Throughbolts

R-HPTII-A4
• Stainless Steel Throughbolt

R-HPTII-ZF
• Zink Flake Throughbolt

R-XPTII-A4
• Stainless Steel Throughbolt

R-XPT
• Throughbolt

R-XPT-HD
• Hot Dip Galvanized Throughbolt

R-HPTII-A4 Stainless Steel Throughbolt

Stainless steel throughbolt anchor for cracked and non-cracked concrete

Approvals and Reports

- ETA-12/0021; ETAG 001-2, Option 1

Installation movie

Product overview

Features and benefits

- Stainless steel material for the highest corrosion resistance
- High performance in cracked and non-cracked concrete confirmed by ETA Option 1
- Highest quality to receive optimal 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 effort

Applications

- Cladding restraints
- Consoles
- Barriers
- Structural steel
- Curtain walling
- Hand rails
- Heavy plant
- Balustrading
- Passenger lifts
- Facades
- Fencing & gates
- 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

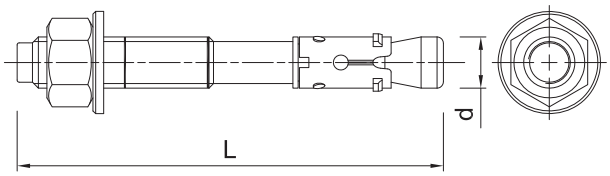
Also suitable for use in:

- Natural stone

Installation guide

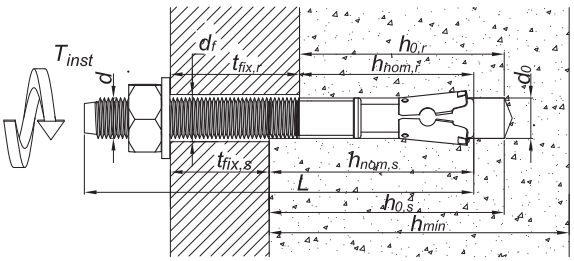
1. Drill a hole of required diameter and depth
2. Clear the hole of drilling dust and debris (using blowpump or equivalent method)
3. Lightly tap the throughbolt through the fixture into hole with a hammer, until fixing depth is reached
4. Tighten to the recommended torque

Product information



Size	Product Code	Anchor		Fixture		
		Diameter	Length	Max. thickness		Hole diameter
		d	L	$t_{fix,r}$	$t_{fix,s}$	d_f
		[mm]	[mm]	[mm]	[mm]	[mm]
M8	R-HPTII-A4-08060/10	8	60	10	-	9
	R-HPTII-A4-08075/10	8	75	25	10	9
	R-HPTII-A4-08085/20	8	85	35	20	9
	R-HPTII-A4-08095/30	8	95	45	30	9
	R-HPTII-A4-08105/40	8	105	55	40	9
	R-HPTII-A4-08115/50	8	115	65	50	9
M10	R-HPTII-A4-10065/5	10	65	5	-	11
	R-HPTII-A4-10080/20	10	80	20	-	11
	R-HPTII-A4-10095/15	10	95	35	15	11
	R-HPTII-A4-10115/35	10	115	55	35	11
	R-HPTII-A4-10130/50	10	130	70	50	11
	R-HPTII-A4-10140/60	10	140	80	60	11
M12	R-HPTII-A4-12080/5	12	80	5	-	13
	R-HPTII-A4-12100/5	12	100	25	5	13
	R-HPTII-A4-12125/30	12	125	50	30	13
	R-HPTII-A4-12150/55	12	150	75	55	13
	R-HPTII-A4-12180/85	12	180	105	85	13
M16	R-HPTII-A4-16125/5	16	125	25	5	18
	R-HPTII-A4-16140/20	16	140	40	20	18
	R-HPTII-A4-16150/30	16	150	50	30	18
	R-HPTII-A4-16180/60	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
STANDARD EMBEDMENT DEPTH						
Min. hole depth in substrate	$h_{0,s}$	[mm]	55	69	80	100
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)	$s_{min,r}$	[mm]	55	70	90	135
Min. spacing (Cracked concrete)	$s_{min,r}$	[mm]	55	70	90	135

Installation data (cont.)

Size			M8	M10	M12	M16
Min. edge distance (Non-cracked concrete)	$c_{min,r}$	[mm]	40	50	55	80
Min. edge distance (Cracked concrete)	$c_{min,r}$	[mm]	40	45	55	70
REDUCED EMBEDMENT DEPTH						
Min. hole depth in substrate	$h_{0,r}$	[mm]	40	49	60	80
Installation depth	$h_{nom,r}$	[mm]	40	49	60	80
Min. substrate thickness	$h_{min,r}$	[mm]		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	70	95	100
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/mm²]	545	545	500	500
Nominal ultimate tensile strength - shear	f_{uk}	[N/mm²]	600	600	550	550
Nominal yield strength - tension	f_{yk}	[N/mm²]	436	436	400	400
Nominal yield strength - shear	f_{yk}	[N/mm²]	480	480	440	440
Cross sectional area - tension	A_s	[mm²]	38.9	61.7	89.6	165.2
Cross sectional area - shear	A_s	[mm²]	38.9	61.7	89.6	165.2
Elastic section modulus	W_{el}	[mm³]	34.3	68.3	119.6	299.5
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	22.0	45.0	72.0	180.0
Design bending resistance	M	[Nm]	18.0	36.0	57.0	144.0

Basic performance data

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

Size		M8	M10	M12	M16
NON-CRACKED CONCRETE					
Standard embedment depth h_{ef}	[mm]	47	59	68	85
Reduced embedment depth h_{ef}	[mm]	32	39	48	65
CRACKED CONCRETE					
Standard embedment depth h_{ef}	[mm]	47	59	68	85
Reduced embedment depth h_{ef}	[mm]	32	39	48	65
MEAN ULTIMATE LOAD					
TENSION LOAD $N_{Ru,m}$					
NON-CRACKED CONCRETE					
Standard embedment depth	[kN]	15.4	22.8	29.2	55.8
Reduced embedment depth	[kN]	10.4	16.0	22.1	37.9
CRACKED CONCRETE					
Standard embedment depth	[kN]	9.70	11.5	18.6	30.4
Reduced embedment depth	[kN]	5.60	9.80	13.4	22.2
SHEAR LOAD $V_{Ru,m}$					
NON-CRACKED CONCRETE					
Standard embedment depth	[kN]	14.0	22.2	29.6	54.5
Reduced embedment depth	[kN]	14.0	19.2	29.6	54.5
CRACKED CONCRETE					
Standard embedment depth	[kN]	14.0	22.2	29.6	54.5
Reduced embedment depth	[kN]	14.0	19.2	29.6	54.5

Basic performance data (cont.)

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

Size		M8	M10	M12	M16
CHARACTERISTIC LOAD					
TENSION LOAD N_{Rk}					
NON-CRACKED CONCRETE					
Standard embedment depth	[kN]	9.00	16.0	25.0	39.5
Reduced embedment depth	[kN]	7.50	12.0	16.8	26.4
CRACKED CONCRETE					
Standard embedment depth	[kN]	6.00	9.00	12.0	25.0
Reduced embedment depth	[kN]	3.00	7.50	9.00	16.0
SHEAR LOAD V_{Rk}					
NON-CRACKED CONCRETE					
Standard embedment depth	[kN]	11.7	18.5	24.6	45.4
Reduced embedment depth	[kN]	11.7	14.7	24.6	45.4
CRACKED CONCRETE					
Standard embedment depth	[kN]	6.00	9.00	24.0	45.4
Reduced embedment depth	[kN]	3.00	7.50	9.00	32.0
DESIGN LOAD					
TENSION LOAD N_{Rd}					
NON-CRACKED CONCRETE					
Standard embedment depth	[kN]	5.00	10.7	16.7	26.3
Reduced embedment depth	[kN]	4.17	6.67	11.2	17.6
CRACKED CONCRETE					
Standard embedment depth	[kN]	3.33	6.00	8.00	16.7
Reduced embedment depth	[kN]	1.67	4.17	6.00	10.7
SHEAR LOAD V_{Rd}					
NON-CRACKED CONCRETE					
Standard embedment depth	[kN]	9.40	14.8	19.7	36.3
Reduced embedment depth	[kN]	9.40	8.20	19.7	36.3
CRACKED CONCRETE					
Standard embedment depth	[kN]	3.30	6.00	16.0	33.3
Reduced embedment depth	[kN]	1.70	4.20	6.00	21.3
RECOMMENDED LOAD					
TENSION LOAD N_{rec}					
NON-CRACKED CONCRETE					
Standard embedment depth	[kN]	3.57	7.62	11.9	18.8
Reduced embedment depth	[kN]	2.98	4.76	8.00	12.6
CRACKED CONCRETE					
Standard embedment depth	[kN]	2.38	4.29	5.71	11.9
Reduced embedment depth	[kN]	1.19	2.98	4.29	7.62
SHEAR LOAD V_{rec}					
NON-CRACKED CONCRETE					
Standard embedment depth	[kN]	6.69	10.6	14.1	25.9
Reduced embedment depth	[kN]	6.69	5.83	14.1	25.9
CRACKED CONCRETE					
Standard embedment depth	[kN]	2.38	4.29	11.4	23.8
Reduced embedment depth	[kN]	1.19	2.98	4.29	15.2

Product commercial data

Size	Product Code	Anchor		Quantity [pcs]			Weight [kg]			Bar Code
		Diameter [mm]	Length [mm]	Box	Outer	Pallet	Box	Outer	Pallet	
M8	R-HPTIIA4-08060/10	8	60	100	100	21000	2.2	2.2	492.0	5906675046419
	R-HPTIIA4-08075/10	8	75	100	100	12000	2.8	2.8	366.0	5906675046426
	R-HPTIIA4-08085/20	8	85	100	100	12000	3.3	3.3	426.0	5906675046433
	R-HPTIIA4-08095/30	8	95	100	100	12000	3.3	3.3	426.0	5906675046440
	R-HPTIIA4-08105/40	8	105	50	50	12000	2.2	2.2	558.0	5906675046457
	R-HPTIIA4-08115/50	8	115	100	100	12000	4.8	4.8	606.0	5906675046464
M10	R-HPTIIA4-10065/5	10	65	50	50	11000	3.0	3.0	690.0	5906675046471
	R-HPTIIA4-10080/20	10	80	50	50	6000	3.0	3.0	390.0	5906675046488
	R-HPTIIA4-10095/15	10	95	50	50	6000	3.7	3.7	468.0	5906675046495
	R-HPTIIA4-10115/35	10	115	50	50	6000	4.0	4.0	510.0	5906675046501
	R-HPTIIA4-10130/50	10	130	50	50	6000	5.0	5.0	630.0	5906675046518
	R-HPTIIA4-10140/60	10	140	50	50	6000	5.0	5.0	630.0	5906675046532
M12	R-HPTIIA4-12080/5	12	80	50	50	6000	5.6	5.6	702.0	5906675046549
	R-HPTIIA4-12100/5	12	100	50	50	6000	6.0	6.0	750.0	5906675046556
	R-HPTIIA4-12125/30	12	125	50	50	6000	7.0	7.0	870.0	5906675046563
	R-HPTIIA4-12150/55	12	150	50	50	4000	10.0	10.0	830.0	5906675046570
	R-HPTIIA4-12180/85	12	180	50	50	3000	12.0	12.0	750.0	5906675046587
M16	R-HPTIIA4-16125/5	16	125	25	25	3000	6.0	6.0	750.0	5906675046594
	R-HPTIIA4-16140/20	16	140	25	25	2000	6.0	6.0	510.0	5906675034898
	R-HPTIIA4-16150/30	16	150	25	25	2000	5.7	5.7	488.0	5906675046600
	R-HPTIIA4-16180/60	16	180	25	25	2000	6.0	6.0	513.0	5906675046617

R-HPTII-ZF Zinc Flake Throughbolt

Throughbolt anchor with corrosion-resistant coating for cracked and non-cracked concrete

Approvals and Reports

- ETA-12/0309; ETAG 001-2, Option 1
- AT-15-9327/2014

Installation movie

Product overview

Features and benefits

- New generation of throughbolt with unique corrosion-resistant coating
- High performance in cracked and non-cracked concrete confirmed by ETA Option 1
- Highest quality to receive optimal 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 effort

Applications

- Cladding restraints
- Consoles
- Barriers
- Structural steel
- Curtain walling
- Hand rails
- Heavy Plant
- Balustrading
- Passenger lifts
- Facades

Base materials

Approved for use in:

- Cracked concrete C20/25-C50/60
- Non-cracked concrete C20/25-C50/60
- Concrete

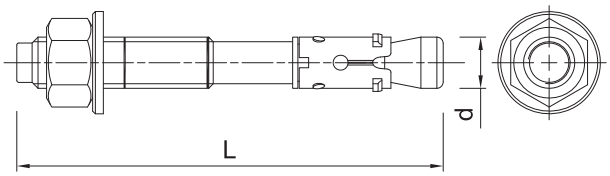
Also suitable for use in:

- 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

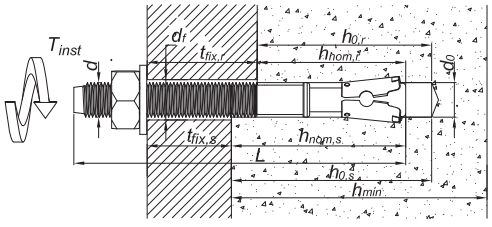
Product information



Size	Product Code	Anchor		Fixture		
		Diameter	Length	Max. thickness		Hole diameter
		d	L	$t_{fix,r}$	$t_{fix,s}$	d_f
		[mm]	[mm]	[mm]	[mm]	[mm]
M8	R-HPTII-ZF-08065/15	8	65	15	-	9
	R-HPTII-ZF-08080/15	8	80	30	15	9
	R-HPTII-ZF-08085/20	8	85	35	20	9
	R-HPTII-ZF-08100/35	8	100	50	35	9
	R-HPTII-ZF-08115/50*	8	115	65	50	9
M10	R-HPTII-ZF-10065/5	10	65	5	-	11
	R-HPTII-ZF-10080/20	10	80	20	-	11
	R-HPTII-ZF-10095/15	10	95	35	15	11
	R-HPTII-ZF-10115/35	10	115	55	35	11
	R-HPTII-ZF-10130/50	10	130	70	50	11
M12	R-HPTII-ZF-12080/5	12	80	5	-	13
	R-HPTII-ZF-12100/5	12	100	25	5	13
	R-HPTII-ZF-12120/25	12	120	45	25	13
	R-HPTII-ZF-12135/40	12	135	60	40	13
	R-HPTII-ZF-12150/55	12	150	75	55	13
M16	R-HPTII-ZF-16100/5	16	100	5	-	18
	R-HPTII-ZF-16105/10	16	105	10	-	18
	R-HPTII-ZF-16140/20	16	140	40	20	18
	R-HPTII-ZF-16160/40	16	160	60	40	18
	R-HPTII-ZF-16180/60	16	180	80	60	18
M20	R-HPTII-ZF-20125/5	20	125	5	-	22
	R-HPTII-ZF-20160/20	20	160	40	20	22

* AT-ITB Polish Technical Approval AT-15-9327/2014

Installation data



Size			M8	M10	M12	M16	M20
Thread diameter	d	[mm]	8	10	12	16	20
Hole diameter in substrate	d_0	[mm]	8	10	12	16	20
Installation torque	T_{inst}	[Nm]	10	20	40	100	180
STANDARD EMBEDMENT DEPTH							
Min. hole depth in substrate	$h_{0,s}$	[mm]	55	69	80	100	119
Installation depth	$h_{nom,s}$	[mm]	55	69	80	100	119
Min. substrate thickness	$h_{min,s}$	[mm]	100	120	140	170	200
Min. spacing (Non-cracked concrete)	$s_{min,r}$	[mm]	50	70	90	160	180

Installation data (cont.)

Size			M8	M10	M12	M16	M20
Min. spacing (Cracked concrete)	$s_{min,r}$	[mm]	50	70	90	160	180
Min. edge distance (Non-cracked concrete)	$c_{min,r}$	[mm]	40	50	65	100	120
Min. edge distance (Cracked concrete)	$c_{min,r}$	[mm]	40	45	65	90	100
REDUCED EMBEDMENT DEPTH							
Min. hole depth in substrate	$h_{0,r}$	[mm]	40	49	60	80	100
Installation depth	$h_{nom,r}$	[mm]	40	49	60	80	100
Min. substrate thickness	$h_{min,r}$	[mm]	100			130	160
Min. spacing (Non-cracked concrete)	$s_{min,r}$	[mm]	55	75	150	190	300
Min. spacing (Cracked concrete)	$s_{min,r}$	[mm]	55	75	150	190	300
Min. edge distance (Non-cracked concrete)	$c_{min,r}$	[mm]	45	60	100	125	200
Min. edge distance (Cracked concrete)	$c_{min,r}$	[mm]	40	50	80	110	120

Mechanical properties

Size			M8	M10	M12	M16	M20
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm²]	620	620	620	620	620
Nominal ultimate tensile strength - shear	f_{uk}	[N/mm²]	520	520	520	520	520
Nominal yield strength - tension	f_{yk}	[N/mm²]	531	531	531	531	531
Nominal yield strength - shear	f_{yk}	[N/mm²]	416	416	416	416	416
Cross sectional area - tension	A_s	[mm²]	25.5	40.7	60.1	106.6	162.9
Cross sectional area - shear	A_s	[mm²]	38.9	61.7	89.6	165.2	259.1
Elastic section modulus	W_{el}	[mm³]	34.3	68.3	119.6	299.5	588.3
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	19.0	38.0	67.0	167.0	328.0
Design bending resistance	M	[Nm]	15.0	31.0	53.0	134.0	263.0

Basic performance data

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

Size		M8	M10	M12	M16	M20
CRACKED CONCRETE						
Standard embedment depth h_{ef}	[mm]	47	59	68	85	99
Reduced embedment depth h_{ef}	[mm]	32	39	48	65	80
NON-CRACKED CONCRETE						
Standard embedment depth h_{ef}	[mm]	47	59	68	85	99
Reduced embedment depth h_{ef}	[mm]	32	39	48	65	80
MEAN ULTIMATE LOAD						
TENSION LOAD $N_{Ru,m}$						
CRACKED CONCRETE						
Standard embedment depth	[kN]	7.50	12.5	19.9	27.3	41.9
Reduced embedment depth	[kN]	4.80	8.60	12.8	26.8	32.7
NON-CRACKED CONCRETE						
Standard embedment depth	[kN]	12.4	20.6	27.7	45.5	64.8
Reduced embedment depth	[kN]	9.60	13.6	17.6	34.5	47.1
SHEAR LOAD $V_{Ru,m}$						
CRACKED CONCRETE						
Standard embedment depth	[kN]	12.2	19.2	28.0	51.5	80.9
Reduced embedment depth	[kN]	12.2	19.2	28.0	51.5	80.9
NON-CRACKED CONCRETE						
Standard embedment depth	[kN]	12.2	19.2	28.0	51.5	80.9
Reduced embedment depth	[kN]	12.2	19.2	28.0	51.5	80.9

Basic performance data (cont.)

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

Size		M8	M10	M12	M16	M20
CHARACTERISTIC LOAD						
TENSION LOAD N_{Rk}						
CRACKED CONCRETE						
Standard embedment depth	[kN]	5.00	9.00	12.0	20.0	30.0
Reduced embedment depth	[kN]	3.00	6.00	9.00	16.0	25.8
NON-CRACKED CONCRETE						
Standard embedment depth	[kN]	9.00	12.0	20.0	35.0	49.6
Reduced embedment depth	[kN]	7.50	9.00	12.0	26.4	36.1
SHEAR LOAD V_{Rk}						
CRACKED CONCRETE						
Standard embedment depth	[kN]	5.00	9.00	23.3	40.0	60.0
Reduced embedment depth	[kN]	3.00	6.00	9.00	32.0	51.6
NON-CRACKED CONCRETE						
Standard embedment depth	[kN]	9.00	12.0	23.3	43.0	67.4
Reduced embedment depth	[kN]	7.50	9.00	12.0	43.0	67.4
DESIGN LOAD						
TENSION LOAD N_{Rd}						
CRACKED CONCRETE						
Standard embedment depth	[kN]	2.78	6.00	8.00	13.3	20.0
Reduced embedment depth	[kN]	1.67	3.33	6.00	10.7	17.2
NON-CRACKED CONCRETE						
Standard embedment depth	[kN]	5.00	8.00	13.3	23.3	33.1
Reduced embedment depth	[kN]	4.17	5.00	8.00	17.6	24.1
SHEAR LOAD V_{Rd}						
CRACKED CONCRETE						
Standard embedment depth	[kN]	2.78	6.00	16.0	26.7	40.0
Reduced embedment depth	[kN]	1.67	3.33	6.00	21.3	34.5
NON-CRACKED CONCRETE						
Standard embedment depth	[kN]	5.00	8.00	18.6	34.4	53.9
Reduced embedment depth	[kN]	4.17	5.00	8.00	34.4	48.1
RECOMMENDED LOAD						
TENSION LOAD N_{rec}						
CRACKED CONCRETE						
Standard embedment depth	[kN]	1.98	4.29	5.71	9.52	14.3
Reduced embedment depth	[kN]	1.19	2.38	4.29	7.62	12.3
NON-CRACKED CONCRETE						
Standard embedment depth	[kN]	3.57	5.71	9.52	16.7	23.6
Reduced embedment depth	[kN]	2.98	3.57	5.71	12.6	17.2
SHEAR LOAD V_{rec}						
CRACKED CONCRETE						
Standard embedment depth	[kN]	1.99	4.29	11.4	19.1	28.6
Reduced embedment depth	[kN]	1.19	2.38	4.29	15.2	24.6
NON-CRACKED CONCRETE						
Standard embedment depth	[kN]	3.57	5.71	13.3	24.6	38.5
Reduced embedment depth	[kN]	2.98	3.57	5.71	24.6	34.4

Product commercial data

Size	Product Code	Anchor		Quantity [pcs]			Weight [kg]			Bar Code
		Diameter [mm]	Length [mm]	Box	Outer	Pallet	Box	Outer	Pallet	
M8	R-HPTIIZF-08065/15	8	65	100	100	12000	2.8	2.8	366.0	5906675022840
	R-HPTIIZF-08080/15	8	80	100	100	12000	3.3	3.3	426.0	5906675022857
	R-HPTIIZF-08100/35	8	100	100	100	17000	3.4	3.4	608.0	5906675034881
	R-HPTIIZF-08115/50*	8	115	100	100	12000	4.4	4.4	558.0	5906675022871
M10	R-HPTIIZF-10065/5	10	65	50	50	10500	2.4	2.4	534.0	5906675022888
	R-HPTIIZF-10080/20	10	80	50	50	6000	3.0	3.0	390.0	5906675022895
	R-HPTIIZF-10095/15	10	95	50	50	6000	3.0	3.0	390.0	5906675022901
	R-HPTIIZF-10115/35	10	115	50	50	6000	3.7	3.7	468.0	5906675022918
	R-HPTIIZF-10130/50	10	130	50	50	6000	4.0	4.0	510.0	5906675022925
M12	R-HPTIIZF-12080/5	12	80	50	50	6000	5.0	5.0	630.0	5906675022932
	R-HPTIIZF-12100/5	12	100	50	50	6000	5.0	5.0	630.0	5906675022949
	R-HPTIIZF-12120/25	12	120	50	50	6000	5.5	5.5	684.0	5906675022956
	R-HPTIIZF-12135/40	12	135	50	50	3800	6.0	6.0	486.0	5906675022963
	R-HPTIIZF-12150/55	12	150	50	50	76000	7.0	7.0	10670.0	5906675022970
M16	R-HPTIIZF-16105/10	16	105	25	25	3600	5.0	5.0	750.0	5906675022987
	R-HPTIIZF-16140/20	16	140	25	25	1900	6.0	6.0	486.0	5906675022994
	R-HPTIIZF-16180/60	16	180	25	25	1900	6.0	6.0	486.0	5906675023007
M20	R-HPTIIZF-20125/5	20	125	25	25	1900	8.0	8.0	639.9	5906675023021
	R-HPTIIZF-20160/20	20	160	25	25	1900	10.0	10.0	790.0	5906675023038

* AT-ITB Polish Technical Approval AT-15-9327/2014

R-XPTII-A4 Stainless Steel Throughbolt

Stainless steel throughbolt for non-cracked concrete

Approvals and Reports

- ETA-12/0384; ETAG 001-2, Option 7

Product overview

Features and benefits

- Stainless steel anchor for the highest corrosion resistance
- High performance in cracked and non-cracked concrete confirmed by ETA Option 7
- Highest quality to receive optimal load capability
- Fire resistant
- 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 effort

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

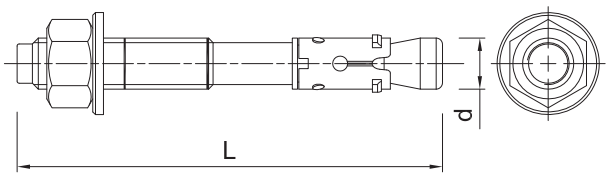
Also suitable for use in:

- Natural Stone

Installation guide

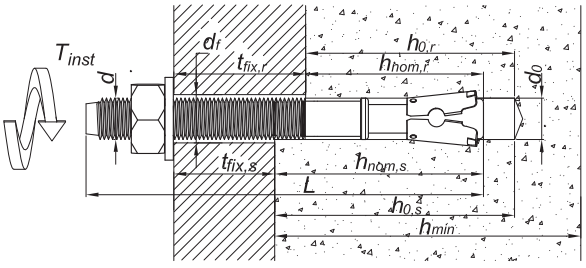
1. Drill a hole of required diameter and depth
2. Clear the hole of drilling dust and debris (using blowpump or equivalent method)
3. Lightly tap the throughbolt through the fixture into hole with a hammer, until fixing depth is reached
4. Tighten to the recommended torque

Product information



Size	Product Code	Anchor		Fixture		
		Diameter	Length	Max. thickness		Hole diameter
		d	L	$t_{fix,r}$	$t_{fix,s}$	d_f
		[mm]	[mm]	[mm]	[mm]	[mm]
M8	R-XPTII-A4-08075/10	8	75	25	10	9
	R-XPTII-A4-08085/20	8	85	35	20	9
	R-XPTII-A4-08095/30	8	95	45	30	9
	R-XPTII-A4-08105/40	8	105	55	40	9
	R-XPTII-A4-08115/50	8	115	65	50	9
M10	R-XPTII-A4-10065/5	10	65	5	-	11
	R-XPTII-A4-10080/20	10	80	20	-	11
	R-XPTII-A4-10095/15	10	95	35	15	11
	R-XPTII-A4-10115/35	10	115	55	35	11
	R-XPTII-A4-10130/50	10	130	70	50	11
	R-XPTII-A4-10140/60	10	140	80	60	11
M12	R-XPTII-A4-12080/5	12	80	5	-	13
	R-XPTII-A4-12100/5	12	100	25	5	13
	R-XPTII-A4-12125/30	12	125	50	30	13
	R-XPTII-A4-12150/55	12	150	75	55	13
	R-XPTII-A4-12180/85	12	180	105	85	13
M16	R-XPTII-A4-16125/5	16	125	25	5	18
	R-XPTII-A4-16140/20	16	140	40	20	18
	R-XPTII-A4-16150/30	16	150	50	30	18
	R-XPTII-A4-16180/60	16	180	80	60	18
	R-XPTII-A4-16220/100	16	220	120	100	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
STANDARD EMBEDMENT DEPTH						
Min. hole depth in substrate	$h_{0,s}$	[mm]	55	69	80	100
Installation depth	$h_{nom,s}$	[mm]	55	69	80	100
Min. substrate thickness	$h_{min,s}$	[mm]	100	120	140	170
Min. spacing	$s_{min,r}$	[mm]	65	90	110	170
Min. edge distance	$c_{min,r}$	[mm]		60	85	90

Installation data (cont.)

Size			M8	M10	M12	M16
REDUCED EMBEDMENT DEPTH						
Min. hole depth in substrate	$h_{0,r}$	[mm]	40	49	60	80
Installation depth	$h_{nom,r}$	[mm]	40	49	60	80
Min. substrate thickness	$h_{min,r}$	[mm]		100		130
Min. spacing	$s_{min,r}$	[mm]	65	115	150	190
Min. edge distance	$c_{min,r}$	[mm]	50	80	100	120

Mechanical properties

Size			M8	M10	M12	M16
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm²]	545	545	500	500
Nominal ultimate tensile strength - shear	f_{uk}	[N/mm²]	600	600	550	550
Nominal yield strength - tension	f_{yk}	[N/mm²]	436	436	400	400
Nominal yield strength - shear	f_{yk}	[N/mm²]	480	480	440	440
Cross sectional area - tension	A_s	[mm²]	38.9	61.7	89.6	165.2
Cross sectional area - shear	A_s	[mm²]	38.9	61.7	89.6	165.2
Elastic section modulus	W_{el}	[mm³]	34.3	68.3	119.6	299.5
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	22.0	45.0	72.0	180.0
Design bending resistance	M	[Nm]	18.0	36.0	57.0	144.0

Basic performance data

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

Size		M8	M10	M12	M16
Standard embedment depth h_{ef}	[mm]	47	59	68	85
Reduced embedment depth h_{ef}	[mm]	32	39	48	65
MEAN ULTIMATE LOAD					
TENSION LOAD $N_{Ru,m}$					
Standard embedment depth	[kN]	15.4	22.8	29.2	55.8
Reduced embedment depth	[kN]	10.4	16.0	22.1	37.9
SHEAR LOAD $V_{Ru,m}$					
Standard embedment depth	[kN]	14.0	22.2	29.6	54.5
Reduced embedment depth	[kN]	14.0	19.2	29.6	54.5
CHARACTERISTIC LOAD					
TENSION LOAD N_{Rk}					
Standard embedment depth	[kN]	9.00	16.0	25.0	39.5
Reduced embedment depth	[kN]	7.50	12.0	16.8	26.4
SHEAR LOAD V_{Rk}					
Standard embedment depth	[kN]	11.7	18.5	24.6	45.4
Reduced embedment depth	[kN]	11.7	14.7	24.6	45.4
DESIGN LOAD					
TENSION LOAD N_{Rd}					
Standard embedment depth	[kN]	5.00	10.7	16.7	26.3
Reduced embedment depth	[kN]	4.17	6.67	11.2	17.6
SHEAR LOAD V_{Rd}					
Standard embedment depth	[kN]	9.36	14.8	19.7	36.3
Reduced embedment depth	[kN]	9.36	8.18	19.7	36.3

Basic performance data (cont.)

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

RECOMMENDED LOAD					
TENSION LOAD N_{rec}					
Standard embedment depth	[kN]	3.57	7.62	11.9	18.8
Reduced embedment depth	[kN]	2.98	4.76	8.00	12.6
SHEAR LOAD V_{rec}					
Standard embedment depth	[kN]	6.69	10.6	14.1	25.9
Reduced embedment depth	[kN]	6.69	5.84	14.1	25.9

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-XPTII-A4-08075/10	8	75	100	100	12000	2.8	2.8	366.0	5906675047249
	R-XPTII-A4-08085/20	8	85	100	100	12000	3.3	3.3	426.0	5906675047256
	R-XPTII-A4-08095/30	8	95	100	100	12000	3.3	3.3	426.0	5906675047263
	R-XPTII-A4-08105/40	8	105	100	100	12000	4.4	4.4	558.0	5906675047270
	R-XPTII-A4-08115/50	8	115	100	100	12000	4.8	4.8	606.0	5906675047287
M10	R-XPTII-A4-10065/5	10	65	50	50	11000	3.0	3.0	690.0	5906675047294
	R-XPTII-A4-10080/20	10	80	50	50	6000	3.0	3.0	390.0	5906675047300
	R-XPTII-A4-10095/15	10	95	50	50	6000	3.7	3.7	468.0	5906675047317
	R-XPTII-A4-10115/35	10	115	50	50	6000	4.0	4.0	510.0	5906675047324
	R-XPTII-A4-10130/50	10	130	50	50	6000	5.0	5.0	630.0	5906675047331
	R-XPTII-A4-10140/60	10	140	50	50	6000	5.0	5.0	630.0	5906675047318
M12	R-XPTII-A4-12080/5	12	80	50	50	6000	5.6	5.6	702.0	5906675047355
	R-XPTII-A4-12100/5	12	100	50	50	6000	6.0	6.0	750.0	5906675047362
	R-XPTII-A4-12125/30	12	125	50	50	6000	7.0	7.0	870.0	5906675047379
	R-XPTII-A4-12150/55	12	150	50	50	4000	10.0	10.0	830.0	5906675047386
	R-XPTII-A4-12180/85	12	180	50	50	3000	12.0	12.0	750.0	5906675047393
M16	R-XPTII-A4-16125/5	16	125	25	25	3000	6.0	6.0	750.0	5906675047409
	R-XPTII-A4-16140/20	16	140	25	25	2000	6.0	6.0	750.0	5906675047416
	R-XPTII-A4-16150/30	16	150	25	25	2000	5.7	5.7	488.0	5906675047430
	R-XPTII-A4-16180/60	16	180	25	25	2000	6.0	6.0	512.0	5906675047447
	R-XPTII-A4-16220/100	16	220	25	25	2000	6.0	6.0	720.0	

R-XPT Throughbolt

Throughbolt for non-cracked concrete

Approvals and Reports

- ETA-08/0339; ETAG 001-2, Option 7
- AT-15-9327/2014

Installation movie

Product overview

Features and benefits

- High performance in non-cracked concrete confirmed by ETA Option 7
- High quality with cost effectiveness
- Suitable for reduced embedment to avoid contact with reinforcement
- Embedment depth markings help to ensure precise installation of the anchor
- Desidn allows drilling and installing directly trough the fixture and helps to reduce installation effort
- Cold formed body ensures consistent dimensional accuracy
- Simple through-installation (drilling and installation through fixed material)
- Optimized expander design with six grip features allows for a high load-bearing capacity

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

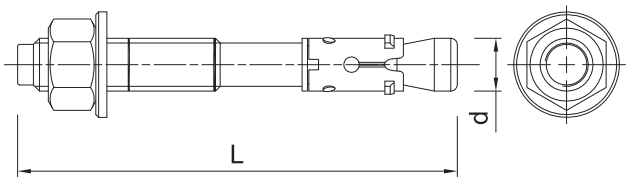
Also suitable for use in:

- 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		Hole diameter
		d	L	$t_{fix,r}$	$t_{fix,s}$	d_f
		[mm]	[mm]	[mm]	[mm]	[mm]
M6	R-XPT-06050/10*	6	50	10	-	7
	R-XPT-06065/5*	6	65	25	5	7
	R-XPT-06085/25*	6	85	45	25	7
	R-XPT-06100/40*	6	100	60	40	7
M8	R-XPT-08050/5*	8	50	5	-	9
	R-XPT-08060/10	8	60	10	-	9
	R-XPT-08065/15	8	65	15	-	9
	R-XPT-08075/10	8	75	25	10	9
	R-XPT-08080/15	8	80	30	15	9
	R-XPT-08085/20	8	85	35	20	9
	R-XPT-08095/30	8	95	45	30	9
	R-XPT-08115/50	8	115	65	50	9
	R-XPT-08140/75	8	140	90	75	9
	R-XPT-08150/85	8	150	100	85	9
M10	R-XPT-10065/5	10	65	5	-	11
	R-XPT-10080/10	10	80	20	10	11
	R-XPT-10095/25	10	95	35	25	11
	R-XPT-10115/45	10	115	55	45	11
	R-XPT-10130/60	10	130	70	60	11
	R-XPT-10140/70	10	140	80	70	11
	R-XPT-10150/80	10	150	90	80	11
	R-XPT-10180/110	10	180	120	110	11
M12	R-XPT-12080/5	12	80	5	-	13
	R-XPT-12100/5	12	100	25	5	13
	R-XPT-12120/25	12	120	45	25	13
	R-XPT-12125/30	12	125	50	30	13
	R-XPT-12135/40	12	135	60	40	13
	R-XPT-12140/45	12	140	65	45	13
	R-XPT-12150/55	12	150	75	55	13
	R-XPT-12180/85	12	180	105	85	13
	R-XPT-12220/125*	12	220	145	125	13
	R-XPT-12300/205*	12	300	225	205	13
M16	R-XPT-16100/5	16	100	5	-	18
	R-XPT-16105/10	16	105	10	-	18
	R-XPT-16125/5	16	125	25	5	18
	R-XPT-16140/20	16	140	40	20	18
	R-XPT-16150/30	16	150	50	30	18
	R-XPT-16160/40	16	160	60	40	18
	R-XPT-16180/60	16	180	80	60	18
	R-XPT-16220/100*	16	220	120	100	18
	R-XPT-16280/160*	16	280	180	160	18

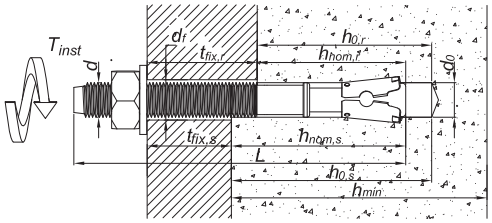
* AT-ITB Polish Technical Approval AT-15-9327/2014

Product information (cont.)

Size	Product Code	Anchor		Fixture		
		Diameter	Length	Max. thickness		Hole diameter
		d	L	$t_{fix,r}$	$t_{fix,s}$	d_f
		[mm]	[mm]	[mm]	[mm]	[mm]
M20	R-XPT-20125/5	20	125	5	-	22
	R-XPT-20160/20	20	160	40	20	22
	R-XPT-20200/60*	20	200	80	60	22
	R-XPT-20300/160*	20	300	180	160	22
M24	R-XPT-24180/20*	24	180	35	20	26
	R-XPT-24260/100*	24	260	115	100	26
	R-XPT-24300/140*	24	300	155	140	26

* AT-ITB Polish Technical Approval AT-15-9327/2014

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_0	[mm]	6	8	10	12	16	20	24
Installation torque	T_{inst}	[Nm]	5	15	30	50	100	200	300
STANDARD EMBEDMENT DEPTH									
Min. hole depth in substrate	$h_{0,s}$	[mm]	50	55	59	80	100	119	135
Installation depth	$h_{nom,s}$	[mm]	50	55	59	80	100	119	135
Min. substrate thickness	$h_{min,s}$	[mm]	84	100		136	170	198	224
Min. spacing	$s_{min,s}$	[mm]	45	50	55	75	90	140	180
Min. edge distance	$c_{min,s}$	[mm]	50	40	50	65	80	100	200
REDUCED EMBEDMENT DEPTH									
Min. hole depth in substrate	$h_{0,r}$	[mm]	30	40	49	60	80	99	120
Installation depth	$h_{nom,r}$	[mm]	30	40	49	60	80	99	120
Min. substrate thickness	$h_{min,r}$	[mm]	80	100			130	158	194
Min. spacing	$s_{min,r}$	[mm]	40	45	55	100		125	160
Min. edge distance	$c_{min,r}$	[mm]	45	40	65	100		125	160

Mechanical properties

Size			M6	M8	M10	M12	M16	M20	M24
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm²]	630	620	620	620	620	620	580
Nominal ultimate tensile strength - shear	f_{uk}	[N/mm²]	520	520	520	520	520	520	680
Nominal yield strength - tension	f_{yk}	[N/mm²]	539	531	531	531	531	531	496
Nominal yield strength - shear	f_{yk}	[N/mm²]	416	416	416	416	416	416	544
Cross sectional area - tension	A_s	[mm²]	15.2	25.5	40.7	60.1	106.6	162.9	311.0
Cross sectional area - shear	A_s	[mm²]	20.1	36.6	58.0	84.3	157.0	245.0	353.0
Elastic section modulus	W_{el}	[mm³]	12.7	31.2	62.3	109.2	277.5	540.9	935.5
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	7.10	17.0	35.0	61.0	155.0	302.0	651.0
Design bending resistance	M	[Nm]	5.70	14.0	28.0	49.0	124.0	241.0	521.0

Basic performance data

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

Size		M6	M8	M10	M12	M16	M20	M24
Standard embedment depth h_{ef}	[mm]	42	47	49	68	85	99	112
Reduced embedment depth h_{ef}	[mm]	22	32	39	48	65	79	97
MEAN ULTIMATE LOAD								
TENSION LOAD $N_{Ru,m}$								
Standard embedment depth	[kN]	8.70	18.1	19.8	28.0	49.7	65.3	67.6
Reduced embedment depth	[kN]	5.70	11.9	11.4	21.5	43.0	45.5	62.7
SHEAR LOAD $V_{Ru,m}$								
Standard embedment depth	[kN]	6.66	12.2	19.2	28.0	51.5	80.8	152.3
Reduced embedment depth	[kN]	6.66	12.2	16.0	28.0	51.5	80.8	152.3
CHARACTERISTIC LOAD								
TENSION LOAD N_{Rk}								
Standard embedment depth	[kN]	6.80	12.0	12.0	25.0	40.0	40.0	50.0
Reduced embedment depth	[kN]	4.50	9.00	9.00	16.0	30.0	35.0	40.0
SHEAR LOAD V_{Rk}								
Standard embedment depth	[kN]	5.50	10.1	16.0	23.3	43.0	67.4	126.9
Reduced embedment depth	[kN]	5.50	10.1	12.0	23.3	43.0	67.4	126.9
DESIGN LOAD								
TENSION LOAD N_{Rd}								
Standard embedment depth	[kN]	3.78	6.67	6.67	13.9	22.2	22.2	27.8
Reduced embedment depth	[kN]	2.50	5.00	5.00	8.89	16.7	19.4	22.2
SHEAR LOAD V_{Rd}								
Standard embedment depth	[kN]	4.40	8.08	12.8	18.6	34.4	53.9	101.6
Reduced embedment depth	[kN]	4.40	8.08	6.67	18.6	34.4	38.2	101.6
RECOMMENDED LOAD								
TENSION LOAD N_{rec}								
Standard embedment depth	[kN]	2.70	4.76	4.76	9.92	15.9	15.9	19.8
Reduced embedment depth	[kN]	1.79	3.57	3.57	6.35	11.9	13.9	15.9
SHEAR LOAD V_{rec}								
Standard embedment depth	[kN]	3.14	5.77	9.14	13.3	24.6	38.5	72.5
Reduced embedment depth	[kN]	3.14	5.77	4.76	13.3	24.6	27.3	72.5

Product commercial data

Size	Product Code	Anchor		Quantity [pcs]			Weight [kg]			Bar Code
		Diameter [mm]	Length [mm]	Box	Outer	Pallet	Box	Outer	Pallet	
M6	R-XPT-06050/10*	6	50	100	100	21000	1.22	1.22	287.0	5906675233499
	R-XPT-06065/5*	6	65	100	100	21000	1.47	1.47	339.5	5906675233505
	R-XPT-06085/25*	6	85	100	100	21000	1.81	1.81	410.1	5906675233512
	R-XPT-06100/40*	6	100	100	100	6400	2.1	2.1	163.4	5906675250311
M8	R-XPT-08050/5*	8	50	100	100	21000	2.3	2.3	513.0	5906675250328
	R-XPT-08060/10	8	60	100	100	21000	2.0	2.0	450.0	5906675234601
	R-XPT-08065/15	8	65	100	100	12000	2.8	2.8	366.0	5906675250335
	R-XPT-08075/10	8	75	100	100	12000	3.3	3.3	426.0	5906675233536
	R-XPT-08080/15	8	80	100	100	12000	3.3	3.3	426.0	5906675250342
	R-XPT-08085/20	8	85	100	100	12000	3.4	3.4	438.0	5906675249636
	R-XPT-08095/30	8	95	100	100	12000	3.7	3.7	474.0	5906675233543
	R-XPT-08115/50	8	115	100	100	12000	4.4	4.4	558.0	5906675233550
	R-XPT-08140/75	8	140	100	100	10800	2.0	2.0	246.0	5906675233567
	R-XPT-08150/85	8	150	100	100	10800	4.4	4.4	505.2	5906675250359
M10	R-XPT-10065/5	10	65	50	50	10500	2.0	2.0	450.0	5906675233574
	R-XPT-10080/10	10	80	50	50	6000	6.0	6.0	750.0	5906675233581
	R-XPT-10095/25	10	95	50	50	6000	3.3	3.3	420.6	5906675233598
	R-XPT-10115/45	10	115	50	50	6000	6.0	6.0	750.0	5906675233604
	R-XPT-10130/60	10	130	50	50	6000	4.0	4.0	510.0	5906675249643
	R-XPT-10140/70	10	140	50	50	6000	6.0	6.0	750.0	5906675233611
	R-XPT-10150/80	10	150	50	50	5400	4.2	4.2	478.7	5906675249650
	R-XPT-10180/110	10	180	50	50	5400	6.0	6.0	678.0	5906675250366
M12	R-XPT-12080/5	12	80	50	50	6000	5.0	5.0	630.0	5906675233628
	R-XPT-12100/5	12	100	50	50	6000	4.8	4.8	603.0	5906675233635
	R-XPT-12120/25	12	120	50	50	6000	5.0	5.0	630.0	5906675250373
	R-XPT-12125/30	12	125	50	50	3800	6.0	6.0	486.0	5906675233642
	R-XPT-12135/40	12	135	50	50	5400	6.0	6.0	678.0	5906675250380
	R-XPT-12140/45	12	140	50	50	5400	6.0	6.0	678.0	5906675249667
	R-XPT-12150/55	12	150	50	50	3800	6.0	6.0	486.0	5906675233659
	R-XPT-12180/85	12	180	50	50	3800	7.0	7.0	562.0	5906675233666
	R-XPT-12220/125*	12	220	50	50	3800	9.1	9.1	721.6	5906675233673
	R-XPT-12300/205*	12	300	10	10	760	2.5	2.5	222.0	5906675251424
M16	R-XPT-16100/5	16	100	25	25	3600	4.5	4.5	672.2	5906675233680
	R-XPT-16105/10	16	105	25	25	3600	6.0	6.0	894.0	5906675250403
	R-XPT-16125/5	16	125	25	25	2700	5.2	5.2	591.1	5906675233697
	R-XPT-16140/20	16	140	25	25	1900	6.0	6.0	486.0	5906675249063
	R-XPT-16150/30	16	150	25	25	1900	6.0	6.0	486.0	5906675249674
	R-XPT-16160/40	16	160	25	25	2700	6.0	6.0	678.0	5906675250410
	R-XPT-16180/60	16	180	25	25	1900	6.0	6.0	486.0	5906675249681
	R-XPT-16220/100*	16	220	25	25	1900	8.2	8.2	656.2	5906675233727
	R-XPT-16280/160*	16	280	15	15	1140	6.4	6.4	514.4	5906675250427
M20	R-XPT-20125/5	20	125	25	25	1900	10.0	10.0	790.0	5906675233734
	R-XPT-20160/20	20	160	25	25	1900	12.5	12.5	980.0	5906675233741
	R-XPT-20200/60*	20	200	10	10	1200	4.1	4.1	520.4	5906675233758
	R-XPT-20300/160*	20	300	10	10	760	7.3	7.3	585.3	5906675233765
M24	R-XPT-24180/20*	24	180	10	10	760	7.1	7.1	567.2	5906675233772
	R-XPT-24260/100*	24	260	10	10	760	9.9	9.9	783.1	5906675233789
	R-XPT-24300/140*	24	300	10	10	760	11.1	11.1	872.8	5906675233796

* AT-ITB Polish Technical Approval AT-15-9327/2014

R-XPT-HD Hot Dip Galvanized Throughbolt

Hot Dip Galvanized throughbolt for non-cracked concrete

Approvals and Reports

- AT-15-9326/2014

Product overview

Features and benefits

- Increased corrosion resistance due to hot dip zinc external protection layer
- High performance in non-cracked concrete confirmed by ETA Option 7
- R-XPT is suitable for reduced embedment to avoid contact with reinforcement
- Embedment depth markings help to ensure precise installation of the anchor
- Design allows drilling and installing directly through the fixture and helps to reduce installation effort
- High quality with cost effectiveness
- Cold formed body ensures consistent dimensional accuracy

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

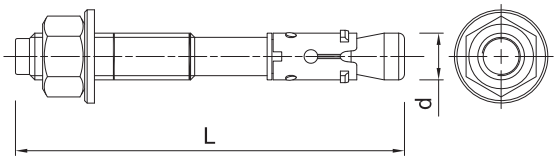
Also suitable for use in:

- Natural Stone

Installation guide

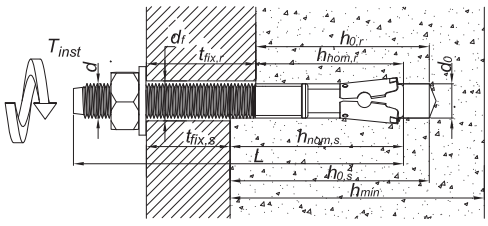
1. Drill a hole of required diameter and depth
2. Clear the hole of drilling dust and debris (using blowpump or equivalent method)
3. Lightly tap the throughbolt through the fixture into hole with a hammer, until fixing depth is reached
4. Tighten to the recommended torque

Product information



Size	Product Code	Anchor		Fixture		
		Diameter	Length	Max. thickness		Hole diameter
		d	L	$t_{fix,r}$	$t_{fix,s}$	d_f
		[mm]	[mm]	[mm]	[mm]	[mm]
M6	R-XPT-HD-06050/10	6	50	10	-	7
	R-XPT-HD-06085/25	6	85	45	25	7
	R-XPT-HD-06100/40	6	100	60	40	7
M8	R-XPT-HD-08050/5	8	50	5	-	9
	R-XPT-HD-08060/10	8	60	10	-	9
	R-XPT-HD-08065/15	8	65	15	-	9
	R-XPT-HD-08075/10	8	75	25	10	9
	R-XPT-HD-08080/15	8	80	30	15	9
	R-XPT-HD-08095/30	8	95	45	30	9
	R-XPT-HD-08115/50	8	115	65	50	9
	R-XPT-HD-08140/75	8	140	90	75	9
M10	R-XPT-HD-10065/5	10	65	5	-	11
	R-XPT-HD-10080/10	10	80	20	10	11
	R-XPT-HD-10095/25	10	95	35	25	11
	R-XPT-HD-10115/45	10	115	55	45	11
	R-XPT-HD-10130/60	10	130	70	60	11
	R-XPT-HD-10140/70	10	140	80	70	11
M12	R-XPT-HD-12080/5	12	80	5	-	13
	R-XPT-HD-12100/5	12	100	25	5	13
	R-XPT-HD-12120/25	12	120	45	25	13
	R-XPT-HD-12125/30	12	125	50	30	13
	R-XPT-HD-12135/40	12	135	60	40	13
	R-XPT-HD-12150/55	12	150	75	55	13
	R-XPT-HD-12180/85	12	180	105	85	13
	R-XPT-HD-12220/125	12	220	145	125	13
M16	R-XPT-HD-16100/5	16	100	5	-	18
	R-XPT-HD-16105/10	16	105	10	-	18
	R-XPT-HD-16125/5	16	125	25	5	18
	R-XPT-HD-16140/20	16	140	40	20	18
	R-XPT-HD-16150/30	16	150	50	30	18
	R-XPT-HD-16180/60	16	180	80	60	18
	R-XPT-HD-16220/100	16	220	120	100	18
M20	R-XPT-HD-20125/5	20	125	5	-	22
	R-XPT-HD-20160/20	20	160	40	20	22
	R-XPT-HD-20200/60	20	200	80	60	22
M24	R-XPT-HD-24260/100	24	260	115	100	26

Installation data



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_0	[mm]	6	8	10	12	16	20	24
Installation torque	T_{inst}	[Nm]	5	15	30	50	100	200	300
STANDARD EMBEDMENT DEPTH									
Min. hole depth in substrate	$h_{0,s}$	[mm]	55	60	65	85	105	125	140
Installation depth	$h_{nom,s}$	[mm]	50	55	59	80	100	119	135
Min. substrate thickness	$h_{min,s}$	[mm]	84	100		136	170	198	224
Min. spacing	$s_{min,s}$	[mm]	45	50	55	75	90	140	180
Min. edge distance	$c_{min,s}$	[mm]	50	40	50	65	80	100	200
REDUCED EMBEDMENT DEPTH									
Min. hole depth in substrate	$h_{0,r}$	[mm]	35	45	55	66	85	105	125
Installation depth	$h_{nom,r}$	[mm]	30	40	49	60	80	99	120
Min. substrate thickness	$h_{min,r}$	[mm]	80	100			130	158	194
Min. spacing	$s_{min,r}$	[mm]	40	45	55	100		125	160
Min. edge distance	$c_{min,r}$	[mm]	45	40	65	100		125	160

Mechanical properties

Size			M6	M8	M10	M12	M16	M20	M24
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm²]	630	620	620	620	620	620	580
Nominal ultimate tensile strength - shear	f_{uk}	[N/mm²]	520	520	520	520	520	520	680
Nominal yield strength - tension	f_{yk}	[N/mm²]	539	531	531	531	531	531	496
Nominal yield strength - shear	f_{yk}	[N/mm²]	416	416	416	416	416	416	544
Cross sectional area - tension	A_s	[mm²]	15.2	25.5	40.7	60.1	106.6	162.9	311.0
Cross sectional area - shear	A_s	[mm²]	20.1	36.6	58.0	84.3	157.0	245.0	353.0
Elastic section modulus	W_{el}	[mm³]	12.7	31.2	62.3	109.2	277.5	540.9	935.5
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	7.10	17.0	35.0	61.0	155.0	302.0	651.0
Design bending resistance	M	[Nm]	5.70	14.0	28.0	49.0	124.0	241.0	521.0

Basic performance data

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

Size		M6	M8	M10	M12	M16	M20	M24
NON-CRACKED CONCRETE								
MEAN ULTIMATE LOAD								
TENSION LOAD $N_{Ru,m}$								
Standard embedment depth	[kN]	8.68	16.2	20.0	29.9	47.9	58.4	71.7
Reduced embedment depth	[kN]	4.20	9.61	12.9	20.9	34.8	46.6	61.6
SHEAR LOAD $V_{Ru,m}$								
Standard embedment depth	[kN]	6.66	12.2	19.2	28.0	51.5	80.9	152.3
Reduced embedment depth	[kN]	6.66	12.2	16.0	28.0	51.5	80.9	152.3
CHARACTERISTIC LOAD								
TENSION LOAD N_{Rk}								
Standard embedment depth	[kN]	6.85	9.72	12.6	20.2	27.6	35.0	41.9
Reduced embedment depth	[kN]	2.98	6.05	8.87	12.9	19.4	28.0	35.4
SHEAR LOAD V_{Rk}								
Standard embedment depth	[kN]	5.50	9.72	12.6	23.3	43.0	67.4	83.8
Reduced embedment depth	[kN]	2.98	6.05	8.87	12.9	38.7	56.1	70.7
DESIGN LOAD								
TENSION LOAD N_{Rd}								
Standard embedment depth	[kN]	2.72	3.86	5.00	8.00	10.95	13.9	16.6
Reduced embedment depth	[kN]	1.18	2.40	3.52	5.11	7.68	11.1	14.0

Basic performance data (cont.)

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

Size		M6	M8	M10	M12	M16	M20	M24
SHEAR LOAD V_{Rd}								
Standard embedment depth	[kN]	2.72	3.86	5.00	16.0	21.9	27.8	33.3
Reduced embedment depth	[kN]	1.18	2.40	3.52	5.11	15.4	22.3	28.1
RECOMMENDED LOAD								
TENSION LOAD N_{rec}								
Standard embedment depth	[kN]	1.94	2.76	3.57	5.72	7.82	9.93	11.9
Reduced embedment depth	[kN]	0.84	1.71	2.51	3.65	5.49	7.95	10.0
SHEAR LOAD V_{rec}								
Standard embedment depth	[kN]	1.94	2.76	3.57	11.4	15.6	19.8	23.7
Reduced embedment depth	[kN]	0.84	1.71	2.51	3.65	10.98	15.9	20.0

Product commercial data

Size	Product Code	Anchor		Quantity [pcs]			Weight [kg]			Bar Code
		Diameter [mm]	Length [mm]	Box	Outer	Pallet	Box	Outer	Pallet	
M6	R-XPT-HD-06050/10	6	50	100	100	58200	1.23	1.23	744.7	5906675277844
	R-XPT-HD-06085/25	6	85	100	100	39100	1.83	1.83	745.5	5906675277851
	R-XPT-HD-06100/40	6	100	100	100	6700	2.1	2.1	169.7	5906675277868
M8	R-XPT-HD-08050/5	8	50	100	100	9800	2.3	2.3	257.9	5906675277875
	R-XPT-HD-08060/10	8	60	100	100	10000	2.6	2.6	287.0	5906675234007
	R-XPT-HD-08065/15	8	65	100	100	10000	2.8	2.8	308.5	5906675277882
	R-XPT-HD-08075/10	8	75	100	100	12000	3.1	3.1	403.2	5906675234014
	R-XPT-HD-08080/15	8	80	100	100	12000	3.3	3.3	426.6	5906675277899
	R-XPT-HD-08095/30	8	95	100	100	9900	3.6	3.6	390.4	5906675234618
	R-XPT-HD-08115/50	8	115	100	100	12000	4.2	4.2	536.4	5906675234038
	R-XPT-HD-08140/75	8	140	100	100	7600	4.9	4.9	405.4	5906675234045
M10	R-XPT-HD-10065/5	10	65	50	50	10000	2.3	2.3	498.0	5906675234052
	R-XPT-HD-10080/10	10	80	50	50	6000	2.7	2.7	354.0	5906675234069
	R-XPT-HD-10095/25	10	95	50	50	6000	3.1	3.1	397.8	5906675234076
	R-XPT-HD-10115/45	10	115	50	50	6000	3.6	3.6	455.4	5906675234083
	R-XPT-HD-10130/60	10	130	50	50	6000	4.0	4.0	508.0	5906675277905
	R-XPT-HD-10140/70	10	140	50	50	6000	4.2	4.2	528.6	5906675234090
M12	R-XPT-HD-12080/5	12	80	50	50	6000	4.0	4.0	507.0	5906675234106
	R-XPT-HD-12100/5	12	100	50	50	6000	4.6	4.6	586.2	5906675234113
	R-XPT-HD-12120/25	12	120	50	50	6000	5.6	5.6	706.3	5906675277912
	R-XPT-HD-12125/30	12	125	50	50	3800	5.5	5.5	450.3	5906675234625
	R-XPT-HD-12135/40	12	135	50	50	4000	6.0	6.0	510.6	5906675277929
	R-XPT-HD-12150/55	12	150	50	50	3800	6.4	6.4	517.9	5906675234137
	R-XPT-HD-12180/85	12	180	50	50	3800	7.5	7.5	597.7	5906675234144
	R-XPT-HD-12220/125	12	220	50	50	3000	9.1	9.1	576.6	5906675234151
M16	R-XPT-HD-16100/5	16	100	25	25	3000	4.3	4.3	546.0	5906675234168
	R-XPT-HD-16105/10	16	105	25	25	2400	4.6	4.6	466.5	5906675277936
	R-XPT-HD-16125/5	16	125	25	25	2400	5.1	5.1	518.9	5906675234175
	R-XPT-HD-16140/20	16	140	25	25	1900	5.9	5.9	475.9	5906675277943
	R-XPT-HD-16150/30	16	150	25	25	2700	7.9	7.9	880.5	5906675249728
	R-XPT-HD-16180/60	16	180	25	25	1600	8.9	8.9	597.5	5906675249735
	R-XPT-HD-16220/100	16	220	25	25	1900	8.2	8.2	656.2	5906675234205
M20	R-XPT-HD-20125/5	20	125	25	25	2150	8.2	8.2	735.4	5906675234212
	R-XPT-HD-20160/20	20	160	25	25	1900	10.2	10.2	805.4	5906675234229
	R-XPT-HD-20200/80	20	200	10	10	960	4.9	4.9	501.1	5906675199849
M24	R-XPT-HD-24260/100	24	260	10	10	760	9.9	9.9	785.2	5906675249742