

MICRO DIAPHRAGM LIQUID PUMPS NF 30 / 31

DATA SHEET E 513



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 30/31 type liquid pumps can be mounted in any position and can deliver up to 0.3 l/min 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

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 of up to 6 mWg suction and 10 mWg pressure.

Extreme chemical resistance

The use of chemically resistant materials such as PTFE, 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.

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.

Performance Data

Type	Flow rate (l/min)	Suction head (mWg)	Pressure head (mWg)
NF 30/31	0.3	6*	10
NFB 30	2 x 0.3	6*	10

* for versions with PTFE diaphragm max. 5 mWg

The KNF Modular Concept of Selection



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:

Flow rate at atmos. pressure (l/min)	Max. suction head (mWg)	Max. pressure head (mWg)	Pump type				
			Basic model	Components			
				1	2	3	4
0.3	6	10	NF 30/31				
2 x 0.3	6	10	NFB 30				

1	Materials of head components	
KP* / KP .51**	Head	PP
	Valves	EPDM
	Diaphragm	EPDM
	.27 Diaphragm	EPDM
KV	Head	PP
	Valves	FPM
	Diaphragm	FPM
	.27 Diaphragm	FPM
KN	Head	PP
	Valves	CR
	Diaphragm	CR
KT*	Head	PP
	Valves	FFPM
	Diaphragm	PTFE
	.27 Diaphragm	FFPM
TV	Head	PVDF
	Valves	FPM
	Diaphragm	FPM
	.27 Diaphragm	FPM
TT*	Head	PVDF
	Valves	FFPM
	Diaphragm	PTFE
	.27 Diaphragm	FFPM
FT	Head	PTFE
	Valves	FFPM
	Diaphragm	PTFE

2	Head types
-	Standard model
.27	Integrated overpress. relief valve

3	Motors
E	Shaded pole motor (AC)
DC	Direct current motor
DCB	Brushless direct current motor

4	Voltages / Frequencies
230V / 50Hz 115V / 60Hz 100V / 50-60Hz	for AC motors
6 / 12 / 24V	for DC motors
12 / 24V	for DCB motors

* NFB is only in this versions as standard available. Other versions on request.

** food conform according to the standard NSF/ANSI 169, for further information see options

Basic models



General note

This Data Sheet provides an overview of the options with our NF 30/31 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.

Note: The flow rate is measured with water at 20°C.

Basic models

- NF Single headed diaphragm liquid pump
- NFB Double headed diaphragm liquid pump

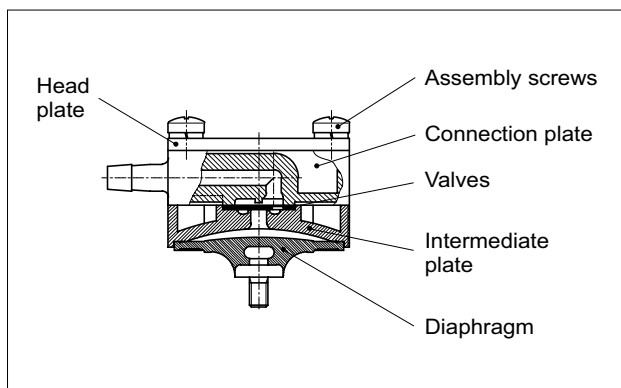
1 Materials of head components

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 30/31 is made up of six main parts. The diaphragm, intermediate plate, connection plate 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.



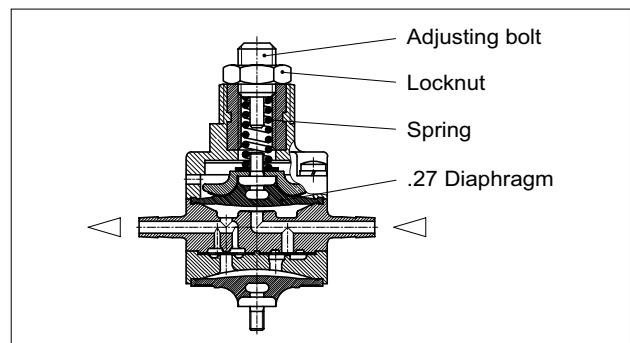
.27 Integrated overpressure relief valve

The integrated overpressure relief valve is available for all NF 30/31 pumps.

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. 0.5 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.



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

- E Shaded pole motor (AC)
- DC Direct current motor
- NF 31 Ironless direct current motor
This provides the following advantages compared to a conventional DC motor: higher durability, less power consumption and smaller size.
- 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.
Option: control possibility via PWM or 0-5V DC signal

4 Voltages / Frequencies

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

NF 30-E

NF 30/31-DC



Performance

Basic model	Flow rate at atmos. pressure (l/min)	Max. suction head (mWg)	Max. pressure head (mWg)
NF 30-E	0.25	6 ¹⁾	10

¹⁾ For models with PTFE diaphragm: max. 5 mWg

Motor selection	E
Voltage (V)	230V / 50Hz
Power rating (W)	26
I max. load (A)	0.21
I max. (A)	0.22
EMC guideline	EN 55014
Motor protection factor	IP 00
Weight	570 g

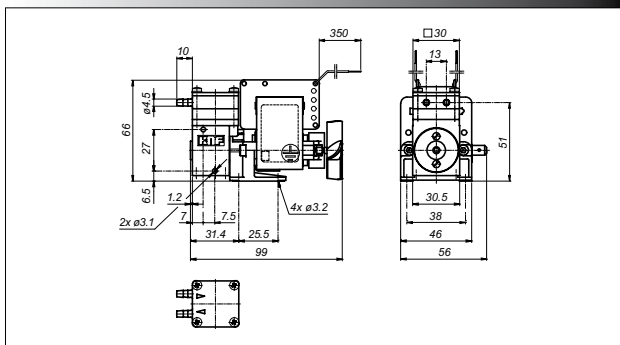
Performance

Basic model	Flow rate at atmos. pressure (l/min)	Max. suction head (mWg)	Max. pressure head (mWg)
NF 30/31-DC	0.3	6 ¹⁾	10

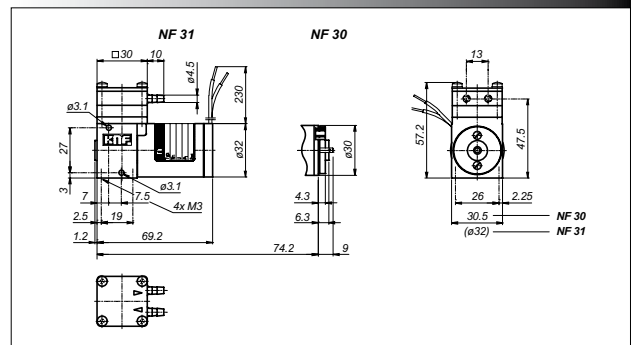
¹⁾ For models with PTFE diaphragm: max. 5 mWg

Motor selection	DC (NF 30)	DC (NF 31)
Voltage (V)	6 / 12 / 24	6 / 12 / 24
Power rating (W)	11.3/11.9/12.2	7.2/7.8/7.8
I max. load (A)	1.25/0.69/0.36	0.92/0.58/0.3
I max. (A)	1.88/0.99/0.51	1.2/0.65/0.33
EMC guideline	EN 55014	EN 55022 EN 55011
Motor protection factor	IP 00	IP 33
Weight	180 g	220 g

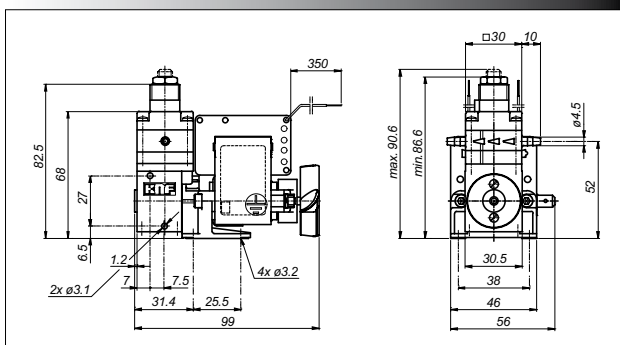
NF 30-E



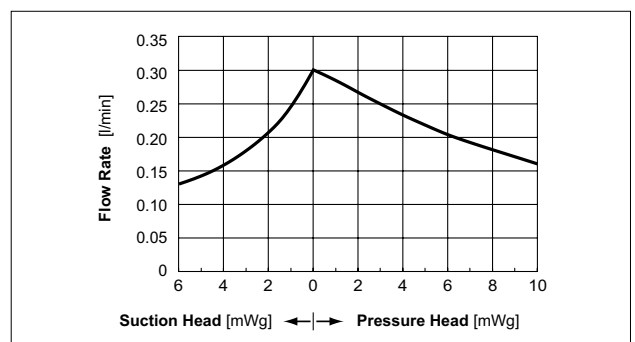
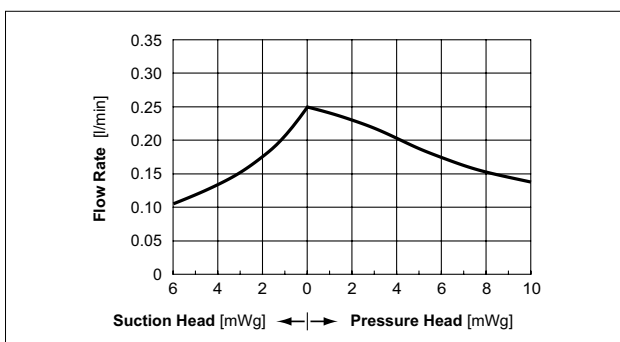
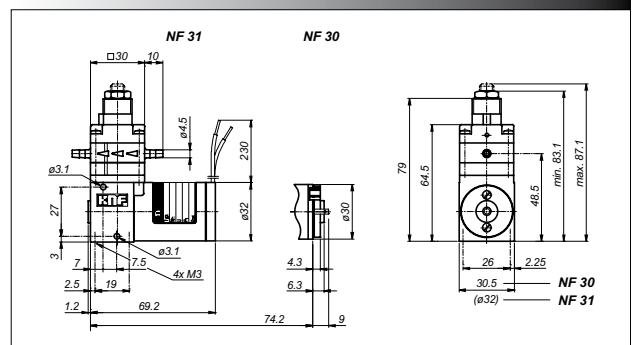
NF 30/31-DC



NF 30-.27E



NF 30/31-.27DC



NF 30-DCB

NFB 30-DCB



Performance

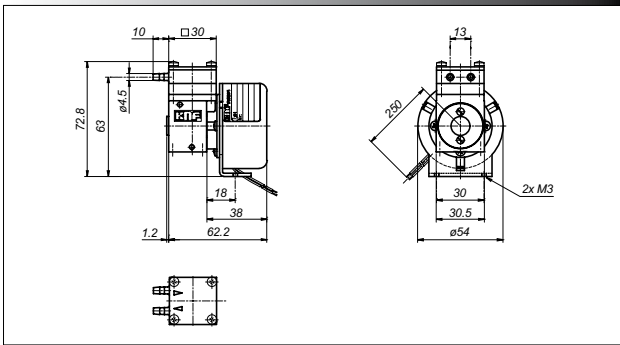
Basic model	Flow rate at atmos. pressure (l/min)	Max. suction head (mWg)	Max. pressure head (mWg)
NF 30-DCB	0.3	6 ¹⁾	10

¹⁾ For models with PTFE diaphragm: max. 5 mWg

Motor selection	DCB
Voltage (V)	12 / 24
Power rating (W)	11.2 / 11
I max. load (A)	0.6 / 0.31
I max. (A)	0.93 / 0.46
EMC guideline ²⁾	EN 55014-1 EN 61000-2-6
Motor protection factor	IP 30
Weight	270 g

²⁾ In order to comply with the above standards attention must be paid to the specifications in the operating instructions.

NF 30-DCB



Performance

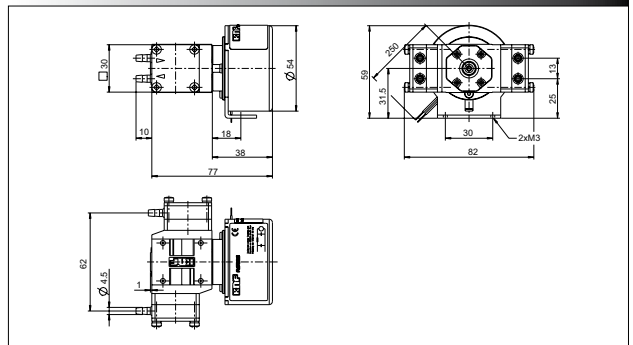
Basic model	Flow rate at atmos. pressure (l/min)	Max. suction head (mWg)	Max. pressure head (mWg)
NFB 30-DCB	2 x 0.3	6 ¹⁾	10

¹⁾ For models with PTFE diaphragm: max. 5 mWg

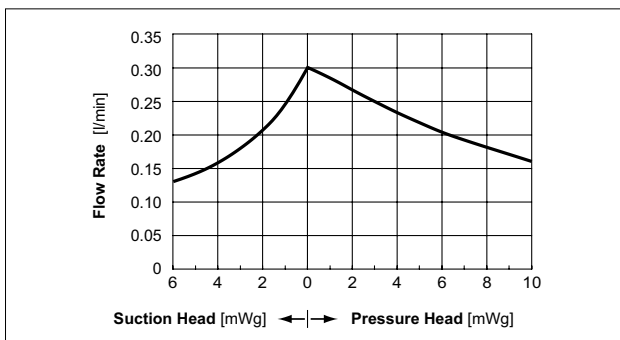
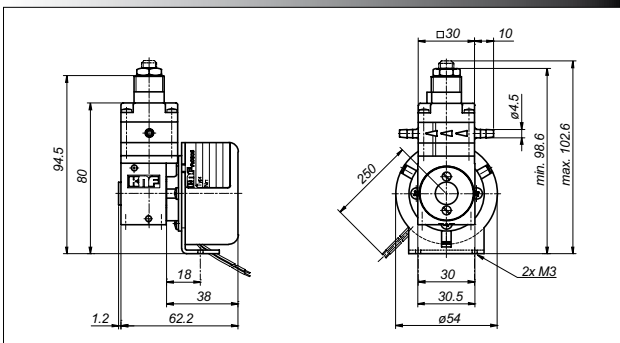
Motor selection	DCB
Voltage (V)	12 / 24
Power rating (W)	10.5 / 10.6
I max. load (A)	0.87 / 0.44
I max. (A)	0.93 / 0.46
EMC guideline ²⁾	EN 55014-1 EN 61000-2-6
Motor protection factor	IP 30
Weight	315 g

²⁾ In order to comply with the above standards attention must be paid to the specifications in the operating instructions.

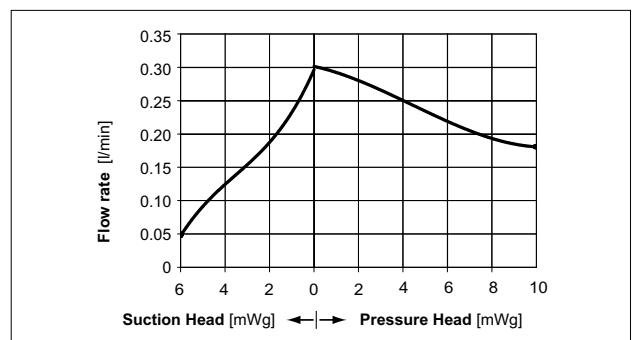
NFB 30-DCB



NF 30-27DCB



Flow rate per pump head





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. Example FDV 30 KPZ, for more information see data sheet FDV



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. Suggestion FPD 06 KPZ-1, for more details see data sheet FPD

Further accessories

- Hoses
- Hoses connections
- Shock mounts
- Suppression device for DCB motor (ID-Nr. 068713)

We specialise in tailor made solutions. For all the possible options please feel free to contact us.



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

Further options

- Connections: M5, UNF 1/4"-28, 4/6 mm hose connector
- Head material: Stainless steel, PPS, PA MXD 6 etc.
- Suitable for hot fluids up to 135°C
- Suitable for pressure over 1.0 bar
- Portable version specially suitable for laboratory applications. IP21 housing is equipped with an integral mains transformer and an ON/OFF switch
- High protection IP65 version for applications under bad conditions (moisture, dust), for NF 30/31-DC
- Motors with special voltages and frequencies
- The incorporation of customers special requirements, for example special electrical connections (Molex, AMP, etc.)

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