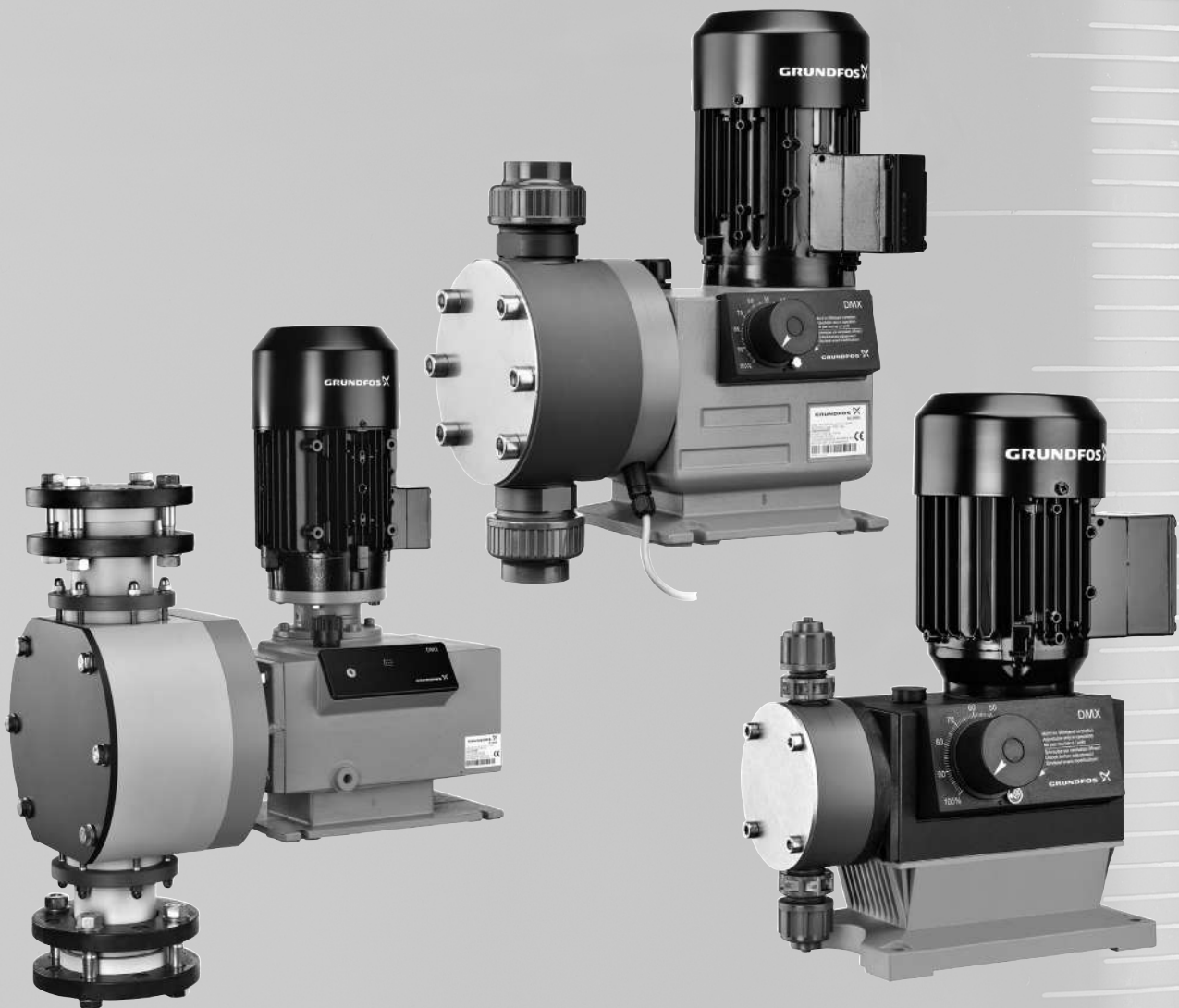


# DMX

## Mechanical dosing pumps

50 Hz



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# 1. Product introduction

## Performance range

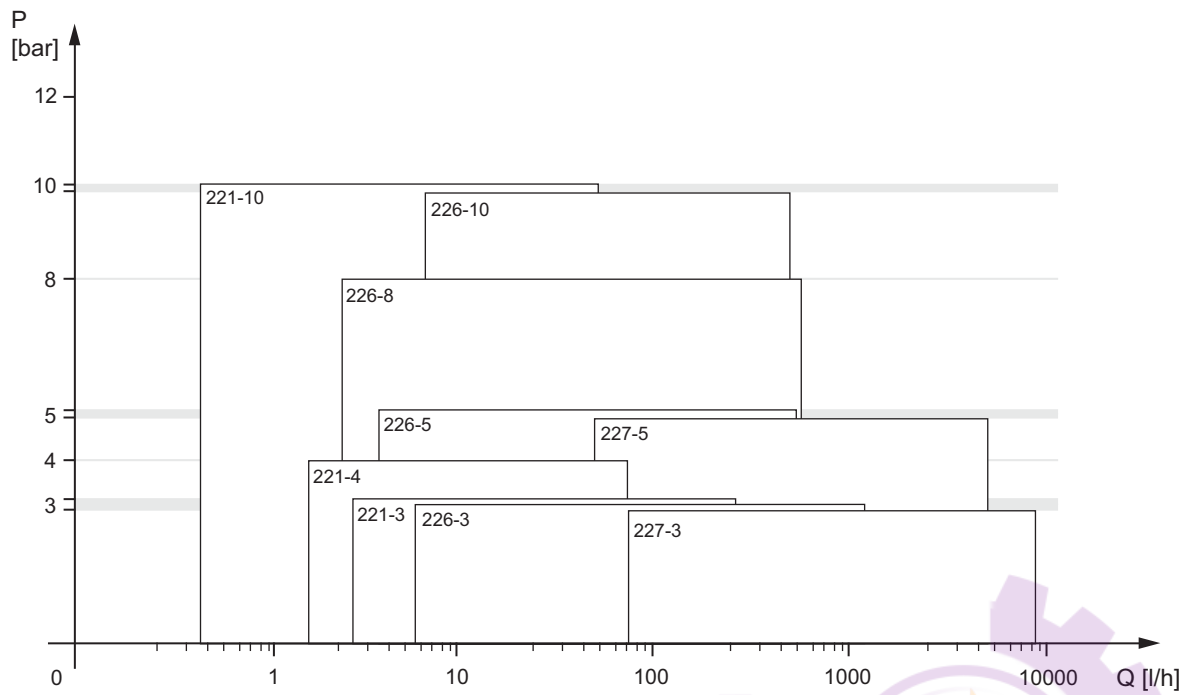


Fig. 1 DMX performance range

TM04 8905 3313



## Features and benefits



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Fig. 2 DMX model 221, 226 and 227

### General

The DMX pump range has proven its worth in dosing applications worldwide. With their robust diaphragm-based design and their high-quality motors, DMX pumps require minimum maintenance and are best choice for many dosing applications. The DMX range is highly versatile: it covers a wide flow range and offers a variety of dosing head sizes, materials and accessories.

### Accurate dosing - all the time

The diaphragm design makes sure, that the dosing flow fluctuation is  $\pm 1.5\%$  (DMX 227:  $\pm 2\%$ ) and the linearity deviation is  $\pm 4\%$  at all times. This allows very precise dosing of chemicals - as much as necessary, as little as possible.

### Smooth and low-pulsation dosing

The DMX range combines sophisticated drive technology and gear kinematics to ensure smooth and low-pulsation dosing without pressure peaks. This means less stress to all system components, such as tubes and valves, and leads to longer service intervals for the entire system.

### Compact design saves money and space

DMX pumps are available in 12 different dosing head sizes. The compact design allows placing several pumps right next to each other in confined spaces. Double-head versions (DMX models 226 and 227) offer a very cost-efficient way to save space or to dose two different chemicals. The extra capacity offered by double-head versions can also be used to gain higher flow rates for a single chemical.

### Perfect material selection for housing and liquid-wetted parts

The smaller DMX models have plastic housings offering chemical resistance and all the protection necessary for many applications. The larger models have a robust cast-aluminium housing with epoxy coating to meet all application needs. Investment costs and running costs for spare parts are kept low over the years: A wide choice of materials for dosing head, valves and accessories allow selecting exactly the degree of chemical resistance required. All liquid-wetted parts need to be resistant to the chemicals used. The diaphragm is made of NBR and PTFE-coated.

### Motors and VFD to match application needs

For applications with specific motor requirements, the versatile DMX range offers Ex-classified or ATEX-certified high-quality motors. The VFD (Variable Frequency Drive) has inputs and outputs for analog and digital signals and an interface for field bus communication (Profibus, Profinet).

### Accessories ensure perfect operation of the entire system

A wide range of accessories specially designed for the DMX range helps optimise performance: AR control electronics (contact signal control with multiplier and divisor function, 4-20 mA control or stroke frequency control via display and key pad, low-level/empty signal), integrated relief valve, dosing controller, diaphragm leakage detection, servomotor for automatic stroke-length adjustment, PTC motors with Variable Frequency Drive (VFD). We also offer system components such as pressure-loading valves and pulsation dampers.

### Approvals and certificates

For potentially explosive areas we offer Ex-classified or ATEX-certified motors and pumps.

#### Ex zones only for DMX 226

- ATEX Directive (94/9/EC), Group II, category 2 (zone 1/21, 2/22).

### Applications

DMX pumps are intended for the dosing of chemicals in tasks like disinfection, coagulation, flocculation, precipitation in various application fields:

- Drinking water treatment
- Waste water treatment
- Pulp and paper industry
- Textile industry
- Cleaning water treatment
- Food and beverage industry, dairies
- Cooling tower water treatment
- Low-pressure boiler feed water treatment
- Agriculture
- Irrigation
- Fertigation.

## 2. Identification

### Type key

Example: DMX 4-10 B-PP/E/T-X-E1B3B3E0

	Code	Description	Remark
<b>Type</b>	DMX	Hydraulic piston diaphragm dosing pump	
<b>Maximum flow</b>	4-	4 l/h maximum capacity of the pump	Example
<b>Maximum pressure</b>	10	Maximum counterpressure 10 bar	Example
<b>Number of dosing heads</b>		Single-head	DMX models 221, 226, 227
	/2	Double-head	DMX models 221, 226, 227
<b>Control variant</b>	B	Standard - manual control	DMX models 221, 226
	S2	Stroke sensor PNP	DMX model 221
	AR	AR control unit, only with standard single-phase control	DMX models 221, 226
	AT3	Servomotor, 1 x 230 V, 50/60 Hz supply, 4-20 mA control	DMX models 221, 226
	S1	Stroke counter NAMUR, NC output	DMX models 226, 227
	D	Without manual control	DMX model 227
	<b>Dosing head variant</b>	PP	Polypropylene
PV		PVDF (polyvinylidene fluoride)	DMX models 221, 226
PVC		Polyvinyl chloride	DMX models 221, 226, 227
SS		Stainless steel, 1.4571 (EN 10027-2), 316Ti (AISI)	DMX models 221, 226, 227
PP-L		PP - with diaphragm leakage detection	DMX models 221, 226, 227
PV-L		PVDF - with diaphragm leakage detection	DMX models 221, 226
PVC-L		PVC - with diaphragm leakage detection	DMX models 221, 226, 227
SS-L		SS - with diaphragm leakage detection	DMX models 221, 226, 227
<b>Gasket material</b>	E	EPDM	DMX models 221, 226, 227
	V	FKM	DMX models 221, 226, 227
	T	PTFE	DMX models 221, 226
<b>Valve ball material</b>	G	Glass	DMX models 221, 226
	T	PTFE	DMX models 221, 226
	SS	Stainless steel, 1.4401 (EN 10027-2), 316Ti (AISI)	DMX models 221, 226, 227
	C	Ceramic	DMX models 221, 226
	PP	Polypropylene	DMX model 227
<b>Control panel position</b> (VFD or AR position)	PVC	Polyvinyl chloride	DMX model 227
	X	No control panel (without AR, without VFD)	DMX models 221, 226, 227
	F	Opposite side of dosing head	DMX models 221, 226
<b>Supply voltage</b>	S	Same side as adjustment knob	DMX models 221, 226
	E	3 x 230/400 V, 50/60 Hz; 3 x 440/480 V, 60 Hz	DMX models 221, 226
	E	3 x 230/400 V, 50 Hz; 3 x 460 Hz	DMX model 227
	G	1 x 220-240V 50/60Hz	DMX model 221
	G	1 x 230 V, 50 Hz	DMX model 226
	4	3 x 230/400 V, 50 Hz (Ex)	DMX models 226
	0	Without motor, IEC motor flange	DMX models 221, 226, 227
<b>Valve type</b>	1	Standard, not spring-loaded (suction/discharge side)	DMX models 221, 226
	4	Spring-loaded, 0.8 bar (discharge side); Standard (suction side)	DMX models 221, 226
	2	Spring-loaded valves (spring-loaded both sides 0.1 bar)	DMX model 227

	Code	Description	Remark
<b>Connection, suction/discharge</b>	B1	Pipe 10/12 cementing, hose 6/12 (PVC) DN 8	DMX model 221
	A	Threaded, Rp 1/4, female (SS)	DMX model 221
	B3	Pipe welding 12/16 (PP, PVDF)	DMX model 221
	B2	Tube 13/20 mm, cementing $\varnothing$ 25 mm (PVC)	DMX models 221, 226
	A1	Threaded, Rp 3/4, female (SS)	DMX models 221, 226
	B4	Welding $\varnothing$ 25 mm (PP, PVDF)	DMX models 221, 226
	K	Cementing $\varnothing$ 40 mm PVC (DN 32)	DMX model 226
	B5	Welding $\varnothing$ 40 mm PP/PVDF (DN 32)	DMX model 226
	A2	Threaded Rp 1 1/4" female SS	DMX model 226
	B9	Tube 19/27 mm, cementing $\varnothing$ 25 mm (PVC)	DMX model 226
	R	Flange, DN 65, with connection for PVC pipe, 65/75 mm	DMX model 227
	T	Flange, DN 65, with connection for PP pipe, 65/75 mm	DMX model 227
	U	Flange, DN 65, with connection for stainless steel pipe, 65/75 mm	DMX model 227
	-	No plug for 3 AC motors	DMX models 221, 226, 227
	<b>Mains plug</b>	X	No plug for 1 AC motors and with AR
F		EU (safety plug) for 1 AC motors and with AR	DMX models 221, 226
-		Standard motor	DMX model 221, 226, 227
<b>Motor variant</b>	E0	Motor with PTC, prepared for operation with frequency converter	DMX models 221, 226, 227
	E1	Motor for EX, type II 2G EEx e II T3	DMX model 226
	E2	Motor for EX, type II 2GD EEx de IIC T4, without PTC	DMX model 226
	FA	VFD (Variable Frequency Drive)	DMX models 221, 226, 227

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### 3. Functions and options

#### Functions for capacity control

Function	DMX 221	DMX 226	DMX 227
Manual control (stroke-length adjustment)	•	•	
Servomotor control (electric stroke-length adjustment)	•	•	
Motor speed control with integrated frequency converter	•	•	•
AR control unit (stroke frequency, pulse and analog signal), only with standard single-phase motor	•	•	

#### Capacity control by stroke-length adjustment

The capacity is controlled by means of the stroke-length adjustment knob, or electrically by a servomotor. The stroke frequency remains constant.

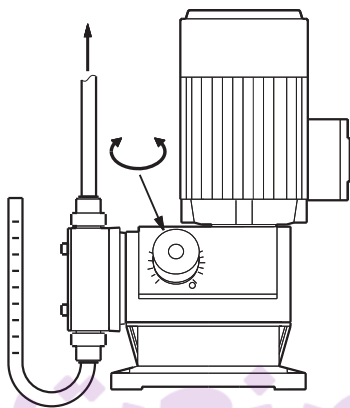


Fig. 3 Capacity control by stroke-length adjustment knob

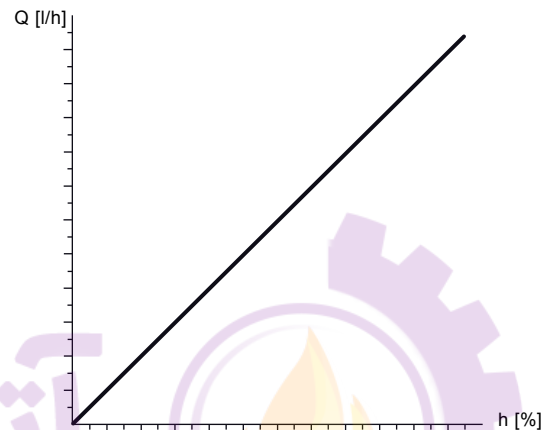


Fig. 4 Relation of stroke length and capacity

#### Capacity setting

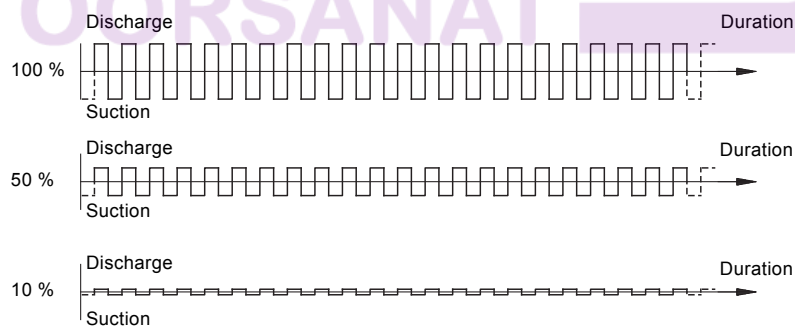


Fig. 5 Relation of stroke-length adjustment - capacity



### Capacity control with frequency converter (VFD)

The capacity of DMX pumps with variable frequency drives can be adjusted by changing the motor speed via an integrated frequency converter. Pumps with special motors for operation with external frequency converter are also available.

#### Motor frequency setting

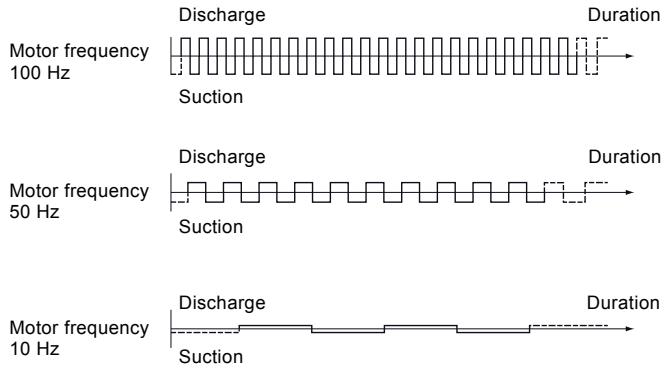


Fig. 6 Relation of motor frequency setting - capacity

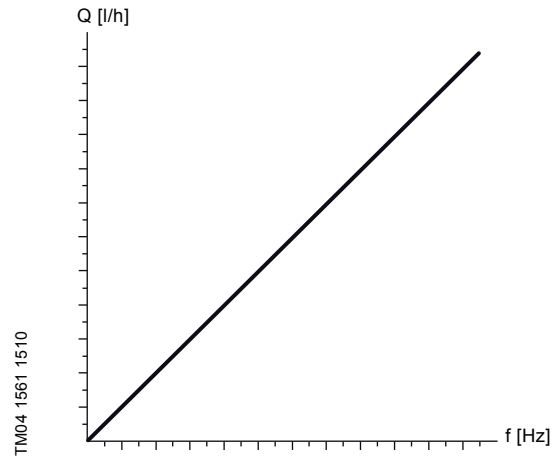


Fig. 7 Relation of motor frequency - capacity

### Capacity control by AR electronics

The capacity of DMX pumps with single-phase motor and AR electronics can be controlled by regulation of the pause time between strokes. This is carried out by analog or pulse signals or via manual stroke frequency adjustment.

#### Stroke frequency setting

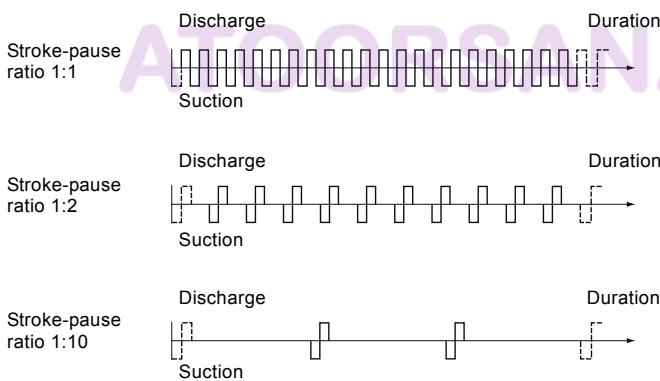


Fig. 8 Relation of stroke frequency setting - capacity

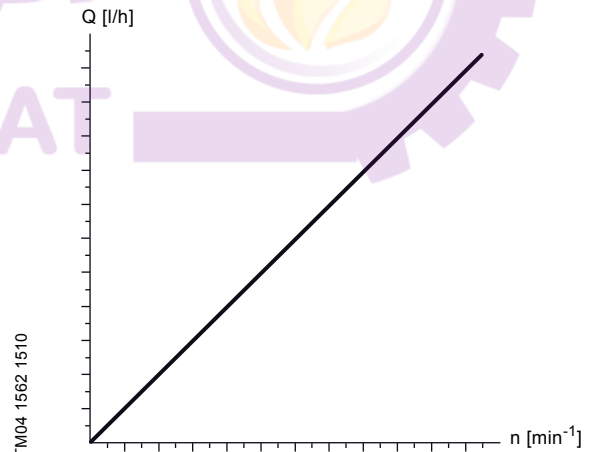


Fig. 9 Relation of stroke frequency - capacity

## Electric servomotor

To facilitate automatic control of the flow rate, the DMX pumps can be equipped with an electric servomotor in a metal housing (IP65). The electric servomotor primarily consists of an overload-proof synchronous motor, reduction gear and min/max limit switches. The electric servomotor is connected to the control slide of the dosing pump. This adjusts the active stroke length and the corresponding dosing flow.

### Variants

- Electric servomotors with different operating voltages
- Electric servomotors with 4-20 mA control and output signal and manual/automatic switch.



Fig. 10 DMX pump with servomotor

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## AR control unit

Convenient electronics in a plastic housing (IP65) for DMX 221 and DMX 226 pump models with standard single-phase motor.

### Control modes

- Manual control: stroke frequency is manually adjustable from 1 up to the maximum strokes per minute
- Pulse signal control: multiplier 1:n (n strokes per incoming pulse) and divisor n:1 (1 stroke per incoming n pulse), memory function (stores a maximum of 65,000 pulses)
- 0/4-20 mA analog signal control: adjustment of stroke frequency in proportion to the current signal, weighting of current input is possible.

### Inputs

- Pulse signal
- Analog signal
- Remote on/off
- Tank-empty sensor
- Dosing controller and diaphragm leakage sensor.

### Outputs

- Analog signal
- Error signal (fault)
- Stroke signal
- Low-level signal.

## Stroke sensor

DMX pumps with stroke sensor are especially designed for batch dosing and other mixing or filling tasks.

DMX 221: An optional stroke sensor can be mounted below the gear box of the pump.

DMX 226 and DMX 227: An optional stroke sensor can be mounted in the gear cover of the pump.

Pump model	Sensor	Supply voltage	Connection	Type key code
DMX 221	PNP	$U_B: 10-30\text{ V}$	Cable, PUR, 2 m, 0.14 mm <sup>2</sup>	S2
DMX 226	NAMUR	$U_0: 8.2\text{ V}$		S1
DMX 227				

## Integrated pressure-relief valve (PRV)

The DMX models 221 and 226 (up to 460 l/h) are available with an optional pressure-relief valve (PRV) integrated in the dosing head.

If the pressure rises above the set opening pressure, the PRV opens and the dosing medium is returned to the dosing tank.

An integrated PRV provides additional pump protection in case of a blocked discharge valve, and protects the entire discharge line system from excessive pressure build-up in a dosing system. However, each pump in the dosing system requires its own PRV.

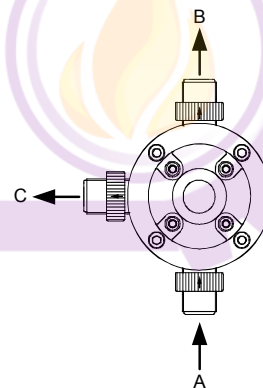


Fig. 11 Connections

### Legend

A	Connect the suction line to the suction valve
B	Connect the discharge line to the discharge valve
C	Connect the overflow line to the relief valve and allow the medium to flow by gravity into the tank or to an appropriate overflow.

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## Diaphragm leakage detection

Pumps prepared for diaphragm leakage detection have a special dosing head flange for inserting the opto-electronic sensor.

- The opto-electronic sensor contains infrared sender and infrared receiver.

In case of a leaking diaphragm, liquid penetrates the dosing head flange and the light refraction in the opto-electronic sensor changes. The sensor produces a signal. This signal can be used to trigger an alarm device or to switch off the pump via:

- Electronic unit for optical sensor (230 V, product number 96725701)
- AR control unit (DMX 221 and DMX 226).

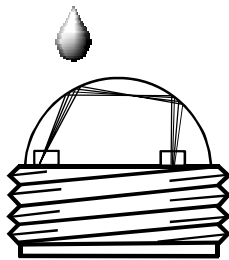


Fig. 12 Diaphragm leakage sensor

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## Frequency converter (VFD)

DMX pumps with integrated frequency converter provide extended capacity range and functionality. All VFD variants include analog and digital inputs and outputs, an integrated potentiometer for precise and easy setting of speed and flow, control and self-monitoring functions. Optional extension I/O board or Fieldbus modules offer process integration and automation.



Fig. 13 DMX pump with frequency converter

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## Parameter box

- VFD accessory: handheld controller for easy and fast parameterisation and programming.



Fig. 14 Parameter box

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The parameter box is a convenient and compact control panel for text-controlled commissioning, parameterisation and control of the VFD. The parameter box is connected with a RJ12 patch cable directly to the frequency converter via the RJ12 diagnostic socket. A USB 2.0 connection cable, series A plug to series B plug, is required to connect a PC or laptop.

Technical data	Product number
Control voltage	4.5 VDC to 30 VDC
Power consumption	Approx. 1.3 W
Display	Plain text display
Interface	RJ12
Ambient temperature	0°C to +40 °C
Protection class	IP54 <sup>1)</sup>
Dimensions (L x W x D)	117 x 73 x 24 mm
Approx. weight	0.2 kg
Connection cable length	Approx. 2 m

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<sup>1)</sup> on plug socket IP20

## Functions of the Variable Frequency Drive

Type key code	FA, GA, HA, KA	FB, GB, HB, KB	FC, GC, HC, KC FD, GD, HD, KD	FE, GE, HE, KE
VFD type	VFD basic	I/O extension board	Profibus internal/external	Profinet
<b>Operation modes</b>				
Manual speed/flow control (local by potentiometer)	•	•	•	•
Analog control 0/4-20 mA (remote by water meter, PLC, etc.)	•	•	•	•
Profibus	-	-	•	-
Profinet	-	-	-	•
<b>Functions</b>				
Process controller	-	•	•	•
PI control, integrated	-	•	•	•
Closed-loop control	-	•	•	•
Field connection of sensors / actuators	-	•	•	•
Connection for sensor 4-20 mA (e.g. pH, disinfection, etc.)	-	•	•	•
Decentral drive solution, motor-mounted frequency inverter	•	•	•	•
Best EMC protection class C1	•	•	•	•
Diagnostic LEDs	•	•	•	•
Overtemperature alarm	•	•	•	•
Short-circuit monitoring	•	•	•	•
Earth connection fault monitoring	•	•	•	•
Overvoltage and undervoltage protection	•	•	•	•
Overload protection	•	•	•	•
RS232/RS485 interface via RJ12 plug	•	•	•	•
<b>Inputs</b>				
Manual control (AI1), local operation (deaeration)	•	•	•	•
Operation mode manual control (DI2)	•	•	•	•
Analog control, 0/4-20 mA (AI2)	•	•	•	•
Operation mode analog control, 0/4-20 mA (DI3)	•	•	•	•
External ON/OFF (DI1)	•	•	•	•
Low-level signal (DI4)	-	•	•	•
Empty-tank signal (DI5)	-	•	•	•
Additional analog inputs (2 x AI)	-	•	-	-
Additional digital inputs (4 x DI)	-	-	-	•
<b>Outputs</b>				
Feedback 0/4-20 mA (AO)	-	•	-	-
Operation (DO1)	•	•	•	•
Alarm (DO2)	•	•	•	•
Additional digital outputs (2 x DO)	-	-	-	•

## 4. Construction

### General information

Grundfos DMX pumps are mechanical diaphragm dosing pumps. The strokes are generated by an eccentric which moves the diaphragm by means of a tappet. The discharge stroke is activated by the eccentric, the suction stroke is activated by the spring return. DMX pumps are designed for capacities between 4 l/h and 2 x 4000 l/h, and a maximum pressure of up to 10 bar. They have a separation chamber, which prevents the pumped liquid from flooding the pump or other system components in the event of a diaphragm failure.

### Sectional drawings

#### DMX 221

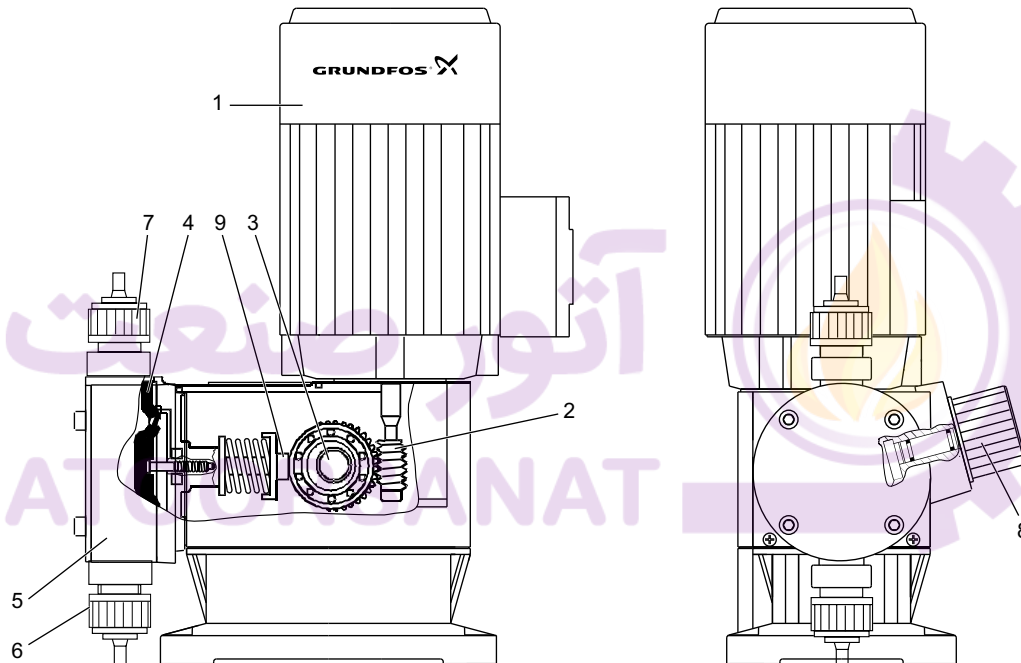


Fig. 15 Sectional drawing DMX 221

Pos.	Description
1	Motor
2	Gears
3	Eccentric
4	Dosing diaphragm
5	Dosing head
6	Suction valve
7	Discharge valve
8	Stroke-length adjustment knob
9	Tappet

#### Functional principle

- Reciprocating displacement pump with electric motor and mechanical diaphragm control.
- The rotation of the motor is transformed into the reciprocating movement of the dosing diaphragm by the operation of the eccentric and tappet.
- Adjustment of the dosing flow is possible by adjusting the stroke length.

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## DMX 226

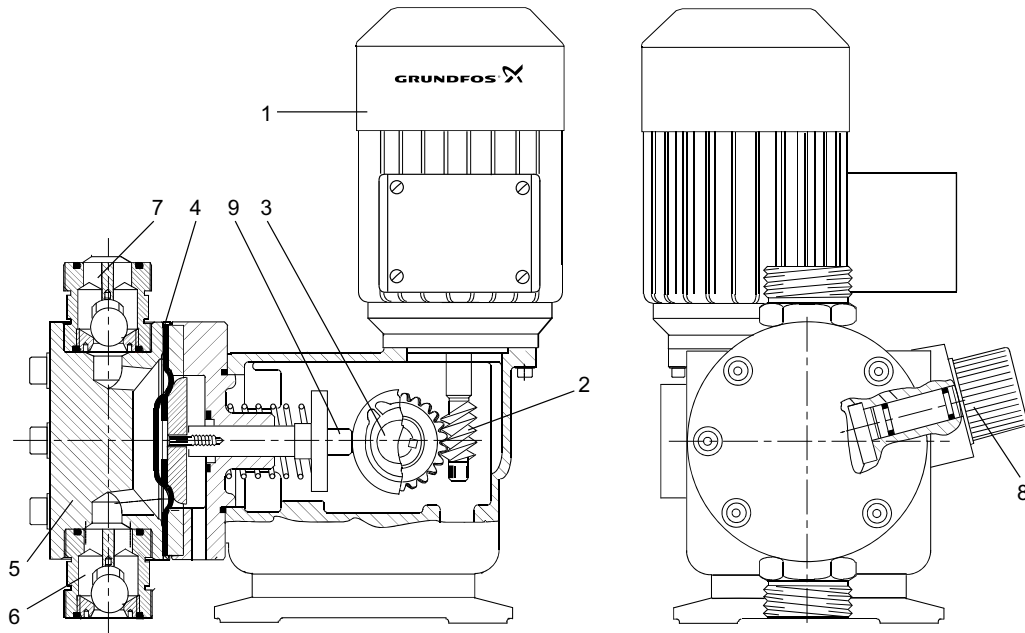


Fig. 16 Sectional drawing DMX 226

Pos.	Description
1	Motor
2	Gears
3	Eccentric
4	Dosing diaphragm
5	Dosing head
6	Suction valve
7	Discharge valve
8	Stroke-length adjustment knob
9	Tappet

### Functional principle

- Reciprocating displacement pump with electric motor and mechanical diaphragm control.
- The rotation of the motor is transformed into the reciprocating movement of the dosing diaphragm by the operation of the eccentric and tappet.
- Adjustment of the dosing flow is possible by adjusting the stroke length.

DMX 226 is available in 2 versions:

- DMX 226 M (M = Medium)
- DMX 226 L (L = Large).

The difference is in flow and pressure range.

## DMX 227

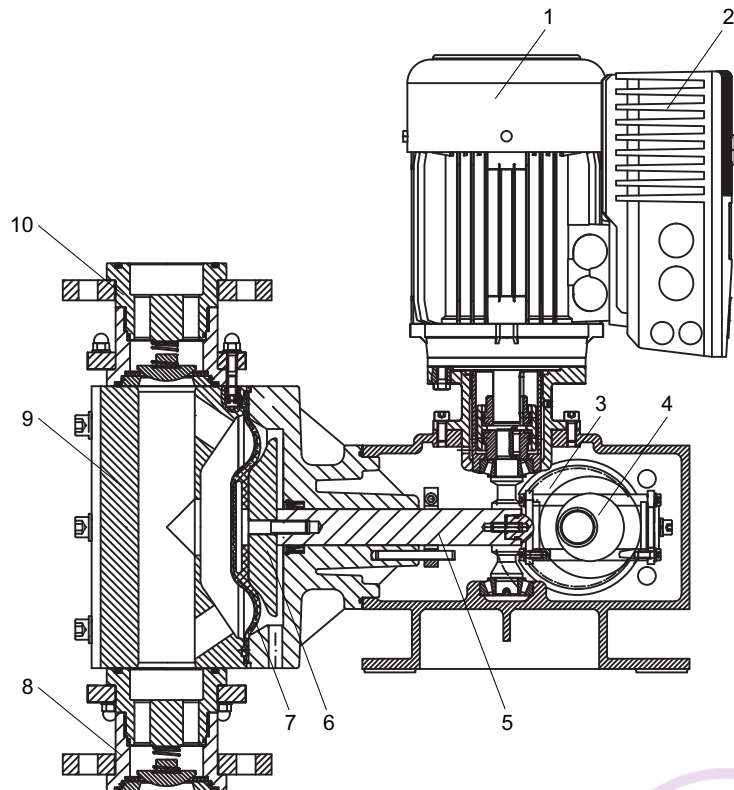


Fig. 17 Sectional drawing DMX 227 with VFD

Pos.	Description
1	Motor
2	Variable frequency drive (VFD)
3	Gears
4	Eccentric
5	Plunger
6	Support disk
7	Dosing diaphragm
8	Suction valve
9	Dosing head
10	Discharge valve

#### Functional principle

- Reciprocating displacement pump with electric motor and mechanical diaphragm control.
- The rotation of the motor is transformed into the reciprocating movement of the dosing diaphragm by the operation of the eccentric and plunger.
- The dosing flow can be adjusted in the range of 10-100 % by means of a VFD.

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## 5. Technical data

### Dimensions DMX model 221

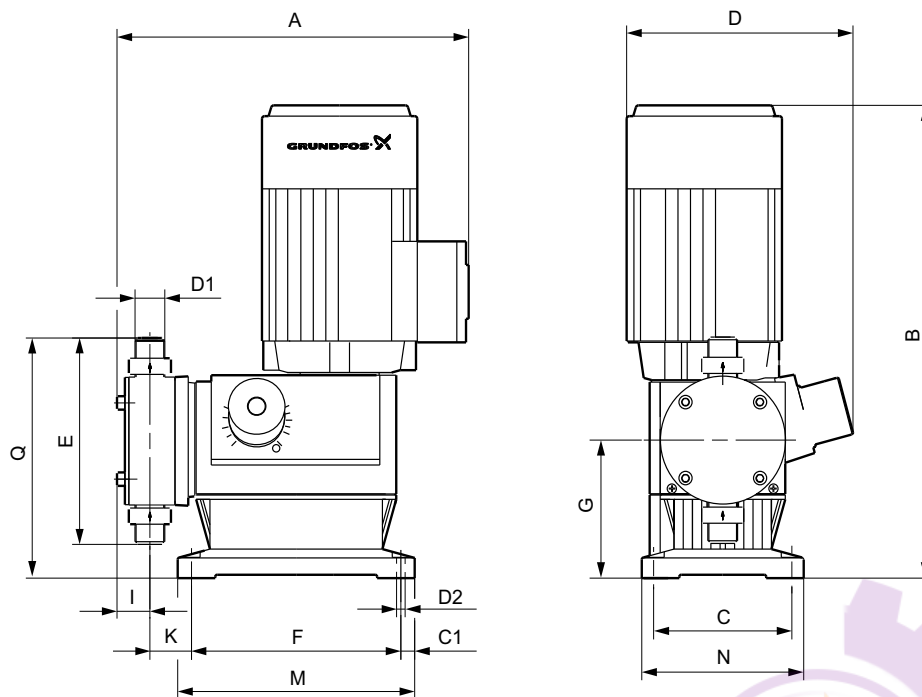


Fig. 18 Dimensions, DMX model 221

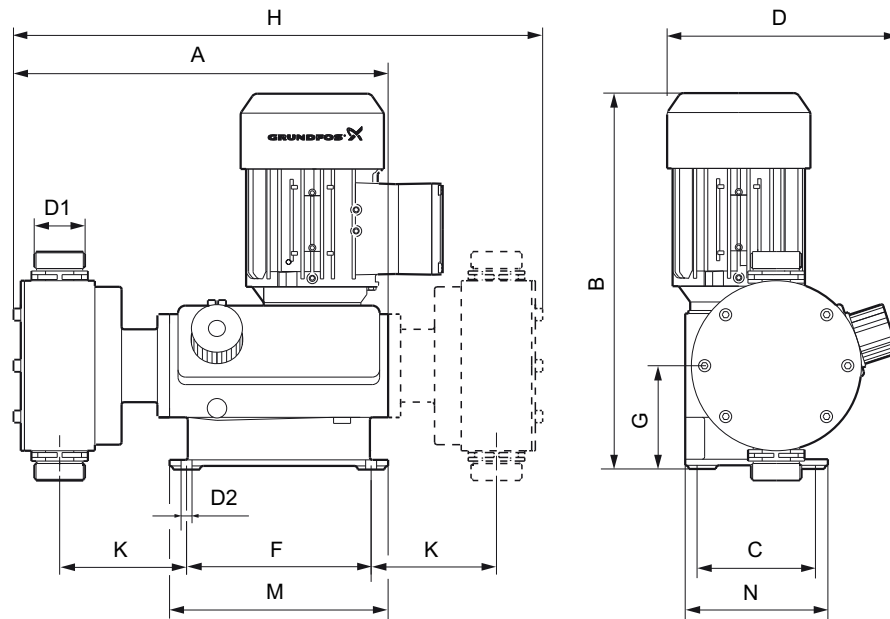
### DMX model 221

Pump type	A	B	C	C1	D	D1	D2	E	F	G	I	K	M	N	Q
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
DMX 4-10	275	319	105	10.5	175	G 5/8	6.5	153	159	102.5	25	32	180	123	179
DMX 7-10	275	319	105	10.5	175	G 5/8	6.5	153	159	102.5	25	32	180	123	179
DMX 8-10	275	319	105	10.5	175	G 5/8	6.5	153	159	102.5	25	32	180	123	179
DMX 9-10	275	319	105	10.5	175	G 5/8	6.5	153	159	102.5	25	32	180	123	179
DMX 12-10	275	319	105	10.5	175	G 5/8	6.5	153	159	102.5	25	32	180	123	179
DMX 14-10	275	319	105	10.5	175	G 5/8	6.5	153	159	102.5	25	32	180	123	179
DMX 16-10	275	319	105	10.5	175	G 5/8	6.5	153	159	102.5	25	32	180	123	179
DMX 17-4	323	319	105	10.5	175	G 5/4	6.5	177	159	102.5	38	64	180	123	192
DMX 18-10	275	319	105	10.5	175	G 5/8	6.5	153	159	102.5	25	32	180	123	179
DMX 25-3	330	319	105	10.5	175	G 5/4	6.5	188	159	102.5	40	80	180	123	197
DMX 26-10	275	319	105	10.5	175	G 5/8	6.5	153	159	102.5	25	32	180	123	179
DMX 27-10	275	319	105	10.5	175	G 5/8	6.5	153	159	102.5	25	32	180	123	179
DMX 35-10	275	319	105	10.5	175	G 5/8	6.5	153	159	102.5	25	32	180	123	179
DMX 39-4	323	319	105	10.5	175	G 5/4	6.5	177	159	102.5	38	64	180	123	192
DMX 50-10	275	319	105	10.5	175	G 5/8	6.5	153	159	102.5	25	32	180	123	179
DMX 60-3	330	319	105	10.5	175	G 5/4	6.5	188	159	102.5	40	80	180	123	197
DMX 75-4	323	319	105	10.5	175	G 5/4	6.5	177	159	102.5	38	64	180	123	192
DMX 115-3	330	319	105	10.5	175	G 5/4	6.5	188	159	102.5	40	80	180	123	197

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## DMX model 226 M



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Fig. 19 Dimensions DMX model 226 M

Pump type	A	B	C	D	D1	D2	E	F	G	H	K	M	Mx	N	R
	[mm]	[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
DMX 24-8	302	310	97.5	190	G 5/4	9	178	152	85.5	425	104.5	180	180	118	4
DMX 37-5	302	310	97.5	190	G 5/4	9	178	152	85.5	425	104.5	180	180	118	4
DMX 52-8	302	310	97.5	190	G 5/4	9	178	152	85.5	425	104.5	180	180	118	4
DMX 60-3	302	310	97.5	190	G 5/4	9	178	152	85.5	425	104.5	180	180	118	4
DMX 82-5	302	310	97.5	190	G 5/4	9	178	152	85.5	425	104.5	180	180	118	4
DMX 100-8	302	310	97.5	190	G 5/4	9	178	152	85.5	425	104.5	180	180	118	4
DMX 130-3	302	310	97.5	190	G 5/4	9	178	152	85.5	425	104.5	180	180	118	4
DMX 142-8	302	310	97.5	190	G 5/4	9	178	152	85.5	425	104.5	180	180	118	4
DMX 160-5	302	310	97.5	190	G 5/4	9	178	152	85.5	425	104.5	180	180	118	4
DMX 230-5	302	310	97.5	190	G 5/4	9	178	152	85.5	425	104.5	180	180	118	4
DMX 255-3	302	310	97.5	190	G 5/4	9	178	152	85.5	425	104.5	180	180	118	4
DMX 380-3	302	310	97.5	190	G 5/4	9	178	152	85.5	425	104.5	180	180	118	4

## DMX model 226 L

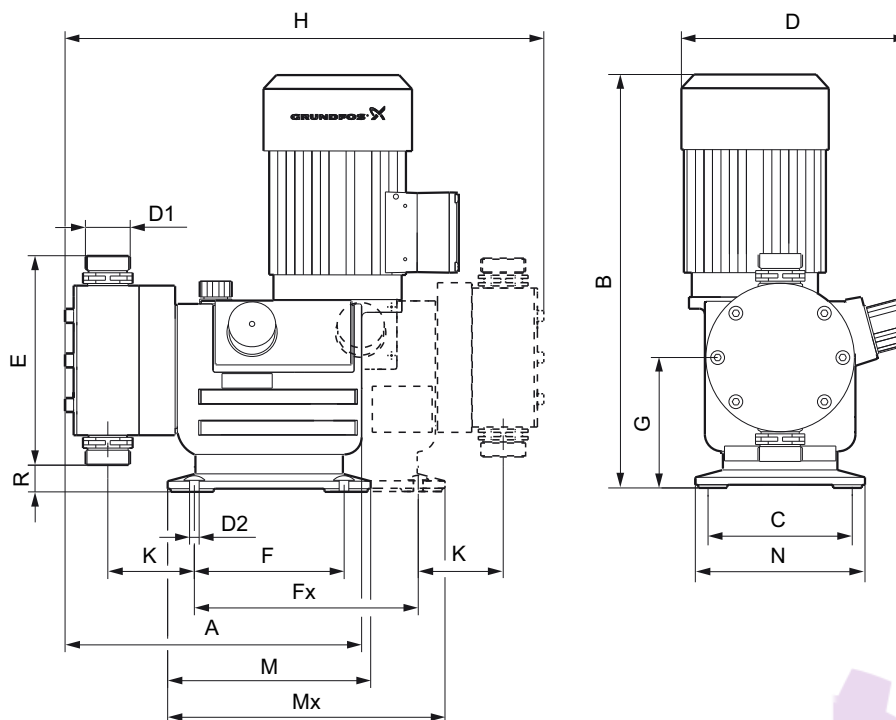


Fig. 20 Dimensions, DMX model 226 L

TM06 2432 4214

Pump type	A	B	C	D	D1	D2	E	F	Fx	G	H	K	M	Mx	N	R
	[mm]	[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
DMX 67-10	366	372	136	222	G 5/4	9	178	140	208	123	440	80	190	258	160	34
DMX 95-8	366	372	136	222	G 5/4	9	188	140	208	123	444	80	190	258	160	29
DMX 132-10	366	372	136	222	G 5/4	9	178	140	208	123	440	80	190	258	160	34
DMX 152-6	-	372	136	222	G 5/4	9	208	140	208	123	453	83	190	258	160	19
DMX 190-8	366	372	136	222	G 5/4	9	178	140	208	123	440	80	190	258	160	34
DMX 190-10	366	372	136	222	G 5/4	9	178	140	208	123	440	80	190	258	160	34
DMX 199-8	366	372	136	222	G 5/4	9	188	140	208	123	444	80	190	258	160	29
DMX 249-3	-	390	136	222	G 2	9	240	140	208	123	498	92	190	258	160	3
DMX 280-6	366	372	136	222	G 5/4	9	188	140	208	123	444	80	190	258	160	29
DMX 280-8	366	372	136	222	G 5/4	9	188	140	208	123	444	80	190	258	160	29
DMX 315-3	-	390	136	222	G 2	9	240	140	208	123	498	92	190	258	160	3
DMX 321-4	-	372	136	222	G 5/4	9	208	140	208	123	453	83	190	258	160	19
DMX 321-6	-	372	136	222	G 5/4	9	208	140	208	123	453	83	190	258	160	19
DMX 460-3	-	372	136	222	G 5/4	9	208	140	208	123	453	83	190	258	160	19
DMX 460-6	-	372	136	222	G 5/4	9	208	140	208	123	453	83	190	258	160	19
DMX 525-3	-	390	136	222	G 2	9	240	140	208	123	498	92	190	258	160	3
DMX 765-3	-	390	136	222	G 2	9	240	140	208	123	498	92	190	258	160	3

## DMX model 227

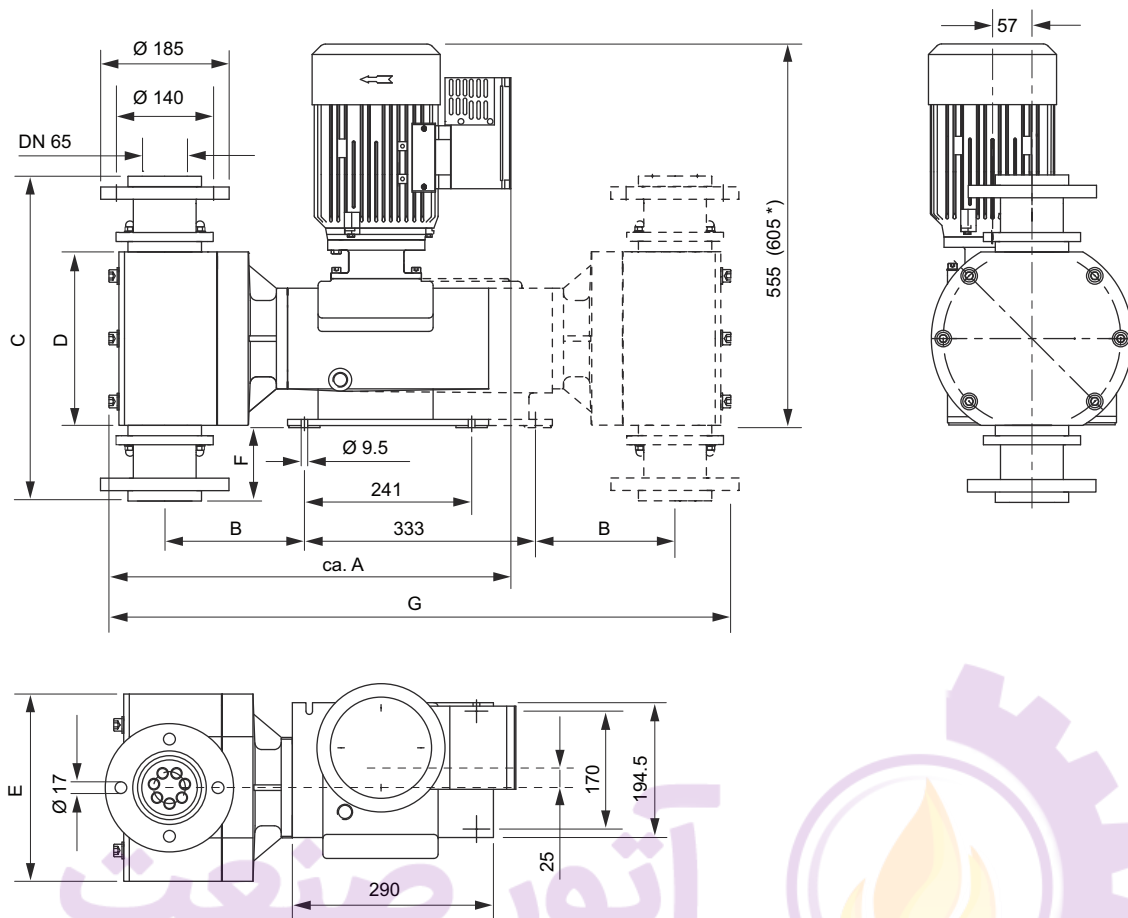


Fig. 21 Dimensions, DMX model 227

Pump type	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]
DMX 430-5	567	185	446	228	270	95	880
DMX 770-3	580	201	468	250	290	106	910
DMX 860-5	567	185	446	228	270	95	880
DMX 1120-5	567	185	446	228	270	95	880
DMX 1520-3	580	201	468	250	290	106	910
DMX 2000-3	580	201	468	250	290	106	910

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## Weights

### DMX 221

Pump type	Weights [kg]	
	Dosing head: plastic	Dosing head: SS
DMX 4-10	7-11	9-14
DMX 7-10	7-11	9-14
DMX 7.2-16	7-11	9-14
DMX 8-10	7-11	9-14
DMX 9-10	7-11	9-14
DMX 12-10	7-12	9-15
DMX 14-10	7-11	9-14
DMX 16-10	7-11	9-14
DMX 17-4	9-13	11-15
DMX 18-10	7-11	9-14
DMX 25-3	10-15	14-17
DMX 26-10	7-12	9-15
DMX 27-10	7-11	9-14
DMX 35-10	7-11	9-14
DMX 39-4	9-13	11-15
DMX 50-10	7-12	9-15
DMX 60-3	10-15	14-17
DMX 75-4	9-13	11-15
DMX 115-3	10-15	14-17

The weights are approximate.

### DMX 226

Pump type	Weights [kg]			
	Single-head pump		Double-head pump	
	Dosing head: plastic	Dosing head: SS	Dosing head: plastic	Dosing head: SS
DMX 24-8	15	21	18	29
DMX 37-5	15	21	18	29
DMX 52-8	15	21	18	29
DMX 60-3	17	24	23	34
DMX 67-10	18	24	25	35
DMX 82-5	15	21	18	19
DMX 95-8	18	24	25	35
DMX 100-8	15	21	18	29
DMX 130-3	17	24	23	34
DMX 132-8/10	18	24	25	35
DMX 142-8	15	21	18	29
DMX 152-6	19	27	27	40
DMX 160-5	15	21	18	29
DMX 190-8/10	18	24	25	35
DMX 199-8	18	24	25	35
DMX 230-5	15	21	18	29
DMX 249-3	23	32	33	48
DMX 255-3	17	24	23	34
DMX 315-3	23	32	33	48
DMX 280-6/8	18	24	25	35
DMX 321-4/6	19	27	27	40
DMX 380-3	17	24	23	34
DMX 460-3.5/6	19	27	27	40
DMX 525-3	23	32	33	48
DMX 765-3	23	32	33	48

The weights are approximate.

### DMX 227

Pump type	Weights [kg]			
	Single-head pump		Double-head pump	
	Dosing head: plastic	Dosing head: SS	Dosing head: plastic	Dosing head: SS
DMX 430-5	82	103	136	160
DMX 770-3	86	107	145	185
DMX 860-5	82	103	136	160
DMX 1120-5	82	103	136	160
DMX 1520-3	86	107	145	185
DMX 2000-3	86	107	145	185

The weights are approximate.

## Motor power

DMX model	Capacity [l/h]	Motor power single-head [kW]		Motor power double-head [kW]	
		50 Hz	100 Hz	50 Hz	100 Hz
		221	4, 8, 16, 7, 14, 27, 9, 18, 35	0.09	0.09
221	12, 26, 50, 17, 39, 75, 25, 60, 115	0.09	0.18	-	-
226M	All	0.18	0.18	0.18	0.18
226L	All	0.37	0.55	0.37	0.55
227	All	1.5	1.5	1.5	2.2

## Pump protection and efficiency class

The motor protection defines the pump protection class.

Motor capacity	Protection rating	Motor efficiency class
up to 0.18 kW (1 AC and 3 AC)	IP65	-
0.37 kW (1 AC and 3 AC)	IP65	-
0.55 kW (3 AC)	IP65	-
1.5 - 2.2 kW (3 AC)	IP55 or IP65 (depending on version)	IE2 (Standard motor) or IE3 (with VFD)

## Sound pressure

DMX model	Sound pressure level <sup>1</sup> [dB(A)]
221	55
226	55
227	70

<sup>1</sup> Tested according to DIN 45635-01-KL3.

## Accuracy

DMX model	Dosing flow fluctuation	Linearity deviation
221 226	± 1.5 % (FS)	± 4 % of full-scale value within 20-100 % stroke length
227	± 2 % (FS) within 10 to 100 % of stroke frequency	-

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

- Dosing liquid: water
- Fully vented dosing head
- Standard version of pump.

## Temperature of dosing liquid

Material of dosing head	Permissible temperature of dosing liquid
	p < 10 bar
PVC	0 to +40 °C
Stainless steel, 1.4571 (EN 10027-2), 316Ti (AISI)*	-10 to +70 °C
PP	0 to +40 °C
PVDF	-10 to +60 °C (+70 °C at 9 bar)

\* For SIP/CIP applications, a temperature of 145 °C is permissible for a short time (approx. 15 min.) at p < 2 bar.  
(CIP = Cleaning-In-Place).  
(SIP = Sterilisation/Steaming-In-Place).

## Ambient and operating conditions for DMX 221, 226 and 227

- Permissible ambient temperature: 0 °C to +40 °C
- Permissible storage temperature: -20 °C to +50 °C
- Permissible air humidity (max. relative humidity, not condensing): 70 % at +40 °C, 90 % at +35 °C.

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## 6. Pump selection

1. Select a DMX model from the *Performance data* tables. The DMX models 226 and 227 are also available as double-head versions. Double-head versions have twice the capacity listed in the table.
2. Look into the *DMX catalogue variants (selection)* tables to find the suitable product number.
3. If you cannot find the DMX dosing pump there, select a suitable variant from the *DMX variants* tables.

### Performance data

The values in the tables are based on the following conditions:

- 50 Hz
- Flooded suction: 0.5 m
- Fully vented dosing head
- 400 V motor, 3-phase
- Liquid with viscosity similar to water
- Minimum counterpressure: 1 bar.

The counterpressure refers to the pressure at the pump discharge valve. Pressure losses in the line to the injection point are not taken into account.

The maximum permissible viscosity at operating temperature applies to:

- Newtonian liquids
- Non-degassing media
- Media without suspended matter
- Media with a density similar to water.

**Note:** The viscosity increases with decreasing temperature! We recommend to test the performance with the respective liquid.

### DMX model 221

Max. pressure [bar]	Max. capacity <sup>1</sup> [l/h]	Pump type	Connection discharge/ suction	Stroke frequency [n/min]	Stroke volume [ml]	Max. suction lift <sup>1</sup> [m]	Max. suction lift (max. viscosity) [m]	Max. length of suction line [m]	Max. viscosity [mPas]	VFD possible (100 Hz operation) <sup>2</sup>
3	25	DMX 25-3	DN 20	29	16	1	0	2	200	x
3	60	DMX 60-3	DN 20	63	16	1	1	2	100	x
3	115	DMX 115-3	DN 20	120	16	1	0	2	100	-
4	17	DMX 17-4	DN 20	29	10.4	1	0	2	200	x
4	39	DMX 39-4	DN 20	63	10.4	1	1	2	100	x
4	75	DMX 75-4	DN 20	120	10.4	1	0	2	100	-
10	4	DMX 4-10	DN 8	29	2.2	4	1	5	400	x
10	7	DMX 7-10	DN 8	29	3.8	4	1	5	400	x
10	8	DMX 8-10	DN 8	63	2.2	4	1	5	400	x
10	9	DMX 9-10	DN 8	29	4.9	3	1	4	200	x
10	12	DMX 12-10	DN 8	29	6.9	3	1	4	200	x
10	14	DMX 14-10	DN 8	63	3.8	4	1	5	400	x
10	16	DMX 16-10	DN 8	120	2.2	4	1	5	200	-
10	18	DMX 18-10	DN 8	63	4.9	3	1	4	200	x
10	26	DMX 26-10	DN 8	63	6.9	3	0	4	200	x
10	27	DMX 27-10	DN 8	120	3.8	1	1	5	200	-
10	35	DMX 35-10	DN 8	120	4.9	3	1	4	100	-
10	50	DMX 50-10	DN 8	120	6.9	3	1	4	100	-

<sup>1</sup> Viscosity similar to water

<sup>2</sup> Double max. capacity

## DMX 226 M

Max. pressure	Max. capacity <sup>1</sup>	Pump type	Connection discharge/suction	Stroke frequency	Stroke volume	Max. suction lift <sup>1</sup>	Max. suction lift (max. viscosity)	Max. length of suction line	Max. viscosity	VFD possible (100 Hz operation) <sup>2</sup>
[bar]	[l/h]			[n/min]	[ml]	[m]	[m]	[m]	[mPas]	
3	60	DMX 60-3	DN 20	29	36	1	1	2	500	x
3	130	DMX 130-3	DN 20	63	36	2	0	3	400	x
3	255	DMX 255-3	DN 20	120	36	2	0	3	100	-
3	380	DMX 380-3	DN 20	168	36	2	0	3	50	-
5	37	DMX 37-5	DN 20	29	22	3	1	3	600	x
5	82	DMX 82-5	DN 20	63	22	3	1	3	500	x
5	160	DMX 160-5	DN 20	120	22	3	0	3	200	-
5	224	DMX 230-5	DN 20	168	22	3	0	3	150	-
8	24	DMX 24-8	DN 20	29	13.8	3	1	4	1000	x
8	52	DMX 52-8	DN 20	63	13.8	3	1	4	700	x
8	100	DMX 100-8	DN 20	120	13.8	3	1	4	400	-
8	142	DMX 142-8	DN 20	168	13.8	3	0	4	200	-

<sup>1</sup> Viscosity similar to water<sup>2</sup> Double max. capacity

## DMX model 226 L

Max. pressure	Max. capacity <sup>1</sup>	Pump type	Connection discharge/suction	Stroke frequency	Stroke volume	Max. suction lift <sup>1</sup>	Max. suction lift (max. viscosity)	Max. length of suction line	Max. viscosity	VFD possible (100 Hz operation) <sup>2</sup>
[bar]	[l/h]			[n/min]	[ml]	[m]	[m]	[m]	[mPas]	
3	249	DMX 249-3	DN 32	57	73	1.5	0	2	100	x
3	315	DMX 315-3	DN 32	72	73	1.5	0	2	100	x
3	525	DMX 525-3	DN 32	120	73	1	0	2	50	-
3	765	DMX 765-3	DN 32	175	73	0	0	2	10	-
6	152	DMX 152-6	DN 20	57	44.6	2	0	3	400	x
6	321	DMX 321-6	DN 20	120	44.6	0	0	3	100	-
6	460	DMX 460-6	DN 20	175	44.6	0	0	3	100	-
8	95	DMX 95-8	DN 20	57	27.8	3	1	3	500	x
8	199	DMX 199-8	DN 20	120	27.8	3	0	3	200	-
8	280	DMX 280-8	DN 20	175	27.8	2	0	3	100	-
10	67	DMX 67-10	DN 20	57	18.5	3	1	4	700	x
10	132	DMX 132-10	DN 20	120	18.5	3	1	4	400	-
10	190	DMX 190-10	DN 20	175	18.5	3	0	4	50	-

<sup>1</sup> Viscosity similar to water<sup>2</sup> Double max. capacity

## DMX model 227

Max. pressure	Max. capacity <sup>1</sup>	Pump type	Connection discharge/suction	Stroke frequency	Stroke volume	Max. suction lift <sup>1</sup>	Max. suction lift (max. viscosity)	Max. length of suction line	Max. viscosity	VFD possible (100 Hz operation) <sup>2</sup>
[bar]	[l/h]			[n/min]	[ml]	[m]	[m]	[m]	[mPas]	
3	770	DMX 770-3	DN 65	28	457	3	0	2	800	x
3	1520	DMX 1520-3	DN 65	56	457	3	0	2	400	x
3	2000	DMX 2000-3	DN 65	73	457	3	0	2	200	x
5	430	DMX 430-5	DN 65	28	256	3	0	3	1000	x
5	860	DMX 860-5	DN 65	56	256	3	0	3	800	x
5	1120	DMX 1120-5	DN 65	73	256	3	0	3	400	x

<sup>1</sup> Viscosity similar to water<sup>2</sup> Double max. capacity

## DMX catalogue variants (selection)

The following tables show a selection of DMX pumps for typical applications. The listed DMX pumps are fitted with standard three-phase motor.

For other configurations and capacities, please see the *DMX variants* tables.

### DMX 221

Max. capacity [l/h]	Max. pressure [bar]	Material			Type designation	Product number	
		Dosing head	Gasket	Valve ball		With standard motor	With integrated VFD "FA"
4	10	PVC	FKM	Glass	DMX 4-10 B-PVC/V/G-X-E1B1B1	96684148	On request
		SS	PTFE	SS	DMX 4-10 B-SS/T/SS-X-E1AA	96716307	
7	10	PVC	FKM	Glass	DMX 7-10 B-PVC/V/G-X-E1B1B1	96730998	
		SS	PTFE	SS	DMX 7-10 B-SS/T/SS-X-E1AA	96684430	
14	10	PVC	FKM	Glass	DMX 14-10 B-PVC/V/G-X-E1B1B1	96693593	95747688
		SS	PTFE	SS	DMX 14-10 B-SS/T/SS-X-E1AA	96683666	
27	10	PVC	FKM	Glass	DMX 27-10 B-PVC/V/G-X-E1B1B1	96648142	On request
		SS	PTFE	SS	DMX 27-10 B-SS/T/SS-X-E1AA	96715842	
35	10	PVC	FKM	Glass	DMX 35-10 B-PVC/V/G-X-E1B1B1	96650928	
		SS	PTFE	SS	DMX 35-10 B-SS/T/SS-X-E1AA	96684076	
50	10	PVC	FKM	Glass	DMX 50-10 B-PVC/V/G-X-E1B1B1	96611961	
		SS	PTFE	SS	DMX 50-10 B-SS/T/SS-X-E1AA	96684272	
75	4	PVC	FKM	Glass	DMX 75-4 B-PVC/V/G-X-E1B2B2	96652050	On request
		SS	PTFE	SS	DMX 75-4 B-SS/T/SS-X-E1A1A1	96684507	
115	3	PVC	FKM	Glass	DMX 115-3 B-PVC/V/G-X-E1B2B2	96611663	On request
		SS	PTFE	SS	DMX 115-3 B-SS/T/SS-X-E1A1A1	96683528	

### DMX 226 M

Max. capacity [l/h]	Max. pressure [bar]	Material			Type designation	Product number	
		Dosing head	Gasket	Valve ball		With standard motor	With integrated VFD "FA"
24	8	PVC	FKM	Glass	DMX 24-8 B-PVC/V/G-X-E1B2B2	96685432	95747689
		SS	PTFE	SS	DMX 24-8 B-SS/T/SS-X-E1A1A1	96718926	
100	8	PVC	FKM	Glass	DMX 100-8 B-PVC/V/G-X-E1B2B2	96717563	On request
		SS	PTFE	SS	DMX 100-8 B-SS/T/SS-X-E1A1A1	96684911	
142	8	PVC	FKM	Glass	DMX 142-8 B-PVC/V/G-X-E1B2B2	96685051	
		SS	PTFE	SS	DMX 142-8 B-SS/T/SS-X-E1A1A1	96718050	
224	5	PVC	FKM	Glass	DMX 230-5 B-PVC/V/G-X-E1B2B2	96634523	On request
		SS	PTFE	SS	DMX 230-5 B-SS/T/SS-X-E1A1A1	96691542	
380	3	PVC	FKM	Glass	DMX 380-3 B-PVC/V/G-X-E1B9B9	96653406	On request
		SS	PTFE	SS	DMX 380-3 B-SS/T/SS-X-E1A1A1	96615372	



## DMX 226 L

Max. capacity [l/h]	Max. pressure [bar]	Material			Type designation	Product number	
		Dosing head	Gasket	Valve ball		With standard motor	With integrated VFD "FA"
67	10	PVC	FKM	Glass	DMX 67-10 B-PVC/V/G-X-E1B2B2	96686029	95747690
		SS	PTFE	SS	DMX 67-10 B-SS/T/SS-X-E1A1A1	96720407	
132	10	PVC	FKM	Glass	DMX 132-10 B-PVC/V/G-X-E1B2B2	96653457	
		SS	PTFE	SS	DMX 132-10 B-SS/T/SS-X-E1A1A1	96690320	
190	10	PVC	FKM	Glass	DMX 190-10 B-PVC/V/G-X-E1B2B2	96718466	On request
		SS	PTFE	SS	DMX 190-10 B-SS/T/SS-X-E1A1A1	96685223	
280	8	PVC	FKM	Glass	DMX 280-8 B-PVC/V/G-X-E1B2B2	96653084	
		SS	PTFE	SS	DMX 280-8 B-SS/T/SS-X-E1A1A1	96685581	
315	3	PVC	FKM	Glass	DMX 315-3 B-PVC/V/G-X-E1KKE0	96685598	95747693
		SS	PTFE	SS	DMX 315-3 B-SS/T/SS-X-E1A2A2	96719336	
321	6	PVC	FKM	Glass	DMX 321-6 B-PVC/V/G-X-E1B9B9	96607455	
		SS	PTFE	SS	DMX 321-6 B-SS/T/SS-X-E1A1A1	96685646	
460	6	PVC	FKM	Glass	DMX 460-6 B-PVC/V/G-X-E1B9B9	96656708	On request
		SS	PTFE	SS	DMX 460-6 B-SS/T/SS-X-E1A1A1	96690336	
525	3	PVC	FKM	Glass	DMX 525-3 B-PVC/V/G-X-E1KK	96699830	
		SS	PTFE	SS	DMX 525-3 B-SS/T/SS-X-E1A2A2	96685949	
765	3	PVC	FKM	Glass	DMX 765-3 B-PVC/V/G-X-E1KK	96720540	
		SS	PTFE	SS	DMX 765-3 B-SS/V/SS-X-E1A2A2	96293622	

## DMX 227

Max. capacity [l/h]	Max. pressure [bar]	Material			Type designation	Product number	
		Dosing head	Gasket	Valve ball		With standard motor	With integrated VFD "FA"
430	5	PVC	FKM	PVC	DMX 430-5 D-PVC/V/PVC-X-ERRE0	96686245	
		SS	FKM	SS	DMX 430-5 D-SS/V/SS-X-EUUE0	95729539	
770	3	PVC	FKM	PVC	DMX 770-3 D-PVC/V/PVC-X-ERRE0	96686252	On request
		SS	FKM	SS	DMX 770-3 D-SS/V/SS-X-EUUE0	95703664	
860	5	PVC	FKM	PVC	DMX 860-5 D-PVC/V/PVC-X-ERRE0	96693685	
		SS	FKM	SS	DMX 860-5 D-SS/V/SS-X-EUUE0	96720992	
1120	5	PVC	FKM	PVC	DMX 1120-5 D-PVC/V/PVC-X-ERRE0	96693688	95747691
		SS	FKM	SS	DMX 1120-5 D-SS/V/SS-X-EUUE0	96686199	
1520	3	PVC	FKM	PVC	DMX 1520-3 D-PVC/V/PVC-X-ERRE0	96720884	On request
		SS	FKM	SS	DMX 1520-3 D-SS/V/SS-X-EUUE0	96720885	
2000	3	PVC	FKM	PVC	DMX 2000-3 D-PVC/V/PVC-X-ERRE0	96692242	95747692
		SS	FKM	SS	DMX 2000-3 D-SS/V/SS-X-EUUE0	96691750	

## DMX variants

### DMX 221 models with valve size DN 8

Max. capacity and pressure [l/h]-[bar]	Control variant	Materials			Control panel position	Supply voltage	Valve type	Connection, discharge/suction	Mains plug	Motor variant				
		Dosing head	Gasket	Valve ball										
DMX 4-10 DMX 7-10 DMX 8-10 DMX 9-10 DMX 12-10 DMX 14-10 DMX 16-10 DMX 18-10 DMX 26-10 DMX 27-10 DMX 35-10 DMX 50-10	B S2 AT3	PP PP-L	E	C	X	0 E	1 4	B3B3	-	-				
				SS										
				T										
			V	C										
				G										
				C										
		PV PV-L	T	C										
				T										
				C										
			PVC PVC-L	E	C	X	0 E	1 4	B1B1		-			
					SS									
					T									
	T	C												
		T												
		C												
	V	G												
C														
SS														
SS SS-L	T	SS	X	0 E	1 4	AA	-							
								V						
								E						
	E							F S	G	1 4	B3B3	X F	-	
														V
														G
PV PV-L	T	C												
		T												
		C												
	PVC PVC-L	E	C	F S	G	1 4	B1B1	X F	-					
			SS											
			T											
T		C												
		T												
		C												
V	G													
	C													
	SS													
SS SS-L	E	SS	F S	G	1 4	AA	X F	-						
									T					
									V					

## DMX 221 models with valve size DN 20

Max. capacity and pressure [l/h]-[bar]	Control variant	Materials			Control panel position	Supply voltage	Valve type	Connection, discharge/suction	Mains plug	Motor variant					
		Dosing head	Gasket	Valve ball											
DMX 17-4 DMX 25-3 DMX 39-4 DMX 60-3 DMX 75-4 DMX 115-3	B S2 AT3	PP PP-L	E	C SS T	X	0 E	1 4	B4B4	-	- E0 FA					
			T	T											
			V	G											
		PV PV-L	T	T	X	0 G	1 4	B4B4	X F						
			PVC PVC-L	E							SS T	0 E	1 4	B2B2	-
				V							C G SS				
	SS SS-L	E	SS		X	0 E	1 4	A1A1	-						
		T	SS												
		V	SS												
	AR	PP PP-L	E	C SS T	F S	G	1 4	B4B4	X F	-					
			T	T											
			V	G											
		PV PV-L	T	T	F S	G	1 4	B2B2	X F	-					
			PVC PVC-L	E							SS T	0 E	1 4	A1A1	-
				V							C G SS				
SS SS-L		E	SS		F S	G	1 4	A1A1	X F	-					
		T	SS												
		V	SS												

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**DMX 226 M models with valve size DN 20**

(ATEX variants on request)

Max. capacity and pressure [l/h]-[bar]	Control variant	Materials			Control panel position	Supply voltage	Valve type	Connection, discharge/suction	Mains plug	Motor variant			
		Dosing head	Gasket	Valve ball									
DMX 24-8 DMX 37-5 DMX 52-8 DMX 60-3 DMX 82-5 DMX 100-8 DMX 130-3 DMX 142-8 DMX 160-5 DMX 230-5 DMX 255-3 DMX 380-3	B AT3 S1	PP PP-L	E	C SS T	X	0 4 E	1 4	B4B4	-	- E0 E1 E2 FA			
			T	T									
			V	G									
		PV PV-L	T	T	X	0 G	1 4	B4B4	X F				
			PVC PVC-L	E							SS T		
				V							C G SS		
		SS SS-L	E	SS SS	X	0 4 E	1 4	A1A1	-				
			T	SS									
			V	SS									
		DMX 24-8 DMX 37-5 DMX 52-8 DMX 60-3 DMX 82-5 DMX 100-8 DMX 130-3 DMX 142-8 DMX 160-5 DMX 230-5 DMX 255-3 DMX 380-3	AR	PP PP-L	E	C SS T	F S	G	1 4		B4B4	X F	-
					T	T							
					V	G							
PV PV-L	T			T	F S	G	1 4	B2B2 B9B9	X F				
	PVC PVC-L			E						SS T			
				V						C G SS			
SS SS-L	E			SS SS	F S	G	1 4	A1A1	X F				
	T			SS									
	V			SS									


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## DMX 226 L models with valve size DN 20

(ATEX variants on request)

Max. capacity and pressure [l/h]-[bar]	Control variant	Materials			Control panel position	Supply voltage	Valve type	Connection discharge/suction	Mains plug	Motor variant		
		Dosing head	Gasket	Valve ball								
DMX 67-10 DMX 95-8 DMX 132-10 DMX 152-6 DMX 190-10 DMX 199-8 DMX 280-8 DMX 321-6 DMX 460-6	B AT3 S1	PP PP-L	E	C SS T	X	0 4 E	1 4	B4B4	-	- E0 E1 E2 FA		
			T	T								
			V	G								
		PV PV-L	T	T	X	0 G	1 4	B4B4	X F			
			PVC PVC-L	E							SS	
		V		T								
				C								
			SS SS-L	V	G	X	0 G	1 4	B2B2 B9B9		X F	
		E		SS								
		T		SS								
		DMX 67-8 DMX 95-8 DMX 132-8 DMX 152-6 DMX 190-8 DMX 199-8 DMX 280-6 DMX 321-4 DMX 460-3	AR	PP PP-L	E	C SS T	F S	G	1 4		B4B4	X F
					T	T						
V	G											
PV PV-L	T			T	F S	G	1 4	B2B2 B9B9	X F			
	PVC PVC-L			E						SS		
V				T								
				C								
	SS SS-L			V	G	F S	G	1 4	A1A1	X F		
E				SS								
T				SS								
SS SS-L	V			SS	F S	G	1 4	A1A1	X F			
	E			SS								
SS SS-L	T	SS	F S	G	1 4	A1A1	X F					
	V	SS										

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**DMX 226 L models with valve size DN 32**

(ATEX variants on request)

Max. capacity and pressure [l/h]-[bar]	Control variant	Materials			Control panel position	Supply voltage	Valve type	Connection discharge/suction	Mains plug	Motor variant			
		Dosing head	Gasket	Valve ball									
DMX 249-3 DMX 315-3 DMX 525-3 DMX 765-3	B AT3 S1	PP PP-L	E	SS T	X	0 4 E	1 4	B5B5	-	- E0 E1 E2 FA			
			T	T									
			V	G									
		PV PV-L	T	T	X	0 4 G	1 4	B5B5	X F				
			PVC PVC-L	E							SS T		
		V		SS G	X	0 4 G	1 4	KK	-				
			SS SS-L	E							SS	X	0 4 E
		T		SS									
		V		SS									
		DMX 249-3 DMX 315-3 DMX 525-3	AR	PP PP-L	E	SS T	F S	G	1 4		B5B5	X F	-
					T	T							
					V	G							
PV PV-L	T			T	F S	G	1 4	KK	X F				
	PVC PVC-L			E						SS T			
V				C	F S	G	1 4	A2A2	X F				
				G									
	SS												
SS SS-L	E			SS	F S	G	1 4	A2A2	X F				
	T			SS									
	V			SS									

**DMX 227 models with valve size DN 65**

Max. capacity and pressure [l/h]-[bar]	Control variant	Materials			Control panel position	Supply voltage	Valve type	Connection discharge/suction	Mains plug	Motor variant
		Dosing head	Gasket	Valve ball						
DMX 430-5 DMX 770-3 DMX 860-5 DMX 1120-5 DMX 1520-3 DMX 2000-3	D S1	PP PP-L	V	PP	X	0 E	2	TT	-	- E0 FA
			PVC PVC-L	E						
		V			X	0 E	2	RR	-	
SS SS-L	V	SS	X	0 E						2

## 7. Selection of accessories

Pump model	Pump type	Max. capacity [l/h]	Stroke volume [ml]	Connection size	Accessories chapter		
DMX 221	DMX 4-10	4	2.2	G 5/8	Accessories for small dosing pumps		
	DMX 8-10	8					
	DMX 16-10	16					
	DMX 7-10	7	3.8				
	DMX 14-10	14					
	DMX 27-10	27					
	DMX 9-10	9	4.9				
	DMX 18-10	18					
	DMX 35-10	35					
	DMX 12-10	12	6.9				
	DMX 26-10	26					
	DMX 50-10	50					
	DMX 17-4	17	10.4			G 5/4 (G 1 1/4)	Accessories for large dosing pumps
	DMX 39-4	39					
DMX 75-4	75						
DMX 25-3	25	16					
DMX 60-3	60						
DMX 115-3	115						
DMX 226M	DMX 24-8	24	13.8	G 5/4 (G 1 1/4)	Accessories for large dosing pumps		
	DMX 52-8	52					
	DMX 100-8	100					
	DMX 142-8	142					
	DMX 37-5	37	22				
	DMX 82-5	82					
	DMX 160-5	160					
	DMX 230-5	224	36				
	DMX 60-3	60					
	DMX 130-3	130					
DMX 255-3	255	18.5					
DMX 380-3	380						
DMX 67-8	67						
DMX 67-10	67	27.8	G 5/4 (G 1 1/4)	Accessories for large dosing pumps			
DMX 132-10	132						
DMX 190-8	190						
DMX 190-10	190	44.6					
DMX 95-8	95						
DMX 199-8	199						
DMX 280-6	280	73	G 2				
DMX 280-8	280						
DMX 152-6	152						
DMX 321-4	321	457	Flange DN 65	Accessories for large dosing pumps			
DMX 321-6	321						
DMX 460-3.5	460						
DMX 460-6	460	2000					
DMX 249-3	249						
DMX 315-3	315						
DMX 525-3	525	2000					
DMX 765-3	765						
DMX 430-5	430						
DMX 860-5	860	2000					
DMX 1120-5	1120						
DMX 770-3	770						
DMX 1520-3	1520	2000					
DMX 2000-3	2000						

## 8. Accessories for small dosing pumps

Grundfos offer a comprehensive range of accessories covering every need when dosing with Grundfos pumps.

### Installation kits for dosing pumps

An installation kit includes the following parts:

- Injection unit with spring-loaded non-return valve (see page 38)
- PE discharge hose, 6 m
- PVC suction hose, 2 m
- PVC deaeration hose, 2 m
- PE foot valve with strainer and weight, without or with level indication (see page 34).

In addition to the installation kit, please order an inlay kit for DMX pumps.

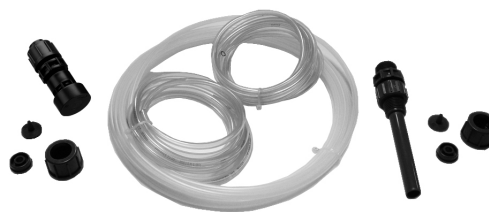


Fig. 22 Installation kit with foot valve without level indication

TM04 1600 0312



Fig. 23 Installation kit with foot valve with level indication

TM04 8469 0512

### Technical data

Max. flow rate <sup>1</sup> [l/h]	Max. pressure [bar]	Size		Material of injection unit			Product number		Inlay kit		
		Suction / discharge hose [mm]	Deaeration hose [mm]	Housing	Gasket	Ball	Foot valve without level indication	Foot valve with level indication			
7.5	13	4/6	4/6	PP	FKM	Ceramic	95730440	95730464	95730984		
					EPDM	Ceramic	95730441	95730465			
					FKM	Ceramic	95730442	95730466			
					PVC	EPDM	Ceramic	95730443		95730467	95730720
					PTFE	Ceramic	95730444	95730468			
					FKM	Ceramic	95730445	95730469			
				PVDf	EPDM	Ceramic	95730446	95730470	95730729		
					PTFE	Ceramic	95730447	95730471			
					FKM	Ceramic	95730448	95730472			
					PP	EPDM	Ceramic	95730449		95730473	95730713
					FKM	Ceramic	95730450	95730474			
					PVC	EPDM	Ceramic	95730451		95730475	
PTFE	Ceramic	95730452	95730476								
FKM	Ceramic	95730453	95730477								
30	12	6/9	4/6	PVDf	EPDM	Ceramic	95730454	95730478	95730732		
					PTFE	Ceramic	95730455	95730479			
					FKM	Ceramic	95730456	95730480			
					PP	EPDM	Ceramic	95730457		95730481	95730715
					FKM	Ceramic	95730458	95730482			
					PVC	EPDM	Ceramic	95730459		95730483	
				PTFE	Ceramic	95730460	95730484				
				FKM	Ceramic	95730461	95730485				
				PVDf	EPDM	Ceramic	95730462	95730486	95730734		
					PTFE	Ceramic	95730463	95730487			

<sup>1</sup> Viscosity similar to water



## Cables and plugs

Cables and plugs are used for the connection of the dosing pump to external control devices, such as process controllers, flow meters, level control units, etc.

## Hoses

Hoses are available in various materials, sizes and lengths.



TM04 8268 0411

Fig. 24 Hoses

### Technical data

Max. flow rate <sup>1</sup> [l/h]	Size (internal/outside diameter) [mm]	Material	Max. pressure at 20 °C [bar]	Length [m]	Product number
7.5	4/6	PE	13	3	91835676
				10	91836504
				50	91835680
		PVC	0.5	3	96701733
				10	96702133
				50	96727418
ETFE	20	3	95730337		
		10	95730338		
		50	95730339		
17	5/8	PE	13	3	95730888
				10	96727393
				50	95730889
		PE	12	3	96727409
				10	96727412
				50	96727415
30	6/9	PVC	0.5	3	95730334
				10	95730335
				50	95730336
		ETFE	20	3	95730340
				10	95730341
				50	95730342
60	6/12	PVC, textile-reinforced	23	3	96693751
				10	96653571
				50	91835686
		PE	9	3	96727395
				10	96705657
				50	96727398
60	9/12	PVC	0.5	3	96727434
				10	95730890
				50	95724702
		ETFE	13	3	95730343
				10	95730344
				50	95730345

<sup>1</sup> Viscosity similar to water

## Foot valves

Foot valves are installed at the lower end of the suction hose. They are available either without level indication or with low-level and empty-tank indication.

Foot valves include:

- Weight
- Strainer (mesh size approx. 0.8 mm)
- Non-return valve
- Hose connection set: 4/6 mm, 6/9 mm, 6/12 mm and 9/12 mm
- Pipe connection set: threaded, Rp 1/4", female (stainless steel).

Foot valves with low-level and empty-tank indication include additionally:

- Reed-switch unit with two floaters
- 5 metres of cable with PE jacket
- PE cap, Ø58 mm, for assembly in Grundfos cylindrical tanks, or for use with tank adaptors.

The switch mode of the low-level and empty-tank indication is factory-set to NO. The switch mode can be set to NC by turning the floaters upside down.

Electrical data of the level indication:

- Max. voltage: 48 V
- Max. current: 0.5 A
- Max. load: 10 VA.



Fig. 25 Left: foot valve without level indication; right: foot valve with level indication

TM04 8476 0512

## Dimensions

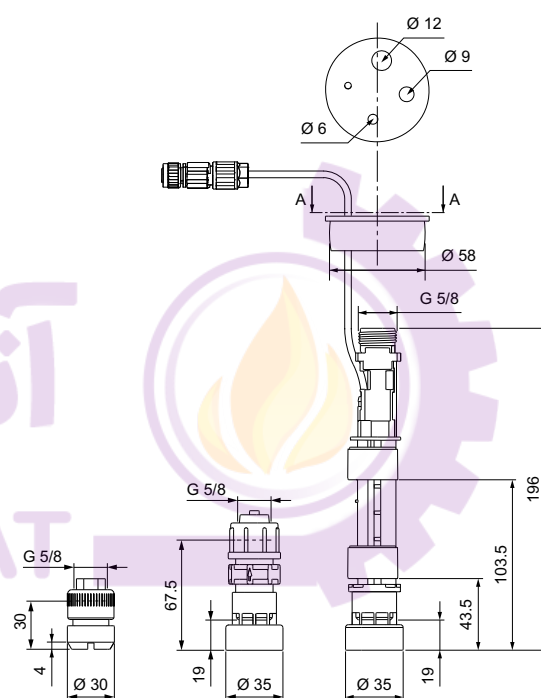


Fig. 26 Left: stainless-steel foot valve; centre and right: PE or PVDF foot valve, dimensions

TM04 8461 0312

## Technical data

Max. flow rate [l/h]	Material			Product number	
	Housing	Gasket	Ball	Without level indication	With level indication
60	PE	FKM, EPDM	Ceramic	98070951	98070966
		PTFE	Ceramic	98070952	98070967
	PVDF	FKM, EPDM	Ceramic	98070953	98070968
		PTFE	Ceramic	98070954	98070969
	SS	PTFE	SS	98070963	-

## Suction lances

Suction lances are installed at the lower end of the suction hose. They are available either without level indication or with low-level and empty-tank indication. Their immersion depth is adjustable.

Suction lances include:

- Strainer (mesh size approx. 0.8 mm)
- Non-return valve
- Hose connection set: 4/6 mm, 6/9 mm, 6/12 mm and 9/12 mm
- Adjustable tank connection with holes for e.g. relief line.

Suction lances with low-level and empty-tank indication include additionally:

- Reed-switch unit with 2 floaters
- 5 metres of cable with PE jacket.

The switch mode of the low-level and empty-tank indication is factory-set to NO. The switch mode can be set to NC by turning the floaters upside down.

Electrical data of the level indication:

- Max. voltage: 48 V
- Max. current: 0.5 A
- Max. load: 10 VA.



Fig. 27 Suction lance

## Dimensions

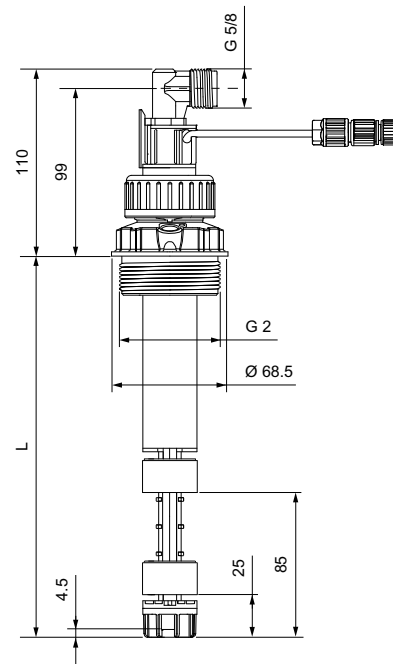


Fig. 28 Suction lance, dimensions

## Dimensions / Selection

For dosing tank type	Tank volume [l]	Recommended immersion depth <sup>2</sup> (L) [mm]
	40	400
	60	500
	100	690
Grundfos cylindrical tank	200	690
	300	980
	500	1100
	1000	1200
Grundfos square tank <sup>1</sup>	100	690
L-ring drum <sup>1</sup>	120	820
	220	980
Steel drum <sup>1</sup>	216	980
Standard jerricans according to EN 12712 <sup>1</sup>	12, 33 (large cap)	400
	25, 30, 33	500
	60	690
IBC <sup>1</sup>	All sizes	1200

<sup>1</sup> Suitable adaptors see page 37.

<sup>2</sup> Please take into account the max. suction lift of the dosing pump.

Please use the M-12-plug-to-flat-plug adaptor mentioned on (see page 44).

TM04 8458 0312

**Technical data**

Max. flow rate [l/h]	Max. immersion depth <sup>1</sup> [mm]	Material			Product number	
		Housing	Gasket	Ball	Without level indication	With level indication
60	400	PE	FKM, EPDM	Ceramic	98070978	98071074
			PTFE	Ceramic	98070979	98071075
		PVDF	FKM, EPDM	Ceramic	98070980	98071076
			PTFE	Ceramic	98070981	98071077
	500	PE	FKM, EPDM	Ceramic	98070990	98071086
			PTFE	Ceramic	98070991	98071087
		PVDF	FKM, EPDM	Ceramic	98070992	98071088
			PTFE	Ceramic	98070993	98071089
	570	PE	FKM, EPDM	Ceramic	98071002	98071098
			PTFE	Ceramic	98071003	98071099
		PVDF	FKM, EPDM	Ceramic	98071004	98071100
			PTFE	Ceramic	98071005	98071101
	690	PE	FKM, EPDM	Ceramic	98071014	98071110
			PTFE	Ceramic	98071015	98071111
		PVDF	FKM, EPDM	Ceramic	98071016	98071112
			PTFE	Ceramic	98071017	98071113
	820	PE	FKM, EPDM	Ceramic	98071026	98071122
			PTFE	Ceramic	98071027	98071123
		PVDF	FKM, EPDM	Ceramic	98071028	98071124
			PTFE	Ceramic	98071029	98071125
980	PE	FKM, EPDM	Ceramic	98071038	98071134	
		PTFE	Ceramic	98071039	98071135	
	PVDF	FKM, EPDM	Ceramic	98071040	98071136	
		PTFE	Ceramic	98071041	98071137	
1100	PE	FKM, EPDM	Ceramic	98071050	98071146	
		PTFE	Ceramic	98071051	98071147	
	PVDF	FKM, EPDM	Ceramic	98071052	98071148	
		PTFE	Ceramic	98071053	98071149	
1200	PE	FKM, EPDM	Ceramic	98071062	98071158	
		PTFE	Ceramic	98071063	98071159	
	PVDF	FKM, EPDM	Ceramic	98071064	98071160	
		PTFE	Ceramic	98071065	98071161	

<sup>1</sup> Minimum immersion depth for all sizes: approx. 140 mm

## Accessories for suction lances and foot valves with level indication


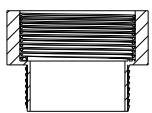
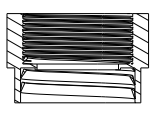
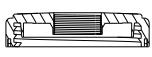
### Adaptors for containers

These adaptors allow the installation of standard suction lances (G 2 thread) and foot valves with level indication (PE cap) on different types of containers.



TM04 8506 0712

### Technical data

Adaptor type	for container type	Remark	Product No.
	TM04 8470 0512 Counter nut for tanks without threaded opening, e.g. 100-litre square tank or 1000-litre cylindrical tank	PVC, grey	98071170
	Containers with 2" NPT threaded opening	PVC, grey	98156690
	Drums with S 70 x 6 coarse thread (MAUSER 2")	PE, blue	98071171
	Drums with S 56 x 4 coarse thread (TriSure®)	PE, orange	98071172
	Jerricans with small opening (approx. Ø36), according to EN 12713	PE, green	98071173
	Jerricans with medium-sized opening (approx. Ø45), according to EN 12713	PE, yellow	98071174
	Jerricans with large opening (approx. Ø57), according to EN 12713	PE, brown	98071175
	US containers with bung hole of 63 mm (ASTM International)	PE, white	98071176
	TM04 8472 0512 IBC (Intermediate Bulk Container) with opening of Ø150 mm, S 160 x 7	PE, black	98071177

### Emission protection kits

Gas emitted by liquid in a container can cause bad odour and corrosion. Emission protection kits help avoid such problems. Suction lances can be retrofitted with emission protection kits.

Two variants are available:

- Emission protection kit with snifting valve: no gas can escape from the container, but air can be drawn in.
- Emission protection kit for use with filter: gas can escape from the container and air can be drawn in. The kit can be connected to a filter by means of a 4/6 mm hose.

They include:

- gasket for the tank adaptor
- snifting valve or hose nipple 4/6mm (hose is not included)
- gasket for the cable outlet.

### Order data

Variant	Remark	Product number
Emission protection kit with snifting valve	Can be retrofitted	98071178
Emission protection kit for use with filter	Can be retrofitted	98071179

### M-12-plug-to-flat-plug adaptor

The adaptor allows to connect suction lances or foot valves with level indication to pumps with a level input designed for flat plugs (e.g. DMX and DMH with AR control unit).

### Order data

Description	Product number
M-12-plug-to-flat-plug adaptor	96635010

## Injection units

Injection units connect the dosing line with the process line. They ensure a minimum counterpressure of 0.7 bar, and avoid backflow of the dosing liquid.

In general, they include:

- Injection pipe. PP, PVC and PVDF versions can be shortened.
- Spring-loaded non-return valve with Tantal spring.
- Hose connection set: 4/6 mm, 6/9 mm, 6/12 mm, and 9/12 mm.
- Pipe connection set: threaded, Rp 1/4", female (stainless steel).

## Standard injection units

### Dimensions

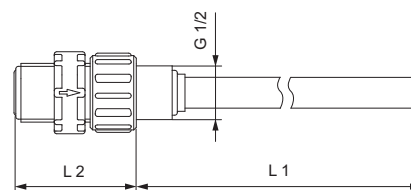


Fig. 29 Standard injection unit, PP, PVC, and PVDF version

TM04 8280 0411

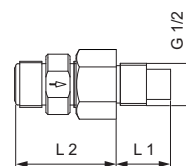


Fig. 30 Standard injection unit, stainless-steel version

TM04 8281 0411

### Technical data

Max. flow rate [l/h]	Max. pressure [bar]	Material			Dimensions		Product number
		Housing	Gasket	Ball	L 1 [mm]	L 2 [mm]	
60	16	PP	FKM	Ceramic	100	47	95730904
			EPDM	Ceramic	100	47	95730908
		PVC	FKM	Ceramic	100	47	95730912
			EPDM	Ceramic	100	47	95730916
		PVDF	PTFE	Ceramic	100	47	95730920
			FKM	Ceramic	100	47	95730924
	100	Stainless steel	PTFE	Stainless steel	27	50	95730936
			FKM	Ceramic	300	47	95730940
		PVC	EPDM	Ceramic	300	47	95730944
			PTFE	Ceramic	300	47	95730948

## Injection units with lip valve

Injection units with lip valve are typically used to add sodium hypochlorite solution to water with a high carbonate content. The FKM lip prevents crystallisation and blocking caused by alkali carbonate reactions at the point of injection.

### Dimensions

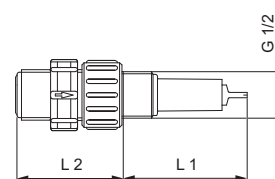


Fig. 31 Injection unit with lip valve

TM04 8282 0411

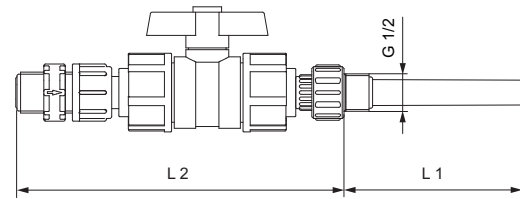
### Technical data

Max. flow rate [l/h]	Max. pressure [bar]	Material			Dimensions		Product number
		Housing	Gasket	Ball	L 1 [mm]	L 2 [mm]	
60	16	PVC	FKM	Ceramic	55	59	95730964

## Injection units with ball valve

Injection units with ball valve are used for applications where the injection point must be closable. The ball valve is placed between the injection pipe and the spring-loaded non-return valve. Thus, the dosing line can be completely disconnected from the process. The non-return valve can be disassembled and cleaned without stopping the process and emptying the process line.

### Dimensions



TM04 8284 0411

Fig. 32 Injection unit with ball valve

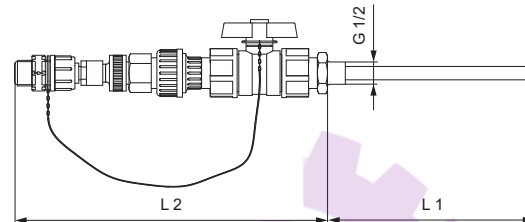
### Technical data

Max. flow rate [l/h]	Max. pressure [bar]	Material			Dimensions		Product number
		Housing	Gasket	Ball	L 1 [mm]	L 2 [mm]	
60	16	PVC	FKM	Ceramic	100	183	95730952
			EPDM	Ceramic	100	183	95730956
	64	Stainless steel	PTFE	Stainless steel	27	138	95730960

## Injection units, withdrawable for cleaning

These injection units are used where regular cleaning of the injection pipe is required. The construction allows the withdrawal of the injection unit from the process line and the cleaning of it, without stopping the water flow. The injection point can be closed with the integrated ball valve. The immersion depth of the injection pipe can be adjusted.

### Dimensions



TM04 8285 0411

Fig. 33 Injection unit, withdrawable for cleaning

### Technical data

Max. flow rate [l/h]	Max. pressure [bar]	Material			Dimensions		Product number
		Housing	Gasket	Ball	L 1 [mm]	L 2 [mm]	
60	10	PVC	FKM	Ceramic	185	280	95730968
			EPDM	Ceramic	185	280	95730972

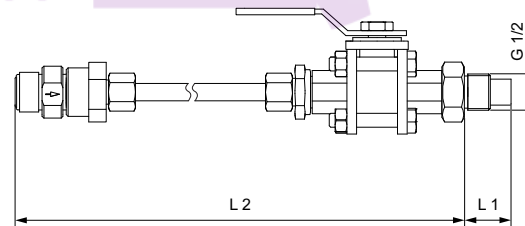
## Hot-injection units with ball valve

Hot-injection units with ball valve can be used for direct injection of dosing liquid into processes with a temperature of up to 120 °C.

In addition, these injection units include:

- Injection pipe, stainless steel.
- Ball valve installed between the injection pipe and the cooling pipe, stainless steel.
- Bendable cooling pipe, stainless steel, length 1 m.

### Dimensions



TM04 8286 0411

Fig. 34 Hot-injection unit with ball valve

### Technical data

Max. flow rate [l/h]	Max. pressure [bar]	Material			Dimensions		Product number
		Housing	Gasket	Ball	L 1 [mm]	L 2 [mm]	
60	16	PVDF	PTFE	Ceramic	27	1158	95730976
	64	Stainless steel	PTFE	Stainless steel	27	1158	95730980

## Multi-function valves, pressure relief valves, pressure loading valves

Multi-function valves combine the functions of pressure relief valves and pressure loading valves. In addition, they allow deaeration of the pump and emptying of the discharge line for maintenance.

Pressure relief valves, or safety valves, protect the pump and the discharge installations against excessive pressure. All pressurised dosing installations should include a pressure relief valve.

Pressure loading valves maintain a certain counterpressure for the pump. They are used in applications with too low counterpressure or no counterpressure at all. Pressure loading valves are also used to prevent syphoning, when the admission pressure is higher than the counterpressure. They provide a constant counterpressure for the dosing pump when the system pressure is fluctuating.

### Multi-function valves

A multi-function valve is mounted directly on the pump discharge side. The top connection is for the discharge line, the side connection leads the relief liquid back into the tank.

- Loading pressure, adjustable from 1 to 4 bar, is factory-set to 3 bar.
- Relief pressure, adjustable from 7 to 16 bar, is factory-set to 10 bar or 16 bar.
- Maximum system pressure 16 bar.
- Hose connection set: 4/6 mm, 6/9 mm, 6/12 mm, and 9/12 mm.

### Technical data

Max. flow rate [l/h]	Housing	Material			Product number	
		Connections	Gasket	Diaphragm	Relief pressure 10 bar	Relief pressure 16 bar
60	PVDF	PP	FKM	PTFE	95704585	95730821
			EPDM	PTFE	95704591	95730822
		PVC	FKM	PTFE	95730807	95730823
			EPDM	PTFE	95730808	95730824
		PVDF	PTFE	PTFE	95730809	95730825
			FKM	PTFE	95730810	95730826
			EPDM	PTFE	95730811	95730827
			PTFE	PTFE	95730812	95730828



Fig. 35 Multi-function valve, pressure relief valve, pressure loading valve

### Dimensions

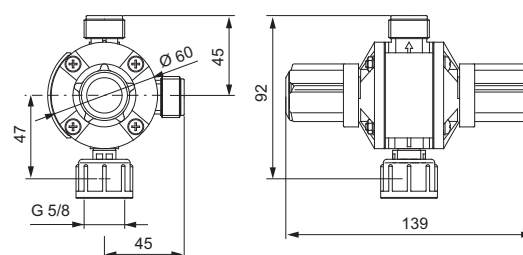


Fig. 36 Multi-function valve

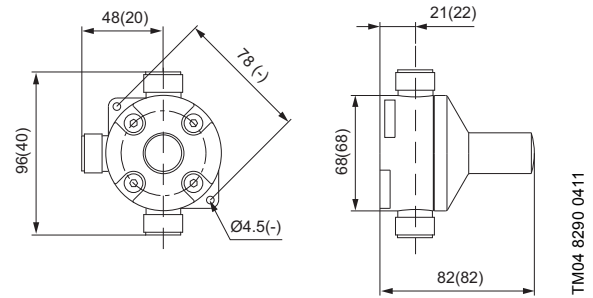


## Pressure relief valves

Pressure relief valves are installed in the discharge line near the pump, using the 2 in-line connections. The side connection leads the relief liquid back into the tank.

- Relief pressure, adjustable from 5 to 10 bar, is factory-set to 10 bar, or
- Relief pressure, adjustable from 7 to 16 bar, is factory-set to 16 bar.
- Maximum system pressure 16 bar.
- Hose connection set: 4/6 mm, 6/9 mm, 6/12 mm, and 9/12 mm.
- Pipe connection set: threaded, Rp 1/4", female (stainless steel).

## Dimensions



**Fig. 37** Pressure relief valve. Dimensions in brackets apply to stainless-steel version

## Technical data

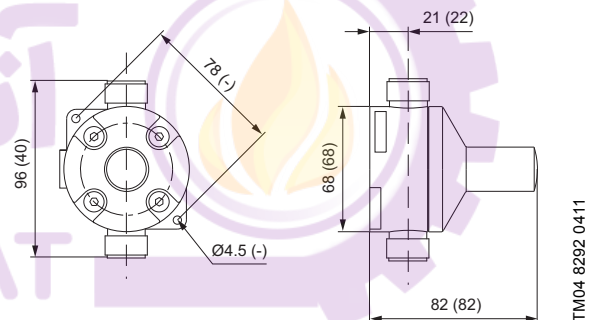
Max. flow rate [l/h]	Material			Product number	
	Diaphragm	Housing and connections	Gasket	Relief pressure 10 bar	Relief pressure 16 bar
60	PTFE	PP	FKM / EPDM	95730757	95730773
		PVC	FKM / EPDM	95730758	95730774
			PTFE	95730759	95730775
		PVDF	FKM / EPDM	95730760	95730776
			PTFE	95730761	95730777
Stainless steel	No gaskets	95730771	95730783		

## Pressure loading valves

Pressure loading valves are installed in the discharge line after the pressure relief valve, and after the pulsation damper, if fitted.

- Loading pressure, adjustable from 1 to 5 bar, is factory-set to 3 bar.
- Maximum system pressure: 16 bar.
- Hose connection set: 4/6 mm, 6/9 mm, 6/12 mm, and 9/12 mm.
- Pipe connection set: threaded, Rp 1/4", female (stainless steel).

## Dimensions



**Fig. 38** Pressure loading valve. Dimensions in brackets apply to stainless-steel version

## Technical data

Max. flow rate [l/h]	Material			Product number
	Diaphragm	Housing and connections	Gasket	
60	PTFE	PP	FKM / EPDM	95730741
		PVC	FKM / EPDM	95730742
			PTFE	95730743
		PVDF	FKM / EPDM	95730744
			PTFE	95730745
Stainless steel	No gaskets	95730751		

## Pump connection kits and inlay kits

Retrofit pump connection kits and inlay kits for the integration of Grundfos standard pumps into installations with various sizes of hoses or pipes.

A pump connection kit includes:

- 1 set of inlays
- 1 union nut.

An inlay kit includes:

- 2 sets of inlays.



Fig. 39 Left: pump connection kit; right: inlay kit

### Technical data

Connection type	Size	Material	Product number	
			Connection kit	Inlay kit
Hose (cone and ring)	4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm	PP	97691902	-
		PVC	97691903	-
		PVDF	97691904	-
	0.17" x 1/4", 1/4" x 3/8", 3/8" x 1/2"	PP	97691905	-
		PVC	97691906	-
		PVDF	97691907	-
Hose (cone and ring)	4/6 mm, or 0.17" x 1/4"	PP	97702474	95730984
		PVC	97702485	95730720
		PVDF	97702495	95730729
	4/9 mm	PP	98153922	98153977
		PVC	98153944	98154006
	5/8 mm	PVDF	98153949	98154029
		PP	97702475	95730711
	6/8 mm	PVC	97702486	95730721
		PVDF	97702496	95730730
		PP	97702476	95730712
	6/9 mm	PVC	97702487	95730722
		PVDF	97702497	95730731
		PP	97702477	95730713
	6/12 mm	PVC	97702488	95730723
		PVDF	97702498	95730732
		PP	97702478	95730714
	9/12 mm	PVC	97702489	95730724
		PVDF	97702499	95730733
		PP	97702479	95730715
	1/4" x 3/8	PVC	97702490	95730725
		PVDF	97702500	95730734
		PP	97702482	95730718
	3/8" x 1/2"	PVC	97702492	95730727
		PVDF	97702503	95730737
PP		97702483	95730719	
Hose (cutting ring type)	1/8" x 1/4"	PVC	97702493	95730728
		PVDF	97702504	95730738
		PP	97702481	95730717
Pipe welding	External diameter 16 mm	PVDF	97702502	95730736
		PP	97702480	95730716
Pipe cementing	Internal diameter 12 mm	PVDF	97702501	95730735
		PVC	97702491	95730726
Pipe, threaded, male	1/2" NPT	PP	97702484	-
		PVC	97702494	-
		PVDF	97702505	-
Pipe, threaded, female	Rp 1/4"	Stainless steel	97702508	-
		Stainless steel	97702472	95730739
		Stainless steel	97702473	95730740
Pipe (cutting ring type)	4/6 mm	Stainless steel	97702506	-
		Stainless steel	97702507	-
	8/10 mm	Stainless steel	97702507	-

## Adaptors

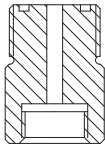
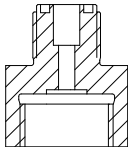
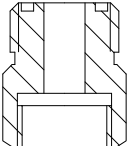
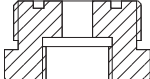
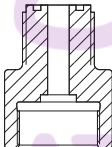
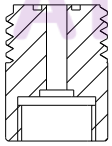
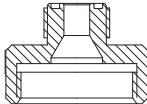
### Threaded adaptors

Threaded adaptors are used to convert between different threaded connection sizes.

A threaded adaptor kit includes:

- 1 adaptor
- 1 O-ring.

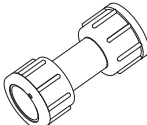
#### Technical data

Type	Threaded connection size		Material		Product number	
	Female	Male	Housing	Gaskets		
	TM04 8296 0411	G 3/8	G 5/8	PP	FKM / EPDM	95730407
				PVC	FKM / EPDM	95730408
					PTFE	95730409
				PVDF	FKM / EPDM	95730410
					PTFE	95730411
	TM04 8297 0411	G 5/8	G 3/8	PP	FKM / EPDM	95730412
				PVC	FKM / EPDM	95730413
					PTFE	95730414
				PVDF	FKM / EPDM	95730415
					PTFE	95730416
	TM04 8298 0411	G 5/8	G 3/4	PP	FKM / EPDM	95730417
				PVC	FKM / EPDM	95730418
					PTFE	95730419
				PVDF	FKM / EPDM	95730420
					PTFE	95730421
	TM04 8299 0411	G 5/8	G 1 1/4	PP	FKM / EPDM	95730422
				PVC	FKM / EPDM	95730423
					PTFE	95730424
				PVDF	FKM / EPDM	95730425
					PTFE	95730426
	TM04 8300 0411	G 5/8	M 20 x 1.5	PP	FKM / EPDM	95730427
				PVC	FKM / EPDM	95730428
					PTFE	95730429
				PVDF	FKM / EPDM	95730430
					PTFE	95730431
	TM04 8475 0612	G 5/8	M 30 x 3.5	PVDF	FKM / EPDM	98154048
					PTFE	98154054
	TM04 8301 0411	G 1 1/4	G 5/8	PP	FKM / EPDM	95730432
				PVC	FKM / EPDM	95730433
					PTFE	95730434
				PVDF	FKM / EPDM	95730435
					PTFE	95730436

### Union nut adaptors

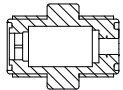

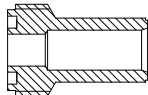
Union nut adaptors consist of a rigid pipe with union nuts on both ends. They have neither gaskets nor glued or welded connections.

#### Technical data

Type	Threaded connection size		Material		Product number
	Female	Female	Housing		
	G 5/8	G 5/8	PVC		95730437
			PP		95730438
			PVDF		95730439

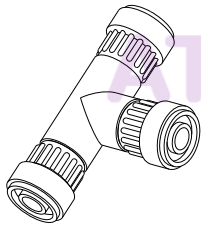
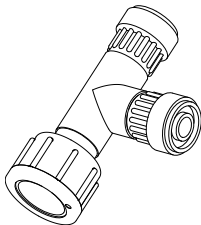
## Hose-to-hose and hose-to-pipe adaptors

### Technical data

Type	Description	Connections		Material		Product number
		Side 1	Side 2	Housing and connections	Gaskets	
 TM04 8302 0411	Valve housing with two male threads G 5/8	For hoses 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm	Without	PP	FKM / EPDM	95730367
				PVC	FKM / EPDM	95730368
					PTFE	95730369
				PVDF	FKM / EPDM	95730370
					PTFE	95730371
				PP	FKM / EPDM	95730356
		Without	PVC	FKM / EPDM	95730357	
				PTFE	95730358	
			PVDF	FKM / EPDM	95730359	
				PTFE	95730360	
	Without	Threaded Rp 1/4	Stainless steel	PTFE	95730361	
 TM04 8360 0711	Pipe cementing end on one side, male thread G 5/8 on the other side	For hoses 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm	Internal $\varnothing$ 12 mm	PVC	FKM / EPDM	95730378
					PTFE	95730379
		Without	Internal $\varnothing$ 12 mm	PVC	FKM / EPDM	95730365
					PTFE	95730366
				PP	FKM / EPDM	95730377
				PVDF	FKM / EPDM	95730380
 TM04 8303 0411	Pipe welding end on one side, male thread G 5/8 on the other side	For hoses 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm	External $\varnothing$ 16 mm	PP	FKM / EPDM	95730377
				PVDF	FKM / EPDM	95730381
		Without	External $\varnothing$ 16 mm	PP	FKM / EPDM	95730362
				PVDF	FKM / EPDM	95730363
					PTFE	95730364
					PTFE	95730364

## T-pieces

### Technical data

Type	Description	Connections			Material		Product number
		Bottom	Top	Side	Housing and connections	Gaskets	
 TM04 8304 0411	Three male threads G 5/8	-	Without	-	PP	FKM / EPDM	95730387
					PVC	FKM / EPDM	95730388
						PTFE	95730389
					PVDF	FKM / EPDM	95730390
						PTFE	95730391
					PP	FKM / EPDM	95730346
		-	Without	-	PVC	FKM / EPDM	95730347
						PTFE	95730348
					PVDF	FKM / EPDM	95730349
						PTFE	95730350
 TM04 8305 0411	Two male threads G 5/8, one female connection with union nut	Union nut G 5/8	Without	For hoses 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm	PP	FKM / EPDM	95730397
					PVC	FKM / EPDM	95730398
						PTFE	95730399
					PVDF	FKM / EPDM	95730400
						PTFE	95730401
					PP	FKM / EPDM	95730351
		Without	Without	Without	PVC	FKM / EPDM	95730352
						PTFE	95730353
					PVDF	FKM / EPDM	95730354
						PTFE	95730355

## Water meter

The in-line water meter with potential-free pulse signal is suitable for use in flow-proportional dosing applications.

- Qn 1.5 and Qn 2.5 meters are of the multi-jet, dry dial type, for cold water up to +30 °C, or hot water up to +90 °C.
- Qn 15 meters and up are of the helical vane type, for cold water up to +50 °C, or hot water up to +120 °C.
- Max. pressure: 16 bar.

If the water meter is connected directly to the pump pulse input, use a control plug (PN 96698715).

- Qn 1.5 to Qn 15 meters are threaded.
- Qn 40 to Qn 150 meters are flanged.
- Cable length: 3 m.



Fig. 40 Water meter

TM04 8317 0411

Qn [m <sup>3</sup> /h]	Pulse rate [l/pulse]	Maximum short-period capacity [m <sup>3</sup> /h]	Maximum pressure [bar]	Transitional capacity with error ± 2 % [l/h]	Minimum capacity with error ± 5 % [l/h]	Product number			
						Maximum water temperature			
						+30 °C	+50 °C	+90 °C	+120 °C
1.5 <sup>1</sup>	1	3	16	120	50	96446846	-	96446897	-
2.5 <sup>1</sup>	2.5	5	16	200	70	96446847	-	96446898	-
15 <sup>1</sup>	10	30	16	3000	450	-	96446848	-	96446899
1.5 <sup>1</sup>	0.25	3	16	120	50	96482640	-	96482643	-
2.5 <sup>1</sup>	0.25	5	16	200	70	96482641	-	96482644	-
15 <sup>1</sup>	2.5	30	16	3000	450	96482642	-	96482645	-
40 <sup>2</sup>	100	80	10	4000	700	-	96446849	-	96446900
60 <sup>2</sup>	25	120	10	6000	1200	-	96446850	-	96446901
150 <sup>2</sup>	100	300	10	12000	3000	-	96446851	-	96446902

<sup>1</sup> Maximum load, Reed contact: 30 VAC/VDC, 0.2 A.

<sup>2</sup> Maximum load, Namur contact: 8-12 VDC, 1 kOhm (requires external power supply).

## Dimensions

Size	Connections	Installation kit connection	Port-to-port length [mm]	Port-to-port length incl. kit [mm]
<b>Threaded connection</b>				
Qn 1.5	G 3/4	G 1/2	165	245
Qn 2.5	G 1	G 3/4	190	288
Qn 15	G 2.5	G 2	300	438
<b>Flanged connection</b>				
Qn 40	DN 80		225	-
Qn 60	DN 100		250	-
Qn 150	DN 150		300	-

## 9. Accessories for large dosing pumps

Grundfos offer a comprehensive range of accessories covering every need when dosing with Grundfos pumps.

The following accessories are suitable for large dosing pumps, such as DMX and DMH with more than 50 l/h.

To find the suitable hydraulic accessories for your pump, please compare the connection size and material combination of your pump with the data in this booklet.

- G 5/4 = G 1 1/4 = DN 20
- G 2 = DN 32.

### Overview of a dosing system

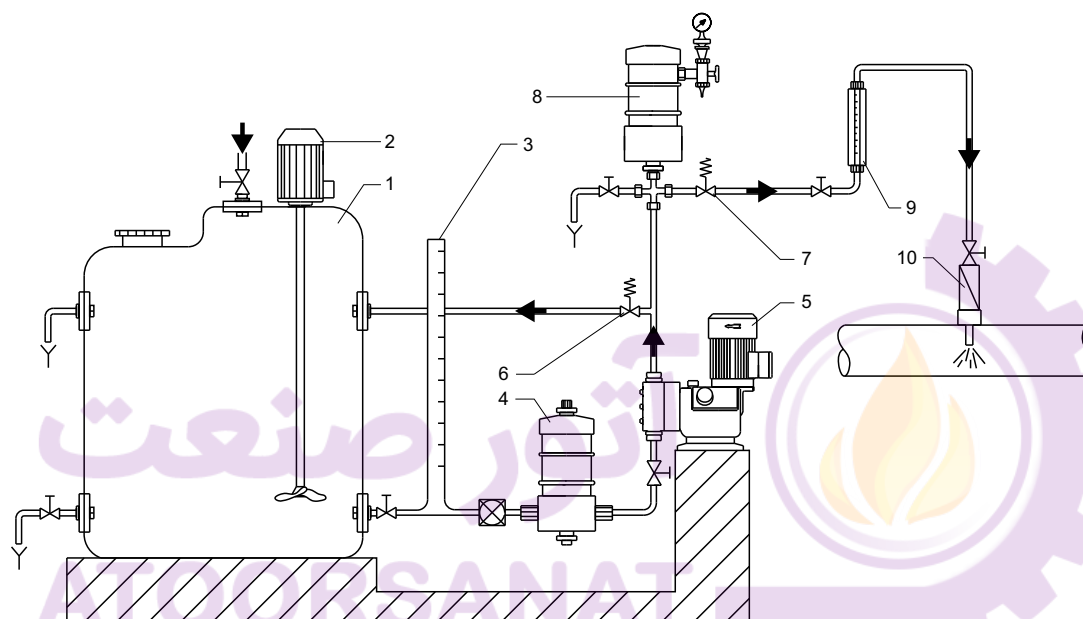


Fig. 41 Overview of a dosing system

#### Legend

Pos.	Component	Page
1	Dosing tank	
2	Electric mixer	68
3	Lateral discharge device	
4	Pulsation damper, suction side	56
5	Dosing pump	
6	Pressure-relief valve	53
7	Pressure-loading valve	54
8	Pulsation damper, discharge side	58
9	Measuring glass	
10	Injection unit	52

#### Additional accessories

Accessories	Page
Hoses	47
Foot valve	48
Suction line	49
Level-control unit	51

TM03 2124 3705

## Cables and plugs

The listed cables and plugs are suitable for the connection of a pump to external control devices, such as process controllers, flow meters, start/stop contacts and level sensors.

### Cables and plugs for DMX, DMH pumps

Socket	Application		Pins	Plug type	Cable length [m]	Product No
④	Input	Analog pulse remote switch	4	Straight	2	96609014
					5	96609016
					No cable	96698715
				Angled	2	96693246
③	Output	Error relay (stroke or low-level relay)	4	Straight	2	96609017
					5	96609019
					No cable	96696198
				Angled	2	96698716
②	Output	Analog	5	Straight	2	96632921
					5	96632922
					No cable	96609031
				Angled	2	96699697
⑤	Input	Low-level; for DDI	4	Straight	Soldered cable	96679388
		Empty tank; for DMX/DMH AR	2			
		Low-level; for DMX/DMH AR	3			
	Adapter, flat-round	Low-level	4			
⑥	Profibus	Y-connector; for DMX/DMH AR			-	96693735
		Terminating resistor			-	96693737
	Mains (DDI 222)	110-240 VAC	3	Angled	-	96698717

## Hoses

Hoses in various materials, sizes and lengths for large dosing pumps.



TM01 8958 0900

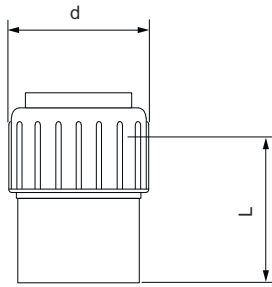
Fig. 42 Hoses

### Technical data

Inside / outside diameter [mm]	Material	Max. pressure [bar]	Length [m]	Product number
12/19	PVC, textile-reinforced	15	10	96534489
15/20	PVC	0.5	2	96535081
16/24	PVC, textile-reinforced	14	10	96441200
			1	96727425
			1.5	96727427
			3	96727426
			5	96699991
			10	96696200
19/27	PVC, textile-reinforced	12	15	96727429
			25	96634866
			50	96695788
			100	96727428
			5	96535070
25/34	PVC, textile-reinforced	10	10	96441201
			5	96535077
32/41	PVC, textile-reinforced	9	10	96535079

## Foot valves

Foot valves complete with non-return valve, strainer and hose or pipe connection for large dosing pumps.



TM04 8709 5112

Fig. 43 Foot valve

### Technical data

Max. flow rate [l/h]	Connection size	Material			Connection		Dimensions		Product number		
		Body	Gasket	Ball	Type	Inside / outside diameter or thread	d [mm]	L [mm]	Foot valve	Valve kit	
400	G 5/4 (G 1 1/4)	PP	EPDM	Ceramic	Hose clamp	19/27 mm, 25/34 mm	53		51	96527112	96731227
					Threaded	3/4" NPT			55	96566136	
		PP	FKM	Ceramic	Hose clamp	19/27 mm, 25/34 mm	53		51	96527113	96731229
					Threaded	3/4" NPT			55	96566138	
		PVDF	FKM	Ceramic	Hose clamp	19/27 mm, 25/34 mm	53		51	96527114	96731231
					Threaded	3/4" NPT			55	96566139	
		SS <sup>1</sup>	FKM	SS <sup>1</sup>	Threaded	3/4" NPT	53		55	96537921	-
1150	G 2	PP	EPDM	Glass	Threaded	Rp 1 1/4	71	81	96527115	96731232	
					Threaded	1 1/4" NPT			96566145		
		FKM	Glass	Threaded	Rp 1 1/4	71	81	96527116	96731233		
				Threaded	1 1/4" NPT			96566146			
		PVDF	FKM	Glass	Threaded	Rp 1 1/4	71	81	96527118	96731234	
					Threaded	1 1/4" NPT			96566147		
		SS <sup>1</sup>	FKM	SS <sup>1</sup>	Threaded	Rp 1 1/4	71	73	96534454	96731235	
					Threaded	1 1/4" NPT			96537970		

<sup>1</sup> Stainless steel 1.4401 (EN 10027-2)



## Rigid suction lines

Grundfos offer a comprehensive range of rigid suction lines for a variety of chemical containers.

### Rigid suction lines for stationary tanks

These suction lines are designed for the use with stationary tanks (e.g. Grundfos tanks). The length of the rigid pipe can be adapted to the customer's requirements. Rigid suction lines for stationary tanks have a foot valve with strainer. The pump is usually installed either directly on the tank, on a wall bracket or in a skid. Level switches are available as accessories and can be retrofitted.

#### Features

- Strainer included
- Available in different material combinations (see table)
- Available with different types of hoses.

#### Technical data

Connection size	Material				Pipe size [mm]	Hose size [mm]	Pipe length (L1) [m]	Hose length (L2) [m]	Product number
	Body	Seat	Ball	Gasket					
G 5/4	PVC	PTFE	Ceramic	PTFE	20/25	13/20	1	5	96693062
	PVC	SS <sup>1</sup>	SS <sup>2</sup>	EPDM	20/25	13/20	1	5	96694411
	PVC	PE	Glass	FKM	20/25	-	1	-	96646486
	PP	PTFE	Glass	FKM	20/25	-	1.3	-	96727272
	PVDF	PTFE	PTFE	PTFE	20/25	-	1.2	-	91835645
G 2	PVC	PE	Glass	FKM	32/40	-	1.25	-	96727281

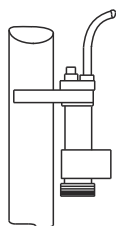
<sup>1</sup> Stainless steel 1.4571 (EN 10027-2)

<sup>2</sup> Stainless steel 1.4401 (EN 10027-2)

### Suitable level switches to clip on rigid suction lines

Reed contact level switch to clip on the suction line.

- For use as tank empty signal or as an additional level indication
- Cable length 2 metres
- Empty signal NO (normally open).



TM04 14.06 4209

Fig. 45 Level switch

Connection size	Material	Plug	Product number
G 5/4	PVC	Flat	96635069
	PVC	Round	96725716
	PP	Flat	96725712
	PP	Round	96698387
G 2	PVC	Flat	96730129

#### Dimensions

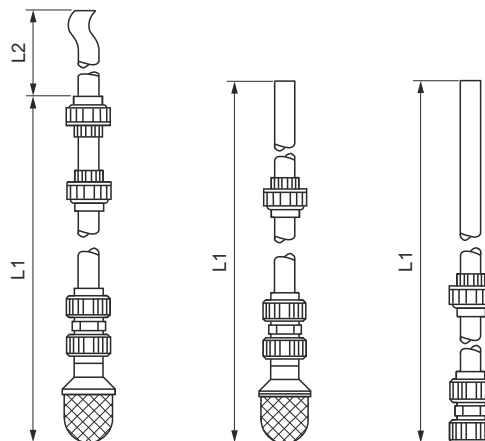


Fig. 44 Rigid suction lines for stationary tanks

TM04 1422 4409

## Rigid suction lines for drums or tanks

These suction lines are easy to remove in case the tank or drum has to be replaced. The drum adapter fits with the most standard chemical drum bungs. The position of the drum adapter is adjustable and the pipe length suits most of the common drum or tank heights. The pump is usually installed on a wall bracket or in a skid.

### Features

- Drum adapter with thread S 70 x 6
- Suitable for drum and tank heights up to 1100 mm
- Empty and low-level indication
- With flat plug for connection with DMX-AR, DMH-AR pump electronics
- Available with different PVC hose types (see table).

### Dimensions

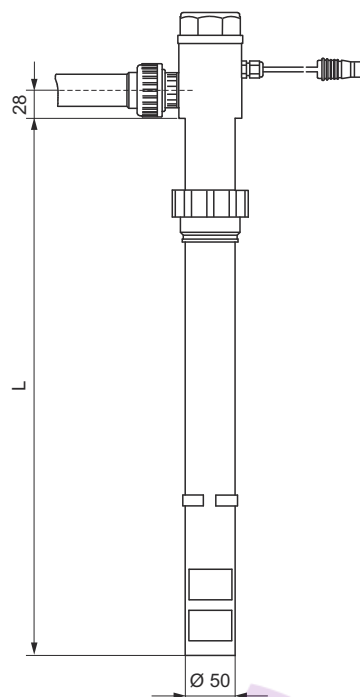


Fig. 46 Rigid suction line for drums or tanks

TM04 1411 4309

### Technical data

Connection size	Contact position <sup>2</sup>		Material				Hose ID/OD <sup>1</sup> [mm]	Length			Product number
	Empty	Low-level	Body	Seat	Ball	Gasket		Hose [m]	Pipe (L) [m]	Cable [m]	
G 5/4	NO	NO	PVC	PTFE	Glass	EPDM	13/20	5	0.6	5	96727286
						EPDM	13/20	5	1.2	3	96727287
	NC	NC				FKM	13/20	5	1.2	3	96727288
						EPDM	19/27	5	1.2	3	96727289
	NC	NC				EPDM	13/20	5	1.2	3	95707689
						FKM	13/20	5	1.2	3	95707688

<sup>1</sup> ID = Inside Diameter, OD = Outside Diameter

<sup>2</sup> NO = Normally Open, NC = Normally Closed

## Level-control units

Grundfos level-control units are suitable for dosing pumps with input for level-control.

The switch mode of the reed switch unit is factory-set to NO. The switch mode can be set to NC by turning the floater(s).

### Electrical data

- Max. voltage: 48 V
- Max. current: 0.5 A
- Max. load: 10 VA.

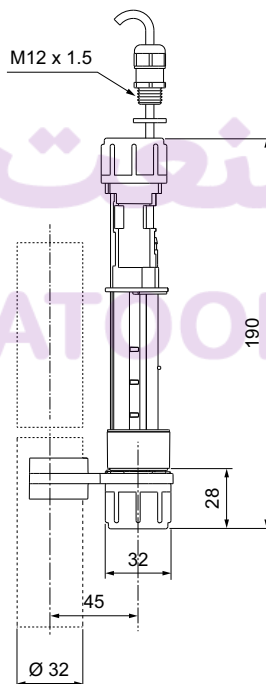
## Level-control unit for agitator protection

Level-control units for agitator protection are used for suction lances for pumps up to 60 l/h. They are clipped to the suction lances at the required switch-off height above the mixer propeller.

Level-control units can also be used for overflow protection or as an additional tank level indication.

A level-control unit for agitator protection includes:

- Reed switch unit with 1 floater
- 5 m cable with PE jacket and open wire ends
- Clip for suction lance
- Cable gland for mounting at the tank top.



TM04 8819 1413

Fig. 47 Level-control unit for agitator protection

Description	Material	Product No
Level-control unit for agitator protection	PE	98306210

## Flexible level-control unit

The flexible level-control unit is suitable for dosing pumps with level-control input and provides 2 level switches

A flexible level-control unit includes:

- Reed switch unit with 2 floaters
- 5 m of cable with PE jacket and M12 plug
- Weight that keeps the level-control unit in an upright position at the tank bottom
- PE cap,  $\varnothing 58$  mm, for assembly in Grundfos cylindrical tanks, or for use with tank adaptors.

### Dimensions

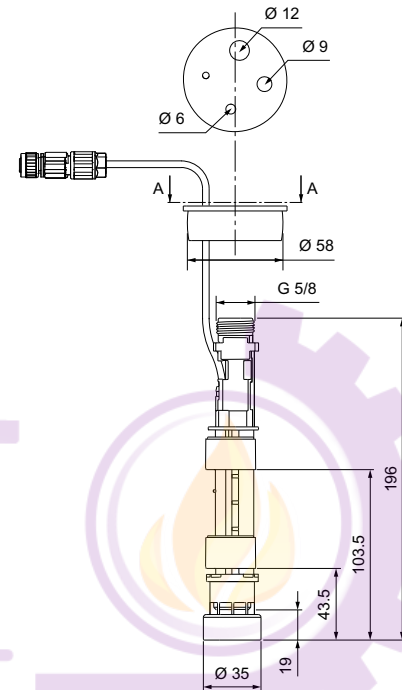


Fig. 48 Flexible level-control unit

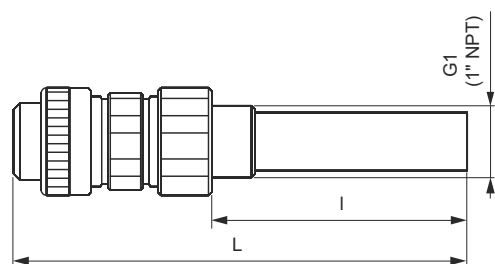
Description	Material	Product No
Flexible level-control unit	PE	98375695

TM04 8820 1413

## Injection units

### Injection units, threaded pump connection G 5/4

Maximum flow: 500 l/h



TM03 8634 2107

Fig. 49 Standard version, DN 20

Process connection size	Connection from dosing pump	Material				Dimensions		$P_{\max}^2 / T_{\max}^3$ [bar] / [°C]	Product number
		Body	Ball	Gasket	Seat	I [mm]	L [mm]		
G 1	Pipe Rp 3/4"	SS <sup>4</sup>	SS <sup>4</sup>	FKM	SS <sup>4</sup>	120	212	100 / 120	96688313
	Hose 13/20 mm pipe 20/25 mm	PVC	Glass	FKM	PTFE	60	140		10 / 20
	Hose 19/27 mm					60	117	96688309	
	Hose 13/20 mm pipe 20/25 mm	PP	Glass	FKM	PTFE	200	280	10 / 20	96688310
	Hose 19/27 mm					60	142		96688311
	Hose 13/20 mm pipe 20/25 mm	PVDF	PTFE	EPDM	PTFE	200	-	10 / 60	96688315
	Hose 19/27 mm					60	189		96688312
	Pipe 20/25 mm	PVDF	PTFE	EPDM	PTFE	60	-	10 / 40	96688316
	Hose 19/27 mm hose 25/34 mm					60	-		96688317
	Pipe 20/25 mm	PVDF	PTFE	EPDM	PTFE	60	189	10 / 60	96688314
Pipe 20/25 mm	60					189	96688314		
1" NPT	3/4" NPT male	SS <sup>4</sup>	SS <sup>4</sup>	FKM	SS <sup>4</sup>	120	212	100 / 120	96727298
	3/4" NPT female	PVC	Glass	FKM	PTFE	120	205		10 / 20
						PTFE	EPDM	PTFE	
			PVDF	PTFE	EPDM	PTFE	120	189	10 / 60

<sup>1</sup> ID = Inside Diameter, OD = Outside Diameter

<sup>2</sup> Maximum pressure

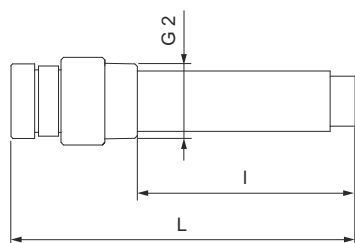
<sup>3</sup> Maximum temperature

<sup>4</sup> Stainless steel 1.4301 (EN 10027-2)

### Injection units, threaded pump connection G 2

Maximum flow: 1500 l/h.

The threaded parts are made of stainless steel.



TM03 8628 2107

Fig. 50 Standard version, DN 32

Process connection size	Connection from dosing pump	Material				Dimensions		$P_{\max}^1 / T_{\max}^2$ [bar] / [°C]	Product number
		Body	Balls	Gasket	Seat	I [mm]	L [mm]		
G 2	G 2	PVC	Glass	FKM	PE	200	275	10 / 20	96688318

<sup>1</sup> Maximum pressure

<sup>2</sup> Maximum temperature

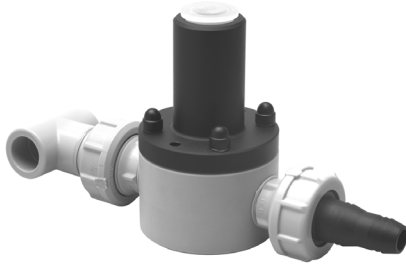
## Pressure-relief valves

### Pressure-relief valves G 5/4, G 2

The adjustable pressure-relief valve is suitable for installation in the discharge line.

The valve is fitted in a T-connection with the valve outlet connected to the tank. The valve functions as a pressure-relief valve or a safety valve, protecting the pump and the discharge line against excessive pressures.

- Diaphragm material: PTFE
- Pressure range: 0-10 bar.



GrA1041

Fig. 51 Pressure relief valve, G 5/4, G 2

### Dimensions

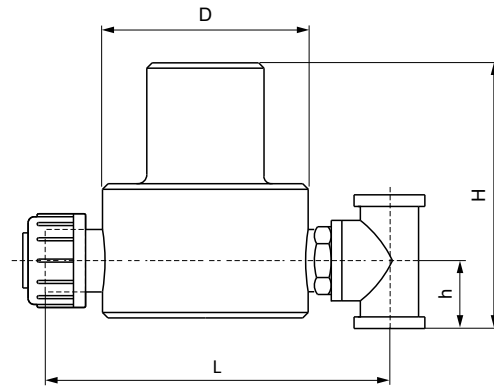


Fig. 52 Pressure relief valve, G 5/4, G 2

TM04 1445 0210

### Technical data

Max. flow rate [l/h]	Pump connection size	Material	Included connections	Dimensions				Product number
		Body/gasket	ID/OD <sup>1</sup> or thread	L [mm]	H [mm]	D [mm]	h [mm]	
400	G 5/4	PP/EPDM	Hose, 19/27 mm, 25/34 mm	153	144	90	28	96295888
		PP/FKM						96295889
		PVC/EPDM	Hose, 19/27 mm, 25/34 mm	149	144	90	28	96295890
		PVC/FKM						96295891
1150	G 2	SS <sup>2</sup>	Pipe, Rp 3/4"	-	144	134	28	96295892
		PP/EPDM	Pipe cementing diameter, 40 mm	229	218	129	70	96295893
		PP/FKM						96295894
		PVC/EPDM	Pipe cementing diameter, 40 mm	229	218	129	70	96295895
		PVC/FKM						96295896
		SS*	Pipe, Rp 1 1/4"	-	188	129	40	96295897

<sup>1</sup> ID = Inside Diameter, OD = Outside Diameter

<sup>2</sup> Stainless steel 1.4571 (EN 10027-2)

## Pressure-loading valves

### G 5/4 and G 2, flange DN 32

The adjustable pressure-loading valve is suitable for installation in the discharge line.

The valve is fitted in-line. It functions as a counter-pressure valve, optimising dosing accuracy into systems with fluctuating pressure. The valve also functions as an anti-siphoning valve when dosing into pressureless systems.

- Diaphragm material: PTFE
- Pressure range: 0-10 bar
- Opening pressure: adjustable between 1 and 5 bar, preset to 3 bar.



Fig. 53 Pressure-loading valve, G 5/4 and G 2

GRA1037

### Dimensions

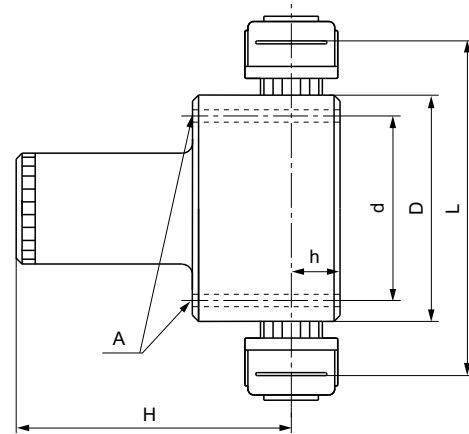


Fig. 54 Pressure-loading valve, G 5/4 and G 2

TM04 1460 0310

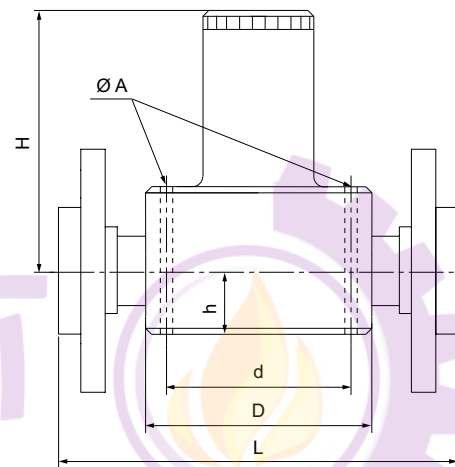


Fig. 55 Pressure-loading valve, flange DN 32

TM06 0529 0414

### Technical data

Max. flow rate [l/h]	Pump connection size	Material		Included connections		Dimensions				Product number							
		Body/gasket	ID/OD <sup>1</sup> or thread	L [mm]	H [mm]	D [mm]	h [mm]	d [mm]	A [mm]								
400	G 5/4	PP/EPDM	Hose, 19/27 mm, 25/34 mm	153	144	90	28	72	6.6	96295903							
		PP/FKM								96295904							
		PVC/EPDM	Hose, 19/27 mm, 25/34 mm							149	144	90	28	72	6.6	96295905	
		PVC/FKM														96295906	
SS <sup>2</sup>	Pipe, Rp 3/4"	-	144	134	28	72	6.6	96295907									
1150	G 2	PP/EPDM	Pipe cementing diameter, 40 mm	229	218	129	70	105	8.4							96295908	
		PP/FKM								96295909							
		PVC/EPDM	Pipe cementing diameter, 40 mm							229	218	129	70	105	8.4	96295910	
		PVC/FKM														96295911	
SS <sup>2</sup>	Pipe, Rp 1 1/4"	-	188	129	40	105	8.4	96295912									
1150	Flange DN 32	PP/EPDM	Without counterflanges	229	218	129	70	105	8.4							96727371	
		PP/FKM								96695919							
		PVC/EPDM								Without counterflanges	229	218	129	70	105	8.4	96695696
		PVC/FKM															96695695
SS <sup>2</sup>		206	188	129	40	105	8.4	96652055									

<sup>1</sup> ID = Inside Diameter, OD = Outside Diameter

<sup>2</sup> Stainless steel 1.4571 (EN 10027-2)

## Pulsation dampers

Pulsation dampers are particularly suitable for long discharge lines and small-diameter lines.

Installed in the discharge line, pulsation dampers optimise dosing accuracy and protect the pump and discharge line against pressure surges.

Depending on the system pressure, the installation of a counter-pressure valve after the pulsation damper may be required to optimise its function.

Special pulsation dampers are available for suction lines.

### Setting the pressure

Set the pressure in the pulsation damper by means of compressed air. The pressure must be the system pressure  $(p_1) \times 0.8$ .

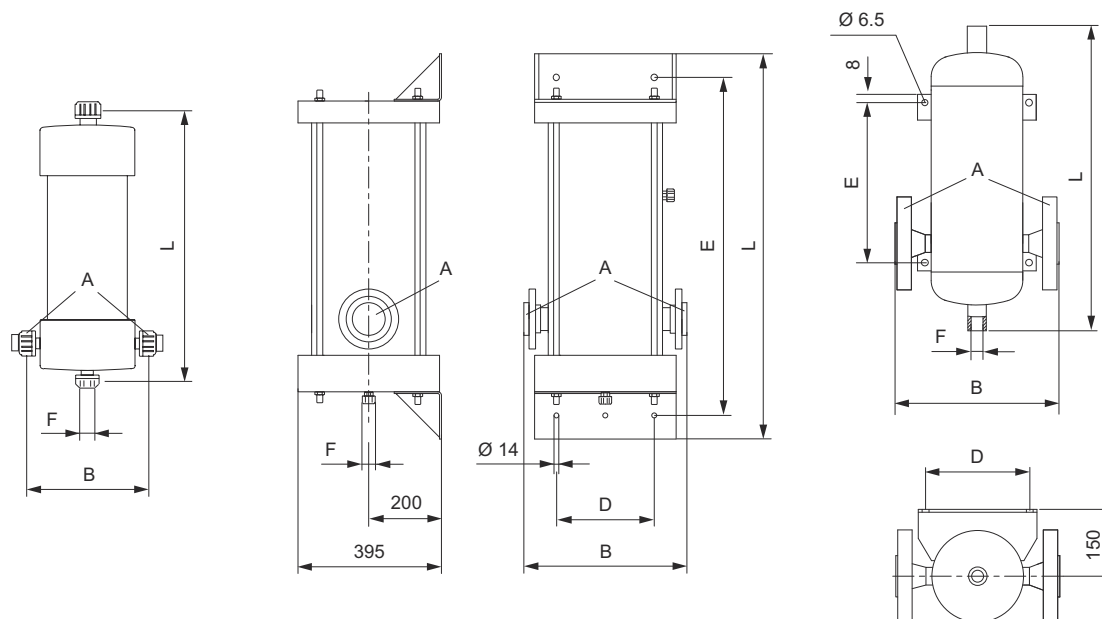
The pressure on the liquid side of the pulsation damper should be 0 when the air side is filled with air. This applies both to the initial setting of the pressure as well as to later check-ups.

To facilitate the reading of the pulsation damper pressure, a pressure gauge can be fitted directly on the damper.



Fig. 56 Pulsation dampers

## Suction-side pulsation dampers



TM04 1456 0210

**Fig. 57** Dimensions of suction-side pulsation dampers:  
 plastic, 1 to 20 litres (left), plastic, 40 litres (centre), stainless steel, 1 to 40 litres (right)

### Selection of suction-side pulsation dampers

One suction-side pulsation damper can be used for more than one pump. In this case, sum up the stroke volumes of all pumps connected to the pulsation damper and select the suitable size accordingly.

Suitable for max. stroke volume <sup>2</sup> [ml]	Volume [l]	Material		P <sub>max</sub> [bar]	Connection		Dimensions					Product number
		Body	Seals		Thread or flange A	Hose or pipe ID/OD <sup>1</sup> [mm]	B [mm]	D [mm]	E [mm]	F [mm]	L [mm]	
7	1	PVC	FKM	2	G 1	12/16, 16/20	160	-	-	DN 10	388	91835549
			EPDM	2	G 1	12/16, 16/20	160	-	-	DN 10	388	96688101
		PVDF	PTFE	6	G 3/4	14/16	145	-	-	DN 10	524	96690350
			SS <sup>3</sup>	-	40	Rp 1/4"	-	159	-	155	R 1/4"	295
45	3	PVC	FKM	2	G 1 1/2	20/25, 25/32	194	-	-	DN 10	643	96688102
			EPDM	2	G 1 1/2	20/25, 25/32	194	-	-	DN 10	643	96654767
		PVDF	PTFE	6	G 3/4	14/16	145	-	-	DN 10	1035	96688100
			SS <sup>3</sup>	-	40	Rp 3/4"	-	213	-	215	R 1/4"	375
131	5	PVC	FKM	2	G 2 1/4	32/40, 40/50	220	-	-	DN 10	900	96688103
			EPDM	2	G 2 1/4	32/40, 40/50	220	-	-	DN 10	900	96653755
		SS <sup>3</sup>	-	25	Rp 3/4"	-	248	170	245	R 1/4"	395	96688109
500	20	PP	FKM	6	Flange DN 50	-	320	200	-	DN 10	800	96688104
					Flange DN 65	-	320	200	-	DN 10	800	96688105
		SS <sup>3</sup>	-	6	Flange DN 50	-	363	273	255	R 1/4"	500	96688110
					Flange DN 65	-	363	273	255	R 1/4"	500	95702959
1000	40	PP	FKM	4	Flange DN 50	-	450	270	930	DN 10	1060	96638463
					Flange DN 65	-	450	270	930	DN 10	1060	96688106
		SS <sup>**</sup>	-	4	Flange DN 50	-	363	273	755	R 1/4"	1000	96688111
					Flange DN 65	-	363	273	755	R 1/4"	1000	96688112

**Note:** Connections may not be standard pump connection sizes.

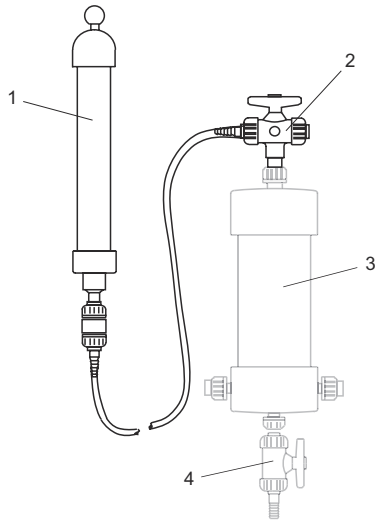
<sup>1</sup> ID = Inside Diameter, OD = Outside Diameter

<sup>2</sup> Not suitable in every case, please check with calculation based on layout

<sup>3</sup> Stainless steel 1.4301 (EN 10027-2)



Accessories for suction-side pulsation dampers



TM04 1458 0210

Fig. 58 Manual vacuum pump with 3-way ball valve, pulsation damper and drain valve

Legend

Pos.	Description
1	Manual vacuum pump (suction aid)
2	3-way ball valve
3	Pulsation damper, 1 to 20 litres
4	Drain valve



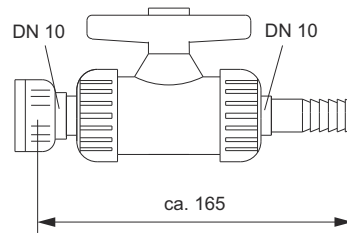
TM04 1442 4909

Fig. 59 Manual vacuum pump with pulsation damper, plastic, 1 to 20 litres

Manual vacuum pump (suction aid)

Description	Product No
Manual vacuum pump with hose and 3-way ball valve (suction aid)	96653775

Aeration and drain valves



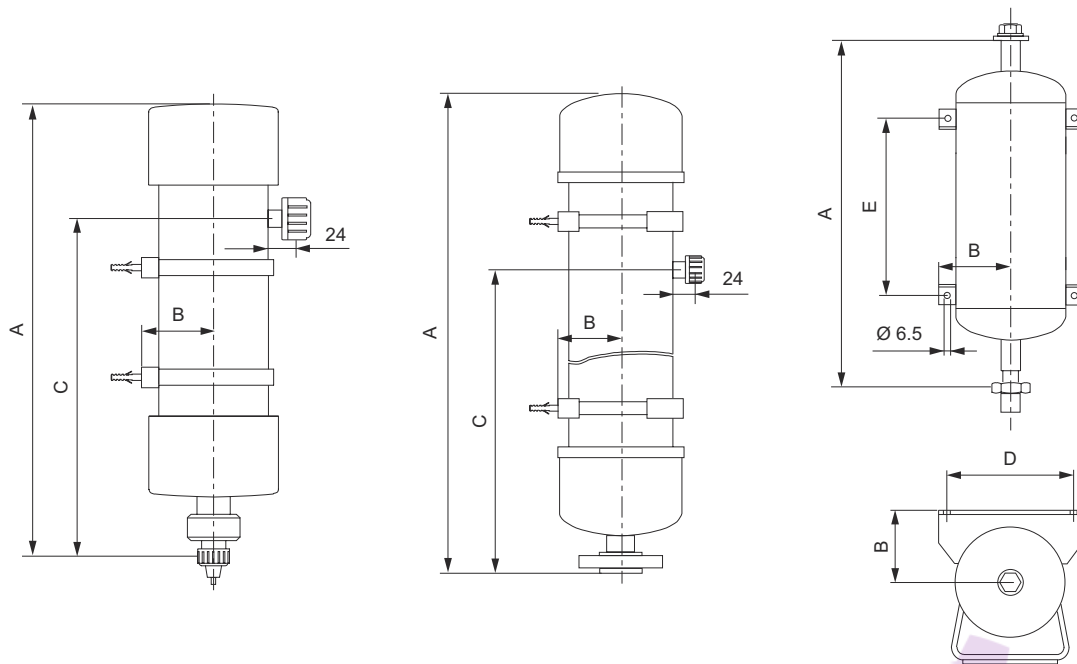
TM04 1450 0210

Fig. 60 Aeration and drain valve

Description	Connections	Material		Product number
		Body	Gaskets	
Aeration and drain valve	DN 10	PVC	FKM	96638467
	DN 10	PVC	EPDM	96693605
	DN 10	PP	FKM	96727337
	DN 10	PVC	EPDM	96727338
	DN 10	PVDF	FKM	96704688



## Discharge-side pulsation dampers without separating diaphragm



**Fig. 61** Dimensions of discharge side pulsation dampers without separating diaphragm: plastic 0.35 - 5.0 litres (left), plastic 10-40 litres (centre), stainless steel 0.35 - 40 litres (right)



**Fig. 62** Discharge-side pulsation damper, plastic, 0.35 - 5.0 litres

TM04 1457 02 10

TM04 1443 4909

### Selection of discharge-side pulsation dampers without separating diaphragm

We recommend to use only one pump per discharge-side pulsation damper.

Suitable for max. stroke volume <sup>2</sup> [ml]	Volume [l]	Material		P <sub>max</sub> [bar]	Connection			Dimensions					Product number
		Body	Seals		Thread or flange	Hose ID/OD <sup>1</sup> [mm]	Pipe ID/OD <sup>1</sup> [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	
2	0.35	PVC	FKM	10	G 5/8	4/6	-	202	47	127	-	-	95700901
			EPDM	10	G 5/8	4/6	-	202	47	127	-	-	96688114
		PP	FKM	10	G 5/8	4/6	-	202	47	127	-	-	96727147
			EPDM	10	G 5/8	4/6	-	202	47	127	-	-	96727148
		PVDF	FKM	10	G 5/8	4/6	4/6	202	47	127	-	-	96727150
			EPDM	10	G 5/8	4/6	4/6	202	47	127	-	-	96727151
7	1	SS <sup>3</sup>	-	16	Rp 1/4"	-	-	215	50	-	83	85	96727145
			PVC	FKM	10	G 1 1/4	6/12	10/12	351	60	260	-	-
		PVC	EPDM	10	G 1 1/4	6/12	10/12	351	60	260	-	-	96688121
			FKM	10	G 1 1/4	-	12/16	278	60	165	-	-	96688123
		PP	EPDM	10	G 1 1/4	-	12/16	278	60	165	-	-	96688124
			FKM	10	G 1 1/4	-	14/16	278	60	165	-	-	96688125
		PVDF	FKM	10	G 1 1/4	-	14/16	278	60	165	-	-	96619905
			EPDM	10	G 1 1/4	-	14/16	278	60	165	-	-	96619905
		SS <sup>3</sup>	-	16	Rp 1/4"	-	-	277	65	-	110	125	96688122
			19	PVC	FKM	10	G 1 1/4	13/20	20/25	764	60	675	-
EPDM	10	G 1 1/4			13/20	20/25	764	60	675	-	-	96688127	
PP	FKM	10		G 1 1/4	-	20/25	655	60	565	-	-	96688129	
	EPDM	10		G 1 1/4	-	20/25	655	60	565	-	-	96688130	
PVDF	FKM	10		G 1 1/4	-	20/25	655	60	565	-	-	96688131	
	EPDM	10		G 1 1/4	-	20/25	655	60	565	-	-	96688132	
45	5	SS <sup>3</sup>	-	16	Rp 3/4"	-	-	355	87	-	150	160	96688128
			PVC	FKM	10	G 1 1/4	13/20	20/25	841	70	750	-	-
		PVC	EPDM	10	G 1 1/4	13/20	20/25	841	70	750	-	-	96654923
			FKM	10	G 1 1/4	-	20/25	700	70	608	-	-	96688135
		PP	EPDM	10	G 1 1/4	-	20/25	700	70	608	-	-	96688136
			FKM	10	G 1 1/4	-	20/25	700	70	608	-	-	96688137
		PVDF	FKM	10	G 1 1/4	-	20/25	700	70	608	-	-	96688138
			EPDM	10	G 1 1/4	-	20/25	700	70	608	-	-	96688138
		SS <sup>3</sup>	-	16	Rp 3/4"	-	-	345	100	-	170	190	96688134
			75	PVC	FKM	10	Flange DN 32	-	32/40	829	95	610	-
EPDM	10	Flange DN 32			-	32/40	829	95	610	-	-	96688140	
PP	FKM	10		Flange DN 32	-	32/40	829	95	605	-	-	96688142	
	EPDM	10		Flange DN 32	-	32/40	829	95	605	-	-	96688143	
PVDF	FKM	10		Flange DN 32	-	32/40	829	95	605	-	-	96688144	
	EPDM	10		Flange DN 32	-	32/40	829	95	605	-	-	96688145	
SS <sup>3</sup>	-	16	-	-	-	633	100	-	170	460	96688141		
	131	PP	FKM	6	Flange DN 50	-	50/63	1056	108	812	-	-	96688146
EPDM			6	Flange DN 50	-	50/63	1056	108	812	-	-	96688147	
PP		FKM	6	Flange DN 65	-	65/75	1056	108	812	-	-	96688149	
		EPDM	6	Flange DN 65	-	65/75	1056	108	812	-	-	96688150	
SS <sup>3</sup>		-	6	Flange DN 50	-	-	525	150	-	270	310	96639884	
		-	6	Flange DN 65	-	-	525	150	-	254	310	96688148	
500	40	PP	FKM	4	Flange DN 65	-	65/75	896	166	662	-	-	96638405
			EPDM	4	Flange DN 65	-	65/75	896	166	662	-	-	96688152
		SS <sup>3</sup>	-	4	-	-	935	150	-	254	720	96688151	

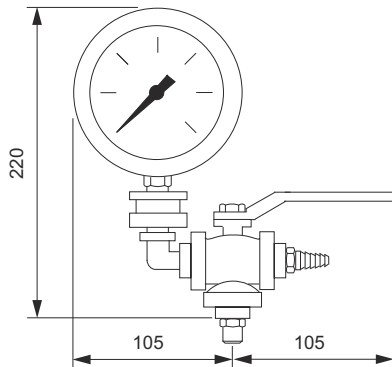
<sup>1</sup> ID = Inside Diameter, OD = Outside Diameter

<sup>2</sup> Not suitable in every case, please check with calculation based on layout

<sup>3</sup> Stainless steel 1.4301 (body), stainless steel 1.4571 (connections), according to EN 10027-2

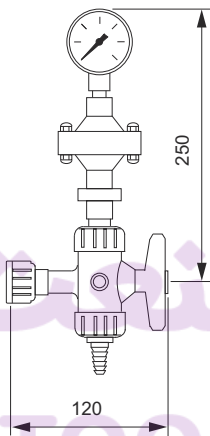
### Pressure gauge for discharge-side pulsation dampers without separating diaphragm

Pressure gauges for pulsation dampers are available on request together with the respective pulsation damper.



TM04 1453 0210

**Fig. 63** Pressure gauge for discharge-side pulsation dampers, stainless steel



TM04 1452 0210

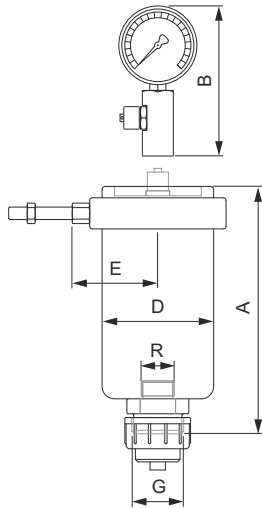
**Fig. 64** Pressure gauge for discharge-side pulsation dampers, PVC and PP

Max. pressure [bar]	Material		Product number
	Body	Gaskets	
10	PVC <sup>1</sup>	FKM	95731730
	PVC <sup>1</sup>	EPDM	95731391
	PP <sup>1</sup>	FKM	95731047
	PP <sup>1</sup>	EPDM	98031546
	PVDF <sup>1</sup>	FKM	98031547
	PVDF <sup>1</sup>	EPDM	98031548
	SS <sup>2</sup>	-	98031549
40	SS <sup>2</sup>	-	98031550

<sup>1</sup> Pressure gauges for plastic pulsation dampers are equipped with diaphragm pressure transducers

<sup>2</sup> Stainless steel 1.4571 (EN 10027-2)

## Discharge-side pulsation dampers with separating diaphragm



TM04 1459 0210

**Fig. 65** Discharge-side pulsation damper with separating diaphragm with pressure gauge



**Fig. 66** Discharge-side pulsation dampers

TM04 1444 4909

### Selection of discharge-side pulsation dampers with separating diaphragm, DN 8

We recommend to use only one pump per discharge-side pulsation damper.

Suitable for max. stroke volume <sup>2</sup> [ml]	Volume [l]	Material		P <sub>max</sub> [bar]	Connection			Dimensions [mm]				Product number	
		Body	Diaphragm (Seals)		G (ext.)	R (int.)	Hose ID/OD <sup>1</sup>	Pipe ID/OD <sup>1</sup> or thread	A	B	D		E
2	0.07	PVC	FKM	10	G 5/8	G 3/8	4/6 mm 6/12 mm	10/12 mm	123	120	60	58	96688153
			EPDM	10	G 5/8	G 3/8	4/6 mm 6/12 mm	10/12 mm	123	120	60	58	96688154
		SS <sup>3</sup>	FKM	200	G 5/8	G 3/8	Rp 1/4"	118	136	55	53	96688155	
			EPDM	200	G 5/8	G 3/8	Rp 1/4"	118	136	55	53	96688156	
		PP	10	G 5/8	G 3/8	12/16 mm	123	120	60	58	96688157		
			EPDM	10	G 5/8	G 3/8	12/16 mm	123	120	60	58	96688158	
7	0.15	PVC	FKM	10	G 5/8	G 1/2	4/6 mm 6/12 mm	10/12 mm	160	120	80	67	96697351
			EPDM	10	G 5/8	G 1/2	4/6 mm 6/12 mm	10/12 mm	160	120	80	67	96688159
		SS <sup>3</sup>	FKM	180	G 5/8	G 1/2	Rp 1/4"	143	136	70	64	96688161	
			EPDM	180	G 5/8	G 1/2	Rp 1/4"	143	136	70	64	96688163	
		PP	FKM	10	G 5/8	G 1/2	12/16 mm	160	120	80	67	96688164	
			EPDM	10	G 5/8	G 1/2	12/16 mm	160	120	80	67	96688165	
PVDF	PTFE	20	G 5/8	G 1/2	14/16 mm	206	136	64	58	96688166			

<sup>1</sup> ID = Inside Diameter, OD = Outside Diameter

<sup>2</sup> Not suitable in every case, please check with calculation based on layout

<sup>3</sup> Stainless steel 1.4404 (EN 10027-2)

### Options

- Basic type without connections and mounting material
- Different connection
- Different pre-charge pressure
- With included pressure gauge.

All options are available on request.

### Selection of discharge-side pulsation dampers with separating diaphragm, DN 20

We recommend to use only one pump per discharge-side pulsation damper.

Suitable for max. stroke volume <sup>2</sup> [ml]	Volume [l]	Material		P <sub>max</sub> [bar]	Connections			Dimensions [mm]				Product number	
		Body	Diaphragm (seals)		G (ext.)	R (int.)	Hose ID/OD <sup>1</sup>	Pipe ID/OD <sup>1</sup> or thread	A	B	D		E
19	0.35	PVC	FKM	10	G 1 1/4	G 3/4	13/20 mm		198	120	90	71	96688167
			EPDM	10	G 1 1/4	G 3/4	13/20 mm	20/25 mm	198	120	90	71	96688168
		SS <sup>3</sup>	FKM	130	G 1 1/4	G 1/2		Rp 3/4"	192	136	80	67	96688169
			EPDM	130	G 1 1/4	G 1/2		Rp 3/4"	192	136	80	67	96688171
		PP	FKM	10	G 1 1/4	G 3/4		20/25 mm	198	120	90	71	96688172
			EPDM	10	G 1 1/4	G 3/4		20/25 mm	198	120	90	71	96688173
0.3	PVDF	PTFE	20	G 1 1/4	G 1/2		20/25 mm	270	136	78	67	96688175	
45	0.65	PVC	FKM	10	G 1 1/4	G 3/4	13/20 mm	20/25 mm	258	120	100	78	96688176
			EPDM	10	G 1 1/4	G 3/4	13/20 mm	20/25 mm	258	120	100	78	96688177
		SS <sup>3</sup>	FKM	50	G 1 1/4	G 3/4		Rp 3/4"	233	136	90	67	96688179
			EPDM	50	G 1 1/4	G 3/4		Rp 3/4"	233	136	90	67	96688181
		PP	FKM	10	G 1 1/4	G 3/4		20/25 mm	258	120	100	78	96688183
			EPDM	10	G 1 1/4	G 3/4		20/25 mm	258	120	100	78	96688184
0.7	PVDF	PTFE	20	G 1 1/4	G 3/4		20/25 mm	253	136	98	78	96688185	
75	1.4	PVC	FKM	10	G 1 1/4	G 1	13/20 mm	20/25 mm	323	120	130	92	96688186
			EPDM	10	G 1 1/4	G 1	13/20 mm	20/25 mm	323	120	130	92	96688187
		SS <sup>3</sup>	FKM	40	G 1 1/4	G 3/4		Rp 3/4"	273	136	110	78	96688188
			EPDM	40	G 1 1/4	G 3/4		Rp 3/4"	273	136	110	78	96688189
		PP	FKM	10	G 1 1/4	G 1		20/25 mm	323	120	130	92	96688190
			EPDM	10	G 1 1/4	G 1		20/25 mm	323	120	130	92	96688191
	PVDF	PTFE	20	G 1 1/4	G 3/4		20/25 mm	323	136	112	84	96736538	

<sup>1</sup> ID = Inside Diameter, OD = Outside Diameter

<sup>2</sup> Not suitable in every case, please check with calculation based on layout

<sup>3</sup> Stainless steel 1.4404 (EN 10027-2)

#### Options

- Basic type without connections and mounting material
- Different connection
- Different pre-charge pressure
- With included pressure gauge.

All options are available on request.

### Selection of discharge-side pulsation dampers with separating diaphragm, DN 32 and DN 65

We recommend to use only one pump per discharge-side pulsation damper.

Suitable for max. stroke volume <sup>2</sup> [ml]	Volume [l]	Nominal width	Material		P <sub>max</sub> [bar]	Connection			Dimensions [mm]				Product number
			Body	Diaphragm (seals)		G (ext.)	R (int.)	Pipe ID/OD <sup>1</sup> or thread	A	B	D	E	
131	2.6	DN 32	PVC	FKM	10	G 2	G 1	32/40 mm	362	120	160	107	96688192
				EPDM	10	G 2	G 1	32/40 mm	362	120	160	107	96688193
			SS <sup>3</sup>	FKM	30	G 2	G 1	Rp 1 1/4"	332	136	140	90	96688194
				EPDM	30	G 2	G 1	Rp 1 1/4"	332	136	140	90	96688195
			PP	FKM	10	G 2	G 1	32/40 mm	362	120	160	107	96688196
				EPDM	10	G 2	G 1	32/40 mm	362	120	160	107	96688197
PVDF	PTFE	20	G 2	G 1	32/40 mm	357	136	158	107	96727195			
256	5.6	DN 32	PVC	FKM	10	G 2	G 1 1/2	32/40 mm	495	120	198	127	96688198
				EPDM	10	G 2	G 1 1/2	32/40 mm	495	120	198	127	96688199
			SS <sup>3</sup>	FKM	40	G 2	G 1 1/2	Rp 1 1/4"	451	136	170	127	96688200
				EPDM	40	G 2	G 1 1/2	Rp 1 1/4"	451	136	170	127	96688201
			PP	FKM	10	G 2	G 1 1/2	32/40 mm	495	120	198	127	96688202
				EPDM	10	G 2	G 1 1/2	32/40 mm	495	120	198	127	96688203
PVDF	PTFE	20	G 2	G 1	32/40 mm	527	136	158	107	96688204			
500	9.5	DN 65	PVC	FKM	10	G 2	G 2	65/75 mm	560	120	250	133	96688205
				EPDM	10	G 2	G 2	65/75 mm	560	120	250	133	96688206
			SS <sup>3</sup>	FKM	30	Flange	G 2		502	136	220	111/119	95702090
				EPDM	30	Flange	G 2		502	136	220	111/119	95702091
			PP	FKM	10	Flange	G 2		560	120	250	133	95702092
				EPDM	10	Flange	G 2		560	120	250	133	95702093
PVDF	PTFE	20	Flange	G 1 1/4		525	136	212	111/113	95702094			

<sup>1</sup> ID = Inside Diameter, OD = Outside Diameter

<sup>2</sup> Not suitable in every case, please check with calculation based on layout

<sup>3</sup> Stainless steel 1.4404 (EN 10027-2)

#### Options

- Basic type without connections and mounting material
- Different connection
- Different pre-charge pressure
- With included pressure gauge.

All options are available on request.

#### Pressure gauge for discharge-side pulsation dampers with separating diaphragm

The following pressure gauges fit for every size of discharge side pulsation damper with separating diaphragm, select suitable variant according to max. pressure of the damper.

Description	Pressure [bar]	Product No
Pressure gauge for discharge-side pulsation damper with separating diaphragm	10	95730263
	25	95730264
	60	98031543
	160	98031544
	250	98031545

### Accessories for discharge side pulsation dampers

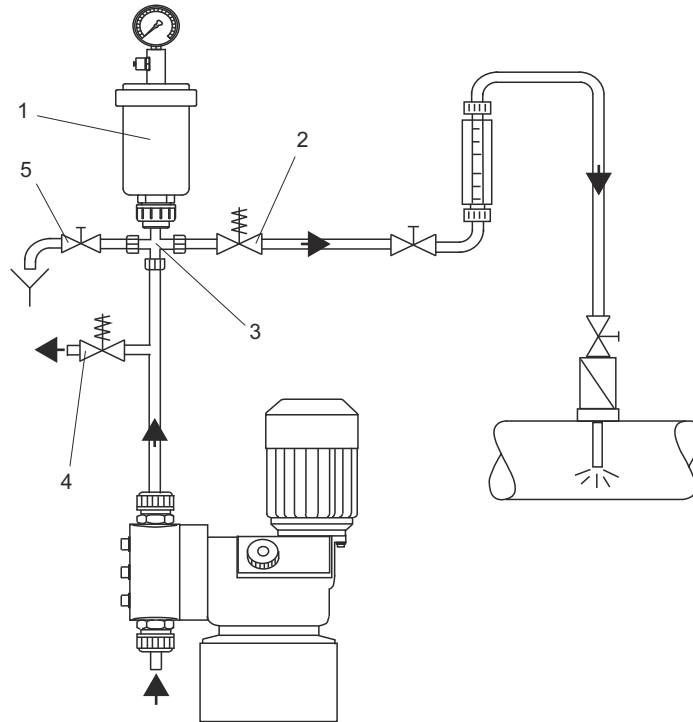
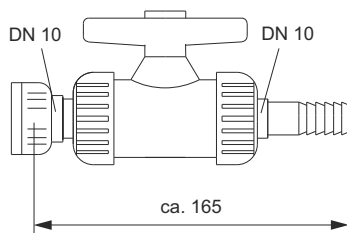


Fig. 67 Flow scheme of a discharge-side pulsation damper with separating diaphragm

#### Legend

Pos.	Description
1	Pulsation damper
2	Pressure loading valve
3	Cross piece
4	Pressure relief valve
5	Drain valve

#### Aeration and drain valves



TM04 1450 0210

Fig. 68 Aeration and drain valve

Description	Connections	Material		Product No
		Body	Gaskets	
Aeration and drain valve	DN 10	PVC	FKM	96638467
	DN 10	PVC	EPDM	96693605
	DN 10	PP	FKM	96727337
	DN 10	PVC	EPDM	96727338
	DN 10	PVDF	FKM	96704688



## Cross pieces

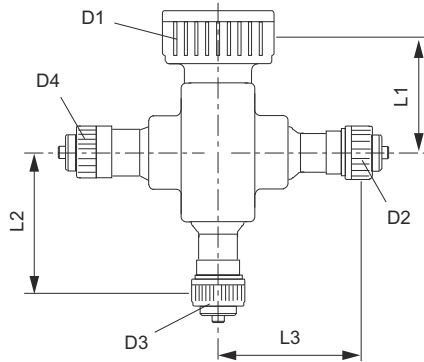


Fig. 69 Cross pieces G 5/8, G 3/4 and G 5/4

TM04 1448 0210

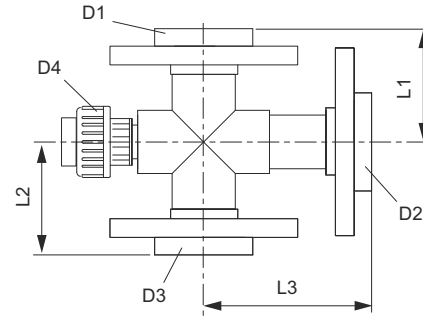


Fig. 70 Cross pieces with flanges

TM04 1449 0210

## Pos. Description

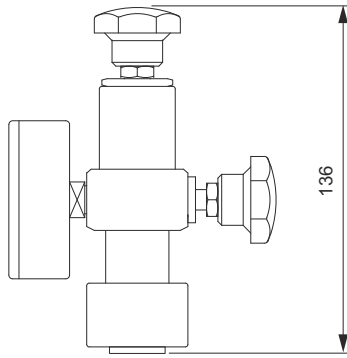
D1	Connection to pulsation damper
D2	Connection to discharge side
D3	Connection to dosing pump
D4	Connection to drain valve

Material	PN <sup>1</sup> [bar]	Connections				Dimensions [mm]				Product number
		D1	D2	D3	D4	L1	L2	L3	L4	
PVC	10	G 5/4	G 5/8 <sup>2</sup>	G 5/8	DN 10 (G 3/4)	55	73	73	77	96699618
PVC	10	G 5/4	G 5/4	G 5/4	DN 10 (G 3/4)	55	55	55	77	96694022
PP	10	G 5/4	G 5/4	G 5/4	DN 10 (G 3/4)	62	62	55	77	96727346
PP	10	G 5/4	G 3/4	G 3/4	DN 10 (G 3/4)	62	62	61	55	96727347
PVDF	10	G 5/4	G 3/4	G 3/4	DN 10 (G 3/4)	62	62	55	55	96727348
PVDF	10	G 5/4	G 5/4	G 5/4	DN 10 (G 3/4)	62	62	61	55	96727349
PVC	10	Flange DN 32	Flange DN 32	Flange DN 32	G 5/4	85	85	125	83	96699615
PVC	10	Flange DN 50	Flange DN 50	Flange DN 50	G 5/4	113	113	115	139	96727350
PVC	10	G 5/8	G 5/8	G 5/8	G 5/8	66	73	73	77	96727351
PP	10	G 5/8	G 5/8	G 5/8	G 5/8	73	66	45	53	96727352

<sup>1</sup> at +20 °C<sup>2</sup> use the G 5/8 reducing piece supplied

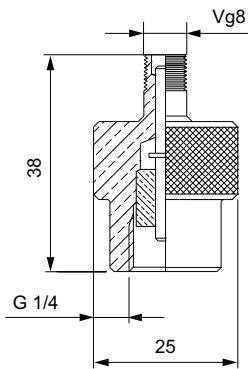
Other cross pieces on request.

## Filling devices



TM04 1447 0210

Fig. 71 Filling device



TM04 1355 2909

Fig. 72 Adapter for filling valve

Description	Product No
Adapter for filling valve (tyre valve) for pulsation dampers up to 8 bar, for use in conjunction with compressed-air filling device or pressure gauge	96727332
Compressed-air filling device for plastic pulsation dampers, for an existing compressed-air plant, control lever, pressure gauge and hose with filling valve, for use in conjunction with adapter	96727335
Compressed-air filling device for plastic pulsation dampers, with 6-litre compressed-air cylinder, control lever, pressure gauge and hose with filling valve, for use in conjunction with adapter	96699614
Filling device for plastic or stainless-steel pulsation dampers, with pressure gauge, up to 25 bar, compressed-air filled via G 1/4 connection	96727342
Filling device for stainless-steel pulsation dampers, with pressure gauge, up to 60 bar, compressed-air filled via G 1/4 connection	96727343
Filling device for stainless-steel pulsation dampers, with pressure gauge, up to 160 bar, compressed-air filled via G 1/4 connection	96727344
Filling device for stainless-steel pulsation dampers, with pressure gauge, up to 250 bar, compressed-air filled via G 1/4 connection	96727345

## Pump connection kits

Retrofit pump connection kits and inlay kits for the integration of Grundfos standard pumps into installations with various sizes of hoses or pipes.

A pump connection kit includes:

- 1 set of inlays
- 1 union nut

An inlay kit includes:

- 2 sets of inlays

### Connection kits for DMX and DMH dosing pumps

Connection size	Material	Hose ID/OD <sup>1</sup> , material	Pipe ID/OD <sup>1</sup> or thread	Max. pressure [bar]	Product No
G 5/4	PP	-	20/25 mm	10	91835697
		19/27 mm, PVC	-	10	96727574
		25/34 mm, PVC	-	10	91835696
	PVC	13/20 mm, PVC	-	10	91835696
		13/20 mm, PVC	20/25 mm	10	96704663
		19/27 mm, PVC	-	10	96679391
		19/27 mm, PVC	-	10	96699969
		25/34 mm, PVC	-	10	96701989
		-	20/25 mm	16	96701989
	PVDF	-	3/4" NPT	10	91835723
		12/ mm, PTFE	-	4	96727620
		19/27 mm, PVC	-	10	96727612
		25/34 mm, PVC	-	10	91835698
	SS <sup>2</sup>	-	20/25 mm	10	91835726
		-	3/4" NPT	10	91835726
		-	19/22 mm	100	96727555
-		G 3/4	100	96700184	
-		3/4" NPT	100	91835724	
-		G 3/4	100	96727523	
-		3/4" NPT	100	91835725	
-		3/4" NPT	100	91835725	
G 2	PP	-	32/40 mm	10	96727596
	PP/PVC	-	32/40 mm	16	96727610
	PVC	32/42 mm, PVC	-	0	96727598
		-	32/40 mm	10	96700091
	PVDF	-	1 1/4" NPT	10	91835730
		-	32/40 mm	16	96727597
		-	1 1/4" NPT	10	96727541
		-	G 1 1/4	16	96727595
Flange DN 32	SS <sup>2</sup>	-	1 1/4" NPT	16	91835729
	PP	-	32/40 mm	10	96727589
	PP/PVC	-	32/40 mm	10	96727586
	PVC	-	32/40 mm	10	91835728
	PVDF	-	32/40 mm	16	96727588
	SS*	-	G 1 1/4	10	91835727
DN 65	Y <sup>3</sup>	-	G 1 1/4	10	96727609
	PP	-	65/75 mm	10	96727603
	PVC	-	65/75 mm	10	96727602
	SS <sup>2</sup>	-	65/75 mm	10	96727604

<sup>1</sup> ID = Inside Diameter, OD = Outside Diameter

<sup>2</sup> Stainless steel 1.4571 (EN 10027-2)

<sup>3</sup> Alloy C-4 (NiMo16Cr16Ti) material number 2.4610 (EN 10027-2)

## Electric mixers

Electric mixers are intended for the mixing and dissolving of non-abrasive, non-flammable and non-explosive liquids. They ensure that the liquid in the dosing tank is mixed constantly. With a frequency of 50 Hz they run at 1500 rpm approximately, and are suitable for liquids with low to medium viscosity.

Different versions of electric mixers are available:

- Stainless-steel version
- PP version with or without sealing flange
- Versions for various tank sizes from 60 litres up to 1000 litres

### Dimensions

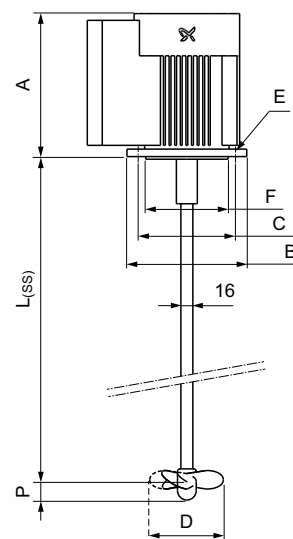


Fig. 73 Electric mixer, stainless-steel version

TM04 8638 4112

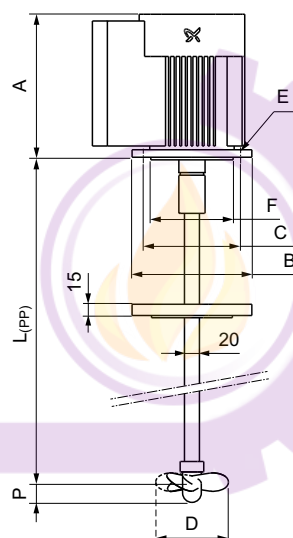


Fig. 74 Electric mixer, PP version, with sealing flange

TM04 8639 4112

Electric mixer	L <sub>(ss)</sub> [mm]	L <sub>(pp)</sub> [mm]	P [mm]	D [mm]	B [mm]	C [mm]	E [mm]	F [mm]	A [mm]
For 60-litre tank	450	452	25	88	140	115	9	95	210
For 100-litre tank	691	693	25	88	140	115	9	95	210
For 200.litre tank	698	700	25	100	160	130	9	110	191
For 300-litre tank	950	952	25	100	160	130	9	110	191
For 500-litre tank	1100	1102	28	125	160	130	9	110	191
For 1000-litre tank	1150	1152	28	125	200	165	11	130	231

## Product data

Electric mixer for tank size [l]	Nominal shaft length [mm]	Shaft type	Product number	
			Single-phase motor	Three-phase motor
60	450	SS	98164569	98165309
		PP	98164573	98165310
		PP, with sealing flange	98164575	98165318
100	690	SS	98164606	98165355
		PP	98164607	98165357
		PP, with sealing flange	98164609	98165382
200	690	SS	98164987	98165385
		PP	98164990	98165386
		PP, with sealing flange	98165152	98165391
300	950	SS	98165172	98165393
		PP	98165175	98165432
		PP, with sealing flange	98165177	98165433
500	1100	SS	98165253	98165435
		PP	98165258	98165436
		PP, with sealing flange	98165259	98165437
1000	1150	SS	98165287	98165439
		PP	98165290	98165440
		PP, with sealing flange	98165304	98165451

## Motor data

Electric mixer	Power rating [kW]	Motor phases	Voltage [V]	Frequency [Hz]	Enclosure class	Insulation class
For 60-litre tank, 100-litre tank	0.09	1	220-240	50/60	IP65	F
		3	220-240 / 380-420 (440-480)	50/60 (60)		
For 200-litre tank, 300-litre tank, 500-litre tank	0.25	1	220-230	50	IP55	F
		3	220-240 / 380-415	50/60		
For 1000-litre tank	0.55	1	220-230	50	IP55	F
		3	220-240 / 380-415	50/60		

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## Wall bracket

Wall bracket for easy installation of a dosing pump on a wall.

### Dimensions

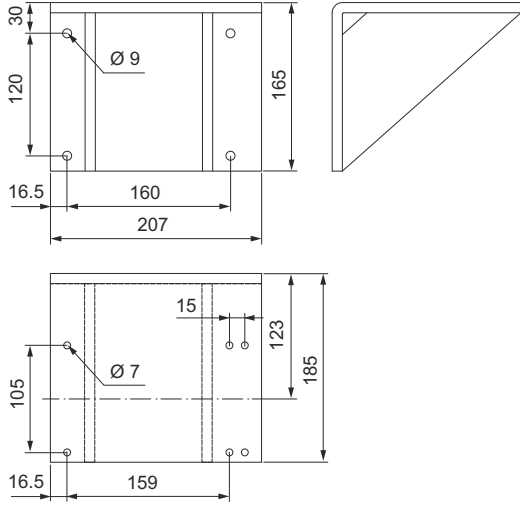


Fig. 75 Wall bracket for DMX 221

TM04 1527 0910

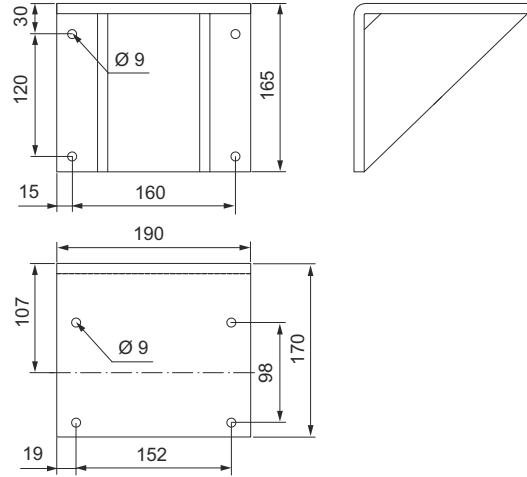


Fig. 76 Wall bracket for DMX 226 and DMH 251/251

TM04 1528 0910

For pump type	Material	Including fixing material for	Product No
DMX 221	PP	Pump on bracket, bracket on wall	91836471
DMX 226M and DMH 251/252	PP	Pump on bracket, bracket on wall	96623672



## 10. 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. Please be careful when handling these liquids.

Pumped liquid (20 °C)			Material								
			Dosing head				Gasket			Valve ball	
Description	Chemical formula	Concentration [%]	PP	PVDF	SS 1.4571	PVC	FKM	EPDM	PTFE	Ceramic	Glass
		60	•	•	•	•	-	•	•	•	•
		85	•	•	•	-	-	-	•	•	•
Aluminium chloride	AlCl <sub>3</sub>	40	•	•	-	•	•	•	•	•	•
Aluminium sulphate	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	60	•	•	•	•	•	•	•	•	-
Ammonia, aqueous	NH <sub>4</sub> OH	28	•	•	•	•	-	•	•	•	-
Calcium hydroxide <sup>5</sup>	Ca(OH) <sub>2</sub>		•	•	•	•	•	•	•	•	•
Calcium hypochlorite	Ca(OCl) <sub>2</sub>	20	○	•	-	•	•	•	•	•	•
		10	•	•	•	•	•	•	•	•	•
Chromic acid <sup>3</sup>	H <sub>2</sub> CrO <sub>4</sub>	30	-	•	-	•	•	○	•	•	•
		50	-	•	-	•	•	-	•	•	•
Copper sulphate	CuSO <sub>4</sub>	30	•	•	•	•	•	•	•	•	•
Ferric chloride <sup>1</sup>	FeCl <sub>3</sub>	45	•	•	-	•	•	•	•	•	•
Ferric sulphate <sup>1</sup>	Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	60	•	•	•	•	•	•	•	•	•
Ferrous chloride	FeCl <sub>2</sub>	37	•	•	-	•	•	•	•	•	•
Ferrous sulphate	FeSO <sub>4</sub>	30	•	•	•	•	•	•	•	•	•
Fluosilicic acid	H <sub>2</sub> SiF <sub>6</sub>	40	•	•	○	•	-	○	•	•	-
Hydrochloric acid	HCl	< 25	•	•	-	•	•	•	•	•	•
		25-37	•	•	-	•	•	○	•	•	•
Hydrogen peroxide	H <sub>2</sub> O <sub>2</sub>	30	•	•	•	•	•	•	•	•	•
		30	•	•	•	•	•	•	•	•	•
Nitric acid	HNO <sub>3</sub>	40	○	•	•	•	•	-	•	•	•
		70	-	•	•	-	•	-	•	•	•
Peracetic acid	CH <sub>3</sub> COOOH	5-15	○	•	•	○	-	○	•	•	•
Potassium hydroxide	KOH	50	•	-	•	•	-	•	•	•	-
Potassium permanganate	KMnO <sub>4</sub>	10	•	•	•	•	○	•	•	•	•
Sodium chlorate	NaClO <sub>3</sub>	30	•	•	•	•	•	•	•	•	•
Sodium chloride	NaCl	30	•	•	-	•	•	•	•	•	•
Sodium chlorite	NaClO <sub>2</sub>	20	•	•	-	○	•	•	•	•	•
		20	•	-	•	•	•	•	•	•	-
Sodium hydroxide	NaOH	30	•	•	•	•	○	•	•	•	-
		50	•	•	•	•	-	•	•	•	-
Sodium hypochlorite	NaOCl	12-15	-	•	-	•	•	•	•	•	•
Sodium sulphide	Na <sub>2</sub> S	30	•	•	•	•	•	•	•	•	-
Sodium sulphite	Na <sub>2</sub> SO <sub>3</sub>	20	•	•	•	•	•	•	•	•	-
Sodium thiosulfate	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	10	•	•	•	•	•	•	•	•	•
Sulphurous acid	H <sub>2</sub> SO <sub>3</sub>	6	•	•	•	•	•	•	•	•	○
		< 80	•	•	-	•	•	○	•	•	○
Sulphuric acid <sup>2</sup>	H <sub>2</sub> SO <sub>4</sub>	80-96	○	•	-	•	•	-	•	•	-
		98	-	•	•	-	○	-	•	•	-

• Resistant

○ Limited resistance

- Not resistant

1 Risk of crystallisation

2 Reacts violently with water and generates much heat (pump should be absolutely dry before dosing sulphuric acid)

3 Must be fluoride-free when glass balls are used

5 Once the pump is stopped, calcium hydroxide will sediment rapidly

For further information, see "Pumped liquid guide".

## 11. Grundfos Product Center

Online search and sizing tool to help you make the right choice.

<http://product-selection.grundfos.com>



**SIZING** enables you to size a pump based on entered data and selection choices.

**REPLACEMENT** enables you to find a replacement product. Search results will include information on

- the lowest purchase price
- the lowest energy consumption
- the lowest total life cycle cost.

The screenshot shows the Grundfos Product Center website. At the top, there is a navigation bar with the logo and 'PRODUCT CENTER'. Below it, a search bar is visible with the placeholder text 'Input product number or a whole or partial product name'. The main content area features four large buttons: 'SIZING' (with a subtext 'Enter pump sizing'), 'CATALOGUE' (with a subtext 'Products and services'), 'REPLACEMENT' (with a subtext 'Replace an old pump with a new'), and 'LIQUIDS' (with a subtext 'Find pump by liquid'). Below these buttons, there is a 'QUICK SIZING' section with input fields for 'Flow (Q)\*' (m³/h) and 'Head (H)\*' (m), and a 'Select what to size by' section with radio buttons for 'Size by application', 'Size by pump design', and 'Size by pump family'. A 'START SIZING' button is located to the right of these options. At the bottom of the screenshot, there are 'ADVANCED SIZING' options: 'Advanced sizing by application' and 'Guided selection'.

**CATALOGUE** gives you access to the Grundfos product catalogue.

**LIQUIDS** enables you to find pumps designed for aggressive, flammable or other special liquids.

### All the information you need in one place

Performance curves, technical specifications, pictures, dimensional drawings, motor curves, wiring diagrams, spare parts, service kits, 3D drawings, documents, system parts. The Product Center displays any recent and saved items - including complete projects - right on the main page.

### Downloads

On the product pages, you can download installation and operating instructions, data booklets, service instructions, etc. in PDF format.

Subject to alterations.



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