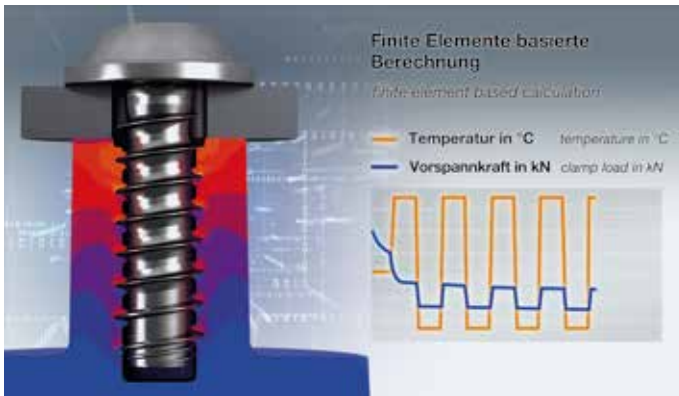


# EJOT EVO PT®

The evolution of direct fastening into plastic

# EJOT®

The EVO PT® is the evolutionary development of the self-tapping screw for thermoplastics. With this innovative fastening solution, EJOT has successfully combined production and application technology knowledge with new methods based on physical computer simulations for the first time.



## Innovative thread geometry for high fastening quality and high repeat accuracy

The newly developed "start-of-thread" of the EVO PT® allows for an easy and straight positioning in the screw hole. The special positioning thread thus generates an equal load distribution over the circumference of the thread flanks in installed condition, since the screw is centered automatically in the screw hole during the installation.

## Increased economic efficiency through reduced parts variety and higher process safety in assembly

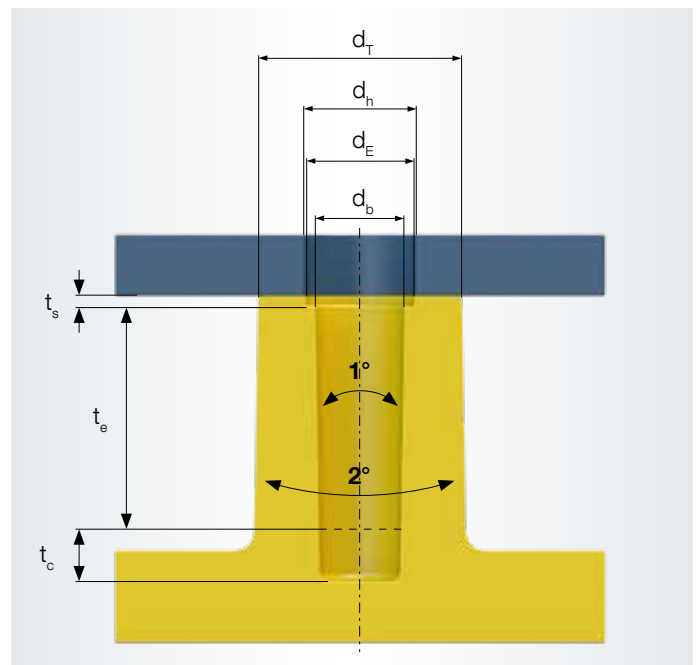
During the installation phase, the innovative forming thread turn creates a torque curve which is virtually independent of the installation depth. The thread forming zone forms a thread turn into the female material which is slightly larger than the clearance that the following thread turns require. The following thread turns can penetrate into the plastic without any appreciable friction. This enables smaller installation spaces or a standardisation of screw lengths and tightening torques.

## Digital service for optimised components

The digital calculation service EVO CALC® offers the possibility to pre-calculate the torques and clamp loads as well as the clamp load relaxation under temperature and time. Furthermore, EJOT provides an individual, FEM-based component analysis to save valuable time and money - beginning with the design of the component.

## Simple and universal design recommendation for EVO PT® screws

Since the forming thread turn generates a virtually constant forming torque, a compensation of different clamping part thicknesses by means of different counterbore depths is not necessary. As we assume to have injection-moulded pre-holes which usually have a draft angle of 1°, the pre-hole diameter of  $0.85 \times d_1$  is measured at the top of the pre-hole. For a better measurability, the pre-hole diameter  $d_b$  at the top of the pre-hole is given as  $0.85 \times d_1$ .



Nominal diameter of the screw:  $d_1$

Counterbore diameter:

$d_E = d_1 \times 1.05$

Hole diameter:

$d_b = 0.85 \times d_1 \pm 0.05 \text{ mm}$

Installation depth:

$t_e = 2 \times d_1$  or deeper

$d_t$  = external boss  $\varnothing$

$d_h$  = clearance hole  $\varnothing$

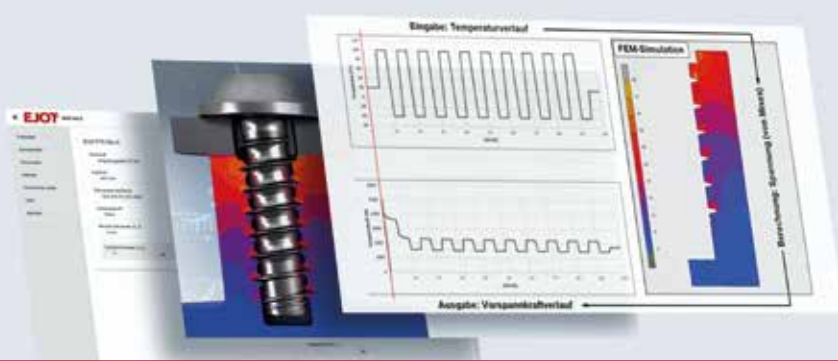
$d_E$  = counterbore  $\varnothing$

$d_b$  = hole  $\varnothing$

$t_s$  = counterbore depth =  $0.1 \times d_1$

$t_e$  = installation depth

$t_c$  = hole depth allowance



## Characteristics and features of the EVO PT® screw



### Bionic contour

Safety margins for challenging applications

- Higher fatigue strength
- Higher breaking torque
- Higher tensile breaking stress



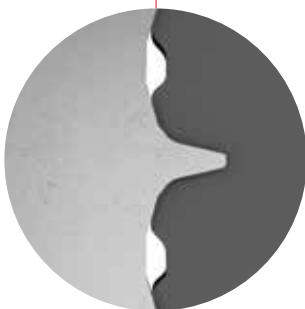
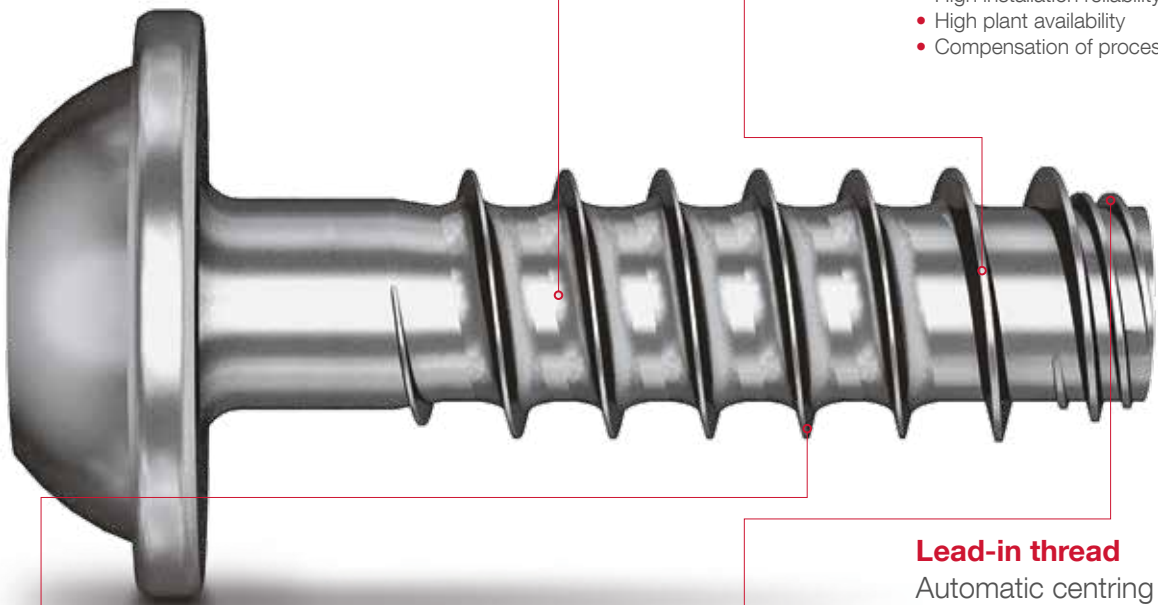
### Thread forming zone

Reduced friction during thread forming

- Thread forming torque is virtually independent of the installation depth
- Installation-depth-independent tightening torques
- Reduced parts variety - one screw, one tightening torque per assembly group
- Uniform tube design
- Supports carry-over part strategies

Large torque window thanks to small installation torque  $T_i$

- High installation reliability
- High plant availability
- Compensation of process fluctuations



### 26° flank angle

Excellent plastic forming

- One flank geometry, suitable for all common thermoplastics
- Reduced radial load in the component



### Lead-in thread

Automatic centring of the screw in the screw hole

- Stable installation process during initial assembly
- Line-integrated, fully automated repeat assembly
- Constant, low-stress surface connection

Smaller counterbore depth

- Less installation space required
- Usage of purchased parts possible without unloading

Automatic compensation in case of axial misalignment (screw/screw hole)

- Compensation of component tolerances



More information at [www.ejot.com/industry](http://www.ejot.com/industry) or please contact  
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