

WCS1 Concrete Screws

High performance concrete screws for anchoring in cracked and non-cracked concrete

Anchor types



WCS1H 6x60
WCS1H 8x70
WCS1H 8x80
WCS1H 8x100
WCS1H 8x120
WCS1H 10x60
WCS1H 10x90
WCS1H 10x100
WCS1H 10x120

- **WCS1H** High performance corrosion resistant concrete screw with hexagon head and seismic performance categories C1 & C2 for design of anchorages under seismic action



WCS1N 6x55

- **WCS1N** High performance concrete screw with a female internal M8/M10 thread and seismic performance category C1 for design of anchorages under seismic action



WCS1M 6x55

- **WCS1M** High performance concrete screw with a male M8 thread connection and seismic performance category C1 for design of anchorages under seismic action

Features and benefits

- ETA Option 1 approval for cracked and non-cracked concrete
- **new** Seismic performance categories C1 and C2 for design of anchorages under seismic action
- Simple and quick installation procedure
- High load capacity
- Up to 2 anchoring depths provide maximum installation flexibility
- Reduced edge and anchor spacing distances
- Fire resistance class R30-R120 for design of anchorages under exposure to fire

Suitable base materials



Concrete
(non-cracked)



Concrete
(cracked)

Typical applications

- Pipe systems
- Suspended rail installations
- Ventilation systems and ducts

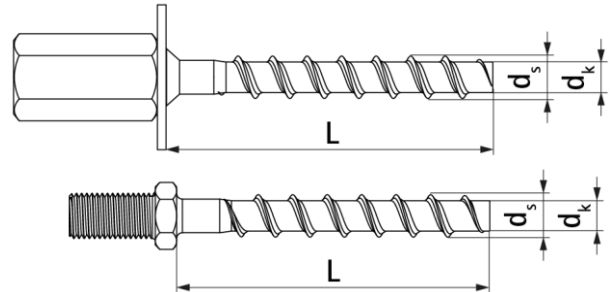
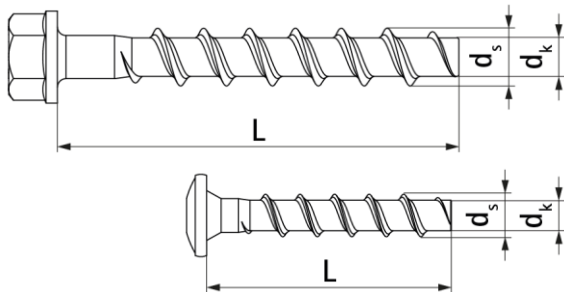
Approvals and certificates

- European Technical Assessment
- Fire Test Report

- ETA-16/0493, 22 September 2020
- ETA-16/0493, 22 September 2020

1. Product details

Article	Description	Size	Length	Shaft diameter	Thread diameter	Head configuration
			L [mm]	d _k [mm]	d _s [mm]	
625 3 696	WCS1N 6x55 M8/10	6	55	5.1	7.5	
625 3 106	WCS1M 6x55 M8	6	55	5.1	7.5	
625 3 306	WCS1H 6x60	6	60	5.1	7.5	
625 3 408	WCS1H 8x70	8	70	7.1	10.6	
625 3 418	WCS1H 8x80	8	80	7.1	10.6	
625 3 428	WCS1H 8x100	8	100	7.1	10.6	
625 3 438	WCS1H 8x120	8	120	7.1	10.6	
625 3 506	WCS1H 10x60	10	60	9.1	12.6	
625 3 509	WCS1H 10x90	10	90	9.1	12.6	
625 3 510	WCS1H 10x100	10	100	9.1	12.6	
625 3 512	WCS1H 10x120	10	120	9.1	12.6	



2. Packaging details

Article	Description	Pack 1		Pack 2	
		[pcs]	EAN13	[pcs]	EAN13
625 3 696	WCS1N 6x55 M8/10	50	8712993058099	-	-
625 3 106	WCS1M 6x55 M8	100	8712993315734	800	8712993173457
625 3 306	WCS1H 6x60	100	8712993315772	400	8712993173471
625 3 408	WCS1H 8x70	50	8712993315796	400	8712993173488
625 3 418	WCS1H 8x80	50	8712993157792	400	8712993173495
625 3 428	WCS1H 8x100	50	8712993157808	-	-
625 3 438	WCS1H 8x120	50	8712993157815	-	-
625 3 506	WCS1H 10x60	50	8712993550111	-	-
625 3 509	WCS1H 10x90	50	8712993315819	-	-
625 3 510	WCS1H 10x100	50	8712993504008	-	-
625 3 512	WCS1H 10x120	50	8712993470914	-	-

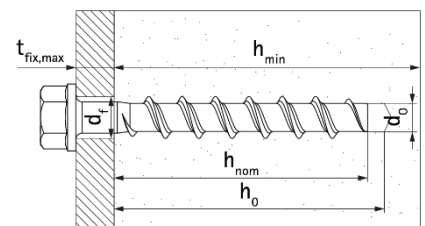
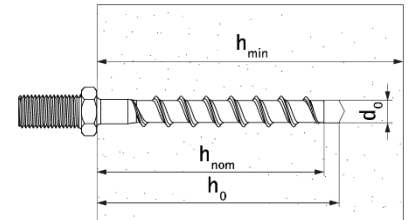
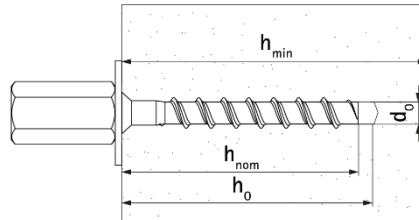
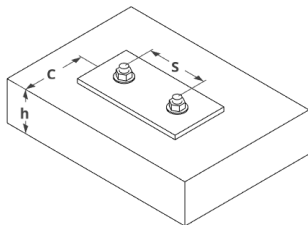
3. Mechanical properties

Property	ETA-16/0516	
	WCS1N, WCS1M	WCS1H
Material	Carbon Steel EN 10263-4	
Coating	Galvanized according to EN ISO 4042	Zinc flake coating according to EN ISO 10683 ($\geq 5\mu\text{m}$)
Characteristic steel yield strength f_{yk} [N/mm ²]	560	
Characteristic steel ultimate strength f_{uk} [N/mm ²]	700	
Elongation at rupture A_5 [%]	≤ 8	

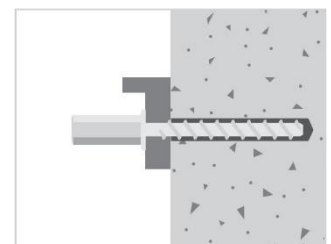
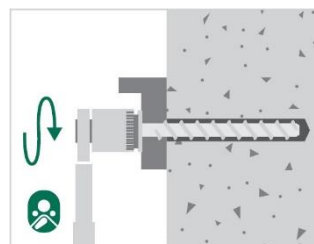
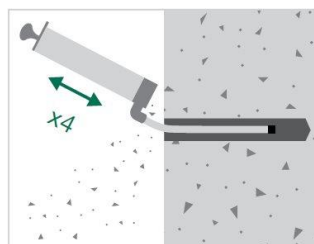
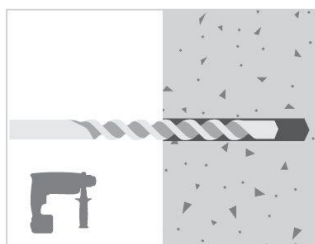
3. Installation data

3.1 Installation parameters for cracked and non-cracked concrete

Anchor Type			WCS1N, WCS1M, WCS1H								
Anchor Size			6		8			10			
Nominal embedment depth	h_{nom}	[mm]	40	55	45	55	65	55	75	85	
Drill hole diameter	d_0	[mm]	6	6	8	8	8	10	10	10	
Cutting diameter of drill bit	d_{cut}	[mm]	6.4	6.4	8.45	8.45	8.45	10.45	10.45	10.45	
Depth of drill hole	h_0	[mm]	45	60	55	65	75	65	85	95	
Diameter of clearing hole in the fixture	d_f	[mm]	8	8	12	12	12	14	14	14	
Max fixture thickness	$t_{fix,max}$	[mm]	L - h_{nom}								
Minimum concrete member thickness	h_{min}	[mm]	100	100	100	100	120	100	130	130	
Minimum edge distance	c_{min}	[mm]	40	40	40	50	50	50	50	50	
Minimum anchor spacing	s_{min}	[mm]	40	40	40	50	50	50	50	50	
Max. impact screw driver torque		[Nm]	160	160	300	300	300	400	400	400	



3.2 Installation procedure for concrete



4. Performance information

4.1 Recommended loads in C20/25 concrete for single anchors¹⁾

Anchor Type			WCS1N, WCS1M, WCS1H									
Anchor Size			6		8			10				
Nominal embedment depth h_{nom} [mm]			40	55	45	55	65	55	75	85		
Tension												
Recommended load for non-cracked concrete ²⁾			N_{rec}	[kN]	1.90	4.30	3.60	5.70	7.60	5.70	9.50	12.00
Recommended load for cracked concrete ²⁾			N_{rec}	[kN]	1.00	1.90	2.40	4.30	5.70	4.30	8.00	9.60
Shear												
Recommended load for cracked concrete ²⁾			V_{rec}	[kN]	3.00	4.00	3.50	4.80	6.40	4.80	15.90	19.20
Recommended load for non-cracked concrete ²⁾			V_{rec}	[kN]	4.00	4.00	5.00	6.80	9.00	6.80	19.40	19.40
Bending moment												
Recommended bending moment			M_{rec}	[Nm]	6.2	6.2	14.9	14.9	14.9	32.0	32.0	32.0

1) Single anchors are 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.

4.2 Recommended loads in concrete under fire exposure for single anchors^{1) 2)}

Anchor Type			WCS1N, WCS1M, WCS1H								
Anchor Size			6		8			10			
Nominal embedment depth h_{nom} [mm]			40	55	45	55	65	55	75	85	
Steel failure for tension and shear load ($F_{Rk,s,fi} = N_{Rk,s,fi} = V_{Rk,s,fi}$)											
Fire resistance class R30-R120											
R30	Recommended resistance for all directions	$F_{Rec,s,fi30}$	[kN]	0,5	0,9	1,3	2,3	2,3	2,3	4,1	4,3
R60		$F_{Rec,s,fi60}$	[kN]	0,5	0,8	1,3	1,7	1,7	2,3	3,3	3,3
R90		$F_{Rec,s,fi90}$	[kN]	0,5	0,6	1,3	1,1	1,1	2,3	2,2	2,2
R120		$F_{Rec,s,fi120}$	[kN]	0,4	0,4	0,7	0,7	0,7	1,7	1,7	1,7
R30	Recommended bending resistance	$M^0_{Rec,s,fi30}$	[Nm]	0,7	0,7	2,4	2,4	2,4	5,9	5,9	5,9
R60		$M^0_{Rec,s,fi60}$	[Nm]	0,6	0,6	1,8	1,8	1,8	4,5	4,5	4,5
R90		$M^0_{Rec,s,fi90}$	[Nm]	0,5	0,5	1,2	1,2	1,2	3,0	3,0	3,0
R120		$M^0_{Rec,s,fi120}$	[Nm]	0,3	0,3	0,9	0,9	0,9	2,3	2,3	2,3
R30-R120	Edge distance	$C_{cr,fi}$	[mm]	2 x h_{ef}							
R30-R120	Spacing	$S_{cr,fi}$	[mm]	4 x h_{ef}							

The characteristic resistance for pull-out failure, concrete cone failure, concrete pry-out failure and concrete edge failure shall be calculated according to TR 020 or CEN/TS 1992/4

1) Single anchors are anchors not affected by concrete edge and anchor spacing influence.

2) Not for using in prestressed hollow core slabs.