

# LEWA Plunger pumps

For high hydraulic power.



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LEWA plunger pumps are high-pressure pumps with integrated gears designed in accordance with API 674. Thanks to their compact and robust design, these pumps are ideal for offshore applications requiring high hydraulic power.

Diversity defines our portfolio: LEWA plunger pumps are available in various designs. From the three-headed Triplex variant to the five-headed Quintuplex pump, we offer exactly the right pump for your application. We place a great deal of importance on individual customer requirements and custom-design each pump. In addition to numerous pump design options, we also provide different drives such as electric, diesel and hydraulic motors – always tailored to your specifications.



# LEWA plunger pumps.

## The advantages at a glance.

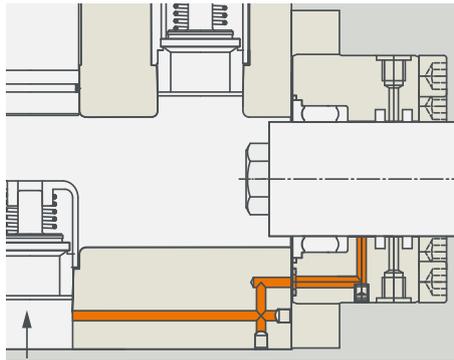
1



### Less suction pressure required

Due to little suction pressure loss, LEWA plunger pumps usually do not require a booster pump. This not only cuts down on costs but also reduces maintenance time and wear parts for the booster pump.

2



### Internal return of leakage

Packing leakage is returned internally, which in turn ensures safe operation. The innovative and easily accessible plunger seal is pressure- or spring-supported. This increases the service life of the packaging.

3



### Integrated gear unit

The gear unit's integrated double helical gearing allows for an incredibly compact design for minimum space requirements. The smooth transmission of force results in a longer service life and lower noise emissions.

4



### Easy and convenient maintenance

The pump design provides access to all wear parts; no special tools are required for maintenance. The drive unit design also enables easy and cost-effective maintenance and servicing as a result of the divided housing.

5



### Customer-specific solutions

The LEWA modular system provides you with flexibility in material selection, painting in accordance with specifications and design and delivery of accessories according to ASME and API standards.

6



### Worldwide service

LEWA is globally organized. Spare parts and service are quickly available throughout the world.



**Industry:** Refineries

**Installation location:** Russia

**Application:** Conveying hydrocarbon at a flow rate of 17.3 m<sup>3</sup>/h and at a pressure of 175.5 bar

**LEWA solution:**

- 2 x Triplex plunger pump G3K 160
- Sealing system for secure operation
- Heat tracing for the entire system ensures proper function in cold ambient temperatures
- Robust design for reliable continuous operation



**Industry:** Oil & Gas

**Installation location:** Qatar

**Application:** This pump skid is designed for two applications. One application is the glycol injection at 305.5 bar and a flow rate of 16.7 m<sup>3</sup>/h, the other application is for "pigging." During pigging, a cleaning device (pig), is pushed through the pipelines at a pressure of 131.6 bar and 21 m<sup>3</sup>/h. This makes it possible to loosen contaminants and expel them from the pipe.

**LEWA solution:**

- Triplex plunger pump G3K 550 with diesel motor drive
- The integrated sealing system ensures safe operation of the pump





**Industry:** Oil & Gas

**Installation location:** Great Britain

**Application:** During the production of natural gas in the North Sea, bore holes run the risk of being clogged with salt, as water with high salt content is used during production. Flushing water is the best option for preventing blockages. The LEWA plunger pumps convey flushing water to the offshore systems at a flow rate of 7.5 m<sup>3</sup>/h and at a pressure of 338 bar.

**LEWA solution:**

- 2 x G3K 160 Triplex plunger pump
- Skid mounted oil/air cooler as heat protection for the pump
- The oil pump is driven by the drive shaft





**Industry:** Oil & Gas

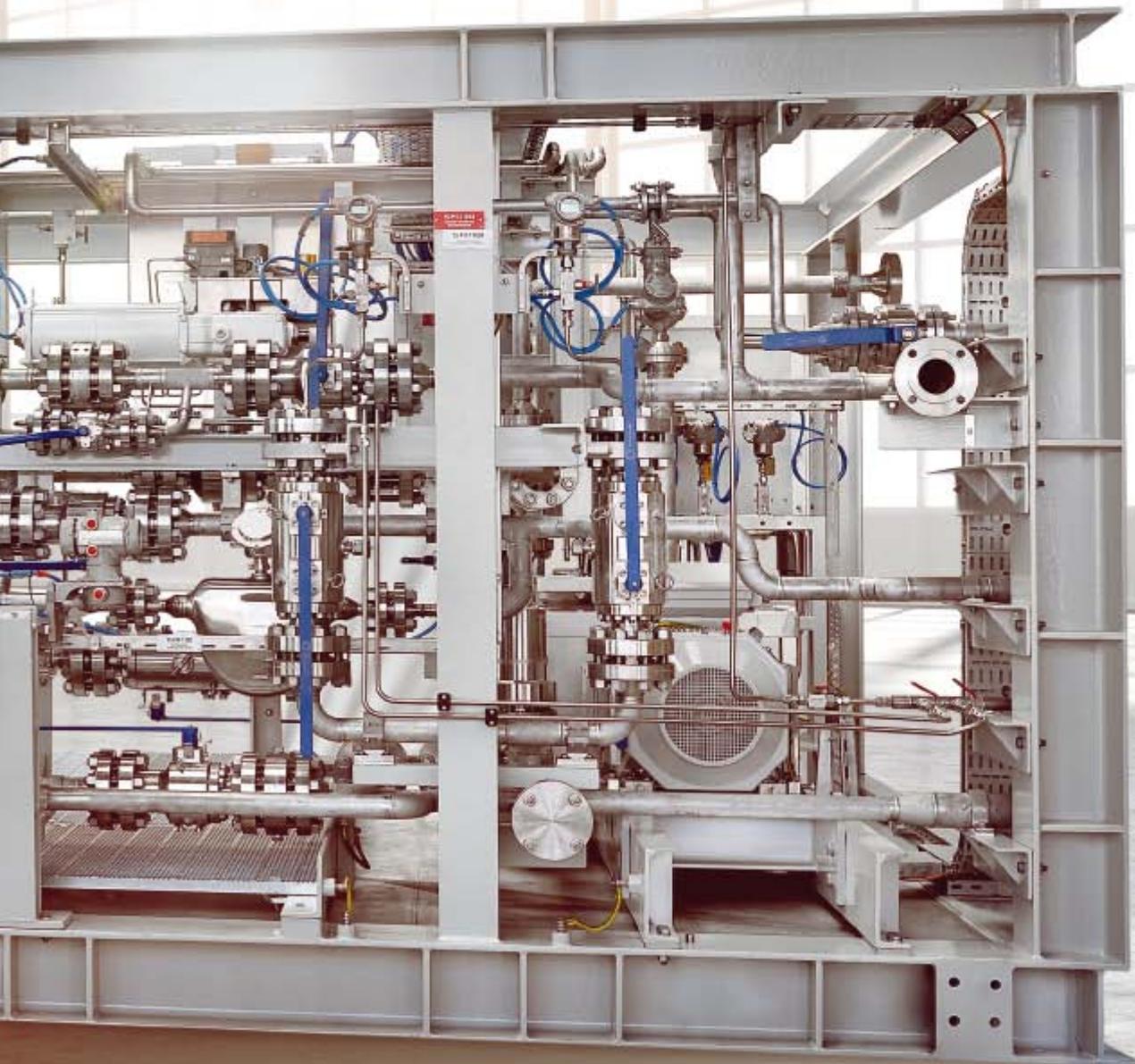
**Installation location:** Norway

**Application:** These Methanol injection packages are used in offshore applications. They feature a flow rate of 3.3 m<sup>3</sup>/h and a pressure of 160 bar in the medium pressure range and 627 bar in the high pressure solution. Methanol is injected both continuously and intermittently. This prevents the formation of hydrates, mainly in offshore sources, and lowers the freezing point of water percentages during the oil and gas transport.



**LEWA solution:**

- Triplex plunger pump skids in parallel operation 2 x G3K 90 and 2 x G3K 130
- Complete skid for offshore installation
- Design in accordance with NORSOK standards





**Industry:** Oil & Gas

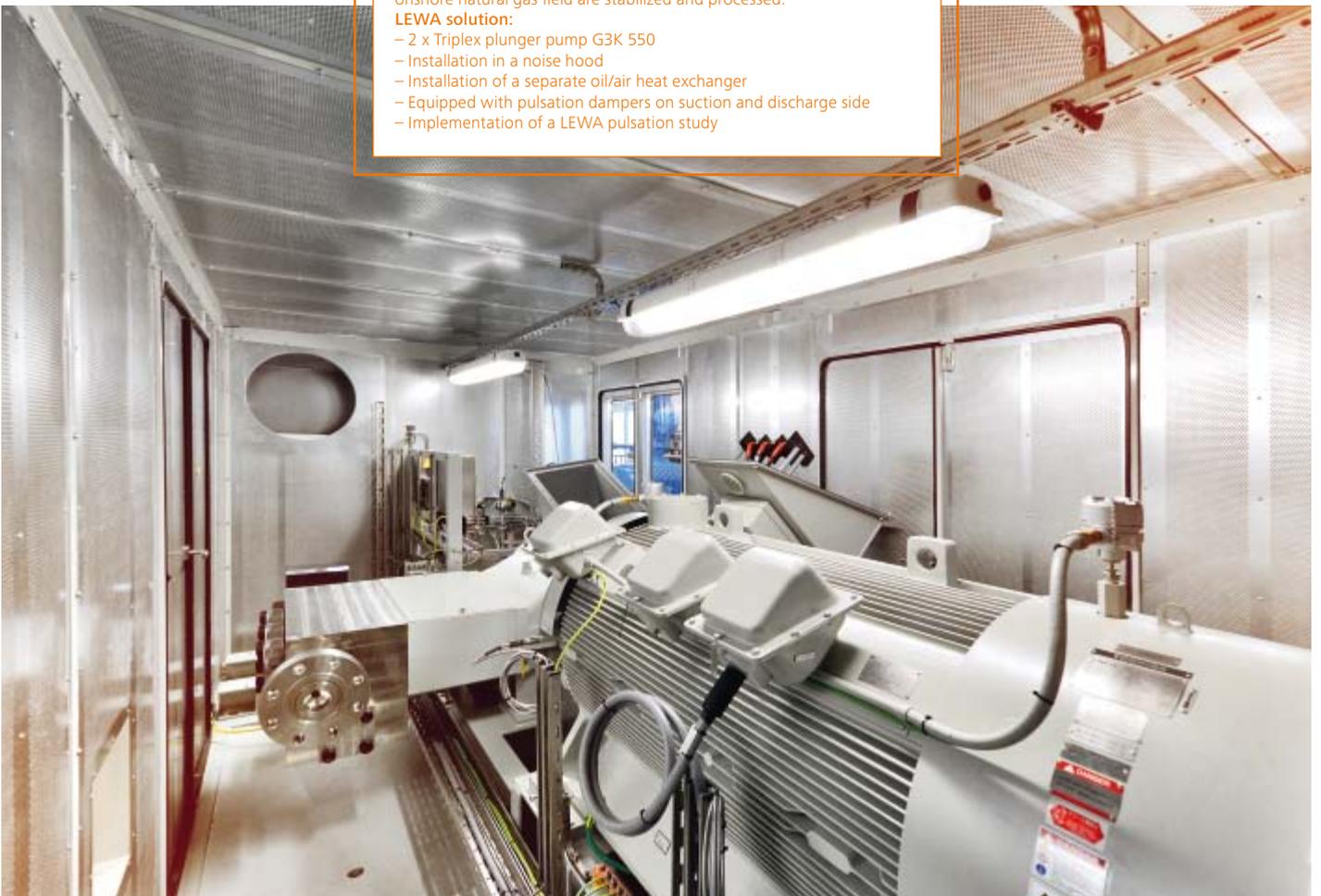
**Installation location:** Papua New Guinea

**Application:** Injecting purified water into an LNG terminal at a flow rate of 20 m<sup>3</sup>/h and at a pressure of 439 bar. These pumps are a component of the gas processing plant in which gas and liquids from a nearby onshore natural gas field are stabilized and processed.



**LEWA solution:**

- 2 x Triplex plunger pump G3K 550
- Installation in a noise hood
- Installation of a separate oil/air heat exchanger
- Equipped with pulsation dampers on suction and discharge side
- Implementation of a LEWA pulsation study

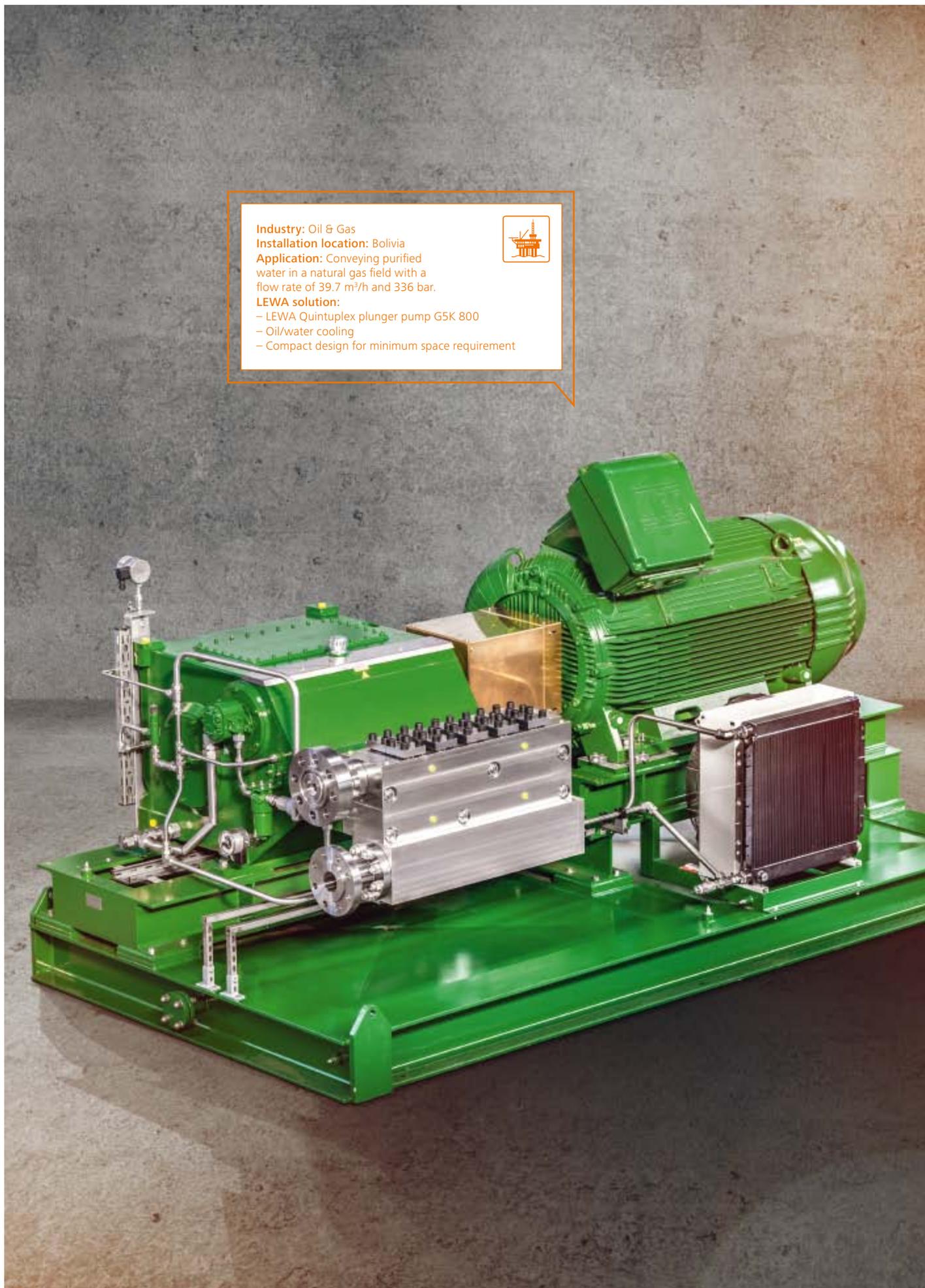


**Industry:** Oil & Gas  
**Installation location:** Bolivia  
**Application:** Conveying purified water in a natural gas field with a flow rate of 39.7 m<sup>3</sup>/h and 336 bar.



**LEWA solution:**

- LEWA Quintuplex plunger pump G5K 800
- Oil/water cooling
- Compact design for minimum space requirement



# For high hydraulic power. The LEWA plunger pump.

## Maintenance-friendly design

The valves are easy to disassemble and the design also ensures that all wear parts are easily accessible.

## Ceramic Plunger

The plungers are made out of ceramic which features a high level of mechanical strength. Special materials can be used upon request.

## Minimum clearance volume

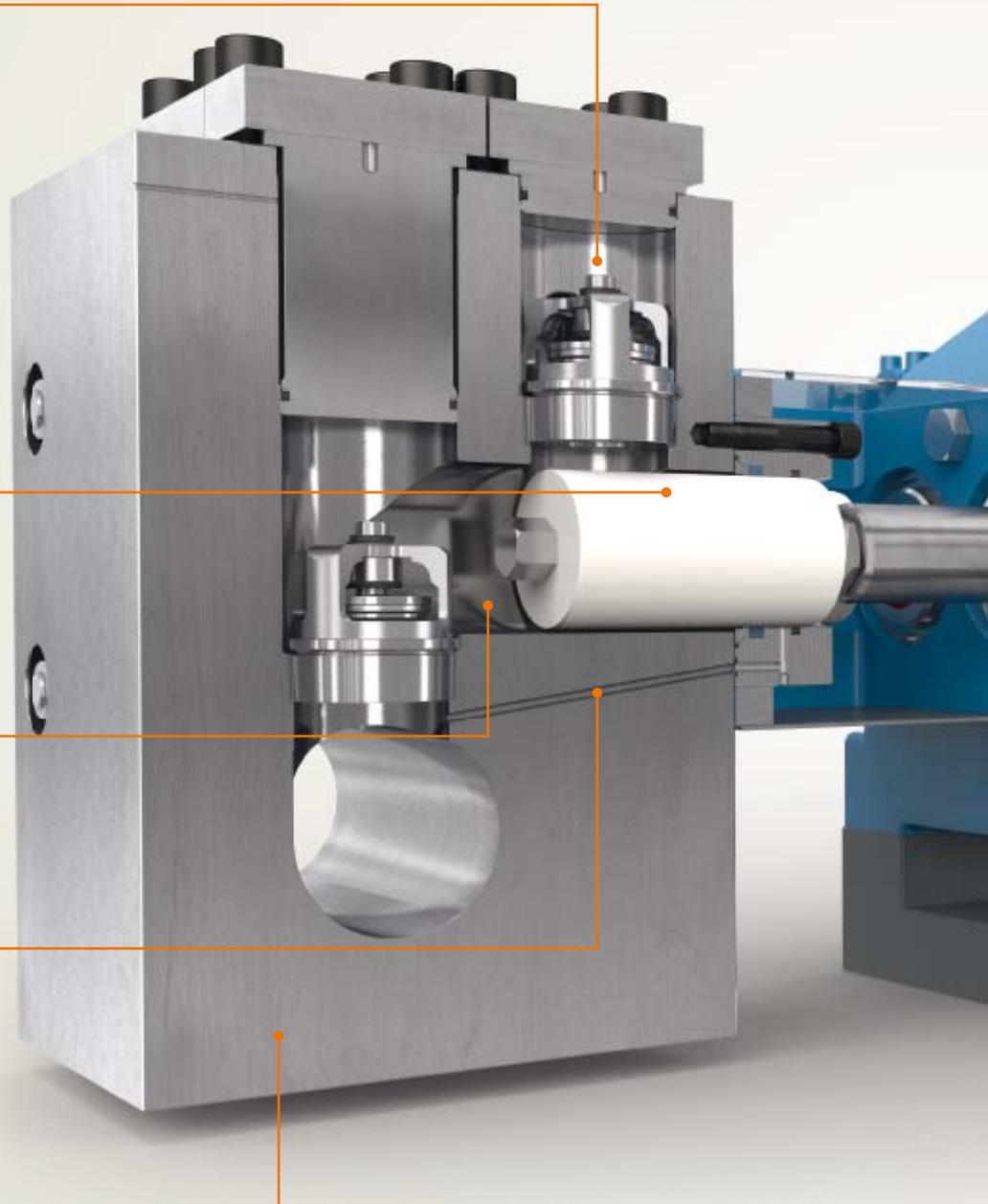
Pump head design optimized for minimum clearance volume and maximum efficiency.

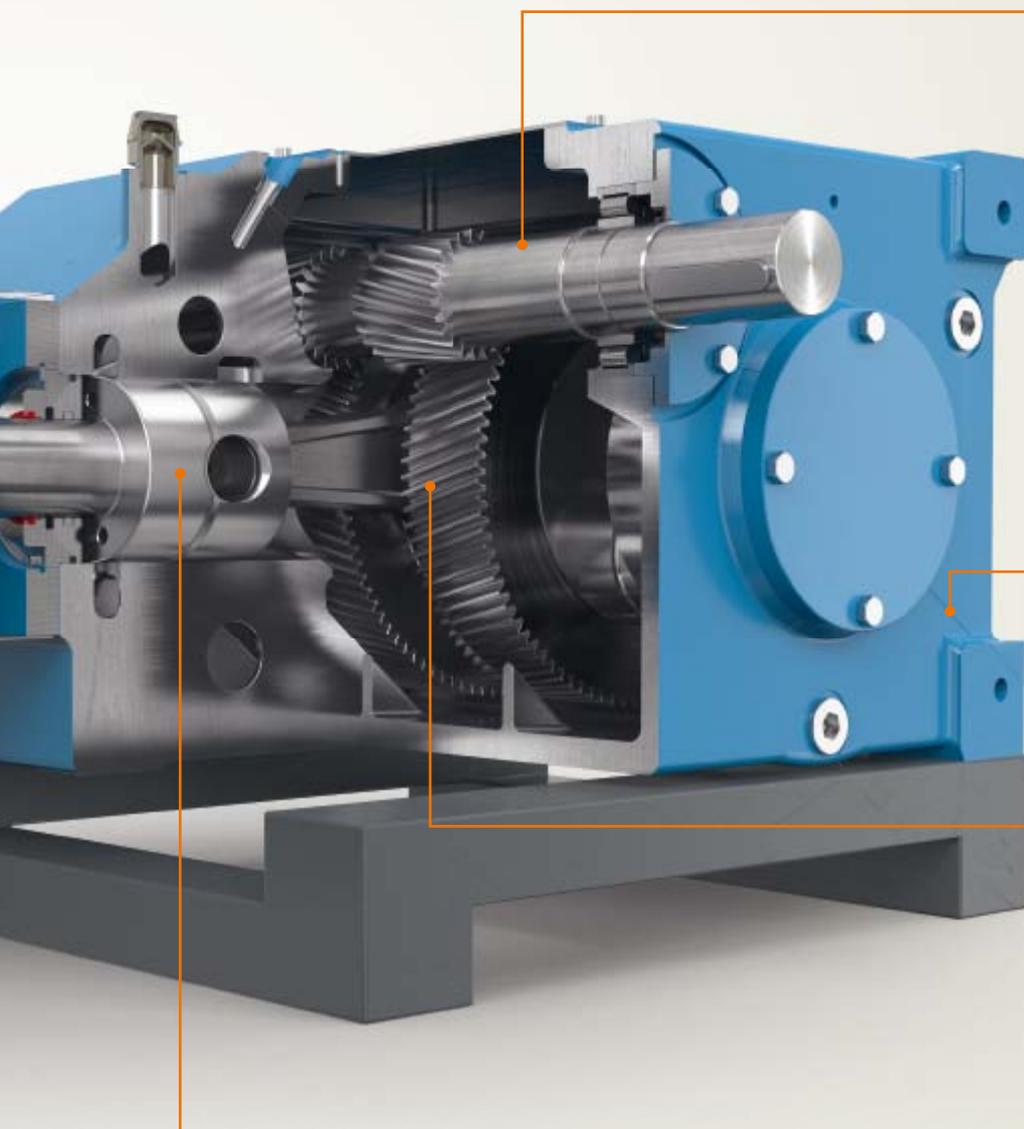
## Innovative pump head design

The leakage is returned to the suction side by an internal return line.

## The right material for every application

Materials are selected in collaboration with the customer and with the fluid properties taken into account.



**Integrated gear unit**

The integrated gear unit allows for a very compact construction with maximum efficiency. The double helical gearing ensures that crank shafts and pinion shafts are free from axial loads.

**Divided housing**

The housing is designed to provide easy access for maintenance and servicing.

**Integrated forced feed lubrication**

Depending on the pump size, lubrication of the connection rod bearings and cross head pins is performed by integrated forced feed lubrication.

**API standard**

LEWA plunger pumps are designed in accordance with the guidelines of the American Petroleum Institute API 674.

# High drive performance in a compact design. The drive unit.

**For high drive performance, LEWA uses integrated double-helical reduction gears throughout the entire series.**

The gear design allows for a very compact overall pump design and provides an efficiency level of over 96%.

## Advantages

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Double-helical gearing keeps the crankshaft and pinion shaft free of any axial loads.

The smooth transmission of force results in longer service life and less noise emission.

High levels of reliability and durability as a result of die-forged and shot-blasted crank shafts.

The integrated forced feed lubrication system provides the connecting rod bearings and cross head pins with oil, which means no additional lubricating systems are required.

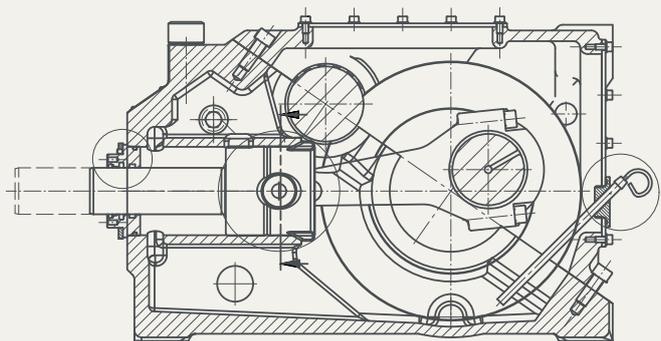
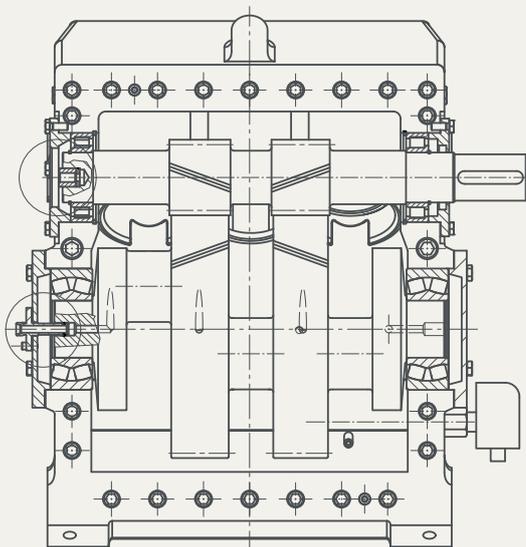
The temperature and pressure of the gear is monitored to protect it against overloading and low oil levels.

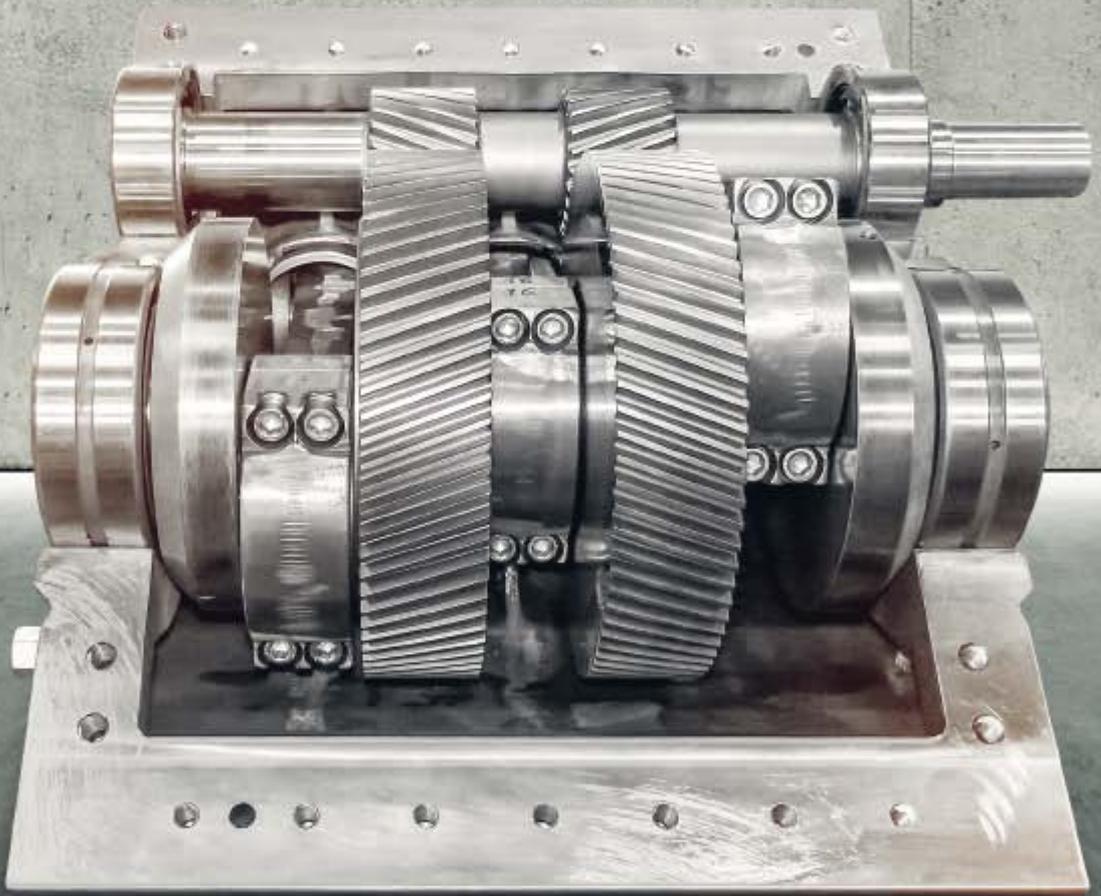
All oil seals are accessible from the outside; this ensures that long downtimes are prevented.

Likewise, the oil for the maintenance of wear parts does not need to be drained.

The divided housing provides optimal accessibility to the entire drive unit.

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# For a wide variety of requirements. Universally applicable LEWA pump heads.

The design engineering of the LEWA plunger pump heads is based on the latest developments. These developments apply in particular to the selection of materials, the valve design and the plunger sealing.

The KMC-L pump head has proven itself in many cases with respect to a wide variety of requirements, such as in high temperatures or with aggressive liquids. The KA-H high-pressure pump head is used for pressures over 1000 bar. All pump heads have an integrated leakage return line to the suction side. The easy maintenance and maximum availability are particularly noteworthy.

## Advantages of LEWA pump heads

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Internal leakage return

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No high suction pressures are required

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Minimum maintenance effort

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Easy assembly and disassembly without special tools

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Robust design for high reliability

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Identical pressure ratings for the suction and discharge side

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Packing is lubricated by fluids

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Maintenance-free pressure or spring-actuated plunger sealing

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## KMC-L technical data

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Discharge pressure up to 1,000 bar

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Flow rate up to 209 m<sup>3</sup>/h

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Temperatures of -20 to 200 °C

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Viscosity up to 2,000 mPa·s

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Available with disc or cone valves

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## KA-H technical data

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Discharge pressure up to 1,500 bar  
(up to 3,500 bar upon request)

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Flow rate 0.6 - 18.8 m<sup>3</sup>/h

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Temperatures of -20 to 200 °C

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Viscosity up to 2,000 mPa·s

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Available with disc valves

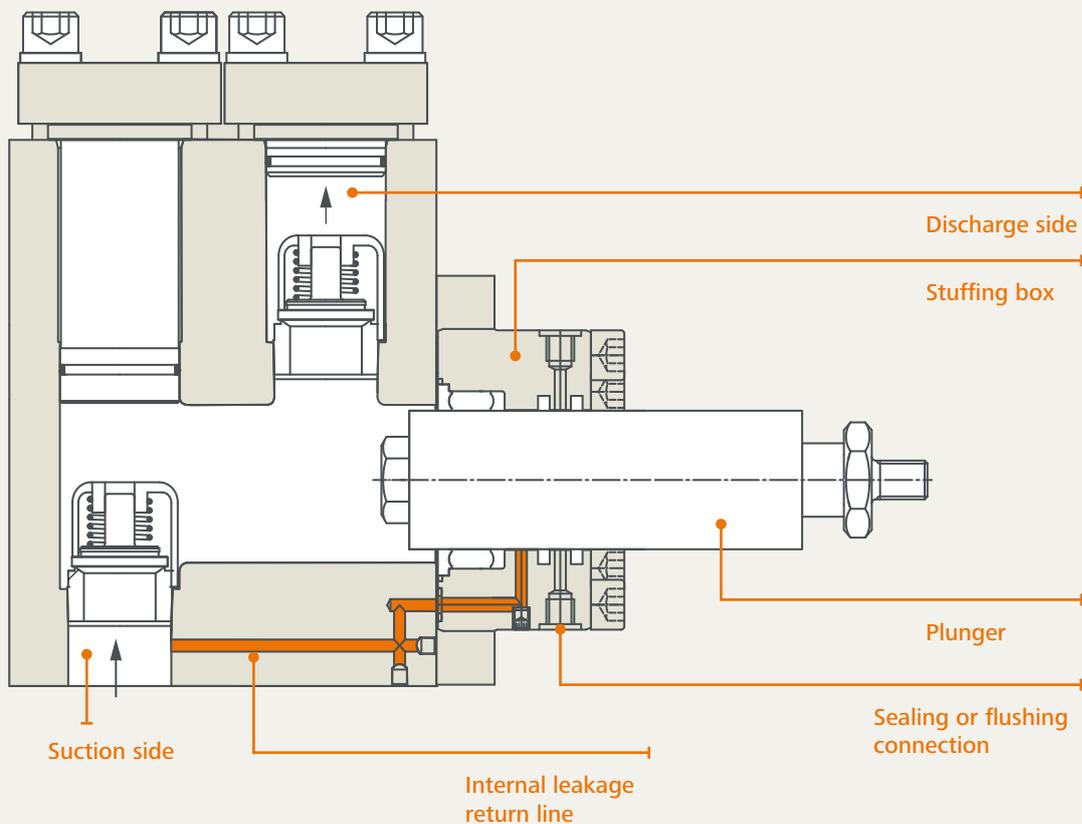
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## Options: Sealing or flushing system with leakage monitoring

We also offer a solution for critical liquids. An additional sealing or flushing system with leakage monitoring can be used for critical liquids. As a result, process safety is ensured during ongoing operation. Depending on the requirement, we provide the perfect solution for each specific application. LEWA recommends its proven hermetically sealed process diaphragm pumps for corrosive, abrasive and toxic liquids.

## Stuffing box

The plunger sealing set consists of a pressure and support ring, a packing as well as one or two sealing rings. The minimum leakage through the packing provides sufficient lubrication between the plunger and the packing. The leakage is returned to the suction side via a bore in the pump head. A sealing or flushing connection is provided for critical liquids, as displayed in the figure.

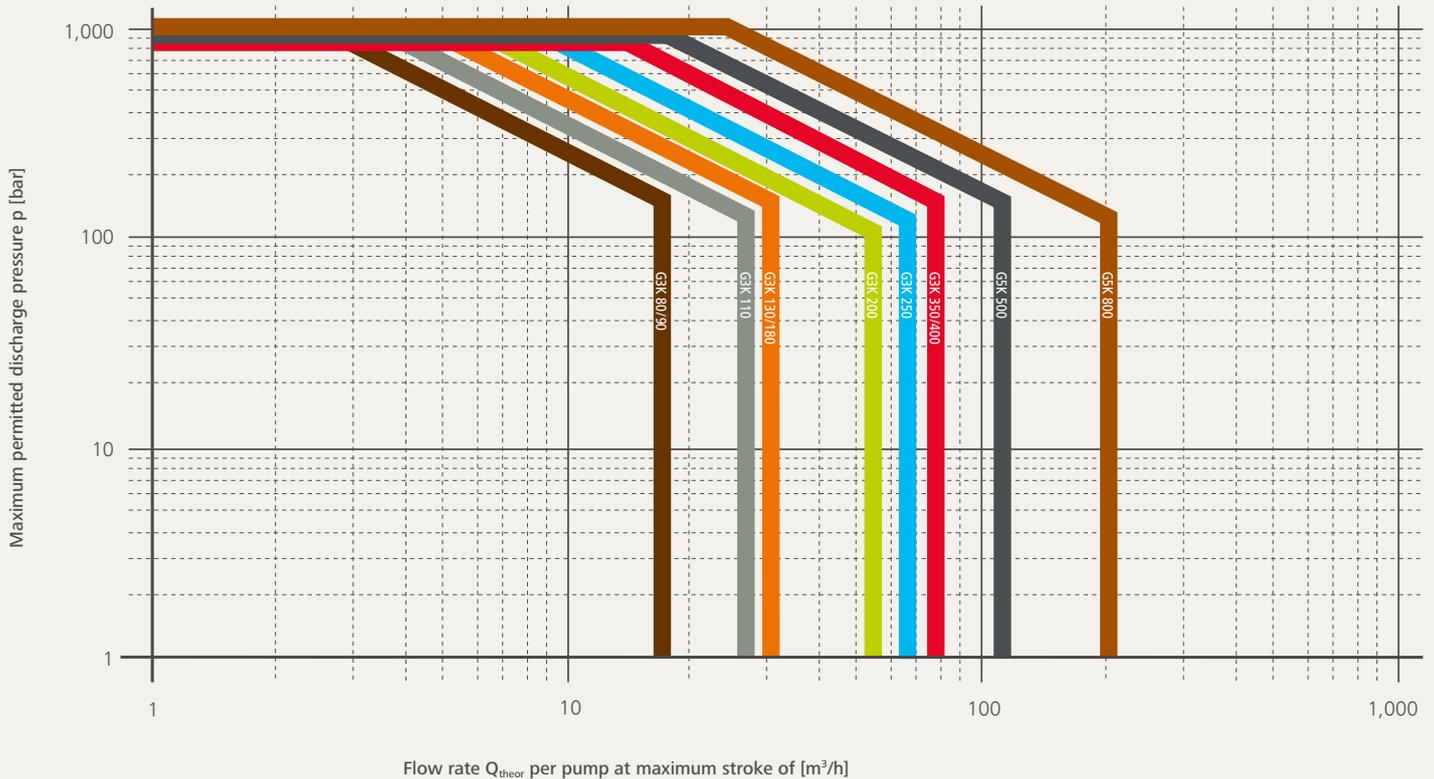






# At a glance. Technical data.

## KMC-L pump head performance overview

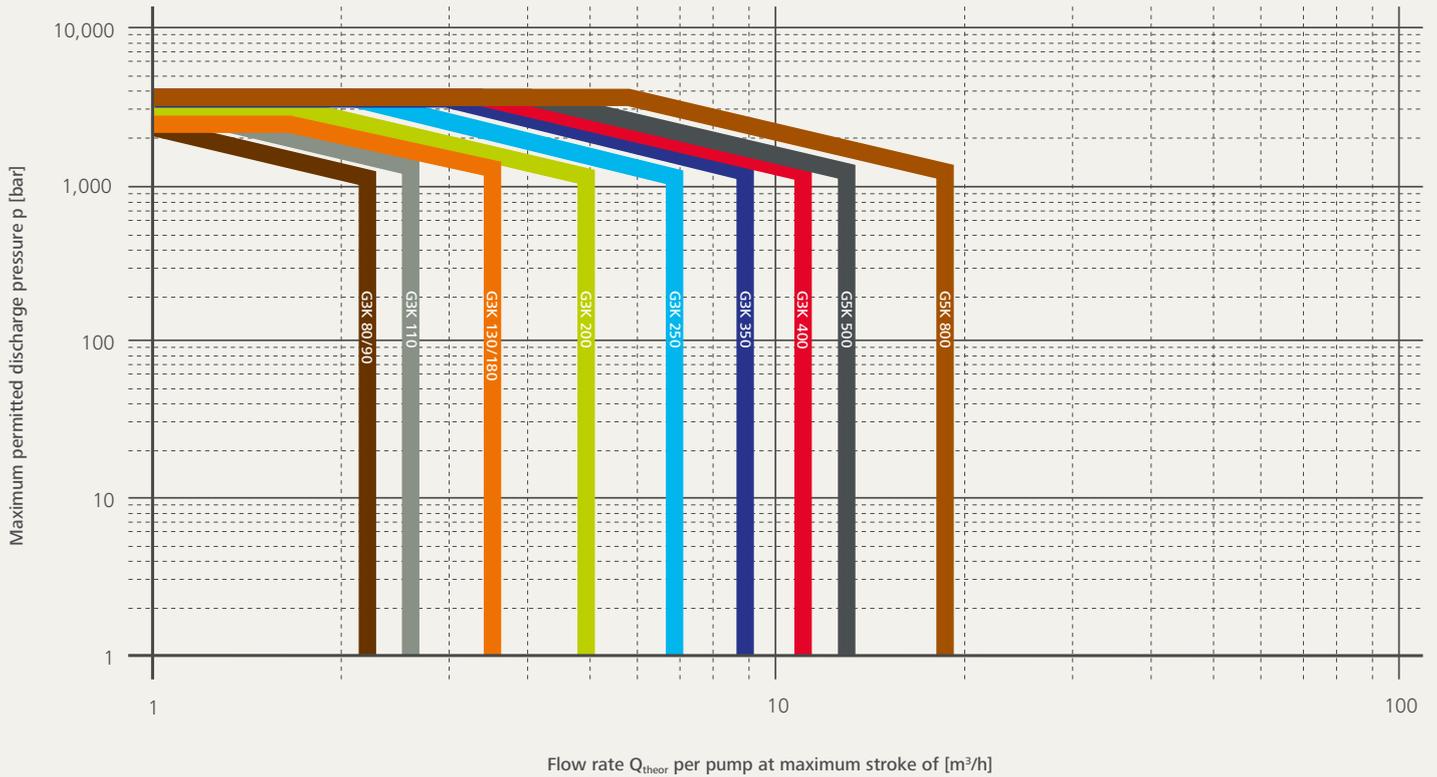


Performance overview to determine drive unit size.

## KMC-L pump head performance data

| Type    | Max. flow rate [ $\text{m}^3/\text{h}$ ] | Pressure max. [bar] |
|---------|--|---------------------|
| G3K 80  | 17.0                                     | 890                 |
| G3K 90  | 17.0                                     | 930                 |
| G3K 110 | 27.3                                     | 1,075               |
| G3K 130 | 29.8                                     | 995                 |
| G3K 180 | 31.3                                     | 975                 |
| G3K 200 | 57.4                                     | 1,060               |
| G3K 250 | 68.9                                     | 1,010               |
| G3K 350 | 78.6                                     | 1,000               |
| G3K 400 | 78.6                                     | 900                 |
| G5K 500 | 114.8                                    | 1,000               |
| G5K 800 | 209.0                                    | 1,075               |

## KA-H high pressure pump head performance overview



Performance overview to determine drive unit size.

## High-pressure pump head KA-H performance data

| Type    | Max. flow rate [ $\text{m}^3/\text{h}$ ] | Pressure max. [bar] |
|---------|--|---------------------|
| G3K 80  | 2.2                                      | 2,950               |
| G3K 90  | 2.2                                      | 3,100               |
| G3K 110 | 2.6                                      | 2,760               |
| G3K 130 | 3.4                                      | 3,000               |
| G3K 180 | 5.0                                      | 3,500               |
| G3K 200 | 5.0                                      | 2,800               |
| G3K 250 | 6.8                                      | 3,200               |
| G3K 350 | 8.9                                      | 3,500               |
| G3K 400 | 11.3                                     | 3,500               |
| G5K 500 | 13.0                                     | 3,500               |
| G5K 800 | 18.8                                     | 3,500               |

# Optimal configuration. Selection of options.

The LEWA plunger pump skids are tailor-made solutions for customer requests and process requirements. LEWA selects suitable materials for the pump and auxiliaries according to fluid and site conditions. This ensures that we have the appropriate pump for any requirement.

### Instrumentation, control, and monitoring:

- Integration of the pump into the process control system for control and status monitoring
- Diagnostic connection for the online readout of measurement data from the pump head and drive
- Pump synchronization
- Converter and control cabinets
- On-site control panel

### Pump head designs:

- Material made of stainless steel or duplex; material also available in accordance to the NACE standard
- Diverse connection geometries
- Sealing or flushing system
- Heating and cooling jacket

### Components:

- Pulsation damper
- Safety valve
- Pressure retaining valve
- Flow meter
- Base plate
- Piping
- Oil cooler
- Noise hood

### Available upon customer request:

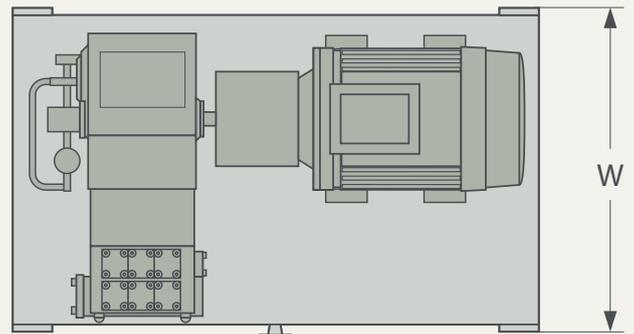
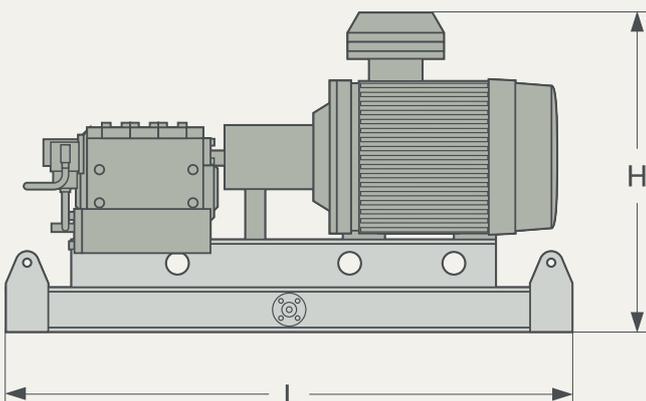
- Special painting
- Pulsation studies
- Different inspection and test procedures

## At a glance. Technical data.

### Technical data – installation dimension

| in mm | Type G3K 80/90 | Type G3K 110/130/180 | Type G3K 200/250 | Type G3K 350/400 | Type G5K 500 | Type G5K 800 |
|-------|----------------|----------------------|------------------|------------------|--------------|--------------|
| L     | 1,980          | 2,140                | 2,550            | 3,250            | 3,690        | 3,840        |
| W     | 1,182          | 1,460                | 1,740            | 1,858            | 1,886        | 2,260        |
| H     | 1,044          | 1,146                | 1,307            | 1,422            | 1,512        | 1,742        |

Skid with pump, coupling and motor on base plate with drip pan.  
The length may change depending on the motor used.



# Complete solutions from a single source. LEWA packages and systems.

LEWA also offers solutions that go beyond individual process or metering pumps. For decades, we have built customer-specific systems, skids, and packages. Our service ranges from engineering to commissioning – including custom system controllers, process visualization, operational data collection, and external interfaces to the process control system.

We guarantee optimal implementation of your requirements thanks to our knowledge and skills in smart process control and the control and regulation technology it requires.

The basis is the competent selection and combination of system components and their characteristics. The core component of LEWA packages and systems is a process pump.



Each process has specific requirements.  
LEWA's experts tailor all components  
carefully to each other and bring in valuable  
industry know-how.



**Industry:** Oil & Gas

**Installation location:** USA, Gulf of Mexico

**Application:** Chemical injection package with 70 injection points and a pressure of up to 670 bar and a flow rate of up to 17 m<sup>3</sup>/h.

**LEWA solution:**

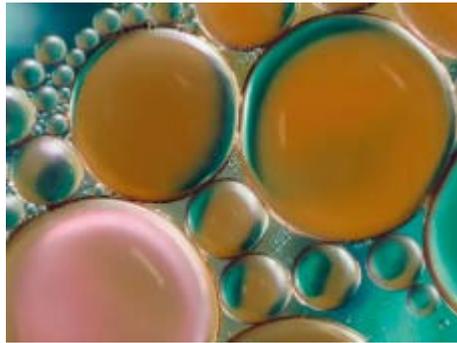
LEWA provided four G3K 250 plunger pumps, a G3K 160 plunger pump as well as a series of diaphragm pumps for this chemical injection package. Additionally, the motors, dampers, and chemical storage tanks were provided by LEWA. The 9.1 x 9.1 x 8.8 m and 125 ton package was designed and built together with a system partner.



# Creating Fluid Solutions. For more value created.



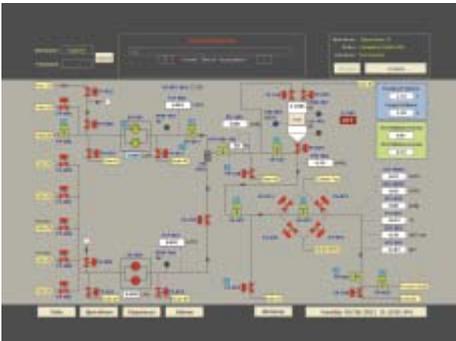
Technical consulting



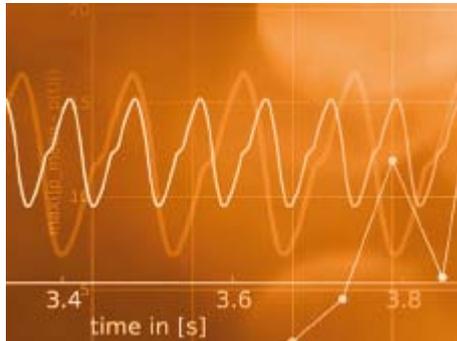
Fluid and process engineering tests



Lifecycle concepts and energy optimization



Process automation



Pulsation studies and pipeline calculations



System layout and integration



Creative development and refinements



Commissioning and maintenance service



Spare part and service concepts

## Creating Fluid Solutions.

Driven by our commitment, our trendsetting products and innovative technologies have set benchmarks for diaphragm pumps, process pumps and metering systems for over 60 years. We solve complex tasks from a single source. That ranges from custom pump design, basic and system engineering, global project management, and pretesting to commissioning and maintenance on site. Our consistent drive always to develop the best solutions for the customer provides you with a competitive advantage and visible added value.

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