Fix Master Toge Dübel

Technical data for single fastening (ETAG001 Annex C)

ETA-15/0514
zur Verankerung im gerissenen und ungerissenen Beton

Technical values without fire exposure for individual fastening: TSM / TSM A4 / TSM HCR

TSM high performance screw size			TSM 6		TSM 8			TSM 10			TSM 12			TSM 14		
Nominal embedment depth	h_{nom}	[mm]	$h_{nom,1}$ 40	$h_{nom,2}$ 55	$h_{nom,1}$ 45	$h_{nom,2}$ 55	$h_{nom,3}$ 65	$h_{nom,1}$ 55	$h_{nom,2}$ 75	$h_{nom,3}$ 85	$h_{nom,1}$ 65	$h_{nom,2}$ 85	$h_{nom,3}$ 100	$h_{nom,1}$ 75	$h_{nom,2}$ 100	$h_{nom,3}$ 115
Nominal drill bit diameter	d_0	[mm]	6		8			10			12			14		
Depth of the drill hole	h_1 ≥	[mm]	45	60	55	65	75	65	85	95	75	95	110	85	110	125
Effective anchorage depth	h_{ef}	[mm]	31	44	35	43	52	43	60	68	50	67	80	58	79	92
Through-hole in fixture to be attached	d_f ≤	[mm]	8		12			14			16			18		
Permissible tensile loads in cracked concrete [1);2)]	N_{zul}	[kN]	1,0	1,9	2,4	4,3	5,7	4,3	8,0	9,6	5,7	9,4	12,3	7,6	12,0	15,1
Permissible shear loads in cracked concrete [1);2)]	V_{zul}	[kN]	3,3		8,1			16,2			20,0			26,7		
Permissible tensile loads in non-cracked concrete [1);2)]	N_{zul}	[kN]	1,9	4,3	3,6	5,7	7,6	5,7	9,5	12,0	7,6	13,2	17,2	10,6	17,0	21,2
Permissible shear loads in non-cracked concrete [1);2)]	V_{zul}	[kN]	3,3		8,1			16,2			20,0			26,7		
Minimum edge distance	C_{min}	[mm]	40		40	50		50			50		70	50	70	
Minimum spacing	S_{min}	[mm]	40		40	50		50			50		70	50	70	
Minimum concrete thickness	h_{min}	[mm]	100		100		120	100	130		120	130	150	130	150	170
Installation torque	T_{inst}	[Nm]	10		20			40			60			80		
Max. torque		[Nm]	160		300			400			500			500		
ETA Seismic C1	**C1**		x		x		Yes	x		Yes	x		Yes	x		Yes

[1)] The partial safety factor for material resistance from the approval γ_M=1.5 as well a partial safety factor for load γ_F=1.4 were considered for determining the load.

[2)] The influence of spacing and edge distances are not taken into count for load values.

Technical values with fire exposure for individual fastening: TSM (steel, A4 and HCR)

TSM high performance screw size				TSM 6		TSM 8			TSM 10			TSM 12			TSM 14		
Nominal embedment depth		h_{nom}	[mm]	$h_{nom,1}$ 40	$h_{nom,2}$ 55	$h_{nom,1}$ 45	$h_{nom,2}$ 55	$h_{nom,3}$ 65	$h_{nom,1}$ 55	$h_{nom,2}$ 75	$h_{nom,3}$ 85	$h_{nom,1}$ 65	$h_{nom,2}$ 85	$h_{nom,3}$ 100	$h_{nom,1}$ 75	$h_{nom,2}$ 100	$h_{nom,3}$ 115
Permissible tensile- and shear loads ($F_{zul,fi}$ = $N_{zul,fi}$ = $V_{zul,fi}$)																	
Fire resistance class																	
R 30	**Permissible resistance**	$F_{zul,fi\ 30}$	[kN]	0,5	0,9	1,3	2,3	2,3	2,3	4,1	4,3	3,0	5,0	6,7	3,9	8,8	9,1
R 60		$F_{zul,fi\ 60}$	[kN]	0,5	0,8	1,3	1,7	1,7	2,3	3,3	3,3	3,0	5,0	5,8	3,9	8,2	8,2
R 90		$F_{zul,fi\ 90}$	[kN]	0,5	0,6	1,3	1,1	1,1	2,3	2,2	2,2	3,0	4,2	4,2	3,9	5,9	5,9
R 120		$F_{zul,fi\ 120}$	[kN]	0,4	0,4	0,7	0,7	0,7	1,7	1,7	1,7	2,4	3,4	3,4	3,1	4,8	4,8
R 30		$M^0_{zul,fi\ 30}$	[kN]	0,7		2,4			5,9			12,3			20,4		
R 60		$M^0_{zul,fi\ 60}$	[kN]	0,6		1,8			4,5			9,7			15,9		
R 90		$M^0_{zul,fi\ 90}$	[kN]	0,5		1,2			3,0			7,0			11,6		
R 120		$M^0_{zul,fi\ 120}$	[kN]	0,3		0,9			2,3			5,7			9,4		
Edge distance																	
R 30 to R 120		$C_{cr,fi}$	[mm]	$2 \times h_{ef}$													
The edge distance must be ≥ 300 mm if the exposure to fire is from more than one side																	
Spacing																	
R 30 to R 120		$S_{cr,fi}$	[mm]	$2 \times C_{cr,fi}$													
Concrete edge failure																	
R 30 to R 120		**k**	[-]	1,0													
For damp concrete the anchorage depth must be increased by at least 30 mm																	

[1)] The partial safety factor for material resistance from the approval γ_M=1.0 as well a partial safety factor for load γ_F=1.0 were considered for determining the load.

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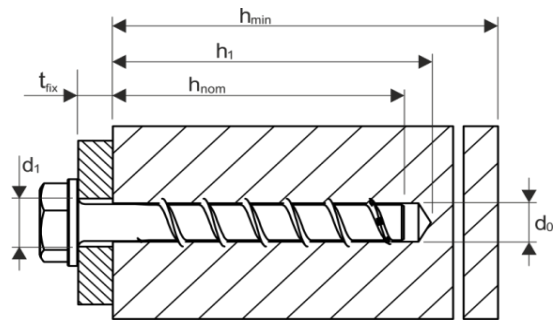
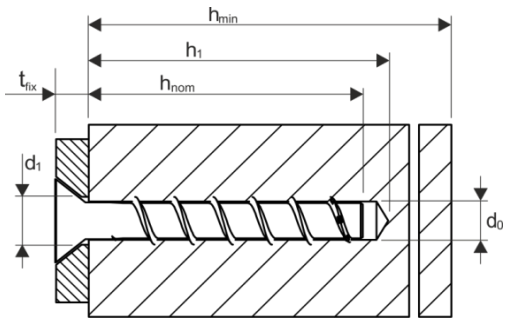
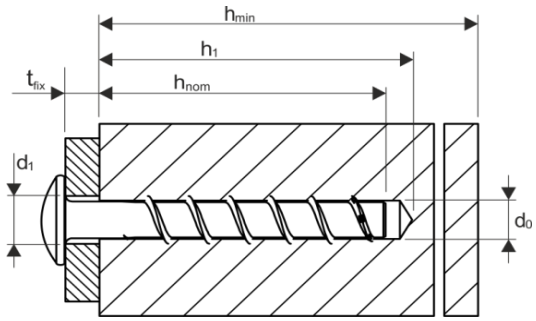
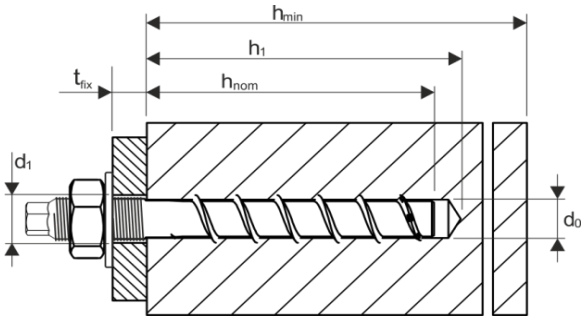
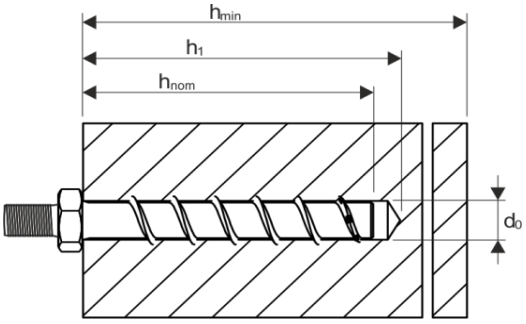
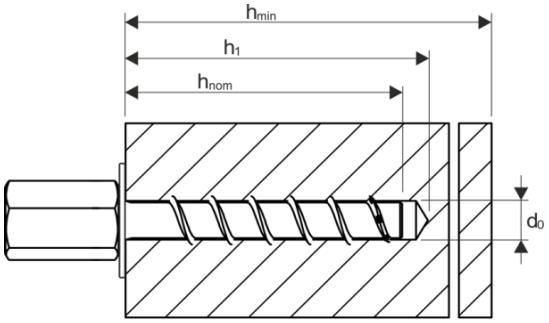




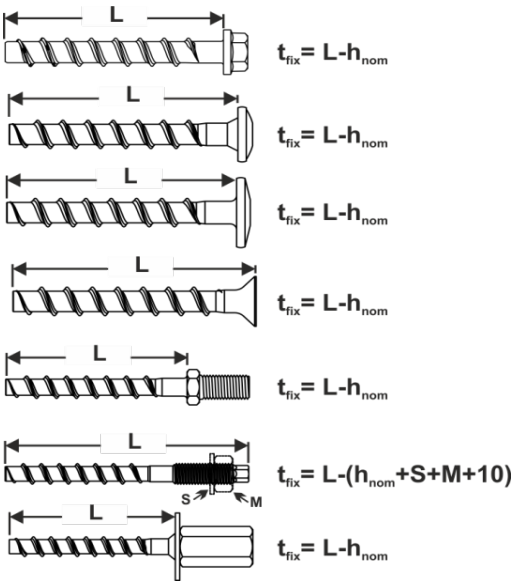


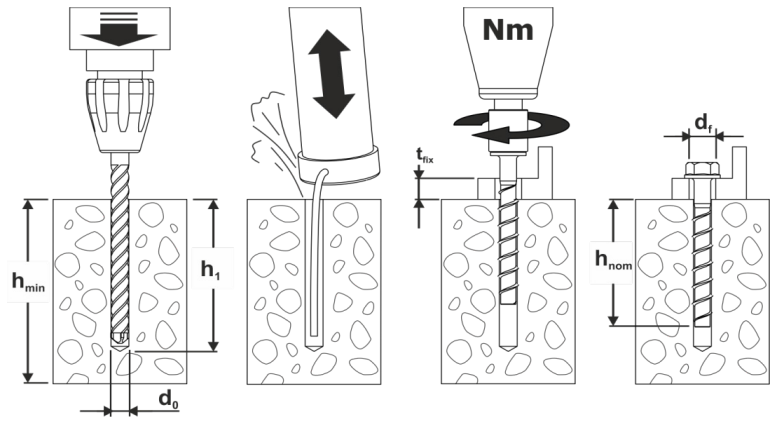






Installation notes:





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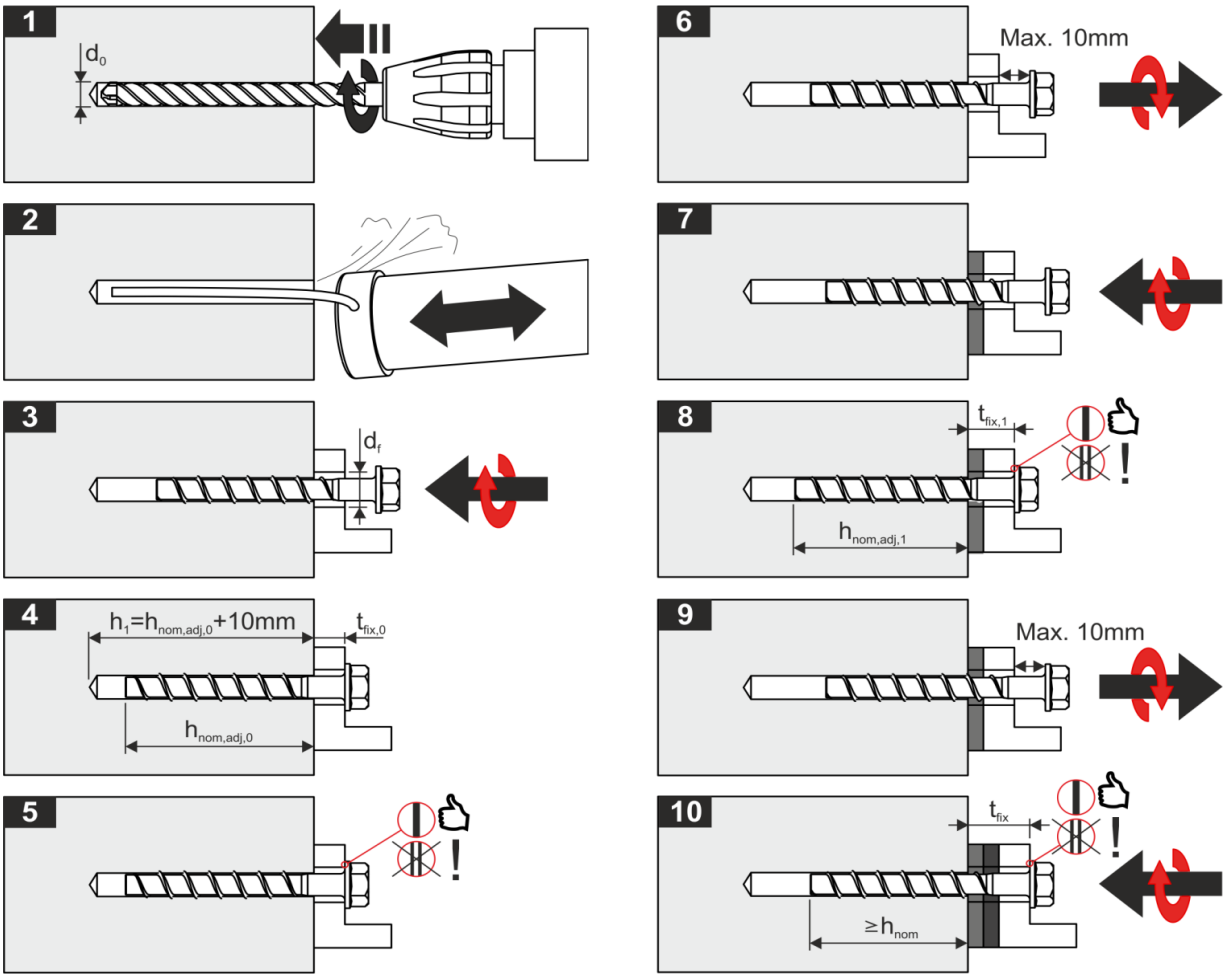
Installation instructions when adjusting for sizes 8 to 14



Important!!!

The screw may be adjusted a maximum of two times. In the process the screw may be screwed back by a maximum of 10 mm at a time, with total maximum of 10 mm. The required installation depth hnom must still be adhered to after adjustment.

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