

## DIAPHRAGM GAS SAMPLING PUMPS

## DATA SHEET E 059



**N 0150 ANE**



**N 0150.1.2 ANE**



**N 0150 AN.12E (Double diaphragm pump)**

### Concept

The diaphragm vacuum 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 KNF double diaphragm system 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 durability. The customer has a choice of pump drives ranging from a selection of motor models.

Explosion protection pumps in ATEX see data sheet E 178.

### Features

#### Pure transferring, 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:

Leak rate from  $< 6 \times 10^{-3}$  mbar l/s (normal models) to  $< 6 \times 10^{-6}$  mbar l/s (standard models with double diaphragm system)

#### Chemically resistant versions

are available with the KNF double diaphragm system

#### Long product life

#### Very quiet and little vibration

#### Cool running motor

even when in constant use

#### 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 are employed for expensive, toxic and dangerous gases. Double diaphragm pumps in ATEX for potentially explosive atmospheres on request.

## Performance data

Type	Delivery (l/min)	Vacuum (mbar absolute)	atm. pressure	Pressure (bar g)	Weight (kg)
N 0150 ANE	150	100	atm. pressure	2	21.5
N 0150.3 ANE	150	20		28.5	
N 0150.1.2 ANE	280	100		2	28.5
N 0150 AN.12E	150	100		2	22.0
N 0150.3 AN.12E	150	20		30.0	
N 0150.1.2 AN.12E	280	100		2	30.0

# N 0150 \_\_E

## Performance data

Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 0150 ANE	150	2	100
N 0150 ATE	120	2	115
N 0150 STE	120	2	115

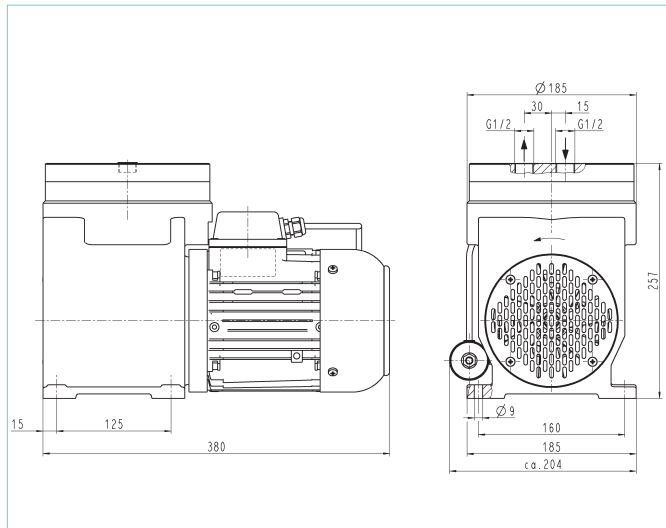
<sup>1)</sup> Liter at STP

## Motor data

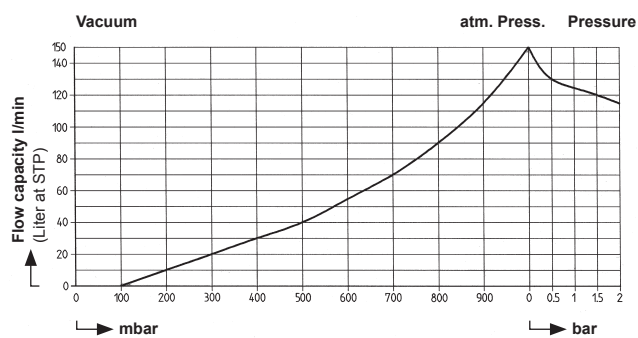
Protection class	IP 54	IP 54
Voltage (V)	230	3~ 230/400
Frequencies (Hz)	50	50
Power P <sub>1</sub> (W)	650	650
I <sub>max</sub> (A)	3.3	3.5/2.0

## Pump material

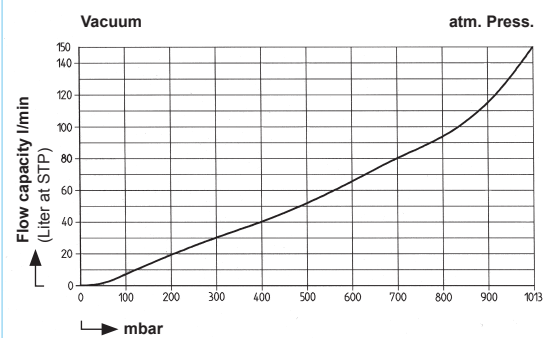
Type	Pump head	Diaphragm	Valves
N 0150 ANE	Aluminum	EPDM	Stainless steel
N 0150 ATE	Aluminum	PTFE-coated	Stainless steel
Chemically resistant version			
N 0150 STE	Stainless steel	PTFE-coated	Stainless steel



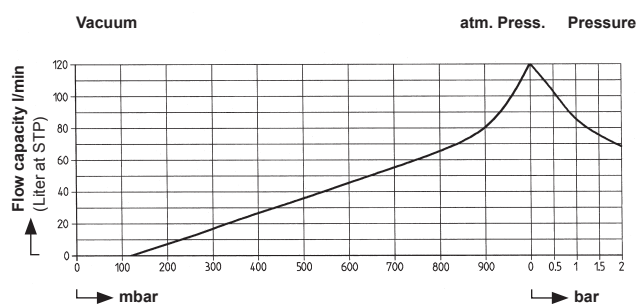
## N 0150 ANE



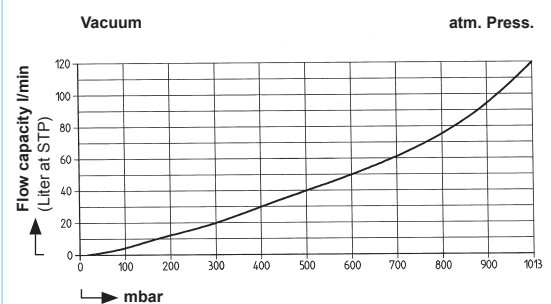
## N 0150.3 ANE



## N 0150 ATE | N 0150 STE



## N 0150.3 ATE | N 0150.3 STE



# N 0150.3 \_\_E

## Performance data

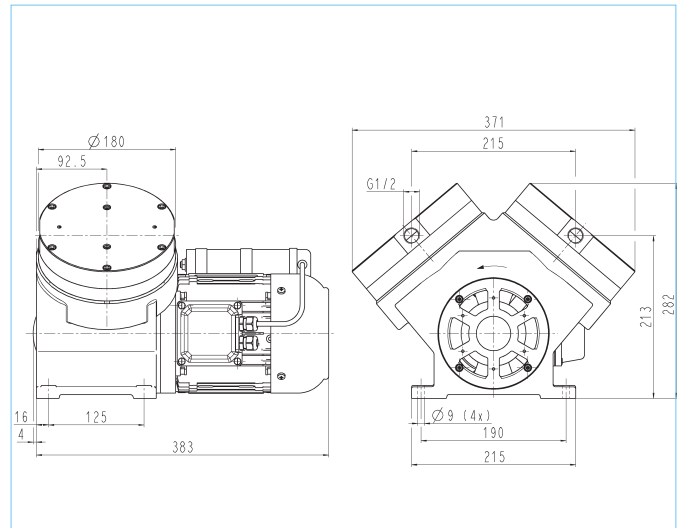
Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 0150.3 ANE	150	-	20
N 0150.3 ATE	120	-	25
N 0150.3 STE	120	-	25

## Motor data

Protection class	IP 54	IP 54
Voltage (V)	230	3~ 230/400
Frequencies (Hz)	50	50
Power P <sub>1</sub> (W)	950	1000
I <sub>max</sub> (A)	4.2	4.0/2.3

## Pump material

Type	Pump head	Diaphragm	Valves
N 0150.3 ANE	Aluminum	EPDM	Stainless steel
N 0150.3 ATE	Aluminum	PTFE-coated	Stainless steel
Chemically resistant version			
N 0150.3 STE	Stainless steel	PTFE-coated	Stainless steel



### Performance data

Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 0150.1.2 ANE	280	2	100
N 0150.1.2 ATE	220	2	115
N 0150.1.2 STE	220	2	115

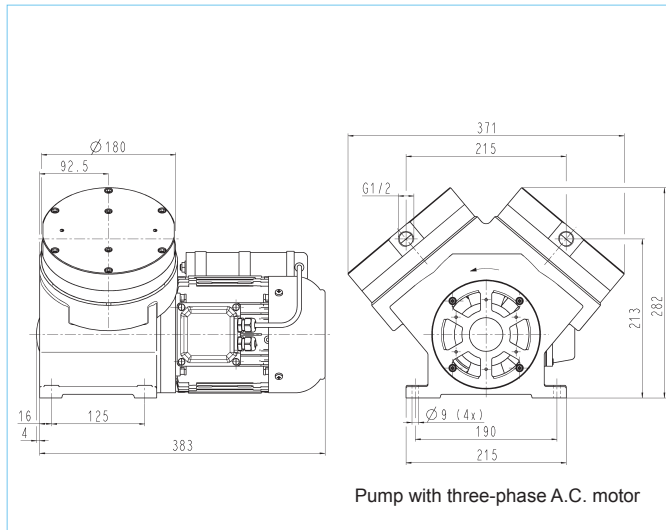
<sup>1)</sup> Liter at STP

### Motor data

Protection class	IP 54	IP 54
Voltage (V)	230	3~ 230/400
Frequencies (Hz)	50	50
Power P <sub>1</sub> (W)	950	1000
I <sub>max</sub> (A)	4.2	4.0/2.3

### Pump material

Type	Pump head	Diaphragm	Valves
N 0150.1.2 ANE	Aluminum	EPDM	Stainless steel
N 0150.1.2 ATE	Aluminum	PTFE-coated	Stainless steel
Chemically resistant version			
N 0150.1.2 STE	Stainless steel	PTFE-coated	Stainless steel



Pumps with double diaphragm system (.12):  
 - increased safety  
 - gas-tightness (leak rate:  $< 6 \times 10^{-6}$  mbar l/s)

### Performance data

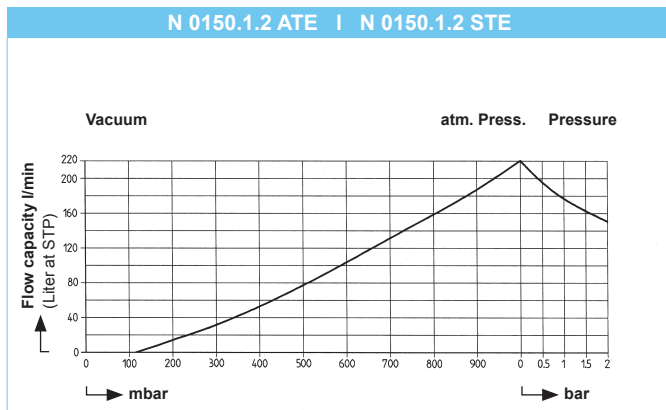
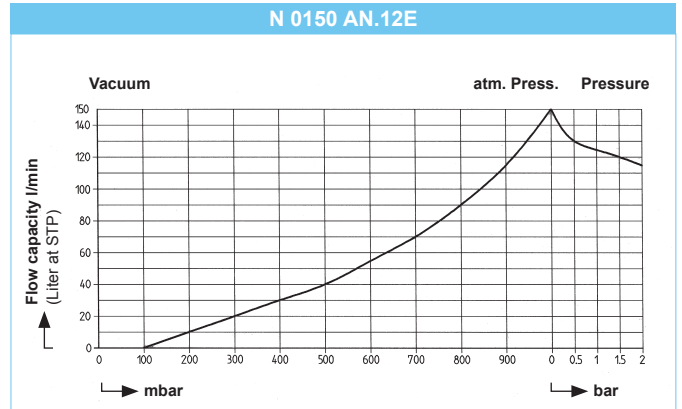
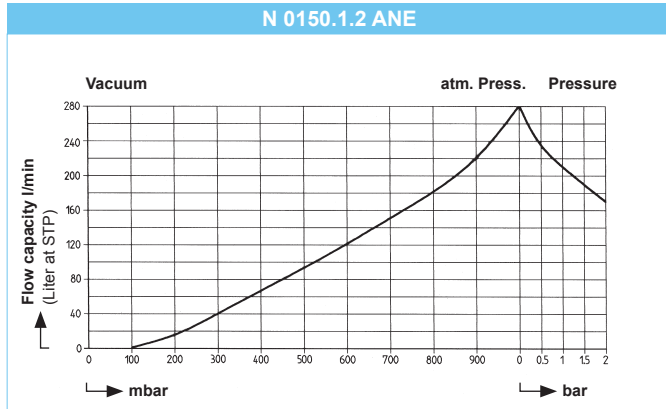
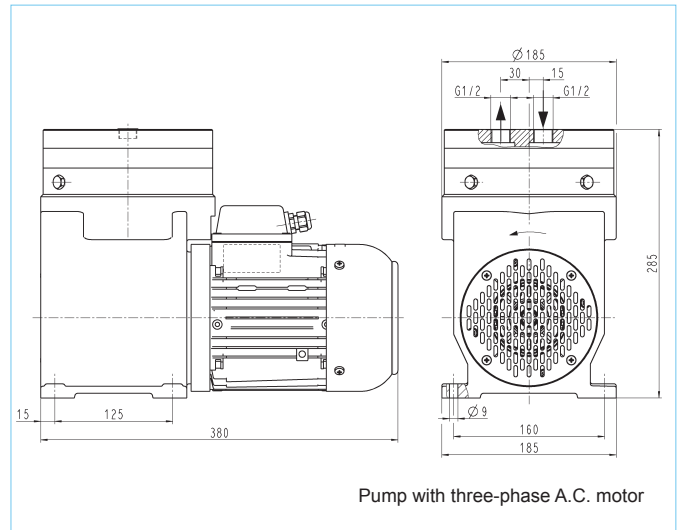
Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 0150 AN.12E	150	2	100

### Motor data

Protection class	IP 54	IP 54
Voltage (V)	230	3~ 230/400
Frequencies (Hz)	50	50
Power P <sub>1</sub> (W)	650	650
I <sub>max</sub> (A)	3.3	3.5/2.0

### Pump material

Type	Pump head	Diaphragm	Valves
N 0150 AN.12E	Aluminum	EPDM	Stainless steel
Chemically resistant version see below			



### Chemically resistant versions with double diaphragm system

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

- Pump head and valves of stainless steel, working diaphragm PTFE-coated
- Delivery: 120 l/min at atm. pressure (Liter at STP)
- Ultimate vacuum: 115 mbar abs.
- Maximum permissible operating pressure: 2 bar g
- Leak rate:  $< 1 \times 10^{-5}$  mbar l/s

# N 0150.3 AN.12E

Pumps with double diaphragm system (.12):  
 - increased safety  
 - gas-tightness (leak rate:  $< 6 \times 10^{-6}$  mbar l/s)

## Performance data

Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 0150.3 AN.12E	150	-	20

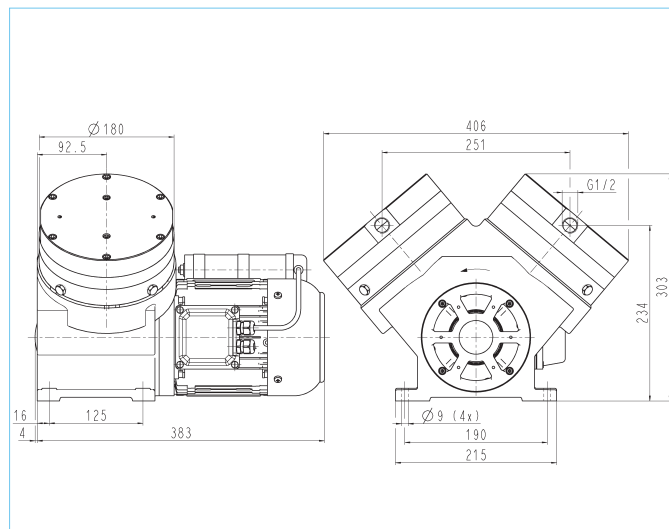
<sup>1)</sup> Liter at STP

## Motor data

Protection class	IP 54	IP 54
Voltage (V)	230	3~ 230/400
Frequencies (Hz)	50	50
Power P <sub>1</sub> (W)	950	1000
I <sub>max</sub> (A)	4.2	4.0/2.3

## Pump material

Type	Pump head	Diaphragm	Valves
N 0150.3 AN.12E	Aluminum	EPDM	Stainless steel
Chemically resistant version see below			



# N 0150.1.2 AN.12E

Pumps with double diaphragm system (.12):  
 - increased safety  
 - gas-tightness (leak rate:  $< 6 \times 10^{-6}$  mbar l/s)

## Performance data

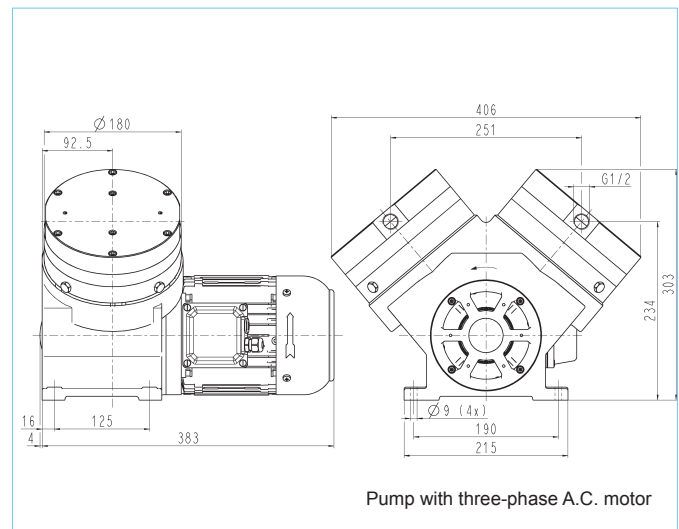
Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 0150.1.2 AN.12E	280	2	100

## Motor data

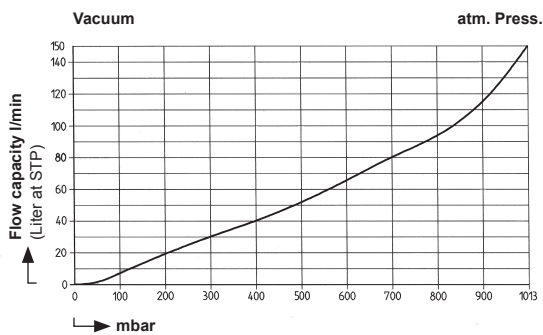
Protection class	IP 54	IP 54
Voltage (V)	230	3~ 230/400
Frequencies (Hz)	50	50
Power P <sub>1</sub> (W)	950	1000
I <sub>max</sub> (A)	4.2	4.0/2.3

## Pump material

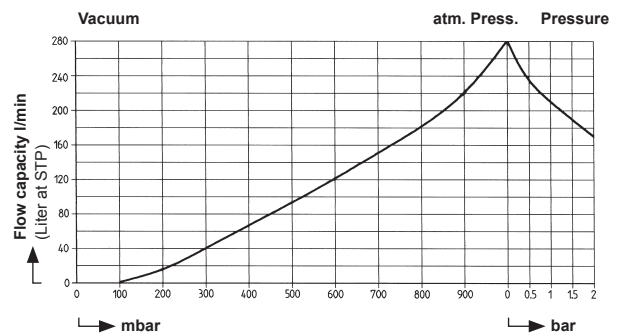
Type	Pump head	Diaphragm	Valves
N 0150.1.2 AN.12E	Aluminum	EPDM	Stainless steel
Chemically resistant version see below			



## N 0150.3 AN.12E



## N 0150.1.2 AN.12E



## Chemically resistant versions with double diaphragm system

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

- Pump head and valves of stainless steel, working diaphragm PTFE-coated
- Delivery: 120 l/min at atm. pressure (Liter at STP)
- Ultimate vacuum: 25 mbar abs.
- Leak rate:  $< 1 \times 10^{-5}$  mbar l/s

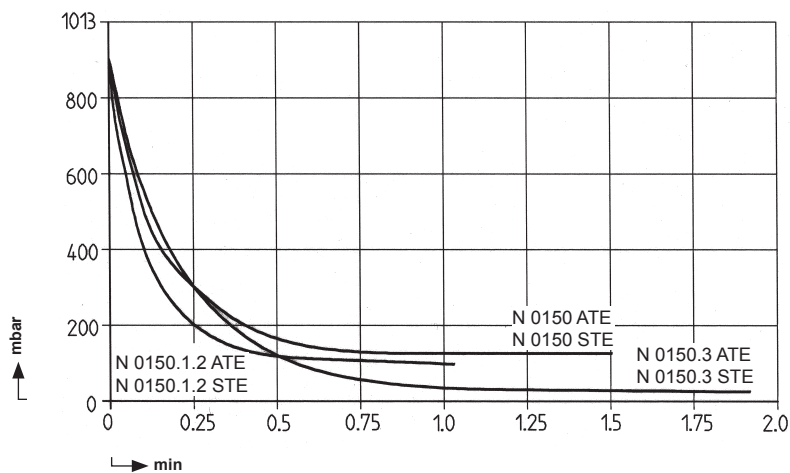
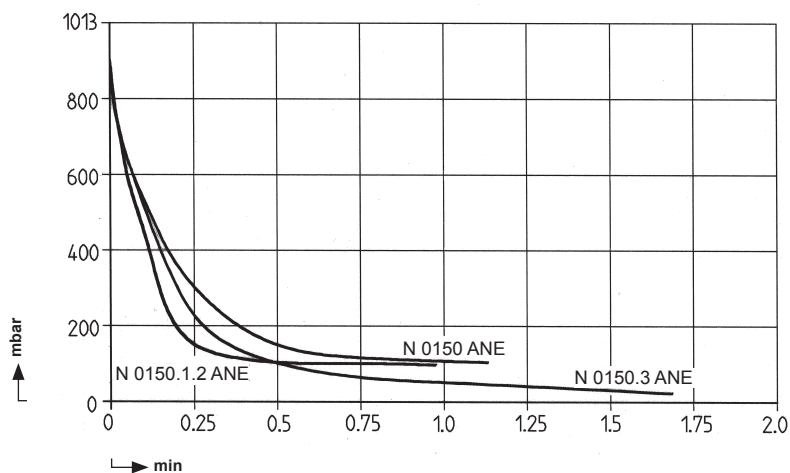
## Chemically resistant versions with double diaphragm system

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

- Pump head and valves of stainless steel, working diaphragm PTFE-coated
- Delivery: 220 l/min at atm. pressure (Liter at STP)
- Ultimate vacuum: 115 mbar abs.
- Maximum permissible operating pressure: 2 bar g
- Leak rate:  $< 1 \times 10^{-5}$  mbar l/s

# TECHNICAL INFORMATION

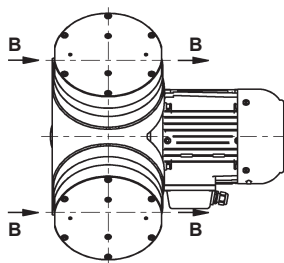
Pump down time for 20 l receiver



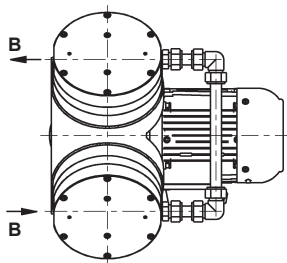
## Accessories

Description	Order No.	Details
Silencer	046104	G 1/2
Wrench for retainer plate	018816	

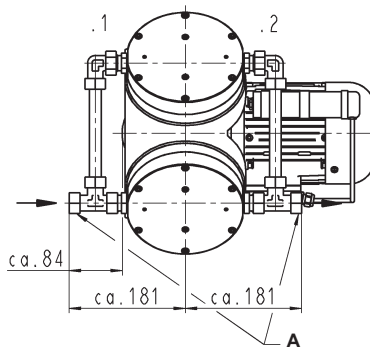
## Head connections



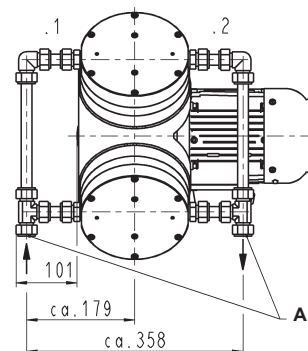
**N 0150.0**  
Pump heads  
without connection



**N 0150.3**  
Pump heads in  
series (2-stage)



**N 0150.1.2**  
Pump heads in  
parallel both side



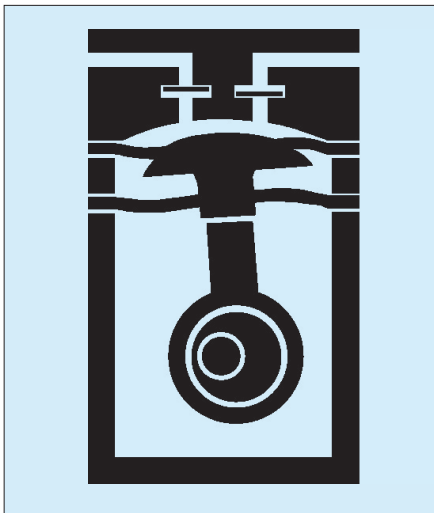
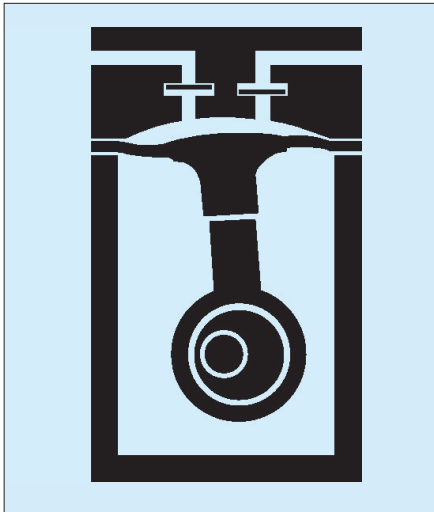
**N 0150.1.2\_.12**  
Pump heads in  
parallel both side

A = taper bush type pipe union for pipe OD 18  
B = G 1/2

## 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.



### 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 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 - that prolongs working-life.

### 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. Please contact us for details.

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