

Metering pumps, components and metering systems



Issued by:

ProMinent GmbH  
Im Schuhmachergewann 5-11  
69123 Heidelberg  
Germany  
Phone +49 6221 842-0  
info@prominent.com  
www.prominent.com



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Heidelberg, January 2016

## Metering Pumps, Components and Metering Systems



### Metering technology for professionals

The heart of metering technology is quite clearly the pump.

With its optimum performance range and functionality adapted to the feed chemical, it is responsible for smooth-running metering processes.

**Chapter 1** focuses on metering pumps that perform all possible metering tasks, ranging from micro-metering pumps to pumps delivering up to 75 l/h at a maximum back pressure of 60 bar.

**Chapter 2** goes on to present durable and easy-to-operate transfer and peristaltic pumps for pure pump capacities, as well as the matching components, like sturdy storage tanks and collecting pans.

Refer to **Chapter 3** for fully ready mounted metering systems. Whether standard or made-to-measure, thanks to their perfect interaction, the precisely coordinated components ensure a safe and immediately ready-to-use complete solution.

### We're there for you!

The selection of a product depends on a number of different factors.

Our team will be happy to be of assistance should you have any questions about our metering technology. Give us a call! We look forward to hearing from you.

Monday to Friday 8:00 - 16:30

#### ProMinent Sales

0049 6221 842-0  
info@prominent.com

#### Technical Consulting

0049 6221 842-1850  
service@prominent.com

### Pump Guide

You can also find information online. Try out our ProMinent Selection Guide on our website. Just enter the required pump capacity and back pressure – and the Pump Guide will present you with a list of suitable metering pumps. It's the quickest and easiest way to track down the right pump for your needs.

[www.pump-guide.com](http://www.pump-guide.com)

**Note:** We can also support you by phone in selecting the right products and, in many cases, optimising entire applications. For more complex requirements, our consultants will hand the task over to a field sales colleague, who will then clarify your requirements in person on site.

### After-sales Service

Our service technicians are on hand to help you. Regardless of whether you need assistance with initial installation or with maintenance and repair – we're happy to help!

0049 6221 842-1850  
service@prominent.com

**Note:** Local to you around the world. Find contact details for our branch offices around the globe at: [www.prominent.com/en/locations](http://www.prominent.com/en/locations)

# Step by Step to the Right Product

Metering tasks come in all shapes and sizes! Provide us with your data - we'll deliver the optimum solution!

The following data sheet will help in solving your metering problem. Please enter your requirements and conditions and return it to [info-de@prominent.com](mailto:info-de@prominent.com). Our Service Centre will use your data to reach the optimum result - the optimum metering pump and matching accessories for your application.

## Required Data for Designing Metering Pumps and Accessories

Min./max. required feed rate l/h \_\_\_\_\_  
 Available power supply \_\_\_\_\_ V, \_\_\_\_\_ Hz  
 Min./max. operating temperature °C \_\_\_\_\_  
 Properties of process chemical \_\_\_\_\_  
 Name, concentration % \_\_\_\_\_  
 Solids content % \_\_\_\_\_  
 Dynamic viscosity mPa (= cP) \_\_\_\_\_  
 Vapour pressure at operating temperature bar \_\_\_\_\_  
 Remarks, e.g. abrasive, \_\_\_\_\_  
 gaseous, flammable, \_\_\_\_\_  
 corrosive towards \_\_\_\_\_

### Suction conditions:

Min./max. suction lift m \_\_\_\_\_  
 Min./max. positive suction head m \_\_\_\_\_  
 Pressure in chemical tank bar \_\_\_\_\_  
 Suction line length m \_\_\_\_\_  
 Suction line diameter mm \_\_\_\_\_

### Discharge conditions:

Min./max. back pressure bar \_\_\_\_\_  
 Min./max. discharge head m \_\_\_\_\_  
 Min./max. negative discharge head m \_\_\_\_\_  
 Discharge line length m \_\_\_\_\_  
 Discharge line diameter mm \_\_\_\_\_  
 Number of valves and fittings in suction and discharge line \_\_\_\_\_

### Data required for proportional dosing:

Water flow Q min./max. m<sup>3</sup>/h \_\_\_\_\_  
 Required final concentration g/m<sup>3</sup>, ppm \_\_\_\_\_

### Example:

A required dose in mg/l = g/m<sup>3</sup> = ppm

(Water flow Q max. 50 m<sup>3</sup>/h)

Pulse spacing (flow volume per pulse) of water meter 5 l.

Process fluid = sodium hypochlorite solution Na OCl with 12 % chlorine (by weight) = 120 g/kg = 150 g/l = 150 mg/ml

Selected dosing pump GALa 1005 NPB2 with 0.41 ml/per stroke volume, at max. 10800 strokes/h.

Variables: pump type, pulse spacing and concentration. The stroke rate (max. throughput l/h: pulse spacing l/pulse = 50,000 l/h : 5 l/pulse = 10000 pulses/h) must not exceed the max. stroke frequency (10800 strokes/h) of the dosing pump.

$$\text{Feed quantity} = \frac{\text{water throughput Q max. (l/h)} \times \text{stroke volume (l)}}{\text{pulse spacing (l)}} = \frac{50,000 \text{ l} \times 0.00041 \text{ l}}{5 \text{ l}} = 4.1 \text{ l/h}$$

$$\begin{aligned} \text{Final dose} &= \frac{\text{concentration (mg/ml)} \times \text{stroke volume (l)}}{\text{pulse spacing (l)}} = \frac{150 \text{ mg} \times 0.41 \text{ ml}}{\text{ml} \times 5 \text{ l}} = 12.3 \text{ mg/l} \\ &= 12.3 \text{ g/m}^3 \\ &= 12.3 \text{ ppm chlorine Cl}_2 \end{aligned}$$

# Free Choice with the Identity Code

Use the identity code to determine the properties and features of your low-pressure metering pump. Simply select, enter the code in the bottom row and you've configured your product!

You've opted for a pump product range. It's now up to you to configure the pump exactly to meet your individual needs.

First determine the **pump type (1)**. This is based on the pump capacity you require and the back pressure present. Enter the result at the very bottom, in the grey row of the identity code.

The medium to be metered is crucial when it comes to the **material of the dosing head (2)** and the **seals (3)**. Once again enter the selected code in the bottom row.

You can now select the features and properties of your product with a few restrictions.

Work through column by column, generating the identity code for your own individual metering pump.

BT4b	Type	Capacity																		
	1000	10	0.74																	
	1601	16	1.10																	
	1602	16	2.20																	
	1604	16	3.60																	
	0708	7	7.10																	
	0413	4	12.30																	
	0220	2	19.00																	
<b>1</b>	BT5b																			
	2504	25	2.90																	
	1008	10	6.80																	
<b>2</b>	0713	7	11.00																	
	0420	4	17.10																	
	0232	2	32.00																	
	<b>Liquid end/valve material</b>																			
	PP	Polypropylene/PVDF, for version self-degassing Polypropylene/Polypropylene																		
<b>3</b>	NP	Acrylic glass/PVDF, for version self-degassing Acrylic glass/PVC																		
	PV	PVDF/PVDF																		
	TT	PTFE/PTFE																		
	SS	Stainless steel 1.4404/1.4404																		
	<b>Seal/diaphragm material</b>																			
	T	PTFE/PTFE coated																		
<b>4</b>	S	Diaphragm additionally with FKM coating for siliceous media																		
	<b>Liquid end version</b>																			
	0	Non-bleed version, no valve spring, for TT, SS and type 0232 only																		
	1	Non-bleed version, with valve spring, for TT, SS and type 0232 only																		
	2	With deaerator, no valve spring, PP, PV, NP only, not type 0232																		
	3	With deaerator, with valve spring, PP, PV, NP only, not type 0232																		
	4	version for highly viscous media, only PVT, types 1604, 0708, 1008, 0413, 0713, 0220, 0420																		
	7	self-bleeding without bypass (SER), only for NP and PV, not for types 1000, 1601 and 0232																		
	<b>Hydraulic connections</b>																			
	0	Standard according to technical data																		
	5	Connector for 12/6 hose, delivery side only, only with materials PP, NP and PV																		
	9	Connector for 10/4 hose, delivery side only, only with materials PP, NP and PV																		
	<b>Version</b>																			
	0	Standard																		
	<b>Logo</b>																			
	0	with ProMinent logo																		
	<b>Power supply</b>																			
	U	100-230 V ± 10 %, 50/60 Hz																		
	M	12-24 V DC, only for BT4																		
	N	24 V DC, only for BT5																		
	<b>Cable and plug</b>																			
	A	2 m European																		
	B	2 m Swiss																		
	C	2 m Australian																		
	D	2 m USA																		
	1	2 m, open-ended																		
	<b>Relay</b>																			
	0	No relay																		
	1	Fault indicating relay, normally energised, 1 x changeover contact 230 V - 2 A																		
	3	Fault indicating relay, normally de-energised, 1 x changeover contact 230 V - 2 A																		
	4	as 1 + pacing relay 2 x normally open contacts 24 V - 100 mA																		
	5	as 3 + pacing relay 2 x normally open contacts 24 V - 100 mA																		
	<b>Accessories</b>																			
	0	No accessories																		
	1	With foot and dosing valve, 2 m PVC suction tubing, 5 m PE discharge tubing																		
	<b>Control type</b>																			
	0	No lock																		
	1	With lock: manual operation locked when external cable plugged in																		
	<b>Control Variants</b>																			
	0	Standard																		
	<b>Options on request</b>																			
	00	No options																		
BT5b	0713	NP	S																	

We will be happy to advise you on your metering application.

Give us a call should you still have any questions!

### ProMinent Germany Sales

0049 6221 842-0  
info-de@prominent.com

### Technical Consulting

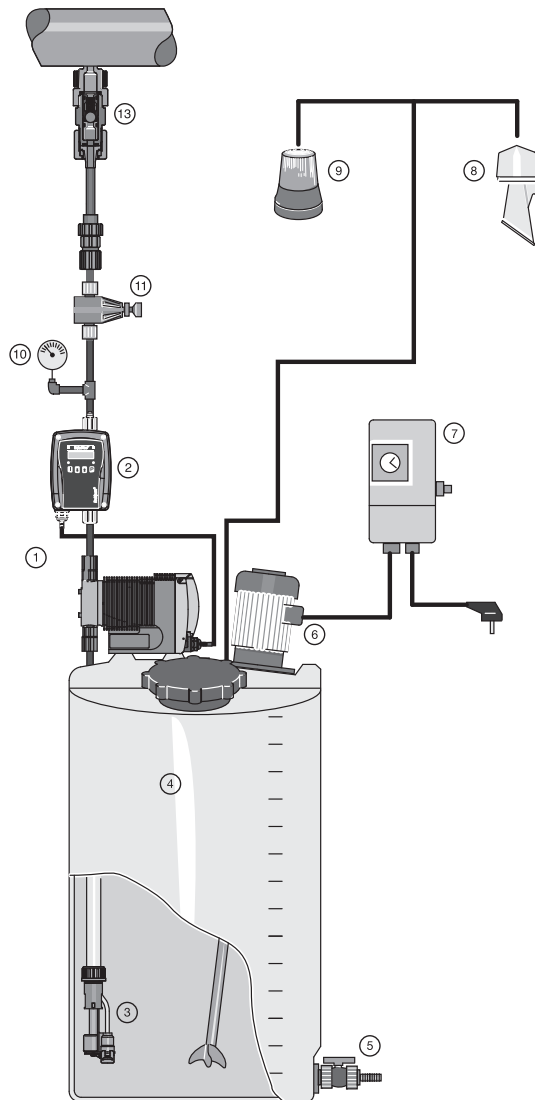
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# Metering Pumps also Need Accessories

Examples of metering tasks illustrate which components and accessories can be used for different metering processes.

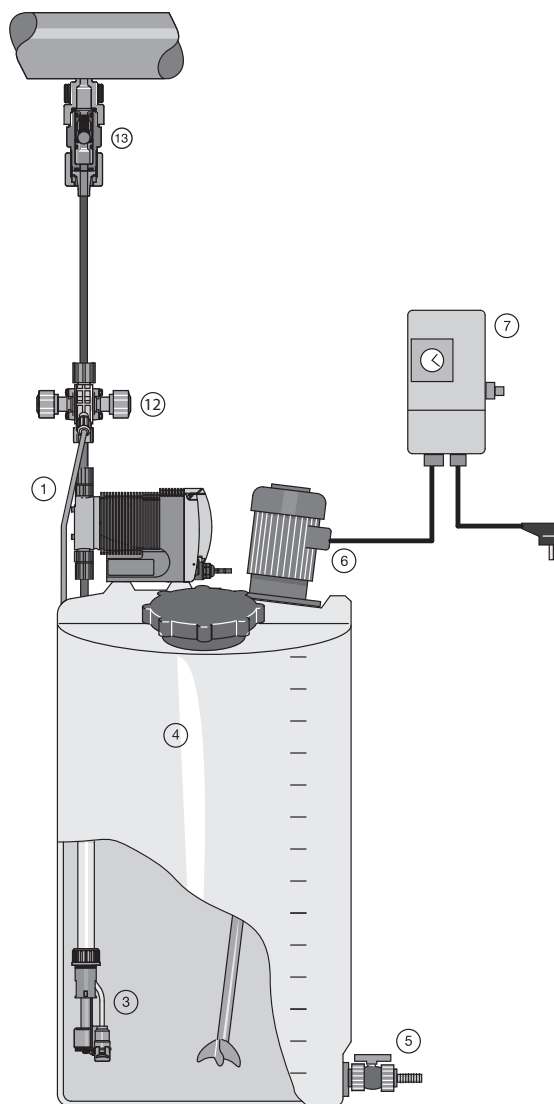
A pump alone is often simply not enough. A metering process requires further **components and accessories**. ProMinent provides all the products you need to guarantee **optimum process flows** for the metering of liquid media. Expertise and advice are, of course, included!

- 1 Metering pump
- 2 DFMa flow meter with single stroke monitor and feedback to the metering pump
- 3 Suction assembly with level switch
- 4 Chemical tank
- 5 Drain cock
- 6 Stirrer
- 7 Timer for stirrer
- 8 Signal horn
- 9 Display lamp
- 10 Manometer for precise adjustment of the back pressure valve
- 11 Back pressure valve



# Metering Pumps also Need Accessories

- 1 Metering pump
- 3 Suction assembly with level switch
- 4 Chemical tank
- 5 Drain cock
- 6 Stirrer
- 7 Timer for stirrer
- 12 Multifunctional valve
- 13 Injection valve



AP\_0005\_SW3







## New feature for successful all-rounder



In 2016 ProMinent is extending the function range of the Beta® b without restricting its tried and tested characteristics. The pump will then optionally be available with a 0/4...20 mA input. The standard signal commonly used in industry will allow the pump's performance to be controlled from a remote control room. Adjusting between 0/4...20 mA is incredibly simple: the Beta® b integrates the corresponding positions on the "Pulse Control Switch". As the 0/4...20 mA signal is unaffected by electromagnetic interference, the Beta® b product range can also be safely operated using long control lines. A potential control line failure is recognised as a fault and can be quickly reported to the control room. Another pioneering feature is the very easy way in which the Beta® b can be integrated in centrally controlled systems. This new function will continue to make the Beta® b the product range of choice for water treatment and chemical metering.

For more information see page → 1-7

## Solenoid driven metering pump gamma/ X now with Bluetooth interface



- Optional Bluetooth interface for convenient adjustment and configuration of the operating parameters
- Virtually wear-free solenoid drive, overload-proof and economical
- Suitable for continuous micro-metering from 1 ml/h thanks to the regulated solenoid drive
- Simple adjustment of the capacity directly in l/h
- Direct input of the required final concentration in volume-proportional metering tasks
- Detection of hydraulic malfunctions or blocked discharge lines ensures smooth process
- Integrated pressure measurement and display for greater safety during commissioning and in the process
- Adaptation to existing signal transducers by external control via potential-free contacts with pulse step-up and step-down
- External control via 0/4-20 mA standard signal with adjustable assignment of signal value to stroke rate
- Integrated 1-month timer for timed metering tasks
- Guaranteed metering by means of automatic bleeding
- Connection to process control systems via bus interfaces, such as Profibus, Profinet, CAN bus and others on request

For more information see page → 1-13



# New Products Metering Pumps, Components and Metering Systems



## Rotary Lobe Pumps

Capacity range 25–100 m<sup>3</sup>/h, 10–4 bar

The rotary lobe pump is robust and surprisingly powerful given its compact dimensions: depending on the model it can pump up to 100 m<sup>3</sup>/h viscose media and media containing solids, even containing larger particles of solids. It can be used with ease as a self-priming pump with reversible pumping direction. And naturally it is absolutely safe to operate as an intermediate chamber reliably separating the pumped medium from the gear oil.

The carefully selected materials, high-grade workmanship and maintenance-friendly construction make the rotary lobe pump into a low-wear endurance pump. A three-phase motor drives the two rotary pistons via a precision gear perfectly synchronised and thus also quietly. Corresponding drive versions enable the pump to be connected to bus systems and thus integrated into modern production environments.

- Pump complete with drive motor, reduction gear system, clutch and base plate
- Housing material AISI-316 or AISI 420, rotary piston and shaft seals made of NBR, EPDM or FKM
- Constant i.e. non-pulsing feed rates
- Valveless construction enables reversed pump direction
- Different versions of power end/drive via three-phase motor (On/Off mode, adjustable motor with integrated frequency converter or external fan)
- Connection to bus system is possible (integrated frequency converter needed)
- Hydraulic connection as standard by means of DIN flange (DN 50, 65, 80, 100, 125), other connectors available
- Simple replacement of wear discs thanks to maintenance-friendly construction

For more information see page → 2-22

## Metering System DULCODOS® universal

Pump volume depending on the selected pump 1 ml/h–75 l/h, back pressure 10-2 bar

Metering is dependent on the metering pump. Components, such as pipes, relief valves and electrics – indispensable, but scarcely variable – ensure the reliable operation of the system. That is why we have pre-configured the new metering system DULCODOS® universal with these standards. The benefits for you: low costs, fast delivery, simple commissioning.

Naturally you have a choice here as well: Should it be the solenoid driven metering pump Beta® 4 or 5, delta® or gamma/ X? Should the pipes and seals be made of PP/FKM or PVC/EPDM? And do you need one or two points of injection with one or two pumps?

The novel valve block gives every metering system a clearly arranged structure. Every system is equipped with two relief valves, a collecting pan with leakage sensor and a calibration tank for controlled metering for complete operational safety.

- ProMinent solenoid driven metering pumps Beta® 4/5, delta® or gamma/ X
- Dimensions: 1,700 x 1,200 x 635 mm (H x W x D)
- Material combinations: PP/FKM or PVC/EPDM (note compatibility with the feed chemical)
- Relief valves to protect the pipework
- Manometer
- Collecting pan with leakage sensor
- Flushing connectors
- Terminal box with master switch
- Assembly frame available in 6 standard colours

For more information see page → 3-10

## Dosing Tanks

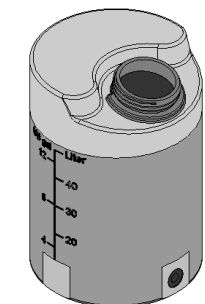
Our PE dosing tanks are now also available with a useful capacity of **1,500 litres**. The blue, black, yellow, red and neutral storage tanks are manufactured in the ProMinent quality you have come to expect.

Diameter: 1,150 mm, Height: 1,735 mm, Weight: approx. 80 kg.

### Dosing tank with flat mounting surface

- "Natural/transparent PE dosing tank" design without sintered threaded socket
- Level mounting surface for the installation of metering pumps on the storage tank
- Additional installation of a manual or electric stirrer is possible

For more information see page → 2-4



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# Overview of Low Pressure Metering Pumps

## How to Find the Right Pump Type?

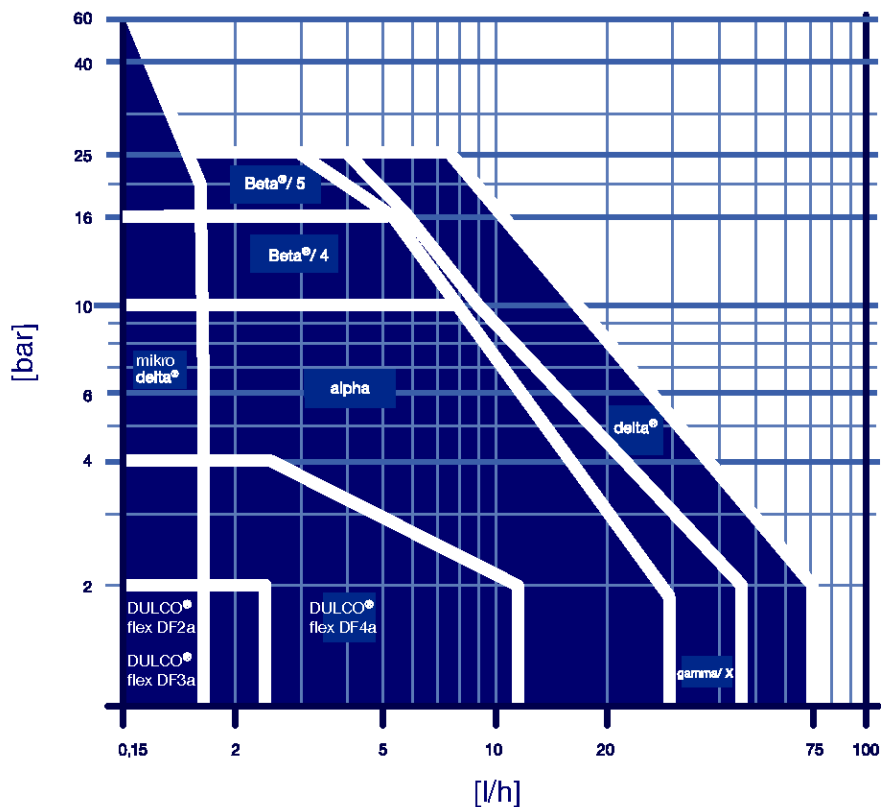
Low-pressure metering pumps for practically all liquid chemicals:

the wide range of materials and extremely reliable function make these pumps veritable all-rounders - even under the toughest conditions. You'll find the optimum metering pump for your application in this broad product range from **0.74 to 75 l/h at a back pressure of 25 - 2 bar**.

### Tip

The performance overview will assist you with rapid pre-selection. Determine the right product range of metering pumps based on a given back pressure (bar) and pump capacity (l/h).

All our low-pressure metering pumps are self-priming!



SG\_0028\_C

Back pressure [bar] as a function of feed rate [l/h]

### Important note

ProMinent<sup>®</sup> metering pumps in the capacity range of **over 75 l/h or over 25 bar**, as well as metering pumps approved for use in premises at risk of gas explosions are included in volume 3 "Motor-driven and process metering pumps for all capacity ranges".

Please use our Pump Guide for assistance in making a quick selection; [www.pump-guide.com](http://www.pump-guide.com).





# 1.1 Motor Driven Metering Pump alpha

## 1.1.1 Motor Driven Metering Pump alpha



The cost-effective solution for simple applications in the lower performance range.

Capacity range 1.0 – 30.6 l/h, 10 – 2 bar



The motor-driven metering pump alpha is the metering pump for liquid media and the optimum solution for simple applications. Robust, low-noise, chemical-resistant, with precise metering and good suction capacity.

Various pump types are available as a combination of 2 gears and 4 sizes of dosing head in materials PVDF and clear acrylic/PVC, enabling you to match the pump perfectly to your metering process.

### Your benefits

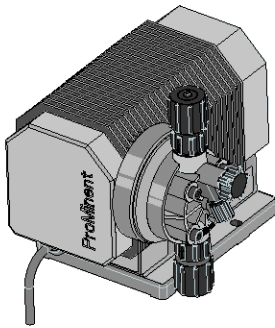
- Precise metering and good suction capacity by soft controlled suction and compression strokes
- Tough plastic housing – shock-proof and chemical-resistant
- Suitable for higher viscosity media, thanks to spring-loaded valves
- Low-noise operation

### Technical details

- Stroke length adjustment by changing the eccentricity on the pump drive when the pump is idle
- Stroke length adjustment in 10% steps
- Diaphragm deflection from the centre position
- Soft controlled suction and compression strokes

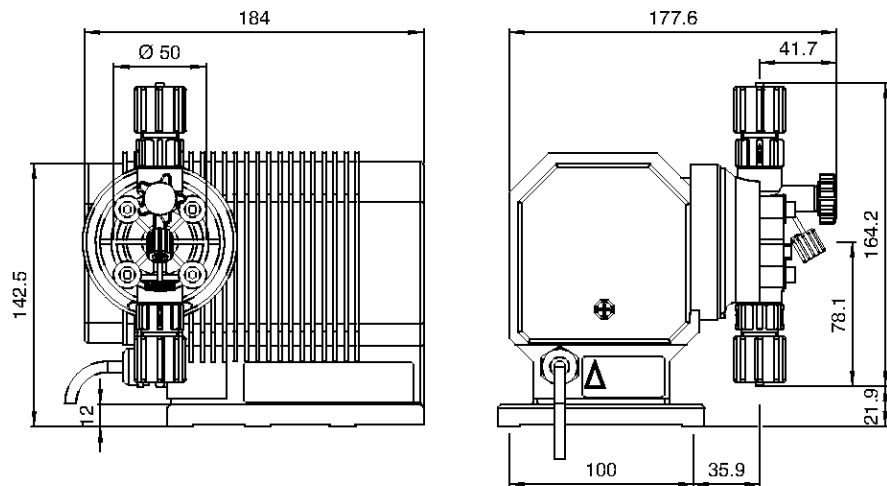
### Field of application

All low capacity applications where constant metering is required.



P\_ALP\_0004\_SW

### Dimensional drawing of the alpha



P\_ALP\_0006\_SW3

Dimension drawing of the alpha - dimensions in mm



# 1.1 Motor Driven Metering Pump alpha

## Technical Data

Pump type	Delivery rate at max. back pressure			Delivery rate at medium back pressure			Number of strokes	Stroke length	Connection size o Ø x i Ø	Suction lift	Shipping weight
	bar	l/h	ml/stroke	bar	l/h	ml/stroke					
<b>50 Hz version</b>											
ALPc 1001	10	1.0	0.29	5	1.1	0.32	30	2	6 x 4	5.1	3.0
ALPc 1002	10	1.8	0.52	5	2.1	0.60	58	2	6 x 4	5.1	3.0
ALPc 1004	10	3.5	1.01	5	3.9	1.12	58	3	8 x 5	5.1	3.0
ALPc 1008	10	7.7	1.00	5	8.6	1.12	128	3	8 x 5	5.1	3.0
ALPc 0707	7	6.9	1.98	3	7.7	2.21	58	3	8 x 5	4.1	3.0
ALPc 0417	4	17.0	2.51	2	18.3	2.76	128	3	8 x 5	4.1	3.0
ALPc 0230	2	30.6	3.98	1	32.7	4.26	128	3	12 x 9	3.1	3.0
<b>60 Hz version</b>											
ALPc 1001	10	1.2	0.29	5	1.3	0.31	36	2	6 x 4	5.1	3.0
ALPc 1002	10	2.2	0.53	5	2.6	0.63	69	2	6 x 4	5.1	3.0
ALPc 1004	10	4.1	0.99	5	4.7	1.14	69	3	8 x 5	5.1	3.0
ALPc 1008	10	8.9	0.96	5	10.4	1.13	154	3	8 x 5	5.1	3.0
ALPc 0707	7	8.3	2.00	3	9.2	2.22	69	3	8 x 5	4.1	3.0
ALPc 0417	4	20.6	2.45	2	21.9	2.75	154	3	8 x 5	4.1	3.0
ALPc 0230	2	34.4	3.72	1	39.2	4.24	154	3	12 x 9	3.1	3.0

All data refers to water at 20 °C.

## Materials in Contact With the Medium

	Liquid end	Suction/discharge connector	Ball seal	Seals	Balls
PPE	Polypropylene	Polypropylene	EPDM	EPDM	Ceramic
PPB	Polypropylene	Polypropylene	FKM	FKM	Ceramic
NPE	Acrylic glass	PVC	EPDM	EPDM	Ceramic
NPB	Acrylic glass	PVC	FKM	FKM	Ceramic
PVT	PVDF	PVDF	PVDF	PTFE	Ceramic

Metering diaphragm with PTFE coating for all types.

FKM = Fluorine Rubber

## Motor Data

Type	Split pole motor with integrated thermal overload protection
Electrical connection	220-240 V, 50/60 Hz (version A)
Power	50 W (at 230 V/50 Hz)
Power consumption	0.4 A (at 230 V/50 Hz)



**Warranty:** The warranties listed under "General Terms and Conditions of Sale" apply, although there is a warranty period of 12 months for the alpha pump drive



# 1.1 Motor Driven Metering Pump alpha

## 1.1.2 Identity Code Ordering System

### alpha series, version c

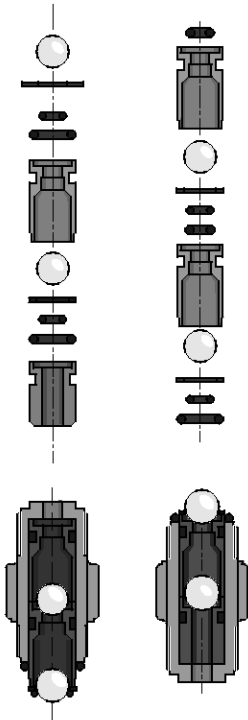
ALPc	Type	Capacity (50 Hz / 60 Hz)			
		l/h	bar	l/h	bar
	1001	1.0	10	1.2	10
	1002	1.8	10	2.2	10
	1004	3.5	10	4.1	10
	1008	7.7	10	8.9	10
	0707	6.9	7	8.3	7
	0417	17.0	4	20.6	4
	0230	30.6	2	34.4	2
<b>Liquid end material</b>					
	PPE	Polypropylene/polypropylene/EPDM			
	PPB	Polypropylene/polypropylene/FKM			
	NPE	Acrylic/PVC/EPDM			
	NPB	Acrylic/PVC/FKM			
	PVT	PVDF/PVDF/PTFE			
<b>Valve springs</b>					
	2	without valve spring, with bleeding			
	3	with 2 valve springs approx. 0.1 bar, material 1.4571, with bleeding			
<b>Hydraulic connectors</b>					
	0	Standard according to technical data			
<b>Version</b>					
	0	With ProMinent® logo			
<b>Electrical connection</b>					
	A	230 V, 50/60 Hz, 2 m, Euro. plug			
	B	230 V, 50/60 Hz, 2 m, Swiss plug			
	C	230 V, 50/60 Hz, 2 m, Austral. plug			
<b>Accessories</b>					
	0	No ancillary equipment			
	1	with foot and metering valve, 2 m PVC suction line, 5 m PE metering line			

FKM = Fluorine Rubber



# 1.1 Motor Driven Metering Pump alpha

## 1.1.3 Spare Parts Kits, Replacement Diaphragms



### Spare parts kits for alpha

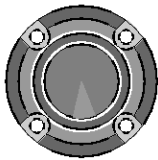
Spare parts kits for alpha, consisting of

- 1 pump diaphragm
- 1 suction valve compl.
- 1 discharge valve compl.
- 2 valve balls
- 1 connector set

Type		Order no.
<b>for alpha c, type 1001, 1002, 1004, 1008</b>	PPE	1001647
	PPB	1001655
	NPE	1001716
	NPB	1001724
	PVT, PPT, NPT	1023110
<b>for alpha c, type 0707, 0417</b>	PPE	1001649
	PPB	1001657
	NPE	1001718
	NPB	1001726
	PVT, PPT, NPT	1023112
<b>for alpha c, type 0230</b>	PPE	1001650
	PPB	1001658
	NPE	1001719
	NPB	1001727
	PVT, PPT, NPT	1023113

### Replacement Diaphragms

Type	Order no.
<b>For alpha c 1001, 1002, 1004, 1008</b>	1000247
<b>For alpha c 0707, 0417</b>	1000249
<b>For alpha c 0230</b>	1000250



pk\_1\_008

### Accessories

- Foot Valves for Low-Pressure Metering Pumps see page → 1-44
- Injection Valve for Low-Pressure Metering Pumps see page → 1-47
- Hoses, Pipes see page → 1-57
- Suction Lances, Suction Kit Without Level Switch see page → 1-62
- Connector Parts/Fittings see page → 1-84

### Spare Parts

- Custom Valve Balls/Valve Springs See page → 1-83



# 1.2 Solenoid Driven Metering Pump Beta®

## 1.2.1 Solenoid Driven Metering Pump Beta®



Equipped with all the features and properties for superior process management.

Capacity range 0.74 – 32 l/h, 25 – 2 bar



All-purpose solenoid metering pump for metering liquid media in water treatment and chemical processes: Solenoid driven metering pump Beta®. Cost-effective, overload-proof, adaptable to existing signal transducers.

A range of different pump types and material combinations are available for virtually all metering applications. The virtually wear-free solenoid drive guarantees an exceptionally long service life even under maximum load.

### Your benefits

- Simple adjustment of metering capacity via stroke rate and stroke length
- Adaptation to existing signal transducers by external control via potential-free contacts with pulse step-up and step-down
- Suitable for use with almost all liquid chemicals thanks to the available material combinations: PP, PVDF, clear acrylic, PTFE and stainless steel
- Self-bleeding dosing head design in clear acrylic/PVC and PP
- Virtually wear-free solenoid drive: economical and overload-proof
- Economical operation with up to 50% energy-savings, thanks to higher pump efficiency
- Everything in sight and under control: 3 LED display for operating, warning and error messages

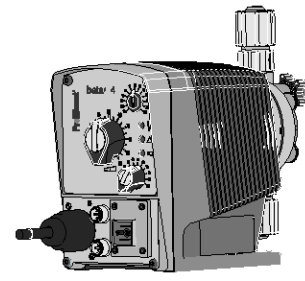
### Technical details

- External control via potential-free contacts with pulse step-up and step-down to adapt to existing signal transducers of 64:1 to 1:64
- Optional external control via 0/4 – 20 mA and potential-free contacts with pulse step-up and step-down of 32:1 to 1:32
- Stroke rate adjustment in 10% increments of 10 – 100% corresponds to 18 – 180 strokes/minute
- Continuous stroke length adjustment of 0 – 100% (recommended 30 – 100%)
- Connector for 2-stage level switch
- Wide-range electrical connection: 100 – 230 V, 50/60 Hz
- Optional relay module, can also be retrofitted easily and securely
- Low voltage design 12 – 24 V DC

### Field of application

- Metering liquid media in water treatment and chemical processes

### Dimensional drawing of Beta® Material design PP

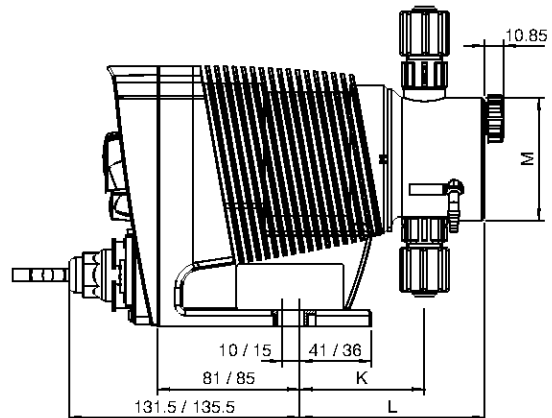
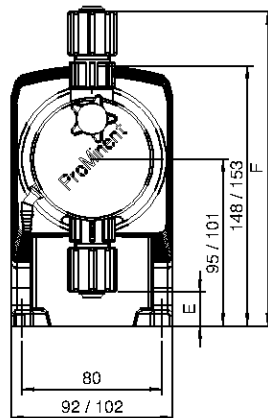


P\_BE\_0048\_SW1  
Beta® b

**NEW**

Type	E	F
1000-1604	19.5	179
0708-0220	7	186.5
1008-0420	14	191.5
0232	1.5	200.5

Type	K	L	M
1000-1604	71	105.5	Ø 70
0708-0220	77.5	111	Ø 90
1008-0232	74	107.5	Ø 90
0232	77.5	94.5	Ø 110



P\_BE\_0069\_SW3

Dimensional drawing of Beta®, Material version PP - dimensions in mm



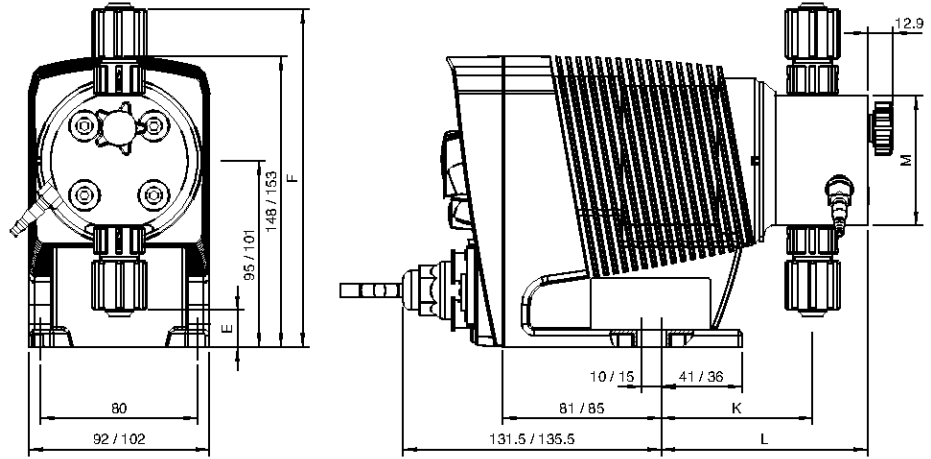
## 1.2 Solenoid Driven Metering Pump Beta®

1

**Dimensional drawing of Beta®  
Material design NP**

Type	E	F
1000-1604	19	172
0708-0220	7.2	183
2504	24.5	178.5
1008-0420	14	188
0232	3.2	199

Type	K	L	M
1000-1604	77	105	∅ 70
0708-0220	77.5	105.5	∅ 90
2504	77	105	∅ 70
1008-0420	74	102	∅ 90
0232	76	104.5	∅ 110



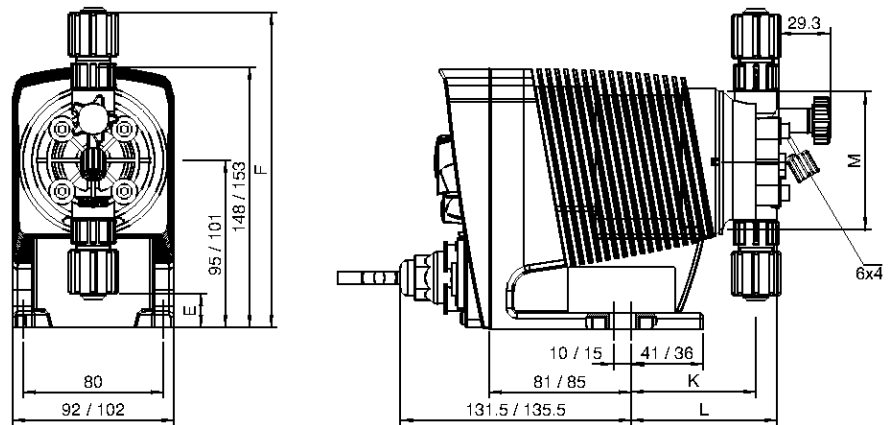
P\_BE\_0070\_SW3

Dimensional drawing of Beta®, Material version NP - dimensions in mm

**Dimensional drawing of Beta®  
Material design PV**

Type	E	F
1604	19	179
0708-0220	8	185.5
1008-0420	14	191.5
0232	3.2	199

Type	K	L	M
1604	71	83	∅ 70
0708-0220	73	90	∅ 90
1008-0420	73	90	∅ 90
0232	76	93	∅ 110



P\_BE\_0071\_SW3

Dimensional drawing of Beta®, Material version PV - dimensions in mm



# 1.2 Solenoid Driven Metering Pump Beta®

## Technical Data

Pump type	Delivery rate at max. back pressure			Delivery rate at medium back pressure			Number of strokes	Connection size ø x i ø	Suction lift	Average power consumption		Shipping weight	
	bar	l/h	ml/stroke	bar	l/h	ml/stroke				Strokes/min	mm	mWC	W
<b>Beta® b</b>													
BT4b 1000***	10	0.7	0.07	5.0	0.8	0.08	180	6 x 4	6.0**	7,2	2.9	3.6	
BT4b 1601***	16	1.1	0.10	8.0	1.4	0.13	180	6 x 4	6.0**	9,6	2.9	3.6	
BT4b 1602***	16	2.2	0.20	8.0	2.5	0.24	180	6 x 4	6.0**	11,2	2.9	3.6	
BT4b 1604***	16	3.6	0.33	8.0	4.3	0.40	180	6 x 4	6.0**	15,2	3.1	3.9	
BT4b 0708***	7	7.1	0.66	3.5	8.4	0.78	180	8 x 5	6.0**	15,2	3.1	3.9	
BT4b 0413	4	12.3	1.14	2.0	14.2	1.31	180	8 x 5	3.0**	15,2	3.1	3.9	
BT4b 0220	2	19.0	1.76	1.0	20.9	1.94	180	12 x 9	2.0**	15,2	3.3	4.4	
BT5b 2504	25	2.9	0.27	10.0	5.0	0.46	180	8 x 4****	6.0**	19,2	4.5	5.3	
BT5b 1008	10	6.8	0.63	5.0	8.3	0.76	180	8 x 5	6.0**	19,2	4.5	5.3	
BT5b 0713	7	11.0	1.02	3.5	13.1	1.21	180	8 x 5	4.0**	19,2	4.5	5.3	
BT5b 0420	4	17.1	1.58	2.0	19.1	1.77	180	12 x 9	3.0**	19,2	4.7	5.8	
BT5b 0232	2	32.0	2.96	1.0	36.2	3.35	180	12 x 9	2.0**	19,2	5.1	6.6	
<b>Beta® b metering pumps with self-bleeding dosing head without bypass</b>													
BT4b 1602	10	1.4	0.13	8.0	1.7	0.16	180	6 x 4	1.8**	11,2	2.9	-	
BT4b 1604	10	2.7	0.25	8.0	3.6	0.33	180	6 x 4	1.8**	15,2	3.1	-	
BT4b 0708	7	6.6	0.61	3.5	7.5	0.69	180	8 x 5	1.8**	15,2	3.1	-	
BT4b 0413	4	10.8	1.00	2.0	12.6	1.17	180	8 x 5	1.8**	15,2	3.1	-	
BT4b 0220	2	16.2	1.50	1.0	18.0	1.67	180	12 x 9	2.0**	15,2	3.3	-	
BT5b 1008	10	6.3	0.58	5.0	7.5	0.69	180	8 x 5	1.8**	19,2	4.5	-	
BT5b 0713	7	10.5	0.97	3.5	12.3	1.14	180	8 x 5	1.8**	19,2	4.5	-	
BT5b 0420	4	15.6	1.44	2.0	17.4	1.61	180	12 x 9	1.8**	19,2	4.7	-	



Beta® b metering pumps with dosing heads for higher-viscosity media have a 10-20% lower capacity and are not self-priming. G 3/4-DN 10 connector with d 16-DN 10 hose nozzle.

- \* The given performance data constitutes guaranteed minimum values, calculated using water as the medium at room temperature.
  - \*\* Suction lift with a filled dosing head and filled suction line, with a self-bleeding dosing head with air in the suction line.
  - \*\*\* Pressure-reduced pump types are available in the pressure ratings 4, 7 and 10 bar for special applications, for example in the swimming pool sector. More detailed information is available upon request.
  - \*\*\*\* With stainless steel design 6 mm connector width.
- All data refers to water at 20 °C.

### Materials in Contact With the Medium

	Dosing head	Suction/pressure connector	Ball seat	Seals	Balls
PPT	Polypropylene	PVDF	PVDF	PTFE	Ceramic
NPT	Clear acrylic	PVDF	PVDF	PTFE	Ceramic
PVT	PVDF	PVDF	PVDF	PTFE	Ceramic
TTT	PTFE with carbon	PTFE with carbon	Ceramic	PTFE	Ceramic
SST	Stainless steel material no. 1.4404	Stainless steel material no. 1.4404	Ceramic	PTFE	Ceramic

Metering reproducibility: ± 2% when used according to the operating instructions.

Permissible ambient temperature -10 °C to +45 °C

Degree of protection: IP 65, insulation class F

<emphasis>Scope of delivery: Metering pump with mains cable (2 m) and plug, connecting kit for hose/pipe connection as per table.</emphasis>



# 1.2 Solenoid Driven Metering Pump Beta®

## 1.2.2 Identity Code Ordering System

### Beta® Version b

BT4b	Type	Capacity	
		bar	l/h
	1000	10	0.74
	1601	16	1.10
	1602	16	2.20
	1604	16	3.60
	0708	7	7.10
	0413	4	12.30
	0220	2	19.00
BT5b	2504	25	2.90
	1008	10	6.80
	0713	7	11.00
	0420	4	17.10
	0232	2	32.00
<b>Liquid end/valve material</b>			
	PP	Polypropylene/PVDF	
	NP	Acrylic glass/PVDF	
	PV	PVDF/PVDF	
	TT	PTFE with carbon, PTFE	
	SS	Stainless steel 1.4404/1.4404	
<b>Seal/diaphragm material</b>			
	T	PTFE/PTFE coated	
<b>Liquid end version</b>			
	0	Non-bleed version, no valve spring, for TT, SS and type 0232 only	
	1	Non-bleed version, with valve spring, for TT, SS and type 0232 only	
	2	With deaerator, no valve spring, PP, PV, NP only, not type 0232	
	3	With deaerator, with valve spring, PP, PV, NP only, not type 0232	
	4	version for highly viscous media, only PVT, types 1604, 0708, 1008, 0413, 0713, 0220, 0420	
	7	self-bleeding without bypass, only for NPT and PVT, not for types 1000, 1601 and 0232	
<b>Hydraulic connections</b>			
	0	Standard according to technical data	
	5	Connector for 12/6 hose, delivery side only	
	9	Connector for 10/4 hose, delivery side only	
<b>Version</b>			
	0	Standard	
<b>Logo</b>			
	0	with ProMinent® logo	
<b>Power supply</b>			
	U	100-230 V ± 10%, 50/60 Hz	
	M	12 – 24 V DC, only with BT4b	
	N	24 V DC, only for BT5b	
<b>Cable and plug</b>			
	A	2 m European	
	B	2 m Swiss	
	C	2 m Australian	
	D	2 m USA	
	1	2 m, open-ended	
<b>Relay</b>			
	0	No relay	
	1	Fault indicating relay, normally energised, 1 x changeover contact 230 V - 2 A	
	3	Fault indicating relay, normally de-energised, 1 x changeover contact 230 V - 2 A	
	4	as 1 + pacing relay 2 x normally open contacts 24 V - 100 m	
	5	as 3 + pacing relay 2 x normally open contacts 24 V - 100 mA	
<b>Accessories</b>			
	0	No accessories	
	1	With foot and dosing valve, 2 m PVC suction tubing, 5 m PE discharge tubing	
<b>Control type</b>			
	0	No lock	
	1	With lock: manual operation locked when external cable plugged in	
<b>Control Variants</b>			
	0	without analogue control	
	A	with analogue control 0/4 – 20 mA	
<b>Options on request</b>			
	0 0	No options	

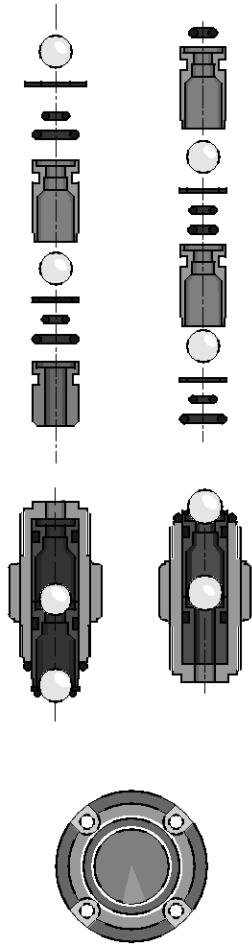
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# 1.2 Solenoid Driven Metering Pump Beta®

## 1.2.3 Spare Parts Kits, Replacement Diaphragms



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### Spare Parts Kits for Solenoid Driven Metering Pump Beta®

Spare parts kits for Beta®, consisting of:

- 1 Diaphragm
- 1 Suction valve, complete
- 1 Discharge valve, complete
- 2 Valve balls
- 1 Connector kit

Suction and discharge valve set not included with stainless steel version.

Type	Materials in contact with the medium	Order no.
<b>Type 1000</b>	PPT, NPT, PVT	1023107
	TTT	1001737
	SST	1001729
<b>Type 1601</b>	PPT, NPT, PVT	1023108
	TTT	1001738
	SST	1001730
<b>Type 1602</b>	PVT, PPT, NPT	1023109
	TTT	1001739
	SST	1001731
<b>Type 1604 and Type 2504</b>	PVT, PPT, NPT	1035332
	PVT HV	1035342
	TTT	1035330
	SST	1035331
<b>Type 0708 and Type 1008</b>	PVT, PPT, NPT	1023111
	PVT4	1019067
	TTT	1001741
	SST	1001733
<b>Type 0413 and Type 0713</b>	PVT, PPT, NPT	1023112
	PVT4	1019069
	TTT	1001742
	SST	1001734
<b>Type 0220 and Type 0420</b>	PVT, PPT, NPT	1023113
	PVT4	1019070
	TTT	1001754
<b>Type 0232</b>	PVT, PPT, NPT	1001735
	TTT	1023124
	SST	1001755
	SST	1001736

### Accessories

- Foot Valves see page → 1-44
- Injection Valve see page → 1-47
- Hoses, Pipes see page → 1-57
- Suction Lances, Suction Kit Without Level Switch see page → 1-62
- Connector Parts/Fittings see page → 1-84

### Spare Parts

- Custom Valve Balls/Valve Springs See page → 1-83



## 1.2 Solenoid Driven Metering Pump Beta®

### Spare Parts Kits for Solenoid Driven Metering Pump Beta® with Self-Bleeding Dosing Head

Spare parts kits for metering pumps with self-bleeding dosing head without bypass, consisting of:

- 1 Diaphragm
- 1 Suction valve, complete
- 1 Discharge valve, complete
- 2 Valve balls
- 1 Connector kit

Type	Materials in contact with the medium	Order no.
Type 1602	PVT7, NPT7	1047830
Type 1604	PVT7, NPT7	1047858
Type 0708 and Type 1008	PVT7, NPT7	1047832
Type 0413 and Type 0713	PVT7, NPT7	1047833
Type 0220 and Type 0420	PVT7, NPT7	1047837

### Spare Diaphragms for Solenoid Driven Metering Pump Beta®

Type	Materials in contact with the medium	Order no.
Type 1000	all materials	1000244
Type 1601	all materials	1000245
Type 1602	all materials	1000246
Type 1604 and Type 2504	all materials	1034612
Type 0708 and Type 1008	all materials	1000248
Type 0413 and Type 0713	all materials	1000249
Type 0220 and Type 0420	all materials	1000250
Type 0232	all materials	1000251



## 1.3 Solenoid Driven Metering Pump gamma/ X

### 1.3.1

### Solenoid Driven Metering Pump gamma/ X



#### gamma/ X – the proven best-seller intelligently extended

Capacity range 2.3 ml/h – 45 l/h, 25 – 2 bar

The solenoid diaphragm metering pump gamma incorporates a wealth of eXcellent ingenuity! With integrated pressure measurement, it ensures the smooth running of your metering process. The gamma/X is ideal for all metering work involving liquid media.



NEW

The new solenoid diaphragm metering pump gamma/ X is user-friendly and has an outstandingly long service life, just like its predecessor. An ingenious solenoid control measures the back pressure and protects the system from overload. This technology makes a pressure sensor superfluous, meaning that operating safety can be significantly increased: no additional parts come into contact with the feed chemical, there are no additional sealing surfaces and no electronic components come into contact with the feed chemical. Whether the metering volume fluctuates or hydraulic failures affect the metering process – the gamma/ X keeps everything at your fingertips.

It independently ensures a trouble-free metering process and should the pump ever need maintenance its service module draws attention to this.

#### Your benefits

- Optional Bluetooth interface for convenient adjustment and configuration of the operating parameters
- Virtually wear-free solenoid drive, overload-proof and economical
- Suitable for continuous micro-metering from 1 ml/h thanks to the regulated solenoid drive
- Simple adjustment of the capacity directly in l/h
- Direct input of the required final concentration in volume-proportional metering tasks
- Detection of hydraulic malfunctions or blocked discharge lines ensures smooth process
- Integrated pressure measurement and display for greater safety during commissioning and in the process
- Adaptation to existing signal transducers by external control via potential-free contacts with pulse step-up and step-down
- External control via 0/4-20 mA standard signal with adjustable assignment of signal value to stroke rate
- Integrated 1-month timer for timed metering tasks
- Guaranteed metering by means of automatic bleeding
- Connection to process control systems via bus interfaces, such as Profibus, Profinet, CAN bus and others on request



P\_GX\_001\_SW1

NEW

#### Technical details

- Available material combinations: PP, PVDF, clear acrylic, PTFE and stainless steel
- Special dosing head designs for gaseous and high-viscosity media
- Illuminated LC display and 3-LED display for operating, warning and error messages, visible from all sides
- Factor with external contact control 99:1 - 1:99
- Batch operation with max. 65,536 strokes/start pulse
- Stroke rate adjustment in 1 stroke/hour increments from 0-12,000 strokes/h
- Continuous electronic stroke length adjustment from 0 - 100% (recommended 30 - 100%)
- Connector for 2-stage level switch
- External control via 0/4-20 mA standard signal with adjustable assignment of signal value to stroke rate
- Optional 4-20 mA output for remote transmission of stroke length and stroke rate
- Universal power supply unit 100 V - 230 V, 50/60 Hz
- Optional 230 V relay module, can also be retrofitted easily and securely
- Optional 24 V combined relay, can also be retrofitted easily and securely

#### Field of application

- Can be integrated into automated processes and used in all industries.
- The pump can work as a control unit with the timer, for example in cooling water treatment.



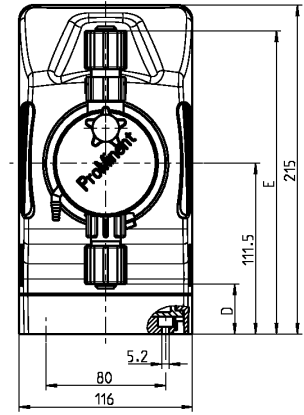
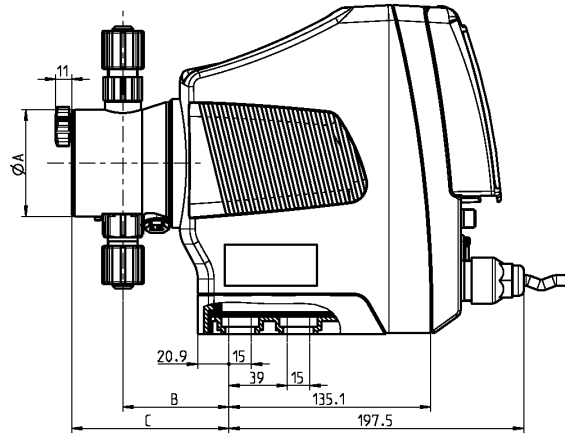
# 1.3 Solenoid Driven Metering Pump gamma/ X

1

**Dimensional drawing of gamma/ X  
Material version PPT2**

Type	Ø A	B
0245	110	76
0424, 0220	90	76
0715, 0414	90	74
1009, 0708	90	74
1604	70	71
1602	70	71

Type	C	D	E
0245	-	14	209
0424, 0220	110	24	202
0715, 0414	107	24	202
1009, 0708	108	24	202
1604	106	32	198
1602	106	32	198



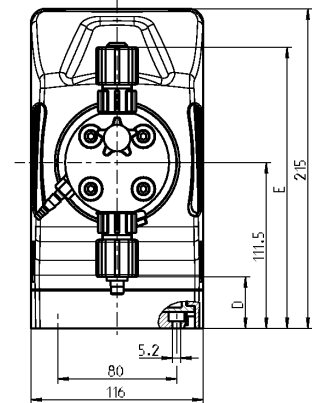
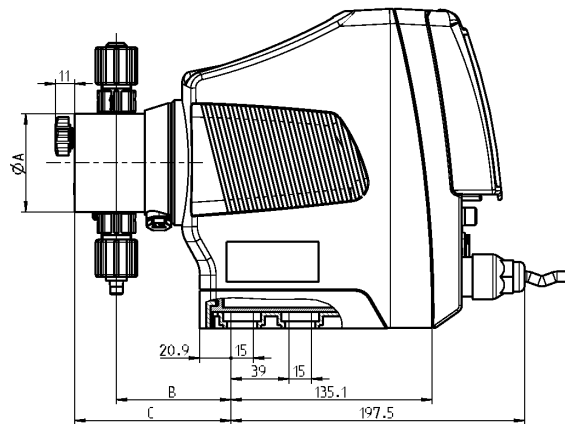
P\_G\_0055\_SW3

Dimensional drawing of gamma/ X, Material design PPT – dimensions in mm

**Dimensional drawing of gamma/ X  
Material version NPT2**

Type	Ø A	B
0245	110	76
0424, 0220	90	76
0715, 0414	90	76
1009, 0708	90	74
1604, 2504	70	77
1602	70	77

Type	C	D	E
0245	105	14	210
0424, 0220	104	23	200
0715, 0414	104	23	200
1009, 0708	102	23	200
1604, 2504	105	33	191
1602	105	33	191



P\_G\_0056\_SW3

Dimensional drawing of gamma/ X, Material design NPT – dimensions in mm



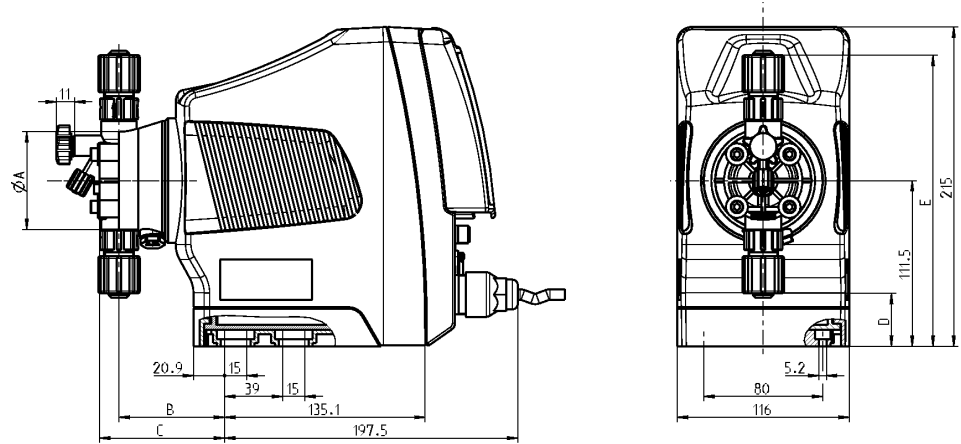
# 1.3 Solenoid Driven Metering Pump gamma/ X

Dimensional drawing of gamma/ X  
Material version PVT2

Type	Ø A	B
0245	110	76
0424, 0220	90	79
0715, 0414	90	73
1009, 0708	90	75
1604	70	71
1602	70	71

Type	C	D	E
0245	-	14	209
0424, 0220	90	25	203
0715, 0414	90	25	203
1009, 0708	92	25	203
1604	84	36	196
1602	84	36	196



P\_G\_0057\_SW3

Dimensional drawing of gamma/ X, Material design PVT – dimensions in mm



# 1.3 Solenoid Driven Metering Pump gamma/ X

## Technical Data

Pump type	Delivery rate at max. back pressure			Number of strokes Strokes/min	Connecti- on size o Ø x i Ø mm	Suction lift mWC	Shipping weight	
	bar	l/h	ml/stroke				PP, NP, PV, TT kg	SS kg
<b>gamma/ X</b>								
GMXa 1602	16	2.3	0.19	200	6 x 4	6.0**	3.6	4.1
GMXa 1604	16	3.6	0.30	200	6 x 4	5.0**	3.6	4.1
GMXa 0708	7	7.6	0.63	200	8 x 5	4.0**	3.7	5.0
GMXa 0414	4	13.5	1.13	200	8 x 5****	3.0**	3.7	5.0
GMXa 0220	2	19.7	1.64	200	12 x 9	2.0**	3.7	5.0
GMXa 2504	25	3.8	0.32	200	8 x 4***	4.0**	4.9	5.5
GMXa 1009	10	9.0	0.75	200	8 x 5	3.0**	5.1	6.5
GMXa 0715	7	14.5	1.21	200	8 x 5****	3.0**	5.1	6.5
GMXa 0424	4	24.0	2.00	200	12 x 9	3.0**	5.1	6.5
GMXa 0245	2	45.0	3.70	200	12 x 9	2.0**	5.2	7.0
<b>gamma/ X metering pumps with self-bleeding dosing head without bypass</b>								
GMXa 1602	10	0.9	0.08	200	6 x 4	1.8**	3.6	-
GMXa 1604	10	1.6	0.13	200	8 x 5	1.8**	3.6	-
GMXa 0708	7	5.7	0.48	200	8 x 5	1.8**	3.7	-
GMXa 0414	4	12.0	1.00	200	8 x 5	1.8**	3.7	-
GMXa 0220	2	17.4	1.45	200	12 x 9	1.8**	3.7	-
GMXa 1009	10	6.0	0.50	200	8 x 5	1.8**	5.1	-
GMXa 0715	7	12.9	1.08	200	8 x 5	1.8**	5.1	-
GMXa 0424	4	19.2	1.60	200	12 x 9	1.8**	5.1	-



gamma/ X metering pumps with dosing heads for high-viscosity media have a 10 – 20% lower capacity and are not self-priming. G 3/4-DN 10 connector with d 16-DN 10 hose nozzle.

- \* The given performance data represents guaranteed minimum values, calculated using water as the medium at room temperature.
  - \*\* Suction lift with a filled dosing head and filled suction line, with a self-bleeding dosing head with air in the suction line
  - \*\*\* With stainless steel design 6 mm connector width
  - \*\*\*\* With stainless steel design 12 mm connector width
- All data refers to water at 20 °C.

## Materials in Contact With the Medium

	Dosing head	Suction/pressure connector	Ball seat	Seals	Balls
PPT	Polypropylene	Polypropylene	PVDF	PTFE	Ceramic
NPT	Clear acrylic	PVC	PVDF	PTFE	Ceramic
PVT	PVDF	PVDF	PVDF	PTFE	Ceramic
TTT	PTFE with carbon	PTFE with carbon	Ceramic	PTFE	Ceramic
SST	Stainless steel material no. 1.4404	Stainless steel material no. 1.4404	Ceramic	PTFE	Ceramic

Metering reproducibility: ±2% when used according to information in the operating instructions

Permissible ambient temperature: -10 °C to +45 °C

Mean power consumption: 24/30 W

Degree of protection: IP 65, insulation class F



**Scope of supply**  
Metering pump with mains cable, connector kit for hose/tube connector as per table.



# 1.3 Solenoid Driven Metering Pump gamma/ X

## 1.3.2 Identity Code Ordering System

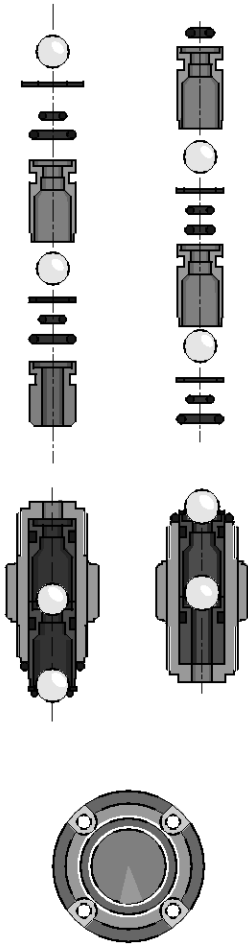
### gamma/ X product range, version a

GMXa	Type	Capacity		GMXa	Type	Capacity	
		bar	l/h			bar	l/h
	1602	16	2.3		2504	25	3.8
	1604	16	3.6		1009	10	9.0
	0708	7	7.6		0715	7	14.5
	0414	4	13.5		0424	4	24.0
	0220	2	19.7		0245	2	45.0
<b>Liquid end/valve material</b>							
	PP	Polypropylene/PVDF, with self-bleeding design polypropylene/polypropylene					
	NP	Clear acrylic/PVDF, with self-bleeding design clear acrylic/PVC					
	PV	PVDF/PVDF					
	TT	PTFE/PTFE					
	SS	Stainless steel 1.4404/1.4404					
<b>Seal/diaphragm material</b>							
	T	PTFE/PFTE coated					
<b>Liquid end version</b>							
	0	Non-bleed version, no valve spring only with NP, TT and SS and type 0245					
	1	Non-bleed version, with valve spring only with NP, TT and SS and type 0245					
	2	Bleed function, no valve spring only with PP, PV, NP not for type 0245					
	3	Bleed function, with valve spring only with PP, PV, NP not for type 0245					
	4	Version for highly viscous media only with PV, types 1604, 0708, 0414, 2504, 1009, 0715, 0424					
	7	self-bleeding without bypass, only for NPT and PVT					
<b>Hydraulic connections</b>							
	0	Standard according to technical data					
	5	Discharge side connection for hose 12/6, suction side standard, only with materials PP, NP and PV					
	9	Discharge side connection for hose 10/4, suction side standard, only with materials PP, NP and PV					
<b>Diaphragm rupture indicator</b>							
	0	Without diaphragm rupture indicator					
	1	With diaphragm rupture indicator, optical sensor					
<b>Version</b>							
	0	Standard					
<b>Logo</b>							
	0	with ProMinent® logo					
<b>Power supply</b>							
	U	100-230 V, ±10%, 50/60 Hz					
<b>Cable and plug</b>							
	A	2 m European					
	B	2 m Swiss					
	C	2 m Australian					
	D	2 m USA					
	E	2 m Great Britain					
	1	2 m, open-ended					
<b>Relay, pre-set to</b>							
	0	No relay					
	1	1 x changeover contact 230 V – 2 A, fault indicating relay N/C					
	4	2 x N/O 24 V – 100 mA, fault indicating relay N/C + pacing relay					
	C	1 x N/O 24 V – 100 mA, fault indicating relay N/C 1 + 4 – 20 mA output					
<b>Accessories</b>							
	0	No accessories					
	1	With foot valve and discharge valve, 2 m PVC suction tubing, 5 m PE delivery tube only with PP, PV and NP, not with PVT4					
<b>Control version</b>							
	0	Manual + external 1:1 with pulse control					
	3	Manual + external with pulse control + analogue 0/4 - 20 mA					
	C	as 3 + CANopen*					
	C	as 3 + CANopen*®					
	C	as 3 + CANopen*					
	R	as 3 + PROFIBUS®-DP interface M12*					
	-	*No relay can be selected with these options.					
<b>Metering monitor</b>							
	0	Pulse signal input					
<b>Remote stop</b>							
	0	without Bluetooth					
	B	with Bluetooth					
<b>Language</b>							
	DE	German					
	EN	English					
	FR	French					
	ES	Spanish					



# 1.3 Solenoid Driven Metering Pump gamma/ X

## 1.3.3 Spare Parts Kit for gamma/ X



pk\_1\_008

### Spare Parts Kit for gamma/ X

Spare parts kits for gamma/ X, consisting of:

- 1 Diaphragm
- 1 Suction valve, complete
- 1 Discharge valve, complete
- 2 Valve balls
- 1 Connector kit

Suction and discharge valve set not included with stainless steel version.

Type		Order no.
<b>Type 1602</b>	PVT, PPT, NPT	1023109
	TTT	1001739
	SST	1001731
<b>Type 1604 and Type 2504</b>	PVT, PPT, NPT	1035332
	PVT HV	1035342
	TTT	1035330
	SST	1035331
<b>Type 0708 and Type 1009</b>	PVT, PPT, NPT	1023111
	PVT4	1019067
	TTT	1001741
	SST	1001733
<b>Type 0414 and Type 0715</b>	PVT, PPT, NPT	1023112
	PVT4	1019069
	TTT	1001742
	SST	1001734
<b>Type 0220 and Type 0424</b>	PVT, PPT, NPT	1051129
	PVT HV	1051134
	TTT	1051151
	SST	1051139
<b>Type 0245</b>	PVT, PPT, NPT	1051130
	TTT	1051152
	SST	1051140

### Spare Parts Kits for Solenoid Driven Metering Pump gamma/ X with Self-Bleeding Dosing Head

Spare parts kits for metering pumps with self-bleeding dosing head without bypass, consisting of:

- 1 Diaphragm
- 1 Suction valve, complete
- 1 Discharge valve, complete
- 1 Bleed valve, complete
- 2 Valve balls
- 1 Connector kit

Type	Materials in contact with the medium	Order no.
<b>Type 1602</b>	PVT7, NPT7	1051105
<b>Type 1604</b>	PVT7, NPT7	1051106
<b>Type 0708 and Type 1009</b>	PVT7, NPT7	1051109
<b>Type 0414 and Type 0715</b>	PVT7, NPT7	1051110
<b>Type 0220 and Type 0424</b>	PVT7, NPT7	1051111





## 1.3 Solenoid Driven Metering Pump gamma/ X

### Spare Diaphragms for Solenoid Driven Metering Pump gamma/ X

Type	Materials in contact with the medium	Order no.
Type 1602	all materials	1000246
Type 1604 and Type 2504	all materials	1034612
Type 0708 and Type 1009	all materials	1000248
Type 0414 and Type 0715	all materials	1000249
Type 0220 and Type 0424	all materials	1045456
Type 0245	all materials	1045443

### Accessories

- Foot Valves see page → 1-44
- Injection Valve see page → 1-47
- Hoses, Pipes see page → 1-57
- Suction Lances, Suction Kit Without Level Switch see page → 1-62
- Connector Parts/Fittings see page → 1-84

### Spare Parts

- Custom Valve Balls/Valve Springs See page → 1-83



## 1.4 Solenoid Driven Metering Pump delta®

### 1.4.1 Solenoid Driven Metering Pump delta® with Regulated Solenoid Drive



Virtually an all-rounder and just the right solution for exacting requirements.

Capacity range 7.5 – 75 l/h, 25 – 2 bar

A high-end diaphragm metering pump with regulated solenoid drive. Virtually wear-free, extremely economical and with a self-bleeding dosing head design.

A range of different pump types and material combinations are available for virtually all metering applications. The optional 1-month process timer offers a variety of installation options. The pump achieves maximum precision even with fluctuating back pressure thanks to the regulated solenoid drive. This guarantees an exceptionally long service life even under maximum load. The integrated monitoring function optoGuard® reports faulty hydraulic conditions, such as overpressure or ruptured metering line. The large illuminated LC display guarantees excellent legibility of all displayed values. The capacity is shown directly in l/h.

#### Your benefits

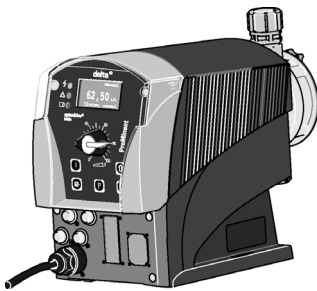
- Adjustment of the capacity directly in l/h
- Adaptation to existing signal transducers by external control via potential-free contacts with pulse step-up and step-down
- External control via 0/4 – 20 mA standard signal with adjustable assignment of signal value to stroke rate
- Organise work processes conveniently with the optional process timer. The alternative to timers or PLCs.
- Optional PROFIBUS® interface for connection to process control systems
- Suitable for use with almost all liquid chemicals, thanks to the available material combinations PVDF, clear acrylic and stainless steel
- Virtually wear-free solenoid drive: overload-proof and economical
- Everything in sight and under control: illuminated LED display and 3-LED display for operating, warning and error messages
- Reporting of hydraulic error statuses, blocked points of injection, ruptured metering lines and air and/or gas in the dosing head, which the integrated monitoring system optoGuard® detects
- Automatic bleed function
- Maximum dosing precision by compensation of pressure fluctuations
- Also ideal for continuous micro-metering from around 6 ml/h

#### Technical details

- External control via potential-free contacts with pulse step-up and step-down to adapt to existing signal transducers of 99:1 to 1:99
- Batch operation with max. 65,536 strokes/start pulse
- External control via 0/4 – 20 mA standard signal with adjustable assignment of signal value to stroke rate
- Stroke rate adjustment in 1 stroke/hour steps of 0 to 12,000 strokes/h and/or 200 strokes/min
- Stroke length continuously adjustable between 0 – 100% (recommended 30 – 100%)
- Connector for 2-stage level switch
- Dosing monitor input with adjustable number of tolerated defective strokes
- Optional optical diaphragm rupture indicator detects droplets behind the diaphragms
- Optional 4 – 20 mA output for remote transmission of stroke length and stroke rate
- "Concentration input" option for volume-proportional metering
- PROFIBUS® or CAN Open interface option
- Control module option with connecting option for chlorine, pH, ORP sensors or flow meter DFMa
- Wide-range electrical connection: 100 – 230 V, 50/60 Hz
- Optional relay module, can also be easily and reliably retrofitted

#### Field of application

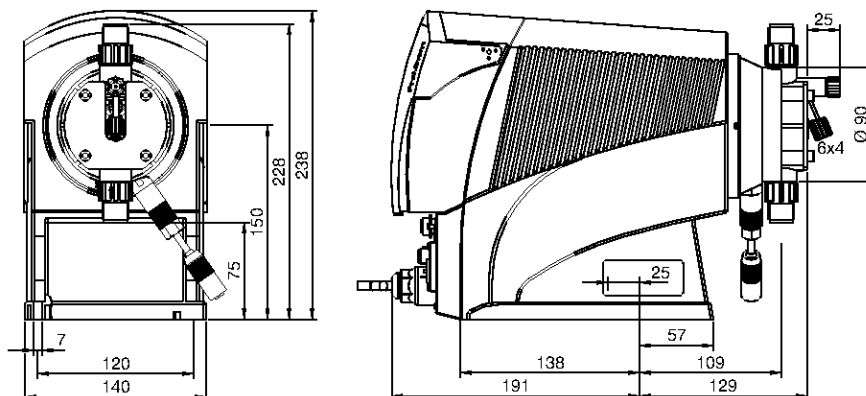
They can be used in all industries and integrated into automated processes. Maximum process reliability through the regulated solenoid drive and opto-Guard® monitoring function. The pump can work as a control unit with the process timer, for example in cooling water treatment



pk\_1\_131\_2

# 1.4 Solenoid Driven Metering Pump delta®

## Dimensional drawing of delta® Material version PV



P\_DE\_0042\_SW\_2\_SW3

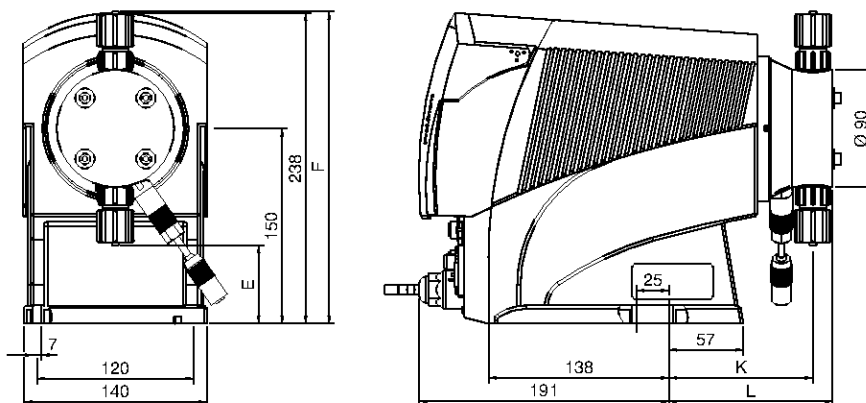
Dimensional drawing of delta® type 1612-0730, Material version PV - dimensions in mm

## Dimensional drawing of delta® Material version NP

Type	E	F
2508 / 1608	63	235
1612	60	239
1020	54	245
0730	53	246

Type	K	L
2508 / 1608	110	125
1612	110	125
1020	112	127
0730	112	127



P\_DE\_0046\_1\_SW3

Dimensional drawing of delta® without bleed valve, Material version NP - dimensions in mm



# 1.4 Solenoid Driven Metering Pump delta®

## Technical Data

Pump type	Max. pressure bar	Delivery rate l/h	Stroke volume ml/stroke	Max. stroke rate Strokes/min	Connector size outside Ø x inside Ø	Suction lift mWC	Shipping weight NPE, NPB, PVT / SST kg
<b>delta®</b>							
DLTa 1612	16	11.3	0.94	200	8 x 5 mm	6*	10/11
DLTa 1020	10	19.1	1.59	200	12 x 9 mm	5*	10/11
DLTa 0730	7	29.2	2.43	200	12 x 9 mm	5*	10/11
DLTa 0450	4	49.0	4.08	200	G 3/4 - DN 10	3*	10/11
DLTa 0280	2	75.0	6.25	200	G 3/4 - DN 10	2*	10/11
DLTa 2508	25	7.5	0.62	200	8 x 4** mm	5*	10/11
DLTa 1608	16	7.8	0.65	200	8 x 5** mm	5*	10/11
<b>delta® metering pumps with self-bleeding dosing head without bypass*</b>							
DLTa_1608	16	3.8	0.32	200	8 x 5 mm	1.8	10
DLTa_1612	16	6.5	0.54	200	8 x 5 mm	1.8	10
DLTa_1020	10	14.0	1.17	200	12 x 9 mm	1.8	10
DLTa_0730	7	28.0	2.33	200	12 x 9 mm	1.8	10



delta® metering pumps with dosing heads for higher-viscosity media have a 10-20 % lower capacity and are not self-priming. G 3/4 - DN 10 connector with d 16-DN 10 hose nozzle.

\* Suction lift (mWS) = Suction lift with filled dosing head and filled suction line

\*\* With stainless steel design 6 mm connector width

All data refers to water at 20 °C.

## Materials in Contact With the Medium

Design	Dosing head	Suction/pressure connector	Ball seat	Seals	Valve balls
NPE	Clear acrylic	PVC	EPDM	EPDM	Ceramic
NPB	Clear acrylic	PVC	FKM	FKM	Ceramic
PVT	PVDF	PVDF	PVDF	PTFE	Ceramic
SST (8-12 mm)	Stainless steel 1.4404	Stainless steel 1.4404	Ceramic	PTFE	Ceramic
SST (DN 10)	Stainless steel 1.4404	Stainless steel 1.4404	PTFE with carbon	PTFE	Ceramic

## Design of connectors

<b>Plastic</b>	8-12 mm	Hose squeeze connection
	DN 10	d16 DN 10 hose nozzle
<b>Stainless steel</b>	6-12 mm	Swagelok system
	DN 10	Rp 3/8 insert

Diaphragm with PTFE coating.

Repeatability of metering ±2% when used according to the operating instructions.

Permissible ambient temperature: -10 °C to 45 °C

Mean power consumption 78 W

Degree of protection IP 65, insulation class F



### Scope of supply

Metering pump with mains cable, connector kit for hose/tube connector as per table.



# 1.4 Solenoid Driven Metering Pump delta®

## 1.4.2 Identity Code Ordering System

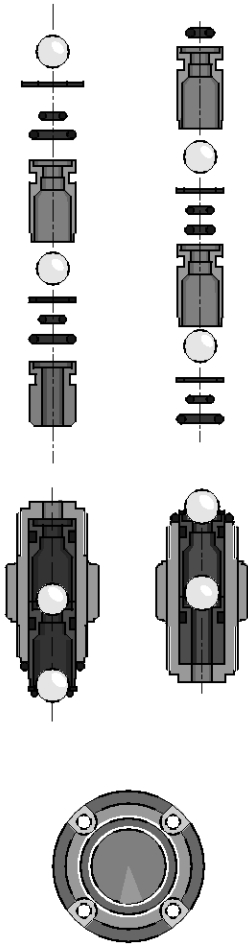
### delta® series

DLTa	Type	Capacity		DLTa	
		bar	l/h	bar	l/h
2508	25	7.5	0730	7	29.2
1608	16	7.8	0450	4	49.0
1612	16	11.3	0280	2	75.0
1020	10	19.1			
<b>Liquid end/valve material</b>					
PV	PVDF/PVDF not for pump type 2508				
NP	Acrylic glass/PVC only for pump type 2508, 1608, 1612, 1020, 0730				
SS	Stainless steel/stainless steel				
<b>Seal/diaphragm material</b>					
T	Only with PV and SS				
S	PTFE/diaphragm additionally with FKM coating for silica-laden media, not for types 0450 and 0280				
B	FKM-B, only with NP				
E	EPDM, only with NP				
<b>Liquid end version</b>					
0	Non-bleed, without valve spring, only with material TT and SS				
1	Non-bleed, with valve spring, only with material TT and SS				
2	Bleed version, without valve spring, only with material NP and PV				
3	Bleed version, with valve spring, only with material NP and PV				
4	HV version for higher-viscosity media, only for types 1608, 1612, 1020 and 0730				
7	self-bleeding without bypass, only for type 1608, 1612, 1020 and 0730, only for material PV				
<b>Hydraulic connections</b>					
0	Standard connectors as per technical data				
5	Discharge-side connector for 12/6 hose, suction-side standard, only with material NP and PV				
F	Connector on discharge side for 8/4 hose, standard on suction side, only with material NP				
<b>Diaphragm rupture indicator</b>					
0	Without diaphragm rupture indication				
1	With diaphragm rupture indicator, optical sensor				
2	With dual diaphragm system and diaphragm rupture indicator, pressure sensor, only with material SS				
<b>Version</b>					
0	With ProMinent logo				
<b>Power supply</b>					
U	Universal controller 100-230 V 50/60 Hz				
<b>Cable and plug</b>					
A	2 m Europe		D	2 m USA / 115 V	
B	2m Switzerland		1	2 m without plug	
C	2 m Australia				
<b>Relay, pre-set to</b>					
0	Without relay				
1	1 x changeover contact 230 V – 8 A, fault indicating relay N/C				
3	1 x changeover contact 230 V – 8 A, fault indicating relay N/O				
4	2 x N/O 24 V – 100 mA, fault indicating relay N/C + pacing relay				
5	2 x N/O 24 V – 100 mA, fault indicating relay N/O + pacing relay				
A	2 x N/O 24 V – 100 mA, switch-off and warning relay N/C				
C	1 x N/O 24 V – 100 mA, fault indicating relay N/C + 4 – 20 mA output				
F	with automatic bleed valve, 230 V, not for pump type 2508				
G	with automatic bleed valve, 24 V DC and relay output, not for pump type 2508				
<b>Accessories</b>					
0	Without accessories				
1	With foot and metering valve, 2m suction line and 5 m discharge line				
2	As 0 + measuring cup (only for type 2508, 1608, 1612, 1020, and 0730)				
3	As 1 + measuring cup (only for type 2508, 1608, 1612, 1020, and 0730)				
<b>Control version</b>					
0	Manual + external contact with pulse control				
3	Manual + external contact with pulse control + analogue 0/4-20 mA				
4	as 0 + 4-week process timer				
5	as 3 + 4-week process timer				
C	as 3 + CANopen				
M	As 3 + pH, ORP and chlorine + DFMA control module				
R	as 3 + PROFIBUS® interface, M12				
<b>Access code</b>					
0	Without access code				
1	With access code				
<b>Language</b>					
DE	german				
EN	english				
FR	french				
ES	spanish				
<b>Pause/level</b>					
0	Pause N.C. contact level, N.C. contact				



# 1.4 Solenoid Driven Metering Pump delta®

## 1.4.3 Spare Parts Kits, Replacement Diaphragms



pk\_1\_008

### Spare parts kits for delta®

Replacement parts kit for delta®, consisting of:

- 1 metering diaphragm
- 1 suction valve compl.
- 1 discharge valve compl.
- 2 valve balls
- 1 set of seals
- 1 connecting kit

Stainless steel version without suction and discharge valve compl.

Type	Materials in contact with the medium	Order no.
<b>Type 2508</b>	NPE2	1033172
	NPB2	1033171
	SST0	1030226
<b>Type 1608</b>	NPE2	1030620
	NPB2	1030611
	PVT2	1030225
	PVT4	1019066
	PVT7	1047831
	SST0	1030226
<b>Type 1612</b>	NPE2	1030536
	NPB2	1030525
	PVT2	1027081
	PVT4	1019067
	PVT7, NPT7	1047832
<b>Type 1020</b>	SST0	1027086
	NPE2	1030537
	NPB2	1030526
	PVT2	1027082
	PVT4	1019069
<b>Type 0730</b>	PVT7, NPT7	1047833
	SST0	1027087
	NPE2	1030621
	NPB2	1030612
	PVT2	1027083
<b>Type 0450</b>	PVT4	1019070
	PVT7, NPT7	1047837
	SST0	1027088
<b>Type 0280</b>	PVT2	1027084
	SST0	1027089
<b>Type 0280</b>	PVT2	1027085
	SST0	1027090

### Replacement diaphragms for delta® series

Type	Materials in contact with the medium	Order no.
<b>Type 2508/1608</b>	all materials	1030353
<b>Type 1612</b>	all materials	1000248
<b>Type 1020</b>	all materials	1000249
<b>Type 0730</b>	all materials	1000250
<b>Type 0450</b>	all materials	1000251
<b>Type 0280</b>	all materials	1025075

### Accessories

- Foot Valves see page → 1-44
- Injection Valve see page → 1-47
- Hoses, Pipes see page → 1-57
- Suction Lances, Suction Kit Without Level Switch see page → 1-62
- Connector Parts/Fittings see page → 1-84

### Spare Parts

- Custom Valve Balls/Valve Springs See page → 1-83



# 1.5 Precision Plunger Metering Pump mikro delta®

## 1.5.1 Precision Plunger Metering Pump mikro delta®



**Continuous and highly precise metering in the micro-litre range with the latest generation of pumps. Capacity range 150 – 1,500 ml/h, 60 – 20 bar**

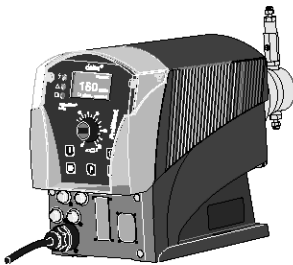


The precision plunger metering pump mikro delta® meters reliably, ultra-accurately and constantly in the microlitre range – one of the latest generation of solenoid metering pumps. Higher pressures can be achieved thanks to half the stroke length and double the stroke rate compared to the previous model.

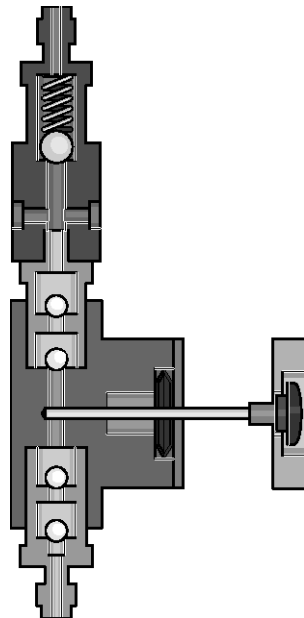
The mikro delta® delivers the same litre outputs as its predecessor model. It does this at half stroke length and double stroke rate. This enables higher pressures to be provided. Double ball valves and an integrated back pressure valve guarantee highly precise and pressure-independent metering in the 0 - 60 bar range. The capacity ranges from 1-250 µl/stroke or 0.001 - 1500 ml/h.

### Your benefits

- Ideally suited for continuous micro-metering from approx. 0.2 l/h
- Adaptation to existing signal transducers by external control via potential-free contacts with pulse step-up and step-down
- External control via 0/4 – 20 mA standard signal with adjustable assignment of signal value to stroke rate
- Organise work processes conveniently with the optional process timer - the alternative to timers or PLC
- Optional PROFIBUS® interface for connection to process control systems
- Virtually wear-free solenoid drive: Overload-proof and cost-effective
- Everything in sight and under control: Illuminated LED display and 3-LED display for operating, warning and error messages
- Maximum dosing precision of ± 0.5% by compensation of pressure fluctuations



P\_DE\_0003\_SW1



pk\_1\_010  
Liquid end

### Technical details

- Adjustment of the capacity directly in ml/h
- External control via potential-free contacts with pulse step-up and step-down to adapt to existing signal transducers of 99:1 to 1:99
- Batch operation with max. 65,536 strokes/start impulse
- External control via 0/4-20 mA standard signal with adjustable assignment of signal value to stroke rate
- Stroke rate adjustment in 1 stroke/hour steps of 0-6.000 strokes/h or 100 strokes/min
- Stroke length continuously adjustable between 0-100% (recommended 4-100%)
- Connector for 2-stage level switch
- PROFIBUS® or CAN Open interface option
- Wide-ranging electrical connection: 100-230 V, 50/60 Hz
- Optional relay module, can also be easily and reliably retrofitted

### Field of application

For continuous micro-metering in laboratories and in manufacturing for the addition of very small quantities of liquid.

### Materials in Contact With the Medium

Version	Dosing head	Suction/discharge connection	Valve balls	Valve seats	Piston	Valve seals	Plunger gaskets
TTT	PTFE with carbon	PTFE with carbon	ruby	ceramic	ceramic	PTFE	PTFE, white
TTG	PTFE with carbon	PTFE with carbon	ruby	ceramic	ceramic	PTFE	PTFE + graphite
SST	stainless steel 1.4571	stainless steel 1.4571	ruby	ceramic	ceramic	PTFE	PTFE, white
SSG	stainless steel 1.4571	stainless steel 1.4571	ruby	ceramic	ceramic	PTFE	PTFE + graphite

Permissible ambient temperature -10 °C ... +45 °C.



# 1.5 Precision Plunger Metering Pump mikro delta®

## Technical Data

Pump type	Delivery rate at max. back pressure			Plunger Ø mm	Connection size hose oØ x iØ mm	Connection size piping oØ mm	Suction lift mWC	Intake height mWC	Perm. pre-pressure suction side bar	Back pressure valve holding pressure bar	Shipping weight kg	
	bar	ml/h	µl/stroke									
<b>Version TT</b>												
100150 TT	10	145	24.17	2.5	1.75 x 1.15	–	6*	0.6**	5	2.5	10	
100600 TT	10	580	96.67	5	1.75 x 1.15	–	6*	2.0**	5	2.5	10	
101500 TT	10	1,480	246.67	8	3.20 x 2.40	–	4*	2.0**	5	1.5	10	
<b>Version SS</b>												
600150 SS	60	145	24.17	2.5	1.75 x 1.15	1.58	6*	0.6**	30	2.5	11	
400600 SS	40	580	96.67	5	1.75 x 1.15	1.58	6*	2.0**	20	2.5	11	
201500 SS	20	1,480	246.67	8	3.20 x 2.40	3.18	4*	2.0**	10	1.5	11	

\* Suction lift with primed liquid end and primed suction line

\*\* Intake height with clean and wetted valves. Feed chemical water at 20 °C. Intake height at 100 % stroke length, open vent screw and suction side as described.

Max. stroke rate 100 rpm.

All data refers to water at 20 °C.

## Electrical Connection

Nominal power, approx.	38 W
Nominal current, approx.	0.64 ... 0.42 A
Start-up peak current, easing within 50 ms	8 ... 4 A

## Dimensional drawing of mikro delta® Material version TT and SS

### Material version TT

Type	A	B
100150	243.9	150.1
100600	243.9	150.1
101500	256.2	150.1

### Material version TT

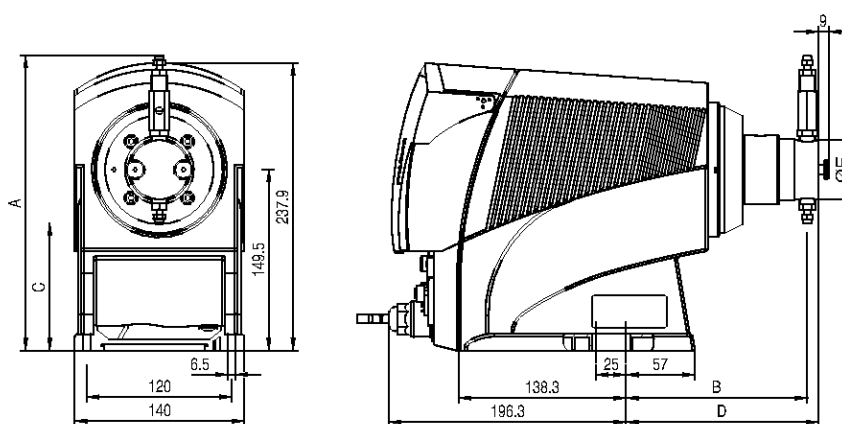
Type	C	D	E
100150	105.1	159.1	Ø 49
100600	105.1	159.1	Ø 49
101500	92.3	161.1	Ø 49

### Material version SS

Type	A	B
600150	256.2	150.1
400600	254.7	150.1
201500	256.2	150.1

### Material version SS

Type	C	D	E
600150	92.3	161.1	Ø 49
400600	99	159.1	Ø 49
201500	92.3	161.1	Ø 49



P\_DE\_0034\_SW\_mikro\_SW3

Dimensional drawing of mikro delta®, Material version TT and SS - dimensions in mm



# 1.5 Precision Plunger Metering Pump mikro delta®

## 1.5.2 Identity Code Ordering System

### mikro delta® series, version a

MDLa	Type	Capacity	
		bar	ml/h
	100150	10	145 (only TT)
	600150	60	145 (only SS)
	100600	10	580 (only TT)
	400600	40	580 (only SS)
	101500	10	1,480 (only TT)
	201500	20	1,480 (only SS)
<b>Dosing head</b>			
	SS	Stainless steel 1.4571	
	TT	PTFE with 25% carbon	
<b>Sealing material</b>			
	T	PTFE pure white	
	G	PTFE with graphite	
<b>Liquid end version</b>			
	0	no valve spring	
	1	with valve spring (not for type 100150 and 600150)	
<b>Hydraulic connection</b>			
	0	Standard according to technical data	
<b>Logo</b>			
	0	with ProMinent®-Logo	
	2	no ProMinent®-Logo	
<b>Electrical power supply</b>			
	U	100 – 230 V ± 10%, 50/60 Hz	
<b>Cable and plug</b>			
	A	2 m European	
	B	2 m Swiss	
	C	2 m Australian	
	D	2 m USA	
<b>Relay</b>			
	0	no relay	
	1	Fault indicating relay, normally energised, 1x changeover contact, 230 V - 8 A	
	3	Fault indicating relay, normally de-energised, 1 x changeover contact, 230 V - 8 A	
	4	as 1 + pacing relay, 2 x normally open contact, 24 V - 100 mA	
	5	as 3 + pacing relay, 2 x normally closed contact, 24 V - 100 mA	
<b>Accessories</b>			
	0	no accessories	
<b>Control variants</b>			
	0	manual + external contact with pulse control	
	3	manual + external contact w. pulse control + analogue 0/4-20 mA	
	4	as 0 + Process Timer (1 month)	
	5	as 3 + Process Timer (1 month)	
	C	CANopen	
	R	as 3 + PROFIBUS®-interface, M12	
<b>Access code</b>			
	0	no acces code	
	1	with acces code	
<b>Language</b>			
	DE	german	
	EN	english	
	FR	french	
	ES	spanish	
<b>Pause / Level</b>			
	0	Pause, n.c., level n.c.	



## 1.5 Precision Plunger Metering Pump mikro delta®

### 1.5.3 Spare Parts

#### Spare piston

Type	Order no.
100150/600150	803149
100600/400600	803181
101500/201500	803182

#### Spare piston packing PTFE pure white

Type	Order no.
100150/600150	485431
100600/400600	485430
101500/201500	485432

#### Spare piston packing PTFE with graphite

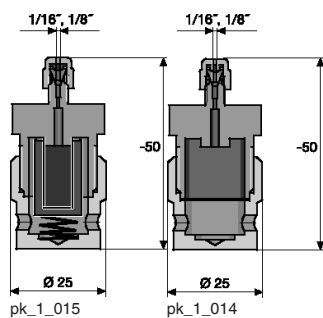
Type	Order no.
100150/600150	485428
100600/400600	485427
101500/201500	485429



# 1.5 Precision Plunger Metering Pump mikro delta®

## 1.5.4 mikro delta® Installation Accessories

### Stainless steel suction filter



Without check valve, interchangeable filter element. Material: 1.4404/1.4310/SS 316/PTFE

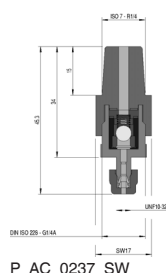
Connection		Order no.
1/16" - 15 µm	(For mikro 50 and 200 ml head) (Fig. pk_1_015) for tube Ø 1.58	803253
1/8" - 15 µm	(For mikro 500 ml head) (Fig. pk_1_015) for tube Ø 3.175	803254
1/8" - 60 µm	(For SK metering pumps) (Fig. pk_1_014) for tube Ø 3.175	803255

### Replacement filter elements for suction filter

		Order no.
Sintered elements	15 µm	403814
Screen mesh	60 µm	404523

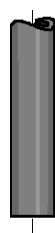
### Stainless steel injection valve

Housing in 1.4404 and springs in 1.4571, PTFE seals.



Size	Connection		Order no.
Ø 20 x 48 mm	1/16" - 1/4"	for tube Ø 1.58 and 1.75 mm	803251
Ø 22 x 56 mm	1/8" - 1/4"	for tube Ø 3.175 and 3.2 mm	803252

### Suction and discharge pipe



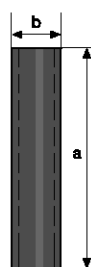
pk\_1\_013

	Permissible pressure	Order no.
	bar	
PTFE 1.75 mm o. Ø x 1.15 mm i. Ø (1/16")	12*	037414
PTFE 3.2 mm o. Ø x 2.4 mm i. Ø (1/8")	8*	037415
Stainless steel pipe 1.4435 1.58 mm o. Ø x 0.9 mm i. Ø (1/16")	400*	1020774
Stainless steel pipe 1.4435 3.175 mm o. Ø x 1.5 mm i. Ø (1/8")	400*	1020775

\* Permitted operating pressure at 20 °C, provided media is compatible and pipe is correctly connected.

### Nipple

1.4571 pipe nipple for mikro g/ 5 and gamma/ 4 SK for connecting 1/16" and 1/8" PTFE tubing.



pk\_1\_017

	Order no.
Nipple 1/16" o. Ø 1.58 mm x i. Ø 0.9 mm, length 25 mm	402315
Nipple 1/8" o. Ø 3.175 mm x i. Ø 1.5 mm, length 30 mm	402316
Nipple 1/8-1/16" o. Ø 3.175 - 1.58 mm, length 45 mm	402317



# 1.6 Pneumatic Metering Pump Pneumados

## 1.6.1 Pneumatic Metering Pump Pneumados b



The ProMinent® Pneumados is a pneumatically operated diaphragm metering pump

Capacity range 0.76 – 16.7 l/h, 16 – 2 bar

The metering pump Pneumados has a pneumatic power end and can be used in places without electrical supply voltage, with suction stroke performed by spring force.

The compression stroke is provided by compressed air applied to a diaphragm, which drives the PTFE-coated metering diaphragm. The suction stroke is actuated by a spring-loaded force. The pump capacity is adjusted by the stroke length and stroke rate.

### Your benefits

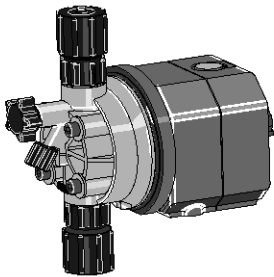
- No electrical supply voltage needed
- Material version PVDF and stainless steel
- Stroke rate of up to 180 strokes/min
- Spring-loaded valves for higher-viscosity media
  
- Use wherever no electrical supply voltage is available

### Technical details

- Compressed air requirement approx. 50 l/h, non-oiled compressed air preferred
- Length of the compressed air line between the valve and pump max. 1 metre
- Diaphragm deflection from the centre position

### Field of application

- Metering and handling of animal feed
- Use in car wash facilities

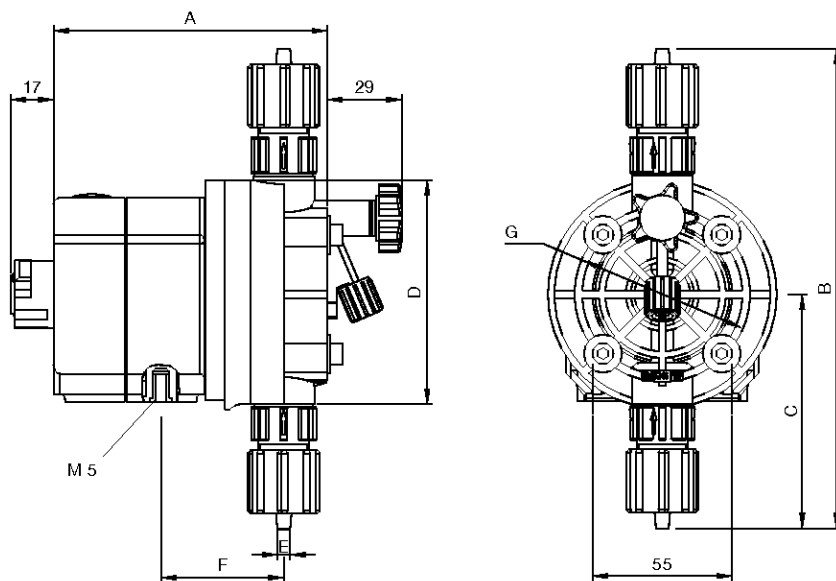


P\_PN\_0005\_SW

### Dimensional drawing for Pneumados b Material design PVDF

Type	A	D	E	F
1000	103	70	6x4	48
1601	105	70	6x4	49
1602	103	70	6x4	48
1005	107	90	8x5	48
0708	109	90	8x5	50
0413	109	90	8x5	50
0220	111	90	12x9	52

Type	B	C	G
1000	164	78	50
1601	176	90	50
1602	172	88	50
1005	189	92	66
0708	190	93	66
0413	181	88	66
0220	181	88	66



P\_PN\_0009\_SW3

Dimensional drawing of Pneumados b, Material version PVC - dimensions in mm



# 1.6 Pneumatic Metering Pump Pneumados

## Technical Data

Pump type	Delivery rate at max. back pressure			Number of strokes Strokes/min	Connector sizes	Suction lift mWC	Shipping weight kg
	bar	l/h	ml/stroke				
PNDb 1000	10	0.76	0.07	180	6 x 4	6.0	1.0 - 1.7
PNDb 1601	16	1.00	0.09	180	6 x 4	6.0	1.0 - 1.7
PNDb 1602	16	1.70	0.16	180	6 x 4	6.0	1.0 - 1.7
PNDb 1005	10	3.80	0.35	180	8 x 5*	5.0	1.2 - 1.9
PNDb 0708	7	6.30	0.58	180	8 x 5	4.0	1.2 - 1.9
PNDb 0413	4	10.50	0.97	180	8 x 5	3.0	1.2 - 1.9
PNDb 0220	2	16.70	1.55	180	12 x 9	2.0	1.2 - 1.9

All data refers to water at 20 °C.

\* Stainless steel version 6 x 4 mm

Filtered compressed air 6 bar ±10%

Air consumption at 1 m feed line 47 l/min

Max. stroke rate 180 strokes/min

## Connectors

Material	Øo x Øi	Version
For PV	6, 8 and 12 mm	Hose nozzle with clamping ring
For stainless steel SS	6, 8 and 12 mm	Swagelok system screw connection

## Materials in Contact With the Medium

	Liquid end	Intake/pressure connection	Ball seal	Seals	Balls
PVT	PVDF	PVDF	PVDF	PTFE	Ceramic
SST	Stainless steel M. No. 1.4404	Stainless steel M. No. 1.4404	Ceramic	PTFE	Ceramic

DEVELOPAN® metering diaphragm with PTFE coating.

Metering reproducibility of ±2% when used in accordance with operating instructions. Permissible ambient temperature -10 °C to +50 °C.



# 1.6 Pneumatic Metering Pump Pneumados

## 1.6.2 Identity Code Ordering System

### Pneumados product range, version b

PNDb	Type	Capacity	
		bar	l/h
	1000	10.0	0.76
	1601	16.0	1.00
	1602	16.0	1.70
	1005	10.0	3.80
	0708	7.0	6.30
	0413	4.0	10.50
	0220	2.0	16.70
<b>Liquid end/Valve material</b>			
	PV	PVDF/PVDF	
	SS	SS Stainless steel 1.4404/1.4404	
<b>Seal/diaphragm material</b>			
	S	Metakorin diaphragm with Viton-B seal	
	T	Standard diaphragm with PTFE seal	
<b>Liquid end version</b>			
	0	Non-bleed, without valve spring only for SS	
	1	Non-bleed, with valve spring only for SS	
	2	With bleed valve, without valve spring only for PV	
	3	With bleed valve, with valve spring only for PV	
<b>Hydraulic connectors</b>			
	0	Standard connection as per technical data	
<b>Version</b>			
	0	With ProMinent logo	
<b>Power connector</b>			
	0	G 1/4 connector, compressed air 6 bar	
	1	6 x 4 connector, compressed air 6 bar	
<b>Control type</b>			
	0	Single-acting (standard), without control valves	
	1	Electropneumatic actuation, with electric clock generator 24 V DC, solenoid valve 24 V DC, wall bracket and mounting material for solenoid valve	
<b>Approvals</b>			
	01	CE	

1



# 1.6 Pneumatic Metering Pump Pneumados

## 1.6.3 Ordering Example for Installation Accessories

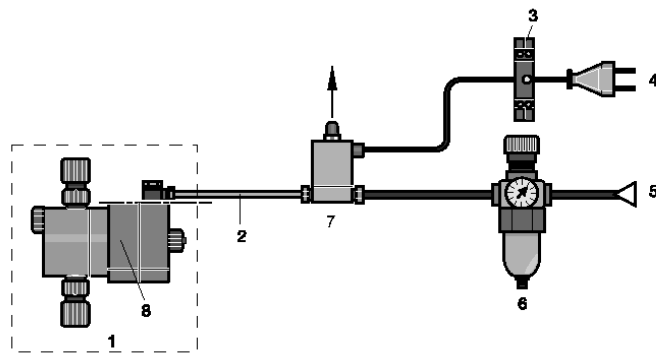
	Order no.
1 x PVC foot valve with filter and Ø 6 back check valve	924557
1 x PVC injection valve with Ø 6 - R 1/2 ball check valve	924680
1 x 5 m suction, discharge and compressed air line, PE 6 x 4 mm	1004492
1 x compressed air connector for Pneumados G 1/4 - 6 mm quick release connector LCK 1/4"	354641
1 x Pneumados wall bracket including fixtures and fittings	1030028

For electrical controller

	Order no.
1 x 3/2-way solenoid valve MHE3, 24 V DC, with connection fittings 6/4mm	1030275
1 x retaining bracket for solenoid valve	1030276
1 x sound absorber for solenoid valve	1030277
1 x electrical pulse generator 30-180 strokes/min., 24Vdc	1030351

### Electrical/Pneumatic controller

Schematic diagram



- 1 Pneumados supply limit
- 2 PE 6x4 max. 1 m
- 3 Electrical pulse generator
- 4 230 V/50-60 Hz mains connector
- 5 Compressed air 6 bar
- 6 Maintenance unit
- 7 3/2 way solenoid valve with sound absorber
- 8 Pneumados

pk\_1\_035



## 1.6 Pneumatic Metering Pump Pneumados

### 1.6.4 Spare Parts Kits

Replacement parts kit for Pneumados b consisting of

- 1 Metering diaphragm
- 1 Suction connector compl.
- 1 Discharge connector compl.
- 2 Valve balls
- 1 Set of seals
- 1 Connecting kit

**Stainless steel version without suction and discharge valve compl.**

Type		Order no.
Type 1000	PPT, NPT, PVT	1023107
	SST	1001729
Type 1601	PPT, NPT, PVT	1023108
	SST	1001730
Type 1602	PVT, PPT, NPT	1023109
	SST	1001731
Type 1005	PVT, PPT, NPT	1023110
	SST	1001732
Type 0708	PVT, PPT, NPT	1023111
	SST	1001733
Type 0413	PVT, PPT, NPT	1023112
	SST	1001734
Type 0220	PVT, PPT, NPT	1023113
	SST	1001735

#### Accessories

- Foot Valves see page → 1-44
- Injection Valve see page → 1-47
- Hoses, Pipes see page → 1-57
- Suction Lances, Suction Kit Without Level Switch see page → 1-62
- Connector Parts/Fittings see page → 1-84

#### Spare Parts

- Custom Valve Balls/Valve Springs See page → 1-83





# 1.7 Peristaltic Pumps DULCO®flex

## 1.7.1 Peristaltic Pump DULCO®flex DF2a



The optimum pump product range for use in swimming pools, hot tubs, and spa zones.

Capacity range 0.4 – 2.4 l/h at max. 1.5 bar back pressure



The peristaltic pump DULCO®flex DF2a meters chemicals functionally, cost-effectively and quietly – ideal for use in swimming pools, hot tubs, and in spa and wellness facilities.

The feed chemical is transported by the rotor squeezing the hose in the direction of flow. This explains why there is no need for valves. The feed chemical is thus handled with care. Typical applications: wherever lower pump pressure is sufficient. For example when metering conditioners in private pools.

### Your benefits

- Smooth inner wall reduces deposits.
- Hose materials: PharMed® or Viton®
- Virtually silent operation
- Simple handling
- Enhanced service life of the hose due to spring-loaded rollers, which keep the rolling pressure constant
- Robust and protected against spray water from all sides: Housing made of impact-resistant and chemical-resistant PPE

### Technical details

- Self-priming against max. 1.5 bar
- Control or flow control via ON/OFF power supply
- Degree of protection IP 65
- OEM versions on request

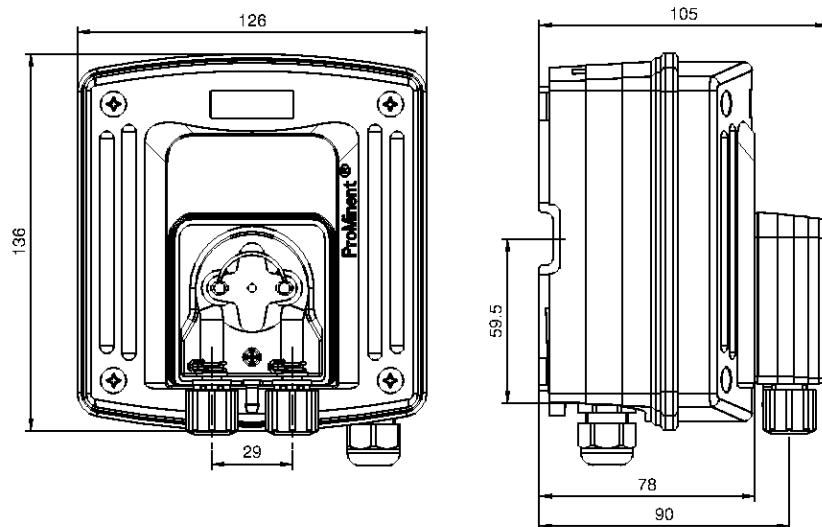
### Field of application

- Meters conditioners in private pools
- Meters belt lubricants in bottling machines
- Meters cleaning agents in dishwashers



pk\_1\_130

### Dimensional drawing of DULCO®flex DF2a



P\_DX\_0051\_SW3

Dimensional drawing of DULCO®flex DF2a - dimensions in mm



# 1.7 Peristaltic Pumps DULCO®flex

## 1.7.2 Identity Code Ordering System

### DULCO®flex product range, version DF2a

DF2a	Type	Capacity
		<b>bar</b> <b>l/h</b>
	0204	1.5    0.4
	0208	1.5    0.8
	0216	1.5    1.6
	0224	1.5    2.4
<b>Hose material</b>		
	P	PharMed®
	V	Viton® for fragrances (special version)
<b>Version</b>		
	0	With ProMinent® logo
	1	Without ProMinent® logo
<b>Hydraulic connectors</b>		
	0	Connector for hose 6/4 mm suction and discharge side
	9	Connector for hose 10/4 mm discharge side only
<b>Power supply</b>		
	A	230 V ± 10%, 50/60 Hz
<b>Cable and plug</b>		
	0	No mains lead
	1	With 2 m mains lead, open ended
	A	With mains cable, European plug
<b>Drive</b>		
	0	Mains ON/OFF
<b>Installation</b>		
	W	Wall mounted
<b>Accessories</b>		
	0	No accessories

Viton® and PharMed® are registered trademarks.

### Technical Data

Type	Capacity		Frequency rpm	Connector size o dia. x i dia.	Suction lift mWC	Intake head m WC
	bar	l/h				
0204	1.5	0.4	5	6x4/10x4	4	3
0208	1.5	0.8	10	6x4/10x4	4	3
0216	1.5	1.6	20	6x4/10x4	4	3
0224	1.5	2.4	30	6x4/10x4	4	3

Admissible ambient temperature: 10-45 °C  
 Power consumption approx.: 5 W  
 Switching duration: 100%  
 Enclosure rating: IP 65

All data refers to water at 20 °C.

### Spare Hoses

	Order no.
Spare hose set, complete, PharMed®	1009480
Replacement hose compl. Viton®	1023842



# 1.7 Peristaltic Pumps DULCO®flex

## 1.7.3

### Peristaltic Pump DULCO®flex DF3a



Provides for the perfect atmosphere in spa and wellness zones.

Capacity range 0.4 – 2.4 l/h at max. 1.5 bar back pressure

Fragrance metering in spa and wellness facilities: efficient and high-performance with the peristaltic pump DULCO®flex DF3a. They are used wherever small volumes of fragrances need to be metered.

Meters infusions in saunas, steam rooms and whirlpools. The metering pump is equipped with a time control, which can control two other peristaltic pumps for other essences. As the essences cannot be placed undiluted on the oven in saunas, the DF3a has a relay to control the dilution water. To save essences when the sauna is not in use, the pump has a contact input to which a door contact or motion detector can be connected. Essences are therefore only metered when the sauna is in use.

#### Your benefits

- Employees can therefore operate it quickly: It can be operated simply and reliably with language-neutral user guidance and programming via four buttons on the front
- Quietly operating, does not disturb the spa and wellness experience: Low-noise synchronous motor
- Ideal for retrofitting: Simple to integrate into existing systems
- Efficient operation by economical operation: "Meters only when needed"

#### Technical details

- Viton® hose material, specifically for the metering of fragrances in spa and wellness zones
- Control of dilution water by a solenoid valve
- Spring-mounted rollers for uniform roller pressure and increased service life of the hose
- Three float switch inputs

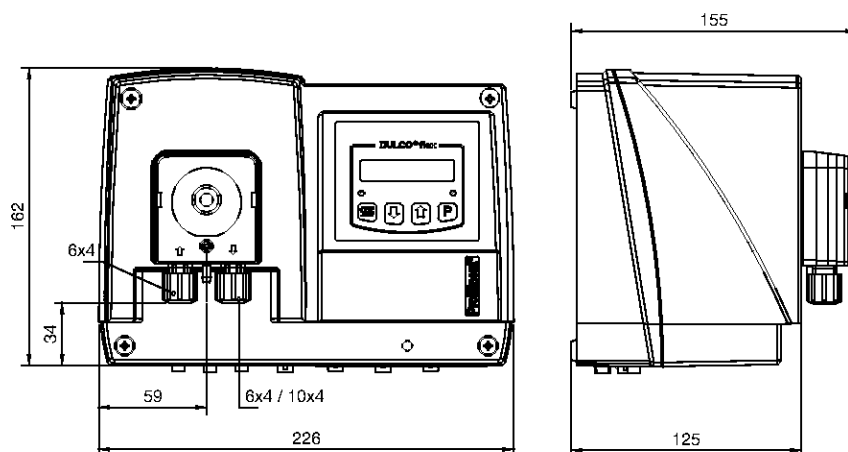
#### Field of application

For saunas, steam rooms and hot tubs



P\_DX\_0003\_SW1

#### Dimensional drawing of DULCO®flex DF3a



P\_DX\_0050\_SW3

Dimensional drawing of DULCO®flex DF3a - dimensions in mm



# 1.7 Peristaltic Pumps DULCO®flex

## 1.7.4 Identity Code Ordering System

### DULCO®flex product range, version DF3a

DF3a	Application	Fragrance metering					
D	Installation	Wall mounting					
W	Version	with LCD, with ProMinent® logo					
		with LCD, without ProMinent® logo					
	Type	Capacity		bar		I/h	
	0204	1.5	0.4	0216	1.5	1.6	
	0208	1.5	0.8	0224	1.5	2.4	
	Hose material	Viton®					
	V	Hydraulic connectors					
	0	Standard					
	9	Special connection 10x4 discharge side					
	Power supply	A 230 V, 50/60 Hz					
	Cable and plug	Without cable		A	With cable 2.0 m; Euro connector		
	1	With cable 2.0 m; open end		B	With cable 2.0 m; Swiss connector		
	Accessories	0 Without accessories					
	1	Metering valve and foot valve; suction and discharge line					
	Hardware extension	0 None					
	Language	00 Language-neutral					
	Relay	0 Without relay					
	Application relays	0 None					
	1	Solenoid valve					
	2	Solenoid valve + pump 2					
	3	Solenoid valve + pump 2 + pump 3					
	Control versions	0 External contact					
	Pause/level	0 Pause break contact + level break contact					
	1	Pause make contact + level break contact					
	2	Pause break contact + level make contact					
	3	Pause make contact + level make contact					
	Approvals	01 CE-Symbol					

Viton® is a registered trademark.

### Technical Data

Type	Capacity		Frequency rpm	Connector size o dia. x i dia.	Suction lift mWC	Intake head m WC
	bar	I/h				
0204	1.5	0.4	5	6 x 4	4	2
0208	1.5	0.8	10	6 x 4	4	2
0216	1.5	1.6	20	6 x 4	4	2
0224	1.5	2.4	30	6 x 4	4	2

Permissible ambient temperature: 10-45 °C

Approx. power consumption: 24 W

Switching duration: 100%

Enclosure rating: IP 65

All data refers to water at 20 °C.

### Spare Hoses

Replacement hose compl. Viton®

Order no.

1023842



# 1.7 Peristaltic Pumps DULCO®flex

## 1.7.5 Peristaltic Pump DULCO®flex DF4a



The optimum pump for use in swimming pools, hot tubs and spa and wellness facilities.

Capacity range 1.5 – 12 l/h, 4 – 2 bar

The peristaltic pump DULCO®flex DF4a for metering flocculants and activated charcoal treats water precisely and accurately. It is ideal for use in swimming pools, hot tubs or spa and wellness facilities. An operating pressure up to 4 bar is possible.

There are three designs of DULCO®flex DF4a available.

- 1 Metering chemicals
- 2 Metering activated charcoal
- 3 Metering flocculants

This guarantees that the operating menu, inputs and outputs are always adapted to the respective application.

### Your benefits

- Language-neutral user navigation
- Continuous adjustment of capacity
- Hose material in PharMed®
- Full control, as the capacity is shown in l/h in the display
- Safe and reliable operation: Flow volume and concentration can be entered reproducibly
- Long service life: Spring-loaded rollers stabilise rolling pressure and reduce wear and tear on the hose
- No irritating noise: low-noise stepper motor with ball bearing drive shaft
- Fast to use: simple installation and retrofitting, even with existing systems
- Guaranteed safety: Hose rupture monitoring system and fault indicating relay register and report all problems.
- Suitable for use around the clock – 100% switch-on time
- Operating hours counter for the peristaltic pump - always stay informed.



P\_DX\_0003\_SW1

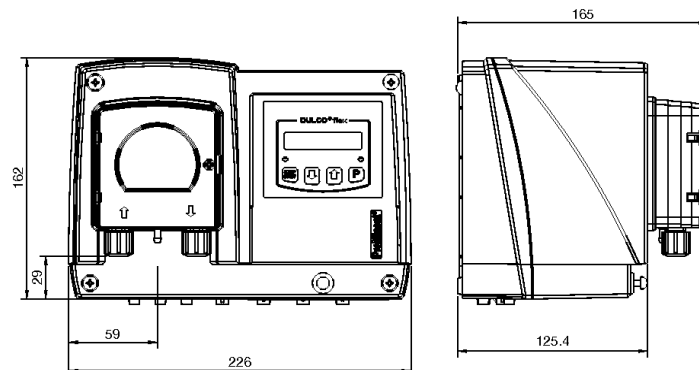
### Technical details

- Priming function
- Night setback
- Inputs for contacts and analogue signals
- Housing degree of protection IP 65
- One or two-stage float switch input
- Operating hour counter
- CANopen interface

### Field of application

Swimming pool water treatment

### Dimensional drawing of DULCO®flex DF4a



DF4a\_SW3

Dimensional drawing of DULCO®flex DF4a - dimensions in mm



# 1.7 Peristaltic Pumps DULCO®flex

## 1.7.6 Identity Code Ordering System

### DULCO®flex product range, version DF4a

<b>DF4a</b>	<b>Application</b>	
0	Chemical pump	
A	Activated charcoal metering	
F	Flocculant metering	
	<b>Installation</b>	
W	Wall mounting	
	<b>Version</b>	
0	With ProMinent® logo	
1	Without ProMinent® logo	
	<b>Type Capacity</b>	
	<b>bar l/h</b>	
04004	4.0 0.35	
04015	4.0 1.50	
03060	2.5 6.00	
02120	2.0 12.00	
	<b>Hose material</b>	
P	PharMed®	
	<b>Hydraulic connectors</b>	
0	Standard connector 6x4	
9	Special connector 10x4 discharge side	
	<b>Power supply</b>	
U	100 - 240 VAC, 50/60 Hz	
	<b>Cable and plug</b>	
0	Without cable	
1	With cable 2.0 m; open end	
A	With cable 2.0 m; Euro connector	
B	With cable 2.0 m; Swiss connector	
	<b>Accessories</b>	
0	Without accessories	
2	With lip-seal metering valve PCB and 10 m PE metering line	
	<b>Hardware extension</b>	
0	None	
	<b>Language default</b>	
00	Language-neutral	
	<b>Relay</b>	
1	Fault signalling relay, drop-out action	
3	Fault signalling relay, pick-up action	
	<b>Control versions</b>	
8	manual + external contact and analogue 0/4 - 20 mA + 0 - 10 V	
C	as "8" and CANopen	
D	such as "8" and CANopen and CAN connector	
	<b>Further input</b>	
1	Pause + 2-stage level + AUX1	
2	Pause + 1-stage level + AUX1 + AUX2	
	<b>Pause/level</b>	
0	Pause break contact + level break contact	
	<b>Approvals</b>	
01	CE-Symbol	

PharMed® is a registered trademark.

### Technical Data

Priming lift	3 mWS	Approx. power consumption:	24 W
Suction lift	4 mWS	Switching duration:	100%
Speed	0 - 85 RPM	Degree of protection:	IP 65
Permissible ambient temperature:	10-45 °C		

All data refers to water at 20 °C.

### Spare Hoses

	Order no.
For type 04004 PharMed®	1034997
For type 04015 PharMed®	1030722
For type 03060 PharMed®	1030723
For type 02120 PharMed®	1030774



## 1.8 Flow Meter DulcoFlow®

### 1.8.1

### Flow Meter DulcoFlow®

**Your reliable control unit: unobtrusively measures, monitors and detects faults.**

**For the measurement of pulsating volumetric flows within the range of 0.03 ml/stroke to 10 ml/stroke**

The flow meter DulcoFlow® reliably measures pulsating flows in the range above 0.03 ml/stroke based on the ultrasound measuring principle. The flow meter achieves maximum chemical resistance, as all wetted parts are made of PVDF and PTFE.

The device works on the ultrasound measuring principle. It was developed specifically for measuring small pulsating volumetric flows. It is installed around 30 cm downstream of the metering pump, so that there is still sufficient pulsation in the flow. All liquids that conduct ultrasound waves can be measured.

#### Your benefits

- Maximum chemical resistance by the use of PVDF and PTFE
- No electrical conductivity of the medium is needed
- Measurement above stroke volumes of approx. 30 µl
- Detection of gas bubbles in the feed chemical
- No bottlenecks in the measuring tube. Media with small undissolved particles or with increased viscosity can be measured
- A 0/4 -20 mA current output and a frequency output are available for remote transmission of the measured values.
- Use as a single stroke monitor with feedback to the pump. This ensures that the metering stroke is performed within an adjustable lower and upper limit
- Summation of the metering volume measured with stroke counter
- Intuitive user guidance and simple programming

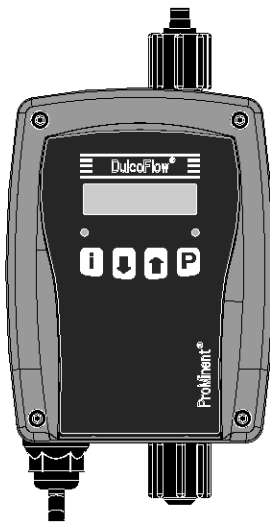
#### Technical details

- 2 LEDs for status display and stroke feedback
- 2-line graphic display
- 0/4 – 20 mA standard signal and 0 – 10 kHz frequency output for remote transmission of the measured value
- Compact, chemically-resistant plastic housing
- Measuring accuracy ±2% if the device has been calibrated to the chemical to be measured. Max. operating pressure 16 bar.

#### Field of application

- Measurement of the chemical consumption, for example in surface treatment
- Guaranteed metering, for example in the paper industry
- Measured value transmission and pump control by the central control system
- Measurement of aggressive chemicals
- Not suitable for liquids, which have minimal acoustic conductivity, e.g. sodium hydroxide (NaOH) with a concentration of greater than around 20%
- **We recommend first testing the measurability with emulsions and suspensions**

NEW

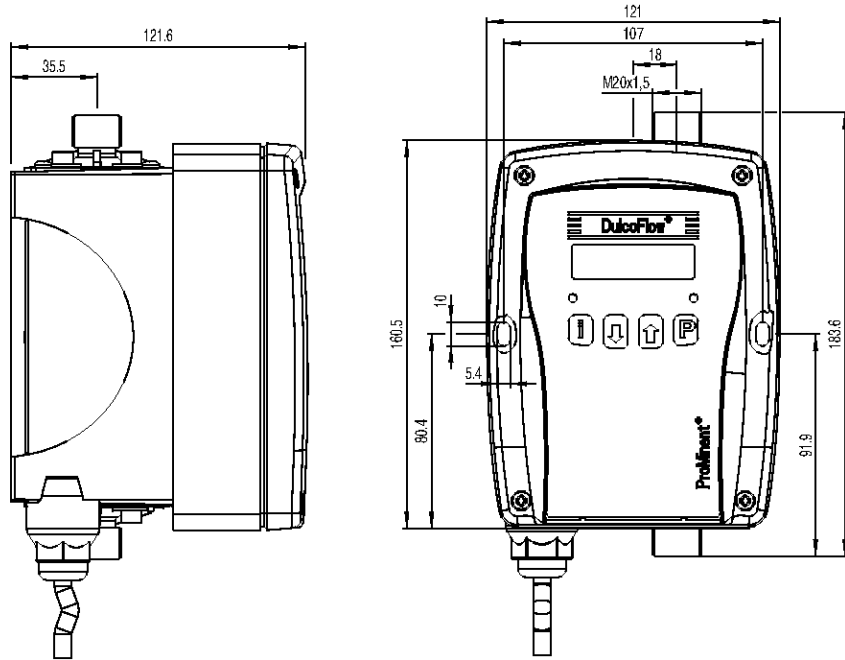


P\_DFI\_0002\_SW1



# 1.8 Flow Meter DulcoFlow®

Dimensional drawing of DulcoFlow®



P\_DFI\_0003\_SW\_Dulcoflow\_SW3  
Dimensional drawing of DulcoFlow® - dimensions in mm

## Technical Data

Type	Type 05	Type 08
<b>Max. operating pressure</b>	16 bar	16 bar
<b>Smallest measurable stroke volume</b>	Approx. 0.03 ml/stroke pulsing	Approx. 0.05 ml/stroke pulsing
<b>Contact output with individual stroke detection</b>	Open collector, 1 contact per stroke	Open collector, 1 contact per stroke
<b>Frequency output</b>	Open collector, up to 10 kHz at maximum flow (parametrisable)	Open collector, up to 10 kHz at maximum flow (parametrisable)
<b>Analogue output for series</b>	Parametrisable, max. load 400 Ω Beta® 1000 – 0413/0713, gamma/ X 1602 – 0414/0715, delta® 1608 – 1612	Parametrisable, max. load 400 Ω Beta® 1604 – 0420, gamma/ X 1604 – 0424, delta® 1020 – 0450, Sigma/ 1





# 1.8 Flow Meter DulcoFlow®

## Identity code ordering system for DulcoFlow® ultrasound flow meter

DFMa	Type (for pump series)	
08	Beta® 1604 – 0420, gamma/ X 1604 – 0424, delta® 1020 – 0450, Sigma/ 1	
	<b>Sealant material</b>	
	E	EPDM
	V	FKM
	T	PTFE
	<b>Hydraulic connection</b>	
	1	6/4 mm
	2	8/5 mm
	3	12/9 mm
	<b>Electrical connection, cable</b>	
	A	100 - 230 V AC, 2 m European
	B	100 - 230 V AC, 2 m Swiss
	C	100 - 230 V AC, 2 m Australian
	D	100 - 230 V AC, 2 m USA
	<b>Signal output</b>	
	0	No output
	1	Current output
	2	Contact output
	3	Current output and contact output
	4	Current output for delta® with control module
	<b>Version</b>	
	0	With ProMinent® logo
	<b>Accessories</b>	
	0	Without accessories



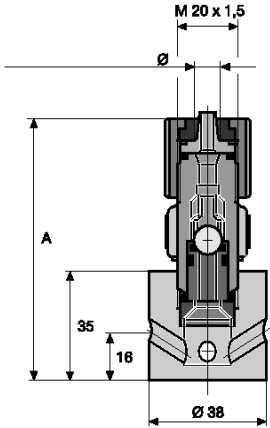
# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.1 Foot Valves for Low-Pressure Metering Pumps

At the end of the suction line as protection against contamination and vacuum breaker, with filter meshes and ball check. With 6/4, 8/5, 12/6, 12/9 connectors with ceramic weight.

### PPE Foot Valve

PP body, EPDM seals

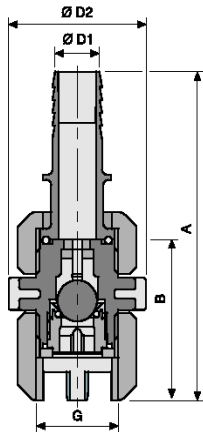


pk\_1\_038

Connector	oØ x iØ mm	A mm	Fig.	Order no.
6/4 for hose	6 x 4	84	pk_1_038	924558
8/5 for hose	8 x 5	84	pk_1_038	809468
12/9 for hose	12 x 9	87	pk_1_038	809470
10/4 for hose	10 x 4	87	pk_1_038	1002916
12/6 for hose	12 x 6	87	pk_1_038	809469
6/4 for hose	6 x 4	57	P_AC_0207_SW	914554
G 3/4 - DN 10 for hose	20 x 15 and 24 x 16	93	P_AC_0206_SW	809465

### PPB Foot Valve

PP body, FKM (FKM) seals

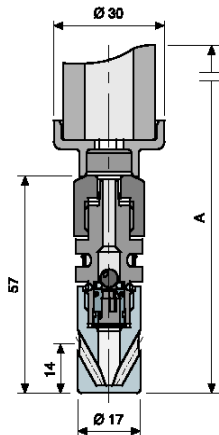


P\_AC\_0206\_SW

Connector	oØ x iØ mm	A mm	Fig.	Order no.
6/4 for hose	6 x 4	84	pk_1_038	924559
8/5 for hose	8 x 5	84	pk_1_038	924683
12/9 for hose	12 x 9	87	pk_1_038	924684
10/4 for hose	10 x 4	87	pk_1_038	1002915
12/6 for hose	12 x 6	87	pk_1_038	924685
G 3/4 - DN 10 for hose	20 x 15 and 24 x 16	93	P_AC_0206_SW	790189

### PCB Foot Valve

PVC housing, FKM seals.



P\_AC\_0207\_SW

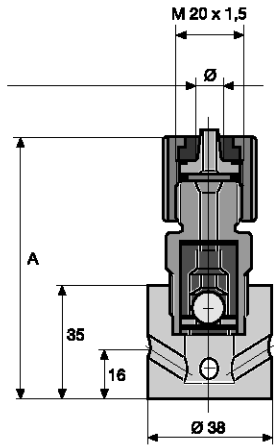
Connector	oØ x iØ mm	A mm	Fig.	Order no.
6/4 for hose	6 x 4	84	pk_1_038	924557
8/5 for hose	8 x 5	84	pk_1_038	924562
12/9 for hose	12 x 9	87	pk_1_038	924564
10/4 for hose	10 x 4	87	pk_1_038	1002917
12/6 for hose	12 x 6	87	pk_1_038	924563
6/4 for hose	6 x 4	57	P_AC_0207_SW	914505
G 3/4 - DN 10 for hose	20 x 15 and 24 x 16	93	P_AC_0206_SW	809464



# 1.9 Hydraulic/Mechanical Installation Accessories

## PVT Foot Valve

PVDF housing, PTFE seals.

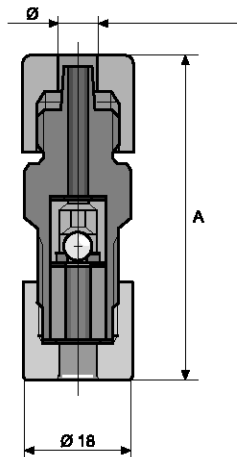


pk\_1\_040

Connector	oØ x iØ mm	A mm	Fig.	Order no.
6/4 for hose	6 x 4	79	pk_1_040	1024705
8/5 for hose	8 x 5	79	pk_1_040	1024706
12/9 for hose	12 x 9	82	pk_1_040	1024707
DN 10 for hose	24 x 16	92	P_AC_0206_SW	1029471

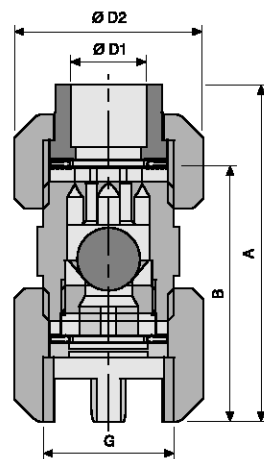
## Foot Valve TTT

PTFE housing and seals, for connections 6/4, 8/5, 12/6, 12/9 with ceramic weight.



pk\_1\_039

Connector	oØ x iØ mm	A mm	Fig.	Order no.
6/4 for hose	6 x 4	79	pk_1_040	809455
8/5 for hose	8 x 5	79	pk_1_040	809471
12/9 for hose	12 x 9	82	pk_1_040	809473
12/6 for hose	12 x 6	82	pk_1_040	809472
6/4 for hose	6 x 4	52	pk_1_039	914349
G 3/4 - DN 10	d16 welding sleeve	93	P_AC_0202_SW	809466



P\_AC\_0202\_SW

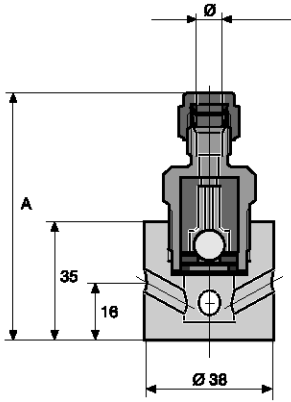


# 1.9 Hydraulic/Mechanical Installation Accessories

1

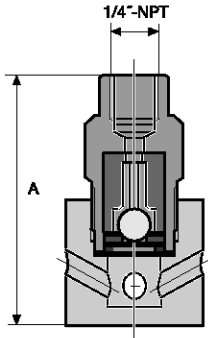
## Foot Valve SST

Stainless steel 1.4404 housing, PTFE seals. A support sleeve is required for tube connections 6/4, 8/5, 12/9.

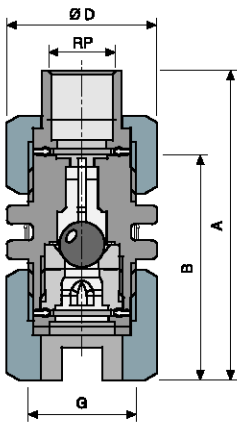


P\_AC\_0229\_SW1

Connector	oØ x iØ mm	A mm	Fig.	Order no.
6/4 for pipe 6 x 5 mm / hose	6 x 4	74	P_AC_0229_SW1	924568
8/5 for pipe 8 x 7 mm / hose	8 x 5	74	P_AC_0229_SW1	809474
12/9 for pipe 12 x 10 mm / hose	12 x 9	77	P_AC_0229_SW1	809475
1/4" NPT for SS2		70	pk_1_031_SW1	924567
G 3/4 - DN 10 with socket Rp 3/8		67	P_AC_0204_SW	809467



pk\_1\_031\_SW1

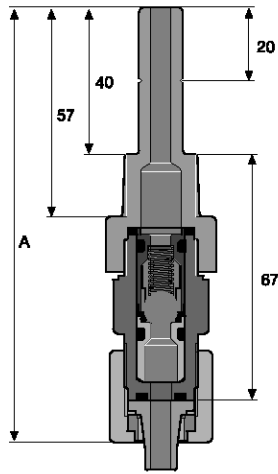


P\_AC\_0204\_SW



# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.2 Injection Valve for Low-Pressure Metering Pumps



pk\_1\_105

Injection valves are mounted at the point of injection to connect the metering line. They protect against backflow and generate a defined back pressure.

In the PP, PVC, PVDF and stainless steel versions, the injection valve with ball check is spring-loaded with a Hastelloy C spring, priming pressure approx. 0.5 bar (with R1/4 connector, spring made of stainless steel no. 1.4571, priming pressure approx. 1 bar). They may be fitted in any position.

The TT version without a spring is suitable for vertical installation from below. Valve springs can be retrofitted.

**Important:** Injection valves are not absolutely leak-tight shut-off devices!

### PPE Injection Valve

PP housing, EPDM seals with non-return ball, spring-loaded with Hastelloy C spring, prepressure approx. 0.5 bar with extended screwed socket.

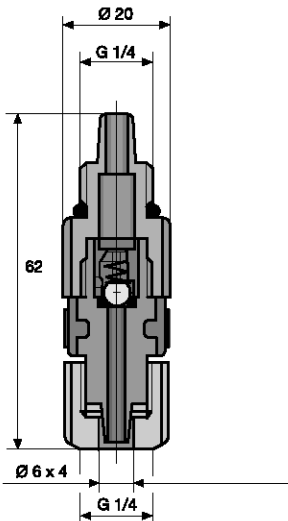
#### Applications when using appropriate metering lines

25 °C - max. operating pressure 16 bar

45 °C - max. operating pressure 9 bar

Connection	oØ x iØ mm	A mm	Fig.	Order no.
6/4 - R 1/2 for PE/PTFE pipe	6 x 4	119	pk_1_105	924681
8/5 - R 1/2 for PE/PTFE pipe	8 x 5	119	pk_1_105	809476
12/9 - R 1/2 for PE/PTFE pipe	12 x 9	119	pk_1_105	809478
10/4 - R 1/2 for PVC hose	10 x 4	119	pk_1_105	1002920
12/6 - R 1/2 for PVC hose	12 x 6	119	pk_1_105	809477
6/4 - G 1/4 for PE/PTFE pipe*	6 x 4	62	pk_1_042	914184
G 3/4 - DN 10 for PVC hose	24 x 16	83	pk_2_029	809461

\* Valve spring from stainless steel 1.4571, priming pressure approx. 0.8 bar



pk\_1\_042

### PPB Injection Valve

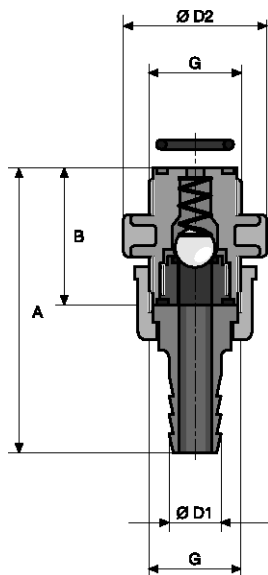
PP housing, FKM seals with spring-loaded non-return ball, prepressure approx. 0.5 bar.

#### Applications when using appropriate metering lines

25 °C - max. operating pressure 16 bar

45 °C - max. operating pressure 9 bar

Connection	oØ x iØ mm	A mm	Fig.	Order no.
6/4 - R 1/2 for PE/PTFE pipe	6 x 4	119	pk_1_105	924682
8/5 - R 1/2 for PE/PTFE pipe	8 x 5	119	pk_1_105	924687
12/9 - R 1/2 for PE/PTFE pipe	12 x 9	119	pk_1_105	924688
10/4 - R 1/2 for PVC hose	10 x 4	119	pk_1_105	1002921
12/6 - R 1/2 for PVC hose	12 x 6	119	pk_1_105	924689
G 3/4 - DN 10 for PVC hose	24 x 16	83	pk_2_029	790191

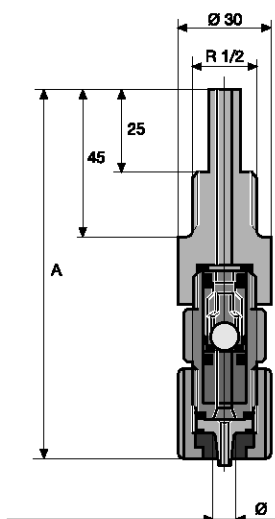


pk\_2\_029



# 1.9 Hydraulic/Mechanical Installation Accessories

1



pk\_1\_046

## PP/PTFE Injection Valve

For prevention of chemical deposits. PP body, PTFE mounting insert, EPDM seals with ball check and Hastelloy C spring approx. 0.5 bar priming pressure (Fig. pk\_1\_046).

### Applications when using appropriate metering lines

25 °C - max. operating pressure 16 bar

45 °C - max. operating pressure 9 bar

Connection	oØ x iØ mm	A mm	Fig.	Order no.
6/4 - R 1/2 for PE/PTFE pipe	6 x 4	103	pk_1_046	924588
8/5 - R 1/2 for PE/PTFE pipe	8 x 5	103	pk_1_046	924589
12/9 - R 1/2 for PE/PTFE pipe	12 x 9	106	pk_1_046	924590
10/4 - R 1/2 for PVC hose	10 x 4	106	pk_1_046	1002923
12/6 - R 1/2 for PVC hose	12 x 6	106	pk_1_046	924591

## PVC/PTFE Injection Valve

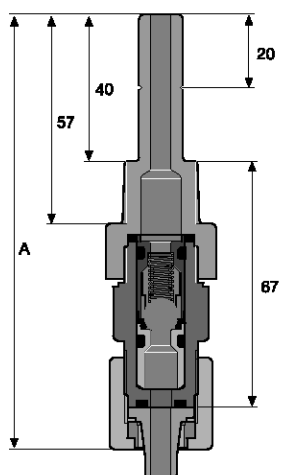
PVC body, PTFE mounting insert, FKM-B seals, spring loaded ball check with Hastelloy C spring, approx. 0.5 bar priming pressure.

### Applications when using appropriate metering lines

25 °C - max. operating pressure 16 bar

45 °C - max. operating pressure 7 bar

Connector	oØ x iØ mm	Fig.	Order no.
6/4 - R 1/2 for PE/PTFE pipe	6 x 4	pk_1_046	809450
8/5 - R 1/2 for PE/PTFE pipe	8 x 5	pk_1_046	809451
12/9 - R 1/2 for PE/PTFE pipe	12 x 9	pk_1_046	809452
10/4 - R 1/2 for PVC hose	10 x 4	pk_1_046	1002924
12/6 - R 1/2 for PVC hose	12 x 6	pk_1_046	809453



pk\_1\_105

## PCB Injection Valve

Housing made of PVC, seals made of FKM with non-return ball spring-loaded with Hastelloy C spring, priming pressure approx. 0.5 bar, with extended screwed socket. Type 8/4 up to 25 bar.

### Applications when using appropriate metering lines

25 °C - max. operating pressure 16 bar

45 °C - max. operating pressure 7 bar

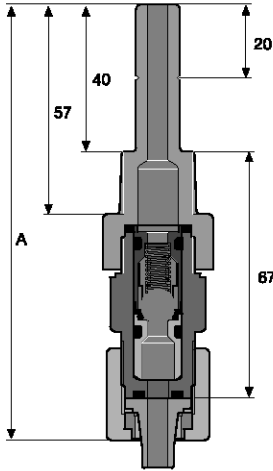
Connection	oØ x iØ mm	A mm	Fig.	Order no.
6/4 - R 1/2 for PE/PTFE pipe	6 x 4	119	pk_1_105	924680
8/4 - R 1/2 for PTFE line	8 x 4	119	pk_1_105	1034621
8/5 - R 1/2 for PE/PTFE pipe	8 x 5	119	pk_1_105	924592
12/9 - R 1/2 for PE/PTFE pipe	12 x 9	119	pk_1_105	924594
10/4 - R 1/2 for PVC hose	10 x 4	119	pk_1_105	1002919
12/6 - R 1/2 for PVC hose	12 x 6	119	pk_1_105	924593
6/4 - G 1/4 for PE/PTFE pipe*	6 x 4	62	-	914559
G 3/4 - DN 10 for PVC hose	24 x 16	83	pk_2_029	809460

\* Spring made of 1.4571, approx. 0.8 bar priming pressure.



# 1.9 Hydraulic/Mechanical Installation Accessories

## PVT Injection Valve



pk\_1\_105

Housing PVDF, seals PTFE, with non-return ball, spring-loaded with Hast. C spring, approx. 0.5 bar priming pressure, with extended screwed socket. Type 6/3 up to 20 bar, 8/4 up to 25 bar.

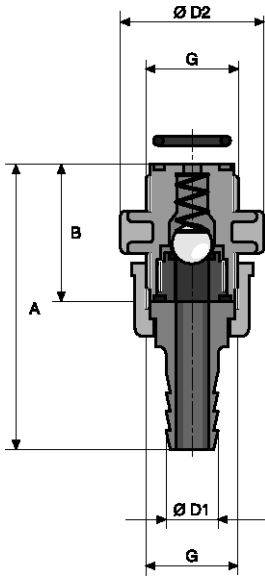
### Applications when using appropriate metering lines

25 °C - max. operating pressure 16 bar

45 °C - max. operating pressure 12 bar

Connection	oØ x iØ mm	A mm	Fig.	Order no.
6/3 - R 1/2 for PTFE pipe	6 x 3	119	pk_1_105	1024713
6/4 - R 1/2 for PE/PTFE pipe	6 x 4	119	pk_1_105	1024708
8/4 - R 1/2 for PTFE line	8 x 4	119	pk_1_105	1034619
8/5 - R 1/2 for PE/PTFE pipe	8 x 5	119	pk_1_105	1024710
12/9 - R 1/2 for PE/PTFE pipe	12 x 9	119	pk_1_105	1024711
10/4 - R 1/2 for PVC hose	10 x 4	119	pk_1_105	1024709
12/6 - R 1/2 for PVC hose	12 x 6	119	pk_1_105	1024712
G 3/4 - DN 10 with pressure hose nozzle d16 - DN 10.	24 x 16	84	pk_2_029	1029476

## PVT Injection Valve with Tantalum Spring



pk\_2\_029

PVDF housing, PTFE seals with tantalum spring-loaded ball check, priming pressure approx. 0.5 bar, with extra-long screw-in fitting. 6/3 version up to 20 bar, 8/4 up to 25 bar, for metering of sodium-calcium hypochlorite, with universal tube connector set 6x3, 6x4, 8x4, 8x5, 12x9, 10x4 and 12x6 mm.

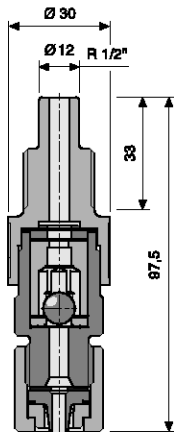
### Application range when using appropriate metering line

25 °C - max. operating pressure 16 bar

45 °C - max. operating pressure 12 bar

Connection	A mm	Fig.	Order no.
Universal connector, R 1/2	119	pk_1_105	1044653

## TTT Injection Valve



P\_AC\_0184\_SW

Vertical installation from below. With ball check, without spring. Valve spring (Order No. 469404) can be retrofitted. Body and seals made of PTFE.

### Applications when using appropriate metering lines

25 °C - max. operating pressure 10 bar

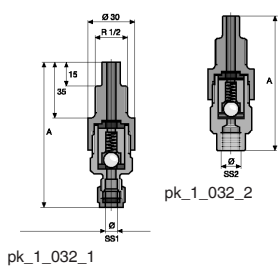
45 °C - max. operating pressure 5 bar

Connection	oØ x iØ mm	A mm	Fig.	Order no.
6/4 - R 1/2 for PE/PTFE pipe	6 x 4	98	P_AC_0184_SW	809488
8/5 - R 1/2 for PE/PTFE pipe	8 x 5	98	P_AC_0184_SW	809479
12/9 - R 1/2 for PE/PTFE pipe	12 x 9	101	P_AC_0184_SW	809481
12/6 - R 1/2 for PVC hose	12 x 6	101	P_AC_0184_SW	809480
G 3/4 - DN 10 with d16 welding sleeve	-	-	pk_2_030	809462



# 1.9 Hydraulic/Mechanical Installation Accessories

1



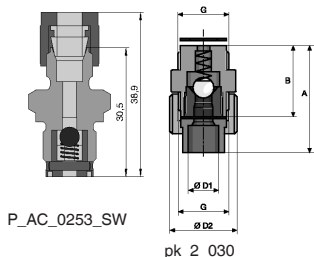
## SST Injection Valve

Stainless steel 1.4404 body and PTFE seals with spring loaded ball check. Spring made of Hastelloy C. with approx. 0.5 bar priming pressure, for 1.4571 R 1/4 spring, approx. 1 bar priming pressure. Ferrule is required for connection with PE/PTFE pipe.

### Applications when using appropriate metering lines

25 °C - max. operating pressure 30 bar

45 °C - max. operating pressure 30 bar



Connection	oØ x iØ mm	A mm	Fig.	Order no.
6 mm - R 1/2 for pipe	6 x 5	93	pk_1_032_1	809489
8 mm - R 1/2 for pipe	8 x 7	93	pk_1_032_1	809482
12 mm - R 1/2 for pipe	12 x 10	96	pk_1_032_1	809483
1/4" NPT - R 1/2 for pipe	R 1/4" NPT	89	pk_1_032_2	924597
6 mm - R 1/4 for pipe		-	P_AC_0253_SW	914588
G 3/4 - DN 10, sleeve	Rp 3/8	-	pk_2_030	809463

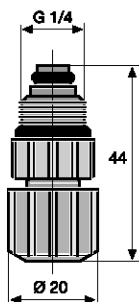
## PPB Injection Valve O-Ring Loaded

PP body, FKM seals. Priming pressure approx. 0.5 bar.

### Applications when using appropriate metering lines

25 °C - max. operating pressure 16 bar

45 °C - max. operating pressure 9 bar



Connector	oØ x iØ mm	Fig.	Order no.
6/4 - G 1/4 short	6 x 4	P_AC_0008_SW	914754
6/4 - G 1/4 long	6 x 4	P_AC_0009_SW	741193

P\_AC\_0008\_SW

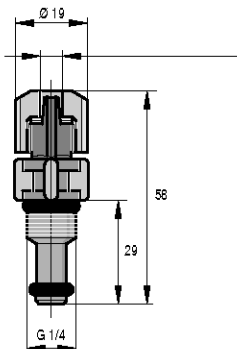
## PCB Injection Valve O-Ring Loaded

PVC body, FKM seals, priming pressure approx. 0.5 bar.

### Applications when using appropriate metering lines

25 °C - max. operating pressure 16 bar

45 °C - max. operating pressure 7 bar



Connector	oØ x iØ mm	Fig.	Order no.
6/4 - G 1/4 short	6 x 4	P_AC_0008_SW	914558
6/4 - G 1/4 long	6 x 4	P_AC_0009_SW	915091

P\_AC\_0009\_SW





# 1.9 Hydraulic/Mechanical Installation Accessories

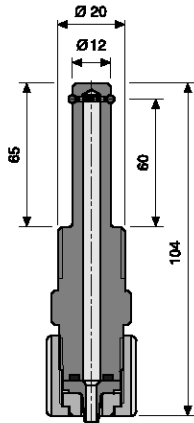
## PTFE Injection Valve O-Ring Loaded

PTFE housing, FKM seals.

### Applications when using appropriate metering lines

25 °C - max. operating pressure 10 bar

45 °C - max. operating pressure 6 bar



P\_AC\_0183\_SW

Connection	oØ x iØ mm	A mm	Fig.	Order no.
6/4 – for PE/PTFE line	6 x 4	104	P_AC_0183_SW	809484
8/5 – for PE/PTFE line	8 x 5	104	P_AC_0183_SW	809485
10/4 – for PVC hose	10 x 4	104	P_AC_0183_SW	1002925
12/6 – for PVC hose	12 x 6	104	P_AC_0183_SW	809487
12/9 – for PE/PTFE line	12 x 9	104	P_AC_0183_SW	809486

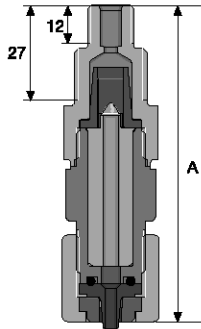
## Lip Seal Injection Valve PCB

Body PVC, seals FKM, inlet pressure approx. 0.05 bar. For metering sodium hypochlorite and for use in conjunction with the peristaltic pump DF2a.

### Applications when using appropriate metering lines

25 °C - max. operating pressure 2 bar

45 °C - max. operating pressure 2 bar



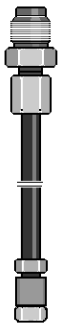
pk\_1\_070

Connection	oØ x iØ mm	A mm	Fig.	Order no.
6/4 - R 1/2 - 1/4 for PE/PTFE pipe	6 x 4	90	pk_1_070	1019953
10/4 - R 1/2 - 1/4 for PE/PTFE pipe	10 x 4	90	pk_1_070	1024697

## Metering Connector for Warm Water up to 200 °C

Consists of stainless steel 1.4404 injection valve, 1 m stainless steel 1.4571 discharge line and threaded connector with reinforcing sleeve for connection of PE/PTFE pipe to stainless steel pipe.

Max. operating pressure 30 bar



pk\_1\_049

Connection	Fig.	Order no.
Warm water 6 mm - R 1/4	pk_1_049	913166
Warm water 6 mm - R 1/2	pk_1_049	913167
Warm water 8 mm - R 1/2	pk_1_049	913177
Warm water 12 mm - R 1/2	pk_1_049	913188

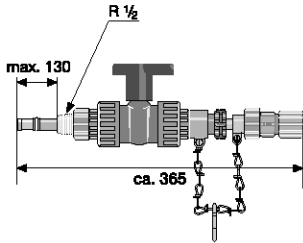


# 1.9 Hydraulic/Mechanical Installation Accessories

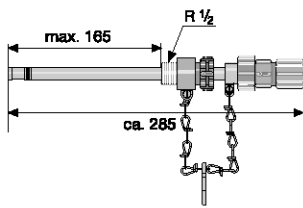
## 1.9.3 Injection Lances, Non-Return Valves for Low-Pressure Metering Pumps

### PPE Injection Lance

For immersion depths of 20 - 165 mm, in large diameter pipe to prevent chemical deposition at the point of injection. Consists of spring-loaded metering valve, Hastelloy C spring, ceramic ball, adjustable immersion rod and hose valve. With connectors for all hose sizes used with solenoid metering pumps: 6/4, 8/5, 12/9, 10/4 and 12/6.



pk\_1\_007



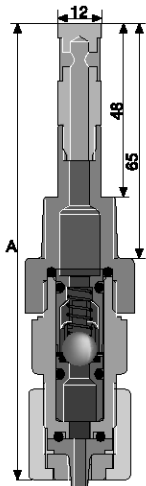
pk\_1\_062

Type	Seal material	Max. pressure at 25 °C bar	Fig.	Order no.
PPE without stopcock	EPDM/silicone	6	pk_1_062	1021530
PPE with stopcock	EPDM/silicone	6	pk_1_007	1021531
PCB without stopcock	FKM/silicone*	6	pk_1_062	1021528
PCB with stopcock	FKM/silicone*	6	pk_1_007	1021529

\* Please note: The product contains connections bonded with Tangit. Always note the durability of Tangit adhesive.

### Short Injection Lance

Metering lance with universal connection kit, enabling the connection of different hose sizes of from 6/4 to 12/9. Hastelloy C spring, ceramic ball and silicone hose. Material of screwed socket: PVDF.



P\_AC\_0020\_SW

Type	Material, valve body	Max. pressure at 25 °C bar	Seal material	A mm	Fig.	Order no.
PPE	PP	16	EPDM	126	P_AC_0020_SW	1028383
PCB	PVC	16	FKM-B	126	P_AC_0020_SW	1028363
PVT	PVDF	16	PTFE	126	P_AC_0020_SW	1028081

### PVDF Non-Return Valve for Hose Installation

With connection kit on both sides for fitting in hose line.

With non-return ball, spring-loaded with Hastelloy C spring, prepressure approx. 0.5 bar.

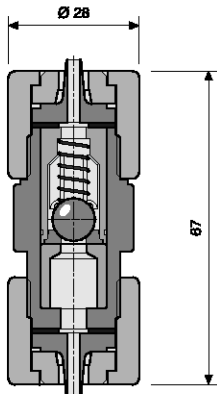
PVDF housing, PTFE seals.

Different hose sizes from 6/4 to 12/9 can be joined using different connection kits.

#### Applications when using appropriate metering lines

25 °C - max. operating pressure 16 bar

45 °C - max. operating pressure 12 bar



P\_AC\_0181\_SW

Connection	oØ x iØ mm	A mm	Fig.	Order no.
6/4 for PE/PTFE line	6 x 4	67	P_AC_0181_SW	1030463
8/5 for PE/PTFE line	8 x 5	67	P_AC_0181_SW	1030975
10/4 for PE/PTFE line	10 x 4	67	P_AC_0181_SW	1030977
12/6 for PVC hose	12 x 6	67	P_AC_0181_SW	1030978
12/9 for PE/PTFE line	12 x 9	67	P_AC_0181_SW	1030976

# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.4 Back Pressure Valves / Relief Valves for Low-Pressure Metering Pumps

Back pressure valves are used to generate a constant back pressure to ensure precise metering and protect against over-metering or metering imprecision through free outlets and priming pressure on the suction side. They are also used in conjunction with pulsation dampers to generate low-pulsation metering. We recommend back pressure valves type DHV-RM with fluctuating back pressure and metering into vacuums.

(Back Pressure Valves / Relief Valves for Motor Driven Metering Pumps see volume "Motor-driven and process metering pumps for all capacity ranges" page → 1-64)

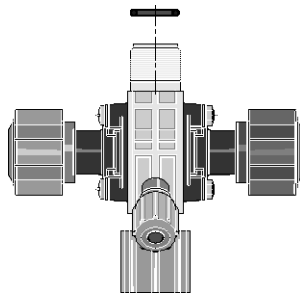
The DHV listed below are designed for different applications. Please note the relevant notes for the different mountings.



**Important:** Back pressure valves cannot be used as absolutely leak-tight shut-off devices. Take appropriate precautions when handling hazardous media.

Relief valves are used to protect pumps, pipes and fittings from over pressure, in the event of incorrect operation or blockages in the bypass. In the event of a malfunction, the pump pumps back into the storage tank.

### Multifunctional Valve Type MFV-DK, PVDF



pk\_1\_053

Back pressure valve / relief valve for fitting directly on the pump's dosing head with the functions:

- Back pressure valve, opening pressure approx. 1.5 bar with free outlet or priming pressure at the suction end (black rotary dial)
- Relief valve, opening pressure approx. 6, 10 or 16 bar (red rotary dial)
- Priming aid for pending back pressure, no need to release discharge line
- Discharge line relief, e.g. prior to service work

The multifunctional valve is operated by free-moving rotary dials that automatically return to their original position when released by the operator. This means operation is possible even when access is difficult. The multifunctional valve is made of PVDF and can be used to meter almost any chemical.

**Caution:** Back pressure valves are not absolutely leak-tight shut-off devices! It is essential that you observe the installation notes in the operating instructions!

**Caution:** The bypass line should always be connected.

For hoses see page → 1-57.

- Valve body PVDF
- Diaphragm PTFE- coated
- Seal FKM and EPDM (enclosed)

Type	Relief opening pressure*	Connection	Bypass connector	Order no.
Size I	16 bar	6-12	6/4	792011
Size I	10 bar	6-12	6/4	791715
Size I	6 bar	6-12	6/4	1005745
Size II	10 bar	6-12	12/9	792203
Size II	6 bar	6-12	12/9	740427
Size III	10 bar	DN 10	12/9	792215

\* The relief opening pressure given above is the pressure at which the valve begins to open. The pressure can be up to 50% higher until the valve is fully open depending on the type of pump.

#### Application: multifunctional valves

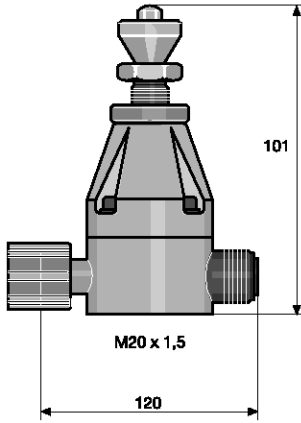
- Size I ALPc 1001, 1002, 1004, 1008, 0708  
Beta®, gamma/ L type 1000, 1601, 1602, 1604, 1605, 1005, 1008, 0708, 0413, 0220  
gamma/ X type 1602, 1604, 1009, 0708, 0414, 0220  
delta® type 1608, 1612
- Size II ALPc 0417, 0230  
Beta®, gamma/ L type 1605, 1008, 0713, 0420, 0232  
gamma/ X type 1009, 0715, 0424, 0245  
delta® type 1020, 0730
- Size III delta® type 0450, 0280

For material design PP, PV, NP, TT



# 1.9 Hydraulic/Mechanical Installation Accessories

## Back Pressure Valve Type DHV-S-DK, 0-10 bar Adjustable



pk\_1\_129

Adjustable back pressure valve for fitting directly onto the dosing head to generate a constant back pressure. For accurate metering with a free outlet and with priming pressure on the suction side.

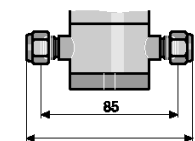
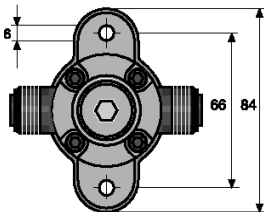
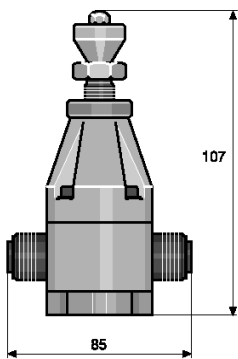
**Caution:** Back pressure valves are not absolutely leak-tight shut-off devices! It is essential that you observe the installation notes in the operating instructions!

**Applications:** Metering pump alpha, Beta®, gamma/ X, Pneumados b, EXtronic® and delta®

Type	Adjustable pressure	Connection	Material	Order no.
DHV-S-DK	0 – 10 bar	6 to 12 mm	PP/EPDM	302320
DHV-S-DK	0 – 10 bar	6 to 12 mm	PC/FKM*	302321
DHV-S-DK	0 – 10 bar	6 to 12 mm	TT/PTFE	302322
DHV-S-DK	0 – 10 bar	6 mm	SS	1003793
DHV-S-DK	0 – 10 bar	8 mm	SS	1003795
DHV-S-DK	0 – 10 bar	12 mm	SS	1003797

\* **Caution:** The product contains adhesive joints with Tangit. Please note the resistance of Tangit adhesive.

## Back Pressure Valve / Relief Valve Type DHV-S-DL, 0-10 bar Adjustable



pk\_1\_054

Adjustable back pressure valve for installation in the metering line to generate a constant back pressure for precise metering with a free outlet and with priming pressure on the suction side

When used as a back pressure valve in long lines to avoid resonance vibrations: Install at the end of the metering line or select a set pressure greater than the line pressure loss

Only use in conjunction with pulsation damper with a free outlet and short metering line. Use type DHV-U for use with a pulsation damper at back pressure or long lines.

**Caution:** Back pressure valves are not absolutely leak-tight shut-off devices! It is essential that you observe the installation notes in the operating instructions!

**Applications:** Metering pumps alpha, Beta®, gamma/ X, Pneumados b, EXtronic® and delta®

(Back Pressure Valves / Relief Valves for Motor Driven Metering Pumps see volume "Motor-driven and process metering pumps for all capacity ranges" page → 1-64)

Type	Adjustable pressure	Connection	Material	Order no.
DHV-S-DL	0 – 10 bar	6 to 12 mm	PP	302323
DHV-S-DL	0 – 10 bar	6 to 12 mm	PC/FKM*	302324
DHV-S-DL	0 – 10 bar	6 to 12 mm	TT	302325
DHV-S-DL	0 – 10 bar	6 mm	SS	302326
DHV-S-DL	0 – 10 bar	8 mm	SS	302327
DHV-S-DL	0 – 10 bar	12 mm	SS	302328

Order 2 connecting kits in the required hose size separately for the connection.

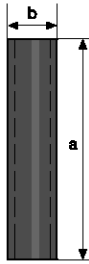
\* **Please note:** The product contains connections bonded with Tangit. Always note the durability of Tangit adhesive.

(Connection Kits for Low-Pressure Metering Pumps see page → 1-75)

# 1.9 Hydraulic/Mechanical Installation Accessories

## Pipe Nipples

For the direct connection of the pressure maintenance valve DHV-S-DL in stainless steel (SS) to the liquid end.



pk\_1\_017

Type	A mm	B mm	Fig.	Order no.
1.4571 pipe nipple	6	40	pk_1_017	818537
	8	40	pk_1_017	818538
	12	40	pk_1_017	818539

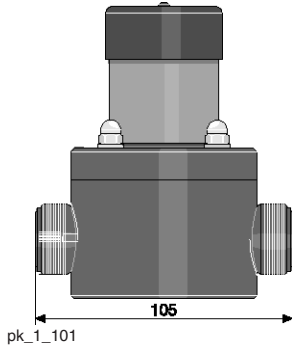
## Back Pressure Valve Type BPV-DM



Adjustable back pressure valve for installation in the metering line to generate a constant back pressure and/or for precise metering with a free outlet and with priming pressure on the suction side.

**Caution:** Back pressure valves are not absolutely leak-tight shut-off devices! It is essential that you observe the installation notes in the operating instructions!

**Applications:** Metering pumps alpha, Beta®, gamma/ X, Pneumados b and delta®



pk\_1\_101

Type	Adjustable pressure	Connection	Material	Order no.
BPV-DM	1 – 10 bar	6 – 12	PP/EPDM	1009884
BPV-DM	1 – 10 bar	6 – 12	PP/FKM-B	1009886
BPV-DM	1 – 10 bar	6 – 12	PVC/EPDM	1009885
BPV-DM	1 – 10 bar	6 – 12	PVC/FKM-B	1026450

\* Order 2 connection kits in the required hose size separately for the connection.

(Connector Kits see page → 1-75)

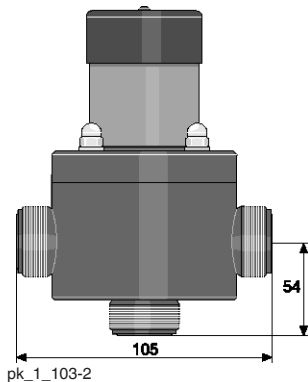
## Relief Valve Type BPV-SM



Adjustable relief valve for installation in the metering line to protect against overpressure. With additional connector for the relief line at the base of the valve body, no T-piece is required for installation.

**Caution:** Back pressure valves are not absolutely leak-tight shut-off devices! It is essential that you observe the installation notes in the operating instructions!

**Applications:** Metering pumps alpha, Beta®, gamma/ X, Pneumados b and delta®



pk\_1\_103-2

Type	Adjustable pressure	Connection	Material	Order no.
BPV-SM	1 – 10 bar	6 – 12	PPE	1009887
BPV-SM	1 – 10 bar	6 – 12	PPB	1009889
BPV-SM	1 – 10 bar	6 – 12	PCE	1009888
BPV-SM	1 – 10 bar	6 – 12	PCB	1026445

\* Order 3 connection kits in the required hose size separately for the connection.

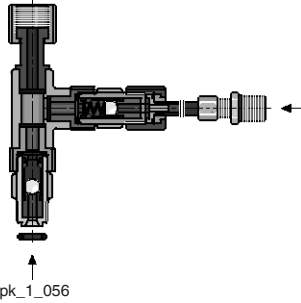
(Connector Kits see page → 1-75)



# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.5 Flushing Assemblies and Overload Protection Assemblies for Low-Pressure Metering Pumps

1



### Flushing Assembly

For flushing and cleaning dosing heads, metering lines and injection valves.

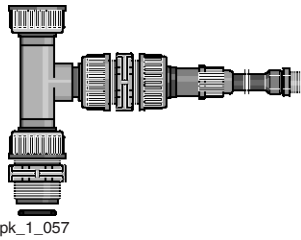
As a manual or automatic, time-controlled design. Installation, even retrospectively, on the suction connector of the metering pump. Supplied with 2 m flushing pipe and R 3/8 connection nipple.

Automatic flushing equipment for the fully automatic flushing of the pump head is possible on request.

### PPE Flushing Assembly

PP material, EPDM seal.

	Fig.	Order no.
For 6/4, 8/5, 12/6, 12/9 connectors	pk_1_056	809909
For G 3/4 -DN 10 connector	pk_1_057	809917
For G 1 -DN 15 connector	pk_1_057	809919



### PCB Flushing Assembly

Material: PVC, FKM seals

	Fig.	Order no.
for 6/4, 8/5, 12/6, 12/9 connectors	pk_1_056	809925
for G 3/4 - DN 10 connectors	pk_1_057	809926
for G 1 - DN 15 connectors	pk_1_057	803960

\* **Caution:** The product contains adhesive joints with Tangit. Please note the resistance of Tangit adhesive.

### Relief Valve Assembly

Consisting of a back pressure valve, which can be set from 1 - 10 bar, type DL, complete with connecting parts, installation directly on the dosing head.

Connector size 6 - 12 mm, depending on the pressure connector on the metering pump.

### PPE Relief Valve Assembly

Material: PP, EPDM seals.

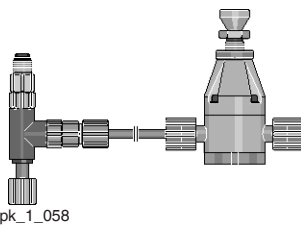


	Fig.	Order no.
For 6/4, 8/5, 12/6, 12/9 connectors	pk_1_058	809990
G 3/4 - DN 10 connector	pk_1_059	809991
G 1 - DN 15 connector	pk_1_059	809992

### PCB Relief Valve Assembly

Material: PVC, FKM seals.

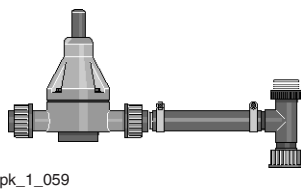


	Fig.	Order no.
for 6/4, 8/5, 12/6, 12/9 connectors	pk_1_058	809989
for G 3/4 - DN 10 connectors	pk_1_059	809993
for G 1 - DN 15 connectors	pk_1_059	914745

\* **Caution:** The product contains adhesive joints with Tangit. Please note the resistance of Tangit adhesive.



# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.6 Hoses, Pipes

### Hoses and Pipework for Low-Pressure Metering Pumps

For metering pumps and accessories.

We recommend that only original lines are used so that the mechanical connection of the compression fitting and the pressure rating and chemical resistance are ensured.

#### Soft PVC Suction Line

Material	Length m	oØ x iØ mm	Permissible pressure bar	Order no.
PVC flexible	5	6 x 4	0.5*	1004520
	5	8 x 5	0.5*	1004521
	5	12 x 9	0.5*	1004522
	10	6 x 4	0.5*	1004523
	10	8 x 5	0.5*	1004524
	10	12 x 9	0.5*	1004525
	25	6 x 4	0.5*	1004526
	25	8 x 5	0.5*	1004527
	25	12 x 9	0.5*	1004528
	50	6 x 4	0.5*	1004529
	50	8 x 5	0.5*	1004530
	50	12 x 9	0.5*	1004531
	Sold in metres	19 x 15	0.5*	037020

\* Admissible operating pressure at 20 °C in accordance with DIN EN ISO 7751, subject to chemical resistance and correct assembly.

#### Soft PVC Suction and Discharge Line with Woven Fabric Core

Material	Length m	oØ x iØ mm	Permissible pressure bar	Order no.
Fabric-reinforced flexible PVC	5	10 x 4	18*	1004533
	5	12 x 6	17*	1004538
	10	10 x 4	18*	1004534
	10	12 x 6	17*	1004539
	25	10 x 4	18*	1004535
	25	12 x 6	17*	1004540
	50	10 x 4	18*	1004536
	50	12 x 6	17*	1004541
	Sold in metres	24 x 16	10*	037040
	Sold in metres	27 x 19	10*	037041

\* Admissible operating pressure at 20 °C in accordance with DIN EN ISO 7751, subject to chemical resistance and correct assembly.

#### Soft PVC Suction and Metering Line with Woven Inner Layer Approved for Food Use

Material	Length m	oØ x iØ mm	Permissible pressure bar	Order no.
Soft PVC with woven inner layer approved for food use	5	10 x 4	10*	1037556
	5	12 x 6	10*	1037561
	10	10 x 4	10*	1037557
	10	12 x 6	10*	1037562
	25	10 x 4	10*	1037558
	25	12 x 6	10*	1037563
	50	10 x 4	10*	1037559
	50	12 x 6	10*	1037564

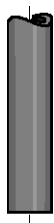
\* Permissible operating pressure at 20 °C as per DIN EN ISO 7751, 1/4 of burst pressure, subject to chemical resistance and correct connection

With socket-welded and PVC-bonded rigid PP and PVDF piping, pipes and fittings of pressure rating PN 16 or PN 10 bar should be used.

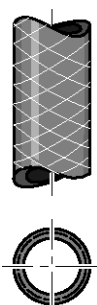
#### Please note:

PVC soft hoses do not offer the same resistance as rigid PVC. Always note the resistance of soft PVC and the cleaning instructions for use in food applications (see website).

pk\_1\_013



pk\_1\_060



## 1.9 Hydraulic/Mechanical Installation Accessories

### PE Suction and Discharge Line

Material	Length m	oØ x iØ mm	Permissible pressure bar	Order no.
Polyethylene	5	6 x 4	10*	1004492
	5	8 x 5	10*	1004493
	5	12 x 9	7*	1004504
	10	6 x 4	10*	1004505
	10	8 x 5	10*	1004506
	10	12 x 9	7*	1004507
	25	6 x 4	10*	1004508
	25	8 x 5	10*	1004509
	25	12 x 9	7*	1004510
	50	6 x 4	10*	1004511
	50	8 x 5	10*	1004512
	50	12 x 9	7*	1004513

\* Admissible operating pressure at 20 °C in accordance with DIN EN ISO 7751, subject to chemical resistance and correct assembly

### PTFE Suction and Discharge Lines

Material	Length m	oØ x iØ mm	Permissible pressure bar	Order no.
PTFE	Sold in metres	1.75 x 1.15	12*	037414
	Sold in metres	3.2 x 2.4	8*	037415
	Sold in metres	6 x 3	20*	1021353
	Sold in metres	6 x 4	14*	037426
	Sold in metres	8 x 4	25*	1033166
	Sold in metres	8 x 5	16*	037427
	Sold in metres	12 x 9	10*	037428
	Meterage, max. 30 m	19 x 16	6*	037430

\* Admissible operating pressure at 20 °C in accordance with DIN EN ISO 7751, subject to chemical resistance and correct assembly

### Stainless Steel Pipes

Material	Length m	oØ x iØ mm	Permissible pressure bar	Order no.
Stainless steel pipe 1.4435	Sold in metres	1.58 x 0.9	400*	1020774
	Sold in metres	3.175 x 1.5	400*	1020775
	Sold in metres	6 x 5	175*	015738
	Sold in metres	6 x 4	185*	015739
	Sold in metres	8 x 7	160*	015740
	Sold in metres	12 x 10	200*	015743

\* Admissible operating pressure at 20 °C in accordance with DIN EN ISO 7751, subject to chemical resistance and correct assembly

### Hose Cutting Kit

Hose Cutting Set for Plastic Pipes up to a Diameter of 25 mm. Manufacturer: Gedore.

	Order no.
Hose Cutting Kit	1038571

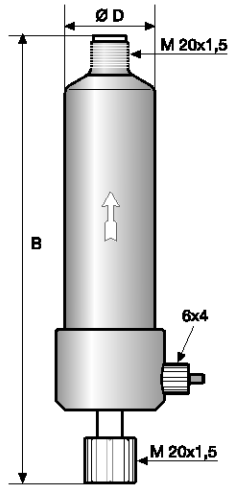




# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.7 Pressure Accumulator

### PP Pressure Accumulator



### PP Pressure Accumulator

**Please note:** Only use pulsation dampers in conjunction with an overflow device with adjustable back pressure / relief valve.

With this: Wall bracket for accumulator available in PP and PVC, consisting of pipe clamp, mounting plate and connecting nipple.

#### Operating range

20 °C - max. operating pressure 10 bar

40 °C - max. operating pressure 6 bar

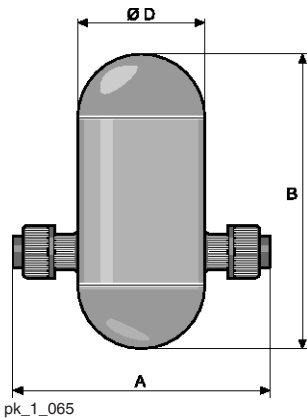
	Volume l	Permissible stroke volume ml	Connection	Fig.	Order no.
Size 0*	0.15	1.0	M 20 x 1,5	pk_1_006	1021157
Size I	0.35	2.5	DN 8	pk_1_065	243218
Size II	1.00	5.0	G 3/4 – DN 10	pk_1_065	243219
Size II	1.00	5.0	G 1 – DN 15	pk_1_065	243220

\* With bleed valve. Install directly at the pressure connector.

	Connection	A	B	Ø D
Size 0	M 20 x 1.5	-	225	49
Size I	DN 8	150	170	75
Size II	DN 10	192	220	110
Size II	DN 15	200	220	110

pk\_1\_006

### PVC Pressure Accumulator



**Please note:** Only use pulsation dampers in conjunction with an overflow device with adjustable back pressure / relief valve.

With this: Wall bracket for accumulator available in PP and PVC, consisting of pipe clamp, mounting plate and connecting nipple.

#### Operating range

20 °C - max. operating pressure 10 bar

40 °C - max. operating pressure 6 bar

	Volume l	Permissible stroke volume ml	Connection	Fig.	Order no.
Size 0*	0.15	1.0	M 20 x 1,5	pk_1_006	1021120
Size I	0.35	2.5	DN 8	pk_1_065	243203
Size II	1.00	5.0	G 3/4 – DN 10	pk_1_065	243204
Size II	1.00	5.0	G 1 – DN 15	pk_1_065	243205

\* **Caution:** The product contains adhesive joints with Tangit. Please note the resistance of Tangit adhesive.

\* With ventilation valve. Mounted directly on the pressure connector.

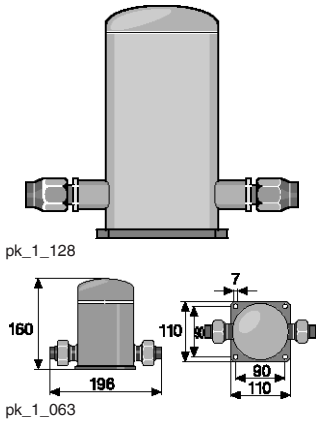
	Connection	A	B	Ø D
Size 0	M 20 x 1.5	-	225	49
Size I	DN 8	150	170	75
Size II	DN 10	192	220	110
Size II	DN 15	200	220	110

pk\_1\_065



# 1.9 Hydraulic/Mechanical Installation Accessories

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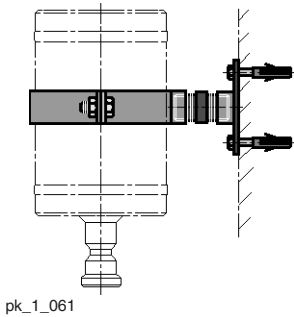


## Stainless Steel Accumulator

Max. operating pressure 10 bar.

	Volume l	Permissible stroke volume ml	Connection	Fig.	Order no.
<b>Size 0</b>	0.15	2.5	for pipe oØ 6	pk_1_128	914510
<b>Size I</b>	0.35	2.5	for pipe oØ 8	pk_1_128	914511
<b>Size II</b>	1.00	2.5	for pipe oØ 12	pk_1_128	914512
<b>Size II*</b>	1.00	5.0	G 3/4 – DN 10	pk_1_063	914756

\* Threaded sleeve insert G 3/8.



## Wall Mounting for Accumulator

For PP and PVC versions, consisting of clamping ring, mounting plate and connecting nipple.

	Volume	Ø	Order no.
<b>For size I accumulator - 0.35 l</b>	0,35 l	Ø 75	818501
<b>For size II accumulator - 1l</b>	1 l	Ø 110	818502



# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.8 Pulsation Damper for Low-Pressure Metering Pumps

Pulsation dampers are available in different versions: as in-line dampers and as accumulators.

Pulsation dampers are used for low-pulsation metering and to reduce the flow resistance with long metering lines. They are also ideally suited to viscous media. The gas cushion between the housing and hose is compressed when the metering pump has a pressure stroke, at the same time as a partial volume of the medium is metered into the metering line. The overpressure that forms in the gas cushion causes the compressed volume to be transported on at the following suction stroke and the original, relaxed volume of gas is present again

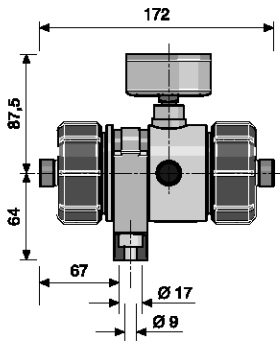
**Important:**  
Protect the pulsation dampers in principle with a relief valve.

### PP In-Line Damper

**Please note:** Only use pulsation dampers in conjunction with an overflow device with adjustable back pressure / relief valve.

With this: Dummy plugs to seal the output side of the damper in installations with a T-piece.

**Operating conditions**  
 5 - 30 °C - max. operating pressure 10 bar  
 40 °C - max. operating pressure 8 bar  
 60 °C - max. operating pressure 4 bar



P\_AC\_0180\_SW

	Volume	Damper diaphragm	Seal material	Connection	Order no.
<b>PPE in-line damper</b>	0.05	CSM*	EPDM	M 20 x 1,5	1026768
<b>PPB in-line damper</b>	0.05	FKM	FKM	M 20 x 1,5	1026771
<b>PPE in-line damper</b>	0.05	CSM*	EPDM	G 3/4 - DN 10	1026769
<b>PPB in-line damper</b>	0.05	FKM	FKM	G 3/4 - DN 10	1026772

\* Chlorosulfonated polyethylene

### Threaded End Plug

Material	Connection	Order no.
PP	M 20 x 1,5	1030200
PP	G 3/4 - DN 10	1001352

### PVC In-Line Damper

**Please note:** Only use pulsation dampers in conjunction with an overflow device with adjustable back pressure / relief valve.

With this: Dummy plugs to seal the output side of the damper in installations with a T-piece.

**Operating conditions**  
 5 - 20 °C - max. operating pressure 10 bar  
 40 °C - max. operating pressure 6 bar  
 60 °C - max. operating pressure 2 bar

	Volume	Damper diaphragm	Seal material	Connection	Order no.
<b>PCE in-line damper</b>	0.05	CSM*	EPDM	M 20 x 1,5	1026774
<b>PCB in-line damper</b>	0.05	FKM	FKM	M 20 x 1,5	1026777
<b>PCE in-line damper</b>	0.05	CSM*	EPDM	G 3/4 - DN 10	1026775
<b>PCB in-line damper</b>	0.05	FKM	FKM	G 3/4 - DN 10	1026778

\* Chlorosulfonated polyethylene

### Threaded End Plug

Material	Connection	Order no.
PVC	M 20 x 1,5	1030458
PVC	G 3/4 - DN 10	1001349



# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.9 Suction Lances, Suction Kit Without Level Switch

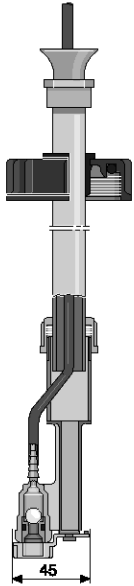
### PPE Variable Suction Lance without Level Switch

Variable suction lance without level switch for connection to 5 - 60 litre disposable tanks, comprising a support pipe, foot valve, height-adjustable screw cap and 2 m long suction line. Length 640 mm.

**Note:** The required screw cap Ø 44 is available as a spare part for container opening Ø 44 and can be swapped by the customer for screw cap Ø 50.

<b>Material of retaining tube and foot valve</b>	PP
<b>Seal material</b>	EPDM
<b>Hose material</b>	PE

Material	Hose o Ø x i Ø mm		Fig.	Order no.
PPE	6 x 4	For 50 mm tank opening	pk_1_067	790539
PPE	8 x 5	For 50 mm tank opening	pk_1_067	790540
PPE	12 x 9	For 50 mm tank opening	pk_1_067	790541



pk\_1\_067

### PCB Variable Suction Lance without Level Switch

Variable suction lance without level switch for connection to 5 - 60 litre disposable tanks, comprising a support pipe, foot valve, height-adjustable screw cap and 2 m long suction line. Length 640 mm.

**Note:** The required screw cap Ø 44 is available as a spare part for container opening Ø 44 and can be swapped by the customer for screw cap Ø 50.

<b>Material of retaining tube and foot valve</b>	PVC
<b>Seal material</b>	FKM
<b>Hose material</b>	Soft PVC

Material	Hose o Ø x i Ø mm		Fig.	Order no.
PCB	6 x 4	For 50 mm tank opening	pk_1_067	790536
PCB	8 x 5	For 50 mm tank opening	pk_1_067	790537
PCB	12 x 9	For 50 mm tank opening	pk_1_067	790538

### Screw Cap

For tanks with opening Ø 44, customers need to order the Ø 44 screw cap as a spare part to replace the Ø 50 screw cap.



pk\_1\_066

	Order no.
Ø 44 screw cap	811626



# 1.9 Hydraulic/Mechanical Installation Accessories

## PPE Variable Suction Lance for 200 Litre Barrel without Level Switch

Variable suction lance without level switch for connection to 200 litre barrel, comprising a support pipe, foot valve, height-adjustable screw plug and 3 m long suction line. Length 1,000 mm.

**Note:** Adapters for other threads are available on request

<b>Material of retaining tube and foot valve</b>	PP
<b>Seal material</b>	EPDM
<b>Hose material</b>	PE

Material	Hose o Ø x i Ø mm		Fig.	Order no.
PPE	6 x 4	For 2" tank opening DIN S 70 x 6	pk_1_125	790545
PPE	8 x 5	For 2" tank opening DIN S 70 x 6	pk_1_125	790546
PPE	12 x 9	For 2" tank opening DIN S 70 x 6	pk_1_125	790547

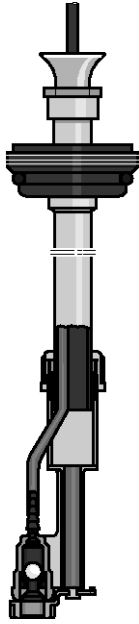
## PCB Variable Suction Lance for 200 Litre Barrel without Level Switch

Variable suction lance without level switch for connection to 200 litre barrel, comprising a support pipe, foot valve, height-adjustable screw plug and 3 m long suction line. Length 1,000 mm.

**Note:** Adapters for other threads are available on request

<b>Material of retaining tube and foot valve</b>	PVC
<b>Seal material</b>	FKM
<b>Hose material</b>	Soft PVC

Material	Hose o Ø x i Ø mm		Fig.	Order no.
PCB	6 x 4	For 2" tank opening DIN S 70 x 6	pk_1_125	790542
PCB	8 x 5	For 2" tank opening DIN S 70 x 6	pk_1_125	790543
PCB	12 x 9	For 2" tank opening DIN S 70 x 6	pk_1_125	790544

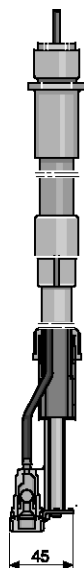


pk\_1\_125



# 1.9 Hydraulic/Mechanical Installation Accessories

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pk\_1\_069

## PPE Variable Suction Assembly for 35 to 1,000 Litre Tanks without Level Switch

Variable suction assembly without level switch for connection to 35 - 1,000 litre tanks, comprising a support pipe, foot valve, threaded connector and 2 m long suction line. Adjustable length.

Material of retaining tube and foot valve PP  
 Seal material EPDM  
 Hose material PE

Support pipe length mm	Hose o Ø x i Ø mm	For tank	Fig.	Order no.
375 – 550	6 x 4	35, 60 l	pk_1_069	790333
375 – 550	8 x 5	35, 60 l	pk_1_069	790334
375 – 550	12 x 9	35, 60 l	pk_1_069	790335
655 – 1060	6 x 4	100, 140, 250, 500 l	pk_1_069	790336
655 – 1060	8 x 5	100, 140, 250, 500 l	pk_1_069	790337
655 – 1060	12 x 9	100, 140, 250, 500 l	pk_1_069	790338
1085 – 1425	6 x 4	1000 l	pk_1_069	790453
1085 – 1425	8 x 5	1000 l	pk_1_069	790454
1085 – 1425	12 x 9	1000 l	pk_1_069	790455

## PCB Variable Suction Assembly for 35 to 1,000 Litre Tanks without Level Switch

Variable suction assembly without level switch for connection to 35 - 1,000 litre tanks, comprising a support pipe, foot valve, threaded connector and 2 m long suction line. Adjustable length.

Material of retaining tube and foot valve PVC  
 Seal material FKM  
 Hose material Soft PVC

Support pipe length mm	Hose o Ø x i Ø mm	For tank	Fig.	Order no.
375 – 550	6 x 4	35, 60 l	pk_1_069	790327
375 – 550	8 x 5	35, 60 l	pk_1_069	790328
375 – 550	12 x 9	35, 60 l	pk_1_069	790329
655 – 1060	6 x 4	100, 140, 250, 500 l	pk_1_069	790330
655 – 1060	8 x 5	100, 140, 250, 500 l	pk_1_069	790331
655 – 1060	12 x 9	100, 140, 250, 500 l	pk_1_069	790332
1085 – 1425	6 x 4	1000 l	pk_1_069	790450
1085 – 1425	8 x 5	1000 l	pk_1_069	790451
1085 – 1425	12 x 9	1000 l	pk_1_069	790452



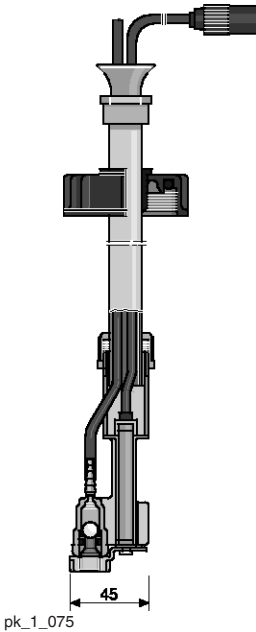
Suction assemblies with larger nominal widths, see Volume 3, page



# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.10 Suction Lances, Suction Assemblies with Two-Stage Level Switch

### PPE Variable Suction Lance with Two-Stage Level Switch



pk\_1\_075

Variable suction lance with two-stage level switch for connection to 5 - 60 litre disposable tanks, comprising a support pipe, foot valve, level switch with round connector, height-adjustable screw cap and 2 m long suction line. Length 640 mm.

**Switch mode when liquid level low: 2 x N/C**

Suitable for metering pumps of the Beta®, gamma/ X and delta® product ranges.

**Note:** The required screw cap Ø 44 is available as a spare part for container opening Ø 44 and can be swapped by the customer for screw cap Ø 50.

<b>Material of retaining tube and foot valve</b>	PP
<b>Seal material</b>	EPDM
<b>Hose material</b>	PE

Material	Hose o Ø x i Ø mm		Fig.	Order no.
PP	6 x 4	PP for Ø 50 tank opening, suction hose	pk_1_075	802277
PP	8 x 5	PP for Ø 50 tank opening, suction hose	pk_1_075	802278
PP	12 x 9	PP for Ø 50 tank opening, suction hose	pk_1_075	790372

### PCB Variable Suction Lance with Two-Stage Level Switch

Variable suction lance with two-stage level switch for connection to 5 - 60 litre disposable tanks, comprising a support pipe, foot valve, level switch with round connector, height-adjustable screw cap and 2 m long suction line. Length 640 mm.

**Switch mode when liquid level low: 2 x N/C**

Suitable for metering pumps of the Beta®, gamma/ X and delta® product ranges.

**Note:** The required screw cap Ø 44 is available as a spare part for container opening Ø 44 and can be swapped by the customer for screw cap Ø 50.

<b>Material of retaining tube and foot valve</b>	PVC
<b>Seal material</b>	FKM
<b>Hose material</b>	Soft PVC

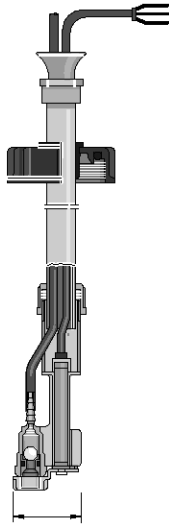
Material	Hose o Ø x i Ø mm		Fig.	Order no.
PVC	6 x 4	PVC for Ø 50 tank opening, suction hose	pk_1_075	802077
PVC	8 x 5	PVC for Ø 50 tank opening, suction hose	pk_1_075	802078
PVC	12 x 9	PVC for Ø 50 tank opening, suction hose	pk_1_075	790371



# 1.9 Hydraulic/Mechanical Installation Accessories

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## PCB Variable Suction Lance with Two-Stage Level Switch



P\_AC\_0234\_SW1

640 mm long for connection to 5 – 60 litre disposable tanks, consisting of a foot valve, level switch with support pipe, height adjustable screw cap and 2 m long suction hose

**For metering pump product range DF4a**  
**Switching mode at liquid level low 2 x N/C**

## PCB Variable Suction Lance with Two-Stage Level Switch

**Material of retaining tube and foot valve** PCB  
**Seal material** FPM  
**Hose material** Soft PVC

Material	Hose o Ø x i Ø mm		Fig.	Order no.
PCB	6 x 4	PP for Ø 50 tank opening, suction hose	P_AC_02 34_SW1	790650

## Screw Cap

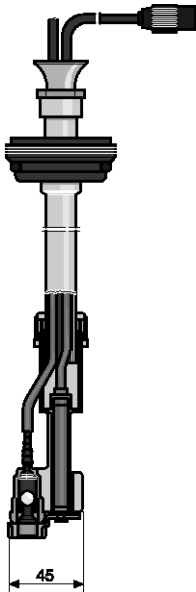
For tanks with opening Ø 44, customers need to order the Ø 44 screw cap as a spare part to replace Ø 50 screw cap.



pk\_1\_066

	Order no.
Ø 44 screw cap	811626

## PPE Variable Suction Lance for 200 Litre Barrel with Two-Stage Level Switch



pk\_1\_076

Variable suction lance with two-stage level switch for connection to 200 litre barrel, comprising a support pipe, foot valve, level switch with round connector, height-adjustable sealing plug and 3 m long suction line. Length 1000 mm.

**Switch mode when liquid level low: 2 x N/C**  
 Suitable for metering pumps of the Beta®, gamma/ X and delta® product ranges.  
**Note:** Adapters for other threads are available on request

**Material of retaining tube and foot valve** PP  
**Seal material** EPDM  
**Hose material** PE

Material	Hose o Ø x i Ø mm		Fig.	Order no.
PP	6 x 4	PP for tank opening 2" DIN S 70 x 6, suction hose	pk_1_076	802279
PP	8 x 5	PP for tank opening 2" DIN S 70 x 6, suction hose	pk_1_076	802280
PP	12 x 9	PP for tank opening 2" DIN S 70 x 6, suction hose	pk_1_076	790374

## PCB Variable Suction Lance for 200 Litre Barrel with Two-Stage Level Switch

**Material of retaining tube and foot valve** PVC  
**Seal material** FKM  
**Hose material** Soft PVC

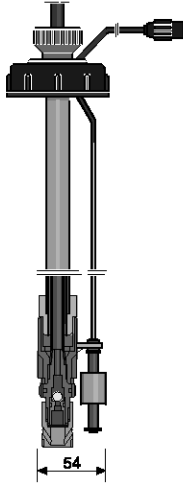
Material	Hose o Ø x i Ø mm		Fig.	Order no.
PVC	6 x 4	PVC for tank opening 2" DIN S 70 x 6, suction hose	pk_1_076	802079
PVC	8 x 5	PVC for tank opening 2" DIN S 70 x 6, suction hose	pk_1_076	802080
PVC	12 x 9	PVC for tank opening 2" DIN S 70 x 6, suction hose	pk_1_076	790373





# 1.9 Hydraulic/Mechanical Installation Accessories

## PPE Suction Lance for 60 Litre Canister, Fixed Length, Gas-Tight, with Two-Stage Level Switch



P\_AC\_0052\_SW

Variable suction lance with 2-stage level switch for connection to 60 litre canister, gastight, comprising a support pipe, foot valve, level switch with round connector and 2 m long suction line. Length 560 mm. Version with vent valve and bleed valve.

**Switch mode when liquid level low: 2 x N/C**

Suitable for metering pumps of the Beta®, gamma/ X and delta® product ranges.

<b>Material of retaining tube and foot valve</b>	PP
<b>Seal material</b>	EPDM
<b>Hose material</b>	PE

Material	Hose o Ø x i Ø mm		Fig.	Order no.
PP	6 x 4	PP for Ø 55 with suction hose	P_AC_0052_SW	802285
PP	8 x 5	PP for Ø 55 with suction hose	P_AC_0052_SW	802286
PP	12 x 9	PP for Ø 55 with suction hose	P_AC_0052_SW	802287

## PCB Suction Lance for 60 Litre Canister, Fixed Length, Gas-tight, with Two-Stage Level Switch

Variable suction lance with 2-stage level switch for connection to 60 litre canister, gastight, comprising a support pipe, foot valve, level switch with round connector and 2 m long suction line. Length 560 mm. Version with vent valve and bleed valve.

**Switch mode when liquid level low: 2 x N/C**

Suitable for metering pumps of the Beta®, gamma/ X and delta® product ranges.

<b>Material of retaining tube and foot valve</b>	PVC
<b>Seal material</b>	FKM
<b>Hose material</b>	Soft PVC

Material	Hose o Ø x i Ø mm		Fig.	Order no.
PVC	6 x 4	PVC for Ø 55 with suction hose	P_AC_0052_SW	802081
PVC	8 x 5	PVC for Ø 55 with suction hose	P_AC_0052_SW	802082
PVC	12 x 9	PVC for Ø 55 with suction hose	P_AC_0052_SW	802083

\* **Caution:** The product contains adhesive joints with Tangit. Please note the resistance of Tangit adhesive.

## PVDF Suction Lance with Two-Stage Level Switch

Fixed length suction lance made of PVDF with two-stage level switch, consisting of PVDF support pipe, foot valve and two-stage level switch with open end. Suction hose PTFE 8 x 6 mm; a suitable connector kit is included in the scope of delivery.



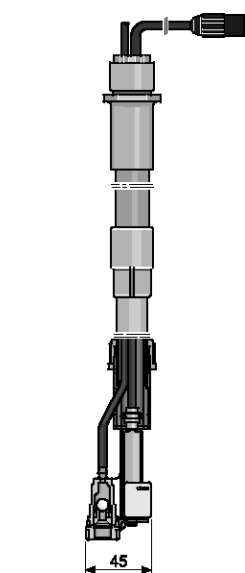
P\_AC\_0250\_SW

	Length mm	Order no.
PVDF Suction Lance	350	1038304
PVDF Suction Lance	650	1038305



# 1.9 Hydraulic/Mechanical Installation Accessories

## Variable Suction Assembly for 35 to 1,000 Litre Storage Tanks with Two-Stage PPE Level Switch



pk\_1\_077

Variable suction lance with two-stage level switch for connection to 35 to 1,000 litre tanks, comprising a support pipe, foot valve, level switch with 3-pin round connector and 2 m long suction line, or 3 m with 1,000 litre tanks. Adjustable length.

**Switch mode when liquid level low: 2 x N/C**

Suitable for metering pumps of the Beta®, gamma and delta® product ranges.

**Material of retaining tube and foot valve** PP  
**Seal material** EPDM  
**Hose material** PE

Support pipe length mm	Hose o Ø x i Ø mm	For tank	Fig.	Order no.
375 – 550	6 x 4	35, 60 l	pk_1_077	790365
375 – 550	8 x 5	35, 60 l	pk_1_077	790366
375 – 550	12 x 9	35, 60 l	pk_1_077	790367
655 – 1060	6 x 4	100, 140, 250, 500 l	pk_1_077	790368
655 – 1060	8 x 5	100, 140, 250, 500 l	pk_1_077	790369
655 – 1060	12 x 9	100, 140, 250, 500 l	pk_1_077	790370
1085 – 1425	6 x 4	1000 l	pk_1_077	790465
1085 – 1425	8 x 5	1000 l	pk_1_077	790466
1085 – 1425	12 x 9	1000 l	pk_1_077	790467

## Variable Suction Assembly for 35 to 1,000 Litre Tanks with Two-stage PCB Level Switch

Variable suction lance with two-stage level switch for connection to 35 to 1,000 litre tanks, comprising a support pipe, foot valve, level switch with 3-pin round connector and 2 m long suction line, or 3 m with 1,000 litre tanks. Adjustable length.

**Switch mode when liquid level low: 2 x N/C**

Suitable for metering pumps of the Beta®, gamma and delta® product ranges.

**Material of retaining tube and foot valve** PVC  
**Seal material** FKM  
**Hose material** Soft PVC

Support pipe length mm	Hose o Ø x i Ø mm	For tank	Fig.	Order no.
375 – 550	6 x 4	35, 60 l	pk_1_077	790359
375 – 550	8 x 5	35, 60 l	pk_1_077	790360
375 – 550	12 x 9	35, 60 l	pk_1_077	790361
655 – 1060	6 x 4	100, 140, 250, 500 l	pk_1_077	790362
655 – 1060	8 x 5	100, 140, 250, 500 l	pk_1_077	790363
655 – 1060	12 x 9	100, 140, 250, 500 l	pk_1_077	790364
1085 – 1425	6 x 4	1000 l	pk_1_077	790462
1085 – 1425	8 x 5	1000 l	pk_1_077	790463
1085 – 1425	12 x 9	1000 l	pk_1_077	790464



# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.11 Float Switches

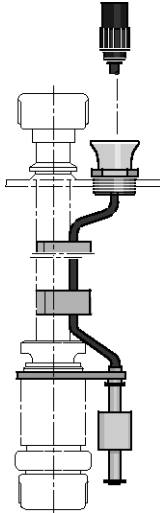
### PVDF Level Switch Kit Complete, Two-Stage with Round Connector



The level switch set can be ordered in conjunction with the DN 10/ DN 15 suction assemblies. Customers are responsible for fixing.

**For Beta®, gamma/ L and delta® metering pump product ranges**

Switching mode: with liquid level low 2 x NC  
 Materials: Level switch PVDF  
 Float PE foamed  
 3 m cable, PE



pk\_1\_079

Connection	Type	Order no.
DN 10/15	with 3-pin round plug	1034879

### Single stage float switch



For minimum display at the same time as switching off the metering pump.

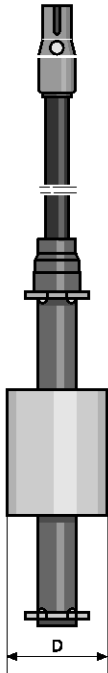
**With flat coupling for direct connection to ProMinent metering pump D\_4a.**

#### Technical data

Max. switching voltage 48 V,  
 Switching current 0.5 A,  
 Switching power 5 W/5 VA,  
 Temperature range -10 °C to 65 °C, degree of protection IP 67.  
 Switching mode: at liquid level low 1 x N/O.

#### Material

Body PVDF, float PE foamed, cable PE.



pk\_1\_080

	Lead length	Order no.
PVDF/PE with flat coupling	2 m	1031588
PVDF/PE with flat coupling	5 m	1031590

#### Material

Body PVDF, float PVDF, cable PE.

	Lead length	Order no.
PVDF with flat connector	2 m	1034695
PVDF with flat connector	5 m	1034696

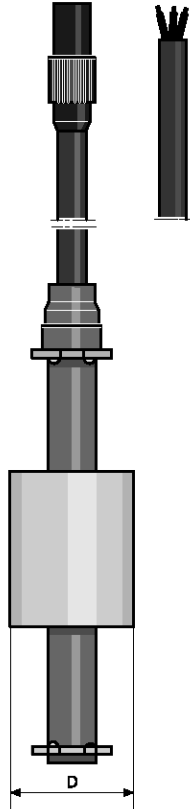


# 1.9 Hydraulic/Mechanical Installation Accessories

## Two-Stage Float Switch



1



pk\_1\_081

Two-stage level switch for level monitoring in the storage tank with pre-warning alarm message and switch-off of the metering pump after a further 30 mm reduction in level.

With a 3-pin round connector for direct connection to metering pump or with 3 leads, e.g. in conjunction with relay control, order no. 914768.

**Switch mode when liquid level low: 2 x N/C**

Suitable for metering pumps of the Beta®, gamma/ X and delta® product ranges.

**Technical data**

Max. switching voltage: 48 V, Switching current: 0.5 A, Switching power: 5 W/5 VA,

Temperature range: -10 °C to 65 °C, degree of protection IP 67.

	Lead length	Order no.
PVDF/PE with 3-pin round plug	2 m	1031604
PVDF/PE with 3-pin round plug	5 m	1031606
PVDF/PE with 3 wires	2 m	1031607
PVDF/PE with 3 wires	5 m	1031609

**Material**

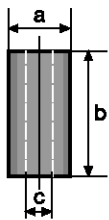
Body PVDF, float PVDF, cable PE.

	Lead length	Order no.
PVDF with 3-pin round plug	2 m	1034697
PVDF with 3-pin round plug	5 m	1034698
PVDF with 3 wires	2 m	1034699
PVDF with 3 wires	5 m	1034700

**Cable assignment on 3-wire cable:**

Colour	Function
black	Earth
blue	Minimum pre-warning
brown	Minimum limit stop

## Ceramic Weight for Vertical Fixing of Float Switch



pk\_1\_082

	Ø A mm	B mm	Ø C mm	Weight g	Type	Order no.
Size 1	25	50	10	60	For round and latch plug	1019244
Size 2	39	32	*	65	For round plug/flat connector	404004
Size 3	40	50	24	70	For round plug/flat connector	1030189

\* Slot 13 x 27 mm

With the two stage float switch with round plug, the weight is pushed up when float is attached.



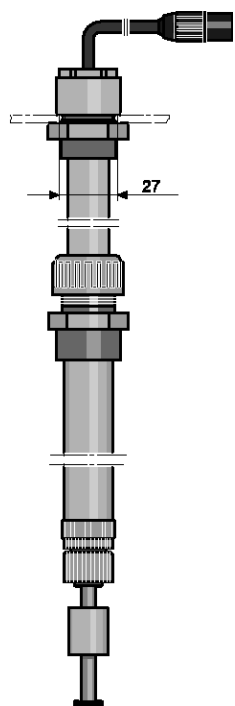
# 1.9 Hydraulic/Mechanical Installation Accessories

## PVDF/PE Level Switch with Hard PVC Retaining Pipe

Level switch for use in media which attack the PE cable of the level switch and/or for stable attachment in conjunction with electric stirrer, FKM seal. Adjustable length.

**2-stage switch mode when liquid level low: 2 x N/C**

**1-stage switch mode when liquid level low: 1 x N/O**



pk\_1\_084

Long support pipe mm	Float switch	Order no.
350 – 550	- two-stage with round plug	802010
660 – 1160	- two-stage with round plug	802011
350 – 550	- one-stage with flat connector	801727
660 – 1160	- one-stage with flat connector	801728



pk\_1\_126

## Extension Lead, 3-Core

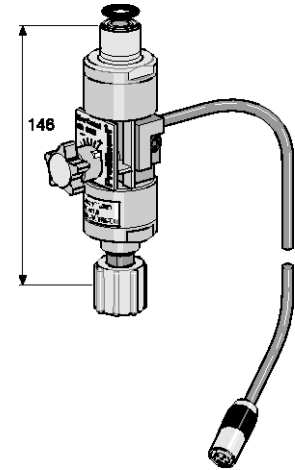
	Fig.	Order no.
For 2-stage float switch with round plug and coupler, length, 3 m	pk_1_126	1005559



# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.12 Metering Monitor, Signal Cable

### Flow Control Dosing Monitor for Discharge Side Installation



pk\_1\_086\_2

Dosing monitor assembly with connector cable for assembly directly on the dosing head to monitor individual strokes using the float principle. The adjustment screw is used to match the partial flow flowing past the float to the set stroke volume so that an alarm is emitted if the level falls approx. 20 % below the required level. The gamma/ L and gamma/ X metering pumps enable the permitted number of incompletely performed strokes to be selected between 1 to 127, ensuring optimum adaptation to process requirements.

Suitable for metering pumps of the product ranges gamma/ L and gamma/ X in material versions PP, PC, NP and TT.

**Please note:** It is essential that you observe the minimum values for the stroke length!

#### Materials

- Housing: PVDF
- Float: PTFE-coated
- Seals: FKM/EPDM

#### Flow Control for Discharge Side Installation

Flow Control	For pump type	Material	Order no.
Size I	1602	PVDF/EPDM	1009229
	1602	PVDF/FKM	1009335
Size II	1604, 0708, 1009, 0414, 0220, 0715, 0424	PVDF/EPDM	1009336
	1604, 0708, 1009, 0414, 0220, 0715, 0424	PVDF/FKM	1009338

Note the minimum values for the stroke length.

Pump type	Medium operating pressure	Stroke length (scale division)	Max. permissible operating pressure	Stroke length (scale division)
1602	8 bar	> 30 %	16 bar	> 40%
1604	5 bar	> 30 %	16 bar	> 50%
0708	4 bar	> 30 %	7 bar	> 40%
1009	5 bar	> 30 %	10 bar	> 40%
0414	2 bar	> 30 %	4 bar	> 30%
0715	4 bar	> 30 %	7 bar	> 30%
0220	1 bar	> 30 %	2 bar	> 30%
0424	2 bar	> 30 %	4 bar	> 30%

#### Flow Control for Suction Side Installation



Suitable for the delta® series with slow discharge stroke version. Individual strokes are detected on the suction side where the flow velocity is sufficiently high. With water as the medium, the minimum stroke length is 30%, normal suction stroke version, HV1 or HV2.

Flow Control	For pump type	Material	Order no.
Size II	1608 – 0730	PVDF/EPDM	1036407
	1608 – 0730	PVDF/FKM	1036409
Size III	0450 – 0280	PVDF/EPDM	1036439
	0450 – 0280	PVDF/FKM	1036440



# 1.9 Hydraulic/Mechanical Installation Accessories

## Universal Signal Cable



pk\_1\_085

For controlling the metering pump via contacts - external control, standard signals - analog control and for potential-free ON/OFF connection - connection function.

For Beta®, gamma and delta® with 5-pin round plastic plug and 5-wire open-ended cable.

	Lead length	Order no.
5-core universal cable, 5-pin round plug	2 m	1001300
5-core universal cable, 5-pin round plug	5 m	1001301
5-core universal cable, 5-pin round plug	10 m	1001302

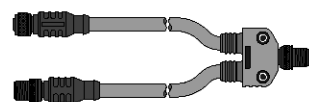
## External Signal Cable



Only for external control of Beta®, gamma/ X and delta® via contacts. With 5-pin round plug, internally bridged and 2-wire cable with open end.

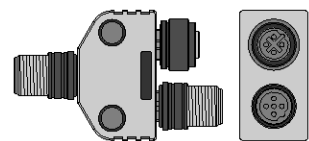
	Lead length	Order no.
2-core external cable, 5-pin round plug	2 m	707702
2-core external cable, 5-pin round plug	5 m	707703
2-core external cable, 5-pin round plug	10 m	707707

## PROFIBUS® Adapter, Enclosure Rating IP 65

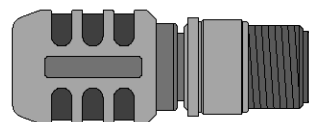


P\_AC\_0245\_SW

		Fig.	Order no.
Y-adapter 2 x M12 x 1 male/female	M12 x 1 male	P_AC_0245_SW	1040956
PROFIBUS® termination assembly, comprising a Y-plug and terminating resistance	M12	-	1040955
PROFIBUS® Y-adapter	M 12 x 1	P_AC_0230_SW	1036621
PROFIBUS® termination resistor, plug-in	M 12 x 1	P_AC_0239_SW	1036622



P\_AC\_0230\_SW\_1



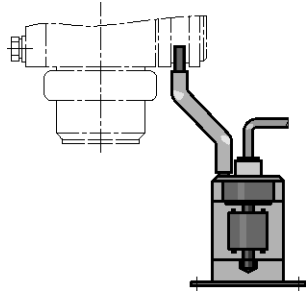
P\_AC\_0239\_SW



# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.13 Safety Equipment

### Diaphragm rupture indicator



pk\_1\_087

To trigger an alarm and switch off the metering pump in the event of diaphragm rupture. Consisting of PVC/PE level switch, clear acrylic storage tank, connecting sockets and connecting hose. Potential-free N/O switch, max. contact load 60 V AC, 300 mA, 18 W.

**To fit all types of Beta® and gamma.**

Retrofitting is also possible.

<b>Diaphragm rupture indicator</b>	<b>Order no.</b> 803640
------------------------------------	----------------------------

### Horn

HUW 55, 230 V, 50-60 Hz, 165 x 60 x 65, 85 phon, for use indoors

(e.g. in connection with fault signalling relay)



pk\_1\_088

<b>HUW 55 Horn</b>	<b>Order no.</b> 705002
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### Indicator lamp

Red for wall mounting 230 V, 50-60 Hz (e.g. in connection with fault signalling relay, relay control or clock generator relay)

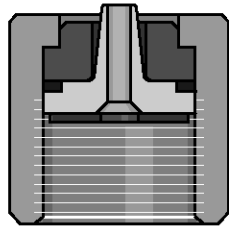
<b>Indicator lamp, red</b>	<b>Order no.</b> 914780
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# 1.9 Hydraulic/Mechanical Installation Accessories

## 1.9.14 Connection Kits for Low-Pressure Metering Pumps



pk\_1\_089

Connection kit for fitting hoses of different sizes to the suction and pressure connector of the dosing head of alpha, Beta, gamma, delta®, Pneumados b and accessories, consisting of hose nozzle, clamp ring, union nut and seal for one or two connectors.

### Single Connector Kit

Material		oØ x iØ mm	Order no.
PP/EPDM (PPE)	for hose	6 x 4	817160
PP/EPDM (PPE)	for hose	8 x 5	817161
PP/EPDM (PPE)	for hose	12 x 9	817162
PP/EPDM (PPE)	for hose	10 x 4	1002587
PP/EPDM (PPE)	for hose	12 x 6	817163
PP/FKM (PPB)	for hose	6 x 4	817173
PP/FKM (PPB)	for hose	8 x 5	817174
PP/FKM (PPB)	for hose	12 x 9	817175
PP/FKM (PPB)	for hose	10 x 4	1002588
PP/FKM (PPB)	for hose	12 x 6	817176
PVC/EPDM (PCE)	for hose	6 x 4	791161
PVC/EPDM (PCE)	for hose	8 x 5	792058
PVC/EPDM (PCE)	for hose	12 x 9	790577
PVC/EPDM (PCE)	for hose	10 x 4	1002590
PVC/EPDM (PCE)	for hose	12 x 6	792062
PVC/FKM (PCB)	for hose	6 x 4	817065
PVC/FKM (PCB)	for hose	8 x 5	817066
PVC/FKM (PCB)	for hose	12 x 9	817067
PVC/FKM (PCB)	for hose	10 x 4	1002589
PVC/FKM (PCB)	for hose	12 x 6	817068
PVDF (PVT)	for hose	6 x 3	1024583
PVDF (PVT)	for hose	6 x 4	1024619
PVDF (PVT)	for hose	8 x 4	1033148
PVDF (PVT)	for hose	8 x 5	1024620
PVDF (PVT)	for hose	12 x 9	1024618
PVDF (PVT)	for hose	10 x 4	1024585
PVDF (PVT)	for hose	12 x 6	1024617
PTFE (TTT)	for hose	6 x 4	817205
PTFE (TTT)	for hose	8 x 5	817206
PTFE (TTT)	for hose	12 x 9	817207
PTFE (TTT)	for hose	12 x 6	817208

### Double Connector Kit

Material		oØ x iØ mm	Order no.
PP/EPDM (PPE)	for hose	6 x 4	817150
PP/EPDM (PPE)	for hose	8 x 5	817153
PP/EPDM (PPE)	for hose	12 x 9	817151
PP/EPDM (PPE)	for hose	12 x 6	817152
PP/FKM (PPB)	for hose	6 x 4	817166
PP/FKM (PPB)	for hose	8 x 5	817167
PP/FKM (PPB)	for hose	12 x 9	817168
PP/FKM (PPB)	for hose	12 x 6	817169
PVC/EPDM (PCE)	for hose	6 x 4	817060



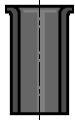
# 1.9 Hydraulic/Mechanical Installation Accessories

1

Material		oØ x iØ mm	Order no.
PVC/EPDM (PCE)	for hose	8 x 5	817048
PVC/EPDM (PCE)	for hose	12 x 9	817049
PVC/EPDM (PCE)	for hose	12 x 6	791040
PVC/FKM (PCB)	for hose	6 x 4	817050
PVC/FKM (PCB)	for hose	8 x 5	817053
PVC/FKM (PCB)	for hose	12 x 9	817051
PVC/FKM (PCB)	for hose	12 x 6	817052
PVDF (PVT)	for hose	6 x 4	1023246
PVDF (PVT)	for hose	8 x 5	1023247
PVDF (PVT)	for hose	12 x 9	1023248
PVDF (PVT)	for hose	12 x 6	1024586
PTFE (TTT)	for hose	6 x 4	817201
PTFE (TTT)	for hose	8 x 5	817204
PTFE (TTT)	for hose	12 x 9	817202
PTFE (TTT)	for hose	12 x 6	817203

## Support Insert Made of Stainless Steel No. 1.4571

For connection of PE or PTFE pipe to stainless steel connectors using Swagelock and Serto systems.

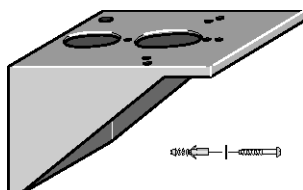


pk\_1\_090

	oØ x iØ mm	Order no.
for hose	6 x 4	359365
for hose	8 x 5	359366
for hose	12 x 9	359368
for hose	8 x 6	359362
for hose	12 x 10	359363

## 1.9.15 Wall Brackets for Metering Pumps

### PPE Wall Mounting Bracket



pk\_1\_092

With fittings, for mounting a metering pump of size Beta®/ 4, Beta®/ 5, gamma/ X and alpha.

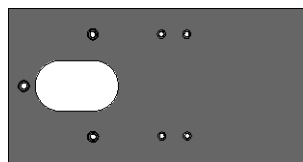
The Beta®/ 4, gamma/ X can either be mounted parallel or diagonally to each other.

Dimensions L x W x H: 208 x 120 x 140 mm

**Material** glasfaserverstärkter Kunststoff PPE

	Fig.	Order no.
for BT4, BT5, gamma/ X, G/ 4, G/ 5, D_4a	pk_1_092	810164

### PP Adapter Plate



pk\_1\_121

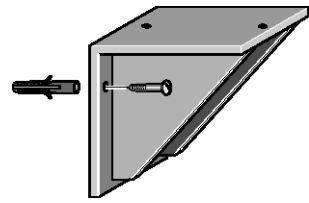
With fixing materials for vertical wall-mounting of Beta® or gamma pumps with self-degassing liquid ends. Used with PPE wall bracket.

	Fig.	Order no.
for BT4, BT5, gamma/ X	pk_1_121	1003030



# 1.9 Hydraulic/Mechanical Installation Accessories

## Metering Pump Wall Mounting Bracket

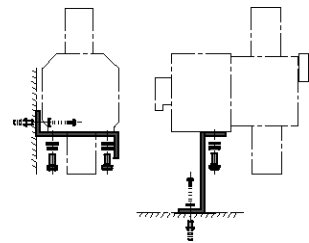


pk\_2\_036

PP wall bracket, holds pump parallel to the wall, includes fixings.  
 Dimensions L x W x H: 230 x 220 x 220 mm

	Fig.	Order no.
For delta®	pk_2_036	1001906

## Wall/Foot Bracket

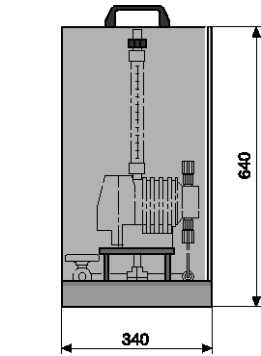


pk\_1\_095

To hold Pneumados metering pump. Floor or wall mounted, made of coated aluminium. Includes fittings.

	Fig.	Order no.
Dimensions: L x W x H 92 x 80 x 30	pk_1_095	790605

## Portable Plastic Pump Stand

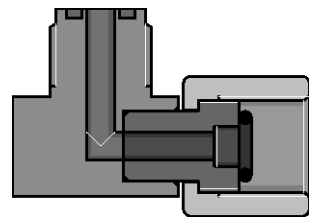


pk\_1\_093

To accommodate a metering pump of the product range beta® or gamma/ X. The pump stand can either be designed in PP or black PE. It is prepared for accommodating a fixed pipe and has collector equipment for escaping feed chemical, e.g. in the event of a leakage on the suction line or a rupture of the diaphragm. Supplied with carrying handle, but without pump and pipework

	Fig.	Order no.
Light grey PP	pk_1_093	1000180
Black PE	pk_1_093	1000181

## PVC Right-Angled Threaded Connector



pk\_1\_083

For mounting multifunctional valve onto Beta® or gamma/ L models, self-degassing liquid end version.

	Material	Fig.	Order no.
PCE Version	PVC/EPDM	pk_1_083	1003472
PCB Version	PVC/FKM	pk_1_083	1003318

\* **Caution:** The product contains adhesive joints with Tangit. Please note the resistance of Tangit adhesive.



# 1.9 Hydraulic/Mechanical Installation Accessories

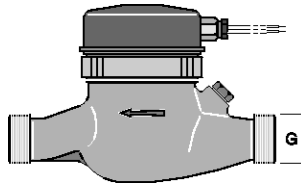
## 1.9.16 Contact Water Meters for Use in Potable Water and Accessories

### DIN Version contact water meter

PN 10 bar, readable, type series MNR-K, operating temp. 40 °C, contact load max. 100 mA, 24 V, NG - nominal size.

$Q_{max}$  = maximum load,  $Q_d$  = permanent load

$Q_n$  = nominal load (1/2  $Q_d$  according to calibration regulations)



pk\_1\_096

$Q_{max} / Q_d / Q_n$ NG - m <sup>3</sup> /h	Threaded connector width R DN/mm	Connector thread G	Length without thread mm	Pulse interval I	Order no.
5/5/2.5	3/4 – DN 20	1	190	0.05	304467
5/5/2.5	3/4 – DN 20	1	190	0.10	304432
5/5/2.5	3/4 – DN 20	1	190	0.25	304455
5/5/2.5	3/4 – DN 20	1	190	0.50	304431
5/5/2.5	3/4 – DN 20	1	190	1.00*	304434
5/5/2.5	3/4 – DN 20	1	190	10.00	304453
12/12/6	1 – DN 25	1 1/4	260	0.25	1004550
12/12/6	1 – DN 25	1 1/4	260	1.00*	1039764
12/12/6	1 – DN 25	1 1/4	260	1.50*	1004549
12/12/6	1 – DN 25	1 1/4	260	2.00*	1004546
12/12/6	1 – DN 25	1 1/4	260	10.00*	1004547
20/20/10	1 1/2 – DN 40	2	300	2.00*	1039765
20/20/10	1 1/2 – DN 40	2	300	3.00	1004552
20/20/10	1 1/2 – DN 40	2	300	10.00	1004554
30/30/15	2 – DN 50	2 1/2	270	3.00	1020551
30/30/15	2 – DN 50	2 1/2	270	4.00*	1020552
30/30/15	2 – DN 50	2 1/2	270	10.00	1020550

\*Standard storage tank

# 1.9 Hydraulic/Mechanical Installation Accessories

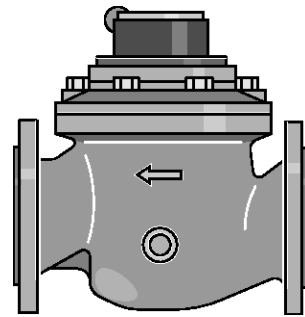
## DIN Version contact water meter

Readable, series WS-K, operating temp. 40 °C, contact load max. 30 mA, 30 V, DIN 2501 flange, PN 16 bar.

$Q_{max}$  = Maximum load

$Q_d$  = Continuous load

$Q_n$  = Nominal load



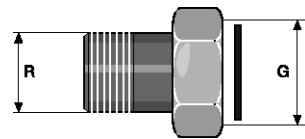
pk\_1\_097

$Q_{max} / Q_d / Q_n$	Connector width DN/mm	Lower working limit l/h	Length mm	Pulse interval l	Order no.
110/55/40	DN 80	275	300	10.00*	1004560
110/55/40	DN 80	275	300	25.00	1004558
110/55/40	DN 80	275	300	100.00	1004559
180/90/60	DN 100	300	360	10.00	1004567
180/90/60	DN 100	300	360	25.00*	1004556
180/90/60	DN 100	300	360	50.00	1004557
350/200/150	DN 150	800	500	50.00*	1004568

\*Standard storage tank

## Union assembly set with seal

For threaded water meter, brass.

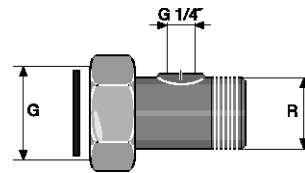


pk\_1\_098

		Order no.
R 3/4	G 1	359029
R 1	G 1 1/4	801322
R 1 1/4	G 1 1/2 – (turboDOS®)	359034
R 1 1/2	G 2	359037
R 2	G 2 1/2	359039

## Union assembly set with seal

For threaded water meter with G 1/4 connector for injection valve, brass.



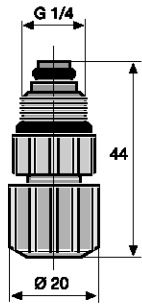
P\_AC\_0249\_SW

		Order no.
R 3/4	G 1 – 1/4	359030
R 1	G 1 1/4 – 1/4	359032
R 1 1/2	G 2 – 1/4	359038
R 2	G 2 1/2 – 1/4	801321



# 1.9 Hydraulic/Mechanical Installation Accessories

1



P\_AC\_0008\_SW

## O-ring loaded injection valve

For use with threaded connectors on water meters.

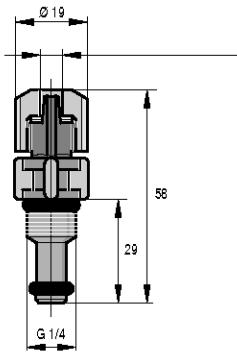
Short design for R 3/4 and R 1 threaded connectors, long design for R 1 1/2 and R 2 threaded connectors.

### Applications when using appropriate metering lines

25 °C - max. operating pressure 16 bar

45 °C - max. operating pressure 9 bar

Connector		Material	oØ x iØ mm	Fig.	Order no.
6/4 - G 1/4 short	for hose	PP/FKM	6 x 4	P_AC_0008_SW	914754
6/4 - G 1/4 long	for hose	PP/FKM	6 x 4	P_AC_0009_SW	741193
6/4 - G 1/4 short	for hose	PVC/FKM	6 x 4	P_AC_0008_SW	914558
6/4 - G 1/4 long	for hose	PVC/FKM	6 x 4	P_AC_0009_SW	915091



P\_AC\_0009\_SW



# 1.10 Mechanical/Hydraulic Special Accessories

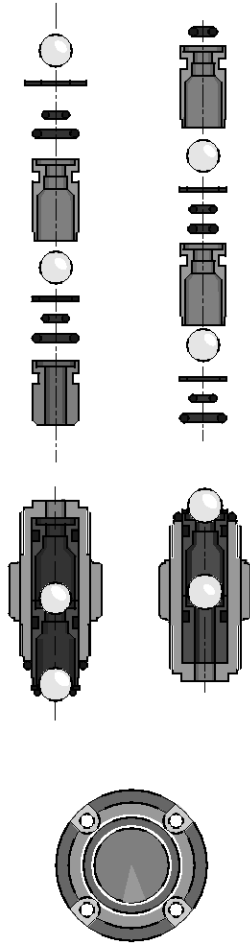
## 1.10.1 Spare Parts Kits

### Spare Parts Kits for Solenoid Driven Metering Pump Beta® a and gamma/ L

Spare parts kits for Beta® a und gamma/ L, consisting of:

- 1 diaphragm
- 1 suction valve assembly
- 1 discharge valve assembly
- 2 valve balls
- 1 connector kit

Stainless steel version without suction valve assembly and without discharge valve assembly



pk\_1\_008

Type	Materials in contact with the medium	Order no.
<b>Type 1000</b>	PPE	1001644
	PPB	1001652
	NPE	1001713
	NPB	1001721
	PPT, NPT, PVT	1023107
	TTT	1001737
<b>Type 1601</b>	SST	1001729
	PPE	1001645
	PPB	1001653
	NPE	1001714
	NPB	1001722
	PPT, NPT, PVT	1023108
<b>Type 1602</b>	TTT	1001738
	SST	1001730
	PPE	1001646
	PPB	1001654
	NPE	1001715
	NPB	1001723
<b>Type 1005 and Type 1605</b>	PVT, PPT, NPT	1023109
	TTT	1001739
	SST	1001731
	PPE	1001647
	PPB	1001655
	NPE	1001716
<b>Type 0708 and Type 1008</b>	NPB	1001724
	PVT, PPT, NPT	1023110
	PVT4	1019066
	TTT	1001740
	SST	1001732
	PPE	1001648
<b>Type 0413 and Type 0713</b>	PPB	1001656
	NPE	1001717
	NPB	1001725
	PVT, PPT, NPT	1023111
	PVT4	1019067
	TTT	1001741
<b>Type 0220 and Type 0420</b>	SST	1001733
	PPE	1001649
	PPB	1001657
	NPE	1001718
	NPB	1001726
	PPE	1001650
<b>Type 0220 and Type 0420</b>	PPB	1001658
	NPE	1001719
	NPB	1001727
	PVT, PPT, NPT	1023113
	PVT4	1019070
	TTT	1001754
SST	1001735	



## 1.10 Mechanical/Hydraulic Special Accessories

Type	Materials in contact with the medium	Order no.
Type 0232	PPE	1001651
	PPB	1001659
	NPE	1001720
	NPB	1001728
	PVT, PPT, NPT	1023124
	TTT	1001755
	SST	1001736

### Spare Parts Kits for Solenoid Driven Metering Pump Beta® a and gamma/ L with Self-bleeding Dosing Head with Bypass (SEK)

Spare parts kits for beta® a and gamma/ L with self-bleeding dosing head, consisting of:

- 1 diaphragm
- 1 suction valve assembly
- 1 discharge valve assembly
- 1 bleed valve assembly
- 2 valve balls
- 1 connector kit

Type	Materials in contact with the medium	Order no.	
Type 1601	PPE9	1001756	
	PPB9	1001762	
	NPE9	1001660	
	NPB9	1001666	
Type 1602	PPE9	1001757	
	PPB9	1001763	
	NPE9	1001661	
	NPB9	1001667	
Type 1005 and Type 1605	PPE9	1001758	
	PPB9	1001764	
	NPE	1001662	
	NPB9	1001668	
Type 0708 and Type 1008	PPE9	1001759	
	PPB9	1001765	
	NPE9	1001663	
	NPB9	1001669	
	Type 0413 and Type 0713	PPE9	1001760
		PPB9	1001766
NPE9		1001664	
NPB9		1001670	
Type 0220 and Type 0420	PPE9	1001761	
	PPB9	1001767	
	NPE9	1001665	
	NPB9	1001671	

### 1.10.2

### Pump Diaphragms

#### Replacement Diaphragms for Solenoid Driven Metering Pump Beta® a and gamma/ L

Type	Materials in contact with the medium	Order no.
Type 1000	all materials	1000244
Type 1601	all materials	1000245
Type 1602	all materials	1000246
Type 1005 and Type 1605	all materials	1000247
Type 0708 and Type 1008	all materials	1000248
Type 0413 and Type 0713	all materials	1000249
Type 0220 and Type 0420	all materials	1000250
Type 0232	all materials	1000251



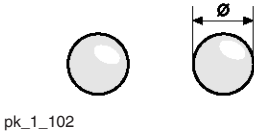


# 1.10 Mechanical/Hydraulic Special Accessories

## 1.10.3 Custom Valve Balls/Valve Springs

For on-site retrofitting of metering pumps and accessories, for applications where standard materials are unsuitable. Supplied loose only, not fitted.

### Valve balls

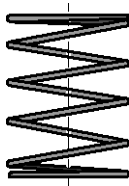


pk\_1\_102

Material	Ø mm		Order no.
PTFE	4.7	for valve Ø 6 mm	404255
PTFE	9.5	for valve Ø 8 and 12 mm	404258
PTFE	11.0	for valve DN 10	404260
PTFE	16.0	for valve DN 15	404259
Keramik	4.7	for valve Ø 6 mm	404201
Keramik	9.2	for valve Ø 8 and 12 mm	404281
Keramik	11.0	for valve DN 10	404277
Keramik	16.0	for valve DN 15	404275

### Valve springs for liquid ends

With approx. 0.1 bar priming pressure for spring loading of the valve balls in the liquid end. Recommended to improve the valve function and increase metering accuracy, in particular for viscous metering media above 50 mPas.

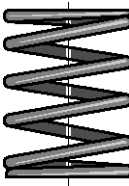


pk\_1\_103

Material	Prepressure bar		Order no.
1.4571	0.1	for valve 4.7	469406
1.4571	0.1	for valve 9.2	469403
1.4571	0.1	for mikro g/ 5	469437
1.4571	0.1	for mikro g/ 5	469438
1.4571	0.1	for mikro g/ 5	469439
Hast. C	0.1	for valve DN 10	469114
Hast. C	0.1	for valve DN 15	469107

### Valve springs for injection valves

Approx. 0.5/1/2 bar prepressure for increasing metering accuracy and preventing suction and siphoning effect.



pk\_1\_104

Material	Prepressure bar		Order no.
1.4571	1.0	for R 1/4" - Ø 6 mm connector	469401
Hast. C	0.5	for R 1/2" - Ø 6, 8 and 12 mm connector	469404
Hast. C	1.0	for R 1/2" - Ø 6, 8 and 12 mm connector	469413
Hast. C	2.0	for R 1/2" - Ø 6, 8 and 12 mm connector	469410
Hast. C	0.5	for DN 10	469115
Hast. C	1.0	for DN 10	469119
Hast. C	0.5	for DN 15	469108
Hast. C	1.0	for DN 15	469116

### Valve spring made of Hastelloy C with FEP coating

Material	Prepressure bar		Order no.
Hast. C/FEP	0.5	for R 1/2" - Ø 6, 8 and 12 mm connector	818590
Hast. C/FEP	1.0	for R 1/2" - Ø 6, 8 and 12 mm connector	818536
Hast. C/FEP	0.5	for DN 10	818515
Hast. C/FEP	0.5	for DN 15	818516

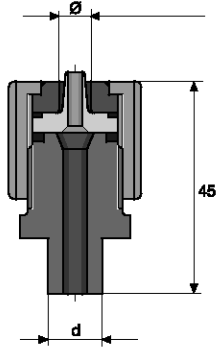


# 1.10 Mechanical/Hydraulic Special Accessories

## 1.10.4 Connector Parts/Fittings

### PVC hose/adhesive nipple

With union nut, for connection of PE tubing to rigid PVC fittings for on-site construction of connector system.

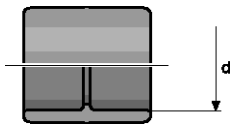


pk\_1\_107

	d mm		oØ x iØ mm	Fig.	Order no.
<b>Nozzle/solvent union</b>	12	for hose	6 x 4	pk_1_107	817088
	12	for hose	8 x 5	pk_1_107	817089
	12	for hose	12 x 9	pk_1_107	817090
	12	for hose	12 x 6	pk_1_107	817091
	16	for hose	6 x 4	pk_1_107	817092
	16	for hose	8 x 5	pk_1_107	817093
	16	for hose	12 x 9	pk_1_107	817094
	16	for hose	12 x 6	pk_1_107	817095

\* **Caution:** The product contains adhesive joints with Tangit. Please note the resistance of Tangit adhesive.

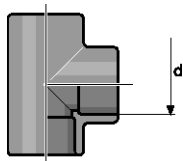
### PVC straight solvent union



pk\_1\_109

	d mm		Fig.	Order no.
<b>PVC straight solvent union</b>	12	DN 8	pk_1_109	356608
	16	DN 10	pk_1_109	356609
	20	DN 15	pk_1_109	356610
	25	DN 20	pk_1_109	356611

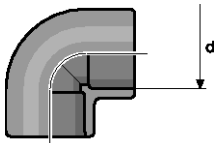
### PVC T-joint



pk\_1\_113

	d mm		Fig.	Order no.
<b>PVC T-joint</b>	12	DN 8	pk_1_113	356406
	16	DN 10	pk_1_113	356407
	20	DN 15	pk_1_113	356408
	25	DN 20	pk_1_113	356409

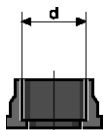
### 90° PVC elbow joint



pk\_1\_108

	d mm		Fig.	Order no.
<b>90° PVC elbow joint</b>	12	DN 8	pk_1_108	356315
	16	DN 10	pk_1_108	356316
	20	DN 15	pk_1_108	356317
	25	DN 20	pk_1_108	356318

### PVC insert (straight solvent union)



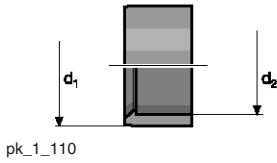
pk\_1\_115

	d mm		Fig.	Order no.
<b>PVC insert (straight solvent union)</b>	12	DN 8	pk_1_115	356571
	16	DN 10	pk_1_115	356572
	20	DN 15	pk_1_115	356573
	25	DN 20	pk_1_115	356574



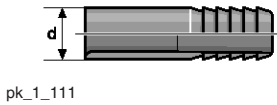
# 1.10 Mechanical/Hydraulic Special Accessories

## PVC short reducing union



	d1 mm	d2 mm	Fig.	Order no.
PVC short reducing union	12	8	pk_1_110	357025
	16	10	pk_1_110	357026
	20	16	pk_1_110	357027
	25	20	pk_1_110	357028

## PVC hose connection nozzle



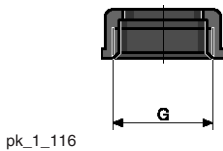
	d mm		Fig.	Order no.
PVC hose connection nozzle	12	DN 8	pk_1_111	356655
	16	DN 10	pk_1_111	356656
	20	DN 15	pk_1_111	356657
	25	DN 20	pk_1_111	356658

## Hose nozzle with seal



Material	d mm		Fig.	Order no.
PVC	16	DN 10	pk_2_046	800554
PVC	20	DN 15	pk_2_046	811407
PVC	25	DN 20	pk_2_046	811408
PP	16	DN 10	pk_2_046	800657
PP	20	DN 15	pk_2_046	800655
PP	25	DN 20	pk_2_046	800656

## Union nuts

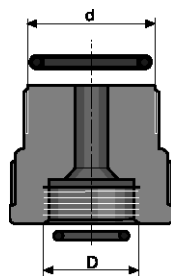


Material	Connection	Fig.	Order no.
PP	G 5/8 – DN 8	pk_1_116	800665
PP	G 3/4 – DN 10	pk_1_116	358613
PP	G 1 – DN 15	pk_1_116	358614
PP	G 1 1/4 – DN 20	pk_1_116	358615
PVC	G 5/8 – DN 8	pk_1_116	800565
PVC	G 3/4 – DN 10	pk_1_116	356562
PVC	G 1 – DN 15	pk_1_116	356563
PVC	G 1 1/4 – DN 20	pk_1_116	356564
PVDF	G 3/4 – DN 10	pk_1_116	358813



# 1.10 Mechanical/Hydraulic Special Accessories

1



pk\_1\_114

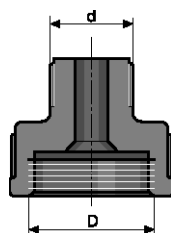
## Single adapter kit

For connection of system + GF+ threaded connectors to metering pumps and accessories.

Material	Size	Internal thread D	External thread d	Order no.
PP/EPDM	For DN 8 threaded connector	M20 x 1,5	G 5/8	817164
PP/FKM	For DN 8 threaded connector	M20 x 1,5	G 5/8	740604
PVC/EPDM	For DN 8 threaded connector	M20 x 1,5	G 5/8	740583
PVC/FKM	For DN 8 threaded connector	M20 x 1,5	G 5/8	817069
PVDF/PTFE	For DN 8 threaded connector	M20 x 1,5	G 5/8	1031073
PP/EPDM	For DN 10 threaded connector	M20 x 1,5	G 3/4	817165
PP/FKM	For DN 10 threaded connector	M20 x 1,5	G 3/4	817178
PVC/EPDM	For DN 10 threaded connector	M20 x 1,5	G 3/4	740585
PVC/FKM	For DN 10 threaded connector	M20 x 1,5	G 3/4	740601
PVDF/PTFE	For DN 10 threaded connector	M20 x 1,5	G 3/4	1028409

## Single adapter kit

For fitting series A, B, C and E accessories to current metric M20 x 1.5 connectors.

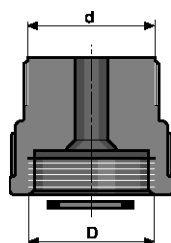


pk\_1\_124

Material	Size	Internal thread D	External thread d	Order no.
PP	6-8 mm connector	M20 x 1.5	G 1/4	811904
PVC	6-8 mm connector	M20 x 1.5	G 1/4	811902

## Double adapter kit

For fitting laboratory type GL connectors, manufactured by Bola or Schott.

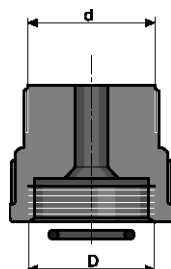


pk\_1\_127

Material	Size	Internal thread D	External thread d	Order no.
PTFE	GL 18	M20 x 1.5	GL 18	1000990

## Single adapter kit

For fittings of current accessories with metric M20 x 1.5 connectors to series A, B, C and E.



pk\_1\_122

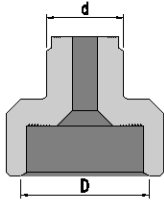
Material	Size	Internal thread D	External thread d	Order no.
PP/EPDM	6-8 mm connector	G 1/4	M20 x 1.5	741088
PVC/FKM	6-8 mm connector	G 1/4	M20 x 1.5	741087
PTFE	6-8 mm connector	G 1/4	M20 x 1.5	741091
PP/EPDM	12 mm connector	G 3/8	M20 x 1.5	741090
PVC/FKM	12 mm connector	G 3/8	M20 x 1.5	741089
PTFE	12 mm connector	G 3/8	M20 x 1.5	741092



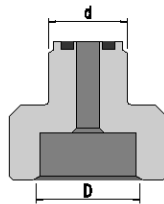
# 1.10 Mechanical/Hydraulic Special Accessories

## Adapter

Fits connector set for 12 x 9 hose.

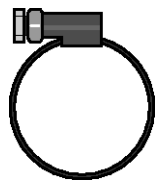


P\_AC\_0254\_SW



P\_AC\_0255\_SW

Material	Fig.	Internal thread D	External thread d	Order no.
PP	P_AC_0255	DN 10, G 3/4	M20 x 1.5	800815
PVC	P_AC_0255	DN 10, G 3/4	M20 x 1.5	800816
PVDF	P_AC_0254	DN 10, G 3/4	M20 x 1.5	1017406
PVDF	P_AC_0254	DN 15, G 1	M20 x 1.5	1028530



pk\_1\_068

## Stainless steel threaded clip

For connection of suction and discharge tubing to pressure nozzles.

	Clamping range mm	Order no.
DN 10 clamping ring	16 – 25	359703
DN 15 clamping ring	20 – 32	359705



pk\_1\_028

## Stainless steel straight threaded male adapter

Swagelock system, stainless steel SS 316 (1.4401) for fitting tubing to dosing heads and valves with inner threads and for SB versions.

	Order no.
6 mm - ISO 7 R 1/4	359526
8 mm - ISO 7 R 1/4	359527
12 mm - ISO 7 R 1/4	359528
12 mm - ISO 7 R 3/8	359520
16 mm - ISO 7 R 3/8	359521
16 mm - ISO 7 R 1/2	359529

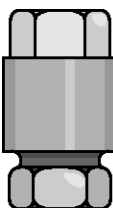


pk\_1\_117

## Stainless steel clamping ring sets

For use with stainless steel threaded connectors for metering pumps and Swagelock accessories. Both parts must be replaced at the same time. Set consists of back and front clamping rings.

	oØ mm	Order no.
Set of rings Ø 6 for pipe	6	104232
Set of rings Ø 8 for pipe	8	104236
Set of rings Ø 12 for pipe	12	104244



pk\_1\_118

## Stainless steel threaded connector

Serto system for connecting PE or PTFE discharge line to stainless steel pipe, made from stainless steel with clamping ring, but without support insert (parts in contact with chemicals stainless steel 1.4571).

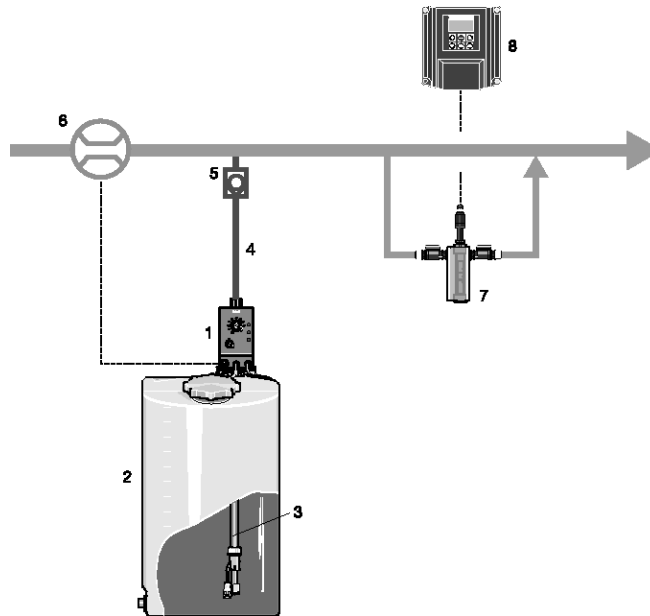
	Order no.
6 mm outer diameter to 6 mm outer diameter stainless steel pipe	359317
8 mm outer diameter to 8 mm outer diameter stainless steel pipe	359318
12 mm outer diameter to 12 mm outer diameter stainless steel pipe	359320



# 1.11 Application Examples

## 1.11.1 Volume-proportional Metering of Chlorine Bleach Solution in Potable Water

Product: **Beta®**  
 Metered medium: **NaOCl**  
 Sector: **Potable water**  
 Application: **Disinfection**



- 1 Beta®/ 4 with self-bleeding liquid end made of PMMA/PVC (Plexiglas)
- 2 Feed chemical tank
- 3 Intake fitting for foot valve and level switch
- 4 Soft PVC metering line with woven fabric or PTFE
- 5 Metering valve
- 6 Contact water meter
- 7 Chlorine measuring sensor
- 8 Control measurement

pk\_1\_132

### Task and requirements

- Volume-proportional feed of chlorine bleach solution into the main water flow
- Monitoring of chlorine content after metering

### Operating conditions

- Variable flow
- Installation in closed buildings

### Application information

- The metered medium emits gas, therefore after a relatively long period of pump idleness, an air (gas) bubble may have formed in the metering line causing an interruption in metering operation.
- Metering is to be fully automatic and without malfunctions as operating personnel are not always present in the waterworks or water supply.

### Solution

- Beta® solenoid-driven metering pump with self-bleeding liquid end
- Contact water meter in main line for pump activation
- DULCOMETER® measuring and control technology for final inspection

### Benefits

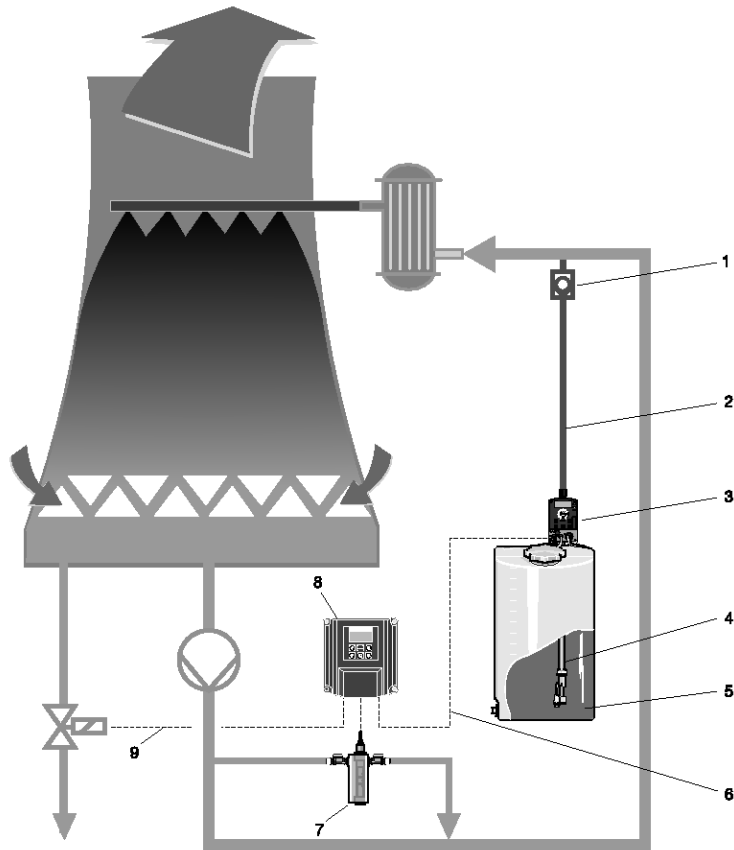
- High degree of reliability provided by self-bleeding liquid end
- Reliable protection against overmetering and undermetering with downstream final inspection



# 1.11 Application Examples

## 1.11.2 Shock Metering of Biocide in Cooling Water Circuit

Product: **gamma/ L**  
 Metering medium: **biocide**  
 Industry: **cooling water treatment**  
 Application: **disinfection**



- 1 Metering
- 2 Metering line
- 3 gamma/ L with process timer
- 4 Intake fitting for foot valve and level switch
- 5 Metering tank
- 6 Relay output for deactivation of conductivity-controlled desalination during biocide shock metering
- 7 Conductivity sensor
- 8 D1C conductivity
- 9 Activation – solenoid valve for desalination
- 10 Waste water

pk\_1\_133

### Tasks and requirements

- Increasing the biocide content e.g. at weekly intervals destroys all biological substances in the cooling water.
- Local increases in concentration may occur resulting in conductivity-controlled desalination. They disappear again after full dispersion in the cooling water circuit.
- Conductivity-controlled desalination must therefore be deactivated during shock metering and for an appropriate time afterwards.

### Operating conditions

- Aggressive chemicals (oxidising)
- Installation of the metering pump in the building

### Notes on application

- Shock metering takes place at defined intervals, e.g. weekly.
- In smaller cooling circuits, the metering pump with the integrated process timer replaces the PLC.
- Irrespective of the set metering times, conductivity-controlled desalination must be deactivated via a potential-free contact.
- In some cases, desalination is performed before each shock metering cycle. This procedure must be controlled by means of a second relay contact in the pump.



## 1.11 Application Examples

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### Solution

- gamma/L with process timer and corresponding relay outputs
- The relays can be assigned to the process timer as needed and execute the necessary switching functions.
- The pump itself operates at the specified metering times.
- The metering program can be set up on a PC and downloaded on site to the pump.
- Metering programs can be sent by e-mail.
- Liquid end made of PVDF for excellent chemical resistance

### Benefits

- High IP rating of IP 75 for the control by integration in the pump.
- Cost savings as no PLC required
- Saving of installation costs thanks to compact design
- Simple and safe setting up of programs on the PC
- Fast downloading to the pump, especially in cases where several pumps run with the same program.





# 2.0 Overview of Tanks and Transfer Pumps

## 2.0.1

### Selection Guide

The right accessories offer even more: They increase the performance range, application options or the feed rates.

This chapter includes storage tanks, transfer and peristaltic pumps, with which you can define the pump capacity precisely and store liquids safely.

The table will assist with quick selection. It is sorted by relevant key figures and details.

**NEW**



#### Selection Guide - Tanks:

	Shape	Effective volume
Dosing tank, PE natural/transparent	Cylindrical	35 – 1,500 l
Natural/transparent PE dosing tank with flat mounting surface	Cylindrical	35 – 250 l

#### Selection Guide - Transfer Pumps:

	Drive	Capacity range
Eccentric Screw Pump Spectra	Electric	to 12,000 l/h
Centrifugal Pump von Taine®	Electric	Up to 22,500 l/h
Air-Operated Diaphragm Pump Duodos	Compressed air	Up to 6,700 l/h, 7 bar
Barrel Pump DULCO®Trans	Electric	to 4,800 l/h

#### Selection aid for rotary pump

	Drive	Capacity range
Rotary Lobe Pumps	Electric	Capacity of 25 – 100 m³/h, 4 – 10 bar

**NEW**

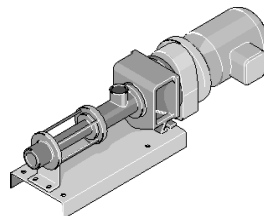
#### Selection Guide - Peristaltic Pumps

	Drive	Capacity range
Peristaltic Pump DULCO®flex	Electric	Up to 15,000 l/h, max. 15 bar

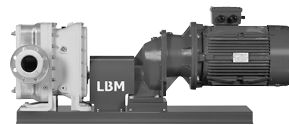
**Metering and storage tanks**  
see page → 2-10



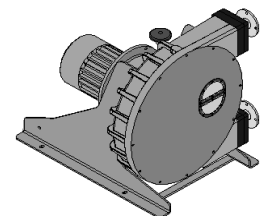
**Chemical transfer pumps**  
see page → 2-10



**Rotary lobe pump**  
see page → 2-23



**Peristaltic pumps**  
see page → 2-24



## 2.1 PE Metering Tanks and Collecting Pans

### 2.1.1 Dosing Tanks

Anyone who works with chemicals, needs to store them safely. ProMinent® dosing tanks are tough and ideal for working with metering pumps.

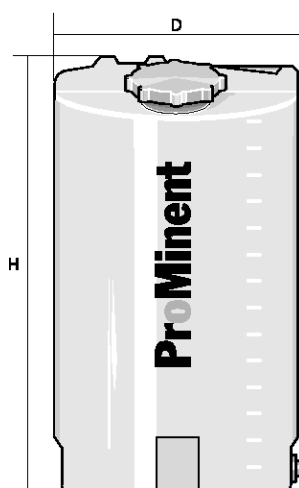
Useful capacity 35 – 1,500 l

PE storage tanks produced in a rotation process. They can be enhanced with ProMinent® metering pumps, suction lances and stirrers. The stackable PE collection pans are available in matching sizes.

#### Your benefits

- Environmentally-friendly storage of liquid chemicals
- Robust and durable: stable design in UV-stabilised PE (polyethylene)
- Scale for litres and US gallons
- Simple to install: sintered threaded sockets for fixing ProMinent metering pumps and stirrers on storage tanks
- Safe storage: A screw cover closes safely (push-on lid for 35-litre storage tank)
- Flat sides to secure the storage tank.
- Standard colours: natural, black, blue, yellow and red.

#### Natural Coloured/Transparent PE Dosing Tank



pk\_3\_0001\_1a

Usable capacity l	D mm	H mm	Threaded bush for metering pumps	Weight kg	Order no.
35	350	485	without threaded bushes	3.5	791993
60	410	590	gamma/ X, Beta®	5.0	791994
100	500	760	alpha, Beta®, gamma/ X	7.0	1001490
140	500	860	alpha, Beta®, gamma/ X	9.5	791995
250	650	1,100	alpha, Beta®, gamma/ X, Sigma/ 1/ 2/ 3, delta®	17.5	1023175
500	820	1,190	2 x gamma/ X, 2 x Sigma/ 1, 2 x delta®, 2 x Beta®	24.5	791997
1,000	1,070	1,260	2 x gamma/ X, 2 x Sigma/ 1/ 2/ 3, 2 x delta®, 2 x Beta®	51.0	1010909
1,500	1,150	1,735	2 x gamma/ X, 2 x Sigma/ 1/ 2/ 3, 2 x delta®, 2 x Beta®	80.0	1060975

#### Natural Coloured/Transparent PE Dosing Tank

Designed for the installation of a manually operated or electric stirrer.

Usable capacity l	with an opening for	Order no.
60	manually operated stirrer	792104
60	electric stirrer	792105
100	manually operated stirrer	1002034
100	electric stirrer	1002033
140	manually operated stirrer	792106
140	electric stirrer	792107
250	manually operated stirrer	792108
250	electric stirrer	792109
500	manually operated stirrer	792110
500	electric stirrer	792111
1,000	manually operated stirrer	1010910
1,000	electric stirrer	1010911

The 35 – 1,000-litre storage tank have an R 3/4" threaded sleeve (1,500 l: R 1 1/4") for drainage that can be drilled to Ø 10 mm on site if required. A PE R 3/4" sealing stopper (1,500 l: R 1 1/4") with a seal is screwed in.

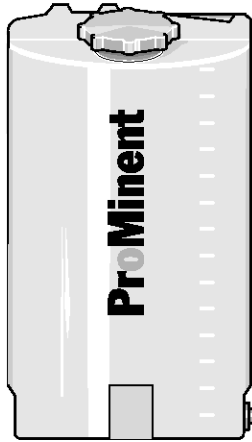
Dosing tanks without ProMinent logo are available on request.



## 2.1 PE Metering Tanks and Collecting Pans

### Black PE Dosing Tank

For light sensitive media.



pk\_3\_001\_1

Usable capacity l	Order no.
35	791998
60	791999
100	1001322
140	792000
250	1023176
500	792002
1,000	1010912
1,500	1060976

### Blue PE Dosing Tank

Usable capacity l	Order no.
35	1003812
60	1003813
100	1003814
140	1003815
250	1023177
500	1003817
1,000	1010913
1,500	1060977

### Yellow PE Dosing Tank

Usable capacity l	Order no.
35	1003818
60	1003819
100	1003820
140	1003821
250	1023178
500	1003823
1,000	1010914
1,500	1060978

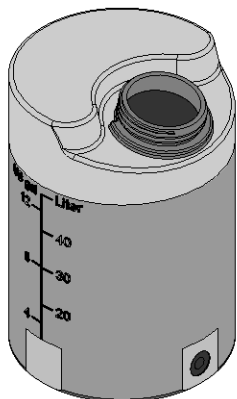
### Red PE Dosing Tank

Usable capacity l	Order no.
35	1003824
60	1003825
100	1003826
140	1003827
250	1023179
500	1003829
1,000	1010915
1,500	1060979

Dosing tanks without ProMinent® logo are available on request.



## 2.1 PE Metering Tanks and Collecting Pans



### Natural/transparent PE dosing tank with flat mounting surface

Usable capacity	D	H	Threaded bush for metering pumps	Weight	Order no.
l	mm	mm		kg	
35	350	485	without threaded bushes	3.5	791993
60	410	590	without threaded sockets	5.0	1061060
100	500	760	without threaded sockets	7.0	1008599
250	650	1,100	without threaded sockets	17.5	1061061

#### Your benefits

- "Natural/transparent PE dosing tank" design without sintered threaded socket
- Level mounting surface for the installation of metering pumps on the storage tank
- Additional installation of a manual or electric stirrer is possible

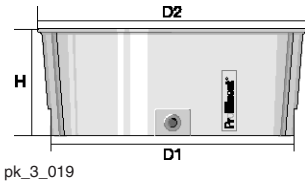
P\_DO\_0022\_SW1



## 2.1 PE Metering Tanks and Collecting Pans

### 2.1.2 PE Stackable Collecting Pans for Dosing Tanks

Made of UV-stabilised polyethylene in a stackable design with ProMinent® logo. 2 flat sides for fixing the collecting pan.



pk\_3\_019

#### Colourless/Transparent PE Stackable Collecting Pans

Usable capacity l	D2 mm	D1 mm	H mm	Weight kg	Order no.
35	565	507	220	3.0	1010879
60	680	607	270	4.3	1010880
100	802	727	320	6.5	1010881
140	811	727	370	7.0	1010882
250	917	807	520	11.0	1010883
500	1,155	1,009	670	16.0	1010884

#### Black PE Stackable Collecting Pans

Usable capacity l	D2 mm	D1 mm	H mm	Weight kg	Order no.
35	565	507	220	3.0	1010885
60	680	607	270	4.3	1010886
100	802	727	320	6.5	1010887
140	811	727	370	7.0	1010888
250	917	807	520	11.0	1010889
500	1,155	1,009	670	16.0	1010890

#### Blue PE Stackable Collecting Pans

Usable capacity l	D2 mm	D1 mm	H mm	Weight kg	Order no.
35	565	507	220	3.0	1010891
60	680	607	270	4.3	1010892
100	802	727	320	6.5	1010893
140	811	727	370	7.0	1010894
250	917	807	520	11.0	1010895
500	1,155	1,009	670	16.0	1010896

#### Yellow PE Stackable Collecting Pans

Usable capacity l	D2 mm	D1 mm	H mm	Weight kg	Order no.
35	565	507	220	3.0	1010897
60	680	607	270	4.3	1010898
100	802	727	320	6.5	1010899
140	811	727	370	7.0	1010900
250	917	807	520	11.0	1010901
500	1,155	1,009	670	16.0	1010902



## 2.1 PE Metering Tanks and Collecting Pans

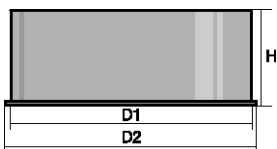
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### Red PE Stackable Collecting Pans

Usable capacity l	D2 mm	D1 mm	H mm	Weight kg	Order no.
35	565	507	220	3.0	1010903
60	680	607	270	4.3	1010904
100	802	727	320	6.5	1010905
140	811	727	370	7.0	1010906
250	917	807	520	11.0	1010907
500	1,155	1,009	670	16.0	1010908



An R 3/4" threaded sleeve is moulded on 35-500 litre collecting pans for drainage, which requires drilling (Ø 10 mm) on site if necessary. An R 3/4" PE sealing stopper with a seal is screwed in (Accessory part no. 200692).



pk\_3\_018a

### Natural PE Collecting Pan

Usable capacity l	D2 mm	D1 mm	H mm	Weight kg	Order no.
1,000	1,280	1,200	980	34.0	740719
1,500	1,410	1,350	1,280	42.0	1060980

### Black PE Collecting Pan

Usable capacity l	D2 mm	D1 mm	H mm	Weight kg	Order no.
1,000	1,280	1,200	980	34.0	740726
1,500	1,410	1,350	1,280	42.0	1060981

### 2.1.3

### Spare Parts

	Order no.
Push cap for 35 l tank	740708
Screw cap with seal for 60/100/140/250	1031429
Screw cap with seal for 500/1000	1030910
Sealing stopper with 3/4" PE seal	200692
Sealing stopper with 1 1/4" PE seal	1061779



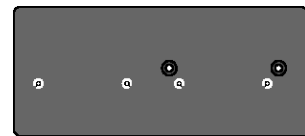
## 2.2 Accessories for Metering Tanks

### 2.2.1 Fittings and Detachable Parts

#### Attachment of pumps to dosing tanks

##### PP mounting plate

For mounting metering pumps onto metering tanks (including screws for attachment of mounting plates to the metering tank).



pk\_3\_003

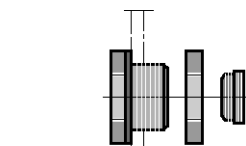
	Order no.
Mounting plate, Sigma/ 1/ 2/ 3	740476
Mounting plate, alpha	790850
Mounting plate for Beta®, gamma/ X	801575
Mounting plate 3 x gamma/ X, 3 x Beta®	801580
Mounting plate 2 x gamma/ X, 2 x Beta®	801583

Please refer to the following table for the order numbers for the mounting plates.

Metering pumps	Dosing tanks						
	35 l	60 l	100 l	140 l	250 l	500 l	1000 l/1500 l
alpha	790850	790850	x	x	x	2x790850	2x790850
Beta®, gamma/ X	801575	x	x	x	x	2x	2x
delta®	-	801569	801569	801569	x	2x	2x
Sigma/ 1	-	801569	740476	740476	x	2x	2x
Sigma/ 2, Sigma/ 3	-	-	-	-	x	2x740476	2x
2xBeta® or 2xgamma/ X	-	801583	801583	801583	801583	2x801583	2x801583
3xBeta® or 3xgamma/ X	-	-	801580	801580	801580	2x801580	2x801580

- x = Direct installation of a pump on a storage tank
- 2x = Direct installation of 2 pumps on a storage tank
- - = Pump cannot be installed on the storage tank

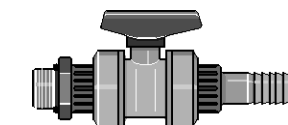
#### Tank connectors with PE plugs



pk\_3\_004

	Order no.
R 1/2" as an additional connection for PE metering tanks 35-1,000 l	809755
R 3/4" as an additional connection for PE metering tanks 35-1,000 l	809756

#### PP discharge tap



pk\_3\_005

	Order no.
For metering tanks with d 20, Ø 20 mm hose nozzle and 3/4" nipple for direct connection to the threaded connector on the tank.	809714

#### PVC discharge tap

	Order no.
For metering tanks with d 16, Ø 16 mm hose nozzle and 3/4" nipple for direct connection to the threaded connector on the tank.	809745

#### Screw cap lock

	Order no.
Lock with key for screw cap	200683

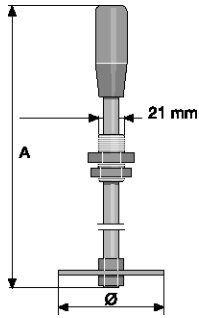


## 2.2 Accessories for Metering Tanks

### 2.2.2 Stirrers

#### PP Hand mixer

Fully assembled.

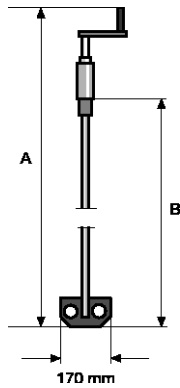


pk\_3\_009

	A mm	Ø mm	Order no.
for 35 und 60 l storage tanks	515	90	741118
for 100 and 140 l tanks	715	90	741119
for 250 and 500 l tanks	1,040	130	741120

#### PP Hand stirrer

With crank, fully assembled



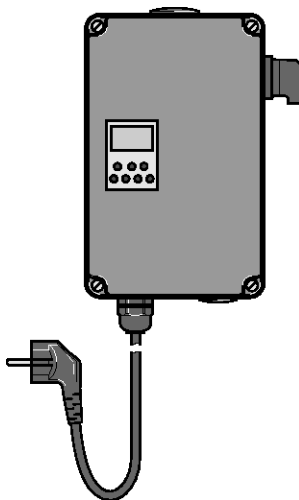
pk\_3\_007

	A mm	B mm	Order no.
for 60 l tanks	670	465	914701
for 100 l tanks	855	650	914738
for 140 l tanks	965	765	914702
for 250 and 500 l tanks	1,175	965	914703
for 1000 l tanks	1,240	1,040	914705

#### Timer with digital clock

	Order no.
In plastic housing for the control of a stirrer or a metering pump, 230 V, 50 Hz, max. 6A, IP 65. Day and week programs, shortest switching time 1 min. with 2 m power cable and euro plug.	1005561

Stirrers should only be operated via the motor protection switch!



pk\_3\_010\_1





## 2.2 Accessories for Metering Tanks

### Electric stirrers for dosing tanks

For the batching and mixing of liquids up to max. 500 mPas viscosity. Intermittent operation using timer recommended.

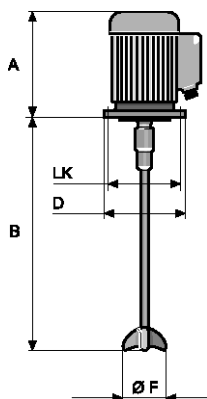
- Wide-range motor with insulation class F, insulated for use in hot climates
- Stainless steel or plastic-coated shaft
- Polypropylene propeller
- Provide a motor protection switch for all stirrers.
- Not suitable for gaseous media

### Stainless steel electric stirrer

For tank	Power uptake W	Shaft	Propeller	Weight kg	Order no.
60 l	20	1.4571	PP	2.9	818576
100 l	180	1.4571	PP	3.0	1001566
140 l	180	1.4571	PP	7.3	791502
250 l	180	1.4571	PP	7.3	791503
500 l	250	1.4571	PP	8.5	791504
1000 l I	750	1.4571	PP	18.0	791458
1500 l	1,100	1.4535	PP	22.0	1061200

### Chemical resistant electric stirrer

For tank	Power uptake W	Shaft	Propeller	Weight kg	Order no.
60 l	20	1.4571/PVDF	PP	2.9	818577
100 l	180	1.4571/PVDF	PP	3.0	1002035
140 l	180	1.4571/PVDF	PP	7.3	791454
250 l	180	1.4571/PVDF	PP	7.3	791455
500 l	250	1.4571/PVDF	PP	8.5	791456
1000 l	750	1.4571/PVDF	PP	18.0	791457
1500 l	1,100	Steel/PE	PP	22.0	1061201



pk\_3\_008

Size	A	B	Ø D	Ø LK	Ø F
60	195	490	115	100	70
100	200	675	160	130	70
140	200	780	160	130	70
250	200	950	160	130	70
500	200	950	160	130	70
1000	230	1190	200	165	130
1500	282	1400	200	165	175

### Technical Data

For tank	Capacity	Voltage (50 Hz)	Nominal current (50 Hz)	Speed (50 Hz)	Enclosure rating
60 l	0,02 kW	1 pH, 230 V	0,38 A	1400	IP55
100 l	0,18 kW	1 pH, 230 V	1,9 A	1440	IP55
140 l	0,18 kW	1 pH, 230 V	1,9 A	1440	IP55
250 l	0,18 kW	1 pH, 230 V	1,9 A	1440	IP55
500 l	0,25 kW	1 pH, 230 V	1,8 A	1440	IP55
1000 l	0,75 kW	3 pH, 230/400 V	2,96/1,71 A	1440	IP55
1500 l	1,1 kW	3 pH, 230/400 V	4,5/2,6 A	1500	IP55



## 2.3 Eccentric Screw Pump Spectra

### 2.3.1 Eccentric Screw Pump Spectra for Pumping Polymer Solutions

Pump ultra-gently, meter precisely and with a wealth of applications.

Capacity range 2.4 – 12,000 l/h, 12 – 3 bar

The eccentric screw pump Spectra meters liquid polyelectrolytes in concentrated and dilute form. It can be used, for example, in waste water treatment or sludge dewatering.

The eccentric screw pump Spectra has been designed for the transport of polymer solutions with a viscosity of up to 5,000 mPas. It is low-maintenance and can even be used if polymer solutions containing oil are to be metered.

The pumps are equipped with gear motors and external fans and can be operated via an external frequency converter. Protect the pump from running dry.

#### Your benefits

- Low-pulsation pumping
- Feed rate is proportional to the speed
- Reversible pumping direction

#### Technical details

- FKM stator
- Stainless steel (Cr-Ni-Mo 17-12-2) rotor
- Stainless steel housing for 12/2 - 12/100
- Grey cast iron housing for 6/300 - 3/12000
- Axial face seal
- Voltage: 3-phase, 230/400 VAC
- Degree of protection: IP55

#### Field of application

Waste water treatment, sludge dewatering

The frequency converters do not form part of the Spectra scope of supply.

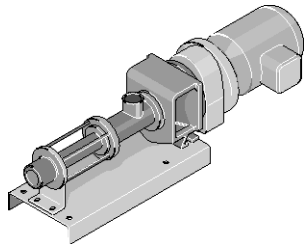
#### Without base plate

	Delivery rate at 3 bar	Maximum back pressure bar	Power uptake kW	Order no.
<b>Spectra 12/2 F</b>	0.24...2.4 l/h	12	0.37	1025284
<b>Spectra 12/13 F</b>	1.3...13.2 l/h	12	0.37	1025285
<b>Spectra 12/33 F</b>	3.3...33 l/h	12	0.37	1025286
<b>Spectra 12/100 F</b>	10...100 l/h	12	0.37	1025287
<b>Spectra 6/300 F</b>	30...300 l/h	6	0.37	1025288
<b>Spectra 6/650 F</b>	65...650 l/h	6	0.55	1025289
<b>Spectra 5/1400 F</b>	140...1,400 l/h	5	0.75	1025290
<b>Spectra 3/3000 F</b>	300...3,000 l/h	3	0.75	1025291
<b>Spectra 3/6500 F</b>	650...6,500 l/h	3	1.50	1025292
<b>Spectra 3/12000 F</b>	1,200...12,000 l/h	3	2.20	1025293

#### With base plate

	Delivery rate at 3 bar	Maximum back pressure bar	Power uptake kW	Order no.
<b>Spectra 12/2 FB</b>	0.24...2.4 l/h	12	0.37	1025294
<b>Spectra 12/13 FB</b>	1.3...13.2 l/h	12	0.37	1025295
<b>Spectra 12/33 FB</b>	3.3...33 l/h	12	0.37	1025296
<b>Spectra 12/100 FB</b>	10...100 l/h	12	0.37	1025297
<b>Spectra 6/300 FB</b>	30...300 l/h	6	0.37	1025298
<b>Spectra 6/650 FB</b>	65...650 l/h	6	0.55	1025299
<b>Spectra 5/1400 FB</b>	140...1,400 l/h	5	0.75	1025300
<b>Spectra 3/3000 FB</b>	300...3,000 l/h	3	0.75	1025301
<b>Spectra 3/6500 FB</b>	650...6,500 l/h	3	1.50	1025302
<b>Spectra 3/12000 FB</b>	1,200...12,000 l/h	3	2.20	1025303

pk\_3\_032



2





## 2.3 Eccentric Screw Pump Spectra

### Frequency Converters for Spectra

		Recommended for pumps up to	Order no.
<b>SK500E – 550</b>	0.55 kW, 1 ph, 230 V, incl. control panel	0.37 kW	1010980
<b>SK500E – 750</b>	0.75 kW, 1 ph, 230 V, incl. control panel	0.55 kW	1010981
<b>SK500E – 111</b>	1.10 kW, 1 ph, 230 V, incl. control panel	0.75 kW	1025304
<b>SK500E – 151</b>	1.50 kW, 1 ph, 230 V, incl. control panel	1.10 kW	1010982
<b>SK500E – 221</b>	2.20 kW, 3 ph, 400 V, incl. control panel	2.20 kW	1025305

The frequency converters do not form part of the Spectra scope of supply.

### Motor Data

Electrical connection	Frequency	Enclosure rating	Overheating protection	Cooling
230/400 VAC, 3 ph	4 - 89 Hz	IP 55	3 PTC thermistors in winding	external fan 1~, 230 VAC, 50 Hz

### Technical Data

	Weight kg	Dimensions L x W x H (mm)	Housing material	Material rot. parts	Suction/discharge connection
<b>Spectra 12/2 F</b>	24	739 x 200 x 182	Cr Ni Mo 17 – 12 – 2	Cr Ni Mo 17 – 12 – 2	1/2", female
<b>Spectra 12/13 F</b>	24	739 x 200 x 182	Cr Ni Mo 17 – 12 – 2	Cr Ni Mo 17 – 12 – 2	1/2", female
<b>Spectra 12/33 F</b>	24	739 x 200 x 182	Cr Ni Mo 17 – 12 – 2	Cr Ni Mo 17 – 12 – 2	1/2", female
<b>Spectra 12/100 F</b>	24	739 x 200 x 182	Cr Ni Mo 17 – 12 – 2	Cr Ni Mo 17 – 12 – 2	1/2", female
<b>Spectra 6/300 F</b>	26	874 x 223 x 192	Grey cast iron	Cr Ni Mo 17 – 12 – 2	1 1/4", female
<b>Spectra 6/650 F</b>	26	874 x 223 x 192	Grey cast iron	Cr Ni Mo 17 – 12 – 2	1 1/4", female
<b>Spectra 5/1400 F</b>	26	874 x 223 x 192	Grey cast iron	Cr Ni Mo 17 – 12 – 2	1 1/4", female
<b>Spectra 3/3000 F</b>	36	950 x 223 x 193	Grey cast iron	Cr Ni Mo 17 – 12 – 2	1 1/4", female
<b>Spectra 3/6500 F</b>	56	1,172 x 237 x 224	Grey cast iron	Cr Ni Mo 17 – 12 – 2	DN 50, flange
<b>Spectra 3/12000 F</b>	81	1,487 x 264 x 244	Grey cast iron	Cr Ni Mo 17 – 12 – 2	DN 65, flange
<b>Spectra 12/2 FB</b>	28	739 x 220 x 232	Cr Ni Mo 17 – 12 – 2	Cr Ni Mo 17 – 12 – 2	1/2", female
<b>Spectra 12/13 FB</b>	28	739 x 220 x 232	Cr Ni Mo 17 – 12 – 2	Cr Ni Mo 17 – 12 – 2	1/2", female
<b>Spectra 12/33 FB</b>	28	739 x 220 x 232	Cr Ni Mo 17 – 12 – 2	Cr Ni Mo 17 – 12 – 2	1/2", female
<b>Spectra 12/100 FB</b>	28	739 x 220 x 232	Cr Ni Mo 17 – 12 – 2	Cr Ni Mo 17 – 12 – 2	1/2", female
<b>Spectra 6/300 FB</b>	33	874 x 230 x 242	Grey cast iron	Cr Ni Mo 17 – 12 – 2	1 1/4", female
<b>Spectra 6/650 FB</b>	33	874 x 230 x 242	Grey cast iron	Cr Ni Mo 17 – 12 – 2	1 1/4", female
<b>Spectra 5/1400 FB</b>	33	874 x 230 x 242	Grey cast iron	Cr Ni Mo 17 – 12 – 2	1 1/4", female
<b>Spectra 3/3000 FB</b>	44	950 x 230 x 242	Grey cast iron	Cr Ni Mo 17 – 12 – 2	1 1/4", female
<b>Spectra 3/6500 FB</b>	67	1,172 x 237 x 274	Grey cast iron	Cr Ni Mo 17 – 12 – 2	DN 50, flange
<b>Spectra 3/12000 FB</b>	96	1,487 x 265 x 294	Grey cast iron	Cr Ni Mo 17 – 12 – 2	DN 65, flange

## 2.3 Eccentric Screw Pump Spectra

### 2.3.2 Spare Parts

	Order no.
Stator FKM for Spectra 12/2	1025306
Stator FKM for Spectra 12/13	1025307
Stator FKM for Spectra 12/30, 12/33	1025308
Stator made of FKM for Spectra 12/100	1025309
Stator FKM for Spectra 6/300, 6/650	1025310
Stator FKM for Spectra 5/1400	1025312
Stator FKM for Spectra 3/3000	1025313
Stator made of FKM for Spectra 3/6500	1025314
Stator FKM for Spectra 3/12000	1025315
Rotor Cr Ni Mo 17-12-2 for Spectra 12/2	1025316
Rotor Cr Ni Mo 17-12-2 for Spectra 12/13	1025317
Rotor Cr Ni Mo 17-12-2 for Spectra 12/30, 12/33	1025318
Rotor made of Cr Ni Mo 17-12-2 for Spectra 12/100	1025319
Rotor Cr Ni Mo 17-12-2 for Spectra 6/300, 6/650	1025320
Rotor Cr Ni Mo 17-12-2 for Spectra 5/1400	1025322
Rotor Cr Ni Mo 17-12-2 for Spectra 3/3000	1025323
Rotor made of Cr Ni Mo 17-12-2 for Spectra 3/6500	1025324
Rotor Cr Ni Mo 17-12-2 for Spectra 3/12000	1025325
Spare parts kit for axial face seal for Spectra 12/2 - 12/100	1025326
Spare parts kit for mech. seal for Spectra 6/300 - 5/1400	1025330
Spare parts kit for mech. seal for Spectra 3/3000	1025333
Spare parts kit for axial face seal for Spectra 3/6500	1025334
Spare parts kit for mech. seal for Spectra 3/12000	1025335
Spare parts kit for pin joint for Spectra 12/2 - 12/100	1025346
Pin joints spare parts kit for Spectra 6/300 - 5/1400	1025350
Pin joints spare parts kit for Spectra 3/3000	1025353
Spare parts kit for pin joint for Spectra 3/6500	1025354
Pin joints spare parts kit for Spectra 3/12000	1025355



## 2.4 Centrifugal Pump von Taine®

### 2.4.1

### Centrifugal Pump von Taine®

The safe and high-quality solution when liquid media need to be pumped leak-free.

Capacity range up to 22,500 l/h, discharge lift up to 23.5 mWC



The solenoid-coupled centrifugal pump vonTaine® for the pumping of liquid media works safely and reliably: liquid media are pumped leak-free.

The von Taine® pump is a solenoid-coupled centrifugal pump. Thanks to the solenoid coupling, the pump transports the liquid medium from storage tank to storage tank without any leaks or even from a tank to a discharge line. The von Taine® centrifugal pump transports media at up to 22,500 l/h and up to a discharge lift of 23.5 metres. As the pump capacity is highly dependent on the back pressure, always observe the performance curve.

#### Important note

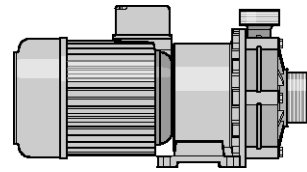
Check the material tolerability when selecting your pump. Take into consideration the density, viscosity and temperature of the medium to be transported. Please also note: The transported media should not contain any solid fractions. The pump is not self-priming and requires a feed.

#### Your benefits

- Safe and reliable: Leak-free pumping of liquid chemicals
- Coupling between motor and impeller via magnetic coupling

#### Technical details

- Pump head made of PP or PVDF
- FKM or EPDM seal
- The pump is not self-priming and requires a feed
- Protect the pump from running dry
- Hydraulic connectors with pipe threading as per DIN ISO 228-1



pk\_3\_026

#### Field of application

Leak-free pumping of liquid chemicals

#### von Taine®, PP/FKM Version

	Feed rate at max. pressure l/h	Feed lift max. m	Power uptake kW	Voltage/ frequency	Weight	Order no.
von Taine® 0502 PP/FKM	1,800	4.5	0.06	1~/230 V/50 Hz	2.7 kg	1023089
von Taine® 0807 PP/FKM	6,600	7.9	0.25	3~/400 V/50 Hz	5.0 kg	1023090
von Taine® 1010 PP/FKM	9,600	10.0	0.37	3~/400 V/50 Hz	7.6 kg	1023091
von Taine® 1313 PP/FKM	13,200	13.2	0.65	3~/400 V/50 Hz	8.7 kg	1023092
von Taine® 1820 PP/FKM	19,500	18.1	1.10	3~/400 V/50 Hz	16.0 kg	1023093
von Taine® 2323 PP/FKM	22,500	23.5	1.50	3~/400 V/50 Hz	17.0 kg	1023094

#### von Taine®, PVDF/FKM Version

	Feed rate at max. pressure l/h	Feed lift max. m	Power uptake kW	Voltage/ frequency	Weight	Order no.
von Taine® 0502 PVDF/FKM	1,800	4.5	0.06	1~/230 V/50 Hz	2.8 kg	1023095
von Taine® 0807 PVDF/FKM	6,600	7.9	0.25	3~/400 V/50 Hz	5.2 kg	1023096
von Taine® 1010 PVDF/FKM	9,600	10.0	0.37	3~/400 V/50 Hz	8.0 kg	1023097
von Taine® 1313 PVDF/FKM	13,200	13.2	0.65	3~/400 V/50 Hz	9.0 kg	1023098
von Taine® 1820 PVDF/FKM	19,500	18.2	1.10	3~/400 V/50 Hz	16.7 kg	1023099
von Taine® 2323 PVDF/FKM	22,500	23.5	1.50	3~/400 V/50 Hz	17.7 kg	1023100



## 2.4 Centrifugal Pump von Taine®

### von Taine®, PP/EPDM Version

	Feed rate at max. pressure l/h	Feed lift max. m	Power uptake kW	Voltage/ frequency	Weight	Order no.
von Taine® 0502 PP/EPDM	1,800	4.5	0.06	1~/230 V/50 Hz	2.7 kg	1028551
von Taine® 0807 PP/EPDM	6,600	7.9	0.25	3~/400 V/50 Hz	5.0 kg	1028552
von Taine® 1010 PP/EPDM	9,600	10.0	0.37	3~/400 V/50 Hz	7.6 kg	1028553
von Taine® 1313 PP/EPDM	13,200	13.2	0.65	3~/400 V/50 Hz	8.7 kg	1028564
von Taine® 1820 PP/EPDM	19,500	18.1	1.10	3~/400 V/50 Hz	16.0 kg	1028565
von Taine® 2323 PP/EPDM	22,500	23.5	1.50	3~/400 V/50 Hz	17.0 kg	1028566

### von Taine®, PVDF/EPDM Version

	Feed rate at max. pressure l/h	Feed lift max. m	Power uptake kW	Voltage/ frequency	Weight	Order no.
von Taine® 0502 PVDF/EPDM	1,800	4.5	0.06	1~/230 V/50 Hz	2.8 kg	1028567
von Taine® 0807 PVDF/EPDM	6,600	7.9	0.25	3~/400 V/50 Hz	5.2 kg	1028568
von Taine® 1010 PVDF/EPDM	9,600	10.0	0.37	3~/400 V/50 Hz	8.0 kg	1028569
von Taine® 1313 PVDF/EPDM	13,200	13.2	0.65	3~/400 V/50 Hz	9.0 kg	1028570
von Taine® 1820 PVDF/EPDM	19,500	18.1	1.10	3~/400 V/50 Hz	16.7 kg	1028571
von Taine® 2323 PVDF/EPDM	22,500	23.5	1.50	3~/400 V/50 Hz	17.7 kg	1028572

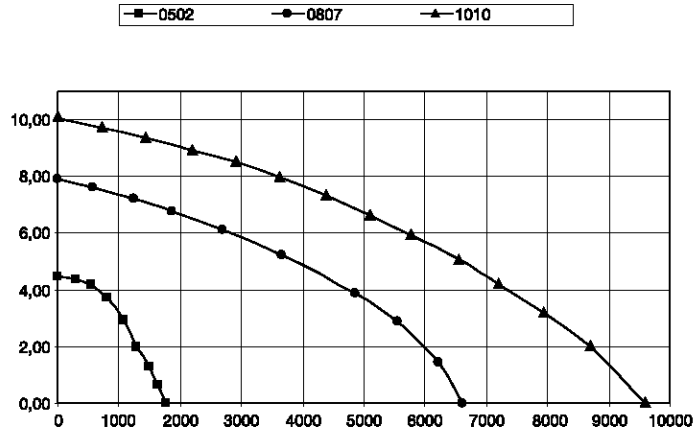
### Parameters For Use

	Medium temperature max. °C	Maximum density kg/dm <sup>3</sup>	Max. viscosity mPas	Max. system pressure at 20° C bar
von Taine® 0502 PP	80	1.25...1.35	20	1.0
von Taine® 0807 PP	80	1.20...1.80	20	2.5
von Taine® 1010 PP	80	1.60...2.00	20	2.5
von Taine® 1313 PP	80	1.60...1.90	20	2.5
von Taine® 1820 PP	80	1.10...1.80	20	5.0
von Taine® 2323 PP	80	1.00...2.00	20	5.0
von Taine® 0502 PVDF	95	1.25...1.35	20	1.0
von Taine® 0807 PVDF	95	1.20...1.80	20	2.5
von Taine® 1010 PVDF	95	1.60...2.00	20	2.5
von Taine® 1313 PVDF	95	1.60...1.90	20	2.5
von Taine® 1820 PVDF	95	1.10...1.80	20	5.0
von Taine® 2323 PVDF	95	1.00...2.00	20	5.0



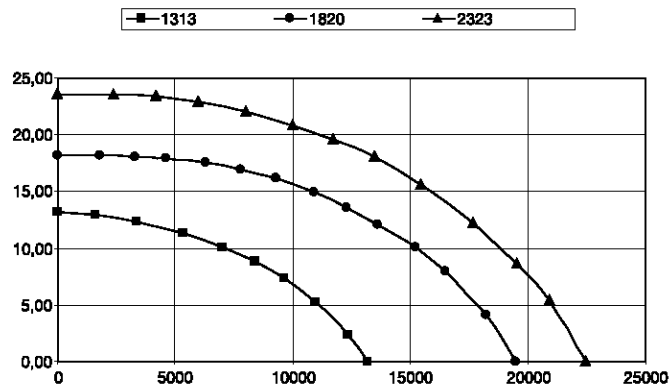
## 2.4 Centrifugal Pump von Taine®

### Characteristic Curves



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Delivered quantity [l/h] as a function of the delivery head [mWC]



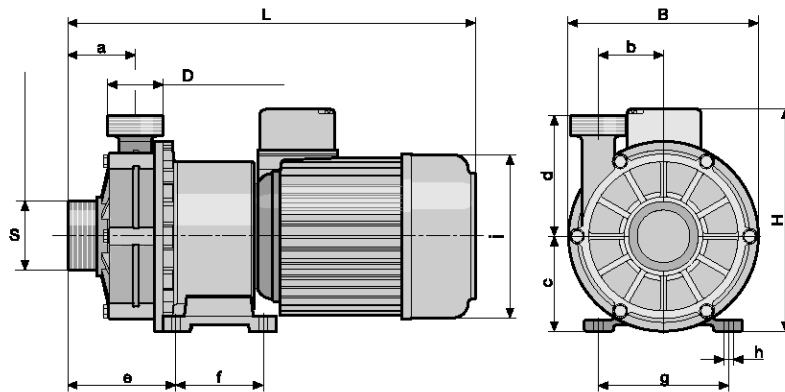
pk\_2\_115

Delivered quantity [l/h] as a function of the delivery head [mWC]



## 2.4 Centrifugal Pump von Taine®

### Dimensions



pk\_3\_027

		von Taine® 0502 PVDF	von Taine® 0807 PVDF	von Taine® 1010 PVDF	von Taine® 1313 PVDF	von Taine® 1820 PVDF	von Taine® 2323 PVDF
<b>Discharge connector (D)</b>		G1"	G1 1/4"	G1 1/2"	G1 1/2"	G2"	G2"
<b>Suction connector (S)</b>		G1 1/4"	G1 1/4"	G2"	G2"	G2 1/4"	G2 1/4"
<b>L</b>	mm	240	283	346	350	455	455
<b>B</b>	mm	120	138	163	163	205	205
<b>H</b>	mm	145	185	181	191	216	216
<b>a</b>	mm	37.0	45.0	58.5	58.5	70.0	70.0
<b>b</b>	mm	29.5	29.5	56.0	56.0	70.0	70.0
<b>c</b>	mm	60.0	70.0	82.0	82.0	104.5	104.5
<b>d</b>	mm	65.5	86.0	104.0	104.0	134.5	134.5
<b>e</b>	mm	129	50	106	106	115	115
<b>f</b>	mm	78	71	74	74	100	100
<b>g</b>	mm	91	91	114	114	130	130
<b>h</b>	mm	6.5	8.5	8.5	8.5	10.0	10.0
<b>i</b>	mm	92	135	136.5	135	160	160
<b>Enclosure rating</b>		IP 55	IP 55	IP 55	IP 55	IP 55	IP 55
<b>Min. flow</b>	l/h	30	60	60	60	90	120







## 2.4 Centrifugal Pump von Taine®

### 2.4.2

#### Spare Parts Kits

	<b>Order no.</b>
PP/FKM liquid end for von Taine® 0502	1023978
PP/FKM liquid end for von Taine® 0807	1023979
PP/FKM liquid end for von Taine® 1010	1023980
PP/FKM liquid end for von Taine® 1313	1023981
PP/FKM liquid end for von Taine® 1820	1023982
PP/FKM liquid end for von Taine® 2323	1023983
PVDF/FKM liquid end for von Taine® 0502	1023994
PVDF/FKM liquid end for von Taine® 0807	1023995
PVDF/FKM liquid end for von Taine® 1010	1023996
PVDF/FKM liquid end for von Taine® 1313	1023997
PVDF/FKM liquid end for von Taine® 1820	1023998
PVDF/FKM liquid end for von Taine® 2323	1023999
	<b>Order no.</b>
PP/EPDM liquid end for von Taine® 0502	1028573
PP/EPDM liquid end for von Taine® 0807	1028574
PP/EPDM liquid end for von Taine® 1010	1028575
PP/EPDM liquid end for von Taine® 1313	1028576
PP/EPDM liquid end for von Taine® 1820	1028577
PP/EPDM liquid end for von Taine® 2323	1028578
PVDF/EPDM liquid end for von Taine® 0502	1028579
PVDF/EPDM liquid end for von Taine® 0807	1028580
PVDF/EPDM liquid end for von Taine® 1010	1028581
PVDF/EPDM liquid end for von Taine® 1313	1028582
PVDF/EPDM liquid end for von Taine® 1820	1028583
PVDF/EPDM liquid end for von Taine® 2323	1028584
	<b>Order no.</b>
Motor for von Taine® 0502	1024000
Motor for von Taine® 0807	1024001
Motor for von Taine® 1010	1024002
Motor for von Taine® 1313	1024003
Motor for von Taine® 1820	1024004
Motor for von Taine® 2323	1024005

## 2.5 Air-Operated Diaphragm Pump Duodos

### 2.5.1 Air-operated Diaphragm Pump Duodos

Duodos pumps are air-driven double diaphragm transfer pumps. No electrical components are required.

Capacity range up to 6,700 l/h, discharge lift up to 70 mWC

Air-operated Diaphragm Pump Duodos for pumping liquid media.

The pump capacity of the pump can be controlled by changing the pressure in the air supply. The air control is designed for oil-free operation. Duodos pumps are ideally suited for the transport of liquid chemicals. Duodos pumps transport media at up to 6,700 l/h and up to a discharge lift of 70 m. As the pump capacity is highly dependent on the back pressure, the performance curve must always be observed. At the same time, the differential pressure between the hydraulic and pneumatic sides should not exceed 2 bar. Higher values reduce the service life of the pump. When selecting pumps, check the material compatibility. In addition, consider the density, viscosity and temperature of the transported medium.

#### Your benefits

- No electrical components are required because the pumps are air-operated
- Duodos pumps are run-dry safe and self-priming

#### Technical details

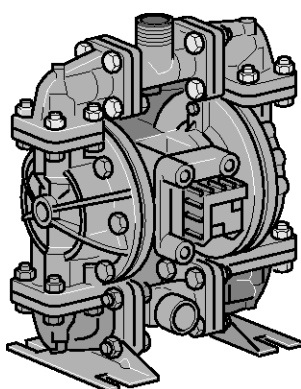
- Maximum air pressure 7 bar
- The air control is designed for oil-free operation
- If the back pressure is greater than the air pressure in the pump, the pump remains stationary

#### Field of application

- Pumping of liquid chemicals

The following materials are available:

- PP pump chambers with Santoprene® diaphragms and valves
- PVDF pump chambers with PTFE diaphragms and valves



pk\_2\_062

#### Duodos PP

	Housing material	Diaphragms/ valves	Delivery rate (2 bar differential pressure) l/h	Order no.
<b>Duodos 10 PP</b>	PP	Santoprene®	0...650*	1010793
<b>Duodos 15 PP</b>	PP	Santoprene®	0...2,000*	1010794
<b>Duodos 20 PP</b>	PP	Santoprene®	0...3,000*	1010795
<b>Duodos 25 PP</b>	PP	Santoprene®	0...6,700*	1010796

\* Delivery rate at a differential pressure of 2 bar (0.5 bar back pressure, 2.5 bar air pressure).

Santoprene® is a registered trademark of the Monsanto Corporation.

#### Duodos PVDF

	Housing material	Diaphragms/ valves	Delivery rate (2 bar differential pressure) l/h	Order no.
<b>Duodos 10 PVDF</b>	PVDF	Teflon	0...650*	1010797
<b>Duodos 15 PVDF</b>	PVDF	Teflon	0...2,000*	1010798
<b>Duodos 20 PVDF</b>	PVDF	Teflon	0...3,000*	1010799
<b>Duodos 25 PVDF</b>	PVDF	Teflon	0...6,700*	1010800

\* Delivery rate at a differential pressure of 2 bar (0.5 bar back pressure, 2.5 bar air pressure).

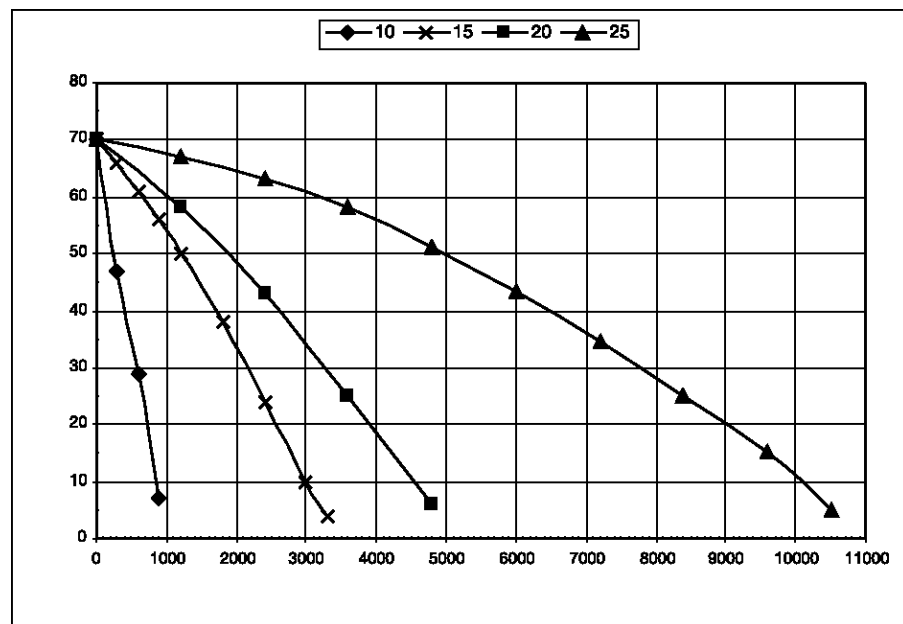


## 2.5 Air-Operated Diaphragm Pump Duodos

### Parameters For Use

	Min. temperature °C	Max. temperature °C	Max. viscosity mPas
Duodos 10 PP	5	65	200
Duodos 10 PVDF	-13	93	200
Duodos 15 PP	5	65	200
Duodos 15 PVDF	-13	93	200
Duodos 20 PP	5	65	200
Duodos 20 PVDF	-13	93	200
Duodos 25 PP	5	65	200
Duodos 25 PVDF	-13	93	200

### Characteristic Curves



pk\_2\_114

Feed lift [m WC] over feed rate [l/h] at 7 bar air supply

### 2.5.2

### Spare Parts Kits

#### Spare part kits for pneumatics comprising

- Seals
- O-rings
- Clamp collars
- Air control valve

	Order no.
Spare parts kit, pneumatics for Duodos 10 PP/PVDF	1010810
Spare parts kit, pneumatics for Duodos 15/20 PP/PVDF	1010811
Spare parts kit, pneumatics for Duodos 25 PP/PVDF	1010813

#### Spare part kits for the liquid end comprising

- Diaphragms
- Valve balls
- Seals



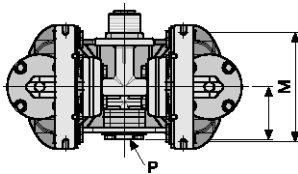
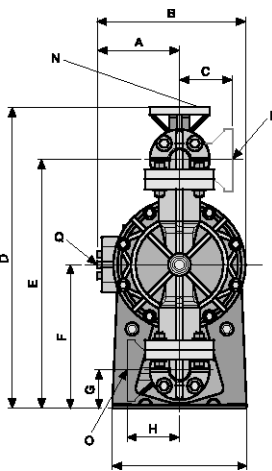
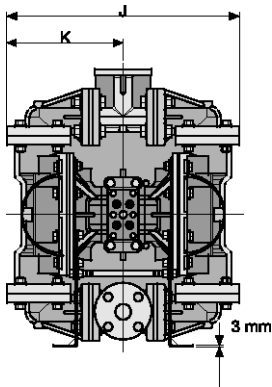
## 2.5 Air-Operated Diaphragm Pump Duodos

2

	Order no.
Spare parts kit, liquid end for Duodos 10 PP	1010801
Spare parts kit, liquid end for Duodos 15 PP	1010802
Spare parts kit, liquid end for Duodos 20 PP	1010803
Spare parts kit, liquid end for Duodos 25 PP	1010804
Spare parts kit, liquid end for Duodos 10 PVDF	1010806
Spare parts kit, liquid end for Duodos 15 PVDF	1010807
Spare parts kit, liquid end for Duodos 20 PVDF	1010808
Spare parts kit, liquid end for Duodos 25 PVDF	1010809

### Dimensions

		Duodos 10	Duodos 15	Duodos 20	Duodos 25
A	mm	79	103	103	172
B	mm	140	179	179	296
C	mm	32	44	60	92
D	mm	198	287	339	527
E	mm	167	243	279	435
F	mm	87	140	163	249
G	mm	19	35	46	64
H	mm	32	44	60	92
I	mm	78	143	143	130
J	mm	178	258	300	433
K	mm	89	129	150	216
L	mm	33	46	57	123
M	mm	66	143	143	102
Discharge connector		1/2"NPT	1"BSP	1 1/2"BSP	1"ANSI flange
Suction connector		1/2"NPT	1"BSP	1 1/2"BSP	1"ANSI flange
Air consumption	m <sup>3</sup> /h	0,5...11	3,5...27	7,0...34	8.5...77
Differential pressure	bar	2	2	2	2
Air connection		1/4"NPT	1/4"NPT	1/4"NPT	1/2"NPT
Weight (PP)	kg	2	8	9	24
Weight (PVDF)	kg	2,5	9,0	9,5	29,0



## 2.6 Barrel Pump DULCO®Trans

### 2.6.1 Barrel Pump DULCO®Trans

Barrel pumps are the ideal solution for moving liquids.

Pump capacity according to size 900 – 4,800 l/h

The application range of the DULCO®Trans depends on the chemical resistance of the materials used.

DULCO®Trans is used for bottling, draining and transferring liquids from canisters, hobbocks, drums, storage tanks and containers.

Included in the scope of supply: Metering hose with pump nozzle.

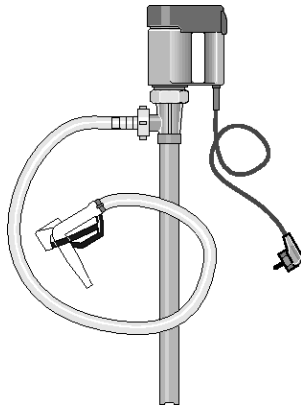
#### Field of application

Barrel pump for bottling, emptying and transferring liquids from canisters, drums and containers.

#### Materials in Contact With the Medium

The following components come into contact with the liquids:

	PP version	PVDF version
External and internal pipe, tap	Polypropylene	PVDF
Drive shaft	Hastelloy C	Hastelloy C
Rotor	ETFE	ETFE
Mechanical seal	ceramic oxide/PTFE/carbon	ceramic oxide/PTFE/carbon
O-rings	FKM	FKM
Metering hose	PVC	PVC



pk\_3\_029

#### DULCO®Trans PP Version

	Feed rate max. *	Feed lift max. m	Order no.
DULCO®Trans 25/700 PP	900 l/h *	5.0	1023085
DULCO®Trans 40/1000 PP	3500 l/h *	9.6	1034225
DULCO®Trans 50/1200 PP	4800 l/h *	12.4	1023087

#### DULCO®Trans PVDF Version

	Feed rate max. *	Feed lift max. m	Order no.
DULCO®Trans 25/700 PVDF	1260 l/h *	5.4	1036145
DULCO®Trans 40/1000 PVDF	3500 l/h *	9.6	1036146
DULCO®Trans 50/1200 PVDF	4800 l/h *	12.4	1036147

\* The specified delivery rate includes hose and tap.

#### Spare parts kit for DULCO®Trans

	Order no.
Spare parts kit for DULCO®Trans 25/700 PP	1024179
Spare parts kit for DULCO®Trans 25/700 PVDF	1036149
Spare parts kit for DULCO®Trans 40/1000 PP/PVDF	1034712
Spare parts kit for DULCO®Trans 50/1200 PP/PVDF	1024181



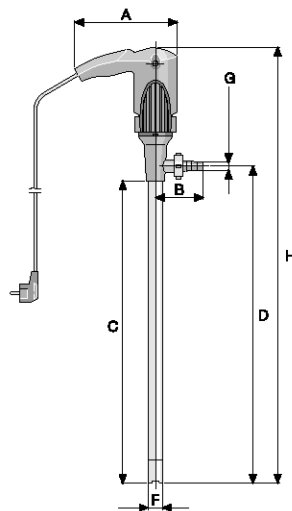
## 2.6 Barrel Pump DULCO®Trans

### Technical Data

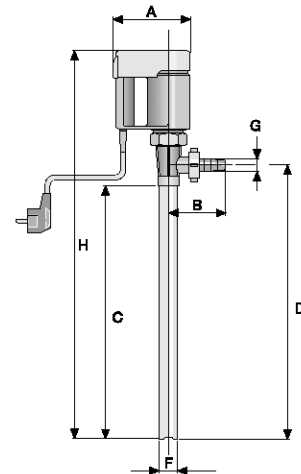
Type		DULCO®Trans 25/700	DULCO®Trans 40/1000	DULCO®Trans 50/1200
Max. density	kg/ dm <sup>3</sup>	1.2	1.5	1.8
Max. viscosity	mPas	150	500	500
Media temperature PP	°C	45	50	50
Media temperature PVDF	°C	60	60	60
Suction pipe outer diameter	mm	25	40	50
Hose connection		d13	d19	d25
Discharge hose		1.5 m, PVC, 13/18 mm	2.0 m, PVC, 19/27 mm	3.0 m, PVC, 25/34 mm
Motor rating	W	230	500	800
Enclosure rating		IP 24	IP 24	IP 24
Voltage/frequency		230 V/1~/50/60Hz	230 V/1~/50/60Hz	230 V/1~/50/60 Hz
Under-voltage cut-out		none	with	with
Overvoltage safety switch		with	with	with
Temperature monitoring		none	with	none
Speed control		2-stage	Continuous	none
Connection cable		5 m, EUR plug	5 m, EUR plug	5 m, EUR plug
Drum adapter		none	G 2"	G 2"
Weight PP/PVDF	kg	2.4/2.6	5.1/5.4	7.4/8.2
Dimensions H x W x D	mm	927 x 197 x 83	1,272 x 185 x 95	1,489 x 217 x 115

### Dimensions

Type		DULCO®Trans 25/700	DULCO®Trans 40/1000	DULCO®Trans 50/1200
A	mm	197	185	217
B	mm	83	113	113
C	mm	672	961	1,161
D	mm	700	1,006	1,206
F	mm	25	40	50
G	d	13	19	25
H	mm	927	1,272	1,489



pk\_3\_028



pk\_3\_029\_1



## 2.7 Rotary Lobe Pumps

### 2.7.1 Rotary Lobe Pumps

**The robust solution for the pumping of viscose media and media containing solids**

**Capacity range 25–100 m<sup>3</sup>/h, 10–4 bar**



The compact rotary lobe pump pumps viscose and even abrasive media at up to 100 m<sup>3</sup>/h and also with reversible pumping direction thanks to its valveless construction. Housing, plunger and seals are available in different materials to match the medium.

The rotary lobe pump is robust and surprisingly powerful given its compact dimensions: depending on the model it can pump up to 100 m<sup>3</sup>/h viscose media and media containing solids, even containing larger particles of solids. It can be used with ease as a self-priming pump with reversible pumping direction. And naturally it is absolutely safe to operate as an intermediate chamber reliably separating the pumped medium from the gear oil.

The carefully selected materials, high-grade workmanship and maintenance-friendly construction make the rotary lobe pump into a low-wear endurance pump. A three-phase motor drives the two rotary pistons via a precision gear perfectly synchronised and thus also quietly. Corresponding drive versions enable the pump to be connected to bus systems and thus integrated into modern production environments.

#### Your benefits

- Compact pump with good pump capacity
- Ideal for viscous, abrasive and shear-sensitive media containing solids
- High-grade seals and the reliable separation of gears and medium enhance the pump's operational safety
- Feed rate can be controlled via motor speed
- Connection to bus system is possible
- Low-wear and maintenance-friendly



P\_PM\_TRF\_0003\_SW1

#### Technical details

- Pump complete with drive motor, reduction gear system, clutch and base plate
- Housing material AISI-316 or AISI 420, rotary piston and shaft seals made of NBR, EPDM or FKM
- Constant i.e. non-pulsing feed rates
- Valveless construction enables reversed pump direction
- Different versions of power end/drive via three-phase motor (On/Off mode, adjustable motor with integrated frequency converter or external fan)
- Connection to bus system is possible (integrated frequency converter needed)
- Hydraulic connection as standard by means of DIN flange (DN 50, 65, 80, 100, 125), other connectors available
- Simple replacement of wear discs thanks to maintenance-friendly construction

#### Field of application

- Waste water and sludge pumping
- Food and beverage industry

#### Rotary Lobe Pumps

	Flange	Max. pump volume	Max. pressure	Weight	Order no.
Type 070	DN 50	25 m <sup>3</sup> /h	10 bar	80 kg	on request
Type 090	DN 65	35 m <sup>3</sup> /h	6 bar	85 kg	on request
Type 100	DN 80/100	80 m <sup>3</sup> /h	8 bar	185 kg	on request
Type 125	DN 100/125	100 m <sup>3</sup> /h	4 bar	195 kg	on request



## 2.8 Peristaltic Pump DULCO®flex

### 2.8.1 Peristaltic Pump DULCO®flex

The virtually universal pump for many applications.

Capacity range up to 15,000 l/h, up to 15 bar



ProMinent® peristaltic pumps operate on a simple functional principle and stand out thanks to their compact and robust design. They are self-priming and operate without seals and valves.

The peristaltic pumps of product range DULCO®flex are ideal for almost all metering and pumping tasks in laboratories and industry. The reason: their extensive pump capacity range and the large number of different hose materials.

This is how they work: The feed chemical is pumped by the rotor clamping the hose in the direction of flow. No valves are needed. Abrasive, viscous and gaseous media can thereby be gently conveyed.

The pumping process is triggered by an elastomer hose, pressed by two rotating rollers or shoes against the pump housing. Once the rollers or shoes have passed by, the hose immediately returns to its original shape and creates a vacuum at the pump inlet. Atmospheric pressure causes the medium to flow in. The feed rate is proportional to the pump speed. A vacuum device can optionally be used to assist the hose to return to its position on product range DFCa and DFDa pumps, improving their suction behaviour and ensuring the even feed of viscose media.

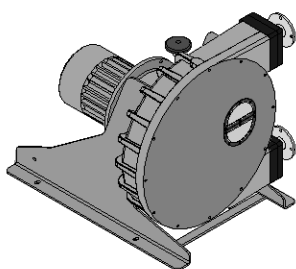
Whereas the pumps are fitted with roller technology for low pressures of up to 8 bar, they have shoes for higher pressures of up to 15 bar.

#### Your benefits

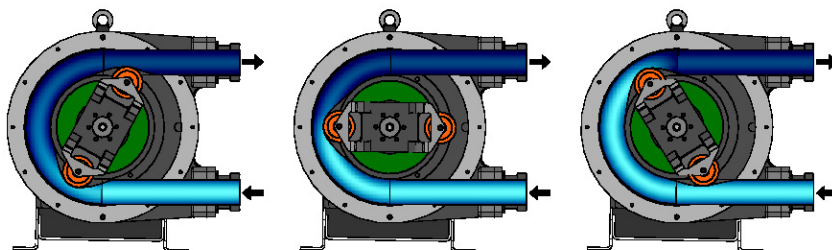
- Simple to operate
- Reversible pumping direction
- Hose materials suitable for various chemicals
- Simple and quick hose change
- Safeguarded against running dry
- Self-priming
- Ideal for pumping pasty, viscous, abrasive and gaseous media

#### Field of application

Chemical industry, clarification plants, mining



P\_DX\_0010\_SW1



P\_DX\_0028\_SW3

DULCO®flex peristaltic pumps can be used to convey media with the following properties:

- pasty and solid-containing
- viscous
- abrasive
- shear-sensitive
- outgassing
- corrosive

The pumps can be selected with the aid of an identity code:

#### Overview:

Type	Application	Feed rate at max. pressure l/h	Max. pressure bar	Rollers/shoes
DFAa	Laboratory	105	2	Rollers
DFBa	Industry	650	8	Rollers
DFCa	Industry	8,900	8	Rollers
DFDa	Industry	15,000	15	Shoes





## 2.8 Peristaltic Pump DULCO®flex

### 2.8.2 Peristaltic Pump DULCO®flex DFAa



**Precise metering of the smallest volumes**

**Feed rates of up to 105 l/h at 2 bar**

The peristaltic pump DULCO®flex DFAa (designed as a low-pressure pump) is suitable for metering the smallest volumes in laboratories.

It can be used for the precise metering of low feed rates of up to 105 l/h at 2 bar. The rotor is equipped with 3 rollers to reduce pulsation. A quick-release connector aids fast hose replacement.

**Your benefits**

- Simple to operate
- Reversible pumping direction
- Hose materials suitable for various chemicals
- Simple and quick hose change
- Ideal for pumping pasty, high-viscosity, abrasive and gaseous media
- Self-priming
- Safeguarded against running dry

**Technical details**

- Hose diameter: 3.2 to 8 mm
- Feed rates: 1.6 to 10 ml/rev
- Hose materials: SOLVA, silicone, Norprene A60G, Norprene A60F
- Self-priming up to 8 m
- Back pressure up to 2 bar

**Options**

- Stainless steel base plate
- Single phase motor
- Two pump heads

**Field of application**

- Laboratory applications

**Technical Data**

**Hose material** SOLVA, Silikon, Norprene A60G, Norprene A60F  
**Self-priming** up to 8 m  
**Rollers / shoes** Rollers

Type	Feed rate / revolution	Delivery rate at max. back pressure		Hose diameter (internal)
		bar	l/h	
DFAa 003	ml/U 1.66	2	17.5	3.2
DFAa 008	10	2	105	8.0



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFAa 003 peristaltic pump

DFAa	Type	
	003	DFAa, with 3.2 mm hose, wall thickness 2.4 mm (1.66 ml/revolution)
<b>Drive unit</b>		
	000	without drive unit
	A10	0.12 kW, 14 rpm, 1.4 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	A11	0.12 kW, 35 rpm, 3.5 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	A12	0.12 kW, 70 rpm, 7.0 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	A13	0.18 kW, 93 rpm, 9.3 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	A14	0.18 kW, 140 rpm, 13.9 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	A21	0.12 kW, 10.9 - 57 rpm, 1.1-5.7 l/h, 2 bar (Manual adjustment gears), 3-phase, 400 V AC
	A22	0.25 kW, 34 - 176 rpm, 3.4-17.5 l/h, 2 bar (Manual adjustment gears), 3-phase, 400 V AC
	A31	0.18 kW, 13 - 130 rpm, 1.3-12.9 l/h, 7-70 Hz, 2 bar (Gear motor with integrated frequency converter), 1-phase, 230 V AC
	A41	0.18 kW, 4 - 105 rpm, 0.4-10.5 l/h, 3-75 Hz, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
<b>Hose material</b>		
	B	Norprene A60F (food grade)
	C	Solva
	D	Silicone
<b>Base plate</b>		
	0	Base plate, painted steel
	1	Base plate, stainless steel
<b>Batch controller</b>		
	0	Without controller
<b>Special motor</b>		
	0	Standard (3 phase)
	D	Single phase motor, 0.12 kW (only for A10-A13)
	E	Single phase motor, 0.18 kW (only for A14, A15)
<b>Pump head</b>		
	0	with one pump head
<b>Approvals</b>		
	01	CE

### DULCO®flex DFAa 008 peristaltic pump

DFAa	Type	
	008	DFAa with 8.0 mm hose, wall thickness 2.4 mm (10 ml/revolution)
<b>Drive unit</b>		
	000	without drive unit
	B10	0.12 kW, 14 rpm, 8.4 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	B11	0.12 kW, 35 rpm, 21 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	B12	0.12 kW, 70 rpm, 42 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	B13	0.18 kW, 93 rpm, 55.8 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	B14	0.18 kW, 140 rpm, 84 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	B21	0.12 kW, 10.9 - 57 rpm, 6.5-34.2 l/h, 2 bar (Manual adjustment gear), 3-phase, 230/400 V AC
	B22	0.25 kW, 34 - 176 rpm, 20.4-105 l/h, 2 bar (Manual adjustment gear), 3-phase, 230/400 V AC
	B31	0.18 kW, 13 - 130 rpm, 7.8-78 l/h, 7-70 Hz, 2 bar (Gear motor with integrated frequency converter), 1-phase, 230 V AC
	B41	0.18 kW, 4 - 105 rpm, 2.4-63 l/h, 3-75 Hz, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
<b>Hose material</b>		
	A	Norprene A60G
	B	Norprene A60F (food grade)
	C	Solva
	D	Silicone
<b>Base plate</b>		
	0	Base plate, painted steel
	1	Base plate, stainless steel
<b>Batch controller</b>		
	0	Without controller
<b>Special motor</b>		
	0	Standard (3 phase)
	D	Single phase motor, 0.12 kW (only for B10-B13)
	E	Single phase motor, 0.18 kW (only for B14, B15)
<b>Pump head</b>		
	0	with one pump head
<b>Approvals</b>		
	01	CE



## 2.8 Peristaltic Pump DULCO®flex

### 2.8.3 Peristaltic Pump DULCO®flex DFBa



**Low and medium pump capacities**

**Feed rates of up to 649 l/h at 8 bar**

The peristaltic pump DULCO®flex DFBa is designed for low and medium pump capacities of up to 649 l/h at 8 bar.

The peristaltic pump DULCO®flex DFBa is equipped with rollers and fabric-reinforced hoses for tough industrial use. Pumps with a Halar-coated pump housing can be produced for use in the chemical industry.

**Your benefits**

- Simple to operate
- Reversible pumping direction
- Hose materials suitable for various chemicals
- Simple and quick hose change
- Ideal for pumping pasty, high-viscosity, abrasive and gaseous media
- Self-priming
- Safeguarded against running dry

**Technical details**

- Connector sizes 3/8 - 1"
- Feed rates of 0.023 - 0.24 l/rev
- Hose materials NR, NBR, EPDM, NR-A, Norprene, NBR-A, Hypalon, Tygon
- Self-priming up to 8 m
- Back pressure up to 8 bar

**Options**

- Stainless steel base plate
- Available as a mobile unit
- Various connectors, such as BSP, NPT, Tri-Clamp and DIN 11851
- Pulsation damper
- Leakage sensor
- Housing with Halar coating
- Food approval EU 1935/2004

**Field of application**

- Chemical industry
- Waste water
- Mining

**Technical Data**

**Hose material** NR, NBR, EPDM, NR-A, Norprene, NBR-A, Hypalon, Tygon  
**Self-priming** up to 8 m  
**Rollers / shoes** Rollers

Type	Feed rate / revolution	Delivery rate at max. back pressure		Hose diameter (internal)	Max. solids	Weight without drive	Connection DN
		bar	l/h				
DFBa 010	0.02	8	60	10	2.5	6	3/8"
DFBa 013	0.04	8	100	13	3.3	6	3/8"
DFBa 016	0.09	8	188	16	4.0	13	3/4"
DFBa 019	0.12	2	671	19	4.8	13	1"
DFBa 022	0.24	8	649	22	5.5	22	1"



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFBa 010 peristaltic pump

DFBa	Type	
	010	DFBa 010, 0.023 l/revolution
		<b>Power end/drive*</b>
	000	without drive unit
	A10	0.12 kW, 15 rpm, 21 l/h, 8 bar (Reduction gear system), 3-phase, 230/400 V AC
	A11	0.12 kW, 20 rpm, 28 l/h, 8 bar (Reduction gear system), 3-phase, 230/400 V AC
	A12	0.18 kW, 29 rpm, 40 l/h, 6 bar (Reduction gear system), 3-phase, 230/400 V AC
	A13	0.18 kW, 46 rpm, 64 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	A14	0.25 kW, 57 rpm, 79 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	A15	0.25 kW, 70 rpm, 97 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	A21	0.12 kW, 3 - 16 rpm, 4-22 l/h, 8 bar (Manual adjustment gear), 3-phase, 230/400 V AC
	A22	0.25 kW, 5 - 29 rpm, 7 - 40 l/h, 6 bar
	A23	0.25 kW, 10 - 53 rpm, 14-73 l/h, 4 bar (Manual adjustment gear), 3-phase, 230/400 V AC
	A24	0.25 kW, 15 - 80 rpm, 21-110 l/h, 2 bar (Manual adjustment gear), 3-phase, 230/400 V AC
	A31	0.37 kW, 9 - 34 rpm, 12 - 47 l/h, 20 - 75 Hz, 6 bar (Gear motor with integrated frequency converter), 1-phase, 230 V AC
	A32	0.37 kW, 16 - 60 rpm, 22-83 l/h, 20-75 Hz, 4 bar (Gear motor with integrated frequency converter), 1-phase, 230 V AC
	A41	0.18 kW, 1 - 34 rpm, 1 - 47 l/h, 3 - 75 Hz, 6 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
	A42	0.18 kW, 2 - 44 rpm, 3 - 60 l/h, 3 - 75 Hz, 4 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
	A43	0.25 kW, 3-69 rpm, 4-95 l/h, 3-75 Hz, 4 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
		<b>Hose material</b>
	0	NR
	B	NBR
	E	EPDM
	R	NR-A
	N	Norprene (max. 2 bar)
	A	NBR-A
	H	Hypalon
		<b>Hydraulic connections</b>
	A	VA BSP 3/8"
	B	VA NPT 3/8"
	C	PP BSP 3/8"
	D	PVDF BSP 3/8"
	E	PVDF NPT 3/8"
	F	PVC NPT 3/8"
	G	Tri-Clamp, VA, 1/2"
	H	DIN 11851, VA, NW10
		<b>Base plate</b>
	0	Base plate, painted steel
	1	Base plate, stainless steel
	2	Portable unit + painted steel base plate
	3	Portable unit + stainless steel base plate
		<b>Leakage sensor</b>
	0	Without leakage sensor
	L	With leakage sensor
	M	as "L" + relay output
		<b>Rotor</b>
	0	Rotor with 2 rollers
		<b>Batch controller</b>
	0	Without controller
		<b>Special version</b>
	0	Standard
	H	Halar-coated housing
		<b>Vacuum system</b>
	0	without
		<b>Approvals</b>
	01	CE
	02	CE+Food approval EU 1935/2004

\* The pumps are factory-set to a maximum back pressure of 4 bar, unless the stated pressure is lower. Please state any deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFBa 013 peristaltic pump

DFBa	Type	
	013	DFBa 013, 0.039 l/revolution
<b>Power end/drive*</b>		
000		without drive unit
B10		0.12 kW, 15 rpm, 35 l/h, 8 bar (Reduction gear system), 3-phase, 230/400 V AC
B11		0.12 kW, 20 rpm, 46 l/h, 8 bar (Reduction gear system), 3-phase, 230/400 V AC
B12		0.18 kW, 29 rpm, 67 l/h, 6 bar (Reduction gear system), 3-phase, 230/400 V AC
B13		0.18 kW, 46 rpm, 107 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
B14		0.25 kW, 57 rpm, 133 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
B15		0.25 kW, 70 rpm, 163 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
B21		0.12 kW, 3 - 16 rpm, 7-37 l/h, 8 bar (Manual adjustment gear), 3-phase, 230/400 V AC
B22		0.25 kW, 5 - 29 rpm, 11 - 67 l/h, 6 bar (Manual adjustment gear), 3-phase, 230/400 V AC
B23		0.25 kW, 10 - 53 rpm, 23-124 l/h, 4 bar (Manual adjustment gear), 3-phase, 230/400 V AC
B24		0.25 kW, 15 - 80 rpm, 35-187 l/h, 2 bar (Manual adjustment gear), 3-phase, 230/400 V AC
B31		0.37 kW, 9 - 34 rpm, 21 - 79 l/h, 20 - 75 Hz, 6 bar (Gear motor with integrated frequency converter), 1-phase, 230 V AC
B32		0.37 kW, 16 - 60 rpm, 37-140 l/h, 20-75 Hz, 4 bar (Gear motor with integrated frequency converter), 1-phase, 230 V AC
B41		0.18 kW, 1 - 34 rpm, 2 - 78 l/h, 3 - 75 Hz, 6 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
B42		0.18 kW, 2 - 44 rpm, 5 - 100 l/h, 3 - 75 Hz, 4 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
B43		0.25 kW, 3-69 rpm, 7-157 l/h, 3-75 Hz, 4 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
<b>Hose material</b>		
0		NR
B		NBR
E		EPDM
R		NR-A
N		Norprene (max. 2 bar)
A		NBR-A
H		Hypalon
<b>Hydraulic connections</b>		
A		VA BSP 3/8"
B		VA NPT 3/8"
C		PP BSP 3/8"
D		PVDF BSP 3/8"
E		PVDF NPT 3/8"
F		PVC NPT 3/8"
G		Tri-Clamp, VA, 3/4"
H		DIN 11851, VA, NW15
<b>Base plate</b>		
0		Base plate, painted steel
1		Base plate, stainless steel
2		Portable unit + painted steel base plate
3		Portable unit + stainless steel base plate
<b>Leakage sensor</b>		
0		Without leakage sensor
L		With leakage sensor
M		as "L" + relay output
<b>Rotor</b>		
0		Rotor with 2 rollers
<b>Batch controller</b>		
0		Without controller
<b>Special version</b>		
0		Standard
H		Halar-coated housing
<b>Vacuum system</b>		
0		without
<b>Approvals</b>		
01		CE
02		CE+Food approval EU 1935/2004

\* The pumps are factory-set to a maximum back pressure of 4 bar, unless the stated pressure is lower. Please state any deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFBa 016 peristaltic pump

DFBa	Type	
	016	DFBa 016, 0.092 l/revolution
<b>Power end/drive*</b>		
000		without drive unit
C10		0.18 kW, 14 rpm, 77 l/h, 8 bar (Reduction gear system), 3-phase, 230/400 V AC
C11		0.18 kW, 20 rpm, 110 l/h, 8 bar (Reduction gear system), 3-phase, 230/400 V AC
C12		0.25 kW, 32 rpm, 176 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
C13		0.25 kW, 46 rpm, 253 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
C14		0.37 kW, 57 rpm, 314 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
C15		0.37 kW, 70 rpm, 386 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
C21		0.37 kW, 8 - 50 rpm, 44-276 l/h, 4 bar (Manual adjustment gear), 3-phase, 230/400 V AC
C22		0.37 kW, 10 - 61 rpm, 55-336 l/h, 2 bar (Manual adjustment gear), 3-phase, 230/400 V AC
C23		0.37 kW, 16 - 91 rpm, 88-502 l/h, 1 bar (Manual adjustment gear), 3-phase, 230/400 V AC
C31		0.37 kW, 9 - 34 rpm, 49 - 187 l/h, 20 - 75 Hz, 4 bar (Gear motor with integrated frequency converter), 1-phase, 230 V AC
C32		0.37 kW, 16 - 60 rpm, 88-331 l/h, 20-75 Hz, 2 bar (Gear motor with integrated frequency converter), 1-phase, 230 V AC
C41		0.25 kW, 1 - 34 rpm, 5 - 188 l/h, 3 - 75 Hz, 4 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
C42		0.25 kW, 2-48 rpm, 11-265 l/h, 3-75 Hz, 4 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
C43		0.37 kW, 3-69 rpm, 16-381 l/h, 3-75 Hz, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
<b>Hose material</b>		
0		NR
B		NBR
E		EPDM
R		NR-A
N		Norprene (max. 2 bar)
A		NBR-A
H		Hypalon
<b>Hydraulic connections</b>		
A		VA BSP 3/4"
B		VA NPT 3/4"
C		PP BSP 3/4"
D		PVDF BSP 3/4"
E		PVDF NPT 3/4"
F		PVC NPT 3/4"
G		Tri-Clamp, VA, 1"
H		DIN 11851, VA, NW20
<b>Base plate</b>		
0		Base plate, painted steel
1		Base plate, stainless steel
2		Portable unit + painted steel base plate
3		Portable unit + stainless steel base plate
<b>Leakage sensor</b>		
0		Without leakage sensor
L		With leakage sensor
M		as "L" + relay output
<b>Rotor</b>		
0		Rotor with 2 rollers
<b>Batch controller</b>		
0		Without controller
<b>Special version</b>		
0		Standard
H		Halar-coated housing
<b>Vacuum system</b>		
0		without
<b>Approvals</b>		
01		CE
02		CE+Food approval EU 1935/2004

\* The pumps are factory-set to a maximum back pressure of 4 bar, unless the stated pressure is lower. Please state any deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFBa 019 peristaltic pump

DFBa	Type	
	019	DFBa 019, 0.123 l/revolution
<b>Power end/drive*</b>		
000		without drive unit
D10		0.18 kW, 15 rpm, 110 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
D11		0.18 kW, 20 rpm, 148 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
D12		0.25 kW, 32 rpm, 236 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
D13		0.25 kW, 46 rpm, 339 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
D14		0.37 kW, 57 rpm, 421 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
D15		0.37 kW, 70 rpm, 517 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
D21		0.37 kW, 8 - 50 rpm, 59-369 l/h, 2 bar (Manual adjustment gear), 3-phase, 230/400 V AC
D22		0.37 kW, 10 - 61 rpm, 74-450 l/h, 2 bar (Manual adjustment gear), 3-phase, 230/400 V AC
D23		0.37 kW, 16 - 91 rpm, 118-671 l/h, 2 bar (Manual adjustment gear), 3-phase, 230/400 V AC
D31		0.37 kW, 9 - 34 rpm, 66-251 l/h, 20-75 Hz, 2 bar (Gear motor with integrated frequency converter), 1-phase, 230 V AC
D32		0.37 kW, 16 - 60 rpm, 118-443 l/h, 20-75 Hz, 2 bar (Gear motor with integrated frequency converter), 1-phase, 230 V AC
D41		0.25 kW, 1-34 rpm, 7-251 l/h, 3-75 Hz, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
D42		0.25 kW, 2-48 rpm, 15-354 l/h, 3-75 Hz, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
D43		0.37 kW, 3-69 rpm, 22-509 l/h, 3-75 Hz, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
<b>Hose material</b>		
N		Norprene (max. 2 bar)
T		TYGON (max. 2 bar)
<b>Hydraulic connections</b>		
A		VA BSP 1"
B		VA NPT 1"
C		PP BSP 1"
D		PVDF BSP 1"
E		PVDF NPT 1"
F		PVC NPT 1"
G		Tri-Clamp, VA, 1"
H		DIN 11851, VA, NW25
<b>Base plate</b>		
0		Base plate, painted steel
1		Base plate, stainless steel
2		Portable unit + painted steel base plate
3		Portable unit + stainless steel base plate
<b>Leakage sensor</b>		
0		Without leakage sensor
L		With leakage sensor
M		as "L" + relay output
<b>Rotor</b>		
0		Rotor with 2 rollers
<b>Batch controller</b>		
0		Without controller
<b>Special version</b>		
0		Standard
H		Halar-coated housing
<b>Vacuum system</b>		
0		without
<b>Approvals</b>		
01		CE
02		CE+Food approval EU 1935/2004

\* The pumps are factory-set to a maximum back pressure of 4 bar, unless the stated pressure is lower. Please state any deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFBa 022 peristaltic pump

DFBa	Type	
	022	DFBa 022, 0.246 l/revolution
<b>Power end/drive*</b>		
000		without drive unit
E10		0.25 kW, 17 rpm, 251 l/h, 8 bar (Reduction gear system), 3-phase, 230/400 V AC
E11		0.37 kW, 23 rpm, 339 l/h, 8 bar (Reduction gear system), 3-phase, 230/400 V AC
E12		0.55 kW, 38 rpm, 561 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
E13		0.55 kW, 45 rpm, 664 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
E14		0.55 kW, 54 rpm, 797 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
E15		0.75 kW, 66 rpm, 974 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
E21		0.37 kW, 4-20 rpm, 59-295 l/h, 8 bar (Manual adjustment gear), 3-phase, 230/400 V AC
E22		0.55 kW, 6-32 rpm, 89-472 l/h, 4 bar (Manual adjustment gear), 3-phase, 230/400 V AC
E23		0.75 kW, 9-48 rpm, 133-708 l/h, 2 bar (Manual adjustment gear), 3-phase, 230/400 V AC
E31		0.55 kW, 12-44 rpm, 177-649 l/h, 20-75 Hz, 4 bar (Gear motor with integrated frequency converter), 1-phase, 230 V AC
E32		0.75 kW, 18-67 rpm, 266-989 l/h, 20-75 Hz, 2 bar (Gear motor with integrated frequency converter), 1-phase, 230 V AC
E41		0.55 kW, 2-44 rpm, 30-649 l/h, 3-75 Hz, 4 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
E42		0.75 kW, 2-57 rpm, 30-841 l/h, 3-75 Hz, 4 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
E43		1.1 kW, 3-81 rpm, 44-1196 l/h, 3-75 Hz, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
<b>Hose material</b>		
0		NR (natural rubber)
B		NBR
E		EPDM
R		NR-A
N		Norprene (max. 2 bar back pressure)
A		NBR-A
H		Hypalon
<b>Hydraulic connections</b>		
A		VA BSP 1"
B		VA NPT 1"
C		PP BSP 1"
D		PVDF BSP 1"
E		PVDF NPT 1"
F		PVC NPT 1"
G		Tri-Clamp, VA, 1"
H		DIN 11851, VA, NW25
<b>Base plate</b>		
0		Base plate, painted steel
1		Base plate, stainless steel
2		Portable unit + painted steel base plate
3		Portable unit + stainless steel base plate
<b>Leakage sensor</b>		
0		Without leakage sensor
L		With leakage sensor
M		as "L" + relay output
<b>Rotor</b>		
0		Rotor with 2 rollers
<b>Batch controller</b>		
0		Without controller
<b>Special version</b>		
0		Standard
H		Halar-coated housing
<b>Vacuum system</b>		
0		without
<b>Approvals</b>		
01		CE
02		CE+Food approval EU 1935/2004

\* The pumps are factory-set to a maximum back pressure of 4 bar, unless the stated pressure is lower. Please state any deviating pressures when ordering.





## 2.8 Peristaltic Pump DULCO®flex

### 2.8.4 Peristaltic Pump DULCO®flex DFCa



#### High pump capacities and long service life

#### Feed rates of up to 8,900 l/h at 8 bar

High pump capacities are not a problem with the peristaltic pump DULCO®flex DFCa. It is equipped with extra rollers and fabric-reinforced hoses for industrial use.

It is ideal for heavy-duty industrial applications and pump capacities of up to 8,900 l/h at 8 bar back pressure.

A ball-bearing mounted rotor ensures extremely smooth running and a long service life.

Pumps with a Halar-coated pump housing can be produced for use in the chemical industry.

A vacuum unit can optionally be used to help the hose to return to its original shape with pumps of the product range DFCa, thereby improving their suction behaviour and ensuring the even feed of high-viscosity media.

#### Your benefits

- Simple to operate
- Reversible pumping direction
- Hose materials suitable for various chemicals
- Simple and quick hose change
- Ideal for pumping pasty, high-viscosity, abrasive and gaseous media
- Self-priming
- Safeguarded against running dry

#### Technical details

- Connector sizes 1 1/4" - DN 80
- Feed rates of 0.43 - 6.72 l/rev
- Hose materials NR, NBR, EPDM, Norprene, NR-A, NBR-A
- Self-priming up to 8 m
- Back pressure up to 8 bar

#### Options

- Stainless steel base plate
- Available as a mobile unit
- Various connectors, such as BSP, NPT, Tri-Clamp, DIN 11851 and flange
- Pulsation damper
- Leakage sensor
- Housing with Halar coating
- Vacuum system
- Food approval EU 1935/2004

#### Field of application

- Chemical industry
- Waste water
- Mining

#### Technical Data

**Hose material** NR, NBR, EPDM, NR-A, Norprene, NBR-A  
**Self-priming** up to 8 m  
**Rollers / shoes** Rollers

Type	Feed rate / revolution	Delivery rate at max. back pressure		Hose diameter (internal)	Max. solids	Weight without drive	Connection DN
		bar	l/h				
	l/U				mm	kg	
DFCa 030	0.43	8	727	28	7.0	62	DN 32
DFCa 040	0.86	8	1,495	35	8.8	89	DN 40
DFCa 050	1.47	8	1,852	40	10.0	140	DN 40
DFCa 060	3.16	8	5,100	55	13.8	235	DN 50
DFCa 070	6.72	8	8,900	65	16.3	440	DN 65



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFCa 030 peristaltic pump

DFCa	Type	
	030	DFCa 030, 0.433 l/revolution
<b>Power end/drive*</b>		
000		without drive unit
A11		0.25 kW, 18 rpm, 468 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
A12		0.37 kW, 29 rpm, 753 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
A13		0.55 kW, 38 rpm, 987 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
A14		0.55 kW, 55 rpm, 1429 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
A31		0.55 kW, 11 - 39 rpm, 286-1013 l/h, 20-75 Hz, 4 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
A32		0.75 kW, 18 - 63 rpm, 468 - 1637 l/h, 20-75 Hz, 2 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
A41		0.37 kW, 2 - 28 rpm, 52 - 727 l/h, 3 - 50 Hz, 4 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
A42		0.75 kW, 3 - 59 rpm, 78-1533 l/h, 3-65 Hz, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
<b>Hose material</b>		
0		NR
B		NBR
E		EPDM
R		NR-A
A		NBR-A
N		Norprene (max. 2 bar)
<b>Hydraulic connections</b>		
A		VA BSP 1 1/4"
B		VA NPT 1 1/4"
C		PP BSP 1 1/4"
D		PVDF/PTFE BSP 1 1/4"
F		PVC NPT 1 1/4"
G		Tri-Clamp, VA, 1 1/2"
H		DIN 11851, VA, NW32
I		DIN flange VA DN32
L		ANSI flange VA, 1 1/4"
P		ANSI flange PVC, 1 1/4"
<b>Base plate</b>		
0		Base plate, painted steel
1		Base plate, stainless steel
2		Portable unit + painted steel base plate
3		Portable unit + stainless steel base plate
<b>Leakage sensor</b>		
0		without leakage sensor
L		with leakage sensor
M		as "L" + relay output
<b>Rotor</b>		
0		Rotor with 2 rollers
<b>Batch controller</b>		
0		without controller
<b>Special version</b>		
0		Standard
H		Halar-coated housing
<b>Vacuum system</b>		
0		without
V		with vacuum system
<b>Approvals</b>		
01		CE
02		CE+Food approval EU 1935/2004

\* The pumps are factory-set to a maximum back pressure of 4 bar, unless the stated pressure is lower. Please state any deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFCa 040 peristaltic pump

DFCa	Type	
	040	DFCa 040, 0.86 l/revolution
<b>Power end/drive*</b>		
	000	without drive unit
	B11	0.55 kW, 18 rpm, 928 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	B12	0.55 kW, 29 rpm, 1495 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	B13	0.75 kW, 38 rpm, 1960 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	B14	1.1 kW, 54 rpm, 2786 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	B31	1.1 kW, 12 - 36 rpm, 619-1857 l/h, 20-70 Hz, 4 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
	B32	1.5 kW, 15 - 53 rpm, 774-2735 l/h, 20-70 Hz, 2 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
	B41	1.1 kW, 2 - 49 rpm, 103-2528 l/h, 3-65 Hz, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
	B42	1.5 kW, 3 - 53 rpm, 154-2735 l/h, 3-65 Hz, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
<b>Hose material</b>		
	0	NR
	B	NBR
	E	EPDM
	R	NR-A
	A	NBR-A
	N	Norprene (max. 2 bar)
<b>Hydraulic connections</b>		
	A	VA BSP 1 1/2"
	B	VA NPT 1 1/2"
	C	PP BSP 1 1/2"
	D	PVDF/PTFE BSP 1 1/2"
	G	Tri-Clamp, VA, 1 1/2"
	H	DIN 11851, VA, NW40
	I	DIN flange VA DN40
	L	ANSI flange VA, 1 1/2"
	P	ANSI flange PVC, 1 1/2"
<b>Base plate</b>		
	0	Base plate, painted steel
	1	Base plate, stainless steel
	2	Portable unit + painted steel base plate
	3	Portable unit + stainless steel base plate
<b>Leakage sensor</b>		
	0	without leakage sensor
	L	with leakage sensor
	M	as "L" + relay output
<b>Rotor</b>		
	0	Rotor with 2 rollers
<b>Batch controller</b>		
	0	without controller
<b>Special version</b>		
	0	Standard
	H	Halar-coated housing
<b>Vacuum system</b>		
	0	without
	V	with vacuum system
<b>Approvals</b>		
	01	CE
	02	CE+Food approval EU 1935/2004

\* The pumps are factory-set to a maximum back pressure of 4 bar, unless the stated pressure is lower. Please state any deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFCa 050 peristaltic pump

DFCa	Type	
	050	DFCa 050, 1.47 l/revolution
		<b>Power end/drive*</b>
	000	without drive unit
	C11	0.55 kW, 14 rpm, 1235 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	C12	0.75 kW, 21 rpm, 1852 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	C13	1.1 kW, 30 rpm, 2646 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	C14	1.5 kW, 38 rpm, 3352 l/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	C15	1.5 kW, 48 rpm, 4234 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	C16	2.2 kW, 58 rpm, 5116 l/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	C31	1.5 kW, 8 - 29 rpm, 706-2558 l/h, 20-70 Hz, 4 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
	C32	2.2 kW, 17 - 60 rpm, 1499-5292 l/h, 20-70 Hz, 2 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
	C41	1.5 kW, 1 - 27 rpm, 88-2381 l/h, 3-65 Hz, 4 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
	C42	2.2 kW, 3 - 55 rpm, 265-4851 l/h, 3-65 Hz, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
		<b>Hose material</b>
	0	NR
	B	NBR
	E	EPDM
	R	NR-A
	A	NBR-A
	N	Norprene (max. 2 bar)
		<b>Hydraulic connections</b>
	I	DIN flange VA DN40
	G	Tri-Clamp, VA, 2"
	H	DIN 11851, VA, NW50
	J	DIN flange PP DN40
	K	DIN flange PVDF/PTFE DN40
	L	ANSI flange VA, 1 1/2"
	M	ANSI flange PP 1 1/2"
	N	ANSI flange PVDF/PTFE 1 1/2"
		<b>Base plate</b>
	0	Base plate, painted steel
	1	Base plate, stainless steel
	2	Portable unit + painted steel base plate
	3	Portable unit + stainless steel base plate
		<b>Leakage sensor</b>
	0	without leakage sensor
	L	with leakage sensor
	M	as "L" + relay output
		<b>Rotor</b>
	0	Rotor with 2 rollers
		<b>Batch controller</b>
	0	without controller
		<b>Special version</b>
	0	Standard
	H	Halar-coated housing
		<b>Vacuum system</b>
	0	without
	V	with vacuum system
		<b>Approvals</b>
	01	CE
	02	CE+Food approval EU 1935/2004

\* The pumps are factory-set to a maximum back pressure of 4 bar, unless the stated pressure is lower. Please state any deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFCa 060 peristaltic pump

DFCa	Type	
	060	DFCa 060, 3.16 l/revolution
<b>Power end/drive*</b>		
	000	without drive unit
	D11	2.2 kW, 18 rpm, 3.4 m³/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	D12	2.2 kW, 22 rpm, 4.2 m³/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	D13	3.0 kW, 27 rpm, 5.1 m³/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	D14	3.0 kW, 33 rpm, 6.3 m³/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	D15	3.0 kW, 42 rpm, 8.0 m³/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
	D16	3.0 kW, 47 rpm, 8.9 m³/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
	D31	3.0 kW, 7 - 25 rpm, 1.3 - 4.7 m³/h, 4 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
	D32	4.0 kW, 17 - 59 rpm, 3,2-11.2 m³/h, 2 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
	D41	3.0 kW, 1 - 24 rpm, 0.2 - 4.5 m³/h, 4 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
	D42	4.0 kW, 2 - 55 rpm, 0,4-10.4 m³/h, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
<b>Hose material</b>		
	0	NR
	B	NBR
	E	EPDM
	R	NR-A
	A	NBR-A
	N	Norprene (max. 2 bar)
<b>Hydraulic connections</b>		
	I	DIN flange VA DN50
	G	Tri-Clamp, VA, 2 1/2"
	H	DIN 11851, VA, NW50
	J	DIN flange PP DN50
	K	DIN flange VA, Halar coated + PVDF inserts DN50
	L	ANSI flange VA 2"
	M	ANSI flange PP 2"
	N	ANSI flange VA, Halar coated + PVDF inserts 2"
<b>Base plate</b>		
	0	Base plate, painted steel
	1	Base plate, stainless steel
	2	Portable unit + painted steel base plate
	3	Portable unit + stainless steel base plate
<b>Leakage sensor</b>		
	0	without leakage sensor
	L	with leakage sensor
	M	as "L" + relay output
<b>Rotor</b>		
	0	Rotor with 2 rollers
<b>Batch controller</b>		
	0	without controller
<b>Special version</b>		
	0	Standard
	H	Halar-coated housing
<b>Vacuum system</b>		
	0	without
	V	with vacuum system
<b>Approvals</b>		
	01	CE
	02	CE+Food approval EU 1935/2004

\* The pumps are factory-set to a maximum back pressure of 4 bar, unless the stated pressure is lower. Please state any deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFCa 070 peristaltic pump

DFCa	Type	
	070	DFCa 070, 6.72 l/revolution
<b>Power end/drive*</b>		
000		without drive unit
E11		2.2 kW, 13 rpm, 5.2 m³/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
E12		3.0 kW, 22 rpm, 8.9 m³/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
E13		4.0 kW, 26 rpm, 10.5 m³/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
E14		4.0 kW, 32 rpm, 12.9 m³/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
E15		5.5 kW, 37 rpm, 14.9 m³/h, 4 bar (Reduction gear system), 3-phase, 230/400 V AC
E16		5.5 kW, 46 rpm, 18.5 m³/h, 2 bar (Reduction gear system), 3-phase, 230/400 V AC
E31		5.5 kW, 8 - 27 rpm, 3.2 - 10.9 m³/h, 20-60 Hz, 4 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
E32		7.5 kW, 13 - 38 rpm, 5.2 - 15.3 m³/h, 20-60 Hz, 2 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
E41		5.5 kW, 1 - 25 rpm, 0.4 - 10.1 m³/h, 3-65 Hz, 4 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
E42		7.5 kW, 2 - 42 rpm, 0.8 - 16.9 m³/h, 3-65 Hz, 2 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
<b>Hose material</b>		
0		NR
B		NBR
E		EPDM
R		NR-A
A		NBR-A
<b>Hydraulic connections</b>		
I		DIN flange VA DN65
G		Tri-Clamp, VA, 3"
H		DIN 11851, VA, NW65
J		DIN flange PP DN65
L		ANSI flange VA, 2 1/2"
M		ANSI flange PP 2 1/2"
Q		DIN flange VA Halar coated DN65
R		ANSI flange VA Halar coated 2 1/2"
<b>Base plate</b>		
0		Base plate, painted steel
1		Base plate, stainless steel
2		Portable unit + painted steel base plate
3		Portable unit + stainless steel base plate
<b>Leakage sensor</b>		
0		without leakage sensor
L		with leakage sensor
M		as "L" + relay output
<b>Rotor</b>		
0		Rotor with 2 rollers
<b>Batch controller</b>		
0		without controller
<b>Special version</b>		
0		Standard
H		Halar-coated housing
<b>Vacuum system</b>		
0		without
V		with vacuum system
<b>Approvals</b>		
01		CE
02		CE+Food approval EU 1935/2004

\* The pumps are factory-set to a maximum back pressure of 4 bar, unless the stated pressure is lower. Please state any deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### 2.8.5 Peristaltic Pump DULCO®flex DFDa



**Maximum pump capacities and high pressures**

**Feed rates of up to 15,000 l/h at 15 bar**

The peristaltic pump DFDa is designed for maximum pump capacities and high pressures and is winning customers over with its noiselessness and long service life. It is fitted with shoes and fabric-reinforced hoses – perfect for industrial use.

The pump housing is filled with glycerine to reduce friction. A ball-bearing mounted rotor ensures extremely smooth running and a long service life. In tough industrial use, the DFDa conveys volumes of up to 15,000 l/h with back pressures of up to 15 bar.

A vacuum unit can optionally be used to help the hose to return to its original shape with pumps of the product range DFDa, thereby improving their suction behaviour and ensuring the even feed of high-viscosity media.

**Your benefits**

- Simple to operate
- Reversible pumping direction
- Hose materials suitable for various chemicals
- Simple and quick hose change
- Ideal for pumping pasty, high-viscosity, abrasive and gaseous media
- Self-priming
- Safeguarded against running dry

**Technical details**

- Connector sizes DN 25 – DN 100
- Feed rates of 0.3 - 20.0 l/rev
- Hose materials NR, NBR, EPDM
- Self-priming up to 8 m
- Back pressure up to 15 bar

**Options**

- Stainless steel base plate
- Available as a mobile unit
- Various connectors, such as Tri-Clamp, DIN 11851 and flange
- Pulsation damper
- Leakage sensor
- Vacuum system

**Field of application**

- Chemical industry
- Waste water
- Mining

**Technical Data**

**Hose material** NR, NBR, EPDM  
**Self-priming** up to 8 m  
**Rollers / shoes** Shoes

Type	Feed rate / revolution	Delivery rate at max. back pressure		Hose diameter (internal)	Max. solids	Weight without drive	Connection DN
		bar	l/h				
DFDa 025	0.30	15	504	25	6.3	57	DN 25
DFDa 032	0.62	15	3,800	32	8.0	89	DN 32
DFDa 040	1.33	15	2,075	40	10.0	150	DN 40
DFDa 060	2.90	15	3,800	57	14.3	252	DN 50
DFDa 070	6.70	15	7,200	65	16.3	530	DN 65
DFDa 080	11.70	15	8,700	80	20.0	900	DN 80
DFDa 100	20.00	15	14,400	100	25.0	1,100	DN 100



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFDa 025 peristaltic pump

DFDa	Type	
	025	DFDa 025, 0.3 l/revolution
		<b>Power end/drive*</b>
	000	without drive unit
	A11	0.55 kW, 18 rpm, 324 l/h, 15 bar (Reduction gear system), 3-phase, 230/400 V AC
	A12	0.75 kW, 28 rpm, 504 l/h, 15 bar (Reduction gear system), 3-phase, 230/400 V AC
	A13	0.75 kW, 39 rpm, 702 l/h, 10 bar (Reduction gear system), 3-phase, 230/400 V AC
	A14	0.75 kW, 45 rpm, 810 l/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
	A15	1.1 kW, 55 rpm, 990 l/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
	A31	1.1 kW, 16 - 55 rpm, 288-990 l/h, 20-70 Hz, 5 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
	A32	1.5 kW, 18 - 63 rpm, 324-1134 l/h, 20-70 Hz, 5 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
	A41	0.75 kW, 4 - 36 rpm, 72-648 l/h, 7-65 Hz, 15 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
	A42	1.1 kW, 6 - 58 rpm, 108-1044 l/h, 7-65 Hz, 5 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
	A43	1.5 kW, 9 - 86 rpm, 162-1548 l/h, 7-65 Hz, 5 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
		<b>Hose material</b>
	0	NR
	B	NBR
	E	EPDM
		<b>Hydraulic connections</b>
	I	DIN flange VA DN25
	J	DIN flange PP DN25
	K	DIN flange PVDF DN25
	L	ANSI flange VA DN25
		<b>Base plate</b>
	0	Base plate, painted steel
	1	Base plate, stainless steel
	2	Portable unit + painted steel base plate
	3	Portable unit + stainless steel base plate
		<b>Leakage sensor</b>
	0	without leakage sensor
	L	with leakage sensor
	M	as "L" + relay output
		<b>Rotor</b>
	0	Rotor with 2 shoes
		<b>Batch controller</b>
	0	without controller
		<b>Special version</b>
	0	Standard
	H	Halar-coated housing
		<b>Vacuum system</b>
	0	without
	V	with vacuum system
		<b>Approvals</b>
	01	CE

\* The pumps are factory-set to a maximum back pressure of 5 bar. Please specify deviating pressures when ordering.





## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFDa 032 peristaltic pump

DFDa	Type	
	032	DFDa 032, 0.625 l/revolution
<b>Power end/drive*</b>		
000		without drive unit
B11		0.75 kW, 21 rpm, 787 l/h, 10 bar (Reduction gear system), 3-phase, 230/400 V AC
B12		1.1 kW, 21 rpm, 787 l/h, 15 bar (Reduction gear system), 3-phase, 230/400 V AC
B13		1.1 kW, 30 rpm, 1125 l/h, 10 bar (Reduction gear system), 3-phase, 230/400 V AC
B14		1.1 kW, 38 rpm, 1425 l/h, 10 bar (Reduction gear system), 3-phase, 230/400 V AC
B15		1.5 kW, 47 rpm, 1762 l/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
B16		1.5 kW, 58 rpm, 2175 l/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
B31		1.5 kW, 12 - 42 rpm, 450 - 1575 l/h, 20 - 70 Hz, 7.5 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
B32		2.2 kW, 19 - 66 rpm, 712-2475 l/h, 20-70 Hz, 5 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
B41		1.1 kW, 4 - 39 rpm, 150 - 1462 l/h, 7 - 65 Hz, 7.5 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
B42		1.5 kW, 5 - 49 rpm, 190 - 1837 l/h, 7 - 65 Hz, 7.5 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
B43		2.2 kW, 8 - 75 rpm, 300-2812 l/h, 7-65 Hz, 5 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
<b>Hose material</b>		
0		NR
B		NBR
E		EPDM
<b>Hydraulic connections</b>		
I		DIN flange VA DN32
J		DIN flange PP DN32
K		DIN flange PVDF/PTFE DN 32
L		ANSI flange VA, 1 1/4"
<b>Base plate</b>		
0		Base plate, painted steel
1		Base plate, stainless steel
2		Portable unit + painted steel base plate
3		Portable unit + stainless steel base plate
<b>Leakage sensor</b>		
0		without leakage sensor
L		with leakage sensor
M		as "L" + relay output
<b>Rotor</b>		
0		Rotor with 2 shoes
<b>Batch controller</b>		
0		without controller
<b>Special version</b>		
0		Standard
H		Halar-coated housing
<b>Vacuum system</b>		
0		without
V		with vacuum system
<b>Approvals</b>		
01		CE

\* The pumps are factory-set to a maximum back pressure of 5 bar. Please specify deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFDa 040 peristaltic pump

DFDa	Type	DFDa 040, 1.33 l/revolution
	040	
<b>Power end/drive*</b>		
000		without drive unit
C11		1.1 kW, 21 rpm, 1676 l/h, 10 bar (Reduction gear system), 3-phase, 230/400 V AC
C12		1.1 kW, 26 rpm, 2075 l/h, 7.5 bar (Reduction gear system), 3-phase, 230/400 V AC
C13		1.5 kW, 21 rpm, 1676 l/h, 10 bar (Reduction gear system), 3-phase, 230/400 V AC
C14		1.5 kW, 26 rpm, 2075 l/h, 15 bar (Reduction gear system), 3-phase, 230/400 V AC
C15		1.5 kW, 38 rpm, 3032 l/h, 7.5 bar (Reduction gear system), 3-phase, 230/400 V AC
C16		1.5 kW, 43 rpm, 3431 l/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
C17		2.2 kW, 48 rpm, 3830 l/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
C31		2.2 kW, 17 - 60 rpm, 1356-4788 l/h, 20-70 Hz, 5 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
C41		1.5 kW, 4 - 34 rpm, 320-2713 l/h, 7-65 Hz, 5 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
C42		2.2 kW, 4 - 34 rpm, 320-2713 l/h, 7-65 Hz, 10 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
C43		2.2 kW, 5 - 49 rpm, 400 - 3910 l/h, 7 - 65 Hz, 5 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
C44		3.0 kW, 7 - 62 rpm, 558 - 4948 l/h, 7 - 64 Hz, 5 bar (Gear motor, external frequency converter required), 3-phase, 230/400 V AC
<b>Hose material</b>		
0		NR
B		NBR
E		EPDM
<b>Hydraulic connections</b>		
I		DIN flange VA DN40
J		DIN flange PP DN40
K		DIN flange PVDF DN40
L		ANSI flange VA, 1 1/2"
M		ANSI flange PP 1 1/2"
N		ANSI flange PVDF/PTFE 1 1/2"
<b>Base plate</b>		
0		Base plate, painted steel
1		Base plate, stainless steel
2		Portable unit + painted steel base plate
3		Portable unit + stainless steel base plate
<b>Leakage sensor</b>		
0		without leakage sensor
L		with leakage sensor
M		as "L" + relay output
<b>Rotor</b>		
0		Rotor with 2 shoes
<b>Batch controller</b>		
0		without controller
<b>Special version</b>		
0		Standard
H		Halar-coated housing
<b>Vacuum system</b>		
0		without
V		with vacuum system
<b>Approvals</b>		
01		CE

\* The pumps are factory-set to a maximum back pressure of 5 bar. Please specify deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFDa 060 peristaltic pump

DFDa	Type	
	060	DFDa 060, 2.9 l/revolution
<b>Power end/drive*</b>		
000		without drive unit
D11		2.2 kW, 22 rpm, 3.8 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
D12		3.0 kW, 26 rpm, 4.5 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
D13		4.0 kW, 22 rpm, 3.8 m³/h, 15 bar (Reduction gear system), 3-phase, 230/400 V AC
D14		4.0 kW, 26 rpm, 4.5 m³/h, 10 bar (Reduction gear system), 3-phase, 230/400 V AC
D15		4.0 kW, 32 rpm, 5.6 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
D16		4.0 kW, 37 rpm, 6.4 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
D17		5.5 kW, 47 rpm, 8.2 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
D31		5.5 kW, 10 – 36 rpm, 1.7 – 6.3 m³/h, 20 – 70 Hz, 5 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
D32		7.5 kW, 19 – 66 rpm, 3.3 – 11.5 m³/h, 20 – 70 Hz, 5 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
D41		5.5 kW, 4 – 34 rpm, 0.7 – 5.9 m³/h, 20 – 70 Hz, 5 bar (Gear motor, external frequency converter required), 3-phase, 400/660 V AC
D42		7.5 kW, 7 – 61 rpm, 1.2 – 10.6 m³/h, 20 – 70 Hz, 5 bar (Gear motor, external frequency converter required), 3-phase, 400/660 V AC
<b>Hose material</b>		
0		NR
B		NBR
E		EPDM
<b>Hydraulic connections</b>		
I		DIN flange VA DN 50
L		ANSI flange VA DN 50
J		ANSI flange PP DN 50
M		ANSI flange PP DN 50
U		DIN flange VA, Halar-coated + PVDF inserts DN 50
V		ANSI flange VA, Halar coated + PVDF inserts DN 50
<b>Base plate</b>		
0		Base plate, painted steel
1		Base plate, stainless steel
2		Portable unit + painted steel base plate
<b>Leakage sensor</b>		
0		without leakage sensor
L		with leakage sensor
M		as "L" + relay output
<b>Rotor</b>		
0		Rotor with 2 shoes
<b>Batch controller</b>		
0		without controller
<b>Special version</b>		
0		Standard
H		Halar-coated housing
<b>Vacuum system</b>		
0		without
V		with vacuum system
<b>Approvals</b>		
01		CE

\* The pumps are factory-set to a maximum back pressure of 5 bar. Please specify deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFDa 070 peristaltic pump

DFDa	Type	
	070	DFDa 070, 6.7 l/revolution
<b>Power end/drive*</b>		
000		without drive unit
E11		3.0 kW, 13.5 rpm, 5.4 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
E12		4.0 kW, 18 rpm, 7.2 m³/h, 7.5 bar (Reduction gear system), 3-phase, 230/400 V AC
E13		5.5 kW, 13.5 rpm, 5.4 m³/h, 15 bar (Reduction gear system), 3-phase, 230/400 V AC
E14		5.5 kW, 26 rpm, 10.4 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
E15		7.5 kW, 18 rpm, 7.2 m³/h, 15 bar (Reduction gear system), 3-phase, 230/400 V AC
E16		7.5 kW, 26 rpm, 10.4 m³/h, 10 bar (Reduction gear system), 3-phase, 230/400 V AC
E17		7.5 kW, 32 rpm, 12.8 m³/h, 7.5 bar (Reduction gear system), 3-phase, 230/400 V AC
E18		7.5 kW, 40 rpm, 16 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
E31		7.5 kW, 10 - 36 rpm, 4 - 14.4 m³/h, 20-70 Hz, 5 bar (Gear motor with integrated frequency converter), 3-phase, 400 V AC
E41		7.5 kW, 4 - 34 rpm, 1.6 - 13.7 m³/h, 7-65 Hz, 5 bar (Gear motor, external frequency converter required), 3-phase, 400/660 V AC
<b>Hose material</b>		
0		NR
B		NBR
E		EPDM
<b>Hydraulic connections</b>		
I		DIN flange VA DN65
J		DIN flange PP DN65
L		ANSI flange VA, 2 1/2"
M		ANSI flange PP 2 1/2"
Q		DIN flange VA Halar coated DN65
R		ANSI flange VA Halar coated 2 1/2"
<b>Base plate</b>		
0		Base plate, painted steel
1		Base plate, stainless steel
<b>Leakage sensor</b>		
0		without leakage sensor
L		with leakage sensor
M		as "L" + relay output
<b>Rotor</b>		
0		Rotor with 2 shoes
<b>Batch controller</b>		
0		without controller
<b>Special version</b>		
0		Standard
H		Halar-coated housing
<b>Vacuum system</b>		
0		without
V		with vacuum system
<b>Approvals</b>		
01		CE

\* The pumps are factory-set to a maximum back pressure of 5 bar. Please specify deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFDa 080 peristaltic pump

DFDa	Type	
	080	DFDa 080, 11.7 l/revolution
<b>Power end/drive*</b>		
	000	without drive unit
	G11	4 kW, 12.5 rpm, 8.7 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
	G12	5.5 kW, 17.6 rpm, 12.3 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
	G13	7.5 kW, 12.5 rpm, 8.7 m³/h, 15 bar (Reduction gear system), 3-phase, 230/400 V AC
	G14	7.5 kW, 17.6 rpm, 12.3 m³/h, 10 bar (Reduction gear system), 3-phase, 230/400 V AC
	G15	7.5 kW, 20 rpm, 14 m³/h, 7.5 bar (Reduction gear system), 3-phase, 230/400 V AC
	G16	7.5 kW, 27.7 rpm, 19.4 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
	G17	11 kW, 30 rpm, 21 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
<b>Hose material</b>		
	0	NR
	B	NBR
	E	EPDM
<b>Hydraulic connections</b>		
	I	DIN flange VA DN80
	J	DIN flange PP DN80
	L	ANSI flange VA 3"
	M	ANSI flange PP 3"
	Q	DIN flange VA Halar coated DN80
	R	ANSI flange VA Halar coated 3"
<b>Base plate</b>		
	0	Base plate, painted steel
<b>Leakage sensor</b>		
	0	without leakage sensor
	L	with leakage sensor
	M	as "L" + relay output
<b>Rotor</b>		
	0	Rotor with 2 shoes
<b>Batch controller</b>		
	0	without controller
<b>Special version</b>		
	0	Standard
<b>Vacuum system</b>		
	0	without
	V	with vacuum system
<b>Approvals</b>		
	01	CE

\* The pumps are factory-set to a maximum back pressure of 5 bar. Please specify deviating pressures when ordering.



## 2.8 Peristaltic Pump DULCO®flex

### DULCO®flex DFDa 100 peristaltic pump

DFDa	Type	
	100	DFDa 100, 20.0 l/revolution
		<b>Power end/drive*</b>
	000	without drive unit
	F11	7.5 kW, 12 rpm, 14.4 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
	F12	11 kW, 18 rpm, 21.6 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
	F13	15 kW, 12 rpm, 14.4 m³/h, 15 bar (Reduction gear system), 3-phase, 230/400 V AC
	F14	15 kW, 18 rpm, 21.6 m³/h, 10 bar (Reduction gear system), 3-phase, 230/400 V AC
	F15	15 kW, 23 rpm, 27.6 m³/h, 7.5 bar (Reduction gear system), 3-phase, 230/400 V AC
	F16	15 kW, 28 rpm, 33.6 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
	F17	18.5 kW, 30 rpm, 36 m³/h, 5 bar (Reduction gear system), 3-phase, 230/400 V AC
		<b>Hose material</b>
	0	NR
	B	NBR
	E	EPDM
		<b>Hydraulic connections</b>
	I	DIN flange VA DN100
	J	DIN flange PP DN100
	L	ANSI flange VA 4"
	M	ANSI flange PP 4"
	Q	DIN flange VA Halar coated DN100
	R	ANSI flange VA Halar coated 4"
		<b>Base plate</b>
	0	Base plate, painted steel
		<b>Leakage sensor</b>
	0	without leakage sensor
	L	with leakage sensor
	M	as "L" + relay output
		<b>Rotor</b>
	0	Rotor with 2 shoes
		<b>Batch controller</b>
	0	without controller
		<b>Special version</b>
	0	Standard
		<b>Vacuum system</b>
	0	without
	V	with vacuum system
		<b>Approvals</b>
	01	CE

\* The pumps are factory-set to a maximum back pressure of 5 bar. Please specify deviating pressures when ordering.

2





## 2.8 Peristaltic Pump DULCO®flex

### 2.8.6

#### Spare Parts

##### Spare Parts for DFAa 003

	Order no.
DFAa 003 silicone tube	1037107
DFAa 003 Norprene tube A-60-F	1037144
DFAa 003 Solva tube	1037145

##### Spare Parts for DFAa 008

	Order no.
DFAa 008 silicone tube	1037146
DFAa 008 Norprene tube A-60-G	1037147
DFAa 008 silicone tube	1037148
DFAa 008 Solva tube	1037149

##### Spare Parts for DFBa 010

	Order no.
DFBa 010 NR tube	1037150
DFBa 010 NBR tube	1037151
DFBa 010 EPDM tube	1037152
DFBa 010 NR-A tube	1037153
DFBa 010 NBR-A tube	1037154
DFBa 010 NORPRENE tube	1037155
DFBa 010 HYPALON tube	1037156

##### Spare Parts for DFBa 013

	Order no.
DFBa 013 NR tube	1037157
DFBa 013 NBR tube	1037158
DFBa 013 EPDM tube	1037159
DFBa 013 NR-A tube	1037160
DFBa 013 NBR-A tube	1037161
DFBa 013 NORPRENE tube	1037162
DFBa 013 HYPALON tube	1037163

##### Spare Parts for DFBa 016

	Order no.
DFBa 016 NR tube	1037164
DFBa 016 NBR tube	1037165
DFBa 016 EPDM tube	1037166
DFBa 016 NR-A tube	1037167
DFBa 016 NBR-A tube	1037168
DFBa 016 NORPRENE tube	1037169
DFBa 016 HYPALON tube	1037171

##### Spare Parts for DFBa 019

	Order no.
DFBa 019 TYGON tube	1037172
DFBa 019 NORPRENE tube	1037173

## 2.8 Peristaltic Pump DULCO®flex

### Spare Parts for DFBa 022

	Order no.
DFBa 022 NR tube	1037175
DFBa 022 NBR tube	1037176
DFBa 022 EPDM tube	1037178
DFBa 022 NR-A tube	1037179
DFBa 022 NBR-A tube	1037180
DFBa 022 NORPRENE tube	1037181
DFBa 022 HYPALON tube	1037182

### Spare Parts for DFCa 030

	Order no.
DFCa 030 NR tube	1037183
DFCa 030 NBR tube	1037184
DFCa 030 EPDM tube	1037185
DFCa 030 NR-A tube	1037186
DFCa 030 NBR-A tube	1037187
DFCa 030 tube NORPRENE	1045073

### Spare Parts for DFCa 040

	Order no.
DFCa 040 NR tube	1037192
DFCa 040 NBR tube	1037193
DFCa 040 EPDM tube	1037194
DFCa 040 NR-A tube	1037195
DFCa 040 NBR-A tube	1037196
DFCa 040 NORPRENE tube	1037198

### Spare Parts for DFCa 050

	Order no.
DFDa 040/DFCa 050 NR hose	1037199
DFDa 040/DFCa 050 NBR hose	1037201
DFDa 040/DFCa 050 EPDM hose	1037202
DFCa 050 NR-A tube	1037203
DFCa 050 NBR-A tube	1037204
DFCa 050 tube NORPRENE	1045084

### Spare Parts for DFCa 060

	Order no.
DFCa 060 NR tube	1037206
DFCa 060 NBR tube	1037208
DFCa 060 EPDM tube	1037209
DFCa 060 NR-A tube	1037210
DFCa 060 NBR-A tube	1037211
DFCa 060 tube NORPRENE	1045085







## 2.8 Peristaltic Pump DULCO®flex

### Spare Parts for DFCa 070

	Order no.
DFDa 070/DFCa 070 NR hose	1037213
DFDa 070/DFCa 070 NBR hose	1037214
DFDa 070/DFCa 070 EPDM hose	1037215
DFCa 070 NR-A hose	1037216
DFCa 070 NBR-A hose	1037217

### Spare Parts for DFDa 025

	Order no.
DFDa 025 NR tube	1037219
DFCa 025 NBR tube	1037220
DFDa 025 EPDM tube	1037221

### Spare Parts for DFDa 032

	Order no.
DFDa 032 NR tube	1037225
DFCa 032 NBR tube	1037226
DFDa 032 EPDM tube	1037227

### Spare Parts for DFDa 040

	Order no.
DFDa 040/DFCa 050 NR hose	1037199
DFDa 040/DFCa 050 NBR hose	1037201
DFDa 040/DFCa 050 EPDM hose	1037202

### Spare Parts for DFDa 060

	Order no.
DFDa 060 NR tube	1037236
DFCa 060 NBR tube	1037237
DFDa 060 EPDM tube	1037238

### Spare Parts for DFDa 070

	Order no.
DFDa 070/DFCa 070 NR hose	1037213
DFDa 070/DFCa 070 NBR hose	1037214
DFDa 070/DFCa 070 EPDM hose	1037215

### Spare Parts DFDa 080

	Order no.
DFDa 080 hose NR	1041677
DFDa 080 hose NBR	1041678
DFDa 080 hose EPDM	1041679

### Spare Parts for DFDa 100

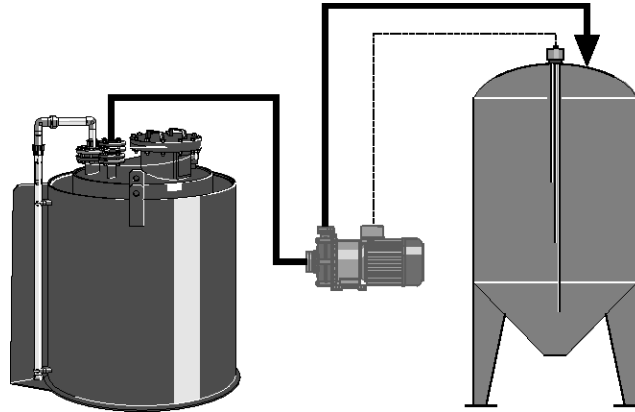
	Order no.
DFDa 100 NR tube	1037247
DFCa 100 NBR tube	1037248
DFDa 100 EPDM tube	1037249

## 2.9 Application Examples

### 2.9.1 Filling a Day Tank

Product:	<b>von Taine® centrifugal pump</b>
Metered medium:	<b>32% hydrochloric acid solution</b>
Sector:	<b>Food</b>
Application:	<b>Chemical transfer</b>

The von Taine® centrifugal pump is switched on and off automatically by the level control facility in the day tank.



pk\_3\_050

#### Task and requirements

- Automatically filling service tanks with 32 % hydrochloric acid solution

#### Operating conditions

- Indoor operation
- Automatic activation of pump

#### Application information

- Centrifugal pump controlled by level control facility in metering tank
- The centrifugal pump is not self-priming and requires feed
- Hydrochloric acid compatibility of materials must be ensured (PP, PVDF; EPDM)
- Provide dry-running protection facility for centrifugal pump

#### Solution

- vonTaine® 1820 PP centrifugal pump
- Service tank with level control

#### Benefits

- Safe handling of hydrochloric acid
- Fully automatic operation with minimum personnel and maintenance requirements

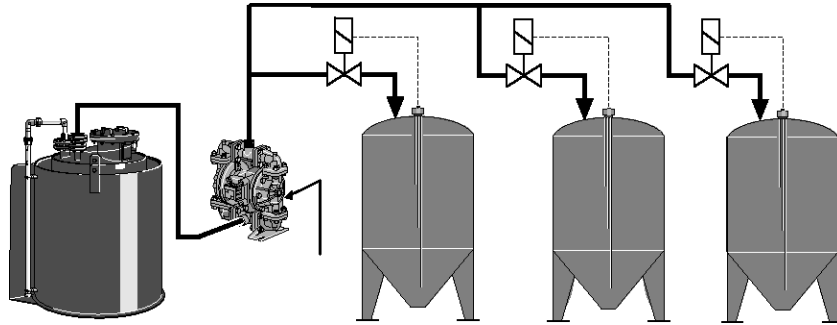


## 2.9 Application Examples

### 2.9.2 Filling Day Tanks

Product: **Duodos air-operated diaphragm pump**  
 Metered medium: **Detergent**  
 Sector: **Laundry**  
 Application: **Chemical transfer**

The level control facility for the day tanks opens the solenoid valves when the level drops below minimum. With decreasing back pressure, the Duodos pump automatically begins to pump medium into the metering line and switches off when the maximum level in the tank is reached and the solenoid valve is switched off.



pk\_3\_051

#### Task and requirements

- Automatic filling of day tanks with detergent

#### Operating conditions

- Compressed air necessary for operating compressed air diaphragm pump
- Automatic filling of day tanks

#### Application information

- Compressed air diaphragm-type pump controlled by level control facility in metering tank
- The compressed air diaphragm pump is self-priming
- Also suitable for viscous media
- The level control facility for the day tanks opens the solenoid valves when the level drops below minimum. With decreasing back pressure, the compressed air diaphragm-type pump automatically begins to pump medium into the metering line and switches off when the maximum level in the tank is reached and the solenoid valve is switched off

#### Solution

- Duodos air-operated diaphragm pump
- Day tank with level control

#### Benefits

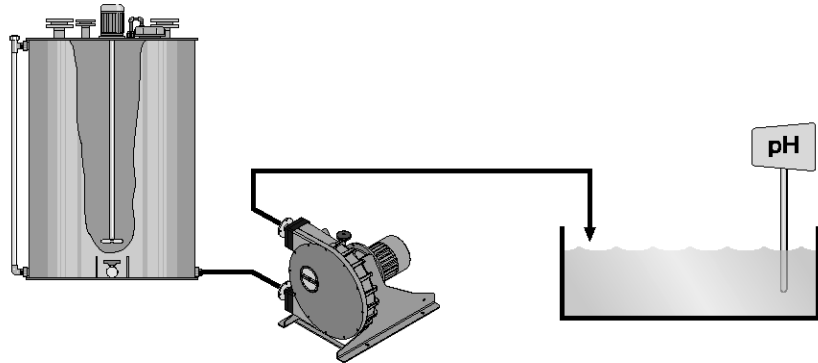
- Simplified logistics through central storage
- Fully automatic operation with minimum personnel and maintenance requirements



## 2.9 Application Examples

### 2.9.3 Deacidification of Potable Water

Product	<b>DULCO®flex peristaltic pump</b>
Feed chemical	<b>Lime milk 10%</b>
Sector:	<b>Potable water</b>
Application	<b>Feed of abrasive chemicals</b>



AP\_PTW\_0001\_SW

#### Problems and requirements

- Feed of abrasive lime milk into potable water tanks
- Deacidification of the potable water

#### Operating conditions

- The lime milk comes as a 10% suspension
- The pH in the application tank is continuously measured

#### Notes on use

- The peristaltic pump is self-priming
- The pump is controlled by a pH measuring unit
- Speed reduction to extend the service life of the hose

#### Solution

- DULCO®flex DFCa 040 type peristaltic pump
- Hose material: NR (natural rubber)

#### Benefits

- Reliable feed of lime milk
- Fully automatic operation with minimum personnel and maintenance requirements



# 3.0 Overview of Metering Systems DULCODOS®

## 3.0.1 Selection Guide

Metering systems are ready mounted complete solutions, which are immediately available and ready for use for the most important applications. Whether standard or customised – you'll find the right solution here.

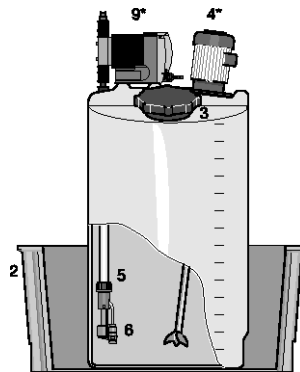
**Tip:** The table provides a good overview.



### Selection Guide for DULCODOS® Metering Systems

Type	Function	Applications	Capacity range
DULCODOS® eco	Storing, metering	General	35 – 1,000 litres
DULCODOS® universal	Metering	General	–
DULCODOS® panel	Metering	General	0.74 – 1,000 l/h
DULCODOS® Hydrazin	Preparing, metering	Boiler feed water	up to 11 l/h
DULCODOS® PPLA	Mixing, metering	Animal food	–

### Metering systems DULCODOS®



## 3.1 Metering System DULCODOS® eco

### 3.1.1 Metering System DULCODOS® eco

Choose from a range of different components and adapt the metering system to your requirements.

For storing and metering liquid chemicals Use a selection guide (identity code) to quickly and flexibly adapt your metering system to your metering task.

Two hydraulic connection points guarantee simple installation of the metering system. The ready mounted system consists of components that have been perfectly matched to each other to ensure problem-free operation. You obtain a complete system. Individually configure your metering system at the time of ordering. A simple selection system makes ordering easy and guarantees maximum efficiency even at the time of ordering.

#### Your benefits

- One to three metering pumps mounted on a storage tank, ready for connection with all the necessary accessories
- Short delivery time
- Outstanding value for money
- Compact construction
- Fast commissioning
- Versatile use
- All the components are perfectly matched to each other and fit precisely
- Environmentally-friendly handling of chemicals

#### Technical details

- Dosing tank: PE, various colours, 35 – 1,000 litres
- Collecting pan: PE, various colours, 35 – 1,000 litres
- Lock for screw top
- Hand mixer / stirrer: PP, PVDF or stainless steel, various outputs
- Suction assembly: PP, PVC, various connectors
- Level switch for suction assembly: 2 -stage
- Drain tap: PP, PVC, with ball valve
- Metering pump: alpha, Beta®, gamma/ X, Sigma/ 1, Sigma/ 2, Sigma/ 3

#### Field of application

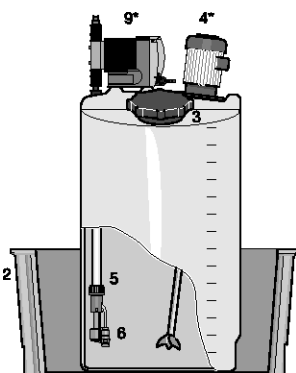
Treatment of cooling, process and swimming pool water

ProMinent metering systems with PE storage tanks can be selected and ordered with the help of an identity code system. First select the metering pump using the separate pump identity code.

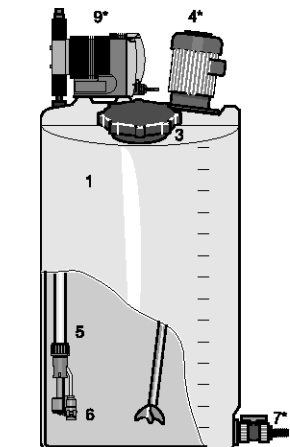
#### Selectable components

1. PE dosing tank (35 – 1,000 litres)
2. Stackable collecting pans (35 – 1,000 litres)
3. Lock for tank screw top
4. Hand mixer/stirrer (\*)
5. Suction assembly
6. Level switch for suction assembly
7. Drain tap for storage tank (\*)
8. Order metering pump (\*) separately  
(Order the pump separately due to the large number of possible pumps that can be installed on storage tanks. Use the identity code for the pump you require.)

\* These components are ready for subsequent installation, but are supplied separately to avoid damage in transit. Customers should fully install the system on site.



pk\_3\_033



pk\_3\_034



### 3.1 Metering System DULCODOS® eco

The following table shows the combination option of metering pump and storage tank:

Metering pumps	Tanks						
	35 l	60 l	100 l	140 l	250 l	500 l	1000 l
alpha	x+	x+	x	x+	x	x+	x+
Beta®	x+	x	x	x	x	x	x
gamma/ X	x+	x	x	x	x	x	x
Sigma/ 1	-	x+	x+	x+	x	x	x
Sigma/ 2	-	-	-	-	x	x+	x
Sigma/ 3	-	-	-	-	x	x+	x
delta®	-	x+	x+	x+	x	x	x

x = Direct assembly of the pump without mounting plate  
 x+ = Assembly of the pump with mounting plate

#### 3.1.2 Identity Code Ordering System, 35 litres

##### Metering system with storage tank, 35 litres

DSBa	PE tank
	0035N 35 l PE metering tank, neutral colour
	0035S 35 l PE metering tank, black
	0035B 35 l PE metering tank, blue
	0035G 35 l PE metering tank, yellow
	0035R 35 l PE metering tank, red
	<b>Collecting pan</b>
	0 without collecting pan
	1 with collecting pan, neutral colour
	2 with collecting pan, coloured (the same colour as the tank)
	<b>Version</b>
	0 with ProMinent® Logo
	<b>Lock for tank screw top</b>
	0 without lock
	<b>Hand mixer, stirrer</b>
	0 none
	A with PP hand mixer
	<b>Metering pump mounting</b>
	0 without pump
	D for alpha
	E for Beta®, gamma/ X
	<b>Suction assembly selection</b>
	0 without suction assembly
	1 suction assembly with 6x4 suction hose
	2 suction assembly with 8x5 suction hose
	3 suction assembly with 12x9 suction hose
	<b>Suction assembly material</b>
	0 none
	1 PVC
	2 PP
	<b>Suction assembly float switch</b>
	0 without float switch
	1 2-stage, round plug, (6 x 4, 8 x 5, 12 x 9) for Beta®, gamma/ X
	<b>Accessories - discharge tap for tank</b>
	0 without accessories
	1 with ball valve PVC, hose grommet d16 **
	2 with ball valve PP, hose grommet d20 **
	<b>Calibration assembly</b>
	0 none
	<b>Info - pump*</b>
	e.g. BT4 1005 PPE 300AA000

\* Please enter the Identity code of the selected pump  
 \*\* Ball valve can only be selected if the metering station is ordered without drip pan.  
 \*\*\* Metering gauge can only be selected if the metering station is ordered without drip pan and without suction fitting.



# 3.1 Metering System DULCODOS® eco

## 3.1.3 Identity Code Ordering System, 60 litres

### Metering system with storage tank, 60 litres

<b>DSBa</b>	<b>PE tank</b>
0060N	60 l PE metering tank, neutral colour
0060S	60 l PE metering tank, black
0060B	60 l PE metering tank, blue
0060G	60 l PE metering tank, yellow
0060R	60 l PE metering tank, red
	<b>Collecting pan</b>
0	without collecting pan
1	with collecting pan, neutral colour
2	with collecting pan, coloured (the same colour as the tank)
	<b>Version</b>
0	with ProMinent® Logo
	<b>Lock for tank screw top</b>
1	with lock
	<b>Hand mixer, stirrer</b>
0	none
A	with PP hand mixer
B	with PP hand stirrer
H	with stainless steel 0.02 kW electric stirrer
P	with PVDF 0.02 kW electric stirrer
	<b>Metering pump mounting</b>
0	without pump
A	for Beta®, gamma/ X
D	for alpha
F	for Sigma/ 1
P	for delta®
	<b>Suction assembly selection</b>
0	without suction assembly
1	suction assembly with 6x4 suction hose
2	suction assembly with 8x5 suction hose
3	suction assembly with 12x9 suction hose
4	suction assembly DN 10
5	suction assembly DN 15
	<b>Suction assembly material</b>
0	none
1	PVC
2	PP
	<b>Suction assembly float switch</b>
0	without float switch
1	2-stage, round plug, (6 x 4, 8 x 5, 12 x 9) for Beta®, gamma/ X, delta®
2	2-stage, round plug, (DN 10-32) for Sigma/ 1/ 2/ 3, delta®
	<b>Accessories - discharge tap for tank</b>
0	without accessories
1	with ball valve PVC, hose grommet d16 **
2	with ball valve PP, hose grommet d20 **
	<b>Calibration assembly</b>
0	none
	<b>Info - pump*</b>
	e.g. GMXa 0414 PVT 20000UA

\* Please enter the Identity code of the selected pump

\*\* Ball valve can only be selected if the metering station is ordered without drip pan.

\*\*\* Metering gauge can only be selected if the metering station is ordered without drip pan and without suction fitting.







# 3.1 Metering System DULCODOS® eco

## 3.1.4 Identity Code Ordering System, 100 litres

### Metering system with storage tank, 100 litres

<b>DSBa</b>	<b>PE tank</b>	
	0100N	100 l PE metering tank, neutral colour
	0100S	100 l PE metering tank, black
	0100B	100 l PE metering tank, blue
	0100G	100 l PE metering tank, yellow
	0100R	100 l PE metering tank, red
		<b>Collecting pan</b>
	0	without collecting pan
	1	with collecting pan, neutral colour
	2	with collecting pan, coloured (the same colour as the tank)
		<b>Version</b>
	0	with ProMinent® Logo
		<b>Lock for tank screw top</b>
	1	with lock
		<b>Hand mixer, stirrer</b>
	0	none
	A	with PP hand mixer
	C	with PP hand stirrer
	I	with stainless steel 0.18 kW electric stirrer
	R	with PVDF 0.18 kW electric stirrer
		<b>Metering pump mounting</b>
	0	without pump
	A	for Beta®, gamma/ X
	L	for Sigma/ 1
	N	for alpha
	P	for delta®
		<b>Suction assembly selection</b>
	0	without suction assembly
	1	suction assembly with 6x4 suction hose
	2	suction assembly with 8x5 suction hose
	3	suction assembly with 12x9 suction hose
	4	suction assembly DN 10
	5	suction assembly DN 15
		<b>Suction assembly material</b>
	0	none
	1	PVC
	2	PP
		<b>Suction assembly float switch</b>
	0	without float switch
	1	2-stage, round plug, (6 x 4, 8 x 5, 12 x 9) for Beta®, gamma/ X, delta®
	2	2-stage, round plug, (DN 10-32) for Sigma/ 1/ 2/ 3, delta®
		<b>Accessories - discharge tap for tank</b>
	0	without accessories
	1	with ball valve PVC, hose grommet d16 **
	2	with ball valve PP, hose grommet d20 **
		<b>Calibration assembly</b>
	0	none
		<b>Info - pump*</b>
		e.g. GMXa 0414 PVT 20000UA

\* Please enter the Identity code of the selected pump

\*\* Ball valve can only be selected if the metering station is ordered without drip pan.

\*\*\* Metering gauge can only be selected if the metering station is ordered without drip pan and without suction fitting.

# 3.1 Metering System DULCODOS® eco

## 3.1.5 Identity Code Ordering System, 140 litres

### Metering system with storage tank, 140 litres

<b>DSBa</b>	<b>PE tank</b>	
0140N	140 l PE metering tank, neutral colour	
0140S	140 l PE metering tank, black	
0140B	140 l PE metering tank, blue	
0140G	140 l PE metering tank, yellow	
0140R	140 l PE metering tank, red	
	<b>Collecting pan</b>	
0	without collecting pan	
1	with collecting pan, neutral colour	
2	with collecting pan, coloured (the same colour as the tank)	
	<b>Version</b>	
0	with ProMinent® Logo	
	<b>Lock for tank screw top</b>	
1	with lock	
	<b>Hand mixer, stirrer</b>	
0	none	
A	with PP hand mixer	
D	with PP hand stirrer	
K	with stainless steel 0.18 kW electric stirrer	
S	with PVDF 0.18 kW electric stirrer	
	<b>Metering pump mounting</b>	
0	without pump	
A	for Beta®, gamma/ X	
D	for alpha	
H	for Sigma/ 1	
P	for delta®	
	<b>Suction assembly selection</b>	
0	without suction assembly	
1	suction assembly with 6x4 suction hose	
2	suction assembly with 8x5 suction hose	
3	suction assembly with 12x9 suction hose	
4	suction assembly DN 10	
5	suction assembly DN 15	
	<b>Suction assembly material</b>	
0	none	
1	PVC	
2	PP	
	<b>Suction assembly float switch</b>	
0	without float switch	
1	2-stage, round plug, (6 x 4, 8 x 5, 12 x 9) for Beta®, gamma/ X, delta®	
2	2-stage, round plug, (DN 10-32) for Sigma/ 1/ 2/ 3, delta®	
	<b>Accessories - discharge tap for tank</b>	
0	without accessories	
1	with ball valve PVC, hose grommet d16 **	
2	with ball valve PP, hose grommet d20 **	
	<b>Calibration assembly</b>	
0	none	
	<b>Info - pump*</b>	
	e.g. GMXa 0414 PVT 20000UA	

\* Please enter the Identity code of the selected pump

\*\* Ball valve can only be selected if the metering station is ordered without drip pan.

\*\*\* Metering gauge can only be selected if the metering station is ordered without drip pan and without suction fitting.





# 3.1 Metering System DULCODOS® eco

## 3.1.6 Identity Code Ordering System, 250 litres

### Metering system with storage tank, 250 litres

<b>DSBa</b>	<b>PE tank</b>								
	0250N	250 l PE metering tank, neutral colour							
	0250S	250 l PE metering tank, black							
	0250B	250 l PE metering tank, blue							
	0250G	250 l PE metering tank, yellow							
	0250R	250 l PE metering tank, red							
		<b>Collecting pan</b>							
	0	without collecting pan							
	1	with collecting pan, neutral colour							
	2	with collecting pan, coloured (the same colour as the tank)							
		<b>Version</b>							
	0	with ProMinent® Logo							
		<b>Lock for tank screw top</b>							
	1	with lock							
		<b>Hand mixer, stirrer</b>							
	0	none							
	A	with PP hand mixer							
	E	with PP hand stirrer							
	L	with stainless steel 0.18 kW electric stirrer							
	T	with electric stirrer PVDF 0.18 kW							
		<b>Metering pump mounting</b>							
	0	without pump							
	A	for Beta®, gamma/ X							
	B	for Sigma/ 2/ 3							
	C	for Sigma/ 1							
	N	for alpha							
	P	for delta®							
		<b>Suction assembly selection</b>							
	0	without suction assembly							
	1	suction assembly with 6x4 suction hose							
	2	suction assembly with 8x5 suction hose							
	3	suction assembly with 12x9 suction hose							
	4	suction assembly DN 10							
	5	suction assembly DN 15							
	7	suction assembly DN 25							
	8	suction assembly DN 32							
		<b>Suction assembly material</b>							
	0	none							
	1	PVC							
	2	PP							
		<b>Suction assembly float switch</b>							
	0	without float switch							
	1	2-stage, round plug, (6 x 4, 8 x 5, 12 x 9) for Beta®, gamma/ X, delta®							
	2	2-stage, round plug, (DN 10-32) for Sigma/ 1/ 2/ 3, delta®							
		<b>Accessories - discharge tap for tank</b>							
	0	without accessories							
	1	with ball valve PVC, hose grommet d16 **							
	2	with ball valve PP, hose grommet d20 **							
		<b>Calibration assembly</b>							
	0	none							
		<b>Info - pump*</b>							
		e.g. GMXa 0414 PVT 2000UA							

\* Please enter the Identity code of the selected pump  
 \*\* Ball valve can only be selected if the metering station is ordered without drip pan.  
 \*\*\* Metering gauge can only be selected if the metering station is ordered without drip pan and without suction fitting.

### 3.1 Metering System DULCODOS® eco

#### 3.1.7 Identity Code Ordering System, 500 litres

##### Metering system with storage tank, 500 litres

DSBa	PE tank								
	0500N	500 l PE metering tank, neutral colour							
	0500S	500 l PE metering tank, black							
	0500B	500 l PE metering tank, blue							
	0500G	500 l PE metering tank, yellow							
	0500R	500 l PE metering tank, red							
		<b>Collecting pan</b>							
	0	without collecting pan							
	1	with collecting pan, neutral colour							
	2	with collecting pan, coloured (the same colour as the tank)							
		<b>Version</b>							
	0	with ProMinent® Logo							
		<b>Lock for tank screw top</b>							
	1	with lock							
		<b>Hand mixer, stirrer</b>							
	0	none							
	A	with PP hand mixer							
	F	with PP hand stirrer							
	M	with stainless steel 0.25 kW electric stirrer							
	U	with PVDF 0.25 kW electric stirrer							
		<b>Metering pump mounting</b>							
	0	without pump							
	A	for Beta®, gamma/ X							
	C	for Sigma/ 1, delta®							
	D	for alpha							
	J	for Sigma/ 2/ 3							
	P	for delta®							
		<b>Suction assembly selection</b>							
	0	without suction assembly							
	1	suction assembly with 6x4 suction hose							
	2	suction assembly with 8x5 suction hose							
	3	suction assembly with 12x9 suction hose							
	4	suction assembly DN 10							
	5	suction assembly DN 15							
	7	suction assembly DN 25							
	8	suction assembly DN 32							
		<b>Suction assembly material</b>							
	0	none							
	1	PVC							
	2	PP							
		<b>Suction assembly float switch</b>							
	0	without float switch							
	1	2-stage, round plug, (6 x 4, 8 x 5, 12 x 9) for Beta®, gamma/ X, delta®							
	2	2-stage, round plug, (DN 10-32) for Sigma/ 1/ 2/ 3, delta®							
		<b>Accessories - discharge tap for tank</b>							
	0	without accessories							
	1	with ball valve PVC, hose grommet d16 **							
	2	with ball valve PP, hose grommet d20 **							
		<b>Calibration assembly</b>							
	0	none							
		<b>Info - pump*</b>							
		e.g. GMXa 0414 PVT 20000UA							

\* Please enter the Identity code of the selected pump

\*\* Ball valve can only be selected if the metering station is ordered without drip pan.

\*\*\* Metering gauge can only be selected if the metering station is ordered without drip pan and without suction fitting.





### 3.1 Metering System DULCODOS® eco

#### 3.1.8 Identity Code Ordering System, 1000 litres

##### Metering system with storage tank, 1000 litres

DSBa	PE tank
1000N	1000 l PE metering tank, neutral colour
1000S	1000 l PE metering tank, black
1000B	1000 l PE metering tank, blue
1000G	1000 l PE metering tank, yellow
1000R	1000 l PE metering tank, red
<b>Collecting pan</b>	
0	without collecting pan
1	with collecting pan, neutral colour
2	with collecting pan, black
<b>Version</b>	
0	with ProMinent® Logo
<b>Lock for tank screw top</b>	
1	with lock
<b>Hand mixer, stirrer</b>	
0	none
G	with hand mixer PP
N	with stainless steel 0.75 kW electric stirrer
W	with PVDF 0.75 kW electric stirrer
<b>Metering pump mounting</b>	
0	without pump
A	for Beta®, gamma/ X
B	for Sigma/ 2/ 3
C	for Sigma/ 1
D	for alpha
P	for delta®
<b>Suction assembly selection</b>	
0	without suction assembly
1	suction assembly with 6x4 suction hose
2	suction assembly with 8x5 suction hose
3	suction assembly with 12x9 suction hose
4	suction assembly DN 10
5	suction assembly DN 15
7	suction assembly DN 25
8	suction assembly DN 32
<b>Suction assembly material</b>	
0	none
1	PVC
2	PP
<b>Suction assembly float switch</b>	
0	without float switch
1	2-stage, round plug, (6x4, 8x5, 12x9) for Beta®, gamma/ X, delta®
2	2-stage, round plug, (DN 10-32) for Sigma/ 1/ 2/ 3, delta®
<b>Accessories - discharge tap for tank</b>	
0	without accessories
1	with ball valve PVC, hose grommet d16 **
2	with ball valve PP, hose grommet d20 **
<b>Calibration assembly</b>	
0	none
<b>Info - pump*</b>	
e.g. GMXa 0414 PVT 20000UA	

\* Please enter the Identity code of the selected pump

\*\* Ball valve can only be selected if the metering station is ordered without drip pan.

\*\*\* Metering gauge can only be selected if the metering station is ordered without drip pan and without suction fitting.

## 3.2 Metering System DULCODOS® universal

### 3.2.1 Metering System DULCODOS® universal

Liquid chemicals are metered conveniently, cost-effectively and reliably

Pump volume depending on the selected pump 1 ml/h–75 l/h, back pressure 10-2 bar



The metering system DULCODOS® universal combines carefully selected standard components with the solenoid driven metering pump you have selected. This is your convenient method for the reliable metering of liquid chemicals – and is available cost-effectively and extremely quickly thanks to the preconfigured modules.

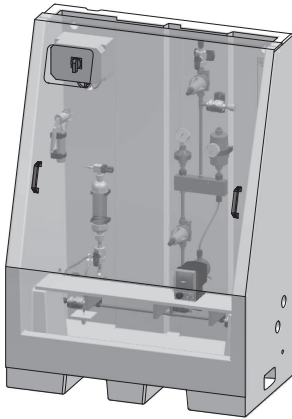
Metering is dependent on the metering pump. Components, such as pipes, relief valves and electrics – indispensable, but scarcely variable – ensure the reliable operation of the system. That is why we have pre-configured the new metering system DULCODOS® universal with these standards. The benefits for you: low costs, fast delivery, simple commissioning.

Naturally you have a choice here as well: Should it be the solenoid driven metering pump Beta® 4 or 5, delta® or gamma/ X? Should the pipes and seals be made of PP/FKM or PVC/EPDM? And do you need one or two points of injection with one or two pumps?

The novel valve block gives every metering system a clearly arranged structure. Every system is equipped with two relief valves, a collecting pan with leakage sensor and a calibration tank for controlled metering for complete operational safety.

#### Your benefits

- Reliable and precise metering of liquid chemicals with proven solenoid driven metering pumps
- Safe operation thanks to relief valves and collecting pan
- Stable installation frame rotationally sintered from a single piece
- Systems with 1 or 2 pumps and 1 or 2 points of injection
- Calibration unit with priming function for controlled metering
- Optional: Pulsation dampener, spray guard



P\_DST\_0004\_SW\_3D  
DULCODOS® Universal, type 1

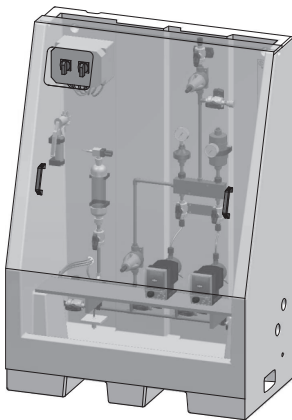
#### Technical details

- ProMinent solenoid driven metering pumps Beta® 4/5, delta® or gamma/ X
- Dimensions: 1,700 x 1,200 x 635 mm (H x W x D)
- Material combinations: PP/FKM or PVC/EPDM (note compatibility with the feed chemical)
- Relief valves to protect the pipework
- Manometer
- Collecting pan with leakage sensor
- Flushing connectors
- Terminal box with master switch
- Assembly frame available in 6 standard colours

#### Field of application

Metering of liquid chemicals, e.g.

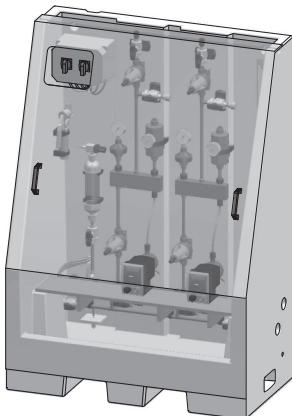
- cooling water treatment
- Waste water and process water treatment
- Paper industry



P\_DST\_0006\_SW\_3D  
DULCODOS® Universal, type 2

#### Type selection

	Metering pumps	Points of injection	Material combinations	Hose materials
Type 1	1	1	PVC/EPMD or PP/FPM	PVC, PE, PVDF
Type 2	2	1	PVC/EPMD or PP/FPM	PVC, PE, PVDF
Type 3	2	2	PVC/EPMD or PP/FPM	PVC, PE, PVDF



P\_DST\_0005\_SW\_3D  
DULCODOS® Universal, type 3



# 3.3 Metering System DULCODOS® panel

## 3.3.1 Metering System DULCODOS® panel



A large number of metering tasks are similar or are repeated. We offer a complete ready mounted solution.

Metering systems are immediately available and ready for use for the most important applications. Sensors, controller and metering pumps form a single unit with the required storage tanks, which can take over your work without any installation effort.

Two hydraulic connection points guarantee simple installation of the metering system. The ready mounted systems consist of components that have been perfectly matched to each other to ensure problem-free operation. You obtain a complete system. Individually configure your metering systems at the time of ordering. A simple selection system makes ordering easy and guarantees maximum efficiency even at the time of ordering.

### Your benefits

- DULCODOS® panel plate-mounted metering systems Ready assembled on a mounting plate, with pipework fitted and complete with all hydraulic and electrical accessories
- Compact construction
- Fast project planning
- Flexible thanks to modular construction
- Proven many times over

### Field of application

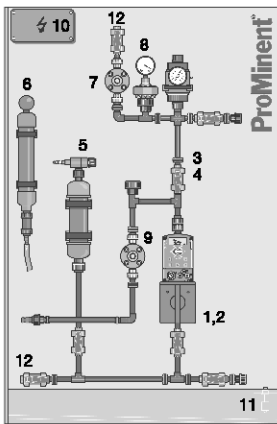
- Metering of biocides and inhibitors in cooling water
- Metering of lyes and acids for pH regulation
- Metering of coagulants (iron-III-chloride) for waste water treatment
- Metering of detergents (CIP (cleaning in place) systems and bottle washing machines)

Panel-mounted metering systems can be selected and ordered with the help of an identity code system.

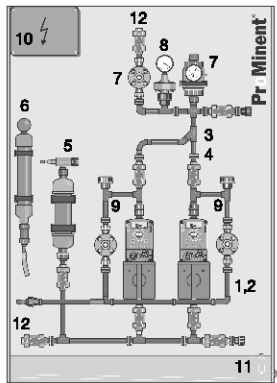
First of all, select and order the metering and standby pump using the separate pump identity code.

### The following options can be selected:

1. Assembly frame with pipework for installation of a metering pump
2. Extension for installation of a standby pump (same type as the metering pump)
3. Pipework material
4. Seal material
5. Vacuum cylinder
6. Vacuum pump
7. Pulsation damper
8. Manometer
9. Overflow device
10. Terminal box
11. Leakage sensor
12. Connections for the suction and discharge side



pk\_7\_070  
Metering system with simple pump



pk\_7\_061  
Metering system with stand-by pump

### Technical Data

Type		B410	B510	GX10	S110	S115	S215	S220	S325	S332
Nominal width of pipework		DN 10	DN 10	DN 10	DN 10	DN 15	DN 15	DN 20	DN 25	DN 32
Nominal width of flushing connector		DN 10	DN 10	DN 10	DN 10	DN 10	DN 10	DN 15	DN 20	DN 25
Connector return line		DN 10	DN 10	DN 10	DN 10	DN 10	DN 10	DN 15	DN 20	DN 25
Dimensions H x W x D	mm	1,200 x	1,200 x	1,200 x	1,400 x	1,400 x	1,400 x	1,400 x	1,600 x	1,600 x
		800 x	800 x	800 x	900 x	900 x	900 x	900 x	900 x	900 x
		300	300	300	450	450	450	450	500	500
Dimensions H x W x D with 2 pumps	mm	1,400 x	1,400 x	1,400 x	1,600 x	1,600 x	1,600 x	1,600 x	1,600 x	1,600 x
		1,000 x	1,000 x	1,000 x	1,200 x	1,200 x	1,200 x	1,200 x	1,200 x	1,200 x
		300	300	300	450	450	450	450	500	500
Max. capacity	l/h	19	32	32	65	120	130	350	324	1,000
Max. operating pressure (25 °C)	bar	10	10	10	10	10	10	10	10	8*/10
Max. operating pressure (40 °C)	bar	6	6	6	6	6	6	6	6	6

\* with pulsation damper option



### 3.3 Metering System DULCODOS® panel

#### 3.3.2 Identity Code Ordering System, Beta® and gamma/ X, DN 10

##### Panel-mounted metering systems for Beta® and gamma/ X, DN 10

<b>DSWa</b>	<b>Mounting frame with pipework for installation of one metering pump (order metering pump separately)</b>	
B410	For Beta®, DN 10 (BT4b 1000 - 0220: 0.74 - 19 l/h)	
B510	For Beta®, DN 10 (BT5b 1605 - 0232: 4.1 - 32 l/h)	
GL10	for gamma/ X, DN 10 (GMXa 1602 - 0245: 2.3 - 45 l/h)	
	<b>Extension for installation of a standby pump (order standby pump separately)</b>	
0	none	
1	with extension for standby pump (same type as metering pump)	
	<b>Pipe material</b>	
PC	PVC	
PP	PP	
	<b>Seal material</b>	
E	EPDM	
A	FKM	
	<b>Vacuum cylinder</b>	
0	none	
1	with vacuum cylinder	
	<b>Vacuum pump</b>	
0	none	
1	with vacuum pump	
	<b>Pulsation damper</b>	
0	none	
1	with pulsation damper (incl. back pressure valve)	
	<b>Pressure gauge</b>	
0	none	
1	with pressure gauge and diaphragm seal unit	
	<b>Relief valve assembly</b>	
0	with multifunctional valve (for 1 pump of type: 1602 - 0220)	
1	with multifunctional valve (for 1 pump of type: 1009 - 0245)	
2	with back pressure valve (for 1 pump)	
3	with multifunctional valve (for 2 pumps of type: 1602 - 0220)	
4	with multifunctional valve (for 2 pumps of type: 1009 - 0245)	
5	with back pressure valves (for 2 pumps)	
	<b>Terminal box</b>	
0	without terminal box	
1	with terminal box for 1 pump	
2	with terminal box for 2 pumps	
3	with terminal box + master switch for 1 pump	
4	with terminal box + 2 master switches for 2 pumps	
	<b>Leakage sensor in drip tray</b>	
0	without leakage sensor	
1	with leakage sensor	
	<b>Suction/discharge side connection parts</b>	
0	with solvent/fusion weld sockets	
1	with 6x4 hose barb	
2	with 8x5 hose barb	
3	with 12x6 hose barb	
4	with 12x9 hose barb	
5	with DN 10 hose barb	
	<b>Info - pump*</b>	
	e.g. GMXa 0414 PVT 20000UA	

\* Please enter the Identity code for your chosen pump

3





### 3.3 Metering System DULCODOS® panel

#### 3.3.3 Identity Code Ordering System for Sigma/ 1, DN 10

##### Panel-mounted metering systems for Sigma/ 1, DN 10

<b>DSWa</b>	<b>Mounting frame with pipework for installation of one metering pump (order metering pump separately)</b>	
S110	Sigma/ 1, DN 10 (S1Cb/S1Ba 12017 - 07065: 20 - 65 l/h)	
	<b>Extension for installation of a standby pump (order standby pump separately)</b>	
	0	none
	2	with extension for standby pump (same type as metering pump)
	<b>Pipe material</b>	
	PC	PVC
	PP	PP
	<b>Seal material</b>	
	E	EPDM
	A	FKM
	<b>Vacuum cylinder</b>	
	0	none
	2	with vacuum cylinder
	<b>Vacuum pump</b>	
	0	none
	1	with vacuum pump
	<b>Pulsation damper</b>	
	0	none
	2	with pulsation damper (incl. back pressure valve)
	<b>Pressure gauge</b>	
	0	none
	1	with pressure gauge and diaphragm seal unit
	<b>Relief valve assembly</b>	
	6	with relief valve assembly
	<b>Terminal box</b>	
	0	without terminal box
	1	with terminal box for 1 pump
	2	with terminal box for 2 pumps
	3	with terminal box + master switch for 1 pump
	4	with terminal box + 2 master switches for 2 pumps
	<b>Leakage sensor in drip tray</b>	
	0	without leakage sensor
	1	with leakage sensor
	<b>Suction/discharge side connection parts</b>	
	0	with straight solvent/fusion sockets
	6	with DN 10 hose connector
	<b>Info - pump*</b>	
		e.g.: S1Ba H12017 PVT0110M000

\* Please enter the Identity code for your chosen pump



### 3.3 Metering System DULCODOS® panel

#### 3.3.4 Identity Code Ordering System for Sigma/ 1, DN 15

##### Panel-mounted metering systems for Sigma/ 1, DN 15

DSWa	Mounting frame with pipework for installation of one metering pump (order metering pump separately)	
S115	Sigma/ 1, DN 15 (S1Cb/S1Ba 07042 - 04120: 50 - 120 l/h)	
	Extension for installation of a standby pump (order standby pump separately)	
	0	none
	3	with extension for standby pump (same type as metering pump)
	<b>Pipe material</b>	
	PC	PVC
	PP	PP
	<b>Seal material</b>	
	E	EPDM
	A	FKM
	<b>Vacuum cylinder</b>	
	0	none
	3	with vacuum cylinder
	<b>Vacuum pump</b>	
	0	none
	1	with vacuum pump
	<b>Pulsation damper</b>	
	0	none
	3	with pulsation damper (incl. back pressure valve)
	<b>Pressure gauge</b>	
	0	none
	1	with pressure gauge and diaphragm seal unit
	<b>Relief valve assembly</b>	
	6	with relief valve assembly
	<b>Terminal box</b>	
	0	without terminal box
	1	with terminal box for 1 pump
	2	with terminal box for 2 pumps
	3	with terminal box + master switch for 1 pump
	4	with terminal box + 2 master switches for 2 pumps
	<b>Leakage sensor in drip tray</b>	
	0	without leakage sensor
	1	with leakage sensor
	<b>Suction/discharge side connection parts</b>	
	0	with straight solvent/fusion sockets
	7	with DN 15 hose connector
	<b>Info - pump*</b>	
		e.g.: S1Ba H07042 PVT0110M000

\* Please enter the Identity code for your chosen pump

3



### 3.3 Metering System DULCODOS® panel

#### 3.3.5 Identity Code Ordering System for Sigma/ 2, DN 15

##### Panel-mounted metering systems for Sigma/ 2, DN 15

<b>DSWa</b>	<b>Mounting frame with pipework for installation of one metering pump (order metering pump separately)</b>	
S215	Sigma/ 2, DN 15 (S2Cb/S2Ba 16050 – 16130: 60 – 130 l/h)	
	<b>Extension for installation of a standby pump (order standby pump separately)</b>	
	0	none
	4	with extension for standby pump (same type as metering pump)
	<b>Pipe material</b>	
	PC	PVC
	PP	PP
	<b>Seal material</b>	
	E	EPDM
	A	FKM
	<b>Vacuum cylinder</b>	
	0	none
	4	with vacuum cylinder
	<b>Vacuum pump</b>	
	0	none
	1	with vacuum pump
	<b>Pulsation damper</b>	
	0	none
	4	with pulsation damper (incl. back pressure valve)
	<b>Pressure gauge</b>	
	0	none
	1	with pressure gauge and diaphragm seal unit
	<b>Relief valve assembly</b>	
	6	with relief valve assembly
	<b>Terminal box</b>	
	0	without terminal box
	1	with terminal box for 1 pump
	2	with terminal box for 2 pumps
	3	with terminal box + master switch for 1 pump
	4	with terminal box + 2 master switches for 2 pumps
	<b>Leakage sensor in drip tray</b>	
	0	without leakage sensor
	1	with leakage sensor
	<b>Suction/discharge side connection parts</b>	
	0	with straight solvent/fusion sockets
	8	with DN 15 hose connector
	<b>Info - pump*</b>	
		e.g.: S2Ba HM16050 PVT0110M000

\* Please enter the Identity code for your chosen pump



### 3.3 Metering System DULCODOS® panel

#### 3.3.6 Identity Code Ordering System for Sigma/ 2, DN 20

##### Panel-mounted metering systems for Sigma/ 2, DN 20

<b>DSWa</b>	<b>Mounting frame with pipework for installation of one metering pump (order metering pump separately)</b>	
S220	Sigma/ 2, DN 20 (S2Cb/S2Ba 07120 – 04350: 120 – 350 l/h)	
	<b>Extension for installation of a standby pump (order standby pump separately)</b>	
0	none	
5	with extension for standby pump (same type as metering pump)	
	<b>Pipe material</b>	
PC	PVC	
PP	PP	
	<b>Seal material</b>	
E	EPDM	
A	FKM	
	<b>Vacuum cylinder</b>	
0	none	
5	with vacuum cylinder	
	<b>Vacuum pump</b>	
0	none	
1	with vacuum pump	
	<b>Pulsation damper</b>	
0	none	
5	with pulsation damper (incl. back pressure valve)	
	<b>Pressure gauge</b>	
0	none	
1	with pressure gauge and diaphragm seal unit	
	<b>Relief valve assembly</b>	
6	with relief valve assembly	
	<b>Terminal box</b>	
0	without terminal box	
1	with terminal box for 1 pump	
2	with terminal box for 2 pumps	
3	with terminal box + master switch for 1 pump	
4	with terminal box + 2 master switches for 2 pumps	
	<b>Leakage sensor in drip tray</b>	
0	without leakage sensor	
1	with leakage sensor	
	<b>Suction/discharge side connection parts</b>	
0	with straight solvent/fusion sockets	
9	with DN 20 hose connector	
	<b>Info - pump*</b>	
	e.g.: S2Ba HM07120 PVT0110M000	

\* Please enter the Identity code for your chosen pump

3





### 3.3 Metering System DULCODOS® panel

#### 3.3.7

#### Identity Code Ordering System for Sigma/ 3, DN 25

#### Panel-mounted metering systems for Sigma/ 3, DN 25

<b>DSWa</b>	<b>Mounting frame with pipework for installation of one metering pump (order metering pump separately)</b>	
S325	Sigma/ 3, DN 25 (S3Cb 120145 - 120330: 174 - 324 l/h)	
	<b>Extension for installation of a standby pump (order standby pump separately)</b>	
	0	none
	6	with extension for standby pump (same type as metering pump)
	<b>Pipe material</b>	
	PC	PVC
	PP	PP
	<b>Seal material</b>	
	E	EPDM
	A	FKM
	<b>Vacuum cylinder</b>	
	0	none
	6	with vacuum cylinder
	<b>Vacuum pump</b>	
	0	none
	1	with vacuum pump
	<b>Pulsation damper</b>	
	0	none
	6	with pulsation damper (incl. back pressure valve)
	<b>Pressure gauge</b>	
	0	none
	1	with pressure gauge and diaphragm seal unit
	<b>Relief valve assembly</b>	
	6	with relief valve assembly
	<b>Terminal box</b>	
	0	without terminal box
	1	with terminal box for 1 pump
	2	with terminal box for 2 pumps
	3	with terminal box + master switch for 1 pump
	4	with terminal box + 2 master switches for 2 pumps
	<b>Leakage sensor in drip tray</b>	
	0	without leakage sensor
	1	with leakage sensor
	<b>Suction/discharge side connection parts</b>	
	0	with straight solvent/fusion sockets
	A	with DN 25 hose connector
	<b>Info - pump*</b>	
	e.g.: S3Ba H120145 PVT0110M000	

\* Please enter the Identity code for your chosen pump

### 3.3 Metering System DULCODOS® panel

#### 3.3.8 Identity Code Ordering System for Sigma/ 3, DN 32

##### Panel-mounted metering systems for Sigma/ 3, DN 32

<b>DSWa</b>	<b>Mounting frame with pipework for installation of one metering pump (order metering pump separately)</b>	
S332	Sigma/ 3, DN 32 (S3Cb 070410 - 041030: 492 - 1000 l/h)	
	<b>Extension for installation of a standby pump (order standby pump separately)</b>	
0	none	
7	with extension for standby pump (same type as metering pump)	
	<b>Pipe material</b>	
PC	PVC	
PP	PP	
	<b>Seal material</b>	
E	EPDM	
A	FKM	
	<b>Vacuum cylinder</b>	
0	none	
7	with vacuum cylinder	
	<b>Vacuum pump</b>	
0	none	
1	with vacuum pump	
	<b>Pulsation damper</b>	
0	none	
7	with pulsation damper (incl. back pressure valve)	
	<b>Pressure gauge</b>	
0	none	
1	with pressure gauge and diaphragm seal unit	
	<b>Relief valve assembly</b>	
6	with relief valve assembly	
	<b>Terminal box</b>	
0	without terminal box	
1	with terminal box for 1 pump	
2	with terminal box for 2 pumps	
3	with terminal box + master switch for 1 pump	
4	with terminal box + 2 master switches for 2 pumps	
	<b>Leakage sensor in drip tray</b>	
0	without leakage sensor	
1	with leakage sensor	
	<b>Suction/discharge side connection parts</b>	
0	with straight solvent/fusion sockets	
B	with DN 32 hose connector	
	<b>Info - pump*</b>	
	e.g.: S3Ba H070410 PVT0110M000	

\* Please enter the Identity code for your chosen pump

3



# 3.4 DULCODOS® Hydrazin Metering Systems

## 3.4.1 Metering System DULCODOS® Hydrazin



**Corrosion is the last thing you need with the majority of applications. That is why Hydrazin protects.**

**Chemical tank ranging from 140 to 250 litres**

DULCODOS® Hydrazin batching and metering systems are used for manual batching and automatic metering of diluted hydrazine solutions. And, of course, they also comply with all environmental and safety requirements.

Hydrazine acts as an oxygen binding agent, is volatile in steam and prevents corrosion. As it is carcinogenic, the dispensing and metering systems need to be gas-tight so that no hydrazine vapours can escape. Our systems comply with these requirements.

**Your benefits**

- Gas-tight design
- Precise metering
- Protects the environment

**Field of application**

- Steam circuits
- Power plants

**Hydrazine is used as an oxygen binding agent in the process water sector, predominantly with steam generation. It is a carcinogenic agent and special care is therefore needed when handling it.**

It therefore has to be ensured that the activation threshold for hydrazine is not exceeded with correct and proper use of closed and gas-tight systems.

**Design**

Ready-to-use assembled metering system essentially consisting of:

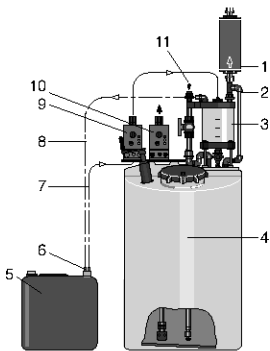
- Gas-tight chemical tank made of PE with a litre scale, with lockable screw lid and manual stirrer
- Each with a dispensing and metering pump with suction assembly, level switch, as well as complete rigid PVC pipework with two ball valves, the measuring tank and activated charcoal filter

**Accessories**

5 m metering line 8/12 mm Ø and stainless steel metering valve 8 mm Ø/1/2"

Electrical connection 230 V ±10%, 50...60 Hz

The metering system is supplied with a hose connection, which fits on a conventional drain system. This drain system is produced by MicroMatic, Gräfelfing/Munich.



pk\_7\_078

- 1 Activated charcoal filter
- 2 Bleed/vent line
- 3 Apportioning unit
- 4 Metering tank
- 5 Hydrazin 15 returnable canister
- 6 Quick release coupling
- 7 Metering line
- 8 Gas shuttle line
- 9 Refilling pump
- 10 Metering pump
- 11 Fill water

**Hydrazine Dispensing and Metering System, Completely Ready Mounted**

Metering Tank Contents	Metering pump Capacity	Metering pump Feed Rate	Transfer Pump Discharge Flow	Order no.
130 l	7.1 l/h	7.0 bar	17 l/h	913018
250 l	11.0 l/h	7.0 bar	32 l/h	913019

**Accessories**

	Order no.
Sampling set, stainless steel	1003964



# 3.5 DULCODOS® PPLA Liquid Enzyme Metering Systems

## 3.5.1 Metering System DULCODOS® PPLA



**For the animal feed industry: Ensuring pet food is further enriched with essential nutrients.**

DULCODOS® PPLA systems "enhance" animal feeds: Liquid additives are coated on the pressed feed pellets. The systems operate on a modular principle: extensions and additions are possible at all times. And at the same time a complete solution for storage, dispensing and application of all types of additives.

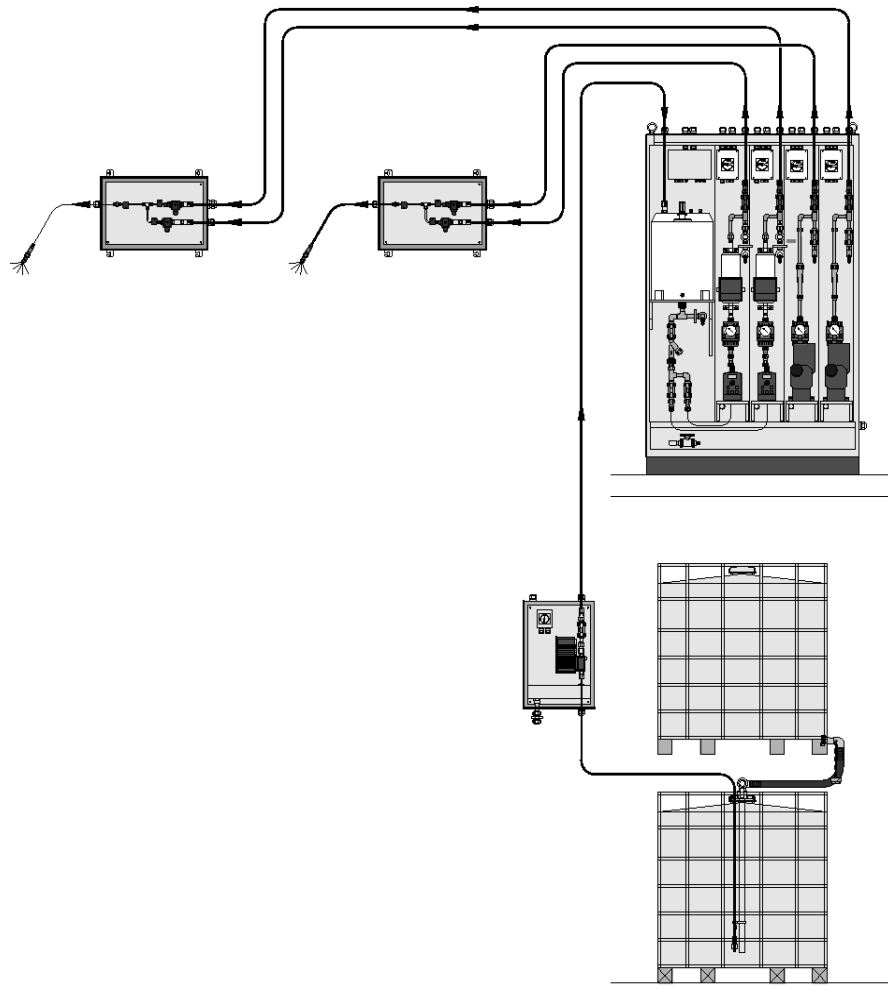
The metering of liquid products plays a decisive role in the production of animal feed. Vitamins and enzymes are probably the best known types of liquid additives. The raw materials for the feed are milled, mixed and then pressed into pellets. DULCODOS® PPLA metering stations apply liquid additives to the feed after pelleting. The liquid products are stored in a container and transported by means of a filling pump into the metering station's daily storage tanks. Water is used as a carrier substance to guarantee the necessary even distribution of additives in the feed. One pump is used for the additives, a second pump for the dilution water. The additives and the water are combined in the mixing station and thoroughly mixed by a static mixer. The diluted additives are sprayed onto the animal feed through a nozzle. Standard solutions within a range of less than 50 ppm to over 1000 ppm are possible.

### Your benefits

- Fast project planning
- Precise metering

### Field of application

- Continuous flow processes
- Batch processes



pk\_4\_PPLA

Prices and delivery time on request







## 3.6 Metering System DULCODOS® modular

### 3.6.1

#### Metering System DULCODOS® modular



##### Modular and flexible for precise metering

**Capacity: 40 – 1,000 l/h, other capacities on request**

The ready-wired modular metering system DULCODOS® is used for the ultra-precise metering of chemicals. It has a modular design and can be flexibly integrated into the most varied applications.

The modular construction of the modular metering systems DULCODOS® enables them to be practically and flexibly coordinated with your process. The metering systems are delivered ready mounted and can be quickly and easily installed. Metering systems DULCODOS® are winning customers over with their precise output all by themselves!

##### Your benefits

- Simple and quick to install, thanks to ready-wired design
- Modular construction for flexible, practical process integration
- Minimal stock of spare parts and short delivery times due to the use of standard parts and components
- Minimal space requirements due to compact construction
- Metering is controlled by pump electronics

##### Technical details

###### Basic version

- Modular configuration options
- Plastic or stainless steel brackets
- Pipework: PP, PVC or PVDF
- Motor Driven Metering Pump Sigma
- Other capacities on request
- Extensive optional accessories
- Relief valve and non-return valve
- Shut-off device with flushing connector (discharge side)
- Repair switch

###### Options for advanced version

- Pulsation damper with back pressure valve
- Manometer
- Routed pipework for suction and relief lines
- Terminal box with repair switch
- Splash guard

##### Field of application

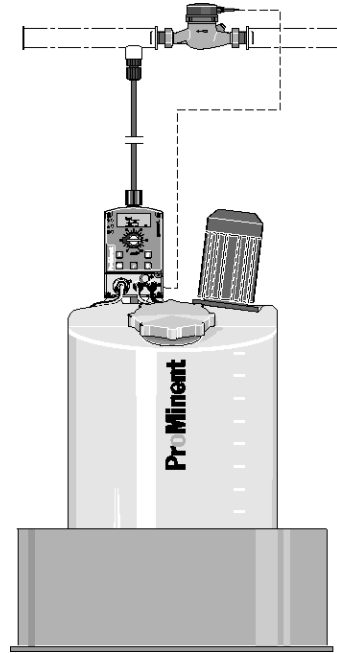
Metering of chemicals: Cleaning agents, disinfectants, additives and auxiliary agents

## 3.7 Application Examples

### 3.7.1 Proportional Metering of Phosphate

Product: **DULCODOS® eco**  
 Feed chemical: **Phosphate**  
 Industry: **Potable water**  
 Application: **Potable water conditioning**

The liquid phosphate is added to the potable water proportional to the volume. The flow meter sends pulses to the gamma/ L pump. The metering volume is adjusted by increasing or decreasing the incoming pulses.



pk\_7\_093

#### Tasks and requirements

Metering of phosphate to potable water to prevent lime deposits and corrosion in the piping

#### Operating conditions

- Treatment of potable water
- Fluctuating water demand
- Water temperature between 4 – 30 °C

#### Application information

- Proportional metering of phosphate depending on the water supply
- Control of the metering pump by a contact water meter
- Measurement of the metering pump capacity during commissioning

#### Solution

- DULCODOS® eco with 140-litre metering tank and drip pan
- gamma/ L with contact input and pulse control
- Contact water meter

#### Benefits

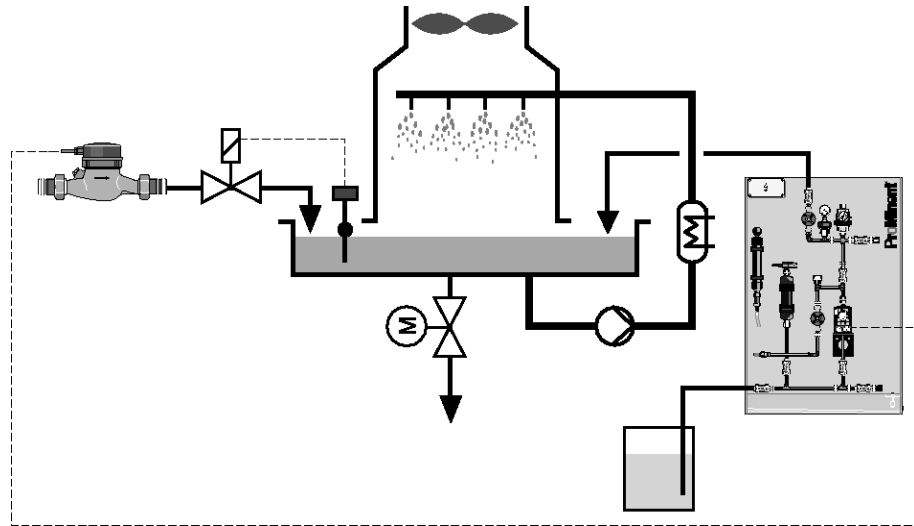
- Constant solution concentration even minimal fluctuating water supply
- Fully-automatic operation with minimal staff and maintenance
- Flexible process design thanks to adaptation of the pump to various concentration demands

## 3.7 Application Examples

### 3.7.2 Inhibitor Metering in Cooling Water

Product: **DULCODOS® panel**  
 Feed chemical: **Corrosion inhibitor**  
 Industry: **Process industry, power stations**  
 Application: **Cooling water conditioning**

The corrosion inhibitor is added to the fresh water in proportion to the volume. The water meter detects the supply water volume and sends the pulses to the gamma/ L pump.



pk\_7\_060\_1

#### Tasks and requirements

Metering of corrosion inhibitors to supply water to prevent lime deposits and corrosion in the cooling water circuit.

#### Operating conditions

- Treatment of flow water
- Fluctuating water demand
- Water temperature between 4 – 20 °C

#### Application information

- Proportional metering of inhibitor depending on the water supply
- Control of the metering pump by a contact water meter
- Calibration of the metering pump capacity during commissioning

#### Solution

- DULCODOS® panel including standby pump
- gamma/ L with contact input and pulse control
- Contact water meter

#### Benefits

- Protection against corrosion in the pipework and heat exchanger
- Constant solution concentration even with fluctuating water supply
- Fully-automatic operation with minimal staff and maintenance
- Flexible process design thanks to adaptation of the pump to various concentration demands

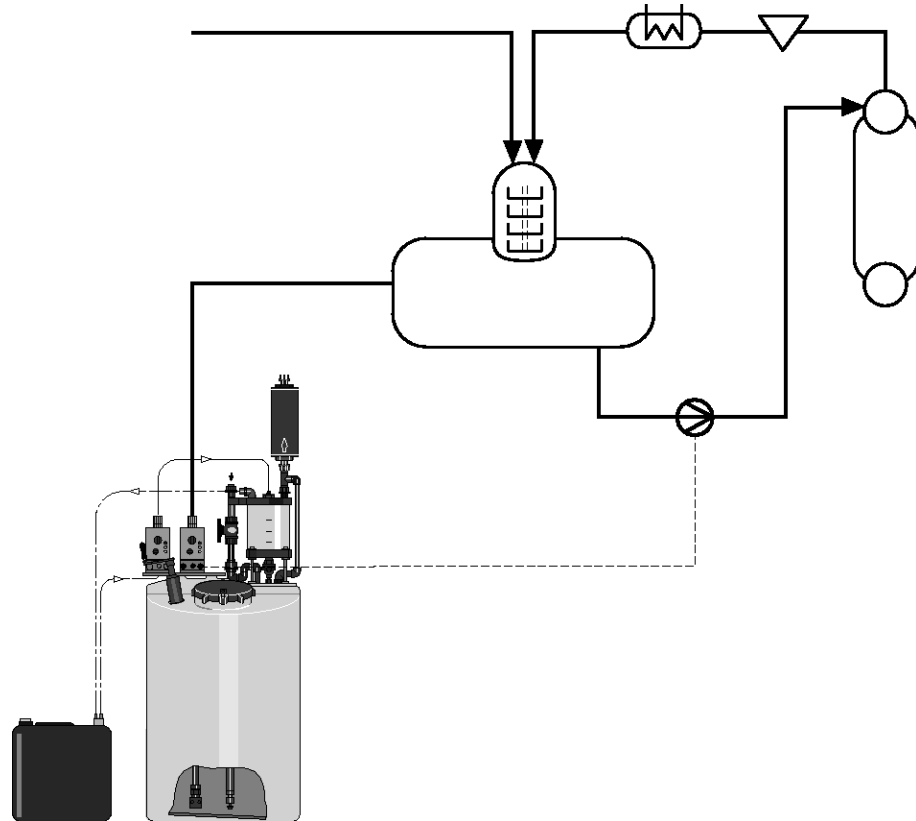


## 3.7 Application Examples

### 3.7.3 Inhibitor Metering in Boiler Feed Water

Product: **DULCODOS® Hydrazin**  
 Feed chemical: **Oxygen binding agent**  
 Industry: **Process industry, power stations**  
 Application: **Boiser feed water treatment**

The oxygen binding agent is added to the fresh water in proportion to the volume. The water meter detects the supply water volume and sends pulses to the gamma/ L pump on the hydrazine unit.



pk\_7\_095

#### Tasks and requirements

Metering of oxygen binding agent to the boiler feed water to prevent oxygen corrosion in the boiler area.

#### Operating conditions

- Fully desalinated potable water
- Continuous operation

#### Application information

- Proportional metering of oxygen binding agent depending on the boiler feed water
- The 15% concentrate is metered by a metering pump using a measuring unit into the metering tank and is diluted with water to produce a 1% metering solution
- Measurement of the metering pump capacity during commissioning

#### Solution

- DULCODOS® Hydrazin with 250-litre metering tank

#### Benefit

- Semi-automatic operation
- Flexible process design thanks to adaptation of the pump to various concentration demands

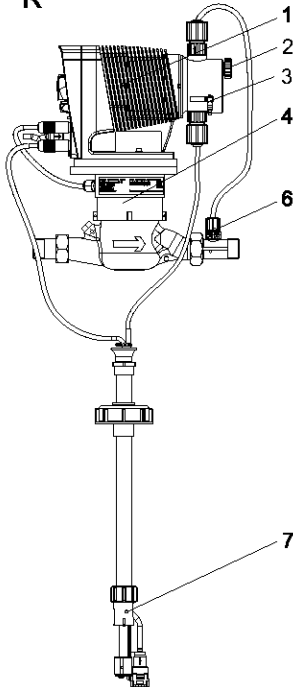


## 4.0 Systems for Domestic Water Installations

### 4.0.1

### Proportional Flow Dosing System for Liquid Dosing

"R"



P\_NM\_0004\_SW1

- 1 Metering pump
- 2 Bleed valve
- 3 Bypass hose sleeve
- 4 Contact water meter
- 5 Wall bracket
- 6 Injection valve
- 7 Suction lance with level switch



#### Promatik®

Metering units protect pipework, fittings, and appliances, such as boilers, washing machines and dishwashers, from corrosion and limescale. Active substances, like silicate, phosphate or silicate phosphate mixtures, can be metered here. These active substances form a protective layer in the pipework and reduce aggressiveness and sedimentation in the water.

#### Silicate

As a corrosion inhibitor to prevent rust formation: "brownish water" in galvanised piping systems, "pitting": needle-like holes in the pipework. Applications include soft, corrosive types of water with a high percentage of aggressive carbonic acid. The silicate is used to raise the pH value closer to a lime-carbonic acid equilibrium. Hydrolysis produces a silica gel that forms a thin protective layer in the pipework and fittings and thus prevents corrosion.

#### Phosphate

As ortho and polyphosphate to prevent limescale and corrosion in hard water up to max. 20 CH (carbonate hardness). Hard water salts, such as calcium and magnesium ions, responsible for limescale are thereby stabilised, i.e. these ions remain dissolved in the water and do not form limescale on the pipe walls. Growth on the pipes is thus prevented and there are no deposits of limescale on heating coils, dramatically reducing their efficiency. A thin, solid protective layer is formed. Mixtures containing silicate and phosphate act as corrosion and limescale inhibitors for soft and medium-hard water. The continuous top-up of the feed chemical is required to maintain this protective layer, otherwise it will degrade within a few days.

#### EXACTAPHOS®

EXACTAPHOS® metering solutions are matched to the capacity of the Promatik® and DULCODOS® units. This ensures that the percentages of max 40 mg/l SiO<sub>2</sub> of silicate and/or 6.7 mg/l of phosphate PO<sub>4</sub> (5mg/l P<sub>2</sub>O<sub>5</sub>) are adhered to, as laid down by the "Drinking Water Ordinance".

#### Function of the systems

In a flow of water, the contact water meter transmits pulses with a fixed pulse interval corresponding to the pulses to the metering pump in line with the flow. Each of these pulses results in a metering stroke of the metering pump, thereby feeding the metering solution. The metering volume per stroke can thus be adjusted continuously between 100 and 50% using the stroke adjustment dial. Because of the very low starting limit and the short pulse interval, a constant volume-proportional addition of chemicals can always be maintained, from minimum water flow rate to maximum load, guaranteeing the best process result.

#### Promatik® proportional flow dosing system

Consisting of a Beta® metering pump with sound insulation plate, contact water meter, suction assembly with foot valve and 2-phase level switch with pre-warning, acting as a low flow contact and empty signal, injection valve and metering line. In the "R" design of the compact metering unit, the metering pump is fitted on the contact water meter; with the "W" design of split system there are wall brackets for mounting the metering pump. Horizontal fitting position of the contact water meter. DVGW-tested in conjunction with the EXACTAPHOS® metering solution. DVGW No. NW-9101 CM 0179.

# 4.1 Metering System Promatik®

## 4.1.1 Metering System Promatik®

Protects pipework, fittings, and appliances from corrosion and limescale.

For flows of 5 – 27 m³/h

The proportional metering system Promatik® is used in the potable water sector for the flow-dependent, adjustable metering of liquid media, like the EXACTAPHOS®. It consists of the metering pump Beta®, a contact water meter, a suction assembly with foot valve and level switch and an injection valve and metering line.

In a flow of water, the contact water meter transmits pulses with a fixed pulse interval corresponding to the pulses to the metering pump in line with the flow. Each of these pulses results in a metering stroke of the metering pump, thereby feeding the metering solution. The metering volume per stroke can thus be adjusted continuously between 100 and 50% using the stroke adjustment dial. Because of the very low starting limit and short pulse interval, a constant volume-proportional addition of chemicals can always be maintained from minimum water flow rate to maximum load, thereby guaranteeing the best process result

### Your benefits

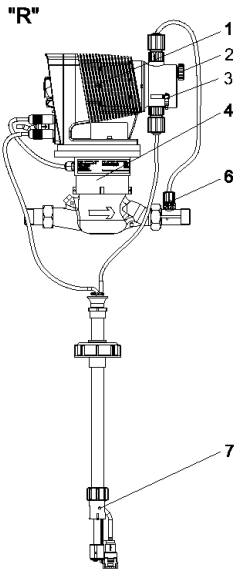
- DVGW-tested in conjunction with the EXACTAPHOS® metering solution. DVGW No. NW-9101 CM 0179.
- The EXACTAPHOS® metering solutions are matched to the capacity of the ProMatik® metering units.

### Technical details

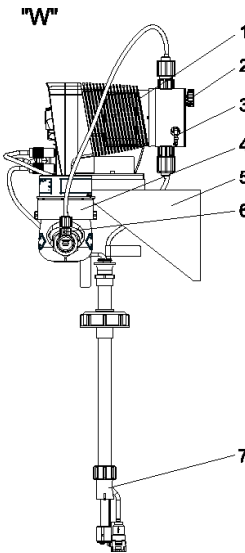
- Consisting of a Beta® metering pump, contact water meter, suction assembly with foot valve and 2-phase level switch with pre-warning as low flow contact and empty signal, injection valve and metering line.
- In the "R" design compact metering system, the metering pump is built onto the contact water meter.
- In the "W" design split system there are wall brackets for accommodating the metering pump. Contact cable and PE metering line 2 m long. Horizontal fitting position of the contact water meter.

### Field of application

Potable water treatment



P\_NM\_0004\_SW1



P\_NM\_0005\_SW1

- 1 Metering pump
- 2 Bleed valve
- 3 Bypass hose sleeve
- 4 Contact water meter
- 5 Wall bracket
- 6 Injection valve
- 7 Suction lance with level switch

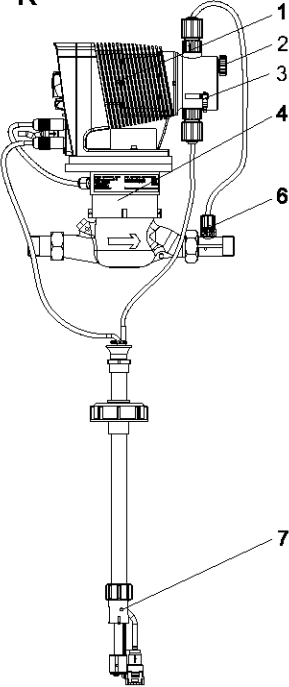
Promatik® type		NG 5	NG 10	NG 20	NG 30
<b>Maximum flow Q max.</b>	m³/h	5	11	16	27
<b>Lower working limit</b>	m³/h	0.05	0.08	0.13	0.24
<b>Metering interval approx.</b>	l/stroke	0.7	1.1	1.8	2.8
<b>Feed rate 50-100 %</b>	ml/m³	50 – 165	50 – 165	50 – 165	50 – 165
<b>Operating pressure</b>	bar	1 – 10	1 – 10	1 – 10	1 – 10
<b>Metering pump type</b>		BT4b 1000 PPT2	BT4b 1601 PPT2	BT4b 1602 PPT2	BT4b 1604 PPT2
<b>Meter connecting thread</b>		G 1 B	G 1 1/4 B	G 2 B	G 2 1/2 B
<b>Screw connector width</b>		R 3/4	R 1	R 1 1/2	R 2
<b>Length without thread</b>	mm	190	260	300	270



# 4.1 Metering System Promatik®

## 4.1.2 Metering System Promatik®

"R"



	Shipping weight approx.	Order no.
	kg	
NG 5 R compact metering system	6	1036414
NG 5 W split metering system	6	1036415
NG 10 R compact metering system	7	1036416
NG 10 W split metering system	7	1036417
NG 20 R compact metering system	9	1036418
NG 20 W split metering system	9	1036419
NG 30 R compact metering system	11	1038104
NG 30 W split metering system	11	1038105

### Materials

- Dosing head/valves: Polypropylene (PP)
- Metering diaphragm EPDM with PTFE insert
- Seals: EPDM
- Valve balls: ceramic
- Float switches: PP
- Suction assembly: flexible PVC
- Discharge tube: PE

- P\_NM\_0004\_SW1
- 1 Metering pump
  - 2 Bleed valve
  - 3 Bypass hose sleeve
  - 4 Contact water meter
  - 5 Wall bracket
  - 6 Injection valve
  - 7 Suction lance with level switch



## 4.2 Chemicals for Water Treatment

### 4.2.1

#### Chemicals

##### EXACTAPHOS® SP 210

Silicate phosphate liquid metering solution. Drinking water treatment for soft water. Promatik® compact metering system.

	Volume l	Order no.
EXACTAPHOS® SP 210	20	950097
EXACTAPHOS® SP 210	200	950043

##### EXACTAPHOS® P 612

Phosphate liquid metering solution. Drinking water treatment for medium hard water. Promatik® compact metering system.

	Volume l	Order no.
EXACTAPHOS® P 612	20	950098
EXACTAPHOS® P 612	200	950048

##### EXACTAPHOS® P 1020

Phosphate liquid metering solution. Drinking water treatment for hard water. Promatik® compact metering system.

	Volume l	Order no.
EXACTAPHOS® P 1020	20	950099
EXACTAPHOS® P 1020	200	950053





# ProMinent® Chemical Resistance List

## Resistance of Materials Used in Liquid Ends to the Chemicals Most Frequently Used

The data apply to standard conditions (20 °C, 1,013 mbar).

s	= saturated solution in water
+	= resistant
+/o	= largely resistant
o	= conditionally resistant
-	= not resistant
n	= resistance not known
=>	= see
*	= For bonded connections, the resistance of the adhesive (e.g. Tangit) is to be considered. (Materials of the types 'o' and '-' are not recommended !)
**	= does not apply to glass fibre reinforced material

Concentration data are stated in weight percent, referred to aqueous solutions. If percentages are stated for the level of resistance, this level of resistance is only valid up to this concentration.

### NOTE:

The elastomers **CSM (Hypalon®)** and **IIR (butyl rubber)** used as diaphragm materials in pulsation dampers have properties similar to **EPDM**.

**PTFE** is resistant to all chemicals in this list.

**PTFE filled with carbon**, however, is attacked by strong oxidants such as bromine (anhydrous) or concentrated acids (phosphoric acid, sulphuric acid, chromic acid).

The resistance of PVC-U adhesive joints with Tangit deviates from the list below with regard to the following chemicals:

Medium	Concentration range
Sulfochromic acid	≥ 70 % H <sub>2</sub> SO <sub>4</sub> + 5 % K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> /Na <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>
Chromic acid	≥ 10 % CrO <sub>3</sub>
Hydrochloric acid	≥ 25 % HCl
Hydrogen peroxide	≥ 5 % H <sub>2</sub> O <sub>2</sub>
Hydrofluoric acid	≥ 0 % HF

### Explanation of abbreviations used as column headings:

<b>PMMA:</b>	Polymethylmethacrylate (Acrylic) resistance
<b>PVC:</b>	Polyvinylchloride, rigid, (PVC-U) resistance
<b>PP:</b>	Polypropylene resistance
<b>PVDF:</b>	Polyvinylidene fluoride
<b>1.4404:</b>	Stainless steel 1.4404 & 1.4571 resistance
<b>FKM:</b>	Fluorine Rubber (e.g. Viton® A & B) resistance
<b>EPDM:</b>	Ethylene-Propylene-Dien-rubber resistance
<b>PharMed®:</b>	Pharmed® resistance
<b>PE:</b>	Polyethylene resistance
<b>2.4819:</b>	Hastelloy C-276 resistance
<b>WPC:</b>	water endangering class

Viton® is a registered trademark of DuPont Dow Elastomers

### Water endangering classes (WGK):

1	= slightly hazardous to water
2	= hazardous to water
3	= severely hazardous to water
(X)	= No classification. Classification according to conclusion by analogy. To be used under reserve.

### Safety data sheets

Safety data sheets on our products in a number of different languages are provided on our website.

[www.prominent.com/MSDS](http://www.prominent.com/MSDS)



# ProMinent® Chemical Resistance List

The data is taken from relevant manufacturer's documentation and our own tests. Resistance of materials is also dependant on other factors, e.g. operating conditions, conditions of surfaces etc, and so this list must be treated as an initial guide only. It cannot claim to offer any guarantees. It should be taken into consideration in particular that usual dosing media are compounds, and their corrosiveness cannot be deducted simply by adding the corrosiveness of each single component. In such cases the chemical producers' data of the material compatibility are to be considered as a matter of prime importance for the material choice. A safety data sheet does not give this data and therefore cannot take the place of the technical documentation on the application.

Chemical	Formula	Conc	PMMA	PVC	PP	PVDF	1.4404	FKM	EPDM	PharMed®	PE	2.4819	WPC
Acetaldehyde	CH <sub>3</sub> CHO	100%	-	-	o	-	+	-	+/o	-	+	+	2
Acetamide	CH <sub>3</sub> CONH <sub>2</sub>	s	+	+	+	+	+	o	+	+/o	+	+	1
Acetic Acid	CH <sub>3</sub> COOH	100%	-	50%	+	+	+	-	o	60%	70%	+	1
Acetic Anhydride	(CH <sub>3</sub> CO) <sub>2</sub> O	100%	-	-	o	-	+	-	+/o	+	o	+	1
Acetic Ether => Ethyl Acetate													
Acetone	CH <sub>3</sub> COCH <sub>3</sub>	100%	-	-	+	-	+	-	+	-	+	+	1
Acetophenone	C <sub>6</sub> H <sub>5</sub> COCH <sub>3</sub>	100%	-	n	+	-	+	-	+	n	+	+	1
Acetyl Chloride	CH <sub>3</sub> COCl	100%	-	+	n	-	o	+	-	o	n	+	1
Acetylacetone	CH <sub>3</sub> COCH <sub>2</sub> COCH <sub>3</sub>	100%	-	-	+	-	+	-	+	n	+	+	1
Acetylene Dichloride => Dichloro Ethylene													
Acetylene Tetrachloride => Tetrachloro Ethane													
Acrylonitril	CH <sub>2</sub> =CH-CN	100%	-	-	+	+	+	-	-	-	+	+	3
Adipic Acid	HOOC(CH <sub>2</sub> ) <sub>4</sub> COOH	s	+	+	+	+	+	+	+	+/o	+	+	1
Allyl Alcohol	CH <sub>2</sub> CHCH <sub>2</sub> OH	96%	-	o	+	+	+	-	+	o	+	+/o	2
Aluminium Acetate	Al(CH <sub>3</sub> COO) <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+/o	1
Aluminium Bromide	AlBr <sub>3</sub>	s	+	+	+	+	n	+	+	+	+	+	2
Aluminium Chloride	AlCl <sub>3</sub>	s	+	+	+	+	-	+	+	+	+	+	1
Aluminium Fluoride	AlF <sub>3</sub>	10%	+	+	+	+	-	+	+	+	+	+/o	1
Aluminium Hydroxide	Al(OH) <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Aluminium Nitrate	Al(NO <sub>3</sub> ) <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Aluminium Phosphate	AlPO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Aluminium Sulphate	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Ammonium Acetate	CH <sub>3</sub> COONH <sub>4</sub>	s	+	+/o	+	+	+	+	+	+	+	+	1
Ammonium Bicarbonate	NH <sub>4</sub> HCO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Ammonium Carbonate	(NH <sub>4</sub> ) <sub>2</sub> CO <sub>3</sub>	40%	+	+	+	+	+	+	+	+	+	+	1
Ammonium Chloride	NH <sub>4</sub> Cl	s	+	+	+	+	-	+	+	+	+	+/o	1
Ammonium Fluoride	NH <sub>4</sub> F	s	+	o	+	+	o	+	+	+	+	+	1
Ammonium Hydroxide	"NH <sub>4</sub> OH"	30%	+	+	+	+	+	-	+	+	+	+	2
(25 °C)													
Ammonium Nitrate	NH <sub>4</sub> NO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Ammonium Oxalate	(COONH <sub>4</sub> ) <sub>2</sub> * H <sub>2</sub> O	s	+	+	+	+	+	+	+	+	+	+	1
Ammonium Perchlorate	NH <sub>4</sub> ClO <sub>4</sub>	10%	+	+	+	+	+	+	+	+	+	+	1
Ammonium Peroxodisulphate	(NH <sub>4</sub> ) <sub>2</sub> S <sub>2</sub> O <sub>8</sub>	s	+	+	+	+	5%	+	+	+	+	5%	2
Ammonium Phosphate	(NH <sub>4</sub> ) <sub>3</sub> PO <sub>4</sub>	s	+	+	+	+	10%	+	+	+	+	10%	1
Ammonium Sulphate	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	s	+	+	+	+	10%	+	+	+	+	10%	1
Ammonium Sulphide	(NH <sub>4</sub> ) <sub>2</sub> S	s	+	+	+	+	n	+	+	n	+	n	2
Ammoniumaluminium Sulphate	NH <sub>4</sub> Al(SO <sub>4</sub> ) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Amyl Alcohol	C <sub>5</sub> H <sub>11</sub> OH	100%	+	+	+	+	+	-	+	-	+	+	1
Aniline	C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub>	100%	-	-	+	+	+	-	+/o	o	+	+	2
Aniline Hydrochloride	C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub> * HCl	s	n	+	+	+	-	+/o	+/o	o	+	+	2
Antimony Trichloride	SbCl <sub>3</sub>	s	+	+	+	+	-	+	+	+	+	n	2
Aqua Regia	3 HCl + HNO <sub>3</sub>	100%	-	+	-	+	-	-	o	-	-	-	2
Arsenic Acid	H <sub>3</sub> AsO <sub>4</sub>	s	+	+	+	+	+	+	+	o	+	+	3
Barium Carbonate	BaCO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Barium Chloride	BaCl <sub>2</sub>	s	+	+	+	+	-	+	+	+	+	+	1
Barium Hydroxide	Ba(OH) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Barium Nitrate	Ba(NO <sub>3</sub> ) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Barium Sulphate	BaSO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Barium Sulphide	BaS	s	+	+	+	+	+	+	+	+	+	+	(1)
Benzaldehyde	C <sub>6</sub> H <sub>5</sub> CHO	100%	-	-	+	-	+	+	+	-	o	+	1
Benzene	C <sub>6</sub> H <sub>6</sub>	100%	-	-	o	+	+	o	-	-	o	+	3
Benzene Sulphonic Acid	C <sub>6</sub> H <sub>5</sub> SO <sub>3</sub> H	10%	n	n	+	+	+	+	-	-	n	+	2
Benzoic Acid	C <sub>6</sub> H <sub>5</sub> COOH	s	+	+	+	+	+	+	+	+/o	+	+	1
Benzoyl Chloride	C <sub>6</sub> H <sub>5</sub> COCl	100%	-	n	o	n	o	+	+	n	o	+	2



# ProMinent® Chemical Resistance List

Chemical	Formula	Conc	PMMA	PVC	PP	PVDF	1.4404	FKM	EPDM	PharMed®	PE	2.4819	WPC
Benzyl Alcohol	C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> OH	100%	-	-	+	+	+	+	-	+	+	+	1
Benzyl Benzoate	C <sub>6</sub> H <sub>5</sub> COOC <sub>7</sub> H <sub>7</sub>	100%	-	-	+	o	+	+	-	-	+	+	2
Benzyl Chloride	C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> Cl	90%	-	n	o	+	+	+	-	-	o	+	2
Bitter Salt => Magnesium Sulphate													
Bleach => Sodium Hypochlorite													
Blue Vitriol => Copper Sulphate													
Borax => Sodium Tetraborate													
Boric Acid	H <sub>3</sub> BO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Brine		s	+	+/o	+	+	+/o	+	+	+	+	+	1
Bromine (dry)	Br <sub>2</sub>	100%	-	-	-	+	-	-	-	-	-	+	2
Bromine Water	Br <sub>2</sub> + H <sub>2</sub> O	s	-	+	-	+	-	-	-	n	-	n	(2)
Bromo Benzene	C <sub>6</sub> H <sub>5</sub> Br	100%	n	n	o	+	+	o	-	-	o	+	2
Bromochloro Methane	CH <sub>2</sub> BrCl	100%	-	-	-	+	+	n	+/o	-	o	+	2
Bromochlorotrifluoro Ethane	HCClBrCF <sub>3</sub>	100%	-	-	o	+	+	+	-	+	o	+	(3)
Butanediol	HOC <sub>4</sub> H <sub>8</sub> OH	10%	n	+	+	+	+	o	+	+	+	+	1
Butanetriol	C <sub>4</sub> H <sub>10</sub> O <sub>3</sub>	s	+	+	+	+	+	o	+	+	+	+	1
Butanol	C <sub>4</sub> H <sub>9</sub> OH	100%	-	+	+	+	+	o	+/o	-	+	+	1
Butyl Acetate	C <sub>7</sub> H <sub>13</sub> O <sub>2</sub>	100%	-	-	+	+	+	-	-	+/o	+	+	1
Butyl Acetate	CH <sub>3</sub> COOC <sub>4</sub> H <sub>9</sub>	100%	-	-	o	+	+	-	+/o	+/o	-	+	1
Butyl Alcohol => Butanol													
Butyl Amine	C <sub>4</sub> H <sub>9</sub> NH <sub>2</sub>	100%	n	n	n	-	+	-	-	n	+	+	1
Butyl Benzoate	C <sub>6</sub> H <sub>5</sub> COOC <sub>4</sub> H <sub>9</sub>	100%	-	-	o	n	+	+	+	-	o	+	2
Butyl Mercaptane	C <sub>4</sub> H <sub>9</sub> SH	100%	n	n	n	+	n	+	-	n	n	n	3
Butyl Oleate	C <sub>22</sub> H <sub>42</sub> O <sub>2</sub>	100%	n	n	n	+	+	+	+/o	n	n	+	1
Butyl Stearate	C <sub>22</sub> H <sub>44</sub> O <sub>2</sub>	100%	o	n	n	+	+	+	-	n	n	+	1
Butyraldehyde	C <sub>3</sub> H <sub>7</sub> CHO	100%	-	n	+	n	+	-	+/o	-	+	+	1
Butyric Acid	C <sub>3</sub> H <sub>7</sub> COOH	100%	5%	20%	+	+	+	+	+	+/o	+	+	1
Calcium Acetate	(CH <sub>3</sub> COO) <sub>2</sub> Ca	s	+	+	+	+	+	+	+	+	+	+	1
Calcium Bisulphite	Ca(HSO <sub>3</sub> ) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	(1)
Calcium Carbonate	CaCO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Calcium Chloride	CaCl <sub>2</sub>	s	+	+	+	+	-	+	+	+	+	+	1
Calcium Cyanide	Ca(CN) <sub>2</sub>	s	+	+	+	+	n	+	+	+	+	n	3
Calcium Hydroxide	Ca(OH) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Calcium Hypochlorite	Ca(OCl) <sub>2</sub>	s	+	+	o	+	-	o	+	+	+	+	2
Calcium Nitrate	Ca(NO <sub>3</sub> ) <sub>2</sub>	s	+	50%	50%	+	+	+	+	+	+	+	1
Calcium Phosphate	Ca <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Calcium Sulphate	CaSO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Calcium Sulphide	CaS	s	+	+	+	+	n	+	+	+	+	+	(2)
Calcium Sulphite	CaSO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	(1)
Calcium Thiosulphate	CaS <sub>2</sub> O <sub>3</sub>	s	+	+	+	+	-	+	+	+	+	+	1
Carbolic Acid => Phenole													
Carbon Disulphide	CS <sub>2</sub>	100%	-	-	o	+	+	+	-	-	o	+	2
Carbon Tetrachloride	CCl <sub>4</sub>	100%	-	-	-	+	+	+	-	-	o	+	3
Carbonic Acid	"H <sub>2</sub> CO <sub>3</sub> "	s	+	+	+	+	+	+	+	+	+	+	1
Caustic Potash => Potassium Hydroxide													
Caustic Soda => Sodium Hydroxide													
Chloric Acid	HClO <sub>3</sub>	20%	+	+	-	+	-	o	o	+	10%	+	2
Chlorinated Lime => Calcium Hypochlorite													
Chlorine Dioxide Solution	ClO <sub>2</sub> + H <sub>2</sub> O	0.5%	o	+	o	+	-	o	-	-	o	+	
Chlorine Water	Cl <sub>2</sub> + H <sub>2</sub> O	s	+	+	o	+	-	+	+	-	o	+	
Chloro Benzene	C <sub>6</sub> H <sub>5</sub> Cl	100%	-	-	+	+	+	+	-	-	o	+	2
Chloro Ethanol	ClCH <sub>2</sub> CH <sub>2</sub> OH	100%	-	-	+	o	+	-	o	+	+	+	3
Chloro Ethylbenzene	C <sub>6</sub> H <sub>4</sub> ClC <sub>2</sub> H <sub>5</sub>	100%	-	-	o	n	+	o	-	-	o	+	(2)
Chloro Phenole	C <sub>6</sub> H <sub>4</sub> OHCl	100%	-	n	+	+	+	n	-	-	+	+	2
Chloro Toluene	C <sub>7</sub> H <sub>8</sub> Cl	100%	-	-	n	+	+	+	-	-	n	+	2
Chloroacetone	ClCH <sub>2</sub> COCH <sub>3</sub>	100%	-	-	n	n	+	-	+	-	n	+	3
Chlorobutadiene	C <sub>4</sub> H <sub>5</sub> Cl	100%	-	-	n	n	+	+	-	-	n	+	1
Chloroform	CHCl <sub>3</sub>	100%	-	-	o	+	+	+	-	o	-	+	2
Chlorohydrin	C <sub>3</sub> H <sub>5</sub> OCl	100%	-	n	+	-	+	+	o	+	+	+	3
Chloroprene => Chlorobutadiene													
Chlorosulphonic Acid	SO <sub>2</sub> (OH)Cl	100%	-	o	-	+	-	-	-	-	-	o	1
Chrome-alum => Potassium Chrome Sulphate													
Chromic Acid	H <sub>2</sub> CrO <sub>4</sub>	50%	-	+	o	+	10%	+	-	o	+	10%	3



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Chemical	Formula	Conc	PMMA	PVC	PP	PVDF	1.4404	FKM	EPDM	PharMed®	PE	2.4819	WPC
Chromic-Sulphuric Acid	$K_2CrO_4 + H_2SO_4$	s	-	+	-	+	n	n	n	-	-	n	3
Chromium Sulphate	$Cr_2(SO_4)_3$	s	+	+	+	+	+	+	+	+	+	+	1
Citric Acid	$C_6H_8O_7$	s	+	+	+	+	+	+	+	+	+	+	1
Cobalt Chloride	$CoCl_2$	s	+	+	+	+	-	+	+	+	+	+	2
Copper-II-Acetate	$Cu(CH_3COO)_2$	s	+	+	+	+	+	+	+	+	+	+	3
Copper-II-Arsenite	$Cu_3(AsO_3)_2$	s	+	+	+	+	+	+	+	+	+	+	3
Copper-II-Carbonate	$CuCO_3$	s	+	+	+	+	+	+	+	+	+	+	2
Copper-II-Chloride	$CuCl_2$	s	+	+	+	+	1%	+	+	+	+	+	2
Copper-II-Cyanide	$Cu(CN)_2$	s	+	+	+	+	+	+	+	+	+	+	(3)
Copper-II-Fluoride	$CuF_2$	s	+	+	+	+	+	+	+	+	+	+	(2)
Copper-II-Nitrate	$Cu(NO_3)_2$	s	+	+	+	+	+	+	+	+	+	+/o	2
Copper-II-Sulphate	$CuSO_4$	s	+	+	+	+	+	+	+	+	+	+	2
Cresols	$C_6H_4CH_3OH$	100%	o	o	+	+	+	+	-	-	+	+	2
Crotonaldehyde	$CH_3C_2H_2CHO$	100%	n	-	+	+	+	-	+	-	+	+	3
Cubic Nitre => Sodium Nitrate													
Cumene => Isopropyl Benzene													
Cyclo Hexane	$C_6H_{12}$	100%	+	-	+	+	+	+	-	-	+	o	1
Cyclohexanole	$C_6H_{11}OH$	100%	o	+/o	+	+	+	+	-	-	+	+	1
Cyclohexanone	$C_6H_{10}O$	100%	-	-	+	-	+	-	+/o	-	+	+	1
Cyclohexyl Alcohol => Cyclohexanol													
Cyclohexylamine	$C_6H_{11}NH_2$	100%	n	n	n	n	+	-	n	n	n	+	2
Decahydronaphthaline	$C_{10}H_{18}$	100%	-	+/o	o	+	n	o	-	-	o	+	2
Decaline => Decahydronaphthalene													
Dextrose => Glucose													
Diacetalcohol	$C_6H_{12}O_2$	100%	-	-	+	o	+	-	+	-	+	+	1
Dibromoethane	$C_2H_4Br_2$	100%	-	-	n	+	+	+	-	-	-	+	3
Dibutyl Ether	$C_4H_9OC_4H_9$	100%	-	-	+	+	+	-	o	-	+	+	2
Dibutyl Phthalate	$C_{16}H_{22}O_4$	100%	-	-	+	+	+	+	+/o	+	o	+	2
Dibutylamine	$(C_4H_9)_2NH$	100%	n	n	+	+	+	-	-	n	+	+	1
Dichloro Acetic Acid	$Cl_2CHCOOH$	100%	-	+	+	+	+	-	+/o	o	+	+	1
Dichloro Benzene	$C_6H_4Cl_2$	100%	-	-	o	+	+	-	-	-	o	+	2
Dichloro Butan	$C_4H_8Cl_2$	100%	-	-	o	+	+	+	-	-	o	+	3
Dichloro Butene	$C_4H_6Cl_2$	100%	-	-	o	+	+	o	-	-	o	+	3
Dichloro Ethane	$C_2H_4Cl_2$	100%	-	-	o	+	+	+	-	o	-	+	3
Dichloro Ethylene	$C_2H_2Cl_2$	100%	-	-	o	+	+	o	-	o	-	+	2
Dichloro Methane	$CH_2Cl_2$	100%	-	-	o	o	o	+	-	o	-	+	2
Dichloroisopropyl Ether	$(C_3H_6Cl)_2O$	100%	-	-	o	n	+	o	o	-	o	+	(2)
Dicyclohexylamine	$(C_6H_{12})_2NH$	100%	-	-	o	n	+	-	-	-	o	+	2
Diethyleneglycol	$C_4H_{10}O_3$	s	+	+	+	+	+	+	+	+	+	+	1
Diethyleneglycolethyl Ether	$C_8H_{18}O_3$	100%	n	n	+	+	+	n	+/o	o	+	+	1
Diethylether	$C_2H_5OC_2H_5$	100%	-	-	o	+	+	-	-	o	o	+	1
Diglycolic Acid	$C_4H_6O_5$	30%	+	+	+	+	+	+	n	+/o	+	+	3
Diethyl Phthalate	$C_{20}H_{26}O_4$	100%	-	-	+	+	+	-	n	+	+	+	(1)
Diisobutylketone	$C_9H_{18}O$	100%	-	-	+	+	+	-	+	-	+	+	1
Di-iso-nonyl Phthalate	$C_{26}H_{42}O_4$	100%	-	-	+	+	+	n	n	+	+	+	1
Diisopropylketone	$C_7H_{14}O$	100%	-	-	+	+	+	-	+	-	+	+	1
Dimethyl Carbonate	$(CH_3O)_2CO$	100%	n	n	+	+	+	+	-	n	+	+	1
Dimethyl Ketone => Acetone													
Dimethyl Phthalate	$C_{10}H_{10}O_4$	100%	-	-	+	+	+	-	+/o	+	+	+	1
Dimethylformamide	$HCON(CH_3)_2$	100%	-	-	+	-	+	-	+	+/o	+	+	1
Dimethylhydrazine	$H_2NN(CH_3)_2$	100%	n	n	+	n	+	-	+	n	+	+	3
Diocetyl Phthalate	$C_4H_4(COOC_8H_{17})_2$	100%	-	-	+	+	+	-	+/o	+	+	+	1
Dioxane	$C_4H_8O_2$	100%	-	-	o	-	+	-	+/o	-	+	+	1
Disodium Hydrogenphosphate	$Na_2HPO_4$	s	+	+	+	+	+	+	+	+	+	+	1
Disulphur Acid -- Oleum													
Disulphur Dichloride	$S_2Cl_2$	100%	n	n	n	+	n	+	-	-	n	n	
DMF => Dimethylformamide													
Engine Oils		100 %	n	+/o	+	+	+	+	-	-	+	+	2
Epsom salts => Magnesium Sulphate													
Ethanol	$C_2H_5OH$	100%	-	+	+	+	+	-	+	+	+	+	1
Ethanol Amine	$HOC_2H_4NH_2$	100%	o	n	+	-	+	-	+/o	o	+	+	1
Ethyl Acetate	$CH_3COOC_2H_5$	100%	-	-	35%	+	+	-	+/o	+/o	+	+	1
Ethyl Acrylate	$C_2H_3COOC_2H_5$	100%	-	-	+	o	+	-	+/o	-	+	+	2



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Chemical	Formula	Conc	PMMA	PVC	PP	PVDF	1.4404	FKM	EPDM	PharMed®	PE	2.4819	WPC
Ethyl Benzene	C <sub>6</sub> H <sub>5</sub> -C <sub>2</sub> H <sub>5</sub>	100%	-	-	o	+	+	o	-	-	o	+	1
Ethyl Benzoate	C <sub>6</sub> H <sub>5</sub> COOC <sub>2</sub> H <sub>5</sub>	100%	n	-	+	o	+	+	-	-	+	+	1
Ethyl Bromide	C <sub>2</sub> H <sub>5</sub> Br	100%	-	n	+	+	n	+	-	o	+	+	2
Ethyl Chloroacetate	ClCH <sub>2</sub> COOC <sub>2</sub> H <sub>5</sub>	100%	-	o	+	+	+	+	-	-	+	+	2
Ethyl Chlorocarbonate	ClCO <sub>2</sub> C <sub>2</sub> H <sub>5</sub>	100%	n	n	n	n	n	+	-	n	n	n	(2)
Ethyl Cyclopentane	C <sub>5</sub> H <sub>4</sub> C <sub>2</sub> H <sub>5</sub>	100%	+	+	+	+	+	+	-	-	+	+	(1)
Ethylacetacetate	C <sub>6</sub> H <sub>10</sub> O <sub>3</sub>	100%	n	-	+	+	+	-	+/o	+/o	+	+	1
Ethylacrylic Acid	C <sub>4</sub> H <sub>7</sub> COOH	100%	n	n	+	+	+	n	+/o	n	+	+	(1)
Ethylene Diamine	(CH <sub>2</sub> NH <sub>2</sub> ) <sub>2</sub>	100%	o	o	+	-	o	-	+	n	+	o	2
Ethylene Dibromide => Dibromoethane													
Ethylene Dichloride => Dichloro Ethane													
Ethylene Glycol => Glycol													
Ethylenglycol Ethylether	HOC <sub>2</sub> H <sub>4</sub> OC <sub>2</sub> H <sub>5</sub>	100%	n	n	+	+	+	n	+/o	o	+	+	1
Ethylhexanol	C <sub>8</sub> H <sub>16</sub> O	100%	n	+/o	+	+	+	+	+	-	+	+	2
Fatty Acids	R-COOH	100%	+	+	+	+	+	+	o	o	+	+	1
Ferric Chloride	FeCl <sub>3</sub>	s	+	+	+	+	-	+	+	+	+	+/o	1
Ferric Nitrate	Fe(NO <sub>3</sub> ) <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Ferric Phosphate	FePO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Ferric Sulphate	Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	s	+	+	+	+	o	+	+	+	+	+	1
Ferrous Chloride	FeCl <sub>2</sub>	s	+	+	+	+	-	+	+	+	+	+/o	1
Ferrous Sulphate	FeSO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Fixing Salt => Sodium Thiosulphate													
Fluoro Benzene	C <sub>6</sub> H <sub>5</sub> F	100%	-	-	+	+	+	o	-	-	o	+	2
Fluoroboric Acid	HBF <sub>4</sub>	35%	+	+	+	+	o	+	+	-	+	+	1
Fluorosilicic Acid	H <sub>2</sub> SiF <sub>6</sub>	100%	+	30%	30%	+	o	+	+	o	40%	+/o	2
Formaldehyde	CH <sub>2</sub> O	40%	+	+	+	+	+	-	+/o	-	+	+	2
Formalin => Formaldehyde													
Formamide	HCONH <sub>2</sub>	100%	+	-	+	+	+	+	+	n	+	+	1
Formic Acid	HCOOH	s	-	+/o	+	+	+	-	-	+/o	+	+	1
Furane	C <sub>4</sub> H <sub>4</sub> O	100%	-	-	+	-	+	-	n	-	+	+	3
Furane Aldehyde	C <sub>5</sub> H <sub>2</sub> O <sub>2</sub>	100%	n	n	n	o	+	-	+/o	-	n	n	2
Furfuryl Alcohol	OC <sub>4</sub> H <sub>3</sub> CH <sub>2</sub> OH	100%	-	-	+	o	+	n	+/o	-	+	+	1
Gallic Acid	C <sub>6</sub> H <sub>2</sub> (OH) <sub>3</sub> COOH	5%	+	+	+	+	+	+	+/o	+	+	+	1
Gasoline		100 %	-	-	+	+	+	+	-	-	+	+	2
Glauber's Salt => Sodium Sulphate													
Glucose	C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Glycerol	C <sub>3</sub> H <sub>5</sub> (OH) <sub>3</sub>	100%	+	+	+	+	+	+	+	+	+	+	1
Glycerol Triacetate	C <sub>3</sub> H <sub>5</sub> (CH <sub>3</sub> COO) <sub>3</sub>	100%	n	n	+	+	+	-	+	n	+	+	1
Glycine	NH <sub>2</sub> CH <sub>2</sub> COOH	10%	+	+	+	+	+	+	+	+	+	+	1
Glycol	C <sub>2</sub> H <sub>4</sub> (OH) <sub>2</sub>	100%	+	+	+	+	+	+	+	+	+	+	1
Glycolic Acid	CH <sub>2</sub> OHCOOH	70%	+	37%	+	+	+	+	+	+/o	+	+	1
Gypsum => Calcium Sulphate													
Heptane	C <sub>7</sub> H <sub>16</sub>	100%	+	+	+	+	+	+	-	-	+	+	1
Hexachloroplatinic Acid	H <sub>2</sub> PtCl <sub>6</sub>	s	n	+	+	+	-	n	+	n	+	-	
Hexanal	C <sub>5</sub> H <sub>11</sub> CHO	100%	n	n	+	+	+	-	+/o	-	+	+	1
Hexane	C <sub>6</sub> H <sub>14</sub>	100%	+	+	+	+	+	+	-	-	+	+	1
Hexanol	C <sub>6</sub> H <sub>13</sub> OH	100%	-	-	+	+	+	n	+	o	+	+	1
Hexantriol	C <sub>6</sub> H <sub>3</sub> (OH) <sub>3</sub>	100%	n	n	+	+	+	+	+	n	+	+	1
Hexene	C <sub>6</sub> H <sub>12</sub>	100%	n	+	+	+	+	+	-	-	+	+	1
Hydrazine Hydrate	N <sub>2</sub> H <sub>4</sub> * H <sub>2</sub> O	s	+	+	+	+	+	n	+	o	+	+	3
Hydrobromic Acid	HBr	50%	+	+	+	+	-	-	+	-	+	o	1
Hydrochloric Acid	HCl	38%	32%	+	+	+	-	+	o	o	+	o	1
Hydrofluoric Acid	HF	80%	-	40%	40%	+	-	+	o	-	40%	+/o	1
Hydrogen Cyanide	HCN	s	+	+	+	+	+	+	+	+	+	+	3
Hydrogen Peroxide	H <sub>2</sub> O <sub>2</sub>	90%	40%	40%*	30%	+	+	30%	30%	+	+	+	1
Hydroiodic Acid	HI	s	+	+	+	+	-	-	n	-	+	n	1
Hydroquinone	C <sub>6</sub> H <sub>4</sub> (OH) <sub>2</sub>	s	o	+	+	+	+	+	-	+/o	+	+	2
Hydroxylamine Sulphate	(NH <sub>2</sub> OH) <sub>2</sub> * H <sub>2</sub> SO <sub>4</sub>	10%	+	+	+	+	+	+	+	+	+	+	2
Hypochlorous Acid	HOCl	s	+	+	o	+	-	+	+/o	+	o	+	(1)
Iodine	I <sub>2</sub>	s	o	-	+	+	-	+	+/o	+	o	+/o	
Iron Vitriol => Ferrous Sulphate													
Isobutanol => Isobutyl Alcohol													
Isobutyl Alcohol	C <sub>2</sub> H <sub>5</sub> CH(OH)CH <sub>3</sub>	100%	-	+	+	+	+	+	+	o	+	+	1



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Chemical	Formula	Conc	PMMA	PVC	PP	PVDF	1.4404	FKM	EPDM	PharMed®	PE	2.4819	WPC
Isopropanol => Isopropyl Alcohol													
Isopropyl Acetate	CH <sub>3</sub> COOCH(CH <sub>3</sub> ) <sub>2</sub>	100%	-	-	+	+	+	-	+/o	+/o	+	+	1
Isopropyl Alcohol	(CH <sub>3</sub> ) <sub>2</sub> CHOH	100%	-	+/o	+	+	+	+	+	o	+	+	1
Isopropyl Benzene	C <sub>6</sub> H <sub>5</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	100%	-	-	o	+	+	+	-	-	o	+	1
Isopropyl Chloride	CH <sub>3</sub> CHClCH <sub>3</sub>	80%	-	-	o	+	+	+	-	o	o	+/o	2
Isopropyl Ether	C <sub>6</sub> H <sub>14</sub> O	100%	-	-	o	+	+	-	-	o	o	+	1
Kitchen Salt => Sodium Chloride													
Lactic Acid	C <sub>3</sub> H <sub>6</sub> O <sub>3</sub>	100%	-	+	+	+	+/o	+	10%	+/o	+	+	1
Lead Acetate	Pb(CH <sub>3</sub> COO) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	2
Lead Nitrate	Pb(NO <sub>3</sub> ) <sub>2</sub>	50%	+	+	+	+	+	+	+	+	+	+	2
Lead Sugar => Lead Acetate													
Lead Sulphate	PbSO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	(2)
Lead Tetraethyl	Pb(C <sub>2</sub> H <sub>5</sub> ) <sub>4</sub>	100%	+	+	+	+	+	+	-	n	+	+	3
Lime Milk => Calcium Hydroxide													
Liquid Ammonia => Ammonium Hydroxide													
Lithium Bromide	LiBr	s	+	+	+	+	+	+	+	+	+	+	1
Lithium Chloride	LiCl	s	+	+	+	+	-	+	+	+	+	n	1
Lunar Caustic => Silver Nitrate													
Magnesium Carbonate	MgCO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+/o	1
Magnesium Chloride	MgCl <sub>2</sub>	s	+	+	+	+	o	+	+	+	+	+	1
Magnesium Hydroxide	Mg(OH) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Magnesium Nitrate	Mg(NO <sub>3</sub> ) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Magnesium Sulphate	MgSO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+/o	1
Maleic Acid	C <sub>4</sub> H <sub>4</sub> O <sub>4</sub>	s	+	+	+	+	+	+	+	o	+	+	1
Malic Acid	C <sub>4</sub> H <sub>6</sub> O <sub>5</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Manganese-II-Chloride	MnCl <sub>2</sub>	s	+	+	+	+	-	+	+	+	+	+	1
Manganese-II-Sulphate	MnSO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
MEK => Methyl Ethyl Ketone													
Mercury	Hg	100%	+	+	+	+	+	+	+	+	+	+	3
Mercury-II-Chloride	HgCl <sub>2</sub>	s	+	+	+	+	-	+	+	+	+	+	3
Mercury-II-Cyanide	Hg(CN) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	3
Mercury-II-Nitrate	Hg(NO <sub>3</sub> ) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	3
Mesityl Oxide	C <sub>6</sub> H <sub>10</sub> O	100%	-	-	n	n	+	-	+/o	-	n	+	1
Methacrylic Acid	C <sub>3</sub> H <sub>5</sub> COOH	100%	n	n	+	+	+	o	+/o	+/o	+	+	1
Methanol	CH <sub>3</sub> OH	100%	-	-	+	+	+	o	+	+/o	+	+	1
Methoxybutanol	CH <sub>3</sub> O(CH <sub>2</sub> ) <sub>4</sub> OH	100%	-	-	+	+	+	+	o	o	+	+	(1)
Methyl Acetate	CH <sub>3</sub> COOCH <sub>3</sub>	60%	-	-	+	+	+	-	+/o	+/o	+	+	2
Methyl Acrylate	C <sub>2</sub> H <sub>3</sub> COOCH <sub>3</sub>	100%	-	-	+	+	+	-	+/o	o	+	+	2
Methyl Benzoate	C <sub>6</sub> H <sub>5</sub> COOCH <sub>3</sub>	100%	-	-	+	+	+	+	-	-	+	+	2
Methyl Catechol	C <sub>6</sub> H <sub>3</sub> (OH) <sub>2</sub> CH <sub>3</sub>	s	+	+	+	+	+	+	-	+o	+	+	(1)
Methyl Cellulose		s	+	+	+	+	+	+	+	+	+	+	1
Methyl Chloroacetate	ClCH <sub>2</sub> COOCH <sub>3</sub>	100%	-	o	+	+	+	o	-	-	+	+	2
Methyl Cyclopentane	C <sub>5</sub> H <sub>9</sub> CH <sub>3</sub>	100%	+	+	+	+	+	+	-	-	+	+	(1)
Methyl Dichloroacetate	Cl <sub>2</sub> CHCOOCH <sub>3</sub>	100%	-	-	+	n	+	-	n	-	+	+	2
Methyl Ethyl Ketone	CH <sub>3</sub> COC <sub>2</sub> H <sub>5</sub>	100%	-	-	+	-	+	-	+	-	+	+	1
Methyl Glycol	C <sub>3</sub> H <sub>8</sub> O <sub>2</sub>	100%	+	+	+	+	+	-	+/o	+	+	+	1
Methyl Isobutyl Ketone	CH <sub>3</sub> COC <sub>4</sub> H <sub>9</sub>	100%	-	-	+	-	+	-	o	-	+	+	1
Methyl Isopropyl Ketone	CH <sub>3</sub> COC <sub>3</sub> H <sub>7</sub>	100%	-	-	+	-	+	-	+/o	-	+	+	1
Methyl Methacrylate	C <sub>3</sub> H <sub>5</sub> COOCH <sub>3</sub>	100%	-	-	+	+	+	-	-	-	+	+	1
Methyl Oleate	C <sub>17</sub> H <sub>33</sub> COOCH <sub>3</sub>	100%	n	n	+	+	+	+	+/o	n	+	+	1
Methyl Salicylate	HO-C <sub>6</sub> H <sub>4</sub> -COOCH <sub>3</sub>	100%	-	-	+	+	+	n	+/o	-	+	+	1
Methylacetyl Acetate	C <sub>5</sub> H <sub>8</sub> O <sub>3</sub>	100%	-	-	+	+	+	-	+/o	o	+	+	2
Methylamine	CH <sub>3</sub> NH <sub>2</sub>	32%	+	o	+	o	+	-	+	+	+	+	2
Methylene Chloride => Dichloro Methane													
Mirabilitt => Sodium Sulphate													
Morpholine	C <sub>4</sub> H <sub>9</sub> ON	100%	-	-	+	-	+	n	n	-	+	+	2
Muriatic Acid => Hydrochloric Acid													
Natron => Sodium Bicarbonate													
Nickel-II-Acetate	(CH <sub>3</sub> COO) <sub>2</sub> Ni	s	+	+	+	+	+	-	+	+	+	+	(2)
Nickel-II-Chloride	NiCl <sub>2</sub>	s	+	+	+	+	-	+	+	+	+	+	2
Nickel-II-Nitrate	Ni(NO <sub>3</sub> ) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+/o	2
Nickel-II-Sulphate	NiSO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+/o	2
Nitrate of Lime => Calcium Nitrate													



# ProMinent® Chemical Resistance List

Chemical	Formula	Conc	PMMA	PVC	PP	PVDF	1.4404	FKM	EPDM	PharMed®	PE	2.4819	WPC
Nitric Acid	HNO <sub>3</sub>	99%	10%	10%*	50%	65%	50%	65%	10%	35%	50%	65%	1
Nitro Methane	CH <sub>3</sub> NO <sub>2</sub>	100%	-	-	+	o	+	-	+/o	-	+	+	2
Nitro Propane	(CH <sub>3</sub> ) <sub>2</sub> CHNO <sub>2</sub>	100%	-	-	+	n	+	-	+/o	-	+	+	2
Nitro Toluene	C <sub>6</sub> H <sub>4</sub> NO <sub>2</sub> CH <sub>3</sub>	100%	-	-	+	+	+	o	-	-	+	+	2
Octane	C <sub>8</sub> H <sub>18</sub>	100%	o	+	+	+	+	+	-	-	+	+	1
Octanol	C <sub>8</sub> H <sub>17</sub> OH	100%	-	-	+	+	+	+	+	-	+	+	1
Octyl Cresol	C <sub>15</sub> H <sub>24</sub> O	100%	-	-	+	+	+	o	n	-	+	+	(1)
Oil => Engine Oils													
Oleum	H <sub>2</sub> SO <sub>4</sub> + SO <sub>3</sub>	s	n	-	-	-	+	+	-	+	-	+	2
Orthophosphoric Acid => Phosphoric Acid													
Oxalic Acid	(COOH) <sub>2</sub>	s	+	+	+	+	10%	+	+	+/o	+	+/o	1
Pentane	C <sub>5</sub> H <sub>12</sub>	100%	+	+	+	+	+	+	-	-	+	+	1
Pentanol => Amyl Alcohol													
Perchloric Acid	HClO <sub>4</sub>	70%	n	10%	10%	+	-	+	+/o	+	+	n	1
Perchloroethylene => Tetrachloro Ethylene													
Perhydrol => Hydrogen Peroxide													
Petroleum Ether	C <sub>n</sub> H <sub>2n+2</sub>	100%	+	+/o	+	+	+	+	-	-	+	+	1
Phenole	C <sub>6</sub> H <sub>5</sub> OH	100%	-	-	+	+	+	+	-	+	+	+	2
Phenyl Ethyl Ether	C <sub>6</sub> H <sub>5</sub> OC <sub>2</sub> H <sub>5</sub>	100%	-	-	+	n	+	-	-	-	+	+	2
Phenyl Hydrazine	C <sub>6</sub> H <sub>5</sub> NHNH <sub>2</sub>	100%	-	-	o	+	+	o	-	-	o	+	2
Phosphoric Acid	H <sub>3</sub> PO <sub>4</sub>	85%	50%	+	+	+	+	+	+	+	+	+	1
Phosphorous Oxychloride	POCl <sub>3</sub>	100%	-	-	+	+	n	+	+	n	+	+	1
Phosphorous Trichloride	PCl <sub>3</sub>	100%	-	-	+	+	+	o	+	+/o	+	+	1
Phthalic Acid	C <sub>6</sub> H <sub>4</sub> (COOH) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Picric Acid	C <sub>6</sub> H <sub>2</sub> (NO <sub>3</sub> ) <sub>3</sub> OH	s	+	+	+	+	+	+	+	-	+	+	2
Piperidine	C <sub>5</sub> H <sub>11</sub> N	100%	-	-	n	n	+	-	-	-	n	+	2
Potash Alum => Potassium Aluminium Sulphate													
Potassium Acetate	CH <sub>3</sub> COOK	s	+	+	+	+	+	+	+	+	+	+	1
Potassium Aluminium Sulphate	KAl(SO <sub>4</sub> ) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Potassium Bicarbonate	KHCO <sub>3</sub>	40%	+	+	+	+	+	+	+	+	+	+/o	1
Potassium Bifluoride	KHF <sub>2</sub>	s	n	+	+	+	+	+	+	+	+	+	1
Potassium Bisulphate	KHSO <sub>4</sub>	5%	+	+	+	+	+	+	+	+	+	+	1
Potassium Bitartrate	KC <sub>4</sub> H <sub>5</sub> O <sub>6</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Potassium Borate	KBO <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	(1)
Potassium Bromate	KBrO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	2
Potassium Bromide	KBr	s	+	+	+	+	10%	+	+	+	+	0,1	1
Potassium Carbonate	K <sub>2</sub> CO <sub>3</sub>	s	+	+	+	+	+	+	+	55%	+	+	1
Potassium Chlorate	KClO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	2
Potassium Chloride	KCl	s	+	+	+	+	-	+	+	+	+	+/o	1
Potassium Chromate	K <sub>2</sub> CrO <sub>4</sub>	10%	+	+	+	+	+	+	+	+	+	+	3
Potassium Chrome Sulphate	KCr(SO <sub>4</sub> ) <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Potassium Cyanate	KOCN	s	+	+	+	+	+	+	+	+	+	+	2
Potassium Cyanide	KCN	s	+	+	+	+	5%	+	+	+	+	5%	3
Potassium Cyanoferrate II	K <sub>4</sub> Fe(CN) <sub>6</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Potassium Cyanoferrate III	K <sub>3</sub> Fe(CN) <sub>6</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Potassium Dichromate	K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	s	+	+	+	+	25%	+	+	+	+	10%	3
Potassium Fluoride	KF	s	+	+	+	+	+	+	+	+	+	+	1
Potassium Hydroxyde	KOH	50%	+	+	+	+	+	-	+	10%	+	+	1
(25 °C)													
Potassium Iodide	KI	s	+	+	+	+	+	+	+	+	+	+	1
Potassium Nitrate	KNO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Potassium Perchlorate	KClO <sub>4</sub>	s	+	+	+	+	n	+	+	+	+	+	1
Potassium Permanganate	KMnO <sub>4</sub>	s	+	+	+	+	+	+	+	6%	+	+	2
Potassium Persulphate	K <sub>2</sub> S <sub>2</sub> O <sub>8</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Potassium Phosphate	KH <sub>2</sub> PO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Potassium Pyrochromate => Potassium Dichromate													
Potassium Sulphate	K <sub>2</sub> SO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Potassium Sulphite	K <sub>2</sub> SO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Propionic Acid	C <sub>2</sub> H <sub>5</sub> COOH	100%	o	+	+	+	+	+	+	+/o	+	+	1
Propionitrile	CH <sub>3</sub> CH <sub>2</sub> CN	100%	n	n	+	+	+	+	-	-	+	+	2
Propyl Acetate	CH <sub>3</sub> COOC <sub>3</sub> H <sub>7</sub>	100%	-	-	+	+	+	-	+/o	-	+	+	1
Propylene Glycol	CH <sub>3</sub> CHOHCH <sub>2</sub> OH	100%	+	+	+	+	+	+	+	+	+	+	1
Prussic Acid => Hydrogen Cyanide													
Pyridine	C <sub>5</sub> H <sub>5</sub> N	100%	-	-	o	-	+	-	-	o	+	+	2



# ProMinent® Chemical Resistance List

Chemical	Formula	Conc	PMMA	PVC	PP	PVDF	1.4404	FKM	EPDM	PharMed®	PE	2.4819	WPC
Pyrrrole	C <sub>4</sub> H <sub>4</sub> NH	100%	n	n	+	n	+	-	-	-	+	+	2
Roman Vitriol => Copper Sulphate													
Salicylic Acid	HOC <sub>6</sub> H <sub>4</sub> COOH	s	+	+	+	+	+	+	+	+	+	+/o	1
Salmiac => Ammonium Chloride													
Saltpeter => Potassium Nitrate													
Silic Acid	SiO <sub>2</sub> * x H <sub>2</sub> O	s	+	+	+	+	+	+	+	+	+	+	1
Silver Bromide	AgBr	s	+	+	+	+	+/o	+	+	+	+	+	1
Silver Chloride	AgCl	s	+	+	+	+	-	+	+	+	+	+/o	1
Silver Nitrate	AgNO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+/o	3
Slaked Lime => Calcium Hydroxide													
Soda => Sodium Carbonate													
Sodium Acetate	NaCH <sub>3</sub> COO	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Benzoate	C <sub>6</sub> H <sub>5</sub> COONa	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Bicarbonate	NaHCO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Bisulphate	NaHSO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Bisulphite	NaHSO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Borate	NaBO <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Bromate	NaBrO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	3
Sodium Bromide	NaBr	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Carbonate	Na <sub>2</sub> CO <sub>3</sub>	s	+	+	+	+	+/o	+	+	+	+	+	1
Sodium Chlorate	NaClO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	2
Sodium Chloride	NaCl	s	+	+	+	+	-	+	+	+	+	+	1
Sodium Chlorite	NaClO <sub>2</sub>	24%	+	+	+	+	10%	+	+	+	+	10%	2
Sodium Chromate	Na <sub>2</sub> CrO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	3
Sodium Cyanide	NaCN	s	+	+	+	+	+	+	+	+	+	+	3
Sodium Dichromate	Na <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	s	+	+	+	+	+	+	+	+	+	+	3
Sodium Dithionite	Na <sub>2</sub> S <sub>2</sub> O <sub>4</sub>	s	+	10%	10%	+	+	n	n	+	10%	+/o	1
Sodium Fluoride	NaF	s	+	+	+	+	10%	+	+	+	+	+	1
Sodium Hydrogen Sulphate => Sodium Bisulphate													
Sodium Hydroxide	NaOH	50%	+	+	+	+	+	-	+	30%	+	+	1
(60%/ 25 °C)													
Sodium Hypochlorite	NaOCl + NaCl	12%	+	+	o	+	-	+	+	+	o	> 10%	2
Sodium Iodide	NaI	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Metaphosphate	(NaPO <sub>3</sub> ) <sub>n</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Nitrate	NaNO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Nitrite	NaNO <sub>2</sub>	s	+	+	+	+	+	+	+	+	+	+	2
Sodium Oxalate	Na <sub>2</sub> C <sub>2</sub> O <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Perborate	NaBO <sub>2</sub> *H <sub>2</sub> O <sub>2</sub>	s	+	+/o	+	+	+	+	+	+	+	+/o	1
Sodium Perchlorate	NaClO <sub>4</sub>	s	+	+	+	+	10%	+	+	+	+	10%	1
Sodium Peroxide	Na <sub>2</sub> O <sub>2</sub>	s	+	+	+	+	+	+	+	n	-	+	1
Sodium Persulphate	Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub>	s	n	+	+	+	+	+	+	+	+	+	1
Sodium Pyrosulphite	Na <sub>2</sub> S <sub>2</sub> O <sub>5</sub>	s	+	+	+	+	+	n	n	+	+	+	1
Sodium Salicylate	C <sub>6</sub> H <sub>4</sub> (OH)COONa	s	+	+/o	+	+	+	+	+	+	+	+	1
Sodium Silicate	Na <sub>2</sub> SiO <sub>3</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Sulphate	Na <sub>2</sub> SO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Sulphide	Na <sub>2</sub> S	s	+	+	+	+	+	+	+	+	+	+	2
Sodium Sulphite	Na <sub>2</sub> SO <sub>3</sub>	s	+	+	+	+	50%	+	+	+	+	50%	1
Sodium Tetraborate	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> * 10 H <sub>2</sub> O	s	+	+	+	+	+	+	+	+	+	+	1
Sodium Thiosulphate	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	s	+	+	+	+	25%	+	+	+	+	25%	1
Sodium Tripolyphosphate	Na <sub>5</sub> P <sub>3</sub> O <sub>10</sub>	s	+	+	+	+	+	+/o	+	+	+	+	1
Starch	(C <sub>6</sub> H <sub>10</sub> O <sub>5</sub> ) <sub>n</sub>	s	+	+	+	+	+	+	n	+	+	+	1
Starch Gum		s	+	+	+	+	+	+	+	+	+	+	1
Styrene	C <sub>6</sub> H <sub>5</sub> CHCH <sub>2</sub>	100%	-	-	o	+	+	o	-	-	o	+	2
Sublimate => Mercury-II-Chloride													
Succinic Acid	C <sub>4</sub> H <sub>6</sub> O <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Sugar Syrup		s	+	+	+	+	+	+	+	+	+	+	1
Sulphur Chloride => Disulphur Dichloride													
Sulphuric Acid	H <sub>2</sub> SO <sub>4</sub>	98%	30%	50%	85%	+	20%	+	+	30%	80%	+	1
Sulphuric Acid, fuming --> Oleum													
Sulphurous Acid	H <sub>2</sub> SO <sub>3</sub>	s	+	+	+	+	10%	+	+	+	+	+	(1)
Sulphuryl Chloride	SO <sub>2</sub> Cl <sub>2</sub>	100%	-	-	-	o	n	+	o	-	-	n	1
Tannic Acid	C <sub>76</sub> H <sub>52</sub> O <sub>46</sub>	50%	+	+	+	+	+	+	+	+	+	+	1
Tartaric Acid	C <sub>4</sub> H <sub>6</sub> O <sub>6</sub>	s	50%	+	+	+	+	+	+/o	+	+	+	1





# ProMinent® Chemical Resistance List

Chemical	Formula	Conc	PMMA	PVC	PP	PVDF	1.4404	FKM	EPDM	PharMed®	PE	2.4819	WPC
Tetrachloro Ethane	C <sub>2</sub> H <sub>2</sub> Cl <sub>4</sub>	100%	-	-	o	+	+	o	-	o	o	+	3
Tetrachloro Ethylene	C <sub>2</sub> Cl <sub>4</sub>	100%	-	-	o	+	+	o	-	o	o	+	3
Tetrachloromethane => Carbon Tetrachloride													
Tetrahydro Furane	C <sub>4</sub> H <sub>8</sub> O	100%	-	-	o	-	+	-	-	-	o	+	1
Tetrahydro Naphthalene	C <sub>10</sub> H <sub>12</sub>	100%	-	-	-	+	+	+	-	-	o	+	3
Tetralin => Tetrahydro Naphthalene													
THF => Tetrahydrofurane													
Thionyl Chloride	SOCl <sub>2</sub>	100%	-	-	-	+	n	+	+	+	-	n	1
Thiophene	C <sub>4</sub> H <sub>4</sub> S	100%	n	-	o	n	+	-	-	-	o	+	3
Tin-II-Chloride	SnCl <sub>2</sub>	s	+	o	+	+	-	+	+	+	+	+/o	1
Tin-II-Sulphate	SnSO <sub>4</sub>	s	n	+	+	+	+	+	+	+	+	+/o	(1)
Tin-IV-Chloride	SnCl <sub>4</sub>	s	n	+	+	+	-	+	+	+	+	+	1
Titanium Tetrachloride	TiCl <sub>4</sub>	100%	n	n	n	+	n	o	-	n	n	n	1
Toluene	C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>	100%	-	-	o	+	+	o	-	-	o	+	2
Toluene Diisocyanate	C <sub>7</sub> H <sub>3</sub> (NCO) <sub>2</sub>	100%	n	n	+	+	+	-	+/o	n	+	+	2
Tributyl Phosphate	(C <sub>4</sub> H <sub>9</sub> ) <sub>3</sub> PO <sub>4</sub>	100%	n	-	+	+	+	-	+	+	+	+	1
Trichloro Ethane	CCl <sub>3</sub> CH <sub>3</sub>	100%	-	-	o	+	+	+	-	o	o	+	3
Trichloro Ethylene	C <sub>2</sub> HCl <sub>3</sub>	100%	-	-	o	+	+/o	o	-	o	o	+	3
Trichloro Methane => Chloroform													
Trichloroacetaldehyde Hydrate	CCl <sub>3</sub> CH(OH) <sub>2</sub>	s	-	-	o	-	+	o	o	n	+	+	2
Trichloroacetic Acid	CCl <sub>3</sub> COOH	50%	-	+	+	+	-	-	o	+/o	+	+	1
Tricresyl Phosphate	(C <sub>7</sub> H <sub>7</sub> ) <sub>3</sub> PO <sub>4</sub>	90%	-	-	+	n	+	o	+	+	+	+	2
Triethanol Amine	N(C <sub>2</sub> H <sub>4</sub> OH) <sub>3</sub>	100%	+	o	+	n	+	-	+/o	o	+	+	1
Trilene => Trichloro Ethane													
Trioctyl Phosphate	(C <sub>8</sub> H <sub>17</sub> ) <sub>3</sub> PO <sub>4</sub>	100%	n	-	+	+	+	o	+	+	+	+	2
Trisodium Phosphate	Na <sub>3</sub> PO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+	1
Urea	CO(NH <sub>2</sub> ) <sub>2</sub>	s	+	+/o	+	+	+	+	+	20%	+	+	1
Vinyl Acetate	CH <sub>2</sub> =CHOOCCH <sub>3</sub>	100%	-	-	+	+	+	n	n	+/o	+	+	2
Water Glass => Sodium Silicate													
Xylene	C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub>	100%	-	-	-	+	+	o	-	-	o	+	2
Zinc Acetate	(CH <sub>3</sub> COO) <sub>2</sub> Zn	s	+	+	+	+	+	-	+	+	+	+	1
Zinc Chloride	ZnCl <sub>2</sub>	s	+	+	+	+	-	+	+	+	+	n	1
Zinc Sulphate	ZnSO <sub>4</sub>	s	+	+	+	+	+	+	+	+	+	+/o	1



# ProMinent® Chemical Resistance List

## Overview of the Resistance of Soft PVC Hoses (Guttasyn®) to the Most Common Chemicals

This data applies to standard conditions (20 °C, 1013 mbar).

+	=	resistant
o	=	conditionally resistant
-	=	not resistant

The data is taken from relevant manufacturers' literature and supplemented by our own tests and experience. As the resistance of a material also depends on other factors, especially pressure and operating conditions etc, this list should merely be regarded as an initial guide and does not claim to offer any guarantees. Take into consideration the fact that conventional dosing agents are largely compounds, the corrosiveness of which cannot simply be calculated by adding together the corrosiveness of each individual component. In cases such as these the material compatibility data produced by the chemical manufacturer must be read as a matter of priority when selecting a material. Safety data sheets do not provide this information and cannot therefore replace application-specific documentation.

Corrosive agent	Concentration in %	Evaluation
Acetic acid	50	o
Acetic acid (wine vinegar)		o
Acetic acid anhydride	100	-
Acetic acid, aqueous	10	+
Acetic ester	100	-
Acetone	all	-
Acetylene tetrabromide	100	-
Aluminium salts, aqueous	all	+
Alums of all kinds, aqueous	all	+
Ammonium salts	all	+
Ammonium, aqueous	15	-
Ammonium, aqueous	saturated	-
Aniline	100	-
Benzene	100	-
Bisulphite, aqueous	40	+
Borax solution	all	+
Boric acid, aqueous	10	+
Bromine, vaporous and liquid		-
Butanol	100	+
Butyl acetate	100	-
Butyric acid, aqueous	20	+
Butyric acid, aqueous	conc.	-
Calcium chloride, aqueous	all	+
Carbon disulphide	100	-
Carbonic acid	all	+
Caustic potash	15	+
Chlorinated hydrocarbons	all	-
Chrome-alum, aqueous	all	+
Chromic acid, aqueous	50	-
Copper sulphate, aqueous	all	+
Creosote		-
Dextrin, aqueous	saturated	+
Diesel oils, compressed oils	100	o
Diethyl ether	100	-
Difluorodichloromethane	100	-
Ethanol	96	-
Ethyl acetate	100	-
Ethylene glycol	30	+
Ferric chloride, aqueous	all	+
Fertilizing manure salt, aqueous	all	+
Formaldehyde, aqueous	30	o
Glacial acetic acid	100	-
Glucose, aqueous	saturated	+
Glycerol	100	-
Halogens	all	-



# ProMinent® Chemical Resistance List

Corrosive agent	Concentration in %	Evaluation
Hydrochloric acid	15	+
Hydrogen bromide	10	+
Hydrogen peroxide	to 10	+
Hydrogen sulphide, gaseous	100	-
Ink		+
Magnesium salts, aqueous	all	+
Methyl alcohol	100	+
Methylene chloride	100	-
Nitric acid, aqueous	25	+
Oils => fats, diesel oil, Lubricating oil and similar		
Perchloric acid	all	o
Phenol, aqueous	all	o
Phosphoric acid, aqueous	100	-
Potassium bichromate, aqueous	saturated	+
Potassium persulphate, aqueous	saturated	+
Silver nitrate	10	+
Sodium chloride, aqueous	all	+
Sodium hydroxide	aqueous	+
Sodium hypochlorite	15	+
Sodium salts => sodium chloride		
Sulphur dioxide, gaseous	all	+
Sulphuric acid	30	+
Tetrachloromethane	100	-
Toluene	100	-
Trichloroethylene	100	-
Urea, aqueous	all	+
Xylene	100	-
Zinc salts	all	+







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