

# MICRO DIAPHRAGM LIQUID PUMPS

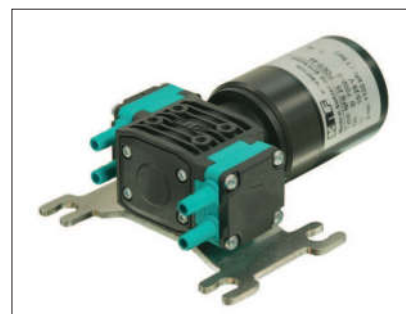
NF 25, NFB 25



NF 25 KPDC-M



NF 25 KPDCB-4



NFB 25 KPDCB-4A

## Concept

KNF micro diaphragm liquid pumps are based on the principle of the oscillating displacement pump which is remarkably simple in design. The circular power from the motor is converted into vertical movement by an eccentric. This motion is then transferred to a diaphragm by means of a connecting rod which in conjunction with an inlet and outlet valve creates a pumping action.

NF/NFB 25 type liquid pumps can be mounted in any position and can deliver up to 300 ml/min per head depending on the model and will operate against pressures of up to 10 mWg.

The KNF modular system contains a wide standard range of materials, motors, voltages and frequencies to enable the selection of an optimal solution for your application.

## Features

### Small and powerful

Micro design and maximum performance resulting from built-in technology are the outstanding characteristics of this product.

### Self-priming and excellent for pressure

Sophisticated diaphragm technology and precise valve structures enable performances from 3 mWg suction and 10 mWg pressure.

### Extreme chemical resistance

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

### Dry running, durable and maintenance free

The carefully considered design of these pumps allows them to be run dry and ensures safe operation and a long life even under the most severe conditions.

## Areas of use

The versatility of KNF pumps allows a wide field of applications to be covered. Over many years our pumps have proved themselves in the following areas:

### Analysers

- Medical/pharmaceutical
- Environmental/water treatment
- Food/toxicology

### Laboratory

- Filtration
- Chromatography

### Cleaning industry

- Cuvette cleaning
- Sterilisers
- Industrial washing machines

### Printing

- Ink jet printing
- Photographic/film development

Other applications for diaphragm liquid pumps include: fuel cells, hydrogen generators, CD coating, dental technology, textiles and many more.

PERFORMANCES			
Type	Flow rate (ml/min)	Suction height (mWg)	Pressure head (mWg)
NF 25 DC-M / L	250	3	10
NF 25 DCB-4	25–250	3	10
NFB 25 DCB-4A	2 x 50–300	3	10

# THE KNF MODULAR CONCEPT OF SELECTION

## General note

This Data Sheet provides an overview of the options with our NF/NFB 25 pumps. Certain standard options will be explained in more detail where necessary.

## Flow curves

The flow curves illustrate how the flow rate alters in relation to the pressures before and after the pump. In the case of a combination of both we would be very happy to advise what the expected flow rate would be.

**The values given in the curves are dependant upon the liquid, choice of head materials, ambient temperature and the type of hoses being used. Therefore a certain deviation is to be expected. The flow rate is measured with water using KNF standardised test equipment.**

## Modules

Our versatile self-selection program allows you to personally determine the optimum characteristics that you require from your pump. Select your diaphragm pump from the following characteristics:

TYPE DESCRIPTION			
Type	Components		
	1	2	3
NF 25			
NFB 25			
Example	KP	DCB-4A	10...28V

1 MATERIALS OF HEAD COMPONENTS		
KP	Head Valves Diaphragm Resonating diaphragm	PP EPDM EPDM EPDM
KT	Head Valves Diaphragm Resonating diaphragm	PP FFKM PTFE covered FFKM
TT	Head Valves Diaphragm Resonating diaphragm	PVDF FFKM PTFE covered FFKM

2 MOTORS	
DC-M	Direct current motor
DC-L	Ironless direct current motor
DCB-4 / 4A	Brushless direct current motor

3 VOLTAGES	
12 / 24V	for direct current motor
10...28V	for brushless direct current motor

## 1 Materials of head components

KNF Flodos offers a wide range of different materials for those parts which come in contact with the liquid thus allowing the possibility of pumping most liquids.

## 2 Motors

- DC-M** Direct current motor
- DC-L** Ironless direct current motor  
This provides the following advantages compared to a conventional DC motor: higher durability, less power consumption and smaller size.
- DCB-4, DCB-4A** Brushless direct current motor  
This type of motor has no brushes which can wear down thus giving it a lifetime comparable with an AC motor. The small size, the flow rate adjustability and the impulse generator are some more advantages to the other DC motors.

LEADS DCB-4 / DCB-4A			
Function	lead	signal name	signal
+ voltage	red	+Vs	10...28VDC
- voltage	black	-Vs/GND	-
control voltage input signal	white	Vctrl	0.3...5 VDC
impulse generator	green	FG	*6 Pulses / rot.

\* DCB-4A 18 Pulses / rot

## 3 Voltages

Choose from the different electrical connection possibilities. Special variations are available.

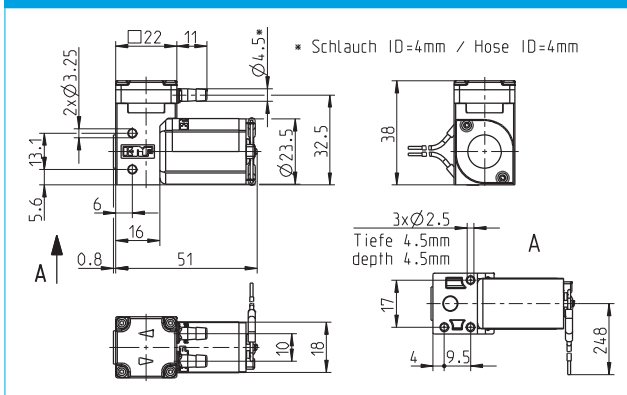
## NF 25 DC-M /L

### PERFORMANCE

Basic model	Flow rate at atmos. pressure (ml/min)	Max. suction height (mWg)	Max. pressure head (mWg)
NF 25 DC-M	250	3	10
NF 25 DC-L	250	3	10

Motor selection	DC-M	DC-L
Supply voltage (V)	12 / 24	12 / 24
Power rating (W)	2.9 / 2.9	1.9 / 1.9
I max. last (A)	0.24 / 0.12	0.16 / 0.08
I max. (A)	0.31 / 0.14	0.25 / 0.12
EMC guideline	EN 55022 EN 55011	EN 55022 EN 55011
Weight (g)	64	74
Motor protection factor	IP 30	IP 33

### NF 25 DC-M



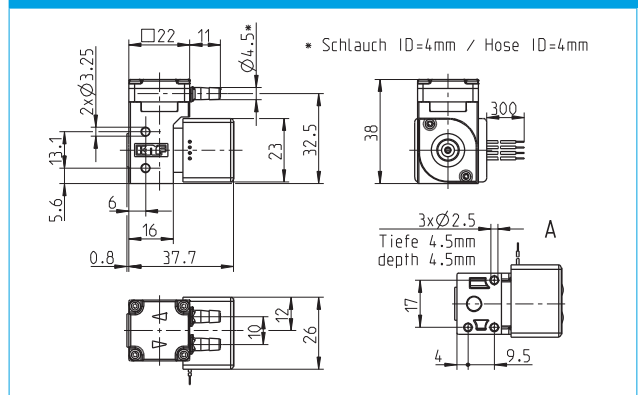
## NF 25 DCB-4

### PERFORMANCE

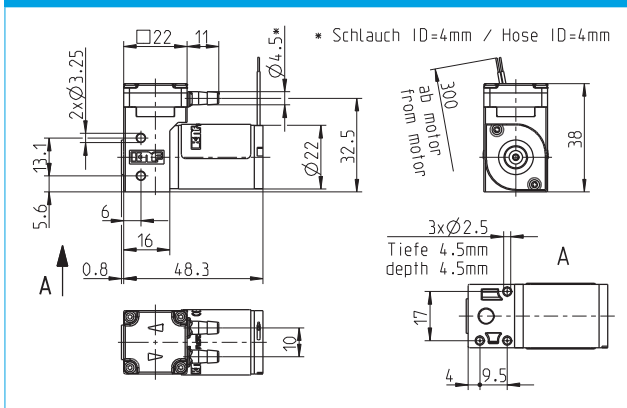
Basic model	Flow rate at atmos. pressure (ml/min)	Max. suction height (mWg)	Max. pressure head (mWg)
NF 25 DCB-4	25-250	3	10

Motor selection	DCB-4
Supply voltage (V)	10...28
Power rating (W)	2.6
I max. last (A)	0.26...0.09
I max. (A)	0.45
EMC guideline	EN 61000-6-2 EN 61000-6-3
Weight (g)	60
Motor protection factor	IP 40

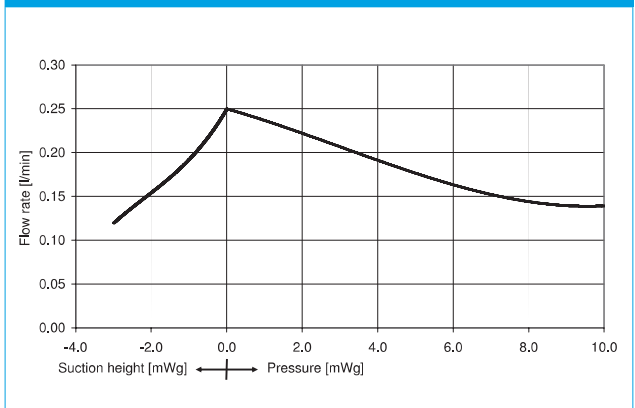
### NF 25 DCB-4



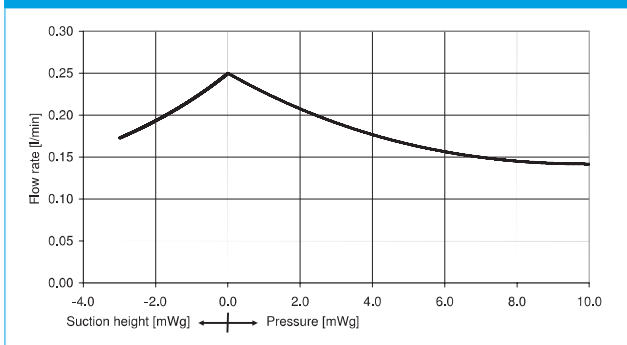
### NF 25 DC-L



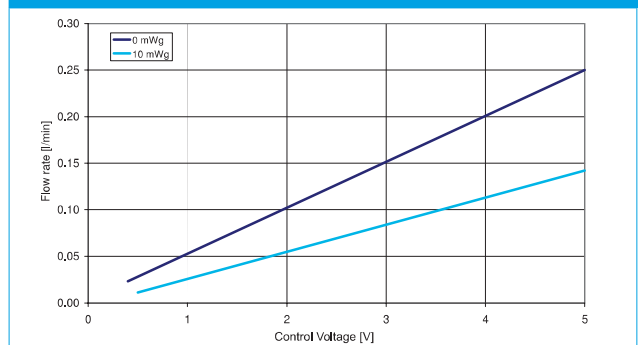
### NF 25 DCB-4 FLOW CURVE



### NF 25 DC-L FLOW CURVE



### NF 25 DCB-4 CONTROL CURVE

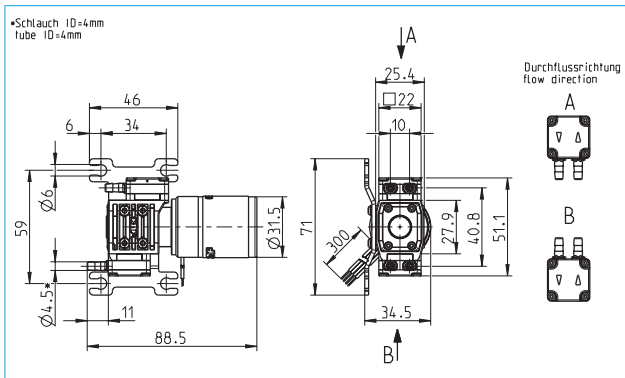


# NFB 25 DCB-4A

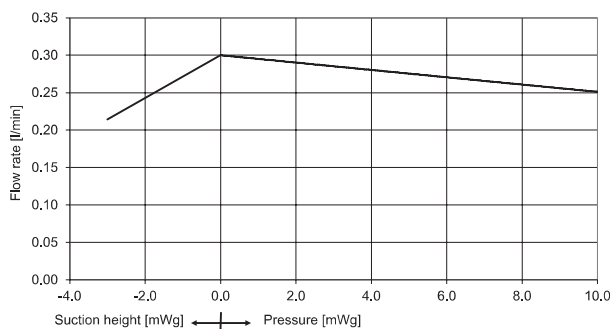
## PERFORMANCE

Basic model	Flow rate at atmos. pressure (ml/min)	Max. suction height (mWg)	Max. pressure head (mWg)
NFB 25 DCB-4A	2 x 50–300	3	10

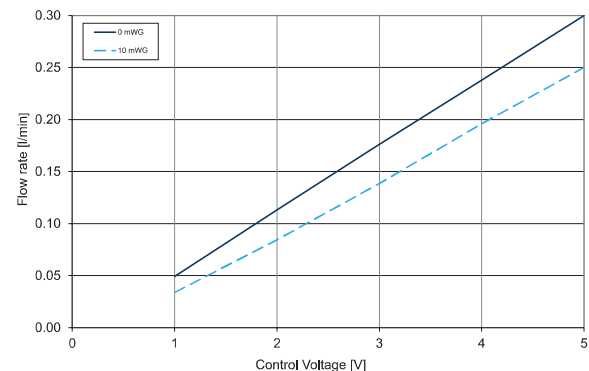
Motor selection	DCB-4A
Supply voltage (V)	10...28
Power consumption [W]	6.3
I max. last (A)	0.41...0.23
Max. permissible current consumption [A]	1.1
EMC guideline	EN 55014-1 EN 55014-2 EN 61000-6-1 EN 61000-6-3
Weight (g)	190
Motor protection factor	IP 54



## NFB 25 DCB-4A FLOW CURVE (PER HEAD)



## NFB 25 DCB-4A CONTROL CURVE (FLOW RATE PER HEAD)



# OPTIONS, ACCESSORIES

## Further options

- Other materials
- Motors with special voltages
- The incorporation of customers special requirements, or example special
- Electrical connections (Molex, AMP, etc.)
- DCB Motor with 2 wires (12 V and 24 V)

## Diaphragm pressure control valve

The pressure control valve can be used for a more accurate control of flow against a fluctuating back pressure, metering into a vacuum and from a pressurised system. Used correct it can save pumps, plumbings and other fittings from damage.



## Pulsation damper

This very versatile pulsation damper reduces the vibration in hoses and pipes and it helps to remove pulsation which is preventing the system from functioning correctly. It also protects instrumentation connected after the pump.



## Filter

KNF filters protect both pumps and other upstream instrumentation and hydraulic circuits against particulate, crystals and fibres which can impede optimum operation.



## Other accessories

- Tubing
- Shock mounts
- Parallel connection for NFB pumps