

## LEWA process diaphragm pumps



Process diaphragm pumps for process engineering

- **safe**
- **hermetically tight**
- **reliable**
- **economical**
- **up to 1200 bar**

# LEWA process diaphragm pumps



*Low life cycle costs:  
high overall efficiency, low  
energy consumption  
and long service intervals*



*Maximum safety:  
safe, even dry operation, safe  
against overload and equipped with dia-  
phragm monitoring system*



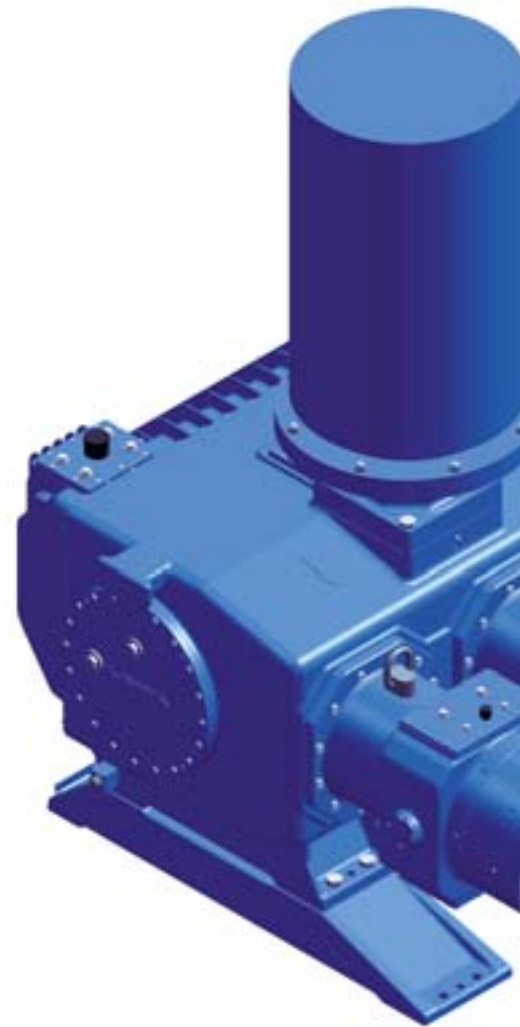
*Technically at the top:  
LEWA supplies the world's biggest  
process diaphragm pumps*

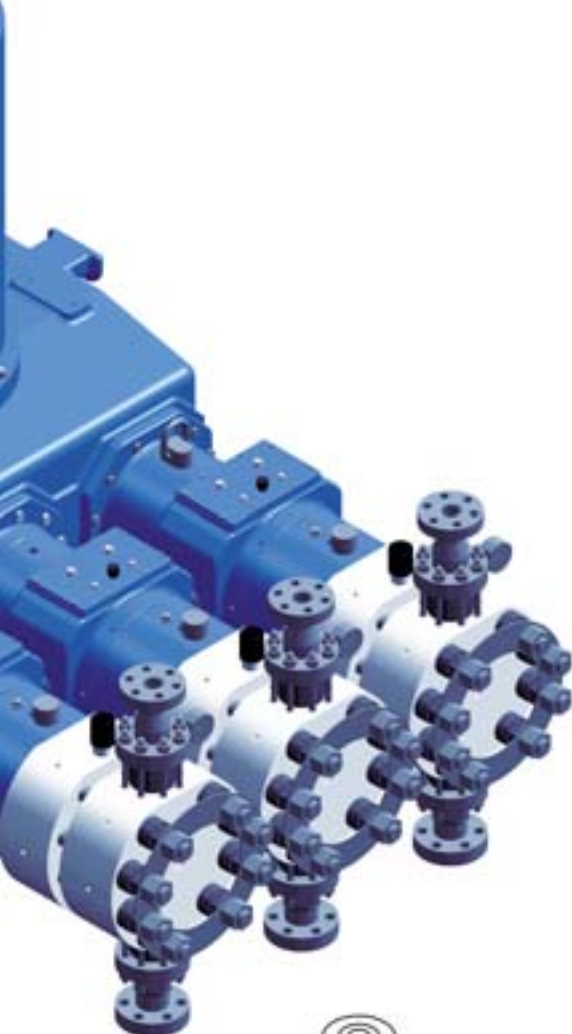
The LEWA process diaphragm pumps for high pressure process engineering are the standard for tightness in the high pressure range. Here also LEWA has set the standards and consistently further develops the diaphragm pump technology.

With LEWA process diaphragm pumps even critical, toxic or inflammable fluids can be conveyed safely. Also extremely low viscosity, non-lubricating fluids or abrasive suspensions are handled without any problems. The pressure range goes up to 1200 bar.

The advantages of LEWA process diaphragm pump at a glance:

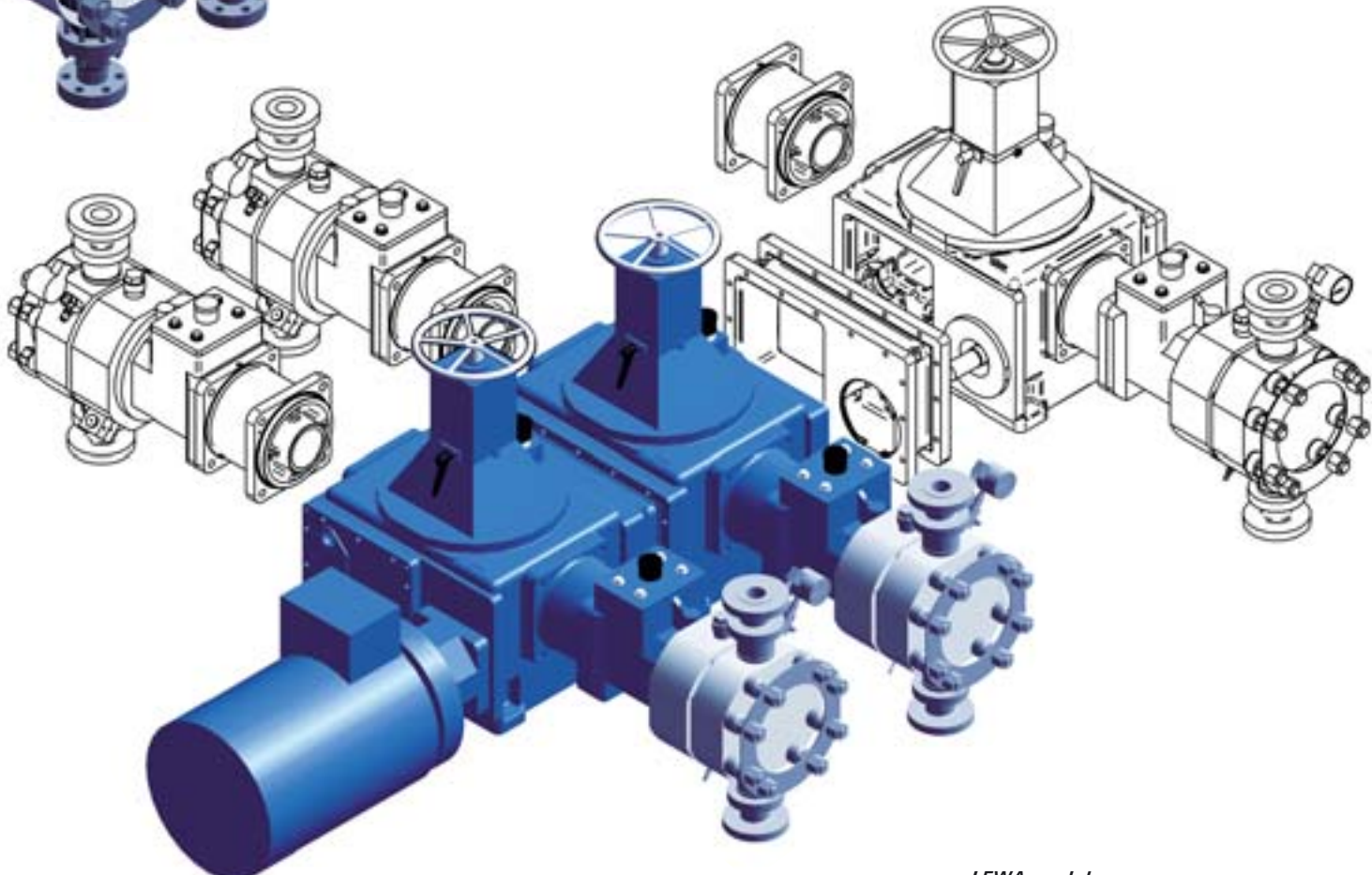
- Hermetically tight, zero leakage
- Metal- or PTFE sandwich diaphragms with diaphragm monitoring system
- Compact monoblock design or variable modular design
- Safe dry operation and overload safe
- Sturdy and low maintenance requirements
- Precise conveying even at pressure fluctuations due to pressure stiff characteristic
- High efficiency
- High availability
- Low life cycle costs





*LEWA triplex:  
monoblock design*

Performance table	
<b>Pressure</b>	up to 1200 bar
<b>Flow rate</b>	up to 0,1 – 180 m <sup>3</sup> /h per pump head
<b>Temperature</b>	-80 to +200°C
<b>Viscosity</b>	from 0,1 up to 250.000 mPa s



*LEWA modular:  
variable modular design in  
serial and boxer design*

# High performance with minimum foot print: The LEWA drive units



*Even at remote locations: the LEWA service is available at any time and all over the world*



*Ready for hook-up: LEWA process diaphragm pumps and systems are supplied ready for operation and with all required interfaces*

**LEWA process diaphragm pumps are available in the compact LEWA triplex series and in the segment design LEWA modular.**

## LEWA triplex

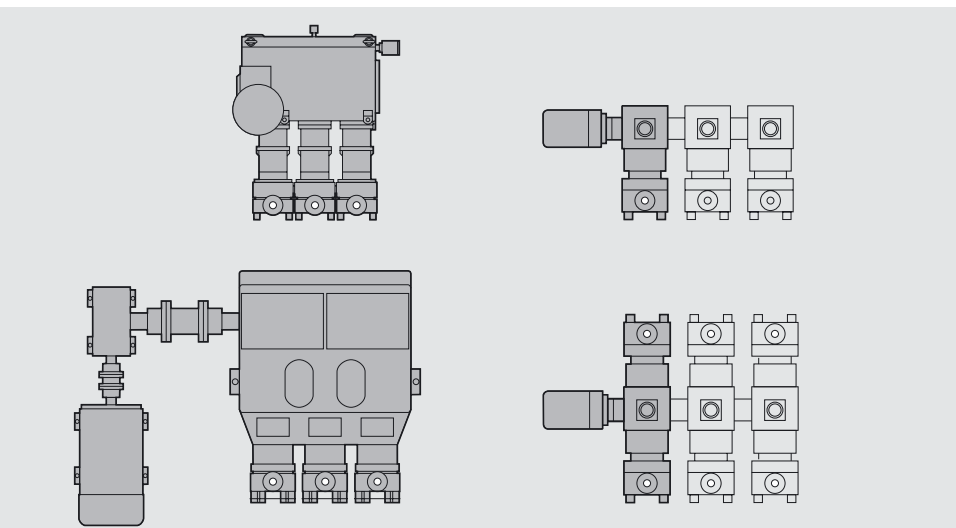
The LEWA triplex drive units are carried out in monoblock design.

- Extremely space- and weight saving
- monoblock design
- Solid, sturdy overall design
- Extremely smooth and low-vibration running due to equal eccentric shifting
- Sturdy friction bearings for eccentric and rod bolt
- Integrated worm gear and vertical flange motor up to G3R frame size
- Low pulsation due to overlapping partial flows
- Precise, reproducible flow setting via speed

## LEWA modular

With this very flexible programme the most different customer requirements can be met economically.

- Especially for mixture control and strongly varying flows
- Wide control range up to 1:100
- Precise, reproducible flow setting via stroke length and speed
- For conveying tasks conveyed with metering tasks
- Solid overall construction
- Up to six individual elements, even different frame sizes, can be combined
- Economic duplex- quadruplex- or sextuplex pumps in boxer design (GSB, ESB, LDHB and LGB)



*High performance: compact monoblock design or variable segment design*



*Gentle conveying of a pharmaceutical dispersion, 1,3 m<sup>3</sup>/h at 800 bar  
2 x G3 F electronically coupled, M400*

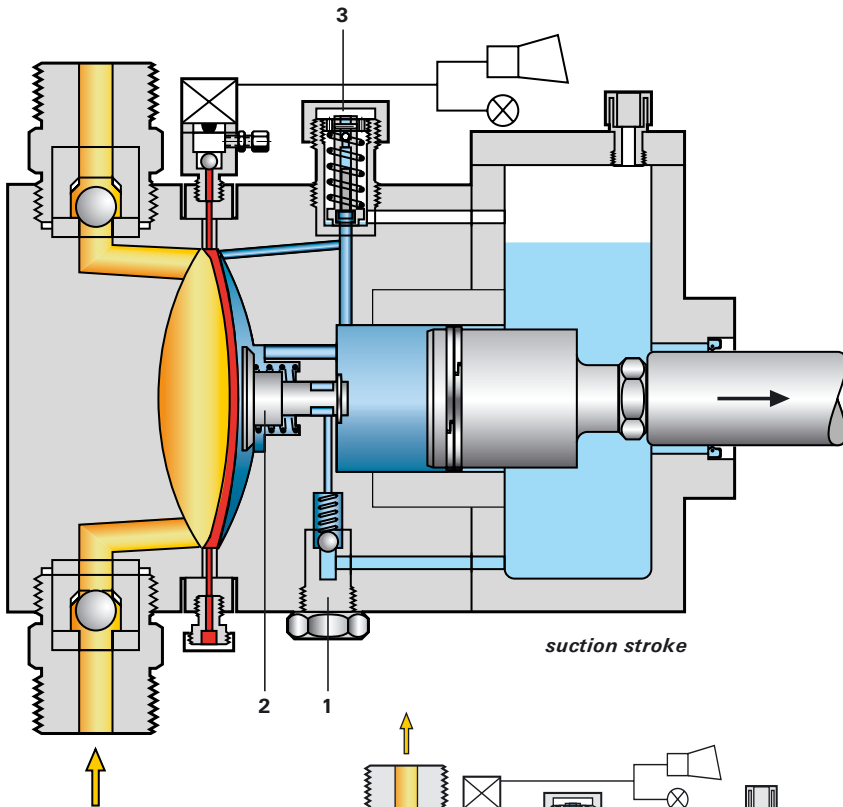


*Versatile solutions:  
e. g. fully heated  
plunger pump heads  
and valves for melts*

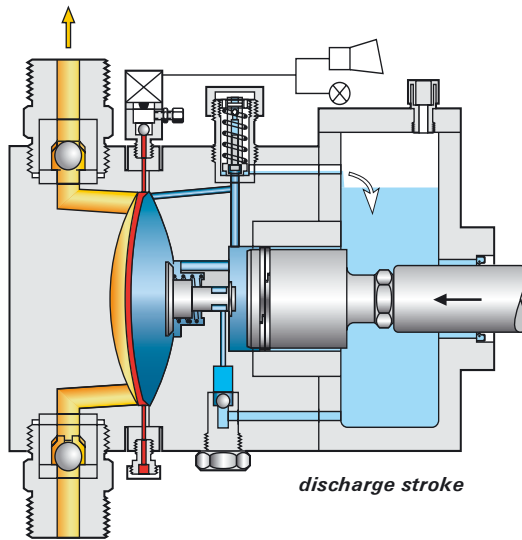


*Example chemistry/ petrochemistry:  
methanol injection,  
8,8 m<sup>3</sup>/h at 345 bar, M500*

# Maintain hermetic tightness: LEWA diaphragm pump heads



suction stroke



discharge stroke

The principle shown with the example of the M500 series:

The reciprocating plunger transmits its displacing movement via a hydraulic fluid on the diaphragm and the diaphragm on the fluid conveyed. The diaphragm separates hydraulic fluid and the fluid conveyed and safely separates them from the atmosphere. A diaphragm movement control in the hydraulic part of the pump head assures highest operational safety. Via the snifting valve (1) in connection with the control push rod (2) the rear diaphragm position is determined and the internal leakage is replenished. An integrated pressure limiting valve (3) with degassing function safeguards the pump against overload.

LEWA diaphragm pump allow safe and hermetically tight conveying at medium up to high pressures.

LEWA diaphragm pump heads are an economical solution for a variety of metering- and conveying tasks. Environmentally damaging, dangerous, sensitive or abrasive fluids are therefore only conveyed with zero-leakage pump today.

Sandwich diaphragms with diaphragm monitoring system are the standard design of all LEWA diaphragm pumps. Damage of the diaphragm is reliably indicated. The pump still remains tight and operation can be continued for a limited period of time. LEWA diaphragm pumps are protected against overload by an integrated pressure limiting valve.

## Advantages of LEWA diaphragm pump heads

- Highly economical
- Hermetically tight, zero leakage
- Durable sandwich diaphragm with diaphragm monitoring system
- Protected against overload by adjustable pressure limiting valve
- Minimum maintenance costs due to low-wear components
- Absolute safe dry operation
- High metering accuracy by pressure stiff, linear pump characteristics and hydraulic degassing
- Separation of hydraulic and drive element oil
- Gentle conveying of sensitive fluids
- Online and offline condition monitoring systems for electronic monitoring

# Universal with high performance: Diaphragm pump head M500

The universal series with PTFE sandwich diaphragm suitable for practically any metering and conveying application.

Due to the revolutionary diaphragm position control highest operational safety can be achieved even for fluids difficult to handle, e.g. suspensions or highly viscous fluids.

## Advantages of the M500 series

- Universal application
- Insensitive to particles suitable for suspensions and high viscosity fluids
- Long diaphragm service life due to hydraulic diaphragm position control
- Suction pressure safe up to 350 bar by full rear diaphragm support
- Unobstructed flow channels in the operating chamber as diaphragm oscillates freely
- Internal protection against over-pressure
- Standard materials for wetted parts is 1.4571 (316 Ti) with high chemical resistance

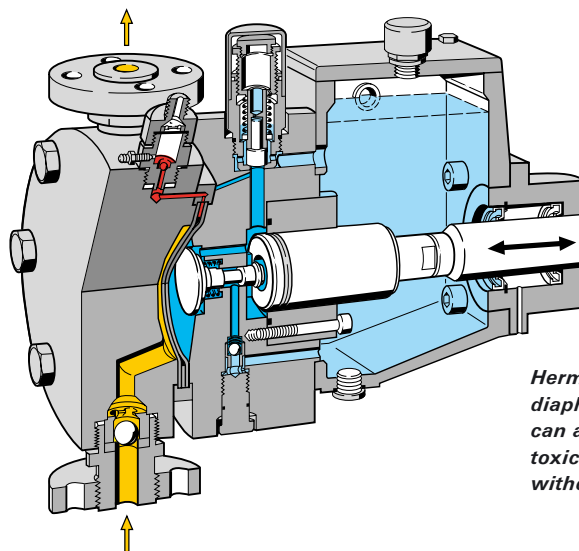
## Options

A high number of special designs allows to meet almost every process requirement:

- Special valves
- Many connection options
- Diaphragm condition monitoring systems using pressure switches, pressure gauges and contact pressure gauges and pressure transmitters
- Heating and cooling jacket
- Pump heads with overall heating jacket for melts
- Easy clean pump heads (CIP)
- Special materials, e.g. Hastelloy, titanium, duplex steel
- Hygienic designs for food stuffs, pharmaceutical and bio-technology applications
- 3A-approval

## Performance table

<b>Pressure</b>	up to 350 bar
<b>Flow rate</b>	up to 50 m <sup>3</sup> /h per pump head
<b>Temperature</b>	-50 to +150°C
<b>Viscosity</b>	up to 100.000 mPa s



*Hermetically tight: diaphragm pump heads can also be used for critical, toxic or inflammable fluids without problems*

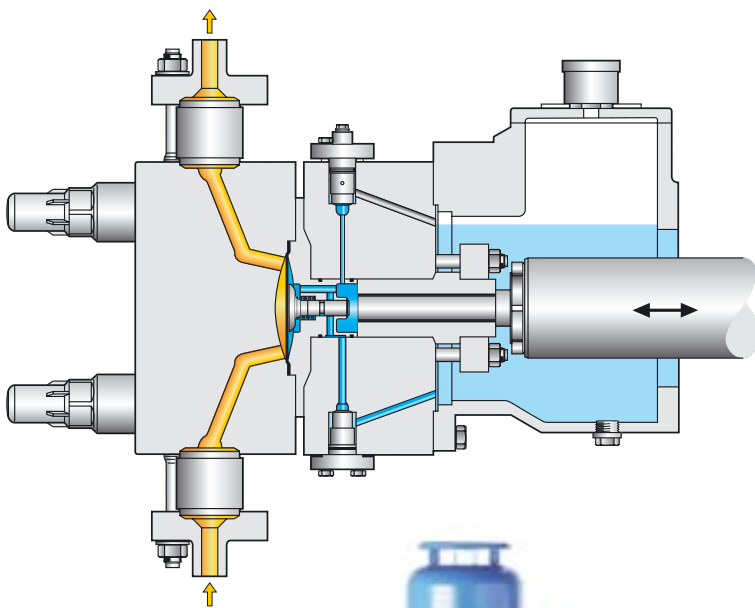


*Extremely wide application range: diaphragm pump heads are suitable for nearly all fluids*

# For high pressure and high performance: Diaphragm pump head M800

## Performance table

<b>Pressure</b>	up to 800 bar
<b>Flow rate</b>	from 130 l/h – 20 m <sup>3</sup> /h per pump head
<b>Temperature</b>	-20°C to +80°C
<b>Viscosity</b>	up to 100.000 mPa s



*Conveying at high pressure:  
e.g. high pressure atomisation  
G3 S, M800, 700 bar*

The high pressure diaphragm pump heads of the M800 series represent an extension of the proven M500 series with a discharge pressure up to 800 bar. Due to an integrated diaphragm monitoring system in combination with a PTFE sandwich diaphragm high process safety is guaranteed. With this series the use of zero-leakage diaphragm pumps, exceeding the present pressure limits of plastics diaphragms, is considerably more economical than using metal diaphragm pump heads.

## Advantages of the M800 series

- Maximum pressure 800 bar
- Temperature range -20°C to +80°C
- Hermetically tight system
- High process safety due to diaphragm monitoring system
- Long diaphragm service life
- Low life cycle costs due to wear-free plunger seals and long diaphragm service life
- Suitable also for difficult fluids e.g. suspensions with hard particles or fluids with high viscosity
- High suction ability due to diaphragm position control
- Safe against high suction pressure by full rear diaphragm support
- Safe against overload of the pump by integrated pressure limiting valve in the hydraulic part

## Options

- Special valves
- A variety of connection dimensions
- Heating and cooling equipment
- Easy to clean pump heads (CIP)
- Hygienic designs for food stuffs, pharmaceutical and bio-technology applications
- Special materials

# For high pressure up to 1200 bar: Diaphragm pump heads M400

**The high pressure pump series with metal diaphragm for high pressures and high temperatures.**

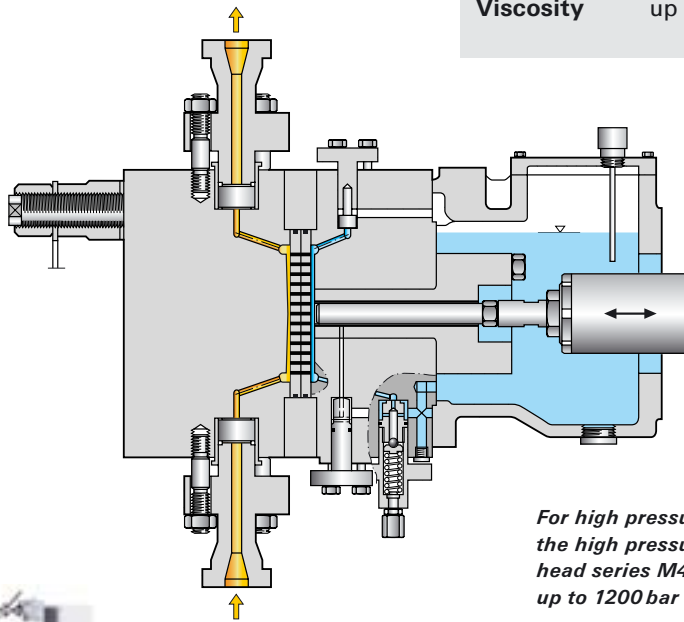
Diaphragm pumps with metal diaphragm are used when high pressures or high temperatures must be handled or when high diffusion resistance is required. This series offers extremely high safety standards by limiting the diaphragm deflection in both directions so that diaphragm overload by faulty operation is safely prevented. A big safety plus is offered by the sandwich diaphragm at pressures of up to 1200 bar.

## Advantages of the M400 series

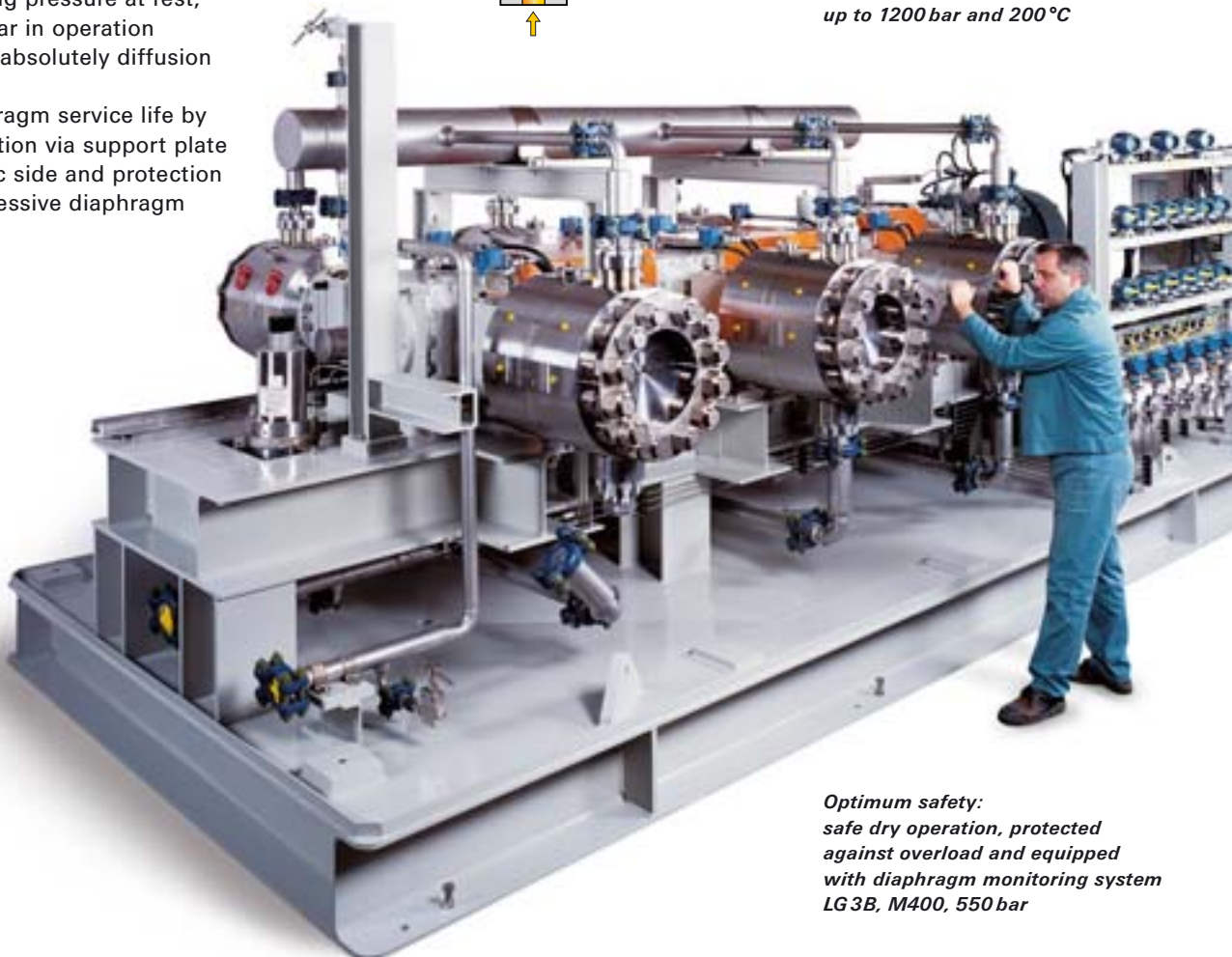
- Very high safety standard
- Protected against diaphragm overload and faulty operation
- Suction pressure proof up to full operating pressure at rest, up to 100 bar in operation
- Diaphragm absolutely diffusion tight
- Long diaphragm service life by even deflection via support plate on hydraulic side and protection against excessive diaphragm deflection

## Performance table

<b>Pressure</b>	up to 1200 bar
<b>Flow rate</b>	from 1 l/h to 5 m <sup>3</sup> /h per pump head
<b>Temperature</b>	up to +200 °C
<b>Viscosity</b>	up to 500 mPa s



*For high pressure:  
the high pressure pump  
head series M400 is used  
up to 1200 bar and 200 °C*



*Optimum safety:  
safe dry operation, protected  
against overload and equipped  
with diaphragm monitoring system  
LG 3B, M400, 550 bar*

# Partner of the customer: System responsibility from one source



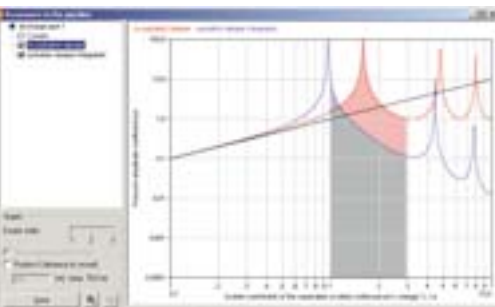
*From the pump to the system:  
LEWA develops and supplies  
solutions for the most different  
applications*

## Engineering for pump systems

Apart from specifically adapted process diaphragm pumps LEWA also develops and supplies complete pump systems, which can be easily and directly integrated into the complete installation. All components including control and protection installations are appropriately designed and optimised for the respective application.

## Complete service

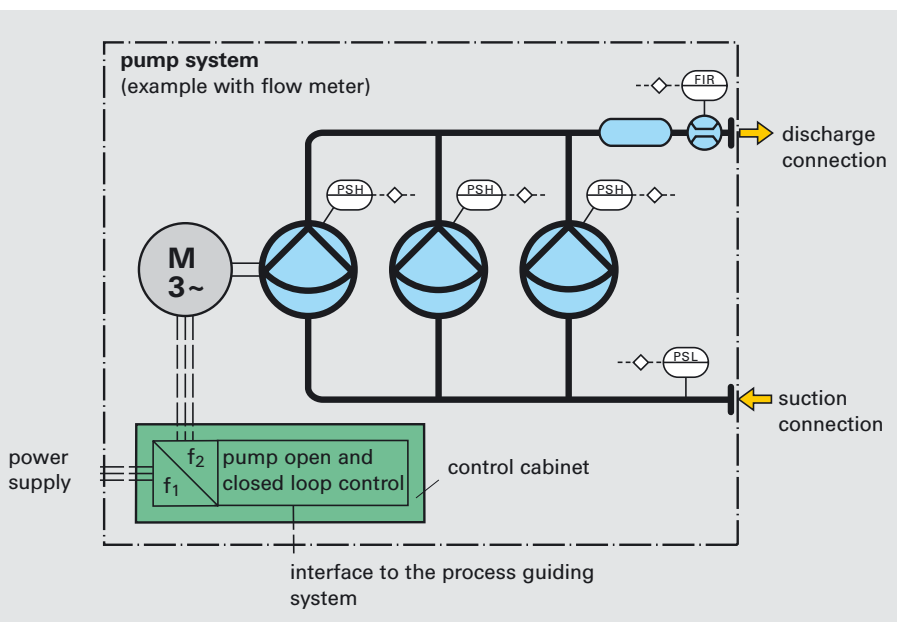
- Computer-supported, expert design of pipelines and pulsation dampers
- Vibration analysis
- Fluid evaluations
- Commissioning on-site
- System tests
- Service and maintenance contracts
- Service worldwide
- Consultation for changed operating conditions
- Extension and modification of existing pumps and systems



*Consultation at an early  
stage already:  
fluid evaluations and computer  
supported pipeline calculations  
save money even before the  
actual investment has started*

## Expandable system solutions

- Instrumentation for the pump
- Flow adjustment via frequency inverter
- Interfaces to the process guiding system
- Online and offline condition monitoring systems for electronic control

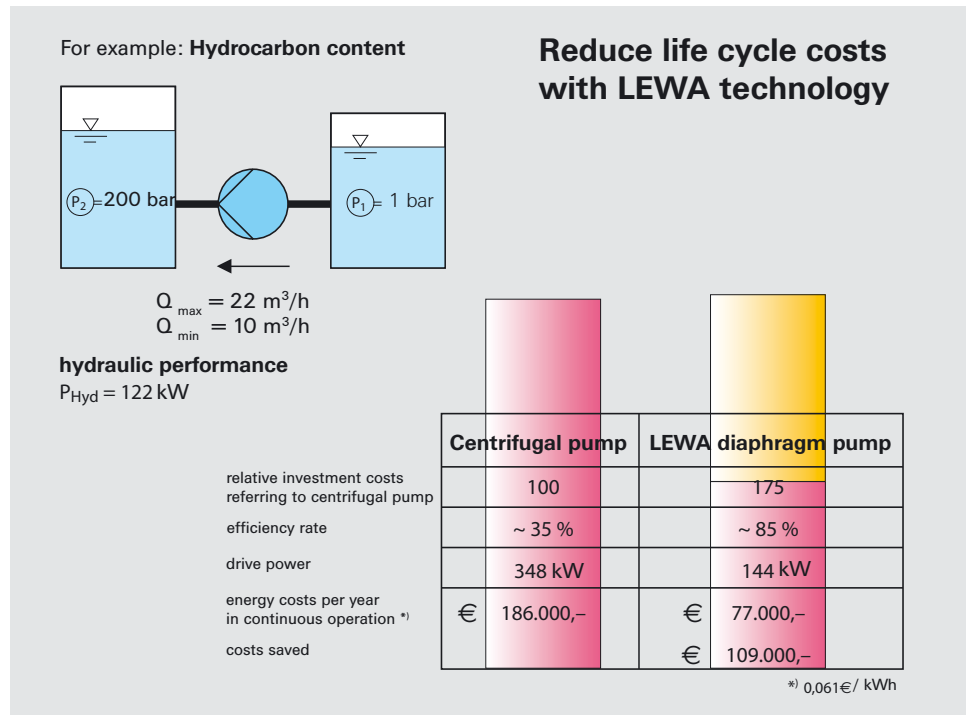


# Advantage of diaphragm pumps: Low life cycle costs

## Low life cycle costs

The low life cycle costs are determined by a high overall efficiency with low energy costs and by low maintenance costs due to long diaphragm up-times and long maintenance intervals.

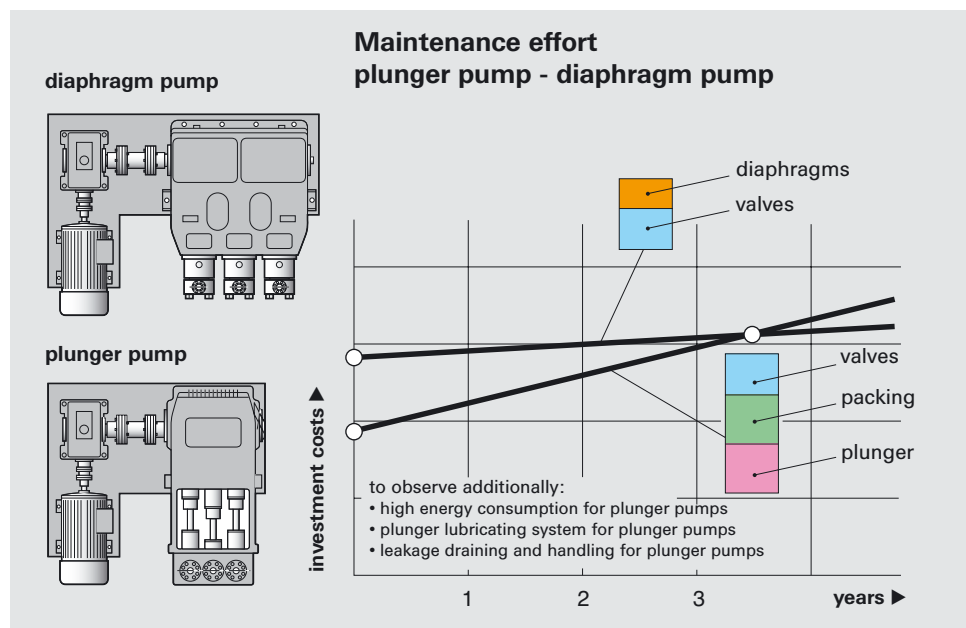
The life cycle costs of the LEWA process diaphragm pumps are lower compared to centrifugal pumps.



**Low life cycle costs:**  
*high overall efficiency,  
low energy consumption  
and long maintenance  
intervals*



**Economical even when  
pumping critical fluids:**  
e.g.  $H_2S/CO_2$  compression  
G4T, M 514 S, 110  $m^3/h$ , 215 bar



**Low maintenance costs:**  
*diaphragm pumps show  
excellent results regarding  
economical efficiency  
compared to plunger pumps*

## Wide application range



Due to their technical features and the very high operational safety LEWA process diaphragm pumps have captured many fields of application.

*Example food production:  
gentle conveying of food-stuffs,  
2 x G3 S, M500, 6 m<sup>3</sup>/h at 90 bar*



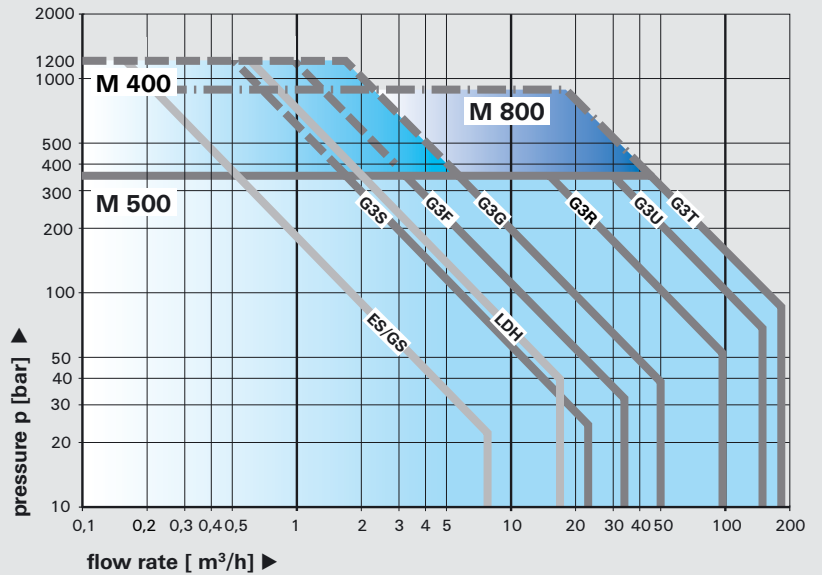
*Example chemistry:  
highly corrosive intermediate products  
14 m<sup>3</sup>/h, 350 bar, G3 R, M500*

# Technical data

## Performance range table

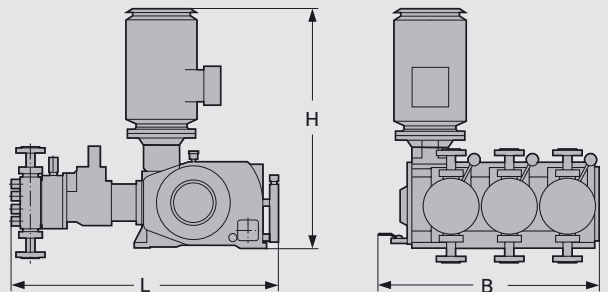
For determining the drive element size. The graphs for the LEWA pump types ES/GS, LDH, LG are applicable for simplex pumps.

Diaphragm pump heads  
**M400** with metal diaphragm  
**M500** with PTFE diaphragm  
**M800** with PTFE diaphragm

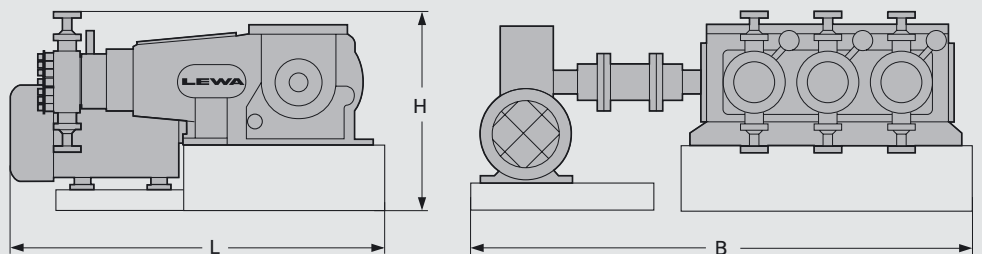


## General overall dimensions

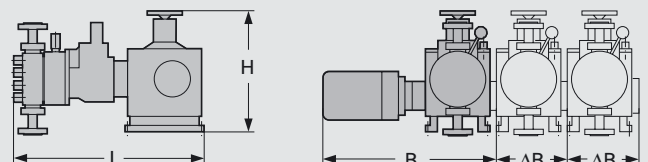
Type	L [mm]	B [mm]	H [mm]
G3S	1300	1150	1350
G3F	1600	1550	1850
G3G	2200	1750	1950
G3R	2950	2050	2400



Type	L [mm]	B [mm]	H [mm]
G3U	3300	4450	1750
G3T	3600	4950	2200



Type	L [mm]	B [mm]	$\Delta B$ [mm]	H [mm]
LDE	700	800	320	670
ES/GS	1300	1300	490	1000
LDH/LDHB	2100	1800	717	1500



The dimensions given may differ depending on the size and type of pump head mounted

# The wide scope of supply



LEWA ecoflow



LEWA micro-metering pumps



LEWA ecodos



LEWA metering systems and packages

In addition to the process diaphragm pumps LEWA manufactures metering pumps, metering systems and metering packages. If you are interested in our complete scope of supply we would be pleased to send comprehensive information and leaflets to you.

## ■ LEWA ecoflow

The universally applicable metering pump series in modular design is the technically and economically optimal solution for medium and high pressures. Drive units and pump heads can be combined to multiplex pumps even in different frame sizes. A variety of drives and accessories are available for application specific adaptation.

### Performance range

Flow rate	up to 10 m <sup>3</sup> /h
Discharge pressure	up to 1200 bar

## ■ LEWA ecodos

Standard diaphragm metering pumps for low pressure services using a patented, mechanically actuated four-layer PTFE sandwich diaphragm for multiple safety. In simplex or multiplex configurations.

### Performance range

Flow rate	up to 1,5 m <sup>3</sup> /h per pump head
Discharge pressure	up to 20 bar

## ■ LEWA micro-metering pumps

Micro-metering pumps with hydraulically actuated metal diaphragm, used predominately in the laboratory and process research duties in pilot plants.

### Performance range

Flow rate	up to 68 l/h
Discharge pressure	up to 560 bar

## ■ LEWA metering systems

LEWA metering systems are modular combinations of pump with adjusting device for stroke length and/or speed. Flow meters (volume- or mass-flow) and closed loop controller. The metering pump is operated in a closed control loop.

## ■ Standard metering packages

LEWA has developed standardized solutions for a wide range of applications. Examples for this are acid dilution, gas odourization, polyethylene cross-linking, and solar powered chemical injection.

## ■ Tailor-made metering packages

LEWA metering/mixing packages support process automation and are designed and built to meet specific customer requirements with a complete solution for the corresponding application. LEWA supplies complete, ready to operate problem solutions for the corresponding application. The scope of supply covers turn-key standard metering packages up to the engineering and commissioning of complex systems with customized process controls, displays, data recording and external interfaces to the plant's central control system.

# Take advantage of our expertise

LEWA is a global supplier of metering pumps, process pumps, and metering systems. We strive for a close partnership with our customers in all activities related to our products. Your complete satisfaction begins with consultation before or after an order is even placed, service and repair, spare parts supply, maintenance and training.

Our services extend from comprehensive documentation for our products through fast spare parts supply, expert repairs and rebuilds, and field service for maintenance and training. This increases the up-time of LEWA pumps and packages and assures trouble-free operation.

We would be pleased to present detailed information on our scope of supply, our services and our resources that can be made available to you. Our over 50 years of experience in fluid metering and controlled volume applications is behind the design support we offer.

For this we offer:

- Correct pipe line calculation
- Fluid evaluation from the expert
- Worldwide, competent service
- Maintenance directly from the manufacturer
- Seminars from the specialist
- Spare parts supply with 24/28 hours service
- Installation of diagnosis systems



*Profit from LEWA's Kow-How at an early stage, during design or ongoing operation*

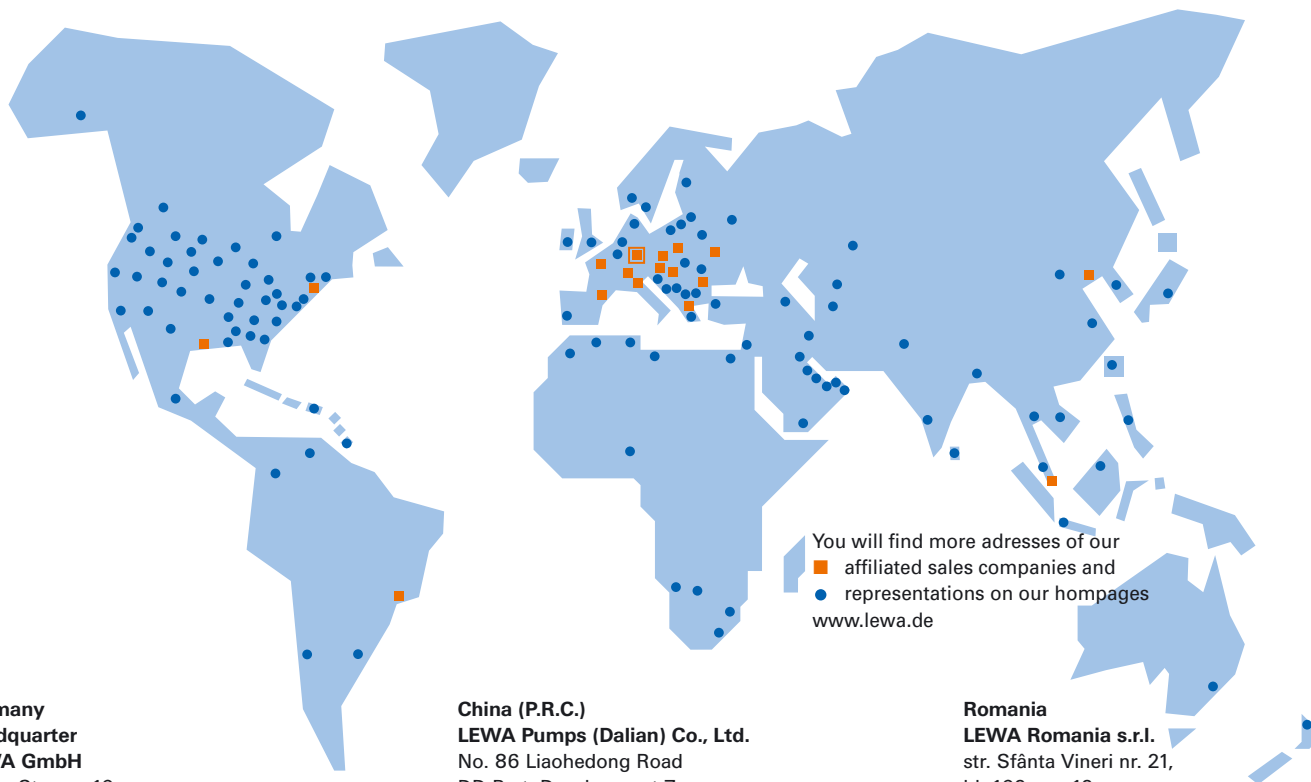


*On-site without delay: Consulting, maintenance or service. Being close to our customers is very important to us*

*Worldwide:  
With eight LEWA Centers of Competence around the globe, and over 50 experienced representatives, we are never far away*



# LEWA Group: at your service worldwide



You will find more addresses of our  
■ affiliated sales companies and  
● representations on our hompages  
[www.lewa.de](http://www.lewa.de)

## Germany

**Headquarter**  
**LEWA GmbH**  
 Ulmer Strasse 10  
 71229 Leonberg  
 Phone +49 7152 14-0  
 Fax +49 7152 14-1303  
[lewa@lewa.de](mailto:lewa@lewa.de)  
[www.lewa.de](http://www.lewa.de)

**HOV Herbert Ott**  
**Vertriebsgesellschaft mbH + Co KG**  
 P.O. Box 1637  
 71226 Leonberg  
 Phone +49 7152 6091-0  
 Fax +49 7152 6091-59  
[hov@hov.de](mailto:hov@hov.de)  
[www.hov.de](http://www.hov.de)

## Austria

**LEWA Pumpen GmbH**  
 Wattmangasse 49  
 1130 Vienna  
 Phone +43 1 8773 0400  
 Fax +43 1 8773 04029  
[info@lewa.at](mailto:info@lewa.at)  
[www.lewa.at](http://www.lewa.at)

## Brazil

**LEWA SULAMERICANA Ltda.**  
 Av. Santa Catarina 2153  
 Vila Santa Catarina  
 04378-400 São Paulo - SP  
 Phone +55 11 5677 0466  
 Fax +55 11 5564 6827  
[info@lewa-sulamericana.com.br](mailto:info@lewa-sulamericana.com.br)

## China (P.R.C.)

**LEWA Pumps (Dalian) Co., Ltd.**  
 No. 86 Liaohedong Road  
 DD Port, Development Zone  
 116600 Dalian  
 Phone +86 411 8758 1477  
 Fax +86 411 8758 1478  
[sales@lewa.cn](mailto:sales@lewa.cn)  
[www.lewa.cn](http://www.lewa.cn)

**Czech Republic**  
**LEWA Herbert Ott s.r.o.**  
 Sedláčkova 19  
 60200 Brno  
 Phone +420 5 4323 6052  
 Fax +420 5 4323 6053  
[office@lewa.cz](mailto:office@lewa.cz)

## France

**LEWA S.A.S.**  
 Z.A. des Sureaux  
 5-9 Rue d'Estienne d'Orves  
 78500 Sartrouville  
 Phone +33 1 3086 7480  
 Fax +33 1 3957 0608  
[info@pompes-lewa.fr](mailto:info@pompes-lewa.fr)  
[www.pompes-lewa.fr](http://www.pompes-lewa.fr)

## Hungary

**LEWA Herbert Ott Kft.**  
 Lovas ut. 19, fsz. 3  
 1012 Budapest  
 Phone +36 1 2240 403  
 Fax +36 1 4890 833  
[lewa.hu@lewa.at](mailto:lewa.hu@lewa.at)

## Italy

**POMPE LEWA S.R.L.**  
 Via Marconi, 28/1  
 20020 Arese  
 Phone +39 02 9358 2660 - 1  
 Fax +39 02 9358 2657  
[info@pompe-lewa.it](mailto:info@pompe-lewa.it)  
[www.pompe-lewa.it](http://www.pompe-lewa.it)

## Poland

**LEWA Polska Sp.z.o.o.**  
 ul. Andersa 13  
 00-159 Warsaw  
 Phone +48 22 6358 204  
 Fax +48 22 6358 988  
[info@lewa.pl](mailto:info@lewa.pl)

## Romania

**LEWA Romania s.r.l.**  
 str. Sfânta Vineri nr. 21,  
 bl. 102, ap. 12  
 030202 Bucharest  
 Phone +40 1 3237 598  
 Fax +40 1 3237 598  
[info@lewa.ro](mailto:info@lewa.ro)

## Singapore

**LEWA ASIA**  
**HERBERT OTT PTE LTD**  
 45 Gul Drive, Jurong  
 Singapore 629492  
 Phone +65 6861 7127  
 Fax +65 6861 6506  
[info@lewa-asia.com.sg](mailto:info@lewa-asia.com.sg)

## Spain

**LEWA Herbert Ott España, S.L.**  
 Via Trajana 50-56, Nave 49  
 08020 Barcelona  
 Phone +34 93 2247 740  
 Fax +34 93 2247 741  
[info@lewa.es](mailto:info@lewa.es)

## Switzerland

**Herbert Ott AG**  
 Nenzlingerweg 5  
 4153 Reinach 1  
 Phone +41 61 7179 400  
 Fax +41 61 7179 401  
[info@herbert-ott-ag.ch](mailto:info@herbert-ott-ag.ch)  
[www.herbert-ott-ag.ch](http://www.herbert-ott-ag.ch)

## Ukraine

**LEWA-Ukraine GmbH**  
 15-A, Holosiyvskiy prosp.  
 03039 Kiev  
 Phone +380 44 5279 631  
 Fax +380 44 5279 605  
[lewa.ua@lewa.at](mailto:lewa.ua@lewa.at)

## USA / North- and Middle America

**AMERICAN LEWA, Inc.**  
 132 Hopping Brook Road  
 Holliston, MA 01746  
 Phone +1 508 429 7403  
 Fax +1 508 429 8615  
[sales@amlewa.com](mailto:sales@amlewa.com)  
[www.americanlewa.com](http://www.americanlewa.com)



**LEWA**  
 pumps + systems