

DIAPHRAGM GAS SAMPLING PUMPS

DATA SHEET E 059



N 0150 AP.9E



N 0150 SP.12E Double diaphragm pump

Concept

The diaphragm vacuum pumps from KNF are based on a simple principle – 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 KNF double diaphragm system (.12) for increased safety

A second diaphragm is located underneath the working diaphragm. If gas should leak at the working diaphragm, it will still remain inside the pump space.

Thanks to the KNF modular system, the parts used to transfer the gases can be made from materials with varying degrees of resistance. The customer has a choice of pump drives ranging from a selection of motors models. Please contact us for further details. Explosion-proof pumps in ATEX see data sheet E 178.

Features

Pure transfer, evacuation and compression of air, gases and vapors
no contamination of the media due to oil-free operation

Low maintenance

High level of gas tightness

Following leakage rates are available:
.9 corresponds to $< 6 \times 10^{-3}$ mbar l/s
.13 corresponds to $< 6 \times 10^{-6}$ mbar l/s
.12 corresponds to $< 6 \times 10^{-6}$ mbar l/s

Chemically resistant versions
are also available with the KNF double diaphragm system

Long product life

Very quiet and low vibration

Cool running motor
even in continuous operation

Can operate in any installed position

Areas of use

These diaphragm pumps for analysis and process gases offer a high level of performance despite their small size, as well as an excellent price performance ratio. They are used especially in the fields of chemical, environmental, energy and production technology.

Pumps with the KNF double diaphragm system (.12) are employed for expensive, toxic and dangerous gases. Double diaphragm pumps in ATEX for potentially explosive atmospheres on request. Please contact us for details.

PERFORMANCE DATA

Type	Delivery (l/min)	Vacuum (mbar absolute)	Pressure (bar g)	Weight incl. 3 ~ / 1 ~ motor (kg)
N 0150 AP.9E	130	120	1	40.5 / 34.5
N 0150 SP.9E	130	120	1	46.5 / 40.5
N 0150 SP.13E	130	120	1	46.5 / 40.5
N 0150 ST.9E	100	130	1	46.5 / 40.5
N 0150 ST.13E	100	130	1	46.5 / 40.5
N 0150.3 AP.9E	130	25	-	46.5 / 41.5
N 0150.3 SP.9E	130	25	-	58.5 / 53.5
N 0150.3 SP.13E	130	25	-	58.5 / 53.5
N 0150.3 ST.9E	100	30	-	58.5 / 53.5
N 0150.3 ST.13E	100	30	-	58.5 / 53.5
N 0150 SP.12E	130	120	1	48.5 / 43.0
N 0150.3 SP.12E	130	25	-	63.5 / 58.5

N 0150 _ _ _ E

PERFORMANCE DATA

Type	Delivery at atm. pressure (l/min) ¹⁾	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 0150 AP.9E	130	1	120
N 0150 SP.9E	130	1	120
N 0150 SP.13E	130	1	120
N 0150 ST.9E	100	1	130
N 0150 ST.13E	100	1	130

¹⁾ Liter at STP

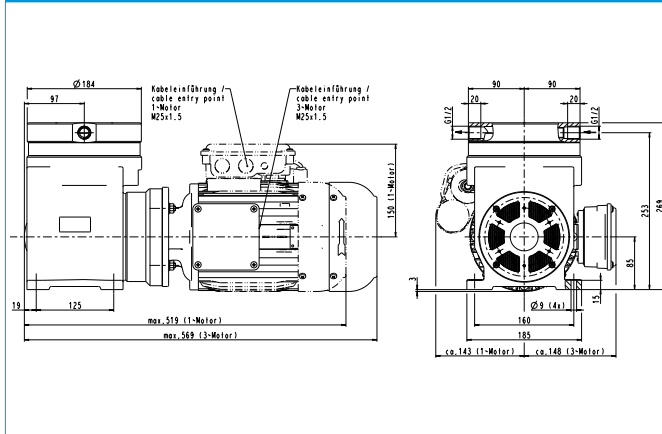
MOTOR DATA

Protection class	IP 55	IP 55
Voltage (V)	230	3~ 230/400
Frequency (Hz)	50	50
Power P ₁ (kW)	0.9	0.9
I _{max} (A)	6.6	6.1/3.5

PUMP MATERIAL

Type	Pump head	Diaphragm	Valves
N 0150 AP.9E	Aluminum	EPDM	Stainless steel
N 0150 SP.9E	Stainless steel	EPDM	Stainless steel
N 0150 SP.13E	Stainless steel	EPDM	Stainless steel
Chemically resistant version			
N 0150 ST.9E	Stainless steel	PTFE-coated	Stainless steel
N 0150 ST.13E	Stainless steel	PTFE-coated	Stainless steel

N 0150 _ _ _ E



N 0150.3 _ _ _ E

PERFORMANCE DATA

Type	Delivery at atm. pressure (l/min) ¹⁾	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 0150.3 AP.9E	130	-	25
N 0150.3 SP.9E	130	-	25
N 0150.3 SP.13E	130	-	25
N 0150.3 ST.9E	100	-	30
N 0150.3 ST.13E	100	-	30

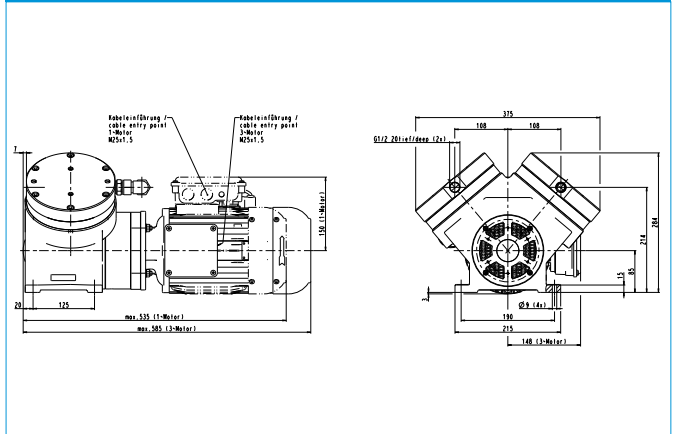
MOTOR DATA

Protection class	IP 55	IP 55
Voltage (V)	230	3~ 230/400
Frequency (Hz)	50	50
Power P ₁ (kW)	1.0	0.9
I _{max} (A)	7.3	6.1/3.5

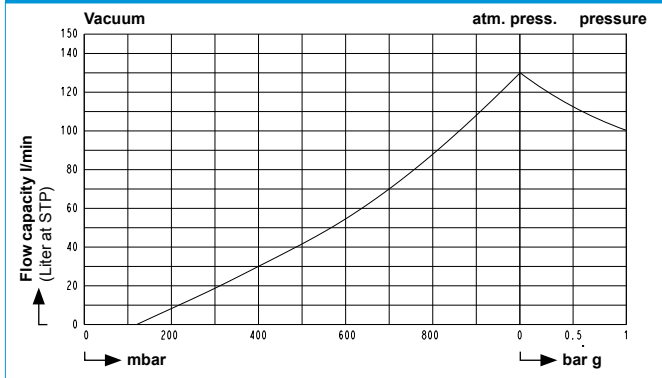
PUMP MATERIAL

Type	Pump head	Diaphragm	Valves
N 0150.3 AP.9E	Aluminum	EPDM	Stainless steel
N 0150.3 SP.9E	Stainless steel	EPDM	Stainless steel
N 0150.3 SP.13E	Stainless steel	EPDM	Stainless steel
Chemically resistant version			
N 0150.3 ST.9E	Stainless steel	PTFE-coated	Stainless steel
N 0150.3 ST.13E	Stainless steel	PTFE-coated	Stainless steel

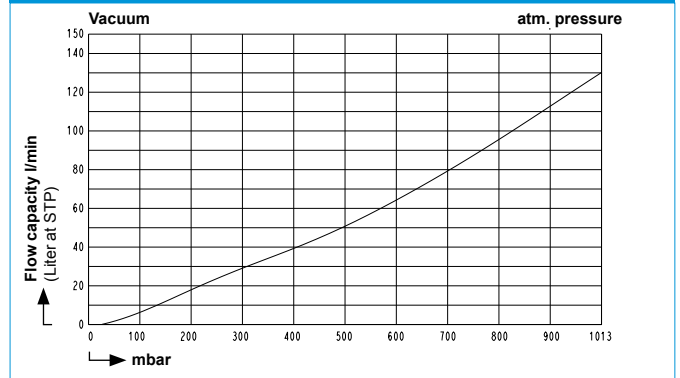
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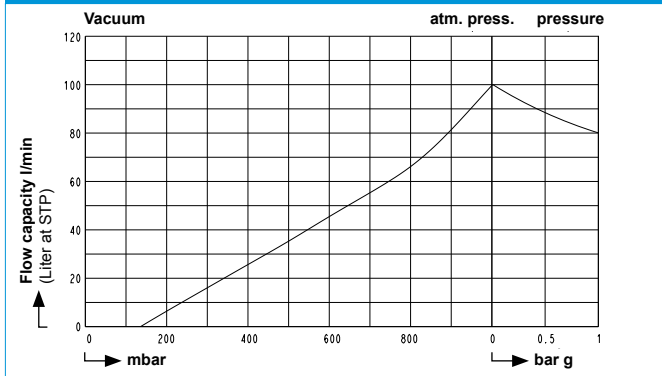
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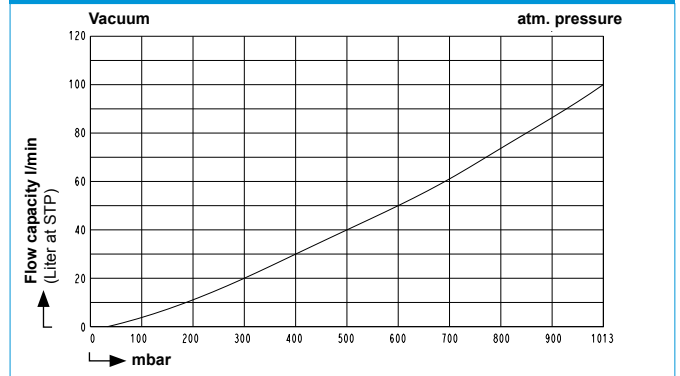
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N 0150 ST.9E | N 0150 ST.13E



N 0150.3 ST.9E | N 0150.3 ST.13E



N 0150 SP.12E

PERFORMANCE DATA

Type	Delivery at atm. pressure (l/min) ¹⁾	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 0150 SP.12E	130	1	120

¹⁾ Liter at STP

MOTOR DATA

Protection class	IP 55	IP 55
Voltage (V)	230	3~ 230/400
Frequency (Hz)	50	50
Power P1 (kW)	0.9	0.9
I _{max} (A)	6.6	6.1/3.5

PUMP MATERIAL

Type	Pump head	Diaphragm	Valves
N 0150 SP.12E	Stainless steel	EPDM	Stainless steel

Chemically resistant version see mentioned below

N 0150.3 SP.12E

PERFORMANCE DATA

Type	Delivery at atm. pressure (l/min) ¹⁾	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 0150.3 SP.12E	130	-	25

MOTOR DATA

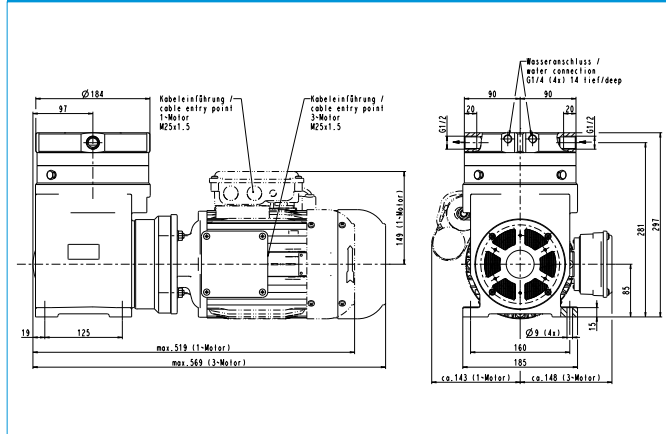
Protection class	IP 55	IP 55
Voltage (V)	230	3~ 230/400
Frequency (Hz)	50	50
Power P1 (kW)	1.0	0.9
I _{max} (A)	7.3	6.1/3.5

PUMP MATERIAL

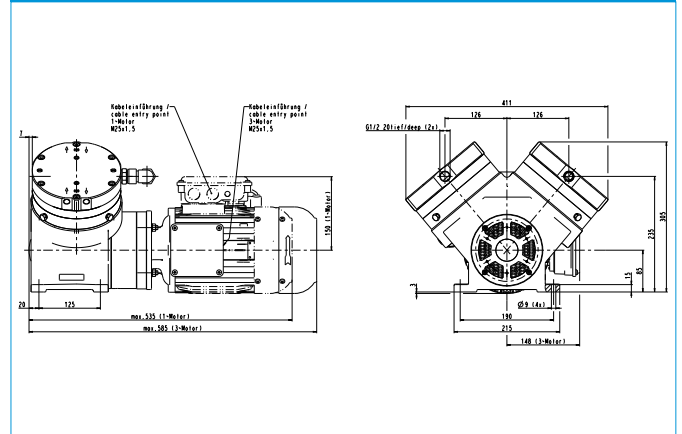
Type	Pump head	Diaphragm	Valves
N 0150 SP.12E	Stainless steel	EPDM	Stainless steel

Chemically resistant version see mentioned below

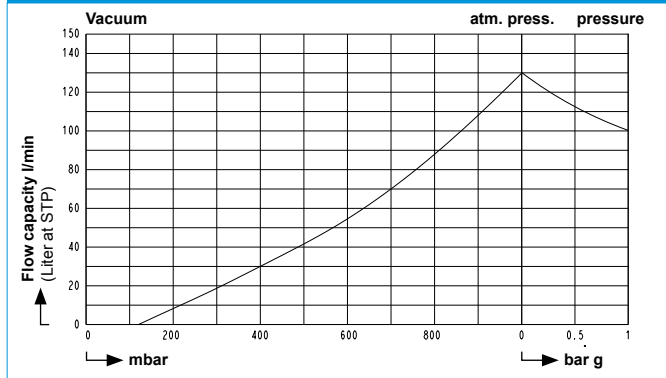
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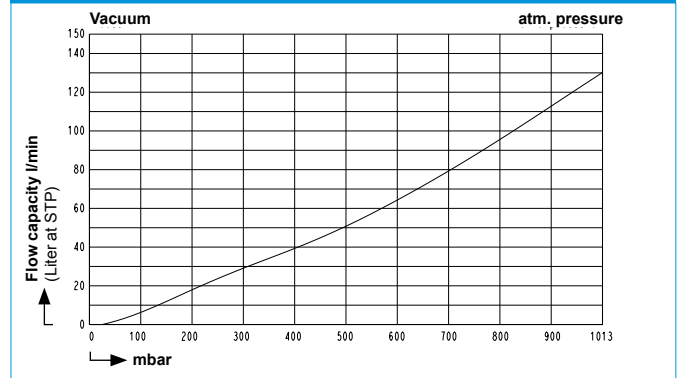
N 0150.3 SP.12E



N 0150 SP.12E



N 0150.3 SP.12E



CHEMICALLY RESISTANT VERSION WITH DOUBLE DIAPHRAGM SYSTEM

Pumps with the double diaphragm system are available as chemically resistant versions. Increased safety can be combined with high resistance to chemicals. The properties of the new pump:

- Pump head and valves of stainless steel, working diaphragm PTFE-coated
- Delivery: 100 l/min at atm. pressure (Liter at STP)
- Ultimate vacuum: 130 mbar abs.
- Maximum permissible operating pressure: 1 bar g
- Leak rate: $< 6 \times 10^{-5}$ mbar l/s

Please contact us for details

CHEMICALLY RESISTANT VERSION WITH DOUBLE DIAPHRAGM SYSTEM

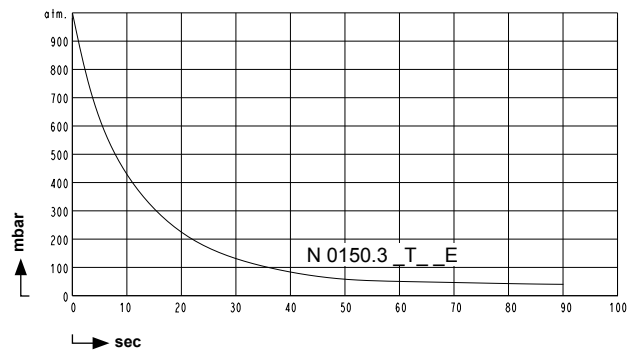
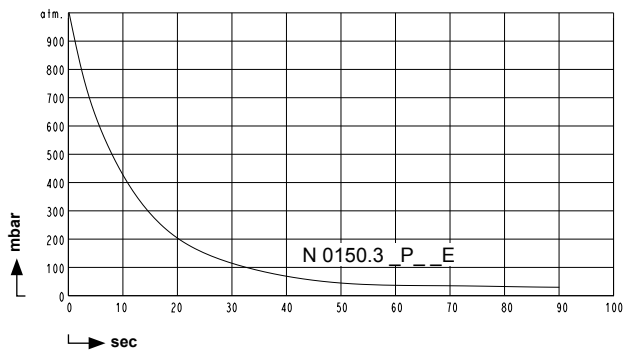
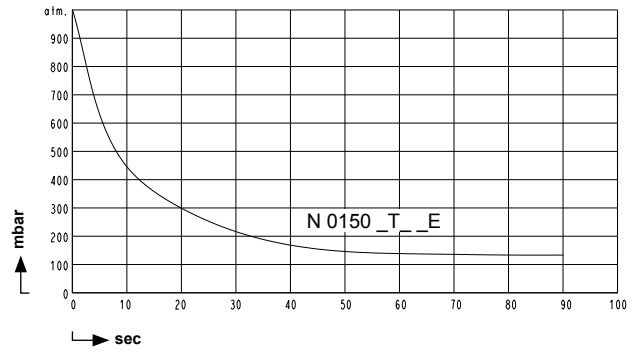
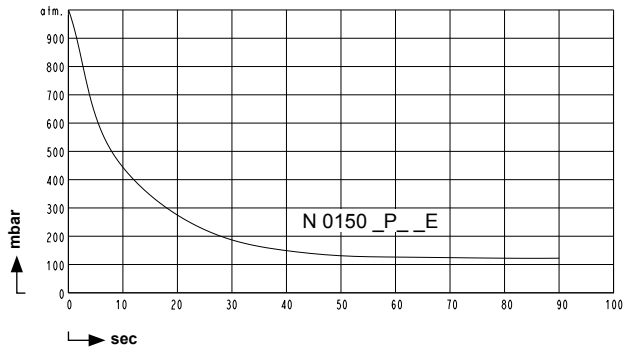
Pumps with the double diaphragm system are available as chemically resistant versions. Increased safety can be combined with high resistance to chemicals. The properties of the new pump:

- Pump head and valves of stainless steel, working diaphragm PTFE-coated
- Delivery: 100 l/min at atm. pressure (Liter at STP)
- Ultimate vacuum: 30 mbar abs.
- Leak rate: $< 6 \times 10^{-5}$ mbar l/s

Please contact us for details

TECHNICAL INFORMATION

PUMP DOWN TIME 20 LITER VESSEL



ACCESSORIES

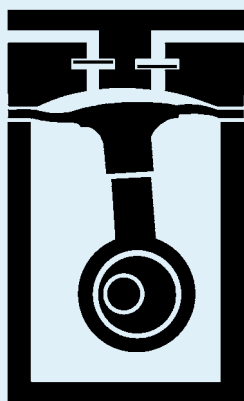
Description	Order No.	Details
Silencer	046104	G 1/2
Wrench for retainer plate	018816	
Foot plate with shock mounts	304463	
Water cooling (only in combination with stainless steel heads)		
N 0150 / N0150___.12	305998	
N 0150.0 (double-head pump)	306765	
N 0150.0 (double-head pump) .12	306766	

HINTS ON FUNCTION AND INSTALLATION

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



The KNF double diaphragm system for increased safety

A second diaphragm is located underneath the working diaphragm. This second diaphragm is under less mechanical stress when the pump is operating. If gas should leak at the working diaphragm, it will still remain inside the pump space. The space between both diaphragms can be monitored so that any damage to the working diaphragm will be noted immediately.

Pumps with the KNF double diaphragm system are employed for expensive, toxic and dangerous gases.

Double diaphragm pump



Hints on installation and operation

- Range of use: Transferring air and gases at temperatures between +5 °C and +40 °C.
- Use chemically resistant versions for aggressive gases and vapors.
- 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.
- To prevent the maximum operating pressure being exceeded, restriction or regulation of the gas 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 can not collect in the head of the pump.

KNF Neuberger GmbH
Alter Weg 3
D 79112 Freiburg
Tel. +49 7664 5909 0
Fax +49 7664 5909 99
info@knf.de
www.knf.de