



RELIABLE PRECISION  
KNF DIAPHRAGM PUMPS  
IN INSTRUMENTAL  
ANALYSIS

## APPLICATIONS FOR KNF GAS AND LIQUID PUMPS:

- Sample preparation
- HPLC/GC
- Mass spectrometry with all detector types
- Elemental analysis
- TOC
- Calorimetry
- Titration
- Dissolution
- Electrophoresis



KNF GAS AND LIQUID PUMPS

# FOR DEPENDABLE RESULTS

Precision is the central requirement of instrumental analysis. Valid measurement results are needed for important decisions, when it comes to nothing less than the protection of people and the environment. In research, they are a prerequisite to drawing the right conclusions and advancing development. Dependable results can be achieved when components and functions interact precisely at each individual process step.

As the long-time solutions provider for well-known manufacturers of devices for routine and high-end analysis, we are familiar with this requirement. We bring our entire expertise to the table to deliver you a technically suitable pump, and additionally create advantages that provide you with added value. Along the way, we take into account the ever-growing market demand for faster analytics, ease of operations and cost efficiency. Together we will achieve the optimum!

## **Competence creates trust**

KNF impresses with outstanding engineering know-how. Thanks to our modular system we are able to adapt our many series models to specific requirements quickly and cost-effectively, thereby implementing your specifications exactly. You can rely on this flexibility and quality of support from KNF for large as well as small lot sizes.



Handling gases and liquids with no risk of contamination is essential for achieving valid results in instrumental analysis.

HIGH-PERFORMANCE AND COST-EFFICIENT

# INTELLIGENT SOLUTIONS

KNF gas and liquid pumps offer a range of advantages for use in analytical systems. One key asset is the membrane technology itself. This allows completely oil-free operation. Samples are not contaminated and oil changes are not necessary. The laboratory environment remains free of oil vapors for the entire service life of the analytical system. And the pumps are maintenance free.

## **Compelling advantages – engineered by KNF**

Chemical resistance is an essential feature for instrumental analysis. To make this possible, we offer a wide range of material combinations for the pump parts in contact with media – even for highly aggressive liquids and gases. We are constantly reducing the size of the pumps while at the same time improving their performance. KNF pumps for mobile analyzers and hand-held devices weigh just eleven grams. Via a manifold, our gas and liquid pumps can be integrated into any analytical system with a minimum of interfaces. They run quietly and smoothly, enabling a focused working atmosphere in the laboratory. And KNF pumps are known for their outstanding flexibility. Our modular system offers multiple options for every pump component. So you're guaranteed optimal technical design and the right price/benefit ratio.

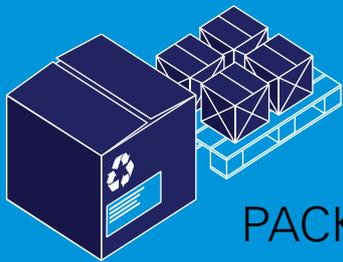


## **CHEMICALLY RESISTANT, QUIET, COMPACT**

KNF pumps are custom-fit for the demands of instrumental analysis.

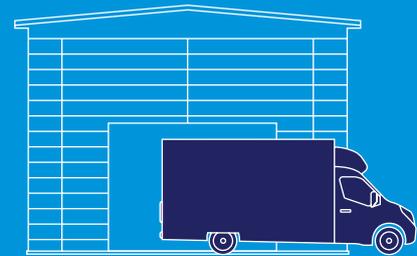
# FLEXIBLE SUPPORT FROM START TO FINISH – YOUR ADDED VALUE IS OUR PRIORITY

WITH KNF, FLEXIBILITY DOESN'T STOP AT THE TECHNICAL SOLUTION. WE FULFILL YOUR INDIVIDUAL REQUESTS EVERY STEP OF THE WAY UNTIL DELIVERY AND SERVICE.



## PACKAGING

We'll be happy to implement any measures that make life easier for your goods receiving department, as well as to support your efforts toward recycling and environmental protection.



## LOGISTICS

We support all types of production lot ordering – including Kanban, VMI, CMI, B2B and others.



## DOCUMENTATION

Together, we'll define the type, scope and design of the documentation.



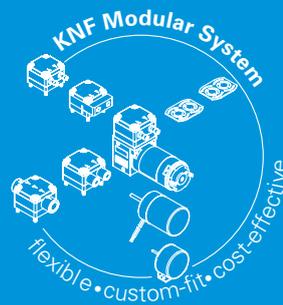
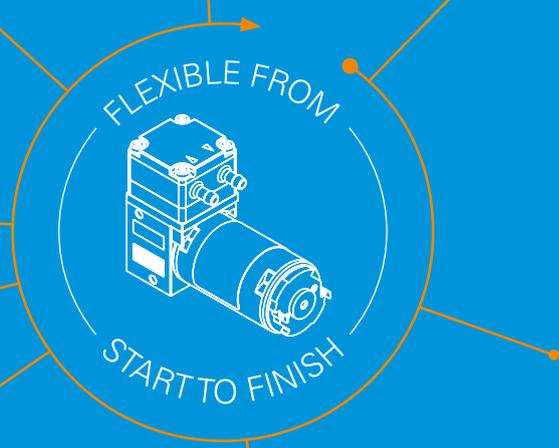
We inspect and test 100% in line with your requests.





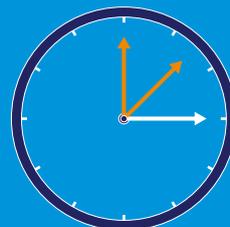
## SERVICE

We implement custom-fit service concepts for you. It is important to us to minimize the overall running costs of our pumps, and we take this into account in the pricing of replacement parts.



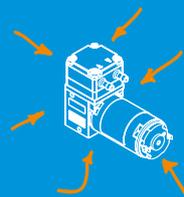
# ~3,000

customized adaptations are carried out at KNF every year for all our customers worldwide – quickly and inexpensively thanks to our modular system. We also develop exclusive pumps and drive concepts for individual customers.

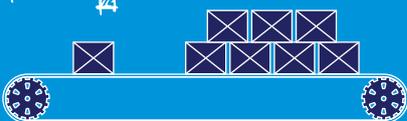


## “ASSEMBLY AND ENGINEERING IN ONE”

We will provide you with the pump as an assembly. This may include completing steps in the production process or installing components such as a valve block, sensors, tubing etc.



# ≥1



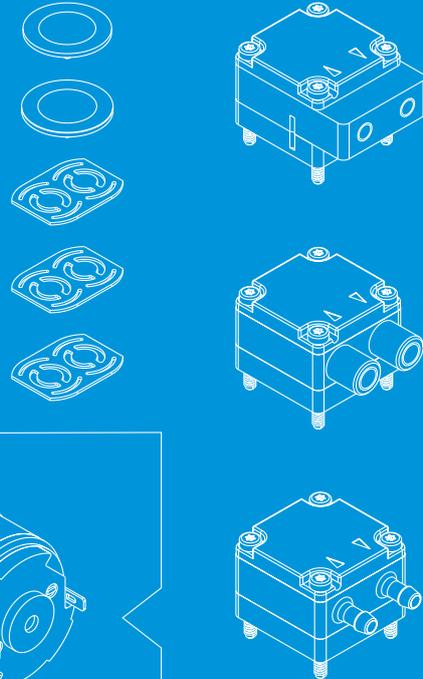
## PRODUCTION

You can rely on the flexibility and quality of our support for every order with KNF, from large lot sizes to a single pump.

## MATERIAL OPTIONS

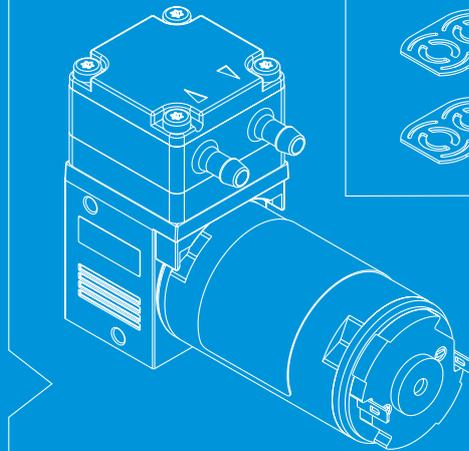
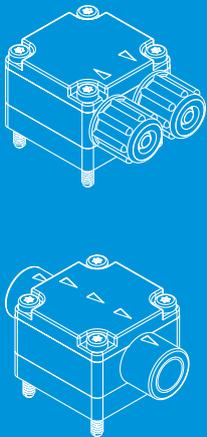
Valve/Diaphragm:  
EPDM, FKM, FFKM,  
HNBR, stainless steel  
and others

Pump head:  
PP, PPS, fluoroplastics,  
stainless steel,  
aluminum and others



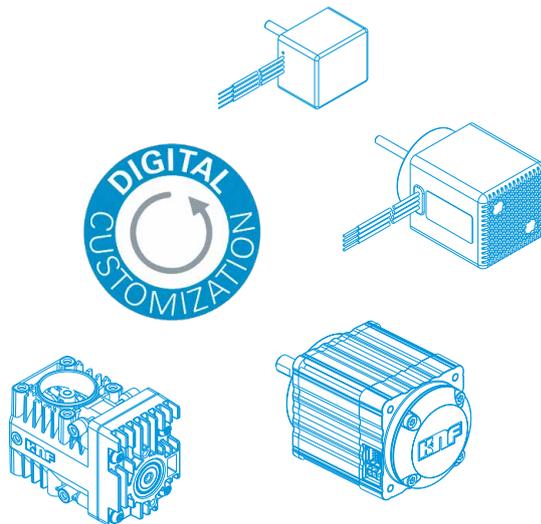
## MECHANICAL OPTIONS

Circuit points and connections

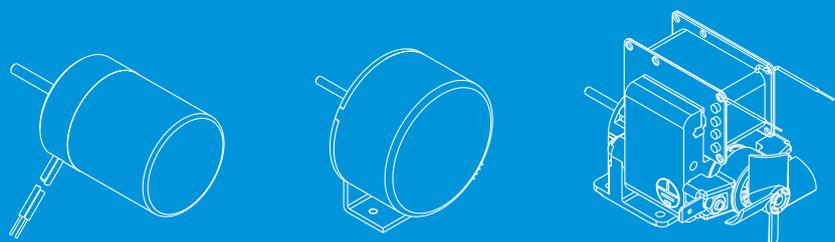


## MOTOR OPTIONS

“DIGITAL CUSTOMIZATION” sets our brushless DC motors apart, allowing for their unique configuration. And we do mean unique. We develop and produce these motors ourselves or as part of an exclusive development partnership with a leading motor manufacturer. These motors map complex operating profiles, including required safety parameters. Your advantage: high energy efficiency, precisely controlled target variables and simple control via digital signals.



Explosion-proof versions  
and all common voltage  
configurations available.  
Motor types: DC, DC-B, AC.





KNF MODULAR SYSTEM

# CUSTOM-FIT FROM STANDARD TO HIGH-END

Every application is different and some are one of a kind. Our modular system is designed to give you a high degree of flexibility, speed and reliability. You can be sure that every gas and liquid pump supplied by KNF will exactly meet your requirements, no matter how complex or unusual these might be.

## **Series models – the first step to customized pumps**

KNF offers a range of up to 90 series models designed for handling gases and liquids. The performances of these are described in our data sheets.

## **The KNF modular system for creating customized pumps**

By selecting and combining a variety of options, ranging from the material used to make the pump components that come into contact with the media, to the drive and the mechanical elements such as the circuit points and connections, it is easy to tailor every series model to meet application-specific requirements.

The configurations created by the KNF modular system are based on tried and tested individual components, meaning that developing customized pumps is quick and inexpensive.

## **Project pumps – precisely designed for the application**

We support your development project by providing you with sample pumps quickly and easily. In consultation with you, our employees from the sales, engineering, and product management divisions determine the modifications to be made to the product's standard technical parameters.

**MICRO-DIAPHRAGM GAS PUMPS****DIAPHRAGM GAS PUMPS****DIAPHRAGM LIQUID PUMPS****SAMPLE PREPARATION****NMP 03 to NMS 030**

Flow rate:  
0.3–12 (l/min)  
Vacuum:  
max. 200 (mbar abs.)  
Pressure: max. 3 (bar g)



- quiet and nearly vibration-free

**N 96**

Flow rate:  
8.5 (l/min)  
Vacuum:  
max. 100 (mbar abs.)  
Pressure: max. 2.5 (bar)



- compact and high-performing

**FMM 20 to FL 10**

Flow rate:  
18–100 (ml/min)  
Pressure height:  
max. 10 (mWg)  
Suction height:  
max. 4 (mWg)



- low operating costs thanks to durability and maintenance-free design

**TRANSFER OF LIQUID AND GASEOUS SAMPLES FOR ANALYSIS****NMP 03 to NMP 850 HP**

Flow rate:  
0.3–15 (l/min)  
Vacuum:  
max. 50 (mbar abs.)  
Pressure: max. 3 (bar g)



- small, quiet, low power demand – perfect for portable and/or battery-operated analytical systems

**N 86 to N 838**

Flow rate:  
5.5–60 (l/min)  
Vacuum:  
max. 0.5 (mbar abs.)  
Pressure: max. 2.5 (bar g)



- highly chemically resistant

**FEM 1.02 to FL 10**

Flow rate:  
0.2–100 (ml/min)  
Pressure height:  
max. 60 (mWg)  
Suction height:  
max. 4 (mWg)



- compact for simple device integration

**DISPOSAL OF SAMPLE WASTE****NMP 820 to NMP 850 HP**

Flow rate:  
2.1–15 (l/min)  
Vacuum:  
max. 50 (mbar abs.)  
Pressure: max. 3 (bar g)



- durable and robust against humidity and condensate

**N 86.0, N 816, N 838.1.2, N 938, N 940**

Flow rate:  
4.5–60 (l/min)  
Vacuum:  
max. 1.5 (mbar abs.)  
Pressure: max. 1 (bar g)



- with impressive flow rates of up to 60 l/min, collecting containers are evacuated quickly and reliably

**NF 30, NFB 30, NF 300**

Flow rate:  
0.3–3 (l/min)  
Pressure height:  
max. 10 (mWg)  
Suction height: max. 6 (mWg)



- resistant to aggressive waste mixtures

**DEGASSING****NMP 820 to NMP 850 HP**

Flow rate:  
2.1–15 (l/min)  
Vacuum:  
max. 50 (mbar abs.)  
Pressure: max. 3 (bar g)



- perfect size for use in HPLC degassers

**N 84.3 to N 838**

Flow rate:  
4.2–60 (l/min)  
Vacuum:  
max. 0.5 (mbar abs.)  
Pressure: max. 1 (bar g)



- effective removal of dissolved air from the samples for precise analysis results

**EVACUATING THE MEASUREMENT CELL****N 84.3 to N 952**

Flow rate:  
4.2–36 (l/min)  
Vacuum:  
max. 0.5 (mbar abs.)  
Pressure: max. 1 (bar g)



- high-speed evacuation of the measurement chamber thanks to exceptional suction speed

**PRE-VACUUM FOR MASS SPECTROMETRY****N 84.3 to N 880**

Flow rate:  
4.2–80 (l/min)  
Vacuum:  
max. 0.5 (mbar abs.)  
Pressure: max. 1 (bar g)



- stable vacuum for the transfer of pressure to the turbopump

**NF 5 to NF 2.35**  
 Flow rate: 5–650 (ml/min)  
 Pressure height: max. 16 (bar g)  
 Suction height: max. 6 (mWg)



■ safe handling of aggressive, low-viscosity media

**FP 7 to FP 1.400**  
 Flow rate: 0.06–4.6 (l/min)  
 Pressure height: max. 6 (bar g)  
 Suction height: max. 3 (mWs)



■ excellent adjustability, gentle transfer and quiet operation (and particularly low pulsation)

**FF 12/20 to NF 1.60**  
 Flow rate: 130–650 (ml/min)  
 Pressure height: max. 60 (mWg)  
 Suction height: max. 6 (mWg)



■ uncontaminated transfer of liquid samples

**FP 7 to FP 1.400**  
 Flow rate: 0.06–4.6 (l/min)  
 Pressure height: max. 6 (bar g)  
 Suction height: max. 3 (mWs)



■ self-priming, safe to run dry and with minimal pulsation

**NF 2.35**  
 Flow rate: 350 (ml/min)  
 Pressure height: max. 16 (bar g)  
 Suction height: max. 3 (mWg)



■ pump head uses PEEK for outstanding chemical resistance

**NPK 03 to NPK 09**  
 Flow rate: 2.7–24 (l/min)  
 Vacuum: max. 100 (mbar abs.)  
 Pressure: max. 7 (bar g)



■ high pressure, compact design

# OUR BEST PUMP SERIES MODELS FOR DEMANDING INSTRUMENTAL ANALYSIS TASKS

Thanks to the KNF modular system, each of our series models can be quickly and inexpensively adapted to suit the specific needs of an application.

