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1. Pump connection sizes by pump types

The following table gives an overview of the pump connection sizes for different pump types. The listed connection size reflects the connection size at the inlet and outlet valve of the dosing pump without any connection kits.



DMH 28x dosing pumps are high-pressure pumps. Use high-pressure accessories for the outlet side.

SMART Digital S - DDA, DDC, DDE

Product family	Model	Pump type	Connection size
DDA	SMART digital S	DDA 7.5-16	G 5/8
		DDA 12-10	
		DDA 17-7	
		DDA 30-4	
DDC	SMART digital S	DDC 6-10	G 5/8
		DDC 9-7	
		DDC 17-4	
DDE	SMART digital S	DDE 6-10	G 5/8
		DDE 9-7	
		DDE 17-4	

SMART Digital XL - DDA, DDE

Product family	Model	Pump type	Connection size
DDA	SMART digital XL	DDA 60-10	G 5/4
		DDA 120-7	
		DDA 200-4	
DDE	SMART digital XL	DDE 60-10	G 5/4
		DDE 120-7	
		DDE 200-4	

DDI

Product family	Model	Pump type	Connection size
DDI	222	DDI 60-10	G 5/8
		DDI 150-4	G 5/4

DME

Product family	Model	Pump type	Connection size
DME	3	DME 60-10	G 5/4
		DME 150-4	
	4	DME 375-10	G 2
		DME 940-4	

DMH

Product family	Model	Pump type	Connection size
DMH	251, 252	DMH x-x	G 5/8
DMH	253, 254	DMH x-x	G 5/4
DMH	255	DMH x-x	G 5/4*
DMH	257	DMH x-x	Flange DN 32, accessories for G 2 are suitable.
DMH	280	DMH x-x	G 3/8** Use an adapter on the suction side to convert to G 5/8 and use G 5/8 accessories. 2.10.3 Threaded adapters G 3/8 on page 34
DMH	281	DMH x-x	G 5/8**
DMH	283, 285, 286	DMH x-x	G 5/4**
DMH	287, 288	DMH x-x	G 5/8**

* Pump types DMH 270-10 and DMH 550-10 have a DN 32 flange on the inlet side

** Use high-pressure accessories for the outlet side

DMX

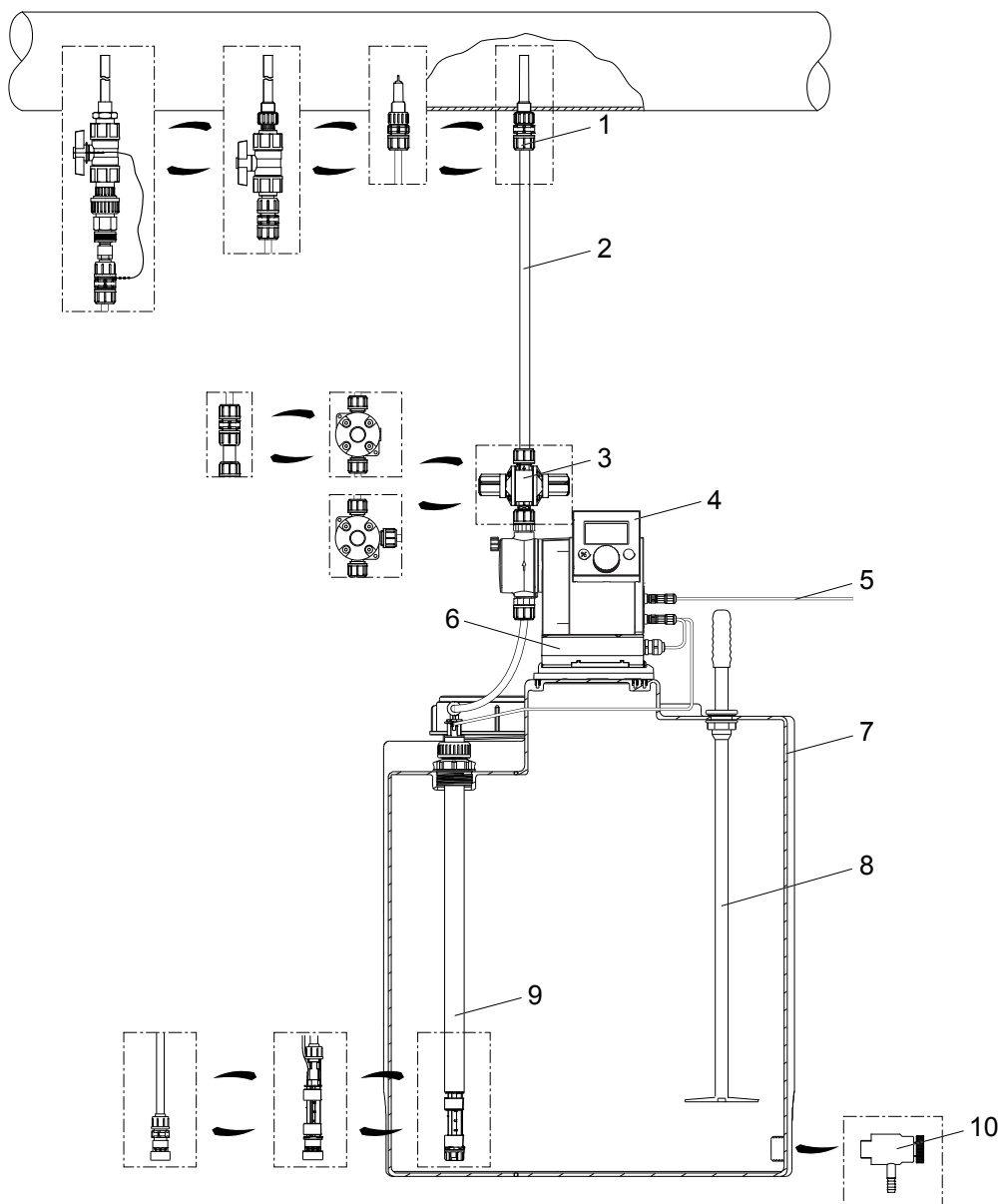
Product family	Model	Pump type	Connection size
DMX	221 (pre-selected)	DMX 16-12	G 5/8
		DMX 27-12	
		DMX 50-10	
		DMX 115-3	
DMX	221	DMX 4-10	G 5/8
		DMX 7-10	
		DMX 8-10	
		DMX 9-10	
		DMX 12-10	
		DMX 14-10	
		DMX 16-10	
		DMX 17-4	
		DMX 18-10	
		DMX 25-3	G 5/4
		DMX 26-10	G 5/8
		DMX 27-10	
		DMX 35-10	
		DMX 39-4	G 5/4
		DMX 50-10	G 5/8
		DMX 60-3	G 5/4
		DMX 75-4	
		DMX 115-3	
DMX	226 (pre-selected)	DMX 132-10	G 5/4
		DMX 199-8	
		DMX 280-8	
		DMX 321-6	
		DMX 460-6	
		DMX 525-3	G 2
		DMX 765-3	

Product family	Model	Pump type	Connection size
DMX	226	DMX 24-8	G 5/4
		DMX 37-5	
		DMX 52-8	
		DMX 60-3	
		DMX 67-10	
		DMX 82-5	
		DMX 95-8	
		DMX 100-8	
		DMX 130-3	
		DMX 132-10	
		DMX 142-8	
		DMX 152-6	
		DMX 160-5	
		DMX 190-10	
		DMX 199-8	
		DMX 230-5	
		DMX 249-3	G 2
		DMX 255-3	G 5/4
		DMX 280-8	
		DMX 315-3	G 2
		DMX 321-6	G 5/4
		DMX 380-3	
		DMX 460-6	
		DMX 525-3	G 2
		DMX 765-3	
DMX	227	DMX x-x	Flange DN 65. See accessories for DMX 227.

2. Hydraulic accessories for pump connection size G 5/8

Overview of accessories for pump connection size G 5/8

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



TM070284

Pos.	Description	See section
1	Injection units	Injection units on page 18
2	Hoses	Hoses for pump connection size G 5/8 on page 9
3	Multi-function valve, pressure loading valves, pressure relief valves, pressure valves	Multi-function valves MFV on page 21 Pressure relief valves PRV on page 23 Pressure loading valves PLV on page 24 Pressure valves PV on page 25
4	Example: SMART Digital S dosing pump	
5	Cables	Cables and plugs for pump connection size G 5/8 on page 104
6	E-box	E-box for SMART Digital S DDA on page 106
7	Dosing tanks	Square tank on page 85 Cylindrical tanks on page 86
8	Handheld mixer	Tank accessories on page 92

Pos.	Description	See section
9	Rigid suction lances and foot valves	<i>Order data for rigid suction lances RSL with connection size G 5/8 on page 13</i> <i>Order data for foot valves FV with connection size G 5/8 on page 11</i>
10	Drain valve	<i>Tank accessories on page 92</i>
-	Installation kits	<i>Installation kits for pump connection size G 5/8 on page 8</i>
-	Accessories for hydraulic connection	<i>Pump connection kits and inlay kits for pump connection size G 5/8 on page 32</i> <i>Threaded adapters G 5/8 on page 33</i> <i>Threaded adapters G 3/8 on page 34</i> <i>Adapters G 5/8 on page 34</i> <i>T-piece adapters G 5/8 on page 36</i>

Installation kits for pump connection size G 5/8

The delivery includes:

- Injection unit with spring-loaded non-return valve
- PE outlet hose, 6 m
- PVC inlet hose, 2 m
- PVC deaeration hose, 2 m
- PE foot valve with strainer and weight, without or with level indication

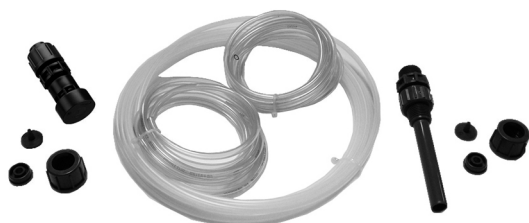


Fig. Installation kit with foot valve without level indication



Fig. Installation kit with foot valve with level indication

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Max. pressure [bar]	Size		Material of injection unit			Product number	
		Inlet / outlet hose [mm]	Deaeration hose [mm]	Body	Gasket	Ball	Foot valve without level indication	Foot valve with level indication
7.5	13	4/6	4/6	PP	FKM	Ceramic	95730440	95730464
					EPDM	Ceramic	95730441	95730465
7.5	13	4/6	4/6	PVC	FKM	Ceramic	95730442	95730466
					EPDM	Ceramic	95730443	95730467
					PTFE	Ceramic	95730444	95730468
7.5	13	4/6	4/6	PVDF	FKM	Ceramic	95730445	95730469
					EPDM	Ceramic	95730446	95730470
					PTFE	Ceramic	95730447	95730471
30	12	6/9	4/6	PP	FKM	Ceramic	95730448	95730472
					EPDM	Ceramic	95730449	95730473
30	12	6/9	4/6	PVC	FKM	Ceramic	95730450	95730474
					EPDM	Ceramic	95730451	95730475
					PTFE	Ceramic	95730452	95730476
30	12	6/9	4/6	PVDF	FKM	Ceramic	95730453	95730477
					EPDM	Ceramic	95730454	95730478
					PTFE	Ceramic	95730455	95730479
60	9	9/12	4/6	PP	FKM	Ceramic	95730456	95730480
					EPDM	Ceramic	95730457	95730481
60	9	9/12	4/6	PVC	FKM	Ceramic	95730458	95730482
					EPDM	Ceramic	95730459	95730483
					PTFE	Ceramic	95730460	95730484
60	9	9/12	4/6	PVDF	FKM	Ceramic	95730461	95730485
					EPDM	Ceramic	95730462	95730486
					PTFE	Ceramic	95730463	95730487

Hoses for pump connection size G 5/8

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

Pump connection size: G 5/8



Fig. Hoses

TM018958

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Size (internal/external 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
		PTFE	20	3	95730337
				10	95730338
				50	95730339
17	5/8	PE	13	3	95730888
				10	96727393
				50	95730889
30	6/9	PE	12	3	96727409
				10	96727412
				50	96727415
		PVC	0.5	3	95730334
				10	95730335
				50	95730336
		ETFE	20	3	95730340
				10	95730341
				50	95730342
	6/12	PVC, textile-reinforced	23	3	96693751
				10	96653571
				50	91835686
60	9/12	PE	9	3	96727395
				10	96705657
				50	96727398
		PVC	0.5	3	96727434
				10	95730890
				50	95724702
		ETFE	13	3	95730343
				10	95730344
				50	95730345

Foot valves FV

Foot valves FV are installed at the lower end of the inlet hose.

Foot valves are suitable for the following applications:

- Extraction of chemicals from unpressurised containers.
- Monitoring of the liquid level in a chemical container (versions with two-step level indication).



Fig. Foot valves, connection size G 5/8 without level indication (left), with level indication (right)

Order data for foot valves FV with connection size G 5/8

Foot valves are available either without level indication or with low-level and empty-tank indication.

The delivery includes:

- 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, internal thread (stainless steel).

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

- Reed-switch unit with 2 floaters
- 5 metres of cable with PE jacket
- M 12 plug to connect a DDA, DDC, DDE or DDI dosing pump.
- PE cap, $\varnothing 58$ mm, for assembly in Grundfos cylindrical tanks, or for use with tank adapters.

The contact type of the low-level and empty-tank indication is factory-set to NO. The contact type 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

TM048476

Dimensions

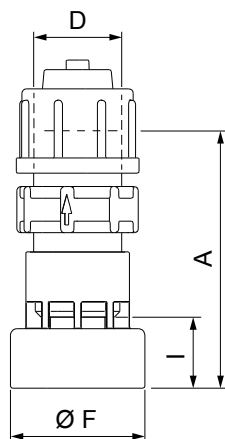


Fig. Foot valve without level indication, PE / PVDF

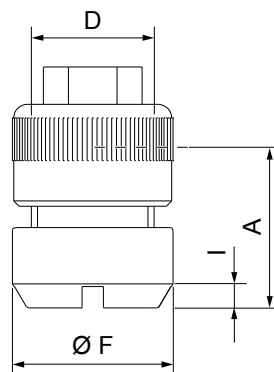


Fig. Foot valve without level indication (stainless-steel version)

TM048494

Body material	A [mm]	D	øF [mm]	I [mm]
PE / PVDF	67.5	G 5/8	35	19
Stainless steel	30	G 5/8	30	4

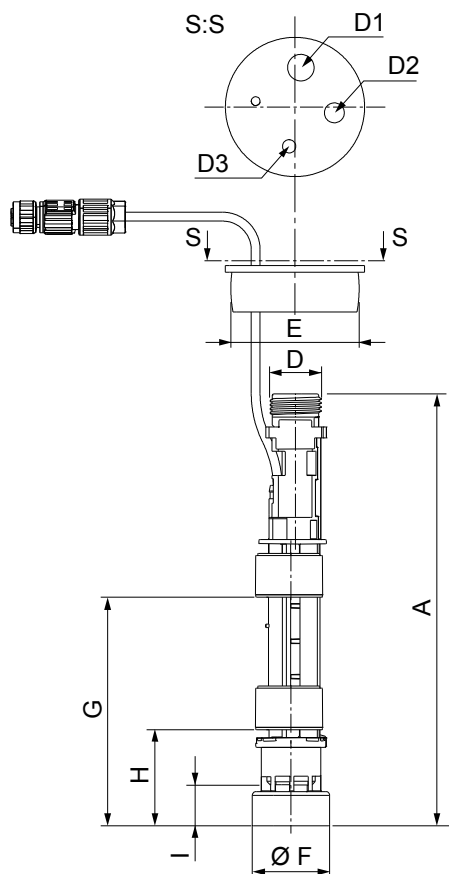


Fig. Foot valve with level indication

A [mm]	D	D1 / D2 / D3 [mm]	E [mm]	øF [mm]	G [mm]	H [mm]	I [mm]
196	G 5/8	12 / 9 / 6	58	35	103.5	43.5	19

TM048447

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Material			Product number	
	Body	Gasket	Ball	FV without level indication	FV with level indication
60	PE	FKM, EPDM	Ceramic	98070951	98070966
		PTFE	Ceramic	98070952	98070967
	PVDF	FKM, EPDM	Ceramic	98070953	98070968
		PTFE	Ceramic	98070954	98070969
	Stainless steel	PTFE	Stainless steel	98070963	-

Related information

[Flat-plug adapter for DMX and DMH with AR control unit. See page 17.](#)

Rigid suction lances RSL

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

Rigid suction lances RSL are suitable for the following applications:

- Extraction of chemicals from unpressurised containers.
- Monitoring of liquid level in the chemical container (versions with two-step level indication).

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



Fig. Rigid suction lance, connection size G 5/8

TMO48458

Order data for rigid suction lances RSL with connection size G 5/8

The delivery includes:

- 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.

Rigid suction lances RSL with low-level and empty-tank indication include additionally:

- Reed-switch unit with 2 floaters
- 5 metres of cable with PE jacket
- M 12 plug to connect DDA, DDC, DDE or DDI dosing pump.

The contact type of the low-level and empty-tank indication is factory-set to NO. The contact type 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

Dimensions

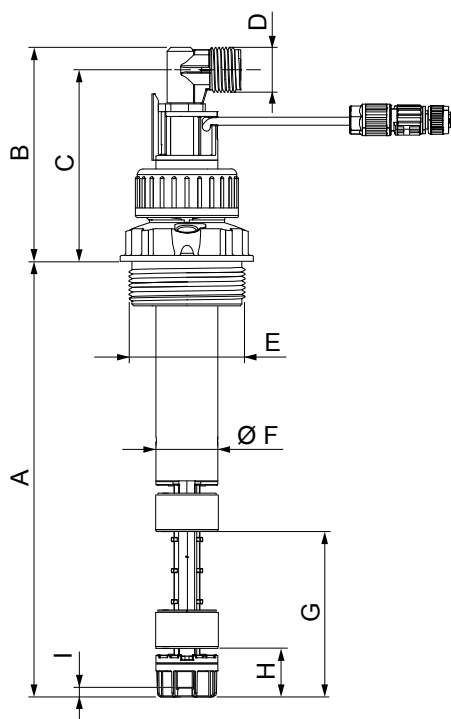


Fig. Rigid suction lance with / without level indication

TM048445

A [mm]	B [mm]	C [mm]	D	E	øF [mm]	G [mm]	H [mm]	I [mm]
400-1200	110	99	G 5/8	G 2	32	85	25	4.5

Selection

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

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Minimum immersion depth for all sizes: approx. 140 mm

Max. flow rate [l/h]	Max. immersion depth [mm]	Material			Product number	
		Body	Gasket	Ball	RSL without level indication	RSL 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

Accessories for rigid suction lances RSL and foot valves FV

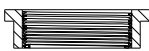
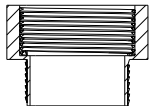
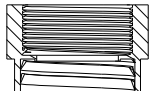
Adapters for container connection

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



Fig. Adapters for containers

Order data

Type	For container type	Material	Product number
	TM048470 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
	TM048473 Jerricans with small opening (approx. $\varnothing 36$), according to EN 12713	PE, green	98071173
	Jerricans with medium-sized opening (approx. $\varnothing 45$), according to EN 12713	PE, yellow	98071174
	Jerricans with large opening (approx. $\varnothing 57$), according to EN 12713	PE, brown	98071175
	US containers with bung hole of 63 mm (ASTM International)	PE, white	98071176
	TM048472 IBC (Intermediate Bulk Container) with opening of $\varnothing 150$ mm, S 160 x 7	PE, black	98071177

Emission protection kits for rigid suction lances RSL

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

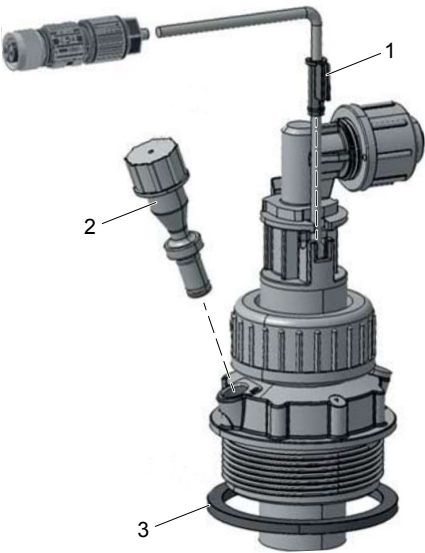
Two variants are available:

- 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.

The delivery includes:

- Gasket for the tank adapter
- Snifting valve or hose nipple 4/6 mm (hose is not included)
- Gasket for the cable outlet.

TM048506



TM069068

Fig. Emission protection kit

Pos.	Description
1	Gasket for the cable outlet
2	Air valve
3	Gasket for the tank adapter

Order data

Variant	Product number
Emission protection kit with snifting valve	98071178
Emission protection kit for use with filter	98071179

Flat-plug adapter for DMX and DMH with AR control unit

The flat-plug adapter allows to connect rigid 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).



TM070206

Fig. Flat-plug adapter for DMX and DMH with AR control unit

Order data

Description	Product number
Flat-plug adapter for DMX and DMH with AR control unit	96635010

Injection units

Standard injection units

Injection units connect the dosing line with the process line. They ensure a minimum counterpressure and avoid backflow of the dosing medium.



Fig. Standard injection unit

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.

- 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.



Fig. Injection unit with ball valve

Injection units with lip valve

Injection units with lip valve are typically used for adding 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.

Injection units with removable injection pipe

Injection units with removable injection pipe are used where regular cleaning of the injection pipe is required.

- The injection pipe can be removed from the process line without stopping the process water flow.
- The injection point can be closed with the integrated ball valve.
- The immersion depth of the injection pipe can be adjusted.

Hot-injection units with ball valve

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

- Hot-injection units have a stainless-steel injection pipe and a bendable stainless-steel cooling pipe of 1 metre.
- The stainless-steel ball valve is installed between the injection pipe and the cooling pipe.
- The cooling pipe separates the hot parts from the non-return valve and the dosing line.

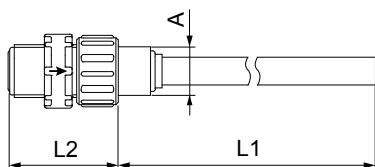
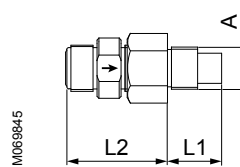
TM068428

TM068429

Order data for injection units for pump connection size G 5/8

Injection units for small dosing pumps with G 5/8 connections ensure a minimum counterpressure of 0.7 bar.
The delivery includes:

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

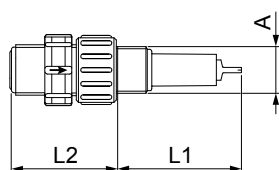
Dimensions of standard injection units**Fig.** Body material: PP, PVC, PVDF**Fig.** Body material: Stainless steel

Material	A	L1 [mm]	L2 [mm]
PVC	G 1/2	100 / 300	47
PP, PVDF	G 1/2	100	47
Stainless steel	G 1/2	27	50

Order data for standard injection units

- Max. flow rate: 60 l/h
- The flow rate values apply to liquids with a viscosity similar to water.

Max. pressure [bar]	L1 [mm]	Material			Product number
		Body	Gasket	Ball	
16	100	PVC	FKM	Ceramic	95730912
			EPDM	Ceramic	95730916
			PTFE	Ceramic	95730920
		PP	FKM	Ceramic	95730904
			EPDM	Ceramic	95730908
		PVDF	FKM	Ceramic	95730924
			EPDM	Ceramic	95730928
			PTFE	Ceramic	95730932
16	300	PVC	FKM	Ceramic	95730940
			EPDM	Ceramic	95730944
			PTFE	Ceramic	95730948
100	27	Stainless steel	PTFE	Stainless steel	95730936

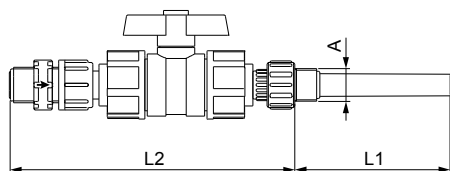
Dimensions of injection units with lip valve

A	L1 [mm]	L2 [mm]
G 1/2	55	59

Order data for injection units with lip valve

- Max. flow rate: 60 l/h
- Max. pressure: 16 bar
- The flow rate values apply to liquids with a viscosity similar to water.

Material			Product number
Body	Gasket	Ball	
PVC	FKM	Ceramic	95730964

Dimensions of injection units with ball valve

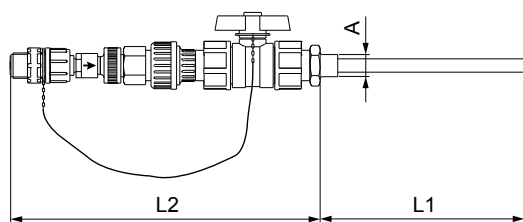
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Material	A	L1 [mm]	L2 [mm]
PVC	G 1/2	100	183
Stainless steel	G 1/2	27	138

Order data for injection units with ball valve

- Max. flow rate: 60 l/h
- The flow rate values apply to liquids with a viscosity similar to water.

Max. pressure [bar]	Material			Product number
	Body	Gasket	Ball	
16	PVC	FKM	Ceramic	95730952
		EPDM	Ceramic	95730956
64	Stainless steel	PTFE	Stainless steel	95730960

Dimensions of injection units with removable injection pipe

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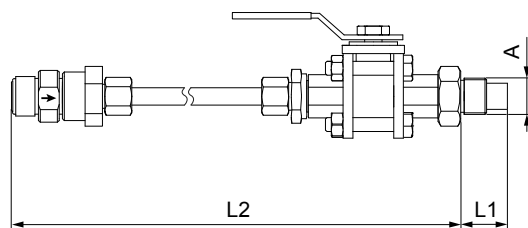
A	L1 [mm]	L2 [mm]
G 1/2	185	280

Order data for injection units with removable injection pipe

- Max. flow rate: 60 l/h
- Max. pressure: 10 bar
- The flow rate values apply to liquids with a viscosity similar to water.

Material			Product number
Body	Gasket	Ball	
PVC	FKM	Ceramic	95730968
	EPDM	Ceramic	95730972

Dimensions of hot-injection units with ball valve



TM06950

A	L1 [mm]	L2 [mm]
G 1/2	27	1158

Order data for hot-injection units with ball valve

- Max. flow rate: 60 l/h
- Maximum process water temperature: 120 °C
- The flow rate values apply to liquids with a viscosity similar to water.

Max. pressure [bar]	Material			Product number
	Body	Gasket	Ball	
16	PVDF	PTFE	Ceramic	95730976
64	Stainless steel	PTFE	Stainless steel	95730980

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

Multi-function valves MFV

Multi-function valves MFV combine the functions of pressure relief valves PRV and pressure loading valves PLV.

- Pressure relief valves PRV protect the pump and the outlet-side installations against excessive pressure.
- Pressure loading valves PLV maintain a certain counterpressure for the dosing pump.

In addition, multi-function valves allow deaeration of the pump and emptying of the outlet line for maintenance.

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



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Fig. Multi-function valve MFV

Order data for multi-function valves MFV

- Loading pressure:
 - factory-set to 3 bar approximately
 - adjustable from 1 to 4 bar
- Relief pressure:
 - factory-set to 10 bar or 16 bar approximately
 - adjustable from 7 to 16 bar
- Max. operating pressure: 16 bar
- Max. flow rate: 60 l/h
 - The flow rate values apply to liquids with a viscosity similar to water.
- Body material: PVDF
- Connection size: 5/8
- Hose connection set: 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm

Dimensions

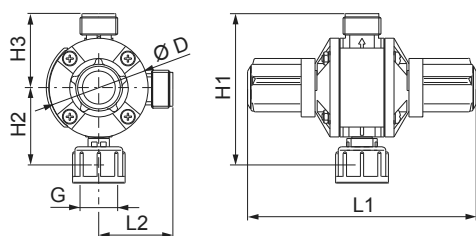


Fig. Multi-function valve MFV

L1 [mm]	L2 [mm]	H1 [mm]	H2 [mm]	H3 [mm]	ø D [mm]	G
139	45	92	47	45	60	G 5/8

Order data

Material			Product number	
Connections	Gaskets	Diaphragm	Relief pressure: 10 bar	Relief pressure: 16 bar
PP	FKM	PTFE	95704585	95730821
	EPDM	PTFE	95704591	95730822
PVC	FKM	PTFE	95730807	95730823
	EPDM	PTFE	95730808	95730824
	PTFE	PTFE	95730809	95730825
PVDF	FKM	PTFE	95730810	95730826
	EPDM	PTFE	95730811	95730827
	PTFE	PTFE	95730812	95730828

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Pressure relief valves PRV

Pressure relief valves PRV protect the pump and the outlet-side installations against excessive pressure. All pressurised dosing installations should include a pressure relief valve.



Fig. Pressure relief valve PRV, G 5/8

Order data for pressure relief valves PRV for pump connection size G 5/8

Pressure relief valves PRV for small dosing pumps with G 5/8 connections are installed in the outlet line near the pump using the 2 in-line connections. The side connection leads the relief liquid back into the tank.

- Relief pressure:
 - factory-set to 10 bar approximately, adjustable from 5 to 10 bar
 - factory-set to 16 bar approximately, adjustable from 7 to 16 bar
- Max. operating pressure: 16 bar
- Max. flow rate: 60 l/h
 - The flow rate values apply to liquids with a viscosity similar to water.
- Hose connection set: 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm
- Pipe connection set (Stainless steel): threaded, Rp 1/4, internal thread
- Diaphragm: PTFE-coated

Dimensions

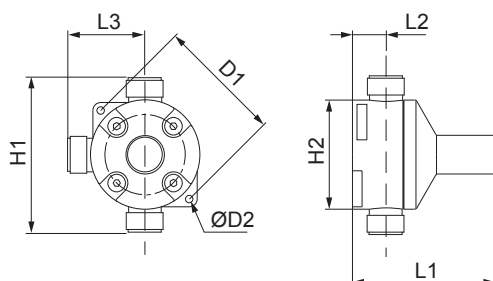


Fig. Pressure relief valve PRV

Material	L1 [mm]	L2 [mm]	L3 [mm]	H1 [mm]	H2 [mm]	D1 [mm]	Ø D2 [mm]
PP / PVC / PVDF	82	21	48	96	68	78	4.5
Stainless steel	82	22	20	40	68	-	-

Order data

Material		Product number		
Diaphragm	Body / Connections	Gaskets	Relief pressure: 10 bar	Relief pressure: 16 bar
PTFE	PP	FKM / EPDM	95730757	95730773
		PTFE	95730759	95730775
	PVC	FKM / EPDM	95730758	95730774
		PTFE	95730761	95730777
	PVDF	FKM / EPDM	95730760	95730776
		PTFE	95730761	95730777
	Stainless steel	-	95730771	95730783

Pressure loading valves PLV

Pressure loading valves PLV maintain a constant counterpressure for the dosing pump. They are used in the following applications:

- Too low counterpressure or no counterpressure at all
- Fluctuating system pressure with outlet-side pulsation damper
- To prevent syphoning, when the inlet pressure is higher than the counterpressure

Pressure loading valves are installed in the outlet line.

Pressure loading valves should not be used as shut-off valves.



Fig. Pressure loading valves PLV, G 5/8

Order data for pressure loading valves PLV for pump connection size G 5/8

- Loading pressure:
 - factory-set to 3 bar approximately
 - adjustable from 1 to 5 bar
- Max. operating pressure: 16 bar
- Max. flow rate: 60 l/h
 - The flow rate values apply to liquids with a viscosity similar to water.
- Hose connection set: 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm
- Pipe connection set (Stainless steel): threaded, Rp 1/4, internal thread
- Diaphragm: PTFE-coated

Dimensions

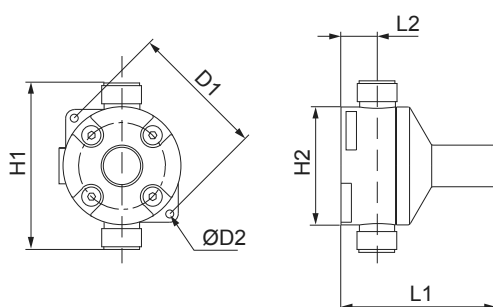


Fig. Pressure loading valve PLV

Material	L1 [mm]	L2 [mm]	H1 [mm]	H2 [mm]	D1 [mm]	ø D2 [mm]
PP / PVC / PVDF	82	21	96	68	78	4.5
Stainless steel	82	22	40	68	-	-

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Order data

Material			Product number
Diaphragm	Body and connections	Gaskets	
PTFE	PP	FKM / EPDM	95730741
	PVC	FKM / EPDM	95730742
		PTFE	95730743
	PVDF	FKM / EPDM	95730744
		PTFE	95730745
	Stainless steel	-	95730751

Pressure valves PV

Pressure valves PV provide a constant counterpressure of 3 bar.

They are particularly required for SMART Digital S DDA-FC or DDA-FCM pumps at very small flow rates.

Pressure valves are installed either directly on the pump outlet valve, or on the pressure relief valve.

Order data for pressure valves PV for pump connection size G 5/8

- Loading pressure: 3 bar, not adjustable
- Max. operating pressure: 16 bar
- Max. flow rate: 60 l/h (The flow rate values apply to liquids with a viscosity similar to water.)
- Spring material: Tantalum alloy
- No connections included

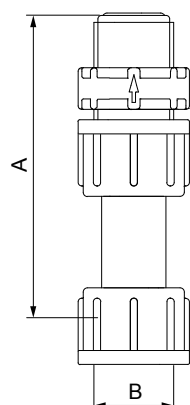


Fig. Dimensions of pressure valve PV

A [mm]	B
87	G 5/8

Material			Product number
Body	Ball	Gaskets	
PP	Ceramic	FKM	95730325
		EPDM	95730326
PVC	Ceramic	FKM	95730327
		EPDM	95730328
		PTFE	95730329
PVDF	Ceramic	FKM	95730330
		EPDM	95730331
		PTFE	95730332
Stainless steel	Stainless steel	PTFE	95730333

TMD69796

Pulsation dampers and calibration columns

Discharge-side pulsation dampers DB and DBG

Pulsation dampers are used to even out the pulsating flow and pressure produced by positive displacement pumps like diaphragm dosing pumps.

Pulsation dampers DB and DBG have a separating diaphragm and are intended for the outlet side of the dosing pump. They are especially designed for installations with long outlet lines with a small diameter, or with rigid pipes. The pulsation dampers optimise the dosing accuracy and protect the pump and the outlet line against pressure surges.

Pulsation dampers DB and DBG have an air or nitrogen cushion inside, which is separated from the dosing medium by a separating diaphragm. This keeps the preload pressure stable for a long time and avoids that air or nitrogen is dissolved in the dosing medium.

In PVC, PP, and stainless steel pulsation dampers, an FKM or EPDM bladder is used as separating diaphragm, in PVDF pulsation dampers a PTFE bellows is used as separating diaphragm.

Pulsation dampers DBG include a pressure gauge for easy setting of the correct pressure. Pulsation dampers DB have no pressure gauge.

Grundfos SMART Digital dosing pumps do not require a DB or DBG pulsation damper, if the flow rate is limited to 75 % of the maximum dosing capacity of the pump. In rigid pipe installations, the flow rate without pulsation damper should not exceed 50 % of the maximum dosing capacity of the pump.

If the counterpressure in the system is low or fluctuating, the installation of a pressure loading valve PLV after the pulsation damper may be required to optimise its function.



Fig. Discharge-side pulsation damper DBG

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Suction-side pulsation dampers CSD with calibration scale

Pulsation dampers are used to even out the pulsating flow and pressure produced by positive displacement pumps like diaphragm dosing pumps.

Pulsation dampers CSD are installed on the inlet side of the dosing pump. They can be used for multiple pumps that are supplied by the same inlet line.

Pulsation dampers CSD help to ensure the accuracy of dosing pumps, which is highly dependent on proper suction conditions. In installations with long inlet lines or inlet lines with a small diameter, the use of a CSD pulsation damper is recommended.

Pulsation dampers CSD have a transparent PVC cylinder with a fine volume scale. When combined with a shut-off valve in the inlet line, they can also be used for calibration or flow measurement. In installations without flooded suction, the optional manual vacuum pump kit simplifies startup of the dosing pump.



Fig. Suction-side pulsation dampers CSD with calibration scale

Calibration columns

Calibration columns have a graduated glass cylinder with a fine scale. A shut-off valve on the lower end can disconnect them from the inlet-side installation during normal operation.

One calibration column can be used for multiple pumps that are supplied by the same inlet line.

Calibration columns must not be used as pulsation dampers.

TM068450

Sizing guide for pulsation dampers and calibration columns, pump connection size G 5/8

Look up your pump type in the table. Find the required pulsation damper or calibration column volume in the respective table column.

Pump type	Pump stroke volume [ml]	Required volume [l]		
		DB / DBG	CSD	Calibration column
DDC-DDE 6-10	0.81	0.15 - 0.18	0.25	0.25
DDA 7.5-16*	0.74			
DDC 9-7	0.84			
DDA 12-10	1.45			
DDC-DDE 15-4	1.58			
DDA 17-7	1.55			
DDA 30-4*	3.1			
DDI 60-10	6.67	0.15 - 0.18	0.5	0.5
DMX 4-10	2.2	0.15 - 0.18	0.5	0.5
DMX 8-10				
DMX 16-10				
DMX 16-12	2.2			
DMX 7-10	3.8			
DMX 14-10				
DMX 27-10				
DMX 27-12	3.8	0.15 - 0.18	0.5	0.5
DMX 9-10	4.9	0.15 - 0.18	0.5	0.5
DMX 18-10				
DMX 35-10				
DMX 12-10	6.9			
DMX 26-10				
DMX 50-10				
DMH 5-10	3.5	0.15 - 0.18	0.5	0.5
DMH 13-10				
DMH 24-10				
DMH 11-10	6.4			
DMH 24-10				
DMH 46-10				

* For very low residual pulsation, a larger damper should be used.

Order data for pulsation dampers CSD, pump connection size G 5/8

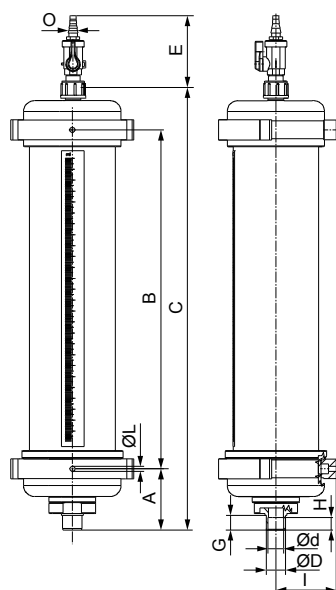
Features

- Prepared for pipe gluing connection with spigot (D) or socket (d).
- Calibration is possible by installing a T-piece and a shut-off valve.
- In installations without flooded suction, the optional manual vacuum pump kit simplifies the startup of the dosing pump.

The delivery includes:

- Sight glass with calibration scale
- Aeration valve
- Material for wall mounting

Dimensions



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Fig. Suction-side pulsation dampers CSD with calibration scale

Damper volume [l]	A [mm]	B [mm]	C [mm]	øD/ød [mm]	E [mm]	G [mm]	H [mm]	I [mm]	øL [mm]	O [mm]
0.25	50	270	360	16/12	92	14	12	40	6.5	8-13
0.5	50	340	431	16/12	92	14	12	47		

Order data

Max. operating pressure: 2 bar

Damper volume [l]	Max. pump stroke volume [ml]	Max. number of pumps with max. stroke volume	Scale division [ml]	Material			Product number
				Body	Sight glass	Gasket	
0.25	2	3	2	PVC	PVC	FKM / EPDM	99186948
						PTFE	99217401
0.5	7	3	5	PVC	PVC	FKM / EPDM	99187777
						PTFE	99217402

Related information

[Manual vacuum pump kit for pulsation damper CSD. See page 101.](#)

Order data for calibration columns, pump connection size G 5/8

Calibration columns are intended for flow measurement or calibration of dosing pumps. They must be isolated from the pipework during normal operation.

The volume in the calibration column can supply the largest suitable pump for approximately 30 seconds.

The delivery includes:

- Glass cylinder with acrylic outer shield
- Aeration valve on top
- Shut-off valve on the bottom

In installations without flooded suction, the optional manual vacuum pump kit simplifies the startup of the dosing pump. Calibration columns must not be used as pulsation dampers.

Dimensions

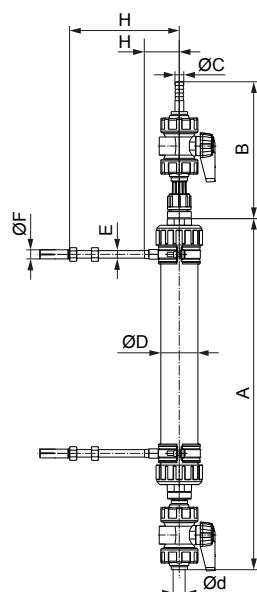


Fig. Calibration column

Volume [l]	Body	A [mm]	B [mm]	øC [mm]	øD [mm]	E	øF [mm]	H [mm]
0.25	PVDF	478	184	12	50.8	M 10	12	50-154
	SS	460	140					
0.5	PVDF	517	184	12	69.85	M 10	12	61-165
	SS	498	140					

Order data

Volume [l]	Max. pump stroke volume [ml]	Scale division [ml]	Connection ød		Material		Product number
			[mm]		Body	Gasket	
0.25	2	2	16	-	PVDF	FKM	99224280
			-	G 1/2	SS	FKM	99224303
			-	G 1/2	SS	EPDM	99224304
0.5	7	5	16	-	PVDF	FKM	99224305
			-	G 1/2	SS	FKM	99224307
			-	G 1/2	SS	EPDM	99224308

Related information

[Manual vacuum pump kit for calibration columns. See page 102.](#)

Order data for pulsation dampers DB and DBG, pump connection size G 5/8

We recommend using one pulsation damper per dosing pump.

Preload pressure: 2.7 bar.

The delivery includes::

- Material for wall mounting
- PVC versions are prepared for pipe gluing connection with spigot (D) or socket (d).
- PVDF and PP versions are prepared for pipe welding connection with spigot (D) or socket (d).
- Pulsation dampers DBG include a pressure gauge.

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Dimensions

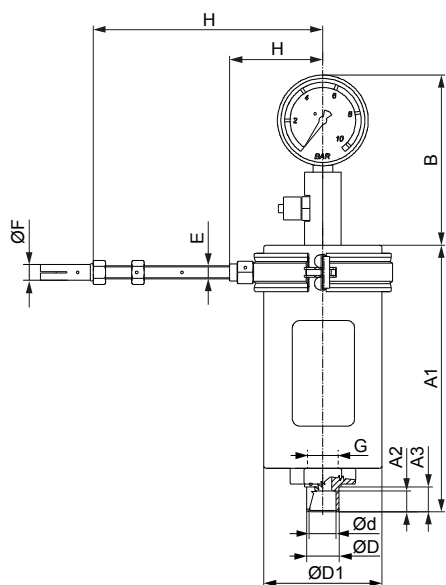


Fig. Pulsation damper DBG, PVC version

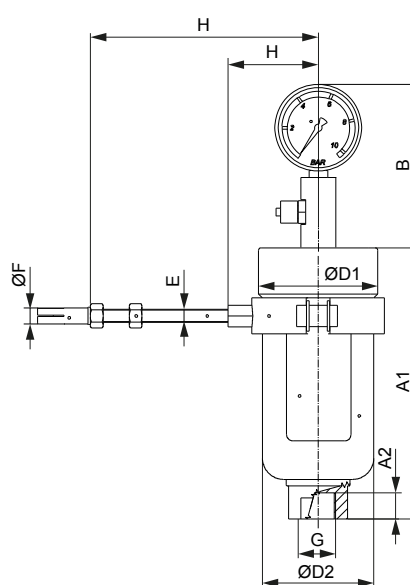


Fig. Pulsation damper DBG, stainless steel version

B [mm]	øF [mm]	E
129	12	M 10

Damper volume [l]	Body material	Connections	A1 [mm]	A2 [mm]	A3 [mm]	øD1 [mm]	øD2 [mm]	H [mm]
		øD/ød [mm] G Internal thread						
0.15	PVDF	16/12 G 1/2	205	12	14	70	53	53-127
0.18	PVC, PP	16/12 G 1/2	161	12	14	80	-	67-171
	SS*	- G 1/2	118	14	-	70	-	64-168

* Stainless steel 1.4404

Order data

Damper volume [l]	Max. pump stroke volume [ml]	Connections		Material		Type DB		Type DBG	
		øD/ød [mm]	G Internal thread	Body	Gasket	Max. operating pressure [bar]	Product number	Max. operating pressure [bar]	Product number
0.15	7	16/12	G 1/2	PVDF	PTFE	20	99202658	20	99202683
0.18	7	16/12	G 1/2	PVC	FKM	10	99202642	10	99202679
					EPDM	10	99202653	10	99202680
				PP	FKM	10	99202654	10	99202681
					EPDM	10	99202657	10	99202682
				SS	FKM	180	99202660	25	99202684
					EPDM	180	99202661	25	99202685

Related information

Order data for filling devices for pulsation dampers DB and DBG. See page 100.

Tyre-valve adapter for pulsation dampers DB and DBG. See page 101.

Pressure gauges for discharge-side pulsation dampers with separating diaphragm. See page 101.

Accessories for hydraulic connection

Pump connection kits and inlay kits for pump connection size G 5/8

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

A pump connection kit includes one set of inlays and one union nut.



Fig. Pump connection kit

The inlay kits are used to connect pumps and accessories to pipes or hoses that differ from Grundfos standard sizes. An inlay kit includes two sets of inlays.



Fig. Inlay kit

Order 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)Hose (cone and ring)	4/6 mm, or 0.17" x 1/4"	PP
PVC	97702485			95730720
PVDF	97702495			95730729
4/9 mm	PP		98153922	98153977
	PVC		98153944	98154006
	PVDF		98153949	98154029
Hose (cone and ring)	5/8 mm	PP	97702475	95730711
		PVC	97702486	95730721
		PVDF	97702496	95730730

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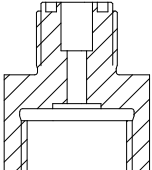
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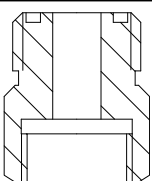
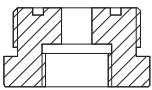
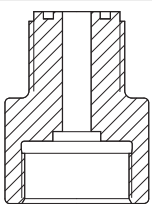
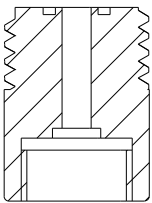
Connection type	Size	Material	Product number	
			Connection kit	Inlay kit
Hose (cone and ring)	6/8 mm	PP	97702476	95730712
		PVC	97702487	95730722
		PVDF	97702497	95730731
	6/9 mm	PP	97702477	95730713
		PVC	97702488	95730723
		PVDF	97702498	95730732
	6/12 mm	PP	97702478	95730714
		PVC	97702489	95730724
		PVDF	97702499	95730733
Hose (cone and ring)	9/12 mm	PP	97702479	95730715
		PVC	97702490	95730725
		PVDF	97702500	95730734
Hose (cone and ring)	1/4" x 3/8"	PP	97702482	95730718
		PVC	97702492	95730727
		PVDF	97702503	95730737
	3/8" x 1/2"	PP	97702483	95730719
		PVC	97702493	95730728
		PVDF	97702504	95730738
Hose (cutting ring type)	1/8" x 1/4"	PP	97702481	95730717
		PVDF	97702502	95730736
Pipe welding	External diameter 16 mm	PP	97702480	95730716
	DN 10, 3/8"	Stainless steel	99369683	-
Pipe cementing	Internal diameter 12 mm	PVC	97702491	95730726
Pipe, external thread	1/2 NPT	PP	97702484	-
		PVC	97702494	-
		PVDF	97702505	-
		Stainless steel	97702508	-
Pipe, internal thread	Rp 1/4	Stainless steel	97702472	95730739
	1/4 NPT	Stainless steel	97702473	95730740
Pipe (cutting ring type)	4/6 mm	Stainless steel	97702506	-
	8/10 mm	Stainless steel	97702507	-
	10/12 mm	Stainless steel	98807664	-

Threaded adapters G 5/8

With threaded adapters, different sizes of threaded connections can be connected. A threaded adapter includes a gasket.

Technical data

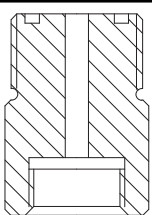
Type	Threaded connection size		Material		Product number
	Internal thread	External thread	Body	Gaskets	
 TM048297	G 5/8	G 3/8	PP	FKM / EPDM	95730412
			PVC	FKM / EPDM	95730413
				PTFE	95730414
			PVDF	FKM / EPDM	95730415
				PTFE	95730416

Type	Threaded connection size		Material		Product number
	Internal thread	External thread	Body	Gaskets	
 TM048298	G 5/8	G 3/4	PP	FKM / EPDM	95730417
			PVC	FKM / EPDM	95730418
				PTFE	95730419
			PVDF	FKM / EPDM	95730420
				PTFE	95730421
 TM048299	G 5/8	G 5/4	PP	FKM / EPDM	95730422
			PVC	FKM / EPDM	95730423
				PTFE	95730424
			PVDF	FKM / EPDM	95730425
				PTFE	95730426
 TM048300	G 5/8	M 20 x 1.5	PP	FKM / EPDM	95730427
			PVC	FKM / EPDM	95730428
				PTFE	95730429
			PVDF	FKM / EPDM	95730430
				PTFE	95730431
 TM048475	G 5/8	M 30 x 3.5	PVDF	FKM / EPDM	98154048
				PTFE	98154054

Threaded adapters G 3/8

With threaded adapters, different sizes of threaded connections can be connected. A threaded adapter includes a gasket.

Technical data

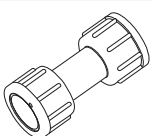
Type	Threaded connection size		Material		Product number
	Internal thread	External thread	Body	Gaskets	
 TM048296	G 3/8	G 5/8	PP	FKM / EPDM	95730407
			PVC	FKM / EPDM	95730408
				PTFE	95730409
			PVDF	FKM / EPDM	95730410
				PTFE	95730411

Adapters G 5/8

Union nut adapters

With a union nut adapter, a pressure loading valve PLV or a pressure relief valve PRV can be mounted directly on the pump outlet valve.

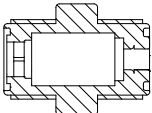
Union nut adapters consist of a rigid pipe with union nuts on both ends. They have neither gaskets nor glued or welded connections.

Type	Threaded connection size		Material		Product number
	Internal thread	Internal thread	Body		
 TM048306	G 5/8	G 5/8	PVC		95730437
			PP		95730438
			PVDF		95730439

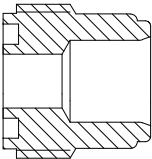
Hose-to-hose and hose-to-pipe adapters

With these adapters, hoses or pipes of different sizes can be connected. The threaded adapter side includes a gasket. Connections for different hose types can be included.

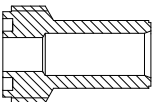
Adapters with two external threads G 5/8

Type	Connections		Material		Product number
	Side 1	Side 2	Body and connections	Gaskets	
 TM048302	External threads G 5/8, connections for hoses 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm		PP	FKM / EPDM	95730367
			PVC	FKM / EPDM	95730368
				PTFE	95730369
			PVDF	FKM / EPDM	95730370
				PTFE	95730371
	External threads G 5/8, without connections		PP	FKM / EPDM	95730356
			PVC	FKM / EPDM	95730357
				PTFE	95730358
			PVDF	FKM / EPDM	95730359
				PTFE	95730360
	External thread G 5/8, without connection	External thread G 5/8, with threaded Rp 1/4 connection	Stainless steel	PTFE	95730361

Adapters with pipe cementing end and external thread G 5/8

Type	Connections		Material		Product number
	Side 1	Side 2	Body and connections	Gaskets	
 TM048360	External threads G 5/8, connections for hoses 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm	Pipe cementing end with internal $\varnothing$ 12 mm	PVC	FKM / EPDM	95730378
				PTFE	95730379
	External thread G 5/8, without connection	Pipe cementing end with internal $\varnothing$ 12 mm	PVC	FKM / EPDM	95730365
				PTFE	95730366

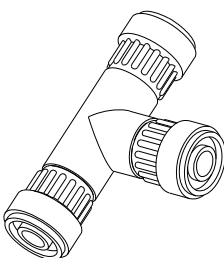
Adapters with pipe welding end and external thread G 5/8

Type	Connections		Material		Product number
	Side 1	Side 2	Body and connections	Gaskets	
 TM048303	External threads G 5/8, connections for hoses 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm	Pipe welding end with external $\varnothing$ 16 mm	PP	FKM / EPDM	95730377
			PVDF	FKM / EPDM	95730380
				PTFE	95730381
	External thread G 5/8, without connection	Pipe welding end with external $\varnothing$ 16 mm	PP	FKM / EPDM	95730362
			PVDF	FKM / EPDM	95730363
				PTFE	95730364

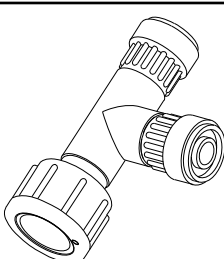
T-piece adapters G 5/8

T-piece adapters can connect three lines. T-piece adapters include gaskets. Connections for different hose types can be included.

T-piece adapters with three external threads G 5/8

Type	Connections			Material		Product number
	Bottom	Top	Side	Body and connections	Gaskets	
 TM048304	External thread G 5/8, connections for hoses 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm			PP	FKM / EPDM	95730387
				PVC	FKM / EPDM	95730388
					PTFE	95730389
				PVDF	FKM / EPDM	95730390
					PTFE	95730391
				PP	FKM / EPDM	95730346
				PVC	FKM / EPDM	95730347
					PTFE	95730348
				PVDF	FKM / EPDM	95730349
					PTFE	95730350

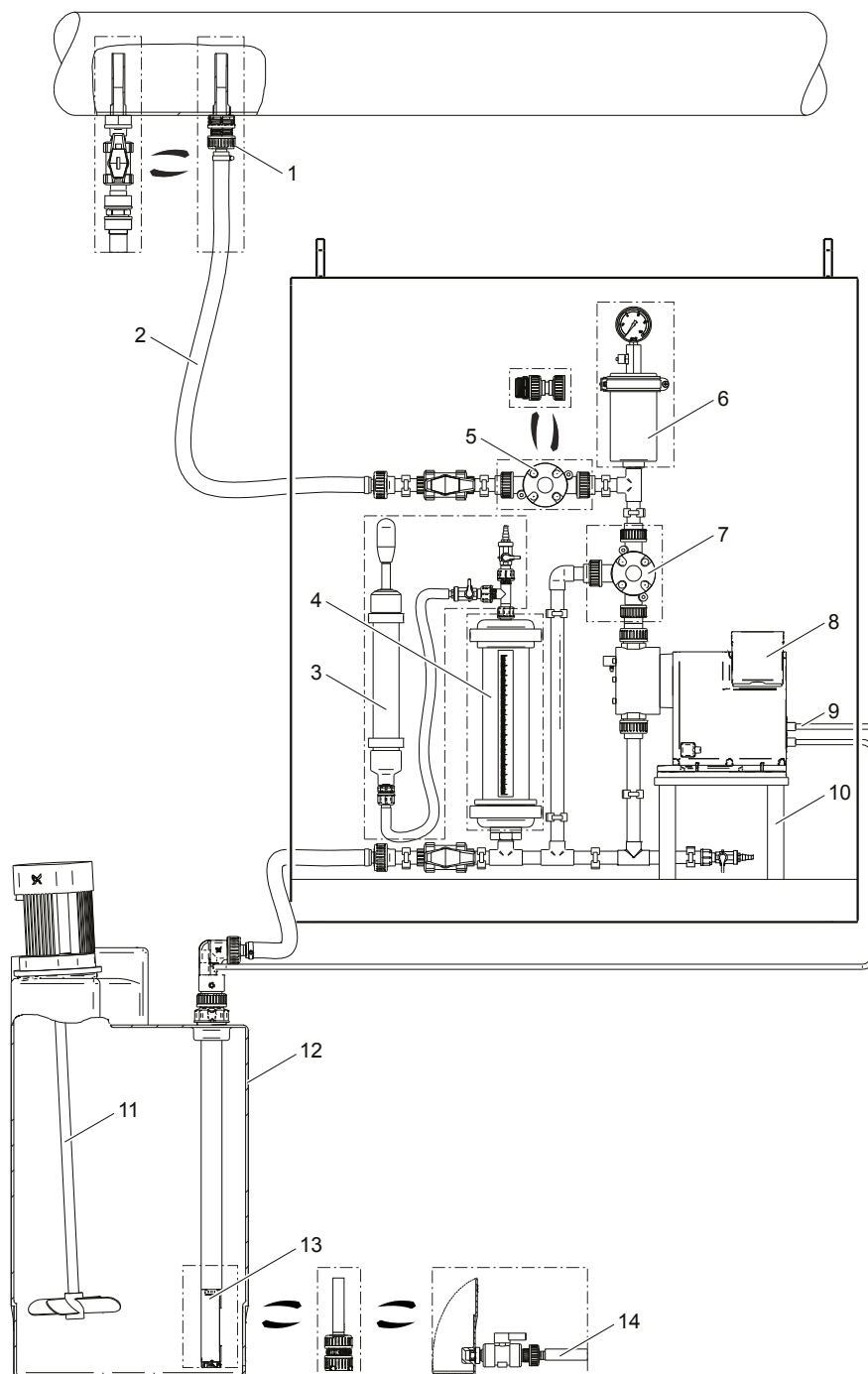
T-piece adapters with internal connection with union nut and two external threads G 5/8

Type	Connections			Material		Product number
	Bottom	Top	Side	Body and connections	Gaskets	
 TM048305	Internal connection, with union nut G 5/8	External thread G 5/8, without connection	External thread G 5/8, connections 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
			External thread G 5/8, without connection	PP	FKM / EPDM	95730351
				PVC	FKM / EPDM	95730352
					PTFE	95730353
				PVDF	FKM / EPDM	95730354
					PTFE	95730355

3. Hydraulic accessories for pump connection size G 5/4

Overview of accessories for pump connection size G 5/4

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



TM070285

Pos.	Description	See section
1	Injection units	Order data for injection units for pump connection size G 5/4 on page 44
2	Hoses	Hoses for pump connection size G 5/4 on page 38
3	Vacuum pump	Order data for pulsation dampers CSD, pump connection size G 5/4 on page 52
4	Pulsation dampers CSD	
5	Pressure valves	Order data for pressure valves PV for pump connection size G 5/4 on page 49
6	Pulsation dampers DBG	Order data for pulsation dampers DB and DBG, pump connection size G 5/4 on page 54

Pos.	Description	See section
7	Pressure relief valves, pressure loading valves	Order data for pressure relief valves PRV for pump connection size G 5/4 on page 46 Order data for pressure loading valves PLV for pump connection size G 5/4 on page 48
8	Example: SMART Digital XL dosing pump	
9	Cables and plugs	Cables and plugs for pump connection size G 5/4 on page 105
10	Wall brackets	Pump mounting accessories on page 99
11	Electrical stirrers	Electric stirrers on page 94
12	Dosing tanks	Square tank on page 85 Cylindrical tanks on page 86
13	Rigid suction lances and foot valves	Order data for rigid suction lances RSL with connection size G 5/4 on page 40 Order data for foot valves FV with connection size G 5/4 on page 39
14	Withdrawal devices	Tank accessories on page 92
-	Accessories for hydraulic connection	Pump connection kits and inlay kits for pump connection size G 5/4 on page 56 Threaded adapters G 5/4 on page 57 Adapters G 5/4 on page 58 Preassembled accessories set for SMART Digital XL on page 58

Hoses for pump connection size G 5/4

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

Pump connection size: G 5/4



Fig. Hoses

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Size (internal/external diameter) [mm]	Material	Max. pressure at 20 °C [bar]	Length [m]	Product number
200	13/20	PVC, textile-reinforced	15	3	96727423
				10	96727420
				50	96692592
460	19/27	PVC, textile-reinforced	12	3	96727426
				10	96696200
				50	96695788
	19/24.6	PVC, reinforced with a plastic spiral	7	3	99168771

TM018958

Foot valves FV

Foot valves FV are installed at the lower end of the inlet hose.

Foot valves are suitable for the following applications:

- Extraction of chemicals from unpressurised containers.



Fig. Foot valve, connection size G 5/4

Order data for foot valves FV with connection size G 5/4

Foot valves G 5/4 have no level indication.

The delivery includes:

- Strainer (mesh size approx. 0.8 mm)
- Non-return valve
- Hose and pipe connection set:
 - for hoses with internal diameter 19 or 20 mm
 - for pipes with external diameter 25 mm (PE includes PVC inlay, PVDF includes PVDF inlay)
- Pipe connection set: threaded, Rp 3/4, internal thread (stainless steel).

Remark: When using the foot valves with hose installation, a rigid pipe should be slipped over the hose to keep the suction line straight and upright in the tank.

Dimensions

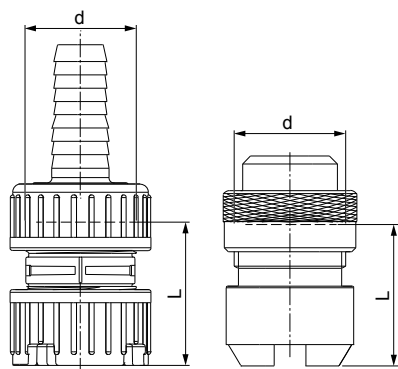


Fig. Left: Foot valve FV (PE, PVDF). Right: Foot valve FV (stainless steel)

Material	d [mm]	L [mm]
PE, PVDF	53	57
SS	50	57

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Material			Product number
	Body	Gasket	Ball	
460	PE	FKM / EPDM	Ceramic	99168633
		PTFE	Ceramic	99168635
	PVDF	FKM / EPDM	Ceramic	99168636
		PTFE	Ceramic	99168649
	SS ¹⁾	PTFE	SS ²⁾	99170593

1) Stainless steel 1.4571, 1.4435, 1.4305

2) Stainless steel 1.4401

Rigid suction lances RSL

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

Rigid suction lances RSL are suitable for the following applications:

- Extraction of chemicals from unpressurised containers.
- Monitoring of liquid level in the chemical container (versions with two-step level indication).

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



Fig. Rigid suction lance, connection size G 5/4

Order data for rigid suction lances RSL with connection size G 5/4

The delivery includes:

- Strainer (mesh size approx. 2.2 mm)
- Non-return valve
- Hose and pipe connection set:
 - for hoses with internal diameter 19 or 20 mm
 - for PVC pipes with external diameter 25 mm
- Adjustable tank connection with holes for a deaeration line.

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

- Reed-switch unit with 2 floaters
- 5 metres of cable with PE jacket
- M 12 plug to connect DDA, DDE, DME or DDI dosing pump.

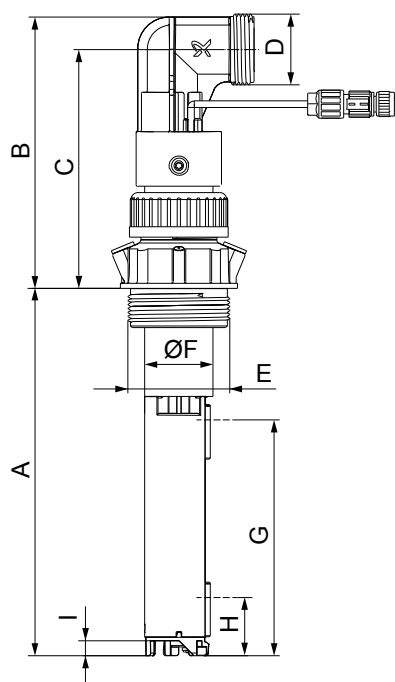
The contact type of the low-level and empty-tank indication is factory-set to NO. The contact type can be set to NC by turning the floaters upside down.

Electrical data of the level indication:

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

TM068423

Dimensions



TM068130

Fig. Rigid suction lance

A [mm]	B [mm]	C [mm]	D	E	øF [mm]	G* [mm]	H* [mm]	I [mm]
500	159	140	G 5/4	G 2	40	138	34	8.7
690								
980								
1200								

* Switching level for water

Selection

Type	Tank volume [l]	Recommended immersion depth (A) [mm]
Grundfos cylindrical tank	60	500
	100	690
	200	690
	300	980
	500	1200
	1000	1200
Grundfos square tank	100	690
L-ring drum	120	980
	220	980
Steel drum	216	980
Standard jerricans according to EN 12712	33 (large cap)	500
	25, 30, 33	500
	60	690
IBC	all sizes	1200

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Max. immersion depth [mm]	Material			Product number	
		Body	Gasket	Ball	RSL without level indication	RSL with level indication
460	500	PE	FKM, EPDM	Ceramic	99199363	99161410
			PTFE	Ceramic	99199364	99161411
	690	PE	FKM, EPDM	Ceramic	99199365	99161412
			PTFE	Ceramic	99199366	99161943
	980	PE	FKM, EPDM	Ceramic	99199367	99161944
			PTFE	Ceramic	99199368	99161945
	1200	PE	FKM, EPDM	Ceramic	99199369	99161946
			PTFE	Ceramic	99199370	99161947

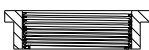
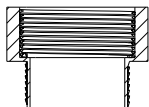
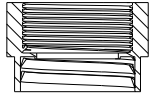
Accessories for rigid suction lances RSL**Adapters for container connection**

These adapters allow the installation of standard rigid suction lances (G 2 thread) on different types of containers.



Fig. Adapters for containers

Order data

Type		For container type	Material	Product number
	TM048470	Counter nut for tanks without threaded opening, e.g. 100-litre square tank or 1000-litre cylindrical tank	PVC, grey	98071170
	TM048471	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
	TM048473	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
	TM048472	IBC (Intermediate Bulk Container) with opening of ø150 mm, S 160 x 7	PE, black	98071177

Emission protection kits for rigid suction lances RSL

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

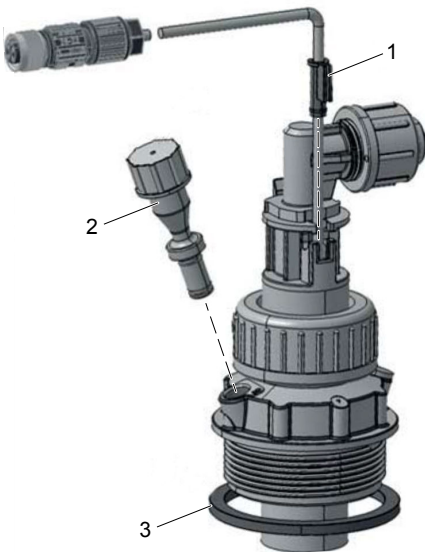
Two variants are available:

- 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.

TM048506

The delivery includes:

- Gasket for the tank adapter
- Snifting valve or hose nipple 4/6 mm (hose is not included)
- Gasket for the cable outlet.



TM069088

Fig. Emission protection kit

Pos.	Description
1	Gasket for the cable outlet
2	Air valve
3	Gasket for the tank adapter

Order data

Variant	Product number
Emission protection kit with snifting valve	98071178
Emission protection kit for use with filter	98071179

Flat-plug adapter for DMX and DMH with AR control unit

The flat-plug adapter allows to connect rigid 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).



TM070206

Fig. Flat-plug adapter for DMX and DMH with AR control unit

Order data

Description	Product number
Flat-plug adapter for DMX and DMH with AR control unit	96635010

Injection units

Standard injection units

Injection units connect the dosing line with the process line. They ensure a minimum counterpressure and avoid backflow of the dosing medium.



Fig. Standard injection unit

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.

- 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.



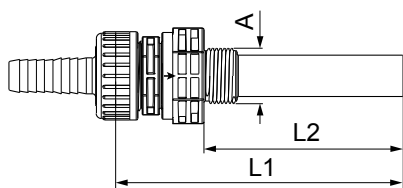
Fig. Injection unit with ball valve

Order data for injection units for pump connection size G 5/4

Injection units for medium-sized dosing pumps with G 5/4 connections ensure a minimum counterpressure of 0.7 bar. The delivery includes:

- Injection pipe
 - immersion depth: 120 mm
 - PP, PVC and PVDF versions can be shortened
- Spring-loaded non-return valve with alloy C-4 spring
- Hose and pipe connection set (PVC, PP, PVDF):
 - for hoses with internal diameter 19 or 20 mm
 - for pipes with external diameter 25 mm
- Pipe connection set (Stainless steel): threaded, Rp 3/4, internal thread

Dimensions of standard injection units



A	L1 [mm]	L2 [mm]
G 1	173	120

TM068428

TM068429

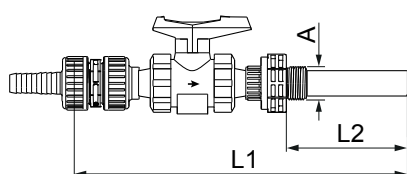
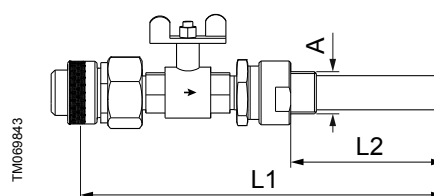
TM069844

Order data of standard injection units

Max. flow rate: 460 l/h

The flow rate values apply to liquids with a viscosity similar to water.

Max. pressure [bar]	Material			Product number
	Body	Gasket	Ball	
10	PVC	FKM	Ceramic	99168657
		EPDM	Ceramic	99168658
		PTFE	Ceramic	99169217
	PP	FKM	Ceramic	99169220
		EPDM	Ceramic	99169223
	PVDF	FKM	Ceramic	99169227
		EPDM	Ceramic	99169228
		PTFE	Ceramic	99169229
16	Stainless steel	PTFE	Stainless steel	99169230

Dimensions of injection units with ball valve**Fig.** Body material: PVC**Fig.** Body material: Stainless steel

Material	A	L1 [mm]	L2 [mm]
PVC	G 1	330	120
Stainless steel	G 1	285.5	120

Order data for injection units with ball valve

Max. flow rate: 460 l/h

Max. pressure: 10 bar

The flow rate values apply to liquids with a viscosity similar to water.

Material			Product number
Body	Gasket	Ball	
PVC	FKM	Ceramic	99206582
	EPDM	Ceramic	99206585
Stainless steel	PTFE	Stainless steel	99206586

Pressure relief valves and pressure loading valves

Pressure relief valves PRV

Pressure relief valves PRV protect the pump and the outlet-side installations against excessive pressure. All pressurised dosing installations should include a pressure relief valve.



Fig. Pressure relief valve PRV, G 5/4

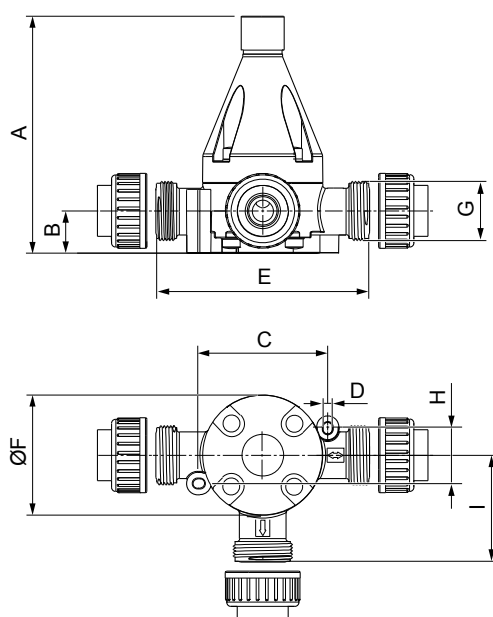
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Order data for pressure relief valves PRV for pump connection size G 5/4

Pressure relief valves PRV for medium-sized dosing pumps with G 5/4 connections are installed in the outlet line near the pump using the 2 in-line connections. The side connection leads the relief liquid back into the tank.

- Relief pressure:
 - factory-set to 10 bar approximately
 - adjustable from 3 to 10 bar
- Max. operating pressure: 10 bar
- Max. flow rate: 460 l/h
 - The flow rate values apply to liquids with a viscosity similar to water.
- Hose and pipe connection set (PVC, PP, PVDF):
 - for hoses with internal diameter 19 or 20 mm
 - for pipes with external diameter 25 mm
- Pipe connection set (Stainless steel): threaded, Rp 3/4, internal thread

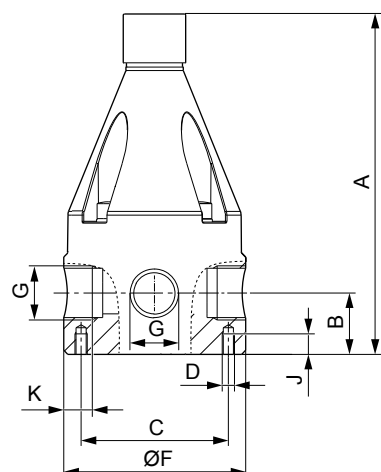
Dimensions of PP, PVC, PVDF pressure relief valves



TM068077

A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	øF [mm]	G	H [mm]	I [mm]
168	30	92	6.5	150	85	G 5/4	40	75

Dimensions of stainless-steel pressure relief valves



TM068247

A [mm]	B [mm]	C [mm]	D	ØF [mm]	G	J [mm]	K [mm]
167	30	63	M 6	89	Rp 3/4	10	17.5

Order data for pressure relief valves

Material		Product number
Body	Gaskets	
PVC	FKM / EPDM	99131032
	PTFE	99141139
PP	FKM / EPDM	99141197
PVDF	FKM / EPDM	99141212
	PTFE	99141224
Stainless steel	-	99141228

Pressure loading valves PLV

Pressure loading valves PLV maintain a constant counterpressure for the dosing pump. They are used in the following applications:

- Too low counterpressure or no counterpressure at all
- Fluctuating system pressure with outlet-side pulsation damper
- To prevent syphoning, when the inlet pressure is higher than the counterpressure

Pressure loading valves are installed in the outlet line.

Pressure loading valves should not be used as shut-off valves.



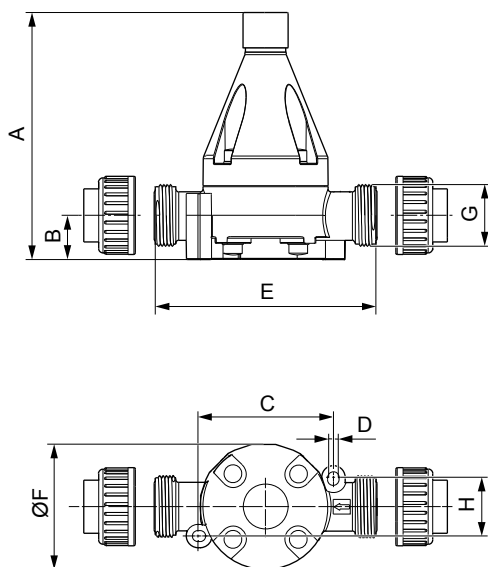
TM068422

Fig. Pressure loading valve PLV, G 5/4

Order data for pressure loading valves PLV for pump connection size G 5/4

- Loading pressure:
 - factory-set to 3 bar approximately
 - adjustable from 3 to 10 bar
- Max. operating pressure: 10 bar
- Max. flow rate: 460 l/h
 - The flow rate values apply to liquids with a viscosity similar to water.
- Hose and pipe connection set (PVC, PP, PVDF):
 - for hoses with internal diameter 19 or 20 mm
 - for pipes with external diameter 25 mm
- Pipe connection set (Stainless steel): threaded, Rp 3/4, internal thread

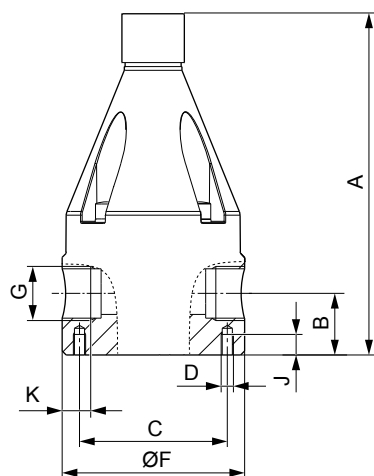
Dimensions of PP, PVC, PVDF pressure loading valves



TM068090

A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G	H [mm]
168	30	92	6.5	150	85	G 5/4	40

Dimensions of stainless-steel pressure loading valves



TM068246

A [mm]	B [mm]	C [mm]	D	F [mm]	G	J [mm]	K [mm]
167	30	63	M 6	89	Rp 3/4	10	17.5

Order data

Material		Product number
Body	Gaskets	
PVC	FKM / EPDM	99132186
	PTFE	99140593
PP	FKM / EPDM	99140610
PVDF	FKM / EPDM	99140646
	PTFE	99140651
Stainless steel	-	99135772

Pressure valves PV

Pressure valves PV provide a constant counterpressure of 3 bar.

They are particularly required for SMART Digital XL DDA-FCM pumps at very small flow rates.

Pressure valves are installed either directly on the pump outlet valve, or on the pressure relief valve.

Order data for pressure valves PV for pump connection size G 5/4

- Loading pressure: 3 bar, not adjustable
- Max. operating pressure: 10 bar
- Max. flow rate: 200 l/h
 - The flow rate values apply to liquids with a viscosity similar to water.
- Spring material: Alloy C-4
- No connections included

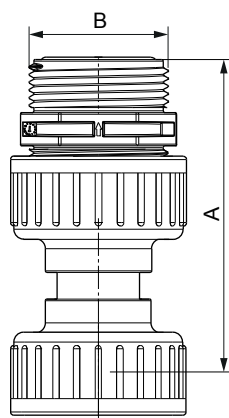
Dimensions

Fig. Pressure valve PV

A [mm]	B
94	G 5/4

Order data

Material			Product number
Body	Ball	Gasket	
PVC	Ceramic	EPDM	99229021
		FKM	99229033
PVDF	Ceramic	EPDM	99229018
		FKM	99229020
Stainless steel	Stainless steel	PTFE	99229034

TMO68404

Pulsation dampers and calibration columns

Discharge-side pulsation dampers DB and DBG

Pulsation dampers are used to even out the pulsating flow and pressure produced by positive displacement pumps like diaphragm dosing pumps.

Pulsation dampers DB and DBG have a separating diaphragm and are intended for the outlet side of the dosing pump. They are especially designed for installations with long outlet lines with a small diameter, or with rigid pipes. The pulsation dampers optimise the dosing accuracy and protect the pump and the outlet line against pressure surges.

Pulsation dampers DB and DBG have an air or nitrogen cushion inside, which is separated from the dosing medium by a separating diaphragm. This keeps the preload pressure stable for a long time and avoids that air or nitrogen is dissolved in the dosing medium.

In PVC, PP, and stainless steel pulsation dampers, an FKM or EPDM bladder is used as separating diaphragm, in PVDF pulsation dampers a PTFE bellows is used as separating diaphragm.

Pulsation dampers DBG include a pressure gauge for easy setting of the correct pressure. Pulsation dampers DB have no pressure gauge.

Grundfos SMART Digital dosing pumps do not require a DB or DBG pulsation damper, if the flow rate is limited to 75 % of the maximum dosing capacity of the pump. In rigid pipe installations, the flow rate without pulsation damper should not exceed 50 % of the maximum dosing capacity of the pump.

If the counterpressure in the system is low or fluctuating, the installation of a pressure loading valve PLV after the pulsation damper may be required to optimise its function.



Fig. Discharge-side pulsation damper DBG

TM068424

Suction-side pulsation dampers CSD with calibration scale

Pulsation dampers are used to even out the pulsating flow and pressure produced by positive displacement pumps like diaphragm dosing pumps.

Pulsation dampers CSD are installed on the inlet side of the dosing pump. They can be used for multiple pumps that are supplied by the same inlet line.

Pulsation dampers CSD help to ensure the accuracy of dosing pumps, which is highly dependent on proper suction conditions. In installations with long inlet lines or inlet lines with a small diameter, the use of a CSD pulsation damper is recommended.

Pulsation dampers CSD have a transparent PVC cylinder with a fine volume scale. When combined with a shut-off valve in the inlet line, they can also be used for calibration or flow measurement. In installations without flooded suction, the optional manual vacuum pump kit simplifies startup of the dosing pump.



Fig. Suction-side pulsation dampers CSD with calibration scale

TM068450

Calibration columns

Calibration columns have a graduated glass cylinder with a fine scale. A shut-off valve on the lower end can disconnect them from the inlet-side installation during normal operation.

One calibration column can be used for multiple pumps that are supplied by the same inlet line.

Calibration columns must not be used as pulsation dampers.

Sizing guide for pulsation dampers and calibration columns, pump connection size G 5/4

Look up your pump type in the table. Find the required pulsation damper or calibration column volume in the respective table column.

Pump type	Pump stroke volume [ml]	Required volume [l]		
		DB / DBG	CSD	Calibration column
DDA / DDE 60-10	5.56	0.3 - 0.36	1.5	2.0
DDA / DDE 120-7	11.58			
DDA / DDE 200-4	19.3			
DME 60-10*	6.25	0.3 - 0.36	1.5	2.0
DME 150-4	15.6			
DDI 150-4	13.9	0.3 - 0.36	1.5	2.0
DMX 17-4	10.4	0.3 - 0.36	1.5	2.0
DMX 39-4				
DMX 75-4				
DMX 25-3	16			
DMX 60-3				

Pump type	Pump stroke volume [ml]	Required volume [l]		
		DB / DBG	CSD	Calibration column
DMX 115-3	16	0.3 - 0.36	1.5	2.0
DMX 24-8	13.8	0.3 - 0.36	1.5	2.0
DMX 52-8				
DMX 100-8				
DMX 142-8				
DMX 67-10	18.5			
DMX 132-10	18.5	0.3 - 0.36	1.5	2.0
DMX 190-10	18.5	0.3 - 0.36	1.5	2.0
DMH 21-10	11.3	0.3 - 0.36	1.5	2.0
DMH 43-10				
DMH 67-10				
DMH 83-10				
DMH 100-10				
DMX 37-5	22	0.65 - 0.7	3.0	4.0
DMX 82-5				
DMX 160-5				
DMX 230-5				
DMX 95-8	27.8			
DMX 199-8	27.8	0.65 - 0.7	3.0	4.0
DMX 280-8				
DMX 60-3	36	0.65 - 0.7	3.0	4.0
DMX 130-3				
DMX 255-3				
DMX 380-3				
DMX 152-6	44.6			
DMX 321-6	44.6	0.65 - 0.7	3.0	4.0
DMX 460-6				
DMH 50-10	31.6	0.65 - 0.7	3.0	4.0
DMH 102-10				
DMH 143-10				
DMH 175-10				
DMH 213-10				
DMH 291-10				

* A smaller damper is sufficient, if a high residual pulsation is acceptable.

Order data for pulsation dampers CSD, pump connection size G 5/4

Features

- Prepared for pipe gluing connection with spigot (D) or socket (d).
- Calibration is possible by installing a T-piece and a shut-off valve.
- In installations without flooded suction, the optional manual vacuum pump kit simplifies the startup of the dosing pump.

The delivery includes:

- Sight glass with calibration scale
- Aeration valve
- Material for wall mounting

Dimensions

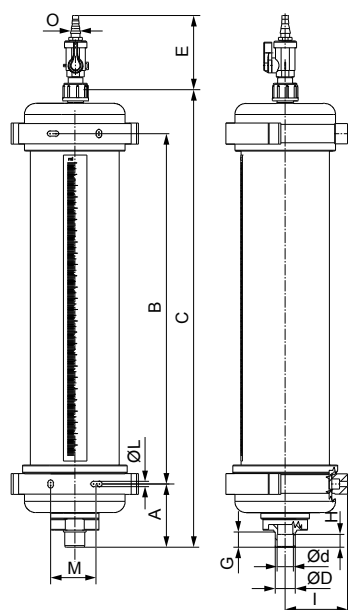


Fig. Suction-side pulsation dampers CSD with calibration scale

Damper volume [l]	A [mm]	B [mm]	C [mm]	$\varnothing D / \varnothing d$ [mm]	E [mm]	G [mm]	H [mm]	I [mm]	$\varnothing L$ [mm]	M [mm]	O [mm]
1.5	75	343	465	25 / 20	92	19	16	70	6.5	40	8-13
3.0	79	435	568	25 / 20	92	19	16	78		60	

Order data

Max. operating pressure: 2 bar

Damper volume [l]	Max. pump stroke volume [ml]	Max. number of pumps with max. stroke volume	Scale division [ml]	Material			Product number
				Body	Sight glass	Gasket	
1.5	19	3	20	PVC	PVC	FKM / EPDM	99188854
						PTFE	99217403
3.0	45	2	25	PVC	PVC	FKM / EPDM	99190807
						PTFE	99217406

Related information

[Manual vacuum pump kit for pulsation damper CSD. See page 101.](#)

Order data for calibration columns, pump connection size G 5/4

Calibration columns are intended for flow measurement or calibration of dosing pumps. They must be isolated from the pipework during normal operation.

The volume in the calibration column can supply the largest suitable pump for approximately 30 seconds.

The delivery includes:

- Glass cylinder with acrylic outer shield
- Aeration valve on top
- Shut-off valve on the bottom

In installations without flooded suction, the optional manual vacuum pump kit simplifies the startup of the dosing pump. Calibration columns must not be used as pulsation dampers.

TM068373

Dimensions

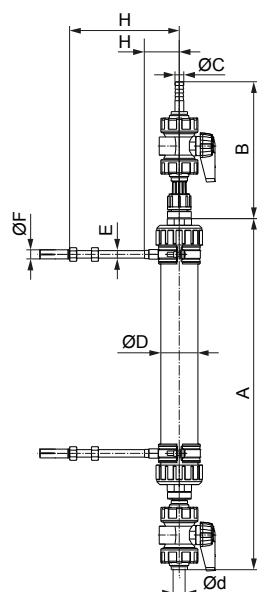


Fig. Calibration column

Volume [l]	Body	A [mm]	B [mm]	øC [mm]	øD [mm]	E	øF [mm]	H [mm]
2.0	PVDF	675	188	12	101.6	M 10	12	78-182
	SS	657	148					
4.0	PVDF	795	188	12	132	M 10	12	92-196
	SS	777	148					

Order data

Volume [l]	Max. pump stroke volume [ml]	Scale division [ml]	Connection ød		Material		Product number
			[mm]		Body	Gasket	
2.0	19	20	25	-	PVDF	FKM	99224309
			-	G 1	SS	FKM	99224310
			-	G 1	SS	EPDM	99224311
4.0	45	25	25	-	PVDF	FKM	99224312
			-	G 1	SS	FKM	99224313
			-	G 1	SS	EPDM	99224314

Related information

[Manual vacuum pump kit for calibration columns. See page 102.](#)

Order data for pulsation dampers DB and DBG, pump connection size G 5/4

We recommend using one pulsation damper per dosing pump.

Preload pressure: 2.7 bar.

The delivery includes:

- Material for wall mounting
- PVC versions are prepared for pipe gluing connection with spigot (D) or socket (d).
- PVDF and PP versions are prepared for pipe welding connection with spigot (D) or socket (d).
- Pulsation dampers DBG include a pressure gauge.

TM068405

Dimensions

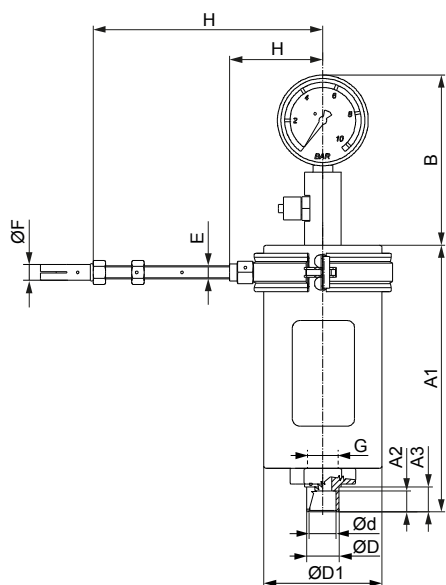


Fig. Pulsation damper DBG, PVC version

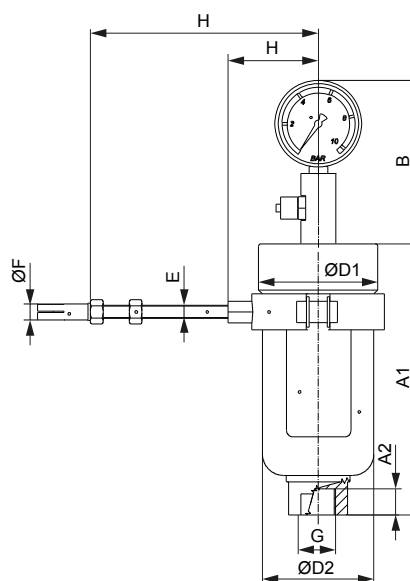


Fig. Pulsation damper DBG, stainless steel version

B [mm]	øF [mm]	E
129	12	M 10

Damper volume [l]	Body material	Connections	A1 [mm]	A2 [mm]	A3 [mm]	øD1 [mm]	øD2 [mm]	H [mm]
		øD/ød [mm] G Internal thread						
0.3	PVDF	25/20 G 3/4	267	20	25	84	63	58-175
0.36	PVC, PP	25/20 G 3/4	203	20	25	90	-	71-175
	SS*	- G 1/2	161	16	-	85	-	67-171
0.65	PVC, PP	25/20 G 3/4	263	20	25	100	-	78-152
	SS*	- G 3/4	205	20	-	90	84	67-171
0.7	PVDF	25/20 G 3/4	138	20	25	98	84	67-171

* Stainless steel 1.4404

Order data

Damper volume [l]	Max. pump stroke volume [ml]	Connections		Material		Type DB		Type DBG	
		øD/ød [mm]	G Internal thread	Body	Gasket	Max. operating pressure [bar]	Product number	Max. operating pressure [bar]	Product number
0.36	19	25/20	G 3/4	PVC	FKM	10	99202662	10	99202687
					EPDM	10	99202663	10	99202688
				PP	FKM	10	99202664	10	99202689
					EPDM	10	99202665	10	99202690
		-	G 1/2	SS	FKM	180	99202667	25	99202692
					EPDM	180	99202669	25	99202693
0.3	19	25/20	G 3/4	PVDF	PTFE	20	99202666	20	99202691

Damper volume [l]	Max. pump stroke volume [ml]	Connections		Material		Type DB		Type DBG	
		øD/ød [mm]	G Internal thread	Body	Gasket	Max. operating pressure [bar]	Product number	Max. operating pressure [bar]	Product number
0.65	45	25/20	G 3/4	PVC	FKM	10	99202670	10	99202694
					EPDM	10	99202671	10	99202695
				PP	FKM	10	99202672	10	99202696
					EPDM	10	99202673	10	99202697
		-	G 3/4	SS	FKM	50	99202675	25	99202699
					EPDM	50	99202676	25	99202700
0.7	45	25/20	G 3/4	PVDF	PTFE	20	99202674	20	99202698

Related information

Order data for filling devices for pulsation dampers DB and DBG. See page 100.

Tyre-valve adapter for pulsation dampers DB and DBG. See page 101.

Pressure gauges for discharge-side pulsation dampers with separating diaphragm. See page 101.

Accessories for hydraulic connection

Pump connection kits and inlay kits for pump connection size G 5/4

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

A pump connection kit includes one set of inlays and one union nut.



TM068425

Fig. Pump connection kit

The inlay kits are used to connect pumps and accessories to pipes or hoses that differ from Grundfos standard sizes. An inlay kit includes two sets of inlays.



TM068430

Fig. Inlay kit

Order data

Application	Connection type	For hose/pipe size		Code	Material	Product number	
		Internal	External			Connection kit	Inlay kit
Hose connection	Nipple and clamp	19, 20 mm	-	U3	PP	99082037	-
Pipe connection	Gluing or welding inlay	-	25 mm		PVC	99082038	-
					PVDF	99082039	-
Hose connection	Cone and ring	13 mm	20 mm	A6	PVC	91835696	99170747
Hose connection	Nipple and clamp	19, 20 mm or 3/4"	-	Q	PP	99169576	99169735
					PVC	99169603	99169740
					PVDF	99169728	99169738

Application	Connection type	For hose/pipe size		Code	Material	Product number	
		Internal	External			Connection kit	Inlay kit
Pipe connection	Welding inlay	-	25 mm	B4	PP	91835697	99171119
					PVDF	91835698	99171146
			DN 20, 3/4"	C0	SS	99369686	-
Pipe connection	Gluing inlay	-	25 mm	B0	PVC	96701989	99171177
			3/4" pipe (US) or 26.6 mm (BS)	C7	PVC	99170858	99171222
Pipe connection	External thread	3/4 NPT		A7	PVC	99082040	99171707
					PP	99082041	99171776
					PVDF	99082042	99171793
Pipe connection	Internal thread	Rp 3/4		A1	PP	99082043	99182104
					PVDF	99082044	99182109
					SS*	99082045	99182114
					Alloy C-4 **	99082046	99182136
	Internal thread	3/4 NPT		A3	PP	99082047	99174974
					PVDF	99082048	99175004
					SS*	99082049	99175015
					Alloy C-4 **	99082050	99175031
Pipe connection	Cutting-ring type	19 mm	22 mm	C3	SS*	96727555	-

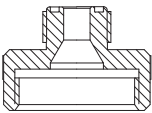
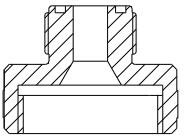
* Union nut: Stainless steel 1.4401, inlay: Stainless steel 1.4571

** 2.4610 (Alloy C-4)

Threaded adapters G 5/4

With threaded adapters, different sizes of threaded connections can be connected. A threaded adapter includes a gasket.

Technical data

Type	Threaded connection size		Material		Product number
	Internal thread	External thread	Body	Gaskets	
 TM048301	G 5/4	G 5/8	PP	FKM / EPDM	95730432
			PVC	FKM / EPDM	95730433
				PTFE	95730434
			PVDF	FKM / EPDM	95730435
				PTFE	95730436
 TM068416	G 5/4	G 3/4	PP	FKM / EPDM	99227512
			PVC	FKM / EPDM	99227511
				PTFE	99228197
			PVDF	FKM / EPDM	99227829
				PTFE	99227533

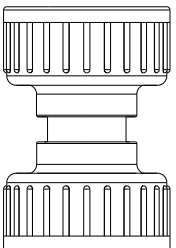
Adapters G 5/4

Union nut adapters

With a union nut adapter, a pressure loading valve PLV or a pressure relief valve PRV can be mounted directly on the pump outlet valve.

Union nut adapters consist of a rigid pipe with union nuts on both ends.

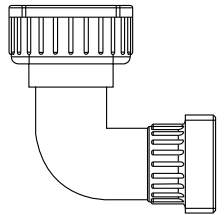
Technical data

Type	Threaded connection size		Body material	Product number
	Internal thread	Internal thread		
 TM068418	G 5/4	G 5/4	PP	99228667
			PVC	99228665
			PVDF	99228669

Elbow adapter

An elbow adapter can be installed, if the space on the inlet side of the pump is confined.

Technical data

Type	Threaded connection size		Body material	Product number
	Internal thread	External thread		
 TM068129	G 5/4	G 5/4	PVC	99168768

Preassembled accessories set for SMART Digital XL

The preassembled accessories set includes a pressure loading valve, a pressure relief valve and a pulsation damper as well as mounting material for a SMART Digital XL DDA or DDE pump.

The mounting material includes a bracket with screws and washers. The bracket can be mounted to a wall or directly on a Grundfos dosing tank. Suitable tank sizes are 200 l, 300 l, 500 l and 1000 l.

Main components of the outlet-side assembly:

- Pressure loading valve PLV, preset to approx. 3 bar loading pressure (adjustable to up to 10 bar)
- Pressure relief valve PRV, preset to approx. 6 bar relief pressure (adjustable to up to 10 bar)
- Pulsation damper DBG with a volume of 0.36 l, with pressure gauge, preloaded to 2.7 bar (preloadable to up to 8 bar)
- Optionally without pulsation damper. For installation without pulsation damper observe the following:
 - For installation with rigid pipes, the pump must be limited to 50 % of its maximum dosing capacity.
 - For installation with hoses, the pump must be limited to 75 % of its maximum dosing capacity.

Order data

Variant	Material		Product number
	Body	Gaskets	
With pulsation damper	PVC	FKM	99211372
		EPDM	99211483
Without pulsation damper	PVC	FKM	99211484
		EPDM	99211485

Dimensions

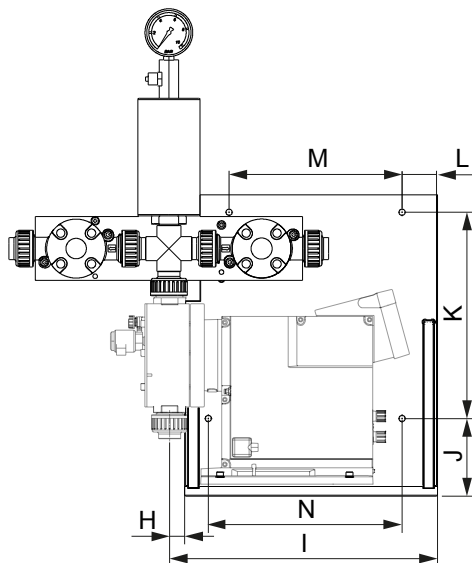


Fig. Preassembled accessories set in side view

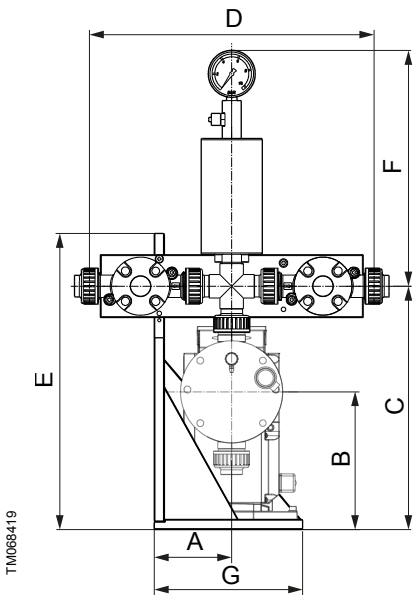


Fig. Preassembled accessories set in back view

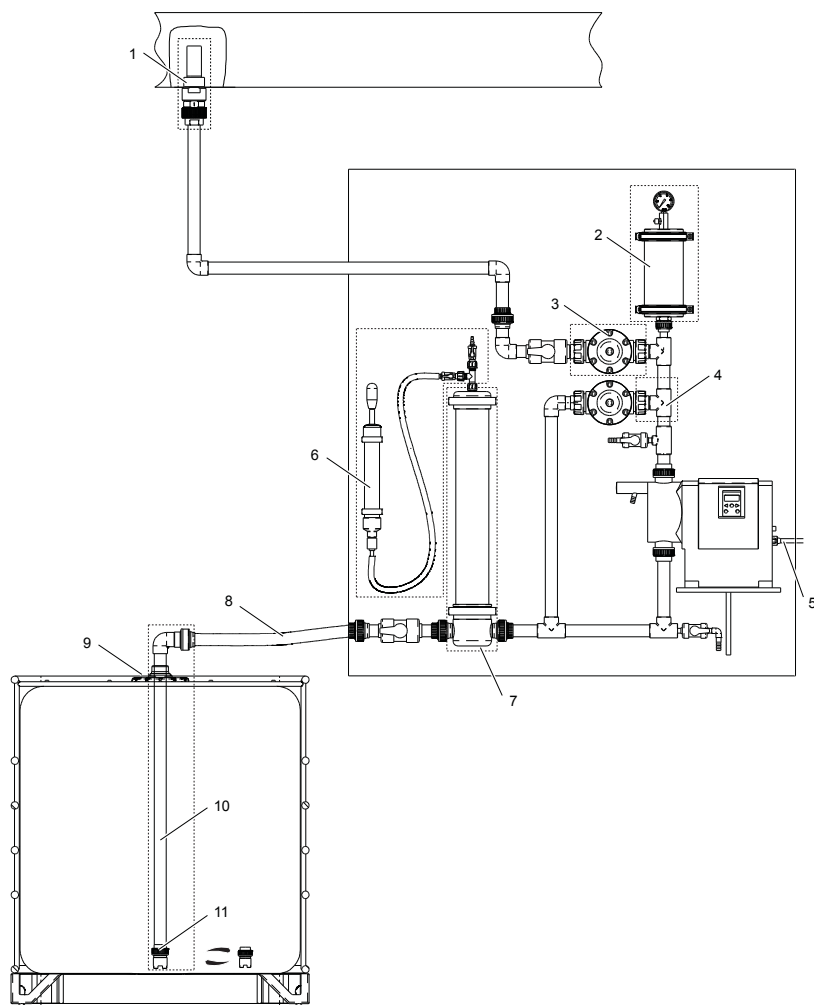
A [mm]	B [mm]	C [mm]			D [mm]	E [mm]
		DDA / DDE 60-10	DDA / DDE 120-7	DDA / DDE 200-4		
117	203	332.5	348	358	410	435

F [mm]	G [mm]	H [mm]	I [mm]	J [mm]	K [mm]	L [mm]	M [mm]	N [mm]
346.5	218	20	385	112	298	51	234	280

4. Hydraulic accessories for pump connection size G 2

Overview of accessories for pump connection size G 2

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



TM070519

Pos.	Description	See section
1	Injection units	Injection units for pump connection size G 2 on page 63
2	Pulsation dampers DBG	Order data for pulsation dampers DB and DBG, pump connection size G 2 on page 68
3	Pressure loading valves PLV	Order data for pressure loading valves PLV for pump connection size G 2 on page 64
4	Pressure relief assembly	Relief assembly for pressure loading valves PLV with G 2 connection on page 65
5	Cables and plugs	Cables and plugs for DME pumps on page 106
6	Manual vacuum pump kits	Order data for pulsation dampers CSD, pump connection size G 2 on page 67
7	Pulsation dampers CSD	
8	Hoses	Hoses for dosing pump connection size G 2 on page 61
9	Adapter for rigid suction lances RSL	Rigid suction lances RSL with connection size G 2 on page 62
10	Rigid suction lances RSL	
11	Foot valves FV	Foot valves FV with connection size G 2 on page 61
-	Pump connection inlay kits and union nut kits	Pump connection inlay kits and union nut kits for pump connection size G 2 on page 70

Hoses for dosing pump connection size G 2

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

Pump connection size: G 2



Fig. Hoses

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Size (internal/external diameter) [mm]	Material	Max. pressure [bar]	Length [m]	Product number
200*	15/20	PVC	0.5	2	96535081
940	32/41	PVC, textile-reinforced	9	5	96535077
				10	96535079

* Relief line for DME dosing head with included deaeration/pressure relief valve

Foot valves FV with connection size G 2

Foot valves G 2 have no level indication.

The delivery includes:

- Strainer (mesh size approx. 1 mm)
- Non-return valve
- Pipe connection set (PVC, PP, PVDF): for pipes with external diameter 40 mm
- Pipe connection set (stainless steel): threaded, Rp 1 1/4, internal thread

Level switches are available as accessories for foot valves. A level switch can be retrofitted, if the foot valve is installed with a pipe with 40 mm external diameter.

Dimensions

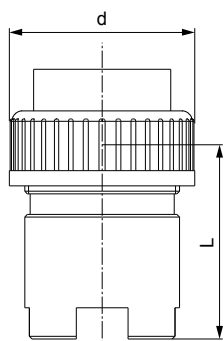


Fig. Foot valve FV

Material	d [mm]	L [mm]
PVC, PP, PVDF	71.5	75
Stainless steel (SS)	70	75

TM018958

TM069925

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Material			Product number
	Body	Gasket	Ball	
1150	PVC	FKM	Glass	99352896
		EPDM	PTFE	99352897
		PTFE	PTFE	99352898
	PP	FKM	Glass	99352899
		EPDM	PTFE	99352900
	PVDF	FKM	PTFE	99352902
		PTFE	PTFE	99352903
	SS	PTFE	SS	99352904

Rigid suction lances RSL with connection size G 2

These rigid suction lances are designed for the use with stationary tanks (e.g. Grundfos tanks). Rigid suction lances for stationary tanks have a foot valve with strainer. Level switches are available as accessories and can be retrofitted. The length of the rigid pipe can be adapted to the customer's requirements. The pipe can be cut and assembled without gluing. The delivery includes:

- Strainer (mesh size approx. 0.8 mm)
- Non-return valve
- Pipe connection set (PVC): for pipes with external diameter 40 mm
- Adjustable tank connection

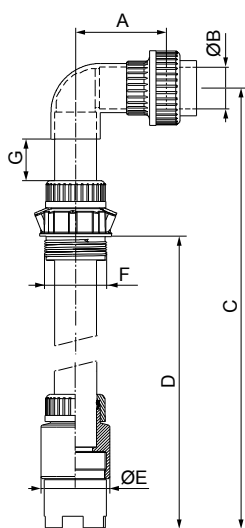
Dimensions

Fig. Rigid suction lance RSL

A [mm]	øB [mm]	C [mm]	D [mm]	øE [mm]	F	G [mm]
87	40	1342	1200	66	G 2	40

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Max. immersion depth [mm]	Material			Product number
		Body	Gasket	Ball	
1150	1200	PVC / PVDF	FKM	Glass	99328221
			EPDM	Glass	99328227

TM069952

Accessories for rigid suction lances RSL

Adapters for container connection

These adapters allow the installation of standard rigid suction lances (G 2 thread) on different types of containers.

Order data

Type	For container type	Material	Product number
	TM048470 Counter nut for tanks without threaded opening, e.g. 100-litre square tank or 1000-litre cylindrical tank	PVC, grey	98071170
	TM048472 IBC (Intermediate Bulk Container) with opening of $\varnothing 150$ mm, S 160 x 7	PE, black	98071177

Injection units for pump connection size G 2

Injection units connect the dosing line with the process line. Injection units for large dosing pumps with G 2 connections ensure a minimum counterpressure of 0.6 bar.

The delivery includes:

- Injection pipe
 - immersion depth: 120 mm
 - PP, PVC and PVDF versions can be shortened
- Spring-loaded non-return valve with alloy C-4 spring
- Pipe connection set (PVC, PP, PVDF): for pipes with external diameter 40 mm
- Pipe connection set (Stainless steel): threaded, Rp 1 1/4, internal thread

Dimensions

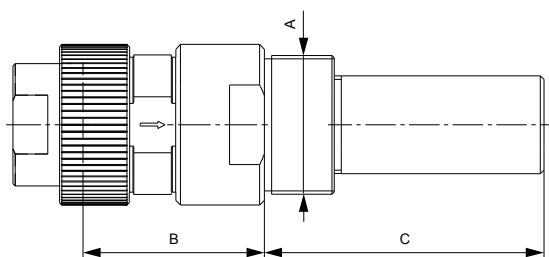


Fig. Injection unit

A	B [mm]	C [mm]
G 2	78	120

Order data

- Max. flow rate: 1500 l/h
- The flow rate values apply to liquids with a viscosity similar to water.

Max. pressure [bar]	Material			Product number
	Body	Gasket	Ball	
10	PVC	FKM	Glass	99332974
		EPDM	PTFE	99333838
		PTFE	PTFE	99333839
	PP	FKM	Glass	99333903
		EPDM	PTFE	99333904
	PVDF	FKM	PTFE	99333905
		EPDM	PTFE	99333907
		PTFE	PTFE	99333909
	Stainless steel	PTFE	Stainless steel	99333910

TM069992

Pressure loading valves PLV

Pressure loading valves PLV maintain a constant counterpressure for the dosing pump. They are used in the following applications:

- Too low counterpressure or no counterpressure at all
- Fluctuating system pressure with outlet-side pulsation damper
- To prevent syphoning, when the inlet pressure is higher than the counterpressure

Pressure loading valves are installed in the outlet line.

Pressure loading valves should not be used as shut-off valves.

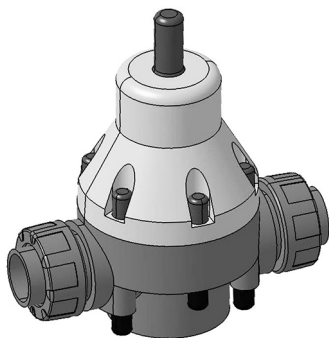


Fig. Pressure loading valve PLV, G 2

Order data for pressure loading valves PLV for pump connection size G 2

- Loading pressure: adjustable from 0.5 to 10 bar
- Max. operating pressure: 10 bar
- Max. flow rate: 1500 l/h
 - The flow rate values apply to liquids with a viscosity similar to water.
- Pipe connection set (PVC, PP, PVDF): for pipes with external diameter 40 mm
- Pipe connection set (Stainless steel): threaded, Rp 1 1/4, internal thread

Dimensions

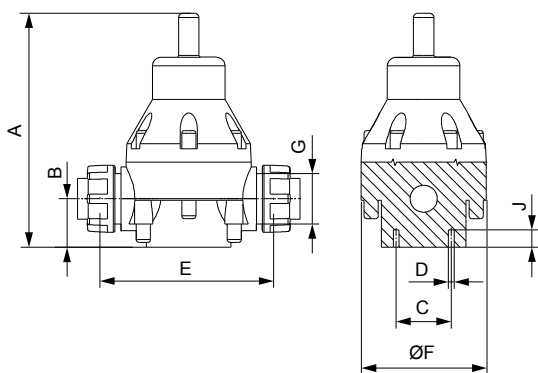


Fig. Body material: PVC, PP, PVDF

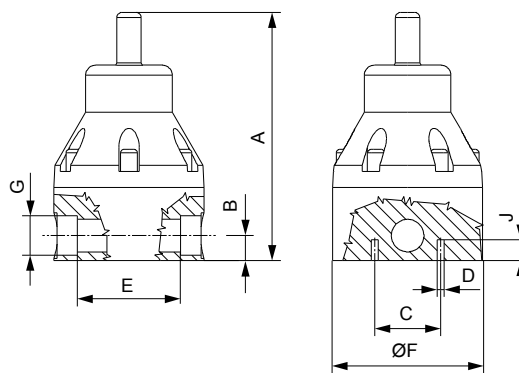


Fig. Body material: Stainless steel

Body material	A [mm]	B [mm]	C [mm]	D	E [mm]	øF [mm]	G	J [mm]
PVC, PP	276	57	65	M 8	205	148	G 2	20.4
PVDF	318	56	65	M 8	200	147		
Stainless steel	245	24.5	65	M 8	102	148	Rp 1 1/4	20.5

Order data

Material		Product number
Body	Gaskets	
PVC	FKM / EPDM	99367198
	PTFE	99367199
PP	FKM / EPDM	99367200
PVDF	FKM / EPDM	99367201
	PTFE	99367203
Stainless steel	-	99367204

Relief assembly for pressure loading valves PLV with G 2 connection

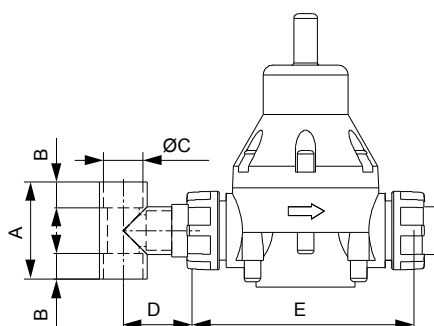
Pressure relief valves protect the pump and the outlet-side installations against excessive pressure. All pressurised dosing installations should include a pressure relief valve.

Pressure relief valves are installed in the outlet line near the pump. A pressure relief valve for a large dosing pump can be created by combining a T-piece and a PLV to a relief assembly. The relief line is connected to the outlet of the PLV.

The delivery includes:

- T-piece with union nut for connection of the PLV
- Pipe connection for pipes with external diameter of 40 mm

The pressure loading valve PLV is not included and must be ordered separately.

Dimensions

TM070283

Fig. Relief assembly for pressure loading valves

A [mm]	B [mm]	øC [mm]	D [mm]	E [mm]
98	26	40	78	205

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Material	Product number
1500	PVC	99370957
	PP	99370958
	PVDF	99370960

Pulsation dampers**Discharge-side pulsation dampers DB and DBG**

Pulsation dampers are used to even out the pulsating flow and pressure produced by positive displacement pumps like diaphragm dosing pumps.

Pulsation dampers DB and DBG have a separating diaphragm and are intended for the outlet side of the dosing pump. They are especially designed for installations with long outlet lines with a small diameter, or with rigid pipes. The pulsation dampers optimise the dosing accuracy and protect the pump and the outlet line against pressure surges.

Pulsation dampers DB and DBG have an air or nitrogen cushion inside, which is separated from the dosing medium by a separating diaphragm. This keeps the preload pressure stable for a long time and avoids that air or nitrogen is dissolved in the dosing medium.

In PVC, PP, and stainless steel pulsation dampers, an FKM or EPDM bladder is used as separating diaphragm, in PVDF pulsation dampers a PTFE bellows is used as separating diaphragm.

Pulsation dampers DBG include a pressure gauge for easy setting of the correct pressure. Pulsation dampers DB have no pressure gauge.

If the counterpressure in the system is low or fluctuating, the installation of a pressure loading valve PLV after the pulsation damper may be required to optimise its function.



Fig. Discharge-side pulsation damper DBG

TM068424

Suction-side pulsation dampers CSD with calibration scale

Pulsation dampers are used to even out the pulsating flow and pressure produced by positive displacement pumps like diaphragm dosing pumps.

Pulsation dampers CSD are installed on the inlet side of the dosing pump. They can be used for multiple pumps that are supplied by the same inlet line.

Pulsation dampers CSD help to ensure the accuracy of dosing pumps, which is highly dependent on proper suction conditions. In installations with long inlet lines or inlet lines with a small diameter, the use of a CSD pulsation damper is recommended.

Pulsation dampers CSD have a transparent PVC cylinder with a fine volume scale. When combined with a shut-off valve in the inlet line, they can also be used for calibration or flow measurement. In installations without flooded suction, the optional manual vacuum pump kit simplifies startup of the dosing pump.



Fig. Suction-side pulsation dampers CSD with calibration scale

TM068450

Sizing guide for pulsation dampers, pump connection size G 2

Look up your pump type in the table. Find the required pulsation damper volume in the respective table column.

Pump type	Pump stroke volume [ml]	Required volume [l]	
		DB / DBG	CSD
DME 375-10	39.1	1.4-1.5	5
DME 940-4*	97.9		
DMX 315-3	73	1.4-1.5	5
DMX 525-3	73	1.4-1.5	5
DMX 765-3			
DMH 194-10	60	1.4-1.5	5
DMH 270-10			
DMH 332-10			
DMH 403-10			
DMH 550-10			
DMH 220-10	131	2.6	10
DMH 440-10			
DMH 575-10			
DMH 770-10			
DMH 880-10			
DMH 1150-10			
DMH 750-4	171		
DMH 1500-4			

* For very low residual pulsation, a larger damper should be used.

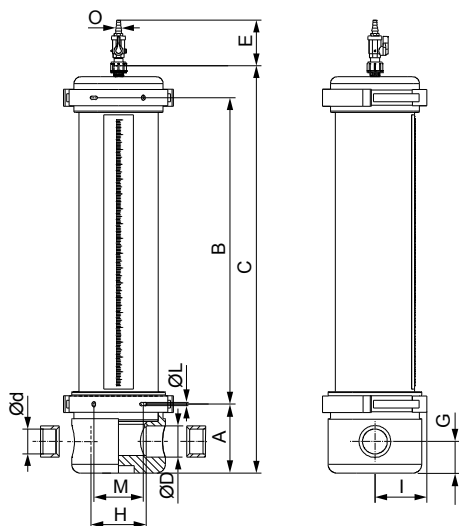
Order data for pulsation dampers CSD, pump connection size G 2**Features**

- Prepared for pipe gluing connection with socket (d).
- Calibration is possible by installing a shut-off valve.
- In installations without flooded suction, the optional manual vacuum pump kit simplifies the startup of the dosing pump.

The delivery includes:

- Sight glass with calibration scale
- Aeration valve
- Material for wall mounting

Dimensions



TM070034

Fig. Suction-side pulsation dampers CSD with calibration scale

Damper volume [l]	A [mm]	B [mm]	C [mm]	ød [mm]	øD [mm]	E [mm]	G [mm]	H [mm]	I [mm]	øL [mm]	M [mm]	O [mm]
5	118.5	700	871	40	50	92	51	71.5	77.5	6.5	60	8-13
10	139.5	600	824	50 40	63	92	64	111.5	95	6.5	90	8-13

Order data

Max. operating pressure: 2 bar

Damper volume [l]	Max. pump stroke volume [ml]	Max. number of pumps with max. stroke volume	Scale division [ml]	Material		Product number
				Body	Sight glass	
5	75	3	10	PVC	PVC	99192488
10	171	3	50	PVC	PVC	99194326

Related information

[Manual vacuum pump kit for pulsation damper CSD. See page 101.](#)

Order data for pulsation dampers DB and DBG, pump connection size G 2

We recommend using one pulsation damper per dosing pump.

Preload pressure: 2.7 bar.

The delivery includes:

- Material for wall mounting
- PVC versions are prepared for pipe gluing connection with spigot (D) or socket (d).
- PVDF and PP versions are prepared for pipe welding connection with spigot (D) or socket (d).
- Pulsation dampers DBG include a pressure gauge.

Dimensions

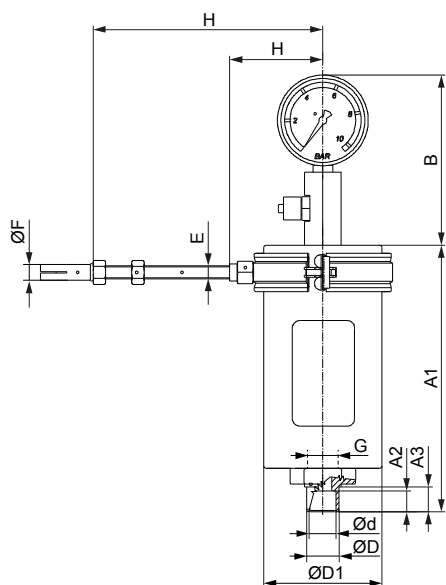


Fig. Pulsation damper DBG, PVC version

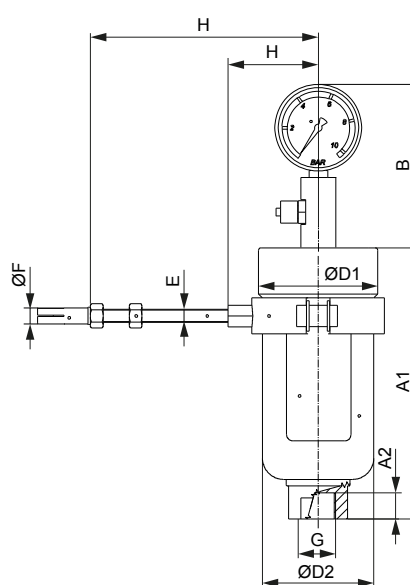


Fig. Pulsation damper DBG, stainless steel version

B [mm]	øF [mm]	E
129	12	M 10

Damper volume [l]	Body material	Connections	A1 [mm]	A2 [mm]	A3 [mm]	øD1 [mm]	øD2 [mm]	H [mm]
		øD/ød [mm] G Internal thread						
1.5	PVC, PP	40/32 G 1	335	22	28	130	-	90-190
1.4	PVDF	40/32 G 3/4	294	22	28	125	104	77-177
1.5	SS*	- G 3/4	245	25	-	110	104	77-177
2.6	PVC, PP	40/32 G 1	365	22	28	160	-	105-205
	PVDF	40/32 G 3/4	360	22	28	170	156	103-203
	SS*	- G 1	295	27	-	140	129	89.5 - 189.5

* Stainless steel 1.4404

Order data

Damper volume [l]	Max. pump stroke volume [ml]	Connections		Material		Type DB		Type DBG	
		øD/ød [mm]	G Internal thread	Body	Gasket	Max. operating pressure [bar]	Product number	Max. operating pressure [bar]	Product number
1.5	75	40/32	G 1	PVC	FKM	10	99331670	10	99332053
					EPDM	10	99331671	10	99332054
				PP	FKM	10	99331672	10	99332055
					EPDM	10	99331693	10	99332056
1.4	75	40/32	G 3/4	PVDF	PTFE	20	99331694	20	99332057
1.5	75	-	G 3/4	SS	FKM	40	99331695	25	99332058
					EPDM	40	99331696	25	99332059

Damper volume [l]	Max. pump stroke volume [ml]	Connections		Material		Type DB		Type DBG	
		øD/ød [mm]	G Internal thread	Body	Gasket	Max. operating pressure [bar]	Product number	Max. operating pressure [bar]	Product number
2.6	171	40/32	G 1	PVC	FKM	10	99333783	10	99333827
					EPDM	10	99333784	10	99333828
				PP	FKM	10	99333785	10	99333829
					EPDM	10	99333786	10	99333830
		-	G 3/4	PVDF	PTFE	20	99333787	20	99333831
			G 1	SS	FKM	30	99333788	25	99333832
					EPDM	30	99333789	25	99333843

Related information

Order data for filling devices for pulsation dampers DB and DBG. See page 100.

Tyre-valve adapter for pulsation dampers DB and DBG. See page 101.

Pressure gauges for discharge-side pulsation dampers with separating diaphragm. See page 101.

Accessories for hydraulic connection

Pump connection inlay kits and union nut kits for pump connection size G 2

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

The inlay kits are used to connect pumps to pipes and hoses that differ from Grundfos standard size.



Fig. Inlay kit

Order data for inlay kits

An inlay kit includes 2 sets of inlays.

Application	Connection type	For hose/pipe size		Connector type key code	Material	Product number
		Internal	External			
Hose connection	Nipple and clamp	32 mm, 41 mm 1 1/4", 1 1/2"	-	C5	PP	96535111
					PVC	99338732
					PVDF	96535112
Pipe connection	Welding inlay	-	40 mm	B5	PP	99305837
			DN 32, 1 1/4"	C1	PVDF	99305838
					SS	99369687
Pipe connection	Gluing inlay	-	40 mm	K	PVC	99305839
			52.5 mm, 1 1/4"	C8	PVC	99338595
Pipe connection	External thread	-	1 1/4 NPT	A8	PVC	99305732
					PP	99305743
					PVDF	99305745
Pipe connection	Internal thread	Rp 1 1/4	-	A2	PP	96608418
				A2	PVDF	96608419
				A2	SS	96575258
		1 1/4 NPT	-	A4	SS	96537895

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Order data for union nut kits

A union nut kit includes 2 union nuts.

Application	Material	Product number
DMX Accessories for dosing pumps	PVC	99307539
	PP	99307540
	PVDF	99307541
DMX Accessories for dosing pumps DME 375-10, DME 940-4	SS	96731914
DME 375-10, DME 940-4	PP	96731916
	PVDF	96731915

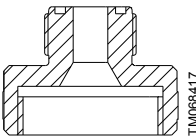
Counter flange sets for DMH 255/257

Suitable for DMH 257 and suction side of DMH 255. A kit includes one counter flange.

Application	Connection type	Pipe size external	Material	Product number
Pipe connection	Gluing	40 mm	PVC	91835728
		40 mm	PP	96727589
	Welding	40 mm	PVDF	96727588
		42.4 mm, DN 32	SS	91835727
		42.4 mm, DN 32	Alloy C-4	96727609

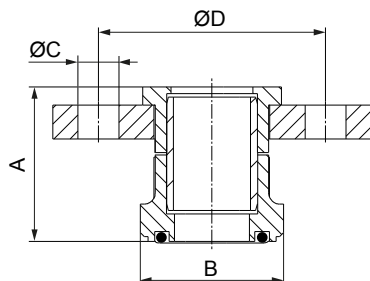
Threaded adapters G 2

With threaded adapters, different sizes of threaded connections can be connected. A threaded adapter includes a gasket.

Type	Threaded connection size		Material		Product number
	Internal thread	External thread	Body	Gaskets	
	G 2	G 5/4	PP	FKM / EPDM	99227945
			PVC	FKM / EPDM	99227943
				PTFE	99227960
			PVDF	FKM / EPDM	99227953
				PTFE	99227948

Flange adapters DN 32

With flange adapters, accessories with G 2 connections can be connected to a dosing pump with DN 32 flanges. A flange adapter includes a gasket for the threaded connection side.

Dimensions

A [mm]	B	øC [mm]	øD [mm]
68	G 2	18	100

TM070343

Order data

Flange	Threaded connection size	Material		Product number
	External thread	Body	Gaskets	
DN 32	G 2	PP	FKM / EPDM	99307979
		PVC	FKM / EPDM	99307977
			PTFE	99307978
		PVDF	FKM / EPDM	99307980
			PTFE	99307981

5. Hydraulic accessories for DMH 28x high-pressure pumps

Accessories for the discharge side of high-pressure dosing pumps of the DMH 28x range are especially designed for high-pressure applications. Check the admissible pressure of all accessories, the one with the lowest permissible pressure defines the maximum pressure of the complete discharge-side installation. Possibly the setting of the pressure relief valve included in the pump must be adjusted accordingly.

Guide to find suitable suction-side accessories for DMH 28x dosing pumps

For the low-pressure suction-side installation of DMH 28x dosing pumps use the standard accessories with the appropriate connection size shown in the table.

Pump type	Pump stroke volume [ml]		Connection size (accessories range)
DMH 280	1.3-200	0.36	G 3/8 Use an adapter on the suction side to convert to G 5/8 and use G 5/8 accessories: <i>Threaded adapters G 3/8 on page 34</i>
	2.2-200		
	2.5-200		
	3.3-200		
DMH 281	2-100	1.11	G 5/8
	4.2-100		
	6.4-100		
	8-100		
	9.6-100		
DMH 287	9-200	5.3	G 5/8
	18-200		
	23-200		
	31-200		
	36-200		
	50-200		
DMH 288	3.3-200	2.33	G 5/8
	7.5-200		
	10-200		
	13-200		
	15-200		
	21-200		
DMH 283	10-100	6	G 5/4
	19-100		
	27-100		
	33-100		
	40-100		
	55-100		
DMH 285	20-100	12	G 5/4
	40-100		
	52-100		
	70-100		
	80-100		
	105-100		
DMH 286	85-50	25.3	G 5/4
	110-50		
	170-50		
	222-50		

Injection units for DMH 28x high-pressure dosing pumps

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.

Dimensions

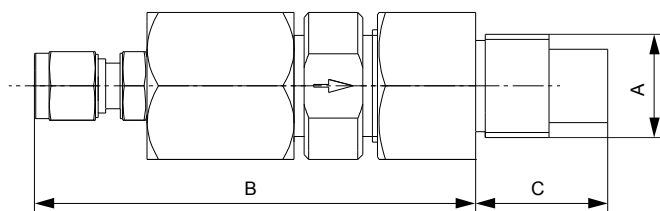


Fig. High-pressure injection unit, flow rate 3.3 l/h

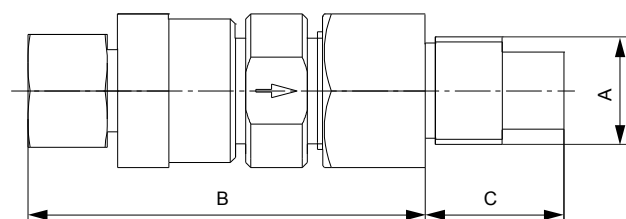


Fig. High-pressure injection unit, flow rate 55 l/h

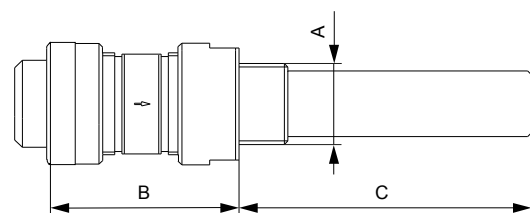


Fig. High-pressure injection unit, flow rate 220 l/h

Max. flow rate [l/h]	A	B [mm]	C [mm]
3.3	G 1/2	90.0	27
55	G 1/2	77.5	27
220	G 1	75	120

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Max. operating pressure [bar]	Dosing line connection size	Material		Product number
			Body, Ball	Gasket	
3.3	200	4/6 mm	Stainless steel	PTFE	99354318
55	200	8/10 mm	Stainless steel	PTFE	99367393
55	200	10/12 mm	Stainless steel	PTFE	99354320
220	100	G 3/4	Stainless steel	PTFE	99354315

TM070227

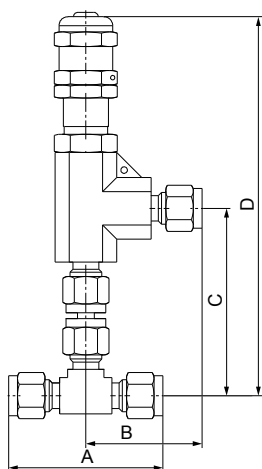
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TM070236

Pressure relief valves PRV for DMH 28x high-pressure dosing pumps

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

Dimensions



TM070299

Fig. Pressure relief valve, max. flow rate 3.3 l/h

Max. flow rate [l/h]	A [mm]	B [mm]	C [mm]	D [mm]
3.3	54	41	66	133
50	72	41	75	142
55	72	46	84	187

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Max. opening pressure range [bar]	Dosing line connection size [mm]	Material		Product number
			Body	Gasket	
3.3	51 103 206	4/6	Stainless steel	FKM	99362083
50	103 206	10/12	Stainless steel	FKM	99362085
55	24 103	10/12	Stainless steel	FKM	99362086

Pulsation dampers for DMH 28x high-pressure dosing pumps

Sizing guide for pulsation dampers for DMH 28x high-pressure dosing pumps

This sizing guide applies to suction-side and discharge-side pulsation dampers. Look up your pump type in the table below.

Pump type		Pump stroke volume [ml]	Required volume [l]	
			DB / DBG-H	CSD
DMH 280	1.3-200	0.36	0.09	0.25
	2.2-200			
	2.5-200			
	3.3-200			
DMH 288	3.3-200	2.33	0.09	0.5
	7.5-200			
	10-200			
	13-200			
	15-200			
	21-200			
DMH 287	9-200	5.3	0.09	0.5
	18-200			
	23-200			
	31-200			
	36-200			
	50-200			
DMH 281	2-100	1.11	0.18	0.5
	4.2-100			
	6.4-100			
	8-100			
	9.6-100			
DMH 283	10-100	6	0.36	1.5
	19-100			
	27-100			
	33-100			
	40-100			
	55-100			
DMH 285	20-100	12	0.36	1.5
	40-100			
	52-100			
	70-100			
	80-100			
	105-100			
DMH 286	85-50	25.3	0.36	3
	110-50			
	170-50			
	222-50			

Related information

Order data for pulsation dampers CSD, pump connection size G 5/8. See page 28.

Order data for pulsation dampers CSD, pump connection size G 5/4. See page 52.

Order data for pulsation dampers DB and DBG-H for DMH 28x high-pressure dosing pumps. See page 77.

Discharge-side pulsation dampers DB and DBG-H

Pulsation dampers are used to even out the pulsating flow and pressure produced by positive displacement pumps like diaphragm dosing pumps.

Pulsation dampers DB and DBG-H are especially designed for installations with long outlet lines with a small diameter, or with rigid pipes. The pulsation dampers optimise the dosing accuracy and protect the pump and the outlet line against pressure surges.

Pulsation dampers DB and DBG-H have a nitrogen cushion inside, which is separated from the dosing medium by a separating diaphragm. This keeps the preload pressure stable for a long time and avoids that nitrogen is dissolved in the dosing medium. A FKM or EPDM bladder is used as separating diaphragm.

Pulsation dampers DBG-H include a pressure gauge for easy setting of the correct pressure. Pulsation dampers DB have no pressure gauge.

Order data for pulsation dampers DB and DBG-H for DMH 28x high-pressure dosing pumps

We recommend using one pulsation damper per dosing pump.

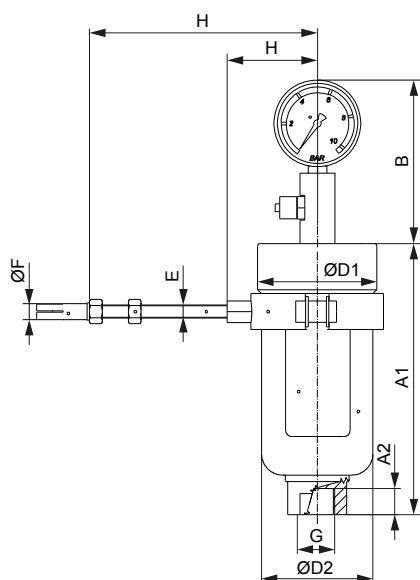
Preload pressure: 2.7 bar.

The pulsation dampers are filled with air in the factory. For use in high-pressure dosing systems (> 10 bar), the air must be replaced with nitrogen.

The delivery includes:

- Material for wall mounting
- Pulsation dampers DBG-H include a pressure gauge.

Dimensions



TM068452

Fig. Pulsation damper DBG-H

Damper volume [l]	A1 [mm]	B [mm]	A2 [mm]	ØD1 [mm]	ØD2 [mm]	E	øF [mm]	G Internal thread	H [mm]
0.09	100	129	14	55	-	M 10	12	G 3/8	52.5 - 152.5
0.36	161	129	16	85	-	M 10	12	G 1/2	67-171
0.65	205	129	20	90	84	M 10	12	G 3/4	67-171

Order data

Damper volume [l]	Max. pump stroke volume [ml]	G Internal thread	Max. operating pressure [bar]	Material		Product number	
				Body	Gasket	Type DB	Type DBG-H
0.09	2	G 3/8	250	SS*	FKM	99336460	99336462
					EPDM	99336461	99336473
0.36	19	G 1/2	160	SS*	FKM	99202667	99336626
					EPDM	99202669	99336625
0.65	45	G 3/4	50	SS*	FKM	99202675	99336634
					EPDM	99202676	99336633

* Stainless steel 1.4404

Related information

[Tank accessories. See page 92.](#)

[Order data for filling devices for pulsation dampers DB and DBG. See page 100.](#)

[Pressure gauges for discharge-side pulsation dampers with separating diaphragm. See page 101.](#)

Order data for connection kits for pulsation dampers DB and DBG-H

Retrofit pulsation damper connection kits for installation with various sizes of pipes.

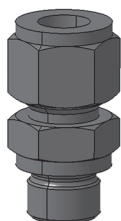


Fig. Pulsation damper connection kit

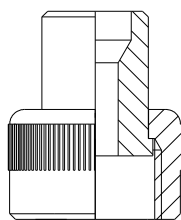
Body material	For damper volume [l]	Pulsation damper connection	Pipe connection [mm]	Product number
Stainless steel 1.4404	0.09	G 3/8	4/6	99369675
			10/12	99369680
	0.36	G 1/2	10/12	99369681

TM070347

Pump connection kits for DMH 28x high-pressure dosing pumps

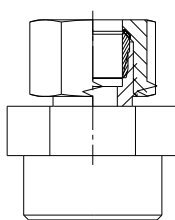
Retrofit pump connection kits for the integration of Grundfos standard dosing pumps into installations with various sizes of pipes.

Material: Stainless steel



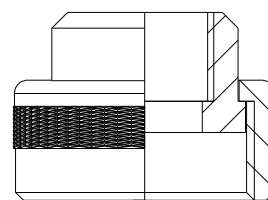
TM070334

Fig. Pipe connection DN 10, 3/8"



TM070333

Fig. Pipe connection 10/12 mm



TM070335

Fig. Pipe connection Rp 3/4

Pump connection size	Connection type	Pipe connection	Code	Min. operating pressure [bar]	Product number
G 3/8	Cutting ring	4/6 mm	B6	200	96727565
G 5/8	Internal thread	Rp 1/4	A	100	97702472
	Cutting ring	4/6 mm	B6	200	97702506
		8/10 mm	C2	200	97702507
		10/12 mm	C9	200	98807664
	Welding nipple	DN 10, 3/8"	A0	40	99369683
G 5/4	Internal thread	Rp 3/4	A1	100	99082045
	Cutting ring	19/22 mm	C3	200	96727555
	Welding nipple	DN 20, 3/4"	C0	40	99369686

6. Hydraulic accessories for DMX 227 dosing pumps

Injection units for DMX 227

Max. operating pressure: 6 bar

Max. operating temperature: 40 °C

Dimensions

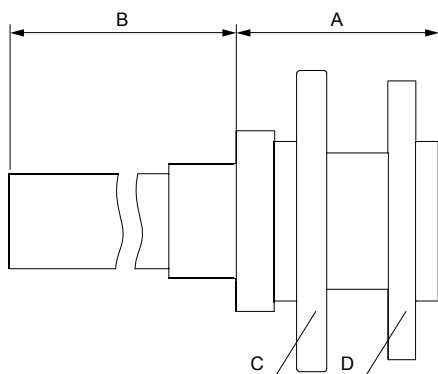


Fig. Injection unit

The flanges comply with DIN 2501 / EN 1092.

A [mm]	B [mm]	C	D
157	220	Flange DN 80	Flange DN 65

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Pump connection size	Material			Product number
		Body	Ball	Gasket	
4000	Flange DN 65	PVC	PVC	FKM	96688319
		PP	PP	FKM	96688320

Pressure relief valves for DMX 227

DN 65 pressure relief valves protect the outlet pipes against too high pressures.

- Overflow function by a diaphragm spring system
- Bypass valves with a connected T-piece
- Relief pressure:
 - factory-set to 10 bar approximately
 - adjustable from 0 to 10 bar

TM070030

Dimensions, PVC and PP version

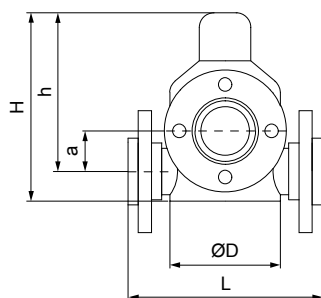


Fig. PVC and PP version

Material	L [mm]	H [mm]	h [mm]	a [mm]	øD [mm]
Body / Gasket					
PVC / FKM	266	230	195	46	130
PVC / EPDM					
PP / FKM	326				

Order data, PVC and PP version

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Pump connection size	Included connections	Material	Product number
			Body / Gasket	
4000	Flange DN 65	Flange DN 65	PVC / FKM	96638461
			PVC / EPDM	96635243
			PP / FKM	96727368

Dimensions, stainless-steel version

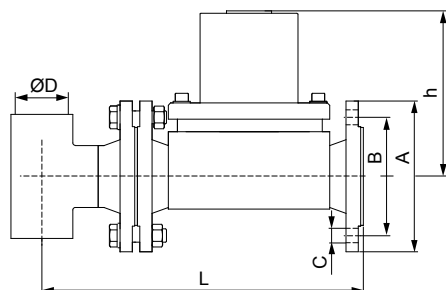


Fig. Stainless-steel version

A [mm]	B [mm]	C [mm]	øD	h [mm]	L [mm]
185	145	18	76 mm / DN 65	203	394

Order data, stainless-steel version

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Pump connection size	Included connections	Material	Product number
			Body / Gasket	
4000	Flange DN 65	Flange DN 65	Stainless steel 1.4571 / FKM	96694452

Pressure loading valves for DMX 227

Pressure loading valves DN 65 are used, if the injection point is at a lower level than the pump.

The opening pressure can be adjusted by a spring-loaded screw.

Loading pressure: factory-set to 3 bar approximately

Dimensions

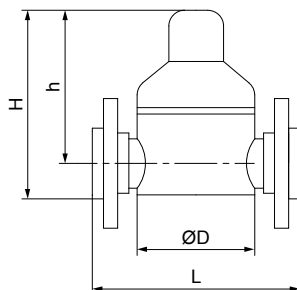


Fig. Pressure loading valve

TMO38638

Material		L [mm]	H [mm]	h [mm]	øD [mm]
Body	Gasket				
PP	FKM	326	230	195	130
PVC	FKM	266	230	195	130
PVC	EPDM	266	230	195	130
Stainless steel 1.4571	FKM	280	243	203	198

Order data

The flow rate values apply to liquids with a viscosity similar to water.

Max. flow rate [l/h]	Pump connection size	Included connections	Material		Product number
			Body	Gasket	
4000	Flange DN 65	Flange DN 65	PP	FKM	96727367
			PVC	FKM	96638486
			PVC	EPDM	96635246
			Stainless steel 1.4571	FKM	96694434

Pulsation dampers DB and DBG for DMX 227

Pulsation dampers DB and DBG have a separating diaphragm and are intended for the outlet side of the dosing pump.

We recommend using one pulsation damper per dosing pump.

Preload pressure: 2.7 bar.

The delivery includes:

- Material for wall mounting
- Pulsation dampers DBG include a pressure gauge.

Dimensions

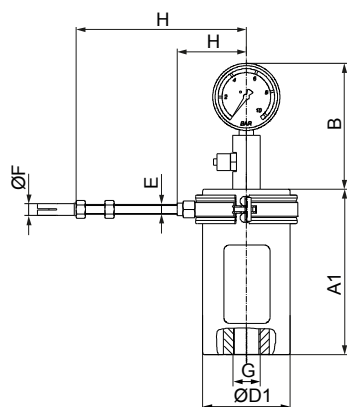


Fig. Pulsation damper DBG, plastic version

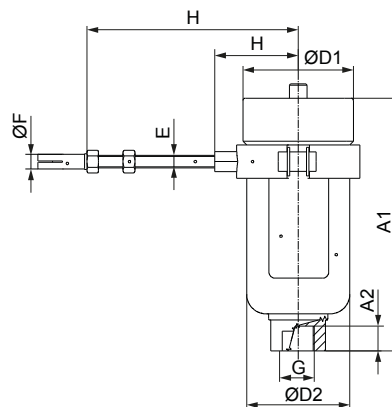


Fig. Pulsation damper DB, stainless steel version

Damper volume [l]	Body material	A1 [mm]	A2 [mm]	B [mm]	ØD1 [mm]	ØD2 [mm]	E	ØF [mm]	G Internal thread	H [mm]
5.6	PVC, PP	458	32	129	198	-	M 10	12	G 1 1/2	124-224
	PVDF	490	32	129	170	156	M 10	12	G 1	103-203
	SS*	414	30	129	170	156	M 10	12	G 1 1/2	103-203
10.0	PVDF	500	50	129	250	-	M 10	12	G 2	150-250
10.4	PVC, PP	441	50	129	250	206	M 10	12	G 2	128-228
	SS*	442	30	129	220	206	M 10	12	G 2	128-228

* Stainless steel 1.4404

Order data

Damper volume [l]	Max. pump stroke volume [ml]	Connections	Material		Type DB		Type DBG	
		G Internal thread	Body	Gasket	Max. operating pressure [bar]	Product number	Max. operating pressure [bar]	Product number
5.6	280	G 1 1/2	PVC	FKM	10	on request	10	99380184
				EPDM	10	on request	10	99380185
			PP	FKM	10	on request	10	on request
				EPDM	10	on request	10	on request
		G 1	PVDF	PTFE	20	on request	10	on request
		G 1 1/2	SS	FKM	40	on request	10	on request
				EPDM	40	on request	10	on request
10.0	460	G 2	PVDF	PTFE	20	on request	10	on request
10.4	460	G 2	PVC	FKM	10	on request	10	99380187
				EPDM	10	on request	10	99380186
			PP	FKM	10	on request	10	on request
				EPDM	10	on request	10	on request
			SS	FKM	30	on request	10	on request
				EPDM	30	on request	10	on request

Related information

Order data for filling devices for pulsation dampers DB and DBG. See page 100.

Tyre-valve adapter for pulsation dampers DB and DBG. See page 101.

Pressure gauges for discharge-side pulsation dampers with separating diaphragm. See page 101.

Pump connection kits and inlay kits for DMX 227

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

The connection kits are used to connect dosing pumps to pipes that differ from Grundfos standard sizes.

Pump connection size	Pipe internal / external diameter [mm]	Max. pressure [bar]	Material	Product number
Flange DN 65	65 / 75	10	PP	96727603
			PVC	96727602
			Stainless steel 1.4401	96727604

7. General accessories

Dosing tanks

Square tank

Dosing tanks are intended for storing and dosing liquids. Different tank accessories can be mounted directly to the tank. Depending on the tank size and type of dosing pump, the pump can be mounted on the tank directly.

SMART Digital S DDA / DDC / DDE pumps can be fitted directly on the tank by means of threaded M 5 brass inserts that are moulded into the mounting platform. The square tank has a mounting platform for one dosing pump or two pumps in parallel.

The square tank has a screw cap. The pump mounting platform is higher than the screw cap to protect pumps and connections when filling chemicals into the tank.

- Tank volume: 100 l
- Tank material: MDPE
- Weight: 15 kg
- Wall thickness: 4 mm
- Liquid temperature: -20 °C to +45 °C

The square tank is prepared for a G 3/4 drain valve.

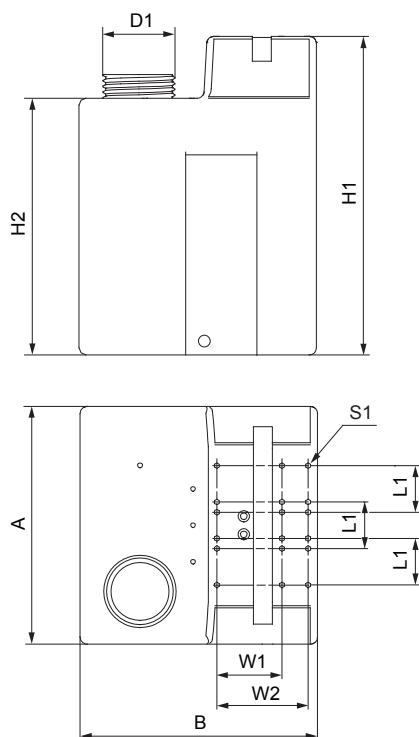
When using a rigid suction lance in the tank, choose the counter nut for fixing.



Fig. Grundfos square tank

TMD48307

Dimensions of square tank



TM069772

H1 [mm]	H2 [mm]	D1 [mm]	A [mm]	B [mm]	L1 [mm]	W1 [mm]	W2 [mm]	S1
670	540	ø152	500	500	98	137	192	M 5

Order data

Description	Product number
Square tank, 100 litres	96489271

Cylindrical tanks

Dosing tanks are intended for storing and dosing liquids. Different tank accessories can be mounted directly to the tank. Depending on the tank size and type of dosing pump, the pump can be mounted on the tank directly or with an adapter plate.

Cylindrical tanks are available transparent or black. They have a litre scale and a black screw cap.

- Tank volume: 40-1000 l
- Tank material: LLDPE, UV-stabilised
- Liquid temperature: -20 °C to +45 °C

All cylindrical tanks are prepared for a G 3/4 opening for a drain valve, and have a screw plug (PE / EPDM).

The cylindrical tanks with volumes of 60, 100, 200, 300 and 500 litres include additionally:

- Threaded M 6 inserts for the direct assembly of a dosing pump.
- A G 2 opening for a rigid suction lance or a foot valve, closed with a screw plug
- Threaded M 6 inserts at the bottom part for floor mounting with a set of floor-mounting brackets.
- A flange for an electric stirrer with threaded inserts

The cylindrical tanks with volumes of 60, 100, 200, 300, 500 and 1000 litres can optionally be prepared for direct assembly of an electric stirrer:

- With opening for electric stirrer (60-500 l).
- With opening and reinforced beam for holding an electric stirrer (1000 l).



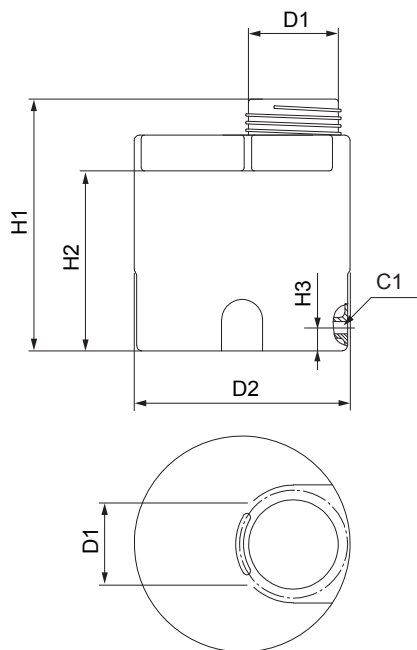
TM048468

Fig. Cylindrical tank, 60 litres

Requirements and restrictions for mounting pumps directly on cylindrical tanks

Pump type	Tank volume [l]	Requirement / restriction
SMART Digital S DDA / DDC / DDE	40, 1000	Holes must be drilled on site. Use plastic screw kit 95730864 to fix the pump on the tank.
	60, 100, 200, 300, 500	Use screw kit 98159495.
SMART Digital XL DDA / DDE	40	Mounting is not possible due to the pump's dimensions or weight.
	60, 100	Pump fits with screw kit 98159495, but exceeds the mounting area. Combination with electric mixer is not possible.
	200, 300, 500	Use screw kit 98159495.
	1000	Holes must be drilled on site. Use plastic screw kit 95730864 to fix the pump on the tank.
DMX 221	40, 1000	Holes must be drilled on site. Use plastic screw kit 95730864 to fix the pump on the tank.
	60, 100, 200, 300, 500	Use screw kit 98159495.
DMX 226 DMH 251 / 252 / 253 DMH 280 / 281	40	Mounting is not possible due to the pump's dimensions or weight.
	60, 100	Pump fits with tank adaptor plate 99211241, but possibly exceeds the mounting area. Combination with electric mixer might not be possible. Observe the pump's maximum suction lift.
	200, 300, 500	Use tank adaptor plate 99211241. Observe the pump's maximum suction lift.
	1000	Holes must be drilled on site. Plastic screws cannot be used due to the pump's weight. Observe the pump's maximum suction lift.
DME 375-10, DME 940-4 DMH 254 / 255 / 257 DMH 283 / 285 / 286 / 287 / 288 DMX 227	40, 60, 100, 200, 300, 500, 1000	Mounting is not possible due to the pump's dimensions or weight.

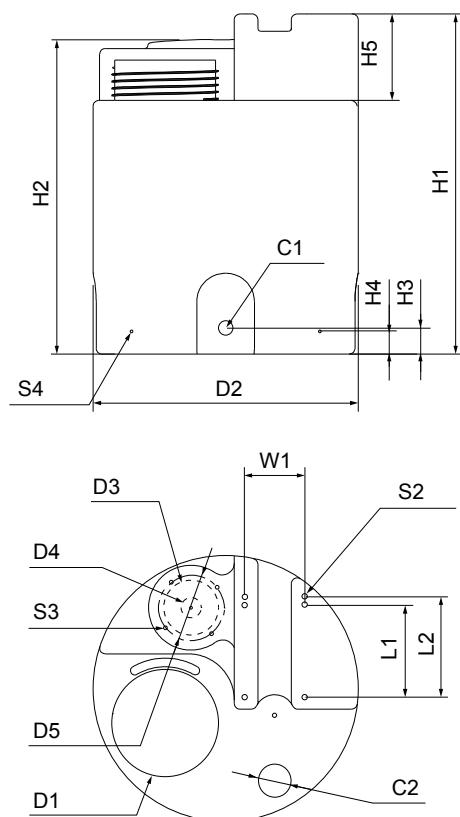
Dimensions of cylindrical tank, 40 litres



TM069773

H1 [mm]	H2 [mm]	H3 [mm]	D1 [mm]	D2 [mm]	C1
420	350	45	ø160	ø420	Rp 3/4

Dimensions of cylindrical tank, 60 and 100 litres

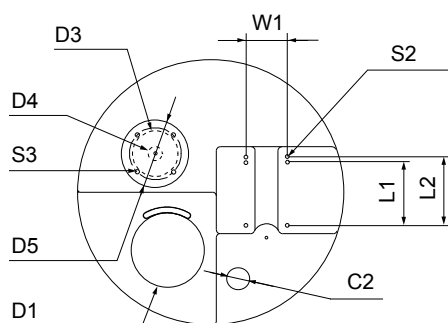
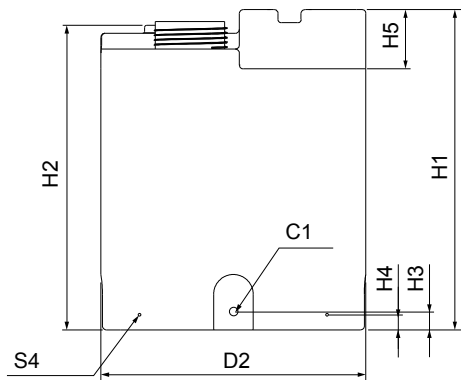


TM069774

Tank volume: 60 l		Tank volume: 100 l	
H1 [mm]	H2 [mm]	H1 [mm]	H2 [mm]
590	545	840	795

H3 [mm]	H4 [mm]	H5 [mm]	D1 [mm]	D2 [mm]	D3 [mm]	D4 [mm]	D5 [mm]
50	40	150	ø160	ø460	ø95	ø35	ø130
C1	C2	L1 [mm]	L2 [mm]	W1 [mm]	S2	S3	S4
G 3/4	G 2	159	174	105	M 6 x 9	M 8 x 12	M 6 x 9

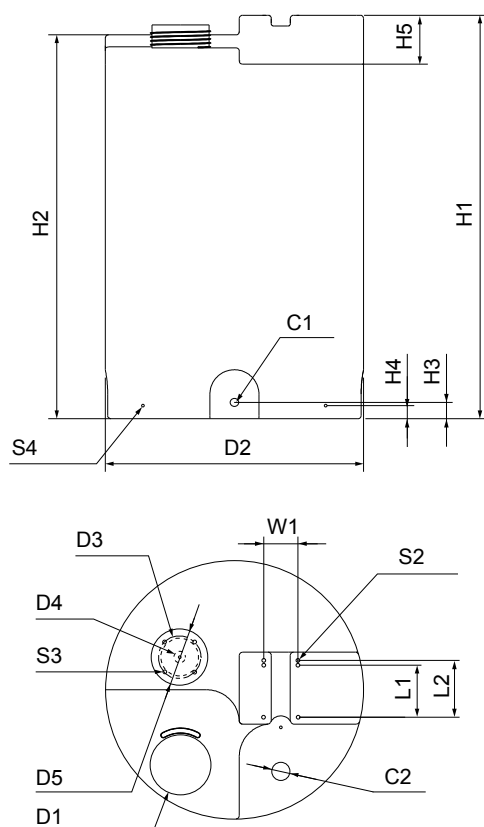
Dimensions of cylindrical tank, 200 and 300 litres



TM069775

Tank volume: 200 l				Tank volume: 300 l			
H1 [mm]	H2 [mm]	H3 [mm]	H4 [mm]	H1 [mm]	H2 [mm]	H3 [mm]	H4 [mm]
810	770	50	40	1080	1040	50	40
D1 [mm]	D2 [mm]	D3 [mm]	D4 [mm]	D1 [mm]	D2 [mm]	D3 [mm]	D4 [mm]
ø160	ø460	ø95	ø35	ø160	ø670	ø115	ø35
C1 [mm]	C2	L1 [mm]	L2 [mm]	C1 [mm]	C2	L1 [mm]	L2 [mm]
G 3/4	G 2	159	174	G 3/4	G 2	159	174

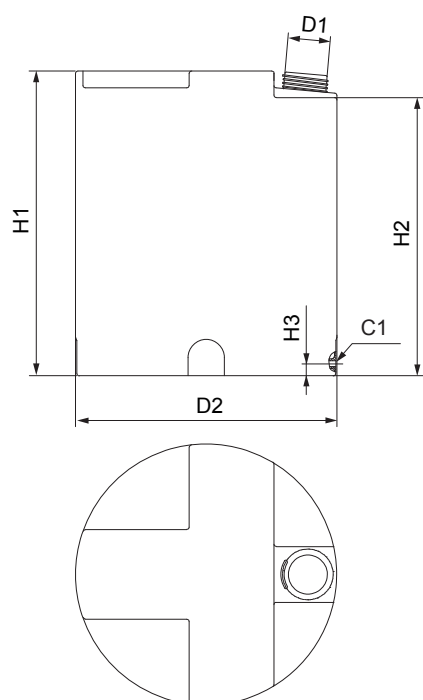
Dimensions of cylindrical tank, 500 litres



TM069776

H1 [mm]	H2 [mm]	H3 [mm]	H4 [mm]	H5 [mm]	D1 [mm]	D2 [mm]	D3 [mm]	D4 [mm]	D5 [mm]
1235	1175	50	40	150	ø160	ø790	ø115	ø35	ø130
C1	C2	L1 [mm]	L2 [mm]	W1 [mm]	S2	S3	S4		
G 3/4	G 2	159	174	105	M 6 x 9	M 8 x 12	M 6 x 9		

Dimensions of cylindrical tank, 1000 litres



TM069777

H1 [mm]	H2 [mm]	H3 [mm]	D1 [mm]	D2 [mm]	C1
1260	1150	50	ø160	ø1080	G 3/4

Order data

Tank volume [l]	Prepared for direct assembly of an electric stirrer	Weight [kg]	Product number	
			Transparent	Black
40	-	3.4	96688081	95701166
60	-	5.5	98148805	98149053
	Yes	5.5	98150038	98150040
100	-	7.5	98149057	98149082
	Yes	7.5	98150051	98150052
200	-	11.5	98149215	98149224
	Yes	11.5	98150053	98150054
300	-	13	98149245	98149252
	Yes	13	98150055	98150056
500	-	28	98149266	98149269
	Yes	28	98150057	98150058
1000	-	40	96688086	95706305
	Yes	48	98173675	98173752

Related information

[Tank accessories. See page 92.](#)

[Pump mounting accessories. See page 99.](#)

Tank accessories

Floor mounting brackets

The floor mounting brackets can be mounted to the floor and fixed with screws into the threaded M 6 inserts at the bottom part of a cylindrical tank.

Description	Product number
Set of 4 floor-mounting brackets with fixing screws	98149921

Collecting tray

A collecting tray collects chemicals that might leak out of the cylindrical tank, and protects the environment. Collecting trays are available in several sizes.

- Material: PE
- Colour: transparent



TM048316

Tank volume [l]	Volume [l]	Dimensions (diameter x height) [mm]	Product number
60	80	500 x 545	96726831
100	120	500 x 700	96726832
200	210	770 x 595	98150059
300	400	770 x 960	96726834
500	500	860 x 980	95701272
1000	1000	1150 x 1080	96726836

Dissolving hopper

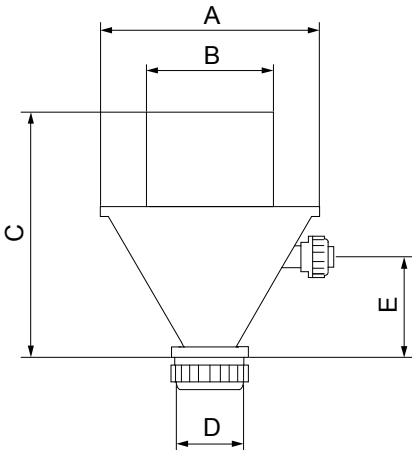
Dissolving hopper for washing powders into a dosing tank.

- Material: PVC
- Dosing tank connection: DN 40 through-bolt
- Water connection: G 5/4
- With union nut and inlay for PVC pipe (cementing diameter 25 mm)

Order data

Description	Product number
Dissolving hopper	96726979

Dimensions of dissolving hopper



TM069778

A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
ø270	ø140	283	ø70	120

Handheld mixer

Handheld mixer for use in dosing tanks.

- Material: PE
- Shaft length 1200 mm, length can be adapted to the corresponding dosing tank
- With DN 15 through-bolt for connection in the dosing tank



TM048477

Description	Product number
Handheld mixer	98133793

Drain valve

Drain valve for installation in the threaded sleeve of the dosing tank.

- Material: PVC
- Dosing tank connection: G 3/4

Description	Product number
Drain valve	96689132

Ventilation valve

The spring-loaded ventilation valve can be installed either for aeration or deaeration of the dosing tank.

Opening pressure: 0.05 bar

Description	Material			Product number
	Body	Gasket	Ball	
Ventilation valve	PVC	FKM	Glass	96694401

Withdrawal device

The withdrawal device with ball valve is designed for installation in the drain opening of a Grundfos tank. Withdrawal devices have a through-bolt for connection to the dosing tank.

Hose or pipe connection sets are included.

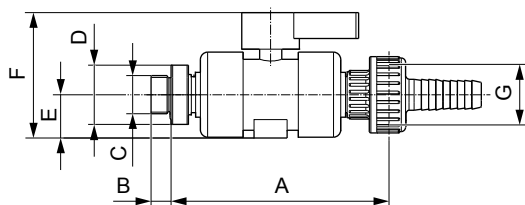
- Hose connection set G 5/8: 4/6 mm, 6/9 mm, 6/12 mm and 9/12 mm
- Hose and pipe connection set G 5/4:
 - for hoses with internal diameter 19 or 20 mm
 - for pipes with external diameter 25 mm

Order data of withdrawal device

The flow rate values apply to liquids with a viscosity similar to water.

Size	Max. flow rate [l/h]	Material		Product number
		Body	Gasket	
G 5/8	60	PVC	FKM	99226879
G 5/8	60	PVC	EPDM	99226880
G 5/4	460	PVC	FKM	99226881
G 5/4	460	PVC	EPDM	99226893

Dimensions of withdrawal device



TM068414

Size	A [mm]	B [mm]	C	D [mm]	E [mm]	F [mm]	G
G 5/8	143	14	G 3/4	41	27	75	G 5/8
G 5/4	151	14	G 3/4	41	30	87	G 5/4

Electric stirrers

Electric stirrers are intended for the mixing and dissolving of non-abrasive, non-inflammable 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 approximately 1500 rpm. Various types for tanks from 60 litres up to 1000 litres are available. Electric stirrers are suitable for liquids with low to medium viscosity.

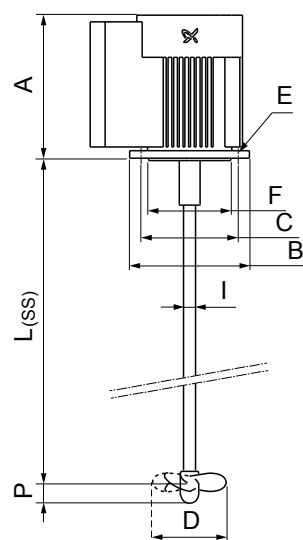
The following types of electric stirrers are available:

- Stainless steel version (SS)
- PP-coated stainless steel version (PP)
- PP-coated stainless steel version with sealing flange (PP-S)

Order data

Type			Product number	
Tank volume [l]	Nominal shaft length [mm]	Material	Single-phase motor	Three-phase motor
60	450	SS	98164569	98165309
		PP	98164573	98165310
		PP-S	98164575	98165318
100	690	SS	98164606	98165355
		PP	98164607	98165357
		PP-S	98164609	98165382
200	700	SS	98164987	98165385
		PP	98164990	98165386
		PP-S	98165152	98165391
300	950	SS	98165172	98165393
		PP	98165175	98165432
		PP-S	98165177	98165433
500	1100	SS	98165253	98165435
		PP	98165258	98165436
		PP-S	98165259	98165437
1000	1150	SS	98165287	98165439
		PP	98165290	98165440
		PP-S	98165304	98165451

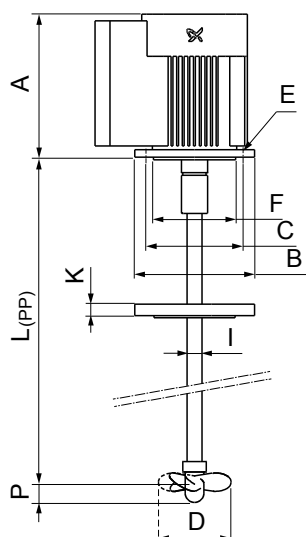
Dimensions



TM069780

Fig. Electric stirrer, stainless steel version

Tank volume [l]	L _(SS) [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	P [mm]	I [mm]
60	450	210	140	115	88	9	95	25	16
100	691	210	140	115	88	9	95	25	16
200	698	191	160	130	100	9	110	25	16
300	950	191	160	130	100	9	110	25	16
500	1100	191	160	130	125	9	110	28	16
1000	1150	231	200	165	125	11	130	28	16



TM069781

Fig. Electric stirrer, PP version with sealing flange

Tank volume [l]	L _(PP) [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	P [mm]	I [mm]	K [mm]
60	452	210	140	115	88	9	95	25	20	15
100	693	210	140	115	88	9	95	25	20	15
200	700	191	160	130	100	9	110	25	20	15
300	952	191	160	130	100	9	110	25	20	15
500	1102	191	160	130	125	9	110	28	20	15
1000	1152	231	200	165	125	11	130	28	20	15

Motor data of electric stirrers

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

Level-control unit for electric stirrer protection

Grundfos level-control units are suitable for dosing pumps with input for level control. The contact type of the reed switch unit is factory-set to NO. The contact type can be set to NC by turning the floater(s).

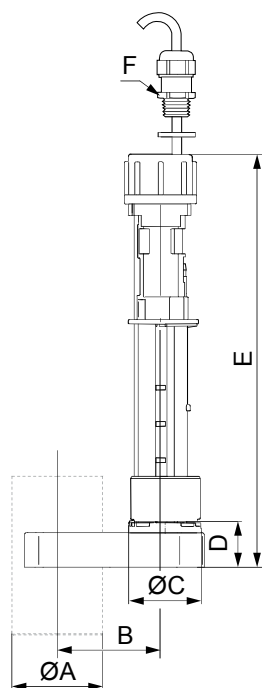
- Max. voltage: 48 V
- Max. current: 0.5 A
- Max. load: 10 VA

Level-control units for electric stirrer protection are used with rigid suction lances RSL. They are clipped to the rigid suction lances at the required switch-off height above the stirrer propeller. Level-control units can also be used for overflow protection or as an additional tank level indication.

The delivery includes:

- Reed switch unit with 1 floater
- 5 m cable with PE jacket and open wire ends
- Clip for diameter 32 mm or 40 mm
- Cable gland for mounting at the tank top

Dimensions



TMD68304

Fig. Level-control unit for electric stirrer protection

øA [mm]	B [mm]	øC [mm]	D [mm]	E [mm]	F
40	47.5	32	20	182	M 12 x 1.5
32	43	32	28	190	M 12 x 1.5

Order data

Description	Material	For RSL with connection size	øA [mm]	Product number
Level-control unit for electric stirrer protection	PE	G 5/8	32	98306210
		G 5/4, G 2	40	99174140

Flexible level-control unit

Grundfos level-control units are suitable for dosing pumps with input for level control. The contact type of the reed switch unit is factory-set to NO. The contact type can be set to NC by turning the floater(s).

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

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

The delivery includes:

- Reed switch unit with 2 floaters
- 5 m of cable with PE jacket and M 12 plug
- Weight that keeps the level-control unit in an upright position at the tank bottom
- PE cap, ø58 mm, for assembly in Grundfos cylindrical tanks, or for use with tank adapters

Dimensions

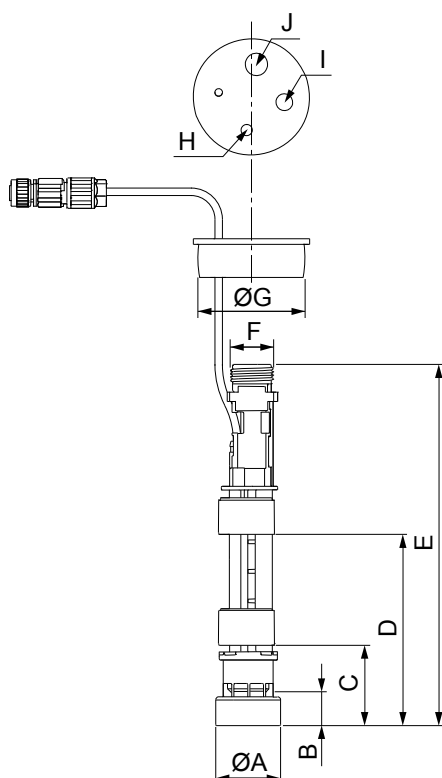


Fig. Flexible level control unit

øA [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F	øG [mm]	H [mm]	I [mm]	J [mm]
35	19	43.5	103.5	196	G 5/8	58	6	9	12

Order data

Description	Material	Product number
Flexible level-control unit PE	PE	98375695

Level-control units for RSL and FV for pump connection size G 2

Grundfos level-control units are suitable for dosing pumps with input for level control. The contact type of the reed switch unit is factory-set to NO. The contact type can be set to NC by turning the floater(s).

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

Level-control units for RSL G 2 and FV G 2 are used for rigid suction lances or foot valves in stationary tanks for pumps up to 1150 l/h. They are clipped to the rigid suction lances or foot valves at the required switch-off height.

The delivery includes:

- Reed switch unit with 2 floaters
- 5 m cable with PE jacket and M 12 plug
- Clip for diameter 40 mm
- Cable gland for mounting at the tank top

TM068102

Dimensions

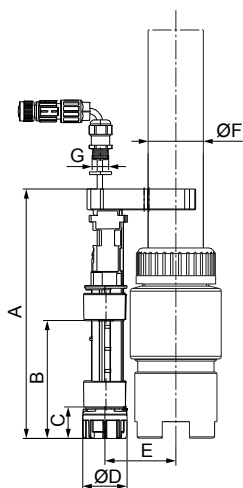


Fig. Level-control unit

TM069986

A [mm]	B [mm]	C [mm]	øD [mm]	E [mm]	øF	G
181	85	25	32	51.5	40	M 12 x 1.5

Order data

Description	Material	Product number
Level-control unit	PE	99339691

Pump mounting accessories

Wall brackets

Wall brackets with installation material for mounting a pump on a wall.

Description	Pump type	Material	Product number
Wall brackets with installation material	DMX 221, DDI 222	PP	91836471
Wall brackets with installation material	DMX 226, DMH 251 / 252 / 253, DME 60-10 / 150-4, SMART Digital XL DDA / DDE	PE	99211245

Pump mounting screws

Set of screws for mounting a dosing pump on a tank.

Description	Tank volume [l]	Pump type	Material	Product number
Set of screws for square tank	100	SMART Digital S DDA / DDC / DDE	Stainless steel	95730862
Set of screws for cylindrical tank	60, 100, 200, 300, 500	SMART Digital S DDA / DDC / DDE, DDI, DMX 221	Stainless steel	98159495
Set of screws for cylindrical tank	40, 1000	SMART Digital S DDA / DDC / DDE, DDI, DMX 221	PP	95730864

Adapter plate for 1 pump

For mounting one dosing pumps on a tank, comprising 1 adapter plate, 8 screws, 8 washers.

Material:

- Adapter plate: black HD-PE
- Screws and washers: Stainless steel

Description	Tank volume [l]	Pump type	Product number
Adapter plate for 1 pump on 1 tank	200, 300, 500	DMX 226, DMH 251 / 252 / 253	99211241

Adapter plate for 2 pumps

For mounting two dosing pumps on one tank, comprising 1 adapter plate, 12 screws, 12 washers.

Material:

- Adapter plate: black HD-PE
- Screws and washers: Stainless steel

Description	Tank volume [l]	Pump type	Product number
Adapter plate for 2 pumps on 1 tank	60, 100, 200, 300, 500	SMART Digital S DDA / DDC / DDE, DDI, DMX 221	98982080

Accessories for pulsation dampers and calibration columns**Filling devices for pulsation dampers DB and DBG**

Filling devices make the adjustment of the preload pressure of pulsation dampers easy. A filling device can be connected to the filling valve of a pulsation damper and to a local compressed-air source or a nitrogen bottle. When the pressure is adjusted, the filling device can be removed.

Order data for filling devices for pulsation dampers DB and DBG

Filling devices are available with different pressure gauges.

A set includes a filling device with pressure gauge and a hose with connections for a nitrogen bottle.

Hose connections:

- Nitrogen bottle: W24.3 x 1 1/4"
- Filling device: G 1/4



Fig. Filling device

Description	Height [mm]	Max. operating pressure [bar]	Product number
Filling device with hose	136	25	96727342
		60	96727343
		160	96727344
		250	96727345

TM070019

Tyre-valve adapter for pulsation dampers DB and DBG

A tyre-valve adapter allows the use of a common air pump with tyre valve connector for filling pulsation dampers DB and DBG with air.

Dimensions

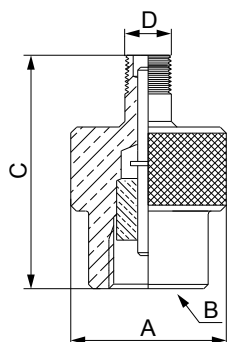


Fig. Tyre-valve adapter

A [mm]	B	C [mm]	D [mm]
25	G 1/4	38	Vg 8

Order data

Description	Max. operating pressure [bar]	Product number
Tyre-valve adapter, for use in conjunction with compressed-air filling device or pressure gauge	8	96727332

Pressure gauges for discharge-side pulsation dampers with separating diaphragm

The following pressure gauges suit all sizes of discharge-side pulsation dampers with separating diaphragm. Select your suitable variant according to the maximum pressure of the pulsation damper.

Description	Max. pressure[bar]	Product number
Pressure gauge for discharge-side pulsation damper with separating diaphragm	10	95730263
	25	95730264
	60	98031543
	160	98031544
	250	98031545

Manual vacuum pump kit for pulsation damper CSD

In installations without flooded suction, the pulsation damper CSD can be filled by the manual vacuum pump kit. This makes startup of the dosing pump easier and prepares the pulsation damper CSD for calibration of the pump.

The delivery includes:

- Ball valve, connection G 5/8
- T-piece, connection G 5/8
- Hose
- Manual vacuum pump
- Holder for wall mounting

Materials:

- Vacuum pump: PVC
- Ball valve and T-piece: PVC
- Gasket: FKM

TV069619



Fig. Manual vacuum pump kit

TMO68426

Dimensions

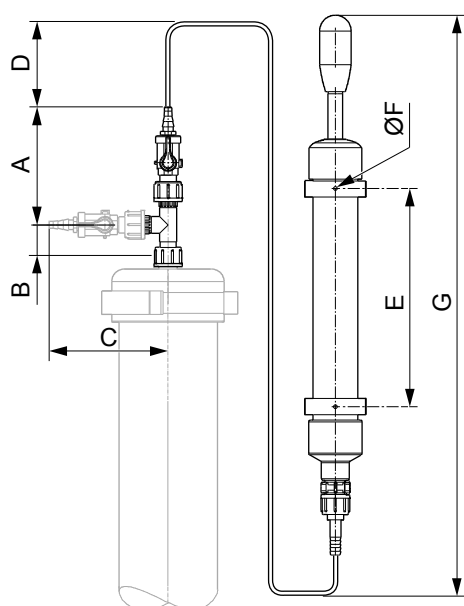


Fig. Manual vacuum pump kit

TMO69603

A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	øF [mm]	G [mm]
131	34	132.5	50	242	6.2	675-875

Order data

Description	Product number
Manual vacuum pump kit	99218131

Manual vacuum pump kit for calibration columns

In installations without flooded suction, the calibration column can be filled by the manual vacuum pump kit. This makes startup of the dosing pump easier and prepares the calibration column for pump calibration.

The delivery includes:

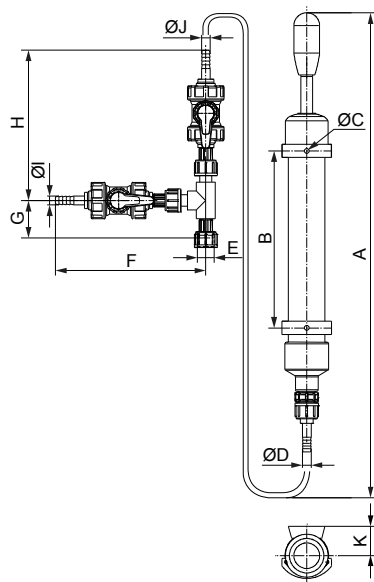
- Ball valve, connection G 5/8
- T-piece, connection G 5/8
- Hose
- Manual vacuum pump
- Holder for wall mounting

Accessories for dosing pumps

Material:

- Manual vacuum pump: PVC
- Ball valve and T-piece: PVDF
- Gasket: FKM

Dimensions



TM068412

Fig. Manual vacuum pump kit for calibration columns

A [mm]	B [mm]	øC [mm]	øD [mm]	E	F [mm]	G [mm]	H [mm]	øI / øJ [mm]	K [mm]
700-875	242	6.1	12	G 5/8	206	51	206	12	40

Order data

Description	Product number
Manual vacuum pump kit for calibration columns	99226934

Cables and plugs for dosing pumps

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



TM048267

Fig. Cable and plugs

Cables and plugs for pump connection size G 5/8

- Cable material: PVC, 0.34 mm²
- Plug size: M 12

Socket	Application		Pins	Plug type	Cable length [m]	Product number
	TM041156	Input	Analog, Pulse, External stop	Straight	2	96609014
					5	96609016
					No cable	96698715
				Angled	2	96693246
	TM041119	Input	Low level, Empty tank	Straight	No cable	96698715
	TM041117	Input, Output	GENIbus, Analog	Straight	2	96632921
					5	96632922
					No cable	96609031
				Angled	2	96699697
	TM041118	Output	Relay	Straight	2	96609017
					5	96609019
					No cable	96696198
				Angled	2	96698716
	TM041156	Extension cable	Analog, Pulse, External stop, Low level, Empty tank	Straight	2	96483235
	TM041119					

Cables and plugs for pump connection size G 5/4

- Cable material: PVC, 0.34 mm²
- Plug size: M 12

Socket (DDA, DDE)		Socket (DMX, DMH, DDI)		Application		Pins	Plug type	Cable length [m]	Product number
	TM041156	4		Input	Analog, Pulse, External stop	4	Straight	2	96609014
								5	96609016
								No cable	96698715
							Angled	2	96693246
	TM041118	3		Output	Relay	4	Straight	2	96609017
								5	96609019
								No cable	96696198
							Angled	2	96698716
	TM068403	2		Output	Analog	5	Straight	2	96632921
								5	96632922
								No cable	96609031
							Angled	2	96699697
	TM041119	5	DDI	Input	Low level, Empty tank	4	Straight	No cable	96698715
-		5	DMX / DMH AR	Input	Low level, Empty tank	3	Straight, with soldered cable	No cable	96630345
				Adapter, flat-round	Low level, Empty tank	4		No cable	96635010
-		6	DDI	Profibus	Y-connector			No cable	96693735
					Terminating resistor			No cable	96693737
	TM068453			Input, Output	GENIbus	5	Straight	3	98589048
	TM041156	4 / 5		Extension cable	Analog, Pulse, External stop, Low level, Empty tank	4	Straight	2	96483235
	TM041119								
-				Mains connection for DDI, DDA, DDE	110-240 VAC	3	Angled	No cable	96698717

Flat-plug adapter for DMX and DMH with AR control unit

The flat-plug adapter allows to connect rigid 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).



TM070206

Fig. Flat-plug adapter for DMX and DMH with AR control unit

Order data

Description	Product number
Flat-plug adapter for DMX and DMH with AR control unit	96635010

Cables and plugs for DME pumps

- Cable material: PUR, 0.34 mm²
- Plug size: M 12

Socket	Application			Pins	Plug type	Cable length [m]	Product number
	TM041156	Input	Analog, Pulse, Diaphragm leakage	5	Straight	2	96440447
						5	96440448
						No cable	96440449
	TM041119	Input	Low level, Empty tank	4	Straight	2	96440450
						5	96440451
						No cable	96440452
	TM041117	Input, Output	External stop, Dosing output	5	Straight	2	96527109
						5	96527111
						No cable	96606401
-		Output	Relay	3	Straight	2	96534214
						5	96534215
	TM041119		Extension cable: Low level, Empty tank	4	Straight	2	96483235

E-box for SMART Digital S DDA

The Grundfos E-box (Extension Box) is a Plug & Play fieldbus communication interface for the integration of SMART Digital S DDA dosing pumps (up to 30 l/h) into a fieldbus network. Fieldbus communication allows to use the DDA dosing pump in industrial automation systems (PLC; SCADA), where advanced remote control and monitoring functions are required:

- Remote control of all settings, such as operation mode, flow rate, etc.
- Remote monitoring of all parameters, such as measured flow, pressure, faults with cause, etc.

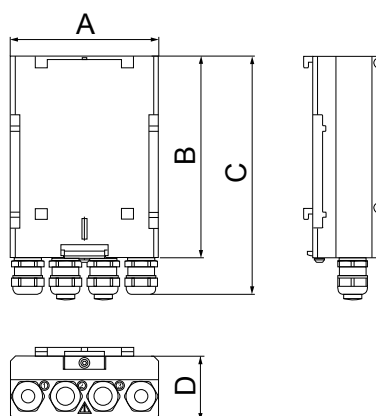
The E-box contains a standard Grundfos CIM communication interface module for data transmission between a fieldbus network and a Grundfos pump.

SMART Digital S DDA dosing pumps can be retrofitted easily with the E-box: it is simply placed between the pump and the mounting plate. The E-box has a connecting cable that is plugged directly into the pump.



Fig. E-Box

TM048455

General technical data for E-Box**Dimensions****Fig.** E-box, dimensions

TMO48454

A [mm]	B [mm]	C [mm]	D [mm]
110	150	177	48

Technical data

Supply voltage	[VDC]	30, ± 10 % (via M 12 plug of DDA)
Max. power consumption	[W]	5
Max. relative humidity (non-condensing)	[%]	96
Pollution degree		2
Enclosure class		IP65 (according to IEC 60529), NEMA 4X
Protection class		III
Min./max. ambient temperature	[°C]	0/45
Approvals		CE, CB, CSA-US, RCM
Weight	[kg]	0.4

GENIbus connection (E-box to pump)

Data protocol		GENIbus
GENIbus connection type		Three-wire RS-485
Transmission speed	[kbit/s]	9.6
Cable length	[mm]	160

Technical data for E-box 150 Profibus DP

Required pump software for retrofitting	V2.5 or higher
Profibus implementation class	DP-V0
Connection type	RS-485, two-wire (lines: A, B)
Recommended cable type	Screened, double-twisted pair conductor cross-section: 0.34 - 1 mm² AWG: 22-17
Max. cable length	100 m at 12000 kbit/s, 1200 m at 9.6 kbit/s
Slave address (set in DDA display)	1-126
Line termination (set via DIP switches)	On/off
Supported data rates	9.6 - 12000 kbit/s
GSD file for system integration	http://net.grundfos.com/qr/i/GRUN0CD9

Technical data for E-box 200 Modbus RTU

Required pump software for retrofitting	V2.5 or higher
Connection type	RS-485, two-wire + common
Recommended cable type	Screened, twisted pair conductor cross-section: 0.20 - 0.25 mm ² AWG: 24-23
Max. cable length	1200 m
Slave address (set in DDA display)	1-247
Line termination (set via DIP switches)	On/off
Supported data rates	9600 / 19200 / 38400 bit/s

Technical data for E-box 500 Ethernet

Required pump software for retrofitting	V2.5 or higher
Ethernet protocol	PROFINET IO / Modbus TCP (selected via rotary switch)
Application layer	DHCP, HTTP, Ping, FTP, SMTP, SNTP, Modbus TCP
Transport layer	TCP
Internet layer	Internet protocol V4 (IPv4)
Link layer	ARP, media access control (Ethernet)
Recommended cable type	Screened/unscreened, twisted-pair cables, CAT5, CAT5e or CAT6

Order data for E-box

Description	Product number
E-box 150 Profibus DP	97513994
E-box 200 Modbus RTU	98563350
E-box 500 Ethernet	99171932

Water meters

The in-line water meter with potential-free pulse signal is suitable for use in flow-proportional dosing applications. If the water meter is connected directly to the pump pulse input, use a control plug (product number 96698715).

- Qn 1.5 and Qn 2.5 water 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 water meters and up are of the helical vane type, for cold water up to 30 °C or 50 °C, or hot water up to 90 °C or 120 °C.
- Qn 1.5 to Qn 15 water meters:
 - Threaded connections
 - Cable length: 3 m
 - Max. pressure: 16 bar
 - Maximum load, Reed contact: 30 VAC/VDC, 0.2 A
- Qn 40 to Qn 150 water meters:
 - Flange connections
 - Cable length: 3 m
 - Max. pressure: 10 bar
 - Maximum load, Namur contact: 8-12 VDC, 1 kOhm (requires external power supply)



Fig. Water meter

TM048317

Order data

Qn [m ³ /h]	Pulse rate [l/pulse]	Product number			
		Max. liquid temperature [°C]			
		30	50	90	120
1.5	1	96446846	-	96446897	-
1.5	0.25	96482640	-	96482643	-
2.5	2.5	96446847	-	96446898	-
2.5	0.25	96482641	-	96482644	-
15	2.5	96482642	-	96482645	-
15	10	-	96446848	-	96446899
40	100	-	96446849	-	96446900
60	25	-	96446850	-	96446901
150	100	-	96446851	-	96446902

Capacity

Qn [m ³ /h]	Pulse rate [l/pulse]	Maximum short-period capacity [m ³ /h]	Transitional capacity with error ± 2 % [l/h]	Minimum capacity with error ± 5 % [l/h]
1.5	1	3	120	50
1.5	0.25	3	120	50
2.5	2.5	5	200	70
2.5	0.25	5	200	70
15	2.5	30	3000	450
15	10	30	3000	450
40	100	80	4000	700
60	25	120	6000	1200
150	100	300	12000	3000

Dimensions of water meters with threaded connections, Qn 1.5 to Qn 15

Qn [m ³ /h]	Connections		Port to port length [mm]	
	Water meter	Installation kit	Excluding kit	Including kit
1.5	G 3/4	G 1/2	165	245
2.5	G 1	G 3/4	190	288
15	G 2.5	G 2	300	438

Dimensions of water meters with flanged connections, Qn 40 to Qn 150

Qn [m ³ /h]	Connections	Port to port length [mm]
40	DN 80	225
60	DN 100	250
150	DN 150	300

Diaphragm leakage sensor for DME pumps

The opto-electronic diaphragm leakage sensor unit consists of:

- Transmitter-receiver
- Holder for fitting the sensor into the drain hole of the back plate
- M 12 plug and wire to transmit the signal to the pump

Insert the sensor into the drain hole behind the diaphragm to detect diaphragm leakage.

When the liquid gets into contact with the sensor, the light refraction changes, and the sensor emits a signal. The signal emitted by the sensor triggers the pump to stop dosing and give alarm.



Fig. Diaphragm leakage sensor

Order data

Pump type	Plug size	Cable length [m]	Product number
DME 375-10	M 12	0.5	96534443
DME 940-4			

Dosing monitor for DME pumps

The dosing monitor is suitable for use in connection with the dosing monitoring function of DME pumps.

The monitor surveys the dosing process and sends a signal to the pump if an error occurs.

- Max. operating pressure: 10 bar
- Max. liquid temperature: 50 °C
- Max. liquid viscosity: 500 mPas (when pumping a liquid with a higher viscosity, it is recommended to test the performance with the liquid to be pumped).

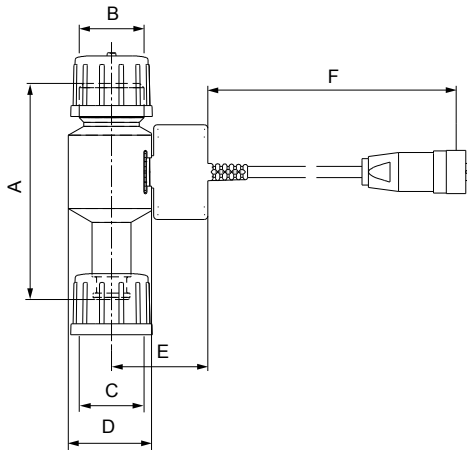


Fig. Dosing monitor

TM067629

TM070070

Dimensions



TM041536

Fig. Dimensions of dosing monitor

A [mm]	B	C	D [mm]	E [mm]	F [mm]
140	G 2	G 2	56.5	62.5	950

Order data

Pump type	Material		Product number
	Body	Gasket	
DME 375-10	PP	EPDM	96655232
DME 940-4		FKM	96655233

8. Grundfos Product Center

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

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TM070461

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4 **LIQUIDS**
Find pump by liquid

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Enter duty point:

Flow (Q)* m³/h
Head (H)* m

Select what to size by:

☐ Size by application
☐ Size by pump design
☐ Size by pump family

START SIZING

ADVANCED SIZING: ☒ Advanced sizing by application ☒ Guided selection

TM070462

Pos.	Description
1	SIZING enables you to size a pump based on entered data and selection choices.
2	CATALOGUE gives you access to the Grundfos product catalogue.
3	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.
4	LIQUIDS enables you to find pumps designed for aggressive, flammable or other special liquids.

