





# LABORATORY PUMPS AND SYSTEMS



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## KNF Product centers

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*Dear potential and  
existing customers*

Welcome to the KNF laboratory catalogue which contains everything you need to know about our laboratory products.

Whatever your vacuum or pressure requirements are, whether it to be the transfer of neutral, corrosive or aggressive media you will find a suitable product here.

Your choice of a **KNF**Lab product will be a good one. Our high quality pumps are maintenance-free and designed for long life. They can be employed simply and flexibly. Due to the use of the diaphragm principle, all transferred media are uncontaminated. Our liquid diaphragm pumps encompass further advantages in that they are self-priming and will run dry.

Our catalogue cannot substitute personal contact, so please feel free to contact us if you have any questions about our products, or are not sure which pump or system is most appropriate for your requirements. We will be more than happy to help and advise you further.

**KNF**

Your partner for all diaphragm pumps and systems

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# Diaphragm Pumps for Air, Gases and Vapours

1



## Product Range: Vacuum Pumps and Compressors

### Features of diaphragm pumps:

- Maintenance-free
- Silent running
- Simple connection to the electric mains (mains plug) and the pneumatic system
- Environmentally friendly, as water is neither consumed nor contaminated.

Delivery (l/min) <sup>1)</sup>	Ultimate vacuum (mbar abs.)	Operating pressure (bar g)	Motor ~230V/50Hz operating current (A)/ power P <sub>1</sub> (W)	Protection class	Pneumatic connections for tube ID	Weight (kg)	Pump type Order No.	Page
<b>LABOPORT® Vacuum pumps and compressors for neutral and slightly aggressive gases and vapours</b>								
6	100	2.4	0.65/60	IP 20	4 mm	1.9	N 86 KN.18	1.2
5.5	160	2.5	0.65/60	IP 20	4 mm	1.9	N 86 KT.18	1.2
11.5	240	2	0.8/65	IP 20	6 mm	2.5	N 811 KN.18	1.4
11.5	290	2	0.8/65	IP 20	6 mm	2.5	N 811 KT.18	1.4
16	15	0.5	0.6/100	IP 20	6 mm	3.95	N 816.3 KN.18	1.6
16	20	0.5	0.6/100	IP 20	6 mm	3.95	N 816.3 KT.18	1.6
22	12	0.5	0.5/80	IP 20	10 mm	6.8	N 838.3 KN.18 (.45)	1.8
22	15	0.5	0.5/80	IP 20	10 mm	6.8	N 838.3 KT.18 (.45)	1.8
22	100	1	0.9/130	IP 44	9 mm	7.1	N 820 AN.18	1.10
20	100	1	0.9/130	IP 44	9 mm	7.1	N 820 AT.18	1.10
22	8	1	0.7/120	IP 44	9 mm	9.3	N 820.3 AN.18	1.12
20	8	1	0.7/120	IP 44	9 mm	9.3	N 820.3 AT.18	1.12
30	100	0.5	0.6/100	IP 20	6 mm	3.95	N 816.1.2 KN.18	1.14
30	160	0.5	0.6/100	IP 20	6 mm	3.95	N 816.1.2 KT.18	1.14
37	100	0.5	0.5/80	IP 20	10 mm	6.8	N 838.1.2 KN.18 (.45)	1.16
37	150	0.5	0.5/80	IP 20	10 mm	6.8	N 838.1.2 KT.18 (.45)	1.16
<b>Vacuum pumps and compressors for neutral and slightly aggressive gases and vapours</b>								
15	100	4	0.7/100	IP 20	6 mm	4	N 022 AN.18	1.18
13	100	4	0.7/100	IP 20	6 mm	4	N 022 AT.18	1.18
21	1.5	0.5	1.3/120	IP 20	9 mm	10.5	N 920 AP.29.18	1.20
21	1.5	0.5	1.3/120	IP 20	9 mm	9.1	N 920 KT.29.18	1.20
22	20	-	0.85/170	IP 20	9 mm	5.8	N 026.3 AN.18	1.22
18	25	-	0.85/170	IP 20	9 mm	5.8	N 026.3 AT.18	1.22
30	100	4	1/220	IP 20	9 mm	8.2	N 035 AN.18	1.24
27	100	4	1/220	IP 20	9 mm	8.2	N 035 AT.18	1.24
30	100	4	1.7/230	IP 44	9 mm	8.5	N 035 AN.18	1.24
27	100	4	1.7/230	IP 44	9 mm	8.5	N 035 AT.18	1.24
30	13	-	1.55/300	IP 20	9 mm	11.3	N 035.3 AN.18	1.26
27	20	-	1.55/300	IP 20	9 mm	11.3	N 035.3 AT.18	1.26
30	13	-	1.9/320	IP 44	9 mm	11.6	N 035.3 AN.18	1.26
27	20	-	1.9/320	IP 44	9 mm	11.6	N 035.3 AT.18	1.26
30	100	7	2.1/320	IP 44	9 mm	12	N 145 AN.18	1.28
27	100	7	2.1/320	IP 44	9 mm	12	N 145 AT.18	1.28
39	100	2	0.85/170	IP 20	9 mm	5.8	N 026.1.2 AN.18	1.30
31	100	2	0.85/170	IP 20	9 mm	5.8	N 026.1.2 AT.18	1.30
55	100	4	1.55/300	IP 20	9 mm	11.3	N 035.1.2 AN.18	1.32
50	100	4	1.55/300	IP 20	9 mm	11.3	N 035.1.2 AT.18	1.32
55	100	4	1.9/320	IP 44	9 mm	11.6	N 035.1.2 AN.18	1.32
50	100	4	1.9/320	IP 44	9 mm	11.6	N 035.1.2 AT.18	1.32
55	100	7	2.1/350	IP 44	9 mm	15	N 145.1.2 AN.18	1.34
50	100	7	2.1/350	IP 44	9 mm	15	N 145.1.2 AT.18	1.34

<sup>1)</sup> at atm. pressure

# Diaphragm Pumps for Air, Gases and Vapours

1



## Product Range: KNF LABOPORT® Chemically-resistant Vacuum Pumps

### Features of diaphragm pumps:

- Resistant against aggressive gases and vapours
- Maintenance-free
- Silent running
- Simple connection to the electric mains (mains plug) and the pneumatic system
- Environmentally friendly, as water is neither consumed nor contaminated.

Delivery (l/min) <sup>1)</sup>	Ultimate vacuum (mbar abs.)	Operating pressure (bar g)	Motor ~230V/50Hz operating current (A)/ power P <sub>1</sub> (W)	Protection class	Pneumatic connections for tube ID	Weight (kg)	Pump type Order-No.	Page
<b>Chemically-resistant vacuum pumps for air, gases and vapours</b>								
10	100	1	0.6/100	IP 44	10 mm	5.9	N 810 FT.18	1.36
10	8	1	0.6/90	IP 44	10 mm	6.9	N 810.3 FT.18	1.36
20	100	1	0.9/130	IP 44	10 mm	7.1	N 820 FT.18	1.38
20	8	1	0.7/120	IP 44	10 mm	9.3	N 820.3 FT.18	1.38
34	100	1	1.5/180	IP 44	10 mm	10.3	N 840 FT.18	1.40
34	8	1	1.5/245	IP 44	10 mm	12.6	N 840.3 FT.18	1.40
34	2	1	1.5/245	IP 44	10 mm	13.4	N 842.3 FT.18	1.42
60	90	1	1.9/270	IP 44	10 mm	12.6	N 840.1.2 FT.18	1.44

<sup>1)</sup> at atm. pressure

### Material in contact with the pumped media

Code	Pump head	Diaphragm	Valves
FT	PTFE	PTFE-coated	FFPM
KN	PPS	EPDM	FPM or EPDM
KT	PPS	PTFE-coated	FFPM
AN	Aluminium	CR	NBR
AP	Aluminium	EPDM	EPDM
AT	Aluminium	PTFE-coated	FFPM

### e.g. for order or request:

Pump type/Order No.:

**N 810 FT.18** is a pump with a pump head made of PTFE, PTFE-coated diaphragm and valves made of FFPM or

**N 920 AP .29.18** is a pump with a pump head made of Aluminium, diaphragm and valves made of EPDM, and adjustable flow rate (.29).

### Technical variants

Code	Description
.29	with adjustable flow rate via motor speed
.45	with fine control valve and vacuum gauge

# Diaphragm Pumps for Air, Gases and Vapours

1



## Series LABOPORT® N 86 K\_.18 Pumps

Series N 86 diaphragm pumps are single-head, dry-running devices used in a wide range of laboratory applications. They transfer, compress and pump down without contamination. The heart of these very compact pumps is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

The pumps are available in various versions differing in the materials which contact the media.

## LABOPORT® Mini Diaphragm Vacuum Pumps and Compressors

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- High level of gas tightness.

### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 86 KN.18	PPS	EPDM	FPM
N 86 KT.18	PPS	PTFE-coated	FFPM

Technical data:	N 86 KN.18	N 86 KT.18
Delivery (l/min) <sup>1)</sup>	6	5.5
Ultimate vacuum (mbar abs.)	100	160
Operating pressure (bar g)	2.4	2.5
Connectors for tube (mm)	ID 4	ID 4
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 20
Power P <sub>1</sub>	65 W	65 W
Operating current	0.63 A	0.63 A
Weight	1.9 kg	1.9 kg
Dimensions LxHxW (mm)	164/141/90	164/141/90
With thermal switch and power fuse		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

## Accessories and spare parts

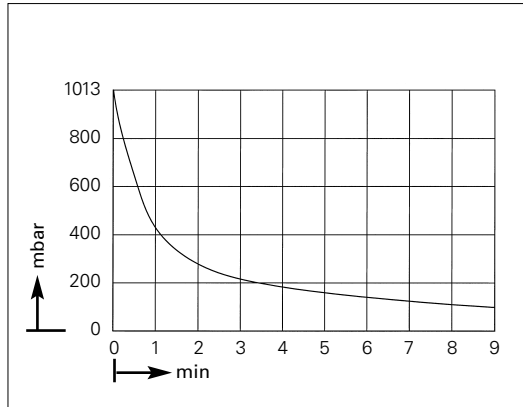
Description	Details	Order No.
Silencer	G 1/8	000345
Filter	G 1/8	000346
Hose connector	G 1/8, PVDF, AD 4 mm	025671
Fine control valve with pressure gauge	pressure side	001786
Fine control valve with vacuum gauge	suction side	001787
Spares kit	for N 86 KN.18	043241
Spares kit	for N 86 KT.18	043242

# Diaphragm Pumps for Air, Gases and Vapours

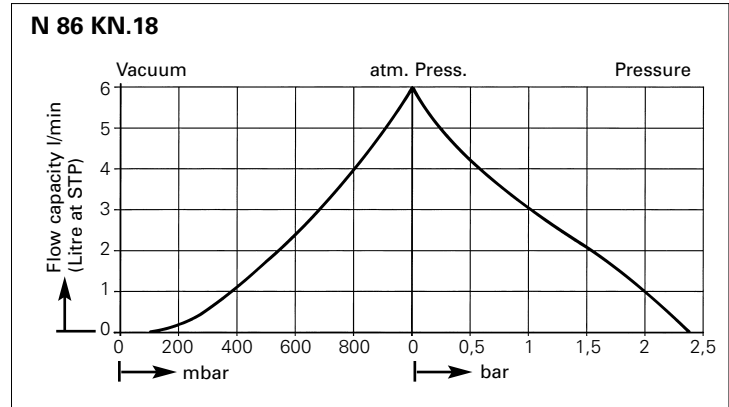
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## Dimensions and performance characteristics

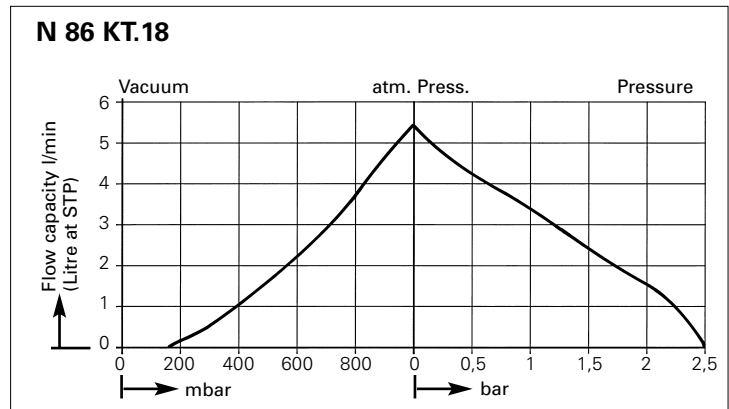
Pump down time for 5 l receiver



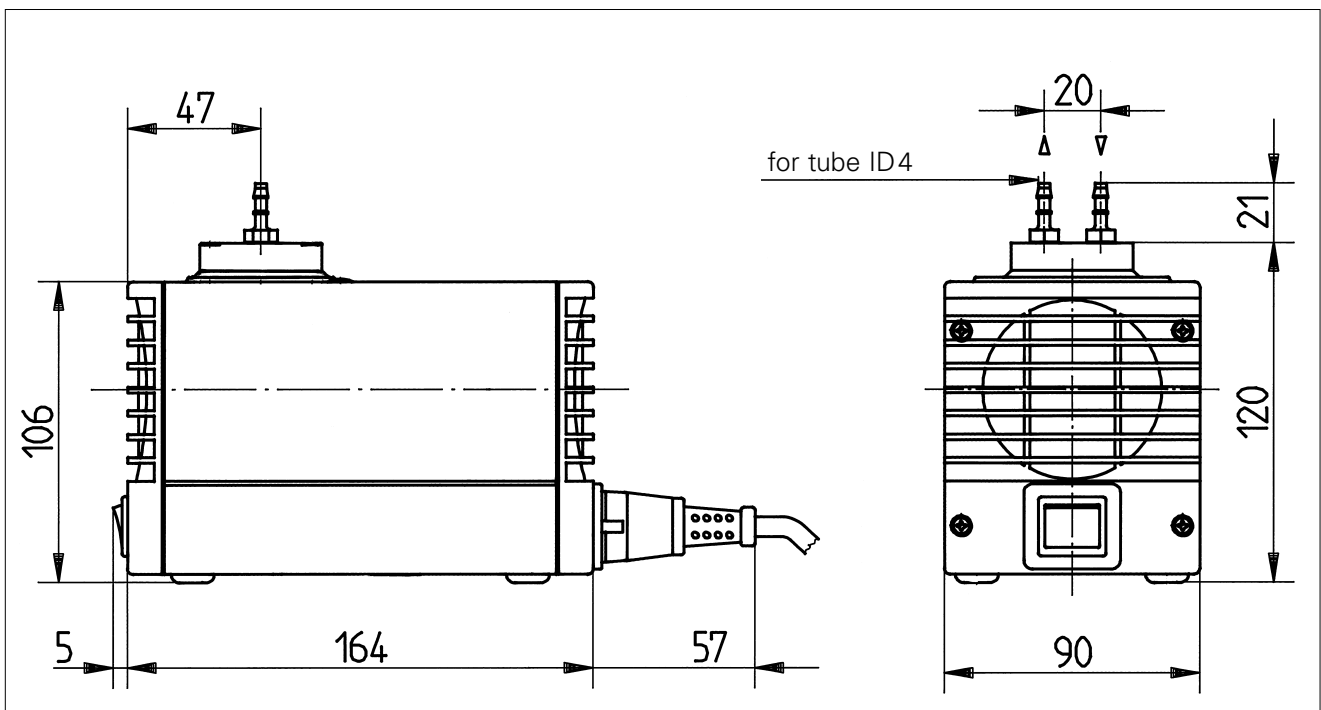
Performance characteristics



Performance characteristics



## Dimensions (mm)



# Diaphragm Pumps for Air, Gases and Vapours

1



## Series LABOPORT® N 811 K\_.18 Pumps

Series N 811 diaphragm pumps are single-head, dry-running devices used in a wide range of laboratory applications. They transfer, compress and pump down without contamination. The heart of these very compact pumps is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

The pumps are available in various versions differing in the materials which contact the media.

### Material in contact with the pumped media

Type/Order No.	Pump head	Diaphragm	Valves
N 811 KN.18	PPS	EPDM	FPM
N 811 KT.18	PPS	PTFE-coated	FFPM

## LABOPORT® Mini Diaphragm Vacuum Pumps and Compressors

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- High level of gas tightness.

Technical data:	N 811 KN.18	N 811 KT.18
Delivery (l/min) <sup>1</sup>	11.5	11.5
Ultimate vacuum (mbar abs.)	240	290
Operating pressure (bar g)	2	2
Connectors for tube (mm)	ID 6	ID 6
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 20
Power P <sub>1</sub>	65 W	65 W
Operating current	0.8 A	0.8 A
Weight	2.5 kg	2.5 kg
Dimensions LxHxW (mm)	187/157/90	187/157/90
With thermal switch and power fuse		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

## Accessories and spare parts

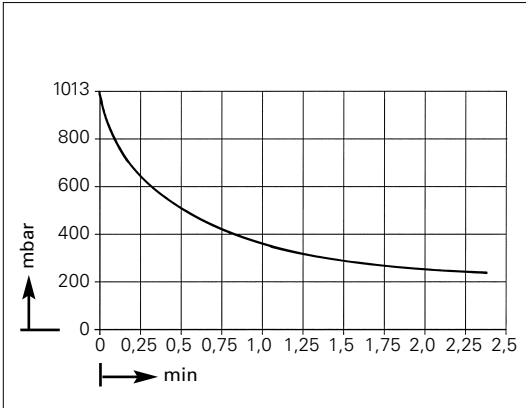
Description	Details	Order No.
Silencer	G 1/8	000345
Filter	G 1/8	000346
Hose connector	G 1/8, PVDF, AD 6 mm	014052
Fine control valve with pressure gauge	pressure side	001786
Fine control valve with vacuum gauge	suction side	001787
Spares kit	for N 811 KN.18	044066
Spares kit	for N 811 KT.18	044067

# Diaphragm Pumps for Air, Gases and Vapours

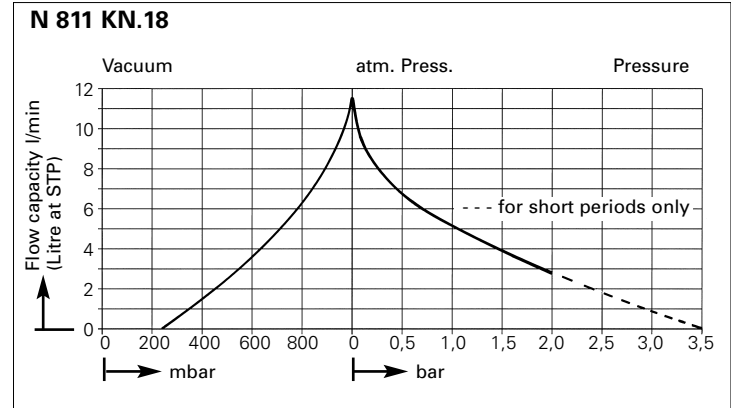
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## Dimensions and performance characteristics

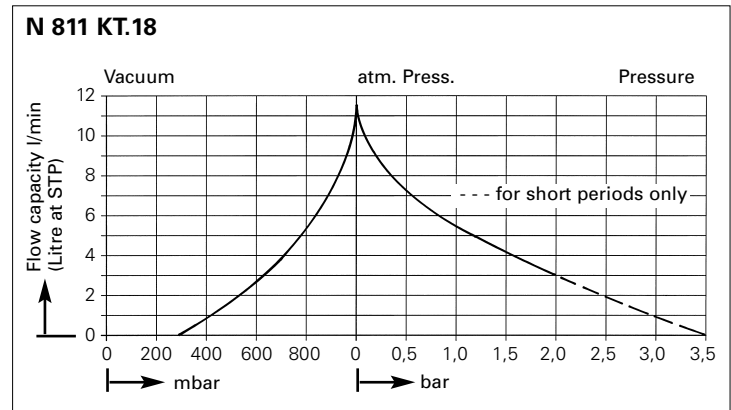
Pump down time for 5 l receiver



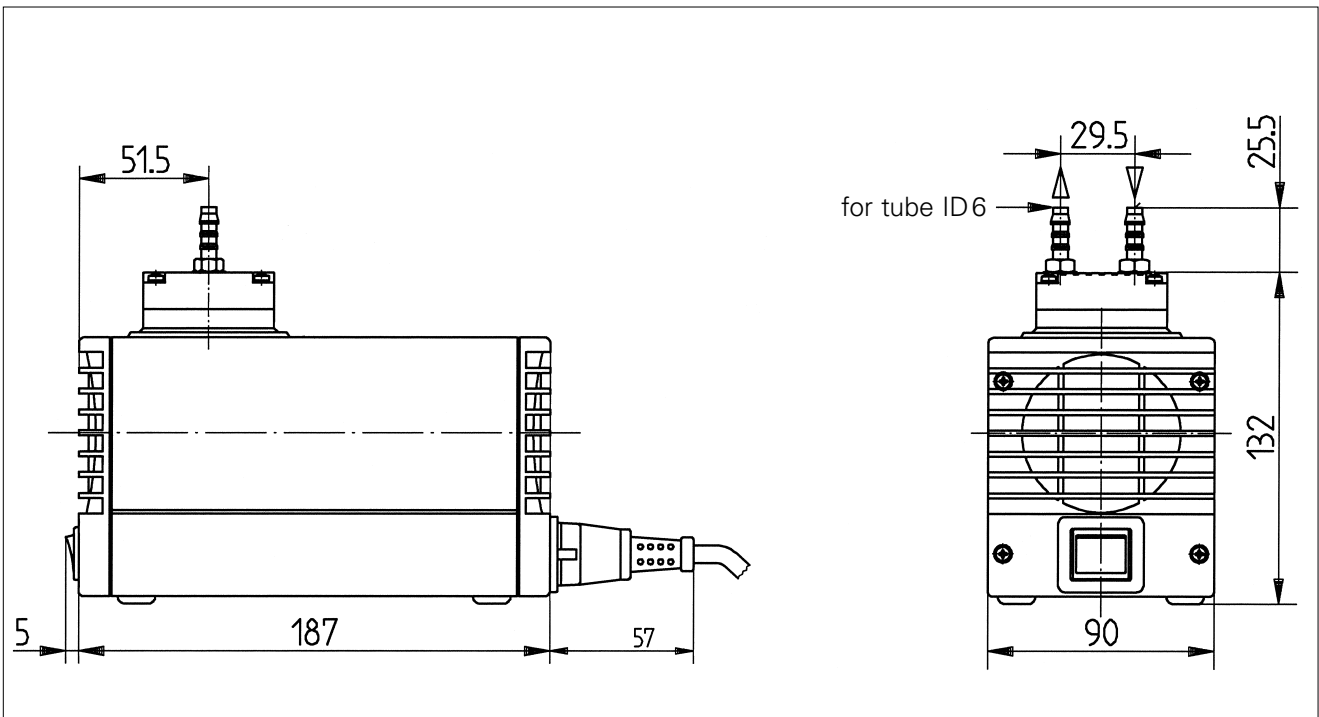
Performance characteristics



Performance characteristics



## Dimensions (mm)





# Diaphragm Pumps for Air, Gases and Vapours

1



## LABOPORT® Mini Diaphragm Vacuum Pumps

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- High level of gas tightness.

### Series LABOPORT® N 816.3 K\_.18 Pumps

Series N 816.3 diaphragm pumps are double-head, dry-running devices used in a wide range of laboratory applications. They transfer and pump down without contamination.

The heart of these very compact pumps is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

The pumps are available in various versions differing in the materials which contact the media.

#### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 816.3 KN.18	PPS	EPDM	EPDM
N 816.3 KN.45.18	PPS	EPDM	EPDM
N 816.3 KT.18	PPS	PTFE-coated	FFPM
N 816.3 KT.45.18	PPS	PTFE-coated	FFPM

.45 = Pump with fine control valve and vacuum gauge

Technical data:	N 816.3 KN.18 N 816.3 KN.45.18	N 816.3 KT.18 N 816.3 KT.45.18
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Delivery (l/min) <sup>1)</sup>	16	16
Ultimate vacuum (mbar abs.)	15	20
Operating pressure (bar g)	0.5	0.5
Connectors for tube (mm)	ID 6	ID 6
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 20
Power P <sub>1</sub>	100 W	100 W
Operating current	0.6 A	0.6 A
Weight	3.95 kg	3.95 kg
Dimensions LxHxW (mm)	361/141/90	361/141/90
With thermal switch and power fuse		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Accessories and spare parts

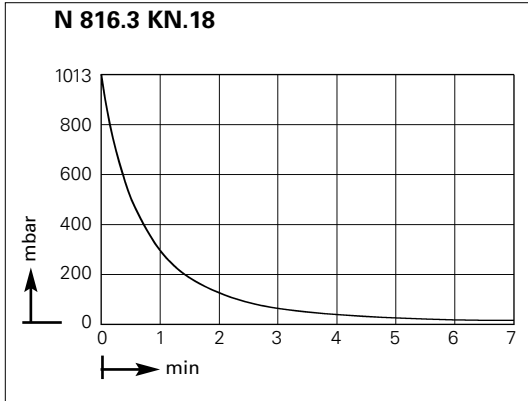
Description	Details	Order No.
Silencer	G 1/8	000345
Hose connector	G 1/8, PVDF, AD 6 mm	014052
Fine control valve with vacuum gauge	suction side	056547
Spares kit	for N 816 KN	056315
Spares kit	for N 816 KT	056316

# Diaphragm Pumps for Air, Gases and Vapours

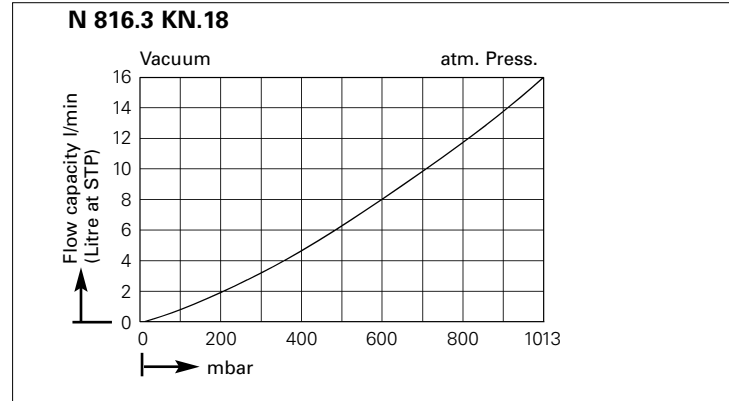
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## Dimensions and performance characteristics

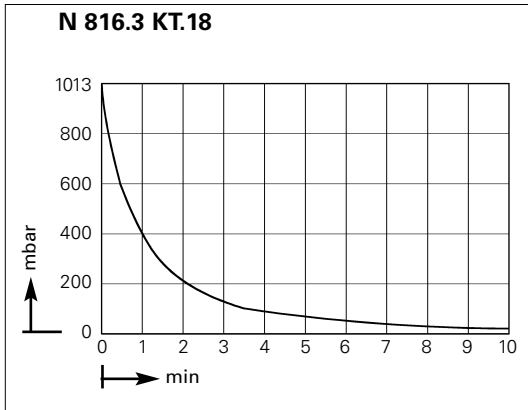
Pump down time for 10 l receiver



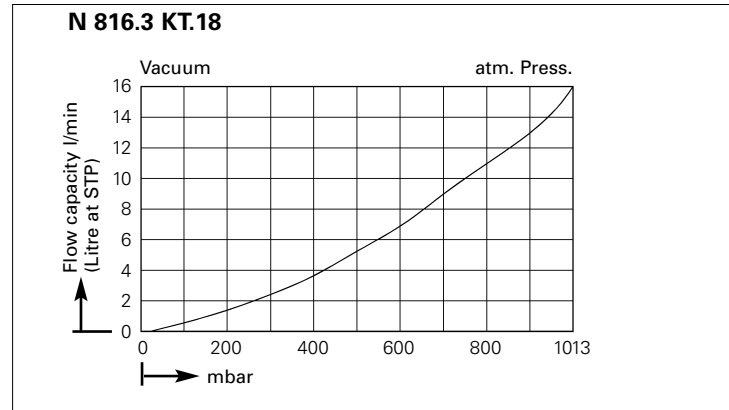
Performance characteristics



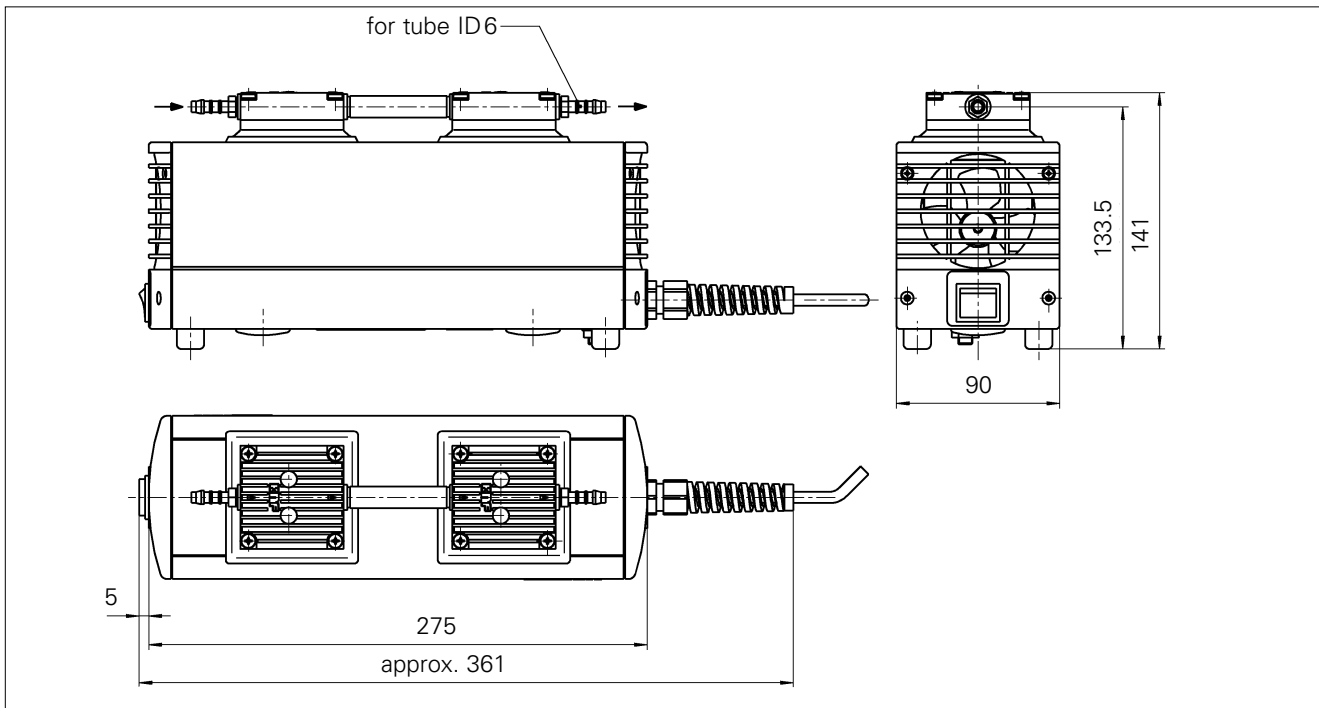
Pump down time for 10 l receiver



Performance characteristics



## Dimensions (mm)



# Diaphragm Pumps for Air, Gases and Vapours

1



## LABOPORT® Mini Diaphragm Vacuum Pumps

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- High level of gas tightness.

### Series LABOPORT® N 838.3 K ... .18 Pumps

Series N 838.3 diaphragm pumps are double-headed, dry-running devices used in a wide range of laboratory applications. They transfer and pump down without contamination. The heart of these very compact pumps is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

The pumps are available in various versions differing in the materials which contact the media.

#### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 838.3 KN.18	PPS	EPDM	FPM
N 838.3 KN.45.18	PPS	EPDM	FPM
N 838.3 KT.18	PPS	PTFE-coated	FFPM
N 838.3 KT.45.18	PPS	PTFE-coated	FFPM

.45 = Pump with fine control valve and vacuum gauge

Technical Data:	N 838.3 KN.18	N 838.3 KT.18
	N 838.3 KN.45.18	N 838.3 KT.45.18
Delivery (l/min) <sup>1)</sup>	22	22
Vacuum (mbar abs.)	12	15
Pressure (bar)	0.5	0.5
Connectors for tube (mm)	ID 10	ID 10
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 20
Power P <sub>1</sub>	80 W	80 W
Operating current	0.5 A	0.5 A
Weight	6.8 kg	6.8 kg
Dimensions		
LxHxB (mm)	404/210/110	404/210/110
With thermal switch and power fuse		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Accessories and spare parts

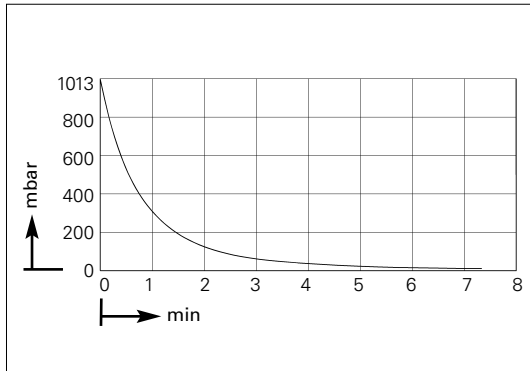
Description	Details	Order No.
Silencer	G 1/8	000345
Hose connector	G 1/8, PVDF, for tube ID 10 mm	112004
Fine control valve with vacuum gauge	suction side	112432
Spares kit	for N 838.3 KN	111952
Spares kit	for N 838.3 KT	111953

# Diaphragm Pumps for Air, Gases and Vapours

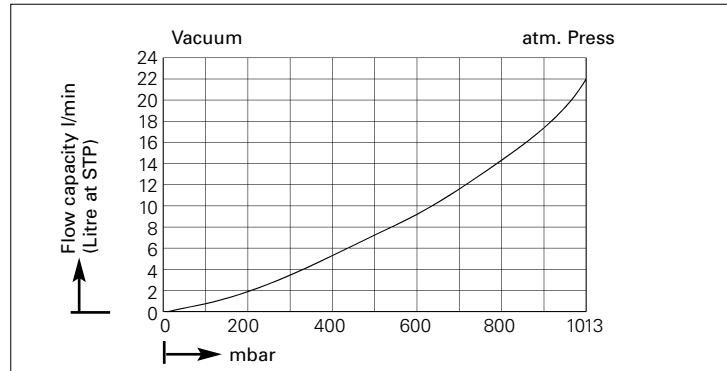
1

## Dimensions and performance characteristics

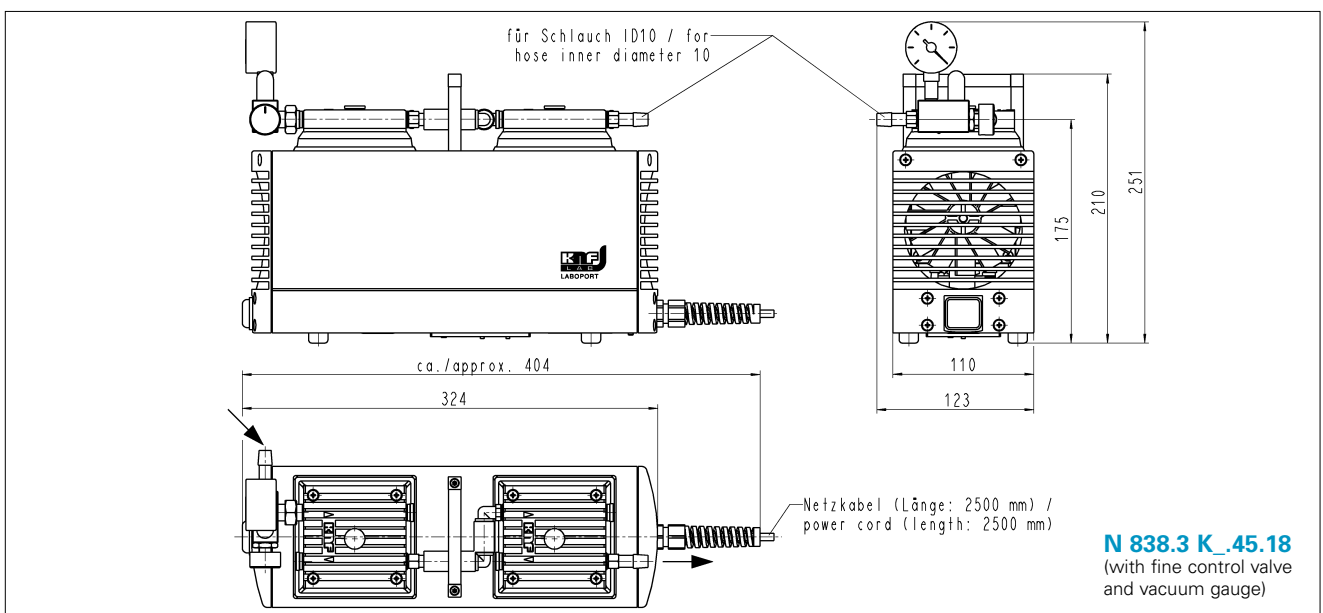
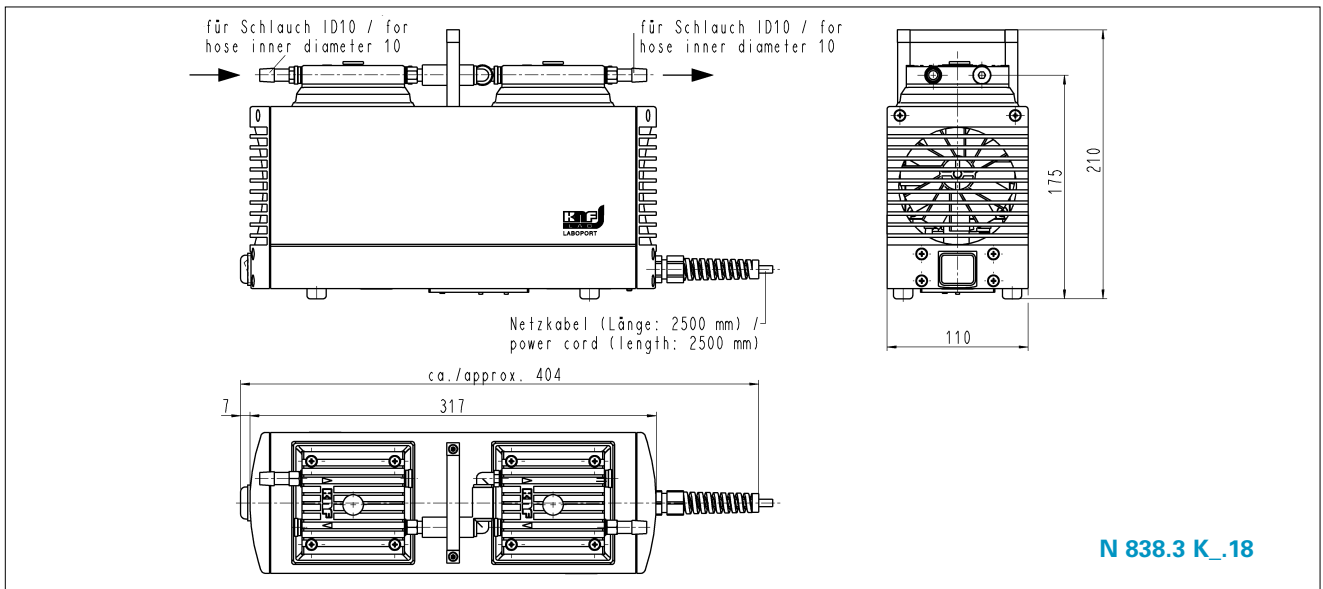
Pump down time for 10 l receiver



Performance characteristics

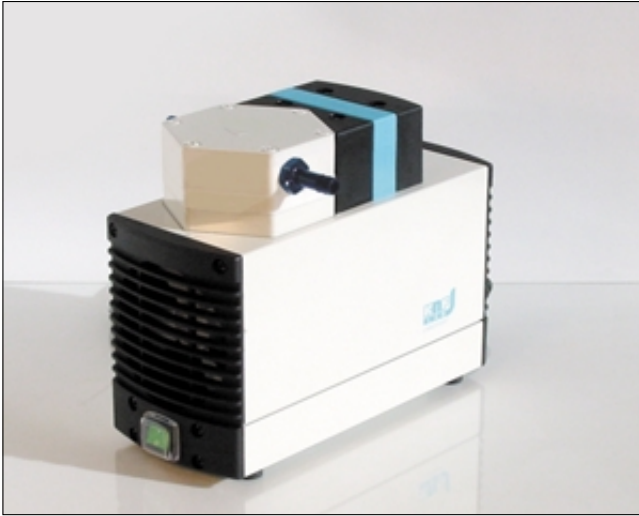


### Dimensions (mm)



# Diaphragm Pumps for Air, Gases and Vapours

1



## Series LABOPORT® N 820 A\_.18 Pumps

Series N 820 diaphragm pumps are single-head, dry-running devices used in a wide range of laboratory applications. They transfer and pump down without contamination.

The heart of these very compact pumps is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

The pumps are available in various versions differing in the materials which contact the media.

### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 820 AN.18	Aluminium	CR	NBR
N 820 AT.18	Aluminium	PTFE-coated	FFPM

## LABOPORT® Diaphragm Vacuum Pumps

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Highly compatible with vapors and condensation
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

### Technical data:

	N 820 AN.18	N 820 AT.18
Delivery (l/min) <sup>1)</sup>	22	20
Ultimate vacuum (mbar abs.)	100	100
Operating pressure (bar g)	1	1
Connectors for tube (mm)	ID 9	ID 9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 44	IP 44
Power P <sub>1</sub>	130 W	130 W
Operating current	0.9 A	0.9 A
Weight	7.1 kg	7.1 kg
Dimensions LxHxW (mm)	261/204/110	261/204/110
With thermal switch and power fuse		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

## Accessories and spare parts

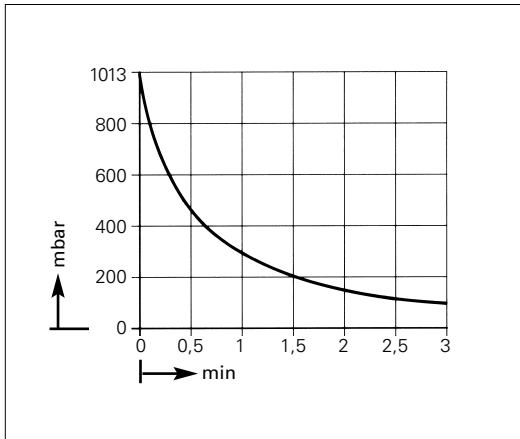
Description	Details	Order No.
Silencer	G 1/4	007007
Hose connector	G 1/4, PVDF, AD 10 mm	004658
Spares kit	for N 820 AN.18	058081
Spares kit	for N 820 AT.18	058078

# Diaphragm Pumps for Air, Gases and Vapours

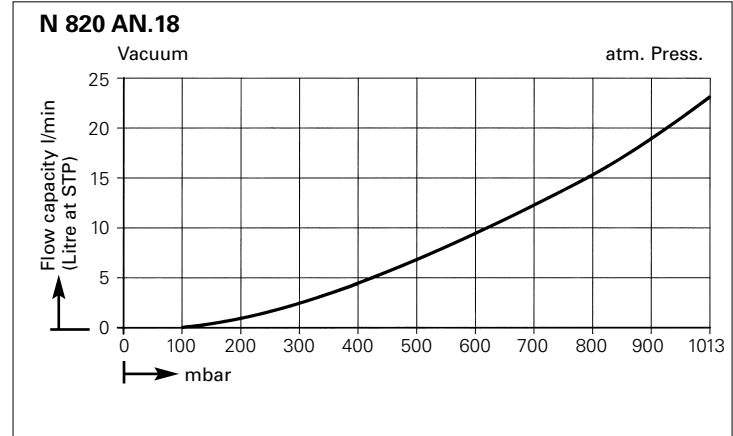
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## Dimensions and performance characteristics

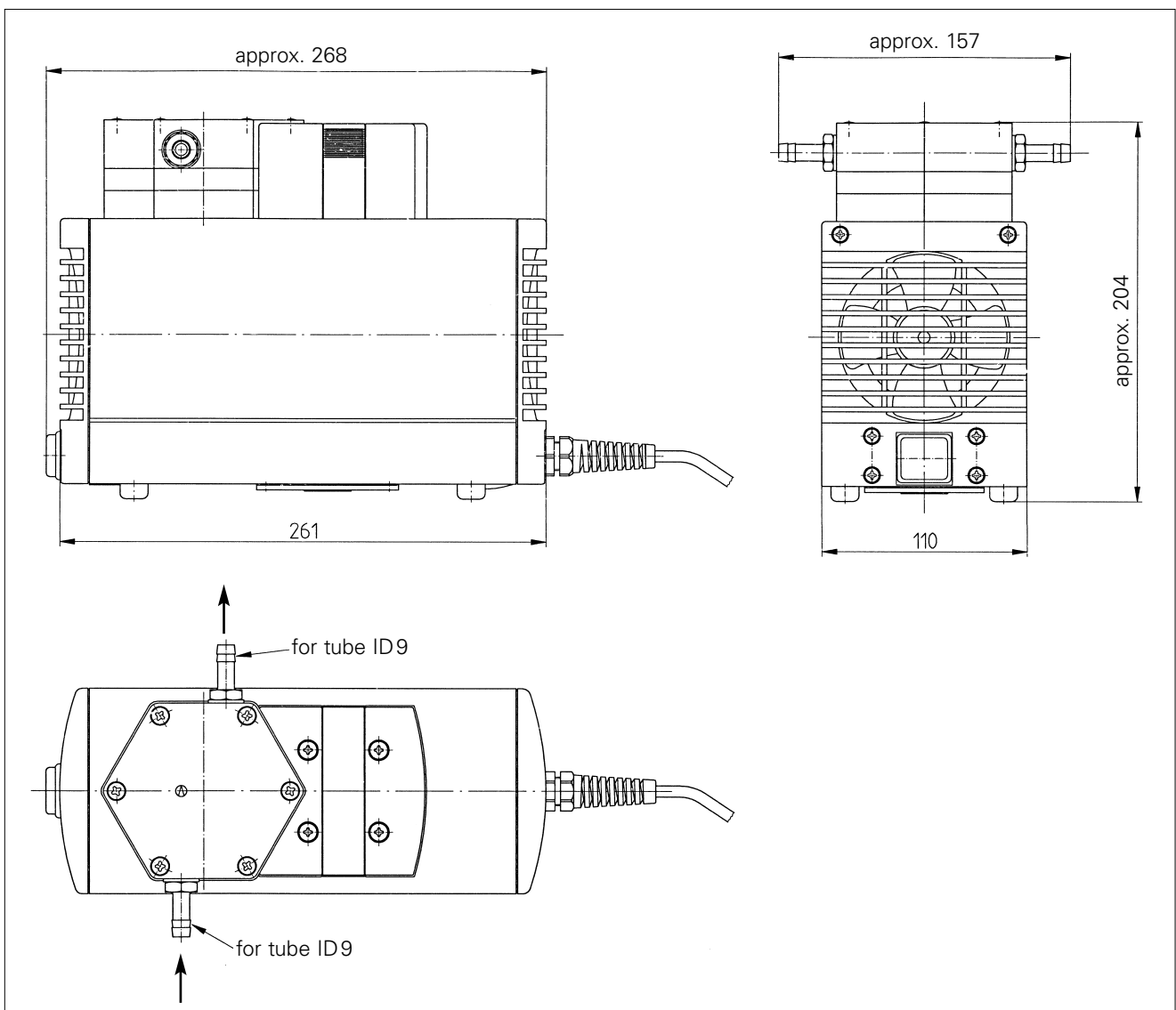
Pump down time for 10 l receiver



Performance characteristics



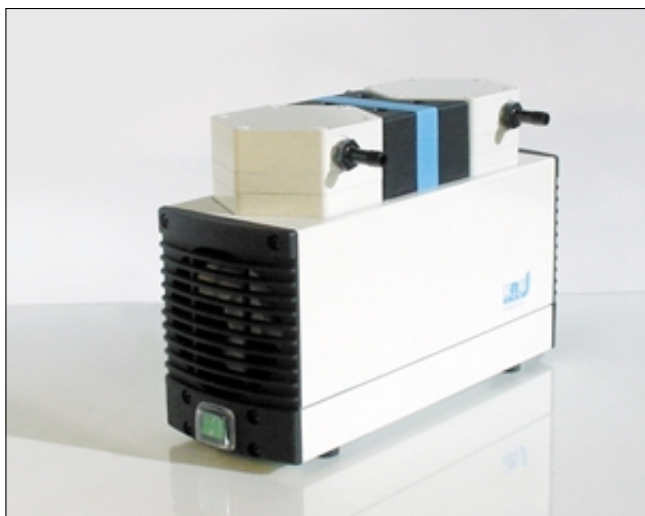
Dimensions (mm)



**KNF worldwide - Diaphragm Pumps and Systems**

# Diaphragm Pumps for Air, Gases and Vapours

1



## LABOPORT® Diaphragm Vacuum Pumps

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Highly compatible with vapors and condensation
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

### Series LABOPORT® N 820.3 A\_18 Pumps

Series N 820.3 diaphragm pumps are double-head, dry-running devices used in a wide range of laboratory applications. They transfer and pump down without contamination.

The heart of these very compact pumps is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

The pumps are available in various versions differing in the materials which contact the media.

Technical data:	N 820.3 AN.18	N 820.3 AT.18
Delivery (l/min) <sup>1)</sup>	22	20
Ultimate vacuum (mbar abs.)	8	8
Operating pressure (bar g)	1	1
Connectors for tube (mm)	ID 9	ID 9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 44	IP 44
Power P <sub>1</sub>	120 W	120 W
Operating current	0.7 A	0.7 A
Weight	9.3 kg	9.3 kg
Dimensions LxHxW (mm)	304/204/110	304/204/110
With thermal switch and power fuse		

### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 820.3 AN.18	Aluminium	CR	NBR
N 820.3 AT.18	Aluminium	PTFE-coated	FFPM

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Accessories and spare parts

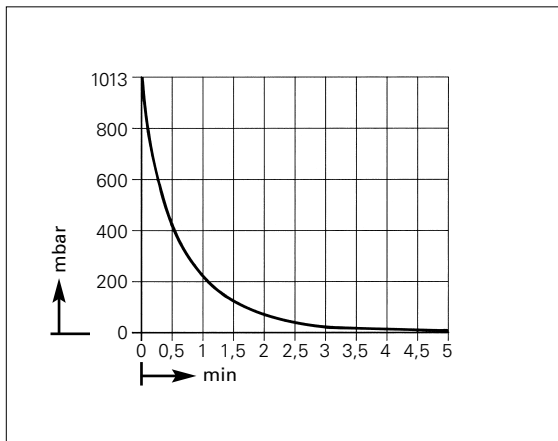
Description	Details	Order No.
Silencer	G 1/4	007007
Hose connector	G 1/4, PVDF, AD 10 mm	004658
Spares kit	for N 820.3 AN.18	058080
Spares kit	for N 820.3 AT.18	057358

# Diaphragm Pumps for Air, Gases and Vapours

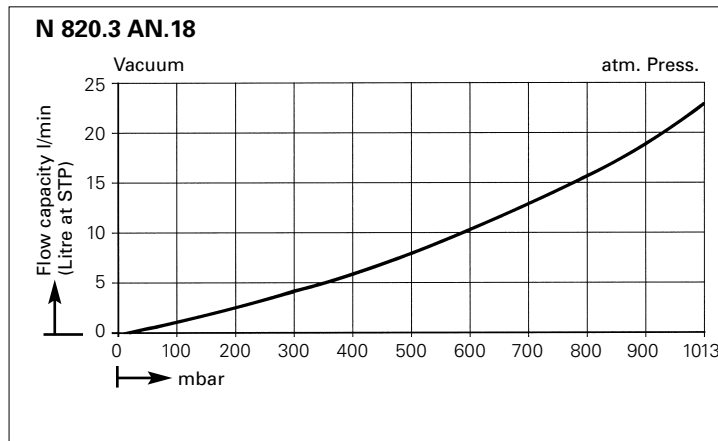
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## Dimensions and performance characteristics

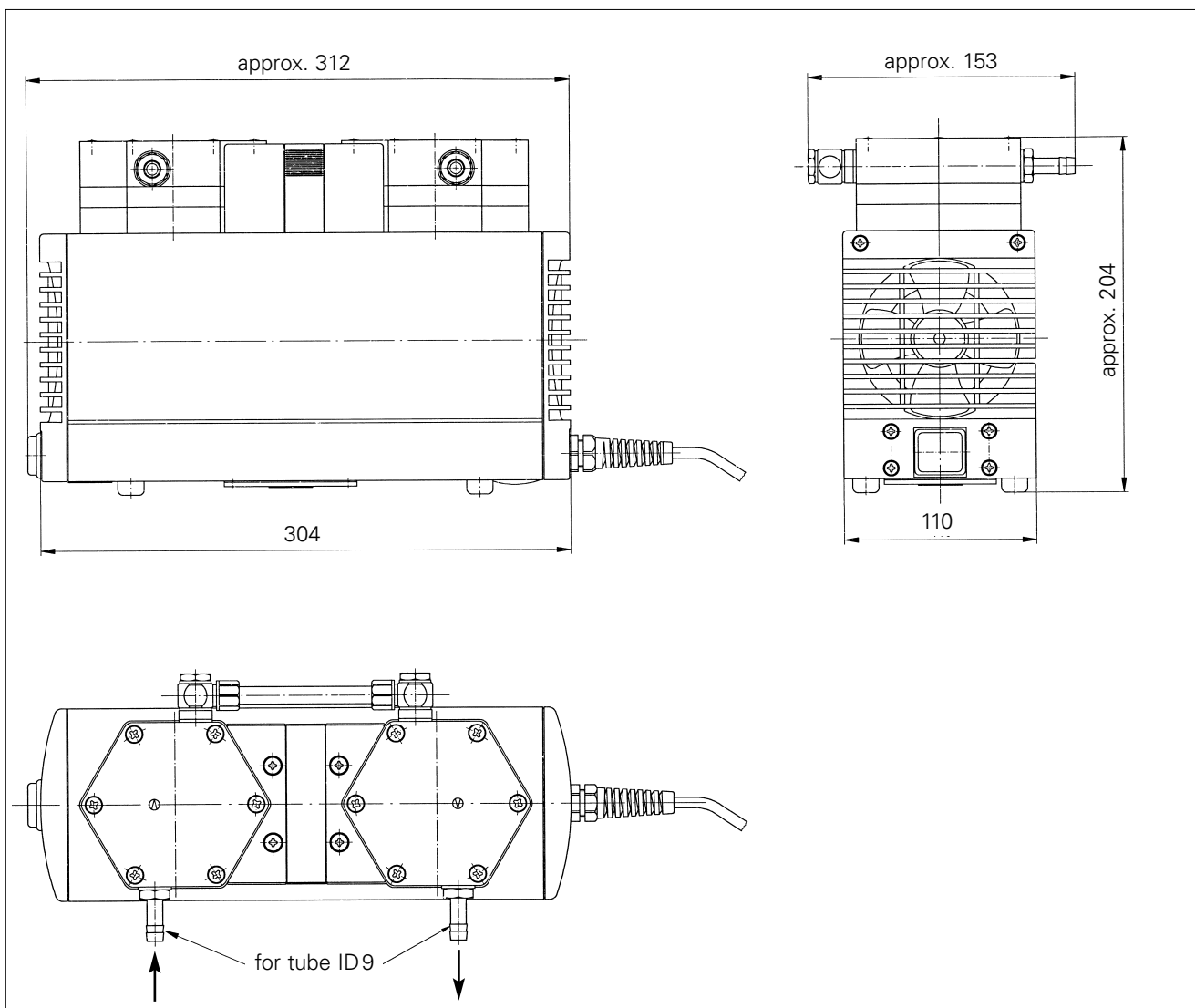
Pump down time for 10 l receiver



Performance characteristics



Dimensions (mm)





# Diaphragm Pumps for Air, Gases and Vapours

1



With fine control valve and vacuum gauge

## LABOPORT® Mini Diaphragm Vacuum Pumps

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- High level of gas tightness.

### Series LABOPORT® N 816.1.2 K\_.18 Pumps

Series N 816.1.2 diaphragm pumps are double-head, dry-running devices used in a wide range of laboratory applications. They transfer and pump down without contamination.

The heart of these very compact pumps is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

The pumps are available in various versions differing in the materials which contact the media.

#### Material in contact with the pumped media

Type/Order No.	Pump head	Diaphragm	Valves
N 816.1.2 KN.18	PPS	EPDM	EPDM
N 816.1.2 KN.45.18	PPS	EPDM	EPDM
N 816.1.2 KT.18	PPS	PTFE-coated	FFPM
N 816.1.2 KT.45.18	PPS	PTFE-coated	FFPM

.45 = Pump with fine control valve and vacuum gauge

#### Technical data:

	N 816.1.2 KN.18 N 816.1.2 KN.45.18	N 816.1.2 KT.18 N 816.1.2 KT.45.18
Delivery (l/min) <sup>1)</sup>	30	30
Ultimate vacuum (mbar abs.)	100	160
Operating pressure (bar g)	0.5	0.5
Connectors for tube (mm)	ID 6	ID 6
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 20
Power P <sub>1</sub>	100 W	100 W
Operating current	0.6 A	0.6 A
Weight	3.95 kg	3.95 kg
Dimensions LxHxW (mm)	361/141/102	361/141/102
With thermal switch and power fuse		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Accessories and spare parts

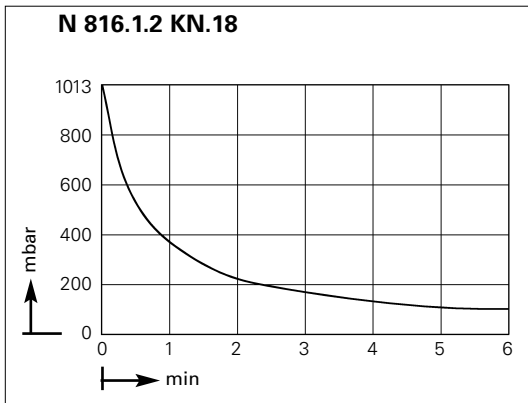
Description	Details	Order No.
Fine control valve with vacuum gauge	suction side	056547
Spares kit	for N 816.1.2 KN	056315
Spares kit	for N 816.1.2 KT	056316

# Diaphragm Pumps for Air, Gases and Vapours

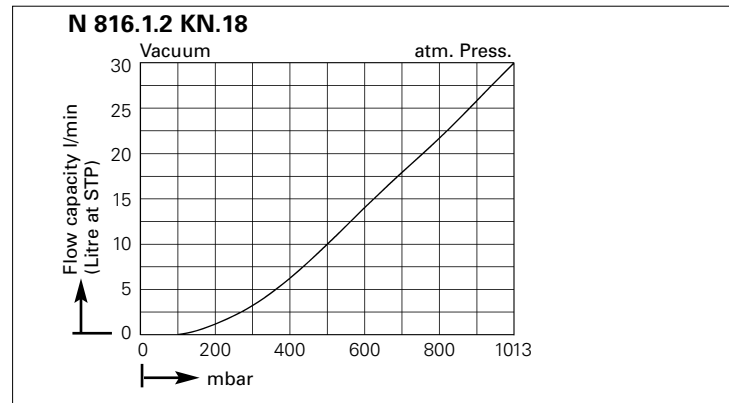
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## Dimensions and performance characteristics

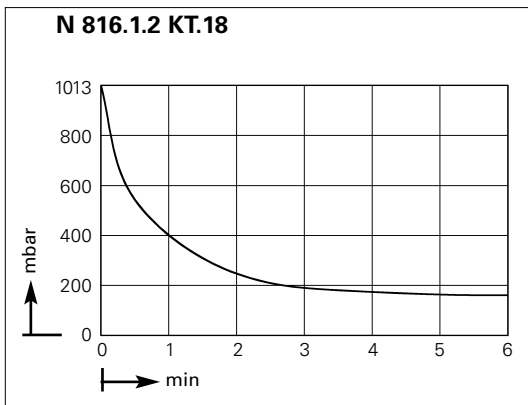
Pump down time for 20 l receiver



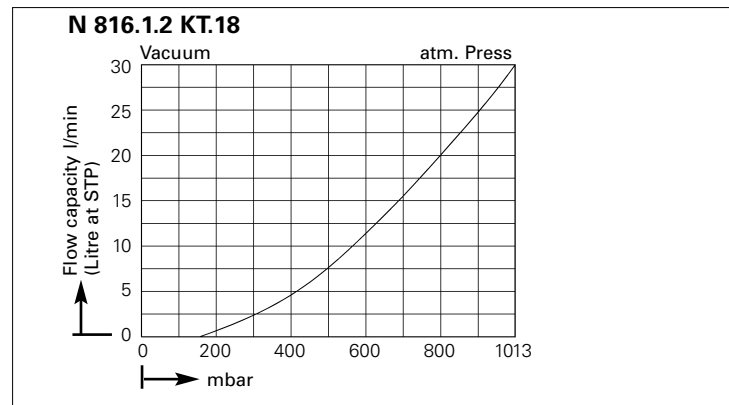
Performance



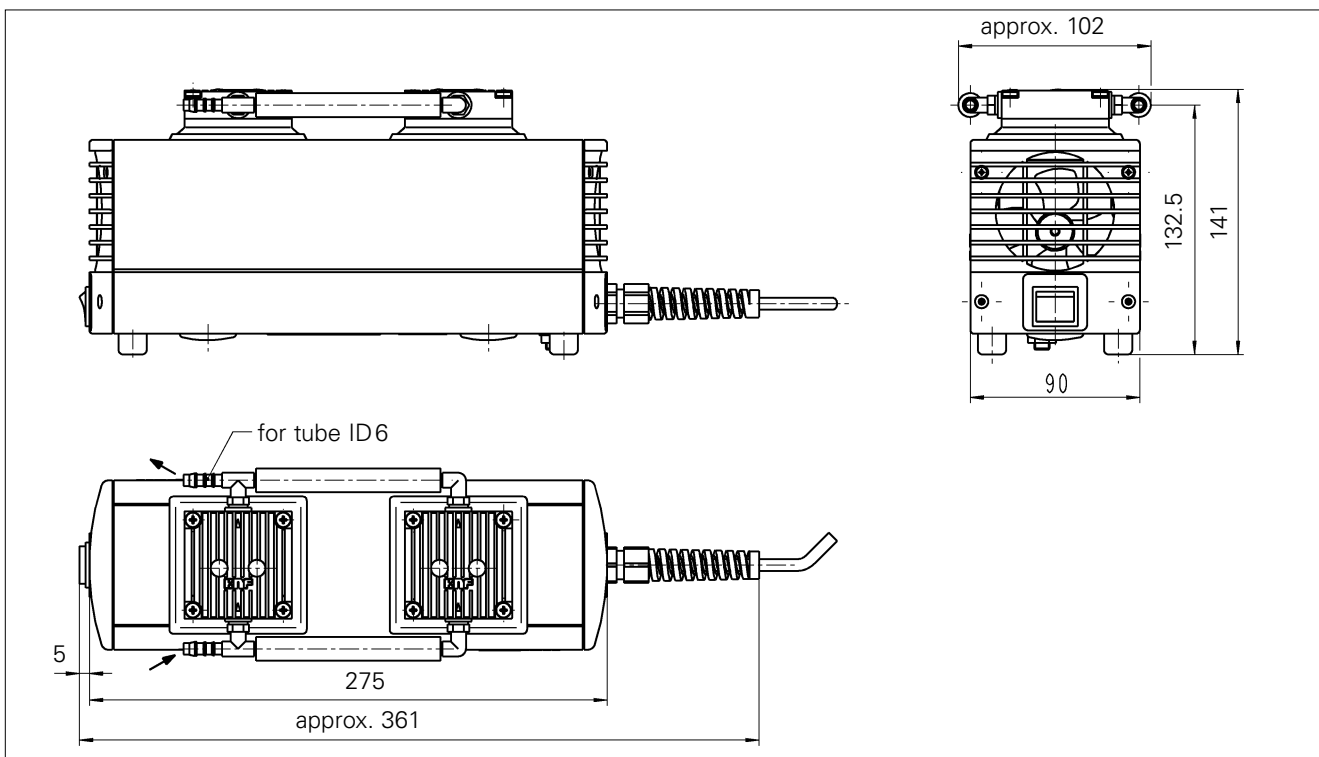
Pump down time for 20 l receiver



Performance



## Dimensions (mm)



# Diaphragm Pumps for Air, Gases and Vapours

1



## LABOPORT® Mini Diaphragm Vacuum Pumps

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- High level of gas tightness.

### Series LABOPORT® N 838.1.2 K\_.18 Pumps

Series N 838.1.2 diaphragm pumps are double-headed, dry-running devices used in a wide range of laboratory applications. They transfer and pump down without contamination. The heart of these very compact pumps is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm. The pumps are available in various versions differing in the materials which contact the media.

#### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 838.1.2 KN.18	PPS	EPDM	FPM
N 838.1.2 KN.45.18	PPS	EPDM	FPM
N 838.1.2 KT.18	PPS	PTFE-coated	FFPM
N 838.1.2 KT.45.18	PPS	PTFE-coated	FFPM

.45 = Pump with fine control valve and vacuum gauge

Technical data:	N 838.1.2 KN.18	N 838.1.2 KT.18
	N 838.1.2 KN.45.18	N 838.1.2 KT.45.18
Delivery (l/min) <sup>1)</sup>	37	37
Vacuum (mbar abs.)	100	150
Pressure (bar)	0.5	0.5
Connectors for tube (mm)	ID 10	ID 10
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 20
Power P <sub>1</sub>	80 W	80 W
Operating current	0.5 A	0.5 A
Weight	6.8 kg	6.8 kg
Dimensions LxHxB (mm)	404/210/110	404/210/110
With thermal switch and power fuse		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Accessories and spare parts

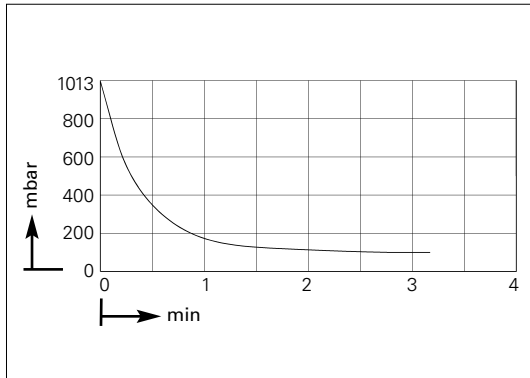
Description	Details	Order No.
Silencer	G 1/8	000345
Hose connector	G 1/8, PVDF, for tube ID 10 mm	112004
Fine control valve with vacuum gauge	suction side	112432
Spares kit	for N 838.1.2 KN	111952
Spares kit	for N 838.1.2 KT	111953

# Diaphragm Pumps for Air, Gases and Vapours

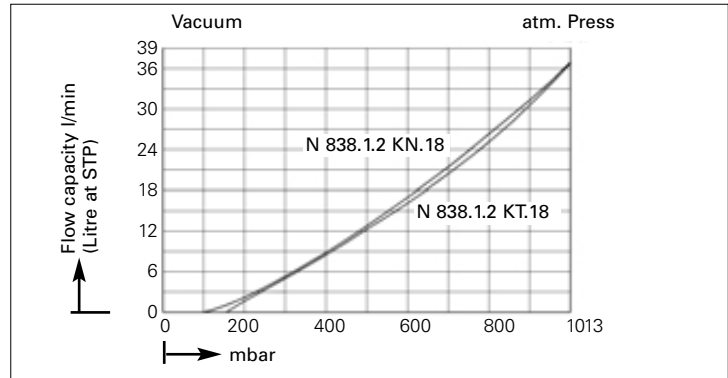
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## Dimensions and performance characteristics

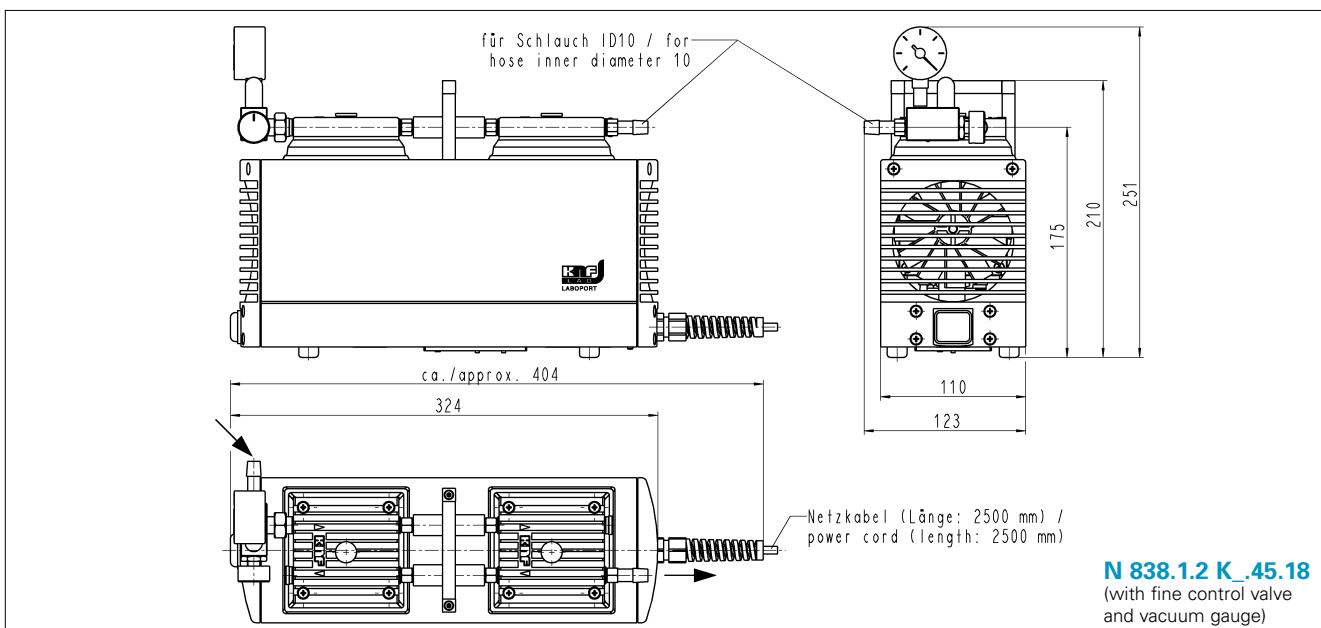
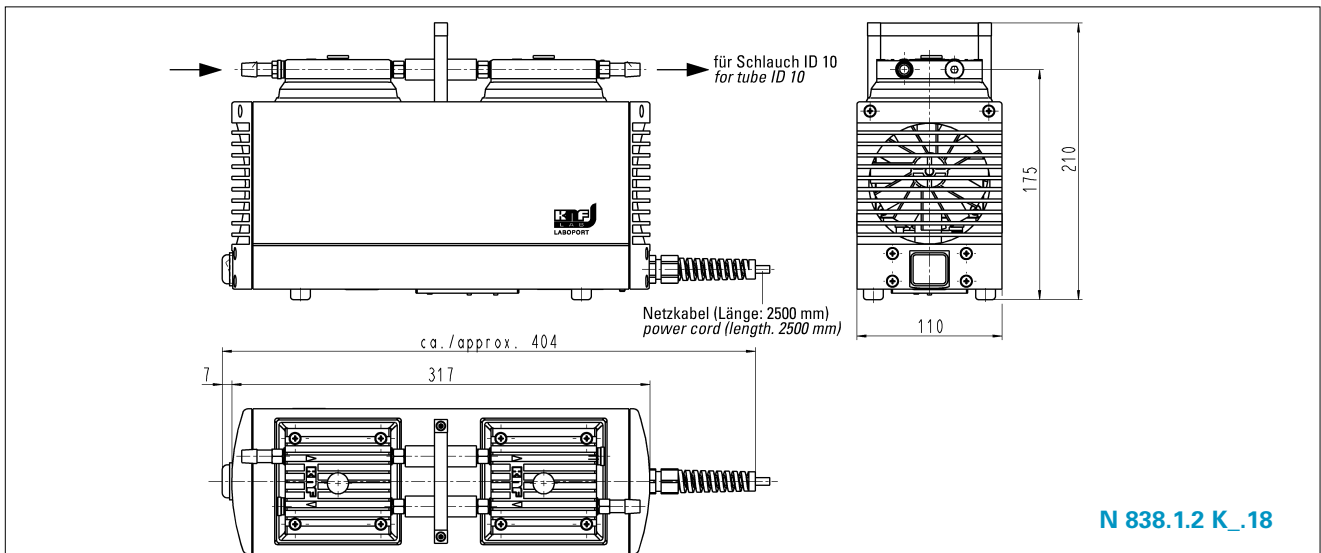
### Pump down time for 10 l receiver



### Performance characteristics



### Dimensions (mm)



**KNF worldwide - Diaphragm Pumps and Systems**

# Diaphragm Pumps for Air, Gases and Vapours

1



## Diaphragm Vacuum Pumps and Compressors

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

### Series N 022 A\_.18 Pumps

Series N 022 diaphragm pumps are single-head, dry-running devices used in a wide range of laboratory applications. They transfer, compress and pump down without contamination. The pumps are available in various versions differing in the materials which contact the media.

#### Material in contact with the pumped media

Type/Order No.	Pump head	Diaphragm	Valves
N 022 AN.18	Aluminium	CR	Stainless steel
N 022 AT.18	Aluminium	PTFE-coated	Stainless steel

Technical data:	N 022 AN.18	N 022 AT.18
Delivery (l/min) <sup>1)</sup>	15	13
Ultimate vacuum (mbar abs.)	100	100
Operating pressure (bar g)	4	4
Connectors for tube (mm)	ID 6	ID 6
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 20
Power P <sub>1</sub>	100 W	100 W
Operating current	0.7 A	0.7 A
Weight	4 kg	4 kg
Dimensions LxHxW (mm)	203/194/145	203/194/145
With thermal switch		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Accessories

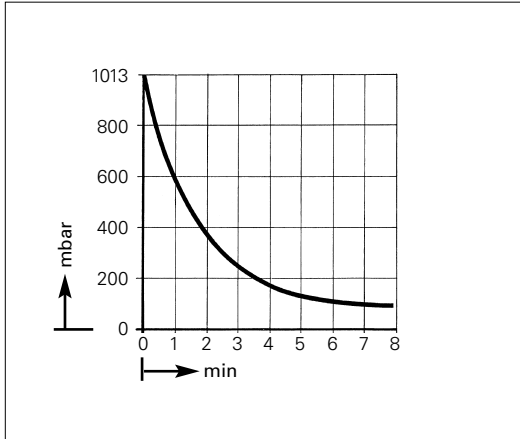
Description	Details	for Type	Order No.
Silencer/Filter	G 1/8		000346
Pressure relief valve	4 bar	N 022 AN.18	000351
Fine control valve with pressure gauge	pressure side	N 022 AN.18	000349
Fine control valve with vacuum gauge	suction side	N 022 AN.18	000350

# Diaphragm Pumps for Air, Gases and Vapours

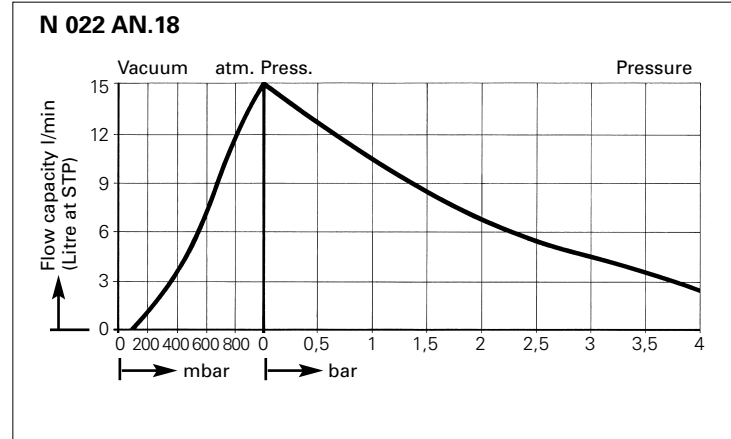
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## Dimensions and performance characteristics

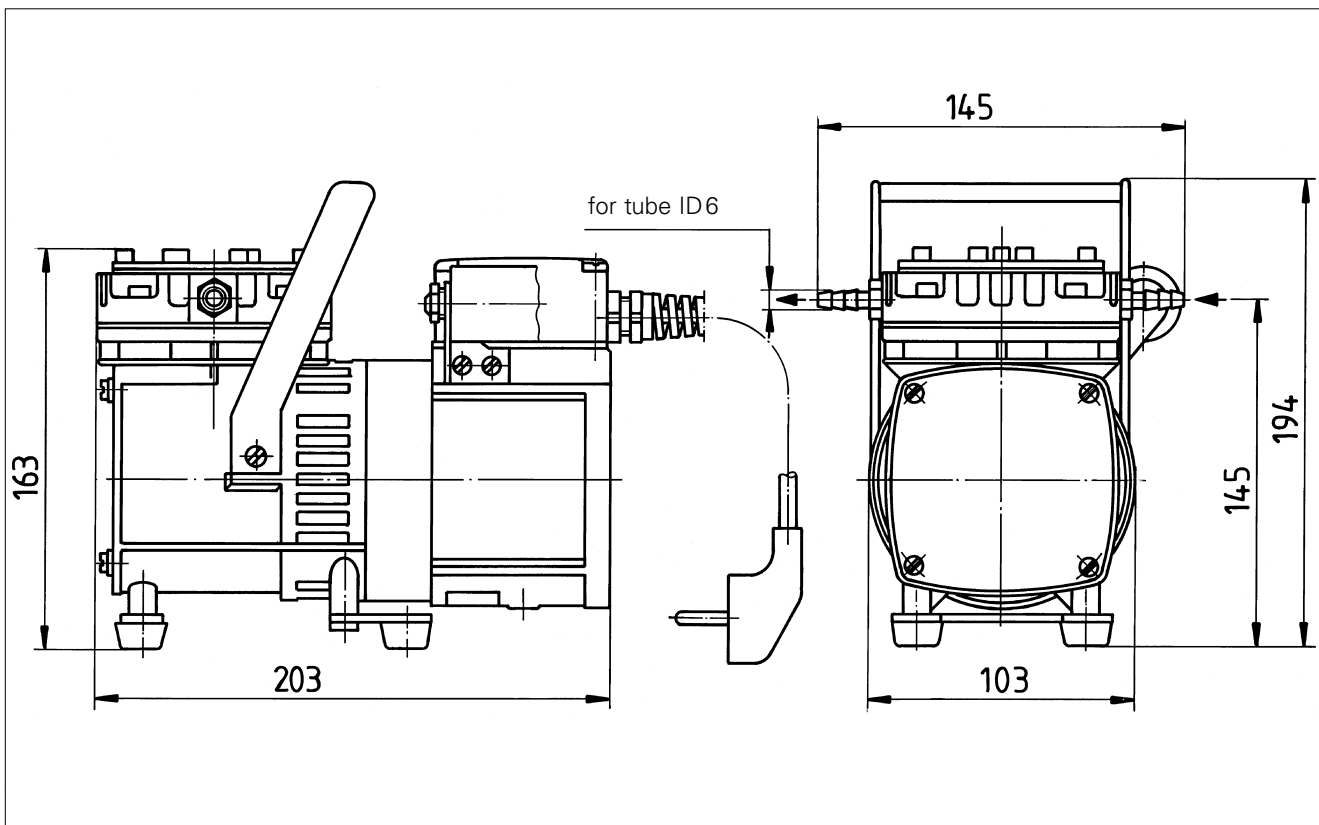
Pump down time for 20 l receiver



Performance characteristics



Dimensions (mm)



# Diaphragm Pumps for Air, Gases and Vapours

1



## Series N 920 \_ \_ .29.18 Pumps

Dry-compression (oil-free) diaphragm pumps of the N 920 series are popular in laboratories for a wide range of applications. They pump and evacuate without contaminating the medium.

The high-performance N 920 vacuum pumps are ideally suited for all applications that need high suction power yet low absolute pressures. A number of technical innovations, including a diaphragm stabilization system, enable strong suction performance, especially in the low vacuum range.

An integrated potentiometer makes it easy to select the desired pumping rate by selecting the appropriate speed, so the pump can adapt to the requirements of a particular process. An analog signal input for external control is available as an option.

### Material in contact with the pumped media

Type/Order No.	Pump head	Diaphragm	Valves
N 920 AP.29.18	Aluminium	EPDM	EPDM
N 920 KT.29.18	PPS	PTFE-coated	FFPM

## Diaphragm Vacuum Pumps with KNF Stabilization System, adjustable Flow Rate

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- KNF Stabilization system, allows high suction speed even in the low-vacuum range
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

Technical data:	N 920 AP.29.18	N 920 KT.29.18
Delivery (l/min) <sup>1)</sup>	max. 21	max. 20
Ultimate vacuum (mbar abs.)	1.5	2.0
Operating pressure (bar g)	0.5	0.5
Connectors for tube (mm)	ID 9	ID 9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	90-230 V / 50-60 Hz	
Motor protection	IP 20	IP 20
Power P <sub>1</sub>	120 W	135 W
Operating current	1.3 A	1.4 A
Weight	10.5 kg	8.6 kg
Dimensions LxHxW (mm)	324/226/158	324/226/158
With thermal switch		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

## Accessories and spare parts

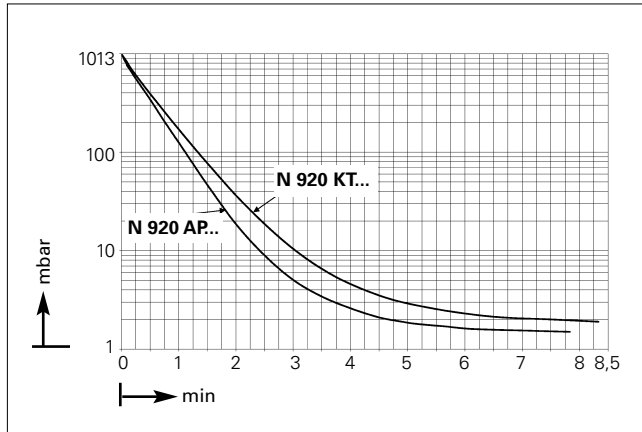
Description	Details	Order No.
Silencer/filter	G 1/8	007006
Small flange, stainless Steel	SF 16	046625
Adjustable delivery through speed regulation	over potentiometer or analog signal input	on request
Spares kit	for N 920 AP.29.18	057456
Spares kit	for N 920 KT.29.18	111905

# Diaphragm Pumps for Air, Gases and Vapours

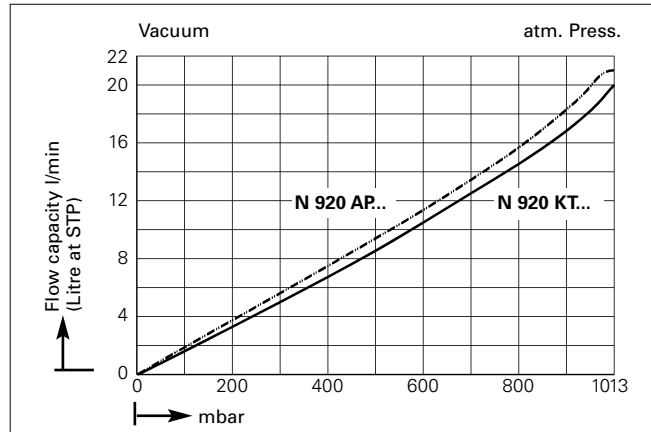
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## Dimensions and performance characteristics

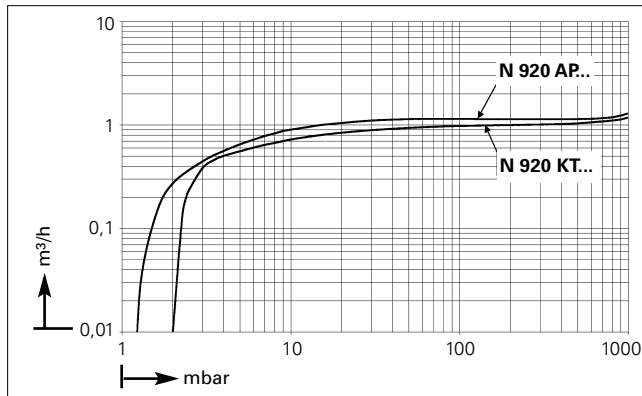
Pump down time for 10 l receiver (at max. motor speed)



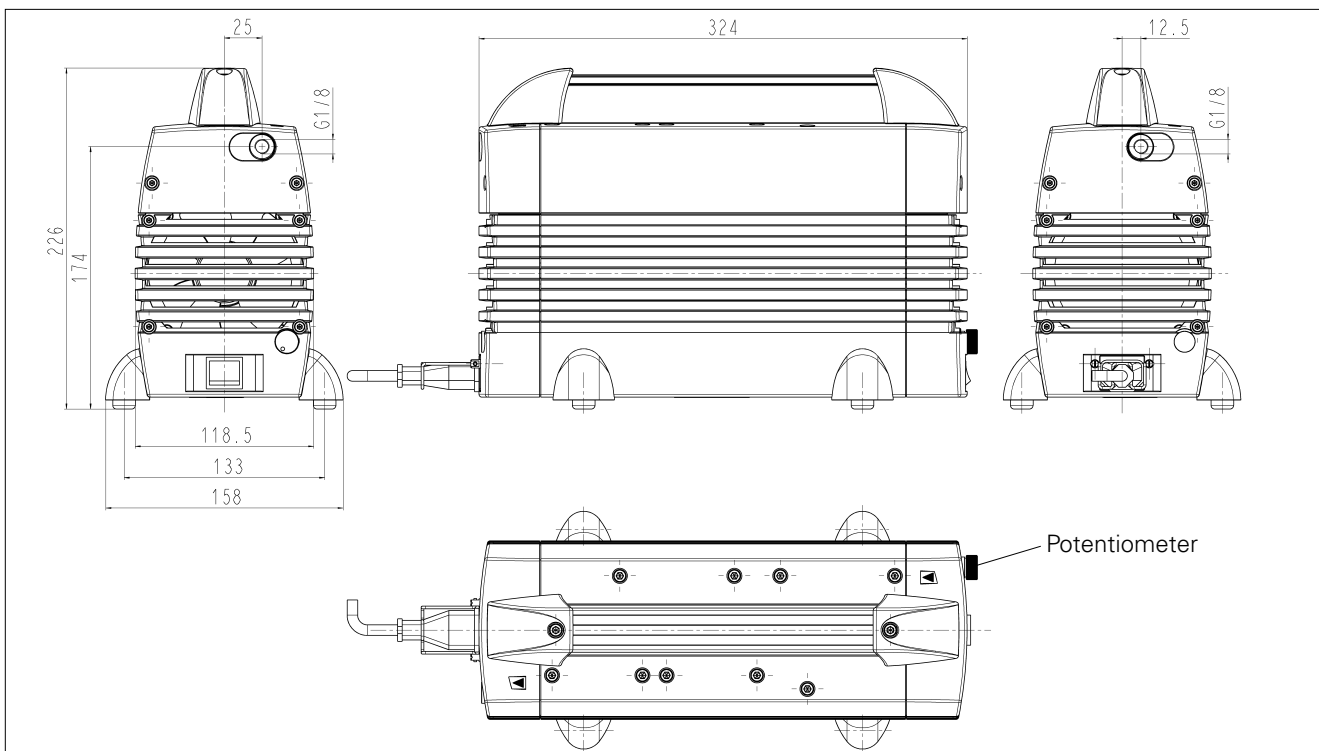
Performance characteristics (at max. motor speed)



Suction pumping speed (at max. motor speed)



## Dimensions (mm)





# Diaphragm Pumps for Air, Gases and Vapours

1



## Diaphragm Vacuum Pumps

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

### Series N 026.3 A\_18 Pumps

Series N 026.32 diaphragm pumps are double-head, dry-running devices used in a wide range of laboratory applications. They transfer and pump down without contamination.

The pumps are available in various versions differing in the materials which contact the media.

Technical data:	N 026.3 AN.18	N 026.3 AT.18
Delivery (l/min) <sup>1)</sup>	22	18
Ultimate vacuum (mbar abs.)	20	25
Operating pressure (bar g)	-	-
Connectors for tube (mm)	ID 9	ID 9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 20
Power P <sub>1</sub>	170 W	170 W
Operating current	0.85 A	0.85 A
Weight	5.8 kg	5.8 kg
Dimensions LxHxW (mm)	243/192/185	243/192/185
With thermal switch		

### Material in contact with the pumped media

Type/Order No.	Pump head	Diaphragm	Valves
N 026.3 AN.18	Aluminium	CR	Stainless steel
N 026.3 AT.18	Aluminium	PTFE-coated	Stainless steel

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Accessories

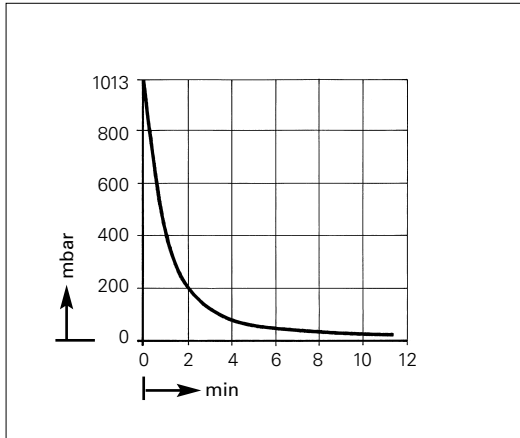
Description	Details	for Type	Order No.
Silencer/Filter	G 1/4		000352
Fine control valve with vacuum gauge	suction side	N 026.3 AN.18	011868

# Diaphragm Pumps for Air, Gases and Vapours

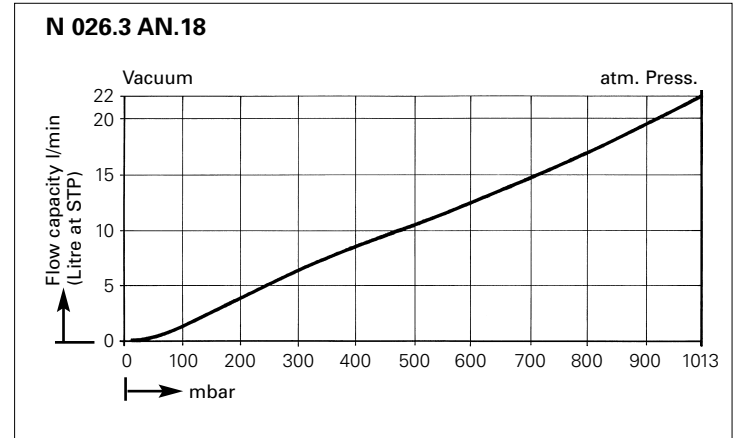
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## Dimensions and performance characteristics

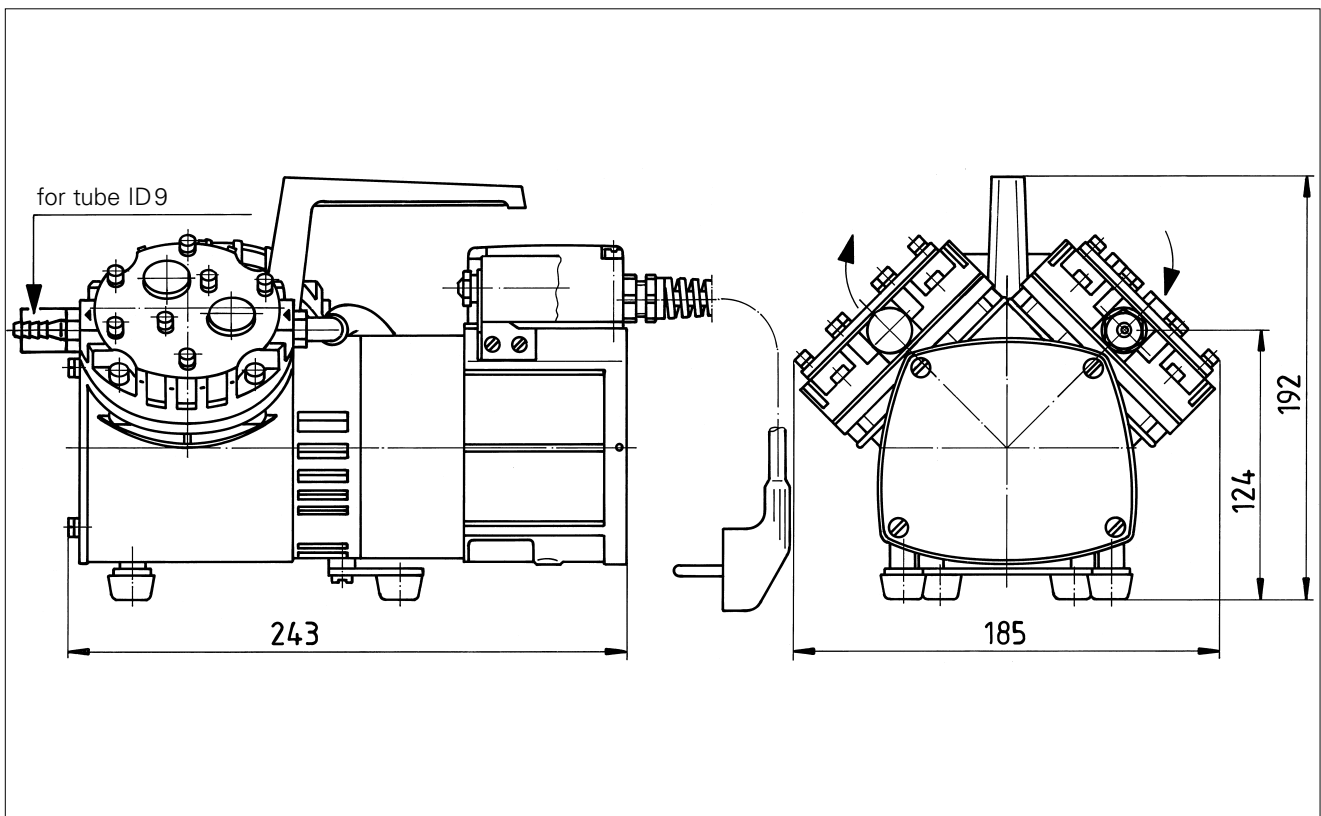
Pump down time for 20 l receiver



Performance characteristics



Dimensions (mm)



# Diaphragm Pumps for Air, Gases and Vapours

1



## Diaphragm Vacuum Pumps and Compressors

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Versions for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

### Series N 035 A\_.18 Pumps

Series N 035 diaphragm pumps are single-head, dry-running devices used in a wide range of laboratory applications. They transfer, compress and pump down without contamination. The pumps are available in various versions differing in the materials which contact the media.

### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 035 AN.18	Aluminium	CR	Stainless steel
N 035 AT.18	Aluminium	PTFE-coated	Stainless steel

Choose the pump and the motor in accordance with the following example:

N 035 AN.18 with IP 44-Motor.

### Technical data:

	N 035 AN.18 IP 20-Motor	N 035 AN.18 IP 44-Motor
Delivery (l/min) <sup>1)</sup>	30	30
Ultimate vacuum (mbar abs.)	100	100
Operating pressure (bar g)	4	4
Connectors for tube (mm)	ID 9	ID 9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Voltage/Frequencies	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 44
Power P <sub>1</sub>	220 W	230 W
Operating current	1 A	1.7 A
Weight	8.2 kg	8.5 kg
Dimensions		
LxHxW (mm)	265/254/143	280/255/198
With thermal switch		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Versions for slightly aggressive gases and vapours

	N 035 AT.18 IP 20-Motor	N 035 AT.18 IP 44-Motor
Delivery (l/min) <sup>1)</sup>	27	27
Ultimate vacuum (mbar abs.)	100	100
Operating pressure (bar g)	4	4
Connectors for tube (mm)	ID 9	ID 9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 44
Power P <sub>1</sub>	220 W	230 W
Operating current	1 A	1.7 A
Weight	8.2 kg	8.5 kg
Dimensions		
LxHxW (mm)	265/254/143	280/255/198
With thermal switch		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Accessories

Description	Details	for Type	Order No.
Silencer/Filter	G 1/4		000352
Pressure relief valve	4 bar	N 035 AN.18	047601
Fine control valve with pressure gauge	pressure side	N 035 AN.18	000482
Fine control valve with vacuum gauge	suction side	N 035 AN.18	000354

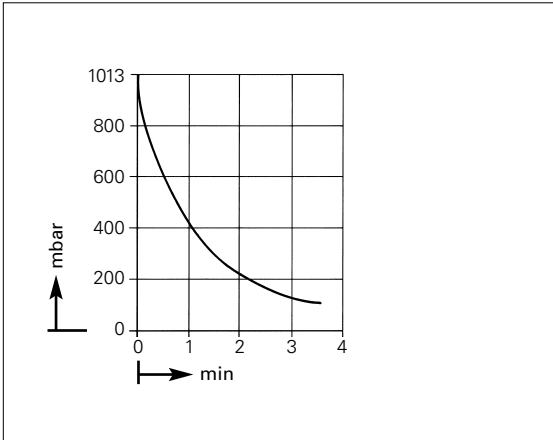
KNF reserves the right to make changes.

# Diaphragm Pumps for Air, Gases and Vapours

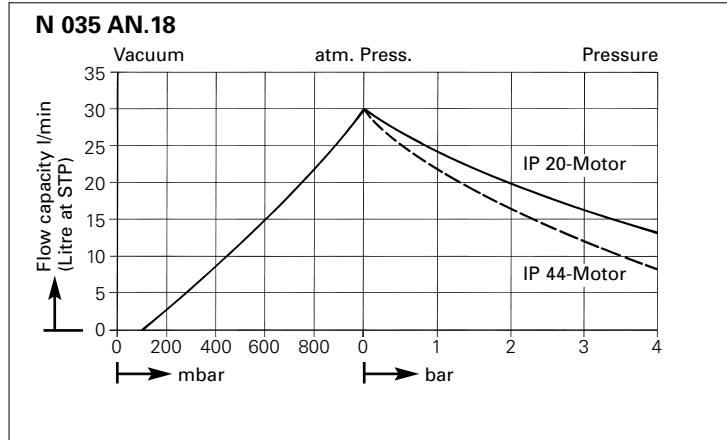
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## Dimensions and performance characteristics

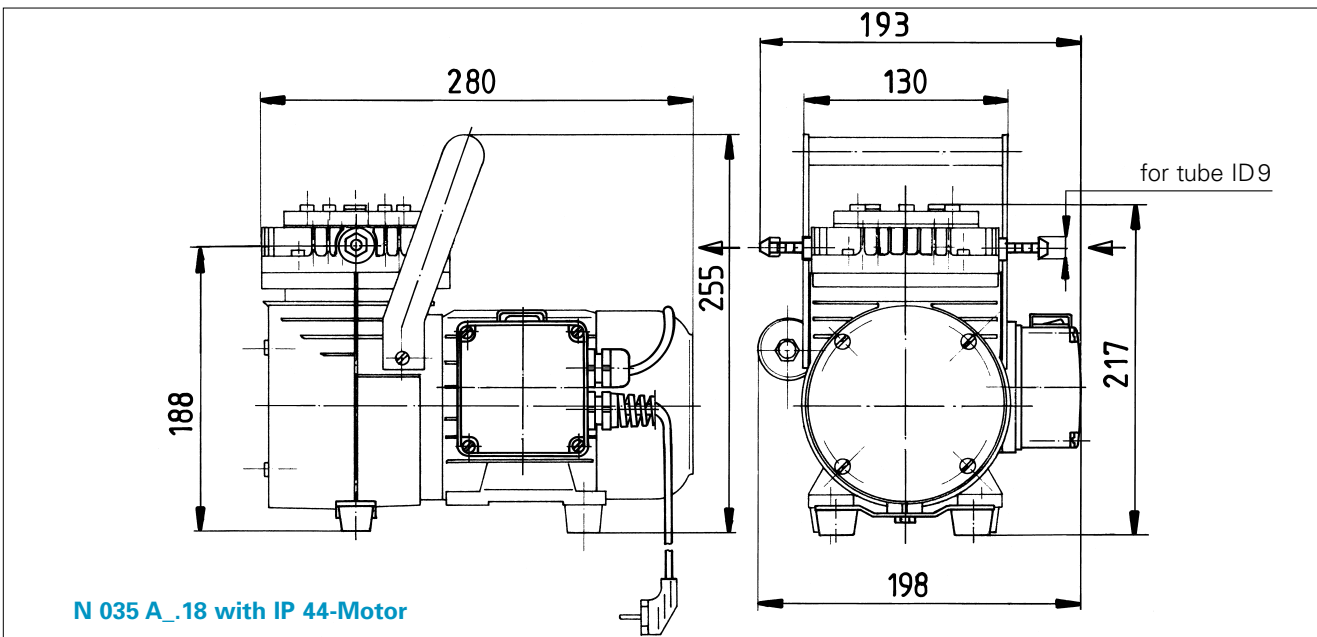
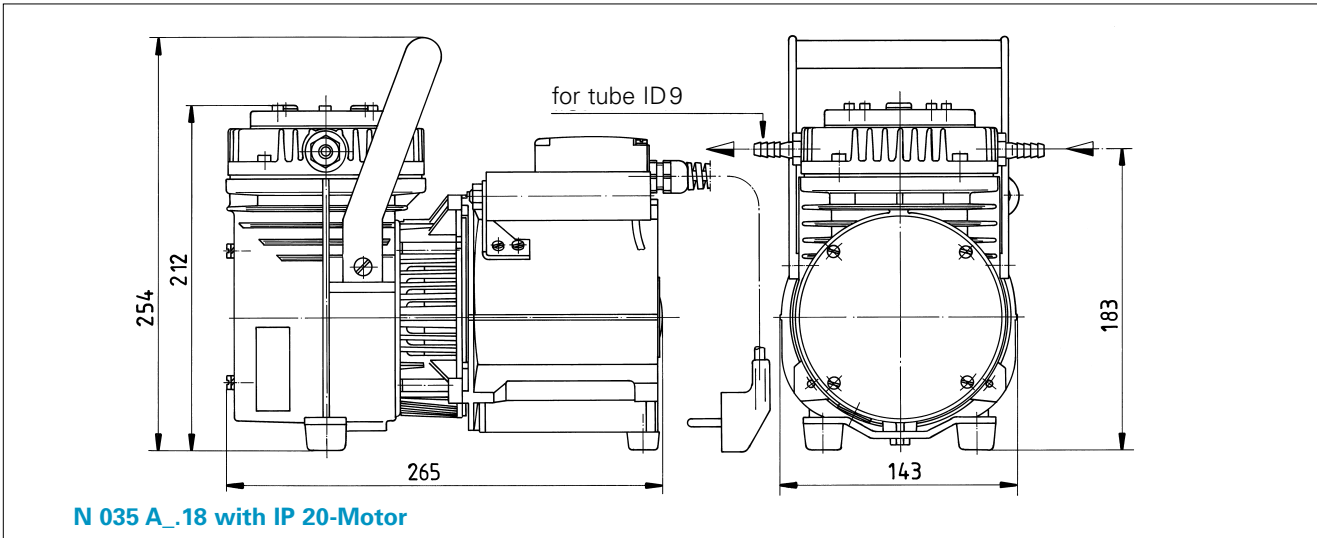
Pump down time for 20 l receiver



Performance characteristics

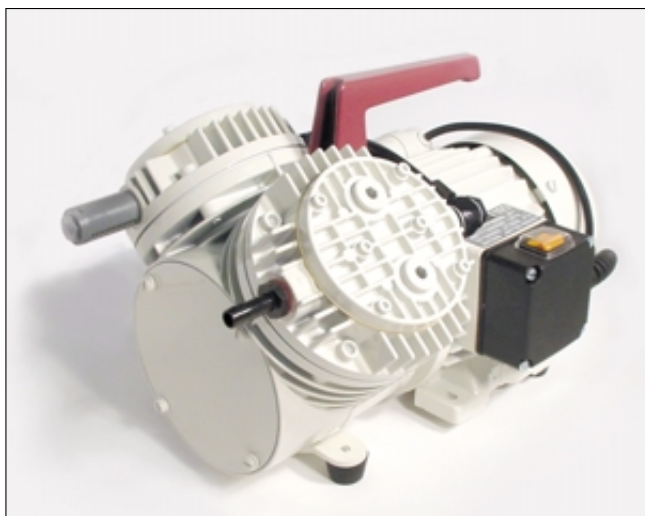


Dimensions (mm)



# Diaphragm Pumps for Air, Gases and Vapours

1



## Diaphragm Vacuum Pumps

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Versions for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

### Series N 035.3 A\_.18 Pumps

Series N 035.3 diaphragm pumps are double-head, dry-running devices used in a wide range of laboratory applications. They transfer and pump down without contamination. The pumps are available in various versions differing in the materials which contact the media.

### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 035.3 AN.18	Aluminium	CR	Stainless steel
N 035.3 AT.18	Aluminium	PTFE-coated	Stainless steel

Choose the pump and the motor in accordance with the following example:  
N 035.3 AN.18 with IP 44-Motor.

### Technical data:

	N 035.3 AN.18 IP 20-Motor	N 035.3 AN.18 IP 44-Motor
Delivery (l/min) <sup>1)</sup>	30	30
Ultimate vacuum (mbar abs.)	13	13
Operating pressure (bar g)	-	-
Connectors for tube (mm)	ID 9	ID 9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Voltage/Frequencies	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 44
Power P <sub>1</sub>	300 W	320 W
Operating current	1.55 A	1.9 A
Weight	11.3 kg	11.6 kg
Dimensions		
LxHxW (mm)	294/222/250	351/222/250
With thermal switch		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Versions for slightly aggressive gases and vapours

	N 035.3 AT.18 IP 20-Motor	N 035.3 AT.18 IP 44-Motor
Delivery (l/min) <sup>1)</sup>	27	27
Ultimate vacuum (mbar abs.)	20	20
Operating pressure (bar g)	-	-
Connectors for tube (mm)	ID 9	ID 9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 44
Power P <sub>1</sub>	300 W	320 W
Operating current	1.55 A	1.9 A
Weight	11.3 kg	11.6 kg
Dimensions		
LxHxW (mm)	294/222/250	351/222/250
With thermal switch		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Accessories

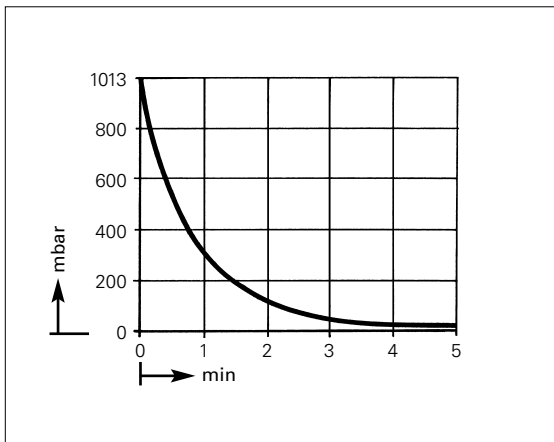
Description	Details	Order No.
Silencer/Filter	G 1/4	000352
Fine control valve with vacuum gauge	suction side	000354

KNF reserves the right to make changes.

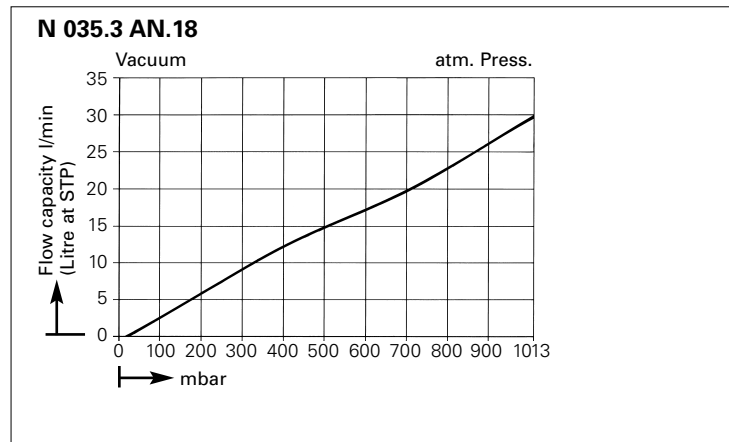
# Diaphragm Pumps for Air, Gases and Vapours

## Dimensions and performance characteristics

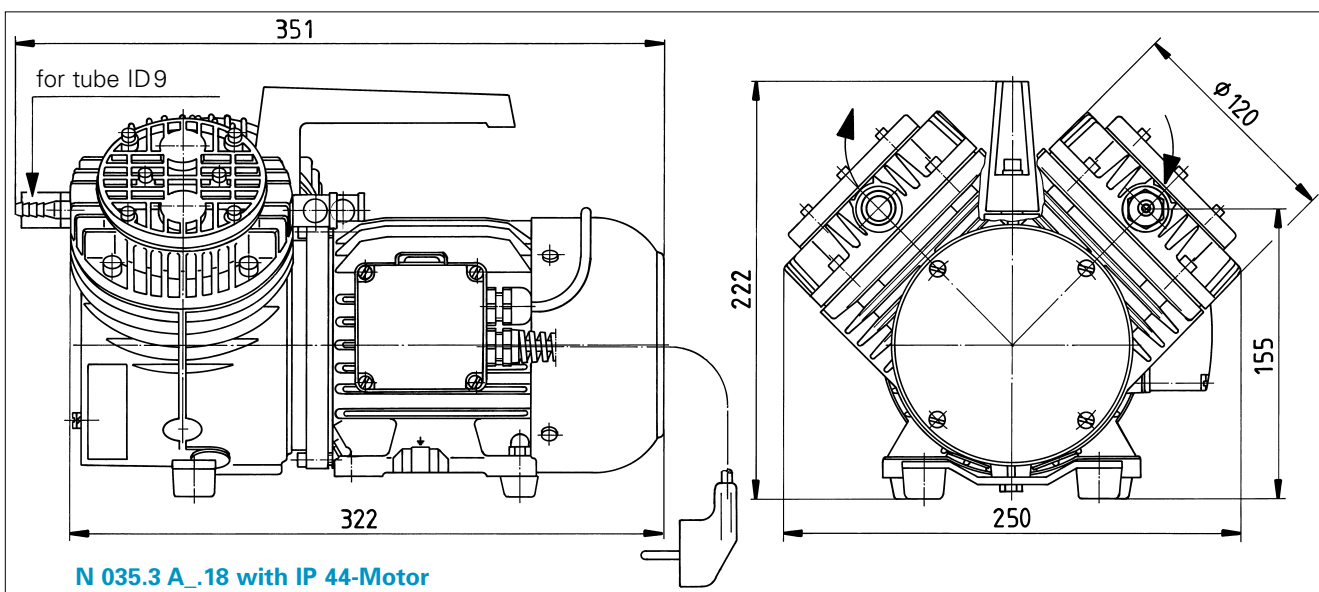
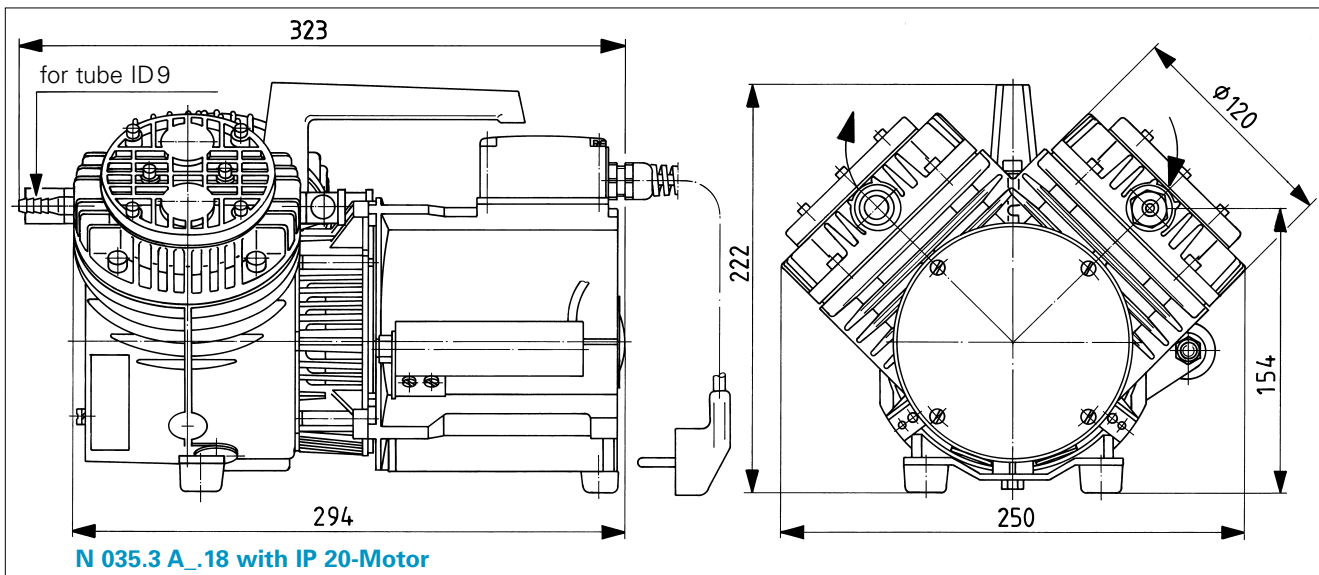
### Pump down time for 20 l receiver



### Performance characteristics



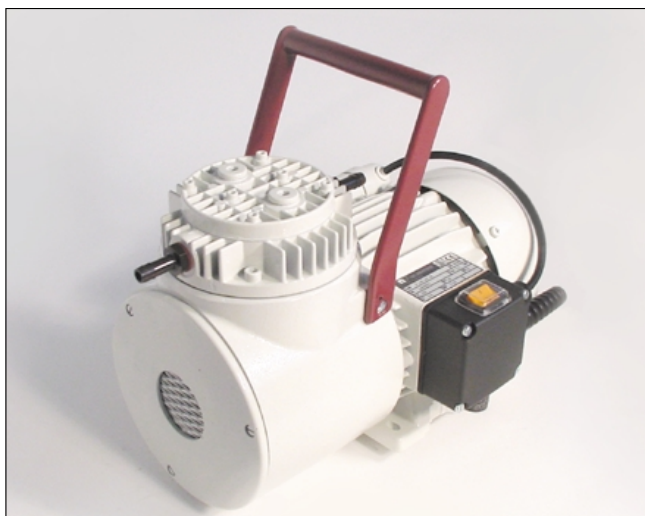
### Dimensions (mm)





# Diaphragm Pumps for Air, Gases and Vapours

1



## Diaphragm Vacuum Pumps and Compressors

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

### Series N 145 A\_.18 Pumps

Series N 145 diaphragm pumps are single-head, dry-running devices used in a wide range of laboratory applications. They transfer, compress and pump down without contamination. The pumps are available in various versions differing in the materials which contact the media.

### Technical data:

	N 145 AN.18	N 145 AT.18
Delivery (l/min) <sup>1)</sup>	30	27
Ultimate vacuum (mbar abs.)	100	100
Operating pressure (bar g)	7	7
Connectors for tube (mm)	ID 9	ID 9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 44	IP 44
Power P <sub>1</sub>	320 W	320 W
Operating current	2.1 A	2.1 A
Weight	12 kg	12 kg
Dimensions LxHxW (mm)	325/286/210	325/286/210
With thermal switch		

### Material in contact with the pumped media

Type/Order No.	Pump head	Diaphragm	Valves
N 145 AN.18	Aluminium	CR	Stainless steel
N 145 AT.18	Aluminium	PTFE-coated	Stainless steel

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Accessories

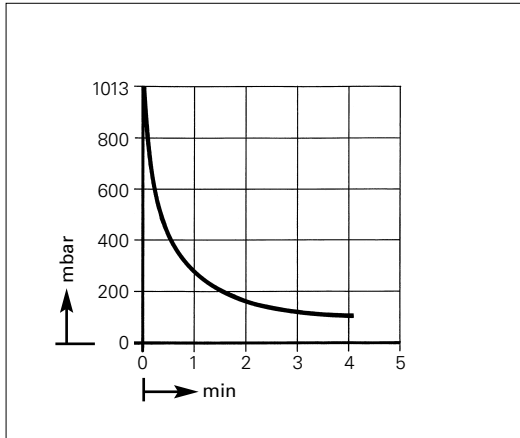
Description	Details	for Type	Order No.
Silencer/Filter	G 1/4		000352
Pressure relief valve	4 bar	N 145 AN.18	047601
Pressure relief valve	7 bar	N 145 AN.18	047602
Fine control valve with pressure gauge	pressure side	N 145 AN.18	000356
Fine control valve with vacuum gauge	suction side	N 145 AN.18	000354

# Diaphragm Pumps for Air, Gases and Vapours

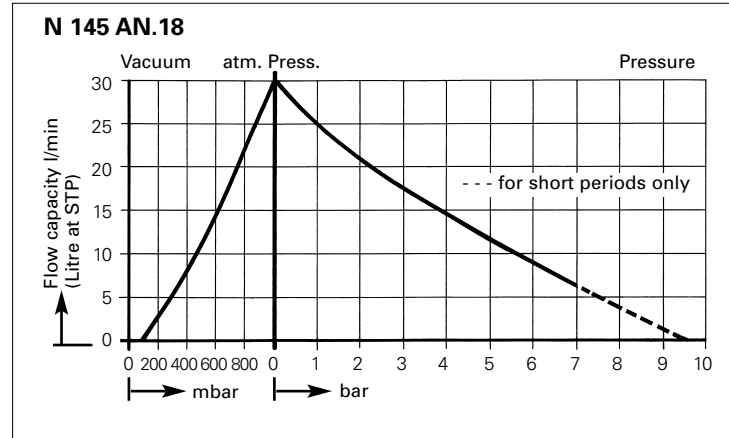
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## Dimensions and performance characteristics

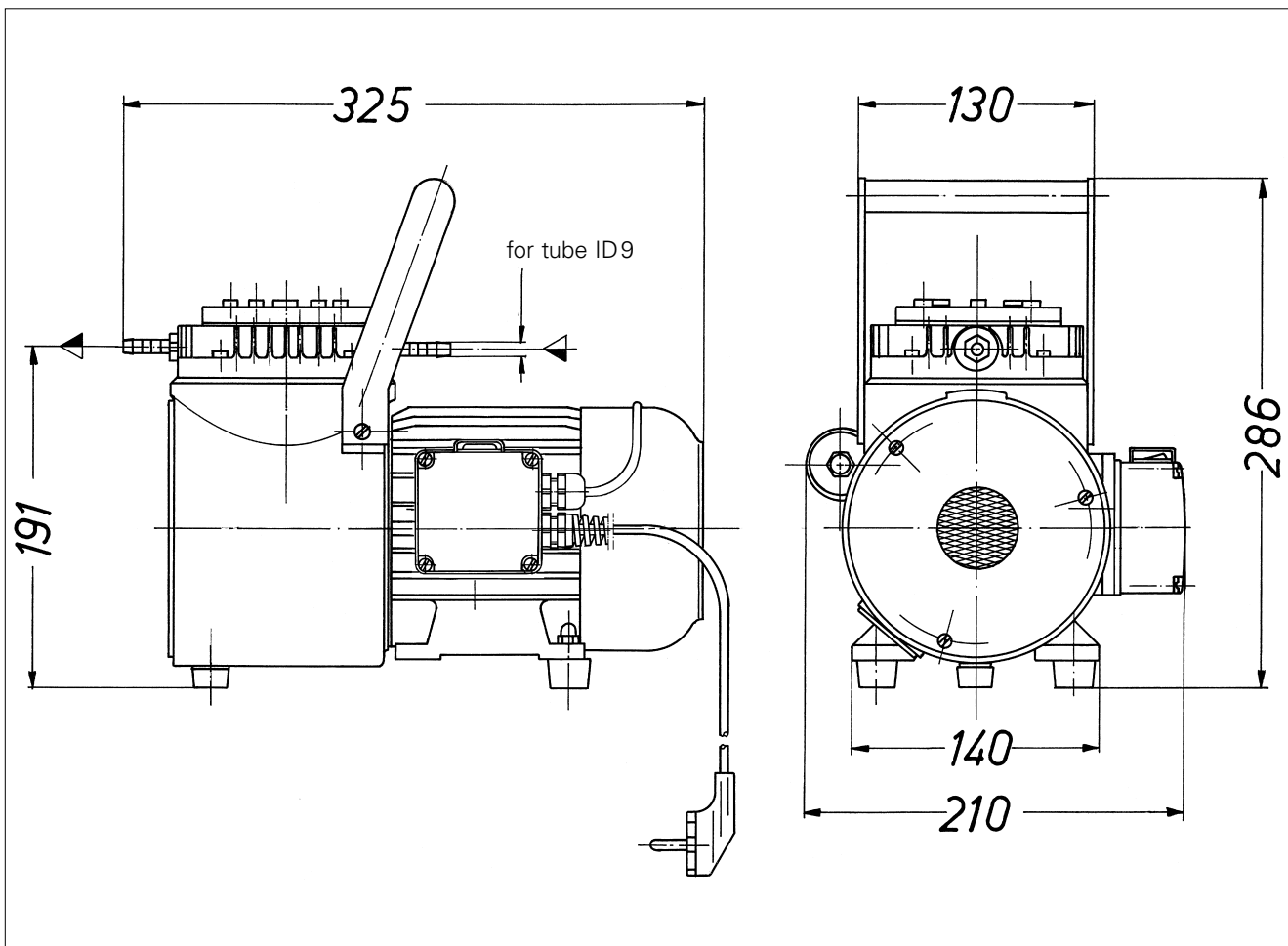
### Pump down time for 20 l receiver



### Performance characteristics



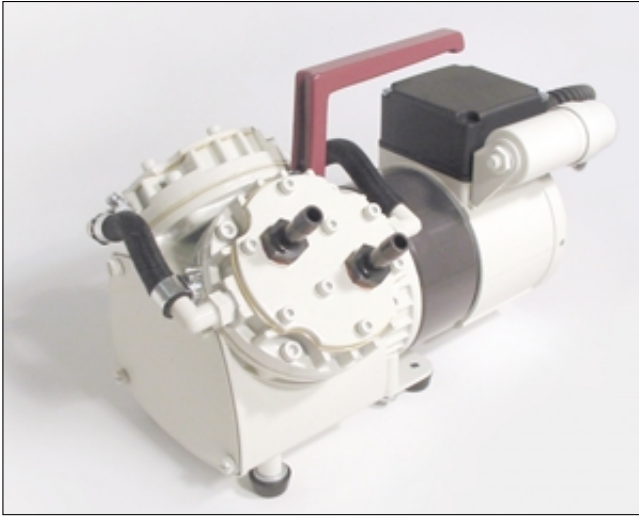
### Dimensions (mm)





# Diaphragm Pumps for Air, Gases and Vapours

1



## Diaphragm Vacuum Pumps and Compressors

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

### Series N 026.1.2 A\_.18 Pumps

Series N 026.1.2 diaphragm pumps are double-head, dry-running devices used in a wide range of laboratory applications. They transfer, compress and pump down without contamination.

The pumps are available in various versions differing in the materials which contact the media.

Technical data:	N 026.1.2 AN.18	N 026.1.2 AT.18
Delivery (l/min) <sup>1)</sup>	39	31
Ultimate vacuum (mbar abs.)	100	100
Operating pressure (bar g)	2	2
Connectors for tube (mm)	ID 9	ID 9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 20
Power P <sub>1</sub>	170 W	170 W
Operating current	0.85 A	0.85 A
Weight	5.8 kg	5.8 kg
Dimensions LxHxW (mm)	254/192/185	254/192/185
With thermal switch		

### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 026.1.2 AN.18	Aluminium	CR	Stainless steel
N 026.1.2 AT.18	Aluminium	PTFE-coated	Stainless steel

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

## Accessories

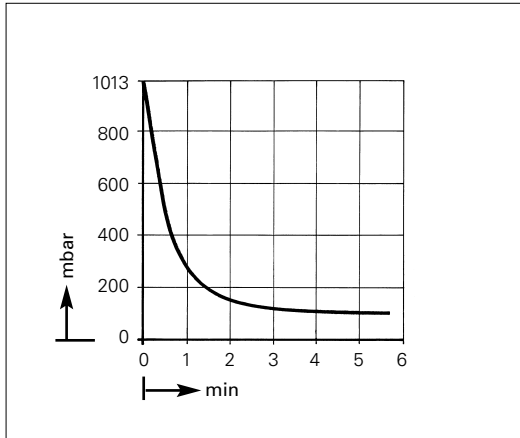
Description	Details	for Type	Order No.
Silencer/Filter	G 1/4		000352
Pressure relief valve	2 bar	N 026.1.2 AN.18	003074
Fine control valve with pressure gauge	pressure side	N 026.1.2 AN.18	011867
Fine control valve with vacuum gauge	suction side	N 026.1.2 AN.18	011868

# Diaphragm Pumps for Air, Gases and Vapours

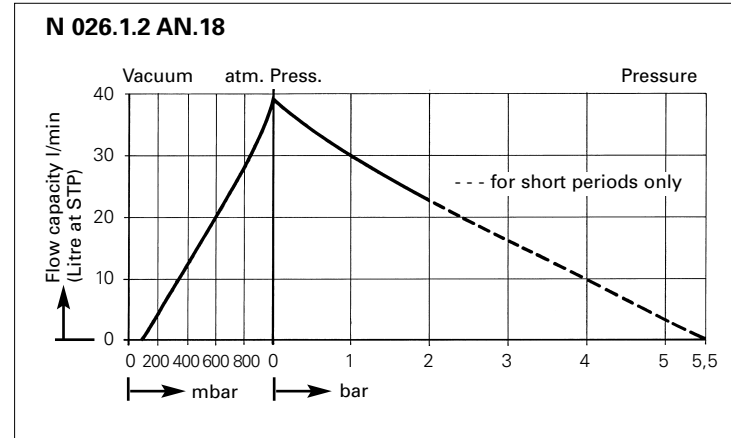
1

## Dimensions and performance characteristics

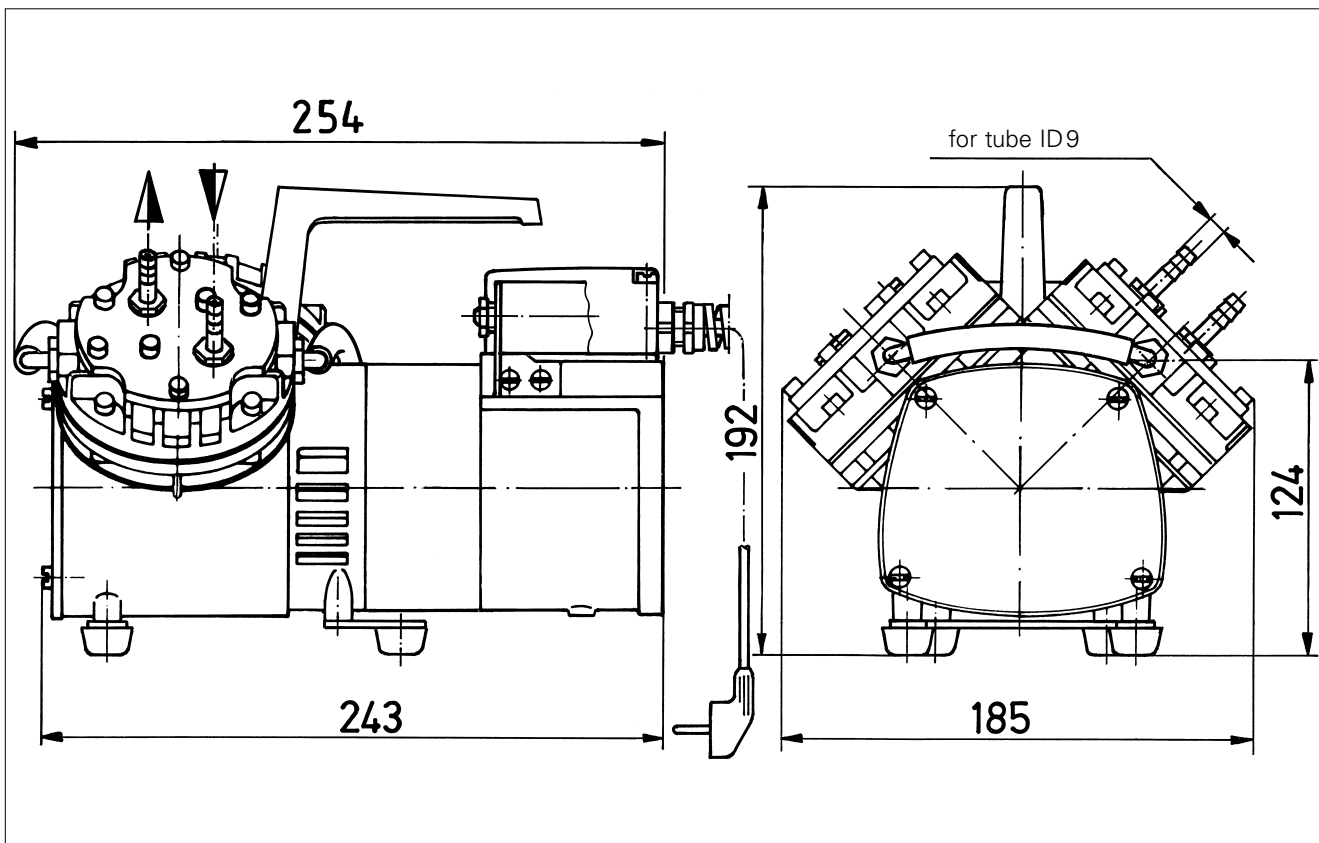
### Pump down time for 20 l receiver



### Performance characteristics

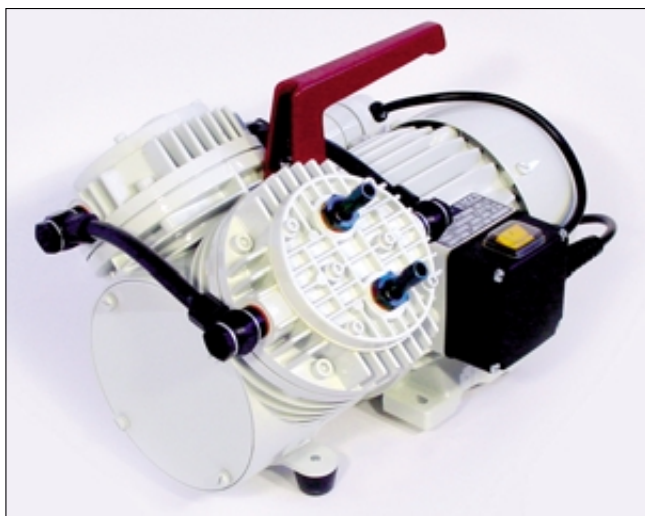


### Dimensions (mm)



# Diaphragm Pumps for Air, Gases and Vapours

1



## Diaphragm Vacuum Pumps and Compressors

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Versions for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

### Series N 035.1.2 A\_.18 Pumps

Series N 035.1.2 diaphragm pumps are double-head, dry-running devices used in a wide range of laboratory applications. They transfer, compress and pump down without contamination.

The pumps are available in various versions differing in the materials which contact the media.

### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 035.1.2 AN.18	Aluminium	CR	Stainless steel
N 035.1.2 AT.18	Aluminium	PTFE-coated	Stainless steel

Choose the pump and the motor in accordance with the following example:

N 035.1.2 AN.18 with IP 44-Motor.

### Technical data:

	N 035.1.2 AN.18 IP 20-Motor	N 035.1.2 AN.18 IP 44-Motor
Delivery (l/min) <sup>1)</sup>	55	55
Ultimate vacuum (mbar abs.)	100	100
Operating pressure (bar g)	4	4
Connectors for tube (mm) ID 9		ID 9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Voltage/Frequencies	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 44
Power P <sub>1</sub>	300 W	320 W
Operating current	1.55 A	1.9 A
Weight	11.3 kg	11.6 kg
Dimensions LxHxW(mm) With thermal switch	321/222/250	349/222/250

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Versions for slightly aggressive gases and vapours

	N 035.1.2 AT.18 IP 20-Motor	N 035.1.2 AT.18 IP 44-Motor
Delivery (l/min) <sup>1)</sup>	50	50
Ultimate vacuum (mbar abs.)	100	100
Operating pressure (bar g)	4	4
Connectors for tube (mm) ID 9		ID 9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 20	IP 44
Power P <sub>1</sub>	300 W	320 W
Operating current	1.55A	1.9 A
Weight	11.3 kg	11.6 kg
Dimensions LxHxW(mm) With thermal switch	321/222/250	349/222/250

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

### Accessories

Description	Details	for Type	Order No.
Silencer/Filter	G 1/4		000352
Pressure relief valve	4 bar	N 035.1.2 AN.18	047601
Fine control valve with pressure gauge	pressure side	N 035.1.2 AN.18	000482
Fine control valve with vacuum gauge	suction side	N 035.1.2.AN.18	000354

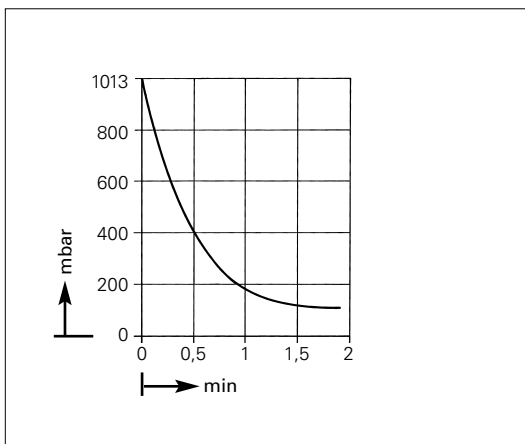
KNF reserves the right to make changes.

# Diaphragm Pumps for Air, Gases and Vapours

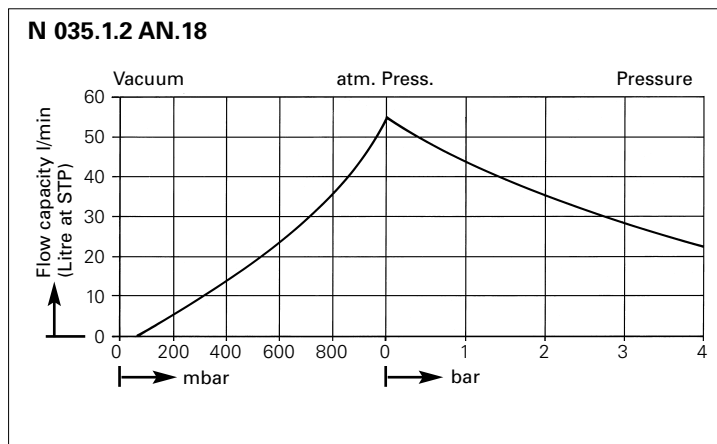
1

## Dimensions and performance characteristics

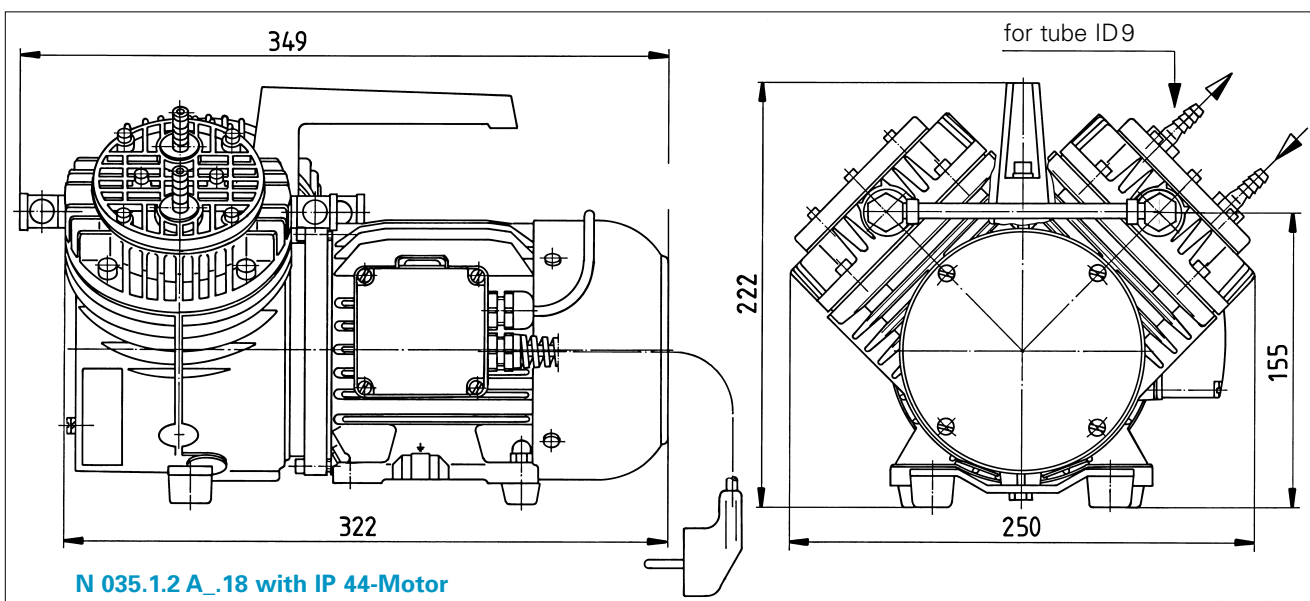
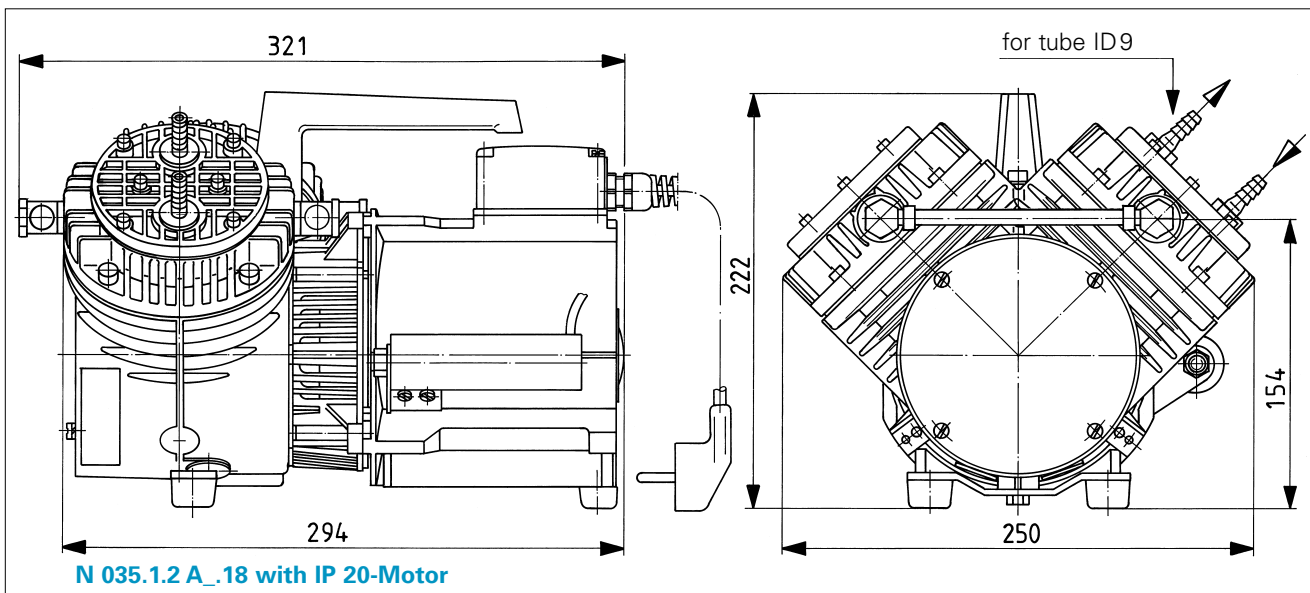
Pump down time for 20 l receiver



Performance characteristics



Dimensions (mm)



# Diaphragm Pumps for Air, Gases and Vapours

1



## Diaphragm Vacuum Pumps and Compressors

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Version for slightly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

### Series N 145.1.2 A\_.18 Pumps

Series N 145.1.2 diaphragm pumps are double-head, dry-running devices used in a wide range of laboratory applications. They transfer, compress and pump down without contamination.

The pumps are available in various versions differing in the materials which contact the media.

Technical data:	N 145.1.2 AN.18	N 145.1.2 AT.18
Delivery (l/min) <sup>1)</sup>	55	50
Ultimate vacuum (mbar abs.)	100	100
Operating pressure (bar g)	7	7
Connectors for tube (mm) ID	9	9
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 44	IP 44
Power P <sub>1</sub>	350 W	350 W
Operating current	2.1 A	2.1 A
Weight	15 kg	15 kg
Dimensions LxHxW (mm)	350/261/250	350/261/250
With thermal switch		

### Material in contact with the pumped media

Type/Order No.	Pump head	Diaphragm	Valves
N 145.1.2 AN.18	Aluminium	CR	Stainless steel
N 145.1.2 AT.18	Aluminium	PTFE-coated	Stainless steel

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

## Accessories

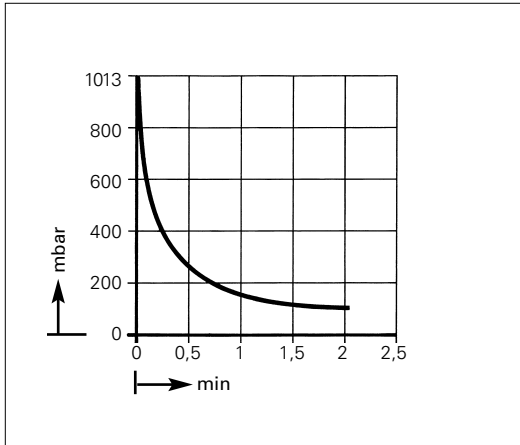
Description	Details	for Type	Order No.
Silencer/Filter	G 1/4		000352
Pressure relief valve	4 bar	N 145.1.2 AN.18	047601
Pressure relief valve	7 bar	N 145.1.2 AN.18	047602
Fine control valve with pressure gauge	pressure side	N 145.1.2 AN.18	000356
Fine control valve with vacuum gauge	suction side	N 145.1.2 AN.18	000354

# Diaphragm Pumps for Air, Gases and Vapours

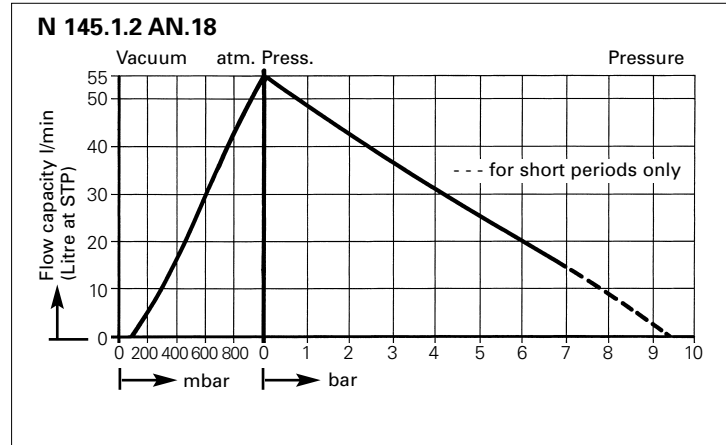
1

## Dimensions and performance characteristics

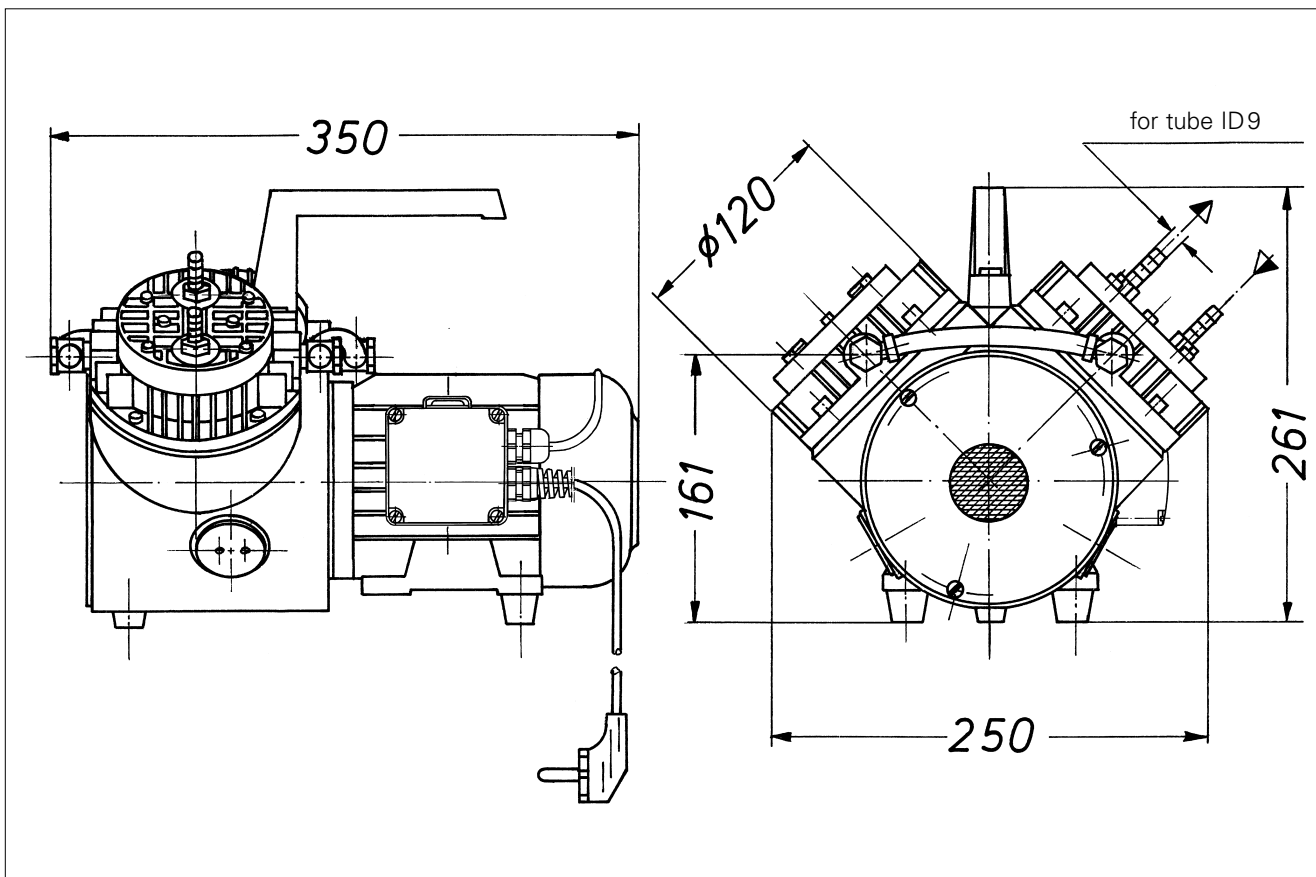
### Pump down time for 20 l receiver



### Performance characteristics



### Dimensions (mm)





# Diaphragm Pumps for Air, Gases and Vapours

1



## LABOPORT® Chemically-resistant Diaphragm Vacuum Pumps

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Highly compatible with vapours and condensation
- Chemically-resistant
- Therefore suitable for highly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

### Series LABOPORT® N 810 FT.18, N 810.3 FT.18 Pumps

The chemically-resistant series N 810 and N 810.3 diaphragm pumps are single- and double-head, dry-running devices used in a wide range of laboratory applications. They transfer and pump down without contamination.

The heart of these very compact pumps is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

#### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 810 FT.18	PTFE	PTFE-coated	FFPM
N 810.3 FT.18	PTFE	PTFE-coated	FFPM

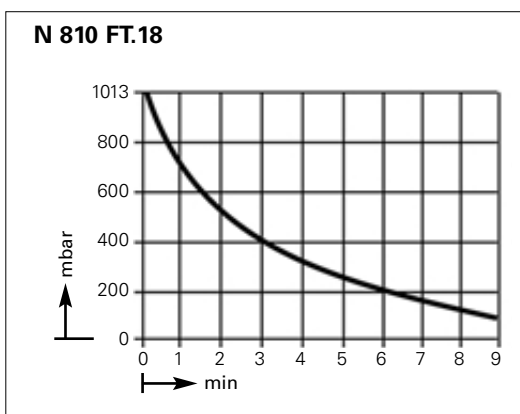
Technical data:	N 810 FT.18	N 810.3 FT.18
Delivery (l/min) <sup>1)</sup>	10	10
Ultimate vacuum (mbar abs.)	100	8
Operating pressure (bar g)	1	1
Connectors for tube (mm)	ID 10	ID 10
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Voltage/Frequencies	230V/50Hz	230V/50Hz
Mains	IP 44	IP 44
Power P <sub>1</sub>	100 W	90 W
Operating current	0.6 A	0.6 A
Weight	5.9 kg	6.9 kg
Dimensions		
LxHxW (mm)	256/187/146	281/187/140
With thermal switch and power fuse		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

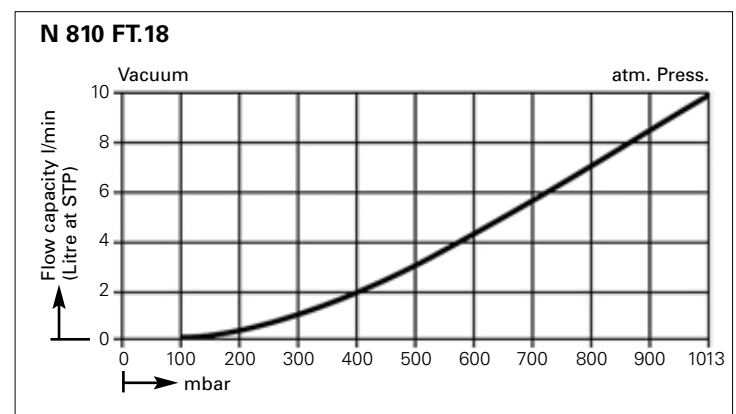
## Dimensions and performance characteristics

### Pump down time for 10 l receiver



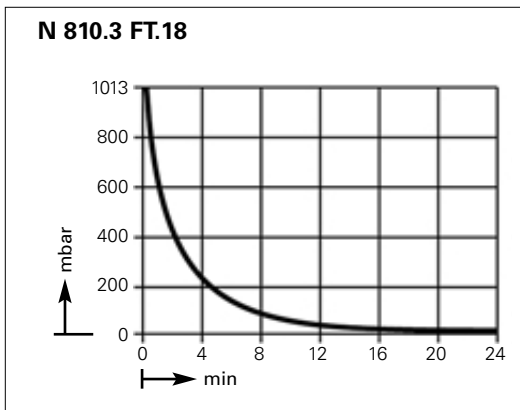
KNF reserves the right to make changes.

### Performance characteristics

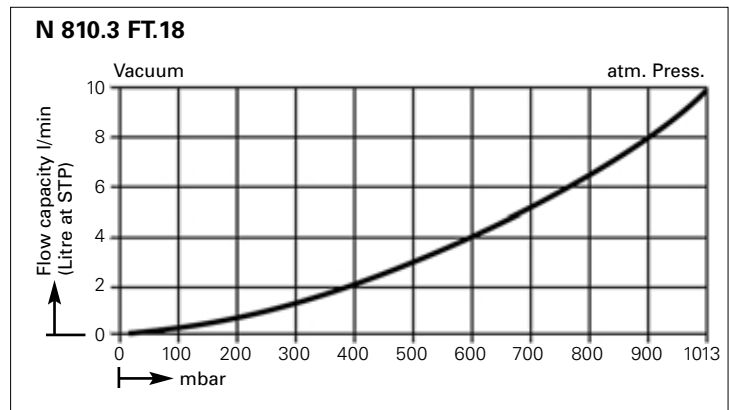


# Diaphragm Pumps for Air, Gases and Vapours

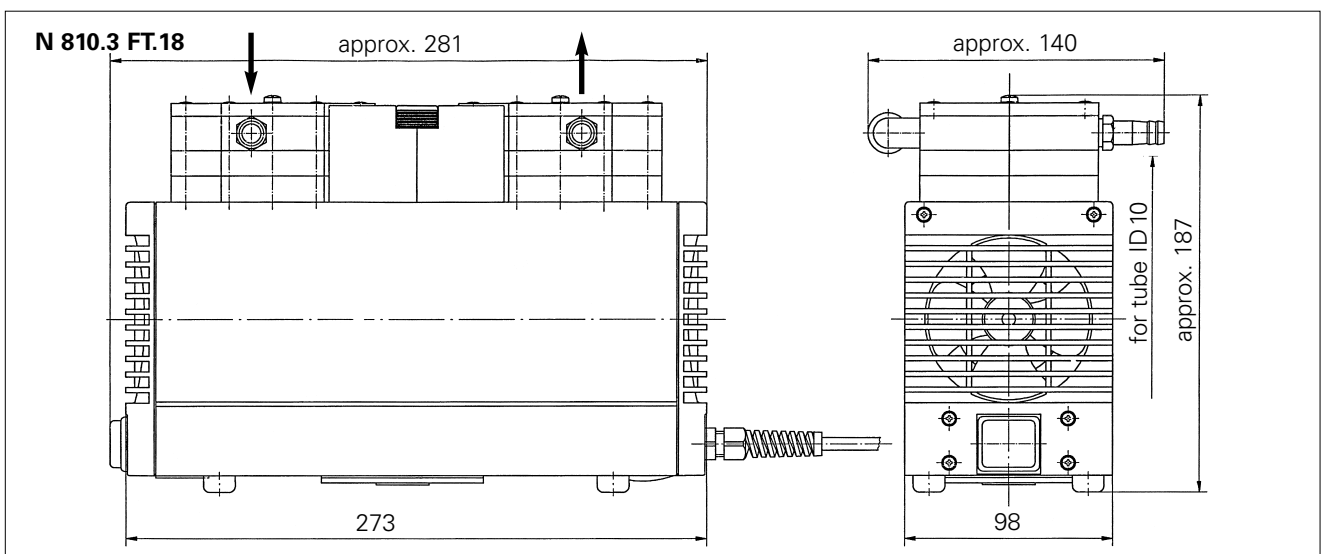
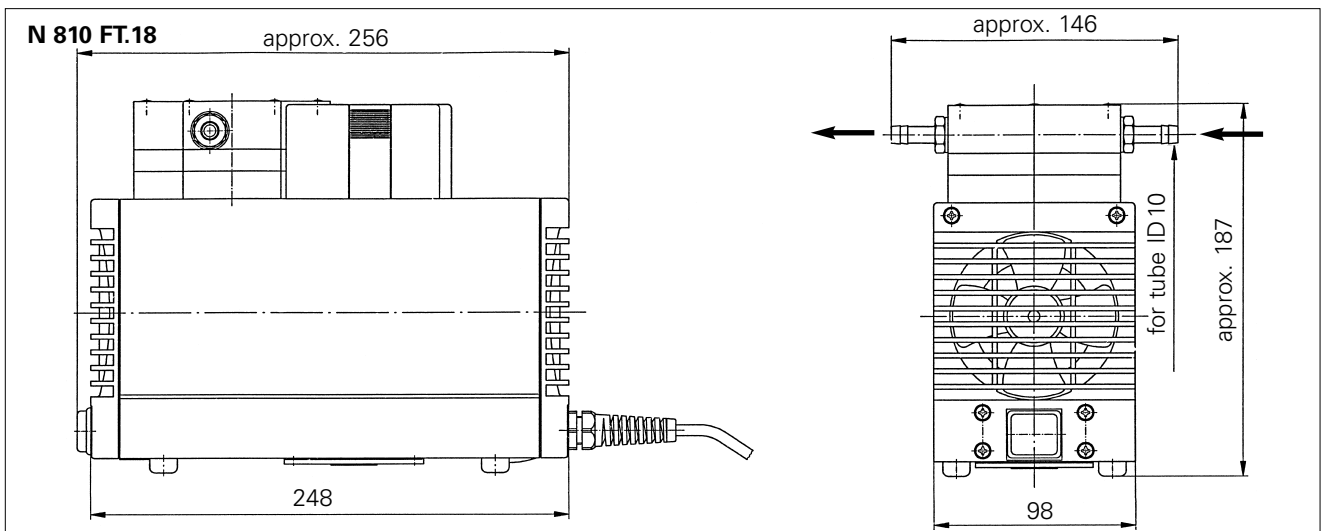
## Pump down time for 10 l receiver



## Performance characteristics



## Dimensions (mm)



## Spare parts

Description	Details	Order No.
Spares kit	for N 810 FT.18	058077
Spares kit	for N 810.3 FT.18	057357

**KNF worldwide - Diaphragm Pumps and Systems**

KNF reserves the right to make changes.



# Diaphragm Pumps for Air, Gases and Vapours

1



## Series LABOPORT® N 820 FT.18, N 820.3 FT.18 Pumps

The chemically-resistant series N 820 and N 820.3 diaphragm pumps are single- and double-head, dry-running devices used in a wide range of laboratory applications. They transfer and pump down without contamination.

The heart of these very compact pumps is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 820 FT.18	PTFE	PTFE-coated	FFPM
N 820.3 FT.18	PTFE	PTFE-coated	FFPM

## LABOPORT® Chemically-resistant Diaphragm Vacuum Pumps

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Highly compatible with vapours and condensation
- Chemically-resistant
- Therefore suitable for highly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

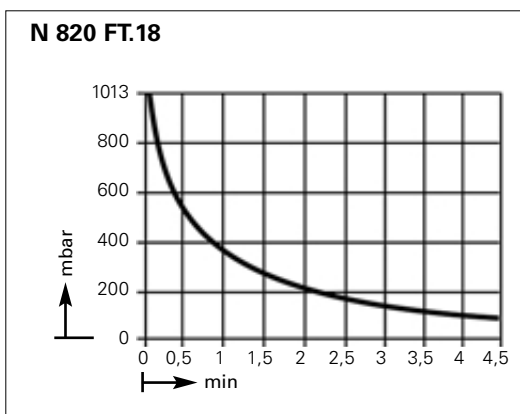
Technical data:	N 820 FT.18	N 820.3 FT.18
Delivery (l/min) <sup>1)</sup>	20	20
Ultimate vacuum (mbar abs.)	100	8
Operating pressure (bar g)	1	1
Connectors for tube (mm)	ID 10	ID 10
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 44	IP 44
Power P <sub>1</sub>	130 W	120 W
Operating current	0.9 A	0.7 A
Weight	7.1 kg	9.3 kg
Dimensions LxHxW (mm)	268/207/159	312/207/154
With thermal switch and power fuse		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

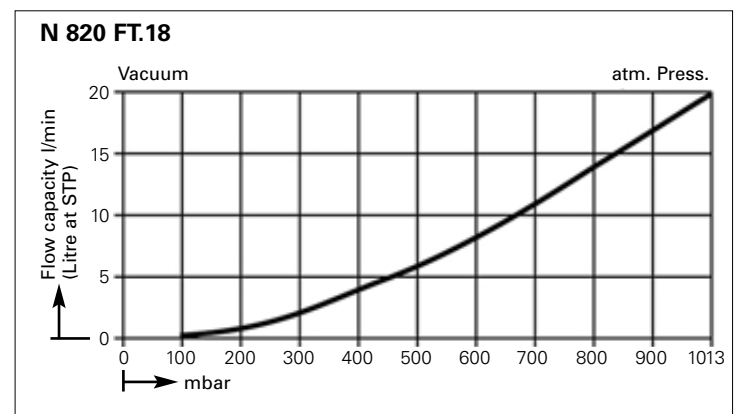
## Dimensions and performance characteristics

### Pump down time for 10 l receiver



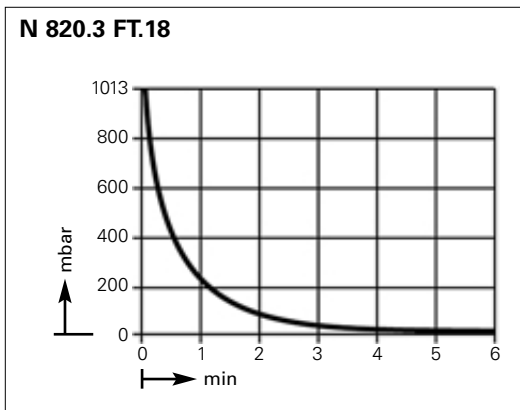
KNF reserves the right to make changes.

### Performance characteristics

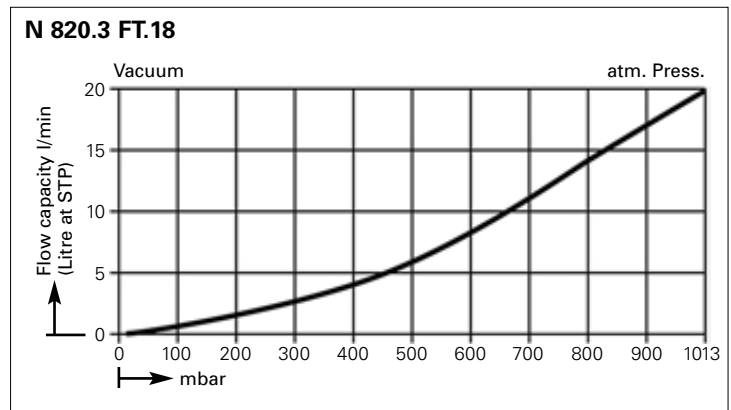


# Diaphragm Pumps for Air, Gases and Vapours

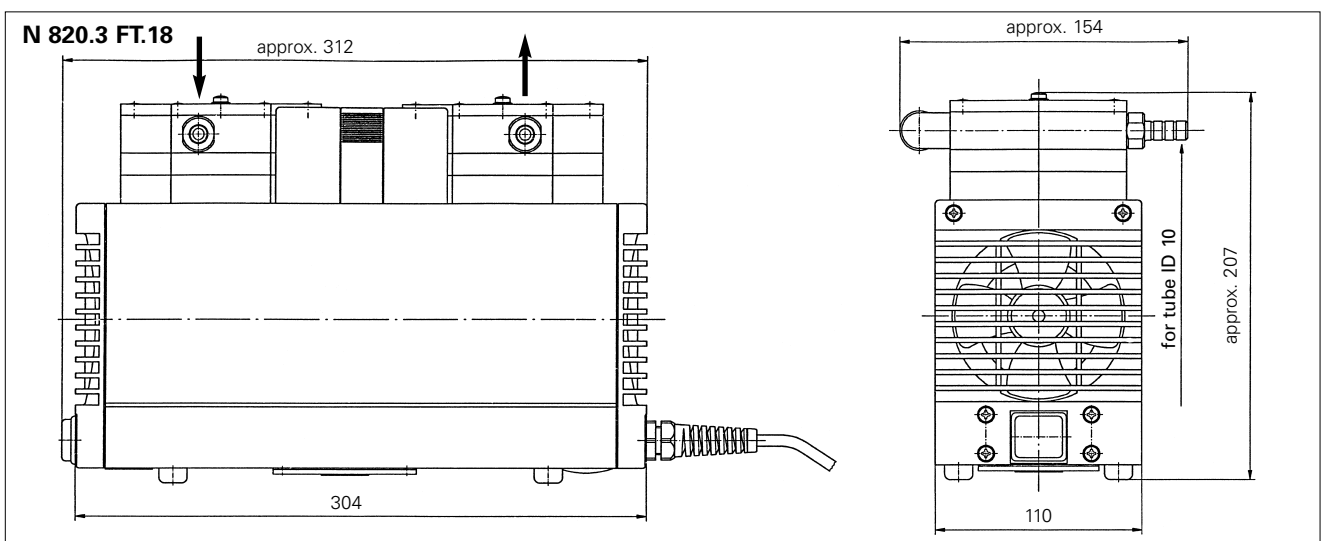
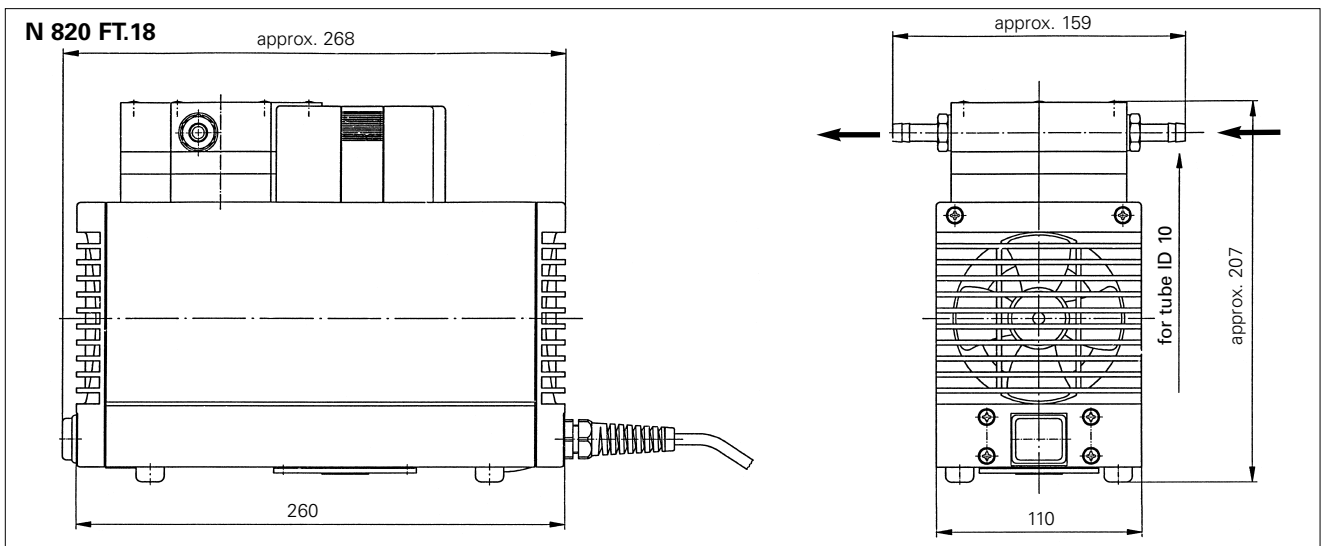
## Pump down time for 10 l receiver



## Performance characteristics



## Dimensions (mm)



## Spare parts

Description	Details	Order No.
Spares kit	for N 820 FT.18	058078
Spares kit	for N 820.3 FT.18	057358

# Diaphragm Pumps for Air, Gases and Vapours

1



## Series LABOPORT® N 840 FT.18, N 840.3 FT.18 Pumps

The chemically-resistant series N 840 and N 840.3 diaphragm pumps are single- and double-head, dry-running devices used in a wide range of laboratory applications. They transfer and pump down without contamination.

The heart of these very compact pumps is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 840 FT.18	PTFE	PTFE-coated	FFPM
N 840.3 FT.18	PTFE	PTFE-coated	FFPM

## LABOPORT® Chemically-resistant Diaphragm Vacuum Pumps

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Highly compatible with vapours and condensation
- Chemically-resistant
- Therefore suitable for highly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

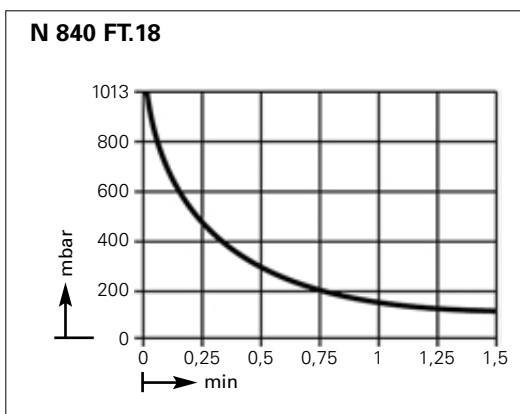
Technical data:	N 840 FT.18	N 840.3 FT.18
Delivery (l/min) <sup>1)</sup>	34	34
Ultimate vacuum (mbar abs.)	100	8
Operating pressure (bar g)	1	1
Connectors for tube (mm)	ID 10	ID 10
Permissible gas and ambient temperature	+5...+40 °C	+5...+40 °C
Mains	230V/50Hz	230V/50Hz
Motor protection	IP 44	IP 44
Power P <sub>1</sub>	180 W	245 W
Operating current	1.5 A	1.5 A
Weight	10.3 kg	12.6 kg
Dimensions LxHxW (mm)	297/226/171	341/226/166
With thermal switch and power fuse		

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

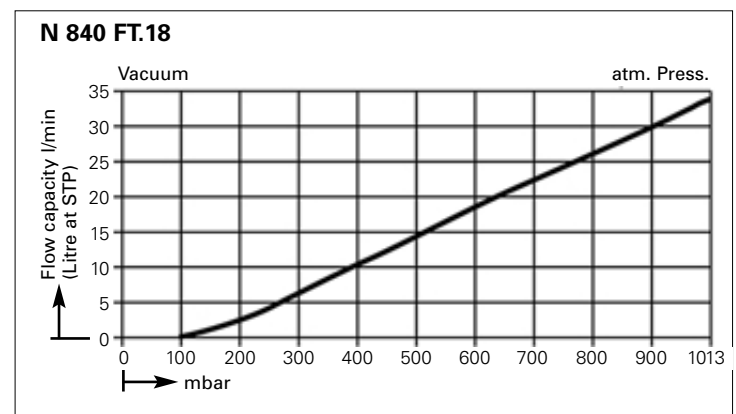
## Dimensions and performance characteristics

### Pump down time for 10 l receiver



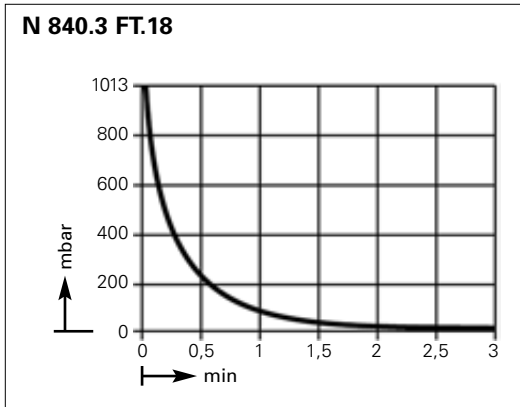
KNF reserves the right to make changes.

### Performance characteristics

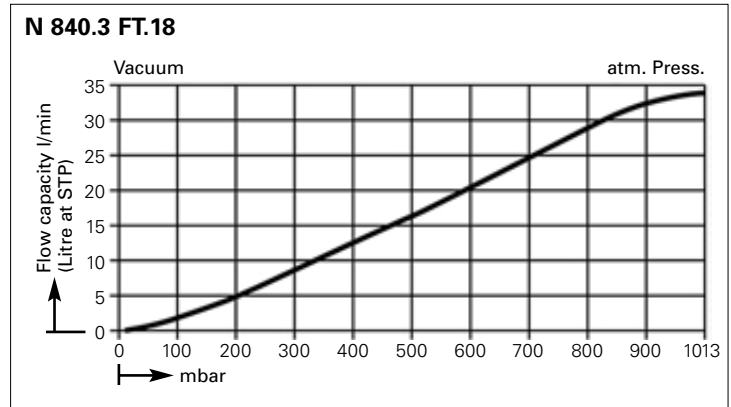


# Diaphragm Pumps for Air, Gases and Vapours

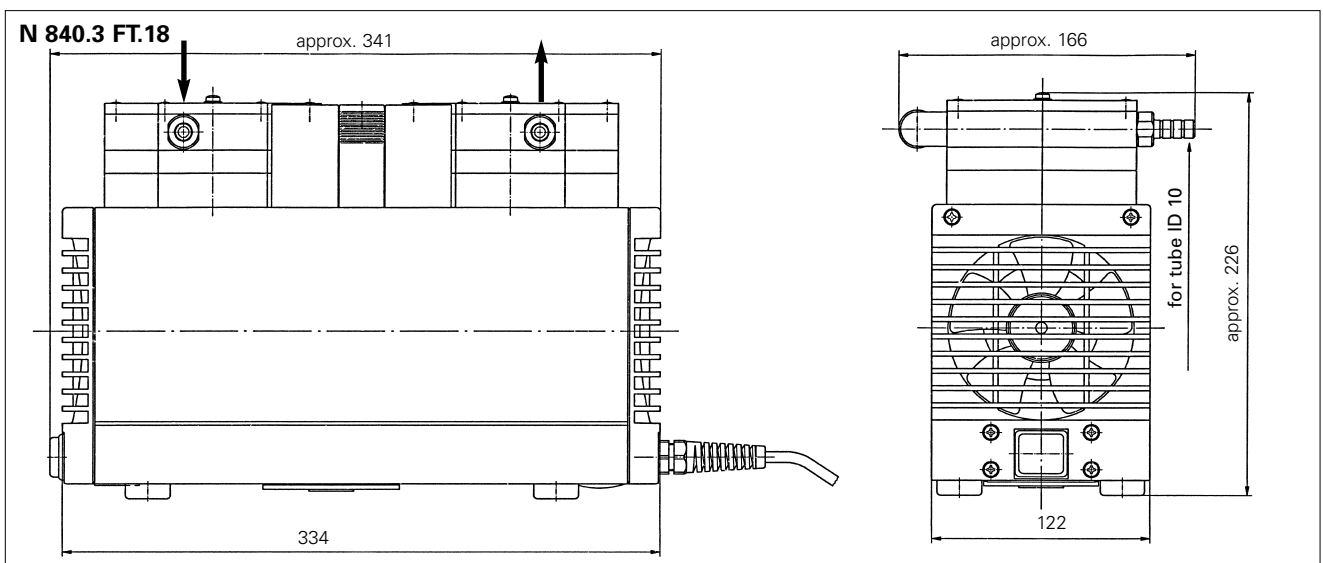
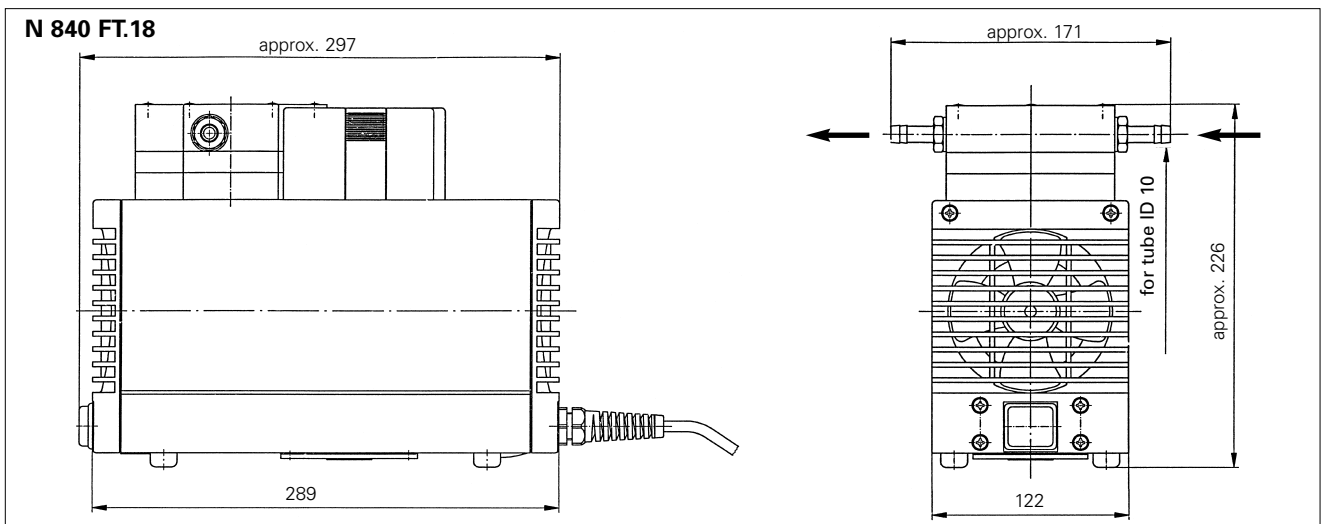
## Pump down time for 10 l receiver



## Performance characteristics



## Dimensions (mm)



## Spare parts

Description	Details	Order No.
Spares kit	for N 840 FT.18	058079
Spares kit	for N 840.3 FT.18	057359

**KNF worldwide - Diaphragm Pumps and Systems**

# Diaphragm Pumps for Air, Gases and Vapours

1



## Serie LABOPORT® N 842.3 FT.18 Pump

The chemically-resistant serie N 842.3 diaphragm pump is a double-head, dry-running device used in a wide range of laboratory applications. These pump transfer and pump down without contamination.

The heart of this very compact pump is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pump smaller while increasing the service life of the diaphragm.

### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 842.3 FT.18	PTFE	PTFE-coated	FFPM

## LABOPORT® Chemically-resistant Diaphragm Vacuum Pump

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Highly compatible with vapours and condensation
- Chemically-resistant
- Therefore suitable for highly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

### Technical data: N 842.3 FT.18

Delivery (l/min) <sup>1)</sup>	34
Ultimate vacuum (mbar abs.)	2
operating pressure (bar g)	1
Connectors for tube (mm)	ID 10
Permissible gas and ambient temperature	+5...+40 °C
Mains	230V/50Hz
Motor protection	IP 44
Power P <sub>1</sub>	245 W
Operating current	1.5 A
Weight	13.4 kg
Dimensions	
LxHxW (mm)	341/223/167
With thermal switch and power fuse	

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

## Spare parts

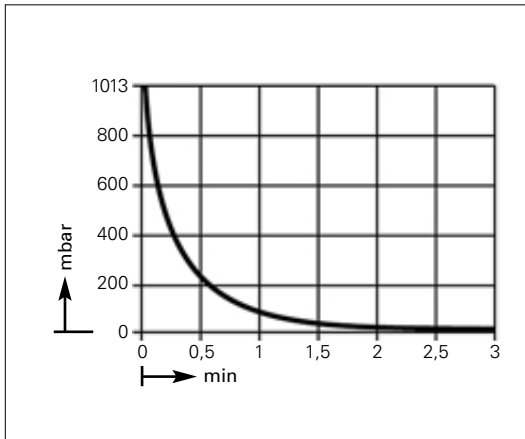
Description	Order No.
Spares kit	057359

# Diaphragm Pumps for Air, Gases and Vapours

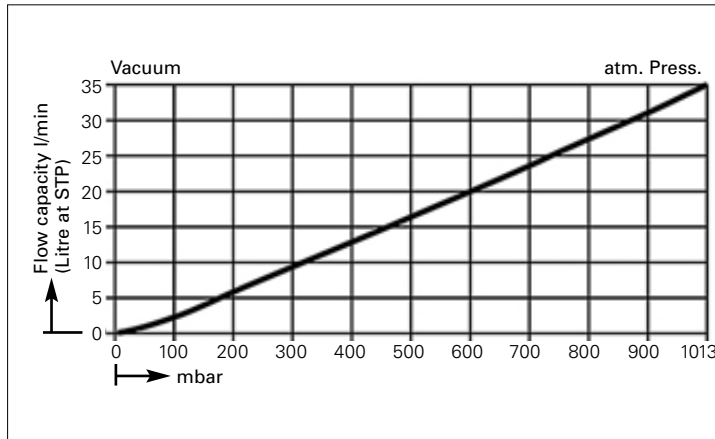
1

## Dimensions and performance characteristics

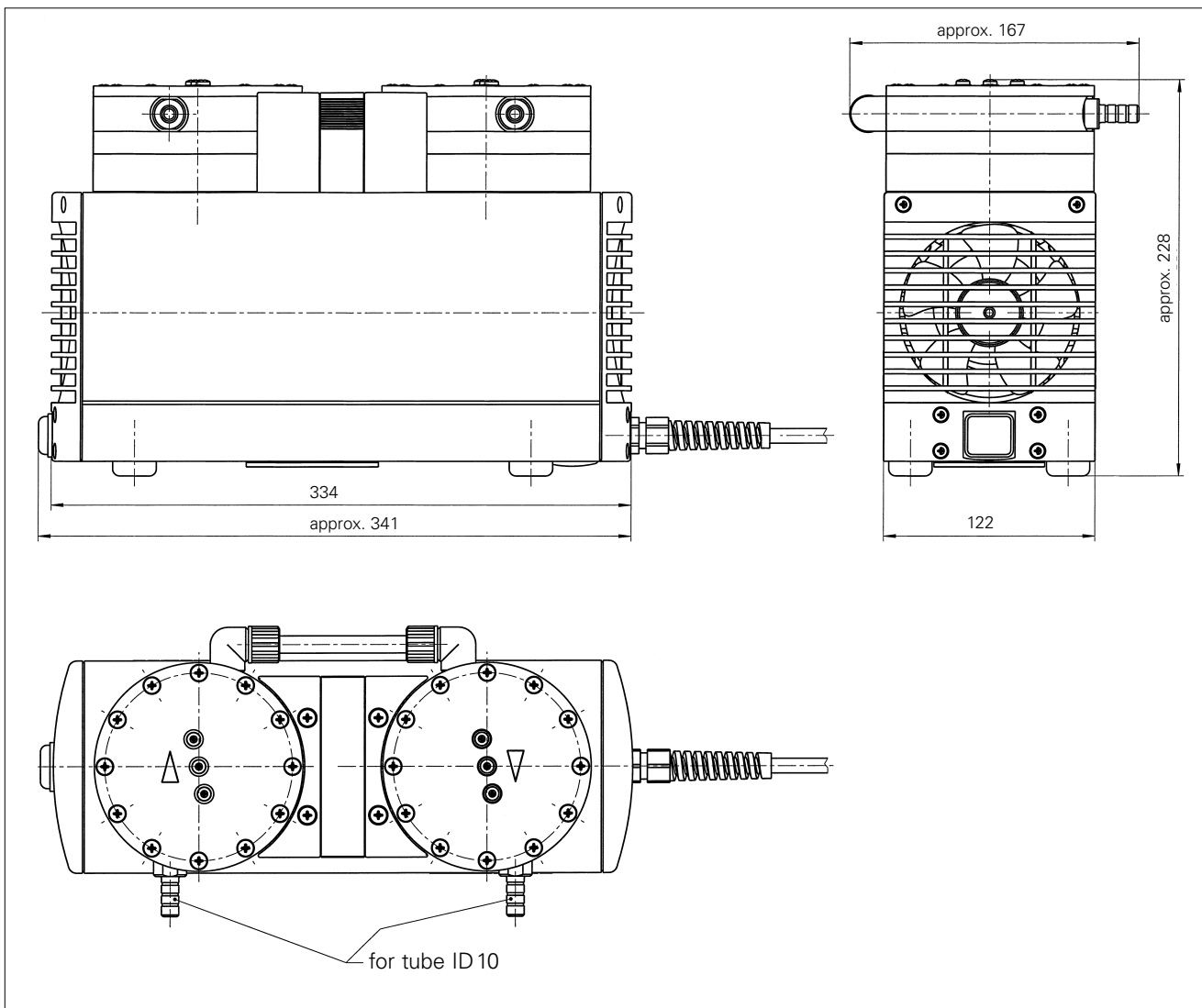
Pump down time for 10 l receiver



Performance characteristics

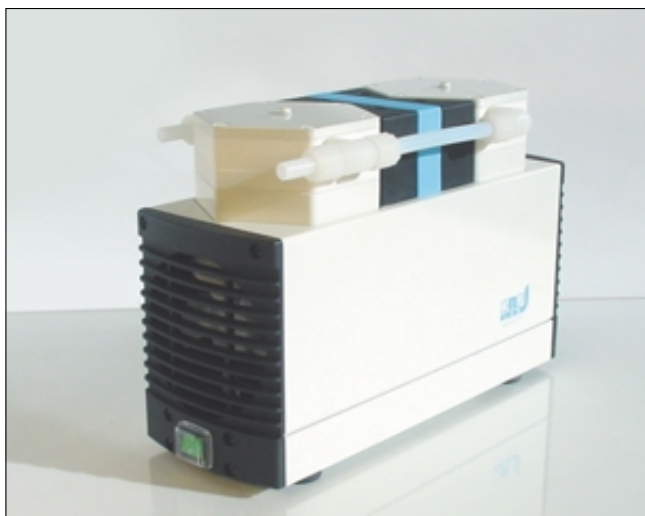


## Dimensions (mm)



# Diaphragm Pumps for Air, Gases and Vapours

1



## Serie LABOPORT® N 840.1.2 FT.18 Pump

## LABOPORT® Chemically-resistant Diaphragm Vacuum Pump

### Technical features:

- 100% oil-free transfer
- Pure transfer, evacuation and compression
- Highly compatible with vapours and condensation
- Chemically-resistant
- Therefore suitable for highly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

The chemically-resistant serie N 840.1.2 diaphragm pump is a double-head, dry-running device used in a wide range of laboratory applications. These pump transfer and pump down without contamination.

The heart of this very compact pump is a KNF structured diaphragm. This patented diaphragm was stress-optimized using the Finite Elements method. As a result, we were able to make the pump smaller while increasing the service life of the diaphragm.

### Technical data: **N 840.1.2 FT.18**

Delivery (l/min) <sup>1)</sup>	60
Ultimate vacuum (mbar abs.)	90
operating pressure (bar g)	1
Connectors for tube (mm)	ID 10
Permissible gas and ambient temperature	+5...+40 °C
Mains	230V/50Hz
Motor protection	IP 44
Power P <sub>1</sub>	270 W
Operating current	1.9 A
Weight	12.6 kg
Dimensions	
LxHxW (mm)	341/226/160
With thermal switch and power fuse	

Motors with other voltages and frequencies on request.

### Material in contact with the pumped media

Type/OrderNo.	Pump head	Diaphragm	Valves
N 840.1.2 FT.18	PTFE	PTFE-coated	FFPM

<sup>1)</sup> at atm. pressure

## Spare parts

Description	Order No.
Spares kit	057359

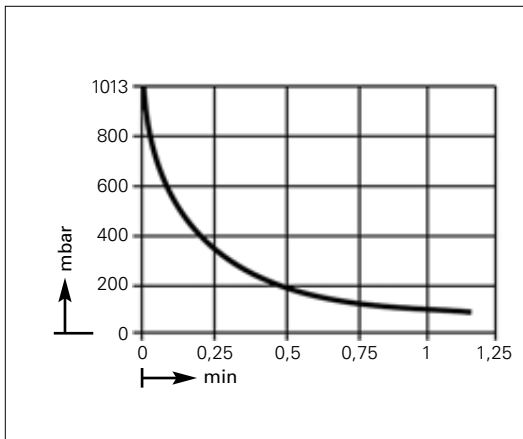


# Diaphragm Pumps for Air, Gases and Vapours

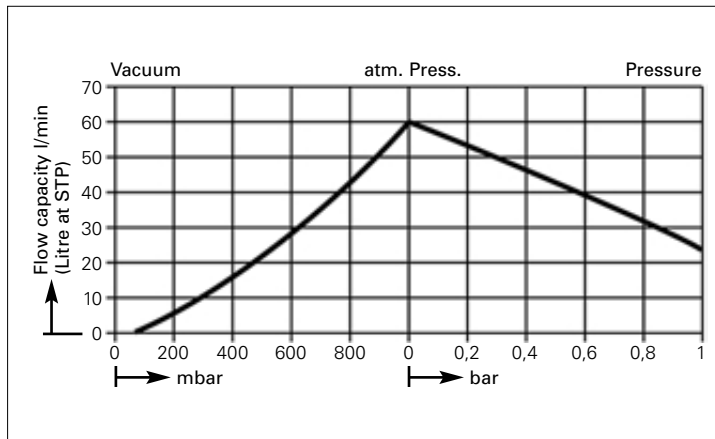
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## Dimensions and performance characteristics

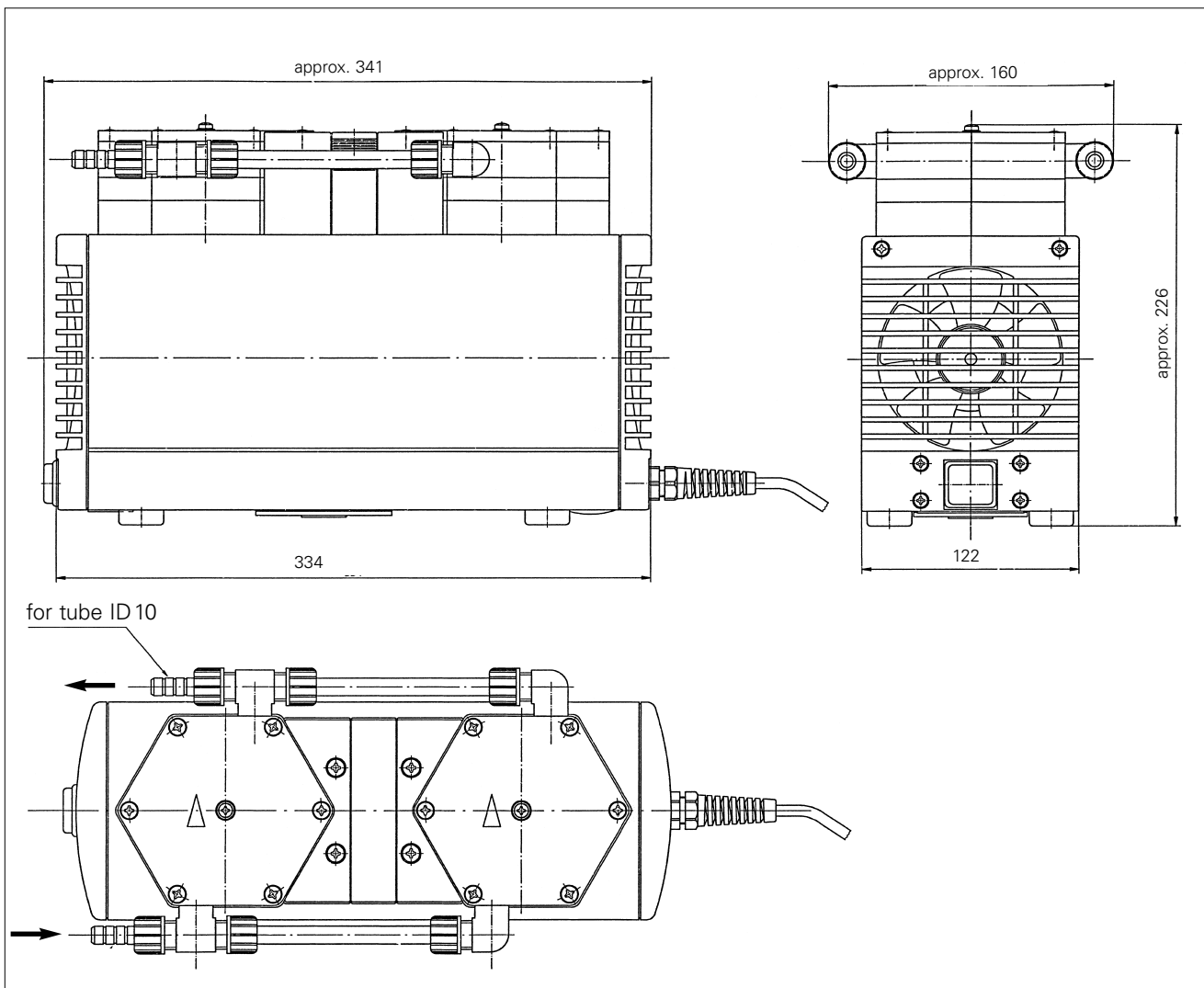
Pump down time for 10 l receiver



Performance characteristics



## Dimensions (mm)





# Diaphragm Pumps for Liquids

2



## Product Range: KNF LIQUIPORT® Chemically-resistant Diaphragm Liquid Pumps

adjustable flow rate  
(manual or external)

### Technical features:

- Maintenance-free
- Self priming
- Dry running
- Chemically-resistant models
- Versions for external control

Flow rate (l/min) <sup>1)</sup>	Pressure head (mWg)	Suction head (mWg)	Motor ~230V/50Hz operating current (A)/ power P <sub>1</sub> (W)	Protection class	Connections for tube ID	Weight (kg)	Pump type (see techn. variants) Order No.	Page
0.2-1.3	10	3	12	IP 65	8 mm	1.0	NF 100 KT.18 S	2.2
0.2-1.3	10	3	12	IP 65	8 mm	1.0	NF 100 TT.18 S	2.2
0.2-1.3	10	3	12	IP 65	8 mm	1.0	NF 100 FT.18 S	2.2
0.2-1.3	60	3	18	IP 65	8 mm	1.0	NF 1.100 KT.18 S	2.2
0.2-1.3	60	3	18	IP 65	8 mm	1.0	NF 1.100 TT.18 S	2.2
0.2-1.3	60	3	18	IP 65	8 mm	1.0	NF 1.100 FT.18 S	2.2
0.2-1.3	10	3	12	IP 65	8 mm	1.0	NF 100 KT.18 RC	2.4
0.2-1.3	10	3	12	IP 65	8 mm	1.0	NF 100 TT.18 RC	2.4
0.2-1.3	10	3	12	IP 65	8 mm	1.0	NF 100 FT.18 RC	2.4
0.2-1.3	60	3	18	IP 65	8 mm	1.0	NF 1.100 KT.18 RC	2.4
0.2-1.3	60	3	18	IP 65	8 mm	1.0	NF 1.100 TT.18 RC	2.4
0.2-1.3	60	3	18	IP 65	8 mm	1.0	NF 1.100 FT.18 RC	2.4
0.5-3.0	10	3	24	IP 65	12 mm	1.5	NF 300 KT.18 S	2.6
0.5-3.0	10	3	24	IP 65	12 mm	1.5	NF 300 TT.18 S	2.6
0.5-3.0	10	3	24	IP 65	12 mm	1.5	NF 300 FT.18 S	2.6
0.5-3.0	60	3	24	IP 65	12 mm	1.5	NF 1.300 KT.18 S	2.6
0.5-3.0	60	3	24	IP 65	12 mm	1.5	NF 1.300 TT.18 S	2.6
0.5-3.0	60	3	24	IP 65	12 mm	1.5	NF 1.300 FT.18 S	2.6
0.5-3.0	10	3	24	IP 65	12 mm	1.5	NF 300 KT.18 RC	2.8
0.5-3.0	10	3	24	IP 65	12 mm	1.5	NF 300 TT.18 RC	2.8
0.5-3.0	10	3	24	IP 65	12 mm	1.5	NF 300 FT.18 RC	2.8
0.5-3.0	60	3	24	IP 65	12 mm	1.5	NF 1.300 KT.18 RC	2.8
0.5-3.0	60	3	24	IP 65	12 mm	1.5	NF 1.300 TT.18 RC	2.8
0.5-3.0	60	3	24	IP 65	12 mm	1.5	NF 1.300 FT.18 RC	2.8

<sup>1)</sup> Water at 20°C and zero pressure head

# Diaphragm Pumps for Liquids

## Selection of the pump types

### Technical variants:

Version	Description	Function
S-Version	with adjustable flow rate manual operation	- adjustable from 10 % to 100 % - Standby mode
RC-Version	with adjustable flow rate, optional: manual operation or external control	- analoge control: 0 - 10 V from 10 % to 100 % (others on request) - Start/Stop control through TTL contact - Output signal fault alarm - Cable for external control included

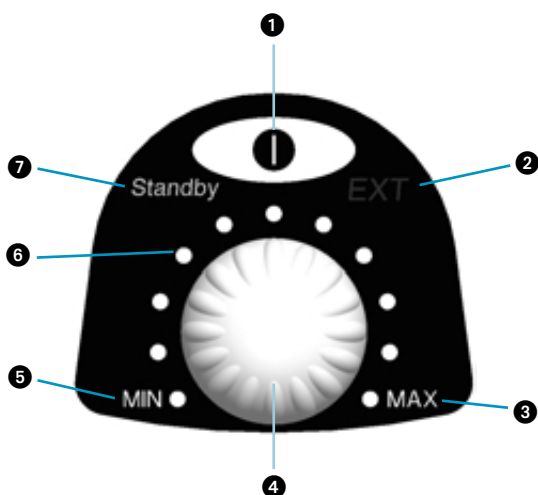
### Material in contact with the pumped media

Code	Pump head	Diaphragm	Valves
KT	PP	PTFE-coated	FFPM
TT	PVDF	PTFE-coated	FFPM
FT	PTFE	PTFE-coated	FFPM

### e.g. for order or request:

Pump type/Order No. **NF 100 KT.18 RC** is a pump with pump head components made of PP, PTFE and FFPM (KT), and adjustable flow rate, either manual operation or external control (RC).

## Operation of Pump



Position	Description	Function
①	<b>ON/OFF button</b>	Turns the pump on and off
②	<b>EXT</b>	Lights up when analog signal is being used (RC-Version)
③	<b>MAX</b>	Maximum flow rate
④	<b>Knob</b>	Adjusts the flow from 10% to 100%
⑤	<b>MIN</b>	Minimum flow rate
⑥	<b>LED</b>	Indicates the flow rate
⑦	<b>Standby</b>	„Standby“ lights up green, as soon as the pump is plugged in. Pump is not running

# Diaphragm Pumps for Liquids

2



## Series LIQUIPORT®: NF 100 \_\_.18 S, NF 1.100 \_\_.18 S Pumps

## LIQUIPORT® Chemically-resistant Diaphragm Liquid Pumps

Flow rate manual adjustable

### Technical features:

- Acid, alkali, solvent resistant
- Self priming
- Dry running
- Maintenance-free
- Splashproof (IP 65)
- Flow rate manually adjustable
- Standby mode

The LIQUIPORT diaphragm liquid pumps of the NF 100/1.100\_18 S series reliably pump neutral and aggressive liquids. A knob with LED makes it easy to vary the pumping capacity. These pumps work quietly and with low vibrations.

### Material in contact with the pumped media

Type Order No.	Pump head	Diaphragm	Valves
NF 100 KT.18 S	PP	PTFE-coated	FFPM
NF 100 TT.18 S	PVDF	PTFE-coated	FFPM
NF 100 FT.18 S	PTFE	PTFE-coated	FFPM
NF 1.100 KT.18 S	PP	PTFE-coated	FFPM
NF 1.100 TT.18 S	PVDF	PTFE-coated	FFPM
NF 1.100 FT.18 S	PTFE	PTFE-coated	FFPM

Technical data:	NF 100 KT.18 S	NF 1.100 KT.18 S
	NF 100 TT.18 S	NF 1.100 TT.18 S
	NF 100 FT.18 S	NF 1.100 FT.18 S
Flow rate (l/min) <sup>1)</sup>	0.2-1.3	0.2-1.3
Suction head (mWg)	3	3
Pressure head (mWg)	10	60
Connectors for tube (mm)	ID 8	ID 8
Permissible ambient temperature	+5...+40 °C	+5...+40 °C
Liquid temperature	+5...+80 °C	+5...+80 °C
Mains	100-230 V / 50-60 Hz	
Motor protection	IP 65 (splashproof)	IP 65
Power P <sub>1</sub>	12 W	18 W
Weight	1.0 kg	1.0 kg
Dimensions LxHxW (mm)	130/177/99	130/177/99

<sup>1)</sup> Water at 20°C and zero pressure head

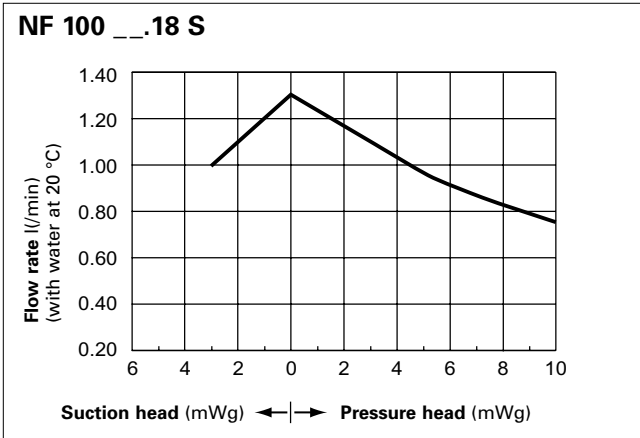
## Accessories and spare parts

Description	Details	OrderNo.
Hose connector	ETFE, NPT 1/8, for tube ID 8	153751
Connection tube	Polyethylene, ID 8x1	007857
Connection tube	PTFE, ID 8x1	007858
Spares kit	for KT/TT version	065262
Spares kit	for FT version	152631

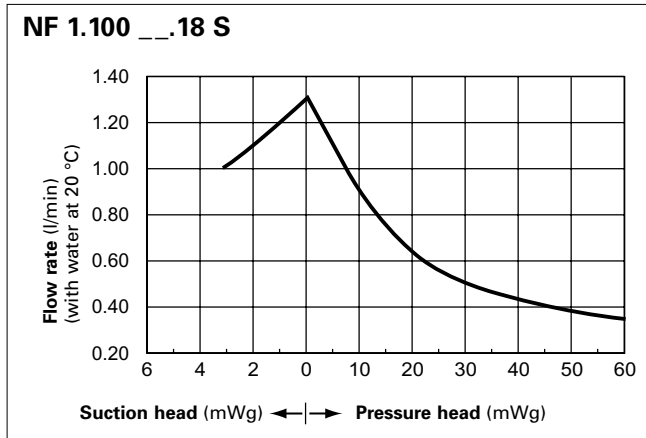
# Diaphragm Pumps for Liquids

## Dimensions and performance characteristics

Performance characteristics (at max. motor speed)



Performance characteristics (at max. motor speed)



2

## Dimensions (mm)

approx. 177  
approx. 172.6  
approx. 170.3  
approx. 174.7  
33.3  
40  
13.3  
15.1  
approx. 130.1  
approx. 106.6  
approx. 98.9

for tube ID 8

### Operation of Liquid Pump

- ON/OFF button**  
Turns the pump on and off
- EXT**  
Lights up when analog signal is being used (RC-Version)
- MAX**  
Maximum flow rate
- Knob**  
Adjusts the flow from 10% to 100%
- MIN**  
Minimum flow rate
- LED**  
Indicates the flow rate
- Standby**  
„Standby“ lights up green, as soon as the pump is plugged in. Pump is not running

# Diaphragm Pumps for Liquids

2



## Series LIQUIPORT®: NF 100 \_\_.18 RC, NF 1.100 \_\_.18 RC Pumps

## LIQUIPORT® Chemically-resistant Diaphragm Liquid Pumps

Flow rate adjustable  
(manual or external)

### Technical features:

- Acid, alkali, solvent resistant
- Self priming
- Dry running
- Maintenance-free
- Splashproof (IP 65)
- Flow rate manually or externally adjustable
- Standby mode
- Maximal pressure limitation

The LIQUIPORT diaphragm liquid pumps of the NF 100/1.100\_18 RC series reliably pump neutral and aggressive liquids. The flow rate is adjusted by turning a knob with LED or it can be controlled remotely by means of a signal input of 0 to 10 V. These pumps work quietly and with low vibrations.

### Material in contact with the pumped media

Type Order No.	Pump head	Diaphragm	Valves
NF 100 KT.18 RC	PP	PTFE-coated	FFPM
NF 100 TT.18 RC	PVDF	PTFE-coated	FFPM
NF 100 FT.18 RC	PTFE	PTFE-coated	FFPM
NF 1.100 KT.18 RC	PP	PTFE-coated	FFPM
NF 1.100 TT.18 RC	PVDF	PTFE-coated	FFPM
NF 1.100 FT.18 RC	PTFE	PTFE-coated	FFPM

Technical data:	NF 100KT.18 RC	NF 1.100KT.18 RC
	NF 100TT.18 RC	NF 1.100TT.18 RC
	NF 100FT.18 RC	NF 1.100FT.18 RC
Flow rate (l/min) <sup>1)</sup>	0.2-1.3	0.2-1.3
Suction head (mWg)	3	3
Pressure head (mWg)	10	60
Connectors for tube (mm)	ID 8	ID 8
Permissible ambient temperature	+5...+40 °C	+5...+40 °C
Liquid temperature	+5...+80 °C	+5...+80 °C
Mains	100-230 V / 50-60 Hz	
Motor protection	IP 65 (splashproof)	IP 65
Power P <sub>1</sub>	12 W	18 W
Signal input (analog)	0 to 10 V	0 to 10 V
Start/Stop	control through TTL contact	
Weight	1.0 kg	1.0 kg
Dimensions LxHxW (mm)	130/177/99	130/177/99

<sup>1)</sup> Water at 20°C and zero pressure head

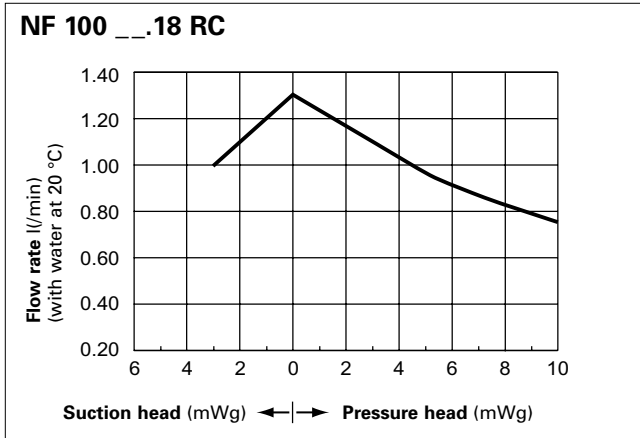
## Accessories and spare parts

Description	Details	OrderNo.
Hose connector	ETFE, NPT 1/8, for tube ID 8	153751
Connection tube	Polyethylene, ID 8x1	007857
Connection tube	PTFE, ID 8x1	007858
Spares kit	for KT/TT version	065262
Spares kit	for FT version	152631

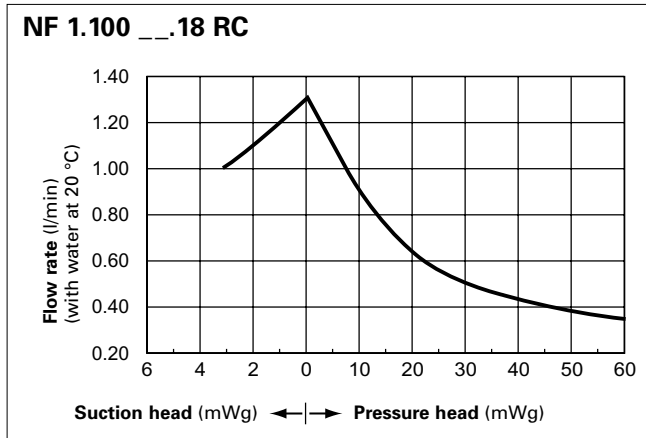
# Diaphragm Pumps for Liquids

## Dimensions and performance characteristics

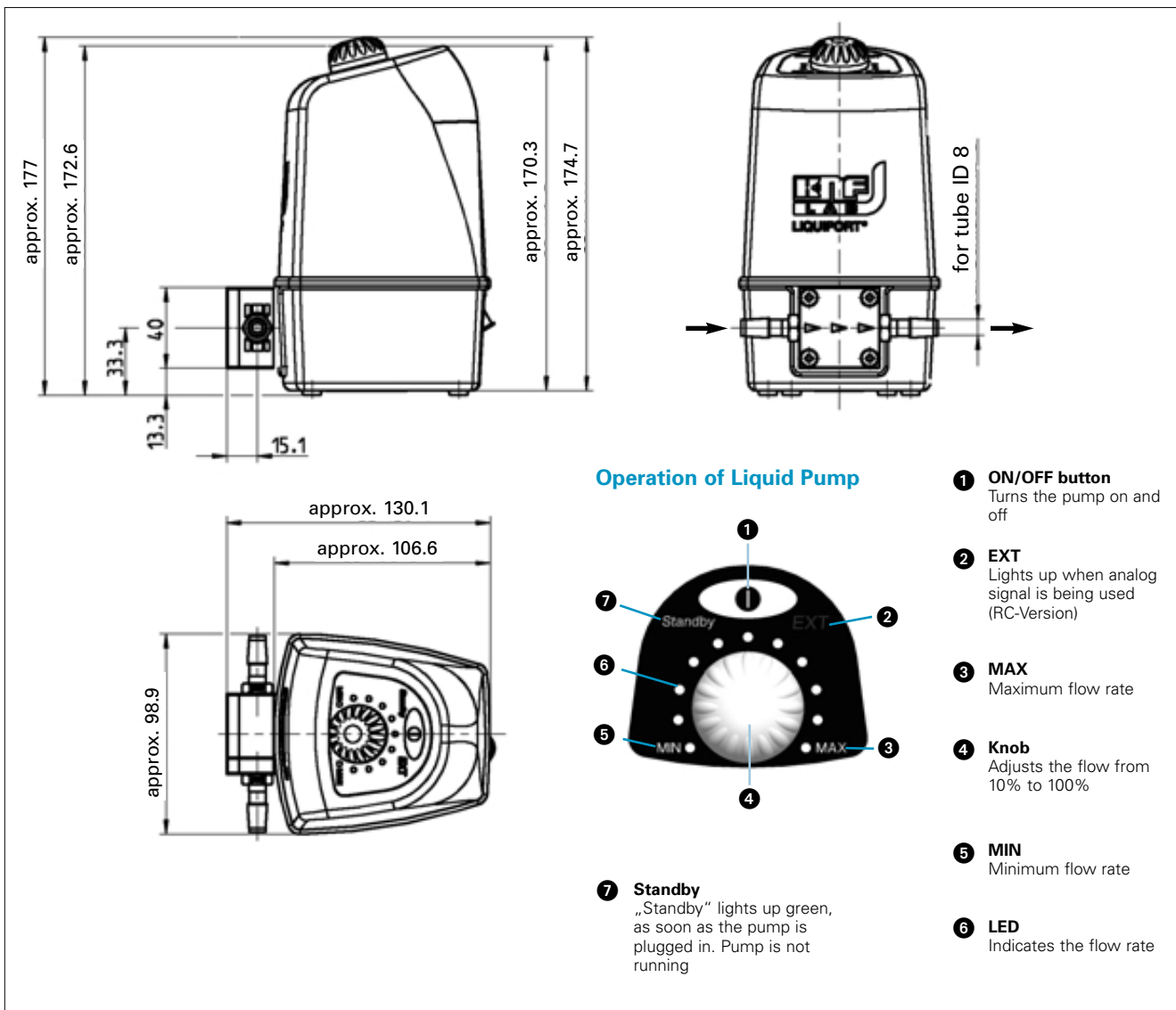
Performance characteristics (at max. motor speed)



Performance characteristics (at max. motor speed)



Dimensions (mm)



# Diaphragm Pumps for Liquids

2



## Series LIQUIPORT®: NF 300 \_\_.18 S, NF 1.300 \_\_.18 S Pumps

## LIQUIPORT® Chemically-resistant Diaphragm Liquid Pumps

Flow rate manual adjustable

### Technical features:

- Acid, alkali, solvent resistant
- Self priming
- Dry running
- Maintenance-free
- Splashproof (IP 65)
- Flow rate manually adjustable
- Standby mode

The LIQUIPORT diaphragm liquid pumps of the NF 300/1.300\_18 S series reliably pump neutral and aggressive liquids. A knob with LED makes it easy to vary the pumping capacity. These pumps work quietly and with low vibrations.

### Material in contact with the pumped media

Type OrderNo.	Pump head	Diaphragm	Valves
NF 300 KT.18 S	PP	PTFE-coated	FFPM
NF 300 TT.18 S	PVDF	PTFE-coated	FFPM
NF 300 FT.18 S	PTFE	PTFE-coated	FFPM
NF 1.300 KT.18 S	PP	PTFE-coated	FFPM
NF 1.300 TT.18 S	PVDF	PTFE-coated	FFPM
NF 1.300 FT.18 S	PTFE	PTFE-coated	FFPM

### Technical data:

	NF300KT.18 S NF300TT.18 S NF300FT.18 S	NF 1.300KT.18 S NF 1.300TT.18 S NF 1.300FT.18 S
Flow rate (l/min) <sup>1)</sup>	0.5-3.0	0.5-3.0
Suction head (mWg)	3	3
Pressure head (mWg)	10	60
Connectors for tube (mm)	ID 12	ID 12
Permissible ambient temperature	+5...+40 °C	+5...+40 °C
Liquid temperature	+5...+80 °C	+5...+80 °C
Mains	100-230 V / 50-60 Hz	
Motor protection	IP 65 (splashproof)	IP 65
Power P <sub>1</sub>	24 W	24 W
Weight	1.5 kg	1.5 kg
Dimensions LxHxW (mm)	160/188/104	160/188/104

<sup>1)</sup> Water at 20°C and zero pressure head

## Accessories and spare parts

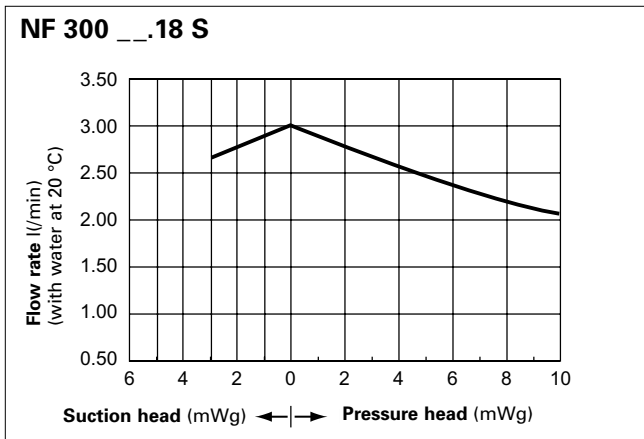
Description	Details	OrderNo.
Hose connector	ETFE, NPT 3/8, for tube ID 12	153753
Connection tube	Polyethylene, ID 12x1	007859
Connection tube	PTFE, ID 12x1	007860
Spares kit NF 300	for KT/TT version	068691
Spares kit NF 1.300	for KT/TT version	069728
Spares kit NF 300	for FT version	151902
Spares kit NF 1.300	for FT version	151903



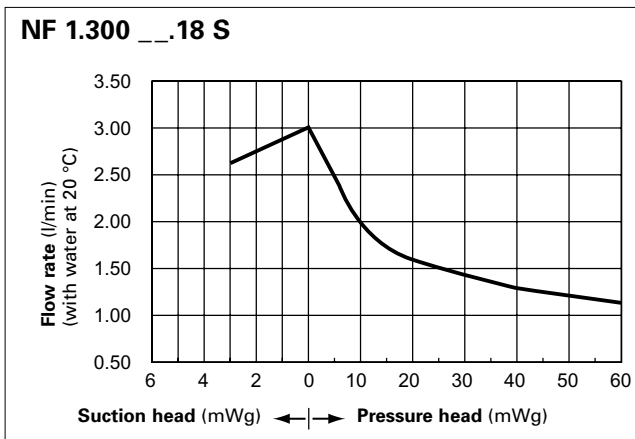
# Diaphragm Pumps for Liquids

## Dimensions and performance characteristics

Performance characteristics (at max. motor speed)



Performance characteristics (at max. motor speed)



2

Dimensions (mm)

approx. 190.3  
approx. 185.5  
40.4  
14.4  
52  
24  
approx. 183.2  
approx. 188  
approx. 104  
for tube ID 12  
approx. 160.5  
approx. 120.5  
approx. 104

**Operation of Liquid Pump**

- ON/OFF button**  
Turns the pump on and off
- EXT**  
Lights up when analog signal is being used (RC-Version)
- MAX**  
Maximum flow rate
- Knob**  
Adjusts the flow from 10% to 100%
- MIN**  
Minimum flow rate
- LED**  
Indicates the flow rate
- Standby**  
„Standby“ lights up green, as soon as the pump is plugged in. Pump is not running



# Diaphragm Pumps for Liquids

2



## Series LIQUIPORT®: NF 300 \_\_.18 RC, NF 1.300 \_\_.18 RC Pumps

## LIQUIPORT® Chemically-resistant Diaphragm Liquid Pumps

Flow rate adjustable  
(manual or external)

### Technical features:

- Acid, alkali, solvent resistant
- Self priming
- Dry running
- Maintenance-free
- Splashproof (IP 65)
- Flow rate manually or externally adjustable
- Standby mode
- Maximal pressure limitation

The LIQUIPORT diaphragm liquid pumps of the NF 300/1.300\_18 RC series reliably pump neutral and aggressive liquids. The flow rate is adjusted by turning a knob with LED or it can be controlled remotely by means of a signal input of 0 to 10 V. These pumps work quietly and with low vibrations.

### Material in contact with the pumped media

Type Order No.	Pump head	Diaphragm	Valves
NF 300 KT.18 RC	PP	PTFE-coated	FFPM
NF 300 TT.18 RC	PVDF	PTFE-coated	FFPM
NF 300 FT.18 RC	PTFE	PTFE-coated	FFPM
NF 1.300 KT.18 RC	PP	PTFE-coated	FFPM
NF 1.300 TT.18 RC	PVDF	PTFE-coated	FFPM
NF 1.300 FT.18 RC	PTFE	PTFE-coated	FFPM

Technical data:	NF300KT.18 RC	NF 1.300KT.18 RC
	NF300TT.18 RC	NF 1.300TT.18 RC
	NF300FT.18 RC	NF 1.300FT.18 RC
Flow rate (l/min) <sup>1)</sup>	0.5-3.0	0.5-3.0
Suction head (mWg)	3	3
Pressure head (mWg)	10	60
Connectors for tube (mm)	ID 12	ID 12
Permissible ambient temperature	+5...+40 °C	+5...+40 °C
Liquid temperature	+5...+80 °C	+5...+80 °C
Mains	100-230 V / 50-60 Hz	
Motor protection	IP 65 (splashproof)	IP 65
Power P <sub>1</sub>	24 W	24 W
Signal input (analog)	0 to 10 V	0 to 10 V
Start/Stop	control through TTL contact	
Weight	1.5 kg	1.5 kg
Dimensions		
LxHxW (mm)	160/188/104	160/188/104

<sup>1)</sup> Water at 20°C and zero pressure head

## Accessories and spare parts

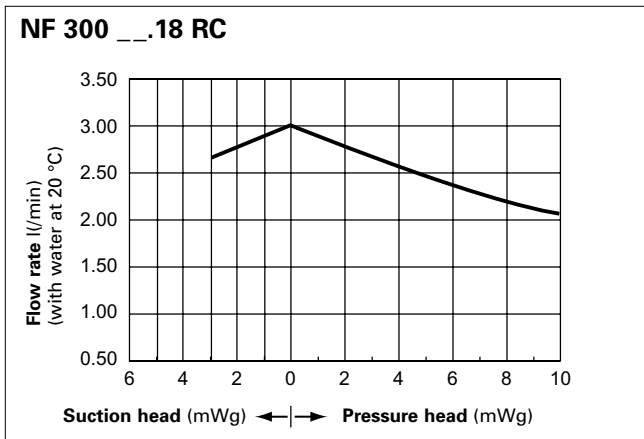
Description	Details	Order No.
Hose connector	ETFE, NPT 3/8, for tube ID 12	153753
Connection tube	Polyethylene, ID 12x1	007859
Connection tube	PTFE, ID 12x1	007860
Spares kit NF 300	for KT/TT version	068691
Spares kit NF 1.300	for KT/TT version	069728
Spares kit NF 300	for FT version	151902
Spares kit NF 1.300	for FT version	151903

KNF reserves the right to make changes.

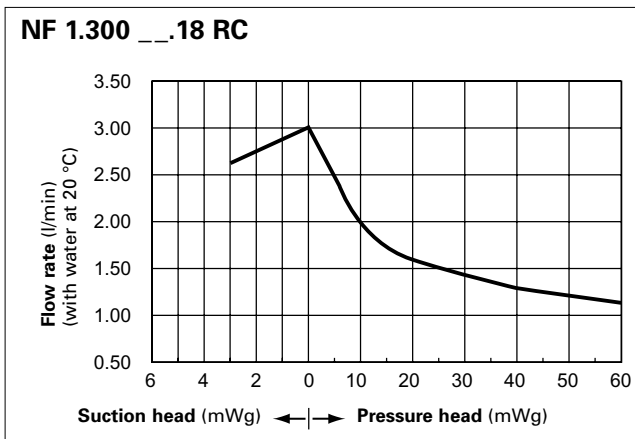
# Diaphragm Pumps for Liquids

## Dimensions and performance characteristics

Performance characteristics (at max. motor speed)



Performance characteristics (at max. motor speed)



## Dimensions (mm)

approx. 190.3  
approx. 185.5  
40.4  
14.4  
52  
24  
approx. 183.2  
approx. 188  
for tube ID 12  
approx. 104  
approx. 160.5  
approx. 120.5  
approx. 104

**Operation of Liquid Pump**

- ON/OFF button**  
Turns the pump on and off
- EXT**  
Lights up when analog signal is being used (RC-Version)
- MAX**  
Maximum flow rate
- Knob**  
Adjusts the flow from 10% to 100%
- MIN**  
Minimum flow rate
- LED**  
Indicates the flow rate
- Standby**  
„Standby“ lights up green, as soon as the pump is plugged in. Pump is not running

2

# Diaphragm Metering Pumps

3



## Product Range: KNF STEPDOS® Chemically-resistant Diaphragm Metering Pumps, Processor controlled



### Technical features:

- Precise dosing, even for extremely small amounts
- Maintenance-free
- Silent
- Self-priming and dry run-proof
- Low-pulsation metering stroke motion

Flow rate (ml/min) <sup>1)</sup>	Pressure head (mWg)	Suction head (mWg)	Motor 100-230V/50-60Hz operating current (A)/ power P <sub>1</sub> (W)	Protection class	Connections	Weight (kg)	Pump type (see techn. variants)  Order No.	Page
0.03-30	60	4	0.23-0.11/25	IP 65	UNF 1/4"-28	1.5	FEM 03 KT.18 S	3.2
0.03-30	60	4	0.23-0.11/25	IP 65	UNF 1/4"-28	1.5	FEM 03 TT.18 S	3.2
0.03-30	60	4	0.23-0.11/25	IP 65	UNF 1/4"-28	1.5	FEM 03 FT.18 S	3.2
0.03-30	60	4	0.23-0.11/25	IP 65	UNF 1/4"-28	1.5	FEM 03 ST.18 S	3.2
0.03-30	60	4	0.23-0.11/25	IP 65	UNF 1/4"-28	1.5	FEM 03 KT.18 RC	3.2
0.03-30	60	4	0.23-0.11/25	IP 65	UNF 1/4"-28	1.5	FEM 03 TT.18 RC	3.2
0.03-30	60	4	0.23-0.11/25	IP 65	UNF 1/4"-28	1.5	FEM 03 FT.18 RC	3.2
0.03-30	60	4	0.23-0.11/25	IP 65	UNF 1/4"-28	1.5	FEM 03 ST.18 RC	3.2
0.08-80	20	3	0.30-0.13/30	IP 65	DN 4/6 mm	1.5	FEM 08 KT.18 S	3.4
0.08-80	20	3	0.30-0.13/30	IP 65	DN 4/6 mm	1.5	FEM 08 TT.18 S	3.4
0.08-80	20	3	0.30-0.13/30	IP 65	NPT 1/8"	1.5	FEM 08 FT.18 S	3.4
0.08-80	20	3	0.30-0.13/30	IP 65	NPT 1/8"	1.5	FEM 08 ST.18 S	3.4
0.08-80	20	3	0.30-0.13/30	IP 65	DN 4/6 mm	1.5	FEM 08 KT.18 RC	3.4
0.08-80	20	3	0.30-0.13/30	IP 65	DN 4/6 mm	1.5	FEM 08 TT.18 RC	3.4
0.08-80	20	3	0.30-0.13/30	IP 65	NPT 1/8"	1.5	FEM 08 FT.18 RC	3.4
0.08-80	20	3	0.30-0.13/30	IP 65	NPT 1/8"	1.5	FEM 08 ST.18 RC	3.4

<sup>1)</sup> Water at 20°C and zero pressure head

### Technical variants:

Code	Comment
<b>S</b>	Manual operation via key pad: <b>Run mode:</b> continuous metering <b>Dispense mode:</b> metering according to volume and time
<b>RC</b>	The RC version features all functions of the S version. In addition, it can be controlled externally, via analog or digital signals. (The software and a control cable are included.)

### Material in contact with the pumped media

Code	Pump head	Diaphragm	Valves
<b>KT</b>	PP	PTFE-coated	FFPM
<b>TT</b>	PVDF	PTFE-coated	FFPM
<b>FT</b>	PTFE	PTFE-coated	FFPM
<b>ST</b>	Stainless steel (1.4435)	PTFE-coated	FFPM

e.g.:

Pump type/order no. FEM 03 KT.18 RC  
is a pump with pump head parts made of PP, PTFE and FFPM. This pump is controlled manually or externally (RC).

# Diaphragm Metering Pumps

## Convenient metering



3

### The STEPDOS diaphragm metering pumps

They combine the best properties of diaphragm pump technology (such as high chemical resistance and precise metering) with great user friendliness and flexibility.

### User-friendly operation

The metering amount is entered in ml/min or in any other of eleven units (such as mg/s, l/h, U.S. gallons/h), directly via the display. The set value is continually shown as a digital value, and can easily be read from above. The display is available in English or German.

The operating field directly under the display is well spaced and logically structured. It consists of a chemically-resistant key pad. The manual input commands are sent directly to the microprocessor. Entries are made in either run mode or dispense mode:

1. **Run mode:** continuous metering according to volume and time
2. **Dispense mode:** infinitely variable volume metering according to volume, time and repeat function
3. **Prime function:** for quick suction and rinsing.

### Flexible external control

STEPDOS RC (Remote Control) is designed for inclusion in automatic metering processes. Either digital signals (RS232, RS485), analog signals (0-5 V, 0-20 mA, 4-20 mA) or a pulse generator can be used for control. The metering capacity can be tailored by means of an integrated pulse conver-

sion ratio. A potential-free output signal forwards errors. Further settings (such as AND/OR functions, vessel empty forewarning) offer a high degree of flexibility.

### Overview of technical features

#### Dimensional stability diaphragm

- Nearly no loss of capacity between atmospheric pressure and maximum pressure
- Consistently high metering precision during continual operations

#### Stepper motor with sinus compensation

- Uniform output over the entire stroke motion

#### Calibration function

- For precise metering under the given conditions of use

#### Integrated solenoid valve

- No dripping and no flowing back, even after long idling

#### Small dead volume

- Good suction
- Low danger of carry-over

#### Lateral connections

- The hoses are easy to screw on

#### IP 65 Housing

- Protected against splash

# Diaphragm Metering Pumps

3



## STEPDOS® 03 Chemically-resistant Diaphragm Metering Pumps, Processor controlled

### Technical features:

- Maintenance-free
- Silent
- Even discharge over the entire travel range
- Suitable for virtually any chemicals
- Reproducibility +/- 1%
- Integrated solenoid valve ensures the liquid does not drip or flow back during stop

### Metering Pumps STEPDOS® 03: FEM 03 \_\_.18/S, FEM 03 \_\_.18/RC

The chemically-resistant, microprocessor-controlled series FEM 03\_\_18/S and FEM 03\_\_18/RC diaphragm metering pumps meter the smallest volumes continuously and evenly. Thanks to a special drive technology, these pumps feature a remarkably wide metering range of 1:1000.

#### Material in contact with the pumped media

Type OrderNo.	Pump head	Diaphragm	Valves
FEM 03 KT.18/S	PP	PTFE-coated	FFPM
FEM 03 TT.18/S	PVDF	PTFE-coated	FFPM
FEM 03 FT.18/S	PTFE	PTFE-coated	FFPM
FEM 03 ST.18/S	StainlessSteel	PTFE-coated	FFPM
FEM 03 KT.18/RC	PP	PTFE-coated	FFPM
FEM 03 TT.18/RC	PVDF	PTFE-coated	FFPM
FEM 03 FT.18/RC	PTFE	PTFE-coated	FFPM
FEM 03 ST.18/RC	StainlessSteel	PTFE-coated	FFPM

### Technical data:

Flow rate <sup>1)</sup>	0.03-30 ml/min
Pressure head	60 mWg (6 bar)
Suction head	4 mWg
Metering volumes	50 µl-43.2 l
Time metering	0.34 s - 24h
Repeated metering	1-65000
Pause time	1 s-24 h
Reproducibility	+/- 1 %
Permissible liquid temperature	5-80 °C
Permissible ambient temperature	5-40 °C
Connectors	UNF 1/4"-28 inside thread
Mains	100-230V, 50/60Hz
Weight	approx. 1.5 kg
Housing	IP 65 (splash proof)
Dimensions (LxHxW)	192/115/82 mm

Supply with 1 meter tubing PTFE 3.2 x 1.6 mm, two connectors and software and PC cable.

<sup>1)</sup> Water at 20°C and zero pressure head

#### S version (manual control):

Operation is manual using a keypad.

- **Run Mode:** - For continuous metering
- **Dispense Mode:** - Metering according to volume  
- Metering according to time  
- Repeated metering with adjustable pause time
- **Rapid suction feature**

#### RC version (manual or external control):

The RC version incorporates all the functions of the S version and can also be controlled externally via analog or digital signals (PC-compatible).

External control:

- **Analog signals:** 0/4-20 mA, 0-5 V, 0-10 V
- **Digital signals:** RS 232, RS 485 (cable and software are included)
- **Pulse input point:** logic input I/01, I/02

## Accessories

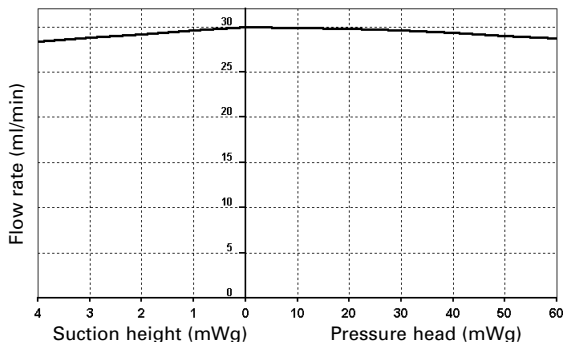
Description	OrderNo.
Foot switch	069875

KNF reserves the right to make changes.

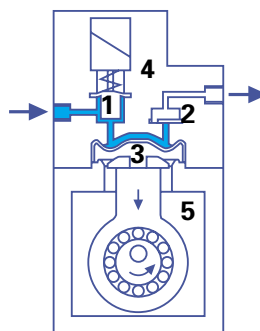
# Diaphragm Metering Pumps

## Dimensions and performance characteristics

### Flow rate



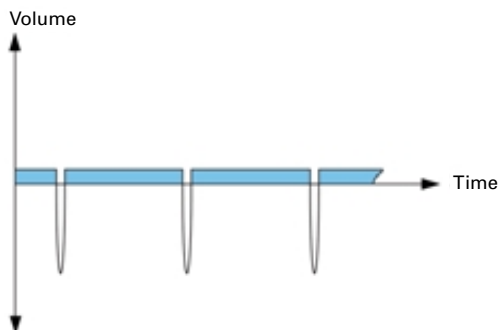
### Function of the diaphragm metering pump STEPDOS 03



- 1 Solenoid valve
- 2 Outlet valve
- 3 Diaphragm
- 4 Head
- 5 Drive housing

3

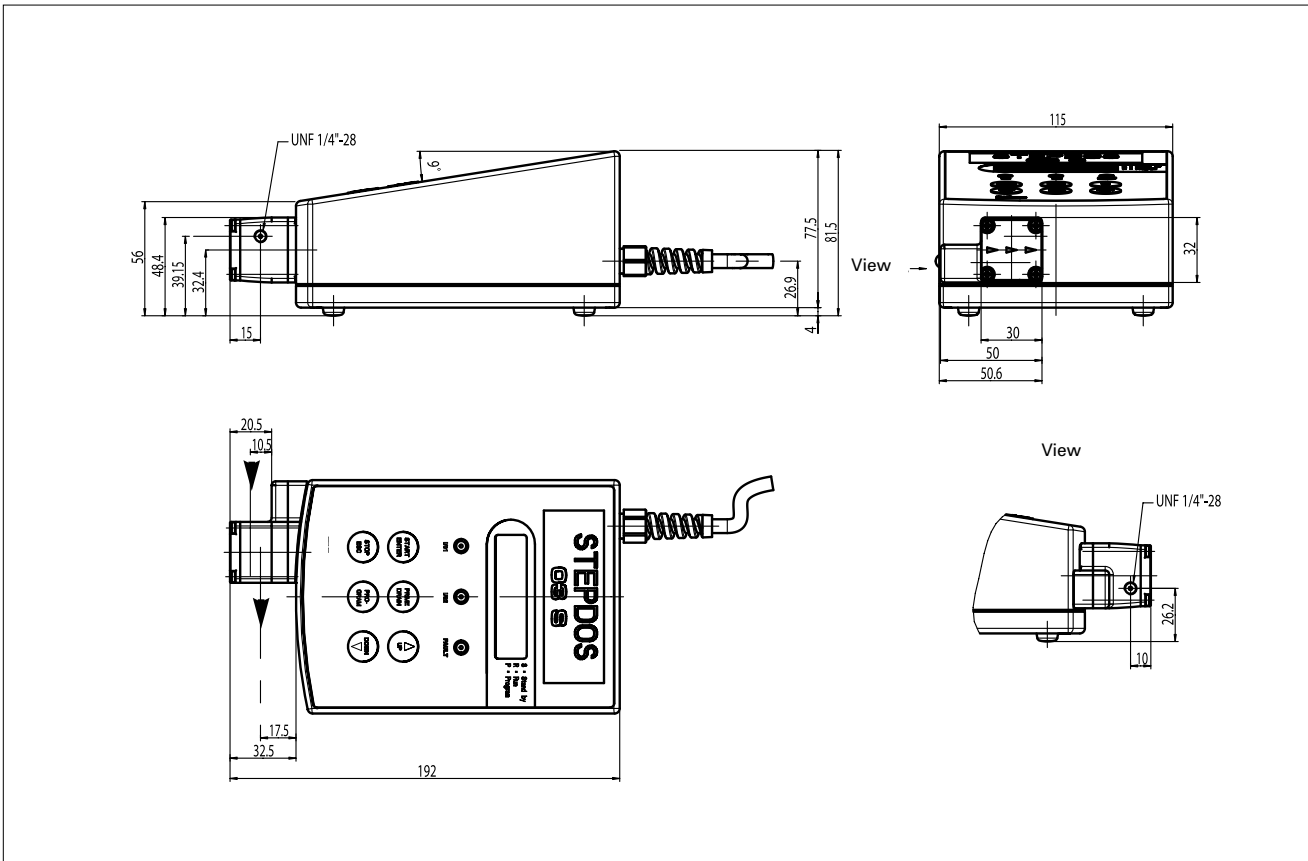
### Pump performance characteristics for a dose of 1 ml/min



### Technology with long-term precision

A stepper motor and integrated solenoid valve continuously ensure controlled movement in the pump head. The result is exact, practically pulsation-free, careful metering. The liquid is released slowly and evenly, while the suction stroke always occurs at maximum speed. Thus, the liquid is metered virtually continuously and very quietly, without pressure peaks.

### Dimensions (mm)





# Diaphragm Metering Pumps

3



## STEPDOS® 08 Chemically-resistant Diaphragm Metering Pumps, Processor controlled

### Technical features:

- Maintenance-free
- Silent
- Even discharge over the entire travel range
- Suitable for virtually any chemicals
- Reproducibility +/- 1%
- Integrated solenoid valve ensures the liquid does not drip or flow back during stop

### Metering Pumps STEPDOS® 08: FEM 08 \_\_.18/S, FEM 08 \_\_.18/RC

The chemically-resistant, microprocessor-controlled series FEM 08\_\_18/S and FEM 08\_\_18/RC diaphragm metering pumps meter the smallest volumes continuously and evenly. Thanks to a special drive technology, these pumps feature a remarkably wide metering range of 1:1000.

#### Material in contact with the pumped media

Type OrderNo.	Pump head	Diaphragm	Valves
FEM 08 KT.18/S	PP	PTFE-coated	FFPM
FEM 08 TT.18/S	PVDF	PTFE-coated	FFPM
FEM 08 FT.18/S	PTFE	PTFE-coated	FFPM
FEM 08 ST.18/S	Stainless Steel	PTFE-coated	FFPM
FEM 08 KT.18/RC	PP	PTFE-coated	FFPM
FEM 08 TT.18/RC	PVDF	PTFE-coated	FFPM
FEM 08 FT.18/RC	PTFE	PTFE-coated	FFPM
FEM 08 ST.18/RC	Stainless Steel	PTFE-coated	FFPM

### Technical data:

Flow rate <sup>1)</sup>	0.08-80 ml/min
Pressure head	20 mWg (2 bar)
Suction head	4 mWg
Metering volumes	80 µl-115.2 l
Time metering	0.34 s - 24h
Repeated metering	1-65000
Pause time	1 s-24 h
Reproducibility	+/- 1 %
Permissible liquid temperature	5-80 °C
Permissible ambient temperature	5-40 °C
Connectors	for tube 4/6 mmm (KT, TT) and NPT 1/8" inside thread (FT, ST)
Mains	100-230V, 50/60Hz
Weight	approx. 1.5 kg
Housing	IP 65 (splash proof)
Dimensions (LxHxW)	185/115/82 mm

Supply with software and PC cable

<sup>1)</sup> Water at 20°C and zero pressure head

#### S version (manual control):

Operation is manual using a keypad.

- Run Mode: - For continuous metering
- Dispense Mode: - Metering according to volume  
- Metering according to time  
- Repeated metering with adjustable pause time
- Rapid suction feature

#### RC version (manual or external control):

The RC version incorporates all the functions of the S version and can also be controlled externally via analog or digital signals (PC-compatible).

External control:

- Analog signals: 0/4-20 mA, 0-5 V, 0-10 V
- Digital signals: RS 232, RS 485 (cable and software are included)
- Pulse input point: logic input I/01, I/02

## Accessories

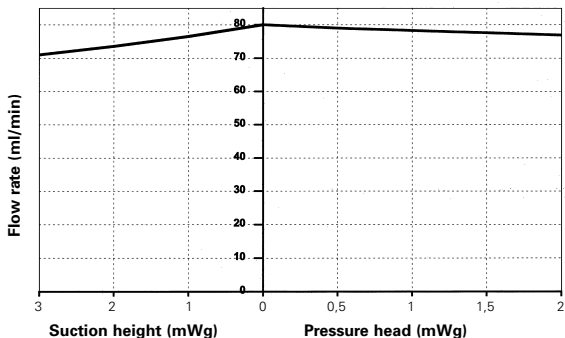
Description	OrderNo.
Foot switch	069875

KNF reserves the right to make changes.

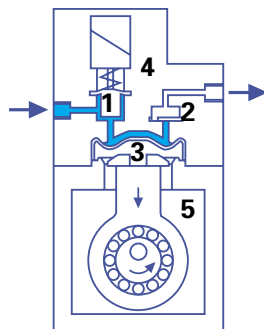
# Diaphragm Metering Pumps

## Dimensions and performance characteristics

### Flow rate

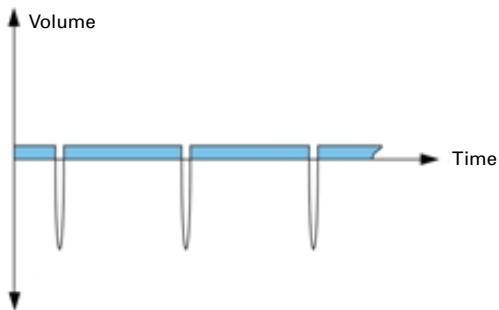


### Function of the diaphragm metering pump STEPDOS 08



- 1 Solenoid valve
- 2 Outlet valve
- 3 Diaphragm
- 4 Head
- 5 Drive housing

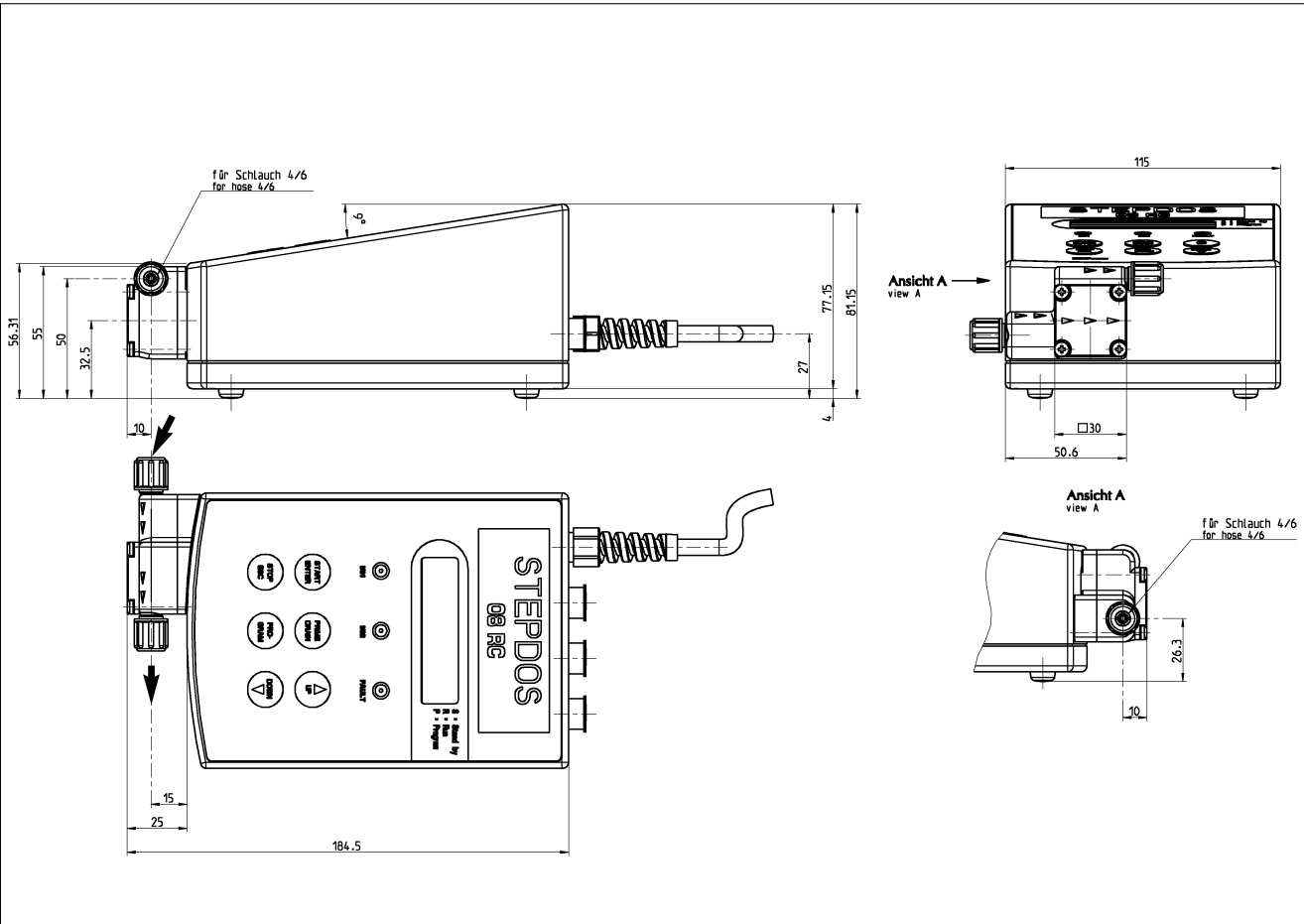
### Pump performance characteristics for a dose of 1 ml/min



### Technology with long-term precision

A stepper motor and integrated solenoid valve continuously ensure controlled movement in the pump head. The result is exact, practically pulsation-free, careful metering. The liquid is released slowly and evenly, while the suction stroke always occurs at maximum speed. Thus, the liquid is metered virtually continuously and very quietly, without pressure peaks.

### Dimensions (mm)





# Vacuum Pumps for moist Gases



## Product Range: LABOPORT® SD Self-drying Vacuum Pumps for moist Gases

### Technical features:

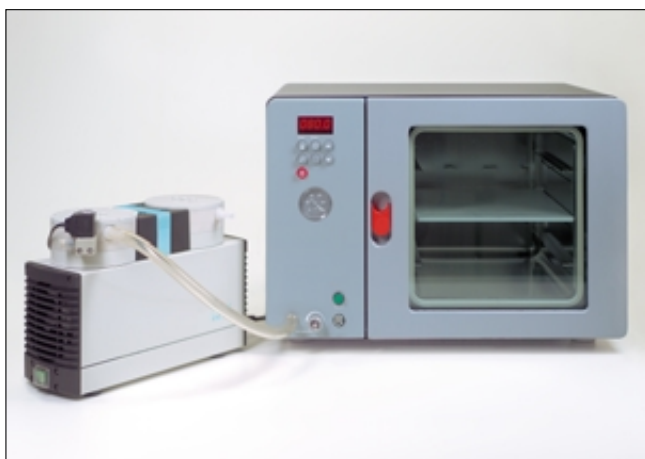
- Maintenance-free
- Silent
- With KNF drying system
- Better vacuum and faster pumping down
- Simple connection to the line power (power plug) and to the pneumatic system
- Environmentally friendly, because no water is consumed and no waste water is contaminated

4

Delivery (l/min) <sup>1)</sup>	Ultimate vacuum (mbar abs.)	Operating pressure (bar g)	Motor ~230V/50Hz operating current (A)/ power P <sub>1</sub> (W)	Protection class	Pneumatic connections for tube ID	Weight (kg)	Pump type Order No.	Page
20	10	1	0.7/120	IP 44	10 mm	9.6	N 820.3 FT.40.18	4.2
34	10	1	1.5/245	IP 44	10 mm	12.9	N 840.3 FT.40.18	4.4
34	4	1	1.5/245	IP 44	10 mm	13.7	N 842.3 FT.40.18	4.6
60	4	1	1.6/220	IP 54	12 mm	14.8	N 860.3 FT.40.18	4.8

<sup>1)</sup> at atm. pressure

## For vacuum drying systems



N 842.3 FT.40.18 connected to a vacuum drying chamber

**LABOPORT SD vacuum pumps** are dry-running displacement pumps for neutral, highly aggressive or corrosive gases and vapors and constant vacuum. Process gases are transferred without contamination - and this is less expensive and more environmentally friendly than water jet pumps.

**The KNF self-drying system** allows condensed liquid to be blown out of the pump heads at high speed during evacuation. The vacuum in the equipment remains constant.

**The drying cycle** can be adjusted to the requirements of the individual process using three variables. After drying, the pump reaches a better vacuum and is able to evacuate significantly faster compared with pumps without a drying system.

# Vacuum Pumps for moist Gases

## LABOPORT SD expanded to a SR system



4

### LABOPORT SD vacuum pumps with modular accessories

A practical, complete system, with a base plate as well as a filter and separator component. You can order this accessory and retrofit it to your KNF LABOPORT SD vacuum pump or you can order the complete system assembled at the factory.

**Please contact us!**

# Vacuum Pumps for moist Gases



## LABOPORT® SD Self-drying Vacuum Pump for moist Gases

### Technical features:

- Pure transfer and evacuation
- Highly compatible with vapors and condensation
- Chemically-resistant
- Therefore suitable for highly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

4

### Series LABOPORT® SD N 820.3 FT.40.18 Vacuum Pump

The chemically-resistant series ND 820.3 FT.40.18 diaphragm pump is a twin-head unit with an integrated KNF self-drying system. There is a wide range of applications for this pump in laboratories, especially whenever clean vacuum is required and moist gases must be pumped down. Examples include vacuum-drying of vacuum drying chambers (for drying or heat-treating substances and components) or steam sterilizers for sterilizing instruments, vessels, filters and textiles. Due to its high resistance to aggressive media, this pump can be used universally.

The heart of these very compact pumps are KNF structured diaphragms (PTFE-coated). These patented diaphragms were stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

**The KNF self-drying system** allows condensed liquid to be blown out of the pump heads at high speed during evacuation. The vacuum in the recipient remains constant.

The drying cycle can be adjusted to the requirements of the individual process using three variables. After drying, the pump reaches a better vacuum and is able to evacuate significantly faster compared with pumps without a drying system.

### Material in contact with the pumped media

Type/Order No.	Pump head	Diaphragm	Valves
N 820.3 FT.40.18	PTFE	PTFE-coated	FFPM

### Technical data:

	N 820.3 FT.40.18
Delivery (l/min) <sup>1)</sup>	20
Ultimate vacuum (mbar abs.)	10
Operating pressure (bar g)	1
Connectors for tube (mm)	ID 10
Permissible gas and ambient temperature	+5...+40 °C
Mains	230V/50Hz
Motor protection	IP 44
Power P <sub>1</sub>	120 W
Operating current	0.7 A
Weight	9.6 kg
Dimensions	
LxHxW (mm)	312/220/177
With thermal switch and power fuse	

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

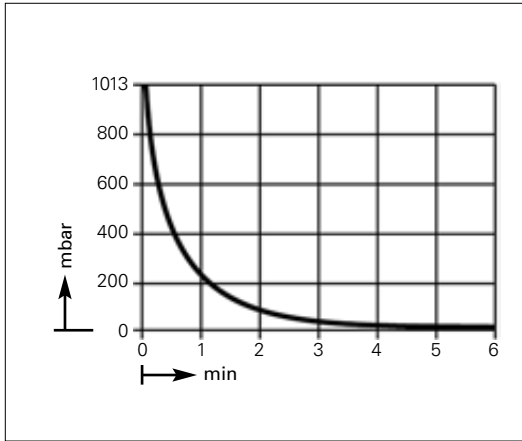
## Spare parts

Description	Order No.
Spares kit	057358

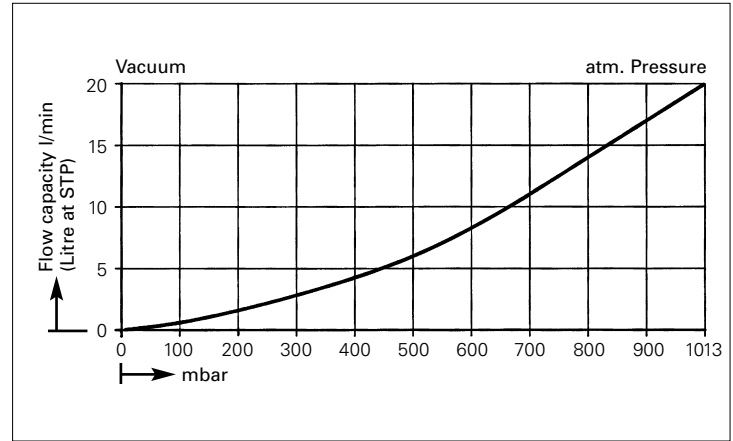
# Vacuum Pumps for moist Gases

## Dimensions and performance characteristics

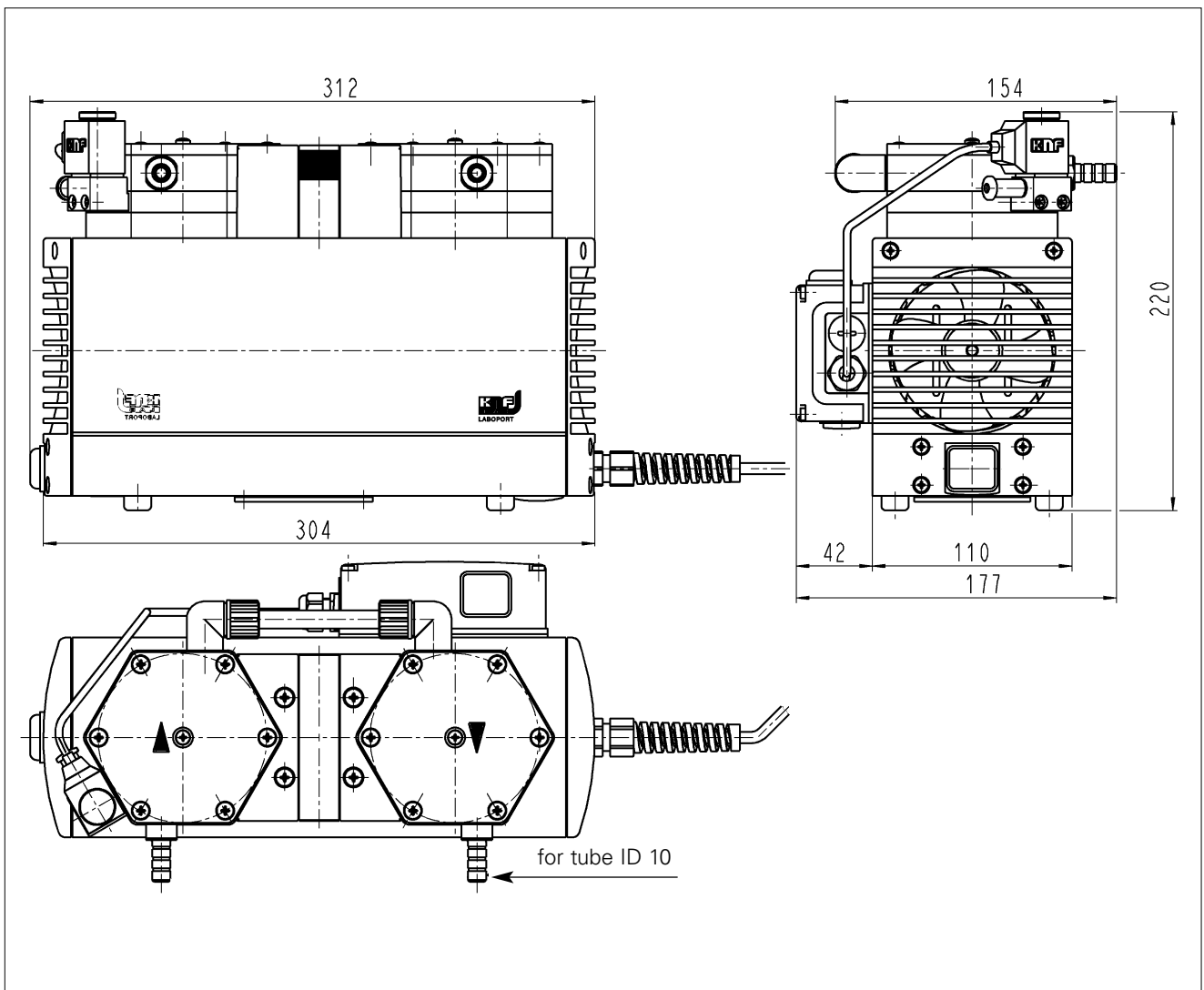
Pump down time for 10 l receiver



Performance characteristics



Dimensions (mm)



4

# Vacuum Pumps for moist Gases



## LABOPORT® SD Self-drying Vacuum Pump for moist Gases

### Technical features:

- Pure transfer and evacuation
- Highly compatible with vapors and condensation
- Chemically-resistant
- Therefore suitable for highly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

4

### Series LABOPORT® SD N 840.3 FT.40.18 Vacuum Pump

The chemically-resistant series ND 840.3 FT.40.18 diaphragm pump is a twin-head unit with an integrated KNF self-drying system. There is a wide range of applications for this pump in laboratories, especially whenever clean vacuum is required and moist gases must be pumped down. Examples include vacuum-drying of vacuum drying chambers (for drying or heat-treating substances and components) or steam sterilizers for sterilizing instruments, vessels, filters and textiles. Due to its high resistance to aggressive media, this pump can be used universally.

The heart of these very compact pumps are KNF structured diaphragms (PTFE-coated). These patented diaphragms were stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

**The KNF self-drying system** allows condensed liquid to be blown out of the pump heads at high speed during evacuation. The vacuum in the recipient remains constant.

The drying cycle can be adjusted to the requirements of the individual process using three variables. After drying, the pump reaches a better vacuum and is able to evacuate significantly faster compared with pumps without a drying system.

### Material in contact with the pumped media

Type/Order No.	Pump head	Diaphragm	Valves
N 840.3 FT.40.18	PTFE	PTFE-coated	FFPM

### Technical data:

	N 840.3 FT.40.18
Delivery (l/min) <sup>1)</sup>	34
Ultimate vacuum (mbar abs.)	10
Operating pressure (bar g)	1
Connectors for tube (mm)	ID 10
Permissible gas and ambient temperature	+5...+40 °C
Mains	230V/50Hz
Motor protection	IP 44
Power P <sub>1</sub>	245 W
Operating current	1.5 A
Weight	12.9 kg
Dimensions	
LxHxW (mm)	341/239/189
With thermal switch and power fuse	

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

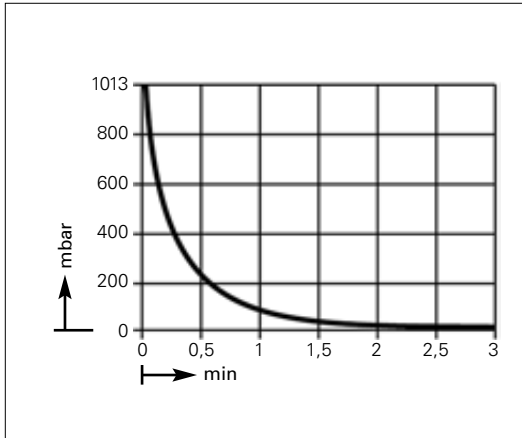
## Spare parts

Description	Order No.
Spares kit	057359

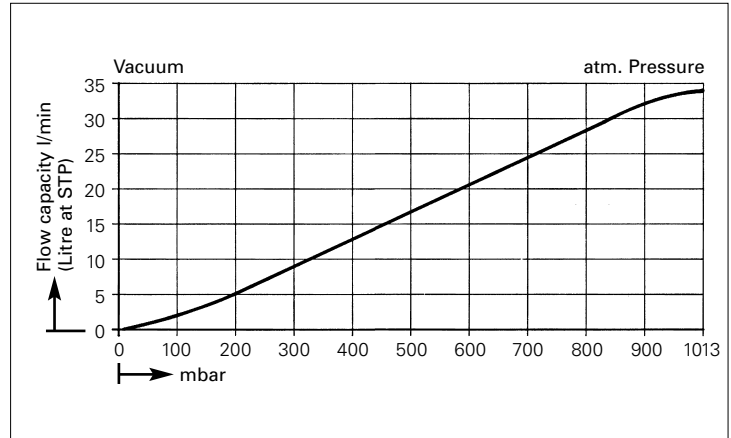
# Vacuum Pumps for moist Gases

## Dimensions and performance characteristics

Pump down time for 10 l receiver

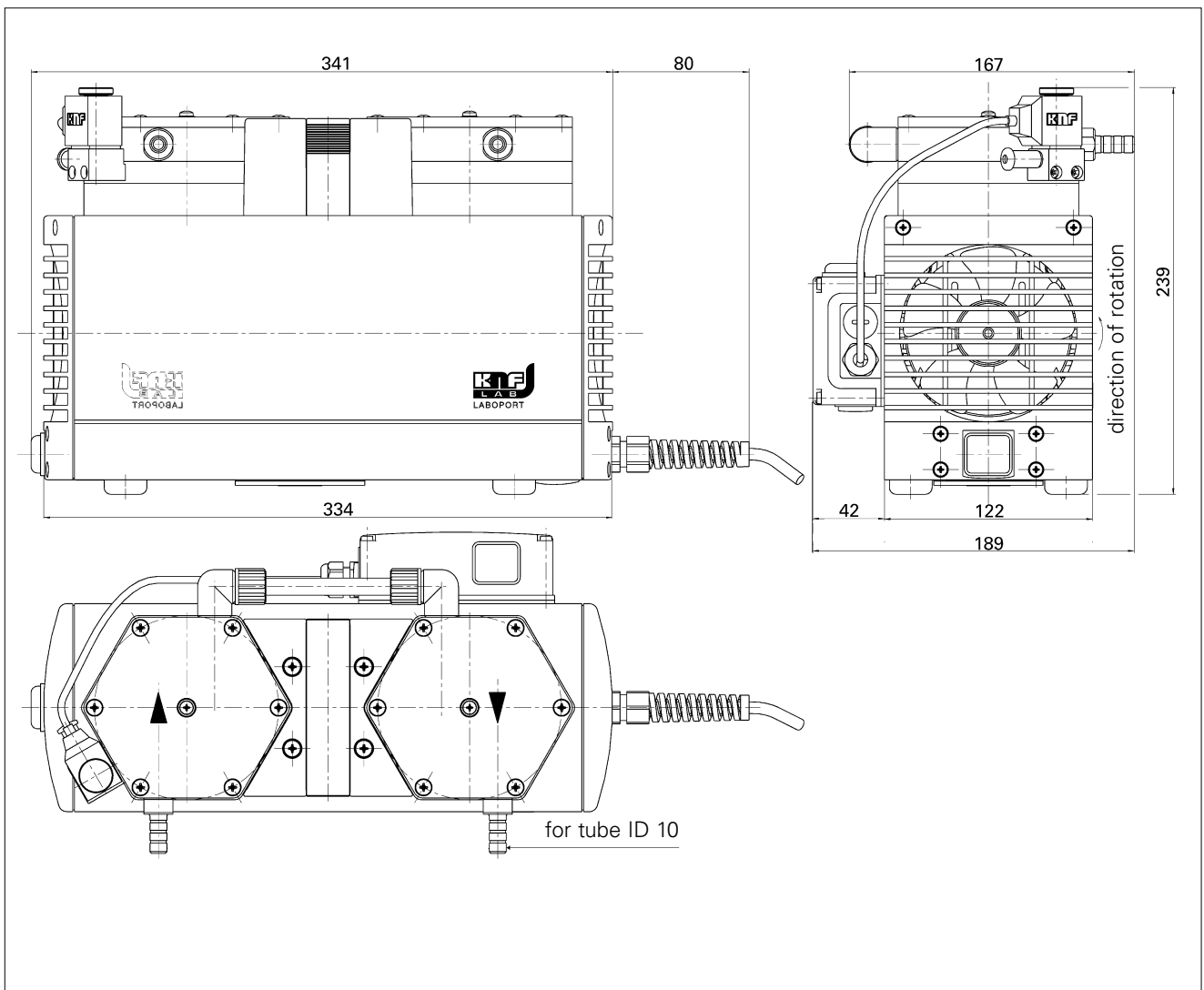


Performance characteristics



4

Dimensions (mm)





# Vacuum Pumps for moist Gases



## LABOPORT® SD Self-drying Vacuum Pump for moist Gases

### Technical features:

- Pure transfer and evacuation
- Highly compatible with vapors and condensation
- Chemically-resistant
- Therefore suitable for highly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

4

### Series LABOPORT® SD N 842.3 FT.40.18 Vacuum Pump

The chemically-resistant series ND 842.3 FT.40.18 diaphragm pump is a twin-head unit with an integrated KNF self-drying system. There is a wide range of applications for this pump in laboratories, especially whenever clean vacuum is required and moist gases must be pumped down. Examples include vacuum-drying of vacuum drying chambers (for drying or heat-treating substances and components) or steam sterilizers for sterilizing instruments, vessels, filters and textiles. Due to its high resistance to aggressive media, this pump can be used universally.

The heart of these very compact pumps are KNF structured diaphragms (PTFE-coated). These patented diaphragms were stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

**The KNF self-drying system** allows condensed liquid to be blown out of the pump heads at high speed during evacuation. The vacuum in the recipient remains constant.

The drying cycle can be adjusted to the requirements of the individual process using three variables. After drying, the pump reaches a better vacuum and is able to evacuate significantly faster compared with pumps without a drying system.

### Material in contact with the pumped media

Type/Order No.	Pump head	Diaphragm	Valves
N 842.3 FT.40.18	PTFE	PTFE-coated	FFPM

### Technical data:

	N 842.3 FT.40.18
Delivery (l/min) <sup>1)</sup>	34
Ultimate vacuum (mbar abs.)	4
Operating pressure (bar g)	1
Connectors for tube (mm)	ID 10
Permissible gas and ambient temperature	+5...+40 °C
Mains	230V/50Hz
Motor protection	IP 44
Power P <sub>1</sub>	245 W
Operating current	1.5 A
Weight	13.7 kg
Dimensions	
LxHxW (mm)	341/242/189
With thermal switch and power fuse	

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

## Spare parts

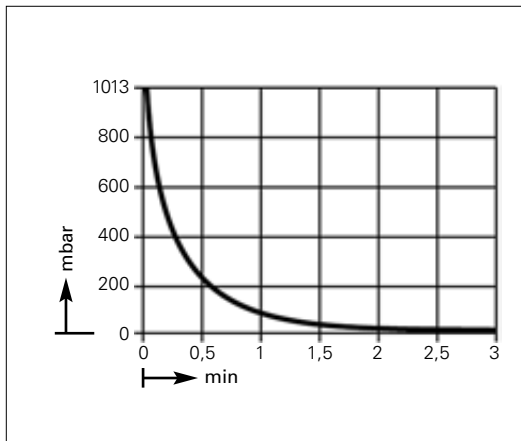
Description	Order No.
Spares kit	057359



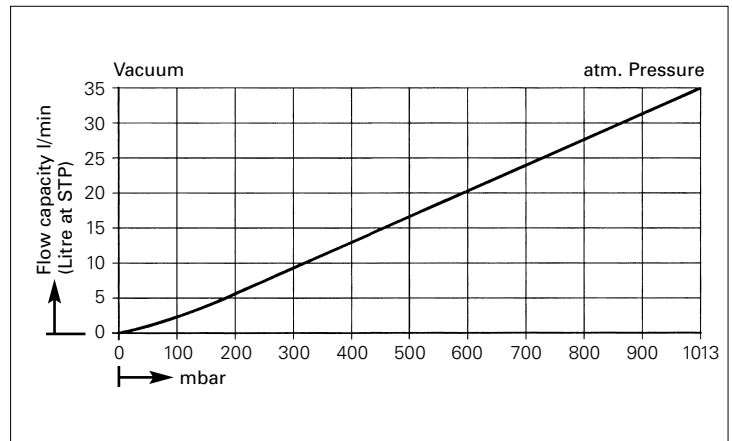
# Vacuum Pumps for moist Gases

## Dimensions and performance characteristics

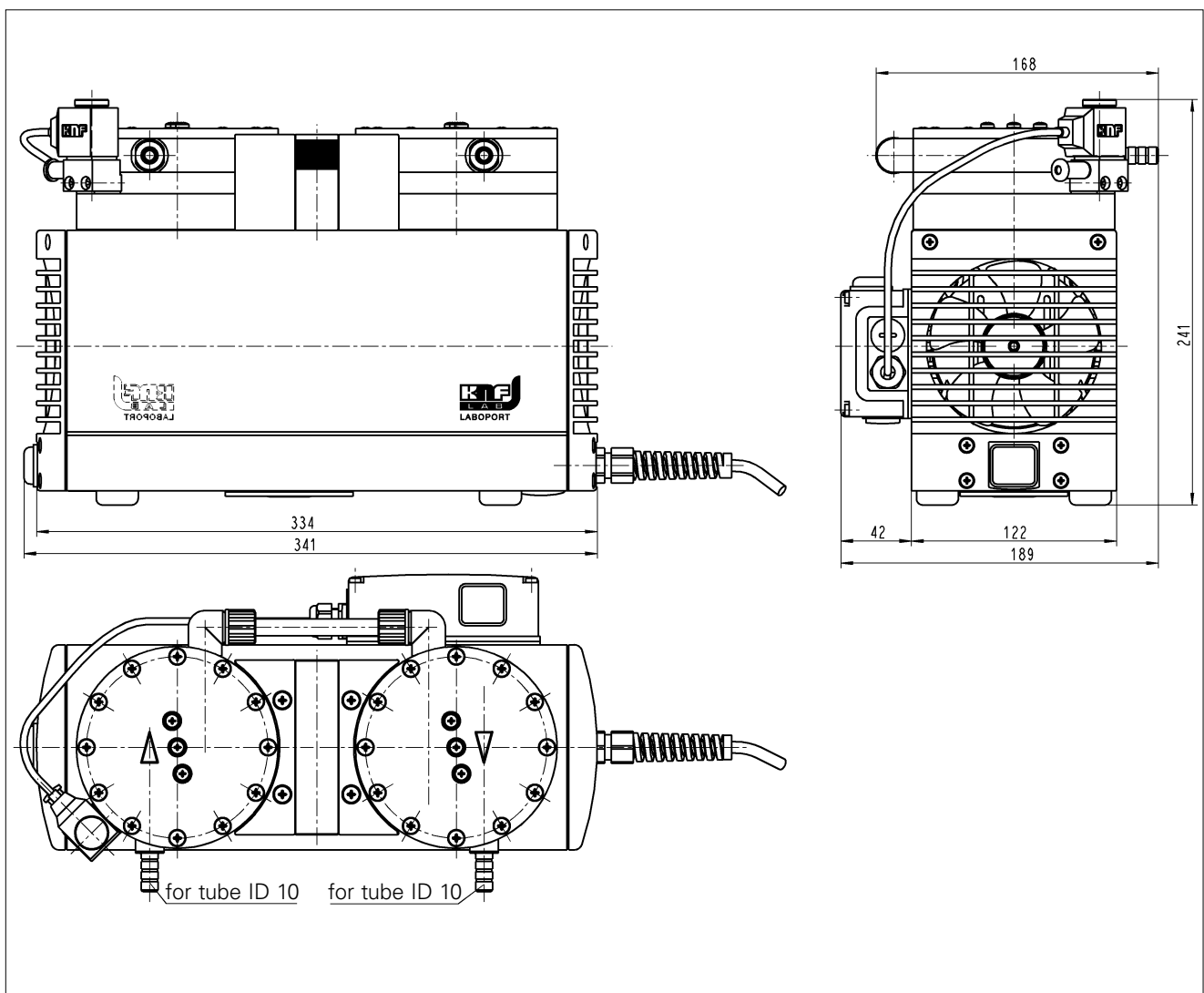
Pump down time for 10 l receiver



Performance characteristics



Dimensions (mm)



**KNF worldwide - Diaphragm Pumps and Systems**

KNF reserves the right to make changes.

# Vacuum Pumps for moist Gases



## Self drying Vacuum Pump for moist Gases

### Technical features:

- Pure transfer and evacuation
- Highly compatible with vapors and condensation
- Chemically-resistant
- Therefore suitable for highly aggressive or corrosive gases and vapours
- Maintenance-free
- Environmentally friendly
- Gastight, leakage rate approx.  $6 \times 10^{-3}$  mbar x l/s, not tested in serial production.

4

### Series N 860.3 FT.40.18 Vacuum Pump

The chemically-resistant series ND 860.3 FT.40.18 diaphragm pump is a twin-head unit with an integrated KNF self-drying system. There is a wide range of applications for this pump in laboratories, especially whenever clean vacuum is required and moist gases must be pumped down. Examples include vacuum-drying of vacuum drying chambers (for drying or heat-treating substances and components) or steam sterilizers for sterilizing instruments, vessels, filters and textiles. Due to its high resistance to aggressive media, this pump can be used universally.

The heart of these very compact pumps are KNF structured diaphragms (PTFE-coated). These patented diaphragms were stress-optimized using the Finite Elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

**The KNF self-drying system** allows condensed liquid to be blown out of the pump heads at high speed during evacuation. The vacuum in the recipient remains constant.

The drying cycle can be adjusted to the requirements of the individual process using three variables. After drying, the pump reaches a better vacuum and is able to evacuate significantly faster compared with pumps without a drying system.

### Material in contact with the pumped media

Type/Order No.	Pump head	Diaphragm	Valves
N 860.3 FT.40.18	PTFE	PTFE-coated	FFPM

### Technical data:

	N 860.3 FT.40.18
Delivery (l/min) <sup>1)</sup>	60
Ultimate vacuum (mbar abs.)	4
Operating pressure (bar g)	1
Connectors for tube (mm)	ID 12
Permissible gas and ambient temperature	+5...+40 °C
Mains	230V/50Hz
Motor protection	IP 54
Power P <sub>1</sub>	220 W
Operating current	1.6 A
Weight	14.8 kg
Dimensions	
LxHxW (mm)	331/278.5/291
With thermal switch and power fuse	

Motors with other voltages and frequencies on request.

<sup>1)</sup> at atm. pressure

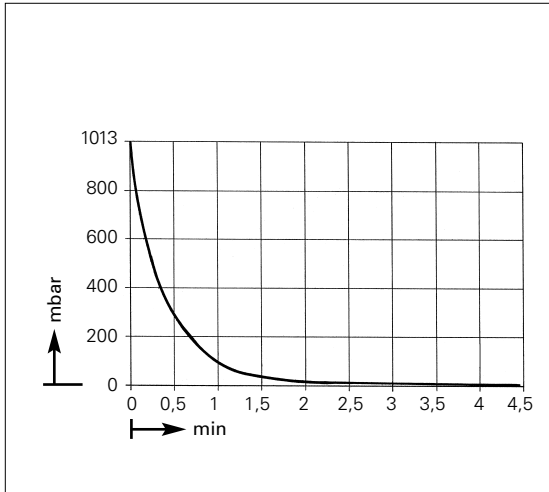
### Spare parts

Description	Order No.
Spares kit	047499

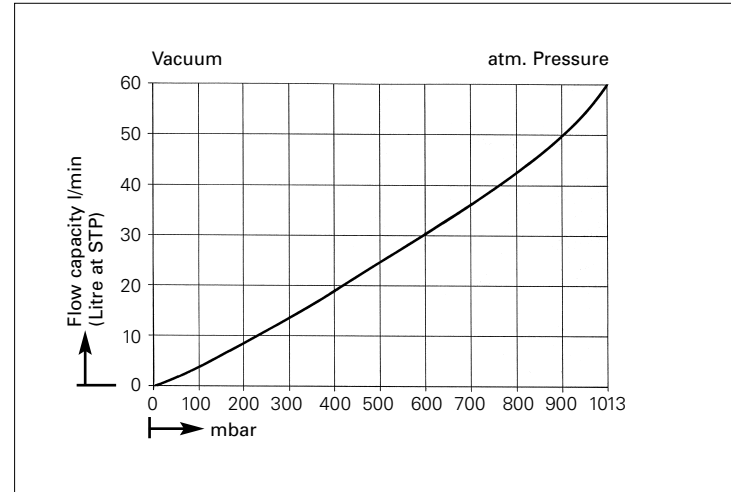
# Vacuum Pumps for moist Gases

## Dimensions and performance characteristics

Pump down time for 20 l receiver

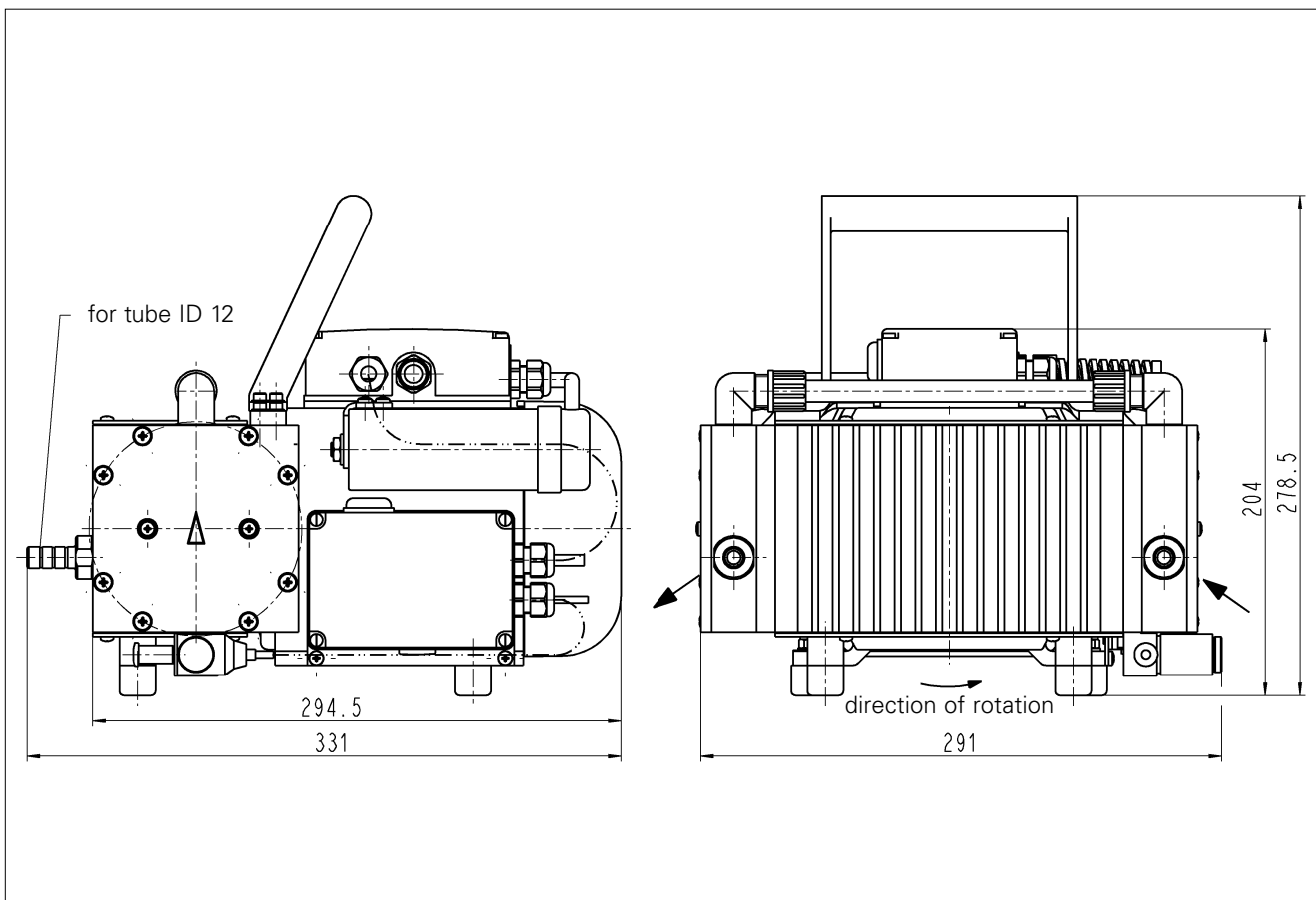


Performance characteristics



4

Dimensions (mm)



# Modular Vacuum Systems, controlled Vacuum

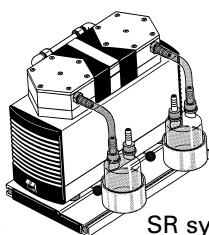


## Product Range: Chemically-resistant LABOPORT® Vacuum Systems, modular

### Technical features:

- Maintenance-free
- Silent
- Simple connection to the line power (power plug) and to the pneumatic system
- Environmentally friendly
- Easy to expand or convert

5

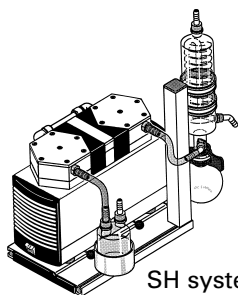


SR system

System <sup>3)</sup> (completely assembled)	Delivery (l/min) <sup>1)</sup>	Ultimate vacuum (mbar abs)	Pneumatic connections for tube ID	Weight (kg)	Built in pump type	Page
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### SR system comprising pump, base plate and two separators

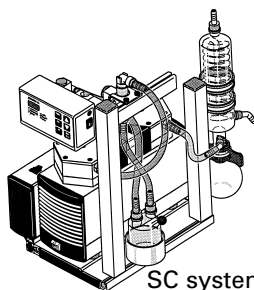
SR 810	10	8	10 mm	9.4	N 810.3 FT.18	5.2
SR 820	20	8	10 mm	11.6	N 820.3 FT.18	5.2
SR 840	34	8	10 mm	14.9	N 840.3 FT.18	5.2



SH system

### SH system comprising pump, base plate, condenser and separator

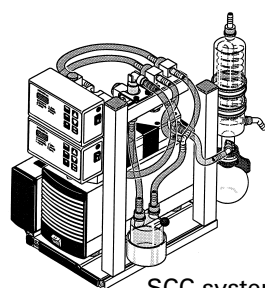
SH 810	10	8	10 mm	10.1	N 810.3 FT.18	5.4
SH 820	20	8	10 mm	12.5	N 820.3 FT.18	5.4
SH 840	34	8	10 mm	15.8	N 840.3 FT.18	5.4



SC system

### SC system comprising pump, base plate, condenser, separator and one vacuum controller

SC 810	10	8	10 mm	13.6	N 810.3 FT.18	5.6
SC 820	20	8	10 mm	16	N 820.3 FT.18	5.6
SC 840	34	8	10 mm	19.3	N 840.3 FT.18	5.6
SC 842	34	2	10 mm	20.1	N 842.3 FT.18	5.6



SCC system

### SCC system comprising pump, base plate, condenser, separator and two vacuum controllers for two different processes

SCC 810	10	8	10 mm	15.2	N 810.3 FT.18	5.8
SCC 820	20	8	10 mm	17.6	N 820.3 FT.18	5.8
SCC 840	34	8	10 mm	20.9	N 840.3 FT.18	5.8
SCC 842	34	2	10 mm	21.7	N 842.3 FT.18	5.8

<sup>1)</sup> at atm. pressure

<sup>3)</sup> systems with single head pumps and lower vacuum on request

# Modular Vacuum Systems, controlled Vacuum



## Product Range: Chemically-resistant LABOPORT® Vacuum Pumps and modular Accessories

### Technical features:

- Maintenance-free
- Silent
- Simple connection to the line power (power plug) and to the pneumatic system
- Environmentally friendly, because no water is consumed and no waste water is contaminated

## LABOPORT® components for building or retrofitting

The modular components listed here are designed for customers who build their own vacuum system, for integration in a laboratory process setup, or for retrofitting an existing vacuum system. This enhances flexibility in laboratories.

5

## Chemically-resistant vacuum pumps

Delivery (l/min) <sup>1)</sup>	Ultimate vacuum (mbar abs.)	Operating pressure (bar g)	Motor ~230V/50Hz operating current (A)/ power P <sub>1</sub> (W) <sup>2)</sup>	Protection class	Pneumatic connections for tube ID	Weight (kg)	Pump type Order No.	Data-Sheet, page
10	100	1	0.6/100	IP 44	10 mm	5.9	N 810 FT.18	1.30
10	8	1	0.6/90	IP 44	10 mm	6.9	N 810.3 FT.18	1.30
20	100	1	0.9/130	IP 44	10 mm	7.1	N 820 FT.18	1.32
20	8	1	0.7/120	IP 44	10 mm	9.3	N 820.3 FT.18	1.32
34	100	1	1.5/180	IP 44	10 mm	10.3	N 840 FT.18	1.34
34	8	1	1.5/245	IP 44	10 mm	12.6	N 840.3 FT.18	1.34
34	2	1	1.5/245	IP 44	10 mm	13.4	N 842.3 FT.18	1.36
60	90	1	1.9/270	IP 44	10 mm	12.6	N 840.1.2 FT.18	1.38

<sup>1)</sup> at atm. pressure

<sup>2)</sup> Motors with other voltages, frequencies on request

## Modular accessories

Type designation Order No.	System modules
NP 810/820	base plate for vacuum pumps N 810 FT.18, N 810.3 FT.18, N 820 FT.18, N 820.3 FT.18
NP 840	base plate for vacuum pumps N 840 FT.18, N 840.3 FT.18, N 842.3 FT.18
NR 800	separator (usable at pressure side or suction side)
NH 800	high-performance condenser
NC 800 A first controller	vacuum controller with valves, cabling and electrical supply unit
NC 800 B* second controller	vacuum controller, only with NC 800 A, with valves and cabling
NC 800 A/B*	two vacuum controllers with valves, cabling and electrical supply unit

\*) For independent vacuum control of two different, simultaneous processes (NC 800 A upgrades SH to SC. NC 800 B only in conjunction with NC 800 A or upgrades SC to the full system SCC. NC 800A/B upgrades SH to SCC).

# Modular Vacuum Systems, controlled Vacuum



## Chemically-resistant LABOPORT® Vacuum Systems with two Separators

### Technical features:

- Maintenance-free
- Silent
- Simple connection to the line power (power plug) and to the pneumatic system
- Environmentally friendly
- Separation of solvent drops in the gas (at the pressure side)
- Collection of particles in the system (at the suction side)
- Easy to expand or convert

### SR Systems, modular

5

The SR vacuum systems are equipped with the LABOPORT-series chemically-resistant diaphragm pump of your choice (refer to the table/overview "modular accessories"). SR systems include two separators. There is a wide range of applications for these vacuum systems in laboratories, whenever clean, constant vacuum is required.

The heart of the very compact LABOPORT pumps used in the vacuum systems is KNF structured diaphragm. This patented diaphragm was stress-optimized using the finite elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

For laboratory applications, there is a wide variety of vacuum pumps with many different performance levels and various modular system components. The systems listed here are fully assembled at the factory. They can be converted quickly and easily; special tools are not required.

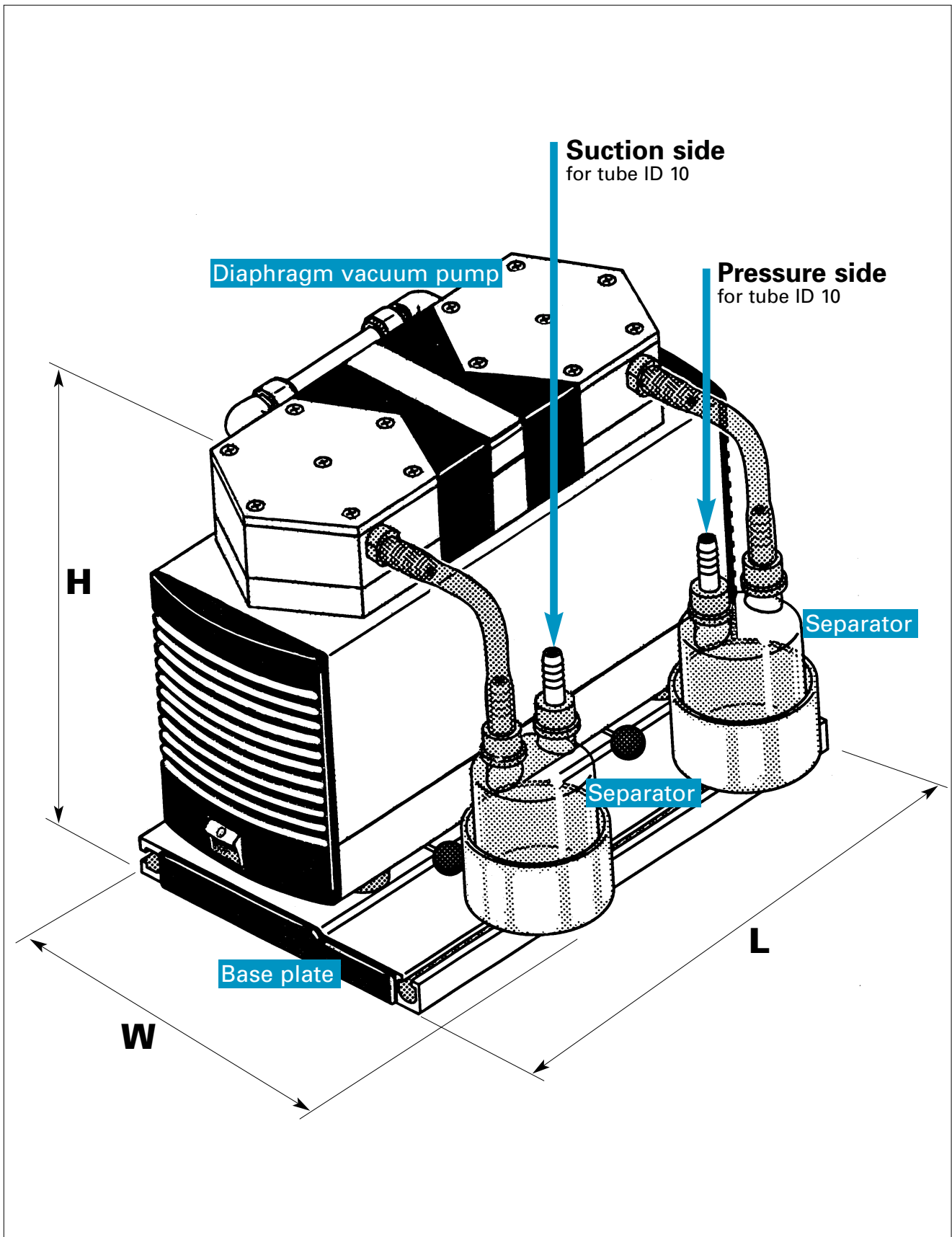
**Complete SR vacuum systems with: chemically-resistant diaphragm pump of your choice, base plate, two separators for suction and pressure side including tubing ready to connect.**

System <sup>3)</sup>	Delivery (l/min) <sup>1)</sup>	Ultimate vacuum (mbar abs)	Operating pressure (bar g)	Motor ~230V/50Hz operating current (A)/ power P <sub>1</sub> (W) <sup>2)</sup>	Pneumatic connections for tube ID	Weight (kg)	Dimensions (LxHxW) (mm)	Built in pump type
<b>SR system comprising pump, base plate and two separators</b>								
SR 810	10	8	1	0.6/90	10 mm	9.4	312/227/232	N 810.3 FT.18
SR 820	20	8	1	0.7/120	10 mm	11.6	312/227/252	N 820.3 FT.18
SR 840	34	8	1	1.5/245	10 mm	14.9	334/227/266	N 840.3 FT.18

<sup>1)</sup> at atm. pressure <sup>2)</sup> Motors with other voltages, frequencies on request  
<sup>3)</sup> systems with single head pumps and lower vacuum on request

# Modular Vacuum Systems, controlled Vacuum

Dimensions (see table)



5



# Modular Vacuum Systems, controlled Vacuum



## Chemically-resistant LABOPORT® Vacuum Systems with Separator and Condenser

### Technical features:

- Maintenance-free
- Silent
- Simple connection to the line power (power plug) and to the pneumatic system
- Environmentally friendly
- Controlled recovery of solvents, with high-performance condenser (at the pressure side)
- Collection of particles in the system (at the suction side)
- Easy to expand or convert

5

### SH Systems, modular

The SH vacuum systems are equipped with the LABOPORT-series chemically-resistant diaphragm pump of your choice (refer to the table/overview "modular accessories"). SH systems include a separator and a high performance condenser. There is a wide range of applications for these vacuum systems in laboratories, whenever clean, constant vacuum is required.

The heart of the very compact LABOPORT pumps used in the vacuum systems is KNF structured diaphragm. This patented diaphragm was stress-optimized using the finite elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

For laboratory applications, there is a wide variety of vacuum pumps with many different performance levels and various modular system components. The systems listed here are fully assembled at the factory. They can be converted quickly and easily; special tools are not required.

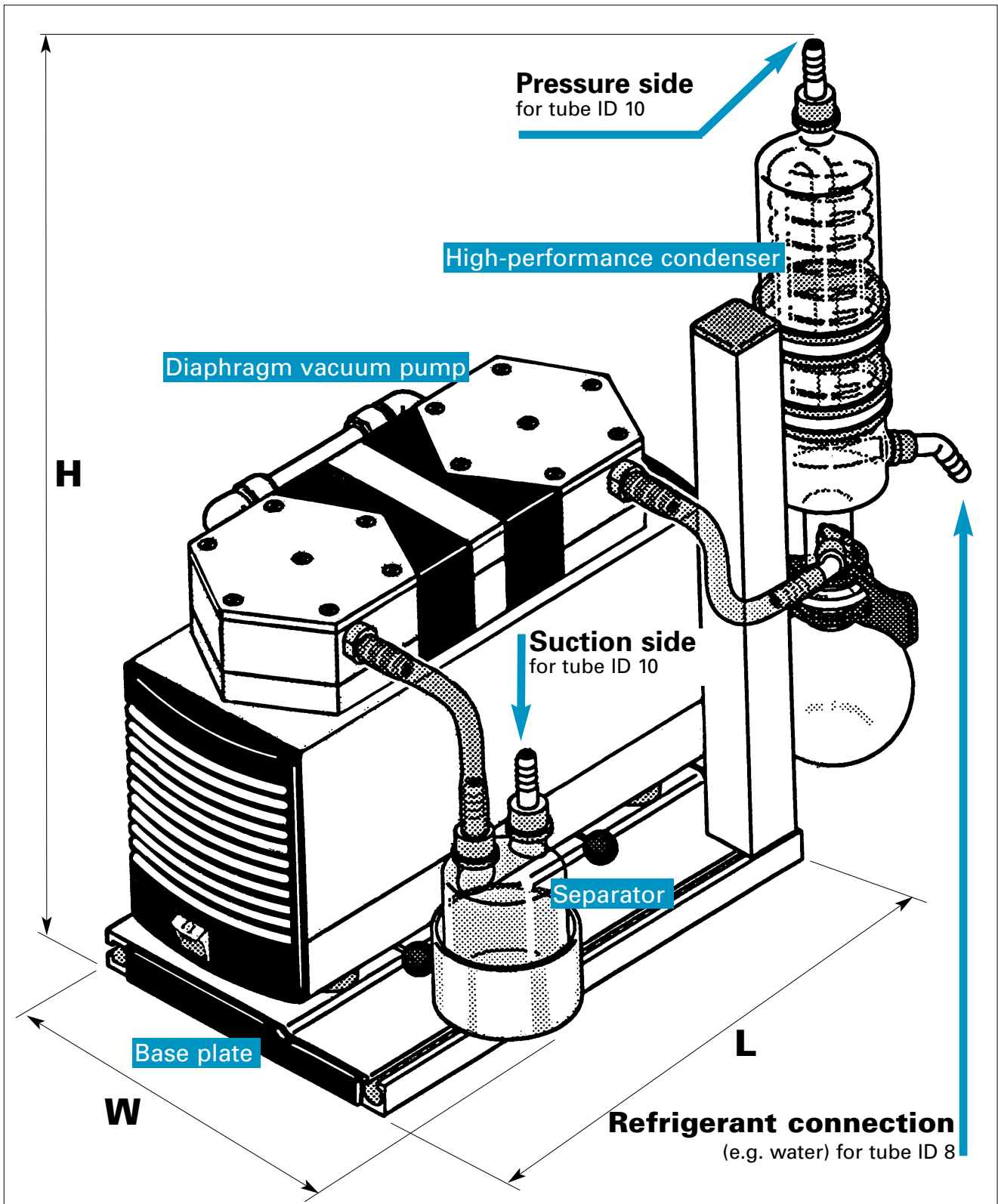
**Complete SH vacuum systems with: chemically-resistant diaphragm pump of your choice, base plate, separator (suction side), condenser (pressure side) including tubing ready to connect.**

System <sup>3)</sup>	Delivery (l/min) <sup>1)</sup>	Ultimate vacuum (mbar abs)	Operating pressure (bar g)	Motor ~230V/50Hz operating current (A)/ power P <sub>1</sub> (W) <sup>2)</sup>	Pneumatic connections for tube ID	Weight (kg)	Dimensions (LxHxW) (mm)	Built in pump type
<b>SH system comprising vacuum pump, base plate, condenser and separator</b>								
SH 810	10	8	1	0.6/90	10 mm	10.1	397/227/506	N 810.3 FT.18
SH 820	20	8	1	0.7/120	10 mm	12.5	397/227/506	N 820.3 FT.18
SH 840	34	8	1	1.5/245	10 mm	15.8	417/227/506	N 840.3 FT.18

<sup>1)</sup> at atm. pressure <sup>2)</sup> Motors with other voltages, frequencies on request  
<sup>3)</sup> systems with single head pumps and lower vacuum on request

# Modular Vacuum Systems, controlled Vacuum

Dimensions (see table)



5

# Modular Vacuum Systems, controlled Vacuum



## Chemically-resistant LABOPORT® Vacuum Systems with Separator, Condenser and Vacuum Controller

### Technical features:

- Maintenance-free
- Silent
- Simple connection to the line power (power plug) and to the pneumatic system
- Environmentally friendly
- Automatic vacuum control
- Controlled recovery of solvents, with high-performance condenser (at the pressure side)
- Collection of particles in the system at the suction side)
- Easy to expand or convert

5

### SC Systems, modular

The SC vacuum systems are equipped with the LABOPORT-series chemically-resistant diaphragm pump of your choice (refer to the table/overview "modular accessories"). SC systems include a vacuum controller for controlled vacuum processes. There is a wide range of applications for these vacuum systems in laboratories, whenever clean, constant vacuum is required.

The heart of the very compact LABOPORT pumps used in the vacuum systems is KNF structured diaphragm. This patented diaphragm was stress-optimized using the finite elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

For laboratory applications, there is a wide variety of vacuum pumps with many different performance levels and various modular system components. The systems listed here are fully assembled at the factory. They can be converted quickly and easily; special tools are not required.

**Complete SC vacuum systems with:  
chemically-resistant diaphragm pump of your choice,  
base plate, separator (suction side), condenser (pressure side), vacuum controller with electrical supply unit, cabling and tubing ready to connect.**

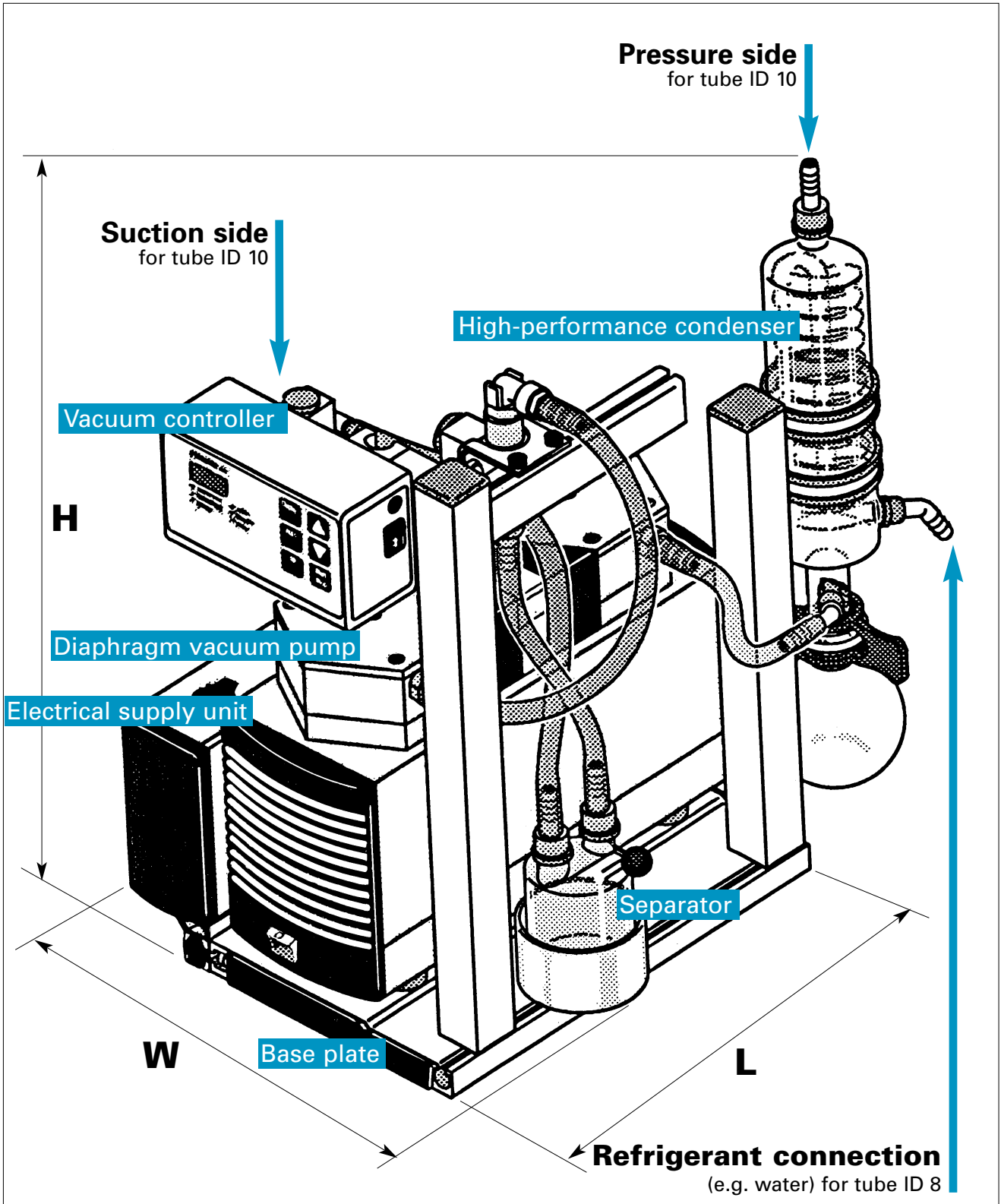
System <sup>3)</sup>	Delivery (l/min) <sup>1)</sup>	Ultimate vacuum (mbar abs)	Operating pressure (bar g)	Motor ~230V/50Hz operating current (A)/ power P <sub>1</sub> (W) <sup>2)</sup>	Pneumatic connections for tube ID	Weight (kg)	Dimensions (LxHxW) (mm)	Built in pump type
<b>SC system comprising vacuum pump, base plate, condenser, separator, and a vacuum controller</b>								
SC 810	10	8	1	0.6/90	10 mm	13.6	397/289/506	N 810.3 FT.18
SC 820	20	8	1	0.7/120	10 mm	16	397/289/506	N 820.3 FT.18
SC 840	34	8	1	1.5/245	10 mm	19.3	417/289/506	N 840.3 FT.18
SC 842	34	2	1	1.5/245	10 mm	20.1	417/289/506	N 842.3 FT.18

<sup>1)</sup> at atm. pressure <sup>2)</sup> Motors with other voltages, frequencies on request

<sup>3)</sup> systems with single head pumps and lower vacuum on request

# Modular Vacuum Systems, controlled Vacuum

Dimensions (see table)



5

## Accessories

Order No.	Description	Details
045075	Coolant valve	G 1/2, ID 8

KNF reserves the right to make changes.

# Modular Vacuum Systems, controlled Vacuum



## Chemically-resistant LABOPORT® Vacuum Systems

with Condenser, Separator and two Vacuum Controllers

### Technical features:

- Maintenance-free
- Silent
- Simple connection to the line power (power plug) and to the pneumatic system
- Environmentally friendly
- Automatic vacuum control for two processes
- Controlled recovery of solvents, with high-performance condenser (at the pressure side)
- Collection of particles in the system (at the suction side)
- Easy to expand or convert

5

### SCC Systems, modular

The SCC vacuum systems are equipped with the LABOPORT-series chemically-resistant diaphragm pump of your choice (refer to the table/overview "modular accessories"). Fully-featured SCC systems have two vacuum controllers for two independent processes with just one pump. There is a wide range of applications for these vacuum systems in laboratories, whenever clean, constant vacuum is required.

The heart of the very compact LABOPORT pumps used in the vacuum systems is KNF structured diaphragm. This patented diaphragm was stress-optimized using the finite elements method. As a result, we were able to make the pumps smaller while increasing the service life of the diaphragm.

For laboratory applications, there is a wide variety of vacuum pumps with many different performance levels and various modular system components. The systems listed here are fully assembled at the factory. They can be converted quickly and easily; special tools are not required.

**Complete SCC vacuum systems (fully-featured) with: chemically-resistant diaphragm pump of your choice, base plate, separator (suction side), condenser (pressure side), two vacuum controllers with electrical supply unit for controlling two independent processes, cabling and tubing ready to connect.**

System <sup>3)</sup>	Delivery (l/min) <sup>1)</sup>	Ultimate vacuum (mbar abs)	Operating pressure (bar g)	Motor ~230V/50Hz operating current (A)/ power P <sub>1</sub> (W) <sup>2)</sup>	Pneumatic connections for tube ID	Weight (kg)	Dimensions (LxHxW) (mm)	Built in pump type
<b>SCC system comprising vacuum pump, base plate, condenser, separator, and two vacuum controllers</b>								
SCC 810	10	8	1	0.6/90	10 mm	15.2	397/289/506	N 810.3 FT.18
SCC 820	20	8	1	0.7/120	10 mm	17.6	397/289/506	N 820.3 FT.18
SCC 840	34	8	1	1.5/245	10 mm	20.9	417/289/506	N 840.3 FT.18
SCC 842	34	2	1	1.5/245	10 mm	21.7	417/289/506	N 842.3 FT.18

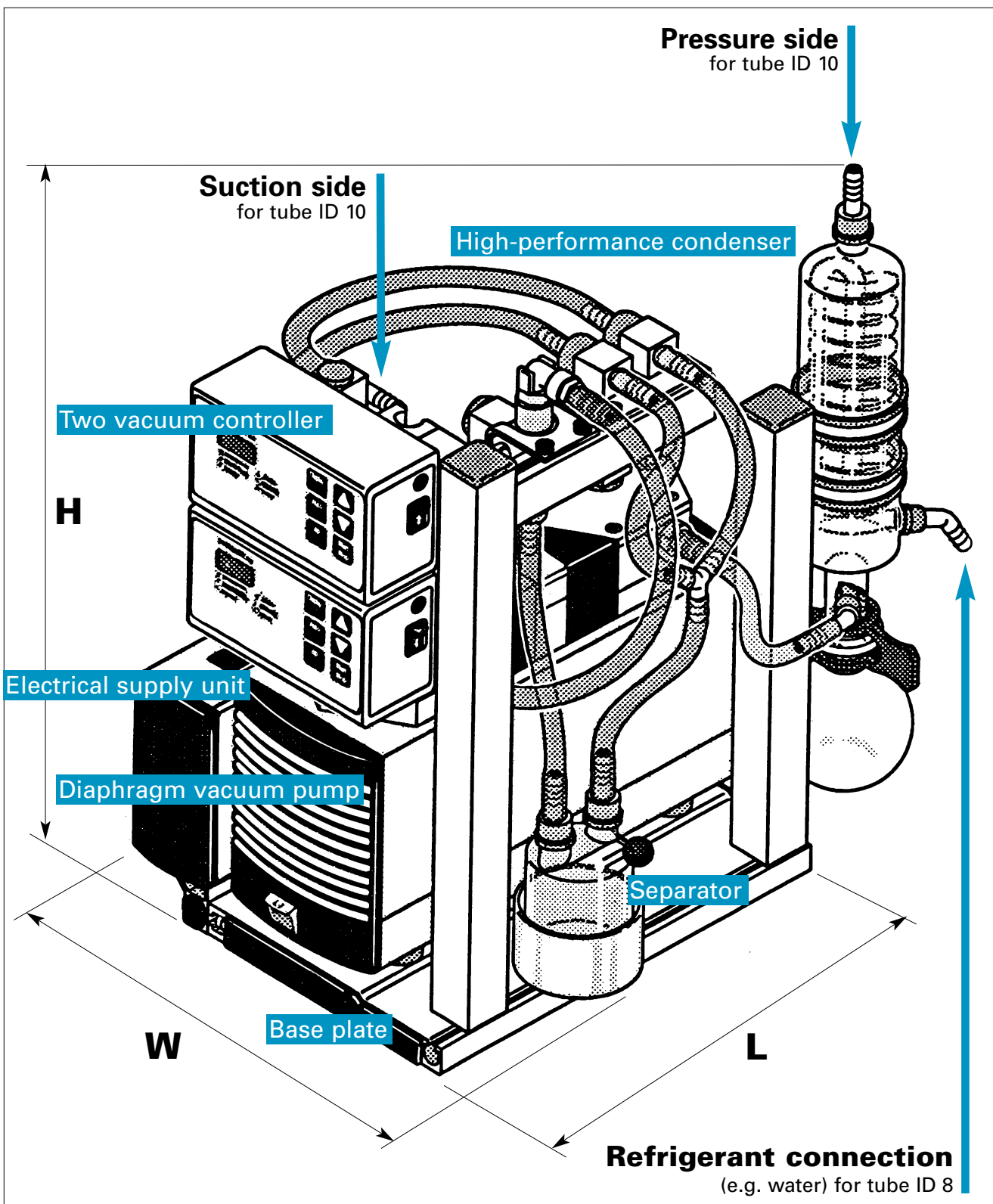
<sup>1)</sup> at atm. pressure <sup>2)</sup> Motors with other voltages, frequencies on request

<sup>3)</sup> systems with single head pumps and lower vacuum on request



# Modular Vacuum Systems, controlled Vacuum

Dimensions (see table)



5

## Accessories

Order No.	Description	Details
045075	Coolant valve	G 1/2, ID 8

**KNF worldwide - Diaphragm Pumps and Systems**

KNF reserves the right to make changes.

# Vacuum Systems for the Distillation



## Chemically-resistant LABOXACT® Vacuum Systems for controlled and gentle Distillation

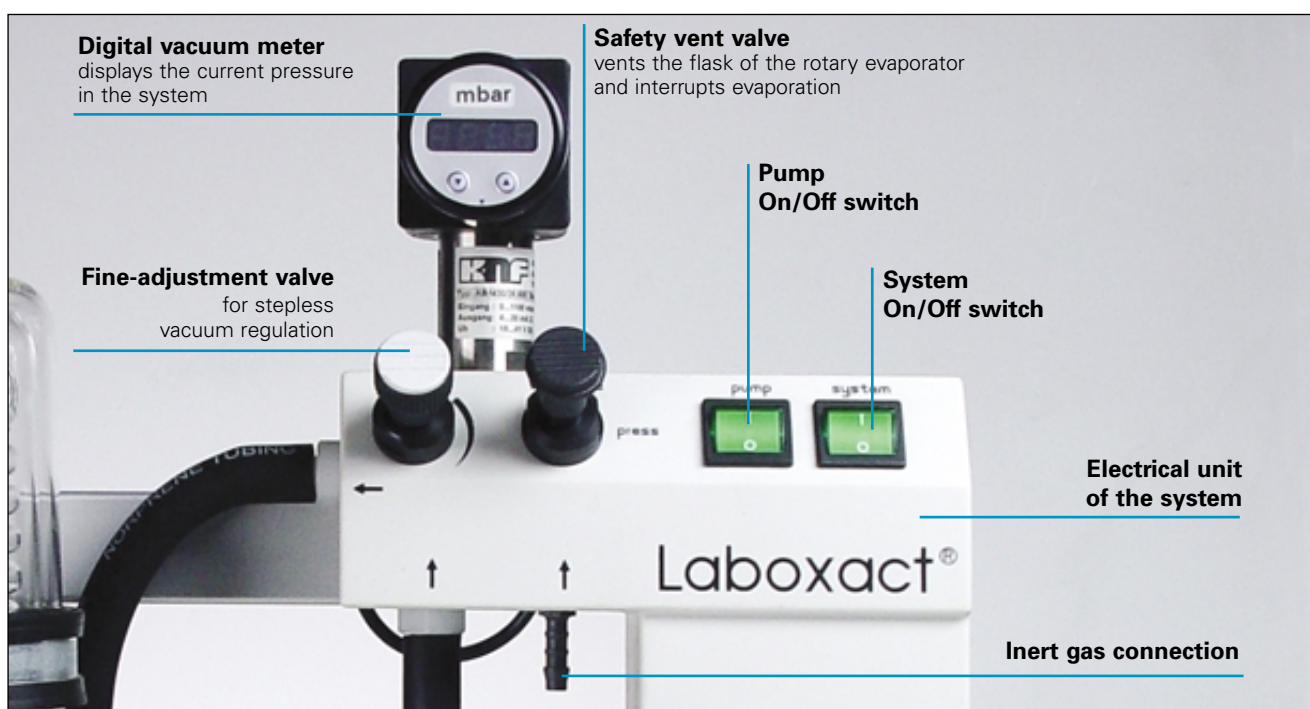
### Technical features:

- Maintenance-free
- Gentle distillation, due to closed system
- Careful control of evaporation
- High degree of solvent recovery
- Silent
- Simple connection to the line power (power plug) and to the pneumatic system
- Environmentally friendly

System	Flow rate (l/min) <sup>1)</sup>	Ultimate vacuum (mbar abs)	Pneumatic connections for tube ID	Weight (kg)	Included in the system: Selection of a vacuum pump	Components (same for all systems)
SEM 810	10	8	10 mm	12.1	N 810.3 FT.18	base plate, separator, condenser, fine-adjustment valve, digital vacuum meter, safety vent valve
SEM 820	20	8	10 mm	14.5	N 820.3 FT.18	
SEM 840	34	8	10 mm	17.8	N 840.3 FT.18	
SEM 842	34	2	10 mm	18.6	N 842.3 FT.18	

<sup>1)</sup> at atm. pressure

## Function and operation

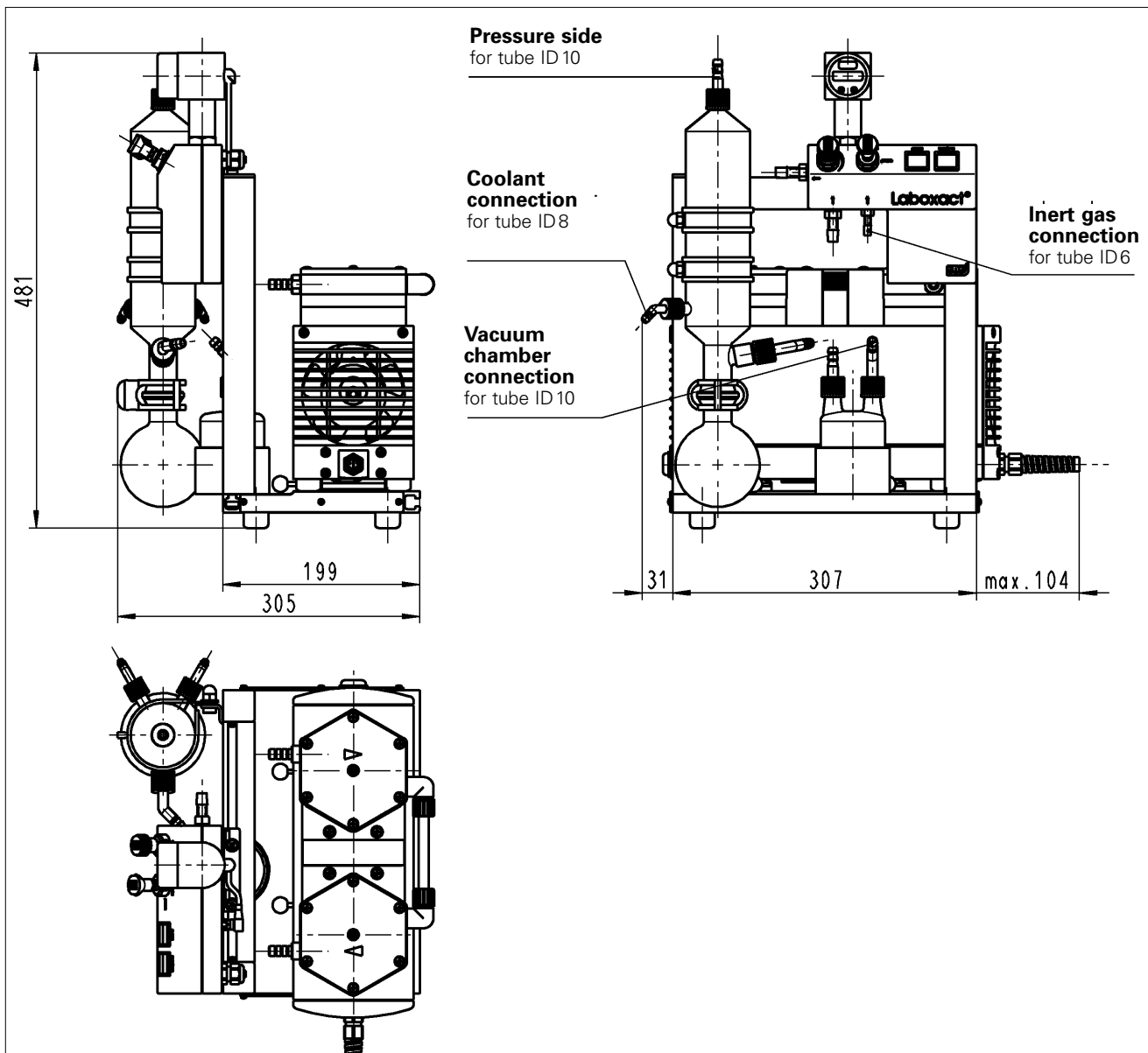


KNF reserves the right to make changes.



# Vacuum Systems for the Distillation

## Dimensions (mm)



## LABOXACT® in use

The process in the rotary evaporator can be monitored reliably with the vacuum system LABOXACT. A closed, patented system arrangement enables gentle distillation and high recovery rates, even for low-boiling solvents.

An fine-adjustment valve regulates the vacuum precisely. When the desired vacuum is reached, the fine-adjustment valve can be closed, or the pump can be switched off. If the rotary evaporator has leaks, then the fine-adjustment valve can be adjusted, allowing the pump to remove the leakage flow and maintain the boiling pressure. The safety vent valve makes it possible to interrupt evaporation at any time, by venting the rotary evaporator. Inert gas can be added via the special connection.

# Multi-User Vacuum Systems for up to ten Users



## Chemically-resistant LABOBASE® Vacuum Systems for Multi-User

### Technical features:

- Maintenance-free
- Silent
- More room on the laboratory bench
- Fully-automatic vacuum generation for several users
- Vacuum supply points with regulated tapping
- Simple connection to the line power (power plug) and to the pneumatic system
- Environmentally friendly
- Chemically-resistant

## Fully-automatic Base Vacuum Station

### The concept

A fully-automatic, chemically-resistant base unit supplies vacuum for several laboratory workplaces. This reduces costs and makes more space available on the laboratory bench. The base unit switches itself off automatically when no vacuum is required.

### The base vacuum station - compact and fully-automatic

All components of the base unit are located compactly on a base plate.

The vacuum controller of the base station regulates the vacuum pump and the coolant valve at the high-performance condenser.

The controller is capable of determining:

- lower threshold value (pressure in mbar), the pump switches off
- upper threshold value (pressure in mbar), the pump starts
- switch-off delay (in minutes)
- delay time of the coolant circuit (in minutes)

### LABOBASE® base vacuum station - all components on a base plate

System, base vacuum station	Flow rate (l/min) <sup>1)</sup>	Ultimate vacuum (mbar abs)	Pneumatic connections for tube ID	Weight (kg)	Included in the system Selection of a vacuum pump	Components (same for all base vacuum stations)
SBC 840	34	8	10 mm	22.6	N 840.3 FT.18	Base plate, separator, high performance condenser, vacuum controller, valves and electrical supply unit.
SBC 840.40	34	10	10 mm	22.9	N 840.3 FT.40.18	
SBC 844	40	2	10 mm	23.4	N 844.3 FT.18	
SBC 844.40	40	4	10 mm	23.7	N 844.3 FT.40.18	
SBC 860	60	2	10 mm	25.0	N 860.3 FTE	
SBC 860.40	60	4	10 mm	25.3	N 860.3 FT.40E	

<sup>1)</sup> at atm. pressure

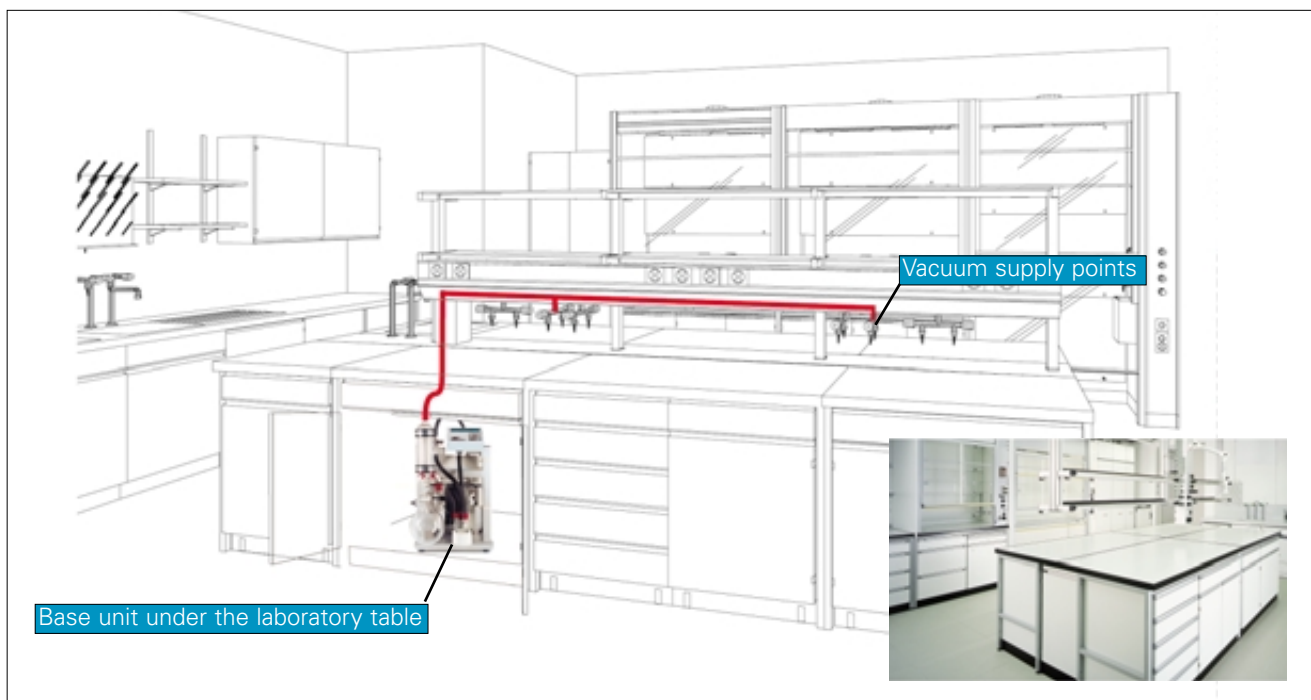
### Accessories for LABOBASE® base vacuum station

Order No.	Description	Details
045886	Gas washing bottle	0.5 liter
045075	Coolant valve	G 1/2, ID 8

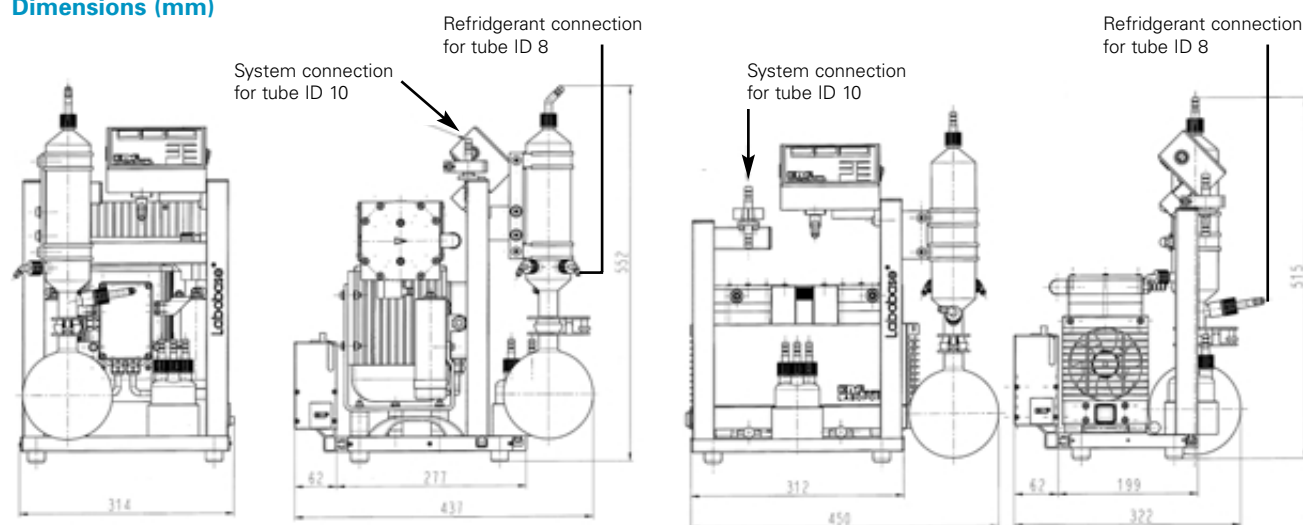
KNF reserves the right to make changes.

# Multi-User Vacuum Systems for up to ten Users

## Easily built into laboratories



### Dimensions (mm)



**Systems SBC 860, 860.40**

**Systems SBC 840, 844, 840.40, 844.40**

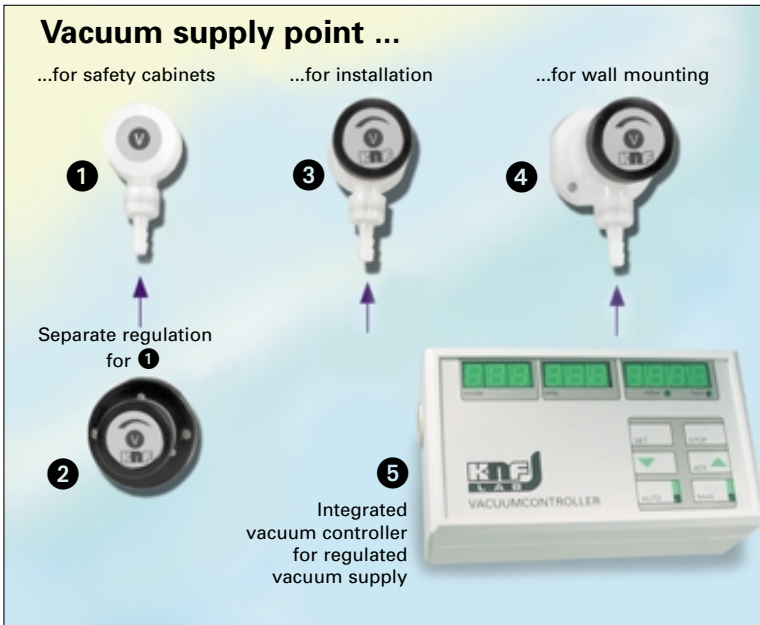
## Vacuum supply points for LABOBASE® systems

Order No.	Description	Details	Picture-No. (see the next pages)
048461	vacuum supply point	unregulated, for safety cabinets (PVDF)	1 + 2
048723	vacuum supply point	unregulated, for installation in laboratory equipment (PVDF)	3
048329	vacuum supply point	unregulated, for wall mounting (surface mounting) (PVDF)	4
048459	mobile controller unit	for regulated vacuum supply (chemical-resistant)	6

For more information on vacuum supply points, refer to the following pages!

# Multi-User Vacuum Systems for up to ten Users

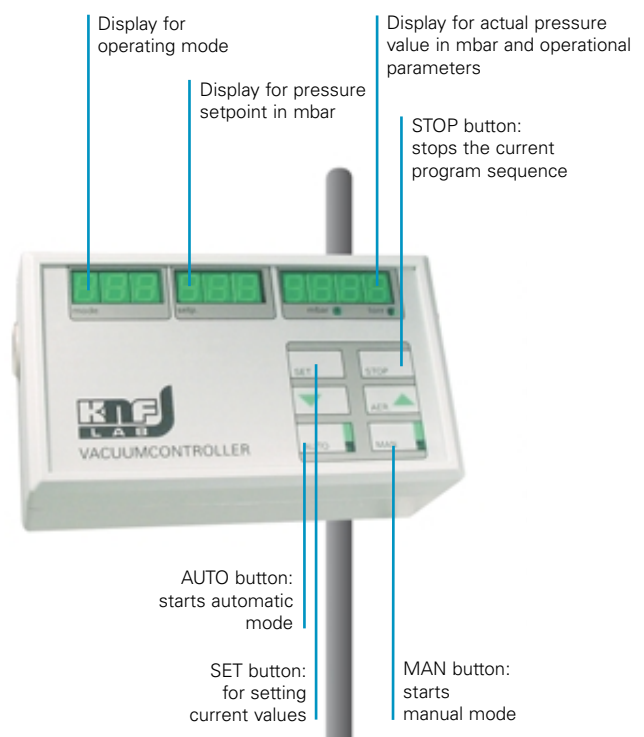
## Vacuum Supply Points for retrofitting or planning Laboratories



- 1 + 2 Supply point for safety cabinets, with integrated non-return valve and the regulation system relating to them
- 3 Supply point for installation with integrated non-return valve
- 4 Supply point for wall mounting, with integrated non-return valve
- 5 Integrated Vacuum controller for the regulated supply point
- 6 Customer-specific solutions for supply points on request

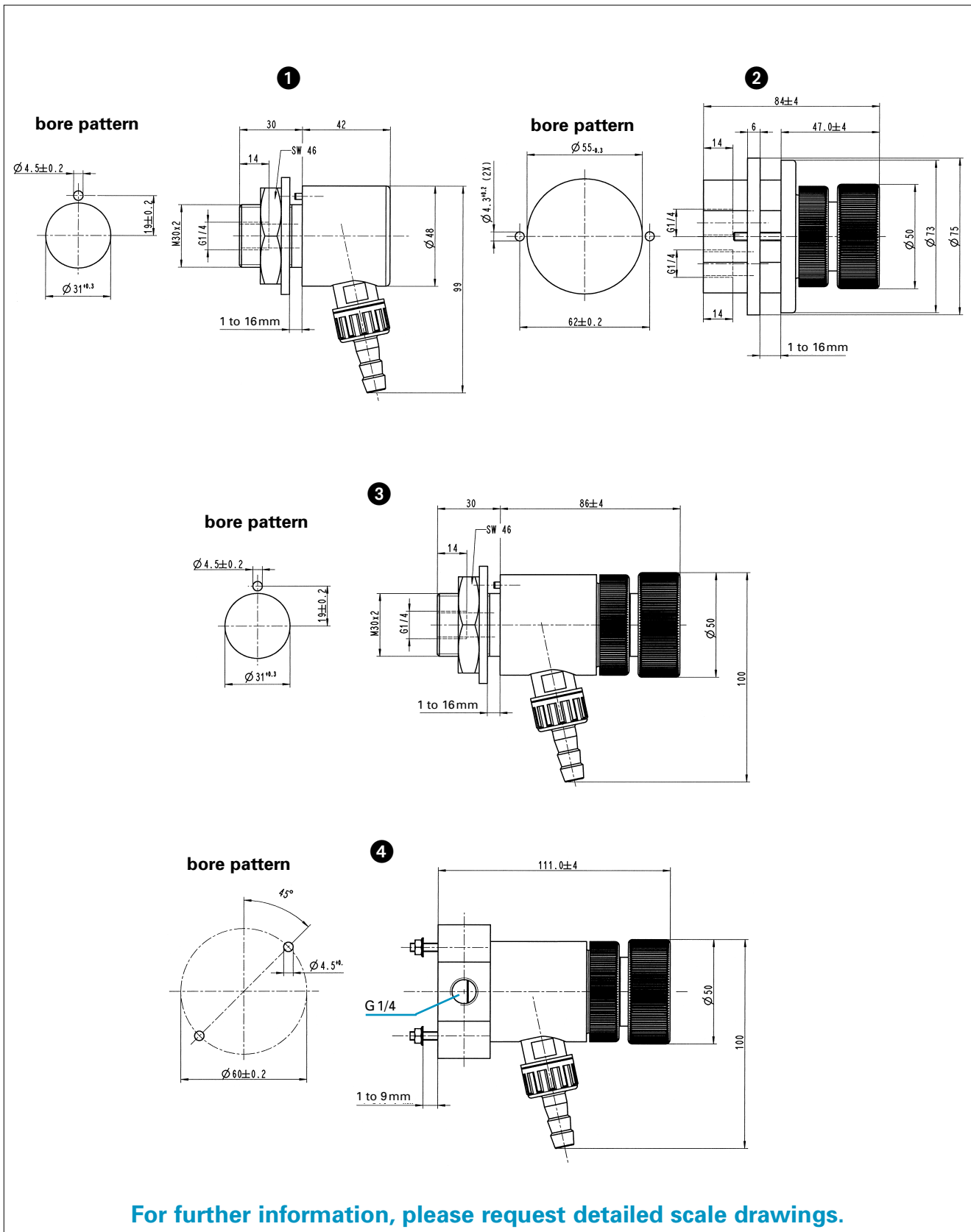
## Mobile Vacuum Controller Unit for regulated Extraction of Vacuum with high Flexibility

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# Multi-User Vacuum Systems for up to ten Users

## Installation dimensions of the vacuum supply points





# NEW GENERATION SC 920



8

# SC 920

# Vacuum Pump System with wireless remote Control



8



# Vacuum Pump System with wireless remote Control

## Enter process parameters via the hand terminal

The new vacuum pump system SC 920 now supports remote control over a portable hand terminal, thus ensuring maximum flexibility in the laboratory. Fast process times and high precision are further outstanding features of this new product.

These days, it is hard to imagine modern laboratories without controller-operated vacuum pump systems. They deliver precise vacuum and offer widely diverse control functions for a huge range of applications in the laboratory.

The intuitive user guidance on the hand terminal ensures ease of operation; the process parameters can be entered over a touch screen and a rotation knob. The various menus to enter:

- units of measurement
- the operating language
- the operating mode
- parameters, such as the setpoint pressure or suction capacity of the system direct over rotation knob.

Depending on the selected operating mode, the graphic display of the hand terminal then indicates the respective process variables. The user can intervene in the ongoing process at any time with the hand terminal and its integrated touchscreen and rotating knob.

The hand terminal can be called via vacuum pump system (paging); the hand terminal will answer with a signal tone.

## 8

### Four operating modes

The vacuum pump system can be used in four different operating modes, selected on the hand terminal:

- **Evacuate:**  
the vacuum pump system evacuates a vacuum chamber with adjustable pump capacity.
- **Pressure control:**  
the vacuum pump system controls the system pressure to the set value (constant pressure).
- **Automatic:**  
the vacuum pump system automatically finds the vapour pressure of the sample and adjusts the process pressure accordingly.

- **Individual pressure function:**

the vacuum pump system controls the process according to a user-defined pressure curve. The setpoint pressure and the opening and closing of the coolant valve (accessory) on the high-performance condenser can be easily entered for a range of set times. A repeat function allows successive repetitions of the programmed pressure curve.

At any time during an active process, you can switch to manual process control. Functions for Evacuate and Pressure control will be available simultaneously.

### Intelligent control

A key feature of the SC 920 vacuum pump system is its intelligent control system. A pressure sensor measures the actual pressure in the system several times per second, and a microprocessor monitors any pressure drop over time. The pump speed is adapted according to this information constantly.

At the start of each process, the vacuum pump operates at low speed to avoid over-response in situations with a small vacuum chamber volume and a fast-boiling medium. If there is a large discrepancy between the actual pressure and the setpoint pressure, the pump speed, and thus the transferred volume, is increased in order to speed up the process. As soon as the actual pressure approaches the setpoint pressure, the pump speed is reduced. This ensures fast process times and high control accuracy.

### Controlling via a PC

Included in delivery with the SC 920 is Windows®-based software, which also supports operation of the system over a PC. In addition to the options offered by the hand terminal, the software also supports the display of the pressure curves as a chart (setpoint/actual shown), setpoint can be saved, and the export of data to spreadsheets or text files. Communication with the PC is implemented over a USB interface.

### Fast process times

Besides intelligent control, the diaphragm vacuum pump used in the SC 920 further contributes to short process times. The pump is fitted with the patented diaphragm stabilization system that ensures high suction speeds even at low pressures.

The vacuum pump system achieves an ultimate vacuum of 2 mbar absolute and delivers up to 20 liters of gas per minute. All gas carrying parts are manufactured from chemical resistant materials.

# Vacuum Pump System with wireless remote Control



8

## Extremely quiet operation

The integrated vacuum pump operates extremely quietly. Furthermore the system stops the pump completely as soon as the setpoint pressure of the system is reached and only starts up again intermittently in order to offset any slight drop in pressure due to leakages in the process equipment.

## Perfectly matched components

This vacuum pump system SC 920 opens up a whole new range of options in the laboratory. This is due to new functions and technical solutions. Thanks to the coordinated development of the individual components it has been possible, for example, to adjust the sensitivity of the motor to suit the requirements of the control process.

The SC 920: an extremely user-friendly laboratory device that meets the highest demands.

# Vacuum Pump System with wireless remote Control

## Technical data:

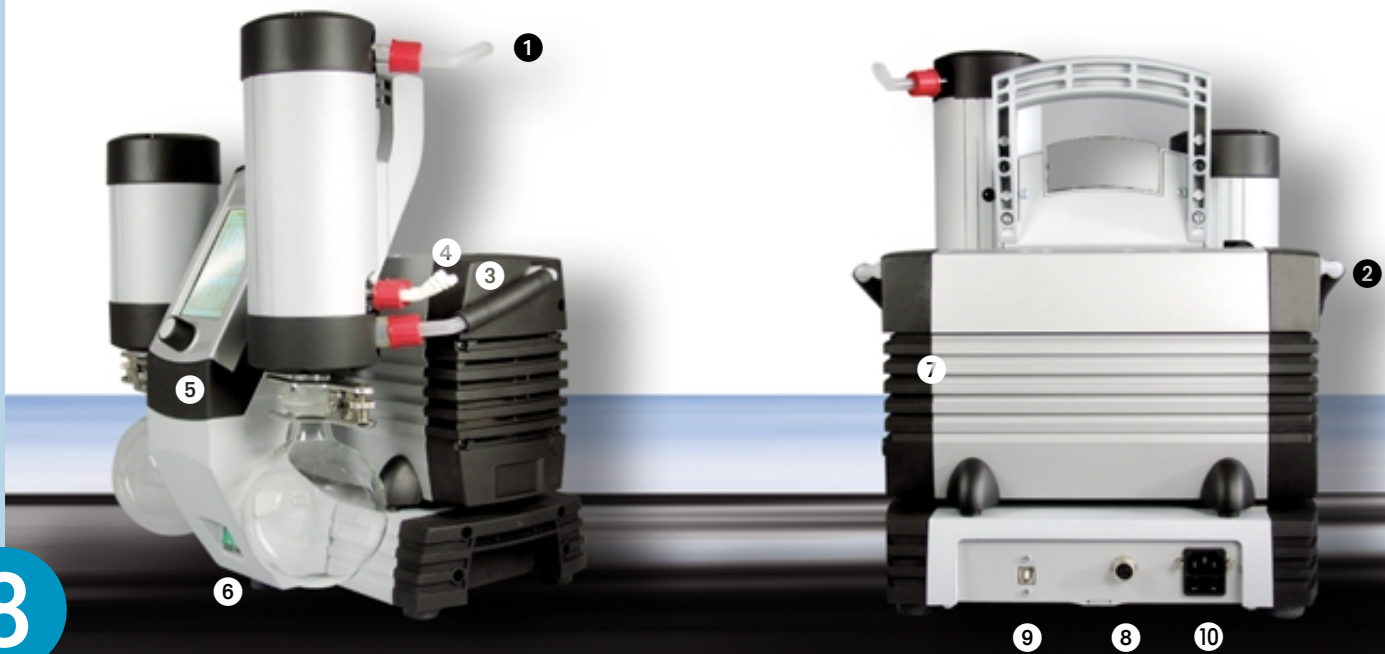
Delivery (l/min) <sup>1)</sup> :	20
Ultimate vacuum (mbar abs.):	2
Control:	over hand terminal and Windows®-based software
Mains connection:	100 - 230 V, 50 - 60 Hz
Power consumption:	max. 135 W
Hose connections, pneumatic:	ID 10
Hose connections for coolants:	ID 8
Current consumption:	max. 1.7 A
Weight:	15 kg
Dimensions (mm) H x W x D:	423 x 366 x 294
With overcurrent protection and mains fuse	

<sup>1)</sup> at atm. pressure

## SC 920

## Legend

- 1 Gas outlet
- 2 Connection to vacuum chamber
- 3 Coolant outlet
- 4 Coolant inlet
- 5 Hand terminal, portable with wireless control
- 6 Mains switch
- 7 Vacuum pump
- 8 Connection coolant valve
- 9 USB connection
- 10 Mains connection

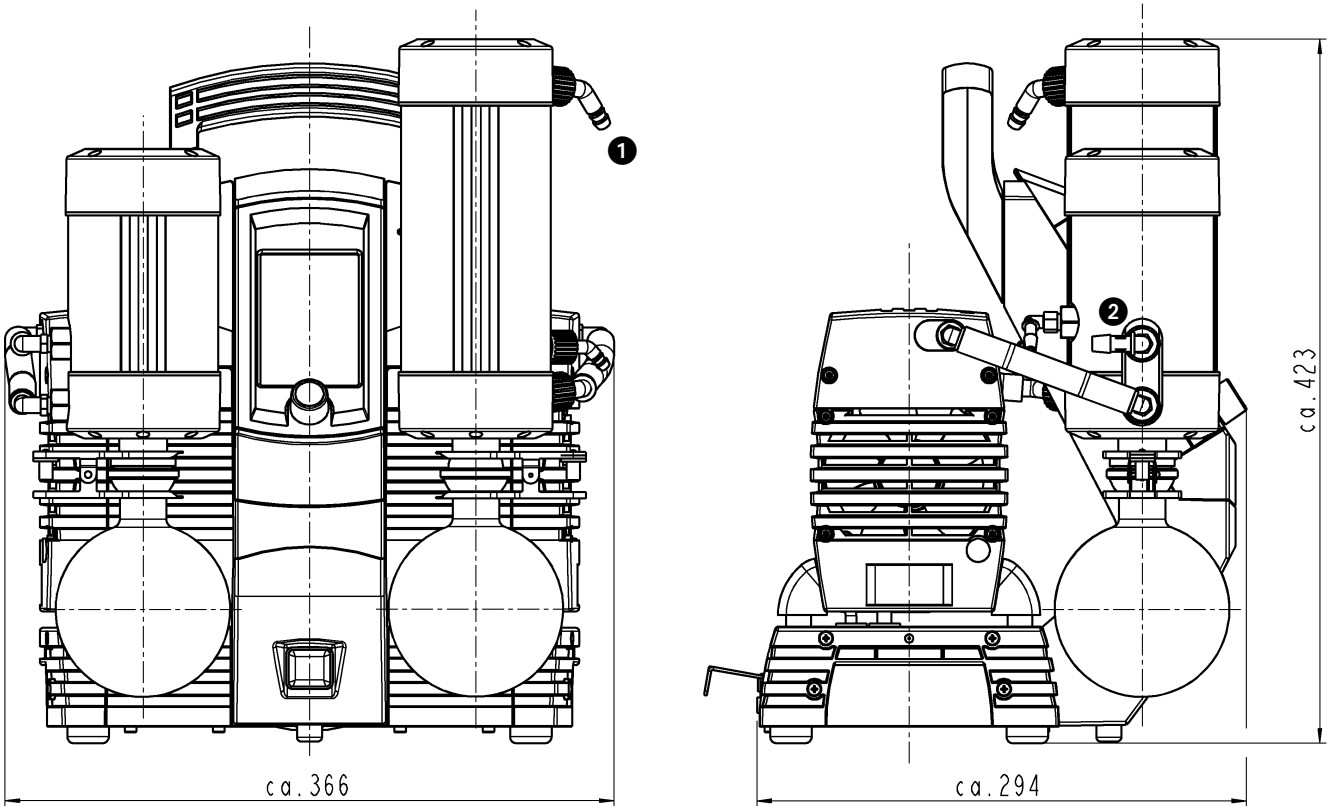


8

# SC 920

# Vacuum Pump System with wireless remote Control

## Dimensions (mm)



## Accessories

Order No.	Description	Details
117121	Coolant valve	G 1/2, ID 8



The system SC 920 can be easily stowed away, i.e. in units under the work bench or in a fume hood.



## Woulfe's Bottles, Erlenmeyer Shape

### Features:

- Thick walls
- Suitable for vacuum work
- Plastic coating protection against splinters and implosions
- Glass insert with removable plastic buttons (PP)
- GL 18 attachments
- Intermediate piece with aeration valve
- Dial pressure gauge with two scales (100...0 mbar, 760...0 mm Hg)

Order No.	Contents (ml)	Diameter (mm)
057953	500	approx. 110
057954	1000	approx. 140



## Cold Trap

Made of borosilicate glass, DURAN®, one-piece, GL 45 on top with sealing cap, side connections have GL 18 threads plus caps and plastic buttons.

Order No.	Volume (ml)
057955	approx. 250





The KNF diaphragm pressure valves can be used to keep the system pressure constant, as a pressure relief valve to reduce pressure peaks or in order to prevent injection. The pressure valves are suitable for use with liquids and gases. They can be used in any position. The required opening pressure can be set by using a spindle/spring combination. This presses down on a diaphragm which is in contact with the liquid or gas.

**Important:**

Pressure control valves need to be installed on the pressure side of the pump.

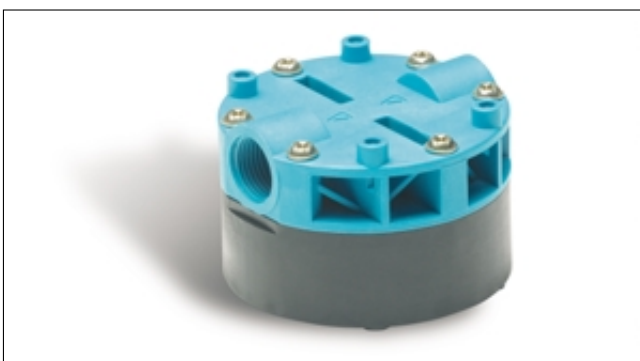
## Diaphragm Pressure Control Valves

**Features:**

- Compact and lightweight
- Use with liquid and gaseous media
- Durable and maintenance free
- High chemical resistance provided by chemical-resistant materials like PVDF and FFPM
- Pressure-control function that generates a constant back pressure and optimizes dosing accuracy
- As a bypass valve that prevents impermissibly high pressure in lines and systems
- Anti-injection function

For further information, please ask for data sheet.

Type	Max. flow rate with liquid (l/min)	Max. flow rate with gas (l/min)	Pressure range (bar g)	Data Sheet No.
FDV 30/31	3.0	150	0.2 - 2.5	760
FDV 1.30/1.31	3.0	150	2.0 - 6.5	760
FDV 300/301	12.0	300	0.8 - 2.5	760
FDV 1.300/1.301	12.0	300	2.0 - 6.5	760



**Areas of use:**

- To reduce the vibration in hoses and pipes.
- To help remove pulsation which is preventing the system from functioning correctly.
- The protection of instrumentation connected after the pump.

## Diaphragm Pulsation Damper

The KNF diaphragm pulsation damper can effectively reduce the pulsation behind the pump by up to 97%. The correct selection of pulsation damper and the correct installation are essential in ensuring an optimal performance.

The pulsation damper is made up of only a few parts and is constructed in a simple but effective way. A diaphragm separates the liquid section (upper part) from the damping chambers (lower part). The damping elements (situated in the damping chambers) combined with the separating diaphragm remove a large part of the pulsation caused by the pump. In the upper part of the pulsation damper there are also two choke orifices which aid the damping process.

**High chemical resistance**

The use of chemically resistant materials such as PP, PVDF, FFPM or other material combinations for the parts which come in contact with the liquid allows almost all neutral or corrosive liquids to be pumped.

For further information, please ask for a data sheet.

Type	Max. pressure (bar g)	Data Sheet No.
FPD 06	2.0	765
FPD 1.06	6.0	765
FPD 10	2.0	765
FPD 1.10	6.0	765

## Clean and uncontaminated Transfer, Compression, Evacuation and Metering

Whether for use with neutral or aggressive gases or liquids, the KNF range provides the right type of pump. KNF compressors and vacuum pumps carry out transferring, compressing and evacuating tasks, KNF liquid pumps take on transferring and metering jobs.

### Applications

Here are some typical applications of these pumps in the laboratory:

#### Gas pumps:

- Pumping and transferring of gases
- Vacuum filtration
- Vacuum distillation
- Rotary evaporation
- Vacuum drying
- Vacuum impregnation
- Gel drying

#### Liquid pumps:

- Pumping and transferring of liquids
- Metering liquids
- Sampling
- Analysis
- Ultra-fine pipetting, dispensing and titration

### Principle of the diaphragm pump

An elastomer diaphragm (see illustration) is moved up and down by an eccentric. 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 outlet valve and out of the head. The compression chamber is hermetically sealed from the mechanism by the diaphragm. The pumps transfer, evacuate and compress completely oil-free.

### Features of diaphragm pumps:

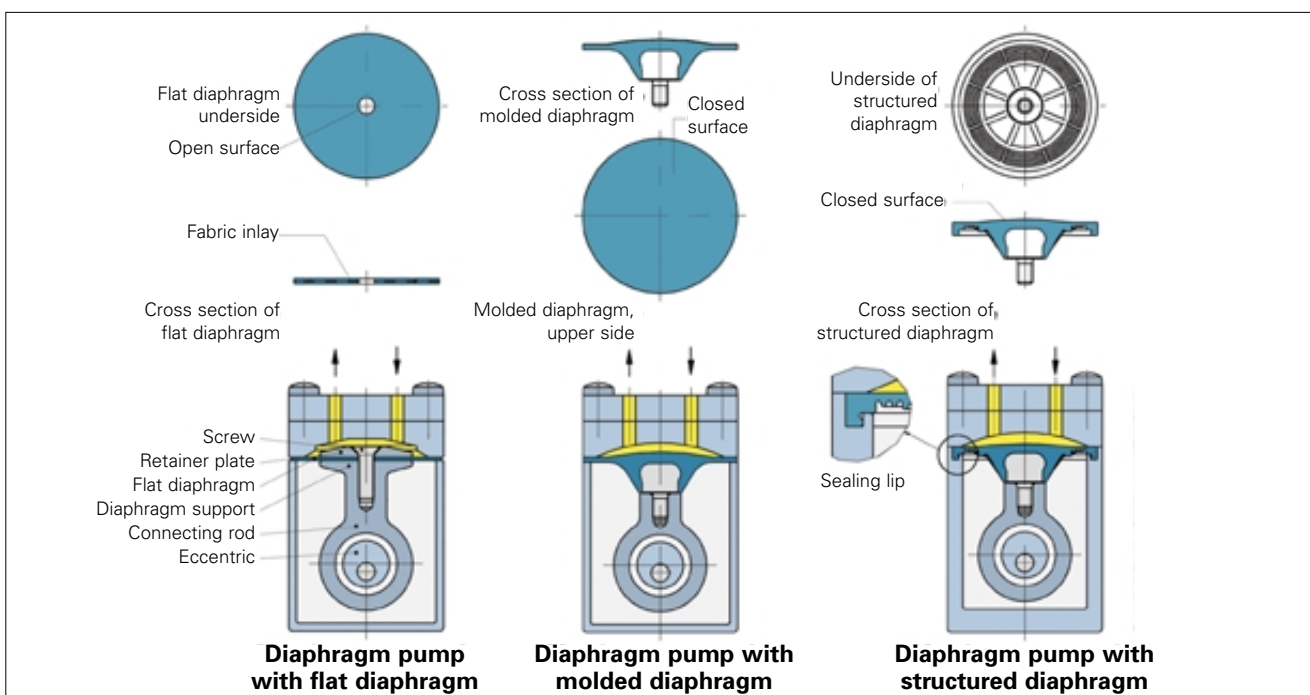
- Uncontaminated transfer, no pollution of the media
- 100% maintenance-free
- Compact design
- Smooth running
- Easy installation
- With very few exceptions, the pumps can operate in any installed position

Liquid pumps have the following additional features:

- Self-priming
- Will operate dry

In addition to the above features, diaphragm pumps for gases have excellent gas tightness.

### Diaphragm versions for gas pumps





# Technical Information



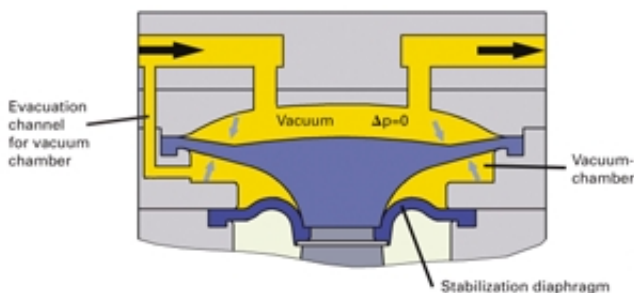
## Diaphragms

Once more KNF has set new standards in diaphragm pump technology with its new stress-optimised, patented structured diaphragms for gas pumps. Major benefits over conventional diaphragms are:

- Approximately one third higher output from same size of pump
- Longer service life

## Diaphragm stabilization system for vacuum pumps

An additional diaphragm, the so-called stabilization diaphragm, separates the underside of the working diaphragm from the "crank" space of the pump (see fig.). The space between the two diaphragms (called a vacuum chamber) is connected with the suction side of the pump via a 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.



## Liquid and Metering pumps with stepping motor drive

LIQUIPORT pumps and STEPDOS metering pumps with the KNF Flodos stepping motor drive offer a unique combination of features; they are self-priming, can operate dry and are maintenance-free, they have almost universal chemical resistance and provide quasi-continuous, low-pulsation metering.

## The KNF drying system for vacuum pumps (Laboport® SD)

The drying system from KNF utilizes the pressure difference between the pump chamber and the surrounding atmosphere. This unique layout ensures that the vacuum remains constant and the pump valve is self-regulating. The operating cycle is as follows:

### 1. Condensation reduces the pump's performance

Condensation in the pump head reduces the pump's performance, increasing pump-down time.

### 2. Drying the pump heads

The drying system vents the pump heads, while the vacuum is maintained in the vacuum chamber. This way, the condensation is blown out of the pump heads at high speed.

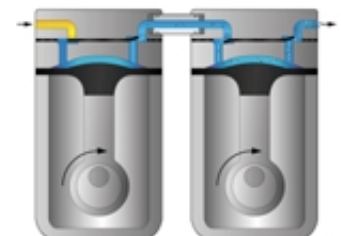
### 3. Trouble-free pumping down

After the pump heads have been dried, the pump will pump down much faster.

**Note:** An exhaust container must be fixed to the pressure side to collect the condensation blown out of the pump head.



1. Condensation reduces pump efficiency



2. Drying the pump heads



3. Trouble-free evacuation

# Service



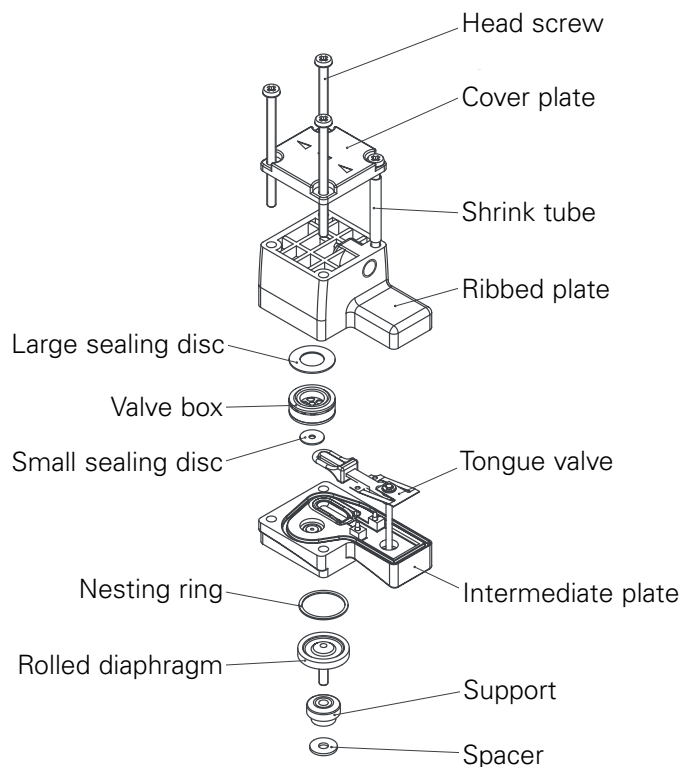
## Simple Servicing

KNF diaphragm pumps are essentially maintenance-free. Diaphragms, valves and seals are subject to wear. Replace them when they have been in operation for a long time. Replacing them is simple and easy. We offer sets of replacement parts which simplify replacing wearing parts. KNF recommends replacing all such parts simultaneously; for twin-head units replace the parts for both pump heads. This helps to keep the pump functioning at full capacity.

## Liquid Pumps and Metering Pumps

The exploded view of the pump head for STEPDOS 03 shows its service-friendly structure. The preliminary work is as follows: Rinse and pump out the entire installation. Switch off the electrical power and disconnect the pump from the source of electrical power. Remove hoses from the pump head. Remove the entire pump head by unscrewing the head screw. This makes it easy to replace the replacement parts. For details, please refer to the appropriate operating manual.

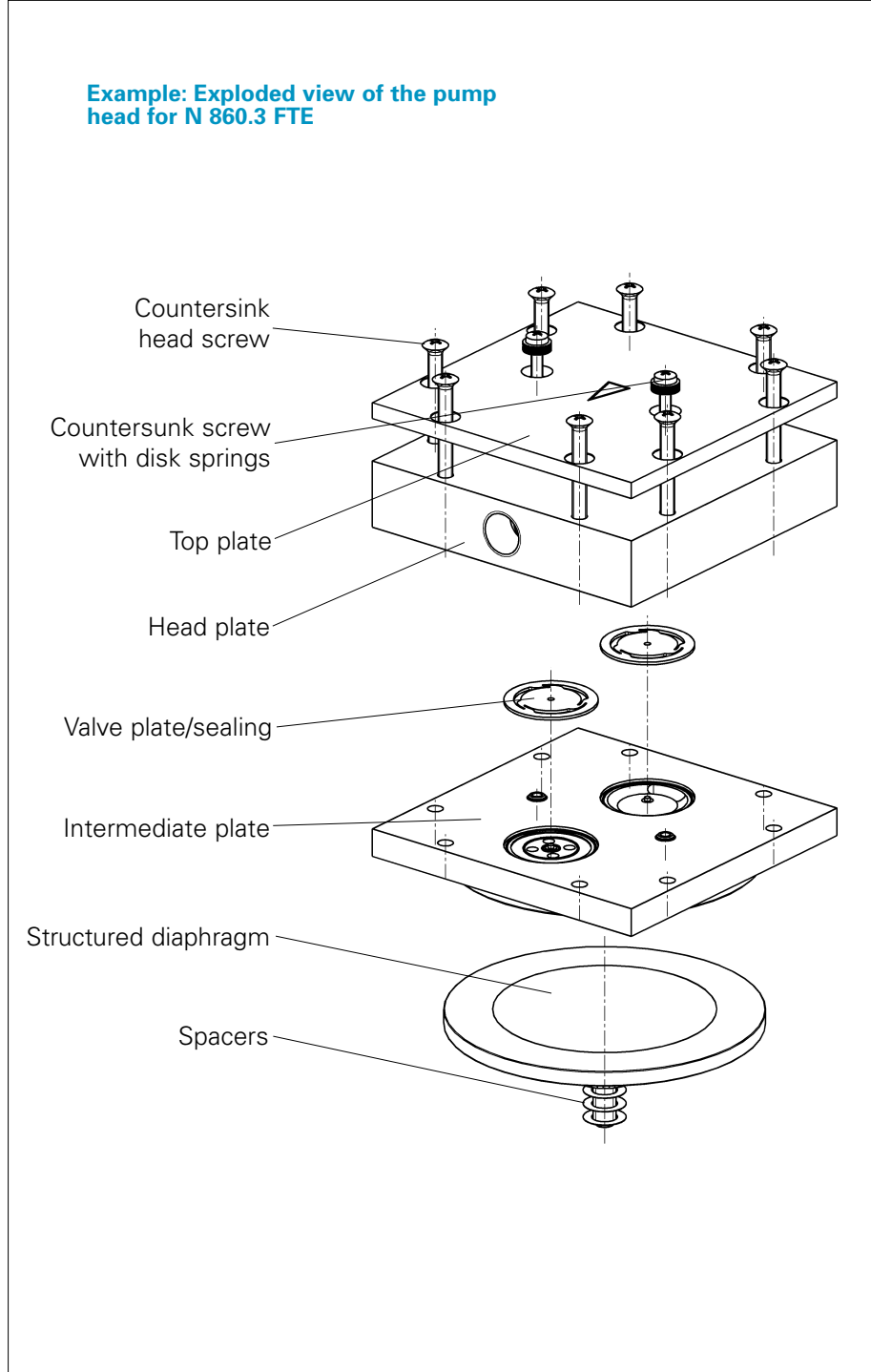
Example:  
Pump head of diaphragm metering pump STEPDOS 03



## Gas Pumps

This drawing illustrates how easy it is to service the pump. The preliminary work is as follows: Switch off the electrical power and disconnect the pump from the source of electrical power. For twin-head pumps, remove the pneumatic connections from the pump heads. Remove the fan cover or housing lid to access the motor fan or the flywheel in the pump housing. This will make it easier to replace the diaphragms. Remove the screws in the pump head. Then remove the pressure plate, head plate and intermediate plate. The diaphragm, valve plates/sealings (wearing parts) can now be easily replaced. Please refer to the appropriate operating manual for detailed instructions and the proper replacement part set numbers.

**Example: Exploded view of the pump head for N 860.3 FTE**













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E-mail: info@knf.de  
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### Product center for liquid pumps:

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## LABORATORY PUMPS AND SYSTEMS