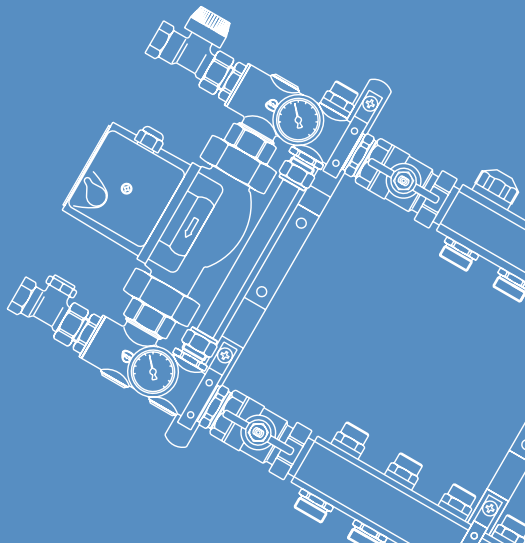




SYSTEM
KAN-therm

User manual of the pump group with constant value control set and with a three- way valve



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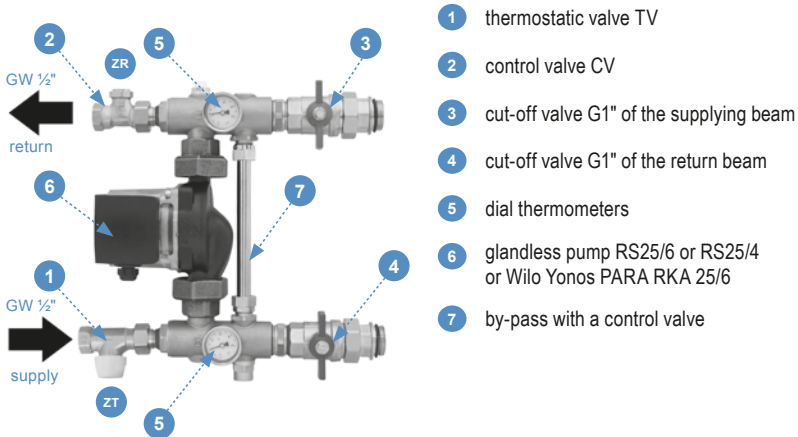


Fig.1 Construction of the pump group

The pump group ensures an accurate and optimal control of the floor heating system. A pump mixing unit connected to the manifold ensures reduction of the heating factor parameters to the required temperature of the floor heating supply system (e.g. from 80°C to 50°C).

It's not recommended to use those pump groups with low temperature heat sources (condensing boilers, heat pumps).

Construction and principles of operation

The pump group is equipped with:

1. a thermostatic valve TV with a female thread G $\frac{1}{2}$ " on the supply unit (inlet to the unit from the system), on which the thermostatic head with the clip-on temperature sensor can be screwed to manually set value of the supply temperature for the floor heating (it also serves as protection against increase of temperature above the value set on the head). The clip-on temperature sensor of the valve head on the supply should be mounted on the supply beam of the distributor with the use of the provided clamping ring. Alternatively, electric actuator may be assembled on the valve (through adapter M30×1.5mm), which cooperates with the room thermostat (value of temperature will be set by the knob of the thermostat – option recommended e.g. in rooms with few circuits connected to one distributor, where there is no need to control each circuit separately). Note: heads with sensors and electric actuators are additional equipment;
2. a control valve CV with a female thread G $\frac{1}{2}$ " on the return (outlet from the unit to the system), whose proper adjustment makes it possible to obtain proper mixing level of water and the required temperature for supply of the floor heating;
3. a cut-off valve G1" of the supply beam;
4. a cut-off valve G1" of the return beam;
5. two dial thermometers to control the supply temperature of the floor heating (red) and on the return (blue);
6. a glandless pump RS25/6 or RS25/4 with the adjusted three-level rotational speed, or a glandless pump Wilo Yonos PARA RS 25/6 RKA with the variable adjusted rotational speed along with cut-off valves;
7. a by-pass with a control valve protecting the pump in the event of all cut-off valves closing on the supply (the upper beam of the distributor).

Operation

1. The pump is supplied with hot water from the system through the thermostatic valve TV and from the return of the floor heating coil (the return beam) thanks to which mixing and decrease of the water temperature occurs, then water is transferred to the supply beam of the distributor (supplying floor heating coil).
2. Water returns to the system through the control valve CV.
3. Proper level of water mixing is obtained by changing the adjustment of the control valve CV.
4. In the case of electric actuators being mounted on each coil circuits, by-pass valve should be adjusted to $\frac{1}{2}$ of the rotation, which ensures additional flow within 0.5 – 1 l/min. (depending on the selected pump run) protecting the pump against pumping the water to the closed system (in the case of all coil circuits being simultaneously closed).
5. Make sure the unit is properly connected to other parts of the system. The unit should be mounted between the supply and the return ducts in the heat source circuit. The thermostatic valve TV should be connected to the supply duct, while the control valve CV to the return duct.

Valves adjustment

By-pass valve adjustment

1. Unscrew the protecting element of the by-pass valve with the use of the 6 mm hex wrench – Fig.2.
2. Screw in the insert till it is secured in the socket of the valve with use of the 5 mm hex wrench, and then unscrew by $\frac{1}{4}$ of the rotation (Fig.3).
3. Screw in the protecting element with the 6 mm hex wrench.

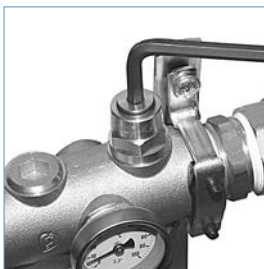


Fig.2



Fig.3

Adjustment of the control valve CV

1. Unscrew the cap with the 24 mm flat wrench.
2. Screw in the insert of the valve with the 4 mm hex wrench till it is completely closed (Fig.4).
3. Unscrew the insert of the valve by the set number of rotations equal to the set indicated in the design, or till the required supply temperature is obtained.
4. Screw in the cap.



Fig.4

Characteristics of the return valve is presented in Fig.5.

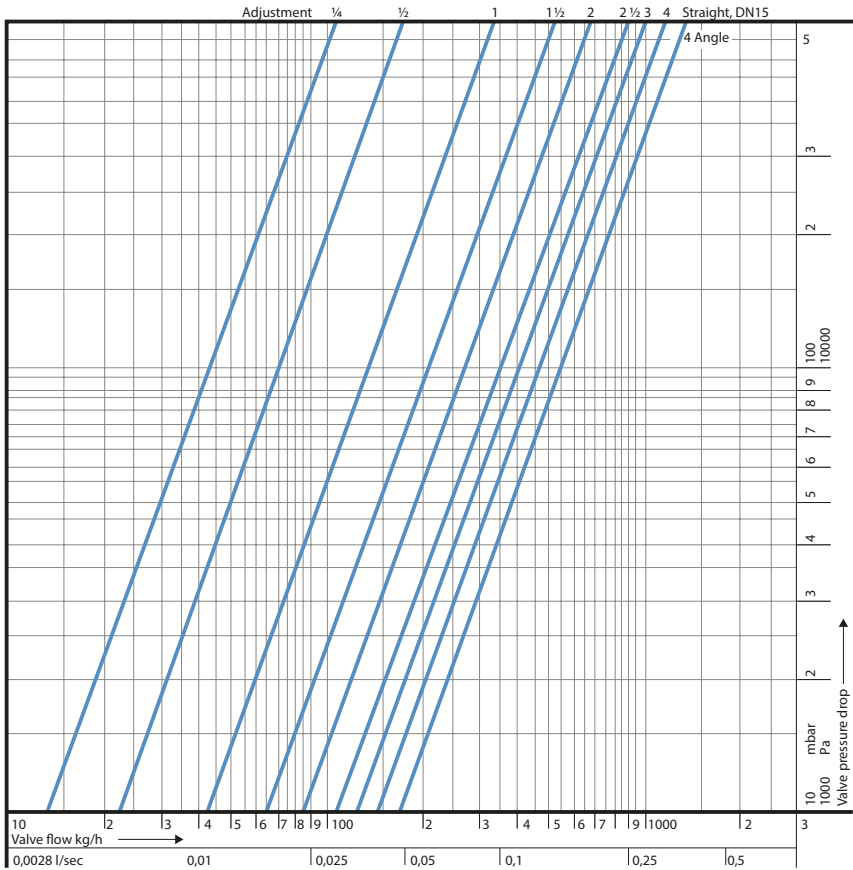


Fig.5 Characteristics of the control valve CV

Assembly, start-up and operation

Assembly and adjustment of the RS pump

The pump does not need to be operated during its work. The required characteristics of the flow are obtained by means of changing the rotational speed of the engine with a three-position switch on the electric box. Changes can be carried out during the pump operation. The pump should work with capacity that ensures proper operation of the heating system. Unjustified increase of the pump rotational speed may cause its faster wear. Prior to the start-up of the pump, the whole system must be filled in with water, and the pump must be vented. Protect the pump against running without medium. To vent the pump and check its operation, switch the pump to its maximum rotation (speed 3), unscrew the cap on the back wall and turn on the pump.

Assembly and adjustment of the Yonos PARA pump

The pump does not need to be operated during its work. The required characteristics of the flow are obtained by selecting proper operation mode (automatic or constant value) with a switch on the electric box. Changes cannot be made while the pump is in operation. Prior to the start-up of the pump, the whole system must be filled with water, and the pump must be vented. Protect the pump against a running without medium. To vent the area of the rotor, venting procedure may be manually activated by setting the red knob on the venting procedure symbol (middle position). The venting function will be activated after 3 seconds. Venting function is activated for 10 minutes and when on, the LED ring around the red knob flashed green. Flow noises may be heard during this procedure.

The venting process may be stopped at any time by turning the red knob. After 10 minutes the pump stops and automatically changes to the work mode Δp -c max. Next, if the pump should work in another mode and another set-point of the increase value, these values must be set.

RECOMMENDATION: The venting procedure removes the air that accumulates within the area of the pump rotor. It is not used to vent the whole system, which has to be carried out separately (previously).

Selection of the adjustment mode: To select the adjustment **mode I** of the setpoint of the increasing value, turn the red knob in the proper direction.

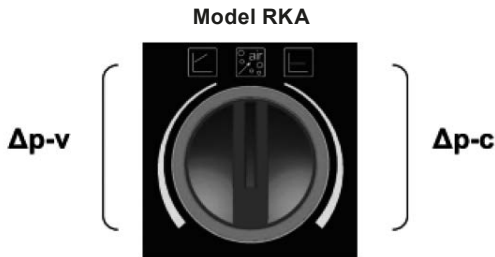


Fig.6 Selection of the adjustment

Proportional pressure difference (Δp -v):

Turn the red knob left from the middle position for the adjustment mode Δp -v.

Constant pressure difference (Δp -c):

Turn the red knob right from the middle position for the adjustment mode Δp -c.

The diagram of the pump connection to the electrical system is presented in Fig.7.

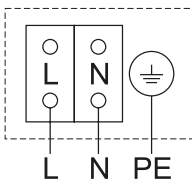


Fig.7 Diagram of the pump connection to the electrical system

Start-up of the unit

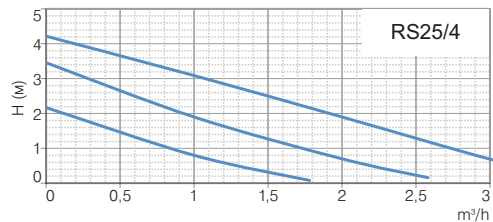
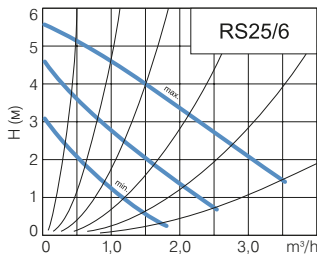
1. Following the assembly of all hydraulic connections of the unit and electric connections of the pump, fill in the system with water.
2. Open the thermostatic valve TV, fully open the cut-off valves of the distributor, open the ball valve on the pump, and close the control valve CV.
3. In the case of actuators being mounted on all coils circuits, adjustment of the by-pass valve (opening – $\frac{1}{4}$ of the rotation) should be carried out. The unit is delivered with the closed valve.
4. Vent and start up the pump, vent the floor heating system (in the described situation water circulates through the pump and coils of the floor heating, alternatively by by-pass).
5. Set and obtain water design temperature (e.g. 80°C) in the heat source for radiators, as well as the flow. Next, with the proper number of rotations in the direction of opening the control valve CV set the valve and obtain the required value of temperature for supply of the floor heating.

CV adjustment should be carried out in two stages:

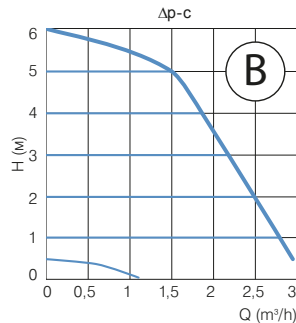
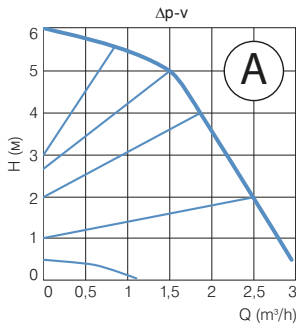
- I. initial setup of the supply temperature at the start-up of the floor heating system equal to the design temperature -10°C (max. 40°C),
- II. final adjustment of the supply temperature (the next day), after heating the screed and adjustment of the heating circuits (max. 50°C).

After hydraulic adjustment of the heating and final adjustment of the CV, mount the head with a clip-on temperature sensor or electric actuator on the thermostatic valve TV (the thermostat control option).

Characteristics of the pump



Yonos PARA RKA 25/6



USER MANUAL OF A PUMP GROUP WITH A THREE-WAY VALVE

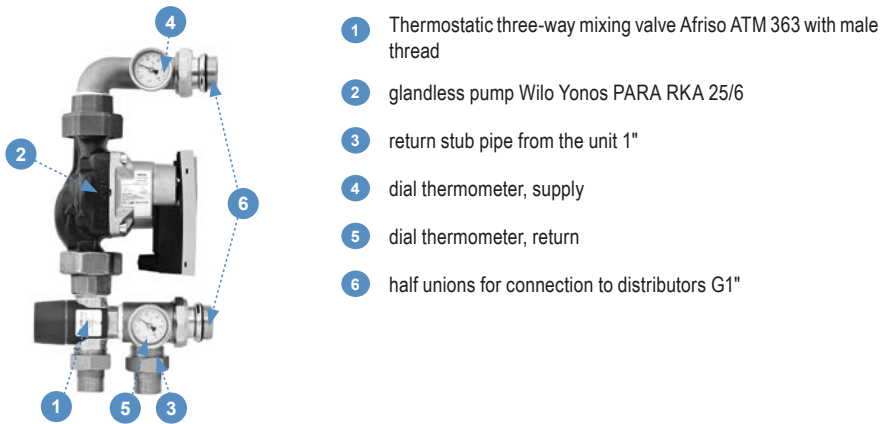


Fig.8 Construction of the pump group

This pump group ensures accurate and optimal control of the floor heating system as well as reduction of the heating factor parameters to the required temperature of the floor heating supply system (e.g. from 80°C to 50°C) regardless of the heat source.

Construction and principles of operation

The pump group is equipped with:

1. a thermostatic three-way mixing valve with a male thread G1" on the supply unit (inlet to the unit from the system). The valve enables to set the temperature of the mixed water within the range from 35 to 65 °C,
2. a glandless pump Wilo Yonos PARA RKA 25/6 with the variable adjusted rotational speed,
3. a return connection with the external thread G1",
4. dial thermometers to control the supply temperature of the floor heating,
5. dial thermometers to control the supply temperature of the return unit,
6. a half unions for connection to distributors with male thread G1" and span in the axis 235 mm.

Operation

1. The unit is supplied with hot water from the system through the three-way thermostatic valve and from the return of the floor heating coil (the return beam) thanks to which mixing and decrease of the water temperature transferred to the supply beam of the distributor (supplying floor heating coil) occurs. Water circulation in the system is forced by operation of the built-in pump.
2. Water returns to the system through the return stub pipe.
3. Proper temperature of the agent after mixing is obtained by changing the setpoint on the three-way thermostatic valve.
4. In the case of electric actuators being assembled on each coil circuits, control automation should be equipped with the module turning off the pump when all circuits are closed. Alternatively, one circuit of the distributor may be left without automatic control. It will secure the pump against pumping the water to the closed system.

Make sure the unit is properly connected to other parts of the system. The unit should be mounted between the supply and the return stub pipe should be connected to the return circuit. In the case of more complex systems, it may be necessary to apply additional throttle on the inlet of the pump group.

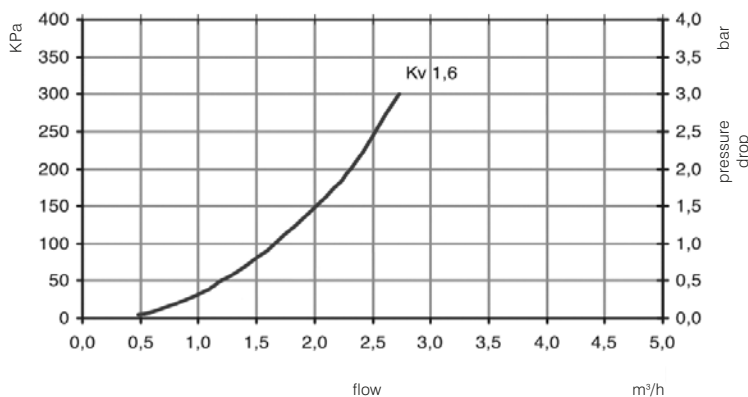
Adjustment of the thermostatic mixing valve

To set the required temperature after mixing, remove the plastic cap protecting the three-way valve ("click" assembly) and select proper setpoint of the valve:

Setpoint	Temperature of mixed water
1	35 °C
2	44 °C
3	48 °C
4	51 °C
5	57 °C
6	60 °C

Temperature values are given with the accuracy of ± 2 °C.

Hydraulic characteristic of the valve is presented on the below diagram:



After selection of the proper setpoint of the valve, reassemble the plastic protecting cap.

Assembly, start-up and operation

Assembly and adjustment of the Yonos PARA pump

The pump does not need to be operated during its work. The required characteristics of the flow are obtained by selecting proper operation mode (automatic or constant value) with a switch on the electric box. Changes cannot be carried out while the pump is in operation. Prior to the start-up of the pump, the whole system must be filled with water, and the pump must be vented.

Protect the pump against a running without medium. To vent the area of the rotor, venting procedure may be manually activated by setting the red knob on the venting procedure symbol (middle position). The venting function will be activated after 3 seconds. The venting function is activated for 10 minutes and when on, the LED ring around the red knob flashes green. Flow noises may be heard during this procedure. Venting process may be stopped at any time with turning the red knob. After 10 minutes the pump stops and automatically changes to the work mode Δp -c max. Next, if the pump is to work in another mode and another set-point of the increase value, these values must be set.

RECOMMENDATION: The venting procedure removes the air that accumulates within the area of the pump rotor. It is not used to vent the whole system, which has to be carried out separately (previously).


Selection of the adjustment mode: To select the adjustment **mode I** of the setpoint of the increasing value, turn the red knob in the proper direction.



Fig.9 Selection of the adjustment mode

Proportional pressure differenced (Δp -v): 

Turn the red knob left from the middle position for the adjustment mode Δp -v.

Constant pressure difference (Δp -c): 

Turn the red knob right from the middle position for the adjustment mode Δp -c.

The diagram of the pump connection to the electrical system is presented in Fig.10.

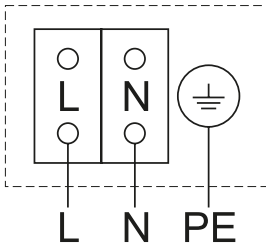


Fig.10 The diagram of the pump connection to the electrical system

Start-up of the unit

1. Following the assembly of all hydraulic connections of the unit and electric connections of the pump, fill in the system with water.
2. Set the thermostatic mixing valve to the required temperature of the mixed water.
3. In the case of actuators being mounted, the pump should be connected through the pump module on terminal.
4. Vent and start-up the pump, vent the floor heating system (in the described situation water circulates through the pump and the floor heating coils).
5. Set and obtain water design temperature (e.g. 80°C) in the heat source for radiators, as well as the flow.

Characteristics of the pump WILO Yonos PARA RKA 25/6

