



POWERTRAIN COMPONENTS

IT'S GETTING HOT IN HERE

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AIR MANAGEMENT

Air Management

- Uniflor™ 8911** - Throttle body bearings
- Uniflor™ 8981R** - Bearings in throttle position sensors
- Uniflor™ 8950** - Throttle position sensors
- Uniflor™ 8901F** - Throttle actuator valves
- Uniflor™ 8921SU** - Throttle position sensors
- Uniflor™ 8921** - EGR valves
- Uniflor™ 8472** - EGR gears
- Rheotemp™ 768G** - EGR temperature sensors
- Rheotemp™ 500** - Supercharger needle bearings
- Nye Synthetic Oil 605** - Supercharger gears
- Uniflor™ 8921** - Variable air intake control valves
- Uniflor™ 8921** - Turbo diesel actuator bearings
- Uniflor™ 8512R** - Ball bearings in smart remote actuators
- Uniflor™ 8512R** - Actuator motors

Connector

Insertion force reduction has also become a major OEM challenge. 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. Synthetic lubricants have been proven to reduce high insertion force with no effect on electrical continuity, all while protecting against fretting corrosion.

- NyoGel® 760G** - Electrical contacts
- Rheotemp™ 768G** - Fuel pump connectors
- Uniflor™ 8917** - High temperature electrical connectors

Cooling System

Radiator fan motor bearings must withstand high heat, dust, dirt, and debris. A complex sodium-soap, light viscosity ester is effective. It is also an option for bearings in alternators, water pumps, and air conditioner compressors.

- NyoGel® 783H** - Assembly aid
- Rheotemp™ 500** - Bearings

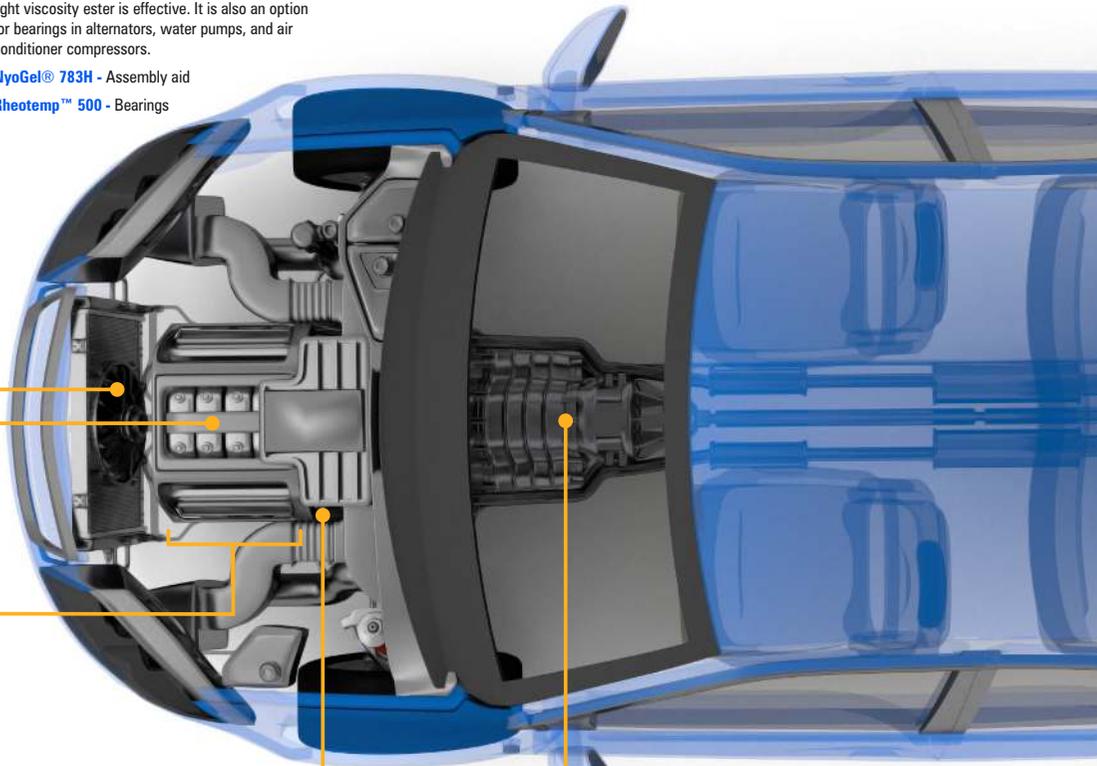
Starter

Starter motors must withstand the elements, temperatures from -40°C to 200°C, and 50,000 duty cycles or more. Issues of high load and torque, especially during cold crank, also have to be considered. Effectively lubricating the motors' gears, bearings, and splines requires a careful blend of synthetic oils, additives and gellants. Popular starter motor lubricants feature PAO and ester blends with additives for extreme pressure, corrosion protection, and friction reduction.

- Rheolube® 373** - Motors
- Rheolube® 380** - Gears
- Rheolube® 377AL** - Planetary gears
- NyoGel® 760G** - Electrical leads

Transmission

- Rheolube® 363F** - Shift linkage
- Rheolube® 380** - Bearings in dual clutch transmission
- Rheosil™ 500F** - PRNDL gear shifting



Electronic Throttle Control

The stepper motor that powers an electronic throttle control must withstand high temperatures and corrosive fuel-system vapors. Fluorinated lubricants, which are inherently inert, tolerate this kind of environment. In addition to staying fluid at very low temperatures, their superior thermo-oxidative stability prevents high-temperature varnishing, even at continuous temperatures of 250°C.

EGR Valves

The Exhaust Gas Recirculation (EGR) valve is 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. PFPE/PTFE lubricants regularly ensure 100,000 mile EGR service.

Superchargers

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 robust antioxidant package is recommended. For high-speed bearing applications, a light viscosity ester grease with EP additives has been proven extremely effective.