

MICRO DIAPHRAGM GAS SAMPLING PUMPS

DATA SHEET E 003



NMS 010 L

Concept

The micro diaphragm gas sampling pumps from KNF are based on a simple principal - an elastic diaphragm, fixed on its edge, moves up and down its central point by means of an eccentric. In this way the medium is transferred using automatic valves.

The new micro diaphragm pumps NMS 010 and NMS 020 offer improved pneumatic performance in conjunction with a smaller size. The new technology results in low pulsation and minimum noise emission.

Additional technical features include efficient valve and sealing systems, as well as a precision bolting system on the pump heads.



NMS 020 L

Features

Uncontaminated flow

No contamination of the media due to oil-free operation

Maintenance-free

Compact size

High pneumatic performance because of new oval diaphragm

Low aerodynamic loss by means of a new valve system

High level of gas tightness thanks to the closed diaphragm surface and special sealing system

Low pulsation

Low noise

Long product life

Ready for assembly

Can operate in any installed position



NMS 020 B

Areas of use

KNF micro diaphragm pumps NMS 010 and NMS 020 can be used frequently in the fields of analysis and medicine.

For instance as pumps for gas measurement, for example for sampling environmental conditions in the workplace or for exhaust gas and smoke analysis or built into machines for measuring blood pressure.

As they are DC driven, these micro diaphragm pumps are suited for use in portable and stand-alone equipment.

Performance data							
Type		Delivery (l/min)	Vacuum (mbar absolute)	atmospheric pressure	Pressure (bar g)	Weight (g)	
NMS 010 S (standard DC motor)		0.75	600			0.2	23.0
NMS 010 L (DC motor with iron-free rotor)		0.75	600			0.2	20.0
NMS 020 B (brushless DC motor)		1.6	500			0.5	29.0
NMS 020 S (standard DC motor)		1.7	500			0.2	28.0
NMS 020 L (DC motor with iron-free rotor)		1.8	500			0.2	32.0

NMS 010 S | NMS 010 L

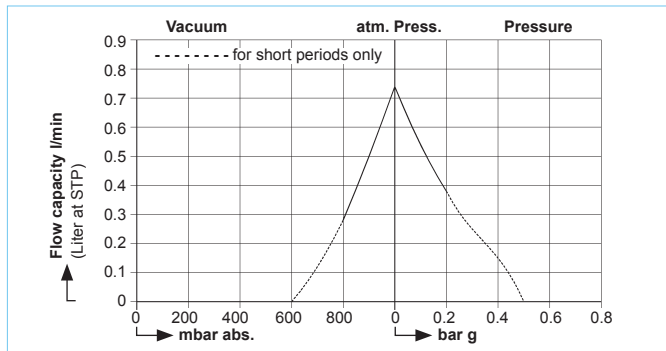
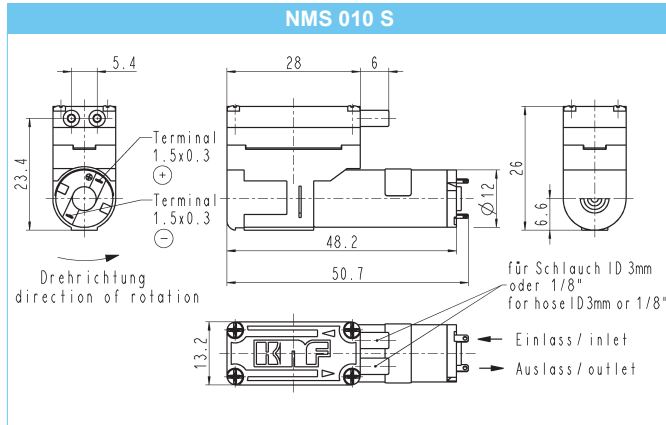
Performance data

Type	DC motor (V)	Delivery at atm. pressure (l/min) ¹⁾	Continuous running Max. pressure (mbar g)	Continuous running Max. vacuum (mbar abs.)	Ultimate pressure (mbar g)	Ultimate vacuum (mbar abs.)
NMS 010 S	5	0.75	200	800	500	600
NMS 010 L	5	0.75	200	800	500	600

¹⁾ Liter at STP

Pump material

Pump head	Diaphragm	Valves
PPS	EPDM	EPDM



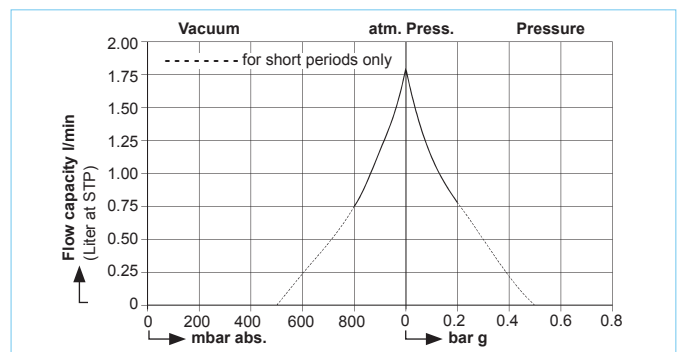
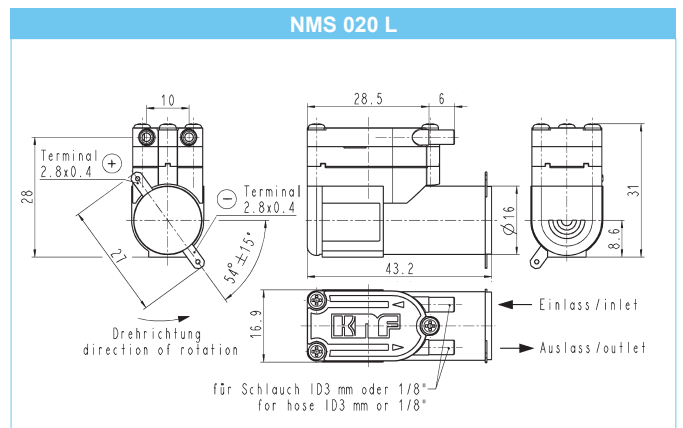
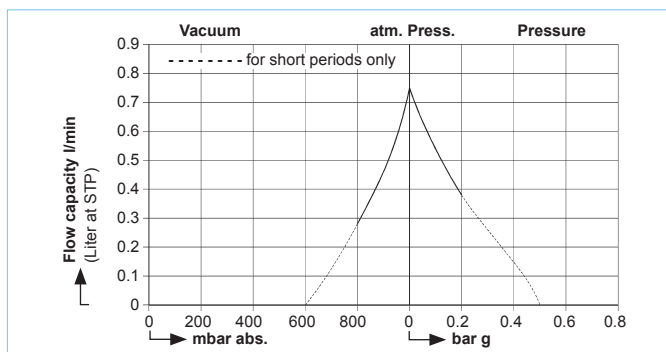
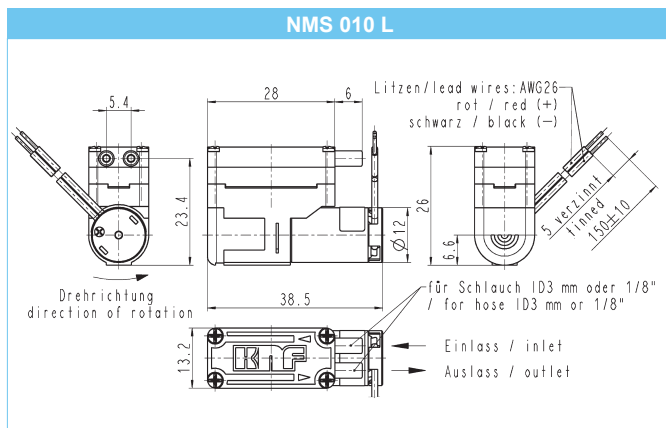
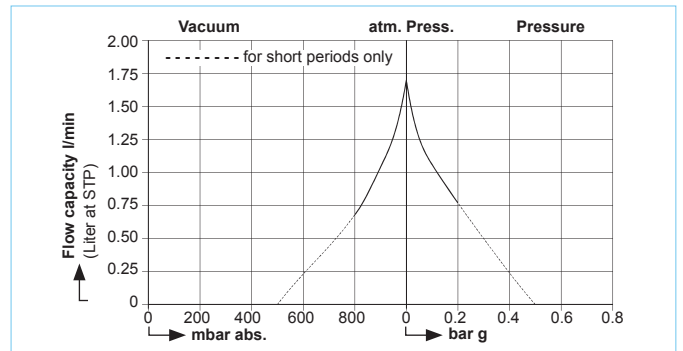
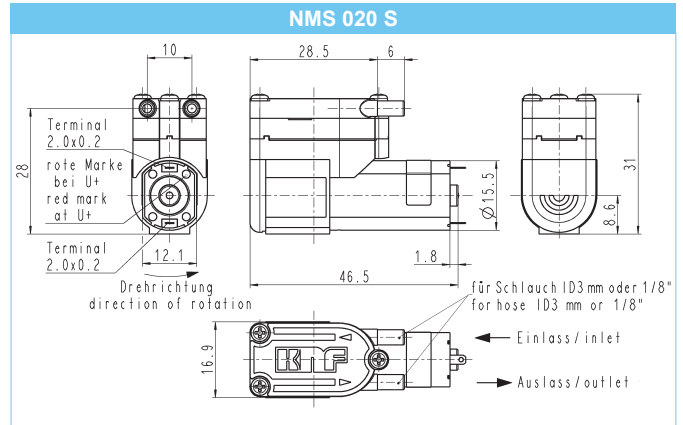
NMS 020 S | NMS 020 L

Performance data

Type	DC motor (V)	Delivery at atm. pressure (l/min) ¹⁾	Continuous running Max. pressure (mbar g)	Continuous running Max. vacuum (mbar abs.)	Ultimate pressure (mbar g)	Ultimate vacuum (mbar abs.)
NMS 020 S	6	1.7	200	800	500	500
NMS 020 L	6	1.8	200	800	500	500

Pump material

Pump head	Diaphragm	Valves
PPS	EPDM	EPDM



NMS 020 B

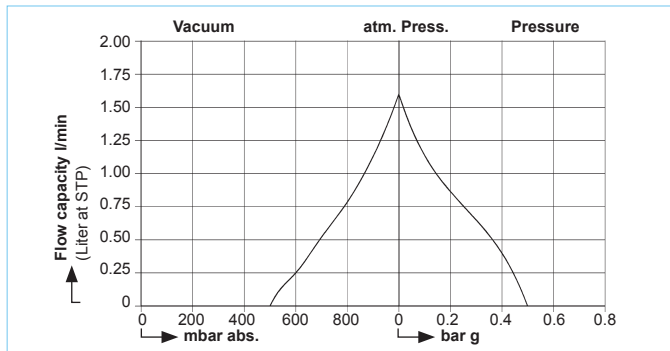
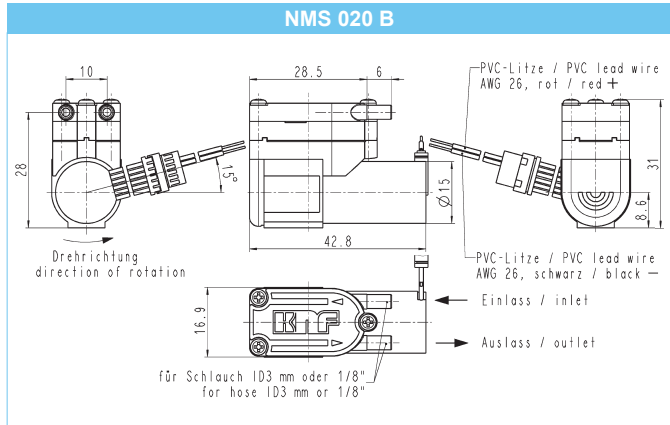
Performance data

Type	Brushless DC motor (V)	Delivery at atm. pressure (l/min) ¹⁾	Continuous Max. pressure (mbar g)	running Max. vacuum (mbar abs.)	Ultimate pressure (mbar g)	Ultimate vacuum (mbar abs.)
NMS 020 B	6	1.6	500	500	500	500

Caution! Incorrect lead connection will damage motor electronics!

Pump material

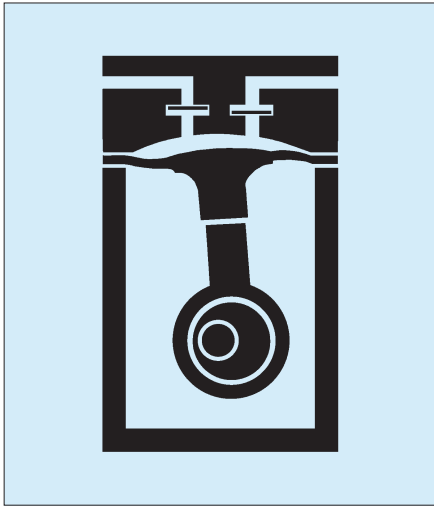
Pump head	Diaphragm	Valves
PPS	EPDM	EPDM



HINTS ON FUNCTION, INSTALLATION AND SERVICE

Function of KNF micro diaphragm gas sampling pumps

An elastic diaphragm is moved up and down by an eccentric (see illustration). On the down-stroke it draws the air or gas being handled through the inlet valve. On the up-stroke the diaphragm forces the medium through the exhaust valve and out of the head. The compression chamber is hermetically separated from the drive mechanism by the diaphragm. The pumps transfer, evacuate and compress completely oil-free.



Motor type

The KNF micro diaphragm pump is available with different motor type.

S - standard

The pump is equipped with a standard DC motor.

L - DC motor with iron-free rotor

The pump is equipped with a DC motor with an iron-free rotor. The DC motor is robust and durable.

B - brushless DC motor

The pump is equipped with a brushless electronically commutated DC motor (electronics integrated in motor). The motor runs vibration and spark free, almost silently, is very dynamic and extremely durable. This model can be used permanently at all pressure levels.

Hints on installation and operation

- Range of use: transferring air and gases at temperatures between +5 °C and +40 °C
- Please check the compatibility of the material of the pump head, diaphragm and valves with the medium.
- The KNF product line contains pumps suitable for pumping aggressive gases and vapors - please contact us.
- Permissible ambient temperature: between +5 °C and +40 °C
- The standard pumps are not suitable for use in areas where there is a risk of explosion. In these cases there are other products in the KNF program - please ask us for details.
- The pumps are not designed to start against pressure or vacuum; when a pump is switched on, the pressure in the suction and pressure lines must be atmospheric. Pumps that start against pressure or vacuum are available on request.
- To prevent the maximum operating pressure being exceeded, restriction or regulation of the air flow should only be carried out in the suction line.
- Components connected to the pump must be designed to withstand the pneumatic performance of the pump.
- Fit the pump at the highest point in the system, so that condensate cannot collect in the head of the pump - that prolongs working-life.

Technical details

Motors with other voltages or with speed control on request.

The pump models L and B pass the EU guideline 2004/108/EC (without NMP 015 B).

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