

Increase productivity

SKF MachineLube

Lubrication solutions for machine tools



SKF – Expertise and Global Presence

Wherever in the world machine parts move, SKF is there to offer tailor-made solutions.

Your partner in friction reduction and tribology

For more than a century, SKF, a leading global provider of bearings and bearing units, has advanced the state of the art in all sectors of industry with its exceptional products and solutions. This applies to components for machine tools as well. With over 70 years of experience in this industry, SKF knows the complexities in detail. This includes the entire field of centralized lubrication for machine tools and minimal quantity lubrication for cutting processes.

SKF further expanded its expertise in lubrication engineering with the acquisition of Willy Vogel AG, the global leader in centralized lubrication systems, as well as other acquisitions. 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.

SKF is thus your prime supplier for equipping modern machine tools and production lines with high-quality components and intelligent system solutions.

SKF's expertise in the field of lubrication

Aiming for longer service life and lower energy consumption always takes you to the field of tribology. For this reason, SKF established a specialized research center where lubrication engineering is researched in detail and innovative solutions are developed to improve the lubrication of your bearings. All SKF lubricants are subjected to extensive analyses and tests before reaching your machines and systems, ensuring that you get the right lubrication technology and support for your applications anywhere in the world.



Your partner for SKF Lubrication solutions:

- SKF Center of Excellence for Lubrication Solutions
- SKF Solution Factory

Your reliable partner

Expert application engineers are there to advise you on-site.

Global availability in service of customers

Over 100 manufacturing sites around the globe, plus a network of sales organizations in all markets, including consulting and service, confirm that SKF a truly global company. For you as our customer, this means that individual components and complete systems are available quickly and directly.

Centers of Excellence for Lubrication Systems

This part of our support network produces and develops new solutions building on our expertise and experience in tribology and many varied applications.

SKF Lubrication Systems manufactures in Germany at its Berlin, Hockenheim and Walldorf locations. Additional production sites are located in Argentina, China, Finland, France, India, Italy, Japan, the Netherlands, and the USA. These centers support you with lubrication expertise and quality of a high standard.

SKF Center of Excellence for Machine Tools

Our location in Stuttgart is a highly qualified SKF Center specialized in the machine tool sector. We can thus offer you global availability and help you achieve your goals quickly by developing customer-specific solutions locally in cooperation with you.

SKF Solution Factories

This unique concept provides our customers with direct access to SKF's global capabilities, with specialized, one-stop support involving our core competencies: bearings and bearing units, seals, mechatronics, services, and lubrication systems.

At SKF Solution Factories, customers can solve their difficult application challenges and take advantage of our lubrication specialists' expertise. They support you in lubrication management, lubricant analysis, and the development and planning of customizations to lubrication systems.

For more information about SKF Solution Factories, contact your local SKF representative, or visit www.skf.com/solutionfactory.



*Germany
Berlin*



*Germany
Hockenheim*



*Germany
Stuttgart*



*Italy
Milano*



*France
Saumur*



*Japan
Osaka*

Use your full capacity

Even more efficient and reliable with centralized lubrication systems

Lubrication solutions make their mark on: productivity, environmental protection, safety, and maintenance.

Meet the growing challenges.

The components used in the machinery industry are increasingly designed for continuous loads at the limits of materials and technology. Precise and demand-based lubrication is therefore becoming ever more important – as is a strong partner that offers the optimum solution for your requirements, both in terms of technology and costs.

SKF centralized lubrication systems contribute significantly to the prevention of system downtimes, unplanned machine stops, and interruptions in production, ensuring you the highest level of reliability and efficiency in manufacturing.

Achieve the greatest possible availability.

Centralized lubrication systems feed lubricant from a central source to all connected friction points on a machine. The decisive factor in the efficiency of these systems is that the optimum amount of lubricant reaches the right point at the right time. Bearings lubricated in this way run more evenly, have a significantly longer service life, and provide maximum availability for the machine because fewer failures occur, reducing unplanned downtime. This is a strong selling point for you as the system operator under tight deadlines and cost pressures.

Maintenance

- Minimized unplanned downtime
- Increased reliability
- Reduced repair costs
- Reduced costs through automation
- Avoid inadequate and excessive lubrication
- Reduced costs for equipment and special greases
- Extended maintenance intervals

Safety

- Elimination of manual lubrication at dangerous, difficult-to-access points
- Less contamination by lubricant reduces the risk of slipping
- Minimization of fire hazard thanks to cooled bearings

Ensure maximum productivity.

The high quality of SKF centralized lubrication systems pays off in several ways. You can reduce lubricant consumption by up to 50%, which pays off particularly when using expensive special lubricants. In addition, the systems are practically maintenance-free. Even refilling of the lubricant reservoir can be automated if needed.

For you and your customers, this means minimized operating costs while increasing the system's service life.

Increase the efficiency.

In modern industrial manufacturing processes with high process speeds, the costs for coolant lubrication can easily be multiples of the tool costs. This often makes minimal quantity lubrication (MQL) the cheaper solution because it requires no cooling lubricant circuit and also increases the productivity of your system.

Productivity

- Increased machine availability
- Reduction of unplanned downtime
- Increased cost-effectiveness

Environmental considerations

- Reduced energy consumption through reduced friction
- Reduced CO₂ emissions
- Reduced environmental impact due to more efficient use of lubricating greases

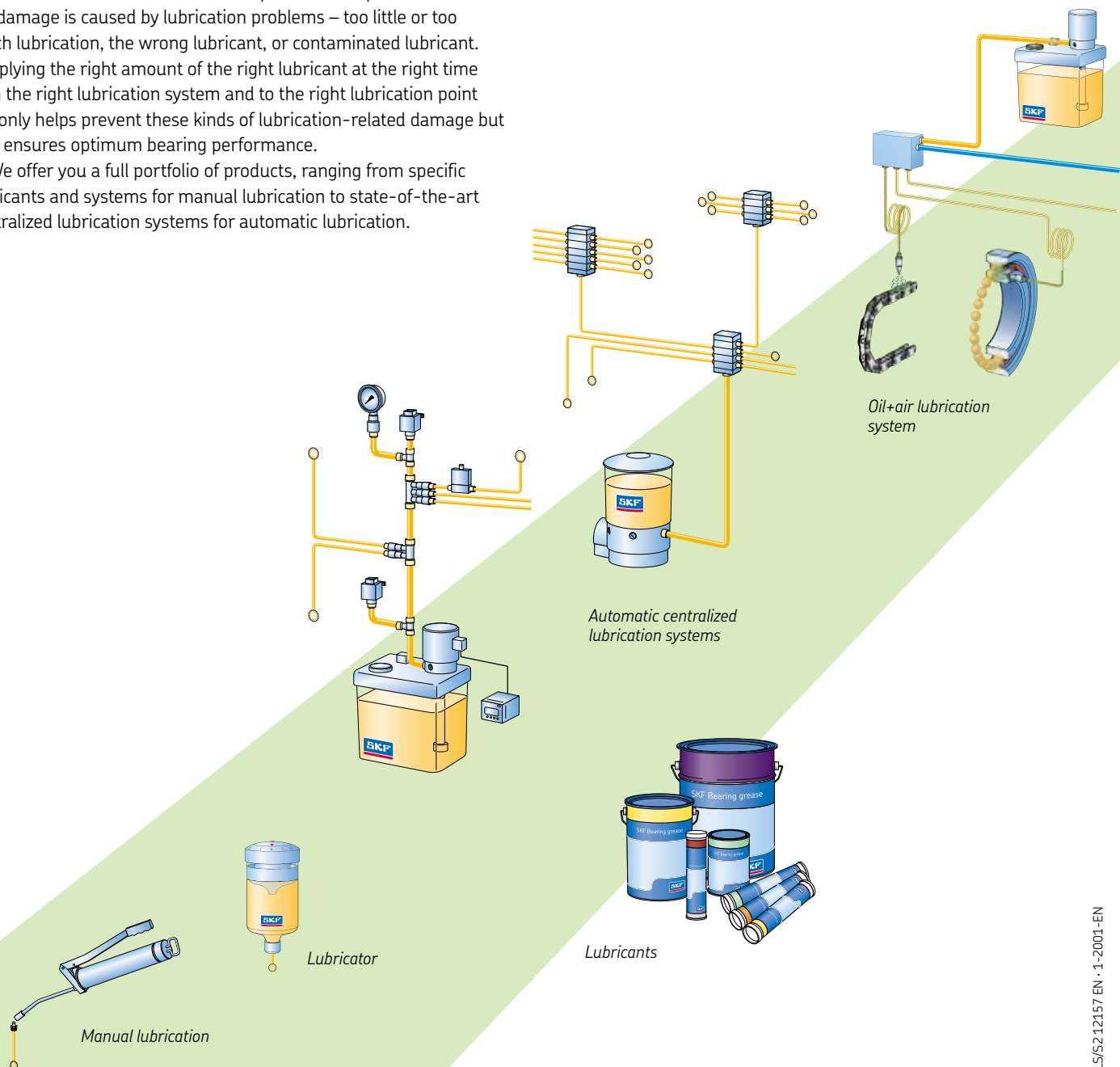
The right solution for a wide range of applications

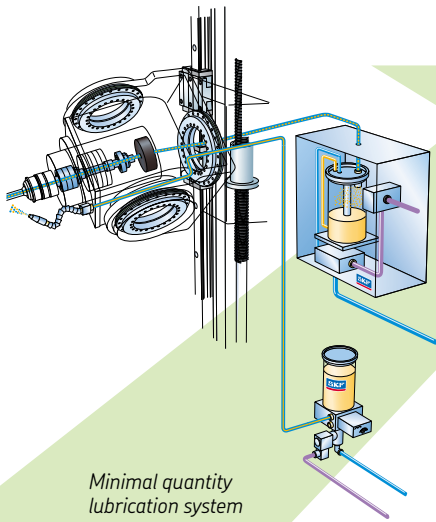
SKF offers a complete portfolio of lubrication solutions to help prevent unplanned downtime and failures.

Thanks to more than 100 years of mechanical engineering experience, SKF has an excellent understanding of bearings. As a large part of this experience also includes the science of tribology, SKF is also very well versed in lubrication.

Previous studies have shown that 36 percent of all premature bearing damage is caused by lubrication problems – too little or too much lubrication, the wrong lubricant, or contaminated lubricant. Supplying the right amount of the right lubricant at the right time with the right lubrication system and to the right lubrication point not only helps prevent these kinds of lubrication-related damage but also ensures optimum bearing performance.

We offer you a full portfolio of products, ranging from specific lubricants and systems for manual lubrication to state-of-the-art centralized lubrication systems for automatic lubrication.





Minimal quantity lubrication system

There is no practical alternative to automated centralized lubrication systems

Only automatic lubrication systems can reliably ensure lubricant supply to all components. SKF's fully developed centralized lubrication systems meet all the necessary requirements by delivering the desired amount of the right lubricant at the specified times. Even the smallest quantities of lubricant are guided to the friction points, helping to ensure smooth operation over the long term.

Lubricants: The blood in your lubrication system

Using the right lubricant is just as important as having a reliable lubrication system. The right lubricant creates the conditions for minimal friction and wear. By using the right lubricant, you can extend lubrication intervals and reduce lubricant consumption, increasing the reliability of your system.

With SKF lubricants and SKF lubrication systems, you can rely on SKF's expertise to take care of your system.

SKF LubriLean minimal quantity lubrication (MQL) improves ecological and economic efficiency.

Machining distributor base plates with SKF LubriLean DigitalSuper (MQL) can provide the following savings compared to wet machining with three high-pressure pumps without frequency converters*:

- Emissions: -55.6%**
- CO₂ emissions: -92.35%**
- Energy consumption: -92.35%.**

* See brochure 1-0999-EN.





The right lubrication system for any need

Friction and wear occur on all moving parts and require specific lubrication solutions.

SKF offers an ideal lubrication solution for every application. Perfectly matched components provide the optimum level of function and efficiency. They protect machine tool bearings, linear guides, bedways, spindles, tools, and workpieces from penetration by coolant, helping to prevent machine downtime and thus increasing machine availability and the service life of your machines and systems.

Lubrication of linear guides, screw drives, and ball bearings

We can offer the right lubrication system for each lubricant based on the application.

For lubrication using oil or fluid grease, SKF MonoFlex single-line centralized lubrication systems with pumps of the MKx, MFE, POE, PFE and KFB product series are available.

SKF ProFlex progressive centralized lubrication systems are suitable for bearings under especially heavy load, in which greases of NLGI Grade 2 are the preferred lubricant. Pumps of product series KFA or KFG are especially well suited for this and are available with an integrated control unit.

For machines not equipped with centralized lubrication (e.g., due to the expense), the linear guides are often insufficiently and unreliably lubricated by hand or with one-time devices. The SKF Compact Greaser for linear guides is an ideal, reliable, and inexpensive solution for these machines.

SKF CircOil circulating-oil lubrication systems are the preferred choice if you need to not only reduce wear but also remove frictional heat.

Lubrication of spindles

The performance required of spindle bearings is only possible long-term if combined with a well-designed lubrication solution. We offer a variety of lubrication solutions for different spindle speeds. The ETPC relubrication cartridge, which can be integrated directly into the spindle, and the SKF Compact Greaser are available for lower speeds suitable for grease lubrication.

For tool spindles designed for high efficiency and long service life, we developed especially powerful SKF Oil+Air lubrication systems which provide a continuous, finely metered flow of oil that can be tailored to operating conditions by changing the metered quantity and the cycle.

SKF Microdosage is well suited for airless lubrication of especially high-speed spindles with speeds up to 60 000 rpm.

This system stands out for using oil as a carrier medium and for its very fast responses to changed lubricant requirements.

SKF Oil+Air
Oil+air lubrication system

SKF LubriLean
Internal and external minimal
quantity lubrication

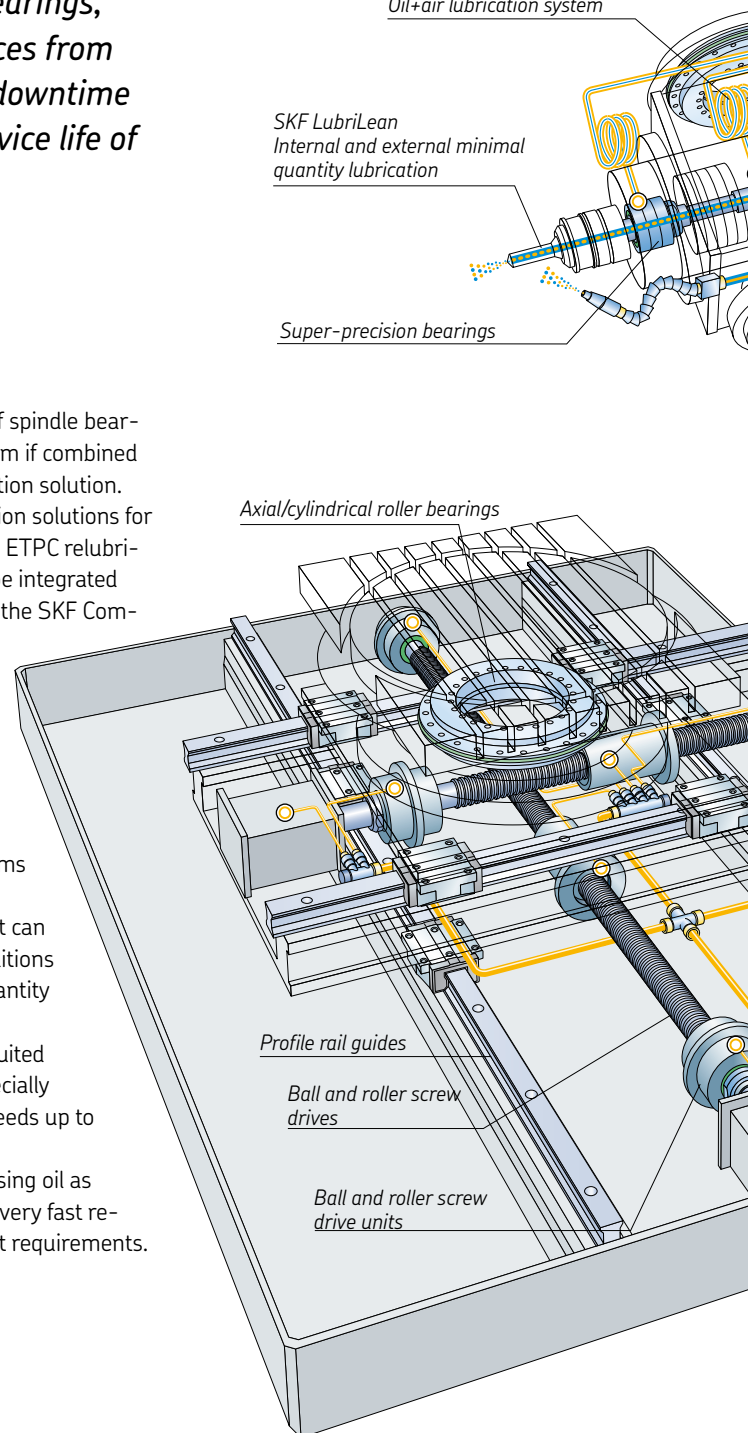
Super-precision bearings

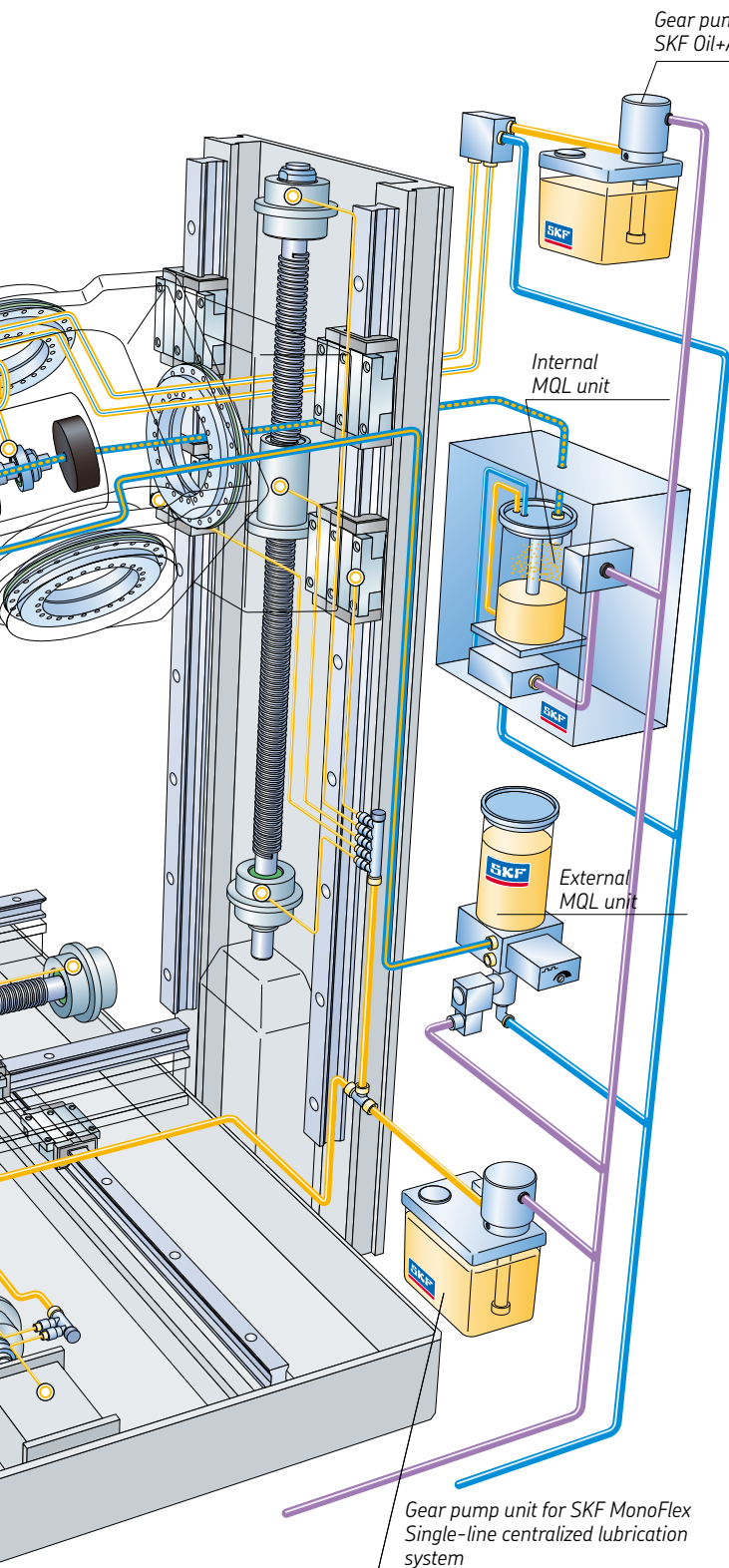
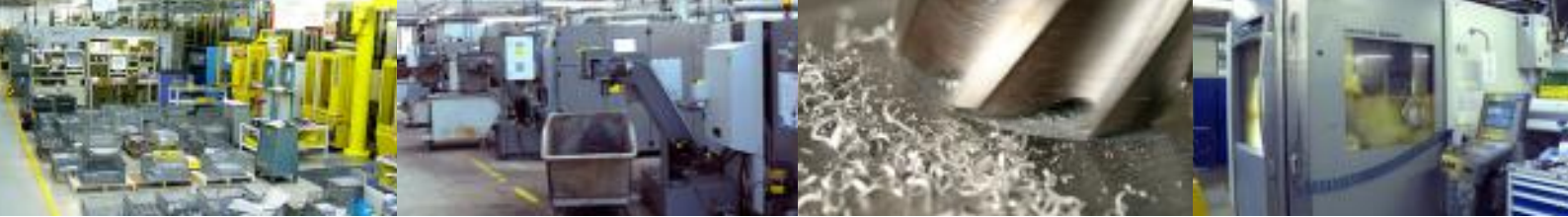
Axial/cylindrical roller bearings

Profile rail guides

Ball and roller screw
drives

Ball and roller screw
drive units





There are many advantages to not using cooling lubricants on the cutting unit of the machine tool, including increased efficiency and cost savings. In addition, the environmental situation in the plant and workplace quality are improved for the long term.

Minimal quantity lubrication (MQL)

We cover the entire range of the innovative MQL technology. We offer systems both for external MQL, in which external lines and nozzles feed the aerosol, and high-efficiency solutions for internal MQL, in which the aerosol is transported internally through the tool holder and the tool. On an innovative internal lubrication system such as LubriLean DigitalSuper, the aerosol quantity can even be set individually by your machine tool's PLC – the efficient solution for machining and turning centers. A benefit of internal lubrication is that the aerosol is always fed exactly to the cutting edge of the tool. When the tool shape or length is changed, there is no need for time-consuming readjustment of the nozzles to make the aerosol reach the right point.

Higher productivity, lower costs

Using SKF minimal quantity lubrication systems brings several benefits for the productivity and operating costs of your machines. You can significantly reduce production time and achieve greater flexibility in usage. Cost benefits also result from longer tool service lives and improved production quality thanks to more precise surface machining. You and your customers also benefit from the fact that cooling lubricant is not required and the associated machine components such as lubricant filters and preparation systems are eliminated. Workpieces do not need to be cleaned, and there are no more expenses for cleaning of chippings and disposal of cooling lubricants.



The right system for your needs

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

SKF Lubricator

These are automatic lubricators for individual lubrication points in many different applications. The units are delivered ready-to-use and are filled with a lubricant on customer request.

Advantages:

- Economical solution for the relubrication of linear guides, robots, rolling bearings, and high-speed spindle bearings
- Ideal and cost-effective alternative if centralized lubrication is not available
- Automatic lubricant supply for up to five lubrication points

SKF MonoFlex single-line centralized lubrication systems

A pump feeds the lubricant via the main line to the lubricant distributors, where it is metered and fed to the lubrication points. Depending on the type of distributors used, this is performed during or after the pump cycle. The individual lubricant requirement for each lubrication point can be adapted using different metering nipples.

Advantages:

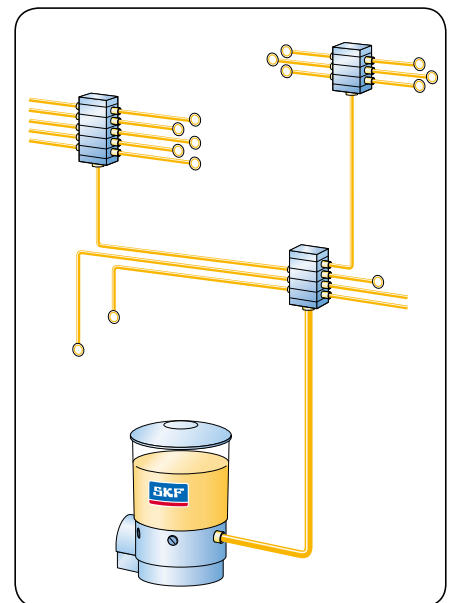
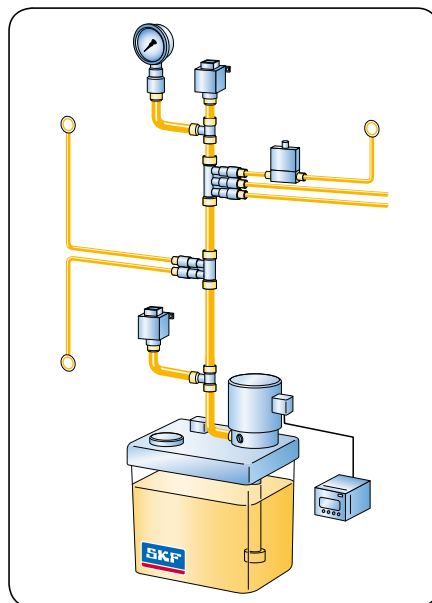
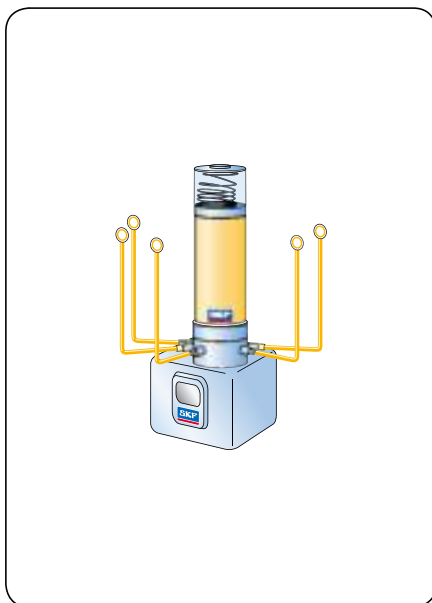
- Suitable for almost all lubricants
- Easy system expansion
- System does not fail completely if a lubrication point clogs
- Support for integrated control unit

SKF ProFlex progressive centralized lubrication systems

In these systems, the piston pump delivers lubricant from the lubricant reservoir to the lubricant outlet. The pump element attached to the outlet delivers the lubricant into the main line through which the lubricant flows to the progressive feeder. There, the lubricant is distributed according to the volume required by the lubrication points being supplied.

Advantages:

- Easy system monitoring via series connection of metering pistons
- Continuous delivery of lubricant
- Simple system blockage control
- Support for integrated control unit





SKF CircOil circulating-oil centralized lubrication systems

In contrast to total loss lubrication systems, after the oil passes through the point requiring lubrication, it is fed back through the return line into the oil reservoir for reuse regardless of viscosity and pressure. In addition to lubricating, circulating-oil lubrication performs a range of other functions. It stabilizes the lubrication points to the proper temperature, removes and filters out wear particles from friction points, prevents corrosion damage, and removes water condensation.

Advantages:

- Efficient cooling and lubrication
- Water and air separation
- Integrated condition monitoring
- Demand-based distribution of lubricant which can be monitored

SKF Oil+Air Lubrication systems

In oil+air lubrication, a quantity of oil metered volumetrically by distributors is pulled apart by a continuous air flow in a tube and carried along the tube wall in the direction of compressed-air flow. The quantity of oil is fed into the air flow in pulses at a mixing point. A nearly continuous flow of oil is produced that leaves the outlet nozzle as fine drops and is fed to the rolling bearing without contact.

Advantages:

- Continuous, finely metered oil flow

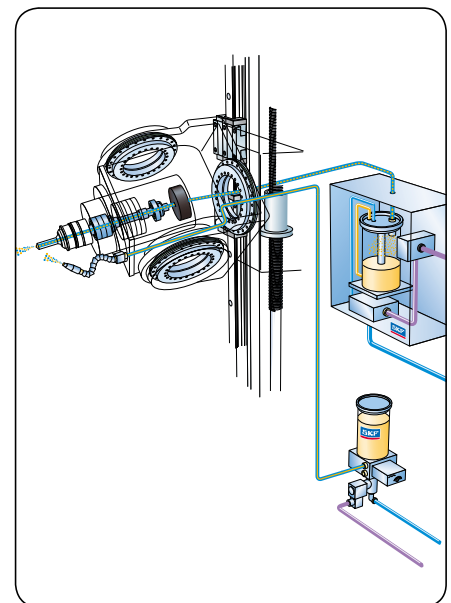
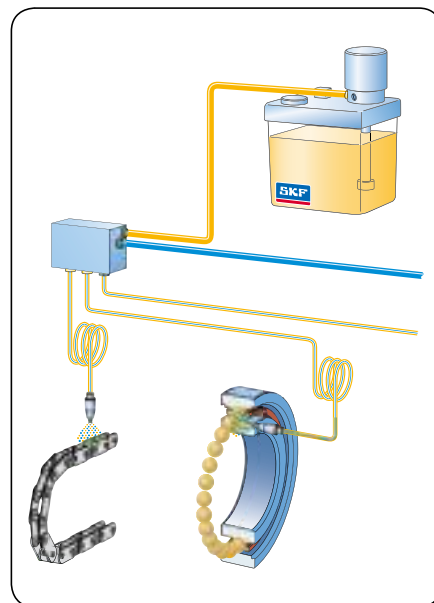
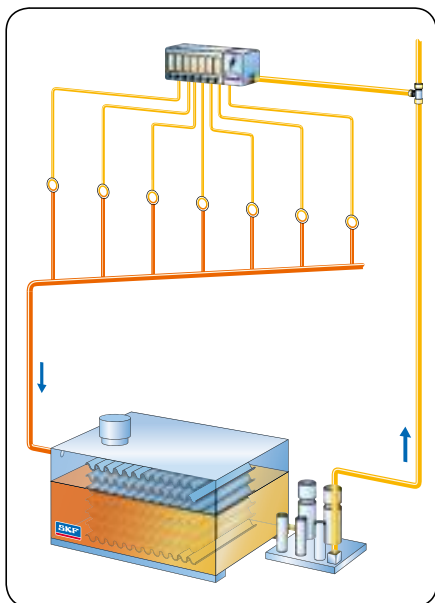
SKF LubriLean Minimal quantity lubrication systems

In MQL, lubrication is performed between the tool and workpiece by an aerosol, i.e., by oil droplets that are finely distributed in an air flow.

In external minimal quantity lubrication, the aerosol is supplied to the lubrication point from the outside through nozzles. In internal MQL, the aerosol is brought directly to the lubrication point through the tool.

Advantages:

- Reduced costs due to elimination of cooling lubricant and therefore of entire machine tool components such as lubricant filters and preparation systems
- Higher productivity and significantly reduced production time
- Higher cutting output and longer tool service life
- Reduction in energy consumption and CO₂ emissions



The right component for each system

High-quality components to optimize machine performance pay off for you and your customers.

Criteria such as ambient conditions, required delivery rates, the lubricants employed, and service intervals determine which lubricant pump to select. The pumps are available with different control and monitoring options.

SKF Compact Greaser

Electrothermal Pump (ETP) for fluid greases and greases of NLGI Grades 000 to 2

Technical features:

- Grease cartridge: 80 cm³
- Number of outlets: 2 to 5
- Metering volume: 10; 15; 20 mm³

Advantages:

- Economical solution for the relubrication of linear guides, robots, rolling bearings, and high-speed spindle bearings
- Ideal and cost-effective alternative for up to five lubrication points
- Optional fill level and stroke monitoring



SKF Compact Greaser

MKx (MKU; MKF; MKL) pump units

Gear pump units for oil and fluid grease for use in single-line and oil+air centralized lubrication systems

Technical features:

- Reservoir capacities: 2, 3 or 6 l plastic or metal reservoir
- Number of outlets: 1–2
- Displacement: 0,1; 0,2; 0,5 l/min

Advantages:

- Integrated pressure regulating and pressure relief valve
- Optional: electrical pressure switch, pressure gauge, float switch
- Support for external control via PLC or internal control unit
- All important functions integrated into the lid, protection against ambient influences such as dirt and dust.
- Modular design



MKx compact units

MFE pump units

Gear pump units for single-line centralized lubrication systems for oil

Technical features:

- Reservoir capacities: 3, 6, or 15 l plastic or metal reservoir
- Number of outlets: 1
- Flow rate: 0,25; 0,5 l/min

Advantages:

- Already integrated in the unit:
 - Float switch for fill level monitoring
 - Pressure relief valve
 - Pressure regulating valve
- Motors available for various voltage ranges and approvals
- Special designs available for a wide range of applications, e.g. in the automotive industry



KFB pump units

Gear pump unit with reservoir for oil and fluid greases of NLGI Grades 000, 00, and 0 for use in single-line centralized lubrication systems

Technical features:

- Reservoir capacity: 1 l
- Number of outlets: 1
- Displacement: 50 cm³/min

Advantages:

- Compact pump unit
- Already integrated in the unit:
 - Pressure relief valve
 - Pressure regulating valve
- Visual or optional electrical fill level monitoring
- Optional integrated control unit

ZM pump units

Gear pump units for circulating-oil lubrication systems and hydrostatic lubrication systems

Technical features:

- Foot units for separate mounting or mounting directly on oil reservoir
- Number of possible circuits: units with 1, 2, 4, 5, 8, 10, or 20 circuits
- Flow rate: 0,015 to 2,5 l/min per circuit

Advantages:

- Even flow rate with different resistances from individual consuming points and supply lines
- Smooth running and good suction behavior

KFA(S) and KFG(S) pump units

Piston pump units with plastic reservoir and up to three pump elements, for greases of NLGI Grade 2

Technical features:

- Reservoir capacity: 1; 2; 6; 10 kg
- Number of outlets: 1 to 3
- Delivery rate: 0,8 to 5,0 cm³/min

Advantages:

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



KFB S1 gear pump unit



Ten-circuit pump unit



KFGS, KFAS1 piston pump units

Exact metering for each lubrication point

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

All distributors offered by SKF are distinguished by high manufacturing precision, so lubricant can be distributed with pinpoint accuracy in the contact area and high metering accuracy.

SKF MonoFlex single-line distributors

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

Product series 341, 351, 391

Technical features:

- Prelubrication distributors for assembly in manifolds, for oil or fluid grease
- Number of outlets: 1
- Displacement per outlet and cycle: 0,01 to 1,5 cm³
- Max. operating pressure: 45 or 80 bar
- Material: galvanized steel

Advantages:

- Flexible options for lubrication system design by combination with 1- to 6-port manifolds

Product series 340, 350, 390

Technical features:

- Prelubrication distributors for oil or fluid grease
- Number of outlets: 2, 3, 5
- Displacement per outlet and cycle: 0,01 to 1,5 cm³
- Max. operating pressure: 45 or 80 bar
- Material: Zinc die-cast

Advantages:

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

VR product series

Technical features:

- Prelubrication distributors for grease up to NLGI Grade 2
- Number of outlets: 1 to 12
- Displacement per outlet and cycle: 0,1 to 1,3 cm³
- Max. pressure: 315 bar
- Material: Anodized aluminum

Advantages:

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



341 single-line distributor with manifold



340, 350, 390 single-line distributors



VR single-line distributors

In order to handle the different requirements in various locations, the distributors can be supplied in different material designs, including galvanized or in stainless steel.

SKF ProFlex progressive feeders

Progressive feeders are utilized in block or modular design. Both types function according to the same principle and are available in various designs. They are sturdy and easy to install. Their proper functioning can be monitored both electrically and visually.

VP product series

Technical features:

- Plate construction
- Number of outlets: 6 to 20
- Displacement per outlet and cycle: 0,1 to 1,2 cm³
- Max. oil/grease pressure: 200/300 bar
- Material: galvanized steel

Advantages:

- Sturdy and cost-effective
- Centralized function monitoring of all feeder outlets with little effort
- High functional reliability due to check valves installed standard

VPK product series

Technical features:

- Plate construction
- Number of outlets: 6 to 20
- Displacement per outlet and cycle: 0,05 to 0,6 cm³
- Max. oil/grease pressure: 200/300 bar
- Material: Basic design is galvanized steel; optionally a corrosion-resistant, chemically nickel-plated design is available

Advantages:

- Usable for the widest possible range of applications in terms of mode of operation (continuous/intermittent) and lubricants
- Centralized function monitoring of all feeder ports with little effort

VPB product series

Technical features:

- Block construction
- Number of outlets: 6 to 20
- Displacement per outlet and cycle: 0,2 cm³
- Max. oil/grease pressure: 200/300 bar
- Material: Basic design is galvanized steel; optionally a stainless steel or a saltwater-resistant design is available

Advantages:

- Preset quantity distribution per outlet and cycle



VPM3 progressive feeders



VPKM6 progressive feeders



VPBM8 progressive feeders

Information in Detail

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

By using intelligent monitoring devices, all necessary data can be recorded in order to ensure efficient lubrication that is optimized according to demand. SKF has developed a number of system-specific monitoring devices that electronically collect and evaluate signals from automatic centralized lubrication systems.

Pressure switch for SKF MonoFlex

Pressure switches are used primarily in single-line centralized lubrication systems. After the metering is complete and the pre-set pressure has been reached, the pressure switch installed at the end of the line system sends a signal to the machine tool's central control unit. After the pre-set delay time, the control unit cuts off the power supply to the pump unit, and pressure in the lubrication system is relieved. The system is now ready for the next lubrication cycle.

Piston detector for SKF ProFlex

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

Flow monitor for SKF CircOil

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



DSA, DSB, DSC and DSD pressure switch



177-300-097 piston detector



171-210-051 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 slot or based on the system cycle.

Flow sensor for SKF MonoFlex

The flow sensors monitor the oil flow from a metering point to the lubrication point, during which the metering element only briefly meters a small quantity of oil. Depending on the type, the flow sensors can monitor metered quantities of oil from 10 to 600 mm³ per lubrication pulse.

Oil-streak sensors for SKF Oil+Air

Oil-streak sensors monitor the continuity of the oil flow in oil+air lubrication systems. The oil-streak sensor allows the monitoring of the transport of the fine oil flow along the wall of the lubrication line immediately before the lubrication point.

Control units

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

The task of the control units is to trigger lubrication at specific intervals. Additionally, the devices possess a range of functions necessary to control and monitor the lubrication system. The scope of these functions depends on the specific type of device.



GS300 flow sensor



GS oil-streak sensor



Control unit and board

Prevent spindle failure

The right lubrication for every speed

The performance required of spindle bearings is only possible long-term if combined with a well-designed lubrication solution. SKF offers a variety of lubrication solutions for different spindle speeds, from small devices for grease relubrication and conventional oil+air lubrication to highly innovative airless lubrication for especially high-speed spindles.

SKF Compact Greaser

Electrothermal mini piston pump unit for grease relubrication of spindle bearings from outside

Technical features:

- Grease cartridge: 80 cm³
- Number of outlets: 2 to 5
- Metering volume: 10, 15, 20 mm³

Advantages

- Automatic lubricant supply for up to five lubrication points
- Low maintenance and operating costs
- Optional fill level and stroke monitoring



SKF Compact Greaser with or without monitoring

ETPC1 relubrication cartridge

Electrothermal Pump Compact (ETPC) for integrated single-bearing lubrication through the outer bearing ring

Technical features:

- Grease cartridge: 2,5 cm³
- Metering volume: 6 mm³/stroke
- Suitable for grease, NLGI Gr. 2

Advantages:

- Compact design for easy integration into the spindle
- Extends the service life of the spindle by extending the grease service life
- Reduces maintenance and service costs



ETPC1 relubrication cartridge

SKF Oil+Air lubrication system

In oil+air lubrication, a drop of oil is pulled apart in a tight tube by a stream of air in streaks and transported in the direction of the lubrication point. The bearing is continuously supplied with oil in the form of fine drops via the outlet nozzle. The transport air leaves the bearing nearly free of oil.



Oil+Air unit with oil-streak sensors

Components:

- Gear pump unit with valve set required for pressure relief and limitation, oil pressure switch, float switch, control unit
- Filter unit
- Pressure regulating valve, pressure gauge, pressure switch for air pressure control
- Oil+Air metering unit
- Oil-streak sensor

The components can be supplied as a complete unit or individually.

Advantages:

- Better machining due to better speed factors
- Higher dependability
- Lower lubricant consumption

Oil+Air metering units

Mixing valves with integrated piston distributor meter the required quantity of oil and mix it with an air flow to form an oil-air mixture. They are mounted in the compressed air line leading to the consuming point. The metering units are typically supplied as part of an Oil+Air unit but can also be ordered separately.

Technical features:

- MV20x-20 series
 - Metered quantities: 0,01 to 0,16 cm³
 - Actuating pressure
 - Air: 3 to 10 bar
 - Oil: 17 to 40 bar
- MV50x series:
 - Metered quantities: 0,002 to 0,006 cm³
 - Actuating pressure
 - Air: 3 to 10 bar
 - Oil: 25 to 40 bar
 - Self-venting

SKF Microdosage

The microdosage system is an alternative to conventional oil and air lubrication. Its advantages are especially clear when lubricating especially high-speed spindles with speeds up to 60 000 rpm.

The lubricant metering system allows individual supply of up to four lubrication points with minimal quantities of oil from a common reservoir. Metering is performed by microvalves that generate a homogeneous and nearly continuous volumetric flow when actuated accordingly.

Applications with:

- Highest metering precision
- Continuous lubricant requirements
- Precise metering of very small quantities (0,5 to 5 mm³/min)

Advantages:

- Consumes no air for oil transport
- Fast response to changed lubricant requirements



MV 50x microdosage unit



MDU microdosage control unit and reservoir



Lower energy consumption and higher productivity

SKF LubriLean minimal quantity lubrication (MQL) improves ecological and economic efficiency.

Using MQL eliminates the need for complicated wet machining when performing cutting operations. The principle is simple: The lubricant is applied to the cutting edge of the tool as an aerosol in the exact amount required. The lubrication consumption using MQL is measured in milliliters per hour instead of liters per minute. Consistently employing SKF LubriLean instead of cooling lubricant on production lines allows for simple, efficient, and environmentally friendly factory design.

SKF LubriLean Smart

Applications:

- Drilling, milling, broaching, thread cutting, thread forming
- Universal milling machines
- External lubrication

Technical features:

- Filling: 0,3; 0,5; 0,8 l
- Number of outlets: 1 to 2
- Air consumption per outlet: ≈50 NI/min
- Oil quantity: 5 to 100 ml/h



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SKF LubriLean Basic

Applications:

- Drilling, milling, broaching, thread cutting, thread forming
- Universal milling machines
- External lubrication

Technical features:

- Filling: 3 l
- Number of outlets: 1 to 8
- Modular construction allows change in number of outlets
- Air consumption per outlet: ≈50 NI/min
- Oil quantity: 5 to 100 ml/h



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SKF LubriLean Vario

Applications:

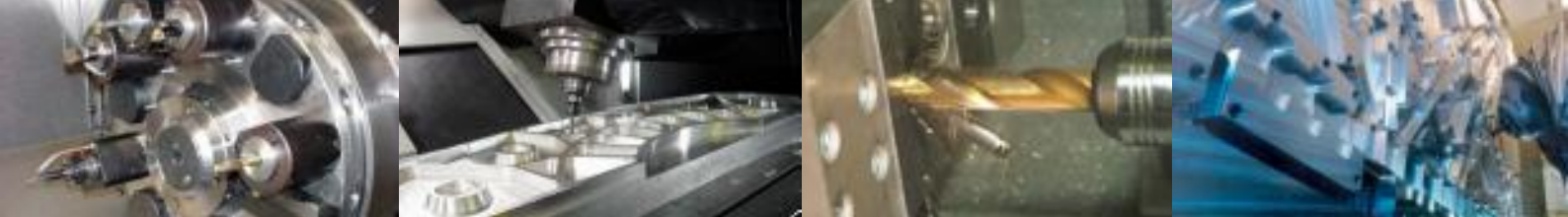
- Turning, milling, drilling
- Special applications (e.g., multispindle)
- Retrofitting on lathes
- Internal and external lubrication

Technical features:

- Filling: 1,8 l
- Number of outlets: 1 to 3
- Air consumption: 15 to 300 NI/min
- Oil quantity: 1 to 150 ml/h
- Air/oil quantity adjustment: manual



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Alternating use of wet and dry machining on one machine is possible in most cases. In addition to integration in new machine tools, the low-maintenance MQL devices can in most cases also be used to retrofit existing machinery. The experience gathered using MQL technology in-house can also be integrated directly into product innovations.

SKF LubriLean VarioPlus

Applications:

- Turning, milling, drilling
- Retrofitting on turning and machining centers
- Also suitable for small tools
- Internal and external lubrication

Technical features:

- Filling: 1,8 l
- Number of outlets: 1 to 3
- Air consumption: 15 to 300 NI/min
- Oil quantity: 1 to 150 ml/h
- Air/oil quantity adjustment: manual
- Integrated pressure monitoring



UFV10-009

SKF LubriLean VarioSuper

Applications:

- Machining centers, turning centers, special-purpose machinery
- Internal and external lubrication

Technical features:

- Filling: 1,8 l
- Number of outlets: 1 to 3
- Air consumption: 15 to 300 NI/min
- Oil quantity: 1 to 150 ml/h
- Air/oil quantity adjustment: via machine control unit
- Integrated pressure monitoring



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SKF LubriLean DigitalSuper

Applications:

- DigitalSuper 1 in machining centers and turning centers
- DigitalSuper 2 for use in machining centers with double spindles or turning machines with two turrets
- Internal and external lubrication

Technical features:

- Filling: 1,8 l
- Number of outlets: 1 to 3
- Air consumption: 15 to 300 NI/min
- Oil quantity: 1 to 150 ml/h
- Air/oil quantity adjustment: via Profibus interface
- Integrated flow sensor and pressure monitoring



UFD10-20



Expertise and experience for the automotive industry

SKF Lubrication Systems is your reliable partner, including for custom lubrication solutions

Friction and wear occur over the entire process chain and need a custom lubrication solution that fits the requirements and the ambient conditions. SKF offers systems and components for every part of the production chain that meet the specifications of the automotive industry, backed up by a comprehensive service package.

Meet a wide range of challenges

Whether your lubrication systems have to cope with the enormous stresses of metal forming and casting, as can occur in **foundries**, **stamping plants**, etc., or they supply lubricant to robots in **automotive body construction**, SKF understands the conditions involved and offers products and solutions to match. This ensures the greatest possible service life and reliability for your systems.

The machine tools employed in **component manufacturing** must meet the highest demands for productivity and efficiency. SKF MonoFlex, ProFlex, CircOil, or Oil+Air centralized lubrication systems are used depending on the lubricant required. The use of SKF LubriLean minimal quantity lubrication allows clean and efficient manufacturing and huge savings in energy usage and reduced CO₂ emissions.

The demands on **conveyor belts and chains** are very high, as they have to withstand heavy loads, continuous operation, and harsh environments. These systems therefore need special care to ensure they are operational at any time. SKF uses special chain lubrication systems (GVP). These allow the grease to be sprayed directly into the chain pins while the chain is in motion.



Unit design according to specifications of the automotive industry
MFE5-BW7-S120+MWZ KFG1-5W1-M+924



Grease injection system for chain conveyors
GVP chain lubrication



Approved in equipment specifications

Thanks to our industry-specific application expertise and more than half a century of experience in the automotive industry, we are able to offer lubrication systems for the highest-performance applications. SKF products for centralized lubrication are approved worldwide in the equipment specifications and component lists of leading automobile manufacturers.

Service to your advantage

SKF provides all fluid-specific documentation in multiple languages. Our engineers work with state-of-the-art tools so you can integrate the 3D CAD data directly into your system planning.

We support your maintenance staff with comprehensive training on lubrication that is tailored to your needs and can be held on-site or at our company. If necessary, we can of course also install or perform maintenance on lubrication systems on-site at your company.





Services are paramount at SKF

For us, service means satisfying our customers in all aspects of centralized lubrication, before and after the purchase of a centralized lubrication system.

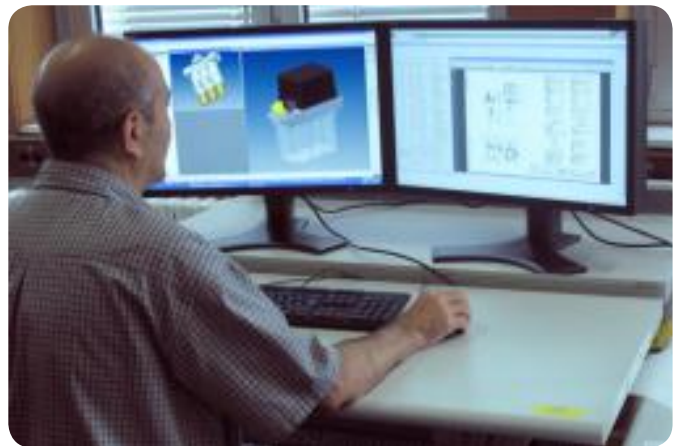
Lubricant analysis

Not all lubricants are suitable for use in centralized lubrication systems. On request, SKF can inspect a lubricant provided by the customer for its compatibility with centralized lubrication systems. We have developed various grease tests and grease testing devices for this purpose. The results of the tests provide a good estimate of the feedability and help in the optimization, system selection, and design of centralized lubrication systems.

Design in 3D and electronic CAD product catalog

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

3D CAD data is available in native format in our online product catalog, which is based on the eCATALOGsolutions technology by CADENAS GmbH. You can configure your product online from the centralized lubrication area and integrate it into your design process free of charge.





Maintenance and repair

System downtime is more than just a hassle. It becomes even more problematic when costs for maintenance and repair start to become unwieldy. SKF has thus developed a comprehensive service and maintenance program that extends from professional installation to regular inspections and maintenance work to replacing parts subject to wear and retrofitting with kits.

Training

SKF Lubrication Systems passes on its extensive knowledge gained from decades of experience with special technical and product-related training.

SKF has acquired substantial technical expertise by cooperating closely with customers in the development of customer-specific solutions and services. Our customer training lets users benefit from this knowledge and apply it in practice.



Find out more about SKF solutions

The table below provides an overview of the products and solutions from SKF for the machine tool industry as well as publications containing additional information.

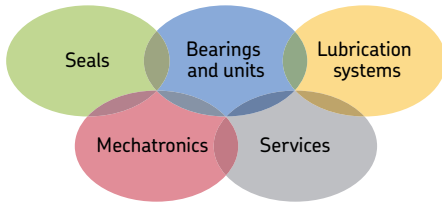
Product	Lubricant				SKF Lubrication system							Publication No.
	Oil	Fluid grease	Grease	Aerosol	SKF Compact Greaser	SKF MonoFlex	SKF ProFlex	SKF CirOil	SKF Oil+Air	SKF LubriLean	SKF ChainLube	
Pump units												
ETP		•	•		•							1-0988-EN
MKU	•					•			•			1-1203-EN
MKF		•				•						1-1203-EN
MKL	•								•			1-1203-EN
M(F)	•	•						•				1-1202-EN
MFE	•	•				•						1-1202-EN
ZM	•							•				1-1204-EN
KFB(S)		•				•						1-1206-EN
KFA(S)		•	•				•					
KFG(S)			•			•	•					1-3030-EN
ETPC1			•									1-0987-EN
OLA	•								•			1-5012-3-EN
Microdosage	•											1-5020-EN
UFS				•						•		1-5102-EN
UFB				•						•		1-5102-EN
UFV				•						•		1-5102-EN
UFD				•						•		1-5109-EN
VTEC	•			•						•		1-4401-EN
VE1B	•			•								1-4403-EN
GVP			•								•	1-4101-EN
POE, POEP	•					•						1-1110-EN
PFE, PFEP		•				•						1-1110-EN
P, PW, PF, PFW-268	•	•				•						1-1110-EN
PEF-99	•	•				•						1-1110-EN
PEU-99	•	•				•						1-1110-EN
Lubricant distributor												
341	•	•				•						1-5001-EN
340	•	•				•						1-5001-EN
351	•	•				•						1-5001-EN
350	•	•				•						1-5001-EN
391	•	•				•						1-5001-EN
390	•	•				•						1-5001-EN
VR		•	•			•						1-5001-EN
VP	•	•	•					•	•			1-3016-EN
VPK	•	•	•					•	•			1-3015-EN
VPB	•	•	•					•	•			1-3017-EN
PSG	•	•	•					•	•			1-3013-EN
MVx	•			•						•		1-5012-3-EN
Rotolub	•											PUB LS/P2 10363 EN

Product	Lubricant				SKF Lubrication system						Publication No.	
	Oil	Fluid grease	Grease	Aerosol	SKF Compact Greaser	SKF MonoFlex	SKF ProFlex	SKF CirOil	SKF Oil+Air	SKF LubriLean		SKF ChainLube
Control 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
Oil-streak sensors	•								•			1-1704-EN
Aerosol monitor				•						•		1-5108-EN
Humidity sensor									•			1-0972-EN
Control units												
Universal control unit for SKF MonoFlex						•						1-1700-1-EN
for SKF ProFlex							•					1-1700-4-EN
for SKF Oil+Air									•			1-1700-2-EN
												1-1700-3-EN
Additional system components												
Fittings and accessories	•	•	•		•	•	•	•	•			1-0103-EN
Electrical plug-in connections												1-1730-EN
Chain lubrication, accessories												1-4106-EN
SKF VectoLub, accessories				•						•		1-4402-EN
SKF LubriLean, accessories				•						•		1-5102-EN
Minimal quantity metering, accessories	•								•			1-5012-5-EN

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The **SKF media library** online at www.skf.com is the one-stop shop for SKF publications. You can find publications through browsing or searching; all publications can be downloaded in PDF format.
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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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