

Declaration of Performance

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

Walraven Throughbolt Anchor WTB1 SSt

DoP No. 17/0343-WTB1SSt

1. Unique identification code of the product-type:

Walraven Throughbolt Anchor WTB1 SSt, Item numbers: 609871080, 609871081, 609871100, 609871101, 609871120, 609871121

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 - 17/0343 (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-17/0343	EAD 330232-00-0601
Displacement	See Annex C1 and C2, ETA-17/0343	EAD 330232-00-0601
Resistance to fire	See Annex C3, ETA-17/0343	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			M8		M10		M12		M16	
Size			Red ¹⁾	Std	Red ¹⁾	Std	Red	Std	Red	Std
Characteristic resistance	$N_{Rk,s}$	[kN]	21,2		33,6		44,8		82,6	
Partial safety factor	γ_{Ms}	[-]	1,5		1,5		1,5		1,5	

Pull-out failure										
Characteristic resistance in cracked concrete C20/25	$N_{Rk,p}$	[kN]	3,0	6,0	7,5	9,0	9,0	12,0	16,0	25,0
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p}$	[kN]	7,5	9,0	12,0	16,0	-	25,0	-	-
Installation safety factor	γ_{inst}	[-]	1,2	1,2	1,2	1,0	1,0	1,0	1,0	1,0
Increasing factor										
Cracked and uncracked concrete	C30/37	ψ_c	[-]	1,07	1,16	1,07	1,26	1,16	1,23	1,18
	C40/50			1,13	1,33	1,13	1,52	1,32	1,45	1,37
	C50/60			1,20	1,50	1,20	1,78	1,49	1,67	1,55

Concrete cone failure										
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,c}$	[kN]	-	-	-	-	16,8	-	26,4	39,5
Factor for concrete cone failure for cracked concrete	$k_{cr,N}$	[-]	7,7							
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
Effective anchorage depth	h_{ef}	[mm]	32	47	39	59	48	68	65	85
Spacing	$s_{cr,N}$	[mm]	96	141	117	177	144	204	195	255
Edge distance	$c_{cr,N}$	[mm]	48	71	59	89	72	102	98	128

Splitting failure										
Spacing	$s_{cr,sp}$	[mm]	160	240	200	300	250	340	320	430
Edge distance	$c_{cr,sp}$	[mm]	80	120	100	150	125	170	160	215
Installation safety factor	γ_{inst}	[-]	1,2	1,2	1,2	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	
			Red ¹⁾	Std	Red ¹⁾	Std	Red	Std	Red	Std
Tension load in cracked concrete	N	[kN]	1,2	2,4	3,0	4,3	4,3	5,7	7,6	11,9
Displacement	δ_{N0}	[mm]	1,1	0,5	0,5	1,2	0,8	1,0	0,2	1,0
	$\delta_{N\infty}$	[mm]	1,8	1,3	0,8	1,2	1,0	1,3	0,6	1,1
Tension load in uncracked concrete	N	[kN]	3,0	3,6	4,8	7,6	8,0	11,9	12,6	18,8
Displacement	δ_{N0}	[mm]	0,1	0,3	0,2	0,2	0,1	0,5	0,3	0,5
	$\delta_{N\infty}$	[mm]	0,8	1,3	0,8	1,2	1,0	1,3	0,6	1,1

¹⁾ Use restricted to anchoring statically indeterminate structural components

Walraven Throughbolt anchor WTB1 SST**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			M8		M10		M12		M16	
Size			Red ¹⁾	Std	Red ¹⁾	Std	Red	Std	Red	Std
Characteristic resistance	$V_{Rk,s}^0$	[kN]	11,7		18,5		24,6		45,4	
Ductility factor	k_7	[-]	0,8		0,8		0,8		0,8	
Partial safety factor	γ_{Ms}	[-]	1,25		1,25		1,25		1,25	

Steel failure with lever arm			M8		M10		M12		M16	
Characteristic resistance	$M_{Rk,s}^0$	[Nm]	22		45		72		180	
Partial safety factor	γ_{Ms}	[-]	1,25		1,25		1,25		1,25	

Concrete pry-out failure			M8		M10		M12		M16	
Characteristic resistance concrete C20/25	$V_{Rk,cp}$	[kN]	-	-	14,7	-	-	-	-	-
Factor	k_8	[-]	-	-	1,2	-	-	-	-	-
Installation safety factor	γ_{inst}	[-]	-	-	1,2	-	-	-	-	-

Concrete edge failure			M8		M10		M12		M16	
Effective length of anchor	l_f	[mm]	32	47	39	59	48	68	65	85
Anchor diameter	d_{nom}	[mm]	8		10		12		16	
Installation safety factor	γ_{inst}	[-]	1,2	1,2	1,2	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	
			Red ¹⁾	Std	Red ¹⁾	Std	Red	Std	Red	Std
Tension load in cracked and uncracked concrete	V	[kN]	6,7	6,7	5,8	10,6	14,1	14,1	25,9	25,9
Displacement	δ_{V0}	[mm]	3,0	3,0	1,5	2,7	2,5	2,5	2,2	2,2
	$\delta_{V\infty}$	[mm]	4,5	4,5	2,2	4,1	3,8	3,8	3,8	3,3

¹⁾ Use restricted to anchoring statically indeterminate structural components

Walraven Throughbolt anchor WTB1 SST**Performances**

Characteristic resistance under shear load
Displacement under shear load

Annex C 2

Table C5 – Characteristic values of resistance to tension load under fire exposure¹⁾

Size			M8		M10		M12		M16	
			Red ²⁾	Std	Red ²⁾	Std	Red	Std	Red	Std
Characteristic fire resistance duration at 30 minutes										
Steel failure	$N_{Rk,s,fi}$	[kN]	0,7	0,7	1,5	1,5	2,5	2,5	4,7	4,7
Pull-out failure	$N_{Rk,p,fi}$	[kN]	0,8	1,5	1,9	2,3	2,3	3,0	4,0	6,3
Concrete cone failure	$N_{Rk,c,fi}$	[kN]	1,0	2,7	1,7	4,8	2,9	6,9	6,1	12,0
Characteristic fire resistance duration at 60 minutes										
Steel failure	$N_{Rk,s,fi}$	[kN]	0,6	0,6	1,2	1,2	2,1	2,1	3,9	3,9
Pull-out failure	$N_{Rk,p,fi}$	[kN]	0,8	1,5	1,9	2,3	2,3	3,0	4,0	6,3
Concrete cone failure	$N_{Rk,c,fi}$	[kN]	1,0	2,7	1,7	4,8	2,9	6,9	6,1	12,0
Characteristic fire resistance duration at 90 minutes										
Steel failure	$N_{Rk,s,fi}$	[kN]	0,4	0,4	0,9	0,9	1,7	1,7	3,1	3,1
Pull-out failure	$N_{Rk,p,fi}$	[kN]	0,8	1,5	1,9	2,3	2,3	3,0	4,0	6,3
Concrete cone failure	$N_{Rk,c,fi}$	[kN]	1,0	2,7	1,7	4,8	2,9	6,9	6,1	12,0
Characteristic fire resistance duration at 120 minutes										
Steel failure	$N_{Rk,s,fi}$	[kN]	0,4	0,4	0,8	0,8	1,3	1,3	2,5	2,5
Pull-out failure	$N_{Rk,p,fi}$	[kN]	0,6	1,2	1,5	1,8	1,8	2,4	3,2	5,0
Concrete cone failure	$N_{Rk,c,fi}$	[kN]	0,8	2,2	1,4	3,9	2,3	5,5	4,9	9,6
Spacing	$S_{cr,N}$	[mm]	$4 \times h_{ef}$							
	S_{min}	[mm]	50	55	70	70	120	90	150	135
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 $\geq 2 \times h_{ef}$							

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	
			Red ¹⁾	Std	Red ¹⁾	Std	Red ¹⁾	Std	Red	Std
Characteristic fire resistance duration at 30 minutes										
Steel failure without lever arm	$V_{Rk,s,fi}$	[kN]	0,7		1,5		2,5		4,7	
Steel failure with lever arm	$M_{Rk,s,fi}$	[Nm]	0,7		1,9		3,9		10,0	
Characteristic fire resistance duration at 60 minutes										
Steel failure without lever arm	$V_{Rk,s,fi}$	[kN]	0,6		1,2		2,1		3,9	
Steel failure with lever arm	$M_{Rk,s,fi}$	[Nm]	0,6		1,5		3,3		8,3	
Characteristic fire resistance duration at 90 minutes										
Steel failure without lever arm	$V_{Rk,s,fi}$	[kN]	0,4		0,9		1,7		3,1	
Steel failure with lever arm	$M_{Rk,s,fi}$	[Nm]	0,4		1,2		2,6		6,7	
Characteristic fire resistance duration at 120 minutes										
Steel failure without lever arm	$V_{Rk,s,fi}$	[kN]	0,4		0,8		1,3		2,5	
Steel failure with lever arm	$M_{Rk,s,fi}$	[Nm]	0,4		1,0		2,1		5,3	
Concrete pry-out failure										
Factor ²⁾	k_8	[-]	-	-	1,2	-	-	-	-	-
Concrete edge failure										
The characteristic resistance $V_{Rk,c,fi}^0$ in concrete C20/25 to C50/60 is determined by: $V_{Rk,c,fi}^0 = 0,25 \times V_{Rk,c}^0(\leq 90)$ and $V_{Rk,c,fi}^0 = 0,20 \times V_{Rk,c}^0(\leq 120)$ with the initial value of the characteristic resistance $V_{Rk,c}^0$ 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 SST

Performances
Characteristic values of resistance under fire exposure

Annex C 3