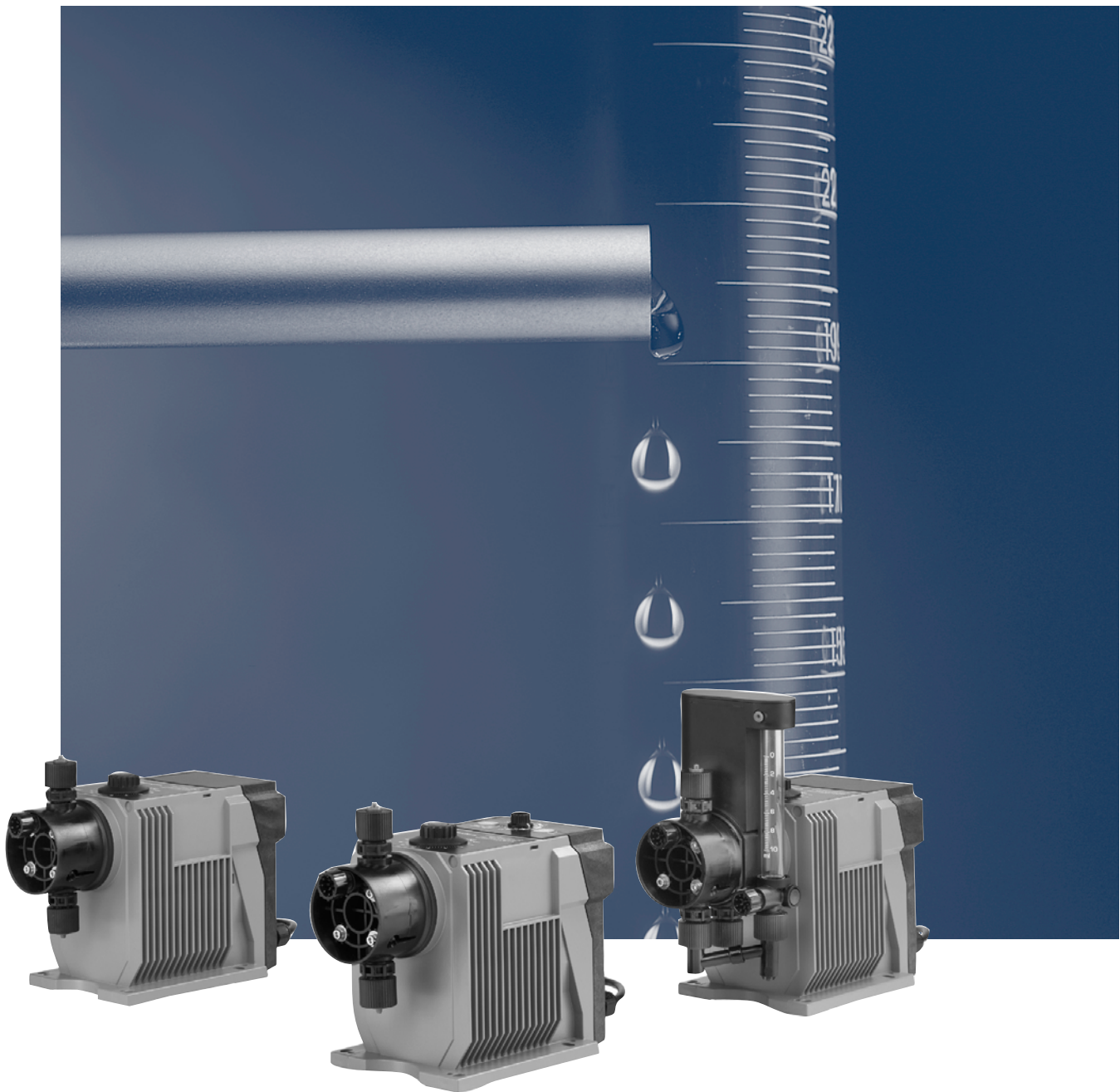




DMI

Dosing



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DMI dosing pumps

Simple and cost-efficient dosing
from 0.3 to 18 l/h

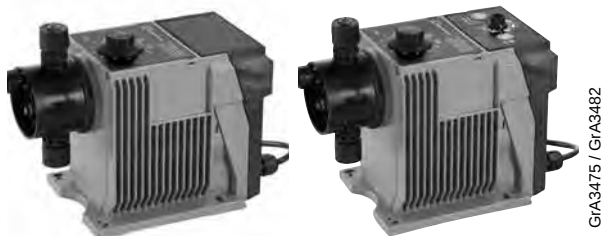


Fig. 1 DMI B

Fig. 2 DMI A

Variations on the synchronous-motor theme

The Grundfos DMI range of dosing pumps comprises several variants for general or specific dosing purposes. Dosing heads and valves are available in different materials to suit a wide range of general water treatment and industrial applications.

Whichever model you choose, you get a sturdy, cost-efficient pump based on a well-proven synchronous-motor design. The DMI range can dose rates from 0.3 to 18 l/h and pressures up to 16 bar.

Silent operation

Regardless of model, the DMI pump is among the most silent of its type available on the market today. It keeps its noise levels down to just 45 dB(A).

Flexible installation

The Grundfos DMI is suitable for both horizontal and vertical installation. If installed horizontally, the control elements are located on the top of the unit for easy access.

Proven synchronous-motor technology

The synchronous-motor technology used in the Grundfos DMI range combines robustness and precision. It keeps pulsation low and performance high.

The DMI A or B: With or without signal inputs

The DMI range is suitable for a wide range of dosing tasks. Choose between control variant B, designed for simple manual control, or control variant A which offers more sophisticated control features. Examples include:

- pulse control with multiplier/divisor that converts signals into strokes as appropriate
- stroke-frequency control
- access to check functions and venting
- optional memory function.

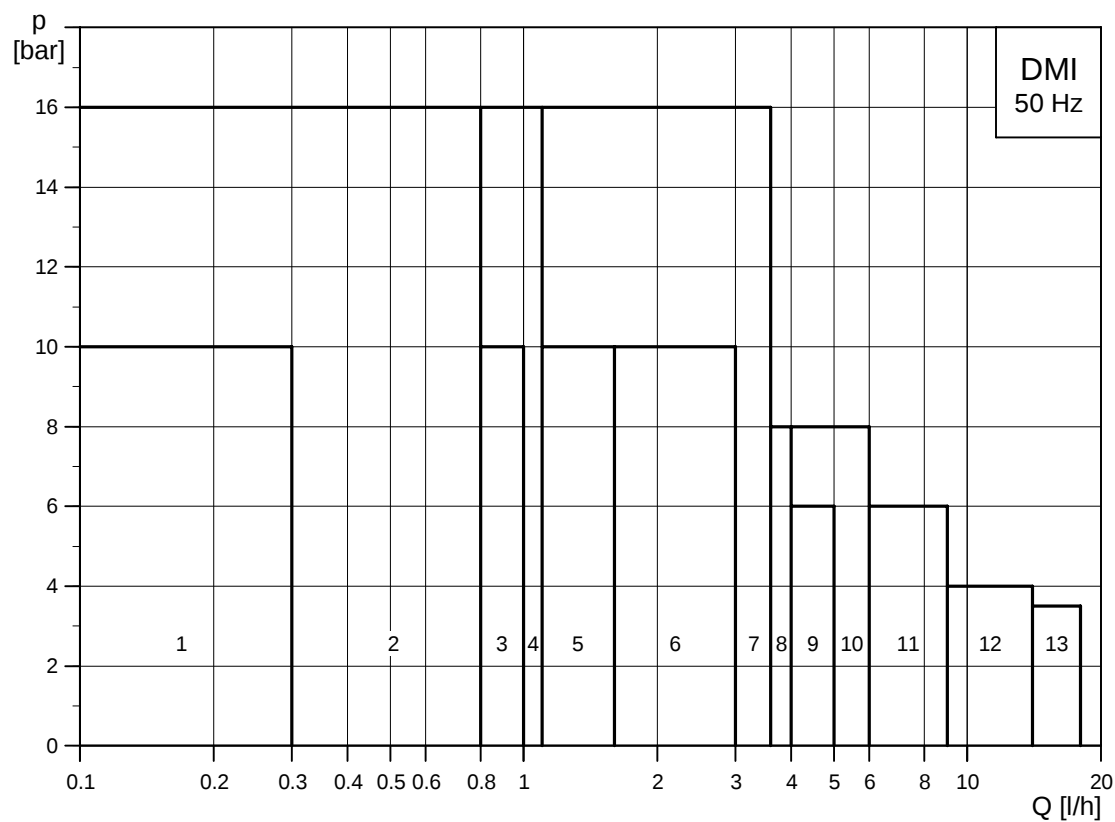
Choose between control options

The DMI A (AR) series can be set to either proportional control or manual dosing by pressing a key. Pulse control mode allows proportional control according to external contact signals from a flowmeter or other device.

Examples of applications

- industrial and municipal water treatment •
water treatment in cooling towers •
industrial cleaning •
Cleaning-In-Place (CIP) and disinfection (dairies, food and beverage industries, etc.)
- paper production/finishing
- chemical industry
- chemigation
- galvanic and surface treatment
- plating

DMI, 50 Hz

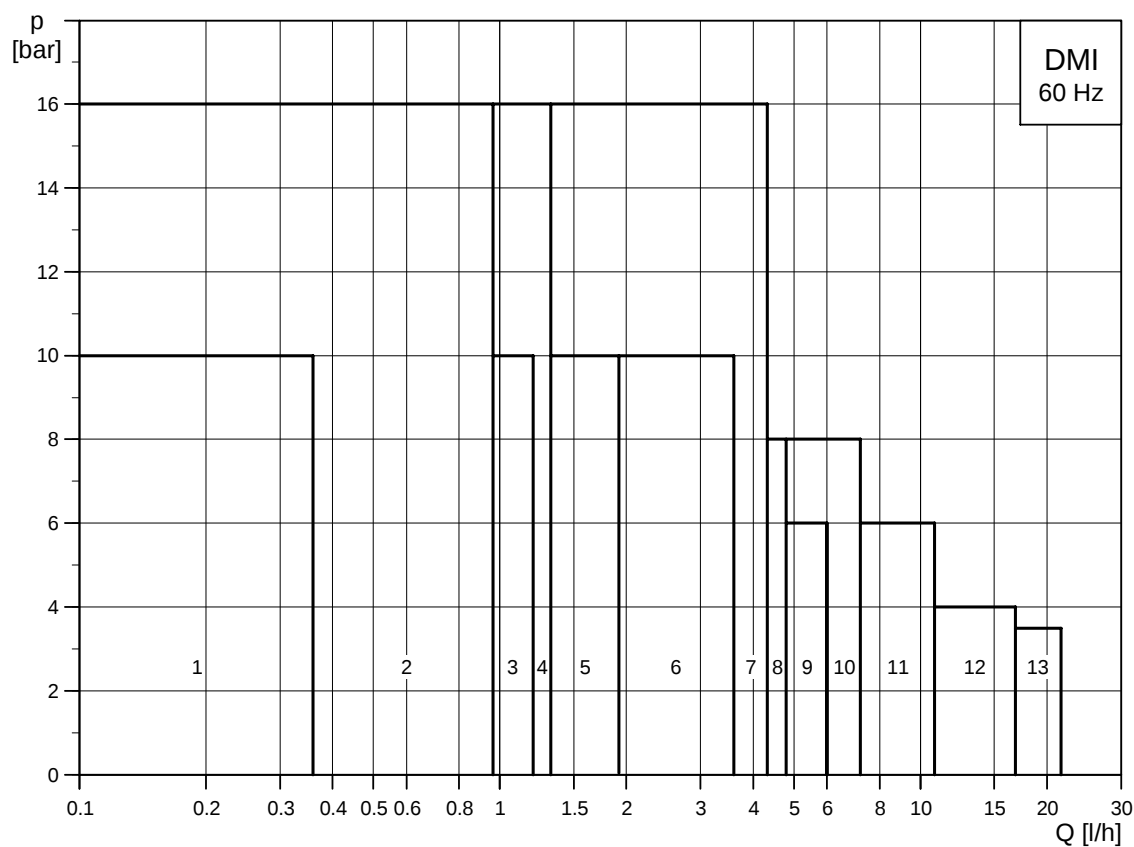


TM03 8131 0507

Fig. 3 Performance range, DMI at 50 Hz

Pos.	Pump
1	DMI 0.3-10
2	DMI 0.8-16
3	DMI 1.0-10
4	DMI 1.1-16
5	DMI 1.6-10
6	DMI 3.0-10
7	DMI 3.6-16
8	DMI 4.0-8
9	DMI 5.0-6
10	DMI 6.0-8
11	DMI 9.0-6
12	DMI 14-4
13	DMI 18-3.5

DMI, 60 Hz



TM03 8251 0907

Fig. 4 Performance range, DMI at 60 Hz

Pos.	Pump
1	DMI 0.3-10
2	DMI 0.8-16
3	DMI 1.0-10
4	DMI 1.1-16
5	DMI 1.6-10
6	DMI 3.0-10
7	DMI 3.6-16
8	DMI 4.0-8
9	DMI 5.0-6
10	DMI 6.0-8
11	DMI 9.0-6
12	DMI 14-4
13	DMI 18-3.5

Type key

Example:		DMI	1.6	- 10	A	PVC	/V	/G	-T	-H	1	33	B
Type range													
DMI													
Maximum flow [l/h]													
Maximum pressure [bar]													
Control variant													
B	Without external control interface												
A	Internal frequency control and external contact-signal control												
AR	Internal frequency control, external contact-signal control and alarm relay												
Dosing head variant													
PP	Polypropylene												
PV	PVDF (polyvinylidene fluoride)												
PVC	Polyvinyl chloride												
SS	Stainless steel, DIN 1.4401												
PP-P3	PP with Plus ³												
PVC-P3	PVC with Plus ³												
Gasket material													
E	EPDM												
V	FKM												
T	PTFE												
Valve ball material													
C	Ceramic												
G	Glass												
T	PTFE												
SS	Stainless steel, DIN 1.4401												
Control panel position													
T	Top-mounted												
X	No control panel												

Mains plug	
X	No plug
F	EU (Schuko)
B	USA, Canada
I	Australia, New Zealand, Taiwan
E	Switzerland
Connection, suction/discharge	
B6	Pipe, 4/6 mm
3	Tube, 4/6 mm
A5	Tube, 5/8 mm
4	Tube, 6/9 mm
6	Tube, 9/12 mm
C4	Tube, 1/8" / 1/4"
R	Tube, 1/4" / 3/8"
S	Tube, 3/8" / 1/2"
A	Threaded, Rp 1/4, female
V	Threaded, 1/4" NPT, female
A9	Threaded, 1/2" NPT, male
B1	Tube, 6/12 mm/cementing d. 12 mm
B3	Welding diameter, 16 mm
Valve type	
1	Standard
2	Spring-loaded 0.05 bar suction opening pressure; 0.05 bar discharge opening pressure
3	Spring-loaded 0.05 bar suction opening pressure; 0.8 bar discharge opening pressure
4	Spring-loaded, discharge only 0.8 bar opening pressure
Supply voltage	
G	1 x 230 V, 50/60 Hz
H	1 x 120 V, 50/60 Hz

Control variants

Features	Control variants		
	B	A	AR
Stroke-length adjustment	•	•	•
Internal frequency control		•	•
External contact-signal control		•	•
Relay output			•



Fig. 5 DMI B



Fig. 6 DMI A

GrA3475 / GrA3482

Options

Pump	Plus ³ system*
DMI 0.3-10	•
DMI 0.8-16	•
DMI 1.0-10	•
DMI 1.1-16	•
DMI 1.6-10	•
DMI 3.0-10	•
DMI 3.6-10	•
DMI 4.0-8	•
DMI 5.0-6	
DMI 6.0-8	•
DMI 9.0-6	
DMI 14-4	
DMI 18-3.5	

* See page 11.


Fig. 7 DMI B with Plus³

GrA3483

Functions

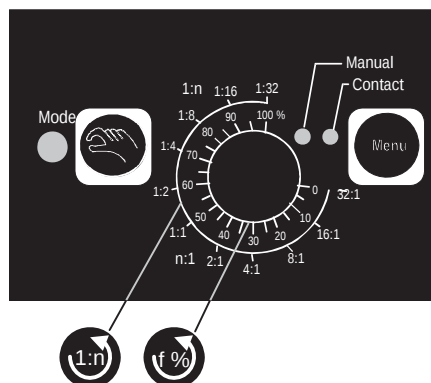
Electronic function	Socket	Control variants	
		A	AR
Relay function	Output socket 3		Stroke
Remote on/off	Input socket 4	NO	NO
Pre-empty signal	Input socket 5	NO	NO
Empty signal	Input socket 5	NO	NO
Error signal	Output socket 3		NO
Relay	Output socket 3		NO
Contact signal	Input socket 4	•	•

NO: Normally open

Capacity control

The capacity can be controlled in three ways:

- by adjusting the stroke length
- by stroke-frequency control
- by external pulse control.

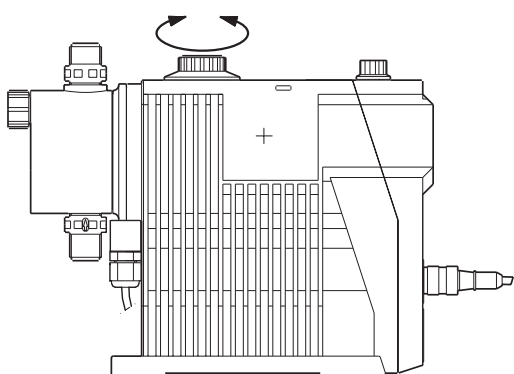


TM03 3647 0506

Fig. 8 Control and display elements, control variant A

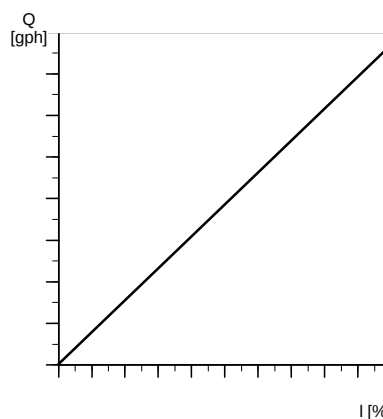
Capacity control by adjusting the stroke length

The stroke length is adjusted by means of the stroke-length adjusting knob.



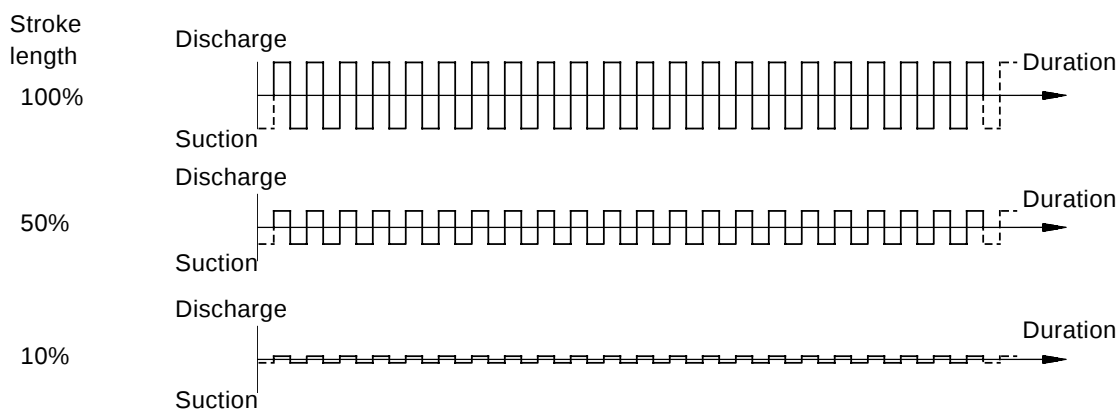
TM03 4643 0506

Fig. 9 Capacity control by adjusting the stroke length



TM03 3883 1106

Fig. 10 Relation between stroke length (l) and capacity (Q)

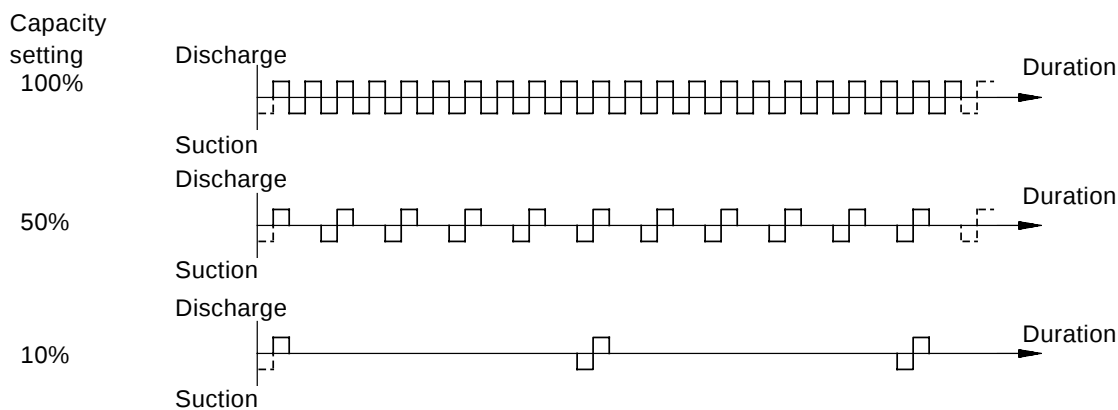


TM03 2074 3505

Fig. 11 Relation between stroke length and capacity

Stroke-frequency control

The suction and discharge stroke speeds are constant, while the stroke frequency varies according to the frequency set.



TM01 8945 0900

Fig. 12 Dosing principle, control variant A/AR, internal frequency control

External pulse control

Setting	Function	Number of strokes per contact signal	Example
1:1	1:1	The pump makes one dosing stroke per contact signal received.	One stroke per contact signal for the setting 1:1.
1:n	Multiplier	The pump makes the set number of dosing strokes per contact signal received.	16 strokes per contact signal for the setting 1:16.
n:1	Divisor	The pump makes one dosing stroke after the set number of contact signals has been received.	One stroke for every four contact signals for the setting 4:1.

General description

The DMI pump is powered by an overload-protected synchronous motor.

The DMI is available with several options on the pump head:

- manual deaeration (standard)
- Plus³ system.

As an option, the pump can also be equipped with spring-loaded valves for viscous liquids.

DMI with manual deaeration

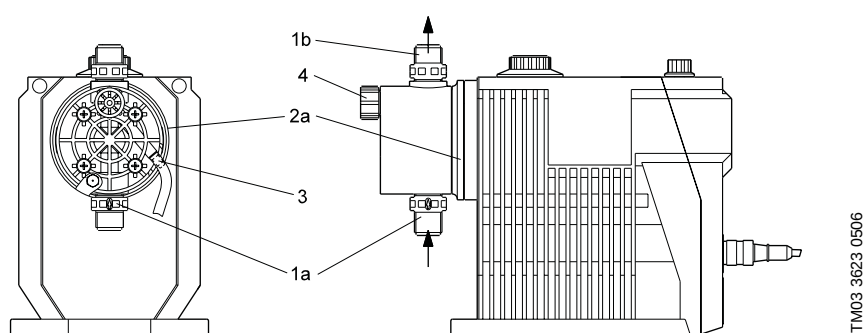


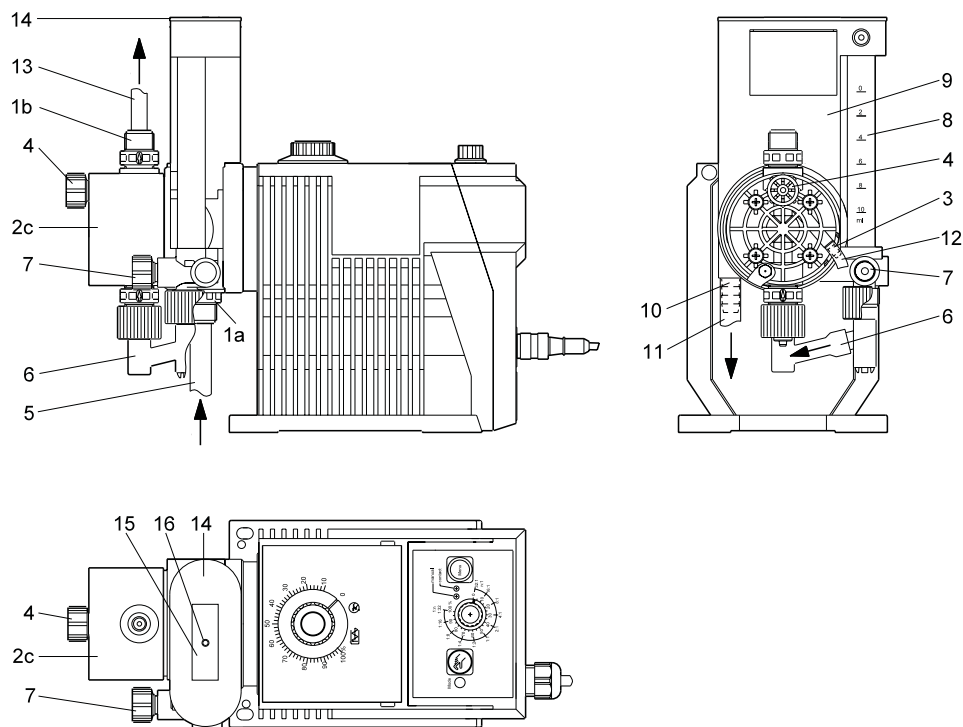
Fig. 13 Sectional drawing, DMI with manual deaeration

Legend

Pos.	Component
1a	Suction valve
1b	Discharge valve
2a	Dosing head with manual deaeration
3	Connection for deaeration line
4	Manual bleed/deaeration valve

DMI with Plus³ system

The Plus³ system incorporates priming/deaeration and calibration system for moderately volatile liquids (chlorine bleaching agents).



TM03 3624 0506

Fig. 14 Sectional drawing, DMI with Plus³ system

Legend

Pos.	Component
1a	Suction valve
1b	Discharge valve
2c	Dosing head with Plus ³ system
3	Connection for deaeration line
4	Manual deaeration valve
5	Suction line from tank
6	Line from calibration tube (pos. 8) to dosing head (pos. 2c)
7	Isolating valve at calibration tube (pos. 8)
8	Calibration tube
9	Priming/deaeration chamber
10	Connection for overflow line (pos. 11)
11	Overflow line to the tank (PVC tube 8/11 mm)
12	Deaeration line to the tank
13	Dosing line (discharge line)
14	Cover
15	Adhesive label
16	Deaeration hole

Functional principle of the Plus³ system

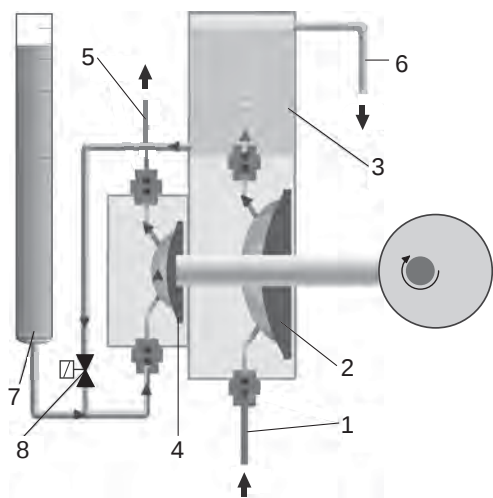


Fig. 15 Functional principle of the Plus³ system

Legend

Pos.	Component
1	Inlet from tank
2	Conveying diaphragm
3	Priming/deaeration chamber
4	Dosing diaphragm
5	Discharge to the process line
6	Deaeration bypass
7	Calibration tube
8	Calibration valve

Operation of the Plus³ system

- The conveying diaphragm (2) draws a large volume of liquid from the supply tank (1) and pumps it into the priming/deaeration chamber (3).
- Any bubbles in the liquid are vented to the atmosphere in the priming chamber.
- The separate, working diaphragm (4) pumps the liquid into the process line (5).
- Any excess liquid is returned to the tank via the deaeration bypass (6).
- The integrated calibration column (7) and calibration valve (8) allow precise adjustment of the flow while the pump is running.

Designed especially for volatile chemicals, the double-diaphragm system offers high process accuracy and cost-efficient operation.

An additional feature of the Plus³ system is that the priming chamber allows the pump to be in a suction lift configuration. This permits the exchange of chemical tanks without interrupting the chemical discharge to the system.

Spring-loaded valves

The pump head can be supplied with spring-loaded valves for improved performance when handling viscous liquids. Some of these valves have a larger nominal width and incorporate adapters.

Note: The suction and discharge dimensions of the pump may change when the pump is fitted with spring-loaded valves.

DMI

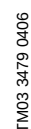
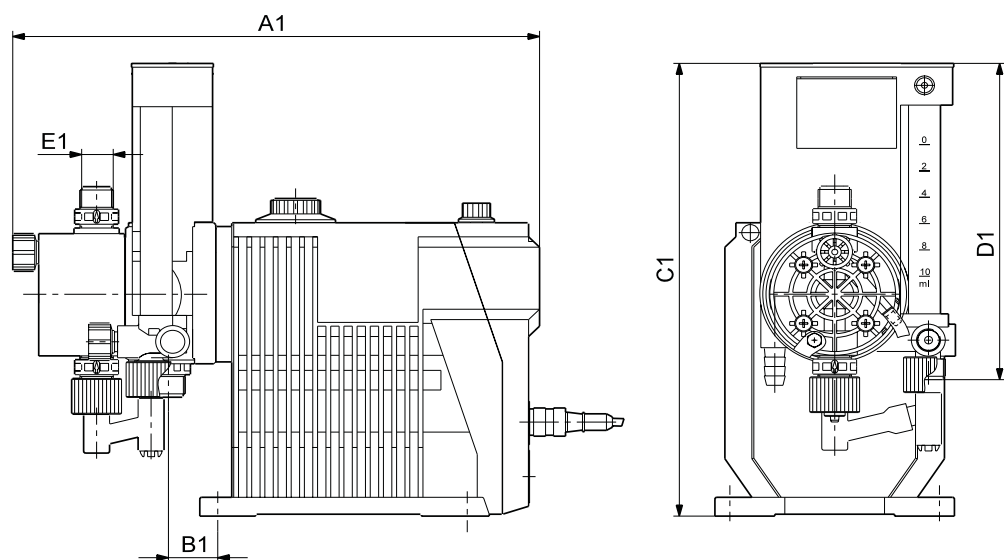


Fig. 16 Dimensions, DMI

Pump	A [mm]	B [mm]	C [mm]	D [mm]	E	C HV* [mm]	D HV* [mm]	E HV*
DMI 0.3-10	225	20.7	175.5	112	G 3/8	175.5	112	G 3/8
DMI 0.8-16	225	20.7	175.5	112	G 3/8	207.5	176	G 5/8
DMI 1-10	225	20.7	175.5	112	G 3/8	207.5	176	G 5/8
DMI 1.1-16	225	20.7	175.5	112	G 3/8	207.5	176	G 5/8
DMI 1.6-10	225	20.7	175.5	112	G 3/8	207.5	176	G 5/8
DMI 3-10	225	20.7	175.5	112	G 3/8	207.5	176	G 5/8
DMI 3.6-16	225	20.7	175.5	112	G 3/8	207.5	176	G 5/8
DMI 4-8	225	20.7	175.5	112	G 3/8	207.5	176	G 5/8
DMI 5-6	225	20.7	175.5	112	G 3/8	207.5	176	G 5/8
DMI 6-8	225	20.7	175.5	112	G 3/8	207.5	176	G 5/8
DMI 9-6	230	26.7	184.5	133	G 3/8	184.5	133	G 5/8
DMI 14-4	230	26.7	184.5	133	G 3/8	184.5	133	G 5/8
DMI 18-4	230	26.7	184.5	133	G 3/8	184.5	133	G 5/8

* HV = Pump version for high-viscosity liquids

DMI with Plus³ system



TM03 3481 0406

Fig. 17 Dimensions of DMI with Plus³ system

Dimensions

Pump	A1 [mm]	B1 [mm]	C1 [mm]	D1 [mm]	E1
DMI 0.3-10	261	25.2	251	197.5	G 3/8
DMI 0.8-16	261	25.2	251	197.5	G 3/8
DMI 1-10	261	25.2	251	197.5	G 3/8
DMI 1.1-16	261	25.2	251	197.5	G 3/8
DMI 1.6-10	261	25.2	251	197.5	G 3/8
DMI 3-10	261	25.2	251	197.5	G 3/8
DMI 3.6-16	261	25.2	251	197.5	G 3/8
DMI 4-8	261	25.2	251	197.5	G 3/8
DMI 5-6	-	-	-	-	-
DMI 6-8	261	25.2	251	197.5	G 3/8
DMI 9-6	-	-	-	-	-
DMI 14-4	-	-	-	-	-
DMI 18-4	-	-	-	-	-

Performance data

Pump	Vstroke [cm ³]	50 Hz			60 Hz		
		Capacity ¹⁾ [l/h]	Pmax ²⁾ [bar]	Max. stroke rate [strokes/min]	Capacity ¹⁾ [l/h]	Pmax ²⁾ [bar]	Max. stroke rate [strokes/min]
DMI 0.3-10	0.04	0.3	10	120	0.36	10	145
DMI 0.8-16	0.11	0.8	16	120	0.96	16	232
DMI 1-10	0.14	1.0	10	120	1.20	10	145
DMI 1.1-16	0.15	1.1	16	120	1.32	16	232
DMI 1.6-10	0.22	1.6	10	120	1.92	10	145
DMI 3-10	0.42	3.0	10	120	3.50	7	102
DMI 3.6-16	0.50	3.6	16	120	4.32	13	189
DMI 4-8	0.55	4.0	8	120	4.8	8	116
DMI 5-6	0.69	5.0	6	120	6.0	5	72.5
DMI 6-8	0.84	6.0	8	120	7.2	6	87
DMI 9-6	1.24	9.0	6	120	10.8	5.5	80
DMI 14-4	1.92	14.0	4	120	16.8	3	44
DMI 18-4	2.50	18.0	3.5	120	21.6	3	44

1) Depending on the pump type, the maximum dosing flow of pumps with

Plus³ system is reduced by approx. 0.1 to 0.4 l/h.

2) P_{max} refers to dosing heads without automatic deaeration.

With automatic deaeration, the P_{max} is 1 bar less.

Performance data is measured at maximum pump counter pressure.

The values in the table above are based on these conditions:

- water as the dosing liquid
- suction lift of 0.5 m
- fully deaerated dosing head
- maximum stroke length.

Changes in temperature affecting the viscosity of the pumped media may cause additional friction losses and require a pump head fitted with spring-loaded valves.

The available pump capacity may be reduced up to 10% when handling fluids at the maximum viscosity.

Turn-down ratio

The turn-down ratio depends on the control version.

Pumps with stroke length adjustment can operate from 10% to 100% of the maximum capacity.

Pumps with pulse control give you even more flexibility.

Suction lift

Pump	Max. suction lift Continuous operation ¹⁾ Liquids with a viscosity similar to water [m]		Max. suction lift Start-up ²⁾ Non-degassing liquids with a viscosity similar to water [m]		Max. permissible viscosity at operating temperature [mPa s]		
	Standard	With Plus ³ system	Standard	With Plus ³ system	Standard	With Plus ³ system	HV variant ³⁾
DMI 0.3-10	*	1.5	*	**	200	100	500
DMI 0.8-16	6	1.5	1	**	200	100	500
DMI 1-10	6	1.5	1	**	200	100	500
DMI 1.1-16	6	1.5	1	**	200	100	500
DMI 1.6-10	6	1.5	1.5	**	200	100	500
DMI 3-10	6	1.5	2	**	200	100	500
DMI 3.6-16	6	1.5	2	**	200	100	500
DMI 4-8	6	1.5	2.2	**	200	100	500
DMI 5-6	6	1.5	2.5	-	100	-	500
DMI 6-8	6	1.5	2.8	**	100	50	500
DMI 9-6	6	1.5	2.8	-	150	-	200
DMI 14-4	6	1.5	2.8	-	150	-	200
DMI 18-4	6	1.5	2.8	-	150	-	200

1) Dosing head and valves wetted (initial start-up)

2) Deaeration valve open

3) Pump head with spring-loaded valves for improved performance when handling viscous liquids

4) The max. permissible viscosities apply to all valve combinations with a spring-loaded valve with an inlet opening pressure of 0.05 bar (valve combination 2 and 3. See type key, page 5.)

* Flooded suction only

** Pumps incorporating the Plus³ system are delivered with special start-up device; consequently, the max. suction lift at start-up is not a problem

Inlet pressure and counter pressure

Pump	Max. inlet pressure		Min. required counter pressure	
	Standard	Plus ³ system	Standard	Plus ³ system
	[bar]	[bar]	[bar]	[bar]
DMI 0.3-10	0.2	*	1	1
DMI 0.8-16	0.2	*	1	1
DMI 1-10	0.2	*	1	1
DMI 1.1-16	0.2	*	1	1
DMI 1.6-10	0.2	*	1	1
DMI 3-10	0.2	*	1	1
DMI 3.6-16	0.2	*	1	1
DMI 4-8	0.2	*	1	1
DMI 5-6	0.2	*	1	1
DMI 6-8	0.2	*	1	1
DMI 9-6	0.2	*	1	1
DMI 14-4	0.2	*	1	1
DMI 18-4	0.2	*	1	1

* The pump must not be installed with inlet pressure, as this would cause overflow.

Permissible temperature range of the pumped media

The pumped media must be liquid. Exceeding the permissible temperatures may cause malfunction or damage to the pump.

Dosing head material	Permissible temperature range [°C]	
	p < 10 bar	p < 16 bar
PVC	0 to 40	0 to 20
Stainless steel, DIN 1.4571*	-10 to 70	-10 to 70
PP	0 to 40	-
PVDF**	-10 to 60	-10 to 20

* Short-term resistance (15 minutes) to 120 °C at a counter pressure of maximum 2 bar.

** At 70 °C the maximum counter pressure is 3 bar.

Electrical data

Pump	Permissible temperature range [°C]	
	p < 10 bar	p < 16 bar
	DMI 0.3-10 DMI 1.0-10 DMI 1.6-10 DMI 3.0-10 DMI 4.0-8	DMI 0.8-16 DMI 1.1-16 DMI 3.6-16 DMI 5.0-6 DMI 6.0-8 DMI 9.0-6 DMI 14-4 DMI 18-3.5
Supply voltage	115 V ±10%, 50/60 Hz 230 V ±10%, 50/60 Hz	
Motor, synchronous motor with gear reduction	Maximum power consumption [W]	11 22
	Maximum current consumption [A]	at 115 V 0.096 0.192
		at 230 V 0.048 0.096
Enclosure class	IP 65	

Additional technical data

Accuracy ¹⁾	Dosing flow fluctuation	< ±1.5% of full scale value within the control range 10% to 100%
	Linearity deviation	± 4% of full scale value within the control range 20% to 100%
Weight	Standard version	2.9 kg
Sound pressure level	Tested according to DIN 45635-01-KL3	± 45 dB(A)
Temperatures	Permissible ambient temperature	0 to 40 °C
	Permissible storage temperature	-10 to 40 °C
Humidity	Max. relative humidity	92% (non-condensing)
Special features	Plus ³ system	Designed for handling sodium hypochlorite and other degassing fluids
	Spring-loaded valves	Valves for viscous liquids

1) The accuracy is based on the following conditions:

- water as the dosing liquid
- fully deaerated dosing head
- standard pump version.

DMI selection (0.3 to 18 l/h)

The example in bold is a **DMI 4-8 B-PP/V/G-X-H133B**

Max. capacity and pressure	Control variant	Materials of dosing head, gaskets and valve balls	Control panel position	Motor voltage	Valve type	Connection, suction/discharge	Mains plug
[l/h] - [bar]	B = Manual stroke length adjustment, 10-100%	Dosing head version: PP = Polypropylene PV = PVDF PVC = Polyvinyl chloride SS = Stainless steel, DIN 1.4401	Control panel position T = Top-mounted (variants A, AR) X = No control panel (variant B)	Motor voltage G = 1 x 230 V, 50/60 Hz H = 1 x 120 V, 50/60 Hz	Valve type 1 = Standard 2 = Spring-loaded, 0.05 bar suction/discharge opening pressure 3 = Spring-loaded, 0.05 bar suction opening pressure 4 = Spring-loaded, discharge side only, 0.8 bar opening pressure	Connection, suction/discharge B6 = Pipe, 4/6 mm 3 = Tube, 4/6 mm A5 = Tube, 5/8 mm 4 = Tube, 6/9 mm 6 = Tube, 9/12 mm C4 = Tube, 1/8" / 1/4" R = Tube, 1/4" / 3/8" S = Tube, 3/8" / 1/2" B1 = Tube, 6/12 mm/cementing diameter, 12 mm A = Threaded, Rp 1/4, female A9 = Threaded, 1/2" NPT, male V = Threaded, 1/4" NPT, female B3 = Welding diameter, 16 mm	Mains plug F = Schuko B = USA and Canada, 120 V I = Australia E = Switzerland X = Without plug
	A = Pulse control, remote on/off AR = Pulse control, remote on/off, alarm output	PP-P3 = PP + Plus ³ system PVC-P3 = PVC + Plus ³ system Gasket material: E = EPDM V = FKM T = PTFE Valve ball material: C = Ceramic G = Glass SS = Stainless steel, DIN 1.4401					
[l/h] - [bar]	Control variant	Materials of dosing head, gaskets and valve balls	Control panel position	Motor voltage	Valve type	Connection, suction/discharge	Mains plug
P < 10 bar, DN 4							
0.3-10	A AR B	PP/E/C	T X	G H	1	3	F
1.0-10		PP/V/C			2	A5	B
1.6-10		PP/V/G			3	B1	I
3.0-10		PV/T/C			4	B6	E
4.0-8		PVC/E/C				C4	X
5.0-6		PVC/V/C					
6.0-8		PVC/V/G					
		SS/T/SS	T	G	1		F
		SS/V/SS	X	H	2	A9	B
					3	B6	I
					4		E
							X
P < 10 bar, DN 8							
9.0-6	A AR B	PP/E/C	T X	G H		4	F
14-4		PP/V/C			1	6	B
18-3.5		PP/V/G			2	A5	I
		PV/T/C			3	A9	E
		PVC/E/C			4	B1	X
		PVC/E/SS				B3	
		PVC/V/C				R	
		PVC/V/G				S	
		SS/T/SS	T	G	1		F
		SS/V/SS	X	H	2	A	B
					3	A9	I
					4	V	E
							X
P < 16 bar							
0.8-16	A AR B	PP/E/C	T X	G H	1		F
1.1-16		PP/V/C			2	A9	B
3.6-16		PP/V/G			3	B1	I
		PVC/E/C			4	C4	E
		PVC/V/C					X
		PVC/V/G					
		SS/T/SS	T	G	1		F
		SS/V/SS	X	H	2	A9	B
					3	B6	I
					4		E
							X

Max. capacity and pressure	Control variant	Materials of dosing head, gaskets and valve balls	Control panel position	Motor voltage	Valve type	Connection, suction/discharge	Mains plug
[l/h] - [bar]	B = Manual stroke length adjustment, 10-100%	Dosing head version: PP = Polypropylene PV = PVDF PVC = Polyvinyl chloride SS = Stainless steel, DIN 1.4401	Control panel position T = Top-mounted (variants A, AR) X = No control panel (variant B)	Motor voltage G = 1 x 230 V, 50/60 Hz H = 1 x 120 V, 50/60 Hz		Connection, suction/discharge B6 = Pipe, 4/6 mm 3 = Tube, 4/6 mm A5 = Tube, 5/8 mm 4 = Tube, 6/9 mm 6 = Tube, 9/12 mm C4 = Tube, 1/8" / 1/4" R = Tube, 1/4" / 3/8" S = Tube, 3/8" / 1/2" B1 = Tube, 6/12 mm/ cementing diameter,12 mm	
	A = Pulse control, remote on/off	PP-P3 = PP + Plus ³ system					
	AR = Pulse control, remote on/off, alarm output	PVC-P3 = PVC + Plus ³ system	Valve type 1 = Standard 2 = Spring-loaded, 0.05 bar suction/discharge opening pressure 3 = Spring-loaded, 0.05 bar suction opening pressure 0.8 bar discharge opening pressure 4 = Spring-loaded, discharge side only , 0.8 bar opening pressure		Mains plug F = Schuko B = USA and Canada, 120 V I = Australia E = Switzerland X = Without plug		
		Gasket material: E = EPDM V = FKM T = PTFE					
		Valve ball material: C = Ceramic G = Glass SS = Stainless steel, DIN 1.4401					
[l/h] - [bar]	Control variant	Materials of dosing head, gaskets and valve balls	Control panel position	Motor voltage	Valve type	Connection, suction/discharge	Mains plug
P < 10 bar, Plus3							
0.3-10	A AR B	PP-P3/E/C	T X	G H	1	3	F
1.0-10		PP-P3/V/C			2	A5	B
1.6-10		PVC-P3/E/C			3	B1	I
3.0-10		PVC-P3/V/C			4	C4	E
4.0-8							X
6.0-8							
P < 16 bar, Plus3							
0,8-16	A	PP-P3/E/C	T X	G H	1	B1 C4	F
1.1-16	AR	PP-P3/V/C			2		B
3.6-16	B	PVC-P3/E/C PVC-P3/V/C			3 4		I E X

List of pumped media

This table is intended as a general guide only on the resistance of materials (at room temperature) to the liquids listed. The table cannot replace actual testing of the pumped media and pump materials under specific working conditions.

The list should, however, be applied with some caution as factors such as purity, temperature, abrasive particles, etc. may affect the chemical resistance of a specific material.

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

Pumped medium (68°F)			Materials									
Designation	Chemical formula	Concentration %	Pump housing				Gasket			Ball		
			PP	PVDF	Stainless steel, DIN 1.4401	PVC	FKM	EPDM	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 to 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 to 98	○	●	—	—	●	—	●	●	●	—

● Resistant.

○ Limited resistance.

— Not resistant.

★³ Risk of crystallisation.

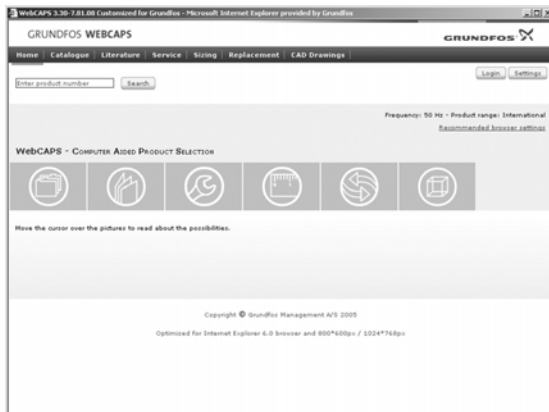
★⁴ Reacts violently with water and generates much heat.
Pump should be absolutely dry before dosing sulphuric acid.)

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

★⁶ In neutral solutions.

★⁷ Saturated solution 0.1%.

WebCAPS

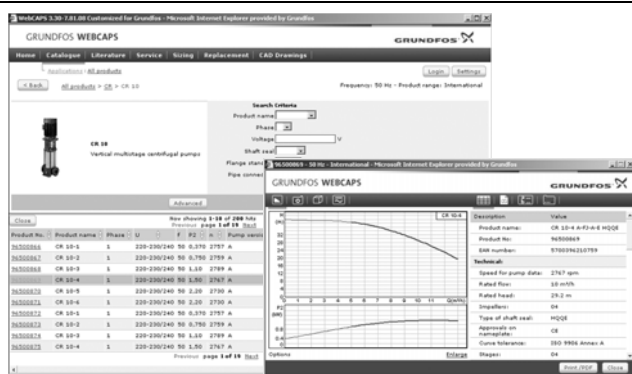


WebCAPS is a **Web**-based **Computer Aided Product Selection** program available on www.grundfos.com.

WebCAPS contains detailed information on more than 185,000 Grundfos products in more than 20 languages.

In WebCAPS, all information is divided into 6 sections:

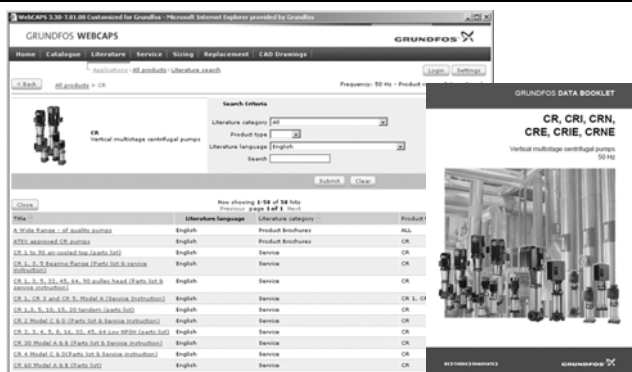
- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



Catalogue

This section is based on fields of application and pump types, and contains

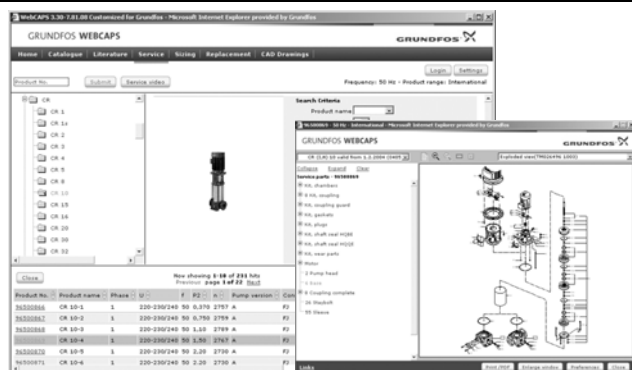
- technical data
- curves (QH, Eta, P1, P2, etc) which can be adapted to the density and viscosity of the pumped medium and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



Literature

In this section you can access all the latest documents of a given pump, such as

- data booklets
- installation and operating instructions
- service documentation, such as Service kit catalogue and Service kit instructions
- quick guides
- product brochures.



Service

This section contains an easy-to-use interactive service catalogue. Here you can find and identify service parts of both existing and discontinued Grundfos pumps.

Furthermore, this section contains service videos showing you how to replace service parts.



Sizing

This section is based on different fields of application and installation examples, and gives easy step-by-step instructions in how to

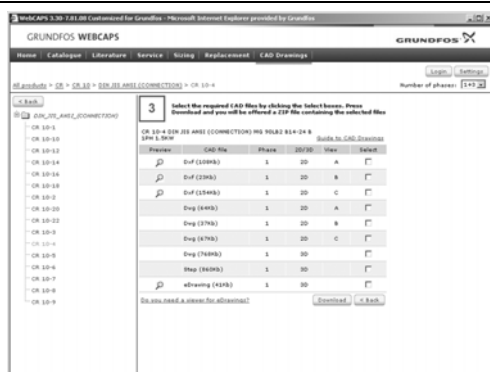
- select the most suitable and efficient pump for your installation
- carry out advanced calculations based on energy consumption, payback periods, load profiles, life cycle costs, etc.
- analyse your selected pump via the built-in life cycle cost tool
- determine the flow velocity in wastewater applications,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



Replacement

In this section you find a guide to selecting and comparing 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. When you have specified the installed pump, the guide will suggest 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.

These 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. 18 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 20 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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Subject to alterations.