

WT1 SSt Throughbolt Anchors

Ultimate-performance stainless steel throughbolt anchors for cracked and non-cracked concrete and for seismic performance categories C1 and C2

Anchor types



WT1 SSt
(M8 – M12)

- **WT1 SSt** is the ultimate stainless steel throughbolt anchor for use in cracked and non-cracked concrete under normal and seismic C1 or C2 conditions.

Features and benefits

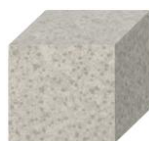
- ETA according to EAD 330232-01-0601 for use in cracked and non-cracked concrete (option 1)
- WT1 SSt is approved for seismic C1 and C2 loads
- Made of A4 stainless steel for use in external atmospheric environment
- Simple and quick installation procedure
- For medium to heavy loads
- Can be installed as pre-fixing (before application of a fixing plate) or as through-fixing (through hole of the fixing plate)
- Compliance with VdS CEA 4001:2024-01 (08) for applications with sprinkler systems in concrete elements
- Fire resistance class R30-R120 for design of anchorages under exposure to fire

Suitable base materials

- Non-cracked concrete, C20/25 to C50/60
- Cracked concrete, C20/25 to C50/60
- Stone



Concrete
(cracked and
non-cracked)



Stone

Typical applications

- Structural steel
- Barriers and safety systems
- Heavy plant machinery
- Facade systems

Approvals and certificates

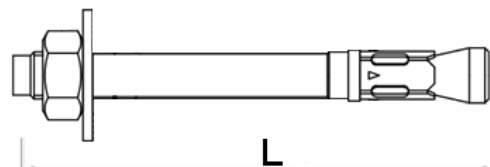
- European Technical Assessment
- Fire Test Report

ETA-21/0365, 8 February 2024
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1. Product details

Article	Description	Size	Length	Max. fixture thickness	Fixture hole clearance
		[-]	L [mm]	t _{fix,max} [mm]	d _f [mm]
608608075	WT1 SSt M8x75	M8	75	9	9
608610090	WT1 SSt M10x90	M10	90	10	12
608610135	WT1 SSt M10x135	M10	135	55	12
608612120	WT1 SSt M12x120	M12	120	24	14
608612150	WT1 SSt M12x150	M12	150	54	14



2. Packaging details

Article	Description	Pack 1		Pack 2	
		[pcs]	EAN13	[pcs]	EAN13
608608075	WT1 SSt M8x80	100	8719942170628	600	8719942170635
608610090	WT1 SSt M8x95	100	8719942170659	400	8719942170666
608610135	WT1 SSt M8x115	50	8719942170680	300	8719942170697
608612120	WT1 SSt M10x90	50	8719942170710	200	8719942170727
608612150	WT1 SSt M10x115	50	8719942170741	100	8719942170758

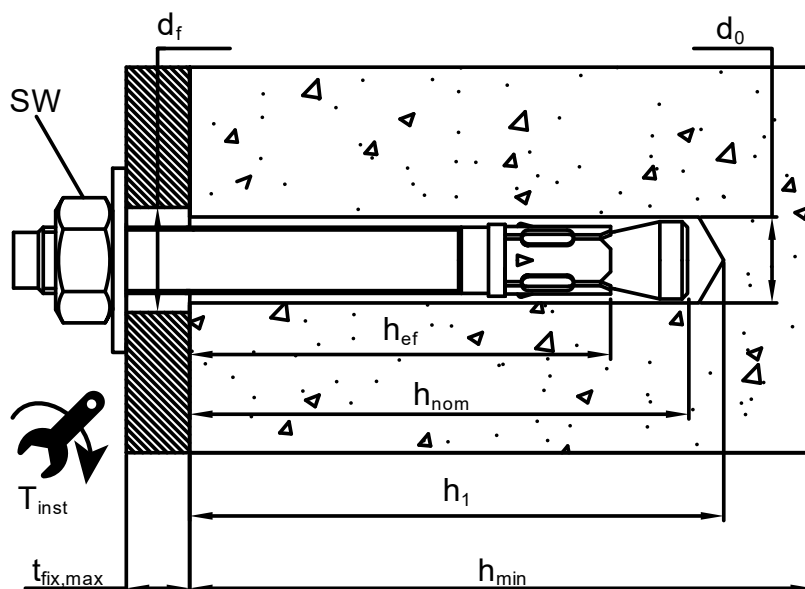
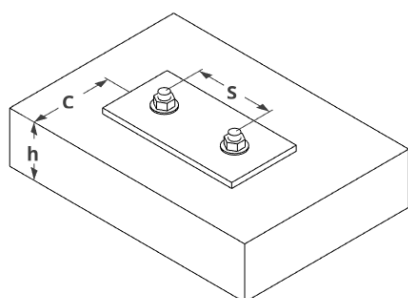
3. Mechanical properties

Component	Material
Anchor Shaft	Stainless steel, grade A4
Washer	DIN 125, 9021 or 440 stainless A4
Nut	Stainless steel, grade A4 with antifriction coating
Expansion clip	Stainless steel, grade A4, galvanized > 5 µm ISO 4042 Zn5/An/T0

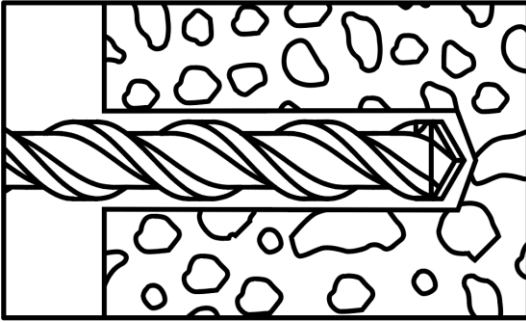
4. Installation data

4.1 Installation parameters

Anchor Type			WT1 SSt		
Anchor Size			M8	M10	M12
Nominal embedment depth	h_{nom}	[mm]	55	68	80
Effective embedment depth	h_{ef}	[mm]	48	60	70
Drill hole diameter	d_0	[mm]	8	10	12
Depth of drill hole	$h_1 \geq$	[mm]	60	75	85
Diameter of clearing hole in the fixture	d_f	[mm]	9	12	14
Max fixture thickness	$t_{fix,max}$	[mm]	L – 66	L – 80	L – 96
Minimum concrete member thickness	h_{min}	[mm]	100	120	140
Minimum allowable edge distance	c_{min}	[mm]	47	52	62
Minimum allowable spacing	s_{min}	[mm]	42	47	57
Characteristic spacing	$S_{cr,N}$	[mm]	144	180	210
Characteristic edge distance	$C_{cr,N}$	[mm]	72	90	105
Characteristic spacing (splitting)	$S_{cr,sp}$	[mm]	164	204	238
Characteristic edge distance (splitting)	$C_{cr,sp}$	[mm]	82	102	119
Tightening torque	T_{inst}	[Nm]	15	30	60
Installation wrench	SW	[mm]	13	17	19

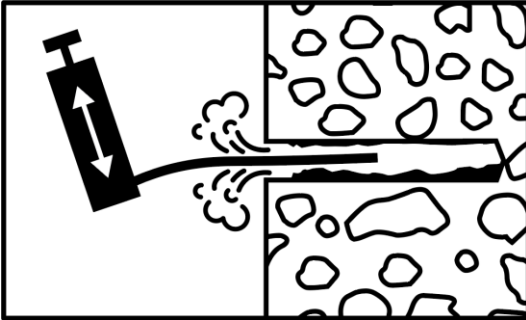


4.2 Installation procedure for concrete

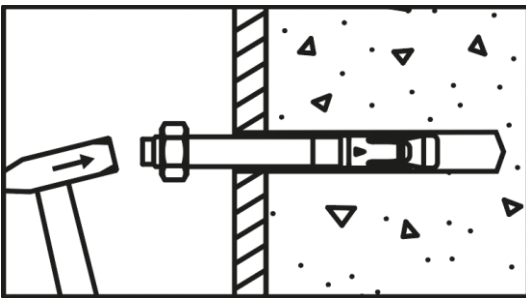


Drill the hole with rotary hammer drilling machine.

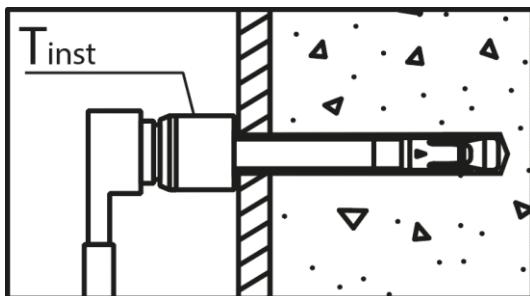
Drill to a required depth.



Clean the drill hole with a hand pump.



Hammer the anchor into the hole.



Tighten the nut to the specified tightening torque T_{inst} .

5. Performance information

5.1 Loading information for WT1 SSt in cracked and non-cracked C20/25 concrete¹⁾

Anchor Type			WT1 SSt Non-cracked concrete			WT1 SSt Cracked concrete		
Anchor Size			M8	M10	M12	M8	M10	M12
Nominal embedment depth	h_{nom}	[mm]	55.0	68.0	80.0	55.0	68.0	80.0
Tension load								
Characteristic resistance	N_{Rk}	[kN]	12.0	16.0	22.0	8.5	14.0	19.0
Design resistance	N_{Rd}	[kN]	8.0	10.6	12.2	5.6	9.3	10.5
Recommended resistance ²⁾	N_{Rec}	[kN]	5.7	7.6	8.7	4.0	6.6	7.5
Shear load								
Characteristic resistance	V_{Rk}	[kN]	<u>11.9</u>	<u>18.9</u>	<u>27.4</u>	11.4	<u>18.9</u>	<u>27.4</u>
Design resistance	V_{Rd}	[kN]	<u>9.5</u>	<u>15.1</u>	<u>21.9</u>	7.6	<u>15.1</u>	<u>21.9</u>
Recommended resistance ²⁾	V_{Rec}	[kN]	<u>6.8</u>	<u>10.8</u>	<u>15.6</u>	5.4	<u>10.8</u>	<u>15.6</u>

1) Presented loading information is only applicable for anchors not affected by concrete edge and anchor spacing influence.

2) Recommended load includes partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.

3) Underlined and italic values indicate steel failure, **bold** values indicate concrete failure, and all others represent pullout failure.

5.2 Loading information for WT1 SSt in C20/25 concrete under Seismic action, category C1¹⁾

Anchor Type			WT1 SSt		
Anchor Size			M8	M10	M12
Nominal embedment depth	h_{nom}	[mm]	55.0	68.0	80.0
Tension Load					
Design resistance	$N_{Rd,p,C1}$	[kN]	-	4.2	6.5
Shear Load					
Design resistance unfilled annular gap	$V_{Rd,p,C1}$	[kN]	-	4.2	7.6

1) Presented loading information is only applicable for anchors not affected by concrete edge and anchor spacing influence.

5.3 Loading information for WT1 SSt in C20/25 concrete under Seismic action, category C2¹⁾

Anchor Type			WT1 SSt		
Anchor Size			M8	M10	M12
Nominal embedment depth	h_{nom}	[mm]	55.0	68.0	80.0
Tension Load					
Design resistance	$N_{Rd,p,C2}$	[kN]	-	2.0	2.2
Shear Load					
Design resistance	$V_{Rd,p,C2}$	[kN]	-	4.2	7.6

1) Presented loading information is only applicable for anchors not affected by concrete edge and anchor spacing influence.

5.4 Loading information for WT1 SSt under fire exposure¹⁾

Anchor Type			WT1 SSt		
Anchor Size			M8	M10	M12
Nominal embedment depth	h_{nom}	[mm]	55.0	68.0	80.0
Tension and shear load					
Characteristic resistance	R30	$N_{Rk,fi} = V_{Rk,fi}$ [kN]	0.7	1.5	2.5
	R60	$N_{Rk,fi} = V_{Rk,fi}$ [kN]	0.6	1.2	2.1
	R90	$N_{Rk,fi} = V_{Rk,fi}$ [kN]	0.4	0.9	1.7
	R120	$N_{Rk,fi} = V_{Rk,fi}$ [kN]	0.4	0.8	1.3

1) Presented loading information is only applicable for anchors not affected by concrete edge and anchor spacing influence.