LUBCHEM

Your global lubrication partner

LUBCHEM
KOREA

Lubchem lubricants for automotive industry
lubrication points and recommendations

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Index

Factory in Daegu

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Lubchem performance lubricants offer a wide range of high quality, high performance lubricants to address the most challenging and complex requirements of original equipment manufacturers ("OEMs") and world-class tier one suppliers. Our products range of oils, greases will provide longterm operational excellence and high performance lubrication in extreme operating conditions.
Automotive design engineers have learned that specifying Lubchem lubricants during the design phase can provide OEMs with significant cost savings. By lengthening the life of critical components and improving consumer satisfaction, Lubchem lubricants help reduce repair costs and potentially save millions in warranty claims.

Automakers are striving for extended warranties, expecting longer intervals between vehicle service visits and very limited relubrication operations. Lubchem lubricants have provided state-of-the art performance for mechanical systems such as engines, bearings and small gears, doors and windows parts, various actuators, valves and other components. Our lubricants don't oxidize; they provide excellent lubricity and a high viscosity index through a broad range of viscosity grades.

Most applications considered by OEMs to be lubricated for the expected lifetime of the vehicle.

Whenever you contact us, we are willing to give you our full experience and services and finally you can solve your lubricating problem.
We always welcome to develop a new lubricant tailored to customers application. Special small packing and OEM labelling is possible – just contact us.

This brochure has been published to provide you with a brief information about our lubricants for Automotive industry.

Brake system

Parts	Recommendation	Raw materials	NLGI	Service temp.	Features
A.B.S	LUBCHEM PF 8022	P.F.P.E, P.T.F.E	2	-45~260 °C	- high loading capacity and water resistant, EPDM and plastics compatibility
Disk brakes	LUBCHEM BP 3091	P.A.G, Polyurea	1	-40~160 °C	- high loading capacity and water resistant, EPDM and plastics compatibility
Brake booster	LUBCHEM RG 6071	P.A.G, Li-soap	1	-40~160 °C	- wide service temp., EPDM and plastics compatibility
Brake cables	LUBCHEM HP 8702	Silicone, Silica	2	-40~180 °C	- wide service temp., excellent low-temp. torque
Drum brake screws	LUBCHEM RG 6052	P.A.G, Li-soap	1	-25~1,000 °C	- high-temp. paste, surfaces welding protection
Master cylinder, Slave cylinder	LUBCHEM SG 6082	Silicone, Li-soap	2	-60~220 °C	- excellent low and high service temp, water resistant, EPDM and plastics compatibility
Electric brakes	LUBCHEM SYN 6052 PGE	P.A.G+Ester, Li-soap	2	-40~180 °C	- brake fluid, EPDM and seals compatibility
Proportioning valves	LUBCHEM RG 6071	P.A.G, Li-soap	1	-40~160 °C	- high loading capacity, water resistant, EPDMand plastics compatibility
Assembly Aids	LUBCHEM SB 6070	P.A.G, Li soap	-	-50~150 °C	- brake fluid, EPDM and seals compatibility, assembly fluid

ABS Module

Caliper pin

Disk brake system

Caliper piston

Hydraulic brake system

Parking brake cable

Drum brake

Hydraulic brake sylinder

Steering system

Parts	Recommendation	Raw materials	NLGI	Service temp.	Features
Ball Joints/Tie rod	LUBCHEM MP 6181	P.A.O, Li -soap	1	-40~130 °C	- good adhesion, stick-slip prevention, elastomers compatibility
Electric motors	LUBCHEM MP 6181	P.A.O, Li -soap	1	-40~130 °C	- high loading capacity, water resistant, wide service temp.
Electric steering system	LUBCHEM BP 4012	P.A.O, Ba-complex	2	-40~130 °C	- high loading capacity, water resistant, wide service temp.
Small gears	LUBCHEM SG 6042	P.A.O, Li soap, solid lubricant	2	-55~135 °C	- wide service temp., excellent low-temp. starting torque
Handle joint needle bearings	LUBCHEM BA 8103	P.F.P.E, P.T.F.E	2	-55~250 °C	- P.T.F.E solid lubricant, stability in high-temp.
Steering columns	LUBCHEM GL 6181 M	P.A.O, Li soap	1	-40~150 °C	- plastics compatibility, noise reduction, vibration absorption
Steering racks	LUBCHEM GL 6021 F	P.A.O, Li -soap	2	-30~130 °C	- excellent stress absorption and anti-corrosion

Steering system

Steering column

Tie-rod

Steering motor

Ball joints

Axle and C.V. Joints

Parts	Recommendation	Raw materials	NLGI	Service temp.	Features
C.V. Joints	LUBCHEM CV 3031 C	Mineral, Polyurea	1	-40~180 °C	- excellent wear protection and long-term lubrication, compatibility with seals
Shock absorbers	LUBCHEM TB 2051	P.A.O, Al-complex	1	-35~120 °C	- good adhesionand water resistant, compatibility with seals
Spline shafts	LUBCHEM UJ 6032	Mineral, Li-saop	2	-45~150 °C	- execellent low-tempand anti-corrosion, wide service temp.
Suspensions	LUBCHM LM 8021	Silicone, Li-saop	2	-50~180 °C	- rubber and plastics, seals compatibility and wear and noise reduction
Wheel bearings	LUBCHEM SB 6042	Mineral, Li-soap	2	-35~140 °C	- execellent anti-oxidation and corrosion, wear protection, high-loading capacity

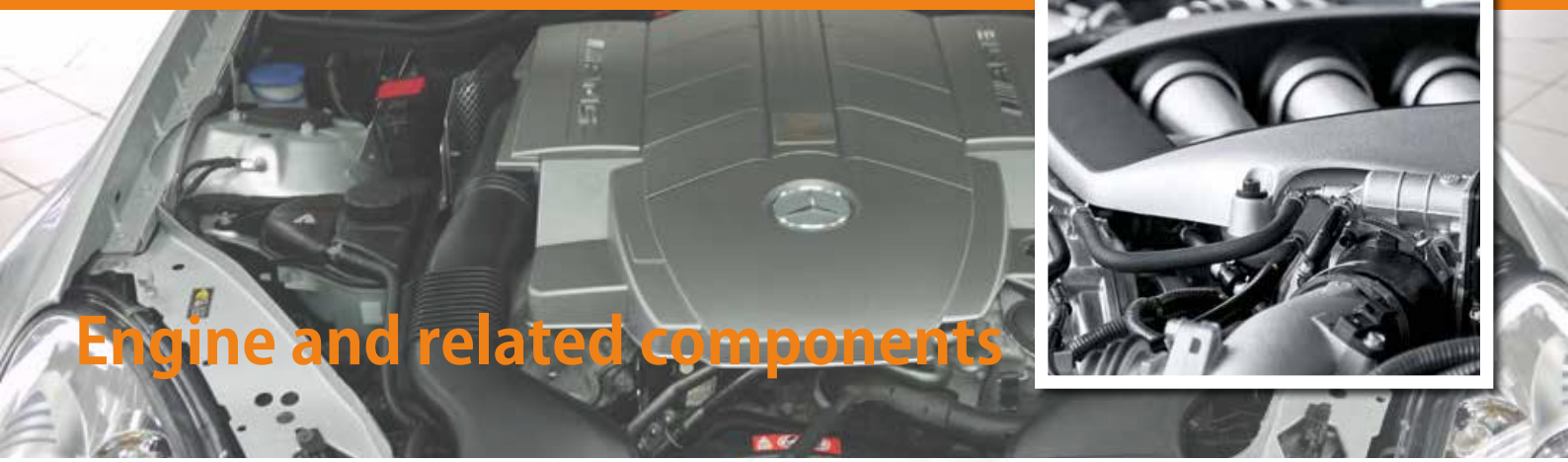
C.V. joints

Spline shaft

Suspension

Shock absorber

Weel bearing/hub units



Engine and related components

Parts	Recommendation	Raw materials	NLGI	Service temp.	Features
Belt tensioner	LUBCHEM TP 3022	Ester, Polyurea	2	-40~180 °C	- excellent anti-corrosive and wate resistant, life-time lubrication
Alternator	LUBCHEM TP 3033 G	Ether, Polyurea	2	-40~180 °C	- execellent low-temp. and adhesive, long-term bearing grease
Starter motor	LUBCHEM RG 6021 M	P.A.O, Li-saop	1	-40~140 °C	- anti-oxidation, resistant to wear and corrosion, long-term lubrication
Throttle/Valves	LUBCHEM PF 8022	P.F.P.E, P.T.F.E	2	-65~220 °C	- wide service temp. and low temp. torque, resistant to aggresive media
Fan bearings	LUBCHEM SG 6082	Silicone, Li-soap	2	-60~220 °C	- P.T.F.E solid lubricant, stability at high temp.
Water pump	LUBCHEM BP 4032	P.A.O, Ba-complex	2	-50~120 °C	- water resistant, high loading capacity

Starter motor

Alternator

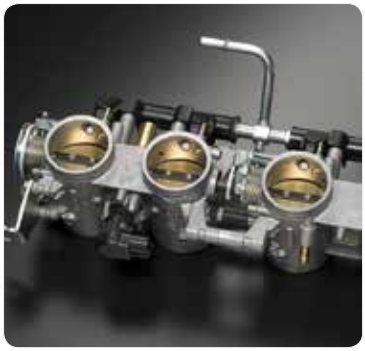
Belt tensioner

Water pump bearings

Engine bearings

Fan clutch

Throttle valves



Turbo charge

Clutches

Parts	Recommendation	Raw materials	NLGI	Service temp.	Features
Master $ Slave cylinders	LUBCHEM BS 6070	P.A.G, Li-soap	0	-40~180 °C	- high loading capacity, water resistant, EPDM and plastic compatibilty
Clutch release bearings	LUBCHEM TP 3022	Ester, Polyurea	2	-40~180 °C	- high temp. and loading, long-term lubrication greaase, water resistant
Spline joints	LUBCHEM BH 6061	P.A.O, Li soap	1	-40~160 °C	- excellent stress absorptionand anti-corrosion
Dual mass flywheels	LUBCHEM DF 6172	P.A.G, Li-soap	2	-40~180 °C	- high loading capacity, water resistant, EPDM and plastic compatibility

Clutch

Clutch releasing system

Spline joint

Clutch module

Hydraulic clutch releasing system

transmission system

Manual clutch hydraulic cylinder

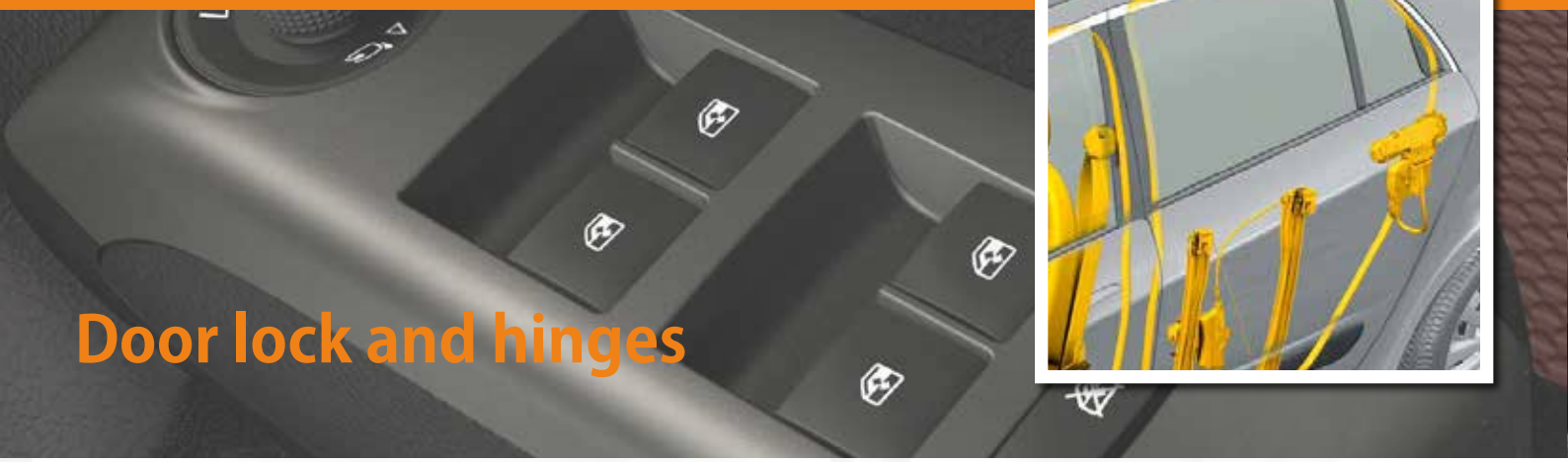
Gearshift

Parts	Recommendation	Raw materials	NLGI	Service temp.	Features
Seals	LUBCHEM SYN 8012 P	P.A.O, PTFE	2	-60~140 °C	- resistant to high pressure, wide service temp., plastics and seals compatibility, excellent noise and vibration reduction
Plain bearings bushes	LUBCHEM KL 6012	P.A.O, Li-soap	2	-40~150 °C	- execellent low-temp, anti-oxidation and ageing, wide application multi purpose grease in automotive industry, small motor, plastic sliding contact surface
Gear shift linkage	LUBCHEM MP 6151	P.A.O, Li soap	1	-40~150 °C	- plastics compatibility, noise reduction, vibration absorption
Gear shift lever	LUBCHEM HP 8122	P.A.O, P.T.F.E	2	-50~250 °C	- solid lubricant PTFE, wide service temp. compatibility with plastic and seals, resistant to chemical media
Bowden cables	LUBCHM GL 6021	Silicone, Li-saop	1	-40~200 °C	- rubber, seals and plastic compatibility, wear and noise reduction

Gearshift cable

Gearshifting mechanism

Gearshift lever

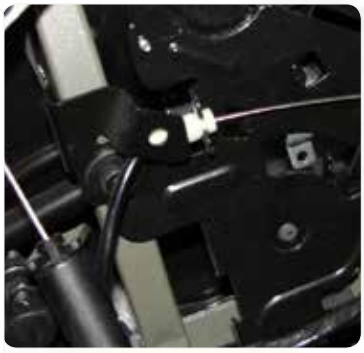


Door lock and hinges

Parts	Recommendation	Raw materials	NLGI	Service temp.	Features
Bowden cables	LUBCHM LM 8021	Silicone, Li-saop	2	-50~180 °C	- rubber plastics, seals compatibility, friction reduction, noise removing
	LUBCHEM BL 6011	P.A.O, Li-soap	1	-40~150 °C	- execellent low-temp, anti-ageing and oxidation, plastics compatibility
Central locking system	LUBCHEM KL 6012	P.A.O, Li-soap	2	-40~150 °C	- execellent low-temp, anti-ageing and oxidation, plastics compatibility
	LUBCHEM SM 6531	P.A.O, Li-soap	2	-40~150 °C	- execellent low-temp, anti-ageing and oxidation resistant, plastics compatibility
Hinges	LUBCHEM DH 6022	P.A.O, Li soap	2	-40~150 °C	- plastics compatibility, noise reduction, vibration absorption
Door latches	LUBICAN KL 6012	P.A.O, Li soap	2	-40~150 °C	- plastics compatibility, noise reduction, vibration absorption
Locks	LUBCHEM SM 6531	P.A.O, Li-soap	1	-60~130 °C	- execellent low-temp, anti-ageing and oxidation resistant, water resistant
	LUBCHEM KL 6012	P.A.O, Li-soap	2	-40~150 °C	- execellent low-temp, anti-ageing and oxidation resistant, water resistant
Door checker	LUBCHEM MP 6072 F	P.A.O, Li-soap	2	-40~150 °C	- execellent low-temp, anti-ageing and oxidation resistant, noise reduction
	LUBCHEM MP 6151	P.A.O, Li-soap	1	-40~150 °C	- execellent low-temp, anti-ageing and oxidation resistant, noise reduction

Door latch

Trunk lid control cable



Key and locks

Central locking parts

Door checker

Interior and electic parts

Parts	Recommendation	Raw materials	NLGI	Service temp.	Features
Dashboard	LUBCHEM SYN 6142 P	P.A.O, Li-soap	2	-40~150 °C	- rubber plastics, seals compatibility, friction and noise reduction
	LUBCHEM MP 6151	P.A.O, Li soap	1	-40~150 °C	- plastics compatibility, noise reduction, vibration absorption
Electircal Motors	LUBCHEM DY 3012 MF	P.A.O, Li-soap	2	-60~130 °C	- execellent low-temp, anti-ageing and oxidation, plastics compatibility
	LUBCHEM KL 6012	P.A.O, Li-soap	2	-40~150 °C	- execellent low-temp, anti-ageing and oxidation, plastics compatibility
Heating and cooling systems	LUBCHEM MP 6151	P.A.O, Li soap	1	-40~150 °C	- plastics compatibility, noise reduction, vibration absorption
Mirrors	LUBCHEM SM 6042 MF	P.A.O, Li soap	2	-40~150 °C	- plastics compatibility, noise reduction, vibration absorption
	LUBCHEM SM 3011 MF	P.A.O, Polyurea	1	-50~130 °C	- execellent low-temp, anti-ageing and oxidation, plastics compatibility
Small gears	LUBCHEM KL 6012	P.A.O, Li-soap	2	-50~130 °C	- execellent low-temp, anti-ageing and oxidation, plastics compatibility
Electrical S/W	LLUBCHEM MF 6562	P.A.O, Li-soap	2	-40~150 °C	- electric contacts, anti-corrosive and ageing protection, low contact resistance
Multifunction S/W	LUBCHEM MF 6562	P.A.O, Li-soap	2	-40~150 °C	- electric contacts, anti-corrosive and ageing protection, low contact resistance
Wiper Linkages	LUBCHEM MS 6012	P.A.O, Li-soap	2	-40~150 °C	- execellent water and wear resistant, wide service temp.

Combination switches

Wiper motor

Electrical switches

Side mirrow actuators

Window lifters and sun roofs

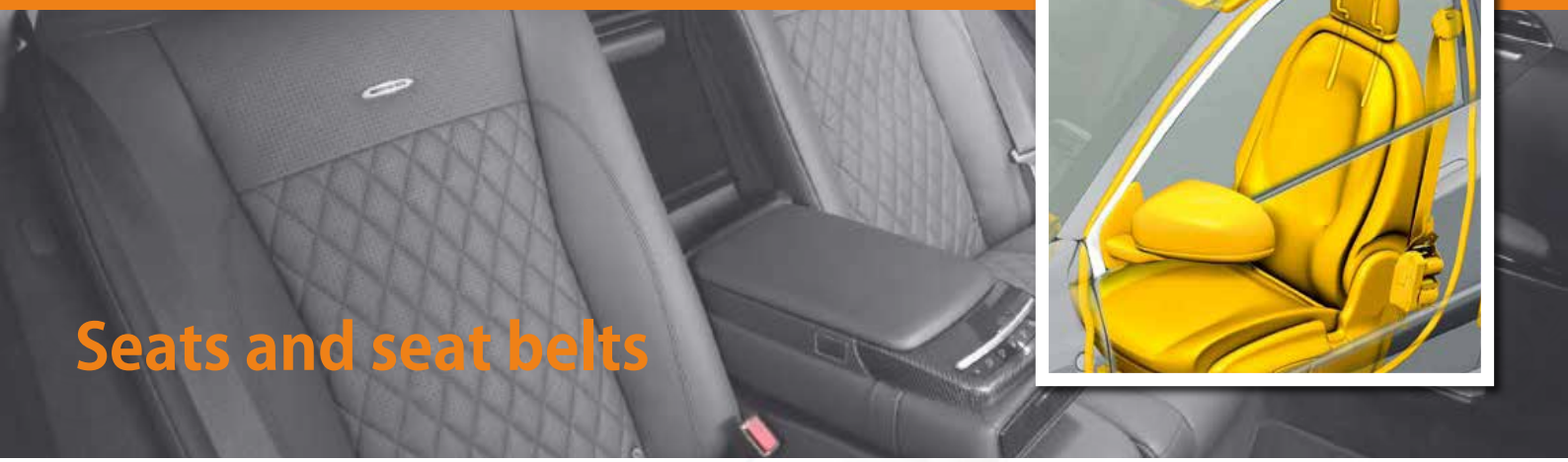
Parts	Recommendation	Raw materials	NLGI	Service temp.	Features
Bowden cables	LUBCHEM LM 6081	Silicone, Li-soap	1	-50~160 °C	- execellent low-temp, anti-ageing and oxidation resistant, plastics compatibility
Electrical motors	LUBCHEM DY 6012 M	Mineral, Li-soap	2	-40~150 °C	- execellent low-temp, and low starting torque, anti-ageing and oxidation resistant
Sliding surfaces	LUBCHEM MS 6012	P.A.O, Li soap	2	-40~150 °C	- plastics compatibility, noise reduction, vibration absorption
Windows regulators	LUBCHEM WR 6072 F	P.A.O, Li soap	2	-40~150 °C	- plastics compatibility, noise reduction, vibration absorption
Small gears	LUBCHEM KL 6012	P.A.O, Li-soap	2	-40~150 °C	- execellent low-temp, anti-ageing and oxidation resistant, plastics compatibility
Toothed segments	LUBCHEM KL 6012	P.A.O, Li-soap	2	-40~150 °C	- execellent low-temp, anti-ageing and oxidation resistant, plastics compatibility

power windows motor

sun roofs motor

power windows lifting module

sun roofs module



Seats and seat belts

Parts	Recommendation	Raw materials	NLGI	Service temp.	Features
Adjusting units	LUBCHEM KL 6012	P.A.O, Li-soap	2	-40~150 °C	- excellent low-temp, anti-ageing and oxidation, plastics compatibility
	LUBCHEM SYN 6462 P	P.A.O, Li-soap	2	-40~150 °C	- rubber plastics, seals compatibility, friction and noise reduction
Electric motors	LUBCHEM KL 6012 M	P.A.O, Li soap	2	-40~150 °C	- plastics compatibility, noise reduction, vibration absorption
	LUBCHEM UJ 6032	Mineral, Li-soap	2	-40~120 °C	- worm gear, self-locking effects and excellent low-temp. and anti-corrosion
Retractors	LUBCHEM KL 6012	P.A.O, Li-soap	2	--40~150 °C	- excellent low-temp, anti-ageing and oxidation resistant, plastics compatibility
Seat rails	LLUBCHEM MS 6012 D	P.A.O, Li-soap	2	-40~150 °C	- excellent low-temp, anti-ageing and oxidation resistant, plastics compatibility
	LUBCHEM ST 6441 F	P.A.O, Li-soap	1	-40~150 °C	- rubber, plastics and seals compatibility, friction and noise reduction
Small gears	LUBCHEM KL 6012	P.A.O, Li-soap	2	-60~130 °C	- excellent low-temp, anti-ageing and oxidation resistant, plastics compatibility
	LUBCHEM UJ 6032	Mineral, Li-soap	2	-40~120 °C	- worm gear, execellent low-temp. and anti-corrosion, plastics compatibility
Toothed segments	LUBCHEM KL 6012	P.A.O, Li-soap	2	-40~150 °C	- excellent low-temp, anti-ageing and oxidation resistant, plastics compatibility
	LUBCHEM UJ 6032	Mineral, Li-soap	2	-40~120 °C	- excellent low-temp, anti-ageing and oxidation resistant, plastics compatibility

safety belt mechanism

power seat motor

seat rail

Other parts and lubricant recommendations

Parts	Recommendation	Raw materials	NLGI	Service temp.	Features
Air bag mechanism	LUBCHEM AB 3012	P.A.O, Li-soap	2	-30~180 °C	- execellent low-temp, anti-ageing and oxidation resistant, plastics compatibility
C.V. joints	LUBCHEM BJ 3621 MG	Mineral, Polyurea	1	-30~130 °C	- anti-wear and pressure, compatibility with rubber, execellent resistant to water and moisture, wide-serice temp and life-time lubricants
	LUBCHEM TJ 6042	Mineral, Li-soap	2	-30~180 °C	
	LUBCHEM MS 3042 M	Mineral, Polyurea	2	-30~150 °C	
	LUBCHEM CJ 3581 M	Mineral, Polyurea	1	-30~180 °C	
	LUBCHEM BJ 3622	Mineral, Polyurea	2	-30~150 °C	
	LUBCHEM BJ 6042 E	Mineral, Li-soap	2	-30~130 °C	
Water pump bearing /Seals	LUBCHEM BP 4032	P.A.O, Ba-complex	2	-40~150 °C	- resistant to water and chemical media and long-term lubrication
Bowden cables	LUBCHEM CA 6091 F	P.A.O, Li-soap	1	-40~150 °C	- low-temp. and resistant to moisture, excellent sliding properties
Power windows regulator	LUBCHEM DA 3022 MF	P.A.O, Polyurea	2	-40~150 °C	- low-temp. and resistant to moisture, excellent sliding properties
Dual mass flywheels	LUBCHEM DF 6092 LUBCHEM DF 6172	P.A.G, Li-soap	2 2	-40~200 °C -40~180 °C	- vibration absorption and anti-corrosion, reducing stick-slip
Multi-function s/w damping grease	LUBCHEM DP 6062	Mineral, Li-soap	2	-30~140 °C	- compatibility toward plastics and rubber, damping properties, noise protection grease, high adhesive
Steering column housing	LUBCHEM DP 8283	P.I.B, Silica	3	-5~200 °C	- execellent plastics compatibility, wide service temperature
Ball joint dust cover	LUBCHEM DS 6032	Mineral, Li-soap	2	-30~120 °C	- rubber and plastics compatibility, excellent low-temp, good sealing effects
Window lifter motors	LUBCHEM DY 3012 MF	P.A.O, Li-soap	1	-40~150 °C	- smooth operation at low temp. and low starting torque
Outside mirror motors	LUBCHEM EL 3011	P.A.O, Polyurea	1	-40~160 °C	- smooth operation at low temp. and low starting torque, resistant to water and car washing agent
Outside mirror actuator	LUBCHEM KL 6542 F	P.A.O, Li-soap	2	-40~130 °C	- smooth operation at low temp. and low starting torque, resistant to water and car washing agent
Pedal damping grease	LUBCHEM GH 7192	P.A.O, Silica	2	-15~200 °C	- noise reduction and good damping effects, no odor grease
Universal joints	LUBCHEM HB 3190 M	Mineral, Polyurea	0	-15~180 °C	- wear protection in joints and coupling, water and dust resistant, excellent high temperature grease
Parking brake cables	LUBCHEM HP 8702	Silicone, P.T.F.E	2	-45~180 °C	- low-temp and resistant to moisture, good sliding properties, compatibility seals and plastics

Challenges and solutions in the lubrication of automotive parts

In the modern concept automotive components lubrication, functionality, the appropriate lubricant selection is required to take consideration of aesthetics, and the hazard to human health and the environment safety. The lubricants used in the manufacturing of automotive parts warranty period should be longer than specified by the manufacturer and must guarantee the stability and longevity. With extended component life due to improved lubricant performance, we assure that car manufacturer's the burden of the quality control to components can be reduced, as well as these benefits can be shared with customers who buy the car. From this viewpoint, we have been constantly researching and developing of the lubricant to maximize the reliability of the components,

Lubricating points	Challanges/Considerations
Interior	
seat track	A part of rail is exposed so transparent grease is preferred. grease cannot stain or leak oil to prevent seat and carpet contamination. and it should be no odor. to dampen seat track's rattle or vibration, damping grease should be applied.
sun visor	Grease must not be leaked from contacting surface. no oder needed. high viscosity adhesive synthetic grease recommended to give smooth operation for life-time.
pedal position adjustment system	This system is adopted for safety and ergonomics in vehichles. no dripping and odorless, synthetic greases are recommended for bearings, gears and sliding surfaces.
PNDL	Requiring lubrication mainly to dampen noise. The synthetic lubricant should enable the mechanism to slide smoothly between notches while imparting a quality feel to the thumb-activated release mechanism. grease should offer good noise and vibration reduction.
control system on dashboard	In these days, climate and ventillation control systems rely on a series of motorized vents to re-route airflow for operator comfort. grease should offer stability at low temp. and compatibility with plastics.
needle gauges on dashboad	In case of fuel, speedometer, odometer, and other gauges, now relatively inexpensive magnetic systems are being replaced by electro-mechanical systems, powered by small Stepper motors that more accurately changes needle positioning. A very soft, silicone grease could be recommended for maintaining the life and accuracy of these precision instruments.
pop-up cup holder	The sliding surfaces are exposed when pulled into their open positions. A transparent synthetic lubricants that stay in place and give plastic a quality sounds and feel are recommended.
sun roofs	A transparent synthetic grease with very low oil separation are recommened that resists water, withstands temperatures of -40°C, and offers vibration and noise reduction.
power folding side mirror	Their small motors and gears must be operated at temperatures to -40°C, even when exposed to rain, saltwater, and car washes. A light viscosity, synthetic hydrocarbon damping grease are recommended to withstand the cold, offer vibration and noise reduction, and resists the elements.
power sliding door	The motor and cable systems of power sliding doors require a medium-viscosity synthetic grease. The rollers on the doors are on ball bearings which must withstand water, salt and grime. A synthetic hydrocarbon grease with a clay thickener offers water resistance and low oil separation.
Engine	
super and turbo-charge	Synthetic lubricants have been a mainstay in lube-for-life superchargers and turbochargers. For gears and powdered metal parts, a light viscosity ester oil with a copper deactivator and EP agents is recommended.
EGR valves	Exposed to extremely high temperatures and acidic exhaust fumes. PFPEs thickened with PTFE perform well in this demanding environment. They offer the broadest temperature capabilities of any synthetic lubricant and are unaffected by corrosive gases and liquids.
electronic throttle control	The stepper motor that powers an electronic throttle control must withstand high temperatures as well as caustic, fuel-system vapors. Fluorinated lubricants, inherently inert, tolerate this kind of environment.
idle air actuator	An extremely small stepper motor with very low torque, the idle air actuator requires a low-viscosity synthetic bearing lubricant for cold-temperature performance. The lubricant must also survive an extreme temperature environment rich in fuel vapors. An extremely light, fluorinated grease, thickened with PTFE is recommended. PTFE exerts minimal drag on the system.
Electric controller	
connector contact surface protection	Contact lubricants are used to prevent wear, environmental corrosion and "fretting corrosion," micro-motion caused by vibration and thermal changes within the connector housing. By reducing the formation of metal oxide at the mated interface, synthetic lubricants extend contact life and keep resistance low.
gold plated contacts	In air bags, for – example – have goldplated contacts. Gold is soft. When mating, the plating may stick, gall and scratch, sometimes exposing the substrate to corrosion. The right synthetic lubricant reduces "stiction" and prevents galling, scratching and deforming.
multi connector	Mating multi-pin connectors, sometimes in difficult to reach locations, often requires significant force – creating the potential for incomplete mating as well as repetitive-motion injuries for assembly workers. Fluoroether-based synthetic lubricants have been proven to reduce high insertion forces – without unacceptable increases in resistance.
sensor	When electromechanical sensors or potentiometers break contact, signal is lost. To ensure continuous contact, choose a low-viscosity fluorinated or silicone oil. A more viscous oil may cause the contact to hydroplane, instead of remaining in contact with the resistor. Sensor lubricants should exhibit low viscosity at -40°C and pour points should approach -90°C to guard against lubricant thickening at low temperatures.
switches(1)	Contacts in starters, head lamps, high-beams and other high-current switches are known for high-temperature arcing. Although they reach extreme temperatures for only a nanosecond, the copper tends to oxidize where the arc occurred. While no lubricant can survive arcing temperatures, glycol oils burn clean in the presence of an arc rather than leaving a resistive varnish. They do not form oxides that compromise electrical conductivity.
switches(2)	Medium-duty switches accommodate loads in the 1-10 amp range. Applications include switches for exhaust fan speed, rear window defroster, and windshield wipers, as well as windows, seats and door locks. A lithium-soap-thickened ester grease with a copper corrosion inhibitor is recommended.
damping grease	Mechanical damping greases improve the perceived quality of hand-operated mechanical switch components. These "sticky" greases absorb loose fits. The viscosity of these greases can be varied to give the switch a wide variety of acoustic and tactile characteristics.

Our strengths in manufacturing total solution lubricants

- Special lubricant production capacity in response to all industries
- Constant research and investment in the field of new products development
- A wealth of research and development human resources and potential new areas of investment
- Commitment for building a global sales network
- A variety of test equipments and production facilities
- Close cooperation and relationship with OEM, distributors
- Sales brochures and product description published by multilingual each edition

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