



## EJOT SHEETtracs®

Safe assembly of thin sheet metal joints with pilot hole

A collection of various mechanical parts and fasteners scattered on a grey background. The parts include screws, bolts, nuts, washers, gears, and other small components in various colors like black, white, blue, red, and yellow. The text "... Always a Good Connection" is overlaid in the center in a large, white, sans-serif font.

... Always a Good Connection



Globally, the EJOT group of companies specialises in advanced fastening and forming technology. Historically, EJOT customers are mainly from the automotive and supply chain industry, telecommunications and consumer electronics in addition to the building and construction industry.

EJOT's Industrial Division offers a wide range of innovative fastening elements, above all self-tapping screws for metals and plastic materials, multifunctional cold-formed components, individual assembly groups made of metal and plastic materials, engineered plastic components as well as special fastening solutions.

Working alongside our customers, EJOT develops individual solutions for their joining applications as well as appropriate assembly parts. The goal is to use "intelligent" products to secure the outstanding quality of the joint and at the same time reduce the overall costs permanently. The savings potential offered by this optimisation approach is much higher compared to the component costs, which are usually only 10 - 20 percent of the total costs.

EJOT - with over 90 years of company history and about 3,500 employees in more than 30 subsidiaries, assures quick global availability of our products and fast, personal contact with our customers.

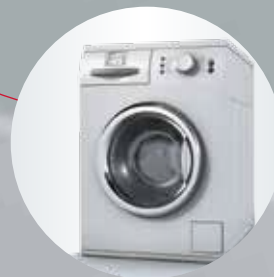
## The challenge

# **EJOT SHEETtracs®** the process-reliable connection for thin sheet metal applications

Less material = less costs. This also applies for the sheet metal thickness: pre-punched sheet metals have become thinner and thinner, so thin sheet metal screws are required for their process-reliable assembly.

These screws have a metric 60° thread and are often made with cone-shaped points. The advantage of a metric thread is the smaller thread pitch in comparison with sheet metal screws, whereby more thread turns are engaged in the thin sheet metal.

However, as it is usually not the screw which represents the weak point of a joint but the formed female thread, EJOT has developed its own thin sheet metal screw with a reduced flank angle: EJOT SHEETtracs®.







## **EJOT SHEETtracs®**

### **A thread geometry for more stability**

The EJOT SHEETtracs® is a self-tapping screw for safe mounting of thin sheet metal joints with pilot hole. It is characterized by an asymmetrical flank angle of 45° (30°/15°). Due to the reduced material displacement, the SHEETtracs® screw creates a more stable female thread in the sheet metal, particularly in comparison to conventional 60° threads. This increases the stripping torque level of the joint and enables multiple repeat assemblies.

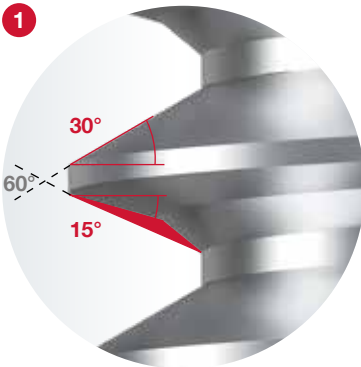
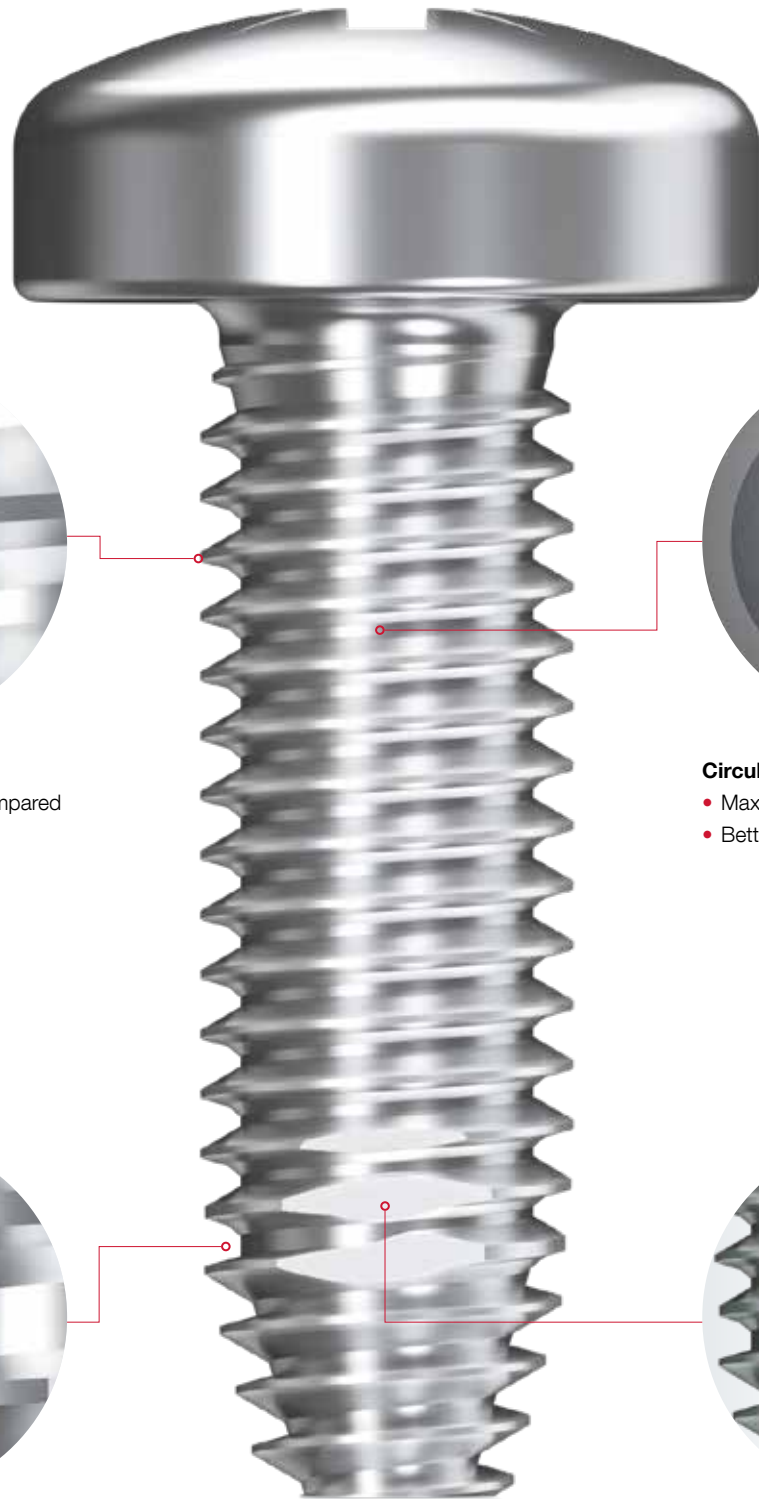
The circular cross section in the upper, load-bearing thread results in higher thread engagement in the sheet metal compared to non-circular thread geometries.

In the lower, tapered area of the screw, the flank angle is reversed, and the resulting through draught is formed mainly in fastening direction. The non-circular thread forming zone ensures an easy, centred application and the raised thread areas ensure a secure penetration of the sheet metal material.

The metric pitch of the EJOT SHEETtracs® facilitates interchangeability with standard metric screws, e.g. for repairs.

#### **Characteristics at a glance**

- High strength of the screw joint
- Simple and safe assembly due to easy alignment and low installation torque
- High stripping torque due to a robust female thread
- Metric compatibility



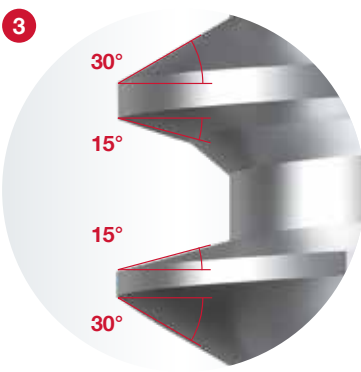
**Thread flank geometry**

- More stable female thread compared to conventional 60° threads



**Circular thread geometry**

- Maximum flank coverage
- Better interchangeability



**Reversed flank angle**

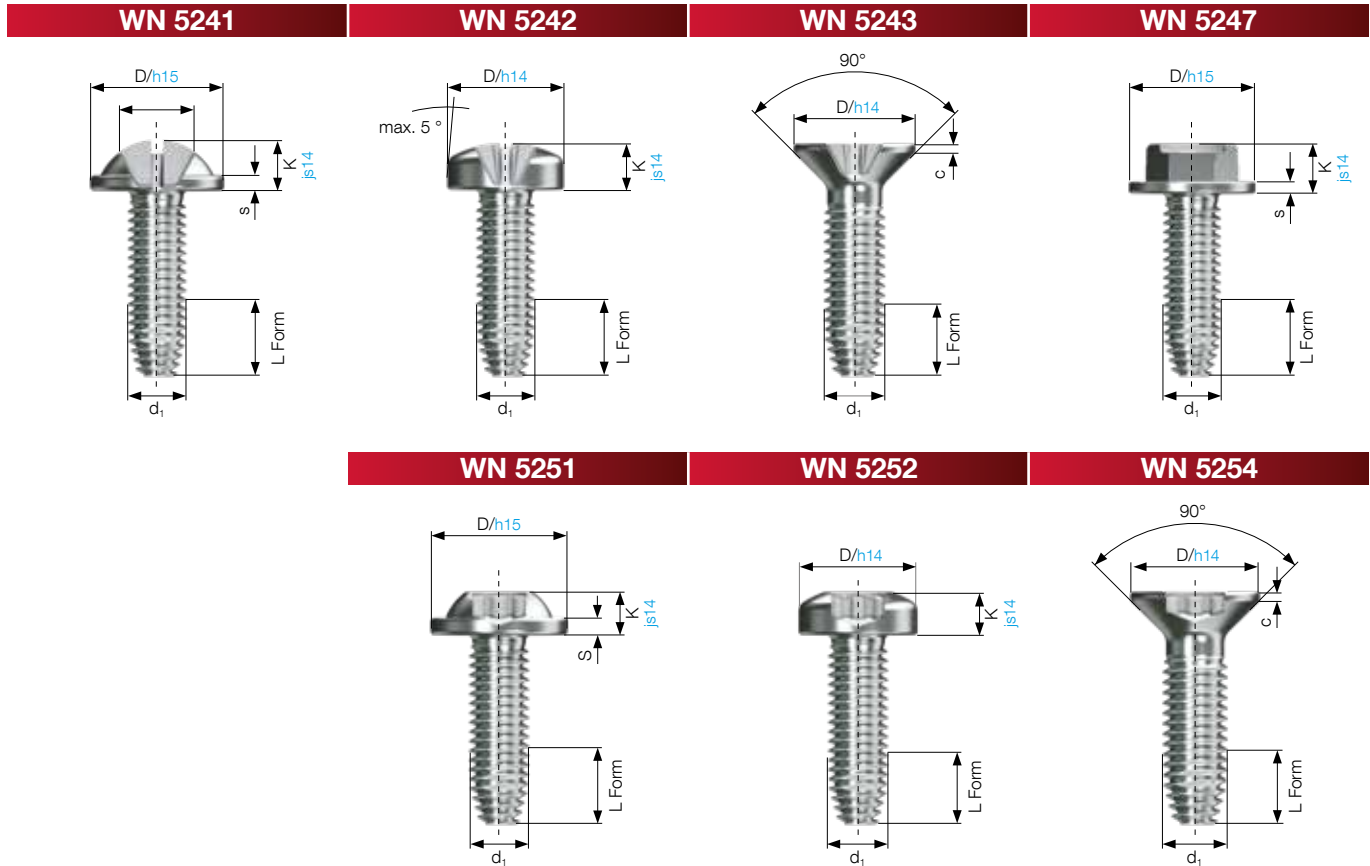
- Forming the through draught in fastening direction



**Non-circular thread forming zone**

- Easy and simple application of the screw
- Reliable penetration into the material

**Technical specifications**  
Designs



SHEETtracs®	25	30	35	40	50	60
Outer Ø	2,50	3,00	3,50	4,00	5,00	6,00
Length of forming areas max. L <sub>Form</sub>	3,5	3,9	4,6	5,0	5,9	7,1

**Nominal size ranges (mm)**

Tolerance range	over 3		over 6		over 10		over 18		over 30		
	up to 3	up to 6	up to 10	up to 18	up to 30	up to 50					
h 14	0	0	0	0	0	0	-0,25	-0,30	-0,36	-0,43	-0,52
h 15	0	0	0	0	0	0	-0,40	-0,48	-0,58	-0,70	-0,84
js 14	±0,12	±0,15	±0,18								

All cross and TORX® recesses are also available as combi recesses. (exception: WN 5243 & WN 5254)



**Ordering example**  
Description of an EJOT SHEETtracs® screw with pan head and TORX® recess, nominal Ø 4.0 mm and length L = 20 mm  
**EJOT SHEETtracs® screw WN 5252 40 x 20**

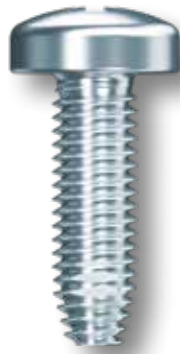


SHEETtracs®			25	30	35	40	50	60
Outer Ø	d <sub>i</sub>		2,50	3,00	3,50	4,00	5,00	6,00
Outer Ø tolerance			+0,10	+0,10	+0,10	+0,12	+0,12	+0,14
Pitch	P		0,45	0,50	0,60	0,70	0,80	1,00
<b>WN 5241</b>								
Head Ø	D <sub>max.</sub>			7,50	9,00	10,00	11,50	14,50
Head height	K			2,40	2,50	3,20	4,00	4,60
Washer thickness	s			0,90	1,00	1,20	1,40	1,60
H cross recess	insertion depth t	min.		1,07	1,33	1,98	2,24	2,84
		max.		1,70	1,96	2,61	2,90	3,50
Z cross recess	insertion depth t	min.		1,08	1,40	2,01	2,27	2,91
		max.		1,54	1,86	2,47	2,73	3,37
Cross size H/Z				2	2	2	3	3
<b>WN 5242</b>								
Head Ø	D <sub>max.</sub>		5,00	6,00	7,00	8,00	10,00	12,00
Head height	K		2,20	2,40	3,10	3,30	3,90	4,90
H cross recess	insertion depth t	min.	1,30	1,70	1,74	2,04	2,77	3,03
		max.	1,60	2,00	2,24	2,54	3,27	3,53
Z cross recess	insertion depth t	min.	1,27	1,68	1,65	1,90	2,64	3,02
		max.	1,52	1,93	2,11	2,36	3,10	3,48
Cross size H/Z			1	1	2	2	2	3
<b>WN 5243</b>								
Head Ø	D <sub>max.</sub>		5,00	6,00	7,00	8,40	10,00	12,50
cyl. Head height	C <sub>max.</sub>		0,55	0,60	0,65	0,70	0,75	0,85
H cross recess	insertion depth t	min.	1,25	1,50	1,40	1,62	2,10	2,80
		max.	1,55	1,80	1,70	2,12	2,60	3,30
Z cross recess	insertion depth t	min.	1,22	1,48	1,34	1,60	2,05	2,46
		max.	1,47	1,73	1,79	2,06	2,51	2,92
Cross size H/Z			1	1	2	2	2	3
<b>WN 5247</b>								
Washer Ø	D <sub>max.</sub>			7,50	8,30	9,00	11,00	13,00
Head height	K			3,00	3,40	3,80	4,30	5,00
Width across flats	A/F			5,00	5,50	5,50	7,00	8,00
Washer thickness	s			0,70	0,90	0,90	1,10	1,30
<b>WN 5251</b>								
Head Ø	D <sub>max.</sub>		6,00	7,50	9,00	10,00	11,50	14,50
Head height	K		2,00	2,25	2,50	3,00	3,60	4,40
Washer thickness	s		0,60	0,70	0,80	1,10	1,40	1,50
TORX®			T8	T10	T15	T20	T25	T30
	A <sub>Ref.</sub>		2,40	2,80	3,35	3,95	4,50	5,60
Insertion depth t	min.		0,95	1,00	1,10	1,25	1,60	2,00
	max.		1,15	1,30	1,40	1,70	2,00	2,40
<b>WN 5252</b>								
Head Ø	D <sub>max.</sub>		5,00	6,00	7,00	8,00	10,00	12,00
Head height	K		2,00	2,25	2,50	3,00	3,60	4,40
TORX®			T8	T10	T15	T20	T25	T30
	A <sub>Ref.</sub>		2,40	2,80	3,35	3,95	4,50	5,60
Insertion depth t	min.		0,95	1,00	1,10	1,25	1,60	2,00
	max.		1,15	1,30	1,40	1,70	2,00	2,40
<b>WN 5254</b>								
Head Ø	D <sub>max.</sub>		5,00	6,00	7,00	8,40	10,00	12,50
cyl. Head height	C <sub>max.</sub>		0,55	0,60	0,65	0,70	0,75	0,85
TORX®			T8	T10	T15	T20	T25	T30
	A <sub>Ref.</sub>		2,40	2,80	3,35	3,95	4,50	5,60
Insertion depth t	min.		0,70	0,75	0,85	1,10	1,15	1,40
	max.		0,90	1,10	1,15	1,55	1,55	1,80

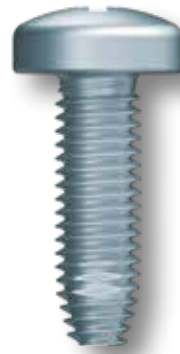
## Technical specifications

### Designs

Material: Case-hardened steel, case-hardened,  
hexavalent chromium-free coatings



zinc-plated,  
blue passivated



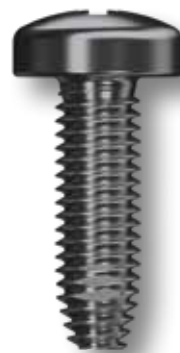
zinc-plated, blue/thick-film  
passivated + EJOSEAL



zinc-plated,  
thick-film passivated



ZnFe, ZnNi,  
transparent passivated  
(with or without sealing/  
top coat)



ZnFe, ZnNi,  
black passivated  
(with or without sealing/  
top coat)



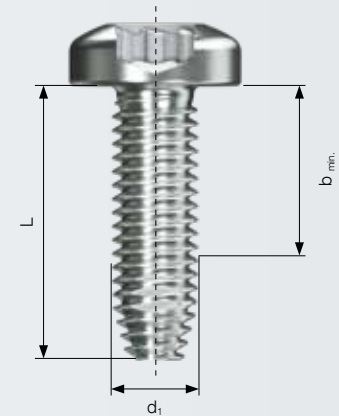
Zinc flake coatings  
(with or without sealing/  
top coat in silver or black)

Further materials and coatings are available upon request.

Manufacturing range

SHEETtracs®	25	30	35	40	50	60
Outer Ø d <sub>1</sub> (mm)	2,50	3,00	3,50	4,00	5,00	6,00
Length L	Usable thread length b <sub>min.</sub>					
6 + 0,60	2,50	2,10				
8 + 0,75	4,50	4,10	3,40	3,00		
10 + 0,75	6,50	6,10	5,40	5,00	4,10	
12 + 0,90	8,50	8,10	7,40	7,00	6,10	4,90
14 + 0,90	10,50	10,10	9,40	9,00	8,10	6,90
16 + 0,90	12,50	12,10	11,40	11,00	10,10	8,90
18 + 0,90	14,50	14,10	13,40	13,00	12,10	10,90
20 + 1,05		16,10	15,40	15,00	14,10	12,90
25 + 1,05			20,40	20,00	19,10	17,90
30 + 1,05				25,00	24,10	22,90
35 + 1,25					29,10	27,90
40 + 1,25						32,90
50 + 1,25						42,90
60 + 1,50						52,90
Partial thread length	10	10	12	14	16	18

Special lengths are available upon request.

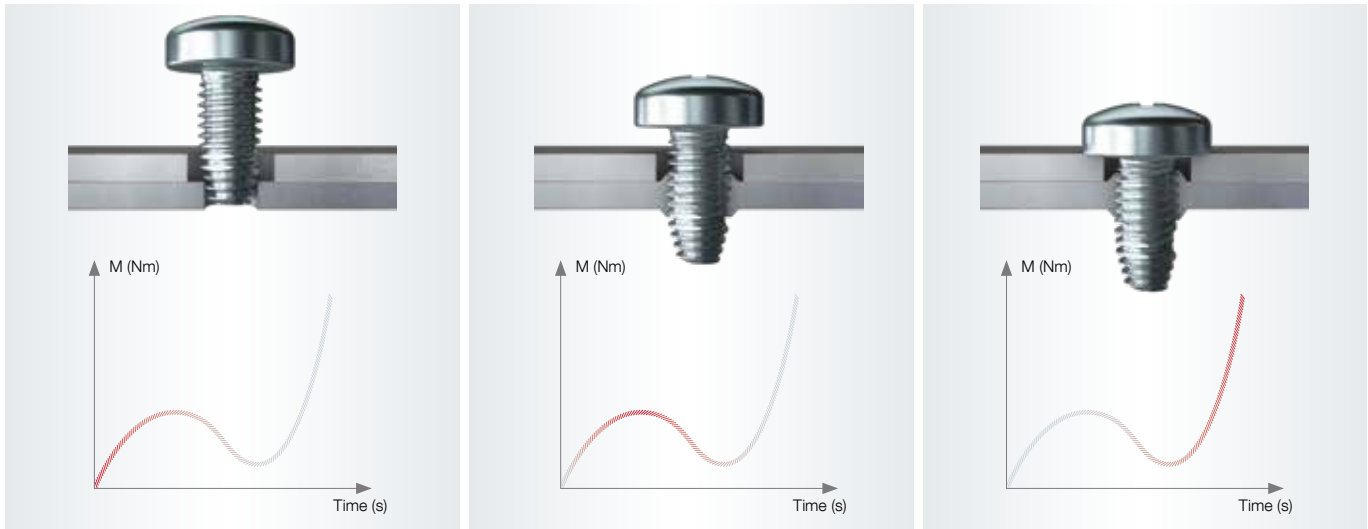


- Minimal length for versions with countersunk head
- Full thread
- Manufacturing range with partial thread



## Application notes

### Assembly stages



**1** Positioning

**2** Thread forming

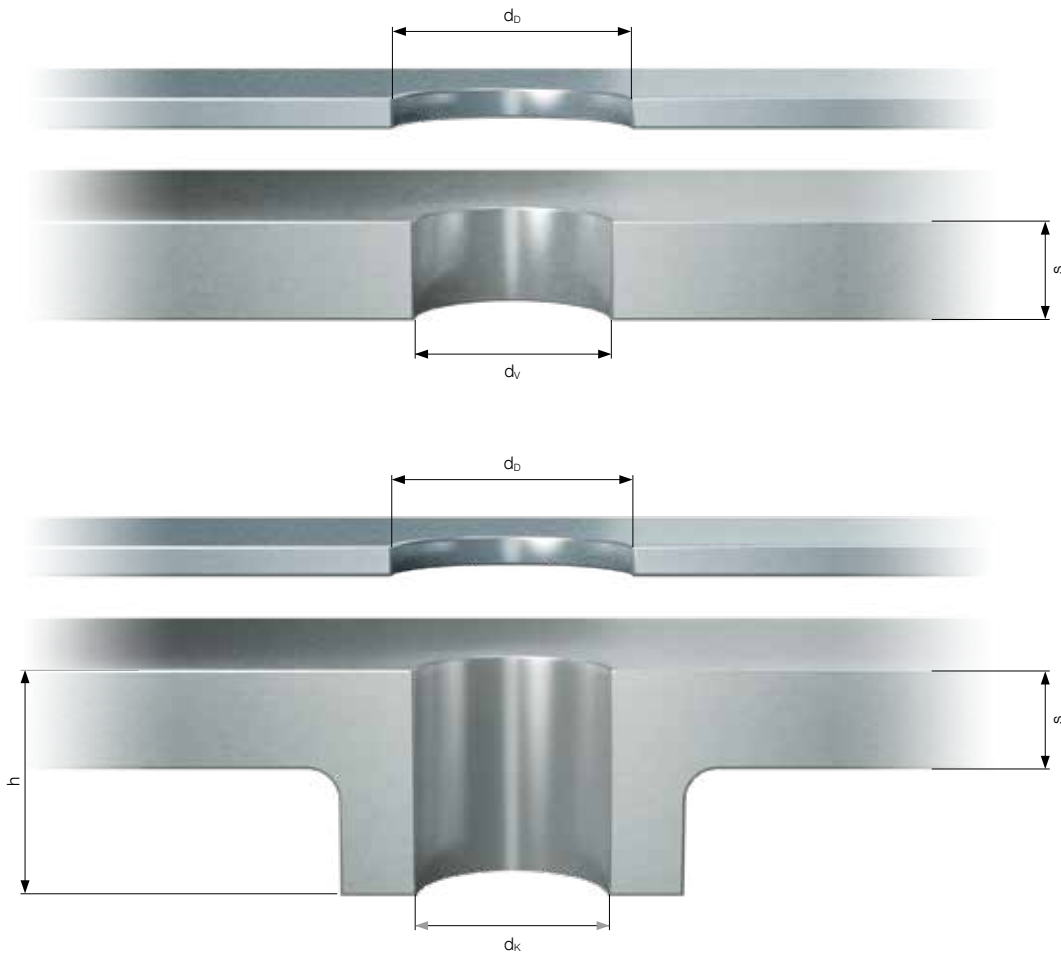
**3** Tightening

## Hole dimensioning for sheet metals

### Recommended pilot hole diameter and tightening torque\* for mild steels according to DIN EN 10130

SHEETtracs®	Outer Ø d <sub>1</sub> (mm)	Sheet metal thckn. s (mm)	Pilot hole Ø d <sub>v</sub> (tolerance +0.1)	Tightening torque M <sub>A</sub> (Nm)
30	3,0	0,50 – 0,63	Ø 2,0	1,0
		0,63 – 0,88	Ø 2,1	1,2
35	3,5	0,63 – 0,88	Ø 2,2	1,3
		0,88 – 1,00	Ø 2,4	1,5
		1,00 – 1,25	Ø 2,6	1,5
40	4,0	0,63 – 0,88	Ø 2,4	2,0
		0,88 – 1,00	Ø 2,6	2,5
		1,00 – 1,25	Ø 3,0	2,5
		0,63 – 0,75	Ø 3,8	2,5
50	5,0	0,75 – 0,88	Ø 4,1	3,0
		0,88 – 1,00	Ø 4,2	3,5
		1,00 – 1,25	Ø 4,3	3,5
		1,25 – 1,50	Ø 4,4	4,0
60	6,0	0,88 – 1,00	Ø 4,8	4,0
		1,00 – 1,25	Ø 4,9	5,0
		1,25 – 1,50	Ø 5,1	6,0

\* In thicker sheet metals or harder materials, the pilot hole diameter should be increased by approx. 0.2 mm.



**Core hole diameter for sheet metal through draughts in steel according to DIN EN 10130**

SHEETtracs®	25	30	35	40	50	60
Outer Ø d <sub>i</sub> (mm)	2,50	3,00	3,50	4,00	5,00	6,00
Core hole Ø d <sub>k</sub> (mm)	2,30	2,75	3,20	3,60	4,50	5,50
Depth of through draught h	h = (1,5 - 2) s					

**Recommended clearance hole in the clamping part**

Clearance hole Ø d <sub>b</sub> (mm)	4,00	4,50	5,00	6,00	7,00	8,00
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**Note:**

It is recommended to check the values and the determination of the installation torque  $T_i$  and stripping torque  $T_s$  during component trials. Therefore we offer the service of our EJOT APPLITEC test laboratory.





## Service and support

# Always perfect advice and assistance

The EJOT concept of total quality goes far beyond outstanding product features. You can expect best performance and service from us. Our goal is always to benefit the customer through added value service. We want you to be successful.



### Engineering advice

A major consideration of today's product manufacture is the basic need to be cost competitive. The cost structure of the manufactured product is significantly influenced by the design engineering. 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 disposal. In this laboratory components are checked thoroughly and the customer has the possibility to have an individual examination of his application done. Following the analysis, he receives professional proposals concerning the best possible fastening solution.



#### Online service

Besides the possibility to have components tested in our laboratory, we offer our customers several prognosis programs to pre-design direct assemblies in thermoplastics and light metals. Practical examples prove that considerable cost savings are already possible during the development phase by using these programmes. After the required registration on the EJOT homepage under "CAD & more", these calculation tools as well as downloads of CAD data and product information are also available online.



#### 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 regards to simplified procurement 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.



#### EJOT sales structure

In addition to the international EJOT companies, a growing number of licensees and members of the Global Fastener Alliance all over the world ensure the global availability of products and local support.

For further information concerning the EJOT license management, please contact Mrs. Ulrike E. Ljubas, Global License Management (phone: +49 2752 109-124, e-mail: [uljubas@ejot.de](mailto:uljubas@ejot.de)).



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