

## DIAPHRAGM PUMPS WITH KNF STABILIZATION SYSTEM

DATA SHEET E218

**NEU**



Portable Vacuum pump N 920 AP.29.18, with variable flow.



Portable Vacuum pump N 920 KT.29.18, for the transfer of some aggressive gases, (please contact KNF for further advise), with variable flow.

### 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.

An integrated potentiometer makes it possible to set the flow rate by changing the rotary speed. This way the pump can, for example, be tailored to the requirements of a process. As an option, the pumps are available with an analog signal input for external control.

### Features

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

No contamination of the media due to oil-free operation

**Adjustable flow rates**

**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**

### 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 a roughing pump.

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

## PERFORMANCE DATA

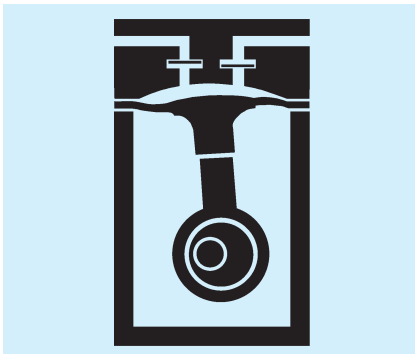
Type	Delivery (l/min)	Vacuum (mbar absolute)	atm. Press.	Pressure (bar g)	Weight (kg)
N 920 AP.29.18	21	1.5		0.5	10.5
N 920 KT.29.18	21	1.5		0.5	9.1

## 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.

### KNF Neuberger GmbH Diaphragm Pumps + Systems

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### 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.

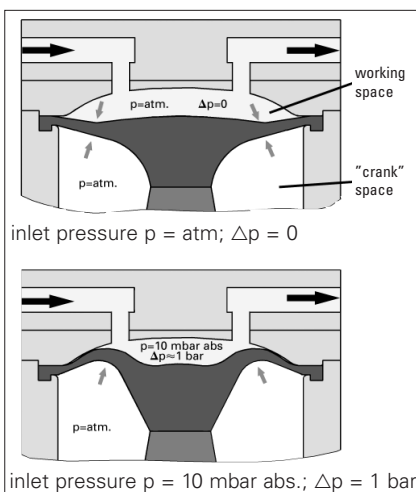


Fig. 1: Diaphragm behavior, due to the pressure difference between working space and "crank" space (normal diaphragm pump)

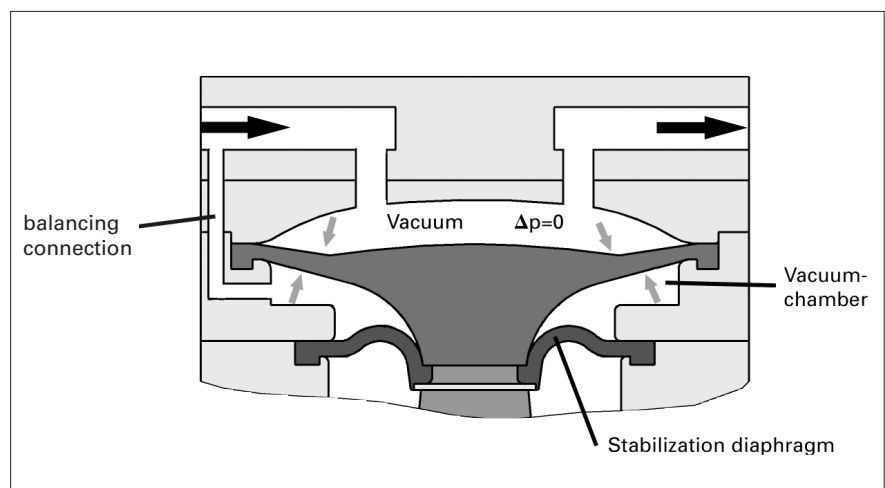


Fig. 2: Diaphragm stabilization system with additional diaphragm. This improves the suction speed of the pump significantly, over its entire working range.

# N 920 AP.29.18    N 920 KT.29.18

## 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 AP.29.18	21	0.5	< 1.5
N 920 KT.29.18	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

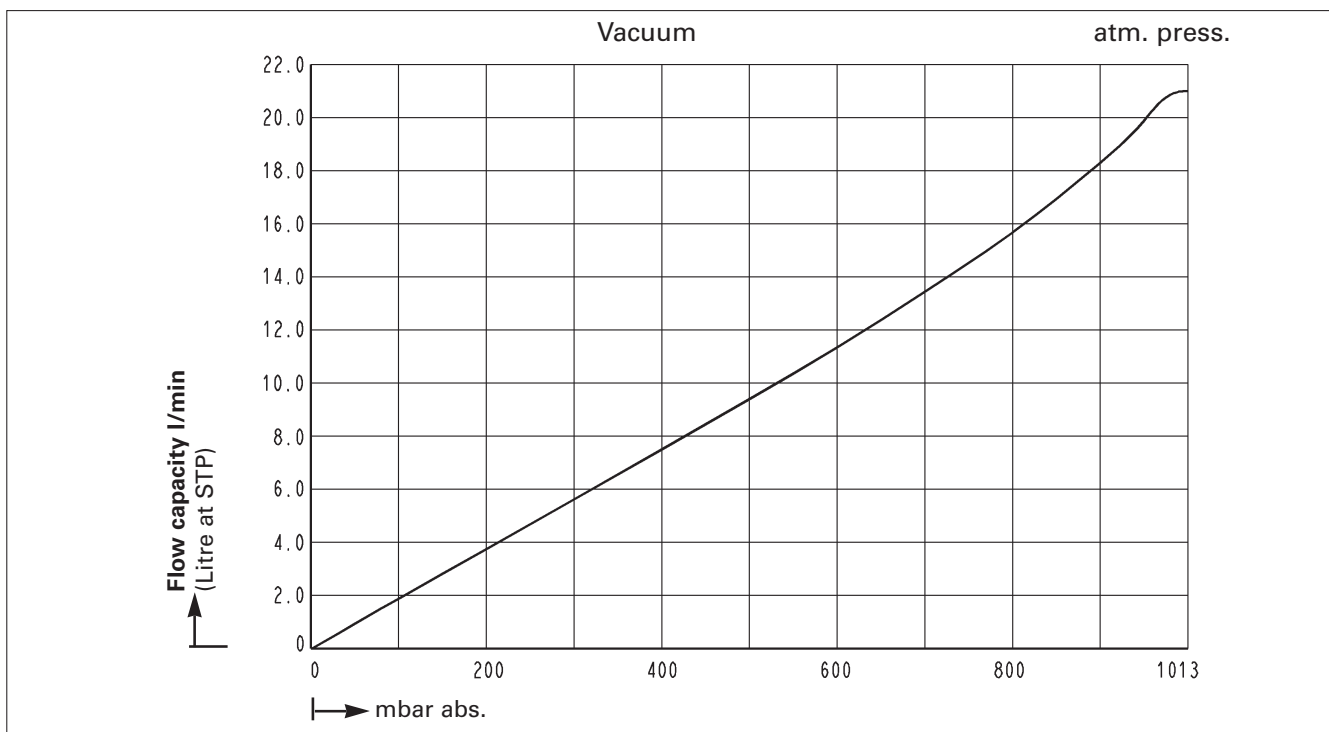
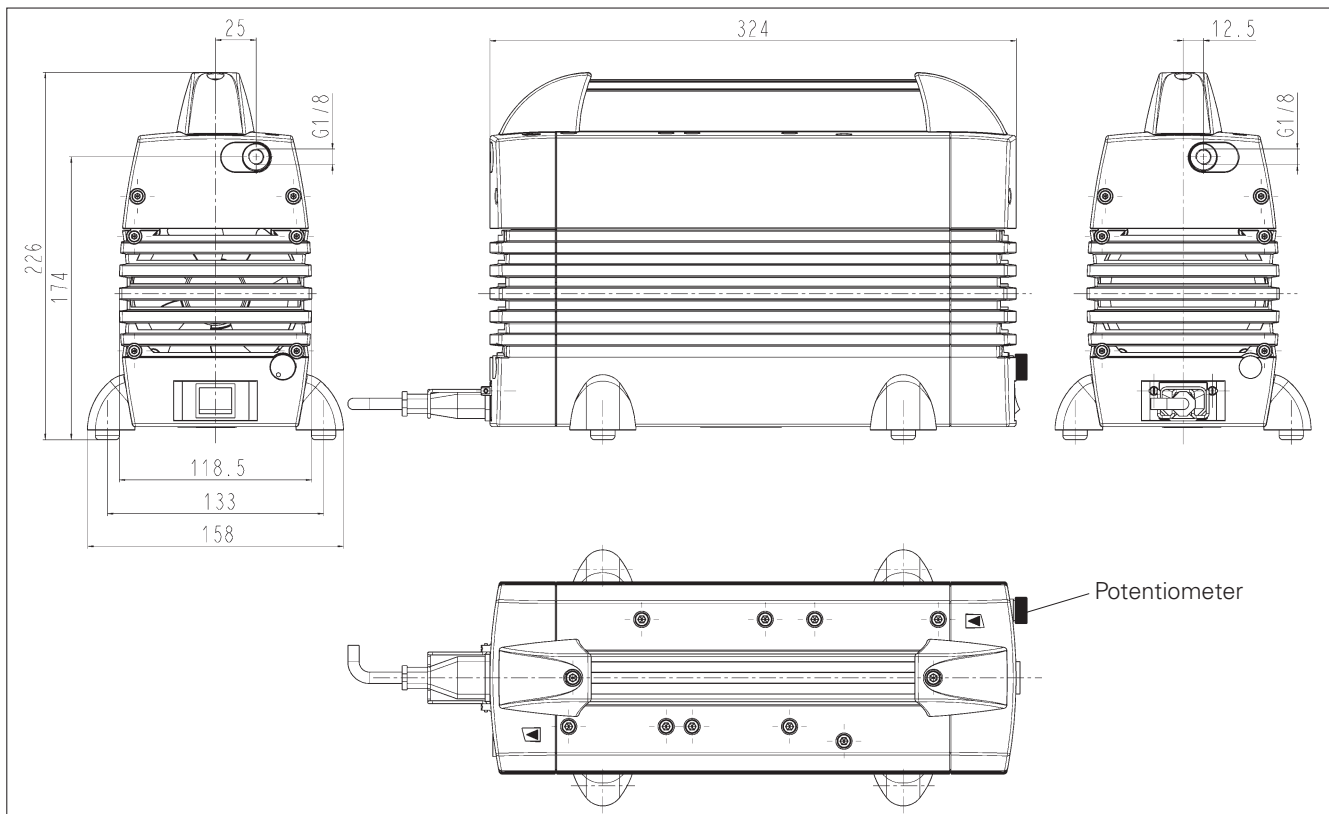
Type and Order No.	Pump head	Diaphragm	Valves
N 920 AP.29.18	Aluminium	EPDM	EPDM
Version for aggressive gases			
N 920 KT.29.18	Ryton	PTFE-coated	Kalrez

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

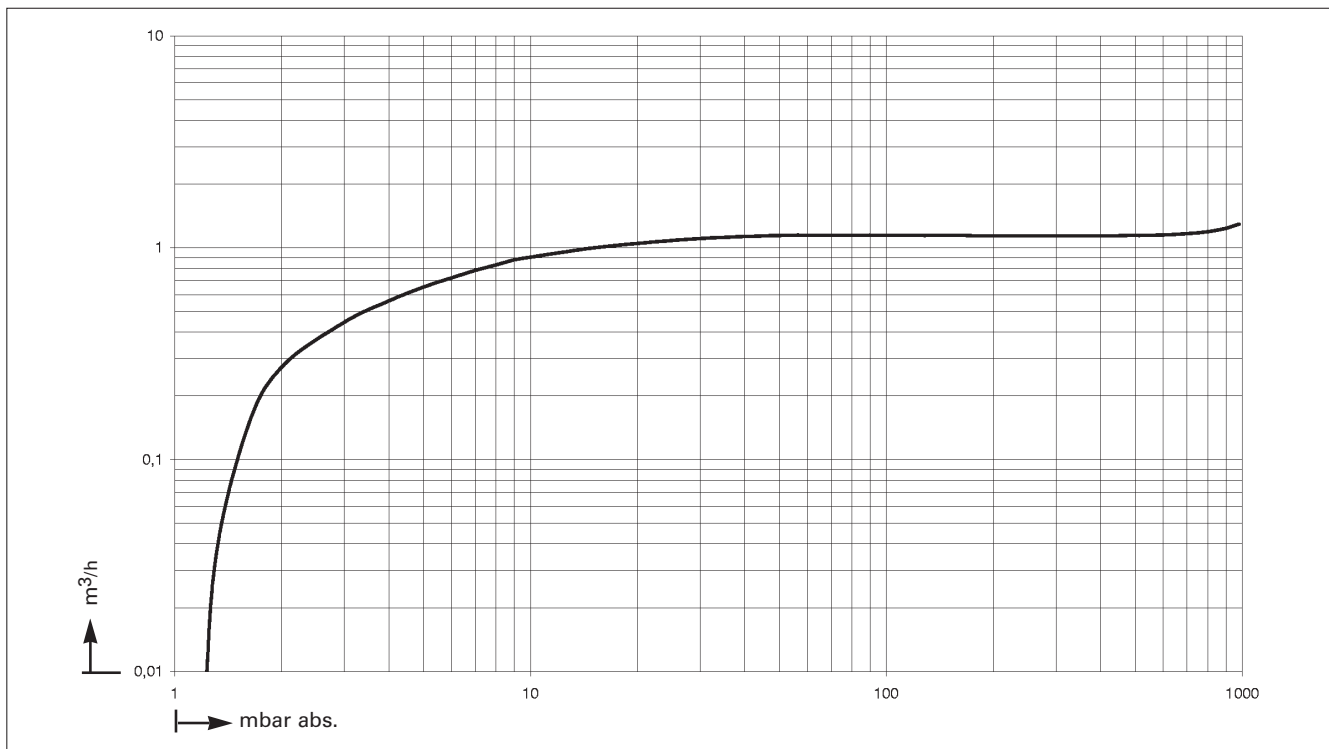
Versions without adjusted delivery on request.

Hints on function, installation, and service: see back side

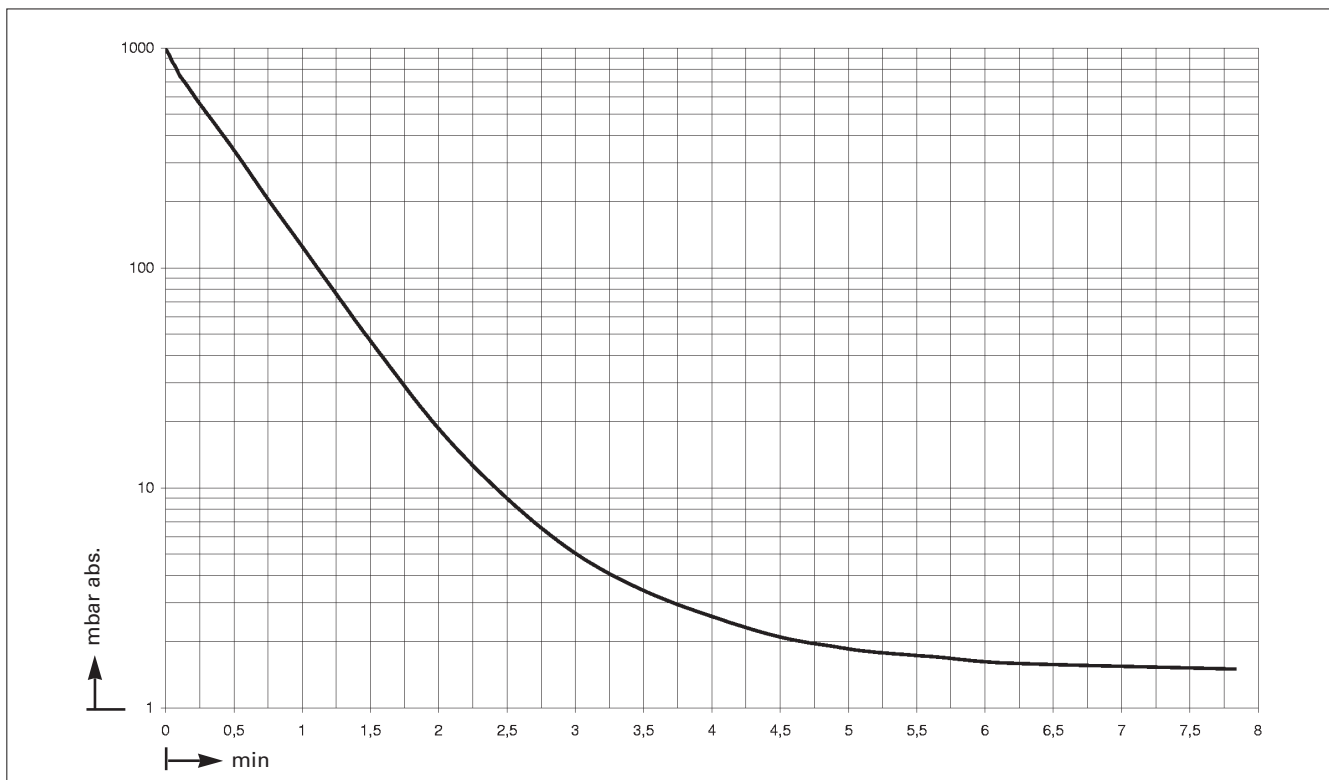
Dimensions mm (All dimensional tolerances conform to DIN ISO 2768-1, Tolerance Class V)



## Suction pumping speed



## Pump down time for 10 litre receiver



## 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 with analog signal input	on request	for external control

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