

TOLERANCE COMPENSATION SYSTEMS BATTERY APPLICATION

Power Precision: Seamless Connections for High-Voltage Battery Performance

WITOL offers innovative tolerance compensation systems that ensure precise, stress-free connections between high-voltage batteries and vehicle bodies, enhancing assembly efficiency and product quality. Key features include:

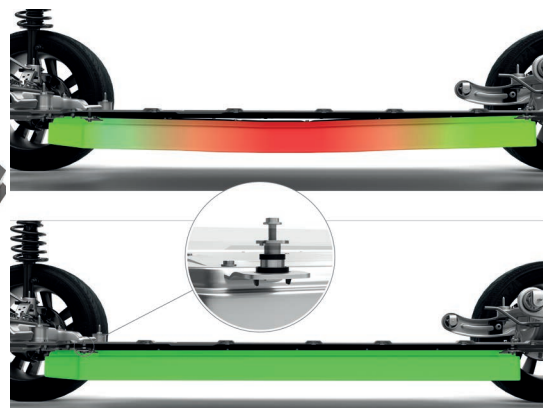
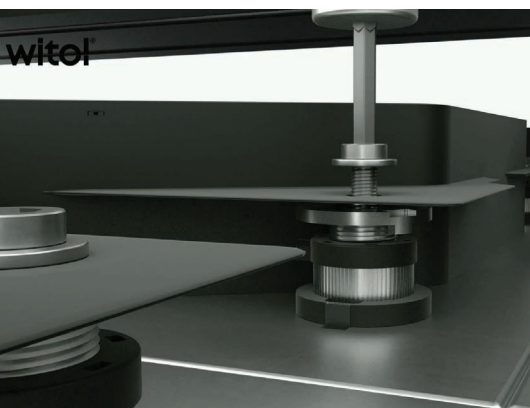
External Connection of High-Voltage Battery to Vehicle Body:

- ▶ **Stress-Free Attachment:** WITOL systems compensate for axial and radial tolerances during the joining process, preventing deformation and ensuring optimal joint patterns.
- ▶ **Simplified Assembly:** Preassembled on either the battery housing or vehicle body, WITOLs streamline the assembly process, significantly reducing assembly times.

Internal Connection of Battery Modules:

- ▶ **Precise Tolerance Compensation:** WITOL systems equalize gaps between cell modules and housing flanges stress-free, eliminating issues like deformation and poor thermal management associated with conventional bolting.
- ▶ **Cost and Weight Reduction:** By minimizing the need for heat-conducting mediums, WITOL solutions improve heat dissipation, enhance battery performance, extend service life, and reduce overall vehicle weight.
- ▶ **Serviceability:** The universal screw connection design allows for easy removal and installation of individual cell modules during servicing.

By integrating WITOL tolerance compensation systems, manufacturers can achieve precise, stress-free connections in high-voltage battery assemblies, leading to improved performance, reduced costs, and enhanced vehicle quality.



TOLERANCE COMPENSATION SYSTEMS CROSS CAR BEAM APPLICATION

Strong Foundations: Stress-Free Mounting for Superior Cross Car Beam Stability

WITOL's tolerance compensation systems ensure precise and stress-free mounting of cross car beams (CCBs) to vehicle bodies, enhancing assembly efficiency and product quality. Key features include:

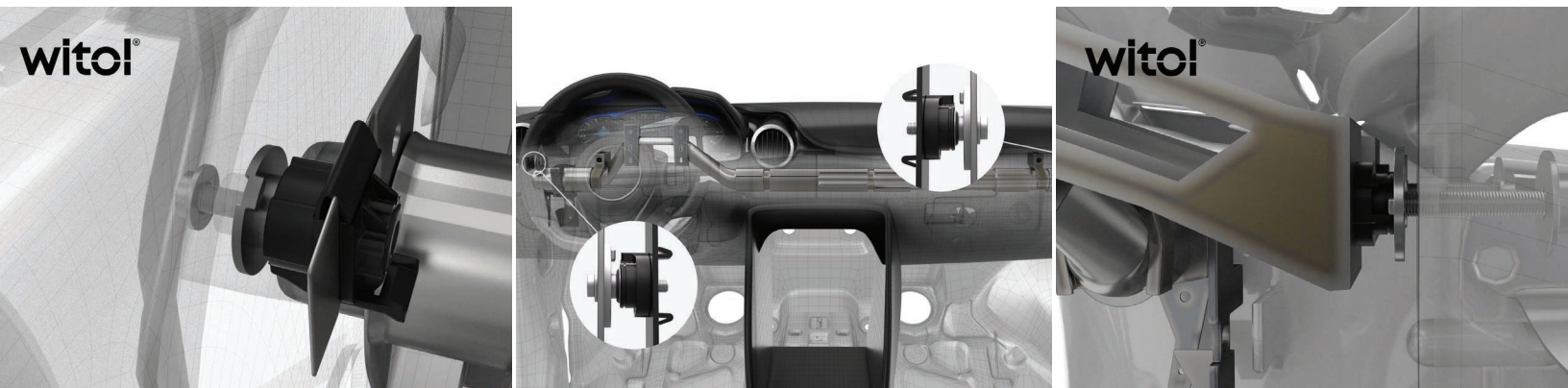
Precise Fastening of Cross Car Beams:

- ▶ **Tolerance Compensation:** Due to the substantial size of CCBs, significant tolerances can occur at screw points. WITOL systems automatically compensate for these tolerances during bolting, ensuring accurate alignment and secure attachment.
- ▶ **Assembly Gap Management:** A deliberate joint gap between the CCB and A-pillars is maintained during assembly to prevent jamming. WITOLs facilitate precise positioning, closing this gap seamlessly during installation.
- ▶ **Enhanced NVH Performance:** WITOLs can be integrated with sound insulation or vibration dampers for the instrument panel, reducing the transmission of engine noise into the vehicle interior.

Efficient Blind Assembly:

- ▶ **Challenges Addressed:** Bolting CCBs to the body, especially in areas like frequency struts near the bulkhead, often requires blind assembly from the engine compartment, where screw points are not fully visible.
- ▶ **Process Optimization:** WITOL tolerance compensation elements enable smooth blind assembly, ensuring precise, process-safe connections and reliably compensating for deviations at screw points, thereby optimizing the entire manufacturing process.

By integrating WITOL tolerance compensation systems, manufacturers can achieve precise, stress-free connections in cross car beam assemblies, leading to improved performance, reduced costs, and enhanced vehicle quality.



TOLERANCE COMPENSATION SYSTEMS HEADLAMP APPLICATION

Lighting the Way: Precision Alignment for Perfectly Positioned Headlamps

WITOL's advanced tolerance compensation systems ensure stress-free, precise installation of headlamps, enhancing both the functionality and aesthetic integration of lighting systems in modern vehicles. As headlamps evolve with larger designs and complex features, WITOL provides solutions that maintain alignment and eliminate assembly challenges, delivering superior quality and safety.

Stress-Free Mounting:

- ▶ Headlamp assemblies require precise mounting to ensure they align with the vehicle's design and maintain their functional performance.
- ▶ WITOL's tolerance compensation systems address axial and radial misalignments, preventing stress and deformation during installation.

Compensation in Complex Assemblies:

- ▶ In headlamp mounting, tolerances can occur due to tight installation spaces or multiple surrounding components.
- ▶ WITOL systems provide blind assembly solutions, compensating for these tolerances to deliver precise connections even in confined spaces.

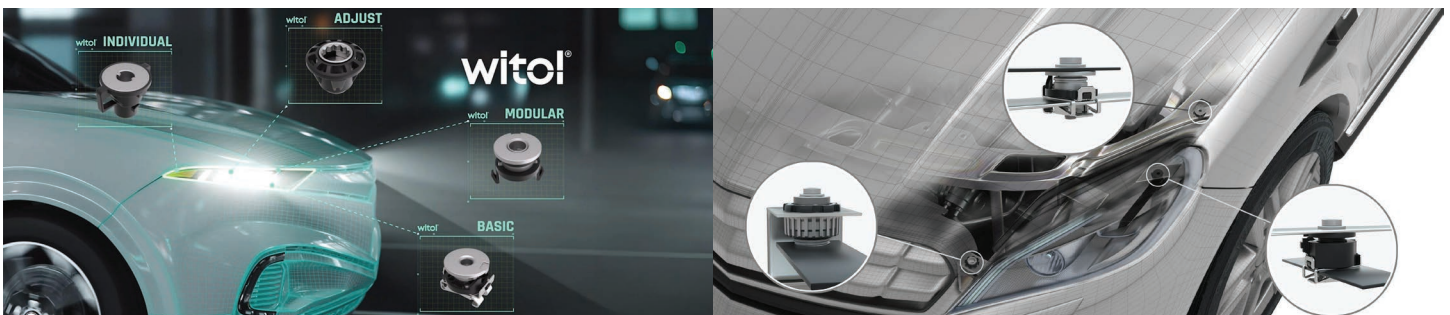
Adapting to Modern Trends in Lighting Design:

- ▶ Modern headlamps, with features such as automatic high beams and selective lighting, are increasingly larger and heavier.
- ▶ WITOL provides robust fastening solutions with additional screw points to support these designs without compromising alignment.

Simplified Assembly Process:

- ▶ By compensating for tolerances during assembly, WITOL solutions reduce installation complexity and time.
- ▶ Ideal for high-volume production lines where efficiency and repeatability are critical.

By integrating WITOL tolerance compensation systems, manufacturers can achieve precise, stress-free connections in headlamp assemblies, leading to improved performance, reduced costs, and enhanced vehicle quality.





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