TAPTITE 2000®:
The ideal thread forming screw for metals
Continuous development of thread forming screws for metals

The chipless thread forming process was introduced in 1961 with TAPTITE® fasteners as a worldwide standard. Later developments like the TAPTITE® II and the DUO-TAPTITE® fasteners addressed ever increasing technical requirements.

Now the new TAPTITE 2000® fastener combines the technologies of the TAPTITE® II and the DUO-TAPTITE® while further enhancing the thread profile. It represents the future-focused synergy of the various previous designs.

It is no wonder TAPTITE® fasteners are the worldwide number one choice for thread forming applications.

TAPTITE® II

This widely marketed thread forming screw for metals has a chamfered edge over the first three threads and a pronounced TRILOBULAR® form. Thanks to its excellent geometry, it more than meets the requirements of a thread forming screw.

DUO-TAPTITE®

The special thread forming screw for applications over M5 has a less pronounced TRILOBULAR® form in the load-bearing threaded area, and offers a much greater resistance to stripping out, and thus a much stronger joint. The tip profile with two stabilizing threads helps to ensure perpendicular insertion.

TAPTITE 2000®

The different properties of the TAPTITE® II and the DUO-TAPTITE® fasteners are combined in the TAPTITE 2000® and further enhanced with the special Radius Profile™ thread. This means even lower insertion torque and higher pretensioning strength, while the conical tip over the first 2 to 2.5 thread turns (SP™ version) decisively improves insertion.

Refinements

- Radius Profile™ thread
- Optimum out-of-roundness
- Shortened screw-tip

Your benefit

- One screw to replace both TAPTITE® II and DUO-TAPTITE® fasteners
- Greater separation between insertion and stripping torque means greater assembly security
- High pretensioning strength
- Higher pull-out value
- Lower insertion torque

Radius Profile™ thread

The Radius Profile™ thread means less deformation of the female material for the same frictional values and surface pressure. The insertion torque is thus much lower, and the pretensioning strength is maximized with very little scatter.

T: insertion torque
Tt: tightening torque
Ts: stripping torque
P: pitch
**Profitable fastening and easy assembly**

**How the TAPTITE 2000® fastener works**

The bore is produced by drilling, casting or punching. The thread forming screw is then inserted directly into the hole. The screw creates its own female thread, without producing any swarf. Thread forming screws are suitable for materials up to 500 N/mm².

Waxing the surfaces helps to ensure a closely grouped insertion torque range. After assembly, the TAPTITE 2000® fastener can be replaced by a normal metric screw to DIN ISO 965.

**Fastening for profit**

Using thread forming screws in place of conventional fasteners means big savings on time and money. Several costly steps such as thread-cutting are eliminated.

And what is more, those hard-to-quantify costs like administration, storage and cleaning procedures are also avoided.

**Technical advantages**

- No swarf
- Close mating
- Work hardening of female thread
- Exact thread size is produced
- Standard DIN ISO 965 screws can be used for spares
- Thread forming is possible in materials up to 500 N/mm² or 150 HB

**Threads without tapping**

With appropriate substrates, the thread is formed without cutting or mess. The female component is locally work hardened. The fact that the thread is formed by the screw means there is very close mating (80 – 90%) and no play between the TAPTITE 2000® fastener and the substrate.
Special screws for specific applications

EXTRUDE-TITE® 2000™
- No sleeve required
- No securing nut
- High process security thanks to high over-tightening torque
- Plates can be stacked without scratching (no proud sleeve)
- Special robust thread

TAPTITE 2000® with CA tip
- Finds the bore more easily
- Centres displaced bores

TAPTITE 2000® with captive-point
- Mechanical securing of the screw after thread forming
- Removal only possible by destroying the female thread
- Easy to insert squarely

Special designs to customer drawing
- Designs according to individual requirements

Options and additional functions

Stop teeth
- Increases over-tightening torque
- Robust fastening
- Especially suitable for light gauge sheets or other low strength materials

Cup point
- Electrical contact
- No subsequent shifting of the components
- Splash-proof connection
- Can be combined with fins to exploit the advantages of stop teeth at the same time

100% inspection of attributes
- Max. defect rate reduced from < 150 ppm to 0 – 3 ppm
- Reduced downtimes of cost-intensive assembly lines
- Higher productivity
- Higher functional reliability of the finished product

Power drives
- TORX PLUS® drive system
- TORX®
- DIN 7962-Z cross slot
- Stadler SR (friction drive)
- One-way and safety drives
- Combinations of different drives

Surfaces
- Corrosion resistant materials A2:70 / A4:70
- Special surface treatment available
- Colored screw heads

spedseal® (Ø 1.4 to Ø 20)
- Under-head sealing
- Insulation of electrically conducting zones
- Sound insulation of metallic contacts
- Hardness 50 shore A up to 75 shore D

TAPTITE 2000® with spedcaps®
- Combine the advantages of thread forming with extremely high security due to the micro-encapsulated adhesive

REMFORM® II™ "F"
- Suitable for materials with low deformation (magnesium, aluminium and zinc alloys)
- For high strength thermoplastics
- Good fastening strength
- Adjustable threads
- Suitable for open profiles

TAPTITE 2000® (Long Point)
- Two stabilizing threads / three forming threads
- Specially for through holes
- Self-centering
Technically improved values for better fastening

Assembly techniques
The whole system has to be considered if the best possible fastening solution is to be achieved. Even the best screw can only function when all the factors are optimized.

Fastener
- Tensile strength
- Geometry (head/thread)
- Surface
- Quality
- Ppm level

Optimal assembly

Substrate
- Tensile strength up to 500 N/mm²
- Optimum bore diameter
- Insertion depth 1.5 - 2.6 × d

Fastening tool
- Rotation speed
- Applied force
- Turn-off accuracy
- Feed accuracy
- Type of drive
- Max. 800 rpm

Recommendations for safe fastening
- The insertion torque should not exceed 90% of the fastener strength; or should be at least 30% below stripping torque
- The thread forming torque can not be simply added to the normal tightening torque of a standard screw. That would overload the fastener
- In critical cases, the torque profile can be improved by the under-head configuration
- The fastener should never turn at more than 800 rpm

Suitable substrate strength based on the fastener strength

<table>
<thead>
<tr>
<th>N/mm²</th>
<th>0</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>case hardened</td>
<td>8.8</td>
<td>9.8</td>
</tr>
</tbody>
</table>
| Screw tensile class | 10.9 | stainless steel A2-70/A4-70

We recommend heat treated screws to quality 8.8 to 10.9 for applications with combined tensile and bending strain and for all dynamic load applications.

The thread forming process creates excellent resistance to loosening. The displaced material in the substrate flows back into the flattened areas of the TRILOBULAR® screw, producing an excellent bond with very little play.

If this level of security is insufficient however, coating with spedcaps® creates an even stronger bond.

No other securing elements are needed, and the whole purchasing-storage assembly procedure is dramatically simplified. This of course translates into considerable savings.

Screw tensile classification
SF6 intec thread forming screws can be used in any ductile material below 150 HB / 500 N/mm² (aluminium steel, non-ferrous materials) and are case hardened as standard.

The tensile strength of these screws is at least 900 N/mm², equivalent to a 9.8 screw. The yield point is at around 90% of the tensile value, while the elongation at fracture is equivalent to that of a 10.9 screw.

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**Guidelines for dimensioning**

**Determining the insertion depth**

The load-bearing thread length is reduced by the length of the tip.

**Functional testing**

In order to ensure secure and reliable fastening in mass production, we are able to analyse specific applications.

You too can profit from the know-how of our engineers, and take advantage of our modern application laboratory.

We would be delighted to help design your fasteners.

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**Recommendations for tapered, cast blind and through holes**

The values indicated have been compiled at thorough discussions with leading pressure die casters. General guidelines for the design of castings also apply.

**Recommendations for drilled and punched holes in materials in the hardness range up to 150 HB, 500 N/mm²**

<table>
<thead>
<tr>
<th>Load bearing thread length t (mm)</th>
<th>Bore diameter (mm)</th>
<th>Bore diameter (mm)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>M1.8</td>
<td>H10</td>
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<tr>
<td></td>
<td>0.20</td>
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</tr>
<tr>
<td></td>
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<td>0.50</td>
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<td>0.45</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>0.50</td>
<td>1.25</td>
</tr>
</tbody>
</table>

*Pitch P*

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**Recommendations for fastening through thin sheet**

Thin sheets can be deep drawn to provide a surface for fastening. Using thread tappers or thread tapping screws weakens the thin walls, whereas using thread forming screws results in fully load-bearing workhardened threads.

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**Important note**

The overlap area can be covered but needs to be discussed with SFS intec.

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**Tolerance**

- H10: ±0.060
- H11: ±0.075

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**For the perfect solution for thin sheet without the need to deep draw the bore, we recommend EXTRUDE-TITE® 2000™ fasteners. Please request specific information.**
Fast forward in focus

Our objective is to improve the competitive edge of your business. That’s why we support you with technical advice and a full service palette: so you derive the maximum possible benefit from your collaboration with SFS intec.

Cross location expertise

Flexibility and economy are our bywords at SFS intec, throughout our international network of facilities. We manufacture our products in various plants across three continents.

We maintain a continuous knowledge exchange process beyond company boundaries and national frontiers. It is the merging and ongoing development of technological know-how which creates the critical synergy. That’s why we are always able to communicate and convey a state-of-the-art knowledge base in our technologies.