R-XPT THROUGHBOLT

Throughbolt for non-cracked concrete

FEATURES AND BENEFITS

Optimized expander design with six grip features allows for a high load-bearing capacity.

High quality with cost effectiveness.

Design allows drilling and installing directly through the fixture and helps to reduce installation effort.

Embedment depth markings help to ensure precise installation of the anchor.

Cold formed body ensures consistent dimensional accuracy.

Simple through-installation (drilling and installation through fixed material).

Suitable for reduced embedment to avoid contact with reinforcement.

SUBSTRATES

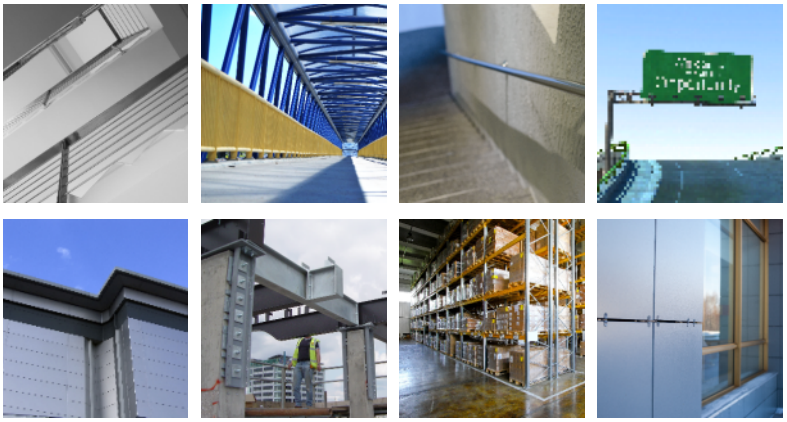
- Non-cracked concrete C20/25-C50/60
- Concrete
- Unreinforced concrete
- Reinforced concrete
- High-density natural stone





APPLICATIONS

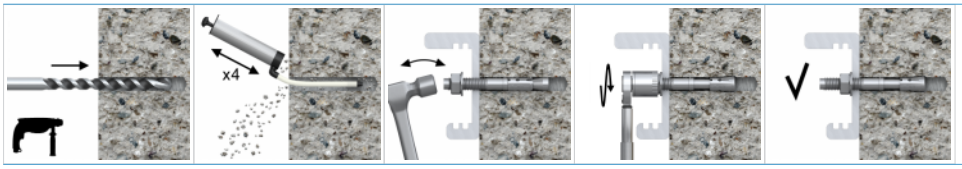
- Balustrades
- Handrails
- Poles and road signs
- Profiled and cover sheets
- Steel structures
- Storage racks
- Ventilated facades





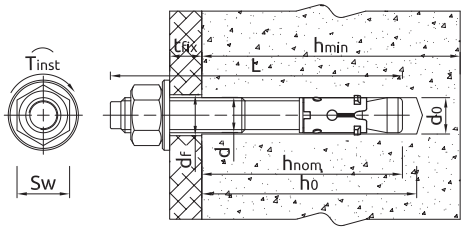
Lyon, France
Parc olympique lyonnais

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 anchor through the fixture into hole with hammer, until fixing depth is reached.
4. Insert bolt through fixture and tighten to the recommended torque.

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
Hole diameter in fixture	d_f	[mm]	9	12	14	18	22
Installation torque	T_{inst}	[Nm]	15	30	50	100	200
Wrench size	Sw	[mm]	13	17	19	24	30
STANDARD EMBEDMENT DEPTH							
Min. hole depth in substrate	$h_{0,s}$	[mm]	65	69	90	110	135
Min. installation depth	$h_{nom,s}$	[mm]	55	59	80	100	119
Min. substrate thickness	$h_{min,s}$	[mm]	100	100	136	170	198
Min. edge distance	c_{min}	[mm]	40	50	65	80	100
For spacing distances	s ≥	[mm]	100	90	100	150	200
Min. spacing	s_{min}	[mm]	50	55	75	90	140
For edge distances	c ≥	[mm]	55	65	90	105	160
REDUCED EMBEDMENT DEPTH							
Min. hole depth in substrate	$h_{0,r}$	[mm]	50	59	70	90	115
Min. installation depth	$h_{nom,r}$	[mm]	40	49	60	80	99
Min. substrate thickness	$h_{min,r}$	[mm]	100	100	100	130	158
Min. edge distance	c_{min}	[mm]	40	65	100	100	125
For spacing distances	s ≥	[mm]	100	55	100	100	125
Min. spacing	s_{min}	[mm]	45	55	100	100	125
For edge distances	c ≥	[mm]	50	65	100	100	125

MECHANICAL PROPERTIES

Size			M8	M10	M12	M16	M20
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm²]	650	650	650	650	650
Nominal yield strength	f_{yk}	[N/mm²]	520	520	520	520	520
Cross sectional area	A_s	[mm²]	26,9	42,4	61,5	109,3	166,8
Elastic section modulus	W_{el}	[mm³]	31,24	62,32	109,2	277,54	544,4
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	22,5	44,9	78,6	199,8	392,0
Design bending resistance	M	[Nm]	18,0	35,9	62,8	159,8	313,6

BASIC PERFORMANCE DATA

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

Size			M8	M10	M12	M16	M20
Standard embedment depth	h_{nom}	[mm]	55	59	80	100	119
Reduced embedment depth	h_{nom}	[mm]	40	49	60	80	99
MEAN ULTIMATE RESISTANCE							
TENSION LOAD $N_{Ru,m}$							
UNCRACKED CONCRETE							
Standard embedment depth	-	[kN]	15,60	19,50	31,20	50,12	57,20
Reduced embedment depth	-	[kN]	11,58	11,70	20,80	33,51	44,90
SHEAR LOAD $V_{Ru,m}$							
UNCRACKED CONCRETE							
Standard embedment depth	-	[kN]	12,10	19,14	27,83	51,81	80,85
Reduced embedment depth	-	[kN]	12,10	16,44	22,45	51,81	80,85
CHARACTERISTIC RESISTANCE							
TENSION LOAD N_{Rk}							
UNCRACKED CONCRETE							
Standard embedment depth	-	[kN]	12,00	15,00	24,00	38,55	44,00
Reduced embedment depth	-	[kN]	8,90	9,00	16,00	25,78	34,54
SHEAR LOAD V_{Rk}							
UNCRACKED CONCRETE							
Standard embedment depth	-	[kN]	11,00	16,87	25,30	47,10	73,50
Reduced embedment depth	-	[kN]	8,90	11,98	16,36	47,10	69,08
DESIGN RESISTANCE							
TENSION LOAD N_{Rd}							
UNCRACKED CONCRETE							
Standard embedment depth	-	[kN]	8,00	10,00	16,00	25,70	29,33
Reduced embedment depth	-	[kN]	5,94	6,00	10,67	17,19	23,03
SHEAR LOAD V_{Rd}							
UNCRACKED CONCRETE							
Standard embedment depth	-	[kN]	8,80	11,25	20,24	37,68	58,80
Reduced embedment depth	-	[kN]	5,94	7,99	10,91	34,37	46,06
RECOMMENDED LOAD							
TENSION LOAD N_{rec}							
UNCRACKED CONCRETE							
Standard embedment depth	-	[kN]	5,71	7,14	11,43	18,36	20,95
Reduced embedment depth	-	[kN]	4,24	4,29	7,62	12,28	16,45
SHEAR LOAD V_{rec}							
UNCRACKED CONCRETE							
Standard embedment depth	-	[kN]	6,29	8,04	14,46	26,91	42,00
Reduced embedment depth	-	[kN]	4,24	5,71	7,79	24,55	32,90

DESIGN PERFORMANCE DATA

Static loads

Size			M8	M8	M10	M10	M12	M12	M16	M16	M20	M20
Effective embedment depth	h_{ef}	[mm]	32	47	39	49	48	68	65	85	79	99
TENSION LOAD												
STEEL FAILURE												
Characteristic resistance	$N_{Rk,s}$	[kN]	17,5	17,5	27,6	27,6	40,0	40,0	71,0	71,0	108,4	108,4
Partial safety factor	γ_{MS}	[-]	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
PULL-OUT FAILURE												
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p,ucr}$	[kN]	9,0	12,0	9,0	15,0	16,0	24,0	28,0	40,0	36,0	44,0
Installation safety factor	γ_{inst}	[-]	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Increasing factors for concrete C30/37	Ψ_c	[-]	1,23	1,16	1,23	1,23	1,21	1,23	1,23	1,23	1,23	1,23
Increasing factors for concrete C40/50	Ψ_c	[-]	1,43	1,28	1,43	1,43	1,39	1,43	1,43	1,43	1,43	1,43
Increasing factors for concrete C50/60	Ψ_c	[-]	1,58	1,40	1,58	1,58	1,52	1,58	1,58	1,58	1,58	1,58
CONCRETE CONE FAILURE												
Factor for uncracked concrete	$k_{ucr,N}$	[-]	11,0	11,0	11,0	11,0	11,0	11,0	11,0	11,0	11,0	11,0
Installation safety factor	γ_{inst}	[-]	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Spacing	$s_{cr,N}$	[mm]	96	141	117	147	144	204	195	255	237	297
Edge distance	$c_{cr,N}$	[mm]	48	71	59	74	72	102	98	149	119	149
CONCRETE SPLITTING FAILURE												
Spacing	$s_{cr,N}$	[mm]	160	240	200	260	250	370	360	430	410	530
Edge distance	$c_{cr,N}$	[mm]	80	120	100	130	125	185	180	215	205	265
Installation safety factor	γ_{inst}	[-]	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
SHEAR LOAD												
STEEL FAILURE												
Characteristic resistance without lever arm	$V^0_{Rk,s}$	[kN]	11,0	11,0	17,4	17,4	25,3	25,3	47,1	47,1	73,5	73,5
Ductility factor	k_7	[-]	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	22,0	22,0	45,0	45,0	79,0	79,0	200,0	200,0	392,0	392,0
Partial safety factor	γ_{MS}	[-]	1,25	1,25	1,25	1,25	1,25	1,25	1,25	1,25	1,25	1,25

R-XPT THROUGHBOLT

Size			M8	M8	M10	M10	M12	M12	M16	M16	M20	M20
CONCRETE PRY-OUT FAILURE												
Factor	k	[-]	1,0	1,0	1,0	1,0	1,0	2,0	2,0	2,0	2,0	2,0
Installation safety factor	γ_{inst}	[-]	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
CONCRETE EDGE FAILURE												
Effective length of anchor	ℓ_f	[mm]	32	47	39	49	48	68	65	85	79	99
Anchor diameter	d_{nom}	[mm]	8	8	10	10	12	12	16	16	20	20
Installation safety factor	γ_{inst}	[-]	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0

LOGISTICAL DATA

SKU	Base-sales unit	Unit pack	Bulk pack	Pallet	Single Package - Gross Weight	Bulk Package - Gross Weight	Palette - Gross Weight	Barcode
R-XPT-06050/10	pcs.	100.0	100.0	16000.0	1.3	1.3	202.4	5906675233499
R-XPT-06065/5	pcs.	100.0	100.0	16000.0	1.5	1.5	247.4	5906675233505
R-XPT-06085/25	pcs.	100.0	100.0	16000.0	1.8	1.8	295.5	5906675233512
R-XPT-06100/40	pcs.	100.0	100.0	16000.0	2.1	2.1	340.5	5906675250311
R-XPT-08050/5	pcs.	100.0	100.0	16000.0	2.3	2.3	366.4	5906675250328
R-XPT-08060/10	pcs.	100.0	100.0	16000.0	2.6	2.6	414.7	5906675234601
R-XPT-08065/15	pcs.	100.0	100.0	16000.0	2.7	2.7	434.2	5906675250335
R-XPT-08075/10	pcs.	100.0	100.0	16000.0	3.0	3.0	487.4	5906675233536
R-XPT-08080/15	pcs.	100.0	100.0	16000.0	3.2	3.2	511.5	5906675250342
R-XPT-08085/20	pcs.	100.0	100.0	16000.0	3.4	3.4	548.6	5906675249636
R-XPT-08095/30	pcs.	100.0	100.0	12000.0	3.7	3.7	439.1	5906675233543
R-XPT-08115/50	pcs.	100.0	100.0	12000.0	4.2	4.2	509.5	5906675233550
R-XPT-08140/75	pcs.	100.0	100.0	16000.0	5.2	5.2	825.3	5906675233567
R-XPT-08150/85	pcs.	100.0	100.0	16000.0	5.4	5.4	857.3	5906675250359
R-XPT-10065/5	pcs.	50.0	50.0	8000.0	2.4	2.4	378.4	5906675233574
R-XPT-10080/10	pcs.	50.0	50.0	8000.0	2.7	2.7	437.9	5906675233581
R-XPT-10095/25	pcs.	50.0	50.0	8000.0	3.1	3.1	497.6	5906675233598
R-XPT-10115/45	pcs.	50.0	50.0	6000.0	3.6	3.6	433.1	5906675233604
R-XPT-10130/60	pcs.	50.0	50.0	8000.0	4.0	4.0	633.9	5906675249643
R-XPT-10140/70	pcs.	50.0	50.0	8000.0	4.2	4.2	674.7	5906675233611
R-XPT-10150/80	pcs.	50.0	50.0	8000.0	4.4	4.4	711.4	5906675249650
R-XPT-10180/110	pcs.	50.0	50.0	6000.0	5.2	5.2	624.2	5906675250366
R-XPT-12080/5	pcs.	50.0	50.0	8000.0	4.0	4.0	647.4	5906675233628
R-XPT-12100/5	pcs.	50.0	50.0	8000.0	4.8	4.8	762.1	5906675233635
R-XPT-12120/25	pcs.	50.0	50.0	6000.0	5.5	5.5	659.6	5906675250373
R-XPT-12125/30	pcs.	50.0	50.0	6000.0	5.7	5.7	679.2	5906675233642
R-XPT-12135/40	pcs.	50.0	50.0	6000.0	6.1	6.1	727.4	5906675250380
R-XPT-12140/45	pcs.	50.0	50.0	6000.0	6.2	6.2	738.7	5906675249667
R-XPT-12150/55	pcs.	50.0	50.0	4000.0	6.6	6.6	528.4	5906675233659
R-XPT-12160/65	pcs.	50.0	50.0	4000.0	6.9	6.9	554.2	5906675216416
R-XPT-12180/85	pcs.	50.0	50.0	4000.0	7.6	7.6	608.8	5906675233666
R-XPT-12200/105	pcs.	50.0	50.0	4000.0	8.3	8.3	666.2	5906675312132
R-XPT-12220/125	pcs.	50.0	50.0	4000.0	9.1	9.1	724.9	5906675233673
R-XPT-12250/155	pcs.	25.0	25.0	3000.0	5.1	5.1	607.7	5906675312149
R-XPT-12280/185	pcs.	20.0	20.0	1600.0	4.6	4.6	365.8	5906675312156
R-XPT-16090/10	pcs.	25.0	25.0	4000.0	4.1	4.1	649.6	5906675250397
R-XPT-16100/5	pcs.	25.0	25.0	4000.0	4.4	4.4	701.6	5906675233680
R-XPT-16105/10	pcs.	25.0	25.0	4000.0	4.6	4.6	733.3	5906675250403
R-XPT-16125/5	pcs.	25.0	25.0	4000.0	5.2	5.2	839.4	5906675233697
R-XPT-16140/20	pcs.	25.0	25.0	4000.0	5.7	5.7	918.2	5906675249063
R-XPT-16150/30	pcs.	25.0	25.0	4000.0	6.1	6.1	970.9	5906675249674
R-XPT-16160/40	pcs.	25.0	25.0	3000.0	6.4	6.4	762.8	5906675250410
R-XPT-16180/60	pcs.	25.0	25.0	3000.0	7.0	7.0	843.1	5906675249681
R-XPT-16200/80	pcs.	25.0	25.0	3000.0	7.6	7.6	916.9	5906675312163
R-XPT-16220/100	pcs.	25.0	25.0	3000.0	8.4	8.4	1007.3	5906675233727
R-XPT-16250/130	pcs.	25.0	25.0	2000.0	9.3	9.3	1118.0	5906675312170
R-XPT-16280/160	pcs.	15.0	15.0	1200.0	6.3	6.3	502.2	5906675250427
R-XPT-16300/180	pcs.	10.0	10.0	1560.0	4.4	4.4	690.6	5906675312187
R-XPT-20125/5	pcs.	25.0	25.0	3000.0	8.2	8.2	989.8	5906675233734
R-XPT-20160/20	pcs.	25.0	25.0	2000.0	10.1	10.1	805.9	5906675233741
R-XPT-20200/60	pcs.	10.0	10.0	1200.0	4.9	4.9	589.7	5906675233758
R-XPT-20250/110	pcs.	10.0	10.0	1200.0	6.0	6.0	718.2	5906675312194
R-XPT-20300/160	pcs.	10.0	10.0	800.0	7.0	7.0	563.7	5906675233765
R-XPT-24180/20	pcs.	10.0	10.0	1200.0	7.0	7.0	842.2	5906675233772
R-XPT-24260/100	pcs.	10.0	10.0	1200.0	9.3	9.3	1118.8	5906675233789
R-XPT-24300/140	pcs.	10.0	10.0	800.0	10.5	10.5	842.7	5906675233796

RELATED PRODUCTS

SAFETY	Protective gloves for power tools **R-PGL** 			
DRILLING	Rotary Hammer Drill SDS plus; 850W; 26mm; 2.5J **R-PRH-26850** 	Cordless RawlHammer 18V SDS plus **R-PRH18-S** 	Drill bits Aggressor SDS plus **RT-SDSA** 	Drill bits Rebardrill SDS plus **RT-SDSR** 
CLEANING	Blow Pump **R-BLOWPUMP** 			
ANCHORING	Hammer **RT-HAM-0500** 	Long impact sockets **RT-IS** 	Torque wrench **RT-RW-20-400** 	MECHANICAL ANCHOR SETTING TOOL SDS PLUS **RT-SDSI-MA** 