

DIAPHRAGM LIQUID PUMPS

NF 300, NF 1.300



NF 300 KP,51DC



NF 1.300 KP,27DCB



NF 300 KPAA

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 300/1.300 type liquid pumps can be mounted in any position and can deliver up to 3.0 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

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 head (mWg)	Pressure head (mWg)
NF 300	3	3	10
NF 1.300	3	3	60

THE KNF MODULAR CONCEPT OF SELECTION

General note

This data sheet provides an overview of the options with our NF 300/1.300 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 300 Diaphragm liquid pump for pressures of up to 10 mWg (1 barg)

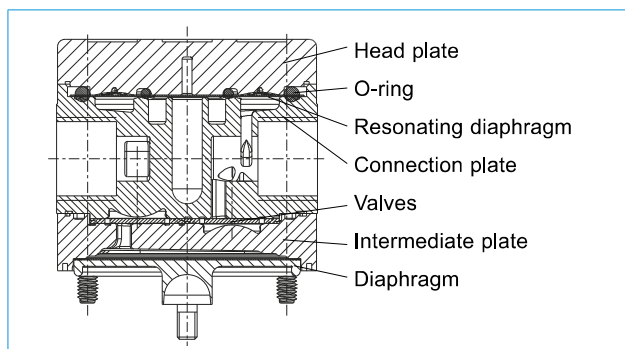
NF 1.300 Diaphragm liquid pump for pressures of up to 60 mWg (6 barg)

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

The pump head of the NF 300/1.300 is made up of seven main parts. The diaphragm, intermediate plate, connection plate, O-ring, 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 on the next page.



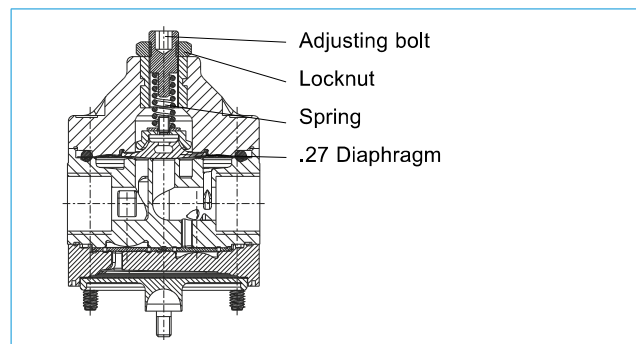
.27 Integrated overpressure relief valve

The integrated overpressure relief valve is available for all NF 300/1.300 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. 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 300) and 6.5 barg (NF 1.300).



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.

Option: control possibility via PWM or 0-5V DC signal

4 Voltages and frequencies

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

BASIC MODELS

Our versatile self-selection program allows to personally determine the optimum characteristics that 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 FFKM
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

4 VOLTAGES AND FREQUENCIES	
230V/50Hz 115V/60Hz 100V/50-60Hz	for AC motors
6/12/24V	for DC motors
12/24V	for DCB motor

TYPE DESCRIPTION				
Type	1	2	3	4
NF 300				
NF 1.300				
Example	KT	.27	DCB	24V

NF 300 DC/DCB

Basic model	Flow rate at atmos. pressure (l/min)	Max. suction head (mWg)	Max. pressure head (mWg)
NF 300 DC	3	3	10
NF 300 DCB	3	3	10

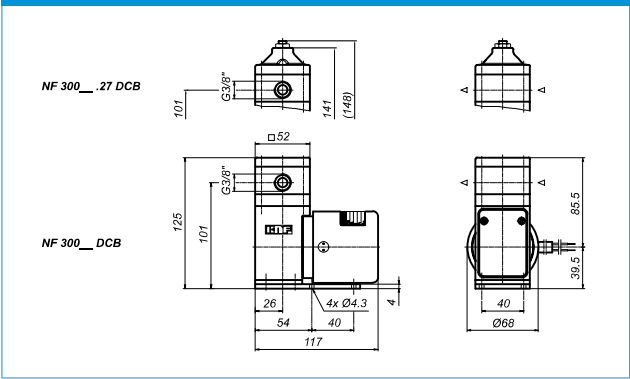
Motor selection	DC	DCB
Voltage (V)	12/24	12/24
Power rating (W)	20/20	35/35
I max. load (A)	1.6/0.8	2.1/1.19
I max. (A)	3.4/1.5	2.5/2
EMC guideline	EN55011	EN55014
Motor protection factor	IP 50	IP 54
Weight (g)	1000	1000

NF 300_27 DC

Technical drawing showing the top view of the NF 300_27 DC component. Dimensions include a total width of 133 (140), a mounting hole diameter of 63/8", and a distance of 93 from the center of the mounting hole to the center of the component.

NF 300 DC

Technical drawing showing the side view of the NF 300 DC component. Dimensions include a total height of 117, a mounting hole diameter of 63/8", a distance of 93 from the center of the mounting hole to the center of the component, a total width of 137.9, a mounting hole diameter of 52, a distance of 10 from the center of the mounting hole to the center of the component, a distance of 28 from the center of the mounting hole to the center of the component, a distance of 4xØ3.3 from the center of the mounting hole to the center of the component, a distance of 85.5 from the center of the mounting hole to the center of the component, a distance of 31.5 from the center of the mounting hole to the center of the component, a distance of 40 from the center of the mounting hole to the center of the component, and a total length of L=300.



The graph shows the relationship between flow rate and head for a pump. The y-axis represents Flow Rate in l/min, ranging from 0.50 to 3.50. The x-axis represents head in mWg, with suction head on the left (0 to 6) and pressure head on the right (0 to 10). The curve starts at approximately 2.65 l/min at -3 mWg, reaches a maximum of 3.00 l/min at 0 mWg, and decreases to about 2.05 l/min at 10 mWg.

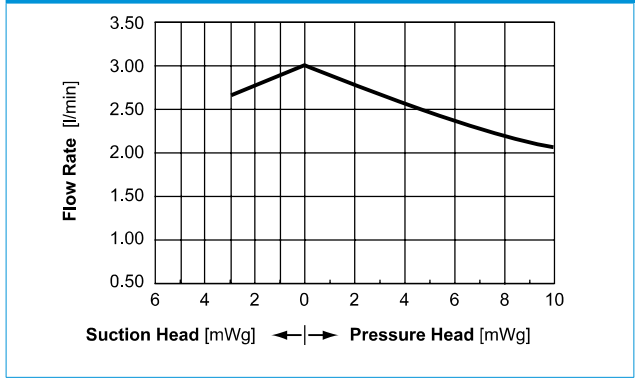
Head [mWg]	Flow Rate [l/min]
-3	2.65
0	3.00
10	2.05

NF 300 AA

Basic model	Flow rate at atmos. pressure (l/min)	Max. suction head (mWg)	Max. pressure head (mWg)
NF 300 AA	3	3	10

Motor selection	AA
Voltage (V)	230V/50Hz
Power rating (W)	91
I max. load (A)	0.39
I max. (A)	0.55
EMC guideline	EN 55014
Motor protection factor	IP 54
Weight (g)	2800

Technical drawing of the NF 300_27 AA and NF 300_AA models. The drawing includes a side view of the NF 300_27 AA model with dimensions: 105.5, 129.5, 105.5, 73, 70, 182, 52, 145.5, 152.5, 38°, 32°, 4xØ5.5, and a top view with dimensions 108, 93, 105, 115. The NF 300_AA model is shown in a similar side view.



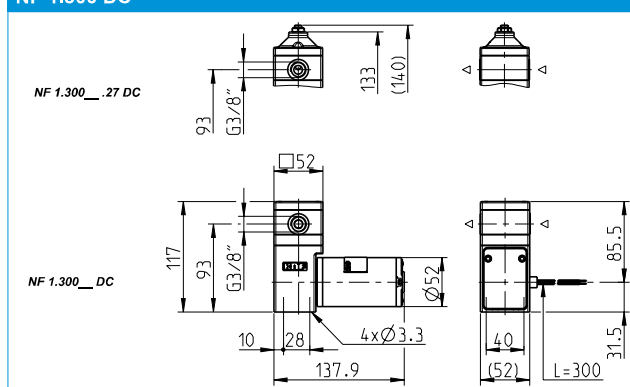
NF 1.300 DC / DCB

PERFORMANCE DATA

Basic model	Flow rate at atmos. pressure (l/min)	Max. suction head (mWg)	Max. pressure head (mWg)
NF 1.300 DC	3	3	60
NF 1.300 DCB	3	3	60

Motor selection	DC	DCB
Voltage (V)	12/24	12/24
Power rating (W)	34/34	35/35
I max. load (A)	2.8/1.4	2.5/1.66
I max. (A)	3.4/1.5	2.5/2
EMC guideline	EN 55011	EN 55014
Motor protection factor	IP 50	IP 54
Weight (g)	1000	1000

NF 1.300 DC



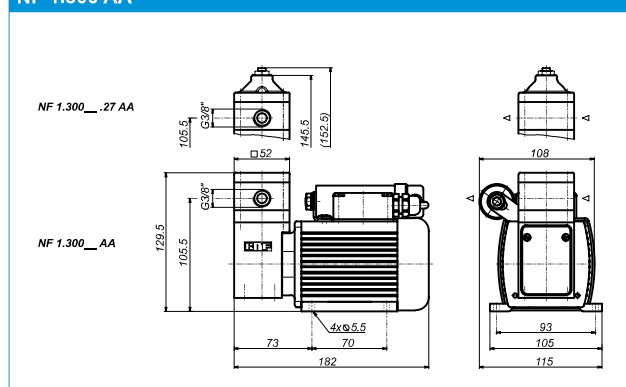
NF 1.300 AA

PERFORMANCE DATA

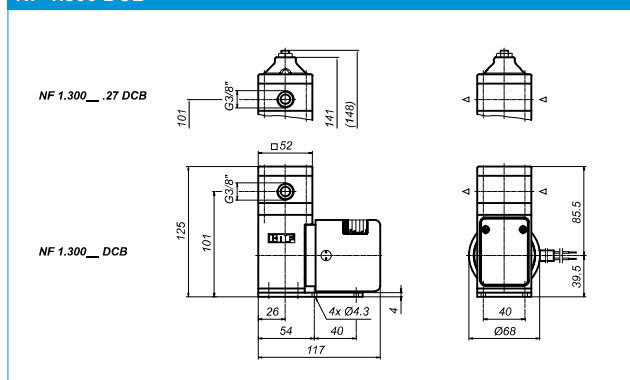
Basic model	Flow rate at atmos. pressure (l/min)	Max. suction head (mWg)	Max. pressure head (mWg)
NF 1.300 AA	3	3	60

Motor selection	AA
Voltage (V)	230V/50Hz
Power rating (W)	91
I max. load (A)	0.39
I max. (A)	0.55
EMC guideline	EN 55014
Motor protection factor	IP 54
Weight (g)	2800

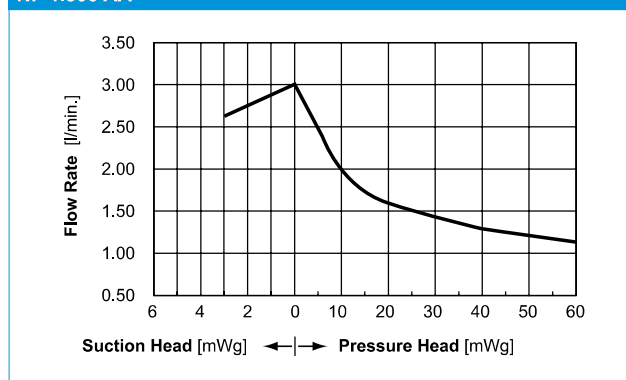
NF 1.300 AA



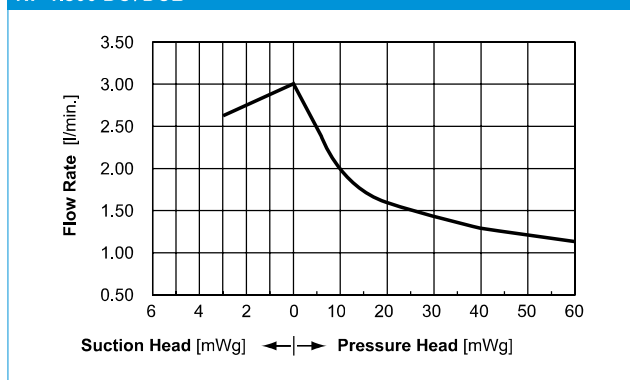
NF 1.300 DCB



NF 1.300 AA



NF 1.300 DC/DCB



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.



Further accessories

- Hoses
- Hose connections
- Shock mounts
- Suppression device for DCB motor

OPTIONS

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 (Food and Drug Administration) 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.

ATEX-explosion proof motors

For pumping liquids in explosive atmospheres we offer the NF 1.300 EX equipped with the KNF Ex-motor.

Compressed air motors

If you can't use electricity in your application or perhaps you would like to use an already available compressed air source, then we can offer the NF 300/1.300 with an air driven motor.

Tandem version (twin headed pump)

The tandem liquid diaphragm pump allows two pump heads to be driven by one motor and is available with AC or DC motors.

Further options

- Connection threads NPT 3/8"
- Variable head materials
- Motors with special frequencies and voltages
- The incorporation of customers special requirements, for example special electrical connections (Molex, AMP etc.)