

Every rotation counts

SKF lubrication solutions for the graphics industry help ensure consistently high quality and can be upgraded.



SKF – Expertise and global presence

Wherever machine components are moving in the world, SKF is there with tailor-made offers

Your partner in friction reduction and tribology

For more than a century, SKF, a leading global provider of bearings and bearing units, has significantly influenced the dynamic development of the technology with its extraordinary products and solutions. This also applies to components and parts of printing machines. Thanks to its over 70 years of experience in this industry, SKF knows about the complex interrelationships down to the last detail. Not the least of these is the entire subject of the central lubrication of printing, finishing and packaging machines.

As of 2010 Lincoln is an SKF Group brand and lubrication is now a core part of the SKF portfolio contributing to and benefiting from our deep knowledge of tribology and friction reduction.

When it comes to equipping state of the art graphics machines with high-quality components and intelligent system solutions, SKF is the ideal lubrication partner.

SKF expertise in the area of lubrication

If you want to achieve longer operating times and lower energy consumption, then you benefit from getting expertise within the science of tribology. SKF has a research center that investigates lubrication technology down to the last detail and develops innovative solutions for better lubrication of your bearings. All lubricants from SKF are exhaustively analyzed and tested before they are used in your machines and systems. This ensures that, no matter where you are in the world, you will receive the appropriate lubrication technology and the right support for your applications.



● SKF production and consultation centers for lubrication solutions

Your reliable partner

Highly qualified employees are at your side
as on-site contact persons

Available for you around the globe

With over 100 production sites around the world, plus a global network of sales offices in all markets, including engineering consulting and after sales services, SKF is truly available to support you where you are. For SKF lubrication solutions this means from sourcing of individual components, systems engineering support to complete systems for example.

Local presence

We develop and produce lubrication systems based on our deep knowledge and long experience of multi-sided industry machinery applications. SKF has lubrication systems production sites in Germany at the Berlin, Hockenheim and Walldorf locations, in Argentina, China, Finland, France, India, Italy, Japan, the Netherlands and the US. These centers act as a local competence center and can support you on customizing lubrication systems to your need.

To find your local lubrication specialist you can use the SKF distributor search on skf.com/lubrication.

*Germany
Berlin*



*Japan
Osaka*



*China
Shanghai*



*India
Bangalore*



*USA
Hampton*



The right solution for better operating characteristics

SKF offers a complete portfolio of lubrication solutions

Ways to avoid every second bearing damage

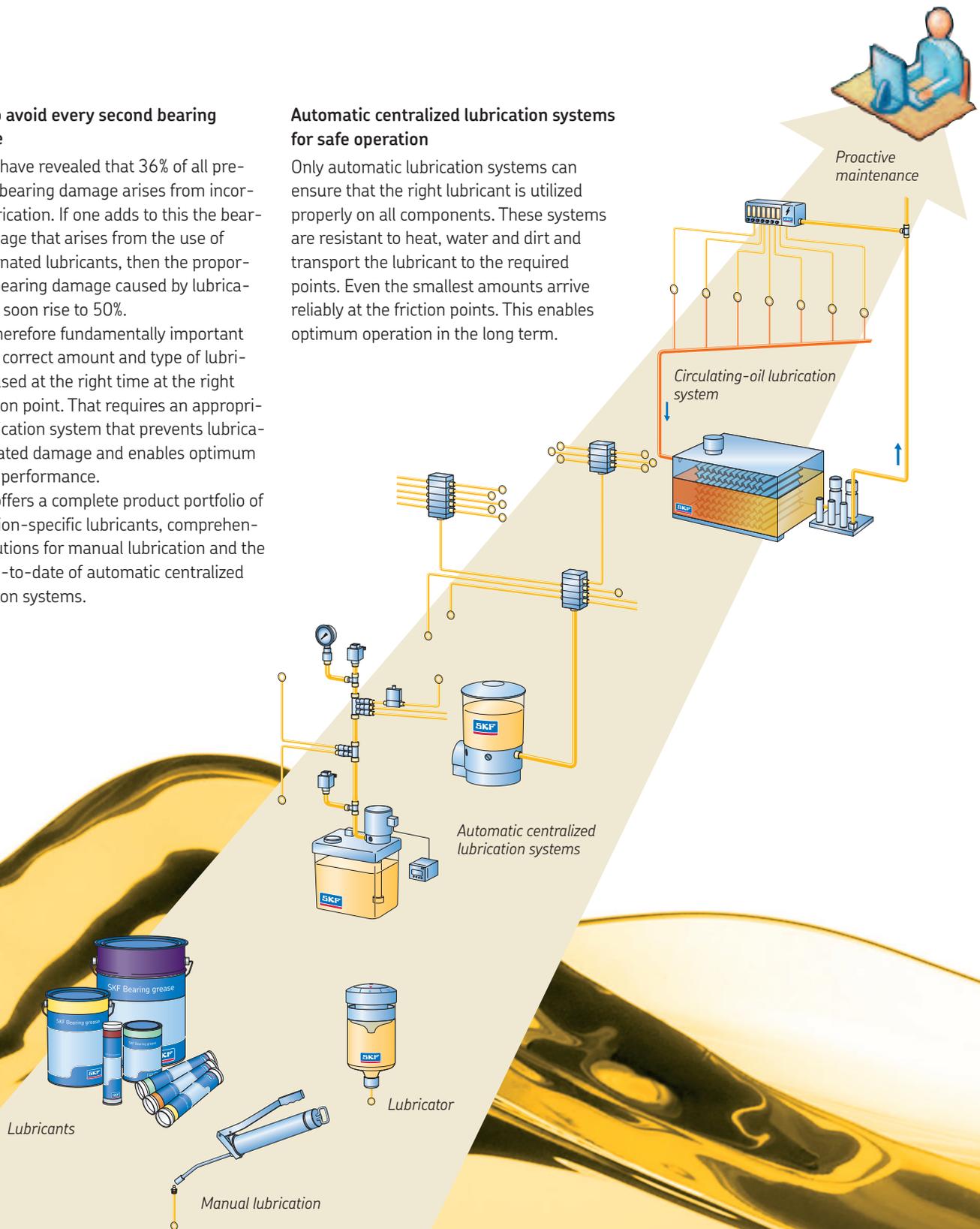
Studies have revealed that 36% of all premature bearing damage arises from incorrect lubrication. If one adds to this the bearing damage that arises from the use of contaminated lubricants, then the proportion of bearing damage caused by lubrication can soon rise to 50%.

It is therefore fundamentally important that the correct amount and type of lubricant is used at the right time at the right lubrication point. That requires an appropriate lubrication system that prevents lubrication-related damage and enables optimum bearing performance.

SKF offers a complete product portfolio of application-specific lubricants, comprehensive solutions for manual lubrication and the most up-to-date of automatic centralized lubrication systems.

Automatic centralized lubrication systems for safe operation

Only automatic lubrication systems can ensure that the right lubricant is utilized properly on all components. These systems are resistant to heat, water and dirt and transport the lubricant to the required points. Even the smallest amounts arrive reliably at the friction points. This enables optimum operation in the long term.



Utilize your capacities

With centralized lubrication systems that are more efficient and more reliable

Meet the increasing challenges effectively

Machine elements are increasingly being designed for continuous loads and thus operate at the limits of materials and technology. It is therefore becoming ever more important to have a precise lubrication calibrated to actual requirements. It is equally important to have a strong partner who offers you optimum solutions for your requirements – both technically and in terms of price.

SKF centralized lubrication systems contribute significantly to the prevention of system downtime, unscheduled machine stops and interruptions in production, thus helping to ensure a high level of reliability and efficiency in production.

Achieve the greatest amount of availability possible

Centralized lubrication systems deliver lubricant from a central source to all of the connected friction points of a machine. Such a system helps to ensure that the optimum amount of lubricant arrives at these points at the right time. Bearings that are lubricated this way run more evenly, have a considerably longer lifetime and ensure the maximum availability of the machine, because fewer breakdowns occur, which means unplanned maintenance downtimes are reduced. That is a significant benefit for you as a plant operator as you are under great pressure in terms of scheduling and costs.

If your machine is not yet equipped with a centralized lubrication system, then SKF is also your partner for retrofitting.

Help ensure maximum productivity and consistent quality

The high quality of the SKF centralized lubrication systems pays off for you many times over: You can lower lubrication consumption by up to 50%. This pays off, particularly with expensive special lubricants. Furthermore, the systems function practically maintenance-free. Even the refilling of the lubricant reservoir can be automated.

For you, that means reduced operating costs with increased lifetime for the plant.

Repair

- Minimization of unplanned downtimes
- Enhancement of reliability
- Reduction of repair costs
- Cost reduction through automation
- Avoidance of insufficient and excessive lubrication
- Cost reduction for equipment and special greases
- Longer repair intervals

Safety

- Avoid manual lubrication at dangerous, hard to access points
- Less contamination of the surroundings by lubricants reduces the danger of slipping
- Minimization of fire hazards through cooled bearings

Productivity

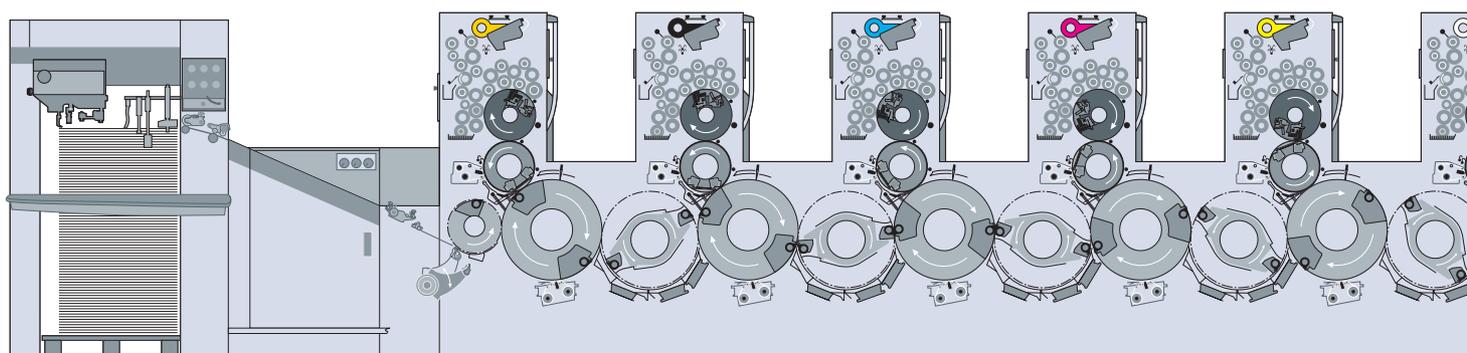
- Increased machine availability
- Reduction of unplanned idle times
- Better profitability



The right lubrication system for every requirement

Sheet-fed offset printing machines

Friction and wear occur on all moving parts and require specific lubrication solutions. SKF offers an ideal lubrication system solution for every task. Components perfectly coordinated with one another result in optimum functionality and efficiency. They protect bearings against wear and thus help produce consistent quality and prevent machinery downtime.



Feeder

The highest precision is demanded, particularly with the paper sheet alignment and the subsequent feeding to the first gripper bar.

In order to help provide such precision, the SKF ProFlex progressive centralized lubrication systems are used. These deliver grease of NLGI Grade 2 directly to the lubrication of the oscillating gripper bar.

In addition to allowing for the lubrication of the inaccessible points, they also reduce the maintenance intervals.

Press unit

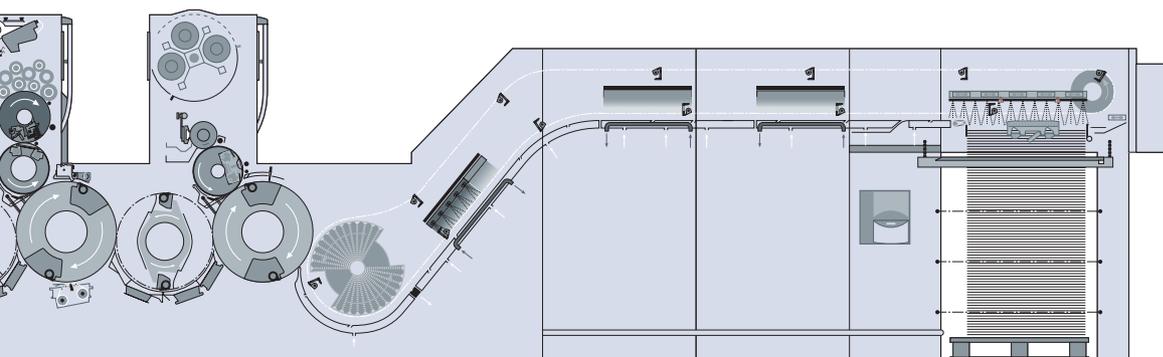
The greatest challenge with printing is achieving the highest precision.

Gear train and cylinder bearings must be relubricated with defined quantities of oil to achieve this. Doing so enables maximum uniformity of concentricity precision and sheet transfer – and thus a consistently high print quality.

The first choice here is a SKF CircOil circulating-oil lubrication system. A Series 143 gerotor pump delivers the lubricant to the respective distributors. These meter the quantity of oil and deliver the lubricant precisely to each lubrication point with each lubrication cycle. SKF MonoFlex single-line centralized lubrication systems are used.

They control the lubrication cycle and monitor it by means of pressure sensors. Many different metering quantities are thereby possible. The lubrication can also be retroactively extended or adjusted very easily.

The oil is filtered, reprocessed and monitored in a central return line reservoir. Furthermore, process heat can be extracted through this lubrication system.



Delivery

The printed sheets are conveyed into the delivery and placed on the stack.

For the lubrication of these chains, the oil must remain on the chain, even with higher printing speeds, and not be struck off onto the sheet. High-viscosity oils with outstanding creep characteristics are used for this purpose. With SKF MonoFlex single-line centralized lubrication systems, these lubricants can be delivered with precision and the requirements typical of the processes fulfilled.

Other

SKF provides individual lubrication solutions for the lubrication of guide curves and additional special applications – even for very small quantities.



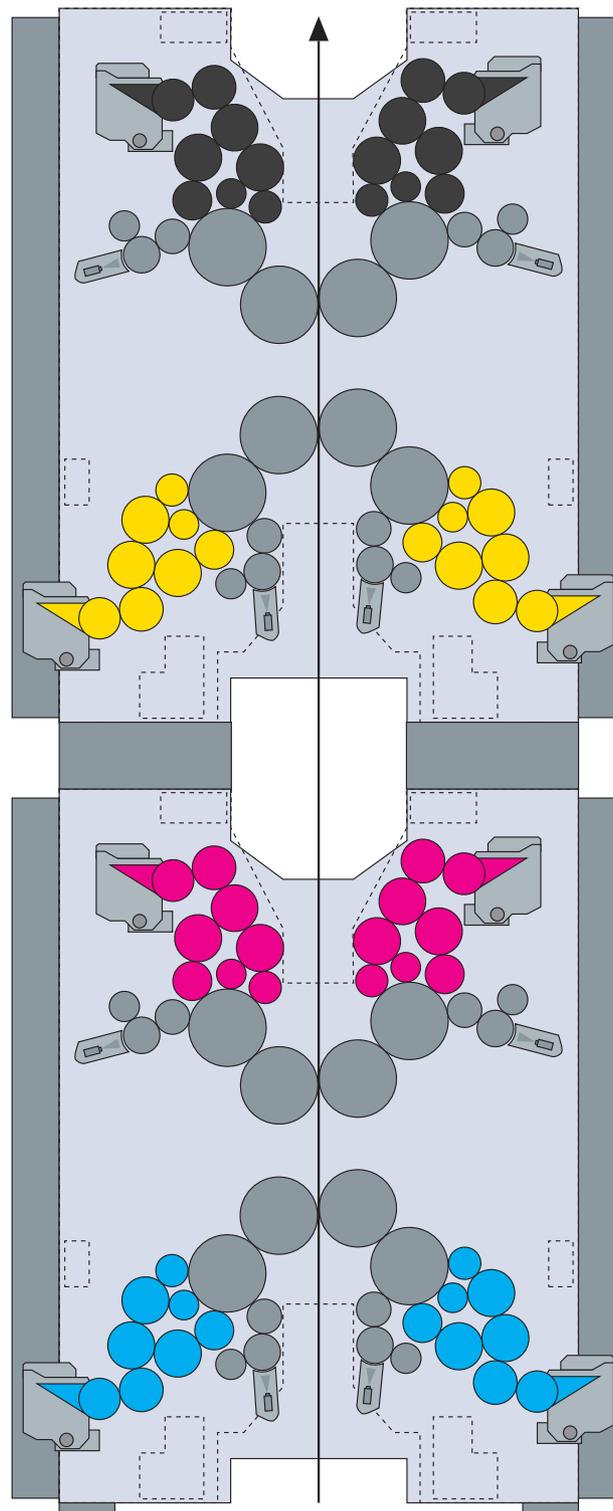
Rotary printing machines

Whether it be offset, flexo or gravure-rotary printing machines – here, too, backlash-free bearings have a direct influence on print quality.

Continuous lubrication is necessary to achieve consistently high precision, particularly because of ever-increasing speeds.

SKF MonoFlex single-line centralized lubrication systems also reliably deliver grease to the bearings and monitor the greasing cycle. The delivery pressures required with these lubrication systems are low and are in effect for only a short time. This reduces the oil separation tendency of unstable lubricants – which in turn considerably increases the selection of greases that can be used. As a result of their modular construction, these systems are very easy to expand.

Even with extensive lubrication systems of especially large plants, these advantages remain in effect. A Series KFG piston pump delivers the lubricant to the MonoFlex distributors. The lubricant is stirred with an agitator with each delivery. It remains homogenous as a result, and the optimum lubrication effect is retained.



Our qualified Service personnel will also be happy to retrofit a centralized lubrication system in your plant.

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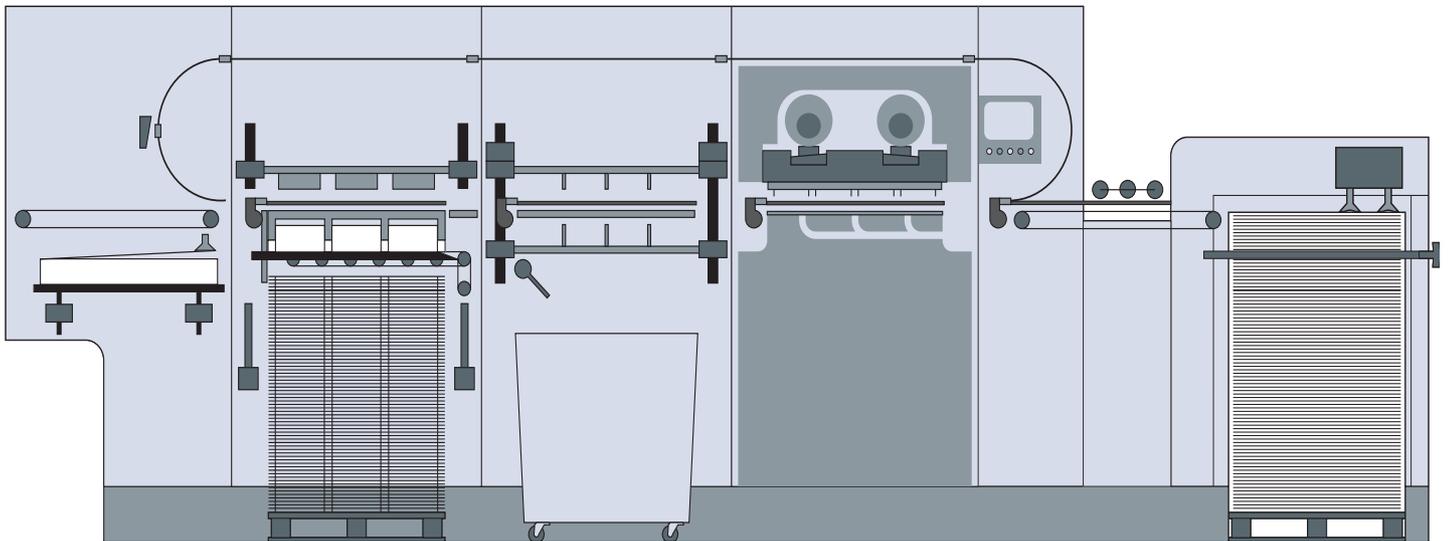


Finishing

Electronically monitored circulating-oil lubrication helps to enhance the necessary safety. Even in the gearbox of a punch.

Not only too little but also too much oil can considerably increase friction and with it the temperature of the bearings. The quantity of oil is therefore kept constant with the aid of flow limiters, even with variations in viscosity and pressure. It is only this way that the optimum utilization conditions of the bearings, and thus the consistently high quality of the graphic product, are possible.

Linear guides are often only insufficiently lubricated by hand. The SKF Compact Greaser is a space-saving, reliable and inexpensive solution.



The right system for your requirements

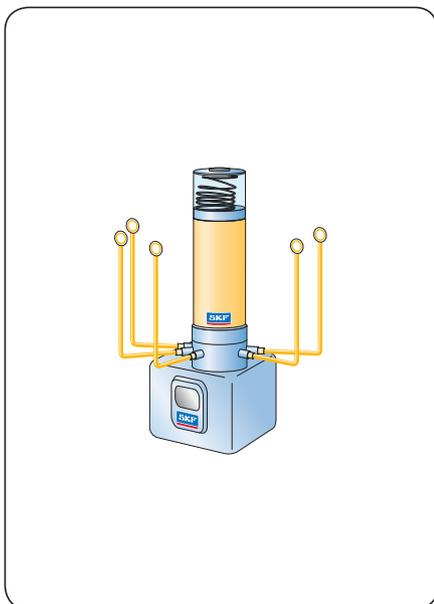
Nothing rotates or moves very long without the right lubrication system. Selecting the right system is thus of critical importance.

SKF Lubricators

Automatic lubricators for individual lubrication points are available for many types of applications. They are delivered ready-to-use and are filled with the lubricant you request.

Advantages:

- Economical solution for relubrication of linear guides, robots and roller bearings
- Ideal and inexpensive alternative when no centralized lubrication system is present
- Automatic delivery of lubricant for up to five lubrication points



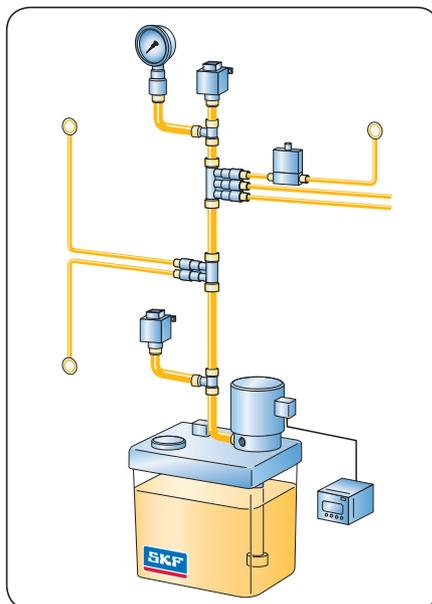
SKF MonoFlex

Single-line centralized lubrication systems

One pump delivers the lubricant to the distributors through the main line. There it is metered and fed to the lubrication points. Depending on the type of distributor, this takes place during or after the pump runtime. The individual requirement for each lubrication point can be adapted using various metering nipples.

Advantages:

- Suitable for practically all lubricants
- Flexibly configurable lubrication systems, also easily expanded retroactively
- Integrated control possible



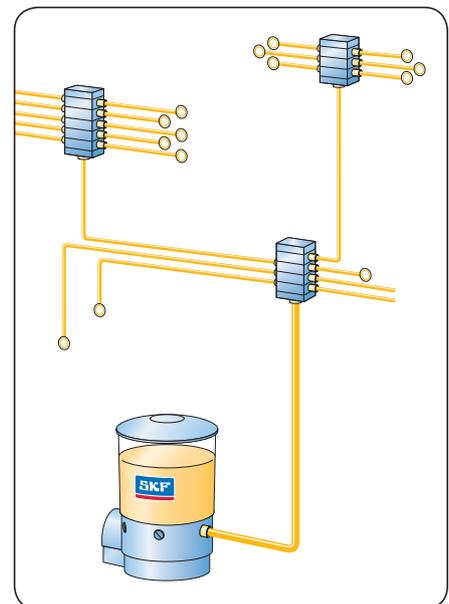
SKF ProFlex

Progressive centralized lubrication systems

The piston pump delivers the lubricant from the reservoir to the outlet. The pump element attached to the outlet transports the lubricant into the main line. Through this line lubricant flows to the progressive feeder. The progressive feeder distributes it to the respective lubrication points in accordance with the volumes required.

Advantages:

- Simple system monitoring through series switching of the metering pistons
- Continuous lubricant delivery
- Integrated control possible



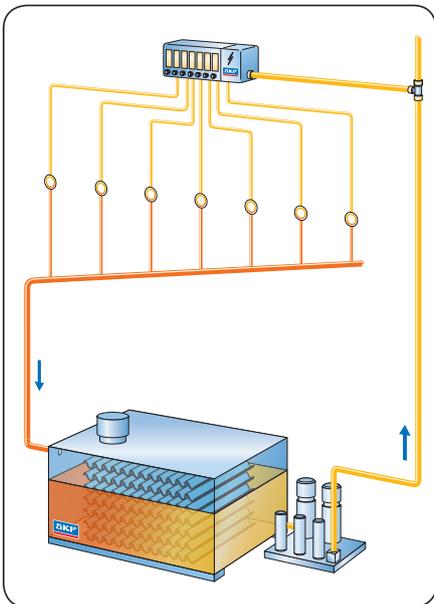
SKF CircOil Circulating-oil centralized lubrication systems

In contrast to total loss lubrication systems, this system transports the oil through a return line to the oil reservoir for reuse after the oil has passed through the lubrication point.

In addition to lubricating, circulating-oil lubrication also performs other functions. It helps ensure the correct temperature of the lubrication points, removes wear particles from friction points and filters them out, avoids corrosion damage and provides for the removal of condensation water.

Advantages:

- Efficient cooling and lubrication
- Segregation of water and air
- Integrated condition monitoring
- Demand-based distribution of the lubricant that can be monitored



The right component for every system

High-quality components for optimization of machine performance pay off – for you and for your customers.

Criteria such as environmental conditions, required delivery rates, lubricants used and service intervals determine the selection of the lubricant pump. The pumps are available with different control and monitoring options.

Relubrication cartridge ETPC1

Electrical thermal pump compact

Technical features:

- Lubricant: Grease (NLGI Grade 2)
- Grease cartridge 2,5 cm³
- Metering volume: 6 mm³/stroke

Advantages:

- Compact design for simple integration in the system
- Extends the lifetime by extending the grease service life
- Lowers maintenance and service costs



Relubrication cartridge ETPC1

SKF Compact Greaser (ETPx)

Electrical thermal mini-piston pump unit

Technical features:

- Lubricant: Fluid grease and grease (NLGI Grades 000 to 2)
- Cartridge: 80 cm³
- Number of outlets: 2–5
- Metering volume per outlet: 10; 15; 20 mm³
- Max. pressure: 25 bar

Advantages:

- Economical solution for relubrication of linear guides, robots, roller bearings and fast-running spindle bearings
- Ideal and inexpensive alternative for a maximum of five lubrication points
- Optional with fill level and stroke monitoring



SKF Compact Greaser with and without monitoring

Pump unit PFP

Pneumatically operated piston pump units with replacement cartridge for application in SKF ProFlex progressive centralized lubrication systems

Technical features:

- Lubricant: Grease (NLGI Grade 2)
- Cartridge: 450 cm³ (in accordance with DIN 1284)
- Number of outlets: 1
- Delivery rate: 1,4 cm³/stroke
- Max. pressure: 275 bar

Advantages:

- Compact and reliable
- Simple cartridge replacement
- Available as complete kit with distributor and lines already filled
- Also available as ATEX version



Pump unit PFP-498



Degree of protection in accordance with Ex Directive 94/9/EC
II 3G IIB T4 +10 °C ≤ Ta ≤ +60 °C

Pump units KFA(S) and KFG(S)

Electrically operated piston pump units for application in SKF ProFlex progressive centralized lubrication systems

Technical features:

- Lubricant: Grease (NLGI Grade 2)
- Reservoir capacity: 1; 2; 6; 10 kg
- Number of outlets: 1–3
- Delivery rate: 0,8–5,0 cm³/min
- Max. pressure: 300 bar

Advantages:

- Compact and reliable
- Safe operation, even with low temperatures
- Control unit with memory and system monitoring function
- Optional with fill level monitoring and integrated control

For error-free and rapid installation, we create pre-mounted lubrication systems for you as complete kits with distributor, pre-filled pumps and lines.



Piston pump units KFGS, KFAS

Pump unit MKx

Electrically operated gear pump units for use in SKF MonoFlex single-line centralized lubrication systems

Technical features:

- Lubricant: Oil and fluid grease (NLGI Grades 000, 00)
- Reservoir capacities: 2, 3 or 6 l Plastic or metal reservoir
- Number of outlets: 1–2
- Output: 0,1; 0,2; 0,5 l/min
- Max. pressure: 30 bar

Advantages:

- Integrated pressure limitation and pressure relief valve
- Optional: electrical pressure switch, pressure gauge, float switch
- External control via SPS or by means of internal control unit possible
- All important functions integrated in the cover, protection against environmental influences such as dirt and dust
- Modular construction



Compact units MKx

Reservoir unit 149

Electrically operated gerotor pump units for application in SKF CircOil circulating-oil centralized lubrication systems

Technical features:

- Lubricant: Oil (10–1000 mm²/s)
- Reservoir capacities: 6–150 l
- Number of outlets: 3, each individually controllable
- Output: up to 19 l/min
- Max. pressure: 60 bar

Advantages:

- Effective tempering and lubrication
- Reprocessing and monitoring of the oil
- Enables extraction of process heat
- Individually configurable



Reservoir unit Series 149

Exact metering for each component

SKF lubricant distributors are high-precision machines. They are available in special material designs for various environmental conditions.

All distributors offered by SKF are distinguished by high manufacturing precision, so lubricant can be distributed precisely and with high metering accuracy for every contact area. In order to handle the various requirements, the distributors can be supplied in different material combinations, including galvanized or in stainless steel.

SKF MonoFlex single-line distributors

Single-line distributors use pump pressure to deliver the lubricant to the lubrication point. Systems with single-line distributors can be expanded without significant additional effort.

Depending on the type, the monitoring can take place through the system or directly at the outlet.

Product series 34x, 35x, 39x

Technical features:

- Lubricant: Oil or fluid grease
- Number of outlets: 2, 3, 5
- Output per cycle and outlet: 0,01–1,5 cm³
- Max. pressure: 45 or 80 bar

Advantages:

- Suitable for lubrication point lines made of metal pipe, plastic pipe, or hose lines with metal pipe connectors



Prelubrication distributors 345 and 352

Product series VR

Technical features:

- Lubricant: Greases up to NLGI Grade 2
- Number of outlets: 1–12
- Output per cycle and outlet: 0,1–1,3 cm³
- Max. pressure: 315 bar

Advantages:

- Innovative, extremely compact design
- Optical function monitoring at every outlet
- High relief pressure (30 or 70 bar)
- High operational reliability when using stiff greases at low working temperatures



Single-line distributors VR

SKF ProFlex progressive feeders

Progressive feeders are used in various configurations, all of which work in accordance with the same principle and are available in different variants. They are robust and easy to install. The operation of the progressive feeders can be monitored both electrically and visually.

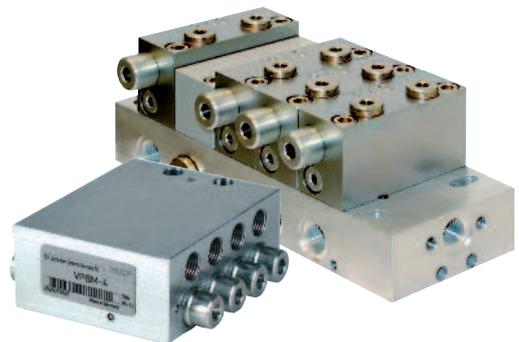
Product series VPB / PSG

Technical features:

- Lubricant: Oil or grease up to NLGI Grade 2
- Number of outlets: 1–20
- Output per cycle and outlet: 0,05–3,2 cm³
- Max. oil/grease pressure: 200/300 bar

Advantages:

- Permanently set quantity distribution per cycle and outlet
- Retrofitting with piston detectors for monitoring is possible at any time
- Additional product series and styles for oil and fluid grease available



Progressive feeders VPBM4 and PSG2

Constant oil flow with SKF flow limiters

independent of temperature or viscosity changes within a wide range (< 600 mm²/s)



Flow limiters

Flow limiters from SKF were designed specially for sophisticated circulating-oil applications. Thanks to their robust construction, they can stand up to even extremely unfavorable environmental conditions and provide a virtually constant flow of oil to every lubrication point. Sensors with analog output signals or gear-type flow indicators with digital output signals can be used to monitor the volumetric flow.

Product series SP/SMB

Technical features:

- Lubricant: Oil
- Number of outlets: 1–6
- Output: 0,09–132 l/min
- Max. pressure: 5–200 bar

Advantages:

- Simple commissioning, space-saving construction
- High dependability
- Virtually constant flow rate through pressure-compensated technology
- Practically independent of oil viscosity and pressure changes



Flow limiter SP/SMB 8 with digital output signal

Injection oiler

Injection rollers deliver and meter lubricant and are designed for small metered quantities per actuation. The delivery rate of the devices is adjustable. The lubricant supply is provided from a central reservoir, an individual reservoir or through a central forced-oil line.

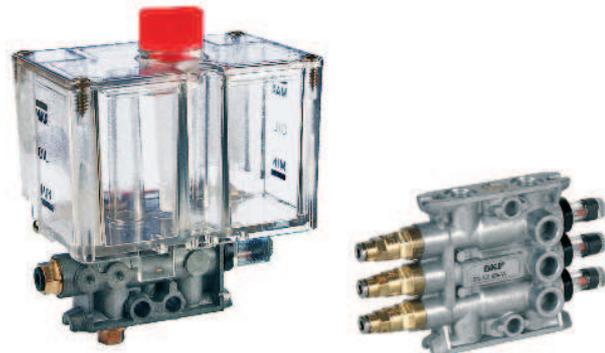
Product series 501-301/-303

Technical features:

- Lubricant: Oil
- Number of outlets: 1 or 3
- Output: 0,003–0,03 cm³/stroke
- Max. pressure: 3–10 bar

Advantages:

- Independent of line lengths and cross-sections
- Metering elements can be controlled either individually or in groups
- Splash lubrication through high oil acceleration
- Rapid pulse train, up to 120 pulses per minute
- Space-saving construction



Injection oiler with and without reservoir

Information in Detail

Monitoring and control are essential to the efficient operation of modern machines and plants.

With the utilization of intelligent monitoring devices, all required data can be recorded to ensure efficient lubrication that is, above all, optimized for requirements. SKF has developed a number of system-related monitoring devices for automated centralized lubrication systems, the signals of which are evaluated electronically.

Pressure switch for SKF MonoFlex

The pressure switch is utilized mainly in single-line centralized lubrication systems. It is mounted on the end of the tubing system and sends a signal to the central control unit of the printing machine when the metering procedure has been completed and the pre-set pressure has been achieved.

The delay time is pre-set. The control unit interrupts the power supply to the pump unit, and the lubrication system is depressurized through the relief valve. The system is ready for the next lubrication cycle.

Piston detector for SKF ProFlex

The piston detector fitted on the progressive feeder monitors the feeder function and passes along the individual feeder strokes to the downstream monitoring system. Cycle or blockage indicators enable optical monitoring.

Flow monitors for SKF CircOil

Flow monitors monitor a continuous oil flow. Flow monitors of different designs are used for this task. They are designed for a flow quantity range of 0,5 to 14 000 cm³.



Pressure switch



Piston detector



Flow monitor

Special sensors can record the condition of the lubricant, reservoir fill levels, system pressures, lubricant metering, piston positions, temperatures, moisture levels, degree of contamination, etc. Measurements are made based on either time or load, so the associated control units function either in an adjustable time frame or based on the system cycle.

Flow sensors for SKF MonoFlex

The flow sensors monitor the flow of oil from one metering point to the lubrication point, whereby the metering element meters only a small quantity of oil for a short time. Depending on their type, the flow sensors can monitor metered quantities of oil ranging from 10 to 600 mm³ per lubrication pulse.



Flow sensor

Directional control valves

Directional control valves control flow of lubricant. For example, they divide a centralized lubrication system into several lubrication circuits (zonal control) or switch back and forth between circulation and intermittent lubrication circuits.

Valves for a maximum pressure of up to around 45 bar can be used for single-line lubrication systems with piston distributors. Valves for a pressure range of up to 300 or 500 bar, respectively, are suitable for progressive systems.

The selection of the valves proceeds in accordance with criteria such as switching function, pressure range, flow rate and medium.



4/2 directional control valve

Control units

Control and monitoring devices for centralized lubrication systems in stationary industrial plants are supplied either as components of SKF compact lubrication units or individually for installation in a control cabinet.

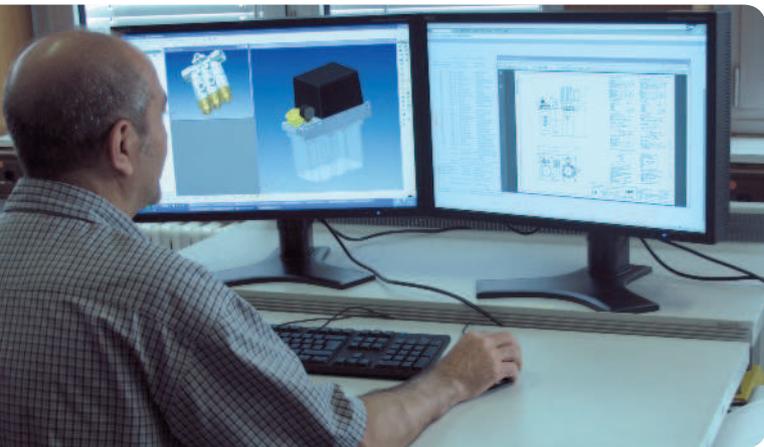
These devices are supposed to trigger a lubrication at certain time intervals. Furthermore, the devices are equipped with a series of functions that are necessary for the control and monitoring of the lubricating system. The extent of these functions depends on the type of device.



Control unit and board

Services are paramount at SKF

For us, Service means satisfying the customer in all respects, before and after the purchase of a centralized lubrication system.



Design in 3-D and electronic CAD product catalog

Our engineers work with modern programs and design the products in 3-D. You can integrate the CAD data seamlessly into your layout plans.

3-D CAD data in native format is available to you in our online product catalog, and is based on the eCATALOGsolutions technology of the CADENAS GmbH Co. You can configure your product online from the central lubrication section and integrate in your design process at no charge.

In the internet you can find the online-catalogue using the following link: <http://skf-lubrication.partcommunity.com>



Retrofitting centralized lubrication systems

System downtimes are worse than simply problematic. At some point, the maintenance and repair costs become unwieldy. It is for that reason that we also offer on-site professional retrofitting of a centralized lubrication system at your location. If you like, we can also assume responsibility in addition for maintenance and repair during ongoing operations.



Procurement logistics and synchronized production

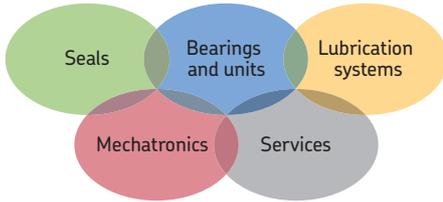
We can tailor our logistics processes to the requirements of our customers. For example, using synchronized electronic KANBAN systems with RFID, we enable an inventory-free supply for manufacturing and assembly that is synchronized with production.

As a result, run-through times and the total outlays are optimized and the risk of loss and damage is reduced. This results in an optimum Supply Chain Management.

Learn more about SKF solutions

This table offers you an overview of the products and solutions from SKF for the graphics industry. The publications listed contain additional information.

Product	Lubricant			Lubrication system			Application			Publication No.	
	Oil	Fluid grease	Grease	Lubricator	SKF MonoFlex	SKF ProFlex	SKF CirOil	Chain way	Inking unit		Feeder
Pump units											
ETP		•	•	•						•	1-0988-EN
ETPC		•	•	•							1-0987-EN
MKx	•	•			•				•		1-1203-EN
Gear and geroter pumps	•						•				1-1204-EN
KFG(S)			•		•	•		•			1-3030-EN
PFP		•			•					•	on request
149-005-x									•		on request
Lubricant distributors											
34x, 35x, 39x	•	•			•				•		1-5001-EN
VR		•	•		•			•	•		1-5001-EN
VPB	•	•	•			•	•	•		•	1-3017-EN
PSG	•	•	•			•	•	•		•	1-3013-EN
Injection oiler 501-130	•				•						1-5012-4-EN
Flow limiters SP/SMB	•						•		•		1-3001-EN; 1-3002-EN; 1-3003-EN; 1-3004-EN; 1-3005-EN; 1-3028-EN
Checking and monitoring units											
Pressure switch	•	•	•		•				•		1-1701-EN
Fill level switch	•	•	•		•	•	•	•	•	•	1-1702-EN
Directional control valves	•	•	•		•	•	•	•	•	•	1-1703-EN
Piston detector	•	•	•			•	•	•		•	1-3017-EN
Flow monitor	•						•		•		1-1704-EN
Flow sensors	•						•		•		1-1704-EN
Control units											
Universal control unit for SKF MonoFlex	•	•	•		•	•	•	•	•	•	1-1700-1-EN
for SKF ProFlex	•	•	•		•			•	•		1-1700-4-EN
	•	•	•			•		•	•		1-1700-2-EN
Additional system components											
Fittings and accessories	•	•	•	•	•	•	•	•	•	•	1-0103-EN
Electrical plug-in connections					•	•	•	•	•	•	1-1730-EN
Accessories for progressive systems	•	•	•			•		•	•	•	1-0107-6-EN



The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems. A global presence provides SKF customers uniform quality standards and worldwide product availability.

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