KOSPEL

SERVICE MANUAL

EKCO.L2N
EKCO.L2Np
EKCO.L2NF

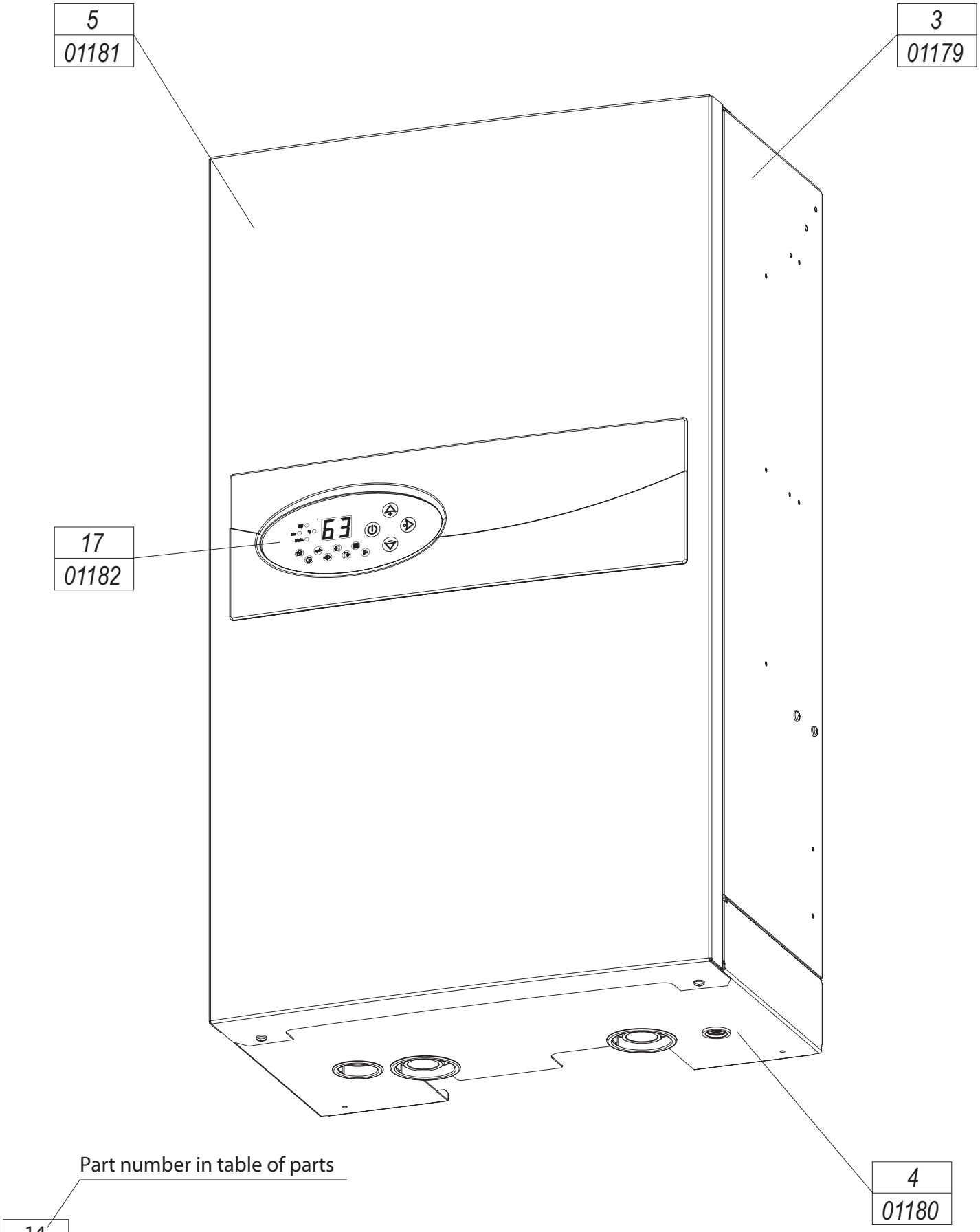
14.03.2016

KOSPEL S.A. KOSZALIN ul. Olchowa 1

Contens

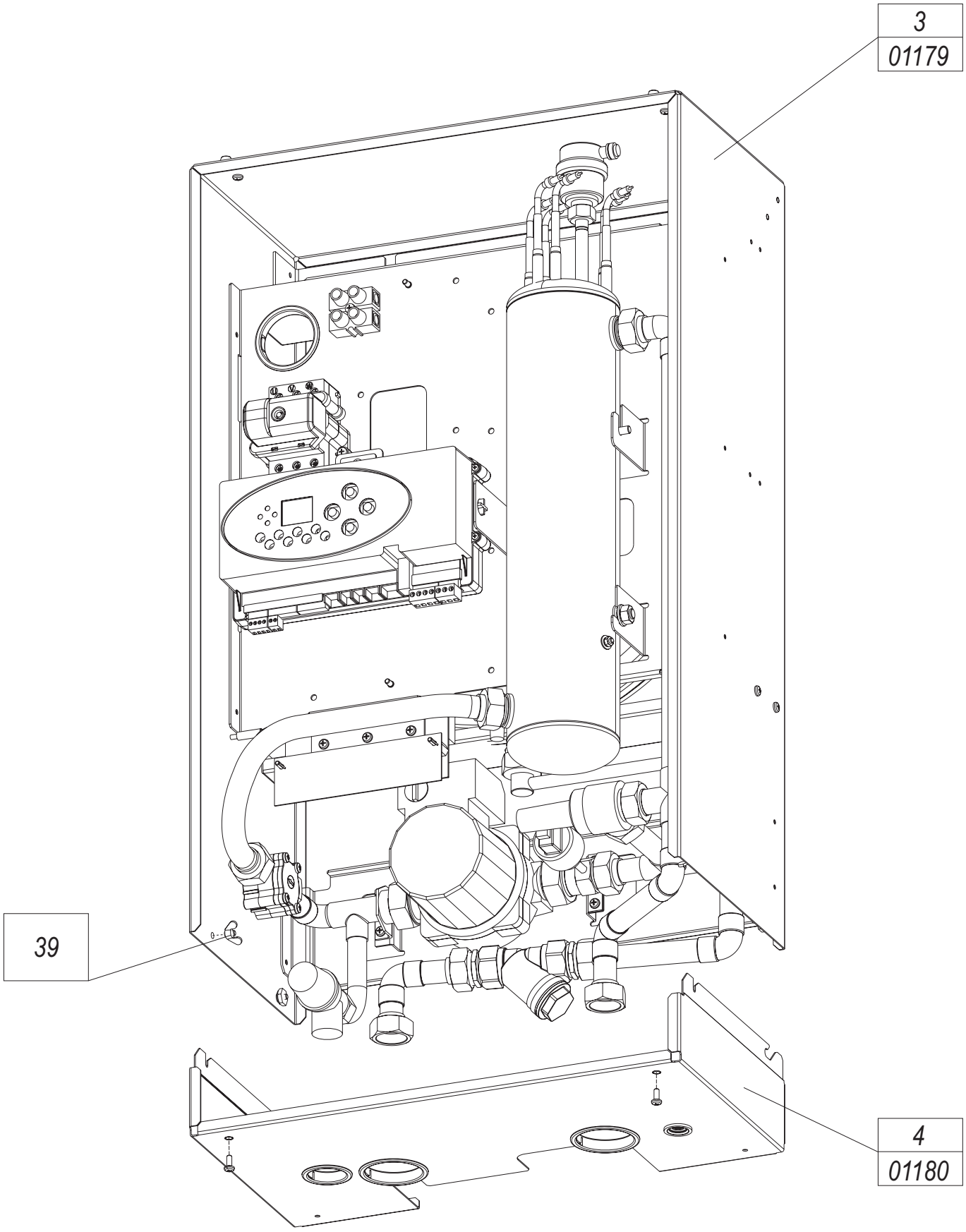
1. Exterior view of boilers.

Pic.1. Exterior view.

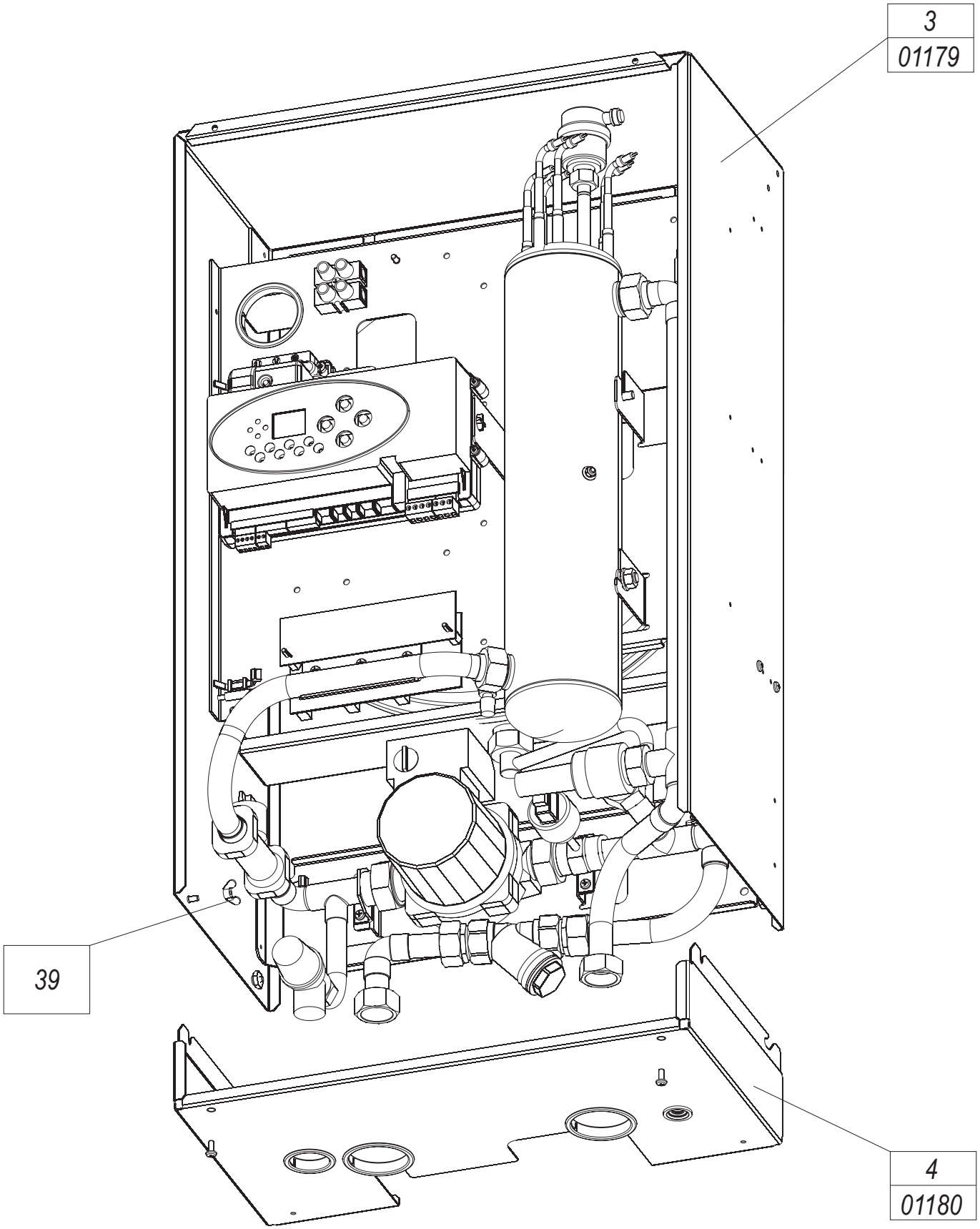


1.1. Exterior view - open case.

Pic.2. Boiler with open case (flow sensor Kospel) - date of production before 29-03-2011.

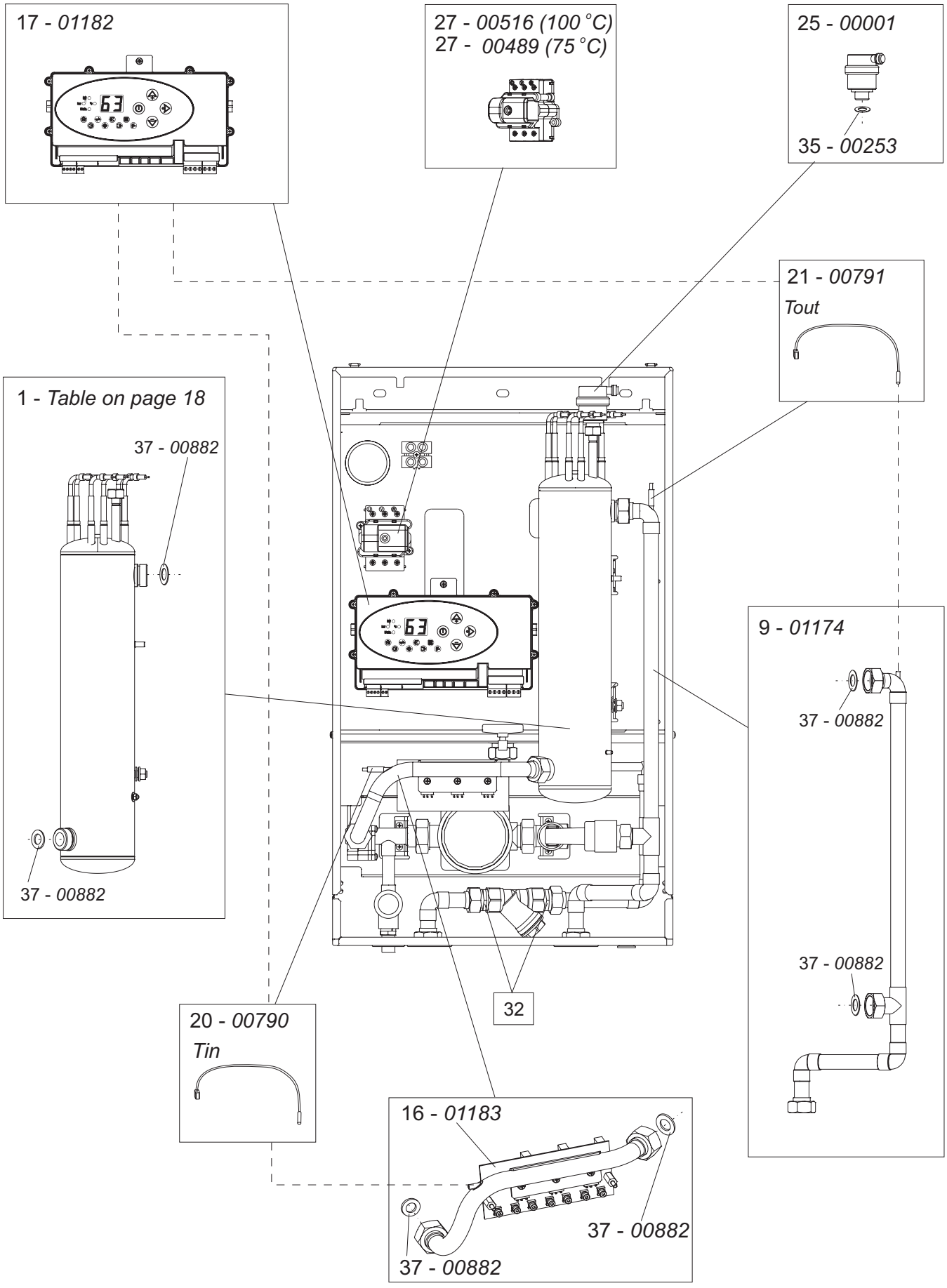


Pic.3. Boiler with open case (flow sensor Huba Control) - date of production after 29-03-2011.

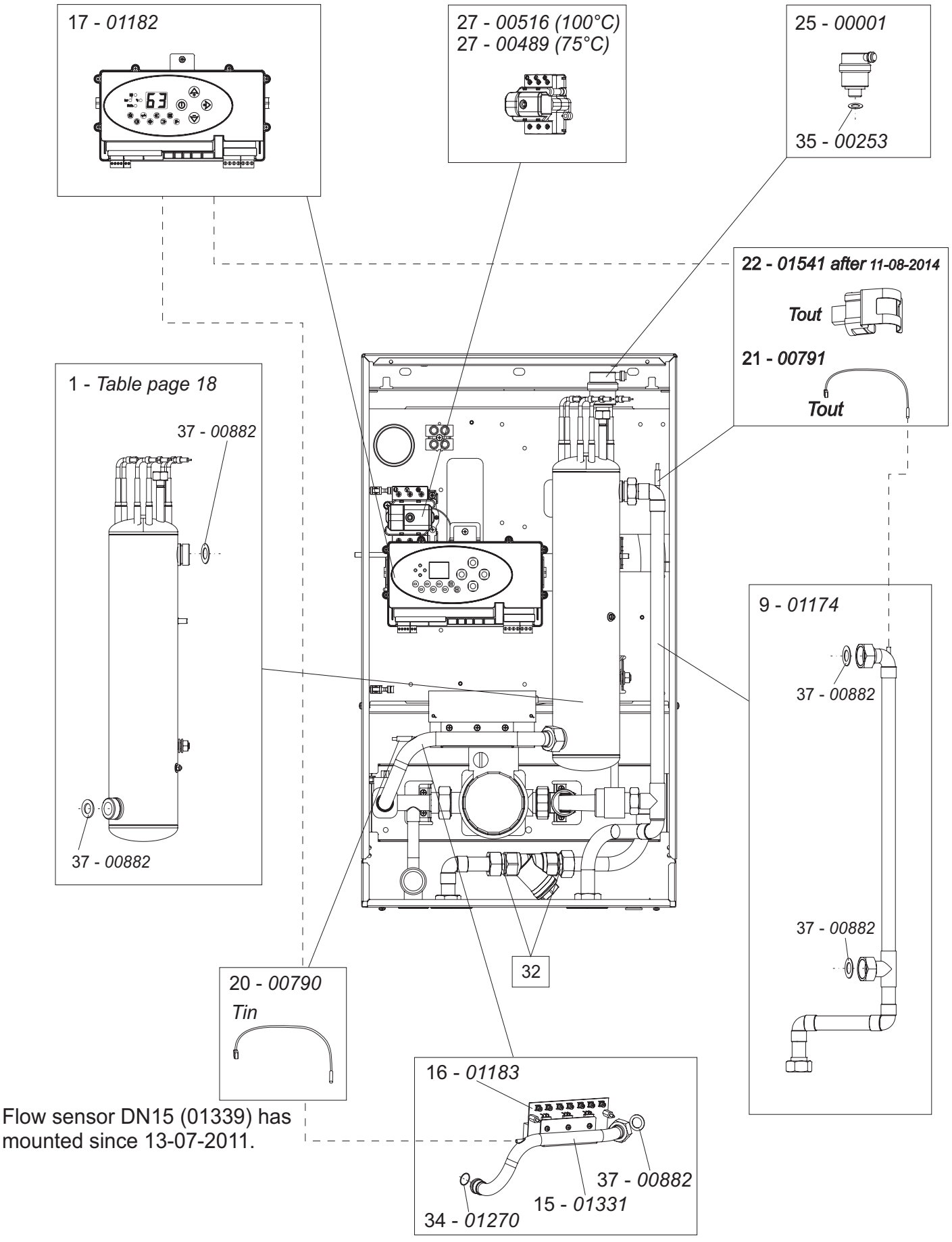


2. Construction of boilers.

Pic.4. Construction of boilers (flow sensor Kospel) - date of production before 29-03-2011.



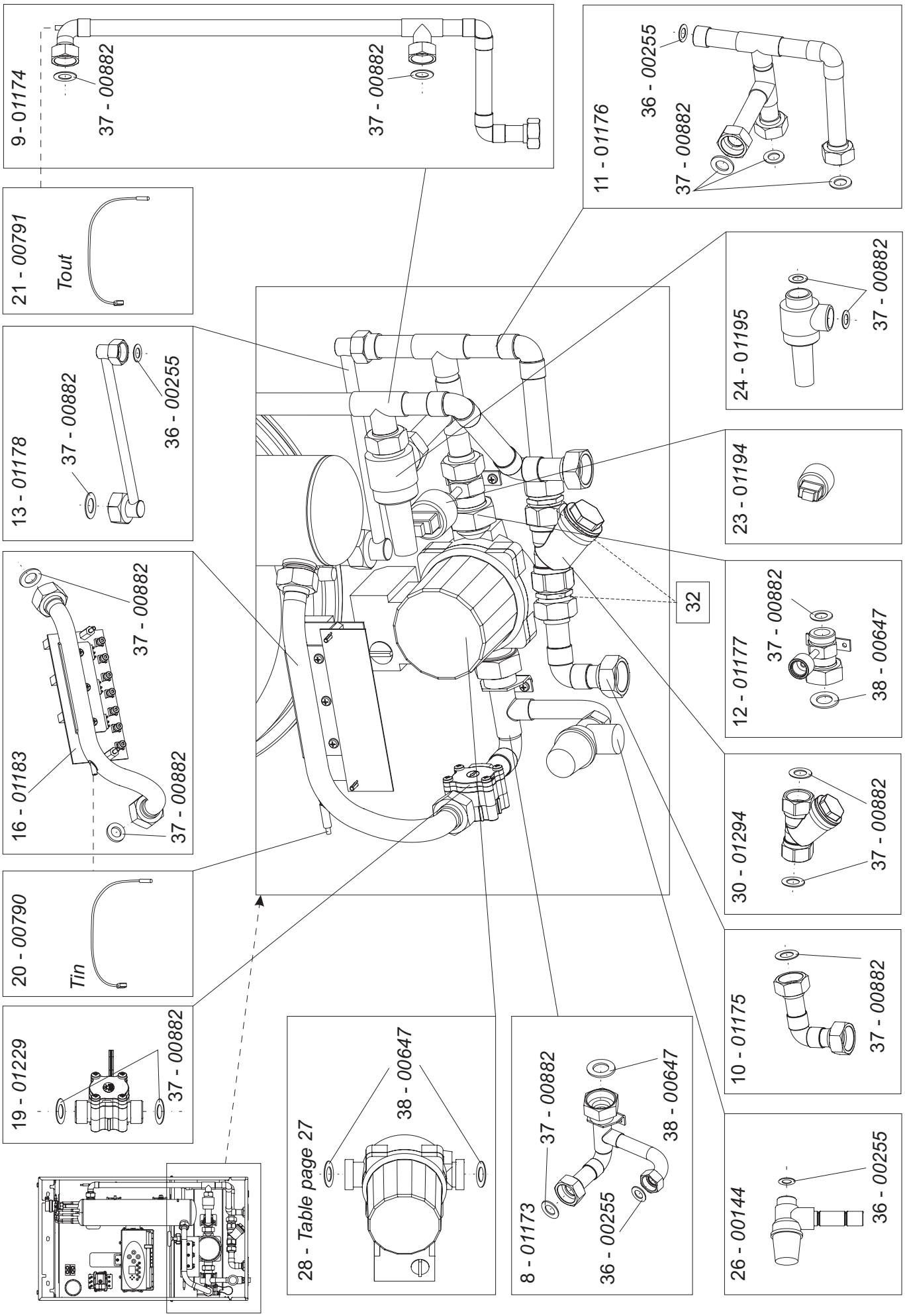
Pic.5. Construction of boilers (flow sensor Huba Control) - date of production after 29-03-2011.



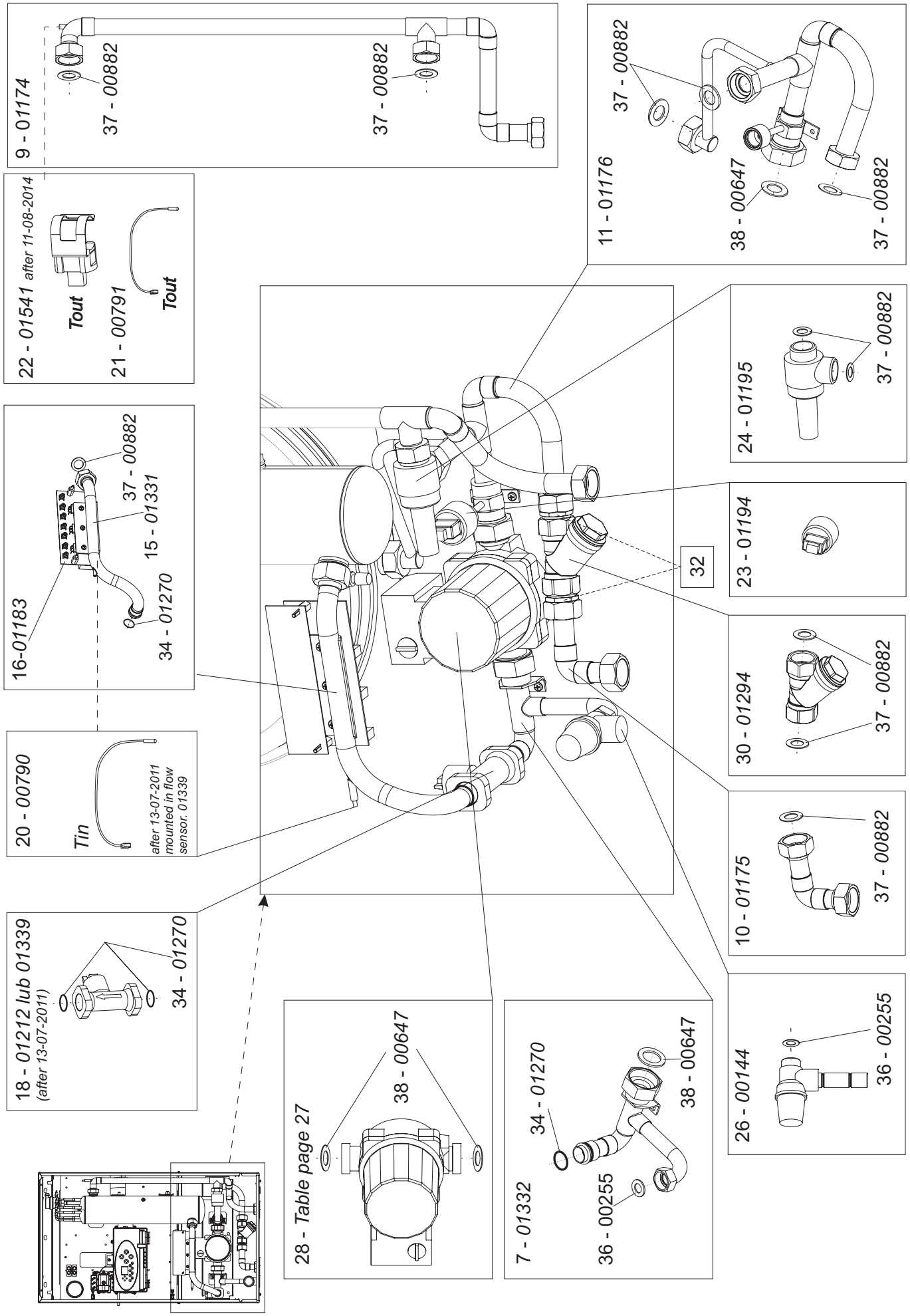
Flow sensor DN15 (01339) has mounted since 13-07-2011.

2.1. Construction of boilers - hydraulic part.

Pic.6. Hydraulic connection (flow sensor Kospel) - date of production before 29-03-2011.

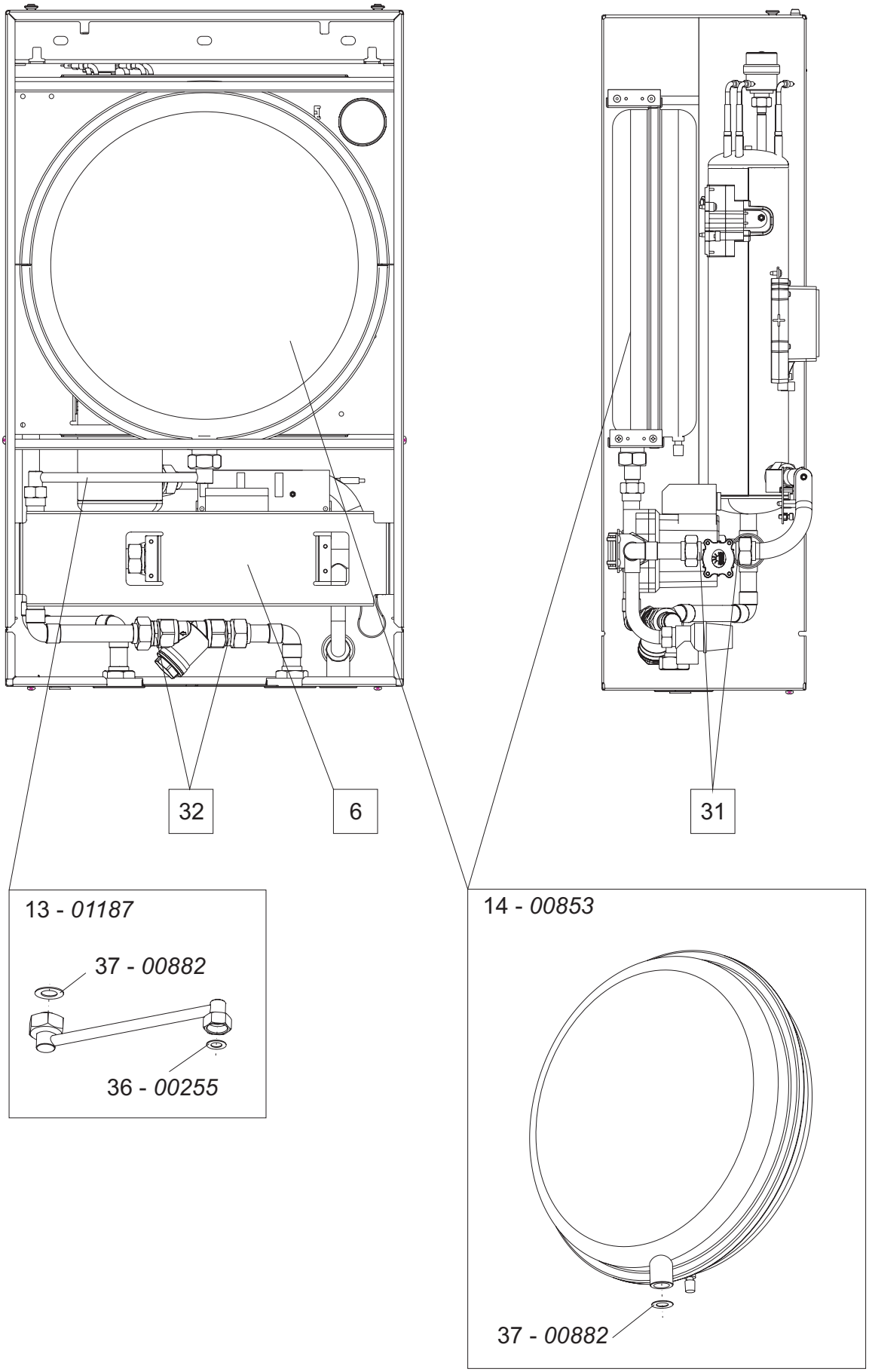


Pic.7. Hydraulic connection (flow sensor Huba Control) - date of production after 29-03-2011.

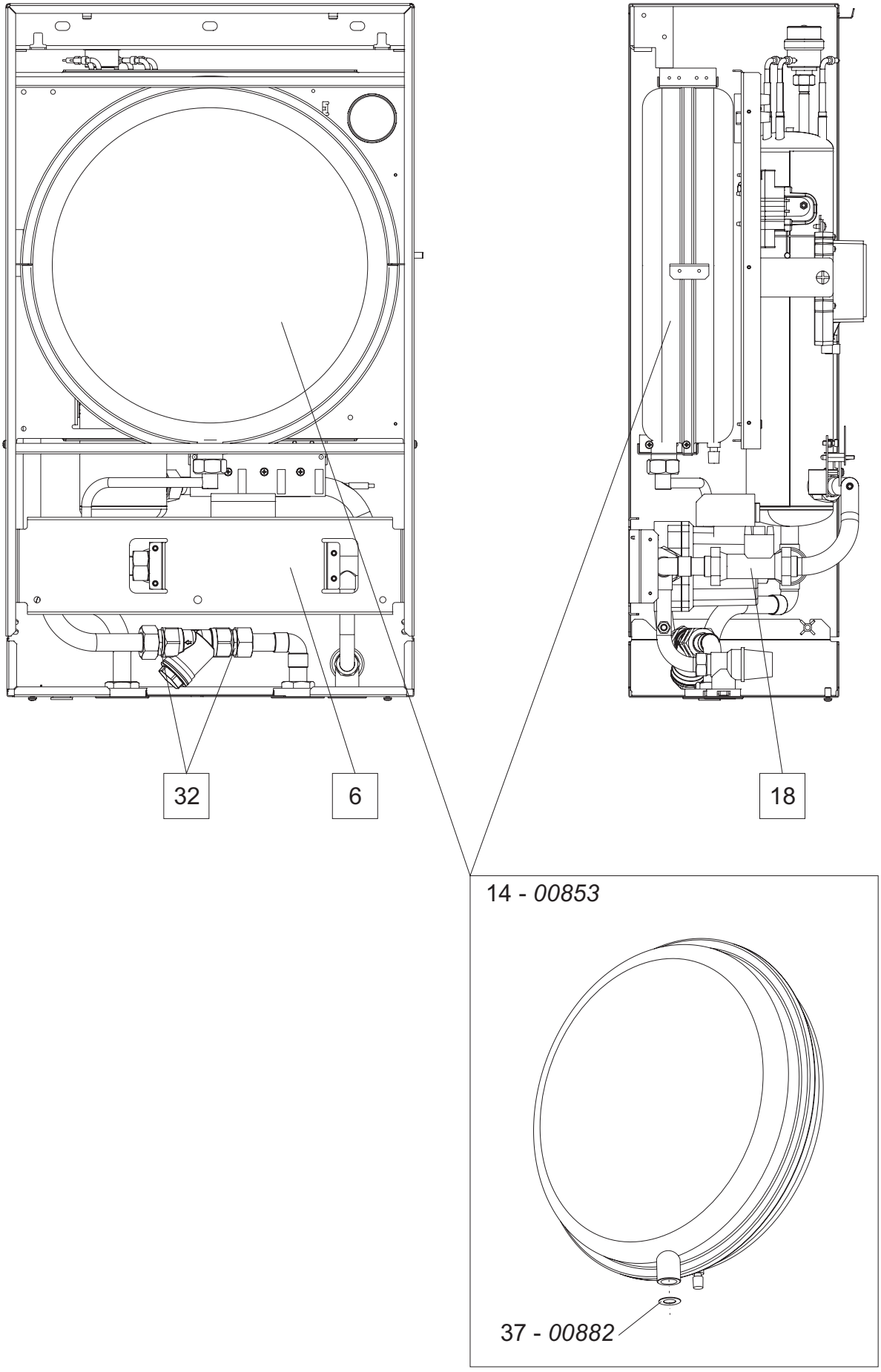


2.2. Construction of boilers - view of expansion vessel.

Pic.8. View of expansion vessel (flow sensor Kospel) - date of production before 29-03-2011.



Pic.9. View of expansion vessel (flow sensor Huba Control) - date of production after 29-03-2011.

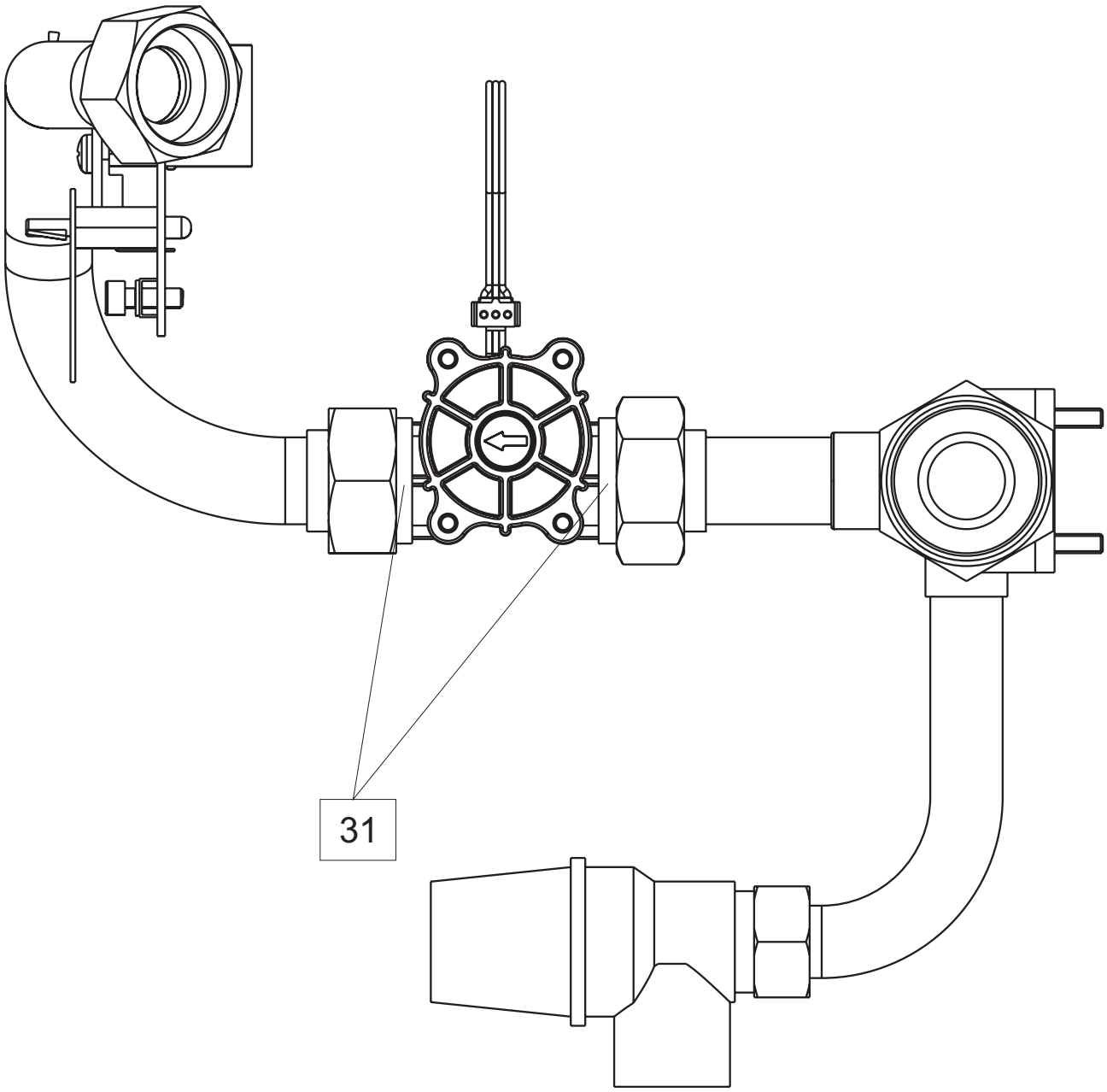


2.3. Assembly of flow sensor

Attention! The flow sensor should be mounted as shown below. Set the type of sensor in the service menu,.

Incorrect installation of the flow sensor, and the incorrect setting in the service menu can result to incorrect measurement of flow and malfunction of the boiler

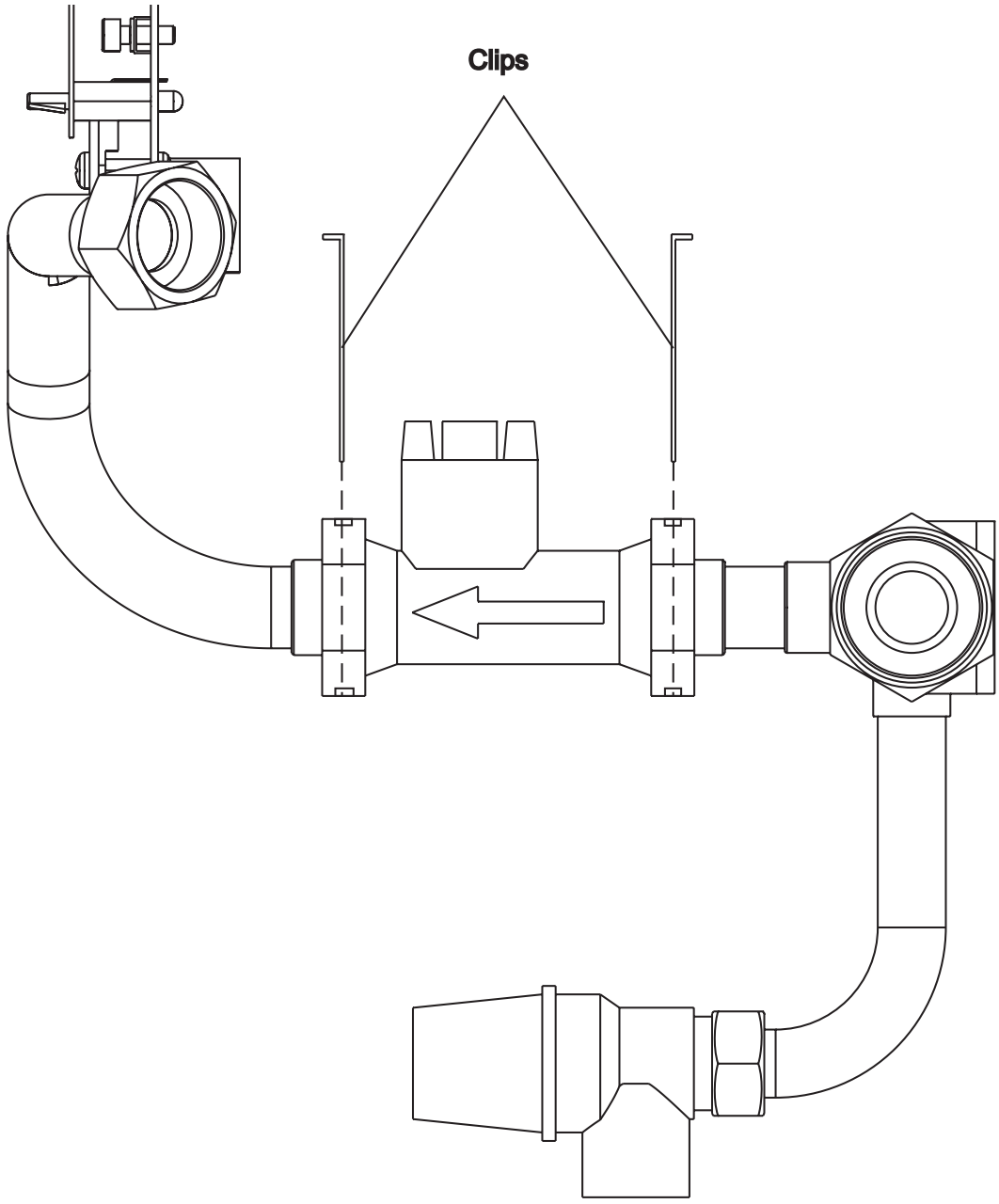
Rys.10. Assembly of flow sensor HubaControl (date of production after 29-03-2011.



Attention! The flow sensor should be mounted as shown below. Set the type of sensor in the service menu,.

Incorrect installation of the flow sensor, and the incorrect setting in the service menu can result to incorrect measurement of flow and malfunction of the boiler

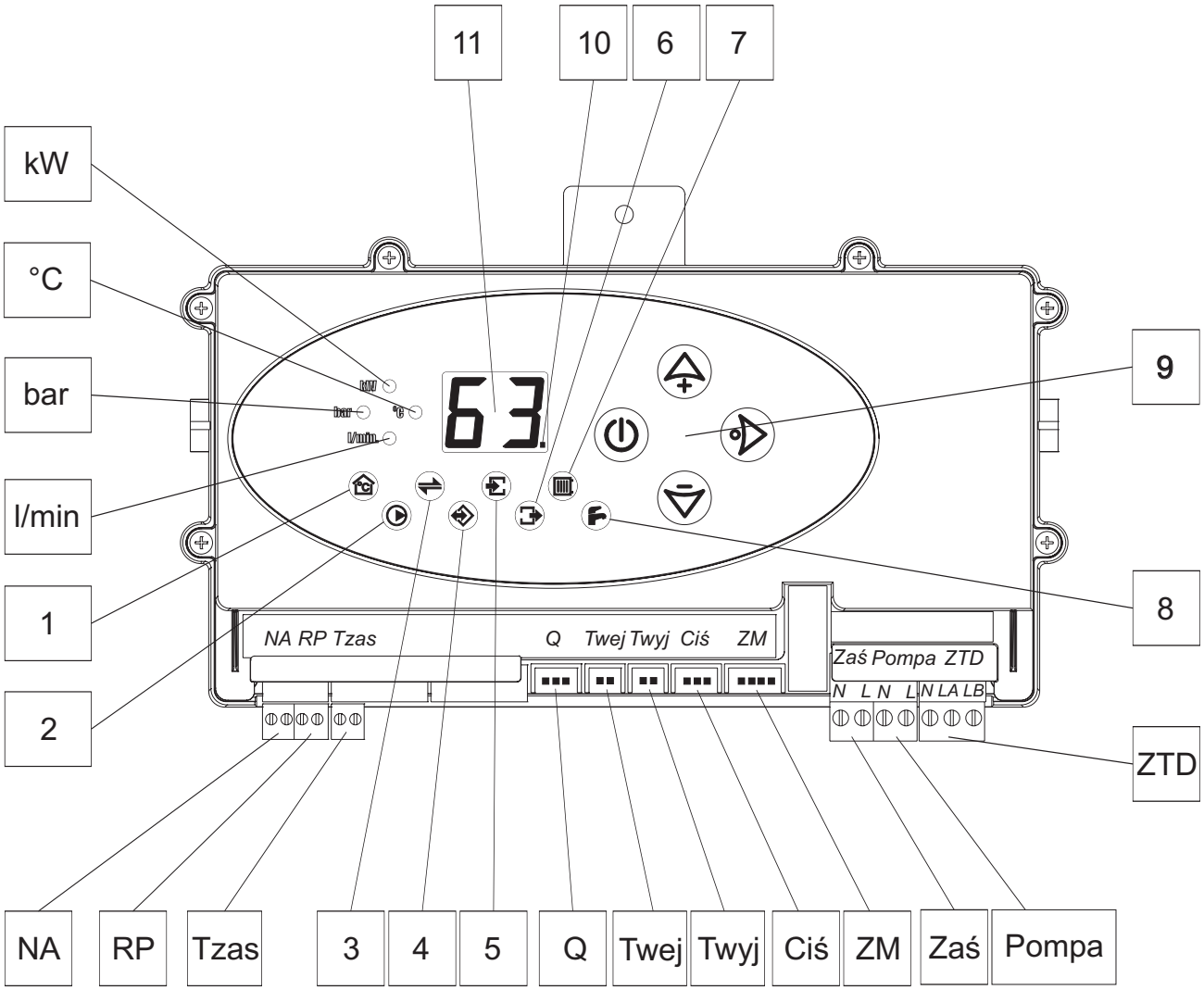
Pic.11. Assamble of flow sensor DN15 200.915101 (18) - date of production after 29-03-2011.



Attention! On 13-07-2011 was change in build construction. Flow sensor HubaControl DN15 200.915101 (18) was replaced with flow sensor HubaControl DN15 200.715111N (44). This change led to remove return temperature sensor (20) and introduction an another wire () from flow sensor to control panel (17).

3. Control panel PSK.P5.

Pic.12. Description of control panel.



3.a. User manual of control panel.

To switch on and off boiler press and hold ⏻ . When the control panel is switched to "stand-by" mode all indicators are off (only F indicator flickers).

After power supply connection to boiler, digital display shows software version and value of power. Next, boiler will start working with set parameters and required operating mode.

The digital display shows the temperature of medium (for central heating). You can check out the following working parameters by pressing the button ⏩. A display shows (in sequence): medium temp. setting (D and M indicators are on), inlet temp. (D and K indicators are on), outlet temp. (D and L indicators are on), medium flow rate through the boiler (B indicator is on), installation pressure (A indicator is on), power with which the boiler currently heats (C indicator is on).

3.b. Description of control panel..

1 - (🏠) - indicator of room thermostat (RP), superior devices (NA) and heating activity.
- off- the required temperature has been reached or RP entry is open (boiler doesn't heat)
- on- room thermostat allows the boiler to heat.
- flickers- master appliance doesn't allow to heat (NA entry is open)

2 - (▶) - indicator of pump and flow activity.
- off - pump is inactive.
- on- pump is active.
- flickers- pump is lack of flow or insufficient flow rate of medium (less than 5l/min), a heating elements are disabled.

3 - ( ) - inactive indicator.

4 - ( ) - inactive indicator.

5 - ( ) - Return temperature indicator.

- flickers- sensor failure.

6 - ( ) - flow temperature indicator.

- flickers- sensor failure.

7 - ( ) - Indicator of boiler activity (for central heating)
- red light- a boiler heats the medium.
- green light- proper temp. has been reached.
- off- boiler operates in summer mode.

8 - ( ) - Indicator of boiler activity (for hot water cylinder)
- red light- , boiler is heating DHW.
- green light, proper. temp. has been reached
- off or flickers, DHW mode is disabled or time-blocked

9 - Control buttons.

10 - stand-by indicator

- flickers- boiler operates in stand-by mode

11 - 7-segment display.

kW, ***°C***, ***bar***, ***l/min*** - Indicators showing which parameter is displayed on digital display (in order boiler power, temperature, system pressure, flow of the medium).

NA - **free-voltage entry,** master appliance connection point, Work without superior device need use a jumper.

RP - **free-voltage entry**, room thermostat connection point. Work without room thermostat need to use a jumper.

Tzas - DHW temperature sensor or DHW thermostat connection. Set type of sensor in service menu or take off without connecting.

Q - flow sensor connection point.

Tin - return temperature connection point.

Tout - flow temperature connection point.

Ciś - pressure sensor connection point.

ZM - power board connection point.

Zaś - Supply connection from power board (***N*** - blue, ***L*** - red)

Pompa - circulate pump connection (***N*** - blue, ***L*** - red)

ZTD - three-way valve connection Honeywell VC6012(work with DHW cylinder) (N – blue, LA- red, LB- brown)

3.c. Temperature settings (central heating).

Press until only indicator is illuminated. Press or until the desired temperature setting is achieved. To switch to the main view press button. A controller will switch over to the main view, if you don't use a buttons for 1 min.

3.d. DHW cylinder settings.

Settings of water temperature in the DHW system with thermostat are set on thermostat.
We can set water temperature on boiler settings only on DHW system with sensor WE009

Press until only indicator is illuminated. The LED display shows temperature of water in DHW cylinder. Press or until the desired temperature setting is achieved. Min. temperature is 30 C. Max temperature depends on the return temperature and is less than for 5 degrees.Set “0” value to disable heating of DHW cylinder (indicator is blinking) .

Press once button when control panel shows overall view to set summer mode.

3.e. Service menu:

For service settings switch the control panel to standby mode (hold button for 3 seconds) then hold the and press . To select parameter press , buttons or enable you to change the value, consecutively:

1. Boiler power (value on digital display 11). Value of this parameter must be same like a power of heating box.
2. Working mode of pump
   „Pa” – automatic work mode
   „Pr” – manual, continous work mode
3.. Number of active heating elements
   „G3” – three heating elements
   „G2” – two heating elements
   „G1” – one heating element
4. Boiler work mode
   „no” – normal mode for central heating (temperature range ***20 – 85°C)***
   „Po” –floor heating mode (temperature range ***20 – 60°***C)
5. Load temperature of DHW cylinder (value on digital display 11, indicators ***°C*** and are illuminated)

- temperature range ***50 – 85°C***.
- Value ***"0"*** - DHW cylinder disable

Set ***“0”*** when boiler works without DHW cylinder.

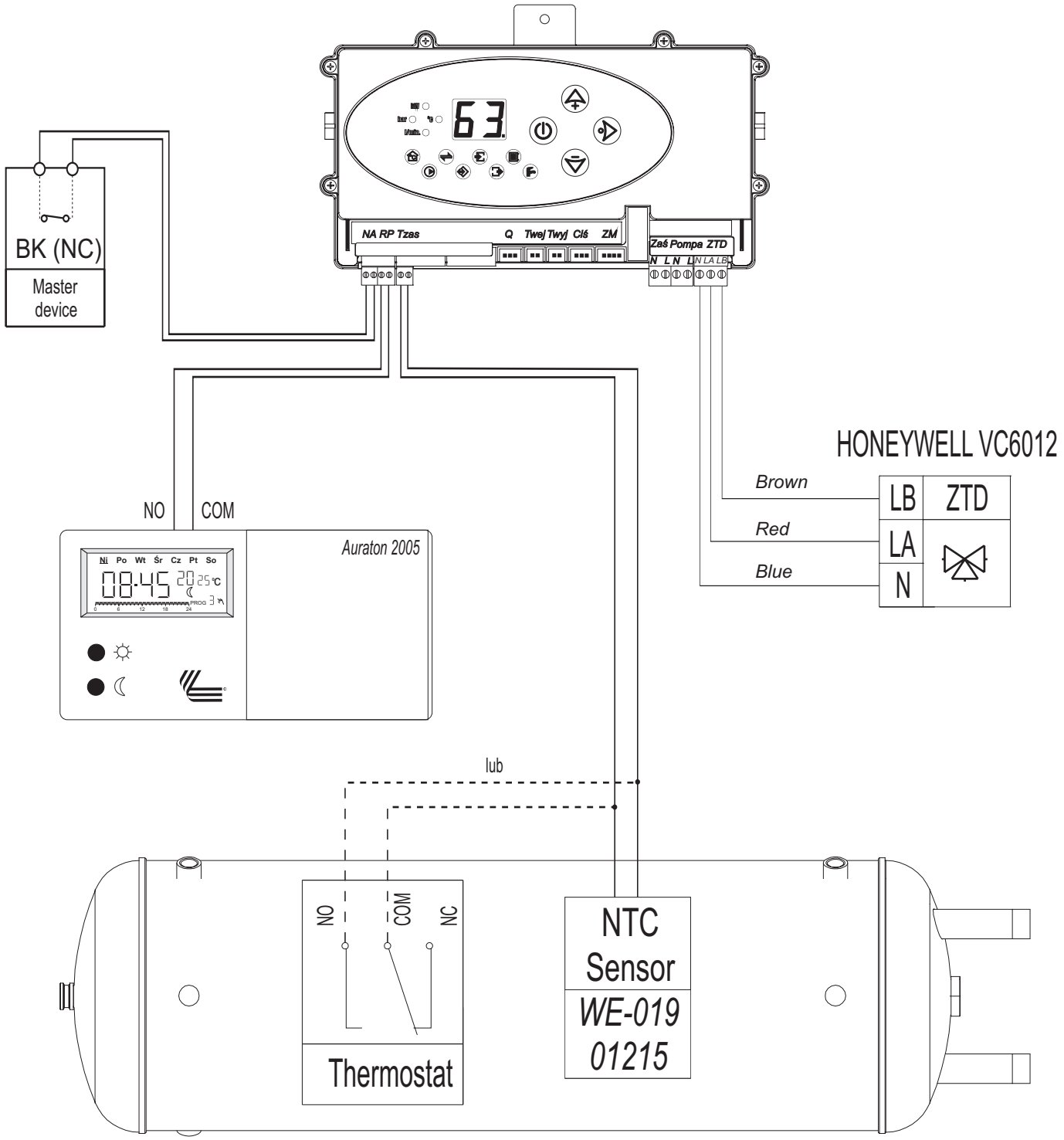
6.Type of DHW sensor.
   ti – temperature sensor NTC (WE-019)
   tE – contact thermostat
7. Pressure lock function (bar indicator on)
   „***0***” – inactive function
   „***1***” - active function - heat and pump will be blocked below pressure 0,6 bar
8. Boiler work mode
   „***A0***” – single mode
   „***A1***” do „***A9***” – cascade mode (Each boiler must have a different address „***A***”
9. Type of flow sensor (l/min indicator on)
   „***1***” - Flow sensor HubaControl
   „***2***” - Flow sensor Kospel
10. Work-time counter (value displayed on indicator 11) .

Counter display shows figures (without leading zeros) starting from the most important (interrupt every 1/2 second), the display will turn off (for 2 seconds) when the least important figure is shown. Example if display displayed number in order 1..2..9.....1..2..9. That mean boiler has been working for 129 hours.

Press and hold the @ button to exit and record the settings .

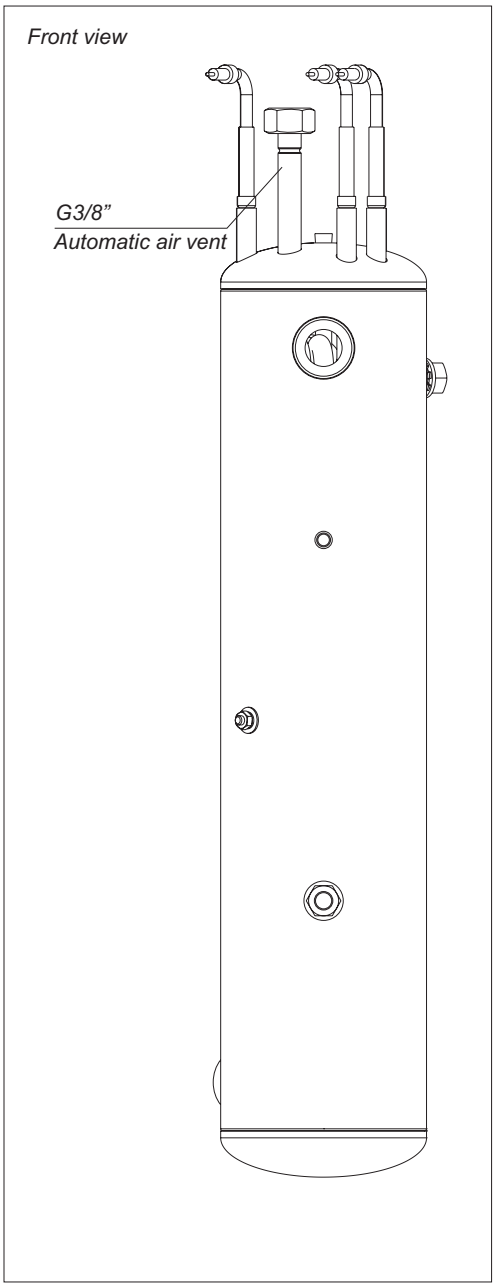
3.1. Connecting of external devices to the control panel PSK.P5.

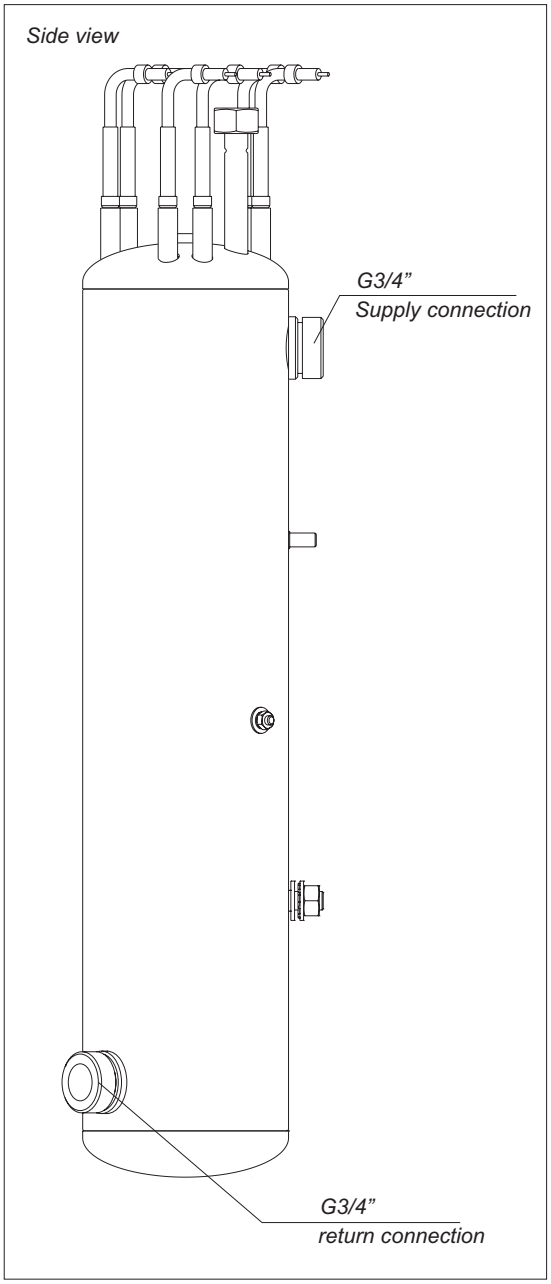
Pic.13. Connecting of external devices.



4. Heating box.

Pic.14.Heating box.





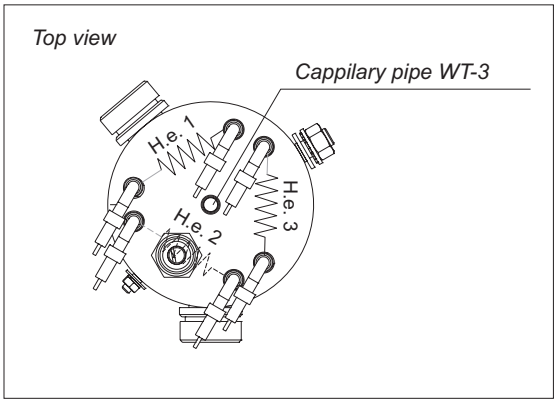
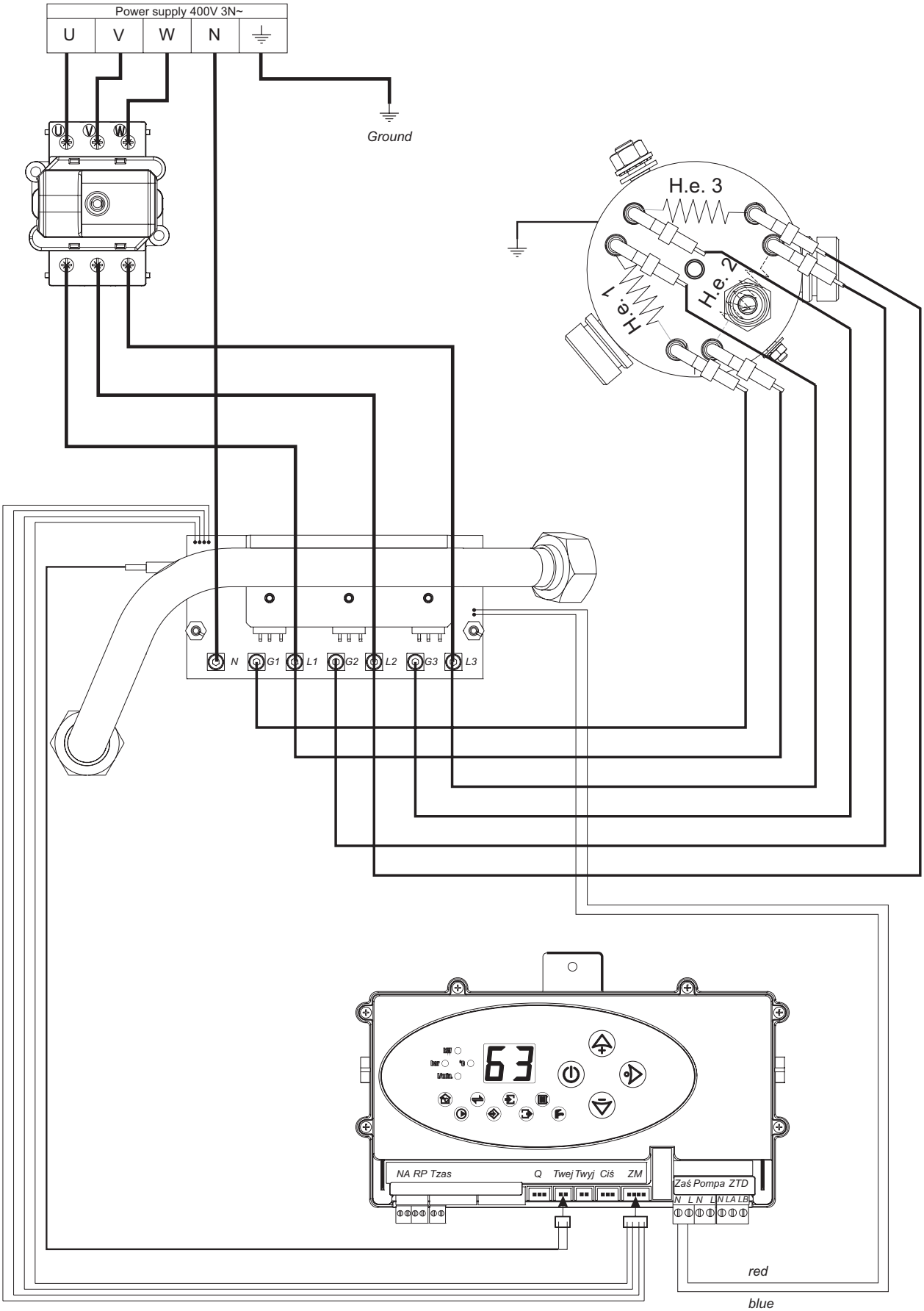


Table 1. Electric parameters of heating box.

BOILER TYPE	SERVICE CODE	HEATING BOX TYPE	Amount of heating elements	R_{el} Heating elements resistance[Ohm]	I_f Current passing through the heating element[A]	U Working voltage of the heating elements [V]
EKCO.L2NF-4	01184	wyk.001	3	37,1 ÷ 40,9	5,6 ÷ 6,2	230
EKCO.L2NF-6	01186	wyk.003	3	24,8 ÷ 28,6	8,0 ÷ 9,3	
EKCO.L2N-4	01184	wyk.001	3	37,1 ÷ 40,9	5,6 ÷ 6,2	
EKCO.L2N-6	01186	wyk.003	3	24,8 ÷ 28,6	8,0 ÷ 9,3	
EKCO.L2N-8	01642	wyk.010	3	18,6 ÷ 20,4	11,3 ÷ 12,4	
EKCO.L2N-12	01184	wyk.001	3	37,1 ÷ 40,9	9,8 ÷ 10,8	400
EKCO.L2N-15	01185	wyk.002	3	29,7 ÷ 32,7	12,2 ÷ 13,5	
EkCO.L2N-18	01186	wyk.003	3	24,8 ÷ 28,6	14,0 ÷ 16,1	
EKCO.LN2-21	01187	wyk.004	3	21,2 ÷ 23,4	17,1 ÷ 18,9	
EKCO.L2N-24	01188	copper	6	18,6 ÷ 20,4	19,6 ÷ 21,5	

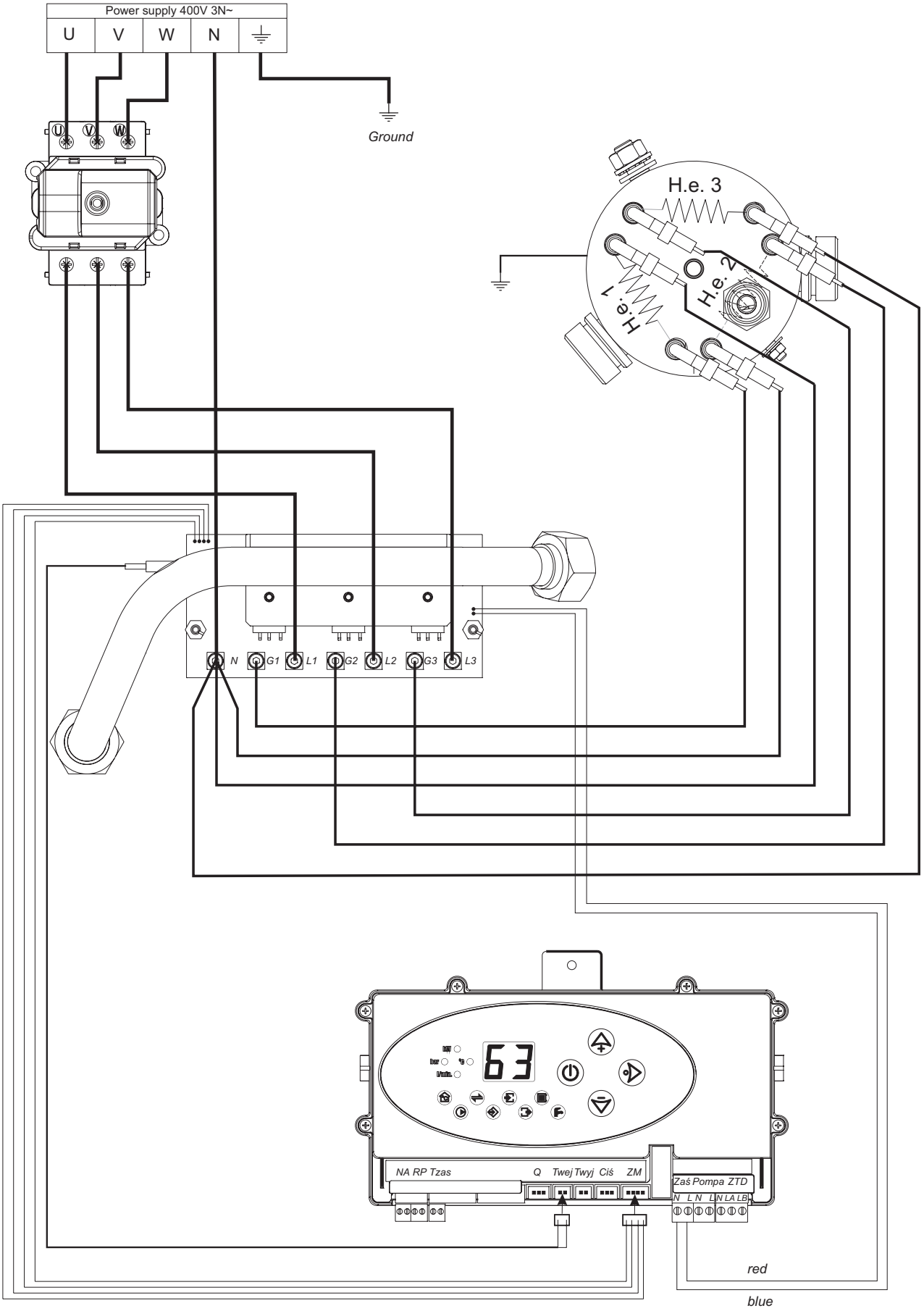
5.1. Power board - connection 400V 3N~ 12-24 kW (wyk I).

Pic.15. Power board connection 12-24 kW 3N~.



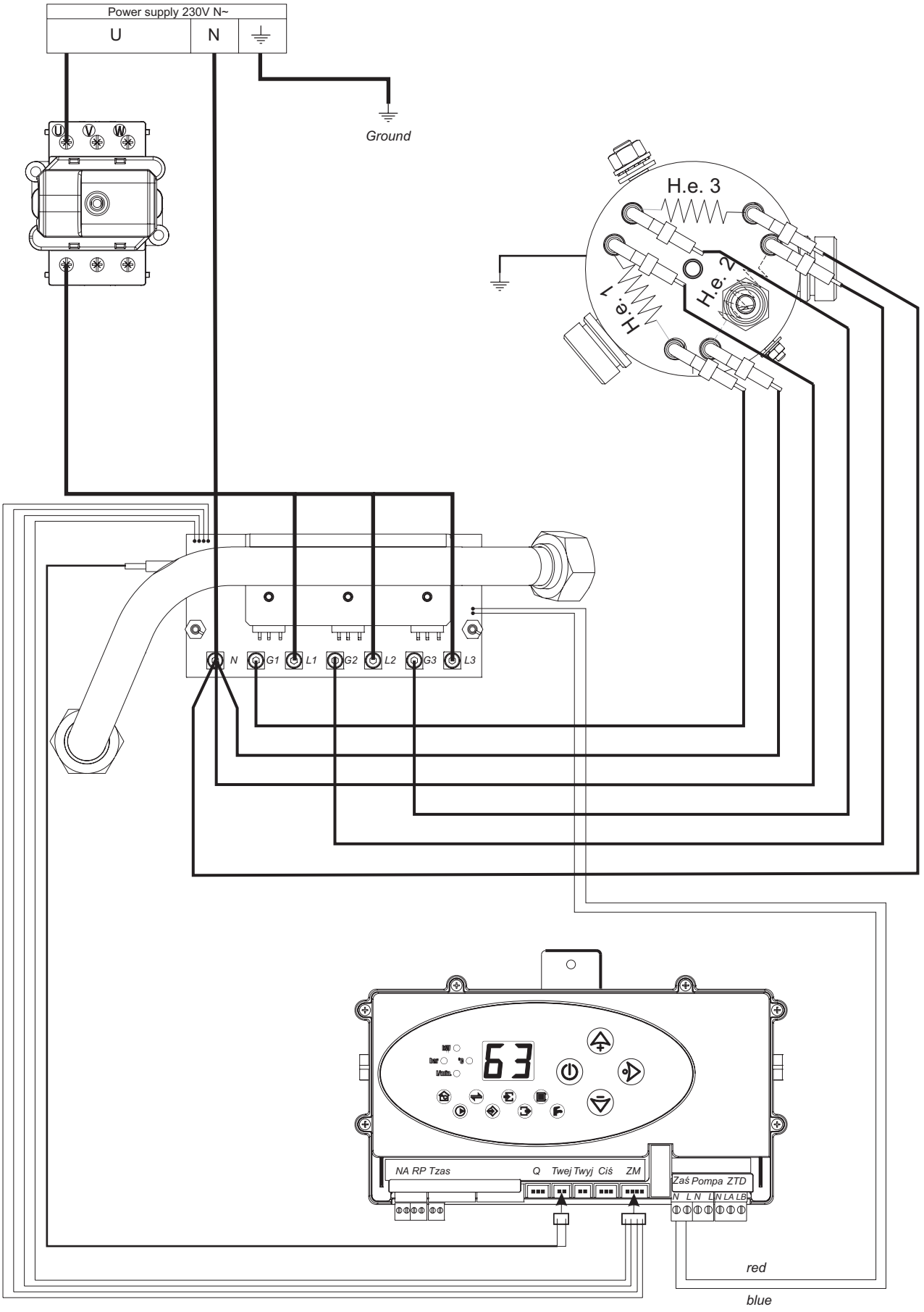
5.2. Power board - connection 400V 3N~ 4-8 kW (wyk II).

Pic.16. Power board connection 4-8 kW 3N~.



5.3. Power board - connection 230V N~ 4-8 kW (wyk III) ver.1.

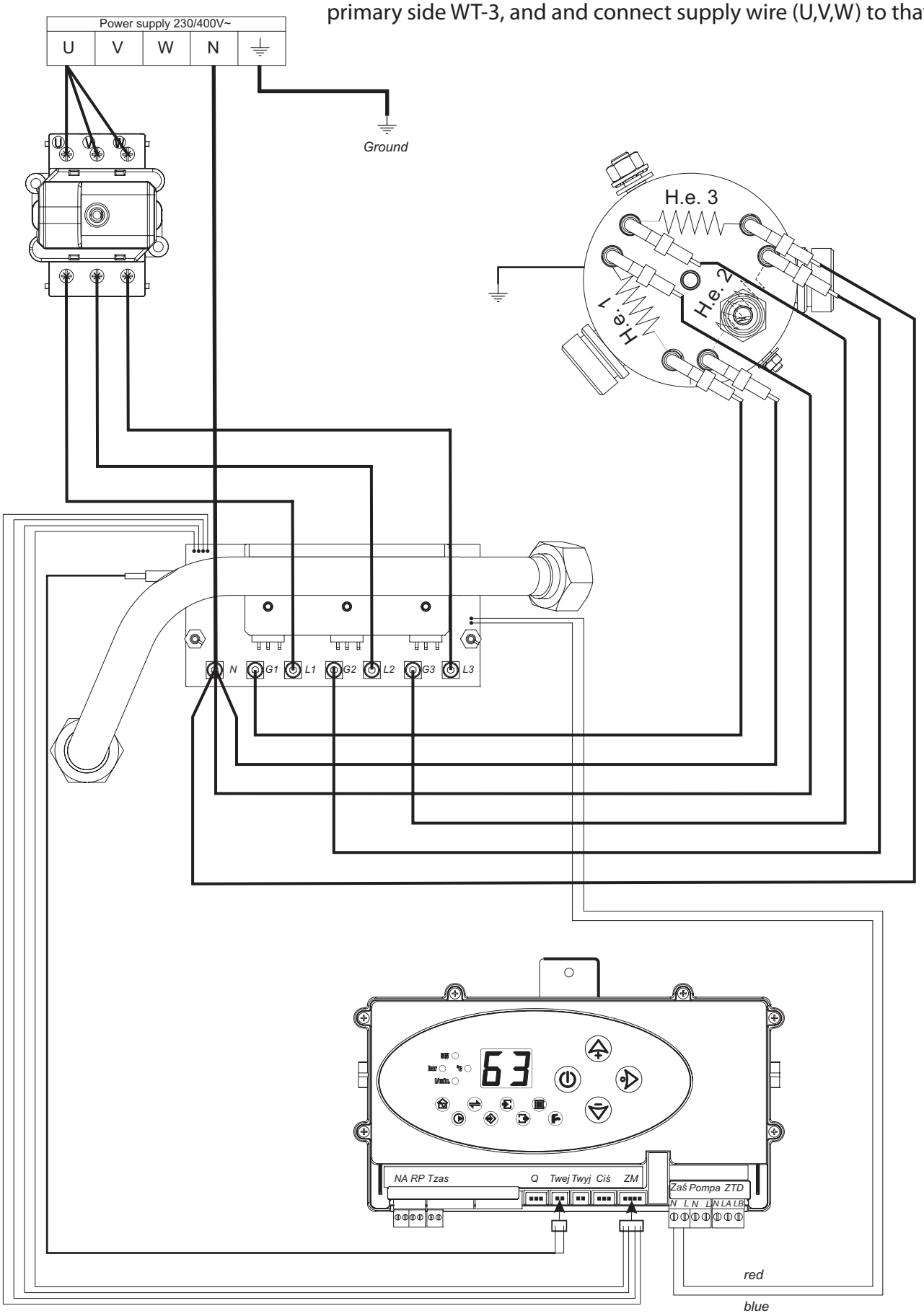
Pic.17.Power board connection 4-8 kW N~ ver.1 (date of production before 17-11-2010).



5.4. Power board - universal connection ver.2.

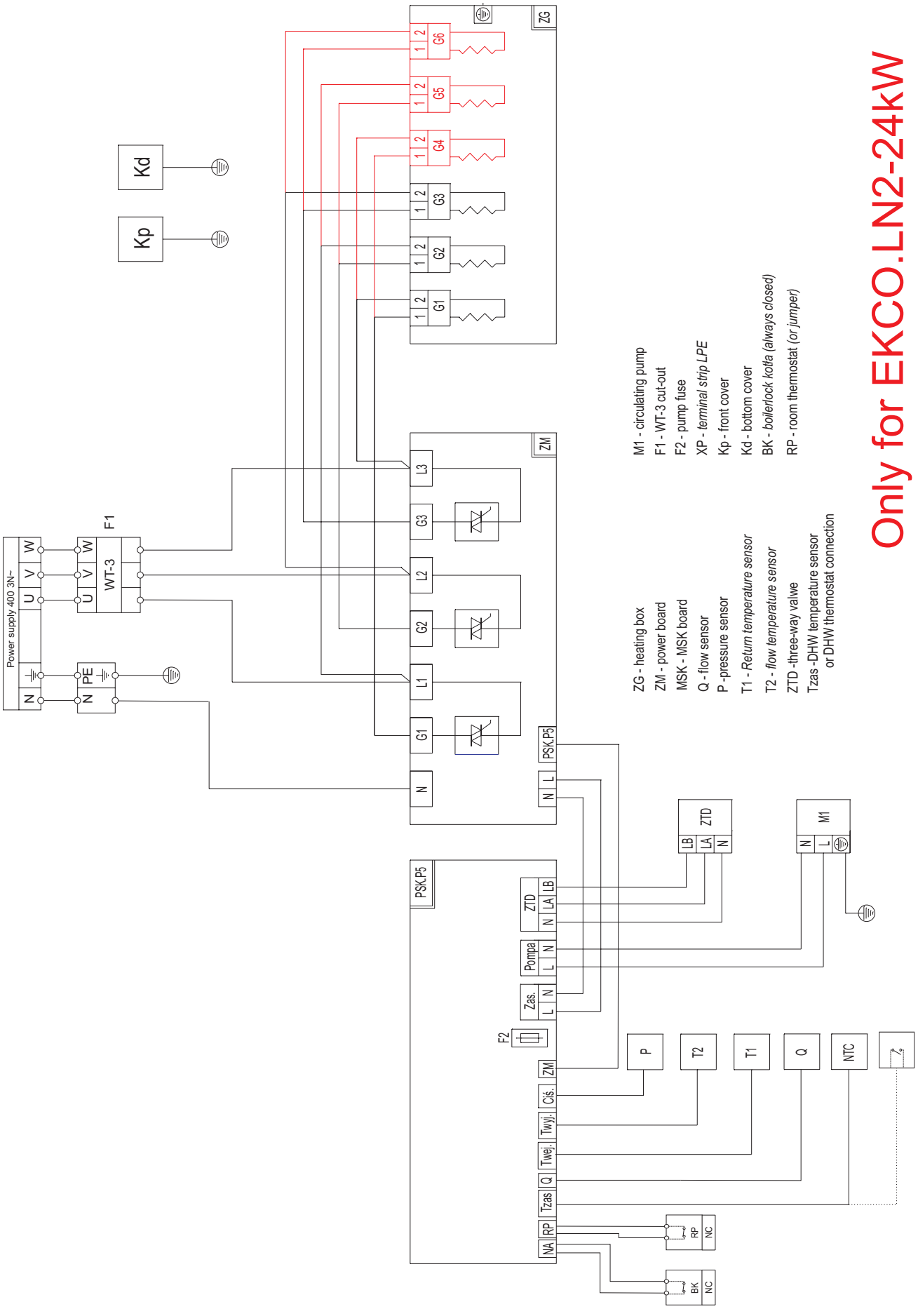
Pic.18. Power board connection 4-14,4 kW 230/400V~ ver.2 (date of production after17-11-2010).

The second version allows you to configure the installation for one or three-phase power. Boiler is configurated for a single phase by factory. To connect boiler to three-phase installation should be removed wire on primary side WT-3, and and connect supply wire (U,V,W) to that place.



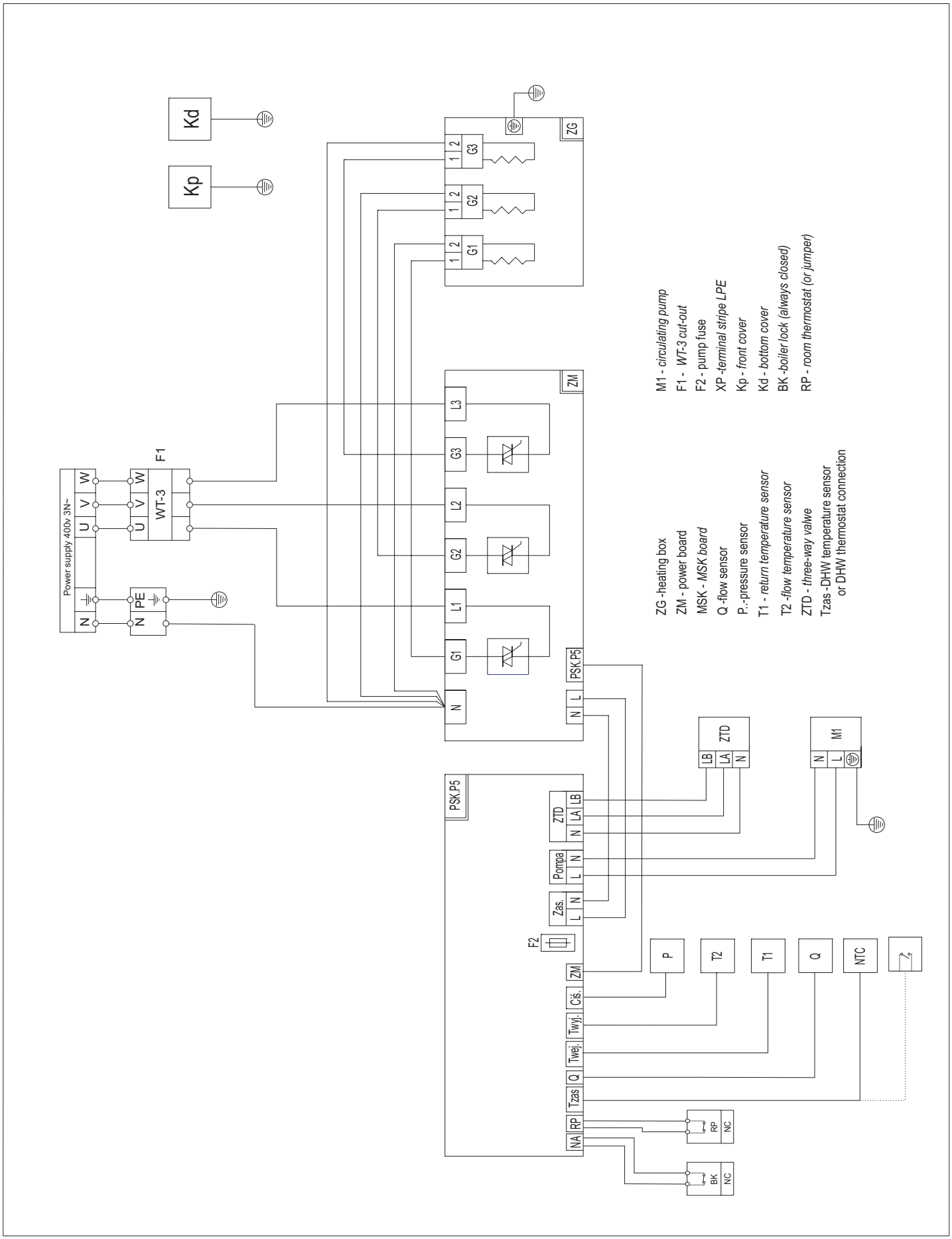
6.1. Wiring diagram - 400V 3N~ 12-24kW (wyk. I).

Pic.19. Electric diagram 12-24 kW 3N~.



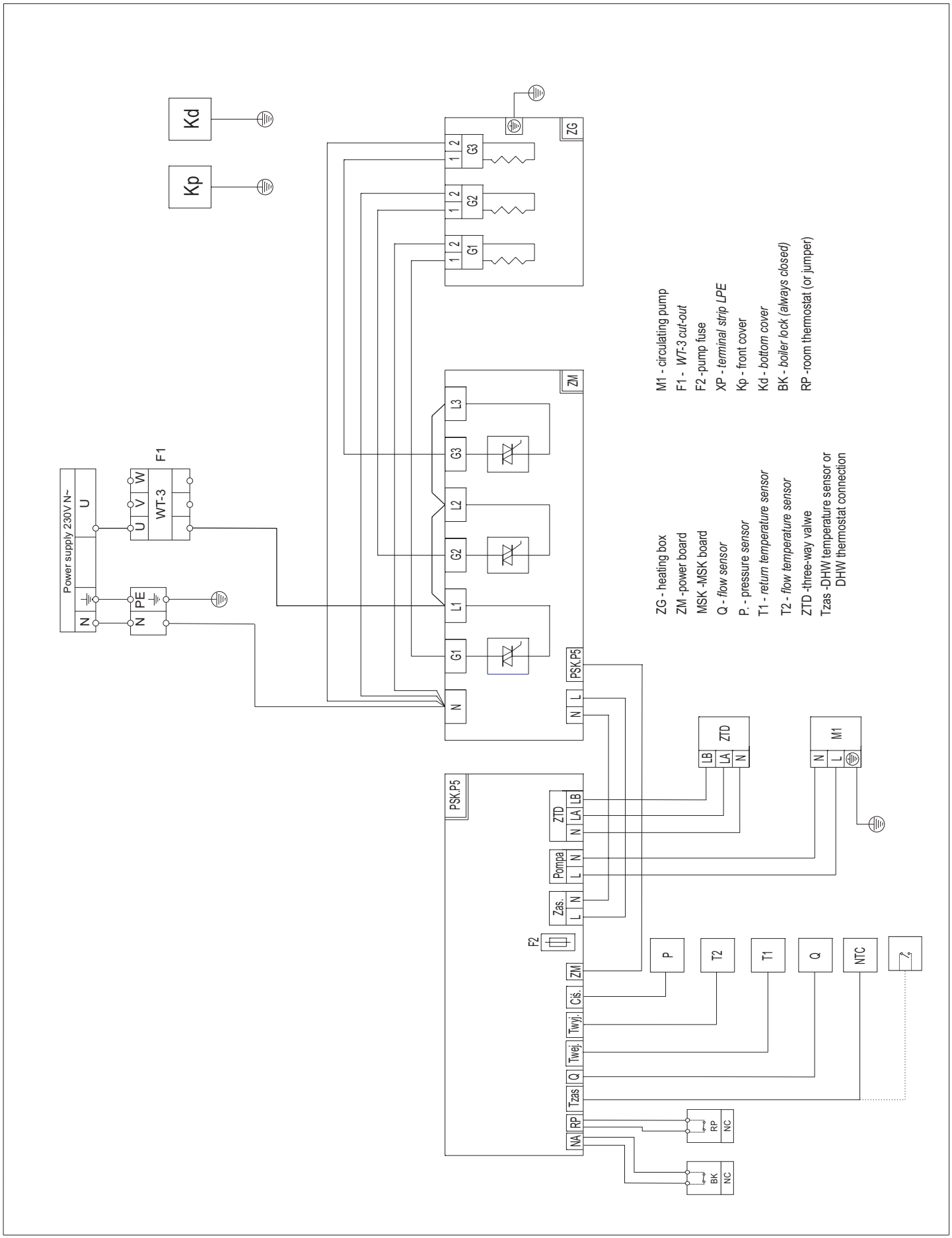
6.2. Wiring diagram - 400V 3N~ 4-8kW (ver. II).

Pic.20. Electric diagram 4-8 kW 3N~.



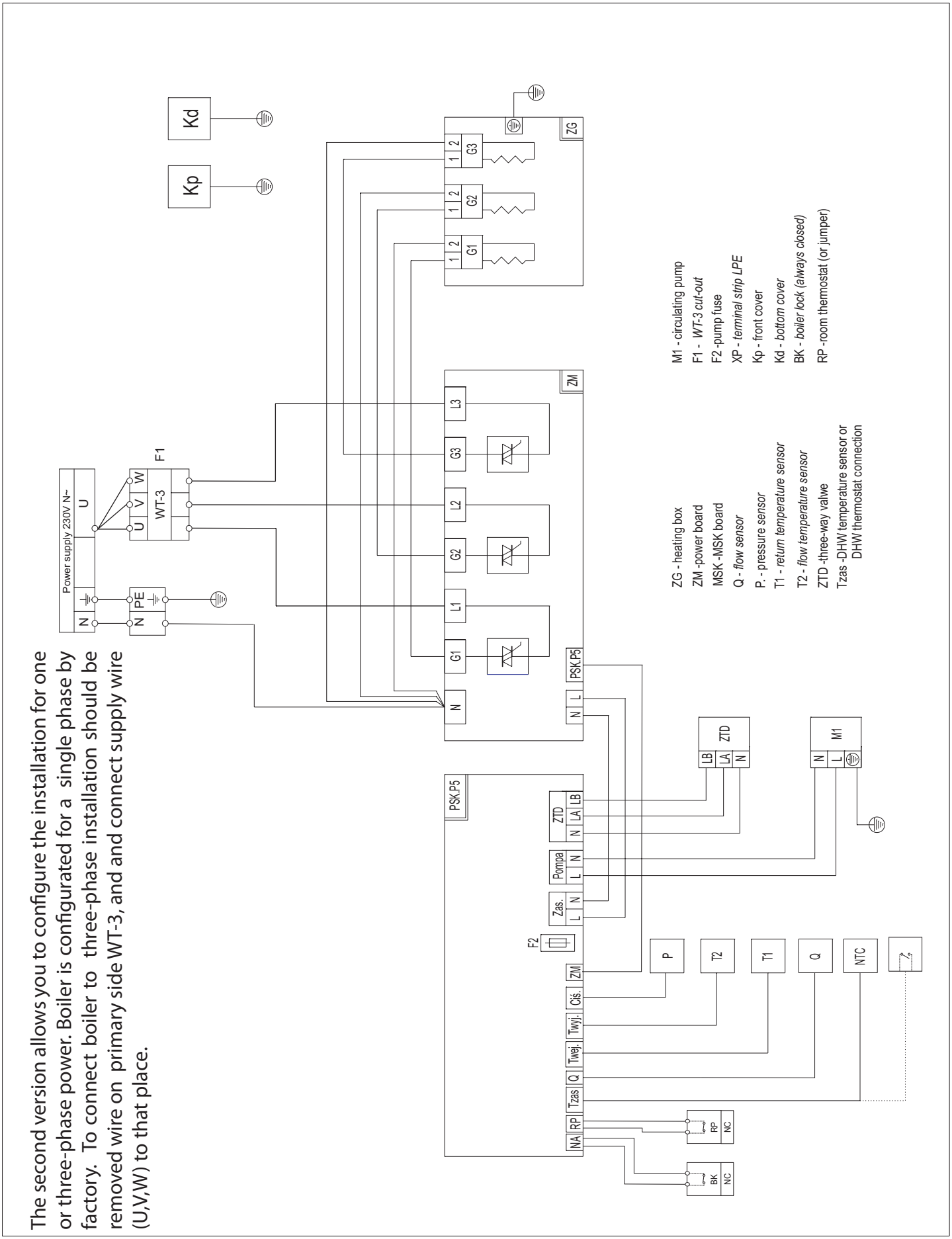
6.3. Wiring diagram - 230V N~ 4-8kW (wyk. III) ver.1.

Pic.21. Electric diagram 4-8 kW N~ ver.1 (date of production before 17-11-2010).



6.4. Universal wiring diagram 230/400V~ ver.2.

Pic.22. 4-14,4 kW 230/400V~ ver.2 (date of production after 17-11-2010).



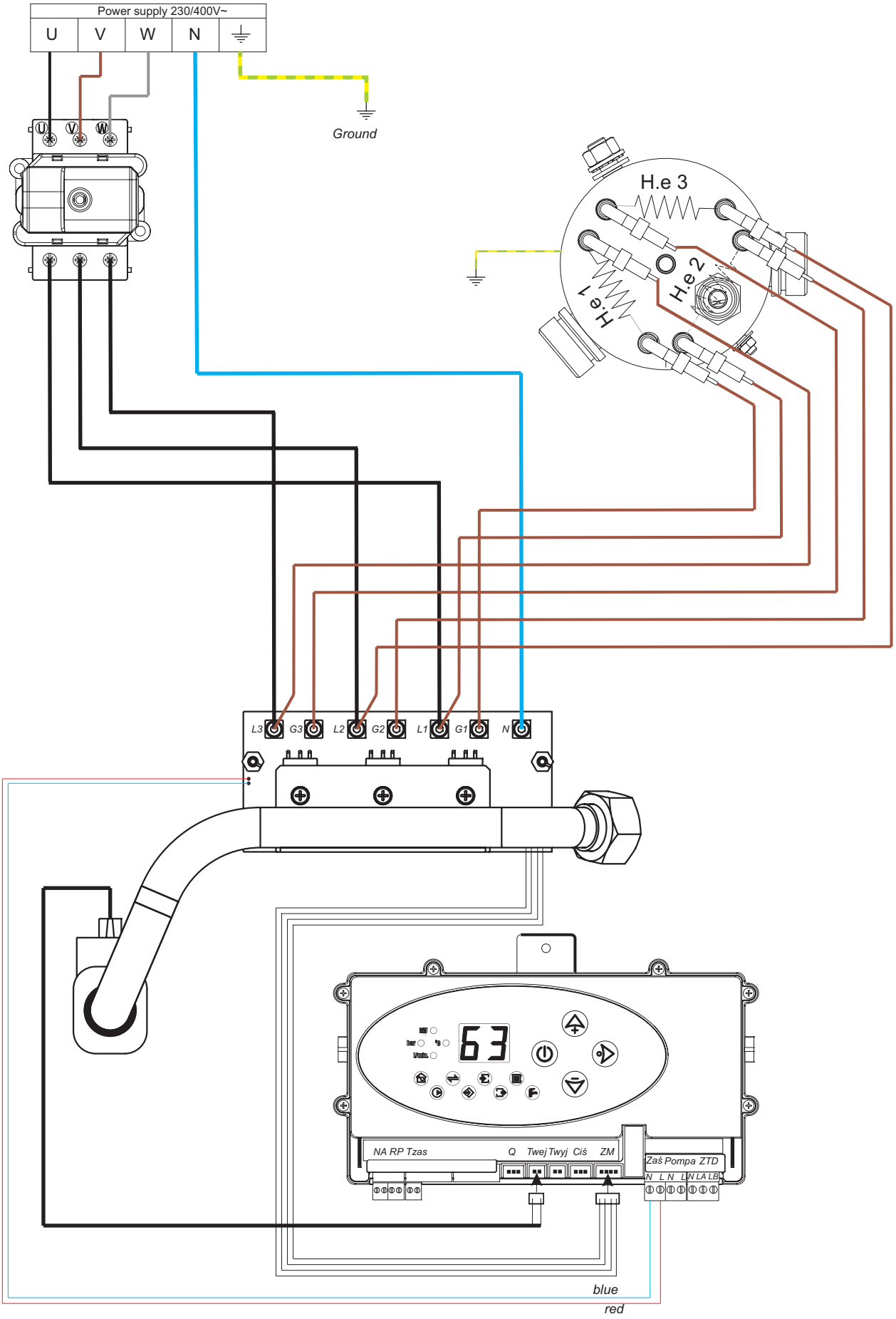
7. Spare parts list.

Table 2. Parts list.

Pos.	Service code	Picture no.	Name	Amount (pcs)	Notice
1	01642	EKCO.L2-02.00.00/010	Heating box EKCO.L2 8kW/230V	1	
	01184	EKCO.L2-02.00.00/001	Heating box EKCO.L2 12kW/400V		
	01185	EKCO.L2-02.00.00/002	Heating box EKCO.L2 15kW/400V		
	01186	EKCO.L2-02.00.00/003	Heating box EKCO.L2 18kW/400V		
	01187	EKCO.L2-02.00.00/004	Heating box EKCO.L2 21kW/400V		
	01188	EKCO.LN2-04.00.00	Heating box EKCO.L2 24kW/400V (copper 6 heating elements)		
3	01179	EKCO.L2-01.00.00	Front cover EKCO.L2	1	
4	01180	EKCO.L2-09.00.00	Bottom wall EKCO.L2	1	
5	01181	OK.B7-00.00	Case EKCO.L2	1	
6		OK.B3-01-05	Bottom suport case EKCO.L2	1	DC01A
7	01332	EKCO.L2-15.00.00	Safety valve 3 bar pipe	1	Production date after 29-03-2011
8	01173	EKCO.L2-03.00.00	Safety valve 3 bar pipe	1	Production date before 29-03-2011
9	01174	EKCO.L2-05.00.00	Outlet connection pipe	1	
	01419		Outlet connection pipe	1	conex connection
10	01175	EKCO.L2-06.00.00	Inlet connection pipe	1	
	01418		Inlet connection pipe	1	conex connection
11	01176	EKCO.L2-07.00.00	Nodes pipe	1	Construction change after 29-03-2011
12	01177	EKCO.L2-08.00.00	Pump pipe	1	Production date before 29-03-2011
13	01178	EKCO.L2-11.00.00	Expansion vessel pipe	1	Production date before 29-03-2011
14	00853		Expansion vessel	1	
15	01331	EKCO.L2-16.01.00	Inner pipe of power board EKCO.L2	1	Power board pipe
16	01183	PCA-ZM.60/02	Power board EKCO.L2	1	
17	01182	PSK.P5-00.00.00	Control panel PSK.P5	1	
	01338		Control panel PSK.P5 EHC	1	
18	01212		Flow sensor DN15 200.915101 EKCO.T/TM	1	
19	01229		Flow sensor	1	before 13-07-2011
20	00790	WE-005/09	Return temperature sensor NTC	1	before 13-07-2011
21	00791	WE-005/-2	Flow temperature sensor NTC	1	
22	01541	WE-029//03	Flow temperature sensor NTC (clip type)	1	after 11-08-2014
23	01194		Electronic pressure sensor	1	
24	01195		Differential pressure relief valve	1	
25	00001		Automatic air-vent	1	
26	00144		Diaphragm safety valve MSL 30.1/2"	1	3Bar
27	00516	WT3a-00.00.00/02	WT-3 safety cut-out EKCO.L2N	1	C.O. 100°C
	00489	WT3a-00.00.00/03	WT-3 safety cut-out EKCO.L2Np	1	Under floor heating 75°C
28	01246		Pump EKCO.L2		Power 4-8 kW
	01247		Pump EKCO.L2		Power 12-24 kW
	01766		Pump UPM3 Flex AS 15-70 130 AZJ		Electronic pump
30	01294		Magnetic filter F-MAG 3/4	1	
31		Z-216	Sleeve 3/4"	2	Flow sensor
32		Z-217	Nipple 3/4"	2	Magnetic filter
34	01270		O-ring seal 17,86x2,62 70NBR		
35	00253		Gasket 1.5x14,8x8 (3/8")	1	
36	00255		Gasket 1.5x18,2x11,7 (1/2")	1	
37	00882		Gasket 1.5x16x24 (3/4")	7	
38	00647		Gasket 2x30x21 (1")	2	
39			Wing nut M4	2	
40			Screw TW 4,1x12 KB-1	1	
41			Screw TW 4,1x16TX	2	
42			Screw M4x10-5,8-A-Fn/Zn5	4	
43			Screw WP M4x10Zn	6	
44	01339		Flow sensor DN15 200.915101 EKCO.L2 (with inlet temp. sensore)	1	Change after 13-07-2011 - flow sensor with integrated inlet temp. sensor
45	01340	P6-H/01	Flow sensor wire EKCO.L2 (with inlet temp. sensore) 6x AWGH28	1	

8.1. Power board ver. 2b - connection 400V 3N~ 12-24 kW.

Pic.23. Connection of power board 4-8 kW 3N~.



8.2. Power board ver. 2b - connection 230V N~ / 400V 3N~ (4-8 kW).

Pic. 24. Connection of power board ver. 2b 230V N~ / 400V 3N~ (4-8 kW).