

# DATASHEET FLOW METERS FOR PRECISE DOSING PHARMACEUTICALS A116

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## APPLICATION NOTE

### Flow Meters for precise dosing of pharmaceutical agents

Coriolis mass flow meters combined with WADose high pressure pumps are used for precise dosing of pharmaceutical agents. Combining this flow meter with a high-pressure pump allows you to dose very small amounts of pharmaceutical agent in a liquid state very reproducibly.

#### Precise dosing of pharmaceutical agents

In this application the objective is to investigate the effect of newly developed medicines. To this end, liquid pharmaceutical agents are supplied into a blood vessel of lab test species. In order to determine exact conversion rates of the medicines and therefore their influence on the test species, reproducible and precise dosing is required. Lack of dosing precision is a typical obstacle for the repeatability of such experiments.



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#### Application requirements

In this application precise dosing is essential. The dosing flow meter/pump combination should exhibit a very low pulsation at ultra-low flow rates in order not to harm the fragile cell tissue of the test species. The dosing pump needs to be easy to clean and to disinfect to avoid contamination. Stable temperature conditions are necessary, as temperature changes will influence the transition rates of the chemical compounds and their biochemical conversion by enzymes.

#### Important topics

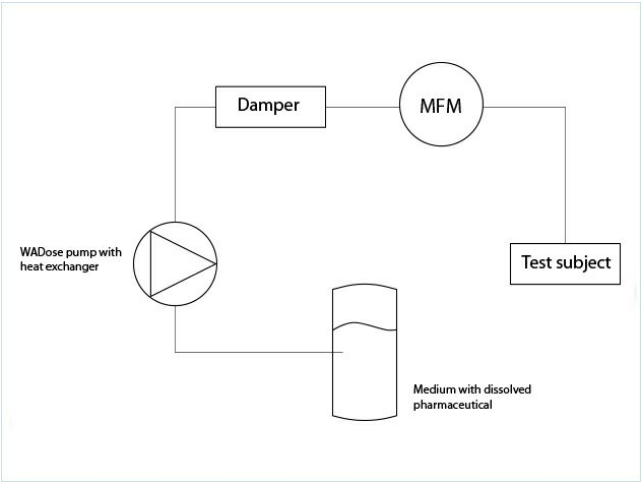
- Precise dosing
  - Enhanced reliability and reproducibility
  - Dose very small rates of liquid
  - Very low pulsation while pumping, to not harm species' tissue
  - Stable temperature
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Process solution

To dose these ultra-low flows of pharmaceutical agent (in a liquid state) very precisely, a Coriolis mass flow meter and a WADose HP Lite pump are used. The flow meter controls the pump, meaning the pump builds up the pressure and delivers the requested flow.

Due to variable fluid properties and small leaks that are present in the pump head, it is difficult for the pump as a stand-alone device to deliver the desired ultra-low flow. In the combined setup, the mass flow meter measures the flow in real-time, and controls the pump by adjusting the flow.

"Simply 'plug & play' the flow meter/pump combination to get started."



Flow scheme

In order not to harm the species' tissue, the pulsation of the pump is significantly reduced by using a special pulsation damper. A heat exchanger attached around the pump head is used to maintain a stable temperature of the pharmaceutical agents.

Pharmaceutical agents often have a high salt concentration which the flow meter/pump combination must deal with. 'Easy to clean' devices are therefore a must. The WADose high pressure pump is easy to clean to avoid contamination. It even has an option for seal wash. It increases the pumps' lifetime and minimises possible downtime.

A traditional way to supply these medicines has been by using a simple syringe or syringe pump. However, a syringe pump lacks exact control over the actual dose of agent. By combing a high-pressure pump with a Coriolis flow meter, you can have this exact control, and therefore, have influence on the actual dose of agent and have a precise dosing solution.

Recommended Products



MINI CORI-FLOW™  
ML120V21

- Flow range 0...200 g/h
- Pressure rating 5 bar
- Independent of fluid properties
- High accuracy, control



MINI CORI-FLOW™  
ML120V00

- Flow range 0...200 g/h
- Pressure rating 200 bar
- Independent of fluid properties
- High accuracy, fast measurement



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