

## MINI GAS SAMPLING PUMPS WITH DOUBLE DIAPHRAGM SYSTEM

DATA SHEET E 081



N 86 AN.12DC-B



N 816 AV.12DC-B



N 838 AN.12DC-B

### Concept

Double diaphragm pumps from KNF are based on a simple principle: an elastic working membrane and safety membrane are held securely at their edges and moved up and down at their center by an eccentric. As a result, the working membrane moves the medium through automatic valves. The lower lying safety diaphragm provides the working diaphragm with additional security.

The safety membrane has a significantly longer service life than the working diaphragm. The redundant arrangement of the diaphragms ensures that no gas can escape into the environment even if the working diaphragm ruptures.

The KNF modular system permits selection of materials with various levels of gas resistance for parts in contact with gas. Several different motors are available to drive the pump. Please contact us for details.

### Features

#### Pure transfer

No contamination of the media due to oil-free operation

#### Maintenance-free

#### Compact size

#### High performance

**High level of gas tightness:**  
 $6 \times 10^{-4}$  mbar x l/s

#### Long product life

#### Very quiet and little vibration

#### With brushless DC motor

Cool running motor even when in constant use, wide range speed controlled motor

#### Ready for assembly

#### Can operate in any installed position

#### High security against escape of hazardous or valuable gases

### Areas of use

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

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

### Performance data

Type	Delivery (l/min)	Vacuum (mbar absolute)	atm. Pressure	Pressure (bar g)	Weight (kg)
N 86 AN.12DC-B	4.5	250	atm. Pressure	1.0	0.7
N 816 AV.12DC-B	11	250		0.6	1.5
N 838 AN.12DC-B	25	200		0.6	2.5
N 838 AN.12.29DC-B	25	200		0.6	2.5

# N 86 AN.12DC-B

## Performance data

Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 86 AN.12DC-B	4.5	1	250

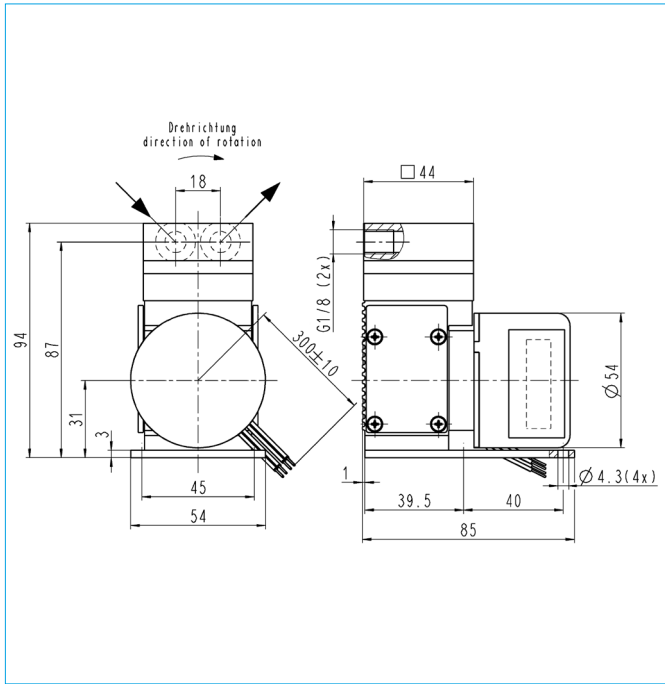
<sup>1)</sup> Liter at STP

## Motor data

Voltage	12 V	24 V
I <sub>max</sub> (A)	0.65	0.35

## Pump material

Type	Pump head	Diaphragm	Valves
N 86 AN.12DC-B	Aluminum	NBR	NBR



# N 816 AV.12DC-B

## Performance data

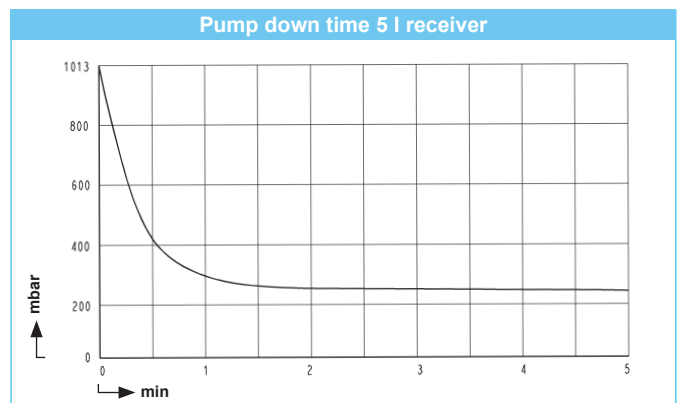
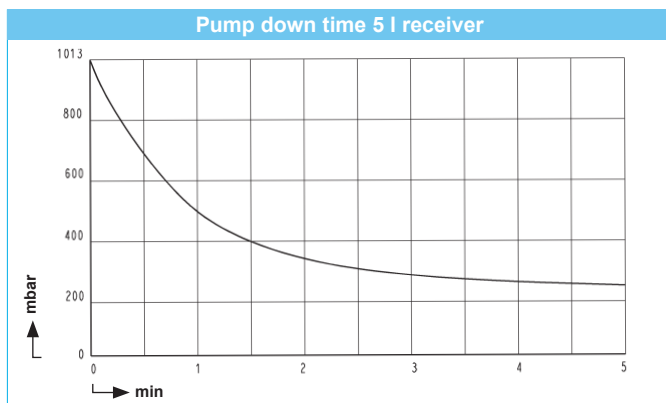
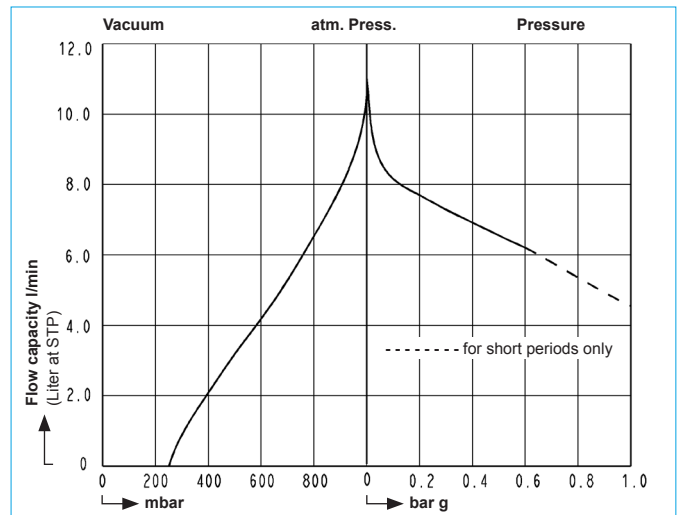
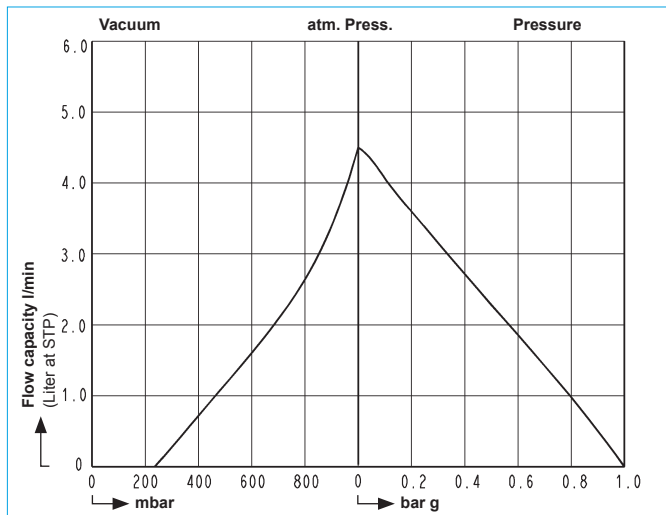
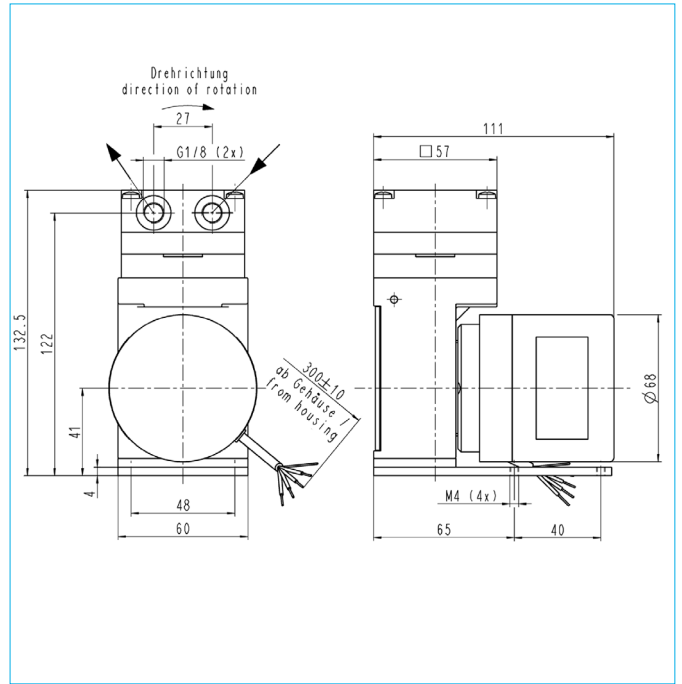
Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 816 AV.12DC-B	11	0.6	250

## Motor data

Voltage	24 V
I <sub>max</sub> (A)	1.1

## Pump material

Type	Pump head	Diaphragm	Valves
N 816 AV.12DC-B	Aluminum	FPM	FPM



# N 838 AN.12DC-B | AN.12.29DC-B

## Performance data

Type	Delivery at atm. pressure (l/min) <sup>1)</sup>	Max. operating pressure (bar g)	Ultimate vacuum (mbar abs.)
N 838 AN.12DC-B	25	0.6	200
N 838 AN.12.29DC-B	4.9-25	0.6	200

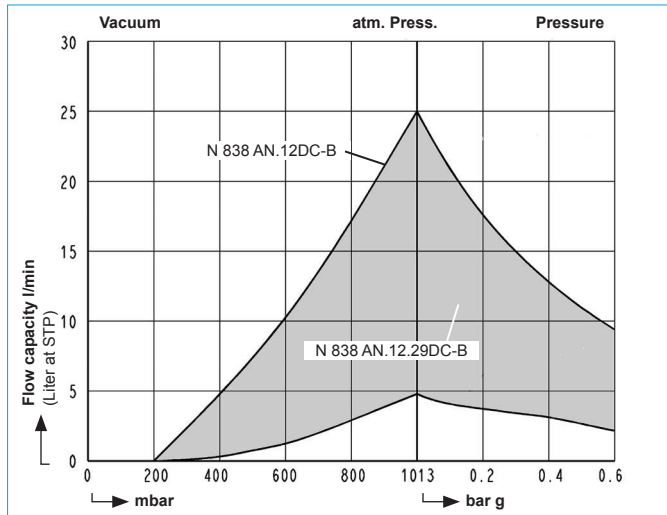
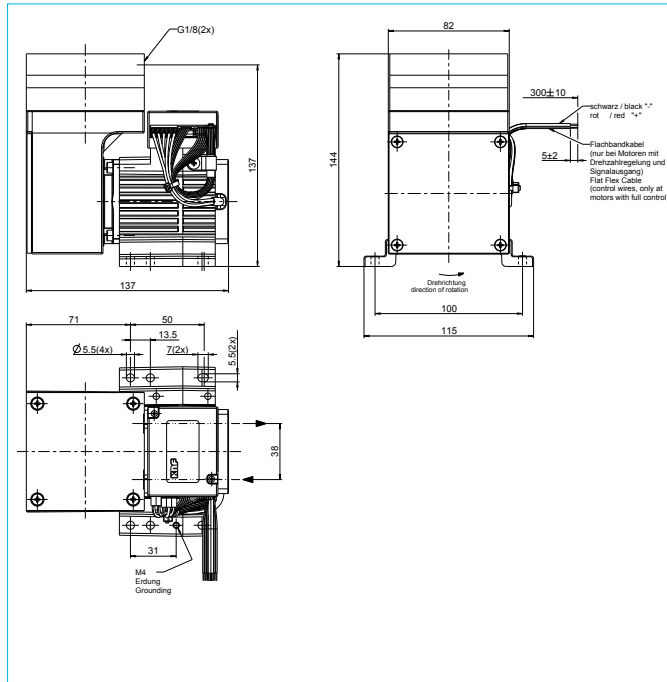
<sup>1)</sup> Liter at STP

## Motor data

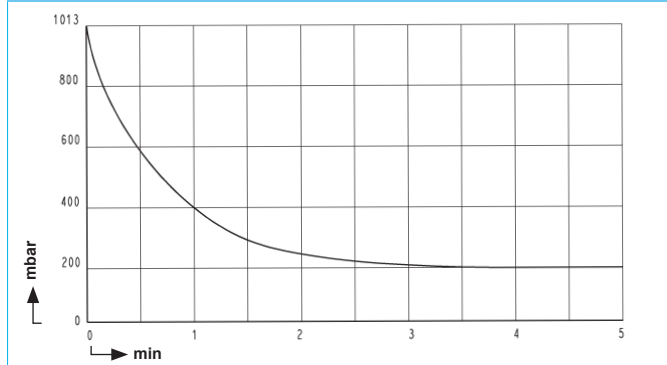
Protection class	IP 20
Voltage	24 V
Power P <sub>1</sub> (W)	46
I <sub>max</sub> (A)	1.9

## Pump material

Type	Pump head	Diaphragm	Valves
N 838 AN...	Aluminum	NBR	NBR



## Pump down time 20 l receiver

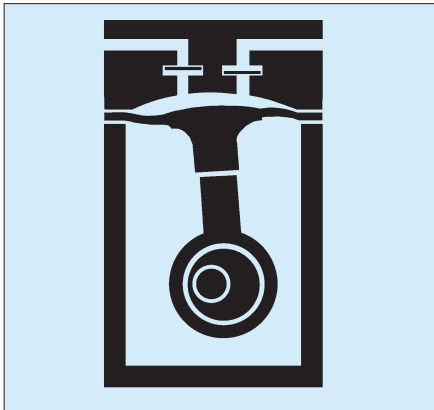


## HINTS ON FUNCTION, INSTALLATION AND TECHNIQUE

### Function of KNF diaphragm gas sampling pumps

An elastic diaphragm is moved up and down by an eccentric (see illustration). On the down-stroke it draws the air or gas being handled through the inlet valve. On the up-stroke the diaphragm forces the medium through the exhaust valve and out of the head. The compression chamber is hermetically separated from the drive mechanism by the diaphragm. The pumps transfer, evacuate and compress completely oil-free.

### Diaphragm pump

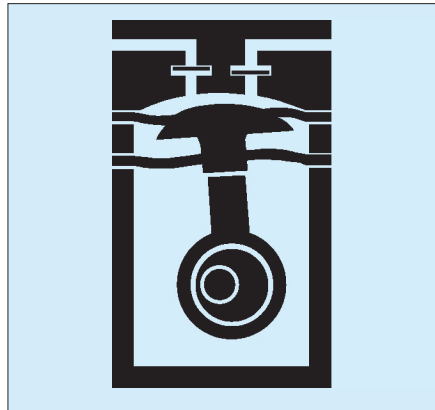


### The KNF double diaphragm system for increased safety

A second diaphragm is located underneath the working diaphragm. This second diaphragm is under less mechanical stress when the pump is operating. If gas should leak at the working diaphragm, it will still remain inside the pump space.

The user can monitor the closed space between the two diaphragms in order to immediately detect any damage to the working diaphragm that may occur during a process, for example. For this, the factory will add an additional connection or access point into the closed space upon request.

### Double diaphragm pump



### Hints on installation and operation

- Range of use: Transferring air and gases at temperatures between +5 °C and +40 °C.
- Permissible ambient temperature: between +5° C and +40 °C.
- Please check the compatibility of the materials of the pump head, diaphragm and valves with the medium.
- The KNF product line contains pumps suitable for pumping aggressive gases and vapors - please contact us.
- The standard pumps are not suitable for use in areas where there is a risk of explosion. In these cases there are other products in the KNF program - please ask us for details.
- The pumps are not designed to start against pressure or vacuum; when a pump is switched on the pressure in the suction and pressure lines must be atmospheric. Pumps that start against pressure or vacuum are available on request.
- To prevent the maximum operating pressure being exceeded, restriction or regulation of the air flow should only be carried out in the suction line.
- Components connected to the pump must be designed to withstand the pneumatic performance of the pump.
- Install the pump so that the fan can draw in sufficient cooling air.
- Fit the pump at the highest point in the system, so that condensate cannot collect in the head of the pump - that prolongs working-life.

## SALES CENTERS

### Germany

KNF Neuberger GmbH  
D-79112 Freiburg  
Tel. +49 7664 5909 0  
info@knf.de  
www.knf.de

### Benelux Netherlands

KNF Verder B.V.  
NL-3451 GG Vleuten  
Tel. +31 30 677 92 40  
info@knf-verder.nl  
www.knf-verder.nl

### Benelux Belgium and Luxemburg

KNF Verder N.V.  
B-2630 Aartselaar  
Tel. +32 3 871 96 24  
info@knf.be  
www.knf.be

### China

KNF Technology (Shanghai) Co., Ltd.  
Shanghai 201203  
Tel. +86 21 5109 9695  
info@knf.com.cn  
www.knf.com.cn

### France, Morocco, Tunisia, Algeria

KNF Neuberger SAS  
F-68128 Village-Neuf  
Tel. +33 389 70 35 00  
info@knf.fr  
www.knf.fr

### UK

KNF Neuberger U.K., Ltd.  
Witney, Oxfordshire OX28 4FA  
Tel. +44 1993 77 83 73  
info@knf.co.uk  
www.knf.co.uk

### India

KNF Pumps + Systems (India) Pvt. Ltd.  
Hinjewadi, Pune 411 057  
Tel. +91 20 640 13 923  
+91 20 640 08 923  
info@knfpumps.in  
www.knfpumps.in

### Italy

KNF ITALIA S.r.l.  
I-20063 Cernusco s. Naviglio MI  
Tel. +39 02 272 03 860  
info@knf.it  
www.knf.it

### Japan

KNF Japan Co.Ltd.  
Tokyo 104-0033  
Tel. +81 3 3551 7931  
info@knf.co.jp  
www.knf.co.jp

### Korea

KNF Neuberger Ltd.  
135-502, Seoul  
Tel. +82 2 959 0255  
knf@knfkorea.com  
www.knfkorea.com

### Sweden, Finland, Denmark, Norway

KNF Neuberger AB  
SE-11743 Stockholm  
Tel. +46 8 744 51 13  
info@knf.se  
www.knf.se

### Switzerland

KNF Neuberger AG  
CH-8362 Balterswil  
Tel. +41 71 973 99 30  
knf@knf.ch  
www.knf.ch

### Taiwan

KNF Neuberger Ltd.  
Taipei City, 11490  
Tel. +886 2 2794 1011  
knftwn@knftwn.com.tw  
www.knftwn.com.tw

### USA, Canada

KNF Neuberger, Inc.  
Trenton, New Jersey 08691-1810  
Tel. +1 609 890 8600  
knfusa@knf.com  
www.knfusa.com

### Latin America

Tel. +1 609 649 1010  
gb@knf.com  
www.knf.com/es