



Development Partner

with Production and Logistics Expertise



Welcome to baier & michels



Since 2003, the b&m Group headquarters is located in an idyllic setting in Ober-Ramstadt close to Frankfurt am Main.

Dear Customer,
dear Business Partner,

the globally operating b&m-group established a strong position in the field of fastener technology and C-parts-management within the Automotive industry. This position is based on innovative products, processes, systems and trust generated through competency, commitment and solidity.

The Technics department develops customized and innovative solutions for our customers. The Application Engineering department supports our customers with any technical requirements. The variety of parts at the customers can be reduced considerably through a unique standardization tool with access to an online portal.

Being a producer the b&m-group has the know-how to ensure a continuously high degree in product quality. With b&m-logistics the b&m-group has a specialized company which can optimize the supply chain worldwide through most innovative logistical solutions like RFID.

I wish you a pleasant reading.

Yours sincerely

Peter Federolf
CEO

Founded in 1932, b&m has established a strong position as a supplier of fastening technology within the Automotive industry and has today over 400 employees worldwide. Additional financial stability is provided by the Würth-Group to which b&m belongs since 1973, with its 74,500 employees and turnover of over EUR 12,7 billion worldwide.



b&m strategy



Technology

The design represents the decisive foundation for the later success of a product. Therefore, the requirements for creativity and expertise of the designers are high. This applies both to product technology as well as efficiency.

At baier & michels the complete product cycle comes from one source; from design and production to logistics. In addition to classic fastening technology, we also offer our customers the design and supply of complete assemblies.

Production

High flexibility and precision are both requirements and objectives. Being active worldwide with consistent quality, that's our claim.



Logistics

b&m consolidates a wide range of suppliers into a single contact point to address questions of:

- sourcing
- technical design
- material planning / scheduling
- procurement routes / production supply

We supply the whole range of fasteners required by our customers for the production of their end product. According to the individual requirement, different supply levels ranging from a Free Carrier (FCA) platform up to KANBAN consignment stock with line-feeding can be provided.

Development Partner



b&m-TIGHT®



Installation of b&m-TIGHT® in a transmission frame

Advantages:

- **Self-sealing**
- **No finding problems** during automatic assembly
- **High self-locking**, no need for additional securing
- **Positioning effect** when placing the screw at an angle (angular offset up 15°)



b&m-CARBONPLAST®



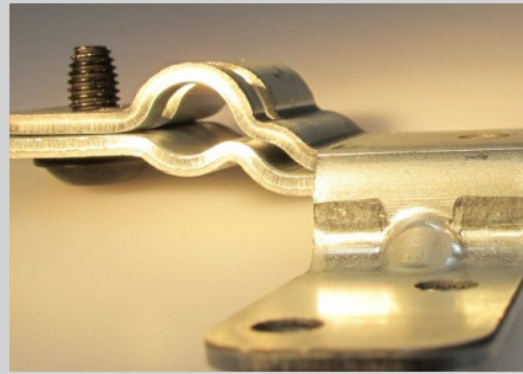
Comparison of b&m-CARBONPLAST® (left) with market-standard steel screws with Zn/Ni plating, (right) in the salt spray test after 480h

Advantages:

- **Corrosion-resistant** austenitic material
- **High strength** thread tip
- Suited for **cutting** thread in CFRP materials



b&m-SHEETFORM®



Assembly example of the
b&m-SHEETFORM® M5x10

Advantages:

- **Compatible** with thread tapping systems in accordance with DIN 7500
- Extrudes a **bore reinforcing collar**
- **No location problems** during automatic assembly



b&m-TRIMNUT®



Assembly example of the b&m-TRIMNUT®

Advantages:

- **Removal** of weld splatter or plating residues
- **Making** damaged thread usable
- Applying bolt thread using **tapped thread**

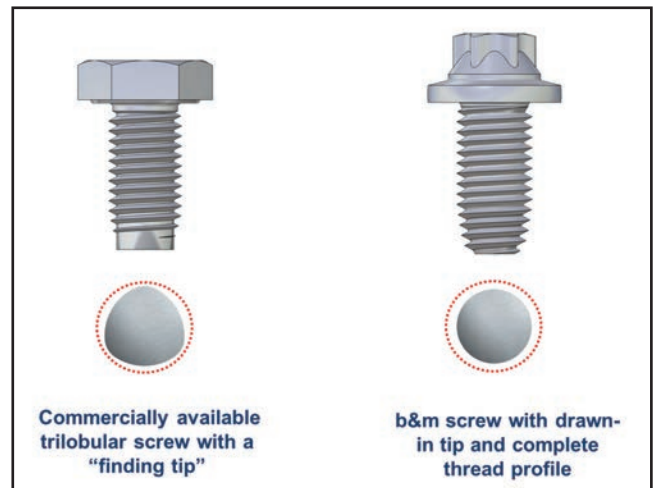
b&m-INNOVATIONS -

Direct screwing connections in metals

Thread geometries of the b&m screws for direct screwing connections into metals

All b&m screw thread geometries for direct screw connections into metals distinguish themselves from conventional thread-forming screws through a circular thread cross-section and completely formed threads in the forming zone.

The interaction of these features produces outstanding product characteristics. This guarantees an extremely robust connection in the presence of interfering factors and thus high process reliability.



Design recommendation

(Guide values for the design of the core hole diameter)

Casted core hole	Extruded hole	Punched hole	Tube
b&m-FORM® b&m-FORM-S®	b&m-FORM® b&m-FORM-S®	b&m-SHEETFORM®	b&m-TIGHT®
0,85-0,95 x D*	0,85-0,95 x D*	0,75-0,95 x D*	~0,93 x D*

* Nominal screw diameter

** Recommended screw-in depth min. 1.5 - 2.0 x D

These values are recommendations which exclusively serve the execution of in-house test series with original components. Binding statements regarding these parameters must be determined for each screw connecting with the serial components in a laboratory and verified by own in-house trials!

b&m-INNOVATIONS -

Direct screwing connections in metals

b&m-FORM®

The b&m-FORM® is a universally applicable direct screwing connection system for all ductile metal materials. The standard hardness of screws is based on a value of 10.9 in accordance with ISO 898.



b&m-FORM®: Direct screwing system for metal applications

b&m-FORM S®

The b&m-FORM-S® is an adapted form of the tried-and-tested b&m-FORM® screw geometry. It is used for screw connections applied in a limited space and assemblies, which permit only a minimal overlap of the screw tip.



b&m-FORM S®: Direct screwing connection in a limited space

b&m-FORM LG®

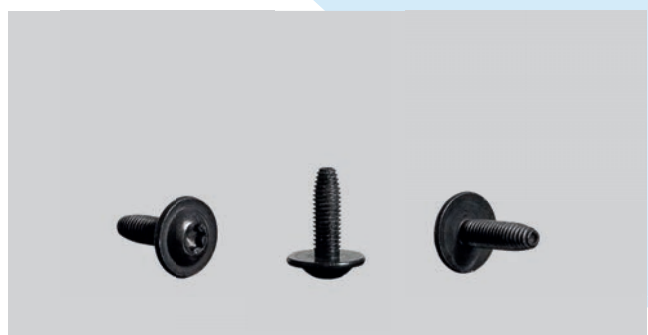
The b&m-FORM LG® is a screw with asymmetric thread profile, specifically for use in die-cast materials. The flank angle of the load flank is characterized by a 30° angle, the opposite flank is 50°. This leads to a reduction of chip formation.



b&m-FORM LG®: Direct screwing connections in die-cast light metal alloys

b&m-SHEETFORM®

b&m-SHEETFORM® is specially designed for the use with thin sheet metal ($t \leq 2$ mm). Given a corresponding design of the core hole diameter, the b&m-SHEETFORM® forms a hole-reinforcing collar from the sheet. This increases the number of threads in the engagement, thus guaranteeing a resilient connection.



b&m-SHEETFORM®: Direct screwing connection system, not only for thin sheetmetal applicati

b&m-INNOVATIONS -

Direct screwing connections in metals

b&m-TIGHT®

The b&m-TIGHT® is a direct screwing system for use in high-strength materials. The screw is self-sealing against gases and liquids up to a pressure of 1000 mbar.



b&m-TIGHT®: Direct screwing system for high-strength materials and hybrid screw connections

b&m-INNOVATIONS -

Thread-forming nut

b&m-TRIMNUT®

The b&m-TRIMNUT® turns the thread forming principle upside down. Not the screw, but the nut is the fastener and simultaneously a thread-forming tool. Designed to remove welding splatters on welding pins or plating residue, the b&m-TRIMNUT® is also able to form a thread in conjunction with a pin geometry designed for this purpose. The metric ISO threads produced in this way are entirely loadable; multiple screwing connections are also possible.



b&m-TRIMNUT®: The thread-forming nut

Direct screwing connections in plastics

New applications mean an increasing significance for the use of plastics.

The resulting advantages are located in the area of weight-reduction, increased chemical resistance and simplified recycling of the components, for example through the replacement of metal inserts.

The economical fitting possibilities and ability to disconnect direct screwing connections made into plastics create cost-savings in comparison to other joining techniques.

In contrast with sheet-metal screws (with a flank angle of 60°), b&m thread geometries have a flank angle of 30° / 25° and reduce radial tension.

This achieves optimal filling of the thread groove, whilst enabling material-saving dimensioning of the screw-in tube.

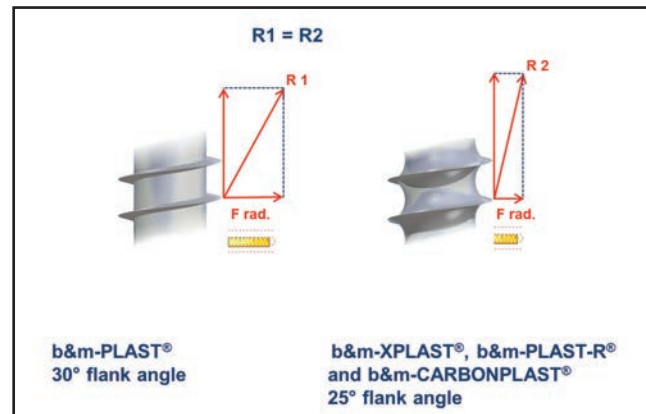
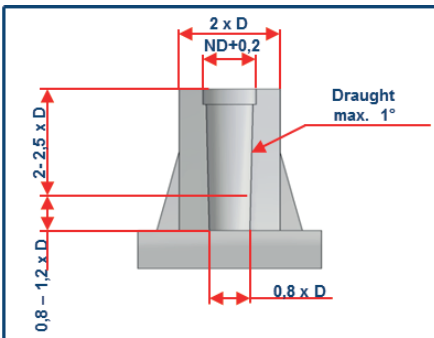
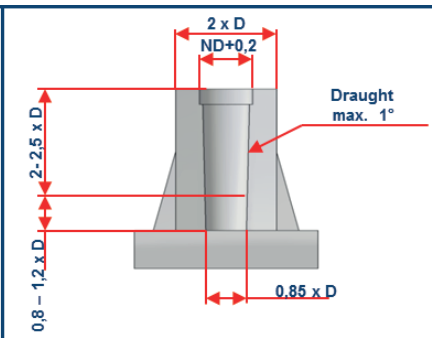
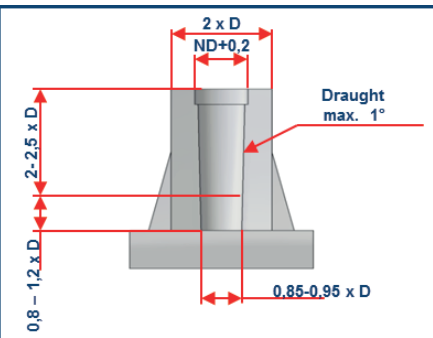


Fig.: Reduced radial tension through a "reduced" flank angle

The design of thin wall thicknesses enables a weight-saving and cost-optimized connection. Greater coverage between the thread flanks and the material increases process safety.

Design recommendation

 <p>2 x D ND+0.2 2-2.5 x D 0.8 - 1.2 x D 0.8 x D Draught max. 1°</p>	 <p>2 x D ND+0.2 2-2.5 x D 0.8 - 1.2 x D 0.85 x D Draught max. 1°</p>	 <p>2 x D ND+0.2 2-2.5 x D 0.8 - 1.2 x D 0.85-0.95 x D Draught max. 1°</p>
Core hole Ø D b&m-PLAST®	Core hole Ø D b&m-XPLAST®	Core hole Ø D b&m-PLAST-R® and b&m-CARBONPLAST®
Screw in depth		2 - 2,5 x D
Pressure relief hole		Nom. Ø + 0,2
Tube exterior Ø		min. 2 x D

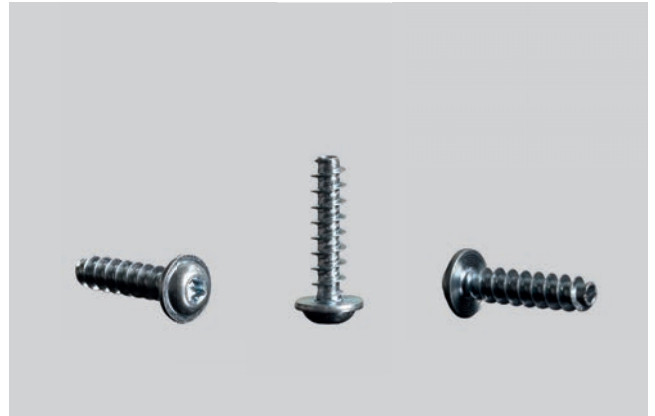
If the plastic contains long-fiber filler, a homogeneous filling of the screw-in tubes needs to be ensured. The connection of the tubes via ribs is advantageous in this case.

b&m-INNOVATIONS -

Direct screwing connections in plastics

b&m-PLAST®

The b&m-PLAST® thread geometry permits the direct screwing into thermoplastics, including fiber-reinforced materials up to a glass fiber content of 30%. The b&m-PLAST® can replace the PT screwing system without any constructive alterations.



b&m-PLAST®: Direct screwing system for thermoplastics

b&m-XPLAST®

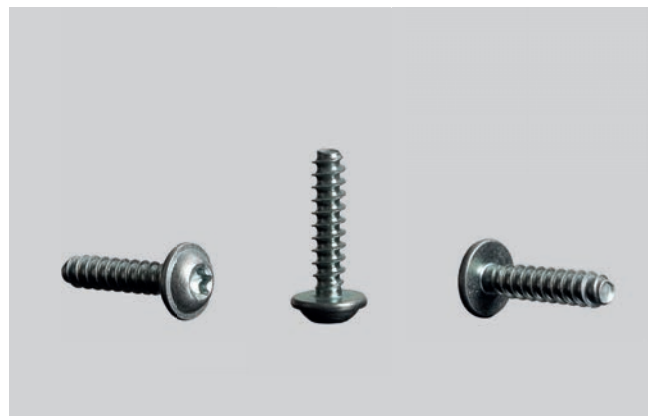
The b&m-XPLAST® is designed for direct screwing into thermoplastics with a higher proportion (> 30%) of reinforced fibers. It distinguishes itself by a 25° reduced flank angle, which considerably reduces radial tensions in the connection tubes.



b&m-XPLAST®: Direct screwing system for fiber reinforced thermoplastics

b&m-PLAST R®

The b&m-PLAST R® is suitable for direct screwing connections in heavy-duty fiber-reinforced plastics. The flank angle reduced to 25° minimizes the radial tensions which impact on the tube. At the same time, the optimized geometry of the thread groove favors a homogeneous material flow and hence the optimal filling of the thread.



b&m-PLAST R®: Direct screwing system for reinforced plastics with a high fiber content

Fastening technology for CFRP materials

b&m-CARBONPLAST®

Screw with plastic thread made of corrosion-resistant austenitic steel for use in carbon fiber reinforced plastic.

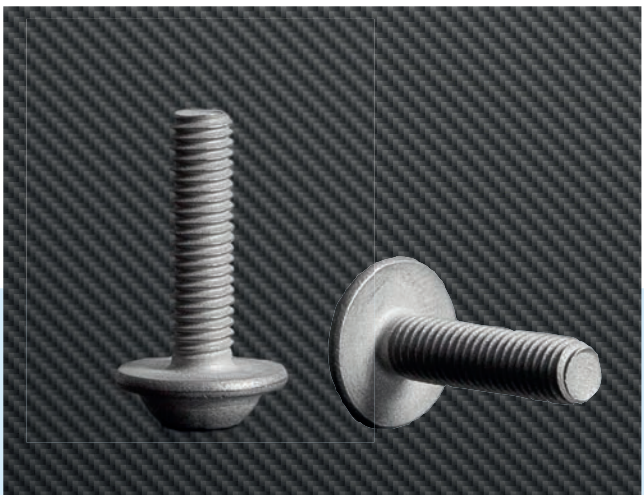
Suitable for direct screwing connections, in particular in combination with b&m-CARBONCONNECT® threaded tubes.



b&m-CARBONMETRIC®

Screw with metric ISO thread, made of corrosion-resistant austenitic steel, for use in carbon fiber reinforced plastics and highly corrosive environments.

Suitable for direct screwing connections, in particular in combination with b&m-CARBONCONNECT® threaded tubes.



b&m-CARBONCONNECT®

Assembly-integrated, highly resilient connection points for carbon fibre component structures with increased screw-in depth and reliable avoidance of delamination during screwing process.

Designed for direct screwing connections with b&m-CARBONPLAST® or b&m-CARBONMETRIC® screws with tapped thread.



Extract: Product Range

Screws

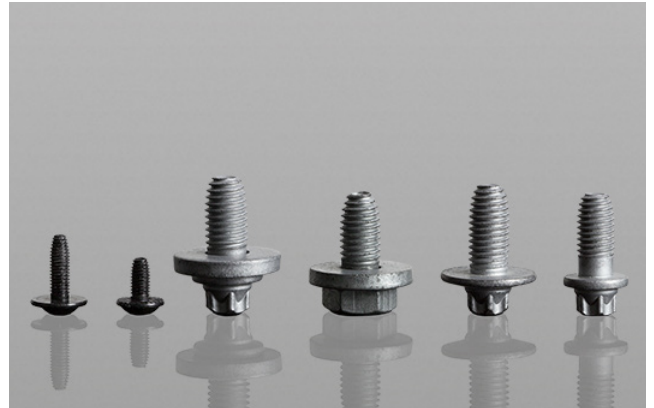
The b&m product range covers screws in accordance with DIN / ISO standards as well as engineered parts for screwing connections in metals, non-ferrous metals and plastics. This includes screws with metric threads, fine and inch threads, and threads for use in thermoplastics and fiber-reinforced thermoplastics.

Dimensions: M3 - M22; Ø2.5 - 8 mm (thread for plastic)

Material: Alloyed and unalloyed steels, stainless steels and steels according to customer specifications

Strength: according to ISO 898-1

Surfaces: all DIN / ISO / VDA or according to customer specifications



Nuts

The b&m product range comprises nuts with metric threads and fine threads according to DIN / ISO as well as engineered parts such as lock, combination and flange nuts.

Dimensions: M3 - M22

Material: Alloyed and unalloyed steels, stainless steels and steels according to customer specifications

Strength: according to ISO 898-2

Surfaces: all DIN / ISO / VDA or according to customer specifications



Press-in systems

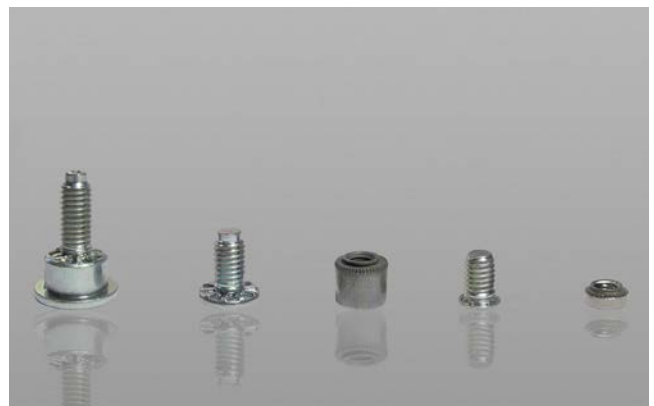
baier & michels offers solutions for press-in systems as fastening elements, which are pressed permanently into sheet metal parts.

Sheet metal thickness: 0.75 - 2.0 mm

Dimensions: M5 - M10

Material: Alloyed and unalloyed steels according to ISO 898-1, stainless steels and steels according to customer specifications

Surfaces: all DIN / ISO / VDA or according to customer specifications



Turning and milling parts

baier & michels develops production-oriented designed turning and milling parts according to customer specifications for complex geometries, small batches and samples.

Material: Machining steels, stainless steels and steels according to customer specifications

Surfaces: all DIN / ISO / VDA or according to customer specifications

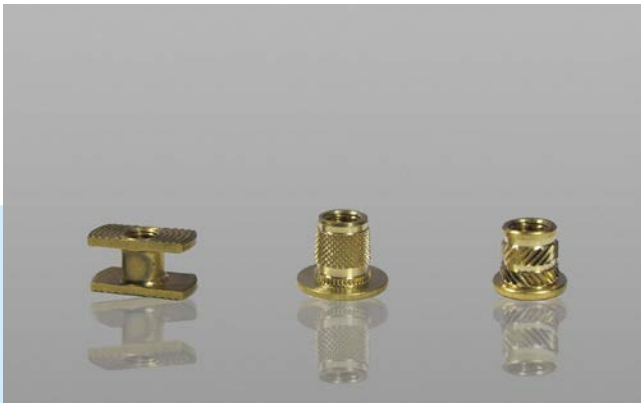


Threaded inserts

baier & michels supplies threaded inserts for plastics, for screwing in, embedding and injection moulding. This makes secure screwing connections in plastic for higher loads possible.

Material: Brass, alloyed steels, stainless steels and steels according to customer specifications

Surfaces: all DIN / ISO / VDA or according to customer specifications

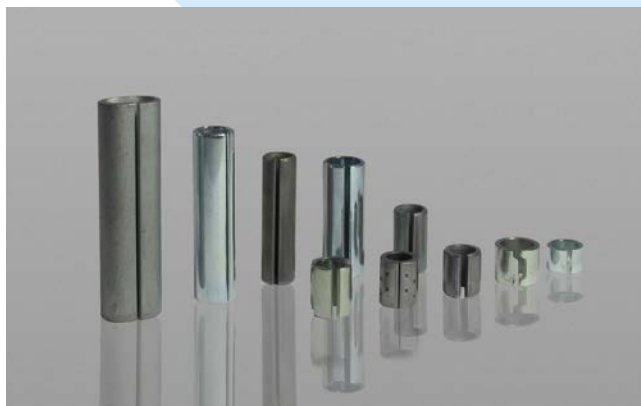


Bushings and spacer sleeves

Compression limiters and bushings for use into plastic components ensure a stable screwing connection. They can be produced with or without slot to either press them into the counterpart or embed them into an injection moulding.

Material: Cold-rolled strip according to EN 10139

Surfaces: all DIN / ISO / VDA or according to customer specifications



Extract: Product Range

Cold formed parts

baier & michels develops cold forged parts, which are designed in a production-oriented manner, either according to customer specifications or from existing (turned) parts. These include, for example, ball and stepped bolts, hollow parts, parts with undercut and other secondary processes.

Material: Alloyed and unalloyed steels, stainless steels and steels according to customer specifications

Surfaces: all DIN / ISO / VDA or according to customer specifications



Pressure springs

Compression springs are produced, depending on their area of usage, with different kinds of geometries (cylindrical, conical or barrel-shaped). This allows tailored force-deflection gradients.

Material: Round or square wire

Wire thickness: 0.1 mm - 5.0 mm



Tension springs

Tension springs are generally cylindrically shaped. Eyelets according to DIN 2097 and special eyelets are possible.

Material: Round wire

Wire thickness: 0.1 mm - 5.0 mm



Torsion springs / wire formed parts

The spring geometry is adapted according to the application. The spring load is from twisting (torsion) around the axis.

Material: Round or square wire

Wire thickness: 0.1 mm - 5.0 mm



Springs from steel strips

Steel strip springs are developed according to their function.

Material: Spring steel strip

Steel thickness: 0.1 mm - 3.0 mm



Product Range - Riveting Technology

Make the right choice in the variety of parts ...

Riveting technology has secured a firm foothold in the automobile industry due to its efficiency. Modern requirements such as mixing components, high-strength materials and modular components are ideal conditions for riveting technology.



Structure and system is the solution!

Which rivet is right for which system?

We create functional documentation in our laboratory, which is tailored to the requirements of the connection. With a force-distance diagram, we examine the function of the different delivery batches and record them.

Salt spray tests, leak tests, shear strength, tensile strength and clamping force - the function of a blind rivet depends on many factors.

The same dimensions in the same material may have diverse functional behavior.

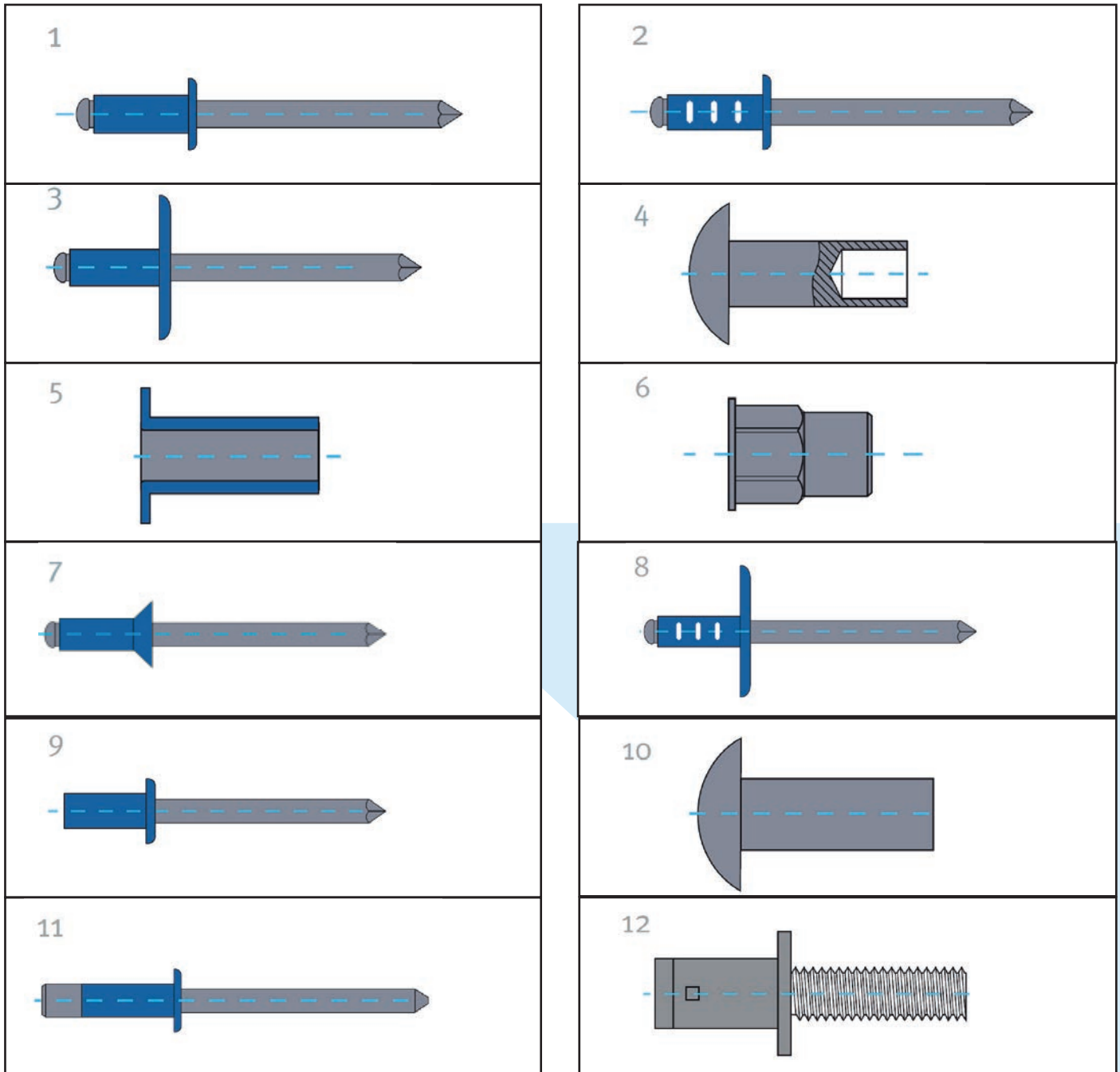
If, for example the surface dimensions of a blind rivet are changed, the function changes. Using function monitoring, changes can be documented and appropriate action taken.

With our support, you put the right rivet in the right place.

Blindrivets, blind rivetnuts, solidrivets, tubularrivets, semi-tubularrivets ...

Standard parts, engineered parts, special designs ...

Whether in **steel, aluminum, stainless steel, copper** or **plastic** ... with sealing function and **stages**, in various **colors** – riveting technology has almost no limits.



1: Standard blind rivet / 2: Multi-purpose blind rivets / 3: Standard blind rivet with large head / 4: Semi-tubular rivet with panhead / 5: Tubular rivet with flat head / 6: Blind rivet nut partial hexagon/ 7: Countersunk blind rivet / 8: Multi-purpose blind rivet with large head / 9: Sealing blind rivet / 10: Solid rivet with panhead / 11: High-strength blind rivet / 12: Blind rivet stud

Standardization - b&m-PORT

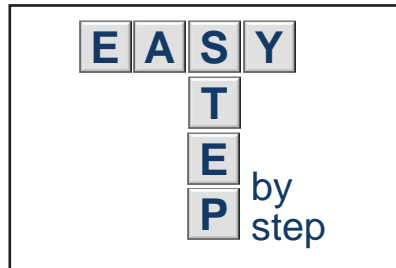
Worldwide

b&m-PORT creates a connection between all processes relevant to successful C-parts management. Aspects of cost optimization and sustainability assurance are taken into consideration.



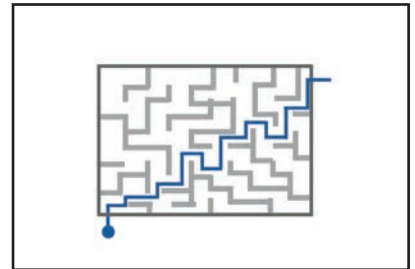
Simplicity

b&m-PORT supports you from the very start and guides you step by step to the optimum solution. Your individual product range lets you react quickly and flexibly.



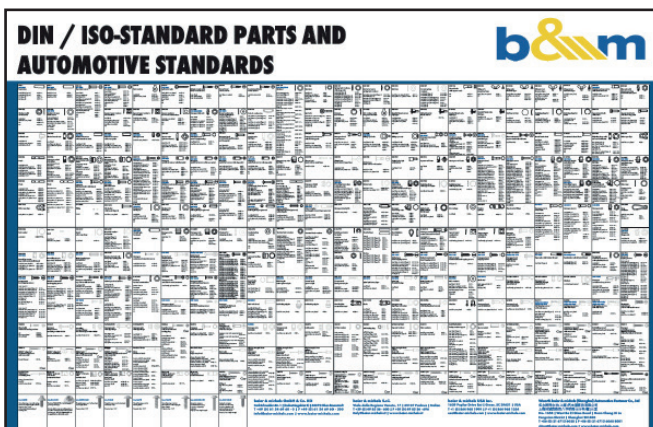
Effectiveness

Optimize your designers' and developers' work.
b&m-PORT allows you to make quick decisions through transparency and clarity.



CLARITY

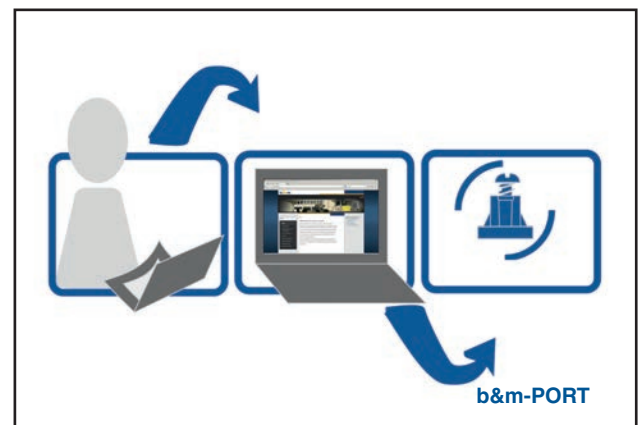
Globalization has brought about an ever stronger trend towards standardization, which also influences fastening technology. OEM standards have been developed in consideration of a recent worldwide market study. The b&m-PORT avoids creating duplicates by using the classification of the parts. Thereby, redundant processes can be prevented and costs decreased. R&D departments receive all important information, customized to your requirements, by the touch of a button. Individually tailored to your needs. Your contact person is available for further questions.



ACCESSIBILITY

The online portal offers a broad overview of our product range and shows new and more cost-effective alternatives. Worldwide automotive standards and innovations, DIN and standard parts as well as your own product range are available around the world, around the clock.

In addition, b&m-PORT integrates all important information about your individual fastener. Drawings, 3D models and assembly recommendations are always available here too.



b&m-PORT - step by step to perfect connecting part

- Standardization of fasteners reduces the variety of parts
- Elimination of duplicates
- Availability of 3D models reduces the design effort
- Transparency
- Easy to operate / structured design
- Easy access to low-cost alternatives



Your Benefits at a Glance

- Extensive download section
 - Drawings and 3D data
 - Individual assembly recommendations
 - Individual screw-in charts
 - Initial sample documents
- Wide range of applications
- 24/7 availability, worldwide
- Personal contact person
- IP secured access
- Sample parts available at short notice
- Time saving through completed approval processes
- Shorter delivery times and cost benefits by increasing the existing supply quantities
- Cost savings in toolmaking
- Elimination of duplicates
- Plus - the portal can be integrated into existing customer systems



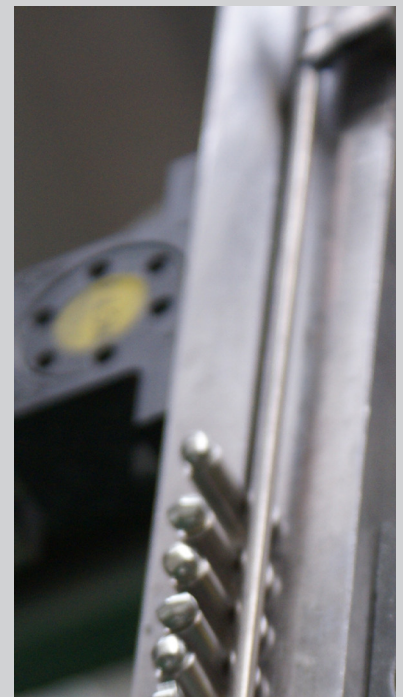
Give us a call!

Let us analyze your demand and requirements for fastening technology and logistical services and offer you an independent, non-binding consultation, on-site on your premises if desired. **Tel.: + 49 (0) 61 54 69 60 - 0**

Production-Know-how

Certified production according to IATF 16949 in the following areas:

Development and Production of Special Rivets and Cold Forming Parts.



Supplier consolidation

- Supplier takeover
- Initial sampling
- Implementation of quality directives
- Centralized production control

Service “Project ramp-up” (SOP)

- Procurement of initial samples
- Creation of packaging strategies
- Guaranteed logistic requirements

Modern warehouse logistics

- Batch traceability
- EDI processing (VDA compliant)
- Bin management
- Safety stock

Worldwide network

- Global footprint (Asia, America, Europe)

Delivery system

- Platform
- VMI / CMI
- In-house shop

b&m-control

- Scan
- RFID
- KANBAN
- Monitoring (eKANBAN-Monitor)

Global Footprint

With our nine companies worldwide you can find us there, where you are.

Partnering with b&m you'll get the same products worldwide and the same excellent local service for all your production units - whether they are in Europe, Middle-East, Asia or North-America.



USA



Mexico



Spain



France

Germany



VDA | Verband der
Automobilindustrie

The global footprint of b&m is based on a stable group structure which shares important standards and IT-systems, such as the ERP system, globally.

Employee rotation and intensive cooperation between subsidiaries ensures that you get the same b&m-quality all around the globe.



China

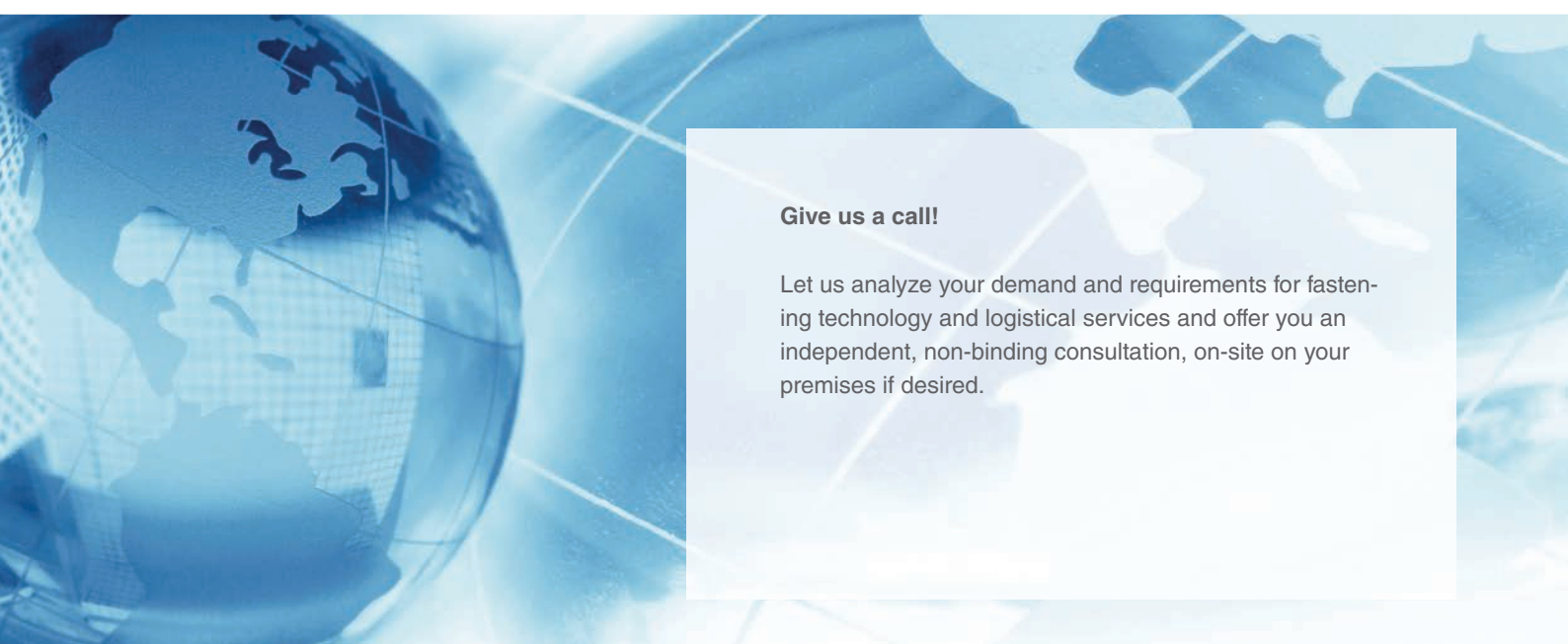


Italy



Turkey

baier & michels worldwide



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baier & michels GmbH & Co. KG

Carl-Schneider-Straße 1
64372 Ober-Ramstadt / **Germany**
Tel.: + 49 (0) 61 54 69 60 - 0
Fax: + 49 (0) 61 54 69 60 - 500
info@baier-michels.com
www.baier-michels.com

baier & michels S.r.l.

Viale Regione Veneto, 17
35127 Padova / **Italy**
Tel.: + 39 04 98 53 66 00
Fax: + 39 04 98 53 66 96
info@baier-michels.it
www.baier-michels.it

baier & michels USA Inc.

65 Brookfield Oaks Drive
Greenville, SC 29607 / **USA**
Tel.: + 1 864 968 1999
Fax: + 1 864 968 1234
usa@baier-michels.com
www.baier-michels.com

Wuerth baier & michels España S.A.

P.I. Can canals
C/ Formentera, 12
08192 Sant Quirze del Vallès
(Barcelona) / **Spain**
Tel.: +34 (0) 65 19 27 543
Fax: +49 (0) 61 54 69 60 99236
info@baier-michels.com
www.baier-michels.com

baier & michels USA Inc.

2800 Superior Court
Auburn Hills, MI 48326 / **USA**
Tel.: + 1 864 354 8286
usa@baier-michels.com
www.baier-michels.com

Würth baier michels Otomotiv Limited Sirketi

Minarelicavus Mahallesi
Çelik Cad. No: 11/1
16140 Nilüfer-Bursa / **Turkey**
Tel.: + 90 224 242 04 24
turkey@baier-michels.com
www.baier-michels.com

Wuerth baier & michels México S.A. de C.V.

Cerrada Bicentenario No. 3 Bodega 4
Fraccionamiento Parque
Industrial El Marqués
El Marqués, Querétaro
C.P. 76246 / **Mexico**
Tel.: +52 1 (442) 446 9047
mexico@baier-michels.com
www.baier-michels.com

Würth baier & michels Automotive Fastener Co., Ltd

No. 1969 Xizha Rd
Nanqiao / Fengxian District
Shanghai 201401 / **P.R. China**
Tel.: + 86 21 67 15 60 28
Fax: + 86 21 67 15 60 68
china@baier-michels.com
www.baier-michels.com