

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-12/0607**  
**of 18 January 2018**

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

Blue-Tip Screwbolt

Product family  
to which the construction product belongs

Concrete screw for use in concrete

Manufacturer

Stanley Black & Decker Deutschland GmbH  
Black & Decker Straße 40  
65510 Idstein  
DEUTSCHLAND

Manufacturing plant

Manufacturing Plant 5 and 6

This European Technical Assessment  
contains

11 pages including 3 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

EAD 330232-00-0601

**European Technical Assessment**

**ETA-12/0607**

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**Specific Part****1 Technical description of the product**

The Blue-Tip Screwbolt is an anchor made of zinc plated steel of sizes BT10, BT12 and BT16. The anchor is screwed into a predrilled cylindrical drill hole. The special thread of the anchor cuts an internal thread into the member while setting. The anchorage is characterised by mechanical interlock in the special thread.

The product description is given in Annex A.

**2 Specification of the intended use in accordance with the applicable EAD**

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead the assumption of working life of the anchor 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
Product performance for static and quasi static action	See Annex C1 / C 2
Displacements	See Annex C1 / C 2

**3.2 Safety in case of fire (BWR 2)**

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	See Annex C 3

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

In accordance with European Assessment Documents EAD No. 330232-00-0601 the applicable European legal act is: [96/582/EC].

The system to be applied is: 1

**5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document**

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

Issued in Berlin on 18 January 2018 by Deutsches Institut für Bautechnik

Dr.-Ing. Lars Eckfeldt  
p.p. Head of Department

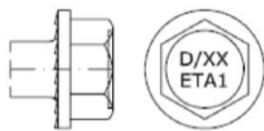
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Baderschneider

Blue-Tip Hex head version



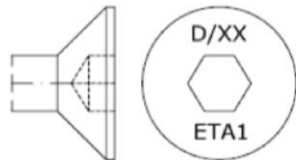
Head styles and marking

BT HEX

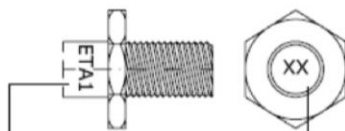


**Head Marking:**  
Identifying mark: ETA1  
Diameter D: e.g. 10  
Length XX: e.g. 150

BT CS



BT ET

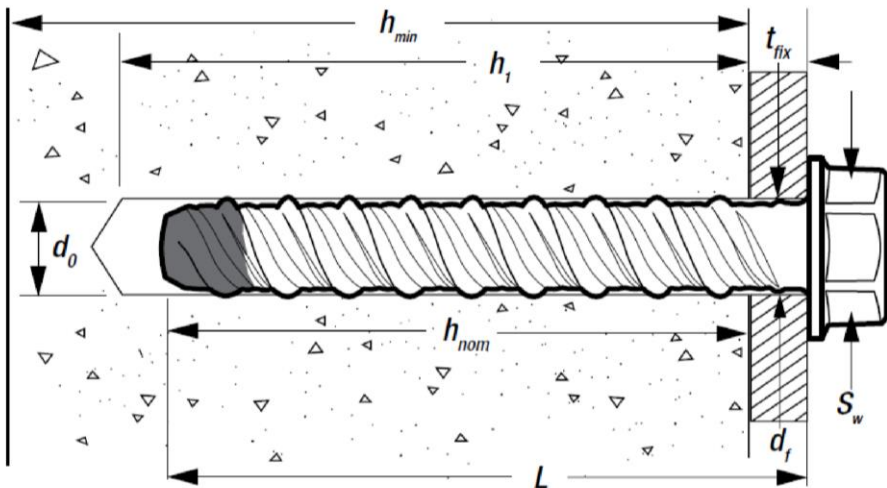


**Marking I:**  
Identifying mark: ETA1  
Diameter D: e.g. 10

**Marking II:**  
Length XX: e.g. 150

Marking D/XX where  
D= Nominal diameter of the bore hole [mm]  
XX= Length of anchor [mm]

Anchor in use



Blue-Tip Screwbolt

**Product description**  
Product  
Installation condition

Annex A1

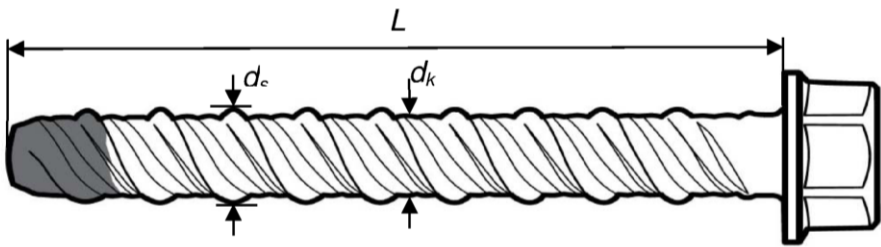


Table A1: Dimensions and Material

Anchor size		BT10	BT12	BT16
Length of the anchor	$L \geq$ [mm]	60	75	95
	$L \leq$ [mm]	320	320	320
Diameter of the shaft	$d_k$ [mm]	9.7	11.6	15.2
Outer diameter of the thread	$d_s$ [mm]	11.2	13.4	17.9
Nominal drill hole diameter	$d_0$ [mm]	10	12	16
Material		Special hardened C-Steel, Zinc plated > 5 $\mu\text{m}$		

Blue-Tip Screwbolt

Product description  
Dimension and material

Annex A2

## Specifications of intended use

### Anchorage subject to:

- Static and quasi-static loading.
- Fire exposure.

### Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000.
- Strength classes C20/25 to C50/60 according to EN 206-1:2000.
- Cracked and non-cracked concrete.

### Use conditions (Environmental conditions):

- Structures subject to dry internal conditions.

### Design:

- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings
- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Design for fastenings in accordance to FprEN 1992-4:2016 and EOTA Technical Report TR 055.

### Installation:

- Hole drilling by hammer drill with conventional carbide bit.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Cleaning of the hole of drilling dust.
- In case of aborted hole, drilling of new hole at a minimum distance of twice the depth of the aborted hole, or smaller distance provided the aborted drill hole is filled with high strength mortar and no shear or oblique tension loads in the direction of aborted hole.
- After Installation further turning of the anchor is not possible. The head of the anchor is supported on the fixture and is not damaged.

Blue-Tip Screwbolt

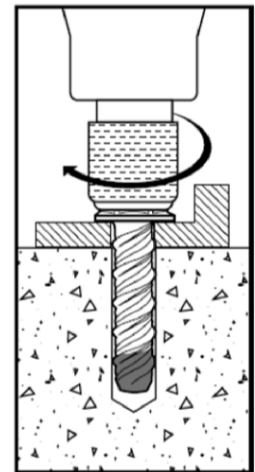
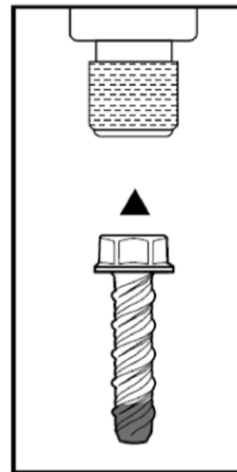
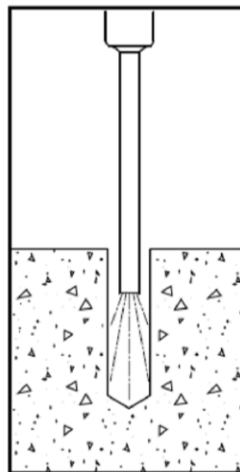
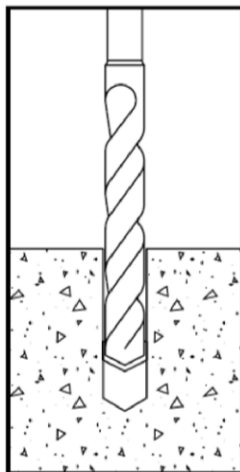
Intended Use  
Specifications

Annex B1

**Table B1: Installation parameters**

Anchor size		BT10		BT12		BT16	
Nominal drill hole diameter	$d_0$ [mm]	10		12		16	
Depth of drill hole	$h_1 \geq$ [mm]	65	85	80	95	90	125
Nominal embedment depth	$h_{nom}$ [mm]	55	75	70	85	80	110
Maximum clearance hole in the fixture	$d_f$ [mm]	12		14		19	
Minimum thickness of member	$h_{min}$ [mm]	105	115	125		145	165
Minimum spacing	$s_{min}$ [mm]	60		90		110	
Minimum edge distance	$c_{min}$ [mm]	60		90		110	

**Installation: Blue-Tip**



**Blue-Tip Screwbolt**

**Intend Use**

Installation Parameters, minimum spacing and minimum edge distance of anchor  
Installation Instruction,

Annex B2



**Table C1: Characteristic values for tension loads**

Anchor size			BT10		BT12		BT16	
Setting depth	$h_{nom}$	[mm]	55	75	70	85	80	110
Steel failure								
Characteristic resistance	$N_{Rk,s}$	[kN]	56.0		78.5		140.4	
Partial factor	$\gamma_{Ms}$ <sup>1)</sup>	[-]	1.4					
Pullout failure								
Characteristic resistance in cracked concrete C20/25	$N_{Rk,p}$	[kN]	3	6	4	5	7.5	12
Characteristic resistance in non-cracked concrete C20/25	$N_{Rk,p}$	[kN]	7.5	12	12	16	16	25
Increasing factor for $N_{Rk,p}$ in cracked and non-cracked concrete	$\Psi_c$	C30/37	1.16					
		C40/50	1.27					
		C50/60	1.39					
Robustness to installation	$\gamma_{inst}$ <sup>1)</sup>	[-]	1.4				1.2	
Concrete cone and splitting failure								
Effective anchorage depth	$h_{ef}$	[mm]	40.0	57.0	51.4	64.1	57.2	82.7
Factor for $k_1$	$k_{ucr,N}$	[-]	11.0					
Factor for $k_1$	$k_{cr,N}$	[-]	7.7					
Spacing	$s_{cr,N} = s_{cr,sp}$	[mm]	3 $h_{ef}$					
Edge distance	$c_{cr,N} = c_{cr,sp}$	[mm]	1.5 $h_{ef}$					
Robustness to installation	$\gamma_{inst}$ <sup>1)</sup>	[-]	1.4				1.2	

<sup>1)</sup> In absence of other national regulations

**Table C2: Displacements under tension loads**

Anchor size			BT10		BT12		BT16	
Setting depth	$h_{nom}$	[mm]	55	75	70	85	80	110
Tension load in cracked concrete	N	[kN]	1.0	2.0	1.4	1.7	3.0	4.8
Displacement	$\delta_{N0,cr}$	[mm]	0.2				0.3	
Displacement	$\delta_{N\infty,cr}$	[mm]	0.9	0.5	0.4	1.0	1.0	1.3
Tension load in non-cracked concrete	N	[kN]	2.6	4.1	3.1	4.1	6.3	9.9
Displacement	$\delta_{N0,ucr}$	[mm]	0.2				0.3	
Displacement	$\delta_{N\infty,ucr}$	[mm]	0.5		0.4		1.0	1.3

**Blue-Tip Screwbolt**

**Performance**

Characteristic values and displacements under tension loads

Annex C1

**Table C3: Characteristic values for shear loads**

Anchor size			BT10		BT12		BT16	
Setting depth	$h_{\text{nom}}$	[mm]	55	75	70	85	80	110
Steel failure without lever arm								
Characteristic resistance	$V_{Rk,s}$	[kN]	27		35.8		55.1	
Partial factor	$\gamma_{Ms}^{1)}$	[-]	1.5					
Steel failure with lever arm								
Characteristic resistance	$M^0_{Rk,s}$	[Nm]	77		128		306	
Ductility Factor	$k_7$	[-]	0.8					
Partial factor	$\gamma_{Ms}^{1)}$	[-]	1.5					
Concrete pryout failure								
Factor	$k_8$	[-]	1.0			2.0		
Robustness to installation	$\gamma_{inst}^{1)}$	[-]	1.0					
Concrete edge failure								
Effective length of the anchor in shear loading	$\ell_f$	[mm]	40	57	51.4	64.1	57.2	82.7
Outside diameter of the anchor	$d_{\text{nom}}$	[mm]	10		12		16	
Robustness to installation	$\gamma_{inst}^{1)}$	[-]	1.0					

1) In absence of other national regulations

**Table C4: Displacements under shear loads**

Anchor size			BT10	BT12	BT16
Shear load in cracked and non-cracked concrete	$V$	[kN]	13	17	26
Displacement	$\delta_{N0}$	[mm]	1.4	2.0	2.5
Displacement	$\delta_{N\infty}$	[mm]	2.1	3.0	3.8

**Blue-Tip Screwbolt**

**Performance**

Characteristic values and displacements under shear loads

Annex C2

**Table C5: Characteristic values under fire exposure in concrete C20/25 to C50/60**

Anchor size				BT10		BT12		BT16	
Setting depth		$h_{nom}$	[mm]	55	75	70	85	80	110
Tension and shear load									
R30	Characteristic resistance	$F_{Rk,fi30}$	[kN]	0.75	1.50	1.00	1.25	1.88	3.00
R60	Characteristic resistance	$F_{Rk,fi60}$	[kN]	0.75	1.50	1.00	1.25	1.88	3.00
R90	Characteristic resistance	$F_{Rk,fi90}$	[kN]	0.74	1.50	1.00	1.25	1.88	3.00
R120	Characteristic resistance	$F_{Rk,fi120}$	[kN]	0.59	1.20	0.80	1.00	1.50	2.40
R30 bis R120	Spacing	$s_{min,fi} = s_{cr,fi}$	[mm]	4 $h_{ef}$					
	Edge distance	$c_{min,fi} = c_{cr,fi}$		2 $h_{ef}$					
Shear load with lever arm									
R30	Char. bending resistance	$M^0_{Rk,s,fi30}$	[Nm]	1.61		3.68		8.27	
R60	Char. bending resistance	$M^0_{Rk,s,fi60}$	[Nm]	1.40		2.76		6.21	
R90	Char. bending resistance	$M^0_{Rk,s,fi90}$	[Nm]	1.08		2.39		5.38	
R120	Char. bending resistance	$M^0_{Rk,s,fi120}$	[Nm]	0.86		1.84		4.14	

**Blue-Tip Screwbolt**

**Performance**

Characteristic values under fire exposure

Annex C3