

Injection Adhesive VM



Description

The Injection System VM consists of a synthetic resin with special filler aggregate contained in a cartridge, plus a hardener. The components are injected through the mixer nozzle into the drill hole by means of the dispenser gun. The hardened injection adhesive gives a secure fastening.

VM-K based on polyester resin, styrene free: good performances in concrete and hollow base materials.

VM-PY based on polyester resin: very economical fixing system for concrete and hollow base materials. Approved for anchoring in brick or hollow block.



Applications

Non security-relevant anchorings into hollow base materials such as projecting roofs, frames, claddings, wood structures.

Fastenings in concrete:

VM-K: Hand rails, steel constructions, brackets.

VM-PY: Anchorings in dry environmental conditions.

Range of loading: 0,3 kN - 47,6 kN
Range of concrete quality: C20/25 - C50/60



Injection Adhesive VM



- ➔ For universal use in most base materials
- ➔ Four different size cartridges

Description	Ref. No.	Content ml	Content of master box pcs.	Weight per master box kg	Weight per piece kg
Cartridge VM-K 300 ¹⁾ - styrene free	28253001	300	12	6,40	0,53
Cartridge VM-K 345 - styrene free	28255201	345	12	7,20	0,58
Cartridge VM-K 420 - styrene free	28256101	420	12	10,1	0,83
Cartridge VM-PY 410 ²⁾	28256002	410	12	9,95	0,83
Static mixer VM-X (for all cartridges)	28305111	-	12	0,12	0,01
Static mixer VM-XP (only for 420ml cartridge)	28304920	-	10	0,10	0,01
Mixer extension VM-XE (200mm) for VM-X	28306011	-	12	-	-

One static mixer as well as one screw-on cap comes with each cartridge.

¹⁾ VM-K 300 is also suitable for Standard-Dispenser.

²⁾ VM-PY with DIBT-approval Z-21.3-1814 for brickstone.

Dispenser VM-P



Description	Ref. No.	Weight per piece kg
Dispenser VM-P 345 Standard ¹⁾	28350505	0,87
Dispenser VM-P 380 Standard ²⁾	28353005	1,10
Dispenser VM-P 345 Profi (Profi quality) ¹⁾	28350511	1,20
Dispenser VM-P 380 Profi ¹⁾ (Profi quality) ²⁾	28351001	1,22
Pneumatic-Dispenser VM-P 345 ³⁾	28350601	2,41
Pneumatic-Dispenser VM-P 380 ²⁾	28352002	2,00

¹⁾ Appropriate to: 150 ml, 300 ml, 345 ml cartridge.

²⁾ Appropriate to: 380 ml, 410 ml, 420 ml cartridge.

³⁾ Appropriate to: 345 ml cartridge.

Installation in Concrete



Recommended loads for single anchor without influence of spacing and edge distance.
Total safety factor as per ETAG 001 included (γ_M and γ_p).

Loads and performance data (for Threaded Studs V-A)			M 8		M 10		M 12		M 16		M 20		M 24	
			Steel 5.8	A4-70	Steel 5.8	A4-70	Steel 5.8	A4-70	Steel 5.8	A4-70	Steel 5.8	A4-70	Steel 5.8	A4-70
Recommended bending moments	rec. M [Nm]		10,9	11,9	21,1	23,8	37,1	42,1	94,9	106,7	185,7	207,9	320,6	359,4
Injection Adhesive VM-K, non-cracked concrete for temperature range +24°C / +24°C¹⁾														
Recommended loads, tension	C 20/25	N [kN]	4,7	4,7	7,0	7,0	9,6	9,6	11,2	11,2	18,7	18,7	-	-
Recommended loads, shear	C 20/25	rec. V [kN]	5,1	7,4	8,6	11,4	12,0	17,1	22,3	23,8	28,6	28,6	-	-
Injection Adhesive VM-PY, non-cracked concrete for temperature range +24°C / +40°C¹⁾														
Recommended loads, tension	C 20/25	rec. N [kN]	4,3	4,3	5,7	5,7	9,5	9,5	11,9	11,9	14,3	14,3	23,8	23,8
Recommended loads, shear	C 20/25	rec. V [kN]	5,1	7,4	8,6	11,4	12,0	17,1	22,3	23,8	28,6	28,6	47,6	47,6
Spacing and edge distance														
Effective anchorage depth	h_{ef} [mm]		80	90	110	125	170	210						
Characteristic spacing	$s_{cr,N}$ [mm]		160	180	220	250	340	420						
Minimum spacing	s_{min} [mm]		40	45	55	65	85	105						
Characteristic edge distance	$c_{cr,N}$ [mm]		80	90	110	125	170	210						
Minimum edge distance	c_{min} [mm]		40	45	55	65	85	105						
Minimum thickness of concrete slab	h_{min} [mm]		110	120	140	160	220	280						
Installation parameters														
Drill hole diameter	d_o [mm]		10	12	14	18	22	26						
Depth of drill hole	h_o [mm]		80	90	110	125	170	210						
Installation torque	T_{inst} [Nm]		10	20	40	60	120	150						
Width across nut	SW [mm]		13	17	19	24	30	36						
Recommended loads in masonry for all load directions (M8 - M10)²⁾														
				drilling with hammer action		drilling with rotation only		spacing s_{cr} [mm]	edge distance c_{cr} [mm]					
Vertical perforated brick (DIN105)	HLz 4 [kN]			0,3		0,6		100	200					
	HLz 6 [kN]			0,4		0,8		100	200					
	HLz 12 [kN]			0,8		1,0		100	200					
Sand-lime perforated brick (DIN 106)	KSL 4 [kN]			0,4		0,6		100	200					
	KSL 6 [kN]			0,6		0,8		100	200					
	KSL 12 [kN]			0,8		1,4		100	200					
Hollow block (concrete, DIN 18151)	Hbl 2 [kN]			0,3		0,5		200	200					
	Hbl 4 [kN]			0,6		0,8		200	200					
Hollow block (concrete, DIN 18153)	Hbn 4 [kN]			0,6		0,8		200	200					
Solid brick (DIN 105)	Mz 12 [kN]			1,7		1,7		100	200					
Solid sand-lime brick (DIN 106)	KS 12 [kN]			1,7		1,7		100	200					

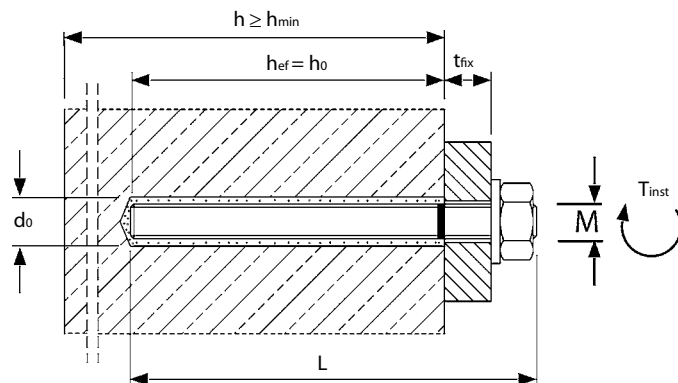
Loads apply to all MKT Injection systems. Use Perfo Sleeve VM-SH 16x85 in perforated block and MKT Threaded Stud V-A or VMU-A in Solid brick.

¹⁾ max long term temperature / max short term temperature

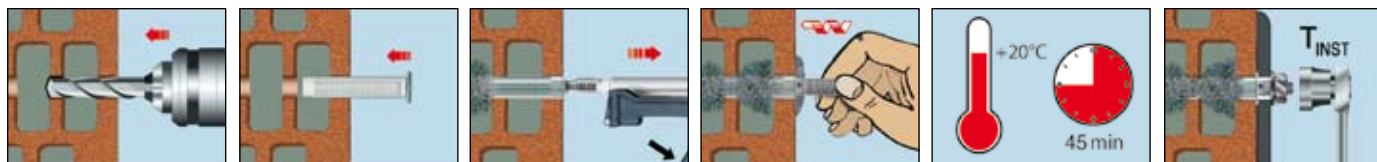
²⁾ Approved loads by using VM-PY with Threaded Stud VMU-A or V-A and Perfo Sleeve VMU-SH (hollow base materials).

Temperature (°C) of base material	working time	curing time
+5°C	25 min	2:00 h
+10°C	15 min	1:20 h
+20°C	6 min	45 min
+30°C	4 min	25 min
+35°C	2 min	20 min

Cartridge temperature when process min. +5°C.



Installation in Hollow Base Material



Injection Adhesive VM



Combi-Box

- The multi purpose box
- Combi-Box may be combined into sets

Description	Ref. No.	Contents	Quantity pcs.	Weight per Box kg
Combi-Box VM 1 styrene free	28999101	Cartridge VM-K 345	2	4,06
		Dispenser VM-P 345	1	
		Blow-out bulb VM-AP 270	1	
		Static mixer VM-X	4	
		Cleaning Brush RB-H 12 nylon	1	
Combi-Box VM 2 styrene free	28999090	Cartridge VMU 345	5	6,24
		Dispenser VM-P 345	1	
		Blow-out bulb VM-AP 270	1	
		Static mixer VM-X	10	
		Cleaning Brush RB-H 12 nylon	1	
Combi-Box VM K-345 styrene free	28999111	Cartridge VM-K 345	25	20,02
		Static mixer VM-X	50	

Dimensions Combi-Box

Description	Height mm	Width mm	Depth mm
Combi-Box VM 1	105	395	295
Combi-Box VM 2	158	395	295
Combi-Box VM 3	315	395	295



Stock-Box

- The practical box
- Stock-Box, the container for various items

Description	Ref. No.	Contents	Quantity pcs.	Weight per Box kg
Stock-Box VM-K 345	28999160	Cartridge VM-K 345	20	16,0
		Static mixer VM-X	40	
Stock-Box VMU 300	28999166	Cartridge VMU 300	20	15,3
		Static mixer VM-X	40	
Stock-Box VMU 345	28999157	Cartridge VMU 345	20	15,3
		Static mixer VM-X	40	
Stock-Box VMU 420	28999195	Cartridge VMU 420	20	18,0
		Static mixer VM-XP	40	

Dimensions Stock-Box

Description	Height mm	Width mm	Depth mm
Stock-Box	220	400	300



Accessories for Installation in hollow base materials

Threaded Stud VM-A



- Steel, zinc plated
- Installation in hollow base materials

Description	Ref. No.	Suitable for perfo sleeve	Fixture thickness t _{fix} mm	Package content pcs.	Weight per package kg
VM-A 6 x 70	28051001	VM-SH 12	15	10	0,18
VM-A 8 x 100	28052001	VM-SH 12 / 16	45 / 5	10	0,40
VM-A 10 x 110	28053001	VM-SH 16	15	10	0,71
VM-A 10 x 135	28053051	VM-SH 16	40	10	0,82
VM-A 12 x 115	28054001	VM-SH 20 / 22	20	10	1,07

Int. Threaded Sleeve VM-IG



- Steel, zinc plated
- Installation in hollow base materials

Description	Ref. No.	Suitable for perfo sleeve	Fixture thickness t _{fix} mm	Package content pcs.	Weight per package kg
VM-IG M 6	28101001	VM-SH 12 / 16	M 6 x 40	10	0,11
VM-IG M 8	28102001	VM-SH 16 / 22	M 8 x 70	10	0,38
VM-IG M 10	28103001	VM-SH 20 / 22	M 10x 70	10	0,45
VM-IG M 12	28104001	VM-SH 22	M 12 x 70	10	0,52

Perfo Sleeve VM-SH



- Plastic
- Installation in hollow base materials

Description	Ref. No.	Drill hole Ø x depth mm	Suitable for		Package content pcs.	Weight per package kg
			Threaded Stud	Threaded Sleeve		
VM-SH 12 x 50	28151001	12 x 60	M 6 - M 8	VM-IG M6	10	0,01
VM-SH 12 x 80	28151201	12 x 90	M 6 - M 8	VM-IG M6	10	0,02
VM-SH 16 x 85	28152001	16 x 95	M 8 - M 10	VM-IG M8	10	0,03
VM-SH 16 x 130	28153001	16 x 140	M 8 - M 10	-	10	0,04
VM-SH 20 x 85	28154001	20 x 95	M12	VM-IG M10	10	0,04

Perfo Sleeve VM-SH



- Metal, to be cut to required length
- Installation in hollow base materials

Description	Ref. No.	Drill hole Ø mm	Suitable for		Package content pcs.	Weight per package kg
			Threaded Studs	Threaded Sleeve		
VM-SH 12 x 1000	28403001	12	M6-M8	VM-IG M6	50	2,88
VM-SH 16 x 1000	28404001	16	M10	VM-IG M6-M8	50	3,38
VM-SH 22 x 1000	28405001	22	M12-M16	VM-IG M8-M12	25	2,70

Cleaning Brush



- For drill hole cleaning
- with wooden T-handle

Description	Ref. No.	Diameter mm	Suitable for drill hole Ø mm
RB-H 12 nylon	29914501	14	8 - 12
RB-H 18 nylon	29918501	18	10 - 18
RB-H 28 nylon	29928501	28	20 - 28

Accessories for Installation in concrete

Threaded Stud V-A



- Steel, zinc plated 5.8
- Installation in non-cracked concrete

Description	Ref. No.	Drill hole Ø x depth mm	Thread Ø x length mm	Package content pcs.	Weight per package kg
V-A 8-20/110	21101101	10 x 80	20	10	0,43
V-A 10-30/130	21203101	12 x 90	30	10	0,81
V-A 12-35/160	21306101	14 x 110	35	10	1,37
V-A 16-45/190	21510101	18 x 125	45	10	2,96
V-A 20-60/260	21617101	22 x 170	60	10	6,39
V-A 24-55/300	21721101	28 x 210	55	5	5,54

Other lengths see page 50.

Int. Threaded Sleeve V-IG



- Steel, zinc plated 5.8
- Fixture easy to remove; sealed drill hole

Description	Ref. No.	Drill hole Ø x depth mm	Thread Ø x length mm	Package content pcs.	Weight per package kg
V-IG M 8	24105101	14x90	M8x25	10	0,50
V-IG M 10	24205101	16x90	M10x30	10	0,65
V-IG M 12	24305101	18x100	M12x35	10	1,00
V-IG M 16	24505101	25x120	M16x40	10	1,65

Int. Threaded Sleeve V-IG A4



- Stainless steel A4/316
- Fixture easy to remove; sealed drill hole

Description	Ref. No.	Drill hole Ø x depth mm	Thread Ø x length mm	Package content pcs.	Weight per package kg
V-IG M 8	24105101	14x90	M8x25	10	0,50
V-IG M 10	24205101	16x90	M10x30	10	0,65
V-IG M 12	24305101	18x100	M12x35	10	1,00
V-IG M 16	24505101	25x120	M16x40	10	1,65

Centering Sleeve VM-ZR



- Plastic
- For overhead attachments

Description	Ref. No.	For Threaded Studs	Package content pcs.
VM-ZR M 8	28201001	M 8	10
VM-ZR M 10	28202001	M 10	10
VM-ZR M 12	28203001	M 12	10
VM-ZR M 16	28204001	M 16	10
VM-ZR M 20	28205001	M 20	10

Blow-out pump



- For drill hole cleaning
- Suitable for drill holes Ø 10-35 mm.

Description	Ref. No.	Suitable for Drill hole Ø mm	Length mm	Package content pcs.	Weight per master box kg
VM-AP 360	33200101	10-35	360	1	0,27
VM-AP 270	29990002	12-35	270	1	0,22