1.1.3 Solenoid-Driven Metering Pump gamma/ X

gamma/ X – the proven best-seller intelligently extended

Feed rate of product range 1 ml/h – 45 l/h; 25 – 2 bar

The solenoid-driven diaphragm metering pump gamma incorporates a wealth of e**X** cellent 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.

The new solenoid-driven metering pump gamma/ X is user-friendly and has a long service life, just like its predecessor. An ingenious solenoid control measures the pending 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 near the feed chemical.

Whether the metering volume fluctuates or hydraulic failures affect the metering process – the gamma/ X allows you to keep an eye on everything.

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

DULCONNEX

Your Benefits

- Simple adjustment of the metering rate directly in l/h
- Direct input of the required and desired concentration in concentration mode with volume-proportional metering tasks
- Integrated pressure measurement and display for greater safety during commissioning and in the process
- Control range for metering rate 1:40,000
- Virtually wear-free solenoid drive, overload-proof and economical
- Suitable for continuous micro-metering from approx. 1 ml/h, thanks to the regulated solenoid drive
- Detection of hydraulic malfunctions, such as gas in the dosing head, and no or too high a back pressure, ensures smooth processes
- Bluetooth interface for simple parameter configuration and access to diagnostic data using the Android and IOS app - DULCONNEX Blue (optional)
- 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 (optional)
- Integrated 1-month timer for timed metering tasks
- Guaranteed metering by means of automatic bleeding
- Connection to process control systems via fieldbus interfaces, such as PROFIBUS®, PROFINET, Modbus RTU and CANopen

Technical Details

- Simple and fine adjustments to litre capacity in automatic mode. Can be regulated down to a few ml/h. Alternatively, the pump can also be operated in automatic “OFF” mode via stroke length and stroke rate.
- 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. 99.99 or 99,999 strokes/start pulse
- Connector for 2-stage level switch
- Available material combinations: PP, PVDF, clear acrylic, PTFE and stainless steel
- Special dosing head designs for outgassing and high-viscosity media
- Optional 0/4 – 20 mA output for remote transmission of actual dosing rate and error messages
- Universal power supply unit 100 V - 230 V, 50/60 Hz
- Optional 230 V relay module, can be retrofitted easily and securely
- Optional 24 V combined relay, can be retrofitted easily and securely

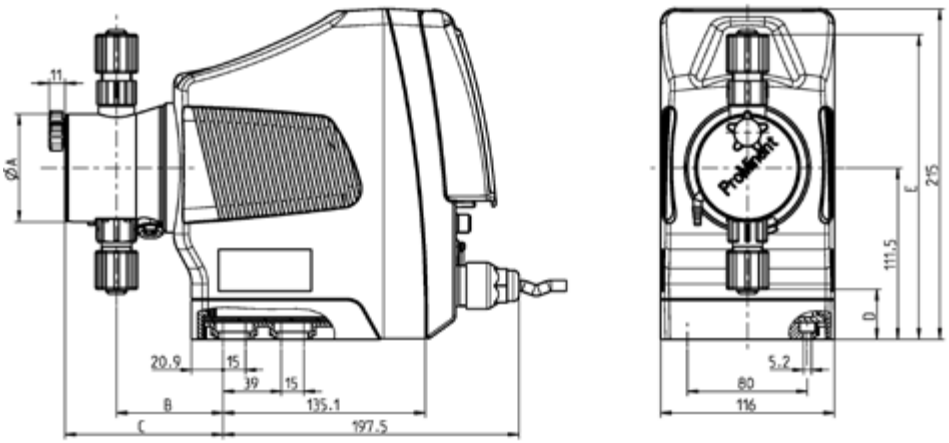
Field of Application

- 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.

Dimensional drawing of gamma/ X, material version PPT

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

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

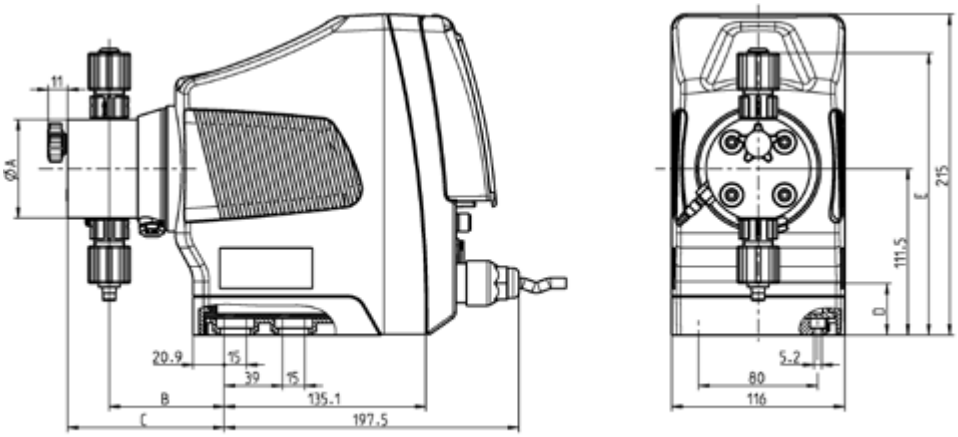


Dimensional drawing of gamma/ X, Material design PPT – dimensions in mm

Dimensional drawing of gamma/ X, material version NPT

Type	Ø A	B
1602 - 2504	70	77
0708, 1009	90	74
0414 - 0424	90	76

Type	C	D	E
1602 - 2504	105	33	191
0708, 1009	102	23	200
0414 - 0424	104	23	200

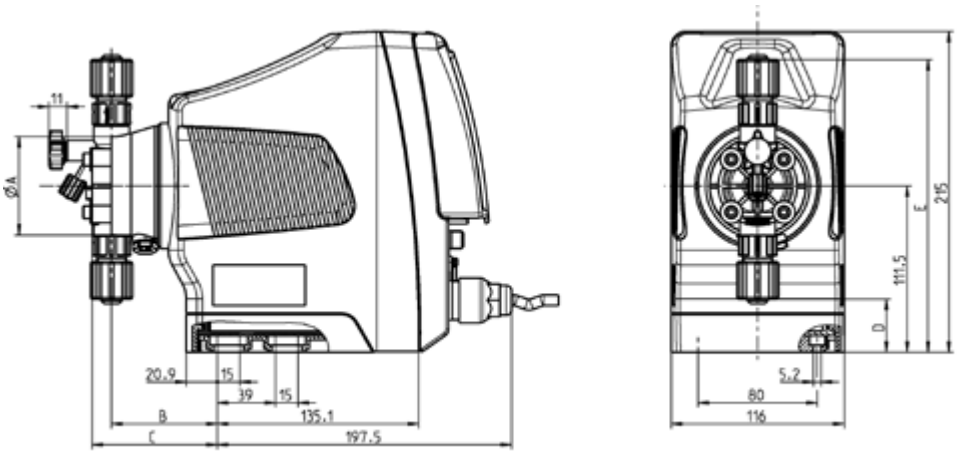


Dimensional drawing of gamma/ X, Material design NPT – dimensions in mm

Dimensional drawing of gamma/ X, material version PVT

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

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



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

1.1 Solenoid-Driven Metering Pumps

Technical Data

Pump type	Pump capacity at max. back pressure			Stroke rate	Connector size o Ø x i Ø	Suction lift*	Shipping weight	
	bar	l/h	ml/stroke	Strokes/min	mm	m WC	PP, NP, PV, TT kg	SS kg
Metering pumps with non-self-bleeding dosing head								
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 2504	25 **	3.8	0.32	200	8 x 4	4.0	4.9	5.5
GMXa 0708	7	7.6	0.63	200	8 x 5	4.0	3.7	5.0
GMXa 1009	10	9.0	0.75	200	8 x 5	3.0	5.1	6.5
GMXa 0414	4	13.5	1.13	200	8 x 5	3.0	3.7	5.0
GMXa 0715	7	14.5	1.21	200	8 x 5	3.0	5.1	6.5
GMXa 0220	2	19.7	1.64	200	12 x 9	2.0	3.7	5.0
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
Metering pumps with self-degassing dosing head (dosing head design 7)								
GMXa 1604	10	2.2	0.18	200	6 x 4	1.8	3.6	-
GMXa 0708	7	5.6	0.47	200	8 x 5	1.8	3.7	-
GMXa 1009	10	6.6	0.55	200	8 x 5	1.8	5.1	-
GMXa 0414	4	12.2	1.01	200	8 x 5	1.8	3.7	-
GMXa 0715	7	13.0	1.08	200	8 x 5	1.8	5.1	-
GMXa 0220	2	18.0	1.50	200	12 x 9	1.8	3.7	-
GMXa 0424	4	22.0	1.83	200	12 x 9	1.8	5.1	-
GMXa 0245	2	40.0	3.33	200	12 x 9	1.8	5.2	-

* Suction lift with a filled dosing head and filled suction line, with a self-bleeding dosing head with air in the suction line.

** 25 bar variant only available with dosing head material NP or SS

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

! The vPTFE diaphragm is limited to a maximum operating pressure of 10 bar. The pump capacities of the metering pumps with vPTFE diaphragm may be 10-20 % lower than those with a standard diaphragm.

All data calculated with water at 20 °C.

Materials in Contact with the Medium

Identity code of material	Dosing head	Connection on suction/ discharge side	Ball seat	Seals	Balls
PVT	PVDF	PVDF	PVDF	PTFE	Ceramic
PPT	Polypropylene	PVDF	PVDF	PTFE	Ceramic
PPE	Polypropylene	Polypropylene	EPDM	EPDM	Ceramic
PPB	Polypropylene	Polypropylene	FKM A	FKM A	Ceramic
NPT	Clear acrylic	PVDF	PVDF	PTFE	Ceramic
NPE	Clear acrylic	PVC	EPDM	EPDM	Ceramic
NPB	Clear acrylic	PVC	FKM A	FKM A	Ceramic
SST	Stainless steel 1.4404	Stainless steel 1.4404	Ceramic	PTFE	Ceramic
TTT	Carbon-filled PTFE	Carbon-filled PTFE	Ceramic	PTFE	Ceramic

Metering reproducibility: ±1% when used according to the instructions in the operating instructions

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

Mean power consumption: 25/30 W

Degree of protection: IP 66, NEMA 4X, insulation class F

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

1.1 Solenoid-Driven Metering Pumps

Identity code ordering system for gamma/ X product range

GMXa	Type	Capacity	
	1602	16 bar	2.3 l/h
	1604	16 bar	3.6 l/h
	0708	7 bar	7.6 l/h
	0414	4 bar	13.5 l/h
	0220	2 bar	19.7 l/h
	2504	25 bar	3.8 l/h
	1009	10 bar	9.0 l/h
	0715	7 bar	14.5 l/h
	0424	4 bar	24.0 l/h
	0245	2 bar	45.0 l/h

Liquid end/valve material	
PP	Polypropylene/polypropylene
NP	Acrylic/PVC
PV	PVDF/PVDF
TT	PTFE
SS	Stainless steel 1.4404/1.4404

Material of seals/diaphragm	
T	PTFE/EPDM, PTFE coated
F	FDA-compliant design, only for PV and SS
M	With vPTFE diaphragm + PTFE valve seats. Design for PV heads only
E	EPDM, diaphragm PTFE coated. EPDM ball seats, only for PP and NP heads
B	FKM, diaphragm PTFE coated. FKM ball seats, only for PP and NP heads

Liquid end version	
0	Non-bleed, without valve spring, only with NP, TT and SS and type 0245
1	Non-bleed, with valve spring, only with NP, TT and SS and type 0245
2	With bleed valve, without valve spring, only with PP, PV, NP not for type 0245
3	Bleed version, with valve spring, only with PP, PV, NP not for type 0245
4	Design for higher-viscosity media (10-20 % lower metering rate possible), only with PV, types 1604, 0708, 0414, 1009, 0715, 0424
7	Self-bleeding without bypass, only for NPT and PVT, not for type 1602. With type 0245 without vent screw.

Hydraulic connections	
0	Standard according to technical data

Diaphragm Rupture Indicator	
0	Without diaphragm rupture indicator
1	With diaphragm rupture indicator, Not for type 0245

Version	
0	Standard

Logo	
0	With ProMinent logo

Electrical Connection	
U	100-230 V, ±10%, 50/60 Hz

Cable and plug	
A	2 m European
B	2 m Swiss
D	2 m USA
E	2 m Great Britain
1	2 m, open-ended

Relay, pre-set to	
0	No relay
1	Fault indicating relay (230 V, 8 A)
4	Fault indicating relay (24 V, 100 mA) + pacing relay (24 V, 100 mA)
C	0/4 – 20 mA analogue output + fault indicating / pacing relay (24 V - 100 mA)
F	With automatic bleed valve 230 V AC, not for pump type 0245
G	With automatic bleed valve 24 V DC and relay output, not for pump type 0245

Accessories	
0	No accessories
1	With foot and metering valve, 2 m PVC suction line, 5 m PE metering line, Only for PP, PV, and NP, not for PVT4
5	1+ universal control cable

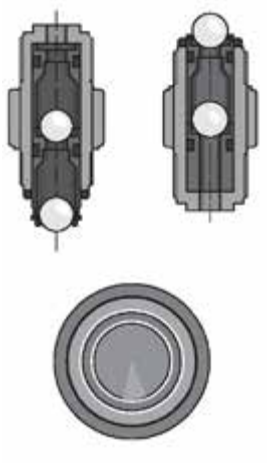
Control Variants	
0	Manual + external with pulse control
3	Manual + external with pulse control + analogue (0/4-20 mA)
C *	As 3 + CANopen
D *	As 3 + CAN open DULCOMARIN II
E *	As 3 + Profinet
R *	As 3 + PROFIBUS® DP interface M12
M *	As 3 + Modbus

Metering monitor	
0	Pulse signal input

Remote stop	
0	Without Bluetooth
B	With Bluetooth

Language

* A relay cannot be used with these options.



Spare Parts Kit for gamma/ X

Spare parts kits for gamma/ X, consisting of:

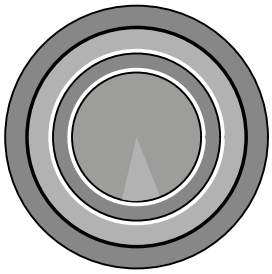
- 1 metering diaphragm
- 1 suction valve assembly
- 1 discharge valve assembly
- 1 connector kit

Stainless steel design without suction valve assembly and without discharge valve assembly, with valve seats, seals and valve balls

Type	Materials in Contact With the Medium	Order no.
Type 1602	PVT, PPT, NPT	1023109
	PVF	1083550
	PPB	1001654
	PPE	1001646
	NPB2	1001723
	NPE2	1001715
	SST	1001731
	SSF	1107472
	PVT7, NPT7	1047830
Type 1604 and type 2504	PVT, PPT, NPT	1035332
	PVF	1083548
	PVT4	1035342
	PPB	1039987
	PPE	1039989
	NPB2	1039986
	NPE2	1039988
	SST	1035331
	SSF	1107505
	PVT7, NPT7	1047858
Type 0708 and Type 1009	PVT, PPT, NPT	1023111
	PVF	1083564
	PVT4	1019067
	PPB	1001656
	PPE	1001648
	NPB2	1001725
	NPE2	1001717
	SST	1001733
	SSF	1107493
	PVT7, NPT7	1047832
Type 0414 and Type 0715	PVT, PPT, NPT	1023112
	PVF	1083551
	PVT4	1019069
	PPB	1001657
	PPE	1001649
	NPB2	1001726
	NPE2	1001718
	SST	1001734
	SSF	1107492
	PVT7, NPT7	1047833
Type 0220 and Type 0424	PVT, PPT, NPT	1051129
	PVF	1083566
	PVT4	1051134
	PPB	1051085
	PPE	1051096
	NPB2	1051107
	NPE2	1051118
	SST	1051139
	SSF	1107504
	PVT7, NPT7	1051111
Type 0245	PVT, PPT, NPT	1051130
	PVF	1083567
	PPB	1051086
	PPE	1051097
	NPB2	1051108
	NPE2	1051119
	SST	1074650
	SSF	1098649
	PVT7, NPT7	1114927

Spare Diaphragms for Solenoid-Driven Metering Pump gamma/ X

	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 for low-pressure metering pumps, see page →138
- Injection valves for low-pressure metering pumps, see page →140
- Hoses and pipework for low-pressure metering pumps, see page →198
- Suction lances and suction assemblies for solenoid-driven metering pumps see page →162
- Connectors, fittings, connector kits, seals, see page →202

Spare Parts

- Special valve balls/special valve springs, see page →219

1.1.4 Solenoid-Driven Metering Pump gamma/ XL

gamma/ XL – large output, great features

Feed rate of product range 4 ml/h – 80 l/h; 25 – 2 bar

The gamma/ XL is a smart, connectible solenoid-driven metering pump that is setting new standards in terms of productivity, reliability and cost-effectiveness.

The new solenoid-driven metering pump gamma/ XL extends the capacity range of the proven gamma/ X to 80 l/h. In addition to the familiar relays and bus interfaces, the gamma/ XL provides a socket with 3 more configurable inputs and outputs. This allows the gamma/ XL to network with all common systems, devices and platforms. Like the gamma/ X, the gamma/ XL has an intuitive operating concept. The pump is adjusted using a click wheel and 4 additional operating keys. Pressure detection without wetted parts ensures maximum operational safety. Hydraulic error statuses, like “Gas in the dosing head”, “Overpressure” and “No pressure” can be detected.

Pressure fluctuations in the system are detected and compensated for, achieving a high level of dosing precision and reducing chemical consumption to the required level.

The last 300 events are retrospectively saved in the integral logbook, which permits rapid analysis of the cause and troubleshooting if required.

Deviations from the metering volume or hydraulic fault statuses are immediately detected and corrected by the gamma/ XL. The pump’s operating menu includes ordering information for the wear parts required.

Designed as a smart product, it can also be connected to our web-based IIoT platform. The user can use this to monitor his metering process in real-time, avoid downtimes and generate reports fully automatically.

Your Benefits

DULCONNEX

- Simple adjustment of the metering rate directly in l/h
- Integrated pressure measurement and display for greater safety during commissioning and in the process
- Control range for metering rate 1:40,000
- Direct input of the required and desired concentration in concentration mode with volume-proportional metering tasks
- Virtually wear-free solenoid drive, overload-proof and economical
- Suitable for continuous micro-metering from approx. 4 ml/h, thanks to the regulated solenoid drive
- Detection of hydraulic malfunctions, such as gas in the dosing head, and no or too high a back pressure, ensures smooth processes
- External control via potential-free contacts with pulse step-up and step-down
- External control via 0/4-20 mA standard signal, scalable
- Integrated 1-week/1-month timer
- Guaranteed metering by means of automatic bleeding
- Connection to process control systems via fieldbus interfaces, such as PROFIBUS®, PROFINET, Modbus RTU and CANopen

Technical Details

- Illuminated 3” LCD and 3-LED display for operating, warning and error messages, visible from all sides
- In non-automatic mode, stroke rate setting 1 stroke/h – 12,000 strokes/h, stroke length electronically continuously variable 0 – 100%, recommended 30 – 100%
- Factor with external contact control 99:1 – 1:99
- In automatic mode, an even finer setting in ml
- Batch operation with max. 99.99 l or 99,999 strokes/start pulse
- Connector for 2-stage level switch
- 3 additional ports, switched as digital inputs or outputs
- Optional 0/4 – 20 mA output for remote transmission of actual dosing rate and error messages
- Optional relay module with 1 x switch-over contact, 230 V – 8 A
- Optional relay module with 2 x On, 24 V – 100 mA

1.1 Solenoid-Driven Metering Pumps

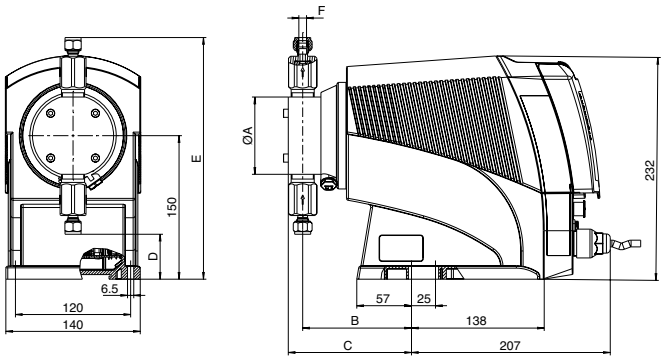
Field of Application

- Chemical distributors
- Systems engineering
- Food and beverage industry
- Potable water
- Wastewater
- Chemical industry
- Electroplating
- Bottling processes, e.g. ink cartridges or highlighter pens
- With an integrated process timer, suitable as a control unit for simple processes, e.g. biocide metering in cooling water
- All industrial applications, either as a stand-alone unit or integrated in a complete system

Dimensional drawing of gamma/ XL, material version SST

Type	Ø A	B
2508, 1608	90	108
1612	90	110
1020	90	110
0730	90	112
0450, 0280	100	115

Type	C	D	E
2508, 1608	128	63	240
1612	130	63	240
1020	130	63	240
0730	132	63	240
0450, 0280	135	29	281

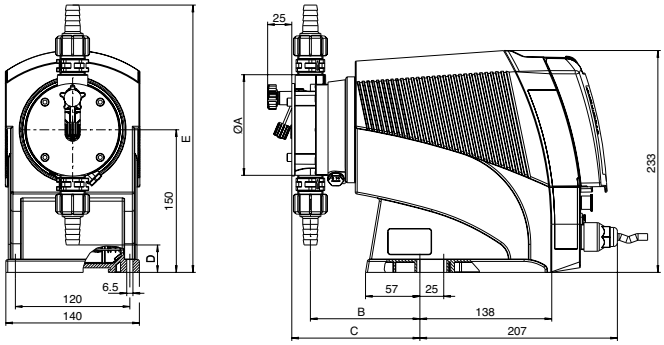


Dimensional drawing of gamma/ XL, material version SST – dimensions in mm

Dimensional drawing of gamma/ XL, material version PV DN 10

Type	Ø A	B
0450, 0280	100	115

Type	C	D	E
0450, 0280	135	29	281



Dimensional drawing of gamma/ XL, material version PV DN 10 – dimensions in mm

1.1 Solenoid-Driven Metering Pumps

Technical Data

Pump type	Pump capacity at max. back pressure		Theor. stroke volume	Max. stroke rate	Nominal diameter	Suction lift*	Shipping weight	
	bar	l/h	ml/stroke	Strokes/min		m WC	NPE, NPB, PVT kg	SS kg
Metering pumps with non-self-bleeding dosing head								
GXLa 2508	25 **	7.5	0.63	200	8 x 4 mm ***	5	10	11
GXLa 1608	16	7.8	0.65	200	8 x 5 mm ***	5	10	11
GXLa 1612	16	12	1	200	8 x 5 mm	6	10	11
GXLa 1020	10	19.6	1.63	200	12 x 9 mm	5	10	11
GXLa 0730	7	29.4	2.4	200	12 x 9 mm	5	10	11
GXLa 0450	4	49	4.08	200	G 3/4 - DN 10	3	10	11
GXLa 0280	2	78.5	6.54	200	G 3/4 - DN 10	2	10	11
Metering pumps with self-degassing dosing head (dosing head design 7)								
GXLa 1608	10	7	0.6	200	8 x 5 mm	1.8	10	-
GXLa 1612	10	10	0.8	200	8 x 5 mm	1.8	10	-
GXLa 1020	10	15	1.25	200	12 x 9 mm	1.8	10	-
GXLa 0730	7	27.5	2.3	200	12 x 9 mm	1.8	10	-

* Suction lift with a filled dosing head and filled suction line, with a self-bleeding dosing head with air in the suction line.

** 25 bar variant only available with dosing head material NP or SS

*** With stainless steel design, 6 mm connector width.

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

! The vPTFE diaphragm is limited to a maximum operating pressure of 10 bar. The pump capacities of the metering pumps with vPTFE diaphragm may be 10-20 % lower than those with a standard diaphragm.

All data calculated with water at 20 °C.

Materials in Contact with the Medium

Identity code of material	Dosing head	Connection on suction/discharge side	Ball seat	Seals	Balls
PVT	PVDF	PVDF	PVDF	PTFE	Ceramic
NPT	Clear acrylic	PVDF	PVDF	PTFE	Ceramic
NPE	Clear acrylic	PVC	EPDM	EPDM	Ceramic
NPB	Clear acrylic	PVC	FKM A	FKM A	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	Carbon-filled PTFE	PTFE	Ceramic

Connectors

Plastic	8 – 12 mm	Hose squeeze connector
	DN 10	d16 DN 10 hose sleeve
Stainless steel	6 – 12 mm	Swagelok system
	DN 10	Rp 3/8 insert

Metering diaphragm with PTFE coating.

Repeatability of metering ±1% when used in accordance with the operating instructions.

Permissible ambient temperature –10 °C to 45 °C.

Mean power consumption 78 W.

Degree of protection IP 66, insulation class F.

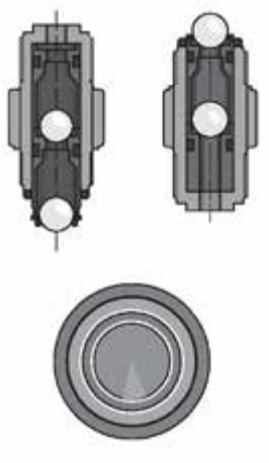
✓ **Scope of supply**
Metering pump with mains cable, connector kit for hose/tube connector as per table.

1.1 Solenoid-Driven Metering Pumps

Identity Code Ordering System for Product Range gamma/ XL

GXLa	Regional design																
	EU	Europe															
	US	USA															
		Type	Capacity														
		2508	25 bar	7.5 l/h													
		1608	16 bar	7.8 l/h													
		1612	16 bar	12 l/h													
		1020	10 bar	19.6 l/h													
		0730	7 bar	29.4 l/h													
		0450	4 bar	49 l/h													
		0280	2 bar	78.5 l/h													
			Liquid end/valve material														
			PV	PVDF/PVDF, not for pump type 2508													
			NP	Acrylic/PVC, Only for pump types 2508, 1608, 1612, 1020 and 0730													
			SS	Stainless steel/stainless steel													
				Material of seals/diaphragm													
				T	PTFE/EPDM, PTFE coated												
				F	FDA-compliant design, only for PV and SS												
				M	With vPTFE diaphragm + PTFE valve seats. Design for PV heads only												
				E	EPDM, diaphragm PTFE coated. EPDM ball seats, only for NP heads												
				B	FKM, diaphragm PTFE coated. FKM ball seats, only for NP heads												
					Liquid end version												
					0	Non-bleed, without valve spring, only with TT and SS materials											
					1	Non-bleed, with valve spring, only with TT and SS materials											
					2	With bleed valve, without valve spring, only with NP and PV materials											
					3	Bleed version, with valve spring, only with NP and PV materials											
					4	HV version for higher-viscosity media, only for PV types 1608, 1612, 1020 and 0730											
					7	Self-bleeding without bypass, only for types 1608, 1612, 1020 and 0730, only for material NP and PV											
						Hydraulic connections											
						0	Standard according to technical data										
						5	Connector on discharge side for 12/6 hose, standard on suction side, only with NP and PV materials										
						F	Connector on discharge side for 8/4 hose, standard on suction side, Only with NP material										
							Diaphragm Rupture Indicator										
							0	Without diaphragm rupture indicator									
							1	With diaphragm rupture indicator									
								Version									
								0	Housing RAL 5003, cover RAL 2003								
									Logo								
									0	With ProMinent logo							
										Electrical Connection							
										U	100 - 230 V ±10%, 50/60 Hz						
											Cable and plug						
											A	2 m European					
											B	2 m Swiss					
											C	2 m Australian					
											D	2 m USA / 115 V					
											1	2 m, open-ended					
												Relay, pre-set to					
												0	No relay				
												1	Fault indicating relay (230 V, 8 A)				
												4	Fault indicating relay (24 V, 100 mA) + pacing relay (24 V, 100 mA)				
												C	0/4 – 20 mA analogue output + fault indicating / pacing relay (24 V - 100 mA)				
												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				
													Accessories				
													0	No accessories			
													1	With foot and metering valve, 2m suction line and 5 m discharge line			
													5	1+ universal control cable			
														Control Variants			
														0	Manual + external contact with pulse control		
														3	Manual + external contact with pulse control + analogue 0/4-20 mA		
														C *	As 3 + CANopen		
														P *	As 3 + PROFINET® interface		
														R *	As 3 + PROFIBUS® interface, M12		
														M *	As 3 + Modbus RTU		
															Communication		
															0	Without interface	
															B	With Bluetooth	
																Operating menu language	

* A relay cannot be used with these options.



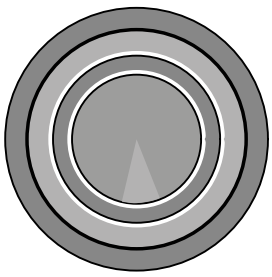
Spare Parts Kits for Solenoid-Driven Metering Pump gamma/ XL

Spare parts kits for gamma/ XL, consisting of:

- 1 metering diaphragm
- 1 suction valve assembly
- 1 discharge valve assembly
- 1 connector kit

Stainless steel design without suction valve assembly and without discharge valve assembly, with valve seats, seals and valve balls

Type	Materials in Contact With the Medium	Order no.
Type 2508	NPT2	1095912
	NPE	1033172
	NPB	1033171
	SSF0	1107362
Type 2508/1608	SST0	1030226
Type 1608	PVT2/NPT2	1030225
	PVF2	1083565
	NPE	1030620
	NPB	1030611
	PVT7	1047831
Type 1612	PVT2/NPT2	1027081
	PVT4	1019067
	PVF2	1083569
	SST0	1027086
	NPE	1030536
	NPB	1030525
	SSF0	1107471
	PVT7	1047832
Type 1020	PVT2/NPT2	1027082
	PVT4	1019069
	PVF2	1083570
	SST0	1027087
	NPE	1030537
	PVT7	1047833
	NPB	1030526
	SSF0	1107484
Type 0730	PVT2/NPT2	1095626
	PVF2	1096089
	PVT4	1095499
	SST0	1095501
	NPE	1095701
	NPB	1095700
	SSF0	1107473
	PVT7	1095503
Type 0450	PVT2	1095502
	PVF2	1096090
	SST0	1095625
	SSF0	1098651
Type 0280	PVT2	1095500
	PVF2	1096088
	SST0	1095624
	SSF0	1098648



Spare Diaphragms for Solenoid-Driven Metering Pump gamma/ XL

	Materials in Contact With the Medium	Order no.
Type 2508/1608	all materials	1030353
Type 1612	all materials	1000248
Type 1020	all materials	1000249
Type 0730	all materials	1045456
Type 0450	all materials	1045443
Type 0280	all materials	1059691

1.1 Solenoid-Driven Metering Pumps

Accessories

- Foot valves for low-pressure metering pumps, see page →138
- Injection valves for low-pressure metering pumps, see page →140
- Hoses and pipework for low-pressure metering pumps, see page →198
- Suction lances and suction assemblies for solenoid-driven metering pumps see page →162
- Connectors, fittings, connector kits, seals, see page →202

Spare Parts

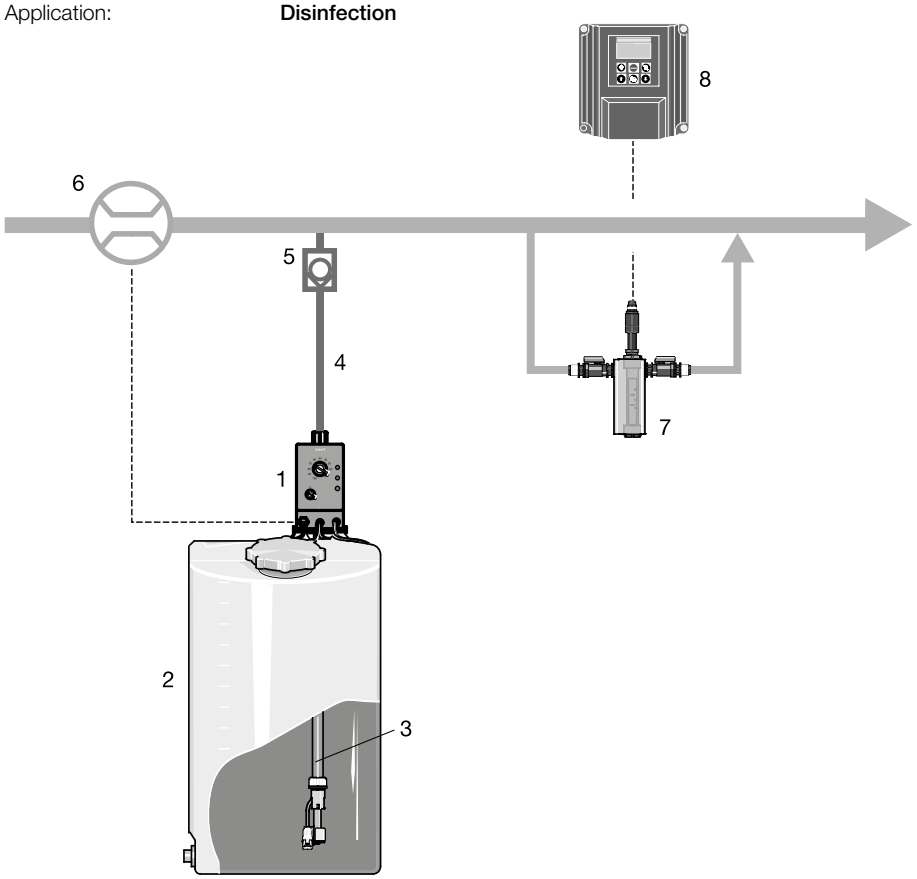
- Special valve balls/special valve springs, see page →219

1.1.5 Application Examples

Volume-proportional Metering of Chlorine Bleach Solution in Potable Water

Product: **beta**
Feed chemical: **NaOCl**
Industry: **Potable water**
Application: **Disinfection**

1 beta with self-bleeding dosing head, PMMA/PVC (clear acrylic)
2 Dosing tank
3 Suction assembly with foot valve and level switch
4 PVC metering line - soft with woven layer or PTFE
5 Injection valve
6 Contact water meter
7 Chlorine measuring probe
8 Control measurement



Problems and requirements

- Volume-proportional addition of sodium hypochlorite to the main water flow
- Monitoring of chlorine content after metering

Operating conditions

- Alternating flow
- Installation in closed buildings

Notes on use

- The feed chemical is outgassing. If the pump has been stationary for long periods, an air bubble may therefore form in the suction line, resulting in an interruption to metering.
- Metering should be fully automatic and trouble-free because operating staff are not always present at waterworks or fountains.

Solution

- Solenoid-driven metering pump beta with self-bleeding dosing head
- Contact water meter in the main line to control the pump
- DULCOMETER measuring and control technology for final check

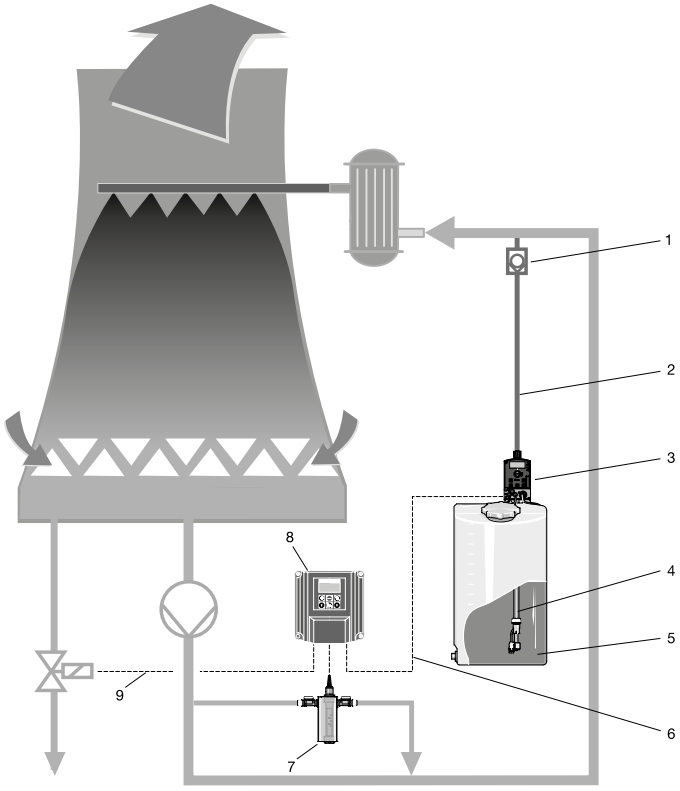
Benefits

- Excellent safety due to self-bleeding dosing head
- Maximum protection from over-metering or under-metering thanks to downstream final check

Shock Metering of Biocide in Cooling Water Circuit

Product: **gamma/ X**
Feed chemical: **Biocide**
Industry: **Cooling water treatment**
Application: **Disinfection**

1 Injection valve
2 Dosing line
3 gamma/ X with process timer
4 Suction assembly with foot valve and level switch
5 Dosing tank
6 Relay output for deactivation of conductance-controlled bleeding during biocide shock metering
7 Conductivity sensor
8 D1C conductivity
9 Control of solenoid valve for bleeding
10 Wastewater



Problems and requirements

- Increasing the biocide content, possibly in a weekly cycle, leads to the destruction of all biology in the cooling water.
- However, this can lead to local increased concentration, which can result in conductance-controlled bleeding. They disappear again following complete distribution in the cooling water.
- Therefore, conductance-controlled bleeding needs to be disabled during shock metering and for a reasonable time thereafter.

Operating conditions

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

Notes on use

- Shock metering is done at periodic intervals, e.g. weekly.
- In smaller cooling circuits, the metering pump with the integral process timer replaces the PLC.
- Conductance-controlled bleeding needs to be disabled via a potential-free contact regardless of the metering times set.
- In many cases, bleeding is performed before each shock metering. This bleeding needs to be controlled by a second relay contact in the pump.

Solution

- gamma/ X with process timer and the corresponding relay outputs
- The relays can be assigned to the process timer, if required, and perform the necessary switching functions.
- The pump itself meters at the required metering times.
- Dosing head made of PVDF for high levels of chemical resistance

Benefits

- Integration of the process timer into the pump results in a high degree of protection of IP65 for the control
- Saving of the cost of a PLC
- Saving of installation costs due to compact construction

1.1.6 DULCONNEX: IIoT Solution for Digital Fluid Management

Location-independent system monitoring in real-time

With DULCONNEX, you always have access to all the key data and measured values. Monitor the status of your system in real-time and benefit from continuous documentation. Check your device data safely and reliably when you're not on site. Simply use the terminal device of your choice: smartphone, tablet or PC.

Refer to our catalogue and website for more information and references.