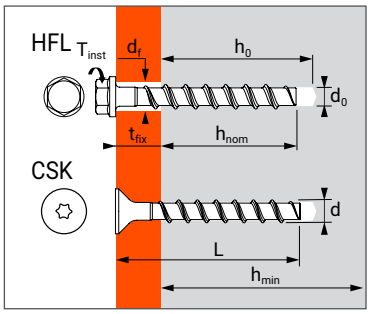
TAPCON XTREM

ETA - 16/0276

Concrete screw anchor for use in cracked and non-cracked concrete and seismic performance categories C1 & C2



CHARACTERISTICS

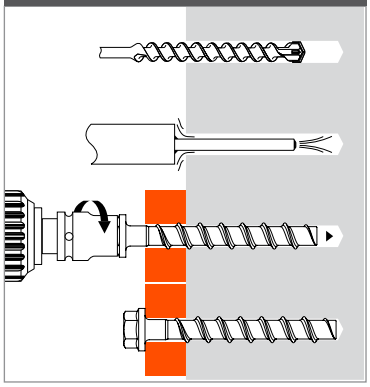
APPLICATION

- Channel, cable tray
- Brackets
- E-Clips, cowhorn
- TRH clip, rod hanging
- Trunking
- Push-pull bars
- Formwork / shuttering

TECHNICAL DATA

VERSION	RANGE	Minimum anchorage depth				Maximum anchorage depth				Thread Ø	Drilling Ø	Total anchor length	Tighten torque	Code
		Embed. depth	Max. thick. of part to be fixed	Drilling depth	Min. thick. of base material	Embed. depth	Max. thick. of part to be fixed	Drilling depth	Min. thick. of base material					
		(mm) $h_{nom,1}$	(mm) t_{fix}	(mm) h_0	(mm) h_{min}	(mm) $h_{nom,2}$	(mm) t_{fix}	(mm) h_0	(mm) h_{min}	(mm) d	(mm) d_0	(mm) L	(Nm) T_{inst}	
HFL	6X50/15	40	10	40	80	-	-	-	-	7,5	6	50	10	058730
	6X80/45-25		40			55	25	60	100			80		058731
	6X100/65-45		60			55	45	60	100			100		058732
	8X50/5	45	5	55	100	-	-	-	-	10,6	8	50	20	058733
	8X60/15		15			-	-	-	-			60		058734
	8X70/25-5		25			65	5	75	120			70		058735
	8X80/35-15		35			65	15	75	120			80		058736
	8X100/55-35		55			65	35	75	120			100		058737
	8X120/75-55		75			65	55	75	120			120		058738
	8X140/95-75		95			65	75	75	120			140		058739
	10X60/5	55	5	65	100	-	-	-	-	12,6	10	60	40	058740
	10X70/15		15			-	-	-	-			70		058741
	10X90/35-5		35			85	5	95	130			90		058742
	10X100/45-15		45			85	15	95	130			100		058743
	10X120/65-35		65			85	35	95	130			120		058744
	10X140/85-55		85			85	55	95	130			140		058745
	10X160/105-75		105			85	75	95	130			160		058746
	12X80/15	65	15	75	120	-	-	-	-	14,6	12	80	60	058747
	12X110/45-10		45			100	10	110	150			110		058748
	14X130/55-15	75	55	85	130	115	15	125	170	16,6	14	130	80	058768
	14X150/75-35		75			115	35	125	170			150		058769
CSK	6X60/25-5	40	20	40	80	55	5	60	100	7,5	6	60	10	058773
	6X80/45-25		40				25					80		058774
	6X100/65-45		60				45					100		058775
	6X120/85-65		80				65					120		058776
	6X140/105-85		100				85					140		058777
	8X80/35-15	45	35	55	80	65	15	75	120	10,5	8	80	20	058653

INSTALLATION



ANCHOR MECHANICAL PROPERTIES

SIZE			Ø6	Ø8	Ø10	Ø12	Ø14
As	[mm^2]	Stressed cross-section	20,4	39,6	65,0	97,7	134,0
W_{el}	[mm^3]	Elastic section modulus	13,0	35,1	74,0	134,0	220,0
$M^0_{Rk,s}$	[Nm]	Characteristic bending moment	10,9	26,0	56,0	113,0	185,0
M	[Nm]	Recommended bending moment	5,0	13,0	28,0	56,5	92,5
SW	[mm]	Key size	13	13	15	17	21

TAPCON XTREM

MINIMUM THICKNESS OF CONCRETE, CHARATERISTIC & MINIMUM DISTANCES FOR SPACING, EDGE

SIZE			Ø6	Ø6	Ø8	Ø8	Ø10	Ø10	Ø12	Ø12	Ø14	Ø14
Embedment depth	h_{nom}	[mm]	40	55	45	65	55	85	65	100	75	115
Minimum thickness of base material	h_{min}	[mm]	100	80	80	80	80	102	80	120	87	138
Characteristic edge and spacing distances for full anchor capacity	C_{cr} ≥	[mm]	60	82,5	67,5	97,5	82,5	127,5	97,5	150	112,5	172,5
	S_{cr} ≥	[mm]	120	165	135	195	165	255	195	300	225	345
Minimum distances for non-cracked concrete	C_{min} S ≥	[mm] [mm]	35	40	35	50	40	50	50	70	70	70
	S_{min} C ≥	[mm] [mm]	35	40	35	50	40	50	50	70	70	70
Minimum distances for cracked concrete	C_{min} S ≥	[mm] [mm]	35	40	35	50	40	50	50	70	70	70
	S_{min} C ≥	[mm] [mm]	35	40	35	50	40	50	50	70	70	70

CHARACTERISTIC RESISTANCES [kN]

Characteristic resistances are shown as informative, and have to be used by application of safety factors.

TENSILE

NON-CRACKED CONCRETE – C20/25

SIZE		Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,1}$	[mm]	40	45	55	65	75
$N_{Rk,p}$	[kN]	4,0	7,5	12,0	16,0	21,7
$h_{nom,2}$	[mm]	55	65	85	100	115
$N_{Rk,p}$	[kN]	9,0	16,0	26,0	35,2	43,4

CRACKED CONCRETE – C20/25

DIMENSIONS		Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,1}$	[mm]	40	45	55	65	75
$N_{Rk,p}$	[kN]	2,0	5,0	9,0	12,0	15,2
$h_{nom,2}$	[mm]	55	65	85	100	115
$N_{Rk,p}$	[kN]	4,0	12,0	19,3	24,6	30,4

SHEAR

CRACKED AND NON-CRACKED CONCRETE – C20/25 to C50/60

SIZE		Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,1}$	[mm]	40	45	55	65	75
$V_{Rk,s}$	[kN]	*7,0*	*13,5*	*22,5*	*33,5*	*56,0*
$h_{nom,2}$	[mm]	55	65	85	100	115
$V_{Rk,s}$	[kN]	*7,0*	*17,0*	*34,0*	*42,0*	*56,0*

RECOMMENDED LOADS OF ONE ANCHOR WITHOUT INFLUENCE OF SPACING & CONCRETE EDGE [kN]

Recommended values are determined from performances given in the ETA, and are guaranteed for spacing ≥ S_{cr} and edge distance ≥ C_{cr}.

TENSILE

NON-CRACKED CONCRETE – C20/25

SIZE		Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,1}$	[mm]	40	45	55	65	75
N_{Rec}	[kN]	1,9	3,6	5,7	7,6	10,3
$h_{nom,2}$	[mm]	55	65	85	100	115
N_{Rec}	[kN]	4,3	7,6	12,4	16,8	20,7

CRACKED CONCRETE – C20/25

DIMENSIONS		Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,1}$	[mm]	40	45	55	65	75
N_{Rec}	[kN]	1,0	2,4	4,3	5,7	10,7
$h_{nom,2}$	[mm]	55	65	85	100	115
N_{Rec}	[kN]	1,9	5,7	9,2	11,7	14,5

$N_{Rec} = \min [N_{Rd,p}; N_{Rd,c}; N_{Rd,s}] / \gamma_F$; $\gamma_F = 1,4$

SHEAR

CRACKED AND NON-CRACKED CONCRETE – C20/25 to C50/60

SIZE		Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,1}$	[mm]	40	45	55	65	75
V_{Rec}	[kN]	*4,0*	*7,7*	*12,9*	*19,1*	*32,0*
$h_{nom,2}$	[mm]	55	65	85	100	115
V_{Rec}	[kN]	*4,0*	*9,7*	*19,4*	*24,0*	*32,0*

$V_{Rec} = V_{Rd,s} / \gamma_F$; $\gamma_F = 1,4$

Nota: The values indicated *in italics and underlined* correspond to steel failure

TAPCON XTREM

i-Expert Software

Design resistances for static, seismic and fire loads are determined from performances given in the ETA, and are guaranteed for spacing ≥ S_{cr} and edge distance ≥ C_{cr}. For project with reduced spacing and edge distance, we recommend to use SPIT i-Expert software to design your project according to EN 1992-4.

DESIGN RESISTANCE FOR STATIC LOADS IN NON CRACKED CONCRETE [kN]

TENSILE

SIZE			Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,1}$	[mm]		40	45	55	65	75
$N_{Rd,uncr}$	[kN]	C20/25	2,7	5,0	8,0	10,7	14,5
		C40/50	3,8	7,1	11,3	15,1	20,5
$h_{nom,2}$	[mm]		55	65	85	100	115
$N_{Rd,uncr}$	[kN]	C20/25	6,0	10,7	17,3	23,5	28,9
		C40/50	8,5	15,1	24,5	33,2	40,9

Distances S_{cr} and C_{cr} must be fulfilled

$N_{Rd,uncr} = \min[N_{Rk,p,uncr} / \gamma_{Mc} ; N_{Rk,s} / \gamma_{Ms,N}]$

$\gamma_{Mc} = 1,5$; $\gamma_{Ms,N} = 1,5$

SHEAR

SIZE			Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,1}$	[mm]		40	45	55	65	75
$V_{Rd,s}$	[kN]	≥ C20/25	*5,6*	*10,8*	*18,0*	*26,8*	*44,8*
$h_{nom,2}$	[mm]		55	65	85	100	115
$V_{Rd,s}$	[kN]	≥ C20/25	*5,6*	*13,6*	*27,2*	*33,6*	*44,8*

$V_{Rd,s} = V_{Rk,s} / \gamma_{Ms,V}$

$\gamma_{Ms,V} = 1,25$

DESIGN RESISTANCE FOR STATIC LOADS IN CRACKED CONCRETE [kN]

TENSILE

SIZE			Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,1}$	[mm]		40	45	55	65	75
$N_{Rd,cr}$	[kN]	C20/25	1,3	3,3	6,0	8,0	10,1
		C40/50	1,9	4,7	8,5	11,3	14,3
$h_{nom,2}$	[mm]		55	65	85	100	115
$N_{Rd,cr}$	[kN]	C20/25	2,7	8,0	12,9	16,4	20,3
		C40/50	3,8	11,3	18,2	23,2	28,6

Distances S_{cr} and C_{cr} must be fulfilled

$N_{Rd,cr} = \min[N_{Rk,p,cr} / \gamma_{Mc} ; N_{Rk,s} / \gamma_{Ms,N}]$

$\gamma_{Mc} = 1,5$; $\gamma_{Ms,N} = 1,5$

SHEAR

SIZE			Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,1}$	[mm]		40	45	55	65	75
$V_{Rd,s}$	[kN]	≥ C20/25	*5,6*	*10,8*	*18,0*	*26,8*	*44,8*
$h_{nom,2}$	[mm]		55	65	85	100	115
$V_{Rd,s}$	[kN]	≥ C20/25	*5,6*	*13,6*	*27,2*	*33,6*	*44,8*

$V_{Rd,s} = V_{Rk,s} / \gamma_{Ms,V}$

$\gamma_{Ms,V} = 1,25$

DESIGN RESISTANCE FOR SEISMIC LOADS CATEGORY C1 [kN]

TENSILE

SIZE			Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,1}$	[mm]		40	45	55	65	75
$N_{Rd,C1}$	[kN]	C20/25	1,3	-	6,0	-	-
		C40/50	1,9	-	8,5	-	-
$h_{nom,2}$	[mm]		55	65	85	100	115
$N_{Rd,C1}$	[kN]	C20/25	2,7	8,0	12,9	16,4	20,3
		C40/50	3,8	11,3	18,2	23,2	28,6

Distances S_{cr} and C_{cr} must be fulfilled

$N_{Rd,C1} = \min[N_{Rk,p,eq,C1} / \gamma_{Mc} ; N_{Rk,s,eq,C1} / \gamma_{Ms,N}]$

$\gamma_{Mc} = 1,5$; $\gamma_{Ms,N} = 1,5$

SHEAR

SIZE			Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,1}$	[mm]		40	45	55	65	75
$V_{Rd,s,C1}$	[kN]	≥ C20/25	*3,8*	-	*10,8*	-	-
$h_{nom,2}$	[mm]		55	65	85	100	115
$V_{Rd,s,C1}$	[kN]	≥ C20/25	*4,4*	*6,8*	*12,2*	*16,8*	*17,9*

$V_{Rd,s,C1} = V_{Rk,s,eq,C1} / \gamma_{Ms,V}$

$\gamma_{Ms,V} = 1,25$

DESIGN RESISTANCE FOR SEISMIC LOADS CATEGORY C2 [kN]

TENSILE

SIZE			Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,2}$	[mm]		55	65	85	100	115
$N_{Rd,C2}$	[kN]	C20/25	-	1,6	3,6	4,7	7,0
		C40/50	-	2,3	5,1	6,7	9,9

Distances S_{cr} and C_{cr} must be fulfilled

$N_{Rd,C2} = \min[N_{Rk,p,eq,C2} / \gamma_{Mc} ; N_{Rk,s,eq,C2} / \gamma_{Ms,N}]$

$\gamma_{Mc} = 1,5$; $\gamma_{Ms,N} = 1,5$

SHEAR

SIZE			Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,2}$	[mm]		55	65	85	100	115
$V_{Rd,s,C2}$	[kN]	≥ C20/25	-	*7,9*	*14,8*	*25,3*	*32,6*

$V_{Rd,s,C2} = V_{Rk,s,eq,C2} / \gamma_{Ms,V}$

$\gamma_{Ms,V} = 1,25$

DESIGN RESISTANCE FOR FIRE EXPOSURE [kN]

TENSILE

SIZE		Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,2}$	[mm]	55	65	85	100	115
$N_{Rd,fi}$ R30	[kN]	0,9	2,4	4,4	7,3	10,3
$N_{Rd,fi}$ R60	[kN]	0,8	1,7	3,3	5,8	8,2
$N_{Rd,fi}$ R90	[kN]	0,6	1,1	2,3	4,2	5,9
$N_{Rd,fi}$ R120	[kN]	0,4	0,7	1,7	3,4	4,8

$N_{Rd,fi} = N_{Rk,s,fi} / \gamma_{M,fi}$

$\gamma_{M,fi} = 1,0$

SHEAR

SIZE		Ø6	Ø8	Ø10	Ø12	Ø14
$h_{nom,2}$	[mm]	55	65	85	100	115
$V_{Rd,fi}$ R30	[kN]	0,9	2,4	4,4	7,3	10,3
$V_{Rd,fi}$ R60	[kN]	0,8	1,7	3,3	5,8	8,2
$V_{Rd,fi}$ R90	[kN]	0,6	1,1	2,3	4,2	5,9
$V_{Rd,fi}$ R120	[kN]	0,4	0,7	1,7	3,4	4,8

$V_{Rd,fi} = V_{Rk,s,fi} / \gamma_{M,fi}$; $\gamma_{M,fi} = 1,0$

$\gamma_{M,fi} = 1,0$

Nota: The values indicated *in italics and underlined* correspond to steel failure