

Technical data

Screwbolt TSM



Extract from the conditions of use of the European Technical Assessment ETA-16/0655 for use in cracked and non-cracked concrete (Option 1).

Permissible loads without influence of axial and edge distances according to EN 1992-4. The total safety factor (γ_M and γ_F) was taken into account.

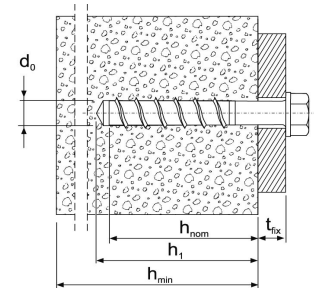
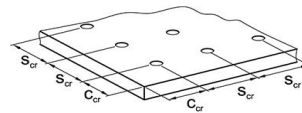
Loads and performance date	Screwbolt TSM		TSM 6		TSM 8			TSM 10			TSM 12		
Nominal embedment depth 1	$h_{nom 1}$	[mm]	-	-	45	-	-	55	-	-	65	-	-
Nominal embedment depth 2	$h_{nom 2}$	[mm]	40	-	-	55	-	-	75	-	-	85	-
Nominal embedment depth 3	$h_{nom 3}$	[mm]	-	55	-	-	65	-	-	85	-	-	100
Approved loads, tension	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	uncracked 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	
Approved loads, shear	cracked / uncracked concrete												
	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 thickness of concrete slab	h_{min}	[mm]	100	100	100	100	120	100	130	130	120	130	150
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

Technical data

Screwbolt TSM

Approved loads with exposure to fire			Max. 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



Technical data

Screwbolt TSM

Extract from the conditions of use of the European Technical Assessment ETA-16/0656 for use for redundant non-structural systems.

Permissible loads without influence of axial and edge distances according to EN 1992-4. The total safety factor (γ_M and γ_F) has been considered. The maximum permissible load per fixing point may be less than the permissible load of the anchor, depending on national regulations.

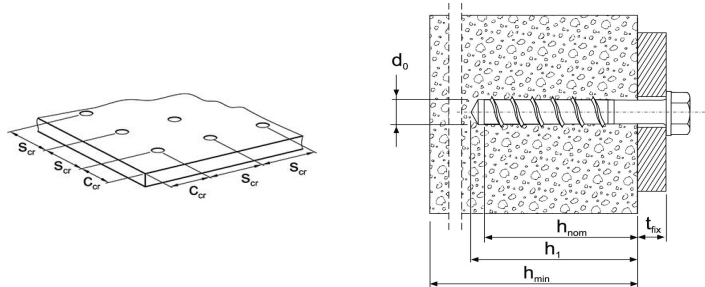
Loads and performance data	Screwbolt TSM		TSM 6	
Nominal embedment depth 1	$h_{nom 1}$	[mm]	35	-
Nominal embedment depth 2	$h_{nom 2}$	[mm]	-	-
Nominal embedment depth 3	$h_{nom 3}$	[mm]	-	55
Approved loads, tension	cracked concrete			
	C20/25 appr. N.	[kN]	1,4	3,6
	C25/30 appr. N.	[kN]	1,6	4,0
	C30/37 appr. N.	[kN]	1,7	4,4
	C40/50 appr. N.	[kN]	2,0	5,1
Approved loads, tension	uncracked 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
Approved loads, shear	cracked / uncracked concrete			
	C20/25 appr. V.	[kN]	2,3/3,3	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 thickness 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 $T_{imp,max}$ in accordance with the manufacturer's specifications

Technical data

Screwbolt TSM

Approved loads with exposure to fire in cracked and uncracked concrete C20/25 to C50/60				
Approved loads, tension	R30 appr. Nfi	[kN]	0,65	0,90
	R60 appr. Nfi	[kN]	0,65	0,80
	R90 appr. Nfi	[kN]	0,60	0,60
	R120 appr. Nfi	[kN]	0,40	0,40
Approved loads, shear	R30 appr. Nfi	[kN]	0,65	0,90
	R60 appr. Nfi	[kN]	0,65	0,80
	R90 appr. Nfi	[kN]	0,50	0,60
	R120 appr. Nfi	[kN]	0,40	0,40
Characteristic spacing	$s_{cr,fi}$	[mm]	108	176
Characteristic edge distance	$c_{cr,fi}$	[mm]	54	88



Technical data

Screwbolt TSM

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	$d_b \geq$	[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	$h_1 \geq$	[mm]	40		
Installation torque	$T_{inst} \leq$	[Nm]	10		