

## Metering Piston Pumps

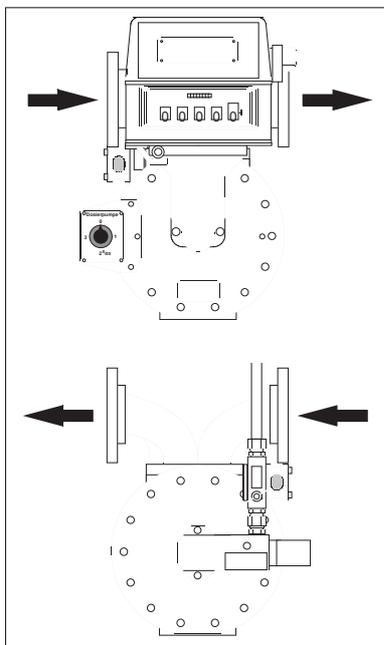
DKP 2,7 A4 for MKA 2290

DKP 4,1 A4 for MKA 3350



**Alfons Haar**

### General:



The metering system comprising metering piston pump DKP ... from **Alfons Haar** is a versatile system used for metering a wide range of additive products.

The metering piston pump is constructed as a separate part and is made of stainless steel and roller bearing steel.

The system is easy to operate via a knob.

#### • Reliable

A crank drive fully supported by roller bearings, a Teflon-coated piston and a Teflon piston ring ensure optimum running behaviour even if the system is not sufficiently lubricated.

#### • Requires almost no maintenance

Lubrication occurs automatically by means of the product; no deaeration is required at the cylinder since there is only a small volume between the cylinders and the respective valves.

### Technical data:

Approved media:

- anti-icing additive
- mineral oil products

Gaskets: NBR 872  
(for low temperatures)

Metering press. = max. 10 bar

Metering rates 0 or 1 ‰

Tolerance ranges of the metering ratios:  
at 1 ‰ = 1 - 1.5 ‰

Max. flow rate:

DKP 2,7 A4  
(MKA 2290) = 2000 l/min

DKP 4,1 A4  
(MKA 3350) = 3000 l/min

### Order numbers and accessories:

#### Order numbers:

Metering chamber with gear  
MKA 2290... per type\*

Metering piston pump  
DKP 2,7 A4 **1677752**

Metering chamber with gear  
MKA 3350... per type

Metering piston pump  
DKP 4,1 A4 **2128297**

#### Accessories:

Flow rate indicator with  
vent valve

srew joint:  
AD 18 **1652202**  
AD 22/18 **1681814**

Strainer made of stainless  
steel, filter size 2µm.

srew joint:  
AD 18 **1677841**  
AD 22 **1677850**  
AD 28/22 **1677868**

Ball valve made of stainless  
steel

DN 20 with screw joint DL 18  
**2034916**  
DN 22 with screw joint DL 22  
**2012285**

Installation tools  
**on request**

\* For MKA type R (CW rotating direction) the additive volume will not be metered

# Metering Piston Pumps

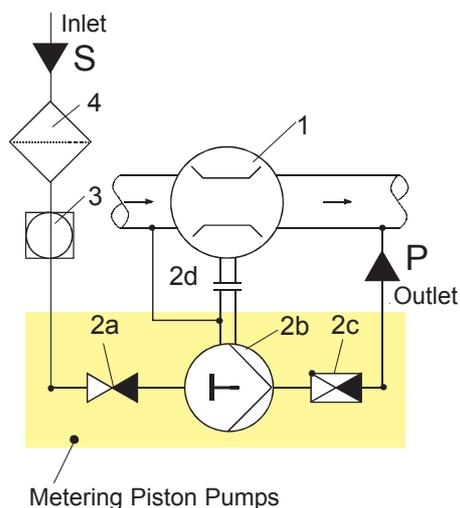
DKP 2,7 - 4,8 A1 for MKA 2290

DKP 4,1 - 7,1 A1 for MKA 3350



**Alfons Haar**

## Design:



- 1 Meter
- 2 Metering piston pump
- 2a Controllable inlet valve
- 2b Metering piston, 1 ‰
- 2c Non-return outlet valve
- 2d Balancing line of the crankcase
- 3 Flow rate indicator
- 4 Filter

## Typical installation diagram and notes regarding installation:

**Permissible line length** from the reservoir or measuring cylinder up to the metering piston pump max. 1200 mm (in special cases please contact Alfons Haar).



**Also for operation with 0‰ one of the ball valves (6) must always be open.**

**Inner diameter** of the line:

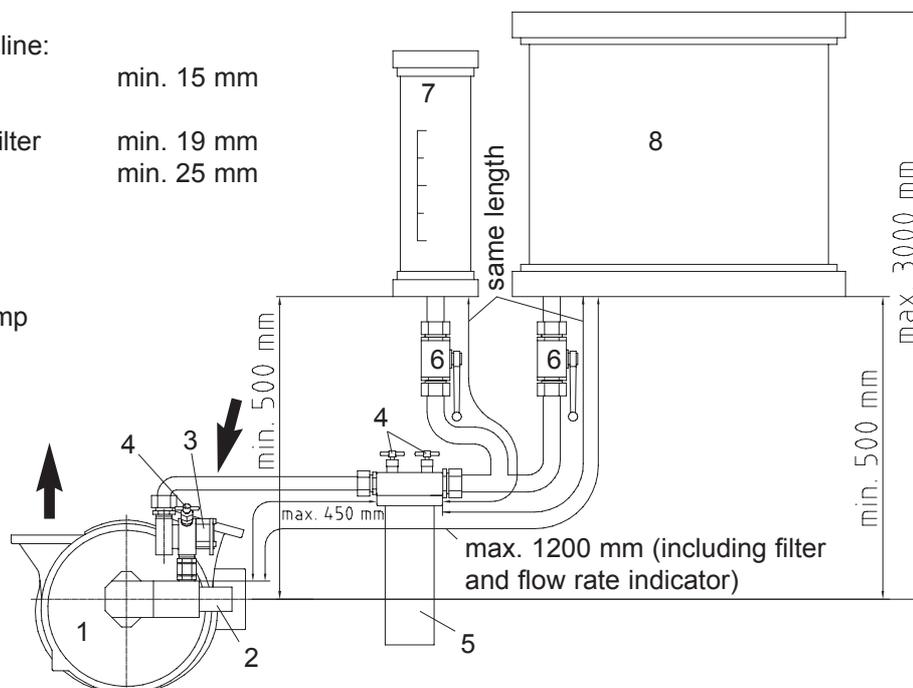
for DKP 2,7 A4 min. 15 mm

for DKP 4,1 A4 min. 19 mm

Flow rate indicator to filter min. 19 mm

Filter to reservoir min. 25 mm

- 1 Metering chamber (back side)
- 2 Metering piston pump
- 3 Flow rate indicator
- 4 Vent valve
- 5 Filter 2 µm
- 6 Ball valve
- 7 Measuring cylinder for checking the metering rate
- 8 Reservoir



**Pump pulsation can create cavitations in too long and too thin lines. This results in dosage faults.**

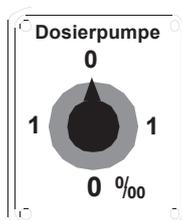
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DKP 4,1 - 7,1 A1 for MKA 3350



### Function:



The available metering rates 0 or 1 ‰ are set with the adjustment knob at the front of the meter.

Intermediate values can not be set.

The adjustment knob is connected with a control pin via an eccentric shaft.

If the control pin is actuated, the inlet valve is kept open, thus causing zero delivery of the pump.

If the control pin are not actuated, the pump cylinder deliver 1 ‰ .

### Notes regarding operation:

Use the adjustment lever installed at the front of the meter to set the metering rates.

To start up the system if there is air in the suction lines and in the metering piston pump, proceed as follows:

- With the meter standing still, set the metering rate to 0 ‰ .
- Open the ball valves to the reservoir.
- Deaerate the system using the vent valve of the flow rate indicator.
- Set the metering rate to 1 ‰.
- Let the meter run while admitting at least half the maximum flow rate until exact metering is achieved (check by means of the measuring cylinder).

During operation (also without metering), make sure that the ball valves to the reservoir are open and that the strainer is not clogged.

(With metering set to zero, the product must be able to oscillate in the suction line!)

The reading of the flow rate indicator will be reliable only after the meter volume flow has risen above 300 l/min.

The flow rate indicator is installed in the suction line where the metering fluid also oscillates if metering is set to zero. The special construction of the indicator ensures that the actual flow rate is only indicated if the maximum flow rate for the meter is not exceeded.

Always set the metering rate to 1 ‰ after operation has been terminated.

With this setting, the inlet valves are also closed (when the pump is at a standstill).

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DKP 4,1 - 7,1 A1 for MKA 3350



### Notes regarding maintenance:

Malfunction	Cause	Remedy
Wrong metering rate	The rod (item 15) has come loose.	Screw out the threaded pins (item 29), insert the rod correctly, insert the threaded pins using a fixing agent (e.g. Loctite) and screw them down.
	The gaskets are defective.	Replace the gaskets.
	The suction lines are too small in diameter or too long.	Heed the notes regarding installation.
	The suction lines and the pump are not deaerated.	Deaerate the suction lines and the pump.
	Too much dirt in the strainer.	Clean the strainer.
	The flow rate indicator is obstructed.	Replace the flow rate indicator or eliminate the obstruction.
No metering	The flow rate of the meter is too high.	Do not exceed the admissible flow rate of the meter.
	The reservoir is empty.	Fill the reservoir.
	The ball valves to the reservoir are closed.	Open the ball valves to the reservoir.
	The strainer is clogged.	Clean the strainer.
	The suction valve leaks.	Replace the valve or the valve gaskets.
Flow rate indicator shows a volume flow in spite of zero metering	The control pins is stuck in the actuated position.	Get the control pin free.
	The flow rate of the meter is too high.	Reduce the flow rate.
Flow rate indicator does not show a volume flow in spite of metering	The braking effect on the oscillation in the flow rate indicator is too weak.	Replace the flow rate indicator or install additional brake springs.
	The flow rate of the meter is below 300 l/min.	Set the flow rate to a value higher than 300 l/min.
	The flow rate indicator is stuck (e.g. by dirt).	Clean the flow rate indicator and check that all moving parts can be moved.