BOSSARD
Proven Productivity

SHEETtracs®

Secure thin sheet fastening

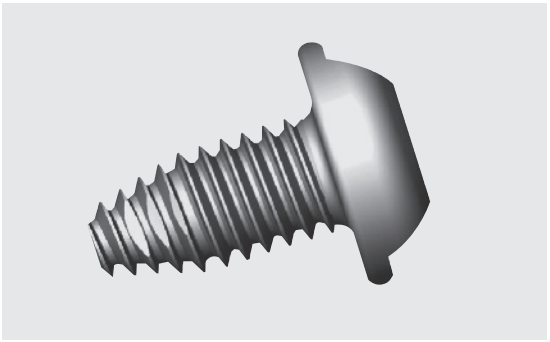
"SHEETtracs® is a thread-forming screw for reliablethin-sheet fastenings with a pilot hole."

SHEETtracs®

Your Benefits

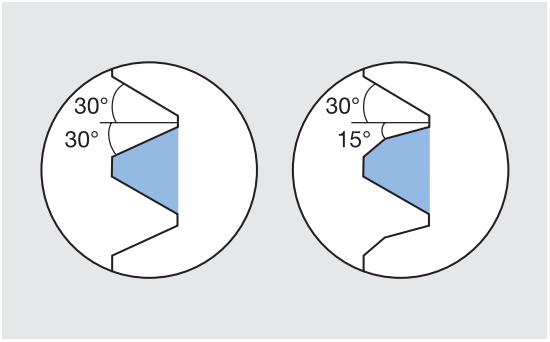
The thin-sheet fastener

SHEETtracs® is a thread-forming screw for reliable thin-sheet fastenings with a pilot hole. Conventional thin-sheet screws have a 60° metric thread. The advantage of the metric thread is the smaller thread pitch compared with self-tapping screws, which leads to more of the load-bearing part of the thread being made use of in the thin sheet. However since in most cases the mating thread formed is the weak point, a special thin-sheet screw has been developed to ensure a reliable assembly process in the pre-holed thin-sheet. This special screw creates a more stable mating thread in the screw-in sheet.



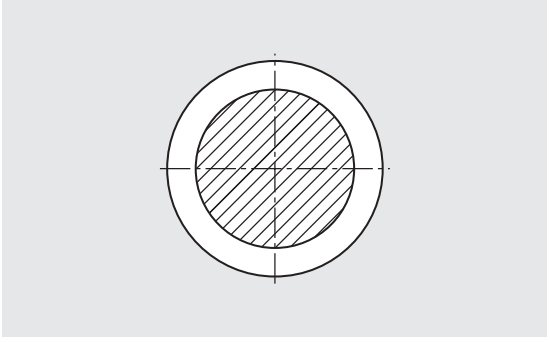
Thread angle geometry

The asymmetric flank angle of 45° leads to lower displacement of material than with symmetric 60° threads and allows a high depth of thread engagement.



Thread geometry

The circular cross-section in the load-bearing thread allows increased overlapping of the thread flanks compared with non-circular thread geometries. The metric pitch means that the screw can be replaced – e.g. in the event of a repair – by conventional metric screws.



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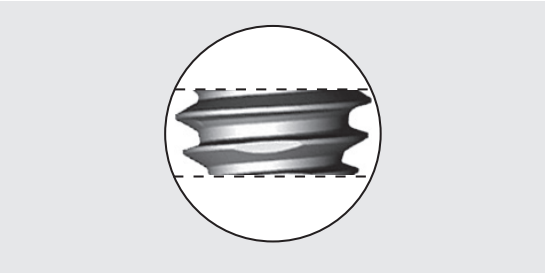
Other variants upon request.

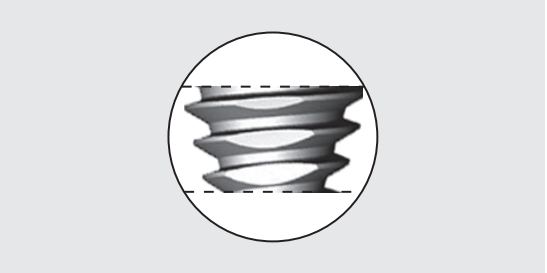
Reversed flank angle

The reversal of the flank angle is made in the form area and ends before the full outer diameter in the load-bearing thread is reached. This means that the resulting rim hole is largely formed in the direction of screwing.



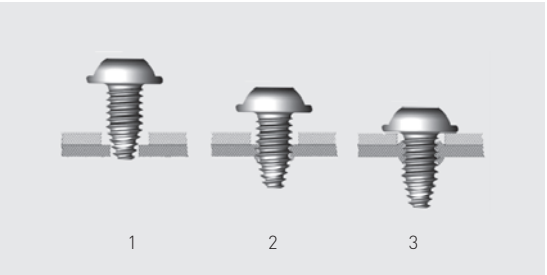
Non-circular thread form areas

The non-circular thread form area allows for a simple, centred preparation of the screw and makes it easy to turn the screw in. The increased thread areas lead to a sure penetration into the sheet material.



Summary

The reduced flank angle of 45° generates a stable mating thread which, thanks to the thicker thread crest, results in higher strengths compared to conventional threads. In addition the circular cross-section in the load-bearing thread allows increased overlapping of the thread flanks compared with non-circular thread
geometries. The reversal of the flank angle in the lower, conical area of the screw forms a rim hole which is mostly developed in the direction of screwing.
The non-circular thread form area allows for a simple, centred preparation of the screw and makes it easy to turn the screw in.

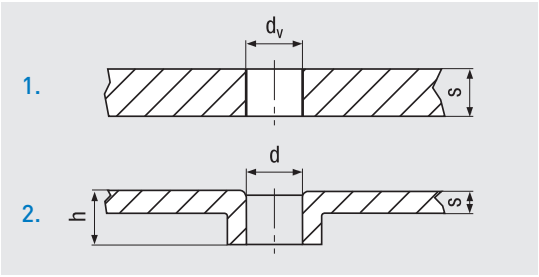


Phases in the process

1. Set up
2. Form thread
3. Tightening

Notes on design

The level of the screwing torque depends on several parameters. They include the type of material and its strengths, the thickness of material, the type of surface treatment of the screw and the screw-in sheet, whether grease or lubricant is present, and the hole diameter used.



1. Hole dimensions for sheets
   Pilot hole diameter dv for screw-in sheet
2. Hole dimensions for sheet rim holes Sheet rim hole d

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Other variants upon request.

1. Pilot hole dimensions without sheet rim hole

2. Hole dimensions for sheet rim holes

SHEETtracs®	Outer-Ø d_1 [mm]	Sheet thickness s [mm]	Pilot hole-Ø d_V [mm] (Tolerance: +0,1)	Tightening torque M_A [Nm]	Tapping hole-Ø d [mm]	Rim hole depth
30	3	0,50 – 0,63	2,0	1,0	2,70 – 2,75	h = (1,5 – 2) s
		0,63 – 0,88	2,1	1,2		
35	3,5	0,63 – 0,88	2,2	1,3	3,20 – 3,30	h = (1,5 – 2) s
		0,88 – 1,00	2,4	1,5		
		1,00 – 1,25	2,6	1,5		
40	4	0,63 – 0,88	2,4	2,0	3,65 – 3,75	h = (1,5 – 2) s
		0,88 – 1,00	2,6	2,5		
		1,00 – 1,25	3,0	2,5		
50	5	0,63 – 0,75	3,8	2,5	4,60 – 4,70	h = (1,5 – 2) s
		0,75 – 0,88	4,1	3,0		
		0,88 – 1,00	4,2	3,5		
		1,00 – 1,25	4,3	3,5		
		1,25 – 1,50	4,4	4,0		
60	6	0,88 – 1,00	4,8	4,0	5,50 – 5,60	h = (1,5 – 2) s
		1,00 – 1,25	4,9	5,0		
		1,25 – 1,50	5,1	6,0		

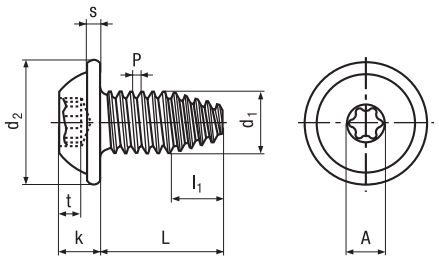
Rim hole depth The recommendations are valid for sheet to sheet connections in cold-rolled soft steels to DIN EN 10130 (DC 01 – DC 04)

Note

It is recommended that the values are checked and the optimal screwing parameters determined by means of components tests carried out in the „Bossard Analysis¨ laboratory.

Thread-forming pan-head screws **WN 5251** with pressed-on washer and Torx® six lobe drive

BN 20191 | Stahl, verzinkt-blau



d		30	35	40	50	60
d_1		3	3,5	4	5	6
P (M)		0,5	0,6	0,7	0,8	1
l_1 max.		3,9	4,6	5	5,9	7,1
d_2		7,5	9	10	11,5	14,5
s		0,6	0,7	1	1,3	1,5
k		2,25	2,5	3	3,6	4,4
	Torx®	T10	T15	T20	T25	T30
A~		2,8	3,35	3,95	4,5	5,6
t	min.	1	1,1	1,25	1,6	2
	max.	1,3	1,4	1,7	2	2,4

d		30	35	40	50	60
L	6	◘				
	8	◘	◘	◘		
	10	◘	◘	◘	◘	
	12	◘	◘	◘	◘	◘
	14		◘	◘	◘	◘
	16			◘	◘	◘
	20				◘	◘
	25					◘

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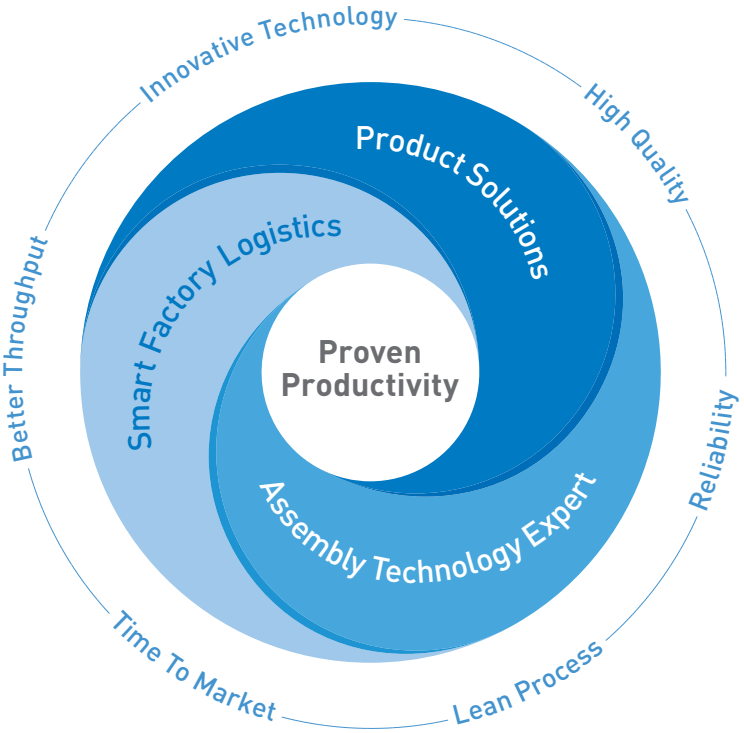
PROVEN PRODUCTIVITY – A PROMISE TO OUR CUSTOMERS

The strategy for success



From years of cooperation with our customers we know what achieves proven and sustainable impact. We have identified what it takes to strengthen the competitiveness of our customers. Therefore we support our customers in three strategic core areas.

Firstly, when finding optimal **Product Solutions**, that is in the evaluation and use of the best fastening part for the particular function intended in our customers' products.

Second, our **Assembly Technology Expert** services deliver the smartest solutions for all possible fastening challenges. Our services cover from the moment our customers developing a new product, to assembly process optimization as well as fastening technology education for our customers' employees.

And thirdly, optimising our clients' productions in a smart and lean way with **Smart Factory Logistics**, our methodology, with intelligent logistics systems and tailor-made solutions.

Understood as a promise to our customers, "Proven Productivity" contains two elements: Firstly, that it demonstrably works. And secondly, that it sustainably and measurably improves the productivity and competitiveness of our customers.

And this for us is a philosophy which motivates us every day to always be one step ahead.

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