Declaration of Performance

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

Walraven Throughbolt Anchor WTB1

DoP No. 17/0345-WTB1

1. **Unique identification code of the product-type:**
   Walraven Throughbolt Anchor WTB1, Item numbers: 609831080, 609831081, 609831082, 609831100, 609831101, 609831102, 609831120, 609831121, 609831160

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 ", October 2016.
   European Technical Assessment: ETA - 17/0345 (12/04/2017).
   Technical Assessment Body: Technical and Test Institute for Construction Prague.
   Notified body: 1020.

6. **Declared performance/s:**

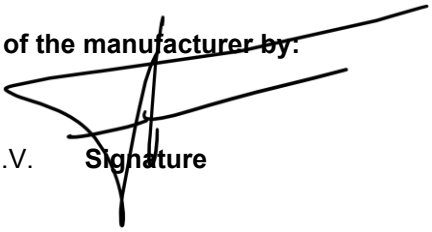
Essential Characteristic	Performance	Harmonized Technical Specification
Characteristic resistance (static and quasi-static loading)	See Annex C1 and C2, ETA-17/0345	EAD 330232-00-0601
Displacement	See Annex C1 and C2, ETA-17/0345	EAD 330232-00-0601
Resistance to fire	See Annex C3, ETA-17/0345	EOTA TRO20
Reaction to Fire	Anchors satisfy requirements for Class A1	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
CCO
J. van Walraven Holding B.V.



Signature

Date 21-10-2025
Place: Mijdrecht

Table C1 – Characteristic resistance under tension load

Steel failure												
Size			M8		M10		M12		M16		M20	
			Red[1)]	Std	Red[1)]	Std	Red	Std	Red	Std	Red	Std
Characteristic resistance	$N_{Rk,s}$	[kN]	15,8		25,2		37,3		66,1		101,0	
Partial safety factor	γ_{Ms}	[-]	1,4		1,4		1,4		1,4		1,4	

Pull-out failure												
Characteristic resistance in cracked concrete C20/25	$N_{Rk,p}$	[kN]	3,0	5,0	6,0	9,0	9,0	12,0	16,0	20,0	-	30,0
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p}$	[kN]	7,5	9,0	9,0	12,0	12,0	20,0	-	35,0	-	-
Installation safety factor	γ_{inst}	[-]	1,2	1,2	1,2	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Increasing factor												
Cracked and uncracked concrete C30/37	ψ_c	[-]	1,20	1,12	1,16	1,22	1,22	1,00	1,11	1,14	1,12	1,07
Cracked and uncracked concrete C40/50	ψ_c	[-]	1,40	1,22	1,33	1,44	1,44	1,00	1,22	1,28	1,26	1,14
Cracked and uncracked concrete C50/60	ψ_c	[-]	1,60	1,33	1,50	1,67	1,67	1,00	1,33	1,43	1,39	1,21

Concrete cone failure												
Characteristic resistance in cracked concrete C20/25	$N_{Rk,c}$	[kN]	-	-	-	-	-	-	-	-	25,8	-
Factor for concrete cone failure for cracked concrete	$k_{cr,N}$	[-]	7,7									
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,c}$	[kN]	-	-	-	-	-	-	26,4	-	36,1	49,6
Factor for concrete cone failure for uncracked concrete	$k_{ucr,N}$	[-]	11,0									
Installation safety factor	γ_{inst}	[-]	1,2	1,2	1,2	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Effective anchorage depth	h_{ef}	[mm]	32	47	39	59	48	68	65	85	80	99
Spacing	$s_{cr,N}$	[mm]	96	141	117	177	144	204	195	255	240	297
Edge distance	$c_{cr,N}$	[mm]	48	71	59	89	72	102	98	128	120	149

Splitting failure												
Spacing	$s_{cr,sp}$	[mm]	170	220	200	300	250	340	320	430	410	530
Edge distance	$c_{cr,sp}$	[mm]	85	110	100	150	125	170	160	215	205	265
Installation safety factor	γ_{inst}	[-]	1,2	1,2	1,2	1,0	1,0	1,0	1,0	1,0	1,0	1,0

[1)] Use restricted to anchoring statically indeterminate structural components

Table C2 – Displacement under tension load

Size			M8		M10		M12		M16		M20	
			Red[1)]	Std	Red[1)]	Std	Red	Std	Red	Std	Red	Std
Tension load in cracked concrete	N	[kN]	1,2	2,0	2,4	4,3	4,3	5,7	7,6	9,5	12,3	14,3
Displacement	δ_{N0}	[mm]	0,6	0,8	0,3	1,0	0,5	0,7	0,3	0,4	0,4	0,4
	$\delta_{N\infty}$	[mm]	1,0	0,9	1,1	1,4	1,0	0,9	0,8	1,1	1,3	0,7
Tension load in uncracked concrete	N	[kN]	3,0	3,6	3,6	5,7	5,7	9,5	12,6	16,7	17,2	23,6
Displacement	δ_{N0}	[mm]	0,1	0,3	0,3	0,3	0,1	0,6	0,5	0,2	0,1	0,6
	$\delta_{N\infty}$	[mm]	1,0	0,9	1,1	1,4	1,0	0,9	0,8	1,1	1,3	0,7

[1)] Use restricted to anchoring statically indeterminate structural components

Walraven Throughbolt anchor WTB1

Performances
Characteristic resistance under tension load
Displacement under tension load

Annex C 1

Table C3 – Characteristic resistance under shear load

Steel failure without lever arm												
Size			M8		M10		M12		M16		M20	
			Red[1)]	Std	Red[1)]	Std	Red	Std	Red	Std	Red	Std
Characteristic resistance	$V^0_{Rk,s}$	[kN]	10,1		16,0		23,3		43,0		67,4	
Ductility factor	k_7	[-]	0,8		0,8		0,8		0,8		0,8	
Partial safety factor	γ_{Ms}	[-]	1,25		1,25		1,25		1,25		1,25	

Steel failure with lever arm												
Characteristic resistance	$M^0_{Rk,s}$	[Nm]	19		38		67		167		328	
Partial safety factor	γ_{Ms}	[-]	1,25		1,25		1,25		1,25		1,25	

Concrete pry-out failure												
Characteristic resistance concrete C20/25	$V_{Rk,cp}$	[kN]	-	-	-	-	-	-	-	-	-	-
Factor	k_8	[-]	1,0	1,0	1,0	1,0	1,0	2,0	2,0	2,0	2,0	2,0
Installation safety factor	γ_{inst}	[-]	1,2	1,2	1,2	1,0	1,0	1,0	1,0	1,0	1,0	1,0

Concrete edge failure												
Effective length of anchor	ℓ_f	[mm]	32	47	39	59	48	68	65	85	80	99
Anchor diameter	d_{nom}	[mm]	8		10		12		16		20	
Installation safety factor	γ_{inst}	[-]	1,2	1,2	1,2	1,0	1,0	1,0	1,0	1,0	1,0	1,0

[1)] Use restricted to anchoring statically indeterminate structural components

Table C4 – Displacement under shear load

Size			M8		M10		M12		M16		M20	
			Red[1)]	Std	Red[1)]	Std	Red	Std	Red	Std	Red	Std
Tension load in cracked and uncracked concrete	V	[kN]	5,8	5,8	9,2	9,2	13,3	13,3	24,5	24,5	38,5	38,5
Displacement	δ_{V0}	[mm]	1,2	1,2	1,5	1,5	2,0	2,0	2,4	2,4	2,6	2,6
	$\delta_{V\infty}$	[mm]	1,8	1,8	2,3	2,3	3,0	3,0	3,6	3,6	3,9	3,9

[1)] Use restricted to anchoring statically indeterminate structural components

Walraven Throughbolt anchor WTB1

Performances
Characteristic resistance under shear load
Displacement under shear load

Annex C 2

Table C5 – Characteristic values of resistance to tension load under fire exposure[1)]

Size			M8		M10		M12		M16		M20	
			Red[2)]	Std	Red[2)]	Std	Red	Std	Red	Std	Red	Std
Characteristic fire resistance duration at 30 minutes												
Steel failure	$N_{Rk,s,fi}$	[kN]	0,4		0,9		1,7		3,1		4,9	
Pull-out failure	$N_{Rk,p,fi}$	[kN]	0,8	1,3	1,5	2,3	2,3	3,0	4,0	5,0	-	-
Concrete cone failure	$N_{Rk,c,fi}$	[kN]	1,0	2,7	1,7	4,8	2,9	6,9	6,1	12,0	10,3	17,6
Characteristic fire resistance duration at 60 minutes												
Steel failure	$N_{Rk,s,fi}$	[kN]	0,3		0,8		1,3		2,4		3,7	
Pull-out failure	$N_{Rk,p,fi}$	[kN]	0,8	1,3	1,5	2,3	2,3	3,0	4,0	5,0	-	-
Concrete cone failure	$N_{Rk,c,fi}$	[kN]	1,0	2,7	1,7	4,8	2,9	6,9	6,1	12,0	10,3	17,6
Characteristic fire resistance duration at 90 minutes												
Steel failure	$N_{Rk,s,fi}$	[kN]	0,3		0,6		1,1		2,0		3,2	
Pull-out failure	$N_{Rk,p,fi}$	[kN]	0,8	1,3	1,5	2,3	2,3	3,0	4,0	5,0	-	-
Concrete cone failure	$N_{Rk,c,fi}$	[kN]	1,0	2,7	1,7	4,8	2,9	6,9	6,1	12,0	10,3	17,6
Characteristic fire resistance duration at 120 minutes												
Steel failure	$N_{Rk,s,fi}$	[kN]	0,2		0,5		0,8		1,6		2,5	
Pull-out failure	$N_{Rk,p,fi}$	[kN]	0,6	1,0	1,2	1,8	1,8	2,4	3,2	4,0	-	-
Concrete cone failure	$N_{Rk,c,fi}$	[kN]	0,8	2,2	1,4	3,9	2,3	5,5	4,9	9,6	8,2	14,0
Spacing	$s_{cr,N}$	[mm]	$4 \times h_{ef}$									
	s_{min}	[mm]	55	50	75	70	150	90	190	160	300	180
Edge distance	$c_{cr,N}$	[mm]	$2 \times h_{ef}$									
	c_{min}	[mm]	$c_{min} = 2 \times h_{ef}$ however if the fire attack is from more than one side, the edge distance of the anchor has to be ≥ 300 mm and ≥ $2 \times h_{ef}$									

[1)] In absence of other national regulations the partial safety factor for resistance under fire exposure. $\gamma_{M,fi} = 1,0$ is recommended
[2)] Use restricted to anchoring statically indeterminate structural components

Table C6 – Characteristic values of resistance to shear load under fire exposure

Size			M8		M10		M12		M16		M20	
			Red[1)]	Std	Red[1)]	Std	Red	Std	Red	Std	Red	Std
Characteristic fire resistance duration at 30 minutes												
Steel failure without lever arm	$V_{Rk,s,fi}$	[kN]	0,4		0,9		1,7		3,1		4,9	
Steel failure with lever arm	$M_{Rk,s,fi}$	[Nm]	0,4		1,1		2,6		6,7		13,0	
Characteristic fire resistance duration at 60 minutes												
Steel failure without lever arm	$V_{Rk,s,fi}$	[kN]	0,3		0,8		1,3		2,4		3,7	
Steel failure with lever arm	$M_{Rk,s,fi}$	[Nm]	0,3		1,0		2,0		5,0		9,7	
Characteristic fire resistance duration at 90 minutes												
Steel failure without lever arm	$V_{Rk,s,fi}$	[kN]	0,3		0,6		1,1		2,0		3,2	
Steel failure with lever arm	$M_{Rk,s,fi}$	[Nm]	0,3		0,7		1,7		4,3		8,4	
Characteristic fire resistance duration at 120 minutes												
Steel failure without lever arm	$V_{Rk,s,fi}$	[kN]	0,2		0,5		0,8		1,6		2,5	
Steel failure with lever arm	$M_{Rk,s,fi}$	[Nm]	0,2		0,6		1,3		3,3		6,5	
Concrete pry-out failure												
Factor[2)]	k_8	[-]	1,0	1,0	1,0	1,0	1,0	2,0	2,0	2,0	2,0	2,0
Concrete edge failure	The characteristic resistance $V^0_{Rk,c,fi}$ in concrete C20/25 to C50/60 is determined by: $V^0_{Rk,c,fi} = 0,25 \times V^0_{Rk,c(\leq 90)}$ and $V^0_{Rk,c,fi} = 0,20 \times V^0_{Rk,c(\leq 120)}$ with the initial value of the characteristic resistance $V^0_{Rk,c}$ in cracked concrete C20/25 under normal temperature											

[1)] Use restricted to anchoring statically indeterminate structural components
[2)] The values of factor k_8 and relevant values of $N_{Rk,c,fi}$ given in the Table C5 have to be considered in the design

Walraven Throughbolt anchor WTB1

Performances
Characteristic values of resistance under fire exposure

Annex C 3