SCHAEFFLER

OPTIME C1

User manual

Foreword

OPTIME as solution for automatic lubrication

The OPTIME system from Schaeffler is a solution for the smart and automatic lubrication and condition monitoring of a large number of machines. This concept allows cost-effective condition-based maintenance even for subsystems, as unscheduled downtimes can be avoided. When developing the system, particular attention was paid to ensuring very simple start-up, easy scalability and a diverse range of potential uses. Every single process step was designed to be as user-friendly as possible.

OPTIME gateway and OPTIME C1

The concept features special wireless OPTIME vibration sensors and OPTIME C1 single-point lubricators, which combine with the OPTIME gateway to form a mesh network. Another key element is the service components, which run centrally in a cloud solution, the Schaeffler IoT Hub, which is also where the data are analysed and the results can be viewed in greater detail. At the same time, the results are also transferred directly to the OPTIME app.

OPTIME app

The OPTIME app shows the machine status directly on site according to criticality and thus allows optimum planning of maintenance activities. The status of the lubricators (fill level, battery capacity, etc.) is also displayed in the app in order to prevent failures as a result of inadequate lubrication. Each user can adapt the selection of machines to their own remit and therefore has direct access to all of the necessary information.

Schaeffler OPTIME

About the user manual

This user manual applies to the OPTIME C1 lubrication system.

Symbols

The warning and hazard symbols are defined in accordance with ANSI Z535.6-2011.

WARNING In case of non-compliance, death or serious injury may occur.◁

CAUTION In case of non-compliance, minor or moderate injury may occur.◁

NOTICE In case of non-compliance, damage or malfunctions in the product or the adjacent construction may occur.◁

Availability

A current electronic version (PDF) of this user manual can be found at https://www.schaeffler.de/std/1F8B.

Legal guidelines

The information in this manual corresponded to the most recent status at the close of editing. The illustrations and descriptions cannot be used as grounds for any claims relating to devices that have already been delivered. Schaeffler accepts no liability for any damage or malfunctions if the device or accessories have been modified or used in an incorrect manner.

Apps and functions may not be available in all countries and regions. The availability of apps and functions may change.

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General safety guidelines

This chapter brings together all the important safety regulations.

Any person charged with working on the system must read this chapter and observe the guidelines.

Principles

The OPTIME system corresponds to the current level of technology and the recognised rules of safety practice. If the safety guidelines are not observed, risks to life and limb for the user or third parties and extensive damage to other material assets may nevertheless arise during use.

Marking

Every lubricator and gateway is marked with a serial number. The gateway nameplate contains the serial number, manufacturer's details and the certification markings. This information is printed on the lubricator.

Usage for the intended purpose

The OPTIME lubrication system is approved for use in indoor and outdoor industrial environments. The system may only be used in accordance with the technical data, see page 74. Unauthorised structural modifications to the system are not permissible. We assume no liability for any damage to machinery or injury to persons arising from such actions.

The OPTIME C1 lubricator may only be operated with a CONCEPT1 cartridge.

Usage for the intended purpose also includes the following:

- all guidelines in the user manual are observed
- compliance with all relevant specifications on occupational safety and accident prevention during the entire product life cycle of the system
- the necessary specialist training and authorisation of your company for carrying out the necessary work on the system

Usage not for the intended purpose

The OPTIME lubrication system does not provide machine protection. It must not be used as a component of safety systems.

The OPTIME lubrication system is not classified as a safety component in accordance with the Machinery Directive 2006/42/EC.

Warranty

The manufacturer shall assume liability for warranties in relation to operational security, reliability and performance only under the following conditions:

- Installation and connection must be carried out only by authorised and skilled personnel.
- The system must be used in accordance with the information in the technical data sheets. The limit values indicated in the technical data must not be exceeded under any circumstances.
- Conversion and repair work on the system may only be carried out by the manufacturer.

Selection and qualification of personnel

The OPTIME lubrication system may only be installed, commissioned and operated by suitably qualified personnel. The scope of competence, area of responsibility and supervision of personnel must be precisely regulated by the site operator.

Designated qualified personnel:

- are authorised to install the system
- have all the necessary knowledge
- are familiar with the safety guidelines
- have read and understood this manual

If personnel do not possess the necessary knowledge, they must be given the necessary training and instruction. Schaeffler can offer corresponding product training on request.

Work on electrical devices

Work on electrical devices and components may only be carried out by a trained electrician.

On the basis of their technical training, knowledge and experience as well as their knowledge of the appropriate regulations, a trained electrician is in a position to assess the work assigned to them and recognise possible hazards.

Do not repair any damaged system components. Please arrange for any necessary repairs to be carried out by Schaeffler.

Any work on wiring, opening or closing of electrical connections may only be performed while disconnected from the power supply and in a voltage-free state.

Safety regulations

All safety specifications are described in the following sections.

Safety during installation

Compliance with the user manual is essential for problem-free and safe operation. The operator must ensure that only qualified personnel work with the lubrication system, that the necessary safety and maintenance regulations are observed and that the lubrication system is used correctly and for the intended purpose.

Proper functioning of the lubrication system can only be guaranteed if the recommended lubricants and original Arcalub range of accessories are used and the installation and operating instructions are observed. The manufacturer accepts no liability for any consequential damage if these instructions are not observed.

Handling batteries

Risk of explosion, burns and of toxic gas formation due to excessive heating of the battery pack. Impaired service life due to discharge with premature failure of the device as a consequence of discharge and possible consequential damage to the application.

Heating can be caused by external factors (e.g. fire) or by chemical processes occurring internally (e.g. short circuit). Premature discharge can be caused by dropping the battery pack. Dropping the battery pack can cause internal damage to the individual cells of the pack and the resulting short circuit can lead to discharge.

Dispose of dropped battery packs immediately. Do not use dropped battery packs. Used battery packs should never be reused or recharged, but must be recycled. Do not open battery packs or thrown them into a fire.

Only use new battery packs which are in their original packaging. Only open the packaging of the battery pack immediately prior to insertion into the device. The lubrication process can no longer be carried out correctly with damaged, used or empty battery packs.

Handling a pressurised lubrication system

Risk of damage due to egress of lubricant. The uncontrolled egress of lubricant under excess pressure can damage the lubricator. Components of the lubrication system and adjacent construction can become contaminated. The lubrication system operates under pressure.

The lines and lubricator must be depressurised prior to dismantling or for maintenance work. The lubricator can be depressurised by detaching the drive unit on the cartridge.

Never remove a pressurised CONCEPT1 cartridge which is not yet completely empty. The gas pressure in the cartridge could eject the remaining grease or oil out of the container in an uncontrolled manner and contaminate the battery compartment.

Ensure that the installation can withstand the maximum system pressure. Only fill the OPTIME C1 lubricator prior to fitting on the adjacent construction. When prefilling, the pressure must never exceed 2 bar.

The OPTIME C1 lubricator may only be operated with a CONCEPT1 cartridge. Do not expose the installation to direct sunlight.
The use of high pressure or steam jets to clean the lubricator is not permitted.

Danger of burns due to hot surfaces

Danger of burns due to hot surfaces. The outer surface of a machine can reach high temperatures that can cause injuries in the event of direct contact.

Before performing installation work, switch off the machine and allow it to cool down. If these instructions are not followed, serious injuries may result.

Protection against unsuitable ambient conditions

Risk of damage due to detrimental ambient conditions.
The lubrication system can be damaged or destroyed by heat, high pressure, moisture, blows, contaminants and dust.
The mechanics and electronics can be damaged by the ingress of water.

Ensure that the mounting position is protected against moisture, blows, contaminants and dust. The OPTIME lubrication system must be protected against temperatures $>$ +55 °C and must not be subjected to heat sources such as direct sunlight.

Safe handling of information interfaces

The OPTIME system has the following information interfaces:

- 2G, LTE CAT M1
- Wirepas Mesh network
- WiFi (WLAN)
- Ethernet

The product can be connected with other devices, components or internal or external networks (e.g. internet) via each of these interfaces. Devices (like data carriers) connected via information interfaces may contain malware or execute malicious functions undetected. This product, or potentially a company infrastructure (e.g. the IT infrastructure), can be damaged due to the use of these kinds of information interfaces. In addition, the company's data security may be compromised.

Before using our product and its information interfaces, please familiarise yourself with the following:

- the security features offered by the product and its information interfaces
- the security provisions of your company (e.g. on IT security)

Before commissioning, please clarify with the relevant points of contact whether and which security measures are to be taken when using the product and its associated information interfaces.

Protection against unauthorised use

Data encryption and secure login with individual login data are the tools used to protect against unauthorised use of the OPTIME app and OPTIME dashboard. Software users (users) must log in with their user name and password. The password has to be changed at regular intervals. A secure password must be used.

The user is responsible for keeping their login data secure.

Scope of delivery

The OPTIME C1 lubricator may only be combined with the CONCEPT1 cartridge.

Gateway

Scope of delivery of the OPTIME gateway:

- 1 OPTIME gateway
- 1 built-in LTE stick (depending on the region)
- 1 Gateway quick guide manual BA 68-02

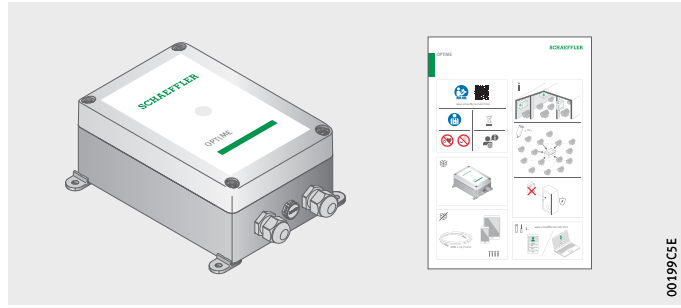


Figure 1
Scope of delivery
Gateway

Lubricator OPTIME C1

The scope of delivery includes the following components:

- 10 lubricators
- 10 battery packs
- 1 quick guide manual BA 70-01

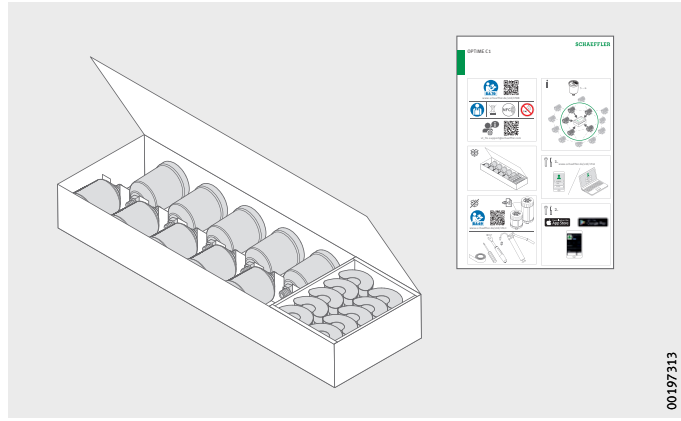


Figure 2
Scope of delivery
Lubricator

The enclosed quick guide manuals contain the following link to this user manual BA 70, which always provides the latest version: https://www.schaeffler.de/std/1F8B

Cartridge CONCEPT1

Prefilled cartridges are available, which are filled with high-performance Arcanol lubricants from Schaeffler.

Figure 3
Scope of delivery
Cartridges

The CONCEPT1 cartridge is only referred to as a cartridge in the context of the OPTIME system. Outside of the OPTIME system, the CONCEPT1 cartridge functions as a standalone lubricator.

User manual BA 69, which contains important safety information on the use of the CONCEPT1 cartridge and lubricator, can be accessed via the following link:
https://www.schaeffler.de/std/1F4C

NOTICE

Risk of damage to the cartridge, lubricator and adjacent construction. Malfunctions with unsuitable lubricants (greases or oils).

When filling the cartridge with an internal lubricant, only use lubricants that have been approved by Schaeffler for use in CONCEPT1 cartridges. With greases, ensure good stability against bleeding of the base oil and a low consistency grade (≤ NLGI 2). ◁

Schaeffler can also supply CONCEPT1 cartridges filled with alternative greases by agreement.

If the CONCEPT1 cartridges are filled by the customer and filling is not carried out correctly, or lubricants are used that have not been approved by Schaeffler for these cartridges, any warranty or other claims made by the customer against Schaeffler in connection with a failure or malfunction of the lubrication system will be disregarded. In case of doubt, please consult Schaeffler.

Required accessories

To ensure the system is ready-to-use, the following devices and accessories need to be provided by the customer in addition to the gateway, lubricator and cartridge, *Figure 4*:

- mobile phone or tablet (each with LTE and NFC technology) with installed OPTIME app
- connection cable to supply power to the gateway
- fasteners

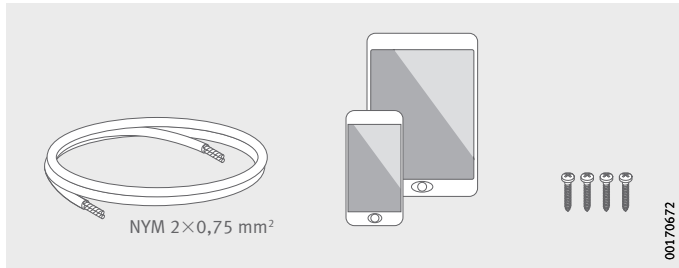


Figure 4
Required accessories for the gateway

The following accessories and tools are needed to install the lubricator, *Figure 5*:

- lever grease gun
- filling adapter
- torque wrench
- sealing tape (PTFE)
- screwdriver
- cartridge CONCEPT1

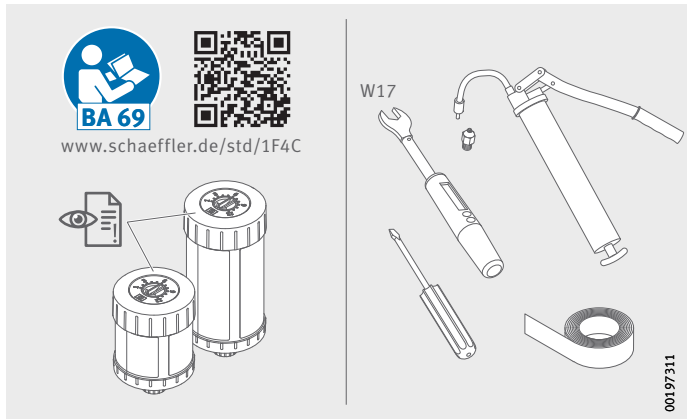


Figure 5
Required accessories and tools for the lubricator

Damage during transit

Any damage during transit must be reported as a complaint to the carrier:

- Check the delivery immediately upon arrival for any damage during transit.
- Report any damage during transit promptly as a complaint to the carrier.

Defects

Any defects must be reported promptly as a complaint:

- Check the product immediately upon delivery for visible defects.
- Report any defects promptly as a complaint to Schaeffler.

Description
Structure

The OPTIME system consists of several components which, depending on the configuration, are designed for intelligent, automatic lubrication, condition monitoring and predictive maintenance.

① OPTIME dashboards in the Schaeffler IoT Hub
② OPTIME C1 lubricator
③ OPTIME app
④ OPTIME vibration sensors
⑤ OPTIME gateway

Figure 6
OPTIME system

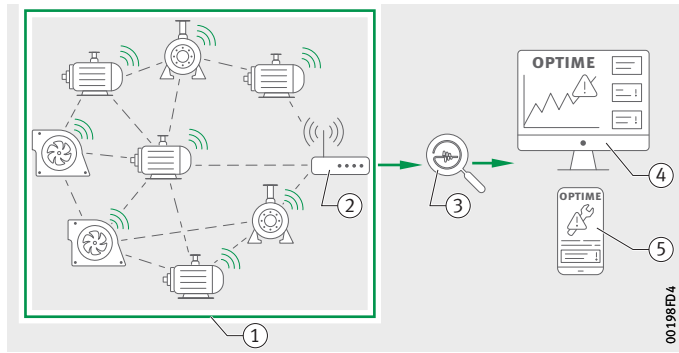
The intelligent OPTIME C1 lubricators automatically form a mesh network that transfers data directly, or via other intelligent lubricators or other OPTIME sensors, to the gateway. In the network, the intelligent lubricators transfer the fill levels and status via the gateway to the Schaeffler IoT Hub, where the data are analysed and the results sent to the OPTIME app. All information is also available in the OPTIME dashboard, which can be opened using an internet browser (for system requirements, see page 62).
Directly after activation, the intelligent lubricator automatically starts to measure and transfer data at pre-set intervals.

The mesh network organises itself automatically, when further OPTIME lubricators or gateways are added or removed. The use of several gateways in the same network is also possible.
Depending on the circumstances, existing OPTIME installations can also be expanded subsequently to between 50 and 70 OPTIME devices (sensors and lubricators) per gateway.

Since an independent network is used to transfer the data to the Schaeffler IoT Hub and wireless technology is used for other communication (pre-set, optionally also WiFi or Ethernet), there is no need for a connection to the local IT infrastructure.

Communication interfaces and data transfer of OPTIME system

Mesh technology was selected because condition monitoring and intelligent, automatic lubrication of machines in large industrial plants must cover large distances and reach machines that are difficult to access. The actively managed mesh network can establish contact to sensors and intelligent lubricators in a line of sight of up to 100 m, ensures reliable communication and at the same time optimises the battery service life of the intelligent lubricators and sensors.



① Mesh network
② OPTIME gateway
③ Schaeffler IoT Hub
④ OPTIME dashboard
⑤ OPTIME app

Figure 7
Communication between OPTIME system components

The standard version of the gateway already has an integrated SIM card for use exclusively in conjunction with the OPTIME system. If the proposed mobile phone connection is not to be used, there are other options for connecting to the Schaeffler IoT Hub, i.e. using a separate SIM card, a WiFi connection or connection via network cable.

Planning

An installation tree, i.e. showing the allocation of sensors and lubricators to machines and assets, does not necessarily have to be set up beforehand. However, in the case of an entire plant this considerably simplifies the installation process, as it is only necessary to select the corresponding machine for installation of the sensors and lubricators. An installation tree may take the form of an Excel table imported via the dashboard menu.

Log into the OPTIME app and OPTIME dashboard

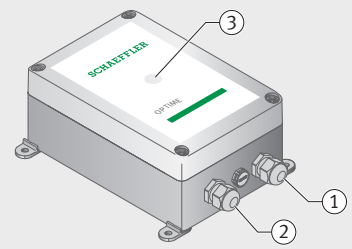
Every customer receives an administration user account when purchasing the OPTIME system. This user is able to create additional users. All created users will receive their login data by e-mail.
To log into the OPTIME customer portal, please visit the following website:
https://schaeffler-optime.com/dashboard

Gateway

The gateway is located in a rugged protective housing suitable for wall or ceiling mounting. It can also be used outdoors thanks to its protection type and UV resistance.

Gateway connections and indicators

The gateway has two cable glands for routing the cable to the power supply and, optionally, feeding through the network cable, *Figure 8*.



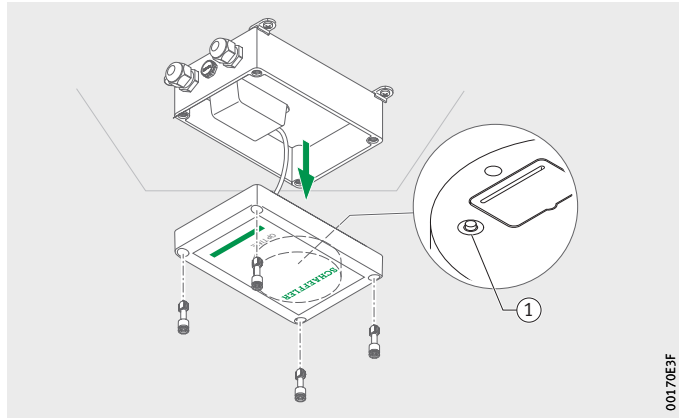
① Input power supply
② Input network connection
③ LED for indicating operating status

Figure 8
Gateway connections and indicators

The gateway is equipped with an LED indicator, which displays the various operating states, see *table*.

LED displays

LED	Function
Green light	The gateway is connected to the internet.
Blue light	The gateway is trying to connect to the internet. If conditions are unfavourable, it can take 15 minutes to establish a connection to the internet.
Flashing blue	The gateway is in configuration mode.
Red light	An error has occurred. More information is provided in the web interface on configuring the gateway.



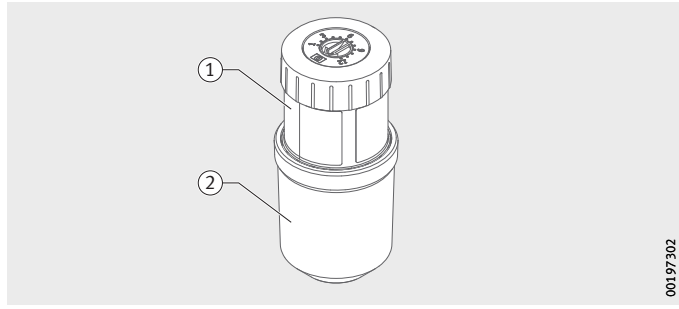
① Button [**Configuration**]

Figure 9
Button for gateway configuration

Put the gateway into configuration mode by pressing the [**Configuration**] button.

Lubricators

The OPTIME C1 lubricator works electromechanically on a fully automatic basis and fits the CONCEPT1 cartridges.
The OPTIME C1 lubricator is screwed directly onto the lubrication point or connected to a lubrication line.



① Cartridge CONCEPT1
② Lubricator OPTIME C1

Figure 10
Lubricator with cartridge

A CONCEPT1 cartridge supplies the system with lubricant.
The running time of 1 to 12 months is set on the CONCEPT1 cartridge.

The device is configured and monitored using the OPTIME app. The function is monitored by a control logic, which displays the current operating state via the OPTIME app. Power is supplied via a replaceable battery pack. The lubricator can be reused several times. The OPTIME C1 lubricator is protected against excessive back pressure by an integrated check valve.

Transport and storage

The packaging used for the lubricators and gateway provides good protection against damage under normal transport conditions.

NOTICE

Risk of damage due to strong vibrations. The electronics and plastic components of the lubricators and gateway can be damaged or destroyed by strong vibrations.

Avoid dropping and exposing the lubricators and gateway to severe impacts.◁

Mounting

Registering in the OPTIME dashboard

To configure the gateway and intelligent lubricators it is necessary to register in the Schaeffler IoT Hub, so that intelligent lubricators and gateways are automatically associated with your company, see page 61. You can configure the components of your system, i.e. gateway and intelligent lubricators, for your installation tree. This can be done following completion of registration either in the OPTIME dashboard or OPTIME app.

Install OPTIME app

Before installing the components of the OPTIME system, you will need to install the OPTIME app on your mobile phone or tablet. The OPTIME app can be downloaded free of charge from the App Store or Google Play. You will need login data to be able to log on to the OPTIME app, see page 35.

Install gateway

When installed for the first time, the gateway is the core of the mesh network. First of all, the gateway is added to the mesh network. It is then mounted at the desired location and the electrical installation is completed.

Add gateway

The OPTIME app will guide you step by step through the process of adding the gateway to the mesh network.

- ▶ Open the OPTIME app.
- ▶ Tap the [**Login**] button.
- ▶ Enter your login data.
- ▶ Go to the [**Menu**] symbol and tap on the [**Provision Gateway**] button.

Figure 11
Add gateway

▶ Follow the instructions in the OPTIME app to scan the DMC or QR code of the gateway.

For further information on configuring the gateway, see page 32.

For further information on adding the gateway via the OPTIME app, see page 60.

Mounting location for gateway

The gateway should be installed at a central location in the overall system, *Figure 12*. Please take note of the following for the mounting location:

- The gateway should be placed in a central position in the area of the installed OPTIME devices. There should be a line of sight to up to five or six devices. In most cases these devices then serve as repeaters for the remaining devices.
- The best coverage in the mesh network can be achieved if the gateway is mounted above several OPTIME devices distributed across an area.
- Avoid installing the gateway at the end of a row of several consecutive OPTIME devices, to prevent the last devices in the row from having a reduced battery life.
- Reinforced concrete or larger metallic objects can strongly impede signal transmission in this area. On no account may the gateway be installed in a metal switch cabinet. Choose a mounting location that will allow stable data transmission.
- If a mobile phone connection is used for data transfer we recommend checking the LTE reception at the installation location beforehand with a mobile phone.

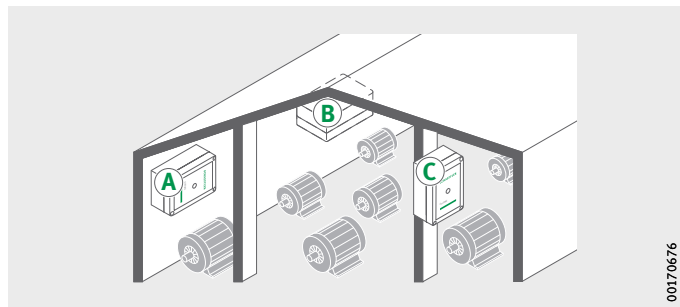


Figure 12
Mounting location for gateway

Mechanical installation of gateway

Suitable fixing material must be selected to match the surface quality of the substrate. Install the gateway using the mounting brackets supplied. Once the gateway has been fixed to the selected location, the electrical connection must be carried out by a qualified electrician.

▶ Fix the gateway to the selected location.

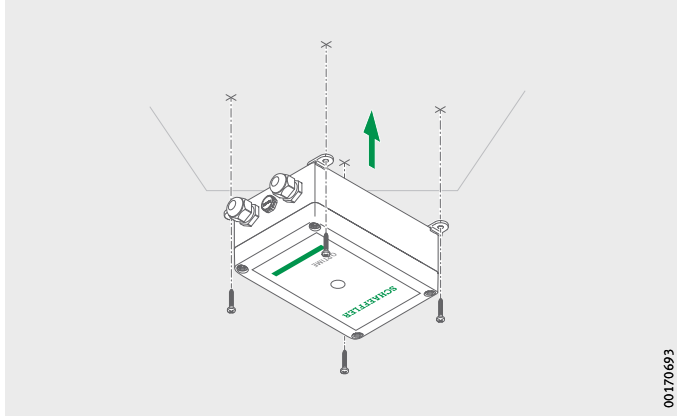


Figure 13
Mount the gateway

Electrical connection of gateway

For the electrical connection the customer has to provide a sufficiently long connection cable with the appropriate specifications.

WARNING

Failure to observe the safety regulations may result in a life-threatening electric shock.

Make sure that all electrical connections are carried out only by a qualified electrician. ◁

WARNING

A defective connection cable can cause a life-threatening electric shock.

Make sure that any defective connection cables are replaced immediately by a qualified electrician. ◁

▶ Proceed as shown, *Figure 14* and *Figure 15*.

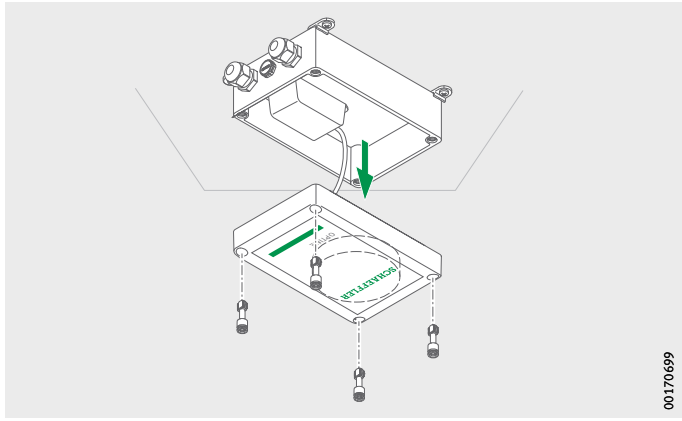


Figure 14
Open cover

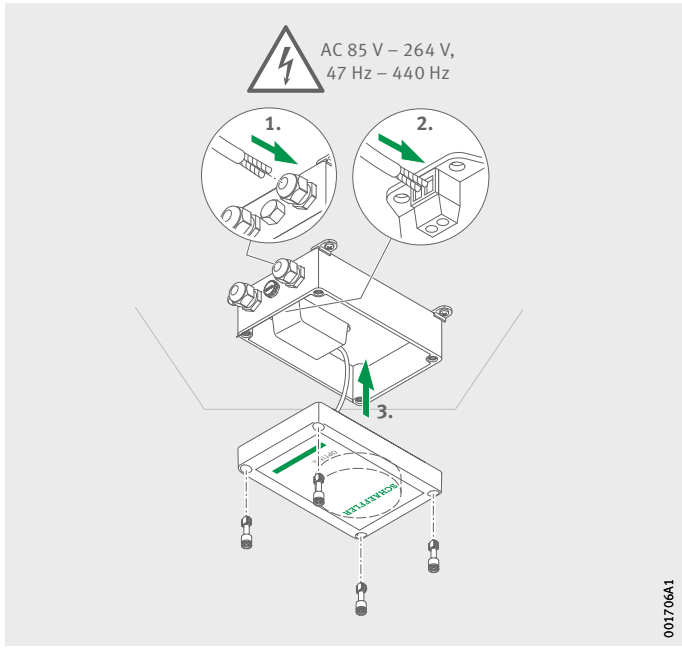


Figure 15
Complete the electrical connections to the gateway

▷ The gateway is now connected.

▷ If the mobile phone gateway connection is used (factory setting), the gateway connects automatically with the Schaeffler IoT Hub. Please remember that it can take several minutes to establish the connection.

▶ If the gateway is to be connected via the LAN, you can alternatively establish communication with the gateway by plugging the network cable connector into the router socket.

▷ When the LED on the gateway flashes green then the connection to the internet has been established successfully. The gateway appears in the customer section in the Schaeffler IoT Hub.

If the mobile phone connection via the installed SIM card is not to be used, there are other options available, see page 32:

- SIM card provided by the customer
- connection via WiFi
- connection via network cable

Install lubricator

The lubricators are screwed to the lubrication point, connected to the OPTIME app using near-field communication (NFC) and configured. The OPTIME lubrication system is suitable for machines typically used in industry, which run continuously and require permanent lubrication with a specified amount of lubricant.

⚠ CAUTION

Danger of burns due to hot surfaces. The surface of a machine can reach a temperature that can cause burns in the event of contact with the hot surface.

Switch the machine off and let it cool down before you start installing the lubricator. The surface temperature of the machine has to be measured using suitable measuring devices. ◁

NOTICE

Risk of damage due to incorrect installation.

The lubricator may only be installed by qualified personnel. ◁

NOTICE

Risk of damage due to environmental influences. The lubricator can be damaged or destroyed by heat, moisture, blows, contaminants and dust.

Ensure that the mounting position is protected against moisture, blows, contaminants and dust. The OPTIME lubrication system must be protected against temperatures > +55 °C and must not be subjected to heat sources such as direct sunlight. ◁

Please take note of the following for the mounting location:

- The mounting location should be selected so that the lubricator is not shielded on several sides by metal parts (e.g. by a switch cabinet) so as not to impede data transmission.
- The lubricator can be installed in any mounting position.
- The lubricator must be installed in an easily accessible location.
- In the case of unfavourable environmental conditions such as strong vibrations, heat or cold directly at the lubrication point, the lubricator must be installed at an adequate distance from the lubrication point using a lubrication line. An unnecessarily long lubrication line should be avoided as this increases the back pressure for the lubricator. The line length must not exceed 1,5 m. For the use of longer lubrication lines, please contact Schaeffler Technical Support.
- The OPTIME app provides installation support and guides the fitter through the mounting steps.

Prepare the lubrication point

Prepare the lubrication point as follows:

▶ Clean the machine surface.

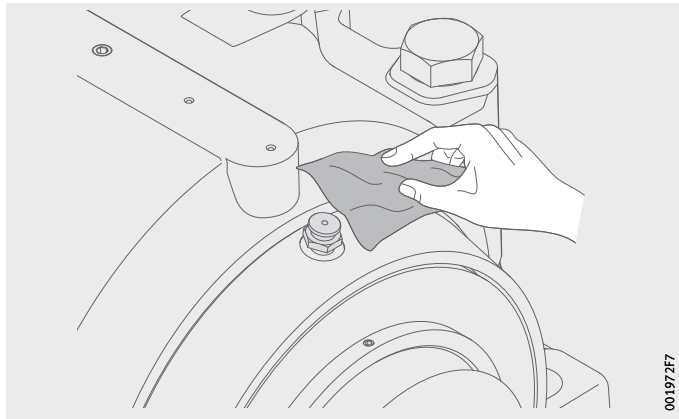


Figure 16
Clean the machine surface

▶ Remove the lubrication nipple.

▶ If necessary, screw a reducing nipple into place and seal the threaded connection with PTFE tape or a suitable sealing material.

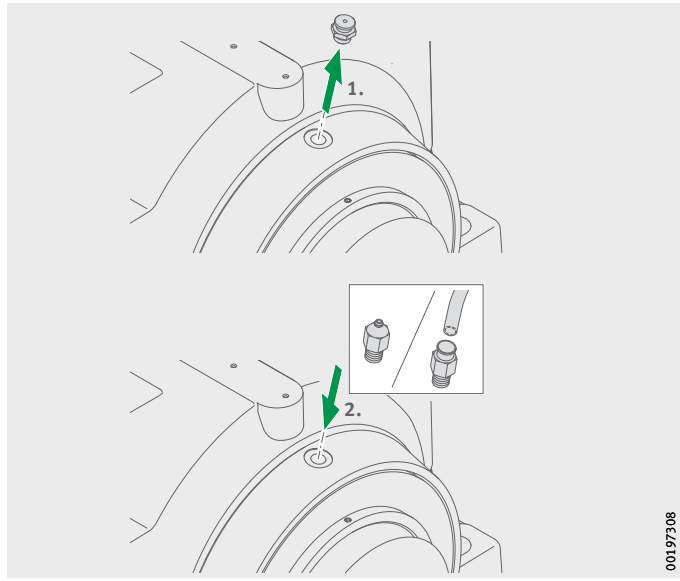


Figure 17
Prepare the lubrication point

Prefill with lubricant

To prefill the lubrication point:

▶ Use a grease gun to prefill the lubrication point and the line with the correct lubricant.

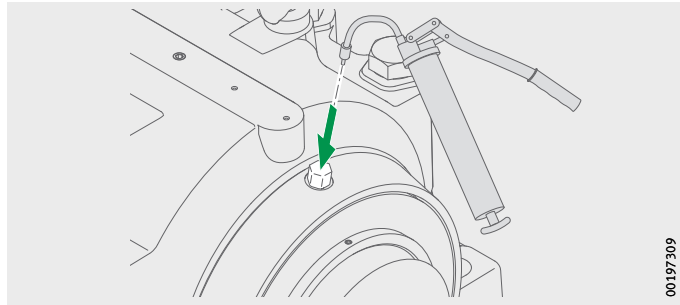


Figure 18
Prefill the lubrication point

▶ Using a grease gun and fill nipple OPTIME-LW-C1.NIPPLE-PREFILL-R1/4#N3 (096691611-0000-10), fill the lubricator with the correct lubricant until lubricant emerges from the end of the thread.

NOTICE

Risk of damage due to egress of lubricant. The uncontrolled egress of lubricant can contaminate the components of the lubrication system and adjacent construction.

Fill the lubricator prior to fitting. Alternatively, check the pressure during prefilling with a suitable manometer. Ensure that the pre-filling pressure does not exceed 2 bar.◁

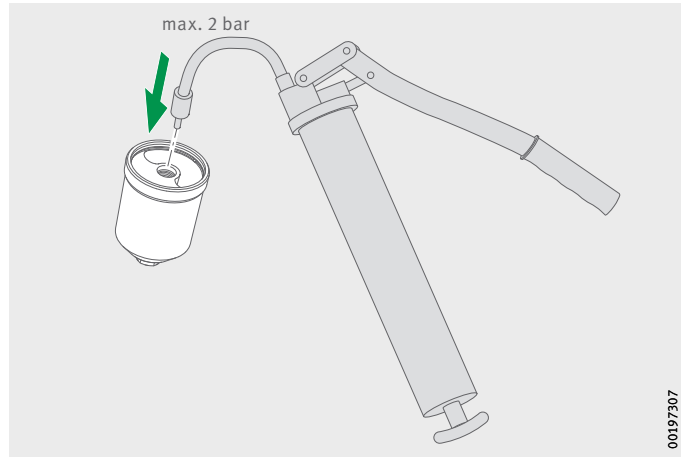


Figure 19
Prefill the lubricator

Install lubricator OPTIME C1

To install the lubricator:

- ▶ Lightly grease the O-ring on the lubricator.
- ▶ Wrap the connector thread on the outlet side with suitable sealing tape (PTFE).
- ▶ Screw the lubricator onto the lubrication point. Observe the tightening torque of 5 Nm to 10 Nm.

NOTICE

Risk of damage due to egress of lubricant. The uncontrolled egress of lubricant can contaminate the components of the lubrication system and adjacent construction.

Observe the maximum tightening torque at the screw connection of the lubricator. ◁

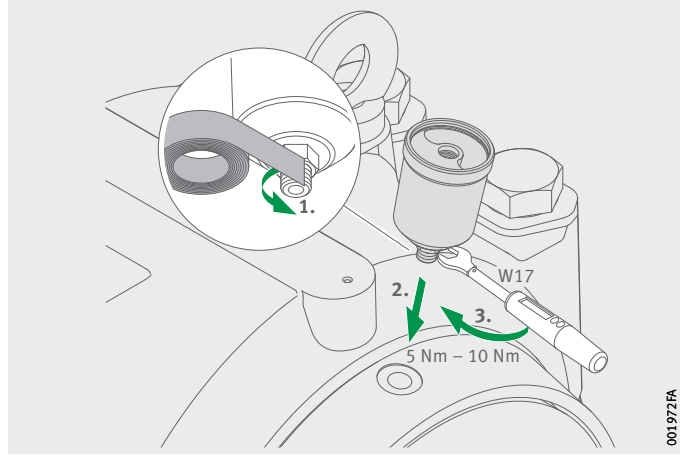


Figure 20
Screw the lubricator onto the lubrication point

▶ Insert the battery pack.

⚠WARNING

Risk of burns. Risk of damage to health from poisonous gases.
A short circuit can lead to excessive heating of the battery packs.

Dispose of dropped battery packs immediately. Do not use dropped battery packs. Only use new battery packs which are in their original packaging. Only open the packaging of the battery pack immediately prior to insertion into the lubricator. ◁

NOTICE

Risk of damage. A short circuit can lead to discharge as a result of damage to the individual cells of the battery pack. Impaired service life due to discharge with premature failure of the device as a consequence of discharge and possible consequential damage to the application.

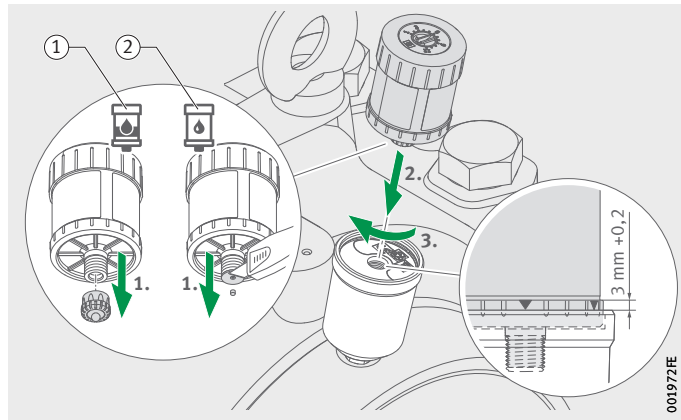
Dispose of dropped battery packs immediately. Do not use dropped battery packs. Only use new battery packs which are in their original packaging. Only open the packaging of the battery pack immediately prior to insertion into the lubricator. ◁

Figure 21
Insert battery pack

Screw-mount cartridge CONCEPT1

To install the cartridge:

- ▶ For cartridges filled with grease:
  Remove the black end cap from the thread.
- ▶ For cartridges filled with oil:
  Cut off the flow control nipple with a sharp knife.
- ▶ Screw the cartridge onto the lubricator as far as the mark.
- ▷ The battery pack is fixed in place and activates the lubricator.



① Cartridge filled with grease
② Cartridge filled with oil

Figure 22
Screw-mount cartridge CONCEPT1

Configure cartridge

- ▶ Add the cartridge via the OPTIME app. Follow the instructions on adding the cartridge in the OPTIME app, see page 51.
- ▶ With the aid of a screwdriver, activate the cartridge using the setting provided in the OPTIME app, see page 54.

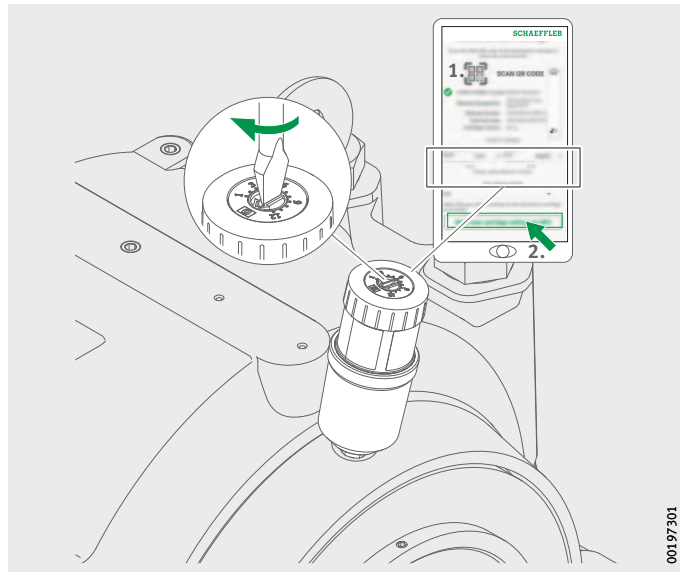


Figure 23
Add cartridge to OPTIME app

Further information

User manual BA 69, which contains important safety information on using the CONCEPT1 cartridge, can be accessed via the following link:
https://www.schaeffler.de/std/1F4C

The lubricator receives the network parameters automatically via the OPTIME app. For configuration purposes, the minimum information required is the machine type (e.g. motor, pump, fan). All other data on the machine (such as the speed, power, bearing types) are optional and primarily improve the quality of the lubrication quantity and lubrication interval.

These data can also be configured retrospectively via the OPTIME app or in the Schaeffler IoT Hub.

Replace empty CONCEPT1 cartridge

The OPTIME C1 lubricator can be used several times. The empty CONCEPT1 cartridge can be used and refilled (maximum of three filling operations).

The user is notified immediately of an empty cartridge by means of an alarm in the OPTIME app and OPTIME dashboard. The user must use the replace cartridge function in the OPTIME app. The user starts the process by selecting the lubricator which is displaying the low fill level.

NOTICE

Risk of damage due to egress of lubricant. The uncontrolled egress of lubricant under excess pressure can damage the lubricator. Components of the lubrication system and adjacent construction can become contaminated.

The lubrication system must be depressurised by detaching the drive unit. ◁

▶ Detach the drive unit from the CONCEPT1 cartridge.

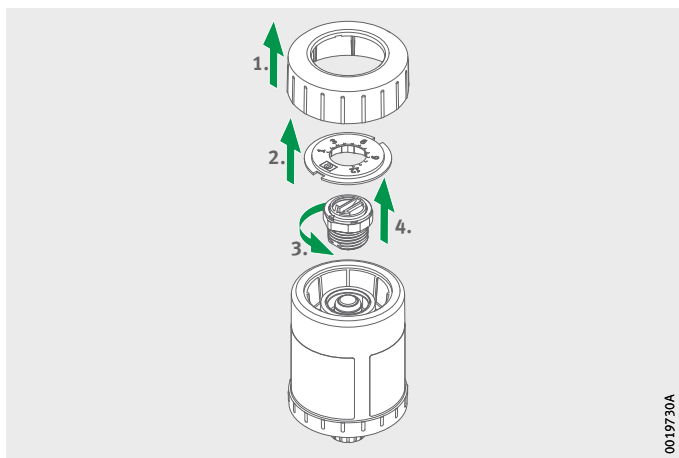


Figure 24
Detach drive unit

- ▶ Unscrew the cartridge. The emptied cartridge can either be replaced or refilled.
- ▶ Remove the battery pack.
- ▶ Check the lubricator seal. Clean the seal if contaminated. Replace the seal if it appears damaged.
- ▶ Insert a new battery pack OPTIME-LW-C1.BATTERY (096687606-0000-10), *Figure 21*, page 28.

⚠ WARNING

Risk of burns. Risk of damage to health from poisonous gases. A short circuit can lead to excessive heating of the battery packs.

Dispose of dropped battery packs immediately. Do not use dropped battery packs. Only use new battery packs which are in their original packaging. Only open the packaging of the battery pack immediately prior to insertion into the lubricator. ◁

NOTICE

Risk of damage. A short circuit can lead to discharge as a result of damage to the individual cells of the battery pack. Impaired service life due to discharge with premature failure of the device as a consequence of discharge and possible consequential damage to the application.

Dispose of dropped battery packs immediately. Do not use dropped battery packs. Only use new battery packs which are in their original packaging. Only open the packaging of the battery pack immediately prior to insertion into the lubricator. ◁

- ▶ Screw the new cartridge onto the lubricator, *Figure 22*, page 29.
- ▶ Add the cartridge via the OPTIME app. Follow the instructions on replacing the cartridge in the OPTIME app, page 51.

Gateway configuration

Various interfaces are available for communication between the gateway and Schaeffler IoT Hub.

Note

Normally there is no need to change the standard gateway settings, but for certain installations it may be necessary to adapt or change some of the standard settings. These settings should be undertaken only by skilled personnel.

The following settings can be changed:

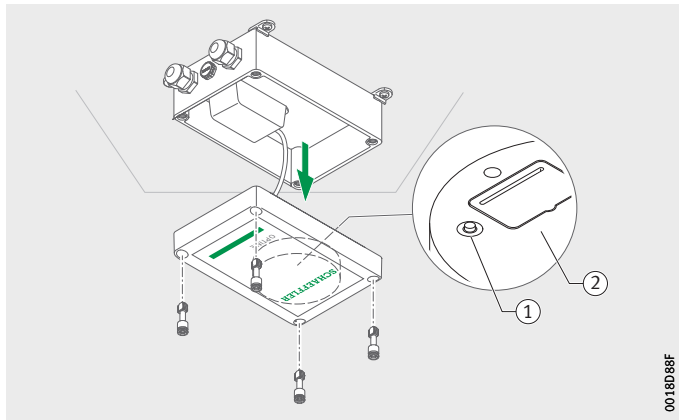
- WiFi
- LAN

Initial login to gateway configurator

To reach the user interface of the gateway configurator using a browser, proceed as follows:

▶ Remove the gateway cover by loosening the four screws.

▶ Press the [**Configuration**] button on the gateway until the status LED flashes blue.



① Button [**Configuration**]
② Nameplate with WiFi password

Figure 25
Button on gateway

▷ The gateway is in configuration mode.

▷ The gateway becomes a WiFi access point.
The name of the WiFi access point is "OPTIME *serial number*", whereby "*serial number*" is the serial number of the gateway.

The serial number is on the label on the side of the gateway.

▶ Establish a WiFi connection between your computer or mobile device and the WiFi access point. The WiFi password is on the nameplate.

▶ Open your browser and enter the IP address 192.168.0.1:3001.

If necessary, determine the TCP/IP values of the gateway if the pre-set IP address does not work. This can happen if the device was already connected to another network.

▷ The drop-down menu opens and displays the setting options.

Settings

The menu items [**View Gateway Status**] and [**View Error Log**] are not relevant for normal operation of the gateway. The information retrievable under these menu items can be used by specialist personnel if the gateway is not working properly.

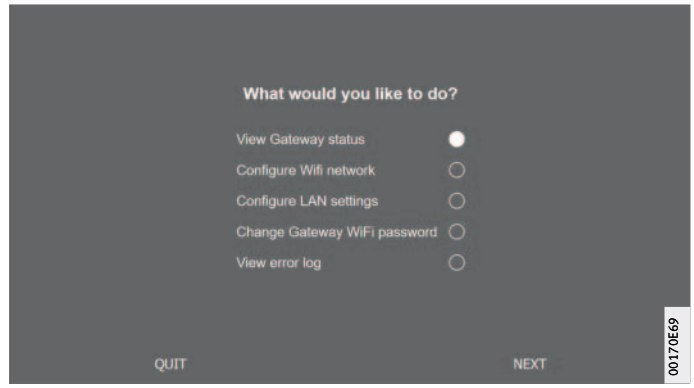


Figure 26
Drop-down menu
for gateway configuration

Configure WiFi

Under the menu item [**Configure WiFi Network**], *Figure 27*, the WiFi settings of the gateway can be modified. A known network can be selected or a new network added. If necessary, the password for the WiFi can be changed under menu item [**Change Gateway WiFi Password**].

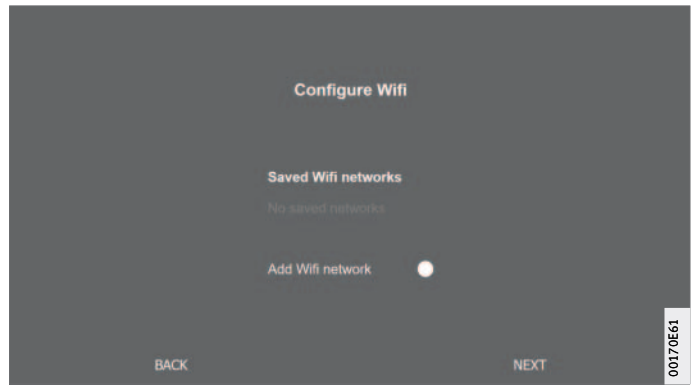


Figure 27
Settings for operation
in WiFi network

Configure LAN

If the gateway is to be connected with a local network via the RJ45 port provided in the device, the necessary settings can be performed under the menu item [**Configure Ethernet LAN Settings**], *Figure 27*, page 34.

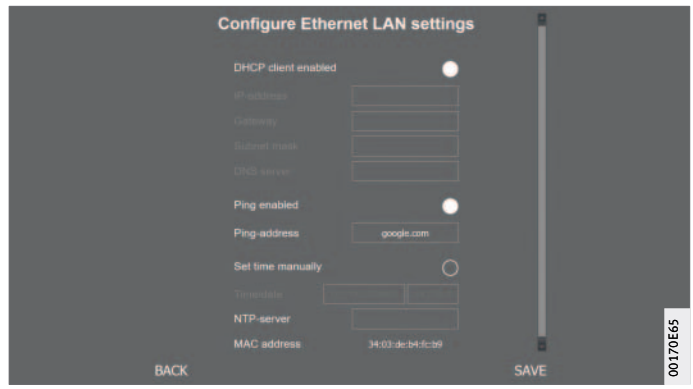


Figure 28
Settings for operation in LAN network

Using the OPTIME app

The OPTIME app is an integral part of the OPTIME solution and provides easy access to the data. The app is used to create and maintain the environment for the sensors and lubricators, receive up-to-date information on operating states and to react to changes in the operating states.

The OPTIME app allows sensor and lubricator data to be retrieved locally via a wireless connection and provides information on the status of the machine and its latest operating values. In addition, the sensors and lubricators are commissioned and configured with the aid of the OPTIME app. The menu navigation guides the user in adding, configuring and managing new sensors and lubricators.

Login and logout

To log into the OPTIME app as a user, you will need login data. Every customer receives an administration user account when purchasing the OPTIME system. This user is able to create additional users. All created users will receive their login data by e-mail.

The customer's administrator receives the login data by registering on the OPTIME dashboard, see page 62.

Login

To log in:

▶ Start the OPTIME app.

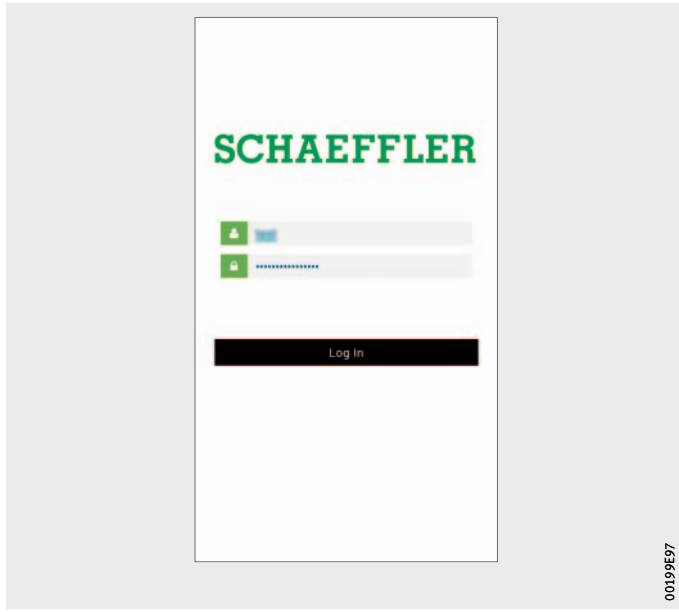


Figure 29
Log into the OPTIME app

▶ Enter your login data.

▶ Tap the [**Login**] button.

▷ After you have logged in successfully the start screen appears.

Logout

To log out:

▶ Go to the [**Menu**] symbol and tap on the [**Logout**] button, *Figure 30*, page 37.

General navigation

There are central navigation elements and setting options for running the OPTIME app, which can be found in the various screens.

The following areas can be accessed in the OPTIME app, to enable targeted monitoring of the machines in the installation:

- group
- machine
- sensor
- lubricators

User roles

The OPTIME app has the same structure for each user. Depending on the user role, different permissions may apply.

Languages The language of the OPTIME app depends on the language of the operating system. The language setting of the app is automatically detected by the settings on your mobile device and, in the case of the OPTIME dashboard, by the country settings for your OPTIME account.

Buttons Navigation is via the drop-down menu, accessible via the [**Menu**] symbol and the main buttons.

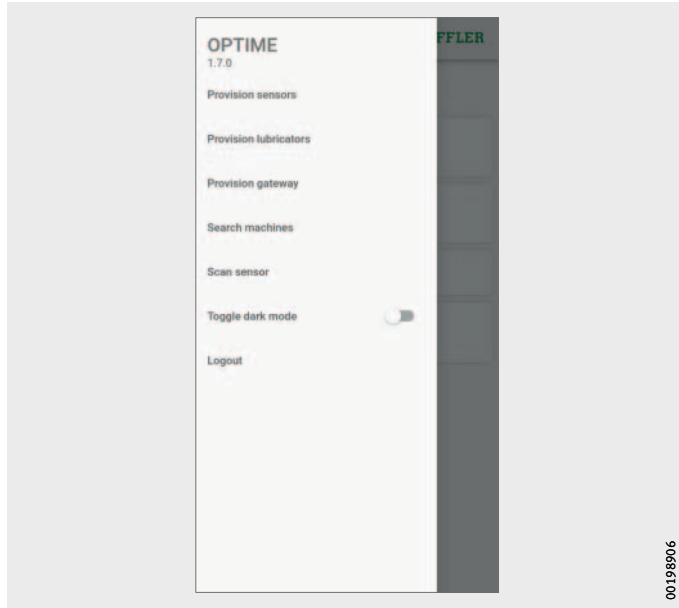


Figure 30
Direct access via navigation elements

Value [**Menu**]

Button, symbol	Description
[**Provision Sensors**]	Direct access for installing and configuring a sensor.
[**Provision Lubricators**]	Direct access for installing and configuring a lubricator.
[**Provision Gateway**]	Direct access for installing and configuring a gateway.
[**Search Machines**]	Direct access to the search function for machines with various filtering options.
[**Scan Sensor**]	Direct access to the scan function for reading sensor settings.
[**Toggle Dark Mode**]	Toggles dark mode, in which the OPTIME app is displayed in a darkened layout.
[**Logout**]	Logs the user out.

Navigation elements

Button, symbol	Description
	Goes back to previous screen.
	Closes screen.
	Adds selection to favourites.
	Confirms the update after the screen was swiped down, for example at group, machine, sensor or lubricator level.

Search function and filters

The search function can be used in various sections of the OPTIME app and helps refine search results for assets, machines, sensors or lubricators according to specific criteria.

Filters can be set based on an inputtable search string, the criticality of the machine and the machine type. Filters can be reset by deleting the inputted search text.

Manage groups

The start screen for group management is displayed immediately after logging in.

Alarm-based groups are pre-set:

- alarm status depending on criticality
- battery status
- warnings for sensors or lubricators

The fields for alarm-based groups take up the whole width of the screen, while the fields for user-defined groups are square.

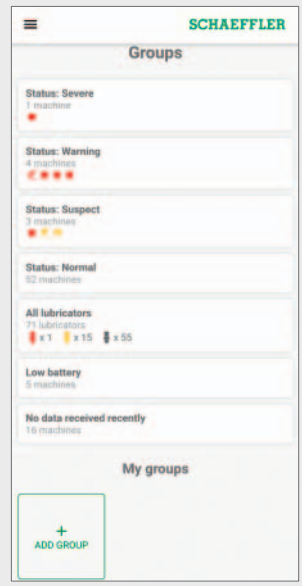


Figure 31
Start screen for group management

Start screen for group management with group fields

Input	Field	Description
[**Status: Severe**] [**Status: Warning**] [**Status: Suspect**] [**Status: Normal**] Alarm status	Button	Information on the operating states of the sensors can be found in BA 68, OPTIME User Manual.
[**All Lubricators**]	Button	The colour of the symbol indicates the operating state of the lubricator: - grey: normal status - yellow: warning - red: alarm
[**Low Battery**] Battery status	Button	Displays the battery status for the sensors.
[**No Data Received Recently**] Receiving status	Button	Shows that a sensor is offline and has not transmitted any data in the last 24 hours.
[**My Groups**]	[**Favorites**] Other dedicated groups, e.g.: [**Pumps**]	Displays user-defined groups.

Display information on groups

To obtain detailed information:

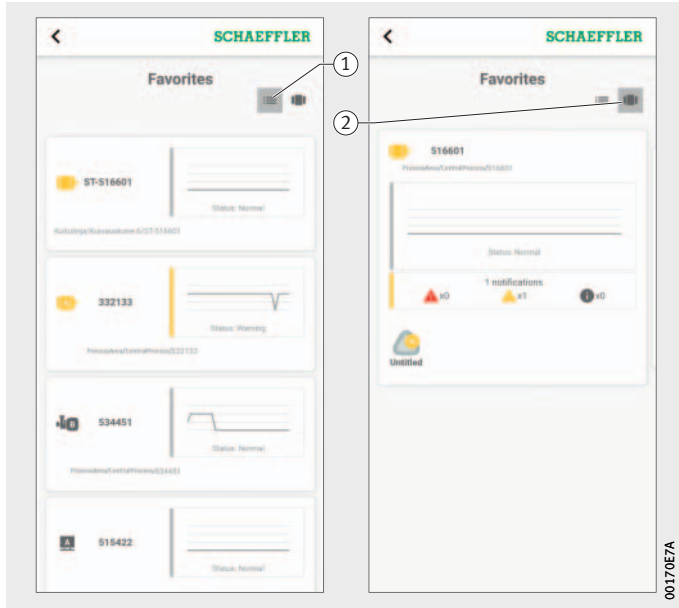
▶ Tap on a group field.

▷ The assigned machines with sensors and lubricators are displayed.

Two different views

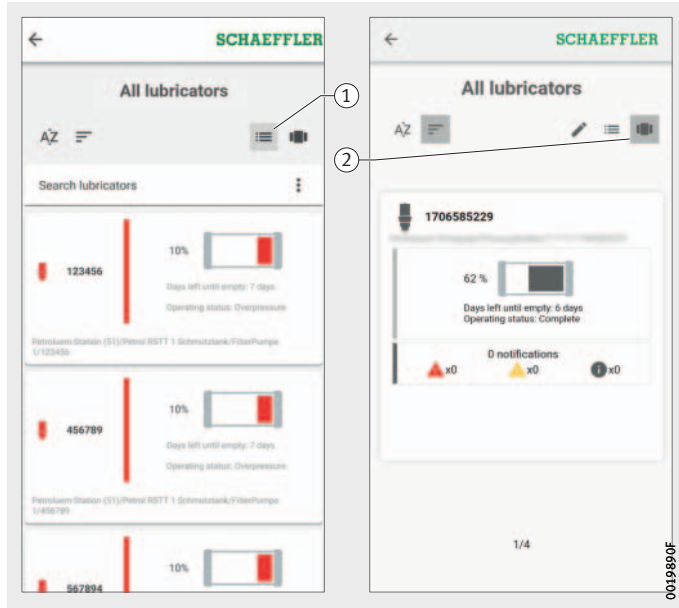
Two different views are available

- List view:
  - Displays the colour-coded alarm status of the machine, the state diagram with alarm level and any outstanding alarm notifications for OPTIME sensors.
  - Displays the colour-coded fill level and operating status for OPTIME lubricators.
- Tiled view:
  - As well as the information in the list view, an extended overview of alarm notifications and the status of the machine sensors is displayed for OPTIME sensors.
  - For OPTIME lubricators, an extended view of the alarm notifications is also displayed.
  - The tiled view allows rapid scrolling through the machines.



① List view
② Tiled view

Figure 32
Access to information about machine groups with OPTIME sensors in various views



① List view
② Tiled view

Figure 33
Access to information about machine groups with OPTIME lubricators in various views

One of the following operating states is displayed for the lubricator:

- normal
- outlet blocked
- cartridge empty
- ambient temperature too low
- ambient temperature too high
- battery level low
- motor defect
- not in operation
- cartridge may not be activated, check on site
- cartridge pressure too high
- back pressure too high
- battery empty

Manage favourites

You can add any machine to your [**Favorites**] group using machine management, see page 43.

Add new group

To add a dedicated group:

▶ Tap [**Add Group**], *Figure 31*, page 39.

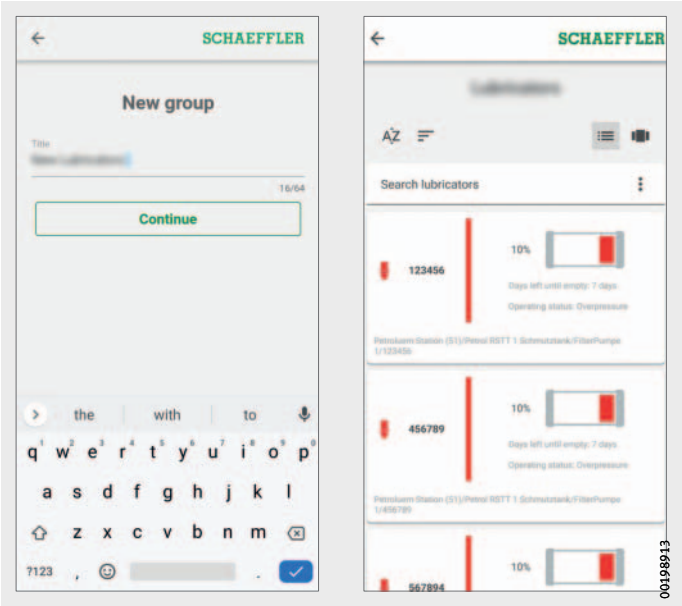


Figure 34
Add new group

▶ Enter the name in the [**Title**] field.

▶ Tap [**Continue**].

▷ A list of all machines is displayed.

▶ Use the search function and filters to refine the choice of machines.

▶ Place a check mark against the machines that you want to add to the group.

▶ Tap [**Create Group**].

▷ Your group will be displayed under [**My Groups**].

Manage machines

The machine management screen displays a machine with associated information such as the status, active alarm notifications and the sensors and lubricators connected to the machine. The sensors and lubricators assigned to the machine can then be reached from the machine management system.

The following functions are available to the user in the machine management system:

- acknowledge alarm notifications
- edit machines
- ask the experts (optional)
- add sensors
- add lubricators
- view machine log
- navigate to sensors or lubricators

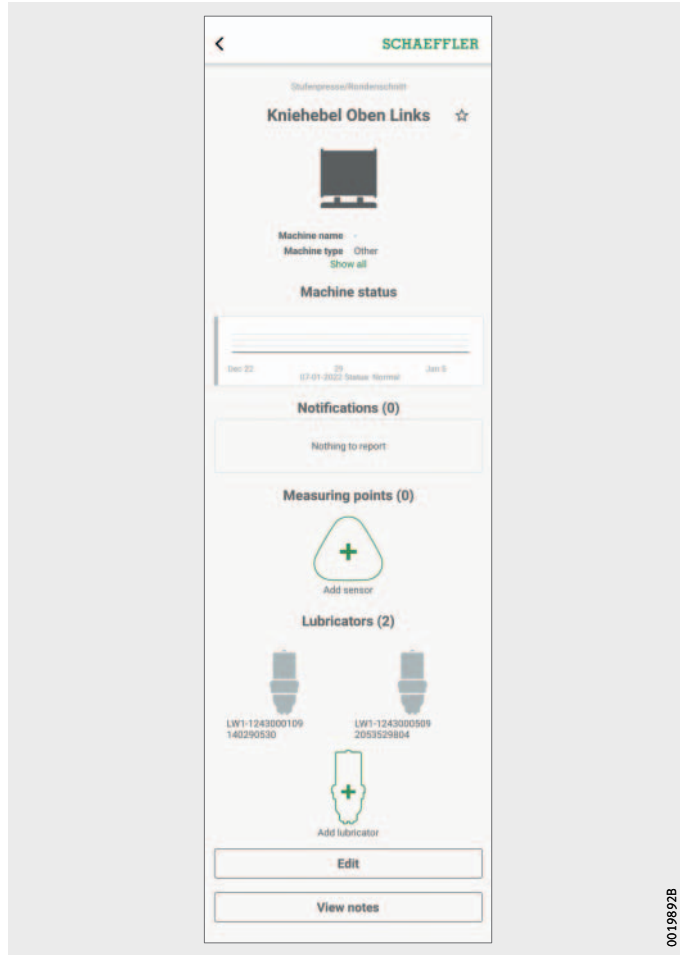


Figure 35
Machine management screen

Machine management screen

Input	Field	Description
Machine name	Text entry	Displays the defined machine names.
Machine symbol	–	Information on the operating states of the machine can be found in BA 68, OPTIME User Manual.
Metadata on machine	Text entries	Depending on machine type, other information can be entered as metadata to specify the machine. The metadata can be completely expanded and collapsed using the buttons [**Show all**] and [**Show less**]. Metadata are superordinate information that serve to describe the data.
[**Machine Status**]	Graphic representation	The machine status shows the state diagram and the alarm status.
[**Notifications**]	Button	Button takes the user to the relevant screen. In the example, no notifications exist.
[**Ask the Expert**] (optional)	Button	Opens a contact form.
[**Measuring Points**]	Button	Displays all sensors for the machine. In the example, no sensors are installed.
Sensor symbol	–	Information on the operating states of the sensors can be found in BA 68, OPTIME User Manual. In the example, no sensors are installed.
[**Add Sensor**]	Button	Adds a new sensor to the machine.
[**Lubricators**]	Button	Displays all lubricators for the machine.
Lubricator symbol		The colour of the symbol indicates the operating state of the lubricator: grey: normal status yellow: warning red: alarm
[**Add Lubricator**]	Button	Adds a new lubricator to the machine
[**Edit**]	Button	Button takes the user to the relevant screen.
[**View Notes**]	Button	Button takes the user to the relevant screen.

Acknowledge alarm notification

The [**Notifications**] button, *Figure 35*, page 43, takes the user to the relevant screen.

To acknowledge an alarm notification, the action taken has to be selected by activating the check box, *Figure 36*. In addition, an entry describing which actions were taken or why the notification is no longer valid must be selected from the drop-down menu. Optionally, a comment can be entered. The alarm notification is stored in the [**View Notes**] archive with a time stamp and details on the user via the [**Acknowledge**] button.

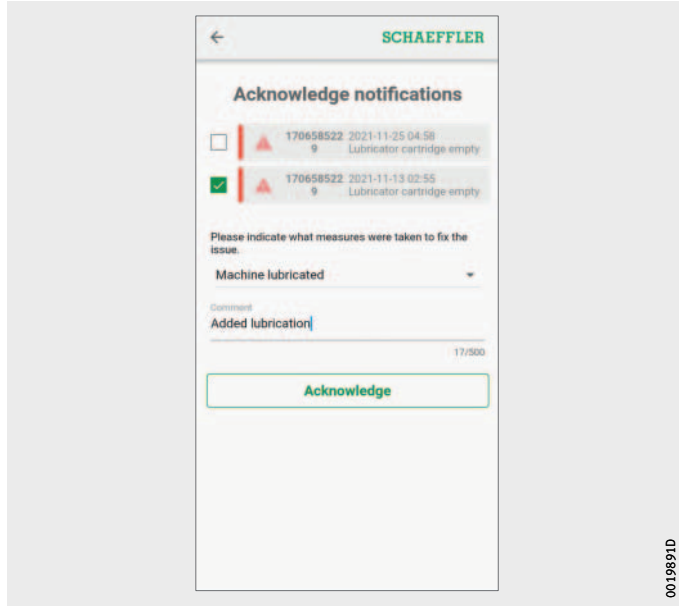


Figure 36
Acknowledge alarm notification

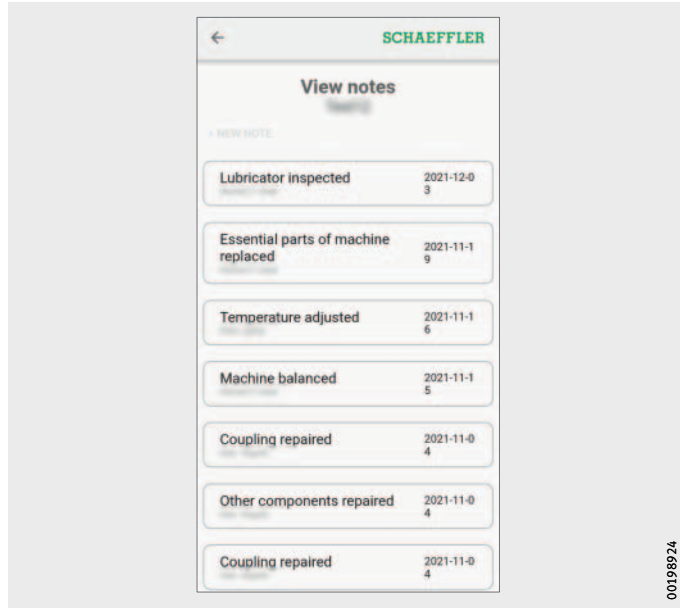


Figure 37
[**View Notes**] archive

Manage machine sensors and lubricators

The machine management screen shows which sensors and lubricators are assigned to the machine. The sensors can be edited in the sensor management screen by tapping on the sensors. The lubricators can also be edited in the same way.

To add a new lubricator for the machine, use the [**Add Lubricator**] button, *Figure 35*, page 43, or [**Provision Lubricators**] button, *Figure 30*, page 37.

For further information on lubricator management, see page 49.

For further information on adding a lubricator, see page 51.

Edit machine

All machine properties can be edited. You should enter machine information as accurately as you can. These data are used to define the threshold values for the OPTIME sensors and to improve the results of the analysis. For OPTIME lubricators, the data are used to determine the correct lubrication settings.

The criticality of the machine is indicated by a letter: “A” for critical machines, “B” for fairly non-critical machines, “C” for non-critical machines. The criticality is defined by the user.

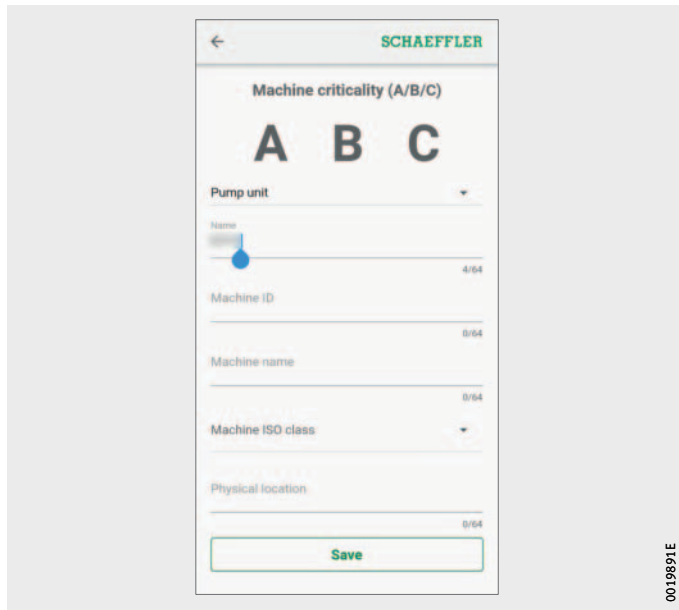


Figure 38
Edit machine

Machine log

The machine log records events during the service life of the asset. Events to be logged include asset creation, sensor or lubricator activation and replacement and alarm notifications.

You can display the log for each machine, in which notifications and log entries are archived in chronological order. Dedicated log entries can be created using the [**+ New Note**] button. Every activity, such as the acknowledgement of alarm notifications, is stored in the machine log.

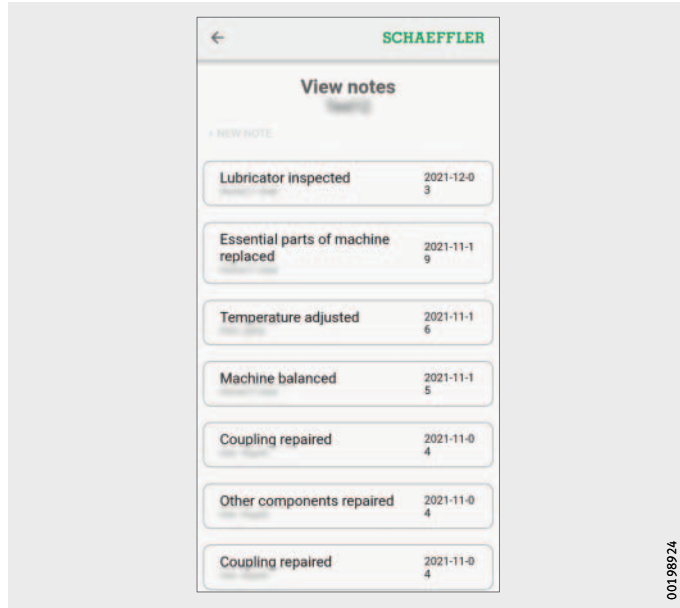


Figure 39
Machine log

Manage lubricators

The following functions are available to the user:

- acknowledge alarm notifications
- display fill level
- edit lubricator

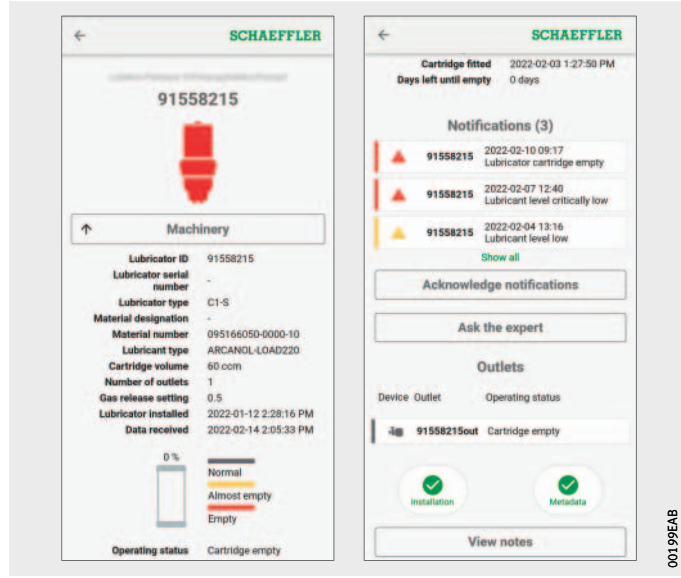


Figure 40
Lubricator management screen

Lubricator management screen

Input	Field	Description
Lubricator name	Text entry	Displays the defined lubricator name.
Lubricator symbol		The colour of the symbol indicates the operating state of the lubricator: grey: normal status yellow: warning red: alarm
[**Machinery**]	Button	Takes the user to the machine management system.
Metadata on the lubricator	Text entries	Depending on the lubricant, data are transmitted when the DMC or QR code is scanned. Further information can be entered. Metadata are superordinate information that serve to describe the data.
Fill level		The colour of the symbol indicates the fill level of the lubricator: grey: normal status yellow: almost empty red: empty
[**Operating Status**]	Text entry	Displays the operating state of the lubricator.
[**Notifications**]	Button	Displays notifications.
[**Acknowledge Notifications**]	Button	Takes the user to the relevant screen.
[**Ask the Expert**] (optional)	Button	Opens a contact form.
[**Outlets**]	Text entry	Displays the operating state of the outlet for single-point lubricators or of the outlets for multi-point lubricators.
[**Installation**]	Button	Takes the user to the following functions: Edit dispensing settings via the [**Edit Dispense Settings**] button, replace lubricators via the [**Replace Lubricator**] button or add lubricators via the [**Provision Lubricators**] button, replace the cartridge via the [**Replace Lubricant Cartridge**] button and deactivate lubricators via the [**Deactivate Lubricator**] button.
[**Metadata**]	Button	Takes the user to the following functions: Edit lubricator metadata via the [**Edit Lubricator**] button and edit outlet metadata via the [**Edit Outlet**] button.
[**View Notes**]	Button	Takes the user to the relevant screen.

Adding a lubricator or cartridge

The addition of new lubricators or replacement of an empty cartridge can be initiated in various sections of the OPTIME app.

Add new lubricator

To add a lubricator:

▶ Tap the [**Add Lubricator**] button, *Figure 40*, page 49, or the [**Provision Lubricators**] button, *Figure 30*, page 37.

▷ The [**MACHINE**] tab is displayed.

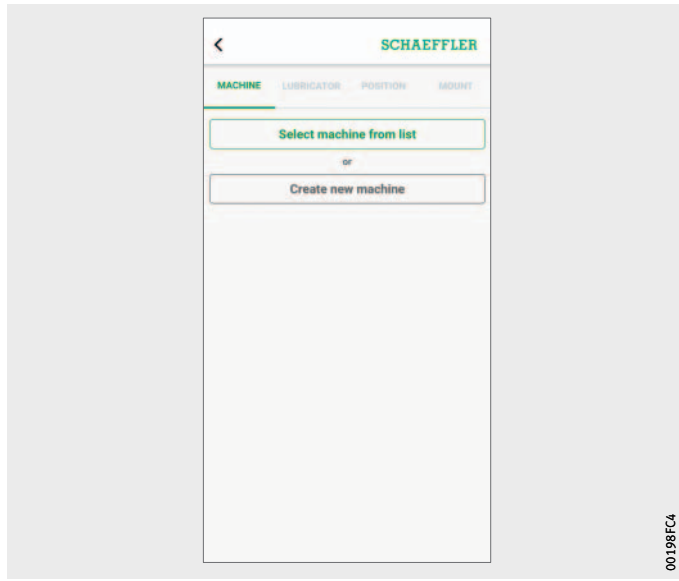


Figure 41
[**MACHINE**] tab: Add lubricator

▶ Choose whether to select a machine from the list via the [**Select Machine From List**] tab or create a new machine via the [**Create New Machine**] tab.

▷ The [**LUBRICATOR**] tab is displayed.

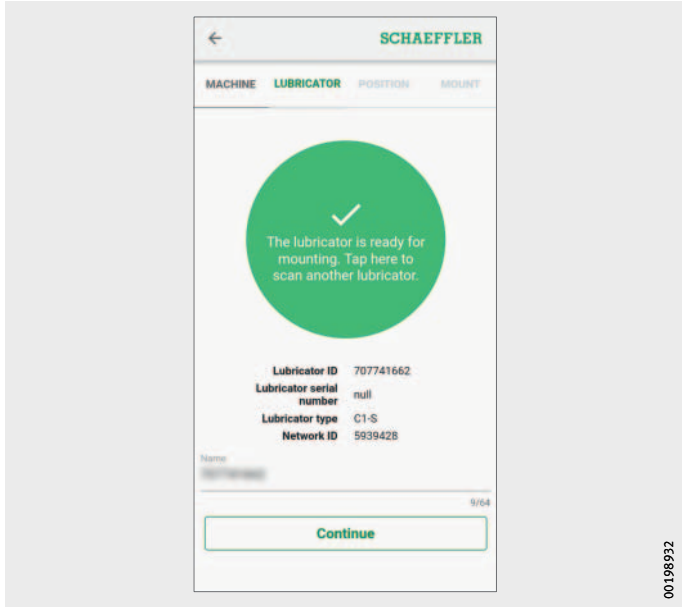


Figure 42
[**LUBRICATOR**] tab:
Transmission of data to the lubricator via NFC contact

▶ Tap the screen when prompted to do so by the OPTIME app.

▶ Hold your mobile device to the OPTIME C1 lubricator when prompted to do so by the OPTIME app, to transfer the network settings to the lubricator via NFC contact.

In order for the write or read process to be successful, the mobile NFC antenna must be carefully placed over the NFC symbol on the lubricator, where the lubricator's NFC antenna is located.

▷ Depending on the mobile device used, each separate NFC contact is acknowledged, e.g. through vibration.

▷ The successful data transfer and verification of the transferred data is displayed on the screen.

▶ Enter the name of the lubricator in the [**Title**] field.

▶ Tap the [**Continue**] button.

▶ Continue configuring the cartridge in the OPTIME app, see page 54.

Replace empty cartridge

To replace an empty cartridge:

▶ Select the lubricator with the low level by tapping the relevant field.

Figure 43
Lubricator with empty cartridge

▶ Tap the [**Installation**] button.

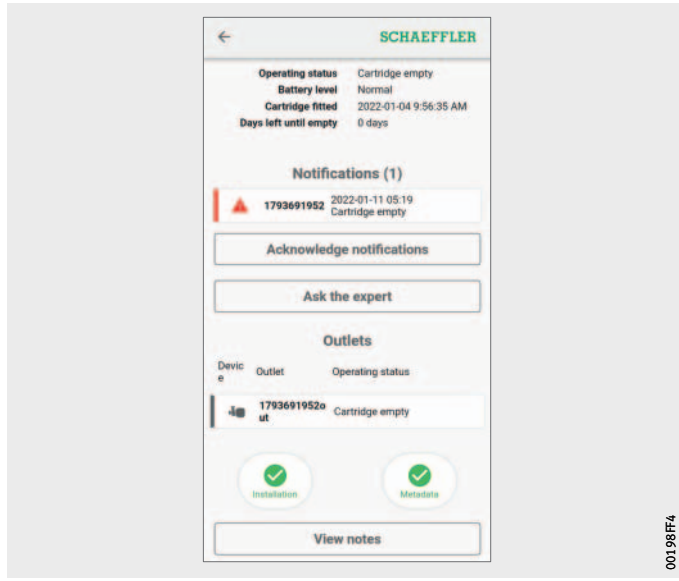


Figure 44
Lubricator management screen

▶ Tap the [**Replace Lubricant Cartridge**] button.

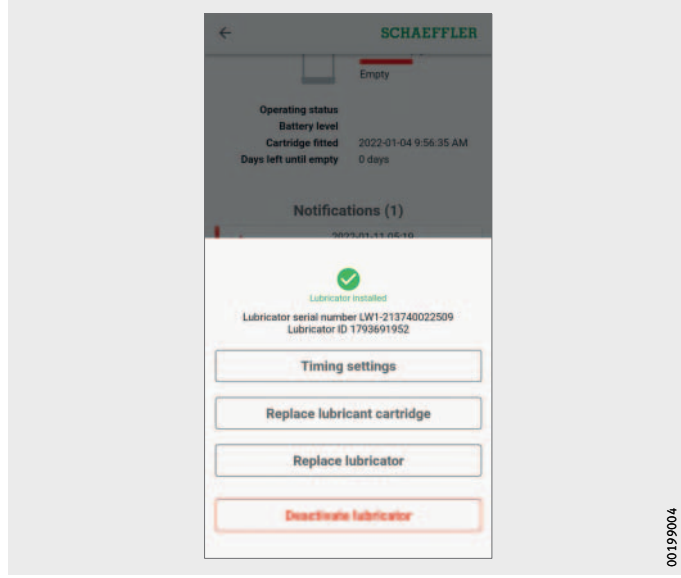


Figure 45
Button
[**Replace Lubricant Cartridge**]

▶ Continue configuring the cartridge in the OPTIME app, see page 54.

Configure cartridge in the OPTIME app

To configure a new cartridge:

▶ Using the camera on the mobile device, scan the DMC or QR code located on the CONCEPT1 cartridge when prompted to do so by the OPTIME app.

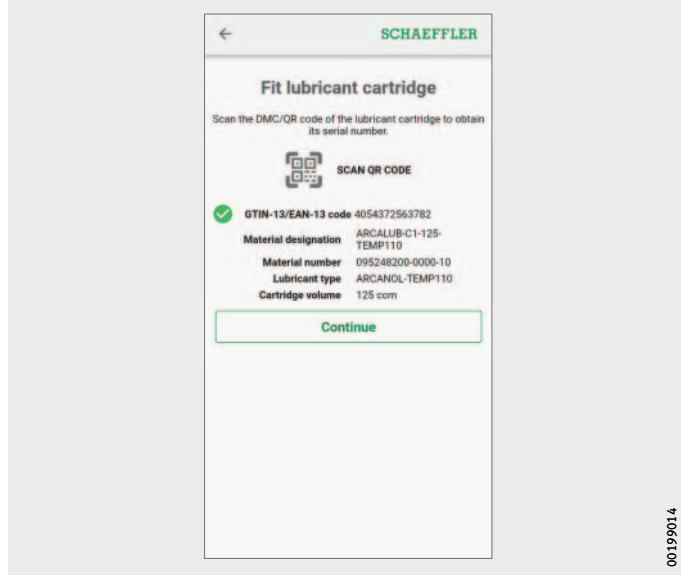


Figure 46
Scan CONCEPT1 cartridge

▶ Carry out the dispense settings by activating either the lubricant quantity per time unit via the [**Outlet Setting**] option field or the cartridge setting via the [**Gas Release Setting**] option field.

Depending on the information available, the dispense setting can be performed using the lubricant quantity per time unit or via the cartridge setting.

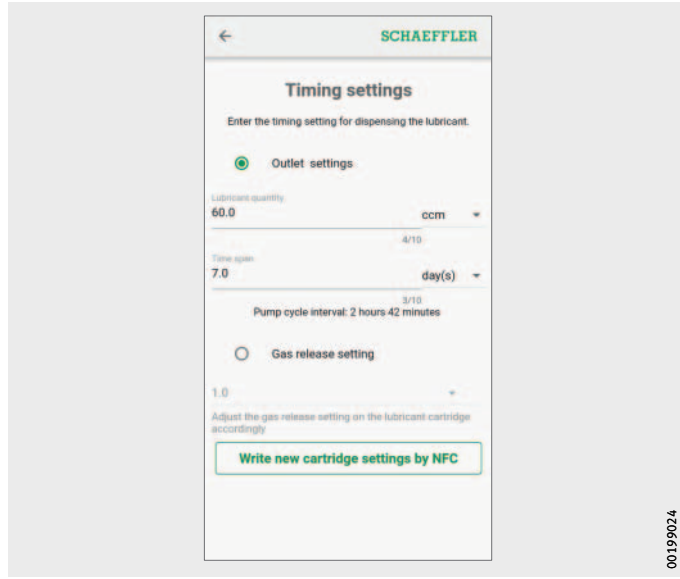


Figure 47
Enter lubrication interval

▶ For [**Outlet Setting**]:
In the [**Lubricant Quantity**] field, enter the lubricant quantity and select the unit (ccm or fl.oz).

In the [**Time Span**] field, enter the relevant time period and select the unit (hours, days, months).

▶ For [**Gas Release Setting**]:
Enter the cartridge setting.

Intervals between 1 and 12 months can be entered in 0,5-month increments.

▷ For [**Gas Release Setting**]:
The cartridge setting notification is displayed and a value is specified. This value must be configured on the cartridge, *Figure 23*, page 29.

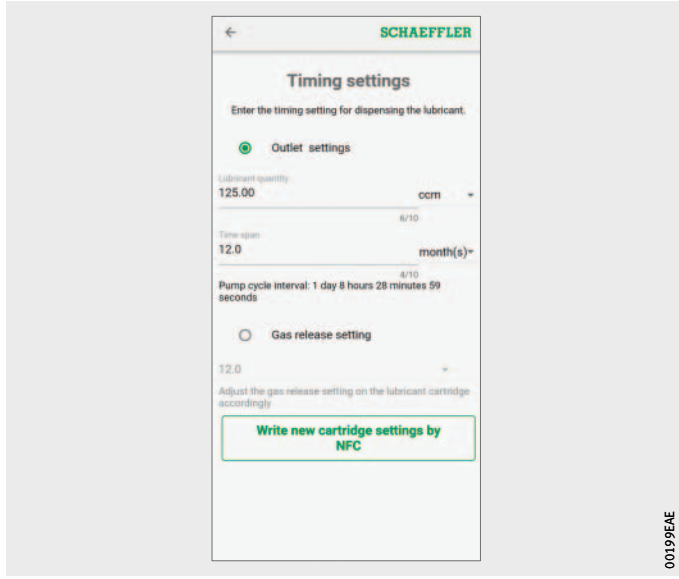


Figure 48
For [**Gas Release Setting**]:
Cartridge setting notification

▶ Tap the [**Write New Cartridge Settings by NFC**] button to transfer the chosen settings to the lubricator via NFC contact.

▶ Hold your mobile device to the OPTIME C1 lubricator when prompted to do so by the OPTIME app, to transfer the chosen settings to the lubricator via NFC contact.

▷ Depending on the mobile device used, each separate NFC contact is acknowledged, e.g. through vibration.

▷ The successful data transfer and verification of the transferred data is displayed on the screen.

▷ The [**POSITION**] tab is displayed.

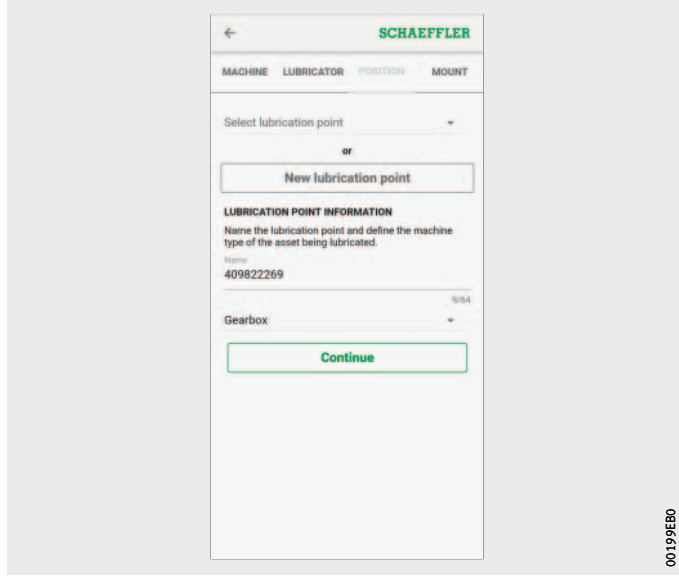


Figure 49
[**POSITION**] tab:
Information on the lubrication point

▶ Choose a new name for the lubrication point.
▶ Select the machine type.
▶ Tap the [**Continue**] button.

▷ The [**MOUNT**] tab is displayed. A prompt will appear asking you to confirm that the lubricator is mounted.

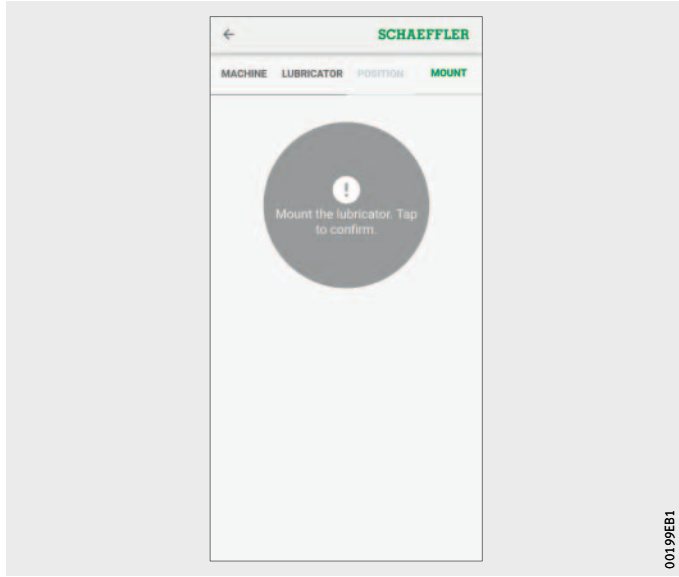


Figure 50
[**MOUNT**] tab:
Confirmation of mounting

▶ Tap the green area on the screen when prompted to do so by the OPTIME app.

If you tap the green area again, the lubricator will be removed.

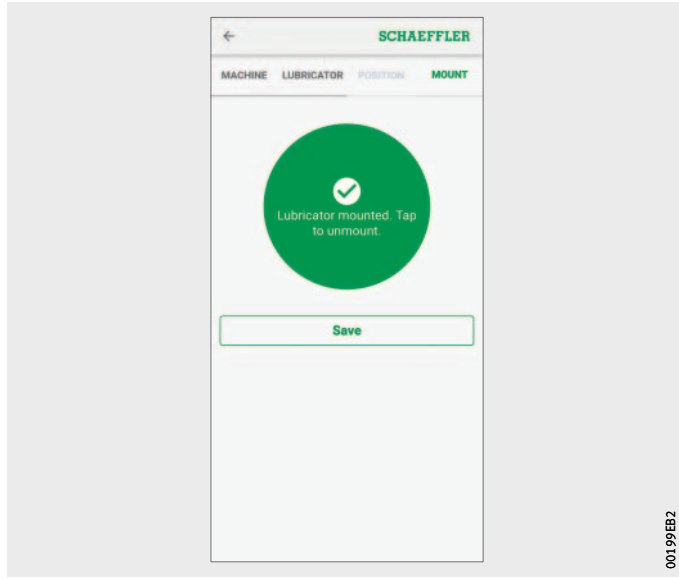


Figure 51
Save the cartridge configuration

▶ Tap the [**Save**] button.
▷ The lubricator is now ready for operation.

Add gateway

The option of adding a gateway is offered in various sections of the OPTIME app.

To add a gateway:

▶ Tap the [**Provision Gateway**] button, *Figure 30*, page 37.

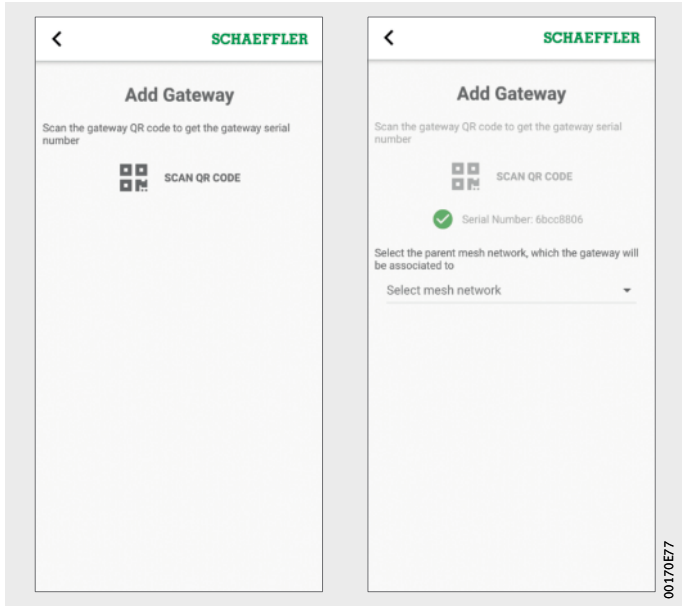


Figure 52
Add gateway

▶ Using the camera on the mobile device, scan the gateway's DMC or QR code to read the DMC or QR code printed on the gateway.

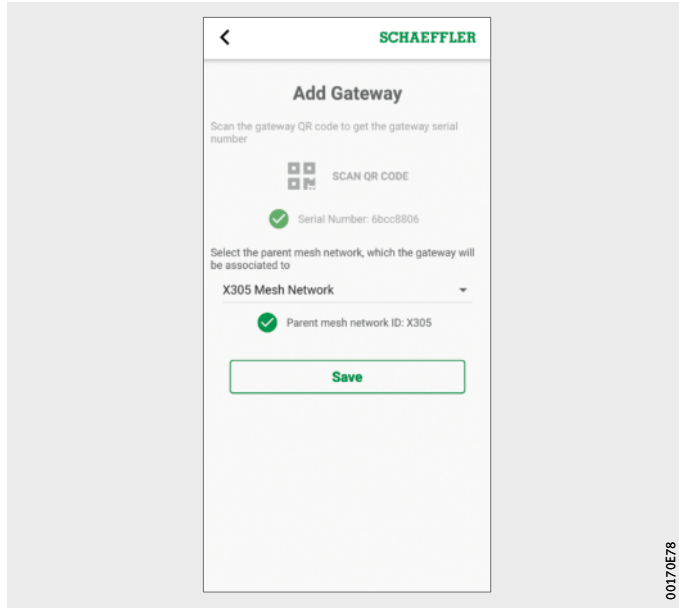


Figure 53
Save gateway

- ▶ As necessary, select the mesh network that the gateway should be associated with.
- ▶ To save the entry, tap the [**Save**] button.

Using the OPTIME dashboard

The OPTIME dashboard is the central user interface for use in control rooms where automatic lubrication of the asset can be monitored.

The OPTIME dashboard helps users and administrators to actively monitor the machine status.

The administrators are authorised to view the network topology in order to evaluate the states of the OPTIME devices in more detail. In management mode, the administrators can add, edit and delete users and profiles as well as send notifications to users. At corporate and mesh network level, the administrators can also manage the process area, department and machine structure (assets) and mesh networks (devices).

The OPTIME dashboard permits the following functions:

- active monitoring of OPTIME devices
- display of alarm notifications
- acknowledgement of alarm notifications
- display and generation of log entries

Other functions are only available to administrators:

- user management:
  - add, edit and delete users and profiles
  - send notifications to users
- manage assets:
  add, move and delete gateways and OPTIME devices

System requirements

The following minimum requirements must be met in order to be able to use the OPTIME dashboard:

- System requirements:
  - Windows 10, current macOS or current Linux operating system
  - high-resolution screen
  - rapid internet connection
- Browser:
  - Google Chrome
  - Microsoft Edge
  - Mozilla Firefox
  - Safari
  - Microsoft Internet Explorer
    (limited support for Microsoft Internet Explorer 11 and older)

Registration, login and logout

The administrator account is created automatically as part of the order process. Other users are managed by the administrator. All new users created by the administrator receive their login data by email.

Login

To log in:

▶ Go to the OPTIME customer portal at:
https://schaeffler-optime.com/dashboard

Figure 54
Login

▶ Enter your user name and click on [**Continue**].

▶ Enter your password and click on [**Login**].

▶ If you have forgotten your password click on [**Forgot Password?**] to reset your password.

▷ Your new login details will be sent to you by email.

NOTICE

Risk of substantial damage to other material assets due to unauthorised use of the OPTIME system. A new, secure password must be created for the initial login. Make a note of your user name and password, as you will need these to log onto both the OPTIME app and the OPTIME dashboard. ◁

Logout

To finish a session you need to log out again.

▶ Click on the [**Settings**] button, *Figure 56*, page 64.

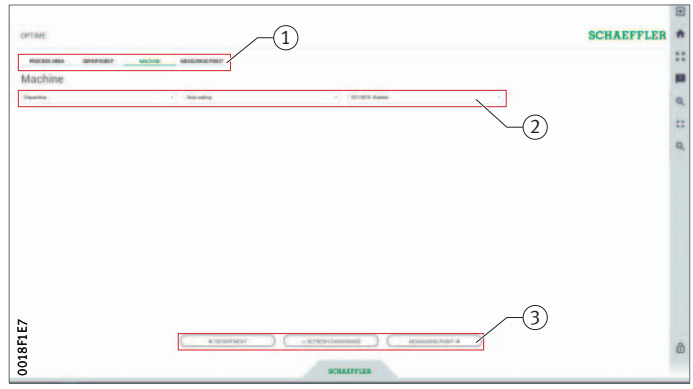
▶ Click on the [**Logout**] button.

General navigation

For operation of the app the various pages contain navigation elements and settings options.

Navigation elements

The app pages contain the hierarchy path, drop-down menus and navigation buttons that provide several options for reaching navigation targets.



① Hierarchy path
② Drop-down menus
③ Navigation buttons

Figure 55
Navigation elements

Settings

The left-hand bar is expanded using the [**Settings**] button.
In addition to logout, other settings are available for adjusting the [**Desktop Options**] and [**User Options**].

① [**Settings**]

Figure 56
Other settings

Explanations

Designation	Description
[**Go to Start Page**]	Switches to the start page.
Fullscreen Mode [**ON**] [**OFF**]	Toggles full screen mode on and off.
[**Set Home View**]	Sets the current page as the home view.
Mobile Mode [**Auto**]	Activates the optimised mode for mobile devices.
[**Invite New User**]	Takes the user to the “invite new user” page (for administrators only).
[**Send Feedback**]	Takes the user to the “send feedback” page.
[**Change Password**]	Takes the user to the “change password” page.
Personal Information [**Edit**]	Adjusts the user profile.
[**Logout**]	Logs the user out.

Search function and filters

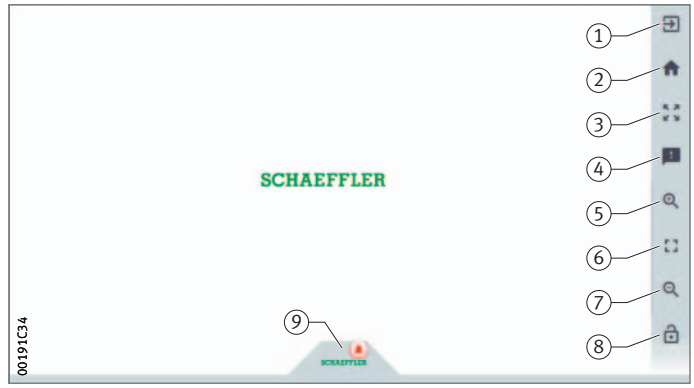
The search function can be used in various sections of the OPTIME dashboard and helps refine search results for assets, machines or OPTIME devices according to specific criteria.

Filters can be set based on an inputtable search string, the criticality of the machine and the machine type. Filters can be reset by deleting the inputted search text.

Description of dashboard

Start page

After logging in, the user is taken to the start page or a user-defined dashboard, depending on the user's settings. The pages contain standardised navigation elements.



① [Logout]
② [Start Page]
③ [Fullscreen Mode]
④ [Send Feedback]
⑤ [Zoom in]
⑥ [Reset Zoom to 1:1]
⑦ [Zoom out]
⑧ [Show or Hide Menu]
⑨ [Schaeffler-Tab]

Figure 57
Start page

Explanations

Designation	Description
[Logout]	Logs the user out.
[Start Page]	Switches to the start page.
[Fullscreen Mode]	Switches to full screen mode.
[Send Feedback]	Opens the feedback page.
[Zoom in]	Magnifies the view.
[Reset Zoom to 1:1]	Returns to the default view.
[Zoom out]	Reduces the view.
[Show or Hide Menu]	Hides the menu. The same button can be used to show the menu again.
[Schaeffler-Tab]	Provides access to other functions.

Using the dashboard levels

Various dashboard levels are accessible via the structure tree on the [**Resource Browser**] page:

- Level [**Process Area**]
- Level [**Department**]
- Level [**Group**]
- Level [**Machine**]
- Level of OPTIME devices, [**Sensor**] or [**Lubricators**]

Alternatively, the individual dashboard levels can also be accessed via the tab of the same name.

Level [Process Area]

The process area assigned to the user is visible in the [**Process Area**] level. The page is subdivided into departments, alarm notifications and user-defined groups.

① [**Departments**]
② [**Machines with Active Alarms**]
③ [**My Groups**]
④ [**Lubricators with Active Alarms**]
⑤ [**Operating Condition**]

Figure 58
Level [**Process Area**]

Explanations

Designation	Description
[**Departments**]	Displays a list of active alarm notifications for departments with the number of alarms and colour-coded representation of the warning level.
[**Machines with Active Alarms**]	Displays a list of active alarm notifications for machines with the number of alarms and colour-coded representation of the warning level.
[**My Groups**]	Displays user-defined groups.
[**Lubricators with Active Alarms**]	Displays lists of the lubricators that have one of the following conditions: - yellow: warning - red: alarm
[**Operating Condition**]	Displays lists of the sensors that have one of the following conditions: - low battery level - no connection - new sensor - learning mode

Clicking on a department name under [**Departments**] will take you to the [**Departments**] level.

Clicking on a machine name under [**Machines with Active Alarms**] will take you to the [**Machine**] level.

Clicking on a lubricator under [**Lubricators with Active Alarms**] will take you to the [**Lubricator**] level.

Clicking on an alarm counter will take you to the [**Alarms and Notifications**] view.

You can use filters on the lists [**Departments**] and [**Machines with Active Alarms**], see page 64.

The list under [**My Groups**] shows the user-defined groups set up in the OPTIME app.

Level [Department]

The [**Department**] level shows the user the machines from a selected department.

① [**Department Name**]
② [**Departments**]
③ [**Groups**]
④ [**All Lubricators**]
⑤ [**Lubricator**]

Figure 59
Level [**Department**]

Explanations

Designation	Description
[**Department Name**]	Displays the name of the department.
[**Departments**]	Displays the machines from a department.
[**Groups**]	Displays the machines in a user-defined group.
[**All Lubricators**]	Displays all lubricators.
[**Lubricator**]	Displays one lubricator.

You can use filters in the displayed list of machines, see page 64.

The machines are ordered so that the machine with the most critical alarm status is at the top.

The [**Status**] column displays the symbol for the machine in the colour of the alarm level. The machines can be identified from the [**Machine-ID**] and [**Machine Name**] columns. Clicking on the ID will take you to the [**Machine**] level.

The [**Machine Status**] and [**Notifications**] columns display the alarm status.

Further information

- Information on the operating and alarm states of the sensors can be found in BA 68, OPTIME User Manual.

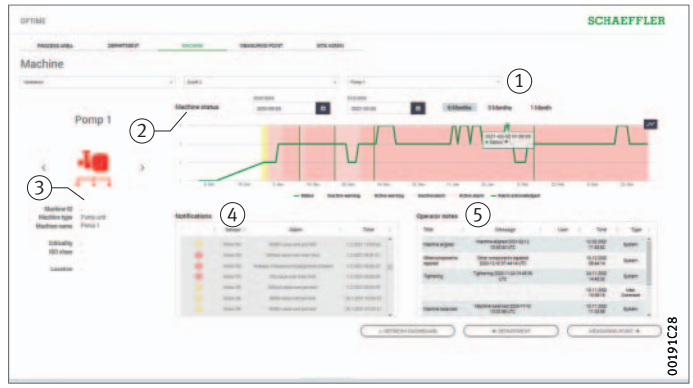
Level [Group]

The [**Groups**] level shows machine groups compiled according to special criteria. The user can also create dedicated groups.

The [**Groups**] level has the same functions as the [**Department**] level.

Level [Machine]

The [**Machine**] level shows the user the status of the machine.



① Filter for period of analysis
② [**Machine Status**]
③ Machine symbol and machine metadata
④ [**Notifications**]
⑤ [**Operator Notes**]

Figure 60
Level [**Machine**]

Explanations

Designation	Description
Filter for period of analysis	Start and end dates can be entered. Alternatively, the corresponding period up to the current date can be selected using the buttons [**1 Month**], [**3 Months**] or [**6 Months**].
[**Machine Status**]	The machine status shows the state diagram and the alarm status.
Machine symbol and machine metadata	Depending on machine type, information can be entered to specify the machine in more detail.
[**Notifications**]	Displays the alarm notifications for the machine.
[**Operator Notes**]	Displays the history of alarm notifications and log entries for the machine.

The machine name and symbol are used to identify the machine.

The metadata are listed below the symbol; depending on machine type this information could be:

- ID
- machine name
- description
- location
- speed
- machine type
- criticality
- department

This information is specified during installation and can be edited via the OPTIME app.

Alarm notifications for the machine

The pre-alarms, main alarms and possible causes are listed as alarm notifications.

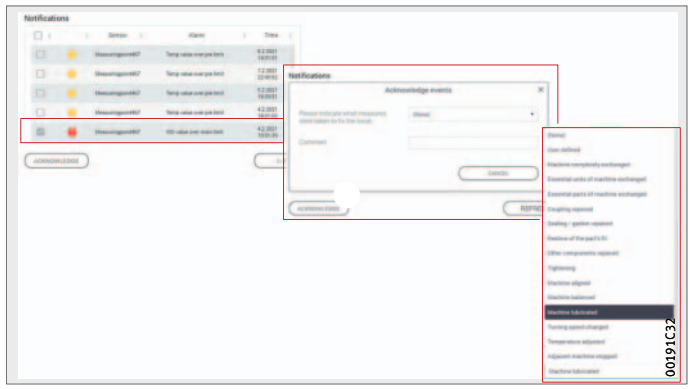


Figure 61
Examples of alarm notifications

An alarm notification can be acknowledged directly by inserting a tick in the line to be confirmed. The [**Acknowledge**] button opens an input field. The action taken is then selected from the drop-down menu. Further information can be entered in the Comments field. The acknowledgement is completed by clicking on the [**Acknowledge**] button. The alarm notification is saved in the history with a time stamp and details on the user.
Clicking on the lines in the list will also take the user to the [**Alarms and Notifications**] view, which provides more detailed information about the alarm notification.

Further information

- Information on the operating and alarm states of the sensors can be found in BA 68, OPTIME User Manual.

History

Alarm notifications and log entries by personnel are archived chronologically in the history for each machine. Log entries performed by the operator in the OPTIME app are also visible in the history.

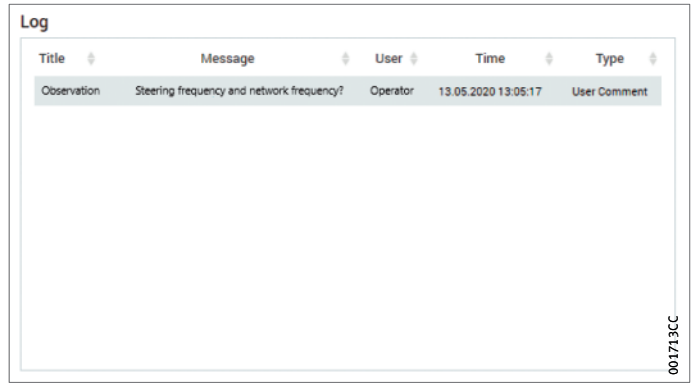


Figure 62
Examples of entries in the history

Level [All Lubricators]

The [All Lubricators] level displays all active lubricators and provides a tabular overview of the status of the lubricator, the lubricant used, the filling volume, the machine name, the alarm notifications, the battery state, the operating state, the number of days remaining until cartridge replacement and the fill level of the cartridge.

Figure 63
Level [All Lubricators]

Level [Lubricator]

The [Lubricator] level displays detailed information on a selected lubricator, indicating the status of the lubricator, the lubricant used, the filling volume, the machine name, the alarm notifications, the battery state, the operating state, the number of days remaining until cartridge replacement and the fill level of the cartridge.

Figure 64
Level [Lubricator]

Maintenance

The OPTIME C1 lubricator is maintenance-free. The housing and seal must be checked and wiped clean each time the CONCEPT1 cartridge is changed or refilled. The OPTIME C1 lubricator must be disposed of if the housing is cracked.

The information provided in BA 69 also applies to the CONCEPT1 cartridge.

Troubleshooting and rectification

The Frequently Asked Questions (FAQ) on the OPTIME customer portal can assist with troubleshooting.

Disposal

The used battery pack and the dismantled drive unit of the CONCEPT1 cartridge should be sent for battery recycling. Batteries should never be reused, recharged, opened or thrown into a fire. Lubricator OPTIME C1 (without battery pack) is disposed of in accordance with Directive 2012/19/EU (WEEE).
Protect the environment by recycling valuable raw materials and observe the disposal guidelines in your country.

WARNING Risk of explosion if disposed of incorrectly. Never expose the battery pack and drive unit to naked flames or excessive heat.◁

Technical data

Gateway

Nameplate

The nameplate with the serial number (S/N) is located on the side of the housing. Beneath this is a QR code, in which the serial number is embedded.

Designation		Value	Unit
Communication			
Wirepas Mesh (ISM band)		2,4	GHz
2G, LTE CAT M1 (other options available with installed local LTE stick: GSM, UMTS, LTE)		●	–
WiFi		2,4	GHz
Ethernet RJ45		●	–
SIM card format		Micro-SIM (3FF)	–
Electrical characteristics			
Power consumption		30	VA
Power supply AC		85 to 264	V
Frequency		47 to 440	Hz
Ambient conditions			
Protection class		IP66	–
Operating temperature		–20 to +50	°C
Storage	Temperature	–40 to +85	°C
	Humidity	20 to 90	%
Dimensions, mass			
Length		180	mm
Width		130	mm
Height		81	mm
Mass		≈ 1,2	kg
Certificates			
CE (EU directive 2014/53/EU), FCC, SRRC, IC, RCM, Anatel, NTC, NBTC, SIRIM, WPC		Current certifications https://www.schaeffler.de/std/1F8A	

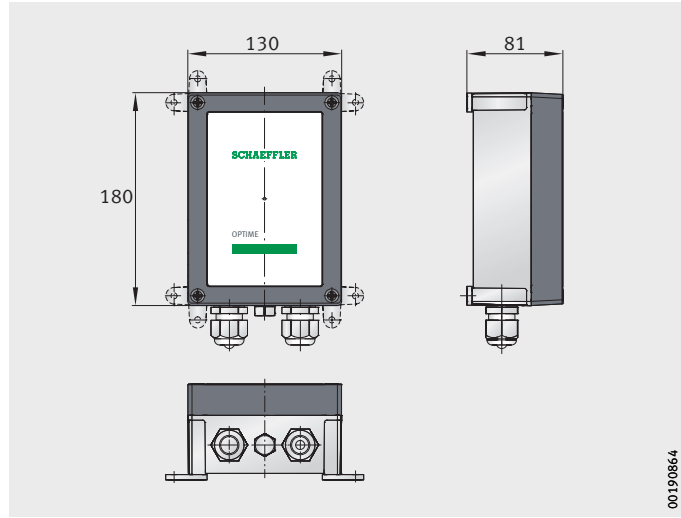


Figure 65
Gateway dimensions

Lubricator OPTIME C1

Nameplate

The serial number is printed on the lubricator.

Description		Value	Unit
Function OPTIME C1			
Drive system		Electro-mechanical	–
Operating pressure		≦ 10	bar
Metering volume per lubrication interval		≈ 0,5	cm^3
Metering volume per day (dependent on size and setting of CONCEPT1)		0,17 up to 8,3	cm^3
Commissioning		NFC	–
Cartridge CONCEPT1			
Dispensing time (steplessly adjustable)		1 up to 12	months
Lubricant volume		60 or 125	cm^3
Lubricant	Grease	≦ NLGI 2	–
	Oil	> 68	mm^2/s
Communication			
Wirepas Mesh (ISM band)		2,4	GHz
Line of sight range		100	m
Electrical characteristics			
Power supply (battery pack)		6	V
		2,3	Ah
Other characteristics			
Mounting position (battery pack)		As required	–
Threaded connector		$G^1/_4$	–
Housing material		PET	–
Mass		≈ 0,25	kg
Warranty and operating life	Duration	2	years
	Number of emptying operations	10	–
Packing unit		10	pieces
Ambient conditions			
Protection class		IP68	–
Operating temperature		–10 up to +55	°C
Storage (protect from direct sunlight, store in a dry place)	Temperature (recommended)	+20±5	°C
	Humidity	≦ 65	%
Certificates			
CE Radio Equipment Directive 2014/53/EU		–	–

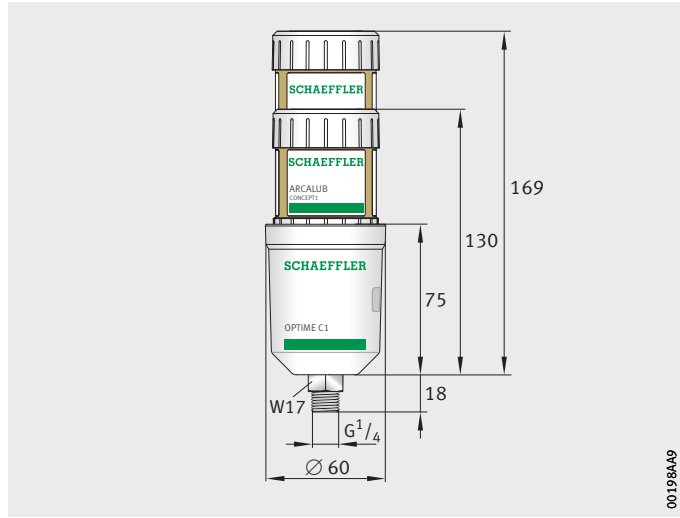


Figure 66
Dimensions
Lubricator OPTIME C1 with cartridge CONCEPT1

Appendix
EU Declaration of Conformity

SCHAEFFLER

EU Declaration of Conformity

We declare herewith that the product designated below complies with the relevant fundamental health and safety requirements of the EU directives specified below, in terms of its design and type, and in the format we introduced into circulation.
This declaration of conformity is issued under the sole responsibility of the manufacturer.

The manufacturer

Schaeffler Technologies AG & Co. KG
Georg-Schäfer-Strasse 30
D-97421 Schweinfurt, Germany

declares that the product

OPTIME-LW-C1 (wireless pressure booster for automatic lubrication system)

complies with the following directives of the European Parliament and Council, in terms of its design and type, and in the format introduced into circulation:

- Electromagnetic Compatibility Directive (2014/30/EU)
- Low Voltage Directive (2014/35/EU)
- Radio Equipment Directive (2014/53/EU)
- Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (2011/65/EU)

Applicable harmonized standards:

- EN 61000-6-2:2019 (EMC)
- EN 61000-6-4:2019 (EMC)
- EN 301 489 -1:2020, -3:2019, -17:2021 (EMC-RED)
- EN 62368-1:2014 (Safety requirement, LVD)
- EN 300 328 V2.2.2 (RF)
- EN 300 330 V2.1.1 (NFC)
- EN/IEC 63000:2018 (RoHS)

Date: 19.01.2022

Signature:

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This declaration assures conformity with the directives cited, but does not represent any guarantee of specific features. The safety advice in the user manual must be observed.

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Figure 67
EU Declaration of Conformity

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Technical support:
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