

The Expert in Lubrication Solutions



Special Solutions

→ For more information go to  
Catalogue "Special Solutions".

## Legend

### Applications:



Conveyors



Electric  
motors



Pumps



Blowers /  
Fans



Power supply with  
15-30 V via system  
or PLC

### Machine elements:



Roller  
bearings



Sliding bearings /  
Sliding guides



Linear guides



Open gears /  
Gear racks



Spindles



Shaft seals



Chains

### Ex-proof certification:

Testing and certification of equipment intended for use in potentially explosive atmospheres. It certifies that the device was tested and is in compliance with ex-proof requirements and safety standards.



**Ex**  
→ Europe



**IECEx**  
→ Global

**ANZEx**

**ANZEx**  
→ Australia and New Zealand

**TIIS**

**TIIS**  
→ Japan



**FM APPROVED**  
→ Canada and USA



**FM APPROVED**  
→ USA

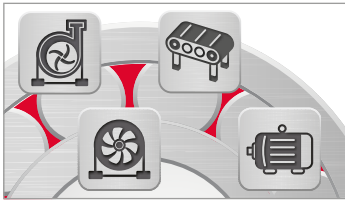


**UL (Underwriters Laboratories)**  
→ Canada and USA



## perma – The Expert in Lubrication Solutions ..... 4-7

- References
- perma-tec
- Facts and figures / Location
- Advantages at a glance



## Applications ..... 8-17

- perma Lubrication Systems for **conveyors, electric motors, pumps, blowers and fans**



## Single-point Lubrication Systems ..... 18-25

- **Electrochemical:** perma CLASSIC / perma FUTURA, perma FLEX, perma NOVA
- **Electromechanical:** perma STAR VARIO



## Lubricants ..... 26-27



## Direct mounting / Remote mounting ..... 28-31

- Quick Start Guide
- Cartridges / pails / bottles / canisters for pre-filling
- Conversion tables, perma SELECT Program
- **perma MOUNTING SETS:** Direct mounting / Remote mounting



## Part Numbers - Lubrication Systems ..... 32-35

- perma Lubrication Systems with part numbers and pictures



## Part Numbers - Accessories ..... 36-41

- Brackets, mounting plate, mounting angles, extensions, angles, tube connectors, tubes, reducers, reducer couplings, oil retaining valves, oil brushes, special connecting parts, mounting brackets, cartridges, bottles with part numbers and pictures



## perma SERVICE ..... 42-43

- perma Lubrication Systems - OVERVIEW
- **www.perma-tec.com:** Product- / Application flyer, perma SELECT Program, Videos / Photos, Installation Instructions
- **perma SERVICE:** Project Planning, Installation, Maintenance, perma MLP, perma ACADEMY

Satisfied customers from around the world

## References



Die Kompetenz in Kalium und Magnesium



### Industries around the world rely on automatic lubrication systems from perma-tec

perma-tec manufactures and sells single- and multi-point lubrication systems for all types of applications. perma products are backed by multiple patents and are used in every industry. In order to provide the best solution for each individual application, we involve our customers in the development process from start to finish. Since 1964 we have sold over 53 million lubricators to customers in mining, steel, power plants, machine building, automotive, food-, plastic- and chemical industries.

**perma**

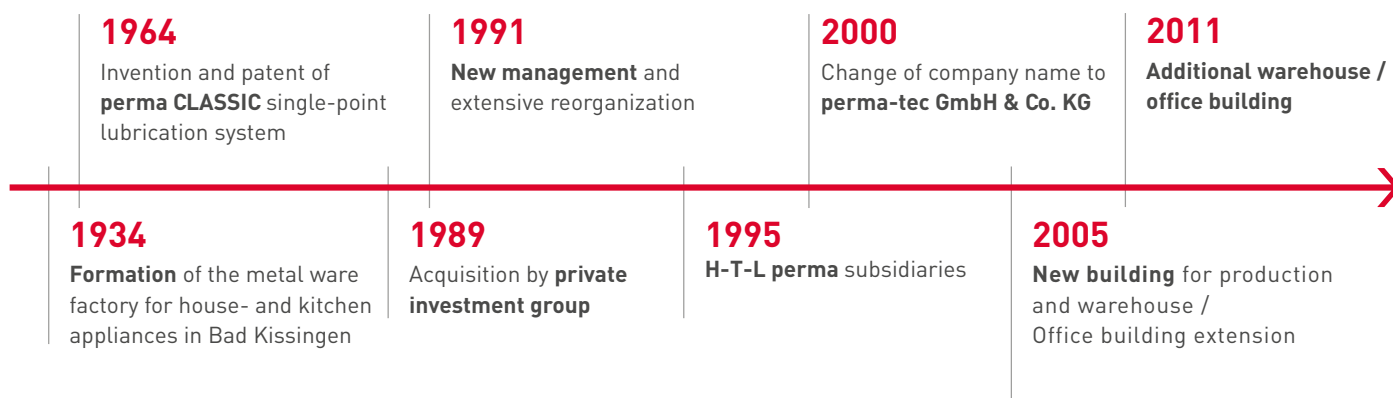


## perma-tec

perma-tec has been providing innovative and creative lubrication solutions for almost 50 years. Our single- and multi-point lubrication systems can be found in almost all types of industries and applications around the world.

perma-tec's leadership in single-point lubrication is based on many patents and certifications. All perma products are developed, tested and manufactured in the company's German headquarters and live up to the "Made in Germany" quality standard.

With many years of experience and a network of subsidiaries and competent partners around the world we can offer our customers lubrication solutions that meet the highest technical requirements.



## → Facts and figures

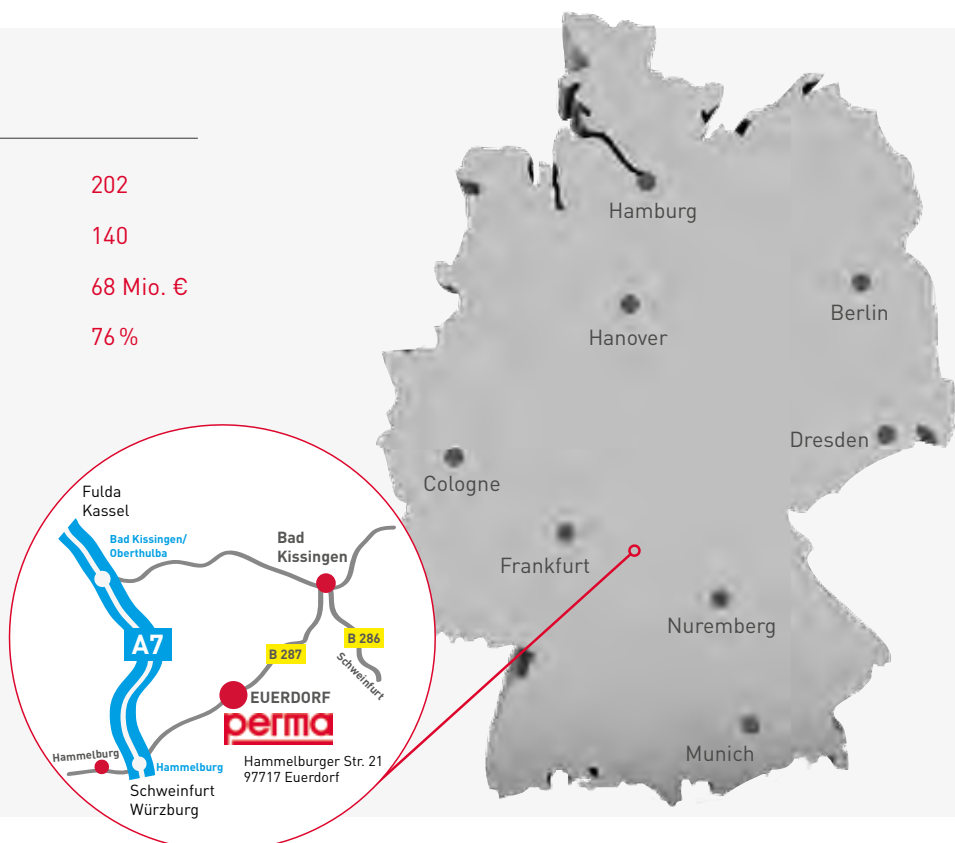
Employees worldwide	202
Employees in Germany	140
Turnover 2012 (not consolidated)	68 Mio. €
Share of sales earned abroad	76 %

### Subsidiaries perma H-T-L

USA	1995
France	1995
Iberica	1996
Italy	1997
UK	1998
Australia	2004
India	2008

Distributor network in more than **60 countries**

Last update: 03/2013



## Advantages at a glance

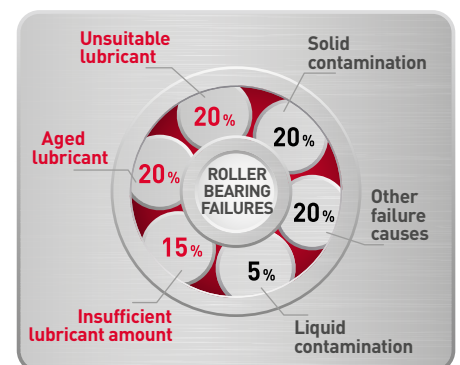
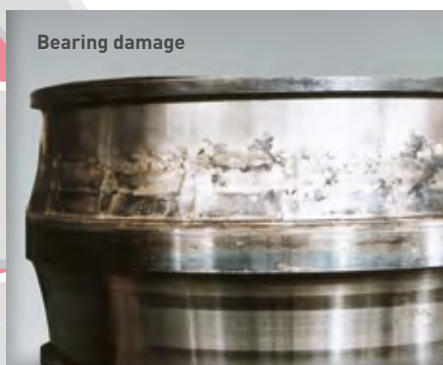
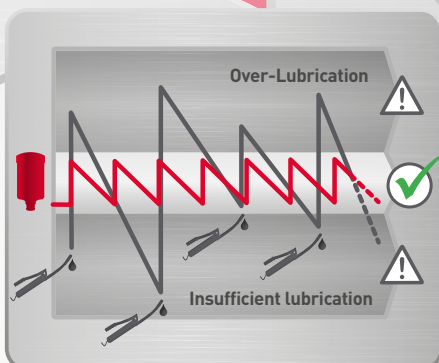
Every 11 seconds a perma product is installed or exchanged worldwide. Manual lubrication is a thing of the past. Today, anyone looking for a safe and effective way to lubricate equipment with long-term cost reduction takes advantage of automatic lubrication. perma-tec offers technical and economical solutions for all lubrication points.

### Technical aspects

#### perma prevents up to 55 % of roller bearing failures

- ✓ A constant renewal of the lubricating film **ensures equipment availability**
- ✓ Reliable, clean and precise **lubrication around the clock**
- ✓ Discharge periods from **1 – 24 months**
- ✓ Lubricant volume **60 cm<sup>3</sup> up to 7.000 cm<sup>3</sup>**
- ✓ Operating temperature from **-20 °C to +60 °C**

perma Lubrication Systems have always been manufactured in Germany.



Source:  
Internal calculation: Material cost and time, maintenance runs / roller bearing industry

## Economical aspects

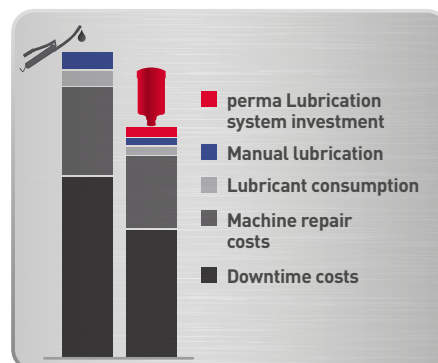
### perma reduces costs by up to 25 %

- ✓ Continuous production processes and **predictable maintenance intervals**
- ✓ Continuous, low maintenance, **long-term lubrication**
- ✓ Permanent supply of lube-points with **fresh lubricant**
- ✓ Consistently high lubricant quality guarantees **high equipment availability**
- ✓ **Energy cost reduction**



perma-tec quality management system is certified according to DIN EN ISO 9001 and DIN EN ISO/IEC 80079-23.

Manual vs. perma lubrication



## Safety aspects

### perma reduces the risk of accidents by up to 90 %

- ✓ **Extended exchange intervals**
- ✓ **Reduced maintenance runs**
- ✓ Time spent in **danger zones** is **reduced**
- ✓ Significantly **reduced** risk of workplace **accidents**



perma-tec is member of the "Association of German Safety Engineers (VDSI)".



## Environmental aspects

### perma - certified environmental management system

- ✓ **Reduced lubricant consumption** through controlled lubrication
- ✓ **Closed systems** – lubricant cannot escape into the environment
- ✓ **Reusable components** help minimize energy and material costs
- ✓ **Environmentally friendly materials** for simple and clean disposal



perma-tec is certified according to DIN EN ISO 14001.









Selection made easy

## The right Lubrication System





For years, perma-tec has been offering lubrication solutions uniquely suited for belt conveyors, electric motors, pumps, fans and blowers.

This chapter explains the lubrication challenges and shows suitable solutions for these applications.

### Main applications

				
				
	<b>Conveyors</b> → Pages 10-11	<b>Electric motors</b> → Pages 12-13	<b>Pumps</b> → Pages 14-15	<b>Blowers / Fans</b> → Pages 16-17

### Single-point Lubrication Systems

	<b>CLASSIC FUTURA</b>	++	0	+	+
	<b>FLEX</b>	+	+	++	++
	<b>NOVA</b>	+	++	+	++
	<b>STAR</b>	++	++	++	++
<b>Recommended lubricants</b>		SF01 / SF04	SF01 / SF08	SF01 / SF08	SF01 / SF02 / SF08

0 limited suitability    + suitable    ++ very suitable

If your application is not listed here,  
please contact your local perma distributor.

## Single-point Lubrication Systems

**perma CLASSIC / FUTURA**  
→ Pages 18-19



**perma FLEX**  
→ Pages 20-21



**perma NOVA**  
→ Pages 22-23



**perma STAR VARIO**  
→ Pages 24-25



### Technical data

	Activator	Rotary switch	Push button + LCD-display	Push button + LCD-display LED-signal red/green
		 → All-in-one system	 → NOVA Control unit reusable	 → STAR VARIO Motor reusable
	0 to +40 °C	-20 to +60 °C		-10 to +60 °C
	Max. 4 bar	Max. 5 bar	Max. 6 bar	6 bar
	120 cm³	60, 125 cm³	65, 130 cm³	60, 120, 250 cm³
	Electrochemical			Electromechanical
	Tamper-proof	Discharge period may be changed at any time / system can be turned off		
	1, 3, 6, 12 months at +20 °C / SF 01 without counter pressure	1, 2, 3 ... 12 months at +20 °C / SF 01 without counter pressure	1, 2, 3 ... 12 months independent of operating temperature	1, 2, 3 ... 12 months independent of operating temperature and counter pressure
	Approved for underwater and underground	IP 68	IP 65	IP 65
	CE Ex	CE Ex TECEx FM APPROVED TIIS	CE Ex TECEx FM APPROVED TIIS ANZEx	CE UL LISTED

### Special operating conditions

	Indoor / outdoor (limited)	Indoor or outdoor		
	Low vibration	Medium vibration		High vibration
	< 1 meter tube extension at +20 °C with lubricant SF01, tube ø16mm, part no. 27.005.091	< 3 meter tube extension at +20 °C with lubricant SF01, tube ø16mm, part no. 27.005.091		< 5 meter tube extension at +20 °C with lubricant SF01, tube ø16mm, part no. 27.005.091

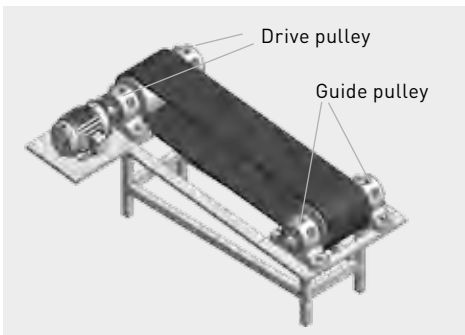


## perma Lubrication Systems for Conveyors

Belt conveyors are one of the most widely used pieces of equipment in all kinds of industries. For smooth process flows it is essential that they operate efficiently with maximum availability. To prevent equipment failures, conveyors need optimal lubrication despite extreme operating conditions like dirt, dust and strong vibration. Unscheduled downtimes, costly repairs and emergency service calls make up a significant share of the operating costs.

- Mining
- Power plants
- Food industry
- Recycling industry
- Quarrying industry
- Cement plants

### Lubrication points



Pillow block housings and spherical roller bearings are used for **drive / guide pulley** support.

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

### Challenges



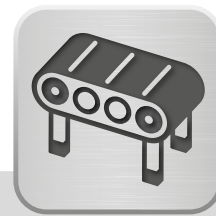
Large conveyor systems often extend over several levels and are **difficult to reach**. Optimal lubrication should take place while the system is running.

**Lubrication points** are often **neglected** because they are located up high, around the back, or in places with little room to maneuver. Maintenance work in such areas during operation is extremely **dangerous** and **jeopardizes workplace safety**.

Insufficient lubrication causes **premature equipment damage** creating **unscheduled** and **costly downtimes**.

- **Dirt** and **water** must be kept from entering lubrication points
- Lubrication points must receive the **right lubricant, in small amounts, at regular intervals**
- **No unnecessary system downtimes** due to relubrication
- Ensure **workplace safety**





## Advantages of automatic lubrication

- ✓ The lubricant seals lubrication points and **prevents contamination**
- ✓ **Lubrication** takes place **while the system is running** without interrupting the work process
- ✓ perma lubrication systems can be installed outside of danger zones (remote mounting), which drastically **reduces the risk of accidents**
- ✓ Precise lubricant discharge **lowers lubricant consumption** and **environmental impact**

### Reference



Die Kompetenz in Kalium und Magnesium

## Solutions

### Direct mounting on the lubrication point: e.g. perma CLASSIC / perma FUTURA

- Easy, quick mounting
- For lube-points with little vibration / shocks
- For easy-to-access and safe lubrication points



perma CLASSIC

Part numbers on page 33

MOUNTING SET  
Direct mounting

Part no. 27.002.001

→ Details on page 30

### Remote mounting to the lubrication point: e.g. perma STAR VARIO

- For lube-points with strong vibration / shocks (isolation of lubrication system)
- When workers' safety is at risk: Mounting in safe areas
- For hard-to-access lubrication points



perma STAR VARIO  
with LC S60

Part numbers on page 35

MOUNTING SET  
with low pressure tube

Part no. 27.002.007

→ Details on page 31

More lubrication solutions on page 8. More details on perma MOUNTING SETS on page 30/31.

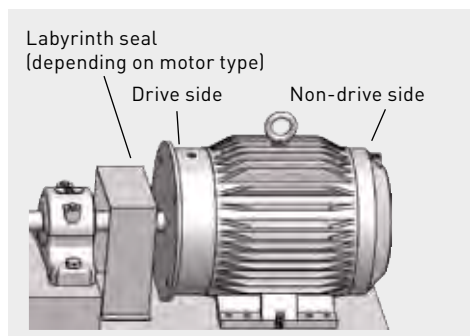
## perma Lubrication Systems for Electric motors

Electric motors are used for a variety of applications where they convert electricity into motion. Efficient lubrication and maintenance practices are essential for the reliability of electric motors.

Many motors are located in hard-to-reach or dangerous areas and are not lubricated according to manufacturer specifications. Overgreasing and lubricant starvation are the major causes for bearing damage and electric motor failures.

- Mining
- Power plants
- Food industry
- Recycling industry
- Quarrying industry
- Cement plants

### Lubrication points



Lubrication points are located on the **drive** and **non-drive end of the motor**.

**Grease escape** (grease drain hole, grease trap, grease relief port) is important. Bearings will overheat if grease cannot escape or if grease traps are filled up with old grease.

#### The right lubricant

Motors with relubrication fittings have plates specifying grease amounts and relubrication intervals.

→ See page 26 / 27 for more details on lubricants

<u>Speed</u> high	<u>Baseoil</u> thinner
<u>Speed</u> low	<u>Baseoil</u> thicker

NLGI 0-2



### Challenges



During manual lubrication, the **grease** is applied in **uneven amounts**. Too much lubricant at one time causes temporary **overgreasing**. Long relubrication intervals lead to **lubricant starvation**.

- Excess grease takes hours to be distributed in the bearing:  
**Bearing heating / fire hazard; Shut-off** by temperature control
- Bearing damage from lubricant starvation results in unscheduled **equipment downtimes** and higher production costs
- **Increased maintenance costs** caused by premature wear



**Relubrication on running motors** (recommended by motor manufacturers) puts workers in danger. Maintenance work in **dangerous** and **hard-to-reach places** increases the risk for workplace accidents.

- **High risk of work-related injuries**
- **Motor shut-down** required when entering dangerous areas





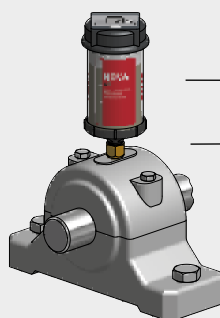
## Advantages of automatic lubrication

- ✓ **Relubrication while the motor is running** minimizes bearing heating
- ✓ **Projectable service runs** reduce material and staff costs
- ✓ **Increased workplace safety** through automatic lubrication of lubrication points that are difficult to access
- ✓ **Precise lubricant discharge reduces lubricant consumption and environmental impact**

## Solutions

### Direct mounting on the lubrication point: e.g. perma NOVA

- Easy, quick mounting
- For lube-points with little vibration / shocks
- For easy-to-access and safe lubrication points



perma NOVA 130

Part numbers on page 34

MOUNTING SET  
Direct mounting

Part no. 27.002.001

→ Details on page 30

### Remote mounting to the lubrication point: e.g. perma STAR VARIO

- For lube-points with strong vibration / shocks (isolation of lubrication system)
- When workers' safety is at risk: Mounting in safe areas
- For hard-to-access lubrication points



perma STAR VARIO  
with LC M120

Part numbers on page 35

MOUNTING SET  
with low pressure tube

Part no. 27.002.007

→ Details on page 31

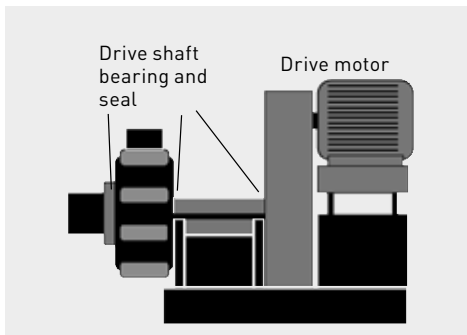
More lubrication solutions on page 8. More details on perma MOUNTING SETS on page 30/31.

## perma Lubrication Systems for Pumps

Pumps are the most important equipment of many applications and industries. A failing pump can stop the entire work- or production process. One of the main factors for trouble-free operation is effective lubrication. A regular injection of fresh, clean grease provides extra protection against ingress of dirt and water and will extend the service life of your pumps.

- Mining industry
- Chemical industry
- Power generation
- Food industry
- Oil and gas production
- Paper industry
- Pharma industry
- Environmental technology
- Water and wastewater

### Lubrication points



Lubrication points (roller bearings) are located on the **drive shaft** between drive motor and pump.

Lubrication of **gland and labyrinth seals** prevents the ingress of dirt or pumped media.

**Bearings and bearing housing seals** must be permanently supplied with the right lubricant in the amount specified by pump manufacturers.

More information about drive motor lubrication on page 12/13 "Electric motors".

### Challenges



Pumps are often operated under extreme conditions with **heavy contamination** from slurry or dust and **hazardous materials** such as acids.

- **Dirt, water or other contaminants** must not enter bearing points

Many lubrication points can only be accessed with **extreme protection measures** (safety gloves and protective masks). As a result, they are not lubricated as often as required or are completely neglected.

Insufficient lubrication of bearings and seals results in **accelerated bearing wear** and **impeller gland leaks**.

- Optimal and continuous **lubrication with fresh lubricant** during operation
- Operation in **potentially explosive areas**
- **Workplace safety** must be ensured





## Advantages of automatic lubrication

- ✓ Automatic lubrication of difficult-to-access lubrication points **increases workplace safety**
- ✓ Precise discharge **reduces** lubricant consumption and **environmental impact**
- ✓ **Less maintenance runs** minimize the time workers spend in dangerous areas
- ✓ Some perma lubrication systems **can be used underground** and in **potentially explosive areas**

### Reference



## Solutions

### Direct mounting on the lubrication point: e.g. perma FLEX

- Easy, quick mounting
- For lube-points with little vibration / shocks
- For easy-to-access and safe lubrication points



perma FLEX 125

Part numbers on page 33

MOUNTING SET  
Direct mounting

Part no. 27.002.001

→ Details on page 30

### Remote mounting to the lubrication point: e.g. perma STAR VARIO

- For lube-points with strong vibration / shocks (isolation of lubrication system)
- When workers' safety is at risk: Mounting in safe areas
- For hard-to-access lubrication points



perma STAR VARIO  
with LC L250

Part numbers on page 35

MOUNTING SET  
with low pressure tube

Part no. 27.002.007

→ Details on page 31

More lubrication solutions on page 8. More details on perma MOUNTING SETS on page 30/31.

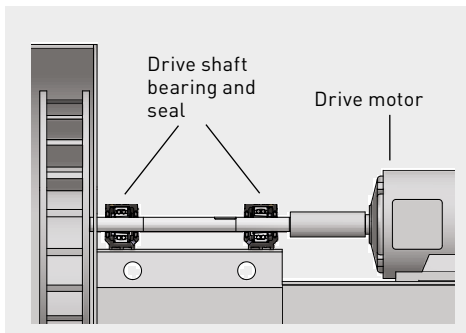
## perma Lubrication Systems for Blowers / Fans

Blowers and fans are used in almost all key industries where they provide adequate amounts of primary and secondary air. Flue gas fans remove air containing dust, gases and other harmful substances.

In primary air zones, induced draft fans are used in scrubbers, dust collectors, heat exchangers and desulfurization plants.

- Mining
- Chemical industry
- Glas industry
- Wood-working
- Power plants
- Food industry
- Refinery

### Lubrication points



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

**Bearings and shaft seals** must be permanently supplied with the right lubricant in the amount specified by fan manufacturers.

More information about drive motor lubrication on page 12/13 "Electric motors".

### Challenges

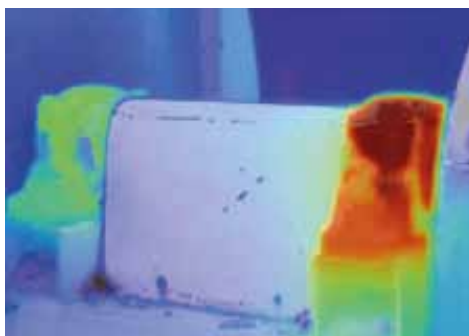


Blowers and fans are often used in **extreme operating conditions** with many **contaminants** in the air. Dust and other substances entering the bearing system will lead to increased wear of individual components and a shorter service life of the fan.

- Contaminants (e.g. **dust**) in the air must not enter lubrication points

Regular lubrication of bearings and seals is essential for uninterrupted operation. Fan and blower lubrication points are often extremely dirty and hard to reach, which makes maintenance even more difficult. When manufacturer recommended lubrication intervals are not observed, the system will eventually fail as a result of **lubricant starvation**.

- **Excessive bearing heating** from insufficient lubrication
- Lubricant must meet **operating requirements** (vibration/ oscillation, speed, operating temperature, load)
- **Observing relubrication intervals** (depending on bearing type, bearing size and ambient conditions)







## Advantages of automatic lubrication

- ✓ perma lubrication systems **seal** and **protect** lubrication points **against contamination**
- ✓ Precise metering of lubricant amount **reduces lubricant consumption**
- ✓ Safe and continuous lubrication in areas with **explosive atmospheres**
- ✓ Different lubricant volumes for precise discharge settings to **meet lube-point requirements**

### Reference



## Solutions

### Direct mounting on the lubrication point: e.g. perma FLEX

- Easy, quick mounting
- For lube-points with little vibration / shocks
- For easy-to-access and safe lubrication points



perma FLEX 125

Part numbers on page 33

**MOUNTING SET  
Direct mounting**

Part no. 27.002.001

→ Details on page 30

### Remote mounting to the lubrication point: e.g. perma NOVA

- For lube-points with strong vibration / shocks (isolation of lubrication system)
- When workers' safety is at risk: Mounting in safe areas
- For hard-to-access lubrication points



perma NOVA 130

Part numbers on page 34

**MOUNTING SET  
with low pressure tube**

Part no. 27.002.006

→ Details on page 31

More lubrication solutions on page 8. More details on perma MOUNTING SETS on page 30/31.

# perma CLASSIC / perma FUTURA

The world's best selling lubrication systems



I M2 c X  
II 2G c IIC T6 X  
II 2D c T80°C X  
0 °C ≤ Ta ≤ +40 °C



## Simple, robust, reliable

perma CLASSIC and perma FUTURA can be used for all applications with ambient temperatures of 0 °C to +40 °C. The reliable operating principle is based on an electro-chemical reaction. The lubrication period is determined by color coded activator screws (and the average ambient temperature). Depending on your application's requirement, you may choose to discharge 120 cm<sup>3</sup> in a period of 1, 3, 6 or 12 months. The activator screw generates pressure (max. 4 bar) which moves the piston forward and continuously injects small lubricant amounts into the lubrication point.

**perma**

## Applications



perma CLASSIC and perma FUTURA are used for single-point lubrication of roller- and sliding bearings, sliding guides, open gears, gear racks, spindles, shaft seals, chains, etc. perma CLASSIC has a metal housing and is preferred for use in steel- and automotive industry, mining and mechanical engineering. perma FUTURA has a corrosion-proof plastic housing, which makes it ideal for hygienically clean environments as in the food and chemical industry.



## Product characteristics

## Benefits



**Simple activation with activator screw**

**Activation**  
1, 3, 6 or 12 months

- Quick installation / tamper-proof
- Simple exchange / no special tools required
- Inexpensive automatic single-point lubrication



perma CLASSIC  
**Metal housing**

perma FUTURA  
**Transparent plastic housing with integrated support flange**

- Robust housing for use in harsh environments
- Easy fill level check via position of the lubricant delivery piston
- Corrosion-proof / suitable for underwater use



**Ex-proof certification**  
**Mining approval**

- Safe and reliable lubrication in explosive areas
- Less exposure to safety hazards increases workplace safety
- Suitable for underground use

## Technical data

→ Refer to page 33 for part numbers

Drive  
**Electrochemical reaction**

Housing  
**CLASSIC: Metal**  
**FUTURA: Transparent plastic**

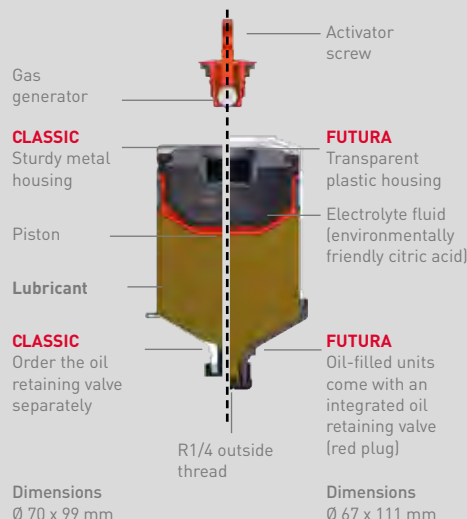
Discharge period at +20 °C / SF01  
**1, 3, 6 or 12 months**

Lubricant volume  
**120 cm<sup>3</sup>**

Operating temperature  
**0 °C to +40 °C**

Pressure build-up  
**Max. 4 bar**

Lubricants  
**Grease up to NLGI 2 / oil**



### Discharge period in months:

Time between activation and first discharge: **1 day**

	120 cm <sup>3</sup>	20.001.001	20.001.003	20.001.006	20.001.012
at 0 °C		4	8	15	>18
at +10 °C		2	5	8	18
at +20 °C		1	3	6	12
at +30 °C		0.8	2	3	6
at +40 °C		0.6	1	2	3

To select the most suitable activator screw  
→ go to page 29

## perma FLEX

The all-in-one lubrication system in two compact sizes



CE  II 1G Ex ia IIC T6  
II 1D Ex iaD 20 T85°C  
I M1 Ex ia I



### Flexible use – even for challenging lubrication points

The automatic lubrication system perma FLEX is available in two convenient sizes (60 cm<sup>3</sup> / 125 cm<sup>3</sup>). It can be used for inside or outside applications at temperatures ranging from -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**



## Applications



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.



## Product characteristics

## Benefits



**All-in-one system with dial for discharge period setting**  
1, 2, 3,... 12 months

- Ready-to-use system / no assembly necessary
- Quick and easy activation with dial
- Discharge 1-12 months / in monthly steps = more flexibility



**Reliable operation**  
at -20 °C to +60 °C

- For use in hot and cold environments
- Year-round use for outdoor applications



**Ex-proof certification**  
**FM certification**  
**IP 68 protection**

- Safe lubrication in dangerous and critical areas
- Reliable lubrication in moist and dusty areas
- Increased workplace safety

## Technical data

→ Refer to page 33 for part numbers

### Drive Gas generating unit

Discharge period at +20 °C / SF01  
**1, 2, 3, ... 12 months**

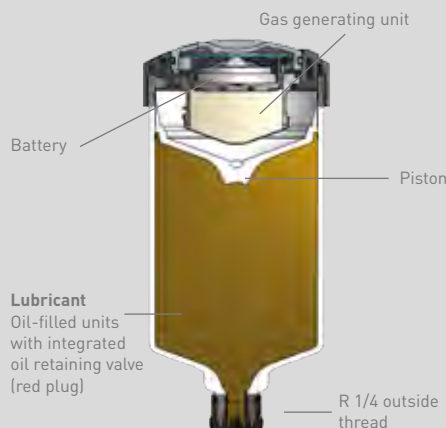
Lubricant volume  
**60 cm<sup>3</sup> or 125 cm<sup>3</sup>**

Operating temperature range  
**-20 °C to +60 °C**

Pressure build-up  
**Max. 5 bar**

Protection class  
**IP 68**

Lubricants  
**Grease up to NLGI 2 / oil**



Dimensions  
FLEX 60: Ø 58 x 84,5 mm  
FLEX 125: Ø 58 x 117 mm

### Rotary switch for discharge period setting

Figures based on laboratory tests for emptying without counter pressure using NLGI 2 lubricant.

Grease residues possible at temperatures >+40 °C or discharge period settings >6 months.



	1	3	6	9	12
at -20 °C	2	5	10	13	15
at 0 °C	1.3	3.8	7.2	11	13
at +20 °C	1	3	6	9	12
at +40 °C	0.8	2.5	5.2	7.5	10
at +60 °C	0.6	2	4	-	-

## perma NOVA

The first temperature independent, electrochemical lubrication system



**NEW**



I M1 Ex ia I Ma  
II 2G Ex ia IIC T4 Gb  
II 2D Ex ia IIIC T135°C Db  
ZELM 09 ATEX 0420 X  
-20 °C ≤ Ta ≤ +60 °C



Ex ia I Ma  
Ex ia IIC T4 Gb  
Ex ia IIIC T135°C Db  
IECEx ZLM 09.0013X



**ANZEx  
TIIS**



### For applications with high variations in temperature

perma NOVA can be used for all applications that are within a temperature range of -20 °C up to +60 °C. The discharge period (1 – 12 months) can be easily programmed by pushing the SET-button on the NOVA control unit. A temperature sensor periodically measures the ambient temperature and the control unit calculates the required gas generation based on this data. This ensures a continuous and controlled discharge. perma NOVA consists of a reusable control unit, a lubricant canister (LC) filled with grease or oil (with integrated oil retaining valve), and a protection cover. The perma NOVA LC is available in sizes of 65 cm<sup>3</sup> and 130 cm<sup>3</sup>.

**perma**

## Applications



perma NOVA is especially suited 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 system is protected against dust and water jets when the individual parts are assembled correctly (IP65). perma NOVA with LC 65 cm<sup>3</sup> is ideal for the lubrication of electric motors.



## Product characteristics

## Benefits



**Electronic control unit with temperature compensation** shows discharge period / operating status  
**LCD display and SET-button**  
Setting: 1, 2, 3, ... 12 months

- Reusable NOVA Control unit
- Temperature independent during the entire discharge period
- Accelerated pressure build-up for first discharge within one day
- Simple handling / easy adjustments



**System works reliably from -20 °C to +60 °C**

- Ideal for applications with considerable temperature variations
- One system for subfreezing as well as high-temperature applications
- Integrated support flange for stronger connections



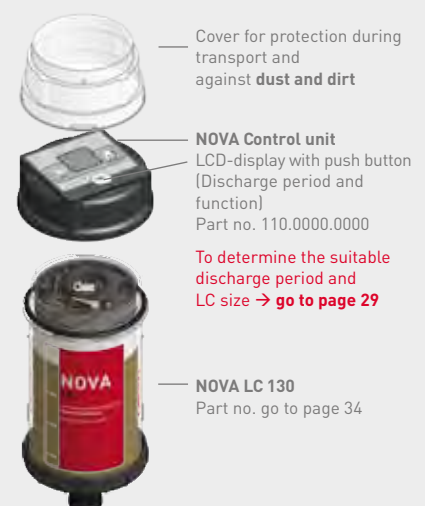
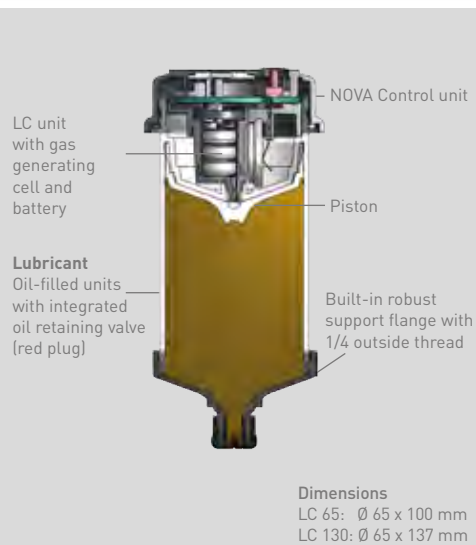
**Ex-proof certification**  
**FM certification**  
**IP 65**

- Safe and reliable lubrication in explosive areas
- Increased workplace safety
- Dust-tight and protected against water jets

## Technical data

→ Refer to page 34 for part numbers

Drive – reusable  
**Electrochemical reaction via gas generating cell**  
**Electronic temperature compensation**  
Discharge period  
**1, 2, 3, ... 12 months**  
Lubricant volume  
**65 cm<sup>3</sup> or 130 cm<sup>3</sup>**  
Operating temperature range  
**-20 °C to +60 °C**  
Pressure build-up  
**Max. 6 bar**  
Protection class  
**IP 65**  
Lubricants  
**Grease up to NLGI 2 / oil**



## perma STAR VARIO

Precise and easy-to-use lubrication system

Independent of temperature and counter pressure

**Generation  
2.0**



### Three different sizes for a broad range of applications

perma STAR VARIO operates fully automatically, independent of temperature and very precisely. The system consists of an electromechanical drive unit, a lubricant canister (LC) with a lubricant volume of 60, 120 or 250 cm<sup>3</sup> and a battery pack. The desired discharge period and LC size can easily be selected with the push button and are immediately visible in the display. The current operating status is indicated on the display and via the all around LED signal lights (red/green), which are visible from a distance.

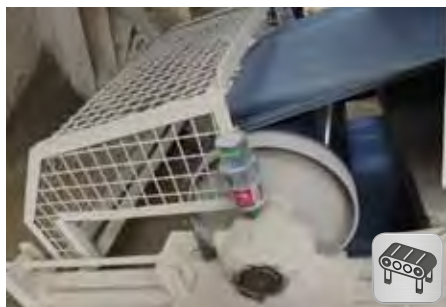
**perma**



## Applications



perma STAR VARIO is used for single-point lubrication of roller- and sliding bearings, sliding guides, open gears, gear racks, spindles, shaft seals, and chains. This lubrication system is ideal for applications that require precise lubricant metering. It is a preferred system for electric motors with very specific relubrication amounts. perma STAR VARIO is protected against dust and water jets when the individual parts are assembled correctly.



## Product characteristics

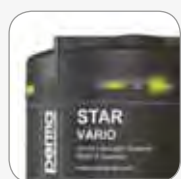
## Benefits



**LCD-display with push button**  
shows discharge period, LC size  
and operating status

**Setting:**  
1, 2, 3, ... 12 months and LC size

- Simple and self-explanatory operation
- Precise settings, based on manufacturer recommendations, prevent lubricant starvation and save lubricant
- Settings can be changed at any time
- System can be turned off for extended equipment shut downs



**Electromechanical,  
reusable drive unit  
with battery pack**  
**All around visible LED lights**  
signal function and errors

- Reliable, precise lubricant discharge independent of temperature and counter pressure
- Short ROI through reduced follow-up costs
- Quick function control from a distance saves time and improves overall workflow



**Pressure build-up to 6 bar  
allows remote mounting with  
tubes up to 5 m**

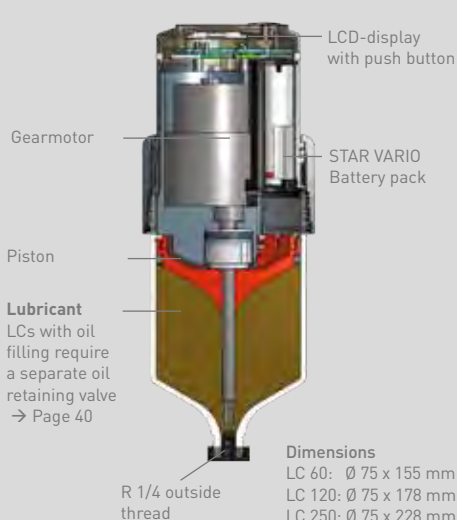
**Purge function**

- Installation at safe- and easy-to-access places reduces workplace accidents and saves time
- Reduces equipment downtime since the exchange can be carried out while the machines are running
- Lubrication point can be purged to clear blockages

## Technical data

→ Refer to page 35 for part numbers

Drive – reusable  
**Electromechanical**  
Power supply  
**STAR VARIO Battery pack 4.5 V**  
Discharge period  
**1, 2, 3, ... 12 months**  
Lubricant volume  
**60 cm<sup>3</sup>, 120 cm<sup>3</sup> or 250 cm<sup>3</sup>**  
Operating temperature  
**-10 °C to +60 °C**  
Pressure build-up  
**6 bar**  
Protection class  
**IP 65**  
Lubricants  
**Grease up to NLGI 2 / oil**



The right lubricant for a longer service life

# Lubricants

perma-tec offers a wide range of high quality, high performance lubricants to meet the lubrication requirements of different industries, applications, and operating environments. Our lubricants are developed especially for the use in perma automatic lubrication systems. They are tested under laboratory conditions and in real applications to ensure optimal performance.



Food and  
pharma industry



Bio-degradable for  
all applications

## Oil

<b>perma Code Name</b> Identification according to DIN 51 517-3 → Lubricant properties	Lubricant	Base oil	Operating temperature (°C)	Viscosity at +40 °C [mm²/s]	Applications			
					Sliding bearings / guides	Open gears / gear racks	Spindles	Chains
<b>S014 High performance oil</b> → Effective lubrication even at high temperatures → Good adhesion and penetration properties → Little residue	Oil	PAO + Ester	-20 to +250	320	-	-	-	✓
<b>S032 Multipurpose oil</b> CLP 100 → FZG scuffing load stage >12 / high micro pitting resistance → Aging and oxidation resistance → Good wear protection for gear teeth and rolling bearings	Oil	Mineral oil	-5 to +100	100	✓	✓	✓	✓
<b>S064 Bio oil, low viscosity</b> CLP E 100 → Rapidly biodegradable → Good wear protection → Good viscosity / temperature behavior	Oil	Ester	-30 to +110	100	✓	✓	✓	✓
<b>S069 Bio oil, high viscosity</b> CLP E 460 → Rapidly biodegradable → Very adhesive → Good viscosity / temperature behavior	Oil	Ester	-20 to +110	460	✓	✓	✓	✓
<b>S070 Food grade oil NSF H1</b> CLP H 220 → Excellent aging and oxidation stability → Neutral towards sealing materials → Good wear protection	Oil	PAO + Ester	-30 to +120	220	✓	✓	✓	✓

### Additives

Additives are organic or inorganic compounds mixed into the base oil to enhance the existing oil properties or to impart new properties.  
Examples: AW (anti-wear) and EP (extreme pressure) additives.  
Additives are selected based on the requirements of the application.

### Operating temperature

The safe function of components can be guaranteed within this temperature range. Using the lubricant outside this range can lead to damage.

### Speed index

The speed factor indicates the permissible bearing speed range for lubricants. The perma lubricant overview indicates the max. speed for grease lubrication of deep groove ball bearings. The  $n \times dm$  factor is a criterion for the selection of the grease taking into consideration bearing size and operating speed.

Calculation:  $n \times dm = \text{speed factor}$   $dm = (D + d) \div 2$

$n$  = Operating speed (1/min)

$D$  = Outside bearing diameter

$d$  = Inside (bore) bearing diameter

$dm$  = Bearing size

→ Special lubricants are available upon request  
→ The perma SELECT software helps you choose the right lubricant

(1) Please check compatibility of lubricant and sealing material.

## Grease

perma Code Name Identification according to DIN 51 502 → Lubricant properties	NLGI-grade	Thickener	Base oil	Operating temperature range (°C)	Viscosity at +40 °C [mm²/s]	Speed index	Applications					
							Roller bearings	Sliding bearings / guides	Linear guides	Open gears / gear racks	Spindles	Shaft seals (1)
<b>SF01 Multipurpose grease</b> KP2K-30 → Resistant to salt water → Free of heavy metal and silicone → Wear-reducing EP additives	2	Li / Ca	Mineral oil	-30 to +130	220	350,000	✓	✓	✓	-	✓	✓
<b>SF02 Extreme pressure grease</b> KPF2K-30 → Good load carrying capacity → Resistant to ageing and oxidation → Good emergency lubrication properties	2	Li + MoS <sub>2</sub>	Mineral oil	-30 to +120	105	350,000	-	✓	-	✓	-	-
<b>SF03 High temp. grease</b> KE1T-20 → High thermal stability → Good oil retention → High water resistance	2	PHS + solids	Ester + PFPE	-20 to +220	420	300,000	✓	✓	-	-	-	-
<b>SF04 High performance grease</b> K1S-20 → High performance for vibration and shock loads → Resistant to aggressive media → Multipurpose grease for extreme requirements	0/1	PHS	Mineral oil + PAO	-20 to +160	500	200,000	✓	✓	✓	✓	✓	-
<b>SF05 High temp. / Extreme pressure grease</b> KPF1S-20 → High performance for vibrations and shock loads → Good emergency lubrication properties → Excellent aging and oxidation resistance	0/1	PHS + MoS <sub>2</sub>	Mineral oil + PAO	-20 to +160	500	200,000	✓	✓	-	✓	-	-
<b>SF06 Liquid grease</b> K0K-20 → Good water resistance → High wear protection → Good flow characteristics	0	Al-Com.	Mineral oil	-20 to +130	220	300,000	✓	✓	✓	-	✓	-
<b>SF08 High speed grease</b> KHC2N-50 → Resistant to aging and oxidation → Good wear protection → High speed factor	2	Ca-Com.	PAO	-40 to +140	100	600,000	✓	✓	-	-	-	-
<b>SF09 Multipurpose bio grease</b> KPE2K-40 → Rapidly biodegradable → Good low-temperature properties → High aging resistance	2	PHS	Ester	-40 to +140	100	300,000	✓	✓	-	✓	-	-
<b>SF10 Food grade grease NSF H1</b> K1K-40 → Synthetic → Especially for the food / pharma industry → Good flow characteristics	1	Al-Com.	PAO	-45 to +120	150	300,000	✓	✓	✓	✓	-	-

### Base oil

Base oil is the main component of a grease and influences its behavior. Base oils may be mineral oil, hydrocracked oil, polyalphaolefin (PAO) oil, or synthetic ester oil.

### Base oil viscosity

Base oil viscosity indicates the flow capability of the base oil. Low viscosity base oils are used for very high speeds. High viscosity base oils are used for high load applications. The viscosity of a typical roller bearing grease at +40 °C is between 15 and 500 mm²/s.

### NLGI grade

Greases are divided into various consistency grades (NLGI grade). High consistency = stiff grease = high NLGI grade  
Low consistency = soft grease = low NLGI grade  
NLGI starts at 000 (liquid) to 6 (very stiff).  
Greases up to NLGI grade 2 are suitable for use in perma lubrication systems.

### Thickeners

The thickener acts like a sponge. It holds the individual components of the grease together and ensures that the oil stays at the contact point.



Direct mounting / Remote mounting

# Quick Start Guide

## Prepare lube-point

Clean lube-point and remove grease fitting

Add sealant and screw reducer into lubrication point

Prefill lube-point and any grease lines / connections  
(use the same grease that is contained in the lubrication system)

Pressure check: Lube-point / all connecting parts  
Accessory set for pressure test  
Part no. 27.002.005

## Cartridges / Pails / Bottles / Canisters for pre-filling

Grease	perma Code	Cartridge 400 g for grease gun 	Pail 1 kg 	Pail 5 kg 
perma Multipurpose grease	SF01	28.001.000	286.0001.0000	287.0001.0000
perma Extreme pressure grease	SF02	28.002.000	286.0002.0000	287.0002.0000
perma High temp. grease	SF03	28.003.000	286.0003.0000	287.0003.0000
perma High performance grease	SF04	28.004.000	286.0004.0000	287.0004.0000
perma High temp. / Extreme pressure grease	SF05	28.005.000	286.0005.0000	287.0005.0000
perma Liquid grease	SF06	28.006.000	286.0006.0000	287.0006.0000
perma High speed grease	SF08	28.008.000	286.0008.0000	287.0008.0000
perma Multipurpose bio grease	SF09	28.009.000	286.0009.0000	287.0009.0000
perma Food grade grease NSF H1	SF10	28.010.000	286.0010.0000	287.0010.0000
Oil	perma Code		Bottle 1 ltr 	Canister 5 ltr 
perma High performance oil	S014		281.0414.0000	288.0414.0000
perma Multipurpose oil	S032		281.0432.0000	288.0432.0000
perma Bio oil, low viscosity	S064		281.0464.0000	288.0464.0000
perma Bio oil, high viscosity	S069		281.0469.0000	288.0469.0000
perma Food grade oil NSF H1	S070		281.0470.0000	288.0470.0000
Grease gun	Pic. 1	26.005.001		
Tube with rotary joint and slide coupling for grease gun	Pic. 2	26.005.010		
Tube prefill adapter for tube with ø 6 mm	Pic. 3	27.005.066		
Tube prefill adapter for tube with ø 8 mm	Pic. 4	27.005.058		
Accessory set for pressure test	-	27.002.005		



For the right lubricant / lubrication system / discharge period setting use the perma SELECT software.

Free download: [www.perma-tec.com](http://www.perma-tec.com)



## Activation / Installation of Lubrication System



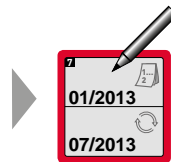
perma CLASSIC /  
perma FUTURA



perma FLEX



perma NOVA /  
perma STAR VARIO



Note activation /  
exchange date  
on label



Remove plug



Screw lubrication  
system into lube-point

## Conversion tables

### Conversion:

1 stroke with grease gun = approx. 1.5 cm<sup>3</sup> (1.2 g)

or use our perma SELECT software

### perma Videos:

Mounting / Activation / Installation

→ [www.perma-tec.com/video-clips](http://www.perma-tec.com/video-clips)



### Activator / setting based on the required lubricant amount:

#### 120 cm<sup>3</sup> Lubricant



Activator / months at +20 °C with SF01	1	3	6	12
Lubricant / day [cm <sup>3</sup> ]	4.0	1.3	0.7	0.3
Lubricant / week [cm <sup>3</sup> ]	28.0	9.3	4.7	2.3
Strokes with grease gun / day	2-3	1	0.5	0.25
Strokes with grease gun / week	16-20	5-7	3-4	1-2

#### 60 - 65 cm<sup>3</sup> Lubricant



Setting / month	1	2	3	4	5	6	7	8	9...	...12
Lubricant / day [cm <sup>3</sup> ]	2.0	1.0	0.7	0.5	0.4	0.3	0.3	0.3	0.2	0.2
Lubricant / 100 hours [cm <sup>3</sup> ]	8.3	4.2	2.8	2.1	1.7	1.4	1.2	1.0	0.9	0.7
Lubricant / week [cm <sup>3</sup> ]	14.0	7.0	4.7	3.5	2.8	2.3	2.0	1.8	1.6	1.6
Strokes with grease gun / day	1-2	<1	0.5	-	-	0.25	-	-	-	0.13
Strokes with grease gun / 100 h	5-7	3	2	1.5	<1.5	1	<1	<1	<1	0.5
Strokes with grease gun / week	9-11	5	3	2-3	2	1-2	<1.5	<1.5	1	<1

#### 120 - 130 cm<sup>3</sup> Lubricant



Setting / month	1	2	3	4	5	6	7	8	9...	...12
Lubricant / day [cm <sup>3</sup> ]	4.2	2.1	1.4	1.0	0.8	0.7	0.6	0.5	0.5	0.4
Lubricant / 100 hours [cm <sup>3</sup> ]	17.4	8.7	5.8	4.3	3.5	2.9	2.5	2.2	1.9	1.6
Lubricant / week [cm <sup>3</sup> ]	29.2	14.6	9.7	7.3	5.8	4.9	4.2	3.6	3.2	2.6
Strokes with grease gun / day	3	1-2	1	<1	<1	0.5	-	-	-	0.25
Strokes with grease gun / 100 h	11-13	5-7	4	3	2-3	2	<2	1.5	<1.5	1
Strokes with grease gun / week	18-22	9-11	6-7	5	4	3-4	3	2-3	2	1-2

#### 250 cm<sup>3</sup> Lubricant



Setting / month	1	2	3	4	5	6	7	8	9...	...12
Lubricant / day [cm <sup>3</sup> ]	8.3	4.2	2.8	2.1	1.7	1.4	1.2	1.0	0.9	0.7
Lubricant / 100 hours [cm <sup>3</sup> ]	34.7	17.4	11.6	8.7	6.9	5.8	5.0	4.3	3.9	3.1
Lubricant / week [cm <sup>3</sup> ]	58.3	29.2	19.4	14.6	11.7	9.7	8.3	7.3	6.5	5.2
Strokes with grease gun / day	5-6	3-4	2	1.5	<1.5	1	<1	<1	<1	0.5
Strokes with grease gun / 100 h	22-24	9-13	7-9	5-7	4-6	3-5	2-4	1-3	2	1-2
Strokes with grease gun / week	36-40	21-18	12-14	9-11	7-9	6-7	5-6	5	4-5	3-4

Direct mounting / Remote mounting

## perma MOUNTING SETS



### Direct mounting

**MOUNTING SET Direct mounting**  
for perma CLASSIC / FUTURA / FLEX / NOVA

Order lubrication system separately



**Part no. 27.002.001**



#### Contents

**A** 1 x Reducer G1/8o x G1/4i  
1 x Reducer M6o x G1/4i  
1 x Reducer M8x1o x G1/4i  
1 x Reducer M10x1o x G1/4i

**B** 1 x Extension R1/4o x G1/4i - 45 mm

**C** 1 x Angle 45° G1/4o x G1/4i

**MOUNTING SET Direct mounting**  
for perma STAR VARIO

Order lubrication system separately



**Part no. 27.002.002**



#### Contents

**A** 1 x Reducer G1/8o x G1/4i  
1 x Reducer M6o x G1/4i  
1 x Reducer M8x1o x G1/4i  
1 x Reducer M10x1o x G1/4i

**B** 1 x Extension R1/4o x G1/4i - 45 mm

**C** 1 x Angle 45° G1/4o x G1/4i

**D** 1 x STAR Support flange G1/4o x G1/4i



Max. tube length depends on lubricant, lubrication system and ambient temperature.

### Remote mounting with tube

### MOUNTING SET Remote mounting with low pressure tube for perma STAR VARIO

Order lubrication system separately



## Contents

<b>A</b>	1 x Reducer G1/8o x G1/4i 1 x Reducer M6o x G1/4i 1 x Reducer M8x1o x G1/4i 1 x Reducer M10x1o x G1/4i
<b>B</b>	1 x Extension R1/4o x G1/4i - 45 mm
<b>C</b>	1 x Angle 45° G1/4o x G1/4i
<b>D</b>	2 x Tube connector G1/4o for tube iØ 9,5 mm (steel, zinc-plated) - push-lock
<b>E</b>	<b>3 m</b> Low pressure tube up to +100 °C (with NBR lining and fabric insert)
<b>F</b>	1 x 1 point bracket G1/4i for 1 lubrication system
<b>G</b>	1 x STAR Support flange G1/4o x G1/4i

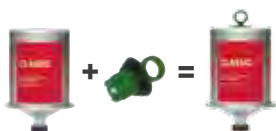


perma Part numbers for ordering

## Lubrication Systems



1st order and ReOrder:








1st order and ReOrder:







1st order and ReOrder:



## perma CLASSIC / perma FUTURA / perma FLEX

					
Grease	perma Code	perma CLASSIC 120 cm³	perma FUTURA 120 cm³	perma FLEX 60 cm³	perma FLEX 125 cm³
perma Multipurpose grease	SF01	01.001.001	070.0001.0900	092.0001.1001	091.0001.1000
perma Extreme pressure grease	SF02	01.002.001	070.0002.0900	092.0002.1001	091.0002.1000
perma High temp. grease	SF03	01.003.001	070.0003.0900	092.0003.1001	091.0003.1000
perma High performance grease	SF04	01.004.001	070.0004.0900	092.0004.1001	091.0004.1000
perma High temp. / Extreme pressure grease	SF05	01.005.001	070.0005.0900	092.0005.1001	091.0005.1000
perma Liquid grease	SF06	01.006.001	070.0006.0900	092.0006.1001	091.0006.1000
perma High speed grease	SF08	01.008.001	070.0008.0900	092.0008.1001	091.0008.1000
perma Multipurpose bio grease	SF09	01.009.001	070.0009.0900	092.0009.1001	091.0009.1000
perma Food grade grease NSF H1	SF10	01.010.001	070.0010.0900	092.0010.1001	091.0010.1000
Oil	perma Code	 Order oil retaining valve (p. 40) separately	incl. oil retaining valve	incl. oil retaining valve	incl. oil retaining valve
perma High performance oil	S014	01.414.001	070.0414.0900	092.0414.1001	091.0414.1000
perma Multipurpose oil	S032	01.432.001	070.0432.0900	092.0432.1001	091.0432.1000
perma Bio oil, low viscosity	S064	01.464.001	070.0464.0900	092.0464.1001	091.0464.1000
perma Bio oil, high viscosity	S069	01.469.001	070.0469.0900	092.0469.1001	091.0469.1000
perma Food grade oil NSF H1	S070	01.470.001	070.0470.0900	092.0470.1001	091.0470.1000

### CLASSIC / FUTURA Activators



	Pic.	Part no.	
Activator <b>yellow</b> 1 month	1	20.001.001	
Activator <b>green</b> 3 months	2	20.001.003	
Activator <b>red</b> 6 months	3	20.001.006	
Activator <b>grey</b> 12 months	4	20.001.012	

### FLEX Accessories


	Pic.	Part no.	
FLEX Support flange G1/4o x G1/4i (alu)	5	26.050.902	
FLEX Protection cap (steel)	6	26.050.911	




**perma NOVA**

NOVA LC (=Lubricant Canister)		<div>  <div>Control unit must be ordered separately</div> </div> <div>  <div>Control unit must be ordered separately</div> </div>	
Grease	perma Code	perma NOVA LC 65 cm³	perma NOVA LC 130 cm³
perma Multipurpose grease	SF01	112.0001.0827	111.0001.0800
perma Extreme pressure grease	SF02	112.0002.0827	111.0002.0800
perma High temp. grease	SF03	112.0003.0827	111.0003.0800
perma High performance grease	SF04	112.0004.0827	111.0004.0800
perma High temp. / Extreme pressure grease	SF05	112.0005.0827	111.0005.0800
perma Liquid grease	SF06	112.0006.0827	111.0006.0800
perma High speed grease	SF08	112.0008.0827	111.0008.0800
perma Multipurpose bio grease	SF09	112.0009.0827	111.0009.0800
perma Food grade grease NSF H1	SF10	112.0010.0827	111.0010.0800
Oil	perma Code	incl. oil retaining valve	incl. oil retaining valve
perma High performance oil	S014	112.0414.0827	111.0414.0800
perma Multipurpose oil	S032	112.0432.0827	111.0432.0800
perma Bio oil, low viscosity	S064	112.0464.0827	111.0464.0800
perma Bio oil, high viscosity	S069	112.0469.0827	111.0469.0800
perma Food grade oil NSF H1	S070	112.0470.0827	111.0470.0800

→ Suitable lubricants for your application: see page 26 / 27.

NOVA Control unit	Part no.	
NOVA Control unit, reusable 1-12 months	110.0000.0000	



Would you like to see how our electrochemical lubrication systems work?

→ **Contact us and ask for your perma MINI sample [MINI@perma-tec.com](mailto:MINI@perma-tec.com)!**

20 cm³

**Important information on lubricator label**

Production date / serial # / lubricant filled.

AB-1332-123456-002

SF01  
123.1234.1234

**Serial number**

(Product code - year / week of manufacture - number)

←

**Lubricant code**


← Part no.





## perma STAR

### STAR LC (=Lubricant Canister)

 Be sure to exchange the battery pack for STAR VARIO Drive when you replace the empty LC

Grease	perma Code	STAR LC S60 60 cm <sup>3</sup>	STAR LC M120 120 cm <sup>3</sup>	STAR LC L250 250 cm <sup>3</sup>
perma Multipurpose grease	SF01	160.001.385	16.001.348	162.001.387
perma Extreme pressure grease	SF02	160.002.385	16.002.348	162.002.387
perma High temp. grease	SF03	160.003.385	16.003.348	162.003.387
perma High performance grease	SF04	160.004.385	16.004.348	162.004.387
perma High temp. / Extreme pressure grease	SF05	160.005.385	16.005.348	162.005.387
perma Liquid grease	SF06	160.006.385	16.006.348	162.006.387
perma High speed grease	SF08	160.008.385	16.008.348	162.008.387
perma Multipurpose bio grease	SF09	160.009.385	16.009.348	162.009.387
perma Food grade grease NSF H1	SF10	160.010.385	16.010.348	162.010.387
Oil	 Order oil retaining valve (see page 40) separately			
perma High performance oil	S014	160.414.385	16.414.348	162.414.387
perma Multipurpose oil	S032	160.432.385	16.432.348	162.432.387
perma Bio oil, low viscosity	S064	160.464.385	16.464.348	162.464.387
perma Bio oil, high viscosity	S069	160.469.385	16.469.348	162.469.387
perma Food grade oil NSF H1	S070	160.470.385	16.470.348	162.470.387



### STAR Components / Accessories

	Pic.	perma STAR VARIO	Pic.	perma STAR CONTROL TIME	Pic.	perma STAR CONTROL IMPULSE
Drive	1	2111.1001.9001	2	21.003.392	3	21.003.393
Battery pack	4	21.000.000				
Cable (5 m)			5			26.004.001
Cable (10 m)			6			26.004.004
STAR Support flange G1/4o x G1/4i (brass / plastic)	7	26.001.620	7			26.001.620
STAR Profile seal ring (NBR)	8	26.001.623	8			26.001.623
STAR Protection cap L250 (plastic)	9	26.001.624	10			27.001.624
STAR Protection cap M120 / S60 (plastic) can be cut to fit size S60	11	26.001.625	12			27.001.625



Always use no. 7 + 8 with  
STAR Protection cap

perma Part numbers for ordering

## Accessories for durable installations

Care taken to “get it right” during installation will ensure long-term lubricator reliability and sets the foundation for a robust maintenance solution. perma accessories have been carefully selected to ensure that installations will stand the test of time in harsh operating environments.

Extensions	Pic.	Brass	Pic.	Stainless steel 1.4571
Extension 30 mm R1/4o x G1/4i	<b>1</b>	26.0011.700		-
Extension 45 mm R1/4o x G1/4i	<b>2</b>	26.0011.701	<b>3</b>	26.0012.701
Extension 75 mm R1/4o x G1/4i	<b>4</b>	26.0011.702	<b>5</b>	26.0012.702
Extension 115 mm R1/4o x G1/4i	<b>6</b>	26.0011.705		-
Extension 16 mm G1/8o x G1/8i (brass nickel-plated)	<b>7</b>	27.008.023		-
Extension 36 mm G1/8o x G1/8i (brass nickel-plated)	<b>8</b>	27.008.024		-
Extension 14 mm M6x0.75o x M6i	<b>9</b>	26.0011.710		-
Extension 30 mm M6x0.75o x M6i	<b>10</b>	26.0011.711		-
Extension 14 mm M6o x M6i	<b>11</b>	26.0011.712		-
Extension 30 mm M6o x M6i	<b>12</b>	26.0011.713		-





For prefilling of connection parts  
always use the same lubricant that  
is filled in the lubrication system  
→ 400 g cartridges on page 28

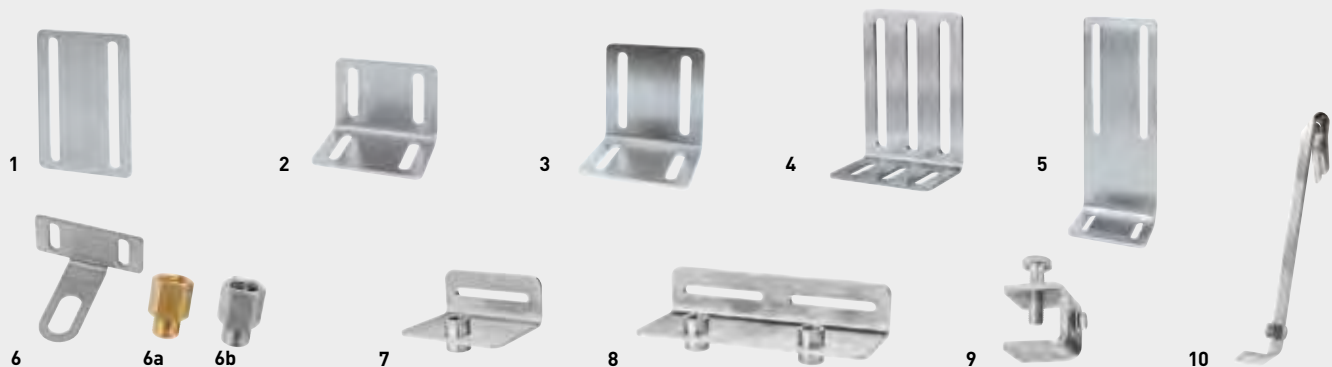
## Brackets

	Pic.	Part no.
Clamp (steel, zinc-plated) for grounding the perma CLASSIC in an Ex-zone	1	26.001.100
Clip for CLASSIC, FUTURA, STAR (plastic)	2	26.001.105
Clip for FLEX, NOVA (plastic)	3	26.050.150



## Mounting plate / Mounting angles / Mounting brackets

	Pic.	Brass	Pic.	Stainless steel 1.4301
Mounting plate 110 x 70 x 2.5 mm - holespacing 45 mm			1	26.001.653
Mounting angle 50 x 50 x 70 x 2.5 mm - holespacing 45 mm			2	26.001.650
Mounting angle 50 x 70 x 70 x 2.5 mm - holespacing 45 mm			3	26.001.651
Mounting angle 50 x 100 x 70 x 2.5 mm - holespacing 45 mm / 22.5 mm			4	26.001.652
Mounting angle 50 x 180 x 70 x 5 mm - holespacing 45 mm			5	26.001.654
Bracket			6	<b>Stainless steel 1.4016</b> 26.0012.150
Insert for Bracket G1/4o x G1/4i	6a	26.0011.151	6b	<b>Stainless steel 1.4571</b> 26.0012.151
1 point bracket G1/4i - for 1 lubrication system	<b>NEW</b> → Quick → Easy → No drilling		7	26.0012.655
2 point bracket G1/4i - for 2 lubrication systems			8	26.0012.656
Beam clamp 30 mm - for bracket no. 7 or 8			9	26.0012.659
1 point cage hanger - for bracket no. 7 or 8			10	26.0012.660




# Accessories

Tubes up to 10 bar for ECOSY / 25 bar for PRO	Pic.	Tubes with oØ 6 mm - Oil -	Pic.	Tubes with oØ 8 mm - Grease -
Tube black (PA) up to +80 °C oØ 8 mm x iØ 5 mm - for PRO - up to +100 °C oØ 6 mm x iØ 4 mm - for ECOSY -	1	- for ECOSY - 27.005.016	2	- for PRO - 27.008.009
Tube translucent (PA) up to +80 °C oØ 6 mm x iØ 4 mm - for ECOSY -	3	- for ECOSY - 27.005.008		-



→ Tube length can be selected individually

Tube connectors (plug-in) up to 25 bar	Pic.	Tubes with oØ 6 mm - Oil -	Pic.	Tubes with oØ 8 mm - Grease -
Tube connector G1/8o straight	1	26.003.904	2	27.008.010
Tube connector G1/8o 90° - rotary type	3	26.003.907	4	27.008.011
Tube connector G1/4o straight	5	26.003.905	6	27.005.011
Tube connector G1/4i straight	7	27.005.038	8	27.005.026
Tube connector G1/4o 90° - rotary type	9	27.005.087	10	27.005.012
Tube connector G3/8o straight		-	11	27.005.013
Tube connector M5o straight	12	26.003.906	<p>Use Tube connectors together with extension for tube oØ 6 mm to oØ 8 mm</p>  <p>Part no. 27.005.039</p>	
Tube connector M6o straight	13	27.005.036		
Tube connector M6o 90° - swivel type	14	27.005.042		
Tube connector M6x0.75o 90° - swivel type	15	27.005.043		
Tube connector M8x1o straight	16	27.005.044		
Tube connector M10x1o straight	17	27.005.037		
Tube connector M8x1o 90° - rotary type	18	27.005.034		
Tube connector M10x1o 90° - rotary type	19	27.005.035		



Accessories for tube (plug-in)	Pic.	For tubes with oØ 6 mm - Oil -	Pic.	For tubes with oØ 8 mm - Grease -
Y-Connector for tube	20	27.005.041	21	27.005.040
Extension for tube oØ 6 mm to oØ 8 mm	22	27.005.039		-
Tube prefill adapter	23	27.005.066	24	27.005.058




Choose the right tube for your lubrication system	iØ / oØ in mm	max. °C	max. pressure	Part no.	CLASSIC / FUTURA	FLEX / NOVA	STAR	PRO	ECOSY
Standard tube translucent (PA)	6 / 8	+80	6 bar	26.001.250	✓	✓	✓	-	-
Standard tube translucent (PTFE)	6 / 8	+250	6 bar	26.001.260	✓	✓	✓	-	-
Low pressure tube black with NBR lining and fabric insert	9.5 / 16	+100	25 bar	27.005.091	✓	✓	✓	-	-
VA-Flex tubes (stainless steel 1.4571)	8 / 12	+260	25 bar	27.005.085	✓	✓	✓	✓	-
Tube black (PA)	5 / 8	+80	25 bar	27.008.009	-	-	-	✓	-
Tube black (PA)	4 / 6	+100	10 bar	27.005.016	-	-	-	-	✓
Tube translucent (PA)	4 / 6	+80	10 bar	27.005.008	-	-	-	-	✓

Max. tube length depends on lubricant, lubrication system and ambient temperature.

Standard tubes up to 6 bar	Pic.	Tube with <b>oØ 8 mm x iØ 6 mm - Grease / Oil -</b>				
Tube up to +80 °C oØ 8 mm x iØ 6 mm (PA), per meter	1	26.001.250				
Tube up to +250 °C oØ 8 mm x iØ 6 mm (PTFE), per meter	2	26.001.260				
	Pic.	Alu / plastic max. +80 °C	Pic.	Brass max. +100 °C	Pic.	Stainless steel 1.4571 max. +250 °C
Tube connector for perma G1/4i	3	26.001.202	4	26.0011.202	5	26.0012.202
Tube connector G1/4o	6	26.001.203	7	26.0011.203	8	26.0012.203
Tube connector G1/8o	9	26.001.204		-		-

  
1  
translucent

  
2  
translucent

  
3

  
4  
nickel plated

  
5

  
6


  
7


  
8

  
9

→ Tube length can be selected individually


Low pressure tube up to 25 bar	Pic.	Tube with <b>oØ 16 mm - Grease / Oil -</b>
Low pressure tube up to +100 °C (with NBR lining and fabric insert)	1	27.005.091
Tube connector G1/4o for tube iØ 9.5 mm (steel, zinc-plated), push-lock	2	27.005.090


  
1


  
2


**NEW**  
 → Longer  
 → Easier  
 → Sturdier


VA-Flex tubes / Cutting ring couplings up to +260 °C	Pic.	For tubes with <b>oØ 12 mm - Grease / Oil -</b>
Tube up to +260 °C, length 1000 mm (PTFE / stainless steel 1.4301)	1	27.005.085
Tube up to +260 °C, length 1500 mm (PTFE / stainless steel 1.4301)	2	27.005.086
Cutting ring coupling R1/4o for oØ 8 mm straight (stainless steel 1.4571)	3	26.0012.220
Cutting ring coupling R1/8o for oØ 8 mm 90° adjustable (stainless steel 1.4571)	4	26.0012.221
Cutting ring coupling R1/8o for oØ 8 mm straight (stainless steel 1.4571)	5	26.0012.222
Cutting ring coupling straight - connector for oØ 8 mm (stainless steel 1.4571)	6	26.0012.223


  
1

  
2

  
3

  
4

  
5

  
6

## Accessories

Reducers / Reducer coupling	Pic.	Brass	Pic.	Stainless steel 1.4571
Reducer R1/2o x G1/4i	1	26.0011.500		-
Reducer G1/8o x G1/4i	2	26.0011.501	3	26.0012.501
Reducer G1/4o x G1/8i	4	26.0011.503		-
Reducer R3/4o x G1/4i	5	26.0011.504		-
Reducer R3/8o x G1/4i	6	26.0011.505		-
Reducer M6o x G1/4i	7	26.0011.511	8	26.0012.511
Reducer M8x1o x G1/4i	9	26.0011.514	10	26.0012.514
Reducer M8o x G1/4i	11	26.0011.515	12	26.0012.515
Reducer M10x1o x G1/4i	13	26.0011.518	14	26.0012.518
Reducer M10o x G1/4i	15	26.0011.520		-
Reducer M12o x G1/4i	16	26.0011.524		-
Reducer M12x1o x G1/4i	17	26.0011.525		-
Reducer M12x1.5o x G1/4i	18	26.0011.526		-
Reducer M14x1.5o x G1/4i	19	26.0011.528		-
Reducer M14o x G1/4i	20	26.0011.529		-
Reducer M16o x G1/4i	21	26.0011.530		-
Reducer M16x1.5o x G1/4i	22	26.0011.531		-
Reducer Whitworth 1/4"o x G1/4i	23	26.0011.533		-
Reducer coupling G3/8i to G1/8i for tube ø 8 mm, nickel plated	24	27.005.081		-



Oil retaining valves	Pic.	Brass	Pic.	Stainless steel 1.4571
Oil retaining valve G1/4o x G1/4i up to +60 °C (with plastic valve)	1	26.0011.810	2	26.0012.810
Oil retaining valve G1/4o x G1/4i up to +150 °C (with metal valve)	3	26.0011.811		-



Seal all connection parts  
with a metal bonding  
adhesive (medium)

Angles	Pic.	Brass	Pic.	Stainless steel 1.4401
Angle 45° G1/4o x G1/4i	1	26.0011.300	2	26.0012.301
Angle 45° M6o x G1/4i	3	26.0011.304		-
Angle 45° M8x1o x G1/4i	4	26.0011.305		-
Angle 45° M10x1o x G1/4i	5	26.0011.306		-
Angle 90° G1/4o x G1/4i	6	26.0011.350	7	26.0012.350
Angle 90° M6o x G1/4i	8	26.0011.353		-
Angle 90° M8x1o x G1/4i	9	26.0011.354		-
Angle 90° M10x1o x G1/4i	10	26.0011.355		-



Others	Pic.	Brass	Pic.	Stainless steel 1.4401
Swivelling screw fitting G1/4o x G1/4i - rotary type	11	26.0011.360		-
T-Adapter 3 x G1/4i	12	26.0011.600	13	26.0012.600
Bulkhead nipple G3/8o x G1/4i	14	26.0011.601		-
Hexagon nipple R1/4o	15	26.0011.602	16	26.0012.602
Sleeve G1/4i	17	26.0011.605	18	26.0012.605 (Stainless steel 1.4571)







Roller bearings



Sliding bearings / guides



Linear guides



Open gears / gear racks



Spindles







































































































Shaft seals



Chains

## perma Lubrication Systems - OVERVIEW

Product	Lubricants	Discharge periods	Time / impulse version	Max. lube-points	Max. pressure [bar]	Operating temp. [°C]	Content [cm³]	Drive / power supply	Operation	Applications								Certifications	Page
																			
Single-point Lubrication Systems, electrochemical for grease / oil																			
	<b>CLASSIC / FUTURA</b>	Grease up to NLGI 2 / Oil	1, 3, 6, 12 months (1)	Time	1	4	0 to +40	120	Electro-chemical	Activator screw									18-19
	<b>FLEX</b>	Grease up to NLGI 2 / Oil	1, 2, 3, ...12 months (1)	Time	1	5	-20 to +60	60 125	Electro-chemical	Dial / Rotary switch								   	20-21
	<b>NOVA</b>	Grease up to NLGI 2 / Oil	1, 2, 3, ...12 months (2)	Time	1	6	-20 to +60	65 130	Electro-chemical	Push button control and display								    	22-23
Single-point Lubrication Systems, electromechanical for grease / oil																			
	<b>STAR VARIO</b>	Grease up to NLGI 2 / Oil	1, 2, 3, ...12 months	Time	1	6	-10 to +60	60, 120, 250	Drive motor / Battery	Push button control and display									24-25
	<b>STAR CONTROL TIME</b>	Grease up to NLGI 2 / Oil	Customized	Time	1	5	-10 to +50	60, 120, 250	Drive motor / 15-30 V DC	Code switch									SS*
	<b>STAR CONTROL IMPULSE</b>	Grease up to NLGI 2 / Oil	Customized	Impulse	1	5	-10 to +50	60, 120, 250	Drive motor / 15-30 V DC	Code switch								EX version available	SS*
Multi-point Lubrication Systems, electromechanical for grease																			
	<b>PRO MP-2</b>	Grease up to NLGI 2	1 day to 24 months	Time	2	25	-20 to +60	250, 500	Drive motor / Pump / Battery	Display with menu navigation									
	<b>PRO C MP-2</b>	Grease up to NLGI 2	Customized	Time or impulse	2	25	-20 to +60	250, 500	Drive motor / Pump / 15-30 V DC	Display with menu navigation									
	<b>PRO MP-6 / PRO LINE</b>	Grease up to NLGI 2	1 day to 24 months	Time (PRO) / Amount (LINE)	6	25	-20 to +60	250, 500	Drive motor / Pump / Battery	Display with menu navigation									SS*
	<b>PRO C MP-6 / PRO C LINE</b>	Grease up to NLGI 2	Customized	Time or impulse	6	25	-20 to +60	250, 500	Drive motor / Pump / 15-30 V DC	Display with menu navigation									SS*
	<b>NET</b>	Grease up to NLGI 2 / Oil	Customized	Time and impulse	<600	25	-20 to +60	60 – 500	Drive motor / Pump / 90-240 V AC	NET Software / PC									
Multi-point Lubrication Systems, electromechanical for oil																			
	<b>ECOSY</b>	Oil	Customized	Time, sensor, impulse	6	10	-20 to +60	7 l	Drive motor / Pump / 85-240 V AC 24 V DC	Display with menu navigation									SS*

CE All perma products are approved according to CE directives.

[1] depending on ambient temperature and counter pressure

[2] depending on counter pressure

## Our Service to You!

[www.perma-tec.com](http://www.perma-tec.com)



Visit our website and, as a registered user, conveniently download operating manuals or installation instructions, brochures or other product information on all perma lubrication systems.

### Product- / Application Flyer



### perma SELECT 5.1 Selection Software



### Videos / Photos Installation Instructions



## perma SERVICE



Do you have any technical questions? Do you need help in selecting the right lubrication system?

**We're there for you!**  
Your perma SERVICE Team.

### Project Planning, Installation, Maintenance



### perma MLP: Maintenance Lubrication Program

<https://mlp.perma-tec.com>



**NEW**

### perma ACADEMY Training Schedules and Content

[www.perma-tec.com](http://www.perma-tec.com)



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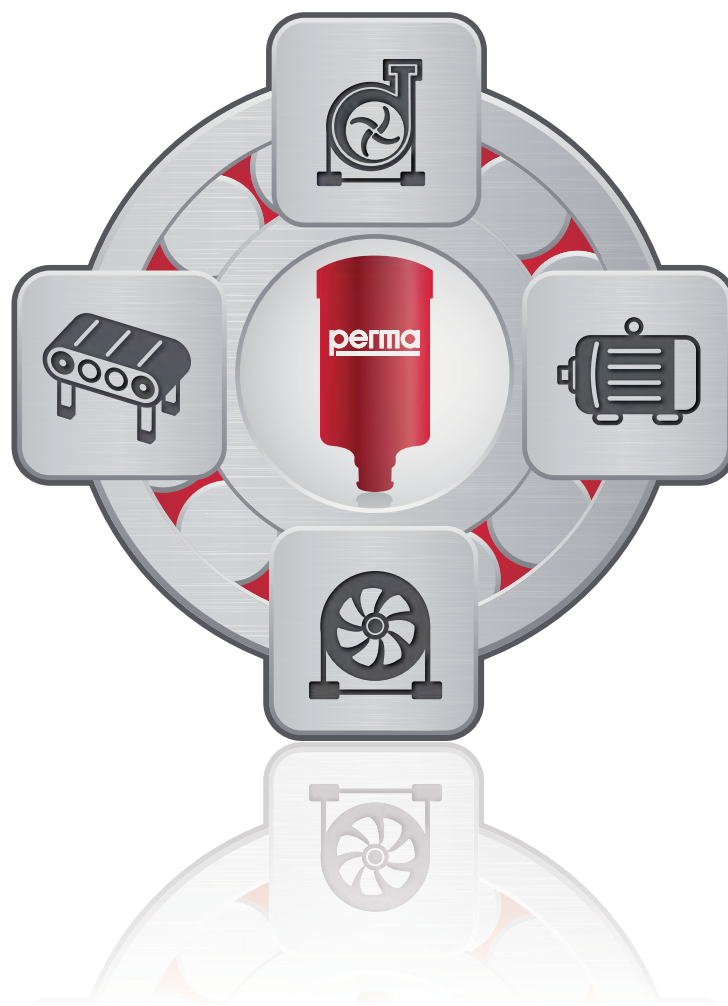
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