R-XPTIII-ZP

THROUGHBOLT FOR UNCRACKED CONCRETE

Zinc Plated throughbolt for uncracked concrete

FEATURES AND BENEFITS

High performance in non-cracked concrete confirmed by ETA Option 7.

Optimized cone shape, increasing the rake angle floor straps.

The new shape of the expansion band with an innovative ring at the end of the band ensures a perfect connection between the anchor and the ground.

Application specification in accordance with EAD 330232-01-0601-v01 and included in ETA-23/0887.

Identification mark of anchor length, facilitating control after installation.

Polish production guarantees the highest precision of workmanship and its repeatability.

Quick and comfortable assembly using an SDS punch.

Possibility of installation near the edge of concrete and at short distances from adjacent screws.

SUBSTRATES

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

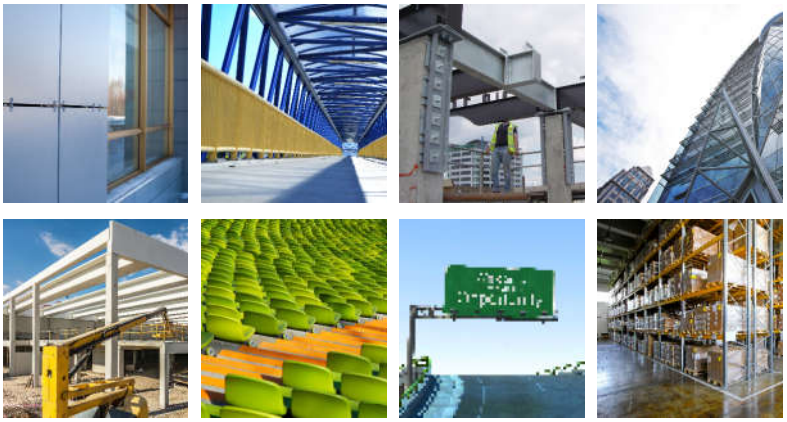


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APPLICATIONS

- Barriers
- Handrails
- Poles and road signs
- Seats in public facilities
- Steel structures
- Ventilated facades





United Arab Emirates, Dubai

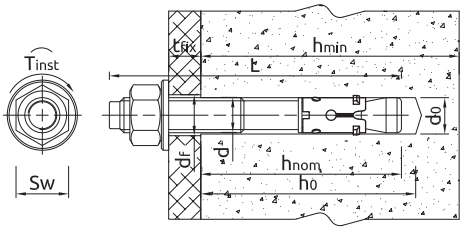
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INSTALLATION GUIDE



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



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
Min. spacing	$s_{min,r}$	[mm]	35	50	70	90	120
Min. edge distance	$c_{min,r}$	[mm]	40	50	70	90	120
STANDARD EMBEDMENT DEPTH							
Min. hole depth in substrate	$h_{0,s}$	[mm]	60	65	90	110	126
Min. installation depth	$h_{nom,s}$	[mm]	55	60	80	100	116
Min. substrate thickness	$h_{min,s}$	[mm]	100	100	102	128	150
REDUCED EMBEDMENT DEPTH							
Min. hole depth in substrate	$h_{0,r}$	[mm]	45	55	70	90	106
Min. installation depth	$h_{nom,r}$	[mm]	40[1)]	50	60	80	96
Min. substrate thickness	$h_{min,r}$	[mm]	100	100	100	100	120

[1)] Use restricted to anchoring statically indeterminate structural components

MECHANICAL PROPERTIES

Size			M8	M10	M12	M16	M20
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm²]	600	600	600	600	600
Nominal yield strength	f_{yk}	[N/mm²]	480	480	480	480	480
Cross sectional area	A_s	[mm²]	36,6	58,0	84,3	157	245
Elastic section modulus	W_{el}	[mm³]	50,3	98,2	169,6	402,1	785,4
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	33,5	66,5	116,1	278,8	548,7
Design bending resistance	M	[Nm]	26,8	53,2	92,8	223,0	439,0

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	60	80	100	116
Reduced embedment depth	h_{nom}	[mm]	40[1)]	50	60	80	96
MEAN ULTIMATE RESISTANCE							
TENSION LOAD							

R-XPTIII-ZP THROUGHBOLT FOR UNCRACKED CONCRETE

Size			M8	M10	M12	M16	M20
UNCRACKED CONCRETE							
Standard embedment depth	$N_{Ru,m}$	[kN]	18,38	23,50	37,85	52,90	67,50
Reduced embedment depth	$N_{Ru,m}$	[kN]	12,22	17,08	22,45	35,37	48,30
SHEAR LOAD							
UNCRACKED CONCRETE							
Standard embedment depth	$V_{Ru,m}$	[kN]	11,99	19,14	22,44	46,20	80,85
Reduced embedment depth	$V_{Ru,m}$	[kN]	11,99	17,08	22,44	46,20	80,85
CHARACTERISTIC RESISTANCE							
TENSION LOAD							
UNCRACKED CONCRETE							
Standard embedment depth	N_{Rk}	[kN]	15,00	17,39	27,58	38,55	49,19
Reduced embedment depth	N_{Rk}	[kN]	8,50	12,45	16,36	25,78	35,20
SHEAR LOAD							
UNCRACKED CONCRETE							
Standard embedment depth	V_{Rk}	[kN]	10,90	17,39	20,40	42,00	73,50
Reduced embedment depth	V_{Rk}	[kN]	8,90	12,45	16,36	42,00	70,40
DESIGN RESISTANCE							
TENSION LOAD							
UNCRACKED CONCRETE							
Standard embedment depth	N_{Rd}	[kN]	10,00	11,60	18,39	25,70	32,80
Reduced embedment depth	N_{Rd}	[kN]	5,67	8,30	10,91	17,19	23,47
SHEAR LOAD							
UNCRACKED CONCRETE							
Standard embedment depth	V_{Rd}	[kN]	8,72	11,60	16,32	33,60	58,80
Reduced embedment depth	V_{Rd}	[kN]	5,94	8,30	10,91	33,60	46,93
RECOMMENDED LOAD							
TENSION LOAD							
UNCRACKED CONCRETE							
Standard embedment depth	N_{rec}	[kN]	7,14	8,28	13,14	18,36	23,43
Reduced embedment depth	N_{rec}	[kN]	4,05	5,93	7,79	12,28	16,76
SHEAR LOAD							
UNCRACKED CONCRETE							
Standard embedment depth	V_{rec}	[kN]	6,23	8,28	11,66	24,00	42,00
Reduced embedment depth	V_{rec}	[kN]	4,24	5,93	7,79	24,00	33,52

[1)] Use restricted to anchoring statically indeterminate structural components

DESIGN PERFORMANCE DATA

Static loads

Size			M8	M8	M10	M10	M12	M12	M16	M16	M20	M20
Nominal embedment depth	h_{nom}	[mm]	40	55	50	60	60	80	80	100	96	116
Effective embedment depth	h_{ef}	[mm]	32[1)]	47	40	50	48	68	65	85	80	100
TENSION LOAD												
STEEL FAILURE												
Characteristic resistance	$N_{Rk,s}$	[kN]	17,5	17,5	27,6	27,6	40,0	40,0	71,1	71,1	108,1	108,1
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]	8,5	15,0	18,0	18,0	32,0	32,0	50,0	50,0	80	80
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	[-]	1,22	122	1,22	122	1,22	122	1,22	122	1,22	1,22
Increasing factors for concrete C40/50	Ψ_c	[-]	1,41	1,41	1,41	1,41	1,41	1,41	1,41	1,41	1,41	1,41
Increasing factors for concrete C50/60	Ψ_c	[-]	1,56	1,56	1,56	1,56	1,56	1,56	1,56	1,56	1,56	1,56
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]	96,0	141,0	120,0	150,0	144,0	204,0	195,0	255,0	240,0	300,0
Edge distance	$c_{cr,N}$	[mm]	48,0	70,5	60,0	75,0	72,0	102,0	97,5	127,5	120,0	150,0
SHEAR LOAD												
STEEL FAILURE												
Characteristic resistance without lever arm	$V^0_{Rk,s}$	[kN]	10,9	10,9	17,4	17,4	20,4	20,4	42,0	42,0	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]	33,5	33,5	66,5	66,5	116,1	116,1	278,8	278,8	548,7	548,7
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
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												

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Size			M8	M8	M10	M10	M12	M12	M16	M16	M20	M20
Effective length of anchor	ℓ_f	[mm]	32	47	40	50	48	68	65	85	80	100
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

[1] Use restricted to anchoring statically indeterminate structural components

LOGISTICAL DATA

SKU	Base-sales unit	Unit pack	Bulk pack	Pallet	Single Package - Gross Weight	Bulk Package - Gross Weight	Palette - Gross Weight	Barcode
R-XPTIIIZP08060/10		100.0	100.0	39200.0	2.7	2.7	1077.6	5906675534558
R-XPTIIIZP08075/25		100.0	100.0	16000.0	3.1	3.1	499.2	5906675534565
R-XPTIIIZP08085/35		100.0	100.0	39200.0	3.3	3.3	1292.0	5906675534572
R-XPTIIIZP08095/45		100.0	100.0	12000.0	3.7	3.7	444.0	5906675534589
R-XPTIIIZP08115/65		100.0	100.0	12000.0	4.4	4.4	532.8	5906675534596
R-XPTIIIZP08150100		100.0	100.0	12000.0	5.2	5.2	838.4	5906675534602
R-XPTIIIZP10065/5		50.0	50.0	19600.0	2.4	2.4	940.0	5906675534619
R-XPTIIIZP10080/20		50.0	50.0	8000.0	2.9	2.9	457.6	5906675534626
R-XPTIIIZP10095/35		50.0	50.0	19600.0	3.2	3.2	617.6	5906675534633
R-XPTIIIZP10105/45		50.0	50.0	9800.0	3.2	3.2	654.2	5906675656977
R-XPTIIIZP10115/55		50.0	50.0	19600.0	1.8	1.8	722.3	5906675534640
R-XPTIIIZP10130/70		50.0	50.0	8000.0	2.1	2.1	656.0	5906675534657
R-XPTIIIZP10140/80		50.0	50.0	19600.0	2.2	2.2	854.8	5906675534664
R-XPTIIIZP10150/90		50.0	50.0	8000.0	4.5	4.5	712.0	5906675645735
R-XPTIIIZP10180120		50.0	50.0	6000.0	2.4	2.4	726.0	5906675534671
R-XPTIIIZP12080/5		50.0	50.0	19600.0	4.2	4.2	1603.3	5906675534688
R-XPTIIIZP12100/25		50.0	50.0	19600.0	4.8	4.8	760.0	5906675534695
R-XPTIIIZP12120/45		50.0	50.0	19600.0	2.8	2.8	1090.9	5906675534718
R-XPTIIIZP12135/60		50.0	50.0	19600.0	3.1	3.1	1227.7	5906675534725
R-XPTIIIZP12150/75		50.0	50.0	19600.0	3.3	3.3	1308.3	5906675534732
R-XPTIIIZP12180105		50.0	50.0	19600.0	3.9	3.9	1533.5	5906675534749
R-XPTIIIZP12200125		50.0	50.0	4000.0	8.3	8.3	667.4	5906675534756
R-XPTIIIZP12220145		50.0	50.0	4000.0	8.9	8.9	737.8	5906675534763
R-XPTIIIZP12250175		50.0	50.0	3000.0	10.1	10.1	808.6	5906675534770
R-XPTIIIZP12280205		50.0	50.0	1600.0	10.6	10.6	869.0	5906675534787
R-XPTIIIZP16105/5		25.0	25.0	4000.0	4.6	4.6	754.6	5906675534794
R-XPTIIIZP16125/25		25.0	25.0	4000.0	5.2	5.2	836.8	5906675534800
R-XPTIIIZP16140/40		25.0	25.0	4000.0	5.7	5.7	911.7	5906675534817
R-XPTIIIZP16150/50		25.0	25.0	4000.0	6.1	6.1	977.0	5906675649566
R-XPTIIIZP16160/60		25.0	25.0	3000.0	6.4	6.4	764.6	5906675534824
R-XPTIIIZP16180/80		25.0	25.0	3000.0	7.0	7.0	843.8	5906675534831
R-XPTIIIZP16200100		25.0	25.0	3000.0	7.6	7.6	913.8	5906675534848
R-XPTIIIZP16220120		25.0	25.0	3000.0	7.2	7.2	889.0	5906675534855
R-XPTIIIZP16250150		25.0	25.0	2000.0	9.3	9.3	742.9	5906675534862
R-XPTIIIZP16280180		15.0	15.0	1200.0	6.5	6.5	546.6	5906675534879
R-XPTIIIZP16300200		10.0	10.0	1560.0	4.7	4.7	756.6	5906675534886
R-XPTIIIZP20125/5		25.0	25.0	3000.0	8.4	8.4	1003.2	5906675534893
R-XPTIIIZP20160/40		25.0	25.0	2000.0	10.2	10.2	817.6	5906675534909
R-XPTIIIZP20200/80		10.0	10.0	1200.0	4.9	4.9	589.2	5906675534916
R-XPTIIIZP20250130		10.0	10.0	1200.0	5.9	5.9	735.4	5906675534923
R-XPTIIIZP20300180		10.0	10.0	800.0	7.0	7.0	584.2	5906675534930

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** 