

EJOT®

EJOSYST®

Multifunctional
EJOT Components

EJOT® The Quality Connection



Imprint

Editor:
EJOT GmbH & Co. KG
Industrial Fasteners Division
57319 Bad Berleburg
Germany

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EJOSYST® products are based on the EJOT expertise in cold forming and plastics processing - the detailed knowledge of both fields results in new innovations. The components and assemblies of this product category are manufactured through heading, rolling, machining, plastic injection moulding as well as additional assembly work.

Part of the EJOSYST® product range are individual component assemblies for the compensation of manufacturing tolerances or thermal changes in length, to fasten or position, for sealing functions, or for the transfer or conversion of motion and moments.

Focus of the development is always the individual solution for customer-specific requirements:

- **Intensive System cooperation - the EJOT way:**
 - Problem definition
 - Proposals for solutions
 - Analysis, simulations and sample production
 - Serial production support
- **Alignment of the functional properties of the part according to the technical specifications of the customer.**
- **Reduction of the logistical effort for component assemblies ("one stop supplier"); considerably reduced costs compared to stand-alone solutions.**
- **On-site project monitoring through qualified application engineers from the concept up to the start of serial production.**

Product Philosophy

Fastening elements are small parts with an overall big effect. They are part of a system. We analyse this system for your benefit.

Increasing System Performance

Reducing System Costs



Increased Efficiency and Increased System Performance with the EJOT® Success Programme

EJOT translates customer requirements into individual product solutions. This knowledge is the basis for our growth and has helped us evolve into a market leader within the fastener industry. In addition to the comprehensive product range we offer many systems, that help you to reach your objectives more efficiently.

For example:

- Design engineering support and on-site advice
- World-wide availability, just in time delivery
- Process reliable assembly and high degrees of purity
- 0 ppm target and highest possible quality

While the component costs only amount to 20 % of the total costs of the joint, the system costs amount to approx. 80 %. EJOT can help you reduce the system costs for the joint and operate the overall process with higher efficiency and productivity.

Detailed information is available in our brochure "Increasing System Performance with EJOT" or directly over the Internet at www.improving-system-performance.com

Contact our application engineers at an early stage of the development process.





TORQtec® – individual systems for precise motion conversion

TORQtec® are EJOT systems, which convert one motion into another. This can be the conversion of one rotary motion into a rotation turned by 90°. Applications can be found in worm gears or spindle-nut-systems.

EJOT Motion Threads

The qualitative and economic advantage of the TORQtec® System lies in the cold-formed threaded spindle. The EJOT motion or trapezoidal threads, with a flank angle of less than 30° and a thread flank with very low surface roughness depth, contribute to the lightness of the counterpart.

Spindle-Nut-Systems

Completely cold-formed thread spindles, combined with accurately fitting nuts, preferably made of plastic, with very tight fitting thread pairs characterise these spindle-nut-systems.

Worm Gears

The described cold-forming technology is the basis for worm gear shafts. The thread flanks with very low surface roughness depth ensure the high degree of efficiency of this system. Cold-forming technology combined with injection moulded gear elements from a single supplier.

TORQtec® product advantages:

- Cold-formed threaded spindles
- Very low surface roughness depth - high degree of efficiency
- Work hardened thread flank - high resistance to wear
- Individual integration into customer projects
- Very high economic efficiency of the system



TORQtec® in the integrated application



TORQtec® application example

- Spindle-nut-system for electromotive adjustment of valves.
- System solution: threaded spindle and exact fitting counterpart from one source considerably reduce the variety of parts.



Motion Threads

- High precision and repeat accuracy
- Low notch sensitivity through cold-formed thread rolling
- Multi-start screw thread pitch possible

Spindle-Nut-Systems

- Customer-specific solutions
- Cold-formed threaded spindles with EJOT motion thread
- Tight fitting systems

Nuts / Materials

- Plastic
- Metal
- Metal-Plastic

Trapezoidal thread spindles / Materials

- Steel (preferably hardened and tempered steel)
- Rust-free steel (preferably A2)
- Non-ferrous metal (preferably aluminium)

Serration Geometry / Materials

- Plastic (preferably)

Field of Application

- Spindle adjustment for Gas Appliances
- Exterior mirror adjustment systems for passenger cars
- Adjustment systems for vertical seat adjusting mechanism in passenger cars
- Head rest adjustment system in passenger cars

TORQtec® Motion Converters

Motion threads and spindle-nut-systems for high-precision applications.

TORQtec® application example

- Innovative and economic adjustment system for exterior car mirror.
- Great functional properties of the system due to thread flanks with very low surface roughness depth.





Adjustment Mechanisms EJOT® ADJUSTtec – integrated variety for consistent clearances

In modern vehicle construction it is necessary to design the fastening of add-on parts in an adjustable way. The requirements on fastening solutions have evolved from a simple attachment, over tolerance compensation up to multifunctional systems.

The design engineering flexibility of the EJOT® ADJUSTtec adjustment mechanism makes further functions, such as high-precision positioning, sealing or the implementation of lightweight design, possible through the use of light metal or high-capacity plastic materials.

A typical case for this product category are rear lights, which need to be fine adjustable in their position to adjacent vehicle components. This has become necessary for many cars, since an equally spaced clearance is considered an important quality indicator by the customers.

ADJUSTtec adjustment systems realise these specific customer demands through individual design, layout and material selection.

EJOT® ADJUSTtec product advantages:

- Standard adjustment mechanism with individual presetting of the adjustment moment
- Fixing and adjusting with only one element - economic and process reliable
- Individual dimensioning of the adjustment range
- Decreased assembly costs through direct assembly into plastic or metal
- Optional functions such as integrated watertight sealing or locking feature
- Fastening elements with three-dimensional tolerance compensation



Rear spoiler fastening with the 3D adjustment mechanism



EJOT® ADJUSTtec application example

- Innovative fastening solution of a rear spoiler with the multi-axial 3D adjustment mechanism for cars.
- Longitudinal and shear forces occurring under influence of temperature are reliably compensated.



EJOT® ADJUSTtec “universal“

The adjusting and fastening element for almost all fields of application. For this element the desired torque window can be set according to the customer request. The element can be fitted with an optional seal for the use in splash water areas.

EJOT® ADJUSTtec “standard“

The standard design is the economic entry model for the individual positioning of add-on parts.

The plastic hollow screw is fastened self-tapping into the screw boss of the plastic attachment part. Through screwing in and out of the threaded bolt the contact surface and thus the position of the attachment is changed.

EJOT® ADJUSTtec “customer-specific“

The individual tolerance adjustment and the design requirements are the relevant properties of this customer-specific adjustment element.

The collar of the threaded bolt is the contact surface on the plastic attachment. Through screwing in and out of the threaded bolt the contact surface and thus the position of the attachment is changed.

EJOT® ADJUSTtec “multifunctional“

All mechanical properties of the standard and the customer-specific ADJUSTtec versions are combined in this pre-set adjustment element. This special fastening element offers the additional possibility to change the pre-setting without having to unfasten the screw joint after the initial installation.

EJOT® ADJUSTtec “three-dimensional“

The assembly of large add-on parts makes high demands on the used fastening elements. Especially tolerance compensation in three space axis, the compensation of thermal influences as well as the fatigue strength of the joint are important parameters for the design engineering. Other individual properties, such as sealing functions can be optionally integrated.

„Connect and Adjust“

Versatile functions in only one component with the ADJUSTtec Adjustment Mechanisms.

EJOT® ADJUSTtec application example

- Individual rear light adjustment system for passenger cars.
- Compensation of manufacturing related tolerances through even clearances on the car body.





TENSIOtec® Compression Limiters – optimum fastening solutions for engine attachments

In order to utilise the many advantages of thermoplastic materials in vehicle motor engineering, the TENSIOtec® compression limiters are inserted into the components. They can take up the clamp load without damaging stress to the plastic.

"Compression limiters" comprise a captive screw through a sleeve. Typical applications for TENSIOtec® are the fastening of cylinder covers, plastic oil pans or intake modules.

The protection of the attachment is only one aspect of the many advantages of this system. TENSIOtec® compression limiters are an important contribution to weight reduction, since they offer a weight advantage of up to 30% compared to common screw-bush-combinations. They are also able to fulfil important functions such as acoustic isolation or a support function for very low flange thicknesses.

TENSIOtec® product advantages:

- Relaxation-free fastening of add-on parts made of plastic
- Weight savings through constructional design layout and choice of material
- Combination with ALtracs® Plus screw enables additional savings potential
- Optimised contact surface, through minimised surface pressure
- Protection of the plastic component
- Captive assembly for transport and installation
- Radial tolerance compensation



Telescope compression limiter TENSIOtec® for low flange thicknesses



TENSIOtec® application example

- Relaxation-free fastening solution for the cylinder cap directly on the motor housing of construction or commercial vehicles.
- Realisation of high contact pressure for reliable and secure sealing of the system.



TENSIOtec® “standard“ – without acoustic isolation of the component

Due to the special geometry of the drill hole in the plastic part this system establishes a radial tolerance compensation. Securing of the bush is realised through respective force closure. "Forming elements" for fixing in the plastic part are not necessary. An assembly of the compression limiter against the demoulding direction of the part is possible without any problems.

TENSIOtec® “decoupled“ – with isolation of structure-born sound

For this version of the TENSIOtec® compression limiter the system is integrated into the seal below the plastic part. This system, consisting of screw, bush and damper, is used for vibration decoupled fastening. The clamping part is locked in place through clamping between the damper above the component and the seal below it.

For optimisation of the vibration characteristics both elastomer elements are carefully adjusted. The clamp load of the joint is absorbed by the support element which does not touch the plastic part due to the decoupling.

TENSIOtec® “telescope“ – for low flange thicknesses

Modern engine development requires a minimisation of the component height due to the tight installation space. Common compression limiters quickly reach their limits in these special conditions. EJOT developed a telescope compression limiter under the term TENSIOtec "telescope", which meets these special requirements.

This screw-bush system, which functions according to the telescope principle, is pressed into the drill hole of the plastic component where it establishes a radial tolerance compensation. Fixing of the TENSIOtec® "telescope" is done through force closure. Special feature of this system is the reduction of the installation space and the additional weight savings.

TENSIOtec® and ALtracs® Plus

Double benefit
made easy.

TENSIOtec® application example

- Innovative fastening of plastic intake units of passenger car engines.
- Integrated system of screw and bush, with optimum balance of the relevant fastening technology parameters.





Positioning Elements EJOT® CENTRAtec – exact assignment of components during assembly

The assembly process of large-volume components in the vehicle industry requires so-called positioning elements. With the help of these components the exact assembly of instrument panels or consoles is possible.

With the EJOT® CENTRAtec product group many functions can be realised. Through the individual geometric design they enable the quick and easy location of the installation point. The material mix of metal and plastic implements the light-weight design requirements and at the same time secures the necessary mechanical strength.

According to individual specifications the CENTRAtec positioning elements can be installed with self-tapping fasteners or other fastening elements. The plastic sheathing prevents corrosion and noise due to vibration.

Positioning Elements EJOT® CENTRAtec

Pre-assembled fastening elements for the reliable and correct positioning of components during the assembly process.

EJOT® CENTRAtec product advantages:

- Exact positioning within the specified tolerance range
- Corrosion prevention through plastic sheathing
- Considerably reduced structure-borne noise due to plastic-metal contact
- Flexible design of the connection with the customer component
- "Lightweight design principle" through material mix



With EJOT® CENTRAtec pre-assembled magnesium cross bar for an exact fit during the assembly process



EJOT® CENTRAtec application example

- Exact installation of a large-volume instrument panel in the passenger car production with pre-assembled positioning element.
- During the later driving operation possible structure-borne sound is clearly reduced with EJOT® CENTRAtec.



EJOSYST® Modular Components - complex parts for individual solutions

The EJOSYST® problem solutions are as individual and innovative as the performance requirements in almost all areas of industrial fastening technology are challenging. In close development cooperation with the customer the EJOT developers analyse the structural and functional requirements.

The components are designed with efficient CAD programmes that realise the data exchange with almost all common systems and thus ensure a valuable contribution to reducing development times. The functional customer ideas are shaped with the help of modern and effective methods of Rapid Prototyping (Selective-Laser-Sintering, Stereo-Lithography etc.).

Special aspects such as weight reduction, design, service reliability or development rate are considered during the design of the individual components.

The EJOSYST® components are mainly used in the automotive and supplier industry, but also in the home, medicine and electro technology as well as the leisure industry.

EJOSYST® Modular Components:

- Fixing, moving, sealing, clamping, protecting
- Individual component design in close cooperation with the customer
- Consistent lightweight design strategy by using light metal and high-capacity plastic material
- Product conception, development and assembly from a single supplier
- Automated component assembly
- Comprehensive production know-how in metal and plastic processing



The EJOT® fastening element for lorry headlights

EJOSYST® Modular Components-application example

- Innovative fastening element for lorry headlights.
- Supports the fast and easy exchange of lorry lamps.



Test station at EJOT® APPLITEC



Design Consultation

A major consideration of today's product manufacture is the basic need to be cost competitive. Significant in achieving this objective is the design process. No other part of the cost structure is influenced more than by design.

Generally speaking, the development of a product, which represents about 10% of the overall costs, determines about 70% of the costs for the final product. Here the cost responsibility of the design engineer becomes evident, because he has to think about the adequate fastening technology already during the product conception stage. It is known that an alteration of the part during the production stage is much more expensive than an optimisation during the design conception stage.

To assist our customers in this process EJOT offers support during the design stage by comprehensive application engineering services. These services provide accurate information on product performance and result in design recommendations that can be used safely on the product line.

Consequent Application Engineering

The daily work with our customers and their application queries greatly influences our understanding of fastening technology and opens up possibilities for innovation. This way we consequently improve our products to meet customer demands and needs.

In addition to highly-qualified engineers and application engineering consultants our application laboratory, the EJOT APPLITEC, is at your disposition. Here we carry out a series of tests on the customer components and also develop new fastening solutions.

Our knowledge is passed on to our customers and supports their efforts towards more rational fastening and assembly techniques. Detailed test reports, technical advice on site, acknowledged seminars and technical publications show our continued commitment to impart our knowledge.



Training



Test report

Logistics and Data Exchange

It is our aim to keep procurement and warehousing costs as low as possible by simultaneously offering product availability and quality.

With respect to simplified procuring processes, EJOT offers a variety of cost reducing procedures and services. The continued analysis of our customers' demands and advanced logistics procedures lead to high availability of our products.

Quality for Automated Assembly

High lot purity of the screws results in minimal malfunctions and higher availability of the machines. Standard quality is not sufficient anymore.

The grade of purity offered by EJOMAT® quality is 10 times higher than the usual standard quality which means increased availability of assembly machines and decreased assembly down time costs:
EJOMAT® Quality that pays for itself.

EJOT Sales Organisation

In addition to EJOT companies throughout Europe a growing number of licensees in North & South America and Asia ensures the global availability of products and local support.

Contact details can be found on our homepage www.ejot.com.



Modern PPS-systems lead to high accuracy in supply and short processing times



EJOMAT® for fully automated assembly

EJOT GmbH & Co. KG

Industrial Fasteners Division

Im Herrengarten 1

57319 Bad Berleburg

Germany

phone +49 2751 529-0

fax +49 2751 529-559

e-mail: industrie@ejot.de

Internet: www.ejot.com

We develop innovative fastening solutions ...

- thread-forming screws for plastic
- thread-forming screws for light metal
- flow drill screws for high-strength sheet metal
- thread forming screws for metal
- plastic assembly elements and clips
- multifunctional fasteners and cold-formed parts
- foamed part fasteners / non-metal lightweight design
- metal-plastic components

EJOT fastening solutions are approved in many industries ...

- automotive industry and suppliers
- electrical and electronic industry
- gardening and forestry industry
- telecommunications
- leisure and sporting goods industry

If you have any questions, the EJOT application engineers will be glad to assist you.