Designated according to The Construction Products (Amendment etc.) (EU Exit) Regulations 2020

UK Technical Assessment	UKTA-0836-22/6199 of 28/07/2022
Technical Assessment Body issuing the UK Technical Assessment:	British Board of Agrément
Trade name of the construction product:	R-LX
Product family to which the construction product belongs:	Area Code 33, Concrete screw for use in cracked and uncracked concrete
Manufacturer:	RAWLPLUG S.A. ul. Kwidzyńska 6 51-416 Wrocław Poland
Manufacturing plant(s):	Manufacturing Plant No. 2
This UK Technical Assessment contains:	17 pages including 3 annexes which form an integral part of this assessment
This UK Technical Assessment is issued in accordance with The Construction Products (Amendment etc.) (EU Exit) Regulations 2020 on the basis of:	UKAD 330232-00-0601 *Mechanical fasteners for use in concrete* and EAD 330011-00-0601 *Adjustable concrete screw*

1 Technical description of the product

The R-LX concrete screw are a range of anchors manufactured from heat-treated and zinc-plated (ZP) or zinc-flaked (ZF) steel. The anchor is screwed into a predrilled cylindrical drill hole. The anchor incorporates a special thread that cuts an internal thread into a concrete member while setting providing a mechanical interlock.

The product range and description is given in Annex A.

2 Specification of the intended use(s) in accordance with the applicable UK Assessment Document (hereinafter UKAD)

The performances given in Section 3 are only valid if the anchors are used in compliance with the specifications and conditions given in Annex B.

The performances given in this UK Technical Assessment are based on an assumed working life of the anchor of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or the Technical Assessment Body but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Essential Characteristic	Performance
Characteristic resistance under static and quasi-static loading	See Annex C1 and C2
Displacements under tension and shear loads	See Annex C2
Characteristic resistance and displacements for seismic performance categories C1 and C2	See Annex C3 and C4

3.2 Safety in case of fire (BWR 2)

Characteristic	Performance
Reaction to fire	Anchors satisfy requirements for Class A1
Resistance to fire	Annex C5

3.3 Health, hygiene and the environment (BWR 3)

Not relevant.

3.4 Safety and accessibility in use (BWR 4)

For Basic Requirement Safety and accessibility in use are included under Basic Requirement Mechanical resistance and stability (BWR 1).

3.5 Protection against noise (BWR 5)

Not relevant.

3.6 Energy economy and heat retention (BWR 6)

Not relevant.

3.7 Sustainable use of natural resources (BWR 7)

Performance not assessed.

3.8 Methods used for assessment

The assessment of the products has been made in accordance with UKAD 330232-00-0601 and UKAD 330011-00-0601.

4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied

4.1 System of assessment and verification of constancy of performance

According to UKAD No. 330232-00-0601, UKAD No. 330011-00-0601, and Annex V of the Construction Products Regulation (Regulation (EU) 305/2011 as brought into UK law and amended, the system of assessment and verification of constancy of performance (AVCP) 1 applies.

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable UKAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with the British Board of Agrément and made available to the UK Approved Bodies involved in the conformity attestation process.

5.1 UKCA marking for the product/ system must contain the following information:

- Identification number of the Approved Body
- Name/address of the manufacturer of the product/ system
- Marking with intention of clarification of intended use
- Date of marking
- Number of certificate of constancy of performance
- UKTA number.

On behalf of the British Board of Agrément 	
Date of Issue: 28 July 2022	**Hardy Giesler** Chief Executive Officer

British Board of Agrément,
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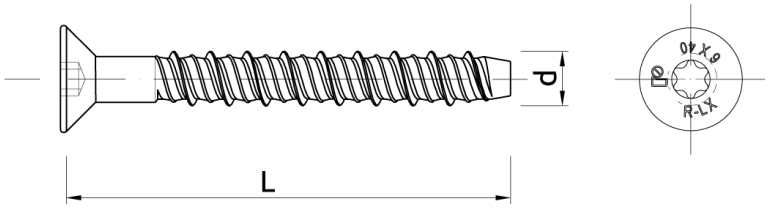
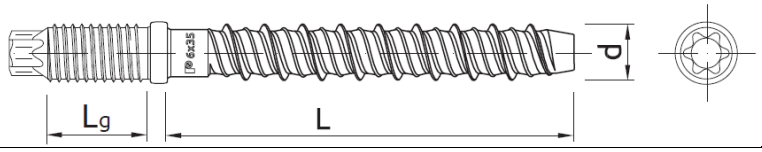
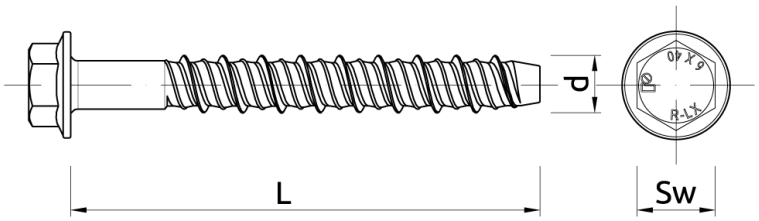
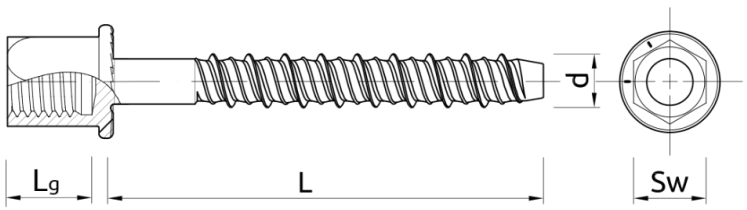
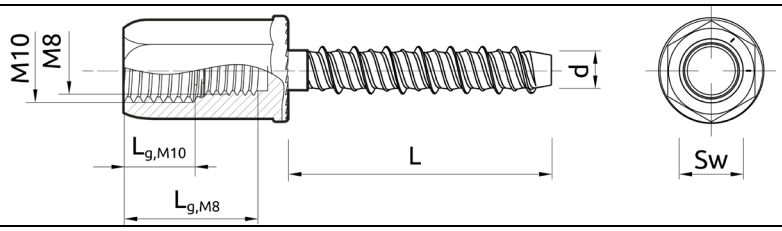
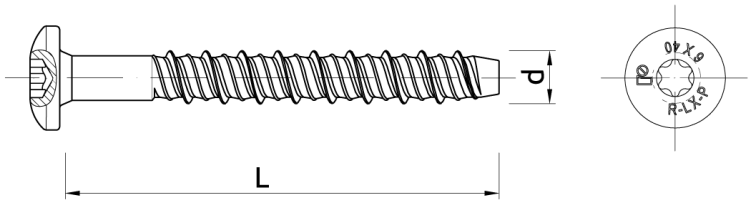
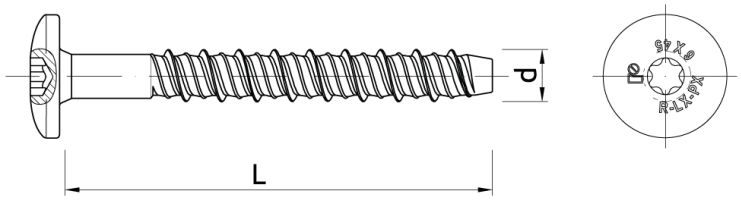
ANNEX A : R-LX product specification

This annex applies to the product described in the main body of the UK Technical Assessment.

Figure 1A : Product range - R-LX

R-LX-CS	
R-LX-E	
R-LX-HF	
R-LX-I	
	
R-LX-P	
R-LX-PX	

R-LX	Annex A 1
Product description Characteristics of the product	

ANNEX A : R-LX - product specification (continued)

Table A1: Dimensions and materials for R-LX-HF, R-LX-CS, R-LX-P and R-LX-PX

Anchor size			R-LX-05	R-LX-06	R-LX-08	R-LX-10	R-LX-12	R-LX-14
Thread size	d	mm	6.2	7.5	9.9	12.4	14.9	17.4
Length of anchor	L	mm	45 - 240	45 - 240	60 - 240	60 - 240	75 - 240	80 - 240
Nominal hole diameter	d_0	mm	5	6	8	10	12	14
Tip chamfer	h_s	mm	2.5	3	4	4.5	6	6
Pitch	h_t	mm	4.2	5	6.7	8.3	10	11.6
Material: carbon steel	f_{uk}	$N.mm^{-2}$	1300	1250	1200	1050	1000	1020
	f_{yk}	$N.mm^{-2}$	1150	1100	1050	950	900	800
Coating			Zinc Plated (ZP ≥ 5 µm) or Zinc Flaked (ZF ≥ 5 µm)					

Figure A1 : Anchors R-LX-HF, R-LX-CS, R-LX-P and R-LX-PX

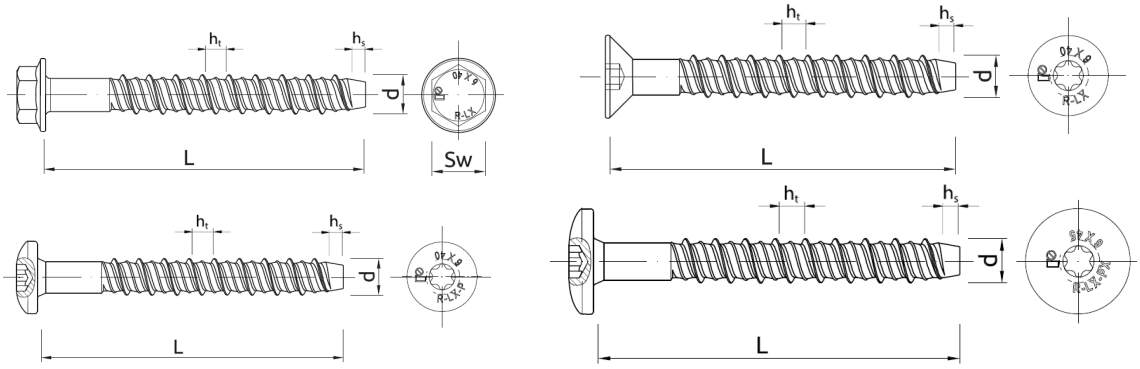
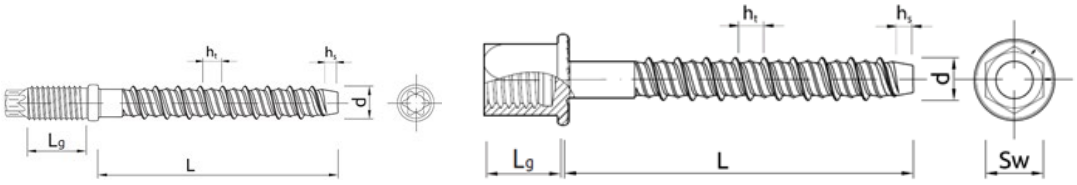


Table A2: Dimensions and materials for R-LX-E and R-LX-I

Anchor size			R-LX-05	R-LX-06	R-LX-08	R-LX-10
Thread size	d	mm	6.2	7.5	9.9	12.4
Length of anchor R-LX-E	L	mm	-	55 - 240	60 - 240	65 - 240
Length of anchor R-LX-I	L	mm	45 - 75	40 -150	51 - 150	56 - 160
Nominal hole diameter	d_0	mm	5	6	8	10
Tip chamfer	h_s	mm	2.5	3	4	4.5
Pitch	h_t	mm	4.2	5	6.7	8.3
External thread (R-LX-E)		-	-	M8	M10	M12
Internal thread (R-LX-I)		-	M6	M6, M8, M10, M8/M10	M12	M12, M16
Material: carbon steel	f_{uk}	$N.mm^{-2}$	1300	1250	1200	1050
	f_{yk}	$N.mm^{-2}$	1150	1100	1050	950
Coating			Zinc Plated (ZP ≥ 5 µm) or Zinc Flaked (ZF ≥ 5 µm)			

Figure A2 : Anchors R-LX-E and R-LX-I



R-LX	Annex A 2
Product description Dimensions and materials	

ANNEX B : Installation

B1 Intended use - specifications

Anchorages subject to:

- Static and quasi-static loads: all sizes and all embedment depth.
- Anchorages with requirements related to resistance to fire: all sizes and all embedment depths.
- Seismic performance categories C1 and C2: R-LX-08, R-LX-10 and R-LX-14.

Base material:

- Reinforced or unreinforced normal weight concrete with strength class C20/25 to C50/60 according to EN 206.
- Uncracked and cracked concrete: all sizes.

Use conditions (environmental conditions):

- Structures subject to dry internal conditions.

Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be transmitted. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages under static and quasi-static loads, under fire exposure and under seismic actions are designed in accordance with EN 1992-4:2018.

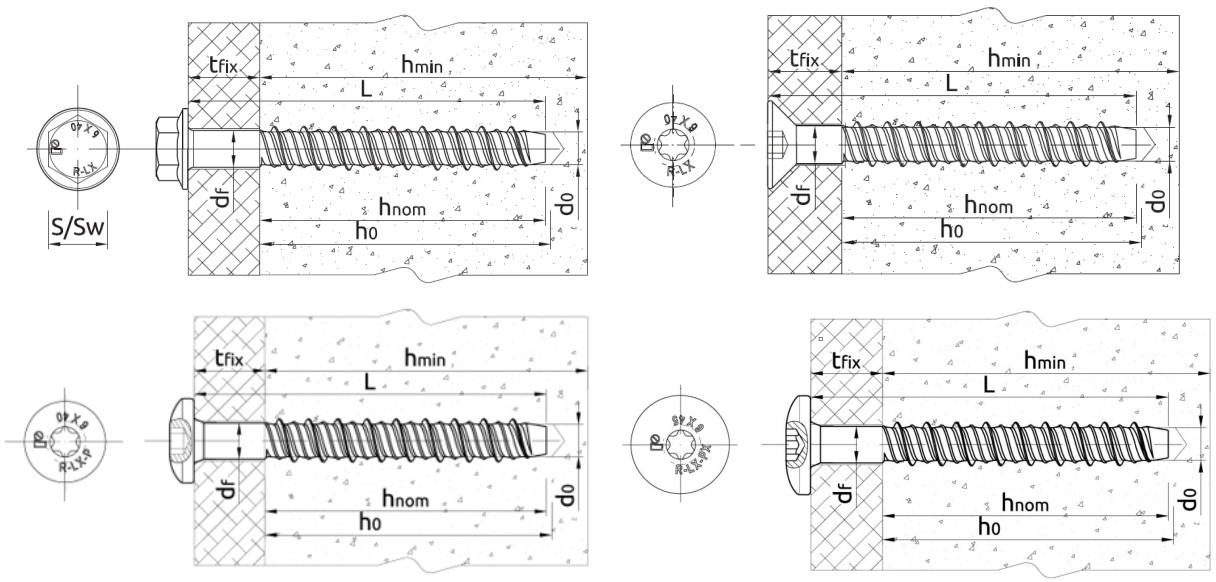
Installation:

- Rotary hammer drilling only: all sizes and all embedment depths.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Anchor installation in accordance with the manufacturer's specifications and drawings and using the appropriate tools.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar and if under shear or oblique tension load it is not in the direction of load application.
- After installation further turning of the anchor is not possible. The head of the anchor is supported on the fixture and is not damaged.
- Adjustment according to Figure B3 and Table C1.

R-LX	Annex B 1
Intended use Specification	

ANNEX B : Installation (continued)

Figure B1 : Installed Anchors R-LX-HF, R-LX-CS, R-LX-P and R-LX-PX



Installed anchor R-LX-HF, R-LX-CS, R-LX-P and R-LX-PX

Table B1: Installation parameters – standard embedment depth

Anchor size			R-LX-05	R-LX-06	R-LX-08	R-LX-10	R-LX-12	R-LX-14
Nominal drill bit diameter	d_{cut}	mm	5	6	8	10	12	14
Maximum drill bit diameter	$d_{cut,max}$	mm	5.40	6.40	8.45	10.45	12.50	14.50
Depth of drill hole*	$h_0 \geq$	mm	50	65	80	95	110	130
Nominal embedment depth	h_{nom}	mm	43	55	70	85	100	120
Effective embedment depth	h_{ef}	mm	32	42	53	65	76	92
Maximum installation torque	$T_{imp,max}$	Nm	200	400	900	950	950	950
Clearance hole in the fixture	$d_f \leq$	mm	7	9	12	14	16	18
Minimum thickness of member	h_{min}	mm	100	100	110	130	155	190
Thickness of the fixture, max.	t_{fix}	mm	L - h_{nom}					

* Real depth of drill hole $h_0 = L + 10 - t_{fix}$

Table B2: Installation parameters – reduced embedment depth

Anchor size			R-LX-06	R-LX-08	R-LX-10	R-LX-12	R-LX-14
Nominal drill bit diameter	d_{cut}	mm	6	8	10	12	14
Maximum drill bit diameter	$d_{cut,max}$	mm	6.40	8.45	10.45	12.50	14.50
Depth of drill hole	$h_0 \geq$	mm	50	60	65	70	85
Nominal embedment depth	h_{nom}	mm	43	50	55	60	75
Effective embedment depth	h_{ef}	mm	32	36	40	42	54
Maximum installation torque	$T_{imp,max}$	Nm	400	900	950	950	950
Clearance hole in the fixture	$d_f \leq$	mm	9	12	14	16	18
Minimum thickness of member	h_{min}	mm	100	100	100	110	110
Thickness of the fixture, max.	t_{fix}	mm		L - h_{nom}			

* Real depth of drill hole $h_0 = L + 10 - t_{fix}$

R-LX	
Intended use Installation parameters	Annex B 2

ANNEX B : Installation (continued)

Figure B2 : Installed Anchors R-LX-I and R-LX-E

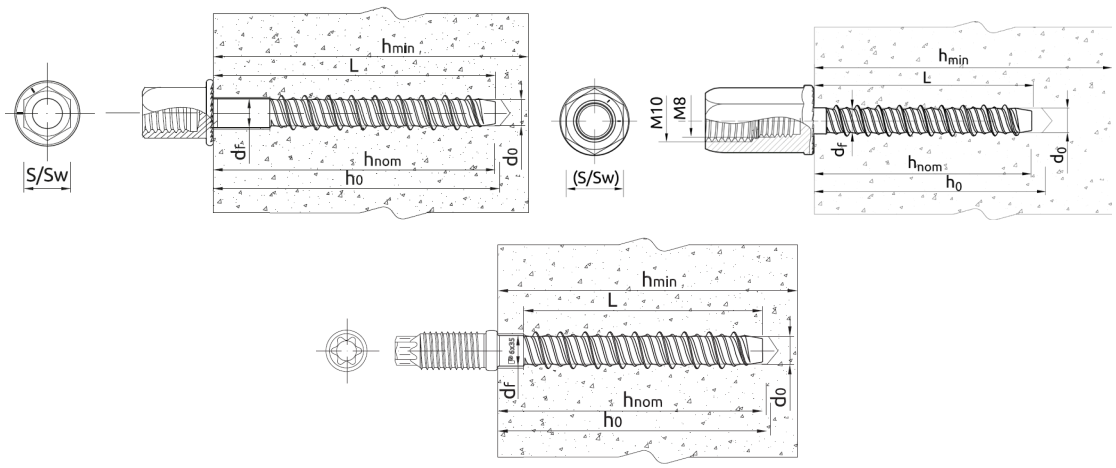


Table B3: Installation parameters – standard embedment depth

Anchor size			R-LX-05	R-LX-06	R-LX-08	R-LX-10
Nominal drill bit diameter	d_{cut}	mm	5	6	8	10
Maximum drill bit diameter	$d_{cut,max}$	mm	5.40	6.40	8.45	10.45
Depth of drill hole	$h_0 \geq$	mm	50	65	80	95
Nominal embedment depth	h_{nom}	mm	43	55	70	85
Effective embedment depth	h_{ef}	mm	32	42	53	65
Maximum installation torque	$T_{imp,max}$	Nm	200	400	900	950
Minimum thickness of member	h_{min}	mm	100	100	110	130

Table B4: Installation parameters – reduced embedment depth

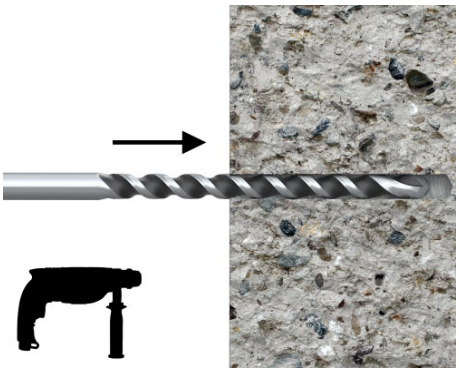
Anchor size			R-LX-06	R-LX-08	R-LX-10
Nominal drill bit diameter	d_{cut}	mm	6	8	10
Maximum drill bit diameter	$d_{cut,max}$	mm	6.40	8.45	10.45
Depth of drill hole	$h_0 \geq$	mm	50	60	65
Nominal embedment depth	h_{nom}	mm	39	50	55
Effective embedment depth	h_{ef}	mm	32	36	40
Maximum installation torque	$T_{imp,max}$	Nm	400	900	950
Minimum thickness of member	h_{min}	mm	100	100	100

Table B5: Minimum spacing and edge distance

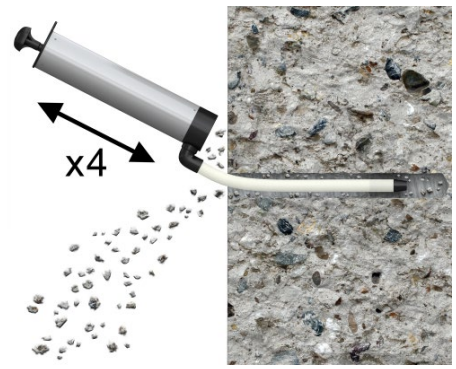
Anchor size			R-LX-05	R-LX-06	R-LX-08	R-LX-10	R-LX-12	R-LX-14
Minimum edge distance	c_{min}	mm	40	45	50	60	80	100
Minimum spacing	s_{min}	mm	40	45	50	60	80	100

R-LX	Annex B 3
Intended use Installation parameters	

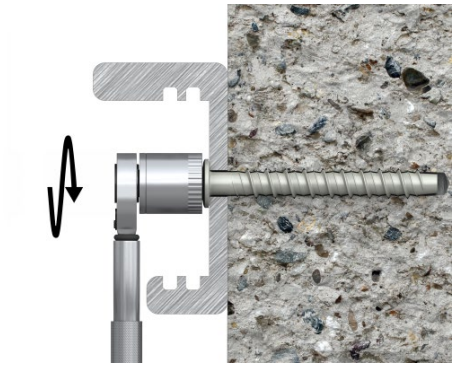
Figure B3 Installation procedure (without adjustment)



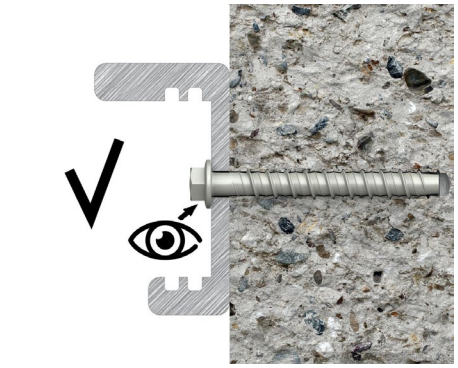
Drill the hole with rotary hammer drilling machine.
Drill to a required depth.



Clean the drill hole (blow out dust at least 4 times with a hand pump).



Tighten the anchor to the substrate.
Installation with any torque impact wrench up to the maximum torque moment ($T_{imp,max}$).

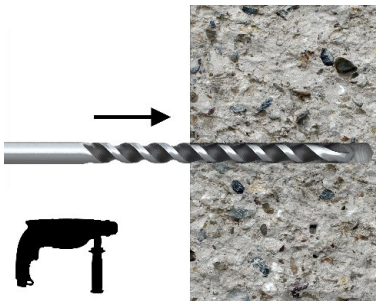


After installation a further turning of the screw must not be possible. The head of the screw must be in contact with the fixture / substrate and be not damaged.

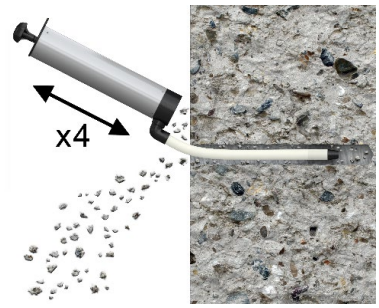
R-LX	Annex B 4
Intended use Installation instruction and tools R-LX-CS, R-LX-E, R-LX-HF, R-LX-I, R-LX-P, R-LX-PX without adjustment	

ANNEX B : Installation (continued)

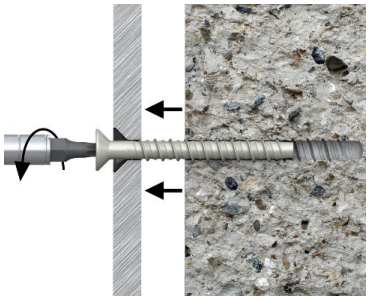
Figure B3 Installation procedure (with adjustment)



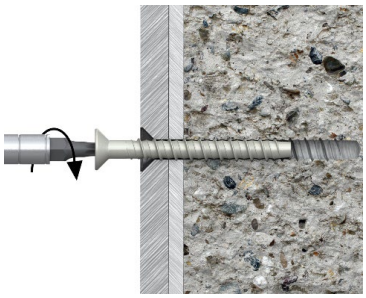
Drill the hole with rotary hammer drilling machine.
Drill to a required depth.



Clean the drill hole (blow out dust at least 4 times with a hand pump).



Possibility of unscrewing and re-screwing.



Tighten the anchor to the substrate.
Installation with any torque impact wrench up to the maximum torque moment ($T_{imp,max}$).

After installation a further turning of the screw must not be possible. The head of the screw must be in contact with the fixture / substrate and be not damaged.

R-LX	Annex B 5
Intended use Installation instruction and tools R-LX-CS, R-LX-E, R-LX-HF, R-LX-I, R-LX-P, R-LX-PX with adjustment	

ANNEX C : Characteristic performance values (continued)

Table C1: Characteristic resistance in cracked and uncracked concrete C20/25 to C50/60, design method A

Anchor size				**R-LX-05**	**R-LX-06**		**R-LX-08**		**R-LX-10**		**R-LX-12**		**R-LX-14**	
Nominal embedment depth		h_{nom}	[mm]	43	43	55	50	70	55	85	60	100	75	120
Adjustment														
Total max. thickness of adjustment layers		t_{adj}	[mm]	10	-	10	-	10	-	10	-	10	-	10
Max. number of adjustments		n_s	[-]	2	-	2	-	2	-	2	-	2	-	2
Steel failure														
Characteristic resistance		$N_{Rk,s}$	[kN]	25.5	35.4		60.4		82.4		113.0		157.0	
Partial safety factor		γ_{Ms} (1)	[-]	1.4	1.4		1.4		1.4		1.4		1.5	
Pull-out failure														
Characteristic resistance in uncracked concrete C20/25		$N_{Rk,p}$	[kN]	7.0	(2)	12.0	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Characteristic resistance in cracked concrete C20/25		$N_{Rk,p}$	[kN]	4.5	(2)	7.0	7.0	13.0	8.0	(2)	7.0	(2)	13.0	(2)
Installation safety factor		γ_{inst}	[-]	1.2	1.0		1.0		1.0		1.0		1.0	
Increasing factor	concrete C30/37	ψ_c	[-]	1.08	1.08		1.08		1.08		1.08		1.08	
	concrete C40/50		[-]	1.15	1.15		1.15		1.15		1.15		1.15	
	concrete C50/60		[-]	1.19	1.19		1.19		1.19		1.19		1.19	
Concrete cone failure and splitting failure														
Effective embedment depth		h_{ef}	[mm]	32	32	42	36	53	40	65	42	76	54	92
Factor for uncracked concrete		$k_{ucr,N}$	[-]	11.0	11.0		11.0		11.0		11.0		11.0	
Factor for cracked concrete		$k_{cr,N}$	[-]	7.7	7.7		7.7		7.7		7.7		7.7	
Installation safety factor		γ_{inst}	[-]	1.2	1.0		1.0		1.0		1.0		1.0	
Characteristic spacing	concrete cone failure	$s_{cr,N}$	[mm]	90	90	126	112	160	120	196	126	228	165	276
	splitting failure	$s_{cr,sp}$	[mm]	90	90	126	112	160	136	222	126	228	188	312
Characteristic edge distance	concrete cone failure	$c_{cr,N}$	[mm]	45	45	63	56	80	60	98	63	114	83	138
	splitting failure	$c_{cr,sp}$	[mm]	45	45	63	56	80	68	111	63	114	94	156

1) In the absence of other national regulations

2) Pull-out failure is not decisive

R-LX	Annex C 1
Performances Characteristic resistance for tension loads.	

ANNEX C : Characteristic performance values (continued)

Table C2: Characteristic resistance in cracked and uncracked concrete C20/25 to C50/60, design method A

Anchor size			**R-LX-05**	**R-LX-06**		**R-LX-08**		**R-LX-10**		**R-LX-12**		**R-LX-14**	
Nominal embedment depth	h_{nom}	[mm]	43	43	55	50	70	55	85	60	100	75	120
Steel failure without lever arm													
Characteristic resistance	$V_{Rk,s}$	[kN]	12.7	17.7		30.2		41.2		57.0		78.5	
Factor considering ductility	k_7	[-]	0.8	0.8		0.8		0.8		0.8		0.8	
Partial safety factor	γ_{Ms} (1)	[-]	1.5	1.5		1.5		1.5		1.5		1.5	
Steel failure with lever arm													
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	19.0	31.8		72.4		123.6		203.3		329.6	
Partial safety factor	γ_{Ms} (1)	[-]	1.5	1.5		1.5		1.5		1.5		1.5	
Concrete pry-out failure													
Factor	k_8	[-]	1.0	1.0		1.0		1.0	2.0	1.0	2.0	1.0	2.0
Installation safety factor	γ_{inst}	[-]	1.0	1.0		1.0		1.0		1.0		1.0	
Concrete edge failure													
Outside diameter on anchor	d_{nom}	[mm]	5	6		8		10		12		14	
Effective length of anchor under shear loads	l_f	[mm]	43	43	55	50	70	55	85	60	100	75	120
Installation safety factor	γ_{inst}	[-]	1.0	1.0		1.0		1.0		1.0		1.0	
Minimum member thickness	h_{min}	[mm]	100	100	100	100	110	100	130	110	155	110	190
Displacements													
Tension load in uncracked concrete C20/25 to C50/60													
Tension load	N	[kN]	2.9	5.6		11.0		14.9		18.1		23.1	
Short term tension displacement	δ_{N0}	[mm]	0.3	0.3		0.4		0.4		0.5		0.5	
Long term tension displacement	$\delta_{N\infty}$	[mm]	0.85	0.9		1.0		1.0		1.2		1.25	
Tension load in cracked concrete C20/25 to C50/60													
Tension load	N	[kN]	2.3	4.4		6.7		10.2		12.4		17.7	
Short term tension displacement	δ_{N0}	[mm]	0.4	0.4		0.5		0.5		0.6		0.7	
Long term tension displacement	$\delta_{N\infty}$	[mm]	2.0	2.0		2.0		2.0		2.0		2.0	
Shear load in cracked and uncracked concrete C20/25 to C50/60													
Shear load	V	[kN]	5.6	8.1		11.9		18.7		27.1		35.2	
Short term shear displacement	δ_{V0}	[mm]	1.4	1.5		2.5		2.5		2.5		2.5	
Long term shear displacement	$\delta_{V\infty}$	[mm]	2.1	2.25		3.75		3.75		3.75		3.75	

1) In the absence of other national regulations

R-LX	Annex C 2
Performances Characteristic resistance for shear loads. Displacements	

ANNEX C : Characteristic performance values (continued)

Table C3: Characteristic values for seismic performance category C1

Anchor size			**R-LX-08**	**R-LX-10**	**R-LX-14**
Nominal embedment depth	h_{nom}	[mm]	70	85	120
Steel failure for tension and shear load					
Characteristic resistance	$N_{Rk,s,eq}$	[kN]	60.4	82.4	157.0
	$V_{Rk,s,eq}$	[kN]	15.1	27.4	52.3
Pullout failure					
Characteristic resistance	$N_{Rk,p,eq}$	[kN]	5.4	13.5	19.2
Concrete cone failure					
Effective embedment depth	h_{ef}	[mm]	53	65	92
Characteristic edge distance	$c_{cr,N}$	[mm]	1.5 h_{ef}		
Characteristic spacing	$s_{cr,N}$	[mm]	3 h_{ef}		
Installation safety factor	γ_{inst}	[-]	1.0		
Concrete pry-out failure					
Factor	k_8	[-]	1.0	2.0	2.0
Concrete edge failure					
Outside diameter on anchor	d_{nom}	[mm]	8	10	14
Effective length of anchor under shear loads	l_f	[mm]	70	85	120

R-LX	Annex C 3
Performances Characteristic values for seismic performance category C1	

ANNEX C : Characteristic performance values (continued)

Table C4: Characteristic values for seismic performance category C2

Anchor size			**R-LX-08**	**R-LX-10**	**R-LX-14**
Nominal embedment depth	h_{nom}	[mm]	70	85	120
Steel failure for tension and shear load					
Characteristic resistance	$N_{Rk,s,eq}$	[kN]	60.4	82.4	157.0
	$V_{Rk,s,eq}$	[kN]	9.9	20.6	35.1
Pullout failure					
Characteristic resistance	$N_{Rk,p,eq}$	[kN]	1.57	4.91	14.87
Concrete cone failure					
Effective embedment depth	h_{ef}	[mm]	53	65	92
Characteristic edge distance	$c_{cr,N}$	[mm]	1.5 h_{ef}		
Characteristic spacing	$s_{cr,N}$	[mm]	3 h_{ef}		
Installation factor	γ_{inst}	[-]	1.0		
Concrete pry-out failure					
Factor	k_8	[-]	1.0	2.0	2.0
Concrete edge failure					
Outside diameter on anchor	d_{nom}	[mm]	8	10	14
Effective length of anchor under shear loads	l_f	[mm]	70	85	120
Displacements					
Displacements under tension load					
Displacement DLS	$\delta_{N,eq}$	[mm]	0.10	0.20	0.63
Displacement ULS	$\delta_{N,eq}$	[mm]	0.50	0.73	3.94
Displacements under shear load					
Displacement DLS	$\delta_{V,eq}$	[mm]	2.00	3.44	4.22
Displacement ULS	$\delta_{V,eq}$	[mm]	3.04	5.04	7.15

R-LX	Annex C 4
Performances Characteristic values for seismic performance category C2	

ANNEX C : Characteristic performance values (continued)

Table C5: Characteristic resistance under fire exposure in cracked and uncracked concrete C20/25 to C50/60

Anchor size				**R-LX-05**	**R-LX-06**		**R-LX-08**		**R-LX-10**		**R-LX-12**		**R-LX-14**	
Nominal embedment depth		h_{nom}	[mm]	43	43	55	50	70	55	85	60	100	75	120
Steel failure for tension and shear load FRk,s,fi = NRk,s,fi = VRk,s,fi														
Characteristic resistance	R30	$F_{Rk,s,fi}$	[kN]	0.20	0.28	0.28	0.75	0.75	1.57	1.57	2.26	2.26	3.08	3.08
	R60	$F_{Rk,s,fi}$	[kN]	0.18	0.25	0.25	0.65	0.65	1.18	1.18	1.70	1.70	2.31	2.31
	R90	$F_{Rk,s,fi}$	[kN]	0.14	0.20	0.20	0.50	0.50	1.02	1.02	1.47	1.47	2.00	2.00
	R120	$F_{Rk,s,fi}$	[kN]	0.10	0.14	0.14	0.40	0.40	0.79	0.79	1.13	1.13	1.54	1.54
	R30	$M^0_{Rk,s,fi}$	[Nm]	0.15	0.25	0.25	0.90	0.90	2.36	2.36	4.07	4.07	6.47	6.47
	R60	$M^0_{Rk,s,fi}$	[Nm]	0.13	0.23	0.23	0.78	0.78	1.77	1.77	3.05	3.05	4.85	4.85
	R90	$M^0_{Rk,s,fi}$	[Nm]	0.10	0.18	0.18	0.60	0.60	1.53	1.53	2.65	2.65	4.20	4.20
	R120	$M^0_{Rk,s,fi}$	[Nm]	0.07	0.13	0.13	0.48	0.48	1.18	1.18	2.04	2.04	3.23	3.23
Pull-out failure														
Characteristic resistance	R30	$N_{Rk,p,fi}$	[kN]	1.13	1.38	1.75	1.88	3.25	2.00	4.75	1.75	6.50	3.25	8.50
	R60	$N_{Rk,p,fi}$	[kN]	1.13	1.38	1.75	1.88	3.25	2.00	4.75	1.75	6.50	3.25	8.50
	R90	$N_{Rk,p,fi}$	[kN]	1.13	1.38	1.75	1.88	3.25	2.00	4.75	1.75	6.50	3.25	8.50
	R120	$N_{Rk,p,fi}$	[kN]	0.90	1.10	1.40	1.50	2.60	1.60	3.80	1.40	5.20	2.60	6.80
Concrete cone failure														
Characteristic resistance	R30	$N_{Rk,c,fi}$	[kN]	0.89	0.89	2.06	1.50	3.68	1.82	6.13	2.06	9.06	4.04	14.61
	R60	$N_{Rk,c,fi}$	[kN]	0.89	0.89	2.06	1.50	3.68	1.82	6.13	2.06	9.06	4.04	14.61
	R90	$N_{Rk,c,fi}$	[kN]	0.89	0.89	2.06	1.50	3.68	1.82	6.13	2.06	9.06	4.04	14.61
	R120	$N_{Rk,c,fi}$	[kN]	0.71	0.71	1.65	1.20	2.94	1.46	4.91	1.65	7.25	3.23	11.69
Edge distance														
R30 to R120		$c_{cr,fi}$	[mm]	$2 \cdot h_{ef}$										
In case of fire attack from more than one side, the minimum edge distance shall be ≥ 300 mm.														
Anchor spacing														
R30 to R120		$s_{cr,fi}$	[mm]	$4 \cdot h_{ef}$										
Concrete pry-out failure														
R30 to R120		k	[-]	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	2.0	1.0	2.0

R-LX	Annex C 5
Performances Characteristic resistance under fire exposure	

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