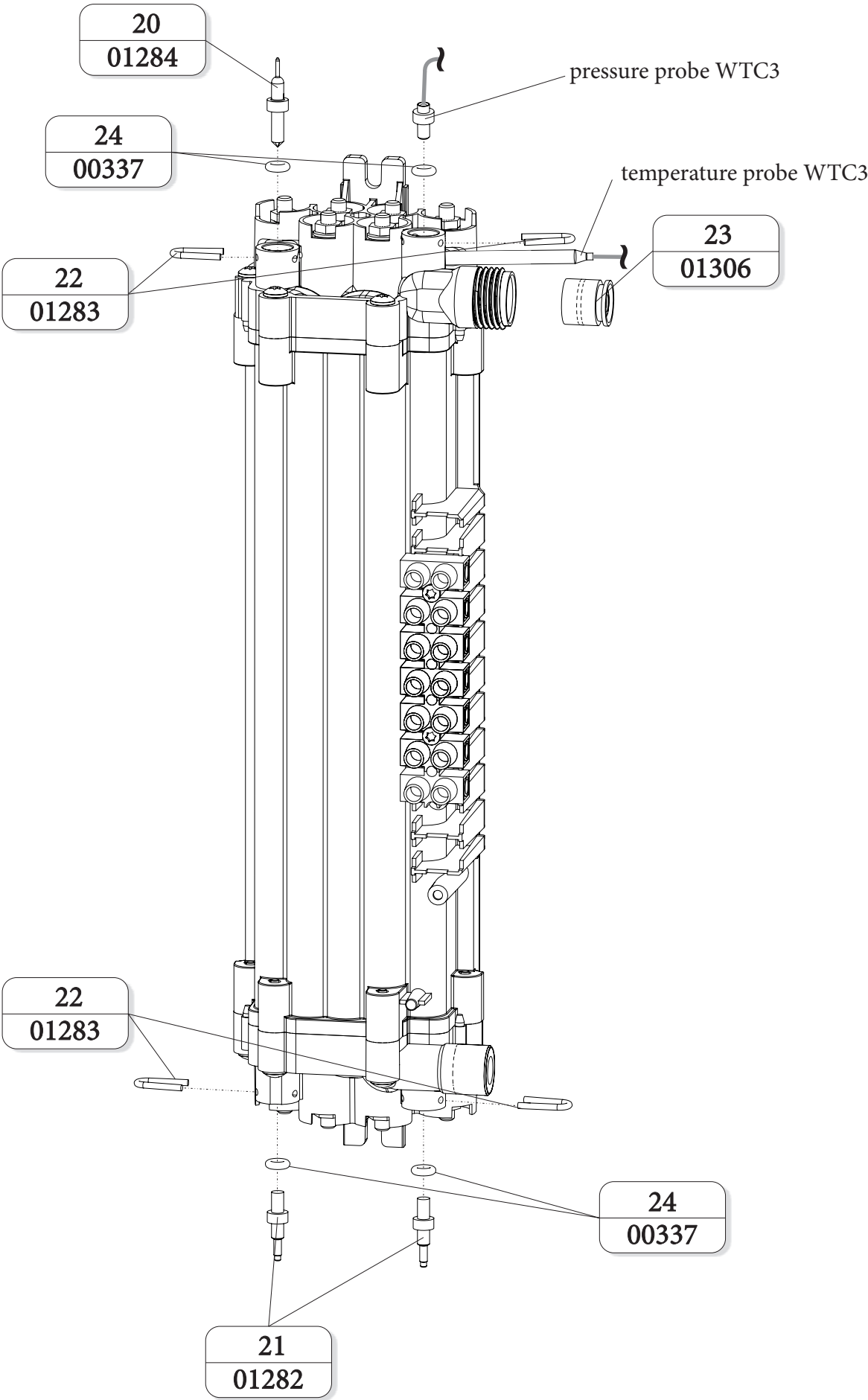
14
01168

Service code

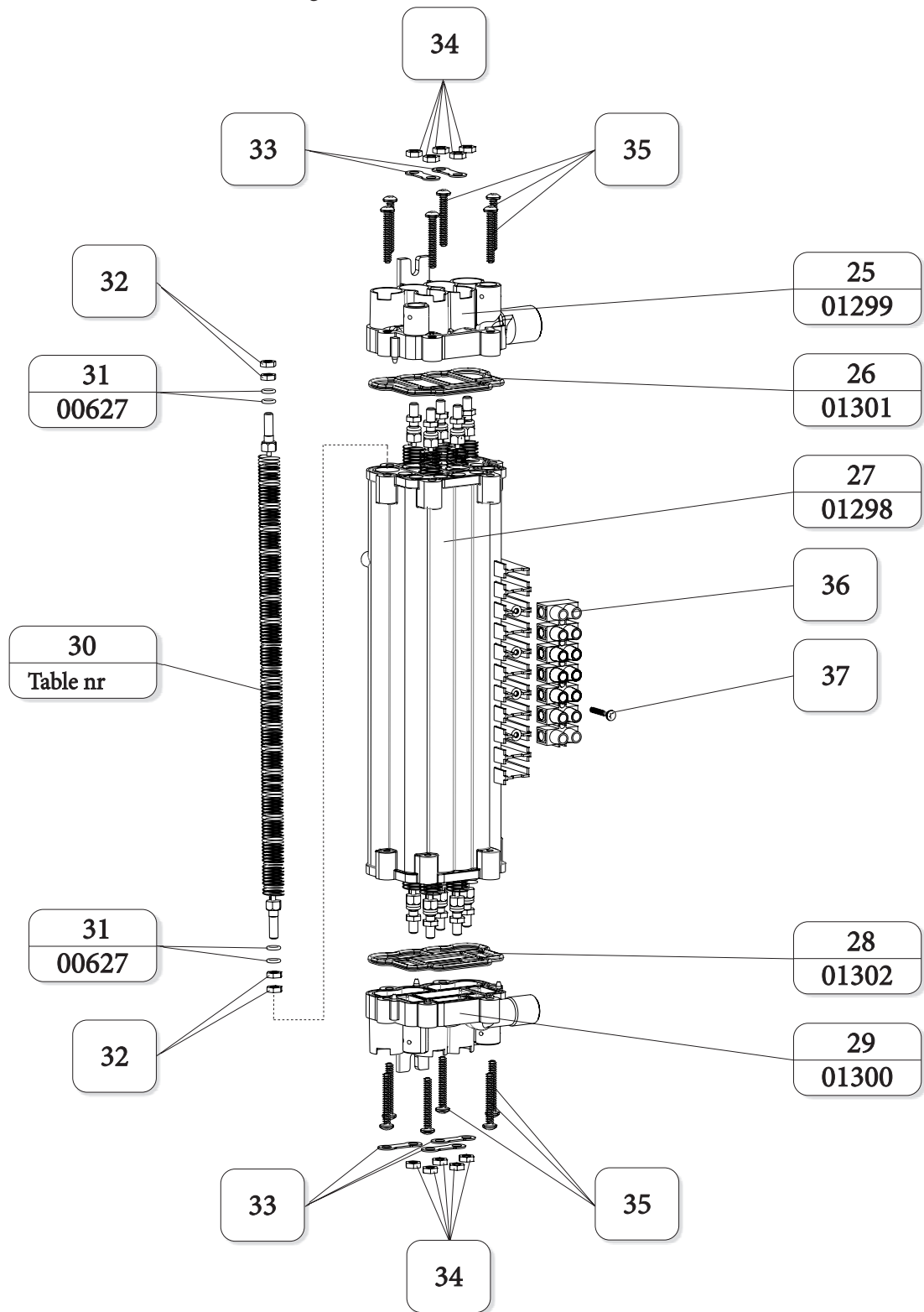
Pic.2. Interior view of Mercury



Pic.2.1. D.H.W heating box



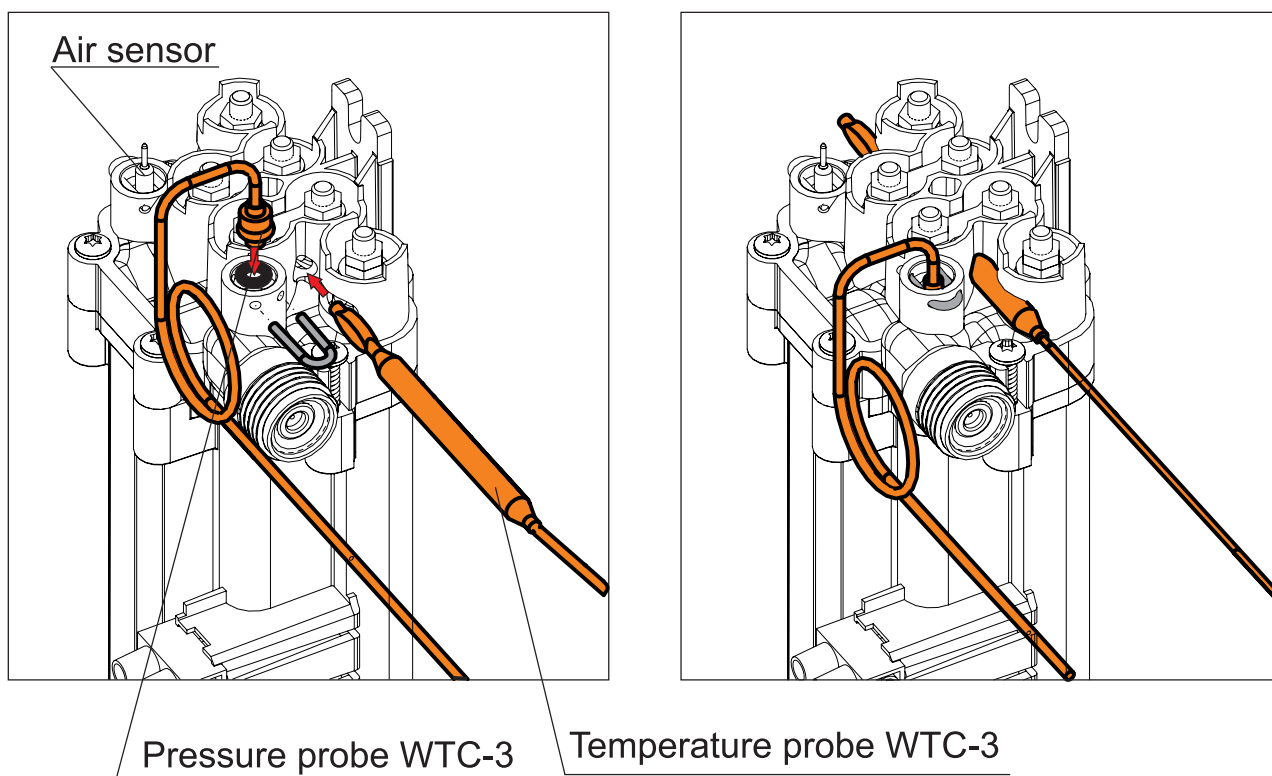
Pic.2.2. Construction of D.H.W heating box



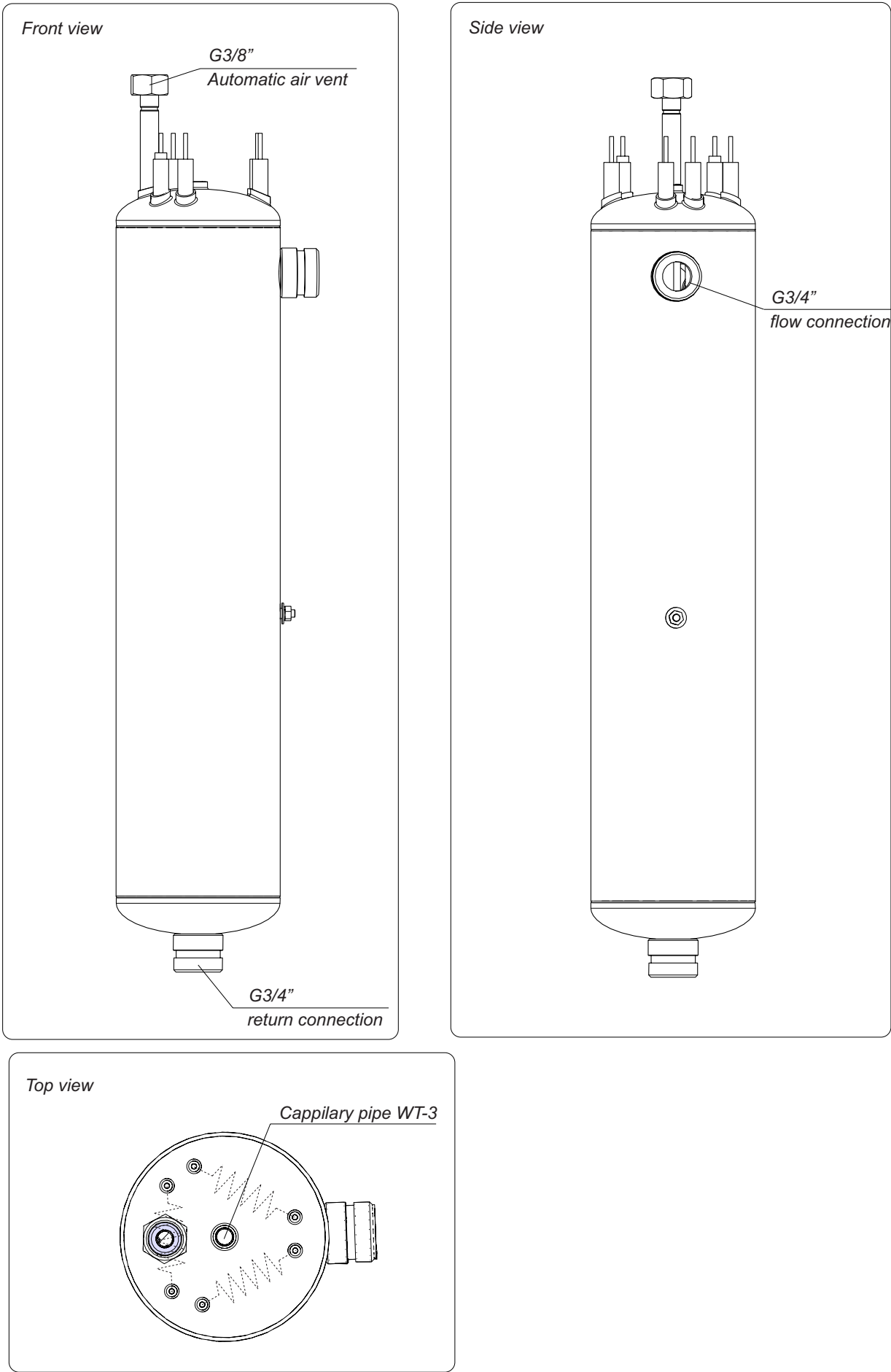
Tab.1. Parameters of heating box D.H.W

Heating power	[kW]	12	14,4
Power of heating element	[W]	2000	2400
Rated voltage	[V]	240	240
Heating element resistance	[Ω]	28,1 - 29,5	23,4 - 24,6

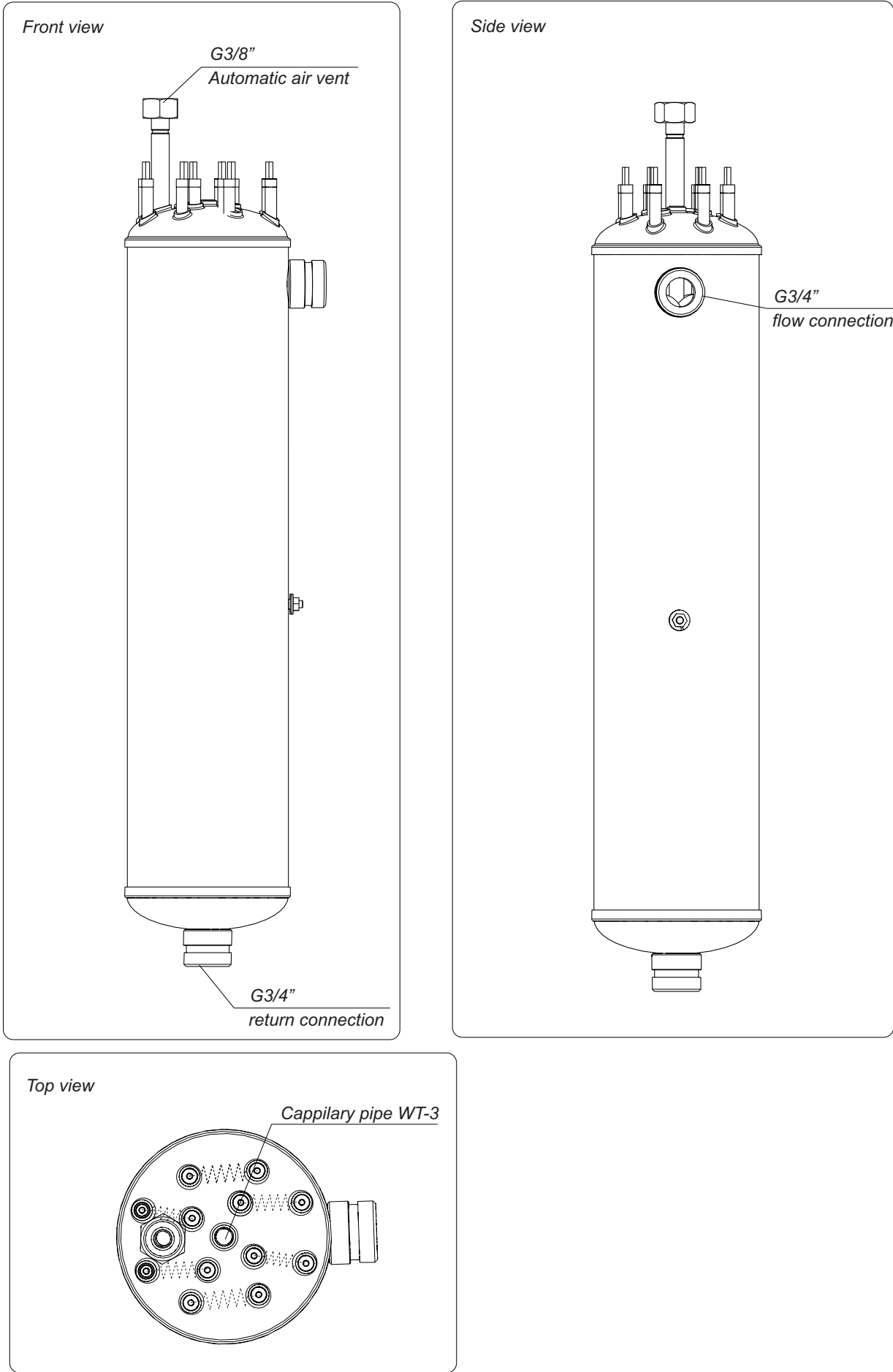
Pic.2.3. Assembly of safety cut out WTC-3



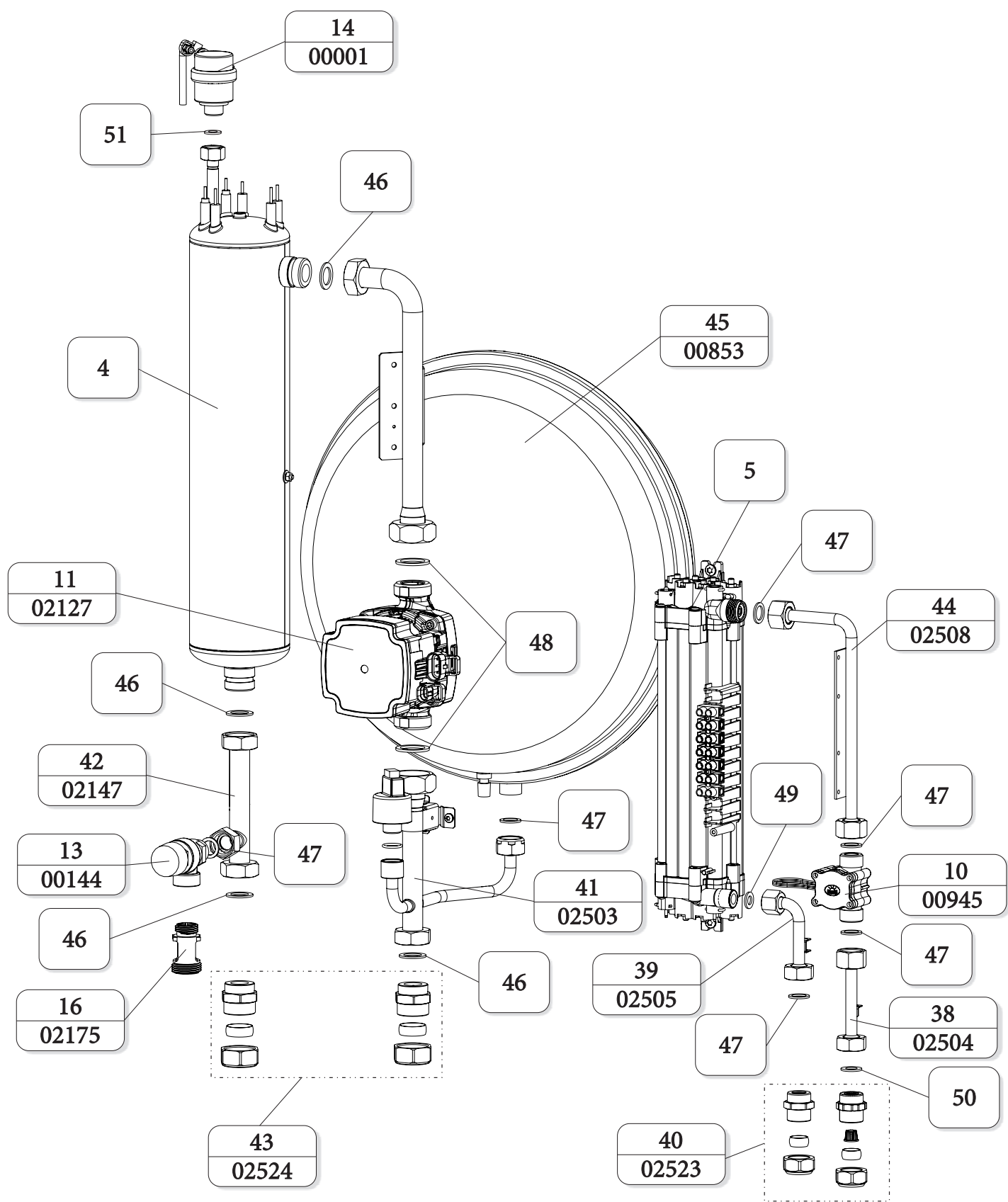
Pic.2.4. Construction of C.H heating box 12 - 19,5 kW



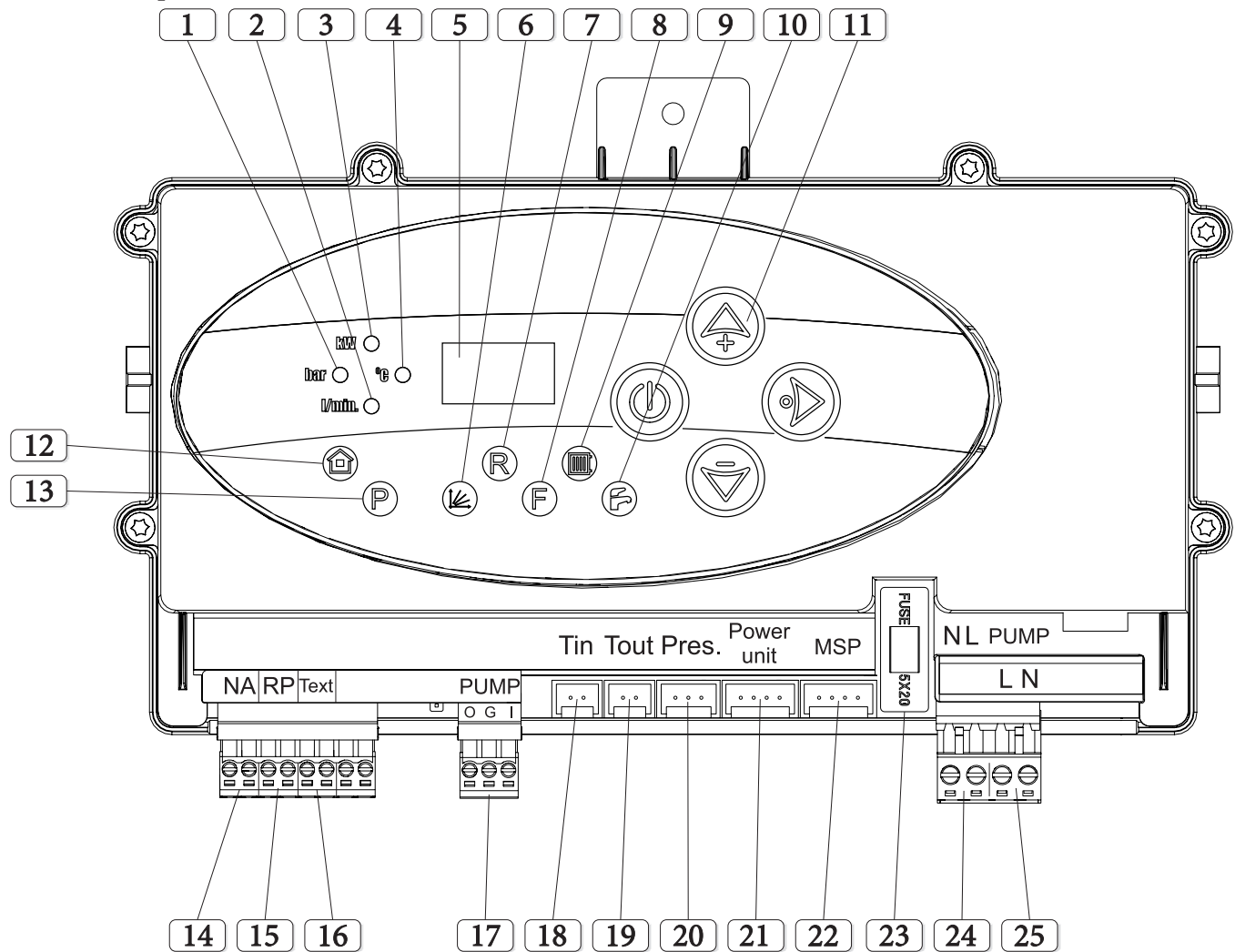
Pic.2.5. Construction of C.H heating box 24 kW



Pic.2.6. Construction of Mercury - water part



Pic.3 Control panel PSK.P12



- 1- pressure [bar]
- 2 - flow [l\min]
- 3 - power [kW]
- 4 - temperature [°C]
- 5 - digital display
- 6 - indicator of weather compensation controller
- 7 - inlet temperature indicator
- 8 - outlet temperature indicator
- 9 - indicator of activity (CH)
- 10 - indicator of instantaneous water heater
- 11 - control buttons
- 12 - indicator of room thermostat and heating activity (CH)
- 13 - indicator of pump and flow activity
- 14 - MA - master appliance (open - heating block)
- 15 - RP - alternative room regulator (open - central heating block)
- 16 - Text - Temperature outside sensor
- 17 - PUMP (O,GI) - circulate pump signal PWM connection (O- brown, G- blue, I- black)
- 18 - Tin - return temperature sensor connection point
- 19 - Tout - low temperature connection point
- 20 - Press - pressure sensor connection point
- 21 - power board connection point
- 22 - MSP board connection point
- 23 - Fuse 1A (pump and TVW supply)
- 24 - supply connection from power board
- 25 - circulate pump supply connection

Stand-by mode

In the stand-by mode the pump is activated everyday for 2 min, which prevents its blockage. On the controller, there is OFF shortly in winter or summer mode. To switch stand-by mode press and hold for 3 sec  button.

Pressing  or  buttons displays parameter of installation's pressure. After 1 min of inactivity the display becomes blanked again. Pressing  button in the stand-by mode shifts boiler's operation to winter or summer mode depending on the valid settings adjusted before activation of stand-by mode.

Winter mode

Winter mode is active when the icons   are active.

In winter mode (main view) the control panel displays pictograms describing the current one device operation. The digital display shows the flow temperature of the central heating system or domestic water temperature, if heating conditions are present. Pressing the button  causes passing to the preview of current parameters and device settings in the following order:

- domestic water temperature setting (indicators "4" and "10"). Using buttons  or  you can change the domestic water setting value,
- domestic water temperature at the inlet (indicators "4", "10" and "7"),
- domestic water temperature at the output (indicators "4", "10" and "8"),
- value of water flow through the heater (indicators "2" and "10"),
- current power consumed by the water heater (indicators "3" and "10"),
- CH medium temperature adjustment (indicators "4" and "9"), indicator "6" is on when weather compensation regulator is active (advanced settings). Indicator "6" flashes when there is no possibility to determine installation's temperature due to the lack or failure of outside sensor- the boiler shifts to manual adjustments. Pressing  or  buttons when heating medium temperature is indicated on the display results in heating medium value change. Note, it works only when weather compensation regulator is switched off (advanced settings - parameter C=0) or when there is no outside sensor,
- inlet temperature CH (indicators 4, 7 and 9),
- outlet temperature CH (indicators 4, 8 and 9),
- outside temperature (indicators 4, 6 and 12), if the weather compensation regulator is disabled, the parameter is ignored. In case of a failure of the external sensor and the weather compensation controller is turned on, are shown on the digital display characters such as "---"
- flow of the medium through the boiler (indicators 2 and 13),
- pressure in CH installation (indicators 1 and 9),
- current power charged by boiler (indicators 3 and 9).

If the control panel is in the preview / parameter setting mode, pressing the button  or if the keyboard is not used for 1 minute, it will take you to the main view.

If the control panel is in the main view, short press the button  to enter to summer mode.

Summer mode

Summer mode is active when the icon  is active and the icon is  inactive.

In summer mode (main view) the control panel displays pictograms describing the current one device operation. Digital display shows the output temperature of domestic water, if heating conditions exist.

Pressing the button  causes passing to the preview of current parameters and device settings in the following order:

- domestic water temperature setting (indicators 4 and 10). Using buttons  or  you can change the domestic water setting value,
- domestic water temperature at the inlet (indicators 4, 10 and 7),
- domestic water temperature at the output (indicators 4, 10 and 8),
- value of water flow through the heater (indicators 2 and 10),
- current power consumed by the water heater (indicators 3 and 10),

If the control panel is in the preview / parameter setting mode, pressing the button  or if the keyboard is not used for 1 minute, it will take you to the main view.

If the control panel is in the main view, short press the button  to enter to winter mode.

Tab.2 Description of indicators and icons.

Indicator	Status	Details
	ON	room thermostat allows the boiler to heat
	OFF	required temperature has been reached (boiler doesn't heat)
	flickering	master appliance doesn't allow to heat (MA entry)
	ON	pump is active, a proper flow rate of medium has been reached
	flickering	lack of flow or insufficient flow rate of medium (failure condition), heating elements are off
	red	heating on- boiler's CH mode
	green	desired temperature has been reached
		boiler co-operates with DHW cylinder (icon  in red)
		temp. in CH system is lower than required but the required room temperature has been reached, RT entry is open, or room thermostat is blocked
	OFF	OFF summer mode on
	red	instantaneous water heater's performance
"bar"	flickering	installation pressure is not sufficient (below 0,5 bar), heating is blocked, pump is inactive
	horizontal dashes	parameter out of range or temp. sensor failure
 or 	flickering	respective temperature sensor failure
 + "°C"	ON	previuev of outside temperature

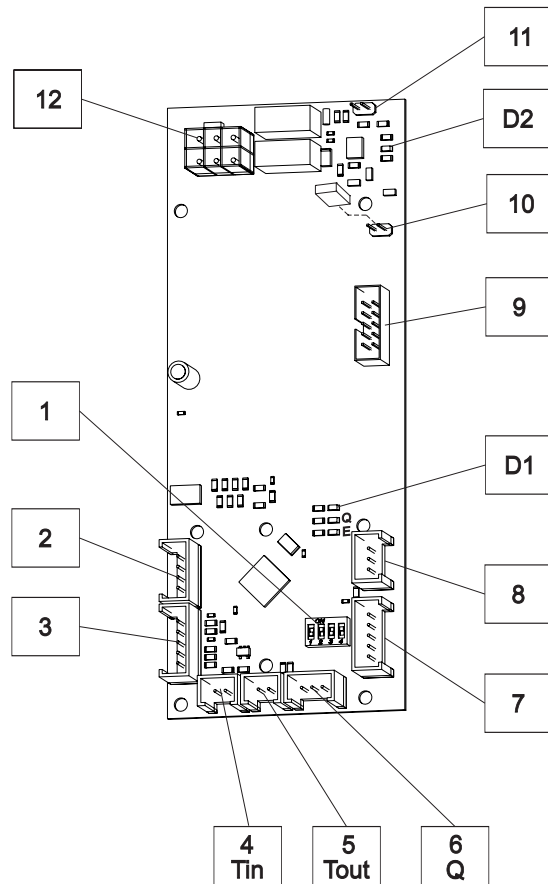
Tab.3 Fault finding

Symptom	Reason	Action
Indicators on control panel are off	lack of device's power supply.	check parameters of power network and fuses
		contact authorised service
"bar" indicator flickers	insufficient pressure (below 0,5 bar)	shift the controller to the pressure view, increase pressure within the installation to required level (1.5bar Cold)
	pressure sensor failure	switch the controller to pressure preview, if display E indicates "--" contact authorised service
 indicator flickers	pump blocked or seized	unblock pump's rotor
	lack of medium's flow through the boilerboiler's blockage	air locked central heating system, vent the installation, pump and boiler & re-set pressure
		check water quality of CH installation and clean the filter
	failure of pump's power supply	contact authorised service
	failure of pump or flow sensor	contact authorised service
 indicator is off (in winter mode), room thermostat indicates heating on	check room thermostat is providing	check programmer/thermostat. linked out RT & MA if no response, change PSK Controller
	continuity across RT connection	contact authorised service
 indicator flickers	failure of inlet temp. sensor, heating blockage	contact authorised service
 indicator flickers	failure of outlet temp. sensor, heating blockage	contact authorised service
 indicator flickers and the boiler doesn't work	failure of installation that connects master appliance	contact authorised service
	failure of electronic module	contact authorised service
 indicator flickers	failure of outside temp. sensor	contact authorised service
 indicator flickers (red)	failure of DHW temp. sensor	contact authorised service

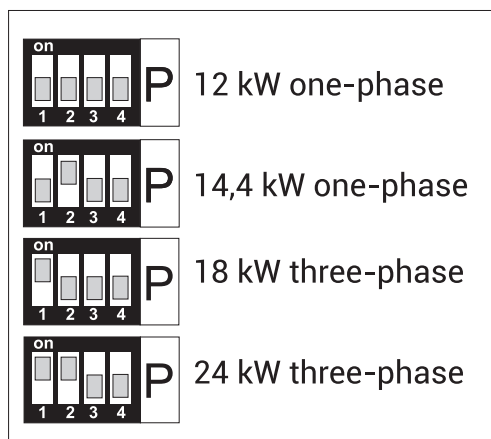
4. Description of MSP-81 board.

Pic.4. MSP-81 board.

- 1 - configuration microswitch (description on next page)
 - 2 - NAST2 - Control panel connection point
 - 3 - NAST1 - connector not used
 - 4 - Tin - inlet temperature sensor connection point
 - 5 - Tout - outlet temperature sensor connection point
 - 6 - Q - flow sensor connection point
 - 7 - PROG - service connection point
 - 8 - TEST - tester connection point
 - 9 - ZM - power board connection point
 - 10 - JP2- Disabling the air detection system
jumper on - air detection disabled
 - 11 - JP1 -?
 - 12 - Connection point of the air sensor, grounding
and power supply from the power unit.
 - 13 - E,Q,D1, D2 LED indicator
- E - red LED - heating indicator
 - OFF - no heating
 - blinking - the unit reach the maximum
 power value which is too low
 for a given operating conditions
 - ON - heating on
- Q - Green LED - flow indicator
 - OFF - no flow
 - blinking - to low flow (<2,2l/min)
 - ON - the minimum flow achieved
- D1 - green LED - MSP board power supply.
- D2 - green LED - air detection in the heating unit
 - ON - no air
 - OFF - air in the heating box

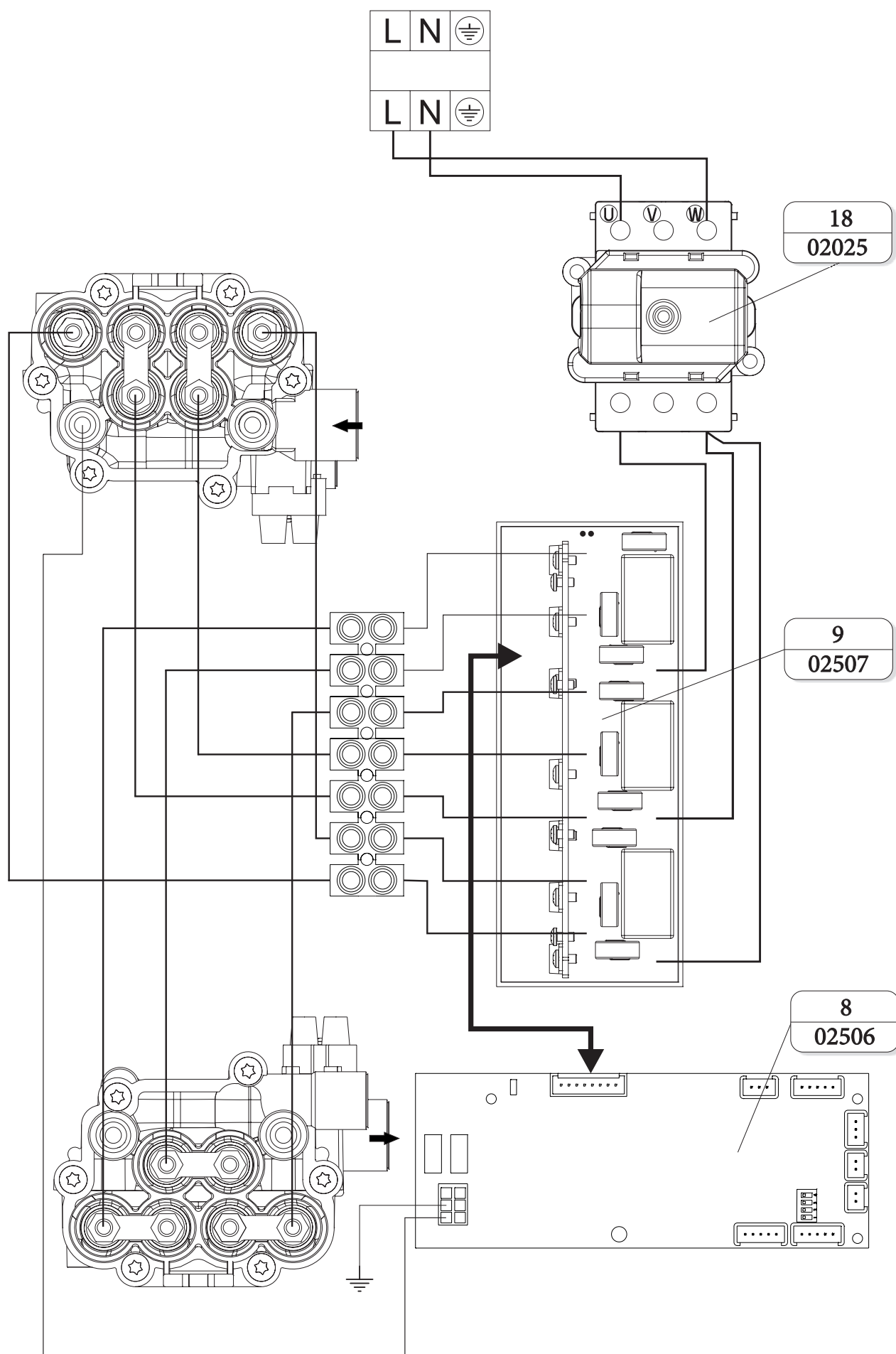


Pic.4.1 Configuration of F switches.

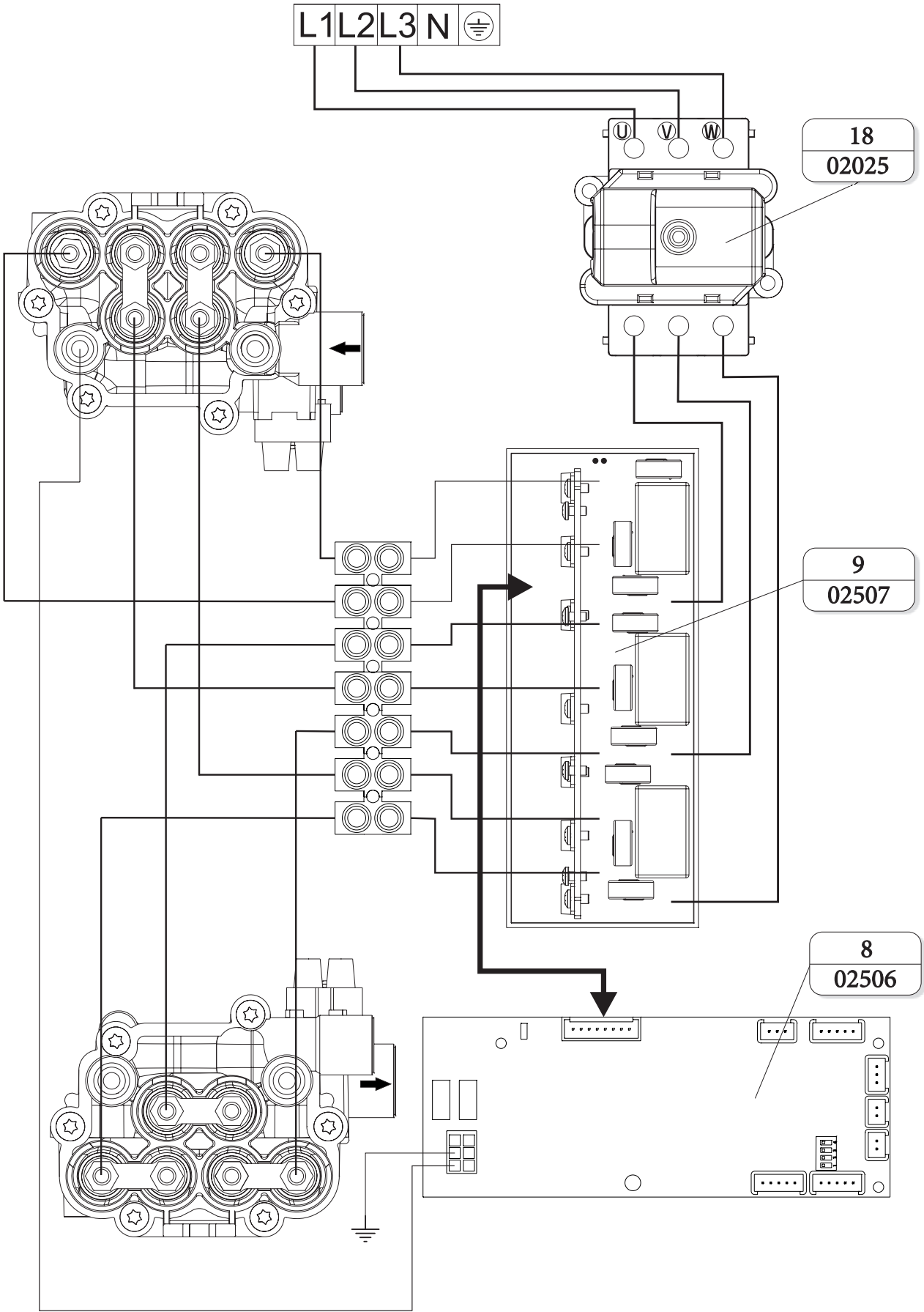


5. Electric connection of D.H.W heating box 240V.

Pic.5. Electric connection of D.H.W heating box 240V .

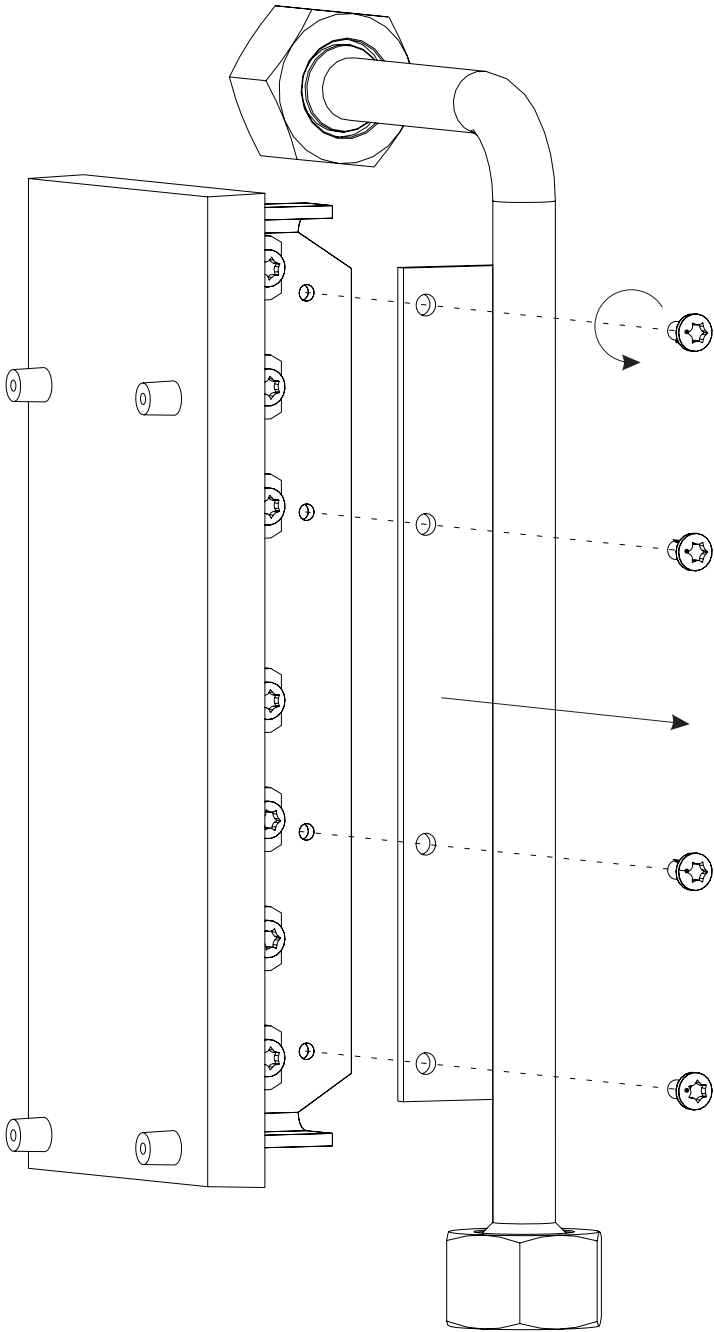


Pic.5.1 Electric connection of D.H.W heating box 415V.

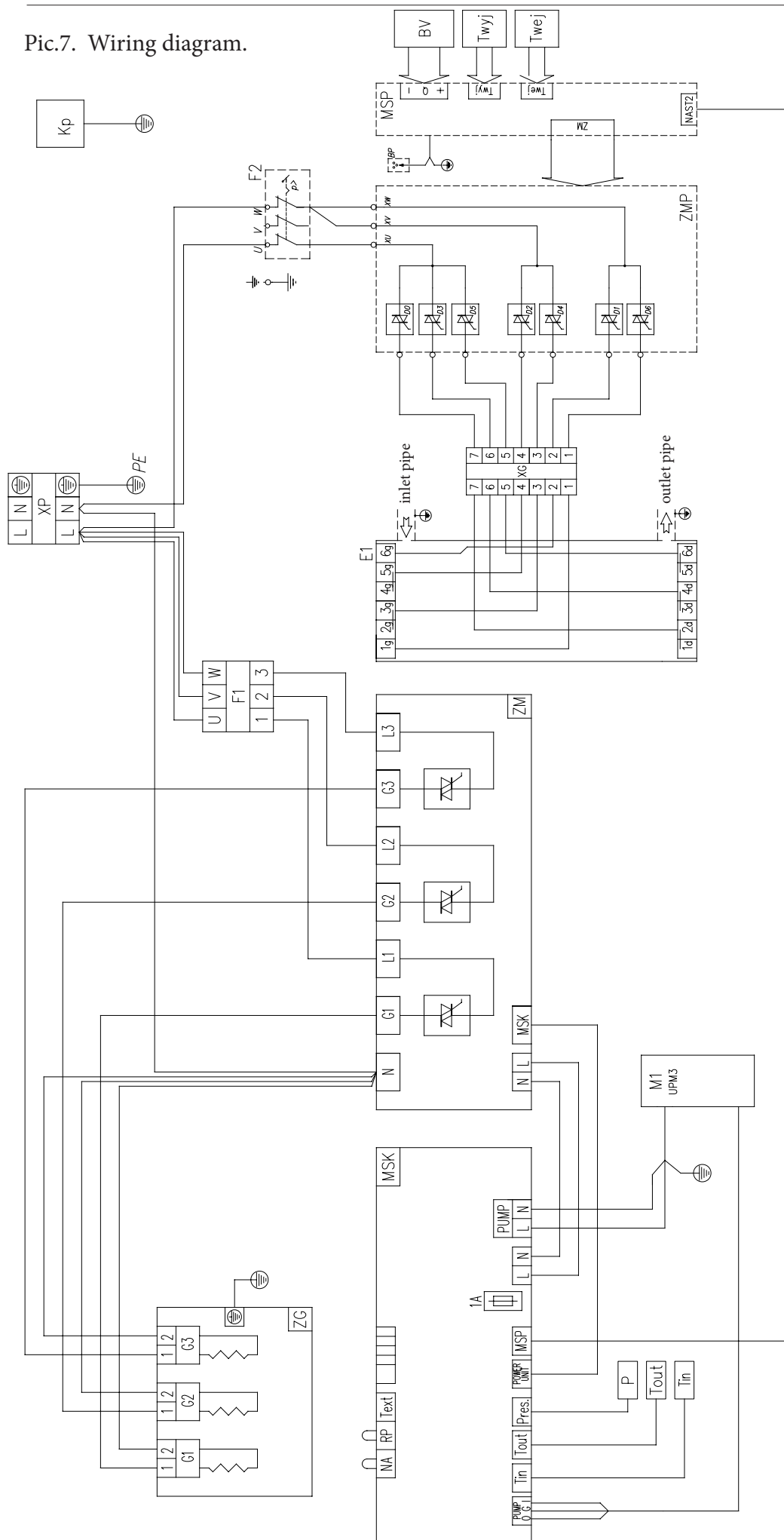


6. Dismantling of power board.

Pic.6. Dismantling of power board.

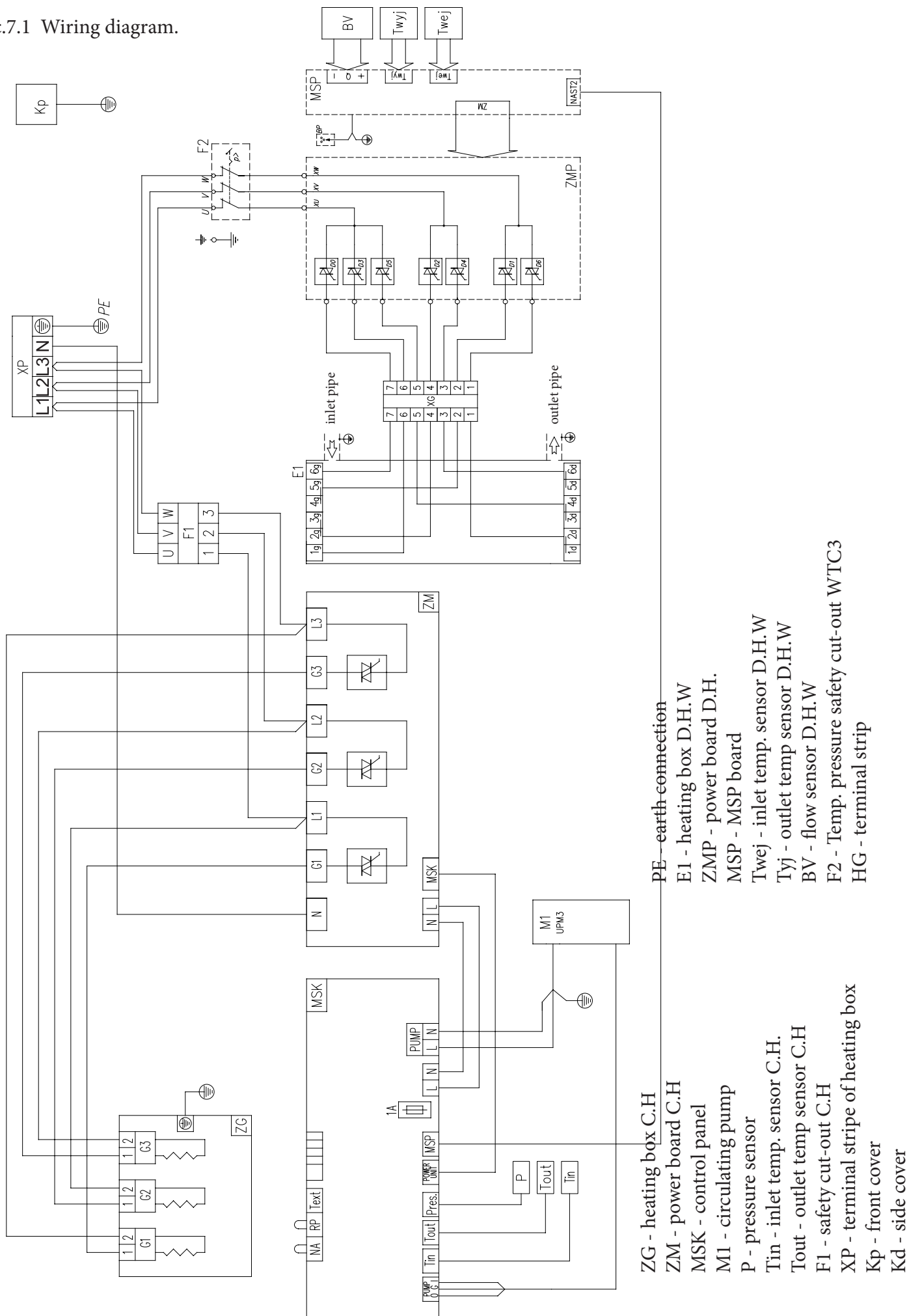


Pic.7. Wiring diagram.

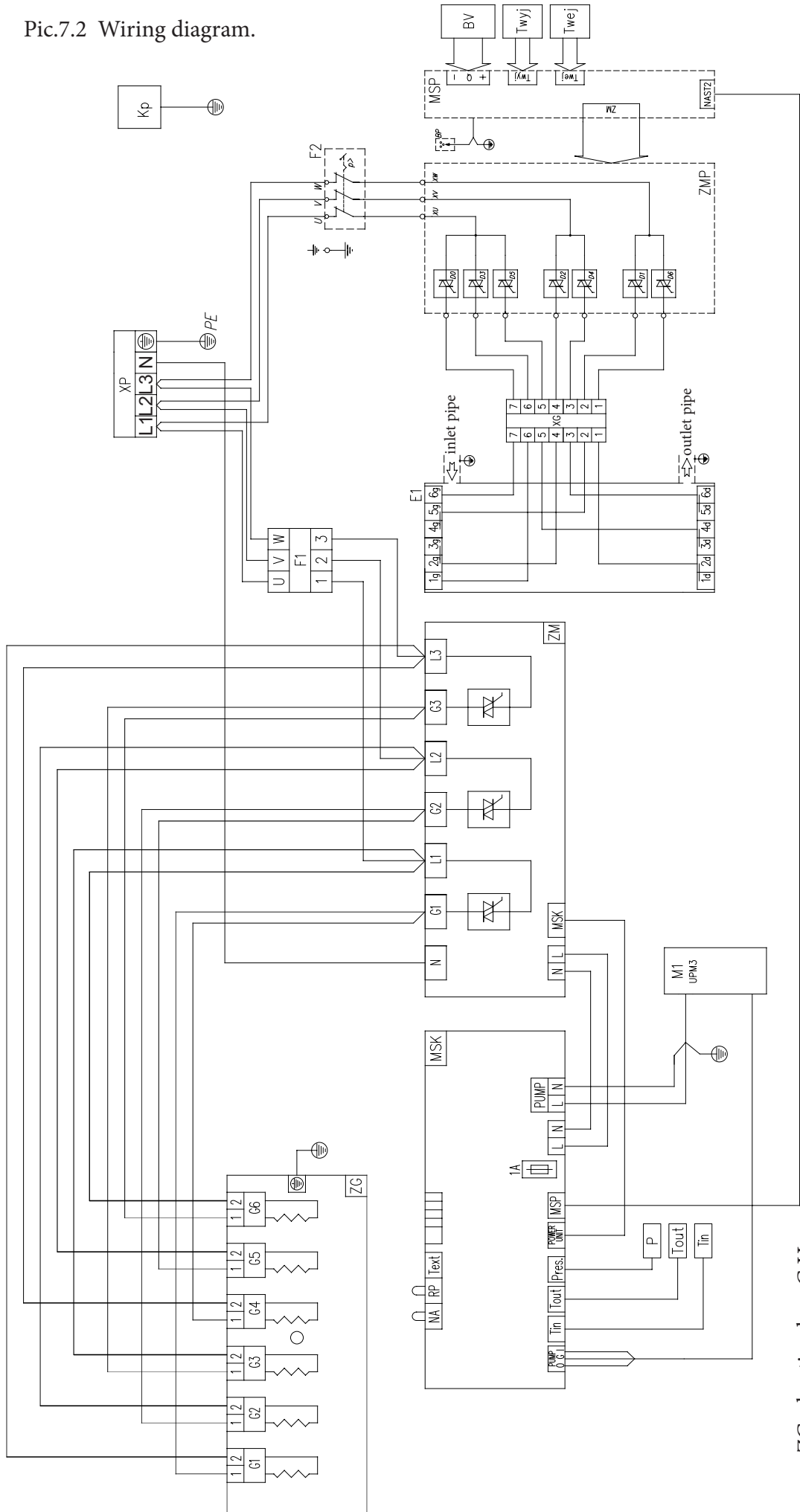


- ZG - heating box C.H
 ZM - power board C.H
 MSK - control panel
 M1 - circulating pump
 P - pressure sensor
 Tin - inlet temp. sensor C.H.
 Tout - outlet temp sensor C.H
 F1 - safety cut-out C.H
 XP - terminal stripe of heating box
 Kp - front cover
 Kd - side cover
- PE - earth connection
 E1 - heating box D.H.W
 ZMP - power board D.H.
 MSP - MSP board
 Twej - inlet temp. sensor D.H.W
 Tyj - outlet temp sensor D.H.W
 BV - flow sensor D.H.W
 F2 - Temp. pressure safety cut-out WTC3
 HG - terminal strip

Pic.7.1 Wiring diagram.



Pic.7.2 Wiring diagram.



- ZG - heating box C.H

ZM - power board C.H

MSK - control panel

M1 - circulating pump

P - pressure sensor

Tin - inlet temp. sensor C.H.

Tout - outlet temp sensor C.H

F1 - safety cut-out C.H

XP - terminal stripe of heating box

Kp - front cover

Kd - side cover
- PE - earth connection

E1 - heating box D.H.W

ZMP - power board D.H.

MSP - MSP board

Twěj - inlet temp. sensor D.H.W

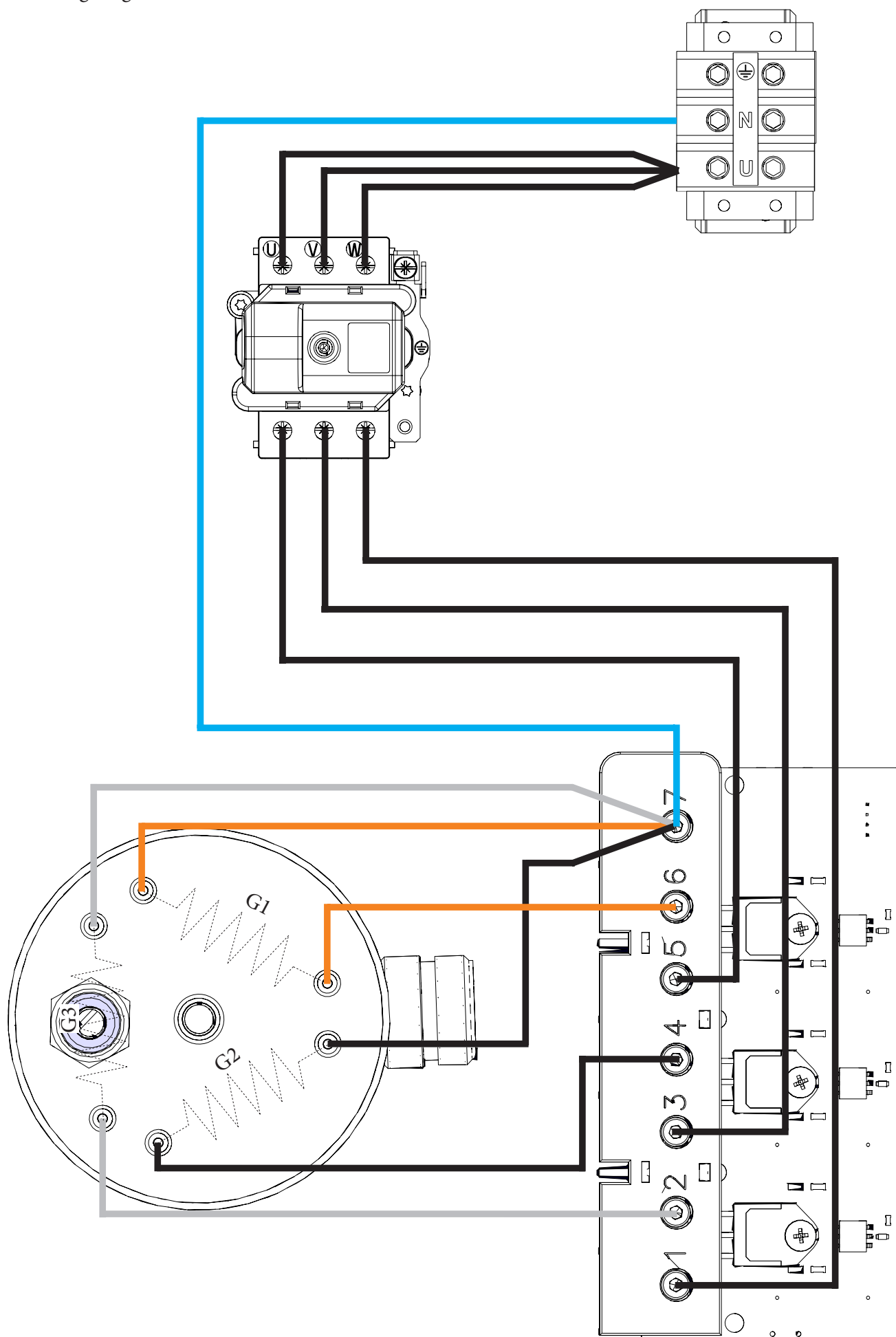
Tyj - outlet temp sensor D.H.W

BV - flow sensor D.H.W

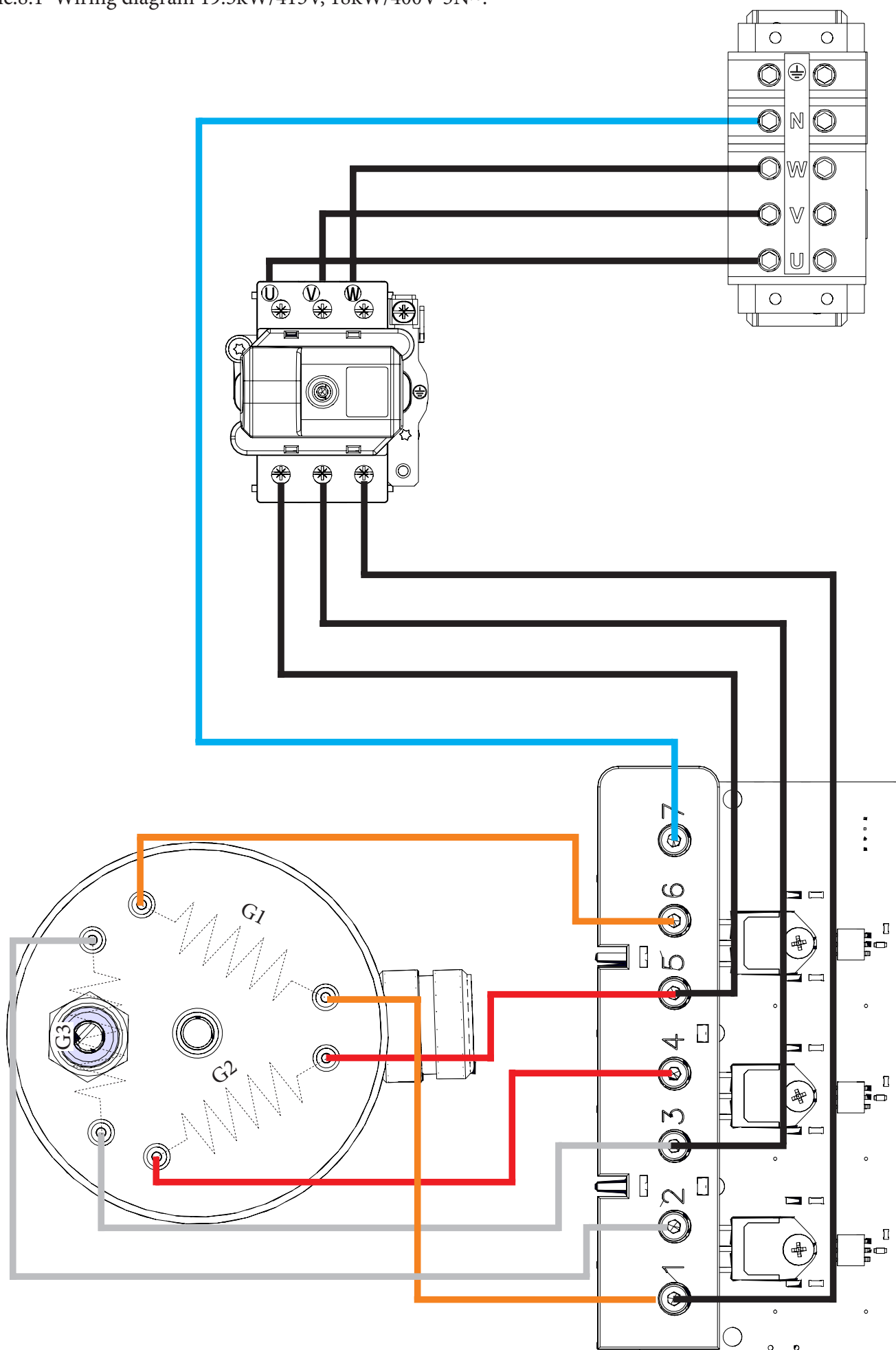
F2 - Temp. pressure safety cut-out WTC3

HG - terminal strip

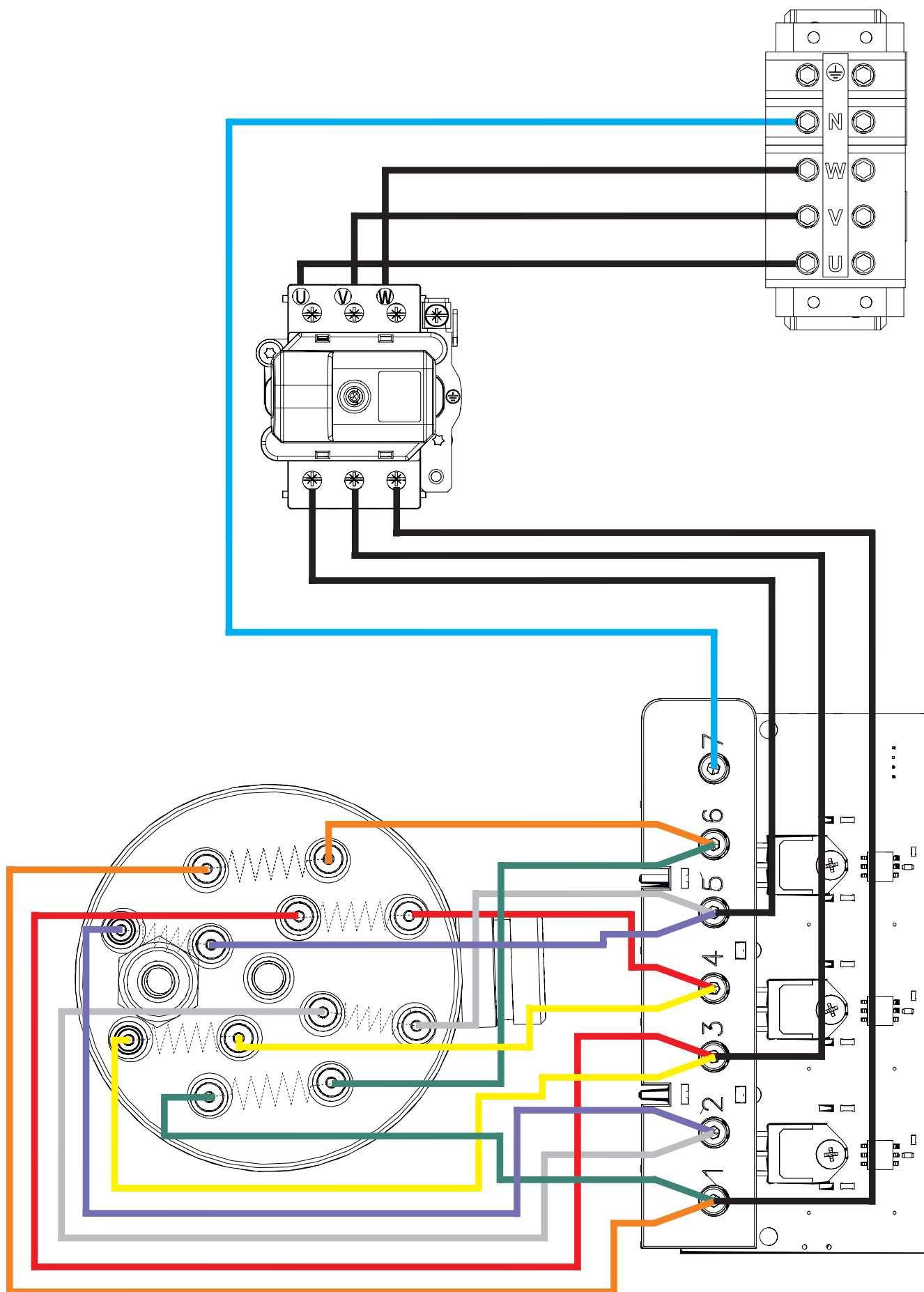
Pic.8 Wiring diagram 12kW/240V, 14.4kW/240V 1N~.



Pic.8.1 Wiring diagram 19.5kW/415V, 18kW/400V 3N~.



Pic.8.2 Wiring diagram 25.8kW/415V, 24kW/400V 3N~.



9. Spare parts list.

Tab.4. Parts list.

Pos.	Service code	Picture number	Name		Notice
1	02509	EKD.T2-03.02.00	Front cover	1	
2	02525	EKD.T2-03.00.00	Side cover		
3	02587	WM-282	Mounting hanger	1	
4	02493	EKD.T2-01.00.00/01	Heating box C.H EKD.T2 12kW 240V	1	
	02494	EKD.T2-01.00.00/02	Heating box C.H EKD.T2 14,4kW 240V	1	
	02495	EKD.T2-01.00.00/03	Heating box C.H EKD.T2 18/19,5kW 400/415V	1	
	02496	EKD.T2-13.00.00	Heating box C.H EKD.T2 24/25,8kW 400/415V	1	
5	02497	EKD.T2-02.00.00/01	Heating box D.H.W EKD.T2 12kW 240V	1	
	02498	EKD.T2-02.00.00/02	Heating box D.H.W EKD.T2 14,4kW 240V		
	02499	EKD.T2-02.00.00/03	Heating box D.H.W EKD.T2 18/19,5kW 400/415V		
	02500	EKD.T2-02.00.00/04	Heating box D.H.W EKD.T2 24/25,8kW 400/415V		
6	02501	PSK.P12/05	Control panel EKD.T2	1	
7	02502	EKD.T2-05.00.00	Power board C.H EKD.T2 (with pipe)	1	
8	02506		MSP.81 board EKD.T2	1	
9	02507	KDE2-09.02.00/04	Power board D.H.W EKD.T2 1F (240V)	1	
		KDE2-09.02.00/05	Power board D.H.W EKD.T2 3f~		
10	00945		Flow sensor	1	
11	02172		Pump Grundfoss UPM3 15-75 130 AZA	1	
12	01194		Pressure sensor	1	
13	00144		Safety valve 3 bar	1	
14	00001		Automatic air-vent	1	
15	01541		Temperature sensor	1	
16	02175		Drain funnel	2	
17	00516	WT3a-00.00.00/02	Safety cut-out WT-3	1	
18	02025	WTC3-00.00.00	Safety cut-out WTC-3	1	
19	02522	EKD.T2-09.00.00	Electrical connector EKD.T2	1	
20	01284	WM-151	Air sensor	1	
21	01282		Temperature sensor	1	
22	01283	WM-156	Staple	1	
23	01306		Check valve	1	7l green
24	00337		O-ring 3,3x2,4		
25	01299	WP-212	Top cover of heating box	1	
26	01301	WP-101	Top gasket of heating box	1	
27	01298	WP-055	Body of heating box	1	
28	01302	WP-100	Bottom gasket of heating box	1	
29	01300	WP-061	Bottom cover of heating box	1	
30	02589	KDE2-03.01.00/11	Heating element 2,0 kW 240V	6	
	02588	KDE2-03.01.00/10	Heating element 2,4 kW 240V	6	
31	00627	WM-156	O-ring 5,1x1,6		
32		PN-86/M-82144	Screw M5-5-A-Fe/Zn5		
33		WM-157	Bridge	5	
34		PN-86/M-82144	Screw M5-5-A-Fe/Zn5	24	
35		MARCOPOL	Screw UW 4,5x30 TBH/1	12	
36		WE-010	Screw connection	1	
37		01.215.0023.0	Screw TW 3,1x20 TX	1	
38	02504	EKD.T2-10.00.00	Inlet connection D.H.W. EKD.T2	1	
39	02505	EKD.T2-06.00.00	Outlet connection D.H.W. EKD.T2	1	
40	02523	EKD.T2-08.00.00/01 EKD.T2-08.00.00/01	Connection Connex D.H.W. EKD.T2 (set)	1	
41	02503	EKD.T2-11.00.00	Inlet connection C.H. EKD.T2	1	
42	02147	EKCO.M3-07.00.00	Outlet connection pipe EKCO.M3/EKD.T2	1	

9. Spare parts list.

Tab.3. Parts list.

Pos.	Service code	Picture number	Name		Notice
44	02508	EKD.T2-04.01.00	Power board connection EKD.T2	1	
45	00853		Expansion vessel 6lt G 1/2``		
46	00882	WP-054/12	Gasket 1,5x16x24 (3/4")	1	
47	01917	WP-054/10	Gasket 1,5x13x18,6	1	
48	00647		Gasket 2x30x21	1	
49	00253	WP-054/02	Gasket 1,5x14,8x8	1	
50	00255	WP-054/07	Gasket 1,5x18,2x11,7	1	
51	0	PPE2-04	Gasket	1	
9	02507	KDE2-09.02.00/04	Power board D.H.W EKD.T2	1	
10	00945		Flow sensor	1	
11	02172		Pump Grundfoss UPM3 15-75 130 AZA	1	
12	01194		Pressure sensor	1	
13	00144		Safety valve 3 bar	1	
14	00001		Automatic air-vent	1	
15	01541		Temperature sensor	1	
16	02175		Drain funnel	2	
17	00516	WT3a-00.00.00/02	Safety cut-out WT-3	1	
18	02025	WTC3-00.00.00	Safety cut-out WTC-3	1	
19	02522	EKD.T2-09.00.00	Electrical connector EKD.T2	1	
20	01284	WM-151	Air sensor	1	
21	01282		Temperature sensor	1	
22	01283	WM-156	Staple	1	
23	01306		Check valve	1	7l green
24	00337		O-ring 3,3x2,4		
25	01299	WP-212	Top cover of heating box	1	
26	01301	WP-101	Top gasket of heating box	1	
27	01298	WP-055	Body of heating box	1	
28	01302	WP-100	Bottom gasket of heating box	1	
29	01300	WP-061	Bottom cover of heating box	1	
30	02589	KDE2-03.01.00/11	Heating element 2,0 kW 240V	6	
	02588	KDE2-03.01.00/10	Heating element 2,4 kW 240V	6	
31	00627	WM-156	O-ring 5,1x1,6		
32		PN-86/M-82144	Screw M5-5-A-Fe/Zn5		
33		WM-157	Bridge	5	
34		PN-86/M-82144	Screw M5-5-A-Fe/Zn5	24	
35		MARCOPOL	Screw UW 4,5x30 TBH/1	12	
36		WE-010	Screw connection	1	
37		01.215.0023.0	Screw TW 3,1x20 TX	1	
38	02504	EKD.T2-10.00.00	Inlet connection D.H.W. EKD.T2	1	
39	02505	EKD.T2-06.00.00	Outlet connection D.H.W. EKD.T2	1	
40	02523	EKD.T2-08.00.00/01 EKD.T2-08.00.00/01	Connection Connex D.H.W. EKD.T2 (set)	1	
41	02503	EKD.T2-11.00.00	Inlet connection C.H. EKD.T2	1	
42	02147	EKCO.M3-07.00.00	Outlet connection pipe EKCO.M3/EKD.T2	1	
43	02524	EKD.T2-07.00.00	Connection Connex C.H. EKD.T2 (set)	1	
45		MARCOPOL	Screw UW 4,5x30 TBH/1	12	
46		PN-86/M-82144	Screw M5-5-A-Fe/Zn5	24	



Electric Heating Company Ltd

Unit 40, Block 5
Third Road
Blantyre Industrial Estate
Blantyre
Glasgow

G72 0UP

Tel: 01698 820533 Fax: 01698 825697

www.electric-heatingcompany.co.uk