

# R-HLX-I HARDENED INDUCTION CONCRETE SCREW

Hardened induction concrete screw with internal threaded head



## FEATURES AND BENEFITS

The new thread geometry with additional cutting teeth ensures quick and easy installation, also in reinforced concrete C20/25 - C50/60.

Fire resistance R30-R120.

R-HLX concrete screws can be used in earthquake-prone zones - seismic category C1 and C2.

The internal thread allows for the use of standard metric screws or threaded rods, and for surface flush removal and reuse of the fixing point. This provides great flexibility.

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

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

Possibility of disassembly and repeated use after verifying thread wear with a tester.

The highest parameters in cracked and uncracked concrete C20/25 - C50/60 confirmed in the ETA.

## SUBSTRATES



Cracked concrete C20/25-C50/60



Non-cracked concrete C20/25-C50/60



Unreinforced concrete



Reinforced concrete



Hollow-core slab C30/37-C50/60



High-density natural stone





## APPLICATIONS

Balustrades

Formwork

Gates

Scaffolding

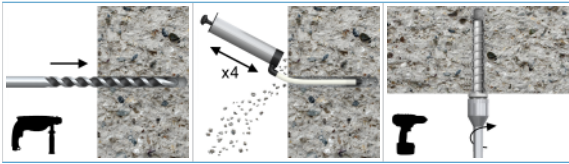
Seats in public facilities

Storage racks

Temporary fixings

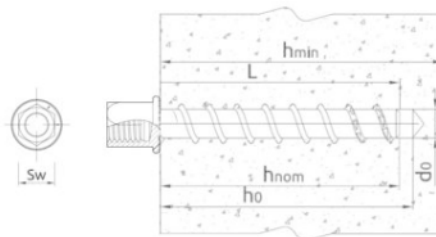


## INSTALLATION GUIDE



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. Tighten the anchor to the substrate.
4. After installation a further turning of the screw must not be possible. The head of the screw must be in contact with the substrate and is not damaged.

## INSTALLATION DATA



Size			6	8
Thread diameter	d	[mm]	7,9	10,4
Hole diameter in substrate	d <sub>0</sub>	[mm]	6	8
Wrench size	Sw	[mm]	13	15
Internal thread	d <sub>i</sub>	[mm]	M6/M8/M10	M12
Max. torque for impact screw driver	T <sub>imp,max</sub>	[Nm]	250	350
<b>STANDARD EMBEDMENT DEPTH</b>				
Min. hole depth in substrate	h <sub>0,s</sub>	[mm]	65	85
Real hole depth in substrate	h <sub>0</sub>	[mm]	L+10-t <sub>fix</sub>	L+10-t <sub>fix</sub>
Min. installation depth	h <sub>nom,s</sub>	[mm]	55	70
Min. substrate thickness	h <sub>min,s</sub>	[mm]	80	110
Min. edge distance	c <sub>min</sub>	[mm]	35	35
Min. spacing	s <sub>min</sub>	[mm]	35	35
<b>REDUCED EMBEDMENT DEPTH</b>				
Min. hole depth in substrate	h <sub>0,r</sub>	[mm]	50	70
Real hole depth in substrate	h <sub>0</sub>	[mm]	L+10-t <sub>fix</sub>	L+10-t <sub>fix</sub>
Min. installation depth	h <sub>nom,r</sub>	[mm]	40	60
Min. substrate thickness	h <sub>min,r</sub>	[mm]	80	110
Min. edge distance	c <sub>min</sub>	[mm]	35	35
Min. spacing	s <sub>min</sub>	[mm]	35	35
<b>MINIMUM EMBEDMENT DEPTH</b>				
Min. hole depth in substrate	h <sub>0,r</sub>	[mm]	45	60
Real hole depth in substrate	h <sub>0</sub>	[mm]	L+10-t <sub>fix</sub>	L+10-t <sub>fix</sub>
Min. installation depth	h <sub>nom,r</sub>	[mm]	35	50
Min. substrate thickness	h <sub>min,r</sub>	[mm]	80	110
Min. edge distance	c <sub>min</sub>	[mm]	35	35
Min. spacing	s <sub>min</sub>	[mm]	35	35

## MECHANICAL PROPERTIES

Size			6	8
Nominal ultimate tensile strength - tension	$f_{yk}$	[N/mm <sup>2</sup> ]	800	800
Nominal yield strength	$f_{yk}$	[N/mm <sup>2</sup> ]	640	640
Cross sectional area	$A_s$	[mm <sup>2</sup> ]	24,6	44,2
Elastic section modulus	$W_{el}$	[mm <sup>3</sup> ]	17,24	41,42
Characteristic bending resistance	$M_{Rk,s}^0$	[Nm]	16,6	39,8
Design bending resistance	M	[Nm]	13,2	31,8

## BASIC PERFORMANCE DATA

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

Size			6	8
Standard embedment depth	$h_{nom}$	[mm]	55	70
Reduced embedment depth	$h_{nom}$	[mm]	40	60
Minimum embedment depth	$h_{nom}$	[mm]	35	50
<b>MEAN ULTIMATE RESISTANCE</b>				
<b>TENSION LOAD <math>N_{Ru,m}</math></b>				
<b>UNCRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	18,99	26,34
Reduced embedment depth	-	[kN]	11,09	19,03
Minimum embedment depth	-	[kN]	8,32	16,44
<b>CRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	10,88	12,24
Reduced embedment depth	-	[kN]	7,11	11,59
Minimum embedment depth	-	[kN]	4,02	9,86
<b>SHEAR LOAD <math>V_{Ru,m}</math></b>				
<b>UNCRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	10,67	19,47
Reduced embedment depth	-	[kN]	10,67	19,47
Minimum embedment depth	-	[kN]	8,95	16,44
<b>CRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	10,67	19,47
Reduced embedment depth	-	[kN]	7,81	19,47
Minimum embedment depth	-	[kN]	6,30	11,57
<b>CHARACTERISTIC RESISTANCE</b>				
<b>TENSION LOAD <math>N_{Rk}</math></b>				
<b>UNCRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	13,80	20,60
Reduced embedment depth	-	[kN]	8,00	13,87
Minimum embedment depth	-	[kN]	4,50	11,90
<b>CRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	3,50	11,00
Reduced embedment depth	-	[kN]	2,00	9,00
Minimum embedment depth	-	[kN]	2,00	8,00
<b>SHEAR LOAD <math>V_{Rk}</math></b>				
<b>UNCRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	9,70	17,70
Reduced embedment depth	-	[kN]	8,08	17,70
Minimum embedment depth	-	[kN]	6,52	11,98
<b>CRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	9,70	17,70
Reduced embedment depth	-	[kN]	5,66	17,70
Minimum embedment depth	-	[kN]	4,57	8,39
<b>DESIGN RESISTANCE</b>				
<b>TENSION LOAD <math>N_{Rd}</math></b>				
<b>UNCRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	9,20	13,73
Reduced embedment depth	-	[kN]	5,33	9,25
Minimum embedment depth	-	[kN]	3,00	7,93
<b>CRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	2,33	7,33
Reduced embedment depth	-	[kN]	1,33	6,00
Minimum embedment depth	-	[kN]	1,33	5,33
<b>SHEAR LOAD <math>V_{Rd}</math></b>				
<b>UNCRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	7,76	14,16
Reduced embedment depth	-	[kN]	5,39	14,16
Minimum embedment depth	-	[kN]	4,35	7,99

Size			6	8
<b>CRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	6,47	14,16
Reduced embedment depth	-	[kN]	3,77	12,95
Minimum embedment depth	-	[kN]	3,04	5,59
<b>RECOMMENDED LOAD</b>				
<b>TENSION LOAD <math>N_{rec}</math></b>				
<b>UNCRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	6,57	9,81
Reduced embedment depth	-	[kN]	3,81	6,61
Minimum embedment depth	-	[kN]	2,14	5,67
<b>CRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	1,67	5,24
Reduced embedment depth	-	[kN]	0,95	4,29
Minimum embedment depth	-	[kN]	0,95	3,81
<b>SHEAR LOAD <math>V_{rec}</math></b>				
<b>UNCRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	5,54	10,11
Reduced embedment depth	-	[kN]	3,85	10,11
Minimum embedment depth	-	[kN]	3,11	5,71
<b>CRACKED CONCRETE</b>				
Standard embedment depth	-	[kN]	4,62	10,11
Reduced embedment depth	-	[kN]	2,69	9,25
Minimum embedment depth	-	[kN]	2,17	3,99

## DESIGN PERFORMANCE DATA

### Static loads

Size			6	6	6	8	8	8
Nominal embedment depth	$h_{nom}$	[mm]	35	40	55	50	60	70
Effective embedment depth	$h_{ef}$	[mm]	26	30	43	39	43	56
<b>TENSION LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance	$N_{Rk,s}$	[kN]	19,4	19,4	19,4	35,4	35,4	35,4
Partial safety factor	$\gamma_{MS}$	[-]	1,50	1,50	1,50	1,50	1,50	1,50
<b>PULL-OUT FAILURE</b>								
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p,ucr}$	[kN]	4,5	8,0	13,8	11,9	16,3	20,6
Characteristic resistance in cracked concrete C20/25	$N_{Rk,p,cr}$	[kN]	2,0	2,0	3,5	8,0	9,0	11,0
Installation safety factor	$\gamma_{inst}$	[-]	1,0 <sup>1)</sup>	1,0 <sup>1)</sup>	1,0	1,0	1,0	1,0
Increasing factors for concrete C30/37	$\psi_c$	[-]	1,17	1,17	1,17	1,17	1,17	1,17
Increasing factors for concrete C40/50	$\psi_c$	[-]	1,32	1,32	1,32	1,32	1,32	1,32
Increasing factors for concrete C50/60	$\psi_c$	[-]	1,42	1,42	1,42	1,42	1,42	1,42
<b>CONCRETE CONE FAILURE</b>								
Installation safety factor	$\gamma_{inst}$	[-]	1,0 <sup>1)</sup>	1,0 <sup>1)</sup>	1,0	1,0	1,0	1,0
Factor for cracked concrete	$k_{cr,N}$	[-]	7,7	7,7	7,7	7,7	7,7	7,7
Factor for uncracked concrete	$k_{ucr,N}$	[-]	11,0	11,0	11,0	11,0	11,0	11,0
Spacing	$s_{cr,N}$	[mm]	78,0	90,0	129,0	117,0	129,0	168,0
Edge distance	$c_{cr,N}$	[mm]	39,0	45,0	64,5	58,5	64,5	84,0
<b>CONCRETE SPLITTING FAILURE</b>								
Installation safety factor	$\gamma_{inst}$	[-]	1,0 <sup>1)</sup>	1,0 <sup>1)</sup>	1,0	1,0	1,0	1,0
Spacing	$s_{cr,sp}$	[mm]	80,0	90,0	130,0	120,0	150,0	170,0
Edge distance	$c_{cr,sp}$	[mm]	40,0	45,0	65,0	60,0	75,0	85,0
<b>SHEAR LOAD</b>								
<b>STEEL FAILURE</b>								
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	9,7	9,7	9,7	17,7	17,7	17,7
Ductility factor	$k_f$	[-]	1,0	1,0	1,0	1,0	1,0	1,0
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	16,1	16,1	16,1	39,8	39,8	39,8
Partial safety factor	$\gamma_{MS}$	[-]	1,25	1,25	1,25	1,25	1,25	1,25
<b>CONCRETE PRY-OUT FAILURE</b>								
Factor	$k$	[-]	1,0	1,0	1,0	1,0	2,0	2,0
Installation safety factor	$\gamma_{inst}$	[-]	1,0	1,0	1,0	1,0	1,0	1,0
<b>CONCRETE EDGE FAILURE</b>								
Effective length of anchor	$\ell_f$	[mm]	35	40	55	50	60	70
Anchor diameter	$d_{nom}$	[mm]	6	6	6	8	8	8
Installation safety factor	$\gamma_{inst}$	[-]	1,0	1,0	1,0	1,0	1,0	1,0

<sup>1)</sup> Holes without cleaning  $\gamma_{inst} = 1,2$

### Resistance to tension and shear loads under fire exposure

# R-HLX-I HARDENED INDUCTION CONCRETE SCREW

Size			6	6	6	8	8	8
			<b>R (for EI) = 30 min</b>					
Nominal embedment depth	$h_{nom}$	[mm]	35	40	55	50	60	70
			<b>TENSION LOAD</b>					
			<b>STEEL FAILURE</b>					
Characteristic resistance	$N_{Rk,s}$	[kN]	1,8	1,8	1,8	3,8	3,8	3,8
			<b>PULL-OUT FAILURE</b>					
Characteristic resistance	$N_{Rk,p}$	[kN]	0,5	0,5	0,8	2,0	2,2	2,7
			<b>SHEAR LOAD</b>					
			<b>STEEL FAILURE</b>					
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	1,8	1,8	1,8	3,8	3,8	3,8
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	1,5	1,5	1,5	4,3	4,3	4,3
			<b>R (for EI) = 60 min</b>					
Nominal embedment depth	$h_{nom}$	[mm]	35	40	55	50	60	70
			<b>TENSION LOAD</b>					
			<b>STEEL FAILURE</b>					
Characteristic resistance	$N_{Rk,s}$	[kN]	1,4	1,4	1,4	2,9	2,9	2,9
			<b>PULL-OUT FAILURE</b>					
Characteristic resistance	$N_{Rk,p}$	[kN]	0,5	0,5	0,8	2	2,2	2,7
			<b>SHEAR LOAD</b>					
			<b>STEEL FAILURE</b>					
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	1,4	1,4	1,4	2,9	2,9	2,9
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	1,2	1,2	1,2	3,3	3,3	3,3
			<b>R (for EI) = 90 min</b>					
Nominal embedment depth	$h_{nom}$	[mm]	35	40	55	50	60	70
			<b>TENSION LOAD</b>					
			<b>STEEL FAILURE</b>					
Characteristic resistance	$N_{Rk,s}$	[kN]	1,0	1,0	1,0	2,0	2,0	2,0
			<b>PULL-OUT FAILURE</b>					
Characteristic resistance	$N_{Rk,p}$	[kN]	0,5	0,5	0,8	2	2,2	2,7
			<b>SHEAR LOAD</b>					
			<b>STEEL FAILURE</b>					
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	1,0	1,0	1,0	2,0	2,0	2,0
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	0,8	0,8	0,8	2,3	2,3	2,3
			<b>R (for EI) = 120 min</b>					
Nominal embedment depth	$h_{nom}$	[mm]	35	40	55	50	60	70
			<b>TENSION LOAD</b>					
			<b>STEEL FAILURE</b>					
Characteristic resistance	$N_{Rk,s}$	[kN]	0,8	0,8	0,8	1,6	1,6	1,6
			<b>PULL-OUT FAILURE</b>					
Characteristic resistance	$N_{Rk,p}$	[kN]	0,4	0,4	0,7	1,6	1,8	2,2
			<b>SHEAR LOAD</b>					
			<b>STEEL FAILURE</b>					
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	0,8	0,8	0,8	1,6	1,6	1,6
Characteristic resistance with lever arm	$M_{Rk,s}$	[Nm]	0,7	0,7	0,7	1,8	1,8	1,8

Allowable values for resistance in case of Seismic performance category C1 & C2

Size			6	6	6	8	8
Nominal embedment depth	$h_{nom}$	[mm]	40	55	50	60	70
			<b>SEISMIC CATEGORY C1</b>				
			<b>TENSION LOAD, STEEL FAILURE</b>				
Characteristic resistance	$N_{Rk,s,C1}$	[kN]	19,4	19,4	35,4	35,4	35,4
			<b>TENSION LOAD, PULL-OUT FAILURE</b>				
Characteristic resistance seismic C1	$N_{Rk,p,C1}$	[kN]	2,0	3,5	7,6	8,6	10,5
			<b>SHEAR LOAD, STEEL FAILURE</b>				
Characteristic resistance without lever arm	$V_{Rk,s,C1}$	[kN]	4,7	4,7	10,6	10,6	10,6
			<b>SEISMIC CATEGORY C2</b>				
			<b>TENSION LOAD, STEEL FAILURE</b>				
Characteristic resistance	$N_{Rk,s,C2}$	[kN]	-	-	-	-	35,4
			<b>TENSION LOAD, PULL-OUT FAILURE</b>				
Characteristic resistance seismic C2	$N_{Rk,p,C2}$	[kN]	-	-	-	-	2,0
			<b>SHEAR LOAD, STEEL FAILURE</b>				
Characteristic resistance without lever arm	$V_{Rk,s,C2}$	[kN]	-	-	-	-	3,6









## LOGISTICAL DATA

SKU	Base-sales unit	Unit pack	Bulk pack	Pallet	Single Package - Gross Weight	Bulk Package - Gross Weight	Palette - Gross Weight	Barcode
R-HLX-06X35-I06-ZP	pcs.	100.0	100.0	38400.0	2.4	2.4	913.9	5906675557175
R-HLX-06X35-I08-ZP	pcs.	100.0	100.0	38400.0	2.2	2.2	825.6	5906675557182
R-HLX-06X35-I10-ZP	pcs.	100.0	100.0	38400.0	2.0	2.0	768.0	5906675557199
R-HLX-06X35-I8/10Z	pcs.	100.0	100.0	25600.0	2.7	2.7	698.9	5906675557205

**LOGISTICAL DATA** 

SKU	Base-sales unit	Unit pack	Bulk pack	Pallet	Single Package - Gross Weight	Bulk Package - Gross Weight	Palette - Gross Weight	Barcode
R-HLX-06X40-I08-ZP	pcs.	100.0	100.0	38400.0	2.1	2.1	806.4	5906675564760
R-HLX-06X40-I10-ZP	pcs.	100.0	100.0	38400.0	2.2	2.2	825.6	5906675564777
R-HLX-06X55-I08-ZP	pcs.	100.0	100.0	25600.0	2.6	2.6	663.0	5906675557212
R-HLX-06X55-I10-ZP	pcs.	100.0	100.0	25600.0	2.5	2.5	627.2	5906675557229
R-HLX-06X55-I8/10Z	pcs.	100.0	100.0	25600.0	3.2	3.2	809.0	5906675557236
R-HLX-08X50-I10-ZP	pcs.	100.0	100.0	25600.0	4.0	4.0	1011.2	5906675640938
R-HLX-08X50-I12-ZP	pcs.	100.0	100.0	25600.0	4.0	4.0	1011.2	5906675640921
R-HLX-08X70-I10-ZP	pcs.	100.0	100.0	25600.0	4.0	4.0	1024.0	5906675640945

**RELATED PRODUCTS** 

<b>SAFETY</b>	Protective gloves for power tools <b>R-PGL</b> 			
<b>DRILLING</b>	Rotary Hammer Drill SDS plus; 850W; 26mm; 2.5J <b>R-PRH-26850</b> 	Cordless Hammer 18V SDS plus <b>R-PRH18</b> 	Drill bits Aggressor SDS plus <b>RT-SDSA</b> 	Drill bits Rebardrill SDS plus <b>RT-SDSR</b> 
<b>CLEANING</b>	Blow Pump <b>R-BLOWPUMP</b> 			
<b>ANCHORING</b>	Cordless RawlWrench 18V 315 Nm, in a transport case <b>R-PID18-315</b> 	Cordless RawlWrench 18V 1000Nm bare tool, in a transport case <b>R-PIW18-S</b> 	Long impact sockets <b>RT-IS</b> 