



# SERVICE MANUAL

EKCO.T  
ECKO.TM

17.11.2020

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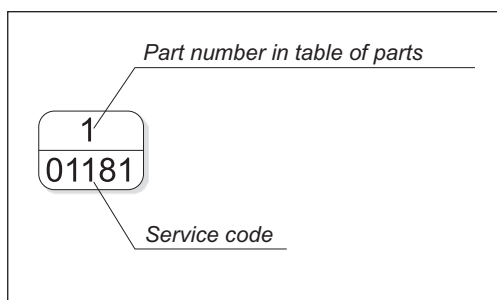
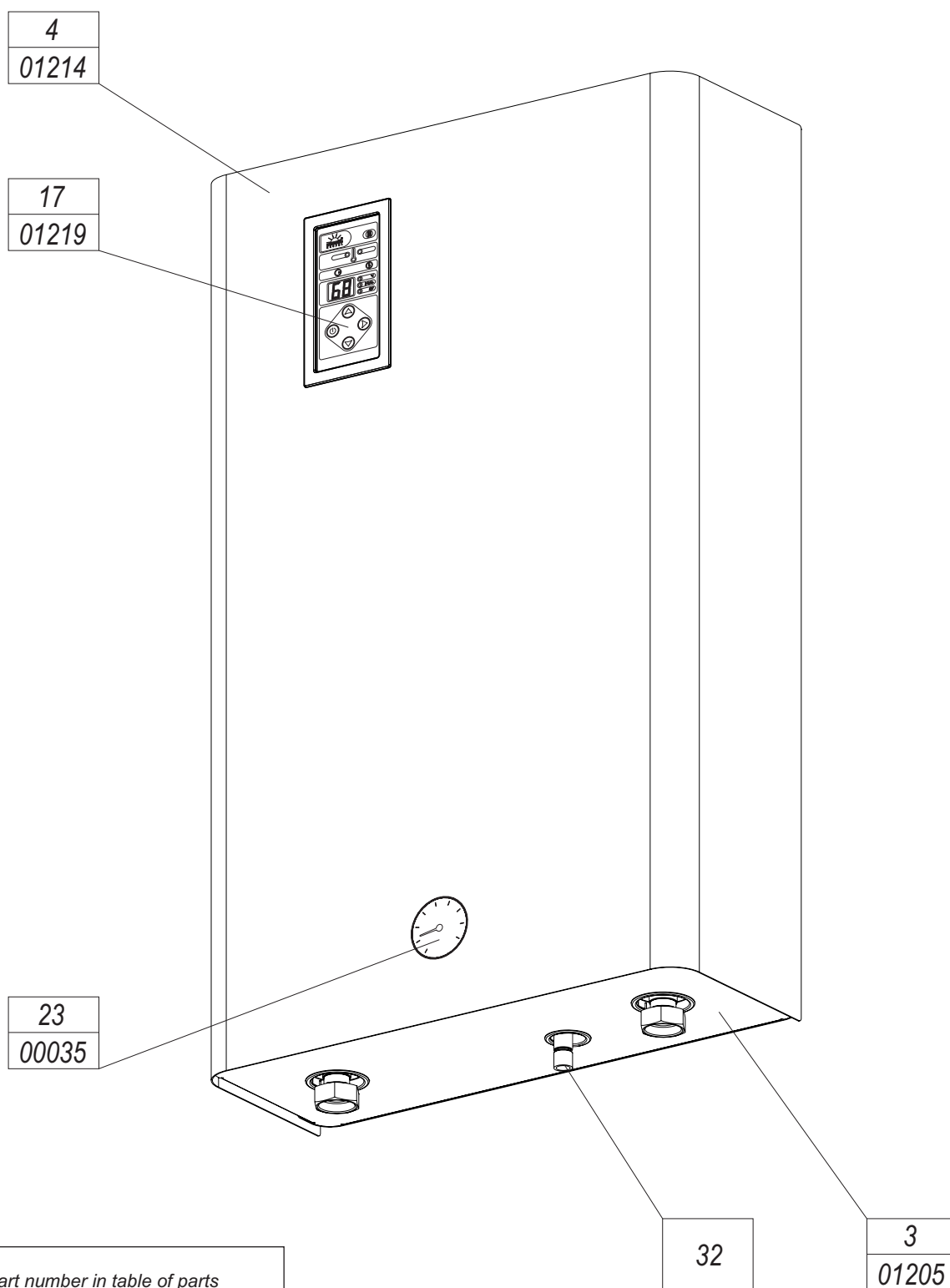
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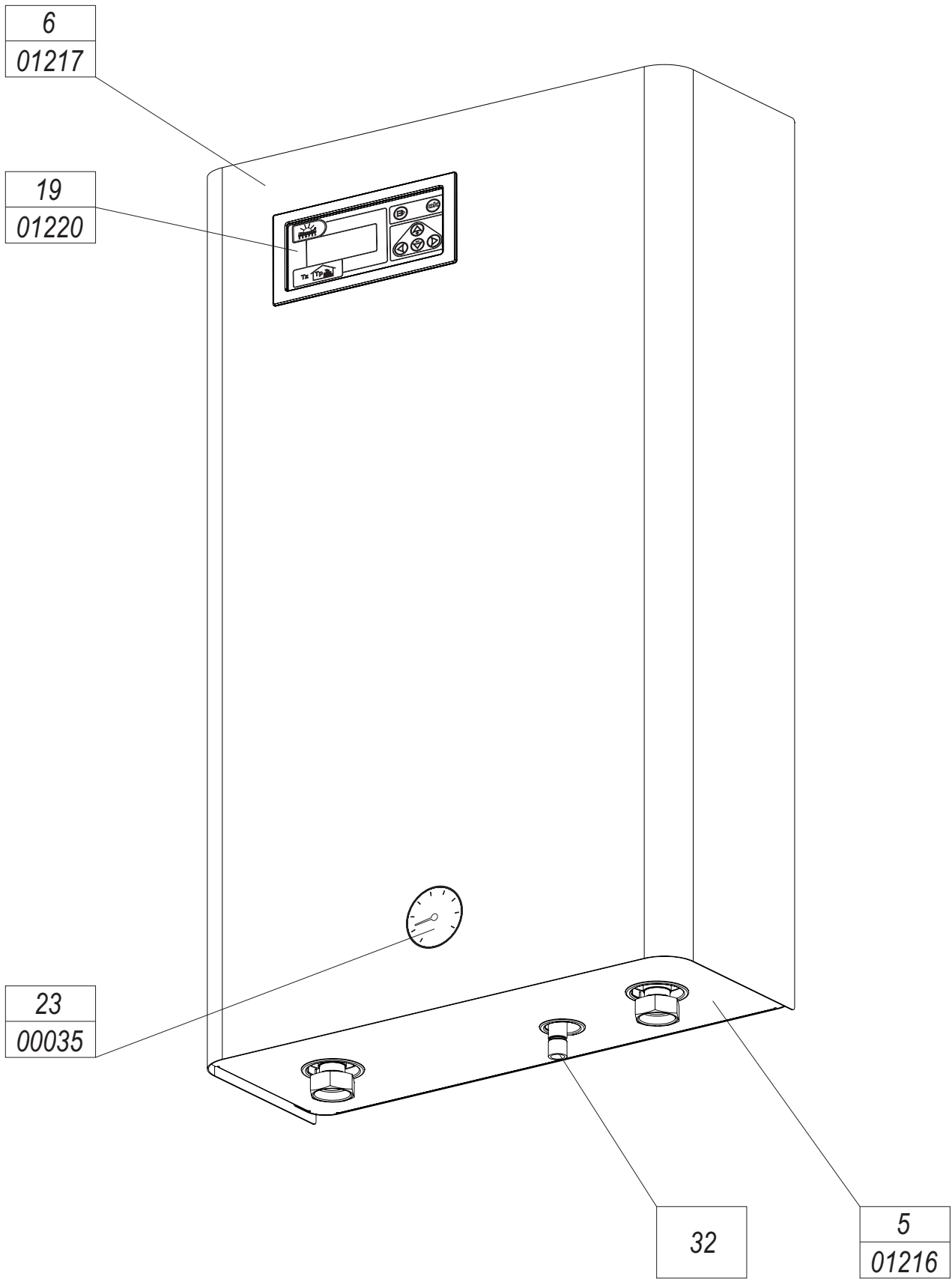
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# 1. Exterior view of boilers.

Pic.1a EKCO.T boiler

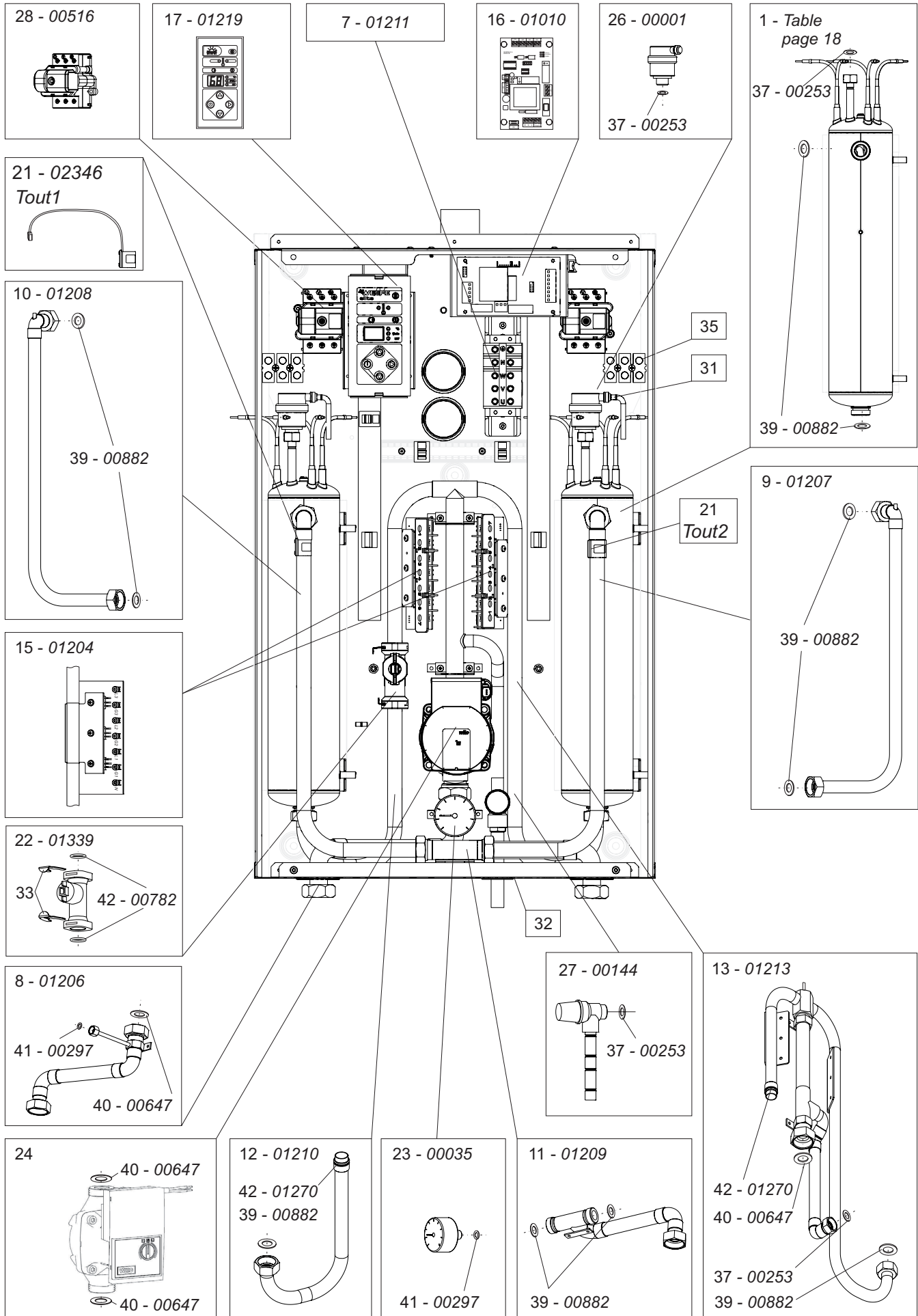


Pic.1b EKCO.TM boiler

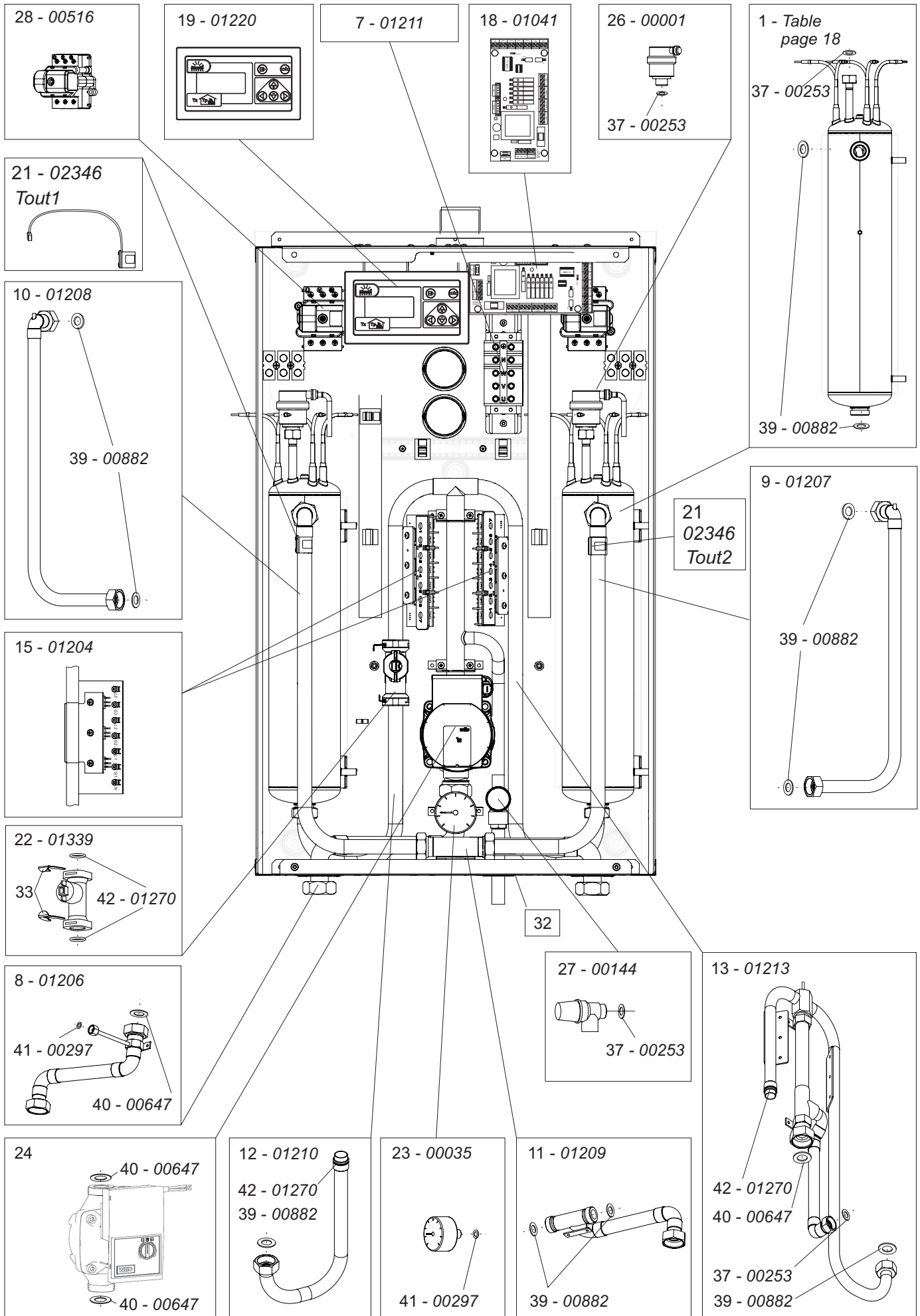


## 2. Construction of boilers.

Pic.2a Construction of the boiler EKCO.T

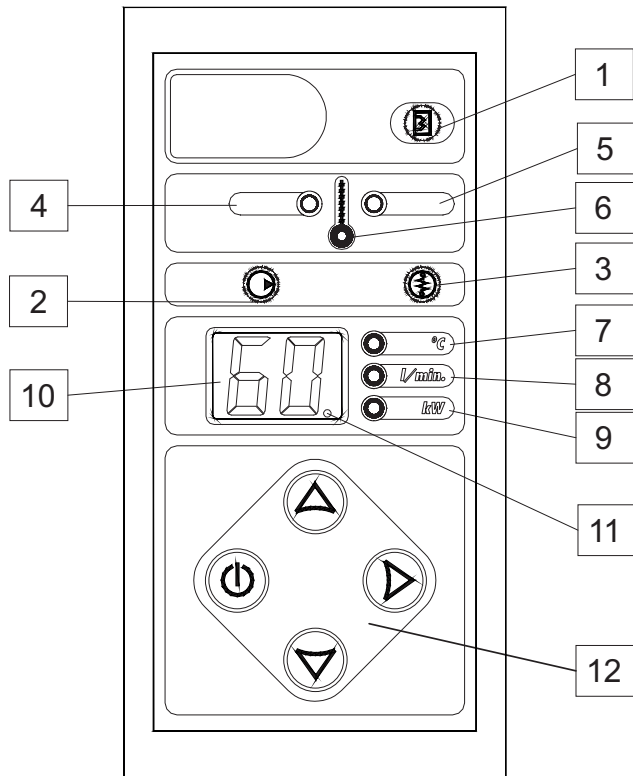


Pic.2b Construction of the boiler EKCO.TM



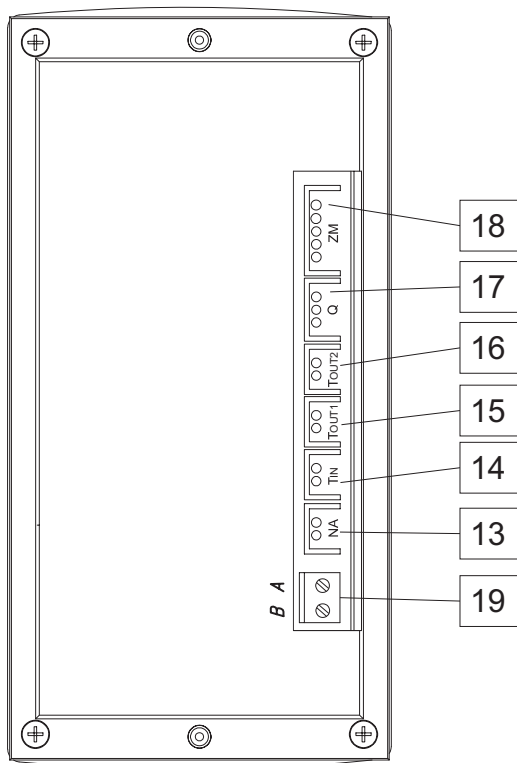
### 3. Control panel PSK.P4 EKCO.T

Pic.3a Front view of the control panel.



- 1 - heat exchanger indicator
- 2 - pump and flow indicator
- 3 - heating on and room thermostat indicator
- 4 - inlet temperature indicator
- 5 - outlet temperature indicator
- 6 - medium temperature setting indicator
- 7,8,9 - measurement value indicators
- 10 - LCD display
- 11 - temperature of water in the heat exchanger indicator
- 12 - switches

Pic.3b Back view of the control panel.



- 13 - (NA) superior device
- 14 - (Tin) return temperature sensor socket
- 15 - (Tout1) supply temperature sensor socket - left heating box
- 16 - (Tout2) supply temperature sensor socket - right heating box
- 17 - (Q) flow sensor socket
- 18 - (ZM) I2C power module socket
- 19 - Cascade connection socket




## 3.1 Advanced settings PSK.P4 ECKO.T

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### Advanced settings.

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

- working mode of pump – PA (automatic), Pr (manual – continuous duty of pump),
- max. number of active heating elements (settings is blocked)
- Operating characteristic of boiler:
  - (no) temperature control between 40 – 85°C,
  - (Po) temperature control between 20 – 60°C (co-operation with DHW Cylinder is not available),
  - the way of display the outlet temperature of medium when the boiler works in winter mode.
  - (to) – displaying the outlet temperature from the boiler only
  - (t.o.) – displaying the outlet temperature from the boiler and from left and right heating box,
- operation in cascade connection:
  - (r0) independent boiler operation, the boiler is not recognised by master sensor,
  - (r1) cascade operation,
  - number of boiler that works in cascade. This parameter can only be changed when the boiler is set up to work in cascade.
  - (Ax), x – number of boiler in cascade,
  - temperature of medium which feed a DHW Cylinder (starting the DHW mode). This mode can be activated by setting the temperature of medium in the range between 50-85°C. Setting at 0°C will switch off the DHW mode.
  - power of heating box (I indicator is on),
  - maximum boiler power during the cylinder feeding (A, I indicators are on)

Press and hold  button to exit and save the settings.

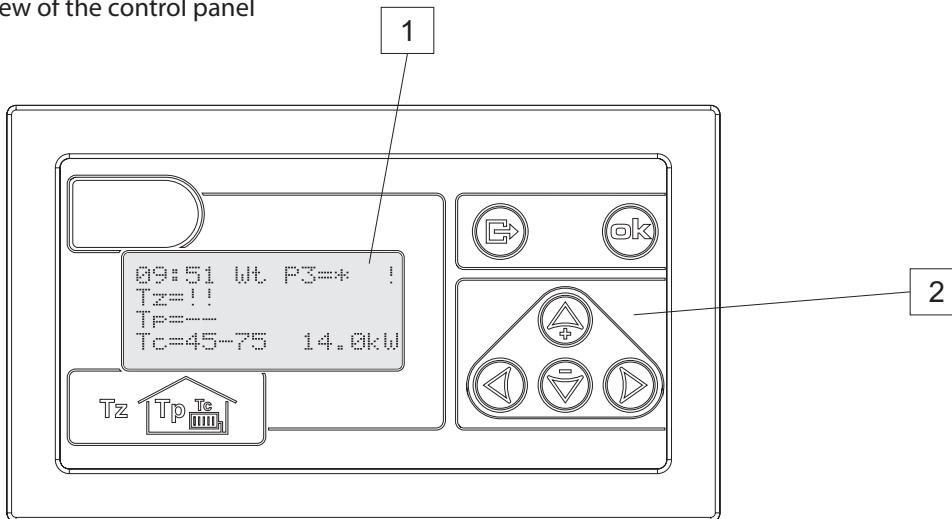
## 3.2 Failure modes of PSK.P4 front panel.

Tab.1 Failures

| Symptoms  | Reason   | Operation  |
|---|--|--|
| Control panel indicators are off  | Power supply failure.  | Check the mains and the main fuses.  |
|   |  | Check the WT-3 temperature cut-off.  |
|   |  | Replace the control panel.   |
| indicator "2" is blinking.  | The flow value is „0" or is too low.<br>(below value of 12 l/min)<br>Heating is blocked. | Check the pump fuse on ZIO23 board.  |
|   |  | Air lock in the heating system, solve the problem.   |
|   | Circulating pump is blocked.   | Deaerate the pump and the heating system.  |
|   |  | Circulating pump is blocked. Make a manual pump run. Use the screw to rotate the rotor.  |
| Room thermostat start heating and the "3" indicator on the control panel is not off.  | Flow sensor failure.   | Replace pump.  |
|   | Flow sensor failure.   | Replace flow sensor.   |
|   | The room thermostat wiring connection failure.   | Check the room thermostat wiring connection.   |
| The "1" indicator is on<br>The boiler is heating only central heating   | Room thermostat failure.   | Replace room thermostat.   |
|   | ZIO 23 failure.  | Replace ZIO 23 board.  |
|   | The three-way valve failure  | Check the servo. Replace the servo of valve  |
| DHW temperature is too low.<br>The boiler is heating only the heating system.<br>The "1" indicator is off                                 | ZIO 23 failure   | Replace ZIO 23 board   |
|   | The DHWT thermostat or DHWT electronic Sensor (DS 1820) failure                          | Replace DHWT thermostat or electronic sensor (DS 1820)   |
|   | ZIO 23 failure   | Replace ZIO 23 board   |
| The supply temperature is too low   | Too low DHWT temperature settings  | Set the higher temperature on the DHWT thermostat or rise the DHWT temperature on the control panel (for the electronic sensor DS 1820)  |
|   | Heating box failure.   | Check or replace heating box.  |
| The NA connector is opened by the superior device.<br>The "3" indicator does not blink  | RP connector opened  | Check the room thermostat  |
|   | Control panel failure PSK.P4   | Replace front panel  |
| Control panel indicators are blinking or temperature indicator is blinking or the return or supply temperature indicator is showing 99°C. | Return or supply temperature sensor.   | Use the right arrow to view the return inlet and flow outlet temperature. If the „E" symbol or 99 is displayed replace the required sensor. (Nominal resistance of the temperature sensor 10kΩ at 25°C). |
|   | Control panel failure  | Replace the control panel PSK.P4   |

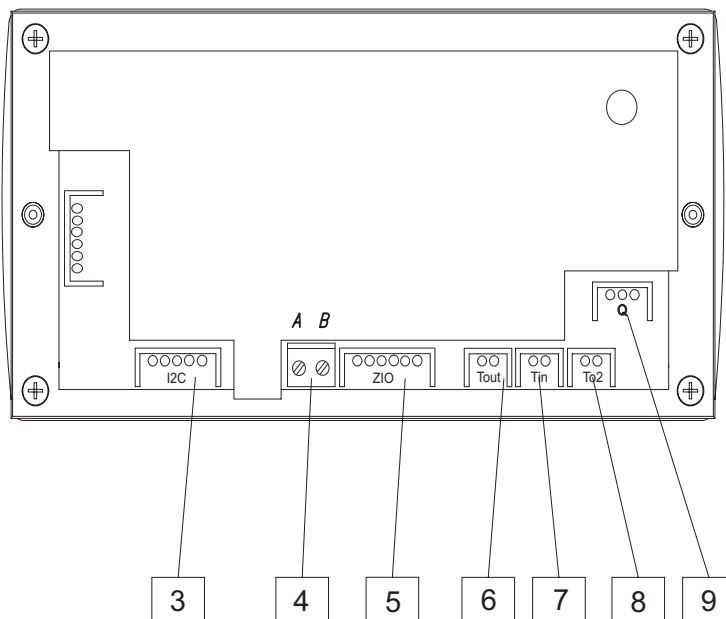
## 4. Control panel PSK.M2 EKCO.TM

Pic.4a Front view of the control panel






1. Display
2. Buttons

Pic.4b Back view of the control panel.



3. ZIO-24 connection point
4. Cascade connection socket
5. ZIO-24 connection point
6. Supply temperature sensor connection point (left heating box)
7. Return temperature sensor connection point
8. Supply temperature sensor connection point (right heating box)
9. Flow sensor connection point

## 4.1 Control panel PSK.M2 EKCO.TM - extended menu.

Extended Menu settings can be changed by qualified person only. To edit „Extended Menu” go to „Extended Menu” code page and enter the 3 digit code. To enter the code press  or  and . Standard factory preset code is „000” or „001”.

Tab.2 Extended menu

| Heating parameters         |   | sample values for radiator central heating system | for under-floor heating system |
|----------------------------|---|---|--------------------------------|
| <b>Tco0</b>                | CH medium temperature in the case of outdoor temperature sensor failure. (°C)   | 70  | 50                             |
| <b>IKEYt</b>               | time (sec.) the „Main View” page automatically returns if you don't use any buttons<br>This parameter is not applicable for „Extended Menu” page.   | 30  | 30                             |
| <b>Tcomax</b>              | maximum CH medium temperature in the central heating system   | 85  | 60                             |
| <b>3F_e</b>                | 1 indicates the symmetry failure , 0 indicates that there is no symmetry failure. Parameter value is 0 for single-phase boilers.  |   |                                |
| <b>zew_t</b>               | outdoor temperature reading intervals (min.) . 0 indicates the reading for every sec. 1 indicates the reading for every minute  | 10  | 10                             |
| <b>pok_t</b>               | room temperature reading intervals (min.) . 0 indicates the reading for every sec. 1 indicates the reading for every minute   | 5   | 5                              |
| <b>ZG_MOC</b>              | power of the heating box  |   |                                |
| <b>NS</b>                  | number of heating elements  | 6   | 6                              |
| <b>WChG</b>                | radiator coefficient:   |   |                                |
|                            | <b>Grz.</b> main circuit (radiator)   | Grz.  | Pod.                           |
|                            | <b>Nag.</b> main circuit (heater)   |   |                                |
|                            | <b>Pod.</b> main circuit (under-floor heating)  |   |                                |
| <b>Tcomin</b>              | minimum CH medium temperature in the central heating system.  | 29  | 29                             |
| <b>PZMR</b>                | desired room temperature for antifreeze program (°C)  | 7   | 7                              |
| <b>Nr</b>                  | number of slave boiler in cascade connection  | 0   | 0                              |
| <b>code1, code2, code3</b> | three digit code to enter „Extended Menu” .   |   |                                |
| <b>Tcwu</b>                | outlet boiler temperature (DHW heating)   | 85  | 85                             |
| <b>Tzas</b>                | parameter of the following value:   |   |                                |
|                            | <b>styk</b> if you use cylinder thermostat  |   |                                |
|                            | <b>DS.</b> if you apply Kospel temperature sensor   |   |                                |
| <b>Tzas_h</b>              | DHW Cylinder hysteresis (Celcius degree)  | 10  | 10                             |
| <b>Tc2max</b>              | maximum heating temperature of the second circuit (°C)  | 60  | -                              |
| <b>Tc2_0</b>               | second circuit temperature in the case of outdoor sensor failure (°C)   | 50  | -                              |
| <b>Tc2_d</b>               | Higher parameter value will affect more delay for the three-way valve opening and closing operation.<br>In the case of the three-way valve outlet oscillation (valve opens or closes too quick) and outlet temperature oscillation then increase the parameter value. Important! If you rise this parameter too far it may slow down the control time too much. | 5   | 5                              |
| <b>RP</b>                  | parameter of the following value:   |   |                                |
|                            | <b>Pzmr</b> if you close the WR contacts on extended module the controller switches for antifreeze program.   |   |                                |
|                            | <b>Noc</b> if you close the WR contacts on extended module the controller switches for night temperature program.   |   |                                |
| <b>WChG2</b>               | this parameter relates to second heating circuit – see WChG.  | Pod.  | -                              |
| <b>GSM</b>                 | value of 0 – GSM not applied , value of 1 – GSM is applied.   |   |                                |
| <b>CYRL</b>                | value of 0 – display without Cyrillic letters, value of 1 – Cyrillic letters display  |   |                                |
| <b>P</b>                   | to move the heating curve for the main heating circuit  |   |                                |
| <b>P2</b>                  | to move the heating curve for the second heating circuit  |   |                                |
| <b>2Tco</b>                | independent view of outlet temperature from the left and right heating box. 0 – view „off”<br>1- view „on”  |   |                                |

The last page asks, if you want to return to factory settings. If you enter „TAK”, all settings (except for the heating box power) will return to the standard value. Some of the factory settings e.g. „3F\_e”, after completing this function, may be not suitable for this particular version of the boiler or installation system. Please maintain cautious while using this function. When you save your changes, the controller will reset automatically.

## 4.2 Failure modes of PSK.P4 control panel.

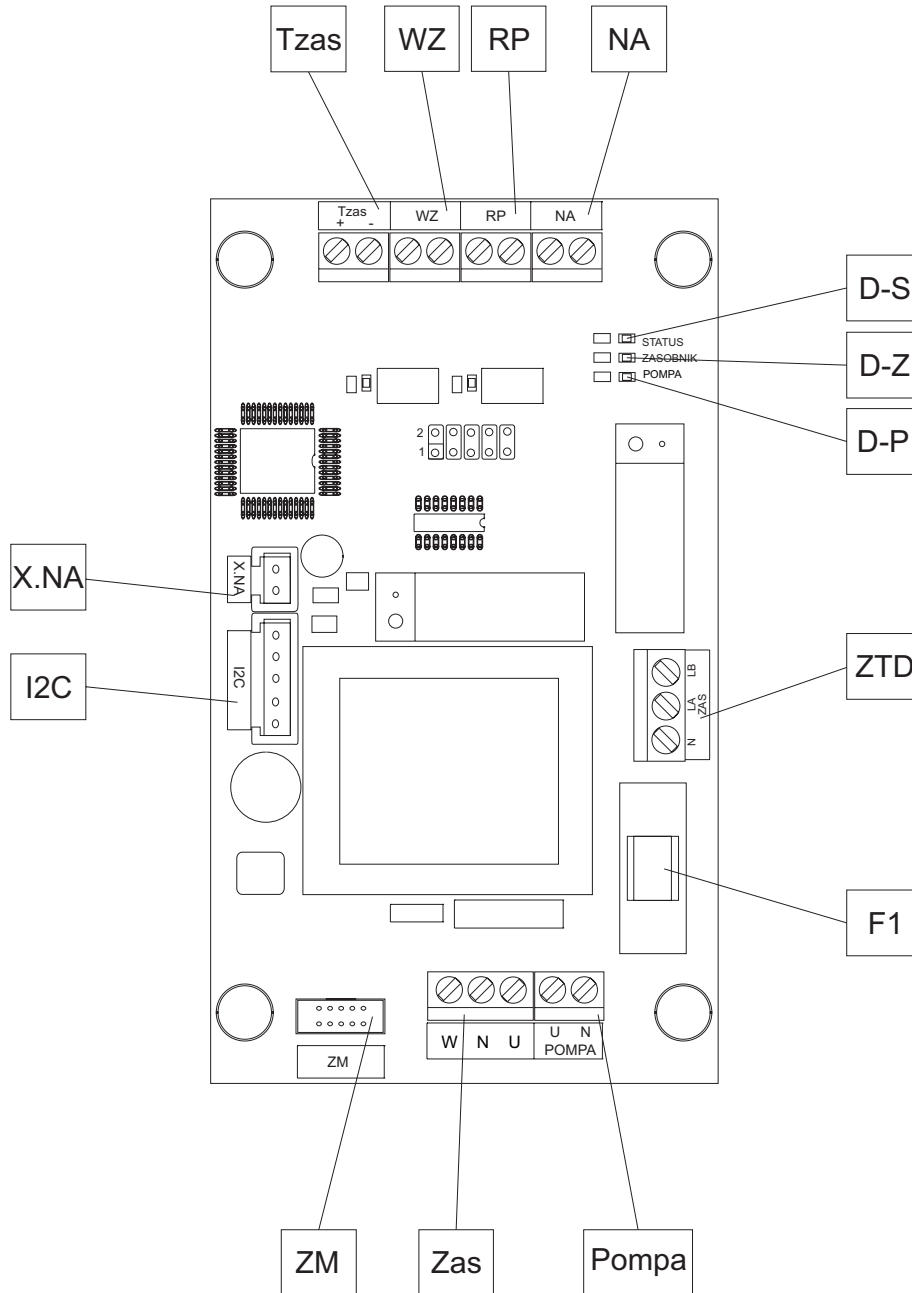
"Faults" display view shows possible failures: flow failure, outdoor/room temperature sensor failure, inlet outlet boiler sensor failure. The controller enables failure detection and identification (short circuit or sensor disconnection/ missing).

Tab.3 Failures

| Symptoms   | Reason   | Operation  |
|--|--|--|
| Display doesn't work.  | Power supply failure.  | Check the mains and the main fuses.  |
|  |  | Check the WT-3 temperature cut-off.  |
|  |  | Replace the control panel.   |
| Display shows flow failure   | The flow value is „0” or is too low.<br>(below value of 12 l/min)<br>Heating is blocked. | Air lock in the heating system, solve the problem.   |
|  | Circulating pump is blocked.   | Deaerate the pump and the heating system.  |
|  |  | Circulating pump is blocked. Make a manual pump run. Use the screw to rotate the rotor.  |
|  | Flow sensor failure.   | Replace pump.  |
| The supply temperature is too low.   | Heating box failure.   | Replace flow sensor.   |
|  |  | Check or replace heating box.  |
| "Faults" display view shows possible failures: flow failure, outdoor/room temperature sensor failure, inlet /outlet boiler sensor failure. The controller enables failure detection and identification (short circuit or sensor disconnection/ missing). | Sensor failure   |  |
| a) „Tzew-brak” or „ Tpok-brak”   | The sensor is not reporting.   | Check connection between controller and sensor.<br>Replace temperature sensor  |
| b) „Tzew zwarcie” or „Tpok zwarcie”  | Short circuit on the connection between controller and sensor..                          | Check connection between controller and sensor.  |
|  | The sensor is inversely connected.   | Check the polarity of the sensor.  |
| Failure of return or supply temperature sensor.  | Sensors failure.   | Check the sensor resistance (10kΩ at 25 ° C), if damaged, replace the sensor. If the sensors are OK, replace the control panel PSK.M2. |

## 5. ZIO-23 board EKCO.T

Pic.5 Description of ZIO-23 board.



Tzas – connection point of DHWT water electronic temperature sensor DS-1820

WZ – connection point of DHWT thermostat

RP – room thermostat connection point (or jumper)

NA - master appliance connection point (or jumper)

ZTD – connection point of three-way valve

ZM – power module

I2C - PSK.P4 cable

X.NA - PSK.P4 cable

F1 - 1 A fuse (pump protection)

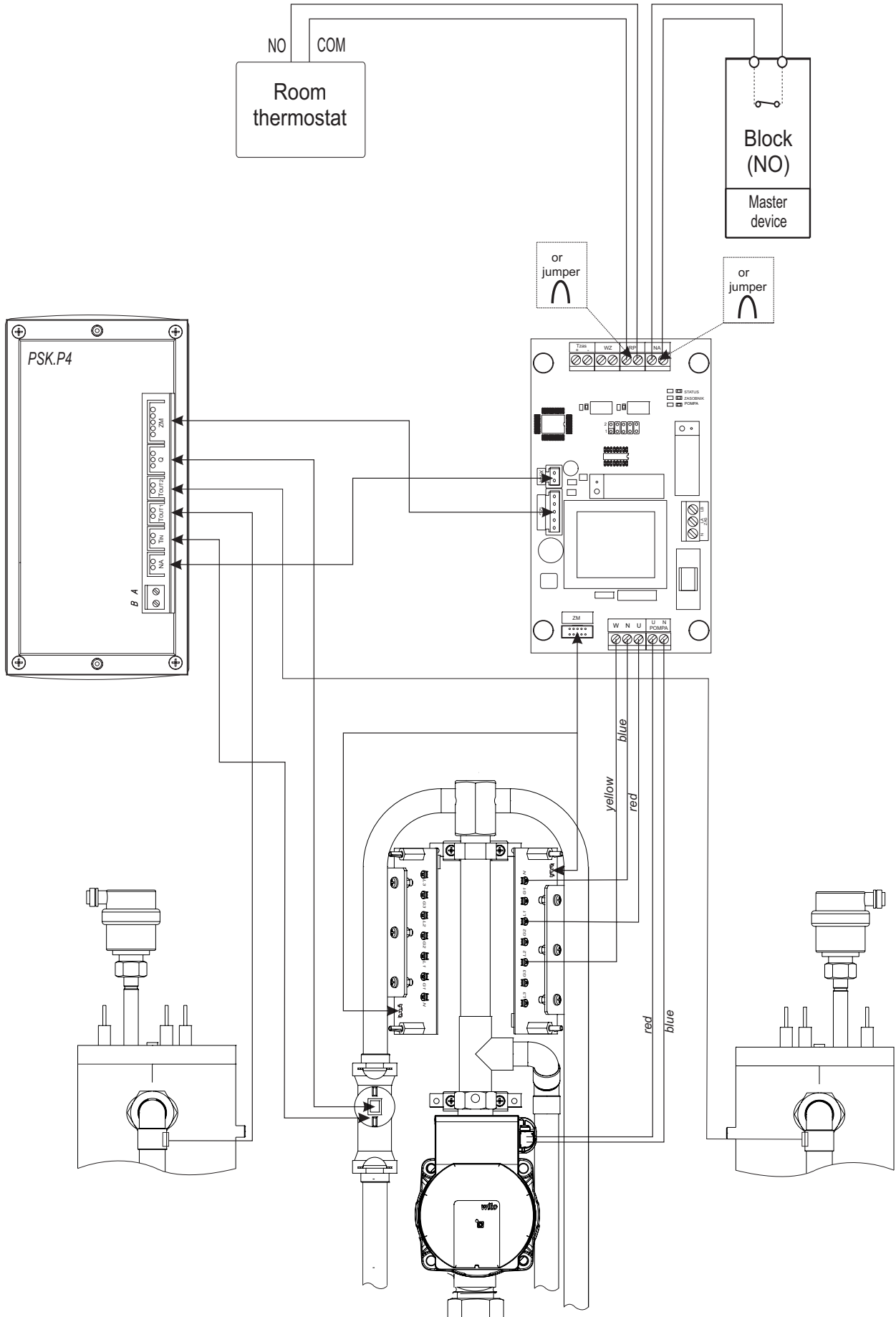
D-S - control panel communication indicator

D-Z - DHW tank heating indicator

D-P - pump operation indicator

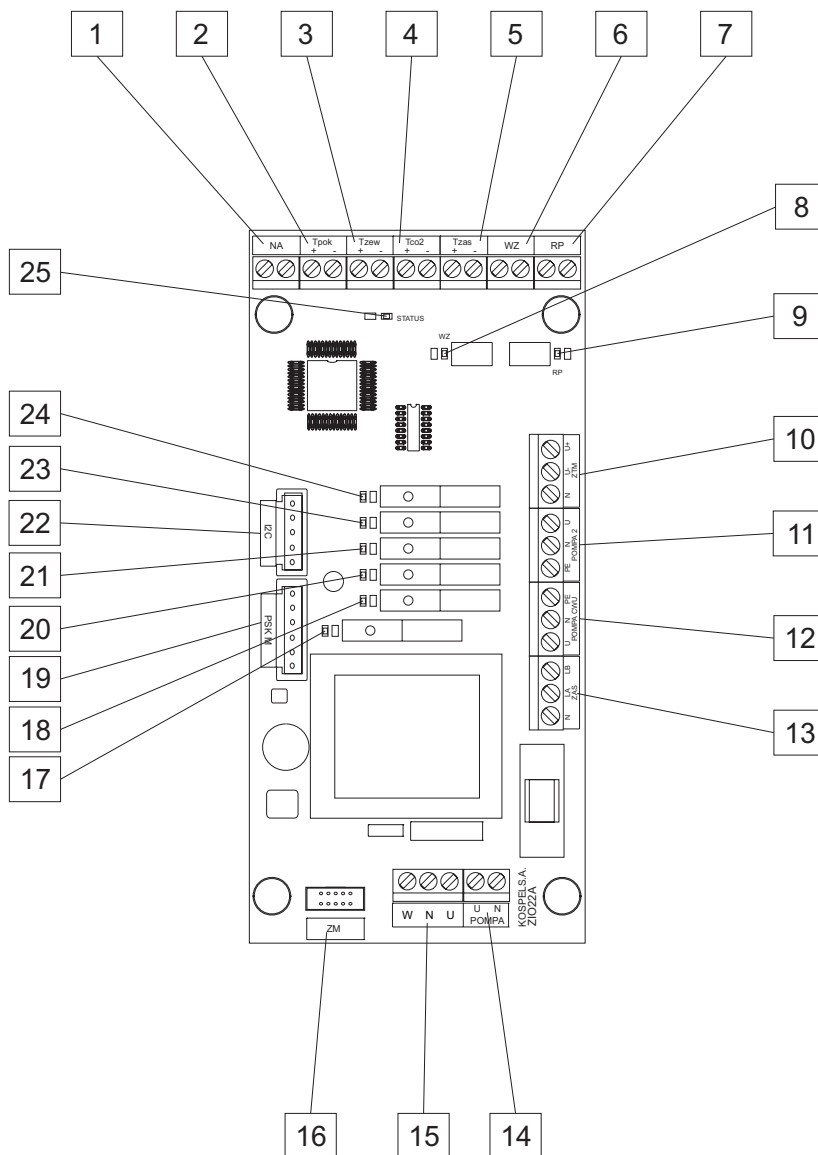
## 6. Connection of control panel PSK.P4 and ZIO-23 board.

Pic .6 Connection of control panel PSK.P4



## 7. ZIO-24 board EKCO.TM

Pic.7 Description of ZIO-24 board

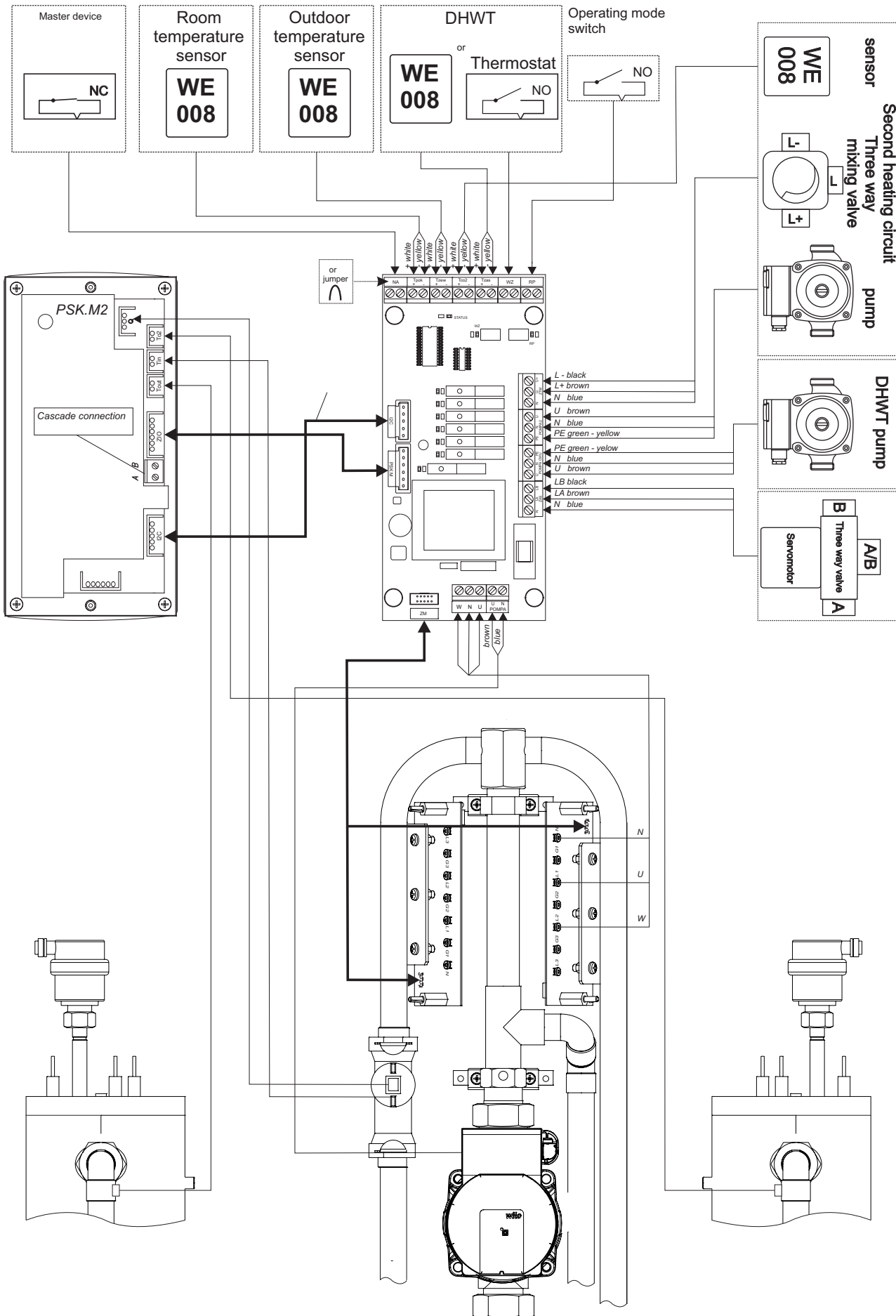


- 1 - (NA) master appliance connection point (or jumper)
- 2 - (Tpok) room temperature sensor connection point
- 3 - (Tzew) outside temperature sensor connection point
- 4 - (Tco2) second heating circuit temperature sensor connection point
- 5 - (Tzas) DHW Cylinder temperature sensor connection point
- 6 - (WZ) connection point of DHWT thermostat
- 7 - (RP) device for night or antifreeze work mode
- 8 - DHW tank heating indicator
- 9 - RP input short-circuit indicator
- 10 - (ZTM) three way mixing valve (under-floor heating or second heating circuit supply connection)
- 11 - (POMPA 2) second circuit pump supply connection
- 12 - (POMPA CWU) DHW pump supply connection
- 13 - (ZAS) three-way switching valve (DHW Cylinder) supply connection
- 14 - (POMPA) C.H pump supply connection
- 15 - ZIO-24 board supply connection
- 16 - (ZM) power boards connection point
- 17 - pump operation indicator
- 18 - 230 volt on LB connection indicator (three-way switching valve)
- 19 - control panel PSK.M2 connection point
- 20 - DHW pump operation indicator
- 21 - second circuit pump operation indicator
- 22 - control panel PSK.M2 connection point
- 23 - 230 volt on U- connection indicator (ZTM three way mixing valve)
- 24 - 230 volt on U+ connection indicator (ZTM three way mixing valve)
- 25 - control panel PSK.M2 communication indicator



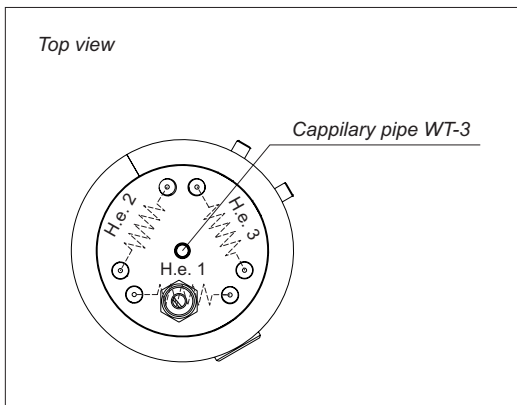
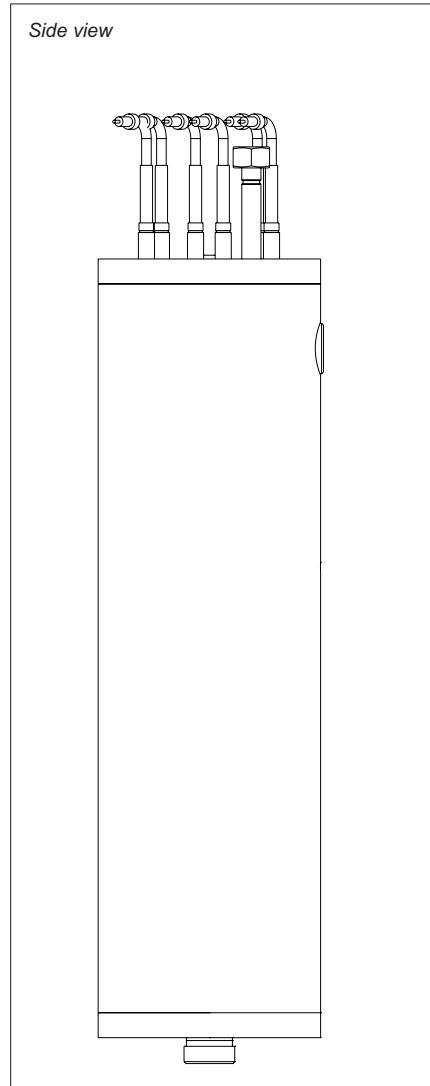
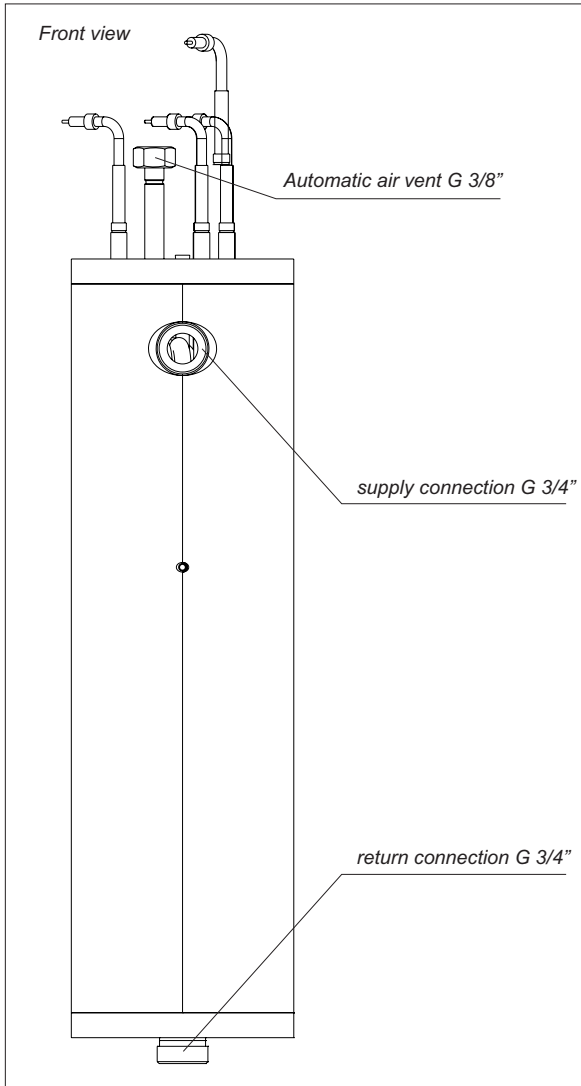
# 8. Connection of control panel PSK.M2 and ZIO-24 board.

Pic.8 ZIO-24 board connection



# 9. Heating box

Pic.9 Heating box

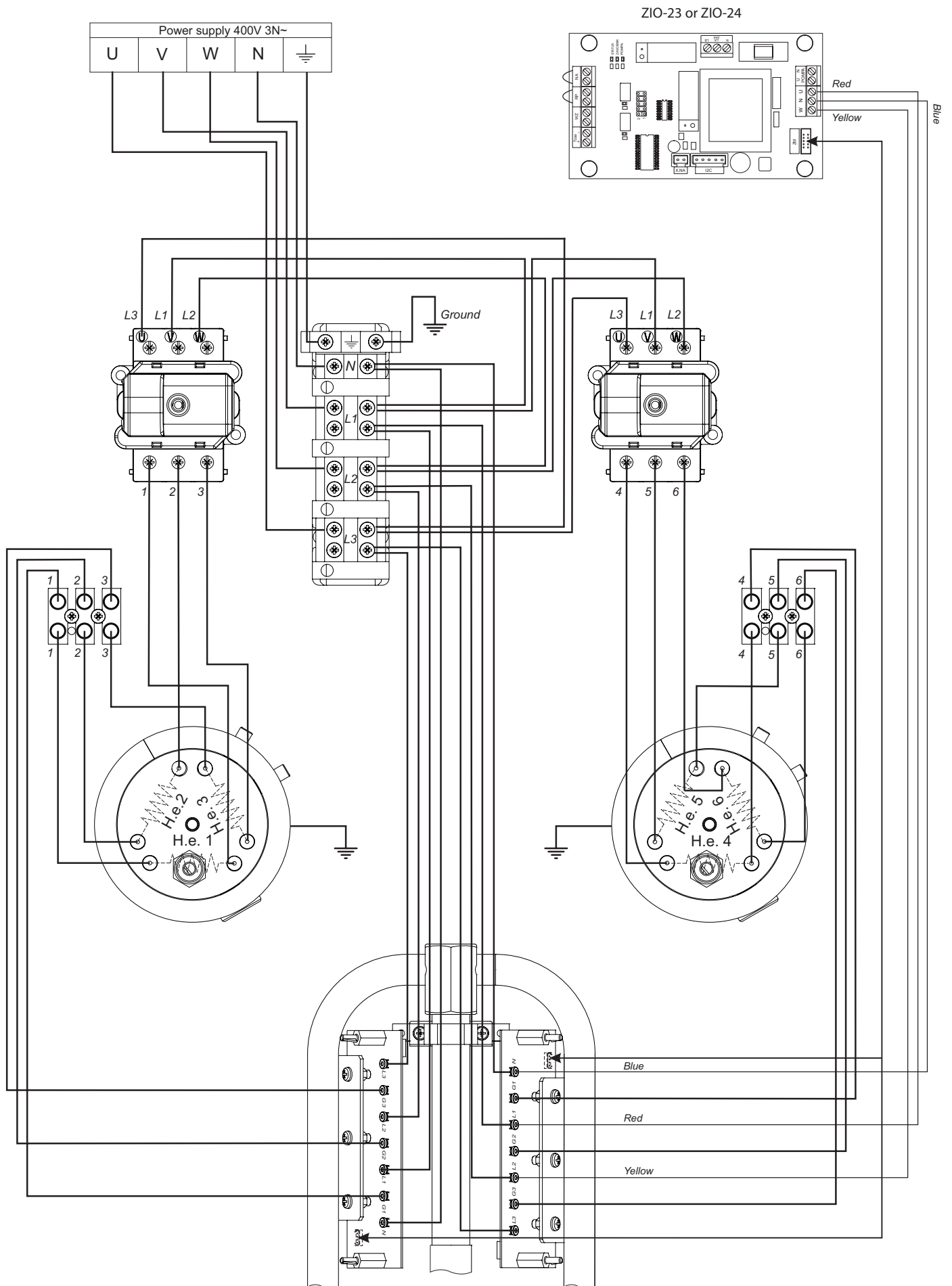


Tab.4 Electric parameters of heating box.

| Boiler type | Service code | Amount of heating elements | $R_{ei}$ [Ohm]<br>Heating elements resistance | $I_f$ [A]<br>Current passing through the heating elements [A] | $U_M$<br>Working voltage of the heating elements |
|-------------|--------------|----------------------------|---|---|--|
| EKCO.T30    | 01200        | 3                          | 29,7 ÷ 32,7                                   | 12,2 ÷ 13,5   | 400  |
| EKCO.T36    | 01201        | 3                          | 24,8 ÷ 27,3                                   | 8,4 ÷ 9,3   |  |
| EKCO.T42    | 01202        | 3                          | 21,2 ÷ 23,4                                   | 17,1 ÷ 18,9   |  |
| EKCO.T48    | 01203        | 6                          | 18,6 ÷ 20,4                                   | 19,6 ÷ 21,5   |  |

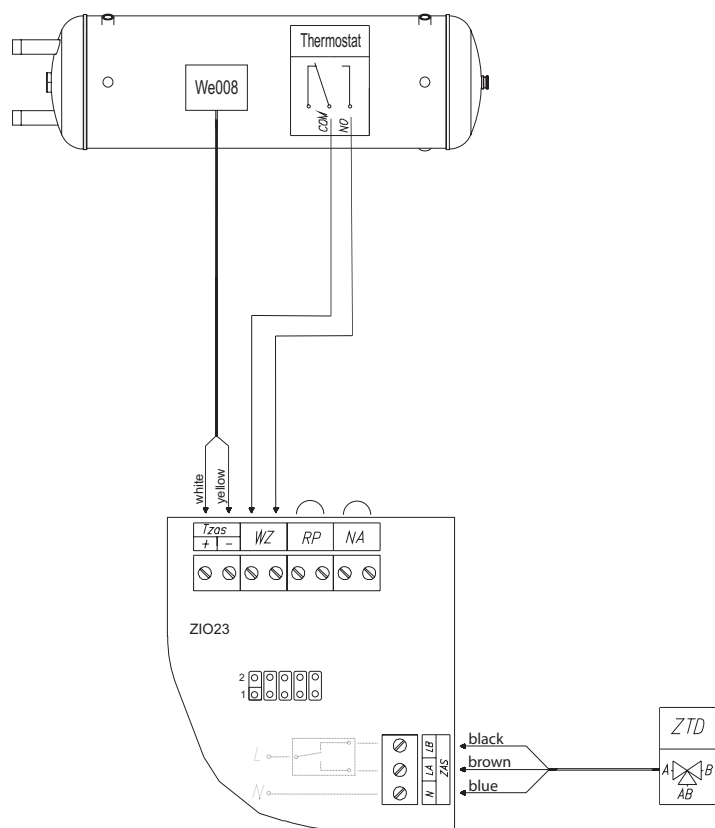
# 10. Connection diagram of heating box.

Pic.10 Connection diagram of heating box.

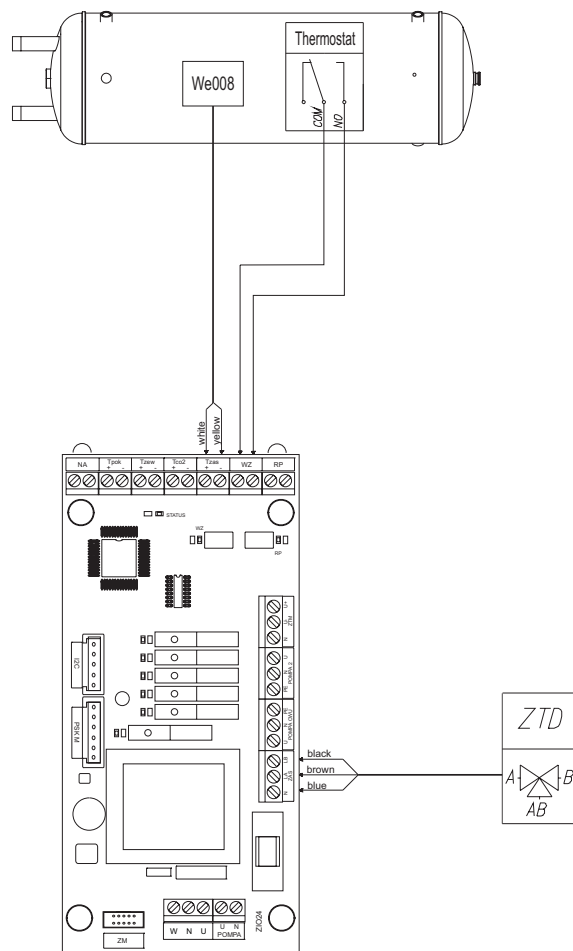


# 11. DHW tank connection

Pic.11a Connection diagram for the DHW tank (EKCO.T)

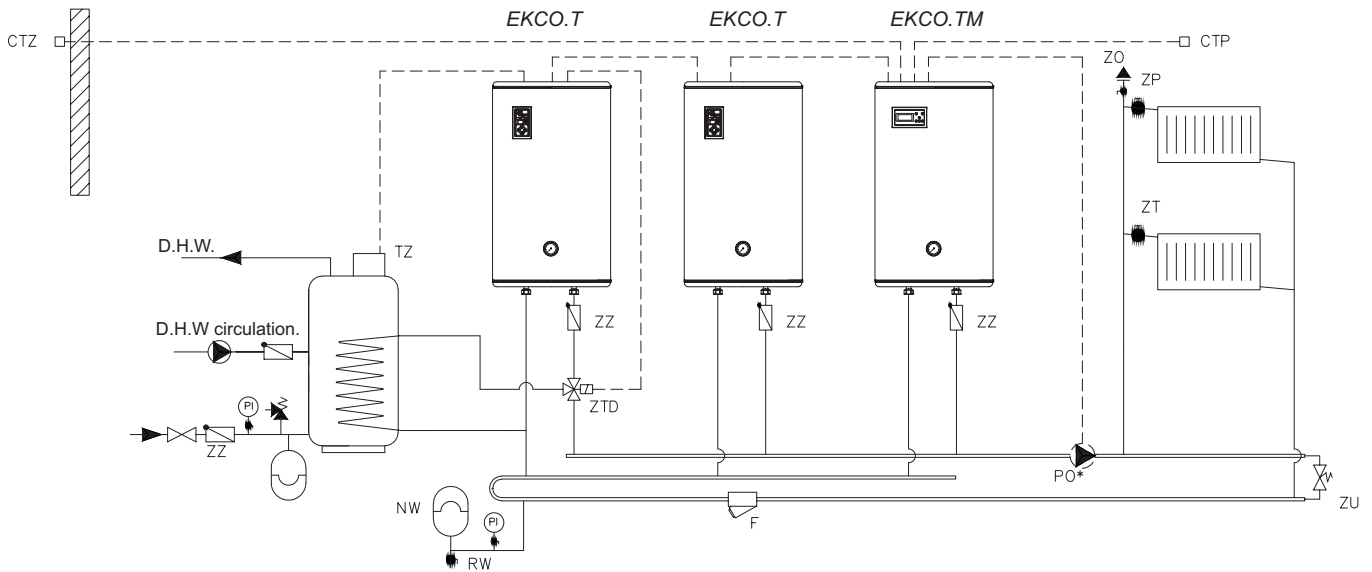


Pic.11b Connection diagram for the DHW tank (EKCO.TM)

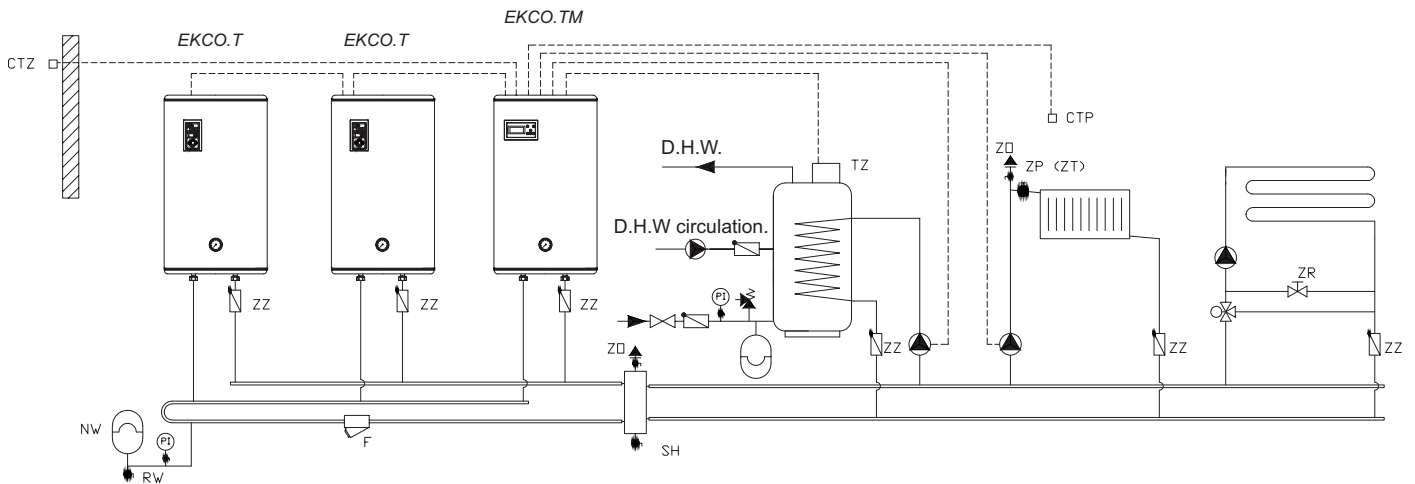


## 12. Cascade connection.

You can connect number of boilers to increase power. The maximum number of slave unit (ECKO.T) in cascade is 8. The slave unit must be equipped with a special controller to enable cascade connection.

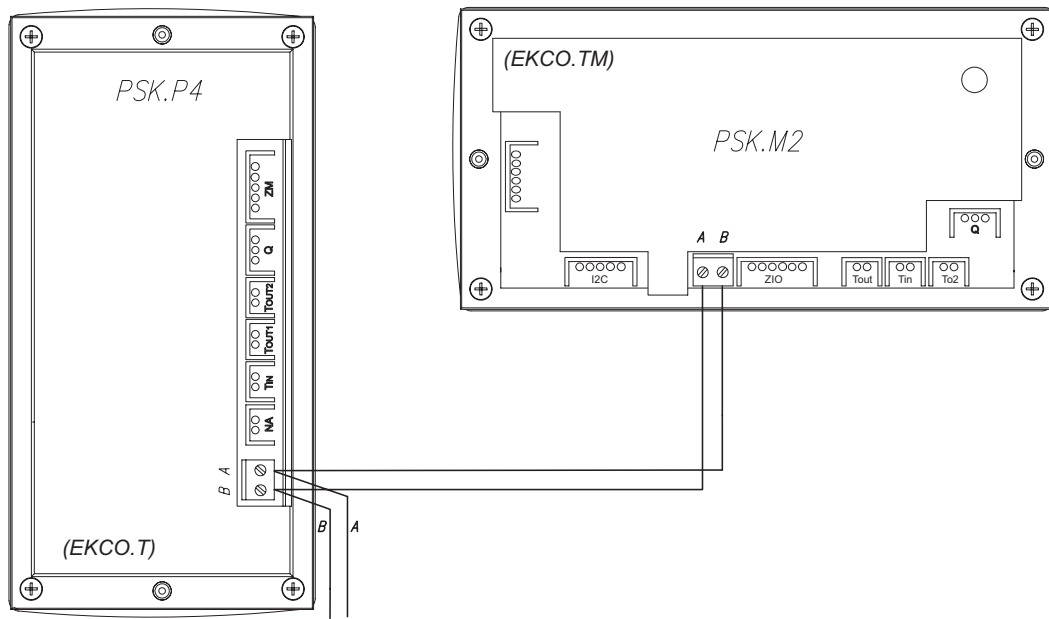


Pic.12 An exemplary diagram of the heating system. Boilers supply the heating circuits directly.



Pic.13 An exemplary diagram of the heating system. Boilers supply the hydraulic clutch.

|                                   |                             |                                 |
|-----------------------------------|-----------------------------|---------------------------------|
| CTP - room temperature sensor     | F - magnetic filter         | ZM - mixing valve               |
| CTZ - outdoor temperature sensor  | SH - hydraulic clutch       | ZTD - three-way switching valve |
| TZ - DHWT thermostat              | ZP - straight-through valve | ZO - air-vent valve             |
| NW - expansion vessel             | ZT - thermostatic valve     |                                 |
| RW - expansion pipe               | ZZ - check valve            |                                 |
| PO - circulation pump             | ZR - regulating valve       |                                 |
| PO* - additional circulation pump | ZU - discharge valve        |                                 |



Pic.14 Additional electrical connection for boilers in cascade

To set the EKCO.TM to work in cascade change the „Nr” parameter in the „Extended Menu” for a required number of slave boiler.

To set the EKCO.T to work in cascade the „Extended Menu” settings have to be changed:

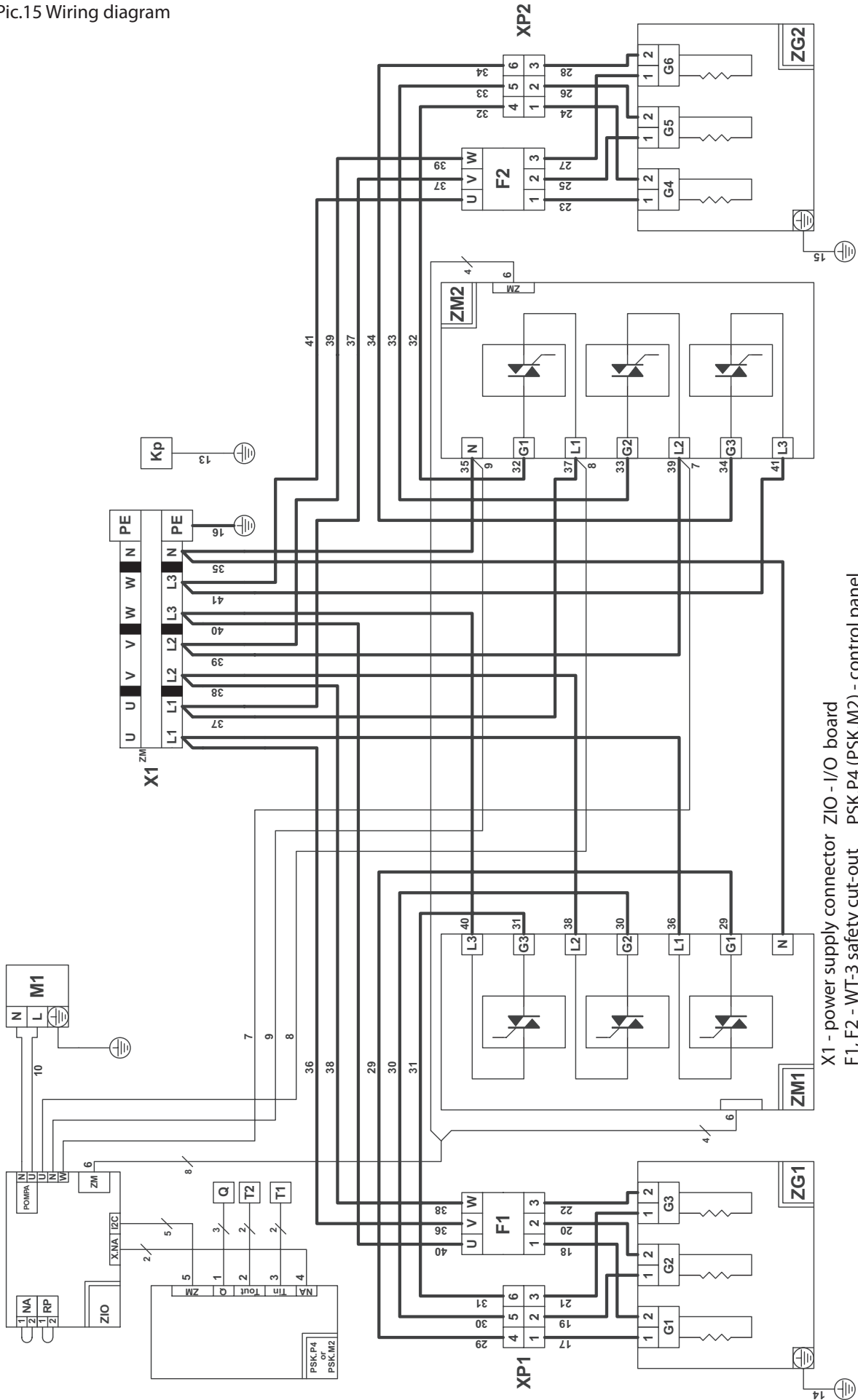
a) set for „r1”

b) set up the unit address – e.g. „A1”

The boiler address is a number that inform about the boiler in the network connection. Each boiler has its own address. The address number can not be higher than number of slave boilers. For example: if you build boilers cascade system with the EKCO.TM (as a master appliance) and three other boilers (as a slave appliances), the slave appliance should have the following addresses: A1, A2 and A3. The boilers must be connected into the mains (use e.g. LIYY 2 x 0,14 wire).

# 13. Wiring diagram

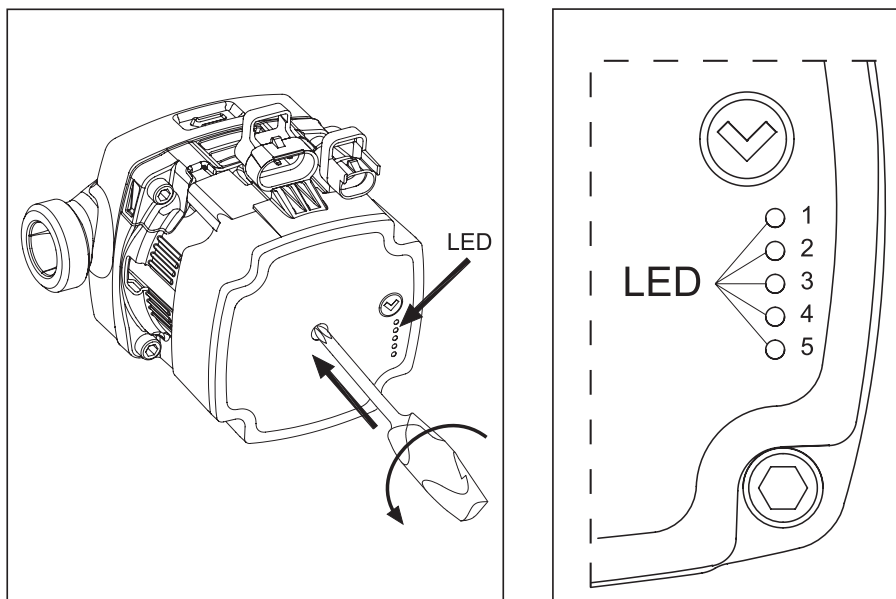
Pic.15 Wiring diagram



- X1 - power supply connector
- ZIO - I/O board
- F1, F2 - WT-3 safety cut-out
- PSK.P4 (PSK.M2) - control panel
- XP1, XP2 - terminal strips
- T1 - return temperature sensor
- T2 - supply temperature sensor
- ZM1, ZM2 - power boards
- ZG1, ZG2 - heating boxes
- Q - flow sensor
- M1 - pump
- K1 - front cover

# 14 Pump Grundfos UPM3 Flex AS

Pic.16. De-block the pump.



In the case of blocking the pump impeller due to a long layover out of heating season and simultaneous noncompliance with the recommendation to leave the driver in this period in a parking mode, please restore proper movement of the impeller. To do this, please use PH2 screwdriver, press and turn the screw left, located in the middle of the front panel of the pump . The pump impeller should be unblocked then.

Tab. 5. Settings view .

| Rated power [kW]      | Pump lifting height [m] | LED 1 red | LED 2 yellow | LED 3 yellow | LED 4 yellow | LED 5 yellow |
|-----------------------|-------------------------|-----------|--------------|--------------|--------------|--------------|
| <del>          </del> | 4                       | ●         | ●            | ○            | ○            | ○            |
| <del>          </del> | 5                       | ●         | ●            | ○            | ●            | ○            |
| 4 - 9                 | 6                       | ●         | ●            | ○            | ●            | ●            |
| 12 - 24               | 7                       | ●         | ●            | ○            | ○            | ●            |

Tab. 6. Alarm status.

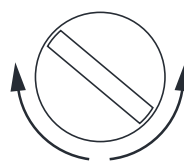
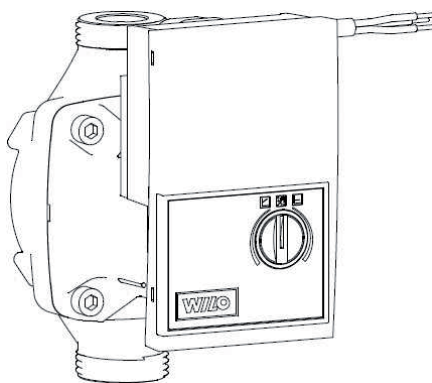
| Indication                | LED 1 red | LED 2 yellow | LED 3 yellow | LED 4 yellow | LED 5 yellow | Counter action                                  |
|---------------------------|-----------|--------------|--------------|--------------|--------------|---|
| No supply voltage         | ○         | ○            | ○            | ○            | ○            | Check the supply voltage<br>Check the pump fuse |
| Pump is blocked           | ●         | ○            | ○            | ○            | ●            | De-block the pump                               |
| Supply voltage is too low | ●         | ○            | ○            | ●            | ○            | Check the supply voltage                        |
| Seriuos failure           | ●         | ○            | ●            | ○            | ○            | Exchange the pump                               |



## 14.1 Pump Wilo Yonos Para

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Pic.17. Settings via operating knob



### Variable differential pressure

The differential-pressure setpoint  $H$  is increased linearly over the permitted volume flow range between  $\frac{1}{2}H$  and  $H$ . The differential pressure generated by the pump is adjusted to the corresponding differential-pressure setpoint. This control mode is especially useful in heating systems with radiators, since the flow noises at the thermostatic valves are reduced.



### Constant differential pressure

The differential-pressure setpoint  $H$  is kept constant over the permitted volume flow range at the set differential-pressure setpoint up to the maximum pump curve. Wilo recommends this control mode for underfloor-heating circuits or older heating systems with large-sized pipes as well as for all applications with no changeable pipe system curve, e.g. boiler charge pumps.


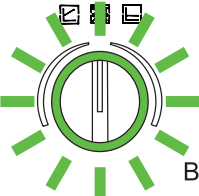
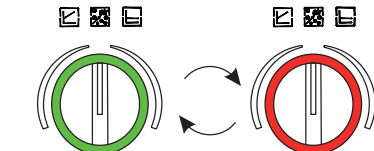
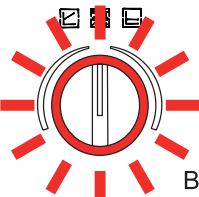
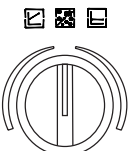


### Venting function

During automatic venting function (10min) the Pump runs alternately with high and low speeds to help air bubble from the pump to agglomerate and to lead direct to the venting valve of the installation.

## 14.2 Pump Wilo Yonos Para - alarm status

Tab. 7. Alarm status

| LED   | Meaning   | Cause and remedy  |
|---|---|---|
|  <p>Lights green</p>       | Pump in operation   | Normal operation  |
|  <p>Blinks quick green</p> | Pump runs during 10 min. in air venting function. Afterwards the targeted performance must be adjusted. | Normal operation  |
|  <p>Blinks red/green</p>   | Pump in function but stopped. Pump restarts by itself after the fault is disappeared.                   | 1. Undervoltage $U < 160V$ or overvoltage $U > 253V$<br><b>Check voltage supply 160V &lt;math&gt;U &lt; 253 V&lt;/math&gt;</b><br><br>2. Modul overheating: temperatur inside motor too high.<br><b>Check water and ambient temperature</b> |
|  <p>Blinks red</p>       | Pump out of function. Pump stopped (blocked)  | Pump does not restart by itself due to a permanent failure<br><b>Change pump</b>  |
|  <p>LED off</p>          | No power supply.<br>No voltage on electronics.  | 1. Pump is not connected to power supply.<br><b>Check cable connection</b><br>2. LED is damaged.<br><b>Check if pump is running.</b><br>3. Electronics are damaged.<br><b>Change pump</b>   |

# 15. Spare parts list.

Tab.8 Parts list

| Pos. | Service code | Picture number     | Name                                   | Amount (pcs) | Notice |
|------|--------------|--------------------|--|--------------|--------|
| 1    | 01200        | EKCO.T-01.00.0004  | Heating box EKCO.T/TM 30kW/400V (15kW) | 2            | ZG     |
|      | 01201        | EKCO.T-01.00.00/03 | Heating box EKCO.T/TM 36kW/400V (18kW) |              |        |
|      | 01202        | EKCO.T-01.00.00/02 | Heating box EKCO.T/TM 42kW/400V (21kW) |              |        |
|      | 01203        | EKCO.T-01.00.00/01 | Heating box EKCO.T/TM 48kW/400V        |              |        |
| 2    |              |                    |  |              |        |
| 3    | 01205        | EKCO.T-03.01.00    | Case EKCO.T                            | 1            |        |
| 4    | 01214        | EKCO.T-03.02.00    | Front cover EKCO.T                     | 1            |        |
| 5    | 01216        | ECKO.TM-03.01.00   | Case ECKO.TM                           | 1            |        |
| 6    | 01217        | ECKO.TM-03.02.00   | Front cover ECKO.TM                    | 1            |        |
| 7    | 01211        | ECKO.T-10.00.00    |  |              |        |
| 8    | 01206        | EKCO.T-04.00.00    | Inlet connection pipe                  | 1            |        |
| 9    | 01207        | EKCO.T-06.00.00    | Outlet connection pipe I (right)       | 1            |        |
| 10   | 01208        | EKCO.T-07.00.00    | Outlet connection pipe II (left)       | 1            |        |
| 11   | 01209        | EKCO.T-08.00.00    | Main connection flow output            | 1            |        |
| 12   | 01210        | EKCO.T-09.00.00    | Power board pipe                       | 1            |        |
| 13   | 01213        | EKCO.T-05.01.00    | Power board connection pipe            | 1            |        |
| 14   |              |                    |  |              |        |
| 15   | 01204        | EKCO.T-05.03.00    | Power board EKCO.T/TM                  | 2            |        |
| 16   | 01010        | EKCO.L-14.00.00a   | ZIO-23 connection board (EKCO.T)       | 1            |        |
| 17   | 01219        | PSK.P4-00.00.00/04 | Control panel PSK.P4 (EKCO.T)          | 1            |        |
| 18   | 01041        | EKCO.M-11.00.00    | ZIO-24 connection board (EKCO.TM)      | 1            |        |
| 19   | 01220        | PSK.M2-00.00.00    | Control panel PSK.M2 (EKCO.TM)         | 1            |        |
| 20   |              |                    |  | 1            |        |
| 21   | 02346        |                    | Supply temperature sensor NTC          | 1            |        |
| 22   | 01339        |                    | Flow sensor (with inlet temp. sensore) | 1            |        |
| 23   | 00035        |                    | Manometer                              | 1            |        |
| 24   | 01766        |                    | Pump UPM3 Flex AS 15-70 130 AZJ        | 1            |        |
|      | 01972        |                    | Pump Wilo Yonos PARA RS15/7-RKA 130    | 1            |        |
| 25   |              |                    |  |              |        |
| 26   | 00001        |                    | Automatic air vent                     | 1            |        |
| 27   | 00144        |                    | Diaphragm safety valve EPCO / EKCO     | 1            |        |
| 28   | 00516        |                    | WT-3 safety cut-out                    | 2            |        |
| 29   |              |                    |  |              |        |
| 30   |              |                    |  | 1            |        |
| 31   |              | EKCO.L-17.00.00    | Air-vent connection pipe               | 2            |        |
| 32   |              | WP-59/01           | Air vent pipe                          | 1            |        |
| 33   |              | WM-120             | Clips                                  | 2            |        |
| 34   |              |                    |  |              |        |
| 35   |              | TLZ-16             | Connection TLZ-16.10                   | 2            |        |
| 36   |              | WM-061             | Bracket                                | 3            |        |
| 37   | 00253        |                    | Gasket 1.5x14,8x8 (3/8")               |              |        |
| 38   | 00255        |                    | Gasket 1.5x18,2x11,7 (1/2")            |              |        |
| 39   | 00882        |                    | Gasket 1.5x16x24 (3/4")                |              |        |
| 40   | 00647        |                    | Gasket 1.5x30x21 (1")                  |              |        |
| 41   | 00297        |                    | Gasket                                 |              |        |
| 42   | 01270        |                    | Oring 17,9x2,6                         |              |        |
| 43   |              |                    | Screw TW 4,1x22TX                      |              |        |
| 44   |              |                    | Screw TW 4,1x16TX                      |              |        |
| 46   |              |                    |  |              |        |
| 47   |              |                    |  |              |        |
| 48   |              |                    |  |              |        |
| 49   |              |                    |  |              |        |
| 50   |              |                    |  |              |        |
| 51   |              |                    |  |              |        |

# 16. Technical data

Tab.9 Technical data








|                        |     |                 |
|------------------------|-----|-----------------|
| Max. pressure          | MPa | 0,3             |
| Min. pressure          | MPa | 0,1             |
| Outflowing water temp. | °C  | 40 ÷ 85         |
| Max. water temp.       | °C  | 100             |
| Overall dimensions     | mm  | 815 x 503 x 197 |
| Weight                 | kg  | ~29             |
| Water connection       |     | G1"             |
| Safety class           |     | IP 21           |








| Type                                  |                 | EKCO.T/TM |          |          |          |
|---------------------------------------|-----------------|-----------|----------|----------|----------|
|                                       |                 | 30        | 36       | 42       | 48       |
| Rated power consumption               | kW              | 30        | 36       | 42       | 48       |
| Rated voltage                         |                 | 400V 3N~  |          |          |          |
| Rated current                         | A               | 3 x 43,3  | 3 x 52,0 | 3 x 60,6 | 3 x 69,3 |
| Fuse rated current                    | A               | 50        | 63       | 80       |          |
| Min. connecting wires section         | mm <sup>2</sup> | 5 x 10    |          |          | 5 x 16   |
| Max. connecting wires section         | mm <sup>2</sup> | 5x50      |          |          |          |
| The maximum allowed network impedance | Ω               | 0,14      | 0,09     | 0,035    | 0,03     |

















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| symptom  | reason   | action  |
|--|--|---|
| Control panel indicators are off   | lack of boiler power supply  | check parameters of the power network and fuses   |
|  |  | contact the seller  |
|  indicator flickers   | pump is blocked  | unblock the pump by unscrew the screw on pump housing and move the pump rotor manually  |
|  | medium doesn't circulate through the boiler - boiler is blocked                | an air-bound of central heating system, vent the installation, pump and boiler<br>check patency of central heating system, clean the filter |
|  | a failure of pump's power supply   | contact the seller  |
|  | a failure of pump or flow sensor   | contact the seller  |
|  indicator is off, room thermostat sends heat on signal   | a failure of installation that connect a room thermostat                       | check installation  |
|  | a failure of electronic module   | contact the seller  |
|  indicator flickers   | D indicator flickers a failure of inlet temp. sensor, boiler in emergency mode | contact the seller  |
|  indicator flickers   | a failure of outlet temp. sensor, heating is blocked                           | contact the seller  |
|  indicator flickers when the master appliance doesn't work  | a failure of installation that connects the master appliance                   | check installation  |
|  | a failure of electronic module   | contact the seller  |
| Boiler doesn't heat a cylinder   | a failure of cylinder temp. sensor or thermostat                               | contact the seller, replace cylinder temp. sensor or thermostat   |
|  | a failure of three-way valve actuator  | replace the actuator  |
|  | a failure of electronic module   | contact the seller  |
|  panel display shows  indicator flickers | medium temperature in the circuit is too low, medium flow rate reading error   | wait until the start-up procedure is finished   |

| symptom  | reason   | action  |
|--|--|---|
| Control panel indicators are off   | lack of boiler power supply  | check parameters of the power network and fuses   |
|  |  | contact the seller  |
|  indicator flickers   | pump is blocked  | unblock the pump by unscrew the screw on pump housing and move the pump rotor manually  |
|  | medium doesn't circulate through the boiler - boiler is blocked                | an air-bound of central heating system, vent the installation, pump and boiler<br>check patency of central heating system, clean the filter |
|  | a failure of pump's power supply   | contact the seller  |
|  | a failure of pump or flow sensor   | contact the seller  |
|  indicator is off, room thermostat sends heat on signal   | a failure of installation that connect a room thermostat                       | check installation  |
|  | a failure of electronic module   | contact the seller  |
|  indicator flickers   | D indicator flickers a failure of inlet temp. sensor, boiler in emergency mode | contact the seller  |
|  indicator flickers   | a failure of outlet temp. sensor, heating is blocked                           | contact the seller  |
|  indicator flickers when the master appliance doesn't work  | a failure of installation that connects the master appliance                   | check installation  |
|  | a failure of electronic module   | contact the seller  |
| Boiler doesn't heat a cylinder   | a failure of cylinder temp. sensor or thermostat                               | contact the seller, replace cylinder temp. sensor or thermostat   |
|  | a failure of three-way valve actuator  | replace the actuator  |
|  | a failure of electronic module   | contact the seller  |
|  panel display shows  indicator flickers | medium temperature in the circuit is too low, medium flow rate reading error   | wait until the start-up procedure is finished   |

| symptom  | reason   | action  |
|--|--|---|
| Control panel indicators are off   | lack of boiler power supply  | check parameters of the power network and fuses   |
|  |  | contact the seller  |
|  indicator flickers   | pump is blocked  | unblock the pump by unscrew the screw on pump housing and move the pump rotor manually  |
|  | medium doesn't circulate through the boiler - boiler is blocked                | an air-bound of central heating system, vent the installation, pump and boiler<br>check patency of central heating system, clean the filter |
|  | a failure of pump's power supply   | contact the seller  |
|  | a failure of pump or flow sensor   | contact the seller  |
|  indicator is off, room thermostat sends heat on signal   | a failure of installation that connect a room thermostat                       | check installation  |
|  | a failure of electronic module   | contact the seller  |
|  indicator flickers   | D indicator flickers a failure of inlet temp. sensor, boiler in emergency mode | contact the seller  |
|  indicator flickers   | a failure of outlet temp. sensor, heating is blocked                           | contact the seller  |
|  indicator flickers when the master appliance doesn't work  | a failure of installation that connects the master appliance                   | check installation  |
|  | a failure of electronic module   | contact the seller  |
| Boiler doesn't heat a cylinder   | a failure of cylinder temp. sensor or thermostat                               | contact the seller, replace cylinder temp. sensor or thermostat   |
|  | a failure of three-way valve actuator  | replace the actuator  |
|  | a failure of electronic module   | contact the seller  |
|  panel display shows  indicator flickers | medium temperature in the circuit is too low, medium flow rate reading error   | wait until the start-up procedure is finished   |

| symptom  | reason   | action  |
|--|--|---|
| Control panel indicators are off   | lack of boiler power supply  | check parameters of the power network and fuses   |
|  |  | contact the seller  |
|  indicator flickers   | pump is blocked  | unblock the pump by unscrew the screw on pump housing and move the pump rotor manually  |
|  | medium doesn't circulate through the boiler - boiler is blocked                | an air-bound of central heating system, vent the installation, pump and boiler<br>check patency of central heating system, clean the filter |
|  | a failure of pump's power supply   | contact the seller  |
|  | a failure of pump or flow sensor   | contact the seller  |
|  indicator is off, room thermostat sends heat on signal   | a failure of installation that connect a room thermostat                       | check installation  |
|  | a failure of electronic module   | contact the seller  |
|  indicator flickers   | D indicator flickers a failure of inlet temp. sensor, boiler in emergency mode | contact the seller  |
|  indicator flickers   | a failure of outlet temp. sensor, heating is blocked                           | contact the seller  |
|  indicator flickers when the master appliance doesn't work  | a failure of installation that connects the master appliance                   | check installation  |
|  | a failure of electronic module   | contact the seller  |
| Boiler doesn't heat a cylinder   | a failure of cylinder temp. sensor or thermostat                               | contact the seller, replace cylinder temp. sensor or thermostat   |
|  | a failure of three-way valve actuator  | replace the actuator  |
|  | a failure of electronic module   | contact the seller  |
|  panel display shows  indicator flickers | medium temperature in the circuit is too low, medium flow rate reading error   | wait until the start-up procedure is finished   |