

## DIAPHRAGM PUMPS WITH KNF STABILIZATION SYSTEM

DATA SHEET E015

**NEW**



N 920 APE as AC version in side position (As an option with external signal input).



N 920 APDCB with brushless DC motor (As an option with external signal input).

### Concept

The powerful diaphragm vacuum pumps N 920 are especially well suited for all applications requiring excellent suction speed at low absolute pressures. A series of technical innovations, including a diaphragm stabilization system, allows the high suction especially in the low-vacuum range.

The vacuum pumps N 920 are available with optional adjustable flow rates; in this case, either an integrated potentiometer or an external activator with an analog signal input will alter the motor speed. These pump versions make it possible to adapt the flow rate to the requirements of a specific process, for example.

### Features

**Transfer, evacuation and compression of air, gases and vapours**

No contamination of the media due to oil-free operation

**KNF stabilization system**

Optimized suction speed, also for low absolute pressures

**High level of gas tightness:**  
approx.  $6 \times 10^{-3}$  mbar x l/s (not tested in serial production)

**Quiet running**

**Cool and efficient brushless motor**

**Multi-voltage power supply input**

**Manifold block head eliminates external connections**

**Can operate in any installed position**

### Areas of use

The N 920 series of diaphragm vacuum pumps offer a high level of performance in a compact unit size. Typical applications are in the fields of analysis, chemistry, medicine and production technologies.

The N 920 pumps also support turbomolecular systems as roughing pumps.

There are many applications for the N 920 series, please contact KNF for application advice.

## PERFORMANCE DATA

Type	Delivery (l/min)	Vacuum (mbar absolute)	atm. Press.	Pressure (bar g)	Weight (kg)
N 920 APE	21	1.5		0.5	10.0
N 920 APDCB	21	1.5		0.5	8.5

# N 920 APE

## PERFORMANCE DATA

Type and Order No.	Delivery (l/min) <sup>1)</sup> at atm. pressure	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 920 APE	21	0.5	< 1.5

<sup>1)</sup> Litre at STP

## MOTOR DATA

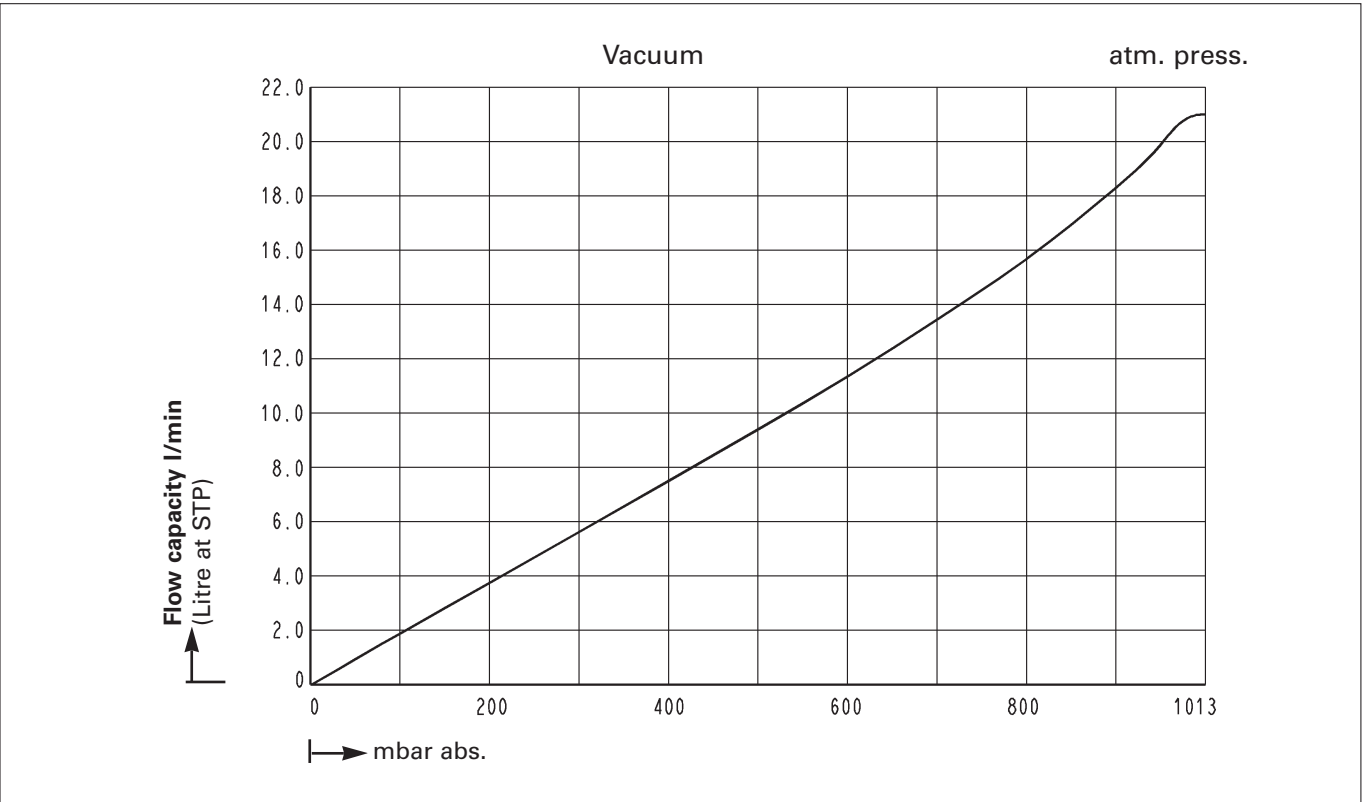
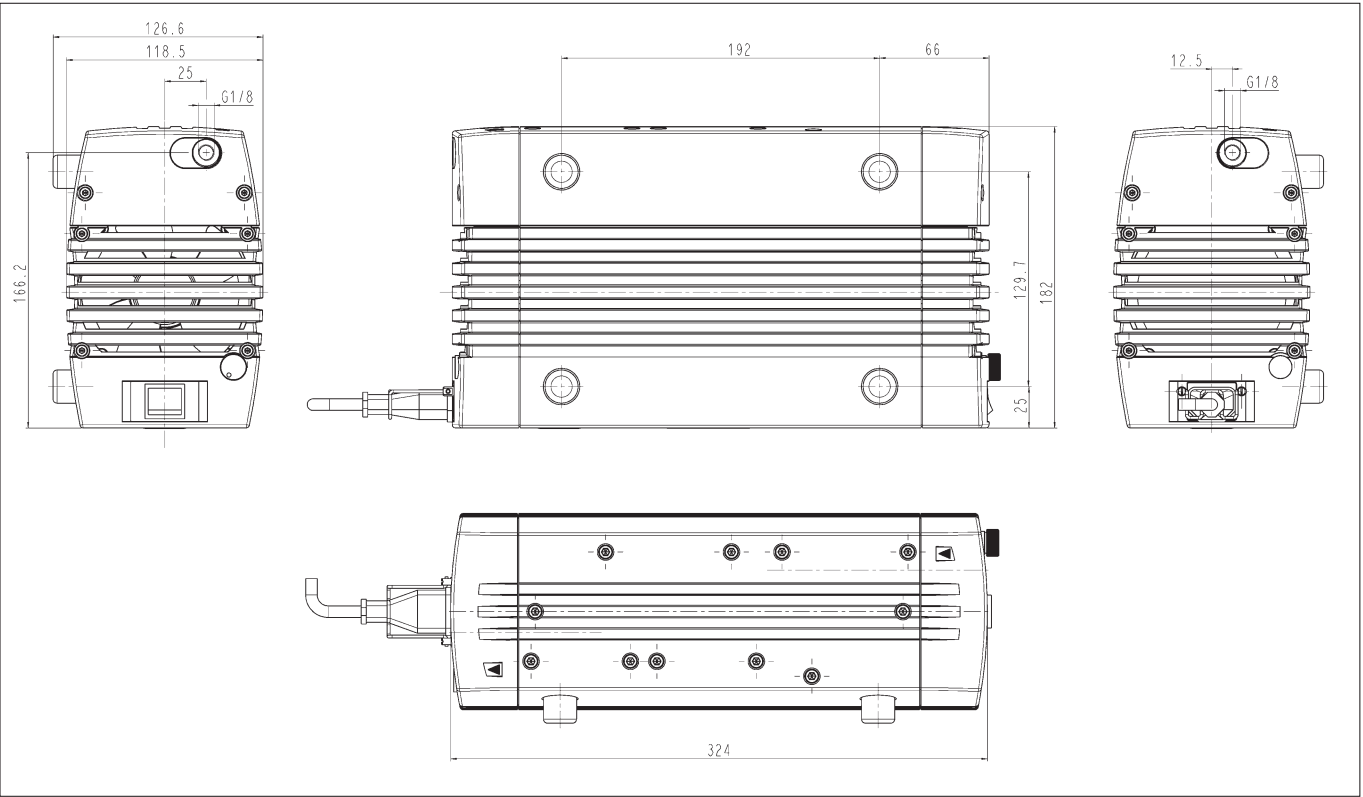
Motor type: brushless DC motor with AC power supply		
Protection class	IP 20	
Voltage/Frequencies (V/Hz)	~90-264/50-60	
Power P <sub>1</sub> (W)	120	
Operating current (A)	1.3	

## MODEL CODES AND MATERIALS

Type and Order No.	Pump head	Diaphragm	Valves
N 920 APE	Aluminium	EPDM	EPDM

The delivery of the N 920 series pumps can be adjusted with an optional potentiometer or by external analog signal. Please contact us for further information.

Dimensions mm (All dimensional tolerances conform to DIN ISO 2768-1, Tolerance Class V)



# N 920 APDC B

## PERFORMANCE DATA

Type and Order No.	Delivery (l/min) <sup>1)</sup> at atm. pressure	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 920 APDC B	21	0.5	< 1.5

<sup>1)</sup> Litre at STP

## MOTOR DATA

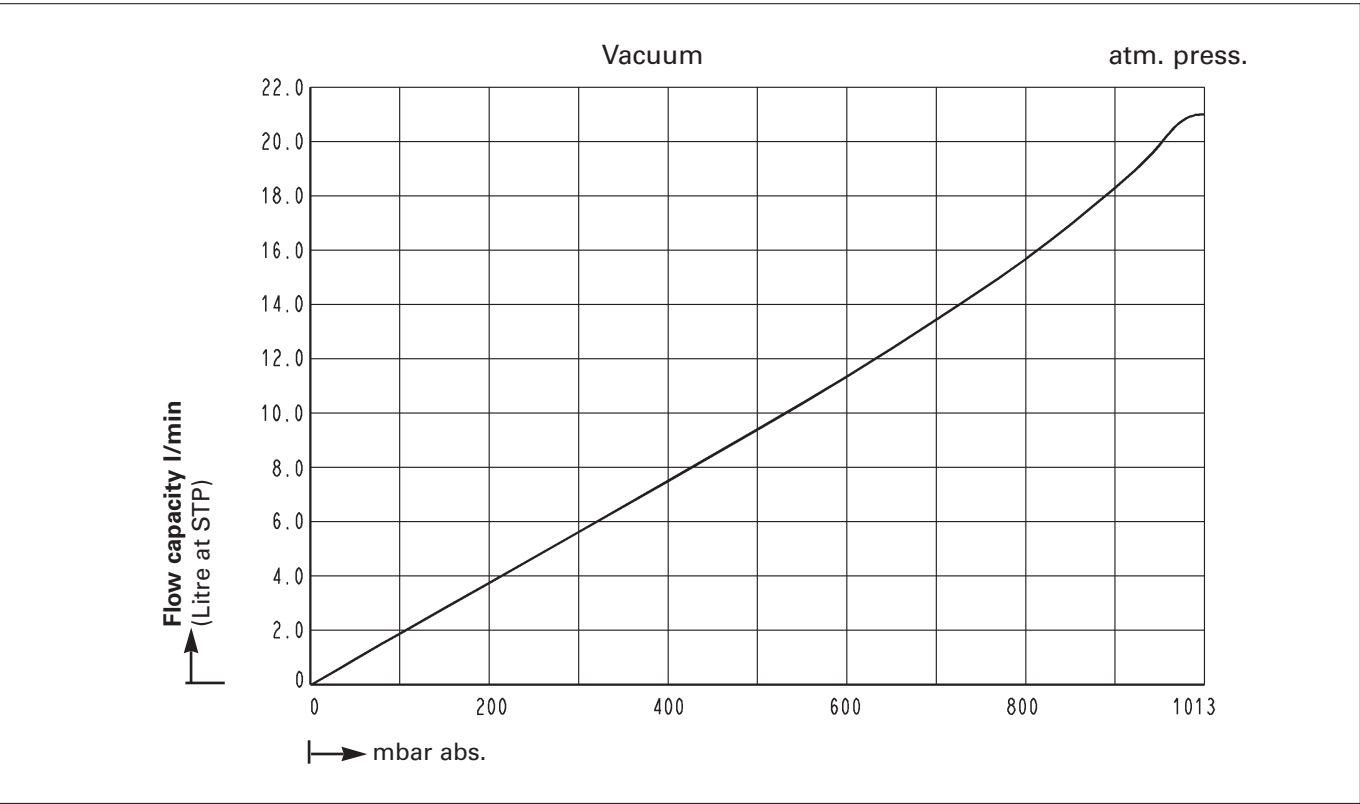
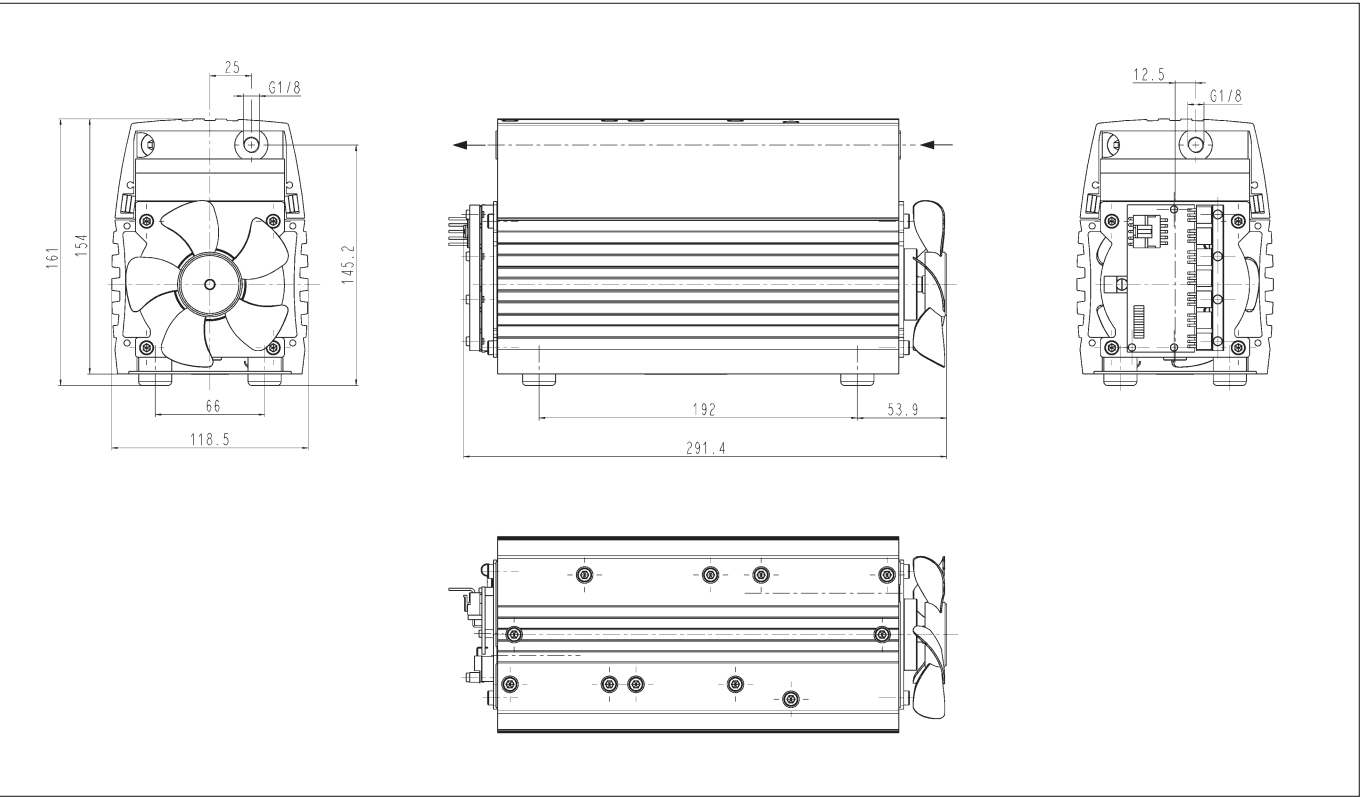
Motor type: brushless DC motor	
Protection class	IP 00
Voltage (V)	24
Power P <sub>1</sub> (W)	100
Operating current (A)	4.2 (starting current, moment ary 200 ms: 7 A)

## MODEL CODES AND MATERIALS

Type and Order No.	Pump head	Diaphragm	Valves
N 920 APDC B	Aluminium	EPDM	EPDM

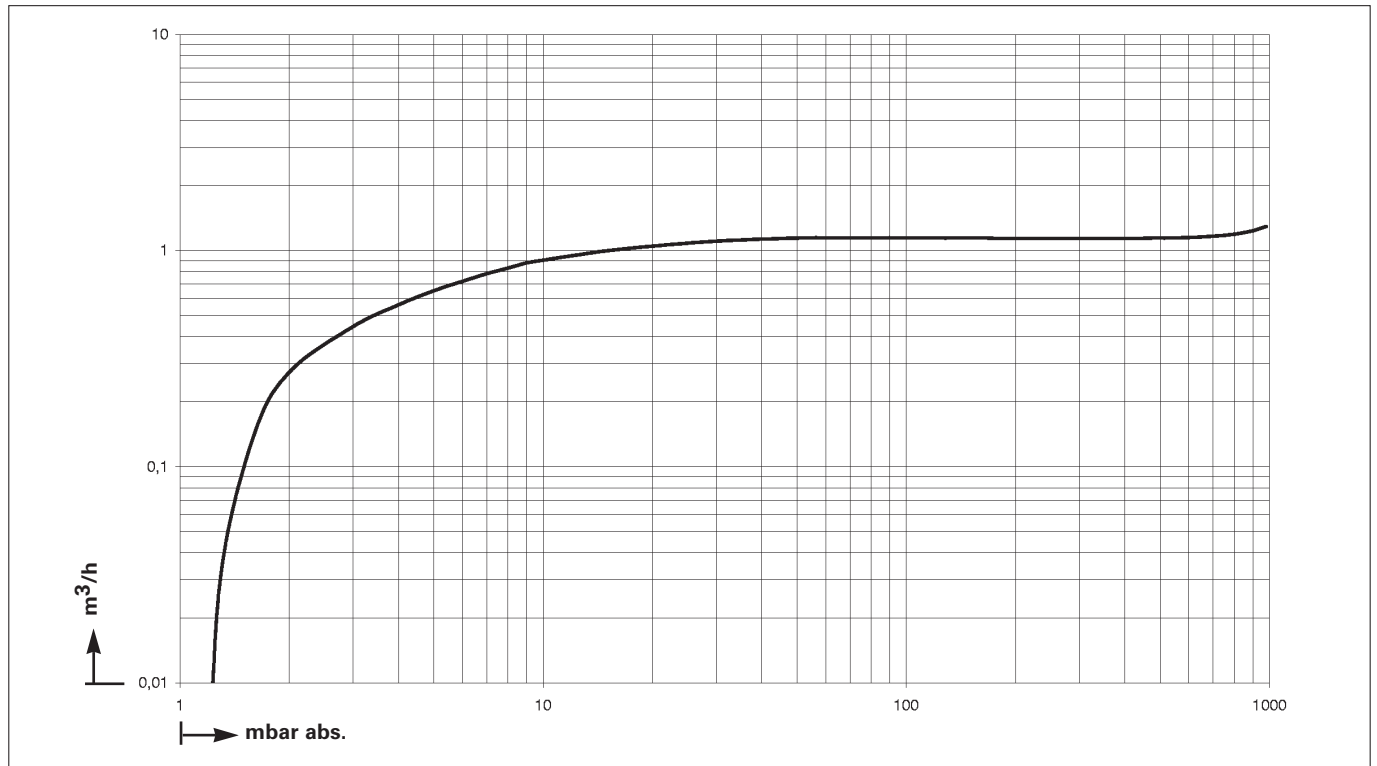
The delivery of the N 920 series pumps can be adjust by external analog signal. Please contact us for further information.

Dimensions mm (All dimensional tolerances conform to DIN ISO 2768-1, Tolerance Class V)

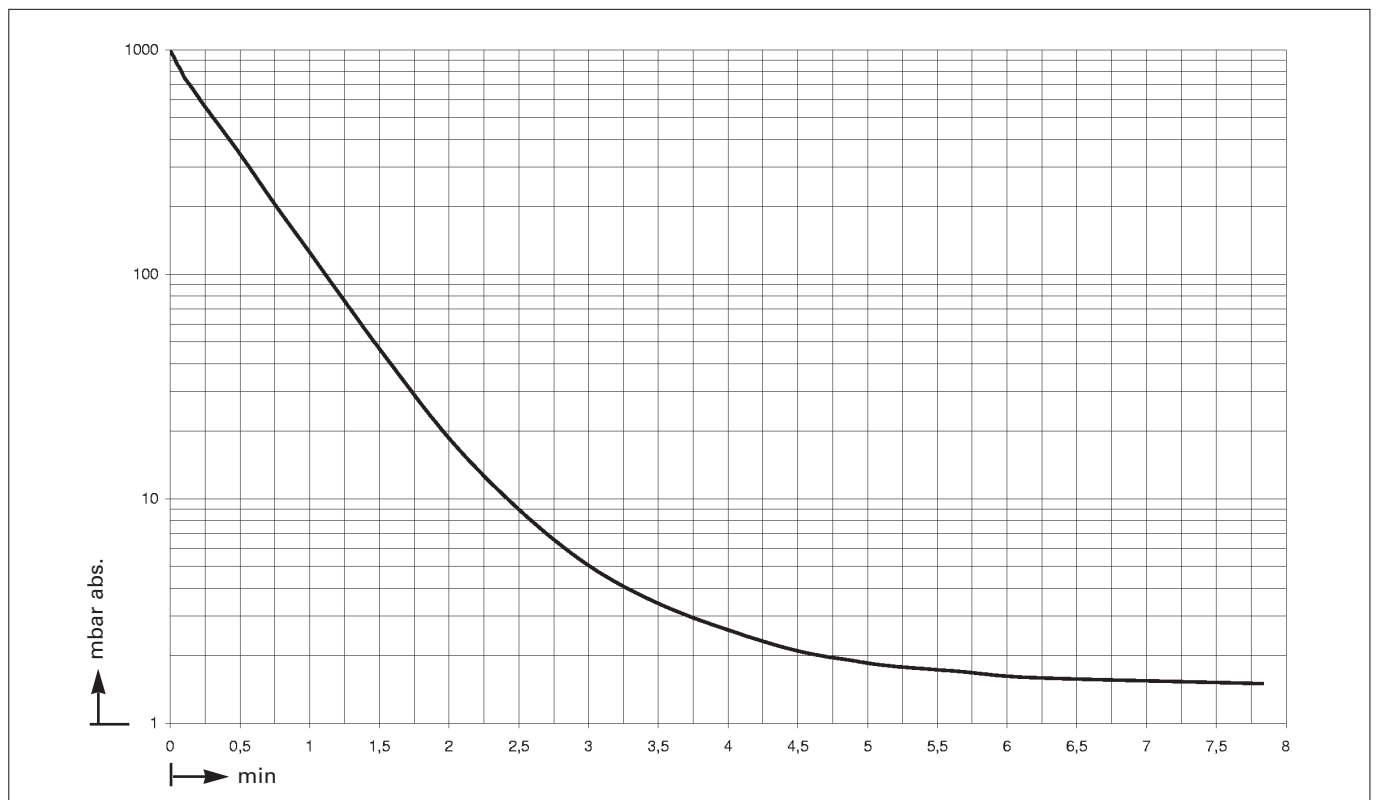


# PERFORMANCE DATA

## Suction pumping speed



## Pump down time for 20 litre receiver



Please visit our website at [www.knf.com](http://www.knf.com) for further information.

Your contact

## Accessories

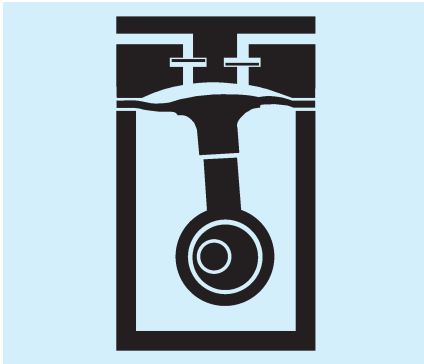
Description	Order No.	Details
Silencer/filter	007006	G 1/8
Small flange, stainless steel	046625	KF 16
Hose connector	029113	G 1/8, for tube ID 9
Sealing for hose connector	026906	
Adjustable delivery through speed regulation	on request	over potentiometer or analog signal input

## HINTS ON FUNCTION, INSTALLATION AND SERVICE

### THE BASIC FUNCTION OF KNF DIAPHRAGM VACUUM PUMPS AND COMPRESSORS

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.

#### Diaphragm pump



### HINTS ON INSTALLATION AND OPERATION

- Range of use: Transferring air and gases at temperatures between +5°C and +40°C
- Permissible ambient temperature: between +10°C and +40°C
- 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
- 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

- Install the pump so that the fan can draw in sufficient cooling air
- Fit the pump at the highest point in the system, so that condensate cannot collect in the head of the pump.

### HINTS ON SERVICE

The diaphragm and valves are the only parts of the KNF diaphragm pumps subject to wear. They are easy to change, as no special tools are needed.

Please visit our website at [www.knf.com](http://www.knf.com) for further information.

#### Your contact



### Diaphragm stabilization system

An additional diaphragm, the so-called stabilization diaphragm, separates the underside of the working diaphragm from the "crank" space of the pump (see Fig. 2). The space between the two diaphragms (called a vacuum chamber) is connected with the suction side of the pump via an balancing connection.

This way, the vacuum chamber has approximately the same pressure as the working space of the diaphragm pump. The pressure difference between the upper and underside of the diaphragm approaches zero. The working diaphragm remains stable, independent of the inlet pressure of the

pump. This improves the suction speed of the pump significantly, over its entire working range.

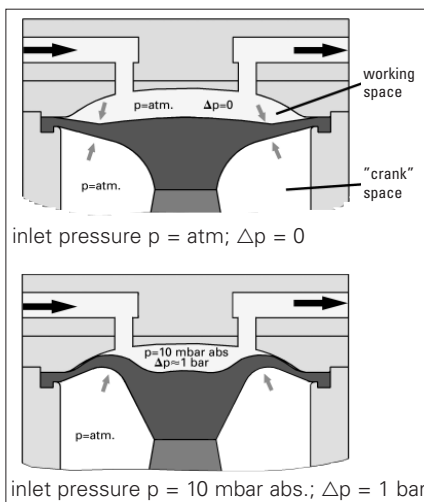


Fig. 1: Diaphragm behavior, due to the pressure difference between working space and "crank" space (normal diaphragm pump)

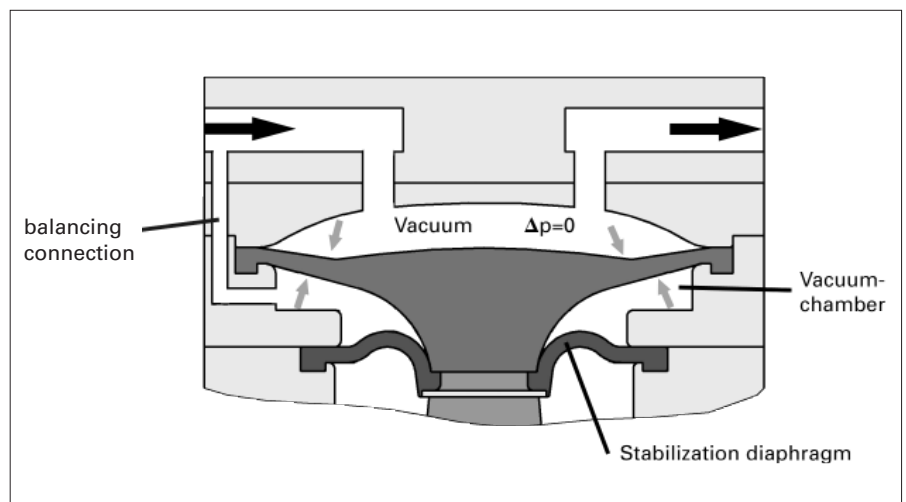


Fig. 2: Diaphragm stabilization system with additional diaphragm. This improves the suction speed of the pump significantly, over its entire working range.