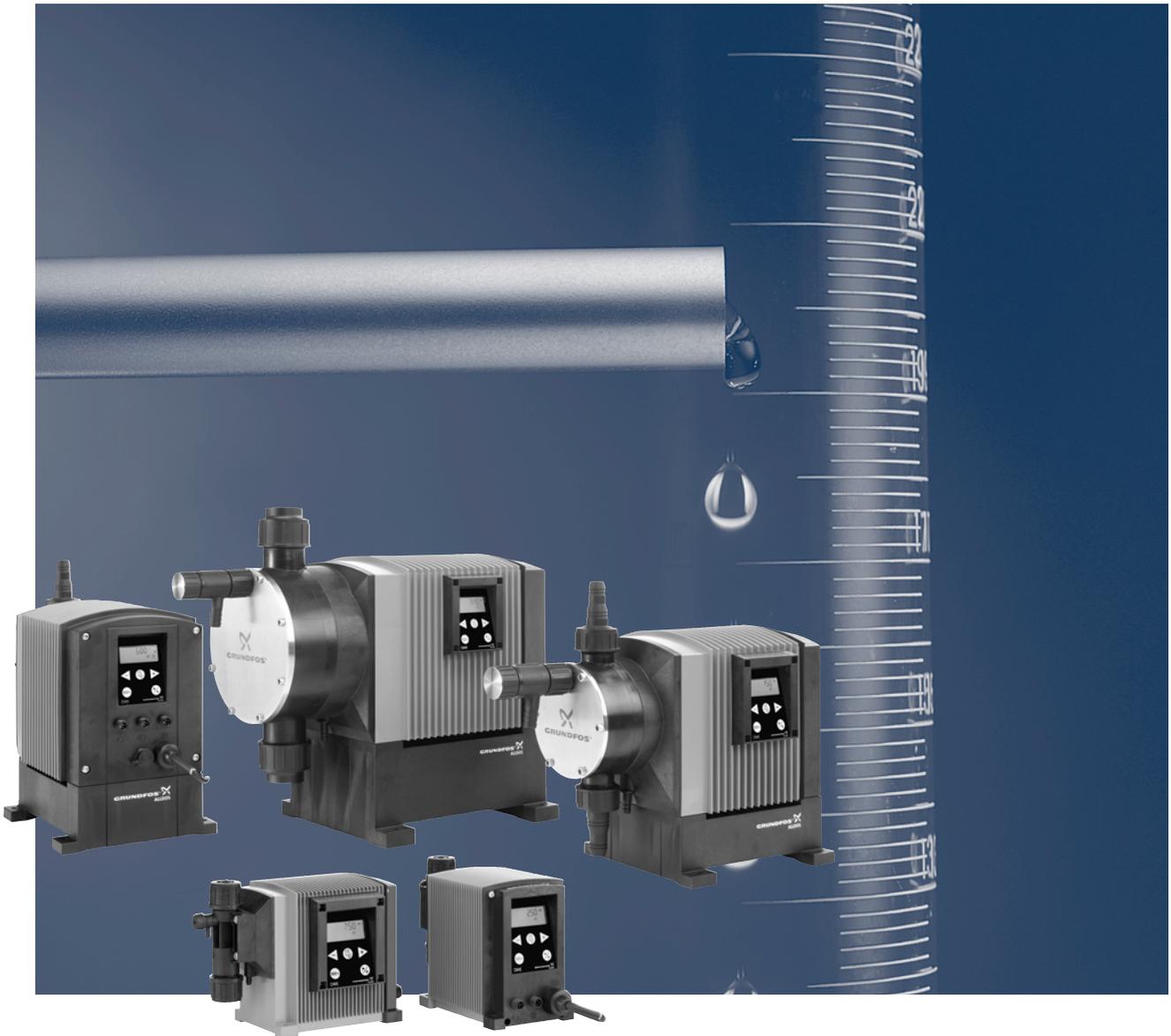


DME and DMS

DIGITAL DOSING™



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Performance range, DME

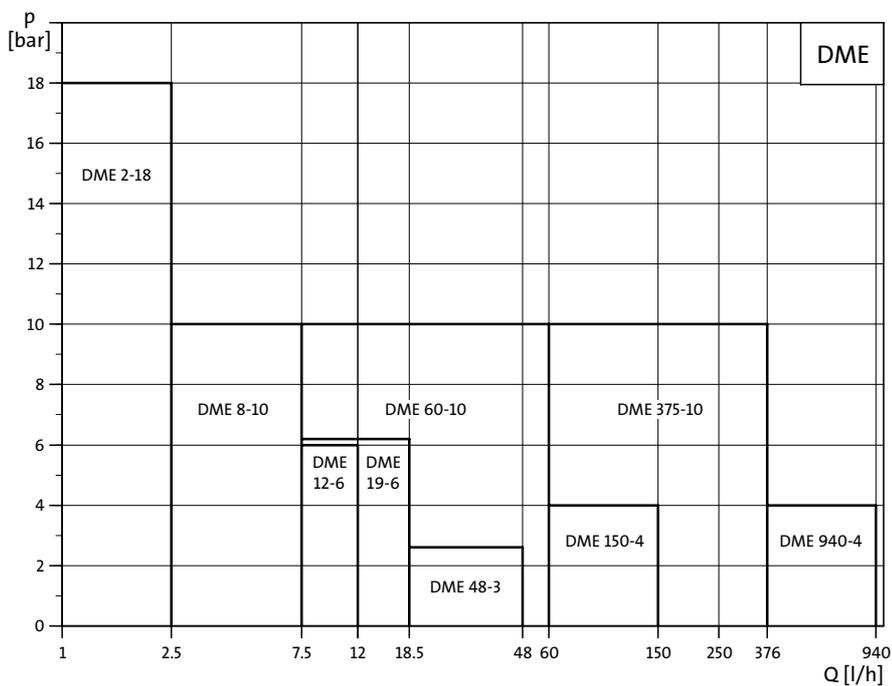


Fig. 1 Performance range, DME

Note: The maximum capacity is available at the pumps maximum counter-pressure if the pump has been calibrated to the actual installation.

Performance range, DMS

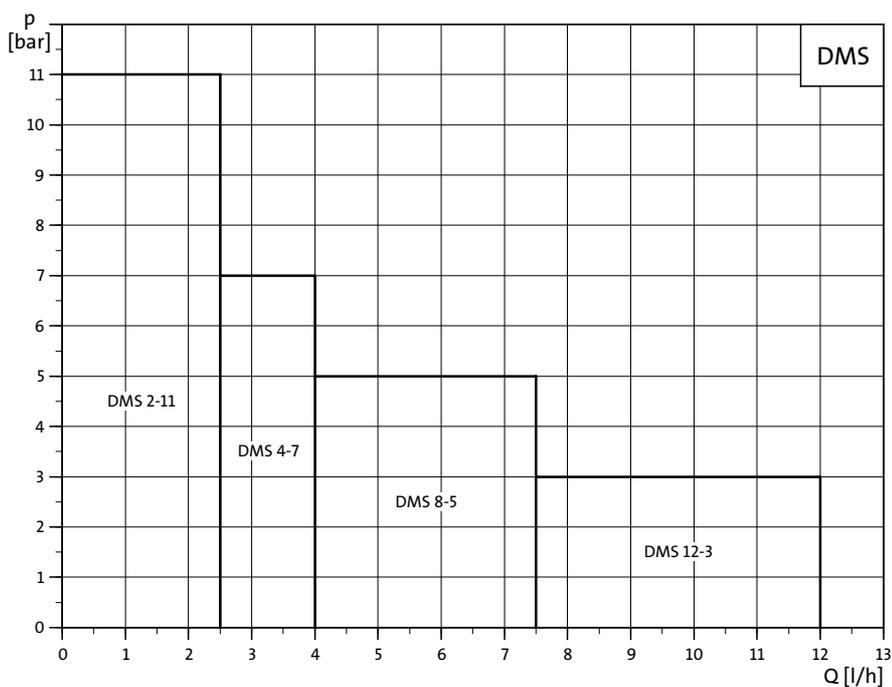


Fig. 2 Performance range, DMS

Note: The maximum capacity is available at the pumps maximum counter-pressure if the pump has been calibrated to the actual installation.

TM02 7811 4103

TM02 7810 4103

DME and DMS



Fig. 3 DME and DMS

TM03 8020 0207

Digital Dosing

Digital Dosing represents state-of-the-art technology. This patented Grundfos solution sets new standards, including new principles and methods.

Precise and easy setting

The operator can easily install and set the pump to discharge exactly the quantity of dosing liquid required in the application. In the display, the setting of the pump is read out directly in ml/h or l/h, pulse or batch, and the operation mode is easily identified by means of icons.

Unique technology

A unique drive and microprocessor control ensure that dosing liquids are discharged precisely and with low pulsation even when the pump is operating with high viscosity or degassing liquids. Instead of the conventional stroke length adjustment, the capacity of the DME is regulated by automatic adjustment of the motor speed during the discharge stroke and by fixed suction stroke speed, ensuring optimal and uniform mixing. The capacity of the DMS is regulated by automatic regulation of the stroke frequency.

Fewer variants to cover all needs

The pumps feature powerful variable speed motor, a turn-down ratio of 1:1000/1:800 and a complete control interface including the following:

- full pulse control
- pulse batch control
- internal timer batch control
- analog 0/4-20 mA control
- level control
- fieldbus communication module.

This ensures that the DME pumps cover the range from 0 to 940 litres per hour up to 18 bar. The switch mode power supply ensures that the same pump is working precisely, irrespective of the mains supply (100-240 V; 50-60 Hz).

The DMS version with synchronous motor and a turn-down ratio of 1:100 (consisting of four pump sizes and three control versions) cover the range from 0 to 12 l/h. The DMS-A pumps have external pulse, analog 0/4-20 mA and level control interface; the DMS-AR is a DMS-A pump equipped with an alarm relay output. The DMS-B version is without external control interface. The DMS-D is without control and user interface.

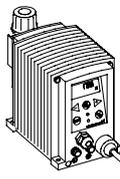
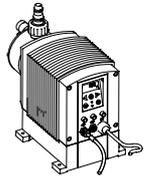
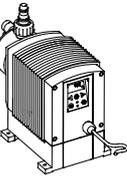
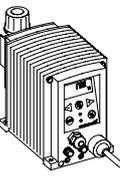
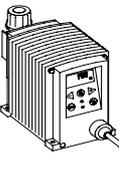
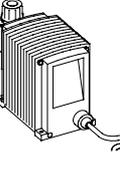
The DME and DMS dosing pumps feature diaphragm dosing head with integrated vent valve, suction and discharge ball valves.

The pumps are fitted with power cable and plug.

Type key

Example	DME	2	-	18	A	-	PP	/	E	/	C	-	F	-	1	1	1	F	
Type range																			Mains plug
Maximum capacity [l/h]																			F EU (Schuko)
Maximum pressure [bar]																			B USA, Canada (120 V)
Control variant																			G UK
A																			I Australia
AR A + alarm relay																			E Switzerland
AP A + PROFIBUS																			J Japan
AG A + GENibus																			
B Basic																			
D Only on/off																			
Dosing head material																			Connection suction/discharge
PP Polypropylene																			1 Tubing 6/9 4/6 mm
PV PVDF																			2 Tubing 6/9 6/12 9/12 mm
SS Stainless steel																			3 Tubing 4/6 mm
Gasket material																			4 Tubing 6/9 mm
E EPDM																			5 Tubing 6/12 mm
T PTFE																			6 Tubing 9/12 mm
V FKM																			7 Hose clamp d. 6 mm
Valve ball material																			8 Hose clamp d. 9 mm
C Ceramic																			9 Hose clamp d. 16 mm
SS Stainless steel, DIN 1.4401																			A Threaded Rp 1/4
G Glass																			B Threaded Rp 3/8
T PTFE																			C Threaded Rp 1/2
Y Hastelloy C-22																			D Threaded Rp 1
Control panel position																			E Cementing d 10 mm
F Front-fitted																			F Cementing d 12 mm
S Side-fitted																			G Cementing d 16 mm
X No control panel																			H Cementing d 20 mm
Supply voltage																			I Cementing d 25 mm
1 1 x 230 V, 50 Hz																			J Cementing d 32 mm
2 1 x 120 V, 60 Hz																			K Cementing d 40 mm
3 1 x 100-240 V, 50-60 Hz																			L Flange DN 15
6 1 x 110 V, 50 Hz																			M Flange DN 25
8 1 x 100 V, 50/60 Hz																			N Tubing 8/12 mm
9 1 x 200 V, 50/60 Hz																			O 1/2" 150 LBS Flange
																			Q Tubing 19/27 mm + 25/34 mm
																			V Threaded 1/4" NPT
																			W Tubing 32/41 mm + 38/48 mm
																			Y Threaded 3/8" NPT
																			A1 Threaded Rp 3/4
																			A2 Threaded Rp 1 1/4
																			A3 Threaded 3/4" NPT
																			A4 Threaded 1 1/4" NPT
																			C2 Piping 8/10 mm
																			Valves
																			1 Standard valve
																			2 Spring-loaded valve

Overview of functions

	DME			DMS		
	0-48 l/h	60-940 l/h AR	60-940 l/h B	Variant A	Variant B	Variant D
						
	TM01 8941 0900	TM02 8337 4903	TM02 8338 4903	TM01 8941 0900	TM01 8943 0900	TM02 8973 1304
Capacity control, see page 7						
Internal stroke-frequency control	•	•	•	•	•	
Internal stroke-speed control	•	•	•			
Control panel, see page 9						
Capacity setting in litres, millilitres or US gallons	•	•	•	•	•	
Display with background light and soft-touch buttons	•	•	•	•	•	
Easy set-up menu with language options	•	•	•	•	•	
On/off button	•	•	•	•	•	
Maximum capacity button (priming)	•	•	•	•	•	
Green indicator light for operating indication	•	•	•	•	•	
Red indicator light for fault indication	•	•	•	•	•	
Control panel lock	•	•	•	•	•	
Side-fitted as an option	•	•	•	•		
Operating modes, see page 12						
Manual control	•	•	•	•	•	
Pulse control	•	•		•		
Analog 0/4-20 mA control	•	•		•		
Timer-based batch control	•	•				
Pulse-based batch control	•	•				
Functions, see page 15						
Dosing monitoring	•	•		•		
Dual-level control	•	•		•		
Calibration of pump to actual installation	•	•	•	•	•	
Anti-cavitation (reduced suction speed)	•	•	•			
Capacity limitation	•	•	•			
Counters for strokes, operating hours and power on/off	•	•	•	•	•	
Fieldbus communication	•	•				
Overload protection		•	•			
Error message in display		•	•			
Leakage sensor		•				
Dosing signal output		•				
Power supply, page 15						
Switch-mode power supply	•	•	•			
Inputs/outputs, see page 18						
Input for pulse control	•	•		•		
Input for analog 0/4-20 mA control	•	•		•		
Input for dual-level control	•	•		•		
Input for external start/stop	•	•		•		
Alarm relay output (variant AR)	•	•		•		
Dosing output		•				
Input for external on/off switch	•	•		•		

Functional description, DME

The electronically controlled variable-speed motor of the DME pumps provides optimum control of the stroke speed. As shown in the figure below, the duration of each suction stroke is constant while the duration of each discharge stroke varies according to the capacity set, resulting in optimum discharge flow in any operating situation.

The advantages are as follows:

- The pump always operates at full stroke length, irrespective of the capacity set; this ensures optimum accuracy, priming and suction.
- A capacity range of 1:1000 (0-48 l/h) for each pump size.
- A capacity range of 1:800 (60-940 l/h) for each pump size.
- Even and constant dosing ensuring an optimum mixing ratio at the injection point.
- Significant reduction of pressure surges, preventing mechanical stress on diaphragm, tubes, connections and other dosing parts exposed to leakage and wear.
- The installation is less affected by long suction and discharge lines.
- Easier dosing of highly viscous and gas-containing liquids.

The optimum dosing control shown below takes place in any operating mode.

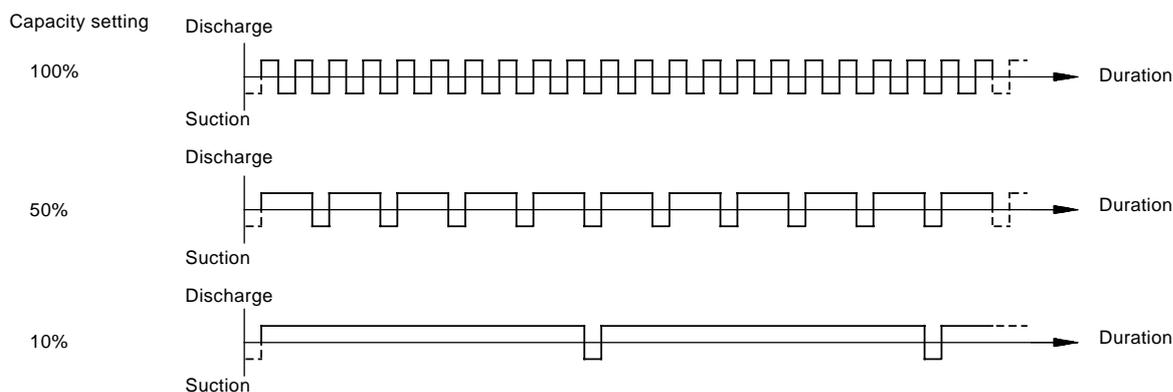


Fig. 4 Relation between stroke-frequency adjustment and capacity for DME

TM01 8944 0900

Functional description, DMS

The electronically-controlled, synchronous motor of the DMS pumps offers almost the same advantages as those of DME pumps. As shown in the figure below, the suction and discharge stroke speeds are constant while the stroke frequency varies according to the capacity set.

The sinusoidal movement of the diaphragm offers the following advantages:

- The pump always operates at full stroke length, irrespective of the capacity set; this ensures optimum accuracy, priming and suction.
- A capacity range of 1:100 for each pump size.
- Reduction of pressure surges, preventing mechanical stress on diaphragm, tubes, connections and other dosing parts exposed to leakage and wear.
- The installation is less affected by long suction and discharge lines.
- Easier dosing of highly viscous and gas-containing liquids.

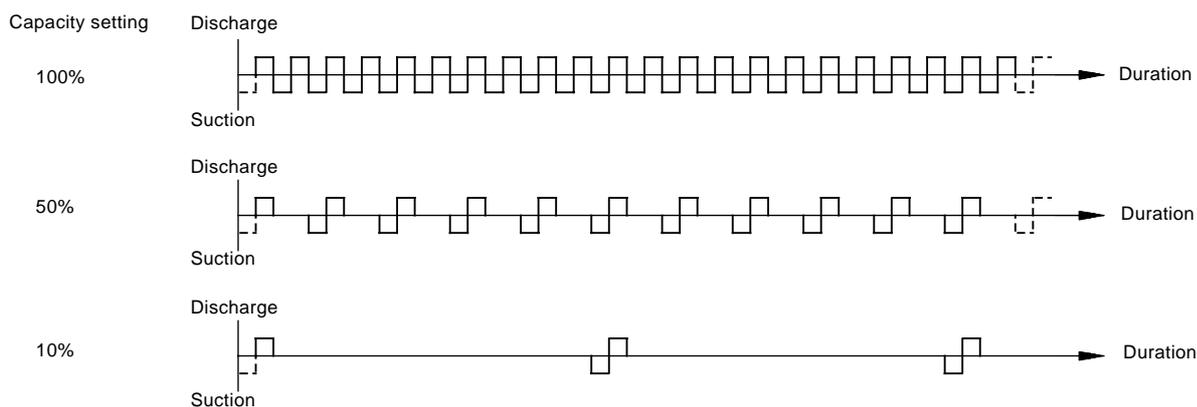


Fig. 5 Relation between stroke-frequency adjustment and capacity for DMS

TM01 8945 0900

Control panel

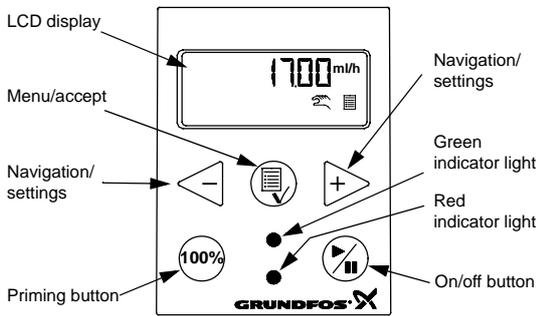


Fig. 6 Control panel

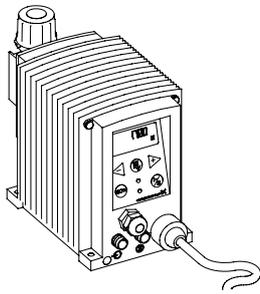


Fig. 7 Front-fitted control panel

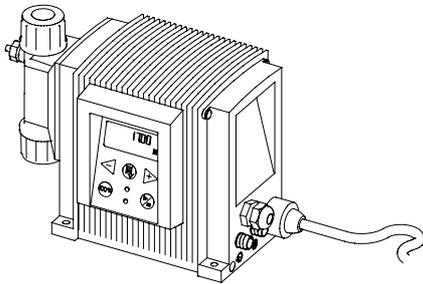


Fig. 8 Side-fitted control panel (not including DMS-B)

Priming button

If the maximum capacity is required over a short period of time, for example during start-up, press the 100% button on the pump control panel. When the button is released, the pump automatically returns to the previous operating mode.

To set the pump to run for a specific number of seconds at maximum capacity, press the 100% and + buttons simultaneously. The remaining number of seconds appear in the display. This feature is useful when flushing the pump. The maximum value is 300 seconds.

To stop the pump before the set time has passed, press the On/off button.

Indicator lights and alarm relay output (0-48 l/h)

The green and red indicator lights on the control panel indicate operation or fault.

DME-AR and DMS-AR pumps can activate an external alarm signal by means of a built-in alarm relay. The alarm signal is activated by means of an internal potential-free contact.

The indicator lights and the alarm relay output indicate the operating state of the pump. See this overview:

Operating state	Green indicator light	Red indicator light	Display	Alarm relay output ★ ¹
Pump running	On	Off	Normal indication	
Set to stop	Flashing	Off	Normal indication	
Pump fault	Off	On	EEPROM	
Supply failure	Off	Off	Off	
Pump running, low chemical level ★ ²	On	On	Normal indication	
Empty tank ★ ²	Off	On	Normal indication	
Analog signal < 2 mA	Off	On	Normal indication	
Insufficient dosing according to the signal from the dosing monitor ★ ³	On	On	Normal indication	
More pulses than capacity	On	On	Normal indication	
Overheated	Off	On	MAX TEMP	

★¹ Applies only to control variant AR.

★² Requires connection to level sensors.

★³ Requires activation of the dosing monitoring function and connection to a dosing monitor.

TM01 8946 1202

TM01 8941 0900

TM01 8949 0900

Indicator lights and alarm relay output (60-940 l/h)

Operating state	Green indicator light	Red indicator light	Display	Alarm relay output★ ¹
Pump running	On	Off	Normal indication	
Set to stop	Flashing	Off	Normal indication	
Pump fault	Off	On	EEPROM	
Supply failure	Off	Off	Off	
Pump running, low chemical level★ ²	On	On	LOW	
Empty tank★ ²	Off	On	EMPTY	
Analog signal < 2 mA	Off	On	NO mA	
Insufficient dosing according to signal from dosing monitor★ ³	On	On	NO FLOW	
Overheating	Off	On	MAX TEMP	
Internal communication failure	Off	On	INT COM	
Internal Hall failure★ ⁴	Off	On	HALL	
Diaphragm failure (leakage)★ ⁵	Off	On	LEAK-AGE	
Max. pressure exceeded★ ⁵	Off★ ⁶	On	OVER-LOAD	
More pulses than capacity	On	On	MAX FLOW	
No detection of motor rotation★ ⁴	On	On	ORIGO	

★¹ Applies only to control variant AR.

★² Requires connection to level sensors.

★³ Requires activation of the dosing monitoring function and connection to a dosing monitor.

★⁴ Please contact a Grundfos service centre.

★⁵ After the fault has been rectified, press  to reset alarms.

★⁶ The pump makes 10 attempts to restart before going into permanent off mode.

Menu

The DME and DMS dosing pumps feature a user-friendly menu. To activate the menu, press the  button. During initial start-up, all menu texts appear in the English language. You can set the menu to display other languages, see page 15.

This example applies to DME pumps:

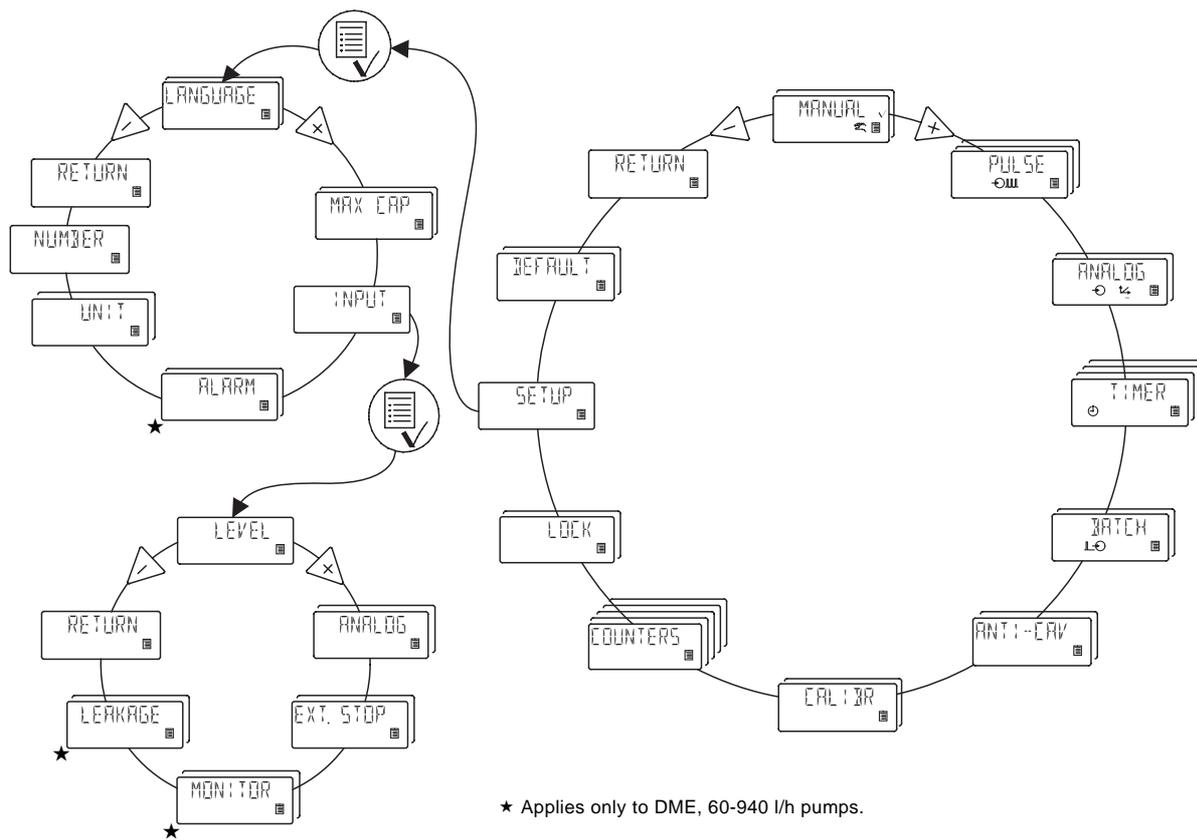


Fig. 9 Menu overview

D68se

Operating modes

Manual control

The pump ensures constant dosing according to the quantity set in l/h or ml/h by means of the \leftarrow and \rightarrow buttons. The pump automatically changes between the measuring units.

Setting range, DME

DME pump	Setting range	
	From [ml/h]	To [l/h]
DME 2	2.5	2.5
DME 8	7.5	7.5
DME 12	12	12
DME 19	18.5	18.5
DME 48	48	48
DME 60	75	60
DME 150	200	150
DME 375	500	376
DME 940	1200	940

When the anti cavitation functions is enabled the maximum flow is reduced. See page 26-27.

Setting range, DMS

DMS pump	Setting range	
	From [ml/h]	To [l/h]
DMS 2	25	2.5
DMS 4	40	4
DMS 6	75	7.5
DMS 12	120	12

Pulse control

Applies to DME-A and DMS-A

The pump doses according to an external pulse signal, for example from a water meter.

There is no direct relation between pulses and dosing strokes. The pump automatically calculates its optimal speed to ensure the required quantity is dosed for each pulse. The quantity to be dosed is set in ml/pulse. The pump adjusts its speed and/or stroke frequency according to two factors:

- frequency of external pulses
- the set quantity per pulse.

Setting range, DME

DME pump	Setting range [ml/pulse]
DME 2-18	0.000023 - 5.0
DME 8-10	0.000069 - 15.0
DME 12-6	0.000111 - 24.0
DME 19-6	0.000204 - 37.0
DME 48-3	0.000530 - 96.0
DME 60-10	0.000625 - 120
DME 150-4	0.00156 - 300
DME 375-10	0.00392 - 750
DME 940-4	0.00980 - 1880

Setting range, DMS

DMS pump	Setting range [ml/pulse]
DMS 2	0.00232 - 50
DMS 4	0.00370 - 80
DMS 8	0.00695 - 150
DMS 12	0.01110 - 240

Analog 0/4-20 mA control

Applies to DME-A and DMS-A

The pump ensures dosing according to an external analog signal. The dosed capacity is proportional to the input value in mA.

Setting	Input signal	Dosed quantity as a percentage of the max. capacity*
4-20 (default)	4 mA	0%
	20 mA	100%
20-4:	4 mA	100%
	20 mA	0%
0-20:	0 mA	0%
	20 mA	100%
20-0:	0 mA	100%
	20 mA	0%

* If a maximum capacity limitation has been set, the dosed quantity is a percentage of the set capacity limitation, see page 14.

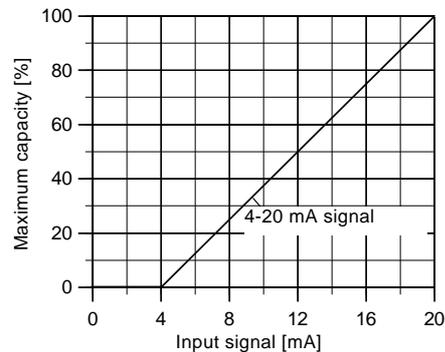


Fig. 10 4-20 mA control

TM01 8218 0100

Timer-based batch control

Applies to DME-A

The set quantity is dosed in batches at maximum capacity or the set capacity limitation.

The time until the first dosing (NX) and the following sequences (IN) can be set in minutes, hours and days. The maximum time limit is 9 days, 23 hours and 59 minutes (9:23:59). The lowest acceptable value is one minute. IN must be higher than the time required to perform one batch. If IN is lower than the time required, the next batch will be ignored.

In case of supply failure, the set dosing quantity, the IN time and the remaining NX time are stored. When the supply is reconnected, the pump starts up with the NX time at the time of the supply failure. Thus, the timer cycle continues, but it will be delayed according to the time of the supply failure.

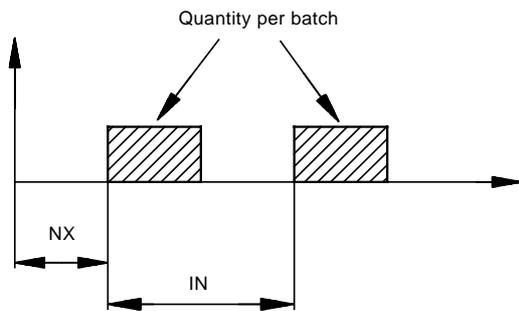


Fig. 11 Timer-based batch control

Setting range, DME

DME pump	Setting range	
	From [ml/batch]	To [l/batch]
DME 2	0.23	5
DME 8	0.69	15
DME 12	1.11	24
DME 19	2.04	37
DME 48	5.3	96
DME 60	6.25	120
DME 150	15.6	300
DME 375	39.1	750
DME 940	97.9	1880

Pulse-based batch control

Applies to DME-A

The set quantity is dosed in batches at maximum capacity or the set capacity limitation. The quantity is dosed every time the pump receives an external pulse. If the pump receives new pulses before the batch is completed, these pulses will be ignored.

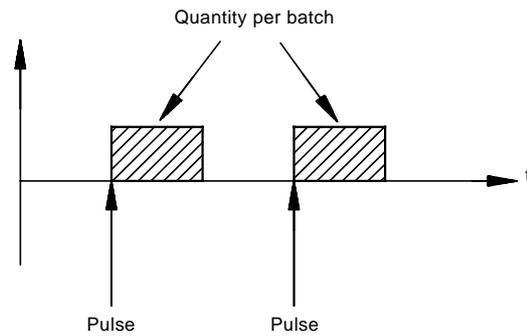


Fig. 12 Pulse-based batch control

Setting range, DME

DME pump	Setting range	
	From [ml/batch]	To [l/batch]
DME 2	0.23	5
DME 8	0.69	15
DME 12	1.11	24
DME 19	2.04	37
DME 48	5.3	96
DME 60	6.25	120
DME 150	15.6	300
DME 375	39.1	750
DME 940	97.9	1880

TM01 8947 0900

TM01 8942 0900

Anti-cavitation

When the anti-cavitation function is selected, the pump extends and smooths its suction stroke. This results in a softer suction stroke.

The anti-cavitation function is used in these situations:

- when pumping high-viscosity liquids
- when pumping degassing liquids
- when the suction tube is long
- when the suction lift is high.

DME (0-48 l/h)

The maximum capacity is reduced when the anti-cavitation function is selected, See page 26 for details.

DME (60-940 l/h)

Depending on the circumstances, the motor speed during the suction stroke can be reduced to approximately 75%, 50% or 25% of the normal motor speed.

When using the anti-cavitation function, the maximum pump capacity is reduced. See page 27 for details.

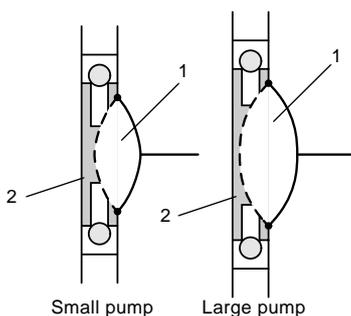
Maximum capacity limitation

Applies to DME

Maximum capacity limitation makes it possible to reduce the maximum capacity (MAX. CAP). It influences the functions in which the pump normally operates at maximum capacity. Under normal operating conditions, the pump cannot operate at a capacity higher than the one stated in the display. This does not apply to the priming button.

The maximum capacity limitation function allows a large pump to be set to operate as a much smaller pump. Together with the 1:1000/1:800 capacity range, this function allows the following:

1. To utilize the smooth and even dosing characteristics of the pump at low capacities to achieve
 - improved chemical mixing
 - improved dosing through long discharge tubes
 - improved dosing of high-viscosity liquids.
2. To improve the dosing of gas-containing liquids: In a large pump, as compared to a small pump, the displaced volume (1) is much larger than the non-displaced volume (2). See fig. 13.



TM02 0158 3301

Fig. 13 Anti-cavitation

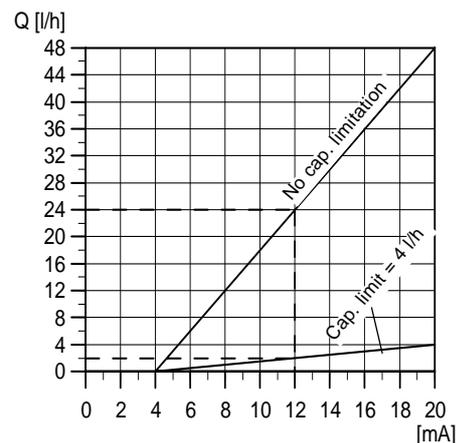
3. To cover several needs with just one pump size.
4. To adapt the pump to a 4-20 mA signal control with 4 mA corresponding to 0% and 20 mA to the set maximum capacity.

This allows you to use for example a DME 48 for dosing a very small quantity of liquid without having to change the input signal. See the example below.

Example

A DME 48 receives a 12 mA input signal from a control instrument. This results in a 50% output (according to the analog curve on page 12) and a capacity of 24 l/h. A new situation occurs where it is only necessary to dose 2 l/h.

The maximum capacity limitation is set to 4 l/h. The pump is still receiving a 12 mA signal resulting in a 50% output and a capacity of 2 l/h.



TM01 9638 2700

Fig. 14 Maximum capacity limitation

The maximum capacity limitation also reduces the pump speed in timer-based batch control, pulse-based batch control and during calibration where the pump usually operates at maximum capacity.

Calibration

After start-up, the dosing pumps can be calibrated for the actual installation to ensure that the displayed value (millilitres or litres) is correct. A calibration program in the set-up menu facilitates calibration.

Counters

The pump can display non-resettable counters for:

- **"Quantity"**
Accumulated dosed quantity in litres or US gallons.
- **"Strokes"**
Accumulated number of dosing strokes.
- **"Hours"**
Accumulated number of operating hours (power on).
- **"Power ON"**
Accumulated number of times the mains supply has been switched on.

Languages

The display text can be displayed in one of the following languages chosen in the set-up menu:

- English
- German
- French
- Italian
- Spanish
- Portuguese
- Dutch
- Swedish
- Finnish
- Danish
- Czech
- Slovak
- Polish
- Russian.

Integrated vent valve

The DME and DMS dosing pumps are provided with an integrated vent valve. The valve makes it very easy to prime the pump during start-up:

On DME and DMS, 0-48 l/h the vent valve must be connected to the tank by means of a 4/6 mm PVC tubing. See fig. 15.

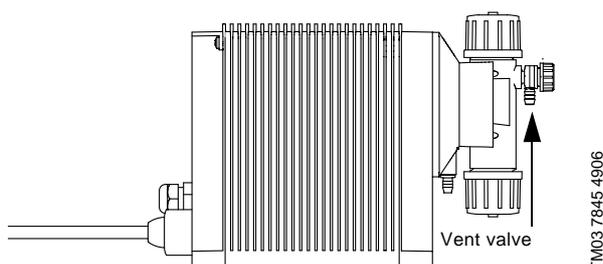


Fig. 15 Integrated vent valve, DME and DMS 0-48 l/h

On DME 60-940 l/h the vent valve must be connected to the tank by means of a 15/20 mm PVC tubing. See fig. 16.

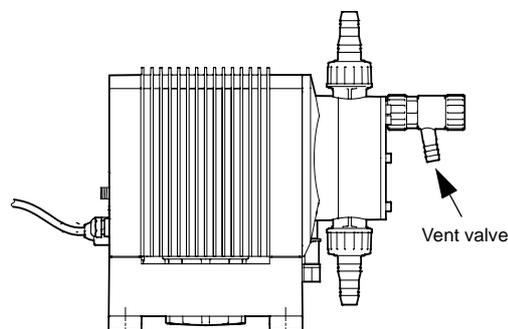


Fig. 16 Integrated vent valve, DME 60-940 l/h

Switch-mode power supply

The DME pump incorporates a switch-mode power supply. This makes the pump independent of variations in supply voltage and frequency.

Operating range: 1 x 100-240 V, 50-60 Hz.

Level control

Applies to DME-A and DMS-A

The pump can be connected to a level control unit for monitoring of the chemical level in the tank. The pump can react to two level signals. The following table shows the pump reactions to the sensor signals:

Level sensors	Pump reaction
Upper sensor activated	<ul style="list-style-type: none"> • Red indicator light is on. • Pump is running. • Alarm relay is activated.★
Lower sensor activated	<ul style="list-style-type: none"> • Red indicator light is on. • Pump stops. • Alarm relay is activated.★

★ Applies to control variant AR

Bus communication

Applies to DME

The pump is available with a built-in module for bus communication with GENIBus (variant AG, up to 48 l/h only) or PROFIBUS DP (variant AP) systems. These modules enable remote monitoring and setting via the fieldbus system.

All DME features are available via bus communication. The PROFIBUS GDS-file can be downloaded from www.grundfosalldos.com.

Diaphragm leakage sensor (60-940 l/h)

The pump can be fitted with a diaphragm leakage sensor. The sensor detects leakage from the diaphragm. The sensor should be connected to the drain hole of the pump head. In case of leakage of the diaphragm, the signal from the sensor generates an alarm in the pump and the alarm relay is activated.

Dosing monitoring

General description



GRA1031

Fig. 17 Dosing monitor mounted on pump discharge side

The dosing monitor is designed to monitor the dosing of liquids which may cause gas accumulation in the dosing head, thus stopping the dosing process even if the pump is still operating.

During the dosing process, the dosing monitor gives pulse signals to the monitor input so that the pump can compare performed dosing strokes (from internal stroke sensor) with externally measured physical strokes (from the dosing monitor). If an external dosing stroke is not measured as a result of the internal dosing stroke, this is considered a fault that may have been provoked by empty tank or gas in the dosing head.

DME/DMS 2 to 48: The dosing monitor should be connected to the "low level" input (pins 2 and 3). This input must be configured for dosing monitoring. Consequently, it cannot be used as a level input.

DME 60 to 150: The dosing monitor should be connected to the input for dosing monitoring (pins 4 and 5). This input must be configured for dosing monitoring.

Once the input has been set to dosing monitoring and a dosing monitor has been connected and set, the dosing monitoring function will be active.

Definitions

Correct dosing stroke: A pulse from the dosing monitor corresponds to the internal stroke signal within acceptable time.

Incorrect dosing stroke: There is no pulse from the dosing monitor corresponding to the internal stroke signal within the acceptable time (the pump is not pumping).

Logic

If a number of incorrect dosing strokes are performed, the pump will continue operating, but it will change over to alarm mode. The red indicator light will be on and the alarm output, if any, will be activated (variant AR).

When a correct dosing stroke is detected, the red indicator light is turned off and the alarm output, if any, is deactivated.

Control panel lock

It is possible to lock the buttons on the control panel to prevent maloperation of the pump. The locking function can be set to ON or OFF. The default setting is OFF.

A pin code is required to change from OFF to ON. When ON is selected for the first time, the indication " _ _ _ _ " appears in the display. If a code has already been entered, the code will appear when an attempt to change to ON is made. This code can either be re-entered or changed.

Units

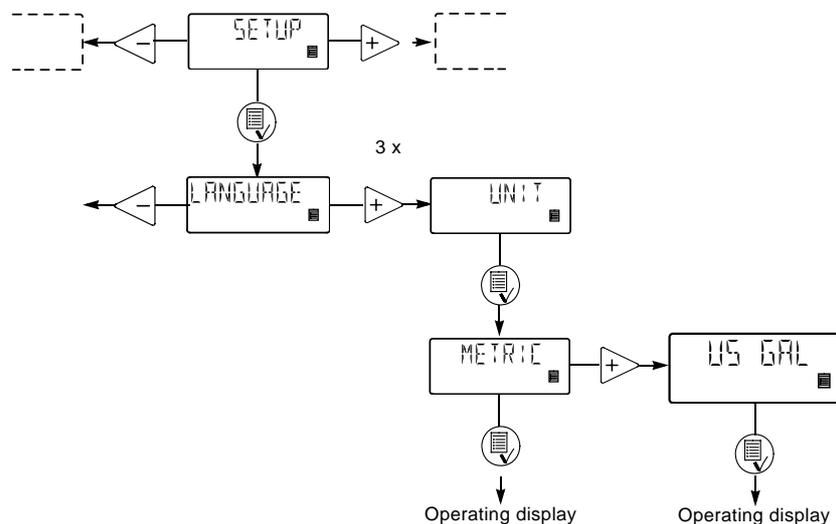
It is possible to select metric units (litre/millilitre) and US units (gallons/millilitre).

Metric measuring units

- **In manual and analog modes**, set the quantity to be dosed in litres per hour (l/h) or millilitres per hour (ml/h).
- **In pulse mode**, set the quantity to be dosed in ml/pulse. The actual capacity is indicated in litres per hour (l/h) or millilitres per hour (ml/h).
- **For calibration**, set the quantity to be dosed in ml per 100 strokes.
- **In timer and batch modes**, set the quantity to be dosed in litres (l) or millilitres (ml).
- Under the QUANTITY menu item in the COUNTERS menu, the dosed quantity is indicated in litres.

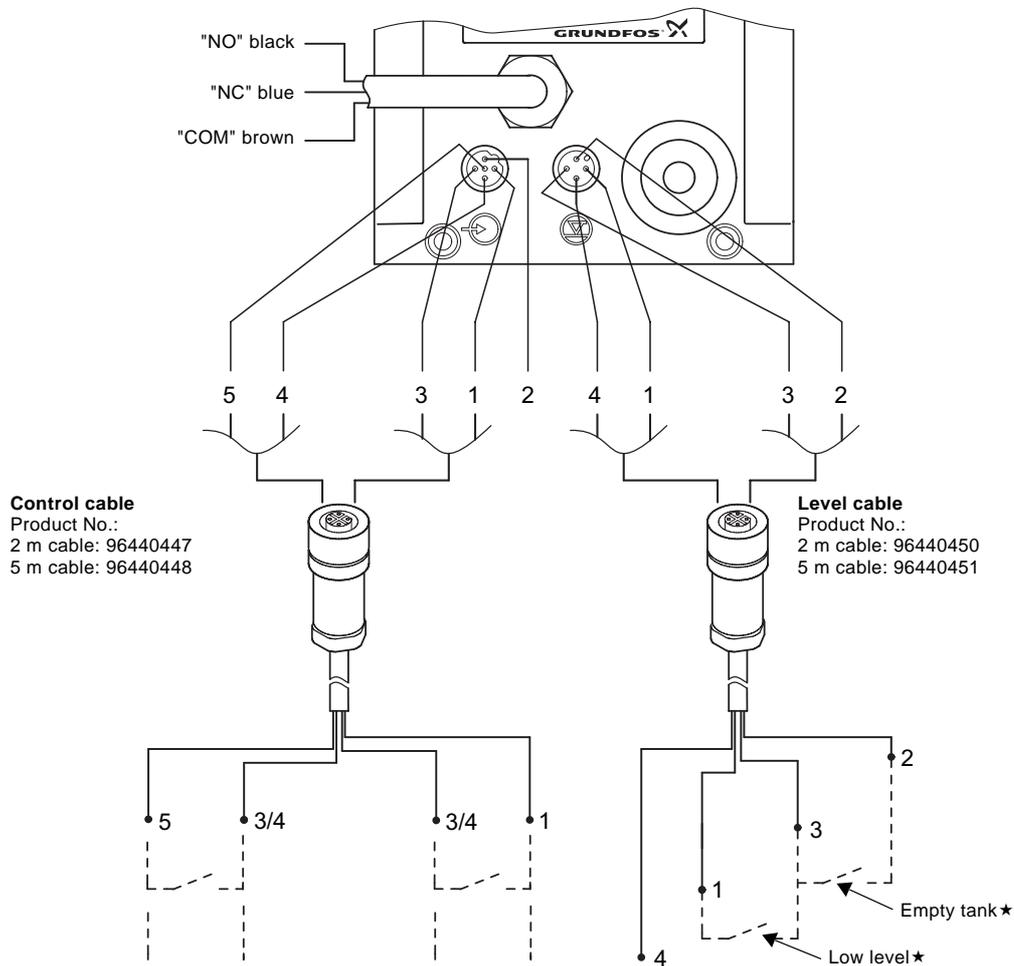
US measuring units

- **In manual and analog modes**, set the quantity to be dosed in gallons per hour (gph).
- **In pulse mode**, set the quantity to be dosed in ml/pulse. The actual capacity is shown in gallons per hour (gph).
- **For calibration**, set the quantity to be dosed in ml per 100 strokes.
- **In timer and batch modes**, set the quantity to be dosed in gallons.
- Under the QUANTITY menu item in the COUNTERS menu, the dosed quantity is indicated in gallons (gal).



Wiring diagram, DME and DMS-A (0-48 l/h)

See pages 26 and 28 for input/output data.



★The level switch contacts (normally open) must be closed at low level/empty tank.

TM03 7853 5006

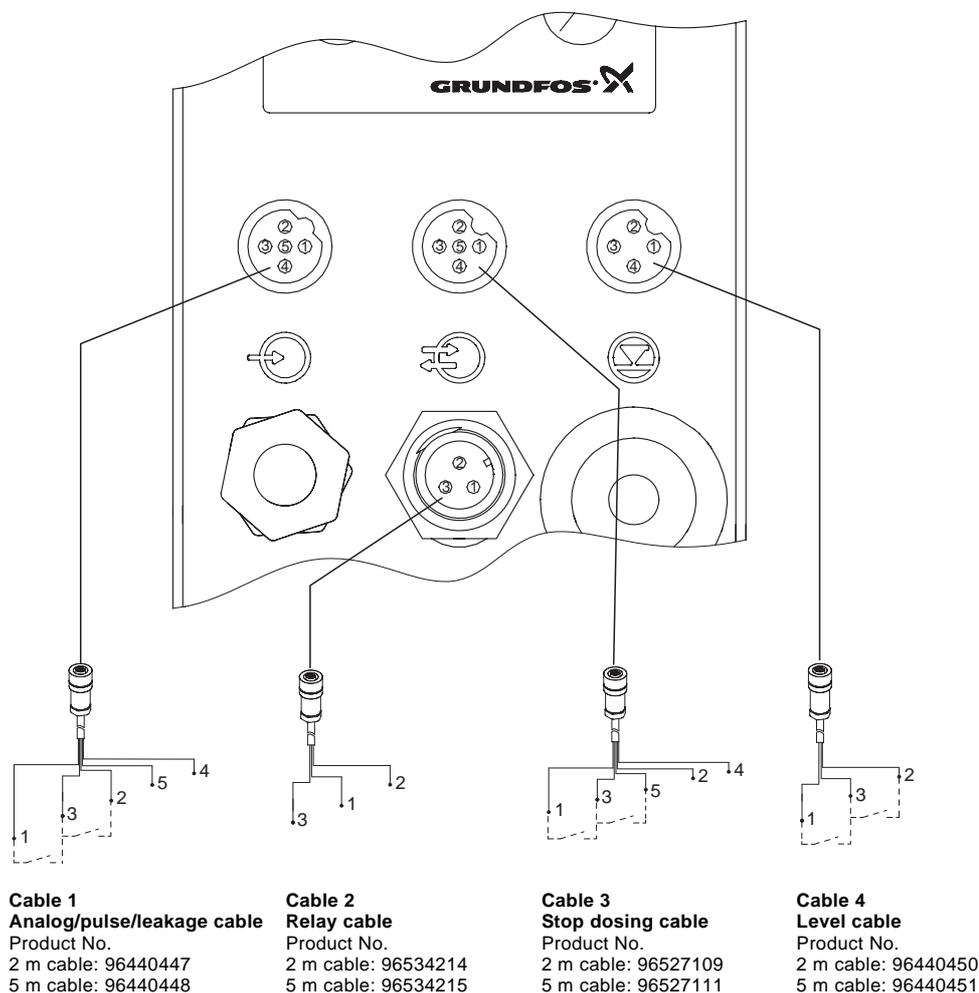
Control input

Number/colour	Pin holes					Plug type
	1/brown	2/white	3/blue, +5V	4/black, GND	5/grey	
Function						
Pulse	X		X			Contact
Pulse	5V			GND		Supply 5 VDC
Analog				(-) mA input	(+) mA input	mA signal
Batch	X		X			Contact
Batch	5V			GND		Supply 5 VDC
External start/stop						
Only pulse/batch mode			X		X	Contact
Only pulse/batch mode				GND	5V	Supply 5 VDC
All other modes	X		X			Contact
All other modes	5V			GND		Supply 5 VDC

Level input

Number/colour	Pin holes					Plug type
	1/brown	2/white	3/blue, +5V	4/black, GND	5/grey	
Function						
Low level	X		X			Contact
Low level	5V			GND		Supply 5 VDC
Empty tank		X	X		(+) mA input	Contact
Empty tank	5V			GND		Supply 5 VDC
Dosing monitoring		X	X			Contact
Dosing monitoring	5V			GND		Supply 5 VDC

Wiring diagram, DME-A (60-940 l/h)



TM02 7069 2503

Cable 1: Analog, pulse and leakage input

Number/colour	Pin holes					Plug type
	1/brown	2/white	3/blue, +5V	4/black, GND	5/grey	
Function						
Pulse	X		X			Contact
Pulse	5V			GND		Supply 5 VDC
Analog				(-) mA input	(+) mA input	mA signal
Batch	X		X			Contact
Batch	5V			GND		Supply 5 VDC
Leakage		X	X			Contact
Leakage		5V		GND		Supply 5 VDC

Cable 2: Output for alarm relay

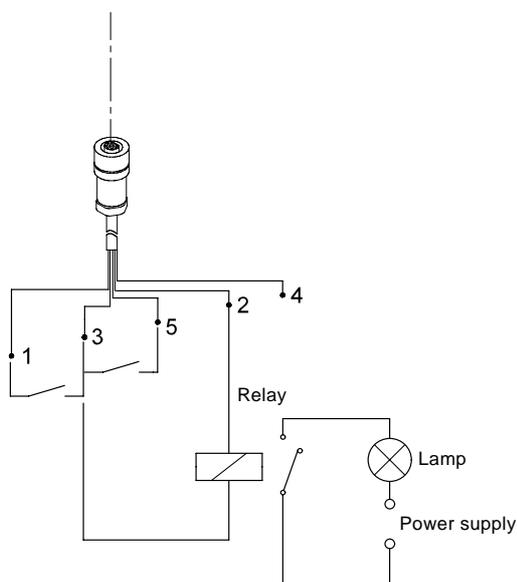
Number/colour	Pin holes		
	1/brown	2/white	3/blue
Function			
Alarm relay output	Common	Normally open	Normally closed

Cable 3: Stop dosing input and dosing monitor or dosing output

Number/colour	Pin holes					Plug type
	1/brown	2/white	3/blue, +5V	4/black, GND	5/grey	
Function						
Stop input	X		X			Contact
Stop input	5V			GND		Supply 5 VDC
Dosing monitoring			X		X	Contact
Dosing monitoring				GND	5V	Supply 5 VDC
Dosing output (pump running)		Open collector★	X	GND		NPN

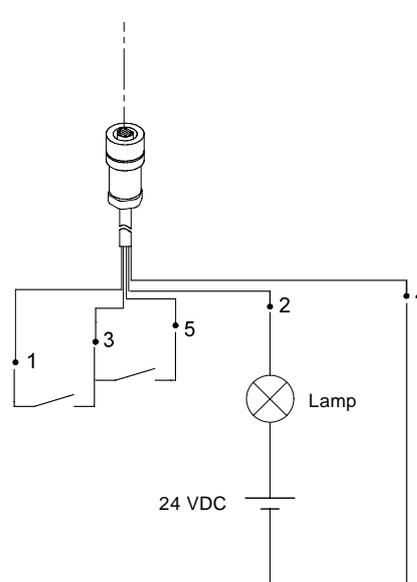
★ Open collector can be used for a relay or a lamp.

1. Using the internal 5V DC power supply:
Max. current: 100 mA



TM03 7868 5006

2. Using an external power supply:
Max. 24 VDC - 100 mA



TM03 7869 5006

Cable 4: Level input

Number/colour	Pin holes					Plug type
	1/brown	2/white	3/blue, +5V	4/black, GND	5/grey	
Function						
Low level	X★		X★			Contact
Low level	5V			GND		Supply 5 VDC
Empty tank		X★	X★			Contact
Empty tank		5V		GND		Supply 5 VDC

★ The function for the potential free contact set can be chosen from the display (NO = Normally Open and NC = Normally Closed).

DME (0-48 l/h)

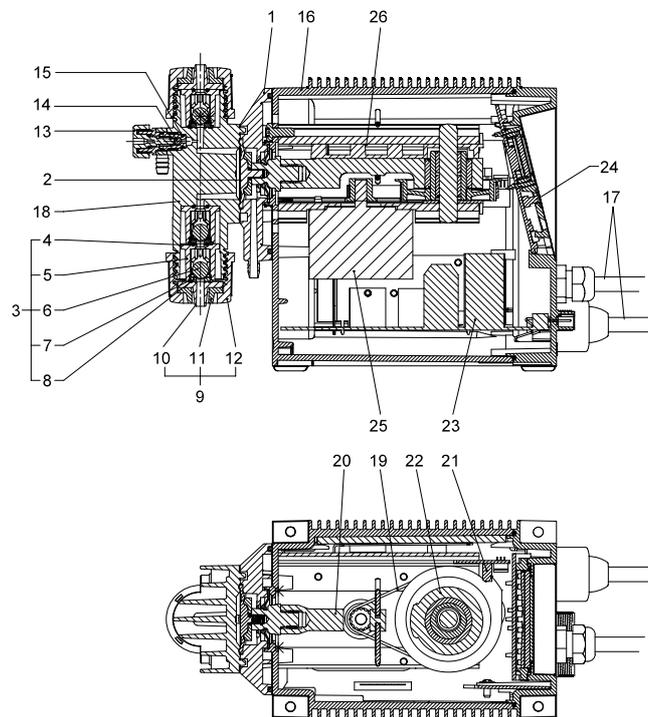


Fig. 19 Sectional drawing, DME (0-48 l/h)

TM03 7854 5006

Construction

The DME pump is a motor-driven diaphragm dosing pump consisting of the following main parts:

Dosing head: Designed with a minimum of clearance space to optimise the priming and deaerating capabilities. The dosing head has built-in valve housings.

Valves: Double-ball suction valve and single-ball discharge valve. Spring-loaded valves are available as an option.

Vent valve: For priming and deaeration complete with connection for a 4/6 mm tubing.

Connections: Sturdy and easy-to-use connections for various sizes of tubing, pipe thread or pipe cementing.

Diaphragm: PTFE-coated, textile-reinforced EPDM diaphragm designed for long life.

Back plate: With separation chamber, safety diaphragm and drain hole.

Drive unit: With diaphragm connecting rod, crank, belt-drive and stepper motor, all mounted on a sturdy frame.

Cabinet: Containing drive unit, electronics, control panel and various electrical connections.

Material specification

Pos.	Description	Material options
1	Back plate	PPE/PS 20% glass fibre
2	Diaphragm	Textile-reinforced EPDM, PTFE-coated
3	Valve complete	–
4	O-ring	EPDM/FKM/PTFE
5★	Valve casing	PP/PVDF/Stainless steel 1.4401
6	Valve ball	Ceramic/Stainless steel 1.4401
7	Valve seat disk	EPDM/FKM/PTFE
8	Valve seat ring	PP/PVDF/Stainless steel 1.4401
9	Connection complete	–
10	Cone/thread piece/ cementing piece	PP/PVDF/Stainless steel 1.4401/PVC
11	Clamping ring	PP/PVDF
12	Union nut	PP/PVDF/Stainless steel 1.4401
13	Vent valve	PP/PVDF
14	Vent valve ball	Ceramic/PTFE
15	Vent valve O-ring	EPDM/FKM
16	Cabinet	PPE/PS 20% glass fibre
17	Power/alarm cable	Rubber
18	Dosing head	PP/PVDF/Stainless steel 1.4401
19	Drive belt	Rubber, polyamide-reinforced
20	Connecting rod	Steel
21	Origo sensor	–
22	Crank shaft	Steel
23	Power PCB	–
24	Operation PCB	–
25	Stepper motor	–
26	Drive frame	Aluminium

★ The pump can be supplied with spring-loaded valves.
Spring material: Hastelloy.

DME (60-940 l/h)

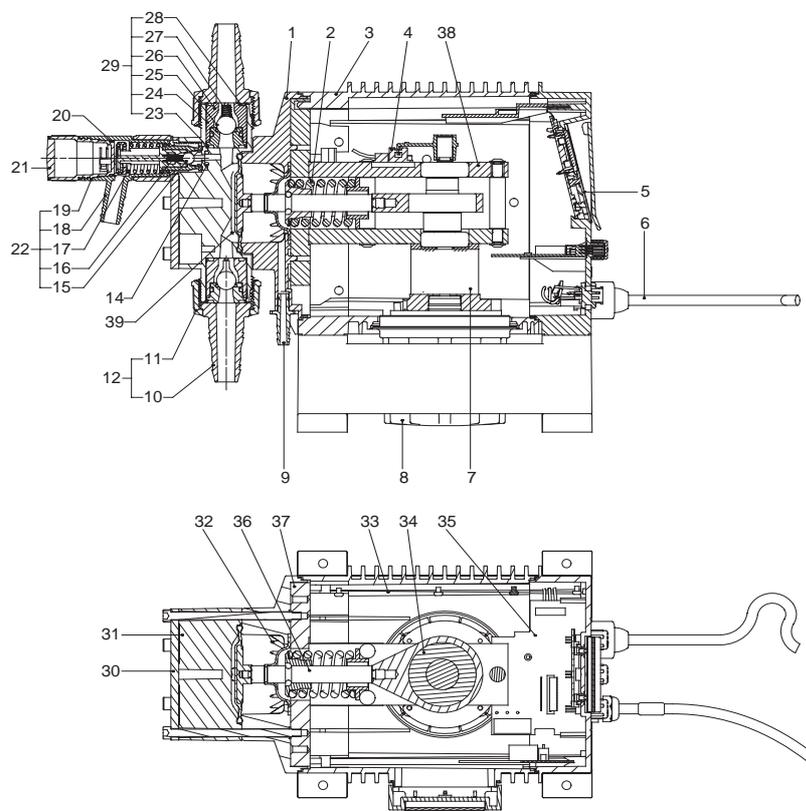


Fig. 20 Sectional drawing, DME (60-940 l/h)

TM02 8599 5006

Material specification

Pos.	Description	Material options
1	Back plate	PPE/PS 20% glass fibre
2	Spring	DIN 17223 TYPE C
3	Cabinet	PPE/PS 20% glass fibre
4	Origo sensor	-
5	Operation PCB (printed circuit board)	-
6	Power cable	Rubber
7	Gear	-
8	BLDC motor	-
9	Drain hole or leakage sensor	-
10	DME 60 and DME 150 19/25 mm hose nozzle	PP/PVDF
	DME 375 and DME 940 connection with internal thread 1 1/4" NPT / Rp 1 1/4	PP/PVDF
11	Union nut	PP/PVDF
12	Connection complete	-
14	O-ring	EPDM/FKM
15	Venting valve ball	Ceramic
16	Spring	Hastelloy C
17	Spring	Hastelloy C
18	Venting valve house	PP/PVDF
19	Venting valve tap	PP/PVDF
20	O-ring	EPDM/FKM
21	End cover	Steel
22	Venting valve complete	-
23	O-ring	EPDM/FKM
24	Valve seat	PP/PVDF/SS 1.4401/PTFE

Pos.	Description	Material options
25	Valve ball	Ceramic/Glass/SS 1.4401/ Hastelloy C/PTFE
26	Valve casing	PP/PVDF/SS 1.4401
27★	Spring	Hastelloy C
28	O-ring	EPDM/FKM/PTFE
29	Valve complete	-
30	Steel plate	Steel
31	Dosing head	PP/PVDF/SS 1.4401
32	Safety membrane	-
33	Power PCB (printed circuit board)	-
34	Crank shaft	Steel
35	I/O PCB (printed circuit board)	-
36	Connecting rod	Steel
37	Steel plate	Steel
38	Steel frame	Steel
39	Diaphragm	Textile-reinforced EPDM, PTFE-coated

★ The pump is available with spring-loaded valves.
Spring material: Hastelloy.

DMS (0-12 l/h)

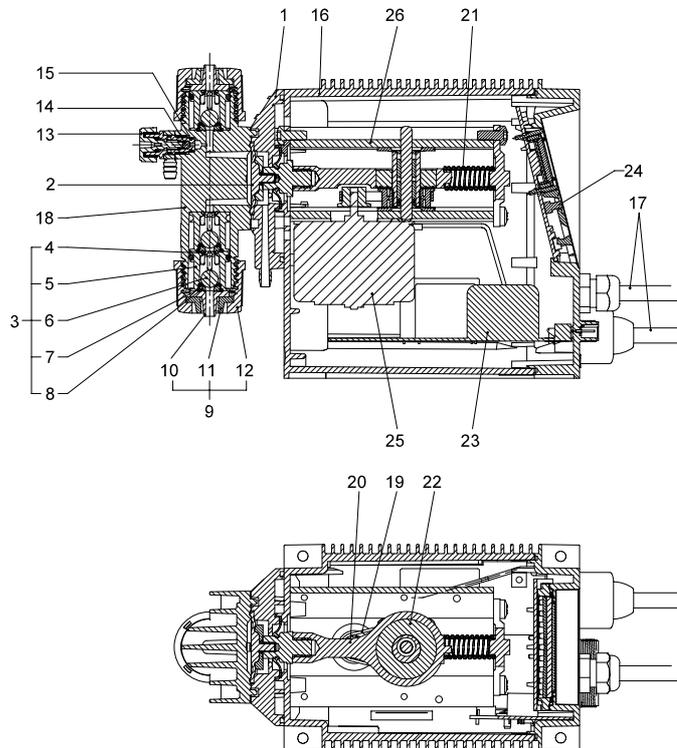


Fig. 21 Sectional drawing, DMS

TM03 7855 5006

Construction

The DMS pump is a motor-driven diaphragm dosing pump consisting of the following main parts:

Dosing head: Designed with a minimum of clearance space to optimise the priming and deaerating capability. The dosing head has built-in valve housings.

Valves: Double-ball suction valve and single-ball discharge valve. Spring-loaded valves are available as an option.

Vent valve: For priming and deaeration complete with connection for a 4/6 mm tubing.

Connections: Sturdy and easy-to-use connections for various sizes of tubing, pipe thread or pipe cementing.

Diaphragm: PTFE-coated, textile-reinforced EPDM diaphragm designed for long life.

Back plate: With separation chamber, safety diaphragm and drain hole.

Drive unit: With diaphragm connecting rod, crank, belt-drive and synchronous motor, all mounted on a sturdy frame.

Cabinet: Containing drive unit, electronics, control panel and various electrical connections (DMS-A).

Material specification

Pos.	Description	Material options
1	Back plate	PPE/PS 20% glass fibre
2	Diaphragm	Textile-reinforced EPDM, PTFE-coated
3	Valve complete	–
4	O-ring	EPDM/FKM/PTFE
5★	Valve casing	PP/PVDF/Stainless steel
6	Valve ball	Ceramic/Stainless steel 1.4401
7	Valve seat disk	EPDM/FKM/PTFE
8	Valve seat O-ring	PP/PVDF/Stainless steel 1.4401
9	Connection complete	–
10	Cone/thread piece/ cementing piece	PP/PVDF/Stainless steel 1.4401/PVC
11	Clamping ring	PP/PVDF
12	Union nut	PP/PVDF/Stainless steel 1.4401
13	Vent valve	PP/PVDF
14	Vent valve ball	Ceramic/PTFE
15	Vent valve O-ring	EPDM/FKM
16	Cabinet	PPE/PS 20% glass fibre
17	Power/alarm cable	Rubber
18	Dosing head	PP/PVDF/Stainless steel 1.4401
19	Drive belt	Rubber, polyamide-reinforced
20	Connecting rod	Steel
21	Dosing stroke auxiliary spring	–
22	Crank shaft	Steel
23	Power PCB	–
24	Operation PCB	–
25	Synchronous motor	–
26	Drive frame	Aluminium

★ The pump is available with spring-loaded valves.
Spring material: Hastelloy.

DME and DMS (0-48 l/h) with front-fitted control panel

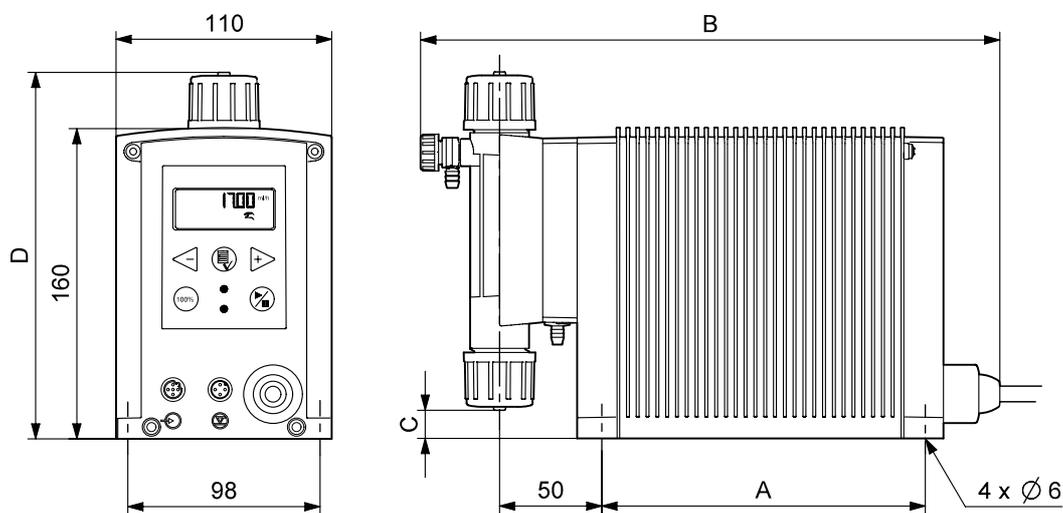


Fig. 22 DME and DMS (0-48 l/h) with front-fitted control panel

TM03 7850 4906

DME and DMS (0-48 l/h) with side-fitted control panel

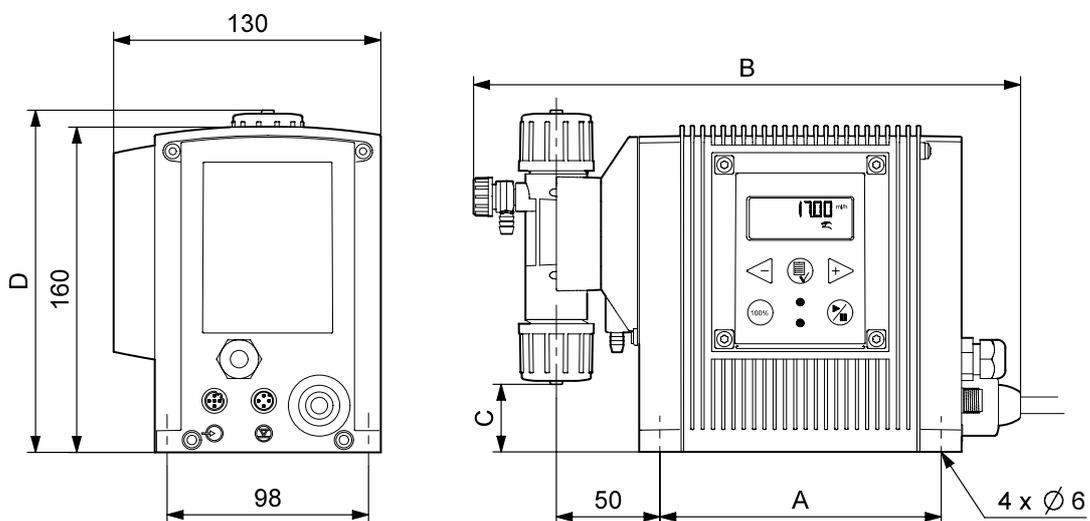


Fig. 23 DME and DMS (0-48 l/h) with side-fitted control panel

TM03 7851 4906

Pump type	Dimensions [mm]					
	DME 2 DMS 2	DMS 4	DME 8 DMS 8	DME 12 DMS 12	DME 19	DME 48
A			137			192
B			245			300
C			36			15
D			168			188

DME (60 and 150 l/h)

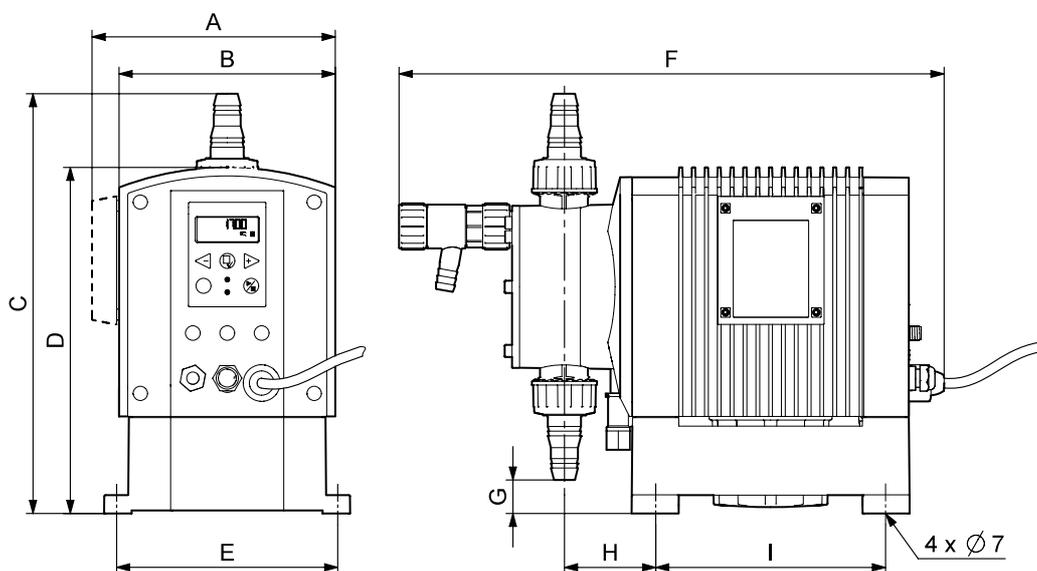


Fig. 24 DME (60 and 150 l/h)

TM02 7062 5106

DME (375 and 940 l/h)

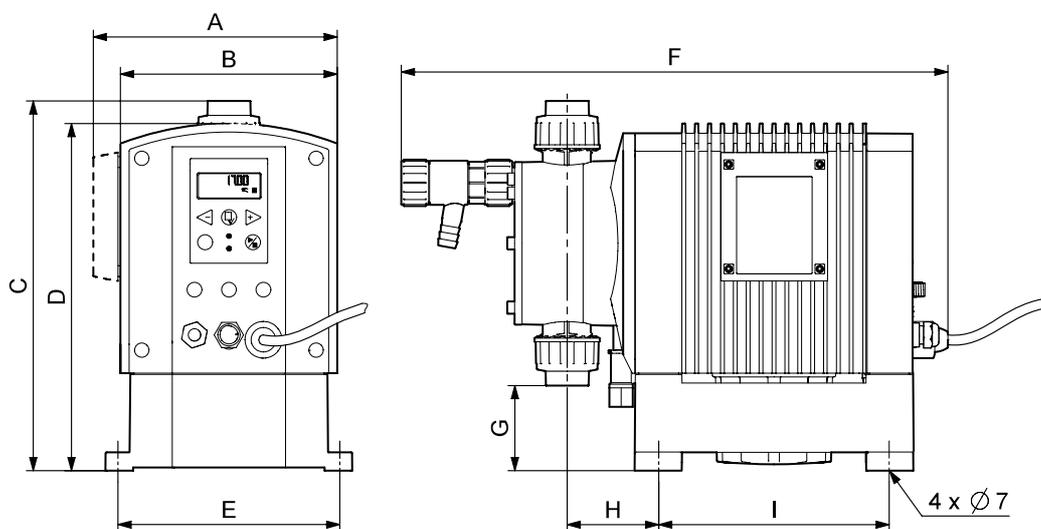


Fig. 25 DME (375 and 940 l/h)

TM03 7884 5006

Pump type	Dimensions [mm]			
	DME 60	DME 150	DME 375	DME 940
A	198	198	238	238
B	176	176	218	218
C	331	345	410	430
D	284	284	364	364
E	180	180	230	230
F	444	444	543	543
G	41	28	95	75
H	74	74	95	95
I	187	187	246	246

DME 375 and 940 are equipped with 1 1/4" thread connections

DME (0-48 l/h)

Pump		DME 2	DME 8	DME 12	DME 19	DME 48	
	Maximum capacity without anti-cavitation ★ ¹	[l/h]	2.5	7.5	12	18.5	48
		[gph]	0.66	1.98	3.71	4.88	12.68
	Maximum capacity with anti-cavitation ★ ¹	[l/h]	1.8	5.6	9	14.5	37
		[gph]	0.49	1.48	2.78	3.66	9.51
	Maximum pressure	[bar]	18	10	6	6.2	2.6
		[psi]	261	145	87	90	38
Mechanical data	Maximum stroke frequency ★ ² [stroke/min]		180	180	180	151	151
	Maximum suction lift during operation [m]		6				
	Maximum suction lift when priming with wet valves [m]		1.8	3	3	3	3
	Maximum viscosity with spring-loaded valves ★ ³ [mPas] (= cP)		500	500	500	500	100
	Maximum viscosity without spring-loaded valves ★ ³ [mPas] (= cP)		200	200	200	200	100
	Maximum liquid temperature [°C]		50				
	Minimum liquid temperature [°C]		0				
	Maximum ambient temperature [°C]		45				
	Minimum ambient temperature [°C]		0				
	Accuracy of repeatability		±1%				
	Weight and size	Weight [kg]	2.3	2.3	2.3	3.4	3.4
		Diaphragm diameter [mm]	28	38	43.5	55	77
	Supply voltage [V]	1 x 100-240 V, 50-60 Hz					
Electrical data	Maximum current consumption [A]	at 100 V	0.27			0.35	
		at 230 V	0.16			0.26	
	Maximum power consumption P ₁ [W]	16.2			22.1		
	Enclosure class	IP 65					
	Insulation class	F					
Signal input	Voltage in level sensor input [VDC]	5					
	Voltage in pulse input [VDC]	5					
	Minimum pulse-repetition period [ms]	3.3					
	Impedance in analog 0/4-20 mA input [Ω]	250					
	Maximum loop resistance in pulse signal circuit [Ω]	350					
	Maximum loop resistance in level signal circuit [Ω]	350					
Signal output	Maximum load of alarm relay output, at ohmic load [A]	2					
	Maximum voltage, alarm relay output [V]	250					
Sound pressure level	The sound pressure level of the pump is lower than [db(A)]	70					
Approvals		CE, VDE, cULus, NSF61, PSE, TSU, GHOST					

★¹ At any counter-pressure if the pump is calibrated to the actual installation.

★² The maximum stroke frequency varies according to calibration.

★³ Maximum suction lift: 1 metre.

DME (60-940 l/h)

Pump		DME 60	DME 150	DME 375	DME 940
Mechanical data	Maximum capacity [l/h]	60	150	376	940
	Maximum capacity with anti-cavitation 75% [l/h]	45	112	282	705
	Maximum capacity with anti-cavitation 50% (approx.) [l/h]	33.4	83.5	210	525
	Maximum capacity with anti-cavitation 25% (approx.) [l/h]	16.1	40.4	101	252
	Maximum pressure [bar]	10	4	10	4
	Maximum stroke frequency [stroke/min]	160			
	Maximum suction lift during operation [m]	6			
	Maximum suction lift when priming with wet valves [m]	1.5			
	Maximum viscosity with spring-loaded valves \star^1 [mPas] (= cP)	3000 mPas at 50% capacity			
	Maximum viscosity without spring-loaded valves \star^1 [mPas] (= cP)	200			
	Maximum liquid temperature [°C]	50			
	Minimum liquid temperature [°C]	0			
	Maximum ambient temperature [°C]	45			
	Minimum ambient temperature [°C]	-10			
Accuracy of repeatability	±1%				
Weight and size	Weight [kg]	11.4	11.8	21	22.5
	Diaphragm diameter [mm]	79	106	124	173
Electrical data	Supply voltage [V]	1 x 100-240 V, 50-60 Hz			
	Maximum current consumption [A]	at 100 V	1.25		2.40
		at 230 V	0.67		1.0
	Maximum power consumption P_1 [W]	67.1		240	
Enclosure class	IP 65				
Insulation class	B				
Cable data	Supply cable	1.5 metre			
Signal input	Voltage in level sensor input [VDC]	5			
	Voltage in pulse input [VDC]	5			
	Minimum pulse-repetition period [ms]	3.3			
	Impedance in analog 0/4-20 mA input [Ω]	250			
	Maximum loop resistance in pulse signal circuit [Ω]	350			
Signal output	Maximum load of alarm relay output, at ohmic load [A]	2			
	Maximum voltage, alarm relay output [V]	42			
Sound pressure level	The sound pressure level of the pump is lower than [dB(A)]	70			
Approvals		DME 60-150 CE, cCSAus, PSE, GHOST DME 375-940: CE, cCSAus, GHOST			

\star^1 Maximum suction lift: 1 metre.

DMS (0-12 l/h)

Pump		DMS 2	DMS 4	DMS 8	DMS 12		
Maximum capacity ★ ¹	DMS-A and AR, B	[l/h]	2.5	4	7.5	12	
		[gph]	0.66	1.05	1.98	3.71	
	DMS-D (50 Hz)	[l/h]	3.3 ±20%	5.7 ±18%	8.7 ±8%	13.7 ±6%	
		[gph]	0.87 ±20%	1.5 ±18%	2.3 ±8%	3.6 ±6%	
	DMS-D (60 Hz)	[l/h]	3.9 ±20%	6.9 ±18%	10.4 ±8%	16.4 ±6%	
		[gph]	1.03 ±20%	1.82 ±18%	2.75 ±8%	4.33 ±6%	
	Maximum pressure	[bar]	11	7	5.4	3.4	
		[psi]	160	102	78	49	
	Mechanical data	Maximum stroke frequency ★ ² [stroke/min]	DMS-A and AR, B	180			
			DMS-D (50 Hz)	187.5			
DMS-D (60 Hz)			225				
Maximum suction lift during operation [m]		6					
Maximum suction lift when priming with wet valves [m]		1.8	2	3	3		
Maximum viscosity with spring-loaded valves ★ ³ [mPas] (= cP)		500					
Maximum viscosity without spring-loaded valves ★ ³ [mPas] (= cP)	200						
Maximum liquid temperature [°C]	50						
Minimum liquid temperature [°C]	0						
Maximum ambient temperature [°C]	45						
Minimum ambient temperature [°C]	0						
Accuracy of repeatability	±1%						
Weight and size	Weight [kg]	2.3					
	Diaphragm diameter [mm]	28	32	38	42.5		
Electrical data	Supply voltage	1 x 230 V -13%/+10%, 50 Hz					
		1 x 120 V -12%/+8%, 60 Hz					
		1 x 100 V ±6%, 50/60 Hz					
	Maximum current consumption [A]	at 100 V	0.2				
		at 120 V	0.17				
at 230 V		0.09					
Maximum power consumption P ₁ [W]	20						
Enclosure class	IP 65						
Insulation class	F						
Signal input	Voltage in level sensor input [VDC]	5					
	Voltage in pulse input [VDC]	5					
	Minimum pulse-repetition period [ms]	3.3					
	Impedance in 0/4-20 mA analog input [Ω]	250					
	Maximum loop resistance in pulse signal circuit [Ω]	350					
Signal output	Maximum load of alarm relay output at ohmic load [A]	2					
	Maximum voltage, alarm relay output [V]	250					
Sound pressure level	The sound pressure level of the pump is lower than [db(A)]	70					
Approvals	CE, VDE, cULus, NSF61, PSE, TSU, GHOST DMS-D kun CE ★ ⁴						

★¹ Irrespective of counter-pressure if the pump is calibrated to the actual installation.

★² The maximum stroke frequency varies according to calibration.

★³ Maximum suction lift: 1 metre.

★⁴ DMS-D: Only CE and VDE.

DME (0-48 l/h), standard range

Power supply: 1 x 100-240 V, 50-60 Hz
(switch mode).

Mains plug: EU (Schuko).

Valves: Double-ball on suction side, single-ball on discharge side.

Max. capacity [l/h] ★ ¹	Max. pressure [bar]	Materials ★ ²			Connection ★ ³	Control panel position	Type designation (variant A)★ ⁴	Product number			
		Pump head	Gaskets	Valve balls				Without alarm relay output (variant A)	With alarm relay output (variant AR)		
2.5 (1.8)	18	PP	EPDM	Ceramic	4/6, <u>6/9</u>	Front-fitted	DME 2-18 A-PP/E/C-F-3111F	96434879	96434885		
						Side-fitted	DME 2-18 A-PP/E/C-S-3111F	96434882	96434888		
		PP	FKM	Ceramic	4/6, <u>6/9</u>	Front-fitted	DME 2-18 A-PP/V/C-F-3111F	96443981	96443987		
						Side-fitted	DME 2-18 A-PP/V/C-S-3111F	96443984	96443990		
		PVDF	FKM	Ceramic	4/6, <u>6/9</u>	Front-fitted	DME 2-18 A-PV/V/C-F-3111F	96434899	96434905		
						Side-fitted	DME 2-18 A-PV/V/C-S-3111F	96434902	96434908		
		SS 1.4401	FKM	SS 1.4401	Rp <u>1/4</u>	Front-fitted	DME 2-18 A-SS/V/SS-F-31AAF	96437423	96437429		
						Side-fitted	DME 2-18 A-SS/V/SS-S-31AAF	96437426	96437432		
		7.5 (5.6)	10	PP	EPDM	Ceramic	4/6, <u>6/9</u>	Front-fitted	DME 8-10 A-PP/E/C-F-3111F	96434880	96434886
								Side-fitted	DME 8-10 A-PP/E/C-S-3111F	96434883	96434889
PP	FKM			Ceramic	4/6, <u>6/9</u>	Front-fitted	DME 8-10 A-PP/V/C-F-3111F	96443982	96443988		
						Side-fitted	DME 8-10 A-PP/V/C-S-3111F	96443985	96443991		
PVDF	FKM			Ceramic	4/6, <u>6/9</u>	Front-fitted	DME 8-10 A-PV/V/C-F-3111F	96434900	96434906		
						Side-fitted	DME 8-10 A-PV/V/C-S-3111F	96434903	96434909		
SS 1.4401	FKM			SS 1.4401	Rp <u>1/4</u>	Front-fitted	DME 8-10 A-SS/V/SS-F-31AAF	96437424	96437430		
						Side-fitted	DME 8-10 A-SS/V/SS-S-31AAF	96437427	96437433		
12 (9)	6			PP	EPDM	Ceramic	4/6, <u>6/9</u>	Front-fitted	DME 12-6 A-PP/E/C-F-3111F	96434881	96434887
								Side-fitted	DME 12-6 A-PP/E/C-S-3111F	96434884	96434890
		PP	FKM	Ceramic	4/6, <u>6/9</u>	Front-fitted	DME 12-6 A-PP/V/C-F-3111F	96443983	96443989		
						Side-fitted	DME 12-6 A-PP/V/C-S-3111F	96443986	96443992		
		PVDF	FKM	Ceramic	4/6, <u>6/9</u>	Front-fitted	DME 12-6 A-PV/V/C-F-3111F	96434901	96434907		
						Side-fitted	DME 12-6 A-PV/V/C-S-3111F	96434904	96434910		
		SS 1.4401	FKM	SS 1.4401	Rp <u>1/4</u>	Front-fitted	DME 12-6 A-SS/V/SS-F-31AAF	96437425	96437431		
						Side-fitted	DME 12-6 A-SS/V/SS-S-31AAF	96437428	96437434		
		18.5 (14.5)	6.2	PP	EPDM	Ceramic	<u>6/9</u> , 9/12	Front-fitted	DME 19-6 A-PP/E/C-F-3122F	96434891	96434895
								Side-fitted	DME 19-6 A-PP/E/C-S-3122F	96434893	96434897
PP	FKM			Ceramic	<u>6/9</u> , 9/12	Front-fitted	DME 19-6 A-PP/V/C-F-3122F	96443993	96443997		
						Side-fitted	DME 19-6 A-PP/V/C-S-3122F	96443995	96443999		
PVDF	FKM			Ceramic	<u>6/9</u> , 9/12	Front-fitted	DME 19-6 A-PV/V/C-F-3122F	96434911	96434915		
						Side-fitted	DME 19-6 A-PV/V/C-S-3122F	96434913	96434917		
SS 1.4401	FKM			SS 1.4401	Rp <u>3/8</u>	Front-fitted	DME 19-6 A-SS/V/SS-F-31BBF	96437435	96437439		
						Side-fitted	DME 19-6 A-SS/V/SS-S-31BBF	96437437	96437441		
48 (37)	2.6			PP	EPDM	Ceramic	6/9, <u>9/12</u>	Front-fitted	DME 48-3 A-PP/E/C-F-3122F	96434892	96434896
								Side-fitted	DME 48-3 A-PP/E/C-S-3122F	96434894	96434898
		PP	FKM	Ceramic	6/9, <u>9/12</u>	Front-fitted	DME 48-3 A-PP/V/C-F-3122F	96443994	96443998		
						Side-fitted	DME 48-3 A-PP/V/C-S-3122F	96443996	96444000		
		PVDF	FKM	Ceramic	6/9, 9/12	Front-fitted	DME 48-3 A-PV/V/C-F-3122F	96434912	96434916		
						Side-fitted	DME 48-3 A-PV/V/C-S-3122F	96434914	96434918		
		SS 1.4401	FKM	SS 1.4401	Rp <u>3/8</u>	Front-fitted	DME 48-3 A-SS/V/SS-F-31BBF	96437436	96437440		
						Side-fitted	DME 48-3 A-SS/V/SS-S-31BBF	96437438	96437442		

★¹ Values in brackets are maximum capacity if the anti-cavitation function has been selected.

★² See list of pumped liquids on page 37.

★³ Underlined sizes are factory-fitted connections; other connections are supplied with the pump as standard.
4/6, 6/9 and 9/12 are compression fittings for inner/outer tubing diameters stated in mm.
Rp 1/4 and Rp 3/8 connections have internal thread for pipe connection.

★⁴ Also available in AR-version.

DME (0-48 l/h), non-standard range

Example in bold: DME 2-18 A-SS/V/SS-F-32AAF

Maximum capacity and pressure ^{★2}	Control variant	Materials of dosing head, gaskets and valve balls	Control panel position	Motor voltage	Valves	Suction/discharge connection	Mains plug
[l/h] - [bar]	See page 6	Dosing head: PP = Polypropylene PV = PVDF SS = Stainless steel 1.4401 Gaskets: E = EPDM V = FKMP T = PTFE Valve balls: C = Ceramic SS = Stainless steel 1.4401 T = PTFE	F = Front-fitted S = Side-fitted	2 = 1x120 V, 60 Hz 3 = 1x100-240 V, 50-60 Hz	1 = Standard 2 = Spring-loaded	1 = Tubing 4/6+ 6/9 mm 2 = Tubing 6/9+6/12 +9/12 mm 3 = Tubing 4/6 mm 4 = Tubing 6/9 mm 5 = Tubing 6/12 mm 6 = Tubing 9/12 mm T = Tubing 0.17"/0.25" R = Tubing 0.25"/0.375" S = Tubing 0.375"/0.5" A = Threaded Rp 1/4 B = Threaded Rp 3/8 V = Threaded 1/4" NPT Y = Threaded 3/8" NPT E = Cementing d.10 mm F = Cementing d.12 mm	F = EU B = USA+ CAN G = UK I = AU E = CH J = JP

DME	Pump head	Gasket	Ball							
2-18 8-10 12-6	A AR AP ^{★1} AG ^{★1}	PP PV	E V	C SS	-F- -S-	2 3	1 2	1 2 3 4 5 6 T R S	1 2 3 4 5 6 T R S	F B G I E J
		PV	T	T				A (PVC) E (PVC) F (PVC)	A (PVC) E (PVC) F (PVC)	
		SS	E V	SS				-F- -S-	2 3	
19-6 48-3	A AR AP ^{★1} AG ^{★1}	PP PV	E V	C SS	-F- -S-	2 3	1 2	2 4 5 6 A E F	2 4 5 6 A E F	
		PV	T	T				A E F	A E F	
		SS	E V	SS				-F- -S-	2 3	

★¹ Pumps equipped with bus communication module, see page 15.

★² 2-18: 2.5 l/h, 18 bar
8-10: 7.5 l/h, 10 bar
12-6: 12 l/h, 6 bar
19-6: 18.5 l/h, 6.2 bar
48-3: 48 l/h, 2.6 bar

DME (60-940 l/h), standard range

Power supply: 1 x 100-240 V, 50-60 Hz switch-mode).

Mains plug: EU (Schuko).

Valves: Single-ball on suction side; single-ball on discharge side.

Max. capacity [l/h]	Max. pressure [bar]	Control variant	Materials			Connection *	Control panel position	Type designation	Product number			
			Pump head	Gaskets	Valve balls							
60	10	AR	PP	EPDM	Ceramic	19/27 25/34	Front-fitted	DME 60-10 AR-PP/E/C-F-31QQF	96524874			
							Side-fitted	DME 60-10 AR-PP/E/C-S-31QQF	96524879			
			PP	FKM	Ceramic	19/27 25/34	Front-fitted	DME 60-10 AR-PP/V/C-F-31QQF	96524910			
							Side-fitted	DME 60-10 AR-PP/V/C-S-31QQF	96524911			
			PVDF	FKM	Ceramic	19/27 25/34	Front-fitted	DME 60-10 AR-PV/V/C-F-31QQF	96524912			
							Side-fitted	DME 60-10 AR-PV/V/C-S-31QQF	96524913			
			SS	FKM	SS 1.4401	Rp 3/4	Front-fitted	DME 60-10 AR-SS/V/SS-F-31A1A1F	96524914			
							Side-fitted	DME 60-10 AR-SS/V/SS-S-31A1A1F	96524915			
			60	10	B	PP	EPDM	Ceramic	19/27 25/34	Front-fitted	DME 60-10 B-PP/E/C-F-31QQF	96524916
										Side-fitted	DME 60-10 B-PP/E/C-S-31QQF	96524917
PP	FKM	Ceramic				19/27 25/34	Front-fitted	DME 60-10 B-PP/V/C-F-31QQF	96524918			
							Side-fitted	DME 60-10 B-PP/V/C-S-31QQF	96524919			
PVDF	FKM	Ceramic				19/27 25/34	Front-fitted	DME 60-10 B-PV/V/C-F-31QQF	96524920			
							Side-fitted	DME 60-10 B-PV/V/C-S-31QQF	96524921			
SS	FKM	SS 1.4401				Rp 3/4	Front-fitted	DME 60-10 B-SS/V/SS-F-31A1A1F	96524923			
							Side-fitted	DME 60-10 B-SS/V/SS-S-31A1A1F	96524924			
150	4	AR				PP	EPDM	Ceramic	19/27 25/34	Front-fitted	DME 150-4 AR-PP/E/C-F-31QQF	96524925
										Side-fitted	DME 150-4 AR-PP/E/C-S-31QQF	96524926
			PP	FKM	Ceramic	19/27 25/34	Front-fitted	DME 150-4 AR-PP/V/C-F-31QQF	96524927			
							Side-fitted	DME 150-4 AR-PP/V/C-S-31QQF	96524928			
			PVDF	FKM	Ceramic	19/27 25/34	Front-fitted	DME 150-4 AR-PV/V/C-F-31QQF	96524929			
							Side-fitted	DME 150-4 AR-PV/V/C-S-31QQF	96524930			
			SS	FKM	SS 1.4401	Rp 3/4	Front-fitted	DME 150-4 AR-SS/V/SS-F-31A1A1F	96524931			
							Side-fitted	DME 150-4 AR-SS/V/SS-S-31A1A1F	96524932			
			150	4	B	PP	EPDM	Ceramic	19/27 25/34	Front-fitted	DME 150-4 B-PP/E/C-F-31QQF	96524933
										Side-fitted	DME 150-4 B-PP/E/C-S-31QQF	96524934
PP	FKM	Ceramic				19/27 25/34	Front-fitted	DME 150-4 B-PP/V/C-F-31QQF	96524935			
							Side-fitted	DME 150-4 B-PP/V/C-S-31QQF	96524936			
PVDF	FKM	Ceramic				19/27 25/34	Front-fitted	DME 150-4 B-PV/V/C-F-31QQF	96524937			
							Side-fitted	DME 150-4 B-PV/V/C-S-31QQF	96524938			
SS	FKM	SS 1.4401				Rp 3/4	Front-fitted	DME 150-4 B-SS/V/SS-F-31A1A1F	96524939			
							Side-fitted	DME 150-4 B-SS/V/SS-S-31A1A1F	96524940			
376	10	AR				PP	EPDM	Glass	Rp 1 1/4	Front-fitted	DME 375-10 AR-PP/E/G-F-31A2A2F	96524941
										Side-fitted	DME 375-10 AR-PP/E/G-S-31A2A2F	96524942
			PP	FKM	Glass	Rp 1 1/4	Front-fitted	DME 375-10 AR-PP/V/G-F-31A2A2F	96524943			
							Side-fitted	DME 375-10 AR-PP/V/G-S-31A2A2F	96524944			
			PVDF	FKM	Glass	Rp 1 1/4	Front-fitted	DME 375-10 AR-PV/V/G-F-31A2A2F	96524945			
							Side-fitted	DME 375-10 AR-PV/V/G-S-31A2A2F	96524946			
			SS	FKM	SS 1.4401	Rp 1 1/4	Front-fitted	DME 375-10 AR-SS/V/SS-F-31A2A2F	96524947			
							Side-fitted	DME 375-10 AR-SS/V/SS-S-31A2A2F	96524948			
			376	10	B	PP	EPDM	Glass	Rp 1 1/4	Front-fitted	DME 375-10 B-PP/E/G-F-31A2A2F	96524949
										Side-fitted	DME 375-10 B-PP/E/G-S-31A2A2F	96524950
PP	FKM	Glass				Rp 1 1/4	Front-fitted	DME 375-10 B-PP/V/G-F-31A2A2F	96524951			
							Side-fitted	DME 375-10 B-PP/V/G-S-31A2A2F	96524952			
PVDF	FKM	Glass				Rp 1 1/4	Front-fitted	DME 375-10 B-PV/V/G-F-31A2A2F	96524953			
							Side-fitted	DME 375-10 B-PV/V/G-S-31A2A2F	96524954			
SS	FKM	SS 1.4401				Rp 1 1/4	Front-fitted	DME 375-10 B-SS/V/SS-F-31A2A2F	96524956			
							Side-fitted	DME 375-10 B-SS/V/SS-S-31A2A2F	96524957			

940	4	AR	PP	EPDM	Glass	Rp 1 1/4	Front-fitted	DME 940-4 AR-PP/E/G-F-31A2A2F	96524958		
							Side-fitted	DME 940-4 AR-PP/E/G-S-31A2A2F	96524959		
			PP	FKM	Glass	Rp 1 1/4	Front-fitted	DME940-4 AR-PP/V/G-F-31A2A2F	96524960		
							Side-fitted	DME 940-4 AR-PP/V/G-S-31A2A2F	96524961		
			PVDF	FKM	Glass	Rp 1 1/4	Front-fitted	DME 940-4 AR-PV/V/G-F-31A2A2F	96524962		
		Side-fitted					DME 940-4 AR-PV/V/G-S-31A2A2F	96524963			
		SS	FKM	SS 1.4401	Rp 1 1/4	Front-fitted	DME 940-4 AR-SS/V/SS-F-31A2A2F	96524964			
						Side-fitted	DME 940-4 AR-SS/V/SS-S-31A2A2F	96524965			
		940	4	B	PP	EPDM	Glass	Rp 1 1/4	Front-fitted	DME 940-4 B-PP/E/G-F-31A2A2F	96524966
									Side-fitted	DME 940-4 B-PP/E/G-S-31A2A2F	96524967
PP	FKM				Glass	Rp 1 1/4	Front-fitted	DME 940-4 B-PP/V/G-F-31A2A2F	96524968		
							Side-fitted	DME 940-4 B-PP/V/G-S-31A2A2F	96524969		
PVDF	FKM				Glass	Rp 1 1/4	Front-fitted	DME 940-4 B-PV/V/G-F-31A2A2F	96524980		
				Side-fitted			DME 940-4 B-PV/V/G-S-31A2A2F	96524981			
SS	FKM			SS 1.4401	Rp 1 1/4	Front-fitted	DME 940-4 B-SS/V/SS-F-31A2A2F	96524982			
						Side-fitted	DME 940-4 B-SS/V/SS-S-31A2A2F	96524983			

★ 19/27, 25/34, 32/41 and 38/48 are inner/outer tubing diameters in mm for hose clamp connectors.
Rp 3/4 and Rp 1 1/4 connections have internal thread for pipe connection.

DME (60-940 l/h), non-standard range

Example in bold: DME 150-4 AR SS/V/SS-F-32A1A1F

Maximum capacity and pressure ★ ²	Control variant	Materials of dosing head, gaskets and valve balls	Control panel position	Motor voltage	Valves	Connection suction/ discharge	Mains plug
[l/h] - [bar]	See page 6	Dosing head: PP = Polypropylene PV = PVDF SS = Stainless steel 1.4401 Gaskets: E = EPDM V = FKM T = PTFE Valve balls: C = Ceramic SS = Stainless steel 1.4401 Y = Hastelloy C G = Glass T = PTFE	F = Front-fitted S = Side-fitted	2 = 1 x 120 V, 60 Hz 3 = 1 x 100-240 V, 50-60 Hz	1 = Standard 2 = Spring-loaded	Q = 19/27+ 25/34 mm A1 = Threaded, Rp 3/4 A2 = Threaded, Rp 1 1/4 A3 = Threaded 3/4" NPT A4 = Threaded 1 1/4" NPT	F = EU (DIN) B = USA+CAN G = UK I = AU E = CH J = JP

DME	Pump head	Gasket	Ball						
60-10 150-4	B AR AP★ ¹	PP PV	E V	C SS Y G	-F- -S-	2 3	1 2	Q A1 A3	F B G I E J
		PV	T	T Y					
		SS	E V	SS					
375-10 940-4	B AR AP★ ¹	PP PV	E V	C SS Y G	-F- -S-	2 3	1 2	A2 A4	
		PV	T	T Y					
		SS	E V	SS					

★¹ Pumps equipped with bus communication module, see page 15.

★² 60-10: 60 l/h, 10 bar
150-4: 150 l/h, 4 bar
375-10: 375 l/h, 10 bar
940-4: 940 l/h, 4 bar

DMS (0-12 l/h), standard range

Power supply: 1 x 230 V, 50 Hz.

Mains plug: EU (Schuko).

Valves: Double-ball on suction side, single-ball on discharge side.

Max. capacity [l/h]	Max. pressure [bar]	Control variant ^{★1}	Materials ^{★2}			Connection ^{★3}	Control panel position	Type designation (variants A ^{★4} and B)	Product number		
			Pump head	Gaskets	Valve balls				Without alarm relay (variant A)	With alarm relay (variant AR)	Variant D
2.5	11	A AR	PP	EPDM	Ceramic	4/6, 6/9	Front-fitted	DMS 2-11 A-PP/E/C-F-1111F	96437450	96446959	
								Side-fitted	DMS 2-11 A-PP/E/C-S-1111F	96437451	96446960
			PP	FKM	Ceramic	4/6, 6/9	Front-fitted	DMS 2-11 A-PP/V/C-F-1111F	96443969	96446961	
								Side-fitted	DMS 2-11 A-PP/V/C-S-1111F	96443970	96446962
			PVDF	FKM	Ceramic	4/6, 6/9	Front-fitted	DMS 2-11 A-PV/V/C-F-1111F	96437458	96446963	
								Side-fitted	DMS 2-11 A-PV/V/C-S-1111F	96437459	96446964
		SS 1.4401	FKM	SS 1.4401	Rp 1/4	Front-fitted	DMS 2-11 A-SS/V/SS-F-11AAF	96437466	96446965		
							Side-fitted	DMS 2-11 A-SS/V/SS-S-11AAF	96437467	96446966	
		B	PP	EPDM	Ceramic	4/6, 6/9	Front-fitted	DMS 2-11 B-PP/E/C-F-1111F	96437474	-	
								Side-fitted	DMS 2-11 B-PP/V/C-F-1111F	96443977	-
			PP	FKM	Ceramic	4/6, 6/9	Front-fitted	DMS 2-11 B-PV/V/C-F-1111F	96437478	-	
								Side-fitted	DMS 2-11 B-PV/V/C-S-1111F	96437479	-
SS 1.4401	FKM		SS 1.4401	Rp 1/4	Front-fitted	DMS 2-11 B-SS/V/SS-F-11AAF	96437482	-			
						Side-fitted	DMS 2-11 B-SS/V/SS-S-11AAF	96437483	-		
3.3	D	PP	EPDM	Ceramic	4/6, 6/9	x	DMS 2-11 D-PP/E/C-X-1111F			96476529	
							Side-fitted	DMS 2-11 D-PP/V/C-X-1111F			96476532
		PP	FKM	Ceramic	4/6, 6/9	x	DMS 2-11 D-PV/V/C-X-1111F			96476533	
							Side-fitted	DMS 2-11 D-PV/V/C-S-X-1111F			96476534
		SS 1.4401	FKM	SS 1.4401	Rp 1/4	x	DMS 2-11 D-SS/V/SS-X-11AAF			96476535	
							Side-fitted	DMS 2-11 D-SS/V/SS-S-X-11AAF			96476536
4	7	A AR	PP	EPDM	Ceramic	4/6, 6/9	Front-fitted	DMS 4-7 A-PP/E/C-F-1111F	96437452	96446967	
								Side-fitted	DMS 4-7 A-PP/E/C-S-1111F	96437453	96446968
			PP	FKM	Ceramic	4/6, 6/9	Front-fitted	DMS 4-7 A-PP/V/C-F-1111F	96443971	96446969	
								Side-fitted	DMS 4-7 A-PP/V/C-S-1111F	96443972	96446970
			PVDF	FKM	Ceramic	4/6, 6/9	Front-fitted	DMS 4-7 A-PV/V/C-F-1111F	96437460	96446971	
								Side-fitted	DMS 4-7 A-PV/V/C-S-1111F	96437461	96446972
		SS 1.4401	FKM	SS 1.4401	Rp 1/4	Front-fitted	DMS 4-7 A-SS/V/SS-F-11AAF	96437468	96446973		
							Side-fitted	DMS 4-7 A-SS/V/SS-S-11AAF	96437469	96446974	
		B	PP	EPDM	Ceramic	4/6, 6/9	Front-fitted	DMS 4-7 B-PP/E/C-F-1111F	96437475	-	
								Side-fitted	DMS 4-7 B-PP/V/C-F-1111F	96443978	-
			PP	FKM	Ceramic	4/6, 6/9	Front-fitted	DMS 4-7 B-PV/V/C-F-1111F	96437479	-	
								Side-fitted	DMS 4-7 B-PV/V/C-S-1111F	96437480	-
SS 1.4401	FKM		SS 1.4401	Rp 1/4	Front-fitted	DMS 4-7 B-SS/V/SS-F-11AAF	96437483	-			
						Side-fitted	DMS 4-7 B-SS/V/SS-S-11AAF	96437484	-		
5.7	D	PP	EPDM	Ceramic	4/6, 6/9	x	DMS 4-7 D-PP/E/C-X-1111F			96476535	
							Side-fitted	DMS 4-7 D-PP/V/C-X-1111F			96476536
		PP	FKM	Ceramic	4/6, 6/9	x	DMS 4-7 D-PV/V/C-X-1111F			96476537	
							Side-fitted	DMS 4-7 D-PV/V/C-S-X-1111F			96476538
		SS 1.4401	FKM	SS 1.4401	Rp 1/4	x	DMS 4-7 D-SS/V/SS-X-11AAF			96476539	
							Side-fitted	DMS 4-7 D-SS/V/SS-S-X-11AAF			96476540
7.5	5.4	A AR	PP	EPDM	Ceramic	4/6, 6/9	Front-fitted	DMS 8-5 A-PP/E/C-F-1111F	96437454	96446975	
								Side-fitted	DMS 8-5 A-PP/E/C-S-1111F	96437455	96446976
			PP	FKM	Ceramic	4/6, 6/9	Front-fitted	DMS 8-5 A-PP/V/C-F-1111F	96443973	96446977	
								Side-fitted	DMS 8-5 A-PP/V/C-S-1111F	96443974	96446978
			PVDF	FKM	Ceramic	4/6, 6/9	Front-fitted	DMS 8-5 A-PV/V/C-F-1111F	96437462	96446979	
								Side-fitted	DMS 8-5 A-PV/V/C-S-1111F	96437463	96446980
		SS 1.4401	FKM	SS 1.4401	Rp 1/4	Front-fitted	DMS 8-5 A-SS/V/SS-F-11AAF	96437470	96446981		
							Side-fitted	DMS 8-5 A-SS/V/SS-S-11AAF	96437471	96446982	
		B	PP	EPDM	Ceramic	4/6, 6/9	Front-fitted	DMS 8-5 B-PP/E/C-F-1111F	96437476	-	
								Side-fitted	DMS 8-5 B-PP/V/C-F-1111F	96443979	-
			PP	FKM	Ceramic	4/6, 6/9	Front-fitted	DMS 8-5 B-PV/V/C-F-1111F	96437480	-	
								Side-fitted	DMS 8-5 B-PV/V/C-S-1111F	96437481	-
SS 1.4401	FKM		SS 1.4401	Rp 1/4	Front-fitted	DMS 8-5 B-SS/V/SS-F-11AAF	96437484	-			
						Side-fitted	DMS 8-5 B-SS/V/SS-S-11AAF	96437485	-		
8.7	D	PP	EPDM	Ceramic	4/6, 6/9	x	DMS 8-5 D-PP/E/C-X-1111F			96476540	
							Side-fitted	DMS 8-5 D-PP/V/C-X-1111F			96476541
		PP	FKM	Ceramic	4/6, 6/9	x	DMS 8-5 D-PV/V/C-X-1111F			96476542	
							Side-fitted	DMS 8-5 D-PV/V/C-S-X-1111F			96476543
		SS 1.4401	FKM	SS 1.4401	Rp 1/4	x	DMS 8-5 D-SS/V/SS-X-11AAF			96476544	
							Side-fitted	DMS 8-5 D-SS/V/SS-S-X-11AAF			96476545

Max. capacity [l/h]	Max. pressure [bar]	Control variant ★ ¹	Materials ★ ²			Connection ★ ³	Control panel position	Type designation (variants A★ ⁴ and B)	Product number			
			Pump head	Gaskets	Valve balls				Without alarm relay (variant A)	With alarm relay (variant AR)	Variant D	
12	3.4	A	PP	EPDM	Ceramic	4/6, <u>6/9</u>	Front-fitted	DMS 12-3 A-PP/E/C-F-1111F	96437456	96446951		
							Side-fitted	DMS 12-3 A-PP/E/C-S-1111F	96437457	96446952		
		AR	PP	FKM	Ceramic	4/6, <u>6/9</u>	Front-fitted	DMS 12-3 A-PP/V/C-F-1111F	96443975	96446953		
							Side-fitted	DMS 12-3 A-PP/V/C-S-1111F	96443976	96446954		
		PVDF	FKM	Ceramic	4/6, <u>6/9</u>	Front-fitted	DMS 12-3 A-PV/V/C-F-1111F	96437464	96446955			
						Side-fitted	DMS 12-3 A-PV/V/C-S-1111F	96437465	96446956			
	SS 1.4401	FKM	SS 1.4401	Rp <u>1/4</u>	Front-fitted	DMS 12-3 A-SS/V/SS-F-11AAF	96437472	96446957				
					Side-fitted	DMS 12-3 A-SS/V/SS-S-11AAF	96437473	96446958				
	13.7	3.4	B	PP	EPDM	Ceramic	4/6, <u>6/9</u>	Front-fitted	DMS 12-3 B-PP/E/C-F-1111F	96437477	-	
								Front-fitted	DMS 12-3 B-PP/V/C-F-1111F	96443980	-	
								Front-fitted	DMS 12-3 B-PV/V/C-F-1111F	96437481	-	
			D	PP	FKM	Ceramic	4/6, 6/9	x	Front-fitted	DMS 12-3 B-SS/V/SS-F-11AAF	96437485	-
Front-fitted									DMS 12-3 D-PP/E/C-X-1111F			96473184
Front-fitted									DMS 12-3 D-PP/V/C-X-1111F			96476544
SS 1.4401	FKM	Ceramic	4/6, 6/9	x	Front-fitted	DMS 12-3 D-PV/V/C-X-1111F			96476545			
					Front-fitted	DMS 12-3 D-SS/V/SS-X-11AAF			96476546			

★¹ See description of control variants on page 6.

★² See list of pumped liquids on page 37.

★³ Underlined sizes are factory-fitted connections; other sizes are supplied with the pump as standard.
4/6 and 6/9 are compression fittings for inner/outer tubing diameters stated in mm.
Rp 1/4 connection have internal thread for pipe connection.

★⁴ Also available in AR version.

DMS (0-12 l/h), non-standard range

Example in bold: **DMS 4-7 A-PP/V/C-S-1244F**

Max. capacity and pressure★ ² [l/h] - [bar]	Control variant	Materials of dosing head, gaskets and valve balls	Control panel position	Motor voltage	Valves	Suction/discharge connection	Mains plug
	See page 6	Dosing head: PP = Polypropylene PV = PVDF SS = Stainless steel 1.4401 Gaskets: E = EPDM V = FKM T = PTFE Valve balls: C = Ceramic SS = Stainless steel 1.4401 T = PTFE	F = Front-fitted S = Side-fitted X = No control panel	1 = 1 x 230 V, 50 Hz 2 = 1 x 120 V, 60 Hz	1 = Standard 2 = Spring-loaded	1 = Tubing 4/6+6/9 mm 2 = Tubing 6/9+6/12 +9/12 mm 3 = Tubing 4/6 mm 4 = Tubing 6/9 mm 5 = Tubing 6/12 mm 6 = Tubing 9/12 mm T = Tubing 0.17"/0.25" R = Tubing 0.25"/0.375" S = Tubing 0.375"/0.5" A = Threaded Rp 1/4 B = Threaded Rp 3/8 B = Threaded Rp 3/8 V = Threaded 1/4" NPT Y = Threaded 3/8" NPT E = Cementing d.10 mm F = Cementing d.12 mm	F = EU B = USA+CAN G = UK I = AU E = CH J = JP

DMS	Pump head	Gasket	Ball									
2-11 4-7 8-5 12-3	A-AR	PP	E	LC	-F- -S-	1 2	1 2	1	1	F B G I E J		
		PV	V	SS				2	2			
								T	T		T	T
								R	R		R	R
								S	S		S	S
								A (PVC)	A (PVC)		A (PVC)	A (PVC)
				E (PVC)	E (PVC)	E (PVC)	E (PVC)					
				F (PVC)	F (PVC)	F (PVC)	F (PVC)					
		B	SS	E	SS	-F-	1 2	1 2	A	A	F B G I E J	
			V		B				B			
					V				V	V		V
					Y				Y	Y		Y
				1	1				1	1		
				2	2				2	2		
	D	PP	E	C	-X-	1 2	1 2	1	1	F J		
		PV	V	SS				2	2		2	2
								T	T		T	T
								R	R		R	R
								S	S		S	S
								A (PVC)	A (PVC)		A (PVC)	A (PVC)
				E (PVC)	E (PVC)	E (PVC)	E (PVC)					
				F (PVC)	F (PVC)	F (PVC)	F (PVC)					
				A	A	A	A					
				B	B	B	B					
				V	V	V	V					
				Y	Y	Y	Y					

★² 2-11: 2.5 l/h, 11 bar
4-7: 4 l/h, 7 bar
8-5: 7.5 l/h, 5.4 bar
12-3: 12 l/h, 3.4 bar

List of pumped liquids

The resistance table below is intended as a general guide for material resistance (at room temperature), and does not replace testing of the chemicals and pump materials under specific working conditions.

The data shown are based on information from various sources available, but many factors (purity, temperature, abrasive particles, etc.) may affect the chemical resistance of a given material.

Note: Some of the liquids in this table may be toxic, corrosive or hazardous.

Note: Please be careful when handling these liquids.

Pumped liquid (20°C)			Materials										
Description	Chemical formula	Concentration %	Pump housing				Gasket					Ball	
			PP	PVDF	SS 1.4401	PVC	FKM	EPDM	CSM	PTFE	Centellen C	Ceramic	Glass
Acetic acid	CH ₃ COOH	25	●	●	●	●	-	○	○	●	○	●	●
		60	●	●	●	●	-	○	-	●	○	●	●
		85	●	●	●	-	-	-	-	●	○	●	●
Aluminium chloride	AlCl ₃	40	●	●	-	●	●	●	●	●	●	●	
Aluminium sulphate	Al ₂ (SO ₄) ₃	60	●	●	●	●	●	●	●	●	●	●	
Ammonia, aqueous	NH ₄ OH	28	●	●	●	●	-	●	●	●	○	●	-
Calcium hydroxide★ ⁷	Ca(OH) ₂		●	●	●	●	●	●	●	●	●	●	-
Calcium hypochlorite	Ca(OCl) ₂	20	○	●	-	●	●	●	●	●	●	●	●
Chromic acid★ ⁵	H ₂ CrO ₄	10	●	●	●	●	●	●	●	●	●	●	●
		30	-	●	-	●	●	○	●	●	○	●	●
		40	-	●	-	●	●	-	●	●	○	●	●
		50	-	●	-	●	●	-	●	●	○	●	●
Copper sulphate	CuSO ₄	30	●	●	●	●	●	●	●	●	●	●	
Ferric chloride★ ³	FeCl ₃	100	●	●	-	●	●	●	●	●	●	●	
Ferric sulphate★ ³	Fe ₂ (SO ₄) ₃	100	●	●	●	●	●	●	●	●	●	●	
Ferrous chloride	FeCl ₂	100	●	●	-	●	●	●	●	●	●	●	
Ferrous sulphate	FeSO ₄	50	●	●	●	●	●	●	●	●	●	●	
Hydrochloric acid	HCl	< 25	●	●	-	●	○	●	●	●	●	●	●
		25-37	●	●	-	●	-	●	-	●	○	●	●
Hydrogen peroxide	H ₂ O ₂	30	●	●	●	●	●	●	●	●	●	●	●
		10	●	●	●	●	●	●	●	●	●	●	●
Nitric acid	HNO ₃	30	●	●	●	●	●	●	●	●	-	●	●
		40	○	●	●	●	●	●	-	●	-	●	●
		70	-	●	●	-	●	-	-	●	-	●	●
Peracetic acid	CH ₃ COOOH	5	●	●	-	●	-	●	●	●	●	●	
Potassium hydroxide	KOH	50	●	-	●	●	-	●	●	●	○	●	-
Potassium permanganate	KMnO ₄	10	●	●	●	●	-	●	●	●	●	●	
Sodium chlorate	NaClO ₃	30	●	●	●	●	○	●	●	●	●	●	
Sodium chloride	NaCl	30	●	●	-	●	●	●	●	●	●	●	
Sodium chlorite	NaClO ₂	20	●	○	-	-	●	●	●	●	●	●	
Sodium hydroxide	NaOH	20	●	○	●	●	●	●	●	●	○	●	-
		30	●	-	●	●	●	●	●	●	○	●	-
		50	●	-	●	●	●	●	●	●	○	●	-
Sodium hypochlorite	NaOCl	20	○	●	-	●	●	●	●	●	●	●	
Sodium sulphide	Na ₂ S	30	●	●	●	●	●	●	●	●	●	-	
Sodium sulphite★ ⁶	Na ₂ SO ₃	20	●	●	●	●	●	●	●	●	●	-	
Sulphurous acid	H ₂ SO ₃	6	●	●	●	●	●	●	●	●	●	○	
Sulphuric acid★ ⁴	H ₂ SO ₄	< 80	●	●	-	○	●	○	●	●	○	●	○
		80-98	○	●	-	-	●	-	-	●	●	●	-

● Resistant.

★³ Risk of crystallisation.

○ Limited resistance.

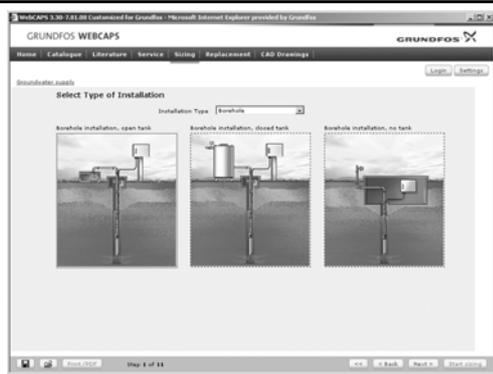
★⁴ Reacts violently with water and generates much heat. (Pump should be absolutely dry before dosing sulphuric acid.)

- Not resistant.

★⁵ Must be fluoride-free when glass balls are used.

★⁶ In neutral solutions.

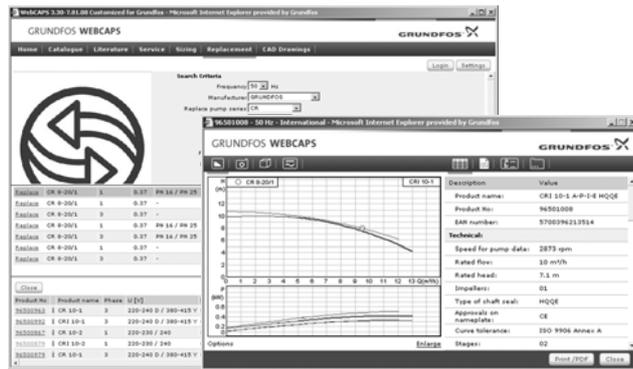
★⁷ Saturated solution 0.1%.



Sizing

With a starting point in different application areas and installation examples, this section gives easy step-by-step instructions in how to

- select the most suitable and efficient pump for your installation
- carry out advanced calculations based on energy consumption, payback periods, load profiles, lifecycle costs, etc.
- analyse your selected pump via the built-in lifecycle cost tool
- determine the flow velocity in wastewater applications, etc.



Replacement

In this section you find a guide to select and compare replacement data of an installed pump in order to replace the pump with a more efficient Grundfos pump. The section contains replacement data of a wide range of pumps produced by other manufacturers than Grundfos.

Based on an easy step-by-step guide, you can compare Grundfos pumps with the one you have installed on your site. After having specified the installed pump, the guide suggests a number of Grundfos pumps which can improve both comfort and efficiency.



CAD drawings

In this section it is possible to download 2-dimensional (2D) and 3-dimensional (3D) CAD drawings of most Grundfos pumps.

The following formats are available in WebCAPS:

2-dimensional drawings

- .dxf, wireframe drawings
- .dwg, wireframe drawings.

3-dimensional drawings

- .dwg, wireframe drawings (without surfaces)
- .stp, solid drawings (with surfaces)
- .eprt, E-drawings.

WinCAPS



Fig. 26 WinCAPS CD-ROM

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 185,000 Grundfos products in more than 22 languages.

The program contains the same features and functions as WebCAPS, but is an ideal solution if no Internet connection is available.

WinCAPS is available on CD-ROM and updated once a year.

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Repl. V7164097 0305	

Subject to alterations.