Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

European Technical Assessment

ETA-13/0816 of 18 October 2023

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	TOB Screws
Product family to which the construction product belongs	TOB screws for use in timber constructions
Manufacturer	TOBSTEEL GmbH Rudolf-Diesel-Straße 8 74613 Öhringen DEUTSCHLAND
Manufacturing plant	Plant 1-100
This European Technical Assessment contains	50 pages including 4 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	130118-01-0603
This version replaces	ETA-13/0816 issued on 22 October 2020

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Specific Part

1 Technical description of the product

TOB-HBS, TOB-Drill, TOB-Fast-Drill, TOB-TBS Quadra-Speed and TOB-TBS-Drill screws are self-tapping screws made from special stainless steel. Screws made from stainless steel no. 1.4006 are hardened. They have an antifriction coating. The outer thread diameter is not less than 3.0 mm and not greater than 10.0 mm. The overall length of the screws is ranging from 12 mm to 400 mm. Further dimensions are shown in Annex 4. The washers are made from stainless steel. The dimensions of the washers are given in Annex 4.

All screws achieve a bending angle α of at least $45/d^{0.7} + 20$, where d is the outer thread diameter of the screws.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The performances given in Section 3 are only valid if the screws are used in compliance with the specifications and conditions given in Annex 1 to 3.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the screws of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Dimensions	See Annex 4
Characteristic yield moment	See Annex 2
Bending angle	See Annex 2
Characteristic withdrawal parameter	See Annex 2
Characteristic head pull-through parameter	See Annex 2
Characteristic tensile strength	See Annex 2
Characteristic yield strength	No performance determined
Characteristic torsional strength	See Annex 2
Insertion moment	See Annex 2
Spacings, end and edge distances of the screws and minimum thickness of the wood-based material	See Annex 2
Slip modulus for mainly axially loaded screws	See Annex 2
Durability against corrosion	See Annex 2

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1

3.3 Safety and accessibility in use (BWR 4)

Same as BWR 1.

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 130118-01-0603 the applicable European legal act is: 97/176/EC.
The system to be applied is: 3

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 18 October 2023 by Deutsches Institut für Bautechnik

Anja Dewitt
Head of Section

beglaubigt:
Vössing

Deutsches Institut für Bautechnik DIBt

Annex 1 Specifications of intended use

A.1.1 Use of the TOB screws only for:

– static and quasi-static loads

A.1.2 Connection material

The screws are used for connections in load-bearing timber structures between timber members or between timber members and steel members:

– Solid timber (softwood) in accordance with EN 14081-1[1],
– Glued laminated timber in accordance with EN 14080[2],
– Laminated veneer lumber LVL (softwood) in accordance with EN 14374[3], arrangement of the screws only perpendicular to the plane of the veneers,
– Glued solid timber in accordance with EN 14080,
– Cross laminated timber (softwood) in accordance with European Technical Assessments.

The screws are used for connecting the following wood-based panels to the timber members mentioned above:

– Plywood in accordance with EN 636[4] and EN 13986[5],
– Oriented strand boards (OSB) in accordance with EN 300[6] and EN 13986,
– Particleboards in accordance with EN 312[7] and EN 13986,
– Fibreboards in accordance with EN 622-2[8], EN 622-3[9] and EN 13986,
– Cement-bonded particleboards in accordance with EN 634-2[10] and EN 13986,
– Solid-wood panels (SWP) in accordance with EN 13353[11] and EN 13986.

Wood-based panels are only arranged on the side of the screw head.

TOB-HBS and TOB-Drill screws with an outer thread diameter of at least 6 mm may also be used for the fixing of thermal insulation material on top of rafters or on wood-based members in vertical façades

1	EN 14081-1:2005+A1:2011	Timber structures – Strength graded structural timber with rectangular cross section – Part 1: General requirements
2	EN 14080:2013	Timber structures – Glued laminated timber and glued solid timber - Requirements
3	EN 14374:2004	Timber structures – Structural laminated veneer lumber – Requirements
4	EN 636:2012+A1:2015	Plywood – Specifications
5	EN 13986:2004+A1:2015	Wood-based panels for use in construction – Characteristics, evaluation of conformity and marking
6	EN 300:2006	Oriented strand boards (OSB) – Definition, classification and specifications
7	EN 312:2010	Particleboards – Specifications
8	EN 622-2:2004/AC:2005	Fibreboards – Specifications – Part 2: Requirements for hardboards
9	EN 622-3:2004	Fibreboards – Specifications – Part 3: Requirements for medium boards
	EN 634-2:2007	Cement-bonded particleboards – Specifications – Part 2: Requirements for OPC bonded particleboards for use in dry, humid and external conditions
11	EN 13353:2022	Solid wood panels (SWP) – Requirements

TOB Screws	Annex 1.1
Specifications of intended use	

A.1.3 Use Conditions (environmental conditions)

The corrosion protection of the TOB screws is specified in Annex A.2.6.

A.1.4 Installation provisions

EN 1995-1-1[12] applies for the installation of TOB screws.

The screws are either driven into the timber member made of softwood without pre-drilling or in pre-drilled holes with a diameter not exceeding the inner thread diameter.

The screw holes in steel members are pre-drilled with an adequate diameter greater than the outer thread diameter.

A minimum of two screws is used for connections in load-bearing timber structures.

If screws with an outer thread diameter $d \geq 8$ mm are used in load-bearing timber structures, the structural solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is from spruce, pine or fir.

In the case of fastening counter battens on thermal insulation material on top of rafters the screws are driven in the rafter through the counter battens and the thermal insulation material without pre-drilling in one sequence.

Countersunk head screws can be used with washers in accordance with Annex 4. After inserting the screw, the washers touch the surface of the timber member completely. Screws made from stainless steel are used with washers made from stainless steel.

By fastening screws in timber members, the head of the screws is flush with the surface of the timber member. For screws with a pan washer or hexagon head the head part remains unconsidered.

[12] EN 1995-1-1:2004+A1:2008+A2:2014 Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings

TOB Screws	Annex 1.2
Installation provisions	

Annex 2 Characteristic values of the load-carrying capacities

Table A.2.1 Characteristic load-carrying capacities of TOB self-tapping screws

Outer thread diameter [mm]		**3.0**	**3.2**	**3.5**	**4.0**	**4.5**	**5.0**	**5.5**	**6.0**	**8.0**	**10.0**
Characteristic yield moment $M_{y,k}$ [Nm]	TOB-HBS and TOB-Drill	0.9	1.2	1.5	1.7	3.0	3.9	-	6.3	13.0	24.0
	TOB-HBS and TOB-Drill hardened	1.5	2.0	2.8	3.3	3.8	5.0	-	9.0	13.0	24.0
	TOB-Fast-Drill	-	-	-	3.9	5.2	6.9	-	11.1	-	-
	TOB-TBS-Drill	-	-	-	-	-	-	6.0	-	-	-
	TOB-TBS Quadra-Speed and TOB-TBS-Drill hardened	-	-	-	-	-	10.0	12.0	-	-	-
Characteristic tensile strength $f_{tens,k}$ [kN]	TOB-HBS and TOB-Drill	1.7	2.0	2.4	3.1	4.0	4.4	-	7.1	13.0	20.0
	TOB-HBS and TOB-Drill hardened	2.8	3.2	3.8	5.0	6.4	7.9	-	11.0	13.0	20.0
	TOB-Fast-Drill	-	-	-	5.0	5.9	7.9	-	11.0	-	-
	TOB-TBS-Drill	-	-	-	-	-	-	7.1	-	-	-
	TOB-TBS Quadra-Speed and TOB-TBS-Drill hardened	-	-	-	-	-	7.9	9.5	-	-	-
Characteristic torsional strength $f_{tor,k}$ [Nm]	TOB-HBS and TOB-Drill	0.8	1.3	1.4	2.2	2.7	3.8	-	6.0	15.0	30.0
	TOB-HBS and TOB-Drill hardened	1.4	1.9	2.7	3.5	4.3	5.9	-	11.5	15.0	30.0
	TOB-Fast-Drill	-	-	-	3.5	5.0	8.0	-	14.0	-	-
	TOB-TBS-Drill	-	-	-	-	-	-	8.0	-	-	-
	TOB-TBS Quadra-Speed and TOB-TBS-Drill hardened	-	-	-	-	-	9.5	11.5	-	-	-

A.2.1 General

All TOB screws achieve a bending angle α of at least $45/d^{0.7} + 20$, where d is the outer thread diameter of the screws.

The minimum penetration length of the threaded part of the screw l_{ef} is

$$l_{ef} = \min \begin{cases} \dfrac{4 \cdot d}{\sin \alpha} \\ 20 \cdot d \end{cases} \qquad (2.1)$$

Where

α angle between screw axis and grain direction [°],

d outer thread diameter of the screw [mm].

The outer thread diameter d of screws inserted in cross laminated timber is at least 6 mm.

TOB Screws	Annex 2.1
Characteristic values of load-carrying capacities	

To connect cross laminated timber the inner thread diameter d_1 of the screws is greater than the maximal width of the gaps in the layer.

A.2.2 Laterally loaded screws

The outer thread diameter d is used as effective diameter of the screw in accordance with EN 1995-1-1.

A.2.3 Axially loaded screws

A.2.3.1 Axial slip modulus for axially loaded screws

The axial slip modulus K_{ser} of the threaded part of a screw for the serviceability limit state per side is independent of angle α to the grain:

$$K_{ser} = 780 \cdot d^{0,2} \cdot l_{ef}^{0,4} \quad [N/mm] \qquad (2.2)$$

Where

d outer thread diameter of the screw [mm],

l_{ef} penetration length of the of the threaded part of the screw in the timber member [mm].

A.2.3.2 Axial withdrawal capacity – Characteristic withdrawal parameter

The characteristic withdrawal parameter for TOB screws at an angle of α = 90° to the grain based on a characteristic density of the wood-based member of 350 kg/m³ is

$f_{ax,90,k}$ = 13.7 N/mm² for TOB-HBS and TOB-Fast-Drill screws

$f_{ax,90,k}$ = 10.0 N/mm² for TOB-Drill, TOB-HBS hardened, TOB-TBS Quadra Speed and TOB-TBS-Drill screws.

For LVL a maximum characteristic density of 500 kg/m³ shall be used in equation (8.40a) of EN 1995-1-1.

For screws penetrating more than one layer of cross laminated timber the different layers may be taken into account proportionally. In the narrow facesof the cross laminated timber the screws shall be fully inserted in one layer.

A.2.3.3 Head pull-through capacity – Characteristic head pull-through parameter

The characteristic value of the head pull-through parameter for TOB screws for a characteristic density of 350 kg/m³ of the timber and for wood-based panels like

- Plywood in accordance with EN 636 and EN 13986,
- Oriented strand boards (OSB) in accordance with EN 300 and EN 13986,
- Particleboards in accordance with EN 312 and EN 13986,
- Fibreboards in accordance with EN 622-2, EN 622-3 and EN 13986,
- Cement-bonded particleboards in accordance with EN 634-2 and EN 13986,
- Solid wood panels in accordance with EN 13353 and EN 13986

with a thickness of more than 20 mm is

$f_{head,k}$ = 9.4 N/mm².

For wood-based panels a maximum characteristic density of 380 kg/m³ shall be used in equation (8.40b) of EN 1995-1-1.

For wood-based panels with a thickness 12 mm ≤ t ≤ 20 mm the characteristic value of the head pull-through parameter for TOB screws is:

$f_{head,k}$ = 8.0 N/mm²

For wood-based panels with a thickness of less than 12 mm the characteristic head pull-through capacity for TOB screws shall be based on a characteristic value of the head pull-through parameter of 8.0 N/mm². The head pull-through capacity shall be limited to 400 N. A minimum thickness of the wood-based panels of 1.2·d where d is the outer thread diameter and the values in Table A.2.2 shall be complied.

TOB Screws	Annex 2.2
Characteristic values of load-carrying capacities	

Table A.2.2 Minimum thickness of wood-based panels

Wood-based panel	**Minimum thickness [mm]**
Plywood	6
Fibreboards (hardboards and medium boards)	6
Oriented strand boards (OSB)	8
Particleboards	8
Cement-bonded particleboards	8
Solid wood panels (SWP)	12

In steel-to-timber connections the head pull-through capacity is not decisive.

A.2.4 Spacings, end and edge distances of the screws and minimum thickness of the wood-based material

A.2.4.1 Laterally or laterally *and*axially loaded screws

Screws in pre-drilled holes

For TOB screws in pre-drilled holes the minimum spacings, end and edge distances are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in pre-drilled holes. Here, the outer thread diameter d shall be considered.

Minimum thickness for structural timber members made of solid timber, glued laminated timber, glued solid timber, laminated veneer lumber and cross laminated timber is t = 30 mm for screws with d ≤ 8 mm and t = 40 mm for screws with d = 10 mm.

Screws in non pre-drilled holes

For TOB screws in non-predrilled holes the minimum spacings, end and edge distances and the minimum member thicknesses are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes. Here, the outer thread diameter d shall be considered.

For Douglas fir members minimum spacing and distances parallel to the grain are increased by 50 %.

Minimum distances from loaded or unloaded ends are at least 15·d for screws with outer thread diameter d ≥ 8 mm and timber thickness t < 5·d.

Minimum distances from the unloaded edge perpendicular to the grain may be reduced to 3·d also for timber thickness t < 5·d, if the spacing parallel to the grain and the end distance is at least 25·d.

A.2.4.2 Only axially loaded screws

For TOB-screws the minimum spacings, end and edge distances as well as the minimum member thicknesses are given in EN 1995-1-1, clause 8.3.1.2 and Table 8.2 as for nails in non-predrilled holes and clause 8.7.2, Table 8.6.

A.2.5 Insertion moment

The ratio between the characteristic torsional strength $f_{tor,k}$ and the mean value of insertion moment $R_{tor,mean}$ fulfills the requirement for all TOB screws.

A.2.6 Durability against corrosion

Steel no. 1.4006, 1.4301, 1.4567, 1.4401, 1.4571, 1.4539 and 1.4529 are used for screws made from stainless steel.

Washers are made from steel no. 1.4006, 1.4301, 1.4567, 1.4401, 1.4571, 1.4539 and 1.4529.

Contact corrosion shall be avoided.

TOB Screws	Annex 2.3
Spacings, end and edge distances and minimum thicknesses, insertion moment and durability against corrosion	

Annex 3 Fastening of thermal insulation material on top of rafters (informative)

A.3.1 General

TOB-HBS and TOB-Drill screws with an outer thread diameter of at least 6 mm are also used for the fixing of thermal insulation material on top of rafters or on wood-based members in vertical façades. In the following, the meaning of the word rafter includes wood-based members with inclinations between 0° and 90°.

The thickness of the thermal insulation material is up to 300 mm. A thermal insulation material is used that is applicable as insulation on top of rafters or on wood-based members in vertical façades.

The counter battens are from solid timber (softwood) in accordance with EN 14081-1. The minimum thickness t and the minimum width b of the counter battens are given as follows:

Table A.3.1 Minimum thickness and minimum width of the counter battens

Outer thread diameter d [mm]	Minimum thickness t [mm]	Minimum width b [mm]
6 and 8	30	50
10	40	60

Instead of counter battens the following wood-based panels may be used to cover the thermal insulation material if they are suitable for that use:

- Plywood in accordance with EN 636 and EN 13986,
- Oriented strand boards (OSB) in accordance with EN 300 and EN 13986,
- Particleboards in accordance with EN 312 and EN 13986,
- Fibreboards in accordance with EN 622-2, EN 622-3 and EN 13986.

The minimum thickness of the wood-based panels is 22 mm.

The minimum width of the rafters is 60 mm.

The word counter batten includes the meaning of wood-based panels in the following.

The spacing between screws e is not more than 1.75 m.

Friction forces are not considered for the design of the characteristic axial load of the screws.

The anchorage of wind suction forces shall be considered for design. Screws perpendicular to the grain of the rafter may be arranged where required.

A.3.2 Parallel inclined screws and thermal insulation material in compression

A.3.2.1 Mechanical model

The system of rafter, thermal insulation material on top of rafter and counter battens parallel to the rafter can be considered as a beam on elastic foundation. The batten represents the beam, and the thermal insulation material on top of the rafter the elastic foundation. The minimum compression stress of the thermal insulation material at 10 % deformation, measured in accordance with EN 826[13], shall be $\sigma_{10\,\%}$ = 0.05 N/mm². The counter batten is loaded perpendicular to the axis by point loads F_b. Further point loads F_s are from the shear load of the roof due to dead and snow load, which are transferred from the screw heads into the counter battens.

[13] EN 826:2013 Thermal insulating products for building applications – Determination of compression behaviour

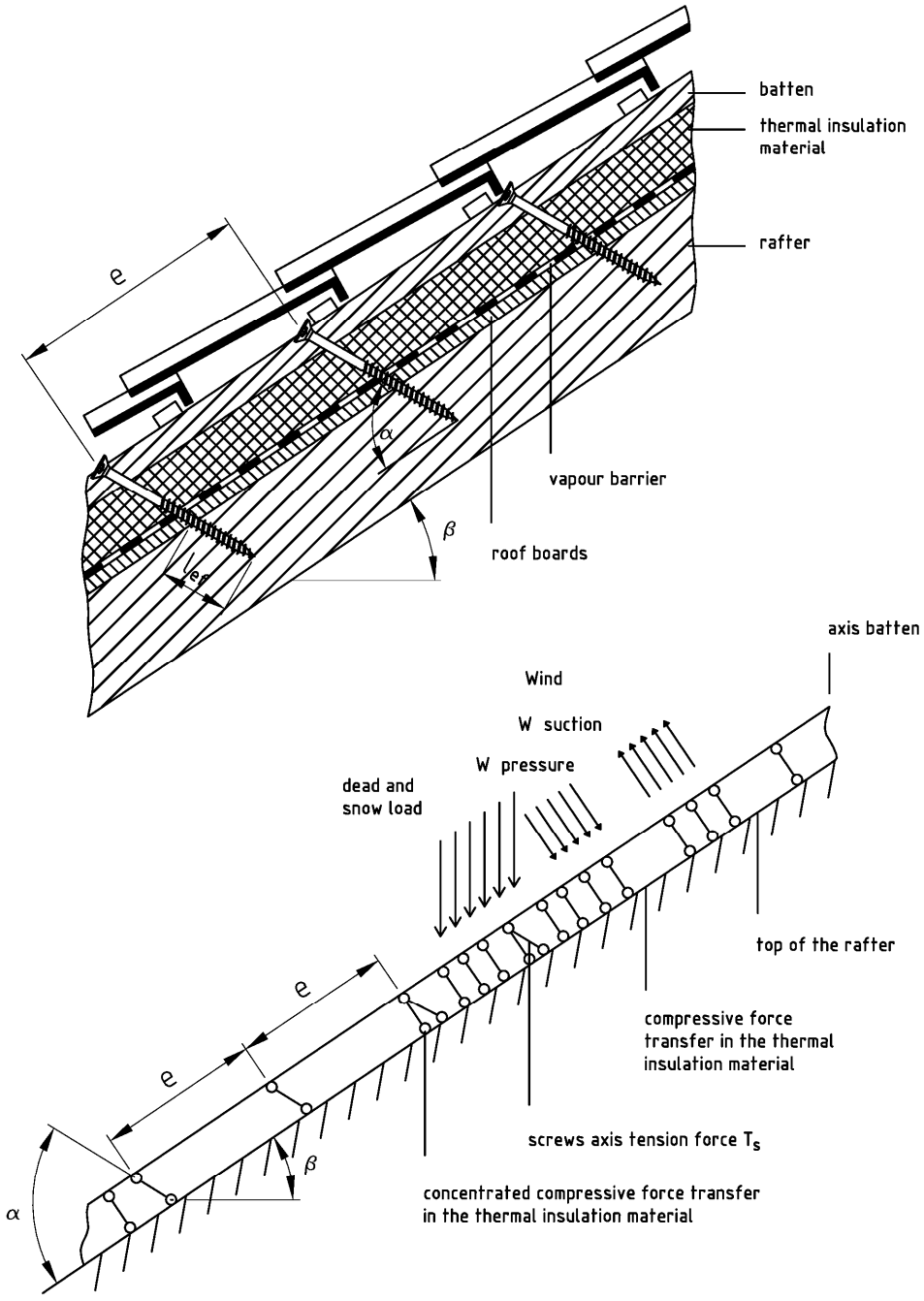


Figure A.3.1 Fastening of the thermal insulation material on top of rafters – Structural system for parallel inclined screws

TOB Screws	Annex 3.2
Fastening of thermal insulation material on top of rafters	

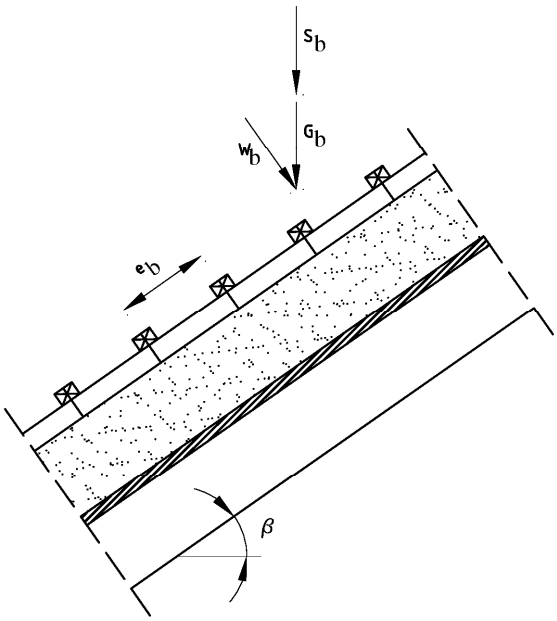


Figure A.3.2 Point loads F_b perpendicular to the counter battens

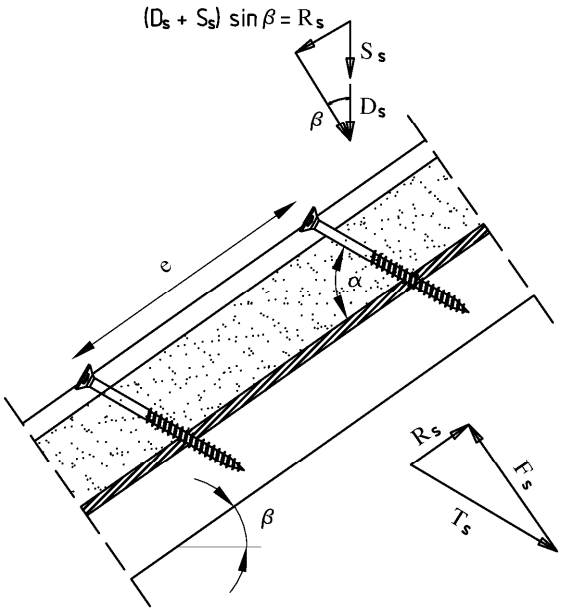


Figure A.3.3 Point loads F_s perpendicular to the counter attens, load application in the area of the screw heads

TOB Screws	Annex 3.3
Fastening of thermal insulation material on top of rafters	

A.3.2.2 Design of the counter battens

It's assumed that the spacing between the counter battens exceeds the characteristic length l_{char}.

The characteristic values of the bending stresses may be calculated as:

$$M_k = \frac{(F_{b,k} + F_{s,k}) \cdot l_{char}}{4} \tag{3.1}$$

Where

(3.2)

l_{char} characteristic length $l_{char} = \sqrt[4]{\frac{4 \cdot EI}{w_{ef} \cdot K}}$

EI bending stiffness of the counter batten,

K modulus of subgrade reaction,

w_{ef} effective width of the thermal insulation material,

$F_{b,k}$ characteristic value of the point loads perpendicular to the counter battens,

$F_{s,k}$ characteristic value of the point loads perpendicular to the counter battens, load application in the area of the screw heads.

The modulus of subgrade reaction K can be calculated from the modulus of elasticity E_{HI} and the thickness t_{HI} of the thermal insulation material if the effective width w_{ef} of the thermal insulation material under compression is known. Due to the load extension in the thermal insulation material the effective width w_{ef} is greater than the width of the counter batten or rafter, respectively. For further calculations, the effective width w_{ef} of the thermal insulation material may be determined in accordance with:

$$w_{ef} = w + t_{HI}/2 \tag{3.3}$$

Where

w minimum from width of the counter batten or rafter, respectively,

t_{HI} thickness of the thermal insulation material.

$$K = \frac{E_{HI}}{t_{HI}} \tag{3.4}$$

The following condition shall be satisfied:

$$\frac{\sigma_{m,d}}{f_{m,d}} = \frac{M_d}{W \cdot f_{m,d}} \le 1 \tag{3.5}$$

For the calculation of the section modulus W the net cross section shall be considered.

The characteristic value of the shear stresses shall be calculated as:

$$V_k = \frac{\left(F_{b,k} + F_{S,k}\right)}{2} \tag{3.6}$$

The following condition need to be satisfied:

$$\frac{\tau_d}{f_{v,d}} = \frac{1.5 \cdot V_d}{A \cdot f_{v,d}} \le 1 \tag{3.7}$$

For the calculation of the cross-section area the net cross section shall be considered.

TOB Screws	Annex 3.4
Fastening of thermal insulation material on top of rafters	

A.3.2.3 Design of the thermal insulation material

The characteristic value of the compressive stresses in the thermal insulation material may be calculated as:

$$\sigma_k = \frac{1{,}5 \cdot F_{b,k} + F_{s,k}}{2 \cdot l_{char} \cdot w} \qquad (3.8)$$

The design value of the compressive stress shall not be greater than 110 % of the compressive stress at 10 % deformation calculated in accordance with EN 826.

A.3.2.4 Design of the screws

The screws are loaded predominantly axial. The characteristic value of the axial tension force in the screw may be calculated from the shear loads of the roof R_s:

$$T_{S,k} = \frac{R_{S,k}}{\cos\alpha} \qquad (3.9)$$

The load-carrying capacity of axially loaded screws is the minimum design value of the axial withdrawal capacity of the threaded part of the screw, the head pull-through capacity of the screw and the tensile strength of the screw in accordance with Annex 2.

In order to limit the deformation of the screw head for thermal insulation material with thickness over 200 mm or with compressive strength below 0.12 N/mm², respectively, the axial withdrawal capacity of the screws are reduced by the factors k_1 and k_2:

$$F_{ax,\alpha,Rd} = \min\left\{ \frac{f_{ax,d} \cdot d \cdot l_{ef} \cdot k_1 \cdot k_2}{1.2 \cdot \cos^2\alpha + \sin^2\alpha} \cdot \left(\frac{\rho_k}{350}\right)^{0.8} ; f_{head,d} \cdot d_h^2 \cdot \left(\frac{\rho_k}{350}\right)^{0.8} ; \frac{f_{tens,k}}{\gamma_{M2}} \right\} \qquad (3.10)$$

Where

$f_{ax,d}$ design value of the axial withdrawal parameter of the threaded part of the screw [N/mm²],

d outer thread diameter of the screw in accordance with Annex 4 [mm],

l_{ef} penetration length of the threaded part of the screw in the counter batten, $l_{ef} \geq 40$ mm,

ρ_k characteristic density of the timber member [kg/m³], for LVL $\rho_k \leq 500$ kg/m³,

α angle α between screw axis and grain direction, $30° \leq \alpha \leq 90°$,

$f_{head,d}$ design value of the head pull-through parameter of the screw [N/mm²],

d_h head diameter of the screw [mm],

$f_{tens,k}$ characteristic tensile strength of the screw in accordance with Annex 2 [N],

γ_{M2} partial factor in accordance with EN 1993-1-1[14],

k_1 min {1; 220/t_{HI}},

k_2 min {1; $\sigma_{10\%}$/0.12},

t_{HI} thickness of the thermal insulation material [mm],

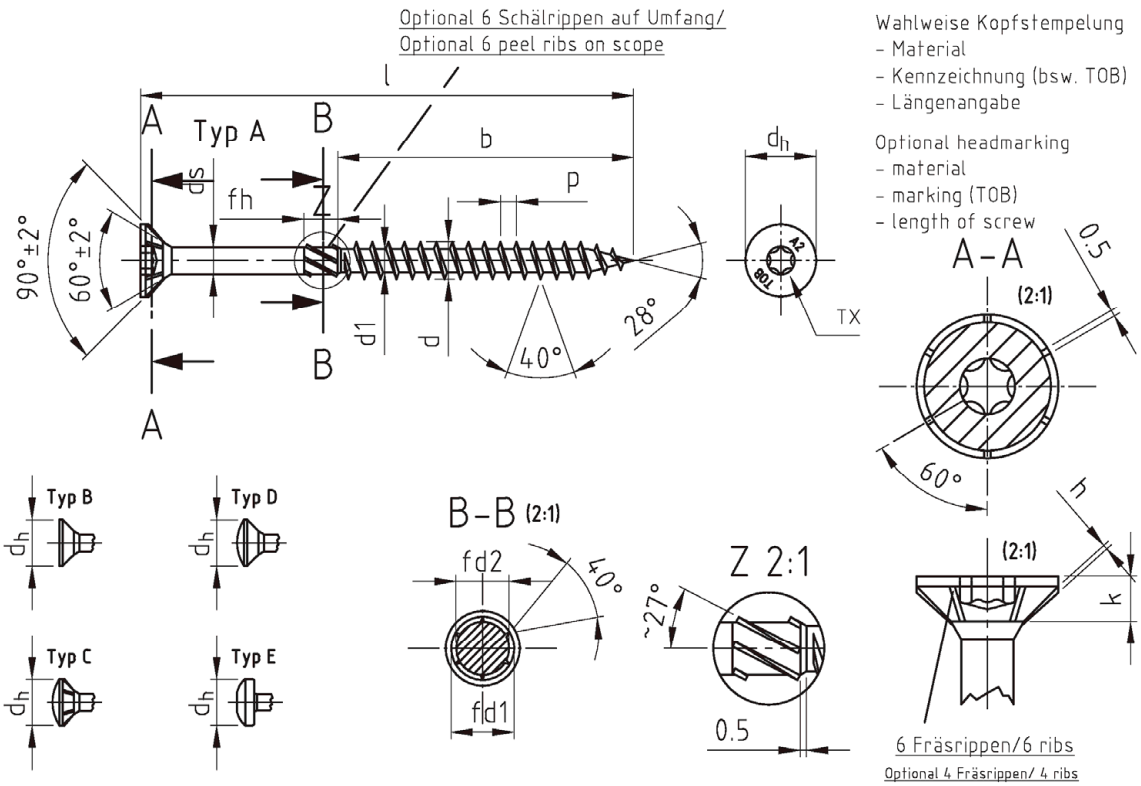
$\sigma_{10\,\%}$ compressive stress of the thermal insulation material under 10 % deformation [N/mm²].

If equation (3.10) is fulfilled, the deflection of the counter battens does not need to be considered when designing the load-carrying capacity of the screws.

[14] EN 1993-1-1:2005/AC:2009 +A1:2014 Eurocode 3: Bemessung und Konstruktion von Stahlbauten – Teil 1-1: Allgemeine Bemessungsregeln und Regeln für den Hochbau

TOB Screws	Annex 3.5
Fastening of thermal insulation material on top of rafters	

Deutsches Institut für Bautechnik DIBt



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–HBS/ Seko–Holzbauschrauben mit verstärktem Kopf, 6 Fräsrippen										
Description	TOB–HBS/ Double countersunk head timber screws, 6 ribs under the head										
Nennmaß/ Nominal dia.	d	d1	dh	ds	k	p	pz	TX	h	fd1	fd2
ø 3,0	3,0 –0,15	2,0 –0,15	6,0 –0,4	2,15 ±0,05	1,9 –0,3	1,35 ±10%	1	10	0,3	2,90 –0,15	1,75 –0,15
ø 3,2	3,2 –0,15	2,1 –0,15	6,5 –0,4	2,3 ±0,05	2,0 –0,3	1,45 ±10%	1	10	0,3	3,15 –0,15	1,85 –0,15
ø 3,5	3,5 –0,3	2,4 –0,3	7,0 –0,4	2,5 ±0,05	2,1 –0,3	1,6 ±10%	2	10/15	0,3	3,45 –0,25	2,4 –0,15
ø 4,0	4,0 –0,3	2,6 –0,3	8,0 –0,5	2,84 ±0,05	2,5 –0,4	1,8 ±10%	2	15/20	0,5	3,70 –0,25	2,7 –0,15
ø 4,5	4,5 –0,3	2,8 –0,3	9,0 –0,5	3,11 ±0,05	2,7 –0,4	2,0 ±10%	2	20/25	0,5	3,95 –0,25	2,9 –0,15
ø 5,0	5,0 –0,3	3,0 –0,3	10,0 –0,5	3,54 ±0,05	3,0 –0,5	2,2 ±10%	2	20/25	0,5	4,2 –0,3	3,5 –0,15
ø 6,0	6,0 –0,3	3,7 –0,3	12,0 –0,5	4,25 ±0,05	3,6 –0,5	2,6 ±10%	3	25/30	0,5	5,1 –0,3	4,3 –0,25
ø 8,0	8,0 +0,2/–0,3	5,5 –0,5	15,0 –1,0	6,0 ±0,1	4,1 –0,5	3,6 ±10%	–	40	0,5	7,3 –0,3	5,75 –0,25
ø 10,0	10,0 +0,2/–0,4	6,5 –0,5	19,0 –1,0	7,0 ±0,1	4,7 –0,5	4,6 ±10%	–	40	0,5	8,8 –0,3	6,75 –0,25

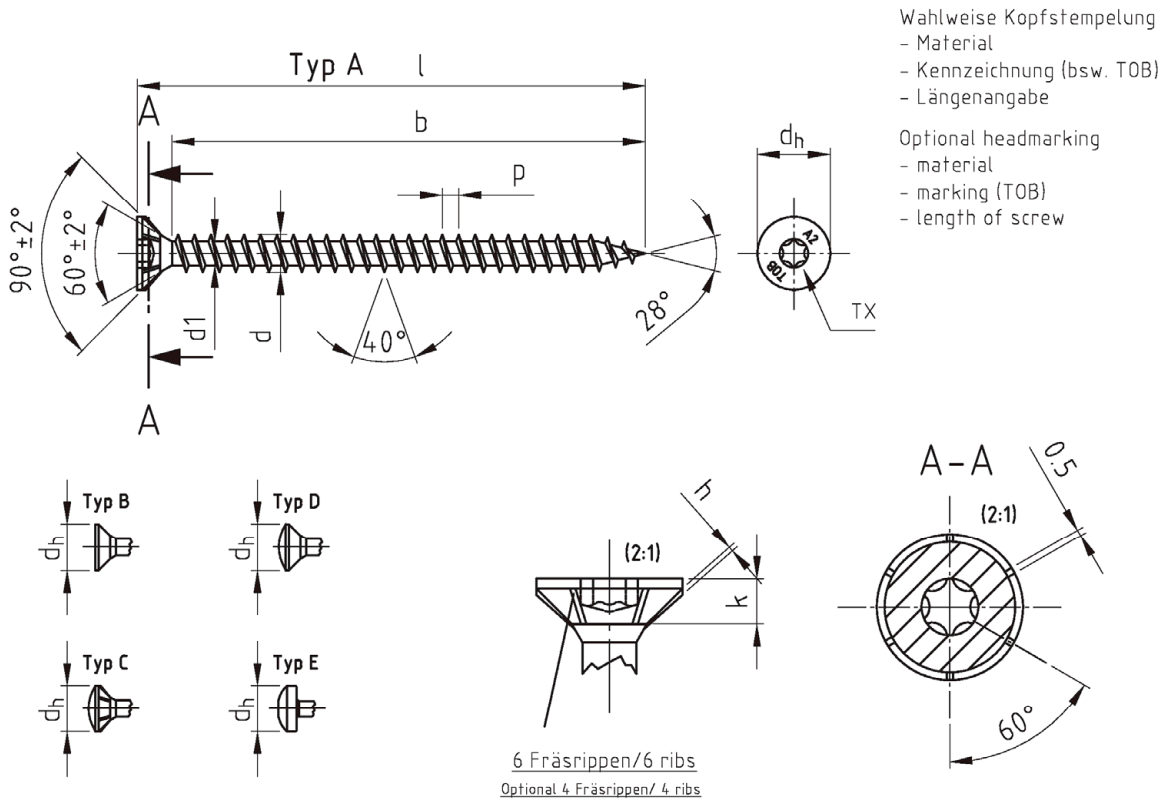
l –1/2 IT17	20	25	30	35	40	45	50	55	60	65	70	75	80	90	100	120–160	180–300	300–400
ø 3,0 b ±1	12	18	18	24	24	30	30	–	–	–	–	–	–	–	–	–	–	–
ø 3,2 b ±1	12	18	18	24	24	30	30	36	36	–	–	–	–	–	–	–	–	–
ø 3,5 b ±1	12	18	18	24	24	30	30	36	–	–	–	–	–	–	–	–	–	–
ø 4,0 b ±1	–	18	18	24	24	30	30	36	36	42	42	48	48	–	–	–	–	–
ø 4,5 b ±1	–	–	18	24	24	30	30	36	36	42	42	48	48	54	60	–	–	–
ø 5,0 b ±1	–	–	20	24	24	30	30	36	36	42	42	48	48	54	60	70	–	–
ø 6,0 b ±1	–	–	–	24	24	30	30	36	36	42	42	48	48	54	70	70	70	–
ø 8,0 b ±1	–	–	–	–	32	37	47	50	50	50	50	50	50	60	80	80	80	80
ø 10,0 b ±1	–	–	–	–	–	–	–	–	50	55	55	55	55	55	55	80	105	105
fh	4,0 –0,2						6,0 –0,2						12,0 –0,6					
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length																		

TOB Screws

TOB-HBS screws with countersunk head 90°
Partially threaded

Annex 4.1

Deutsches Institut für Bautechnik DIBt



Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

Optional headmarking
- material
- marking (TOB)
- length of screw

Bezeichnung	TOB–HBS/ Seko–Holzbauschrauben mit verstärktem Kopf, 6 Fräßrippen, Vollgewinde							
Description	TOB–HBS/ Double countersunk head timber screws, 6 ribs under the head, full thread							
Nennmaß/ Nominal dia.	d	d1	dh	k	p	pz	TX	h
ø 3,0	3,0 –0,15	2,0 –0,15	6,0 –0,4	1,9 –0,3	1,35 ±10%	1	10	0,3
ø 3,2	3,2 –0,15	2,1 –0,15	6,5 –0,4	2,0 –0,3	1,45 ±10%	1	10	0,3
ø 3,5	3,5 –0,3	2,4 –0,3	7,0 –0,4	2,1 –0,3	1,6 ±10%	2	10/15	0,3
ø 4,0	4,0 –0,3	2,6 –0,3	8,0 –0,5	2,5 –0,4	1,8 ±10%	2	15/20	0,5
ø 4,5	4,5 –0,3	2,8 –0,3	9,0 –0,5	2,7 –0,4	2,0 ±10%	2	20/25	0,5
ø 5,0	5,0 –0,3	3,0 –0,3	10,0 –0,5	3,0 –0,5	2,2 ±10%	2	20/25	0,5
ø 6,0	6,0 –0,3	3,7 –0,3	12,0 –0,5	3,6 –0,5	2,6 ±10%	3	25/30	0,5

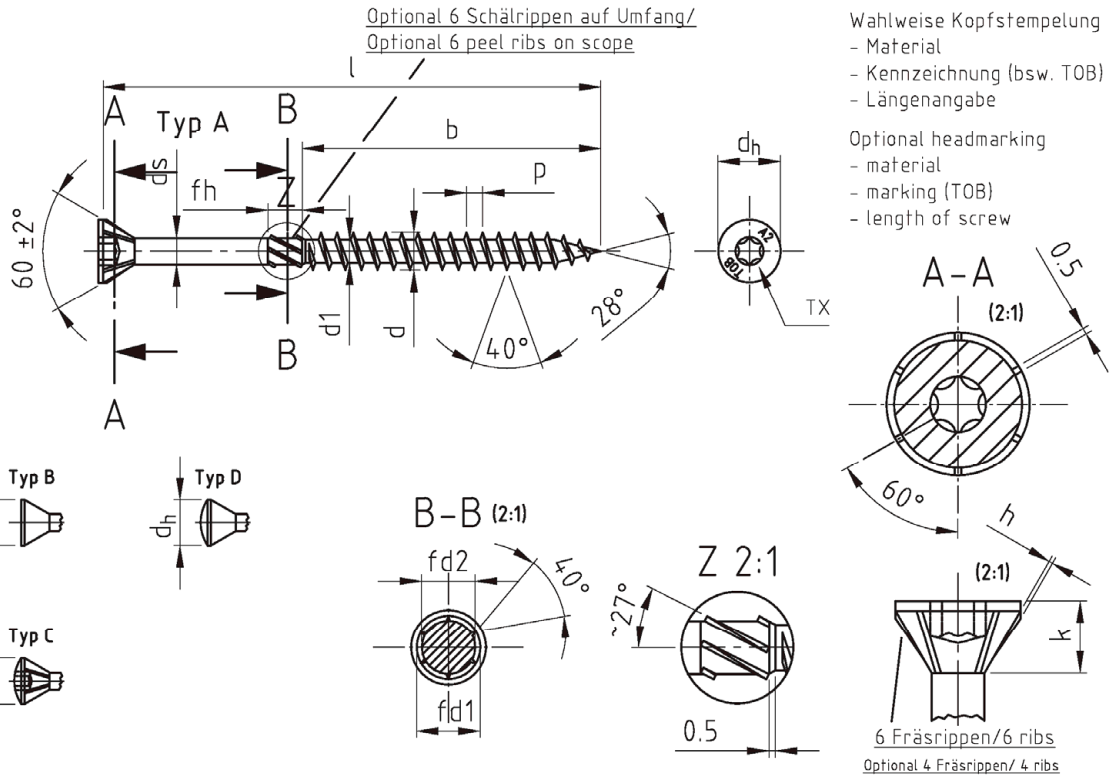
Nennmaß/ Nominal dia.		ø 3,0	ø 3,2	ø 3,5	ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		18	19	19	23	23	28	36
l max. ±1		45	40	50	80	100	100	110
b ±1	min. /+ k	16	16	16	20	25	25	30
	max. /+ k	40	36	45	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≤ L ≤ Lmax sind zulässig / Others screws lenghts with Lmin ≤ L ≤ max are allowed								

TOB Screws

TOB-HBS screws with countersunk head 90°
Fully threaded

Annex 4.2

Deutsches Institut für Bautechnik DIBt



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–HBS–60°/ Seko–Holzbauschrauben mit Innensechsrund, 6 Fräsrippen, 60° Kopf									
Description	TOB–HBS–60°/ Countersunk head woodscrews, six lobe drive, 6 ribs under the head, 60° head									
Nennmaß/ Nominal dia.	d	d1	dh	ds	k	p	TX	h	fd1	fd2
ø 3,0	3,0 –0,15	2,0 –0,15	4,5 –0,4	2,15 ±0,05	1,8 ±0,5	1,35 ±10%	10	0,3	2,90 –0,15	1,75 –0,15
ø 3,2	3,2 –0,15	2,1 –0,15	5,0 –0,4	2,3 ±0,05	2,0 ±0,5	1,45 ±10%	10	0,3	3,15 –0,15	1,85 –0,15
ø 3,5	3,5 –0,3	2,4 –0,3	5,5 –0,4	2,5 ±0,05	2,2 ±0,5	1,6 ±10%	10	0,3	3,45 –0,25	2,4 –0,15
ø 4,0	4,0 –0,3	2,6 –0,3	6,0 –0,5	2,84 ±0,05	2,75 ±0,5	1,8 ±10%	15/20	0,5	3,70 –0,25	2,7 –0,15
ø 4,5	4,5 –0,3	2,8 –0,3	7,0 –0,5	3,11 ±0,05	3,35 ±0,5	2,0 ±10%	20/25	0,5	3,95 –0,25	2,9 –0,15
ø 5,0	5,0 –0,3	3,0 –0,3	7,5 –0,5	3,54 ±0,05	3,45 ±0,5	2,2 ±10%	20/25	0,5	4,2 –0,3	3,5 –0,15
ø 6,0	6,0 –0,3	3,7 –0,3	11,0 –0,5	4,25 ±0,05	5,85 ±0,5	2,6 ±10%	25/30	0,5	5,1 –0,3	4,3 –0,25
ø 8,0	8,0 +0,2/–0,3	5,5 –0,5	14,0 –1,0	6,0 ±0,1	6,95 ±0,5	3,6 ±10%	40	0,5	7,3 –0,3	5,75 –0,25
ø 10,0	10,0 +0,2/–0,4	6,5 –0,5	16,0 –1,0	7,0 ±0,1	7,8 ±0,5	4,6 ±10%	40	0,5	8,8 –0,3	6,75 –0,25

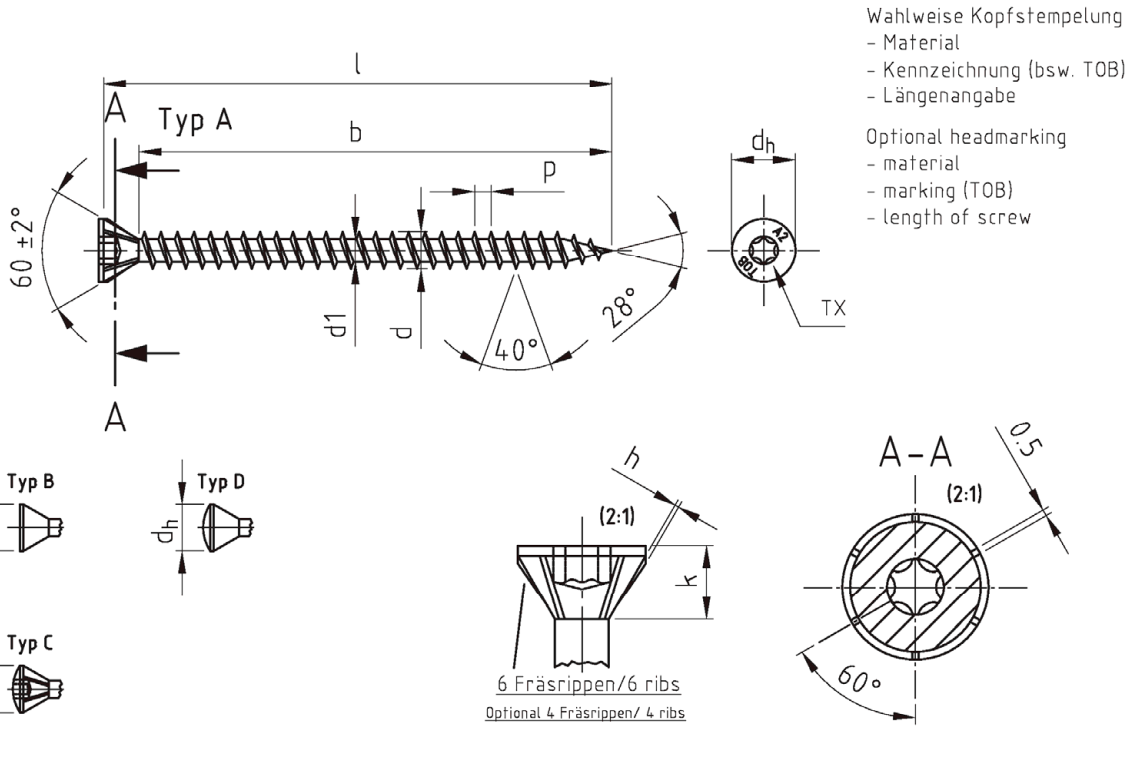
l –1/2 IT17	25	30	35	40	45	50	55	60	65	70	75	80	90	100	120–160	180–300	300–400
ø 3,0 b ±1	18	18	24	24	30	30	–	–	–	–	–	–	–	–	–	–	–
ø 3,2 b ±1	18	18	24	24	30	30	36	36	–	–	–	–	–	–	–	–	–
ø 3,5 b ±1	18	18	24	24	30	30	36	–	–	–	–	–	–	–	–	–	–
ø 4,0 b ±1	18	18	24	24	30	30	36	36	42	42	48	48	–	–	–	–	–
ø 4,5 b ±1	–	18	24	24	30	30	36	36	42	42	48	48	54	60	–	–	–
ø 5,0 b ±1	–	20	24	24	30	30	36	36	42	42	48	48	54	60	70	–	–
ø 6,0 b ±1	–	–	24	24	30	30	36	36	42	42	48	48	54	70	70	70	–
ø 8,0 b ±1	–	–	–	32	37	47	50	50	50	50	50	50	60	80	80	80	80
ø 10,0 b ±1	–	–	–	–	–	–	–	50	55	55	55	55	55	55	80	105	105
fh	4,0 –0,2					6,0 –0,2						12,0 –0,6					
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length																	

TOB Screws

TOB-HBS screws with countersunk head 60°
Partially threaded

Annex 4.3

Deutsches Institut für Bautechnik DIBt



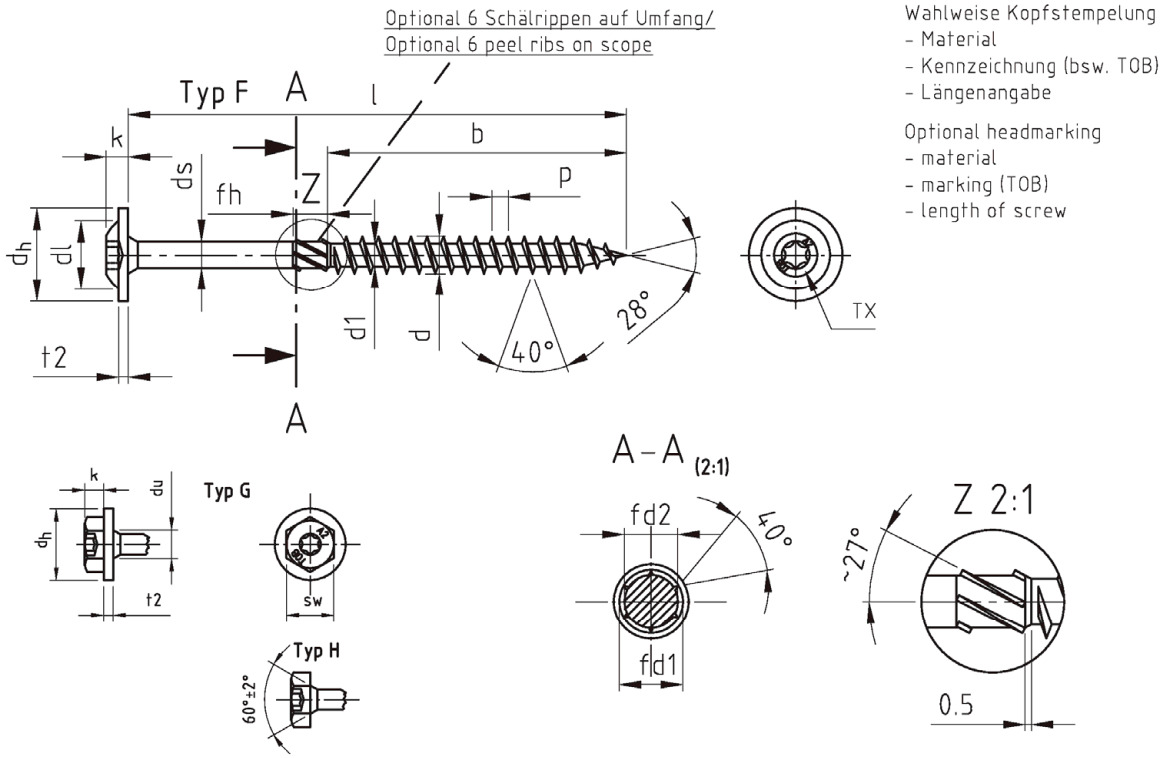
Bezeichnung	TOB–HBS–60°/ Seko–Holzbauschrauben mit Innensechsrund, 6 Fräsrippen, 60° Kopf, Vollgewinde						
Description	TOB–HBS–60°/ Countersunk head woodscrews, six lobe drive, 6 ribs under the head, 60° head, full thread						
Nennmaß/ Nominal dia.	d	d1	dh	k	p	TX	h
ø 3,0	3,0 –0,15	2,0 –0,15	4,5 –0,4	1,8 ±0,5	1,35 ±10%	10	0,3
ø 3,2	3,2 –0,15	2,1 –0,15	5,0 –0,4	2,0 ±0,5	1,45 ±10%	10	0,3
ø 3,5	3,5 –0,3	2,4 –0,3	5,5 –0,4	2,2 ±0,5	1,6 ±10%	10	0,3
ø 4,0	4,0 –0,3	2,6 –0,3	6,0 –0,5	2,75 ±0,5	1,8 ±10%	15/20	0,5
ø 4,5	4,5 –0,3	2,8 –0,3	7,0 –0,5	3,35 ±0,5	2,0 ±10%	20/25	0,5
ø 5,0	5,0 –0,3	3,0 –0,3	7,5 –0,5	3,45 ±0,5	2,2 ±10%	20/25	0,5
ø 6,0	6,0 –0,3	3,7 –0,3	11,0 –0,5	5,85 ±0,5	2,6 ±10%	25/30	0,5

Nennmaß/ Nominal dia.		ø 3,0	ø 3,2	ø 3,5	ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		18	19	19	23	23	28	36
l max. ±1		45	40	50	80	100	100	110
b ±1	min. /+ k	16	16	16	20	25	25	30
	max. /+ k	40	36	45	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≦ L ≦ Lmax sind zulässig / Others screws lenghts with Lmin ≦ L ≦ max are allowed								

TOB Screws

TOB-HBS screws with countersunk head 60°
Fully threaded

Annex 4.4



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–HBS/ TOB–HBS Schrauben mit Tellerkopf oder Sechskantkopf, Teilgewinde											
Description	TOB–HBS/ TOB–HBS screws with pan washer head or hexagonal head, Partially threaded											
Nennmaß/ Nominal dia.	d	d1	dh	dl	ds	k	p	t2	TX	sw	fd1	fd2
ø 3,0	3,0 –0,15	2,0 –0,15	9,0 ±1,0	4,5	2,15 ±0,05	2,2 ±0,4	1,35 ±10%	1,3 –0,5	10	3	2,90 –0,15	1,75 –0,15
ø 3,2	3,2 –0,15	2,1 –0,15	10,0 ±1,0	5,0	2,3 ±0,05	2,5 ±0,4	1,45 ±10%	1,4 –0,5	10	4	3,15 –0,15	1,85 –0,15
ø 3,5	3,5 –0,3	2,4 –0,3	11,0 ±1,0	6,0	2,5 ±0,05	2,7 ±0,4	1,6 ±10%	1,5 –0,5	10/15	5	3,45 –0,25	2,4 –0,15
ø 4,0	4,0 –0,3	2,6 –0,3	12,0 ±1,0	7,0	2,84 ±0,05	3,0 ±0,4	1,8 ±10%	1,5 –0,5	15/20	6	3,70 –0,25	2,7 –0,15
ø 4,5	4,5 –0,3	2,8 –0,3	13,0 ±1,0	8,0	3,11 ±0,05	3,2 ±0,4	2,0 ±10%	1,5 –0,5	20/25	7	3,95 –0,25	2,9 –0,15
ø 5,0	5,0 –0,3	3,0 –0,3	14,0 ±1,0	9,0	3,54 ±0,05	3,5 ±0,4	2,2 ±10%	1,5 –0,5	20/25	8	4,2 –0,3	3,5 –0,15
ø 6,0	6,0 –0,3	3,7 –0,3	15,0 ±1,0	11,0	4,25 ±0,05	3,8 ±0,4	2,6 ±10%	2,0 –0,5	25/30	10	5,1 –0,3	4,3 –0,25
ø 8,0	8,0 +0,2/–0,3	5,5 –0,5	20,0 –1,0	15,0	6,0 ±0,1	4,6 ±0,4	3,6 ±10%	2,0 –0,5	40	12	7,3 –0,3	5,75 –0,25
ø 10,0	10,0 +0,2/–0,4	6,5 –0,5	25,0 –1,0	20,0	7,0 ±0,1	5,0 ±0,4	4,6 ±10%	2,0 –0,5	40	15	8,8 –0,3	6,75 –0,25

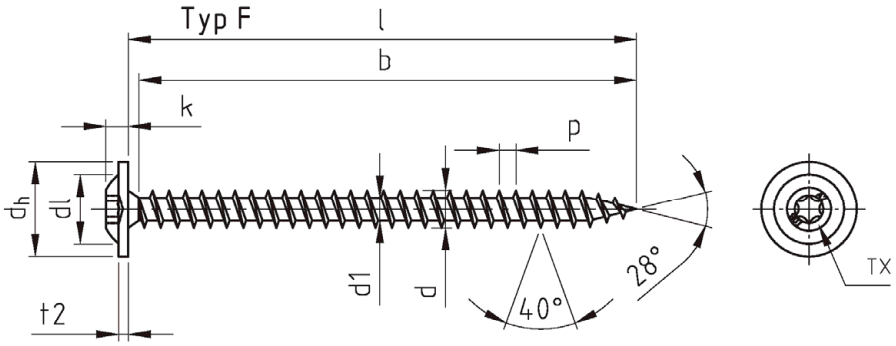
l –1/2 IT17	25	30	35	40	45	50	55	60	65	70	75	80	90	100	120–160	180–300	300–400
ø 3,0 b ±1	18	18	24	24	30	30	–	–	–	–	–	–	–	–	–	–	–
ø 3,2 b ±1	18	18	24	24	30	30	36	36	–	–	–	–	–	–	–	–	–
ø 3,5 b ±1	18	18	24	24	30	30	36	–	–	–	–	–	–	–	–	–	–
ø 4,0 b ±1	18	18	24	24	30	30	36	36	42	42	–	–	–	–	–	–	–
ø 4,5 b ±1	–	18	24	24	30	30	36	36	42	42	48	48	–	–	–	–	–
ø 5,0 b ±1	–	20	24	24	30	30	36	36	42	42	48	48	54	60	70	–	–
ø 6,0 b ±1	–	–	24	24	30	30	36	36	42	42	48	48	54	70	70	70	–
ø 8,0 b ±1	–	–	–	32	37	47	50	50	50	50	50	72	80	80	80	80	80
ø 10,0 b ±1	–	–	–	–	–	–	–	50	55	55	55	55	55	55	80	105	105
fh	4,0 –0,2					6,0 –0,2						12,0 –0,6					
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length																	

TOB Screws

TOB-HBS screws with pan washer head or hexagonal head
Partially threaded

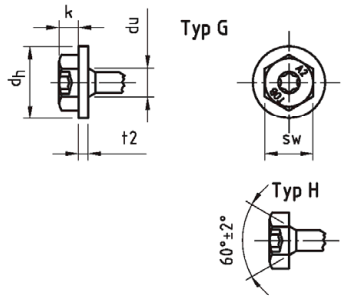
Annex 4.5

Deutsches Institut für Bautechnik DIBt



Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

Optional headmarking
- material
- marking (TOB)
- length of screw



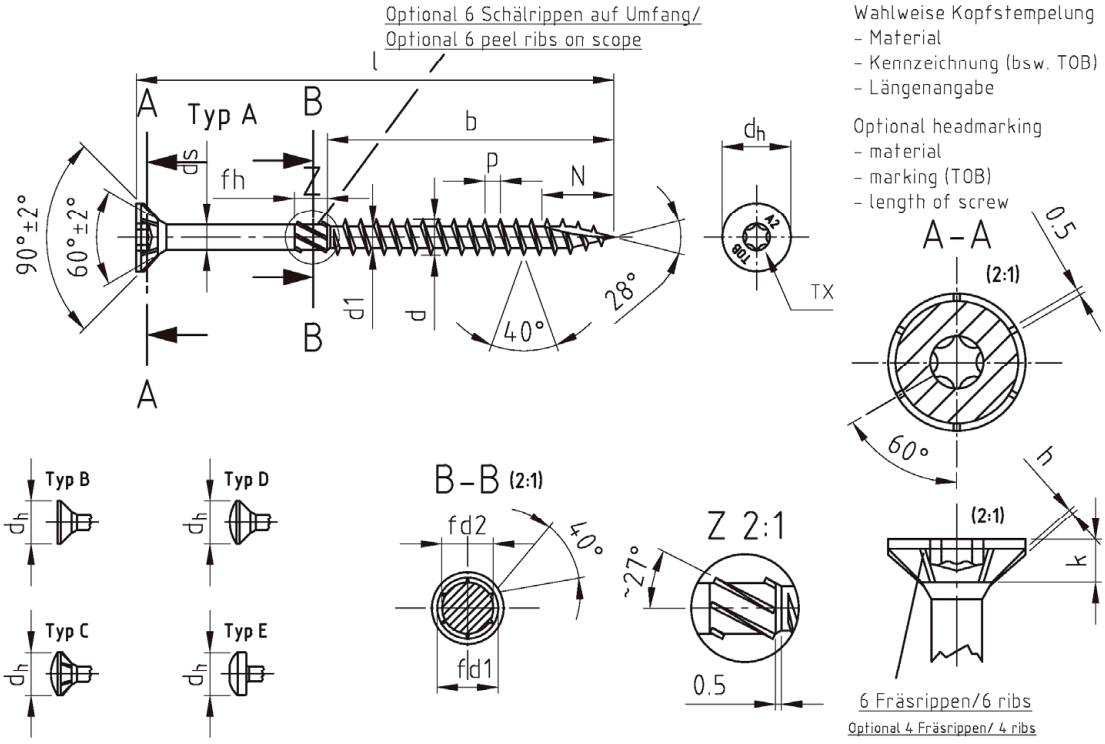
Bezeichnung	TOB–HBS/ TOB–HBS Schrauben mit Tellerkopf oder Sechskantkopf, Vollgewinde								
Description	TOB–HBS/ TOB–HBS screws with pan washer head or hexagonal head, Full threaded								
Nennmaß/ Nominal dia.	d	d1	dh	dl	k	p	t2	TX	sw
ø 3,0	3,0 –0,15	2,0 –0,15	9,0 ±1,0	4,5	2,2 ±0,4	1,35 ±10%	1,3 –0,5	10	3
ø 3,2	3,2 –0,15	2,1 –0,15	10,0 ±1,0	5,0	2,5 ±0,4	1,45 ±10%	1,4 –0,5	10	4
ø 3,5	3,5 –0,3	2,4 –0,3	11,0 ±1,0	6,0	2,7 ±0,4	1,6 ±10%	1,5 –0,5	10/15	5
ø 4,0	4,0 –0,3	2,6 –0,3	12,0 ±1,0	7,0	3,0 ±0,4	1,8 ±10%	1,5 –0,5	15/20	6
ø 4,5	4,5 –0,3	2,8 –0,3	13,0 ±1,0	8,0	3,2 ±0,4	2,0 ±10%	1,5 –0,5	20/25	7
ø 5,0	5,0 –0,3	3,0 –0,3	14,0 ±1,0	9,0	3,5 ±0,4	2,2 ±10%	1,5 –0,5	20/25	8
ø 6,0	6,0 –0,3	3,7 –0,3	15,0 ±1,0	11,0	3,8 ±0,4	2,6 ±10%	2,0 –0,5	25/30	10

Nennmaß/ Nominal dia.		ø 3,0	ø 3,2	ø 3,5	ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		18	19	19	23	23	28	36
l max. ±1		45	40	50	80	100	100	110
b ±1	min. /+ k	16	16	16	20	25	25	30
	max. /+ k	40	36	45	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≦ L ≦ Lmax sind zulässig / Others screws lenghts with Lmin ≦ L ≦ max are allowed								

TOB Screws

TOB-HBS screws with pan washer head or hexagonal head
Fully threaded

Annex 4.6



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–HBS/ Seko–Holzbauschrauben mit verstärktem Kopf, 6 Fräsrippen, Schneidkerbe											
Description	TOB–HBS/ Double countersank head timber screws, 6 rips under the head, cutting point											
Nennmaß/ Nominal dia.	d	d1	dh	ds	k	p	pz	TX	h	fd1	fd2	N
ø 3,0	3,0 –0,15	2,0 –0,15	6,0 –0,4	2,15 ±0,05	1,9 –0,3	1,35 ±10%	1	10	0,3	2,90 –0,15	1,75 –0,15	5,5 ±0,5
ø 3,2	3,2 –0,15	2,1 –0,15	6,5 –0,4	2,3 ±0,05	2,0 –0,3	1,45 ±10%	1	10	0,3	3,15 –0,15	1,85 –0,15	6,5 ±0,5
ø 3,5	3,5 –0,3	2,4 –0,3	7,0 –0,4	2,5 ±0,05	2,1 –0,3	1,6 ±10%	2	10/15	0,3	3,45 –0,25	2,4 –0,15	7,0 ±0,5
ø 4,0	4,0 –0,3	2,6 –0,3	8,0 –0,5	2,84 ±0,05	2,5 –0,4	1,8 ±10%	2	15/20	0,5	3,70 –0,25	2,7 –0,15	7,5 ±0,5
ø 4,5	4,5 –0,3	2,8 –0,3	9,0 –0,5	3,11 ±0,05	2,7 –0,4	2,0 ±10%	2	20/25	0,5	3,95 –0,25	2,9 –0,15	8,5 ±0,5
ø 5,0	5,0 –0,3	3,0 –0,3	10,0 –0,5	3,54 ±0,05	3,0 –0,5	2,2 ±10%	2	20/25	0,5	4,2 –0,3	3,5 –0,15	9,5 ±0,5
ø 6,0	6,0 –0,3	3,7 –0,3	12,0 –0,5	4,25 ±0,05	3,6 –0,5	2,6 ±10%	3	25/30	0,5	5,1 –0,3	4,3 –0,25	11,0 ±1,0
ø 8,0	8,0 +0,2/–0,3	5,5 –0,5	15,0 –1,0	6,0 ±0,1	4,1 –0,5	3,6 ±10%	–	40	0,5	7,3 –0,3	5,75 –0,25	13,0 ±1,0
ø 10,0	10,0 +0,2/–0,4	6,5 –0,5	19,0 –1,0	7,0 ±0,1	4,7 –0,5	4,6 ±10%	–	40	0,5	8,8 –0,3	6,75 –0,25	15,0 ±1,0

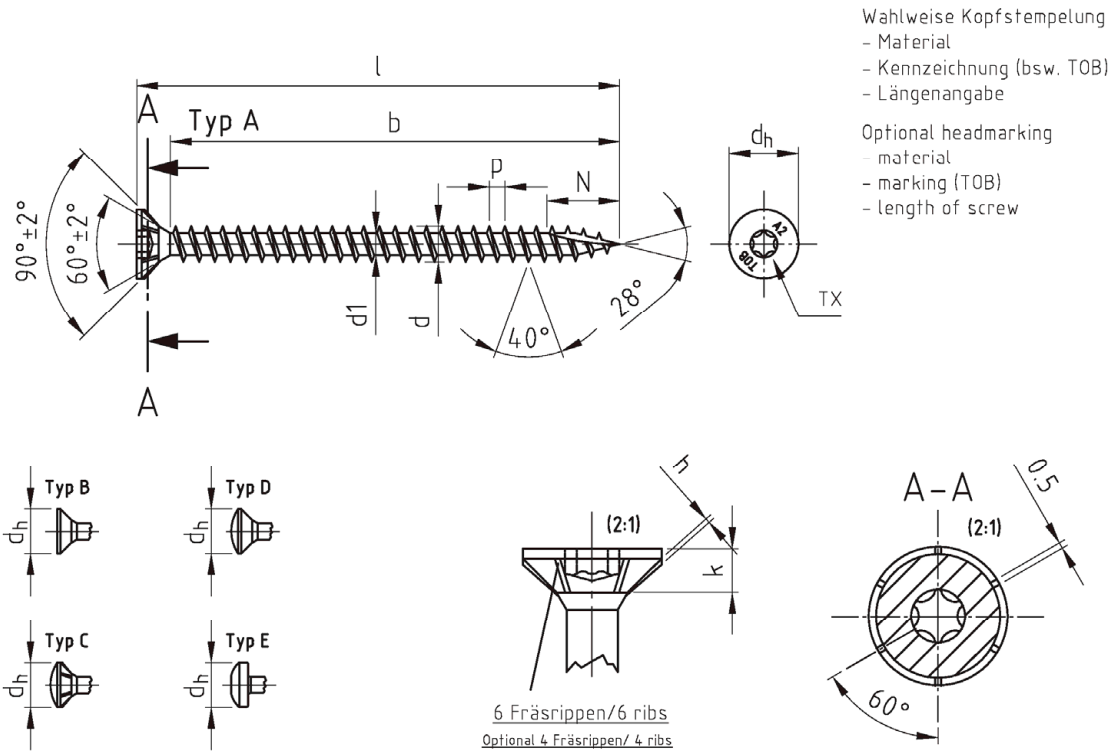
l –1/2 IT17	25	30	35	40	45	50	55	60	65	70	75	80	90	100	120–160	180–300	300–400
ø 3,0 b ±1	18	18	24	24	30	30	–	–	–	–	–	–	–	–	–	–	–
ø 3,2 b ±1	18	18	24	24	30	30	36	36	–	–	–	–	–	–	–	–	–
ø 3,5 b ±1	18	18	24	24	30	30	36	–	–	–	–	–	–	–	–	–	–
ø 4,0 b ±1	18	18	24	24	30	30	36	36	36	42	48	48	–	–	–	–	–
ø 4,5 b ±1	–	18	24	24	30	30	36	36	36	42	48	48	54	60	–	–	–
ø 5,0 b ±1	–	20	24	24	30	30	36	36	36	42	48	48	54	60	70	–	–
ø 6,0 b ±1	–	–	24	24	30	30	36	36	36	42	48	48	54	70	70	70	–
ø 8,0 b ±1	–	–	–	32	37	47	50	50	50	50	50	50	60	80	80	80	80
ø 10,0 b ±1	–	–	–	–	–	–	–	50	55	55	55	55	55	55	80	105	105
fh	4,0 –0,2					6,0 –0,2						12,0 –0,6					
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length																	

TOB Screws

TOB-HBS screws with countersunk head 90°
Partially threaded
Cutting Point

Annex 4.7

Deutsches Institut für Bautechnik DIBt



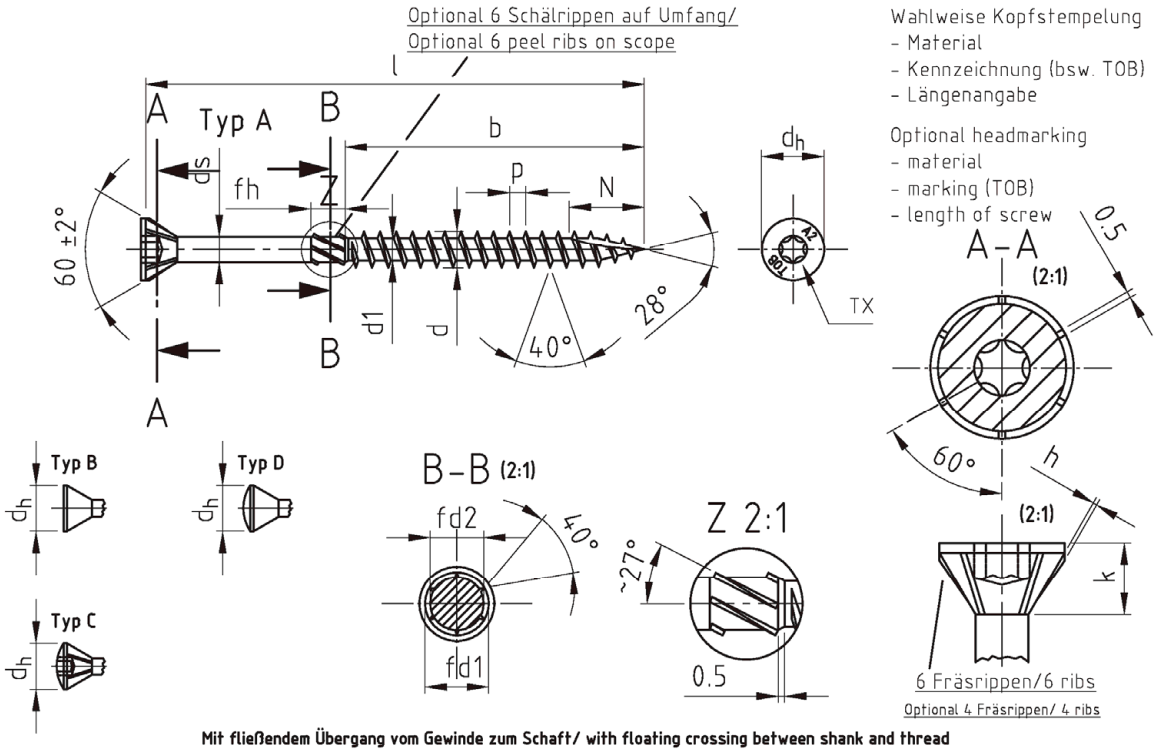
Bezeichnung	TOB–HBS/ Seko–Holzbauschrauben mit verstärktem Kopf, 6 Fräsrippen, Schneidkerbe, Vollgewinde								
Description	TOB–HBS/ Double countersank head timber screws, 6 rips under the head, cutting point, full thread								
Nennmaß/ Nominal dia.	d	d1	dh	k	p	pz	TX	h	N
ø 3,0	3,0 –0,15	2,0 –0,15	6,0 –0,4	1,9 –0,3	1,35 ±10%	1	10	0,3	5,5 ±0,5
ø 3,2	3,2 –0,15	2,1 –0,15	6,5 –0,4	2,0 –0,3	1,45 ±10%	1	10	0,3	6,5 ±0,5
ø 3,5	3,5 –0,3	2,4 –0,3	7,0 –0,4	2,1 –0,3	1,6 ±10%	2	10/15	0,3	7,0 ±0,5
ø 4,0	4,0 –0,3	2,6 –0,3	8,0 –0,5	2,5 –0,4	1,8 ±10%	2	15/20	0,5	7,5 ±0,5
ø 4,5	4,5 –0,3	2,8 –0,3	9,0 –0,5	2,7 –0,4	2,0 ±10%	2	20/25	0,5	8,5 ±0,5
ø 5,0	5,0 –0,3	3,0 –0,3	10,0 –0,5	3,0 –0,5	2,2 ±10%	2	20/25	0,5	9,5 ±0,5
ø 6,0	6,0 –0,3	3,7 –0,3	12,0 –0,5	3,6 –0,5	2,6 ±10%	3	25/30	0,5	11,0 ±1,0

Nennmaß/ Nominal dia.		ø 3,0	ø 3,2	ø 3,5	ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		18	19	19	23	23	28	36
l max. ±1		45	40	50	80	100	100	110
b ±1	min. /+ k	16	16	16	20	25	25	30
	max. /+ k	40	36	45	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≤ L ≤ Lmax sind zulässig / Others screws lenghts with Lmin ≤ L ≤ max are allowed								

TOB Screws

TOB-HBS screws with countersunk head 90°
Fully threaded
Cutting Point

Annex 4.8



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–HBS–60°/ Seko–Holzbauschrauben mit Innensechsrund, 6 Fräsrippen, Schneidkerbe										
Description	TOB–HBS–60°/ Countersunk head woodscrews, six lobe drive, 6 ribs under the head, cutting point										
Nennmaß/ Nominal dia.	d	d1	dh	ds	k	p	TX	h	fd1	fd2	N
ø 3,0	3,0 –0,15	2,0 –0,15	4,5 –0,4	2,15 ±0,05	1,8 ±0,5	1,35 ±10%	10	0,3	2,90 –0,15	1,75 –0,15	5,5 ±0,5
ø 3,2	3,2 –0,15	2,1 –0,15	5,0 –0,4	2,3 ±0,05	2,0 ±0,5	1,45 ±10%	10	0,3	3,15 –0,15	1,85 –0,15	6,5 ±0,5
ø 3,5	3,5 –0,3	2,4 –0,3	5,5 –0,4	2,5 ±0,05	2,2 ±0,5	1,6 ±10%	10	0,3	3,45 –0,25	2,4 –0,15	7,0 ±0,5
ø 4,0	4,0 –0,3	2,6 –0,3	6,0 –0,5	2,84 ±0,05	2,75 ±0,5	1,8 ±10%	15/20	0,5	3,70 –0,25	2,7 –0,15	7,5 ±0,5
ø 4,5	4,5 –0,3	2,8 –0,3	7,0 –0,5	3,11 ±0,05	3,35 ±0,5	2,0 ±10%	20/25	0,5	3,95 –0,25	2,9 –0,15	8,5 ±0,5
ø 5,0	5,0 –0,3	3,0 –0,3	7,5 –0,5	3,54 ±0,05	3,45 ±0,5	2,2 ±10%	20/25	0,5	4,2 –0,3	3,5 –0,15	9,5 ±0,5
ø 6,0	6,0 –0,3	3,7 –0,3	11,0 –0,5	4,25 ±0,05	5,65 ±0,5	2,6 ±10%	25/30	0,5	5,1 –0,3	4,3 –0,25	11,0 ±1,0
ø 8,0	8,0 +0,2/–0,3	5,5 –0,5	14,0 –1,0	6,0 ±0,1	6,95 ±0,5	3,6 ±10%	40	0,5	7,3 –0,3	5,75 –0,25	13,0 ±1,0
ø 10,0	10,0 +0,2/–0,4	6,5 –0,5	16,0 –1,0	7,0 ±0,1	7,8 ±0,5	4,6 ±10%	40	0,5	8,8 –0,3	6,75 –0,25	15,0 ±1,0

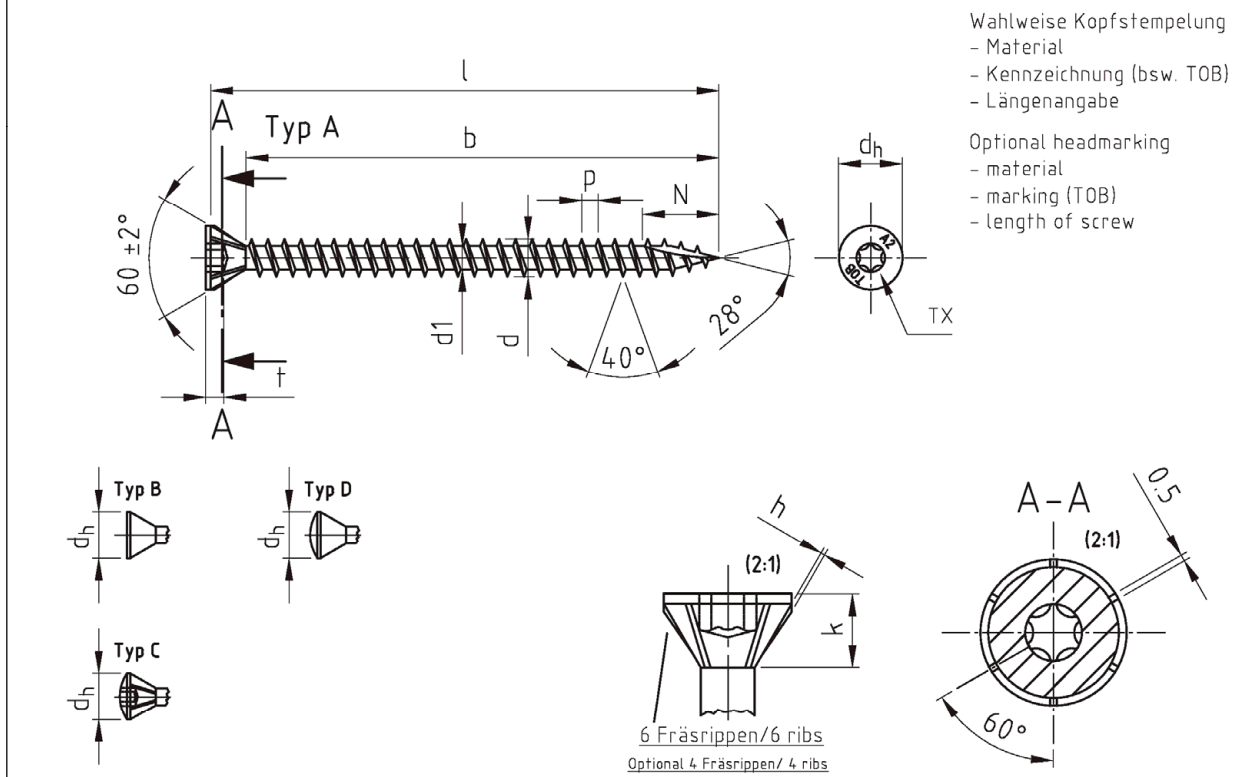
l –1/2 IT17	25	30	35	40	45	50	55	60	65	70	75	80	90	100	110–160	180–300	300–400
ø 3,0 b ±1	18	18	24	24	30	30	–	–	–	–	–	–	–	–	–	–	–
ø 3,2 b ±1	18	18	24	24	30	30	36	36	–	–	–	–	–	–	–	–	–
ø 3,5 b ±1	18	18	24	24	30	30	36	–	–	–	–	–	–	–	–	–	–
ø 4,0 b ±1	18	18	24	24	30	30	36	36	36	42	48	48	–	–	–	–	–
ø 4,5 b ±1	–	18	24	24	30	30	36	36	36	42	48	48	54	60	–	–	–
ø 5,0 b ±1	–	20	24	24	30	30	36	36	36	42	48	48	54	60	70	–	–
ø 6,0 b ±1	–	–	24	24	30	30	36	36	36	42	48	48	54	70	70	70	–
ø 8,0 b ±1	–	–	–	32	37	47	50	50	50	50	50	50	60	80	80	80	80
ø 10,0 b ±1	–	–	–	–	–	–	–	50	55	55	55	55	55	55	80	105	105
fh	4,0 –0,2					6,0 –0,2						12,0 –6,0					
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length																	

TOB Screws

TOB-HBS screws with countersunk head 60°
Partially threaded
Cutting Point

Annex 4.9

Deutsches Institut für Bautechnik DIBt



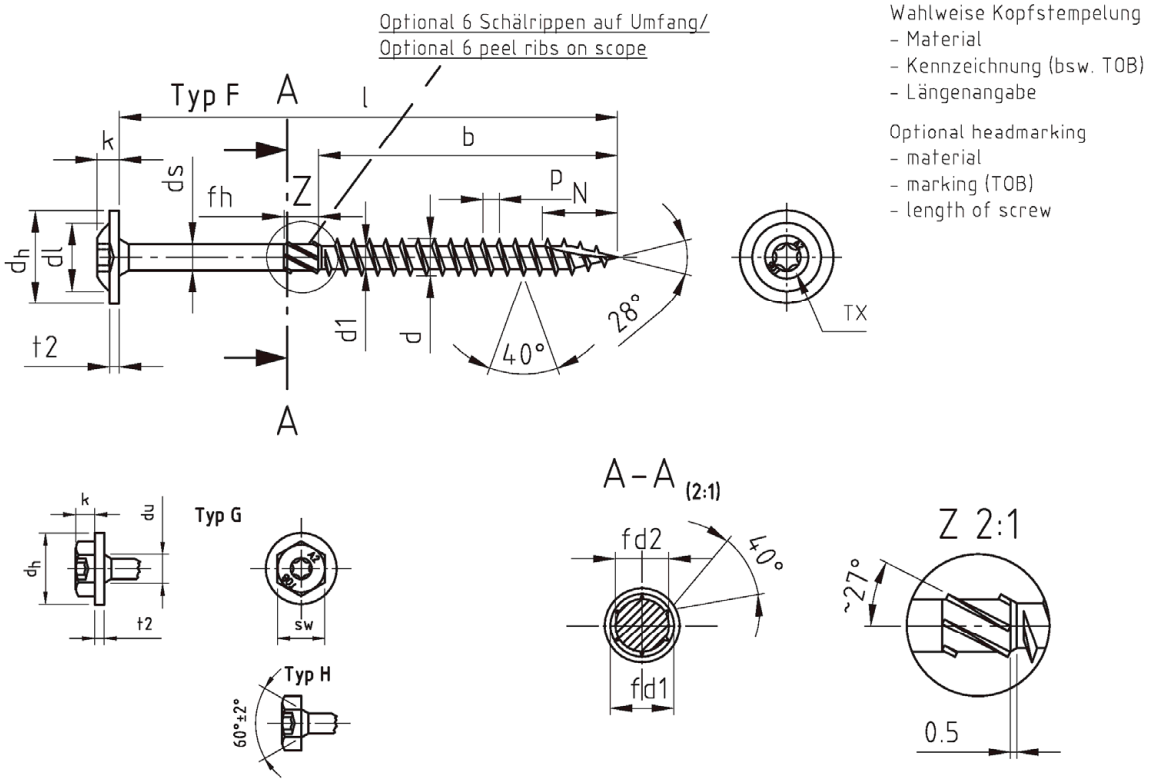
Bezeichnung	TOB–HBS–60°/ Seko–Holzbauschrauben mit Innensechsrund, 6 Fräsrippen, Schneidkerbe, Vollgewinde							
Description	TOB–HBS–60°/ Countersunk head woodscrews, six lobe drive, 6 ribs under the head, cutting point, full thread							
Nennmaß/ Nominal dia.	d	d1	dh	k	p	TX	h	N
ø 3,0	3,0 –0,15	2,0 –0,15	4,5 –0,4	1,8 ±0,5	1,35 ±10%	10	0,3	5,5 ±0,5
ø 3,2	3,2 –0,15	2,1 –0,15	5,0 –0,4	2,0 ±0,5	1,45 ±10%	10	0,3	6,5 ±0,5
ø 3,5	3,5 –0,3	2,4 –0,3	5,5 –0,4	2,2 ±0,5	1,6 ±10%	10	0,3	7,0 ±0,5
ø 4,0	4,0 –0,3	2,6 –0,3	6,0 –0,5	2,75 ±0,5	1,8 ±10%	15/20	0,5	7,5 ±0,5
ø 4,5	4,5 –0,3	2,8 –0,3	7,0 –0,5	3,35 ±0,5	2,0 ±10%	20/25	0,5	8,5 ±0,5
ø 5,0	5,0 –0,3	3,0 –0,3	7,5 –0,5	3,45 ±0,5	2,2 ±10%	20/25	0,5	9,5 ±0,5
ø 6,0	6,0 –0,3	3,7 –0,3	11,0 –0,5	5,85 ±0,5	2,6 ±10%	25/30	0,5	11,0 ±1,0

Nennmaß/ Nominal dia.		ø 3,0	ø 3,2	ø 3,5	ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		18	19	19	23	23	28	36
l max. ±1		45	40	50	80	100	100	110
b ±1	min. /+ k	16	16	16	20	25	25	30
	max. /+ k	40	36	45	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≦ L ≦ Lmax sind zulässig / Others screws lenghts with Lmin ≦ L ≦ max are allowed								

TOB Screws

TOB-HBS screws with countersunk head 60°
Fully threaded
Cutting Point

Annex 4.10



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–HBS/ TOB–HBS Schrauben mit Tellerkopf oder Sechskantkopf, Teilgewinde, CUT Bohrspitze												
Description	TOB–HBS/ TOB–HBS screws with pan washer head or hexagonal head, Partially threaded, Cutting point												
Nennmaß/ Nominal dia.	d	d1	dh	dl	ds	k	p	t2	TX	sw	fd1	fd2	N
ø 3,0	3,0 –0,15	2,0 –0,15	9,0 ±1,0	4,5	2,15 ±0,05	2,2 ±0,4	1,35 ±10%	1,3 –0,5	10	3	2,90 –0,15	1,75 –0,15	5,5 ±0,5
ø 3,2	3,2 –0,15	2,1 –0,15	10,0 ±1,0	5,0	2,3 ±0,05	2,5 ±0,4	1,45 ±10%	1,4 –0,5	10	4	3,15 –0,15	1,85 –0,15	6,5 ±0,5
ø 3,5	3,5 –0,3	2,4 –0,3	11,0 ±1,0	6,0	2,5 ±0,05	2,7 ±0,4	1,6 ±10%	1,5 –0,5	10/15	5	3,45 –0,25	2,4 –0,15	7,0 ±0,5
ø 4,0	4,0 –0,3	2,6 –0,3	12,0 ±1,0	7,0	2,84 ±0,05	3,0 ±0,4	1,8 ±10%	1,5 –0,5	15/20	6	3,70 –0,25	2,7 –0,15	7,5 ±0,5
ø 4,5	4,5 –0,3	2,8 –0,3	13,0 ±1,0	8,0	3,11 ±0,05	3,2 ±0,4	2,0 ±10%	1,5 –0,5	20/25	7	3,95 –0,25	2,9 –0,15	8,5 ±0,5
ø 5,0	5,0 –0,3	3,0 –0,3	14,0 ±1,0	9,0	3,54 ±0,05	3,5 ±0,4	2,2 ±10%	1,5 –0,5	20/25	8	4,2 –0,3	3,5 –0,15	9,5 ±0,5
ø 6,0	6,0 –0,3	3,7 –0,3	15,0 ±1,0	11,0	4,25 ±0,05	3,8 ±0,4	2,6 ±10%	2,0 –0,5	25/30	10	5,1 –0,3	4,3 –0,25	11,0 ±1
ø 8,0	8,0 +0,2/–0,3	5,5 –0,5	20,0 –1,0	15,0	6,0 ±0,1	4,6 ±0,4	3,6 ±10%	2,0 –0,5	40	12	7,3 –0,3	5,75 –0,25	13,0 ±1
ø 10,0	10,0 +0,2/–0,4	6,5 –0,5	25,0 –1,0	20,0	7,0 ±0,1	5,0 ±0,4	4,6 ±10%	2,0 –0,5	40	15	8,8 –0,3	6,75 –0,25	15,0 ±1

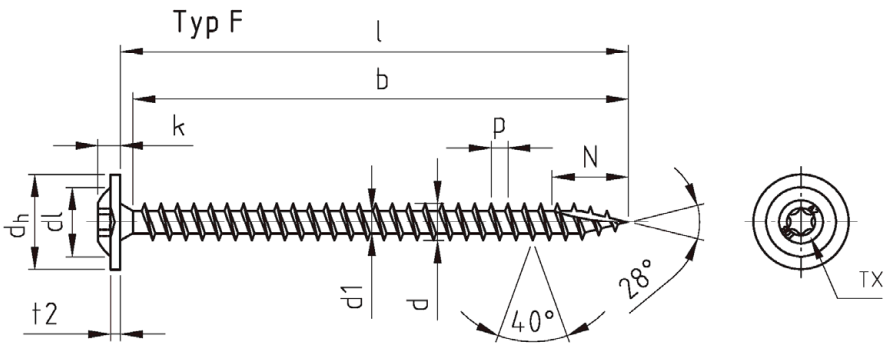
l –1/2 IT17	10	12	16	20	25	30	35	40	45	50	55	60	65	70	75	80	90	100	120–160	180–300	300–400
ø 3,0 b ±1	–	–	–	–	18	18	24	24	30	30	–	–	–	–	–	–	–	–	–	–	–
ø 3,2 b ±1	–	–	–	–	18	18	24	24	30	30	36	36	–	–	–	–	–	–	–	–	–
ø 3,5 b ±1	–	–	–	–	18	18	24	24	30	30	36	–	–	–	–	–	–	–	–	–	–
ø 4,0 b ±1	–	–	–	–	18	18	24	24	30	30	36	36	36	42	–	–	–	–	–	–	–
ø 4,5 b ±1	–	–	–	–	–	18	24	24	30	30	36	36	36	42	48	48	–	–	–	–	–
ø 5,0 b ±1	–	–	–	–	–	20	24	24	30	30	36	36	36	42	48	48	54	60	70	–	–
ø 6,0 b ±1	–	–	–	–	–	–	24	24	30	30	36	36	36	42	48	48	54	70	70	70	–
ø 8,0 b ±1	–	–	–	–	–	–	–	32	37	47	50	50	50	50	50	72	80	80	80	80	80
ø 10,0 b ±1	–	–	–	–	–	–	–	–	–	–	–	50	55	55	55	55	55	55	80	105	105
fh	4,0 –0,2									6,0 –0,2						12,0 –0,6					
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length																					

TOB Screws

TOB-HBS screws with pan washer head or hexagonal head
Partially threaded
Cutting Point

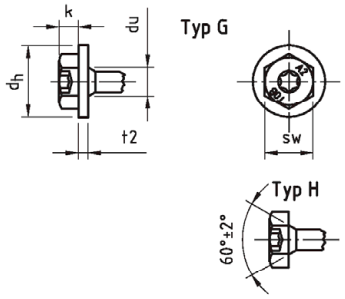
Annex 4.11

Deutsches Institut für Bautechnik DIBt



Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

Optional headmarking
- material
- marking (TOB)
- length of screw



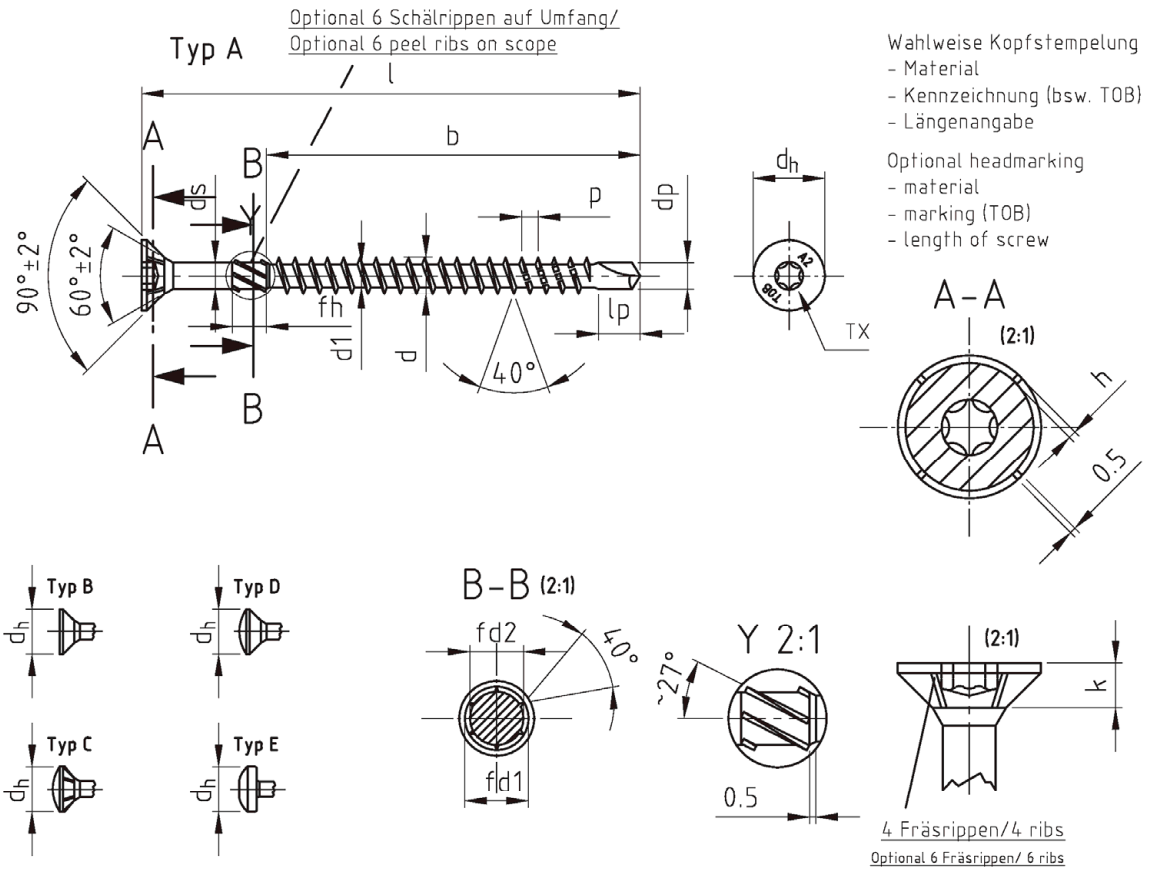
Bezeichnung	TOB–HBS/ TOB–HBS Schrauben mit Tellerkopf oder Sechskantkopf, Vollgewinde, CUT Bohrspitze									
Description	TOB–HBS/ TOB–HBS screws with pan washer head or hexagonal head, Full threaded, Cutting point									
Nennmaß/ Nominal dia.	d	d1	dh	dl	k	p	t2	TX	sw	N
ø 3,0	3,0 –0,15	2,0 –0,15	9,0 ±1,0	4,5	2,2 ±0,4	1,35 ±10%	1,3 –0,5	10	3	5,5 ±0,5
ø 3,2	3,2 –0,15	2,1 –0,15	10,0 ±1,0	5,0	2,5 ±0,4	1,45 ±10%	1,4 –0,5	10	4	6,5 ±0,5
ø 3,5	3,5 –0,3	2,4 –0,3	11,0 ±1,0	6,0	2,7 ±0,4	1,6 ±10%	1,5 –0,5	10/15	5	7,0 ±0,5
ø 4,0	4,0 –0,3	2,6 –0,3	12,0 ±1,0	7,0	3,0 ±0,4	1,8 ±10%	1,5 –0,5	15/20	6	7,5 ±0,5
ø 4,5	4,5 –0,3	2,8 –0,3	13,0 ±1,0	8,0	3,2 ±0,4	2,0 ±10%	1,5 –0,5	20/25	7	8,5 ±0,5
ø 5,0	5,0 –0,3	3,0 –0,3	14,0 ±1,0	9,0	3,5 ±0,4	2,2 ±10%	1,5 –0,5	20/25	8	9,5 ±0,5
ø 6,0	6,0 –0,3	3,7 –0,3	15,0 ±1,0	11,0	3,8 ±0,4	2,6 ±10%	2,0 –0,5	25/30	10	11,0 ±1

Nennmaß/ Nominal dia.		ø 3,0	ø 3,2	ø 3,5	ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		18	19	19	23	23	28	36
l max. ±1		45	40	50	80	100	100	110
b ±1	min. /+ k	16	16	16	20	25	25	30
	max. /+ k	40	36	45	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≦ L ≦ Lmax sind zulässig / Others screws lenghts with Lmin ≦ L ≦ max are allowed								

TOB Screws

TOB-HBS screws with pan washer head or hexagonal head
Fully threaded
Cutting Point

Annex 4.12



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–Drill/ Seko–Holzbauschrauben mit Bohrspitze											
Description	TOB–Drill/ CSK head timber screws drilling–point											
Nennmaß/ Nominal dia.	d	d1	dp	dh	ds	k	p	lp	TX	h	fd1	fd2
ø 3,0	3,0 –0,15	2,0 –0,15	2,3 –0,1	6,0 –0,4	2,15 ±0,05	1,9 –0,3	1,35 ±10%	3,0	10	0,3	2,90 –0,15	1,75 –0,15
ø 3,2	3,2 –0,15	2,1 –0,15	2,4 –0,4	6,5 –0,4	2,3 ±0,05	2,0 –0,3	1,45 ±10%	3,1	10	0,3	3,15 –0,15	1,85 –0,15
ø 3,5	3,5 –0,3	2,4 –0,3	2,8 –0,5	7,0 –0,4	2,5 ±0,05	2,1 –0,3	1,6 ±10%	3,5	10/15	0,3	3,45 –0,25	2,4 –0,15
ø 4,0	4,0 –0,3	2,6 –0,3	3,0 –0,5	8,0 –0,5	2,84 ±0,05	2,5 –0,4	1,8 ±10%	3,7	15/20	0,5	3,70 –0,25	2,7 –0,15
ø 4,5	4,5 –0,3	2,8 –0,3	3,3 –0,5	9,0 –0,5	3,11 ±0,05	2,7 –0,4	2,0 ±10%	4,7	20/25	0,5	3,95 –0,25	2,9 –0,15
ø 5,0	5,0 –0,3	3,0 –0,3	3,6 –0,5	10,0 –0,5	3,54 ±0,05	3,0 –0,5	2,2 ±10%	5,2	20/25	0,5	4,2 –0,3	3,5 –0,15
ø 6,0	6,0 –0,3	3,7 –0,3	4,4 –0,6	12,0 –0,5	4,25 ±0,05	3,6 –0,5	2,6 ±10%	5,8	25/30	0,5	5,1 –0,3	4,3 –0,25

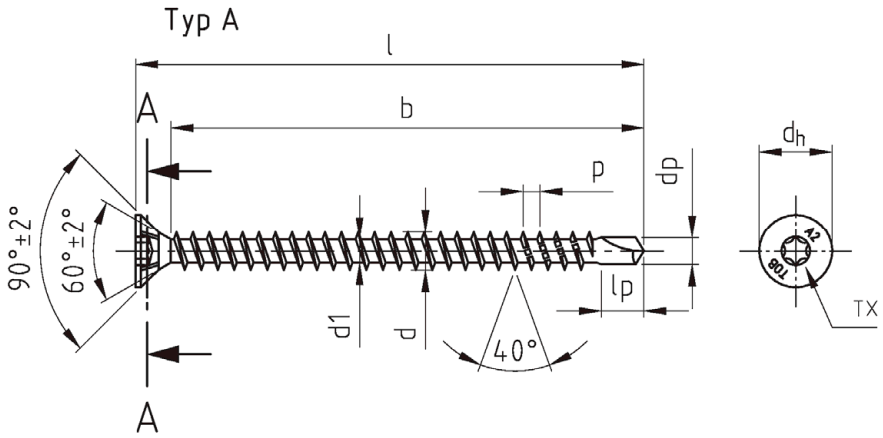
l –1/2 IT17	30	35	40	45	50	55	60	65	70	75	80	90	100	120–200
ø 3,0 b ±1	18	24	24	30	30	–	–	–	–	–	–	–	–	–
ø 3,2 b ±1	18	24	24	30	30	36	36	–	–	–	–	–	–	–
ø 3,5 b ±1	18	24	24	30	30	36	36	–	–	–	–	–	–	–
ø 4,0 b ±1	18	24	24	30	30	36	36	42	42	48	54	54	60	70
ø 4,5 b ±1	18	24	24	30	30	36	36	42	42	48	54	54	60	70
ø 5,0 b ±1	–	24	24	30	30	36	36	42	42	48	54	54	60	70
ø 6,0 b ±1	–	24	24	30	30	36	36	42	42	48	54	54	60	70
fh	4,0 –0,2				6,0 –0,2						12,0 –0,6			
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length														

TOB Screws

TOB-HBS screws with countersunk head 90°
Partially threaded
Drilling Point

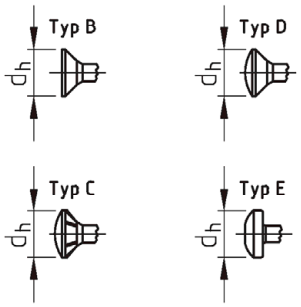
Annex 4.13

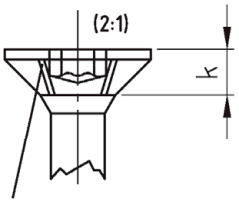
Deutsches Institut für Bautechnik DIBt



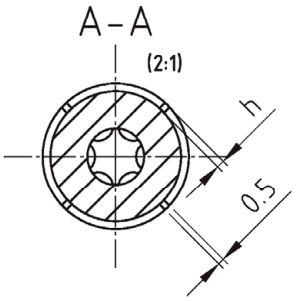
Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

Optional headmarking
- material
- marking (TOB)
- length of screw





4 Fräsrippen/4 ribs
Optional 6 Fräsrippen/ 6 ribs



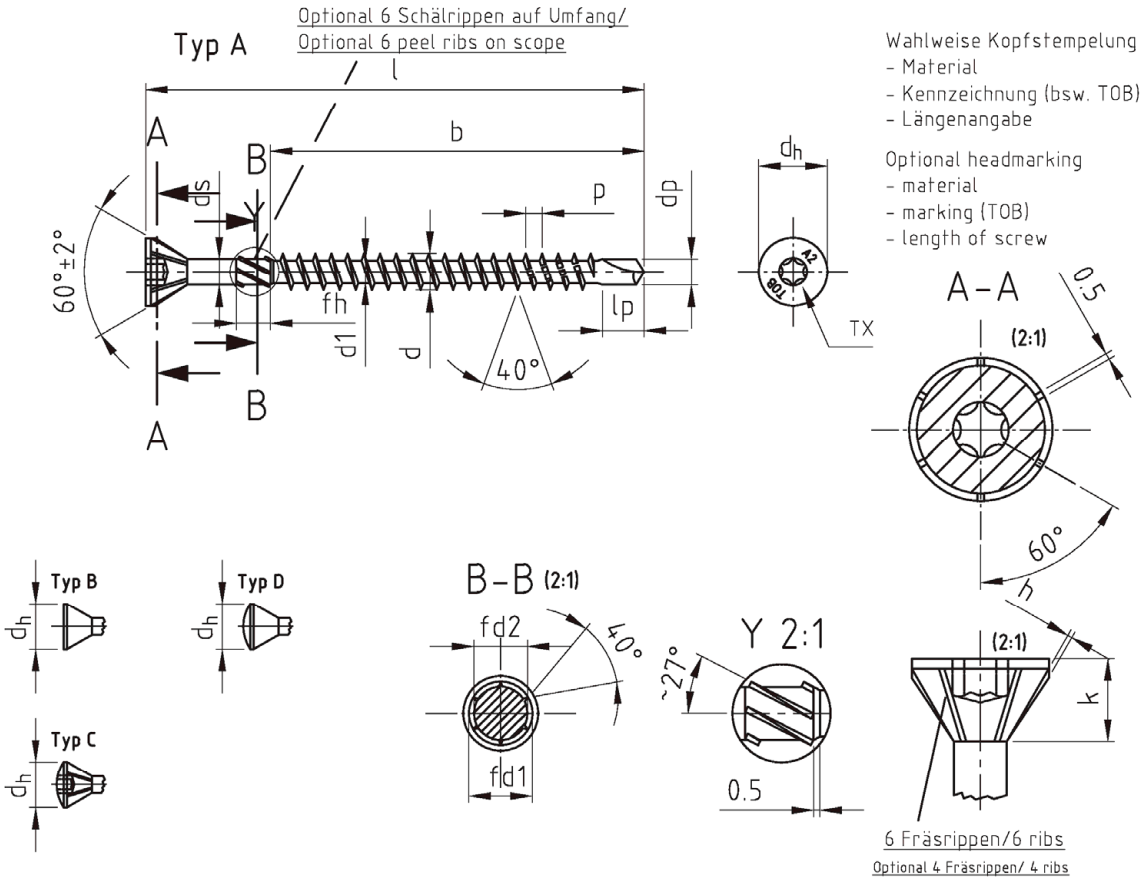
Bezeichnung	TOB–Drill/ Seko–Holzbauschrauben mit Bohrspitze, Vollgewinde								
Description	TOB–Drill/ CSK head timber screws drilling–point, full thread								
Nennmaß/ Nominal dia.	d	d1	dp	dh	k	p	lp	TX	h
ø 3,0	3,0 –0,15	2,0 –0,15	2,3 –0,1	6,0 –0,4	1,9 –0,3	1,35 ±10%	3,0	10	0,3
ø 3,2	3,2 –0,15	2,1 –0,15	2,4 –0,4	6,5 –0,4	2,0 –0,3	1,45 ±10%	3,1	10	0,3
ø 3,5	3,5 –0,3	2,4 –0,3	2,8 –0,5	7,0 –0,4	2,1 –0,3	1,6 ±10%	3,5	10/15	0,3
ø 4,0	4,0 –0,3	2,6 –0,3	3,0 –0,5	8,0 –0,5	2,5 –0,4	1,8 ±10%	3,7	15/20	0,5
ø 4,5	4,5 –0,3	2,8 –0,3	3,3 –0,5	9,0 –0,5	2,7 –0,4	2,0 ±10%	4,7	20/25	0,5
ø 5,0	5,0 –0,3	3,0 –0,3	3,6 –0,5	10,0 –0,5	3,0 –0,5	2,2 ±10%	5,2	20/25	0,5
ø 6,0	6,0 –0,3	3,7 –0,3	4,4 –0,6	12,0 –0,5	3,6 –0,5	2,6 ±10%	5,8	25/30	0,5

Nennmaß/ Nominal dia.		ø 3,0	ø 3,2	ø 3,5	ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		18	19	19	23	23	28	36
l max. ±1		45	40	50	80	100	100	110
b ±1	min. /+ k	16	16	16	20	25	25	30
	max. /+ k	40	36	45	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≦ L ≦ Lmax sind zulässig / Others screws lenghts with Lmin ≦ L ≦ max are allowed								

TOB Screws

TOB-HBS screws with countersunk head 90°
Fully threaded
Drilling Point

Annex 4.14



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–Drill–60°/ Seko–Holzbauschrauben mit Bohrspitze, 60° Kopf											
Description	TOB–Drill–60°/ CSK head timber screws drilling–point, 60° Kopf											
Nennmaß/ Nominal dia.	d	d1	dp	dh	ds	k	p	lp	TX	h	fd1	fd2
ø 3,0	3,0 –0,15	2,0 –0,15	2,3 –0,1	4,5 ±0,5	2,15 ±0,05	1,8 ±0,5	1,35 ±10%	3,0	10	0,3	2,90 –0,15	1,75 –0,15
ø 3,2	3,2 –0,15	2,1 –0,15	2,4 –0,4	5,0 ±0,5	2,3 ±0,05	2,0 ±0,5	1,45 ±10%	3,1	10	0,3	3,15 –0,15	1,85 –0,15
ø 3,5	3,5 –0,3	2,4 –0,3	2,8 –0,5	5,5 ±0,5	2,5 ±0,05	2,2 ±0,5	1,6 ±10%	3,5	10	0,3	3,45 –0,25	2,4 –0,15
ø 4,0	4,0 –0,3	2,6 –0,3	3,0 –0,5	6,0 ±0,5	2,84 ±0,05	2,75 ±0,5	1,8 ±10%	3,7	15/20	0,5	3,70 –0,25	2,7 –0,15
ø 4,5	4,5 –0,3	2,8 –0,3	3,3 –0,5	7,0 ±0,5	3,11 ±0,05	3,35 ±0,5	2,0 ±10%	4,7	20/25	0,5	3,95 –0,25	2,9 –0,15
ø 5,0	5,0 –0,3	3,0 –0,3	3,6 –0,5	7,5 ±0,5	3,54 ±0,05	3,45 ±0,5	2,2 ±10%	5,2	20/25	0,5	4,2 –0,3	3,5 –0,15
ø 6,0	6,0 –0,3	3,7 –0,3	4,4 –0,6	11,0 ±0,5	4,25 ±0,05	5,85 ±0,5	2,6 ±10%	5,8	25/30	0,5	5,1 –0,3	4,3 –0,25

l –1/2 IT17	30	35	40	45	50	55	60	65	70	75	80	90	100	120–200
ø 3,0 b ±1	18	24	24	30	30	–	–	–	–	–	–	–	–	–
ø 3,2 b ±1	18	24	24	30	30	36	36	–	–	–	–	–	–	–
ø 3,5 b ±1	18	24	24	30	30	36	36	–	–	–	–	–	–	–
ø 4,0 b ±1	18	24	24	30	30	36	36	42	42	48	54	–	–	–
ø 4,5 b ±1	18	24	24	30	30	36	36	42	42	48	54	54	60	70
ø 5,0 b ±1	–	24	24	30	30	36	36	42	42	48	54	54	60	70
ø 6,0 b ±1	–	24	24	30	30	36	36	42	42	48	54	54	60	70
fh	4,0 –0,2				6,0 –0,2						12,0 –0,6			
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length														

TOB Screws

TOB-HBS screws with countersunk head 60°
Partially threaded
Drilling Point

Annex 4.15

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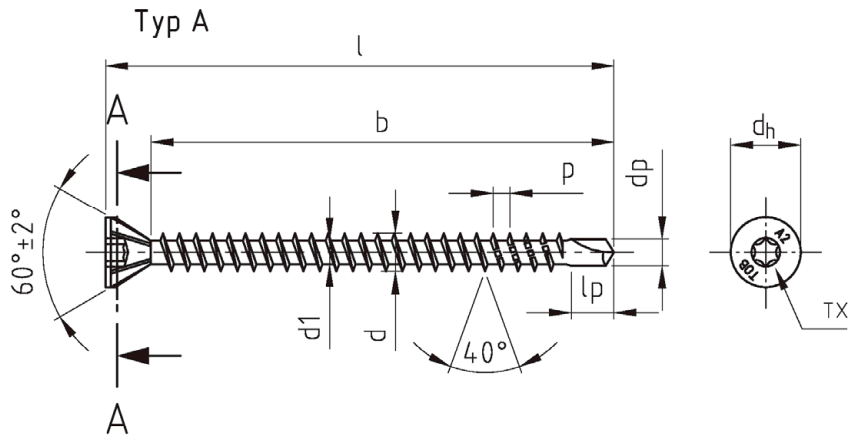
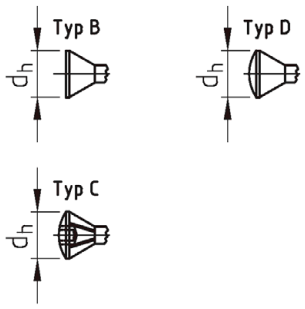
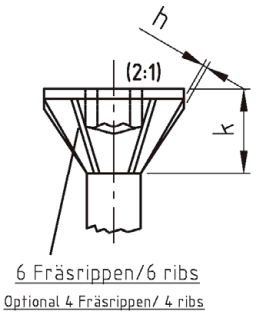


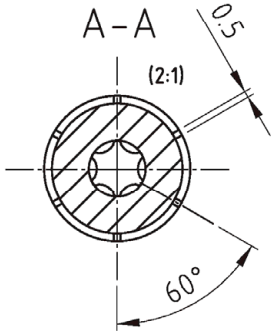
Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

Optional headmarking
- material
- marking (TOB)
- length of screw





6 Fräsrippen/6 ribs
Optional 4 Fräsrippen/ 4 ribs



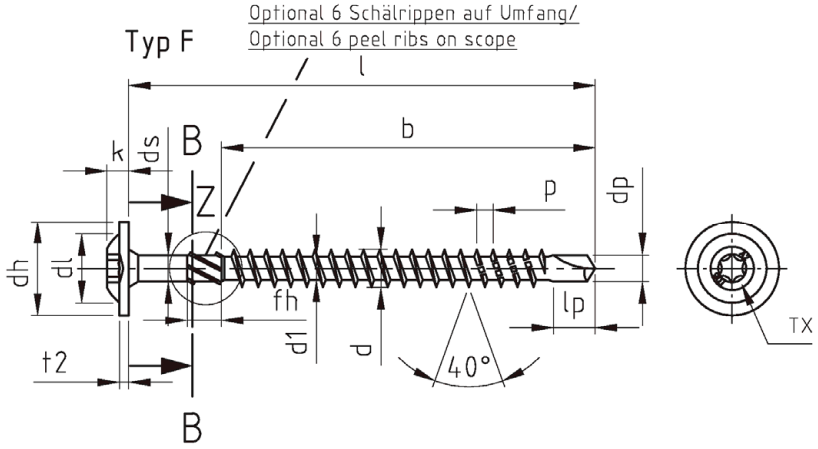
Bezeichnung	TOB–Drill–60°/ Seko–Holzbauschrauben mit Bohrspitze, 60° Kopf, Vollgewinde								
Description	TOB–Drill–60°/ CSK head timber screws drilling–point, 60° Kopf, full thread								
Nennmaß/ Nominal dia.	d	d1	dp	dh	k	p	lp	TX	h
ø 3,0	3,0 –0,15	2,0 –0,15	2,3 –0,1	4,5 ±0,5	1,8 ±0,5	1,35 ±10%	3,0	10	0,3
ø 3,2	3,2 –0,15	2,1 –0,15	2,4 –0,4	5,0 ±0,5	2,0 ±0,5	1,45 ±10%	3,1	10	0,3
ø 3,5	3,5 –0,3	2,4 –0,3	2,8 –0,5	5,5 ±0,5	2,2 ±0,5	1,6 ±10%	3,5	10	0,3
ø 4,0	4,0 –0,3	2,6 –0,3	3,0 –0,5	6,0 ±0,5	2,75 ±0,5	1,8 ±10%	3,7	15/20	0,5
ø 4,5	4,5 –0,3	2,8 –0,3	3,3 –0,5	7,0 ±0,5	3,35 ±0,5	2,0 ±10%	4,7	20/25	0,5
ø 5,0	5,0 –0,3	3,0 –0,3	3,6 –0,5	7,5 ±0,5	3,45 ±0,5	2,2 ±10%	5,2	20/25	0,5
ø 6,0	6,0 –0,3	3,7 –0,3	4,4 –0,6	11,0 ±0,5	5,85 ±0,5	2,6 ±10%	5,8	25/30	0,5

Nennmaß/ Nominal dia.		ø 3,0	ø 3,2	ø 3,5	ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		18	19	19	23	23	28	36
l max. ±1		45	40	50	80	100	100	110
b ±1	min. /+ k	16	16	16	20	25	25	30
	max. /+ k	40	36	45	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≦ L ≦ Lmax sind zulässig / Others screws lenghts with Lmin ≦ L ≦ max are allowed								

TOB Screws

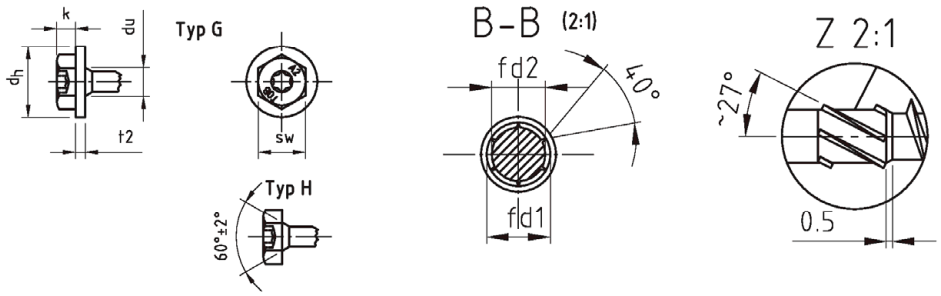
TOB-HBS screws with countersunk head 60°
Fully threaded
Drilling Point

Annex 4.16



Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

Optional headmarking
- material
- marking (TOB)
- length of screw



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–Drill/ TOB–Drill Schrauben mit Tellerkopf oder Sechskantkopf, Teilgewinde, Bohrspitze													
Description	TOB–Drill/ TOB–Drill screws with pan washer head or hexagonal head, Partially threaded, Drilling point													
Nennmaß/ Nominal dia.	d	d1	dp	dh	ds	dl	k	p	t2	lp	TX	sw	fd1	fd2
ø 3,0	3,0 –0,15	2,0 –0,15	2,3 –0,1	9,0 ±1,0	2,15 ±0,05	4,5	2,2 ±0,4	1,35 ±10%	1,3 –0,5	3,0	10	3	2,90 –0,15	1,75 –0,15
ø 3,2	3,2 –0,15	2,1 –0,15	2,4 –0,4	10,0 ±1,0	2,3 ±0,05	5,0	2,5 ±0,4	1,45 ±10%	1,4 –0,5	3,1	10	4	3,15 –0,15	1,85 –0,15
ø 3,5	3,5 –0,3	2,4 –0,3	2,8 –0,5	11,0 ±1,0	2,5 ±0,05	6,0	2,7 ±0,4	1,6 ±10%	1,5 –0,5	3,5	10/15	5	3,45 –0,25	2,4 –0,15
ø 4,0	4,0 –0,3	2,6 –0,3	3,0 –0,5	12,0 ±1,0	2,84 ±0,05	7,0	3,0 ±0,4	1,8 ±10%	1,5 –0,5	3,7	15/20	6	3,70 –0,25	2,7 –0,15
ø 4,5	4,5 –0,3	2,8 –0,3	3,3 –0,5	13,0 ±1,0	3,11 ±0,05	8,0	3,2 ±0,4	2,0 ±10%	1,5 –0,5	4,7	20/25	7	3,95 –0,25	2,9 –0,15
ø 5,0	5,0 –0,3	3,0 –0,3	3,6 –0,5	14,0 ±1,0	3,54 ±0,05	9,0	3,5 ±0,4	2,2 ±10%	1,5 –0,5	5,2	20/25	8	4,2 –0,3	3,5 –0,15
ø 6,0	6,0 –0,3	3,7 –0,3	4,4 –0,6	15,0 ±1,0	4,25 ±0,05	11,0	3,8 ±0,4	2,6 ±10%	2,0 –0,5	5,8	25/30	10	5,1 –0,3	4,3 –0,25

l –1/2 IT17	30	35	40	45	50	55	60	65	70	75	80	90	100	120–200
ø 3,0 b ±1	18	24	24	30	30	–	–	–	–	–	–	–	–	–
ø 3,2 b ±1	18	24	24	30	30	36	36	–	–	–	–	–	–	–
ø 3,5 b ±1	18	24	24	30	30	36	36	–	–	–	–	–	–	–
ø 4,0 b ±1	18	24	24	30	30	36	36	42	42	48	54	54	60	70
ø 4,5 b ±1	18	24	24	30	30	36	36	42	42	48	54	54	60	70
ø 5,0 b ±1	–	24	24	30	30	36	36	42	42	48	54	54	60	70
ø 6,0 b ±1	–	24	24	30	30	36	36	42	42	48	54	54	60	70
fh	4,0 –0,2				6,0 –0,2						12,0 –0,6			
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length														

TOB Screws

TOB-HBS screws with pan washer head or hexagonal head
Partially threaded
Drilling Point

Annex 4.17

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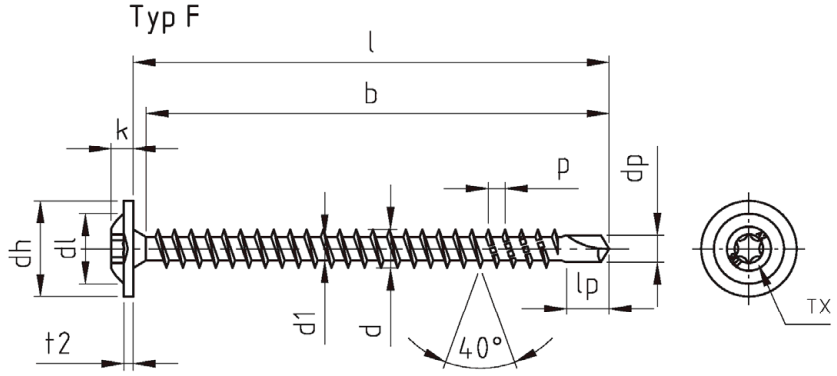
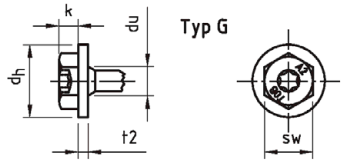
Typ F



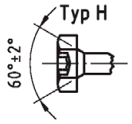
Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

Optional headmarking
- material
- marking (TOB)
- length of screw



Typ G

Typ H



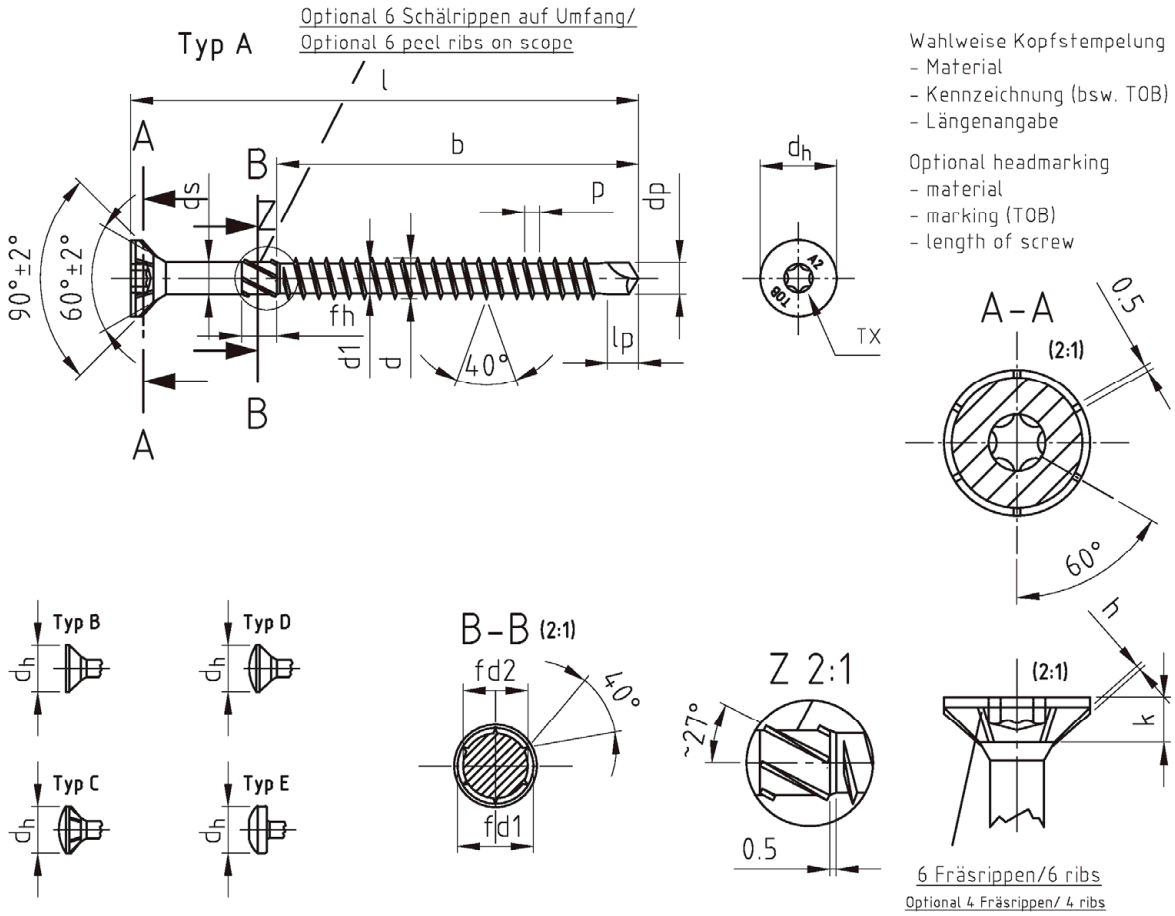
Bezeichnung	TOB–Drill/ TOB–Drill Schrauben mit Tellerkopf oder Sechskantkopf, Vollgewinde, Bohrspitze										
Description	TOB–Drill/ TOB–Drill screws with pan washer head or hexagonal head, Full threaded, Drilling point										
Nennmaß/ Nominal dia.	d	d1	dp	dh	dl	k	p	t2	lp	TX	sw
ø 3,0	3,0 –0,15	2,0 –0,15	2,3 –0,1	9,0 ±1,0	4,5	2,2 ±0,4	1,35 ±10%	1,3 –0,5	3,0	10	3
ø 3,2	3,2 –0,15	2,1 –0,15	2,4 –0,4	10,0 ±1,0	5,0	2,5 ±0,4	1,45 ±10%	1,4 –0,5	3,1	10	4
ø 3,5	3,5 –0,3	2,4 –0,3	2,8 –0,5	11,0 ±1,0	6,0	2,7 ±0,4	1,6 ±10%	1,5 –0,5	3,5	10/15	5
ø 4,0	4,0 –0,3	2,6 –0,3	3,0 –0,5	12,0 ±1,0	7,0	3,0 ±0,4	1,8 ±10%	1,5 –0,5	3,7	15/20	6
ø 4,5	4,5 –0,3	2,8 –0,3	3,3 –0,5	13,0 ±1,0	8,0	3,2 ±0,4	2,0 ±10%	1,5 –0,5	4,7	20/25	7
ø 5,0	5,0 –0,3	3,0 –0,3	3,6 –0,5	14,0 ±1,0	9,0	3,5 ±0,4	2,2 ±10%	1,5 –0,5	5,2	20/25	8
ø 6,0	6,0 –0,3	3,7 –0,3	4,4 –0,6	15,0 ±1,0	11,0	3,8 ±0,4	2,6 ±10%	2,0 –0,5	5,8	25/30	10

Nennmaß/ Nominal dia.		ø 3,0	ø 3,2	ø 3,5	ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		18	19	19	23	23	28	36
l max. ±1		45	40	50	80	100	100	110
b ±1	min. /+ k	16	16	16	20	25	25	30
	max. /+ k	40	36	45	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≤ L ≤ Lmax sind zulässig / Others screws lenghts with Lmin ≤ L ≤ max are allowed								

TOB Screws

TOB-HBS screws with pan washer head or hexagonal head
Fully threaded
Drilling Point

Annex 4.18



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–Fast–Drill/ Seko–Holzbauschrauben mit Bohrspitze											
Description	TOB–Fast–Drill/ CSK head wood screws with drilling–point											
Nennmaß/ Nominal dia.	d	d1	dp	dh	ds	k	p	lp	TX	h	fd1	fd2
ø 4,0	4,1 +0,2/–0,1	3,0 ±0,1	3,0 ±0,15	8,0 –0,5	3,2 ±0,05	2,5 –0,4	1,8 ±10%	3,5 ±0,2	15/20	0,35 ±0,1	4,06 –0,25	3,2 –0,15
ø 4,5	4,6 +0,2/–0,1	3,3 ±0,1	3,4 ±0,15	9,0 –0,5	3,5 ±0,05	2,7 –0,4	2,0 ±10%	3,7 ±0,2	20/25	0,40 ±0,1	4,36 –0,3	3,5 –0,15
ø 5,0	5,3 +0,2/–0,1	3,7 ±0,1	4,0 ±0,15	10,0 –0,5	4,1 ±0,05	3,0 –0,5	2,2 ±10%	4,5 ±0,2	20/25	0,45 ±0,1	5,06 –0,3	4,1 –0,25
ø 6,0	6,5 +0,2/–0,1	4,7 ±0,1	5,0 ±0,15	12,0 –0,5	5,1 ±0,05	3,6 –0,5	2,4 ±10%	4,9 ±0,2	25/30	0,50 ±0,1	5,96 –0,3	5,1 –0,25

l –1/2 IT17	30	35	40	45	50	60	70	80	90	100	120–200
ø 4,0 b ±1	21	26	26	28	33	40	50	50	–	–	–
ø 4,5 b ±1	–	26	26	31	33	40	50	50	58	58	–
ø 5,0 b ±1	–	–	26	30	36	40	50	50	58	58	66
ø 6,0 b ±1	–	–	–	–	30	35	47	57	57	66	66
fh	4,0 –0,2				6,0 –0,2			12,0 –0,6			
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length											

TOB Screws	Annex 4.19
TOB-Fast-Drill screws with countersunk head 90° Partially threaded Drilling Point	

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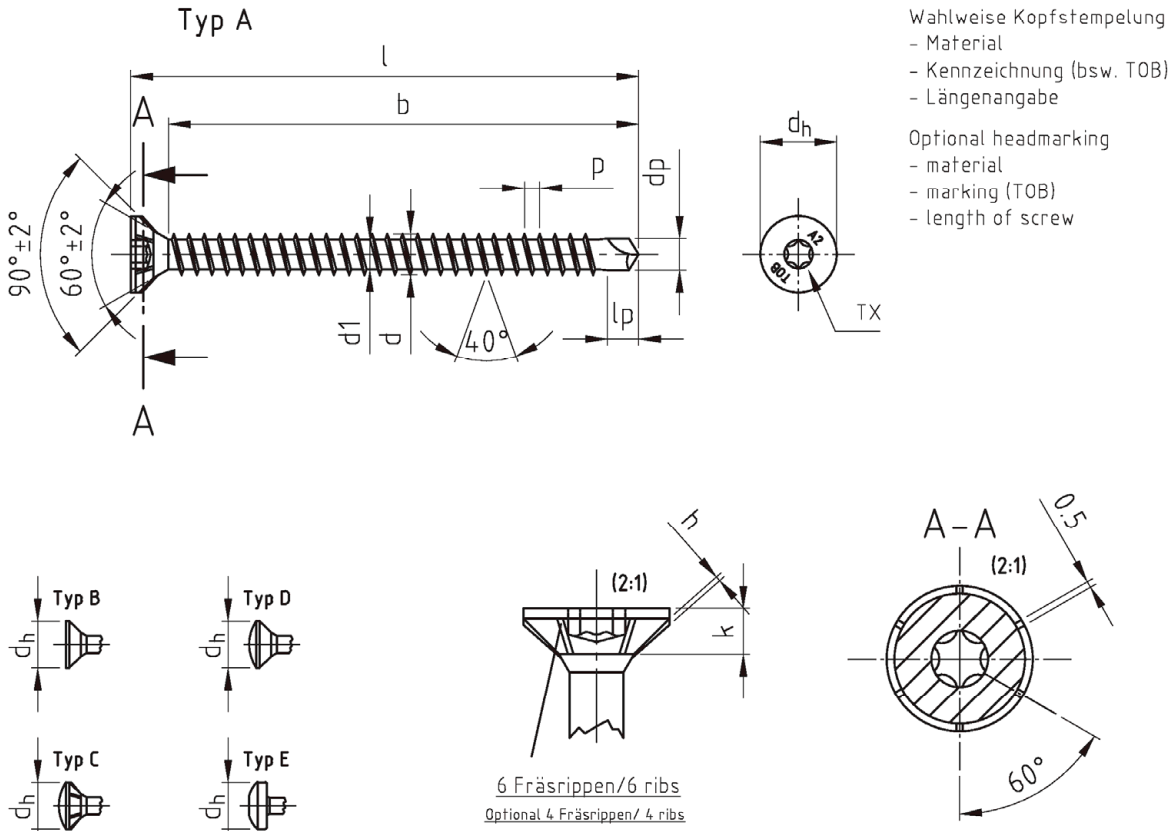
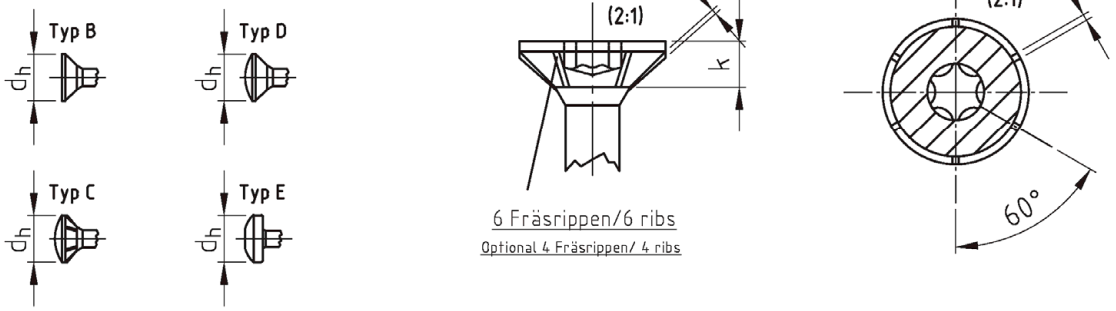




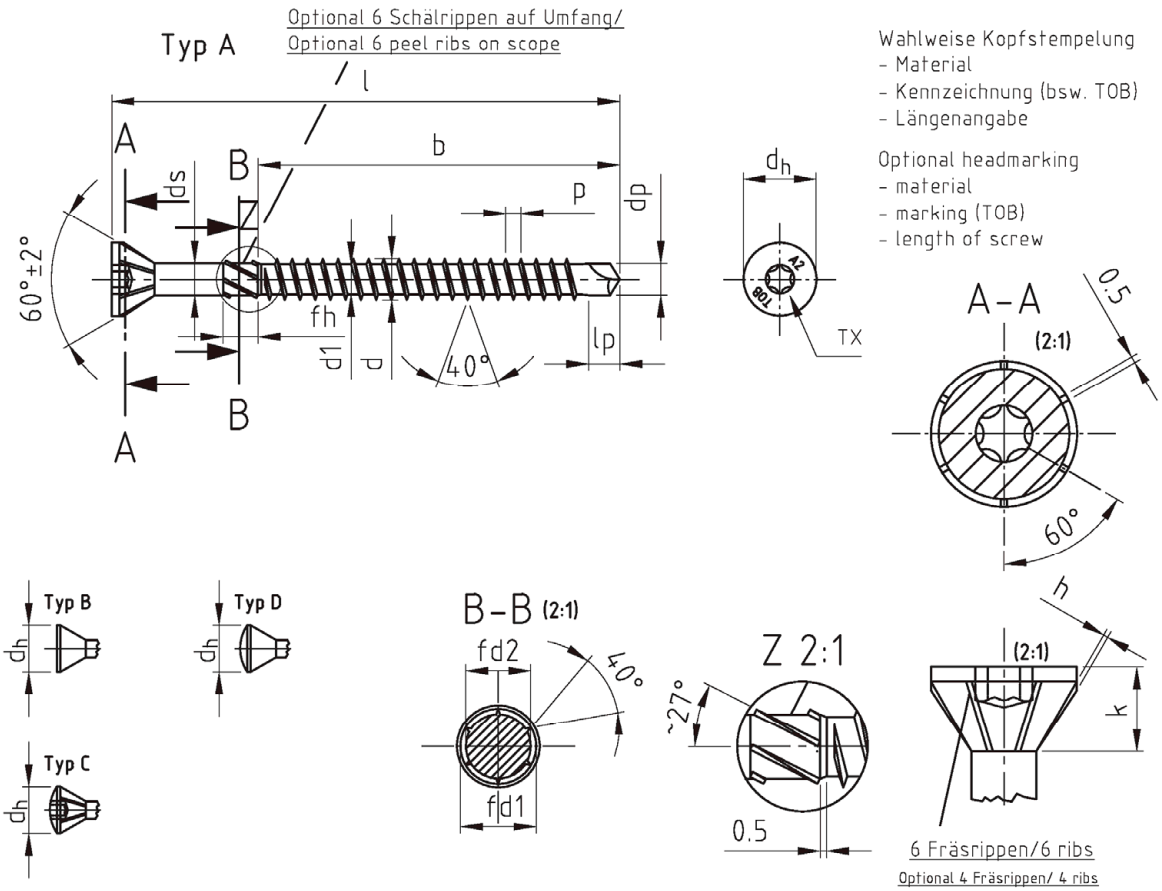
Bezeichnung	TOB–Fast–Drill/ Seko–Holzbauschrauben mit Bohrspitze, Vollgewinde								
Description	TOB–Fast–Drill/ CSK head wood screws with drilling–point, full thread								
Nennmaß/ Nominal dia.	d	d1	dp	dh	k	p	lp	TX	h
ø 4,0	4,1 +0,2/–0,1	3,0 ±0,1	3,0 ±0,15	8,0 –0,5	2,5 –0,4	1,8 ±10%	3,5 ±0,2	15/20	0,35 ±0,1
ø 4,5	4,6 +0,2/–0,1	3,3 ±0,1	3,4 ±0,15	9,0 –0,5	2,7 –0,4	2,0 ±10%	3,7 ±0,2	20/25	0,40 ±0,1
ø 5,0	5,3 +0,2/–0,1	3,7 ±0,1	4,0 ±0,15	10,0 –0,5	3,0 –0,5	2,2 ±10%	4,5 ±0,2	20/25	0,45 ±0,1
ø 6,0	6,5 +0,2/–0,1	4,7 ±0,1	5,0 ±0,15	12,0 –0,5	3,6 –0,5	2,4 ±10%	4,9 ±0,2	25/30	0,50 ±0,1

Nennmaß/ Nominal dia.		ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		23	23	28	36
l max. ±1		80	100	100	110
b ±1	min. /+ k	20	25	25	30
	max. /+ k	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≦ L ≦ Lmax sind zulässig / Others screws lenghts with Lmin ≦ L ≦ max are allowed					

TOB Screws

TOB-Fast-Drill screws with countersunk head 90°
Fullly threaded
Drilling Point

Annex 4.20



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–Fast–Drill 60°/ Seko–Holzbauschrauben mit Bohrspitze, 60° kopf											
Description	TOB–Fast–Drill 60°/ CSK head wood screws with drilling–point, 60° head											
Nennmaß/ Nominal dia.	d	d1	dp	dh	ds	k	p	lp	TX	h	fd1	fd2
ø 4,0	4,1 +0,2/–0,1	3,0 ±0,1	3,0 ±0,15	7,0 –0,5	3,2 ±0,05	3,3 ±0,5	1,8 ±10%	3,5 ±0,2	15/20	0,35 ±0,1	4,06 –0,25	3,2 –0,15
ø 4,5	4,6 +0,2/–0,1	3,3 ±0,1	3,4 ±0,15	8,0 –0,5	3,5 ±0,05	3,9 ±0,5	2,0 ±10%	3,7 ±0,2	20/25	0,40 ±0,1	4,36 –0,3	3,5 –0,15
ø 5,0	5,3 +0,2/–0,1	3,7 ±0,1	4,0 ±0,15	8,5 –0,5	4,1 ±0,05	4,0 ±0,5	2,2 ±10%	4,5 ±0,2	20/25	0,45 ±0,1	5,06 –0,3	4,1 –0,25
ø 6,0	6,5 +0,2/–0,1	4,7 ±0,1	5,0 ±0,15	11,0 –0,5	5,1 ±0,05	5,1 ±0,5	2,4 ±10%	4,9 ±0,2	25/30	0,50 ±0,1	5,96 –0,3	5,1 –0,25

l –1/2 IT17	30	35	40	45	50	60	70	80	90	100	120–200
ø 4,0 b ±1	21	26	26	28	33	40	50	50	–	–	–
ø 4,5 b ±1	–	26	26	31	33	40	50	50	58	58	–
ø 5,0 b ±1	–	–	26	30	36	40	50	50	58	58	66
ø 6,0 b ±1	–	–	–	–	30	35	47	57	57	66	66
fh	4,0 –0,2				6,0 –0,2			12,0 –0,6			
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length											

TOB Screws

TOB-Fast-Drill screws with countersunk head 60°
Partially threaded
Drilling Point

Annex 4.21

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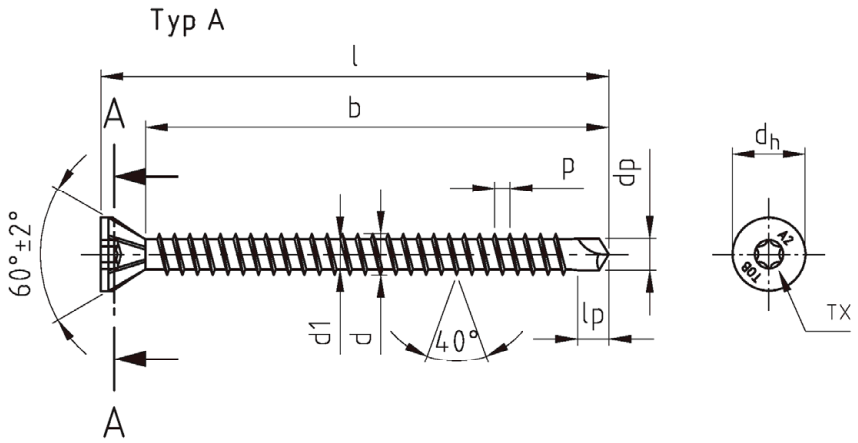
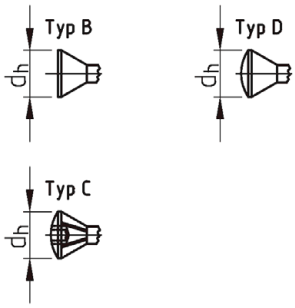
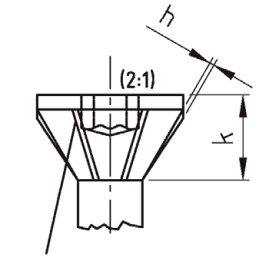


Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

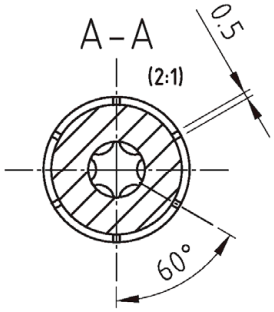
Optional headmarking
- material
- marking (TOB)
- length of screw





6 Fräsrippen/6 ribs

Optional 4 Fräsrippen/ 4 ribs



Bezeichnung	TOB–Fast–Drill 60°/ Seko–Holzbauschrauben mit Bohrspitze, 60° kopf, Vollgewinde								
Description	TOB–Fast–Drill 60°/ CSK head wood screws with drilling–point, 60° head, full thread								
Nennmaß/ Nominal dia.	d	d1	dp	dh	k	p	lp	TX	h
ø 4,0	4,1 +0,2/–0,1	3,0 ±0,1	3,0 ±0,15	7,0 –0,5	3,3 ±0,5	1,8 ±10%	3,5 ±0,2	15/20	0,35 ±0,1
ø 4,5	4,6 +0,2/–0,1	3,3 ±0,1	3,4 ±0,15	8,0 –0,5	3,9 ±0,5	2,0 ±10%	3,7 ±0,2	20/25	0,40 ±0,1
ø 5,0	5,3 +0,2/–0,1	3,7 ±0,1	4,0 ±0,15	8,5 –0,5	4,0 ±0,5	2,2 ±10%	4,5 ±0,2	20/25	0,45 ±0,1
ø 6,0	6,5 +0,2/–0,1	4,7 ±0,1	5,0 ±0,15	11,0 –0,5	5,1 ±0,5	2,4 ±10%	4,9 ±0,2	25/30	0,50 ±0,1

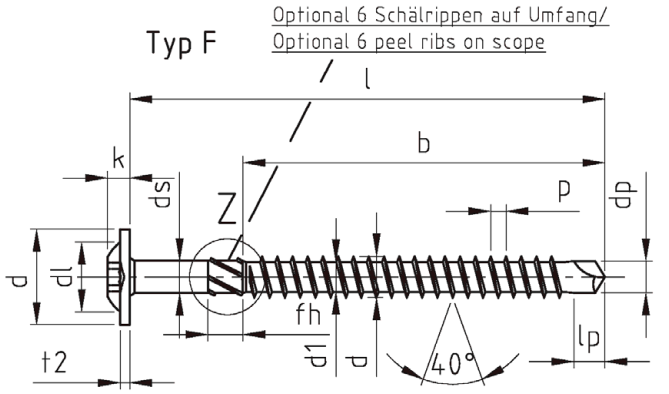
Nennmaß/ Nominal dia.		ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		23	23	28	36
l max. ±1		80	100	100	110
b ±1	min. /+ k	20	25	25	30
	max. /+ k	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≤ L ≤ Lmax sind zulässig / Others screws lenghts with Lmin ≤ L ≤ max are allowed					

TOB Screws

TOB-Fast-Drill screws with countersunk head 60°
Fully threaded
Drilling Point

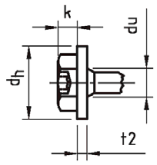
Annex 4.22

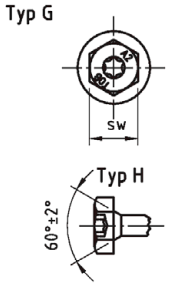
Deutsches Institut für Bautechnik DIBt

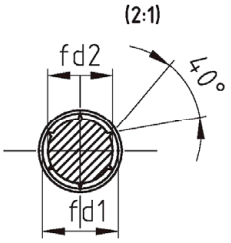


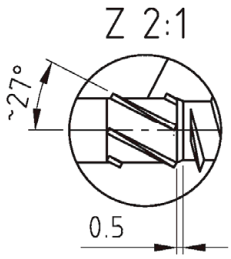
Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

Optional headmarking
- material
- marking (TOB)
- length of screw









Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–Fast–Drill/ TOB–Fast–Drill Schrauben mit Tellerkopf oder Sechskantkopf, Teilgewinde, Bohrspitze													
Description	TOB–Fast–Drill/ TOB–Fast–Drill screws with pan washer head or hexagonal head, Partially threaded, Drilling point													
Nennmaß/ Nominal dia.	d	d1	dp	dh	ds	dl	k	p	t2	lp	TX	sw	fd1	fd2
ø 4,0	4,1 +0,2/–0,1	3,0 ±0,1	3,0 ±0,15	12,0 ±1,0	3,2 ±0,05	7,0	3,0 ±0,4	1,8 ±10%	1,5 –0,5	3,5 ±0,2	15/20	6	4,06 –0,25	3,2 –0,15
ø 4,5	4,6 +0,2/–0,1	3,3 ±0,1	3,4 ±0,15	13,0 ±1,0	3,5 ±0,05	8,0	3,2 ±0,4	2,0 ±10%	1,5 –0,5	3,7 ±0,2	20/25	7	4,36 –0,3	3,5 –0,15
ø 5,0	5,3 +0,2/–0,1	3,7 ±0,1	4,0 ±0,15	14,0 ±1,0	4,1 ±0,05	9,0	3,5 ±0,4	2,2 ±10%	1,5 –0,5	4,5 ±0,2	20/25	8	5,06 –0,3	4,1 –0,25
ø 6,0	6,5 +0,2/–0,1	4,7 ±0,1	5,0 ±0,15	15,0 ±1,0	5,1 ±0,05	11,0	3,8 ±0,4	2,4 ±10%	2,0 –0,5	4,9 ±0,2	25/30	10	5,96 –0,3	5,1 –0,25

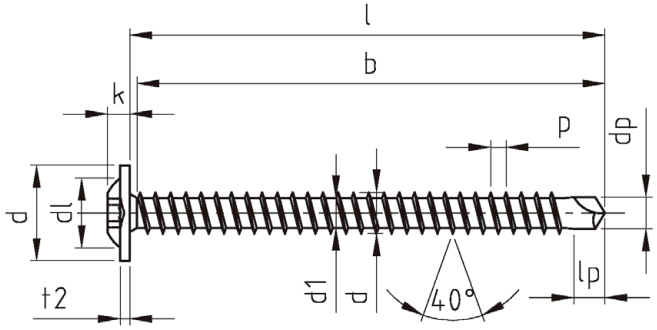
l –1/2 IT17	30	35	40	45	50	60	70	80	90	100	120	140–200
ø 4,0 b ±1	21	26	26	28	33	40	50	50	–	–	–	–
ø 4,5 b ±1	–	26	26	31	33	40	50	50	58	58	–	–
ø 5,0 b ±1	–	–	26	30	36	40	50	50	58	58	66	–
ø 6,0 b ±1	–	–	–	–	30	35	47	57	57	66	66	66
fh	4,0 –0,2				6,0 –0,2			12,0 –0,6				
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length												

TOB Screws

TOB-Fast-Drill screws with pan washer head or hexagonal head
Partially threaded
Drilling Point

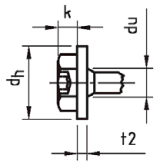
Annex 4.23

Typ F

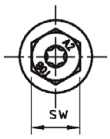


Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

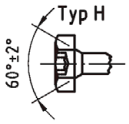
Optional headmarking
- material
- marking (TOB)
- length of screw



Typ G



Typ H



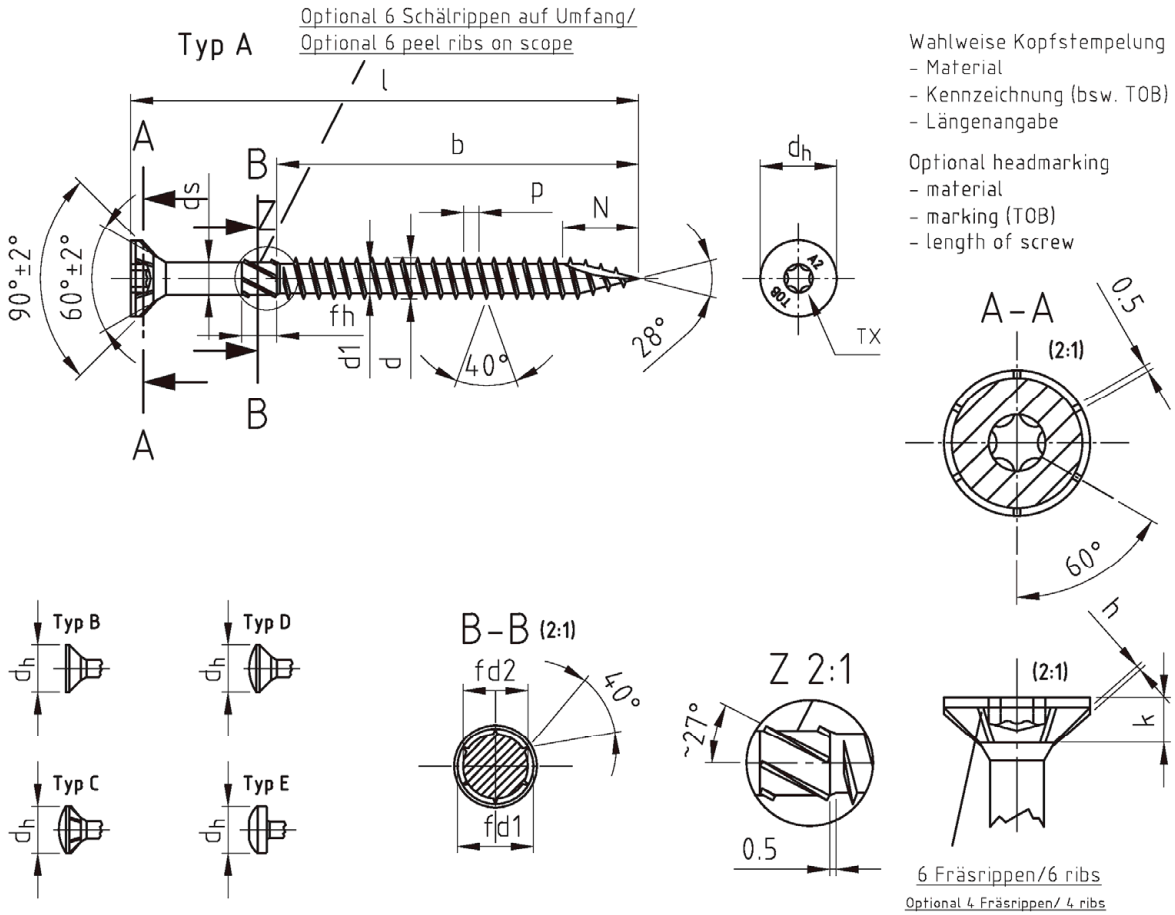
Bezeichnung	TOB–Fast–Drill/ TOB–Fast–Drill Schrauben mit Tellerkopf oder Sechskantkopf, Vollgewinde, Bohrspitze										
Description	TOB–Fast–Drill/ TOB–Fast–Drill screws with pan washer head or hexagonal head, Full threaded, Drilling point										
Nennmaß/ Nominal dia.	d	d1	dp	dh	dl	k	p	t2	lp	TX	sw
ø 4,0	4,1 +0,2/–0,1	3,0 ±0,1	3,0 ±0,15	12,0 ±1,0	7,0	3,0 ±0,4	1,8 ±10%	1,5 –0,5	3,5 ±0,2	15/20	6
ø 4,5	4,6 +0,2/–0,1	3,3 ±0,1	3,4 ±0,15	13,0 ±1,0	8,0	3,2 ±0,4	2,0 ±10%	1,5 –0,5	3,7 ±0,2	20/25	7
ø 5,0	5,3 +0,2/–0,1	3,7 ±0,1	4,0 ±0,15	14,0 ±1,0	9,0	3,5 ±0,4	2,2 ±10%	1,5 –0,5	4,5 ±0,2	20/25	8
ø 6,0	6,5 +0,2/–0,1	4,7 ±0,1	5,0 ±0,15	15,0 ±1,0	11,0	3,8 ±0,4	2,4 ±10%	2,0 –0,5	4,9 ±0,2	25/30	10

Nennmaß/ Nominal dia.		ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		23	23	28	36
l max. ±1		80	100	100	110
b ±1	min. /+ k	20	25	25	30
	max. /+ k	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≤ L ≤ Lmax sind zulässig / Others screws lenghts with Lmin ≤ L ≤ max are allowed					

TOB Screws

TOB-Fast-Drill screws with pan washer head or hexagonal head
Fully threaded
Drilling Point

Annex 4.24



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–Fast–Drill/ Seko–Holzbauschrauben mit Schneidkerbe										
Description	TOB–Fast–Drill/ CSK head wood screws with cutting–point										
Nennmaß/ Nominal dia.	d	d1	dh	ds	k	p	TX	h	fd1	fd2	N
ø 4,0	4,1 +0,2/–0,1	3,0 ±0,1	8,0 –0,5	3,2 ±0,05	2,5 –0,4	1,8 ±10%	15/20	0,35 ±0,1	4,06 –0,25	3,2 –0,15	7,5 ±0,5
ø 4,5	4,6 +0,2/–0,1	3,3 ±0,1	9,0 –0,5	3,5 ±0,05	2,7 –0,4	2,0 ±10%	20/25	0,40 ±0,1	4,36 –0,3	3,5 –0,15	8,5 ±0,5
ø 5,0	5,3 +0,2/–0,1	3,7 ±0,1	10,0 –0,5	4,1 ±0,05	3,0 –0,5	2,2 ±10%	20/25	0,45 ±0,1	5,06 –0,3	4,1 –0,25	9,5 ±0,5
ø 6,0	6,5 +0,2/–0,1	4,7 ±0,1	12,0 –0,5	5,1 ±0,05	3,6 –0,5	2,4 ±10%	25/30	0,50 ±0,1	5,96 –0,3	5,1 –0,25	11,0 ±1,0

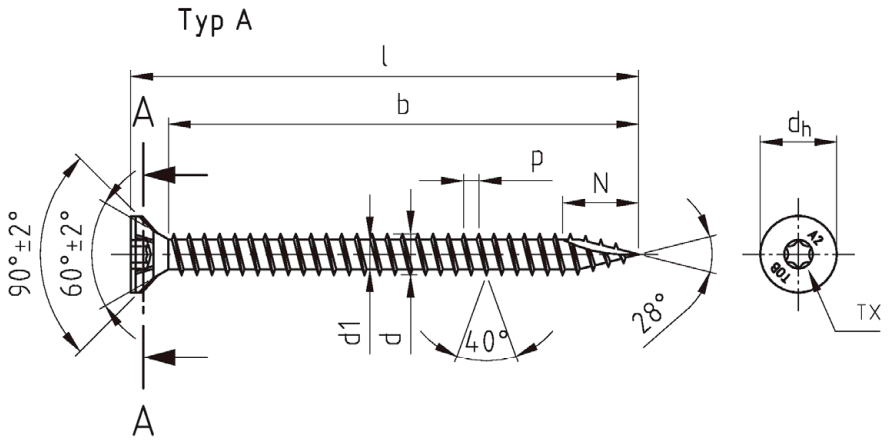
l –1/2 IT17	30	35	40	45	50	60	70	80	90	100	120	140–200
ø 4,0 b ±1	21	26	26	28	33	40	50	50	–	–	–	–
ø 4,5 b ±1	–	26	26	31	33	40	50	50	58	58	–	–
ø 5,0 b ±1	–	–	26	30	36	40	50	50	58	58	66	–
ø 6,0 b ±1	–	–	–	–	30	35	47	57	57	66	66	66
fh	4,0 –0,2				6,0 –0,2			12,0 –0,6				
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length												

TOB Screws

TOB-Fast-Drill screws with countersunk head 90°
Partially threaded
Cutting Point

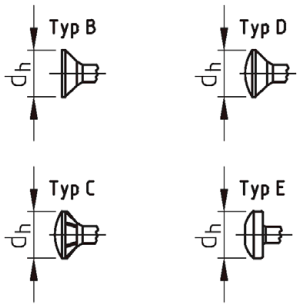
Annex 4.25

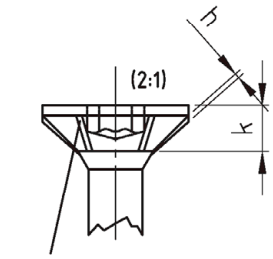
Deutsches Institut für Bautechnik DIBt



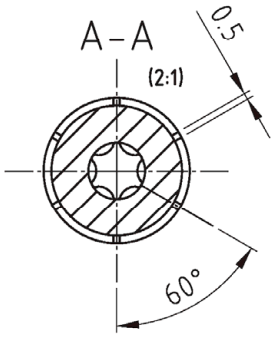
Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

Optional headmarking
- material
- marking (TOB)
- length of screw





6 Fräsrippen/6 ribs
Optional 4 Fräsrippen/ 4 ribs



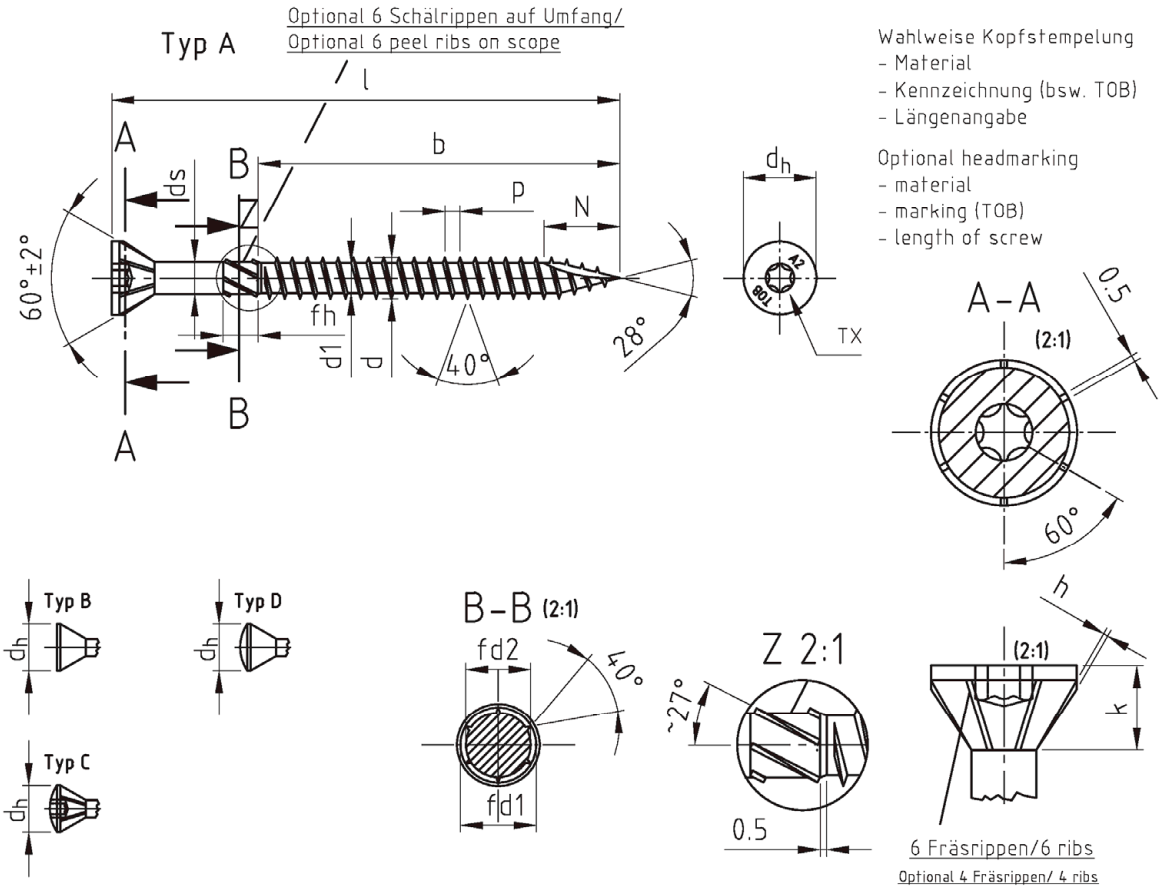
Bezeichnung	TOB–Fast–Drill/ Seko–Holzbauschrauben mit Schneidkerbe, Vollgewinde							
Description	TOB–Fast–Drill/ CSK head wood screws with cutting–point, full thread							
Nennmaß/ Nominal dia.	d	d1	dh	k	p	TX	h	N
ø 4,0	4,1 +0,2/–0,1	3,0 ±0,1	8,0 –0,5	2,5 –0,4	1,8 ±10%	15/20	0,35 ±0,1	7,5 ±0,5
ø 4,5	4,6 +0,2/–0,1	3,3 ±0,1	9,0 –0,5	2,7 –0,4	2,0 ±10%	20/25	0,40 ±0,1	8,5 ±0,5
ø 5,0	5,3 +0,2/–0,1	3,7 ±0,1	10,0 –0,5	3,0 –0,5	2,2 ±10%	20/25	0,45 ±0,1	9,5 ±0,5
ø 6,0	6,5 +0,2/–0,1	4,7 ±0,1	12,0 –0,5	3,6 –0,5	2,4 ±10%	25/30	0,50 ±0,1	11,0 ±1,0

Nennmaß/ Nominal dia.		ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		23	23	28	36
l max. ±1		80	100	100	110
b ±1	min. /+ k	20	25	25	30
	max. /+ k	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≦ L ≦ Lmax sind zulässig / Others screws lenghts with Lmin ≦ L ≦ max are allowed					

TOB Screws

TOB-Fast-Drill screws with countersunk head 90°
Fully threaded
Cutting Point

Annex 4.26



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–Fast–Drill 60°/ Seko–Holzbauschrauben mit Schneidkerbe, 60° kopf										
Description	TOB–Fast–Drill 60°/ CSK head wood screws with cutting–point, 60° head										
Nennmaß/ Nominal dia.	d	d1	dh	ds	k	p	TX	h	fd1	fd2	N
ø 4,0	4,1 +0,2/–0,1	3,0 ±0,1	7,0 –0,5	3,2 ±0,05	3,3 ±0,5	1,8 ±10%	15/20	0,35 ±0,1	4,06 –0,25	3,2 –0,15	7,5 ±0,5
ø 4,5	4,6 +0,2/–0,1	3,3 ±0,1	8,0 –0,5	3,5 ±0,05	3,9 ±0,5	2,0 ±10%	20/25	0,40 ±0,1	4,36 –0,3	3,5 –0,15	8,5 ±0,5
ø 5,0	5,3 +0,2/–0,1	3,7 ±0,1	8,5 –0,5	4,1 ±0,05	4,0 ±0,5	2,2 ±10%	20/25	0,45 ±0,1	5,06 –0,3	4,1 –0,25	9,5 ±0,5
ø 6,0	6,5 +0,2/–0,1	4,7 ±0,1	11,0 –0,5	5,1 ±0,05	5,1 ±0,5	2,4 ±10%	25/30	0,50 ±0,1	5,96 –0,3	5,1 –0,25	11,0 ±1,0

l –1/2 IT17	30	35	40	45	50	60	70	80	90	100	120	140–200
ø 4,0 b ±1	21	26	26	28	33	40	50	50	–	–	–	–
ø 4,5 b ±1	–	26	26	31	33	40	50	50	58	58	–	–
ø 5,0 b ±1	–	–	26	30	36	40	50	50	58	58	66	–
ø 6,0 b ±1	–	–	–	–	30	35	47	57	57	66	66	66
fh	4,0 –0,2				6,0 –0,2			12,0 –0,6				
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length												

TOB Screws	Annex 4.27
TOB-Fast-Drill screws with countersunk head 60° Partially threaded Cutting Point	

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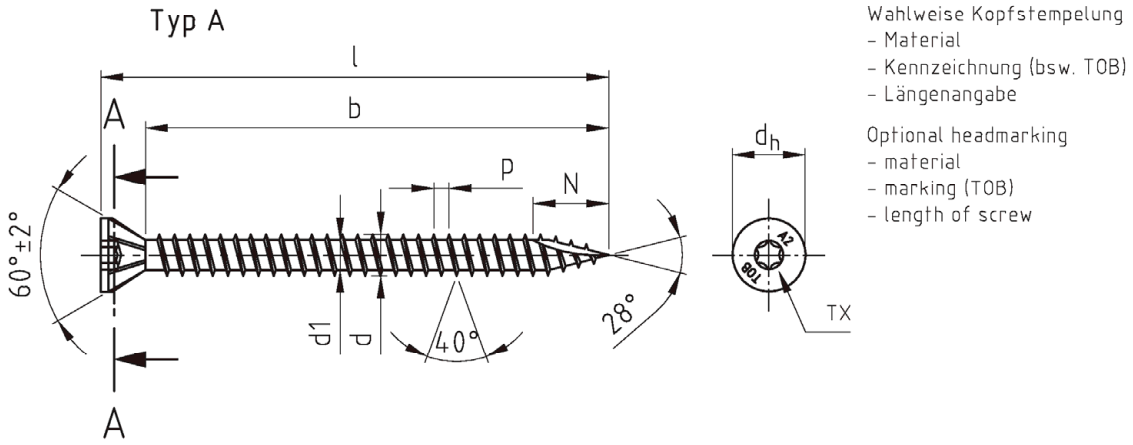
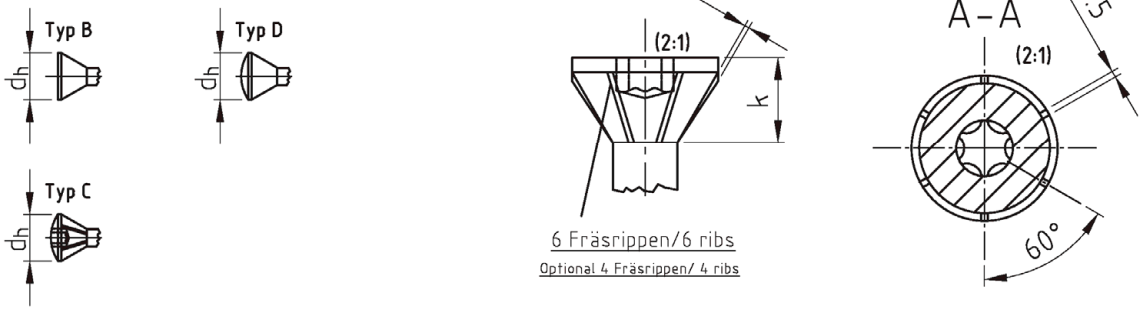




Bezeichnung	TOB–Fast–Drill 60°/ Seko–Holzbauschrauben mit Schneidkerbe, 60° kopf, Vollgewinde							
Description	TOB–Fast–Drill 60°/ CSK head wood screws with cutting–point, 60° head, full thread							
Nennmaß/ Nominal dia.	d	d1	dh	k	p	TX	h	N
ø 4,0	4,1 +0,2/–0,1	3,0 ±0,1	7,0 –0,5	3,3 ±0,5	1,8 ±10%	15/20	0,35 ±0,1	7,5 ±0,5
ø 4,5	4,6 +0,2/–0,1	3,3 ±0,1	8,0 –0,5	3,9 ±0,5	2,0 ±10%	20/25	0,40 ±0,1	8,5 ±0,5
ø 5,0	5,3 +0,2/–0,1	3,7 ±0,1	8,5 –0,5	4,0 ±0,5	2,2 ±10%	20/25	0,45 ±0,1	9,5 ±0,5
ø 6,0	6,5 +0,2/–0,1	4,7 ±0,1	11,0 –0,5	5,1 ±0,5	2,4 ±10%	25/30	0,50 ±0,1	11,0 ±1,0

Nennmaß/ Nominal dia.		ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		23	23	28	36
l max. ±1		80	100	100	110
b ±1	min. /+ k	20	25	25	30
	max. /+ k	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≤ L ≤ Lmax sind zulässig / Others screws lenghts with Lmin ≤ L ≤ max are allowed					

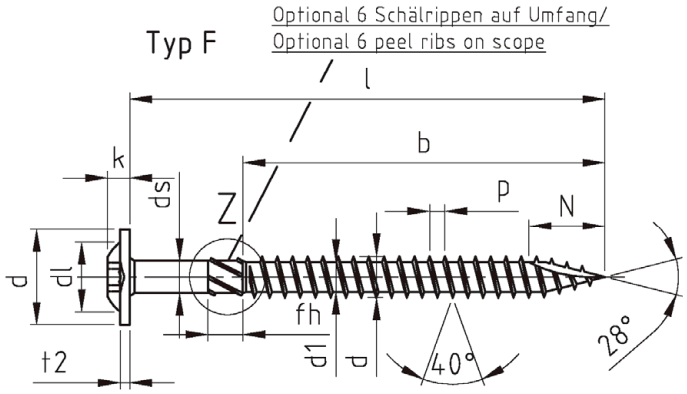
TOB Screws

TOB-Fast-Drill screws with countersunk head 60°
Fully threaded
Cutting Point

Annex 4.28

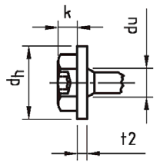
Deutsches Institut für Bautechnik DIBt

Typ F

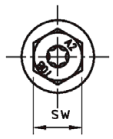


Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

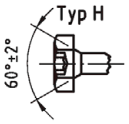
Optional headmarking
- material
- marking (TOB)
- length of screw



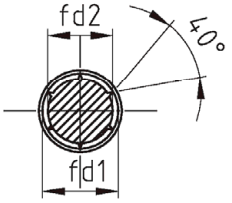
Typ G



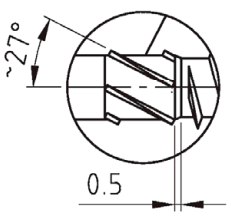
Typ H



(2:1)



Z 2:1



Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–Fast–Drill/ TOB–Fast–Drill Schrauben mit Tellerkopf oder Sechskantkopf, Teilgewinde, CUT Bohrspitze												
Description	TOB–Fast–Drill/ TOB–Fast–Drill screws with pan washer head or hexagonal head, Partially threaded, Cutting point												
Nennmaß/ Nominal dia.	d	d1	dh	ds	dl	k	p	t2	TX	sw	fd1	fd2	N
ø 4,0	4,1 +0,2/–0,1	3,0 ±0,1	12,0 ±1,0	3,2 ±0,05	7,0	3,0 ±0,4	1,8 ±10%	1,5 –0,5	15/20	6	4,06 –0,25	3,2 –0,15	7,5 ±0,5
ø 4,5	4,6 +0,2/–0,1	3,3 ±0,1	13,0 ±1,0	3,5 ±0,05	8,0	3,2 ±0,4	2,0 ±10%	1,5 –0,5	20/25	7	4,36 –0,3	3,5 –0,15	8,5 ±0,5
ø 5,0	5,3 +0,2/–0,1	3,7 ±0,1	14,0 ±1,0	4,1 ±0,05	9,0	3,5 ±0,4	2,2 ±10%	1,5 –0,5	20/25	8	5,06 –0,3	4,1 –0,25	9,5 ±0,5
ø 6,0	6,5 +0,2/–0,1	4,7 ±0,1	15,0 ±1,0	5,1 ±0,05	11,0	3,8 ±0,4	2,4 ±10%	2,0 –0,5	25/30	10	5,96 –0,3	5,1 –0,25	11,0 ±1,0

l –1/2 IT17	30	35	40	45	50	60	70	80	90	100	120	140–200
ø 4,0 b ±1	21	26	26	28	33	40	50	50	–	–	–	–
ø 4,5 b ±1	–	26	26	31	33	40	50	50	58	58	–	–
ø 5,0 b ±1	–	–	26	30	36	40	50	50	58	58	66	–
ø 6,0 b ±1	–	–	–	–	30	35	47	57	57	66	66	66
fh	4,0 –0,2				6,0 –0,2			12,0 –0,6				
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length												

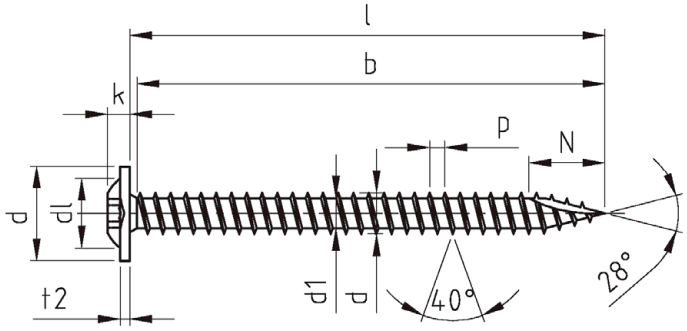
TOB Screws

TOB-Fast-Drill screws with pan washer head or hexagonal head
Partially threaded
Cutting Point

Annex 4.29

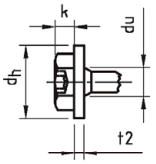
Deutsches Institut für Bautechnik DIBt

Typ F

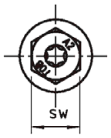


Wahlweise Kopfstempelung
- Material
- Kennzeichnung (bsw. TOB)
- Längenangabe

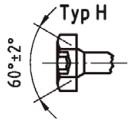
Optional headmarking
- material
- marking (TOB)
- length of screw



Typ G



Typ H



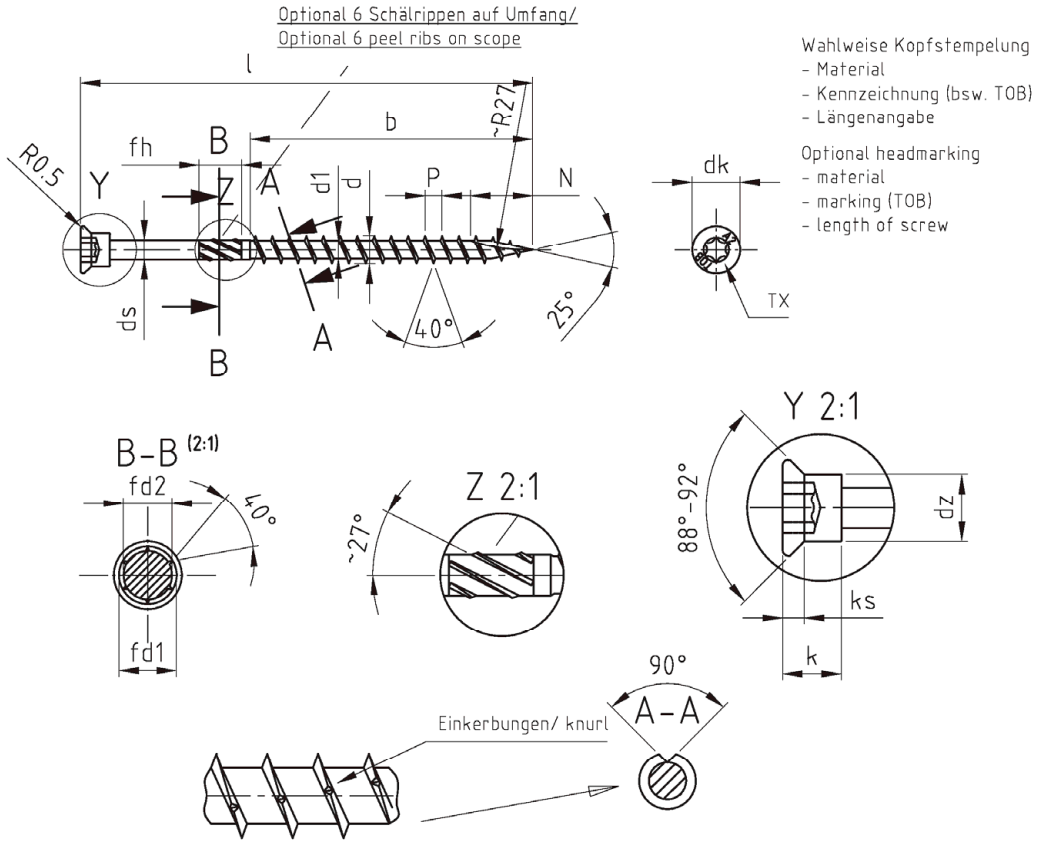
Bezeichnung	TOB–Fast–Drill/ TOB–Fast–Drill Schrauben mit Tellerkopf oder Sechskantkopf, Vollgewinde, CUT Bohrspitze									
Description	TOB–Fast–Drill/ TOB–Fast–Drill screws with pan washer head or hexagonal head, Full threaded, Cutting point									
Nennmaß/ Nominal dia.	d	d1	dh	dl	k	p	t2	TX	sw	N
ø 4,0	4,1 +0,2/–0,1	3,0 ±0,1	12,0 ±1,0	7,0	3,0 ±0,4	1,8 ±10%	1,5 –0,5	15/20	6	7,5 ±0,5
ø 4,5	4,6 +0,2/–0,1	3,3 ±0,1	13,0 ±1,0	8,0	3,2 ±0,4	2,0 ±10%	1,5 –0,5	20/25	7	8,5 ±0,5
ø 5,0	5,3 +0,2/–0,1	3,7 ±0,1	14,0 ±1,0	9,0	3,5 ±0,4	2,2 ±10%	1,5 –0,5	20/25	8	9,5 ±0,5
ø 6,0	6,5 +0,2/–0,1	4,7 ±0,1	15,0 ±1,0	11,0	3,8 ±0,4	2,4 ±10%	2,0 –0,5	25/30	10	11,0 ±1,0

Nennmaß/ Nominal dia.		ø 4,0	ø 4,5	ø 5,0	ø 6,0
l min. ±1		23	23	28	36
l max. ±1		80	100	100	110
b ±1	min. /+ k	20	25	25	30
	max. /+ k	75	90	90	100
Andere Schraubenlängen im Bereich Lmin ≤ L ≤ Lmax sind zulässig / Others screws lenghts with Lmin ≤ L ≤ max are allowed					

TOB Screws

TOB-Fast-Drill screws with pan washer head or hexagonal head
Fully threaded
Cutting Point

Annex 4.30

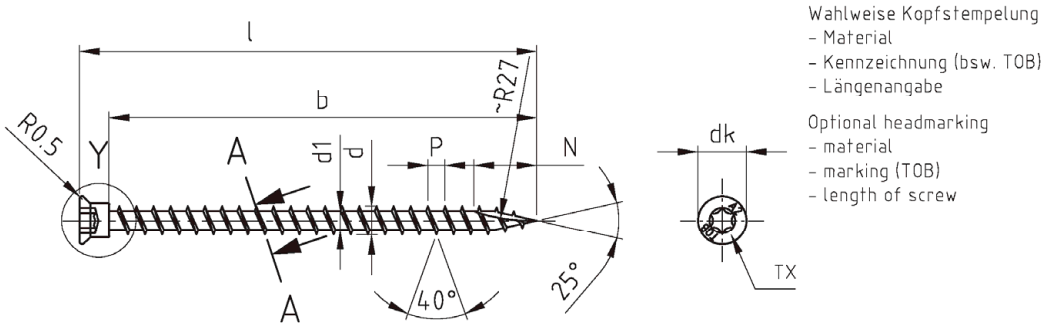


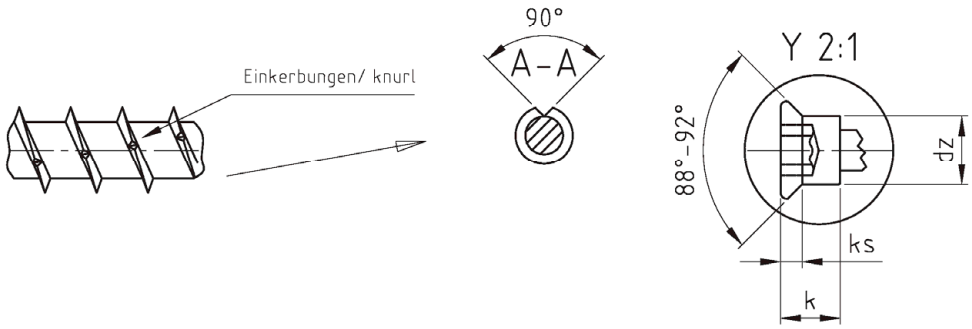
Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–Drill/Zyl.–Terrassenbauschrauben, Schneidkerbe											
Description	TOB–Drill/ cyl. head terrace screws, cutting–point											
Nennmaß/ Nominal dia.	d	d1	dh	dz	ds	k	ks	p	TX	fd1	fd2	N
ø 4,0	4,0 ±0,15	2,55 ±0,1	5,70 –0,3	3,95 ±0,1	2,8 ±0,05	4,35 –0,25	0,90 –0,3	2,5 ±0,1	15/20	3,4 –0,25	2,7 –0,15	8,7 ±0,5
ø 4,5	4,5 ±0,15	2,9 ±0,1	7,05 –0,3	5,35 ±0,1	3,15 ±0,05	4,8 –0,3	1,10 –0,3	2,8 ±0,1	20/25	3,7 –0,25	2,9 –0,15	9,8 ±0,5
ø 5,0	5,0 ±0,15	3,3 ±0,1	8,75 –0,3	6,15 ±0,15	3,55 ±0,05	5,45 –0,3	1,30 –0,3	3,2 ±0,1	20/25	4,35 –0,3	3,5 –0,15	11,2 ±0,5

l ±1	40	45	50	60	70	80	90	100
ø 4,0 b ±1	24	24	30	36	42	48	–	–
ø 4,5 b ±1	–	24	30	36	42	48	54	60
ø 5,0 b ±1	–	24	30	36	42	48	54	60
fh	4,0 –0,2		6,0 –0,2			12,0 –0,6		
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length								

TOB Screws	Annex 4.31
TOB-Drill terrace screws with cylinder head Partially threaded Cutting Point	





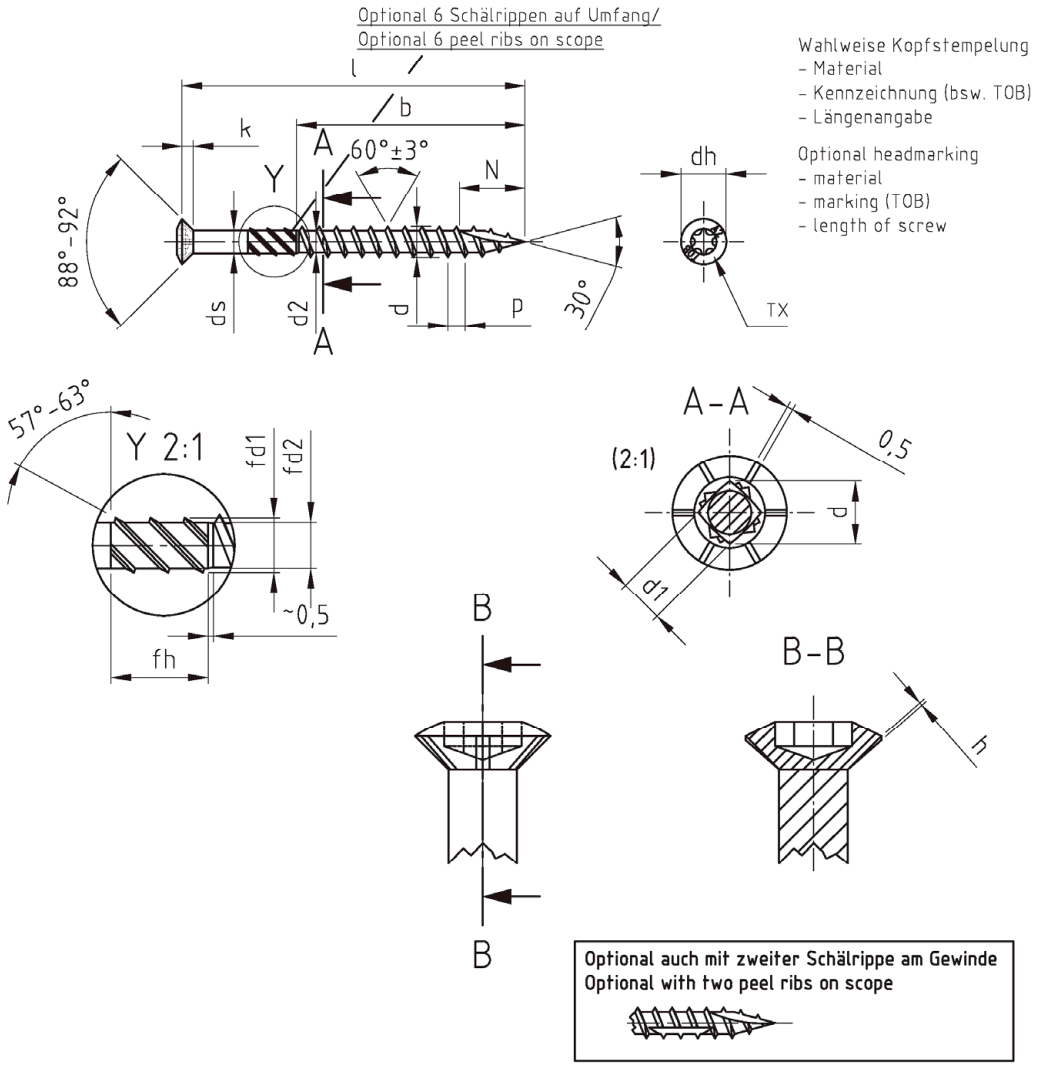
Bezeichnung	TOB–Drill/Zyl.–Terrassenbauschrauben, Schneidkerbe, Vollgewinde								
Description	TOB–Drill/ cyl. head terrace screws, cutting–point, full thread								
Nennmaß/ Nominal dia.	d	d1	dh	dz	k	ks	p	TX	N
ø 4,0	4,0 ±0,15	2,55 ±0,1	5,70 –0,3	3,95 ±0,1	4,35 –0,25	0,90 –0,3	2,5 ±0,1	15/20	8,7 ±0,5
ø 4,5	4,5 ±0,15	2,9 ±0,1	7,05 –0,3	5,35 ±0,1	4,8 –0,3	1,10 –0,3	2,8 ±0,1	20/25	9,8 ±0,5
ø 5,0	5,0 ±0,15	3,3 ±0,1	8,75 –0,3	6,15 ±0,15	5,45 –0,3	1,30 –0,3	3,2 ±0,1	20/25	11,2 ±0,5

Nennmaß/ Nominal dia.		ø 4,0	ø 4,5	ø 5,0
l min. ±1		23	23	28
l max. ±1		80	100	100
b ±1	min. /+ k	20	25	25
	max. /+ k	75	90	90
Andere Schraubenlängen im Bereich Lmin ≦ L ≦ Lmax sind zulässig / Others screws lenghts with Lmin ≦ L ≦ max are allowed				

TOB Screws

TOB-Drill terrace screws with cylinder head
Fully threaded
Cutting Point

Annex 4.32

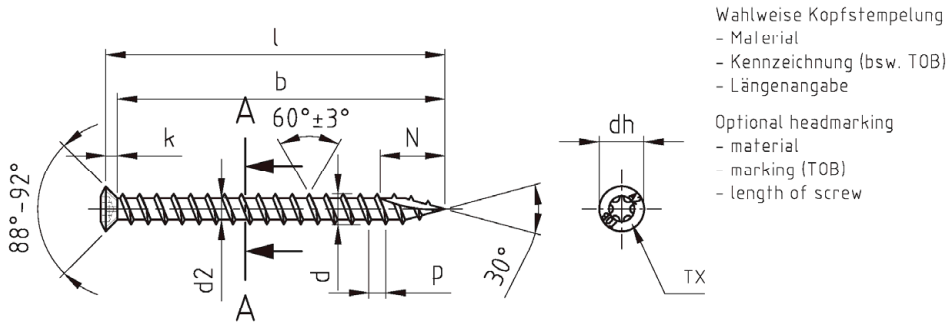


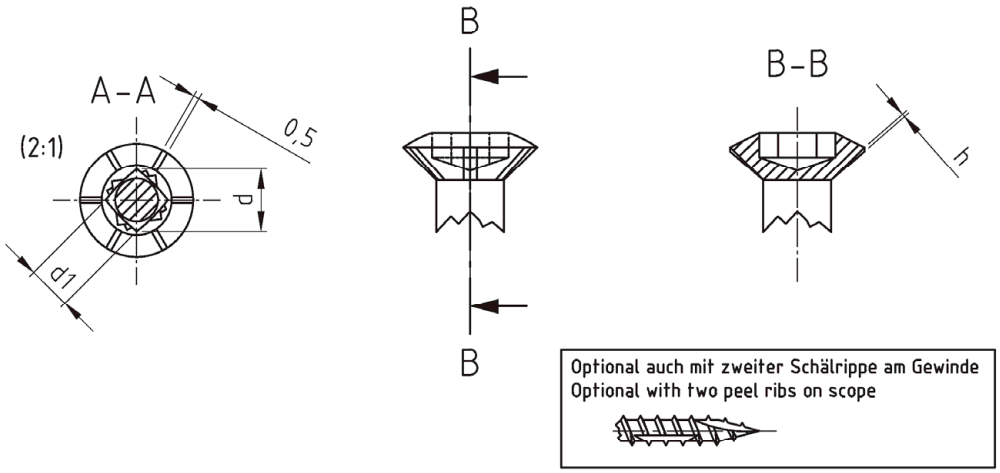
Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–TBS–Quadra–Speed/ Liseko–Terrassenbauschrauben, Schneidkerbe												
Description	TOB–TBS–Quadra–Speed/ RSD CSK head terrace screws, cutting point												
Nennmaß/ Nominal dia.	d	d1	d2	dh	ds	k	p	TX	h	N	fd1	fd2	fh
ø 5,0	5,5 –0,4	4,9 –0,3	3,8 –0,2	7,95 –0,45	4,15 –0,18	max. 3,0	3,10 –0,2	20/25	0,5	11,5 ±0,5	4,8 –0,3	4,15 –0,18	9,0 –0,5

l	40 –1,75	50– 1,75	60 –1,75	70 –1,75	80 –2.28
b +1,0	26	32	39	46	52
Andere Gewindelängen zulässig – siehe kürzeste geprüfte Länge / other thread lengths allowed – see shortest proofed length					

TOB Screws	Annex 4.33
TOB-TBS Quadra-Speed terrace screws with RSD CSK head Partially threaded Cutting Point	





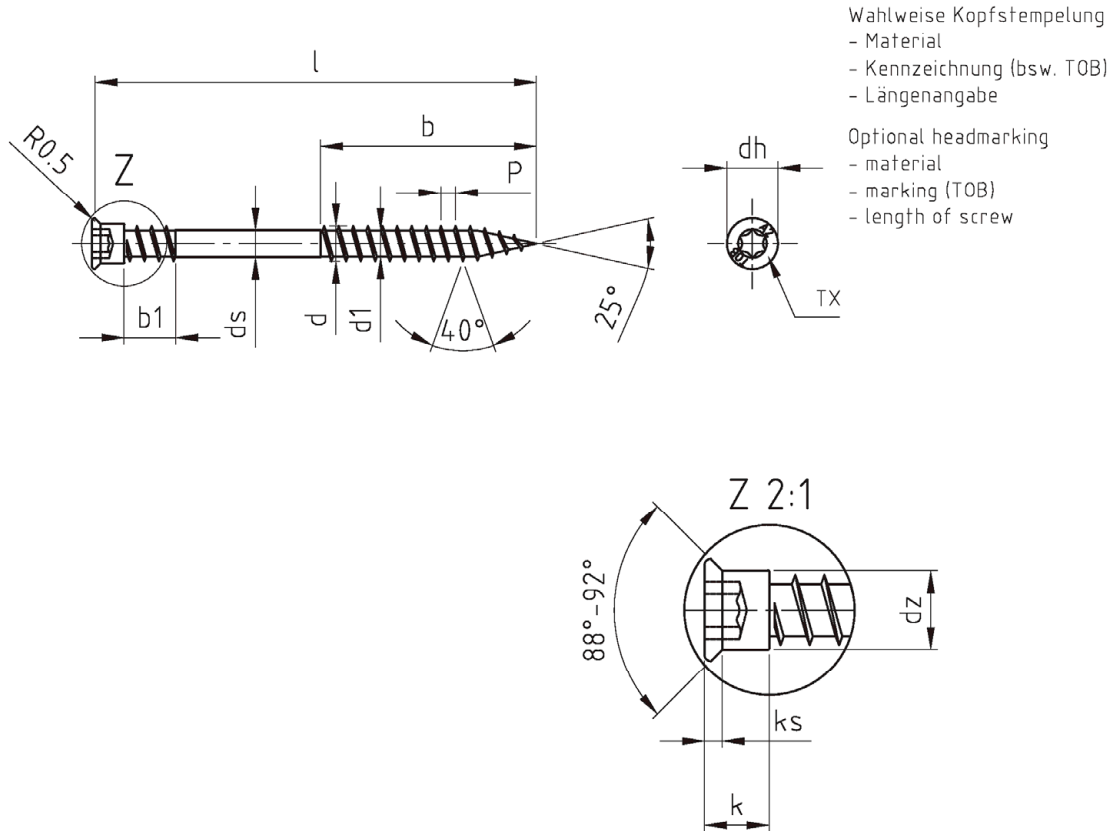
Bezeichnung	TOB–TBS–Quadra–Speed/ Liseko–Terrassenbauschrauben, Schneidkerbe, Vollgewinde								
Description	TOB–TBS–Quadra–Speed/ RSD CSK head terrace screws, cutting point, full thread								
Nennmaß/ Nominal dia.	d	d1	d2	dh	k	p	TX	h	N
ø 5,0	5,5 –0,4	4,9 –0,3	3,8 –0,2	7,95 –0,45	max. 3,0	3,10 –0,2	20/25	0,5	11,5 ±0,5

Nennmaß/ Nominal dia.		ø 5,0
l min. ±1		28
l max. ±1		90
b ±1	min. /+ k	25
	max. /+ k	80
Andere Schraubenlängen im Bereich Lmin ≤ L ≤ Lmax sind zulässig / Others screws lenghts with Lmin ≤ L ≤ max are allowed		

TOB Screws

TOB-TBS- Quadra-Speed terrace screws with RSD CSK head
Fully threaded
Cutting Point

Annex 4.34

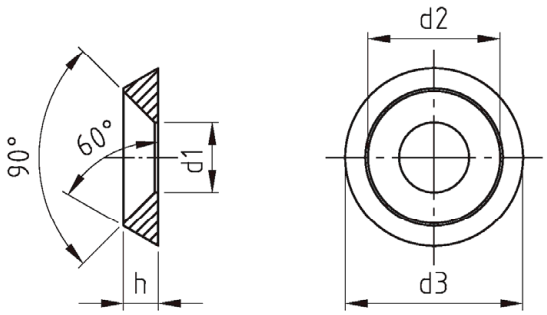


Mit fließendem Übergang vom Gewinde zum Schaft/ with floating crossing between shank and thread

Bezeichnung	TOB–TBS–Drill/ Zyl.–Terrassenbauschr., Unterkopfgewinde									
Description	TOB–TBS–Drill/ cyl. head terrace screws, double thread									
Nennmaß/ Nominal dia.	d	d1	dh	dz	ds	k	ks	p	TX	b1
ø 5,5	5,5 –0,3	4,1 –0,3	8,0 –0,3	6,15 ±0,15	4,26 ±0,05	5,1 –0,3	1,4 –0,3	2,3 ±0,1	20/25	8,0 ±0,5

l ±1	40	50	60	70	80	90	100
ø 5,5 b ±1	18	18	24	34	36	36	36

TOB Screws	Annex 4.35
TOB-TBS-Drill terrace screws with cylinder head Double thread	



Bezeichnung	TOB–Rosette Vollmetal/ gestanzt			
Description	TOB–Rosette Full Metal/ stamped			
Nennmaß/ Nominal dia.	d3	d2	d1	h
ø 4,0	11,0 +0,3	8,0 +0,3	4,5 +0,3	2,5 ±0,2
ø 5,0	14,0 +0,3	10,0 +0,3	5,5 +0,3	3,0 ±0,2
ø 6,0	16,0 +0,3	12,0 +0,3	7,0 +0,3	3,5 ±0,2
ø 8,0	22,0 +0,3	16,0 +03	9,0 +0,3	4,5 ±0,2
ø 10,0	28,0 +0,3	20,0 +03	11,0 +0,3	5,5 ±0,2

TOB Screws

TOB-Rosette
Washers

Annex 4.36