W-LX Concrete Screws

Ultimate performance zinc-plated concrete screws for multiple use for non-structural applications in concrete and precast prestressed hollow core slabs

Anchor types

W-LX-H 6x40 6x60 6x75 8x60 8x75 8x90 8x100 8x120 10x65 10x90 10x100 10x120 10x140 14x115 14x135

- **W-LX-H** zinc-plated concrete screw with hexagon head and a pre-pressed washer
- Ø10 suits installation with BIS RapidStrut

W-LX-N 6x35 6x55

- **W-LX-N** unibody zinc-plated concrete screw with an internal M8/M10 thread

W-LX-M 6x35 6x55

- **W-LX-M** zinc-plated concrete screw with M8 external thread connection and torx T30 drive

W-LX-P 6x40 6x60

- **W-LX-P** zinc-plated concrete screw with a ø14.6 mm pan head and torx T30 drive

W-LX-PX 6x40 6x60

- **W-LX-PX** zinc-plated concrete screw with a large ø17.0 mm pan head and torx T30 drive

Features and benefits

- ETA according to EAD 330747-00-0601 for multiple use for non-structural applications
- Simple and quick installation procedure
- Unique tip and thread geometry prevents concrete spalling
- Very high load capacity
- Approved for use in precast prestressed hollow core slabs
- Compliance with VdS CE 4001:2014-04 (05) and VdS VdS CE 4001:2018-01 (06) for applications with sprinkler systems in concrete elements
- Up to 3 anchoring depths provide maximum installation and design flexibility
- Removable
- Reduced edge and anchor spacing distances
- Fire resistance class R30-R120 for design of anchorages under exposure to fire

Suitable base materials

Concrete (non-cracked)

Concrete (cracked)

Hollow core slabs

Approvals and certificates

- European Technical Assessment — ETA-21/0613
- Fire Test Report — ETA-21/0613

- Compliance with VdS requirements for applications with sprinkler systems in concrete elements — VdS CEA 4001:2014-04 (05), VdS CEA 4001:2018-01 (06)

1. Product details

Article	Description	Size	Length	Thread diameter	Max. Fixture Thickness*			Drive System
			L [mm]	d_s [mm]	$t_{fix,max}$ [mm]			
					h_{nom} = red1	h_{nom} = red2	h_{nom} = std	
62430304	W-LX-H	6	40	7.5	5	1	-	SW10
62430306	W-LX-H	6	60	7.5	25	21	5	SW10
62430308	W-LX-H	6	75	7.5	40	36	20	SW10
62430406	W-LX-H	8	60	9.9	10	-	-	SW13
62430408	W-LX-H	8	75	9.9	25	5	-	SW13
62430409	W-LX-H	8	90	9.9	40	20	-	SW13
62430410	W-LX-H	8	100	9.9	50	30	-	SW13
62430412	W-LX-H	8	120	9.9	70	50	-	SW13
62430507	W-LX-H	10	65	12.4	10	-20	-	SW15
62430509	W-LX-H	10	90	12.4	35	5	-	SW15
62430510	W-LX-H	10	100	12.4	45	15	-	SW15
62430512	W-LX-H	10	120	12.4	65	35	-	SW15
62430514	W-LX-H	10	140	12.4	85	55	-	SW15
62430711	W-LX-H	14	115	17.4	40	-	-	SW19
62430713	W-LX-H	14	135	17.4	60	15	-	SW19
62431304	W-LX-P	6	40	7.5	5	1	-	T30
62431306	W-LX-P	6	60	7.5	25	21	5	T30
62432304	W-LX-PX	6	40	7.5	5	1	-	T30
62432306	W-LX-PX	6	60	7.5	25	21	5	T30
62433304	W-LX-N	6	35	7.5	□	-	-	SW13
62433305	W-LX-N	6	55	7.5	□	□	□	SW13
62434304	W-LX-M	6	35	7.5	□	-	-	T30
62434305	W-LX-M	6	55	7.5	□	□	□	T30

□ product not intended for application with fixture plate

2. Packaging details

Article	Description	Dimension	Pack 1					
			[pcs]	EAN13	length [mm]	width [mm]	height [mm]	weight [kg]
62430304	W-LX-H	6x40	100	8719942052115	186	140	72	1.37
62430306	W-LX-H	6x60	100	8719942052146	186	140	72	1.83
62430308	W-LX-H	6x75	100	8719942052177	186	140	72	2.19
62430406	W-LX-H	8x60	100	8719942052207	186	140	108	3.37
62430408	W-LX-H	8x75	100	8719942052238	186	140	108	3.95
62430409	W-LX-H	8x90	100	8719942052269	286	122	108	4.53
62430410	W-LX-H	8x100	100	8719942052290	286	122	108	4.92
62430412	W-LX-H	8x120	50	8719942052320	186	140	108	2.9
62430507	W-LX-H	10x65	50	8719942052351	286	122	108	2.78
62430509	W-LX-H	10x90	50	8719942052351	186	140	108	3.6
62430510	W-LX-H	10x100	50	8719942052412	186	140	108	3.83
62430512	W-LX-H	10x120	25	8719942052443	186	140	108	2.22
62430514	W-LX-H	10x140	25	8719942052474	286	122	108	2.53
62430711	W-LX-H	14x115	20	8719942052566	186	140	108	3.56
62430713	W-LX-H	14x135	20	8719942052597	186	140	108	4.02
62431304	W-LX-P	6x40	100	8719942052627	186	140	72	1.29
62431306	W-LX-P	6x60	100	8719942052658	186	140	72	
62432304	W-LX-PX	6x40	100	8719942052689	186	140	72	1.28
62432306	W-LX-PX	6x60	100	8719942052719	186	140	72	
62433304	W-LX-N	6x35	100	8719942052740	186	140	108	2.57
62433305	W-LX-N	6x55	100	8719942052771	186	140	108	3.11
62434304	W-LX-M	6x35	100	8719942052801	186	140	108	
62434305	W-LX-M	6x55	100	8719942052832	186	140	108	1.64

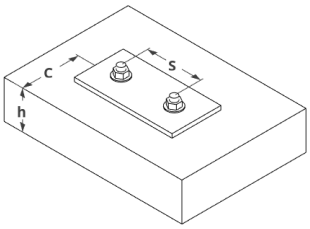
3. Mechanical properties

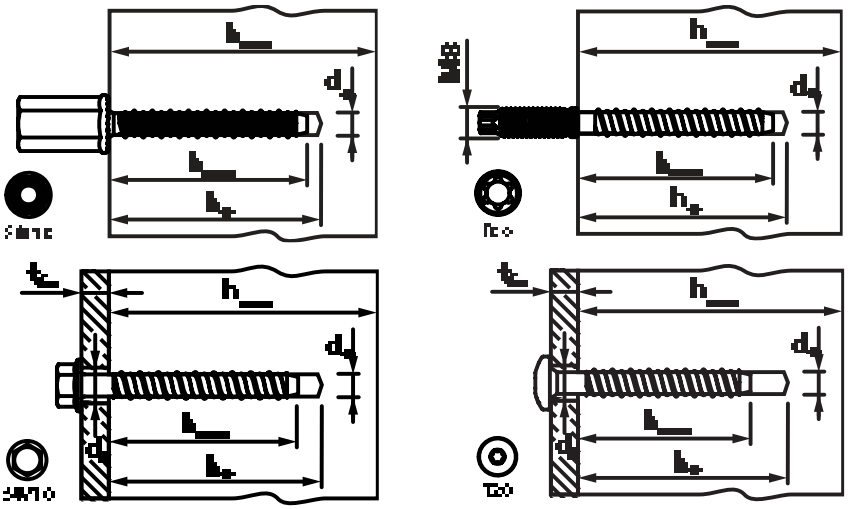
Property			ETA-21/0613
			W-LX-H, W-LX-P, W-LX-PX, W-LX-N, W-LX-M
Material			Carbon Steel - St. 1.5523 (19MnB4)
Coating			Zinc plated ≥ 5µm
Characteristic steel yield strength	f_{yk}	[N/mm^2]	1020-1250
Characteristic steel ultimate strength	f_{uk}	[N/mm^2]	800-1100

3. Installation data

3.1 Installation parameters for cracked and non-cracked concrete

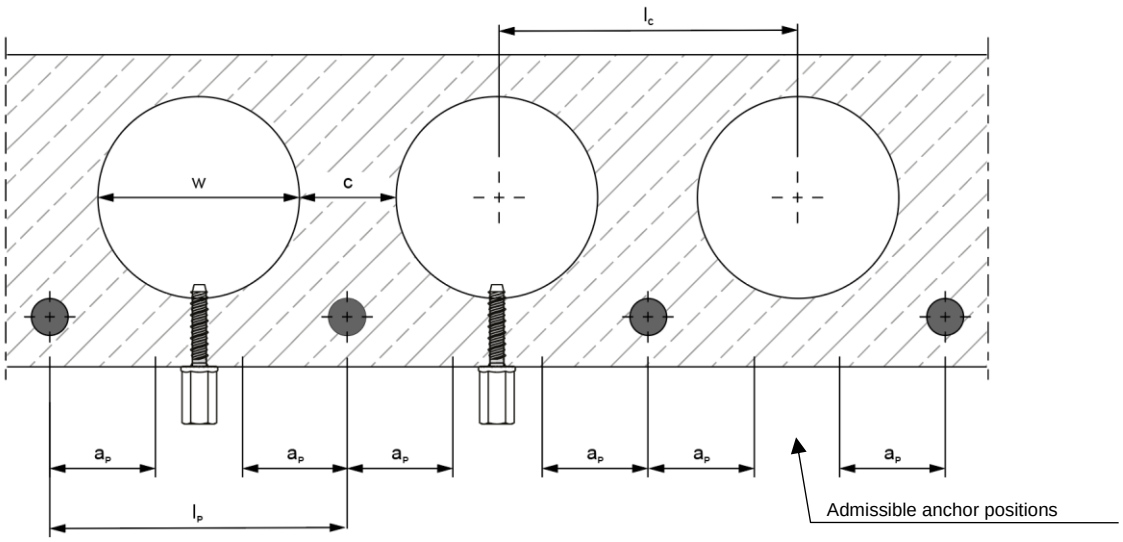
Anchor Type			W-LX								
Anchor Size			6	6	6	8	8	10	10	14	14
Nominal embedment depth	h_{nom}	[mm]	35	39	55	50	70	55	85	75	120
Drill hole diameter	d_0	[mm]	6	6	6	8	8	10	10	14	14
Cutting diameter of drill bit	d_{cut}	[mm]	6.40	6.40	6.40	8.45	8.45	10.45	10.45	14.50	4.50
Depth of drill hole	$h_0 \geq$	[mm]	45	50	65	60	80	65	95	85	130
Diameter of clearing hole in the fixture	d_f	[mm]	9	9	9	12	12	14	14	18	18
Max fixture thickness	$t_{fix,max}$	[mm]	$L - h_{nom}$								
Minimum concrete member thickness	h_{min}	[mm]	80	80	84	80	110	80	130	110	190
Minimum edge distance	c_{min}	[mm]	45	45	45	50	50	60	60	100	100
Minimum anchor spacing	s_{min}	[mm]	45	45	45	50	50	60	60	100	100
Max. impact screw driver torque	$T_{imp,max}$	[Nm]	400	400	400	900	900	950	950	950	950

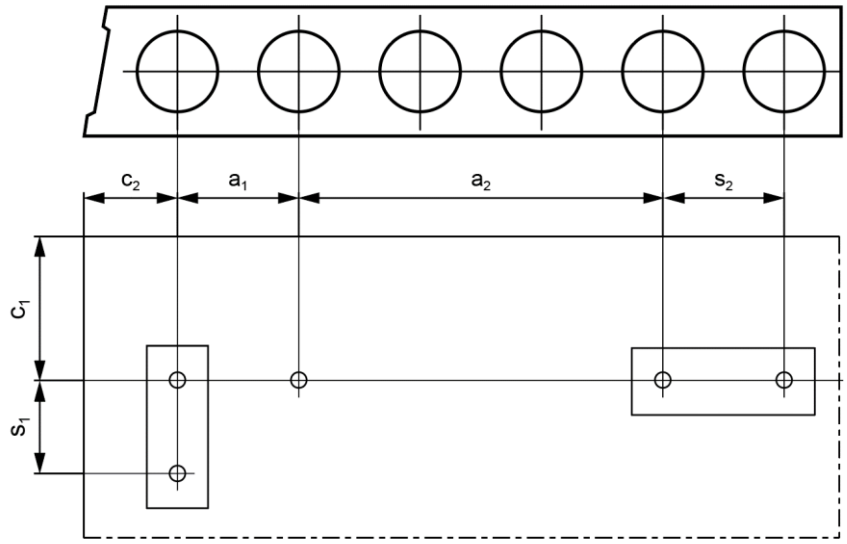




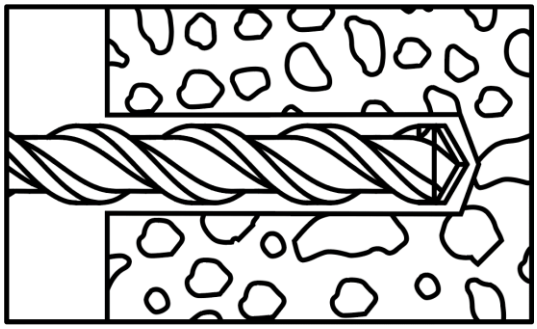
3.2 Installation parameters for precast prestressed hollow core concrete slabs

Anchor Type			W-LX
Anchor Size			6
Nominal embedment depth	h_{nom}	[mm]	6
Drill hole diameter	d_0	[mm]	6.40
Depth of drill hole	$h_0 \geq$	[mm]	45
Nominal embedment depth	h_{nom}	[mm]	35
Minimum edge distance	C_{min}	[mm]	≥ 50 mm
Minimum anchor spacing	S_{min}	[mm]	≥ 100 mm
Minimum distance between anchor groups	S_{min}	[mm]	≥ 100mm
Core distance	l_c	[mm]	≥ 100mm
Prestressing steel distance	l_p	[mm]	≥ 100mm
Distance between anchors	a_{min}	[mm]	≥ 100 mm
Distance between anchor position and prestressing steel	a_p	[mm]	≥ 50 mm
Minimum core width to web thickness ratio	c/w	-	≤ 4.2



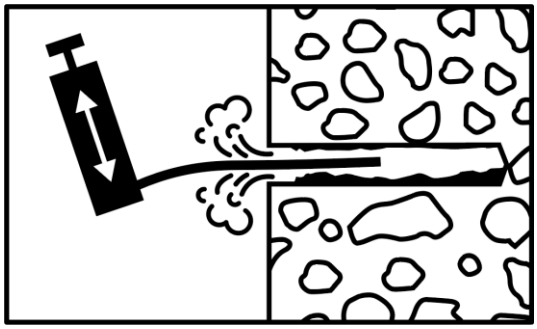


3.3 Installation procedure for concrete

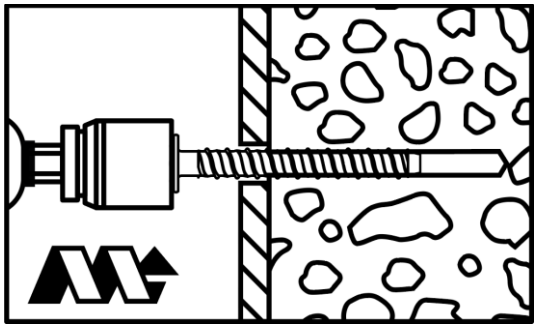


Drill the hole with rotary hammer drilling machine.

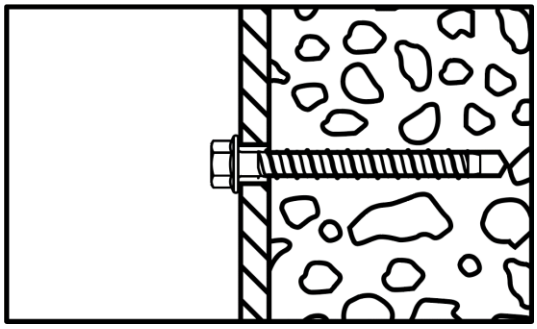
Drill to a required depth.



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

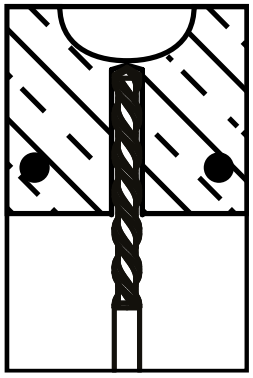


Tighten the anchor to substrate. Install with any torque impact screw driver up to the maximum torque moment ($T_{imp,max}$).



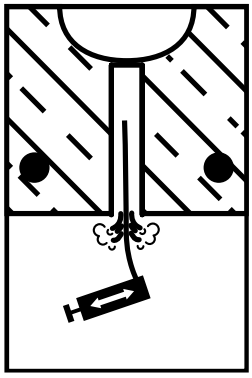
After installation a further turning of the screw must not be possible. The head of the screw must be in contact with the fixture / substrate and it must be not damaged.

3.4 Installation procedure for concrete



Drill the hole with rotary hammer drilling machine.

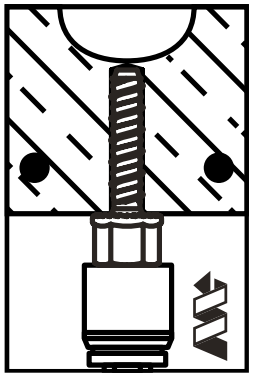
Drill to a required depth



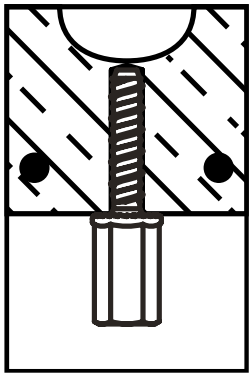
Clean the drill hole (blow out dust at least 4 times with a hand pump).

Cleaning of drill hole is not necessary in case of:

- Drilling vertically upwards or
- Drilling vertically downwards and the drill hole depth has been increased by 3 x d_0



Tighten the anchor to substrate. Install with any torque impact screw driver 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 it must be not damaged.

4. Performance information

4.1 Loading information for multiple use for non-structural applications in cracked and non-cracked concrete for single anchors[1)]

Anchor Type			W-LX								
Anchor Size	ø		6	6	6	8	8	10	10	14	14
Nominal embedment depth	h_{nom}	[mm]	35	39	55	50	70	55	85	75	120
Any load direction											
Characteristic load for cracked and non-cracked concrete	F^0_{Rk}	[kN]	3.00	6.00	9.00	7.50	12.00	9.00	20.00	12.00	30.00
Installation safety factor	γ_{inst}	[-]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Design load for cracked and non-cracked concrete	F^0_{Rd}	[kN]	2.00	4.00	6.00	5.00	8.00	6.00	13.33	8.00	20.00
Recommended load[2)] for cracked and non-cracked concrete	F^0_{Rec}	[kN]	1.42	2.85	4.28	3.57	5.71	4.28	9.52	5.71	14.28
Spacing	S_{cr}	[mm]	100	90	126	120	160	120	196	180	276
Edge distance	C_{cr}	[mm]	50	45	63	60	80	60	98	90	138
Increasing factor for F^0_{Rec}	ψ_c	C30/37	-	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
Increasing factor for F^0_{Rec}	ψ_c	C40/50	-	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Increasing factor for F^0_{Rec}	ψ_c	C50/60	-	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
Shear load with lever arm											
Characteristic bending moment	$M^0_{Rk,s}$	[Nm]	31.8	31.8	31.8	72.4	72.4	123.6	123.6	329.6	329.6
Partial safety factor	γ_{ms}	[-]	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

1) Single anchors are anchors not affected by concrete edge and anchor spacing influence.
2) Recommended load includes partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.

4.2 Loading information for multiple use for non-structural applications in precast prestressed hollow core slabs C30/37 to C50/60 for single anchors[1)]

Anchor Type			W-LX
Anchor Size			6
Bottom flange thickness	d_b	[mm]	≥ 35
Any load direction			
Recommended load[2)] in hollow core slabs C30/37	F^0_{Rec}	[kN]	2.38
Recommended load[2)] in hollow core slabs C40/50 to C50/60	F^0_{Rec}	[kN]	2.85
Spacing	S_{cr}	[mm]	100
Edge distance	C_{cr}	[mm]	50
Shear load with lever arm			
Characteristic bending moment	$M^0_{Rk,s}$	[Nm]	31.8
Partial safety factor	γ_{ms}	[-]	1.5

1) Single anchors are anchors not affected by concrete edge and anchor spacing influence.
2) Recommended load includes partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.

4.3 Characteristic values of resistance to fire exposure[1)]

Anchor Type				W-LX							
Anchor Size				6	6	8	8	10	10	14	14
Nominal embedment depth		h_{nom}	[mm]	39	55	50	70	55	85	75	120
Any load direction											
R30	Characteristic resistance for all directions	$F_{Rk,fi30}$	[kN]	0.28	0.28	0.75	0.75	1.57	1.57	3.00	3.08
R60		$F_{Rk,fi60}$	[kN]	0.25	0.25	0.65	0.65	1.18	1.18	2.31	2.31
R90		$F_{Rk,fi90}$	[kN]	0.20	0.20	0.50	0.50	1.02	1.02	2.00	2.00
R120		$F_{Rk,fi120}$	[kN]	0.14	0.14	0.40	0.40	0.79	0.79	1.54	1.54
Edge distance		$C_{cr,fi}$	[mm]	$2 \times h_{ef}$							
Spacing		$S_{cr,fi}$	[mm]	$4 \times h_{ef}$							
The design method covers anchors with a fire attack from one side only. In case of fire attack from more than one side, the edge distance shall be ≥ 300mm.											

1) in absence of other national regulations a partial safety factor of $\gamma_{M,fi} = 1.0$ is recommended.

5. Design of fastenings for use in concrete – Redundant non-structural systems

EN 1992-4 provides a design method for fastenings (connection of statically determinate and statically indeterminate structural elements and non-structural elements to structural components), which are used to transmit actions to the concrete.

Refer to CEN/TR 17079, which provides design guidance for post-installed fasteners for fixing statically indeterminate non-structural light weight systems with at least three fixing points. The fixing may be into normal weight concrete or precast prestressed hollow core slabs. The proposed design model assumes that load transfer to adjacent fixing points takes place when excessive slip or failure of a fastener occurs under extreme conditions (e.g. large crack width). The suitability of the fasteners should be stated in a European Technical Product Specification for at least multiple use for non-structural applications in concrete.