Datasheet

VT-HP®
Injection system for concrete

Kenmerken

Material

.

Advantages

.

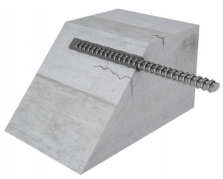
Toepassingen

Support

.

When to use

.



Technische gegevens

Références

Referentie	Product information				
	Grey color	Beige color	Content [ml]	Weigth [kg]	Packaging qty [pcs]
VTHP420-EU	x	-	420	0.796	12

Design resistance – Tension – NRd [kN] – hef = 8d – Carbon steel 5.8

Referentie	Design resistance – h_{ef} = 8d – Carbon steel 5.8							
	Tension - N_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
VT-HP + LMAS M8	4.3	4.5	4.6	4.7	10.7	11.1	11.6	11.8
VT-HP + LMAS M10	7	7.3	7.5	7.7	16.7	17.4	18.1	18.4
VT-HP + LMAS M12	11.1	11.5	11.9	12.2	24.1	25.1	26	26.5
VT-HP + LMAS M16	19.6	20.4	21.2	21.6	40.6	44.6	46.3	47.2
VT-HP + LMAS M20	30.7	31.9	33.2	33.8	56.8	69	72.3	73.7
VT-HP + LMAS M24	44.2	46	47.7	48.6	74.6	90.8	95.5	97.3
VT-HP + LMAS M27	63.5	68.8	71.4	72.7	89.1	105.8	109.9	111.9
VT-HP + LMAS M30	74.4	84.9	88.2	89.8	104.3	117.6	122.1	124.3

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

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Design resistance – Tension – NRd [kN] – hef = 12d – Carbon steel 5.8

Referentie	Design resistance – h_{ef} = 12d – Carbon steel 5.8							
	Tension - N_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
VT-HP + LMAS M8	6.4	6.7	6.9	7.1	12	12	12	12
VT-HP + LMAS M10	10.5	10.9	11.3	11.5	19.3	19.3	19.3	19.3
VT-HP + LMAS M12	16.6	17.2	17.9	18.2	28	28	28	28
VT-HP + LMAS M16	29.5	30.7	31.8	32.4	52	52	52	52
VT-HP + LMAS M20	46.1	47.9	49.7	50.7	81.3	81.3	81.3	81.3
VT-HP + LMAS M24	66.3	69	71.6	72.9	117.3	117.3	117.3	117.3
VT-HP + LMAS M27	99.2	103.2	107.1	109.1	152.6	153.3	153.3	153.3
VT-HP + LMAS M30	122.5	127.4	132.3	134.7	169.6	176.3	183.1	186.5

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

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Injection system for concrete

Design resistance – Tension – NRd [kN] – hef = 8d – Stainless steel

Referentie	Design resistance – h_{ef} = 8d – Stainless steel							
	Tension - N_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
VT-HP + LMAS M8	4.3	4.5	4.6	4.7	10.7	11.1	11.6	11.8
VT-HP + LMAS M10	7	7.3	7.5	7.7	16.7	17.4	18.1	18.4
VT-HP + LMAS M12	11.1	11.5	11.9	12.2	24.1	25.1	26	26.5
VT-HP + LMAS M16	19.6	20.4	21.2	21.6	40.6	44.6	46.3	47.2
VT-HP + LMAS M20	30.7	31.9	33.2	60.8	56.8	69	72.3	73.7
VT-HP + LMAS M24	44.2	46	47.7	48.6	74.6	90.8	95.5	97.3
VT-HP + LMAS M27	63.5	68.8	71.4	72.7	80.4	80.4	80.4	80.4
VT-HP + LMAS M30	74.4	84.9	88.2	89.8	98.3	98.3	98.3	98.3

Threaded rod type A4-70 for M≤24 and A4-50 for M>24

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

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Injection system for concrete

Design resistance – Tension – NRd [kN] – hef = 12d – Stainless steel

Referentie	Design resistance – h_{ef} = 12d – Stainless steel							
	Tension - N_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
VT-HP + LMAS M8	6.4	6.7	6.9	7.1	13.9	13.9	13.9	13.9
VT-HP + LMAS M10	10.5	10.9	11.3	11.5	21.9	21.9	21.9	21.9
VT-HP + LMAS M12	16.6	17.2	17.9	18.2	31.6	31.6	31.6	31.6
VT-HP + LMAS M16	29.5	30.7	31.8	32.4	58.8	58.8	58.8	58.8
VT-HP + LMAS M20	46.1	47.9	49.7	91.2	91.4	91.4	91.4	91.4
VT-HP + LMAS M24	66.3	69	71.6	72.9	132.1	132.1	132.1	132.1
VT-HP + LMAS M27	80.4	80.4	80.4	80.4	80.4	80.4	80.4	80.4
VT-HP + LMAS M30	98.3	98.3	98.3	98.3	98.3	98.3	98.3	98.3

Threaded rod type A4-70 for M≤24 and A4-50 for M>24

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

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VT-HP®

Injection system for concrete

Design resistance – Shear – VRd [kN] – hef = 8d – Carbon steel 5.8

Referentie	Design resistance – h_{ef} = 8d – Carbon steel 5.8							
	Shear - V_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
VT-HP + LMAS M8	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
VT-HP + LMAS M10	12	12	12	12	12	12	12	12
VT-HP + LMAS M12	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
VT-HP + LMAS M16	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2
VT-HP + LMAS M20	48.8	48.8	48.8	48.8	48.8	48.8	48.8	48.8
VT-HP + LMAS M24	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4
VT-HP + LMAS M27	92	92	92	92	92	92	92	92
VT-HP + LMAS M30	112	112	112	112	112	112	112	112

Concrete :

1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

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Injection system for concrete

Design resistance – Shear – VRd [kN] – hef = 12d – Carbon steel 5.8

Referentie	Design resistance – h_{ef} = 12d – Carbon steel 5.8							
	Shear - V_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
VT-HP + LMAS M8	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
VT-HP + LMAS M10	12	12	12	12	12	12	12	12
VT-HP + LMAS M12	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
VT-HP + LMAS M16	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2
VT-HP + LMAS M20	48.8	48.8	48.8	48.8	48.8	48.8	48.8	48.8
VT-HP + LMAS M24	70.4	70.4	70.4	70.4	70.4	70.4	70.4	70.4
VT-HP + LMAS M27	92	92	92	92	92	92	92	92
VT-HP + LMAS M30	112	112	112	112	112	112	112	112

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

Design resistance – Shear – VRd [kN] – hef = 8d – Stainless steel

Referentie	Design resistance – h_{ef} = 8d – Stainless steel							
	Shear - V_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
VT-HP + LMAS M8	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
VT-HP + LMAS M10	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
VT-HP + LMAS M12	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
VT-HP + LMAS M16	35.3	35.3	35.3	35.3	35.3	35.3	35.3	35.3
VT-HP + LMAS M20	55.1	55.1	55.1	55.1	55.1	55.1	55.1	55.1
VT-HP + LMAS M24	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5
VT-HP + LMAS M27	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3
VT-HP + LMAS M30	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8

Threaded rod type A4-70 for M≤24 and A4-50 for M>24

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

SIMPSON Strong-Tie

Design resistance – Shear – VRd [kN] – hef = 12d – Stainless steel

Referentie	Design resistance – h_{ef} = 12d – Stainless steel							
	Shear - V_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
VT-HP + LMAS M8	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
VT-HP + LMAS M10	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
VT-HP + LMAS M12	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
VT-HP + LMAS M16	35.3	35.3	35.3	35.3	35.3	35.3	35.3	35.3
VT-HP + LMAS M20	55.1	55.1	55.1	55.1	55.1	55.1	55.1	55.1
VT-HP + LMAS M24	79.5	79.5	79.5	79.5	79.5	79.5	79.5	79.5
VT-HP + LMAS M27	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3
VT-HP + LMAS M30	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8

Threaded rod type A4-70 for M≤24 and A4-50 for M>24

Concrete :
1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing s ≥ 15 cm (any diameter) or with a rebar spacing s ≥ 10 cm, if the rebar diameter is 10mm or smaller.
2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges (c ≤ max [10 hef; 60d]) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
3. Concrete is considered non-cracked when the tensile stress within the concrete is\sigmaL +\sigmaR ≤ 0. In the absence of detailed verification\sigmaR = 3 N/mm² can be assumed (\sigmaL equals the tensile stress within the concrete induced by external loads, anchors loads included).

Design resistance – Bending moment – MRd [Nm] – Concrete

Referentie	Design resistance – Bending moment – M_{Rd} [Nm]	
	Carbon steel 5.8	Stainless steel A4-70
VT-HP + LMAS M8	15.2	16.7
VT-HP + LMAS M10	29.6	33.3
VT-HP + LMAS M12	52	41.7
VT-HP + LMAS M16	132.8	106.4
VT-HP + LMAS M20	259.2	359
VT-HP + LMAS M24	448	502.6
VT-HP + LMAS M27	666.4	349.6
VT-HP + LMAS M30	898.4	472.7

Design resistance – Tension – NRd [kN] – Seismic performance C1/C2 – Carbon steel 5.8

Referentie	Design resistance – Tension - N_{Rd} – Seismic performance C1/C2 - Carbon steel 5.8 [kN]					
	Cracked concrete C20/25					
	h_{ef} = 8d			h_{ef} = 12d		
	Static	Category C1	Category C2	Static	Category C1	Category C2
VT-HP + LMAS M8	4.3	2.7	-	6.4	4	-
VT-HP + LMAS M10	7	4.3	-	10.5	6.5	-
VT-HP + LMAS M12	11.1	7.4	4	16.6	11.2	6
VT-HP + LMAS M16	19.6	13.2	7.1	29.5	19.8	10.7
VT-HP + LMAS M20	30.7	20.7	11.2	46.1	31	16.7
VT-HP + LMAS M24	44.2	30.5	-	66.3	45.8	-
VT-HP + LMAS M27	63.5	45.8	-	99.2	68.7	-
VT-HP + LMAS M30	74.4	56.5	-	122.5	84.8	-

Design resistance – Tension – NRd [kN] – Seismic performance C1/C2 – Stainless steel

Referentie	Design resistance – Tension - N_{Rd} – Seismic performance C1/C2 - Stainless steel [kN]					
	Cracked concrete C20/25					
	h_{ef} = 8d			h_{ef} = 12d		
	Static	Category C1	Category C2	Static	Category C1	Category C2
VT-HP + LMAS M8	4.3	2.7	-	6.4	4	-
VT-HP + LMAS M10	7	4.3	-	10.5	6.5	-
VT-HP + LMAS M12	11.1	7.4	4	16.6	11.2	6
VT-HP + LMAS M16	19.6	13.2	7.1	29.5	19.8	10.7
VT-HP + LMAS M20	30.7	20.7	11.2	46.1	31	16.7
VT-HP + LMAS M24	44.2	30.5	-	66.3	45.8	-
VT-HP + LMAS M27	63.5	45.8	-	80.4	68.7	-
VT-HP + LMAS M30	74.4	56.5	-	98.3	84.8	-
Threaded rod type A4-70 for M≤24 and A4-50 for M>24						

Design resistance – Shear – VRd [kN] – Seismic performance C1/C2 – Carbon steel 5.8

Referentie	Design resistance – Shear - V_{Rd} – Seismic performance C1/C2 - Carbon steel 5.8 [kN]					
	Cracked concrete C20/25					
	h_{ef} = 8d			h_{ef} = 12d		
	Static	Category C1	Category C2	Static	Category C1	Category C2
VT-HP + LMAS M8	7.2	2.3	-	7.2	2.5	-
VT-HP + LMAS M10	12	4.2	-	12	4.2	-
VT-HP + LMAS M12	16.8	5.9	4.1	16.8	5.9	5
VT-HP + LMAS M16	31.2	10.9	7.3	31.2	10.9	10.9
VT-HP + LMAS M20	48.8	17.1	11.4	48.8	17.1	17.1
VT-HP + LMAS M24	70.4	24.6	-	70.4	24.6	-
VT-HP + LMAS M27	92	32.2	-	92	32.2	-
VT-HP + LMAS M30	112	39.2	-	112	39.2	-

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Design resistance – Shear – VRd [kN] – Seismic performance C1/C2 – Stainless steel

Referentie	Design resistance – Shear - V_{Rd} – Seismic performance C1/C2 - Stainless steel [kN]					
	Cracked concrete C20/25					
	h_{ef} = 8d			h_{ef} = 12d		
	Static	Category C1	Category C2	Static	Category C1	Category C2
VT-HP + LMAS M8	8.3	2.3	-	8.3	2.9	-
VT-HP + LMAS M10	12.8	4.4	-	12.8	4.5	-
VT-HP + LMAS M12	19.2	6.7	4.1	19.2	6.7	5.8
VT-HP + LMAS M16	35.3	12.3	7.3	35.3	12.3	10.9
VT-HP + LMAS M20	55.1	19.3	11.4	55.1	19.3	17.1
VT-HP + LMAS M24	79.5	27.8	-	79.5	27.8	-
VT-HP + LMAS M27	48.3	16.9	-	48.3	16.9	-
VT-HP + LMAS M30	58.8	29.4	-	58.8	29.4	-
Threaded rod type A4-70 for M≤24 and A4-50 for M>24						

Design resistance – Tension – NRd [kN] – hef = 8d – Carbon steel 5.8 – Rebar

Referentie	Design resistance – h_{ef} = 8d – Carbon steel 5.8							
	Tension - N_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
VT-HP + Ø8	4.3	4.5	4.6	4.7	10.7	11.1	11.6	11.8
VT-HP + Ø10	7	7.3	7.5	7.7	16.7	17.4	18.1	18.4
VT-HP + Ø12	11.1	11.5	11.9	12.2	24.1	25.1	26	26.5
VT-HP + Ø14	15	15.6	16.2	16.5	32.8	34.1	35.4	36.1
VT-HP + Ø16	19.6	20.4	21.2	21.6	40.6	44.6	46.3	47.2
VT-HP + Ø20	30.7	31.9	33.2	33.8	56.8	69	72.3	73.7
VT-HP + Ø25	48	49.9	51.8	52.8	79.4	96.5	103.6	105.5
VT-HP + Ø27	-	-	-	-	-	-	-	-
VT-HP + Ø28	67.1	74	76.8	78.2	94.1	113.8	118.2	120.4
VT-HP + Ø32	81.9	96.6	100.3	102.2	114.9	126.3	131.2	133.6

Design resistance – Tension – NRd [kN] – hef = 12d – Carbon steel 5.8 – Rebar

Referentie	Design resistance – h_{ef} = 12d – Carbon steel 5.8							
	Tension - N_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
VT-HP + Ø8	6.4	6.7	6.9	7.1	16.1	16.7	17.4	17.7
VT-HP + Ø10	10.5	10.9	11.3	11.5	25.1	26.1	27.1	27.6
VT-HP + Ø12	16.6	17.2	17.9	18.2	36.2	37.6	39.1	39.8
VT-HP + Ø14	22.6	23.5	24.4	24.8	49.2	51.2	53.2	54.2
VT-HP + Ø16	29.5	30.7	31.8	32.4	64.3	66.9	69.5	70.7
VT-HP + Ø20	46.1	47.9	49.7	50.7	100.5	104.5	108.5	110.5
VT-HP + Ø25	72	74.8	77.7	79.2	143.9	149.7	155.4	158.3
VT-HP + Ø27	-	-	-	-	-	-	-	-
VT-HP + Ø28	106.7	110.9	115.2	117.3	164.1	170.7	177.2	180.5
VT-HP + Ø32	139.3	144.9	150.5	153.3	182.2	189.5	196.8	200.4

Design resistance – Shear – VRd [kN] – hef = 8d – Carbon steel 5.8 – Rebar

Referentie	Design resistance – h_{ef} = 8d – Carbon steel 5.8							
	Shear - V_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
VT-HP + Ø8	8.6	8.9	9.3	9.3	9.3	9.3	9.3	9.3
VT-HP + Ø10	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
VT-HP + Ø12	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7
VT-HP + Ø14	28	28	28	28	28	28	28	28
VT-HP + Ø16	36	36	36	36	36	36	36	36
VT-HP + Ø20	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7
VT-HP + Ø25	88.7	88.7	88.7	88.7	88.7	88.7	88.7	88.7
VT-HP + Ø27	-	-	-	-	-	-	-	-
VT-HP + Ø28	110.7	110.7	110.7	110.7	110.7	110.7	110.7	110.7
VT-HP + Ø32	144.7	144.7	144.7	144.7	144.7	144.7	144.7	144.7

Design resistance – Shear – VRd [kN] – hef = 12d – Carbon steel 5.8 – Rebar

Referentie	Design resistance – h_{ef} = 12d – Carbon steel 5.8							
	Shear - V_{Rd} [kN]							
	Cracked concrete				Non-cracked concrete			
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60
VT-HP + Ø8	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
VT-HP + Ø10	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
VT-HP + Ø12	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7
VT-HP + Ø14	28	28	28	28	28	28	28	28
VT-HP + Ø16	36	36	36	36	36	36	36	36
VT-HP + Ø20	56.7	56.7	56.7	56.7	56.7	56.7	56.7	56.7
VT-HP + Ø25	88.7	88.7	88.7	88.7	88.7	88.7	88.7	88.7
VT-HP + Ø27	-	-	-	-	-	-	-	-
VT-HP + Ø28	110.7	110.7	110.7	110.7	110.7	110.7	110.7	110.7
VT-HP + Ø32	144.7	144.7	144.7	144.7	144.7	144.7	144.7	144.7

Design resistance – Bending moment – MRd [Nm] – Rebar

Referentie	Design resistance – Bending moment – M_{Rd} - Rebar [Nm]
	Carbon steel 5.8
VT-HP + Ø8	22
VT-HP + Ø10	43.3
VT-HP + Ø12	74.7
VT-HP + Ø14	118.7
VT-HP + Ø16	176.7
VT-HP + Ø20	345.3
VT-HP + Ø25	674.7
VT-HP + Ø27	-
VT-HP + Ø28	948
VT-HP + Ø32	1415.3

Design resistance – Tension – NRd [kN] – Seismic performance C1 – Carbon steel 5.8 – Rebar

Referentie	Design resistance – Tension – N_{Rd} – Seismic performance C1 – Carbon steel 5.8 [kN]			
	Cracked concrete C20/25			
	h_{ef} = 8d		h_{ef} = 12d	
	Static	Category C1	Static	Category C1
VT-HP + Ø8	4.3	2.7	6.4	4
VT-HP + Ø10	7	4.3	10.5	6.5
VT-HP + Ø12	11.1	7.4	16.6	11.2
VT-HP + Ø14	15	10.1	22.6	15.2
VT-HP + Ø16	19.6	13.2	29.5	19.8
VT-HP + Ø20	30.7	20.7	46.1	31
VT-HP + Ø25	48	33.1	72	49.7
VT-HP + Ø27	-	-	-	-
VT-HP + Ø28	67.1	49.2	106.7	73.9
VT-HP + Ø32	81.9	64.3	139.3	96.5

Datasheet

VT-HP®
Injection system for concrete

Design resistance – Shear – VRd [kN] – Seismic performance C1 – Carbon steel 5.8 – Rebar

Referentie	Design resistance – Shear – V_{Rd} – Seismic performance C1 – Carbon steel 5.8 [kN]			
	Cracked concrete C20/25			
	h_{ef} = 8d		h_{ef} = 12d	
	Static	Category C1	Static	Category C1
VT-HP + Ø8	8.6	4.6	9.3	6.3
VT-HP + Ø10	14.7	8.8	14.7	10
VT-HP + Ø12	20.7	14.2	20.7	14.2
VT-HP + Ø14	28	19.4	28	19.4
VT-HP + Ø16	36.7	25.3	36.7	25.3
VT-HP + Ø20	57.3	39.6	57.3	39.6
VT-HP + Ø25	90	61.9	90	61.9
VT-HP + Ø27	-	-	-	-
VT-HP + Ø28	113.3	77.6	113.3	77.6
VT-HP + Ø32	147.3	101.3	147.3	101.3

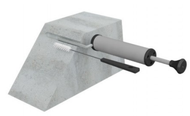
Plaatsing

Curring Schedule

Temperature of the anchorage base $T_{base\ material}$	Working time (Gel time) t_{gel}	Curing time (in dry concrete) $t_{cure,\ dry}$	Curing time (in wet concrete) $t_{cure,\ wet}$
0°C ≤ $T_{base\ material}$ ≤ +4°C	45 min	7 h	14 h
4°C ≤ $T_{base\ material}$ ≤ +9°C	25 min	2 h	4 h
10°C ≤ $T_{base\ material}$ ≤ +19°C	15 min	80 min	2h40 min
20°C ≤ $T_{base\ material}$ ≤ +29°C	6 min	45 min	1h30
30°C ≤ $T_{base\ material}$ ≤ +34°C	4 min	25 min	50 min
35°C ≤ $T_{base\ material}$ ≤ +39°C	2 min	20 min	40 min
+40°C	1,5 min	15 min	30 min

- **Manual Air Cleaning (MAC) for all drill hole diameters d_0 ≤ 24 mm and drill holl depth h_0 ≤ 10d :**
  - **4x blowing (hand pump)**
  - **4x brushing**
  - **4x blowing (Hand pump)**
- **Compressed Air Cleaning (CAC) for all drill hole diameters d_0 and drill hole depths :**
  - **2x blowing (min. 6 bar - oil free compressed air)**
  - **2x brushing**
  - **2x blowing (min. 6 bar - oil free compressed air)**
- **Cartridge temperature (Bond material) : +5°C to +40°C**

1. Gat boren.



2. Boorgat reinigen door uitborstelen en uitblazen zoals aangegeven op de patroon.

3. Gat voor de helft tot twee derde vullen vanaf het bodemgat naar buiten door bij het pompen telkens één maatstreep op de spuitmond achteruit te gaan.

4. Draadstang insteken door langzaam van links naar rechts te draaien. U kunt de draadstang verplaatsen of hars toevoegen zolang de verwerkingstijd niet bereikt is.

5. Vastzetten na het bereiken van de uithardingstijd.

Installation parameters – Concrete

Referentie	Installation parameters - Concrete					
	Ø drilling [d_0] [mm]	Max. fixture hole Ø [d_f] [mm]	Drilling depth (8d) [h_0=h_{ef}=8d] [mm]	Drilling depth (12d) [h_0=h_{ef}=12d] [mm]	Wrench size [SW]	Installation torque [T_{inst}] [Nm]
VT-HP + LMAS M8	10	9	64	96	13	10
VT-HP + LMAS M10	12	12	80	120	17	20
VT-HP + LMAS M12	14	14	96	144	19	40
VT-HP + LMAS M16	18	18	128	192	24	80
VT-HP + LMAS M20	24	22	160	240	30	120
VT-HP + LMAS M24	28	26	192	288	36	160
VT-HP + LMAS M27	28	30	216	324	41	180
VT-HP + LMAS M30	28	33	240	360	46	200

Spacing, edge distances and member thickness – Concrete

Referentie	Spacing, edge distance and member thickness - Concrete									
	Effective embedment depth (8d) [$h_{ef,8d}$] [mm]	Characteristic spacing for $h_{ef,8d}$ [$S_{cr,N}$] [mm]	Characteristic edge distance for $h_{ef,8d}$ [$c_{cr,N}$] [mm]	Min. member thickness for $h_{ef,8d}$ [h_{min}] [mm]	Effective embedment depth (12d) [$h_{ef,12d}$] [mm]	Characteristic spacing for $h_{ef,12d}$ [$S_{cr,N}$] [mm]	Characteristic edge distance for $h_{ef,12d}$ [$c_{cr,N}$] [mm]	Min. member thickness for $h_{ef,12d}$ [h_{min}] [mm]	Min. spacing [S_{min}] [mm]	Min. edge distance [C_{min}] [mm]
VT-HP + LMAS M8	64	192	96	100	96	288	144	126	40	40
VT-HP + LMAS M10	80	240	120	110	120	360	180	150	50	50
VT-HP + LMAS M12	96	288	144	126	144	432	216	174	60	60
VT-HP + LMAS M16	128	384	192	158	192	576	288	222	80	80
VT-HP + LMAS M20	160	480	240	190	240	720	360	270	100	100
VT-HP + LMAS M24	192	576	288	222	288	864	432	318	120	120
VT-HP + LMAS M27	216	648	324	246	324	972	486	354	135	135
VT-HP + LMAS M30	240	720	360	270	360	1060	540	390	150	150

VT-HP®
Injection system for concrete

Installation parameters – Rebar

Referentie	Installation parameters - Rebar		
	Ø drilling [d_0] [mm]	Drilling depth (8d) [h_0=h_{ef}=8d] [mm]	Drilling depth (12d) [h_0=h_{ef}=12d] [mm]
VT-HP + Ø8	12	64	96
VT-HP + Ø10	14	80	120
VT-HP + Ø12	16	96	144
VT-HP + Ø14	18	112	168
VT-HP + Ø16	20	128	192
VT-HP + Ø20	24	160	240
VT-HP + Ø25	32	200	300
VT-HP + Ø27	-	-	-
VT-HP + Ø28	35	224	336
VT-HP + Ø32	40	256	384

Spacing, edge distances and member thickness – Rebar

Referentie	Spacing, edge distance and member thickness - Rebar									
	Effective embedment depth (8d) [$h_{ef,8d}$] [mm]	Characteristic spacing for $h_{ef,8d}$ [$S_{cr,N}$] [mm]	Characteristic edge distance for $h_{ef,8d}$ [$c_{cr,N}$] [mm]	Min. member thickness for $h_{ef,8d}$ [h_{min}] [mm]	Effective embedment depth (12d) [$h_{ef,12d}$] [mm]	Characteristic spacing for $h_{ef,12d}$ [$S_{cr,N}$] [mm]	Characteristic edge distance for $h_{ef,12d}$ [$c_{cr,N}$] [mm]	Min. member thickness for $h_{ef,12d}$ [h_{min}] [mm]	Min. spacing [S_{min}] [mm]	Min. edge distance [C_{min}] [mm]
VT-HP + Ø8	64	192	96	100	96	288	144	126	40	40
VT-HP + Ø10	80	240	120	110	120	360	180	150	50	50
VT-HP + Ø12	96	288	144	128	144	432	216	176	60	60
VT-HP + Ø14	112	336	168	148	168	504	252	204	70	70
VT-HP + Ø16	128	384	192	168	192	576	288	232	80	80
VT-HP + Ø20	160	480	240	208	240	720	360	288	100	100
VT-HP + Ø25	200	600	300	264	300	900	450	364	125	125
VT-HP + Ø27	-	-	-	-	-	-	-	-	-	-
VT-HP + Ø28	224	672	335	294	336	1008	504	406	140	140
VT-HP + Ø32	256	768	384	336	384	1152	576	464	160	160

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