DIAPHRAGM LIQUID PUMPS

NF 100, NF 1.100, NFB 100

NF 100 KP.51DC

NF 1.100 KP.27DCB

NFB 100 KPDCB-4

Concept

KNF 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 100 type liquid pumps can be mounted in any position and can deliver up to 1.3 l/min per head depending on the model and will operate against pressures of up to 60 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

Self-priming and excellent for pressure

Sophisticated diaphragm technology and precise valve structures enable performances, depending on model, of up to 3 mWg suction and 60 mWg pressure.

Extreme chemical resistance

The use of chemically resistant materials such as PTFE, 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, semiconductor industry, dental technology, textiles and many more.

PERFORMANCE DATA			
Type	**Flow rate (l/min)**	**Suction height (mWg)**	**Pressure head (mWg)**
NF 100	**1.2**	**3**	**10**
NF 1.100	**1.3**	**3**	**60**
NFB 100	**2 x 1.3**	**3**	**10**

THE KNF MODULE CONCEPT OF SELECTION

General note
This data sheet provides an overview of the options with our NF 100 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.

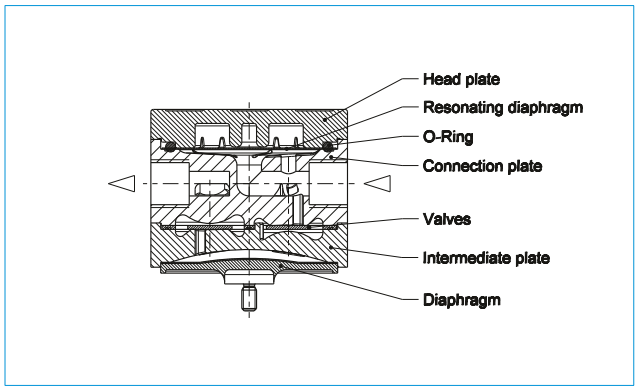
The values given in the curves are dependant upon the liquid, choice of head materials and the type of hoses being used. Therefore a certain deviation is to be expected. The flow rate is measured with water at 20°C.

Basic models

NF 100	Diaphragm liquid pump for pressures of up to 10 mWg (1 barg)
NF 1.100	Diaphragm liquid pump for pressures of up to 60 mWg (6 barg)
NFB 100	Double headed diaphragm liquid pump for pressures of up to 10 mWg (1 barg)

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.

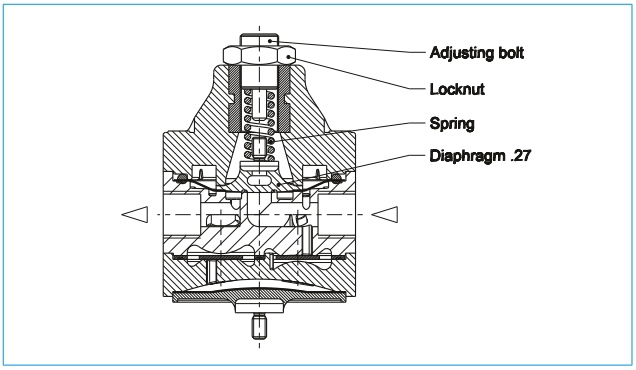
2 Head types
Standard
The pump head of the NF 100/NF 1.100/NFB 100 is made up of the main parts as shown below. Diaphragm, intermediate plate, connection plate, resonating diaphragm and the valves are the only parts which come in contact with the liquid. The materials which are available as standard can be seen in the table.



.27 Integrated over-pressure relief valve
The integrated over-pressure relief valve is available for all NF 100/1.100 pumps. Using .27 with NFB versions can affect technical properties and is therefore not recommended.

How it works
If the pump runs against a closed system the pressure will increase rapidly thus exceeding the allowed limits. In order to prevent this from happening a relief valve has been integrated into the head. Should the pressure exceed the adjusted value (min. 1.5 barg), the valve will open allowing the liquid to pass through the built-in bypass from the outlet to the inlet side.

Note: The valve is adjusted in the factory to a standard value of 1.5 barg (NF 100) and 6.5 barg (NF 1.100).



Areas of use
The valve can be used to prevent damage from occurring to the pump itself, hoses, valves and the system as a whole due to excessive pressures which can build up because of blockages or faulty valves.

3 Motors
- **AA** Capacitor motor (AC)
- **DC** Direct current motor
- **DCB** 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.
- **DCB-4** Brushless DC motor for external control (0-5V DC).

4 Voltages and frequencies
Choose from the different electrical connection possibilities. Special variations are available

BASIC MODELS

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:

1 MATERIALS OF HEAD COMPONENTS		
KP KP .51*	Head Valves Diaphragm Resonating diaphragm .27 Diaphragm	PP EPDM PTFE PTFE EPDM
KT	Head Valves Diaphragm Resonating diaphragm .27 Diaphragm	PP FFKM PTFE PTFE FFKM
TT	Head Valves Diaphragm Resonating diaphragm .27 Diaphragm	PVDF FFKM PTFE PTFE FFPM
FT	Head Valves Diaphragm Resonating diaphragm	PTFE FFKM PTFE PTFE

* food conformity according to the standard NSF/ANSI 169

2 HEAD TYPES	
-	Standard model
.27	Integrated over-pressure relief valve

3 MOTORS	
AA	Capacitor motor (AC)
DC	Direct current motor
DCB	Brushless direct current motor
DCB-4	Brushless direct current motor, adjustable

4 VOLTAGES / FREQUENCIES	
230V / 50Hz 115V / 60Hz 100V / 50-60Hz	for AC motors
12 / 24V	for DC motors
12 / 24V	for DCB motors

TYPE DESCRIPTION				
Basic model	**1**	**2**	**3**	**4**
NF 100				
NF 1.100				
NFB 100				
Example	**KT**	**.27**	**DCB**	**24V**

NF 100 DC/DCB

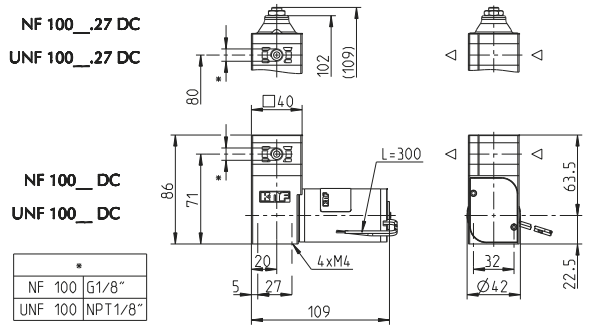
PERFORMANCE DATA

Type	Flow rate at atmos. pressure (l/min)	Max. suction height (mWg)	Max. pressure head (mWg)
NF 100 DC	**1.2**	**3**	**10**
NF 100 DCB	**1.2**	**3**	**10**

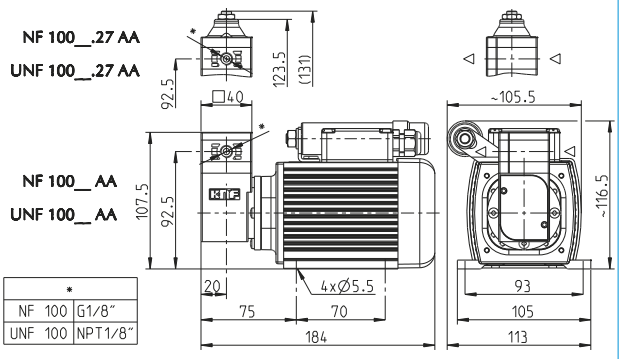
Type	DC	DCB
Voltage (V)	12/24	12/24
Power rating (W)	9.6/8.4	11/11
I max. load. (A)	0.8/0.35	0.67/0.37
I max. (A)	2.2/1.0	0.93/0.46
EMV guideline[1)]	EN 55014-1	EN 55011 EN 55022 EN 61000-4-3
Motor protection factor	IP 50	IP 30
Weight (g)	600 g	480 g

1) In order to comply with the above standards attention must be paid to the specifications in the operating instructions.

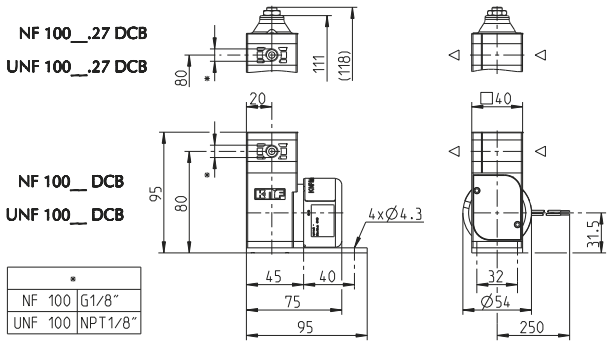
NF 100 DC



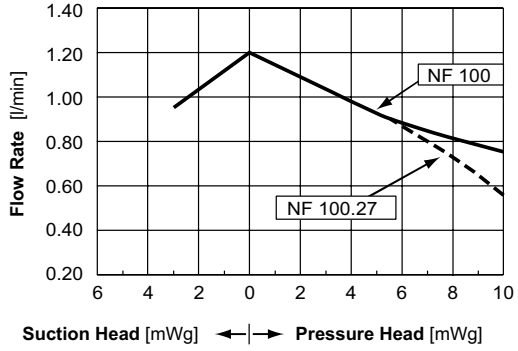
NF 100 AA



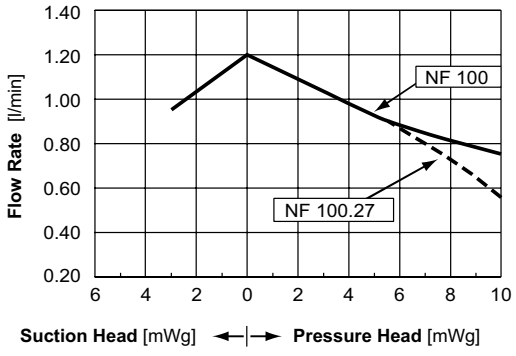
NF 100 DCB



NF 100 AA



NF 100 DC/DCB



NF 1.100 DC/DCB

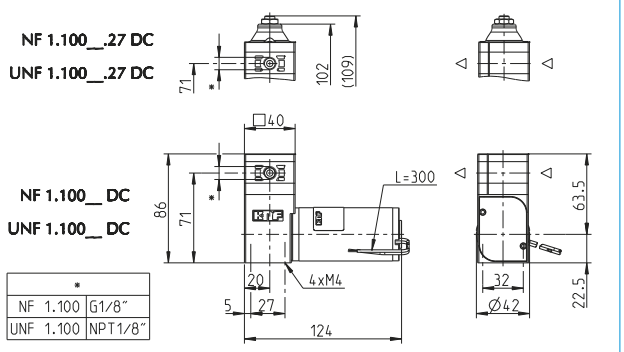
PERFORMANCE DATA

Type	Flow rate at atmos. pressure (l/min)	Max. suction head (mWg)	Max. pressure head (mWg)
NF 1.100 DC	**1.3**	**3**	**60**
NF 1.100 DCB	**1.3**	**3**	**60**

Type	DC	DCB
Voltage (V)	12/24	12/24
Power rating (W)	33/34	18/18
I max. load. (A)	1.3/0.5	1.29/0.75
I max. (A)	2.8/1.0	1.50/0.75
EMV guideline	EN 55014-1	EN 55011 EN 55022 EN 61000-4-3
Motor protection factor	IP 50	IP 30
Weight (g)	720 g	500 g

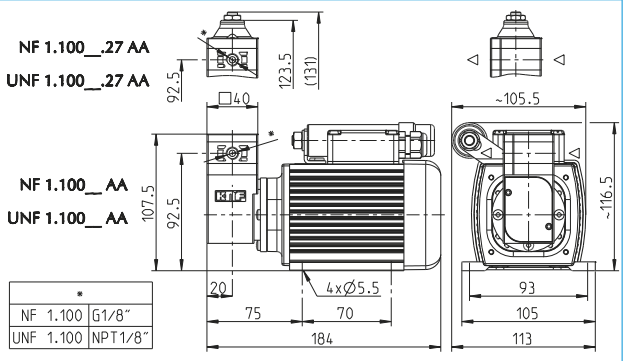
1) In order to comply with the above standards attention must be paid to the specifications in the operating instructions.

NF 1.100 DC



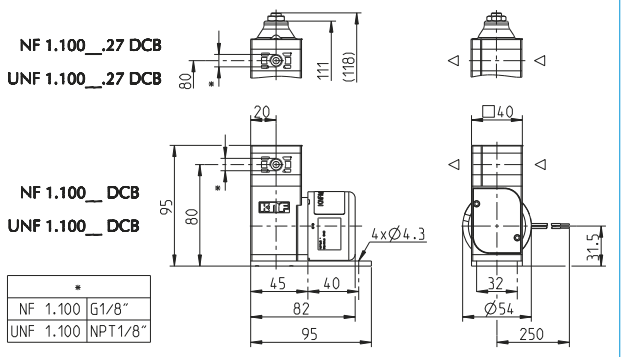
*	
NF 1.100	G1/8"
UNF 1.100	NPT1/8"

NF 1.100 AA



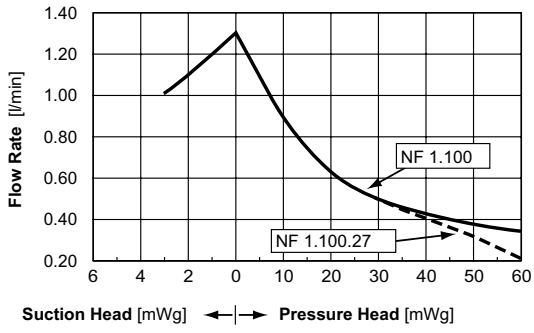
*	
NF 1.100	G1/8"
UNF 1.100	NPT1/8"

NF 1.100 DCB

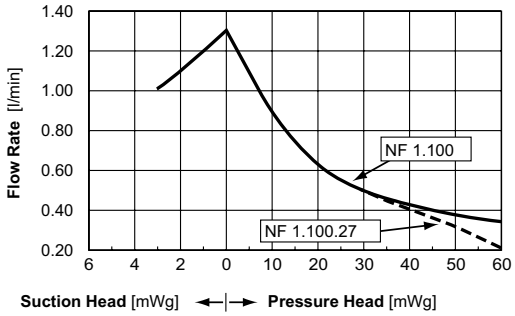


*	
NF 1.100	G1/8"
UNF 1.100	NPT1/8"

NF 1.100 AA



NF 1.100 DC/DCB



NFB 100 DCB-4

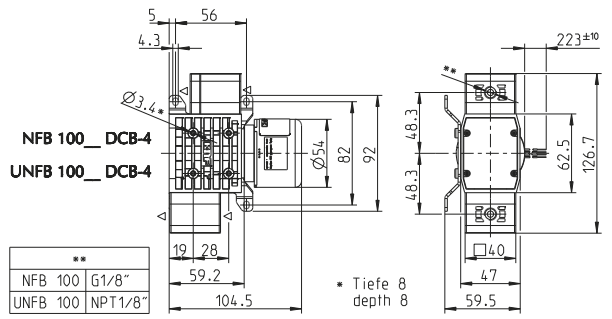
PERFORMANCE DATA

Type	Flow rate at atmos. pressure (l/min)	Max. suction head (mWg)	Max. pressure head (mWg)
NFB 100 DCB-4	**2 x 1.3**	**3**	**10**

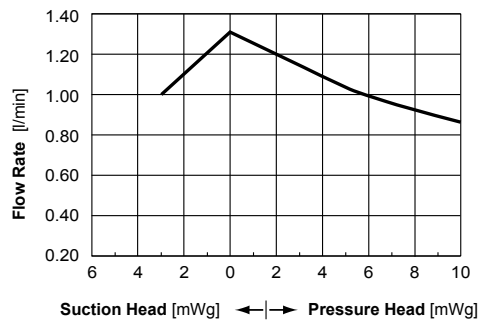
Type	DCB-4
Voltage (V)	12/24
Power rating (W)	15/15
I max. load. (A)	1.25/0.63
I max. (A)	1.50/0.75
EMV guideline 1)	EN 55011 EN 55022 EN 61000-4-3
Motor protection factor	IP 30
Weight (g)	640 g

1) In order to comply with the above standards attention must be paid to the specifications in the operating instructions.

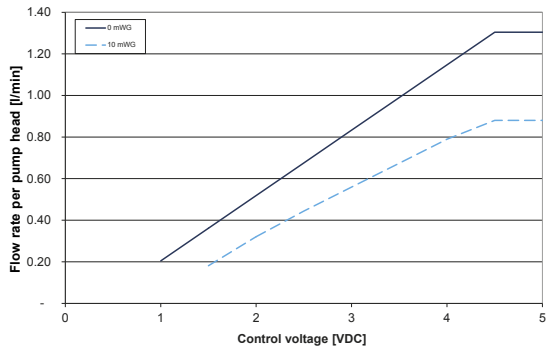
NFB 100 DCB-4



NFB 100 DCB-4 FLOW CURVE (PER HEAD)



NFB 100 DCB-4 CONTROL CURVE (PER HEAD)



OPTIONS, ACCESSORIES

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 correctly it can protect 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.

NSF National Sanitary Foundation

NSF is market leader in the development and controlling of standards relevant for equipment used for handling foodstuffs. By using different toxicological tests our products will be certified according to the standard NSF/ANSI 169. This certification will confirm that all of the pumps with the code .51 are certified for the use with foods/consumables. In addition to this it also means that the pumps are constructed with wetted parts which come with a FDA* declaration of conformity. A yearly audit from NSF will be carried out to ensure that these standards are being maintained. A list of the various products are available on request.

* FDA = Food and Drug Administration

ATEX-explosion proof motors

For pumping liquids in explosive atmospheres we offer the NF 1.100 EX equipped with the KNF Ex-motor.

Further options

- Motors with special voltages and frequencies
- Hose connections, fittings
- The incorporation of customers special requirements, for example special electrical connections (Molex, AMP, etc.)
- Mounting plate

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