ALS®

Automatic Lubrication Systems







oiling | greasing | lubricating

ALS®

Automatic Lubrication Systems

This **ALS catalog** offers a wide variety of lubrication systems and accessories. It is a great source of information, and contains detailed product descriptions, technical data and illustrations.

The **ALS team** is there for your technical questions as well as for the planning and implementation of optimal and customized solutions.

ALS helps you **set up and install** your new lubrication equipment or lubrication system if so desired.

Flexibility for the future. The modular design of ALS lubricating products enables you to expand and/or upgrade your lubrication systems.
All threads are standardized and interchangeable.

ALS products are easy to maintain and offer reliable, continuous long-term lubrication. Quantity and time settings prevent over- and under-lubrication.

All single-point lubricators, systems and accessories are designed for heavy loads and a l**ong life span.**

Every application gets the **optimal amount of lubricant** and thereby improves the reliability of your equipment.

ALS recycles and/or **disposes of** your old and used ALS single-point lubricators through a certified service provider.
A clean and easy way to help our environment.

ALS Products "Made in Germany"

ALS Automatic Lubrication Systems are reliable, easy to maintain and offer long-term lubrication for improved equipment availability.
Make your choice between single- and multi-point lubrication systems.

ALS services

- consultation
- timely delivery
- installation
- re-equipment
- expansion
- repairs
- maintenance

ALS has more than 80 special lubricants in store.

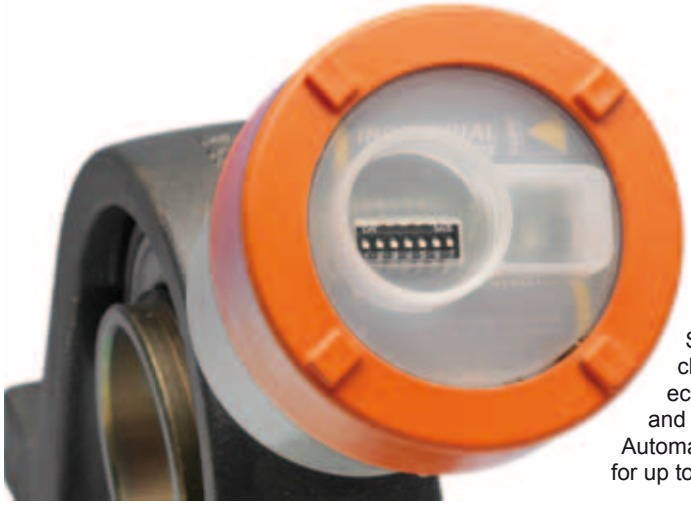
ALS will help you find the optimal solution for your greasing application.

ALS catalog: Index

**Oiling,
Greasing,
Lubricating.**

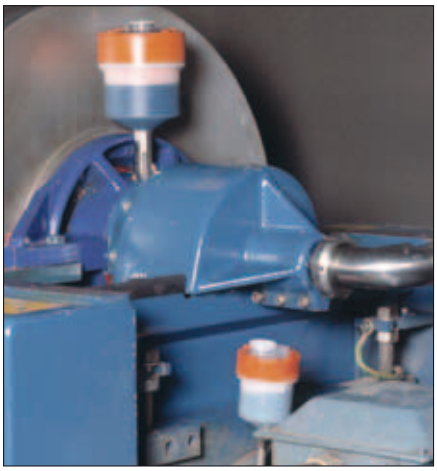
For reliable and cost-efficient maintenance of all single lubrication points

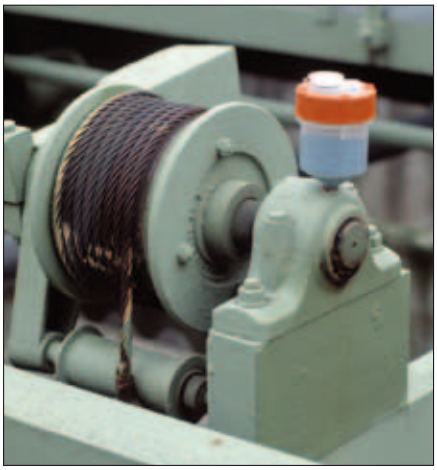
Electronically Monitored ALS Lubricators



Safe, clean, economic and adjustable. Automatic greasing for up to 18 months.

View page 4 – 8





Features and benefits of the ALS Lubrication Systems:

- Automatic lubrication
- Lubricant dosage freely selectable and adjustable at any time
- Visual control of grease flow
- Precise lubrication
- Operating pressure max. 3 bar
- Weatherproof, waterproof and corrosion resistant
- Activation, deactivation and time reset via DIP switches
- Signal light for function control
- Operating temperature from -30 °C to +60 °C
- Ex-proof certified, ATEX, PTB-BVS tested
- Optional:
  - Synchronization with control unit of machine
  - Level monitoring
  - External power supply
- ALS lubricators available in two sizes: Type 125 and Type 475.
- Increased equipment availability through continuous lubrication
- Improved safety and reliable long-term lubrication
- Reduction of maintenance costs
- Mountable in any position
- Refillable
- Easy installation
- NEW ALS Type EM, see page 8

ALS Lubricators Type 125 / 475 - Easy to install

1

Take a screw driver or a similar tool and use it to remove the grease nipple from the lubrication point.

2

Remove the outlet plug of the ALS lubricator. If necessary, use an adapter for the lubrication point before mounting the lubricator.

3

Running times or grease dosage can be manually selected via the DIP switches on top of the lubricator.

4

Once activated, the operating pressure takes about 6 - 8 h to build up. Lubricant is discharged according to setting.

Recommendations:

- Always pre-grease bearing or lubrication point.
- Pre-fill hoses/tubes with lubricant.
- Mount lubricator and set DIP-switches to "ON" position.
- Installation with extension lines for grease lubrication of up to approx. 0.5 m. with oil lubrication up to approx. 2 m.
- Recommended inner diameter of extension lines 6 to 8 mm.
- Oil fillings require about 40 % more running time depending on viscosity. Check valve recommended.
- Use only one lubricator per lubrication point.
- If temperature exceeds 55 °C, remove lubricator from heat source using a tube or something similar.

After mounting the lubricator, activate the ALS Lubricator by setting all DIP-switches to "ON" position.
Note: it takes approximately 6 to 8 hours for the electro-chemical reaction to build up the required operating pressure.

Technical data

Settings

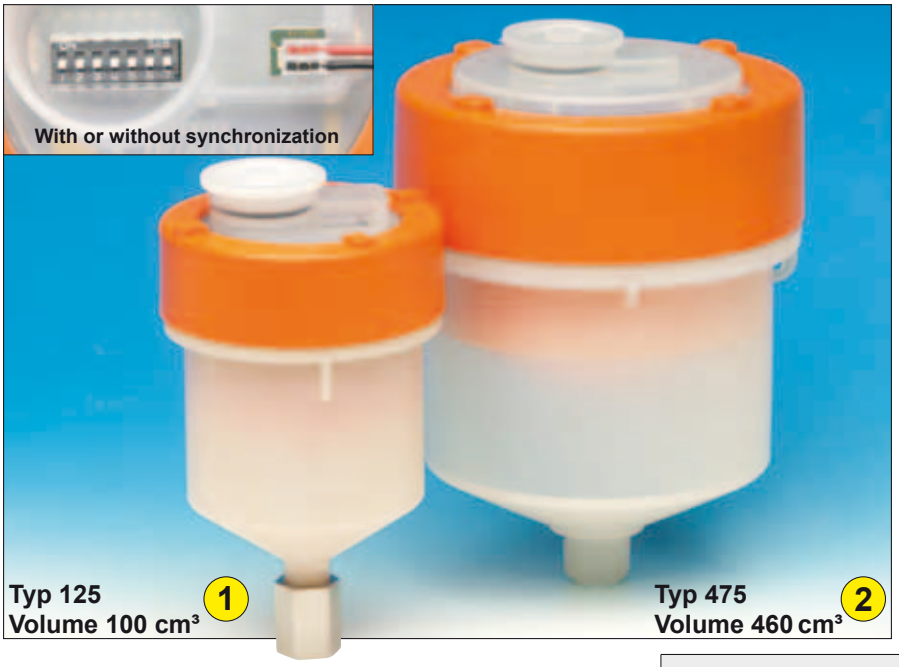
The comparison between the electronically monitored ALS Lubricator Type 125 and a regular grease gun clearly show the lubricator excels with improved performance, constant lubricant discharge, time saving and optimal lubricant supply.

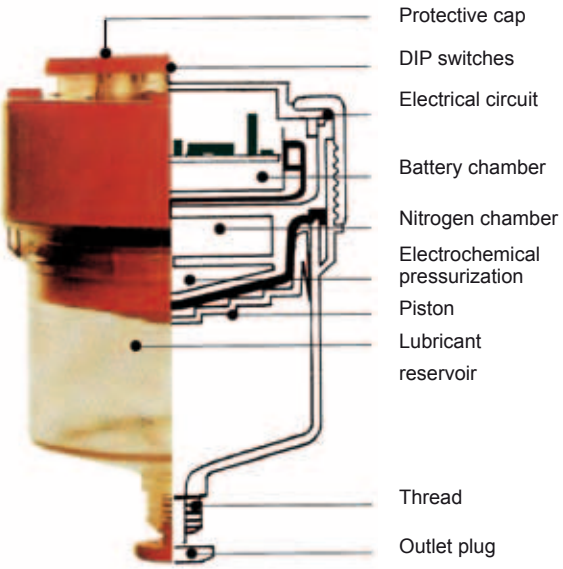
Greasing intervals	Grease gun strokes	ALS settings	Daily lubricant output	Equals strokes of grease gun
Daily Every 2–3 days	3–4 3–4	30 days 60 days	4.00 cm³ 2.10 cm³	4 2
Weekly Biweekly Monthly	8–10 8–10 8–10	90 days 180 days 360 days	1.30 cm³ 0.70 cm³ 0.35 cm³	1.3 ½ ⅓

Below are 7 examples of the 25 possible settings for lubricant discharge or setting times of the ALS Lubricator Type 125 and Type 475. The setting times can be changed at any time. Synchronization with machine running time optionally available. These numbers are empirical only:

DIP switch setting	Daily lubricant discharge		Time until empty
	Type 125	Type 475	
6 5	0.17 cm³ 0.35 cm³	0.60 cm³ 1.20 cm³	18 months 12 months
4 3	0.70 cm³ 1.30 cm³	2.50 cm³ 4.50 cm³	6 months 3 months
2 1	2.10 cm³ 4.00 cm³	7.50 cm³ 14.00 cm³	2 months 1 months
All switches	9.00 cm³	34.00 cm³	14 days

Comparisons





ALS Lubricators

- **Variable settings, electronically monitored**
- **With or without cable connection**
  For the synchronization with machine control unit.
- **Standard filling with lithium complex grease**
  a high performance grease for many application areas. View page 42 for a wide selection of greases, fluid greases and oils.
- **More information on pages 4–7**

We also offer environmentally friendly choices of lubricants including bio-degradable grease with the environmental label "Blue Angel."

				ALS Lubricators Lubricator with microswitch, pressure generator, batteries and lubricant reservoir.			**Recycled ALS Lubricators** Recycling and refilling of empty ALS Lubricators.	
				Empty	**With lithium complex grease** Empty lubricator including filling cost. Not included: **cost of lubricant**	**With special lubricant** Empty lubricator including filling cost. Not included: **cost of lubricant**	**Your ALS product with lithium complex grease** Empty lubricator including filling cost. Not included: **cost of lubricant**	**Your ALS product with special lubricant** Price includes recycling and refilling. Not included: **cost of lubricant**
Lubricant volume Height x Ø	**100 cm³** 100 x 80 mm	**without cable**	**Ord. no.** 1	**12381**	**12377**	**12800**	**12794**	**12798**
Connecting thread Net weight	G ¼ approx. 230 g							
Settings	25 settings from 14 days up to 18 months	**with cable**	**Ord. no.** 1	**12383**	**12379**	**12801**	**12795**	**12799**
Pressure Temperature approx. Power unit	0.2 to 3 bar -30 °C to +60 °C 2 x 1.5 V							
Lubricant volume Height x Ø	**460 cm³** 150 x 115 mm	**without cable**	**Ord. no.** 2	**12365**	**12361**	**12375**	**12369**	**12373**
Connecting thread Net weight	G ½ approx. 570 g							
Settings	25 settings from 14 days up to 18 month	**with cable**	**Ord. no.** 2	**12367**	**12363**	**12376**	**12370**	**12374**
Pressure Temperature approx. Power unit	0.2 to 3 bar -30 °C to +60 °C 4 x 1.5 V							

Accessories
Modules
Tools

ALS accessories
– more flexible
– more individual
– more economical

ALS tools facilitate the exchanging and recycling of empty ALS Lubricators.

ALS modules for the professional installation of lubrication systems

Level monitoring

with sensor

- contact and wear-free
- identification of piston position
- insensitive to dirt and dust

The magnetic sensor reads the position of the piston.
If the grease or oil level drops to 5% content or below, the sensor picks up the information and relays the signal 'empty' to the control unit of the machine. An acoustic or visual alarm signal is set off.

Operating voltage	10 – 30 V DC
Ambient temperature	-20 – +70 °C
Protection type	IP 67

Lubricator	Ord.no.
Type 125	**12385**
Type 475	**12391**

Battery chamber

Type 125 incl. 2 batteries
Type 475 incl. 4 batteries

Type	Ord.no.
125	**12805**
475	**12807**

Filler

Two different filler sizes for the filling of the ALS Lubricators.

	Ord.no.
G ⅛	**12397**
M 10 x 1	**12394**

Insert mold

Special holding fixtures for inserting the ALS Lubricator.

Type	Ord.no.
125/EM	**12398**
475	**12400**

Tool wrench

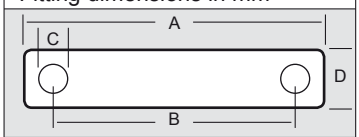
Customized tools for opening up the ALS Lubricator.

Type	Ord.no.
125/EM	**12401**
475	**12403**

Clamp

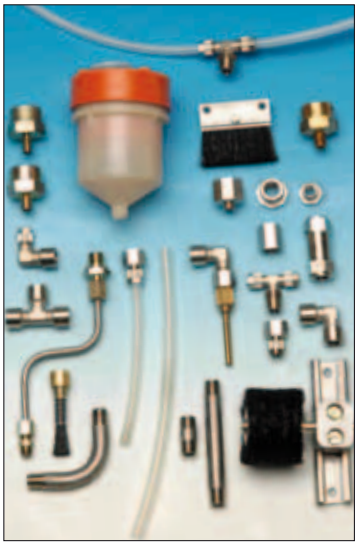
for fastening of the lubricator.

Fitting dimensions in mm



Type	A	B	C	D
125	112	95	6.5	16
475	128	105	8.5	25

Galvanized with steel clamp	
Typ	**Ord.no.**
125	**12802**
475	**12804**
Stainless steel clamp	
125	**13263**
475	**13265**



ALS tools for opening and recycling the ALS Lubricators Type 125, 475 and EM

Insert the ALS Lubricator into the respective insert mold. Unscrew the cylinder with the special tool wrench and open up the lubricator. Exchange the used battery chamber with a new one and screw the top back on. Lubricator is ready for use again.

ALS accessories

Lubricating accessories for expanding and/or upgrading of ALS lubrication systems. More information on pages 18-23.

ALS Type EM electromechanical

- Continuous and precise lubricant discharge
- Temperature independent
- Electromechanical, reusable drive unit
- LED display and microcontroller
- Refillable lubricant reservoir
- LED display indicates operating conditions
- Improved safety
- Running time or lubricant discharge adjustable from 1–18 months
- Choice of standard lubricants and oils
- Special fillings on demand
- Empty ALS lubricators can be recycled and refilled

ALS Type EM • Electromechanical lubricator • Technical data

Running time	1–18 months	Connection	G ¼
Volume	approx. 100 cm³	Battery pack	6 V
Dimensions	Ø 180 x 80 mm	Temperature	-10 °C to +50°C
Pressure	approx. 4 bar	NLGI grade	0 – 2
Protection class	IP 64	PLC version on demand	

Electromechanical lubricator with electromechanical drive unit + grease filling

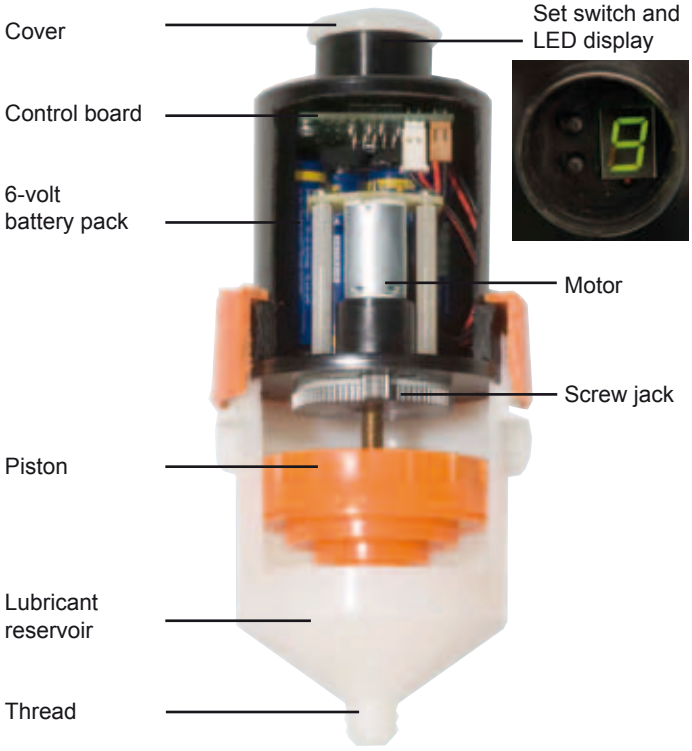
Product with	Ord. no.
ALS EM lubricator with battery pack empty	**14381**
ALS EM lubricator with battery pack filled with special lubricant (Grease extra)	**14554**
ALS recycling: refilling, recycling + new battery pack (Grease extra)	**14555**
Clamp type 125 Spare battery pack 6 V Mounting support	**12802** **14410** **14353**

Running times and settings of lubricant discharge via control switches

LED display	Running time in months	Discharge per day cm³	Discharge per month cm³
1 2 3	1 2 3	4.00 2.00 1.33	120.00 60.00 39.90
4 5 6	4 5 6	1.00 0.8 0.66	30.00 24.00 19.80
7 8 9	7 8 9	0.57 0.50 0.44	17.10 15.00 13.20
A b C	10 11 12	0.40 0.36 0.33	12.00 10.80 9.90
d E F	13 15 18	0.30 0.27 0.23	9.00 8.10 6.90

Electromechanical lubricator • ALS Type EM Special version (on request) e.g.

- Running time of up to 5 years
- Automatic grease requirement detection:
- Precise dosing
- Pressure adjustable (from 0.5 bar - 5 bar)
- Temperature compensation
- Third-party control system, monitoring, PLC

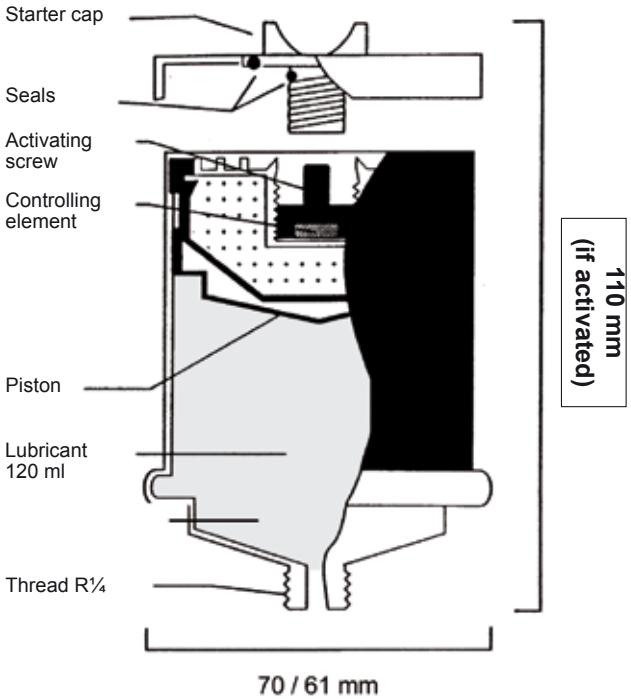


ALS Grease Lubricator chemical

- Reliable supply of lubricant to individual lubrication points
- Automatic, continuous discharge of lubricant
- 4 models designed to operate for a set period of time: 1 • 3 • 6 • 12 months
- Lubricant volume 120 cm³
- Powered by a chemical reaction
- Simple and easy operation
- Choice of standard lubricants
- Special lubricant fillings on demand
- Time and cost saving compared to manual greasing
- Works in any position

ALS Type Grease Lubricator • chemically operated				
Discharge period is indicated by the color coded starter cap (see text below) Continuous lubricant discharge	1 month 3.6 gram/day	3 months 1.2 gram/day	6 months 0.6 gram/day	12 months 0.3 gram/day
Grease Lubricator with drive unit and filling	**Ord.no.**	**Ord.no.**	**Ord.no.**	**Ord.no.**
Universal grease EP High-temperature grease	**13239** **13240**	**13403** **13406**	**13404** **13407**	**13405** **13408**
Fluid grease NLGI 0 Biodegradable multi-purpose grease	**13243** **13247**	**13415** **13427**	**13416** **13428**	**13417** **13429**
Food grade grease USDA-H1 Machine oil ISO VG 100 Chain oil ISO VG 220	**13246** **13249** **13250**	**13424** **13433** **13436**	**13425** **13434** **13437**	**13426** **13435** **13438**
Grease Lubricator with special lubricant filling (Grease/oil extra)	**13384**	**14112**	**14113**	**14114**
Mounting bracket **Ord.no. 14261**	Fittings and accessories on pages 18–23.			

Functional description



The ALS Grease Lubricator is a chemically operated, automatic and highly durable single-point lubricator. It is designed to be screwed into the bearing grease nipple seating, or onto an extension line, and to feed lubricant at a constant rate for a pre-set period of time. The bearing is sealed while the ALS Grease Lubricator is in use. Dust and moisture are prevented from entering the bearing. The time-consuming tasks of checking and manually lubricating are no longer necessary.

The ALS Grease Lubricator contains 120 cm³ of lubricant. The lubricant is discharged in operating times of 1, 3, 6 or 12 months. Only high-quality lubricants have been selected for the ALS Grease Lubricator. In the graph above you will find a selection of our standard greases. These lubricants will cover most applications.

The ALS Grease Lubricator is activated by screwing in the color coded plastic starter cap into the thread opening at the top of the lubricator. The color of the starting cap should match the color of the premounted activation screw.
If the start cover is screwed in, the pre-installed activation screw is screwed in automatically as well and the gas generator is activated. The lubricant is reliably delivered at constant rates.

Spring Pressure Lubricators

Automatic lubrication.
Refillable. Reusable.
The graduated channels in the meter rod allow the bearing to use grease as required. The lubricator uses Venturi action to discharge lubricant only when the bearing is in motion.
The generated pressure is 0.07 bar.

Series 200 Polycarbonate base

Standard model for general applications with minimal vibration, impact, shock, high-torque or centrifugal forces.
Pressure spring made of stainless steel.

Series 300 Metal base

This model is designed for applications subject to vibration, impact, shock, high-torque or centrifugal forces.
Pressure spring made of stainless steel.

Series 500 Corrosion resistant

This model is nickel-chromed, double-plated for applications where corrosive resistance is required, such as chemical and food processing applications.

Series 700 High temperatures

This model is ideal for applications in steel mills, foundries, lumber drying kilns, glass plants, nuclear environments and metal heat-treating facilities.

3 springs
- light
- medium
- heavy

Spring selection to be determined by operating temperature and NLGI grade. See table below

Model		**202**	**205**	**260**	**302**	**305**	**360**	**502**	**505**	**560**	**704**
Capacity	gram	28	56	170	28	56	170	28	56	170	113
Height	mm	92	120	155	89	120	152	89	120	152	180
Ø	mm	45	61	78	45	61	76.2	45	61	75	82.5
Thread size	G	⅛	⅛	⅛	⅛	⅛	⅛	⅛	⅛	⅛	⅛
Dome made of		polycarbonate			polycarbonate			polycarbonate			glass
Base made of		polycarbonate			anodized aluminum			nickel-chrome plated			anodized aluminum
Piston seal ring		neoprene			neoprene			viton			viton
1 piece	Including springs piece x spring (color)	1x	1x	1x	1x	1x	1x	1x	1x	1x	1x 1x
	Ord.no.	**12691**	**12693**	**12695**	**12696**	**12698**	**12700**	**12701**	**12703**	**12705**	**12706**
Packaging unit **10 pieces**	Including springs piece x spring (color)	3x 10x 3x	3x 10x 3x		3x 10x 3x	3x 10x 3x		3x 10x 3x	3x 10x 3x		
	Ord.no.	**12692**	**12694**		**12697**	**12699**		**12702**	**12704**		

Spare springs

For models	light **Ord.no.**	medium **Ord.no.**	heavy **Ord.no.**
202 302 502	**12688**	**12685**	**12682**
205 305 505	**12689**	**12686**	**12683**
260 360 560	**12690**	**12687**	**12684**

Which model to use?

These 4 technical criteria as well as the size determine which model to use:
202–560.

Shaft-Ø	**up to 40 mm**				**over 40 mm**			
Running time	**intermittent**		**continuous**		**intermittent**		**continuous**	
Bearing class	open	closed	open	closed	open	closed	open	closed
Less than 1000 RPM	202 · 302 502	202 · 302 502	202 · 302 502	202 · 302 502	205 · 305 505	205 · 305 505	205 · 305 505	205 · 305 505
1000–2500 RPM	202 · 302 502	202 · 302 502	202 · 302 502	202 · 302 502	205 · 305 505	205 · 305 505	360 · 560	360 · 560
More than 2500 RPM	205 · 305 505	202 · 302 502	205 · 305 505	205 · 305 505	360 · 560	360 · 560	360 · 560	360 · 560

Which spring to use?

- light
- medium
- heavy

Units are assembled with medium springs.

Additional light and heavy springs are included for applications requiring higher pressure. Two factors determine the choice of the right spring: the operating temperature and the NLGI grade of the grease. → See table.

Note: It is recommended to use lubricants with low shares of base oil.

The right spring selection for operating temperature and NLGI grade	**-23 °C to +4 °C**	**+5 °C to +43 °C**	**+44 °C to +93 °C**	**+94 °C to +120 °C**	**+121 °C to +230 °C**
0	light	medium	heavy	–	–
1	light	medium	medium	heavy	–
2	–	light	medium	medium	heavy
3	–	–	light	medium	heavy
4	–	–	medium	medium	heavy

Spring Pressure Lubricators

Suitable for general applications.

A coil spring pushes the exact grease dosage out of the refillable container of these spring-loaded lubricators.
The container itself can be filled with a filler and a regular grease gun. The grease dosage is regulated manually via a valve on the grease lubricator.
The lubricant reservoir is transparent, allowing easy monitoring of the grease level. The grease level can be easily monitored as the lubricant reservoir of the lubricator is transparent.
Thereby, timely refilling is guaranteed.

The ALS Spring Pressure Lubricators are maintenance-free: they do not require any spare parts or replacement parts

- No more stockkeeping of lubricators with different greasing discharge periods necessary.
- Easy to install in any position. Extension lines can be used for remote lubrication points.
- Easy to refill with grease gun.
- Lubricant quantity can be set by manually adjusting the valve.
- Consistent lubrication release. Every bearing gets just the right grease supply.
- No external power supply needed.
- Easy installation.
- The service intervals of these lubricators are considerably extended, which leads to a reduction of your operating costs.
- Lubricant consumption can be visually monitored from outside scale.
- No more overgreasing of bearings with the correct settings.
- Improved safety and reliable long-term lubrication.
- These lubricators do not need any spare parts or replacement parts.

Model	**ALS SB 50**	**ALS SB 501**
Powered by	spring pressure	spring pressure
Thread size Number of outlets	R ⅛ 1	R ⅛ 3
Container-Ø Height	66 mm 121 mm	86 mm 122 mm
Volume NLGI grade	160 grams 1–2	350 grams 1–2
Pressure at outlet Operating temperature	approx. 1 bar approx. -0 °C to +60 °C	approx. 1 bar approx. -0 °C to +60 °C
Settings for lubricating time and quantity	adjustable through mini valve (SB 101)	adjustable through mini valve (SB 101)
Ord.no.	**13145**	**13146**


Model with
1 • 2 • 3
outlets
Image:
1 outlet
+1 oil brush
1


Model with
1 • 2
outlets
Image:
2 outlets
2


Model with
1 • 2 • 3 • 4 • 5 • 6
outlets
Image:
4 outlets
3

Electric Drip Feed Oilers

Outlets for 1– 6 lubricating points.
7 reservoir sizes from 100 ml to 9000 ml.

The Electric Drip Feed Oiler consists of an electric pump with regulating valve, feeding fluids intermittently with a max. pressure of 1.5 bar. The pump is controlled either directly from the main switch of your machine or through other available circuits. The oiler can be directly controlled via the machine control unit or the ALS T 50 (see next page).

2 operating modes:

– **Continuous intermittent duty**
On-time 0.5 s to max. 90 s

Within this on-time range a continuous intermittent duty with 100% duty cycle is ensured, provided that the off-time equals at least the set on-time.

– **Continuous short-time duty**
On-time 0.5 s to max. 150 s

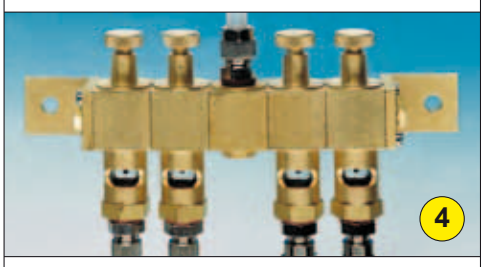
Within this on-time range the off-time must be at least twice as long as the set on-time, 50% duty cycle. Between 0.5 s to 90 s the off-time must at least equal the set on-time.

Image	1		2			3	
Type	**ALS Electric Oiler**		**ALS • EPO 3**			**ALS • EPO 9**	
Outlets	**1 • 2 • 3**		**1 • 2**			**1 • 2 • 3 • 4 • 5 • 6**	
Container capacity	**100 ml**	**460 ml**	**1000 ml**	**2000 ml**	**3000 ml**	**5000 ml**	**9000 ml**
Made of	plastic, transparent		glass			aluminum	
Container-Ø – height – length – depth	80mm 100mm – –	115 mm 150 mm – –	100 mm 200 mm – –	133 mm 235 mm – –	150 mm 300 mm – –	– 230 mm 250 mm 180 mm	– 250 mm 370 mm 190 mm
Power Ambient temperature	18.5 W max. 40 °C		18.5 W max. 40 °C			18.5 W max. 40 °C	
Pressure Delivery height	max. 1.0 bar 10 m		max. 1.0 bar 10 m			max. 1.0 bar 10 m	
Output	21 cm³/min. with oil 65 mm²/sec.		21 cm³/min. with oil 65 mm²/sec.			21 cm³/min. with oil 65 mm²/sec.	
Electrical connection	230 V · 50 Hz		230 V · 50 Hz			230 V · 50 Hz	
Protection class	IP 65		IP 65			IP 65	
Lubricant capacity	100 ml	460 ml	1000 ml	2000 ml	3000 ml	5000 ml	9000 ml
Oiler with 1 pump No.	**14107**	**13940**	**12444**	**12446**	**12448**	**12452**	**12453**
Extra pump No.	**12454**	**12454**	**12454**	**12454**	**12454**	**12454**	**12454**
Mounting bracket No.	**12802**	**12804**	**12723**	**12722**			

4

ALS MTR Oil Dripper

Made of glass with pickled brass. Metering spindles for exact drop dosing. Easy visual control through glass. In combination with oil dispensers, universal central lubrication systems can be assembled.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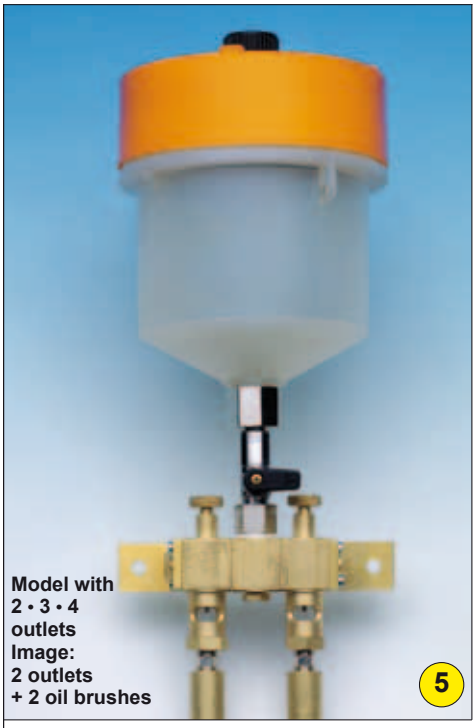
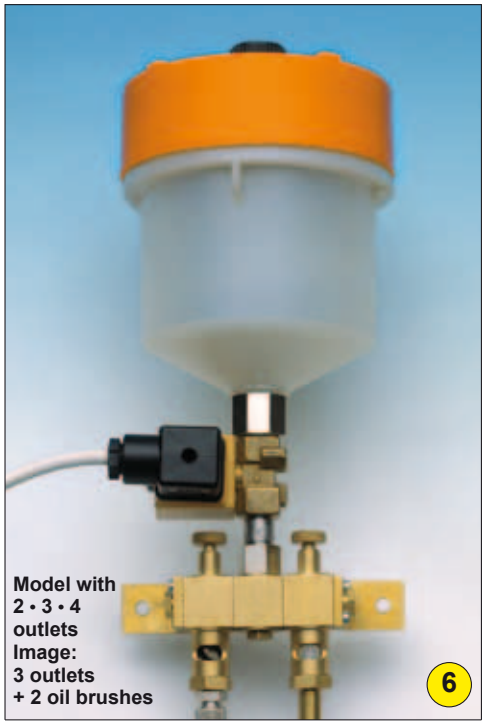
Oil Dripper MTR 2-10 units

Ready for assembly with mounting brackets

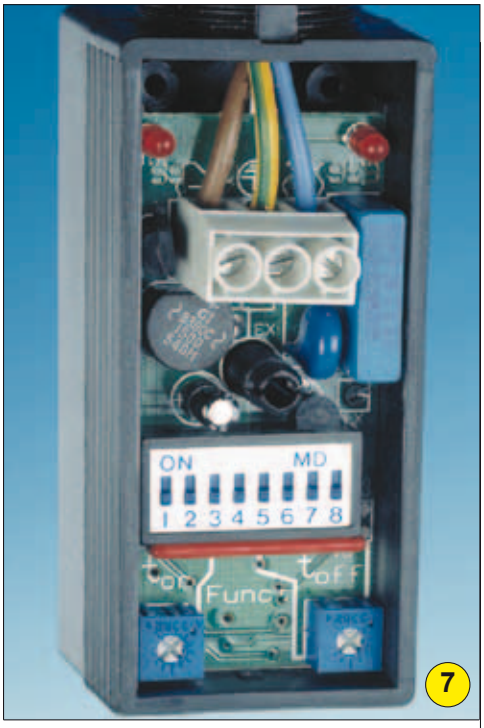
Connection: thread outlets	G ⅛ female	
2 units mounted	**Ord.no**	**14484**
Extra oiler, up to 10 units mounted	**Ord.no.**	**14331**


Model with
2 • 3 • 4
outlets
Image:
2 outlets
+ 2 oil brushes

5


Model with
2 • 3 • 4
outlets
Image:
3 outlets
+ 2 oil brushes

6



7

Drip Feed Oilers

Lubricant system, easy to install.
Manual drip dosing for oil and other fluids that are not mixed with solids or concentrated with heat.
The power supply is either generated from the main switch of your machine or through a different electric circuit. Continuous duty or continuously variable preselected running times through electrical pulse generator are available as accessories.

Oil system with valve or solenoid valve (on and off function), splitter battery (2-4 drip feed lubricator) with metering spindles for exact drip dosing.
Feed opening with dust guard cover and venting. Container made of shock-resistant, transparent plastic. Easy visual checking of fill level.

Timer

An electric, freely programmable control unit for valve control can substitute other additional control modules like timing relay, time switch or control equipment with program.
The ALS T 50 is small, easy to handle and has four different functions. Easy to install; the ordinary power socket is substituted with the module of the control device.

Image			5		6			
Type			**ALS drip feed oiler with valve**		**ALS drip feed oiler with solenoid valve**			
Outlets for lubricating points			**2 • 3 • 4**		**2 • 3 • 4**			
Container capacity			100 ml	460 ml	100 ml		460 ml	
Made of			plastic, transparent		plastic, transparent			
Container-Ø – height			80 mm 100 mm	115 mm 150 mm	80 mm 100 mm		115 mm 150 mm	
Ambient temperature			-10 °C to 60 °C		-10 °C to 60 °C			
Working pressure			gravity		gravity			
Output Medium: oil			manually adjustable		manually adjustable			
Lubricant capacity			100 ml	460 ml	100 ml		460 ml	
Electrical connection			–	–	24 V DC	230 V · 50 Hz	24 V DC	230 V · 50 Hz
Drip feed oiler with number of outlets for lubricating points	2	**no.**	**14092**	**13937**	**14099**	**14104**	**13938**	**13939**
	3	**no.**	**14096**	**14094**	**14100**	**14105**	**14093**	**14102**
	4	**no.**	**14097**	**14095**	**14101**	**14106**	**14098**	**14103**
Mounting bracket		**no.**	**12802**	**12804**	**12802**		**12804**	

Image	7
Type	**ALS T 50 timer**
Functions	Pulse generator
	Reversed pulse generator
	Turn-on pulse
	Start delay
Protection class	IP 65
Setting	via DIP switches
Installation	After removing the regular plug, simply insert time plug
Electrical connection	**120 - 230 V / 50-60 Hz AC DC** **24 - 48 V / 50 - 60 HZ AC DC**
Ord.no.	**12728** 120-230 V 50-60 Hz AC DC
Ord.no.	**12727** 24-48 V 50-60 Hz AC DC


Image:
1 outlet
+1 oil brush
+1 pulse generator
1


Image:
6 outlets
+1 pulse generator
2

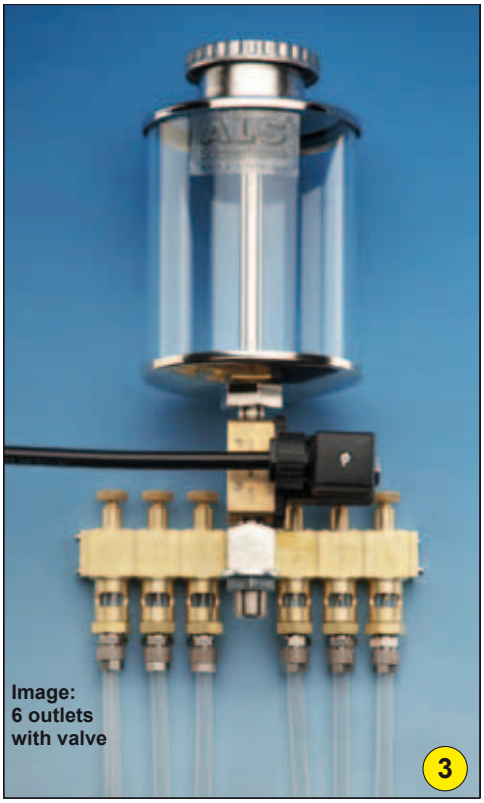


Image:
6 outlets
with valve
3

Electric Drip Feed Oiler for 1–10 Lubrication Points

Drip Feed Oiler ELO Single
For applications in dry, clean areas.
Image: Oiler with oil brush

Nickel-plated brass. Automatic drop dosing of oil and other liquids, provided they are not mixed with solids or thickened by heat. Large storage tank made of natural glass with dust cover guard. The power supply is either generated from the main switch of your machine or through a different electric circuit. Continuous duty or continuously variable preselected running times through electrical pulse generator are available as accessories.

Multiple Drip Feed Oiler MET Basic
for up to 10 outlets.
For applications in dry, clean areas.
Image: Oiler with 6 outlets

MET Basic and MET Heavy: nickel-plated, stained brass. For oil and other liquids. Solenoid valve ('Open-closed' function) directly controllable via main switch of machine. Distributor with 1–10 drip feed lubricators doses the desired oil quantity through metering spindles dependent on the individual settings. Large storage tank made of natural glass. Easy visual control.

Multiple Drip Feed Oiler MET Heavy for up to 10 outlets.
For applications in humid and dusty areas.
Image: Oiler with 6 outlets

Description same as MET Basic type.
Basic type protection class: In accordance with DIN 400 50 IP 20. (Ex) s G 4 not available.
Heavy type protection class: In accordance with DIN 400 50 IP 65. Protection from foreign bodies and from splashing and spraying water and water jets. Specially suited for a control system with a PLC. Also available in (Ex) s G 4 protection class with a 3 m pressed-in cable. Please request. 100% ED. Drip oiler systems optimized with accessories.

Electrical connection	Type ELO	Capacity	1000 ml	2000 ml	3000 ml
Standard 230 V/AC/50/60 Hz	1 Single	Male thread	G ½		
		Female thread	G ¼		
		Drops	approx. 45 drops equal 1 ml		
		Total height	240 mm	285 mm	315 mm
Other voltages on request	System for 1 lubrication point	Reservoir-Ø	100 mm	133 mm	150 mm
		Ord.no.	**12455**	**12458**	**12459**

Electrical connection	Type MET	Capacity	1000 ml	2000 ml	3000 ml
Standard 230 V/AC/50/60 Hz	2 Basic	Total height	275 mm	320 mm	350 mm
		Reservoir-Ø	100 mm	133 mm	150 mm
		Fastening	Filler cap	Filler cap	Filler cap
Other voltages on request	System with 1 outlet	**Ord.no.**	**12461**	**12464**	**12465**
	Extra outlet, up to 10	**Ord.no.**	**14331**		

Electrical connection	Type MET	Capacity	1000 ml	2000 ml	3000 ml
Standard 230 V/AC/50/60 Hz	3 Heavy	Total height	275 mm	310 mm	350 mm
		Reservoir-Ø	100 mm	133 mm	150 mm
		Fastening	Filler cap	Filler cap	Filler cap
Other voltages on request	System with 1 outlet	**Ord.no.**	**12467**	**12470**	**12471**
	Extra outlet, up to 10	**Ord.no.**	**14331**		

Mounting bracket for Drip Feed Oilers			
Length		MWI 90 mm	MWI 120 mm
steel plate	for model with volume in ml	ELO · MET · EPO 140–1000	ELO · MET · EPO 2000–3000
	Ord.no.	**12723**	**12722**

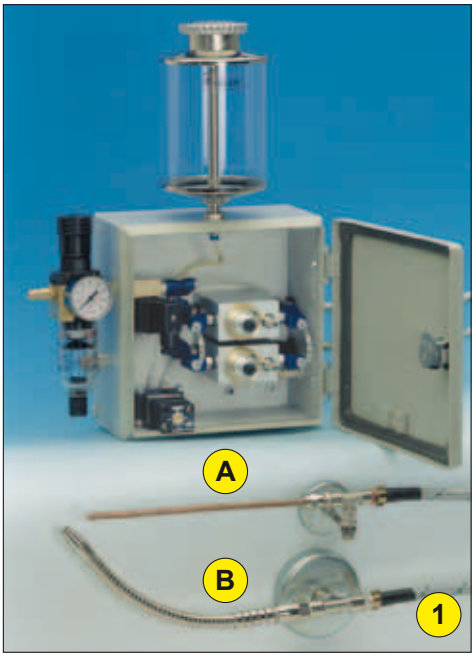
Fill level indicator

These reed switches are activated in contact-free form via a magnetic field within the float gauge.

Electrical connection

Voltage max. 300 V AC/DC
Switching current max. 0.5 A
Contact load 10 W,
Cable 1 m, LIYY 2 x 0.25 mm²
Temperature -20 °C to +80 °C.

Model		**SMM 50**
Material		nickel-plated
Float gauge		VA
Mounting		vertical
Make contact		**12724**
Break contact		**12931**



Pneumatic Microspray System

Function:

The metering unit sprays a fine lubricating film on the cutting edge of tools, workpieces and on moving parts.

Effect:

The compressed air is reduced to the desired working pressure via the regulator flow setting. The magnetic valve, which is opened through the subordinate machine control, feeds the frequency generator, which, in turn, pulsates the ambient air and transfers it to the micro pump. From there, through tubes and hoses, the spray arrives at the spray tubes or spray nozzles.

Microspray system:
Accurately adjusted oil films

• chains • rails • profiles • tubes • tools

Microspray system:
Finely dosed minimum lubrication for

• drilling • tapping • milling • sawing • recasting
• punching

Images:

1. Exact dosing of lubricants for minimum consumption.
2. Microspray system mounted on CNC machine.
3. Microspray system mounted on high-performance band saw.
4. Special nozzle head for band saws and circular saws.

Every application requires an individual solution and installation.
Ask our experts for advice.

Metering units: 6 models	
Standard version A	Nozzle head with 1 CU nozzle tube L = 200 mm, straight nozzle
Special version A	Angled nozzle
Special version B	Equipment for simultaneously supplying 2 lubricating points 2 nozzle heads with 1 CD-nozzle tube each. L = 200 mm straight nozzle
Spray head SKS	Special nozzle head for screw-on band saw blade up to 54 mm
Spray head SKN	Special nozzle head for screw-on band saw blade up to 41 mm
Spray head SKM	Special nozzle head for screw-on band saw blade up to 27 mm

Example: data sheet for BIO spray oil LG 42

Formulation on the basis of vegetable fatty ester acids.

Shape	liquid
Color	yellow
Smell	greasy
Pour point	-10 °C
Density	(20 °C) 0.93 g/cm³
Viscosity	(40 °C) 45 mm²/s
Solubility in water	indissoluble
Flash point	>250 °C

This product is not a dangerous substance in terms of the Ordinance on Hazardous Substances.
Water hazard class:
WGK 1 (self-assessment)

	Pneumatic Microspray System 1 1/1	**1 Pneumatic Microspray System 1 2/1**	**Pneumatic Microspray System 1 2/2**
Description	Model with 1 pump 1 pulse generator	Model with 2 pumps 1 pulse generator	Model with 2 pumps 2 pulse generators
Box (lockable)	1	1	1
Micro pump	1	2	2
Pneumatic pulse generator	1	1	2
Electromagnetic valve	1	1	1
2.5 m coaxial metal casing hose	1	2	2
CU nozzle tube, L = 200 mm on magnet base	1	2	2
1 liter storage tank	1	1	1
Pneumatic maintenance unit	1	1	1
Ord.no.	**13160**	**13231**	**13232**

Bigger storage tanks on request

Single Line Systems

for the delivery of oil and fluid greases.

The lubricant is dispensed through the main line to any number of lubricating points.

Benefits:
- Wide-ranging viscosities
- Only minimal pressure necessary
- Easy installation
- Long lubricating lines possible
- Simultaneous supply of any number of lubrication points possible
- Easy design of lubrication systems
- Extension and/or alteration possible

Technical description:
The Single Line Systems ALS Mini 2 EA-Tronic and ALS Super EA-tronic supply lubricating points via metering valves. The drive unit as well as the electronic control are neatly arranged and protected through an enclosed box against any environmental effects. The systems can be controlled either with an internal control or externally via PLC.

Applications: machine tools, printing and converting machines, textile machines, presses etc.

Technical data	1 ALS Mini 2 EA-Tronic	2 ALS Super 3 EA-Tronic
Pump style:	gear pump	gear pump
Delivery output:	0.4 l/min	0.4 l/min
Operating pressure:	max. 35 bar	max. 35 bar
Lubricant medium:	oil fluid grease on request	oil fluid grease on request
Viscosity range:	20 – 700 mm²/s	20 – 700 mm²/s
Temperature range:	medium 0°C to 70°C surroundings 0°C to 40°C	medium 0°C to 70°C surroundings 0°C to 40°C
Reservoir capacity:	1.5 liter	3.0 liter
Material reservoir:	plastic, transparent	plastic, transparent
Protection class:	IP 54	IP 54
Drive:	electric motor	electric motor
Motor performance:	185/210 W	185/210 W
Operating voltage and nominal current:	24 V DC 230 V AC 50/60 Hz, 0.8/1.0 A	24 V DC, 3.9 A 230 V AC 50/60 Hz, 0.8/1.0 A
Output connection:	R ¼	R ¼
Number of outlets:	1	1
Level switch for fluid grease:	on request	on request
Float switch:	built-in	built-in
Press switch:	built-in	built-in

Type	Medium	Ord.no.	Ord.no.
230 V AC with control	oil	**14460**	**14464**
24 V DC with control	oil	**14459**	**14463**
230 V AC without control	oil	**14461**	**14465**
24 V DC without control	oil	**14462**	**14466**

Single Line Systems for fluid grease on request. Hoses and fittings on pages 18 - 23.

Distribution Blocks and Dosing Elements

for Single Line Systems with screw connection

Distributor manifold with one-sided screw connection for the attachment of dosing elements.
These are available in different dosing volumes and precisely supply individual lubricant output to the lubricating points.

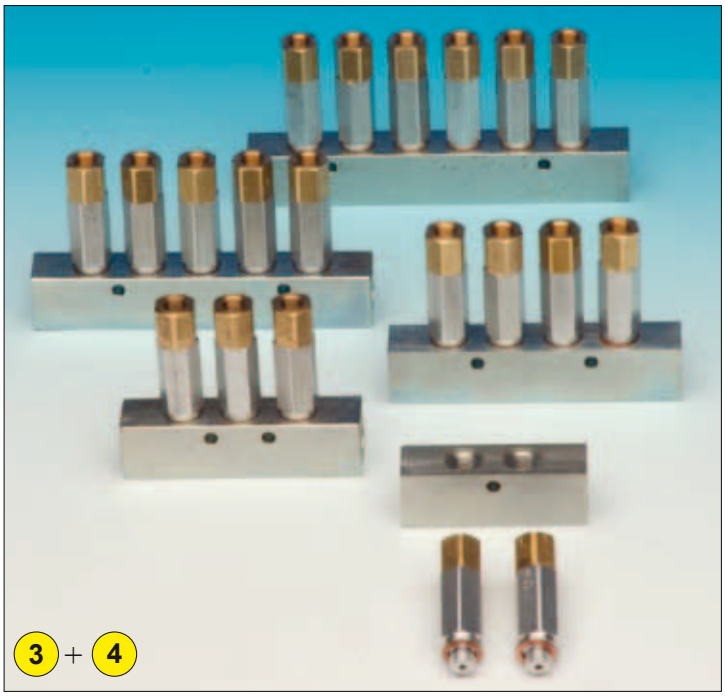
The lubricant shifting of the ALS dosing elements are controlled via the control grommet. As no pressure surge is needed for the functioning, the pressure build-up within the system transpires slowly. The ALS dosing elements distinguish themselves through exact dosing and high repetitive accuracy at slow pressurization.

Design	Steel, surface zinc-plated
Connections Lubrication line Main line	M 8x1 for Ø 4 mm, with double taper sleeve and socket union according to DIN 2367 M 10x1 for Ø 6 mm
Installation position	any, if possible with outlet pointing up
Temperature range	0 - 70°C
Operating pressure	15 – 40 bar
Pressure relief	≤ 4 bar
Lubricants	oils and fluid greases NLGI grade 000 – 00 (according to approval)

ALS Dosing Elements	Image 3
Dosing volume	**Ord.no.**
10 mm³/stroke	**14479**
30 mm³/stroke	**14480**
60 mm³/stroke	**14481**
100 mm³/stroke	**14482**
160 mm³/stroke	**14483**

ALS Distribution Manifolds			Image 4
Quantity	**Ord.no.**	**Quantity**	**Ord.no.**
1	**14467**	6	**14472**
2	**14468**	7	**14473**
3	**14469**	8	**14474**
4	**14470**	9	**14475**
5	**14471**	10	**14476**

More variations and number of outlets on request

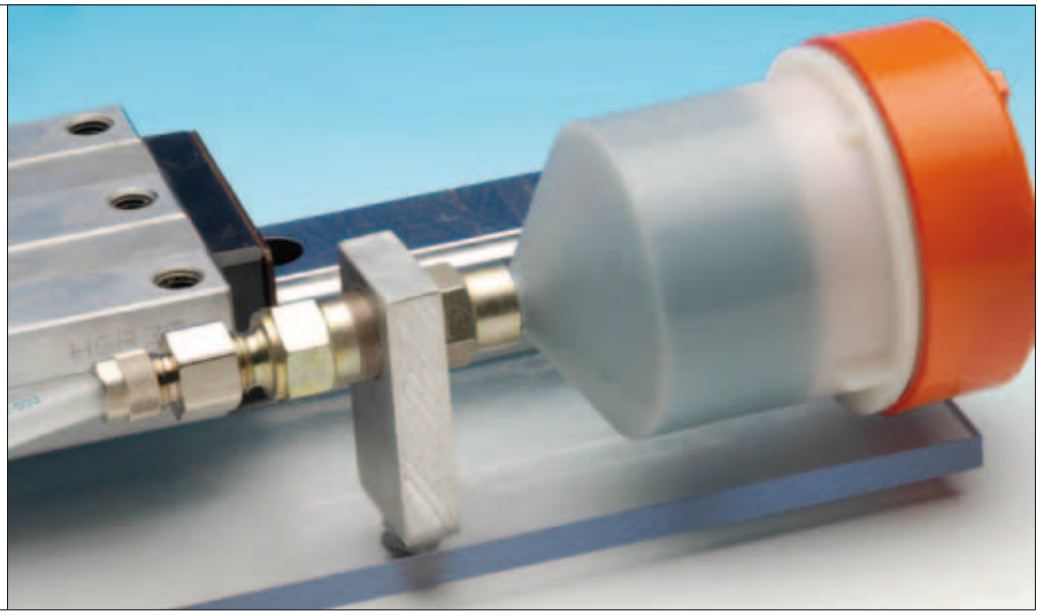


Lubricating lines with a max. bursting pressure of 20 bar. Great selection of fittings.

Fittings

For running fixed and flexible lines between lubricator and lubricating point.

Safe, reliable, adaptable to every space.



Male adapter straight

– cylindrical–

Nickel-plated

For hose male/female thread Ø mm	Male thread mm	Thread length mm	Total length mm	Width across flats mm	Order no.
6/4	G ⅛	6	18.5	13	**12734**
	G ¼	8	19	17	**12732**
	G ½	10	19.5	24	**12733**
8/6	G ⅛	6	18.5	13	**12502**
	G ¼	8	19	17	**12500**
	G ½	10	19.5	24	**12501**
10/8	G ⅛	6	20	14	**14060**
	G ¼	8	20.5	17	**13811**
	G ½	10	21	24	**14061**

Male adapter straight

– conical–

Nickel-plated

For hose male/female thread Ø mm	Male thread mm	Thread length mm	Total length mm	Width across flats mm	Order no.
6/4	R ⅛	7.5	26	12	**13073**
	R ¼	11	30	14	**13074**
	R ⅜	11.5	31	17	**14062**
8/6	R ⅛	7.5	26	12	**13075**
	R ¼	11	30	14	**13076**
	R ⅜	11.5	31	17	**13077**
10/8	R ⅛	7.5	28	14	**14063**
	R ¼	11	32	14	**14064**
	R ½	14	35	22	**14065**

Female bulkhead fitting straight

– cylindrical–

Nickel-plated

For hose male/female thread Ø mm	Female thread mm	Thread length mm	Total length mm	Width across flats mm	Order no.
6/4	G ⅛	8	24	13	**12729**
	G ¼	10.5	26.5	17	**13054**
8/6	G ⅛	8	24	13	**12496**
	G ¼	10.5	26.5	17	**12497**
	G ⅜	11.5	27.5	19	**12498**
	G ½	15	31.5	24	**12495**
10/8	G ¼	10.5	28	17	**13812**
	G ½	15	33	24	**13056**

Elbow male adapter 90° rotary

– cylindrical–

Nickel-plated

For hose male/female thread Ø mm	Male thread mm	Thread length mm		Width across flats mm	Order no.
6/4	G ⅛	6		13	**13062**
	G ¼	8		17	**13063**
8/6	G ⅛	6		13	**13064**
	G ¼	8		17	**13065**
10/8	G ¼	8		17	**13066**

Elbow male adapter 90° rotary

– conical–

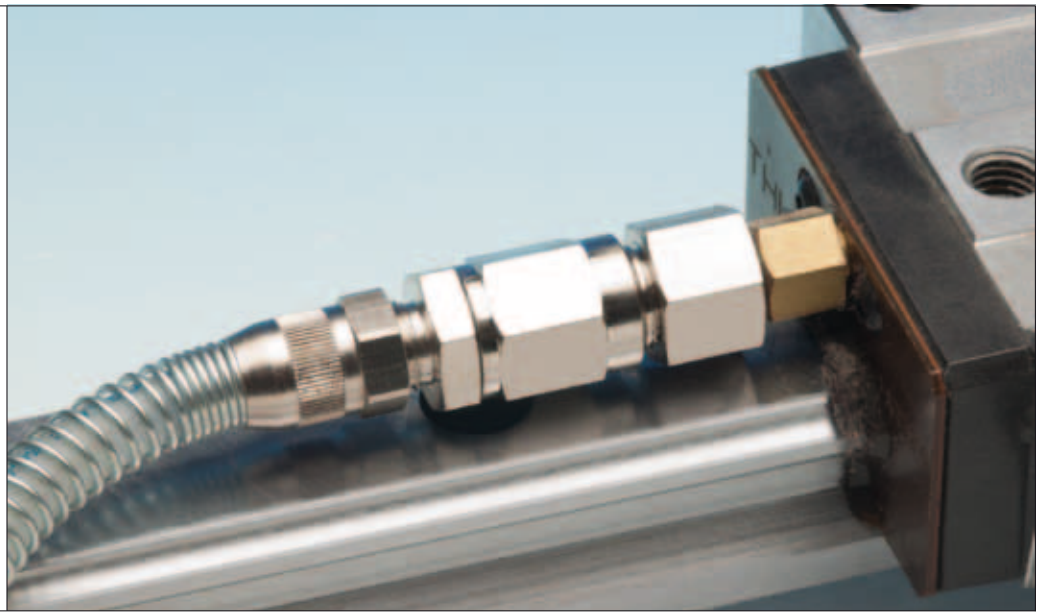
Nickel-plated

For hose male/female thread Ø mm	Male thread mm	Thread length mm		Width across flats mm	Order no.
6/4	R ⅛	7.5		13	**13069**
	R ¼	11		14	**13070**
8/6	R ⅛	7.5		13	**13067**
	R ¼	11		14	**13068**
10/8	R ¼	11		14	**13071**

The optimal solution for lubricating lines.

Ideally, the lubricator is directly mounted on the lubricating adapter.
However, this is often not possible depending on the clearance between the lubrication point and the immediate surroundings.
In this case a line is run from lubricator to lubrication point.

Let us help you find the right connection.



Elbow female adapter 90° rotary

– cylindrical–

Nickel-plated

For hose male/female thread Ø mm	Female thread mm	Thread length mm		Width across flats mm	Order no.
6/4	G ⅛ G ¼	8 10.5		10 13	**13051** **13053**
8/6	G ⅛ G ¼	8 10.5		10 13	**13050** **12494**
10/8	G ¼	10.5		13	**13052**

Male T - adapter rotary

– cylindrical–

Nickel-plated

For hose male/female thread Ø mm	Male thread mm	Thread length mm		Width across flats mm	Order no.
6/4	G ⅛ G ¼	6 8		13 17	**13687** **13688**
8/6	G ⅛ G ¼	6 8		13 17	**13690** **13689**
10/8	G ¼	8		17	**14067**

Male T - adapter rotary

– conical–

Nickel-plated

For hose male/female thread Ø mm	Male thread mm	Thread length mm		Width across flats mm	Order no.
6/4	R ⅛ R ¼	7.5 11		13 14	**13701** **13700**
8/6	R ⅛ R ¼	7.5 11		13 14	**13699** **13698**
10/8	R ¼	11		14	**14066**

T - adapter for hose

Nickel-plated

For hose outlet	For hose inlet			Width across flats mm	Order no.
6/4	6/4			8	**13090**
8/6	6/4 8/6			8 8	**14068** **12511**
10/8	6/4 8/6 10/8			10 10 10	**14069** **14070** **14071**

Cap nut with flexible, protective spring

Nickel-plated

For hose male/female thread Ø mm	Connection thread mm	Thread length mm		Width across flats mm	Order No.
6/4	M 10 x 1	96		12	**13702**
8/6	M 12 x 1	97		14	**13703**
		More fittings on the following pages			

A must-have for piping of tubes

Reducing adapters

These screw connections make two different tube diameters compatible.

Reducer

– cylindrical–

Nickel-plated

Male thread	Female thread	Outer thread length mm	Inner thread length mm	Total length mm	Width across flats mm	Order no.
G ⅛	G ⅛	6	8	16	13	**13661**
	G ¼	6	10.5	19	17	**12485**
	G ⅜	6	11.5	20	19	**13664**
	G ½	6	15	24	24	**12479**
G ¼	G ¼	8	10.5	21	17	**12505**
	G ⅜	8	11.5	22	19	**13662**
	G ½	8	15	26	24	**12478**
G ⅜	G ⅜	9	11.5	23	19	**13668**
	G ½	9	15	27	24	**12480**
G ½	G ½	10	15	28	24	**12504**

Reducer

– conical–

Nickel-plated

Male thread	Female thread	Outer thread length mm	Inner thread length mm	Total length mm	Width across flats mm	Order no.
R ⅛	G ⅛	7.5	8	17.5	13	**13663**
	G ¼	7.5	10.5	20.5	17	**13697**
	G ⅜	7.5	11.5	21.5	19	**13665**
	G ½	7.5	15	25.5	24	**13805**
R ¼	G ¼	11	10.5	24	17	**12711**
	G ⅜	11	11.5	25	19	**13666**
	G½	11	15	29	24	**13809**
R ⅜	G ⅜	11.5	11.5	25.5	19	**13660**
	G ½	11.5	15	29.5	24	**13669**
R ½	G ½	14	15	32	24	**13670**

Reducer

Brass

Special design

Male thread	Female thread	Outer thread length mm	Inner thread length mm	Total length mm	Width across flats mm	Order no.
M 6 x 1	G ¼	10	11	27	19	**12488**
M 8 x 1	G ¼	10	11	27	19	**12489**
	G ½	11	19	35	27	**12484**
M 10 x 1	G ¼	10	11	27	19	**12486**
	G ½	11	19	35	27	**12481**
M 12 x 1	G ¼	10	11	27	19	**12487**
	G ½	11	19	35	27	**12482**

Reducer

– cylindrical–

Nickel-plated

Male thread	Female thread	Outer thread length mm	Inner thread length mm	Total length mm	Width across flats mm	Order no.
G ¼	G ⅛	8	13	13	17	**13672**
G ⅜	G ⅛	9	14	14	19	**13671**
G ½	G ⅛	10	16	16	24	**13078**
G ⅜	G ¼	9	14	14	19	**12507**
G ½	G ¼	10	16	16	24	**12506**
	G ⅜	10	16	16	24	**13677**

Reducer

– conical–

Nickel-plated

Male thread	Female thread	Outer thread length mm	Inner thread length mm	Total length mm	Width across flats mm	Order no.
R ¼	G ⅛	11	8	16	14	**13079**
R ½	G ¼	14	10.5	19.5	22	**13676**
	G ⅛	14	8	19.5	22	**13674**
	G ⅜	14	11.5	19.5	22	**13080**
R ⅜	G ¼	11.5	10.5	16.5	17	**14072**

Sleeves, Elbows, Tees

For the optimal running of fixed tubes from lubrication system to various lubrication points.

Reducing Sleeve
– cylindrical –
Nickel-plated

Female thread	Female thread	Outer thread length mm	Inner thread length mm	Total length mm	Width across flats mm	Order no.
G ⅛	G ¼	8	10.5	18.5	17	**13083**
	G ⅜	8	11.5	19.5	19	**13679**
	G ½	8	15	23	24	**13082**
G ¼	G ⅜	10.5	11.5	22	19	**13680**
	G ½	10.5	15	25.5	24	**13081**
G ⅜	G ½	11.5	15	26.5	24	**13681**

Sleeve
– cylindrical –
Nickel-plated

	Female thread		Inner thread length mm	Total length mm	Width across flats mm	Order no.
	G ⅛		15	15	13	**13088**
	G ¼		21	21	17	**12510**
	G ⅜		23	23	19	**13684**
	G ½		30	30	24	**13089**

Female Elbow 90°
– cylindrical –
Nickel-plated

	Female thread		Inner thread length mm		Width across flats mm	Order no.
	G ⅛		8		10	**13087**
	G ¼		10.5		13	**12509**
	G ⅜		11.5		17	**13694**
	G ½		15		21	**13086**

Elbow 90°
– conical –
Nickel-plated

Male thread	Female thread	Outer thread length mm	Inner thread length mm		Width across flats mm	Order no.
R ⅛	G ⅛	8	8		10	**13961**
R ¼	G ¼	11	11		13	**13215**
R ⅜	G ⅜	11.5	11.5		17	**14073**
R ½	G ½	14	14		21	**13267**

Female Tee
– cylindrical –
Nickel-plated

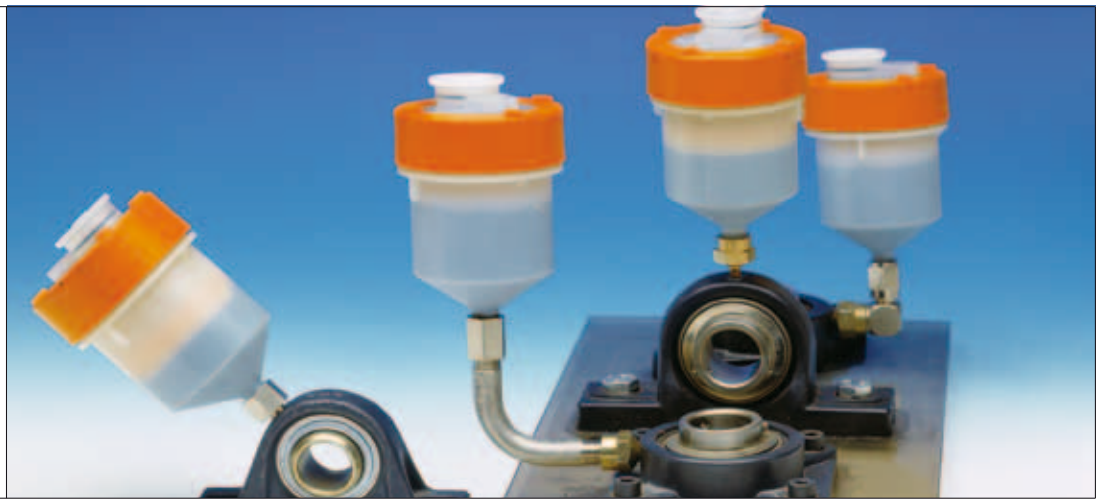
	Female thread		Inner thread length mm		Width across flats mm	Order no.
	G ⅛		8		10	**13085**
	G ¼		11		13	**12508**
	G ⅜		11.5		17	**13695**
	G ½		14		21	**13084**

Hoses and tubes on the following pages

Flexible hoses

and connecting components for lubricant lines from the lubricant dispenser to the lubrication point.

Special solution: Prefabricated lines, empty or filled with grease.



Check valve
Nickel-plated
Viton seal

Opening pressure min. 0.1 bar
Operating pressure max. 10 bar

Male thread	Female thread	Thread length mm	Width across flats mm			Order no.
G ⅛ G ¼	G ⅛ G ¼	26 32	14 17			**13854** **13601**
Female thread	**Female thread**	**Thread length mm**	**Width across flats mm**			**Order no.**
G ⅛ G ¼ G ½	G ⅛ G ¼ G ½	50 50 63	19 19 25			**14074** **14075** **14076**

Hose connection kit empty (without grease)
– polyamide
– polyethylene
On request: filled with ALS greases

Hose outer/ inner Ø mm	Hose length m	Screw in connection straight	Screw on connection straight	PA hoses Polyamide Order no.	PE hoses Polyethylene Order no.
8/6	0.5 1.0	G ¼ G ¼	G ¼ G ¼	**13936** **14135**	**14136** **14137**
	1.5 2.0	G ¼ G ¼	G ¼ G ¼	**14138** **14139**	**14141** **14140**
				Other lengths and connections on request	

Connecting pipe with two-sided male thread

Stainless Steel

Other lengths on request

Male thread	Outer Ø mm	Length straight mm	90°-bend R 40 length mm		Order no.
G ¼	13.5	30 40 60	– – –		**12875** **12876** **12492**
		80 100 120	– – –		**12493** **12491** **12872**
		–	65/65	**Other lengths on request**	**12490**

Seal rings

Polyamide PA
Aluminum

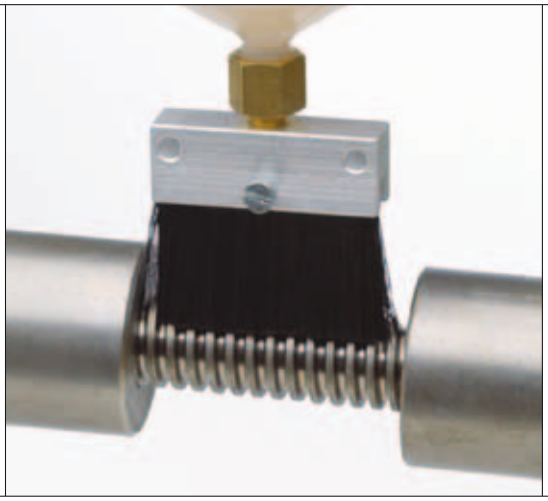
	For thread	Temp. up to °C	Outer Ø mm	Inner- Ø mm	Ring width mm	Ord. no. per 100 pieces
Polyamide	G⅛ +M10 G ¼	90 90	13.8 17	10.3 13.5	1.5 1.5	**13691** **13152**
	G ⅜ G ½	90 90	21 26	16.7 21.3	1.5 1.5	**13692** **13693**
Aluminum	G⅛+M10 G ¼	120 120	14 17.5	10.3 13.5	1.5 1.5	**14077** **13949**
	G ⅜ G ½	120 120	21 25	16.7 21.3	1.5 1.5	**14078** **14079**

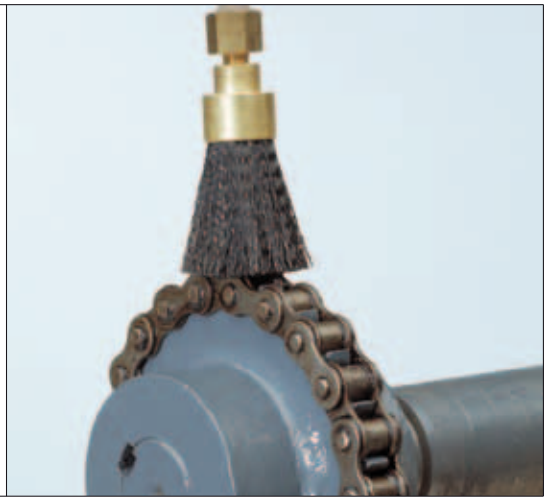
Flexible hose, plastic

	Outer/ Inner Ø mm	Minimum bend radius mm	Admissable working pressure in bar at temperature 20 °C	30 °C	60°C	80 °C	Per 1 m hose length Ord. no.	Per 50 m coil Ord. no.
Polyamide PA	6/4 8/6 10/8	30 40 60	26 19 15	22 16 12.5	14 10 8	11 8 6	**12419** **12814** **13813**	**12420** **12815** **14080**
Polyethylene PE	6/4 8/6 10/8	30 40 60	13 8 6	10 6 4.5	5.5 3.2 2.5	3.5 2 1.5	**12421** **12816** **14081**	**12422** **12817** **14082**

Brush and roller brush lubrication

Ideal for the lubrication of slideways, wire ropes, chains, belts.





Round brush
Thread G ⅛.
Brass socket.
Bristles made of
– horsehair
– perlon
– stainless steel

Brush Ø mm	Horsehair bristles Ord. no.	Perlon bristles applications up to 70 °C Ord. no.	Stainless steel bristles applications over 70 °C Ord. no.
6.5	13898	12522	12930
16	13899	12519	12927
25	13900	12520	12928
30	13901	12521	12929

Flat brush
Thread G ⅛.

Aluminum socket.
Bristles made of
– horsehair
– perlon
– stainless steel

Brush width mm	Horsehair bristles Ord. no.	Perlon bristles applications up to 70 °C Ord. no.	Stainless steel bristles applications over 70 °C Ord. no.
57	13651	12517	13283
114	13652	12514	13626
171	13653	12515	13644

Flat brush
Thread G ¼.

Plastic socket.
Bristles made of
– horsehair

Brush width mm	Horsehair bristles Ord. no.
40	12516
60	12518
100	12513

Microbrush with angle

by request

Roller brush

Adjustable fastening.

The roller brush is supplied with lubricant from within the axis.

Roller brush dimensions Width mm	Ø mm	Axis length mm	Perlon bristles applications up to 70 °C Ord. no.	Stainless steel bristles applications over 70 °C Ord. no.
20	60	74	13629	13636
25	60	82	13630	13637
30	60	91	13631	13638
40	60	99	13575	13639
20	80	74	13632	13640
25	80	82	13633	13641
30	80	91	13634	13642
40	80	99	13635	13643

Roller brush
Adjustable fastening.

The roller brush is lubricated through drop lubrication from above.
Bristles made of
– perlon
– stainless steel.

Roller brush dimensions Width mm	Ø mm	Height mm	Perlon bristles applications up to 70 °C Ord. no.	Stainless steel bristles applications over 70 °C Ord. no.
25	80	137	13628	13627

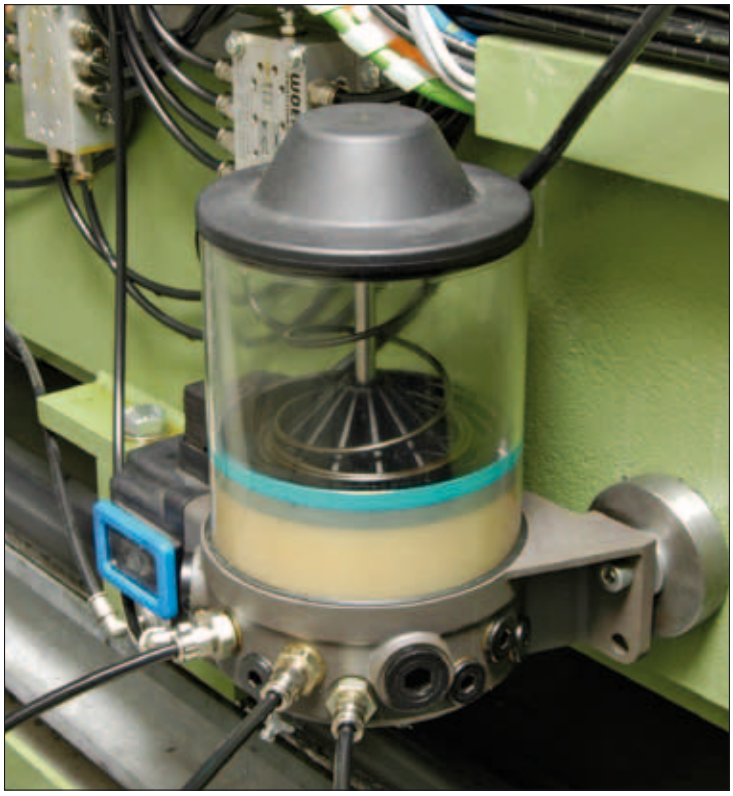
ALS Standard

Central Lubrication Systems

The two electrically actuated models of this central lubrication system have 3 or 21 independently lubricating outlets. A seperate pump element is required for each outlet.
The selection of pump elements should be made according to the operating conditions of the lubricating points and the information in the right hand table. The pump elements are especially well suited for the application of progressive distribution blocks. Progressive distributors can also be connected.

These pumps enable the delivery of lubricants up to NLGI grade 2 at a working pressure of 200 bar or 280 bar, respectively.
The ALS Central Lubrication Systems can also be externally controlled via PLC or an additional ALS timer.

Electric drive • 3 and 21 outlets • Grease capacity 4 or 8 liter		**1**	**2**
Basic systems without pump elements		**ALS Standard 3**	**ALS Standard 21**
Operating voltage Revolutions		24 V DC 15 RPM	24 V DC 15 RPM
Current draw:	idling at +20 °C full load at +20 °C	0.4 A 1.1 A	0.4 A 1.1 A
Max. operating pressure Operating temperature range		max. 280 bar -20 °C to +70 °C	max. 200 bar -20 °C to +70 °C
Container size standard Outlets		4 liter 3	4 liter 21
Basic systems without pump elements		**Ord.no.** **13941**	**Ord.no.** **13943**
Pump elements	Stroke		
PE 120 PE 120 DBV	0.12 cm³ 0.04 – 0.12 cm³	**13947** **13948**	
PE 5 PE 10	0.005 cm³ 0.01 cm³		**13918** **13919**
PE 15 PE 25	0.015 cm³ 0.025 cm³		**13920** **13921**
PE 50	0.05 cm³		**13922**
Reservoir upgrade to 8 liter		**13944**	**13944**
Accessories and supplements: Progressive distributors page 28 • fittings page 34+35			



ALS Vario

Central lubrication systems

For mobile and stationary applications.
Container size 1.2 kg. Max. pressure 280 bar.
Selection of pump elements according to the greasing demand of the lubricating points. Different pump elements allow for variable output quantities.

Technical information

This compact central lubrication system is equipped as multiple line system and prepared for versatile applications. Different sized outlets for five pump elements supply up to 8 lubricating points directly. Simultaneously, another 2 additional pump elements can be connected to a progressive distributor block.
This system has a modular design and can be used for all mobile applications such as trucks, construction machines, agricultural machines etc.
The combination of progressive distributor and multiple line technology makes the ALS Vario a great greasing solution.

Technical data 3

Operating voltage	24 V DC	Operating temperature	-25 °C to +75 °C
Current draw at 280 bar	3.8 A	Revolutions	15 RPM
Protection type	IP 65	Outlets for pump elements	8 x for PE 5/10/15/25/50 2 x for PE 120F/120 FV
Lubricant consistency	Grease NLGI 000-2		
Container size	1.2 kg	With level control.	

Central Lubrication System ALS Vario without pump element • without grease

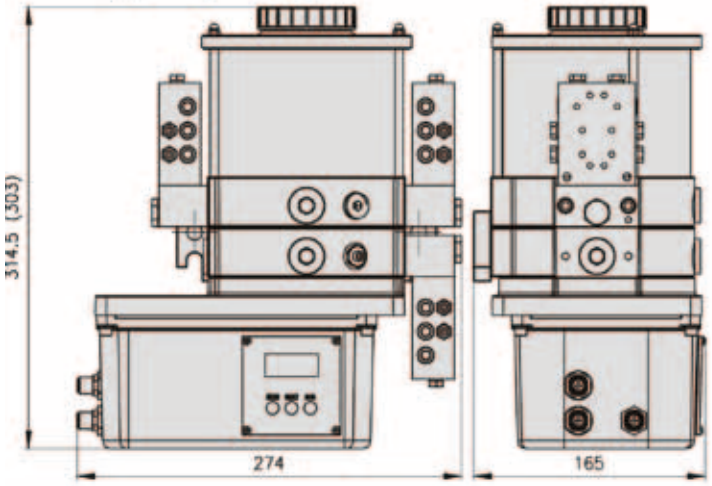
	Ord.no.
Unit without control (24 V DC)	**13917**
Unit with control “Z “ 24 V DC • Lubricating time 1 min. to 16 min. • Time between cycles 0.5 h to 8 h.	**13913**
Unit with control “T” 24 V DC • Lubricating time 2 min. to 32 min. • Time between cycles 0.5 h to 8 h.	**13915**

Pump elements

Pump elements	Output cm³/stroke	Output cm³/min.	Thread outlet	Ord. no.
PE 5	0.005	0.075	M 10 x 1	**13918**
PE 10	0.01	0.15	M 10 x 1	**13919**
PE 15	0.015	0.225	M 10 x 1	**13920**
PE 25	0.025	0.375	M 10 x 1	**13921**
PE 50	0.05	0.75	M 10 x 1	**13922**
PE 120F	0.12	1.8	M 10 x 1	**13946**
PE 120FV	adjustable 0.04–0.12	max. 1.8	G ¼	**13924**

Accessories and supplements:
Fittings page 34+35 • progressive distributor page 28

Design: 2-row with progressive distributors VPB-G



ALS GMG-L	Grease	Oil
1 liter reservoir	Without filler cap	With filler cap
Level check	Intermittent min. monitoring	Min. monitoring
Filling connection	Tapered lubricating nipple DIN 71412	None
Design	Separate delivery for lower and upper pump elements	
Elec. control system	With connections for distribution monitoring	
Circuits	2	
Total of 6 PE possible	3 for the upper and 3 for the lower circuit	
Threaded connection	M 18 x 1.5	
Pump for	**Grease**	**Oil**
Art. No.:	14824	14825
Pump element		
0.04 cm³	14826	
0.11 cm³	14827	
Additional information	Only 0.11 cm³ pump elements can be used for progressive distributors	

Progressive distributors for flange mounting (2 for the upper circuit and 1 for the lower) from page 28 * Fittings p. 34 + 35 *

ALS GMG-L

Central lubrication system

Technical description

The features of this compact central lubrication system can be supplied using an integrated electrical control system and distribution monitoring for up to 60 lubrication points, using an attached progressive distributor. The delivery of oil, fluid grease and grease up to NLGI class 2 is positively affected by improved suction performance at low temperatures (down to - 20°C) due to the pump elements mounted on the eccentric (positively controlled).

Benefit: The upper and lower pump element series can be activated separately one after the other. This way two lubrication circuits with different amounts of lubricant volume can be supplied (no directional valves required).

Technical data			
Reservoir volume	1 liter	**Motor connection voltage**	24 V DC
Reservoir	Al/PP/Acrylic	**Current draw**	2.5 A
Housing	Aluminum	**Speed (load-dependent)**	approx. 30 min⁻¹
Number of pump elements	6	**Protection type**	IP 55
Pump element material	Steel	**Seals**	NBR/FPM (Viton)
Output per stroke and pump element	04 0.04 cm³ 11 0.11 cm³	**Temperature range**	- 20 °C to +60 °C Note penetration of grease at low temperatures
Medium	Oil, grease NLGI class 2	**Mounting position**	Vertical
Max. output pressure	250 bar		

ALS GMG-B

Central Lubrication Systems

For mobile and stationary applications.
Reservoir sizes 2 liter, 4 liter or 7 liter.
Max. pressure 250 bar.
Selection of pump elements according to the greasing demand of lubrication points. Different pump elements allow for variable output quantities.

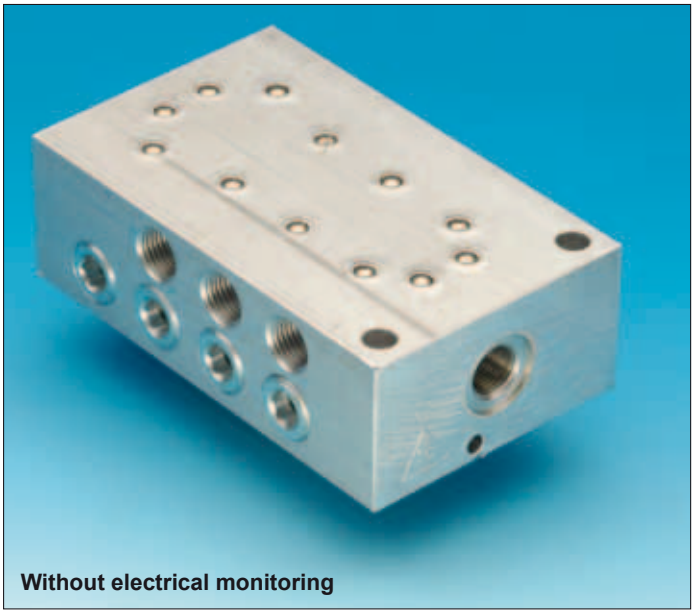
Technical information

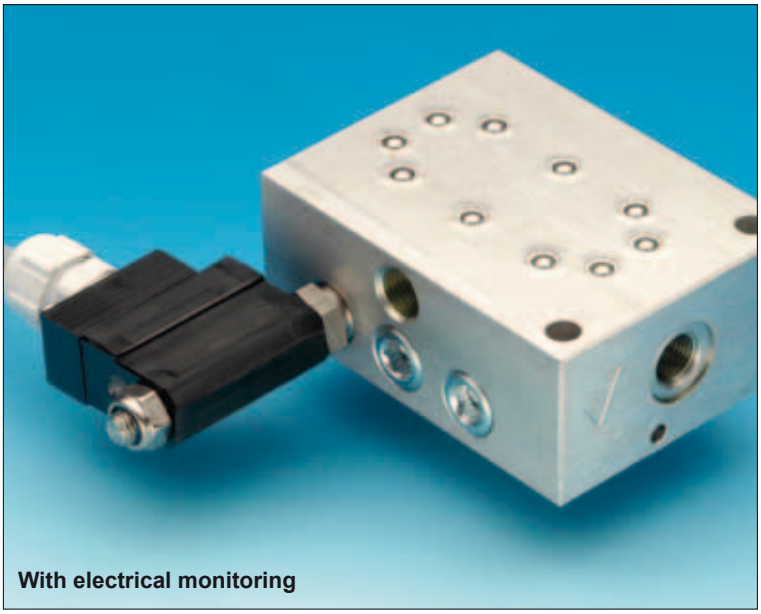
This compact central lubrication system can be used for various applications to deliver lubricating oils and greases.
This pump consists of up to four assembly groups: pump with monitoring and drive, container, control and progressive distributor.

The ALS GMG-B has two outlets for two pump elements with different dosages. In addition it can be connected with a flange-mounted progressive distributor. An electric control as well as level monitoring for grease and oil are also available.

For grease and oil • reservoir sizes 2 liter, 4 liter or 7 liter		
ALS GMG-B		**Ord.no.**
System with 2.0 liter		**14208**
System with 4.0 liter		**14488**
System with 7.0 liter		**14489**
Pump element 0.08 cm³/stroke		**14490**
Pump element 0.16 cm³/stroke		**14491**
Pressure relief valve (for pump elements)	70 bar	**14494**
	150 bar	**14495**
	250 bar	**14496**
Pressure relief valve (adapter/progressive distributor)	70 bar	**14504**
	150 bar	**14505**
Timing On-time/off-time 5 s - 999 h		**14499**
Level control for oil		**14508**
Level control for grease		**14507**
Adapter for progressive distributor Progressive distributor page 31 and 33		**14503**

Technical data			
Reservoir sizes	2 liter, 4 liter, 7 liter	**Connected load of motor**	24 VDC
Reservoir	Polyamide transparent (7 l steel)	**Current draw**	max. 2.5 A
Housing	Aluminum	**RPM (load-dependent)**	approx. 30 min^{-1}
Number of pump elements	max. 2	**Protection type**	IP 55
Pump element material	Steel	**Seals**	NBR (Perbunan)
Output per stroke and pump element	0.08 cm³ 0.16 cm³	**Temperature range**	- 20 °C to +60 °C note penetration of grease at low temperatures
Medium	Oil and grease up to NLGI-grade 2	**Mounting position**	upright
Max. output	150 bar or 250 bar, respectively	**Optional**	timer/level control


Without electrical monitoring


With electrical monitoring

Progressive distributor

A handy component for central lubrication systems and high-performance lubricators. The lubricant is delivered via 2–8 outlets and evenly distributed by piston strokes.

A piston stroke of the progressive distributor delivers 0.09 cm³ or 0.2 cm³ lubricant per outlet. Electrical monitoring is available on request.
The pistons in the distributor move in cycles under the pressure of the incoming lubricant. One reciprocal motion of the stem corresponds to a complete cycle of the distributor. One cycle has to be completely finished before the next one is initiated. Thereby it does not matter if the lubricant is supplied continuously or intermittently. All greasing lines receive the same amount of lubricant.

Examples for the application of progressive distributors:

1. Hand lever grease gun, mobile page 38-39
2. Hand lever grease gun, stationary page 36
3. Central lubrication systems page 24-32

Technical data	
Operating pressure	max. 150 bar
Oil	viscosity from approx. 140 cP (ISO VG 46 at +20 °C)
Grease up to	NLGI grade 2
Temperature range	-20 °C to +80 °C
Connection input – output	G ⅛ – M 10 x 1

Number of outlets		2	3	2	3	4	5	6	7	8
Metered volume per outlet and piston stroke		0.09 cm³		0.2 cm³						
Progressive distributor without electrical monitoring	**Ord.no.**	**13836**	**13835**	**13837**	**13833**	**13822**	**13823**	**13840**	**13844**	**13999**
Progressive distributor with electrical monitoring	**Ord.no.**	**–**	**–**	**13838**	**13834**	**13831**	**13832**	**13841**	**13843**	**13824**

ALS GMV-A

Pneumatic pump for grease cartridge

Function:
The delivery piston glides back during the suction phase in the pump element due to spring force. In the process, the entrance hole on the pump element becomes available. A defined lubricant volume flows into the pump element. During the work stroke, the lubricant is pumped to the outlet by the piston. A built-in check valve on the pump connection prevents the pumped lubricant from flowing back.

Image		
Type	**ALS GMV.A pneumatic pump**	
Connection (air)	G 1/8 i ø 6 mm	
Outlet	1x G 1/8 i, optionally with progressive distributor, up to 8 outlets possible	
Reservoir volume	400 ml grease	
Pressure	max.150 bar	
Reservoir	Plastic	
Reservoir Ø **Reservoir height**	approx. 53 mm approx. 260 mm	
Delivery volume	0.03 ml / 30 mm^3 per stroke	
Temperature range	+10 °C to +50 °C	
Valve	3/2-way valve	
Medium / grease	NLGI class 1 and 2	
Pneumatic cylinder	Single-acting cylinder	
Material	Steel and aluminum	
Seal	Viton	
Mounting position	Depending on the grease, otherwise as needed	
Empty cartridge 400g	**13125**	
Optional valve	No valve	3/2-way valve
Pump without cartridge	**14781**	**14783**
Pump with control system		**14784**
Plus the price for the cartridge, grease and filling costs		

ALS GMV-A

Pneumatic pump for ALS grease container

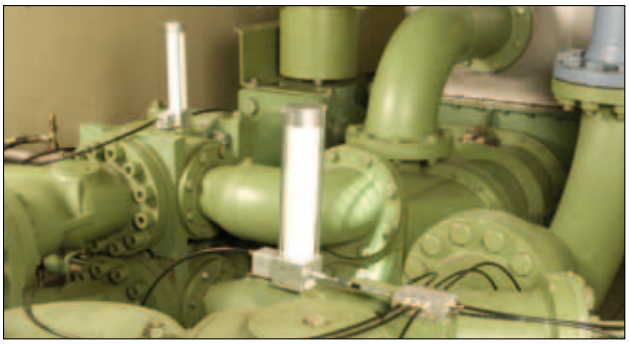


Image		
Type	**ALS GMV.A pneumatic pump**	
Connection (air)	G 1/8 i ø 6 mm	
Outlet	1x G 1/8 i, optional with progressive distributor up to 8 outlets possible	
Reservoir volume	460 ml grease	
Pressure	max.150 bar	
Reservoir	Transparent, impact-resistant plastic	
Reservoir Ø **Reservoir height**	115 mm 150 mm	
Delivery volume	0.03 ml / 30 mm^3 per stroke	
Temperature range	+10 °C to +50 °C	
Valve	3/2-way valve	
Medium / grease	NLGI class 1 and 2	
Pneumatic cylinder	Single-acting cylinder	
Material	Steel and aluminum	
Seal	Viton	
Mounting position	Depending on the grease, otherwise as needed	
ALS grease reservoir	**14202**	
Optional valve	No valve	3/2-way valve
Pump without grease reservoir	**14780**	**14782**
Plus the price for the ALS grease reservoir, grease and filling costs		

ALS GMV-A

Solenoid pump for grease cartridge

Function:
The delivery piston glides back during the suction phase in the pump element due to spring force. In the process, the entrance hole on the pump element becomes available. A defined lubricant volume flows into the pump element. During the work stroke, the lubricant is pumped to the outlet by the piston. A built-in check valve on the pump connection prevents the pumped lubricant from flowing back.

Image	1	
Type	**ALS GMV-A solenoid pump**	
Connection	G 1/8 ø 6 mm	
Outlets / grease	1x G 1/8 i, optionally with progressive distributor, up to 8 outlets possible	
Reservoir	Plastic	
Reservoir ø **Reservoir height**	approx. 53 mm approx. 260 mm	
Delivery volume	0.025 ml / 25 mm^3 per stroke	
Temperature range	+10 °C to +50 °C	
Medium / grease	NLGI class 1 and 2	
Material	Steel and aluminum	
Seal	Viton	
Mounting position	Depending on the grease, otherwise as needed	
Empty cartridge 400g	**13125**	
Voltage	24 V DC	
Current	5.0 A	1.27 A
Activation/idle time	min. 0.25s	
Switch-on duration (ED)	25%	100%
Delivery pressure	100 bar	60 bar
Pump without cartridge	**14789**	**14786**
Pump with control system	**14790**	**14787**
Plus the price for the ALS grease reservoir, grease and filling costs		

ALS GMV-A

Solenoid pump for ALS grease reservoir

24 V DC
0 °C to +60 °C
10-year data buffer
15 different switching cycles
Indiv. outlet volumes
Art. No. 14819

Accessories: ALS time control

Image	2	
Type	**ALS GMV-A solenoid pump**	
Connection	G 1/8 i ø 6 mm	
Outlets / grease	1x G 1/8 i, optional with progressive distributor up to 8 outlets possible	
Reservoir	Transparent, impact-resistant plastic	
Reservoir Ø **Reservoir height**	115 mm 150 mm	
Delivery volume	0.025 ml / 25 mm^3 per stroke	
Temperature range	+10 °C to +50 °C	
Medium / grease	NLGI class 1 and 2	
Material	Steel and aluminum	
Seal	Viton	
Mounting position	Depending on the grease, otherwise as needed	
ALS grease reservoir	**14202**	
Voltage	24 V DC	
Current	5.0 A	1.27 A
Activation/idle time	min. 0.25s	
ED switch on duration	25%	100%
Delivery pressure	100 bar	60 bar
Pump without grease reservoir	**14788**	**14785**
Plus the price for the ALS grease reservoir, grease and filling costs		

ALS GMI-A

Solenoid pump for oil

Function:
The compact construction of this oil pump allows the pump to be used and installed without any problems. The targeted oil lubrication helps increase the life span and efficiency of your machine while simultaneously reducing operating costs.

Image	3
Type	**ALS GMI-A solenoid pump**
Connection	G 1/8 i
Outlet / oil	1
Reservoir	Transparent, impact-resistant plastic
Reservoir Ø **Reservoir height**	115 mm 150 mm
Volume / Stroke speed	0.03 ml/30 mm^3 per stroke/max. 100 rpm
Temperature range	-10 °C to +50 °C
Medium / oil	From 11 to 1900 cP
Material	Aluminum
Seal	Viton
Mounting position	Vertical
Voltage	24 V DC / rated current 1.27 A 230 V AC on request
Activation/idle time	approx. 0.1 s/0.25 s
ED switch on duration	100%
Delivery pressure	20 bar
Activation/idle time	min. 0.25 s
Pump without oil reservoir	**14841**
ALS time control	**14819**
ALS oil reservoir	**14091**
Protection type	IP 55
Plus the price for the ALS oil reservoir, grease and filling costs	

ALS solenoid pump

For oil

Function:
Lubricant is drawn in by the spring-loaded delivery piston when the pump is started. In the process, the entrance hole on the pump element becomes available. A defined lubricant volume flows into the pump element. During the work stroke, the lubricant is pumped to the outlet by the piston. A built-in check valve on the pump connection prevents the pumped lubricant from flowing back.

Image	4
Type	**ALS solenoid pump**
Connection M 10x1 i	2. 3 or 4 outlets
Reservoir volume **Pressure**	460 ml with oil approx. 5 bar
Reservoir	Transparent, impact-resistant plastic
Reservoir Ø **Reservoir height**	115 mm 150 mm
Delivery volume	0.025 ml per stroke
Temperature range **Directional valve**	-5 °C to +60 °C
Viscosity for oil	11 – 1900 cP (mm^2/s) independent of temperature
NLGI class for grease	------
Lifting magnet	Single-acting cylinder
Optional: Signal emitter	In the pump housing
Protection type	Lifting magnet IP / plug IP 54
Voltage	24 V DC
Rated current	1.2 A
Relative switch-on duration	100%
Pump and 2 outlets	**14088**
Pump and 3 outlets	**14089**
Pump and 4 outlets	**14090**
Plus the price for the ALS oil reservoir, grease and filling costs	

ALS Memolub

Compact Central Lubrication System

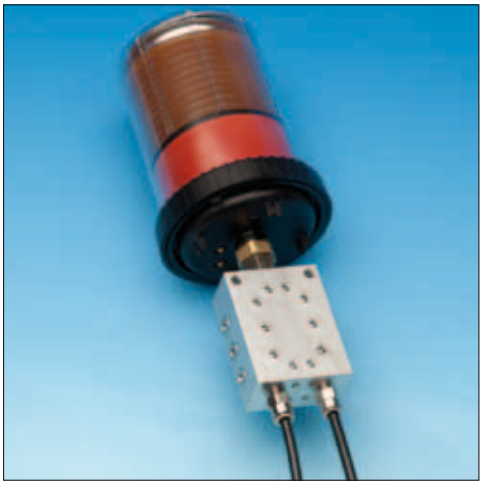
Suitable for all industries, high return on investment, high performance.
3 cartridge sizes up to 480 cm³.
Delivery pressure 25 bar.
3 different types of power supplies.
Suitable also for PLC.

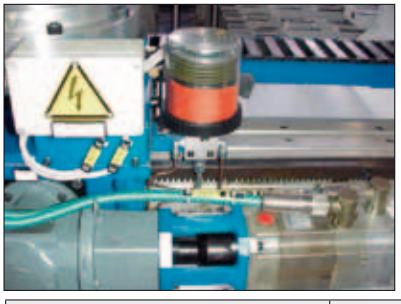
The ALS Memolub is a self-contained, reusable automatic lubricator for all industrial lubrication applications The lubricant output can be precisely adjusted. Variations in temperature do not have impact on the constant grease flow. The system can be turned off at any time. The used cartridges as well as the battery packs are easy to replace. The Memolub can be used as single point lubricator, directly or remotely fitted or as a centralized system using progressive distributors.

Electric drive • 1 outlet • grease volume up to 480 cm³ • output pressure 25 bar		
Memolub – without cartidge	**ALS Mega** **240**	**ALS Giga** **480**
Cartridge capacity Output pressure Dimensions: length/Ø Connecting thread	240 cm³ 25 bar 160/101 mm G ¼	480 cm³ 25 bar 241/101 mm G ¼
Temperature range correlates with power supply HSP ESP ESP/C	 -5 °C to +50 °C -5 °C to +50 °C -10 °C to +50 °C	 0 °C to +50 °C 0 °C to +50 °C -10 °C to +50 °C
Power supply	**Ord.no.**	**Ord.no.**
HSP battery 4.5 V DC ESP external 4.5–6 V DC ESP/C ext. 24 V DC for PLC	**13346** **13351** **14013**	**14009** **14010** **14012**

Cartridges filled with various greases and oils

For Memolub	**Mega 240** **Ord.no.**	**Giga 480** **Ord.no.**
ALS cartridge empty ALS multi-purpose grease plus costs of filling + grease and oil	**14006** **14028**	**14007** **14029**



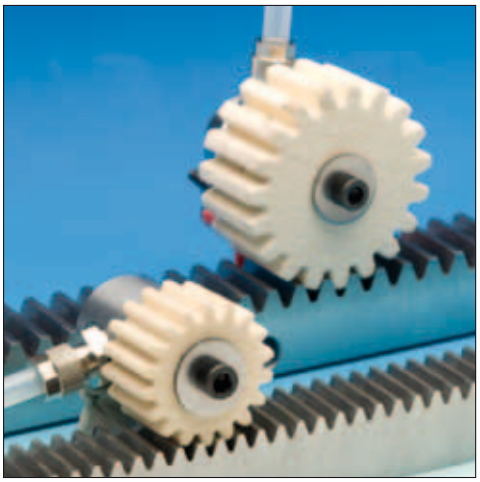


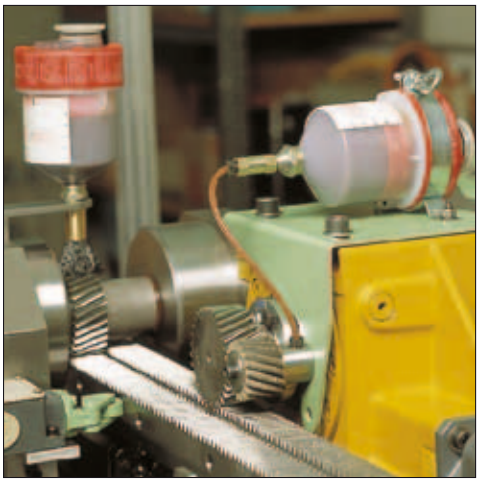
Accessories	**Ord.no.**	**System extension**
Battery pack 4.5 V DC Mounting bracket	**14015** **14016**	Progressive distributor page 28 Fittings and accessories page 34+35

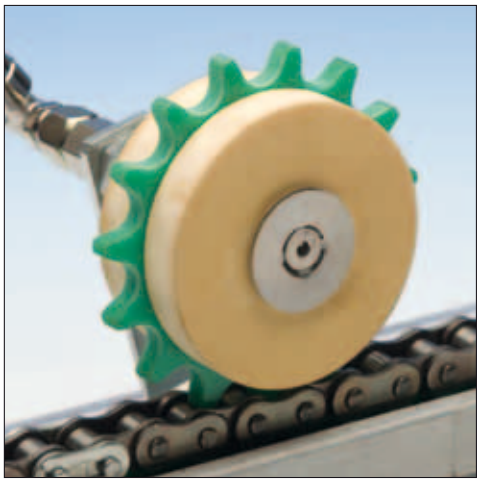
Felt gears and attachment axles

The felt gear is suited for lubricating hard-to-reach places. The lubricant is supplied via a hole in the center of the attachment axle. Liquid greases from NLGI 00 to NLGI 0 can be dosed.

Available with PU foam (on request)
Range of use -30°C to +150°C

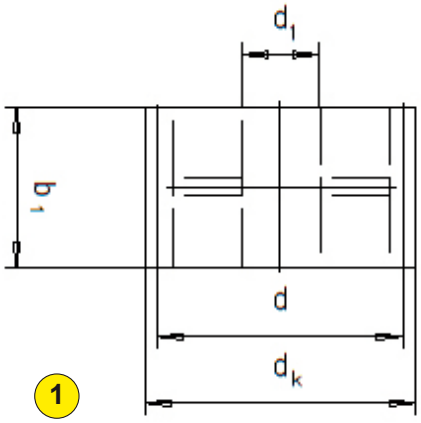






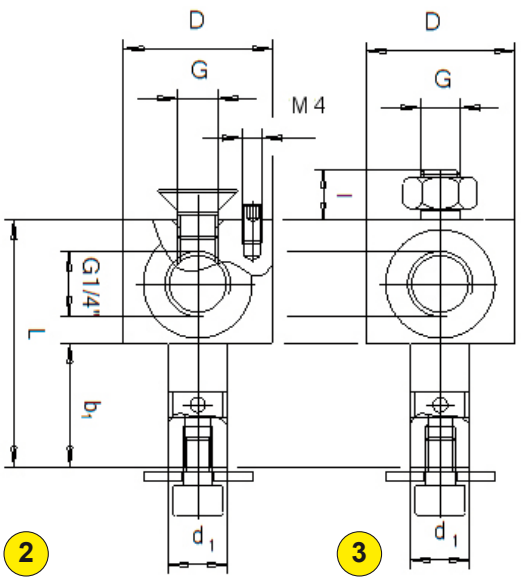
Straight-cut felt gears

Image	Module	z	d	dk	d1	b1	g	Order No.
1	1	40	40.0	42	12	15	7.5	**14425**
1	1.5	26	39.0	42	12	15	7.2	**14426**
1	1.591	24	38.2	41.4	12	15	6.8	**14427**
1	2	19	38	42	12	25	11	**14428**
1	2.5	22	55	60	12	25	25	**14429**
1	3	19	57	63	12	30	37	**14430**
1	3.183	18	57.3	63.6	12	30	36	**14431**
1	4	19	76	84	12	40	98	**14432**
1	5	18	90	100	20	50	133	**14433**



Attachment axles

Image	Module	d1	D	b1	L	l	G	g	Order No.
2	1	12	30	15	40	10	M8	135	**14418**
2	1.5	12	30	15	40	10	M8	135	**14418**
2	1.591	12	30	15	40	10	M8	135	**14418**
2	2	12	30	25	50	10	M8	143	**14419**
3	2	12	30	25	50	-	M8	140	**14438**
2	2.5	12	30	25	50	10	M8	143	**14419**
3	2.5	12	30	25	50	-	M8	140	**14438**
2	3	12	30	30	55	10	M8	147	**14420**
3	3	12	30	30	55	-	M8	145	**14439**
2	3.183	12	30	30	55	10	M8	147	**14420**
3	3.183	12	30	30	55	-	M8	145	**14439**
2	4	12	30	40	65	10	M8	154	**14421**
3	4	12	30	40	65	-	M8	150	**14440**
2	5	20	50	50	75	15	M12	520	**14422**
3	5	20	40	50	75	-	M8	510	**14441**



Push-in connections for high-pressure tubing Ø 4 mm and 6 mm. Applicable for central lubrication systems up to 150 bar.

It is often easier to plug in fittings instead of screwing them in. These fittings work especially well in cramped locations where a screw wrench cannot be applied.

Safe and fast installation instead of leaky sites caused by faulty installations.
These push-in connections withstand pressure of up to 150 bar.

In addition, we offer particularly wear-resistant high-pressure hoses with an outer diameter of 4 or 6 mm.

A computer-monitored central lubrication system with push-in connections is the optimal solution for mobile and stationary lubrication points.

This solution is also ideal for open systems, systems with low pressure and single line systems as seen on page 16.

Banjo fitting rotatable

Hose-	Ø 6 mm	Ø 4 mm
M 6 x1	**14588**	**14584**
M 8 x1	**14589**	**14585**
M 10 x1	**14590**	**14586**
R ⅛	**14587**	**14583**
R ¼	**14591**	**---**

Straight male adapter conical

Hose-	Ø 6 mm	Ø 4 mm
M 6 x1	**14571**	**14567**
M 8 x1	**14572**	**14568**
M 10 x1	**14573**	**14569**
R ⅛	**14570**	**14566**
R ¼	**14574**	**---**

Threaded elbow conical

Hose-	Ø 6 mm	Ø 4 mm
M 6 x1	**14580**	**14576**
M 8 x1	**14581**	**14577**
M 10 x1	**14582**	**14578**
R ⅛	**14579**	**14575**
R ¼	**---**	**---**

Valve body with check valve connects to progressive distributor

Hose- Ø 6 mm	Ord.no.
M 10 x1	**12434**

For central lubrication systems see page 24

Tee fitting for high-pressure hose

Hose- Ø 6 x 1.5 mm	Ord.no.
	12443

Push fitting for high-pressure plastic hose

Hose- Ø 6x 1.5 mm	Ord.no.
	12429

High-pressure plastic hose Ø 4 x 1 mm empty

Per meter	Ord.no.
	14592

Bursting pressure at 20°C about 70 bar. Min. bend radius 50 mm

High-pressure plastic hose Ø 6 x 1.5 mm empty

Per meter	Ord.no.
also prefilled on request	**12428**

Bursting pressure at 20°C about 70 bar. Min. bend radius 50 mm

Pipe clip Ø 6 mm with rubber strip

Hose- Ø 6 mm	Ord.no.
	13775

Easy made refitting for central lubrication system

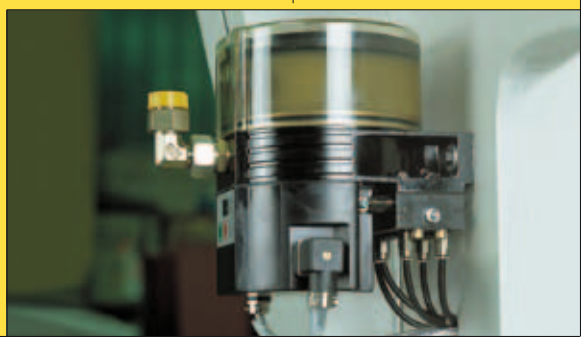
Screw in push-in connection into the lubricating point.

Insert high-pressure hose into push-in connection. Screw valve body with

plug-in connector into distributor. Install pipeline.

Push-in connections and prefilled hoses make the installation of your

central lubrication system easy, fast, clean and safe.



Screw connections for high-pressure tubing Ø 6 mm for central lubrication systems up to 210 bar.

Robust, reliable, safe and economical.

Valve body with check valve connects to progressive distributor (Page 24)

For tube 6 mm	Ord.no.
Opening pressure of check valve in valve body 6 to 8 bar.	**13755**

Cutting ring Male adapter

For tube 6 mm	Ord.no.
M 6 x1 K	**13727**
M 8 x1 K	**13728**
M 10 x1 K	**13756**
R ⅛	**13730**
R ¼	**13731**

Cutting ring Elbow adapter

For tube 6 mm	Ord.no.
M 6 x1 K	**13732**
M 8 x1 K	**13733**
M 10 x1 K	**13734**
R ⅛	**13735**
R ¼	**13736**

Cutting ring Elbow adapter 90° rotatable

For tube 6 mm	Ord.no.
M 10 x1 K	**13749**
R ⅛	**13748**

Reducing sleeve

For tube 6 mm	Ord.no.
M 6 x1 K M 8 x1 i	**13856**
R ⅛ a M 10 x1 i	**13859**

Cutting ring Adapter 45°

For tube 6 mm	Ord.no.
M 8 x1 a M 8 x1 i	**13750**
M 8 x1 a M 10 x1 i	**13751**

Cutting ring Adapter 90°

For tube 6 mm	Ord.no.
M 8 x1 a M 8 x1 K i	**13753**
M 8 x1 a M 10 x1 K i	**13752**

Cutting ring T-adapter

For tube 6 mm	Ord.no.
	13737

Cutting ring Elbow connector

For tube 6 mm	Ord.no.
	13782

Cutting ring Straight connector

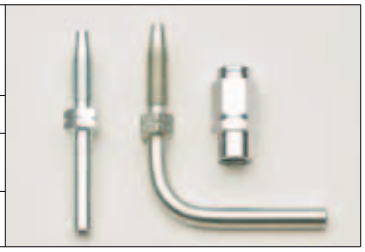
For tube 6 mm	Ord.no.
	13754

High-pressure plastic hose Ø 8.6 x 2.3 mm empty Temperature range -40 °C to +70 °C

For tube 6 mm	Ord.no.
For flexible sections between tubes. Min. bend radius 35 mm	**13872**

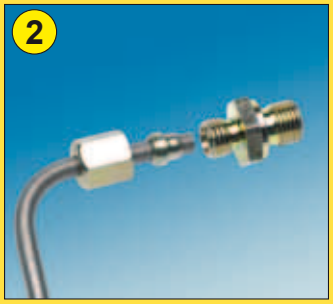
Hose collar and hose connection (tube 6 mm) for hose 8.6 x 2.3 mm

	Ord.no.
Straight	**13873**
90 ° Elbow	**14193**



Installation example for tube greasing lines:

1. Cut tube to length and trim. Bend and fit stress-free.
2. Screw conduit pipes together.
3. Prefill pipes with grease and test seal tightness.



Hand lever and lubrication systems for oil and grease

- Double-action hand pump
- Multi-purpose pump
- Hand lever oiler
- Hand lever grease gun

Double-acting hand pump

Aluminum tube pipe. Extracting and filling of greases and oil through suction and pressure. Applicable for fuel oil, mineral oils, synthetic oils and biological oils, benzine, cooling water, anti-freeze fluid, ethyl alcohol, petroleum and brake fluid.
Other hose lengths and connections on request.

Stroke volume	**260 ml**	**720 ml**	**Service kit comes with**
Coat pipe-Ø Stroke length Hose length Viscosity	40 mm 208 mm 600 mm from 20SAE	60 mm 255 mm 600 mm to 20SAE	1 piston 1 set of piston rings 1 valve cap 2 hose clips
Ord.no.	**12774**	**12775**	

Multi-purpose pump with suction tube

This stainless steel pump is suitable for horizontal drums as well as canisters. It has an adapter with drum thread connection R 2, 1 m-PVC-hose with stainless steel delivery elbow. The stainless steel pump is especially versatile due to its resistancy to chemical substances.

Pump performance	**8 l/min.**	**Suitable for instance for following substances**
Pump outer- Ø Length suction pipe	40 mm 760 mm	Acetone, ethanol, gasoline, chlorobenzene, glycerin, fuel oil, cleaner solvent, synthetic resin thinner, methanol, gear oil, nitro-benzene, nitrothinner, petroleum, acids, terpentine
Ord.no.	**12776**	

Image	1	2	3
Type	**Hand lever oiler light**	**Hand lever oiler heavy**	ALS hand lever grease press
Reservoir	transparent plastic	Alu with vision panel	Transparent, impact-resistant plastic
Viscosity	10–68 cSt at 40 °C	10–68 cSt at 40 °C	Fluid grease NLGI 000–0

Model	**ALS-CKE-8**	**ALS-CKE-20**	**ALS-CLAB-6**	**ALS-CLAB-8**	**Grease NLGI to 2**	**Fluid grease 0000-0**
Output Max. pressure Capacity Connection	8 cm³ 5 bar 1 l 1 x G ⅛	8 cm³ 5 bar 2 l 1 x G ⅛	8 cm³ 15 bar 0.35 l 1 x G ⅛	8 cm³ 15 bar 0.6 l 2 x G ⅛	0.8 cm³ 150 bar 0.46 l 1 x G ⅛	0.8 cm³ 150 bar 0.46 l 1 x G ⅛
Casing -wide -deep -high	approx. 120 mm approx. 85 mm approx. 160 mm	approx. 160 mm approx. 120 mm approx. 160 mm	approx. 85 mm approx. 125 mm approx. 175 mm	approx. 100 mm approx. 125 mm approx. 200 mm	approx. 115 mm approx. 115 mm approx. 150 mm	approx. 115 mm approx. 115 mm approx. 150 mm
Ord.no.	**12713**	**12712**	**12714**	**12715**	**14186**	**14187**

Pneumatic Grease Filling Units

For clean and safe filling of
- grease reservoirs of central lubrication systems
- hand lever and push-type hand guns
- lubricators

With cart for grease drum for up to 200 kg capacity

Mobile Pneumatic Oil Pump

The system consists of pump, 3 m feeding hose, feeding pistol and cart and has a compression ratio of 1 : 3. It is suitable up to SAE 100 (other compression ratios on request). The high pressure of this pump will always bring great results even with critical applications.

Compression ratio Inlet : outlet	**1 : 3**	
Inlet air pressure - max. bar g - min. bar g	8.5 3.5	
Compressed air connection female thread	G ¼	
Oil output without back pressure: g/min	15	
Oil outlet connection male thread	G ½	
Drum size in liter	**60**	**200**
Ord.no.	**13510**	**13511**

Pneumatic Grease Filling Units

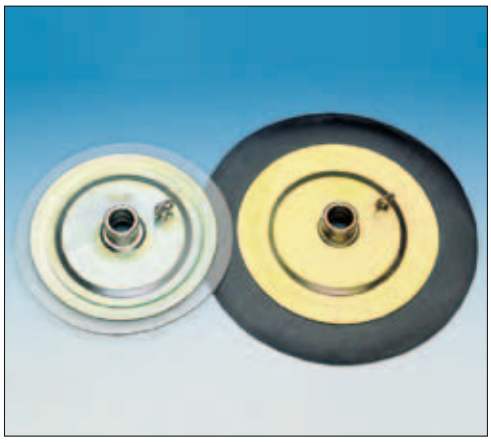
The higher pressure of these grease suppliers ensures optimal greasing results.
The system consists of:
grease pump, grease piston, dust cover, 3m high-pressure hose, Z-swivel joint, grease piston and cart.
Lubricants: greases up to consistency class 2 (NLGI grade 2 according to DIN 51818).
Do not use grease with abrasive particles, additives or silicon grease.

Recommendation: In order to limit the air pressure, extend the life-span of the pumpwork and maintain the warranty, it is important to use a filter regulator before feeding compressed air into the pump.

Compression ratio	**1 : 60**
Minimum air pressure	3.5 bar g
Maximum air pressure	8.5 bar g
Compressed air connection	Female thread G ¼
Output without back pressure	600 g/min
Grease outlet	Male thread G ¼

With cart for grease drum with capacity	**Ord.no.** without drum
20 kg	**12577**
25 kg	**12578**
50 kg	**12579**
200 kg	**12575**

For grease drums with capacity and inner-Ø mm		**Ord.no.**
5 kg	180 - 200	**12563**
12 - 20 kg	240 - 260	**12565**
16 - 30 kg	250 - 280	**12568**
16 - 30 kg	270 - 300	**12569**
20 - 30 kg	300 - 330	**12570**
50 - 60 kg	335 - 360	**12572**
50 - 60 kg	360 - 400	**12573**
200 kg	540 - 590	**12567**



Follower plates for grease drums

Beaded sheet steel plate with guide connection for pump. Rubber-lined.

Accessories for filling units			**Ord.no.**
High-pressure hose 15 mm Ø • 1380 bar g	A	Length 1.5 m Length 3.0 m Length 5.0 m	**12585** **12586** **12587**
Pistol with nozzle tube	B		**12588**
Swivel joint	C	axial Z-joint	**12781** **12562**
Compressed air regulator	D	Maintenance unit	**14828**

Grease guns

Pneumatic lubrication, manual or with acumulator

Accessories: nozzles, couplers, greasing nipples, hoses, lubricants

Pages 38–40

Picture may vary from original

Battery-powered grease gun in heavy-duty case

The Power-Luber is a battery-operated grease gun designed for hard-to-reach fittings and single lubrication points that must be greased manually.

Technical data

Power-Luber	14.4 V DC drive
Pressure	up to 482 bar
Output	approx. 240 g/min at 69 bar
Container	for 400 g standard grease cartridges or direct filling
Battery	Ni-Cd battery 14.4 V
Power	1700 mAH
Weight	Gun 3.4 kg, case cpl. 7.4 kg

(Picture may vary from original)

	Power-Luber-Kit in case	Extra battery Ni-Cd 14.4 V
Ord.no.	**14514**	**14515**

Power-Luber-Kit case with contents:
Grease gun with Ni-Cd battery 14.4 V and charger. Flexible hose, length approx. 760 mm. Hydraulic nozzle. Without cartridges.

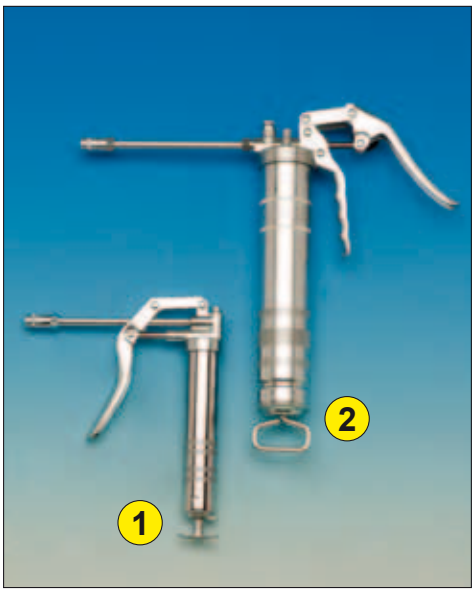
Pneumatic grease guns

This grease gun is suitable for greases up to NLGI grade 2 and can be filled with either cartridges or bulk grease.
It features a contoured plunger, tight fitting and safe handle on the plunger rod. 4 different models available. For greases up to NLGI grade 2.

Technical data

Transmission ratio	50 : 1
Recommended air pressure	2–8 bar
Operating pressure	6 bar
Output per stroke	approx. 0.8 cm³
Volume	500 cm³
Connecting thread	M 10 x 1
Piston Ø	6 mm

Pneumatic grease guns	Ord. no.
"Standard" Nozzle tube, angled, 150 mm. 4-jaw hydraulic coupler.	**12773**
"Plus" High-pressure hose 11 x 300 mm. 4-jaw hydraulic coupler, filling nipple.	**12772**
"Combi" with high-pressure hose 8 x 300 mm and nozzle tube, angled. 2 x 4-jaw hydraulic coupler. Filling nipple.	**12771**
"Automatic" Continuous grease output. Nozzle tube. 4-jaw-hydraulic coupler. Filling nipple.	**12770**



One-hand grease guns

One-hand grease guns are designed for all lubricating points on machines and vehicles equipped with hydraulic type lubricating nipples (DIN 71412).

1 TG 120

This solid one-hand grease gun works with greases up to NLGI grade 2.
It is equipped with a straight nozzle tube and a 4-jaw-hydraulic coupler. R ⅛.
Capacity 130 cm³, operating pressure 200 bar, 2 thread connections (horizontal or vertical).

Ord.no.	**14003**

2 TG 500 S

One-hand grease gun for 400 g cartridges or bulk grease with filling nipple and vent nipple.
Operating pressure 300 bar, for greases up to NLGI-grade 2, with nozzle tube and 2 thread connections (horizontal or vertical).

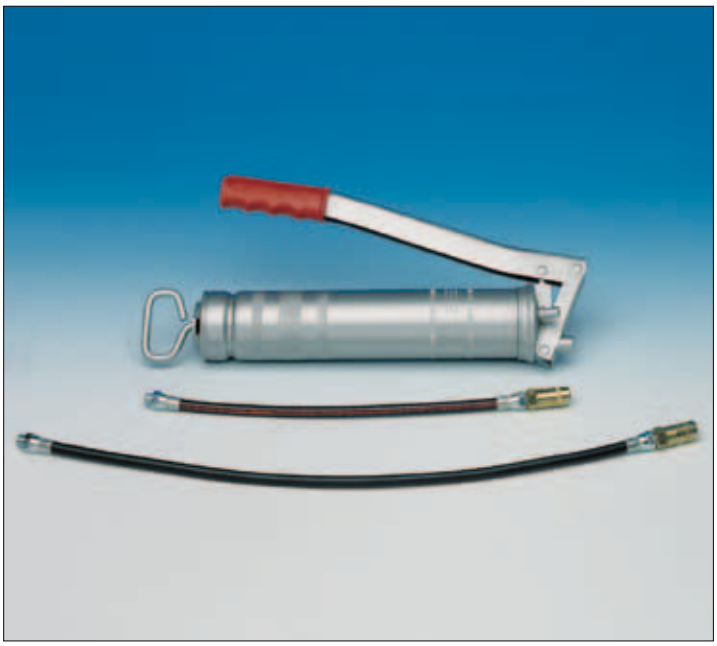
TG 500 S Connection M 10 x 1	**Ord.no.**	**14001**
TG 500 S Connection R ⅛	**Ord.no.**	**14002**

Hand lever grease gun for grease and oil

For grease. Automatic venting nipple. Reinforced handle.The precision pumpwork performs a minimum working pressure of 400 bar and delivers 1.4 ml per stroke. For bulk grease or cartridges. TÜV and DLG approved.

For fluid greases and low viscosity fluids.
Delivery pressure 400 bar.
High-quality sealing collar.
Capacity: 500 cm³.

Not suitable for cartridges.



Thread	M 10 x 1	R ⅛	Thread	M 10 x 1	R ⅛
Ord.no.	**12750**	**12751**	**Ord.no.**	**12762**	**12763**

High-pressure hoses

Connection	Max. pressure	Hose length	Thread	**Ord.no.**
4-jaw hydraulic coupler	1000 bar	300 mm 300 mm 500 mm 500 mm	M 10 x 1 R ⅛ M 10 x 1 R ⅛	**12752** **12754** **12753** **12755**

Accessories kit for grease guns

Sturdy steel sheet box.
All connecting threads M 10 x1

2 pieces 4 jaw hydraulic grip head, hardened, for H grease nipples
1 piece universal nozzle for K grease nipples
1 piece pointed nozzle for D grease nipple
1 piece Button head coupler 16 mm for M-1 grease nipples
1 piece high-pressure hose 300 mm
3 pieces nozzle tubes 150 mm angled
1 piece nozzle tube 150 mm straight

1 piece elbow 90°, fits on hydraulic nozzle
1 piece extension button head coupler, fits on all hydraulic nozzles
1 piece reducer G ⅛ to M 10 x 1, female thread
1 set grease nipples, 3 pieces each
H 1: M 6 x 1, M 8 x 1, M 10 x 1 and G ⅛
H 2: M 6 x 1 and M 8 x 1

Ord.no.	**12749**

High-pressure push guns

Made of steel. For grease and oil. 3 sizes with 2 nozzles each.

Application	Push gun- Ø x length mm	with pointed nozzle for nipple DIN 3405 and universal nozzle for nipple DIN 71412, connecting thread M 10 x1 **Ord.no.**	
For grease	37 x 220 47 x 260	**12758** **12760**	**PT 150** **PT 300**
For oil and petroleum	40 x 150	**12766**	**PO 150**

Greasing accessories – nozzles • offered on next page

4 jaw hydraulic coupler,
hydraulic type greasing nipple

Button head coupler
with button head greasing nipple

Pointed nozzle
with flush-type greasing nipple

Lubricating Accessories

Nozzles

		Universal nozzle	Pointed nozzle	Hydraulic nozzle	Button head coupler		
					Head Ø 10 mm	Head Ø 16 mm	Head Ø 22 mm
G ⅛	Ord.no.	14130	12765	12757	13042	13044	13046
M 10x1	Ord.no.	14129	12764	12756	13041	13043	13045

Lubricating nipples

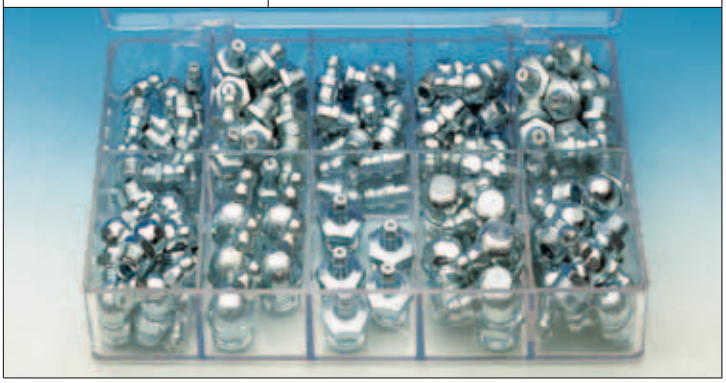
For manual lubrication

Lubricating nipple hydraulic type DIN 71412		Thread	Ord. no.
	H1 nipple straight Ⓐ screw in	M 6x1 M 8x1 M 8x1.25 M 10x1 R ⅛ R ¼	12539 12540 12541 12538 12543 12542
	H2 nipple angled 45° Ⓑ screw in	M 6x1 M 8x1 M 8x1.25 M 10x1 R ⅛ R ¼	12530 12531 12532 12529 12534 12533
	H3 nipple angled 90° Ⓒ screw in	M 6x1 M 8x1 M 8x1.25 M 10x1 R ⅛ R ¼	12528 12524 12525 12523 12527 12526
	H1a nipple straight Ⓓ plain shank	6 mm 8 mm 10 mm	12536 12537 12535
Button head lubricating nipple DIN 3404			
	SW 17 head Ø 16 mm	M 8x1 M 10x1 G ⅛ G ¼	13966 13392 13391 13191
	SW 11 head Ø 10 mm	M 6x1 M 8x1 M 10x1 G ⅛	14121 14122 14123 14124
Flush type lubricating nipple DIN 3405			
	SW 7 SW 9 SW 11 SW 11	M 6x1 M 8x1 M 10x1 G ⅛	14125 14126 14127 14128

Assorted box of lubricating nipples 125 pieces

Assortment based on customary demand. Hydraulic nipples made of stainless steel.

Model		Ⓐ piece	Ⓑ piece	Ⓒ piece	Ⓓ piece
Thread	M 6x1	10			
	M 8x1	10	5	5	
	M 10x1	20	5	5	
	R ⅛	20	5	5	
	R ¼	5	5	5	
Plain shank	6 mm				10
	8 mm				10
Box ord.no.		**12544**			

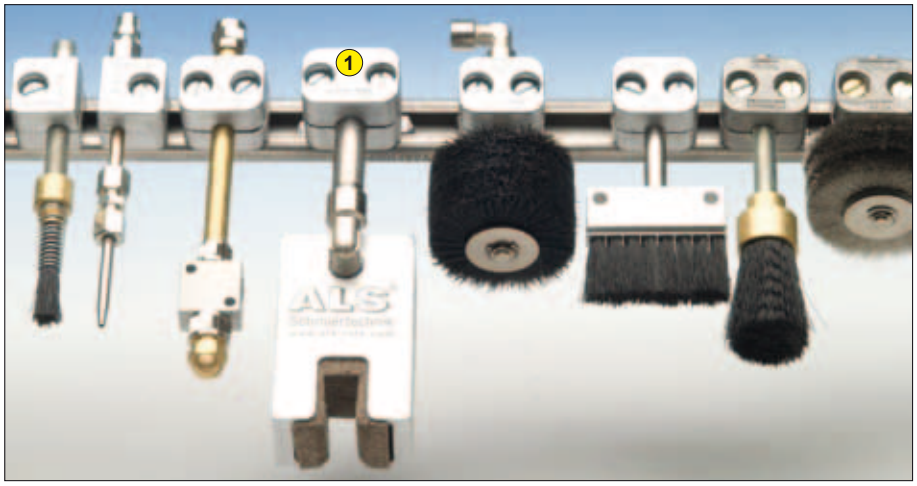


Swivel joint

This allows you to point the connector into any desired direction without having to turn the grease gun into an awkward position. It is highly recommended to use a swivel joint between hose and connector in order to maintain flexibility.

A fitting with the right kind of twist

	Ord.no.
M 10x1	13019
R ⅛	13608



ALS attachment suggestions

Special solutions on request

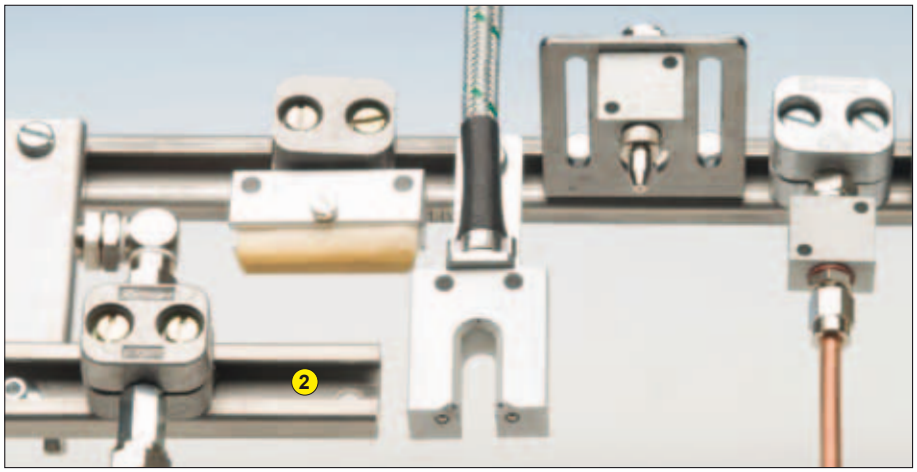
Mounting clip 1

Pipe Ø	PA	AL
4 mm	**14892**	**14834**
6 mm	**14830**	**14835**
8 mm	**14831**	**14836**
10 mm	**14832**	**14837**
12 mm	**14833**	**14838**

Mounting rails 2

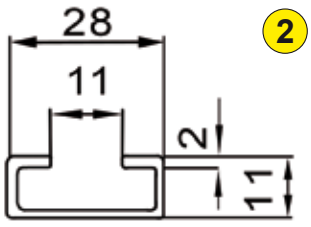
Length	1 m	0.1 m
Stainless steel	**14839**	**14840**

Special lengths on request



Advantages for installation:

- Easy
- Fast
- Secure
- Universal



Accessories and additional equipment

Brushes and roller brushes, page 23

ALS Lubricants:

Grease
Fluid grease
Oil

Available in 16 standard types to meet individual requirements.

If you are looking for something specific our experts will be glad to assist you.

	Types and application areas		NLGI grade	Temperature range		Can 1 kg
Grease	**ALS multi-purpose grease**	Lithium-complex mineral oil for rolling and plain bearings, medium to high revolutions, changes in temperature	2	-30 °C to +150 °C	**Ord.no.**	**12668**
	ALS high-temperature	Aluminum-complex mineral oil for rolling and plain bearings as well as sliding surfaces in high temperatures.	2	-25 °C to +180 °C temporarily to +210 °C	**Ord.no.**	**12661**
	ALS low-temperature	Based on silicone oils and ester oils for rolling and plain bearings. Suitable for smooth running grease in low temperatures.	1	-40 °C to +80 °C	**Ord.no.**	**12669**
	ALS food-grade grease	For food processing industry, packaging industry, feed industry. – USDA-H1, FDA 21 CF 178.357	1 NSF-H1	-40 °C to +150 °C	**Ord.no.**	**12663**
	ALS fluid grease	For single line systems and central lubrication systems.	00	-25 °C to +150 °C	**Ord.no.**	**12675**
	ALS multi-purpose grease biodegradable	For rolling and plain bearings, medium to high revolutions with changes in temperature.	2	-20 °C to +100 °C	**Ord.no.**	**12672**
	ALS water-resistant grease	Grease with high resistance against water and splashes.	2	-30 °C to +160 °C	**Ord.no.**	**12678**

	Types and application areas		Viscosity at °C 40 | 100		Pour point		Can 1 liter
Oil	**ALS multi-purpose oil 46**	For chains, gear wheels, gear rods, slideways and machine elements.	46	2.7	-18 °C	**Ord.no.**	**12659**
	ALS special oil	With abrasion protection and corrosion protection.	10	2.7	-33 °C	**Ord.no.**	**14156**
	ALS oil for food processing industry and feed industry	For chain lubrication USDA-H1 FDA 21 CFR 178.3570	220	22	-33 °C	**Ord.no.**	**12665**
	ALS multi-purpose oil biodegradable	For gear wheels, gear rods, slideways and machine elements.	68	17	-48 °C	**Ord.no.**	**12673**
	ALS adhesive oil 220	Adhesive oil with excellent demulsification and adhesion properties. For guideways, guide rails or guide chains.	220	19	-21 °C	**Ord.no.**	**12655**
	ALS adhesive oil 68	Adhesive oil with excellent demulsification and adhesion properties. For guideways, guide rails or guide chains.	68	9	-27 °C	**Ord.no.**	**12657**

Terms and conditions of sales and delivery

The ALS catalog is intended for industry, trade, commerce, business and government agencies. Sales tax is not included in the listed prices. We reserve the right to make changes to dimensions, technical specifications, characteristics, the weight, the form or the color of products or images or to remove them. The specified values are guidelines and may deviate marginally.

§ 1 Validity of the sales, delivery and payment terms and conditions
(1) Products, services and quotations of ALS Schmiertechnik owned by Norbert Frick (hereafter referred to as Vendor) are delivered, provided and offered solely on the basis of these General Terms and Conditions. They also apply for all future business relationships even if they are not expressly agreed upon again.
(2) The delivery contract and any changes, ancillary agreements, declarations regarding its termination, other declarations and notifications must be in written form unless specified otherwise in these terms and conditions.
(3) Upon receipt of order confirmation from the seller and/or acceptance of ordered goods or services, companies (hereinafter referred to as Buyer) acknowledges these sales, delivery and payment terms and conditions.
(4) Other terms and conditions of Buyer are absolutely not part of the agreement unless stipulated otherwise as part of an expressly written individual agreement.

§ 2 Quotation and contract conclusion
(1) Quotations are non-binding and without obligation. The delivery contract and any changes, ancillary agreements and other agreements only take effect once Vendor has provided written confirmation of the order.
(2) Weights, measures and other performance data shall be part of the contract's contents only if expressly agreed upon as such in writing.

§ 3 Prices and payment terms and conditions
(1) Vendor shall be bound to the prices contained in Vendor's quotations for 30 days after their date. The contract contents are the prices listed in Vendor's order confirmation plus the respective legally applicable sales tax.
(2) The agreed prices apply ex Sindelfingen and do not include customs, packaging or handling costs. Buyer shall bear such costs. Packaging shall be invoiced at cost. Vendor is entitled to demand a flat fee for this.
(3) Deliveries are made against prepayment, for cash on delivery or on account. Shipping and handling costs and cash-on-delivery fees are listed on the invoice.
(4) If not specified otherwise in writing, Vendor's invoices are to be paid within 14 days after the invoice date with a 2% discount or within 30 days from the invoice date without a deduction.
(5) Vendor shall be entitled to demand interest at 8 percent above the base interest rate if payment is past due.
(6) In the event of a substantial decline in the financial position of Buyer, all of Vendor's claims shall become immediately due for payment. In this case, Vendor can refuse further deliveries until all claims, whether due or not, have been paid or security has been provided for them.
(7) Buyer is not entitled to withhold payment due to counterclaims or as compensation unless the counterclaims are uncontested or have been determined legally enforceable.

§ 4 Delivery periods/times and partial deliveries
(1) Delivery deadlines or delivery periods are not binding unless they have been expressly agreed upon in writing.
(2) Delivery periods start after order confirmation, but, at the earliest, after reaching final agreement with Buyer regarding questions to be addressed concerning the purchased item.
(3) A delivery deadline shall be considered met if the shipment has left Vendor or has been announced as ready for shipment before its deadline has expired.
(4) Delivery delays due to force majeure and due to events that substantially impede or make impossible Vendor's delivery, such as strikes or other disruptions to Vendor's own operations or other disruptions in operations of suppliers, shall entitle Vendor to extend the delivery period by the duration of the impediment or, due to (partial) goods that are still undelivered, to withdraw from the contract in whole or in part. The beginning and end of the aforementioned circumstances shall be communicated to Buyer immediately. In the event that the impediment lasts more than two months, Buyer can withdraw from contract in relation to the portion that remains unfulfilled. If the delivery time is extended due to circumstances for which Vendor is not responsible or Vendor is freed from Vendor's performance obligation, Buyer cannot claim compensation to this extent.
(5) Vendor is entitled to partial deliveries if this is reasonable for the customer.

§ 5 Shipping and transfer of risk
(1) Vendor can employ the transportation company of Vendor's choice for shipping.
(2) Buyer shall be held liable for any risks as soon as the shipment has been transferred to the persons handling transport or it has left Vendor's warehouse for the purposes of shipment. If shipment of the goods has not been agreed upon between the parties, Buyer shall be held liable for any risks when the goods have been announced as ready for shipment.

§ 6 Warranty and liability
(1) Buyer shall examine the goods immediately upon receipt. If an obvious defect is apparent, Buyer must report this to Vendor immediately. Should Buyer fail to do so then the goods are considered approved. If a defect was not recognizable during examination, it must be reported immediately upon discovery; otherwise the goods are considered approved in this case as well.
(2) Buyer shall not be entitled to warranty claims for defects, damages or damages caused by defects resulting from use, operating wear, improper use, overloading, operating errors and similar occurrences.
(3) If goods exhibit actual defects, Vendor shall be entitled to subsequent performance, i.e. to remedy the defect or deliver an item free of defects. Buyer must grant Vendor sufficient time and opportunity to carry out the subsequent performance. Buyer shall have the right to perform repairs or have them performed by third parties and to demand compensation for necessary costs from Vendor only in cases where there is danger to operating safety or reliability or to prevent disproportionately large damages or if Vendor is delayed in making repairs. Vendor shall be notified immediately in such an event. In the event of failure of subsequent performance, Buyer can reduce the purchase price or withdraw from the contract in accordance with the legal stipulations of the German Civil Code (BGB). In the latter case, German Civil Code (BGB) Section 350 applies accordingly.
(4) In the event of justified rescission of the contract, Buyer must return the delivered goods to Vendor in their original packaging.
(5) Transfer to third parties of Buyer's warranty claims on Vendor is not permitted. Section 354a of the German Commercial Code (HGB) remains unaffected.
(6) Buyer's warranty claims shall expire within one year after delivery of the goods. This does not apply if the defect has been fraudulently concealed.
(7) To the extent that Vendor must provide compensation in accordance with legal stipulations or these terms and conditions, liability is limited to grossly negligent or willful actions by Vendor or Vendor's agents. This limitation shall not apply in cases of damage to life, limb or health or in cases of malice. The same applies for a guarantee for the quality of delivered goods and a culpable violation of essential contractual obligations. In cases of gross negligence by non-executive employees and in cases of slight negligence, liability is limited to reasonably foreseeable damages typical to contracts. Liability in accordance with the German Product Liability Act (ProdHaftG) remains unaffected.

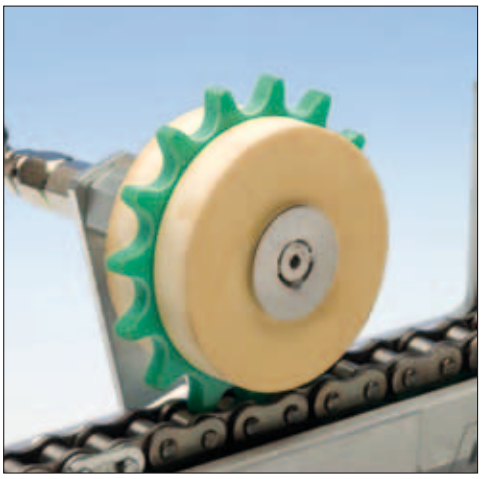
§ 7 Retention of title
(1) The goods remain the property of Vendor until they have been completely paid off. For ongoing invoicing, the goods where the title has been retained also apply as security for all balance claims from the current account.
(2) Buyer shall be entitled to work with the goods with a retained title in the course of normal business and to dispose of them if Buyer is not in arrears. Pledges and assignment as security are prohibited. Buyer shall at this point transfer to Vendor all claims in the amount of the final invoice amount (including sales tax) agreed upon with Vendor that result from resale of the goods with a retained title to their buyers. This transfer applies independently of whether the sold item has been sold without or after processing. Buyer is authorized to collect claims after the transfer as well. Vendor's authority to collect claims remains unaffected by this. The claim shall not be collected by Vendor while Buyer continues to fulfill Buyer's payment obligations from the proceeds received, Buyer is not in arrears of payment and, in particular, Buyer has not posted an application for insolvency proceedings regarding the property of Buyer and no cessation of payment has occurred.
(3) In the event that goods with retained title become part of a new item that belongs to Buyer by being connected or installed, it is considered agreed that Buyer confers co-ownership of the new item to Vendor and Buyer shall keep it in custody free of charge for Vendor. The portion of Vendor's ownership shall be proportional to the value of the goods with retained title relative to the value of the new item.
(4) Claims from resale of goods with retained title can be – revocably – collected by the customer. As soon as Vendor demands, Buyer must report the transfer to Buyer's purchasers. Furthermore, Buyer must provide Vendor all information and documentation that Vendor requires for enforcing and asserting Vendor's rights.
(5) Buyer must immediately inform Vendor if goods with retained title are seized, the rights and interests of Vendor are impacted in some other way by third parties, or there is imminent danger of this occurring. At the same time, Buyer must inform the third parties that the goods are property of Vendor. In addition, Vendor can demand the transfer of any restitution claims of Buyer.
(6) Repossession or pledging of goods with retained title by Vendor does not represent withdrawal from the contract.
(7) Vendor is obligated to release securities held as collateral upon Buyer's request as soon as their value exceeds the claims to be secured by more than 20%.

§ 8 Other
(1) The jurisdiction and place of performance is Sindelfingen. Vendor can also file suit at Buyer's location of business.
(2) The legal relationships between Vendor and Buyer and the Terms and Conditions are subject solely to German law. Applicability of the United Nations Convention on International Sale of Goods (CISG) is expressly excluded.
(3) If a provision of these Terms and Conditions is or becomes invalid, the validity of the remaining provisions remains unaffected.
(4) It must be pointed out that Vendor saves personal data in accordance with legal requirements and works with them as they relate to business transactions.

ALS offers an extensive selection of lubrication technology equipment including single-point as well as multi-point lubrication systems. We will help you find the best solution for every lubrication requirement.

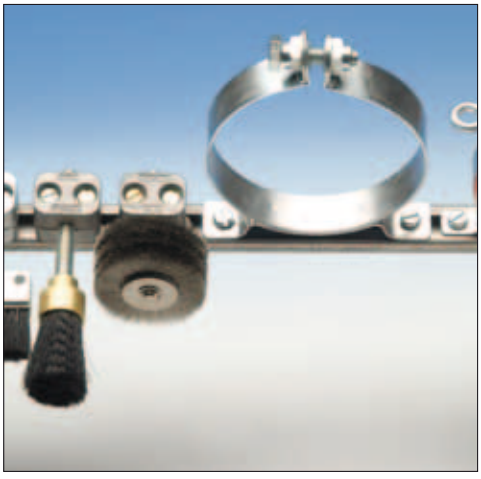
ALS®
Schmiertechnik











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