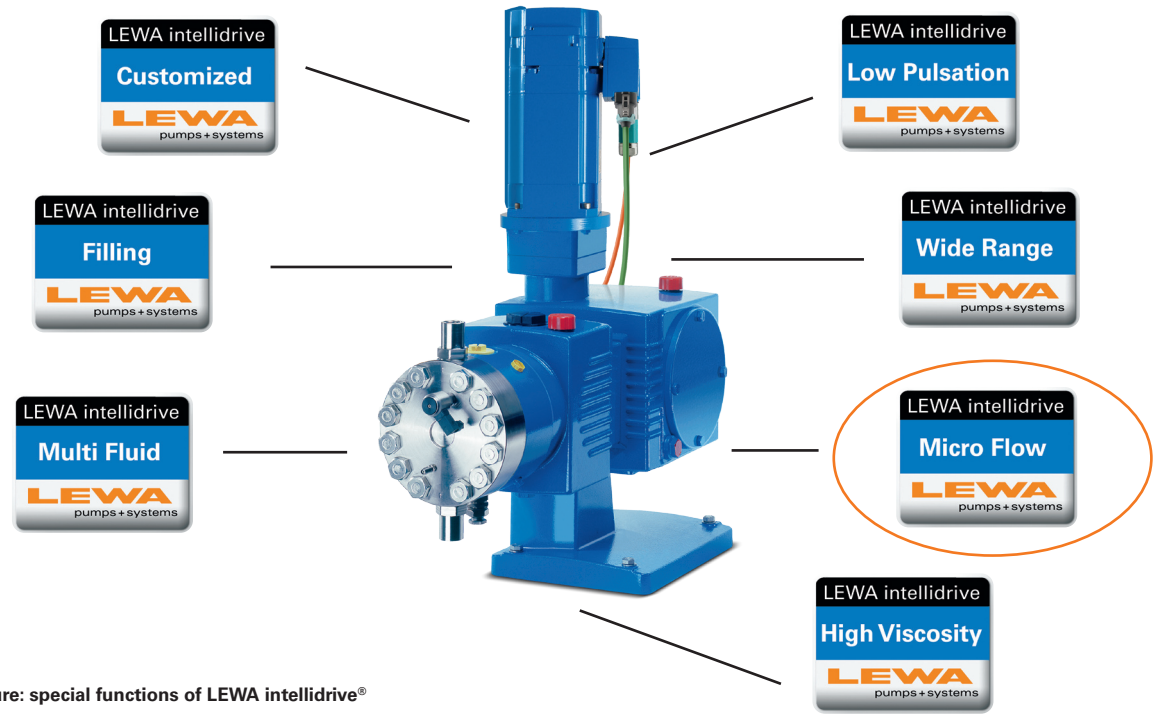
LEWA INTELLIDRIVE - MICRO FLOW



Picture: special functions of LEWA intellidrive®

Introduction

LEWA intellidrive® is a combination of the proven LEWA metering pump mechanics and state of the art servo motors with application oriented programming of the plunger and diaphragm movement.

The dynamics of practical adjustment periods of conventional positive displacement reciprocating pumps, with frequency controlled asynchronous motors exceeds the sequence duration of the suction and discharge stroke. Therefore they can only be used for time averaged volume flow with closed loop control. The shortest useable start-stop sequence covers one full stroke at a minimum.

The improved dynamics of the new LEWA intellidrive®, system allows a free adaptation of the travel time diagram of the period formed by a suction and discharge stroke. This not only means that the suction and discharge stroke can have a variable duration and now the sequence of the period itself is continuously adjustable.

The technology

LEWA intellidrive® follows the modular concept employed in all of the modular systems of the LEWA plunger and diaphragm pumps. Designs for hazardous areas are possible in all sizes.

Functions and advantages

The moving sequence can be programmed absolutely free. LEWA has worked out basic solutions that are designed to meet the highest requirements for handling critical fluids or problematic applications.

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The application

Continuous, test bench metering of micro flows for gas combustion motors.
Metered flow: 1-20 g/h, pressure : 80 bar
Fluid: oil (highly viscous, 350 mPas)

The LEWA intellidrive® solution

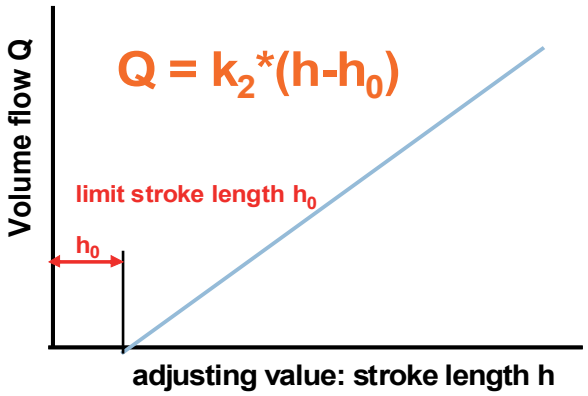
A metering system consists of a plunger pump mounted on a frame with storage vessel and piping. The scope of supply includes an electric cabinet with controls and all required operating elements.

In detail

The metering system operates according to the adaptive mass resp. volume flow control principle. For this a localization of h_0 is carried out in the compression phase during continuous operation. This means that, after the suction phase, starting at the rear dead end, the plunger is moved to the point at which the internal pressure in the pump head coincides with the external system pressure. Based on this position (h_0) the metering speed (~v) required for reaching the pre set desired volume/h (e.g. v_{min} = 1g/h) is calculated.

Changing the h_0 value (i.e. change of the efficiency) e. g. by small air bubbles is picked up and corrected by a re-calculation of the speed (adaptive mass resp. volume flow change). No flow meter is used.

Parameter settings such as over pressure switch off, plunger positioning, speed setting, different operating modes etc. are entered at the control panel.



Picture: linear relation of adjusting values speed and stroke length

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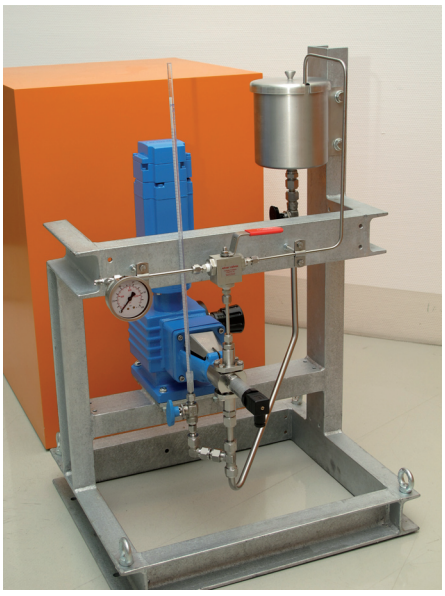
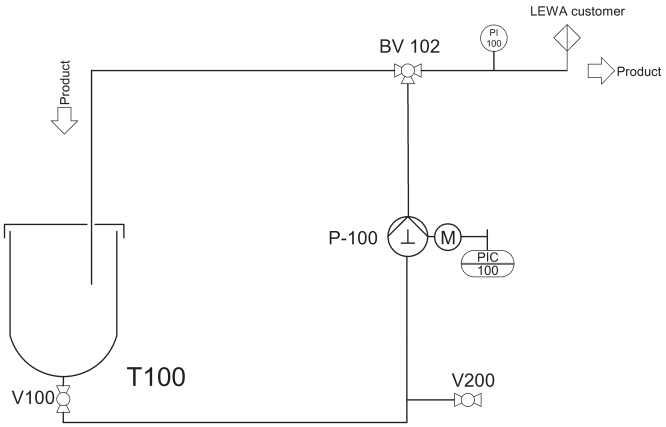
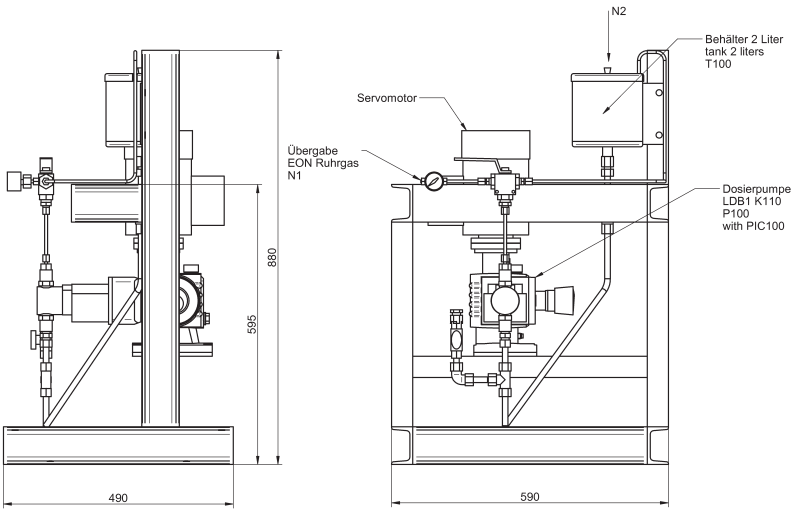
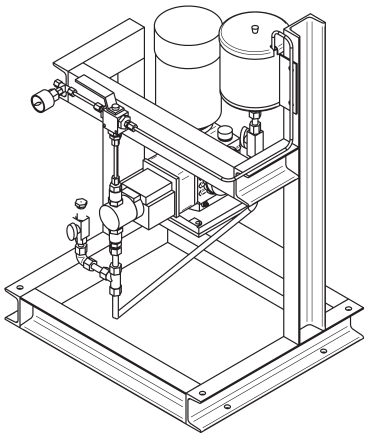


Picture: LEWA intellidrive® for micro metering of oil



Picture: P&ID of this LEWA intellidrive® application





Picture: general arrangement drawing of this LEWA intellidrive® application

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