



b&m-REPTO® family

Threaded inserts and threaded bolts for plastics with different embedding methods

Your Partner in all Facets of Cold Forming

baier & michels

The baier & michels Group (b&m) supports the manufacturing industry with fastener technology innovations. They are based on cold extruded parts such as high-performance screws and sealing systems from our own development and production. Our customers include OEMs and suppliers, especially from the automotive, electrical and medical technology as well as tool and plant construction.

b&m is not only a producer, but also a forward-thinking partner – with fastener tests in our laboratories, with application consulting and with technical training. What drives us are individual solutions to challenges, which cannot be met with standard technologies. The optimal solution is found when we can offer a real added value to our customers.

Our mission: to achieve a significantly improved interplay of quality, cost efficiency and eco-balance, whilst reducing risks and the use of resources in your components – with connections that last.



Lab expertise: qualified application engineers set the screw-in parameters for our customers' components.



With social responsibility and photovoltaics on the roofs: the company headquarters is located in Ober-Ramstadt in the south of Hesse.



Highest precision and quality "Made in Germany": b&m produces small cold extruded parts with a big impact.

From local screw dealer to a global supplier

Founded in 1932 as a small screw shop, baier & michels (b&m), headquartered in Ober-Ramstadt, has become one of the leading producers of high-quality fastening and sealing technology. With currently 500 employees, we operate at nine locations in Europe, Asia and North America. As a member of the Würth Group, b&m stands not only for the spirit of innovation, but also for stability and social responsibility in the sense of sustainable economic activity.

Threaded inserts and bolts

WHY THREADED INSERTS AND BOLTS?

Threaded inserts and threaded bolts can be used to provide plastic components with a metallic nut or bolt thread. During the installation process, threaded inserts and threaded bolts create a form-fit connection to the plastic component by overmolding, ultrasonic or heat embedding and by screwing in inserts with external threads.

By using threaded inserts and threaded bolts, a process-safe connection between plastic components can be ensured, even with repetitive screw connections. Depending on the embedding method, the outer contour features knurls, grooves, hexagon contours or threads, which are designed to accommodate tensile and torque loads.

BENEFITS:

- Repeated screwing- in possible
- No preload force losses due to relaxation
- High load capacity
- Geometry adaptable to customer requirements

b&m-REPTO® family

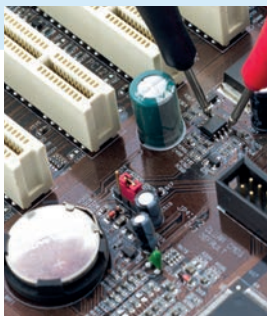
Threaded inserts and threaded bolts for plastics with different embedding methods



Product	Areas of use
b&m-REPTO® M	<ul style="list-style-type: none"> • Unreinforced thermoplastics • Highly reinforced thermoplastics (up to 50% glass fiber content) • Unreinforced and reinforced thermosets
b&m-REPTO® S	<ul style="list-style-type: none"> • Unreinforced thermoplastics • Highly reinforced thermoplastics (up to 30% glass fiber content)
b&m-REPTO® U	<ul style="list-style-type: none"> • Unreinforced thermoplastics • Highly reinforced thermoplastics (up to 30% glass fiber content)
b&m-REPTO® W	<ul style="list-style-type: none"> • Unreinforced thermoplastics • Highly reinforced thermoplastics (up to 50% glass fiber content) • Especially suitable for plastics sensitive to stress cracks, e.g. PC
b&m-REPTO® E	<ul style="list-style-type: none"> • Unreinforced thermoplastics • Highly reinforced thermoplastics (up to 30% glass fiber content) • Unreinforced thermosets
b&m-REPTO® B	<ul style="list-style-type: none"> • Embedding using ultrasound and heat for unreinforced and reinforced thermoplastics with up to 50% glass fiber content • Overmolding for unreinforced and reinforced thermoplastics and thermosets with up to 50% glass fiber content

Application examples

The threaded inserts and threaded bolts of the b&m-REPTO® family connect components reliably in the various fields of application:



Electronics



Household appliances



Automation and sensors



Rail vehicles



Construction and agriculture



Garden and forestry



Sport and lifestyle



Lights



Surveillance and security cameras



Automotive



Material selection

A selection of different materials is available for the b&m-REPTO® family.

Our threaded inserts are available in stock in brass as standard. These threaded inserts can also be custom-made for you in other materials. Detailed information about the available materials can be found in the table below.

For special requirements, baier & michels also offers lead-free materials with a maximum lead content of 0.1%. This means that the requirements of the EU directives for end-of-life vehicles and electrical scrap can already be met today.

Lead-free brass achieves just as high strength combined with high corrosion resistance as leaded brass.

This material is therefore suitable as an alternative to conventional brass to be used in mechanical and corrosion stressed components.

Whether consumer electronics, medical technology, automotive electronics, transportation, leisure industry or many others, we have the right answer for every application.

Material	Standard	Lead - free (Pb max 0.1%)
Brass*, **	x	x
Aluminum	x	x
Steel*	x	x
Stainless steel	x	x

* The products b&m-REPTO® BU, BW and BM are only available in the materials brass and steel.

** All standard dimensions of the variants b&m-REPTO® U, W, M, S and E are available in stock in brass.



Material selection

b&m-REPTO® M

Threaded insert for overmolding with different outer contours in plastics



b&m-REPTO® M microsection



b&m-REPTO® M

The b&m-REPTO® M is a threaded insert for overmolding with the function of connecting screws with plastic components in a reliable and reproducible manner.

Plastic flows around it in a form-fit already during the production of the component. With this method the outer contour can be given any desired undercut and anti-rotation

elements, where the design focus is on the future load. With this optimized surface contour, which creates a form-fit with the plastic in injection molding, large force transmissions can be achieved.

PRODUCT FEATURES:

- **Diameter:** M3 - M8
- **Length:** 6.9mm - 12.7mm
- **Material:** brass, steel, stainless steel and aluminum (also available lead-free)
- **Special characteristics:** customer-specific undercuts and contours
- **Torque absorption:** hexagon and knurl
- **Axial force absorption:** circular grooves and knurls

BENEFITS:

- Installation by overmolding allows undercuts to be filled in a form-fit and forces to be transmitted optimally
- High reproducibility
- Minor acquisitions necessary
- In case of special demands, the geometry can be adapted to customer requirements without limitation
- Universal application for a large variety of materials

Overmolding



b&m-REPTO® S

Threaded insert for screwing into plastics



b&m-REPTO® S microsection



b&m-REPTO® S

The b&m-REPTO® S is a threaded insert for screwing-in, and serves with its internal thread as connection point for reliable and reproducible repeating assemblies of metric screws.

The outer contour corresponds to an external thread and is installed in the plastic like a screw. High loads

can be absorbed due to the large contact area between insert and plastic.

BENEFITS:

- No equipment- and tool acquisitions necessary
- Simple process implementation
- High tensile loads possible
- Surface contour adaptable to customer requirements

PRODUCT FEATURES:

- **Diameter:** M3 - M8
- **Length:** 6mm - 15mm
- **Material:** brass, steel, stainless steel and aluminum (also available lead-free)
- **Special characteristics:** simple assembly
- **Torque absorption:** friction and contact of screw head
- **Axial force absorption:** thread



Screwing-in

b&m-REPTO® U

Threaded insert for ultrasonic embedding into plastics



b&m-REPTO® U microsection



b&m-REPTO® U

The b&m-REPTO® U is a threaded insert for ultrasonic embedding with the function of connecting screws with plastic components in a reliable and reproducible manner.

The outer contour is characterized by knurls and grooves, optimally designed for tensile and torque

loads, making them suitable for embedding via ultrasound. During assembly, the surface of the plastic is melted through the generated friction and the axial pressure, thus adapting itself to the outer contour.

BENEFITS:

- Fast process
- Reduced inherent stresses in the tube
- Surface contour adaptable to customer requirements
- High reproducibility

PRODUCT FEATURES:

- **Diameter:** M3 - M8
- **Length:** 5.7mm - 12.7mm
- **Material:** brass, steel, stainless steel and aluminum (also available lead-free)
- **Special characteristics:** simple process
- **Torque absorption:** knurl
- **Axial force absorption:** circular grooves and knurls

Ultrasonic embedding



b&m-REPTO® W

Threaded insert for heat-embedding into plastics



b&m-REPTO® W microsection



b&m-REPTO® W

The b&m-REPTO® W is a threaded insert for heat-embedding with the function of connecting screws with plastic components in a reliable and reproducible manner.

The inserts have a conical, knurled outer contour to allow for a large contact surface for the heat transfer during the embedding process. The plastic is melted at the surface

through the heat and pressure and adapts to the outer contour. The latter is surrounded by the plastic in a form-fit and is able to absorb both tensile and torque loads well.

BENEFITS:

- Fast and robust process
- Reduced inherent stresses in the tube
- High reproducibility
- Universal application for a large variety of materials

PRODUCT FEATURES:

- **Diameter:** M3 - M8
- **Length:** 5mm - 12mm
- **Material:** brass, steel, stainless steel and aluminum (also available lead-free)
- **Special characteristics:** material-preserving embedding process
- **Torque absorption:** knurl
- **Axial force absorption:** circular grooves and knurls



Heat-embedding

b&m-REPTO® E

Threaded insert for expansion embedding in plastics



b&m-REPTO® E microsection

The b&m-REPTO® E is a threaded insert for expansion embedding, with the function of connecting screws with plastic components in a reliable and reproducible manner.

The outer contour is characterized by a knurl and a slotted embedding area, which are optimally designed for tensile loads. The slotted

application area also helps to achieve an anti-loosening lock. During the assembly, the threaded insert is spread by screwing in the screw so that the knurl penetrates the plastic and ensures that the threaded insert is firmly seated.



b&m-REPTO® E

BENEFITS:

- Fast and simple assembly process
- High reproducibility
- High safety under tensile and torsional load

PRODUCT FEATURES:

- **Diameter:** M3 - M8
- **Length:** 5.7mm - 12.7mm
- **Material:** brass, steel, stainless steel and aluminum (also available lead-free)
- **Characteristics:** simple and fast assembly
- **Torque absorption:** knurl
- **Axial force absorption:** circular grooves and knurls

Expansion



b&m-REPTO® B

Threaded bolt for embedding in plastics



b&m-REPTO® B microsection

The b&m-REPTO® B is a threaded bolt for embedding in thermoplastics and duroplastics.

The external thread of the bolt, which can be designed both as metric and as customer-specific, can be used for joining and assembling further components. It ensures a process-reliable and highly repeatable connection.

The b&m-REPTO® B can be embedded in the plastic by various embedding processes such as heat embedding, ultrasonic embedding

and overmolding. Thereby, the knurl geometry has to be designed for the respective embedding process. An ideal knurl selection is essential for a later load case.

Depending on the selection of geometry and material, the b&m-REPTO® B can be manufactured by machining or completely by cold forming. In the innovative production process using cold forming, the applied material can be used more efficiently and the thread strength can be further increased.

PRODUCT FEATURES:

- **Diameter:** 3mm - 12mm
- **Length:** depending on diameter
- **Material:** brass or steel (also available lead-free)
- **Thread:** metric or customer-specific solutions can be produced
- **Embedding process:** ultrasonic, heat embedding or overmolding
- **Torque absorption:** takes place via the knurling designed for the installation process
- **Axial force absorption:** takes place via additionally attached circular grooves and knurls



Threaded bolt b&m-REPTO® B

BENEFITS:

- Customer and application-specific bolt geometries can be manufactured
- Form-fitting connection, for ideal absorption of torques and axial forces
- Highly repeatable and process-reliable connection
- Higher thread strength for cold forming
- More efficient production in terms of material and cost, due to constant-volume production process with cold forming
- Short embedding time

Threaded bolt

baier & michels worldwide

Get connected with us!

We analyze your screw connection in our labs. In addition, we accompany your product development and production – with fastener technology consulting and training for personnel. On request, our experts present the potentials from the world of innovative connections at a b&m-TECH Day, either digitally or on-site at your premises.

Our services cover the areas of:

- Application engineering
- Process optimization
- Development of new connection systems

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