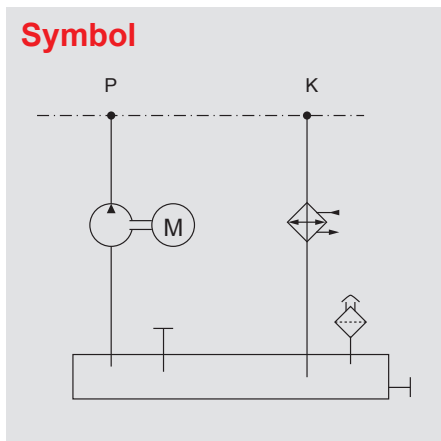


## Fluid-Water Cooling Systems FWKS

### Symbol



### General

The **FWKS** is a compact fluid/water cooling system with a tank, circulating pump, plate heat exchanger and optional temperature control.

The FWKS is primarily used as an intermediate circuit. The advantage of an intermediate circuit is that the system or the parts being cooled only come into contact with the operating fluid and not the coolant water itself, which helps prevent the system from becoming contaminated or corroded.

### Application Field

- Fluid-cooled drives:  
Motor spindles, torque motors, servomotors, linear motors
- Inverter cooling
- Gearbox cooling and lubrication
- Bearing cooling
- Tool cooling

### Operation Data

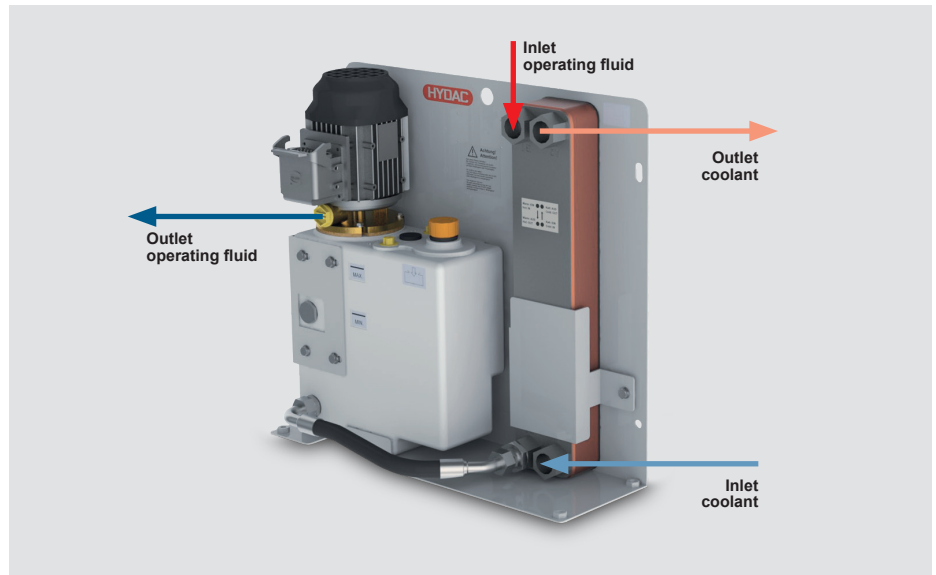
|                        |  |
|------------------------|--|
| Cooling capacity       | Max. 100 kW (depending on constraints)   |
| Operating fluid        | Water-glycol mixture (W):<br>Potable water with 35 – 40 % ethylene glycol-based or propylene glycol-based antifreeze and anti-corrosion concentration<br>Other fluids available upon request (e.g., mineral oil).                            |
| Permitted temperatures | Fluid temperature: max. 60 °C<br>Ambient temperature: 0 – 45 °C  |
| Output                 | Max. 100 l/min   |
| Reservoir volume       | Max. 70 l  |
| Electrical connection  | The motors are electrically connected using a terminal box or a heavy-duty plug.   |
| Mounting position      | Pump vertical  |
| Accessories            | <ul style="list-style-type: none"> <li>● Filling level switch</li> <li>● Filling level and temperature switch</li> <li>● Flow switch</li> <li>● Temperature controller</li> </ul> Combinations and other accessories available upon request. |

## Function

The pump conveys the operating fluid from the tank through the part of the consumer being cooled.

The operating fluid absorbs the heat and flows through the plate heat exchanger, where it is cooled by the coolant flowing in the opposite direction.

The operating fluid is then fed back to the tank.



## Control Options

In unregulated systems, the maximum quantity of coolant is always pumped through the plate heat exchanger regardless of the power input of the consumer. The FWKS with temperature control can change that by adding a valve that adjusts the amount of coolant to the requirements of the consumer. This means only the coolant that is needed to maintain the specified flow temperature is used. This is why regulated systems are particularly energy-efficient and conservative.

The FWKS series offers a number of control and regulating options. This means the right solution can be found for any application.



### Mechanical temperature control version

This version uses fixed value regulation.

The desired flow temperature is set manually. A temperature sensor in the tank measures the temperature of the operating fluid. The integrated proportional valve adjusts the amount of coolant to the power requirements of the consumer.

#### Application:

- Fixed value control to  $\pm 3\text{ }^{\circ}\text{C}$
- Power cooling
- Protection against condensation
- No electricity required for controller



### Electronic temperature control version

Sensors measure the fluid and air temperature, which is analyzed by the temperature controller. An integrated proportional valve adjusts the amount of coolant to the needs of the consumer.

This makes it possible to keep the fluid temperature the same as the ambient temperature (air or machine base temperature).

#### Application:

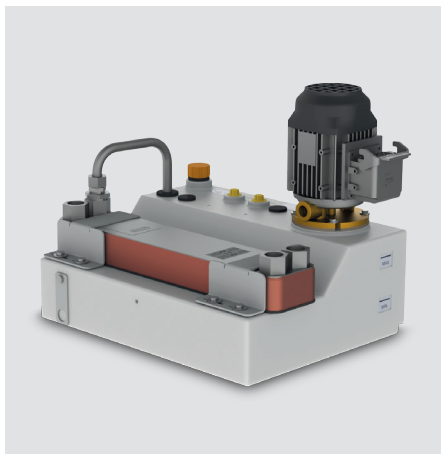
- Precision cooling to  $\pm 0.5\text{ }^{\circ}\text{C}$
- Protection against condensation
- Fixed value setting or differential temperature regulation



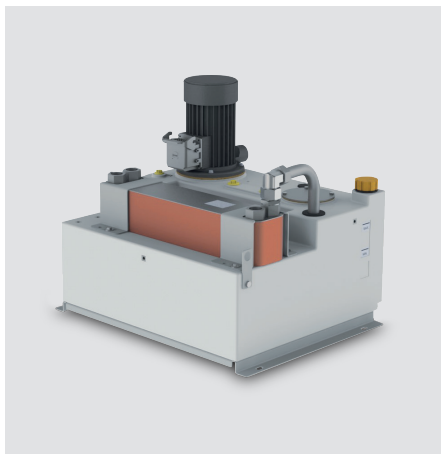
**FWKS-0/1.x**



**FWKS-2/1.x**



**FWKS-2/2.x**



**FWKS-3/2.x**

|                   | Cooling capacity* | Flow rate      | Pressure range | Tank capacity | Dimensions H x W x D |
|-------------------|-------------------|----------------|----------------|---------------|----------------------|
| <b>FWKS-0/1.x</b> | max. 10 kW        | 5 – 15 l/min   | max. 3.5 bar   | 7.0 l         | 145 x 220 x 350 mm   |
| <b>FWKS-2/1.x</b> | max. 20 kW        | 5 – 25 l/min   | max. 5.5 bar   | 9.5 l         | 540 x 155 x 540 mm   |
| <b>FWKS-2/2.x</b> | max. 30 kW        | 5 – 35 l/min   | max. 5.5 bar   | 21.0 l        | 415 x 390 x 525 mm   |
| <b>FWKS-3/2.x</b> | max. 100 kW       | 14 – 100 l/min | max. 5.5 bar   | 70.0 l        | 564 x 608 x 670 mm   |

\* The maximum cooling capacity of the FWKS depends on several factors:

- the inlet temperature of the operating fluid and coolant
- the flow rate of the operating fluid and coolant
- the fluid used.

## Specification Sheet Fluid/Water Cooling System (FWKS)

Project: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Phone: \_\_\_\_\_  
E-mail: \_\_\_\_\_  
Date: \_\_\_\_\_ Author: \_\_\_\_\_

### General

Required cooling capacity: \_\_\_\_\_ kW  
Ambient temperature: min. \_\_\_\_\_ °C max. \_\_\_\_\_ °C  
Site: \_\_\_\_\_  
Cavity Height: \_\_\_\_\_ mm Width: \_\_\_\_\_ mm Depth: \_\_\_\_\_ mm  
Electrical data: Voltage: \_\_\_\_\_ V Frequency: \_\_\_\_\_ Hz

### Hot side

Operating fluid: ☐ Operating fluid: \_\_\_\_\_ % glycol: \_\_\_\_\_ %  
☐ Mineralöl ISO VG: \_\_\_\_\_  
Viscosity at 10 °C: \_\_\_\_\_ cSt  
Viscosity at 40 °C: \_\_\_\_\_ cSt  
☐ \_\_\_\_\_  
Operating fluid temperature: Flow to consumer: \_\_\_\_\_ °C  
Return from consumer (if required): \_\_\_\_\_ °C  
Flow rate: \_\_\_\_\_ l/min  
Pressure differential: \_\_\_\_\_ bar  
Max. permitted pressure: \_\_\_\_\_ bar

### Cold side

Coolant supply: \_\_\_\_\_  
Inlet temperature: min. \_\_\_\_\_ °C max. \_\_\_\_\_ °C  
Guaranteed flow rate: \_\_\_\_\_ l/min  
Available pressure differential: \_\_\_\_\_ bar

Control of operating  
fluid temperature:

- ☐ None
- ☐ Mechanical control
- ☐ Electronic control

Accessories:

- ☐ Filling level and temperature switch
- ☐ Filling level switch
- ☐ Flow switch
- ☐ \_\_\_\_\_

Other requirements:

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Quantity required per year:

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## Note

The information in this brochure relates to the operating conditions.

For applications and operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.



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