GROENEVELD-BEKA
LUBRICATION SYSTEMS BY TIMKEN

Food & Beverage

Optimise performance and improve food safety

Groeneveld-BEKA

Reducing customers' operational costs and at the same time increasing uptime, productivity, efficiency and safety of their vehicles and machines. That is what it's all about at Groeneveld-BEKA. We accomplish this by developing, producing, supplying and servicing industry-leading automatic lubrication, fluid control and safety support systems.

Groeneveld-BEKA, part of The Timken Company, is the world's second largest producer of automatic lubrication systems, fluid management and safety support systems. Groeneveld-BEKA products improve equipment lifetime and reliability, while reducing the total cost of ownership.

Groeneveld-BEKA was formed through the merger of two well-established companies: Groeneveld and BEKA. Groeneveld was founded in 1971 and acquired by Timken in 2017. BEKA was founded in 1927 and acquired by Timken in late 2019. Groeneveld has also incorporated Interlube into their brand. Interlube was acquired by Timken in 2013.

Groeneveld-BEKA products are supplied for ex-factory installs to leading manufacturers of trucks, trailers, buses, wind turbines, industrial applications, agricultural, mining and construction equipment. In addition Groeneveld-BEKA systems are installed in the after-market for a wide variety of transport, construction, agricultural, port equipment and industrial applications. Groeneveld-BEKA strives to develop and manufacture all of its products in-house according to World Class Manufacturing principles.

Automatic Lubrication Systems

Groeneveld-BEKA offers dedicated automatic lubrication systems for all kinds of equipment in a wide variety of market segments, from the smallest excavator to the largest trucks and industrial applications. The application of our high-end systems leads to decreased wear and tear of critical components resulting in extended lifetime, less downtime and reduced repair and maintenance costs. In short: higher productivity and lower operational costs. As maintenance technicians no longer have to climb on or crawl under the equipment, Groeneveld-BEKA's automatic lubrication systems also contribute to safety.

For optimal greasing in all circumstances Groeneveld-BEKA also offers the right type of grease for every application and every system. This is your guarantee for many years of trouble-free operation of your system and perfect lubrication of your valuable equipment.

Fluid Control

Groeneveld-BEKA's fluid management systems reduce daily maintenance and minimize the risk of unexpected downtime by controlling engine oil levels or removing contamination. Next to the oil management systems, Groeneveld-BEKA also offers systems which easily convey hydraulic power from fixed to moving points.

Safety Support Systems

For many years, Groeneveld-BEKA supplies safety support systems for a wide range of applications. Speedlimiters as well as obstacle detection and camera systems by Groeneveld-BEKA increase safety in many segments from road transport to construction, port, terminal and internal transport.

The World of Lubrication

Groeneveld-BEKA is a global enterprise with a worldwide coverage. In many countries, the company is also represented by independent distributors and dealers – all just as driven as our own organisation to offer added value to the customer's company.

With decades of experience providing reliability services to a range of industries, Groeneveld-BEKA offers complete automated maintenance solutions for all your needs. Groeneveld-BEKA's reliability products maintain your equipment, helping you increase uptime and improve profitability.

Visit the Groeneveld-BEKA website for contact details of our subsidiaries, distributors and service dealers.

Less maintenance, improved efficiency and lower costs.

Many food & beverage processors need to run their production 24/7 to stay competitive. It is apparent that the maintenance team has a lot to handle under such conditions. Downtime can be extremely costly in this time-sensitive industry: reliability is essential. Stoppages for maintenance, critical failures and contamination problems are serious threats to efficient production.

Bearings along with related components like bushings and chains are essential components for food & beverage industry equipment. Manual lubrication of these components is not only without risk, it also takes time. Time during which a the equipment should be in operation. In the end it is all about profitability. Groeneveld-BEKA's automatic lubrication systems have been proven to extend component life compared with manual greasing, cutting the cost of component replacements, reducing downtime and improving efficiency and safety.

The benefits

The benefits of automatic lubrication are clear: a better greasing of critical components, no time wasted on manual lubrication and the certainty that lubrication points will always be lubricated independent of time schedules or operators. All resulting in significant cost savings, improving uptime and efficiency.

Higher efficiency

- Reduced downtime due to better and uniform lubrication of all critical components while the equipment is in motion when lubrication takes place, resulting in less wear and tear.

Reduced costs

- Reduced lubricant spillage that occurs with manual lubrication. Savings of lubricant due to a good designed lubrication system can be up to 80%
- Improved availability of maintenance personnel for other technical activities
- Less spoils due to equipment break down
- Energy and waste reduction

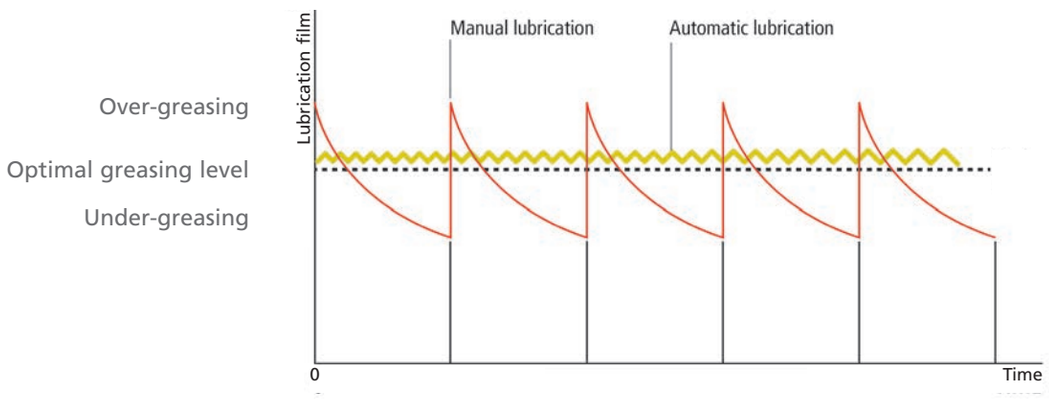
Decreased maintenance

- With manual lubrication, grease will follow the path of least resistance due to the fact that greasing has to take place under static conditions. So, the grease is not equally distributed around the lubrication point. Automatic lubrication avoids this, as lubrication will take place during operation, reducing wear of critical components.
- The lubrication is done automatically and is also monitored. Forgetting to lubricate e.g., difficult to reach lubrication points by the service staff is eliminated.
- Automatic lubrication with minimized quantities during the running time of the equipment, enables the complete consumption of lubricant by the bearing and prevents that sealings are pressed out due to high lubricant pressure.
- Reduced replacement rate of components and bearings up to 50%.

Improved safety

- Reduce risk of injuries from manual tasks, heavy loads or slippery environments
- Comply with health, safety and environmental regulations

Effectiveness of Automatic Lubrication



Automatic lubrication systems for the food & beverage industry

The food & beverage industry includes all the companies involved in transforming raw agricultural goods into consumer food products. The overall supply chain includes food processing, packaging and distribution of fresh food, packed food and beverages. Groeneveld-BEKA offers a customised solution for any application in the food & beverage industry.

Conveyor belts

Overhead conveyors

Sterilizers, retorts & cookers

Chocolate forming equipment

Dough production

Baking line

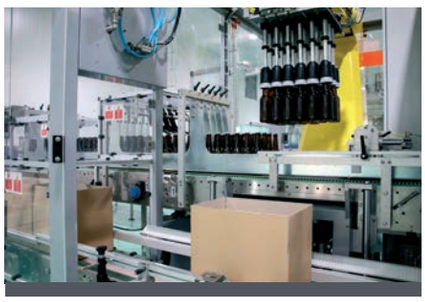
Blow molding equipment

Washing equipment

Filling equipment

Can sealing equipment

Labeling equipment



Packaging equipment

Automatic lubrication solutions

Less maintenance, improved efficiency

Food & Beverage

BEKA® Xlube

The BEKA® Xlube is an electrically operated gear pump unit and is a commonly used system for industrial applications. It's a versatile system and can be used to lubricate the lubrication points with either oil or fluid greases in a single-line system.

- Integrated float switch for fill-level monitoring for use with oil
- Integrated proximity switch and pressure-switch for use with fluid grease
- Compact design

System overview

Reservoir
The reservoir can easily be filled with lubricant by removing the lid on top of the reservoir.

Level monitoring
Optionally a level monitoring can be equipped in the reservoir. The level monitoring can be used to switch off the device, the machine or for activating a visual or acoustic warning signal.

Pressure gauge
The Xlube can be ordered with or without a pressure gauge.

Suction filter
The gear pump and the pressure relieve valve inside the pump are protected from strong pollution by an internal sieve.

Control unit
The BEKA® XLube can be controlled with an external control device.

Metering valves
Different metering valves can be used in combination with the Xlube lubrication system. The most common combination is to use the system with the DVB-1-2-3 or 231-DV single-line valves.

Technical information

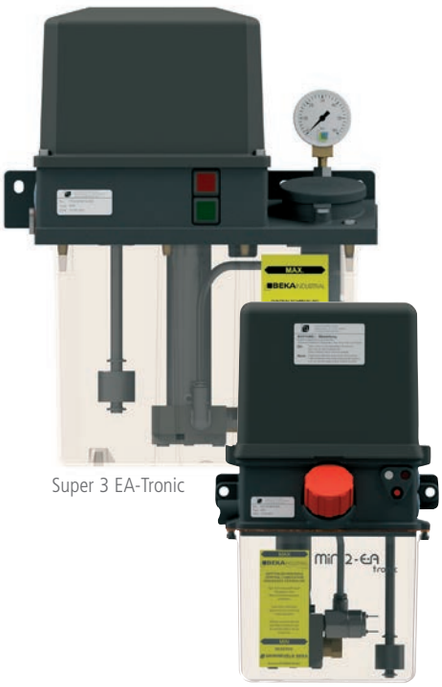
Pump type	Electrically operated gear pump
No. of outlets	1
Delivery volume	0,2 l/min
Maximum operating pressure	28 bar (406 psi)
Operating temperature (ambient temperature)	0 up to 40 °C (32 up to 104 °F)
Lubricant	Oil, viscosity range 20 - 700 cSt
	Fluid grease NLGI-000 - NLGI-00
Reservoir material	Plastic, transparent
Reservoir capacity	1,2 l
Supply voltage	230 V AC
Protection class	IP54

BEKA® Mini 2 & Super 3 Series

The BEKA® Mini 2 and BEKA® Super 3 systems are electrically operated gear pump units and are used in single-line systems to lubricate the lubrication points with either oil or fluid greases.

- Integrated float switch for fill-level monitoring for use with oil
- Integrated proximity switch and pressure-switch for use with fluid grease
- Compact design

System overview



Super 3 EA-Tronic

Mini 2 EA-Tronic

Control unit
All systems in the Mini 2 and Super 3 range can be operated with an internal control, the BEKA® EA-tronic, or an external control.

Filling and ventilation filter
All systems in the Mini 2 and Super 3 range can be equipped with a filling and ventilation filter.

Signal light
The pumps in the Mini 2 and Super 3 range can be equipped with signal lights for an easy indication of the functioning of the system.

Level monitoring
Optionally a level monitoring can be equipped in the reservoir. The level monitoring can be used to switch off the device, the machine or for activating a visual or acoustic warning signal.

Pressure gauge
All systems within the Super 3 range can be ordered with or without a pressure gauge.

Metering valves
Different metering valves can be used in combination with the Mini 2 and Super 3 lubrication system. The most common combination is to use the system with the DVB-1-2-3 or 231-DV single line valves.

Technical information Mini 2

Pump type	Electrically operated gear pump
No. of outlets	1
Delivery volume	0,4 l/min
Maximum operating pressure	35 bar (507 psi)
Operating temperature (ambient temperature)	0 up to 40 °C (32 up to 104 °F)
Lubricant	Oil, viscosity range 20 - 700 cSt
	Fluid grease NLGI-000 or NLGI-00 (according to release list)
Reservoir material	Plastic
Reservoir capacity	1,5 l
Supply voltage	24 V DC,
	115 or 230 V AC
Protection class	IP54

Technical information Super 3

Pump type	Electrically operated gear pump
No. of outlets	1
Delivery volume	0,4 l/min
Maximum operating pressure	35 bar (507 psi)
Operating temperature (ambient temperature)	0 up to 40 °C (32 up to 104 °F)
Lubricant	Oil, viscosity range 20 - 700 cSt
	Fluid grease NLGI-000 or NLGI-00 (according to release list)
Reservoir material	Plastic or steel
Reservoir capacity	Plastic: 2,7 or 6 l
	Steel: 6 l
Supply voltage	24 V DC
	115, 230 or 400 V AC
Protection class	IP54

Food & Beverage

BEKA® ES/EA Series

The BEKA® ES-AS Series is a complete range of gear pumps to automatically lubricate lubrication points with fluid grease or oil. The ES-EA Series is a single-line system and is available with a wide range of reservoirs or as a gear pump only, without a reservoir.

All pump units in the ES-EA Series can be controlled with an external control unit.

- Large range of reservoirs, varying from 3 up to 30 litres
- Reservoirs available in aluminium, steel or transparent plastics

System overview

ES-Series pump

EA-Series pump

Gear pump
All pumps in the ES-EA Series are equipped with a gear pump. The output rate differs between the ES and EA-range. The ES range has an output of 0,4 litre per minute, while the output for the EA range differs from 0,4 up to 2 litres per minute.

Low level switch
The low level switch protects the lubrication system and the machine which has to be lubricated against damage resulting from a lack of lubricant. Depending on the need, the low level switch can be used for switching off the lubrication system, the machine or for actuating a visual or audible alarm signal.

Filling and ventilation filter
Filling the pump happens via the filling connection with an integrated filter at the top of the reservoir. Due to the filter the conveying medium is filtered from heavy contamination before it ends up in the reservoir.

Reservoir
The reservoir of the ES-EA Series pumps is made of aluminium, steel, or transparent plastics. The aluminium and steel reservoirs are equipped with a level indicator to visualise the level of lubricant in the reservoir.

Reservoirs are available in varied sizes, ranging from 3 up to 30 litres.

Optional oil drain screw
All reservoirs are can be equipped with an oil drain screw at the bottom of the reservoir to enable easy drainage of the reservoir for maintenance, cleaning of the reservoir or replacement of the conveying medium.

Working principle

The lubrication system is activated by an external control unit. The pump sucks the lubricant from the reservoir and supplies it into the line system until the pressure switch responds. The connected metering injectors pass on lubricant each time the pressure builds up. When the lubrication process has finished, pressure in the system is relieved via the pressure relieve valve.

The ES-EA Series systems are completed with the single line metering injectors DVB-1-2-3 or the Z31-DV.

Technical information ES

Pump type	Electrically operated gear pump
No. of outlets	1
Operating pressure	Max. 35 bar (507 psi)
Delivery volume	0,4 liter per minute
Lubricant	Oil, viscosity range 20 - 700 mm2/s Fluid grease NLGI-000 or NLGI-00 (according to release list)
Reservoir material	Aluminum; steel or transparent plastic
Reservoir volume	3; 6; 13; 16 or 30 litres
Operating temperature (ambient temperature)	0 up to 40 °C (32 up to 104 °F)
Operating voltage (geared motor)	400 V AC / 3~
Protection class (motor)	IP54

Technical information EA

Pump type	Electrically operated gear pump
No. of outlets	1
Operating pressure	Max. 35 bar (507 psi)
Delivery volume	0.4 litre per minute
Operating temperature (ambient temperature)	0 up to 40 °C (32 up to 104 °F)
Lubricant	Oil, viscosity range 20 - 700 mm2/s Fluid grease NLGI-000 or NLGI-00 (according to release list)
Reservoir material	Transparent plastic
Reservoir volume	3 or 6 l
Operating voltage (geared motor)	400 V AC / 3~
Protection class (motor)	IP54

Technical information EA3, EA6

Pump type	Electrically operated gear pump
No. of outlets	1
Operating pressure	Max. 35 bar (507 psi)
Delivery volume EA3	1 liter per minute
Delivery volume EA6	2 liter per minute
Operating temperature (ambient temperature)	0 up to 40 °C (32 up to 104 °F)
Lubricant	Oil, viscosity range 20 - 700 mm2/s Fluid grease NLGI-000 or NLGI-00 (according to release list)
Reservoir material	Aluminum, steel or transparent plastic
Reservoir volume	3; 6; 13; 16 or 30 litres
Operating voltage (geared motor)	400 V AC / 3~
Protection class (motor)	IP54

Groeneveld® Twin

Unique product features make the Groeneveld® Twin the best solution for larger machines that are often used under extreme conditions. The system works under relatively low pressure, which means that the structure – and therefore the quality – of the grease is preserved.

The dual-line system with its patented metering units ensures that all lubrication points are always optimally lubricated. This is made possible due to precise metering and lubrication intervals, also in case of extremely low or high ambient temperatures and large distances between pump and lubrication points.

- Grease output and delivery independently of ambient temperature and grease viscosity
- Modern pump with real-time clock, memory, CAN-Bus connection and follower plate
- High quality metering units and distribution blocks
- Standard with external display
- The filling coupling with filter prevents contamination during filling

System overview

Twin

Follower plate
The follower plate ensures that all the grease in the reservoir is used. This means that the reservoir wall remains clean, allowing you to check the grease level visually. Ageing of the grease as a result of oxidation is also prevented.

Reservoir
The Groeneveld Twin is available with reservoir volumes of 3, 4, 6 and 8 litres.

Filler coupling with filter
The filling coupling with integrated grease filter prevents contamination of the grease during filling.

Pump housing
The pump is made of hard anodised aluminium and nylon reinforced - containing the control unit, memory database and minimum level indicator.

Twin XL & Twin barrel pump

For larger applications, the Groeneveld Twin range includes the Twin XL with an extra large reservoir of 20 litres. An automatic lubrication system with a higher grease delivery and an extra large reservoir, made of sturdy and coated material.

For machines with an extremely high grease demand Groeneveld-BEKA also supplies a Twin barrel pump with reservoir volumes from 40 to 200 litres.

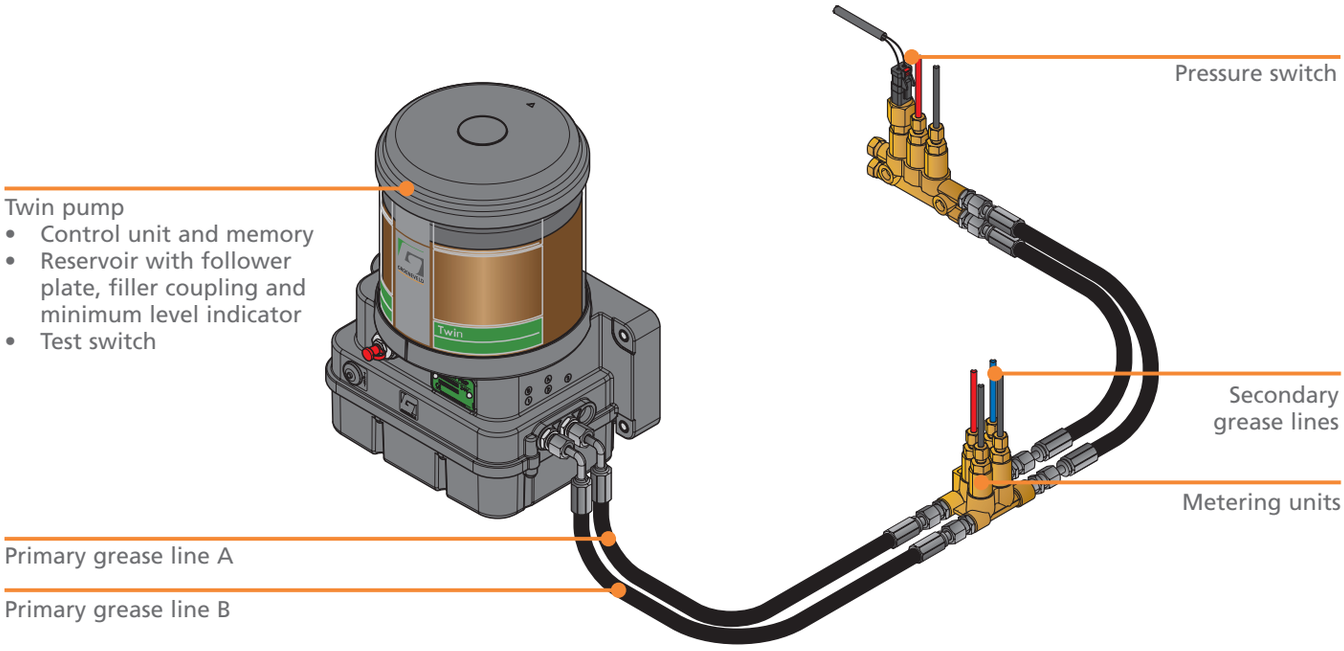
The major benefit will be that the user rarely needs to refill the reservoir.

Twin XL

Working principle

A Groeneveld® Twin system consists of a pump with grease reservoir, a main line network to the distribution blocks with metering units and a secondary line network to the lubrication points. The grease is pumped to the distribution blocks via a double main line network. The metering units supply the exact right amount of grease to each of the lubrication points.

The pump switches off once the pressure in all metering units is at least 100 bar. As a result, always the right amount of grease is provided at each lubrication point, independent of counter-pressure, temperature or viscosity of the grease.



Technical information Twin

Pump type	Electrically operated piston pump
No. of outlets	1 outlet excising of 2 main lines
Maximum number or lubrication points [1)]	200
Delivery volume Twin	12 cm^3/min.
Delivery volume Twin XL	20 cm^3/min.
Delivery volume Twin barrel pump	60 cm^3/min.
Maximum operating pressure	250 bar (3625 psi)
Lubricant	Grease class NLGI-2
Temperature range	-20 up to +70 °C (-4 up to 158 °F)
Supply voltage	12 or 24 V DC
Protection class (pump unit)	IP67

[1)] Depending on system resistance, grease delivery and line length

Groeneveld® MultiLine

The Groeneveld® MultiLine is a range of automatic lubrication systems designed for self-install on light industrial applications. It enables the use of automatic lubrication on applications where return on investment is challenging.

With all of the greasing points lubricated automatically, the service interval and lifetime of the application are extended significantly. This makes the MultiLine AC a smart investment in operational efficiency.

- Suitable for oil SAE 80/90 up to NLGI-2 grease
- Designed for self-install
  - All components in a box
  - All fittings are standard with push-fit connectors
  - Lines are numbered
  - Lines are precut and grouped
- Reduces operational costs and increases efficiency
- Waterproof and corrosion resistant

Ready to install kit

The MultiLine can be ordered as ready to install kits. These pre-loomed kit contains all the necessary items for complete installation: injectors, tubing, connectors and adapters. A layout drawing is supplied for easy installation.

Approximately about one hour is needed to install the pump and 15 minutes per lubrication point.

The ready-to-install kits ensure a quick installation and problem-free operation.

System overview

MultiLine AXL

Fill cap
The MultiLine oil pumps are fitted with a bulk fill cap which is suitable for oil fill.

Reservoir with paddle blade
The reservoir of the MultiLine AC and AXL are equipped with a paddle blade which pushes the lubricant into the pumping chamber and provides a visual indication of the pumps operation. Both versions are available in a 1,25 or 2 litre reservoir.

Filler coupling
At the bottom, the pump is equipped with a grease nipple for filling with grease. Using the grease nipple adaptor for grease fill avoids the possibility of air entrapment and cavitation.

Push fit connectors
The MultiLine AC pumps are pre-loomed from the pumping elements. The push fit connectors provide an easy installation of the lubrication lines.

Outlets
The MultiLine AXL pumps are pre-loomed from the pumping element to the bulkhead connections on the pump bracket. The push fit connectors provide an easy installation of the lubrication lines. The AXL pump is available with up to 12, 24 or 36 outlets and pre-calibrated with blue 0,04 cm^3 pumping units

The MultiLine AC pumps are also pre-loomed but unlike the AXL, the MultiLine AC is not equipped with a pump bracket. The AC is available with up to 60 outlets and is pre-calibrated with yellow 0,025 cm^3 pumping units.

If a lubrication distribution line is not required, the line can be removed and simply replaced with a blanking plug.

Pumping outlets and elements

The MultiLine series is available with up to 60 outlets. For each outlet a separate pumping element has to be used. If one of the outlets is not used, it can easily be covered by a blanking plug.

A selection of pumping elements with varying outputs are available to suit almost any need. The different elements all have their own output and are recognizable by the color ring. The maximum output pressure of each pump element is 120 bar (1740 PSI).

Each pumping element has a push fit connector to provide an easy installation of the lubrication lines.

Color	Output/stroke	Outlet size
Red	0,010 cm^3	4 mm OD Push type
Green	0,015 cm^3	
Yellow	0,025 cm^3	
Blue	0,040 cm^3	
Grey	0,060 cm^3	
Black	0,100 cm^3	

Technical information MultiLine AC

Pump type	Electrical
No. of outlets	Max. 60
Maximum operating pressure	120 bar (1740 psi, 12 MPa)
Lubricant	Oil SAE 80/90 up to NLGI-2 grease
Reservoir capacity	1,25 or 2 l
Temperature range [1)]	-23 up to 60 °C (10 up to 140 °F) with Greenlube NLGI-0-grease -13 up to 60 °C (9 up to 140 °F) with Greenlube NLGI-2 grease Based on maximum lubricant distribution line length of 10m (32ft)
Operating voltage	12 or 24 V AC
Protection class	IP66

[1)] Use of other greases might lead to a different temperature range.

Technical information MultiLine AXL

Pump type	Electrical
No. of outlets	Max. 36
Maximum operating pressure	120 bar (1740 psi, 12 MPa)
Lubricant	Oil SAE 80/90 to NLGI-2 grease
Reservoir capacity	1,25 or 2 l
Temperature range [1)]	-23 up to 60 °C (10 up to 140 °F) with Greenlube NLGI-0-grease -13 up to 60 °C (9 up to 140 °F) with Greenlube NLGI-2 grease Based on maximum lubricant distribution line length of 10m (32ft)
Operating voltage	110 or 220 V DC
Protection class	IP66

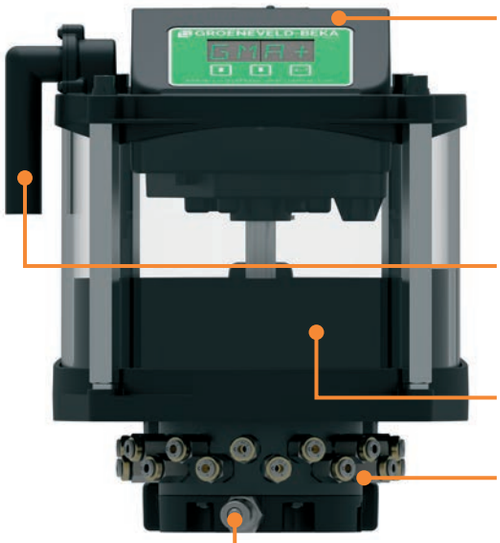
[1)] Use of other greases might lead to a different temperature range.

Groeneveld-BEKA® GM

The Groeneveld-BEKA GM is the latest development in multi line technology. The GM has been designed for easy service and exchange of sealed for life components. Adjusting the system to the lubrication needs and upgrading the system, as well as servicing the system, will be easy due to the modular concept.

- Modularity enables to meet customer specific requirements, from basic to high-end
- Interchangeable components make it easy to service and adjust
- Easy maintenance
- OEM quality standards, compliant with IATF & SPICE regulations
- Waterproof and corrosion resistant
- Suitable for oil SAE 80/90 up to NLGI-2 grease

System overview



GMA+

Top module: the top cover
The top cover comes in 2 versions, the GMA and the GMA+. The GMA is delivered without a control unit, where the GMA+ does.

The control unit allows the user to set the grease interval or the pump via the display and touch pads on the integrated PCA display

Both GMA and GMA+ versions include the gear motor and the main connector.

Oil refilling inlet
At the top of the pump a refilling tube is installed to refill the reservoir with oil.

Central module: the reservoir incl. paddle blade
The reservoir is equipped with a paddle blade which is directly connected to the gear motor. The rotation of the paddle blade minimizes air pockets and grease separation in the reservoir.

Lower module: the pumping element outlets
The GM is available with 3 different amount of outlets, with possibility to use up to 18, 36 or 72 outlets.

There are 6 different pumping elements with push to fit connectors available with varying outputs. The push to fit connection provides an easy installation of the lubrication lines. If an outlet is not required, they can easily be covered with a blanking plug.

Grease refilling inlet
At the bottom of the pump a refilling inlet in installed to refill the reservoir with grease. This inlet avoids the possibility of air entrapment of the grease.

Top cover

The GM is delivered with the basic GMA top module. The top module can easily be upgraded to the GMA+ module, which offers an integrated control unit.

The integrated control unit has a 4 digit display and touch pads, making it easy to program, adjust the greasing interval and check the system status. Alarms and warning messages are also showed on the display.

Reservoir

When in need of a different size of reservoir, the reservoir can be upgraded to one of the available reservoir sizes. Reservoirs are available with a 2, 3 or 5 liter capacity. With changing the size of the reservoir, automatically the paddle blade has to be changed to suit accordingly.

Pumping outlets

The GM series is available with up to 18, 36 or 72 outlets. For each outlet a separate pumping element has to be used. If one of the outlets is not used, it can easily be covered by a blanking plug.

A selection of pumping elements with varying outputs are available to suit almost any need. The different elements all have their own output and are recognizable by the color ring. The maximum output pressure of each pump element is 120 bar (1740 PSI).

Each pumping element has a push fit connector to provide an easy installation of the lubrication lines.

Color	Output/stroke	Outlet size
Red	0,010 cm^3	4 mm OD Push type
Green	0,015 cm^3	
Yellow	0,025 cm^3	
Blue	0,040 cm^3	
Grey	0,060 cm^3	
Black	0,100 cm^3	

Technical information Groeneveld-BEKA GM

Pump type	Electric
No. of outputs	18, 36 or 72
Maximum operating pressure	120 bar (1740 psi, 12 MPa)
Lubricant	Oil SAE 80/90 to NLGI-2 grease
Reservoir capacity	2; 3 or 5 l
Low level sensor	Optional
Temperature range [1)]	-20 up to +70 °C (-4 up to 158 °F) with use of Greenlube EP-2
Operating voltage	12 or 24 V DC
Protection class (reservoir)	IP54
Protection class (electronic compartment)	IP69K
Regulations / EMC	UL 778:2016 Certification

[1)] Use of other greases might lead to a different temperature range.

BEKA® OKG-OC Series

The BEKA® OKG-OC Series is a range of electrically actuated oil lubrication pumps with up to 21 lubrication outlets. The complete series contains a wide range of different pump types which are used as a multiline lubrication system for a variety of industrial applications.

- A versatile solution for a variety of industrial applications
- Springless pump elements with desmodromic drive for highest reliability

System overview

Filling cover
The OKG-OC pumps are equipped with a filling cover to make it easier to fill the reservoir with oil. Below the cover a large sieve is located to filter contaminations out of the lubricant.

Level monitor
The OKG-OC range can be equipped with an electronic oil level controller to monitor the minimum oil level in the reservoir.

Reservoir
Lubrication pumps in the OKG-OC range are equipped with a plastic reservoir with different capacities, ranging from 2,5 to 8 liter.

Control unit
The OKG-OC series differ in control type. Depending on the pump type, they are delivered with or without an integrated EP-tronic control unit in the bottom housing.

The EP-tronic control unit offers you:
- 3 control functions: time, stroke or revolutions
- Electronic monitoring of grease level, pump function, distributor function and lubricant feeding
- Integrated data logger with diagnosis module DiSys

Pump elements

Up to 21 lubricant outlets can be installed on the pump. A separate pump element is required for each outlet. Five different pump elements with different flow rates are available for the OKG-OC Series. All pump elements are marked either with a groove or with a notch for a better differentiation.

Type	Metering volume
PE5	0,005 cm³ per stroke and outlet
PE10	0,010 cm³ per stroke and outlet
PE15	0,015 cm³ per stroke and outlet
PE25	0,025 cm³ per stroke and outlet
PE50	0,050 cm³ per stroke and outlet

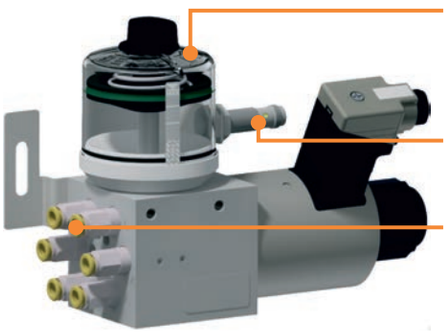
Technical specifications

Pump type	Electrically operated oil lubrication pump
No. of outlets	Max. 21
Operating pressure	Max. 200 bar (2900 psi)
Delivery volume per stroke and outlet	0,005 cm³ to 0,050 cm³ (depending on pump element)
Reservoir capacity	2,5; 4,2 or 8 l
Lubricant	Oil, viscosity range: 25 - 1500 cSt
Operating temperature	-20 to 70 °C (-4 up to 158 °F)
Operating voltage	12 or 24 V DC
Protection class	IP55

BEKA® K-Series

The BEKA K-Series is a range of electromagnetic driven piston pumps with up to 6 lubrication outlets, used to lubricate with oil or fluid greases up to NLGI-0. The complete series contains a variety of different pump types which are preferably used for precise lubrication, like with chain lubrication.

System overview



K-600PX

Reservoir
Lubrication systems in the K-Series can be equipped with a plastic reservoir with different capacities, ranging from 0,08 to 4,2 liter. Also, a separate reservoir can be placed on the pump via a separate fitting.

Level monitoring
For all pumps with reservoir a level monitoring is optional.

Pump outlets
Most pumps within the K-Series are available with 1 up to 6 outlets. Each outlet has an output of either 0,025; 0,040 or 0,10 cm³ per stroke.

The K-600PX pumps have 6 outlets as a standard and an output of 0,025 cm³ per stroke and outlet. The special design of the K-600PX enables the possibility to change the number of outlets easily.

Working principle

All pumps within the K-Series range are electromagnetically driven. When actuating the magnet, a supply stroke is affected by the piston via the pressure pin and pressure plate inside the pump. Oil or fluid grease is sucked from the reservoir into the metering chambers and pushed into the lines to the lubrication points.

Technical specifications

Pump type	Electromagnetic driven piston pump
No. of outlets	Max. 6
Operating pressure	Max. 30 bar (435 psi)
Delivery volume per stroke and outlet	0,025, 0,040 or 0,10 cm³
Reservoir capacity	0,08 up to 4,2 l Direct connection possible
Lubricant	Oil, fluid grease NLGI-000 up to NLGI-0
Operating temperature [1)]	-15 up to 80 °C (5 up to 176 °F)
Operating voltage	24 or 180 V DC
Protection class	IP55

[1)] Depending on lubricant and pump type

BEKA® PICO

The BEKA® PICO system combines power and flexibility in perfect conditions with a compact design. The PICO system is the unique combination of progressive- and multi line technology.

The basic version of the PICO pump supplies lubricant through the progressive outlets to the lubrication points via one or more progressive distributors. In addition up to 8 lubrication points can be supplied directly via the multi-line principle. If necessary the system can be enlarged by a second progressive cycle.

- Very compact design for applications with little number of lubrication points
- Unique combination of two lubrication systems: Progressive- and multi-line technology
- Suitable for all common lubricants from NLGI-000 up to NLGI-2
- Flexible extension possibilities

System overview

Reservoir
The 1,2 litre reservoir is available with agitator blade or follower plate. The system with a follower plate can be installed in each direction, also upside down.

Follower plate
The follower plate ensures that all the grease in the reservoir is used. This means that the reservoir wall remains clean, allowing you to check the grease level visually. Ageing of the grease as a result of oxidation is also prevented.

Multi line outputs
The PICO has got 8 multi line outputs for different pump elements.

Progressive outputs
The PICO has got 2 progressive outputs for different pump elements.

Filing zerk
The pump can be filled with a standard filling gun. The filling zerk can be replaced by a filling connection to refill using a filling pump.

Control unit
The PICO can be delivered with an integrated control unit with:
- 3 control functions: time, stroke or revolutions
- Electronic monitoring of grease level, pump function, distributor function, line rupture, lubricant feeding
- Selection of operating conditions: easy, medium or heavy
- Integrated data logger with diagnosis module DiSys

The protective housing is equipped with a bayonet or Hirschmann plug-type connection.

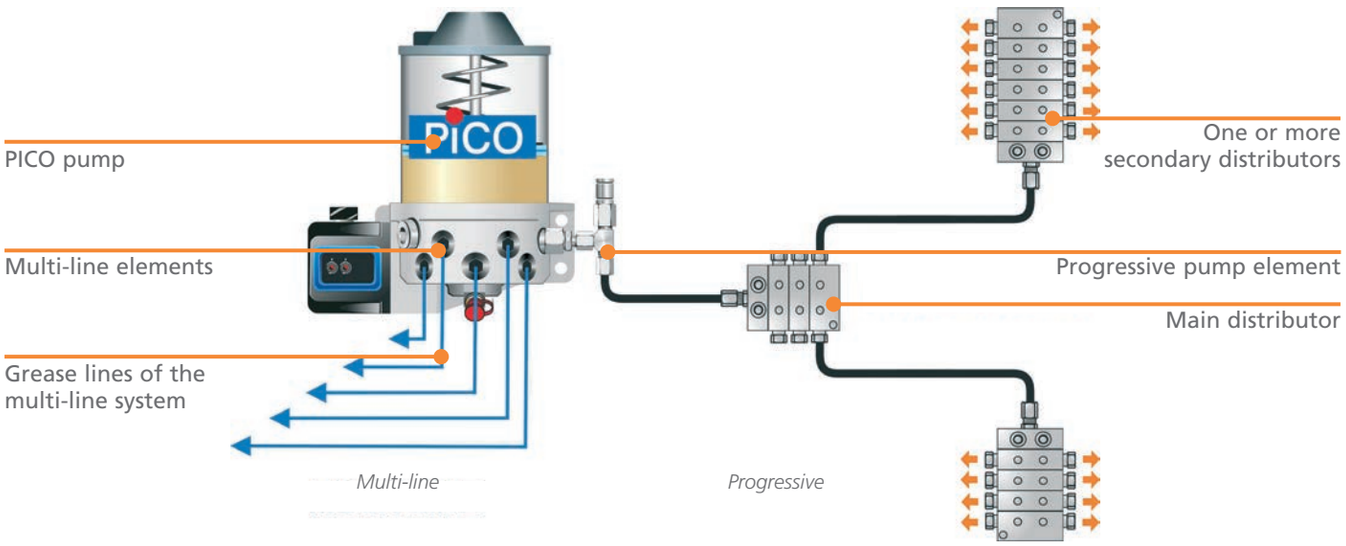
Pump elements

Two different construction types of pump elements can be installed into the device, depending on for which lubrication system or for which lubrication system combination the device is used.

System	Pump elements		Metering volume
Multi-line	PE 5		0,005 cm³/stroke
	PE 10		0,010 cm³/stroke
	PE 15		0,015 cm³/stroke
	PE 25		0,025 cm³/stroke
	PE 50		0,050 cm³/stroke
Progressive	PE 120 F	with/without pressure limiting valve	0,120 cm³/stroke
	PE 120 FV		0,04 up to max. 0,12 cm³/stroke (adjustable)

Working principle

When the pump is activated, grease is pumped through the pump elements. The pump elements transfer the grease to main and secondary progressive distributors. The multi line elements transfer the grease directly to the lubrication points.



Technical information

Pump type	Electric
No. of outlets	Max. 10; 2 progressive and 8 multi-line
Maximum operating pressure	200 bar (2900 psi) at multi-line system 280 bar (4000 psi) at progressive system
Delivery volume	Max. 0,12 cm^3 per stroke/outlet
Reservoir capacity	1,2 l
Lubricant	Greases up to NLGI-2
Temperature range	-20 up to +70 °C / (-4 up to 158 °F)
Operating voltage	12 or 24 V DC
Protection class	IP65

Food & Beverage

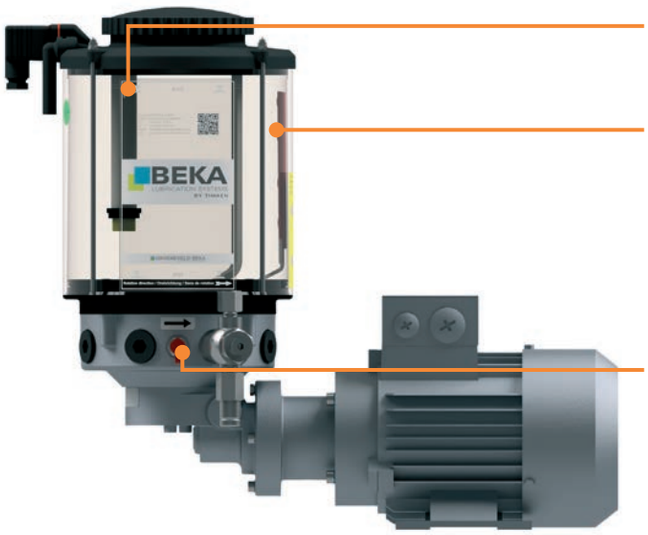
BEKA® FKG-EP Series

The BEKA® FKG-EP Series is a range of electrically actuated pumps with up to 8 lubrication outlets, depending on the pump type. The complete series contains a wide range of different pump types which are commonly used as a progressive lubrication system for a variety of industrial applications. The versatility of the system also makes it possible to set-up the system as a single line lubrication system.

The pumps in the FKG-EP Series are able to work with commercial greases from NLGI-000 up to NLGI-2.

- A versatile solution for a variety of industrial applications
- Suitable for the most common greases
- Springless pump elements with desmodromic drive for highest reliability

System overview



FKG-EP Series pump without control unit

Level monitor
The FKG-EP range be equipped with an electronic grease level controller to monitor the minimum grease level.

Reservoir
Lubrication systems in the FKG-EP range are equipped with either a plastic or steel reservoir with different capacities. All reservoirs are equipped with an agitator blade. The agitator blade pushes the lubricant into the suction area in the pump housing through a screen, preventing the lubricant from air bubbles. The agitator blade in transparent reservoirs also enable a visual check of the lubricant volume.

Filing zerk
The pump can be filled with a standard filling gun. The grease nipple can be replaced with a larger filler coupling or a straight fill-in connection to use a fill-in press.

Control unit
The FKG-EP series differ in control type. Depending on the pump type, they are delivered with or without an integrated control unit in the bottom housing.

The EP-tronic control unit offers you:
- 3 control functions: time, distributor stroke or pump revolutions
- Electronic monitoring of grease level, pump function, distributor function, line rupture and lubricant feeding
- Integrated data logger with diagnosis module DiSys

Pump element

Depending on the pump type up to 8 lubricant outlets can be installed on the pump. A separate pump element is required for each outlet. Three pump elements with different flow rates are available, as well as a flow-adjustable pump element. All pump elements are marked either with a groove or with a notch for a better differentiation.

The pump elements can be equipped with a visual malfunction indicator on the pressure relief valve. If a malfunction should occur in the lubrication system and operating pressure rises, a red pin becomes visible.

PE 60 PLV
0,06 cm³*/stroke*

PE 120 PLV
0,12 cm³*/stroke*

PE 120 V PLV
Max. 0,12 cm³*/stroke*
Adjustable output

PE 170 PLV
0,17 cm³*/stroke*

Pressure: Max. 350 bar (5076 psi)
Pressure limiting valve: adjusted to 290 bar (4206 psi)

Technical specifications

Function principle	Electric
Outlets	Max. 8, depending on pump type
Delivery volume [1]	0,06 to 0,17 cm³
Adjustable delivery volume [2]	0,04 to 0,12 cm³
Lubricant	Greases up to NLGI-2, grease with solid contents only on demand
Operating temperature [3]	-20 up to +70 °C / (-4 up to 158 °F)
Operating pressure	Max. 350 bar (5076 psi)
Pressure limiting valve	Adjusted to max. 290 bar (4206 psi)
Reservoir	1,9; 2,5; 4,2; 8 kg plastic transparent 2; 4 kg steel
Protection class	IP54
Operating voltage	12 or 24 V DC 115; 230 or 400 V AC

[1] Depending on pump element
[2] Only possible with PE 120 V
[3] Depending on lubricant

Food & Beverage

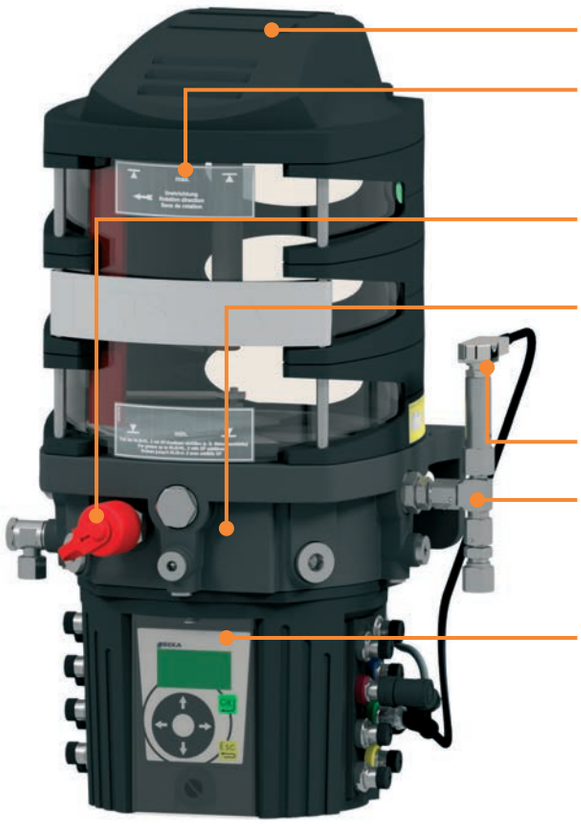
BEKA® GIGA

The BEKA® GIGA range is like having four pumps in one! It serves the full range of automatic lubrication systems and can be used as a progressive as well as a single-line, dual-line or progressive sectional system. The progressive system is the most commonly used layout.

The GIGA has three independent outlets for lubricant supply that are tied together by internal channels within the pump housing. Each channel can be used for a different section (with its own pump element) and set to a unique cycle, or they can all be combined to one lubrication circle with a higher delivery rate.

- Suitable for all lubrication systems: single-line, dual-line, progressive and progressive sectional
- Three lubrication circuits that can be operated independently
- Grease metering regardless of the ambient temperature
- Available in different reservoir sizes; 4, 8 or 16 litre

System overview



Reservoir cover

Reservoir
The GIGA is available with reservoir volumes of 4, 8 and 16 litre. All reservoirs contain a agitator blade which enables a visual check of the lubricant volume in the reservoir.

Filling port
The pump can be filled with a standard filling gun.

Pump housing
The delivery volume of the GIGA can be varied by combining the outlets to one due to the special pump body with integrated channels.

Pressure relief valve

Pump element
The GIGA has up to a maximum of 3 independently operating lubricant outlets. A separate pump element is required for each outlet.

Controller with motor housing
There are 3 different housings available:

- A version without control
- A version with the GIGA-tronic
- A version with the GIGA-multitronic control unit.

Pump elements

Two pump elements with different flow rates are available for the GIGA range. Both elements are available with or without a pressure limiting valve.

PE 120G PLV
0,12 cm³/stroke and outlet

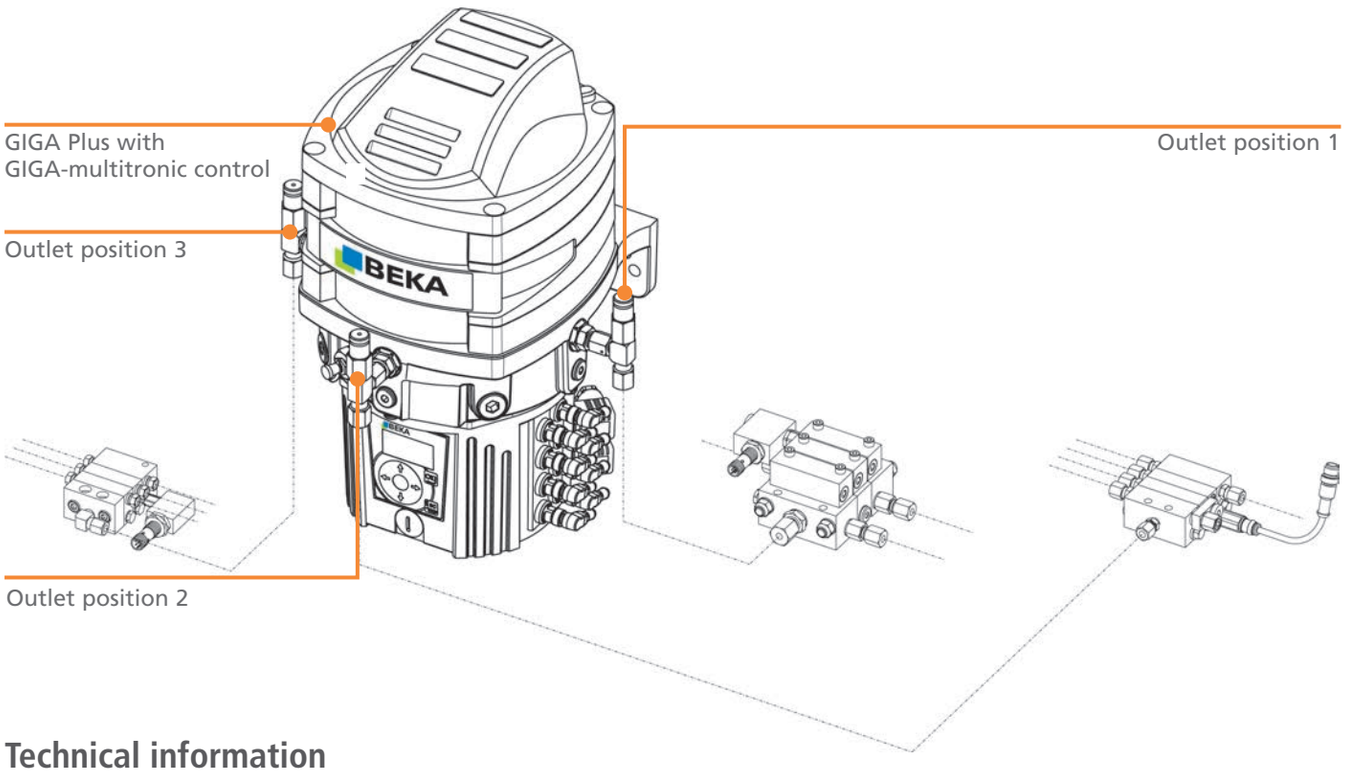
PE 250G PLV
0,25 cm³/stroke and outlet

Working principle

A progressive system consists of a lubrication pump and progressive distributors. The pump delivers the lubricant into a main distributor. The main distributor distributes the lubricant in the correct ration to the secondary distributors which continue to distribute the lubricant to the lubrication points.

By internally connecting the outputs of the GIGA pump unit you can create 1 lubrication cycle with an output of 0,25; 0,50 or 0,75 cm^3 per stroke.

The GIGA can also be set-up as an extended progressive system, a sectional system. Systems or machine groups are then divided into sections and are only lubricated when they are used.



Technical information

Function principle	Electric
Outlets	Max. 3
Delivery volume	Depending on pump element
Lubricant	Grease class NLGI-2
Operation temperature [1)]	-30 up to +70 °C (-22 up to 158 °F)
Operating pressure	Max. 300 bar (4351 psi)
Pressure limiting valve	Adjusted to max. 280 bar (4061 psi)
Number of revolutions	17 min-1
Reservoir	4; 8 or 16 l
Supply voltage	12; 24 V DC 100 up to 250 V AC
Protection class	IP67

[1)] Depending on grease class

BEKA® FL/MZ Series

The BEKA FL/MZ Series contains a range of gear pumps used to supply oil or oil-like lubricants that have sufficient lubrication characteristics. The complete series contains the FL-Series (flange pumps), the U-Series (foot pumps) and the MZ-Series (motor pumps).

FL-Series
Flange pumps in the FL-Series are mainly meant for the direct drive of machines via a coupling, e.g. in tooling machines, compressors or high-pressure pumps. The flange gear pumps are manufactured for clockwise or counterclockwise rotation, with different flow direction. A constant direction of delivery for both rotation directions is optional possible.

U-Series
The flange pumps are also available as a foot pump, which basically only differ from the flange pumps by their mounting location.

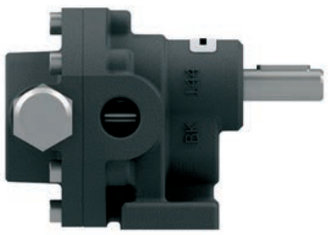
MZ-Series
Motor pumps are available in horizontal and vertical directions. Pumps in a horizontal construction can be used universally. Next to the direct installation onto a reservoir, the pump can also be installed at a machine and suck the lubricant up to a suction height of 1 meter from an oil sump. Pumps in vertical directions are mainly used for space-saving installations in reservoirs.

Pumps in the FL/MZ Series are available as an external gear pump as well as an internal gear pump. Internal gear pumps are able to handle higher operating pressures up to 100 bar and have a lower sound pressure level compared to the external gear pumps which already have a low noise level.

- Designed for 24/7 operation
- Compact and rugged design
- Low noise level
- Wide viscosity range

System overview


Flange pump


Foot pump


Horizontal motor pump


Vertical motor pump

Pressure limiting valve
Gear pumps are available with or without a pressure limiting valve. Pressure limiting valves are available for line installation as well as installation directly in the gear pump with internal return of lubricant.

Drive and delivery direction
The flange gear pumps are manufactured for clockwise or counterclockwise rotation, with different flow direction. A constant direction of delivery for both rotation directions is optional possible.

Explosion protection
All gear pumps are also available with explosion protection when intended for use in explosive atmospheres.

Working principle

The basic elements of a gear pump are the gears, of which one is driven. The gears are exactly installed in the pump housing and cover on ground surfaces. A radial shaft seal, which is relieved from pressure towards the suction side, is used as seal at the shaft. Bearing and shaft seal of the device are lubricated by the lubricant. Additional equipment with pressure limiting valve is possible.

External gear pumps

The external gear pump consists of two intermeshed gears. One of the two gears is driven by a shaft. The second gear wheel (idler gear) is pulled along via the toothing. When the wheels engage, the tooth gap is closed by the opposite tooth. Negative pressure occurs when a tooth emerges from the gap. This free space sucks in oil.

With further rotary movement, the liquid is transported via the tooth gaps to the pressure side.

Internal gear pumps

Internal gear pumps have two gear wheels, of which the outer (ring gear) is internally toothed. The sprocket running inside is smaller. The fluid is conveyed in the spaces between the tooth gaps of the two gear wheels.

Internal gear pumps have incredibly low flow pulsation due to a large meshing length and backlash-free running of the gearing and therefore operate quietly.

The lubricant is sucked in from the suction side and is delivered between the housing and the gears to the pressure connection. The lubricant transport is done by moving the lubricant into the tooth gap alongside the gear chamber wall by which an even lubricant supply is guaranteed.

Technical specifications external gear pumps

Function principle	Gear pump
Outlets	1
Delivery volume FL pumps	0,06 up to 65 l/min
Delivery volume U pumps	1 up to 65 l/min
Delivery volume MZ pumps	0,06 up to 65 l/min
Lubricant	Oil
Operation temperature	-20 up to +80 °C (-4 up to 176 °F)
Operating pressure [1)]	Max. 30; 35 or 40 bar (435; 507 or 580 psi)
Supply voltage	230; 400 V DC
Protection class	IP55

[1)] Depending on pump type

Technical specifications internal gear pumps

Function principle	Gear pump
Outlets	1
Delivery volume	4 up to 32 l/min
Lubricant	Oil
Operation temperature	-5 up to +70 °C (23 up to 158 °F)
Operating pressure	Max. 3 bar (43 psi)
Supply voltage	230; 400 V DC
Protection class	IP55

BEKA® P26-Series

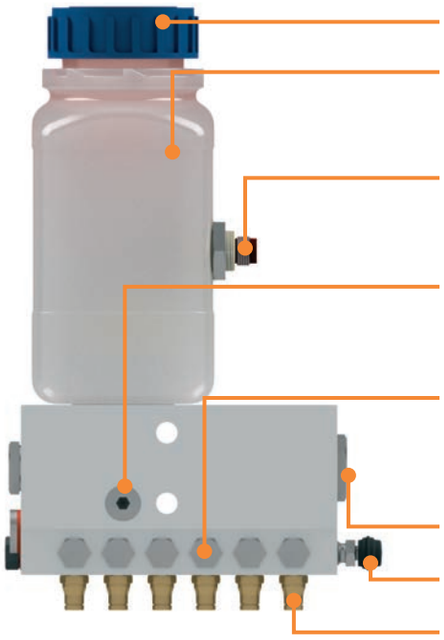
The BEKA P26-series contains a range of pneumatic piston pumps used for oil and air lubrication. Oil and air lubrication is the perfect solution to lubricate bearings, especially high speed bearings. Additional fields of application include chains, gear trains and other industrial applications.

The P26-series pumps function as a multi-line pump where the lubricant gets directly transported to the lubrication points via an air-flow. The lubrication point is continuously supplied with a flow of lubricant and air.

The P26-series give you the possibility to create an simple and economical system for oil-air lubrication up to 6 lubrication points. Systems are available in various configurations and with different oil reservoir sizes, and will be configured individually for each application.

- The combination of oil and air lubrication causes a sealing air flow which protects the lubrication point from outside contamination like dust or dirt.
- Simple and economical solution

System overview



Filling cap

Reservoir
Pumps in the P26-Series are available in plastic or steel and available in different reservoir sizes.

Minimum level monitoring
Automatic minimum level monitoring is available for better reliability and a safe refill cycle.

Pressure limiting valve
The regulation of the pressure happens via a pressure limiting valve. The valve for the P26-series is adjusted to 40 bar (580 psi)

Metering valves
Lubricant is supplied to integrated metering valves. They meter lubricant and deliver it to the lubricant chamber, after which it is supplied to the lube points via sprayed air.

Pneumatic connection for pump actuation

Pneumatic air connection

Lubricant outlet connection
Lubricant outlets are available as a straight outlet or with an 90° angle.

Metering valves

Different internal metering valves are available for the P26-series. For each outlet a separate metering valve must be used. The different valves all have their own output and are recognizable by the colored marking at the sealing plug.

Color	Metering volume
Blue	10 mm^3
Red	20 mm^3
Green	30 mm^3
White	50 mm^3

Working principle

The sprayed air is actuated via a 2/2-way solenoid valve, regulated by a pressure control valve. The pump is actuated via a 3/2-way solenoid valve. The delivery piston is pressurized via a pneumatic connection. During this process the delivery piston carries out a pressure stroke. Lubricant is supplied to the integrated metering valves which meter the lubricant and deliver it to the lubricant chamber. From there it is supplied to the lubrication points via a compressed air flow. Non-used lubricant is returned to the reservoir.

The pump is put under pressure with compressed air for approx. 4-5 seconds. When the pressure in the pump is relieved, the pneumatic piston is pressed back to its initial position and ready for a new revolution.

Technical specifications

Function principle	Pneumatic piston pump
Outlets	1 to 6
Output rate per stroke	2 cm^3
Output rate per outlet	10, 20, 30 or 50 mm^3
Pressure ratio	1:9
Drive air pressure	4 to 8 bar (58 to 116 psi)
Pressure limiting vale	Adjusted to 40 bar (580 psi)
Lubricant	Oil 30 cSt up to 300 cSt
Operation temperature	6 up to 60 °C (42.8 up to 140 °F)
ATEX classification [1)]	II 2G c IIB T4

[1)] Depending on pump type

Food & Beverage

BEKA® Dry belt system

The BEKA Dry belt system offers the advantage of an effective belt lubrication without the use of water and soap and are suitable for the use of common dry belt media like oil with Teflon or silicones.

Besides the common use as a belt lubrication system for the filling- and packing industry (typically used for surface treatment), the system can also be used as a pure return belt system.

Dry belt system
Oil containing Teflon or silicones is applied precisely onto the conveyor belt. As a result, the objects on the belt slides smoothly. No water and soap contaminate your products and environment. Wear and tear between objects and belt are reduced. This solution is often used for an internal transport of products to reduce the friction of heavily loaded belts on conveyor belts.

Pure return belt system
Oil containing Teflon or silicones is injected between the belt and support plate. This solution is often used for an internal transport of products ito reduce the friction of heavily loaded belts on tracks. As a result, the belt runs smoothly, noise and current consumption of the driving motors are reduced.

Groeneveld-BEKA offers 2 dry belt systems, the Foodline Mini and the Foodline Max. The Mini is perfect for smaller machines and systems. The Max is the ultimate solution for mid-sized machines and big plants.

- Lubrication without the use of water and soap
- Reduced operating costs by saving water and media
- No wet or slippery products/areas
- Improved hygiene
- Environmentally friendly
- Increased lifetime of belt

System overview

The system housing contains the control panel, the main switch and the pressure gauge. All parts which come in contact with the medium are made of stainless steel or Viton. Both Foodline Mini and Max are suitable for all kind of lubricants, with a thin or high viscosity.

Piston pump
The dry belt systems is equipped with a piston pump which is placed into the reservoir.

Reservoir
The reservoirs of the Foodline Mini and Max are made of polypropylene plastic and is available in either 5 or 10 litres.

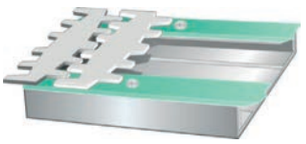
Metering valves
Special metering valves are available for the dry belt systems, entirely made of stainless steel, Viton and with special rubber seals. They are available in 4 sizes with a fixed output from 0,075; 0,10; 0,15 or 0,20 cm^3.

Lubricant apply brush
A special oil brush is available for the dry belt system. Lubricant is supplied to the brush via clamping strips. The clamping strips contain holes which transfer the medium to small dripping holes at the bottom of the strip.

The brush comes in one size and can be shortened to fit the width of the conveyor belt.

Lube-Shooter
As an alternative to the apply brush a special Lube-Shooter can used for contact free lubrication of the belt. The Lube-Shooter is available as a static and dynamic metering vale.

Slide track
Especially for return belt lubrication a slide track is available for the dry belt system.
The slide track comes in 2 versions: a general version with nozzles for retrofitted systems and a fitting block for track systems with integrated lubrication pads according to manufacturer specifications.

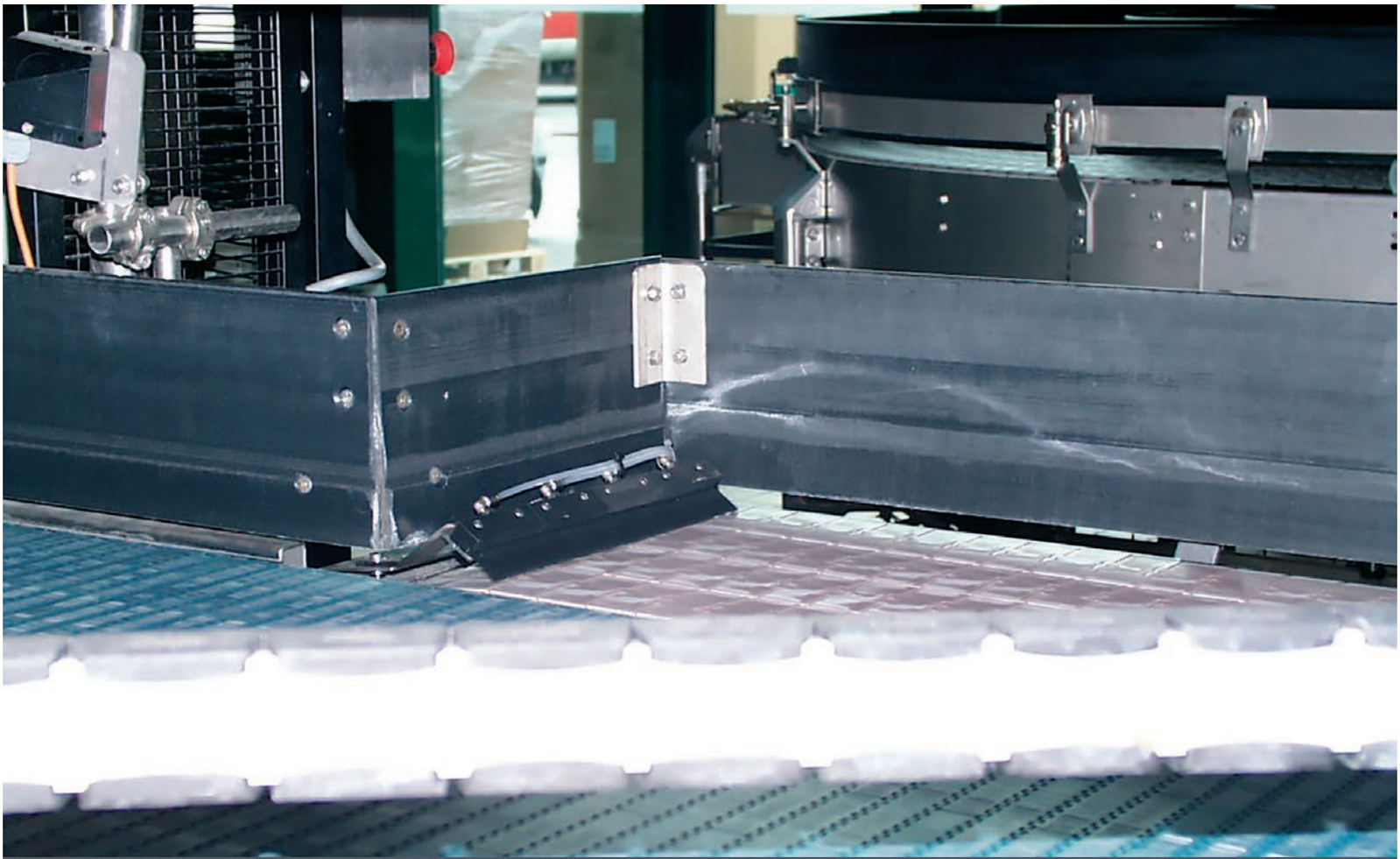


Technical specifications Foodline Mini

Function principle	Piston pump
Outlets	1
Delivery volume	2,3 cm^3/stroke
Lubricant	Dry belt medium
Operation temperature	0 up to +50 °C (32 up to 122 °F)
Operating pressure [1)]	Max. 30 bar (435 psi)
Reservoir	5 l
Reservoir material	PP
Supply voltage	24 V DC
Protection class (motor)	IP65

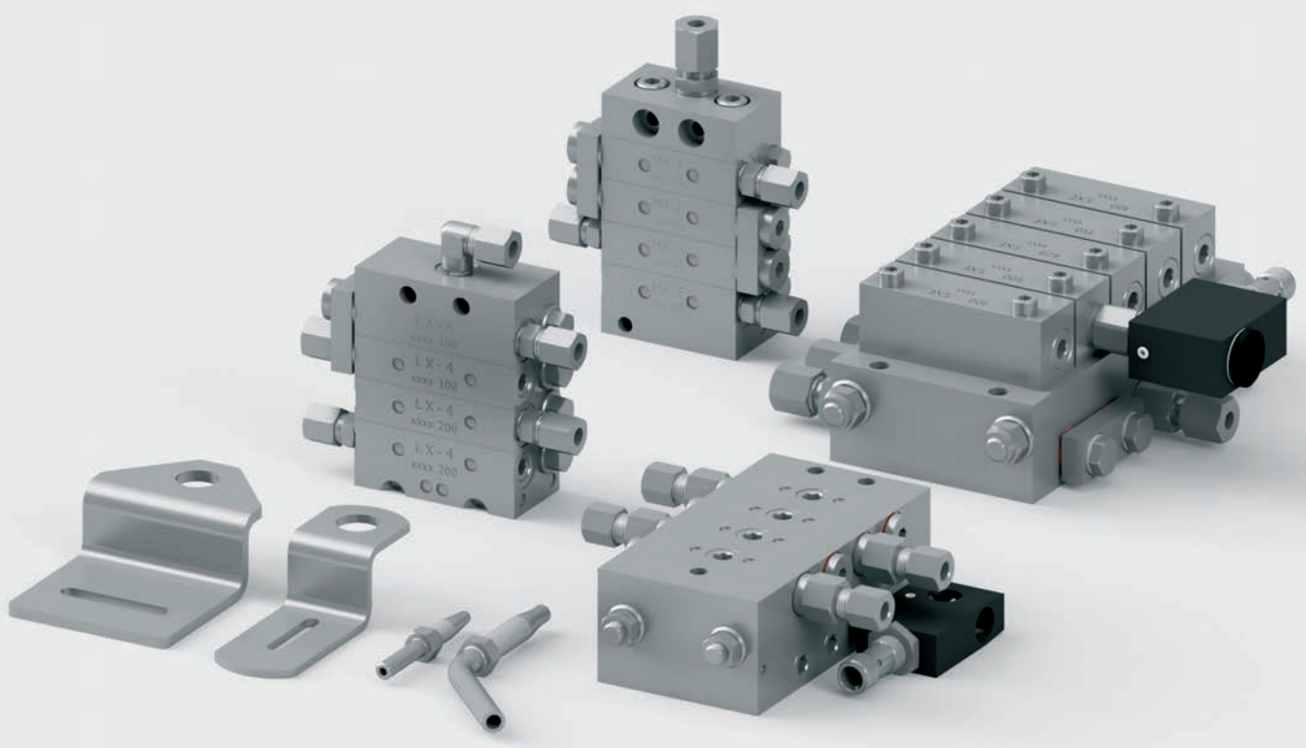
Technical specifications Foodline Max

Function principle	Piston pump
Outlets	1
Delivery volume	44 cm^3/stroke
Lubricant	Dry belt medium
Operation temperature	0 up to +50 °C (32 up to 122 °F)
Operating pressure [1)]	Max. 35 bar (507 psi)
Reservoir	5 l
Reservoir material	PP
Supply voltage	24 V DC
Protection class (motor)	IP65



Food & Beverage

Metering devices



Food & Beverage

BEKA® DV metering devices

The BEKA DV metering elements supply precisely metered lubricant to the individual lubrication points. The respective lubricant quantity is determined by the metering volume of the metering valves.

The range of DV metering units contains the Z31DV, DVB-1, DVB-2, DVB-3

- Wide viscosity range, suitable for oil and fluid grease
- Ideal for precise and exactly repeated applications
- Low pump power required
- Long lines possible
- Nearly unlimited number of lubrication points with continuous lubricant supply

Z31DV

Type	Output
Z31DV3	0,03 cm³ per stroke and outlet
Z31DV5	0,05 cm³ per stroke and outlet
Z31DV10	0,10 cm³ per stroke and outlet
Z31DV15	0,15 cm³ per stroke and outlet
Z31DV20	0,20 cm³ per stroke and outlet

231-DV

The 231-DV metering unit can be plugged directly into a lubrication point connection.

Type	Output
3	0,03 cm³ per stroke and outlet
6	0,06 cm³ per stroke and outlet
10	0,10 cm³ per stroke and outlet

Technical specifications Z31DV

Operating pressure	15 - 40 bar (271 - 580 psi)
Relief pressure	Max. 4 bar (58 psi)
Operating temperature	0 up to 70 °C (32 up to 158 °F)
Lubricant	Oil, viscosity range: 20 - 700 cSt Fluid grease NLGI-000 or NLGI-00
Material	Brass, nickel plated or stainless steel
Installation position	Optional

Technical specifications 231-DV

Relief pressure	Max. 1 bar (14 psi)
Operating temperature	0 up to 70 °C (32 up to 158 °F)
Lubricant [1)]	Oil and fluid grease, according to release list
Material	Steel
Installation position	Optional

[1)] with 4 mm lines only suitable for oil

DVB metering distribution blocks

DVB-1

The DVB-1 metering blocks consist of a distribution block in combination with a metering nipple. The metering block is available with either 2 outlets or with 3 up to 10 outlets. Metering nipples are available with a threated or a plug-in connection.

Type	Output
1	0,01 cm³ per stroke and outlet
2	0,02 cm³ per stroke and outlet
3	0,03 cm³ per stroke and outlet
6	0,06 cm³ per stroke and outlet
10	0,10 cm³ per stroke and outlet
16	0,16 cm³ per stroke and outlet

DVB-2

The DVB-2 metering blocks consist of a distribution block in combination with a metering nipple. The metering block is available with either 1 up to 10 outlets. Metering nipples are available with a threated or a plug-in connection.

Type	Output
0,1	0,10 cm³ per stroke and outlet
0,2	0,20 cm³ per stroke and outlet
0,3	0,30 cm³ per stroke and outlet
0,4	0,40 cm³ per stroke and outlet
0,6	0,60 cm³ per stroke and outlet
16	0,16 cm³ per stroke and outlet

DVB-3

The DVB-2 metering blocks consist of a distribution block in combination with a metering nipple. The metering block is available with either 1; 2 or 3 outlets. Metering nipples are available with a threated or a plug-in connection.

Type	Output
0,2	0,20 cm³ per stroke and outlet
0,3	0,30 cm³ per stroke and outlet
0,4	0,40 cm³ per stroke and outlet
0,6	0,60 cm³ per stroke and outlet
1,0	1,00 cm³ per stroke and outlet
1,5	1,50 cm³ per stroke and outlet

Technical specifications DVB-1

Number of lubrication points	1 - 10
Operating pressure	15 - 40 bar (271 - 580 psi)
Relief pressure	Max. 3 bar (43 psi)
Operating temperature	0 up to 80 °C (32 up to 176 °F)
Lubricant	Oil, viscosity range: 10 - 1000 cSt Fluid grease NLGI-000 or NLGI-00
Material distribution block	Aluminum
Material metering nipple	Brass
Installation position	Outlets upwards if possible

Technical specifications DVB-2

Number of lubrication points	1 - 10
Operating pressure	16 - 50 bar (232 - 725 psi)
Relief pressure	Max. 4 bar (58 psi)
Operating temperature	0 up to 80 °C (32 up to 176 °F)
Lubricant	Oil, viscosity range: 10 - 1000 cSt Fluid grease NLGI-000 or NLGI-00
Material distribution block	Aluminum
Material metering nipple	Brass
Installation position	Upwards if possible

Technical specifications DVB-2

Number of lubrication points	1; 2 or 3
Operating pressure	16 - 50 bar (232 - 725 psi)
Relief pressure	Max. 4 bar (58 psi)
Operating temperature	0 up to 80 °C (32 up to 176 °F)
Lubricant	Oil, viscosity range: 10 - 1000 cSt Fluid grease NLGI-000 or NLGI-00
Material distribution block	Aluminum
Material metering nipple	Brass
Installation position	Outlets upwards if possible

Accessories

Different manifolds are available for metering elements, as e.g. metering valves.

Groeneveld® dual-line metering devices

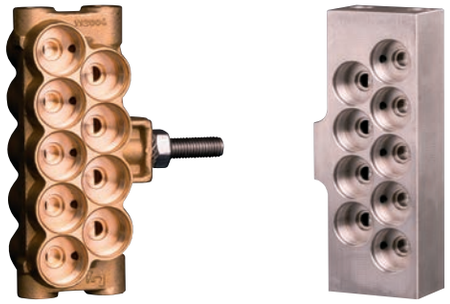
The Groeneveld® dual-line distribution blocks are build by combining a distribution block with different metering units. Unused ports on the distribution block are sealed with a blind plug. A pressure switch can also be mounted into one of the ports. The metering units deliver the lubricant under pressure via secondary lines directly to the lubrication points.

A distribution block with metering units forms an closed structure and can therefore be fitted in a moist or dirty environment without problems. Both distribution blocks and metering units are available in brass and stainless steel. Brass is always used as standard. When it is known that part of the machine will be operating in an aggressive environment (e.g. salt, fertiliser, unslaked lime, acids, etc.) it is recommended to use stainless steel for that part of the lubrication installation.

Groeneveld dual-line distribution blocks

Groeneveld-BEKA offers different types of distribution blocks for the Groeneveld dual-line system:
- Flat distribution blocks, with the metering units in one line made out of brass or stainless steel
- Distribution blocks with threaded studs, fitted with a double row of metering units made out of brass or stainless steel

Flat distribution blocks



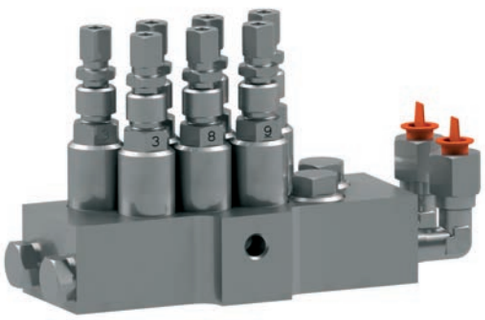
Distribution blocks with threaded stud

Metering units

The metering units are available with different grease outputs and are distinguished from each other using numbers. If the largest dosing rate does not deliver sufficient grease to a grease point then it is possible to connect metering units together.

Metering unit	Output per cycle
0	0,025 cm³
1	0,050 cm³
2	0,100 cm³
3	0,150 cm³
4	0,200 cm³
5	0,250 cm³
6	0,300 cm³

Metering unit	Output per cycle
7	0,350 cm³
8	0,400 cm³
8.5	0,700 cm³
9	1,000 cm³
10	2,000 cm³
11	4,000 cm³



Technical specifications

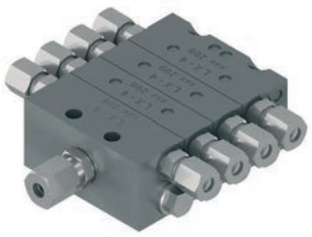
Number of lubrication points	2 up to 22
Operating pressure	16 - 50 bar (232 - 725 psi)
Relief pressure	Max. 4 bar (58 psi)
Operating temperature	0 up to 80 °C (32 up to 176 °F)
Lubricant	Oil, viscosity range: 10 - 1000 mm²/s Fluid grease NLGI-000; NLGI-00
Material distribution block	Brass; stainless steel
Material metering nipple	Brass; stainless steel
Installation position	Outlets upwards if possible

BEKA® LX-Series

- Perfectly suitable for the food & beverage industry
- 100% compatible dimensions and output rate similar to block distributors

BEKA LX-4

The LX-4 progressive distributors are designed in a variable disk design with the advantage that the distributor can be extended or shortened, depending on the number of lubrication points. The disk design offers the possibility to create a complete progressive distributor of individual elements (initial-, middle- and end elements) which have different outlet volumes.



Type element	Output per outlet	Output per element
LX-4 50	0,05 cm^3	0,10 cm^3
LX-4 100	0,10 cm^3	0,20 cm^3
LX-4 150	0,15 cm^3	0,30 cm^3
LX-4 200	0,20 cm^3	0,40 cm^3
No. of metering elements	Min. 3, max. 10 Excluding start and end element	

Technical specifications LX-4

Number of lubrication points	Max. 20
Operating pressure	Max. 300 bar (4351 psi)
Operating temperature	-30 up to 80 °C (-22 up to 176 °F)
Lubricant	Oil, fluid grease and greases up to NLGI-2
Material	Steel, corrosion protected

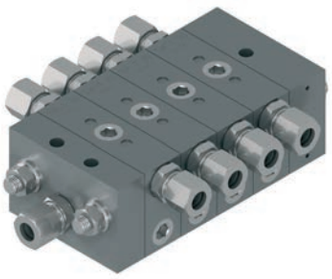
Food & Beverage

BEKA® SX-Series

- Due to up-positioned sealing washers, easy outlet combination without loosening or lines and fittings
- Compact construction with high volume flow
- Perfectly suitable for the food & beverage industry

BEKA SX-1

Progressive distributors SX-1 are built in a variable disk design. Therefore the distributor can be extended or shortened depending on the number of lubrication points. Because of the disk design, there is the possibility to form individual middle elements (metering elements) with different metering volumes to one complete progressive distributor.



Type element	Output per outlet	Output per element
SX-1 05	0,068 cm^3	0,136 cm^3
SX-1 10	0,105 cm^3	0,210 cm^3
SX-1 15	0,150 cm^3	0,300 cm^3
SX-1 20	0,210 cm^3	0,420 cm^3
SX-1 25	0,275 cm^3	0,550 cm^3
SX-1 35	0,350 cm^3	0,700 cm^3
SX-1 45	0,430 cm^3	0,860 cm^3
No. of metering elements	Min. 3, max. 10 Excluding start and end element	

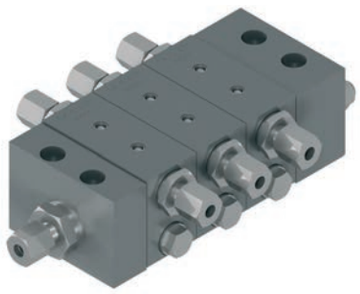
BEKA SX-2 / SX3

The SX-2 and SX-3 combine compact dimensions with a high volume flow. The progressive distributors SX-2 and SX-3 always consist of one initial element (without piston), three to ten middle elements (with piston) and one end element (without piston).

Type element	Output per outlet	Output per element
SX-2 (3) 07	0,075 cm^3	0,150 cm^3
SX-2 (3) 11	0,117 cm^3	0,234 cm^3
SX-2 (3) 17	0,170 cm^3	0,340 cm^3
SX-2 (3) 23	0,230 cm^3	0,460 cm^3
SX-2 (3) 30	0,300 cm^3	0,600 cm^3
SX-2 (3) 38	0,380 cm^3	0,760 cm^3
SX-2 (3) 47	0,470 cm^3	0,940 cm^3
No. of metering elements	Min. 3, max. 10 Excluding start and end element	
Revolutions SX-2	Max. 180 revolutions/min.	
Revolutions SX-3	Max. 60 revolutions/min.	

BEKA SX-5

Progressive distributors SX-5 are built in a variable disk design. Therefore the distributors can be, depending on the number of lubrication points, extended or shortened. Because of the disk design there is the possibility to form individual middle elements (metering elements) with different metering volumes to one complete progressive distributor.



Type element	Output per outlet	Output per element
075 SX-5	0,075 cm^3	0,150 cm^3
117 SX-5	0,117 cm^3	0,234 cm^3
170 SX-5	0,170 cm^3	0,340 cm^3
230 SX-5	0,230 cm^3	0,460 cm^3
300 SX-5	0,300 cm^3	0,600 cm^3
380 SX-5	0,380 cm^3	0,760 cm^3
470 SX-5	0,470 cm^3	0,940 cm^3
No. of metering elements	Min. 3, max. 10 Excluding start and end element	

Technical specifications SX-1

Number of lubrication points	Max. 20
Operating pressure	Max. 300 bar (4351 psi)
Operating temperature	-30 up to 80 °C (-22 up to 176 °F)
Lubricant	Oil, fluid grease and greases up to NLGI-2
Material	Steel, corrosion protected

Technical specifications SX-2

Number of lubrication points	Max. 20
Operating pressure	Max. 300 bar (4351 psi)
Operating temperature	-30 up to 80 °C (-22 up to 176 °F)
Lubricant	Oil, fluid grease and greases up to NLGI-2
Material	Steel, corrosion protected

Technical specifications SX-3

Number of lubrication points	Max. 20
Operating pressure	Max. 300 bar (4351 psi)
Operating temperature	-30 up to 80 °C (-22 up to 176 °F)
Lubricant	Oil, fluid grease and greases up to NLGI-2
Material	Stainless steel, 1.4301

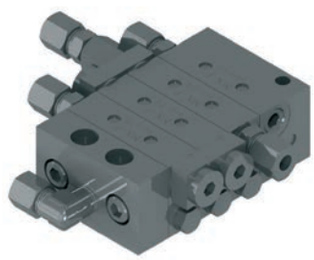
Technical specifications SX-5

Number of lubrication points	Max. 20
Operating pressure	Max. 300 bar (4351 psi)
Operating temperature	-30 up to 80 °C (-22 up to 176 °F)
Lubricant	Oil, fluid grease and greases up to NLGI-2
Material	Steel, corrosion protected

BEKA MX-Series

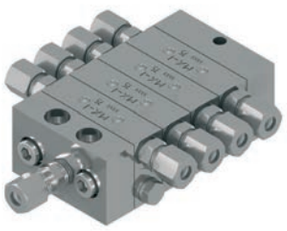
Progressive distributors in the MX-Series are built in a variable disk design. Therefore the distributor can be extended or shortened depending on the number of lubrication points. Because of the disk design there is the possibility to join individual distributor disks (middle element, end element) with different metering volumes together to one complete progressive distributor.

BEKA MX-F



Type element	Output per outlet	Output per element
MX-F 25	0,025 cm^3	0,05 cm^3
MX-F 45	0,045 cm^3	0,09 cm^3
MX-F 75	0,075 cm^3	0,15 cm^3
MX-F 105	0,105 cm^3	0,21 cm^3
No. of metering elements	Min. 3, max. 12 Excluding start and end element	

BEKA MX-I



Type element	Output per outlet	Output per element
MX-I 45	0,045 cm^3	0,90 cm^3
MX-I 75	0,075 cm^3	0,15 cm^3
MX-I 105	0,105 cm^3	0,21 cm^3
No. of metering elements	Min. 3, max. 8 Excluding start and end element	

Technical specifications MX-F

Number of lubrication points	Max. 24
Operating pressure	Max. 300 bar (4351 psi)
Operating temperature	-30 up to 80 °C (-22 up to 176 °F)
Lubricant	Oil, fluid grease and greases up to NLGI-2
Material	Steel, corrosion protected

Technical specifications MX-I

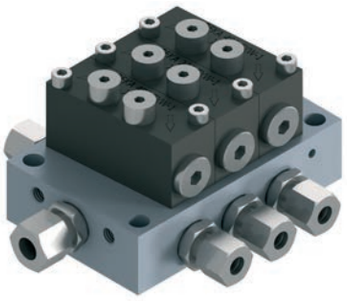
Number of lubrication points	Max. 16
Operating pressure	6 - 150 bar (6 - 2175 psi)
Operating temperature	-30 up to 80 °C (-22 up to 176 °F)
Lubricant	Oil, fluid grease and greases up to NLGI-2
Material metering elements	Stainless steel, 1.4404

BEKA SXW-Series

The progressive distributors in sandwich construction consist of a connecting plate and several metering elements, The elements are connected to the connecting plate and can be exchanged individually or completely with the base plate, The use of dummy elements is possible, which can be replaced by metering elements if necessary,

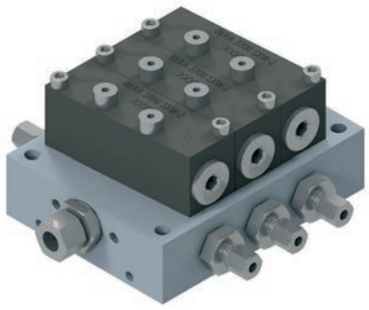
- Metering elements can be exchanged individually or completely with the plate
- Use of dummy elements, which can be replaced by dosage elements, if necessary
- Especially suitable for oil circulation systems

BEKA SXW-1



Type element	Output per outlet	Output per element
000 SXW-1	Dummy element	
100 SXW-1	0,10 cm³	0,20 cm³
150 SXW-1	0,15 cm³	0,30 cm³
220 SXW-1	0,22 cm³	0,44 cm³
300 SXW-1	0,30 cm³	0,60 cm³
400 SXW-1	0,40 cm³	0,80 cm³
500 SXW-1	0,50 cm³	1,00 cm³
630 SXW-1	0,63 cm³	1,26 cm³
750 SXW-1	0,75 cm³	1,50 cm³
900 SXW-1	0,90 cm³	1,80 cm³
No, of metering elements	Min. 3, max, 10	

BEKA SXW-2



Type element	Output per outlet	Output per element
000 SXW-2	Dummy element	
900 SXW-2	0,90 cm³	1,80 cm³
1800 SXW-2	1,80 cm³	3,60 cm³
2700 SXW-2	2,70 cm³	5,40 cm³
3700 SXW-2	3,70 cm³	7,40 cm³
No, of metering elements	Min. 3, max, 10	

Technical specifications SXW-1

Number of lubrication points	Max, 20
Operating pressure	6 - 150 bar (6 - 2175 psi)
Operating temperature	-20 up to 80 °C (-4 up to 176 °F)
Lubricant	Oil, fluid grease and greases up to NLGI-2
Material	Steel, corrosion protected
Material connecting plate	Aluminum

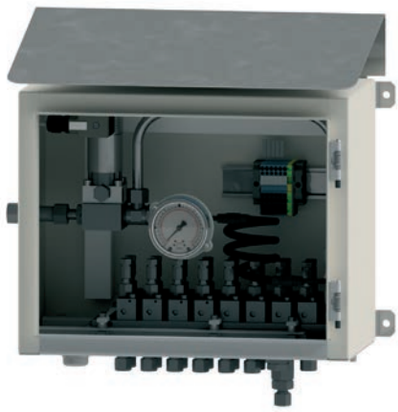
Technical specifications SXW-1

Number of lubrication points	Max, 20
Operating pressure	6 - 150 bar (6 - 2175 psi)
Operating temperature	-20 up to 80 °C (-4 up to 176 °F)
Lubricant	Oil, fluid grease and greases up to NLGI-2
Material metering elements	Steel, corrosion protected
Material connecting plate	Aluminum

BEKA SXD-Series

The progressive distributors in the SDF-Series are built in a variable disk design. Therefore the distributor can be extended or shortened depending on the number of lubrication points. Because of the disk design there is the possibility to join individual distributor disks (middle element, end element) with different metering volumes together to one complete progressive distributor.

For use outside or for unfavorable ambient conditions, the SXD distributors can be mounted into a distributor cabinet. This cabinet protects the distributors against dirt and corrosion.



- Metering elements can be exchanged individually or completely with the plate
- Use of dummy elements, which can be replaced by dosage elements, if necessary
- Can be delivered with or without fittings installed into the distributor
- For monitoring of the system, proximity switches can be attached to the SXD distributors

BEKA SXD

Type element	Output per outlet	Output per element
SXD M000	Dummy element	
SXD M100	0,10 cm^3	0,20 cm^3
SXD M150	0,15 cm^3	0,30 cm^3
SXD M220	0,22 cm^3	0,44 cm^3
SXD M300	0,30 cm^3	0,60 cm^3
SXD M400	0,40 cm^3	0,80 cm^3
SXD M500	0,50 cm^3	1,00 cm^3
SXD M620	0,62 cm^3	1,24 cm^3
SXD M760	0,76 cm^3	1,52 cm^3
No, of metering elements	Min. 3, max, 10	

Technical specifications SXD

Number of lubrication points	Max, 20
Operating pressure	Max. 200 bar (2900 psi)
Operating temperature	-20 up to 80 °C (-4 up to 176 °F)
Lubricant	Oil, fluid grease and greases up to NLGI-2
Material	Steel, corrosion protected

GROENEVELD-BEKA
LUBRICATION SYSTEMS BY TIMKEN

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