

Safer process.
Safer profit.



rhenus PIONEERING

Special greases for the automotive industry



The invisible components

They ensure durable functions, minimise noise, increase convenience, withstand extreme loads and are tailored to materials with high precision – Rhenus Lub’s special greases for the automotive industry.

As much research, development and experience has gone into them as into many other complex components. They are mostly invisible to the user and yet indispensable. For the powertrain, chassis, body and interior.

rhenus special greases are tailored to your applications and goals. With a level of reliability that has been tried and tested a million times over. We provide you with the optimal solution for your lubricant problem, be it from our extensive lubricating grease portfolio or as an innovation partner in the development of new lubricating greases for your pioneering automotive technologies.

Put your trust in the quality of Rhenus Lub. We are certified according to IATF 16949, ISO 9001, ISO 14001 and ISO 45001, and meet the strict auditing requirements of suppliers and OEMs.

What makes rhenus special?

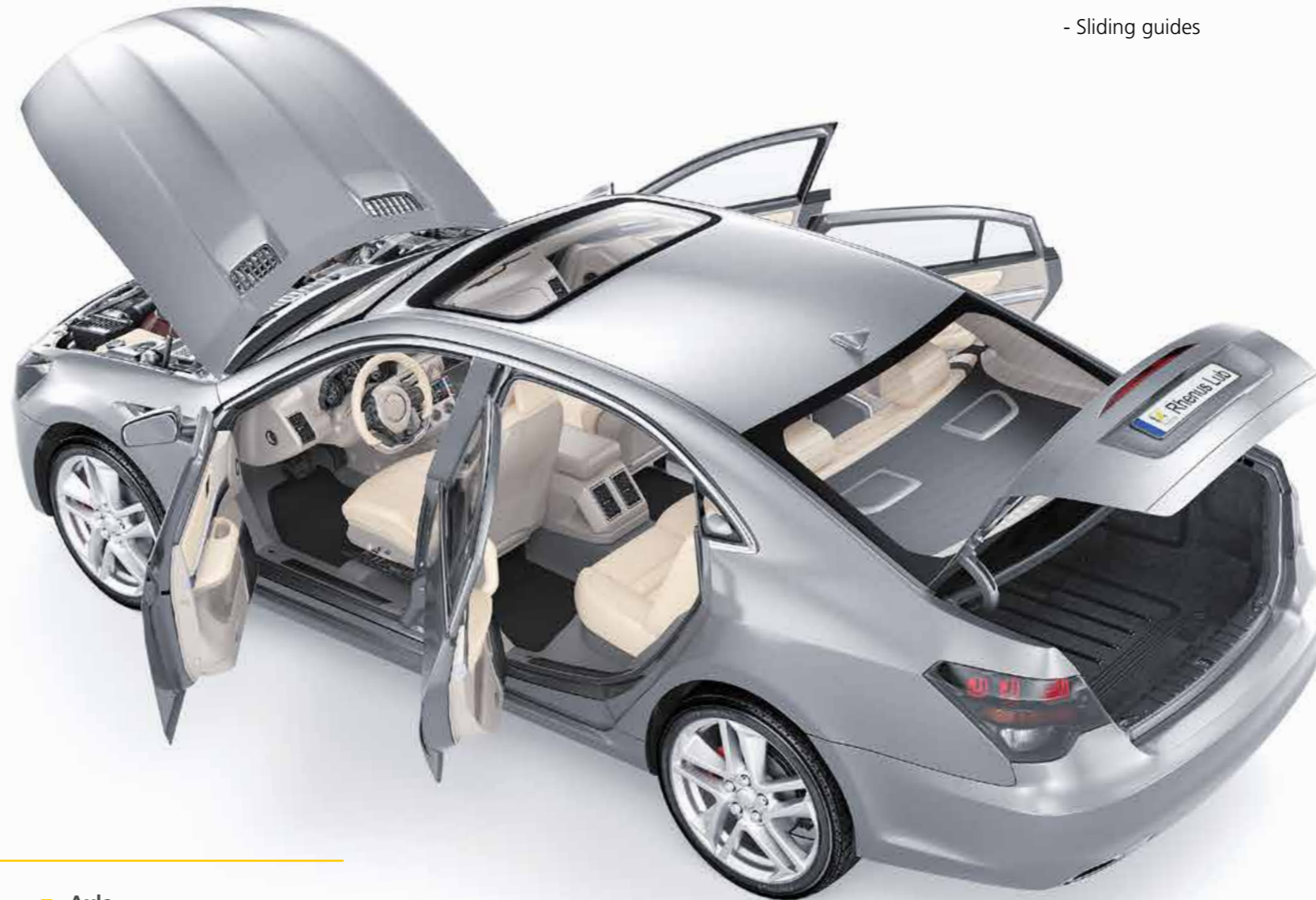
It is the combination of optimal products tailored to your requirements and a partnership offering real added value.

- Global availability
- Compliant with the chemical regulations of all countries and OEMs
- Approvals in the automotive industry
- Expertise in material compatibility
- Testing expertise and capacity
- Problem-solving expertise



A partner for all special greases

Rhenus Lub is a partner who offers you the perfect solution for each of your applications and specifications. Work with us to reduce your administrative burden and maximise the success of your projects.



Drive

- **Engine**
 - Starter
 - Fuel system
 - Exhaust system
 - Belt tensioner
- **Gearshift**
 - **Clutch**
 - **DMF**
 - **Drive shaft**
 - **Transmissions**
 - **Wheel bearings**

Chassis

- **Brakes**
 - Hydraulic
 - Electromechanical
 - Parking brake
 - Assembly aids
 - Brake paste
- **Steering**
 - Steering column
 - Steering gear
 - EPS worm gear
 - EPS ball screw
 - Tie rod joints
 - Rear wheel steering
- **Axle**
 - Ball joints
 - Rubber mounts
 - Strut bearing
 - Active roll stabiliser

Body

- **Wiper motor gear**
- **Washing water system**
- **Exterior mirrors**
- **Door kinematics**
- **Locking systems**
- **Window mechanisms**
 - Gear motor
 - Sliding guides

E-mobility

- **Drive**
 - Drive shafts
 - Motor bearings
- **Noise dampening**
 - Connectors
 - Actuators
- **Electrical connectors**
 - Grease for contact points
- **Charging point, wallbox**
 - Plug grease for sealing
 - Contact protection paste

Interior

- **HVAC**
- **Leather and plastic creaking**
- **Plastic mechanisms**
- **Seat belts**
 - Retractor
- **Seats**
 - Seat rails
 - Gear motors
 - Backrest adjustment
 - Spindle gear
 - Headrest

Innovation starts with team work

Research and development

New materials and technological advances or changes always require new special automotive greases. We firmly believe that the best way to find the solution to these development processes and challenges is to work closely with you as partners – all the way from the initial idea to the finished special grease.

Both technological and methodological expertise

There are two key factors for us in the joint development of lubricants: technological expertise and methodological expertise. In practice, this means that we provide you with engineering expertise, creativity as well as project and development methodologies. These synergies allow us to significantly speed up the development of your new lubricating grease.

Straight from the simulation to the practical test

Another advantage of working in a development partnership with Rhenus Lub: our short communication channels. Our development teams work together on an interdisciplinary basis. Following successful simulations of the chemical and physical properties, the lubricating grease prototypes can be tested and verified in our fully equipped testing laboratories with your original components and materials.

Our range of modern testing equipment and processes include:

- Friction value tests
- Wear tests / service life tests
- Model and component testing facilities
- Acoustic measurements / noise emissions
- Odour tests (olfactory assessments)
- Grease transport
- Vibration tests
- Continuous pressure tests



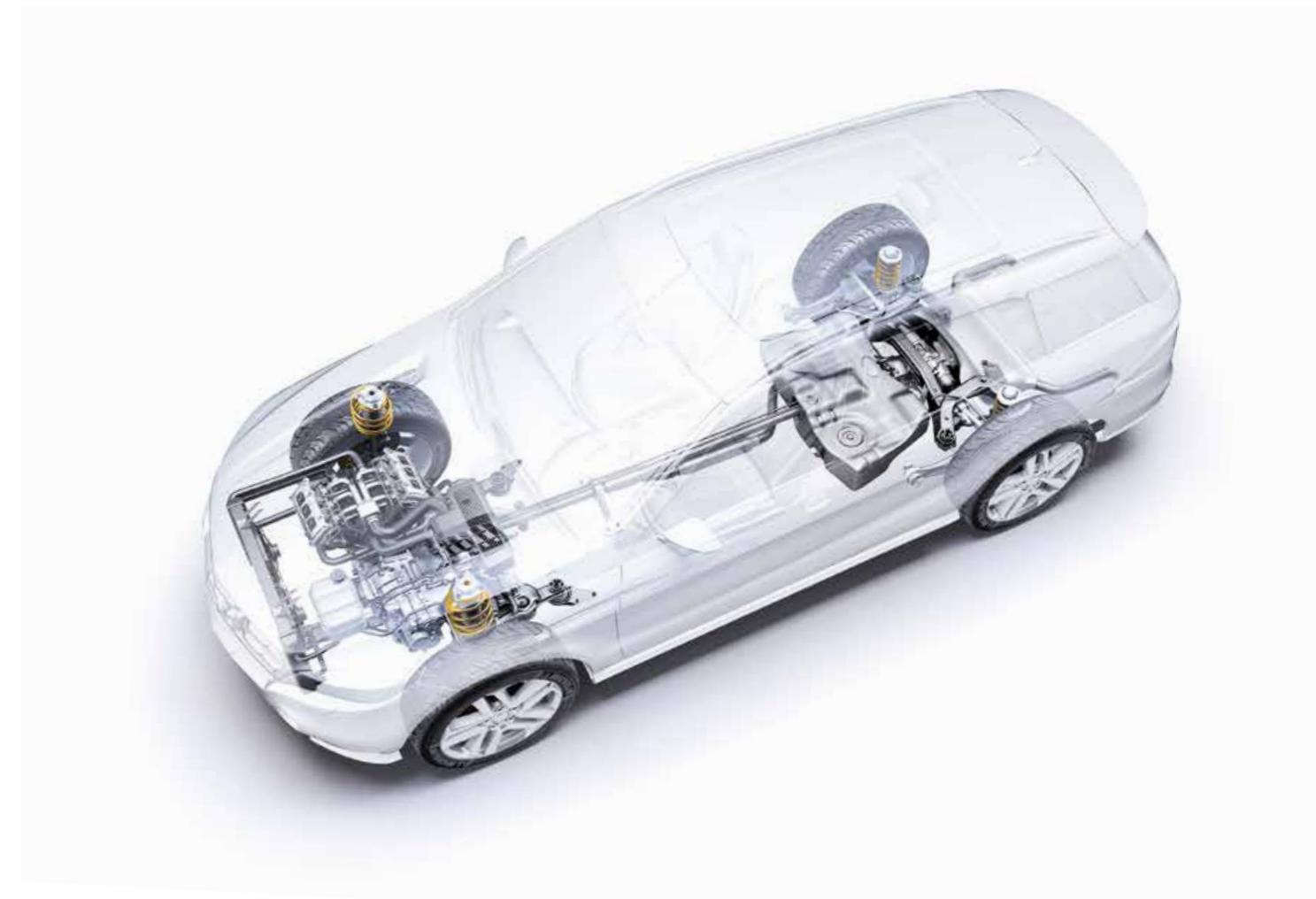
Special automotive greases

Drive

New lubricants for new concepts

At present, the majority of development work is centred on the drive. There are a number of very different drive concepts emerging, ranging from the combustion engine and purely electric vehicle, to various hybrid variants combined with different concepts for the provision of electricity. All drive concepts with their varying components and requirements for elements including temperature stability, speed, electrical conductivity and noise

dampening require adapted lubricants for each individual friction point. Rhenus Lub has been working closely with the pre-development departments of suppliers for many years. With its own testing facility, where the service life for new applications can be tested at various temperatures, Rhenus Lub is able to “look to the future” and provide qualified statements about the performance of new lubricating greases.



Automotive industry	Application in the sector	Lubricating greases/oils	Operating temperatures [°C]	Properties
Drive	Engine – starter	rhenus LKG 2	-50°C to 150°C	EP, very high load capability, low starting torques at low temperatures
	Engine – generator	rhenus LKT 2	-60°C to 140°C	High speed factor, excellent low temperature properties, EP
	Engine – fuel system	rhenus WBN 2	-30°C to 280°C	Resistant to fuel
	Engine – exhaust system	rhenus WBN 2	-30°C to 280°C	Very stable at high temperatures
	Engine – belt tensioner	rhenus HCN 25	-40°C to 190°C	Very good dampening properties, very temperature-stable
	E-mobility roller bearing applications	rhenus HIN 2	-40°C to 160°C	Meets the latest specifications for motor bearings
	Gearshift	rhenus LKB 1	-50°C to 150°C	Low sliding friction values, low starting torques at low temperatures
	Release mechanism	rhenus HDN 2	-40°C to 180°C	High level of wear protection
	DMF	rhenus LXA 2	-40°C to 160°C	Low oil separation, high level of wear protection
	Transmission actuator	rhenus LKG 2	-50°C to 150°C	EP, very high load capability, low starting torques at low temperatures
	Drive shaft	rhenus LKZ 2	-40°C to 150°C	Synthetic base oil with wide temperature range
	Shaft seals / transmissions	rhenus LKZ 2	-40°C to 150°C	Excellent elastomer compatibility
	Wheel bearings	rhenus LKF 2 TB	-30°C to 150°C	Anti-false brinelling

Special automotive greases

Chassis

For your chassis of the future

Our lubricants are a key design element. They ensure that friction in the ball joints is significantly reduced, thus laying the foundations for active chassis kinematics and actively engaging control systems for vehicle stabilisation, distance control and lane keeping assistance. The functions are

made possible by the control of a multitude of electromechanical actuators. These systems are bridging technologies to autonomous driving.



Automotive industry	Application in the sector	Lubricating greases/oils	Operating temperatures [°C]	Properties
Chassis	Brake – hydraulic	rhenus LPO 15	-40°C to 120°C	Compatible with EPDM, low sliding friction
	Brake – electromechanical	rhenus LKG 2	-50°C to 150°C	EP, very high load capability, low starting torques at low temperatures
	Brake – parking brake	rhenus LKB 1	-50°C to 150°C	Low sliding friction values, low starting torques at low temperatures
	Brake – assembly aids	rhenus OPG 24	-40°C to 160°C	Polyalkylene glycol (PAG)
	Brake paste	rhenus MCK 2	-30°C to 250°C	Metal-free, thus also suitable for aluminium brake callipers and ABS systems
	Steering – steering column	rhenus AKC 1	-45°C to 160°C	Reduces static friction
	Steering – steering gear	rhenus LKG 2	-50°C to 150°C	EP, very high load capability, low starting torques at low temperatures
	Steering – EPS worm gear	rhenus LKB 1	-50°C to 150°C	Low sliding friction values, low starting torques at low temperatures
	Steering – EPS ball screw	rhenus LKG 2	-50°C to 150°C	EP, very high load capability, low starting torques at low temperatures
	Steering – tie rod joints	rhenus LKC 1	-40°C to 150°C	Reduces static friction and thus supports the unimpeded steering return
	Steering – rear wheel steering	rhenus LKB 1	-50°C to 150°C	Low sliding friction values, low starting torques at low temperatures
	Axel – ball joints	rhenus LKC 1	-40°C to 150°C	Reduces static friction and thus supports the unimpeded steering return
	Axel – rubber mounts	rhenus LPO 15	-40°C to 120°C	Compatible with EPDM, low sliding friction
	Axel – strut bearings	rhenus CYN 15 GB	-50°C to 100°C	High level of wear resistance with oscillating movements
	Axel – active roll stabiliser	rhenus LKG 2	-50°C to 150°C	EP, very high load capability, low starting torques at low temperatures

Special automotive greases

Body

Resistant to environmental factors and dampen noise

The lubricant is often exposed to environmental factors. How resistant is it to these?

Rhenus Lub have the relevant testing methods. We test the respective lubricating grease specifically for the plastic, the elastomer of your supplier and any environmental factors. Chemically inert lubricants, which do not undergo chemical reactions, are also available.

Another aspect is noise dampening on the body, which is sometimes caused by small transmission motors. We have developed highly dampening greases for transmission lubrication, which also permit exceptionally low torques at low temperatures.



Automotive industry	Application in the sector	Lubricating greases/oils	Operating temperatures [°C]	Properties
Body	Door kinematics	rhenus LKC 1	-40°C to 150°C	High level of wear protection (e.g. hinges, locking devices, roller guides)
	Locks	rhenus LXN 2	-60°C to 130°C	Excellent low temperature properties
	Window mechanism – gear motor	rhenus LKB 1	-50°C to 150°C	Low sliding friction values, low starting torques at low temperatures
	Window mechanism – sliding guides	rhenus LXN 2	-60°C to 130°C	Excellent low temperature properties
	Sunroof – gear motor	rhenus LKB 1	-50°C to 150°C	Low sliding friction values, low starting torques at low temperatures
	Sunroof – sliding guides	rhenus LPO 15	-40°C to 120°C	Compatible with EPDM, low sliding friction
	Exterior mirrors	rhenus LXN 2	-60°C to 130°C	Very modest actuating forces at -40°C
	Wiper motor gear	rhenus LKK 15	-50°C to 150°C	Good wear protection and corrosion protection
	Washing water system	rhenus WBN 2	-30°C to 280°C	Resistant to washing water and solvents

Special automotive greases

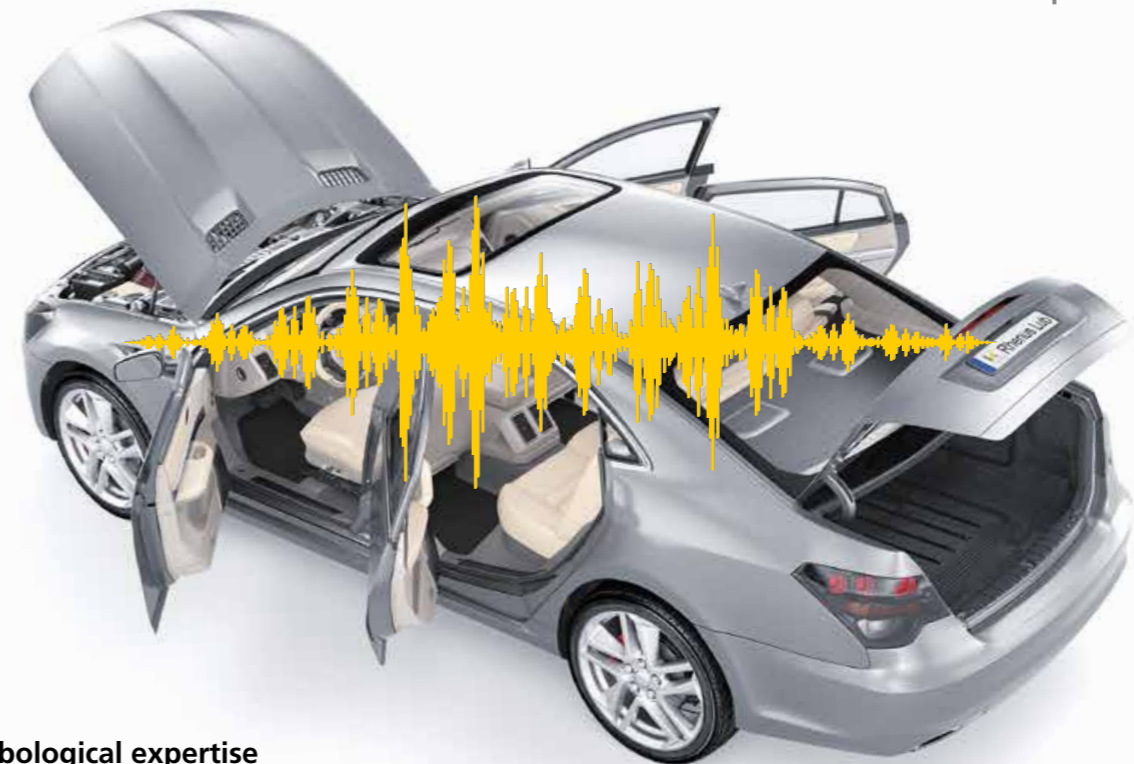
Interior

The future will be quieter

Friction values and vibrations can be significantly reduced by using rhenus greases, such as in seat and belt adjusters, headrests, covers/interior linings, window regulators and gear levers. This ensures that all the interior fittings function optimally and disturbing noises are effectively dampened or eliminated. We also develop lubricants in accordance with VDA 270 to prevent unwanted odours from developing – for the most stringent requirements for an odour-free interior climate.

Soothing calm in the interior

- rhenus low-noise greases are particularly pure, prevent noise from developing in the bearing and help to make the driving experience more relaxing.
- rhenus greases that prevent noise ensure reduced static friction and avoid the stick-slip effect. This effectively prevents squeaking and creaking.
- rhenus dampening greases reduce noises such as knocking and clattering.



Tribological expertise

NVH – noise, vibration, harshness – we are interested in the cause: Is the difference between static and dynamic friction too great or does kinetic energy have to be absorbed?

We identify the problem and validate the solution, for example directly on your component in our noise testing facility.

Automotive industry	Application in the sector	Lubricating greases/oils	Operating temperatures [°C]	Properties
Interior	Interior Special grease – odourless	rhenus XBO 2	-40°C to 130°C	Low-odour and low-emission special grease for the interiors
	HVAC – ventilation flaps	rhenus LKB 1	-50°C to 150°C	Low sliding friction values, low starting torques at low temperatures
	Seats – seat rails	rhenus LKK 15	-50°C to 150°C	Good wear protection and corrosion protection
	Seats – gear motors	rhenus LXN 2	-60°C to 130°C	Very modest actuating forces at -40°C
	Seats – backrest adjustment	rhenus BBC 15	-50°C to 150°C	Compatible with CDC, prevents juddering
	Seats – spindle gear	rhenus LKB 1	-50°C to 150°C	Low sliding friction values, low starting torques at low temperatures
	Plastic mechanisms	rhenus LXN 2	-60°C to 130°C	Dampening greases with varying viscosities
		rhenus LKM 1	-40°C to 150°C	
		rhenus BJN 15	-40°C to 150°C	
	Headrest – height adjustment	rhenus OAS 22	-50°C to 200°C	Colourless, synthetic oil
	Seat belts – retractors	rhenus LPO 15	-40°C to 120°C	Compatible with PP, low sliding friction

Special automotive greases

E-mobility

Showing initiative, rethinking and looking ahead

Not only do we consider ourselves to be your manufacturer and technology expert for special automotive greases, we also see ourselves as your strategic partner. We think entrepreneurially to meet your needs and want to play an active part in safeguarding your future viability, competitiveness and value creation.

Special greases for sustainable e-mobility

Whether electric vehicles or hybrid drives, new generations of vehicles are placing new requirements on special lubricating greases. There are many challenges related to the drivetrain with its high torques and we have developed intelligent solutions for these. We have just the right lubricating grease concepts for electric motor and hybrid drives, which are perfectly suited to high levels of heat generation and have the desired conductivity or insulating capacity. And if there is no lubricant that is up to your challenge, we will develop one in collaboration with you.



Automotive industry	Application in the sector	Lubricating greases/oils	Operating temperatures [°C]	Properties
E-mobility	Roller bearings in the drive	rhenus HIN 2	-40°C to 160°C	Meets the latest specifications for motor bearings
	Dampening of noise, plastic/plastic compounds	rhenus WBN 2	-30°C to 280°C	Very stable at high temperatures, chemically resistant
	Dampening of noise, actuators and miniature drives	rhenus WAO 2	-30°C to 280°C	Dampening, good low temperature, good material compatibility
	Electrical connectors, grease for electrical contacts	rhenus AKC 2	-45 to 160°C	Low-emission, high electrical resistance
	Charging point, wallbox, plug grease for sealing	rhenus CVN 3	-30°C to 100°C	Resistant to ageing, very good water resistance, high level of corrosion protection, very good adhesive properties
	Charging point, wallbox, grease for contact	rhenus LMN 2	-30°C to 120°C	Protects against corrosion, high electrical resistance

From tribological to ecological

Sustainability is one of our main company assets. We take responsibility for our society, the environment and future generations.

You can help to improve sustainability with our rhenus special greases. Our long-life products conserve valuable, natural resources. They reduce friction values and thus contribute directly to lowering emissions. We develop lubricating greases of the highest quality for this purpose.

Opting for rhenus special automotive greases is not just the right choice in terms of cost efficiency based on the purchase costs and life cycle costs, it is also an investment in a liveable, mobile future.

Social, ethical, global economic, political and ecological challenges are inherent in the entire automotive industry. Our material compliance management and active membership of the UN Global Compact initiative demonstrate that we take responsibility for sustainable development in this sector.



When excellent partnership is a promise

Our customers put their trust in us. By offering innovative products and services, we help to create sustainable value for OEMs and automotive

suppliers. This has culminated in long-standing partnerships in the international automotive industry for over 130 years.

AAM • ACPS AUTOMOTIVE • ADIENT • Autoliv • BENTELER • BILSTEIN

BMW • Borg Warner • bosal • BOSCH • BPW Bergische Achsen • brose

Continental • CW BEARING • DAIMLER • DANA • Delphi • DURA

EATON • Eberspächer • ebm-papst • Edscha • elringklinger • faurecia

FEDERAL-MOGUL • Ford • FTE • GRAMMER • HELLA • HOERBIGER • Huf

INTEVA • JOST • JOYSON SAFETY SYSTEMS • KERN-LIEBERS • KNORR-BREMSE

KNORR-BREMSE STEERING SYSTEMS • LEAR • LISI AUTOMOTIVE • MAGNA

MAHLE • MAN • MANN+HUMMEL • MITSUBA • neapco • NSK

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SAF-Holland • SCHAEFFLER • SKF • thyssenkrupp • u-shin • Valeo

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