

# DIAPHRAGM VACUUM PUMPS AND COMPRESSORS

DATA SHEET E 032



N 035.1 ANE with IP 20 motor



N 035.2 ANE with IP 44 motor

## 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.

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 AC motors to explosion-proof models.

## Features

- Pure transfer, evacuation and compression of air, gases and vapors**  
No contamination of the media due to oil-free operation
- Maintenance-free**
- Corrosion resistant models**
- High level of gas tightness**  
approx.  $6 \times 10^{-3}$  mbar x l/s (not tested in serial production)
- Long product life**
- Very quiet and little vibration**
- Cool running motor**  
even when in constant use
- Ready for assembly**
- Can operate in any installed position**

## Areas of use

The diaphragm vacuum pumps offer a high level of performance despite their small size, as well as an excellent price performance ratio. They are required especially in the fields of analysis, medicine and production technology.

The pumps are used for transferring, compressing and evacuating air, gases and vapors, taking samples (even liquids in a vacuum) and evacuating and compressing vessels.

PERFORMANCE DATA				
Type	Delivery (l/min)	Vacuum (mbar absolute)	Pressure (bar g)	Weight (kg)
N 035.1 ANE (IP 20)	55	100	atm. pressure	10.9
N 035.1 ANE (IP 44)	55	100		11.2
N 035.2 ANE (IP 20)	55			4
N 035.2 ANE (IP 44)	55			4
N 035.3 ANE (IP 20)	30	13		10.9
N 035.3 ANE (IP 44)	30	13		11.2

# N 035.1 \_\_ E WITH IP 20 MOTOR

## PERFORMANCE DATA

Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 035.1 ANE	55	-	100
N 035.1 AVE	55	-	100
N 035.1 ATE	49	-	100
N 035.1 SNE	55	-	100
N 035.1 SVE	55	-	100
N 035.1 STE	49	-	100

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

## MOTOR DATA

Protection class	IP 20
Voltage (V)	230
Frequencies (Hz)	50
Power P <sub>1</sub> (W)	320
I <sub>max</sub> (A)	1.8

## PUMP MATERIAL

Type	Pump head	Diaphragm	Valves
N 035.1 ANE	Aluminum	CR	Stainless steel
For slightly aggressive or corrosive gases and vapors			
N 035.1 AVE	Aluminum	FPM	Stainless steel
N 035.1 ATE	Aluminum	PTFE-coated	Stainless steel
N 035.1 SNE	Stainless steel	CR	CR
N 035.1 SVE	Stainless steel	FPM	FPM
N 035.1 STE	Stainless steel	PTFE-coated	PTFE

# N 035.1 \_\_ E WITH IP 44 MOTOR

## PERFORMANCE DATA

Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 035.1 ANE	55	-	100
N 035.1 AVE	55	-	100
N 035.1 ATE	49	-	100
N 035.1 SNE	55	-	100
N 035.1 SVE	55	-	100
N 035.1 STE	49	-	100

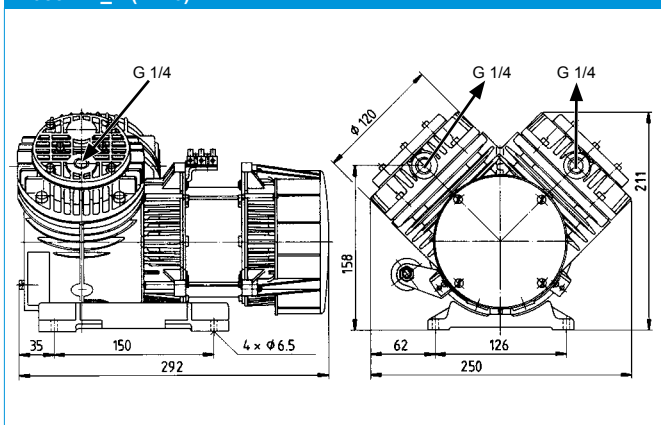
## MOTOR DATA

Protection class	IP 44
Voltage (V)	230
Frequencies (Hz)	50
Power P <sub>1</sub> (W)	360
I <sub>max</sub> (A)	2.1

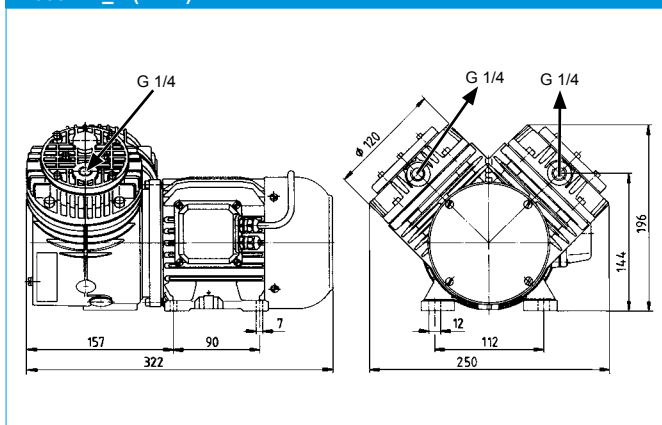
## PUMP MATERIAL

Type	Pump head	Diaphragm	Valves
N 035.1 ANE	Aluminum	CR	Stainless steel
For slightly aggressive or corrosive gases and vapors			
N 035.1 AVE	Aluminum	FPM	Stainless steel
N 035.1 ATE	Aluminum	PTFE-coated	Stainless steel
N 035.1 SNE	Stainless steel	CR	CR
N 035.1 SVE	Stainless steel	FPM	FPM
N 035.1 STE	Stainless steel	PTFE-coated	PTFE

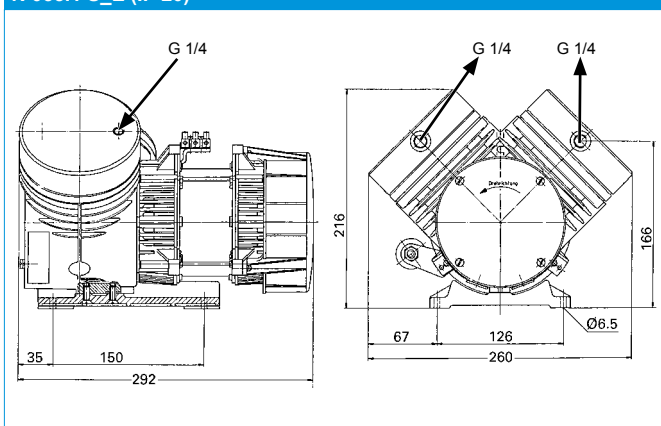
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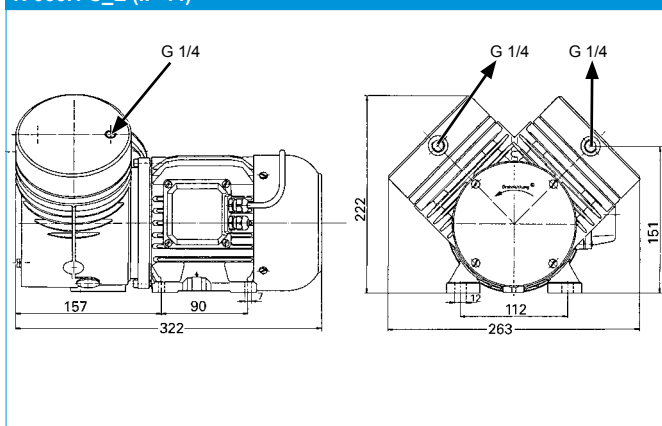
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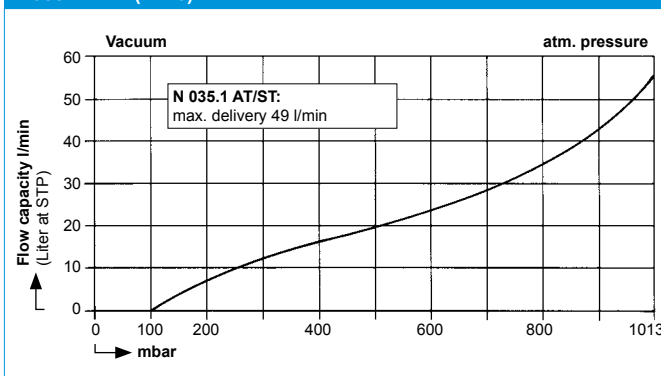
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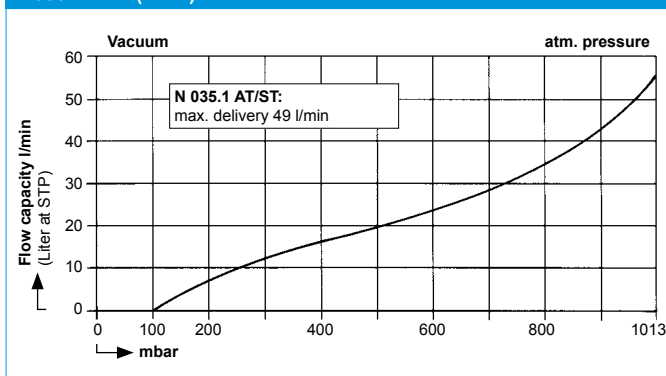
## N 035.1 S\_E (IP 44)



## N 035.1 ANE (IP 20)



## N 035.1 ANE (IP 44)



# N 035.2 \_\_ E WITH IP 20 MOTOR

## PERFORMANCE DATA

Type	Delivery at atm. pressure (l/min) <sup>(1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 035.2 ANE	55	4	-
N 035.2 AVE	55	2	-
N 035.2 ATE	49	4	-
N 035.2 SNE	55	4	-
N 035.2 SVE	55	2	-
N 035.2 STE	49	4	-

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

## MOTOR DATA

Protection class	IP 20
Voltage (V)	230
Frequencies (Hz)	50
Power P <sub>1</sub> (W)	320
I <sub>max</sub> (A)	1.8

## PUMP MATERIAL

Type	Pump head	Diaphragm	Valves
N 035.2 ANE	Aluminum	CR	Stainless steel
For slightly aggressive or corrosive gases and vapors			
N 035.2 AVE	Aluminum	FPM	Stainless steel
N 035.2 ATE	Aluminum	PTFE-coated	Stainless steel
N 035.2 SNE	Stainless steel	CR	CR
N 035.2 SVE	Stainless steel	FPM	FPM
N 035.2 STE	Stainless steel	PTFE-coated	PTFE

# N 035.2 \_\_ E WITH IP 44 MOTOR

## PERFORMANCE DATA

Type	Delivery at atm. pressure (l/min) <sup>(1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 035.2 ANE	55	4	-
N 035.2 AVE	55	2	-
N 035.2 ATE	49	4	-
N 035.2 SNE	55	4	-
N 035.2 SVE	55	2	-
N 035.2 STE	49	4	-

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

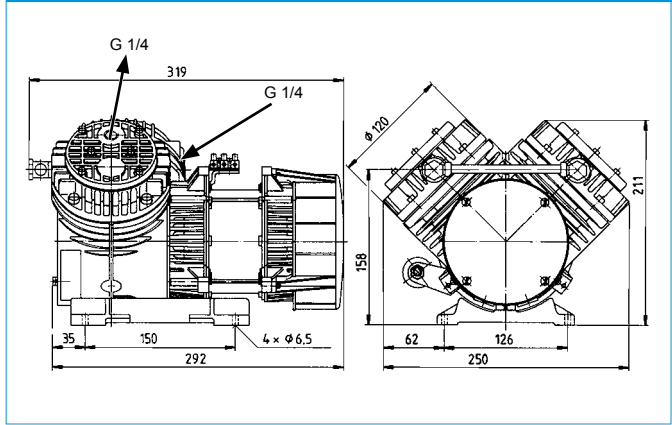
## MOTOR DATA

Protection class	IP 44
Voltage (V)	230
Frequencies (Hz)	50
Power P <sub>1</sub> (W)	360
I <sub>max</sub> (A)	2.1

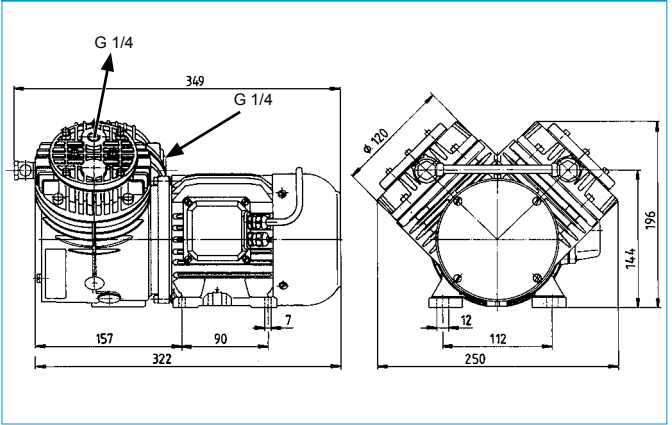
## PUMP MATERIAL

Type	Pump head	Diaphragm	Valves
N 035.2 ANE	Aluminum	CR	Stainless steel
For slightly aggressive or corrosive gases and vapors			
N 035.2 AVE	Aluminum	FPM	Stainless steel
N 035.2 ATE	Aluminum	PTFE-coated	Stainless steel
N 035.2 SNE	Stainless steel	CR	CR
N 035.2 SVE	Stainless steel	FPM	FPM
N 035.2 STE	Stainless steel	PTFE-coated	PTFE

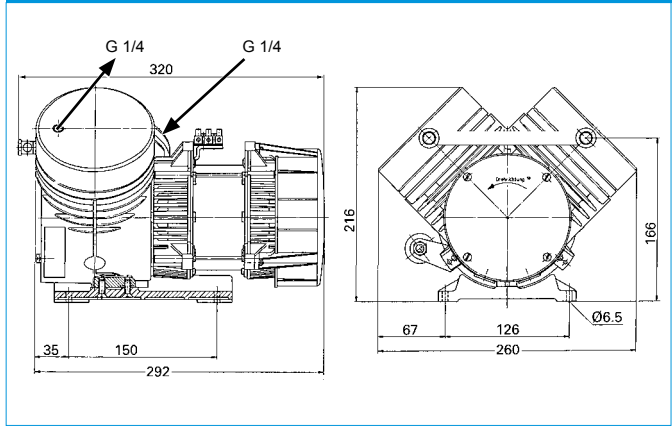
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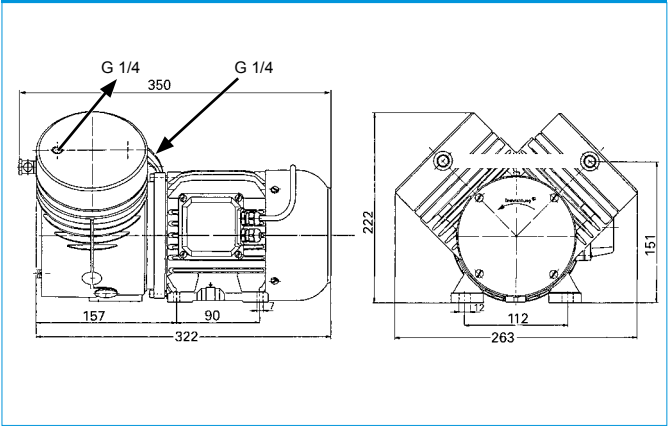
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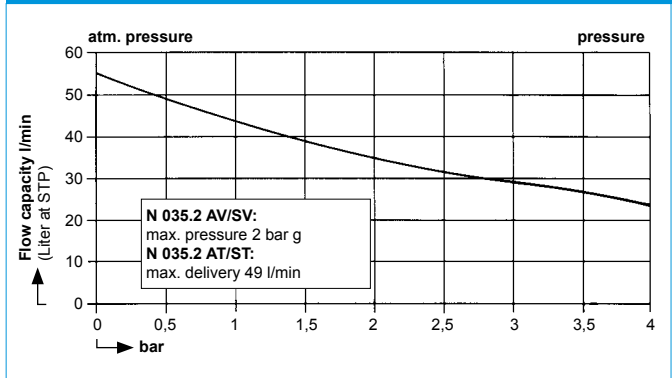
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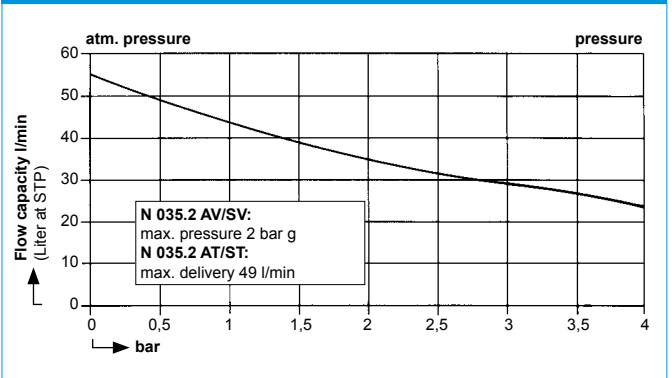
### N 035.2 S\_E (IP 44)



### N 035.2 ANE (IP 20)



### N 035.2 ANE (IP 44)



# N 035.3 \_\_ E WITH IP 20 MOTOR

## PERFORMANCE DATA

Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 035.3 ANE	30	-	13
N 035.3 AVE	30	-	13
N 035.3 ATE	27	-	20
N 035.3 SNE	30	-	13
N 035.3 SVE	30	-	13
N 035.3 STE	27	-	20

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

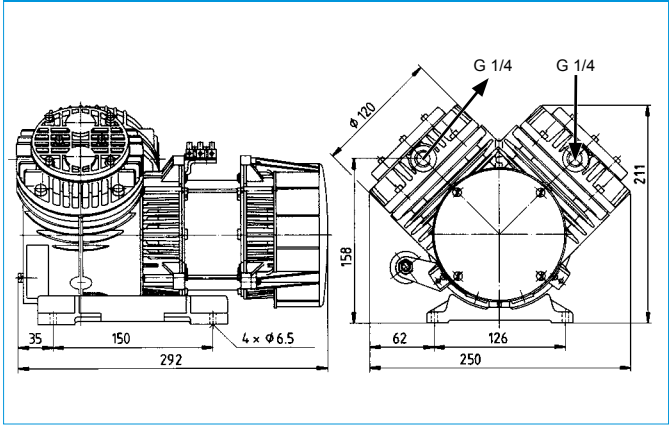
## MOTOR DATA

Protection class	IP 20
Voltage (V)	230
Frequencies (Hz)	50
Power P <sub>1</sub> (W)	230
I <sub>max</sub> (A)	1.5

## PUMP MATERIAL

Type	Pump head	Diaphragm	Valves
N 035.3 ANE	Aluminum	CR	Stainless steel
For slightly aggressive or corrosive gases and vapors			
N 035.3 AVE	Aluminum	FPM	Stainless steel
N 035.3 ATE	Aluminum	PTFE-coated	Stainless steel
N 035.3 SNE	Stainless steel	CR	CR
N 035.3 SVE	Stainless steel	FPM	FPM
N 035.3 STE	Stainless steel	PTFE-coated	PTFE

## N 035.3 A\_E (IP 20)



# N 035.3 \_\_ E WITH IP 44 MOTOR

## PERFORMANCE DATA

Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 035.3 ANE	30	-	13
N 035.3 AVE	30	-	13
N 035.3 ATE	27	-	20
N 035.3 SNE	30	-	13
N 035.3 SVE	30	-	13
N 035.3 STE	27	-	20

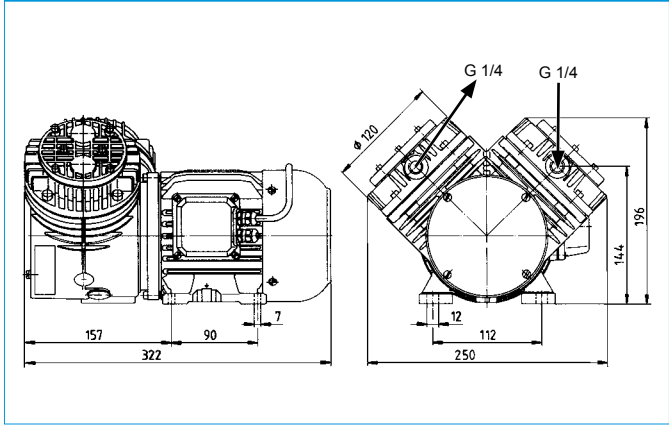
## MOTOR DATA

Protection class	IP 44
Voltage (V)	230
Frequencies (Hz)	50
Power P <sub>1</sub> (W)	260
I <sub>max</sub> (A)	2.0

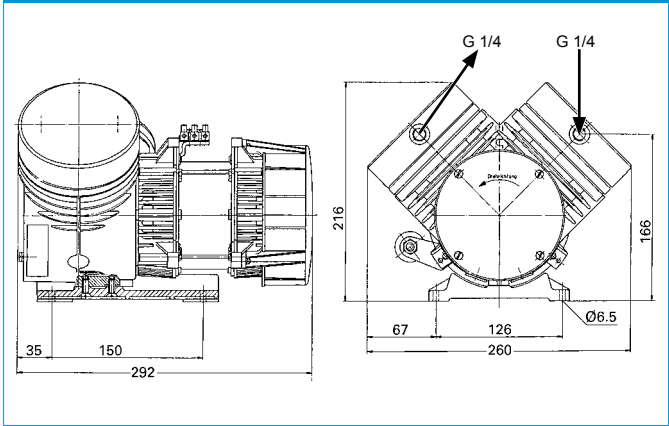
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For slightly aggressive or corrosive gases and vapors			
N 035.3 AVE	Aluminum	FPM	Stainless steel
N 035.3 ATE	Aluminum	PTFE-coated	Stainless steel
N 035.3 SNE	Stainless steel	CR	CR
N 035.3 SVE	Stainless steel	FPM	FPM
N 035.3 STE	Stainless steel	PTFE-coated	PTFE

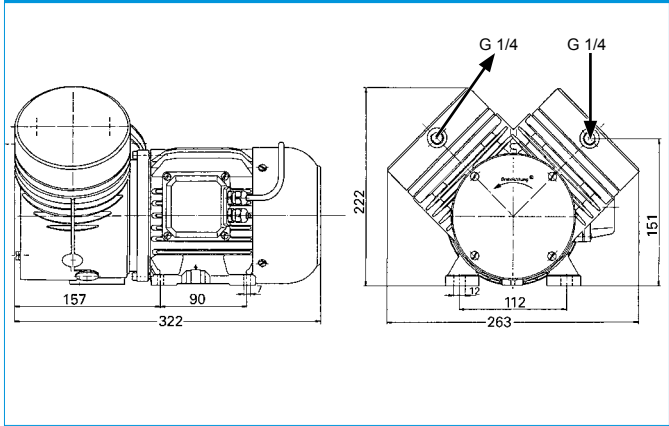
## N 035.3 A\_E (IP 44)



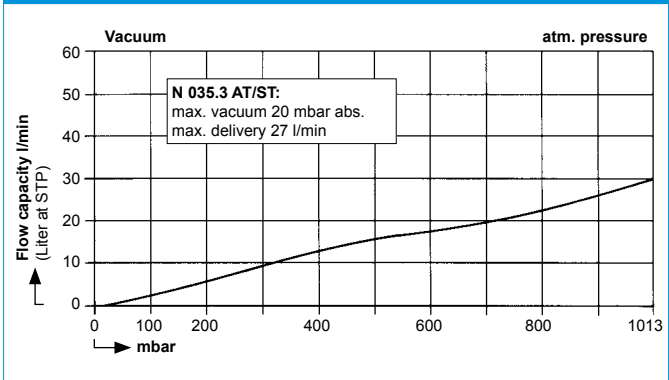
## N 035.3 S\_E (IP 20)



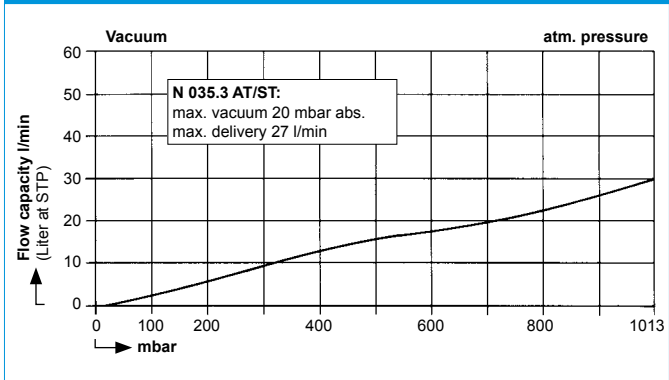
## N 035.3 S\_E (IP 44)



## N 035.3 ANE (IP 20)

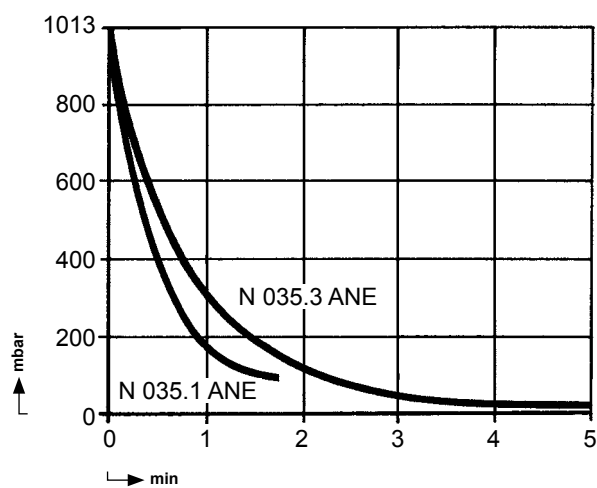


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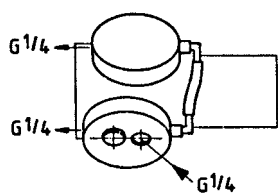


# TECHNICAL INFORMATION

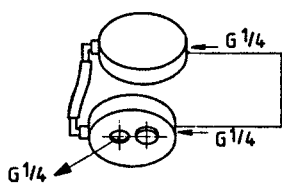
## PUMP DOWN TIME FOR 20 LITER VESSEL



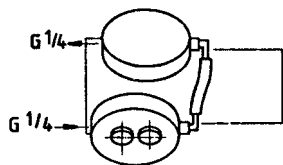
## HEAD CONNECTIONS



**N 035.1**  
Heads with suction side in parallel



**N 035.2**  
Heads with pressure side in parallel



**N 035.3**  
Heads in series

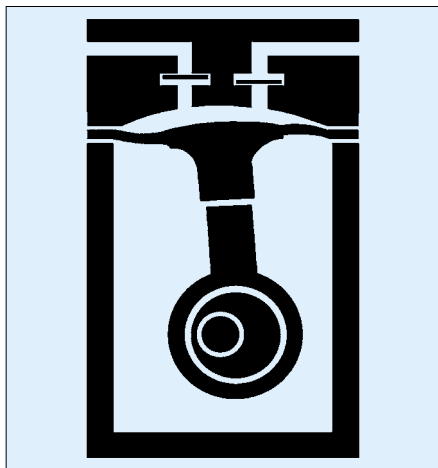
## ACCESSORIES

Description	Order No.	Details
Silencer/filter	000352	G 1/4
Fine control valve, pressure side	000482	with pressure gauge
Fine control valve, suction side	000354	with vacuum gauge
Pressure relief valve	047601	4 bar g
Hose connector	000362	G 1/4, for tube ID 9
Hose connector, stainless steel	020234	G 1/4, for tube ID 9

# 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.
- Permissible ambient temperature: +5 °C ... +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.
- 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.
- The pumps are not designed to start against pressure or vacuum; when a pump is switched on the pressure in the suction and pressure lines must be atmospheric. Pumps that start against pressure or vacuum are available on request.
- 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.

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