PROFIL
a PennEngineering® Company

Your System Supplier for Mechanically Attached Fasteners (MAF)

Pioneering Better Fastening Technology

PROFIL®: Pioneering Better Fastening Technology

PROFIL® (a PennEngineering® company) is the global leader in developing and manufacturing Mechanically Attached Fasteners (MAF), a high-performance alternative to traditional weld fasteners tailored for the automotive industry.

For over 60 years, PROFIL® has collaborated with the world's leading automotive OEMs to design reliable, cost-efficient fastening solutions for a broad range of critical vehicle applications.

With over 450 patents, PROFIL® demonstrates commitment to innovation. On average, PROFIL® advances more than 20 new products to the production stage each year, supported by an array of specialized departments.

MAF provide clean, efficient, and durable fastening options that meet the rigorous demands of modern automotive engineering. From Body-in-White (BIW) structures — including upper and under body, closures, EV battery trays — to frames and chassis, PROFIL® fasteners deliver robust performance for virtually any structural application in automotive manufacturing.

The PROFIL® Advantage: Your Fastening Challenges, Our Development Mission

With advanced development, manufacturing, and quality systems, we deliver both standardized and custom fastening solutions. Our comprehensive offerings include nuts, studs, installation tools, and feed equipment — all from a single, reliable source.

We provide tailored solutions through every stage: **consultation, development, manufacturing, and ongoing service**, ensuring that each solution meets your unique requirements.

Our partnerships worldwide allow us to offer consistent, expert support across all markets — from initial development to customer service.

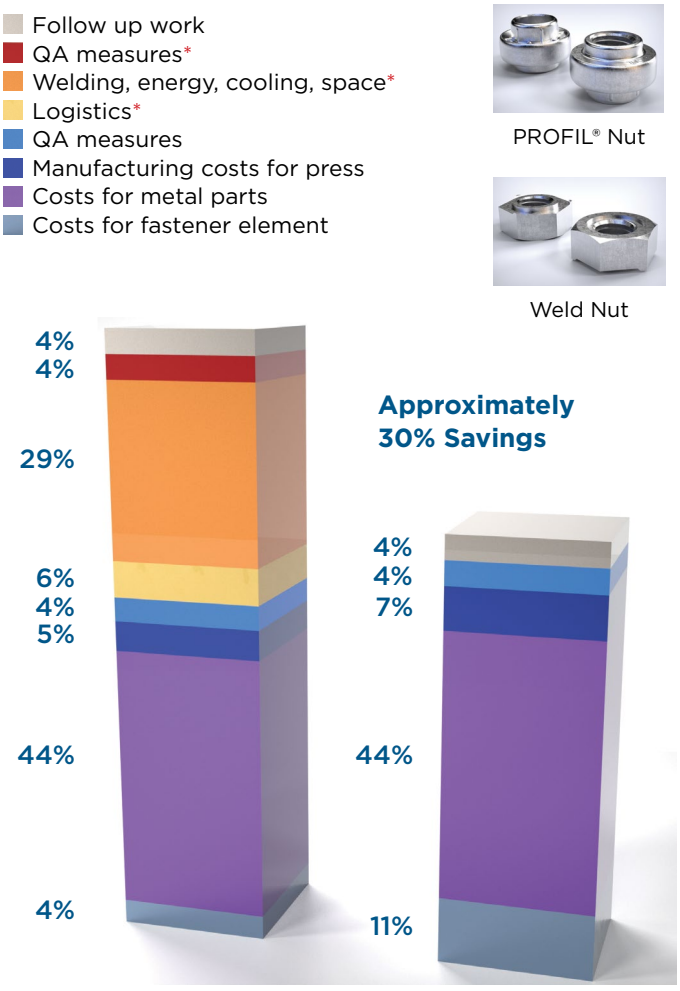
Certified to the highest standards:

- DIN EN ISO 9001
- DIN EN 14001: 2005
- IATF 16949

Optimal Economic and Technical Efficiency

PROFIL® MAF deliver significant cost savings — **up to a third** compared to traditional joining methods — by minimizing steps like storage, transport, welding, and quality assurance. This approach also reduces initial investment and eliminates follow-up costs. Key benefits include:

- **High Process Security:** Ensures stable, durable fastenings with exceptional static and dynamic performance.
- **Material Compatibility:** Suitable for a range of metals, from aluminum to high-strength steels as well as coated or painted metals and sandwich panels.
- **Precision and Protection:** Achieves accurate positioning without damaging components, leaving surfaces free from weld spatters or defects.
- **Environmentally Aware:** Generates no waste or harmful byproducts, making it a cleaner, sustainable solution.

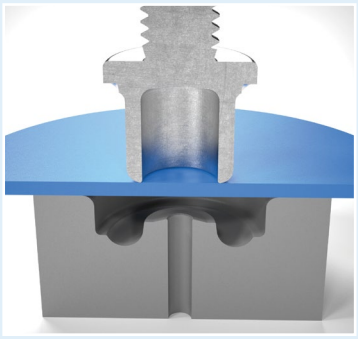


PROFIL® Nut

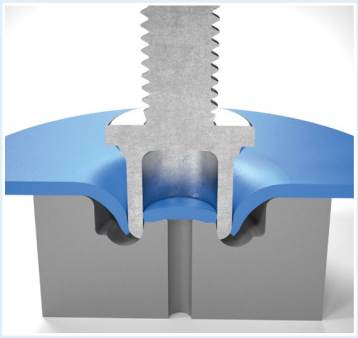
Weld Nut

* These steps are eliminated when you use PROFIL® fastener technology.

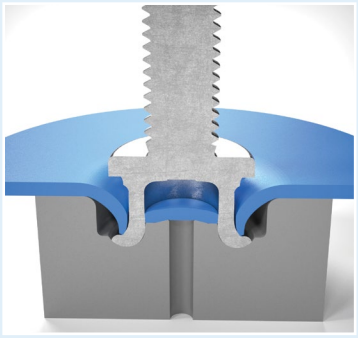
Piercing and Riveting Process



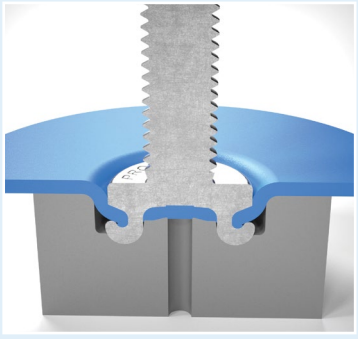
Positioning of the fastener



Piercing through the panel



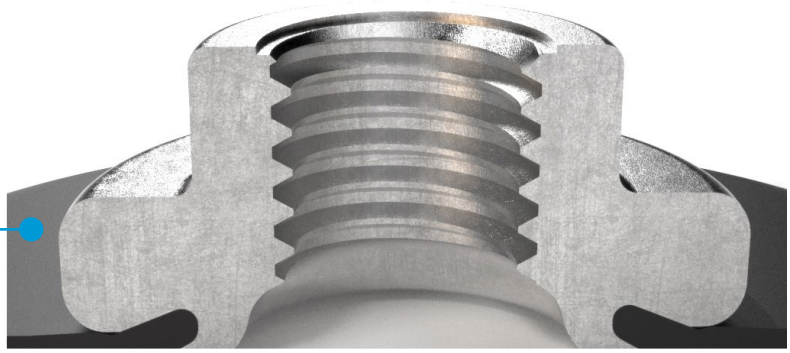
Flanging the pierce and rivet sections, and rolling the shaped panel



Completed attachment of fastener in the panel

PROFIL® Solves Manufacturing Engineering Problems

Steel
High-strength steel*
Aluminum
Magnesium
Pre-painted panels
Sandwich-panels

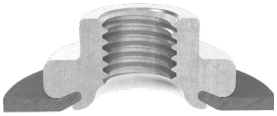


PROFIL® fasteners are suitable for use in different materials

PROFIL® offers a broad range of products and differentiates between the following fastening methods:

Riveting

Stud

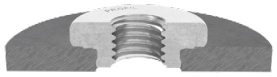


Nut

- **Strong, Durable Joints:** Robust connections with excellent static and dynamic strength, ideal for applications requiring high load-bearing capacity and resistance to vibrations.
- **Versatility Across Materials:** Compatible with a wide range of materials, including high-strength steel, aluminum, and even coated or layered metals. This flexibility makes them suitable for multi-material assemblies.
- **No Need for Heat:** Unlike welding, riveting does not require heat, which reduces the risk of thermal distortion, material weakening, or surface damage. This makes it ideal for heat-sensitive materials and coated surfaces.
- **Consistent Quality in High-Volume Production:** High-quality results especially in automated, high-volume production environments.
- **Simplified Production Process:** In case of self-piercing fasteners it is a one-step attachment method, eliminating the need for prehole operation and reducing the overall number of steps in assembly. This speeds up production and lowers labor costs.
- **Environmentally Friendly:** Riveting does not generate harmful fumes, emissions, or waste byproducts, making it an environmentally responsible choice.
- **Process Security and Precision:** High precision in fastener placement and alignment, ensuring a secure fit and stable joint for reliable performance over time.
- **Cost-Effective Assembly:** By reducing equipment, maintenance, and energy costs associated with welding, riveting provides a cost-efficient solution for manufacturers looking to optimize production efficiency.

Clinching

Stud

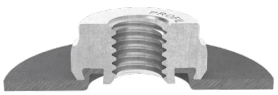


Nut

- **High Retention and Load-Bearing Capacity:** Fasteners are designed to embed into the material, creating strong, reliable joints that can handle high shear and tensile loads, making them ideal for demanding applications.
- **Minimal Space Requirements:** Perfect for applications where space is limited or where low-profile fasteners are preferred, such as compact automotive parts.
- **Suitable for Thin and Lightweight Materials:** Clinching fasteners form a durable connection without compromising the material's integrity.
- **No Damage to Coatings or Surface Finishes:** Clinching fasteners do not require heat or welding, they preserve the original coatings or finishes on the material, which is essential for corrosion resistance and aesthetics.
- **Enhanced Assembly Speed and Efficiency:** Clinching installation integrates easily into automated production lines, significantly increasing assembly speed and reducing labor costs compared to traditional fastening methods.
- **Consistency and Precision:** Precise, repeatable fastener placement, resulting in consistent quality across a large volume of parts, making it well-suited for high-volume manufacturing.
- **Environmentally Friendly:** With no need for adhesives, welding, or additional hardware, clinching fasteners reduce waste and energy use, supporting cleaner production processes and a safer work environment.

Self-Piercing

Stud



Nut

- **No Pre-Piercing Required:** Self-piercing MAFs eliminate the need for pre-pierced holes, speeding up installation time and reducing labor costs.
- **High Process Efficiency:** This method streamlines production by combining piercing and fastening in a single step, which minimizes production time and allows for easy integration into automated assembly lines.
- **Cost-Effective:** Compared to traditional welding, self-piercing MAFs reduce costs related to materials, energy, and equipment maintenance. The elimination of steps like hole preparation, welding, and finishing also reduces overall production expenses.
- **Enhanced Joint Strength and Stability:** Self-piercing fasteners provide excellent static and dynamic stability, creating durable joints that withstand high loads and vibrations, making them ideal for automotive structural applications.
- **Compatibility with Various Materials:** Self-piercing MAFs work well with high-strength steels, aluminum, and coated metals, allowing for flexibility in material choice without compromising joint integrity.
- **Improved Environmental and Workplace Safety:** With no welding or heat involved, this method reduces fumes, spatter, and other emissions, promoting a cleaner, safer work environment and minimizing environmental impact.
- **High Precision and Reliability:** Consistent, high-quality results across a large volume of parts.

Stronger, Cleaner Automotive Fastening that Doesn't Cost the Earth

PROFIL® MAF technology uses 80% less energy than traditional fastening methods, so we can grow a sustainable industry and a greener future.

Our planet is facing growing environmental challenges, and there is no better time to limit human-influenced climate change.

As stewards of our company, our communities, and the world, PROFIL® is taking an aggressive and proactive approach to reduce and eliminate the impact of our business on the environment — and create a better world for our children to inherit.

Our key sustainability pillars — Planning & Ethics, People, Community, and Environment — set the foundation for our actions, both large and small, as we make measurable progress toward our future of sustainability.

Riveting vs. Welding: Process Cost Comparison

Riveting

Coil Raw Material
Press Machine
Tooling & Die

PROFIL® Nut

Time
+
Money

Finished Part

Process integration leads to **30%** cost savings

Welding

Coil Raw Material
Press Machine
Tooling & Die

Semi Finished Part

Transportation Costs

Intermediate Storage

Transportation Costs

Quality Inspection

Weld-Nut

Energy for Welding

Welding Equipment

Semi Finished Part

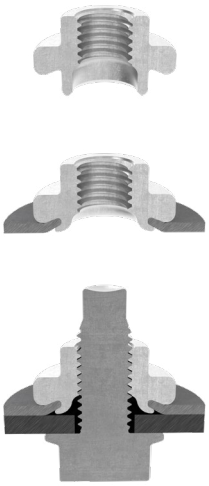
Transportation Costs

Finished Part

PROFIL® Product Range

RND® Rivet Nuts

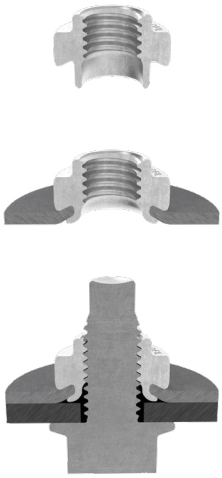
Round rivet nuts for high pull-through forces



Thread size from M5 to M12
Thickness from 0.60 to 3.50 mm
Tensile strengths up to 1500 MPa

RND® Light Rivet Nuts

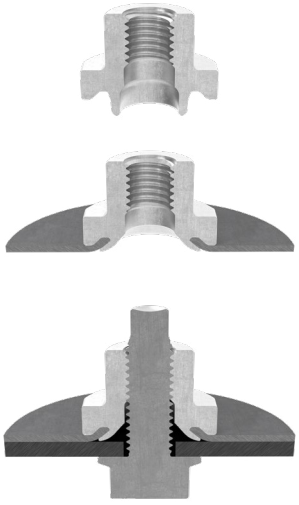
Light rivet nuts for high torques, light and space-efficient



Thread size from M5 to M12
Thickness from 0.60 to 3.00 mm
Tensile strengths up to 1000 MPa

RND®-S Rivet Nuts

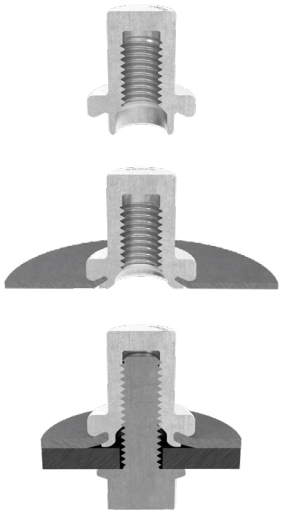
Round special rivet nuts for high pull-through forces



Thread size from M8 to M10
Thickness from 1.20 to 2.40 mm
Tensile strengths up to 2000 MPa

RND® Cap Nuts

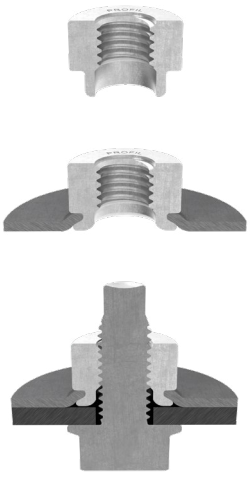
Round special rivet nuts for extra watertightness



Thread size from M6 to M12
Thickness from 0.80 to 3.50 mm
Tensile strengths up to 1500 MPa

RSN® Rivet Nuts

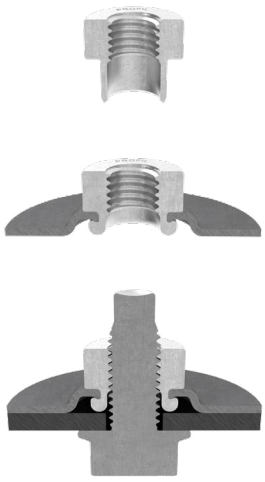
Round, narrow bodied rivet nuts



Thread size from M5 to M14
Thickness from 0.80 to 4.00 mm
Tensile strengths up to 1200 MPa

RSF® Rivet Nuts

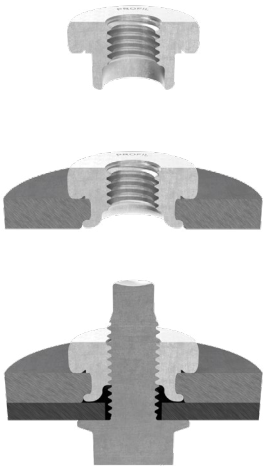
Round shoulder rivet nuts with flange



Thread size from M6 to M12
Thickness from 0.75 to 4.00 mm
Tensile strengths up to 1200 MPa

REN® Rivet Nuts

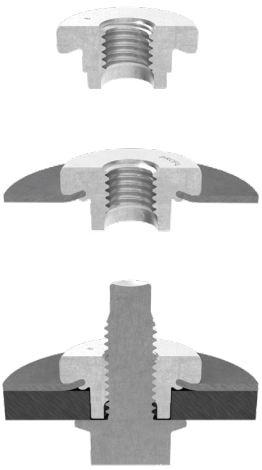
Rivet nuts for thick sheet applications



Thread size from M8 to M10
Thickness from 4.00 to 8.00 mm
Tensile strengths up to 1200 MPa

NMR® Rivet Nuts

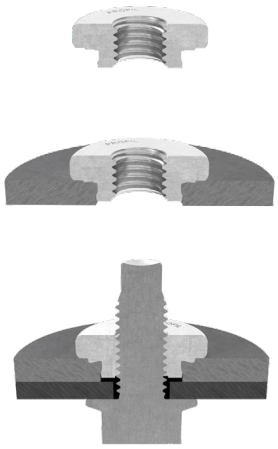
Round rivet nuts with skirt



Thread size from M6 to M8
Thickness from 0.60 to 2.50 mm
Tensile strengths up to 1500 MPa

EMF® Clinch Nuts

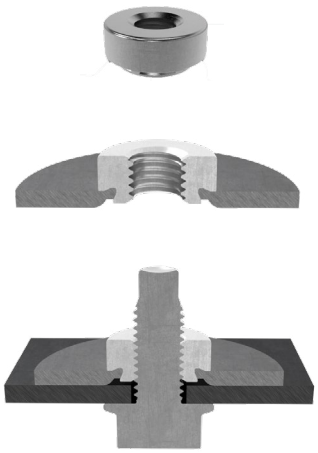
Clinch nuts for thick sheet applications in aluminum



Thread size from M6 to M12
Thickness from 3.00 mm
Tensile strengths up to 325 MPa

MHD® Clinch Nuts

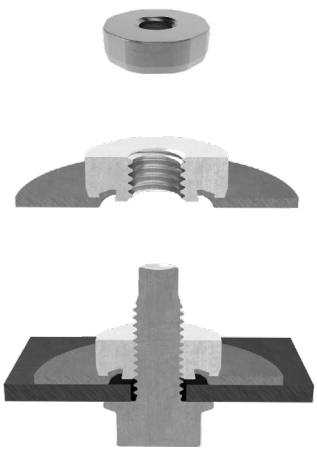
Clinch nuts for thick sheet applications



Thread size from M6 to M12
Thickness from 1.40 to 5.10 mm
Tensile strengths up to 700 MPa

MHN® Self-Piercing Clinch Nuts

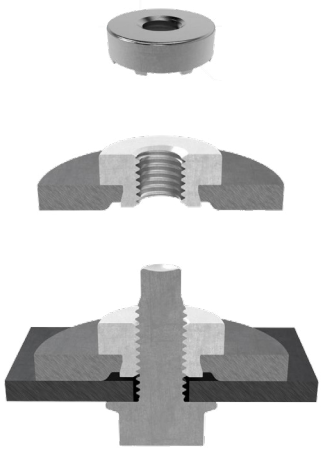
Clinch nuts for thin sheet applications



Thread size from M6 to M12
Thickness from 0.7 to 3.5 mm
Tensile strengths up to 700 MPa

A9N® Clinch Nuts

Clinch nuts for aluminum



Thread size from M6 to M10
Thickness from 1.20 to 6.00 mm
Tensile strengths up to 700 MPa

PROFIL® Product Range

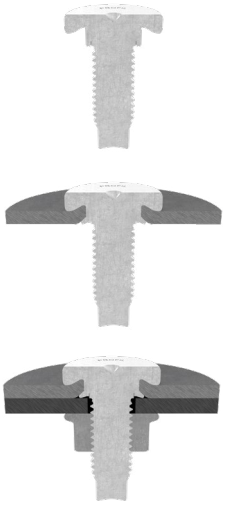
SBF® Rivet Studs

Pierce studs with flange

Thread size from M5 to M10
Thickness from 0.60 to 3.50 mm
Tensile strengths up to 1200 MPa

NBR® Rivet Studs

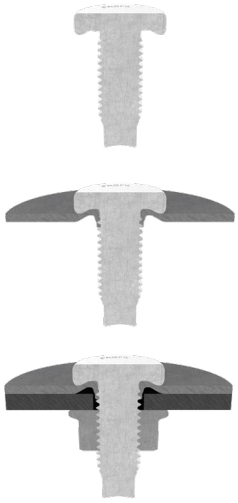
Rivet studs with skirt



Thread size from M6 to M8
Thickness from 0.60 to 2.50 mm
Tensile strengths up to 1500 MPa

EBF® Clinch Studs

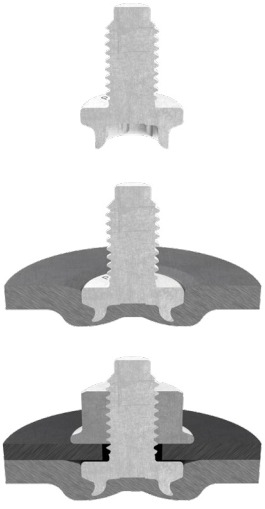
Clinch studs with flange



Thread size from M5 to M12
Thickness from 1.00 to 4.00 mm
Tensile strengths up to 1200 MPa

SBF®-H Self-Piercing Rivet Studs

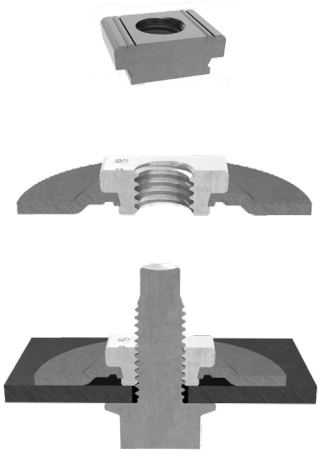
Semi self-piercing rivet studs



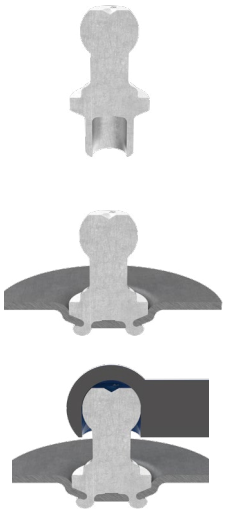
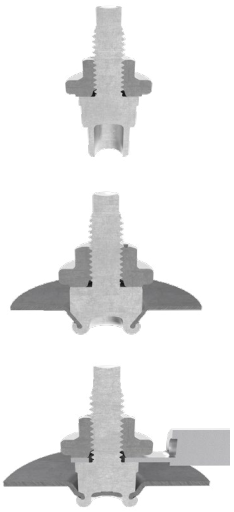
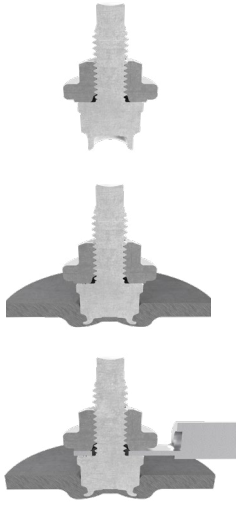
Thickness >2.20 mm

HS® Rectangular Nuts

Pierce nuts for a wide range of sheet thicknesses

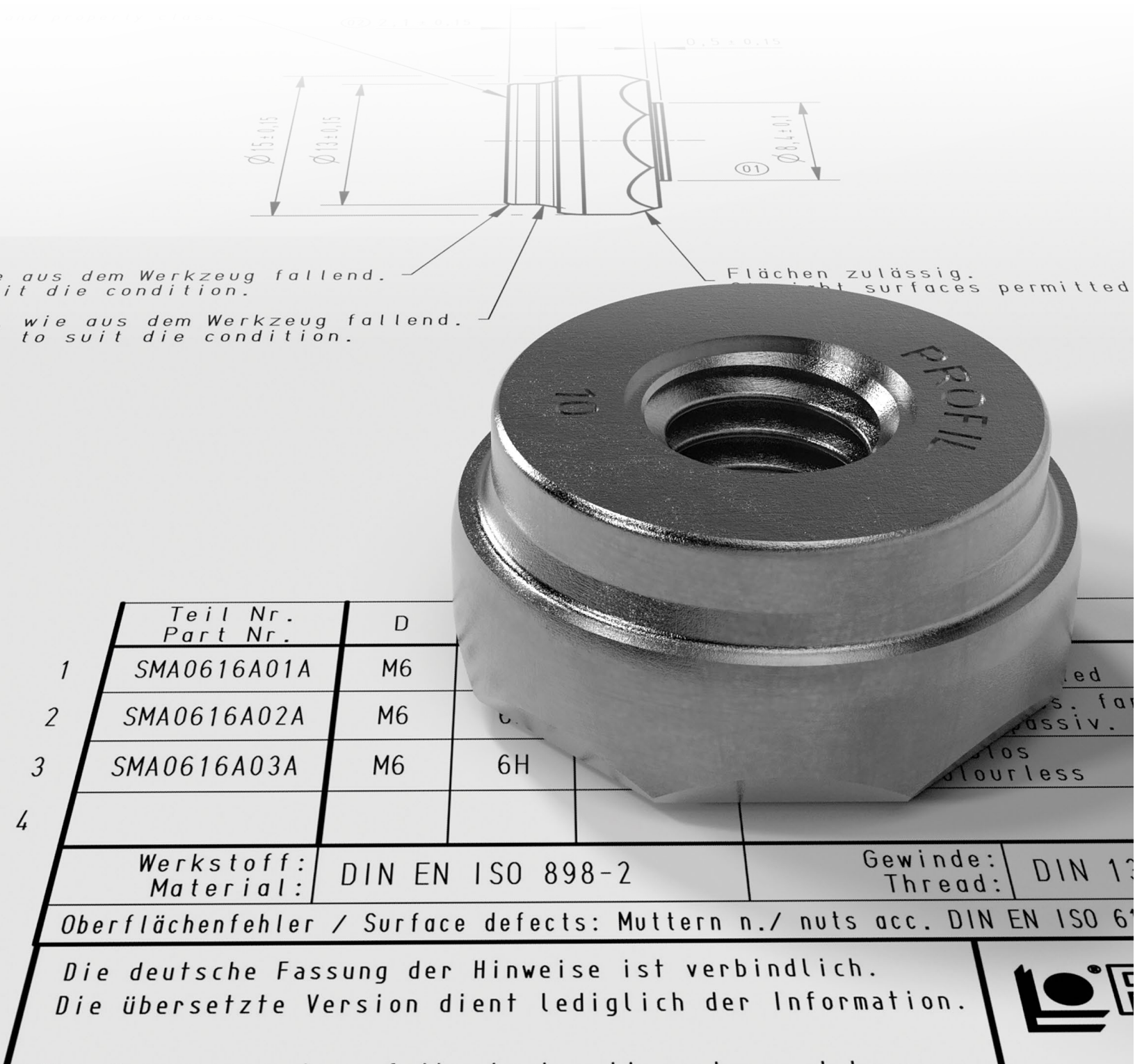


Thread size from M4 to M10
Thickness from 0.65 to 2.3 mm
Tensile strengths up to 1200 MPa

SBF®-K Ball Studs	KSB® Grounding Studs	KSB®-H Grounding Studs
Ball pin with flange	Self-piercing rivet studs for grounding	Semi self-piercing rivet studs for grounding
		
Ball diameter 9.80 mm Thickness from 3.50 mm Tensile strengths up to 1200 MPa	Thread size M6 Thickness from 0.70 to 2.20 mm Tensile strengths up to 1200 MPa	Thread size M6 Thickness >2.20 mm Tensile strengths up to 500 MPa

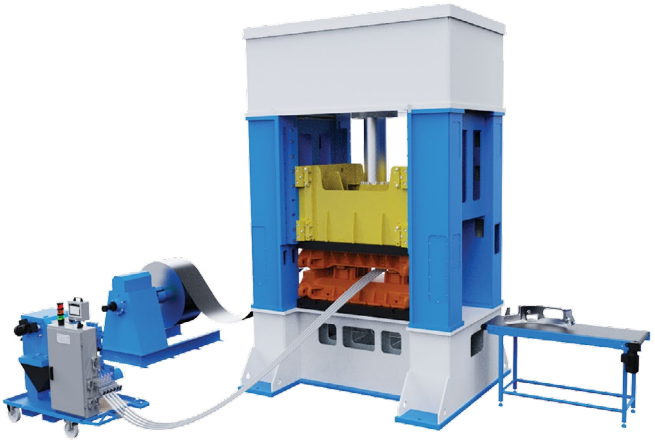
Installation and Application Techniques of Mechanically Attached Fasteners (MAF)

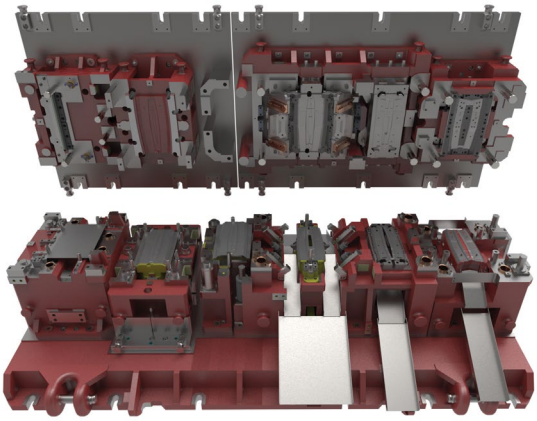
PROFIL® application engineers collaborate closely with customers for pre-production installations and testing. As a systems supplier, we design and provide tailored processing technology to meet the specific production needs of each application. This ensures the optimal solution for various manufacturing requirements.



In-Die

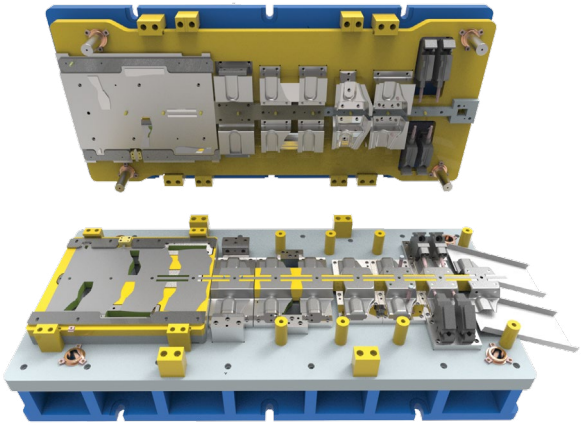
Fully automated installation for high-volume production, integrated directly into the forming press.





Transfer Die

Handles complex, large parts, using multiple press stations for precision.



Progressive Die

Provides precise, high-speed attachment, typically used in the automotive industry.

Body in White

Allows manual or robotic installation for smaller, low-volume or prototype runs.

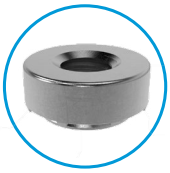
Applications

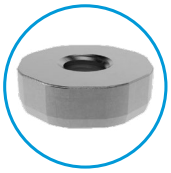
Upper Body Applications

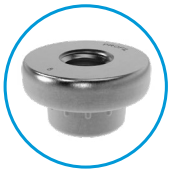

RND®

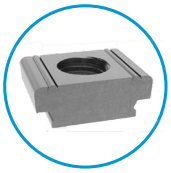

SBF®


EBF®

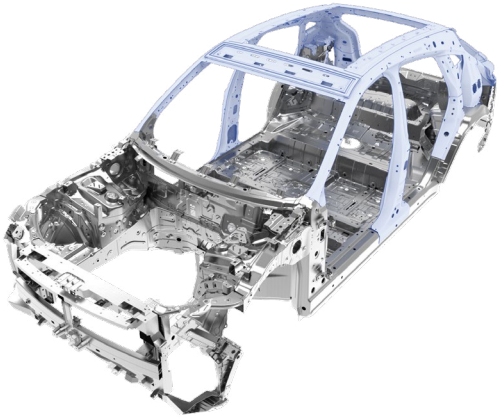

MHD®


MHN®


REN®


HS®

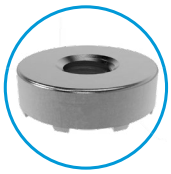
Under Body Applications




RND®


SBF®


EBF®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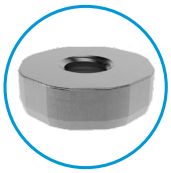
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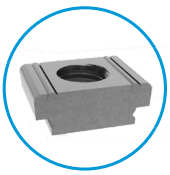
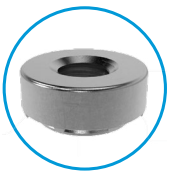

HS®

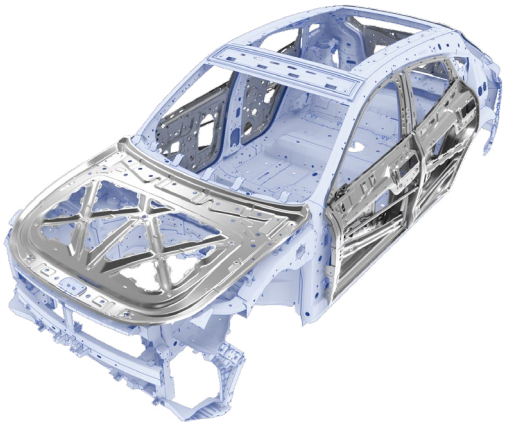

MHD®

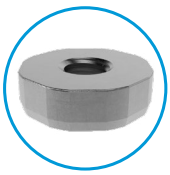

RSF®


REN®


EMF®

Closures

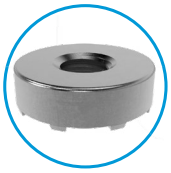



MHN®


RND®


SBF®-K


EBF®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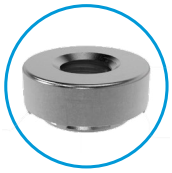
NBR®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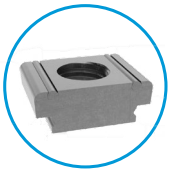
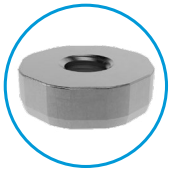

HS®

Chassis


RND®


SBF®


EBF®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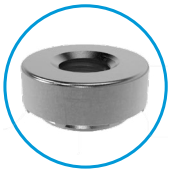
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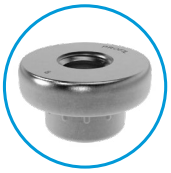

REN®


RSN®


RND®-S

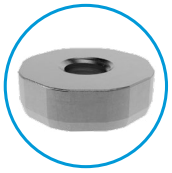

KSB®

Seating


RND®


RSF®


EBF®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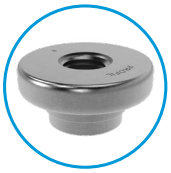
NMR®


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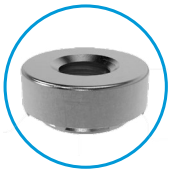
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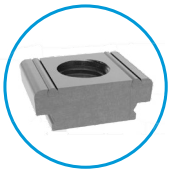
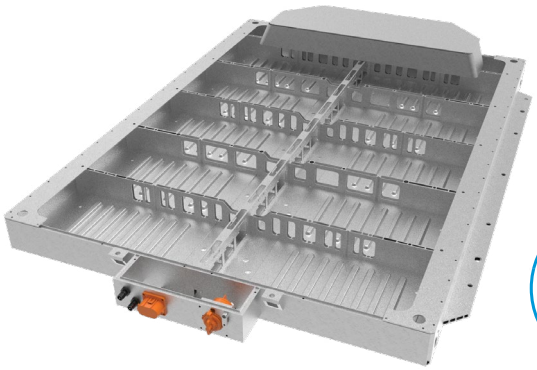

HS®

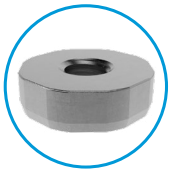
Battery Tray




RND®


SBF®


NBR®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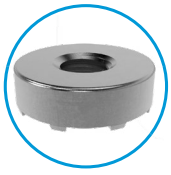
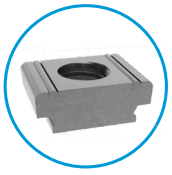
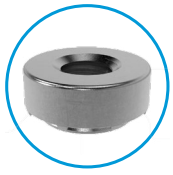

A9N®


HS®


RND® Cap Nut


KSB®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