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Technical data for single fastening (ETAG001 Annex C)

Technical characteristic without fire exposure for single fastening TSM LT A4													
Screw size TSM high performance LT				**TSM 6**			**TSM 8**			**TSM 10**		
nominal embedment depth	h_{nom}		[mm]	h	$h_{nom,2}$	$h_{nom,3}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$
				35	**45**	**55**	**45**	**55**	**65**	**55**	**75**	**85**
nominal diametrer of drill bit	d_0		[mm]	6			8			10		
depth of drill hole	h_0	min	[mm]	40	50	60	55	65	75	65	85	95
effective anchorage depth	h_{ef}		[mm]	25	34	42	32	41	49	40	57	65
diameter of clearance hole in the fixture	d_f	max	[mm]	8			12			14		
permissible tension load in cracked concrete [2);3)]	N_{zul}		[kN]	1,2	0,7	1,4	1,4	2,6	3,8	2,9	6,2	8,095
permissible shear load in cracked concrete [2);3)]	V_{zul}		[kN]	2,1	4,0	4,0	6,2	7,7	9,7	10,371	17,6	19,4
perm. tension load in non-cracked concrete [2);3)]	N_{zul}		[kN]	1,7	1,9	4,1	4,286	5,7	8,095	5,2	9,0	11,905
perm. shear load in non-cracked concrete [2);3)]	V_{zul}		[kN]	3,0	4,0	4,0	7,7	7,7	9,7	12,9	19,4	19,4
permissible bending resistance	M_{zul}		[kN]	6,2			14,9			32,0		
minimum edge distance	C_{min}		[mm]	35			35			40		
minimum spacing	S_{min}		[mm]	35			35			40		
minimum thickness of member	h_{min}		[mm]	80		100	80	100	120	100	130	
installation torque (with metric connection thread)	T_{inst}		[Nm]	10			20			40		
maximum torque (with Impact screw driver)			[Nm]	160			300			450		
ETA seismic C1				No	Yes		Yes	No	Yes	Yes	No	Yes

1) only for statically indeterminate non-strucutral systems in dry conditions
2) the partial safety factor for material resistance from the approval γ_M=1,5 as well a partial safety factor for load actions γ_F=1,4 were considered for determining the load.
3) these values apply without influence of the spacing and edge distances

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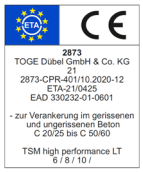

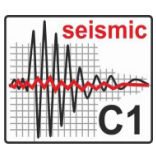

Technical characteristics under fire exposure for single fastening TSM LT A4

Screw size TSM high performance LT				TSM 6			TSM 8			TSM 10		
nominal embedment depth		h_{nom}	[mm]	$h_{nom,1}$ [1)]	$h_{nom,2}$	$h_{nom,3}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$	$h_{nom,1}$	$h_{nom,2}$	$h_{nom,3}$
				35	45	55	45	55	65	55	75	85
permissible load under tensile and shear use ($F_{zul,fi} = N_{zul,fi} = V_{zul,fi}$)												
fire resistance class												
R 30	permissible load	$F_{zul,fi\ 30}$	[kN]	0,5	0,4	0,8	0,8	1,4	2,0	1,5	3,3	4,3
R 60		$F_{zul,fi\ 60}$	[kN]	0,5	0,4	0,8	0,8	1,4	1,7	1,5	3,3	3,3
R 90		$F_{zul,fi\ 90}$	[kN]	0,5	0,4	0,6	0,8	1,1	1,1	1,5	2,3	2,3
R 120		$F_{zul,fi\ 120}$	[kN]	0,4	0,3	0,4	0,6	0,7	0,7	1,2	1,7	1,7
R 30		$M_{zul,fi\ 30}$	[Nm]	0,7			2,4			5,9		
R 60		$M_{zul,fi\ 60}$	[Nm]	0,6			1,8			4,5		
R 90		$M_{zul,fi\ 90}$	[Nm]	0,5			1,2			3,0		
R 120		$M_{zul,fi\ 120}$	[Nm]	0,3			0,9			2,3		
edge distance												
R 30 bis R 120		$C_{cr,fi}$	[mm]	$2 \times h_{ef}$								
the edge distance must be at least 300 mm if the fire stress of more than one side attacks												
spacing												
R 30 bis R 120		$S_{cr,fi}$	[mm]	$4 \times h_{ef}$								
concrete pry-out failure												
R 30 bis R 120		k	[-]	1	1,6		2,1	2,8		2,5		
for wet concrete, the anchoring depth must be increased by at least 30 mm												

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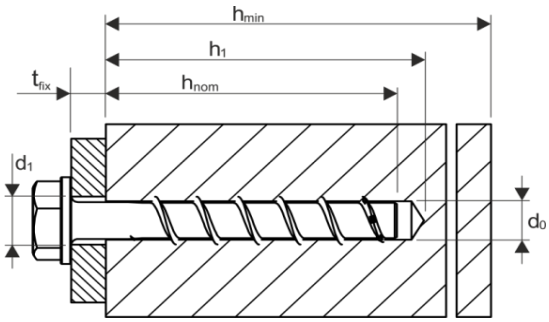
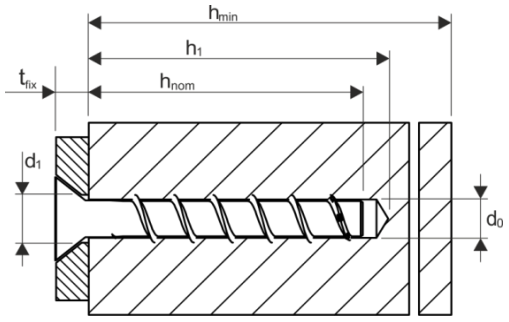
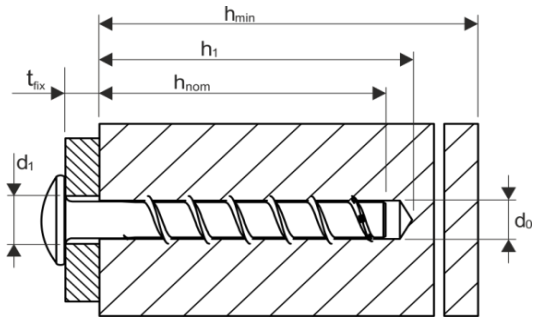
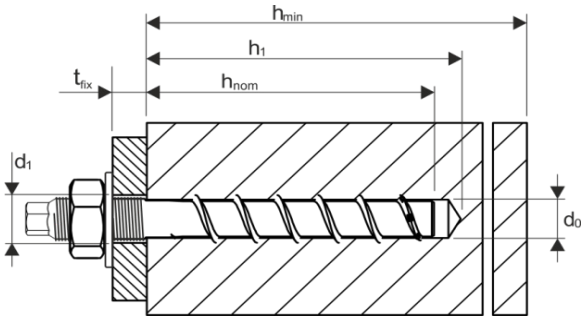
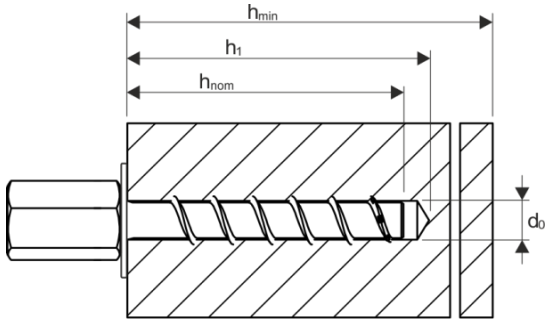


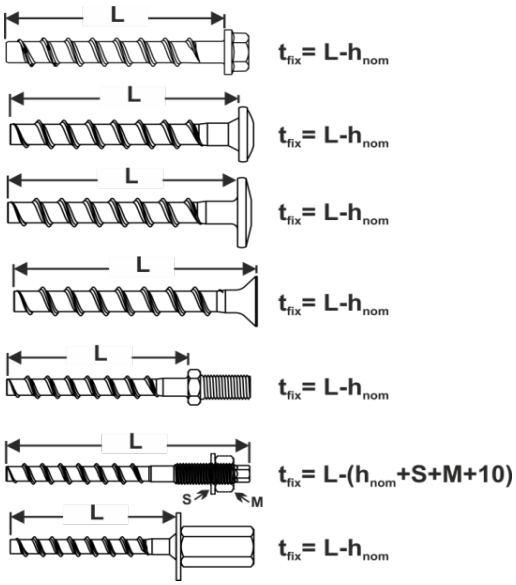


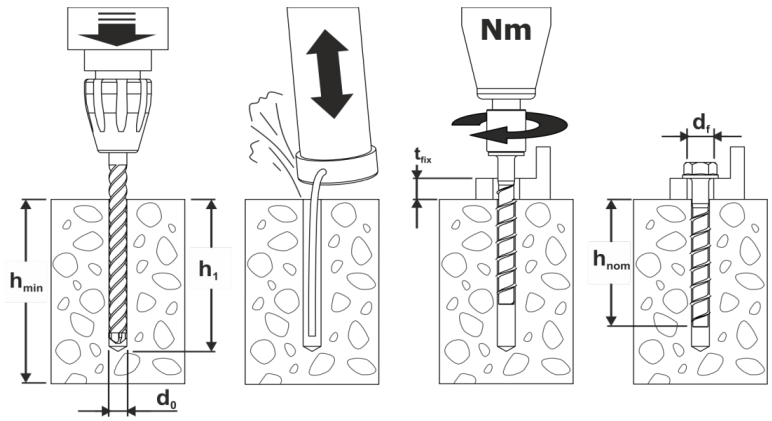






Installation notes:





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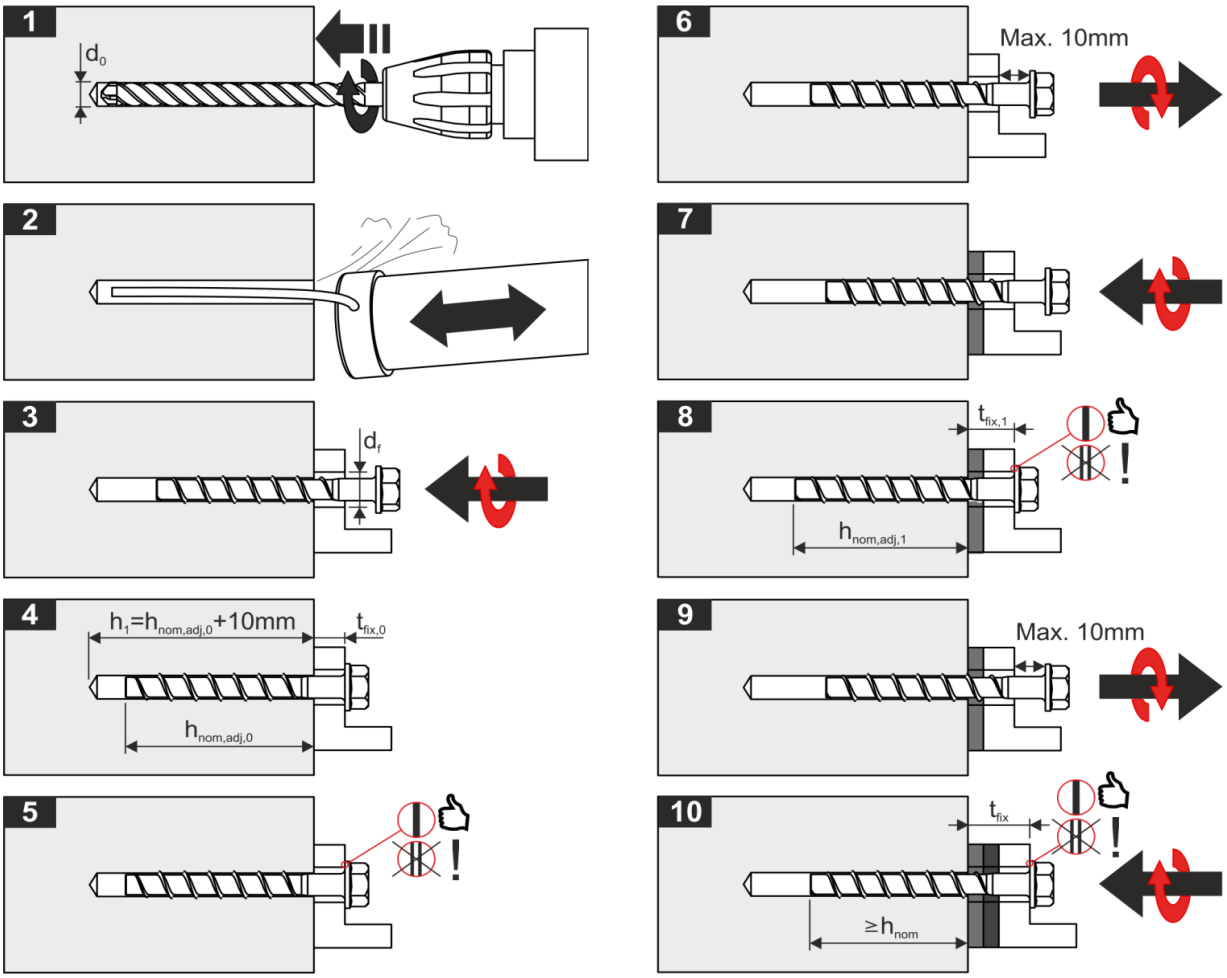
Installation instructions when adjusting for sizes 6 to 10



Important!!!

The anchor may be adjusted maximum two times while the anchor may turn back at most 10 mm.
The total allowed thickness of shims added during the adjustment process is 10 mm.
The final embedment depth after adjustment process must be equal or longer than h_{nom}.

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