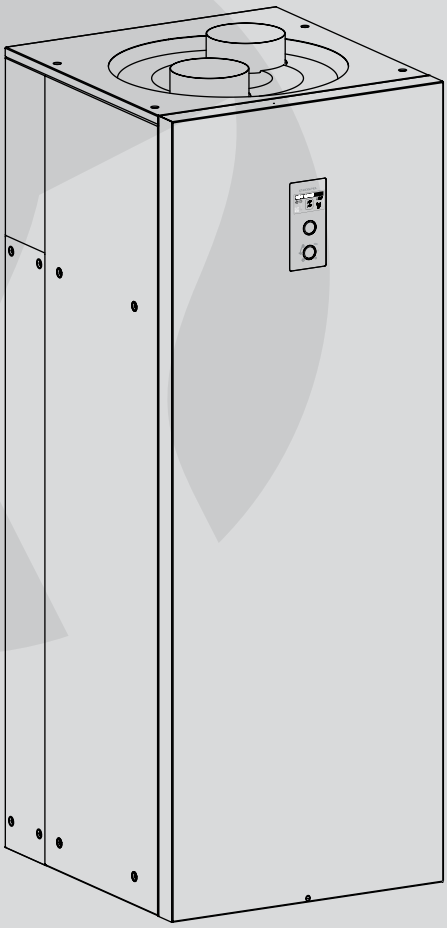
KOSPEL

Heat Pump



HPSW-2/250

Installation and operating instructions

This appliance may be used by children at the min. age of 8 years and by persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge about the product, provided that they have been given supervision or instruction concerning safe usage of the appliance and that they are aware of potential dangers that might result from usage of the appliance. Children should not play with the device. Children without supervision should not complete any cleaning nor maintenance procedures.

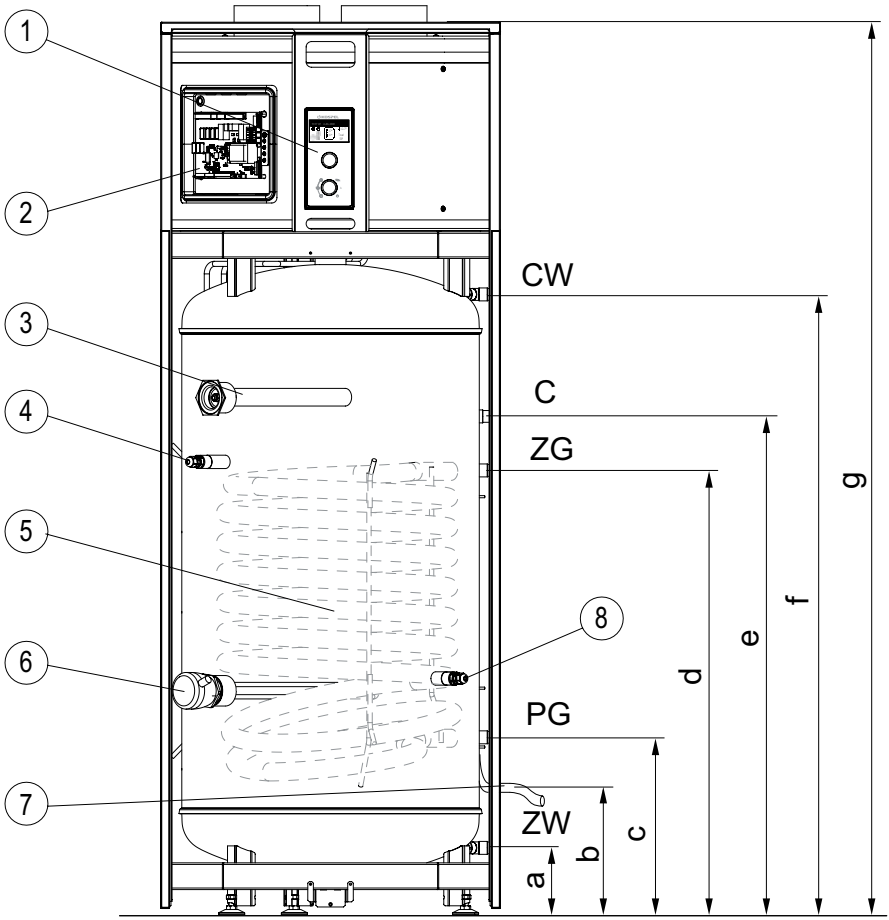
Used product can't be treated as general communal waste. Disassembled appliance has to be delivered to the collection point of electrical and electronic equipment for recycling. Appropriate utilisation of used product prevents potential negative environmental influences that may occur as a result of inappropriate handling of waste. In order to get more detailed information about recycling this product you should contact the local government unit, waste management service or the shop where this product has been purchased.

Safety instructions

1. Read and strictly follow the installation and operating instructions to ensure a long life and reliable operation of this appliance.
2. Installation and use of heat pump inconsistent with this instruction is not permitted - may cause malfunction and will void the warranty.
3. Room for installation should have cubature of minimum 20 m^3 and provide adequate air exchange.
4. Device must not be installed in rooms where the ambient temperature may drop below 0°C.
5. Mounting and commissioning of heat pump and accompanying installation should be entrusted to a specialist service company.
6. Heat pump should be installed only in horizontal position on a flat surface with appropriate lifting capacity.
7. Device must be installed in such a place and in a such a way that the emergency leakage from connectors would not cause flooding of the room.
8. Room must have a possibility to drain condensate to the sewer.
9. After installation device must be connected to water supply system and optionally to heating system as described in the manual. Inconsistence with the description of the connection invalidates the warranty and may cause malfunction.
10. Connection to the water supply system must be made in accordance with the binding norms.
11. Heat pump is designed to connect to installation with pressure not exceeding 0,6MPa. If the water pressure exceeds 0,6MPa, install a pressure reducing valve in front of the machine.
12. Water dripping from the discharge pipe of the safety valve is normal and should not be prevented because blocking the valve can be the cause of failure.
13. Do not use the device if there is a possibility that the valve security is broken.
14. The tank is equipped with a magnesium anode - an additional protection against corrosion. The anode is an operating part, therefore, it is exposed to wear. The condition of the magnesium anode should be controlled every 12 months, however, it is due to be replaced with a new one every 18 months.
15. The heating medium temperature must not exceed 80°C !.

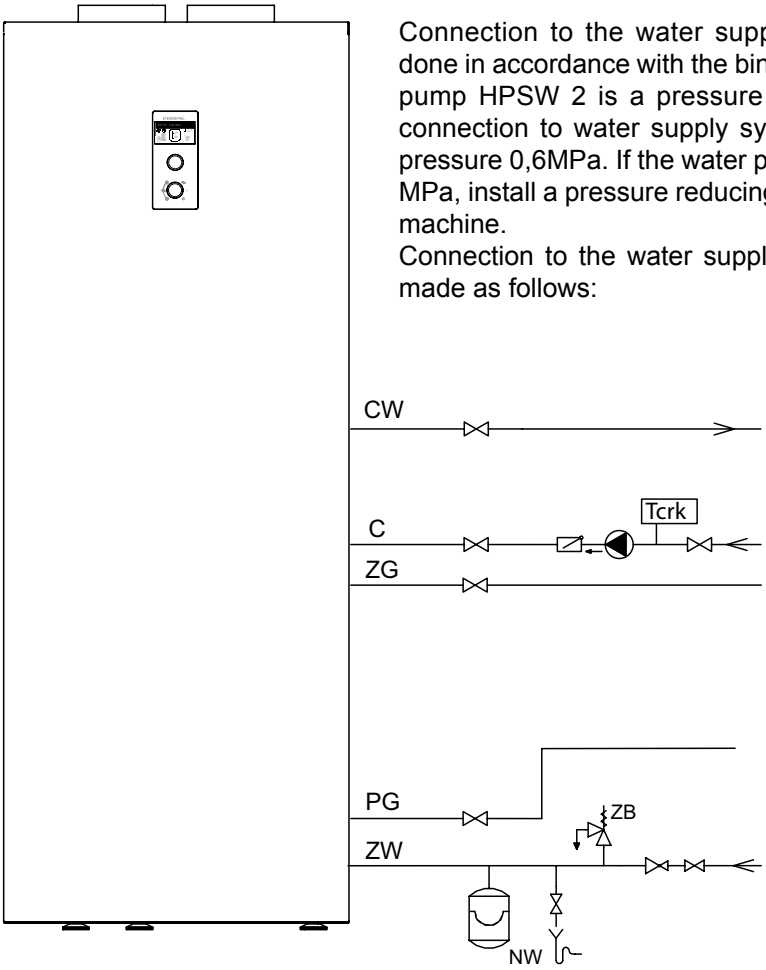
Description

The HPSW-2 heat pump is device used to heat and store domestic hot water using stored energy in the ambient air. Device is equipped with a 250l, an electric heater and a coil to connect external heat source (e.g. central heating boiler).



[1] - control panel
[2] - controller
[3] - magnesium anode
[4] - upper temperature sensor
[5] - coil
[6] - electric heater
[7] - condensate pipe DN16
[8] - bottom temperature sensor
ZW - cold water inlet
CW - cold water outlet
C - circulation connector
ZG - heating medium supply
PG - heating medium return

Connection to the heating and water supply system



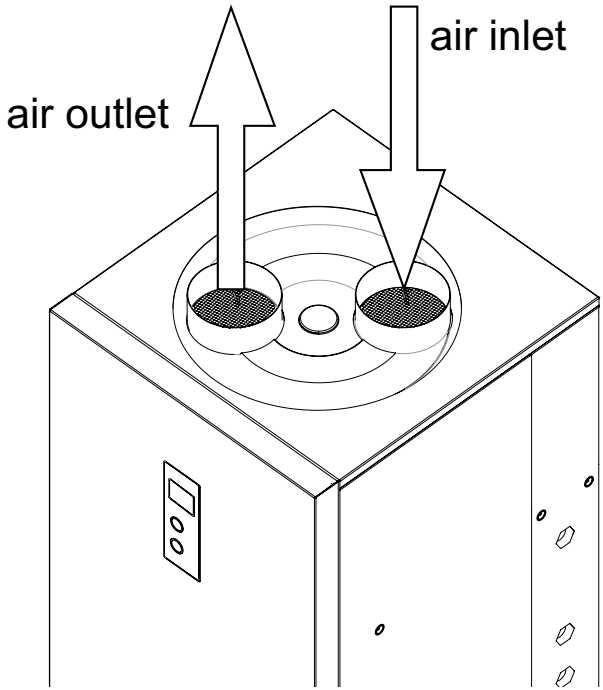
Connection to the water supply system must be done in accordance with the binding norms. Heating pump HPSW 2 is a pressure device adapted for connection to water supply system not exceeding pressure 0,6MPa. If the water pressure exceeds 0,6 MPa, install a pressure reducing valve in front of the machine.

Connection to the water supply system should be made as follows:

- install T-connector with safety valve of opening pressure 6 bar and drain valve to cold water inlet connection between and safety valve; at its outlet cannot be placed any cut-off valve or any throttling element; safety valve must be installed so that water leak is visible,
- connect heat pump with mounted safety valve to water supply system,
- install cut-off valve at cold water inlet. Domestic hot water outlet must be connected to CW connector which is located at the upper part of device.
- each device is equipped with a C connector designed to connect circulation.

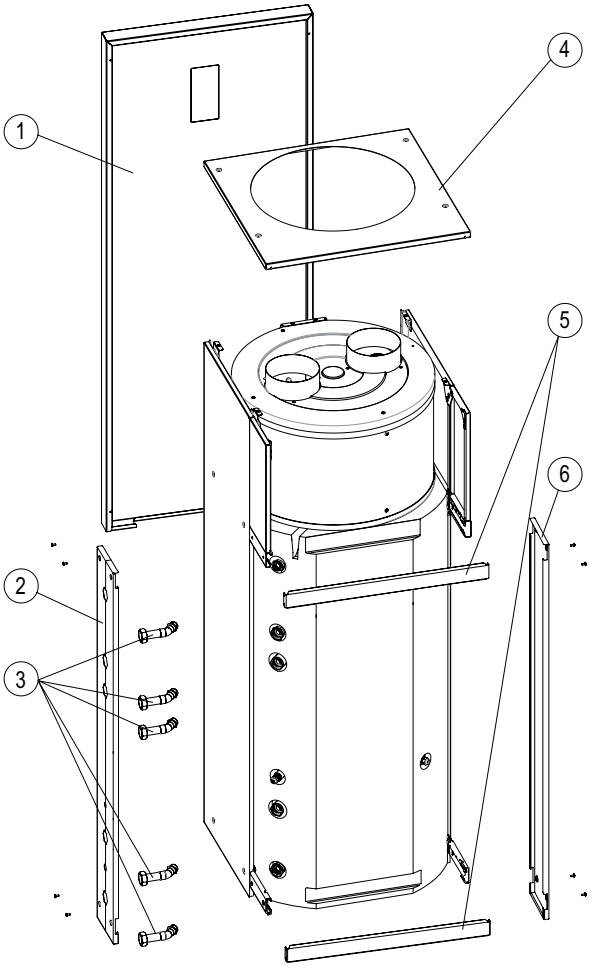
Air cables connection

Air can be extracted from room in which the device is mounted, another room or from outside of the building. Air can be extracted from room in which the device is mounted, another room or from outside of the building. Install air filter of filtration class G3 at the inlet channel.
In order to achieve optimal device parameters, provide air flow of 300m^3/h. To minimize losses associated with air resistance, cables must be performed in a straight line. For DN200 the total length of the air inlet and outlet should not exceed 10m.

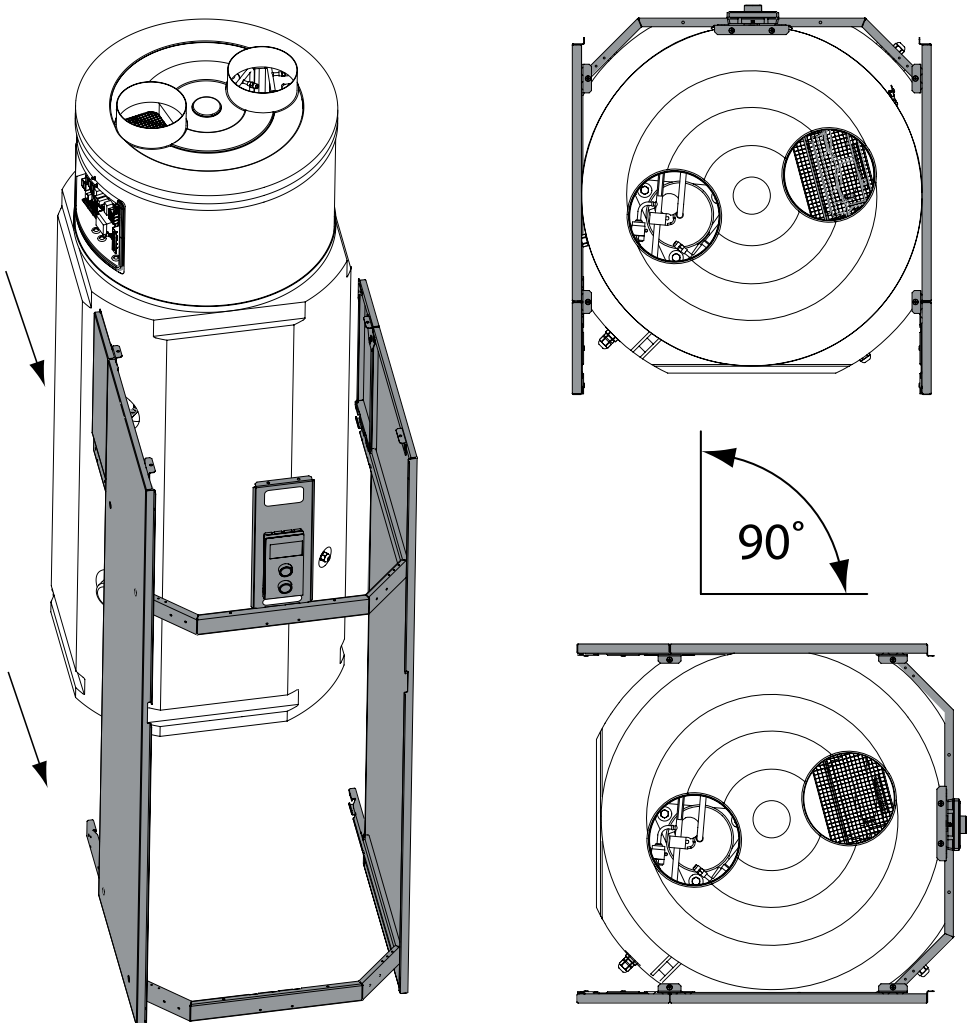


Assemble of case and angular connectors

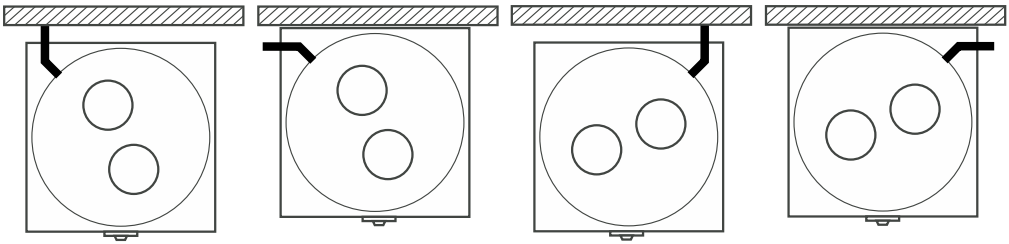
The device case has been designed to allow connector to be directed into right or left side. To direct connectors to required angle rotate them in the socket of hose connector with an angle of 180 degrees.



[1] - front cover
[2] - side cover - back (with holes for connectors)
[3] - angular connections G1 with hose connector
[4] - upper cover
[5] - back bracket
[6] - side cover - back

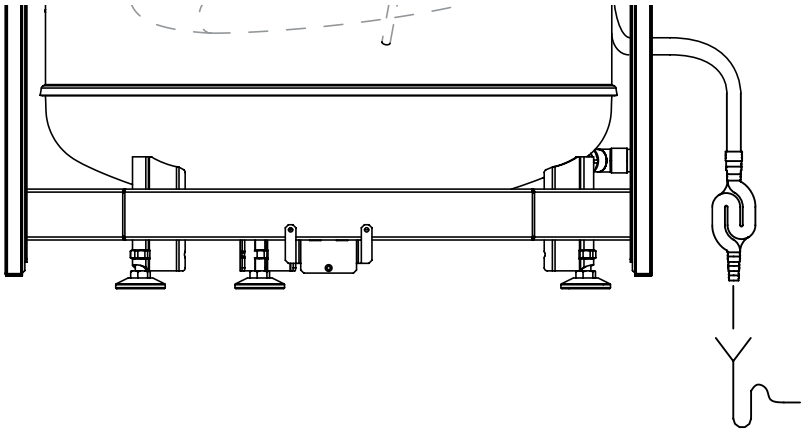


HPSW pump allows to change the position of the connectors. Connectors may be directed to the back or side of device (right or left side).



Connection of the condensate hose

During normal operation, moisture in the air condenses on the walls of evaporator. Condensates flow into the drip tray where are led to the tube nozzle on the outside of the device. Siphon should be hermetically connected to the condensate pipe and then led to sewerage. The pipe should be led without any bends to allow free drainage.



Connection to the electric installation

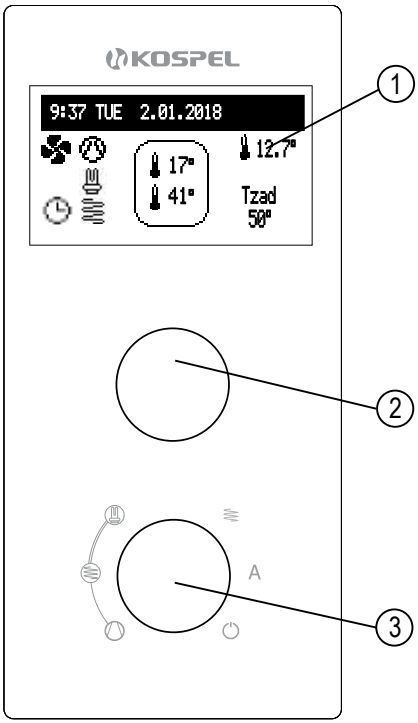
Device is equipped with a power cord that must be permanently connected to electrical installation.
The electrical system should be equipped with a residual current protective devices and means providing that device can be disconnected from power source where distance between joints of all poles is not less than 3 mm.

Start-up

Before starting the unit, visually check the connection of the device and proper installation in accordance with the diagrams.
Cylinder must be filled with water:

- open the valve on the cold water inlet,
- open the valve on the hot water outlet installation (full flow of water stream, without air bubbles indicates that the tank is full)
- close the taps.

Open the valves connecting the heating system with the coil. Check for leaks on the sanitary hot water and heating medium side. Check the operation of the safety valve (in accordance with the valve's manufacturer instruction).



[1] - display
[2] - preview and settings navigation dial
[3] - mode dial

Use the lower knob to select operating mode [3]:

- stand-by > heating pump is off, only frost protection is active,
- compressor > according to configured work schedule heat pump maintains set hot water temperature if the air temperature intake does not allow to activate compressor, occasionally the conditions of starting heat pump will be verified,
- compressor + additional heat source> according to configured work schedule heat pump maintains set hot water temperature, if the air temperature intake will not allow to activate compressor additional heat source is activated and occasionally the conditions of starting heat pump will be verified,
- compressor + additional heat source + heater > according to configured work schedule heat pump and external heat source maintain set hot water temperature, if the air temperature intake will not allow to activate compressor heater is activated and occasionally the conditions of starting heat pump will be verified,
- additional heat source > according to configured work schedule additional heat source maintains set hot water temperature,
- A turbo > selecting this mode enables heating water with all available heat sources until reaching the set temperature,and returns to the previous work mode except stand-by mode. In order to activate the mode enter required hot water temperature, then default temperature of 50°C will be displayed. The temperature level can be corrected using upper dial and then confirmed by pressing the upper dial. After around 10 seconds of inactivity the level of temperature will be automatically saved.

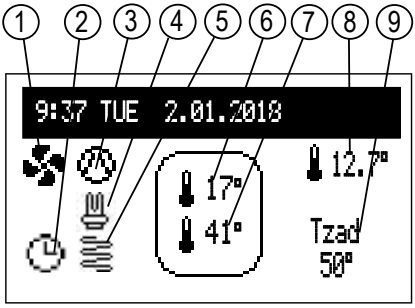
The navigation dial switches function screens:

- MAIN SCREEN: informs about main heat pump parameters (→ MAIN SCREEN),
- SETTINGS: allows to adjust parameters to user's preferences,
- SERVICE / CONFIGURATION: allows to set the hot water heating system (available to specialized services) and preview of input and output signals of the device.

Access to individual functions is enabled after selecting suitable function screen and pressing navigation dial.

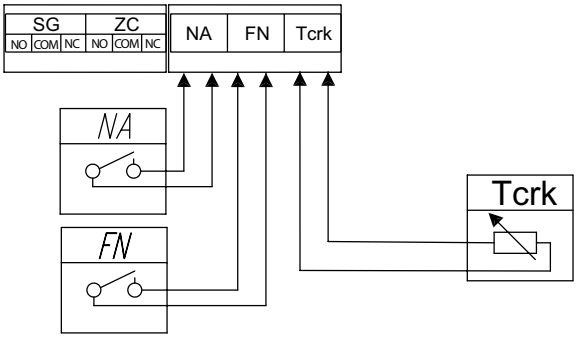
The appearance of an error (s) or warnings of the device is signaled on the main (Err / ⚠) function screen, after pressing the knob, a list of errors and warnings is available.

MAIN SCREEN



[1] - ventilator
[2] - signalling of program implementation
[3] - signalling of compressor work
[4] - electric heater
[5] - external heat source /coil
[6] - temperature of upper cylinder
[7] - temperature of bottom cylinder
[8] - temperature of inlet air (displayed only while ventilator is working)
[9] - set hot water temperature

Signalling of set work program:		
	Maintaining efficiency according to set daily/weekly schedule	
	Disinfection	
NA	Heat pump blocked by an external signal	
FN	FN function work indication	
⚠	Device's warning indication	
Err	Device's error indication	
	Indication of switching on fan	gear 1
		gear 2
	Indication of switching on compressor	
	Indication of switching on heater	
	Indication of switching on additional heat source	



Circulation temperature sensor (Tcrk) (additional component - WE sensor 019/01)

Location of mounting the sensor is shown in the hydraulic system diagram. Cable connection of the sensor should be as short as possible, shouldn't be led close to power cords or wrapped around other wires.

Note that connection of the sensor is optional. When it is not mounted, circulation pump works continuously according to circulation schedule. If the sensor is mounted, circulation pump also works according to circulation schedule but only until the temperature in the circulation stabilizes. At certain time intervals circulation temperature is verified. If water temperature needs to be raised, the pump is activated.

When the sensor is not mounted, the pump works continuously. When the sensor is mounted, the pump works when temperature in circulation declines. Control system automatically detects the presence of the sensor and adjusts accordingly circulation pump control algorithm.

Master appliance (entry NA)

In order to limit the electricity used, it is possible to make the work of devices conditional from other external controllers. In this case, the break contact needs to be connected to NA entry so that switching on electricity master appliance will result in opening the contact, which will block the heating.

Function entry (entry FN)

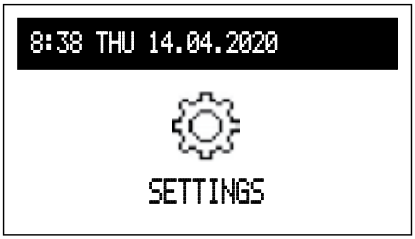
Entry of switching on heating regardless of the schedule. In order to use this function the break contact needs to be connected to NA entry. Contraction of FN entry will result in turning on heating with all available sources (heat pump, coil heater, external heat source) to setting 60°C.

Exit ZC

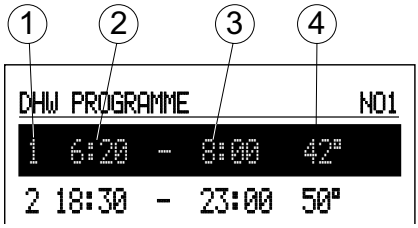
It is a relay output for controlling an external heat source. It is active only if option "Additional heat source" was switched on in setup.

Under no circumstances should any voltage be connected to these terminals (SG, ZC, NA, FN, TCRK), as this will result in the damage of boiler's controller.

SETTINGS:



1 - no. of time frame according to schedule (max 5)
2 - time of starting the selected temperature
3 - time of finishing the selected temperature
4 - temperature setting



- DHW PROGRAMME:
  - No1…No8 > setting 8 daily programs, in each daily program there are 5 editable time frames, for which hot water temperature can be set between 30..60°C, in the remaining time frost protection will be active. Setting up daily programs procedure is described in **Daily schedule paragraph**.
  - Weekly: assigning for each day of the week one of the previously set daily programs.

- CIRCULATION PROGRAMME (available only with the active circulation within hot water system):
  - No. 1...No. 8 > setting 8 daily programs, in each daily program there are 5 editable time frames, in which circulation pump will be active. Setting up daily programs procedure is described in **Daily schedule paragraph**.
  - Weekly: assigning for each day of the week one of the previously set daily programs.

- DISINFECTION:
  - TEMPERATURE: temperature of the storage tank during disinfection,
  - WEEK DAY: day of the week of automatic disinfection,
  - START UP TIME: time of starting automatic disinfection,
  - OPERATION TIME: disinfection duration,
  - AUTOMATIC OPERATION: start disinfection automatically at a given time (Hour, Day of the week),
  - CIRCULATION (available only with the active circulation): a possibility to select disinfection of either the whole installation or just the cylinder,
  - START UP NOW: start disinfection manually (irrespective of a day and time set previously).

- DATE/ TIME:

- Setting current system time (year, month, day, hour, minute).
- AUTO TIME CHANGE: yes > automatic time switch from summer to winter mode and reverse.

**Saving settings to the controller's memory occurs after leaving menu, after pressing "Save and leave" command.*

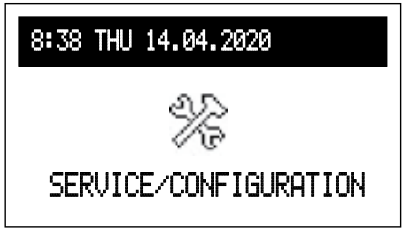
- INTERFACE:

- BRIGHTNESS MIN: setting the brightness of the display in stand-by mode
- BRIGHTNESS MAX: setting the brightness of the display in working mode
- SOUND: yes - turn on/ no - turn off of acoustic sound of the dial
- DIAL'S SENSITIVITY: 1- high / 4- low

- SYSTEM:

- MSPC PROGRAMME: shows program version of the heat pump's controller.
- PW PROGRAMME : shows panel's software version,
- RESET: restarts the heat pump,
- FACTORY SETTINGS: return to factory settings.

SERVICE / CONFIGURATION



PARAMETERS PREVIEW:
Preview of input and output signals of the heat pump.

CONFIGURATION

** Changes in the configuration menu are possible after entering an access code. When prompted for an access code, set recquired code by turn the navigation dial to the left and confirm the code by pressing the dial. If you want to retract from the code request screen, hold the navigation dial or wait until automatic return to main function screen.*

Code : 987

- CYLINDER: Change of hysteresis setting DHW.
- CIRCULATION: turn on or off the circuit.
- FAN: change of the minimum ventilator operating temperature.
- FROST PROTECTION (only when the circulation is active in the system): yes > turn on the protection of hot water installation from frost.
- ADDITIONAL HEAT SOURCE: yes > providing an additional heat source.
- DEVICE'S NO: device's number on the mains.

Exit any menu item by pressing ′End′ or by pressing and holding the navigation dial. When not operated by the user, main function screen will appear after about 3 min.

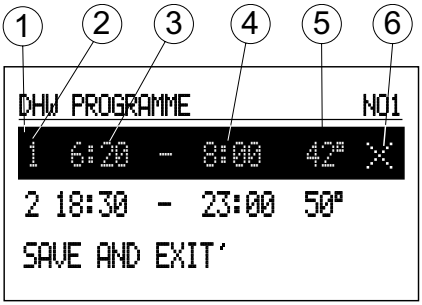
SERVICE

Diagnostic options available only for authorised service

First start-up

With the start-up of the heat pump or after the restoration of the factory settings, select MENU's language. Heat pump is ready to work properly
only after selection of this parameter.

Daily schedule:



[1] - selected time period
[2] - no. of time frame according to schedule (max 5)
[3] - time of starting set temperature
[4] - time of finishing set temperature
[5] - setting DHW temperature
[6] - command (active when editing):
☑ *accept*
☒ *delete*
⊞ *add*

In daily schedule hot water circuit has defined starting time (3) and finishing time (4) of maintaining selected temperature (5) (from range of 30..60°C). Except set time frames only frost protection of the storage cylinder will be possible. For circulation circuit within the schedule there is an adjustment of starting time and finishing time of circulation pump's operation. To change the parameters for the daily schedule, select chosen program number and press navigation dial. Editing field flashes, use the navigation dial to set the new time frame value (hour and minutes separately) and confirm by pressing the dial, then move to next field edition that starts flashing. Last editable position is a command. To save changes select command 'save' ☑ and press the dial to finish editing. To delete selected time frame, edit chosen time frame and by pressing the dial go to command position, select command 'delete ☒ and press the dial.
To add new time frame, select last defined time frame and by pressing the dial go to command position, select command 'add' ⊞ and press the dial to add new time frame which by editing can be adjusted to personal preferences (described above). If all five time frames were used or there is no time break for new period, the command ⊞ will not be visible. If there are no defined time frames within daily schedule, after selecting "new", 40 C will be set as daily temperature. The daily program will be saved to the heat pump settings after leaving daily program and pressing the command "SAVE AND EXIT".

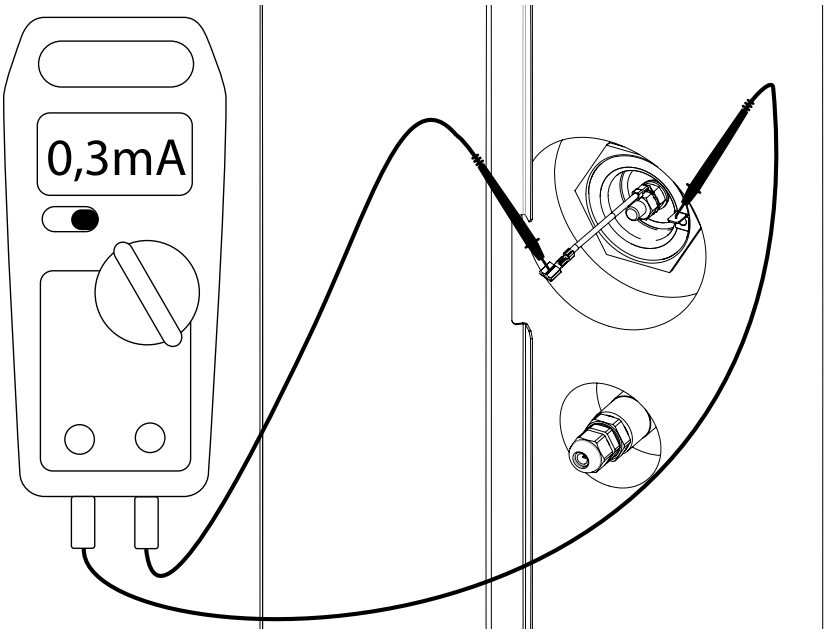
If fault occurs there will be Err message on display. In case of error contact authorized service of Kospel.

Anode's state control

When device is in use, the anode wears naturally. That is why, periodic control and replacement is necessary. In heat pump HPSW an insulated anode was used which allows for preliminary control of its consumption with no need to disassemble. System for measuring the state of anode is built into the device's controller. The measurement is carried out automatically once a day. In case when insufficient protection is detected, a message about the need to replace the anode will appear on the panel. It is also possible to verify the state of anode using universal meter.
To verify the state of anode:

- disconnect the power supply (leave device filled with water),
- remove the casing cover,
- disconnect the anode wire from connector joint,
- use universal meter to measure protective current between an anode and a cylinder's jacket (pic.).

If the value of measured current exceeds 0,3 mA, anode provides sufficient protection. In other case, unscrew the anode, evaluate its state of use, and if needed exchange it.



Technical data

Model			**HPSW-2/250**
Heating power		W	2000 / 4000*
Electric power consumption		W	600/2600**
Rated current		A	2,6/11,3
COP (by PN EN 16147) efficiency factor	A20/W15-45		3,86
	A20/W10-55		3,24
	A15/W15-45		3,47
	A15/W10-55		2,91
Power supply		V/Hz	230/50
Electric heater		W	2000
Maximum water temperature		°C	60/70***
Capacity of hot water cylinder		l	250
Rated water pressure (cylinder)		MPa	0,6
Coil capacity		l	8
Coil surface		m^2	1,2
Rated water pressure (coil)		MPa	1,0
Maximum temperature of heating medium		°C	80
Insulated magnesium anode M8 Ø33		mm	450

*Heat pump / Heat pump + heater
**Active electric heater
***Disinfection

Refrigerant type		R134A
Volume	g	460
GWP		1430
Equivalent of CO_2	t	0,658
Maximum pressure	MPa	2,6
Amount of compressors	szt.	1
Air flow	m^3/h	300
Ambient temperature	°C	5 - 40

Dimensions	a	mm	125,8
	b		229,3
	c		332,5
	d		831,5
	e		932,5
	f		1160
	dimensions (HxWxD)		1669x627x670
Nett weight		kg	152
Noise level		dB(A)	50

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