

your global specialist

Detailed information

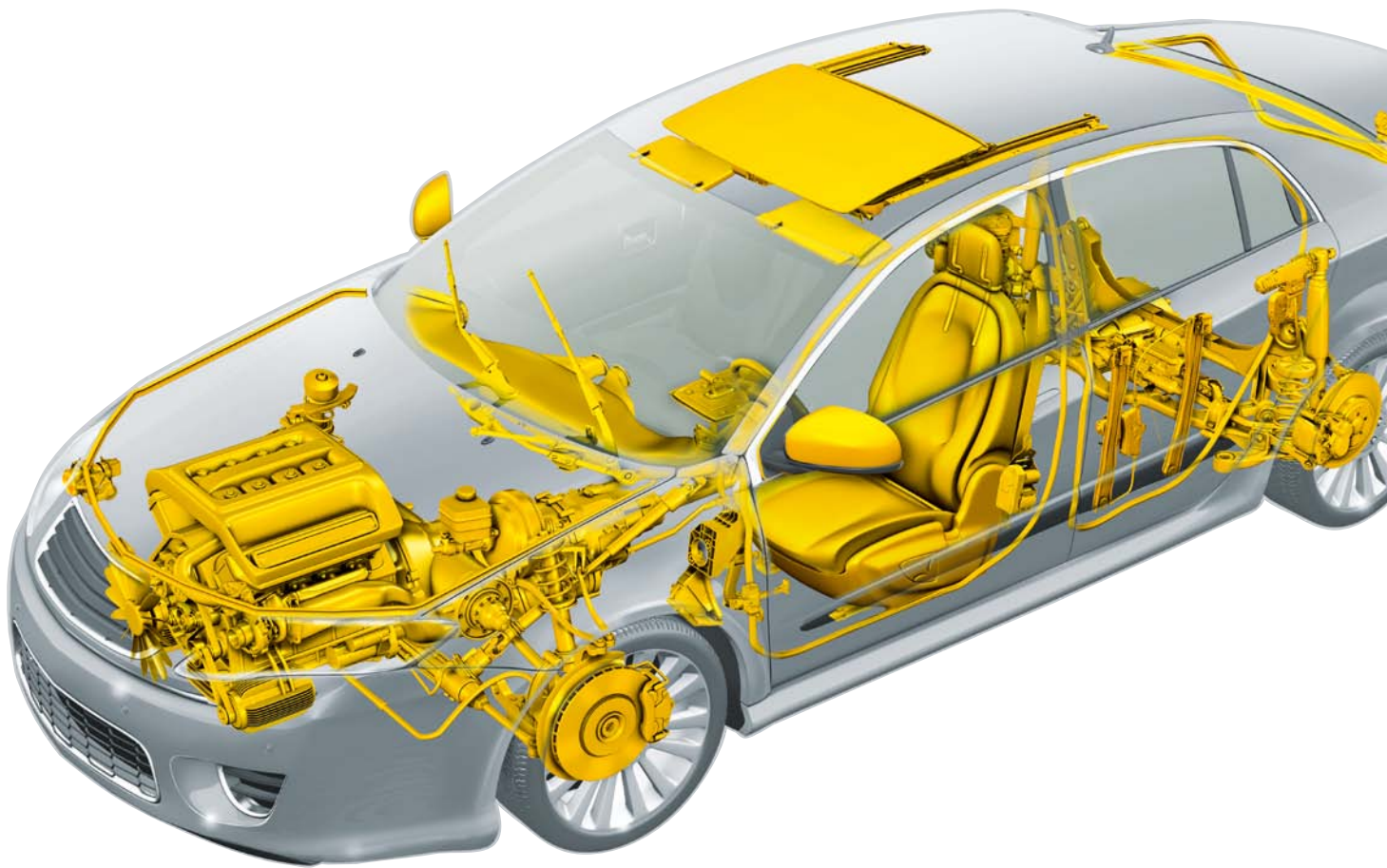
## Driving with Klüber

Applications, speciality lubricants and approvals



# Klüber Lubrication – driving your ideas

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It plays a vital role in every vehicle: the lubricant. As the world market leader for speciality lubricants, Klüber Lubrication offer outstanding tribological solutions for the automotive industry, contributing to safeguarding achievements, meeting future requirements and driving change. Our experience of more than 80 years and our team of highly qualified experts are there to support you – wherever you wish to go.

No matter what challenge the automotive industry is facing: Klüber Lubrication is there to take it - be it hydrogen propulsion, low-cost vehicles, downsized combustion engines, hybrid propulsions and electric motorcars.

Together with our customers, we work on the lubricant solution that brings maximum technological, economical and ecological benefit. 80 years of experience, highly qualified experts and a wide product range underpin the expertise and support Klüber Lubrication is able to offer with regard to the lubrication of vehicles: advice in application engineering, development partnerships, long-term testing on standard or own test rigs and a lot more.

Lubricants from Klüber Lubrication can be found everywhere in a vehicle. Approvals by almost all vehicle manufacturers and suppliers speak for themselves. From constant velocity joints to actuators for variable manifolds, from central locking mechanisms to electric contacts in e-vehicles, our lubricants have proven successful in series application. Nowadays, friction optimisation is crucial in automotive engineering.

If necessary, we will develop a new lubricant tailored to your application. Special pack sizes and private label designs are also available – just contact us.

This brochure is intended to provide you with a quick overview of applications and our speciality lubricants for automotive engineering as well as vehicle manufacturers' approvals.

# Brakes



## Components

- Disk brakes
- Drum brakes
- Electric brakes
- Anti-lock braking systems (ABS)
- Brake cables
- Proportioning valves
- Power brake units
- Master brake cylinders
- Vacuum pumps
- Assembly aids

## Klüber products

Klüberalfa HX 83-301  
Klüberalfa HX 83-302  
Klüberfluid 9 R 100  
Klüberpaste HEL 46-450  
Klübersynth BLR 46-122  
Klübersynth BR 46-82  
Klübersynth HB 72-52  
Klübersynth HLR 46-371  
NONTROP GB 3 G  
SYNTHESO GLEP 1  
SYNTHESO GLK 0  
SYNTHESO GLK 1  
SYNTHESO GLK 1 PF  
UNISILKON GL 301  
UNISILKON GLK 112  
WOLFRAKOTE TOP PASTE

## Lubricant requirements

- Compatibility with elastomers, e.g. EPDM, SBR, CR
- Neutral behaviour towards plastics
- Resistance to brake fluids
- Wide temperature range
- High operational reliability during the entire service life
- High load-carrying capacity and good wear protection
- Noise damping
- Good corrosion protection
- Protection of electric contacts
- Avoiding paint-wetting impairment
- Adhesion to lubrication point

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### Product approvals/specifications (in alphabetical order)

Bosch VS 18314-Ft/N 28 FT 1140-002, Brembo D1.04.07.000, Continental (ATE) N 55315.03, Chrysler MS 9708, Ford ESA-M1C194-A, Ford WSA-M1C246-A, GM 9986206, Knorr N 503880, Lucas T.S. 2-32-101, Lucas T.S. 2-33-03, Meritor 2297-N-7164, PBR MS 1120, PBR MS 1124, Toyota TSK2522G, Toyota TSK2525G, VW-TL 52112, VW-TL 52150, Wabco JED 294, Wabco JED 785

### Customers (in alphabetical order)

ADVICS (Aisin), Akebono, BMW, Bosch, Brembo, Continental, Daimler, Delphi, Ford, Knorr-Bremse, Meritor, Opel, PBR, Porsche, SEAT, TRW, WABCO, Volkswagen

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Please note that the a.m. information is only a small extract from our range of products and applications with no claim of completeness

# Steering systems



## Components

- Steering columns
- Electric motors, small gears
- Telescopic steering shafts, intermediate shafts
- Rolling bearings, seals
- Steering gears, steering racks, ball screws
- Universal joints, steering couplings, tie rods, ball joints
- Electric steering systems in general

## Lubricant requirements

- Low adjustment force at low temperatures
- Noise suppression and good damping properties
- Compatibility with materials used
- Good corrosion protection
- Prevention of fretting corrosion
- High load-carrying capacity and prevention of material fatigue

## Klüber products

ISOFLEX TOPAS NB 52  
ISOFLEX TOPAS NCA 52  
Klübergrease LFT 71-402  
Klüberlub EM 41-92  
Klübersynth BM 44-42  
Klübersynth GE 14-111  
Klübersynth J 44-402  
Klübersynth JIP 84-402  
Klübersynth LE 44-31  
Klübersynth LI 44-22  
Klübersynth LR 44-21  
MICROLUBE GL 262  
SYNTHESO GLEP 1

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### Product approvals/specifications (in alphabetical order)

Daimler DBL 6834.00, Delphi 26113298, Ford ESF-M99B112-A, Ford WSD-M1C234-A2, Porsche 999.917.791.00, Toyota TSK2520G, TRW 62015002, VW-TL 721, VW-TL 778 B, VW-TL 52150, ZF Lemförder LMN 304 B, ZF Lemförder LMN 304 F, ZF Lemförder LMN 304 K

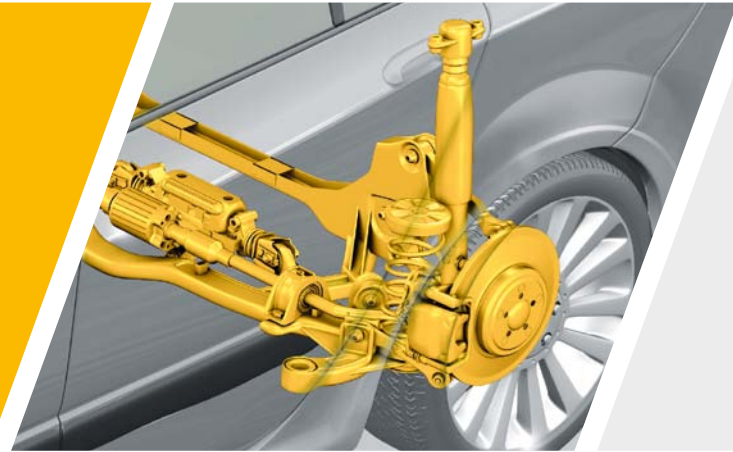
### Customers (in alphabetical order)

Daimler, Dana, Delphi, Fujian Jinduo, General Motors, Hyundai, INAUXA, Jingzhou Henglong, JTEKT, KIA, KYB, Musashi, NSK, PEUGEOT, Raufoss, ThyssenKrupp Presta SteerTec, Timken, TRW, Visteon, Volkswagen, ZF

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# Hub units and constant velocity joints



## Components

- Suspension elements
- Seals
- Constant velocity joints
- Spline shafts
- Wheel bearings
- Shock absorbers
- Support bearings

## Klüber products

DUOTEMPI PMY 45  
ISOFLEX TOPAS NB 5051  
ISOFLEX TOPAS NB 52  
ISOFLEX TOPAS NCA 152  
Klüberlub EH 71-241  
Klüberlub EM 41-111  
Klüberpaste 46 MR 401  
Klüberplex BEM 34-132  
Klübersynth RM 14-211  
Klübersynth RM 14-211 Primer  
MICORLUBE GL 261  
MICROLUBE GL 262  
POLYLUB GA 352 P  
QUIETSCH-EX  
SYNTHESO GLEP 1  
UNISILKON TK 44 N2

## Lubricant requirements

- Corrosion protection
- Lifetime lubrication
- Compatibility with elastomers
- Very good lubricating capacity for oscillating movements
- Very low friction values
- Protection against tribocorrosion
- Noise reduction
- Wear protection

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### Product approvals/specifications (in alphabetical order)

Daimler DBL 6817.00, Daimler DBL 6827.31, Ford ESA-M1C194-A, Opel B 0400882, Porsche 999.917.791.00, PSA X 10 1, PSA X 71 3100, Toyota TSK2522G, VW-TL 738, VW-TL 751, VW-TL 52133, VW-TL 52150

### Customers (in alphabetical order)

Audi, BMW, Delphi, FAG, General Motors, GKN, NSK, Scania, SEAT, Valeo, Volkswagen

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# Engines and under-hood components



## Components

- Starters, start-stop starters
- Throttles, injection pumps
- Alternators, belt tensioners
- Turbo chargers, water pumps
- EGR valves, wastegates and manifold actuators
- Electric contacts, fan bearings, plug connections for fuel lines and cooling conduits

## Klüber products

BARRIERTA K series  
BARRIERTA L series  
ISOFLEX LDS 18 Special A  
ISOFLEX TOPAS NCA 52  
Klüberpaste HEL 46-450  
Klübersynth BEP 72-82  
Klübersynth BR 46-82  
Klübersynth EL 42-32  
Klübersynth HB 72-102  
Klübersynth LP 42-32  
Klüber Noxlub KF 1920  
PETAMO GHY 133 N  
PETAMO GY 193  
UNIMOLY HTC Metallic  
WOLFRACOAT C

## Lubricant requirements

- Very good high-temperature stability
- Maintenance-free
- Low starting and running torque
- Long-term lubrication
- Material compatibility (e.g. seals, hoses, casings)
- Resistance to ambient media

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### Product approvals/specifications (in alphabetical order)

Bosch FS 18570-Ft, Bosch VS 10832-Ft, Bosch VS 18099-Ft, Brembo D1.04.18.000, Daimler DBL 6834.00, Ford WSD-M138P8A1, Opel B 0401122, PSA X 71 3134, Toyota TSK2524G, VW-TL 776, VW-TL 778, VW-TL 52112, VW-TL 52141, VW-TL 52172

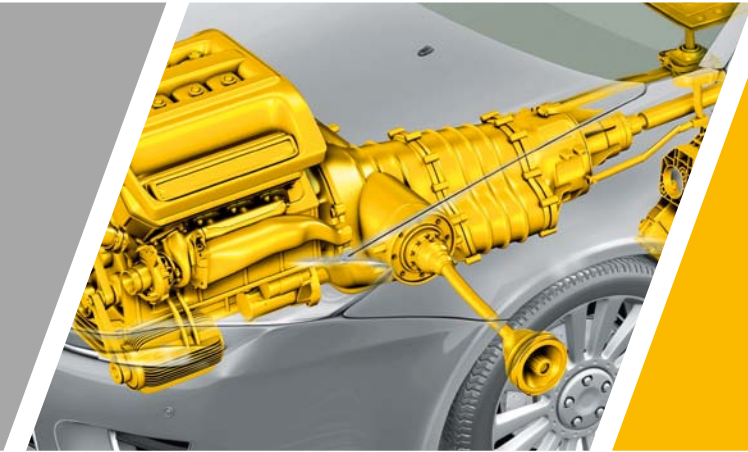
### Customers (in alphabetical order)

Audi, BMW, Bosch, Continental, Daimler, Delphi, DENSO, General Motors, Hyundai, KIA, Litens, Magneti Marelli, MAHLE, Mazda, Mubea, PSA Peugeot Citroën, Scania, Toyota, TRW, Visteon, Volvo, Volkswagen

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# Clutches



## Components

- Master cylinders, slave cylinders
- Clutch release bearings, spline joints
- Dual mass flywheels

## Klüber products

Klüberalfa HM 83-801  
Klübersynth BEP 72-82  
Klübersynth HB 72-102  
Klübersynth HIP 84-401  
Klübersynth HLR 46-371  
MICROLUBE GL 261  
MICROLUBE GNY 202  
PETAMO GY 193  
SYNTHESO GLK 1  
UNISILKON GLK 112  
UNISILKON GLK 1301

## Lubricant requirements

- Protection against tribocorrosion
- Lifetime lubrication
- Elastomer compatibility
- Wide service temperature range
- Good wear protection
- No stick-slip
- Compatibility with brake fluids

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### Product approvals/specifications (in alphabetical order)

Ford ESD-M1C220-A, Ford ESF-M1C 43-A2, Opel B 0400043, Opel B 0400571, VW-TL 760, VW-TL 767 X

### Customers (in alphabetical order)

Audi, Automotive Products, BMW, Daimler, FAG, Ford, FTE automotive, GAT, GETRAG, Hyundai, INA, LuK, Magneti Marelli, NTN, Opel, PHA, Valeo, Voith, Volkswagen, ZF

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# Gearshift



## Components

- Seals
- Plain bearing bushes
- Gear shift linkage
- Gear shifting gates
- Bowden cables

## Klüber products

ISOFLEX TOPAS L 32  
ISOFLEX TOPAS L 32 N  
Klübersynth LIP 84-42  
POLYLUB GLY 801  
UNISILKON GLK 112

## Lubricant requirements

- Lifetime lubrication
- Compatibility with elastomers
- Corrosion protection
- Good damping capacity
- Wide service temperature range

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### Product approvals/specifications (in alphabetical order)

Chrysler MS 9958, Ford ESF-M1C 43-A2, Ford WSD-M1C244-A, Opel B 0400571, Opel B 0401138, PSA B 71 3841, PSA X 71 3102, VW-TL 52147, VW-TL 767 X, VW-TL 52142, ZF LMN 304

### Customers (in alphabetical order)

Audi, BMW, Daimler, DURA, ECS, Ford, Himmermann, Hyundai, JOPP, KIA, Opel, PSA Peugeot Citroën, Teleflex, Volkswagen, Woco, ZF

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# Locks and hinges



## Components

- Latches, hinges
- Locks, Bowden cables
- Door check arms, central locking mechanisms
- Catch bolts, locking pawls

## Lubricant requirements

- Good low-temperature properties
- Resistance to water and de-icers
- Corrosion protection
- Lifetime lubrication
- Compatibility with paints

## Klüber products

CENTOPLEX 1 DL  
ISOFLEX LDS 18 Special A  
ISOFLEX TOPAS L 32  
ISOFLEX TOPAS L 32 N  
ISOFLEX TOPAS NB 152  
Klüberalfa IR 83-22  
Klübersynth LI 44-22  
Klübersynth LIP 84-42  
Klüberstop TM 06-111  
STABUTHERM GH 461  
SYNTHEO GLEP 1  
UNISILKON GLK 112

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## Product approvals/specifications (in alphabetical order)

Chrysler MS 9958, Daimler DBL 6827.40,  
FordESF-M1C43-A2, FordWSB-M1C160-D2, FordWSD-M1C234-A,  
Ford WSD-M1C234-A2, Ford WSD-M1C238-A, Opel B 0400571,  
Opel B 0400852, Opel B 0400858, Opel B 0401122,  
Porsche 999.917.544.00, Porsche 999.917.790.00,  
PSA B 71 3841, Toyota TSK2522G, VW-TL 778, VW-TL 778 A,  
VW-TL 778 B, VW-TL 767 X, VW-TL 52141, VW-TL 52150

## Customers (in alphabetical order)

ArvinMeritor, Audi, BMW, Daimler, Edscha, Ford, Gammastamp,  
Gestamp, General Motors, Huf, Hyundai, KIA, Kiekert, Magna,  
MGI COUTIER, Opel, STRATTEC, Valeo, Volkswagen, WITTE

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# Electrics and passenger compartment



## Components

- Electric motors
- Heating and cooling systems
- Dashboards
- Small gears
- Fans
- Electrical switches
- Mechanical switches
- Windscreen wipers
- Sun visors
- Mirrors
- Plug-in contacts

## Klüber products

BARRIERTA series  
CONSTANT GLY 2100  
CONSTANT OY oil series  
DUOTEMPI PMY 45  
ISOFLEX LDS 18 Special A  
ISOFLEX TOPAS L 32  
ISOFLEX TOPAS L 32 N  
ISOFLEX TOPAS NB 52  
Klüberalfa K 83-735  
Klüberelectric KR 44-22  
Klüberelectric KR 44-102  
Klübersynth MR 96-31  
Klüberelectric KR 44-402  
Klübersynth LI 44-22  
Klübersynth LR 44-21  
Klübersynth RA 44-702  
Klübersynth RA 44-3502  
MIKROZELLA series  
Klüber Noxlub series  
POLYLUB GLY 151  
POLYLUB GLY 501  
POLYLUB GLY 801

## Lubricant requirements

- Low breakaway torque at low temperatures
- Lifetime lubrication
- Material compatibility
- Wide temperature range
- Good surface adhesion
- Mechanical damping
- Noise damping

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### Product approvals/specifications (in alphabetical order)

Chrysler MS 9958, Daimler DBL 6827.40, Ford WSB-M1C160-D2, Ford WSD-M1C244-A, Ford WSD-M1C234-A2, Opel B 0400858, Opel B 0400882, Opel B 0401122, Opel B0401138, Porsche999.917.790.00, Porsche999.917.791.00, PSA B 71 3841, Toyota TSK2522G, VW-TL 778, VW-TL 778 A, VW-TL 778 B, VW-TL 751, VW-TL 52147

### Customers (in alphabetical order)

Audi, BMW, Bosch, Britax, Daimler, Faurecia, Ficos, Ford, Grammer, Hella, Johnson Controls, KOSTAL, Magna, Niles Parts, NMB, NSK, Opel, PSA Peugeot Citroën, Valeo, Volkswagen, Wintech

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# Window lifters and sun roofs



## Components

- Electric motors
- Guiding rails
- Small gears
- Bowden cables
- Toothed segments

## Lubricant requirements

- Low noise level
- Good low-temperature properties
- Compatibility with plastics and elastomers
- Surface adhesion
- Damping properties

## Klüber products

ISOFLEX TOPAS L 32  
ISOFLEX TOPAS L 32 N  
ISOFLEX TOPAS L 32 CN  
Klüberlub EM 41-142  
Klüberlub LM 41-32N  
Klübersynth LF 44-22  
Klübersynth LI 44-22  
Klübersynth LM 41-102  
Klübersynth LR 44-21  
Klübersynth P 84-52 G  
POLYLUB GLY 151  
POLYLUB GLY 501  
POLYLUB GLY 801  
UNISILKON GLK 112

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### Product approvals/specifications (in alphabetical order)

Chrysler MS 9958, Daimler DBL 6827.40,  
Ford ESF-M1C 43-A2, Ford WSB-M1C160-D2,  
Ford WSD-M1C244-A, Ford WSD-M1C234-A2,  
Opel B 0400571, Opel B 0400858, Opel B 0401138,  
PSA B 71 3841, Toyota TSK2522G, VW-TL 751,  
VW-TL 778 A, VW-TL 778 B, VW-TL 767 X, VW-TL 52147

### Customers (in alphabetical order)

Audi, Bosch, Bouverat, Brose, Daimler, Ford, General Motors,  
Grupo Antolin, IGARASHI, IMS Gear, Inalfa, Inteva,  
Johnson Electric, Mitsuba, Nuova SME, Lames, PHA, PRS,  
Saab, Leggett & Platt, Schukra, UNUS International SpA,  
Volkswagen, Webasto

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# Seats and seat belts



## Components

- Retractors, electric motors
- Flexible shafts, buckles
- Small gears, retractor springs
- Screw spindles, seat rails
- Belt tensioners, belt loops
- Adjusting units, toothed segments

## Klüber products

CENTOPLEX CX 3/350  
ISOFLEX LDS 18 Special A  
ISOFLEX TOPAS L 32  
ISOFLEX TOPAS L 32 N  
ISOFLEX TOPAS NB 5051  
ISOFLEX TOPAS NB 52  
Klüberlub EM 41-142  
Klüberpaste UH1 84-201  
Klübersynth LF 44-22  
Klübersynth LR 44-21  
Klübertop TP 39-311  
Klübertop TP 41 A/B  
Klübertop TP 42 A/B  
POLYLUB GLY 801  
UNISILKON GLK 112

## Lubricant requirements

- Lifetime lubrication
- Wide temperature range
- Low breakaway torque
- Good damping properties
- Surface adhesion
- Paintability
- Emergency lubricating properties

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### Product approvals/specifications (in alphabetical order)

Chrysler MS 9958, Daimler DBL 6827.40, Ford WSB-M1C160-D2, Ford WSD-M1C244-A, Ford WSS-M99C123-A, Opel B 0400858, Opel B 0401138, Toyota TSK 2522G, VW-TL 778 A, VW-TL 52147

### Customers (in alphabetical order)

Audi, Autoliv, BMW, Brose, CRH, Daimler, DAS, Faurecia, Ford, General Motors, Grammer, Hyundai, Johnson Controls, Keiper, KERN-LIEBERS, KIA, Lear, Magna, Sitech, TRW, Volkswagen

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## Profiled seals



### Components

- Car body seals
- Door seals
- Folding top seals
- Sun roof seals
- Window channels and guides
- Trunk seals

### Klüber products

Klüberflex 100-0  
Klübertop TP 18-810  
Klübertop TP 22-1310 A/B  
Klübertop TP 27-1310 A/B  
Klübertop TP 27-1311  
Klübertop TP 28-1311  
Klübertop TP 31-1310 A/B  
Klübertop TP 37-1310 A/B P

### Lubricant requirements

- Wear protection
- Noise reduction
- Freeze release
- Pleasant haptics
- Assembly aid

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#### **You will find bonded coatings from Klüber Lubrication in cars of the following manufacturers (in alphabetical order):**


Alfa Romeo, Audi, BMW, Daimler, Fiat, Ford, Hyundai, Jaguar, KIA, Nissan, Opel, SAAB, Volkswagen

#### **Customers (in alphabetical order)**

Cooper-Standard, Dongil Rubber, Draftex Automotive, ELDISY, GTG Gummitechnik, Henniges Automotive, Meteor, Metzeler Automotive Profile Systems, SAARGUMMI, Vorwerk-Dichtungssysteme

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## Klüber Lubrication – your global specialist

Innovative tribological solutions are our passion. Through personal contact and consultation, we help our customers to be successful worldwide, in all industries and markets. With our ambitious technical concepts and experienced, competent staff we have been fulfilling increasingly demanding requirements by manufacturing efficient high-performance lubricants for more than 80 years.



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