Declaration of Performance

According to Annex III of the Regulation (EU) Nr.305/2011
(Construction Products Regulation).

Walraven Concrete Screw W-LX

DoP No. 21/0612-W-LX-1

1. **Unique identification code of the product-type:**
   Walraven Concrete Screw W-LX, Item numbers: 62430304, 62430306, 62430308, 62430406, 62430408, 62430409, 62430410, 62430412, 62430507, 62430509, 62430510, 62430512, 62430514, 62430608, 62430610, 62430711, 62430713, 62431304, 62431306, 62432304, 62432306, 62433304, 62433305, 62433314, 62433315, 62433324, 62433325, 62434304, 62434305

2. **Intended use/es:**
   Metal anchors for use in concrete: for fixing and/or supporting to concrete, structural elements (which contributes to the stability of the works) or heavy units.

3. **Manufacturer:**
   J. van Walraven Holding B.V., Industrieweg 5, 3641 RK Mijdrecht, The Netherlands

4. **System/s of AVCP:**
   System 1

5. **European Assessment Document:** EAD 330232-00-0601 "Mechanical fasteners for use in concrete" and 330011-00-0601 "Adjustable concrete screw"
   European Technical Assessment: ETA - 21/0612 (08/10/2021).
   Technical Assessment Body: Instytut Techniki Budowlanej
   Notified body: 1488.

6. **Declared performance/s:**

Essential Characteristic	Performance	Harmonized Technical Specification
Safety in use (BWR 1)		
Characteristic resistance under static and quasi static loading	See Annex C1 and C2, ETA-21/0612	EAD 330232-00-0601 EAD 330011-00-0601
Displacements under tension and shear loads	See Annex C2, ETA-21/0612	EAD 330232-00-0601 EAD 330011-00-0601
Characteristic resistance and displacements for seismic performance categories C1 and C2	See Annex C3 and C4, ETA-21/0612	EAD 330232-00-0601 EAD 330011-00-0601
Safety in case of fire (BWR 2)		
Reaction to fire	Anchors satisfy requirements for Class A1	EOTA TR020
Resistance to fire	See Annex C5, ETA-21/0612	EN 13501-1

7. **Appropriate Technical Documentation and/or Specific Technical Documentation:**
   N/A

8. **The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.**

Signed for and on behalf of the manufacturer by:

Frank Nijdam
Co-CEO
J. van Walraven Holding B.V.

Signature

Date 07-03-2025
Place: Mijdrecht

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

Anchor size				**W-LX-05**	**W-LX-06**		**W-LX-08**		**W-LX-10**		**W-LX-12**		**W-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

W-LX	**Annex C1**
Performances Characteristic resistance for tension loads.	of European Technical Assessment ETA-21/0612

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

Anchor size			W-LX-05	W-LX-06		W-LX-08		W-LX-10		W-LX-12		W-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

W-LX	Annex C2 of European Technical Assessment ETA-21/0612
Performances Characteristic resistance for shear loads. Displacements	

Table C3: Characteristic values for seismic performance category C1

Anchor size			**W-LX-08**	**W-LX-10**	**W-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

W-LX	**Annex C3** of European Technical Assessment ETA-21/0612
Performances Characteristic values for seismic performance category C1	

Table C4: Characteristic values for seismic performance category C2

Anchor size			**W-LX-08**	**W-LX-10**	**W-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

W-LX	**Annex C4**
Performances Characteristic values for seismic performance category C2	of European Technical Assessment ETA-21/0612

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

Anchor size				**W-LX-05**	**W-LX-06**		**W-LX-08**		**W-LX-10**		**W-LX-12**		**W-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 $F_{Rk,s,fi} = N_{Rk,s,fi} = V_{Rk,s,fi}$														
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

W-LX	**Annex C5**
Performances Characteristic resistance under fire exposure	of European Technical Assessment ETA-21/0612