

Cooling Systems

FWKS-2/1.0/M...

1. DESCRIPTION

1.1. APPLICATIONS

Cooling circuits, such as:

- Cooling of AC main drives
- Cooling of motor spindles on machining centres
- Cooling of transmission and braking systems
- Cooling of servomotors

1.2. CONSTRUCTION

The fluid cooling system FWKS consists of a tank, pump and plate heat exchanger.

The pump built onto the plastic tank pumps the cooling fluid through the plate heat exchanger.

A secondary cooling water circuit, which is also pumped through the heat exchanger, provides the necessary cooling.



2. TECHNICAL SPECIFICATIONS

- 2.1. COOLING CAPACITY AND FLOW RATE OF PUMP
(see 2.12 and 2.13)
- 2.2. PERMISSIBLE FLUID
Mineral oil to DIN 51524 part 1 and part 2
Max. viscosity 200 mm²/s
- 2.3. PERMISSIBLE TEMPERATURES
- 2.3.1 **Temperature of fluid**
max. 65 °C
- 2.3.2 **Ambient temperature**
0 °C to +40 °C
- 2.4. INSTALLATION POSITION
VERTICAL
(PUMP MOTOR UPPERMOST)
- 2.5. NOISE LEVEL MEASURED TO DIN 45635 PART 1
FWKS-2: 67 dB(A)
- 2.6. DIRECTION OF ROTATION
Pump:
clockwise when looking at motor fan
- 2.7. TANK SIZE
Max. 9.5 l, Min. 7 l
- 2.8. WEIGHT
34 kg (standard)
- 2.9. ELECTRICAL CONNECTION
provided by customer:
10 pole connector
e.g. HARTING housing
09300101541 and socket insert
09330102716
(see Point 4.)
- 2.10. HYDRAULIC CONNECTIONS
Operating fluid:
Feed flow: P= G 1/2
Return flow: K= G 3/4
Water circuit:
Inlet: W1= G 3/4 (standard)
Outlet: W2= G 3/4
Flow control option:
W1= G 1/2
Do not reduce pipe cross-sections predetermined by the threaded connections.
- 2.11. ELECTRICAL SPECIFICATIONS
380-420V 50HZ
440-480V 60HZ
Voltage tolerances to EN 60034-1 ±5%
Rated current of motor
See rating plate of electric motor
Motor output
at 50HZ: 2 pole 0.37 KW
at 60HZ: 2 pole 0.43 KW

2.12. PUMP FLOW RATE GRAPHS

At 50Hz:

10 cm³/rev= approx. 14 l/min (4)

8 cm³/rev= approx. 11 l/min (3)

5 cm³/rev= approx. 7 l/min (2)

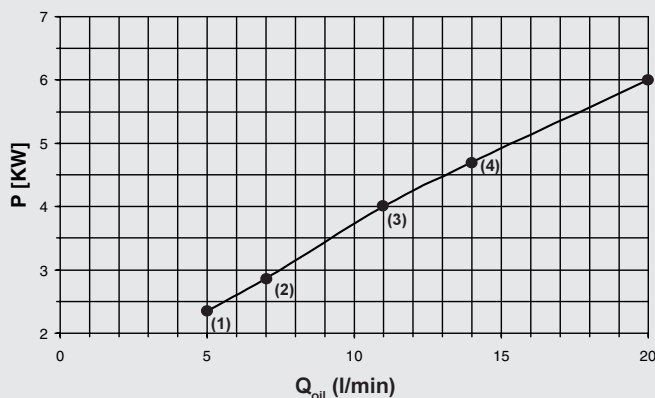
3 cm³/rev= approx. 5 l/min (1)

Max. operating pressure = 6 bar

2.13. COOLING CAPACITY GRAPH

Kühlleistungstoleranz ±5%

FWKS-2



Operating parameters:
WP 24-20 (standard)

Oil = VG 46

T_{oil in} = 50 °C

T_{Water in} = 20 °C

$$Q_{\text{Water}} = \frac{Q_{\text{oil}}}{2}$$

The cooling capacity is dependent on the flow rate on the cold water side!

3. MODEL CODE

FWKS - 2 / 1.0 / M / 10 / 400-50 / WP24-20 1 / 0

(also order example)

Fluid Water Cooling System _____

FWKS

Nominal size _____

2

Type code _____

Modification number _____

Medium _____

M = mineral oil (see 2.2.)

Feed pump _____

10 (10 cm³/rev)

8 (8 cm³/rev)

5 (5 cm³/rev)

3 (3 cm³/rev)

Motor voltage (standard) _____

380-420V (Y) 50HZ

440-480V (Y) 60HZ

Plate heat exchanger _____

WP 24 - 20

Paint _____

1=RAL 7043 (standard)

Accessories (see point 6.) _____

0 = standard (without accessories)

1 = electrical fluid level and temperature monitoring

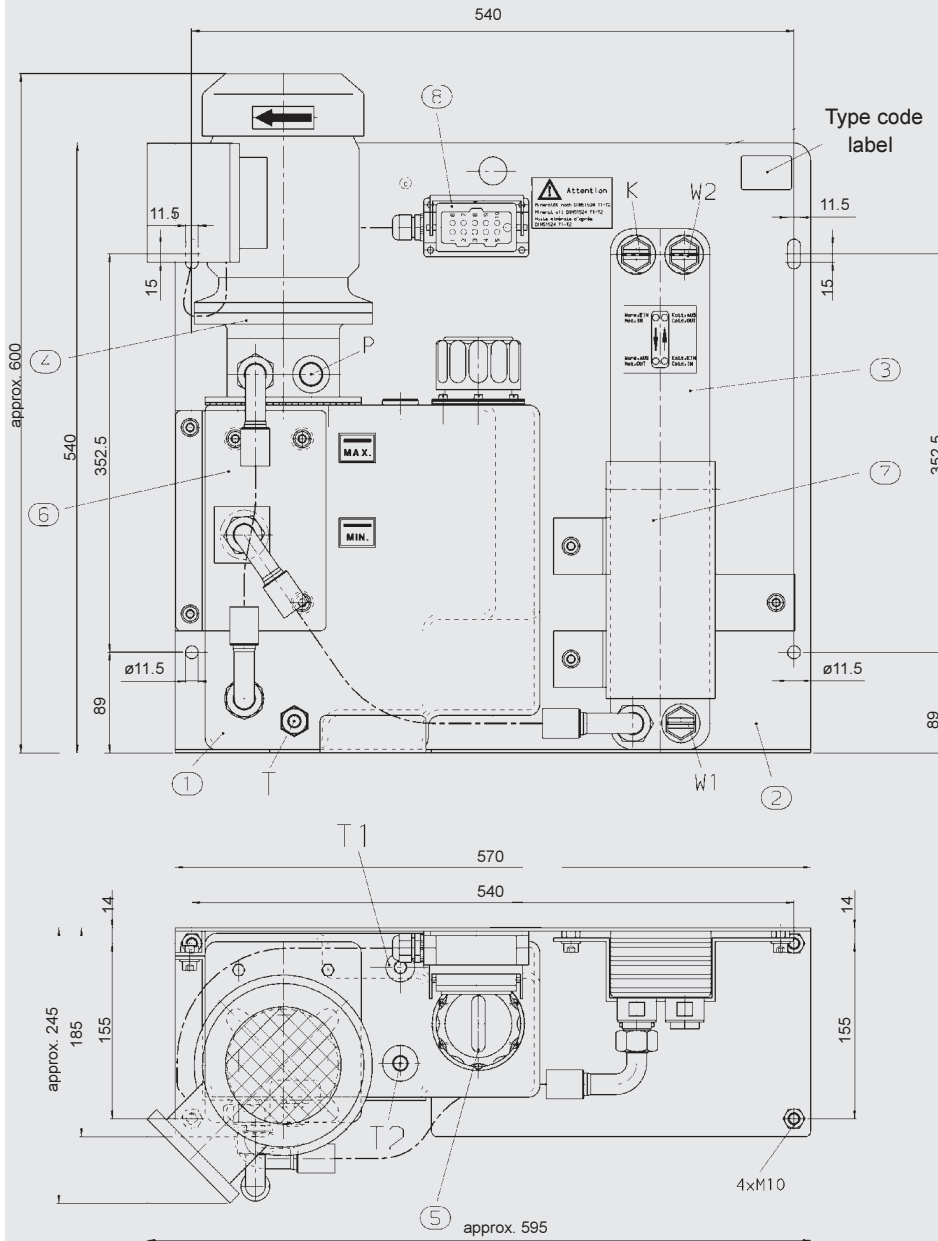
2 = pressure gauge

3 = fluid level and temperature monitoring and pressure gauge

9 = proportional flow control valve for thermostatic control of the water volume

4. DIMENSIONS

FWKS-2

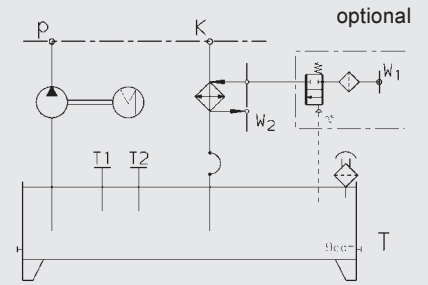


- ① Expansion tank
- ② Mounting plate
- ③ Heat exchanger
- ④ Pump
- ⑤ Tank breather filter ELF-3
- ⑥ Mounting for tank
- ⑦ Mounting for heat exchanger
- ⑧ Heavy duty rectangular connector with 1 x locking clip and 10 pole pin insert

Hydraulic connections:

Pump (fluid feed flow):	P = G 1/2
Operating fluid return flow:	K = G 3/4
<u>Secondary inlet</u> (water circuit):	
Plate heat exchanger:	W1 = G 3/4
(with accessory 9):	(W1=G 1/2)
<u>Secondary outlet</u> (water circuit):	
Plate heat exchanger:	W2 = G 3/4
Tank drain:	T = 12L/ M18x1.5
Tank connection:	T1 = M20x1.5
Tank connection:	T2 = G 1/2

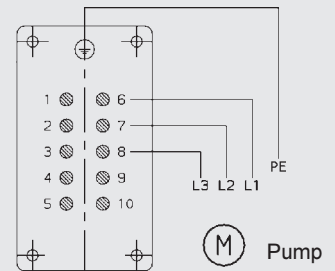
4.1. CIRCUIT DIAGRAM



5. ELECTRICAL PIN CONNECTIONS

FWKS-2

Connection for female insert (to be supplied by the customer)



6. ACCESSORIES

1. ELECTRICAL FLUID LEVEL AND TEMPERATURE MONITORING:

Fluid level and temperature switch 63°C (N/C);
Monitoring of the coolant level and the temperature in the tank.

2. PRESSURE GAUGE :

Visual pressure indicator of the coolant at the pump (0-10 bar)

3. ELECTRICAL FLUID LEVEL AND TEMPERATURE MONITORING + PRESSURE GAUGE

Fluid level and temperature switch 63 °C (N/C);
Monitoring of the coolant level and the temperature in the tank.
Visual pressure indication of the coolant at the pump.

9. PROPORTIONAL FLOW CONTROL VALVE FOR THERMOSTATIC CONTROL OF THE WATER VOLUME

Further accessories available on request

7. NOTE

The information in this brochure relates to the operating conditions and applications described.

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

Subject to technical modifications.