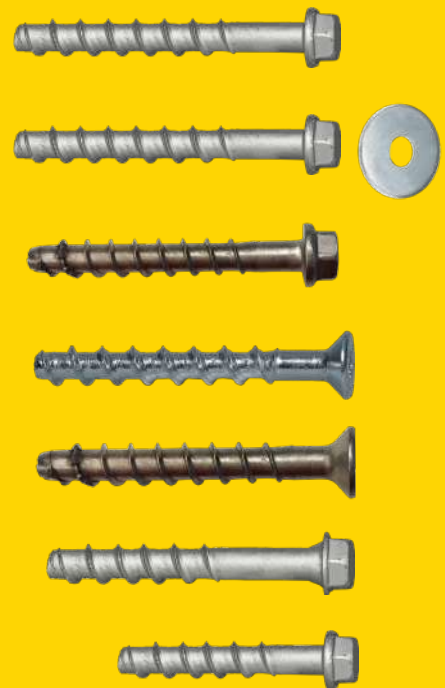


CELO

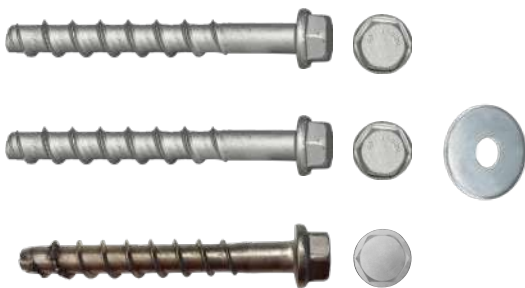
**Concrete screws
BTS 8 - 14 & BTS M**



Concrete screw BTS

High loads combined with an easy application

Assortment



BTS B, hex-head

- zinc flake coating
- zinc flake coating with zinc plated washer according to ISO 7094 (DIN 440) for woodworking
- stainless steel A4



BTS ST, countersunk head

- zinc plated
- stainless steel A4

Suitable building materials

Very suitable



- Concrete



Suitable to a limited extent

- Dense natural stone



Approvals and certificates



European Technical Assessment
Option 1 for cracked concrete



see assessment



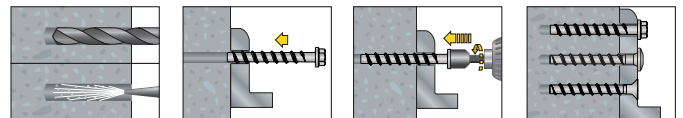
from Ø8



see assessment



Mounting

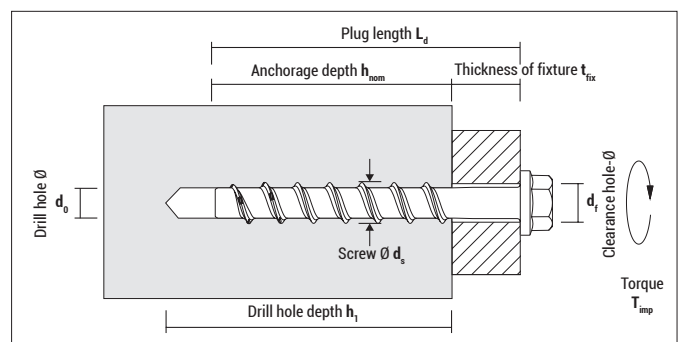


BTS 8: Impact wrench max. 300 Nm

BTS 10: Impact wrench max. 400 Nm

BTS 14: Impact wrench max. 650 Nm

The BTS may be adjusted up to two times for max. 10 mm in order to use shims - for details see assessment.



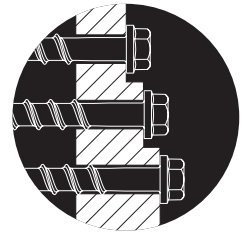
Advantages



Approved for use in **cracked and non-cracked concrete**



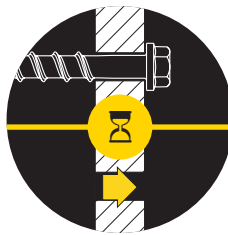
High loads combined with an **easy application** (use of an impact wrench is recommended)



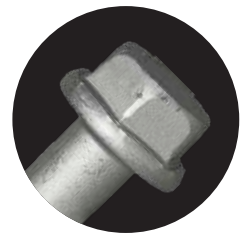
Variable, because of **three setting depths**



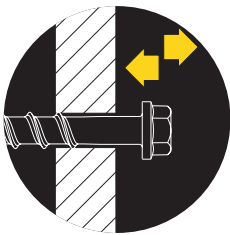
Big range: zinc plated, stainless steel A4 or zinc flake coated with countersunk or hex head



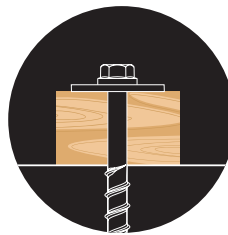
Ideal for **temporary fixings** as it can be removed completely



Zinc flake coating (ZnAl) for improved **corrosion resistance** and higher application security



The BTS may be **adjusted**



Available with large washer according to ISO 7094 [DIN 440] **for woodworking**

Application examples



Steel support



Guard rails



Cable trays



Wood construction

Concrete screw **BTS**

Assortment



BTS B, zinc flake coating with hex-head and integral washer (washer-Ø: BTS 8: Ø 16,2 mm; BTS 10: Ø 20,0 mm; BTS 14: Ø 30,0 mm)

Type $d_0 - L_d$	Art-No	$d_s \times L_d$ [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	$t_{fix} \leq$ [mm]	Recess		 [pcs]	 [pcs]
8-50/-	9ZG850BTSB	10,6 x 50	55 / - / -	45 / - / -	5 / - / -	SW 13	●	50	250
8-70/5	9ZG870BTSB	10,6 x 70	55 / 65 / 75	45 / 55 / 65	25 / 15 / 5	SW 13	●	50	250
8-80/15	9ZG880BTSB	10,6 x 80	55 / 65 / 75	45 / 55 / 65	35 / 25 / 15	SW 13	●	50	250
8-90/25	9ZG890BTSB	10,6 x 90	55 / 65 / 75	45 / 55 / 65	45 / 35 / 25	SW 13	●	50	250
8-100/35	9ZG8100BTSB	10,6 x 100	55 / 65 / 75	45 / 55 / 65	55 / 45 / 35	SW 13	●	50	250
8-120/55	9ZG8120BTSB	10,6 x 120	55 / 65 / 75	45 / 55 / 65	75 / 65 / 55	SW 13	●	50	250
10-60/-	9ZG1060BTSB	12,6 x 60	65 / - / -	55 / - / -	5 / - / -	SW 15	●	50	250
10-70/-	9ZG1070BTSB	12,6 x 70	65 / - / -	55 / - / -	15 / - / -	SW 15	●	40	200
10-80/-	9ZG1080BTSB	12,6 x 80	65 / 85 / -	55 / 57 / -	25 / 5 / -	SW 15	●	40	200
10-90/5	9ZG1090BTSB	12,6 x 90	65 / 85 / 95	55 / 75 / 85	35 / 15 / 5	SW 15	●	40	200
10-100/15	9ZG10100BTSB	12,6 x 100	65 / 85 / 95	55 / 75 / 85	45 / 25 / 15	SW 15	●	40	200
10-120/35	9ZG10120BTSB	12,6 x 120	65 / 85 / 95	55 / 75 / 85	65 / 45 / 35	SW 15	●	40	200
10-140/55	9ZG10140BTSB	12,6 x 140	65 / 85 / 95	55 / 75 / 85	85 / 65 / 55	SW 15	●	30	150
10-160/75	9ZG10160BTSB	12,6 x 160	65 / 85 / 95	55 / 75 / 85	105 / 85 / 75	SW 15	●	30	150
14-80/-	9ZG1480BTSB	16,6 x 80	85 / - / -	75 / - / -	5 / - / -	SW 21	●	20	100
14-110/-	9ZG14110BTSB	16,6 x 110	85 / 110 / -	75 / 100 / -	35 / 10 / -	SW 21	●	20	100



zinc flake coating



zinc plated

BTS B, zinc flake coating with hex-head and integral washer (washer-Ø: BTS 10: Ø 20,0 mm)

with large washer according to ISO 7094 (DIN 440) for woodworking (included in packing, outer Ø = 44 mm)

Type $d_0 - L_d$	Art-No	$d_s \times L_d$ [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	$t_{fix} \leq$ [mm]	Recess		 [pcs]	 [pcs]
10-180/95	9ZG10180BTSB	12,6 x 180	65 / 85 / 95	55 / 75 / 85	125 / 105 / 95	SW 15	●	20	100
10-200/115	9ZG10200BTSB	12,6 x 200	65 / 85 / 95	55 / 75 / 85	145 / 125 / 115	SW 15	●	20	80
10-240/155	9ZG10240BTSB	12,6 x 240	65 / 85 / 95	55 / 75 / 85	185 / 165 / 155	SW 15	●	20	80
10-280/195	9ZG10280BTSB	12,6 x 280	65 / 85 / 95	55 / 75 / 85	225 / 205 / 195	SW 15	●	20	80



BTS B, stainless steel A4 with hex-head and integral washer (washer-Ø: BTS 8: Ø 16,2 mm; BTS 10: Ø 20,0 mm)

A4
STAINLESS
STEEL

Type $d_0 - L_d$	Art-No	$d_s \times L_d$ [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	$t_{fix} \leq$ [mm]	Recess		 [pcs]	 [pcs]
8-80/15	9X880BTSB	10,5 x 80	55 / 65 / 75	45 / 55 / 65	35 / 25 / 15	SW 13	●	50	250
10-90/5	9X1090BTSB	12,5 x 90	65 / 85 / 95	55 / 75 / 85	35 / 15 / 5	SW 15	●	40	200
10-100/15	9X10100BTSB	12,5 x 100	65 / 85 / 95	55 / 75 / 85	45 / 25 / 15	SW 15	●	40	200



BTS ST zinc plated with countersunk head (Head-Ø: BTS ST 8: Ø 19,5 mm; BTS ST 10: Ø 21,5 mm)

Type $d_0 - L_d$	Art-No	$d_s \times L_d$ [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	$t_{fix} \leq$ [mm]	Drive		 [pcs]	 [pcs]
8-80/15	9880BTSST	10,6 x 80	55 / 65 / 75	45 / 55 / 65	35 / 25 / 15	TX 40	●	50	250
10-90/5	91090BTSST	12,6 x 90	65 / 85 / 95	55 / 75 / 85	35 / 15 / 5	TX 50	●	40	200



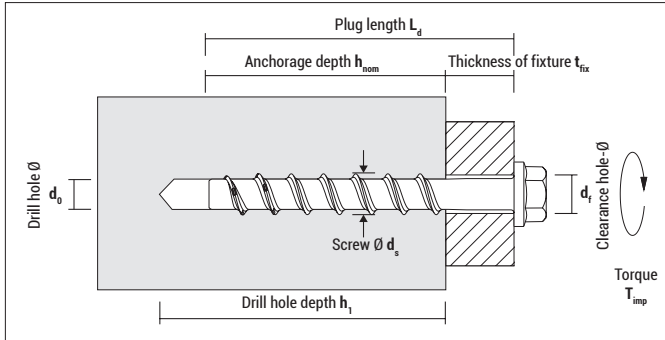
BTS ST stainless steel A4 with countersunk head (Head-Ø: BTS ST 8: Ø 19,5 mm; BTS ST 10: Ø 21,5 mm)

A4
STAINLESS
STEEL

Type $d_0 - L_d$	Art-No	$d_s \times L_d$ [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	$t_{fix} \leq$ [mm]	Drive		 [pcs]	 [pcs]
8-80/15	9X880BTSST	10,5 x 80	55 / 65 / 75	45 / 55 / 65	35 / 25 / 15	TX 40	●	50	250
10-90/5	9X1090BTSST	12,5 x 90	65 / 85 / 95	55 / 75 / 85	35 / 15 / 5	TX 50	●	40	200

Concrete screw **BTS**

Technical values



Loads and installation parameters (values are valid for BTS in carbon steel and stainless steel)

			BTS 8						BTS 10						BTS 14		
			ZnAl	A4	ZnAl	A4	ZnAl	A4	ZnAl	A4	ZnAl	A4	ZnAl	A4			
Drill hole Ø	d ₀	[mm]	8						10						14		
Thread Ø	d _s	[mm]	10,6	10,5	10,6	10,5	10,6	10,5	12,6	12,5	12,6	12,5	12,6	12,5	16,6		
Ø of clearance hole in fixture	d _f ≤	[mm]	12						14						18		
Anchorage depth	h _{nom}	[mm]	45		55		65		55		75		85		75	100	115
Permissible tension load in cracked concrete ^{1), 2), 3)}																	
C20/25	N _{per}	[kN]	2,4	1,4	4,3	2,6	5,7	3,8	4,3	2,9	7,6	6,2	9,2	8,1	7,2	11,5	14,5
Permissible tension load in non-cracked concrete ^{1), 2), 3)}																	
C20/25	N _{per}	[kN]	3,6	4,3	5,7	5,7	7,6	8,1	5,7	5,2	9,5	9,0	12,4	12,4	10,4	16,5	20,7
Permissible shear load in cracked concrete																	
C20/25	V _{per}	[kN]	3,4	6,2	4,6	7,7	6,2	9,7	4,6	10,4	15,2	17,6	18,4	19,4	7,2	23,0	28,9
Permissible shear load in non-cracked concrete																	
C20/25	V _{per}	[kN]	4,9	7,7	6,6	7,7	8,8	9,7	6,6	12,9	19,4	19,4	19,4	19,4	10,4	32,0	32,0
Permissible bending moment	M _{per}	[Nm]	15	14,9	15	14,9	15	14,9	32						106		
Spacing and edge distance																	
Spacing ⁴⁾	s _{cr,N}	[mm]	105	96	129	123	156	147	129	120	180	171	204	255	174	237	276
Edge distance ⁴⁾	c _{cr,N}	[mm]	53	48	65	62	78	74	65	60	90	86	102	98	87	119	138
Minimum spacing ⁴⁾	s _{min}	[mm]	40	35	50	35	50	35	50	40	50	40	50	40	50	70	70
Min. edge distance ⁴⁾	c _{min}	[mm]	40	35	50	35	50	35	50	40	50	40	50	40	50	70	70
Min. thickness of structural part	h _{min}	[mm]	100	80	100		120		100		130		130		130	150	170
Max. installation torque for impact wrench	T _{imp} ≤	[Nm]	300						400	450	400	450	400	450	650		

¹⁾ Permissible loads for single anchor without influence of spacing and edge distance.

²⁾ Load figures include the resistances' partial safety factors as per ETA assessment and a partial factor on the action of $\gamma_F = 1,4$.

³⁾ For higher concrete strengths up to C50/60 the values increase by max. 55% compared with C20/25.

⁴⁾ If underrun the char. spacing or edge distance (C_{cr} or S_{cr}) the loads must be reduced. h_{min} , S_{min} and C_{min} must be observed.

Concrete screw

BTS M

Special concrete screw for temporary construction site facilities

Assortment



BTS M 14-80



BTS M 14-130



Test sleeve

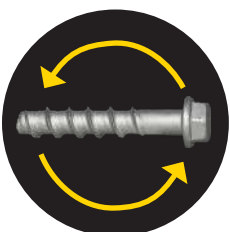
Advantages



Special concrete screw:
Approved for
**temporary construction
site facilities**



Anchoring **without expansion pressure** minimises
concrete spalling



Reusable -
for details see
approval



Zinc flake coating [ZnAl]
for improved **corrosion
resistance** and higher
application security



The approval also regulates
the use in fresh concrete ($\geq$
10 N / mm²), in **cracked and
non-cracked concrete** and for
outdoor applications

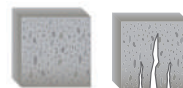


Including test sleeve in
each box to **check the
reusability**



Suitable building materials

Very suitable



• Concrete



Approvals and certificates



Application examples



Inclined support



Guardrails



Formwork

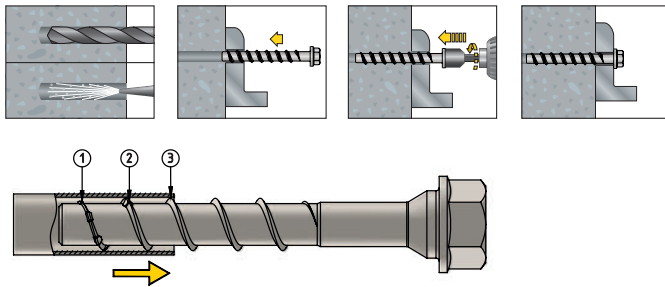


Construction safety net

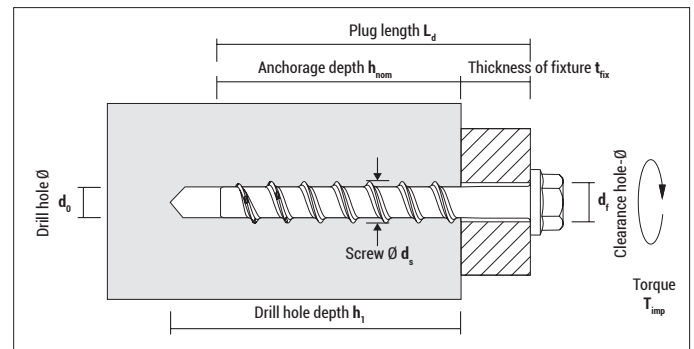


Scaffolding

Mounting



The BTS M may only be reused if max. 3 threads can penetrate into the test sleeve.



Assortment



BTS M, zinc flake coating 1 test sleeve per box included (washer-Ø: 14-80: 28 mm, 14-130: 32 mm)

Type $d_0 - L_d$	Art-No	$d_s \times L_d$ [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	$t_{fix} \leq$ [mm]	Recess	[pcs]	[pcs]
14-80/5	9ZG1480BTSMB	16,6 x 80	85	75	5	SW 21	20	100
14-130/15	9ZG14130BTSMB	16,6 x 130	85 / 100 / 125	75 / 90 / 115	55 / 40 / 15	SW 24	15	75

Loads and installation parameters

			BTS M 14-80/5	BTS M 14-130/15			
Drill hole Ø	d_0	[mm]	14	14			
Thread Ø	d_s	[mm]	16,6	16,6			
Ø of clearance hole in fixture	$d_i \leq$	[mm]	18	18			
Anchorage depth	h_{nom}	[mm]	75	75	90	115	
Min. thickness of structural part	h_{min}	[mm]	150	150	195	200	225

Permissible load in cracked and non-cracked concrete^{1), 2)}

C8/10	F_{per}	[kN]	4,0	4,0	8,0	10,0	11,3
C12/15	F_{per}	[kN]	4,7	4,7	8,7	12,0	14,0
C16/20	F_{per}	[kN]	5,3	5,3	9,3	13,3	16,0

Spacing and edge distance

Minimum spacing	s_{min}	[mm]	320	320	390	500	500
Min. edge distance in load direction	$c_{1,min}$	[mm]	105	105	130	165	165
Min. edge distance vertical to load direction	$c_{2,min}$	[mm]	160	160	195	250	250
Max. installation torque for impact wrench	$T_{imp} \leq$	[Nm]	650	650			

¹⁾ Permissible load in all directions for single anchor without influence of spacing and edge distance

²⁾ Load figures include the resistances' partial safety factors as per ETA assessment and a partial factor on the action of $\gamma_F = 1,5$.

h_{min} , s_{min} and c_{min} must be observed.



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