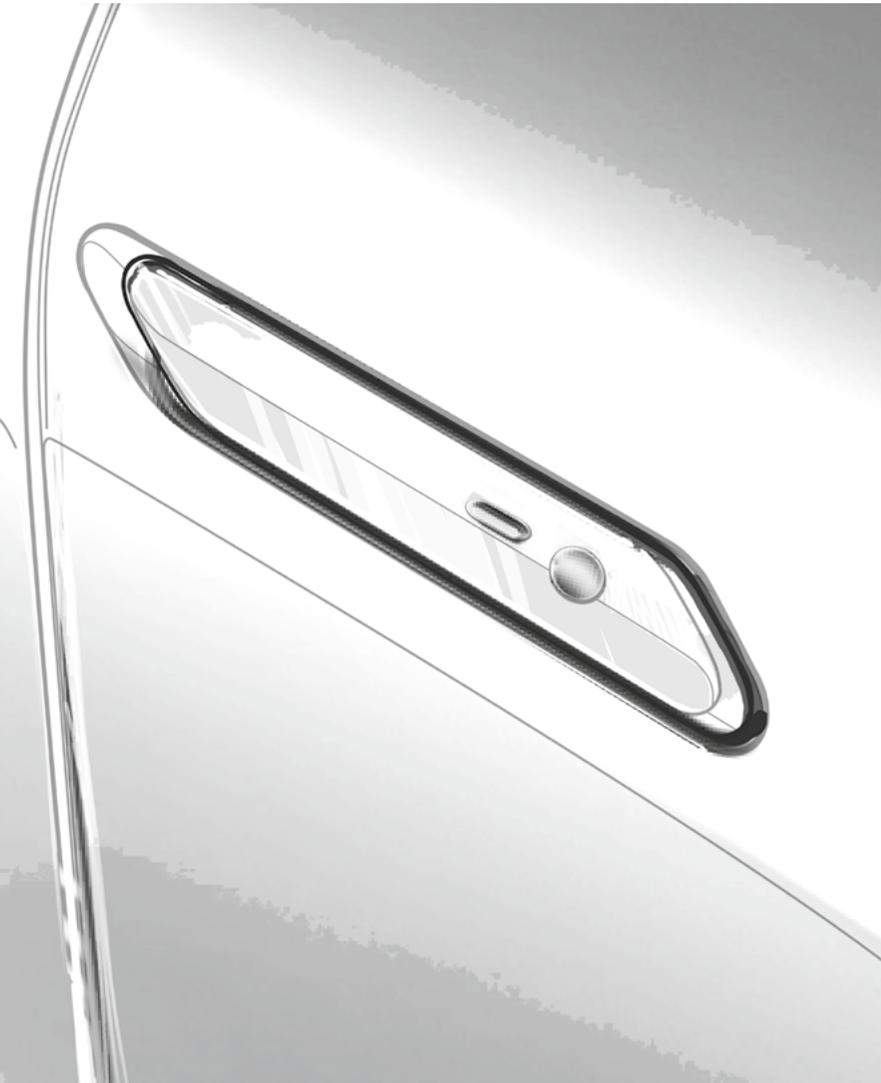


BÖLLHOFF

FLEXITOL®

Tolerance compensation systems
for flush-mounted door handles



Böllhoff - Your fastening expert in automotive engineering

The design of a car goes beyond pure aesthetics and represents one of the most demanding disciplines in automotive development, in which functionality, safety and aesthetics must be harmonized.

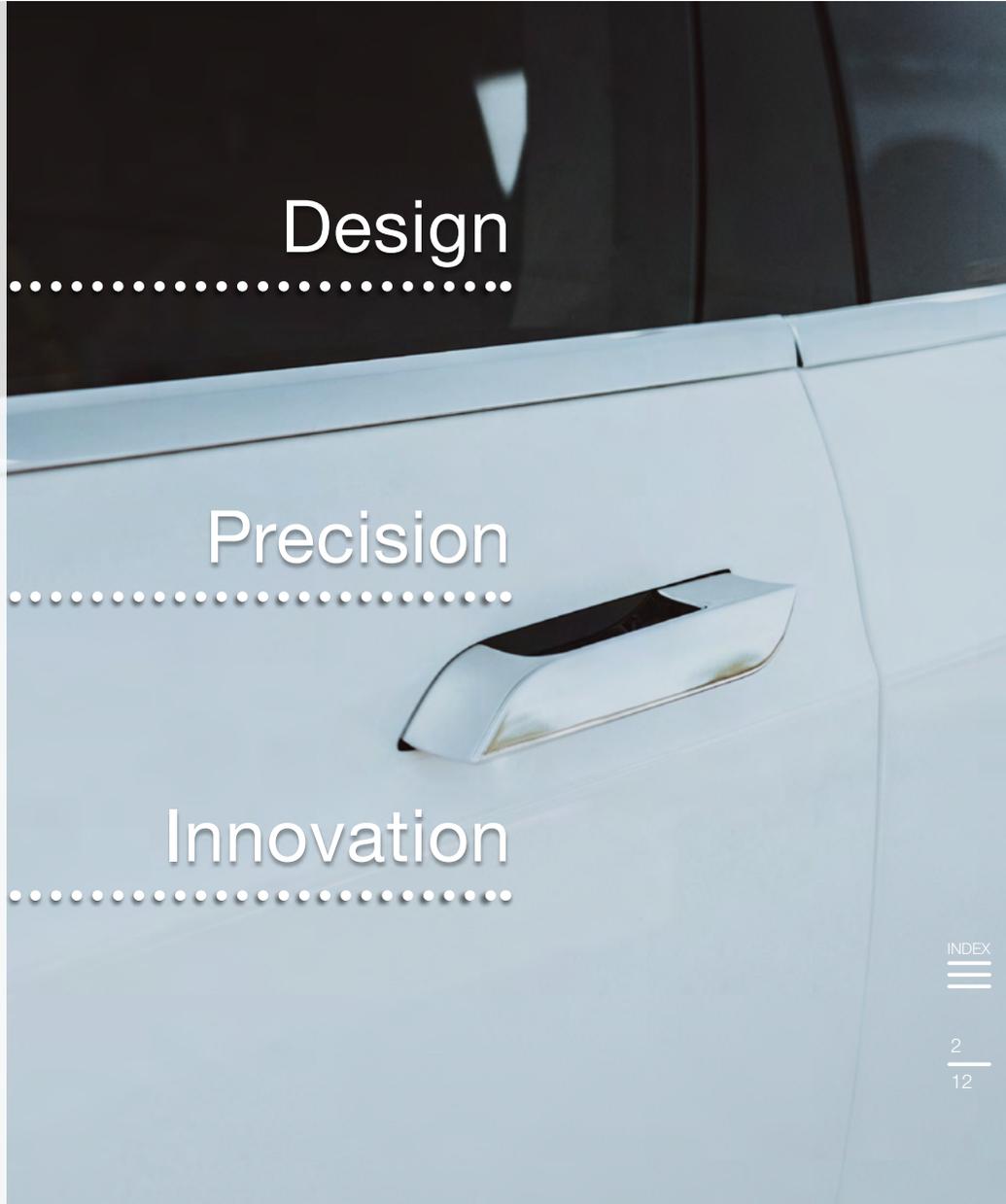
The external appearance of a car plays a central role. It must not only impress with its performance and comfort, but also with an appealing and innovative design that impresses at first glance.

The development and integration of design elements, such as flush-mounted door handles, requires a high degree of precision and poses a number of specific challenges.

Components that are seamlessly integrated into the body of a vehicle require extremely tight manufacturing tolerances that can be easily compensated for by innovative joining solutions.

For decades, we have been a partner to the automotive industry offering special solutions for attaching flush-mounted door handles.

**We are right where you need us –
by your side**

A close-up photograph of a silver car door handle, showing its sleek, flush-mounted design. The handle is set against the light-colored body panel of the car. The background is slightly blurred, showing the car's window and side mirror.

Design

Precision

Innovation

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Our InfoPoint at the end of this brochure offers you additional information in the form of further brochures and/or videos.



Flush-mounted door handles have changed the appearance and functionality of modern vehicles. In addition to improved aerodynamics and reliable movement mechanics, design plays a key role. These door handle systems merge seamlessly with the vehicle body, placing ever greater demands on the joining technology. All influences and parameters must be taken into account when selecting the right fastening solution.

As a development partner, we work in particularly close cooperation with you. We accompany and support projects from the very first concept to the final realisation. Your tailor-made joining solutions evolve from a smart combination of idea and innovation management.



The **FLEXITOL**[®] technology

Discover our intelligent tolerance compensation systems, which represent a selection of our options.



FLEXITOL® is a technical and economical solution for the continuous compensation of tolerances. We currently differentiate between manual and automatic tolerance compensation systems. The application of the respective system depends on the requirements.

The technologies:

Automatic tolerance compensation

Upon automatic tolerance compensation, two components are aligned toward each other. During screwing, the spacing between the two components is automatically compensated. The tolerance compensation system fixes the originally aligned position. If the joint is loosened, the system resumes the initial position.

Manual tolerance compensation

The manual tolerance compensation system is screwed into the screw element to a defined measure. During screwing, the component tolerances can be compensated (zero tolerance at component delivery). Further alignment is possible during installation. The adjusted position is maintained when the joint is loosened.

Your advantages at a glance:

- High performance reliability
- Only one-sided accessibility required
- Easy integration into different applications
- High end product quality
- Fast and easy installation
- No deformation during installation





Flush-mounted door handles: Precision and aesthetics thanks to FLEXITOL® tolerance compensation elements

Flush-mounted door handles enable intuitive operation and create a flowing connection to the body when retracted. Our FLEXITOL® automatic tolerance compensation elements play a key role here.

During installation, these elements are positioned between the handle and the body. When the fixing screw is tightened, the FLEXITOL® elements expand automatically and fill the gap precisely. The simultaneous compensation of angle differences is possible with selected solutions.

This ensures a perfect fit and uniform gap dimensions, which are crucial for the aesthetics and aerodynamics of the vehicle.

Once the screws have been tightened, the FLEXITOL® elements fix the door handle in the optimum position, ensuring a smooth retraction and extension movement and enabling seamless integration into the vehicle contour.

Our FLEXITOL® tolerance compensation elements reduce the installation effort, minimize the risk of misalignment and contribute to a longer service life of the door handles, as mechanical stress and wear are reduced.





Flush-mounted door handles: Shorter installation time thanks to FLEXITOL® tolerance compensation elements

Manual tolerance compensation systems are particularly suitable for applications where precise alignment of components is required without additional aids. They are ideal for applications where the exact positioning and fixing of door handles during assembly is crucial.

During installation, the manual tolerance compensation elements are placed between the door handle and the body. These elements are equipped with the so-called FLEXITOL® K' in K' thread, which enables fine adjustment in a spatial axis and simultaneously assumes the fastening function.

The installation process begins with the loose insertion of the fixing screws through the tolerance compensation element into the threaded holes provided. The technician then carries out the fine adjustment by adjusting the door handle radially via the play between the sleeve and screw and axially via the K' in K' thread.

Once the door handle is precisely aligned and the gap dimensions around the handle are even, the screws are tightened to secure the position.

The manual tolerance compensation elements hold the door handle firmly in this position.

Selected FLEXITOL® K' in K' variants also allow subsequent axial adjustment without first loosening the screws, which reduces assembly times and costs.





Your partner to succeed in joining – and what that means for you:

Innovation and development partner

- Modern methods, organisational forms and processes
- Trend analyses
- Research cooperations
- Open innovation
- In-house research and development
- Application engineering and consulting
- Customer-specific development parts
- Manufacture of samples and prototypes
- Value analyses

Procurement and assembly partner

- Engineering competence thanks to in-house production
- 14 modern production facilities worldwide
- Production methods:
 - Injection moulding
 - Turning
 - Cold working
 - Wire winding
 - Mechanical and plant engineering
- Acceleration of your assembly processes
- Wide range of manual and automated assembly solutions

Logistics and quality partner

- Supply chain solutions
- Quality management according to IATF 16949
- Quality management according to EN 9100
- Distinctive quality and environmental awareness
- Accreditation of the in-house laboratory
 - according to DIN EN ISO/IEC 17025
 - certification according to DIN EN ISO 14001
- Regular audits through customers

Distributor and service partner

- Efficient consulting, assistance and service
- Local expert specialists
- Proximity to customers thanks to global presence
- After-sales service
- Expert seminars, training and workshops
- Online seminars
- Customer in-house fairs

Catalogues

Product catalogues



FLEXITOL®

Systems for stepless
tolerance compensation
Catalogue No 0590

<https://www.boellhoff.com/en/pdf/flexitol>



360° Joining Technology

Joining solutions, processing
systems and services
Catalogue No 1190

<https://www.boellhoff.com/en/pdf/product-guide>

Industry-specific catalogues – automotive



FLEXITOL®

Tolerance compensation systems
for flush-mounted door handles
Catalog No 0596

<https://www.boellhoff.com/en/pdf/flexitol-for-flush-mounted-door-handles>



E-mobility meets 360° Joining Technology

Catalogue No 8024

<https://www.boellhoff.com/en/pdf/e-mobility>



Automotive engineering meets 360° Joining Technology

Exterior – headlights and rear lights
Catalogue No 0943

<https://www.boellhoff.com/en/pdf/lighting-solutions>

Videos**Videos joining elements****FLEXITOL® Hybrid**

Tolerance compensation systems made of plastic & metal

<https://www.boellhoff.com/video/flexitol-hybrid>

**FLEXITOL® K' in K'**

Tolerance compensation systems with K' in K' thread

<https://www.boellhoff.com/video/flexitol-k-in-k>

Industry-specific videos – automotive**FLEXITOL®**

Tolerance compensation systems for flush-mounted door handles

<https://www.boellhoff.com/videos/flexitol-for-flush-mounted-door-handles>

**Automotive engineering meets 360° joining technology**

Exterior – headlights and rear lights

<https://www.boellhoff.com/videos/lighting-solutions>

**Automotive industry meets 360° joining technology**

<https://www.boellhoff.com/video/automotive>

**E-mobility meets 360° joining technology**

<https://www.boellhoff.com/video/e-mobility>

BÖLLHOFF

Passion for successful joining.

Böllhoff Group

Innovative partner for joining technology with assembly and logistics solutions.

Find your local partner at www.boellhoff.com or contact us at fat@boellhoff.com.

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