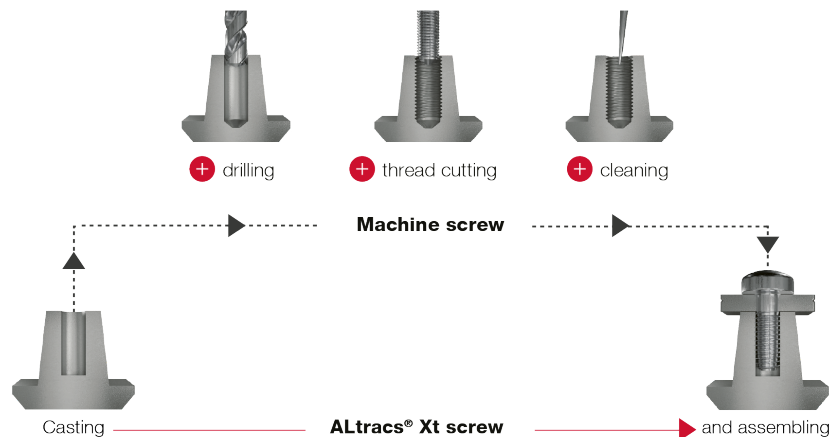# EJOT ALtracs® Xt
Thread forming in light alloys without tradeoffs

EJOT®

EJOT ALtracs® Xt screws are thread forming fasteners developed for the use in light alloys as well as other nonferrous metals with a hardness up to 140 HB. When using thread forming screws for light alloys there used to be a tradeoff between clamp load and torque performance. There were either designs that achieved top results with regards to clamp load (circular screws) or designs that achieved top results with regards to torque performance (non-circular screws). With ALtracs® Xt this compromise is no longer necessary, since it achieves top results in both categories.

Economic

Thanks to the omission of different process steps, the use of thread forming fasteners provides great potential for economic savings. With ALtracs® Xt it is possible to assemble a screw joint directly in a cast part without further machining steps (e.g. drilling, thread cutting). With its intelligent thread design ALtracs® Xt is able to cope with the tolerances of a casting process and provides a reliable process window even in challenging circumstances.

+ drilling   + thread cutting   + cleaning

Machine screw

Casting   **ALtracs® Xt screw**   and assembling

Smart

ALtracs® Xt comes with the opportunity of pre-designing a thread forming screw joint including all relevant process parameters (e.g. torques, load levels, failure mechanisms). By using the specifically developed Xt CALC® software during development stages valuable time and cost savings can be achieved.

Xt CALC®

Compact

Due to the specific thread design for the use in light alloys ALtracs® Xt achieves unique features. The circular cross-section of the thread creates maximum thread engagement in each thread pitch. Furthermore, the reduced flank angle of 33° (compared to a 60° flank of a standard fastener) enables ALtracs® Xt to geometrically strengthen the light alloy part of the screw joint.
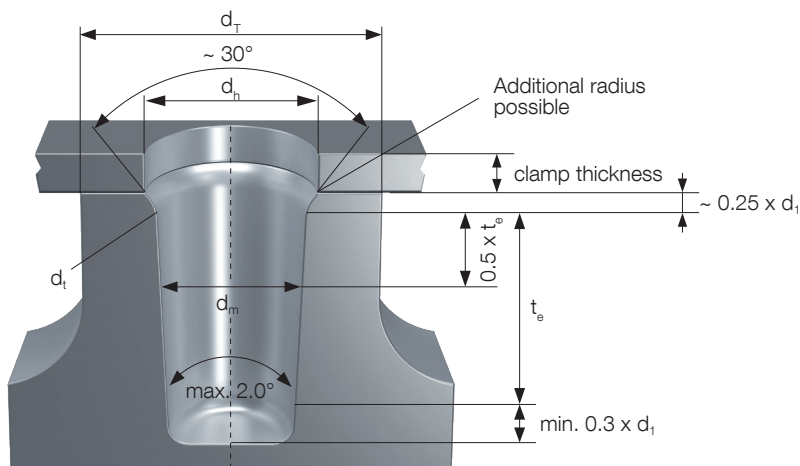
Those two features allow ALtracs® Xt to generate high strength screw joints with minimum space requirement regarding boss outside diameter and length.

Machine screw   ALtracs® Xt
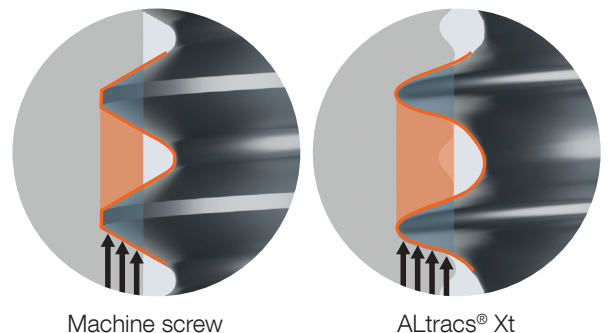
Inspired by nature: Comparison of thread engagement between a machine screw with sharp-edged 60° flank and an ALtracs® Xt with 33° flank

Bringing it together.

Design recommendations:

d_1 [mm]	Pre-hole tolerance [mm]
2.0	± 0.03
2.5 - 3.5	± 0.05
4.0	± 0.06
5.0	± 0.07
6.0 - 7.0	± 0.10
8.0 - 10.0	± 0.14

Hole recommendations for cast or drilled holes with alloys of aluminium, magnesium, zinc and copper

Hardness	up to 55 HB			55 - 115 HB				115 - 140 HB		
t_e	$1.0 \times d_1$	$1.5 \times d_1$	$2.0 \times d_1$	$0.5 \times d_1$	$1.0 \times d_1$	$1.5 \times d_1$	$2.0 \times d_1$	$0.5 \times d_1$	$1.0 \times d_1$	$1.5 \times d_1$
d_1	d_m	d_m $[d_t]$*	d_m $[d_t]$*	d_m	d_m	d_m $[d_t]$*	d_m $[d_t]$*	d_m	d_m	d_m $[d_t]$*
2.5	2.20	2.25 [2.32]	2.30 [2.39]	2.20	2.25	2.30 [2.37]	2.35 [2.44]	2.25	2.30	2.35 [2.42]
3.0	2.65	2.70 [2.78]	2.75 [2.85]	2.65	2.70	2.75 [2.83]	2.80 [2.90]	2.70	2.75	2.80 [2.88]
3.5	3.10	3.15 [3.24]	3.20 [3.32]	3.10	3.15	3.20 [3.29]	3.25 [3.37]	3.15	3.20	3.25 [3.34]
4.0	3.55	3.60 [3.70]	3.65 [3.79]	3.55	3.60	3.65 [3.75]	3.70 [3.84]	3.60	3.65	3.70 [3.80]
5.0	4.40	4.50 [4.63]	4.60 [4.77]	4.40	4.50	4.60 [4.73]	4.70 [4.87]	4.50	4.60	4.70 [4.83]
6.0	5.30	5.40 [5.56]	5.50 [5.71]	5.30	5.40	5.50 [5.66]	5.60 [5.81]	5.40	5.50	5.60 [5.76]
8.0	7.00	7.20 [7.41]	7.40 [7.68]	7.00	7.20	7.40 [7.61]	7.50 [7.78]	7.20	7.40	7.50 [7.71]

ALtracs® Xt 100 upon request.

d_1 = nominal screw diameter d_m = hole diameter centre d_t = hole diameter top t_e = installation depth
d_h = diameter through hole (approx. $1.1 \times d_1$) d_T = minimum boss diameter (approx. $2 \times d_1$)   *d_t calculated with 2.0°
For further information, especially regarding bigger tolerances, please contact EJOT.

Bringing it together.