

SMART Digital S

DIGITAL DOSING up to 30 l/h

Next generation DDA-C, DDC, DDE



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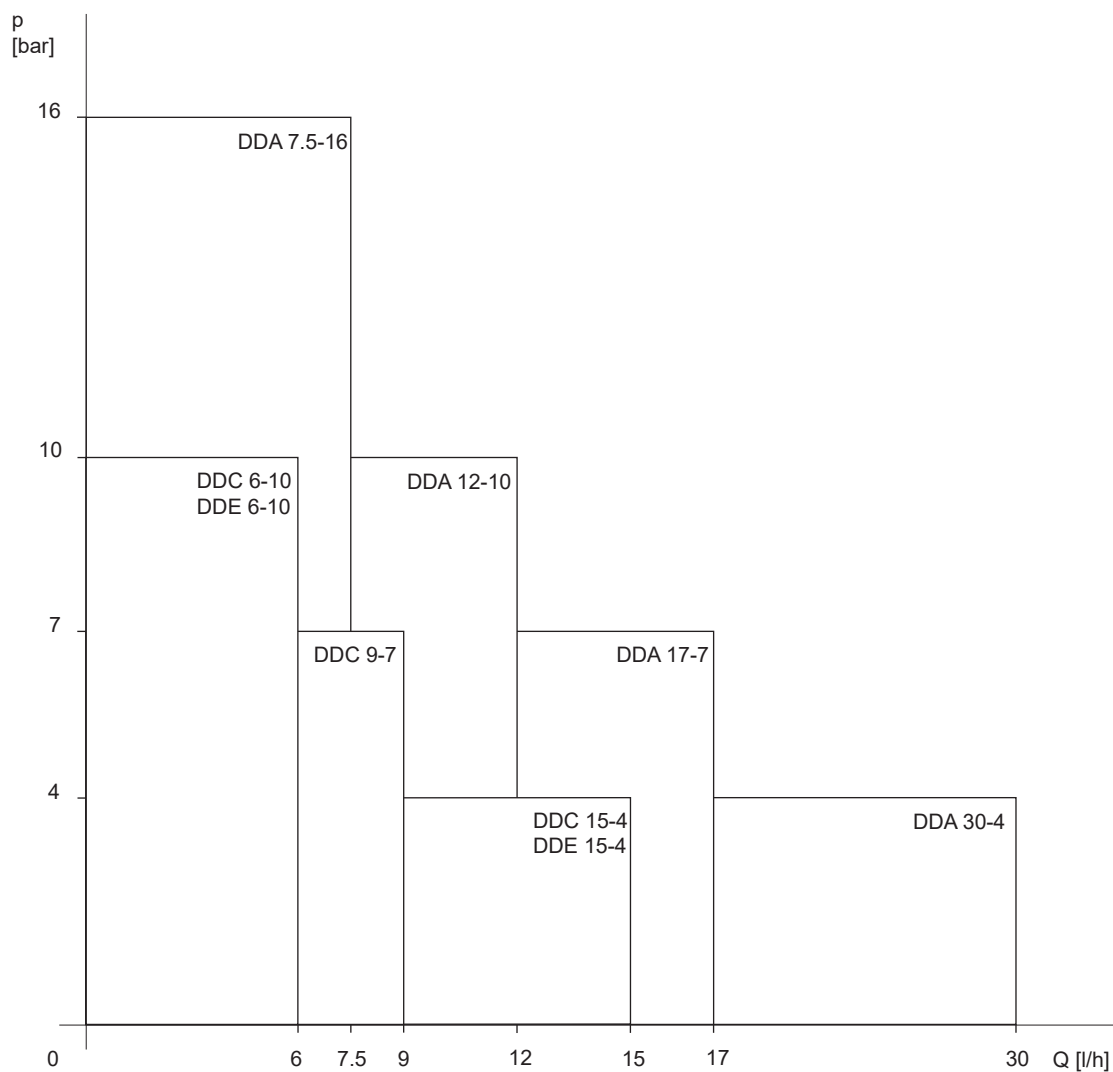
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1. General data

Performance range



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Performance range

Features at a glance



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DDA-C, DDC, DDE

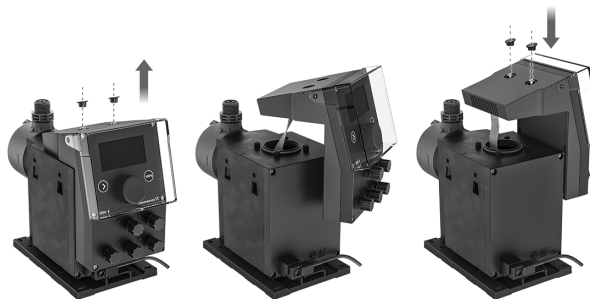
Digital Dosing™

The SMART Digital S generation DDA-C, DDC and DDE with powerful variable-speed stepper motor brings state-of-the-art technology to perfection. Combined expert knowledge and patented solutions set future standards. Traditional technologies, such as stroke length or stroke frequency adjustment with synchronous motor or solenoid drive, become a thing of the past.

Unique flexibility with only a few variants

The included click-stop mounting plate makes the pump more flexible. Three different positions are possible without using any additional accessories, such as wall brackets. Service and pump exchange can now be done easily by clicking the pump in and out of the mounting plate.

The control cube on the DDA-C and DDC pump can be lifted and turned easily into three different positions: front, left or right.



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Modularity of the control cube, DDA-C



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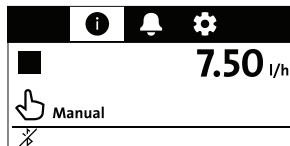
Modularity of the control cube, DDC

A turn-down ratio of up to 1:3000, a wide supply voltage range (100-240 V; 50/60 Hz), combined connection sets and other features reduce the models and variants to a minimum.

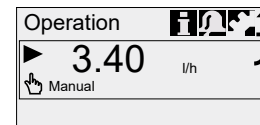
Precise and easy setting / usability and interaction

The operator can easily install the pump and set it to discharge exactly the quantity of dosing liquid required for the application. DDA-C has integrated bluetooth and can be used with the Grundfos GO application. In the display, the setting of the pump is read out directly, the flow is shown in ml/h, l/h, or gph.

The click wheel (turn-and-push) and the graphical LC display with plain-text menu in more than 25 languages make commissioning and operation intuitive. As the LCD is backlit in different colors, the pump status can be seen from a distance (traffic-light concept).



TM088254



TM048170

Display, DDA-C

Display, DDC

Thanks to a variety of operation modes, signal inputs and outputs, the pump can easily be integrated into every process.

Advanced process reliability

An intelligent drive and microprocessor control ensures that dosing is performed precisely and with low pulsation, even if the pump is dosing high-viscosity or degassing liquids. Malfunctions, caused by, for example, air bubbles, are detected quickly by the maintenance-free FlowControl system, and then displayed in the alarm menu.

The AutoFlowAdapt function automatically adjusts the pump according to the process conditions, such as varying backpressure. The integrated flow measurement makes additional monitoring and control equipment redundant.

Designed to save costs

In general, the investment for a dosing pump installation is low compared to its life cycle costs, including the cost of the chemicals. The following features make the SMART Digital S DDA-C, DDC and DDE pumps contribute to low life-cycle costs:

- no underdosing or overdosing due to high dosing accuracy and FlowControl
- longer maintenance intervals due to the universal chemical resistance of the full-PTFE diaphragm
- reduced energy consumption due to the state-of-the-art drive technology.

Three application-oriented type ranges

DDA-C is a high-end pump range for extended flow and pressure ranges with sensor-based FlowControl and measurement functions for challenging industrial applications such as the following:

- process water
- food and beverage
- ultrafiltration and reverse osmosis
- pulp and paper
- boiler feed water
- CIP (Cleaning-In-Place).

DDC is a user-friendly pump range with standard inputs and outputs for common applications like the following:

- drinking water
- waste water
- swimming pool water
- cooling tower
- chemical industry.

DDE is a low-budget pump range with basic functions including manual operation or control via PLC for OEM applications, for example:

- car wash
- irrigation.

2. Identification

Type key

The type key is used to identify the precise pump and is not used for configuration purposes.

Type	
DDA 7.5-16 AR-C-PP/V/C-F-31U2U2FG	
DDA	
DDC	
DDE	
Nominal dosing capacity[l/h]	
DDA 7.5-16 AR-C-PP/V/C-F-31U2U2FG	
Max. pressure[bar]	
DDA 7.5-16 AR-C-PP/V/C-F-31U2U2FG	
Control variant	
DDA 7.5-16 AR-C-PP/V/C-F-31U2U2FG	
B	Basic (only DDE)
P	B with pulse mode (DDE)
PR	P with relay output (DDE)
A	Standard (DDC)
AR	A with alarm relay and analog input (DDC)
AR-C	Standard with embedded connectivity (DDA-C)
FCM-C	AR-C with FlowControl measurement (DDA-C)
Dosing head variant	
DDA 7.5-16 AR-C-PP/V/C-F-31U2U2FG	
PP	Polypropylene
PV	Polyvinylidene fluoride (PVDF)
PVC	PVC (polyvinyl chloride, only up to 10 bar)
SS	Stainless steel 1.4435
Gasket material	
DDA 7.5-16 AR-C-PP/V/C-F-31U2U2FG	
E	EPDM
V	FKM
T	PTFE
Valve ball material	
DDA 7.5-16 AR-C-PP/V/C-F-31U2U2FG	
SS	Stainless steel 1.4401
C	Ceramic
Control Cube	
DDA 7.5-16 AR-C-PP/V/C-F-31U2U2FG	
F	Front-mounted (change to left or right is possible)
X	No control cube
Supply voltage	
DDA 7.5-16 AR-C-PP/V/C-F-31U2U2FG	
3	1 × 100-240 V, 50/60 Hz

Valve type

DDA 7.5-16 AR-C-PP/V/C-F-31U2U2FG

1	Standard (not spring-loaded)
2	Spring-loaded (HV version)

Connection, suction/discharge

DDA 7.5-16 AR-C-PP/V/C-F-31U2U2FG

U2U2	Hose, 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm
U7U7	Hose 0.17" × 1/4"; 1/4" × 3/8"; 3/8" × 1/2"
AA	Threaded Rp 1/4, female (stainless steel)
VV	Threaded 1/4 NPT, female (stainless steel)
XX	No connection

Installation set ¹⁾

I001	Hose, 4/6 mm (up to 7.5 l/h, 13 bar)
I002	Hose, 9/12 mm (up to 60 l/h, 9 bar)
I003	Hose, 0.17" × 1/4" (up to 7.5 l/h, 13 bar)
I004	Hose, 3/8" × 1/2" (up to 60 l/h, 10 bar)

¹⁾ Including: 2 pump connections, foot valve, injection unit, 6 m PE discharge hose, 2 m PVC suction hose, 2 m PVC de-aeration hose (4/6 mm)

Power plug

DDA 7.5-16 AR-C-PP/V/C-F-31U2U2FG

F	EU (Schuko)
B	USA, Canada
G	UK
I	Australia, New Zealand, Taiwan
E	Switzerland
J	Japan
L	Argentina
N	Brazil

Pump design

G	Grundfos
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3. Functions

Overview of functions

Control variant:	DDA		DDC		DDE		
	FCM-C	AR-C	AR	A	PR	P	B
General							
Digital Dosing: Internal stroke speed and frequency control	•	•	•	•	•	•	•
Mounting plate (basic/wall mounting)	•	•	•	•	•	•	•
Control panel, see section Control cube DDA and DDC							
Control cube mountable in three positions: front, left, right	•	•	•	•			
Control panel position: front-fitted					•	•	•
Transparent protective cover for control elements	•	•	•	•			
Capacity setting in milliliters, liters or US-gallons	•	•	•	•			
Graphical display with background light in four colors for status indication: white, green, yellow, red	•	•	•	•			
Plain-text menu in different languages	•	•	•	•			
Turn-and-push knob (click wheel) for easy navigation	•	•	•	•			
Capacity adjustment knob (0.1 - 100 %)					•	•	•
Start/Stop key	•	•	•	•			
100 % key (de-aeration)	•	•	•	•	•	•	
Operation mode switch (manual/pulse)					•	•	
Operation modes, see section on operation modes							
Manual speed control	•	•	•	•	•	•	•
Pulse control in ml/pulse	•	•	•	•			
Pulse control (1:n)					•	•	
Analog control 0/4-20 mA	•	•	•				
Batch control (pulse-based)	•	•					
Dosing timer cycle	•	•					
Dosing timer week	•	•					
Fieldbus control	•	•					
Functions, see section on functions							
Auto de-aeration also during pump standby	•	•					
FlowControl system with selective fault diagnosis	•						
Pressure monitoring (min/max)	•						
Flow measurement	•						
AutoFlowAdapt	•						
SlowMode (anti-cavitation)	•	•	•	•			
Calibration mode	•	•	•	•			
Scaling of analog input	•	•					
Service information display	•	•	•	•			
Relay setting: alarm, warning, stroke signal, pump dosing, pulse input ²⁾	•	•	•		•		
Relay setting (additionally): timer cycle, timer week	•	•					
Inputs/outputs, see section Level control							
Input for external stop	•	•	•	•	•	•	
Input for pulse control	•	•	•	•	•	•	
Input for analog 0/4-20 mA control	•	•	•				
Input for low-level signal	•	•	•	•	•	•	
Input for empty tank signal	•	•	•	•	•	•	
Output relay (2 relays)	•	•	•		•		
Output analog 0/4-20 mA	•	•					

Input/Output for GENIbus	•	•		
Input/Output for CIM modules (for example, Profinet, Profibus)	•	•		
Input/Output for Modbus TCP and Modbus RTU	•	•		
Bluetooth communication	•	•		
Statistics on fault detection	•	•		
Store/recall settings	•	•	•	•
Parameter transfer from one pump to another	•	•		
Max.capacity/max. flow	•	•		
Settings and key lock	•	•	•	•
Stop after power failure	•	•		
ConditionCheck	•			
Multi parameter display (dashboard)	•	•		
Device name	•	•		
Software update	•	•		
Analog input/output calibration	•	•		

2) DDE-PR: relay 1: alarm; relay 2: low-level signal, stroke signal, pulse input

Related information

[Control cube DDA-C and DDC](#)

[Manual control](#)

[SlowMode](#)

[Level control](#)

Functional description

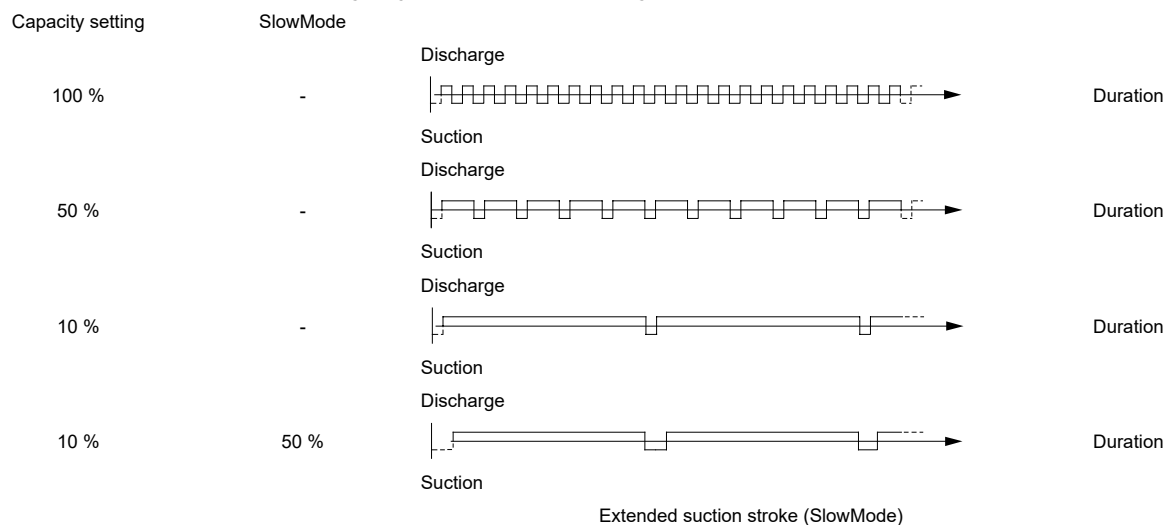
The electronically controlled variable-speed motor (stepper motor) of the DDA, DDC and DDE pumps provides optimum control of the stroke speed. The duration of each discharge stroke varies according to the capacity set, resulting in optimum discharge flow in any operating situation, while the duration of each suction stroke is constant. See the figure below.

The advantages are as follows:

- The pump always operates at full stroke length, irrespective of the capacity set, which ensures optimum accuracy, priming and suction.
- A capacity range of up to 1:3000 (turn-down ratio) results in less variants and spare parts
- Smooth and continuous dosing ensures an optimum mixing ratio at the injection point without static mixers.
- There is a significant reduction of pressure peaks, preventing mechanical stress on wearing parts, such as diaphragm, tubes, connections, resulting in extended maintenance intervals.
- The installation is less affected by long suction and discharge lines.
- Dosing of high-viscosity and degassing liquids (SlowMode) is easier.

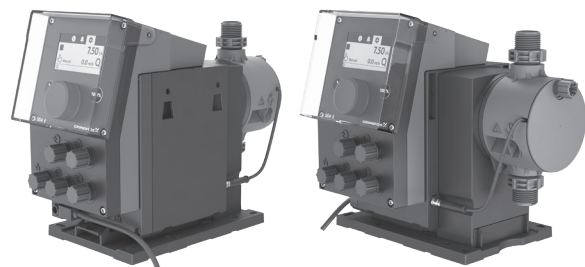
The optimum dosing control shown below applies to any operation mode.

Relation between stroke-frequency adjustment and capacity



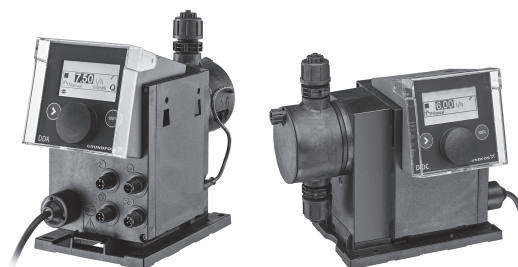
Control cube DDA-C and DDC

DDA-C and DDC pumps are supplied with front-mounted control cube. The position of the control cube can easily be changed by unfastening two screws, lifting the cube, turning it to the left or to the right, and fastening the screws again.



Two of three possible control cube positions, DDA-C

TM088140



Two of three possible control cube positions, DDC

TM069584

Operating elements, DDA-C

The pump operating panel includes a display and operating elements.

If the pump is operated via **Grundfos GO**, the operating elements are locked.



TM087635

Pos.	Description
1	Graphical LC display
2	Click wheel
3	Start/Stop key
4	100% key

Click wheel

The click wheel is used to navigate through the menus, and selecting and confirming settings.

Turning the click wheel clockwise moves the cursor clockwise on the display. Turning the click wheel counter-clockwise moves the cursor counter-clockwise.

If the pump is operated via the **Grundfos GO** app, the click wheel cannot be used for navigating through the menus. To be able to navigate through the menus again, turn the click wheel and disconnect from GO.

Start/Stop key

The **Start/Stop key** is used for starting and stopping the pump. It can still be used while the pump is operated via **Grundfos GO**.

100% key

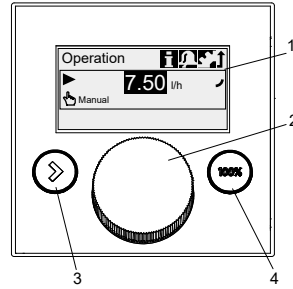
If the 100% key is pressed for less than 1 second, the display returns to the **Idle screen**.

If the 100% key is pressed for longer than 1 second, the pump doses at maximum flow, regardless of the operation mode. The pump continues dosing for 5 seconds while the click wheel can be operated. This is useful for one-handed operation during processes such as start-up or de-aeration.

The 100% key is locked when the pump is operated via the **Grundfos GO** app.

Operating elements, DDC

The pump operating panel includes a display and operating elements.



TM041188

Pos.	Description
1	Graphical LC display
2	Click wheel
3	Start/Stop key
4	100% key

Click wheel

The click wheel is used for navigating through the menus, and selecting and confirming settings.

Turning the click wheel clockwise moves the cursor clockwise on the display. Turning the click wheel counter-clockwise moves the cursor counter-clockwise.

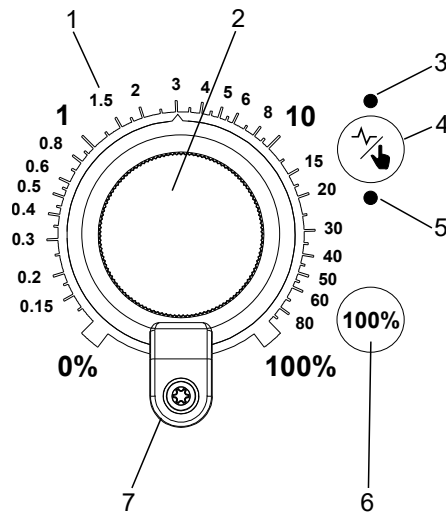
Start/Stop key

The Start/Stop key is used for starting and stopping the pump.

100% key

The pump doses at maximum flow regardless of the operation mode.

Operating elements, DDE

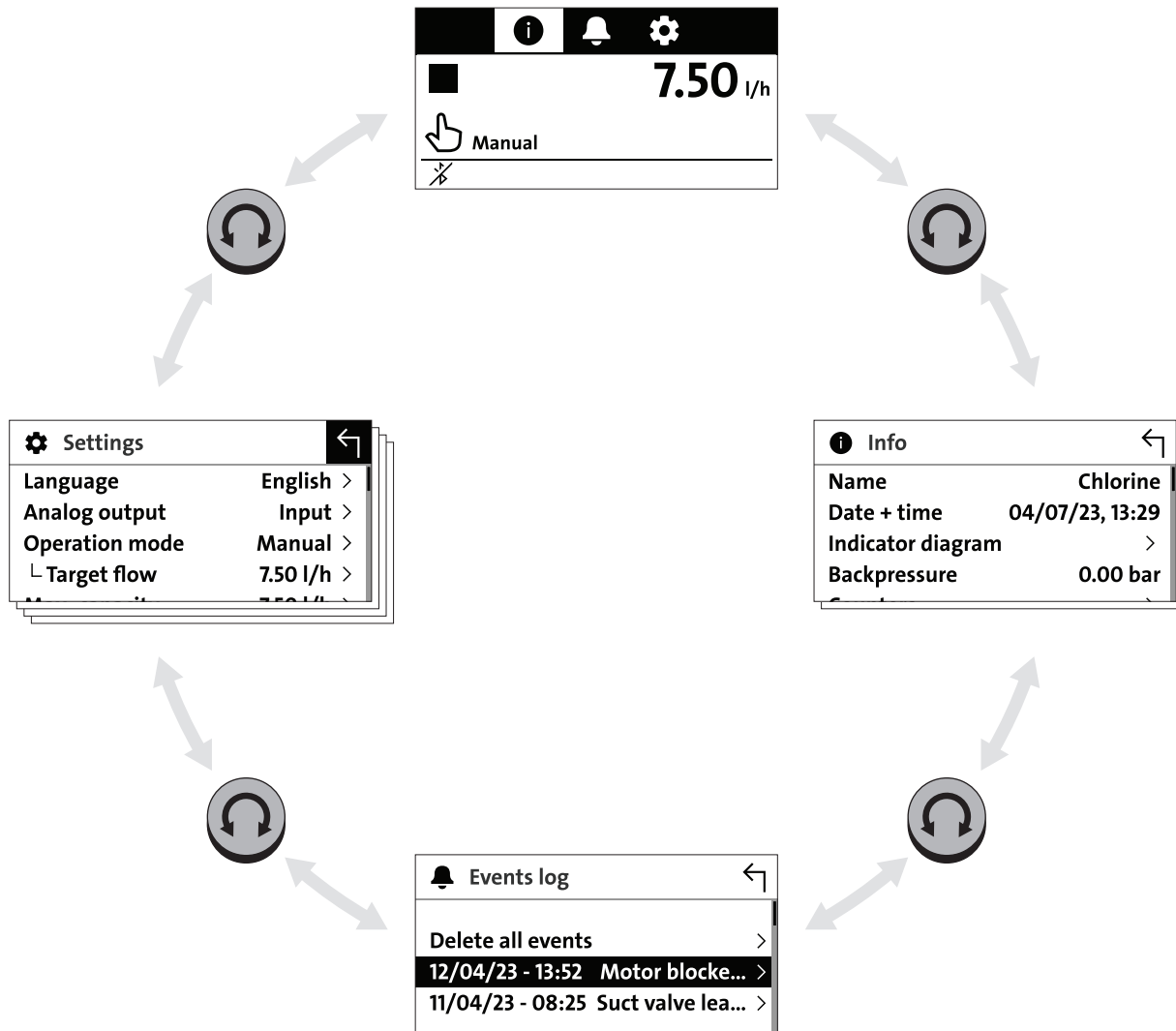


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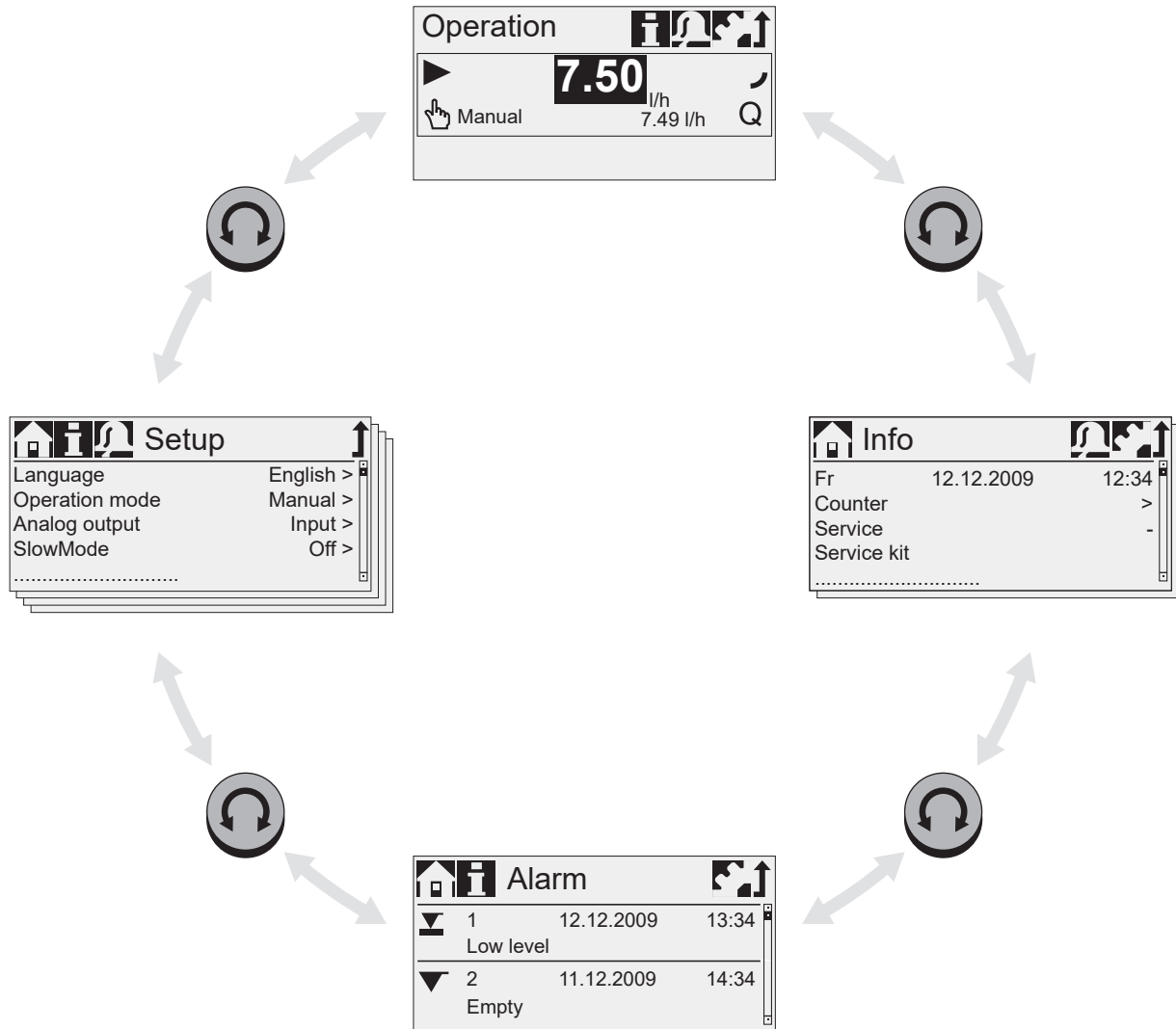
Pos.	Description
1	Logarithmic scale
2	Capacity adjusting knob
3	Status LED "Pulse" (only DDE-PR/P control variant)
4	Operation mode key (only DDE-PR/P control variant)
5	Status LED "Manual"
6	100% key (only DDE-PR/P control variant)
7	Mechanical lock

Menu

The DDA-C and DDC dosing pumps feature a user-friendly plain-text menu. The menu consists of 4 tabs: Operation, Info, Alarm and Setup. During initial start-up, all menu texts appear in English. The menu can be set to other languages.



Menu overview (example of main menus), DDA-C



TM088274

Menu overview (example of main menus)

The menu text appears in more than 25 languages on a big graphical display, backlit in four different colors according to the traffic light concept.

Display	Fault		Pump status
White	-	Stop	Standby
Green	-		Running
Yellow	Warning	Stop	Standby Running
Red	Alarm	Stop	Standby

Operation modes

Manual control

The pump ensures constant dosing according to the quantity set in l/h or ml/h or gph by the click wheel. The pump automatically changes between the measuring units.

Setting range

Pump type	Setting range ³⁾	
	From [l/h (<i>gph</i> × 10 ⁻³)]	To [l/h (<i>gph</i>)]
DDA-C 7.5-16	0.0025 (0.7)	7.5 (2)
DDA-C 12-10	0.0120 (3.1)	12 (3.1)
DDA-C 17-7	0.0170 (4.5)	17 (4.5)
DDA-C 30-4	0.0300 (8)	30 (8)
DDC 6-10	0.0060 (1.5)	6 (1.5)
DDC 9-7	0.0090 (2.4)	9 (2.4)
DDC 15-4	0.0150 (4)	15 (4)
DDE 6-10	0.0060 (1.5)	6 (1.5)
DDE 15-4	0.0150 (4)	9 (2.4)

³⁾ When the SlowMode function is enabled, the maximum flow is reduced, see section SlowMode.

Related information

[SlowMode](#)

Pulse control

The pump doses in proportion to an external potential-free pulse signal, for example, from a water meter. There is no direct relation between pulses and dosing strokes. The pump automatically calculates its optimal speed to ensure that the required quantity is dosed for each incoming pulse.

For DDA-C and DDC:

The quantity to be dosed is set in ml/pulse. The pump adjusts its speed according to two factors:

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

Setting range

Pump type	Setting range [ml/pulse]
DDA 7.5-16	0.0015 - 14.9
DDA 12-10	0.0029 - 29.0
DDA 17-7	0.0031 - 31.0
DDA 30-4	0.0062 - 62.0
DDC 6-10	0.0016 - 16.2
DDC 9-7	0.0017 - 16.8
DDC 15-4	0.0032 - 31.6

The frequency of external pulses is multiplied by the set quantity. If the product exceeds the maximum flow of the pump, a maximum of 65,000 pulses can be stored for later processing with the Memory pulse function, when activated.

For DDE-PR, DDE-P control variant:

The dosing quantity per pulse is adjusted with the adjustment knob according to a scale from 0.1 to 100 % of the stroke volume. The pump adjusts its speed according to two factors:

- the frequency of external pulses
- the set percentage of stroke volume.

Setting range, DDE-PR, DDE-P

Pump type	Setting range [ml/pulse]
DDE 6-10	0.0008 - 0.81
DDE 15-4	0.0016 - 1.58

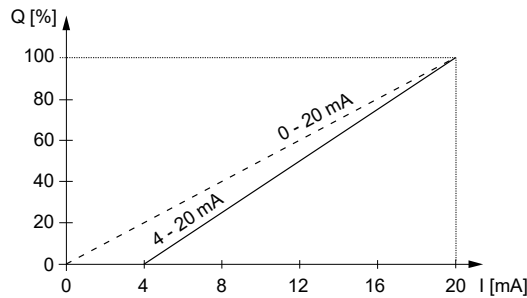
Analog 0/4-20 mA control

This section applies to the DDA-C and DDC-AR control variant.

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

Operation mode	Input signal	Dosing capacity
4-20	≤ 4.1 mA	0 %
	≥ 19.8 mA	100 %
0-20	≤ 0.1 mA	0 %
	≥ 19.8 mA	100 %

The relation of the analog input value and the dosing flow, as shown in the table, can be set in the **Grundfos GO** app in **Advanced settings > Analog input border**.

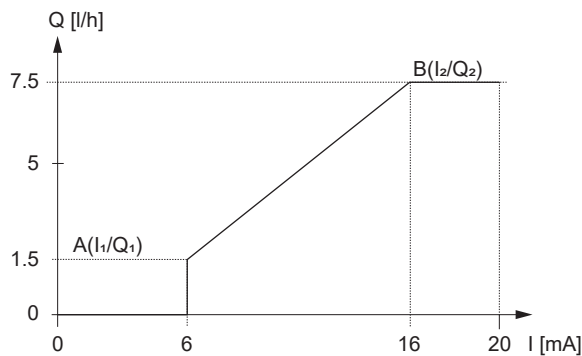


TM041120

0/4-20 mA control

This section applies to the DDA-C.

With the **Analog scaling** function, the curve can be individually drawn between two arbitrary points: A (I_1/Q_1) and B (I_2/Q_2).



TM087861

Analog scaling with positive gradient

Pos.	Description
Q [l/h]	Dosing capacity
I [mA]	Input signal

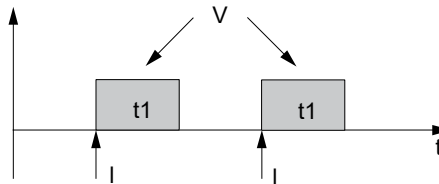
Batch

This section applies to the DDA-C.

In the Batch mode, the pump doses the set **Batch volume** in the set **Batch duration**. A batch is dosed every time the pump receives an external pulse or the Start/Stop key is pushed. If the pump receives new pulses before a batch is completed, these pulses are ignored.

If **Continue after interrupt** is activated, the pump stops dosing and goes to operating state "Ready" in the event of an interruption (**Alarm**, **External stop**). The remaining **Batch volume** and **Batch duration** are displayed. Once the interruption is resolved, the pump automatically continues dosing the remaining **Batch volume** in the remaining **Batch duration**.

If **Continue after interrupt** is deactivated, the pump stops dosing and the batch is reset in the event of an interruption. The remaining **Batch volume** is displayed. Once the interruption is resolved, the pump waits for the next trigger to restart with a new batch.



TM041105

Pos.	Description
V	Batch volume
I	Pulse
t	Time
t1	Batch duration

The setting range depends on the pump type. If the **SlowMode** is active, the setting range is reduced.

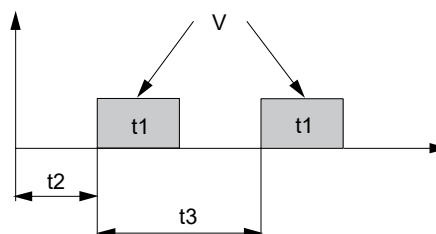
Type	Setting range per Batch		Resolution ⁴⁾ [ml]
	from [ml]	to [l]	
DDA-C 7.5-16	0.74	180	0.0925
DDA-C 12-10	1.45	288	0.1813
DDA-C 17-7	1.55	408	0.1938
DDA-C 30-4	3.10	720	0.3875

⁴⁾ Dosing quantities with a resolution of up to 1/8 of the dosing stroke volume can be dosed due to digital motor control.

Timer cycle

This section applies to the DDA-C.

In the **Timer cycle** mode, the pump doses the set **Batch volume** in regular cycles. A cycle starts after a **Start delay**.



TM041107

Pos.	Description
V	Batch volume
t1	Batch duration
t2	Start delay
t3	Cycle time

In the event of an interruption due to **Alarm** or **External stop**, the pump stops dosing and goes to operating state "Ready" while the **Timer cycle** continues to run. The remaining **Batch volume** and **Batch duration** are displayed. Once the interruption is resolved, the pump automatically continues dosing according to the actual timeline position.

In the event of a power interruption, the pump automatically starts a completely new **Timer cycle**, which begins with a **Start delay** as soon as the power is restored. If the pump is stopped, the **Timer cycle** is lost. A new **Timer cycle** is started when the pump is started.

Setting range

The batch volume setting range corresponds to the pulse-based batch control setting range.

Timer week

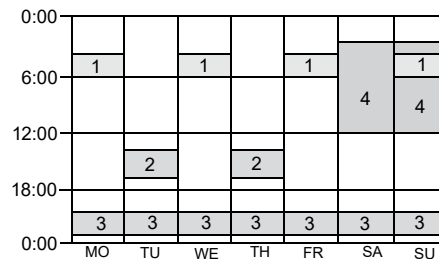
This section applies to the DDA-C.

In this operation mode, up to 16 dosing procedures can be defined for a week. These dosing procedures may take place regularly on one or several week days. For the **Batch volume** setting range, see section **Batch**.

Each dosing procedure consists of the following:

- **Weekly schedule**
- **Start time**
- **Batch volume**
- **Batch duration**
- **Active: On/Off.**

In case several procedures overlap, the procedure with the highest flow rate has the highest priority. Batch dosing stops during any interrupt, for example, power supply failure or external stop, while the time continues running in the background (real-time clock). After the interrupt ends, batch dosing proceeds according to the current status in the timeline.



TM041108

Example of a Weekly schedule

Related information

[Batch](#)

Functions

SlowMode

This section applies to the DDA-C and DDC.

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

The **SlowMode** function is used in the following situations:

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

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

The maximum pump capacity is reduced accordingly. See section Functional description for further details.

Related information

[Functional description](#)

Auto deaeration

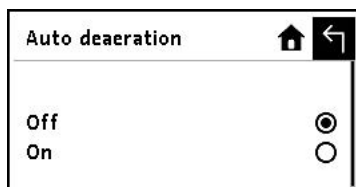
This section applies to DDA-C.

If degassing media are dosed, air pockets can form in the dosing head during breaks in dosing. As a result, it is possible that no medium is dosed when the pump is restarted. The **Auto deaeration** function performs pump de-aeration automatically at regular intervals. Software-controlled diaphragm movements make the air bubbles rise and collect at the discharge valve so that they can be removed on the next dosing stroke.

The **Auto deaeration** function operates under the following conditions:

- if the pump is not in operating state "Stop"
- if no alarm is active
- during breaks in dosing, for example, **External stop** or no incoming pulses.

The **Auto deaeration** function can be activated or deactivated in the **Settings** menu.



The diaphragm movements can displace small volumes of dosing liquid into the discharge line. This is virtually impossible when dosing highly degassing media.

Calibration

This section applies to the DDA-C and DDC.

The pump is calibrated in the factory at the nominal pressure of the respective pump type. For the maximum pressure, see section Technical data for DDA-C and DDC. After start-up, the dosing pump can be calibrated for the actual installation to ensure that the displayed value (ml, l or gph) is correct. A calibration program in the setup menu facilitates this process. The **AutoFlowAdapt** function keeps the dosing precision (DDA FCM-C control variant), even if the backpressure changes. For the description of the **AutoFlowAdapt** function, see section **AutoFlowAdapt**.

Related information

[AutoFlowAdapt](#)

[Technical data, SMART S DDA-C](#)

[Technical data, SMART S DDC](#)

External stop

This section applies to the DDA-C, DDC, DDE-PR and DDE-P.

With the External stop function, the pump can be stopped from a remote place via an external contact. It is not recommended to switch on and off the power supply as it was usual when working with a conventional dosing pump. When working with microprocessor-controlled digital dosing pumps, the external stop signal has to be used to keep the optimal dosing precision and prevent damages to the electronics.

When activating the External stop signal, the pump changes from running to standby. The operation display shows an activated External stop. The signal input can be set to normally open (default) or normally closed contact.

Counters

This section applies to the DDA-C and DDC.

The pump displays resettable and non-resettable counters in the info menu tab.

Counter	Description	Resettable
Trip volume	Volume dosed from a container in liters or US gallons.	Yes
Total volume (DDA-C)	Accumulated dosed quantity in liters or US gallons	No
Operating hours	Accumulated number of operating hours (power-on)	No
Motor runtime	Accumulated number of motor runtime hours	No
Strokes	Accumulated number of dosing strokes	No
Power on/off	Accumulated number of times the mains supply has been switched on	No

Service display

This section applies to the DDA-C and DDC.

Due to the optimized construction and the smooth digital dosing principle, the service periods are more than twice as long as those of conventional pumps. However, the wear parts have to be exchanged at regular intervals to keep the dosing precision and process reliability at a high level. The service display in the pump shows when service of the wear parts is required. The displayed service kit product number makes service more convenient. The following information is presented in the Info display:

Display		Description
Service	-	No service is required.
	Soon	Order parts for service soon.
	Now	Service must be performed now.
Service kit	8-digit Grundfos product number	The service kits contain all parts needed for standard maintenance.
Reset service system		After performing the service, reset the system.

The following service messages appear, depending on what happens first:



Display	Motor runtime [h]	Regular intervals [months]
Service soon	7,500	23
Service now	8,000	24

In case of difficult liquids, the service intervals may be shorter and service has to be performed earlier.

Level control

This section applies to the DDA-C, DDC, DDE-PR and DDE-P.

The pump can be connected to a dual level control unit for monitoring the chemical level in the tank. The pump can react to two level signals:

Level sensors	Pump reaction ⁵⁾	
	DDA, DDC	DDE-PR, DDE-P
 Low-level signal	The display is yellow (Warning). The Low-level signal is flashing. The pump continues running.	The LED lights up in yellow. The pump continues running.
 Empty tank signal	The display is red (Alarm). The Empty tank signal is flashing. The pump stops.	The LED lights up in red. The pump stops.

⁵⁾ Depending on the pump model and settings, the relay outputs can be activated, see section Relay output.

Related information

[Relay output](#)

Relay output

This section applies to DDA-C, DDC-AR and DDE-PR.

The pump can activate 2 external signals by built-in relays switched via internal potential-free contacts. Depending on the process control requirements, the following relay output settings can be selected:

For the DDA-C and DDC-AR:

Signal		Description
Relay 1	Relay 2	
Alarm ⁶⁾	Alarm	The display is red, the pump stops (for example Empty signal).
Warning ⁶⁾	Warning	The display is yellow, the pump is running (for example Low-level signal).
Stroke signal	Stroke signal	It signals each full stroke.
Pump dosing	Pump dosing ⁶⁾	The pump is running and dosing.
Pulse input	Pulse input	It signals each incoming pulse from pulse input.
Bus control	Bus control	It is activated by a command in the bus communication. See section Communication (only DDA-C).
	Timer cycle	The timer can be set in menu: on-time, cycle-time, start delay (only DDA-C).
	Timer week	The timer can be set in menu: procedure, on-time, start time and weekdays (only DDA-C).
Contact type		
NO ⁶⁾	NO ⁶⁾	Normally Open Contact
NC	NC	Normally Closed Contact

⁶⁾ Default setting

For the DDE-PR control variant:

Signal		Description
Relay 1	Relay 2	
Alarm ⁷⁾		It signals empty tank or blocked motor.
	Low level ⁷⁾	The level is low in the tank.
	Stroke signal	It signals each full stroke.
	Pulse input	It signals each incoming pulse from pulse input.
Contact type		
NO ⁷⁾	NO ⁷⁾	Normally Open Contact
NC	NC	Normally Closed Contact

⁷⁾ Default setting

Related information[Communication](#)**Analog output***This section applies to the DDA-C.*

In addition to the analog input (operation mode: analog 0/4-20 mA), the pump is also equipped with an analog 0/4-20 mA output signal. Depending on the process control requirements, the following analog output settings are available:

Setting	Description of analog output signal	Control variant	
		FCM	AR
Output = Input	Analog feedback signal (not for master-slave application): the analog input signal is mapped 1:1 to the analog output.	X	X
Actual flow	Flow is measured in the dosing head. (See section Flow measurement.)	X	X ⁸⁾
Backpressure	Backpressure is measured in the dosing head. (See section Pressure monitoring.)	X	
Bus control	It is set by a command in the bus communication. (See section Communication.)	X	X

⁸⁾ Output signal is calculated based on motor speed and pump status (target flow rate).

The analog input and output are calibrated in the factory. As a rule, they do not need to be recalibrated. If necessary, it is possible to calibrate analog input and output via **Advanced settings** in the **Grundfos GO** application.

Related information[FlowControl](#)[Pressure monitoring](#)[Communication](#)**Key lock and mechanical lock***For the DDA-C and the DDC:*

To protect the pump from maloperation, a key lock can be set by entering a 4-digit PIN code. When the pump is locked, it is still possible to navigate through the menus Alarm and Info, and to acknowledge alarms. For the DDA-C, it is also possible to acknowledge alarms in the **Events log** menu, and check the settings in the **Settings** menu.

Two levels of protection are available:

- Settings: the start/stop key and 100% key are still available.
- Settings + keys: the start/stop key and 100% key are also locked.

For temporary (2 minutes) or final deactivation, the 4-digit preset PIN code has to be entered again.

For the DDE:

The adjustment knob can be locked with a locking screw to fix the current setting.

Basic settings*This section applies to the DDA-C and DDC.**For the DDA-C:*

With **Factory reset**, the pump can be reset to the default settings. In addition, with **Store settings**, the current configuration of the pump is stored and can be restored later by **Recall settings**. The latest saved configuration is stored in the memory.

In the **Grundfos GO** app, the following options are available:

- **Store settings in GO:** The current pump configuration is saved to the memory in Grundfos GO.
- **Store settings on pump:** The current pump configuration is saved to the memory of the pump.
- **Restore settings:** All settings are reset to the stored settings.
- **Factory reset:** All settings are reset to the factory settings.

For the DDC:

With load factory settings, the pump can be reset to the default settings. In addition, with save customer settings, the current configuration of the pump is stored and can be restored later by load customer settings. The latest saved configuration is stored in the memory.

Units

This section applies to the DDA-C and DDC.

It is possible to select metric units (liter/milliliter/bar) or US units (US gallons/psi). Depending on the operation mode and menu, the following units are displayed:

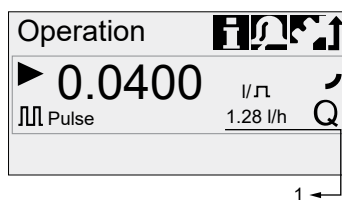
Operation mode/Function	Metric units	US units
Manual control	ml/h or l/h	gph
Pulse control	ml/pulse	ml/pulse
Analog 0/4-20 mA control	ml/h or l/h	gph
Batch control (pulse- or timer-based)	ml or l	gal
Calibration	ml	ml or gal
Volume counter	l	gal
Pressure monitoring	bar	psi

Additional display

This section applies to the DDC.

The additional display provides additional information about the current pump status. The value is displayed with the corresponding symbol.




In **Pulse** mode, the target flow information can be displayed, for example, Q = 1.28 l/h.



TM048167

Pos.	Description
1	Additional display

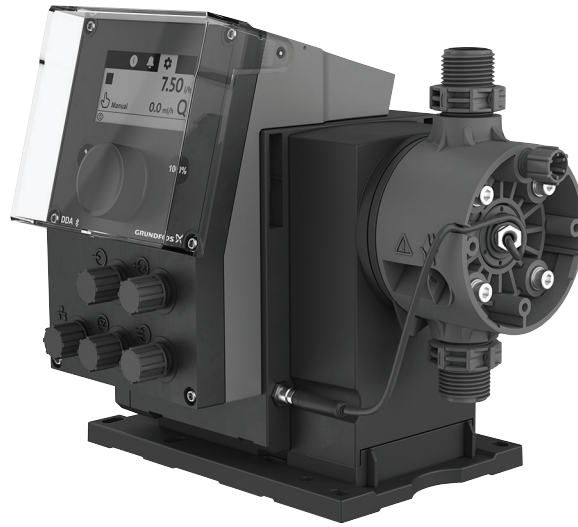
The additional display can be set as follows:

Setting	Description
Default display	 Target flow (Pulse)
	 Input current (Analog) ⁹⁾
Dosed volume	 Dosed volume since last reset

⁹⁾ Only DDC-AR control variant

FlowControl

This section applies to the DDA FCM-C control variant.



TM088205

DDA-C with FlowControl

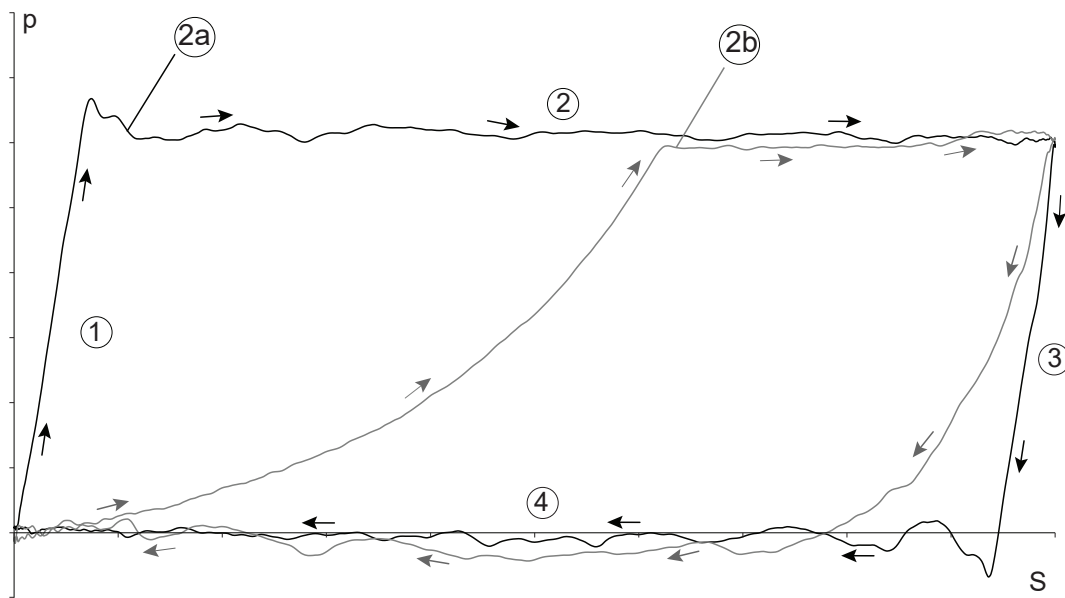
The pump monitors the dosing process of liquids when the FlowControl function is activated. While the pump operates, some influences, such as air bubbles, may cause reduced flow rates or even stop the dosing process. For optimal process safety and reliability, the activated FlowControl function immediately detects and displays the following malfunctions:

- overpressure
- discharge line burst
- air bubbles in the dosing head
- cavitation at the suction side
- suction valve leakage
- discharge valve leakage.

The unique FlowControl is based on an intelligent and maintenance-free sensor integrated in the dosing head. During the dosing process, the sensor measures the actual pressure and sends the measured value to the microprocessor in the pump. An internal indicator diagram is generated combining the actual pressure value with the diaphragm position (stroke length). The dosing process is monitored so the different malfunctions can immediately be detected due to their specific deviations in the curve. Compressible air bubbles, for instance, reduce the discharge phase and the stroke volume.

The sensitivity and delay of the FlowControl function can be adjusted individually.

FlowControl requires a minimum backpressure of 2 bar. Grundfos recommends an additional spring-loaded valve (approx. 3 bar) on the discharge side for dosing low capacities, that is, below 1 l/h.



TM041610

Indicator diagram

Pos.	Description
p	Pressure
S	Stroke length
1	Compression phase
2	Discharge phase
2a	Trouble-free dosing stroke
2b	Air bubbles disturbing the dosing stroke
3	Expansion phase
4	Suction phase

Pressure monitoring

This section applies to the DDA FCM-C control variant.

The integrated pressure sensor measures the actual pressure of the system which is shown in the display. A maximum pressure can be set. If the pressure in the system exceeds the set maximum, for example, if there is a closed valve, the pressure monitoring function stops the dosing process immediately. As soon as the backpressure falls below the set maximum, the dosing process continues. In case the pressure drops below the minimum limit, for example, if a discharge line bursts, the pump stops and major chemical spills are prevented.

Pressure setting range

Pump type	Min. pressure [bar] ¹⁰⁾	Max. pressure [bar] ¹¹⁾
DDA 7.5-16	2-16	3-17 (default)
DDA 12-10	2-10	3-11 (default)
DDA 17-7	2-7	3-8 (default)
DDA 30-4	2-4	3-5 (default)

¹⁰⁾ It can be either set as a warning (pump keeps running) or as an alarm (pump stops).

¹¹⁾ The adjustable maximum pressure is equivalent to the maximum operating pressure plus 1 bar.

Flow measurement

This section applies to the DDA FCM-C control variant.

The pump can precisely measure and display the actual dosing flow. Via the analog 0/4-20 mA output, the actual flow signal can easily be integrated in any process control system without any additional measurement equipment.

The Flow measurement function is based on an indicator diagram, see section FlowControl. Accumulating the length of each discharge stroke phase and multiplying it with the stroke frequency results in the actual flow displayed. Malfunctions, such as air bubbles or lower backpressure, result in a reduced or increased actual flow rate. When the AutoFlowAdapt function is activated, the pump compensates these influences by correcting the stroke speed. See section AutoFlowAdapt.

Related information

[FlowControl](#)

[AutoFlowAdapt](#)

AutoFlowAdapt

This section applies to the DDA FCM-C control variant.

When activating the AutoFlowAdapt function, even environmental changes are compensated so that the required target flow rate is achieved. The integrated AutoFlowAdapt makes additional monitoring and control devices redundant. The AutoFlowAdapt function is based on the following factors:

- FlowControl: malfunctions are detected.
- Pressure monitoring: system pressure changes are detected.
- Flow measurement: deviations in the target flow are detected.

Examples:

- FlowControl detects air bubbles in the system. Due to a special motor drive strategy and a certain speed increase, the pump tries to keep the flow rate constant. This is especially important when dosing degassing liquids.
- In general, increasing system pressure reduces the stroke volume whereas falling system pressure increases the stroke volume. The AutoFlowAdapt function compensates for this by automatically and continuously adapting the motor speed. Despite fluctuating system pressure, dosing accuracy is maintained.

New functions in the DDA-C

Max. capacity

This function offers the possibility of reducing the maximum pump capacity for all operation modes and functions. If **Max. capacity** is set, the pump cannot operate at a higher capacity than the set maximum capacity. **Max. capacity** does not affect the function of the 100% button.

The default maximum capacity is the nominal flow of the pump.

Stop after power failure

The **Stop after power failure** function is used to prevent the pump from performing a reference movement and start dosing when the power supply is switched on or re-established after a power failure.

A reference movement is performed every time the power supply is switched on. With the reference movement, the pump identifies the exact diaphragm position to ensure accurate dosing. Depending on the initial diaphragm position, the reference movement can dose a small amount of dosing medium into the process. To avoid this, the **Stop after power failure** function can be enabled.

The function is disabled by default.

When the function is enabled:

- The pump stops and displays an alarm when the power supply is switched on. The pump performs the reference movement after the user acknowledges the alarm.
- Functions which require the reference movement are deactivated until the reference movement is performed. These functions are the following:
 - **Auto deaeration**
 - **FlowControl**
 - Moving the diaphragm into service position
 - Volume counter.

Communication

The pump can be integrated into various bus systems and configured via Bluetooth with the Grundfos GO app.

Several communication options are available for remote configuration of the pump:

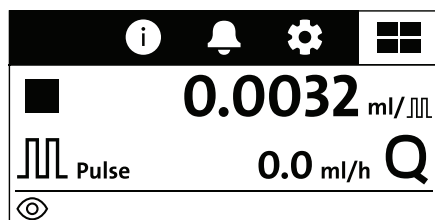
- **Bluetooth** with the Grundfos GO app
- **Bus/ Cloud control** with a CIM module
- **GENibus** with **Modbus RTU** protocol
- **Ethernet** with **Modbus TCP** protocol.

With the **Grundfos GO** app, it is possible to change the name of the pump and to manage software updates.

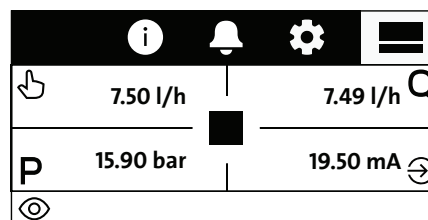
Manuals, functional profiles and support files, such as GSD-files, are available on Grundfos Product Center at www.grundfos.com.

Legacy screen and Dashboard screen

Status information, such as dosing flow, selected operation mode and operating state, is displayed on the **Legacy screen** or the **Dashboard screen**.



TM088256



TM088257

Legacy screen with Dashboard screen icon

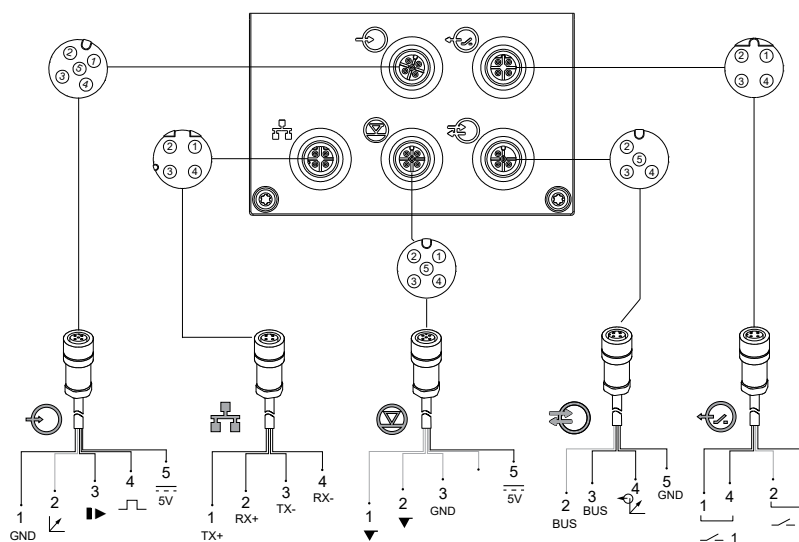
Dashboard screen with Legacy screen icon

In the **Settings > Display > Mult. display** menu, select 1 to 3 additional values. If **Dashboard screen** is selected, the screen is split. By turning the click wheel and selecting the **Legacy screen** icon in the top bar, the display switches back to the **Legacy screen**. As long as the **Dashboard screen** is active, the **Legacy screen** icon is visible in the top bar.

ConditionCheck

With the **ConditionCheck** function, an analysis of the pump and the system where the pump is installed is performed. During the analysis, a progress bar is shown.

Wiring diagram, DDA-C



TM087929

Input: Analog, External stop, Pulse

Function	Pins				
	1/brown	2/white	3/blue	4/black	5/yellow/green
Analog	GND / (-) mA	(+) mA			
External stop	GND		X		
Pulse	GND			X	

Relay outputs

Function	Pins			
	1/brown	2/white	3/blue	4/black
Relay 1	X			X
Relay 2		X	X	

Ethernet

Function	Pins			
	1/green/white	2/orange/white	3/green	4/orange
TX+ / TX-	X		X	
RX+ / RX-		X		X

Level signals: Empty signal, Low-level signal

Function	Pins				
	1	2	3	4	5
Low-level signal	X		GND		
Empty signal		X	GND		

GENibus, Analog output Modbus RTU

Function	Pins			
	2/white	3/blue	4/black	5/yellow/green
GENibus / Modbus RTU	RS-485 A	RS-485 B		GENibus Y
Analog output			(+) mA	GND / (-) mA

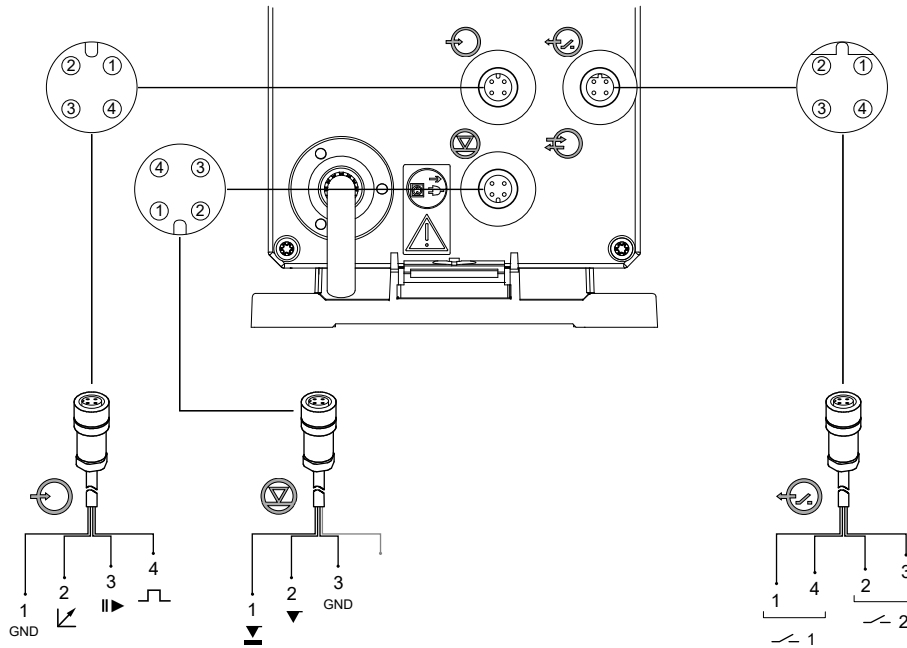
Cable selection

	Cable 1 Analog/External stop/ Pulse	Cable 2 Level input	Cable 3 GENIbus, Analog output	Cable 4 Relay output	Cable 5 Ethernet
Product No.	<ul style="list-style-type: none"> • 2 m cable: 96632921 • 5 m cable: 96632922 	See section about suction lances in Accessories.	<ul style="list-style-type: none"> • 2 m cable: 96632921 • 5 m cable: 96632922 	<ul style="list-style-type: none"> • 2 m cable: 96609017 • 5 m cable: 96609019 	It will be available in the future.

Related information

Rigid suction lances RSL

Wiring diagram, DDC



TM041187

Input: Analog, External stop, Pulse

Function	Pins			
	1/brown	2/white	3/blue	4/black
Analog	GND/(-) mA	(+) mA		
External stop	GND		X	
Pulse	GND			X

Level signals: Empty signal, Low-level signal

Function	Pins			
	1	2	3	4
Low-level signal	X		GND	
Empty signal		X	GND	

Relay outputs

Applies to DDC-AR control variant.

Function	Pins			
	1/brown	2/white	3/blue	4/black
Relay 1	X			X
Relay 2		X	X	

Cable selection

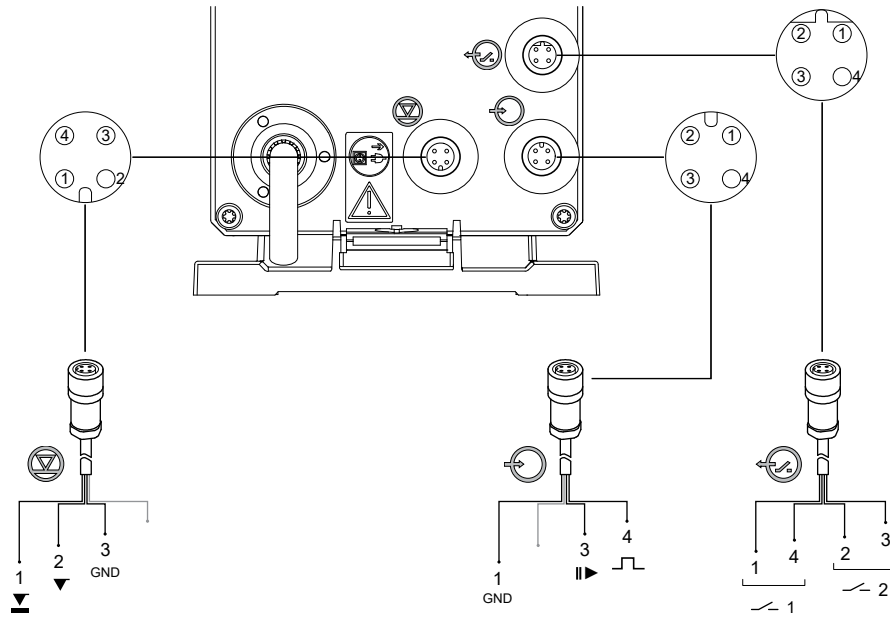
	Cable 1 Analog/external stop/pulse	Cable 2 Level input	Cable 4 Relay output
Product No.	<ul style="list-style-type: none">• 2 m cable: 96609014• 5 m cable: 96609016	See section about suction lances in Accessories.	<ul style="list-style-type: none">• 2 m cable: 96609017• 5 m cable: 96609019

Related information

Rigid suction lances RSL

Wiring diagram, DDE-PR, -P

This section applies to the DDE-PR/P control variant.



TM048172

Input: External stop, Pulse



Function	Pins			
	1/brown	2/white	3/blue	4/black
External stop	GND		X	
Pulse	GND			X

Level signals: Empty signal, Low-level signal



Function	Pins			
	1	2	3	4
Low-level signal	X		GND	
Empty signal		X	GND	

Relay outputs

This section applies to the DDE-PR control variant.



Function	Pins			
	1/brown	2/white	3/blue	4/black
Relay 1 (alarm)	X			X
Relay 2 (selectable)		X	X	

Cable selection

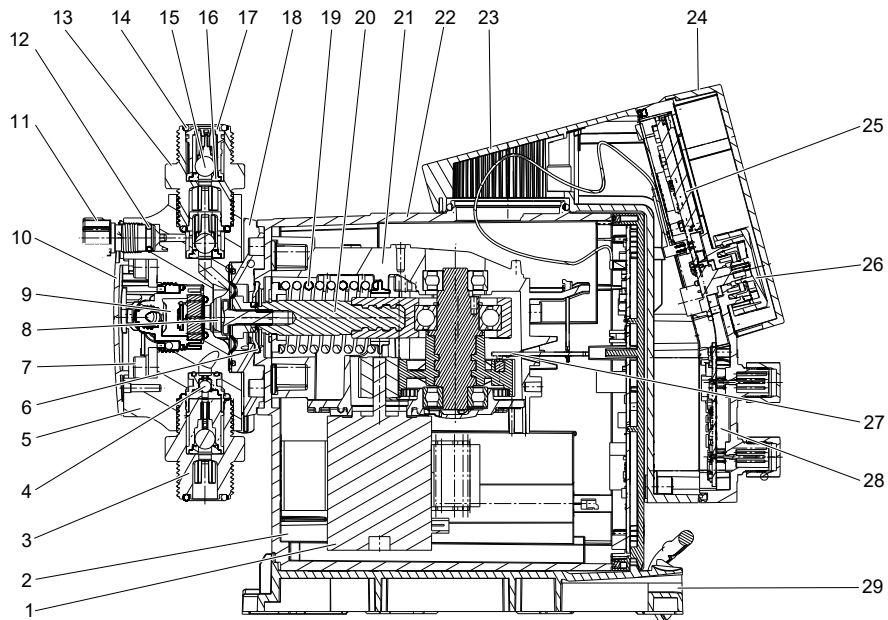
	Cable 1 External stop/pulse	Cable 2 Level input	Cable 4 Relay output
Product No.	<ul style="list-style-type: none">• 2 m cable: 96609014• 5 m cable: 96609016	See section about suction lances in Accessories.	<ul style="list-style-type: none">• 2 m cable: 96609017• 5 m cable: 96609019

Related information

Rigid suction lances RSL

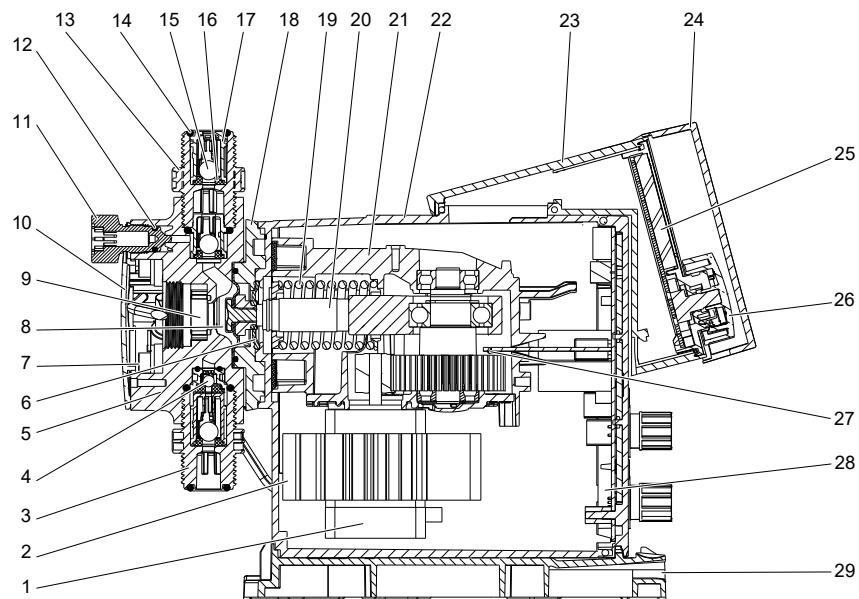
4. Construction

DDA-C and DDC



TM086941

Sectional drawing, DDA-C



TM041533

Sectional drawing, DDC

Construction

The DDA-C and DDC pumps are motor-driven diaphragm dosing pumps consisting of the following main parts:

Dosing head: It has a patented design with a minimum clearance space optimized for degassing liquids. It is supplied with integrated de-aeration valve for priming and venting, complete with connection for a 4/6 mm or 0.17" x 1/4" tubing. DDA FCM-C pumps have an integrated pressure sensor in the dosing head.

Valves: The double-ball discharge and suction valve¹²⁾ design allows for less clearance space, which is optimal for degassing liquids. Spring-loaded valves for higher viscosities are available as an option.

Connections: The robust and easy-to-use connection packages are optimal for various sizes of tubing or pipes.

Diaphragm: The full PTFE diaphragm is designed for long life and universal chemical resistance.

Flange: The flange is offered with separation chamber, safety diaphragm and drain hole.

Drive unit: It has a positive return crank with patented noiseless spur gear drive, energy recovery spring for high efficiency (only DDA-C) and stepper motor, all mounted in a robust gear housing.

Control cube: It contains operation electronics with display, keys, click-wheel and protective cover.

Housing: It contains drive unit and power electronics with robust signal sockets. The housing can be clicked on the mounting plate.

Material specification

Pos.	Description	Material options
1	Stepper motor	-
2	Cooling element ¹³⁾	Aluminum
3	Suction valve, complete ¹⁴⁾	-
4	Valve ball, DN 4 ¹⁵⁾	Ceramic Al ₂ O ₃ 99.5 %, SS 1.4401
5	Dosing head	PP, PVC, PVDF, SS 1.4435
6	Safety diaphragm	EPDM
7	Dosing head screw	SS 1.4301
8	Diaphragm	full PTFE
9	Pressure sensor	-
10	Dosing head cover	PP, SS 1.4301
11	De-aeration valve	PP, PVC, PVDF
12	De-aeration valve O-ring	EPDM/FKM
13	Discharge valve, complete ¹⁴⁾	-
14	Discharge valve O-ring	EPDM, FKM, PTFE
15	Discharge valve ball, DN 8	Ceramic Al ₂ O ₃ 99.5 %, SS 1.4401
16	Discharge valve seat	EPDM, FKM, PTFE
17	Discharge valve ball cage	PP, PVC, PVDF, SS 1.4435
18	Flange	PPO/PS 20 % gf
19	Energy recovery spring ¹³⁾	EN 10270-2/VD SiCr
20	Connecting rod	PA 6.6 30 % gf
21	Gear box	PPO/PS 20 % gf
22	Housing	PPO/PS 20 % gf
23	Control cube	PPO/PS 20 % gf
24	Display cover	PC
25	Operation PCB	-
26	Click wheel	PPO/PS 20 % gf
27	Hall sensor	-
28	Power PCB	-
29	Mounting plate	PPO/PS 20 % gf

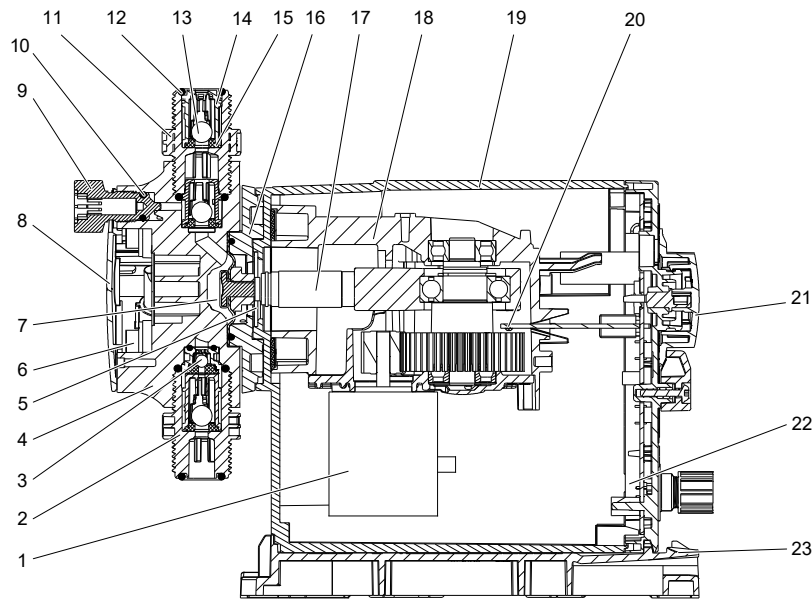
¹³⁾ It is only for DDA-C.

¹⁴⁾ The pump can be supplied with spring-loaded valves (material: Tantal).

¹⁵⁾ It is only for pumps up to 7.5 l/h with standard valves.

¹²⁾ It is only for pumps up to 7.5 l/h with standard valves.

DDE



TM041609

Sectional drawing, DDE

Construction

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

Dosing head: It has a patented design with a minimum clearance space optimized for degassing liquids. It is supplied with integrated de-aeration valve for priming and venting, complete with connection for a 4/6 mm or 0.17" x 1/4" tubing.

Valves: The double-ball discharge and suction valve¹⁶⁾ design allows for less clearance space optimized for degassing liquids. Spring-loaded valves for higher viscosities are available as an option.

Connections: The robust and easy-to-use connection packages are optimal for various sizes of tubing or pipes.

Diaphragm: The full PTFE diaphragm is designed for long life and universal chemical resistance.

Flange: The flange is offered with separation chamber, safety diaphragm and drain hole.

Drive unit: It has a positive return crank with patented noiseless spur gear drive and stepper motor, all mounted in a robust gear housing.

Housing: It contains a drive unit, control panel and electronics with robust signal sockets. The housing can be clicked on the mounting plate.

¹⁶⁾ It is only for pumps up to 6 l/h with standard valves.

Material specification

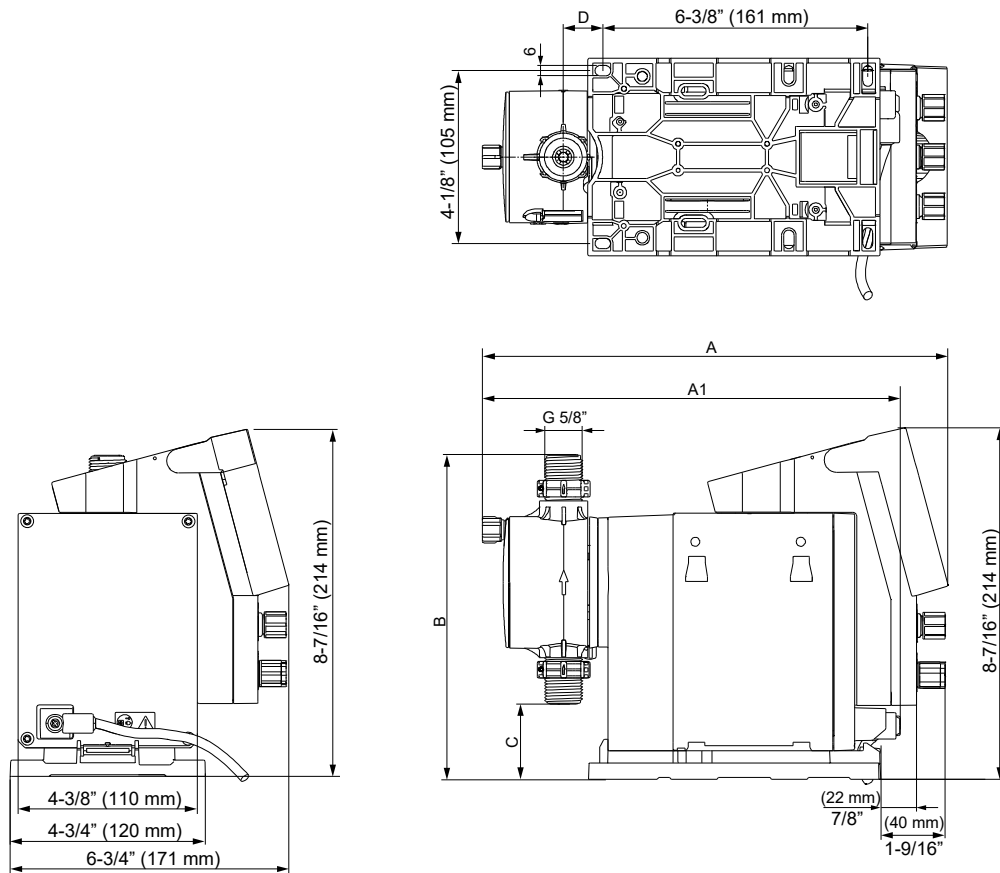
Pos.	Description	Material options
1	Stepper motor	-
2	Suction valve, complete ¹⁷⁾	-
3	Valve ball, DN 4 ¹⁸⁾	Ceramic Al ₂ O ₃ 99.5 %, SS 1.4401
4	Dosing head	PP, PVC, PVDF, SS 1.4435
5	Safety diaphragm	EPDM
6	Dosing head screw	SS 1.4301
7	Diaphragm	full PTFE
8	Dosing head cover	PP, SS 1.4301
9	De-aeration valve	PP, PVC, PVDF
10	De-aeration valve O-ring	EPDM/FKM
11	Discharge valve, complete ¹⁷⁾	-
12	Discharge valve O-ring	EPDM, FKM, PTFE
13	Discharge valve ball, DN 8	Ceramic Al ₂ O ₃ 99.5 %, SS 1.4401
14	Discharge valve ball cage	PP, PVC, PVDF, SS 1.4435
15	Discharge valve seat	EPDM, FKM, PTFE
16	Flange	PPO/PS 20 % gf
17	Connecting rod	PA 6.6 30 % gf
18	Gear box	PPO/PS 20 % gf
19	Housing	PPO/PS 20 % gf
20	Hall sensor	-
21	Capacity adjustment knob	PPO/PS 20 % gf
22	Power PCB	-
23	Mounting plate	PPO/PS 20 % gf

¹⁷⁾ The pump can be supplied with spring-loaded valves (material: Tantal).

¹⁸⁾ It is only for pumps up to 6 l/h with standard valves.

5. Dimensions

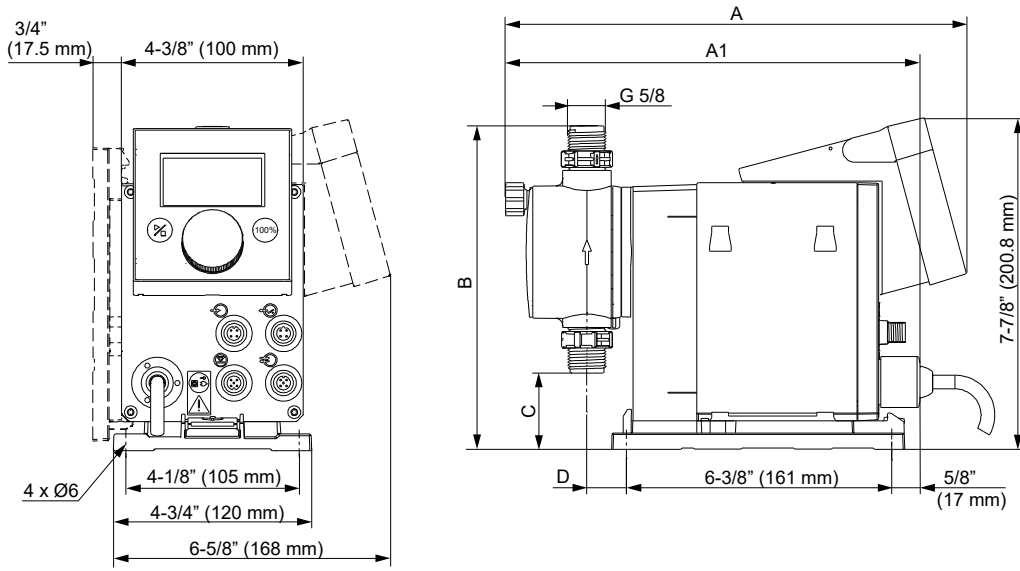
Dimensions, SMART S DDA-C



TM087967

Pump type	A [in. (mm)]	A1 [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]
DDA 7.5-16	11.22 (285)	10 (255)	7.71 (196)	1.83 (46.5)	0.94 (24)
DDA 12-10 / 17-7	11.22 (285)	10 (255)	7.89 (200.5)	1.55 (39.5)	0.94 (24)
DDA 30-4	11.81 (300)	10.62 (270)	8 (204.5)	1.39 (35.5)	1.51 (38.5)

Dimensions, SMART S DDC

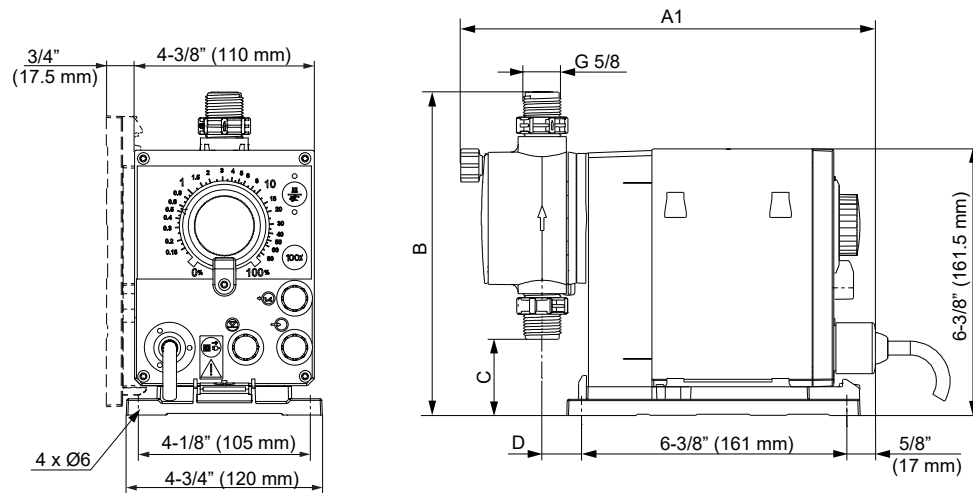


TM041487

Pump type	A [in. (mm)]	A1 [in. (mm)]	B [in. (mm)]	C [in. (mm)]	D [in. (mm)]
DDC 6-10	11 (280)	9.88 (251)	7.71 (196)	1.83 (46.5)	0.94 (24)
DDC 9-7	11 (280)	9.88 (251)	7.71 (196)	1.83 (46.5)	0.94 (24)
DDC 15-4	11 (280)	9.88 (251)	7.89 (200.5)	1.55 (39.5)	0.94 (24)

Dimensions, SMART S DDE

The indicated dimensions are the same for all control variants of the DDE range.
The following drawing shows the DDE-PR control variant.



TM041598

Pump type	A1	B	C	D
	[in. (mm)]	[in. (mm)]	[in. (mm)]	[in. (mm)]
DDE 6-10	9.88 (251)	7.71 (196)	1.83 (46.5)	0.94 (24)
DDE 15-4	9.88 (251)	7.89 (200.5)	1.55 (39.5)	0.94 (24)

6. Technical data

Technical data, SMART S DDA-C

Mechanical data		7.5-16	12-10	17-7	30-4
Turn-down ratio (setting range)	[1:X]	3000	1000	1000	1000
Max. dosing capacity	[l/h]	7.5	12.0	17.0	30.0
	[gph]	2.0	3.1	4.5	8.0
Max. dosing capacity with SlowMode 50 %	[l/h]	3.75	6.00	8.50	15.00
	[gph]	1.00	1.55	2.25	4.00
Max. dosing capacity with SlowMode 25 %	[l/h]	1.88	3.00	4.25	7.50
	[gph]	0.50	0.78	1.13	2.00
Min. dosing capacity	[l/h]	0.0025	0.0120	0.0170	0.0300
	[gph]	0.0007	0.0031	0.0045	0.0080
Max. operating pressure ¹⁹⁾	[bar]	16	10	7	4
	[psi]	230	150	100	60
Max. stroke frequency ²⁰⁾	[strokes/min]	190	155	205	180
Stroke volume	[ml]	0.74	1.45	1.55	3.10
Accuracy of repeatability	[%]	± 1 (of setpoint)			
Max. suction lift during operation ²¹⁾	[m]	6			
Max. suction lift when priming with wet valves ²¹⁾	[m]	2	3	3	2
Min. pressure differential between suction and discharge side	[bar]	1 (FCM-C: 2)			
Max. inlet pressure, suction side	[bar]	2			
Max. viscosity in SlowMode 25 % with spring-loaded valves ²²⁾	[mPas] (= cP)	2500	2500	2000	1500
Max. viscosity in SlowMode 50 % with spring-loaded valves ²²⁾	[mPas] (= cP)	1800	1300	1300	600
Max. viscosity without SlowMode with spring-loaded valves ²²⁾	[mPas] (= cP)	600	500	500	200
Max. viscosity without spring-loaded valves ²²⁾	[mPas] (= cP)	50	300	300	150
Min. internal hose/pipe diameter suction/discharge side ^{21),23)}	[mm]	4	6	6	9
Min. internal hose/pipe diameter suction/discharge side (high viscosity) ²³⁾	[mm]	9			
Min./Max. liquid temperature	[°C]	-10/45			
Min./max. ambient temperature	[°C]	0/45			
Min./max. storage temperature	[°C]	-20/70			
Max. relative humidity (non-condensing)	[%]	96			
Max. altitude above sea level	[m]	2000			

¹⁹⁾PVC: up to 10 bar

²⁰⁾The maximum stroke frequency varies depending on calibration

²¹⁾Data is based on measurements with water

²²⁾Maximum suction lift: 1 m, dosing capacity reduced (approx. 30 %)

²³⁾Length of suction line: 1.5 m, length of discharge line: 10 m (at max. viscosity)

Electrical data		7.5-16	12-10	17-7	30-4
Voltage	[V]	100-240 V (- 10 %/+ 10 %), 50/60 Hz			
Length of power cable	[m]	1.5			
Max. inrush current for 2 ms (100 V)	[A]	8			
Max. inrush current for 2 ms (230 V)	[A]	25			
Max. power consumption P ₁	[W]	24			
Enclosure class		IP65, enclosure type 4X			
Electrical safety class		II			
Pollution degree		2			

Signal input		7.5-16	12-10	17-7	30-4
Max. load for level input		12 V, 5 mA			
Max. load for external stop input		12 V, 5 mA			
Max. load for pulse input		12 V, 5 mA			
Min. pulse length	[ms]	0.5			
Max. pulse frequency	[Hz]	1000			
Impedance at 0/4-20 mA analog input	[Ω]	15			
Accuracy of analog input (full-scale value)	[%]	± 0.5			
Min. resolution of analog input	[mA]	0.007			
Max. resistance in level/pulse circuit	[Ω]	1000			

Signal output		7.5-16	12-10	17-7	30-4
Max. current on relay output (ohmic load)	[A]	0.5			
Max. frequency on relay output	[Hz]	100			
Max. voltage on relay output	[V]	30 VDC / 30 VAC			
Max. voltage on analog output	[V]	24 VDC			
Impedance at 0/4-20 mA analog output	[Ω]	500			
Accuracy of analog output (full-scale value)	[%]	± 0.5			
Min. resolution of analog output	[mA]	0.006			

Weight and size		7.5-16	12-10	17-7	30-4
Weight (PVC, PP, PVDF)	[kg]	2.5	2.5	2.5	2.7
Weight (stainless steel)	[kg]	3.3	3.3	3.3	4.1
Diaphragm diameter	[mm]	44	50	50	74

Sound pressure		7.5-16	12-10	17-7	30-4
Max. sound pressure level	[dB(A)]	60			

Approvals: CE, CSA-US, NSF61, ACS, RCM.

Technical data, SMART S DDC

Mechanical data		6-10	9-7	15-4
Turn-down ratio (setting range)	[1:X]	1000	1000	1000
Max. dosing capacity	[l/h]	6.0	9.0	15.0
	[gph]	1.5	2.4	4.0
Max. dosing capacity with SlowMode 50 %	[l/h]	3.00	4.50	7.50
	[gph]	0.75	1.20	2.00
Max. dosing capacity with SlowMode 25 %	[l/h]	1.50	2.25	3.75
	[gph]	0.38	0.60	1.00
Min. dosing capacity	[l/h]	0.0060	0.0090	0.0150
	[gph]	0.0015	0.0024	0.0040
Max. operating pressure	[bar]	10	7	4
	[psi]	150	100	60
Max. stroke frequency ²⁴⁾	[strokes/min]	140	200	180
Stroke volume	[ml]	0.81	0.84	1.58
Accuracy of repeatability	[%]	± 1 (of setpoint)		
Max. suction lift during operation ²⁵⁾	[m]	6		
Max. suction lift when priming with wet valves ²⁵⁾	[m]	2	2	3
Min. pressure differential between suction and discharge side	[bar]	1		
Max. inlet pressure, suction side	[bar]	2		
Max. viscosity in SlowMode 25 % with spring-loaded valves ²⁶⁾	[mPas] (= cP)	2500	2000	2000
Max. viscosity in SlowMode 50 % with spring-loaded valves ²⁶⁾	[mPas] (= cP)	1800	1300	1300
Max. viscosity without SlowMode with spring-loaded valves ²⁶⁾	[mPas] (= cP)	600	500	500
Max. viscosity without spring-loaded valves ²⁶⁾	[mPas] (= cP)	50	50	300
Min. internal hose/pipe diameter suction/discharge side ^{25) 27)}	[mm]	4	6	6
Min. internal hose/pipe diameter suction/discharge side (high viscosity) ²⁷⁾	[mm]	9		
Min./Max. liquid temperature	[°C]	-10/45		
Min./max. ambient temperature	[°C]	0/45		
Min./max. storage temperature	[°C]	-20/70		
Max. relative humidity (non-condensing)	[%]	96		
Max. altitude above sea level	[m]	2000		

24) The maximum stroke frequency varies depending on calibration.

25) Data is based on measurements with water.

26) Maximum suction lift: 1 m, dosing capacity reduced (approx. 30 %).

27) Length of suction line: 1.5 m, length of discharge line: 10 m (at max. viscosity).

Electrical data		6-10	9-7	15-4
Voltage	[V]	100-240 V, - 10 %/+ 10 %, 50/60 Hz		
Length of power cable	[m]	1.5		
Max. inrush current for 2 ms (100 V)	[A]	8		
Max. inrush current for 2 ms (230 V)	[A]	25		
Max. power consumption P ₁	[W]	22		
Enclosure class		IP65, Type 4x		
Electrical safety class		II		
Pollution degree		2		

Signal input		6-10	9-7	15-4
Max. load for level input		12 V, 5 mA		
Max. load for pulse input		12 V, 5 mA		
Max. load for External stop input		12 V, 5 mA		

Signal input		6-10	9-7	15-4
Min. pulse length	[ms]		5	
Max. pulse frequency	[Hz]		100	
Impedance at 0/4-20 mA analog input	[Ω]		15	
Accuracy of analog input (full-scale value)	[%]		± 1.5	
Min. resolution of analog input	[mA]		0.05	
Max. resistance in level/pulse circuit	[Ω]		1000	

Signal output		6-10	9-7	15-4
Max. ohmic load on relay output	[A]		0.5	
Max. voltage on relay output	[V]		30 VDC / 30 VAC	

Weight and size		6-10	9-7	15-4
Weight (PVC, PP, PVDF)	[kg]		2.4	
Weight (stainless steel)	[kg]		3.2	
Diaphragm diameter	[mm]	44		50

Sound pressure		6-10	9-7	15-4
Max. sound pressure level	[dB(A)]		60	

Approvals: CE, CB, CSA-US, NSF61, EAC, ACS, RCM.

Technical data, SMART S DDE

Mechanical data		6-10	15-4
Turn-down ratio (setting range)	[1:X]	1000	1000
Max. dosing capacity	[l/h]	6.0	15.0
	[gph]	1.5	4.0
Min. dosing capacity	[l/h]	0.006	0.015
	[gph]	0.0015	0.0040
Max. operating pressure	[bar]	10	4
	[psij]	150	60
Max. stroke frequency	[strokes/min]	140	180
Stroke volume	[ml]	0.81	1.58
Accuracy of repeatability	[%]	± 5 (of setpoint)	
Max. suction lift during operation ²⁸⁾	[m]	6	
Max. suction lift when priming with wet valves ²⁸⁾	[m]	2	3
Min. pressure differential between suction and discharge side	[bar]	1	
Max. inlet pressure, suction side	[bar]	2	
Max. viscosity with spring-loaded valves ²⁹⁾	[mPas] (= cP)	600	500
Max. viscosity without spring-loaded valves ²⁹⁾	[mPas] (= cP)	50	
Min. internal hose/pipe diameter suction/discharge side ^{28) 30)}	[mm]	4	6
Min. internal hose/pipe diameter suction/discharge side (high viscosity) ³⁰⁾	[mm]	9	
Min./max. liquid temperature	[°C]	-10/45	
Min./max. ambient temperature	[°C]	0/45	
Min./max. storage temperature	[°C]	-20/70	
Max. relative humidity (non-condensing)	[%]	96	
Max. altitude above sea level	[m]	2000	

²⁸⁾Data is based on measurements with water.

²⁹⁾Maximum suction lift: 1 m, dosing capacity reduced (approx. 30 %).

³⁰⁾Length of suction line: 1.5 m, length of discharge line: 10 m (at max. viscosity).

Electrical data		6-10	15-4
Voltage	[V]	100-240 V, - 10 %/+ 10 %, 50/60 Hz	
Length of power cable	[m]	1.5	
Max. inrush current for 2 ms (100 V)	[A]	8	
Max. inrush current for 2 ms (230 V)	[A]	25	
Max. power consumption P ₁	[W]	19	
Enclosure class		IP65, Type 4x	
Electrical safety class		II	
Pollution degree		2	

Signal input		6-10	15-4
Max. load for level input		12 V, 5 mA	
Max. load for pulse input		12 V, 5 mA	
Max. load for external stop input		12 V, 5 mA	
Min. pulse length	[ms]	5	
Max. pulse frequency	[Hz]	100	
Max. resistance in level/pulse circuit	[Ω]	1000	

Signal output		6-10	15-4
Max. ohmic load on relay output	[A]	0.5	
Max. voltage on relay output	[V]	30 VDC/30 VAC	

Weight and size		6-10	15-4
Weight (PVC, PP, PVDF)	[kg]	2.4	
Weight (stainless steel)	[kg]	3.2	
Diaphragm diameter	[mm]	44	50
Sound pressure		6-10	15-4
Max. sound pressure level	[dB(A)]	60	

Approvals: CE, CB, CSA-US, NSF61, EAC, ACS, RCM.

Technical data for CIP (Clean-In-Place) applications

Short-term temperature limits for maximum 40 minutes at maximum 2 bar operating pressure:

Max. liquid temperature for dosing head material PVDF	[°C]	85
Max. liquid temperature for dosing head material stainless steel	[°C]	120

7. Pump selection

DDA-C, standard range

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

Mains plug: USA, Canada

Valves: Standard

Connection set: U7U7 / I003 / VV, see section Type key

Connection SS: Threaded, NPT 1/4", female

Max. flow [gph (l/h)]	Max. pressure [psi (bar)]	Dosing head	Materials		Installation set ³¹⁾	Type designation ³²⁾	Product number			
			Gaskets	Valve ball			AR-C	FCM-C		
2 (7.5)	230 (16)	PP	EPDM	Ceramic	No	DDA 7.5-16 AR-C-PP/E/C-F-31U7U7BG	93065137	93064934		
					Yes	DDA 7.5-16 AR-C-PP/E/C-F-31I003BG	93065139	93064935		
			FKM	Ceramic	No	DDA 7.5-16 AR-C-PP/V/C-F-31U7U7BG	93065142	93064939		
					Yes	DDA 7.5-16 AR-C-PP/V/C-F-31I003BG	93065143	93064950		
			PVC ³³⁾	EPDM	Ceramic	No	DDA 7.5-16 AR-C-PVC/E/C-F-31U7U7BG	93065148	93064953	
						Yes	DDA 7.5-16 AR-C-PVC/E/C-F-31I003BG	93065149	93064954	
		FKM		Ceramic	No	DDA 7.5-16 AR-C-PVC/V/C-F-31U7U7BG	93065155	93064957		
					Yes	DDA 7.5-16 AR-C-PVC/V/C-F-31I003BG	93065156	93064958		
		PVDF	PTFE	Ceramic	No	DDA 7.5-16 AR-C-PV/T/C-F-31U7U7BG	93065180	93064975		
					Yes	DDA 7.5-16 AR-C-PV/T/C-F-31I003BG	93065181	93064976		
		SS 1.4435	PTFE	SS 1.4401	No	DDA 7.5-16 AR-C-SS/T/SS-F-31VVBG	93065191	93064981		
		3.1 (12)	150 (10)	PVC	EPDM	Ceramic	No	DDA 12-10 AR-C-PVC/E/C-F-31U7U7BG	93065204	93064993
Yes	DDA 12-10 AR-C-PVC/E/C-F-31I004BG						93065205	93064994		
FKM	Ceramic				No	DDA 12-10 AR-C-PVC/V/C-F-31U7U7BG	93065209	93064997		
					Yes	DDA 12-10 AR-C-PVC/V/C-F-31I004BG	93065210	93064998		
PTFE	Ceramic				No	DDA 12-10 AR-C-PVC/T/C-F-31U7U7BG	93065216	93065001		
					Yes	DDA 12-10 AR-C-PVC/T/C-F-31I004BG	93065217	93065002		
PVDF	EPDM			Ceramic	No	DDA 12-10 AR-C-PV/E/C-F-31U7U7BG	93065220	93065005		
					Yes	DDA 12-10 AR-C-PV/E/C-F-31I004BG	93065221	93065006		
	FKM			Ceramic	No	DDA 12-10 AR-C-PV/V/C-F-31U7U7BG	93065224	93065009		
					Yes	DDA 12-10 AR-C-PV/V/C-F-31I004BG	93065225	93065010		
	PTFE			Ceramic	No	DDA 12-10 AR-C-PV/T/C-F-31U7U7BG	93065229	93065013		
					Yes	DDA 12-10 AR-C-PV/T/C-F-31I004BG	93065230	93065015		
SS 1.4435	PTFE			SS 1.4401	No	DDA 12-10 AR-C-SS/T/SS-F-31VVBG	93065235	93065021		
4.5 (17)	100 (7)			PVC	EPDM	Ceramic	No	DDA 17-7 AR-C-PVC/E/C-F-31U7U7BG	93065247	93065033
							Yes	DDA 17-7 AR-C-PVC/E/C-F-31I004BG	93065248	93065034
					FKM	Ceramic	No	DDA 17-7 AR-C-PVC/V/C-F-31U7U7BG	93065251	93065037
							Yes	DDA 17-7 AR-C-PVC/V/C-F-31I004BG	93065252	93065038
					PTFE	Ceramic	No	DDA 17-7 AR-C-PVC/T/C-F-31U7U7BG	93065256	93065051
		Yes	DDA 17-7 AR-C-PVC/T/C-F-31I004BG				93065257	93065052		
		PVDF	EPDM	Ceramic	No	DDA 17-7 AR-C-PV/E/C-F-31U7U7BG	93065261	93065055		
					Yes	DDA 17-7 AR-C-PV/E/C-F-31I004BG	93065262	93065056		
			FKM	Ceramic	No	DDA 17-7 AR-C-PV/V/C-F-31U7U7BG	93065265	93065060		
					Yes	DDA 17-7 AR-C-PV/V/C-F-31I004BG	93065266	93065061		
			PTFE	Ceramic	No	DDA 17-7 AR-C-PV/T/C-F-31U7U7BG	93065270	93065065		
					Yes	DDA 17-7 AR-C-PV/T/C-F-31I004BG	93065271	93065066		
		SS 1.4435	PTFE	SS 1.4401	No	DDA 17-7 AR-C-SS/T/SS-F-31VVBG	93065276	97722662		
		8 (30)	60 (4)	PVC	EPDM	Ceramic	No	DDA 30-4 AR-C-PVC/E/C-F-31U7U7BG	93065286	93065082
							Yes	DDA 30-4 AR-C-PVC/E/C-F-31I004BG	93065287	93065083

Max. flow [gph (l/h)]	Max. pressure [psi (bar)]	Dosing head	Materials		Installation set ³¹⁾	Type designation ³²⁾	Product number		
			Gaskets	Valve ball			AR-C	FCM-C	
1.58 (6)	150 (10)	PVC	FKM	Ceramic	No	DDA 30-4 AR-C -PVC/N/C-F-31U7U7BG	93065301	93065086	
					Yes	DDA 30-4 AR-C -PVC/N/C-F-31I004BG	93065302	93065087	
			PTFE	Ceramic	No	DDA 30-4 AR-C -PVC/T/C-F-31U7U7BG	93065306	93065090	
					Yes	DDA 30-4 AR-C -PVC/T/C-F-31I004BG	93065307	93065091	
			EPDM	Ceramic	No	DDA 30-4 AR-C -PV/E/C-F-31U7U7BG	93065311	93065094	
					Yes	DDA 30-4 AR-C -PV/E/C-F-31I004BG	93065312	93065095	
			PVDF	FKM	Ceramic	No	DDA 30-4 AR-C -PV/N/C-F-31U7U7BG	93065315	93065100
						Yes	DDA 30-4 AR-C -PV/N/C-F-31I004BG	93065316	93065102
				PTFE	Ceramic	No	DDA 30-4 AR-C -PV/T/C-F-31U7U7BG	93065321	93065105
						Yes	DDA 30-4 AR-C -PV/T/C-F-31I004BG	93065322	93065106
			SS 1.4435	PTFE	SS 1.4401	No	DDA 30-4 AR-C -SS/T/SS-F-31VVBG	93065327	93065110

³¹⁾ The installation set includes: 2 pump connections, a foot valve, an injection unit, 19.68 ft (6 m) of PE discharge tube, 6.56 ft (2 m) of PVC suction tube, 6.56 ft (2 m) of PVC de-aeration tube 0.17" x 1/4"(4/6 mm).

³²⁾ It is also available in **FCM-C** control version.

³³⁾ Only maximum 150 psi (10 bar) for the PVC dosing head.

Related information

[Type key](#)

DDC, standard range

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

Mains plug: USA, Canada

Valves: Standard

Connection set: U7U7 / I003 / VV, see section Type key

Connection SS: Threaded, NPT 1/4", female

Max. flow [gph (l/h)]	Max. pressure [psi (bar)]	Dosing head	Materials		Installation set ³⁴⁾	Type designation ³⁵⁾	Product number		
			Gaskets	Valve ball			A	AR	
1.58 (6)	150 (10)	PVC	EPDM	Ceramic	No	DDC 6-10 A -PVC/E/C-F-31U7U7BG	97721537	97721571	
					Yes	DDC 6-10 A -PVC/E/C-F-31I003BG	97721538	97721572	
			FKM	Ceramic	No	DDC 6-10 A -PVC/N/C-F-31U7U7BG	97721541	97721575	
					Yes	DDC 6-10 A -PVC/N/C-F-31I003BG	97721542	97721576	
			PTFE	Ceramic	No	DDC 6-10 A -PVC/T/C-F-31U7U7BG	97721545	97721579	
					Yes	DDC 6-10 A -PVC/T/C-F-31I003BG	97721546	97721580	
			EPDM	Ceramic	No	DDC 6-10 A -PV/E/C-F-31U7U7BG	97721549	97721583	
					Yes	DDC 6-10 A -PV/E/C-F-31I003BG	97721550	97721584	
			PVDF	FKM	Ceramic	No	DDC 6-10 A -PV/N/C-F-31U7U7BG	97721553	97721587
						Yes	DDC 6-10 A -PV/N/C-F-31I003BG	97721554	97721588
				PTFE	Ceramic	No	DDC 6-10 A -PV/T/C-F-31U7U7BG	97721557	97721591
						Yes	DDC 6-10 A -PV/T/C-F-31I003BG	97721558	97721592
			SS	PTFE	SS 1.4401	No	DDC 6-10 A -SS/T/SS-F-31VVBG	97721561	97721595

Max. flow [gph (l/h)]	Max. pressure [psi (bar)]	Dosing head	Materials		Installation set ³⁴⁾	Type designation ³⁵⁾	Product number	
			Gaskets	Valve ball			A	AR
2.4 (9)	100 (7)	PP	EPDM	Ceramic	No	DDC 9-7 A-PVC/E/C-F-31U7U7BG	97721605	97721639
					Yes	DDC 9-7 A-PVC/E/C-F-31I004BG	97721606	97721640
			FKM	Ceramic	No	DDC 9-7 A-PVC/N/C-F-31U7U7BG	97721609	97721643
					Yes	DDC 9-7 A-PVC/N/C-F-31I004BG	97721610	97721644
			PTFE	Ceramic	No	DDC 9-7 A-PVC/T/C-F-31U7U7BG	97721613	97721647
					Yes	DDC 9-7 A-PVC/T/C-F-31I004BG	97721614	97721648
		PVC	EPDM	Ceramic	No	DDC 9-7 A-PV/E/C-F-31U7U7BG	97721617	97721651
					Yes	DDC 9-7 A-PV/E/C-F-31I004BG	97721618	97721652
			FKM	Ceramic	No	DDC 9-7 A-PV/N/C-F-31U7U7BG	97721621	97721655
					Yes	DDC 9-7 A-PV/N/C-F-31I004BG	97721622	97721656
		PVDF	PTFE	Ceramic	No	DDC 9-7 A-PV/T/C-F-31U7U7BG	97721625	97721659
					Yes	DDC 9-7 A-PV/T/C-F-31I004BG	97721626	97721660
		SS	PTFE	SS 1.4401	No	DDC 9-7 A-SS/T/SS-F-31VVBG	97721629	97721663
		4 (15)	60 (4)	PVC	EPDM	Ceramic	No	DDC 15-4 A-PVC/E/C-F-31U7U7BG
Yes	DDC 15-4 A-PVC/E/C-F-31I004BG						97721674	97721708
FKM	Ceramic				No	DDC 15-4 A-PVC/N/C-F-31U7U7BG	97721677	97721711
					Yes	DDC 15-4 A-PVC/N/C-F-31I004BG	97721678	97721712
PTFE	Ceramic				No	DDC 15-4 A-PVC/T/C-F-31U7U7BG	97721681	97721715
					Yes	DDC 15-4 A-PVC/T/C-F-31I004BG	97721682	97721716
PVDF	EPDM			Ceramic	No	DDC 15-4 A-PV/E/C-F-31U7U7BG	97721685	97721719
					Yes	DDC 15-4 A-PV/E/C-F-31I004BG	97721686	97721720
	FKM			Ceramic	No	DDC 15-4 A-PV/N/C-F-31U7U7BG	97721689	97721723
					Yes	DDC 15-4 A-PV/N/C-F-31I004BG	97721690	97721724
PTFE	Ceramic			No	DDC 15-4 A-PV/T/C-F-31U7U7BG	97721693	97721727	
				Yes	DDC 15-4 A-PV/T/C-F-31I004BG	97721694	97721728	
SS	PTFE			SS 1.4401	No	DDC 15-4 A-SS/T/SS-F-31VVBG	97721697	97721731

³⁴⁾ The installation set includes: 2 pump connections, a foot valve, an injection unit, 19.68 ft (6 m) of PE discharge tube, 6.56 ft (2 m) of PVC suction tube, 6.56 ft (2 m) of PVC de-aeration tube 0.17" x 1/4"(4/6 mm).

³⁵⁾ It is also available in AR-control version.

Related information

[Type key](#)

DDE, standard range

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

Mains plug: USA, Canada

Valves: Standard

Connection set: U7U7 / I003 / VV, see section Type key

Connection SS: Threaded, NPT 1/4", female

Max. flow [gph (l/h)]	Max. pressure [psi (bar)]	Dosing head	Materials		Installation set ³⁶⁾	Type designation ³⁷⁾	Product number				
			Gaskets	Valve ball			B	P	PR		
1.58 (6)	145 (10)	PVC	EPDM	Ceramic	No	DDE 6-10 B-PVC/E/C-X-31U7U7BG	97721059	97721093	98147336		
					Yes	DDE 6-10 B-PVC/E/C-X-31I003BG	97721060	97721094	98147337		
			FKM	Ceramic	No	DDE 6-10 B-PVC/N/C-X-31U7U7BG	97721063	97721097	98147340		
					Yes	DDE 6-10 B-PVC/N/C-X-31I003BG	97721064	97721098	98147341		
			PTFE	Ceramic	No	DDE 6-10 B-PVC/T/C-X-31U7U7BG	97721067	97721101	98147346		
					Yes	DDE 6-10 B-PVC/T/C-X-31I003BG	97721068	97721102	98147347		
		PVDF	EPDM	Ceramic	No	DDE 6-10 B-PV/E/C-X-31U7U7BG	97721071	97721105	98147348		
					Yes	DDE 6-10 B-PV/E/C-X-31I003BG	97721072	97721106	98147349		
			FKM	Ceramic	No	DDE 6-10 B-PV/N/C-X-31U7U7BG	97721075	97721109	98147332		
					Yes	DDE 6-10 B-PV/N/C-X-31I003BG	97721076	97721110	98147333		
			PTFE	Ceramic	No	DDE 6-10 B-PV/T/C-X-31U7U7BG	97721079	97721113	98147356		
					Yes	DDE 6-10 B-PV/T/C-X-31I003BG	97721080	97721114	98147357		
		SS	PTFE	SS 1.4401	No	DDE 6-10 B-SS/T/SS-X-31VVBG	97721083	97721117	98147360		
		4 (15)	60 (4)	PVC	EPDM	Ceramic	No	DDE 15-4 B-PVC/E/C-X-31U7U7BG	97721127	97721161	98147370
							Yes	DDE 15-4 B-PVC/E/C-X-31I004BG	97721128	97721162	98147371
					FKM	Ceramic	No	DDE 15-4 B-PVC/N/C-X-31U7U7BG	97721131	97721165	98147374
							Yes	DDE 15-4 B-PVC/N/C-X-31I004BG	97721132	97721166	98147375
					PTFE	Ceramic	No	DDE 15-4 B-PVC/T/C-X-31U7U7BG	97721135	97721169	98147378
Yes	DDE 15-4 B-PVC/T/C-X-31I004BG						97721136	97721170	98147379		
PVDF	EPDM			Ceramic	No	DDE 15-4 B-PV/E/C-X-31U7U7BG	97721139	97721173	98147382		
					Yes	DDE 15-4 B-PV/E/C-X-31I004BG	97721140	97721174	98147383		
	FKM			Ceramic	No	DDE 15-4 B-PV/N/C-X-31U7U7BG	97721143	97721177	98147386		
					Yes	DDE 15-4 B-PV/N/C-X-31I004BG	97721144	97721178	98147387		
	PTFE			Ceramic	No	DDE 15-4 B-PV/T/C-X-31U7U7BG	97721147	97721181	98147390		
					Yes	DDE 15-4 B-PV/T/C-X-31I004BG	97721148	97721182	98147391		
SS	PTFE			SS 1.4401	No	DDE 15-4 B-SS/T/SS-X-31VVBG	97721151	97721186	98147394		

³⁶⁾ The installation set includes: 2 pump connections, a foot valve, an injection unit, 19.68 ft. (6 m) of PE discharge tube, 6.56 ft. (2 m) of PVC suction tube, 6.56 ft. (2 m) of PVC vent tube 0.013/0.019 ft (4/6 mm).

³⁷⁾ It is also available in P- and PR-control versions.

Related information

[Type key](#)

DDA-C, DDC, DDE, non-standard range

Key to the three following tables:

Maximum flow - pressure	[l/h] - [bar]	
Control variant	B: Basic (DDE)	
	P: B with pulse mode (DDE)	
	PR: P with relay output (DDE)	
	A: Standard (DDC)	
	AR: A with alarm relay and analog input (DDC)	
	AR-C: Standard with embedded connectivity (DDA-C)	
	FCM-C: AR-C with integrated FlowControl measurement (DDA-C)	
Materials	Dosing head	
	PP: PP	
	PVC: PVC (PVC dosing heads only up to 10 bar)	
	PV: PVDF	
	SS: Stainless steel 1.4401	
	Gaskets	
	E: EPDM	
	V: FKM	
	T: PTFE	
	Valve ball	
	C: Ceramic	
	SS: Stainless steel 1.4401	
	Control cube position	F: Front-mounted (change to left and right possible)
X: No control cube (DDE)		
Supply voltage	3: 1 x 100-240 V, 50/60 Hz	
Valve type	1: Standard	
	2: Spring-loaded (HV version)	
Connection/Installation set	Suction / discharge connection	
	U2U2: Union nut G 5/8" with parts for tube connection 4/6 mm, 6/9 mm, 6/12 mm, 9/12 mm	
	U7U7: Union nut G 5/8" with parts for tube connection 0.17" x 1/4"; 1/4" x 3/8"; 3/8" x 1/2"	
	AA: Union nut G 5/8" with threaded connection Rp 1/4", internal thread	
	VV: Union nut G 5/8" with threaded connection 1/4" NPT, internal thread	
	XX: No connections included	
	Installation set³⁸⁾	
	I001: 4/6 mm (up to 7.5 l/h, 13 bar)	
	I002: 9/12 mm (up to 60 l/h, 9 bar)	
	I003: 0.17" x 1/4" (up to 7.5 l/h, 13 bar)	
	I004: 3/8" x 1/2" (up to 60 l/h, 10 bar)	
	Mains plug	F: EU
		B: USA, Canada
G: UK		
I: Australia, New Zealand		
E: Switzerland		
J: Japan		
L: Argentina		

Maximum flow - pressure	[l/h] - [bar]
Design	G: Grundfos red
	A: Grundfos green (DDC)
	B: Grundfos black
	X: Neutral/black (DDC)
	C: China approval
Special variant	C3: Inspection Certificate 3.1 (EN 10204)

³⁸⁾ pump connections, a foot valve, an injection unit, 19.68 ft. (6 m) of PE discharge tube, 6.56 ft. (2 m) of PVC suction tube, 6.56 ft. (2 m) of PVC vent tube 0.013/0.019 ft (4/6 mm).

DDA-C

Max. flow - press.	Control variant	Materials			Control cube position	Supply voltage	Valve type	Connection/ Installation set	Mains plug	Design	Special variant
		Head	Gaskets	Ball							
7.5-16	AR-C FCM-C	PP	E V	C	F	3	1 2	U2U2 U7U7	F B G I E J L	G B C	C3
		PVC	E V	C				XX I001 I003			
		PV	T								
		SS	T	SS				AA VV XX			
12-10 17-7 30-4	AR FC FCM	PP	E V	C	F	3	1 2	U2U2 U7U7	F B G I E J L	G B C	C3
		PVC	E V	C				XX I002 I004			
		PV	T								
		SS	T	SS				AA VV XX			

DDC

Max. flow - press.	Control variant	Materials			Control cube position	Supply voltage	Valve type	Connection/ Installation set	Mains plug	Design	Special variant
		Head	Gaskets	Ball							
6-10	A AR	PP	E V	C	F	3	1 2	U2U2 U7U7	F B G I E J L	G A B X C	C3
		PVC	E V	C				XX I001 I003			
		PV	T								
		SS	T	SS				AA VV XX			
9-7 15-4	A AR	PP	E V	C	F	3	1 2	U2U2 U7U7	F B G I E J L	G A B X C	C3
		PVC	E V	C				XX I002 I004			
		PV	T								
		SS	T	SS				AA VV XX			

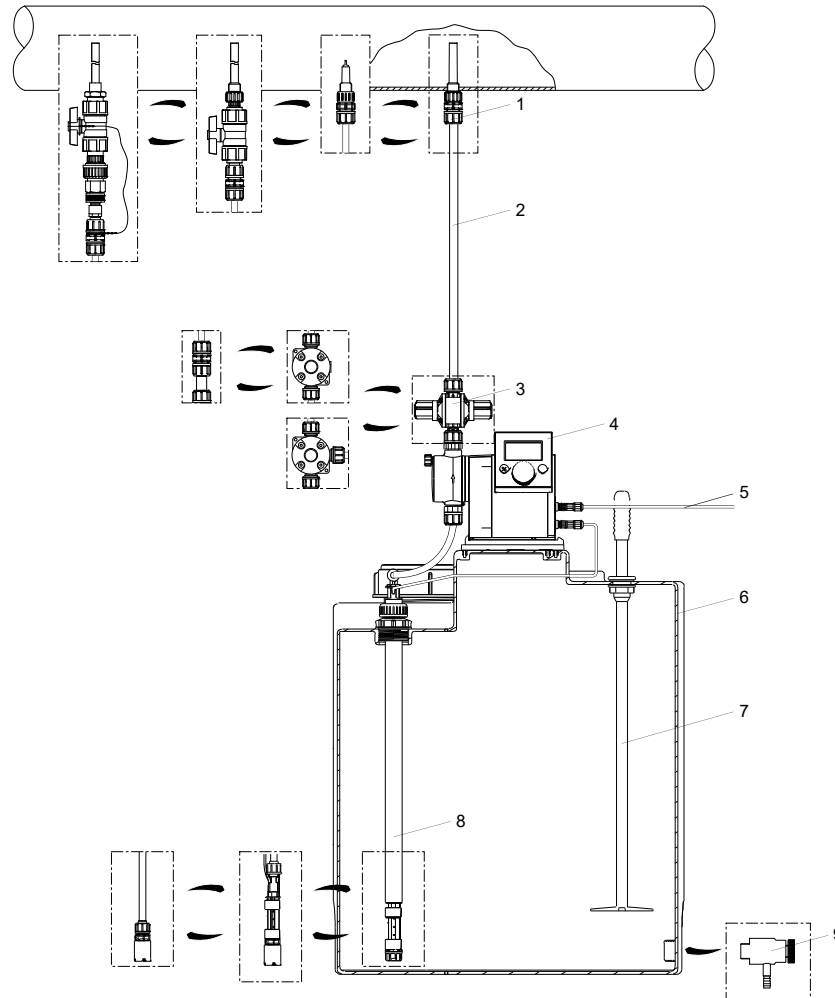
DDE

Max. flow -press.	Control variant	Materials			Control cube position	Supply voltage	Valve type	Connection/ Installation set	Mains plug	Design	Special variant
		Head	Gaskets	Ball							
6-10	B P PR	PP	E V	C	X	3	1 2	U2U2 U7U7 XX I001 I003	F B G I E J L	B C	C3
		PVC	E V	C							
		PV	T								
		SS	T	SS	X	3	1 2	AA VV XX			
		PP	E V	C	X	3	1 2	U2U2 U7U7 XX I002 I004			
		PVC	E V	C							
PV	T										
15-4	B P PR	SS	T	SS	X	3	1 2	AA VV XX			

8. Accessories for small dosing pumps up to 60 l/h

Accessories overview

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



TM086937

Dosing pump with accessories

Pos.	Description
1	Injection units See section Injection units.
2	Tubes See section Tubes.
3	Multi-function valves, pressure-loading valves, pressure-relief valves, pressure valves See sections Multi-function valves, Pressure-loading valves, Pressure-relief valves PRV, and Pressure valves.
4	Example: SMART Digital dosing pump
5	Cables See section Cables and plugs.
6	Dosing tanks See section Adapters.
7	Handheld mixer See section Accessories for dosing tanks.

Pos.	Description
8	Foot valves and rigid suction lances See sections Foot valves FV and Rigid suction lances RSL.
9	Drain valves See section Accessories for dosing tanks.
-	Installation kits: Pump connection kits and inlay kits Adapters T-pieces See section Installation kits for dosing pumps.
-	Accessories for hydraulic connection

Related information

[Installation kits for dosing pumps](#)

[Cables and plugs](#)

[Tubing](#)

[Foot valves FV](#)

[Rigid suction lances RSL](#)

[Injection units](#)

[Hot-injection units with ball valve](#)

[Multi-function valves, pressure-relief valves, pressure-loading valves](#)

[Pump connection kits and inlay kits](#)

[Threaded adapters](#)

[Union nut adapters](#)

[Square tank, 26 gal \(100 l\)](#)

[Cylindrical tanks](#)

[Accessories for dosing tanks](#)

Installation kits for dosing pumps

An installation kit includes the following parts:

- injection unit with spring-loaded non-return valve, see section Injection units
- PE discharge tube, 19.7 ft (6 m)
- PVC suction tube, 6.5 ft (2 m)
- PVC de-aeration tube, 6.5 ft (2 m)
- PE foot valve with strainer and weight, without or with level indication, see section Foot valves FV.



Installation kit with foot valve without level indication



Installation kit with foot valve with level indication

TM085667

TM085664

Technical data

Max. flow rate ³⁹⁾ [gal/h (l/h)]	Suction / discharge tube[inch]	Size De-aeration tubing [inch]	Material of foot valve / injection unit			Product number	
			Body	Gasket	Ball	Foot valve without level indication	Foot valve with level indication
2 (7.5)	0.17" x 1/4"	0.17" x 1/4"	PP	FKM	Ceramic	95730488	95730512
				EPDM	Ceramic	95730489	95730513
2 (7.5)	0.17" x 1/4"	0.17" x 1/4"	PVC	FKM	Ceramic	95730490	95730514
				EPDM	Ceramic	95730491	95730515
				PTFE	Ceramic	95730492	95730516
2 (7.5)	0.17" x 1/4"	0.17" x 1/4"	PVDF	FKM	Ceramic	95730493	95730517
				EPDM	Ceramic	95730494	95730518
				PTFE	Ceramic	95730495	95730519
8 (30)	1/4" x 3/8"	0.17" x 1/4"	PP	FKM	Ceramic	95730496	95730520
				EPDM	Ceramic	95730497	95730521
8 (30)	1/4" x 3/8"	0.17" x 1/4"	PVC	FKM	Ceramic	95730498	95730522
				EPDM	Ceramic	95760499	95730523
				PTFE	Ceramic	95730500	95730524
8 (30)	1/4" x 3/8"	0.17" x 1/4"	PVDF	FKM	Ceramic	95730501	95730525
				EPDM	Ceramic	95730502	95730526
				PTFE	Ceramic	95730503	95730527
15.85 (60)	3/8" x 1/2"	0.17" x 1/4"	PP	FKM	Ceramic	95730504	95730528
				EPDM	Ceramic	95730505	95730529
15.85 (60)	3/8" x 1/2"	0.17" x 1/4"	PVC	FKM	Ceramic	95730506	95730530
				EPDM	Ceramic	95730507	95730531
				PTFE	Ceramic	95730508	95730532
15.85 (60)	3/8" x 1/2"	0.17" x 1/4"	PVDF	FKM	Ceramic	95730509	95730533
				EPDM	Ceramic	95730510	95730534
				PTFE	Ceramic	95730511	95730535

³⁹⁾ Viscosity similar to water

Cables and plugs

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



TM048267

Cable and plug

Technical data

- Cable material: PVC, 22 AWG (0.34 mm²)
- Plug size: M 12

Socket	Application		Pins	Plug type	Cable length [ft (m)]	Product number			
	Input	Analog pulse External stop	4 (DDC)	Straight	6.5 (2)	96609014			
					16.4 (5)	96609016			
						No cable	96698715		
						Angled	6.5 (2)	96693246	
					5 (DDA-C)	Straight	6.5 (2)	96632921	
							16.4 (5)	96632922	
								No cable	96609031
								Angled	6.5 (2)
	Input	Low level Empty tank	4	Straight	No cable	96698715			
	Output	Analog	5	Straight	6.5 (2)	96632921			
					16.4 (5)	96632922			
						No cable	96609031		
						Angled	6.5 (2)	96699697	
	Output	Relay 1 Relay 2	4	Straight	6.5 (2)	96609017			
					16.4 (5)	96609019			
						No cable	96696198		
						Angled	6.5 (2)	96698716	

Tubing

Tubing are available in various materials, sizes and lengths for small dosing pumps.



TMO48268

Tubes

Related information

[Foot valves FV](#)

[Injection units](#)

Technical data

Diameter		Material	Pressure rating [psi (bar)]	Length [ft (m)]	Product number
Inner [in (mm)]	Outer [in (mm)]				
1/8 (3.17)	1/4 (6.35)	PVC	85 (6)	20 (6.0)	91127749
			85 (6)	100 (30.5)	98257648
		PE	358 (25)	20 (6.0)	98670197
			358 (25)	100 (30.5)	97850018
0.17 (4.31)	1/4 (6.35)	PE	358 (25)	20 (6.0)	98670196
			358 (25)	100 (30.5)	98670195
		PTFE	210 (14.47)	20 (6.0)	98842784
			210 (14.47)	100 (30.5)	98842764
0.16 (4.06)		PVDF	208 (14.34)	20 (6.0)	98842789
			208 (14.34)	100 (30.5)	98842787
1/4 (6.35)	3/8 (9.52)	PVC	73 (5)	100 (30.5)	91127750
			PE	192 (13)	20 (6.0)
		192 (13)		100 (30.5)	91127751
		PTFE	180 (12)	20 (6.0)	98842763
			180 (12)	100 (30.5)	98842762
		PVDF	224 (15)	20 (6.0)	98842786
224 (15)	100 (30.5)		98842785		
3/8 (9.52)	1/2 (12.7)	PE	123 (8)	20 (6.0)	91127826
			123 (8)	100 (30.5)	91127752

Foot valves FV

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

Foot valves include:

- weight
- strainer (mesh size approx. 0.03 in. [0.8 mm])
- non-return valve
- tube connection set: 1/4", 3/8", 1/2"
- pipe connection set: threaded, 1/4" NPT, female (stainless steel).

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

- reed-switch unit with two floaters
- 16.4 ft. (5 m) of cable with PE jacket
- M 12 plug to connect DDA, DDC, or DDE dosing pump
- PE cap, Ø2.28 in. (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:

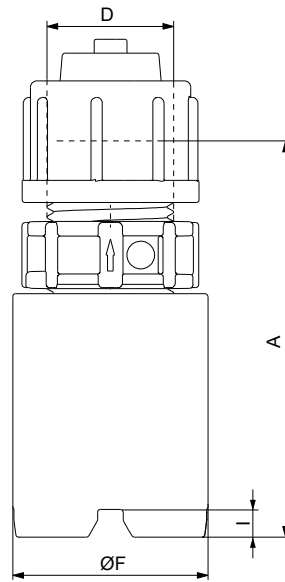
- max. voltage: 48 V
- max. current: 0.5 A
- max. load: 10 VA.



Foot valves: without level indication (left), with level indication (right)

TM085698

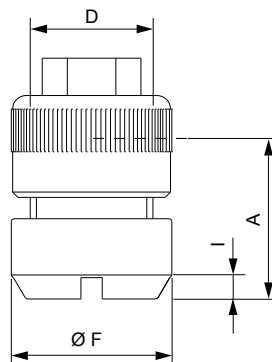
Dimensions



TM086081

FV without level indication, PE/PVDF; with ceramic weight

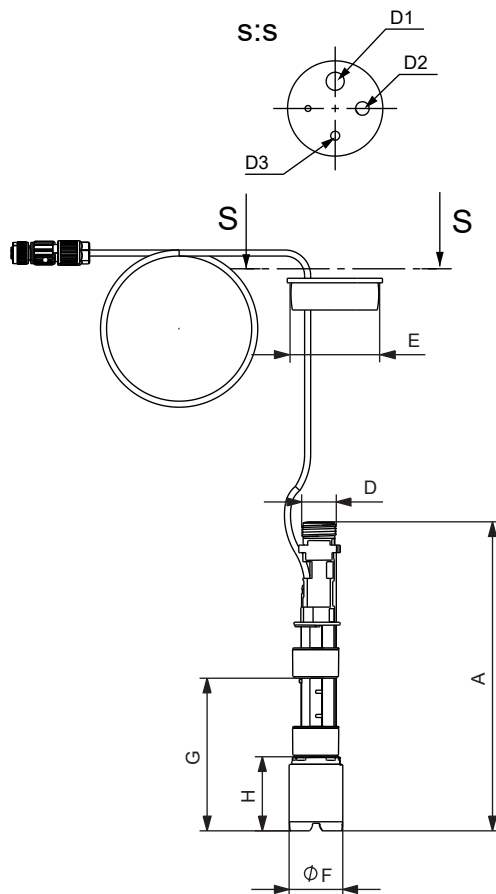
A [inch](mm)	D	ØF [inch](mm)	l [inch](mm)
2.8" (71.8)	G 5/8	1-3/8" (35)	0.2 (5)



TM048494

FV without level indication, stainless steel

A [inch](mm)	D	ØF [inch](mm)	l [inch](mm)
1-1/8" (30)	G 5/8	1-1/8" (30)	1/8" (4)



TM082553

FV with level indication

A [inch](mm)	D	D1/D2/D3 [inch](mm)	E [inch](mm)	ØF [inch](mm)	G [inch](mm)	H [inch](mm)
8 (204)	G 5/8	1/2" / 3/8" / 1/4"(12/9/6)	2-1/4 (58)	1-3/8 (35)	4" (101)	1.93 (49)

Technical data

Max. flow rate [gal./h (l/h)]	Material			Product number	
	Body	Gasket	Ball	Without level indication	With level indication
15. 85 (60)	PE	FKM, EPDM	Ceramic	98070955	98070970
		PTFE	Ceramic	98070956	98070971
	PVDF	FKM, EPDM	Ceramic	98070957	98070972
		PTFE	Ceramic	98070958	98070973
	SS	PTFE	SS	98070964	-

Rigid suction lances RSL

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

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

Rigid suction lances include:

- strainer (mesh size approx. 0.3" [0.8 mm])
- non-return valve
- tube connection set: 1/4", 3/8", 1/2"
- adjustable tank connection with holes, for example, relief line.

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

- reed-switch unit with 2 floaters
- 16.4 ft. (5 m) of cable with PE jacket
- M 12 plug to connect DDA, DDC, or DDE 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:

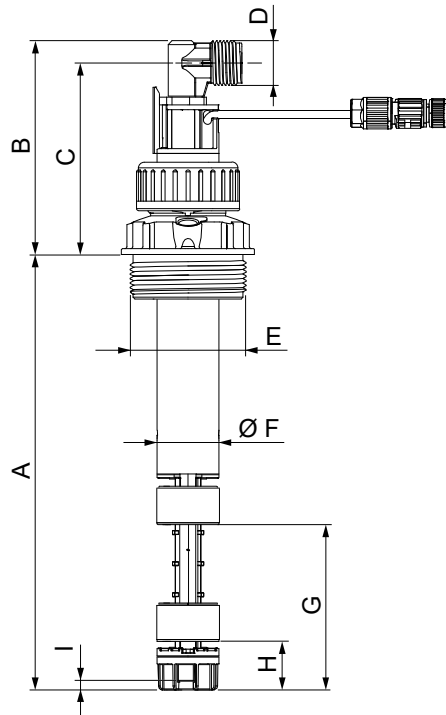
- max. voltage: 48 V
- max. current: 0.5 A
- max. load: 10 VA.



Rigid suction lance

TM048458

Dimensions



TM048445

RSL with or without level indication

A [in (mm)]	B [in (mm)]	C [in (mm)]	D	E	ØF [in (mm)]	G [in (mm)]	H [in (mm)]	I [in (mm)]
16-47 (400-1200)	4.3 (110)	3.8 (99)	G 5/8	G 2	1.2 (32)	3.3 (85)	1 (25)	0.17 (4.5)

Dosing tank selection

For container type	Tank volume [gal (l)]	Recommended immersion depth [L (mm)]
Grundfos cylindrical tank, see section Cylindrical tanks	11 (40)	16 (400)
	16 (60)	20 (500)
	26 (100)	27 (690)
	53 (200)	27 (690)
	79 (300)	39 (980)
	132 (500)	43 (1100)
Grundfos square tank, see section Square tank, 100 liters ⁴⁰⁾	26 (100)	27 (690)
	32 (120)	32 (820)
L-ring drum ⁴⁰⁾	58 (220)	39 (980)
	57 (216)	39 (980)
Steel drum ⁴⁰⁾	3, 9 (12, 33) (large cap)	16 (400)
	7, 8, 9 (25, 30, 33)	20 (500)
Standard jerricans according to EN 12712 ⁴⁰⁾	16 (60)	27 (690)
	IBC ⁴⁰⁾	47 (1200)

⁴⁰⁾ For suitable adapters, see section Adapters for containers.



Related information[Adapters for containers](#)[Square tank, 26 gal \(100 l\)](#)[Cylindrical tanks](#)**Technical data**

Max. flow rate gal./h [l/h]	Max. immersion depth ⁴¹⁾ [in (mm)]	Material			Product number		
		Body	Gasket	Ball	RSL without level indication	RSL with level indication	
16 (60)	16 (400)	PE	FKM, EPDM	Ceramic	98070982	98071078	
			PTFE	Ceramic	98070983	98071079	
		PVDF	FKM, EPDM	Ceramic	98070984	98071080	
			PTFE	Ceramic	98070985	98071081	
		20 (500)	PE	FKM, EPDM	Ceramic	98070994	98071090
				PTFE	Ceramic	98070995	98071091
	PVDF		FKM, EPDM	Ceramic	98070996	98071092	
			PTFE	Ceramic	98070997	98071093	
	22 (570)	PE	FKM, EPDM	Ceramic	98071006	98071102	
			PTFE	Ceramic	98071007	98071103	
		PVDF	FKM, EPDM	Ceramic	98071008	98071104	
			PTFE	Ceramic	98071009	98071105	
	27 (690)	PE	FKM, EPDM	Ceramic	98071018	98071114	
			PTFE	Ceramic	98071019	98071115	
		PVDF	FKM, EPDM	Ceramic	98071020	98071116	
			PTFE	Ceramic	98071021	98071117	
	32 (820)	PE	FKM, EPDM	Ceramic	98071030	98071126	
			PTFE	Ceramic	98071031	98071127	
		PVDF	FKM, EPDM	Ceramic	98071032	98071128	
			PTFE	Ceramic	98071033	98071129	
	39 (980)	PE	FKM, EPDM	Ceramic	98071042	98071138	
			PTFE	Ceramic	98071043	98071139	
		PVDF	FKM, EPDM	Ceramic	98071044	98071140	
			PTFE	Ceramic	98071045	98071141	
43 (1100)	PE	FKM, EPDM	Ceramic	98071054	98071150		
		PTFE	Ceramic	98071055	98071151		
	PVDF	FKM, EPDM	Ceramic	98071056	98071152		
		PTFE	Ceramic	98071057	98071153		
47 (1200)	PE	FKM, EPDM	Ceramic	98071066	98071162		
		PTFE	Ceramic	98071067	98071163		
	PVDF	FKM, EPDM	Ceramic	98071068	98071164		
		PTFE	Ceramic	98071069	98071165		

⁴¹⁾ Minimum immersion depth for all sizes: approx. 140 mm

Accessories for suction lances and foot valves with level indication

Adapters for containers


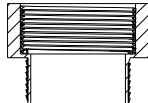
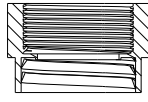

These adapters allow the installation of standard rigid suction lances (G 2" thread) and foot valves with level indication (PE cap) on different types of containers.



TM048506

Adapters for containers

Technical data

Adapter type	For container type	Remark	Product number
	Counter nut for tanks without threaded opening, for example, 26 gal (100-liter) square tank or 264 gal (1000-liter) cylindrical tank	PVC, gray	98071170
	Containers with 2" NPT threaded opening	PVC, gray	98156690
	US containers with bung hole of 2.5 in (63 mm) (ASTM International)	PE, white	98071176
	IBC (Intermediate Bulk Container) with opening of \varnothing 5.9 in (150 mm), S 160 x 7	PE, black	98071177

Emission protection kits

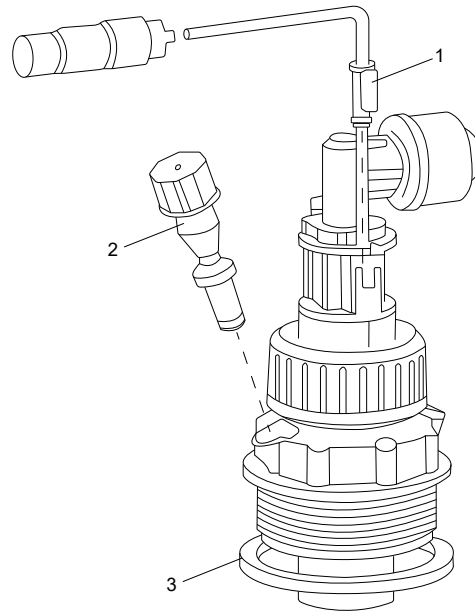
Gas emitted by liquid in a container can cause bad odor and corrosion. Emission protection kits help avoid such problems. Rigid suction lances can be retrofitted with emission protection kits.

Two variants are available:

- Emission protection kit with sniffting 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 a 0.17x1/4 (4/6 mm) tube.

Emission protection kits include:

- gasket for the tank adapter
- sniffting valve or tube nipple 0.17x1/4 (4/6 mm) (tube is not included)
- gasket for the cable outlet.



TM069068

Emission protection kit

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

Order data

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

M 12-plug-to-flat-plug adapter

The adapter allows for connecting rigid suction lances or foot valves with level indication to pumps with a level input designed for flat plugs, for example, the DMX and the DMH with AR control unit.

Order data

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

Injection units

Injection units connect the dosing line with the process line. They ensure a minimum counterpressure of 10 psi (0.7 bar) bar and prevent backflow of the dosing liquid.

In general, they include the following:

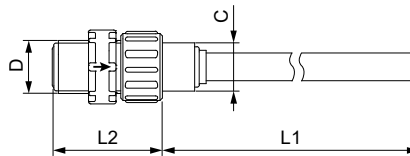
- injection pipe (PP, PVC and PVDF versions can be shortened)
- spring-loaded non-return valve with Tantal spring
- tube connection set (PP, PVC, PVDF): 1/4", 3/8", 1/2"
- pipe connection set: threaded, 1/4" NPT, female (stainless steel).



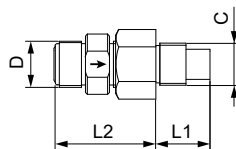
Standard injection unit

Standard injection units

Dimensions



Standard injection unit, PP, PVC, and PVDF version



Standard injection unit, stainless-steel version

Material	C	L1 in [in (mm)]	L2 in L1 in [in (mm)]	D
PVC	1/2" NPT (G 1/2)	4 / 12 (100 / 300)	1.8 (47)	5/8" NPT (G 5/8)
PP, PVDF	1/2" NPT (G 1/2)	4 (100)	1.8 (47)	5/8" NPT (G 5/8)
Stainless steel	1/2" NPT (G 1/2)	1 (27)	1.9 (50)	5/8" NPT (G 5/8)

TM087076

TM069845

TM069846

Technical data

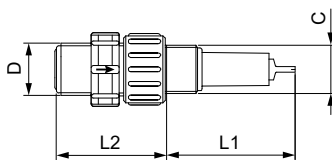
- Max. flow rate: 15.85 gph [60 l/h]
- The flow rate values apply to liquids with a viscosity similar to water.

L1 [in(mm)]	Max. pressure (psi [bar])	Material			Product number
		Body	Gasket	Ball	
3.9 (100)	232 (16)	PP	FKM	Ceramic	95730906
			EPDM	Ceramic	95730910
		PVC	FKM	Ceramic	95730914
			EPDM	Ceramic	95730918
			PTFE	Ceramic	95730922
		PVDF	FKM	Ceramic	95730926
EPDM	Ceramic		95730930		
PTFE	Ceramic		95730934		
1.1 (27)	1450 (100)	Stainless steel	PTFE	Stainless steel	95730938
11.8 (300)	232 (16)	PVC	FKM	Ceramic	95730942
			EPDM	Ceramic	95730946
			PTFE	Ceramic	95730950

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 crystallization and blocking caused by alkali carbonate reactions at the point of injection.

Dimensions



TM069847

Injection unit with lip valve

C	L1 in [mm]	L2 in [mm]	D
G 1/2	2.1 (55)	2.3 (49)	G 5/8

Technical data

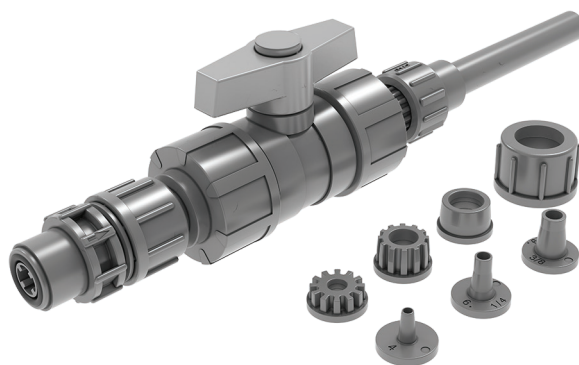
- Max. flow rate: 15.85 gal./h (60 l/h)
- Max. pressure: 232 psi (16 bar)
- The flow rate values apply to liquids with a viscosity similar to water.

Material			Product number
Body	Gasket	Ball	
PVC	FKM	Ceramic	95730966

Injection units with ball valve

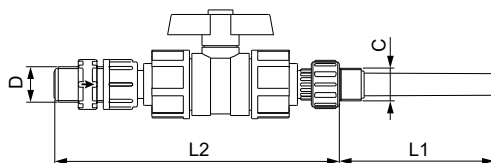
Injection units with ball valve are used for applications where the injection point must be closable. The ball valve is placed between the injection pipe and the spring-loaded non-return valve.

- The dosing line can be completely disconnected from the process.
- The non-return valve can be dismantled and cleaned without stopping the process and emptying the process line.



TM088267

Dimensions



TM069848

Injection unit with ball valve

Material	C	L1 in [mm]	L2 in [mm]	D
PVC	1/2" NPT (G 1/2)	4 (100)	7 (183)	5/8" NPT (G 5/8)
Stainless steel	1/2" NPT (G 1/2)	1 (27)	5 (138)	5/8" NPT (G 5/8)

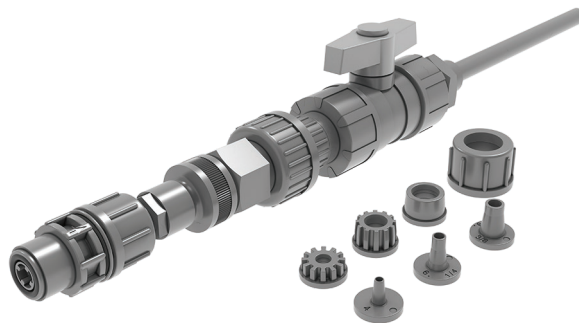
Technical data

- Max. flow rate: 15.85 gal./h (60 l/h)
- The flow rate values apply to liquids with a viscosity similar to water.

Max. pressure psi [bar]	Material			Product number
	Body	Gasket	Ball	
232 (16)	PVC	FKM	Ceramic	95730954
		EPDM	Ceramic	95730958
928 (64)	Stainless steel	PTFE	Stainless steel	95730962

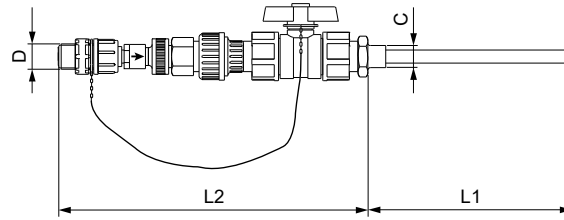
Injection units with removable injection pipe

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.



TM088268

Dimensions



TM069849

Injection unit with removable injection pipe

C	L1 in [mm]	L2 in [mm]	D
1/2" NPT (G 1/2)	7 (185)	11 (280)	5/8" NPT (G 5/8)

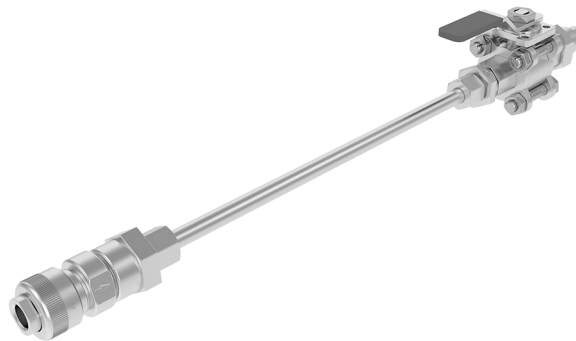
Technical data

- Max. flow rate: 15.85 gal./h (60 l/h)
- Max. pressure: 145 psi (10 bar)
- The flow rate values apply to liquids with a viscosity similar to water.

Material			Product number
Body	Gasket	Ball	
PVC	FKM	Ceramic	95730970
	EPDM	Ceramic	95730974

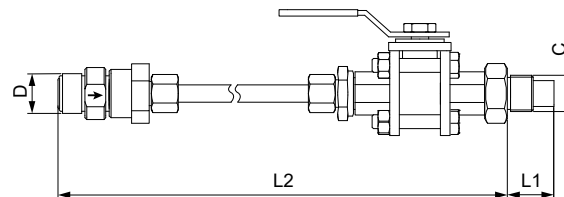
Hot-injection units with ball valve

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 248 °F (120 °C). Hot-injection units have a stainless-steel injection pipe and a bendable stainless-steel cooling pipe of 1 meter. 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.



TM088269

Dimensions



TM069850

Hot-injection unit with ball valve

C	L1 in [mm]	L2 in [mm]	D
1/2" NPT (G 1/2)	1 (27)	46 (1158)	5/8" NPT (G 5/8)

Technical data

- Max. flow rate: 15.85 gal./h (60 l/h)
- Maximum process water temperature: 248 °F (120 °C)
- The flow rate values apply to liquids with a viscosity similar to water.

Max. pressure psi (bar)	Material			Product number
	Body	Gasket	Ball	
232 (16)	PVDF	PTFE	Ceramic	95730978
928 (64)	Stainless steel	PTFE	Stainless steel	95730982

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

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

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

Pressure-loading valves maintain a certain counterpressure for the dosing pump.

They are used in the following cases:

- If the counterpressure is too low or there is no counterpressure at all.
- There is fluctuating system pressure with discharge-side pulsation damper.
- To prevent syphoning when the inlet pressure is higher than the counterpressure.



TM086554

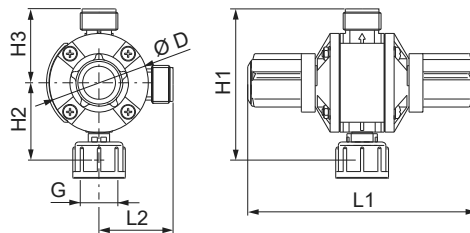
Multi-function valve, pressure-relief valve, pressure-loading valve

Multi-function valves

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

- Loading pressure, adjustable from 15 to 58 psi (1 to 4 bar), is factory-set to 44 psi (3 bar).
- Relief pressure, adjustable from 101 to 232 psi (7 to 16 bar), is factory-set to 145 or 232 psi (10 bar or 16 bar) .
- Maximum operating pressure: 232 psi (16 bar).
- Tube connection set: 1/4", 3/8", 1/2" .

Dimensions



TM069769

Multi-function valve

L1 in (mm)	L2 in (mm)	H1 in (mm)	H2 in (mm)	H3 in (mm)	Ø D in (mm)	G
5.4 (139)	1.8 (45)	3.6 (92)	1.8 (47)	1.7 (45)	2.3 (60)	G 5/8

Technical data

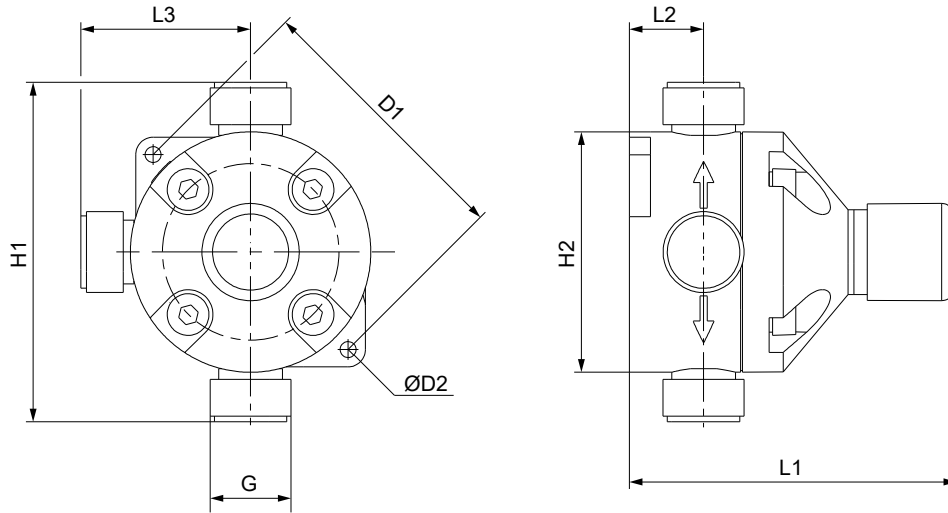
Max. flow rate [gph (l/h)]	Material				Product number
	Body	Connections	Gasket	Diaphragm	Relief pressure 10 bar
15.85 (60)	PVDF	PP	FKM	PTFE	95730813
			EPDM	PTFE	95730814
		PVC	FKM	PTFE	95730815
			EPDM	PTFE	95730816
			PTFE	PTFE	95730817
			FKM	PTFE	95730818
		PVDF	EPDM	PTFE	95730819
			PTFE	PTFE	95730820

Pressure-relief valves PRV

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

- Relief pressure, adjustable from 73 to 145 psi (5 to 10 bar), is factory-set to 145 psi (10 bar) .
- Relief pressure, adjustable from 102 to 232 psi (7 to 16 bar), is factory-set to 232 psi (16 bar).
- Maximum operating pressure: 232 psi (16 bar).
- Max. flow rate: 15.85 gph (60 l/h).
- Tube connection set: 1/4", 3/8", 1/2" .
- Pipe connection set: threaded, 1/4" NPT, female thread (stainless steel).

Dimensions



TM087164

Pressure-relief valve

Material	L1 in (mm)	L2 in (mm)	L3 in (mm)	H1 in (mm)	H2 in (mm)	D1 in (mm)	Ø D2 in (mm)
PP / PVC / PVDF	3.22 (82)	0.82 (21)	1.88 (48)	3.77 (96)	2.67 (68)	3.07 (78)	0.17 (4.5)
Stainless steel	3.22 (82)	0.86 (22)	0.78 (20)	1.57 (40)	2.67 (68)	-	-

Technical data

Max. flow rate [gph (l/h)]	Material			Product number	
	Diaphragm	Body and connections	Gasket	Relief pressure 145 psi (10 bar)	Relief pressure 232 psi (16 bar)
15.85 (60)	PTFE	PP	FKM / EPDM	95730762	95730778 ⁴²⁾
		PVC	FKM / EPDM	95730763	95730779 ⁴²⁾
			PTFE	95730764	95730780 ⁴²⁾
		PVDF	FKM / EPDM	95730765	95730781 ⁴²⁾
			PTFE	95730766	95730782 ⁴²⁾
		Stainless steel	No gaskets	95730772	95730784

⁴²⁾ The valve is delivered without a connection kit. For a suitable connector, see section Pump connection kits and inlay kits.

Related information

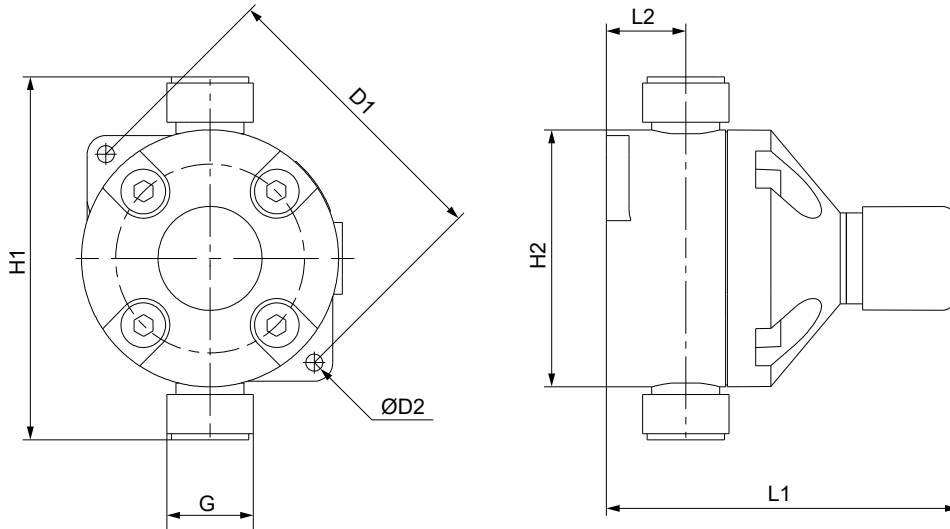
[Pump connection kits and inlay kits](#)

Pressure-loading valves PLV

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

- Loading pressure, adjustable from 15 to 73 psi (1 to 5 bar), is factory-set to 44 psi (3 bar).
- Maximum operating pressure: 232 psi (16 bar).
- Tube connection set: 1/4", 3/8", 1/2" .
- Pipe connection set: threaded, 1/4" NPT, female (stainless steel).

Dimensions



Pressure-loading valve

Material	L1 in (mm)	L2 in (mm)	H1 in (mm)	H2 in (mm)	D1 in (mm)	Ø D2 in (mm)
PP / PVC / PVDF	3.22 (82)	0.82 (21)	3.77 (96)	2.67 (68)	3.07 (78)	0.17 (4.5)
Stainless steel	3.22 (82)	0.86 (22)	1.57 (40)	2.67 (68)	-	-

Technical data

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

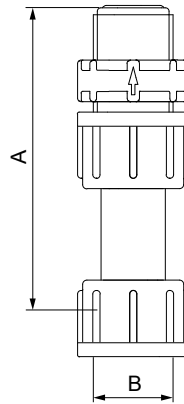
Pressure valves

Pressure valves provide a constant counterpressure of 44 psi (3 bar). They are particularly required for the DDA FCM-C pumps at very small flow rates.

Pressure valves are installed either directly on the pump discharge side, or on the pressure-relief valve.

- Loading pressure: 44 psi (3 bar), not adjustable.
- Maximum system pressure: 232 psi (16 bar).
- Spring material: Alloy C-4 (NiMo16CrTi, material number 2.4610).
- No connections included.

Dimensions



TM069796

Pressure valve

A in (mm)	B
3.4 (87)	G 5/8

Technical data

Max. flow rate [gph (l/h)]	Material			Product number	
	Ball	Body	Gaskets		
15.85 (60)	Ceramic	PP	FKM	95730325	
			EPDM	95730326	
		PVC	FKM	95730327	
			EPDM	95730328	
			PTFE	95730329	
			FKM	95730330	
	Stainless steel	PVDF	EPDM	95730331	
			PTFE	95730332	
		Stainless steel	Stainless steel	PTFE	95730333

Pump connection kits and inlay kits

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

A pump connection kit includes the following:

- 1 set of inlays
- 1 union nut.

The inlay kits are used for connecting pumps and accessories to pipes or tubes that differ from Grundfos standard sizes.

An inlay kit includes the following:

- 2 sets of inlays.



TM048294



TM048295

Left: pump connection kit; right: inlay kit

Technical data

Connection type	Size	Material	Product number	
			Connection kit	Inlay kit
Tube (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	-
Tube (cone and ring)	0.17" x 1/4" (4/6 mm)	PP	97702474	95730984
		PVC	97702485	95730720
		PVDF	97702495	95730729
	4/9 mm	PP	98153922	98153977
		PVC	98153944	98154006
		PVDF	98153949	98154029
	5/8 mm	PP	97702475	95730711
		PVC	97702486	95730721
		PVDF	97702496	95730730
	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
	9/12 mm	PP	97702479	95730715
		PVC	97702490	95730725
		PVDF	97702500	95730734
	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
Tube (cutting ring type)	1/8" x 1/4"	PP	97702481	95730717
		PVDF	97702502	95730736
Pipe welding	External diameter 16 mm	PP	97702480	95730716
		PVDF	97702501	95730735
Pipe welding	DN 10, 3/8"	Stainless steel	99369683	-
	Internal diameter 12 mm	PVC	97702491	95730726
	Internal diameter 1/2"	PVC	92502545	-
	Internal diameter 1/2"	PVDF	93124556	-
Pipe, external thread	1/2" NPT	PP	97702484	-
		PVC	97702494	-
		PVDF	97702505	-
		Stainless steel	97702508	-

Connection type	Size	Material	Product number	
			Connection kit	Inlay kit
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	-

Adapters

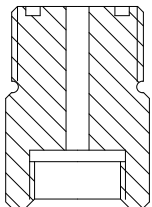
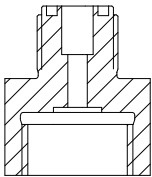
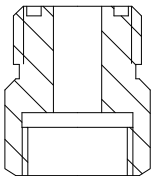
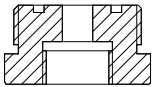
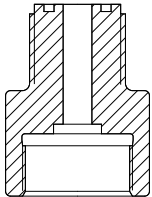
Threaded adapters

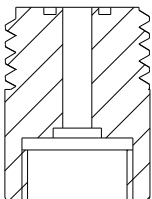
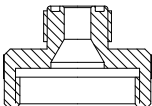
Threaded adapters are used for converting between different threaded connection sizes.

A threaded adapter kit includes the following:

- 1 adapter
- 1 O-ring.

Technical data

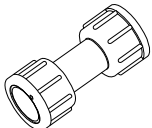
Type	Threaded connection size		Material		Product number
	Internal thread	External thread	Body	Gaskets	
	G 3/8"	G 5/8"	PP	FKM / EPDM	95730407
			PVC	FKM / EPDM	95730408
				PTFE	95730409
			PVDF	FKM / EPDM	95730410
PTFE	95730411				
	G 5/8"	G 3/8"	PP	FKM / EPDM	95730412
			PVC	FKM / EPDM	95730413
				PTFE	95730414
			PVDF	FKM / EPDM	95730415
PTFE	95730416				
	G 5/8"	G 3/4"	PP	FKM / EPDM	95730417
			PVC	FKM / EPDM	95730418
				PTFE	95730419
			PVDF	FKM / EPDM	95730420
PTFE	95730421				
	G 5/8"	G 1 1/4"	PP	FKM / EPDM	95730422
			PVC	FKM / EPDM	95730423
				PTFE	95730424
			PVDF	FKM / EPDM	95730425
PTFE	95730426				
	G 5/8"	M 20 x 1.5	PP	FKM / EPDM	95730427
			PVC	FKM / EPDM	95730428
				PTFE	95730429
			PVDF	FKM / EPDM	95730430
PTFE	95730431				

Type	Threaded connection size		Material		Product number
	Internal thread	External thread	Body	Gaskets	
	G 5/8"	M 30 x 3.5	PVDF	FKM / EPDM	98154048
				PTFE	98154054
	G 1 1/4"	G 5/8"	PP	FKM / EPDM	95730432
			PVC	FKM / EPDM	95730433
				PTFE	95730434
			PVDF	FKM / EPDM	95730435
				PTFE	95730436

Union nut adapters

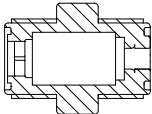
Union nut adapters consist of a rigid pipe with union nuts on both ends. They have neither gaskets nor glued or welded connections.

Technical data

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

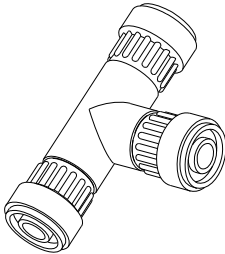
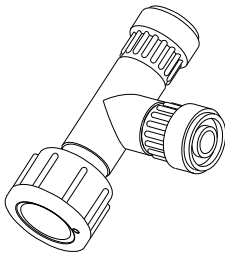
Tube-to-tube adapters

Technical data

Type	Description	Connections		Material		Product number
		Side 1	Side 2	Body and connections	Gaskets	
	Valve body with two external threads G 5/8"	For tubes 0.17" x 1/4", 1/4" x 3/8", 3/8" x 1/2"		PP	FKM / EPDM	95730372
				PVC	FKM / EPDM	95730373
					PTFE	95730374
				PVDF	FKM / EPDM	95730375
					PTFE	95730376
			PP	FKM / EPDM	95730356	
			PVC	FKM / EPDM	95730357	
				PTFE	95730358	
				FKM / EPDM	95730359	
				PTFE	95730360	

T-pieces

Technical data

Type	Description	Connections			Material		Product number	
		Bottom	Top	Side	Body and connections	Gaskets		
	Three external threads G 5/8"	For tubes 1/4", 3/8", 1/2"			PP	FKM / EPDM	95730392	
					PVC	FKM / EPDM	95730393	
						PTFE	95730394	
					PVDF	FKM / EPDM	95730395	
						PTFE	95730396	
		Without			PP	FKM / EPDM	95730346	
					PVC	FKM / EPDM	95730347	
						PTFE	95730348	
					PVDF	FKM / EPDM	95730349	
						PTFE	95730350	
	Two male threads G 5/8", one internal connection with union nut	Union nut G 5/8"	Without	For tubes 1/4", 3/8", 1/2"		PP	FKM / EPDM	95730402
						PVC	FKM / EPDM	95730403
							PTFE	95730404
						PVDF	FKM / EPDM	95730405
							PTFE	95730406
		Without		PP	FKM / EPDM	95730351		
				PVC	FKM / EPDM	95730352		
					PTFE	95730353		
				PVDF	FKM / EPDM	95730354		
					PTFE	95730355		

Dosing tanks

Square tank, 26 gal (100 l)

The closed square tank has a screw cap and a mounting platform for one pump or two pumps in parallel.

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

Characteristics of the tank:

- tank material: MDPE
- weight: 33 lbs (15 kg)
- wall thickness: 0.15 (4 mm)
- liquid temperature: -4 °F to 113 °F (-20 °C to 45 °C).

SMART Digital S pumps can be fitted directly on the mounting platform by brass inserts molded into the platform. For other pumps, a bracket is required.

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, see section Adapters for containers.



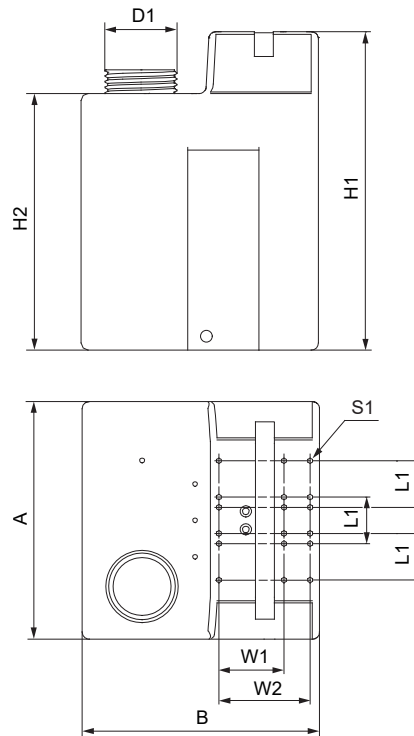
Square tank

Related information

[Adapters for containers](#)

TM048307

Dimensions



TM069772

Square tank, dimensions

H1 [in (mm)]	H2 [in (mm)]	D1 [in (mm)]	A [in (mm)]	B [in (mm)]	L1 [in (mm)]	W1 [in (mm)]	W2 [in (mm)]	S1
26 (670)	21 (540)	5.9 (Ø152)	19.6 (500)	19.6 (500)	3.8 (98)	5.3 (137)	7.5 (192)	M 5

Order data

Tank volume [gal (l)]	Product number
26 (100)	96489271

Cylindrical tanks

Dosing tanks are intended for storing and dosing liquids. Different tank accessories can be mounted directly to the tank. Cylindrical tanks are available in transparent or black. They have a liter scale and a black screw cap.

Characteristics of the tank:

- Tank volume: 11-264 gal (40-1000 l)
- tank material: LLDPE, UV-stabilized
- liquid temperature: -4 °F to 113 °F (-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 or EPDM).

The cylindrical tanks with volumes of 16, 26, 53, 79, and 132 gal (60, 100, 200, 300, and 500 l) additionally include the following:

- threaded M 6 inserts for the direct assembly of a dosing pump
- 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
- flange for an electric stirrer with threaded inserts.

The cylindrical tanks with volumes of 16, 26, 53, 79, 132, and 264 gal (60, 100, 200, 300, 500 and 1000 l) can optionally be prepared for direct assembly of an electric stirrer:

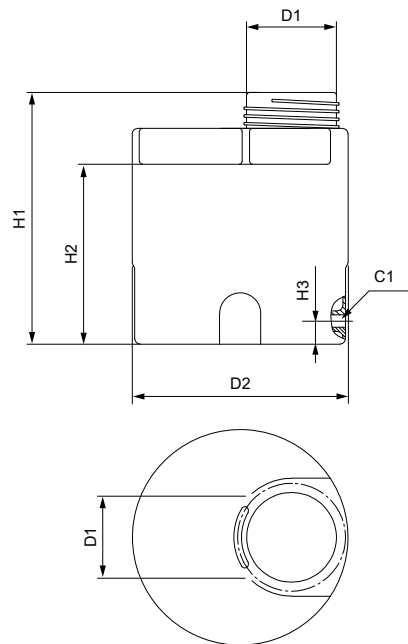
- with opening for electric stirrer (16-132 gal [60-500 l])
- with opening and reinforced beam for holding an electric stirrer (264 gal [1000 l]).



TM048468

Cylindrical tank, 16 gal (60 liters)

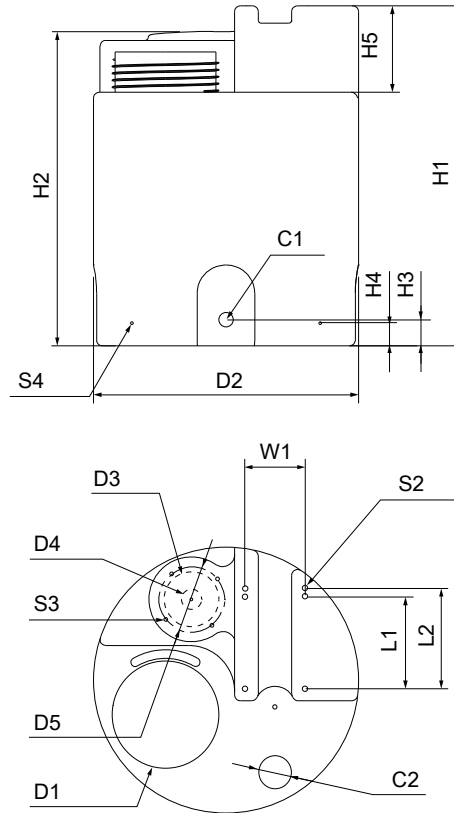
Dimensions of cylindrical tank, 11 gal (40 liters)



TM069773

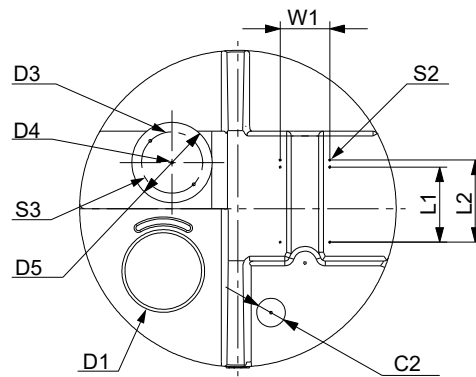
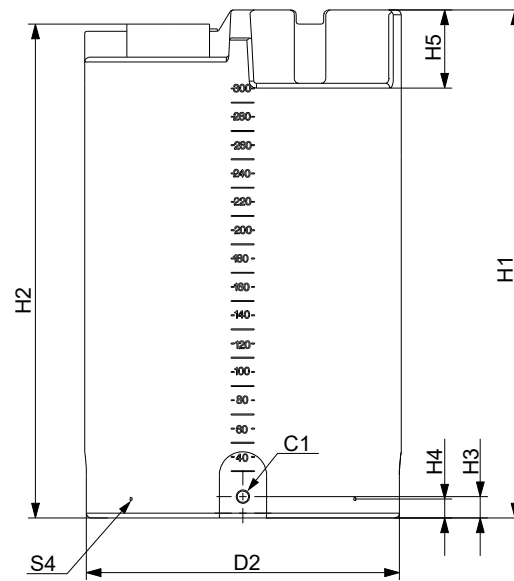
H1 [in (mm)]	H2 [in (mm)]	H3 [in (mm)]	D1 [in (mm)]	D2 [in (mm)]	C1
17 (420)	14 (350)	1.7 (45)	6 (Ø160)	17 (Ø420)	Rp 3/4

Dimensions of cylindrical tank, 16 and 26 gal (60 and 100 liters)



TM069774

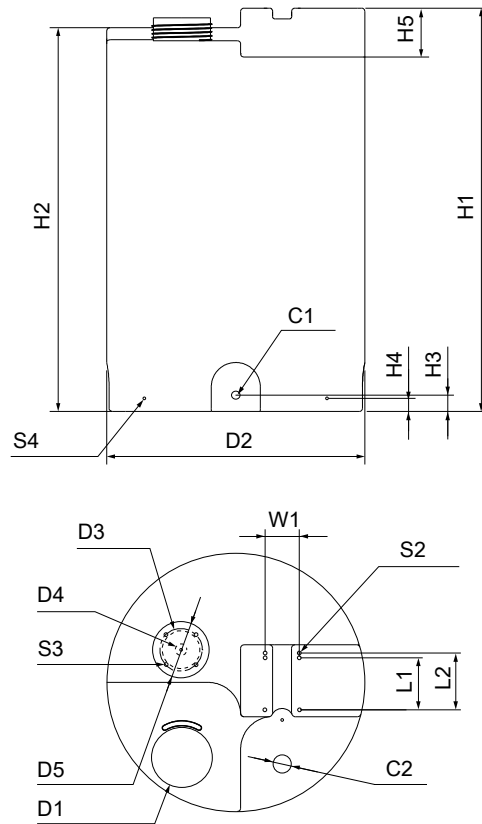
Tank volume: 15.85 gal (60 l)				Tank volume: 26.41 (100 l)			
H1 [in (mm)]		H2 [in (mm)]		H1 [in (mm)]		H2 [in (mm)]	
23 (590)		21 (545)		33 (840)		31 (795)	
H3 [in (mm)]	H4 [in (mm)]	H5 [in (mm)]	D1 [in (mm)]	D2 [in (mm)]	D3 [in (mm)]	D4 [in (mm)]	D5 [in (mm)]
2 (50)	1.5 (40)	6 (150)	6.2 (Ø160)	18 (Ø460)	4 (Ø95)	1.3 (Ø35)	5 (Ø130)
C1	C2	L1 [in (mm)]	L2 [in (mm)]	W1 [in (mm)]	S2	S3	S4
G 3/4	G 2	6.25 (159)	7 (174)	4 (105)	M 6 x 9	M 8 x 12	M 6 x 9

Dimensions of cylindrical tank, 53 and 79 gal (200 and 300 liters)


TM086236

Tank volume: 200 l				Tank volume: 300 l			
H1 [in (mm)]		H2 [in (mm)]		H1 [in (mm)]		H2 [in (mm)]	
32 (810)		30 (770)		43 (1080)		41 (1040)	
H3 [in (mm)]	H4 [in (mm)]	H5 [in (mm)]	D1 [in (mm)]	D2 [in (mm)]	D3 [in (mm)]	D4 [in (mm)]	D5 [in (mm)]
2 (50)	1.5 (40)	6 (150)	6.2 (Ø160)	26 (Ø670)	4.5 (Ø115)	1.3 (Ø35)	5 (Ø130)
C1 [in (mm)]	C2	L1 [in (mm)]	L2 [in (mm)]	W1 [in (mm)]	S2	S3	S4
G 3/4	G 2	6.2 (159)	7 (174)	4 (105)	M 6 x 9	M 8 x 12	M 6 x 9

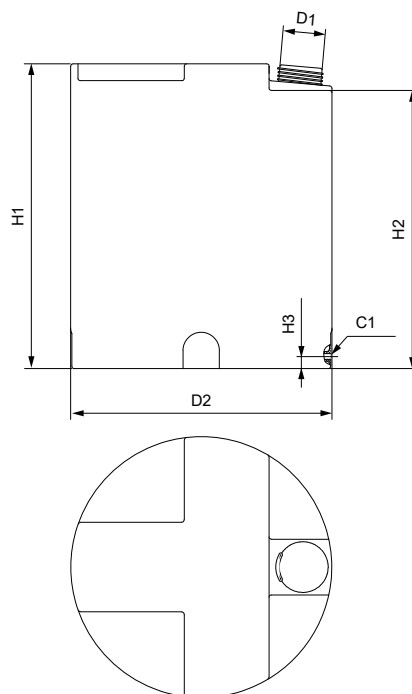
Dimensions of cylindrical tank, 132 gal (500 liters)



TM069776

H1 [in (mm)]	H2 [in (mm)]	H3 [in (mm)]	H4 [in (mm)]	H5 [in (mm)]	D1 [in (mm)]	D2 [in (mm)]	D3 [in (mm)]	D4 [in (mm)]	D5 [in (mm)]
48 (1235)	46 (1175)	2 (50)	1.5 (40)	6 (150)	6.2 (Ø160)	31 (Ø790)	4.5 (Ø115)	1.3 (Ø35)	5 (Ø130)
C1	C2	L1 [in (mm)]	L2 [in (mm)]	W1 [in (mm)]	S2	S3	S4		
G 3/4	G 2	6.2 (159)	7 (174)	4 (105)	M 6 x 9	M 8 x 12	M 6 x 9		

Dimensions of cylindrical tank, 264 gal (1000 liters)



TM069777

H1 [in (mm)]	H2 [in (mm)]	H3 [in (mm)]	D1 [in (mm)]	D2 [in (mm)]	C1
50 (1260)	45 (1150)	2 (50)	6.2 (Ø160)	43 (Ø1080)	G 3/4

Technical data

Tank volume [gal (l)]	Prepared for direct assembly of an electric stirrer	Weight [lbs (kg)]	Product number	
			Transparent	Black
11 (40)	-	7.5 [3.4]	96688081	95701166
16 (60)	-	12 [5.5]	98148805	98149053
	Yes	12 [5.5]	98150038	98150040
26 (100)	-	17 [7.5]	98149057	98149082
	Yes	17 [7.5]	98150051	98150052
53 (200)	-	25 [11.5]	98149215	98149224
	Yes	25 [11.5]	98150053	98150054
79 (300)	-	29 [13]	98149245	98149252
	Yes	29 [13]	98150055	98150056
132 (500)	-	62 [28]	98149266	98149269
	Yes	62 [28]	98150057	98150058
264 (1000)	-	88 [40]	96688086	95706305
	Yes	106 [48]	98173675	98173752

Related information

[Accessories for dosing tanks](#)

Collecting tray

The collecting tray is available in several sizes to suit the respective dosing tank size. It collects chemicals that might leak out of the tank, and protects the environment.

- Material: PE.
- Color: transparent.

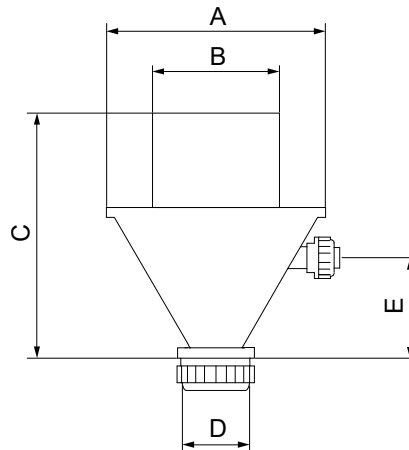


TM048316

Collecting tray

Tank volume gal [l]	Volume gal [l]	Dimensions (diameter x height) in [mm]	Product number
16 [60]	21 [80]	20 x 21 [500 x 545]	96726831
26 [100]	32 [120]	20 x 28 [500 x 700]	96726832
53 [200]	55 [210]	30 x 23 [770 x 595]	98150059
79 [300]	106 [400]	30 x 38 [770 x 960]	96726834
132 [500]	132 [500]	34 x 39 [860 x 980]	95701272
264 [1000]	264 [1000]	45 x 43 [1150 x 1080]	96726836

Accessories for dosing tanks



TM069778

Dissolving hopper, dimensions

A in [mm]	B in [mm]	C in [mm]	D in [mm]	E in [mm]
11 [Ø270]	5.5 [Ø140]	11 [283]	3 [Ø70]	5 [120]

Technical data

Description	Specifications	Material	Product number
Ventilation valve	Spring-loaded, opening pressure 0.05 bar	PVC / FKM / glass	96694401
Dissolving hopper for washing powders into the dosing tank	Dosing tank connection: DN 40 through-bolt Water connection: G 5/4", with union nut and inlay for PVC pipe (cementing diameter 25 mm)	PVC	96726979
Handheld mixer for use in dosing tanks	Shaft length 1200 mm, length can be adapted to the corresponding dosing tank with DN 15 through-bolt for connection at the dosing tank	PE	98133793
Set of screws for mounting a pump on a 26 gal (100 l) square tank	For pump types DDA, DDC, DDE	Stainless steel	95730862
Set of screws for mounting a pump on a 16, 26, 53, 79, and 132 gal (60, 100, 200, 300, and 500 l) cylindrical tank	For pump types DDA, DDC, DDE, DMX model 221	Stainless steel	98159495
Set of screws for mounting a pump on a 11 or a 264 gal (40 or 1000 l) cylindrical tank	For pump types DDA, DDC, DDE, DMX model 221	PP	95730864



Ventilation valve



Handheld mixer

9. Pumped liquids

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

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

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

● = Resistant

○ = Limitedly resistant

- = Not resistant

Pumped liquid (20 °C)			Material								
			Dosing head			Gasket			Ball		PE (Accessories)
Description	Chemical formula	Concentration %	PP	PVDF	SS 1.4435	PVC	FKM	EPDM	PTFE	Ceramic	
Acetic acid	CH ₃ COOH	25	●	●	●	●	-	●	●	●	●
		60	●	●	●	●	-	●	●	●	●
		85	●	●	○	-	-	-	●	●	-
Aluminum chloride	AlCl ₃	40	●	●	-	●	●	●	●	●	●
Aluminum sulfate	Al ₂ (SO ₄) ₃	60	●	●	●	●	●	●	●	●	●
Ammonia, aqueous	NH ₄ OH	28	●	-	●	●	-	●	●	●	●
Calcium hydroxide ⁴³⁾	Ca(OH) ₂		●	●	●	●	●	●	●	●	●
Calcium hypochlorite	Ca(OCl) ₂	20	○	●	-	●	●	●	●	●	●
Chlorine dioxide	ClO ₂	3	-	●	-	●	●	-	●	●	-
		10	●	●	●	●	●	●	●	●	●
		30	-	●	-	●	●	○	●	●	●
Chromic acid	H ₂ CrO ₄	50	-	●	-	●	●	-	●	●	●
		30	●	●	●	●	●	●	●	●	●
Copper sulfate	CuSO ₄	30	●	●	●	●	●	●	●	●	●
Ferric chloride ⁴⁴⁾	FeCl ₃	60	●	●	-	●	●	●	●	●	●
Ferric sulfate ⁴⁴⁾	Fe ₂ (SO ₄) ₃	60	●	●	○	●	●	●	●	●	●
Ferrous chloride	FeCl ₂	40	●	●	-	●	●	●	●	●	●
Ferrous sulfate	FeSO ₄	50	●	●	●	●	●	●	●	●	●
Fluosilicic acid	H ₂ SiF ₆	40	●	●	○	●	-	○	●	●	●
Hydrochloric acid	HCl	< 25	●	●	-	●	●	●	●	●	●
		25-37	●	●	-	●	●	○	●	●	●
Hydrogen peroxide	H ₂ O ₂	30	●	●	●	●	●	●	●	●	●
		30	●	●	●	●	●	●	●	●	●
		40	○	●	●	●	●	-	●	●	●
Nitric acid	HNO ₃	70	-	●	●	-	●	-	●	●	○
		5-15	○	●	○	○	-	-	●	●	○
Peracetic acid	CH ₃ COOOH	5-15	○	●	○	○	-	-	●	●	○
Potassium hydroxide	KOH	50	●	-	●	●	-	●	●	●	●
Potassium permanganate	KMnO ₄	10	●	●	●	●	○	●	●	●	●
Sodium chlorate	NaClO ₃	30	●	●	●	●	●	●	●	●	●
Sodium chloride	NaCl	30	●	●	-	●	●	●	●	●	●
Sodium chlorite	NaClO ₂	20	●	●	-	○	●	●	●	●	●
		30	●	●	●	●	○	●	●	●	●
Sodium hydroxide	NaOH	50	●	●	●	●	-	●	●	●	●
		12-15	-	●	-	●	●	●	●	●	●
Sodium hypochlorite (commercial)	NaClO	12-15	-	●	-	●	●	●	●	●	●
Sodium hypochlorite (produced by electrolysis system)	NaClO	0,8	-	●	-	-	●	●	●	●	○

Pumped liquid (20 °C)			Material								
Description	Chemical formula	Concentration %	Dosing head			Gasket			Ball		PE (Accessories)
			PP	PVDF	SS 1.4435	PVC	FKM	EPDM	PTFE	Ceramic	
Sodium sulfide	Na ₂ S	30	•	•	•	•	•	•	•	•	•
Sodium sulphite	Na ₂ SO ₃	20	•	•	•	•	•	•	•	•	•
Sodium thiosulfate	Na ₂ S ₂ O ₃	10	•	•	•	•	•	•	•	•	•
Sulfurous acid	H ₂ SO ₃	6	•	•	•	•	•	•	•	•	•
Sulfuric acid ⁴⁵⁾	H ₂ SO ₄	< 80	•	•	-	•	•	○	•	•	•
		80-96	○	•	-	•	•	-	•	•	-
		98	-	•	•	-	○	-	•	•	-

43) Once the pump stops, calcium hydroxide sediments rapidly.

44) There is risk of crystallisation.

45) It reacts violently with water and generates much heat. (The pump should be absolutely dry before dosing Sulfuric acid.)

Further information:

<https://product-selection.grundfos.com/pumped-liquid-guide>

10. Grundfos Product Center

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

From the international view, you can select your specific country to view the product range available to you.

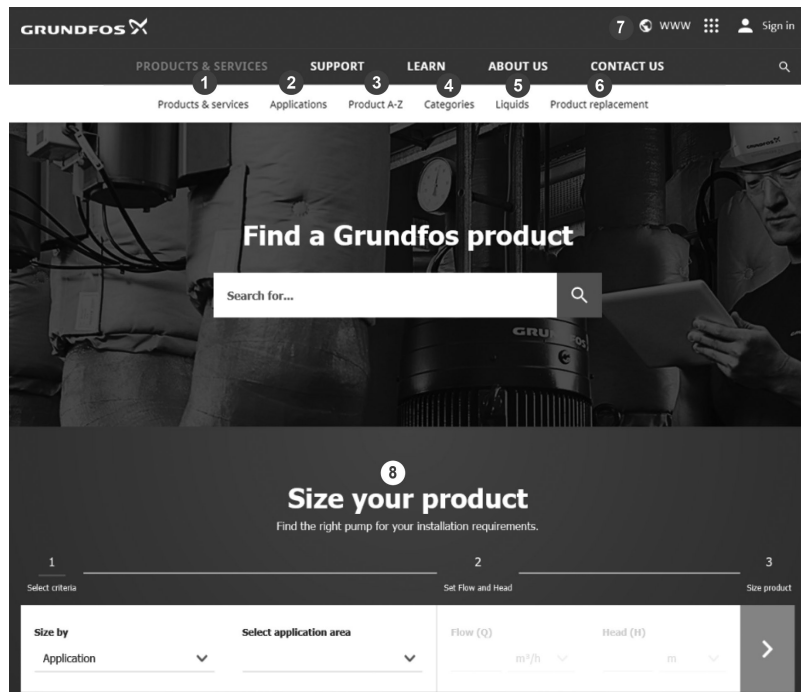
International view: <https://product-selection.grundfos.com>

All the information you need in one place

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

Downloads

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



When you select your country, you will see the menus below. Note that some menus may not be available depending on the country.

Example: <https://product-selection.grundfos.com/uk>

Pos.	Description
1	Products & services enables you to find products and documents by typing a product number or name into the search field.
2	Applications enables you to choose an application to see how Grundfos can help you design and optimize your system.
3	Products A-Z enables you to look through a list of all the Grundfos products.
4	Categories enables you to look for a product category.
5	Liquids enables you to find pumps designed for aggressive, flammable or other special liquids.
6	Product replacement enables you to find a suitable replacement.
7	WWW enables you to select the country, which changes the language, the available product range and the structure of the website.
8	Sizing enables you to size a product based on your application and operating conditions.

11. Document quality feedback

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