

# LMC 301 controller

For reliable control of small, large or multi-system-type lubrication systems

Models 86500, 86501



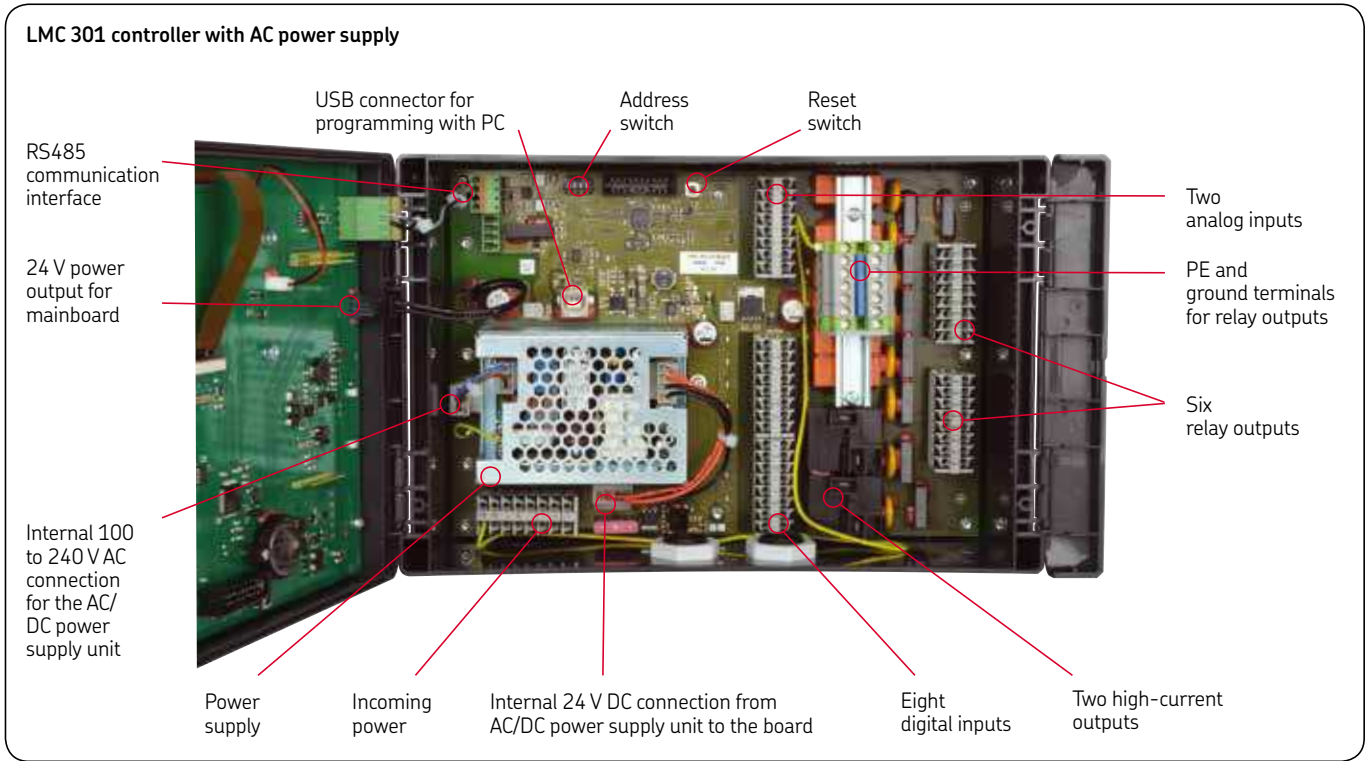
Models 86502, 86503



Designed for use with pumps that have no internal controller, the LMC 301 is suitable for applications where sophisticated control and feedback are required. This versatile controller can handle multiple configurations and diverse temperature ranges.

The LMC 301 works with multiple system types, including single-line, dual-line and progressive systems. One system can operate three different pumps, and each of those pumps can control up to three zones for a total of nine zones. Also, each pump can function as a different system type.

# LMC 301-controlled systems can be configured to verify that lubricant is dispensed



The LMC 301 utilizes pressure switches and pressure transducers, and a grease monitor sensor can be placed before the lubrication point to verify that the system is working correctly. This is ideal for use on critical bearings where it is essential to know that they have been lubricated properly.

Because the unit manages up to nine separate zones, fewer controllers are needed, which saves you money. The unit is designed for systems that have lubrication points requiring different lubrication intervals or different types of grease.

### Features:

- IP 65-rated container for water resistance
- Available in 24 V DC or 110 or 220 V AC
- Modular system with 10 inputs per unit minimizes hardware and installation costs
- Up to seven IO extensions can be added per system
- USB connection mode
- Pump settings include time- or pressure-based lubrication, pump control and temperature monitoring
- Controller and PC software languages: English, German, French, Spanish, Italian, Russian and Chinese
- Can download new firmware at no charge from SKF website and update units via PC software
- Many high-end functions
  - prelubrication and post spray capability
  - ability to control auto-fill pump
  - temperature monitoring
- Ability to switch between a normal and heavy lubrication cycle via a remote switch

### Benefits:

- Operates up to three different pumps for a total of nine zones
- Provides flexibility when varying lubrication intervals or different types of grease are required
- Functions effectively in diverse temperatures
- Controls large-capacity pumps with heavy amperage draw
- Works with new angular grease-detection sensor to verify proper lubrication
- Water-resistant container holds up to high-pressure wash downs
- UL/CSA/CE approved

# Configure the LMC 301 controller to meet your specifications

The LMC 301 utilizes solenoids to control the zones and sensors to monitor the pressure. Because you can select the type of solenoids and sensors used, the unit can be customized to your specific needs and regional applications.

Suitable for all industries where small, large or complex lubrication applications are found, the LMC 301 controller is especially applicable for mobile, off-road, mining, construction and large process industries.

## Typical items for inputs:

- Pressure switch
  - NO or NC
- Pressure transducers
  - 1 to 6 V
  - 0 to 10 V
  - 2 to 10 V
  - 0 to 20 mA
  - 4 to 20 mA
- Temperature sensors
- Grease flow detector
- Piston detectors
- Remote lubrication button
- Cycle counters
- Motor protection when using motor starters
- Lubrication load
  - normal or heavy
- Low level switch or sensor
- Auto filling

## Typical items for outputs

- Pumps
- Vent valves
- Zoning valves
  - 3/2, 2/2 NC, 2/2 NO
- Audible or visible alarms

| Model        | Description  |
|--------------|--|
| <b>86500</b> | DC main unit   |
| <b>86502</b> | DC I/O unit (same as 86500 minus display and control board on cover) |
| <b>86501</b> | AC main unit (same as 86500 plus power supply installed on board)    |
| <b>86503</b> | AC I/O unit (same as 86502 plus same power supply used on 86501)     |

## Technical data

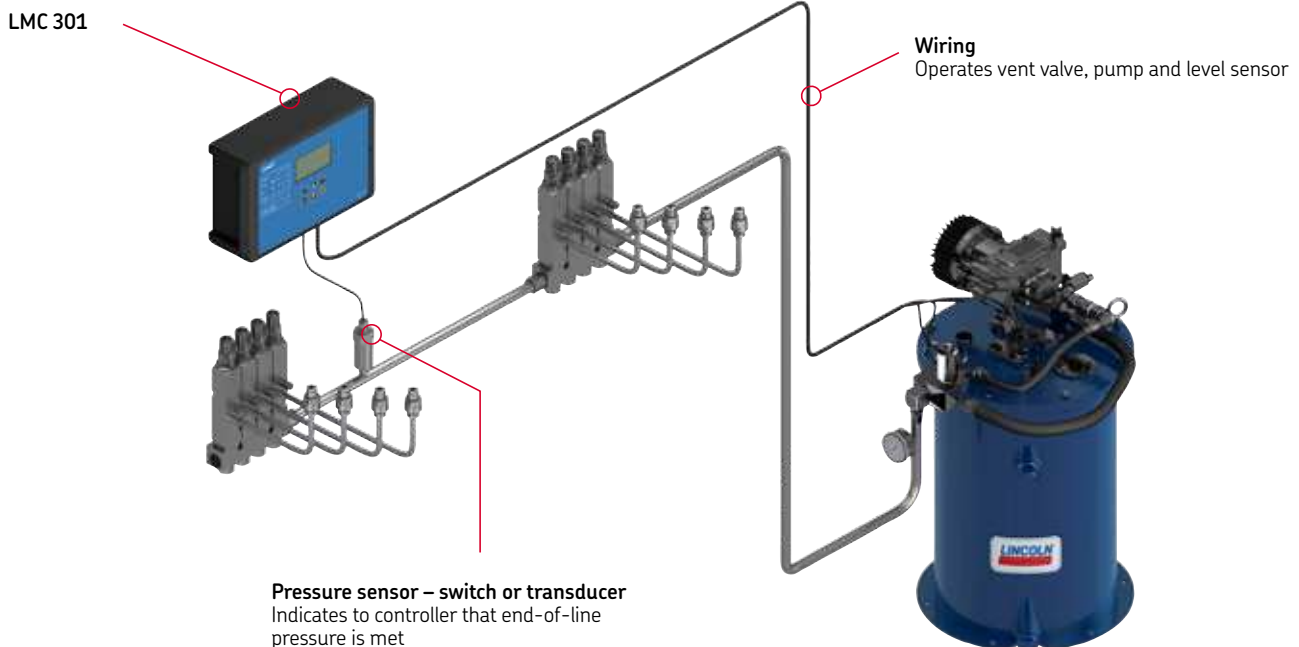
| Models                                      | <b>86500, 86502 (DC units)</b><br><b>86501, 86503 (AC units)</b> |
|---|--|
| Mounting position                           | vertical   |
| Dimensions                                  | 10.6 x 6.7 x 3.5 in. (270 x 170 x 90 mm)                         |
| Display                                     | 2.4 x 1.2 in. (60 x 30 mm); 128 x 64 pixels                      |
| Operating temperature AC                    | 14 to 122 °F (–10 to +50 °C)                                     |
| Operating temperature DC                    | –40 to +158 °F (–40 to +70 °C)                                   |
| LCD display                                 | –4 °F (–20 °C)   |
| Storage temperature                         | –40 to +158 °F (–40 to +70 °C)                                   |
| Inputs                                      | 10   |
| Outputs                                     | Six 8 A relay contacts and two 20 A                              |
| Residual ripple relative operating voltage  | ±5% acc. to DIN 417 55   |
| <b>Protection and monitoring</b>            |  |
| Current limit sustained short-circuit-proof |  |
| Overload-proof                              | yes  |
| Open-circuit-proof                          | yes  |
| Protection class                            | IP 65  |
| <b>Input AC</b>                             |  |
| Input voltage                               | 100-240 V AC (47-63 Hz)  |
| Fusing (slow)                               | 4 A  |
| <b>Input DC</b>                             |  |
| Input voltage                               | 24 V DC ±10%   |
| Fusing (slow)                               | 10 A   |
| <b>Safety per DIN EN 60204-1</b>            |  |
| Safety class                                | Class I  |
| <b>EMC</b>                                  |  |
| Interference suppression                    | VDE 0875 T 11, EN 55011 Class A                                  |
| Emitted interference                        | acc. to EN 61000-6-3   |
| Immunity                                    | acc. to EN 61000-6-2   |

The emitted interference meets the requirements for industrial use; use in a residential area may cause interference under some circumstances

# Single-line lubrication system overview

## Example of a single-line system layout

A one-zone system with a pressure sensor at the end of the line in the ideal position. Up to three zones can be added per pump.



Regardless of the application, the principle of single-line lubrication remains the same: a central pump station automatically delivers lubricant through a single supply line to the lubricant metering device. Each metering device serves only one lubrication point and may be adjusted to deliver the precise amount of grease or oil required. Systems can service one machine, different zones on one machine or even several separate machines.

### Advantages of a single-line lubrication system:

- Easy to understand, install and maintain
- Available in both preset and adjustable models
- Suitable for almost all lubricants
- Simple system expansion
- System continues to operate if one point becomes blocked
- Integrated system control and monitoring
- Able to pump long distances within a wide temperature range

In addition to the LMC 301 controller, the SKF portfolio includes both SKF MonoFlex and Lincoln Centro-Matic system components, such as pumps, metering units, control and monitoring devices and accessories.

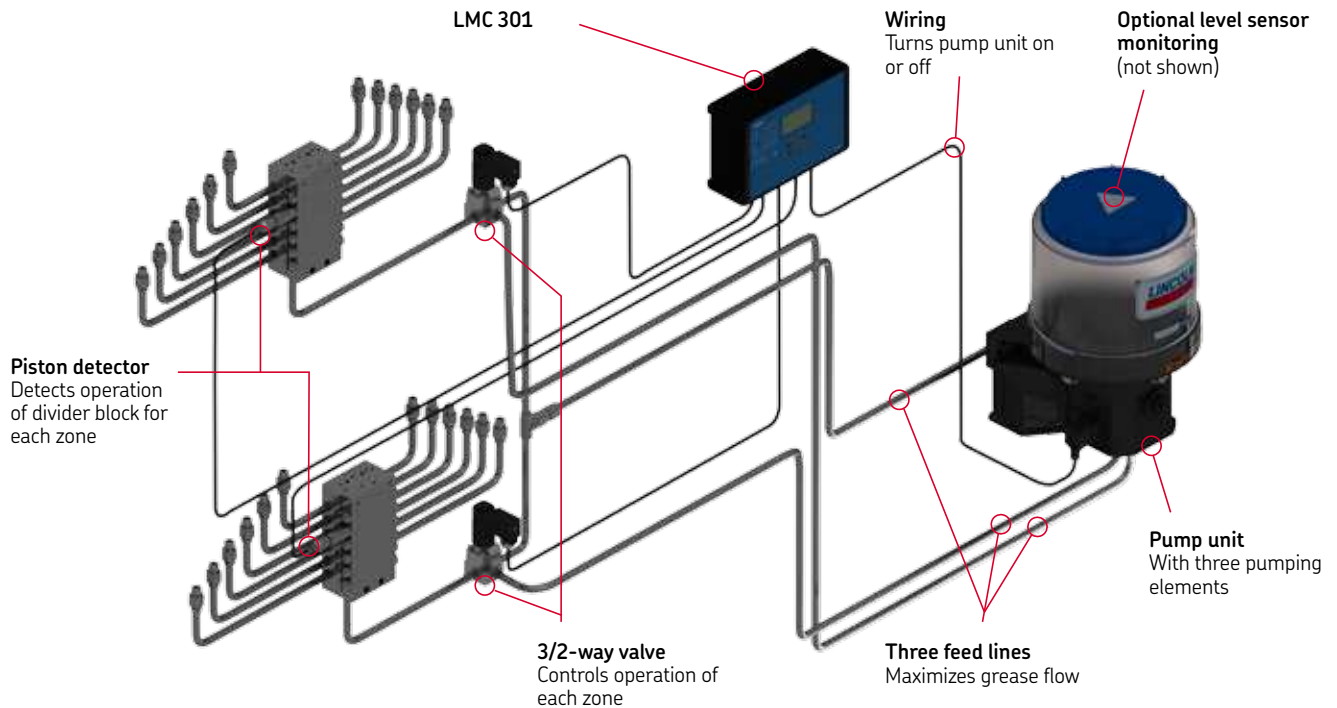
### Benefits of using LMC 301 with a single-line system:

- Lubricates up to three zones per pump with different interval times
- Enables use of preferred zoning solenoids and pressure sensors common for the region
- Data logging function

# Progressive lubrication system overview

## Example of a progressive system layout

A two-zone system with 3/2-way valves. The 3/2-way valves are utilized to expand pumping volume so lubrication of each zone occurs at the same time in quick intervals. An alternative would be to use 2-way valves instead with only two feed lines and increase the pumping time. The LMC 301 can control and monitor up to three different zones.



In progressive automatic lubrication systems, a piston pump supplies a defined amount of lubricant through the main line to the metering device that serves each outlet. SKF ProFlex and Lincoln Quickclub systems are designed for specific applications and can be configured to meet the unique requirements of every lubrication point on the equipment.

### Advantages of a progressive lubrication system:

- Continuous delivery of lubricant during pump running time
- Extends equipment life
- Improves safety and reliability
- Pre-assembled kits for simple installation
- Adjustable delivery volumes
- Easy system monitoring and simple blockage control
- Utilizes standard grease NLGI class 00, 000, 1 and 2

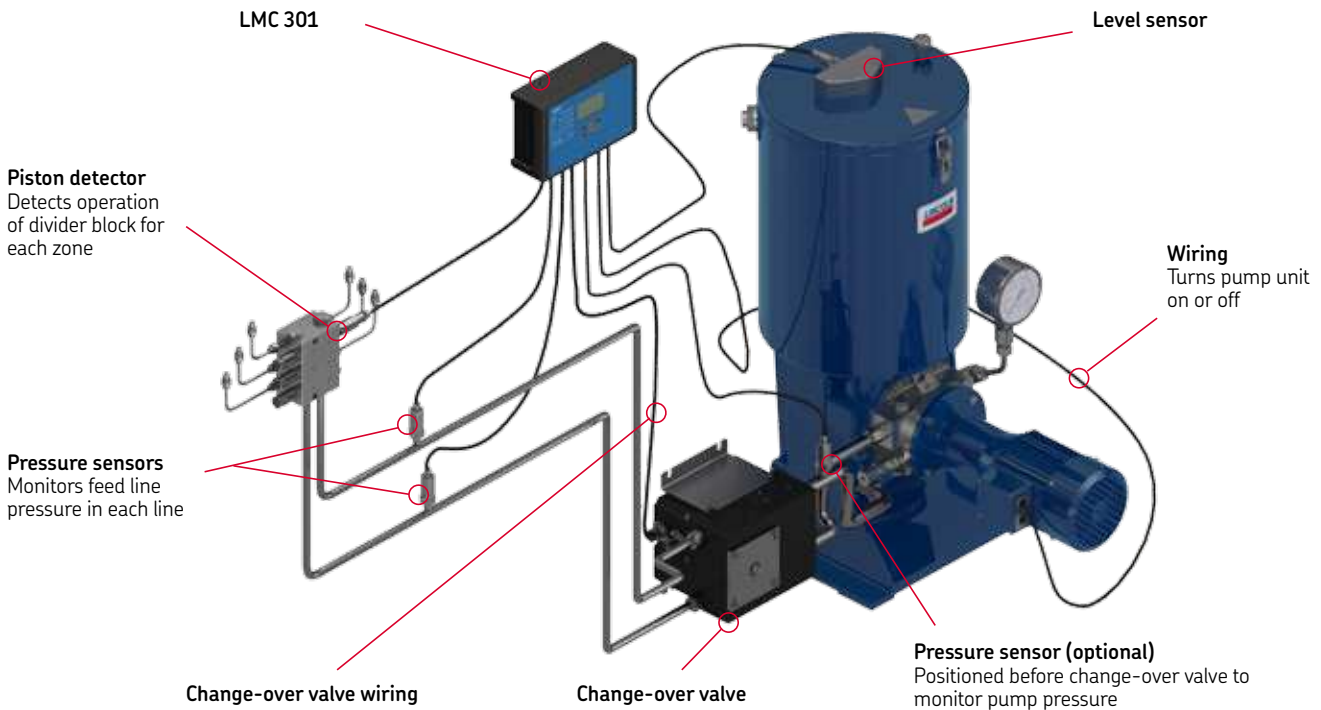
### Benefits of using LMC 301 with a progressive system:

- Monitors large number of piston detectors, flow-sensors or limit switches
- Lubricates up to three zones per pump with different interval times
- Time-based (working and pause time) or count-based programming
- Can monitor temperature and stop system if too cold
- Data logging function
- Controls analog sensors like level sensors

# Dual-line lubrication system overview

## Example of a one-pump, dual-line system layout

In conjunction with the piston detectors, the pressure sensors in each line allow the system to automatically adapt to temperature changes by increasing the pump time in colder weather.



Dual-line lubrication systems, including SKF DuoFlex and Lincoln Helios, utilize two main lines that are supplied alternately with lubricant from a high-pressure pump via a change-over valve, whereby the lubricant also serves as a means of control for the system. These systems are suitable for applications with many lubrication points over long distances in harsh environmental conditions.

### Advantages of a dual-line lubrication system:

- Simple to design and easily extended
- Adjustable delivery volumes
- Easy system monitoring
- System continues to operate if one point becomes blocked
- Can be combined with downstream progressive metering devices to increase total number of lubrication points
- Utilizes oil, semi-fluid grease and hard grease up to NLGI 2

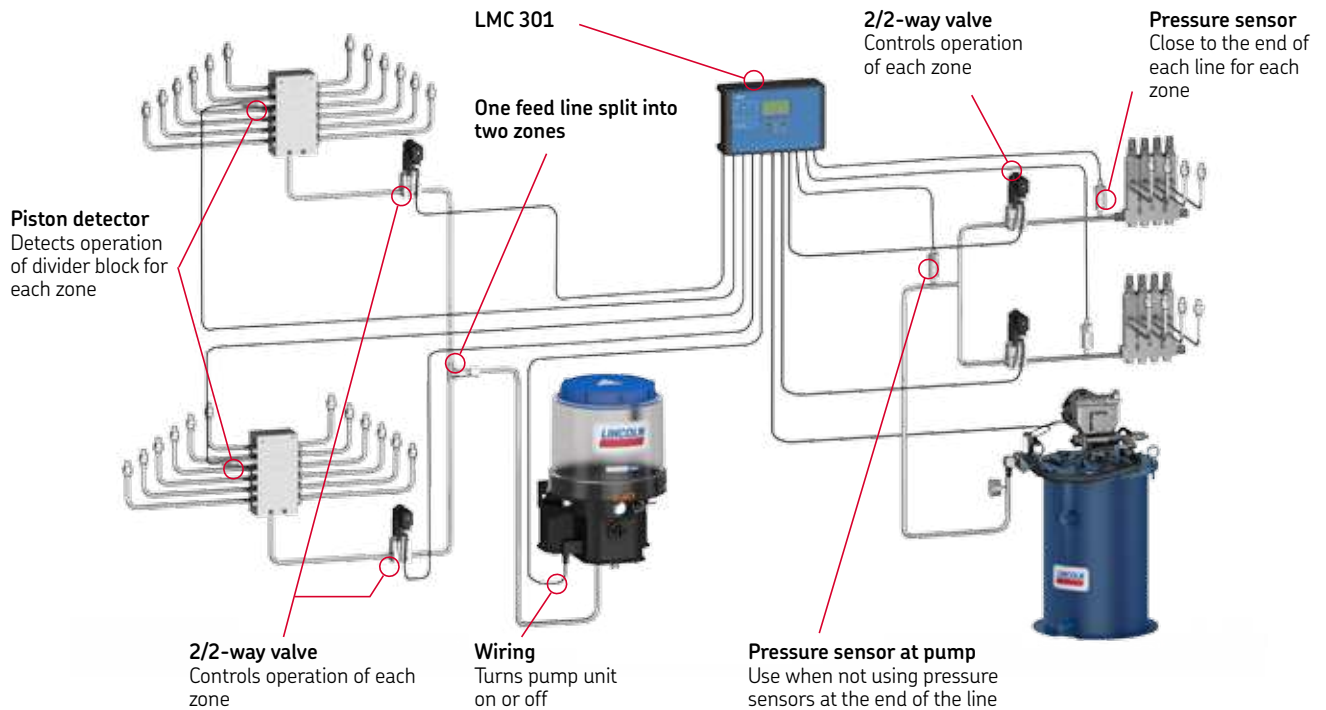
### Benefits of using LMC 301 with a dual-line system:

- Able to work in adaptive mode together with analog pressure sensors
- Uses piston detectors as “learning sensors”
- Controls multi-zone systems
- Time-based or count-based programming
- Controls various models of change-over valves
- Can control three phase motors together with motor starters

# Multi-system-type lubrication system overview

## Example of a two-pump, multi-system layout

The single-line system is a two-zone system with 2-way valves, showing the capability of the system in which each pump can have up to three zones. The progressive system is also a two-zone system with 2-way valves, displaying a different type of progressive setup, as compared to the system depicted on the previous page.



The LMC 301 controller allows for use of up to three pumps, and each pump can operate up to three zones. Each of the pumps can be used with a different system type. Therefore, one unit could operate a single-line system pump and a progressive system pump or a progressive system pump and a dual-line pump.

## Benefits of using LMC 301 with a multi-system-type:

- Controls complex systems with one controller
- One source of configuration and export of data

## The Power of Knowledge Engineering

Combining products, people, and application-specific knowledge, SKF delivers innovative solutions to equipment manufacturers and production facilities in every major industry worldwide. Having expertise in multiple competence areas supports SKF Life Cycle Management, a proven approach to improving equipment reliability, optimizing operational and energy efficiency and reducing total cost of ownership.

These competence areas include bearings and units, seals, lubrication systems, mechatronics, and a wide range of services, from 3-D computer modelling to cloud-based condition monitoring and asset management services.

SKF's global footprint provides SKF customers with uniform quality standards and worldwide product availability. Our local presence provides direct access to the experience, knowledge and ingenuity of SKF people.

### Important information on product usage

SKF and Lincoln lubrication systems or their components are not approved for use with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1 013 mbar) by more than 0,5 bar at their maximum permissible temperature.

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