Technical data

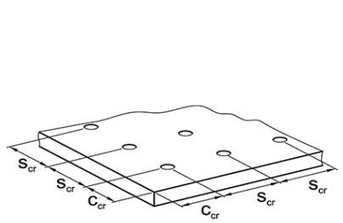
Screwbolt TSM

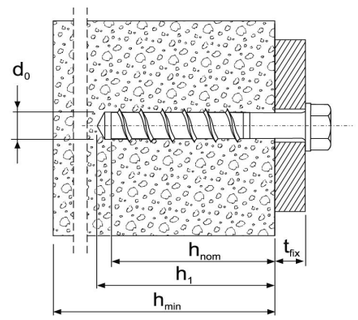
Extract from application conditions of ETA-16/0655
Admissible loads not affected by centre and edge distances.
Total safety factor respected according ETAG 001 (γ_M und γ_F).

Loads and performance date	Screwbolt TSM		TSM 6		TSM 8			TSM 10			TSM 12		
Nominal embedment depth 1	$h_{nom\,1}$	[mm]	-	-	45	-	-	55	-	-	65	-	-
Nominal embedment depth 2	$h_{nom\,2}$	[mm]	40	-	-	55	-	-	75	-	-	85	-
Nominal embedment depth 3	$h_{nom\,3}$	[mm]	-	55	-	-	65	-	-	85	-	-	100
Approved loads, tension	cracked concrete												
	C20/25 appr. N.	[kN]	1,0	1,9	2,4	4,3	5,7	4,3	8,0	9,6	5,7	9,4	12,0
	C25/30 appr. N.	[kN]	1,0	2,1	2,6	4,7	6,3	4,7	8,7	10,5	6,3	10,3	13,4
	C30/37 appr. N.	[kN]	1,2	2,3	2,9	5,2	7,0	5,2	9,7	11,7	7,0	11,4	14,9
	C40/50 appr. N.	[kN]	1,3	2,7	3,4	6,1	8,1	6,1	11,3	13,6	8,1	13,3	17,3
	C50/60 appr. N.	[kN]	1,5	3,0	3,7	6,6	8,9	6,6	12,3	14,9	8,9	14,6	19,0
Approved loads, tension	non-cracked concrete												
	C20/25 appr. N.	[kN]	1,9	4,3	3,6	5,7	7,6	5,7	9,5	11,9	7,6	13,2	17,2
	C25/30 appr. N.	[kN]	2,1	4,7	3,9	6,3	8,3	6,3	10,4	13,0	8,3	14,4	18,8
	C30/37 appr. N.	[kN]	2,3	5,2	4,3	7,0	9,3	7,0	11,6	14,5	9,3	16,0	20,9
	C40/50 appr. N.	[kN]	2,7	6,1	5,1	8,1	10,8	8,1	13,5	16,8	10,8	18,7	24,3
	C50/60 appr. N.	[kN]	3,0	6,6	5,5	8,9	11,8	8,9	14,8	18,4	11,8	20,4	26,7
	cracked / non-cracked concrete												
Approved loads, shear	C20/25 appr. V.	[kN]	3,0/4,0	4,0/4,0	3,5/5,0	4,8/6,8	6,4/9,0	4,8/6,8	15,9/19,4	19,2/19,4	6,1/8,5	18,8/24,0	24,0/24,0
	≥ C25/30 appr. V.	[kN]	3,2/4,0	4,0/4,0	3,9/5,5	5,3/7,4	7,0/9,7	5,3/7,4	17,5/19,4	19,4/19,4	6,6/9,3	20,6/24,0	24,0/24,0
Approved bending moments	appr. M	[Nm]	6,2	6,2	14,9	14,9	14,9	32,0	32,0	32,0	64,6	64,6	64,6
Spacing and edge distance													
Effective anchorage depth	h_{ef}	[mm]	31	44	35	43	52	43	60	68	50	67	80
Characteristic spacing	$s_{cr,\,N}$	[mm]	93	132	105	129	156	129	180	204	150	201	240
Characteristic edge distance	$c_{cr,\,N}$	[mm]	46,5	66	52,5	64,5	78	64,5	90	102	75	100,5	120
Minimum thinckness of concrete slab	h_{min}	[mm]	80	80	80	80	80	80	90	102	80	101	120
Minimum spacing	s_{min}	[mm]	40	40	40	50	50	50	50	50	50	50	70
Minimum edge distance	c_{min}	[mm]	40	40	40	50	50	50	50	50	50	50	70
Installation parameters													
Drill hole diameter	d_o	[mm]	6	6	8	8	8	10	10	10	12	12	12
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8	8	12	12	12	14	14	14	16	16	16
Depth of drill hole	$h_1 \geq$	[mm]	45	60	55	65	75	65	85	95	75	95	110
Installation torque with metric con. thread	$T_{inst} \leq$	[Nm]	10	10	20	20	20	40	40	40	60	60	60
Tangential impact screwdriver [1)]	$T_{imp,max}$	[Nm]	160	160	300	300	300	400	400	400	650	650	650

[1)] It is possible to fit with a tangential screwdriver with maximum output of $T_{imp,max}$ in accordance with the manufacturer's specifications

Approved loads with exposure to fire						
			Maximum tension load in fire tests for the fire resistance classes [kN]			
	Documents	Type	R 30 (30 min)	R 60 (60 min)	R 90 (90 min)	R 120 (120 min)
Screwbolt TSM galvanized steel	ETA 16/0655	TSM 6 h_{nom} 40	0,50	0,50	0,50	0,40
		TSM 6 h_{nom} 55	0,90	0,80	0,60	0,40
		TSM 8 h_{nom} 45	1,25	1,25	1,10	0,70
		TSM 8 h_{nom} 55	2,25	1,70	1,10	0,70
		TSM 8 h_{nom} 65	2,40	1,70	1,10	0,70
		TSM 10 h_{nom} 55	2,25	2,25	2,25	1,70
		TSM 10 h_{nom} 75	4,18	3,30	2,30	1,70
		TSM 10 h_{nom} 85	4,40	3,30	2,30	1,70
		TSM 12 h_{nom} 65	3,00	3,00	3,00	2,40
		TSM 12 h_{nom} 85	4,94	4,94	4,20	3,40
		TSM 12 h_{nom} 100	6,44	5,80	4,20	3,40





Extract from application conditions of ETA-16/0656
For multiple mounting solutions of non-load-bearings systems acc. ETAG001, part 6. Safety factor acc. ETAG 001 is included (γ_M und γ_F).
The perm. loads per fixing point for the respective countries are regulated in ETAG 001, part 6.

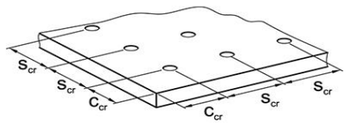
Loads and performance data	Screwbolt TSM		TSM 6	
Nominal embedment depth 1	$h_{nom\,1}$	[mm]	35	-
Nominal embedment depth 2	$h_{nom\,2}$	[mm]	-	-
Nominal embedment depth 3	$h_{nom\,3}$	[mm]	-	55
Approved loads, tension	cracked concrete			
	C20/25 appr. N.	[kN]	1,4	3,6
	C25/30 appr. N.	[kN]	1,6	4,0
	C30/37 appr. N.	[kN]	1,7	4,4
	C40/50 appr. N.	[kN]	2,0	5,1
	C50/60 appr. N.	[kN]	2,3	5,6
Approved loads, tension	non-cracked concrete			
	C20/25 appr. N.	[kN]	1,4	3,6
	C25/30 appr. N.	[kN]	1,6	4,0
	C30/37 appr. N.	[kN]	1,7	4,4
	C40/50 appr. N.	[kN]	2,0	5,4
	C50/60 appr. N.	[kN]	2,3	5,6
	cracked / non-concracked concrete			
Approved loads, shear	C20/25 appr. V.	[kN]	2,3/3,3	4,0/4,0
	≥ C25/30 appr. V.	[kN]	2,6/3,7	4,0/4,0
Approved bending moments	appr. M	[Nm]	6,2	6,2
Spacing and edge distance				
Effective anchorage depth	h_{ef}	[mm]	27	44
Characteristic spacing	$s_{cr,\,N}$	[mm]	81	132
Characteristic edge distance	$c_{cr,\,N}$	[mm]	40,5	66
Minimum thinckness of concrete slab	h_{min}	[mm]	80	100
Minimum spacing	s_{min}	[mm]	35	40
Minimum edge distance	c_{min}	[mm]	35	40
Installation parameters				
Drill hole diameter	d_o	[mm]	6	6
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8	8
Depth of drill hole	$h_1 \geq$	[mm]	40	60
Installation torque with metric con. thread	$T_{inst} \leq$	[Nm]	10	10
Tangential impact screwdriver [1)]	$T_{imp,max}$	[Nm]	160	160

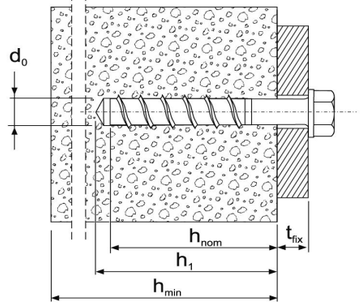
[1)] It is possible to fit with a tangential screwdriver with maximum output of Timp,max in accordance with the manufacturer's specifications

Screwbolt TSM

Approved loads with exposure to fire (Multiple use for non-structural applications according to ETAG 001, Part 6; Steel, zinc plated/Steel, zinc flake coated)						
			Maximum tension load in fire tests for the fire resistance classes [kN]			
	Dokument	Typ	R 30 (30 min)	R 60 (60 min)	R 90 (90 min)	R 120 (120 min)
Screwbolt TSM galvanized steel	ETA-16/0656	TSM 6 h_{nom} 35	0,65	0,65	0,60	0,40
		TSM 6 h_{nom} 55	0,90	0,80	0,60	0,40

Loads and performance data	Screwbolt TSM		TSM 6		
Precast pre-stressed hollow core slabs C30/37 bis C50/60					
Nominal embedment depth	h_{nom}	[mm]	≥ 35		
	Precast pre-stressed hollow core slabs C30/37 bis C50/60				
Flange thickness	d_b ≥	[mm]	25	30	35
	$F_{appr.}$	[kN]	0,48	0,95	1,43
Spacing and edge distance					
Minimum spacing	s_{min}	[mm]	100		
Minimum edge distance	c_{min}	[mm]	100		
Installation parameters					
Drill hole diameter	d_o	[mm]	6		
Diameter of clearance hole in the fixture	d_f	[mm]	8		
Depth of drill hole	h_1 ≥	[mm]	40		
Installation torque	T_{inst} ≤	[Nm]	10		





zur Verankerung im gerissenen und ungerissenen Beton
ETA-16/0655

Europäische Technische Zulassung
ETA-16/0656

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