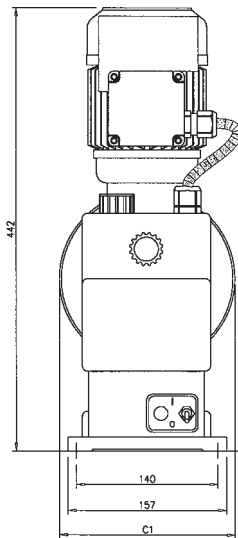
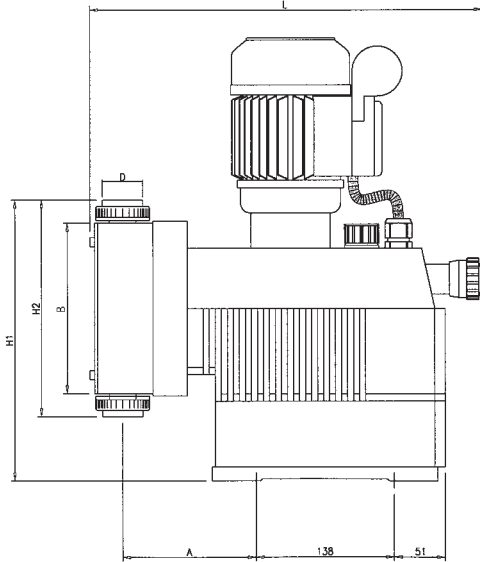


EXTERNAL DIMENSIONS



Drawing dimensions may vary depending upon model/pump head. mm (unless stated)

S200 EMP4 Series Accessory Range

Optional equipment for enhancing the control and performance of the S200 EMP4 pump series.

Foot valve and strainer

Assists in maintaining the prime of the pump under suction lift conditions and prevents large solids from entering the pump.

Suction lance

Combining a foot valve and strainer, the suction lance is inserted into the suction vessel, where it ensures maximum draw-down. It allows low level switching to stop the pump and can provide low-level cut-out. A further option of low-level warning may be incorporated.

Injection fitting

This maintains back pressure on the pump, even when the pump is dis-connected. It generally assists with the control of flow and also injects material into the centre of the flow. Additionally, it serves as an anti-syphon device and non-return valve.

Pressure loading valve

On systems operating below 1 bar, the pressure loading valve maintains back pressure on the pump and ensures that accurate flow control is sustained. It also serves as an anti-syphon device.

Pressure relief valve

A safety device that protects the pump and system from damage if over-pressure occurs.

Multifunction valve

Combines the function of pressure loading and pressure relief valve into a single unit that saves in installation cost and provides anti-syphon protection and drain facility.

Flow switch

Provides a positive indication that the pump is operating and the fluid is flowing.

Electronic controller

A complete control system that provides a loop back to the pump to maintain the required chemical dose. It can make the system more efficient and more economical.

Pulsation damper

Fitted to the suction or discharge side of the pump, it reduces pressure surges on arduous applications such as long dosing lines.

Tubing

Available in a wide range of diameters and materials, including PVDF, PFA, PE, nylon-reinforced PVC and others on request.

VSD motor

A three-phase motor suitable for operation from a variable frequency inverter supply.

Tank and pump sets

A stand-alone and single-sourced chemical delivery system that can be bundled if required and can incorporate stirrers. Pre-engineered and tested, they are delivered to site ready to install and are available in a range of tank capacities up to 4,500 litres - although larger sets can also be engineered.



S200 EMP4 Series Mechanical Diaphragm Metering Pump

Operating capacities from
140 to 750 litres/hour at 10 to 3 bar

- Fitted with a PP head as standard, with PVDF and stainless steel options - to give extreme chemical resistance.
- Double diaphragm as standard prevents ingress of product in the unlikely event of diaphragm rupture. Additional diaphragm rupture detection available.
- Motor voltage options of 115, 230 V AC or 400-3-50Hz.
- DC braking on electronic speed control versions to optimise stroke accuracy.
- Electronic control options using state-of-the-art microprocessor technology, pulse analogue and digital inputs.

FURTHER 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 1745**

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

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S200 Specification and Performance

S200 EMP4 Mechanical Diaphragm Metering Pump

Operating capacities from 140 to 750 litres/hour at 10 to 3 bar

Applications of the Signal 200 EMP4 pump include accurate metering for:

- General process and industry.
- A wide range of chemicals.
- Polyelectrolytes.
- Viscous fluids such as slurries.
- Potable, industrial and waste water treatment.
- Boiler feed water and cooling tower applications.

Metering system – how it works

- The EMP4 pump operates on established mechanical diaphragm principles and uses a double diaphragm as inherent protection against diaphragm rupture.
- A ball-race supported centre drive mechanism operates within an oil-filled housing.
- The precise manual or automatic stroke length adjustment system graduated in 2% steps and operates from 0 – 100% (adjustment made with the pump running). It provides a visual indication of stroke length.
- This facility is further enhanced by a range of electronic options and models.
- Construction of the pump is such that there is complete segregation between electronics and mechanics.

Construction materials

The S200 EMP4 pump housing is constructed in state-of-the-art moulded thermoplastic, aesthetic in appearance and robust in construction. The use of thermoplastic polyester material ensures superb chemical resistance. The finished is blue, RAL 5007. The choice of pump head materials are as follows:

	Standard	Variation	
Pump Head	PP	PVDF	Stainless Steel
Diaphragm	PTFE faced EPDM		
Seals	Viton B	EPDM	Kalrez
Valve Body	PP	Stainless Steel	
Valve Balls	Ceramic	PTFE	Stainless Steel
Seats	Viton B	EPDM	

Metering control

- Manual stroke length control is fitted as standard, from 0 – 100%.
- Automatic stroke length control is electric, from 4 – 20mA input.
- For pump speed control, integrated electronic speed control is available for:
 - manual control.
 - external pulse control.
 - analogue control (0-20 or 4-20mA).
- Inverter speed control, using an uprated motor, is available on the E00 version, 400-3-50Hz.
- Internal pump diagnostics ensure that external control interfacing and monitoring is very simply achieved.

TECHNICAL DATA					
Pump Capacity ltr/hr	140	210	450	630	750
Max. back pressure (bar)	10	8	6	4	3
Number of strokes number (spm)	120	120	120	120	144
Metering amount/stroke max. ml	19.4	29.2	62.5	87.5	89.2
Metering accuracy	<±3%				
Suction lift (mwg) with 100% stroke setting Stroke adjustment*	2	2	2	2	2
Suction/pressure connection thread	1"	1"	2"	2"	2"
Standard power supply	230v/50Hz/60Hz				
Protection Class	On request				
Power consumption	2.5A	2.5A	2.5A	2.5A	2.5A
Capacity kW	0.3	0.3	0.3	0.3	0.3
Special voltage	IP55				
Max. ambient temperature	40°C				
Insulation class	F				
Weight	Approx. 20kg				

* Suction height with clean, damp valves

All data refers to water at 20°C according to the instructions in the technical handbook, with rights reserved.

Electronics

- A range of user-friendly electronic options is offered, all of proven microprocessor-based system design. For protection, they are remote from mechanical drive mechanisms and they are further protected within IP55 enclosures.
- User-friendly controls in the form of dials and keypads are located behind a transparent tamper-proof cover to provide simple and accurate adjustment of pump running mode.
- EMP4 electronic connections are clearly labelled and are made via an internal connecting rail arrangement.
- When used with the Signal dual function low-level sensor, a feature is the display of low and extra low level indications – in conjunction with low and critical low level alarms.
- **No electronic options for 3-phase.**

Motors

- Single phase as standard, 3 phase options available.
- Standard motors are alloy frame, TEFC, IP55 protected, with Class F insulation, suitable for European electricity supply. Can be uprated.
- **Electronic pumps are single phase.** They incorporate integrated thermal protection and DC motor braking for enhanced accuracy.

Application and Selection

- At low pressure ratings, discharge pulsation dampers should be considered.
- Seals in Viton are suitable for most fluids. If not, select EPDM.

Capacity l/h	Measurement in mm						
	A	B	C1	L	H1	H2	D
140	133,5	170	174	392	280	216	1_"
210	133,5	170	174	392	280	216	1_"
450	142,5	190	194	412	303.5	263	2"
630	142,5	220	225	412	318.5	293	2"
750	142,5	220	225	412	318.5	293	2"

See reverse for pump General Arrangement.

ELECTRONIC OPTIONS

E00	terminal box on motor (no electronics).
E10	with on-off selector switch and manual stroke length adjustment.
E60	<ul style="list-style-type: none"> • Illuminated graphic display • 4 operating keys • single stroke control via motor brake (complete stroke execution) • pulse memory • manual stroke length adjustment • manual stroke frequency adjustment (scale: stroke/min, percentage or litre/h) • low-level alarm and empty-level cut-out in conjunction with level monitoring device (supplied separately) • pulse input mode with pulse multiplication and division • analogue signal input mode (0/4-20 or 20-0/4 mA) • batch metering input mode • remote metering lock • remote monitoring of empty-level, stroke (pulse) and fault signals
E60 ^{plus}	As E60 plus plug-in box for data capture from an external flow monitoring device (supplied separately) <ul style="list-style-type: none"> • automatic calibration function • automatically re-adjusts, displays and outputs REAL flowrate

