

1.1 Solenoid-Driven Metering Pumps

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 eX 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.



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.

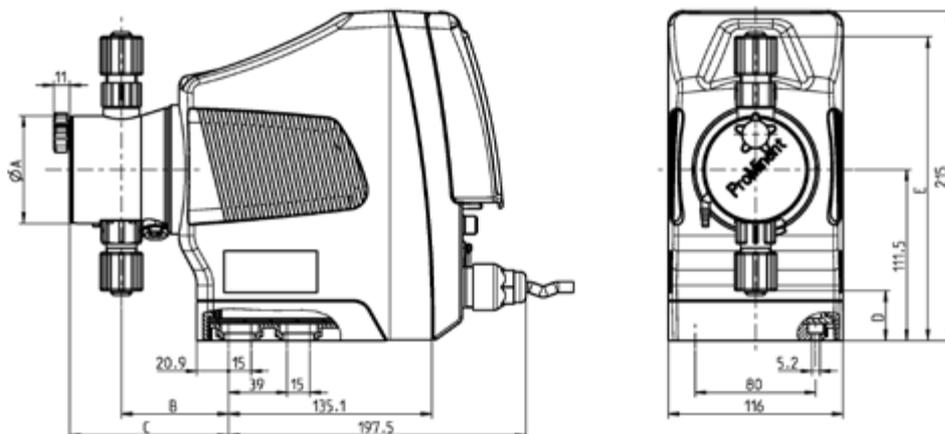


1.1 Solenoid-Driven Metering Pumps

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 | |

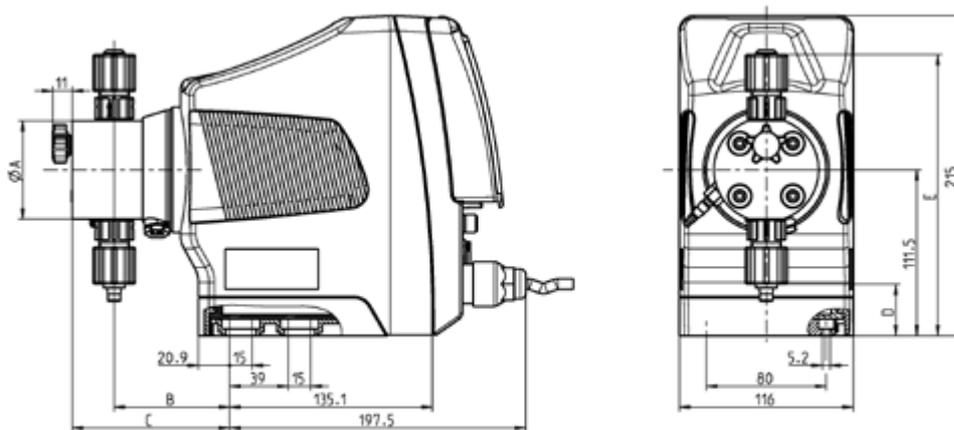


Dimensional drawing of gamma/ X, Material design PPT – dimensions in mm

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 |

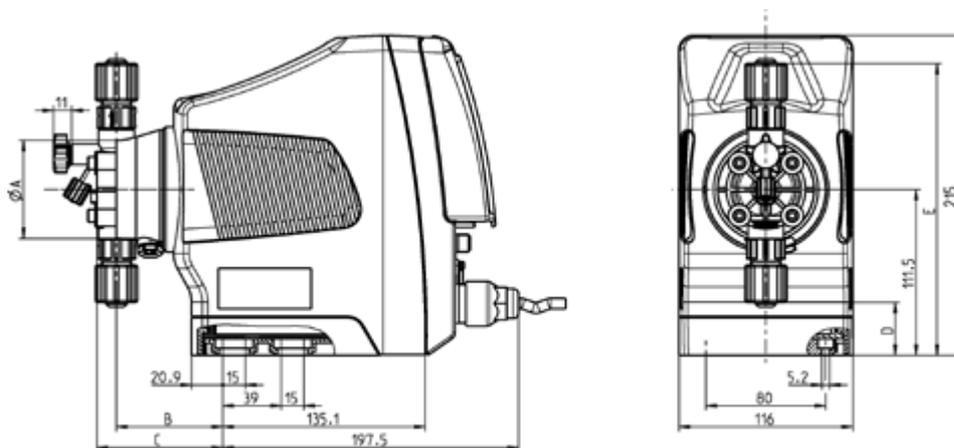


Dimensional drawing of gamma/ X, Material design NPT – dimensions in mm

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 Strokes/min | Connector size o Ø x i Ø mm | Suction lift* m WC | Shipping weight | |
|--|-------------------------------------|------|-----------|----------------------------|-----------------------------------|-----------------------|----------------------|----------|
| | bar | l/h | ml/stroke | | | | 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.

