1. DESCRIPTION
1.1. APPLICATIONS
   Closed-loop cooling circuits
   • Cooling of AC main drives
   • Cooling of motor spindles on machining centres
   • Cooling of transmission and braking systems
   • Cooling of servomotors

1.2. CONSTRUCCION
The FWKS fluid cooling system consists of a tank, a submersible pump and a plate heat exchanger. The submersible pump built into the plastic tank pumps coolant through the plate heat exchanger. A secondary cooling water circuit, which also flows through the heat exchanger, provides the necessary cooling.
2. TECHNICAL Specifications

2.1. COOLING CAPACITY AND FLOW RATE OF PUMP
see graphs 2.12 & 2.13

2.2. PERMISSIBLE FLUID

2.2.1 Preferred fluid:
Mains water with 30-40% GLYSANTIN G48 PROTECT PLUS (BASF)

2.2.2 Other permissible fluids:
Mains water with 30-40%
-PARAFLU 11
Mains water with 5-10%
-MOTOREX COOLANT-F
Other coolants on request

2.3. PERMISSIBLE TEMPERATURES

2.3.1 Fluid temperature
max. 60 °C

2.3.2 Ambient temperature
0 °C to +40 °C

2.4. MOUNTING POSITION
Vertical (pump motor at the top)

2.5. NOISE LEVEL MEASURED TO DIN45635 PT1
FWKS-2: 61 dB(A)

2.6. DIRECTION OF ROTATION
Pump: when looking at motor fan, clockwise

2.7. TANK SIZE:
Max. 9,5 l, Min. 7 l

2.8. WEIGHT
42 kg (Standard)

2.9. ELECTRICAL CONNECTION
Provided by customer:10 pole plug connector e.g. HARTING housing 09300101541 and female insert 09330102716 (see 5.0)

2.10. HYDRAULIC CONNECTION
Operating fluid feed flow connection: P= 3/4"
Operating fluid return flow connection K=3/4"
Water circuit:
inlet: W1=3/4" (Standard)
outlet: W2= 3/4"
Option flow controller
W1= 1/2"
Do not reduce pipe cross-section pre-determined by the threaded connections.
(see 2.12)

2.11. ELECTRICAL SPECIFICATIONS
380-420V 50HZ
440-480V 60HZ
Voltage tolerances to
EN 60034-1 ±5%
Motor rated current:
See type code label on electric motor
Motor output:
at 50HZ: 2 pol. 0,5 KW
at 60HZ: 2 pol. 0,7 KW

2.12. PUMP FLOW RATE GRAPH
The operating point of the pump (flow rate) is dependent on the system characteristics (pipe cross-sections, pipe lengths, threaded connections). The following generally applies: The smaller the pressure losses in the system, the greater the flow rate and therefore the cooling performance is greater.

2.13. COOLING CAPACITY DIAGRAM

The cooling capacity is dependent on the flow rate on the cold water side.
3. MODEL CODE

FWKS- 2 / 1. 0 / W / TP / 400-50 / WP24-20 1 / 0

Fluid Water Cooling System
FWKS

TNominal size
2

Type code

Modification no.

Fluid
W (see 2.2.)

Submersible pump

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 & pressure gauge
9 = Proportional control valve for temperature-dependent control of the water volume
11 = Flow indicator
4. DIMENSIONS
FWKS-2

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

 Hydraulic connections:
 Pump (feed flow) : P = 3/4"  
 Operating fluid return flow : K = 3/4"  
 Secondary inlet, water : W1 = 3/4"  
 plate heat exchanger (with accessory 9): W1 = 1/2"
 Secondary outlet, water : W2 = 3/4"  
 plate heat exchanger
 Tank drain: T = 12L/  
 M18x1,5
 Tank port T1 = M20x1,5
 Tank port T2 = 18L/  
 M26x1,5
 Tank port T3 = 1/2"

4.1. 4.1 CIRCUIT DIAGRAM

5. ELECTRICAL PIN CONNECTIONS
FWKS-2
Connection for female insert (to be supplied by customer)
6. **ACCESSORIES**

1. **ELECTRICAL FLUID LEVEL AND TEMPERATURE MONITORING:**
   - Fluid level and temperature switch 63 °C (N/C);
   - Monitors the level of coolant and the temperature in the tank.

2. **PRESSURE GAUGE:**
   - Visual pressure indication 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);
   - Monitors the level of coolant and the temperature in the tank and provides visual pressure indication of the coolant at the pump.

9. **PROPORTIONAL CONTROL VALVE FOR TEMPERATURE-DEPENDENT CONTROL OF THE WATER VOLUME**

   Further accessories available on request.

11. **FLOW INDICATOR**
    - Flow rate monitoring of the coolant (switch-off point set to 5 l/min)

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.