TSA SHIELD ANCHORS

Features:

- 3 way Expansion
- Suitable for cracked or non-cracked concrete
- Non-Structural multiple use applications
- Zinc Plating, minimum 5um
- Fire Rated

Benefits:

- Quick and simple installation
- One anchor for concrete from C20/25 to C50/60
- Shield only for any type of bolt or threaded rod

Concrete Ranges:	C20/C25 according to EN 206:2013+A1:2016
Certification:	ITB Test Report ITB-KOT-2021/1725

Product Range

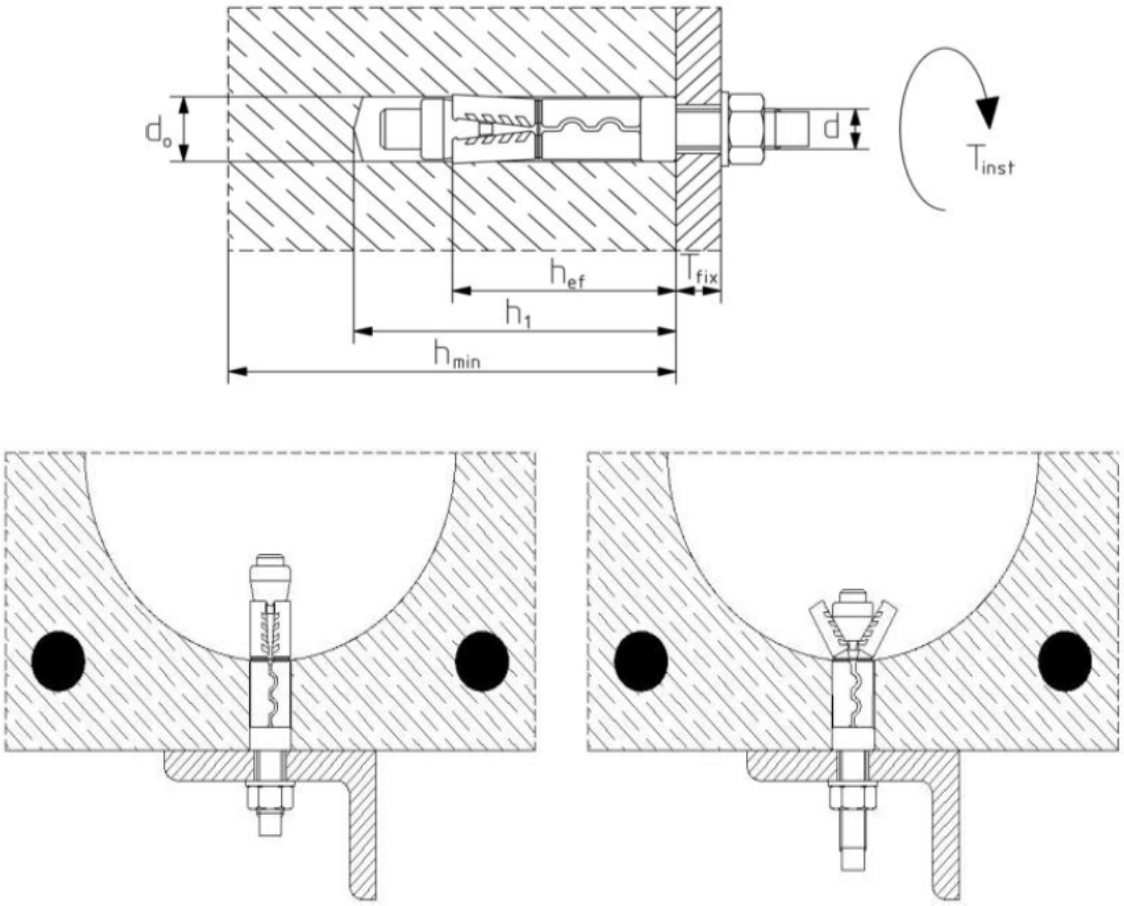
Product Code	Thread Diameter	Anchor Length	Drill Hole Diameter	Drill Hole Depth	Maximum Fixture Thickness	Effective Embedment Depth	Fixture Clearance Hole	Tightening Torque
	d	L	d_o	h_{nom}	t_{fix}	h_{ef}	d_f	T_{inst}
	mm	mm	mm	mm	mm	mm	mm	Nm
Shield Only								
TSA06	6	45	12	50/35(1)	N/A	35/30(2)	7	6
TSA08	8	50	14	55/35(1)		40/30(2)	10	14
TSA10	10	60	16	65/35(1)		50/30(2)	12	27
TSA12	12	70	20	85/35(1)		60/30(2)	14	46
TSA16	16	95	25	125		85	18	110
Loose Bolt								
TSA0610L	6	55	12	50/35(1)	10	35/30(2)	7	6
TSA0810L	8	60	14	55/35(1)	10	40/30(2)	10	14
TSA0825L		75			25			
TSA1010L	10	70	16	65/35(1)	10	50/30(2)	12	27
TSA1025L		85			25			
TSA1050L		110			50			
TSA1210L	12	85	20	85/35(1)	10	60/30(2)	14	46
TSA1225L		100			25			
Eye Bolt								
TSAE06	6	50	12	50/35(1)	10	35/30(2)	7	6
TSAE08	8	65	14	55/35(1)	11.5	40/30(2)	10	14
TSAE10	10	75	16	65/35(1)	14	50/30(2)	12	27
TSAE12	12	90	20	85/35(1)	16	60/30(2)	14	46
Hook Bolt								
TSAH06	6	50	12	50/35(1)	9.5	35/30(2)	7	6
TSAE08	8	65	14	55/35(1)	11	40/30(2)	10	14
TSAE10	10	75	16	65/35(1)	14	50/30(2)	12	27
TSAE12	12	90	20	85/35(1)	16.2	60/30(2)	14	46

(1) & (2) Relate to Hollow core concrete slabs

Installation Data

Anchor Diameter			M6	M8	M10	M12
Solid						
Minimum Thickness of Substrate	h_{min}	[mm]	100	100	100	120
Nominal Spacing	s_{nom}	[mm]	105	120	150	180
Nominal Edge Distance	c_{nom}	[mm]	100	100	100	120
Minimum Spacing	s_{min}	[mm]	100	120	150	180
Minimum Edge Distance	c_{min}	[mm]	100	100	100	120
Hollow Core Concrete Slabs						
Minimum Thickness of Substrate	h_{min}	[mm]	30	30	30	30
Minimum Spacing	s_{min}	[mm]	200	200	200	240
Minimum Edge Distance	c_{min}	[mm]	105	112	150	180

Solid Concrete and Hollow Core Concrete Slab Installation



Load Data

(Cracked and Non-Cracked concrete)

Characteristics Resistance (TSA, TSAP, TSAL, TSAE)

Anchor Diameter			M6	M8	M10	M12	M16
N_{Rk}		[kN]	5.5	6.5	8.5	12.0	15.0
V_{Rk}		[kN]	5.5	6.5	8.5	12.0	15.0

Design Resistance

Anchor Diameter			M6	M8	M10	M12	M16
N_{Rd}		[kN]	2.2	2.6	3.4	4.8	6.0
V_{Rd}		[kN]	4.4	5.2	6.8	9.6	12.0

Recommended Resistance

Anchor Diameter			M6	M8	M10	M12	M16
N_{rec}		[kN]	1.6	1.9	2.4	3.4	4.3
V_{rec}		[kN]	3.1	3.7	4.9	6.9	8.6

Includes Partial Safety Factor γ = 1.4 in the absence of national regulations and type of loading Data is for Static and Quasi Static Loads for a single anchor for multiple use

Hollow Core Concrete Slabs (TSA, TSAP, TSAL, TSAE)

Characteristics Resistance

Anchor Diameter			M6	M8	M10	M12
N_{Rk}		[kN]	3.5	9.5	13.0	16.0
V_{Rk}		[kN]	3.5	9.5	13	16.0

Design Resistance

Anchor Diameter			M6	M8	M10	M12
N_{Rd}		[kN]	1.4	3.8	5.2	6.4
V_{Rd}		[kN]	1.1	3.0	4.2	5.1

Recommended Resistance

Anchor Diameter			M6	M8	M10	M12
N_{rec}		[kN]	1.0	2.7	3.7	4.6
V_{rec}		[kN]	0.8	2.2	3.0	3.7

Includes Partial Safety Factor γ = 1.4 in the absence of national regulations and type of loading Data is for Static and Quasi Static Loads for a single anchor for multiple use

(Cracked and Non-Cracked concrete) (TSAH)

Characteristics Resistance

Anchor Diameter			M6	M8	M10	M12
N_{Rk}		[kN]	1.5	5.0	6.0	9.0
V_{Rk}		[kN]	1.5	5.0	6.0	9.0

Design Resistance

Anchor Diameter			M6	M8	M10	M12
N_{Rd}		[kN]	0.6	2.0	2.4	3.6
V_{Rd}		[kN]	1.2	4.0	4.8	7.2

Recommended Resistance

Anchor Diameter			M6	M8	M10	M12
N_{rec}		[kN]	0.4	1.4	1.7	2.6
V_{rec}		[kN]	0.9	2.9	3.4	5.1

Includes Partial Safety Factor γ = 1.4 in the absence of national regulations and type of loading Data is for Static and Quasi Static Loads for a single anchor for multiple use

Hollow Core Concrete Slabs (TSAH)

Characteristics Resistance

Anchor Diameter			M6	M8	M10	M12
N_{Rk}		[kN]	1.5	5.0	6.0	9.0
V_{Rk}		[kN]	1.5	5	6	9.0

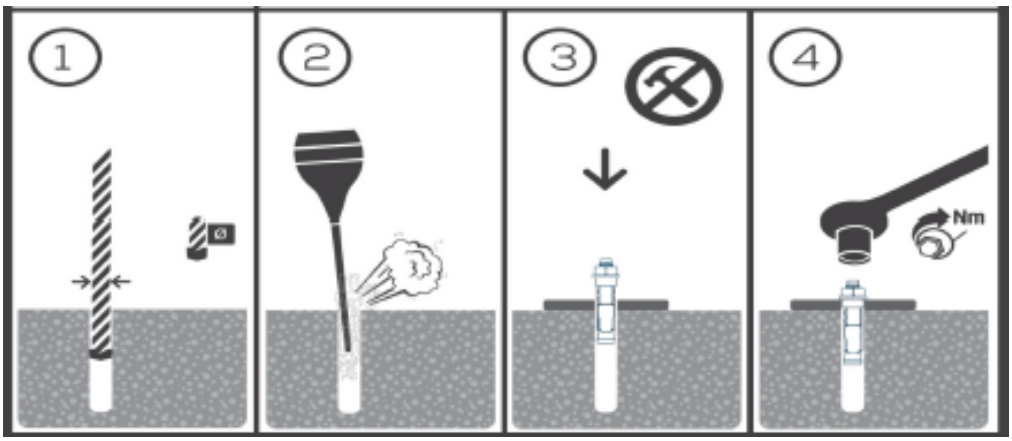
Design Resistance

Anchor Diameter			M6	M8	M10	M12
N_{Rd}		[kN]	0.6	2.0	2.4	3.6
V_{Rd}		[kN]	1.2	4.0	4.8	7.2

Recommended Resistance

Anchor Diameter			M6	M8	M10	M12
N_{rec}		[kN]	0.4	1.4	1.7	2.6
V_{rec}		[kN]	0.9	2.9	3.4	5.1

Includes Partial Safety Factor γ = 1.4 in the absence of national regulations and type of loading Data is for Static and Quasi Static Loads for a single anchor for multiple use

Fire Installation Data

Fire Resistance Class				TSA06[1] TSA06P TSA06L TSAE06 TSAH06	TSA08[1] TSA08P TSA08L TSAE08 TSAH08	TSA10[1] TSA10P TSA10L TSAE10 TSAH10	TSA12[1] TSA12P TSA12L TSAE12 TSAH12	TSA16[1] TSA16P TSA16L
Ordinary concrete, cracked or non-cracked C20/25[3]	R30	Characteristic load capacity ($F_{Rk,fi}$) (5)	kN	1.4/0.4[2]	1.6/1.3[2]	2.1/1.5[2]	3.0/2.3[2]	3.8
	R60		kN	1.4/0.4[2]	1.6/1.3[2]	2.1/1.5[2]	3.0/2.3[2]	3.8
	R90		kN	1.4/0.4[2]	1.6/1.3[2]	2.1/1.5[2]	3.0/2.3[2]	3.8
	R120		kN	1.1/0.3[2]	1.3/1.0[2]	1.7/1.2[2]	2.4/1.8[2]	3.0
Hollow core concrete slabs C40/50[3]	R30		kN	0.9/0.4[2]	1.6/1.3[2]	2.1/1.5[2]	3.0/2.3[2]	
	R60		kN	0.9/0.4[2]	1.6/1.3[2]	2.1/1.5[2]	3.0/2.3[2]	
	R90		kN	0.9/0.4[2]	1.6/1.3[2]	2.1/1.5[2]	3.0/2.3[2]	
	R120		kN	0.7/0.4[2]	1.3/1.0[2]	1.7/1.2[2]	2.4/1.8[2]	
Fastener spacing		$S_{cr,fi}$	mm	4 x h_{ef}				
Edge distance[4]		$C_{cr,fi}$	mm	2 x h_{ef}				
[1] With threaded rod, nuts and washers or bolts and washers greater than grade 4.8								
[2] TSAH Fasteners								
[3] Ordinary concrete according to EN206+A1:2016								
[4] In case of fire effect from more than one side the Edge Distance shall be ≥ 300mm								
[5] Partial Safety Factor $\gamma_{m,fi}$ = 1.0