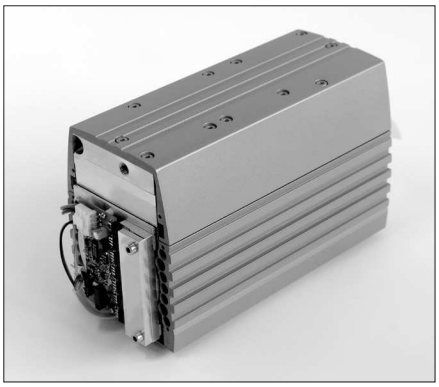
DIAPHRAGM VACUUM PUMPS WITH KNF STABILIZATION SYSTEM

DATA SHEET E 015

N 920 APE-W
Automatically to global voltage condition (As an option with external signal input).



N 920 APDC-B
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 vapors
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 x 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

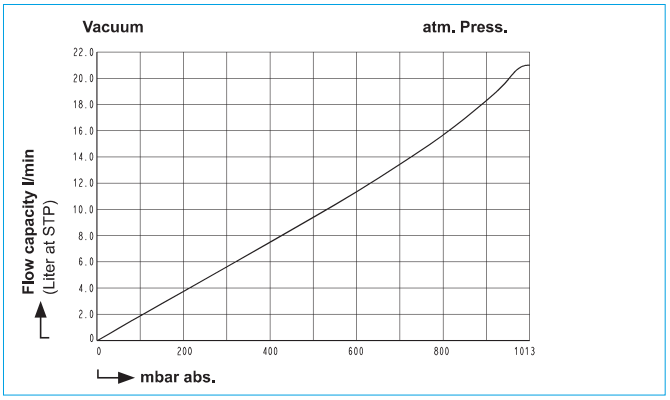
Type	Delivery (l/min)	Vacuum (mbar absolute)	atm. press.	Pressure (bar g)	Weight (kg)
N 920 APE-W	21	1.5		0.5	10.0
N 920 APDC-B	21	1.5		0.5	8.5

N 920 APE-W

Performance data

Type	Delivery at atm. pressure (l/min)[1)]	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 920 APE-W	21	0.5	< 1.5

[1)] Liter at STP

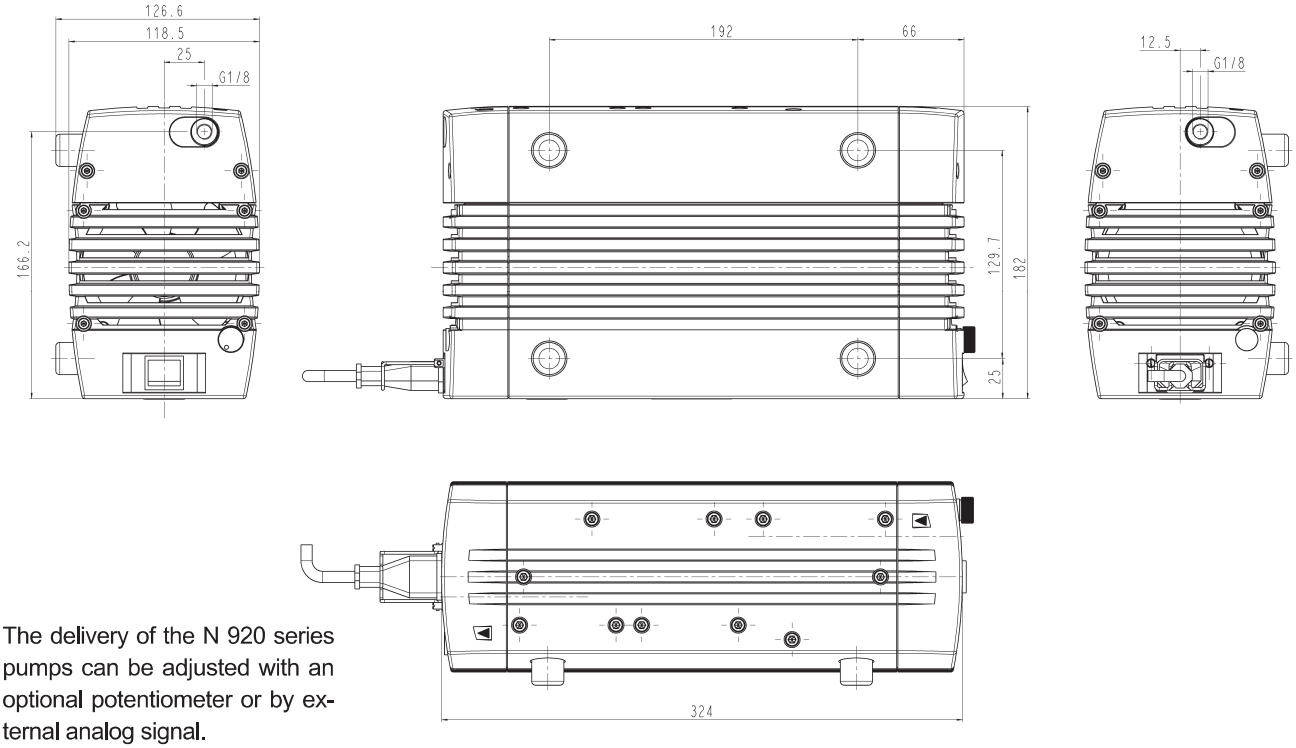


Motor data

Motor type: brushless DC motor with AC power supply	
Protection class	IP 20
Voltage (V)	100-240
Frequencies (Hz)	50-60
Power P_1 (W)	120
I_{max} (A)	1.3

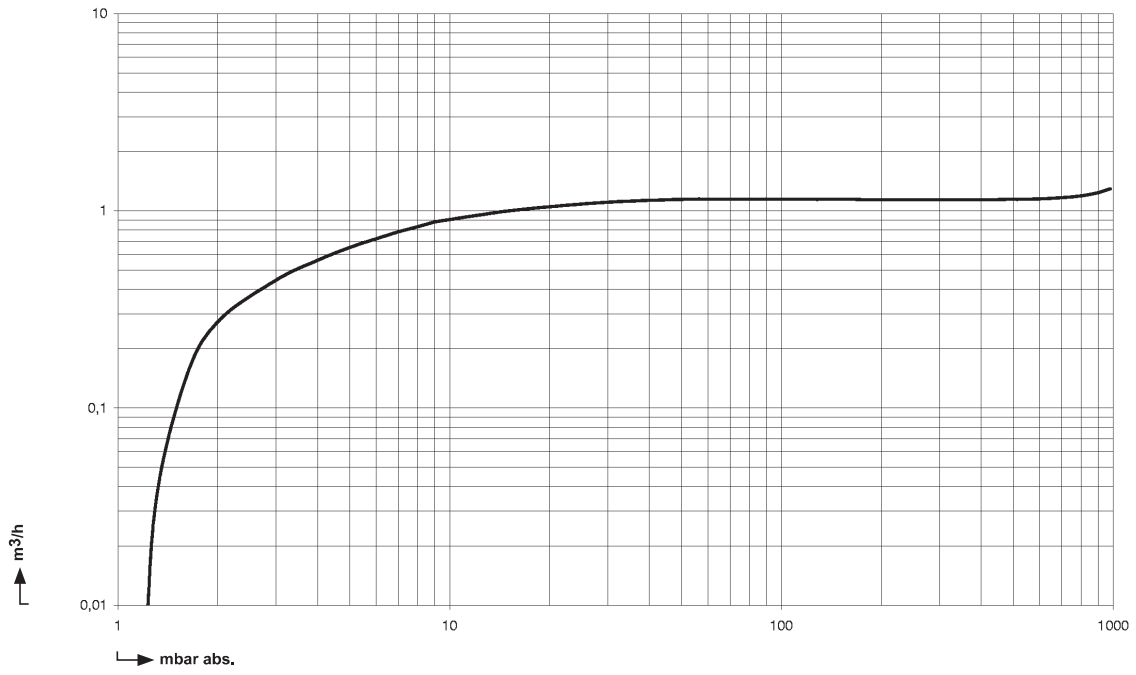
Pump material

Type	Pump head	Diaphragm	Valves
N 920 APE-W	Aluminum	EPDM	EPDM



The delivery of the N 920 series pumps can be adjusted with an optional potentiometer or by external analog signal.

Suction pumping speed N 920 APE-W | N 920 APDC-B

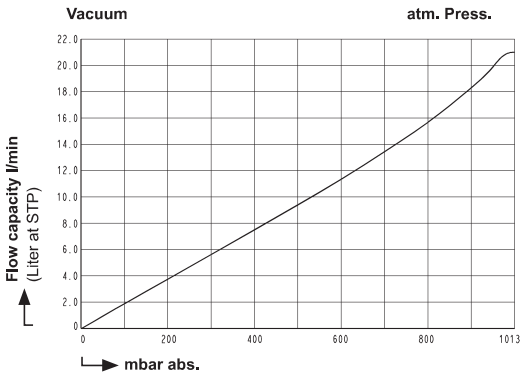


N 920 APDC-B

Performance data

Type	Delivery at atm. pressure (l/min)[1)]	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 920 APDC-B	21	0.5	< 1.5

[1)] Liter at STP

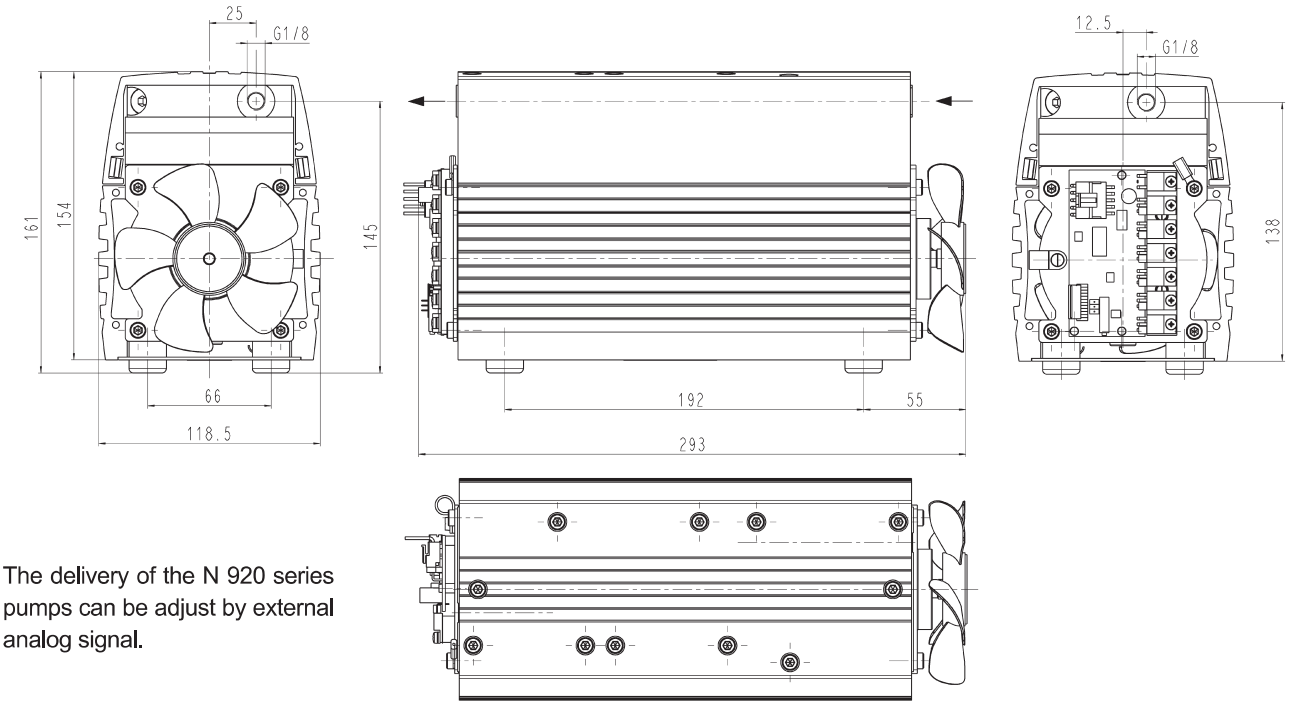


Motor data

Motor type: brushless DC motor	
Protection class	IP 00
Voltage (V)	24
Power P_1 (W)	100
I_{max} (A)	4.2 (starting current temporary 200 ms: 7 A)

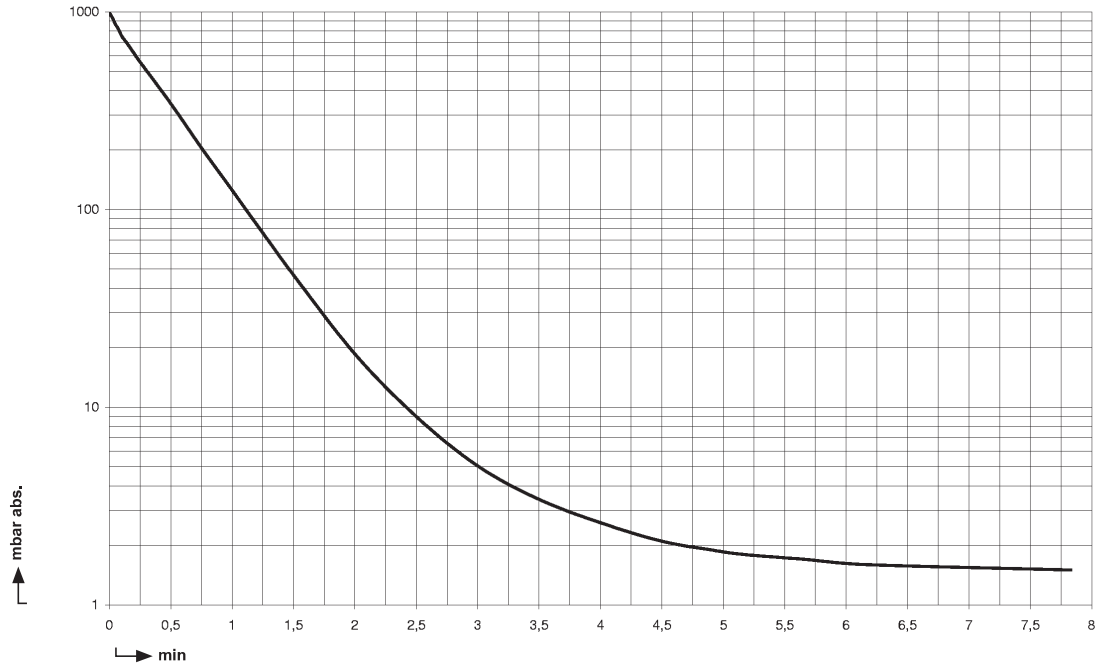
Pump material

Type	Pump head	Diaphragm	Valves
N 920 APDC-B	Aluminum	EPDM	EPDM



The delivery of the N 920 series pumps can be adjust by external analog signal.

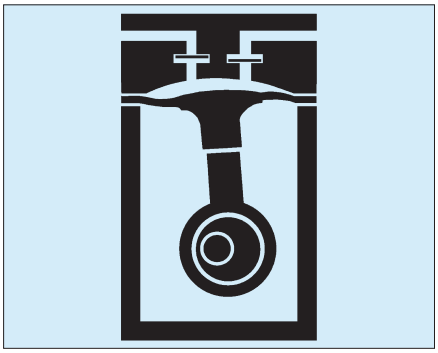
Pump down time for 10 l receiver N 920 APE-W | N 920 APDC-B



HINTS ON FUNCTION, INSTALLATION AND TECHNIQUE

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 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. 3). 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.

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.
- Please check the compatibility of the materials 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.
- 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.

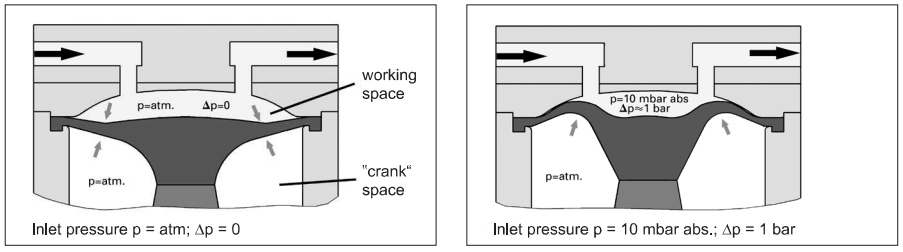


Fig. 1+2: Diaphragm behavior, due to the pressure difference between working space and ”crank” space (normal diaphragm pump).

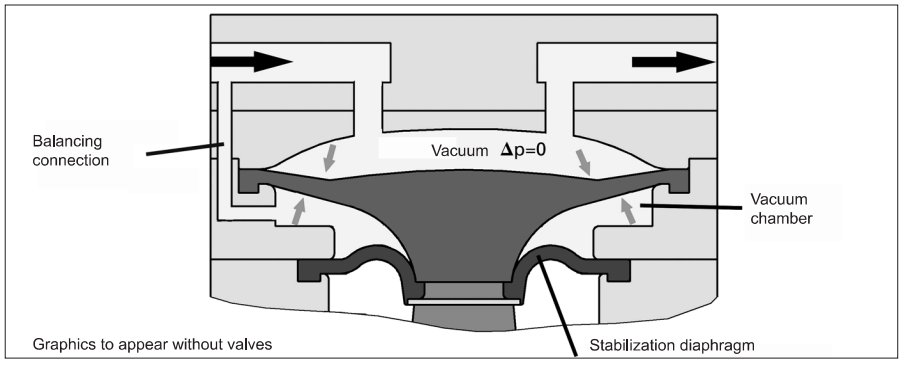


Fig. 3: Diaphragm stabilization system with additional diaphragm. This improves the suction speed of the pump significantly, over its entire working range.

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

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