

R-XPTII-A4 Stainless Steel Throughbolt

Stainless steel throughbolt for non-cracked concrete



Approvals and Reports

- ETA 17/0782



Product information

Features and benefits

- Stainless steel anchor for the highest corrosion resistance
- High performance in non-cracked concrete confirmed by ETA Option 7
- Highest quality ensures maximum load capability
- Suitable for reduced embedment to avoid contact with reinforcement
- Embedment depth markings help to ensure precise installation of the anchor
- Simple through-installation (drilling and installation through fixed material)

Applications

- Cladding restraint
- Curtain wall
- Balustrading
- Barriers
- Handrails
- Racking
- Structural steel
- Bollards

Base materials

Approved for use in:

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

Also suitable for use in:

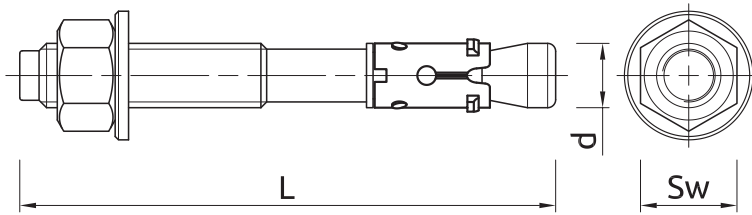
- Natural Stone (after site testing)

Installation guide



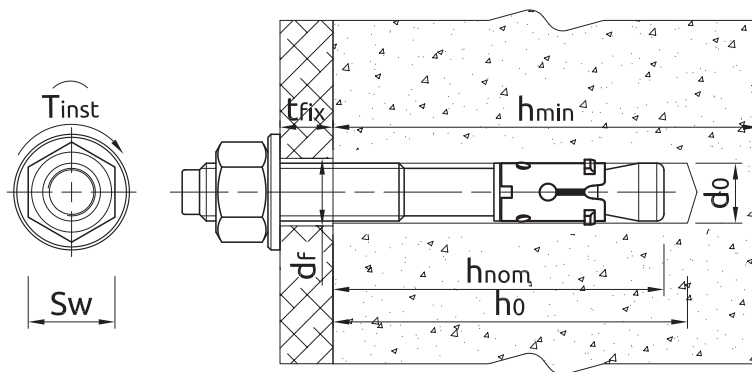
1. Drill a hole of required diameter and depth
2. Clear the hole of drilling dust and debris (using blowpump or equivalent method)
3. Lightly tap the throughbolt through the fixture into hole with a hammer, until fixing depth is reached
4. Insert bolt through fixture and tighten to the recommended torque

Product information



Size	Product Code	Approval type	Anchor		Fixture			
			Diameter	Length	Max. thickness t_{fix} for:		Hole diameter	
			d	L	$h_{nom,red}$	$h_{nom,std}$	d_f	
		-	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
M6	R-XPTIIA4-06050/10	AT-15-7370/16	6	50	10	-	7	
	R-XPTIIA4-06085/25	AT-15-7370/16	6	85	45	25	7	
M8	R-XPTIIA4-08060/10	ETA 17/0782	8	60	10	-	9	
	R-XPTIIA4-08075/10	ETA 17/0782	8	75	25	10	9	
	R-XPTIIA4-08085/20	ETA 17/0782	8	85	35	20	9	
	R-XPTIIA4-08095/30	ETA 17/0782	8	95	45	30	9	
	R-XPTIIA4-08105/40	ETA 17/0782	8	105	55	40	9	
	R-XPTIIA4-08115/50	ETA 17/0782	8	115	65	50	9	
M10	R-XPTIIA4-10065/5	ETA 17/0782	10	65	5	-	11	
	R-XPTIIA4-10080/20	ETA 17/0782	10	80	20	-	11	
	R-XPTIIA4-10095/15	ETA 17/0782	10	95	35	15	11	
	R-XPTIIA4-10115/35	ETA 17/0782	10	115	55	35	11	
	R-XPTIIA4-10130/50	ETA 17/0782	10	130	70	50	11	
	R-XPTIIA4-10140/60	ETA 17/0782	10	140	80	60	11	
M12	R-XPTIIA4-12080/5	ETA 17/0782	12	80	5	-	13	
	R-XPTIIA4-12100/5	ETA 17/0782	12	100	25	5	13	
	R-XPTIIA4-12115/20	ETA 17/0782	12	115	40	20	13	
	R-XPTIIA4-12125/30	ETA 17/0782	12	125	50	30	13	
	R-XPTIIA4-12150/55	ETA 17/0782	12	150	75	55	13	
	R-XPTIIA4-12180/85	ETA 17/0782	12	180	105	85	13	
M16	R-XPTIIA4-16125/5	ETA 17/0782	16	125	25	5	18	
	R-XPTIIA4-16140/20	ETA 17/0782	16	140	40	20	18	
	R-XPTIIA4-16150/30	ETA 17/0782	16	150	50	30	18	
	R-XPTIIA4-16180/60	ETA 17/0782	16	180	80	60	18	
M20	R-XPTIIA4-20125/5	AT-15-7370/16	20	125	5	-	22	
	R-XPTIIA4-20160/20	AT-15-7370/16	20	160	40	20	22	
	R-XPTIIA4-20200/60	AT-15-7370/16	20	200	80	60	22	
	R-XPTIIA4-20300/16	AT-15-7370/16	20	300	180	160	22	
M24	R-XPTIIA4-24260/10	AT-15-7370/16	24	260	115	100	26	

Installation data



Size			M6	M8	M10	M12	M16	M20	M24
Thread diameter	d	[mm]	6	8	10	12	16	20	24
Hole diameter in substrate	d _o	[mm]	6	8	10	12	16	20	24
Installation torque	T _{inst}	[Nm]	5	15	30	50	100	180	320
Wrench size	Sw	[mm]	10	13	17	19	24	30	36
STANDARD EMBEDMENT DEPTH									
Min. hole depth in substrate	h _{o,s}	[mm]	55	65	79	90	110	140	155
Min. installation depth	h _{nom,s}	[mm]	50	55	69	80	100	120	135
Min. substrate thickness	h _{min,s}	[mm]	100	100	120	140	170	210	230
Min. spacing (Non-cracked concrete)	s _{min,s}	[mm]	45	65	90	110	170	170	180
Min. edge distance (Non-cracked concrete)	c _{min,s}	[mm]	50	50	60	85	90	160	200
REDUCED EMBEDMENT DEPTH									
Min. hole depth in substrate	h _{o,r}	[mm]	40	50	59	70	90	120	140
Min. installation depth	h _{nom,r}	[mm]	30	40	49	60	80	100	120
Min. substrate thickness	h _{min,r}	[mm]	100	100	100	100	130	210	230
Min. spacing (Non-cracked concrete)	s _{min,r}	[mm]	40	65	115	150	190	160	190
Min. edge distance (Non-cracked concrete)	c _{min,r}	[mm]	45	50	80	100	120	125	160

Mechanical properties

Size			M6	M8	M10	M12	M16	M20	M24
Nominal ultimate tensile strength - tension	f _{uk}	[N/mm ²]	800	600	600	550	550	500	500
Nominal yield strength - tension	f _{yk}	[N/mm ²]	600	480	480	440	440	210	210
Cross sectional area - tension	A _s	[mm ²]	14.25	25.5	40.7	60.1	106.6	162.9	234.52
Elastic section modulus	W _{el}	[mm ³]	13.15	31.2	62.3	109	276.4	539.9	940.9
Characteristic bending resistance	M ⁰ _{Rk,s}	[Nm]	12.62	22	45	72	180	323.9	564.54
Design bending resistance	M	[Nm]	9.49	17.6	36	57.6	144	136.11	237.2

Basic performance data

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

Size		M6	M8	M10	M12	M16	M20	M24
MEAN ULTIMATE LOAD								
TENSION LOAD N_{Ru,m}								
Standard embedment depth	[kN]	9.80	15.40	22.80	30.39	55.80	24.00	30.00
Reduced embedment depth	[kN]	1.90	10.40	16.00	22.10	37.90	14.40	19.20
SHEAR LOAD V_{Ru,m}								
Standard embedment depth	[kN]	9.80	14.00	22.20	29.60	54.50	48.00	60.00
Reduced embedment depth	[kN]	1.90	14.00	22.20	29.60	54.50	28.80	38.40

Basic performance data

Size		M6	M8	M10	M12	M16	M20	M24
CHARACTERISTIC LOAD								
TENSION LOAD N_{Rk}								
Standard embedment depth	[kN]	7.50	9.00	16.00	25.00	39.57	20.00	25.00
Reduced embedment depth	[kN]	1.50	7.50	12.00	16.79	26.46	12.00	16.00
SHEAR LOAD V_{Rk}								
Standard embedment depth	[kN]	7.50	11.70	18.50	24.60	45.40	40.00	50.00
Reduced embedment depth	[kN]	1.50	9.14	12.30	16.79	45.40	24.00	32.00
DESIGN LOAD								
TENSION LOAD N_{Rd}								
Standard embedment depth	[kN]	2.97	5.00	10.67	16.67	26.38	7.94	9.92
Reduced embedment depth	[kN]	0.59	4.17	6.67	11.20	17.64	4.76	6.35
SHEAR LOAD V_{Rd}								
Standard embedment depth	[kN]	6.00	9.36	14.80	19.68	36.32	32.00	40.00
Reduced embedment depth	[kN]	1.20	6.09	8.20	11.20	35.29	19.20	25.60

Design performance data

Standard embedment depth

(-) failure is not decisive

Size			M6	M8	M10	M12	M16	M20	M24
Effective embedment depth	h_{ef}	[mm]	42.00	47.00	59.00	68.00	85.00	105.00	112.00
TENSION LOAD									
STEEL FAILURE									
Characteristic resistance	$N_{Rk,s}$	[kN]	11.83	21.20	36.60	44.80	82.60	114.03	164.16
Partial safety factor	γ_{Ms}	-	1.60	1.50	1.50	1.50	1.50	2.86	2.86
PULL-OUT FAILURE; NON-CRACKED CONCRETE C20/25									
Characteristic resistance	$N_{Rk,p}$	[kN]	7.50	9.00	16.00	25.00	-	20.00	25.00
PULL-OUT FAILURE									
Installation safety factor	γ_2	-	1.68	1.20	1.00	1.00	1.00	1.68	1.68
Increasing factors for $N_{Rd,p}$ - C30/37	ψ_c	-	1.22	1.22	1.22	1.22	1.22	1.22	1.22
Increasing factors for $N_{Rd,p}$ - C40/50	ψ_c	-	1.41	1.41	1.41	1.41	1.41	1.41	1.41
Increasing factors for $N_{Rd,p}$ - C50/60	ψ_c	-	1.55	1.55	1.55	1.55	1.55	1.55	1.55
CONCRETE CONE FAILURE									
Factor for non-cracked concrete	k	-	10.10	10.10	10.10	10.10	10.10	10.10	10.10
Factor for non-cracked concrete	$k_{ucr,N}$	-	11.00	11.00	11.00	11.00	11.00	11.00	11.00
Installation safety factor	γ_2	-	1.68	1.20	1.00	1.00	1.00	1.68	1.68
Spacing	$s_{cr,N}$	[mm]	126.00	141.00	177.00	204.00	255.00	315.00	336.00
Edge distance	$c_{cr,N}$	[mm]	63.00	71.00	89.00	102.00	128.00	168.00	168.00
CONCRETE SPLITTING FAILURE									
Spacing	$s_{cr,sp}$	[mm]	210.00	240.00	300.00	340.00	430.00	560.00	580.00
Edge distance	$c_{cr,sp}$	[mm]	105.00	120.00	150.00	170.00	215.00	280.00	290.00
Installation safety factor	γ_2	-	1.68	1.20	1.00	1.00	1.00	1.68	1.68

Design performance data

Size			M6	M8	M10	M12	M16	M20	M24
 SHEAR LOAD 									
 STEEL FAILURE 									
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	8.04	11.70	18.50	24.60	45.40	61.25	88.25
Ductility factor	k_{γ}	-	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	12.62	22.00	45.00	72.00	180.00	323.94	564.54
Partial safety factor	γ_{Ms}	-	1.33	1.25	1.25	1.25	1.25	2.38	2.38
 CONCRETE PRY-OUT FAILURE 									
Factor	k	-	1.00	1.00	1.00	2.00	2.00	2.00	2.00
Installation safety factor	γ_2	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00
 CONCRETE EDGE FAILURE 									
Effective length of anchor	ℓ_f	[mm]	42.00	47.00	59.00	68.00	85.00	105.00	112.00
Anchor diameter	d_{nom}	[mm]	6.00	8.00	10.00	12.00	16.00	20.00	24.00
Installation safety factor	γ_2	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Reduced embedment depth

(-) failure is not decisive

Size			M6	M8	M10	M12	M16	M20	M24
Effective embedment depth	h_{ef}	[mm]	22.00	32.00	39.00	48.00	65.00	85.00	97.00
 TENSION LOAD 									
 STEEL FAILURE 									
Characteristic resistance	$N_{Rk,s}$	[kN]	11.83	21.20	33.60	44.80	82.60	114.03	164.10
Partial safety factor	γ_{Ms}	-	1.60	1.50	1.50	1.50	1.50	2.86	2.86
 PULL-OUT FAILURE; NON-CRACKED CONCRETE C20/25 									
Characteristic resistance	$N_{Rk,p}$	[kN]	1.50	7.50	12.00	-	-	12.00	16.00
 PULL-OUT FAILURE 									
Installation safety factor	γ_2	-	1.68	1.20	1.20	1.00	1.00	1.68	1.68
Increasing factors for $N_{Rd,p}$ - C30/37	ψ_c	-	1.22	1.17	1.22	1.22	1.22	1.22	1.22
Increasing factors for $N_{Rd,p}$ - C40/50	ψ_c	-	1.41	1.32	1.41	1.41	1.41	1.41	1.41
Increasing factors for $N_{Rd,p}$ - C50/60	ψ_c	-	1.55	1.42	1.55	1.55	1.55	1.55	1.55
 CONCRETE CONE FAILURE 									
Factor for non-cracked concrete	k	-	10.10	10.10	10.10	10.10	10.10	10.10	10.10
Factor for non-cracked concrete	$k_{ucr,N}$	-	11.00	11.00	11.00	11.00	11.00	11.00	11.00
Installation safety factor	γ_2	-	1.68	1.20	1.20	1.00	1.00	1.68	1.68
Spacing	$s_{cr,N}$	[mm]	66.00	96.00	117.00	144.00	195.00	255.00	291.00
Edge distance	$c_{cr,N}$	[mm]	33.00	48.00	59.00	72.00	98.00	128.00	146.00
 CONCRETE SPLITTING FAILURE 									
Spacing	$s_{cr,sp}$	[mm]	100.00	160.00	200.00	250.00	320.00	430.00	500.00
Edge distance	$c_{cr,sp}$	[mm]	55.00	80.00	100.00	125.00	160.00	215.00	250.00
Installation safety factor	γ_2	-	1.68	1.20	1.20	1.00	1.00	1.68	1.68
 SHEAR LOAD 									
 STEEL FAILURE 									
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	8.04	11.70	18.50	24.60	45.40	61.25	88.25
Ductility factor	k_{γ}	-	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	12.62	22.00	45.00	72.00	180.00	323.94	564.54
Partial safety factor	γ_{Ms}	-	1.33	1.25	1.25	1.25	1.25	2.38	2.38
 CONCRETE PRY-OUT FAILURE 									
Factor	k	-	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Installation safety factor	γ_2	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00
 CONCRETE EDGE FAILURE 									
Effective length of anchor	ℓ_f	[mm]	22.00	32.00	39.00	48.00	65.00	85.00	97.00
Anchor diameter	d_{nom}	[mm]	6.00	8.00	10.00	12.00	16.00	20.00	24.00
Installation safety factor	γ_2	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Product commercial data

Product Code	Anchor		Quantity [pcs]			Weight [kg]			Bar Codes
	Diameter [mm]	Length [mm]	Box	Outer	Pallet	Box	Outer	Pallet	
R-XPTIIA4-06050/10	6	50	100	100	16000	1.27	1.27	233.0	5906675100081
R-XPTIIA4-06085/25	6	85	100	100	16000	1.84	1.84	324.6	5906675100104
R-XPTIIA4-08060/10 ¹⁾	8	60	100	100	16000	2.6	2.6	445.8	5906675047232
R-XPTIIA4-08075/10 ¹⁾	8	75	100	100	16000	3.1	3.1	519.6	5906675047249
R-XPTIIA4-08085/20 ¹⁾	8	85	100	100	16000	3.4	3.4	570.8	5906675047256
R-XPTIIA4-08095/30 ¹⁾	8	95	100	100	12000	3.7	3.7	473.9	5906675047263
R-XPTIIA4-08105/40 ¹⁾	8	105	100	100	16000	4.0	4.0	671.8	5906675047270
R-XPTIIA4-08115/50 ¹⁾	8	115	100	100	16000	4.3	4.3	721.7	5906675047287
R-XPTIIA4-10065/5 ¹⁾	10	65	50	50	8000	2.4	2.4	409.8	5906675047294
R-XPTIIA4-10080/20 ¹⁾	10	80	50	50	8000	2.8	2.8	470.6	5906675047300
R-XPTIIA4-10095/15 ¹⁾	10	95	50	50	8000	3.1	3.1	529.7	5906675047317
R-XPTIIA4-10115/35 ¹⁾	10	115	50	50	6000	3.7	3.7	470.3	5906675047324
R-XPTIIA4-10130/50 ¹⁾	10	130	50	50	6000	4.0	4.0	510.1	5906675047331
R-XPTIIA4-10140/60 ¹⁾	10	140	50	50	8000	4.2	4.2	708.7	5906675047348
R-XPTIIA4-12080/5 ¹⁾	12	80	50	50	8000	4.1	4.1	684.1	5906675047355
R-XPTIIA4-12100/5 ¹⁾	12	100	50	50	8000	4.8	4.8	799.1	5906675047362
R-XPTIIA4-12115/20 ¹⁾	12	115	50	50	6000	5.4	5.4	676.8	5906675324548
R-XPTIIA4-12125/30 ¹⁾	12	125	50	50	6000	5.8	5.8	720.5	5906675047379
R-XPTIIA4-12150/55 ¹⁾	12	150	50	50	4000	6.7	6.7	562.2	5906675047386
R-XPTIIA4-12180/85 ¹⁾	12	180	50	50	4000	7.8	7.8	652.1	5906675047393
R-XPTIIA4-16125/5 ¹⁾	16	125	25	25	4000	5.3	5.3	875.6	5906675047409
R-XPTIIA4-16140/20 ¹⁾	16	140	25	25	4000	5.8	5.8	956.9	5906675047416
R-XPTIIA4-16150/30 ¹⁾	16	150	25	25	4000	6.1	6.1	1009.8	5906675047430
R-XPTIIA4-16180/60 ¹⁾	16	180	25	25	3000	7.1	7.1	886.1	5906675047447
R-XPTIIA4-20125/5	20	125	25	25	3000	8.5	8.5	1048.7	5906675100241
R-XPTIIA4-20160/20	20	160	25	25	3000	10.4	10.4	1271.9	5906675100364
R-XPTIIA4-20200/60	20	200	10	10	1200	5.0	5.0	631.4	5906675100401
R-XPTIIA4-20300/16	20	300	10	10	1200	7.1	7.1	884.4	5906675100418
R-XPTIIA4-24260/10	24	260	10	10	1200	9.5	9.5	1168.6	5906675100432

1) ETA 17/0782