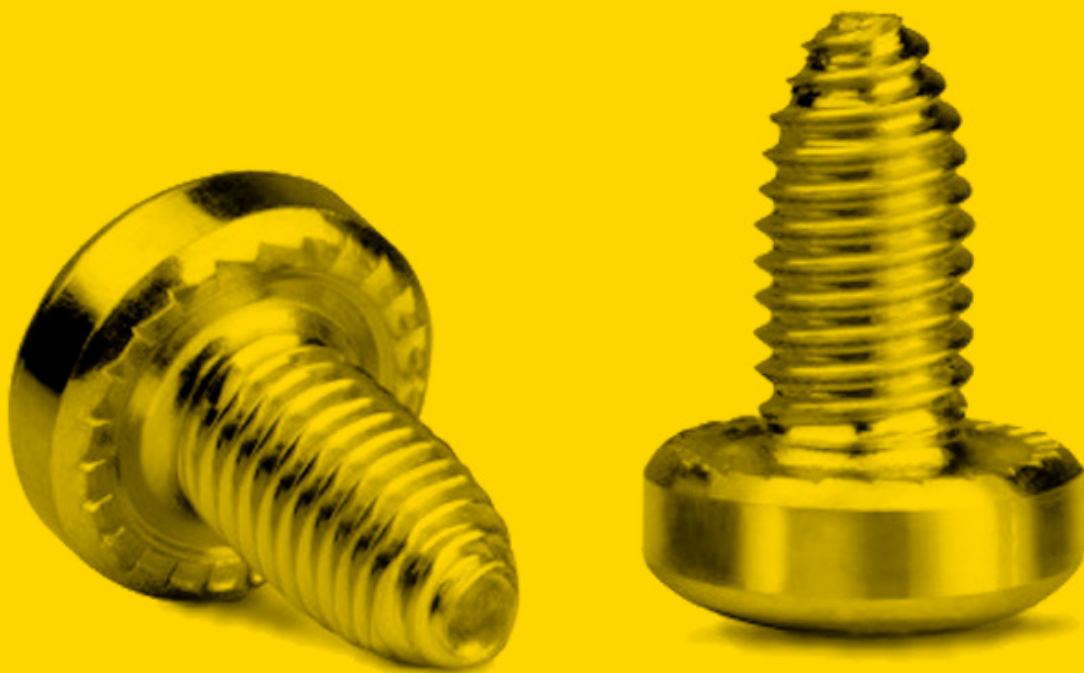


# CELO

## **FASTITE® 2000™**

**The best cost-effective solution  
for joining thin metal sheet**



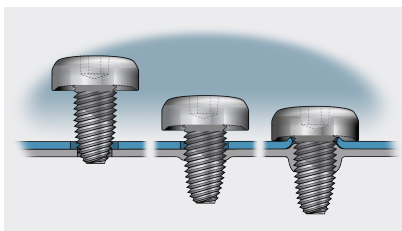
# FASTITE® 2000™



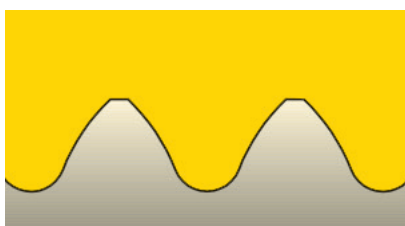
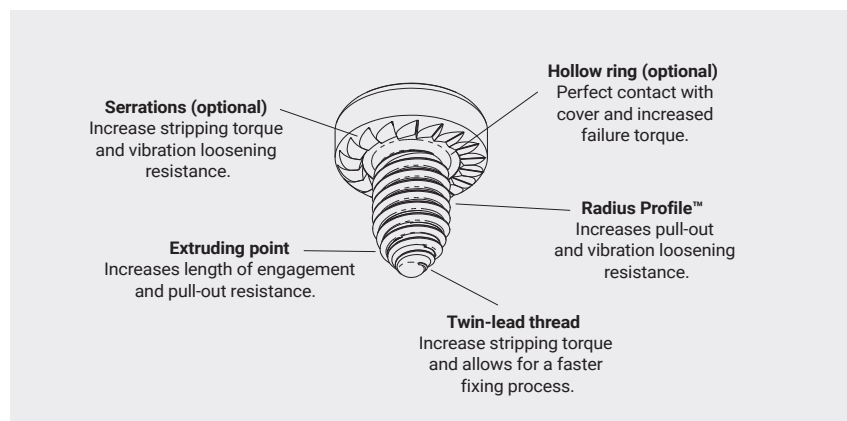
FASTITE® 2000™ thread rolling screws have been specially developed for the assembly into untapped thin metal sheet (thickness of less than 1/3 the diameter of the screw), guaranteeing joint compression without risk of stripping.

FASTITE® 2000™ screws provide high pull-out and vibration loosening resistance, and excellent opportunities for cost reductions when compared to other screw types and assemblies.

## 1. Technical features



**Fig.42.** FASTITE® 2000™ screw starts straight and finishes straight, providing a safe, tight assembly. The twin-lead thread centers the screw in the hole.



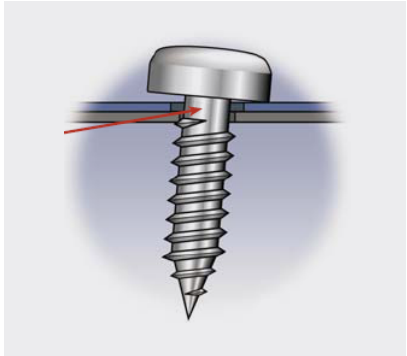
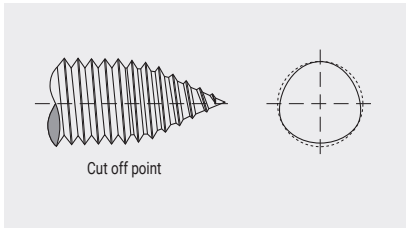
**Fig.43.** Radius Profile™ increases surface contact between the screw and nut member, providing higher pull-out and vibration loosening resistance.

- Twin-lead thread **increases stripping resistance and provides starting stability**, allowing for a fast fixing process.
- The **special extruding point increases length of engagement** during screw insertion.
- **Radius Profile™** thread design of TAPTITE 2000® increases contact surface between the screw and nut member, increasing **vibrational loosening resistance**.
- The serrations under the screw head **increase resistance to stripping and vibrational loosening**.
- **Fully threaded shank** to **avoid clipping** when joining thin metal sheets.
- **TRILOBULAR®** body to **reduce threading torque** and provide **additional resistance to loosening**.

- Hollow ring under screw head to absorb the metal sheet deformation and allow for a perfect seal between screw head and cover.
- Cut off point (optional) permits piercing in sheets with no prepared hole without deforming the sheet. (PG screw with cut-off point available in stock).

2. Advantages

- **High stripping resistance.**
- Fully threaded shank **avoids clipping when joining thin metal sheets.**
- Excellent alignment of screw in the pilot hole during complete insertion process, **providing a safe and tight assembly.**
- **High pull-out and vibration loosening resistance.**
- **High clamping of the assembly.**
- **Cost savings** by **eliminating tapping operations** and sheet metal extrusion.
- Profitable and cost-effective alternative to expensive solutions such as inserts or clinching nuts.
- Cut off point permits piercing in sheets without previous pilot hole.



**Fig.44.** Self-tapping screw unthreaded length below the head is larger than the thickness of the assembly, causing the screw to clip the sheet. The screw leans over during insertion and causes stripped threads or loose assemblies.

3. FASTITE® 2000™ compared to other alternative solutions

FASTITE® 2000™ screws provide technical and economic advantages when compared to other screw types and assemblies for thin metal sheet.

The table below shows a comparison in terms of cost, technical advantages and disadvantages of the most frequently solutions used for the assembly of thin metal sheet:

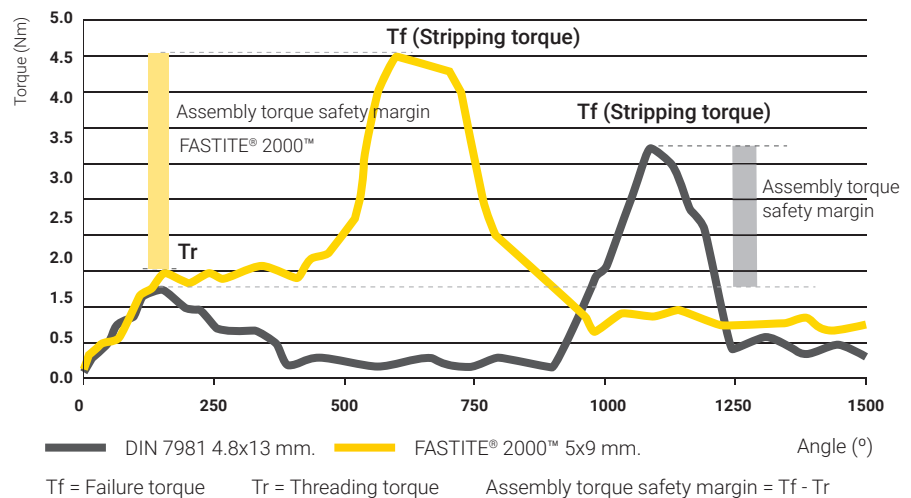
Screw	Cost of assembly element	Cost of assembly process	Disadvantages	Advantages
Self-tapping screw	•	•	Low Stripping resistance Loosening problems Low clamping Unstable threading process	Market availability
Blind rivet	•••	••	Loosening problems Low clamping Non reusable screw	Market availability
Thread rolling screw + extruded hole	••	••• Extruded pilot hole	Higher assembly cost	Strong joint Safe and reliable assembly
Metric screw + insert or clinched nut	••••	••••	Loosening problems Risk of Cross threading	Market availability
FASTITE® 2000™	••	•		High Stripping resistance Vibration loosening resistance Safe and tight assembly

• Low    •• Medium    ••• High    •••• Very high

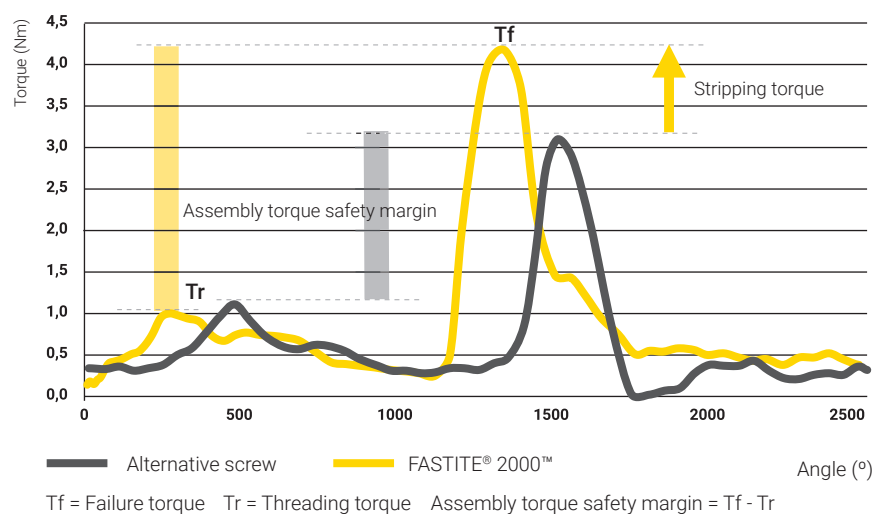
## 4. Threading curve

The following graph shows a comparison between DIN 7981 and FASTITE® 2000™ screw in aluminum sheet of 1.4 mm thickness.

FASTITE® 2000™ screw offers an improved assembly security and process reliability (because of the difference between low threading torque and high failure torque) as well as a fast fixing process. The twin-lead thread and larger engagement length results in a higher stripping torque value.



The following graph shows the threading curve of FASTITE® 2000™ 4x7 zinc plated screw (47FT85T) compared to another screw of similar characteristics, for the assembly of a reactance on painted steel 0.5 mm thickness and pilot hole diameter 1.8 mm.



From the results obtained, we can conclude that FASTITE® 2000™ screw manufactured by CELO has better performance: Lower threading torque (ergonomic assembly) and higher failure torque ensures a safe assembly.

The tightening torque depends on the screw breaking torque, friction coefficient, hole dimensions, length of engagement and screwdriver stability. The optimum tightening torque is determined based on threading curve tests in the laboratory.



5. Recommended pilot hole diameter

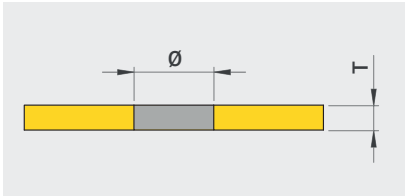
The following tables show the recommended pilot hole diameter for different plate thickness in relation to the nominal diameter of the screw.

Screw diameter	Aluminum plate thickness (T)				
	0.5	1	1.5	2	2.5
3	2.25	2.40	2.50	2.60	-
4	2.85	3.00	3.15	3.30	3.50
5	-	3.70	3.90	4.15	4.35
6	-	4.35	4.60	4.90	5.20

Dimensions in mm.

Screw diameter	Steel plate thickness (T)				
	0.5	1	1.5	2	2.5
3	2.25	2.40	2.60	2.70	-
4	2.90	3.10	3.30	3.50	3.65
5	-	3.80	4.00	4.20	4.50
6	-	4.65	4.90	5.15	5.40

Dimensions in mm.



**Suggested tolerances are:**  
+0.03 / -0.04 mm for holes < Ø2.0 mm  
+0.03 / -0.05 mm for holes Ø2.0 – Ø5.0 mm  
+0.04 / -0.05 mm for holes > Ø5.0 mm

This data is intended for guidance purposes. We recommend carrying out relevant tests on definitive parts to establish the precise values.

6. Applications

FASTITE® 2000™ screws have been specially designed for the assembly into untapped thin aluminum and steel sheets.

Examples

- Automotive
- Assembly of IT and electric material
- Lighting
- Small household appliances
- Metallic constructions

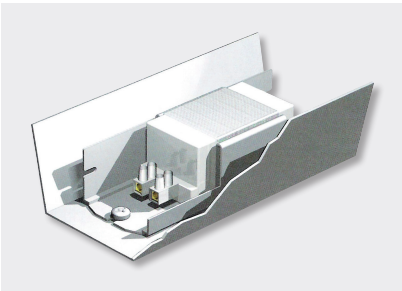
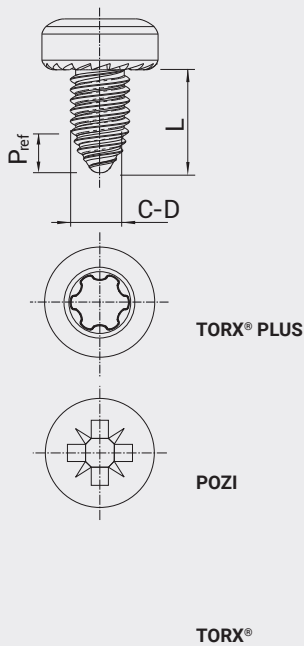


Fig.45. Assembly of lighting components.



Fig.46. Assembly of cooktops components.



## 7. Technical data

FASTITE® 2000™ screws can be manufactured with different head types, recess, dimensions and coating configuration to fit your exact application requirements. For additional information, please contact us on celo@celo.com.

To ensure the quality of the screw we apply baking process to reduce the risk of hydrogen embrittlement (more information in page 124).

Screw diameter	Pitch	C <sub>max</sub>	D <sub>max</sub>	P <sub>ref.</sub>	Extruding point	Pozi	TORX®	TORX Plus®
2.5	0.45	2.52	2.48	2.03		Z1	T8	8 IP
3	0.5	3.02	2.97	2.25		Z1	T10	10 IP
3.5	0.6	3.52	3.46	2.70		Z2	T15	15 IP
4	0.7	4.02	3.95	3.15		Z2	T20	20 IP
5	0.8	5.02	4.94	3.60		Z2	T25	25 IP
6	1	6.03	5.93	4.50		Z3	T30	30 IP

Dimensions in mm. Unless expressly stated, the values shown are nominal. For tolerances and other data, please contact our technical department

**Need to get in touch? Contact us to discuss your application.**

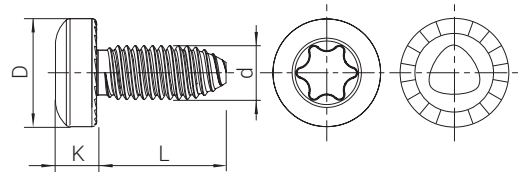
[Contact us](#)



## FT85T

FASTITE® 2000™

- Pan head with serrations
- TORX® recess
- Zinc plated Cr (III) 5µm + Baking



[CAD Files and Samples available](#)

[Go to product](#)

d mm	2.0	3.0	4.0	5.0	6.0
D mm	4.0	6.0	8.0	10.0	12.0
K mm	1.6	2.6	3.4	4.1	5.05
TORX®	6IP <sup>1</sup>	T10	T20	T25	T30

L mm	Ø2.0	Ø3.0	Ø4.0	Ø5.0	Ø6.0
5	○	○	—	—	—
6	—	●	●	—	—
7	—	○	●	—	—
9	—	○	○	●	—
10	—	○	○	○	—
12	—	—	●	●	●

● Product available in stock. ○ Product available upon request. <sup>1</sup> TORX PLUS®

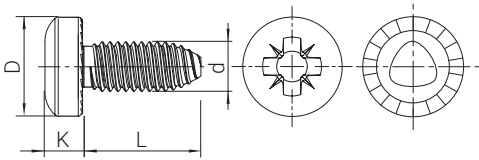
For other plating, thread dimensions and head design, please contact our sales department. Information about packaging conditions in page 130.



FT85Z

FASTITE® 2000™

- Pan head with serrations
- POZI recess
- Zinc plated Cr (III) 5µm + Baking



CAD Files and Samples available

Go to product

d mm	2.0	3.0	4.0	5.0	6.0
D mm	4.0	6.0	8.0	10.0	12.0
K mm	1.6	2.6	3.4	4.1	5.05
POZI	Z1	Z1	Z2	Z2	Z3

L mm	Ø2.0	Ø3.0	Ø4.0	Ø5.0	Ø6.0
5	○	○	–	–	–
6	–	●	○	–	–
7	–	○	●	○	○
9	–	○	○	●	–
12	–	–	○	○	–

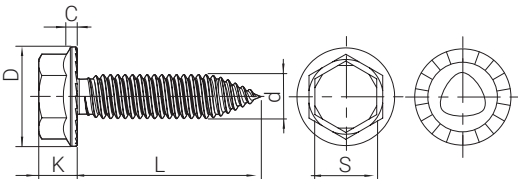
● Product available in stock. ○ Product available upon request. For other plating, thread dimensions and head design, please contact our sales department. Information about packaging conditions in page 130.



PG

FASTITE® 2000™

- Hexagonal Flange head with serrations
- Cut off point
- Zinc plated Cr (III) 5µm + Baking



CAD Files and Samples available

Go to product



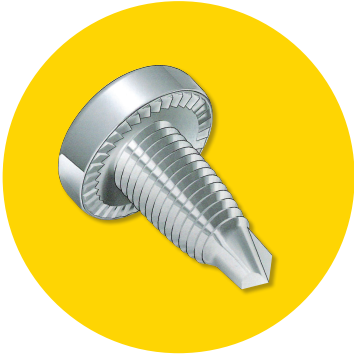
d mm	6.0
D mm	13.5
K mm	5.25
S mm	10.0

L mm	Ø6.0
25	●

● Product available in stock. For other plating, thread dimensions and head design, please contact our sales department. Information about packaging conditions in page 130.

PG screw for hinges assembly in sectional garage door.

# FASTITE® 2000™ SELF-DRILLING screw



FASTITE® 2000™ Self-drilling screw combines the features and advantages of FASTITE® 2000™ with a self-drilling point specially designed to drill and extrude thin metal sheets.

## 1. Advantages

Additionally to the advantages of the standard FASTITE® 2000™ screw, self-drilling variant offers:

- **Cost reduction opportunities**, as it is no longer necessary to drill the two parts of the assembly.
- **Higher stripping torque** compared with standard self-drilling screws.
- **Removable fixing**, providing the ability to remove the screw if necessary.

Maximum sheet thickness		Drilling speed
Aluminum	Steel	(rpm)
0.5 - 2.5	0.5 - 2.0	1200 - 1800



## 2. Applications

FASTITE® 2000™ Self-drilling screw is ideal for assemblies on metallic frames and substitution of rivets and caged nuts.

Apart from the reference available in stock, we produce customized FASTITE® 2000™ self-drilling screw under different dimensions and coating configurations.

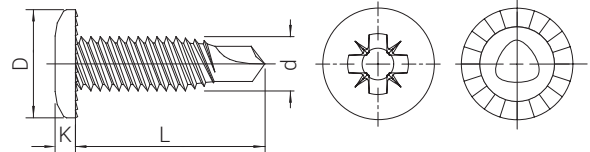
For additional information please contact our sales department.



## FTA85Z

FASTITE® 2000™

- Low Pan head
- POZI recess
- Zinc plated Cr (III)  
5µm + Baking



d mm	4.0
D mm	8.1
K mm	2.3
L mm	Ø4.0
10	●

CAD Files and Samples available

[Go to product](#)

- Product available in stock. For other plating, thread dimensions and head design, please contact our sales department. Information about packaging conditions in page 130.



## Small Things Matter

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● Production plant   ● Logistic hub   ● Sales office