

ENGINEERED SOLUTIONS FOR LIGHT VEHICLES

GAIN CONSISTENT, RELIABLE PERFORMANCE WITH TIMKEN

At Timken, we work with you to meet the changing demands of the global automotive industry, finding innovative ways to:

- Balance torque and efficiency.
- Apply power dense designs to vehicle architectures and technologies.
- Ensure a flawless product launch to fit your design timeline.

For more than 100 years, we have worked with leaders in the automotive industry to design and develop driveline and wheel end systems. As a Timken customer, you are connected to a team of application, sales and on-site service engineers who help solve unique equipment challenges around weight reduction, power density, range extension and efficiency.

A SMART SOLUTION FOR:

- Electric Vehicles
- Utility Vehicles
- Pick-Up Trucks

Timken Advantages

- **Power-dense, energy-efficient tapered roller bearings.** We collaborate with OEMs to achieve the optimal solutions for new axle and transmission designs. Knowledge gained in our rheology lab allows us to understand and design bearings for low-viscosity lubricants. Our bearings have enhanced internal geometries to distribute load and minimize bearing stresses, resulting in more compact and lighter weight designs. Combined with advanced finishes, they reduce torque to increase energy efficiency.
- **Power-dense tapered wheel hub bearing assemblies.** Enhanced internal geometries and race profiles distribute load and minimize bearing stresses, increasing bearing load ratings in a power-dense package – especially with heavier gross axle weight rating (GAWR) due to batteries in electrical vehicles.

Gain Solutions That Give You:

Answers to your toughest problems.

We have worked alongside OEMs for decades to understand how our bearings perform best in their systems. Our passion for problem solving allows us to deliver the optimum products and solutions.

More value.

When you work with Timken, you can expect technical solutions that meet your application requirements and provide reliable equipment performance – all supported through our experienced teams of sales, service and application engineers.

The performance you deserve.

Our products meet or exceed original equipment manufacturer performance requirements. They also meet our own rigorous quality standards and adhere to our stringent manufacturing processes. We thoroughly analyze and test our products using a combination of proprietary software life performance testing, and internally developed industry specific rig tests.








AN IDEAL FIT FOR LIGHT VEHICLE APPLICATIONS

Axle Centers

| Application Challenges | Damage Mode | Timken Solution | Use Advantages |
|------------------------|---|---|---|
| Fuel efficiency | Spalling and peeling | Timken® fuel-efficient, power-dense bearings |  Change internal geometry to reduce torque, manage low viscosity lubricants |
| Power density | Overload spalling | Timken® tapered roller bearings with internal geometries that evenly distribute heavy loads in a smaller envelope |  Smaller, lighter-weight bearings enable smaller shaft and housings for overall system weight savings |
| Setting | Spalling, gear damage, noise, vibration and harshness | Timken® tapered roller bearings with enhanced tolerance specifications |  Consistent rolling torque, which makes it easier to get the right bearing setting in the axle center |

Wheel Ends

| Application Challenges | Damage Mode | Timken Solution | Use Advantages |
|--|---|--|---|
| Larger overturning moments | Bearing damage and premature wear | Tapered single (TS) row roller bearing |  Help distribute the lateral forces generated during cornering or swerving maneuvers |
| Space and sub-system integration (working around other components) | Bearing damage, fatigue spalling | Timken® fuel-efficient, power-dense bearings |  Materials, geometries and surface finishes that enable the smallest solution possible to fit OEM vehicle requirements |
| Space and sub-system integration (working around other components) | Bearing damage, fatigue spalling | Tapered single unitized (TSU) bearings |  Self-contained, unitized assemblies that carry heavy radial loads and can manage thrust loads in either direction |
| Setting | Noise, vibration, bearing fatigue, brake wear | Generation 2 hub and bearing assembly |  Pre-set with optimized setting for bearing life and stiffness |
| Debris and thermal shock | Bearing damage | Sensor-Pac wheel |  Pre-set, pre-sealed, pre-greased with optimized setting for bearing life and stiffness with integrated sensor for traction control |

TIMKEN

The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets bearings, gear drives, automated lubrication systems, belts, brakes, clutches, chain, couplings, linear motion products and related industrial motion rebuild and repair services.

Stronger. By Design.

www.timken.com