

# R-HPTII-A4 Stainless Steel Throughbolt

Stainless steel throughbolt anchor for cracked and non-cracked concrete



## Approvals and Reports

- ETA 17/0185



## Product information

### Features and benefits

- Stainless steel anchor for the highest corrosion resistance
- High performance in cracked and non-cracked concrete confirmed by ETA Option 1
- Highest quality ensures maximum load capability
- For applications requiring fire resistance up to 120 minutes
- Suitable for reduced embedment to avoid contact with reinforcement
- Embedment depth markings help to ensure precise installation of the anchor
- Design of R-HPTII allows drilling and installing directly through the fixture and helps to reduce installation time

### Applications

- Cladding restraints
- Barriers
- Structural steel
- Curtain walling
- Hand rails
- Heavy Plant
- Balustrading
- Passenger lifts
- Facades
- Fencing & gates manufacturing and installation
- Masonry support
- Platforms
- Public seating
- Racking systems

### Base materials

#### Approved for use in:

- Cracked concrete C20/25-C50/60
- Non-cracked concrete C20/25-C50/60
- Reinforced concrete
- Unreinforced concrete

#### Also suitable for use in:

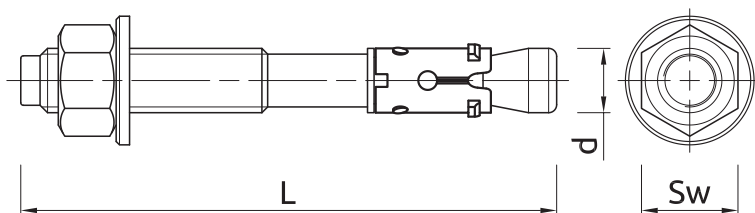
- Natural Stone

## Installation guide



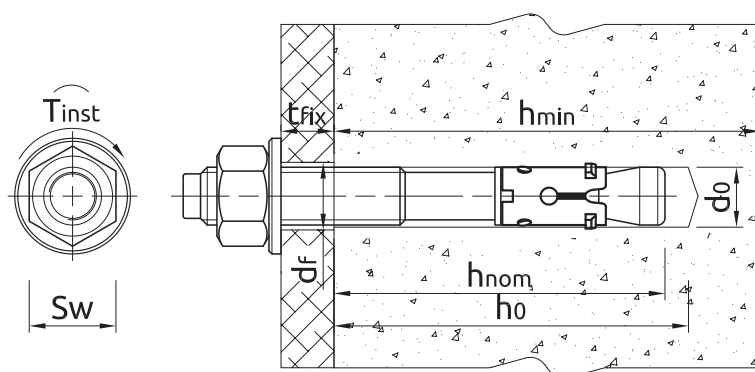
1. Drill a hole of required diameter and depth
2. Clear the hole of drilling dust and debris (using blowpump or equivalent method)
3. Lightly tap the throughbolt through the fixture into hole with a hammer, until fixing depth is reached
4. Tighten to the recommended torque

Product information



Size	Product Code	Anchor		Fixture		
		Diameter	Length	Max. thickness $t_{fix}$ for:		Hole diameter
		d [mm]	L [mm]	$h_{nom,red}$ [mm]	$h_{nom,std}$ [mm]	$d_f$ [mm]
M8	R-HPTIIA4-08060/10	8	60	10	-	9
	R-HPTIIA4-08075/10	8	75	25	10	9
	R-HPTIIA4-08085/20	8	85	35	20	9
	R-HPTIIA4-08095/30	8	95	45	30	9
	R-HPTIIA4-08105/40	8	105	55	40	9
	R-HPTIIA4-08115/50	8	115	65	50	9
M10	R-HPTIIA4-10065/5	10	65	5	-	11
	R-HPTIIA4-10080/20	10	80	20	-	11
	R-HPTIIA4-10095/15	10	95	35	15	11
	R-HPTIIA4-10115/35	10	115	55	35	11
	R-HPTIIA4-10130/50	10	130	70	50	11
	R-HPTIIA4-10140/60	10	140	80	60	11
M12	R-HPTIIA4-12080/5	12	80	5	-	13
	R-HPTIIA4-12100/5	12	100	25	5	13
	R-HPTIIA4-12115/20	12	115	40	20	13
	R-HPTIIA4-12125/30	12	125	50	30	13
	R-HPTIIA4-12150/55	12	150	75	55	13
	R-HPTIIA4-12180/85	12	180	105	85	13
M16	R-HPTIIA4-16125/5	16	125	25	5	18
	R-HPTIIA4-16140/20	16	140	40	20	18
	R-HPTIIA4-16150/30	16	150	50	30	18
	R-HPTIIA4-16180/60	16	180	80	60	18

Installation data



Size		M8	M10	M12	M16
Thread diameter	d [mm]	8	10	12	16
Hole diameter in substrate	$d_0$ [mm]	8	10	12	16
Installation torque	$T_{inst}$ [Nm]	15	30	50	100
Wrench size	Sw [mm]	13	17	19	24

## Installation data

Size			M8	M10	M12	M16
<b>STANDARD EMBEDMENT DEPTH</b>						
Min. hole depth in substrate	$h_{0,s}$	[mm]	65	80	90	110
Installation depth	$h_{nom,s}$	[mm]	55	69	80	100
Min. substrate thickness	$h_{min,s}$	[mm]	100	120	140	170
Min. spacing (Non-cracked concrete)	$s_{min,s}$	[mm]	55	70	90	135
Min. spacing (Cracked concrete)	$s_{min,s}$	[mm]	55	70	90	135
Min. edge distance (Non-cracked concrete)	$c_{min,s}$	[mm]	40	50	55	80
Min. edge distance (Cracked concrete)	$c_{min,s}$	[mm]	40	45	55	70
<b>REDUCED EMBEDMENT DEPTH</b>						
Min. hole depth in substrate	$h_{0,r}$	[mm]	50	60	70	90
Installation depth	$h_{nom,r}$	[mm]	40	49	60	80
Min. substrate thickness	$h_{min,r}$	[mm]	100	100	100	130
Min. spacing (Non-cracked concrete)	$s_{min,r}$	[mm]	50	70	120	150
Min. spacing (Cracked concrete)	$s_{min,r}$	[mm]	50	70	120	150
Min. edge distance (Non-cracked concrete)	$c_{min,r}$	[mm]	50	60	70	90
Min. edge distance (Cracked concrete)	$c_{min,r}$	[mm]	40	50	70	85

## Mechanical properties

Size			M8	M10	M12	M16
Nominal ultimate tensile strength - tension	$f_{uk}$	[N/mm <sup>2</sup> ]	600	600	550	550
Nominal yield strength - tension	$f_{yk}$	[N/mm <sup>2</sup> ]	450	450	413	413
Cross sectional area - tension	$A_s$	[mm <sup>2</sup> ]	36.6	58	84.3	157
Elastic section modulus	$W_{el}$	[mm <sup>3</sup> ]	50.27	98.17	169.65	402.12
Characteristic bending resistance	$M_{Rk,s}^0$	[Nm]	22	45	72	180
Design bending resistance	M	[Nm]	18	36	57	144

## Basic performance data

Performance data for single anchor without influence of edge distance and spacing - ETAG 001

Size		M8	M10	M12	M16
<b>NON-CRACKED CONCRETE</b>					
Standard embedment depth $h_{ef}$	[mm]	47.00	59.00	68.00	85.00
Reduced embedment depth $h_{ef}$	[mm]	32.00	39.00	48.00	65.00
<b>CRACKED CONCRETE</b>					
Standard embedment depth $h_{ef}$	[mm]	47.00	59.00	68.00	85.00
Reduced embedment depth $h_{ef}$	[mm]	32.00	39.00	48.00	65.00
<b>MEAN ULTIMATE LOAD</b>					
<b>TENSION LOAD <math>N_{Ru,m}</math></b>					
<b>NON-CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	15.40	22.80	29.20	55.80
Reduced embedment depth	[kN]	10.40	16.00	22.10	37.90
<b>CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	9.70	11.50	18.60	30.40
Reduced embedment depth	[kN]	5.60	9.80	13.40	22.20
<b>SHEAR LOAD <math>V_{Ru,m}</math></b>					
<b>NON-CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	14.00	22.20	29.60	54.50
Reduced embedment depth	[kN]	11.80	19.20	29.60	54.50
<b>CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	14.00	21.20	29.60	54.50
Reduced embedment depth	[kN]	8.50	13.60	15.40	54.50

## Basic performance data

Size		M8	M10	M12	M16
<b>CHARACTERISTIC LOAD</b>					
<b>TENSION LOAD <math>N_{Rk}</math></b>					
<b>NON-CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	9.00	16.00	25.00	39.50
Reduced embedment depth	[kN]	7.50	12.00	16.80	26.40
<b>CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	6.00	9.00	12.00	25.00
Reduced embedment depth	[kN]	3.00	7.50	9.00	16.00
<b>SHEAR LOAD <math>V_{Rk}</math></b>					
<b>NON-CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	11.70	18.50	24.60	45.40
Reduced embedment depth	[kN]	9.14	14.70	16.79	45.40
<b>CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	11.60	16.31	24.60	45.40
Reduced embedment depth	[kN]	6.52	10.52	11.97	37.70
<b>DESIGN LOAD</b>					
<b>TENSION LOAD <math>N_{Rd}</math></b>					
<b>NON-CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	5.00	10.70	16.70	26.30
Reduced embedment depth	[kN]	4.17	6.67	11.20	17.60
<b>CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	3.33	6.00	8.00	16.70
Reduced embedment depth	[kN]	1.67	4.17	6.00	10.70
<b>SHEAR LOAD <math>V_{Rd}</math></b>					
<b>NON-CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	9.40	14.80	19.70	36.30
Reduced embedment depth	[kN]	6.09	9.84	11.20	35.30
<b>CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	7.73	10.88	19.68	36.30
Reduced embedment depth	[kN]	4.34	7.01	7.98	25.15
<b>RECOMMENDED LOAD</b>					
<b>TENSION LOAD <math>N_{rec}</math></b>					
<b>NON-CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	3.57	7.62	11.90	18.80
Reduced embedment depth	[kN]	2.98	4.76	8.00	12.60
<b>CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	2.38	4.29	5.71	11.90
Reduced embedment depth	[kN]	1.19	2.98	4.29	7.62
<b>SHEAR LOAD <math>V_{rec}</math></b>					
<b>NON-CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	6.69	10.60	14.10	25.90
Reduced embedment depth	[kN]	4.35	7.03	8.00	25.20
<b>CRACKED CONCRETE</b>					
Standard embedment depth	[kN]	5.52	7.77	14.06	25.90
Reduced embedment depth	[kN]	3.10	5.01	5.70	18.00

## Design performance data

Standard embedment depth

(-) failure is not decisive

Size			M8	M10	M12	M16
Effective embedment depth	$h_{ef}$	[mm]	47.00	59.00	68.00	85.00
<b>TENSION LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance	$N_{Rk,s}$	[kN]	21.20	33.60	44.80	82.60
Partial safety factor	$\gamma_{Ms}$	-	1.50	1.50	1.50	1.50
<b>PULL-OUT FAILURE; NON-CRACKED CONCRETE C20/25</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	9.00	16.00	25.00	-
<b>PULL-OUT FAILURE; CRACKED CONCRETE C20/25</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	6.00	9.00	12.00	25.00
<b>PULL-OUT FAILURE</b>						
Installation safety factor	$\gamma_2$	-	1.20	1.00	1.00	1.00
Increasing factors for $N_{Rd,p}$ - C30/37	$\psi_c$	-	1.16	1.26	1.23	1.18
Increasing factors for $N_{Rd,p}$ - C40/50	$\psi_c$	-	1.33	1.52	1.45	1.37
Increasing factors for $N_{Rd,p}$ - C50/60	$\psi_c$	-	1.50	1.78	1.67	1.55
<b>CONCRETE CONE FAILURE</b>						
Factor for cracked concrete	$k$	-	7.20	7.20	7.20	7.20
Factor for cracked concrete	$k_{cr,N}$	-	7.70	7.70	7.70	7.70
Factor for non-cracked concrete	$k$	-	10.10	10.10	10.10	10.10
Factor for non-cracked concrete	$k_{ucr,N}$	-	11.00	11.00	11.00	11.00
Installation safety factor	$\gamma_2$	-	1.20	1.00	1.00	1.00
Spacing	$s_{cr,N}$	[mm]	141.00	177.00	204.00	255.00
Edge distance	$c_{cr,N}$	[mm]	71.00	89.00	102.00	128.00
<b>CONCRETE SPLITTING FAILURE</b>						
Spacing	$s_{cr,sp}$	[mm]	240.00	300.00	340.00	430.00
Edge distance	$c_{cr,sp}$	[mm]	120.00	150.00	170.00	215.00
Installation safety factor	$\gamma_2$	-	1.20	1.00	1.00	1.00
<b>SHEAR LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	11.70	18.50	24.60	45.40
Ductility factor	$k_\gamma$	-	0.80	0.80	0.80	0.80
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	22.00	45.00	72.00	180.00
Partial safety factor	$\gamma_{Ms}$	-	1.25	1.25	1.25	1.25
<b>CONCRETE PRY-OUT FAILURE</b>						
Factor	$k$	-	1.00	1.00	2.00	2.00
Installation safety factor	$\gamma_2$	-	1.00	1.00	1.00	1.00
<b>CONCRETE EDGE FAILURE</b>						
Effective length of anchor	$\ell_f$	[mm]	47.00	59.00	68.00	85.00
Anchor diameter	$d_{nom}$	[mm]	8.00	10.00	12.00	16.00
Installation safety factor	$\gamma_2$	-	1.00	1.00	1.00	1.00

## Design performance data

Resistance to tension and shear loads under fire exposure - Standard embedment depth

Size			M8	M10	M12	M16
<b>R (for EI) = 30 min</b>						
<b>TENSION LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance	$N_{Rk,s}$	[kN]	0.70	1.50	2.50	4.70
<b>PULL-OUT FAILURE</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	1.50	2.30	3.00	6.30
<b>CONCRETE CONE FAILURE</b>						
Characteristic resistance	$N_{Rk,c}$	[kN]	2.70	4.80	6.90	12.00
<b>SHEAR LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0.70	1.50	2.50	4.70
Characteristic resistance with lever arm	$M_{Rk,s}$	[kN]	0.70	1.90	3.90	10.00
<b>R (for EI) = 60 min</b>						
<b>TENSION LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance	$N_{Rk,s}$	[kN]	0.60	1.20	2.10	3.90
<b>PULL-OUT FAILURE</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	1.50	2.30	3.00	6.30
<b>CONCRETE CONE FAILURE</b>						
Characteristic resistance	$N_{Rk,c}$	[kN]	2.70	4.80	6.90	12.00
<b>SHEAR LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0.60	1.20	2.10	3.90
Characteristic resistance with lever arm	$M_{Rk,s}$	[kN]	0.60	1.50	3.30	8.30
<b>R (for EI) = 90 min</b>						
<b>TENSION LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance	$N_{Rk,s}$	[kN]	0.40	0.90	1.70	3.10
<b>PULL-OUT FAILURE</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	1.50	2.30	3.00	6.30
<b>CONCRETE CONE FAILURE</b>						
Characteristic resistance	$N_{Rk,c}$	[kN]	2.70	4.80	6.90	12.00
<b>SHEAR LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0.40	0.90	1.70	3.10
Characteristic resistance with lever arm	$M_{Rk,s}$	[kN]	0.40	1.20	2.60	6.70
<b>R (for EI) = 120 min</b>						
<b>TENSION LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance	$N_{Rk,s}$	[kN]	0.40	0.80	1.30	2.50
<b>PULL-OUT FAILURE</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	1.20	1.80	2.40	5.00
<b>CONCRETE CONE FAILURE</b>						
Characteristic resistance	$N_{Rk,c}$	[kN]	2.20	3.90	5.50	9.60
<b>SHEAR LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0.40	0.80	1.30	2.50
Characteristic resistance with lever arm	$M_{Rk,s}$	[kN]	0.40	1.00	2.10	5.30

## Design performance data

Reduced embedment depth

(-) failure is not decisive

Size			M8	M10	M12	M16
Effective embedment depth	$h_{ef}$	[mm]	32.00	39.00	48.00	65.00
<b>TENSION LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance	$N_{Rk,s}$	[kN]	21.20	33.60	44.80	82.60
Partial safety factor	$\gamma_{Ms}$	-	1.50	1.50	1.50	1.50
<b>PULL-OUT FAILURE; NON-CRACKED CONCRETE C20/25</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	7.50	12.00	-	-
<b>PULL-OUT FAILURE; CRACKED CONCRETE C20/25</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	3.00	7.50	9.00	16.00
<b>PULL-OUT FAILURE</b>						
Installation safety factor	$\gamma_2$	-	1.20	1.20	1.00	1.00
Increasing Factors for $N_{Rd,p}$ - C30/37	$\psi_c$	-	1.07	1.07	1.16	1.18
Increasing Factors for $N_{Rd,p}$ - C40/50	$\psi_c$	-	1.13	1.13	1.32	1.37
Increasing Factors for $N_{Rd,p}$ - C50/60	$\psi_c$	-	1.20	1.20	1.49	1.55
<b>CONCRETE CONE FAILURE</b>						
Factor for cracked concrete	$k$	-	7.20	7.20	7.20	7.20
Factor for cracked concrete	$k_{cr,N}$	-	7.70	7.70	7.70	7.70
Factor for non-cracked concrete	$k$	-	10.10	10.10	10.10	10.10
Factor for non-cracked concrete	$k_{ucr,N}$	-	11.00	11.00	11.00	11.00
Installation safety factor	$\gamma_2$	-	1.20	1.20	1.00	1.00
Spacing	$s_{cr,N}$	[mm]	96.00	117.00	144.00	195.00
Edge distance	$c_{cr,N}$	[mm]	48.00	59.00	72.00	98.00
<b>CONCRETE SPLITTING FAILURE</b>						
Spacing	$s_{cr,sp}$	[mm]	160.00	200.00	250.00	320.00
Edge distance	$c_{cr,sp}$	[mm]	80.00	100.00	125.00	160.00
Installation safety factor	$\gamma_2$	-	1.20	1.20	1.00	1.00
<b>SHEAR LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	11.70	18.50	24.60	45.40
Ductility factor	$k_\gamma$	-	0.80	0.80	0.80	0.80
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	22.00	42.00	72.00	180.00
Partial safety factor	$\gamma_{Ms}$	-	1.25	1.25	1.25	1.25
<b>CONCRETE PRY-OUT FAILURE</b>						
Factor	$k$	-	1.00	1.00	1.00	2.00
Installation safety factor	$\gamma_2$	-	1.00	1.00	1.00	1.00
<b>CONCRETE EDGE FAILURE</b>						
Effective length of anchor	$\ell_f$	[mm]	32.00	39.00	48.00	65.00
Anchor diameter	$d_{nom}$	[mm]	8.00	10.00	12.00	16.00
Installation safety factor	$\gamma_2$	-	1.00	1.00	1.00	1.00

## Design performance data

Resistance to tension and shear loads under fire exposure - Reduced embedment depth

Size			M8	M10	M12	M16
<b>R (for EI) = 30 min</b>						
<b>TENSION LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance	$N_{Rk,s}$	[kN]	0.70	1.50	2.50	4.70
<b>PULL-OUT FAILURE</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	0.80	1.90	2.30	4.00
<b>CONCRETE CONE FAILURE</b>						
Characteristic resistance	$N_{Rk,c}$	[kN]	1.00	1.70	2.90	6.10
<b>SHEAR LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0.70	1.50	2.50	4.70
Characteristic resistance with lever arm	$M_{Rk,s}$	[kN]	0.70	1.90	3.90	10.00
<b>R (for EI) = 60 min</b>						
<b>TENSION LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance	$N_{Rk,s}$	[kN]	0.60	1.20	2.10	3.90
<b>PULL-OUT FAILURE</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	0.80	1.90	2.30	4.00
<b>CONCRETE CONE FAILURE</b>						
Characteristic resistance	$N_{Rk,c}$	[kN]	1.00	1.70	2.90	6.10
<b>SHEAR LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0.60	1.20	2.10	3.90
Characteristic resistance with lever arm	$M_{Rk,s}$	[kN]	0.60	1.50	3.30	8.30
<b>R (for EI) = 90 min</b>						
<b>TENSION LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance	$N_{Rk,s}$	[kN]	0.40	0.90	1.70	3.10
<b>PULL-OUT FAILURE</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	0.80	1.90	2.30	4.00
<b>CONCRETE CONE FAILURE</b>						
Characteristic resistance	$N_{Rk,c}$	[kN]	1.00	1.70	2.90	6.10
<b>SHEAR LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0.40	0.90	1.70	3.10
Characteristic resistance with lever arm	$M_{Rk,s}$	[kN]	0.40	1.20	2.60	6.70
<b>R (for EI) = 120 min</b>						
<b>TENSION LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance	$N_{Rk,s}$	[kN]	0.40	0.80	1.30	2.50
<b>PULL-OUT FAILURE</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	0.60	1.50	1.80	3.20
<b>CONCRETE CONE FAILURE</b>						
Characteristic resistance	$N_{Rk,c}$	[kN]	0.80	1.40	2.30	4.90
<b>SHEAR LOAD</b>						
<b>STEEL FAILURE</b>						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0.40	0.80	1.30	2.50
Characteristic resistance with lever arm	$M_{Rk,s}$	[kN]	0.40	1.00	2.10	5.30



## Design performance data

Allowable values for resistance in case of Seismic performance category C1 - Standard embedment depth

Size			M8	M10	M12	M16
Effective embedment depth	$h_{ef}$	[mm]	47.00	59.00	68.00	85.00
<b>TENSION LOAD, STEEL FAILURE</b>						
Characteristic resistance	$N_{Rk,s}$	[kN]	21.20	33.60	44.80	82.60
Partial safety factor	$V_{MsN,seisC1}$	-	1.50			
<b>TENSION LOAD, PULL-OUT FAILURE</b>						
Characteristic resistance	$N_{Rk,p}$	[kN]	6.00	9.00	12.00	25.00
Partial safety factor	$V_{Mp,seisC1}$	-	1.80	1.50		
<b>SHEAR LOAD, STEEL FAILURE</b>						
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	6.70	12.50	18.40	39.00
Partial safety factor	$V_{MsV,seisC1}$	-	1.25			

## Product commercial data

Size	Product Code	Anchor		Quantity [pcs]			Weight [kg]			Bar Codes
		Diameter [mm]	Length [mm]	Box	Outer	Pallet	Box	Outer	Pallet	
M8	R-HPTIIA4-08060/10 <sup>1)</sup>	8	60	100	100	16000	2.6	2.6	441.0	5906675046419
	R-HPTIIA4-08075/10 <sup>1)</sup>	8	75	100	100	16000	3.1	3.1	519.6	5906675046426
	R-HPTIIA4-08085/20 <sup>1)</sup>	8	85	100	100	16000	3.3	3.3	563.6	5906675046433
	R-HPTIIA4-08095/30 <sup>1)</sup>	8	95	100	100	12000	3.3	3.3	426.0	5906675046440
	R-HPTIIA4-08105/40 <sup>1)</sup>	8	105	50	50	16000	2.2	2.2	734.0	5906675046457
	R-HPTIIA4-08115/50 <sup>1)</sup>	8	115	100	100	16000	4.3	4.3	717.0	5906675046464
M10	R-HPTIIA4-10065/5 <sup>1)</sup>	10	65	50	50	8000	2.4	2.4	409.0	5906675046471
	R-HPTIIA4-10080/20 <sup>1)</sup>	10	80	50	50	8000	2.8	2.8	469.7	5906675046488
	R-HPTIIA4-10095/15 <sup>1)</sup>	10	95	50	50	8000	3.1	3.1	529.7	5906675046495
	R-HPTIIA4-10115/35 <sup>1)</sup>	10	115	50	50	6000	3.7	3.7	468.1	5906675046501
	R-HPTIIA4-10130/50 <sup>1)</sup>	10	130	50	50	6000	4.0	4.0	508.3	5906675046518
	R-HPTIIA4-10140/60 <sup>1)</sup>	10	140	50	50	8000	4.2	4.2	707.0	5906675046532
M12	R-HPTIIA4-12080/5 <sup>1)</sup>	12	80	50	50	8000	4.1	4.1	688.7	5906675046549
	R-HPTIIA4-12100/5 <sup>1)</sup>	12	100	50	50	8000	4.8	4.8	797.4	5906675046556
	R-HPTIIA4-12115/20 <sup>1)</sup>	12	115	50	50	6000	7.0	7.0	870.0	5906675388106
	R-HPTIIA4-12125/30 <sup>1)</sup>	12	125	50	50	6000	5.8	5.8	721.9	5906675046563
	R-HPTIIA4-12150/55 <sup>1)</sup>	12	150	50	50	4000	6.7	6.7	561.6	5906675046570
	R-HPTIIA4-12180/85 <sup>1)</sup>	12	180	50	50	4000	7.8	7.8	651.3	5906675046587
M16	R-HPTIIA4-16125/5 <sup>1)</sup>	16	125	25	25	4000	5.4	5.4	888.2	5906675046594
	R-HPTIIA4-16140/20 <sup>1)</sup>	16	140	25	25	4000	5.8	5.8	957.4	5906675034898
	R-HPTIIA4-16150/30 <sup>1)</sup>	16	150	25	25	4000	6.1	6.1	1006.5	5906675046600
	R-HPTIIA4-16180/60 <sup>1)</sup>	16	180	25	25	3000	7.2	7.2	888.7	5906675046617

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