

Signal S400 SERIES

www.signal-pumps.co.uk



S400 DME series mechanical diaphragm pumps

Operating capacities
from 0.0025 to 940 litres/hour
from 4 to 18 bar

- A range of high-precision diaphragm pumps with stepper motor technology.
- Variable pump speeds give anti-cavitation facility for dosing high viscosity chemicals.
- Fitted with an IP65-rated housing, long-lasting textile-reinforced PTFE-coated EPDM diaphragm and a choice of chemical-compatible head materials.
- Front or side-mounted control panel options - to meet required configuration.
- Turn-down facility of up to 1,000:1 sustains dosing accuracy, even at very low delivery rates.
- Range of electronic pump control options, including analogue and digital input, which can be Profibus-linked.



Signal
METERING PUMPS

A division of GEE & Co

S400 SPECIFICATION AND PERFORMANCE

S400 DME series mechanical diaphragm pumps

Operating capacities from 0.0025 to 940 litres/hour from 4 to 18 bar

Dosing applications for the Signal S400 DME series pumps include:

- Disinfectant applications
- High accuracy potable water treatment
- Detergent and cleaning agents
- pH adjustment
- Chromating chemicals
- Power generation, including oxygen scavenging
- Neutralisation applications.
- Surface finishing

The Signal S400 DME series uses stepper-motor technology in an innovative way. Its variable-speed motor remains in contact with the diaphragm throughout the discharge/section cycle, controlling its speed at all times. Compared with traditional dosing pumps, this gives a much greater level of control.

'What you set is what you get'.

Digital dosing eliminates the need for complicated calculations. Simply calibrate the required additive values on the user-friendly key panel – and the self-calibration will do the rest.

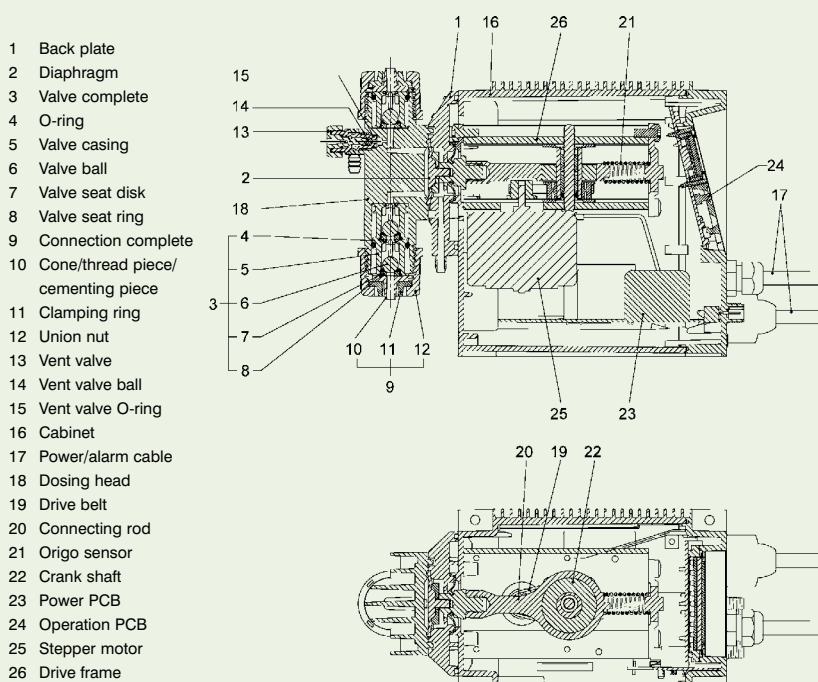
Full stroke length is used every time, eliminating any disruptive factors – such as gas build-up – and to ensure consistent chemical delivery on every stroke.

With a turn-down ratio range of up to 1,000:1, the Signal DME retains this high level of accuracy, even when dosing very small volumes.

The Signal DME offers a range of pump control options. These include manual operation, full pulse control, timer-based batch control, analogue 4-20mA control, pulse-based batch control and switch-mode power supply. All models can be equipped

with a Fieldbus communications module that will share information with you on such matters as performance data, quality control and preventative maintenance. Operations can be PC-monitored and controlled.

SECTIONAL DRAWING



CONSTRUCTION MATERIALS

| Pump head | Standard | Variations | |
|-------------|--------------------------------------|-----------------|-----------------|
| | Polypropylene | PVDF | Stainless steel |
| Diaphragm | PTFE-coated EPDM, textile-reinforced | | |
| Valve balls | Ceramic | Stainless steel | Glass |
| Valve seat | EPDM | Viton | |
| Seals | EPDM | Viton | |

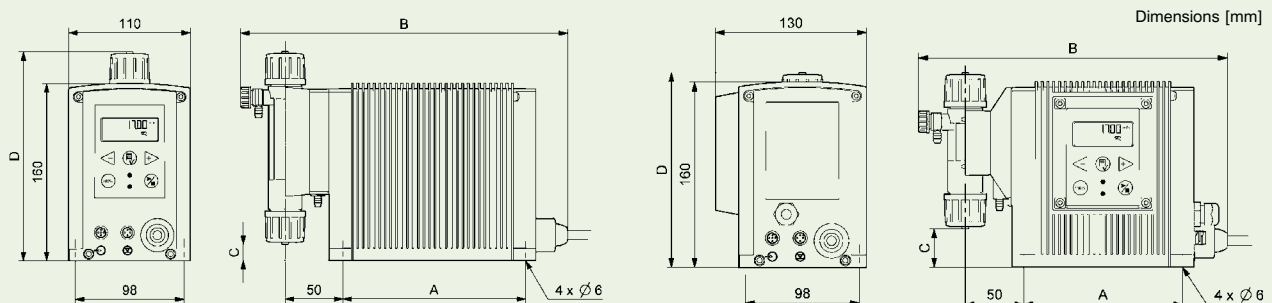
TECHNICAL DATA

S400 SERIES

| Pump | | DME 2 | DME 8 | DME 12 | DME 19 | DME 48 | DME 60 | DME 150 | DME 375 | DME 940 | |
|--------------------------|--|------------------------|-------|--------|--------|--------|--------------|---------|---------|---------|----|
| Operating data | Max capacity without anti-cavitation • ¹ [l/h] | 2.5 | 7.5 | 12 | 18.5 | 48 | 60 | 150 | 375 | 940 | |
| | Max pressure [bar] | 18 | 10 | 6 | 6.2 | 2.6 | 10 | 4 | 10 | 4 | |
| | Max stroke frequency • ² [stroke/min] | 180 | 180 | 180 | 151 | 151 | 160 | 160 | 160 | 160 | |
| | Max suction lift during operation [m] | 6 | | | | | | | | | |
| | Max suction lift when priming with wet valves [m] | 1.8 | 3 | 3 | 3 | 3 | 1.5 | 1.5 | 1.5 | 1.5 | |
| | Max viscosity with spring-loaded valves • ³ [mPas] (=cP) | 500 | 500 | 500 | 500 | 100 | 3000@50% cap | | | | |
| | Max viscosity without spring-loaded valves • ³ [mPas] (=cP) | 200 | 200 | 200 | 200 | 100 | 200 | 200 | 200 | 200 | |
| | Liquid temperature [°C] | 0-50 | | | | | | | | | |
| | Ambient temperature [°C] | 0-45 | | | | | | | | | |
| | Accuracy of repeatability | ±1% | | | | | | | | | |
| Weight & size | Weight [kg] | 2.3 | 2.3 | 2.3 | 3.4 | 3.4 | 11.4 | 11.8 | 21 | 22.5 | |
| | Diaphragm diameter [mm] | 28 | 38 | 43.5 | 55 | 77 | 79 | 106 | 124 | 173 | |
| Electrical data | Supply voltage [V] | 1 x 100-240V, 50-60 Hz | | | | | | | | | |
| | Max current consumption [A] | at 100 V | | 0.27 | | 1.25 | | 2.4 | | 2.4 | |
| | | at 230 V | | 0.16 | | 0.67 | | 1.0 | | 1.0 | |
| | Max power consumption P ¹ [W] | | | 16.2 | | 67.1 | | 240 | | 240 | |
| | Enclosure class | IP 65 | | | | | | | | | |
| Signal input | Insulation class | | | F | | B | | B | | B | |
| | Voltage to level sensor input [VDC] | 5 | | | | | | | | | |
| | Voltage to pulse input [VDC] | 5 | | | | | | | | | |
| | Min pulse-repetition period (from pos edge to pos edge) [ms] | 3.3 | | | | | | | | | |
| | Impedance in analog 4-20 mA input [Ω] | 250 | | | | | | | | | |
| | Max loop resist. in pulse signal circuit [Ω] | 350 | | | | | | | | | |
| Signal output | Max loop resist. in level signal circuit [Ω] | 350 | | | | | | | | | |
| | Max load of alarm output, at ohmic load [A] | 2 | | | | | | | | | |
| Approvals | Max voltage for alarm output [V] | 42 | | | | | | | | | |
| | | CE, VDE, cUL, JET | | | | | | | CE | | CE |

•¹ At any counter-pressure if the pump is calibrated to the actual installation. •² The maximum stroke frequency varies according to calibration. •³ Maximum suction lift: 1 metre.

EXTERNAL DIMENSIONS



DME (0-48 l/h) with front-fitted control panel

DME (0-48 l/h) with side-fitted control panel

| Pump type | DME 2 | DME 8 | DME 12 | DME 19 | DME 48 | DME 60 | DME 150 | DME 375 | DME 940 |
|-----------|-------|-------|--------|--------|--------|--------|---------|---------|---------|
| A [mm] | 137 | 137 | 137 | 192 | 192 | 198 | 198 | 246 | 246 |
| B [mm] | 239 | 239 | 239 | 294 | 294 | 444 | 444 | 543 | 543 |
| C [mm] | 36 | 36 | 36 | 15 | 15 | 41 | 28 | 95 | 75 |
| D [mm] | 168 | 168 | 168 | 188 | 188 | 331 | 345 | 410 | 430 |

TECHNICAL SUPPORT

The Signal team of fully qualified sales engineers are on hand to assist you in any aspect of metering pump technology. Whether you need advice on general application needs, metering, pump performance, health and safety, product selection, accessory choice, ongoing operation or maintenance issues, please call a member of our

**Technical Team on
0121 326 1700**

We are here to support you before your purchase – and right through the long service life of your Signal pumps.



Signal Metering Pumps

Gee House

Holborn Hill

Birmingham B7 5JR

Tel: 0121 326 1700

Fax: 0121 326 1779

Email: info@signal-pumps.co.uk

Web: www.signal-pumps.co.uk

S400 Series Accessory Range

Optional equipment for enhancing the control and performance of the S400 series.

Installation kit

Comprising non-return valves and discharge, suction and vent tubing.

Cable and plug

For pump connection to external control devices, such as process controllers, flow meters and level sensors.

Foot valve

Complete with non-return valve, strainer and hose or pipe connection.

Injection valve

Complete with non-return valve, injection pipe and tubing or pipe connection.

Multifunction valve

Directly pump-mounted, this valve retains the counter pressure at a constant 3 bar, prevents undesired siphoning, protects the pump against excessive pressures and has a manual pressure relief control for priming or de-gassing.

Dosing monitor

As the DME often operates without pulsations on the discharge side, the monitor is installed on the suction side. It sends a pulse signal for every stroke of the pump.

Flow indicator

In indicator used for discharge monitoring.

Adaptor connections

To provide compatibility with non-standard suction and discharge tubing.

Pump connection

Separate retro-fit pump connections for adapting standard Signal DME pumps to installation-specific tubing and pipe sizes.

Rigid suction line

Pre-assembled, with adjustable length for tank mounting.

Level control unit

For dosing pumps with level control input, complete with levels sensors, ceramic weight and connectors.

Counter-pressure and relief valve

Adjustable, it serves to optimise dosing accuracy into systems with fluctuating pressure or as an anti-siphoning valve when dosing into pressureless systems.

Valve assemble

Complete assemble of either counter-pressure and relief valve or relief and shut-off valve.

Automatic vent valve

Available with or without a timer.

Pulsation dampener

For installation in both suction and discharge lines, for ensuring a steady flow by reducing pressure surges.

Priming aid

Facilitates priming, serves as a gas trap and provides pulsation dampening.

Tanks

Range of six cylindrical PE tanks with capacity up to 1,000 litres.

Hand mixer or electric agitator

To ensure homogenous mixing of chemical solutions in the tank.

Water meter

With potential-free pulse signal for use in flow-proportional dosing applications and suitable for cold and hot water use.