



PRODUCT CATALOG

The Expert in Lubrication Solutions

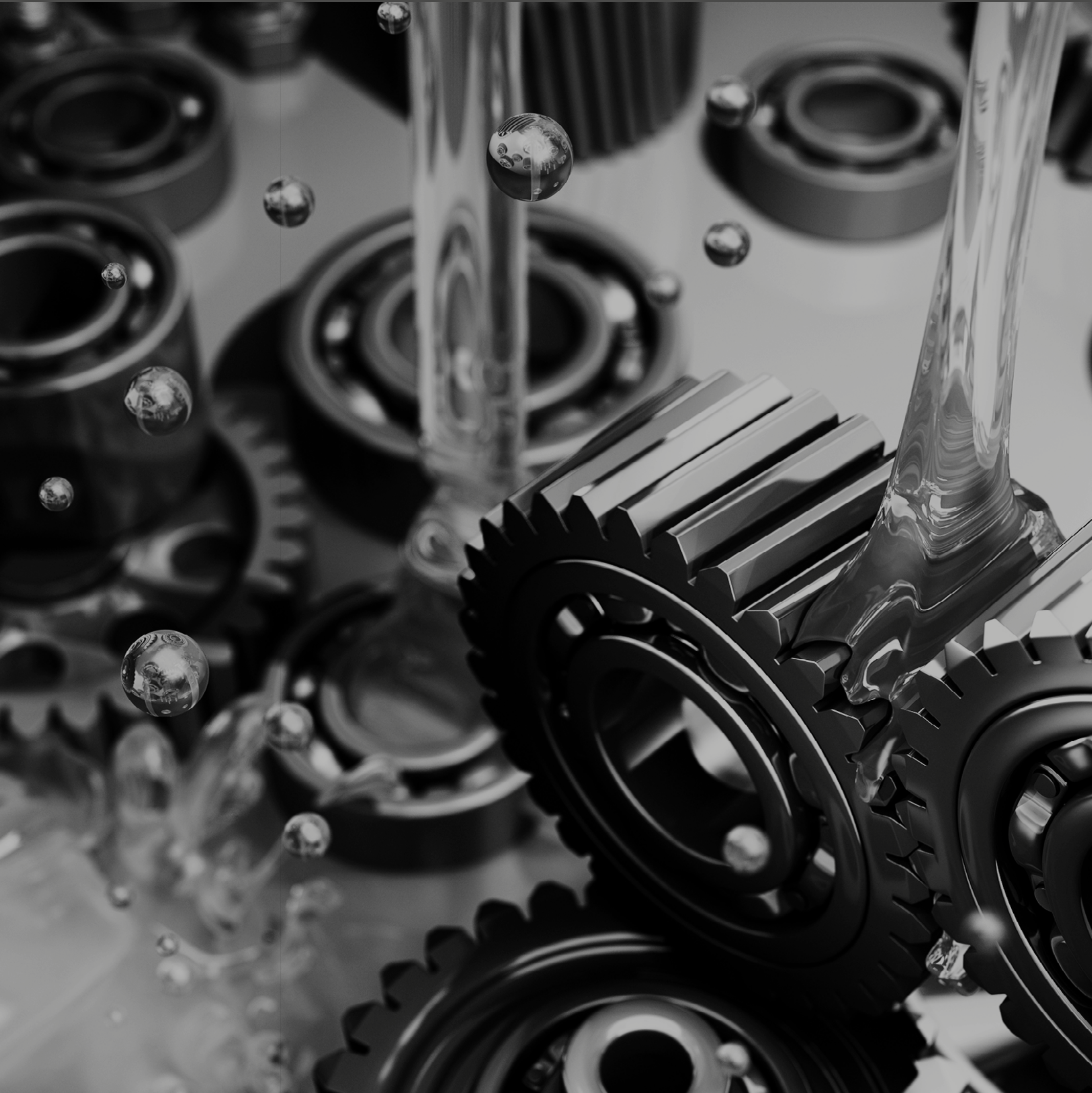
perma

CONTENT

Find out everything about our product portfolio and the innovative perma lubrication solutions. In addition to product features and advantages, you will find a large selection of accessories and application examples.

Our goal is to offer you the best possible lubrication solution. Our priority is quality, functionality and connectivity so that we can ensure the products you choose are perfectly tailored to your needs.

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THE EXPERT IN LUBRICATION SOLUTIONS

When it comes to profitability and optimization in production plants, efficient maintenance with perma lubrication systems is an absolute must.

perma lubrication systems are established in the market for more than 60 years and have been continuously developed to meet the latest technical challenges and customer needs. The result: innovative and tailored lubrication solutions that are used across almost every industry. perma products hold multiple patents and certifications.

All perma products are developed and manufactured in Germany. In addition, perma USA operates a production facility in the USA, where all products used across the Americas are assembled. perma offers a wide range of single- and multi-point lubrication systems, ensuring the appropriate lubrication solution for every application.

As the global market leader in single-point lubrication, perma is renowned for its innovative and reliable lubrication solutions and is globally recognized for cutting-edge technology.



Johannes Kiesel
President & CEO perma Americas



PROUDLY ASSEMBLED
IN THE USA

ADVANTAGES FOR OUR CUSTOMERS

At perma, our customers come first. We believe that happy customers are the key to our success. That's why we strive to prioritize their needs and expectations in all our actions.

Our customers take advantage of a wide range of benefits:

- » High-quality products made in Germany
- » Assembled in the USA
- » State-of-the-art technology
- » Worldwide subsidiaries and partners
- » Custom lubrication solutions
- » Fast and reliable delivery
- » Professional customer service and support, including aftersales support

Maximizing production output is crucial for our customers in order to remain competitive on a global scale. At the same time, they need to keep operating costs down in the long term while ensuring compliance with high workplace safety requirements. The key is using the right lubrication solutions to extend equipment life and to reduce downtime.

Automatic lubrication systems from perma help businesses around the world to achieve their goals.



No more roller bearing failures with perma products

perma lubrication systems allow you to perfectly lubricate your equipment to avoid premature bearing failures and reduce downtime.

We make maintenance work easier

perma lubrication systems are used to lubricate a variety of machine elements in common applications such as conveyors, pumps, fans and electric motors. Our product portfolio provides reliable solutions which are easy to implement and incorporate into your existing maintenance plans.



Prevent contamination from liquids and dirt particles

Contamination from water and solid particles speeds up wear and shortens bearing service life. By applying fresh grease in small amounts regularly, perma automatic lubrication systems prevent ingress of liquids, dirt and dust, thus increasing bearing service life.

Manual vs. automatic lubrication

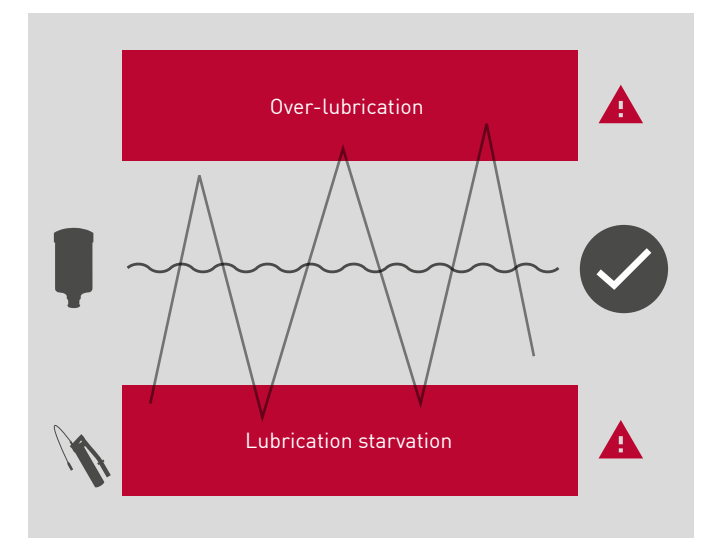
Over-lubrication with manual lubrication

- » Increase in operating temperature
- » Damage to contact seals
- » Excessive lubricant consumption

Lubrication starvation with manual lubrication

- » Increase in friction and wear
- » Contamination ingress

Automatic lubrication with perma lubrication systems ensures constant supply of the ideal lubricant quantity. Unlike manual lubrication, over-lubrication or lubrication starvation can be prevented.



EQUIPMENT AVAILABILITY — **YO UR**

ADD ED — WORKPLACE SAFETY

COST SAVINGS — **VA LUE** — SUSTAINABILITY

EQUIPMENT AVAILABILITY

PERMA HELPS PREVENT ROLLER BEARING FAILURES

- » High equipment availability with permanent relubrication
- » Maintenance intervals can be scheduled during downtimes
- » Reduction in repair and maintenance costs
- » Lubricant discharge during running system operation

CAUSES OF FAILURE IN ROLLER BEARINGS

- » Insufficient lubricant quantity
- » Aged lubricant
- » Unsuitable lubricants
- » Solid contamination

PERMA PREVENTS CONTAMINATION FROM LIQUIDS AND DIRT PARTICLES

- » Permanent lubrication prevents ingress of dirt particles and liquids
- » Protection against friction and wear
- » Increase in bearing service life



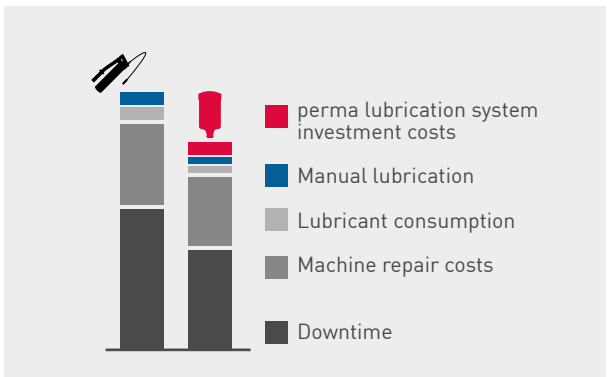
COST SAVINGS

Comparing manual lubrication with perma lubrication shows savings potential in different areas.

The following areas have the biggest savings potential:

- » Reduction in downtimes
- » Machine repair costs

Sources: Internal calculations: Material, time and maintenance requirements / figures from the roller bearing industry and insurance companies.



WORKPLACE SAFETY

perma lubrication systems minimize contact between human and machine and make an important contribution to workplace safety. perma is a member of the German Association for Safety, Health and Environmental Protection at Work (German: *Verband für Sicherheit, Gesundheit und Umweltschutz bei der Arbeit*).

- » Reduction of time spent in hard-to-access dangerous areas
- » Lubrication systems prevent direct contact with hazardous lubricants
- » Reduction of slipping accidents caused by lubricant contamination



The perma quality management system is certified to DIN EN ISO 9001 and EN ISO/IEC 80079-34.



SUSTAINABILITY

The UN Sustainable Development Goals are a call to combat poverty, inequality and climate change. They provide the blueprint for sustainable development to create a better future for everyone. Businesses can make a significant contribution by implementing sustainable business practices, increasing resource efficiency, taking on social responsibility and seeking out partnerships to shape a sustainable future in line with the 2030 Agenda.

“As a business, together we can drive forward the UN Sustainable Development Goals and create a sustainable future for everyone. Let’s do our part for the 2030 Agenda.”
Dr Abassin Aryobsei, CEO perma-tec

OUR PART

- » **Health and well-being:** Programs to promote the health and well-being of our employees, including healthcare, work-life balance measures and individual support (Goal 3).
- » **Energy efficiency:** Our lubrication systems prevent up to 75% of bearing failures, allowing plants to operate longer and reducing energy costs for new productions. This contributes to achieving the UN goal of affordable and clean energy (Goal 7).
- » **Sustainable procurement:** Implementation of a sustainable procurement policy and ensuring that raw materials and ingredients come from environmentally friendly sources. This supports the goal responsible consumption and production (Goal 12).
- » **Circular economy:** Promotion of a circular economy through the development of recyclable and reusable options for our products and packaging. In doing so, we support the goal of sustainable cities and communities (Goal 11) and reduce resource consumption.
- » **Reduction of greenhouse gas emissions:** Implementation of measures to reduce our own greenhouse gas emissions. For example, we support climate protection (Goal 13) through the use of photovoltaic systems, electric and hybrid vehicles, or our certification according to DIN ISO 50001.
- » **Partnerships and collaboration:** Cooperation with other companies and organizations for joint development and implementation of sustainable solutions. This helps us contribute to the goal for global partnerships (Goal 17).

SERVICE PORTFOLIO

perma SERVICES

The perma Services team is made up of highly qualified professionals who are on hand to help you find the right lubrication solution.



Pre-sales services

Expert lubrication solutions

With support from perma, equipping your machinery with the right lubrication solutions ensures maximum equipment uptime.

- » perma ACADEMY
- » Plant Asset Survey
- » Technical support



After-sales services

Extended service life

Extend equipment service life with lubrication solutions and all-round service from perma.

- » Installation
- » Commissioning
- » Inspection
- » Exchange
- » Digital lubrication and maintenance plan via perma CONNECT
- » Technical support



Reactive services

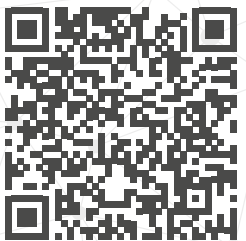
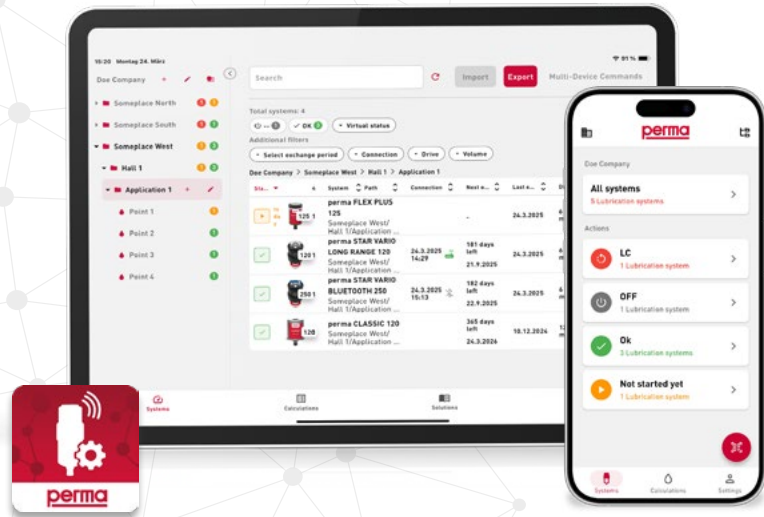
Fast and competent support

Take advantage of the longstanding experience of the perma Services team for all questions concerning lubrication.

- » Lubricant tests
- » Technical support
- » Tech Hotline

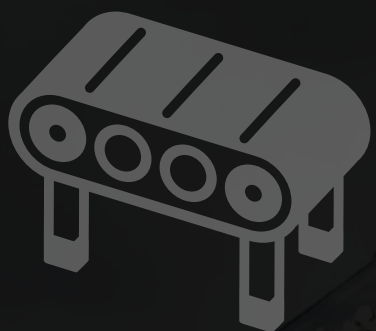
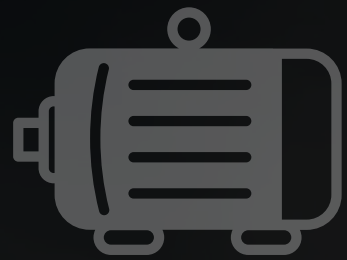


EASY. SMART. CONNECTED.



perma CONNECT allows you to seamlessly and reliably monitor and manage your lubrication systems remotely, even in hard-to-reach areas and hazardous zones. This allows you to increase efficiency, saves valuable time and boosts the productivity of your business. perma CONNECT lets you design your own network and provides access to information about your lubrication points from the comfort of your workstation.

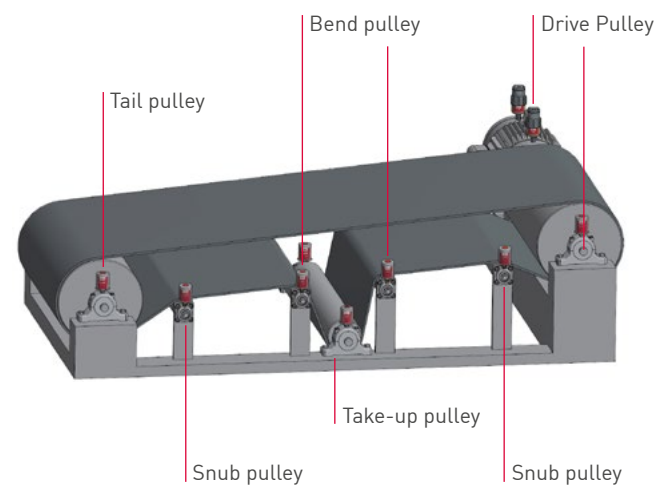
perma will show you how it works!



KEY APPLICATIONS

CONVEYORS

LUBRICATION POINTS



Pillow block housings with spherical roller bearings are mainly used for drive and bend pulleys.

Bearings and bearing housing seals must be permanently supplied with lubricant.

Information about drive motor lubrication can be found on page 17 *Electric motors*.

CHALLENGES



- » Dirt, water and process media must not enter the lubrication points
- » No unnecessary equipment downtimes due to relubrication
- » Workplace safety must be ensured

Large conveyors often extend over long distances and several levels and are difficult to access. Relubrication should ideally take place while the equipment is running. Many transfer points can only be lubricated with the help of catwalk grating or work platforms and are therefore often neglected. Accident prevention and workplace safety must be ensured at all times.

Lubrication starvation results in wear, leads to failure of equipment components and reduces productivity and cost-effectiveness.

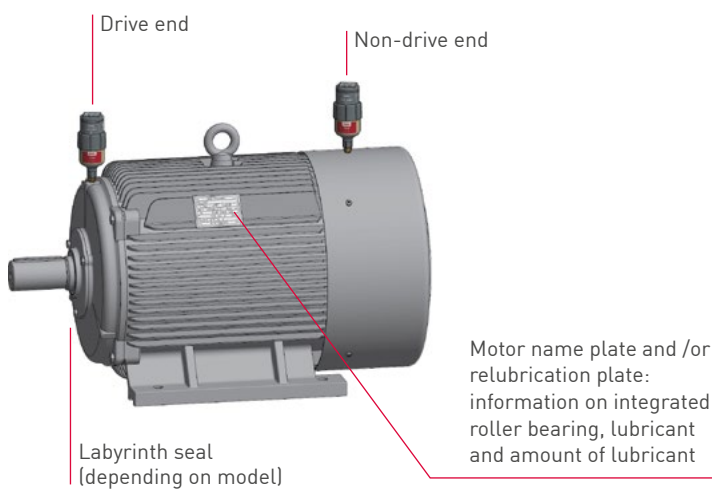
SOLUTIONS



- » Continuous supply of shaft seals with fresh lubricant prevents the ingress of contamination
- » Lubrication system exchange outside of dangerous area. No system downtime necessary
- » Mounting outside of dangerous areas or at easy-to-reach locations increases workplace safety
- » Optimized use of lubricant as regularly dispensed in small quantities

ELECTRIC MOTORS

LUBRICATION POINTS



Speed: low	=	low base oil viscosity	NLGI 0-2	
Speed: high	=	high base oil viscosity		
Speed: low	=	low base oil viscosity		

Lubrication points are located on the drive and non-drive end of electric motors. When relubricating, you must ensure that excess grease is discharged through the discharge openings, grease relief ports or grease traps.

Bearings will overheat if grease cannot escape and / or if grease traps are filled up with used grease.

CHALLENGES

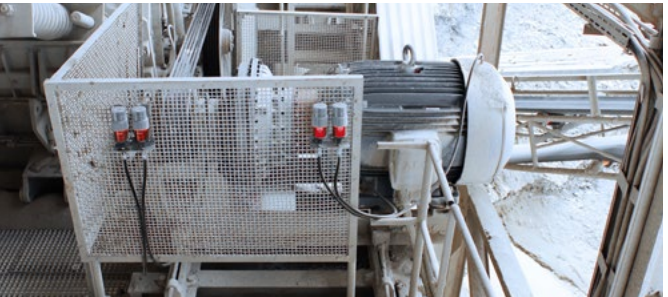


- » Bearing heating and possible fire hazard since it takes hours to distribute excess grease
- » Bearing damage due to lubrication starvation results in unscheduled machine downtimes and higher production costs
- » High accident risk
- » Possible shut-off with temperature monitoring
- » Increasing maintenance costs caused by premature wear
- » Motor shut-down when entering secured areas

During manual lubrication, the grease is applied in uneven amounts. A large quantity of lubricant is introduced at one time. This leads to a temporary over-lubrication of bearings. Ignoring the recommended relubrication intervals leads to lubrication starvation.

Relubrication during running operations (manufacturer recommendations) jeopardize maintenance staff. The risk of accidents increases when people spend time in dangerous or hard-to-reach areas.

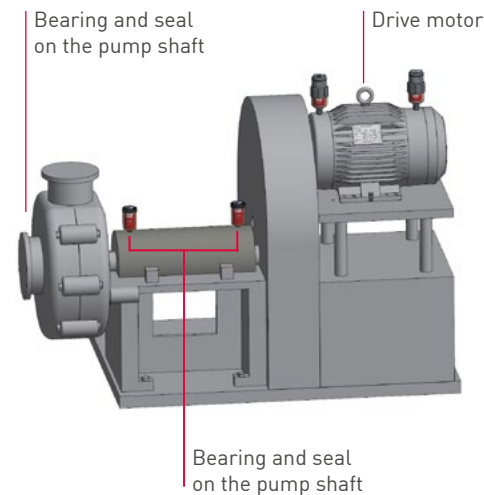
SOLUTIONS



- » Relubrication during running operation minimizes overheating of bearings
- » Predictable exchange intervals with reduced material and personnel expenditure
- » Increased workplace safety due to automatic lubrication of hard-to-reach lubrication points
- » Precise lubricant discharge can lower lubricant consumption, thereby reducing environmental impacts

PUMPS

LUBRICATION POINTS



Lubrication points (roller bearings) are located on the drive shaft between drive motor and pump body or in the pump housing.

Lubrication of gland seal and labyrinth seal prevents the ingress of dirt and / or pumped media into the bearing. Seals of bearings and bearing housings must be permanently supplied with the specified amount of the right lubricant.

Information about drive motor lubrication can be found on page 17 *Electric motors*.

CHALLENGES



- » Dirt, water or other contaminants must not enter the bearing points
- » Lubrication while the machine is in operation must be ensured
- » Workplace safety must be ensured
- » Operation in potentially explosive areas

Pumps are normally operated under extreme conditions. These can include heavy contamination from slurry or dust and hazardous materials such as alkali solutions and weak acids.

Many lubrication points can only be accessed with extreme protective measures (safety gloves and mask). This frequently leads to neglect of the prescribed lubrication.

Lubrication starvation results in wear and leads to failure of equipment components or pump leakages.

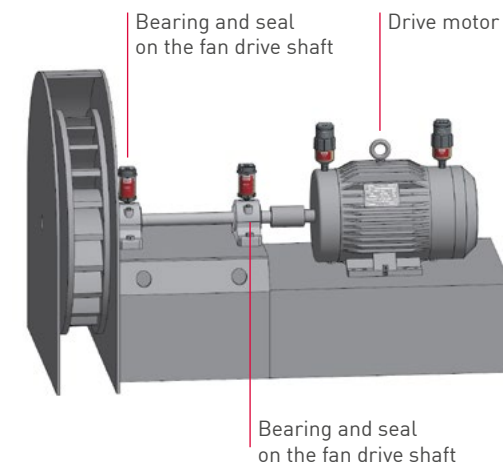
SOLUTIONS



- » Increased workplace safety due to automatic lubrication of hard-to-reach lubrication points
- » A precise lubricant discharge lowers lubricant consumption and reduces environmental impacts
- » Fewer maintenance runs minimize the time spent in dangerous areas
- » If a certified lubrication system is selected, it may be used underground or in potentially explosive atmospheres

BLOWERS & FANS

LUBRICATION POINTS

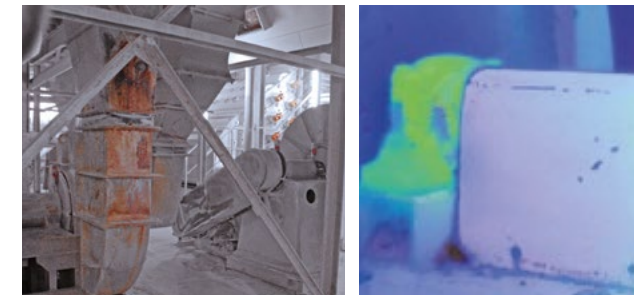


The lubrication points (roller bearings) are located at the drive shaft between drive motor and fan impeller.

Bearing and sealing of fan drive shaft is normally done by means of a pillow block housing or a bearing unit. These must be permanently supplied with the specified amount of the right lubricant.

Information about drive motor lubrication can be found on page 17 *Electric motors*.

CHALLENGES



- » Contaminants (e.g. dust) raised in the air must not enter the lubrication points
- » Excessive overheating of bearing points due to lubrication starvation
- » Lubricants must be able to withstand demands, such as vibrations and high speeds
- » Compliance with relubrication intervals, depending on bearing type, bearing size and ambient conditions

Blowers & fans are normally operated under extreme conditions. Contaminants such as dust or pumped media are raised and may infiltrate the bearing system. This causes increased wear in individual components and reduces service life.

Regular lubrication of bearings and seals is imperative. Lubrication points are often extremely dirty and hard to reach, which makes maintenance even more difficult. Specified lubrication intervals are neglected or not observed for this reason. The resulting lubrication starvation leads to increased wear and in extreme cases to failure of the blowers and fans.

SOLUTIONS



- » perma lubrication systems seal lubrication points and protect them against contamination
- » Precise metering of lubricant amount reduces lubricant consumption
- » Safe and reliable lubrication, also in areas with potentially explosive atmospheres
- » Different lubricant volumes for exact adjustment to lubrication point

MAIN APPLICATIONS

CONVEYORS



ELECTRIC MOTORS



PUMPS



BLOWERS & FANS



COMMON INDUSTRIAL APPLICATIONS

BUCKET ELEVATOR



CRANES



KILNS



CRUSHER & HAMMER MILLS





THE EXPERT
IN LUBRICATION
SOLUTIONS



perma LUBRICATION SYSTEMS AT A GLANCE

perma STAR VARIO	perma STAR VARIO BLUETOOTH	perma STAR VARIO LONG RANGE	perma STAR VARIO EX	perma STAR VARIO BLUETOOTH EX	perma STAR CONTROL
Push button + LCD display + LED signals					
Drive Reusable					
-40 °F* to +140 °F -40 °C* to +60 °C					
109 psi 7.5 bar					
60, 120, 250, 500 cc 2.03, 4.06, 8.45, 16.91 fl.oz.					
Greases up to NLGI 2 Oils					
Battery pack STAR VARIO or Battery pack STAR VARIO low temperature		Battery pack STAR VARIO EX		External power supply: 9 - 30 V DC	
Discharge period can be altered at any time / system can be shut down					
1, 2, 3 ... 12 months / 1, 2, 3 ... 52 weeks STAR LC 60: + 15, 18, 21, 24 months STAR LC 500: max. 6 months			1, 2, 3 ... 12 months / 1, 2, 3 ... 52 weeks STAR LC 500: max. 6 months		1, 2, 3 ... 12 months / 1, 2, 3 ... 26 weeks STAR LC 60: + 15, 18, 21, 24 months STAR LC 500: max. 6 months
-					0.1-9.5 cc per impulse Independent of operating temperature and counter pressure
IP 67 IP 65		min. IP 54		IP 65	
Special operating conditions					
Minor to heavy vibration					
We recommend remote mounting with a grease line if there are vibrations at the lubrication point					
16 ft. grease line < 5 meters					

*To achieve functionality below -4° F | -20° C, Battery pack STAR VARIO low temperature (Lithium) must be used. Only use with suitable low temperature lubricants!

perma ULTRA	perma FLEX	perma NOVA	perma CLASSIC perma FUTURA
Push button + LCD display + LED signals	Rotary switch	Push button + LCD display	Activator
Drive Reusable	Complete system	NOVA Control unit Reusable	Order activator separately
-40 °F* to +140 °F -40 °C* to +60 °C	-4 °F to +140 °F -20 °C to +60 °C	-4 °F to +140 °F -20 °C to +60 °C	32 °F to +104 °F 0 °C to +40 °C
725 psi Up to 50 bar	75 psi Max. 5 bar	87 psi Max. 6 bar	58 psi Max. 4 bar
500, 1,000 cc 16.91, 33.81 fl.oz.	60, 125 cc 2.03, 4.23 fl.oz.	65, 125 cc 2.03, 4.23 fl.oz.	120 cc 4.06 fl.oz.
Greases up to NLGI 2	Greases up to NLGI 2 Oils		
Battery pack ULTRA or Battery pack ULTRA low temperature	Electrochemical		
Discharge period can be altered at any time system can be shut down			Tamper-proof
1, 2, 3 ... 12 months / 1, 2, 3 ... 52 weeks	1, 2, 3 ... 12 months at +68 °F +20 °C perma MULTI LC 150 - 2 (SF01)	1, 2, 3 ... 12 months independent of operating temperature	1, 3, 6, 12 months at +68 °F +20 °C perma MULTI LC 150 - 2 (SF01)
-			
IP 67 IP 65	IP 68	IP 65	-
Special operating conditions			
Minor to heavy vibration	Minor to moderate vibration		Low vibration
Remote mounting with grease line only	We recommend remote mounting with a grease line if there are vibrations at the lubrication point		
65 ft. grease line < 20 meters	6 ft. grease line < 2 meters		3 ft. grease line < 1 meter

*To achieve functionality below -4° F | -20° C, Battery pack STAR VARIO low temperature (Lithium) must be used. Only use with suitable low temperature lubricants!

AUTOMATIC LUBRICATION SOLUTIONS AT A GLANCE

1. TYPICAL EXPECTED COUNTER PRESSURE (direct mounting)

Applications					
	Conveyors	Pumps	Blowers & Fans	Electric motors	Multi-axis systems
	15 - 44 psi 1 - 3 bar	15 - 44 psi 1 - 3 bar	15 - 58 psi 1 - 4 bar	29 - 87 psi 2 - 6 bar	87 - 189 psi 6 - 13 bar

2. TYPICAL APPLICATIONS FOR SINGLE-POINT LUBRICATIONS SYSTEMS (sorted by counter pressure)

Counter pressure 0 - 15 psi | 0 - 3 bar 15 - 29 psi | 1 - 2 bar 29 - 44 psi | 2 - 3 bar 44- 58 psi | 3 - 4 bar 58 - 73 psi | 4 - 5 bar 73 - 87 psi | 5 - 6 bar 87 - 580 psi | 6 - 40 bar

Direct Mounting	perma FLEX Optional: CLASSIC, FUTURA, NOVA		perma STAR VARIO perma STAR CONTROL Optional: FLEX, NOVA	perma STAR VARIO perma STAR CONTROL Optional: NOVA	perma STAR VARIO perma STAR CONTROL	perma ULTRA
Remote Mounting additional counter pressure of 15 psi 1 bar per m* 	3 ft. 1 m	perma FLEX Optional: CLASSIC, FUTURA, NOVA	perma STAR VARIO perma STAR CONTROL Optional: NOVA	perma STAR VARIO perma STAR CONTROL		
	6 ft. 2 m		perma STAR VARIO perma STAR CONTROL			
	10 ft. 3 m	perma STAR VARIO perma STAR CONTROL				
	16 ft. 5 m	perma ULTRA Optional: STAR VARIO perma STAR CONTROL	perma ULTRA			
	20 - 65 ft. 6 - 20 m					

 **Behaviour in case of untypically high counter pressure:**
Untypically high counter pressure might be an indicator of blocked grease lines, blocked application or unsuitable lubricants. Recommendation: check lubrication point accordingly.

3. SPECIAL PRODUCT CHARACTERISTICS OF THE SINGLE-POINT LUBRICATIONS SYSTEMS

Electrochemical reaction / drive			Electromechanical system		
 perma CLASSIC 120 cc 4.06 fl.oz. 32 °F to +104 °F 0 °C to +40 °C	 perma FUTURA 120 cc 4.06 fl.oz. 32 °F to +104 °F 0 °C to +40 °C	 perma FLEX 60, 125 cc 2.03, 4.23 fl.oz. -4 °F to +140 °F -20 °C to +60 °C	 perma NOVA 65, 125 cc 2.03, 4.23 fl.oz. -4 °F to +140 °F -20 °C to +60 °C	 perma STAR 60, 120, 250, 500 cc 2.03, 4.06, 8.45, 16.91 fl.oz. -40 °F to +140 °F -40 °C to +60 °C	 perma ULTRA 500, 1,000 cc 16.91, 33.81 fl.oz. -40 °F to +140 °F -40 °C to +60 °C
 Underwater use	 Permanently visible piston position	 Easy activation (no separate activator required)	 Temperature-independent	 Reusable drive unit	 External control

*with perma MULTI LC 150-2 (SF01) at +68 °F | +20 °C and hose [aØ 8 mm / iØ 6 mm]

This matrix cannot replace individual advice from a qualified technician. It serves to provide an initial impression about the suitability of single-point lubrication systems for special applications or machine elements, and to simplify the decision-making process for customers and users.

Identify the appropriate lubrication system
with the help of *perma CONNECT*



 **Instructions for the use of perma ULTRA:**
The total of the maximum expected counter pressure at the lubrication point and the expected counter pressure of the grease line (length in meters * 15 psi | 1 bar) should not exceed 580 psi | 40 bar.

Additional factors, such as ambient temperature, temperatures at the lubrication point, weather conditions, vibrations, lubricant requirements etc., have to be taken into account. These are not included in the matrix and will be covered by individual technical advice.

perma STAR VARIO

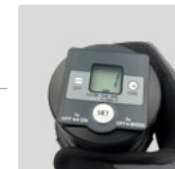
Four different sizes for individual discharge settings

perma STAR VARIO operates fully automatically, independent of temperature and pressure with a very precise discharge. The system consists of an electromechanical drive, an LC with 60, 120, 250 or 500 cc | 2.03, 4.06, 8.45 or 16.91 fl.oz. of lubricant and a battery pack. perma STAR VARIO provides pressure build-up of 109 psi | 7.5 bar and is used for single-point lubrication of roller and sliding bearings, sliding guides, open gears, gear racks, spindles, shaft seals and chains. Thanks to precise lubricant metering, perma STAR VARIO is ideal for lubrication of electric motors with specified lubricant quantities.

More about our perma products
can be found on our website www.permausa.com



MADE IN GERMANY
PROUDLY ASSEMBLED
IN THE USA



LCD display with
push button displays
discharge period,
LC size and
operating status



Electromechanical, reusable
drive with battery pack

LED (green | red) visible all round
signals functioning and any errors



Pressure build-up of 109 psi |
7.5 bar allows remote mounting
up to 16 ft | 5 m

Lubrication system operates
reliably from -40 °F** to +140 °F |
-40 °C** to +60 °C



**Enhanced
equipment availability**



**Increased
workplace safety**



**One drive for
all LC sizes**



**Optimized
lubrication**



Drive – reusable

Electromechanical function with Battery pack STAR VARIO (Alkaline) or
with Battery pack STAR VARIO low temperature (Lithium)



Discharge period

1, 2, 3 ... 12 months | 1, 2, 3 ... 52 weeks
STAR LC 60: + 15, 18, 21, 24 months
STAR LC 500: max. 6 months | max. 26 weeks



Lubricant volume

60, 120, 250, 500 cc | 2.03, 4.06, 8.45, 16.91 fl.oz.



Operating temperature*

-40 °F** to +140 °F | -40 °C** to +60 °C



Pressure build-up

109 psi | 7.5 bar



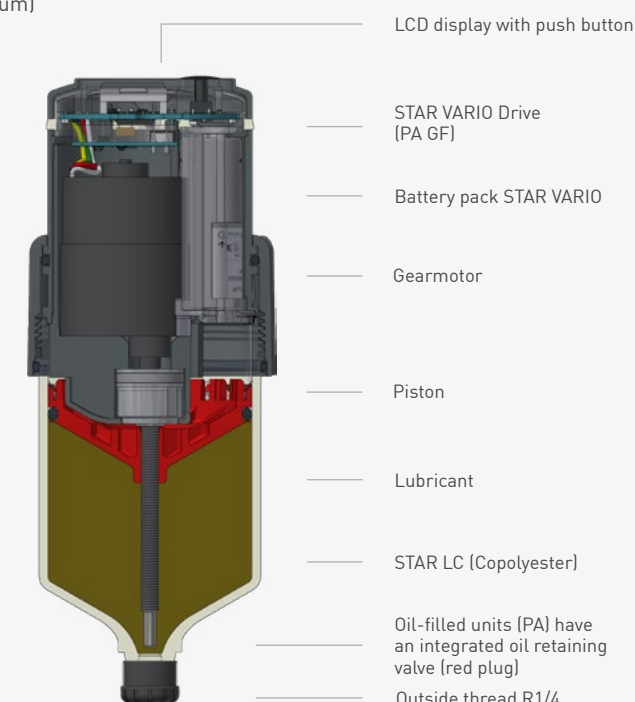
Protection class

IP 67 | IP 65



Standard & special lubricants

Greases up to NLGI 2 | Oils



Dimensions

LC 60: Ø 75 x 155 mm | LC 120: Ø 75 x 178 mm
LC 250: Ø 75 x 228 mm | LC 500: Ø 75 x 324 mm

*To achieve functionality below -4° F | -20° C, Battery pack STAR VARIO low temperature (Lithium) must be used.

**Only use with suitable low temperature lubricants!



perma STAR VARIO BLUETOOTH

Convenient operation via perma CONNECT

perma STAR VARIO BLUETOOTH operates fully automatically, independent of temperature and pressure with a very precise discharge. The system consists of an electromechanical drive, an LC with 60, 120, 250 or 500 cc | 2.03, 4.06, 8.45 or 16.91 fl.oz. lubricant and a battery pack. perma STAR VARIO BLUETOOTH provides pressure build-up of 109 psi | 7.5 bar and can be conveniently operated via perma CONNECT. The bluetooth-enabled lubrication system is used for single-point lubrication of roller and sliding bearings, sliding guides, open gears, gear racks, spindles, shaft seals and chains and is ideal for lubricating electric motors with specified lubricant quantities thanks to extremely precise lubricant metering.

More about our perma products
can be found on our website www.permausa.com



MADE IN GERMANY
PROUDLY ASSEMBLED
IN THE USA



LCD display with push button
displays discharge period,
LC size and operating status

Electromechanical, reusable drive
with battery pack



Bluetooth functionality

Simple operation via
perma CONNECT

Compatible with
Gateway BLUETOOTH



Pressure build-up of 109 psi |
7.5 bar allows remote mounting
up to 16 ft | 5 m

Lubrication system works reliably
from -40 °F** to +140 °F |
-40 °C** to +60 °C



**Enhanced
equipment availability**



**Increased
workplace safety**



**Bluetooth
functionality**



**Optimized
lubrication**



Drive – reusable

Electromechanical function with Battery pack STAR VARIO (Alkaline) or
with Battery pack STAR VARIO low temperature (Lithium)



Discharge period

1, 2, 3 ... 12 months | 1, 2, 3 ... 52 weeks
STAR LC 60: + 15, 18, 21, 24 months
STAR LC 500: max. 6 months | max. 26 weeks



Lubricant volume

60, 120, 250, 500 cc | 2.03, 4.06, 8.45, 16.91 fl.oz.



Operating temperature*

-40 °F** to +140 °F | -40 °C** to +60 °C



Pressure build-up

109 psi | 7.5 bar



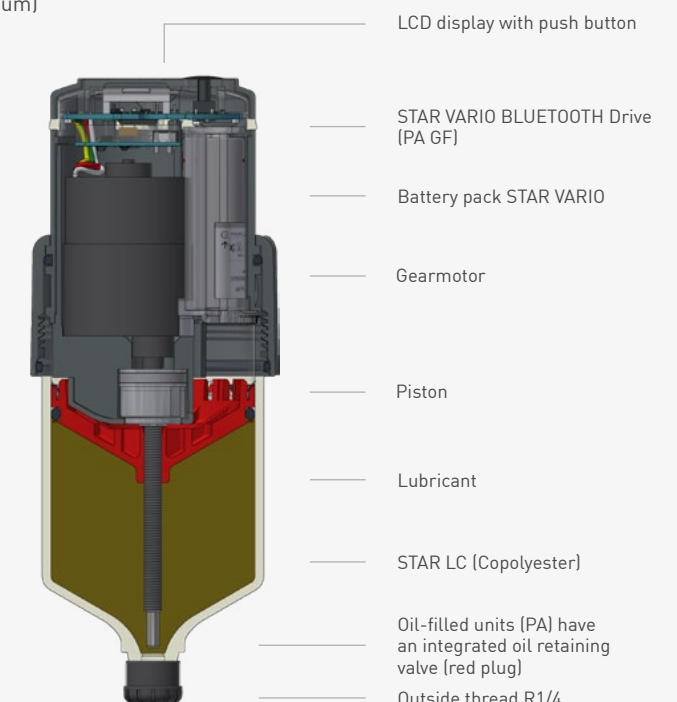
Protection class

IP 67 | IP 65



Standard & special lubricants

Greases up to NLGI 2 / Oils



Dimensions

LC 60: Ø 75 x 155 mm | LC 120: Ø 75 x 178 mm
LC 250: Ø 75 x 228 mm | LC 500: Ø 75 x 324 mm

*To achieve functionality below -4° F | -20° C, Battery pack STAR VARIO low temperature (Lithium) must be used.

**Only use with suitable low temperature lubricants!

perma STAR VARIO EX

Versatile lubrication system for use in potentially explosive areas

This lubrication system is used for single-point lubrication of roller and sliding bearings, sliding guides, open gears, gear racks, spindles, shaft seals and chains in potentially explosive areas. Thanks to precise lubricant metering, perma STAR VARIO EX is ideal for lubrication of electric motors with specified lubricant quantities. It operates independent of temperature and pressure and consists of an electromechanical drive, an LC with 60, 120, 250 or 500 cc | 2.03, 4.06, 8.45 or 16.91 fl.oz. and the Battery pack STAR VARIO EX. The lubrication system can be used in potentially explosive areas with gases (up to Zone 0 | Div 1) and dusts (up to Zone 20 | Div 1). Thanks to the intrinsically safe Battery pack STAR VARIO EX, both battery pack and STAR LC can be replaced directly on site.

More about our perma products
can be found on our website www.permusa.com



MADE IN GERMANY
PROUDLY ASSEMBLED
IN THE USA



II 1G Ex ia IIB T4 Ga
II 1D Ex ia IIIC T₂₀₀ 135°C Da
I M1 Ex ia I Ma
CML 23ATEX2479X
IECEX CML 23.0169X



Class I/II/III Div 1 Groups C,D,E,F,G,
T4 - T135°C
Intrinsically safe / Sécurité intrinsèque
Class I/II/III Zone 0/20

AEx/Ex ia IIB T4 Ga
AEx/Ex ia IIIC T135°C Da
-40°C to +60°C



Automatic lubricant supply
for lubrication points in
explosive areas
(Class 1 | Div 1)



Backlit LCD display with push
button displays discharge period,
LC size and operating status

Electromechanical, reusable drive
with battery pack

Poka-Yoke-Safeguard



Replacement of intrinsically
safe battery pack and STAR LC
within the hazardous area

Safeguard mechanism ensures
the use of the correct battery pack



**Enhanced
equipment availability**



**Increased
workplace safety**



**Safe lubrication
in EX zones**



**Optimized
lubrication**



Drive - reusable
Electromechanical drive
with Battery pack STAR VARIO EX (Lithium)



Discharge period
1, 2, 3 ... 12 months | 1, 2, 3 ... 52 weeks
STAR LC 60: + 15, 18, 21, 24 months
STAR LC 500: max. 6 months | max. 26 weeks



Lubricant volume
60, 120, 250, 500 cc | 2.03, 4.06, 8.45, 16.91 fl.oz.



Operating temperature
-40 °F* to +140 °F | -40 °C* to +60 °C



Pressure build-up
109 psi | 7.5 bar

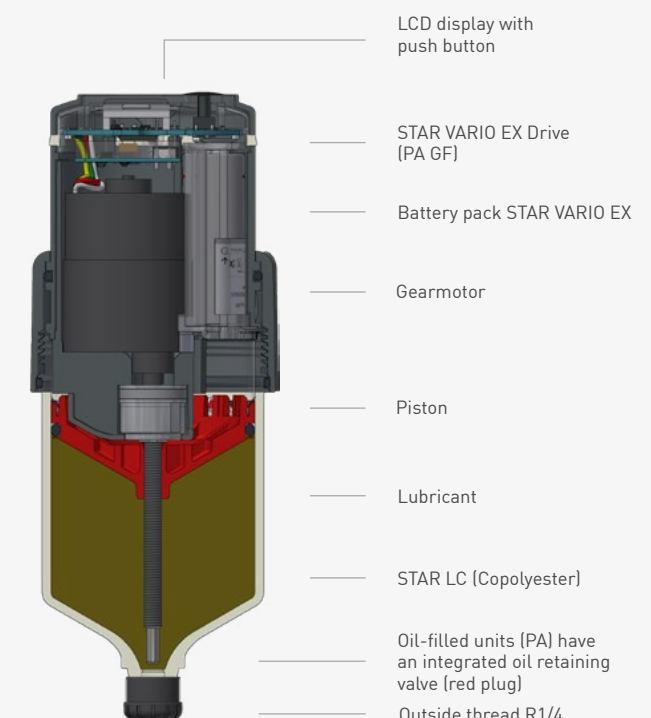


Protection class
Min. IP 54



Standard & special lubricants
Greases up to NLGI 2 | Oils

*Only use with suitable low temperature lubricants!



Dimensions
LC 60: Ø 75 x 155 mm | LC 120: Ø 75 x 178 mm
LC 250: Ø 75 x 228 mm | LC 500: Ø 75 x 324 mm



perma STAR VARIO BLUETOOTH EX

Versatile lubrication system with Bluetooth functionality for use in potentially explosive areas

perma STAR VARIO BLUETOOTH EX is used for single-point lubrication of roller and sliding bearings, sliding guides, open gears, gear racks, spindles, shaft seals and chains in potentially explosive areas. Thanks to precise lubricant metering, perma STAR VARIO BLUETOOTH EX is ideal for lubrication of electric motors with specified lubricant quantities. The lubrication system can be configured, controlled and maintained conveniently from a distance via perma CONNECT. perma STAR VARIO BLUETOOTH EX can be used in potentially explosive areas with gases (up to Zone 0 | Div 1) and dusts (up to Zone 20 | Div 1). Thanks to the intrinsically safe Battery pack STAR VARIO EX, both battery pack and STAR LC can be replaced directly on site.

More about our perma products
can be found on our website www.permausa.com



MADE IN GERMANY
PROUDLY ASSEMBLED
IN THE USA



II 1G Ex ia IIB T4 Ga
II 1D Ex ia IIIC T₂₀₀ 135°C Da
I M1 Ex ia I Ma
CML 23ATEX2479X
IECEx CML 23.0169X



Class I/II/III Div 1 Groups C,D,E,F,G,
T4 - T135°C
Intrinsically safe / Sécurité intrinsèque
Class I/II/III Zone 0/20

AEx/Ex ia IIB T4 Ga
AEx/Ex ia IIIC T135°C Da
-40°C to +60°C



Automatic lubricant supply for
lubrication points in
potentially explosive areas
(Class 1 | Div 1)

Safeguard mechanism ensures
the use of the correct battery pack



Backlit LCD display with push
button displays discharge period,
LC size and operating status

Pressure build-up of 109 psi |
7.5 bar allows remote mounting
up to 16 ft | 5 m

Poka-Yoke-Safeguard



EX-proof certification

Simple operation via
perma CONNECT

Compatible with
Gateway BLUETOOTH



**Enhanced
equipment availability**



**Increased
workplace safety**



**Safe lubrication
in EX zones**



**Bluetooth
functionality**



Drive - reusable
Electromechanical drive
with Battery pack STAR VARIO EX (Lithium)



Discharge period
1, 2, 3 ... 12 months | 1, 2, 3 ... 52 weeks
STAR LC 500: max. 6 months | max. 26 weeks



Lubricant volume
60, 120, 250, 500 cc | 2.03, 4.06, 8.45, 16.91 fl.oz.



Operating temperature
-40 °F* to +140 °F | -40 °C* to +60 °C



Pressure build-up
109 psi | 7.5 bar

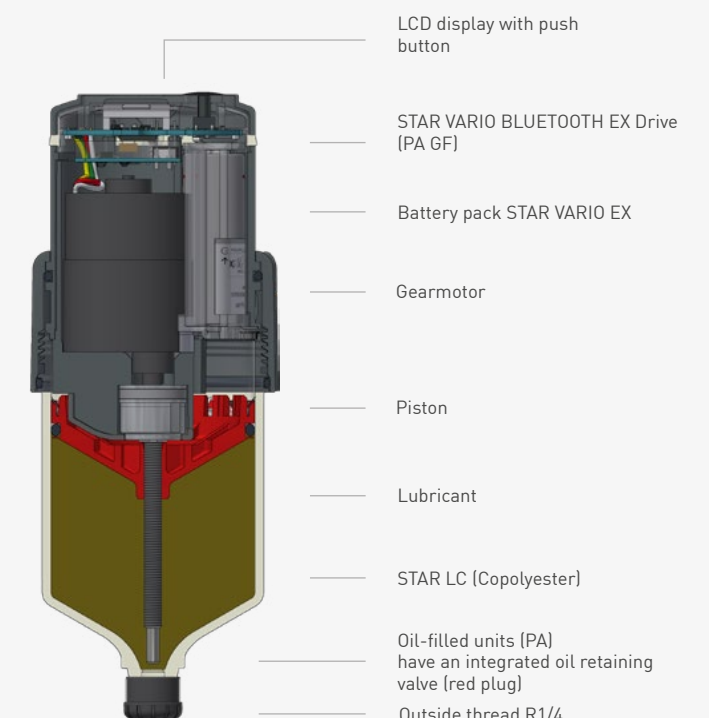


Protection class
Min. IP 54



Standard & special lubricants
Greases up to NLGI 2 | Oils

*Only use with suitable low temperature lubricants!



Dimensions
LC 60: Ø 75 x 155 mm | LC 120: Ø 75 x 178 mm
LC 250: Ø 75 x 228 mm | LC 500: Ø 75 x 324 mm

perma STAR VARIO LONG RANGE

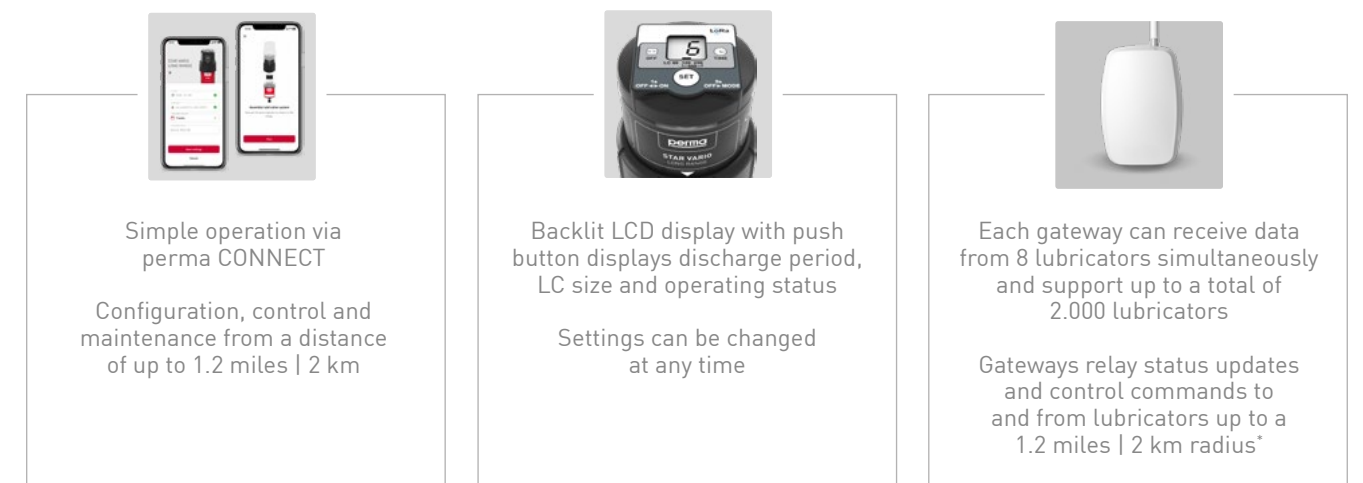
Convenient operation via perma CONNECT

perma STAR VARIO LONG RANGE operates fully automatically, independent of temperature and pressure with a very precise discharge. The system consists of an electromechanical drive, an LC (Lubricant Canister) with 60, 120, 250 or 500 cc | 2.03, 4.06, 8.45 or 16.91 fl.oz. lubricant and a battery pack. perma STAR VARIO LONG RANGE provides pressure build-up of up to 109 psi | 7.5 bar. The lubrication system is used for single-point lubrication of roller and sliding bearings, sliding guides, open gears, gear racks, spindles, shaft seals and chains. Thanks to precise lubricant metering, perma STAR VARIO LONG RANGE is ideal for lubrication of electric motors with specified lubricant quantities. Thanks to LoRa wireless technology, up to 2,000 lubrication systems in a facility can be conveniently managed via perma CONNECT over a distance of up to 1.2 miles | 2 km, using the Gateway LONG RANGE.

More about our perma products
can be found on our website www.permausa.com

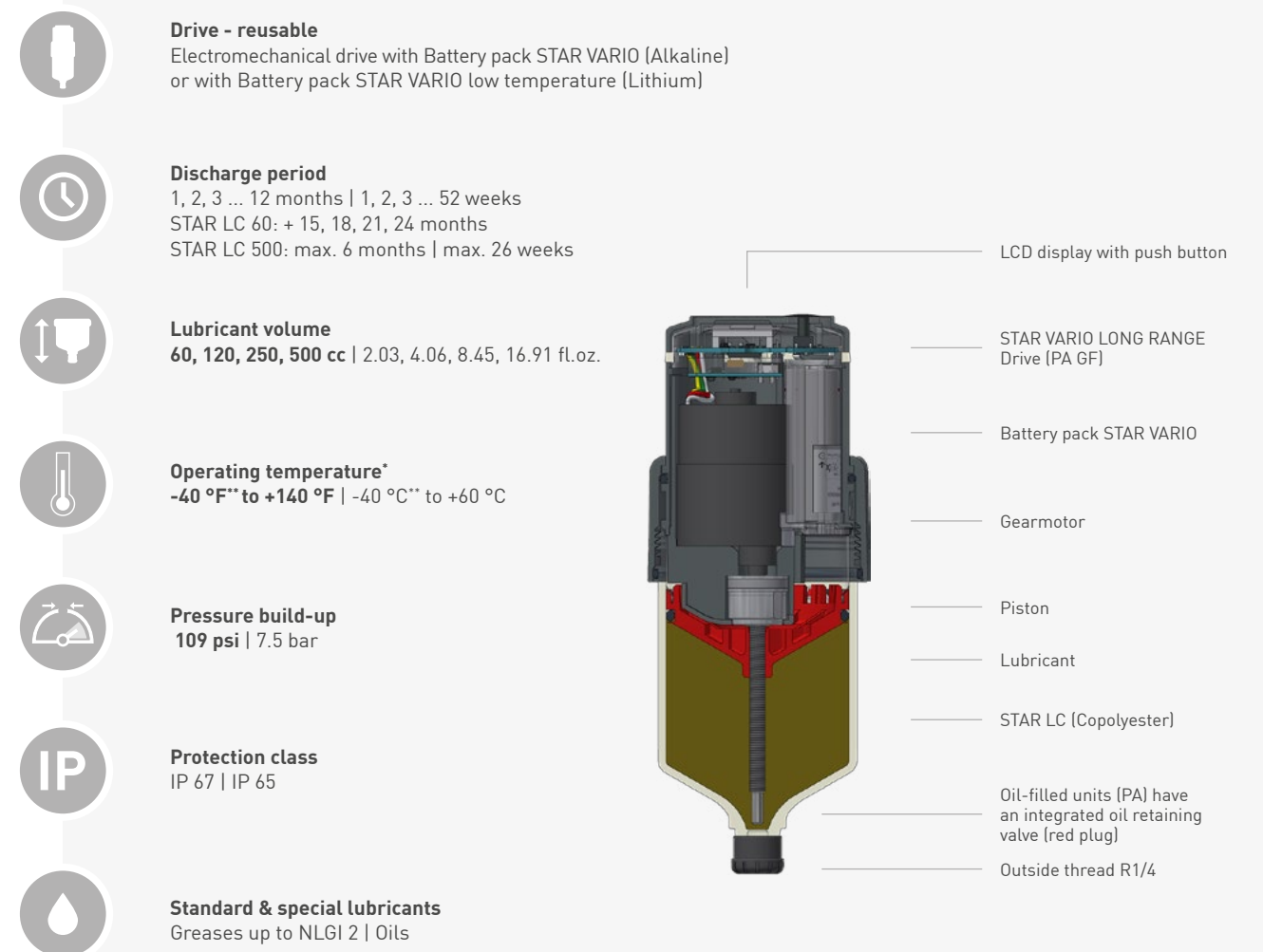


MADE IN GERMANY
PROUDLY ASSEMBLED
IN THE USA



*LoRa® communication up to 1.2 miles | 2 km line-of-sight. Dependant on a number of factors, including signal interference and density of obstructions/structures between the gateways and lubricators

- Remote management, maintenance and control**
- Increased workplace safety**
- Time saving**
- Central ecosystem**



*To achieve functionality below -4° F | -20° C, Battery pack STAR VARIO low temperature (Lithium) must be used.
**Only use with suitable low temperature lubricants!

perma ULTRA

Bluetooth-enabled lubrication system with high pressure build-up and wide temperature range

perma ULTRA is a fully automatic lubrication system, independent of temperature and counter pressure with a very precise discharge. With two cartridge sizes, pressure build-up to 725 psi | 50 bar and options of weekly and monthly time settings, perma ULTRA is an extremely versatile and capable lubrication system. It is suited to a wide range of applications which demand high lubrication rates and where long remote grease lines are necessary to ensure safe access, e.g. drag conveyors, shaker screens, rotary kilns and belt conveyors.

More about our perma products
can be found on our website www.permausa.com



MADE IN GERMANY


LCD display with backlighting and
push button operation
displays discharge period,
LC size and operating status


Bluetooth functionality
Allows simplified operation via
perma CONNECT

Compatible with
Gateway BLUETOOTH


Pressure build-up,
up to 725 psi | 50 bar

Lubrication system works
reliably from -40 °F** to +140 °F |
-40 °C** to +60 °C


**Bluetooth
functionality**


**Increased
workplace safety**


**Large discharge
amounts**


**High pressure
build-up**



Drive - reusable
Electromechanical drive with
Battery pack ULTRA (Alkaline) or with
Battery pack ULTRA low temperature (Lithium)



Discharge period
1, 2, 3 ... 12 months | 1, 2, 3 ... 52 weeks



Lubricant volume
500, 1,000 cc | 16.91, 33.81 fl.oz.



Operating temperature*
-40 °F** to +140 °F | -40 °C** to +60 °C



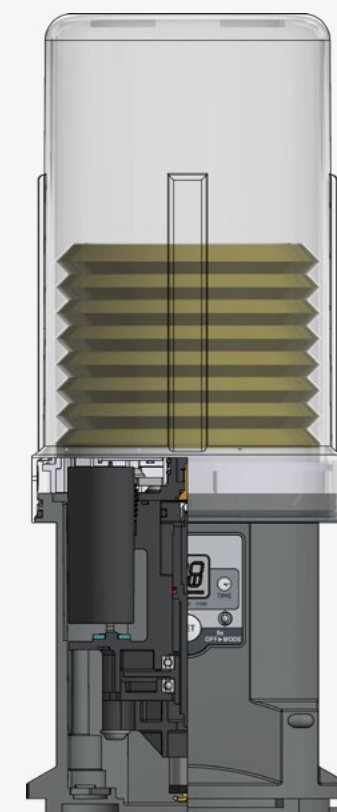
Pressure build-up
Up to 725 psi | 50 bar



Protection class
IP 67 | IP 65



Standard & special lubricants
Greases up to NLGI 2



ULTRA LC

Battery pack ULTRA

LCD display with
backlighting and
push button

Pump

Inside thread R1/4

Dimensions
perma ULTRA: Ø 120 x 300 mm

*To achieve functionality below -4° F | -20° C, Battery pack ULTRA low temperature (Lithium) must be used.
**Only use with suitable low temperature lubricants!

CONNECTING BEYOND BOUNDARIES

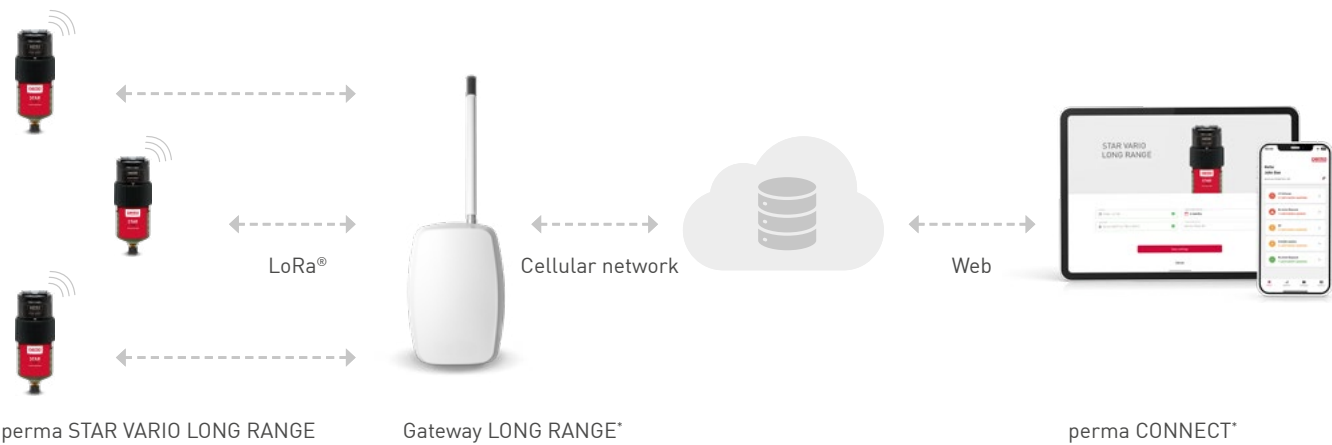


The Expert in Lubrication Solutions

perma

CONNECTED SOLUTIONS

perma LONG RANGE ARCHITECTURE



*Custom solutions available upon request

perma STAR VARIO LONG RANGE & Gateway LONG RANGE

How does it work?

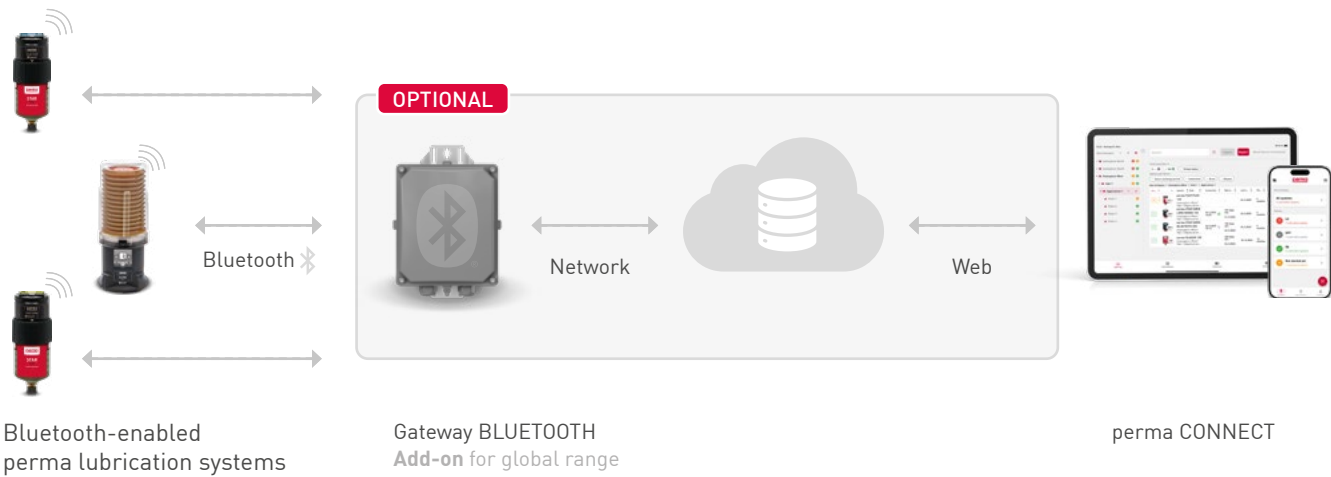
- » perma STAR VARIO LONG RANGE sends status messages periodically to perma CONNECT via the Gateway LONG RANGE
 - Messages include information such as status, timestamp / date, ambient temperature, fill level (%)
 - Message is sent on every status change
- » perma STAR VARIO LONG RANGE can receive messages from perma CONNECT via the Gateway LONG RANGE
 - Receives messages after a signal is sent and checks for new commands at least once an hour
 - Messages include actions like turning devices on / off, changing settings, running purge cycles
- » perma STAR VARIO LONG RANGE provides same functionality as standard perma STAR VARIO drive unit, with added LoRa®WAN communication features



More about our perma products
can be found on our website www.permausa.com



perma BLUETOOTH ARCHITECTURE

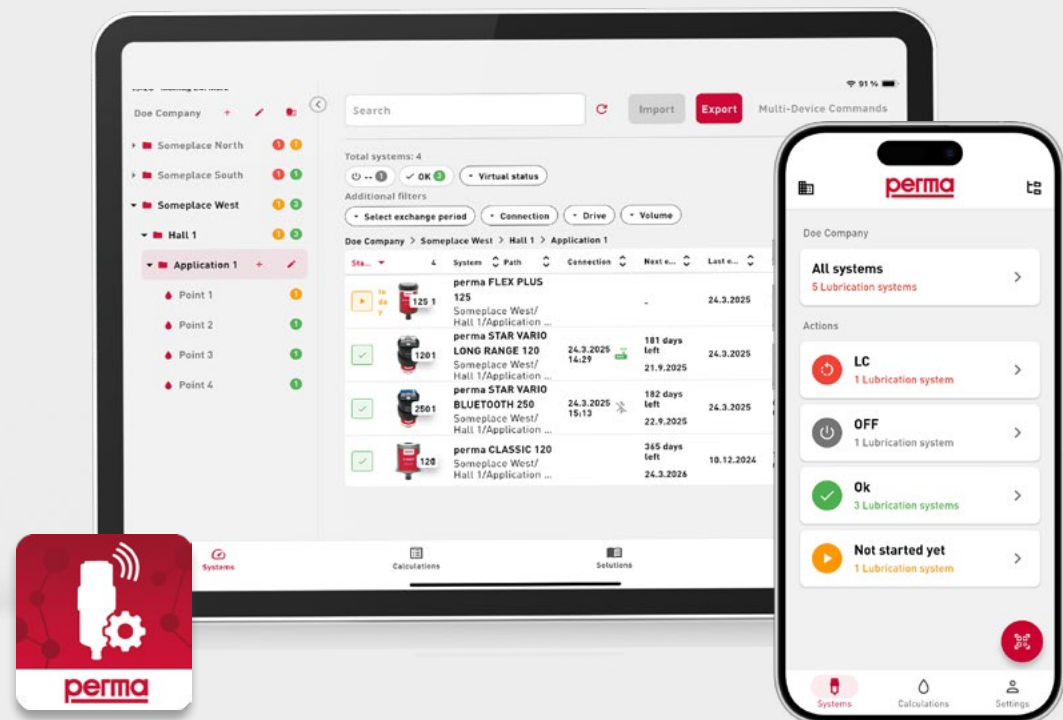


Gateway BLUETOOTH

How does it work?

- » Bluetooth-enabled perma lubrication systems send status messages in real time via the Gateway BLUETOOTH to perma CONNECT.
 - Messages include information such as status, timestamp / date, ambient temperature, fill level (%)
 - Message is sent on every status change
- » Bluetooth-enabled perma lubrication systems can receive commands from perma CONNECT via the Gateway BLUETOOTH
 - Receives commands after a signal has been sent
 - Messages include actions like turning devices on / off, changing settings, running purge cycles





perma CONNECT

Simple and intuitive - configure and maintain all perma lubrication systems via mobile devices

perma CONNECT provides you with a comprehensive overview of all lubrication points, enabling centralized management of your maintenance processes. Whether from your workstation or even on the go, our intelligent application ensures seamless access to critical lubrication point data at any time and from any location. With extensive remote control functions, you can optimize operational efficiency, save valuable time, and make a significant contribution to improving safety within your organisation.

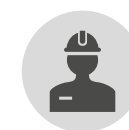
perma demonstrates how it works!

More about our perma products
can be found on our website www.permausa.com



perma CONNECT

=



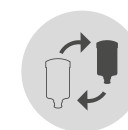
SURVEY

+

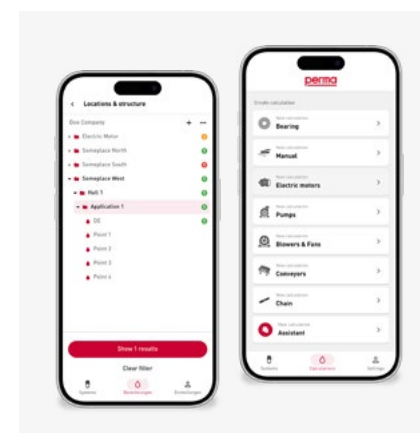


INSTALLATION

+

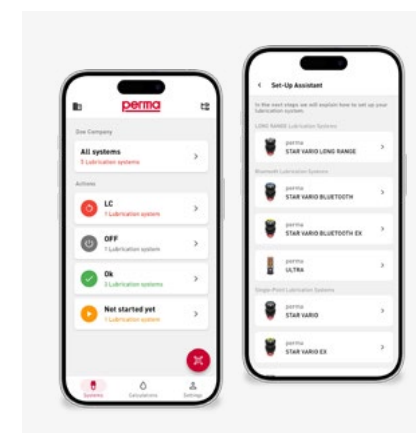


MAINTENANCE & EXCHANGE



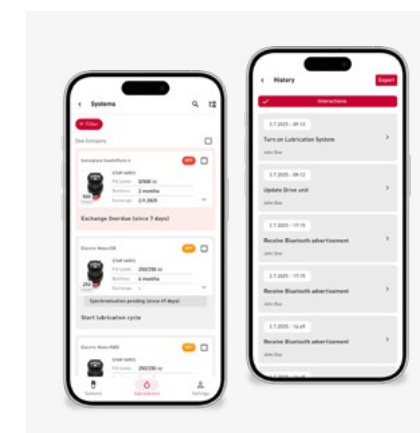
SURVEY

- + Precise calculation of the relubrication amount
- + Reliable determination of the discharge period
- + Helpful suggestions for the installation
- + Simple creation of the organizational structure



INSTALLATION

- + Convenient configuration and remote control via the application
- + Flexible assignment of user roles
- + Easy digitalization



MAINTENANCE & EXCHANGE

- + Comprehensive overview of all lubrication points
- + Proactive notifications for required actions
- + Efficient creation of material lists
- + Automatic documentation



Get perma CONNECT now!

Download it to your smartphone | tablet or open web application under: <https://perma-connect.com>



perma STAR CONTROL

Optimal lubricant metering based on operating hours or lubrication impulse

In contrast to the perma STAR VARIO (with battery pack), the perma STAR CONTROL is supplied with external power via cable. The operating status can be transmitted to a PLC and evaluated. The two integrated operating modes TIME and IMPULSE offer flexible use. In TIME mode, lubricant discharge is based on operating hours. In IMPULSE mode, a precisely defined quantity is dispensed as soon as voltage is supplied. The perma STAR CONTROL consists of an electromechanical drive and an LC with 60, 120, 250 or 500 cc | 2.03, 4.06, 8.45, 16.91 fl.oz. of lubricant. The required mode is set on the drive. Lubrication is precise and temperature-independent at a counter pressure up to 109 psi | 7.5 bar.

More about our perma products
can be found on our website www.permausa.com



MADE IN GERMANY



LCD display with
push button shows
discharge settings,
LC size and
operating status



Electromechanical drive with
external power supply

LED visible all round signals
functioning and errors



PLC | SPS

Flexible handling via
TIME or IMPULSE mode

Manual additional discharge via
push button on display (Purge)



**Needs-based
lubricant discharge**



**Versatile
configuration**



**External
power supply**



**Temperature-
independent**



Drive - reusable
Electromechanical drive with external power supply:
9 - 30 V DC, I_{max} 0.5 A



Discharge period
Time-controlled (TIME)
Impulse-controlled (IMPULSE)



Lubricant volume
60, 120, 250, 500 cc | 2.03, 4.06, 8.45, 16.91 fl.oz.



Operating temperature
-40° °F to +140° °F | -40° °C to +60° °C



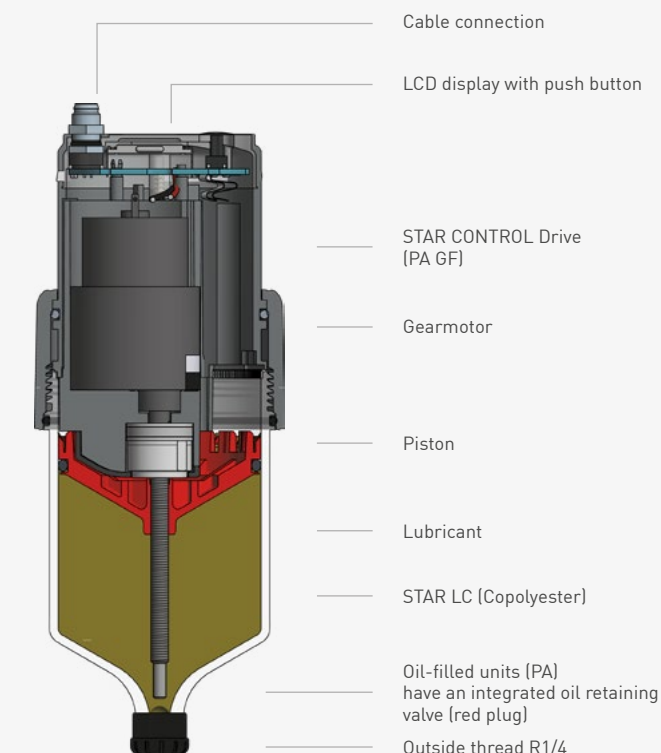
Pressure build-up
109 psi | 7.5 bar



Protection class
IP 65



Standard & special lubricants
Greases up to NLGI 2 | Oils



Dimensions
LC 60: Ø 72 x 160 mm | LC 120: Ø 72 x 183 mm
LC 250: Ø 72 x 233 mm | LC 500: Ø 72 x 329 mm

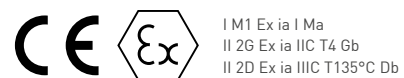
*Only use with suitable low temperature lubricants!

perma NOVA

For applications with high temperature fluctuations

perma NOVA can be used in all application areas from -4 °F to +140 °F | -20 °C to +60 °C. A discharge period from 1 to 12 months can be entered via the setting button on the NOVA Control unit. The control unit then calculates the required quantity of gas for constant and reliable discharge while taking into account the ambient temperature. perma NOVA consists of a reusable control unit, a NOVA LC filled with grease or oil and a protective cover. NOVA LC is available in 65 cc and 125 cc | 2.20, 4.23 fl.oz.. perma NOVA was specifically developed for single-point lubrication of roller and sliding bearings, sliding guides, open gears, gear racks, shaft seals and chains located in areas with considerable temperature variations (e.g. outside installations). The lubrication system is protected against dust and water jets, subject to correct assembly of the individual parts (IP65). perma NOVA with LC 65 cc is ideal for the lubrication of electric motors.

More about our perma products
can be found on our website www.permausa.com



I M1 Ex ia I Ma
II 2G Ex ia IIC T4 Gb
II 2D Ex ia IIC T135°C Db



MADE IN GERMANY



Electronic control unit with
temperature compensation
displays discharge period &
operating status



System operates reliably
from -4 °F to +140 °F |
-20 °C to +60 °C



Reusable NOVA Control unit
Extremely robust due to integrated
support flange



Increased
workplace safety



Reusable
control unit



Temperature-
independent



Drive - reusable
Electrochemical reaction from gas
generating cells with electronic
temperature compensation



Discharge period
1, 2, 3 ... 12 months



Lubricant volume
65, 125 cc | 2.20, 4.23 fl.oz.



Operating temperature
-4 °F to +140 °F | -20 °C to +60 °C



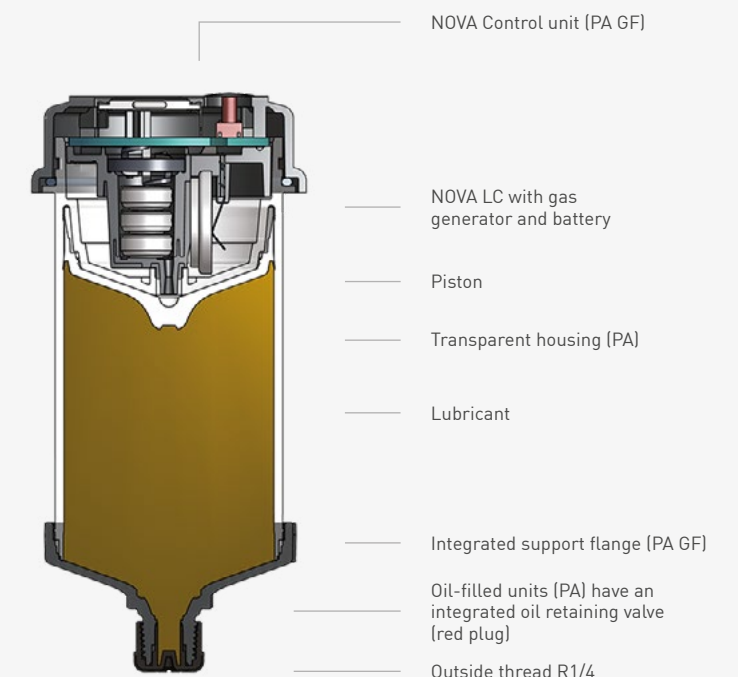
Pressure build-up
Max. 87 psi | 6 bar



Protection class
IP 65



Standard & special lubricants
Greases up to NLGI 2 | Oils



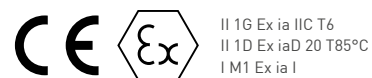
Dimensions
LC 65: Ø 65 x 101 mm
LC 125: Ø 65 x 132 mm

perma FLEX

Flexible use - even on lubrication points with challenging requirements

The automatic lubrication system perma FLEX is available in two convenient sizes (60, 125 cc | 2.03, 4.23 fl.oz.). It can be used for inside or outside applications at temperatures ranging from -4 to +140 °F | -20 °C to +60 °C. Discharge period setting is flexible and can be adjusted from 1 – 12 months using the dial on top of the lubricator. perma FLEX comes fully assembled and ready-to-use. Simply turn the dial to the desired discharge period and the system is activated. The electronically controlled chemical reaction will build up the pressure that is necessary to continually supply the lubrication point with fresh lubricant. perma FLEX is a single-point lubrication system for all types of applications and industries. Ingress protection to IP 68 level guarantees reliable lubrication in extremely dusty and moist environments. The wide operating temperature range makes it suitable for many applications indoors and outdoors. If necessary, the discharge period can be adjusted even after activation. It can be switched off during longer non-operation periods.

More about our perma products
can be found on our website www.permausa.com



JPEX

MADE IN GERMANY



All-in-one system with rotary switch for discharge period setting



Can be used in very moist and dusty environments



Safe for use in Class I, II & III, Division 1, Groups A, B, C, D, E, F & G and Class I, Zone 1, Group IIC



Ready-to-use system



Compact dimensions



Safe lubrication in EX zones



Increased workplace safety



Drive
Electrochemical reaction



Discharge period at 68 °F | +20 °C
perma MULTI LC 150-2 (SF01)
1, 2, 3, ... 12 months



Lubricant volume
60, 125 cc | 2.03, 4.23 fl.oz.



Operating temperature
-4 °F to +140 °F | -20 °C to +60 °C



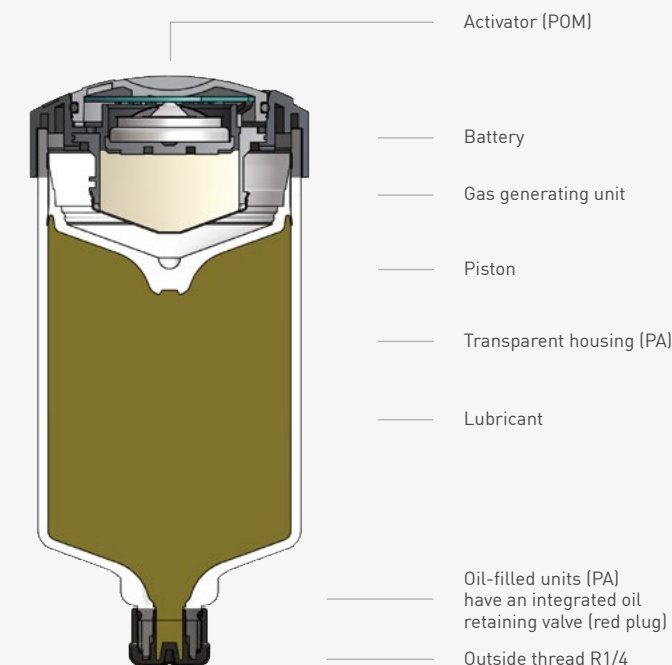
Pressure build-up
Max. 75 psi | 5 bar



Protection class
IP 68



Standard & special lubricants
Greases up to NLGI 2 | Oils



Dimensions
perma FLEX 60: Ø 58 x 86.5 mm
perma FLEX 125: Ø 58 x 117 mm

perma CLASSIC | perma FUTURA

Simple - robust - reliable

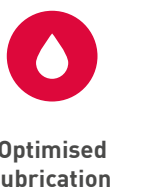
perma CLASSIC and perma FUTURA can be used in all types of applications with ambient temperatures from 32 °F to +104 °F | 0 °C to +40 °C. Depending on operating conditions, a lubricant volume of 120 cc | 4.06 fl.oz. is used up in 1, 3, 6 or 12 months. Reliable function is based on an electrochemical reaction. The activator is screwed into the lubrication system until the eyelet comes off. The contained gas generator builds up a pressure of max. 58 psi | 4 bar, which moves the piston forward and transports lubricant into the lubrication point. These lubrication systems are suitable for single-point lubrication of roller- and sliding bearings, sliding guides, open gears, gear racks, spindles, shaft seals and chains. Typical applications for perma CLASSIC can be found in mining, steel, automotive and mechanical engineering. perma FUTURA is ideal for areas that must be kept hygienically clean. Due to its resistance to corrosion, perma FUTURA is especially suited for applications in the food industry.

More about our perma products
can be found on our website www.permausa.com



CE I M2 h Mb X
II 2G h IIC T6 Gb X
II 2D h IIC T80°C Db X

MADE IN GERMANY



Drive
Electrochemical reaction
via gas generator



Discharge period at 68 °F | +20 °C
perma MULTI LC 150-2 (SF01)
1, 3, 6 or 12 months



Lubricant volume
120 cc | 4.06 fl.oz.



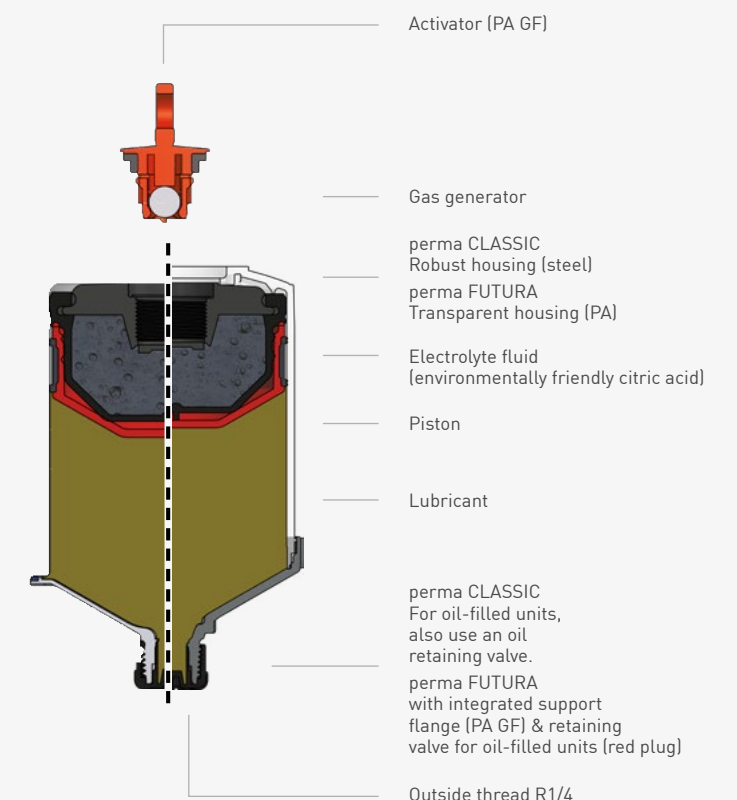
Operating temperature
32 °F to +104 °F | 0 °C to +40 °C



Pressure build-up
Max. 58 psi | 4 bar



Standard & special lubricants
Greases up to NLGI 2 | Oils



Dimensions
perma CLASSIC: Ø 70 x 99 mm
perma FUTURA: Ø 67 x 111 mm

LUBRICANTS | GREASES

You can find out more about our perma lubricants on our website at www.permausa.com



For more than 50 years, perma has stood for innovative and creative lubrication solutions. Now, we are extending our exclusive line of perma greases to enhance our product offerings and ensure an uninterrupted supply chain. With our many years of eperience, we can offer you a wide range of high-quality lubricants designed to meet your needs. Our comprehensive

family of greases have been specifically developed to meet the rigorous heavy industry demands of our customers while provi- ding superior protection for critical rotating equipment such as conveyors, pumps, fans, and electric motors. The perma range includes multipurpose, food, speed and heavy load greases with petroleum or synthetic base.

perma Grease name	Grease Specification						Grease Applications				Grease Characteristics					
	Thickener type	Oil type	cSt @ 40°C	NLGI	Temperature Range	Color	Electric Motors	Fans & Blowers	Pumps	Conveyors	High Speed	Low Speed	High Load	Mod Load / EP	Low Load	Water
perma SPEED LX 100-2 (SF140)	Lithium Complex	Mineral	115	2	-20°C - 150°C -4°F - 302°F	Brown	**	*	*	-	***	*	-	-	***	*
perma SPEED PU 100-2 (SF141)	Polyurea	Mineral	128	2	-23°C - 198°C -10°F - 390°F	Blue	***	*	*	-	***	*	-	-	***	**
perma SPEED LX SYN 100-2 (SF152)	Lithium Complex	Synthetic	100	2	-40°C - 149°C -40°F - 300°F	White	**	***	***	-	***	*	-	*	***	**
perma MULTI LC 150-2 (SF01)	Lithium Calcium	Mineral	150	2	-30°C - 130°C -22°F - 266°F	Brown	*	**	**	**	*	***	**	**	*	***
perma MULTI LX 220-1 (SF101)	Lithium Complex	Mineral	220	1	-18°C - 140°C 0°F - 284°F	Blue/Green	*	**	**	***	*	***	**	**	*	**
perma MULTI LX 220-2 (SF111)	Lithium Complex	Mineral	220	2	-18°C - 140°C 0°F - 284°F	Blue/Green	*	**	**	***	*	***	**	**	*	**
perma MULTI LC SYN 220-1 (SF120)	Lithium Calcium	Semi-Synthetic	230	1	-30°C - 140°C -22°F - 284°F	Blue	*	***	***	**	*	***	**	**	*	**
perma MULTI LC SYN 220-2 (SF130)	Lithium Calcium	Semi-Synthetic	230	2	-30°C - 140°C -22°F - 284°F	Blue	*	***	***	**	*	***	**	**	*	**
perma LOAD LX 460-1 (SF181)	Lithium Complex	Mineral	460	1	-18°C - 140°C 0°F - 284°F	Amber	-	-	-	***	-	***	***	***	-	***
perma LOAD LX 460-2 (SF191)	Lithium Complex	Mineral	460	2	-18°C - 140°C 0°F - 284°F	Amber	-	-	-	***	-	***	***	***	-	***
perma FOOD AX SYN 150-1 (SF10)	Aluminium Complex	Synthetic	150	1	-45°C - 120°C -49°F - 248°F	Beige	-	**	**	**	*	**	**	**	*	***
perma FOOD CS SYN 220-1 (SF161)	Calcium Sulphonate	Synthetic	220	1	-40°C - 190°C -40°F - 375°F	Off White	-	**	**	**	*	**	**	**	*	***
perma FOOD CS SYN 220-2 (SF171)	Calcium Sulphonate	Synthetic	220	2	-40°C - 190°C -40°F - 375°F	Off White	-	**	**	**	*	**	**	**	*	***

Not recommended: - | Ok: * | Good: ** | Recommended: ***

NSF
One requirement of the food and beverage industry is that lubricants must be registered with the US organization NSF. All lubricants that (occasionally) come into direct contact with food must be tested and registered in accordance with the NSF H1 criteria.

Halal and Kosher
Other requirements include the dietary rules of the Jewish and Muslim population relating to the use of machines and surroundings during the food production. Appropriate certification confirms that the strict requirements for halal and kosher have been met and complies with the religious requirements.

Miscibility
When relubricating a lubrication point, the same lubricant should always be used to avoid mixing different lubricants. If this is not possible, it must be ensured that the base oil and thickener are compatible. The compatibility of these components must be checked and taken into account using specified miscibility tables.

Base oil
Grease consists of between 70 % and 95 % of oil. The type of oil influences the lubricating properties of the grease and also determines the applications the grease is best suited for.

Base oil viscosity
The viscosity indicates the flowability of the base oil. Greases with a low viscosity base oil are usually used for bearings with a high speed factor whereas slow-moving bearings will use a high viscosity base oil.

NLGI grade
The NLGI grade (consistency number) indicates a grease's relative hardness. Grades range from 000 (very fluid) to 6 (very hard). Greases up to NLGI grade 2 can be used in perma lubrication systems.

Thickener
A thickener is a component of the grease that gives it a semi-fluid consistency. This ensures that the grease stays in the bearing and does not leak out, as would be the case for oil alone. Different thickeners are not always compatible which means that different greases should be checked before being mixed.

WE GUARANTEE



CONTAMINATION-FREE LUBRICANTS

Based on many years of experience and technical expertise, perma lubrication systems are reliably filled with clean lubricant and free of air pockets.



CORRECT LUBRICANT DESIGNATION

perma lubrication systems always have the correct lubricant designation. This helps to avoid unwanted mixing of lubricants.



RELIABLE OPERATION OF THE LUBRICATION SYSTEMS

Our lubrication systems and exchangeable cartridges (LC units) meet high-quality standards and therefore guarantee reliable lubrication.



LUBRICANT DURABILITY

The serial number on our products shows the year and week of manufacture. This makes it easy to ensure that only fresh lubricants are used.



CLP | GHS-COMPLIANT MARKINGS

perma lubrication systems are correctly labeled and immediately show the user the relevant danger and safety instructions.



NSF-CERTIFIED FILLING

We offer a wide range of suitable lubricants in our automatic lubrication systems, especially for the food & beverage industry. Filling at perma is NSF-certified according to DIN ISO 21469.



HOW TO ORDER

The following overview will outline which parts are essential when ordering the STAR family and what components the products consist of. When placing an order, it is crucial to consider the key elements that make up the STAR family. Each product is composed of several components that ensure its functionality and quality. These components include:

perma STAR Components

Complete your solution with the following components

STEP 1



perma STAR VARIO Drive
Part # 117222



perma STAR VARIO BLUETOOTH Drive
Part # 117223
perma STAR VARIO LONG RANGE Drive
Part # 118912



perma STAR VARIO EX Drive
Part # 118586
perma STAR VARIO BLUETOOTH EX Drive
Part # 118585



perma STAR CONTROL Drive
TIME- or IMPULSE Modus
Part # 118216

+



Battery pack STAR VARIO (Alkaline)
Part # 101351

or



Battery pack STAR VARIO low temperature (Lithium)
Part # 116901



Battery pack STAR VARIO EX (Lithium)
Part # 118526



Cable STAR CONTROL
16 ft | 5 m
Part # 108432
33 ft | 10 m
Part # 108431

+



perma STAR LC 60 cc



perma STAR LC 120 cc



perma STAR LC 250 cc



perma STAR LC 500 cc

+



Support flange STAR 1/8" NPT male x G1/4 female (Brass / Plastic)
Part # 109418



Support flange STAR 1/4" NPT male x G1/4 female (Brass / Plastic)
Part # 109419



Support flange STAR G1/4 male x G1/4 female (Brass / Plastic)
Part # 109420

+

optional

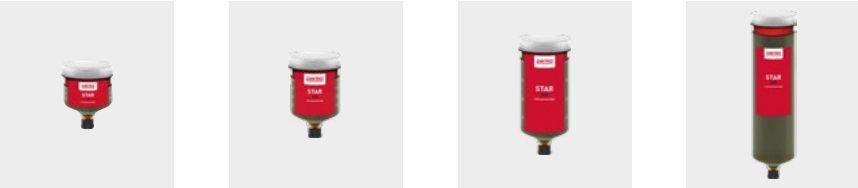


Gateway BLUETOOTH for perma STAR VARIO BLUEOOTH or perma STAR VARIO BLUEOOTH EX
Contact for region-specific part number



Gateway LONG RANGE for perma STAR VARIO LONG RANGE
Part # 912380

perma Standard Greases and Oils



perma Greases	Part #	Part #	Part #	Part #
perma MULTI LC 150-2 (SF01)	901393	901394	901395	900533
perma MULTI LX 220-1 (SF101)	911340	911341	911342	911343
perma MULTI LX 220-2 (SF111)	911347	911348	911349	911350
perma MULTI LC SYN 220-2 (SF130)	-	912459	911589	-
perma SPEED LX 100-2 (SF140)	911456	912436	-	-
perma SPEED PU 100-2 (SF141)	911335	911336	911337	-
perma SPEED LX SYN 100-2 (SF152)	911888	911889	912021	-
perma LOAD LX 460-1 (SF181)	911351	911352	911353	-
perma LAD LX 460-2 (SF191)	-	-	912042	912408
perma FOOD AX SYN 150-1 (SF10)	901499	907199	907103	900991
perma FOOD CS SYN 220-2 (SF171)	-	-	912144	-

perma Oils				
perma Multipurpose oil S032	901455	901456	901457	-
perma Food grade oil H1 S070	901467	901468	901469	-

Example for ordering perma STAR VARIO*

1st ORDER



+



or

+



REORDER



+



or

perma STAR CONTROL

1st ORDER



+



+



REORDER



*depends on product type

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HOW TO ORDER

The following overview will outline which parts are essential when ordering the perma ULTRA and what components the product consist of. When placing an order, it is crucial to consider the key elements that make up the perma ULTRA. Each product is composed of several components that ensure its functionality and quality.

perma ULTRA Components

Complete your solution with the following components

STEP 1



perma ULTRA Drive
with cover
Part # 116159



For extreme operating conditions:
Protection cap ULTRA
Heavy Duty (plastic)
Part # 116149



STEP 2



Battery pack ULTRA
(Alkaline)
Part # 116147



Battery pack ULTRA
low temperature
(Lithium)
Part # 116148



STEP 3



perma ULTRA LC
500 cm³



perma ULTRA LC
1,000 cm³



STEP 4



optional
Gateway BLUETOOTH
Contact for region-specific part number

More about our perma products
can be found on our website www.permausa.com



perma Standard Greases



perma Greases	Part #	Part #
perma MULTI LC 150-2 (SF01)	900478	900486
perma MULTI LX 220-1 (SF101)	-	-
perma MULTI LX 220-2 (SF111)	-	-
perma MULTI LC SYN 220-2 (SF130)	-	-
perma SPEED LX 100-2 (SF140)	-	-
perma SPEED PU 100-2 (SF141)	-	-
perma SPEED LX SYN 100-2 (SF152)	-	911871
perma LOAD LX 460-1 (SF181)	-	-
perma LAD LX 460-2 (SF191)	-	912409
perma FOOD AX SYN 150-1 (SF10)	-	-
perma FOOD CS SYN 220-1 (SF161)	-	-
perma FOOD CS SYN 220-2 (SF171)	-	-

perma ULTRA

1st ORDER



or



+



REORDER



or



HOW TO ORDER

The following will outline which parts are essential when ordering gas driven units and what components the products consist of. When placing an order, it is crucial to consider the key elements that make up the gas driven units. Each product is composed of several components that ensure its functionality and quality.

perma Gas-Driven Units

Complete your solution with the following components

STEP 1



Activator, yellow
1 month, Part # 101331
Activator, green
3 months, Part # 101332
Activator, red
6 months, Part # 101333
Activator, gray
12 months, Part # 101335



Rotary switch with



perma NOVA Control
unit (reusable)
1, 2, 3 ... 12 months
Part # 107271

STEP 2



perma CLASSIC
120 cc



perma FUTURA
120 cc



perma FLEX
60 cc



perma FLEX
120 cc



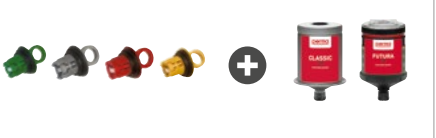
NOVA LC
65 cc



NOVA LC
125 cc

perma CLASSIC | perma FUTURA

1st ORDER = REORDER



perma FLEX

1st ORDER = REORDER



perma NOVA

1st ORDER



REORDER



perma Standard Greases and Oils



perma Greases	Part #	Part #	Part #	Part #
perma MULTI LC 150-2 (SF01)	100020	901390	901391	901392
perma MULTI LX 220-1 (SF101)	-	-	911338	911339
perma MULTI LX 220-2 (SF111)	-	-	911345	911346
perma MULTI LC SYN 220-2 (SF130)	-	-	-	911794
perma SPEED LX 100-2 (SF140)	911937	-	-	911791
perma SPEED PU 100-2 (SF141)	-	-	912145	911792
perma SPEED LX SYN 100-2 (SF152)	-	912224	912477	911793
perma LOAD LX 460-1 (SF181)	-	-	911354	911355
perma LAD LX 460-2 (SF191)	-	-	-	911795
perma FOOD AX SYN 150-1 (SF10)	907401	902759	900352	902546
perma FOOD CS SYN 220-1 (SF161)	-	911891	-	-
perma FOOD CS SYN 220-2 (SF171)	-	-	911764	911796

perma Oils

Order oil retaining valve separately

perma Multipurpose oil S032	901451	901452	901453	901454
perma Food grade oil H1 S070	901463	901464	901465	901466



perma Greases	Part #	Part #
perma MULTI LC 150-2 (SF01)	901388	901387
perma FOOD AX SYN 150-1 (SF10)	902905	902837

perma Oils

perma Multipurpose oil S032	901450	901449
perma Food grade oil H1 S070	901462	901461

MOUNTING SOLUTIONS

Decision Making for Best Practice

For many lubrication points, it is beneficial to mount the lubricating system with a grease line at a location that can be safely accessed during plant operation.

Determine thread size at the lubrication point with:
perma fitting thread tester
Part # 110374



DECIDE WHAT MOUNTING TYPE IS SUITABLE FOR YOU...

→ If you answer yes to one of the questions, we recommend that you use indirect | remote mounting.

YES ☐ NO ☐ Is it necessary to remove protective guards or safety cages to access the lubrication point?

YES ☐ NO ☐ Is it difficult or unsafe to access the lubrication point while equipment is running?

YES ☐ NO ☐ Is the lubrication point subject to severe vibration or high temperatures which may damage the lubrication system?

YES ☐ NO ☐ Is it necessary to get permits to access lubrication points when in confined spaces or fall protection is required?

YES ☐ NO ☐ Is the lubrication point exposed to excessive amounts of water, process materials or impact from solid material?

YES TO ONE: REMOTE MOUNTING

Benefits | Remote Mounting

- » Relocate lubrication point to a safe area
- » Vibrations at the lubrication point can be disregarded
- » Automatic lubrication systems can be exchanged while the machine is in operation



NO TO ALL: DIRECT MOUNTING

Benefits | Direct Mounting

- » Immediate supply of lubrication points with fresh lubricant
- » Grease has the shortest supply path, meaning it does not age before entering the bearing
- » Lowest cost, quickest, and most simplest installation method



INSTALLATION KITS STAR

Remote Mounting | Standard and Heavy Duty

INSTALLATION KITS contain all necessary parts for the complete mounting of the lubrication system to the lubrication point: mounting bracket with mounting support, support flange, hose connectors, reducers and Heavy Duty hose.



STANDARD DUTY KIT | L-BRACKET

These kits are very versatile and can be used in areas with normal ambient conditions. The kits contain all necessary parts, including a reducer 1/8" NPT, 1/4" NPT and 1/4 - 28 UNF per lubrication point.



HEAVY DUTY KIT | C-BRACKET

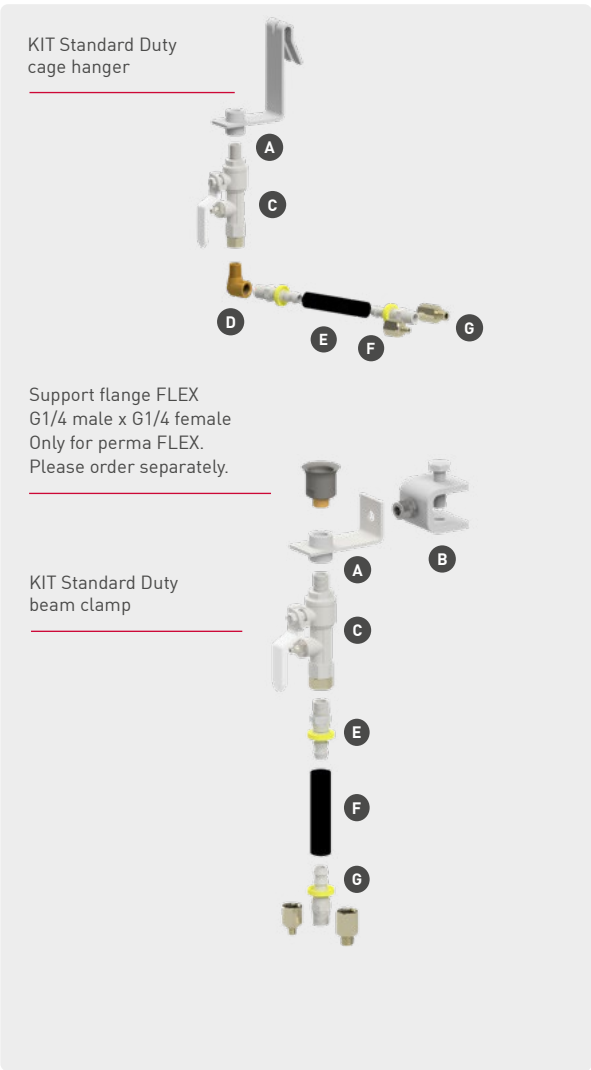
Heavy Duty kits have been specifically designed for use in operational areas with harsh ambient conditions which are subject to regular washdown and water impact, such as the conditions found in coal handling preparation plants.

More about perma kits can be found on our website www.permausa.com



MOUNTING SOLUTIONS

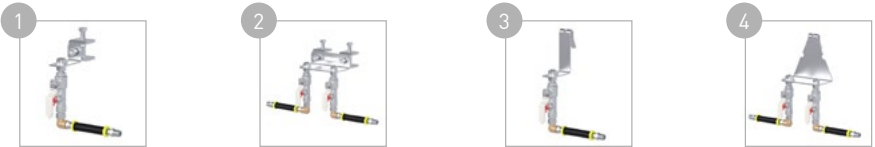
Select the right mounting kit



- A Brackets**
Compact Stainless steel brackets are available and can be easily attached to square cage mesh using a hook attachment design or to beam sections using beam clamps.
- B Beam clamp**
Easy-to-use beam clamps, supplied with case-hardened cup head set screws and stainless steel assembly screws. Available in 1.18 inch or 2.56 inch (30 or 65 mm)
- C Purge connection with manual valve 1/4" NPT**
Compact Stainless steel brackets are available and can be easily attached to square cage mesh using a hook attachment design or to beam sections using beam clamps.
- D Angle 90° 1/4" NPT male x 1/4" NPT female**
Optional use. One angle included per lubrication point.
- E Hose connector 1/4" NPT male**
For hose iØ 3/8" push-lock (stainless steel). Two included per lubrication point.
- F Heavy Duty hose**
Supplied with iØ 3/8" and easy-to-use push-lock type swivel hose ends. Hose 3 ft / 1 m per lubrication point is included, other lengths upon request.
- G Reducing adapter**
Two reducers 1/8" NPT and 1/4-28 UNF included for each lubrication point.

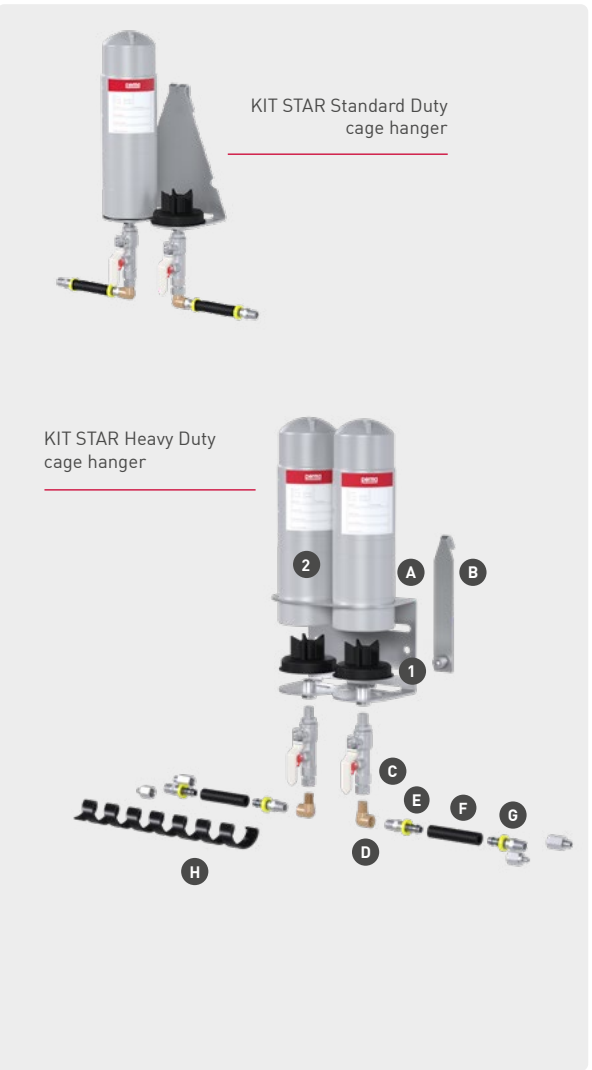
KITS Standard Duty beam clamp	Additional information	Pic.	Part #
KIT Gas 1-point beam clamp with 3 ft / 1 m hose	1.18 inch, 30 mm beam clamp	1	901046
	2.65 inch, 65 mm beam clamp		901047
KIT Gas 2-point beam clamp with 6 ft / 2 m hose	1.18 inch, 30 mm beam clamp	2	901048
	2.65 inch, 65 mm beam clamp		901049

KITS Standard Duty cage hanger	Additional information	Pic.	Part #
KIT Gas 1-point cage hanger with 3 ft / 1 m hose	-	3	901050
KIT Gas 2-point cage hanger with 6 ft / 2 m hose	-	4	901051



MOUNTING SOLUTIONS

Cage Hanger Kits



- A Brackets incl.**
 - Support flange STAR with cover clip
 - Protection cap STAR Heavy Duty (Plastic)Compact Stainless steel brackets are available and can be easily attached to square cage mesh using a hook attachment design or to beam sections using beam clamps.
- B Cage hanger**
Compact stainless steel brackets are available and can be easily attached to square cage mesh using a hook attachment design.
- C Purge connection with manual valve 1/4" NPT**
Used for convenient additions of supplementary grease, line purging, and grease blockage clearing.
- D Angle 90° 1/4" NPT male x 1/4" NPT female**
Optional use. One angle included per lubrication point.
- E Hose connector 1/4" NPT male**
For hose iØ 3/8" push-lock (stainless steel). Two included per lubrication point.
- F Heavy Duty hose**
Supplied with iØ 3/8" and easy-to-use push-on type swivel hose ends. Hose 10 ft / 3 m per lubrication point is included, other lengths upon request.
- G Reducing adapter**
Two reducers 1/8" NPT and 1/4-28 UNF included for each lubrication point.
- H Hose spiral guard**
Use to bundle hoses in multipoint kits.

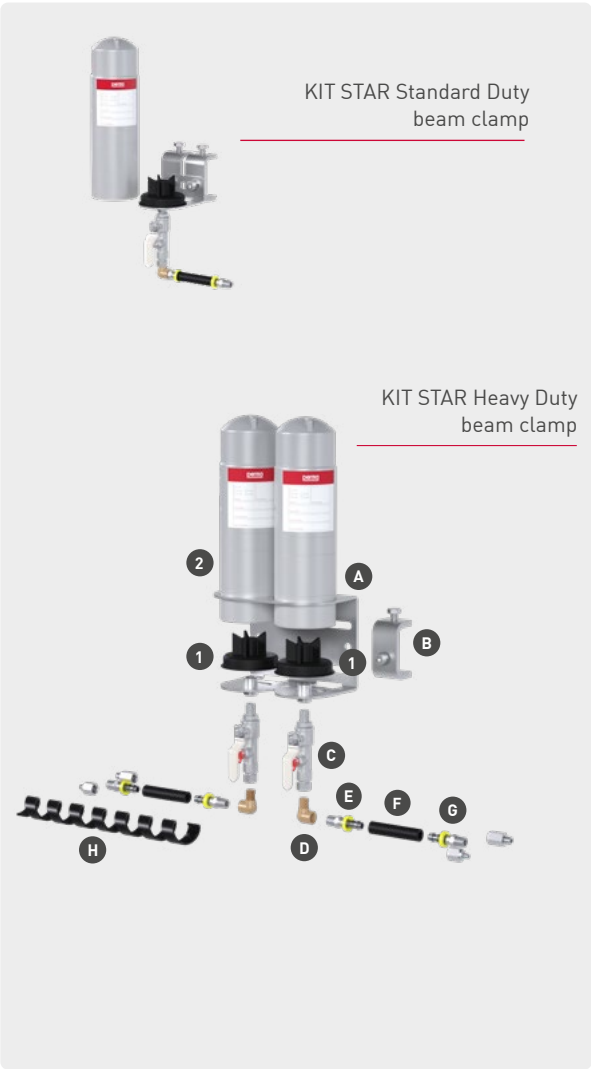
KITS STAR Standard Duty cage ganger	Pic.	Part #
KIT STAR Standard Duty 1-point cage hanger 10 ft hose	1	902218
KIT STAR Standard Duty 2-point cage hanger 20 ft hose	2	902219
KIT STAR Standard Duty 3-point cage hanger 30 ft hose	3	902220
KIT STAR Standard Duty 4-point cage hanger 40 ft hose	4	902221

KITS STAR Heavy Duty beam clam	Pic.	Part #
KIT STAR Heavy Duty 1-point cage hanger 10 ft hose	5	902222
KIT STAR Heavy Duty 2-point cage hanger 20 ft hose	6	902223
KIT STAR Heavy Duty 3-point cage hanger 30 ft hose	7	902224
KIT STAR Heavy Duty 4-point cage hanger 40 ft hose	8	902225



MOUNTING SOLUTIONS

Beam Clamp Mounting Kits

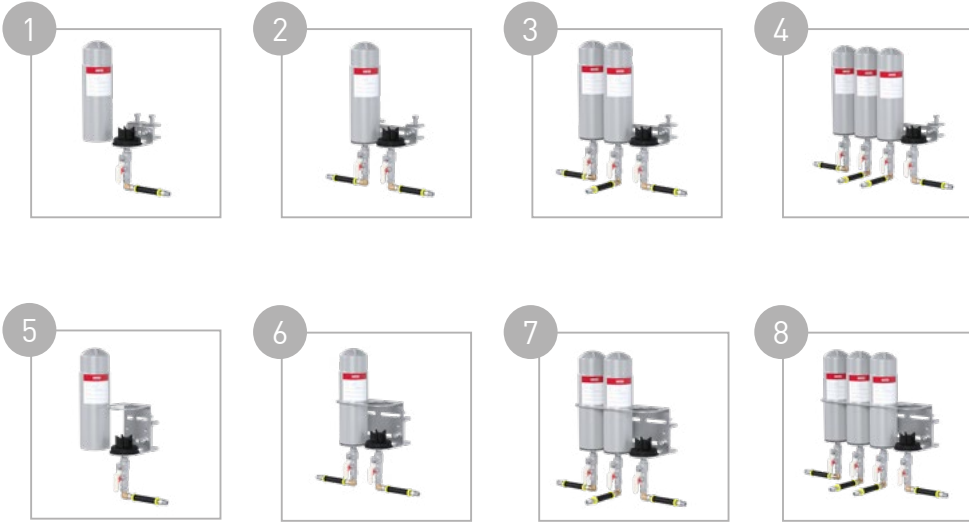


- A Brackets incl.**
1. Support flange STAR with cover clip
2. Protection cap STAR Heavy Duty (Plastic)
- Compact Stainless steel brackets are available and can be easily attached to square cage mesh using a hook attachment design or to beam sections using beam clamps.
- B Beam clamp**
- Easy-to-use beam clamps, supplied with case-hardened cup head set screws and Stainless steel assembly screws. Available in 1.18 inch or 2.56 inch (30 or 65 mm)
- C Purge connection with manual valve 1/4" NPT**
- Used for convenient additions of supplementary grease, line purging and grease blockage clearing.
- D Angle 90° 1/4" NPT male x 1/4" NPT female**
- Optional use. One angle included per lubrication point.
- E Hose connector 1/4" NPT male**
- For hose iØ 3/8" push-on (stainless steel). Two included per lubrication point.
- F Heavy Duty hose**
- Supplied with iØ 3/8" and easy-to-use push-on type swivel hose ends. Hose 10 ft / 3 m per lubrication point is included, other lengths upon request.
- G Reducing adapter**
- Two reducers 1/8" NPT and 1/4-28 UNF included for each lubrication point.
- H Hose spiral guard**
- Use to bundle hoses in multipoint kits.



KITS STAR Standard Duty beam clamp	Additional information		Pic.	Part #
	1.18 inch, 30 mm beam clamp	2.65 inch, 65 mm beam clamp		
KIT STAR Standard Duty 1-point beam clamp with 10 ft / 3 m hose	1			902202
				902203
KIT STAR Standard Duty 2-point beam clamp with 20 ft / 6 m hose	2			902204
				902205
KIT STAR Standard Duty 3-point beam clamp with 30 ft / 9 m hose	3			902206
				902207
KIT STAR Standard Duty 4-point beam clamp with 40 ft / 12 m hose	4			902208
				902209

KITS STAR Heavy Duty beam clamp	Additional information		Pic.	Part #
	1.18 inch, 30 mm beam clamp	2.65 inch, 65 mm beam clamp		
KIT STAR Heavy Duty 1-point beam clamp with 10 ft / 3 m hose	5			902210
				902211
KIT STAR Heavy Duty 2-point beam clamp with 20 ft / 6 m hose	6			902212
				902213
KIT STAR Heavy Duty 3-point beam clamp with 30 ft / 9 m hose	7			902214
				902215
KIT STAR Heavy Duty 4-point beam clamp with 40 ft / 12 m hose	8			902216
				902217



You can find out more about our perma mounting solutions on our website at www.permausa.com



MOUNTING SOLUTIONS

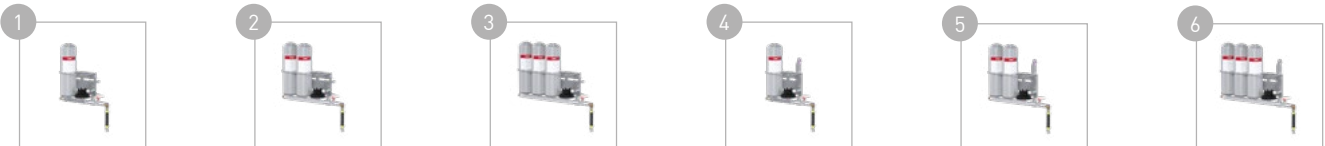
Manifold Kits



- A Welded manifold bracket incl.**
1. Support flange STAR with cover clip for protection cap
2. Protection cap STAR Heavy Duty (Plastic)
- Compact Stainless steel brackets are available and can be easily attached to square cage mesh using a hook attachment design or to beam sections using beam clamps.
- B Purge connection with manual valve 1/4" NPT**
- Used for convenient additions of supplementary grease, line purging, and grease blockage clearing.
- C Angle 90° 1/4" NPT male x 1/4" NPT female**
- Optional use. One angle included per lubrication point.
- D Hose connector 1/4" NPT male**
- For hose iØ 3/8" push-on (stainless steel). Two included per lubrication point.
- E Heavy Duty hose**
- Supplied with iØ 3/8 and easy-to-use push-lock type swivel hose ends. Hose 10 ft / 3 m per lubrication point is included, other lengths upon request.
- F Reducing adapter**
- Two reducers 1/8" NPT and 1/4-28 UNF included for each lubrication point.

KITS STAR Heavy Duty beam clamp with welded manifold	Additional information	Pic.	Part #
KIT STAR Heavy Duty 2-point beam clamp 10 ft / 3 m hose welded manifold	2.65 inch, 65 mm beam clamp	1	907501
KIT STAR Heavy Duty 3-point beam clamp 10 ft / 3 m hose welded manifold	2.65 inch, 65 mm beam clamp	2	907504
KIT STAR Heavy Duty 4-point beam clamp 10 ft / 3 m hose welded manifold	2.65 inch, 65 mm beam clamp	3	907507

KITS STAR Heavy Duty cage hanger with welded manifold	Additional information	Pic.	Part #
KIT STAR Heavy Duty 2-point cage hanger 10 ft / 3 m hose welded manifold	-	4	907502
KIT STAR Heavy Duty 3-point cage hanger 10 ft / 3 m hose welded manifold	-	5	907505
KIT STAR Heavy Duty 4-point cage hanger 10 ft / 3 m hose welded manifold	-	6	907508



MOUNTING SOLUTIONS

U-Bolt Mount Kits



Support flange with G-male threads required for brackets

- A Brackets incl.**
1. Support flange STAR with cover clip
2. Protection cap STAR Heavy Duty (Plastic)
- Compact Stainless steel brackets are available which can be easily attached to rail using a U-bolt design.
- B 2 U-Bolt**
- Used to mount bracket to rail
- C Purge connection with manual valve G 1/4"**
- Used for convenient additions of supplementary grease, line purging, and grease blockage clearing.
- D Angle 90° 1/4" NPT male x 1/4" NPT female**
- Optional use. One angle included per lubrication point.
- E Hose connector 1/4" NPT male**
- For hose iØ 3/8 push-on (stainless steel). Two included per lubrication point.
- F Heavy Duty hose**
- Supplied with iØ 3/8" and easy-to-use push-lock type swivel hose ends. Hose 10 ft / 3 m per lubrication point is included, other lengths upon request.
- G Reducing adapter**
- Two reducers 1/8" NPT and 1/4-28 UNF included for each lubrication point.
- H Hose spiral guard**
- Use to bundle hoses in multipoint kits.

KITS STAR rail mount (for rails up to 1 1/2 inch diameter)	Pic.	Part #
KIT STAR Heavy Duty 1-point rail mount 10 ft hose	1	907572
KIT STAR Heavy Duty 2-point rail mount 20 ft hose	2	907573
KIT STAR Heavy Duty 3-point rail mount 30 ft hose	3	907574
KIT STAR Heavy Duty 4-point rail mount 40 ft hose	4	907575



You can find out more about our perma mounting solutions on our website at www.permausa.com



THE EXPERT IN LUBRICATION SOLUTIONS



MOUNTING SOLUTIONS

for perma ULTRA



Beam clamp mount



KIT ULTRA Heavy Duty
65 mm beam clamp mount
without hose

Part # 900522

Cage hanger mount



KIT ULTRA Heavy Duty
single hook cage hanger mount
without hose

Part # 900523

Rail mount

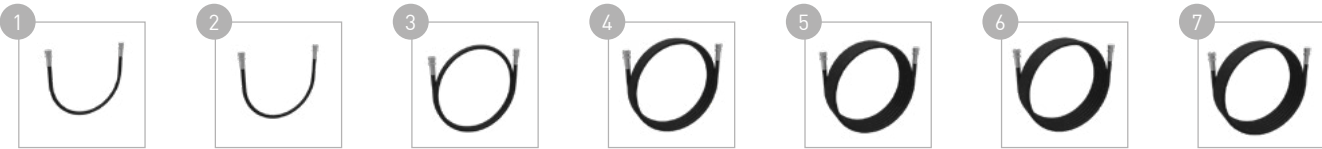


KIT ULTRA Heavy Duty
U-bolt mount without hose

Part # 900524

Hoses for perma ULTRA KITS

	Pic.	Part #
Hose High Pressure Hydraulic R7 iØ 3/8" crimped 3ft black	1	900525
Hose High Pressure Hydraulic R7 iØ 3/8" crimped 6ft black	2	900526
Hose High Pressure Hydraulic R7 iØ 3/8" crimped 10ft black	3	900527
Hose High Pressure Hydraulic R7 iØ 3/8" crimped 15ft black	4	900528
Hose High Pressure Hydraulic R7 iØ 3/8" crimped 20ft black	5	900529
Hose High Pressure Hydraulic R7 iØ 3/8" crimped 25ft black	6	900530
Hose High Pressure Hydraulic R7 iØ 3/8" crimped 30ft black	7	900547



BRACKETS

It has never been so easy to integrate automatic lubrication systems in existing production processes. Our expertise is based on many years of experience and global know-how. perma customers obtain all necessary components from a single supplier and also benefit from service and support to implement customized lubrication solutions.

Beam clamp
30 mm
(stainless steel)
Part # 109957

or

Beam clamp
65 mm
(stainless steel)
Part # 109958

or

Cage hanger arm
single hook
(stainless steel)
Part # 114019

Mounting brackets for perma CLASSIC, FUTURA, FUTURA PLUS, FLEX, FLEX PLUS & NOVA			
	Pic.	Material	Part #
Mounting bracket 1-point G1/4 female	1	Stainless steel	109685
Mounting bracket 2-point G1/4 female	2		109686
Mounting bracket cage hanger 1-point G1/4 female	3		109689
Mounting bracket cage hanger 2-point G1/4 female	4		109690



Mounting brackets for perma STAR VARIO & STAR CONTROL			
	Pic.	Material	Part #
Mounting bracket STAR Standard Duty 1-point G1/4 female	5	Stainless steel	109663
Mounting bracket STAR Standard Duty 2-point G1/4 female	6		109667
Mounting bracket STAR Heavy Duty C-section 1-point G1/4 female	7		109664
Mounting bracket STAR Heavy Duty C-section 2-point G1/4 female	8		108648
Mounting bracket STAR Standard Duty cage hanger 1-point G1/4 female	9		109665
Mounting bracket STAR Standard Duty cage hanger 2-point G1/4 female	10		109668



Additional brackets Parts			
	Pic.	Material	Part #
Bracket	11	Stainless steel	104864
Insert for bracket G1/4a x G1/4 female	11a	Brass	104820
	11b	Stainless steel	104865



Mounting plate Mounting angle		Pic.	Material	Part #
Mounting plate 110 x 70 x 2.5 mm	Hole spacing 45 mm	1	Stainless steel	101432
Mounting angle 50 x 50 x 70 x 2.5 mm	Hole spacing 45 mm	2		101429
Mounting angle 50 x 70 x 70 x 2.5 mm	Hole spacing 45 mm	3		101430
Mounting angle 50 x 100 x 70 x 2.5 mm	Hole spacing 45 mm / 22.5 mm	4		101431



Support flanges Protection caps Standard Duty and Heavy Duty	Pic.	Material	Part #
Support flange STAR G1/4 male x G1/4 female	1	Brass / Plastic	109420
Support flange STAR 1/4" NPT M x G1/4 F	2		109419
Support flange STAR 1/8" NPT M x G1/4 F	3		109418
Support flange FLEX 1/4" NPT male x G1/4 female	4		109322
Support flange FLEX 1/8" NPT male x G1/4 female	5		109323
Support flange FLEX G1/4 male x G1/4 female	6		101427
Support flange STAR with cover clip for protection cap	7	Plastic	116602
Support flange STAR Heavy Duty	8		110757
Protection cap STAR Standard Duty 250	9		109519
Protection cap STAR Heavy Duty	10		109999
Protection cap STAR Heavy Duty 500	11		900210
Adapter cable STAR CONTROL 1.6 ft 50 cm	11	-	115505



More about the perma brackets
can be found on our website www.permausa.com



HOSES & TUBES

Name Material Properties	Part # (meter goods)	iØ oØ ["]	Operating temperature range [°F °C]	Minimum bending radius ["]	Max. operating pressure [psi bar]	Initial filling amount per cm³ foot. [cc]	Max. grease line* [ft]			
							perma CLASSIC FUTURA PLUS	perma FLEX NOVA	perma STAR	perma ULTRA
Hose Heavy Duty black Synthetic Rubber with fiber braided reinforcement » Leak-proof protection without crimping » Oil and weather resistant outer layer	901006	3/8 5/8	-40 to 212 -40 to 100	3.0	400 28	22	3	6	15	n/a
Tube 95A Polyurethane » Abrasion, weather, UV-resistance » Leak-proof protection » Compatible with oil and grease	901178	1/4 3/8	-40 to 165 -40 to 74	1.0	170 12	10	3	6	15	n/a
Tube PTFE » Good temperature resistance » Noncombustible (flammability class V-0) » Suitable for food and beverage » Translucent	901281	1/4 3/8	-94 to 500 -70 to 260	2.0	180 12	10	3	6	15	n/a
High Pressure Hydraulic hose R7 iØ 3/8"	900519	3/8 0.65	-65 to 200 -54 to 93	2.0	2250 155	22	n/a	n/a	n/a	65"
Hose spiral guard 1 inch / 25 mm Plastic	109695									

*only offered in specific length and pre-assembled

More offers for tubes you will find on our website www.permausa.com



HOSES & TUBES CONNECTORS

Hose connector suitable for hose for hose iØ 3/8" - push-on
Hose connector 1/4" NPT male for hose iØ 3/8" - push-on

Pic.	Material	Part #
1	Stainless steel	902160



Tube connector push-lock suitable for tube oØ 3/8" 901178 and 901281

Pic.	Material	Part #
2	Nickel-plated	901169
3		901173
4		901174
5	Nickel-plated / Plastic	901175
6		901176





REDUCERS

	Pic.	Material	Part #
Reducer 1/8" NPT male x 1/4" NPT female	1	Nickel-plated	901008
Reducer 1/4-28 UNF male x 1/4" NPT female	2	Nickel-plated	901009
Reducer 1/4-28 UNF male x 1/8" NPT female	3	Nickel-plated	901010
Bushing 1/4" NPT male x 1/8" NPT female	4	Brass	901011
Reducer 1/4" NPT male x 3/8" NPT female	5		901236
Reducer G1/4 male x 1/4" NPT female	6	Nickel-plated	901000
Reducer M6 male x G1/4 female	7	Stainless steel	104876
Reducer M10 male x G1/4 female	8	Brass	104841
Reducer M8 male x G1/4 female	9	Stainless steel	104878
Reducer M8x1 male x G1/4 female	10	Stainless steel	104877
Reducer M10x1 male x G1/4 female	11	Brass	104840
Reducer 1/4 UNF male x G1/4 female	12	Stainless steel	109845
Reducer R1/8 male x G1/4 female	13		900494
Reducer 1/4-28 UNF male x G1/4 female	14		900495
Reducer M10x1 male x G1/4 female	15		900496
Reducer 1/4" NPT male x G1/4 female	16		900498
Reducer 1/8" NPT male x G1/4 female	17		900499



EXTENSIONS

	Pic.	Material	Part #
Extension 2 inch 1/4" NPT male x 1/4" NPT female	1	Brass	901001
Extension 4 inch 1/4" NPT male x 1/4" NPT female	2		901002
Extension 6 inch 1/4" NPT male x 1/4" NPT female	3		901003
Extension 2 inch 1/8" NPT male x 1/4" NPT female	4		901004
Extension 4 inch 1/8" NPT male x 1/4" NPT female	5		901005
Extension 30 mm G1/4 male x G1/4 female	6		104854
Extension 45 mm G1/4 male x G1/4 female	7		104855
Extension 75 mm G1/4 male x G1/4 female	8		104856
Extension 115 mm G1/4 male x G1/4 female	9		104857
Extension 50 mm R1/8 male x G1/4 female	10		109848
Extension 50 mm M6 male x G1/4 female	11	Stainless steel	109697
Extension 75 mm M10x1 male x G1/4 female	12	Brass	108923
Extension 115 mm M10x1 male x G1/4 female	13		108924
Extension 50 mm 1/4 UNF male x G1/4 female	14	Stainless steel	109854

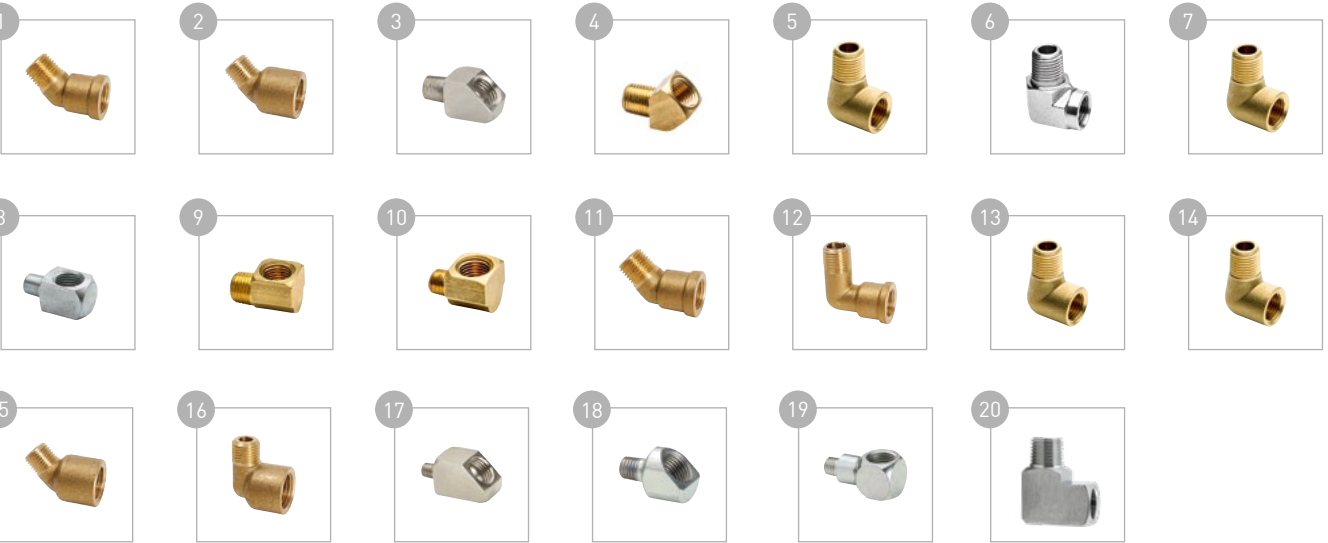


You can find out more about perma accessories on our website at www.permausa.com



ANGLES

	Pic.	Material	Part #
Angle 45° 1/4" NPT male x 1/4" NPT female	1	Brass	901019
Angle 45° 1/8" NPT male x 1/4" NPT female	2		901020
Angle 45° 1/8" NPT male x 1/4" NPT female	3	Nickel-plated	901021
Angle 45° 1/4" NPT male x 1/4" NPT female square	4	Brass	901024
Angle 90° 1/4" NPT male x 1/4" NPT female	5		901025
Angle 90° 1/4" NPT male x 1/4" NPT female	6	Stainless steel	902162
Angle 90° 1/8" NPT male x 1/4" NPT female	7	Brass	901026
Angle 90° 1/8" NPT male x 1/4" NPT female	8	Nickel-plated	901027
Angle 90° 1/4" NPT male x 1/4" NPT female square	9	Brass	901030
Angle 90° 1/8" NPT male x 1/4" NPT female square	10		901031
Angle 45° G1/4 male x G1/4 female	11		104823
Angle 90° G1/4 male x G1/4 female	12		104827
Angle 90° R1/4 male x G1/4 female	13		109849
Angle 90° R1/8 male x G1/4 female	14		109851
Angle 45° M10x1 male x G1/4 female	15		104826
Angle 90° M10x1 male x G1/4 female	16		104830
Angle 45° 1/4-28 UNF male x 1/4" NPT female	17	Nickel-plated	901022
Angle 45° 1/4-28 UNF male x 1/8" NPT female	18		901023
Angle 90° 1/4-28 UNF male x 1/8" NPT female	19		901029
Angle 90° R1/4 x G1/4 female	20	Stainless steel	900500



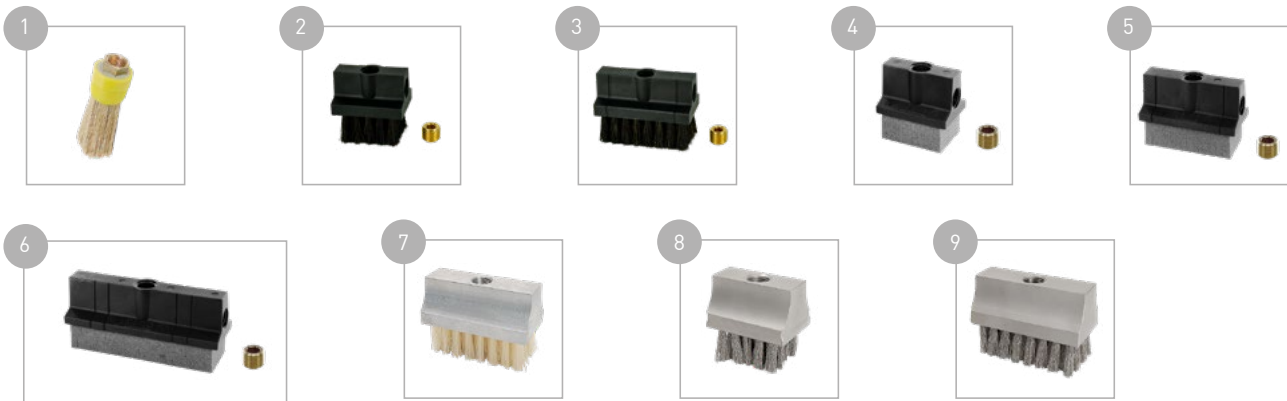
OIL RETAINING VALVES

	Pic.	Material	Part #
Oil retaining valve G1/4 male x G1/4 female up to +60 °C	1	Brass with plastic valve	104862
	2	Stainless steel with plastic valve	104889
Oil retaining valve G1/4 male x G1/4 female up to +150 °C	3	Brass with metal valve	104863



OIL BRUSHES

		Connecting thread	Size	Pic.	Material	Part #
Oil brush		G1/4 female top connection	Ø 20 mm	1	PA / natural bristles	101396
Oil brush, bristle height 20 mm	up to 176 °F +80 °C	G1/4i top connection + side connection	40 x 30 mm	2	PA / horsehair bristles	119196
			60 x 30 mm	3		119197
Oil brush foam 17.5 mm	up to 176 °F +80 °C	G1/4i top connection + side connection	40 x 30 mm	4	PA / foam	117435
			60 x 30 mm	5		117436
			100 x 30 mm	6		117437
Oil brush, bristle height 20 mm	up to 356 °F +180 °C	G1/4 female top connection	60 x 30 mm	7	Alu / PPS	101403
Oil brush, bristle height 20 mm	up to 662 °F +350 °C	G1/4 female top connection	40 x 30 mm	8	Stainless steel / Stainless steel	101405
			60 x 30 mm	9		101406



You can find special lubricating brushes on our website www.permausa.com



SPECIAL SOLUTION FITTINGS

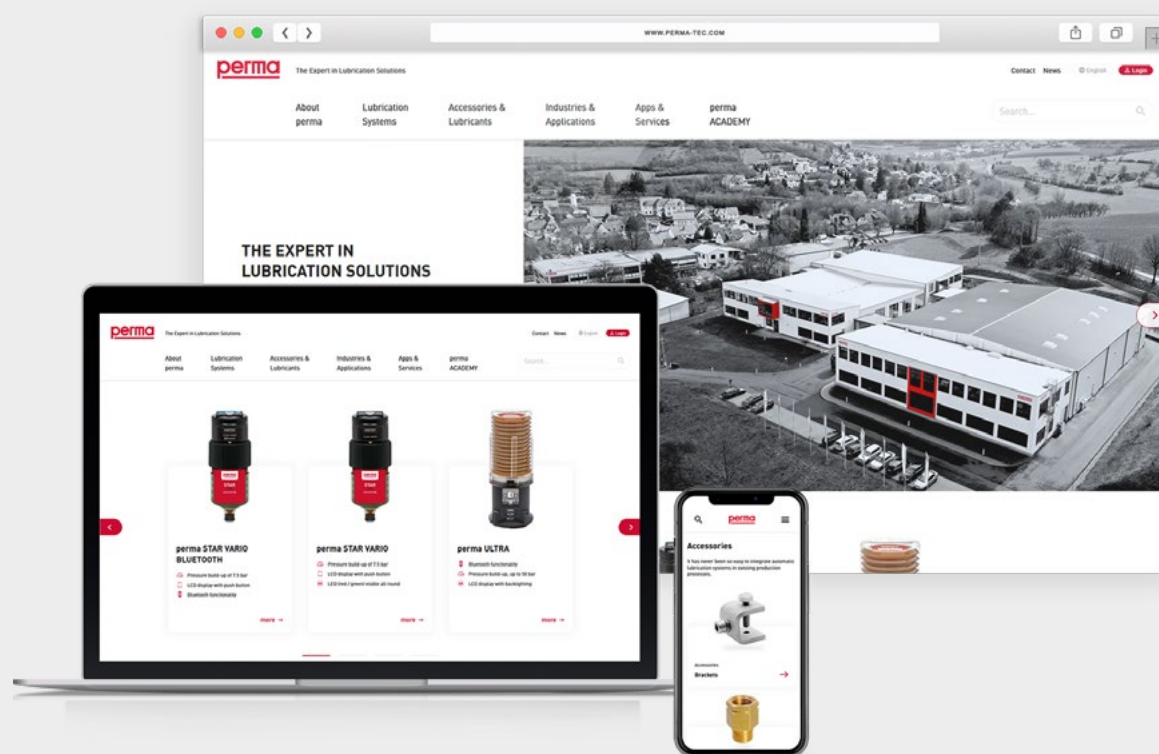
	Pic.	Part #
T-Adapter 3 x 1/4" NPT female (Nickel-plated)	1	901012
T-Adapter 3 G1/4 female (Stainless steel)	2	900493
Coupler 1/4" NPT female (Brass)	3	901013
Hexagon-nipple R1/4 male x 9/16 JIC male (Stainless steel)	4	900518
Hexagon-nipple R1/4 male	5	900497
Hexagon-nipple 1/4" NPT male (Brass)	6	901014
Relief valve 1/8" NPT male (5 lbs)	7	901015
Electric motor drain cup kit 120 cc / 4.06 oz	8	901085



SERVICE EQUIPMENT

	Pic.	Part #
50 ml Bottle Loctite® 243™ thread sealant (medium strength)	1	110278
perma Fitting thread tester	2	110374
perma REDUCER / ANGLE KIT includes several different reducers → Detailed bill of material on request or on our website	3	901044
Zerk fitting R 1/4 male	4	113898
Zerk fitting 1/4" NPT male	5	901032
perma UNIVERSAL ACCESSORY KIT includes reducers, angels, extensions, hose connectors, service equipment, etc. → Detailed bill of material on request or on our website	6	901045
Prefill adapter 1/4" NPT male	7	901041
Prefill adapter G1/4 male	8	109003
Grease gun	9	901035
Flex hose 18" with button head and hydraulic coupling for grease gun	10	901043





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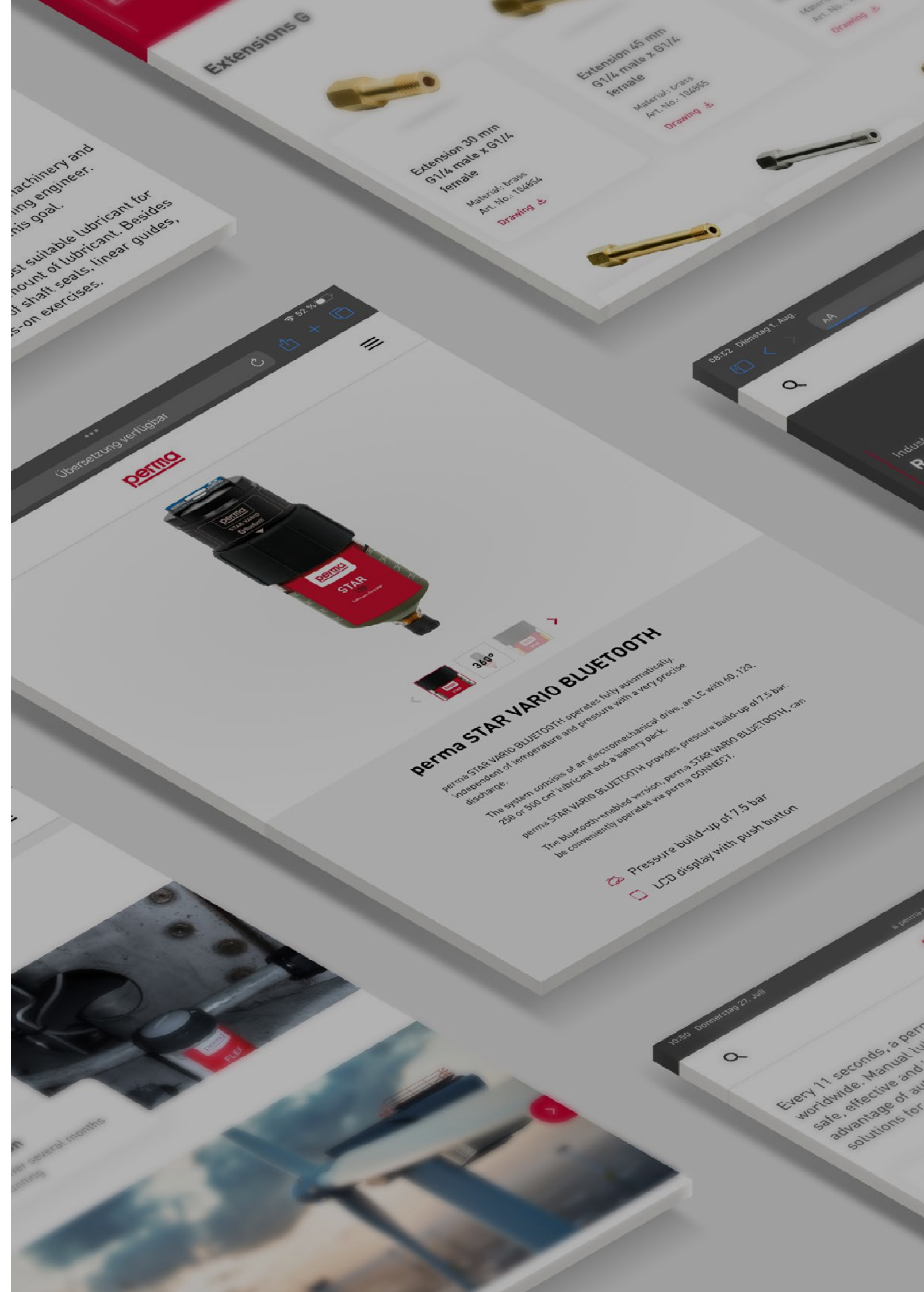
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