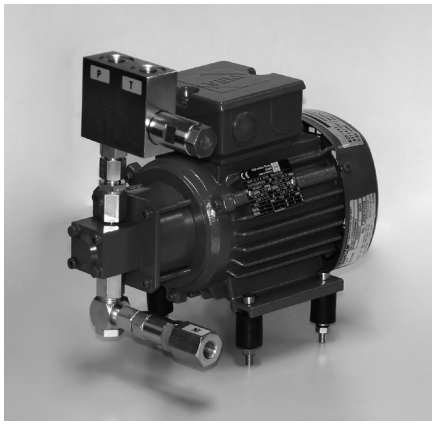


Conditioning Module Reservoir Extraction
CM-RE

Description
The ConditioningModule Reservoir Extraction CM-RE is designed as an accessory to the CS ContaminationSensors and the FCU FluidControl Units. The CM-RE is a self-priming motor-pump unit which makes it possible for the CS/FCU to measure oil cleanliness in unpressurised reservoirs, tanks or leakage lines.

The oil being analyzed is drawn through the suction strainer at the inlet port (IN). The gear pump supplies the oil at a maximum pressure of 60 bar (870 psi) to the pressure port so that it can be analyzed by the CS / FCU

The pressure relief valve relieves any positive pressure via connection (T) as leakage oil.

For modules with a pump with increased inlet pressure (CM-RE-2 ...), internal leakage oil is drained from the pump via the separate LEAKAGE connection.

Applications
- Hydraulic and lubrication systems

Advantages
- Motor-pump unit to supply CS/FCU
- Optimal flow rate for carrying out measurements

Technical specifications

General data			
Fluid temperature	0 ... 70 °C (32 ... 158 °F)		
Ambient temperature	0 ... 40 °C (32 ... 104 °F)		
Relative humidity	max. 90%, non-condensing		
Hydraulic data	**CM-RE-1-x-x**	**CM-RE-2-x-x**	**CM-RE-4-x-x**
Permitted pressure at inlet (IN)	- 0.4 bar ... 0.5 bar	- 0.4 bar ... 120 bar	- 0.4 bar ... 80 bar
Max. pressure at outlet (P)	30 bar* / 60 bar*	30 bar* / 60 bar*	30 bar* / 40 bar*
Pump type	Gear pump	Gear pump	Gear pump, magnetic drive
Max. suction height	500 mm	500 mm	500 mm
Sealing material	NBR / FKM*	NBR / FKM*	NBR / FKM*
Inlet (IN)	G ¼“	G ¼“	G ¼
Outlet (P)	G ¼“	G ¼“	G ¼
Outlet (T)	G ¼“	G ¼“	G ¼
Leakage oil (LEAKAGE)	–	G ¼“	–

*) Depending on model

Electrical data CM-RE-x-x-W/N/X60/O60		
Voltage (delta circuit)	230 V, **50 Hz**, 3 Ph	265 V, **60 Hz**, 3 Ph
Voltage (star circuit)	400 V, **50 Hz**, 3 Ph	460 V, **60 Hz**, 3 Ph
Current consumption	1.23 A (⅄) / 0.71 A (Δ)	1.18 A (⅄) / 0.68 A (Δ)
Nominal power	0.18 kW	0.21 kW
Duty cycle	100%	100%
Speed	1425 rpm	1710 rpm
IP class	IP55	IP55
Insulation class	F	F
Viscosity range		
CM-RE-1	10 ... 3000 mm²/s	10 ... 3000 mm²/s
CM-RE-2	10 ... 3000 mm²/s	10 ... 3000 mm²/s
CM-RE-4	10 ... 1000 mm²/s	10 ... 1000 mm²/s
Total flow		
CM-RE-1	90 ml/min	110 ml/min
CM-RE-2	180 ml/min	220 ml/min
CM-RE-4	200 ml/min	240 ml/min
Weight	≈ 8.5 kg	≈ 8.5 kg
Electrical data CM-RE-x-x-N/AB/N60/AB60		
Voltage (delta circuit)	400 V, **50 Hz**, 3 Ph	400 V, **60 Hz**, 3 Ph
Voltage (star circuit)	690 V, **50 Hz**, 3 Ph	690 V, **60 Hz**, 3 Ph
Current consumption	0.71 A (⅄) / 0.41 A (Δ)	0.57 A (⅄) / 0.33 A (Δ)
Nominal power	0.18 kW	0.18 kW
Duty cycle	100%	100%
Speed	1425 rpm	1755 rpm
IP class	IP55	IP55
Insulation class	F	F
Viscosity range		
CM-RE-1	10 ... 3000 mm²/s	10 ... 3000 mm²/s
CM-RE-2	10 ... 3000 mm²/s	10 ... 3000 mm²/s
CM-RE-4	10 ... 1000 mm²/s	10 ... 1000 mm²/s
Total flow		
CM-RE-1	90 ml/min	110 ml/min
CM-RE-2	180 ml/min	220 ml/min
CM-RE-4	200 ml/min	240 ml/min
Weight	≈ 8.5 kg	≈ 8.5 kg
Electrical data CM-RE-x-x-U		
Voltage	max. 24 V DC	
Current consumption	2.5 A (S1); max. 3.0 A (S4)	
Nominal power	32 W	
Duty cycle	100% (max. 2.5 A)	
Speed	depending on voltage max. 3700 rpm	
IP class	IP20	
Insulation class	E	
Viscosity range	10 ... 350 mm²/s (S4)	
Total flow	CM-RE-1 ≈ 220 ml/min CM-RE-2 ≈ 440 ml/min (at max. voltage/rpm)	
Weight	≈ 2.4 kg	
Electrical data CM-RE-x-x-U170		
Voltage	24 V DC	
Current consumption	max. 20 A	
Nominal power	170 W	
Duty cycle	100% (max. 5A)	
Speed	depending on voltage max. 4200 rpm	
IP class	IP44	
Insulation class	B	
Viscosity range	10 ... 1000 mm²/s	
Total flow	CM-RE-1 ≈ 250 ml/min CM-RE-2 ≈ 500 ml/min (at max. voltage/rpm)	
Weight	≈ 3.9 kg	

Model code

CM - RE - 1 - 0 - W/N/X60/O60 - Z

Model
CM = Conditioning Module

Type
RE = Reservoir Extraction

Pump
1 = gear pump, standard
2 = gear pump, with increased inlet pressure, with separate leakage line
4 = gear pump, magnetic drive, with increased inlet pressure, without separate leakage line

Pump protection
0 = Pump protection 30 bar
1 = Pump protection 60 bar (only for CS 1000, only pump 1 and 2)
2 = Pump protection 40 bar (only for CS 1000, only pump 4)

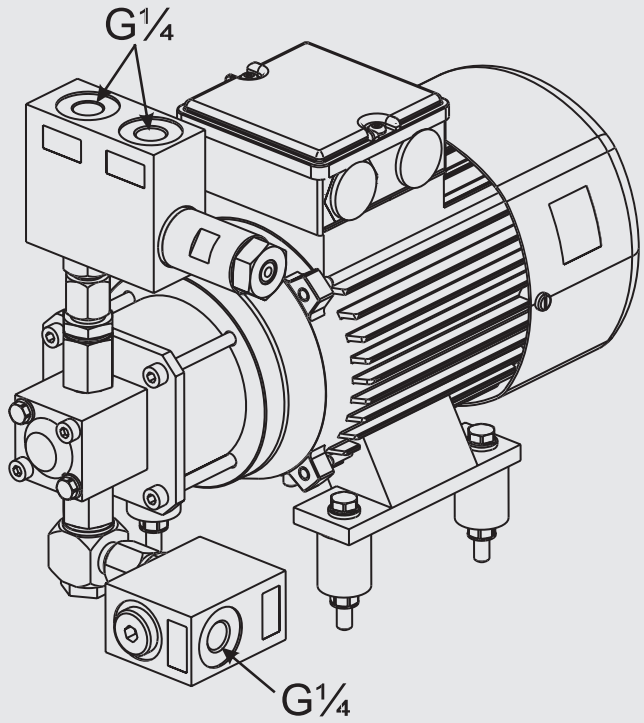
Supply voltage**

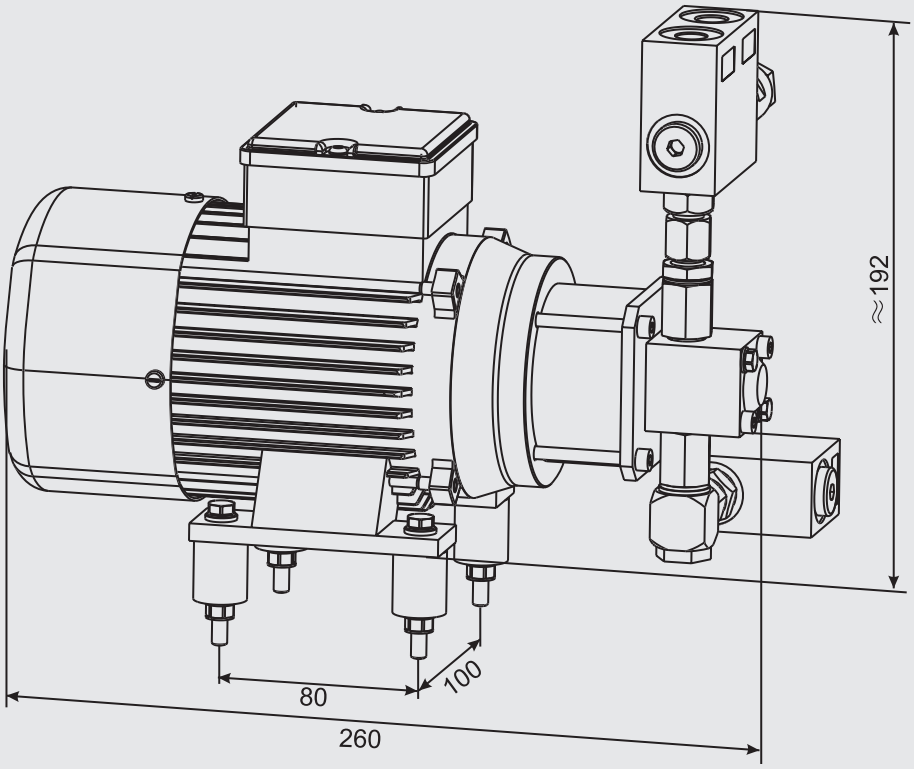
W/N/X60/O60	=	230 V, 50 Hz, 3Ph / 265 V, 60 Hz, 3Ph, delta circuit 400 V, 50 Hz, 3Ph / 460 V, 60 Hz, 3Ph, star circuit
N/AB/N60/AB60	=	400 V, 50 Hz, 3Ph / 400 V, 60 Hz, 3Ph, delta circuit 690 V, 50 Hz, 3Ph / 690 V, 60 Hz, 3Ph, star circuit
U	=	24 V DC, 32 W] only pump 1 and 2
U170	=	24 V DC, 170 W]

**Other voltages on request

Modification
O = with adjustable throttle valve to adjust pressure supplied to particle counter, pressure gauge and connection hose for pressure gauge
Z = without accessories
V = Viton version (FKM)

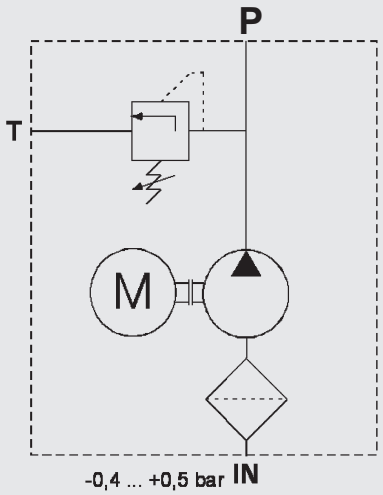
Dimensions (3-phase model)



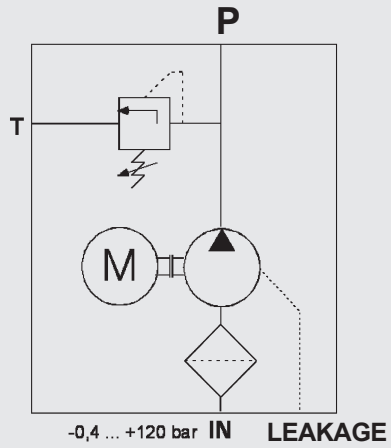


Hydraulic circuit diagram

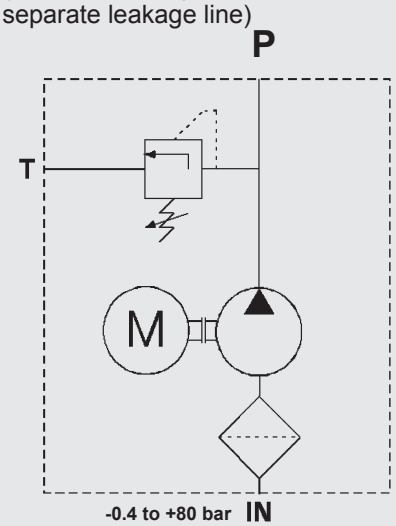
CM-RE-1...



CM-RE-2...
(increased inlet pressure,
with separate leakage line)

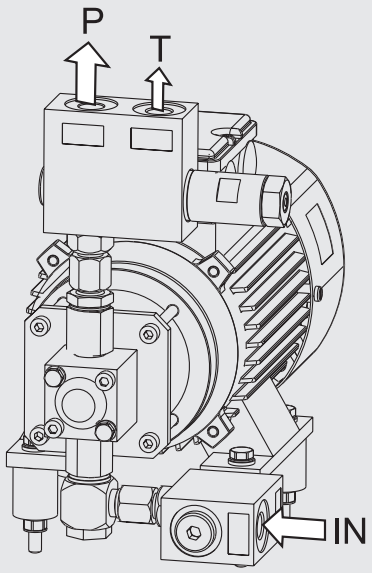


CM-RE-4...
(increased inlet pressure, without
separate leakage line)

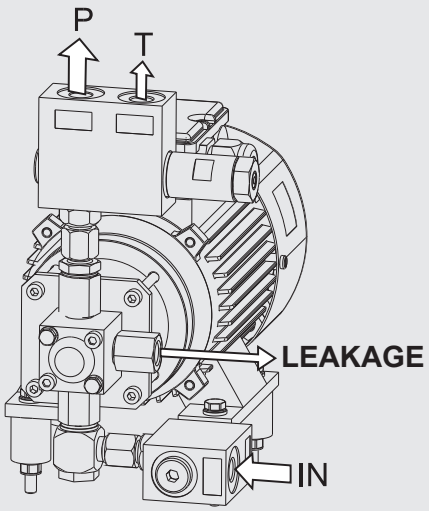


Hydraulic connection

CM-RE-1..., CM-RE-4...



CM-RE-2...



IN	=	**suction connection**
P	=	**pressure connection**
T	=	**unpressurized return line**
LEAKAGE	=	**leakage / unpressurized return line**

(3-phase model only is shown. The connections of the DC model have the same configuration.)

Notes on pipes and hoses

In order to keep the pressure drop as low as possible, use as few threaded connections as possible.

The pressure drop in a hydraulic line depends on:

- Flow rate
- Kinematic viscosity
- Pipe dimensions
- Density of medium

The pressure drop for hydraulic oils can be estimated as follows:

$$\Delta p\ [bar] \approx 6.8 \times \frac{L}{d^4} \times Q \times \upsilon \times \rho$$

This applies to straight pipe runs and hydraulic oils. Additional threaded connections and pipe bends increase the pressure differential.

Ensure that the difference in height between the unit and the oil level is as small as possible.

Hoses must be suitable for suction pressures of at least –0.5 bar.

Constrictions in connecting pipes must be avoided because they reduce capacity and increase the risk of cavitation.

The nominal bore of the connecting hoses/pipes must be at least as large as the inlet port sizes.

Note:

The maximum pressure across the IN suction port must be:

- for CM-RE-1 … = -0.4 bar ... 0.5 bar
- for CM-RE-2 … = -0.4 bar ... 120 bar
- for CM-RE-4 … = -0.4 bar ... 80 bar

Note

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

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

Subject to technical modifications.

HYDAC FILTER SYSTEMS GMBH
Industriegebiet
D-66280 Sulzbach / Saar
Tel.:+49 (0) 6897/509-01
Fax:+49 (0) 6897/509-9046
Internet: www.hydac.com
E-Mail: filtersystems@hydac.com