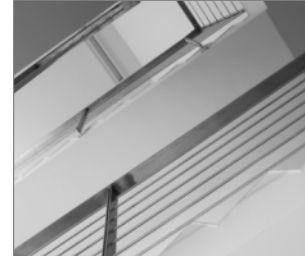


## R-LX-HF-ZP Zinc plated Hex with Flange Concrete Screw Anchor

Self-tapping concrete screwbolt



### Approvals and Reports

- ETA 17/0806



### Product information

#### Features and benefits

- Time-efficient through-fixing installation with streamlined procedure - simply drill and drive.
- Completely removable with possibility of reuse
- Unique design with patented threadform ensures high performance for relatively small hole diameter
- Non-expansion functioning ensures low risk of damage to base material and makes R-LX ideal for installation near edges and adjacent anchors
- High performance in both uncracked and cracked concrete
- Different head types for any application
- Oversize head for fixtures with elongated holes
- Excellent product for temporary fixing
- Suitable for standard and reduced embedment depth

#### Applications

- Through-fixing
- Temporary anchorages
- Formwork support systems
- Balustrading & handrails
- Fencing & gates manufacturing and installation
- Racking systems
- Public seating
- Scaffolding

#### Base materials

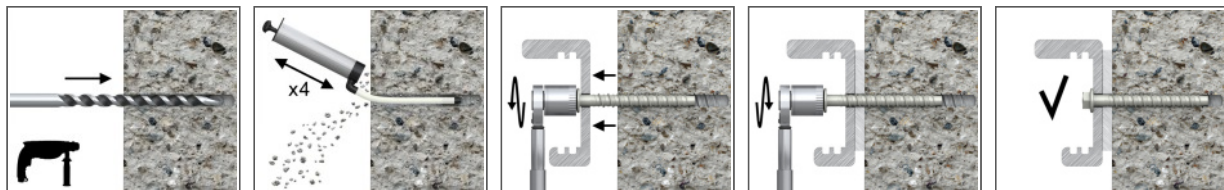
##### Approved for use in:

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

##### Also suitable for use in:

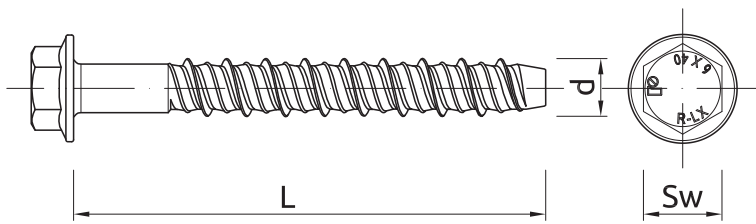
- Natural Stone (after site testing)

### Installation guide



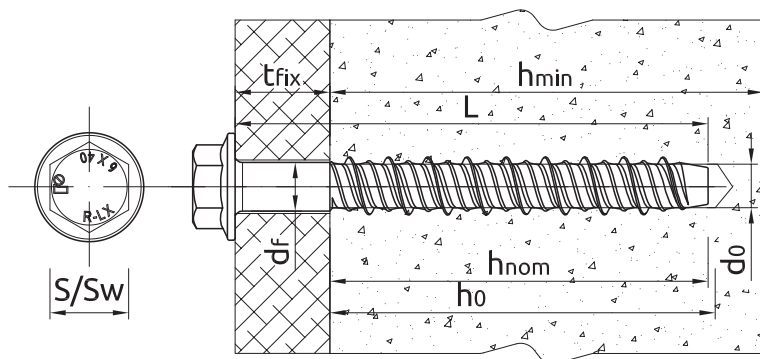
1. Drill the hole with rotary hammer drilling machine. Drill to a required depth.
2. Blow out dust at least 4 times with a hand pump.
3. Possibility of unscrewing and re-screwing.
4. Tighten to the recommended torque.
5. After installation.

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]
5	R-LX-05X050-HF-ZP	ETA-17/0806	6.3	50	-	7	7	
	R-LX-05X075-HF-ZP	ETA-17/0806	6.3	75	-	32	7	
6	R-LX-06X050-HF-ZP	ETA-17/0806	7.5	50	7	-	9	
	R-LX-06X060-HF-ZP	ETA-17/0806	7.5	60	17	5	9	
	R-LX-06X075-HF-ZP	ETA-17/0806	7.5	75	32	20	9	
	R-LX-06X090-HF-ZP	ETA-17/0806	7.5	90	47	35	9	
	R-LX-06X100-HF-ZP	ETA-17/0806	7.5	100	57	45	9	
	R-LX-06X130-HF-ZP	ETA-17/0806	7.5	130	87	75	9	
	R-LX-06X150-HF-ZP	ETA-17/0806	7.5	150	107	95	9	
8	R-LX-08X060-HF-ZP	ETA-17/0806	10	60	10	-	12	
	R-LX-08X075-HF-ZP	ETA-17/0806	10	75	25	5	12	
	R-LX-08X090-HF-ZP	ETA-17/0806	10	90	40	20	12	
	R-LX-08X100-HF-ZP	ETA-17/0806	10	100	50	30	12	
	R-LX-08X120-HF-ZP	ETA-17/0806	10	120	70	50	12	
	R-LX-08X130-HF-ZP	ETA-17/0806	10	130	80	60	12	
	R-LX-08X150-HF-ZP	ETA-17/0806	10	150	100	80	12	
10	R-LX-10X060-HF-ZP	ETA-17/0806	12.5	60	5	-	14	
	R-LX-10X065-HF-ZP	ETA-17/0806	12.5	65	10	-	14	
	R-LX-10X075-HF-ZP	ETA-17/0806	12.5	75	20	-	14	
	R-LX-10X085-HF-ZP	ETA-17/0806	12.5	85	30	-	14	
	R-LX-10X090-HF-ZP	ETA-17/0806	12.5	90	35	5	14	
	R-LX-10X100-HF-ZP	ETA-17/0806	12.5	100	45	15	14	
	R-LX-10X110-HF-ZP	ETA-17/0806	12.5	110	55	25	14	
	R-LX-10X120-HF-ZP	ETA-17/0806	12.5	120	65	35	14	
	R-LX-10X130-HF-ZP	ETA-17/0806	12.5	130	75	45	14	
	R-LX-10X140-HF-ZP	ETA-17/0806	12.5	140	85	55	14	
12	R-LX-12X075-HF-ZP	-	14.9	75	10	-	16	
	R-LX-12X100-HF-ZP	-	14.9	100	35	-	16	
	R-LX-12X130-HF-ZP	-	14.9	130	65	30	16	
	R-LX-12X150-HF-ZP	-	14.9	150	85	50	16	
14	R-LX-14X080-HF-ZP	ETA-17/0806	17	80	5	-	18	
	R-LX-14X105-HF-ZP	ETA-17/0806	17	105	30	-	18	
	R-LX-14X115-HF-ZP	ETA-17/0806	17	115	40	-	18	
	R-LX-14X135-HF-ZP	ETA-17/0806	17	135	60	15	18	
	R-LX-14X160-HF-ZP	-	17	160	85	40	18	

## Installation data



Size			5	6	8	10	12	14
Thread diameter	d	[mm]	6.3	7.5	10	12.5	14.9	17
Hole diameter in substrate	d <sub>0</sub>	[mm]	5	6	8	10	12	14
Wrench size	Sw	[mm]	8	10	13	15	16	19
External diameter of washer		[mm]	12	14	18	22	27	32
Max. torque for impact screw driver	T <sub>imp,max</sub>	[Nm]	200	400	900	950	950	950
<b>STANDARD EMBEDMENT DEPTH</b>								
Min. hole depth in substrate	h <sub>0,s</sub>	[mm]	50	65	80	95	110	130
Real hole depth in substrate	h <sub>0</sub>	[mm]	L + 10 - t <sub>fix</sub>	L + 10 - t <sub>fix</sub>	L + 10 - t <sub>fix</sub>	L + 10 - t <sub>fix</sub>	L + 10 - t <sub>fix</sub>	L + 10 - t <sub>fix</sub>
Min. installation depth	h <sub>nom,s</sub>	[mm]	43	55	70	85	100	120
Min. substrate thickness	h <sub>min,s</sub>	[mm]	100	100	110	130	155	190
Min. spacing	s <sub>min,s</sub>	[mm]	40	45	50	60	80	100
Min. edge distance	c <sub>min,s</sub>	[mm]	40	45	50	60	80	100
<b>REDUCED EMBEDMENT DEPTH</b>								
Min. hole depth in substrate	h <sub>0,r</sub>	[mm]	-	50	60	65	70	85
Real hole depth in substrate	h <sub>0</sub>	[mm]	-	L + 10 - t <sub>fix</sub>	L + 10 - t <sub>fix</sub>	L + 10 - t <sub>fix</sub>	L + 10 - t <sub>fix</sub>	L + 10 - t <sub>fix</sub>
Min. installation depth	h <sub>nom,r</sub>	[mm]	-	43	50	55	60	75
Min. substrate thickness	h <sub>min,r</sub>	[mm]	-	100	100	100	110	110
Min. spacing	s <sub>min,r</sub>	[mm]	-	45	50	60	80	100
Min. edge distance	c <sub>min,r</sub>	[mm]	-	45	50	60	80	100

## Mechanical properties

Size			5	6	8	10	12	14
Nominal ultimate tensile strength - tension	F <sub>uk</sub>	[N/mm <sup>2</sup> ]	1300	1250	1200	1050	1000	1020
Nominal yield strength - tension	F <sub>yk</sub>	[N/mm <sup>2</sup> ]	1150	1100	1050	950	900	800
Cross sectional area - tension	A <sub>s</sub>	[mm <sup>2</sup> ]	19.6	28.3	50.3	78.5	113	153.9
Elastic section modulus	W <sub>el</sub>	[mm <sup>3</sup> ]	12.2	21.2	50.3	98.1	169.4	269.3
Characteristic bending resistance	M <sup>0</sup> <sub>Rk,s</sub>	[Nm]	19	31.8	72.4	123.6	203.3	329.6
Design bending resistance	M	[Nm]	12.7	21.2	48.3	82.4	135.5	219.7

## Basic performance data

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

Size		5	6	8	10	12	14
<b>NON-CRACKED CONCRETE C20/25</b>							
Standard embedment depth h <sub>nom</sub>	[mm]	43.00	55.00	70.00	85.00	76.00	120.00
Reduced embedment depth h <sub>nom</sub>	[mm]	-	43.00	50.00	55.00	42.00	75.00
<b>CRACKED CONCRETE C20/25</b>							
Standard embedment depth h <sub>nom</sub>	[mm]	43.00	55.00	70.00	85.00	76.00	120.00
Reduced embedment depth h <sub>nom</sub>	[mm]	-	43.00	50.00	55.00	42.00	75.00

## Basic performance data

Size		5	6	8	10	12	14
<b>MEAN ULTIMATE LOAD</b>							
<b>TENSION LOAD <math>N_{Ru,m}</math></b>							
<b>NON-CRACKED CONCRETE C20/25</b>							
Standard embedment depth	[kN]	10.10	14.80	26.04	35.37	44.72	59.96
Reduced embedment depth	[kN]	-	11.09	15.19	17.08	18.37	27.53
<b>CRACKED CONCRETE C20/25</b>							
Standard embedment depth	[kN]	7.10	11.10	18.33	24.89	31.47	41.92
Reduced embedment depth	[kN]	-	7.81	10.69	12.02	12.80	19.37
<b>SHEAR LOAD <math>V_{Ru,m}</math></b>							
<b>NON-CRACKED CONCRETE C20/25</b>							
Standard embedment depth	[kN]	10.10	14.80	26.04	49.46	59.85	94.19
Reduced embedment depth	[kN]	-	11.09	15.19	17.08	18.37	27.53
<b>CRACKED CONCRETE C20/25</b>							
Standard embedment depth	[kN]	7.10	11.10	18.33	49.46	59.85	83.83
Reduced embedment depth	[kN]	-	7.81	10.69	12.02	12.93	19.37
<b>CHARACTERISTIC LOAD</b>							
<b>TENSION LOAD <math>N_{Rk}</math></b>							
<b>NON-CRACKED CONCRETE C20/25</b>							
Standard embedment depth	[kN]	7.00	12.00	19.49	26.46	33.46	44.56
Reduced embedment depth	[kN]	-	9.14	10.91	12.78	13.75	20.04
<b>CRACKED CONCRETE C20/25</b>							
Standard embedment depth	[kN]	4.50	7.00	13.00	18.87	23.85	31.77
Reduced embedment depth	[kN]	-	6.52	7.50	8.00	7.00	13.00
<b>SHEAR LOAD <math>V_{Rk}</math></b>							
<b>NON-CRACKED CONCRETE C20/25</b>							
Standard embedment depth	[kN]	9.14	13.75	19.49	41.20	57.00	78.50
Reduced embedment depth	[kN]	-	9.14	10.91	12.78	13.75	20.04
<b>CRACKED CONCRETE C20/25</b>							
Standard embedment depth	[kN]	6.52	9.80	13.89	37.73	47.70	63.54
Reduced embedment depth	[kN]	-	6.52	7.78	9.11	9.80	14.29
<b>DESIGN LOAD</b>							
<b>TENSION LOAD <math>N_{Rd}</math></b>							
<b>NON-CRACKED CONCRETE C20/25</b>							
Standard embedment depth	[kN]	3.89	8.00	12.99	17.64	22.31	29.71
Reduced embedment depth	[kN]	-	6.09	7.27	8.52	9.16	13.36
<b>CRACKED CONCRETE C20/25</b>							
Standard embedment depth	[kN]	2.50	4.67	8.67	12.58	15.90	21.18
Reduced embedment depth	[kN]	-	4.34	5.00	5.33	4.67	8.67
<b>SHEAR LOAD <math>V_{Rd}</math></b>							
<b>NON-CRACKED CONCRETE C20/25</b>							
Standard embedment depth	[kN]	6.09	9.16	12.99	27.47	38.00	52.33
Reduced embedment depth	[kN]	-	6.09	7.27	8.52	9.16	13.36
<b>CRACKED CONCRETE C20/25</b>							
Standard embedment depth	[kN]	4.34	6.53	9.26	25.15	31.80	42.36
Reduced embedment depth	[kN]	-	4.34	5.18	6.07	6.53	9.52

## Design performance data

Standard embedment depth

(-) failure is not decisive

Size			5	6	8	10	12	14
Min. installation depth	$h_{nom}$	[mm]	43.00	55.00	70.00	85.00	100.00	120.00
Effective embedment depth	$h_{ef}$	[mm]	32.00	42.00	53.00	65.00	76.00	92.00
<b>TENSION LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance	$N_{Rk,s}$	[kN]	25.50	35.40	60.40	82.40	113.00	157.00
Partial safety factor	$\gamma_{Ms}$	-	1.40	1.40	1.40	1.40	1.40	1.50
<b>PULL-OUT FAILURE; NON-CRACKED CONCRETE C20/25</b>								
Characteristic resistance	$N_{Rk,p}$	[kN]	7.00	12.00	-	-	-	-
<b>PULL-OUT FAILURE; CRACKED CONCRETE C20/25</b>								
Characteristic resistance	$N_{Rk,p}$	[kN]	4.50	7.00	13.00	-	-	-
<b>PULL-OUT FAILURE</b>								
Installation safety factor	$\gamma_2$	-	1.20	1.00	1.00	1.00	1.00	1.00
Increasing factors for $N_{Rd,p}$ - C30/37	$\psi_c$	-	1.08	1.08	1.08	1.08	1.08	1.08
Increasing factors for $N_{Rd,p}$ - C40/50	$\psi_c$	-	1.15	1.15	1.15	1.15	1.15	1.15
Increasing factors for $N_{Rd,p}$ - C50/60	$\psi_c$	-	1.19	1.19	1.19	1.19	1.19	1.19
<b>CONCRETE CONE FAILURE</b>								
Installation safety factor	$\gamma_2$	-	1.20	1.00	1.00	1.00	1.00	1.00
Factor for cracked concrete	$k$	-	7.20	7.20	7.20	7.20	7.20	7.20
Factor for cracked concrete	$k_{cr,N}$	-	7.70	7.70	7.70	7.70	7.70	7.70
Factor for non-cracked concrete	$k$	-	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
Spacing	$s_{cr,N}$	[mm]	90.00	126.00	160.00	196.00	228.00	276.00
Edge distance	$c_{cr,N}$	[mm]	45.00	63.00	80.00	98.00	114.00	138.00
<b>CONCRETE SPLITTING FAILURE</b>								
Installation safety factor	$\gamma_2$	-	1.20	1.00	1.00	1.00	1.00	1.00
Spacing	$s_{cr,sp}$	[mm]	90.00	126.00	160.00	222.00	228.00	312.00
Edge distance	$c_{cr,sp}$	[mm]	45.00	63.00	80.00	111.00	114.00	156.00
<b>SHEAR LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	12.70	17.70	30.20	41.20	57.00	78.50
Ductility factor	$k_7$	-	0.80	0.80	0.80	0.80	0.80	0.80
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	19.00	31.80	72.40	123.60	203.30	329.60
Partial safety factor	$\gamma_{Ms}$	-	1.50	1.50	1.50	1.50	1.50	1.50
<b>CONCRETE PRY-OUT FAILURE</b>								
Factor	$k$	-	1.00	1.00	1.00	2.00	2.00	2.00
Installation safety factor	$\gamma_2$	-	1.00	1.00	1.00	1.00	1.00	1.00
<b>CONCRETE EDGE FAILURE</b>								
Effective length of anchor	$\ell_f$	[mm]	43.00	55.00	70.00	85.00	100.00	120.00
Anchor diameter	$d_{nom}$	[mm]	5.00	6.00	8.00	10.00	12.00	14.00
Installation safety factor	$\gamma_2$	-	1.00	1.00	1.00	1.00	1.00	1.00

## Design performance data

Characteristic Resistance under fire exposure in concrete C20/25 to C50/60

Size			5	6	8	10	12	14
<b>TENSION LOAD</b>								
Edge distance	$C_{cr}$	[mm]	64.00	84.00	106.00	130.00	152.00	184.00
Spacing	$S_{cr}$	[mm]	128.00	168.00	212.00	260.00	304.00	368.00
<b>R (for EI) = 30 min</b>								
<b>TENSION LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance	$N_{Rk,s}$	[kN]	0.20	0.28	0.75	1.57	2.26	3.08
<b>PULL-OUT FAILURE</b>								
Characteristic resistance	$N_{Rk,p}$	[kN]	1.13	1.75	3.25	4.75	6.50	8.50
<b>SHEAR LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0.20	0.28	0.75	1.57	2.26	3.08
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	0.15	0.25	0.90	2.36	4.07	6.47
<b>R (for EI) = 60 min</b>								
<b>TENSION LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance	$N_{Rk,s}$	[kN]	0.18	0.25	0.65	1.18	1.70	2.31
<b>PULL-OUT FAILURE</b>								
Characteristic resistance	$N_{Rk,p}$	[kN]	1.13	1.75	3.25	4.75	6.50	8.50
<b>SHEAR LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0.18	0.25	0.65	1.18	1.70	2.31
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	0.13	0.23	0.78	1.77	3.05	4.85
<b>R (for EI) = 90 min</b>								
<b>TENSION LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance	$N_{Rk,s}$	[kN]	0.14	0.20	0.50	1.02	1.47	2.00
<b>PULL-OUT FAILURE</b>								
Characteristic resistance	$N_{Rk,p}$	[kN]	1.13	1.75	3.25	4.75	6.50	8.50
<b>SHEAR LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0.14	0.20	0.50	1.02	1.47	2.00
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	0.10	0.18	0.60	1.53	2.65	4.20
<b>R (for EI) = 120 min</b>								
<b>TENSION LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance	$N_{Rk,s}$	[kN]	0.10	0.14	0.40	0.79	1.13	1.54
<b>PULL-OUT FAILURE</b>								
Characteristic resistance	$N_{Rk,p}$	[kN]	0.90	1.40	2.60	3.80	5.20	6.80
<b>SHEAR LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0.10	0.14	0.40	0.79	1.13	1.54
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	0.07	0.13	0.48	1.18	2.04	3.23

## Design performance data

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

Size			8	10	14
Effective embedment depth	$h_{ef}$	[mm]	53.00	65.00	92.00
<b>TENSION LOAD, STEEL FAILURE</b>					
Characteristic resistance	$N_{Rk,s}$	[kN]	60.40	82.40	157.00
Partial safety factor	$\gamma_{MsN,seisC1}$	-	1.40		
<b>TENSION LOAD, PULL-OUT FAILURE</b>					
Characteristic resistance	$N_{Rk,p}$	[kN]	5.40	13.50	19.20
Partial safety factor	$\gamma_{Mp,seisC1}$	-	1.50		
<b>SHEAR LOAD, STEEL FAILURE</b>					
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	15.10	27.40	52.30
Partial safety factor	$\gamma_{MsV,seisC1}$	-	1.50		

Allowable values for resistance in case of Seismic performance category C2 - Standard embedment depth

Size			8	10	14
Effective embedment depth	$h_{ef}$	[mm]	53.00	65.00	92.00
<b>TENSION LOAD, STEEL FAILURE</b>					
Characteristic resistance	$N_{Rk,s}$	[kN]	60.40	82.40	157.00
Partial safety factor	$\gamma_{MsN,seisC2}$	-	1.40		
<b>TENSION LOAD, PULL-OUT FAILURE</b>					
Characteristic resistance	$N_{Rk,p}$	[kN]	1.57	4.91	14.87
Partial safety factor	$\gamma_{Mp,seisC2}$	-	1.50		
<b>SHEAR LOAD, STEEL FAILURE</b>					
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	9.90	20.60	35.10
Partial safety factor	$\gamma_{MsV,seisC2}$	-	1.50		

## Design performance data

Reduced embedment depth

(-) failure is not decisive

Size			5	6	8	10	12	14
Min. installation depth	$h_{nom}$	[mm]	-	43.00	50.00	55.00	60.00	75.00
Effective embedment depth	$h_{ef}$	[mm]	-	32.00	36.00	40.00	42.00	54.00
<b>TENSION LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance	$N_{Rk,s}$	[kN]	-	35.40	60.40	82.40	113.00	157.00
Partial safety factor	$\gamma_{Ms}$	-	-	1.40	1.40	1.40	1.40	1.50
<b>PULL-OUT FAILURE; NON-CRACKED CONCRETE C20/25</b>								
Characteristic resistance	$N_{Rk,p}$	[kN]	-	-	-	-	-	-
<b>PULL-OUT FAILURE; CRACKED CONCRETE C20/25</b>								
Characteristic resistance	$N_{Rk,p}$	[kN]	-	-	7.50	8.00	7.00	13.00
<b>PULL-OUT FAILURE</b>								
Installation safety factor	$\gamma_2$	-	-	1.00	1.00	1.00	1.00	1.00
Increasing factors for $N_{Rd,p}$ - C30/37	$\psi_c$	-	-	1.08	1.08	1.08	1.08	1.08
Increasing factors for $N_{Rd,p}$ - C40/50	$\psi_c$	-	-	1.15	1.15	1.15	1.15	1.15
Increasing factors for $N_{Rd,p}$ - C50/60	$\psi_c$	-	-	1.19	1.19	1.19	1.19	1.19
<b>CONCRETE CONE FAILURE</b>								
Installation safety factor	$\gamma_2$	-	-	1.00	1.00	1.00	1.00	1.00
Factor for cracked concrete	$k$	-	-	7.20	7.20	7.20	7.20	7.20
Factor for cracked concrete	$k_{cr,N}$	-	-	7.70	7.70	7.70	7.70	7.70
Factor for non-cracked concrete	$k$	-	-	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
Spacing	$s_{cr,N}$	[mm]	-	90.00	112.00	120.00	126.00	165.00
Edge distance	$c_{cr,N}$	[mm]	-	45.00	56.00	60.00	63.00	83.00
<b>CONCRETE SPLITTING FAILURE</b>								
Installation safety factor	$\gamma_2$	-	-	1.00	1.00	1.00	1.00	1.00
Spacing	$s_{cr,sp}$	[mm]	-	90.00	112.00	136.00	126.00	188.00
Edge distance	$c_{cr,sp}$	[mm]	-	45.00	56.00	68.00	63.00	94.00
<b>SHEAR LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	-	17.70	30.20	41.20	57.00	78.50
Ductility factor	$k_7$	-	-	0.80	0.80	0.80	0.80	0.80
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	-	31.80	72.40	123.60	203.30	329.60
Partial safety factor	$\gamma_{Ms}$	-	-	1.50	1.50	1.50	1.50	1.50
<b>CONCRETE PRY-OUT FAILURE</b>								
Factor	$k$	-	-	1.00	1.00	1.00	1.00	1.00
Installation safety factor	$\gamma_2$	-	-	1.00	1.00	1.00	1.00	1.00
<b>CONCRETE EDGE FAILURE</b>								
Effective length of anchor	$\ell_f$	[mm]	-	43.00	50.00	55.00	60.00	75.00
Anchor diameter	$d_{nom}$	[mm]	-	6.00	8.00	10.00	12.00	14.00
Installation safety factor	$\gamma_2$	-	-	1.00	1.00	1.00	1.00	1.00



## Design performance data

Characteristic Resistance under fire exposure in concrete C20/25 to C50/60

Size			5	6	8	10	12	14
<b>TENSION LOAD</b>								
Edge distance	$C_{cr}$	[mm]	-	64.00	72.00	80.00	82.00	108.00
Spacing	$S_{cr}$	[mm]	-	128.00	144.00	160.00	164.00	216.00
<b>R (for EI) = 30 min</b>								
<b>TENSION LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance	$N_{Rk,s}$	[kN]	-	0.28	0.75	1.57	2.26	3.08
<b>PULL-OUT FAILURE</b>								
Characteristic resistance	$N_{Rk,p}$	[kN]	-	1.38	1.88	2.00	1.75	3.25
<b>SHEAR LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	-	0.28	0.75	1.57	2.26	3.08
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	-	0.25	0.90	2.36	4.07	6.47
<b>R (for EI) = 60 min</b>								
<b>TENSION LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance	$N_{Rk,s}$	[kN]	-	0.25	0.65	1.18	1.70	2.31
<b>PULL-OUT FAILURE</b>								
Characteristic resistance	$N_{Rk,p}$	[kN]	-	1.38	1.88	2.00	1.75	3.25
<b>SHEAR LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	-	0.25	0.65	1.18	1.70	2.31
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	-	0.23	0.78	1.77	3.05	4.85
<b>R (for EI) = 90 min</b>								
<b>TENSION LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance	$N_{Rk,s}$	[kN]	-	0.20	0.50	1.02	1.47	2.00
<b>PULL-OUT FAILURE</b>								
Characteristic resistance	$N_{Rk,p}$	[kN]	-	1.38	1.88	2.00	1.75	3.25
<b>SHEAR LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	-	0.20	0.50	1.02	1.47	2.00
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	-	0.18	0.60	1.53	2.65	4.20
<b>R (for EI) = 120 min</b>								
<b>TENSION LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance	$N_{Rk,s}$	[kN]	-	0.14	0.40	0.79	1.13	1.54
<b>PULL-OUT FAILURE</b>								
Characteristic resistance	$N_{Rk,p}$	[kN]	-	1.10	1.50	1.60	1.40	2.60
<b>SHEAR LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	-	0.14	0.40	0.79	1.13	1.54
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	-	0.13	0.48	1.18	2.04	3.23

### Product commercial data

Product Code	Anchor	Quantity [pcs]			Weight [kg]			Bar Codes
	Length [mm]	Box	Outer	Pallet	Box	Outer	Pallet	
R-LX-05X050-HF-ZP <sub>1)</sub>	50	100	100	41600	1.02	1.02	454.3	5906675112947
R-LX-05X075-HF-ZP <sub>1)</sub>	75	100	100	41600	1.17	1.17	516.7	5906675112961
R-LX-06X050-HF-ZP <sub>1)</sub>	50	100	100	41600	1.59	1.59	691.4	5906675112978
R-LX-06X060-HF-ZP <sub>1)</sub>	60	100	100	38400	1.79	1.79	717.4	5906675442396
R-LX-06X075-HF-ZP <sub>1)</sub>	75	100	100	35200	2.1	2.1	779.8	5906675119175
R-LX-06X090-HF-ZP <sub>1)</sub>	90	100	100	25600	2.4	2.4	652.1	5906675442402
R-LX-06X100-HF-ZP <sub>1)</sub>	100	100	100	25600	2.7	2.7	716.1	5906675119182
R-LX-06X130-HF-ZP <sub>1)</sub>	130	100	100	25600	3.3	3.3	882.5	5906675119199
R-LX-06X150-HF-ZP <sub>1)</sub>	150	100	100	25600	3.8	3.8	992.6	5906675119205
R-LX-08X060-HF-ZP <sub>1)</sub>	60	100	100	25600	3.4	3.4	892.7	5906675119212
R-LX-08X075-HF-ZP <sub>1)</sub>	75	100	100	25600	4.0	4.0	1041.2	5906675119236
R-LX-08X090-HF-ZP <sub>1)</sub>	90	100	100	19200	4.5	4.5	899.8	5906675119243
R-LX-08X100-HF-ZP <sub>1)</sub>	100	100	100	19200	4.9	4.9	974.6	5906675119250
R-LX-08X120-HF-ZP <sub>1)</sub>	120	50	50	12800	2.9	2.9	759.6	5906675442389
R-LX-08X130-HF-ZP <sub>1)</sub>	130	50	50	12800	3.0	3.0	808.2	5906675119267
R-LX-08X150-HF-ZP <sub>1)</sub>	150	50	50	12800	3.4	3.4	903.0	5906675119274
R-LX-10X060-HF-ZP <sub>1)</sub>	60	50	50	15600	2.6	2.6	847.4	5906675442334
R-LX-10X065-HF-ZP <sub>1)</sub>	65	50	50	15600	2.8	2.8	895.8	5906675119281
R-LX-10X075-HF-ZP <sub>1)</sub>	75	50	50	12800	3.1	3.1	817.2	5906675119304
R-LX-10X085-HF-ZP <sub>1)</sub>	85	50	50	12800	3.4	3.4	894.0	5906675119311
R-LX-10X090-HF-ZP <sub>1)</sub>	90	50	50	12800	3.5	3.5	933.7	5906675442341
R-LX-10X100-HF-ZP <sub>1)</sub>	100	50	50	12800	3.8	3.8	1010.5	5906675119335
R-LX-10X110-HF-ZP <sub>1)</sub>	110	25	25	6400	2.1	2.1	559.9	5906675442358
R-LX-10X120-HF-ZP <sub>1)</sub>	120	25	25	6400	2.2	2.2	597.0	5906675119342
R-LX-10X130-HF-ZP <sub>1)</sub>	130	25	25	7800	2.4	2.4	771.0	5906675442365
R-LX-10X140-HF-ZP <sub>1)</sub>	140	25	25	7800	2.5	2.5	817.8	5906675119410
R-LX-10X150-HF-ZP <sub>1)</sub>	150	25	25	7800	2.7	2.7	864.6	5906675442372
R-LX-12X075-HF-ZP	75	50	50	9600	4.6	4.6	903.6	5906675431895
R-LX-12X100-HF-ZP	100	50	50	6400	5.6	5.6	746.8	5906675431901
R-LX-12X130-HF-ZP	130	50	50	6400	6.9	6.9	913.2	5906675431918
R-LX-12X150-HF-ZP	150	50	50	6400	7.8	7.8	1028.4	5906675423746
R-LX-14X080-HF-ZP <sub>1)</sub>	80	20	20	5120	2.7	2.7	731.4	5906675292861
R-LX-14X105-HF-ZP <sub>1)</sub>	105	20	20	5120	3.3	3.3	879.9	5906675119953
R-LX-14X115-HF-ZP <sub>1)</sub>	115	20	20	5120	3.6	3.6	941.4	5906675312118
R-LX-14X135-HF-ZP <sub>1)</sub>	135	20	20	5120	4.0	4.0	1059.1	5906675119977
R-LX-14X160-HF-ZP <sub>1)</sub>	160	15	15	3840	3.5	3.5	917.0	5906675442419

## Product commercial data

1) ETA 17/0806