

Motor Driven Metering Pump Sigma/ 1 (Control Type)

The intelligent pump for safe and reliable use in many applications.



Capacity range 17 – 117 l/h, 12 – 4 bar

The Sigma/ 1 Control diaphragm metering pump together with pumps of type Sigma/ 2 Control and Sigma/ 3 Control represent an integrated product range. They cover the capacity range from 17 to 1,040 l/h. The entire Sigma Control product range is equipped with intelligent features

to provide a high level of operating convenience, safety and efficiency. The pump features a removable operating unit and adjustable metering profiles to ensure optimum metering results.

Your benefits

Excellent process safety and reliability:

- In the event of an accident, the feed chemical does not escape to the outside nor into the pump's power end, thanks to the patented multi-layer safety diaphragm with optical (optionally electric) signalling
- Integrated overload shut-down in the pump control to protect the pump from overloading and thus significantly reduced pressure surges caused by blockages.

- Integrated relief valve protects the pump against overloading and bleed option during the suction process ensures reliable operation
- Metering reproducibility is better than $\pm 2\%$ with a 30-100% stroke length adjustment range under certain defined conditions and with proper installation.

Flexible adaptation to the process:

- Detachable operating unit with large illuminated LC display for outstanding user convenience
- Metering profiles for optimum metering results

Field of application

- Volume-proportional addition of chemicals in water treatment, e.g. sodium-calcium hypochlorite for the disinfection of potable water
- Neutralisation in waste water treatment
- Time-controlled addition of chemicals in the cooling water circuit
- Pulse-controlled metering in the bottling of different volumes e.g. glycerin filling of manometers

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Technical Data

Detachable Operating Unit (HMI)

The operating unit (HMI) can be attached directly to the metering pump or mounted on the wall alongside the pump. This provides the operator with a range of options for the integration of a metering system in the overall system that it is readily accessible and easy to use. Moreover the removable operating unit offers additional protection against unauthorised operation of the metering pump or against modification of the pump settings. The operating unit can, for example, be completely removed for project applications.

Individual functions of the metering pump can be easily selected and adjusted with five program keys. An illuminated LCD display provides information about the relevant operating status. LEDs on the operating unit and the control unit indicate the active pump functions or the pump status.

Metering Profiles

Metering profiles guarantee optimum metering results by adapting the metering behaviour of the metering pump to the application or chemical used.

The stroke motion of the displacement body is continually recorded and regulated so that the stroke is made in line with the desired metering profile. The pump can be operated in normal mode (Diagram 1), with optimised discharge stroke (Diagram 2) or with optimised suction stroke (Diagram 3). Three typical metering profiles are shown schematically with the behaviour over time.

In normal operating mode, the time behaviour for the suction stroke and the discharge stroke is similar (Diagram 1). In the mode with optimised discharge stroke (Diagram 2), the discharge stroke is lengthened while the suction stroke is made as quickly as possible. This set-up is suited to applications which require optimum mixing and as continuous a mixing of chemicals as possible, for example.

In the mode with the optimised suction stroke (diagram 3), the suction stroke is carried out as slowly as possible, permitting precise and trouble-free metering of viscous and gaseous media. Select this setting to minimise the NPSH value as well.

"Physiologically Safe (FDA) in Respect of Wetted Materials" Version

All wetted materials in the "Physiologically safe (FDA) in respect of wetted materials" design comply with the FDA guidelines.

FDA guidelines:

- Material PTFE: FDA No. 21 CFR § 177.1550
- Material PVDF: FDA No. 21 CFR § 177.2510

Available for material version PVT and SST.

Identity code example: S1CbH07042PVTS01 F UA10S0DE

Sigma / 1 Control Type Version "Liquid End on Left Side"

This version offers additional adaptability to special installation situations, e.g. in combination with storage tanks, brackets, etc.

Identity code example: S1CbH07042PVTS01 5 UA10S0DE

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| Type S1Cb | Delivery rate at max. back pressure | | | Max. stroke rate | Delivery rate at max. back pressure | | Suction lift | Perm. pre-pressure suction side | Connection, suction/ discharge side | Shipping weight |
|-----------|-------------------------------------|-----|-----------|------------------|-------------------------------------|----------|--------------|---------------------------------|-------------------------------------|-----------------|
| | bar | l/h | ml/stroke | Strokes/min | psi | gph (US) | m WC | bar | G-DN | kg |
| 12017 PVT | 10 | 21 | 3.8 | 90 | 145 | 5.5 | 7 | 1 | 3/4-10 | 9 |
| 12017 SST | 12 | 21 | 3.8 | 90 | 174 | 5.5 | 7 | 1 | 3/4-10 | 12 |
| 12035 PVT | 10 | 42 | 4.0 | 170 | 145 | 11.1 | 7 | 1 | 3/4-10 | 9 |
| 12035 SST | 12 | 42 | 4.0 | 170 | 174 | 11.1 | 7 | 1 | 3/4-10 | 12 |
| 10050 PVT | 10 | 49 | 4.0 | 200 | 145 | 12.9 | 7 | 1 | 3/4-10 | 9 |
| 10050 SST | 10 | 49 | 4.0 | 200 | 145 | 12.9 | 7 | 1 | 3/4-10 | 12 |
| 10022 PVT | 10 | 27 | 5.0 | 90 | 145 | 7.1 | 6 | 1 | 3/4-10 | 9 |
| 10022 SST | 10 | 27 | 5.0 | 90 | 145 | 7.1 | 6 | 1 | 3/4-10 | 12 |
| 10044 PVT | 10 | 53 | 5.1 | 170 | 145 | 14.0 | 6 | 1 | 3/4-10 | 9 |
| 10044 SST | 10 | 53 | 5.1 | 170 | 145 | 14.0 | 6 | 1 | 3/4-10 | 12 |
| 07065 PVT | 7 | 63 | 5.2 | 200 | 102 | 16.6 | 6 | 1 | 3/4-10 | 9 |
| 07065 SST | 7 | 63 | 5.2 | 200 | 102 | 16.6 | 6 | 1 | 3/4-10 | 12 |
| 07042 PVT | 7 | 52 | 9.5 | 90 | 102 | 13.7 | 3 | 1 | 1-15 | 10 |
| 07042 SST | 7 | 52 | 9.5 | 90 | 102 | 13.7 | 3 | 1 | 1-15 | 14 |
| 04084 PVT | 4 | 101 | 9.7 | 170 | 58 | 26.7 | 3 | 1 | 1-15 | 10 |
| 04084 SST | 4 | 101 | 9.7 | 170 | 58 | 26.7 | 3 | 1 | 1-15 | 14 |
| 04120 PVT | 4 | 117 | 9.7 | 200 | 58 | 30.9 | 3 | 1 | 1-15 | 10 |
| 04120 SST | 4 | 117 | 9.7 | 200 | 58 | 30.9 | 3 | 1 | 1-15 | 14 |

Materials in Contact With the Medium

| Material | Dosing head | Suction/pressure connector | Seals/ball seat | Balls | Integral relief valve |
|----------|------------------------|----------------------------|-----------------|------------------------|-----------------------------|
| PVT | PVDF | PVDF | PTFE/PTFE | Ceramic | PVDF/FKM or EPDM |
| SST | Stainless steel 1.4404 | Stainless steel 1.4581 | PTFE/PTFE | Stainless steel 1.4404 | Stainless steel/FKM or EPDM |

With "F" design – "physiologically safe - FDA" the ball seat is made of PVDF

Motor Data

| Identity code specification | Power supply | Remarks |
|-----------------------------|--|---------|
| U | 1-phase, IP 65 100 – 230 V ±10 % / 240 V ±6 % 50/60 Hz 110 W | |

Motors less than 0.75 kW and motors designed for speed-controllable operation are not subject to the IE3 standard in compliance with the Ecodesign Directive 2009/125/EC.