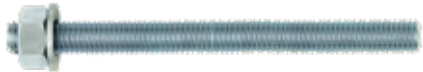


# Injection System VME plus



**Threaded Stud V-A**



**Threaded Stud VMU-A**



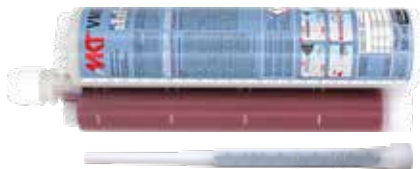
**Threaded Stud VM-A**  
1 meter length, to be cut to the required length



**Internally Threaded Sleeve VMU-IG**



**Cartridge VME plus 440**  
Side-by-side cartridge  
Content: 440ml



**Cartridge VME plus 585**  
Side-by-side cartridge  
Content: 585ml

**Range of loading:** 2,9 kN–221,6 kN  
**Concrete quality:** C20/25–C50/60  
**Material:** Steel, zinc plated, hot dip galvanized, stainless steel A4, stainless steel HCR

### Description

The Injection System VME plus is a slow curing injection system based on an epoxy adhesive. Due to the European Technical Assessment for fixings in cracked and non-cracked concrete as well as for post-installed rebar connections, it is highly versatile. As the Injection System VME plus does not shrink during curing, it is particularly suitable for fixings requiring high impermeability.

By using the hollow drill bit SB, contamination and dust exposure of the respiratory tract can be reduced to a minimum and subsequent drill hole cleaning is not necessary. As anchoring elements the threaded studs VMU-A, VM-A and V-A, the internally threaded sleeves VMU-IG also standard threaded studs with strength test certificate 3.1 or reinforcement bars can be used.



**SEISMIC**  
C1: M8-M30,  
Ø8-Ø32  
C2: M12-M24

F30-F120

Certified to NSF/ANSI 61

EMISSIOMS DANS L'AIR INTERIEUR  
A+ A1 B1 C1

### Advantages

- European Technical Assessment in cracked and non-cracked concrete
- Very high, approved loads
- Long processing time, even at high temperatures
- No shrinkage, therefore very high tightness of the fastenings
- Working life 100 years for use in concrete (ETA-19/0483)
- Approved under seismic action of category C1 (threaded studs M8 - M30, reinforcing steel Ø8 - Ø32) and C2 (threaded studs M12 - M24 galvanized steel: FKL ≥8.8, A4, HCR: FKL ≥70)
- For higher loads under seismic action, the annular gap between the anchor rod and the fixing element can be filled using the Filling Washer VS.
- Fire test report for all diameters
- Approved for installation in dry and wet concrete and in water-filled drill holes
- Variable anchorage depths allow flexible adaptation to the respective load situation, reduce the drilling effort and adhesive consumption
- Versatile in application
- The wide range of threaded studs VMU-A, VM-A, V-A and internally threaded sleeves VMU-IG as well as the use of standard threaded studs with strength test certificate 3.1 or reinforcement bars allows any requirement to be met
- Drill hole creation with hammer drill, compressed air drill or hollow drill bit
- Drill hole creation with diamond drill in non-cracked concrete without seismic action
- When using the hollow drill bit SB the subsequent cleaning of the borehole is not necessary
- Opened cartridges can be reused with a new static mixer
- Styrene-free

### Applications

**Heavy duty fastenings in cracked and non-cracked concrete:** Steel structures, railings, base plates, supports, brackets, facade structures.  
**Fastenings with rebar in cracked and non-cracked concrete with shear force:** Shear connectors, wall connecting reinforcement, concrete joints.

**Injection Cartridge VME plus**



→ Long processing time

→ No shrinkage

Description	Ref. No.	Content ml	Content of master box pcs.	Weight per master box kg	Weight per piece kg
Cartridge VME plus 440	28258001	440	12	9,79	0,78
Cartridge VME plus 585	28258243	585	12	12,28	1,02
Static mixer VM-XHP	28305301	-	12	0,18	0,01

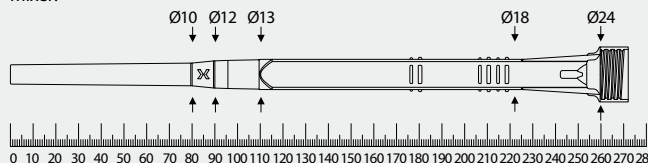
One static mixer VM-XHP comes with each cartridge

NEW

**Usable length static mixer VM-XHP**

Drill holes must always be filled from the bottom of the hole to ensure no air pockets are trapped in the adhesive. This is only possible when the tip of the mixing nozzle reaches the very bottom of the drill hole before injecting the adhesive. If the mixing nozzle does not reach the bottom of the drill hole, a mixer extension tube must be used.

Outer diameter mixer:



**Curing Time Injection Adhesive VME plus**

→ Cartridge temperature when installing +5°C to +40°C

Temperature (°C) of the concrete	maximum working time	minimum curing time	
		dry concrete	wet concrete
0°C to +4°C <sup>1)</sup>	90 min	144 h	288 h
+5°C to +9°C	80 min	48 h	96 h
+10°C to +14°C	60 min	28 h	56 h
+15°C to +19°C	40 min	18 h	36 h
+20°C to +24°C	30 min	12 h	24 h
+25°C to +34°C	12 min	9 h	18 h
+35°C to +39°C	8 min	6 h	12 h
+40°C	8 min	4 h	8 h

<sup>1)</sup>Drill hole temperature 0°C to + 4°C for fastenings in concrete (ETA-19/0483)

**Accessories for Injection System VME plus**

Threaded stud	Internally threaded stud	Rebar Ø	Drill bit Ø	Blow-out pump <sup>1)</sup> / Air gun <sup>1)</sup>	Cleaning brush RB <sup>1)</sup>	Retaining Washer VM-IA <sup>2)</sup>	Extension tube <sup>1)</sup>	Dispenser
		mm	mm					
M8		8	10	VM-ABP 200	RB 10 M6		VM-XE 10	
M10	VMU-IG M6	8 / 10	12	VM-ABP 200 DLS with RS, RS25	RB 12 M6 RB 12 M8		VM-XE 10	
M12	VMU-IG M8	10 / 12	14	VM-ABP 200 DLS with RS, RS25	RB 14 M6 RB 14 M8		VM-XE 10	
		12	16	VM-ABP 200 DLS with RS, RS25	RB 16 M6 RB 16 M8		VM-XE 10	
M16	VMU-IG M10	14	18	VM-ABP 200 / 250 / 500 / 1000 DLS with RS, RS25	RB 18 M6 RB 18 M8	VM-IA 18	VM-XE 10 VM-XLE 16	
		16	20	VM-ABP 200 / 250 / 500 / 1000 DLS with RS, RS25	RB 20 M6 RB 20 M8	VM-IA 20	VM-XE 10 VM-XLE 16	
M20	VMU-IG M12		22	VM-ABP 250 / 500 / 1000 DLS with RS, RS25	RB 22 M6	VM-IA 22	VM-XE 10 VM-XLE 16	VM-P 585 Standard, VM-P 585 Profi, VM-P 585 Akku, VM-P 585 Pneumatic
		20	25	VM-ABP 250 / 500 / 1000 DLS with RS, RS25	RB 25 M8 RB 26 M6	VM-IA 25	VM-XE 10 VM-XLE 16	
M24	VMU-IG M16		28	VM-ABP 250 / 500 / 1000 DLS with RS, RS25	RB 28 M6	VM-IA 28	VM-XE 10 VM-XLE 16	
M27			30	VM-ABP 250 / 500 / 1000 DLS with RS, RS25	RB 30 M6	VM-IA 30	VM-XE 10 VM-XLE 16	
M30	VMU-IG M20	24 / 25	32	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 32 M6 RB 32 M8	VM-IA 32	VM-XE 10 VM-XLE 16	
		28	35	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 35 M6 RB 35 M8	VM-IA 35	VM-XE 10 VM-XLE 16	
		32	40	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 40 M6	VM-IA 40	VM-XE 10 VM-XLE 16	
<b>See page</b>				<b>169</b>	<b>170</b>	<b>172</b>	<b>171</b>	<b>172 / 173</b>

<sup>1)</sup>When using the MKT hollow drill SB (see page 168) the subsequent cleaning of the borehole is not necessary

<sup>2)</sup>If the static mixer does not reach the bottom of the borehole (see usable length of static mixer), a extension tube must be used. From a drill-Ø d<sub>0</sub> ≥ 18 mm, retaining washer and extension tube must be used for overhead installation and for drill hole depths > 250 mm.

Chemical Anchors

## Threaded studs for Injection System VME plus

### Threaded stud VMU-A

Steel, zinc plated 5.8  
Dimensions see page 163



- For use in structures subject to dry internal conditions
- Steel, zinc plated 8.8 on demand

### Threaded stud VMU-A fvz

Steel, hot dip galvanized 5.8  
Dimensions see page 163



- For use in structures subject to dry internal conditions

NEW

### Threaded stud VMU-A A4

Stainless steel A4-70  
Dimensions see page 163



- For use in structures subject to dry internal conditions or external atmospheric exposure
- Stainless steel HCR on request

### Internally threaded sleeve VMU-IG

Steel, zinc plated 5.8  
Dimensions see page 165



- For use in structures subject to dry internal conditions
- With internal thread

### Internally threaded sleeve VMU-IG A4

Stainless steel A4-70  
Dimensions see page 165



- For use in structures subject to dry internal conditions or external atmospheric exposure
- With internal thread

### Threaded stud V-A

Steel, zinc plated 5.8  
Dimensions see page 164



- For use in structures subject to dry internal conditions

### Threaded stud V-A fvz

Steel, hot dip galvanized 5.8  
Dimensions see page 164



- For use in structures subject to dry internal conditions

### Threaded stud V-A 8.8

Steel, zinc plated 8.8  
Dimensions see page 164



- For use in structures subject to dry internal conditions

### Threaded stud V-A A4

Stainless steel A4-70  
Dimensions see page 164



- For use in structures subject to dry internal conditions or external atmospheric exposure

### Threaded stud V-A HCR

Stainless steel HCR-70  
Dimensions see page 164



- For use in particularly corrosive environments
- High corrosion resistant steel 1.4529 (HCR)

### Threaded stud VM-A

Steel 5.8, zinc plated  
Dimensions see page 165



- For use in structures subject to dry internal conditions
- Threaded studs, of 1 meter length, to be cut to the required length
- Comes with manufacturer's certificate (3.1 EN 10204) in every package

### Threaded stud VM-A

Steel 8.8, zinc plated  
Dimensions see page 165



- For use in structures subject to dry internal conditions
- Threaded studs, of 1 meter length, to be cut to the required length
- Comes with manufacturer's certificate (3.1 EN 10204) in every package

### Threaded stud VM-A

Stainless steel A4-70  
Dimensions see page 165



- For use in structures subject to dry internal conditions or external atmospheric exposure
- Threaded studs, of 1 meter length, to be cut to the required length
- Comes with manufacturer's certificate (3.1 EN 10204) in every package



**Extract from Permissible Service Conditions of European Technical Assessment ETA-19/0483**

Approved loads for working life of up to 50 years without influence of spacing and edge distance in dry or wet concrete for temperature range I -40°C to +24°C/+40°C<sup>1)</sup> and for temperature range II -40°C to +50°C/+72°C<sup>1)</sup> Total safety factor as per ETAG included ( $\gamma_M$  and  $\gamma_P$ ). Load capacities under fire exposure see page 190.

**Loads and performance data**

<b>Injection System VME plus, threaded stud steel 5.8</b>				<b>M8</b>	<b>M10</b>	<b>M12</b>	<b>M16</b>	<b>M20</b>	<b>M24</b>	<b>M27</b>	<b>M30</b>	
Range of anchorage depths	$h_{ef,min} - h_{ef,max}$	[mm]		60 - 160	60 - 200	70 - 240	80 - 320	90 - 400	96 - 480	108 - 540	120 - 600	
Approved loads, tension for $h_{ef,min} - h_{ef,max}$ cracked concrete												
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. N	[kN]	5,0 - 8,6	6,3 - 13,8	10,0 - 20,0	12,3 - 37,1	14,6 - 58,1	16,1 - 83,8	19,2 - 109,5	22,5 - 133,3
	50°C/72°C <sup>1)</sup>	C20/25	appr. N	[kN]	4,3 - 8,6	5,4 - 13,8	8,8 - 20,0	12,3 - 37,1	14,6 - 58,1	16,1 - 83,8	19,2 - 109,5	22,5 - 133,3
Approved loads, tension for $h_{ef,min} - h_{ef,max}$ non-cracked concrete												
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. N	[kN]	8,6	11,2-13,8	14,1 - 20,0	17,2 - 37,1	20,5 - 58,1	22,6 - 83,8	27,0 - 109,5	31,6 - 133,3
	50°C/72°C <sup>1)</sup>	C20/25	appr. N	[kN]	8,6	11,2-13,8	14,1 - 20,0	17,2 - 37,1	20,5 - 58,1	22,6 - 83,8	27,0 - 109,5	31,6 - 133,3
Approved loads, shear for $h_{ef,min} - h_{ef,max}$ cracked concrete												
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. V	[kN]	6,3	9,7	14,3	24,5 - 26,9	29,3 - 42,3	32,2 - 60,6	38,5 - 78,9	45,1 - 96,0
	50°C/72°C <sup>1)</sup>	C20/25	appr. V	[kN]	6,3	9,7	14,3	24,5 - 26,9	29,3 - 42,3	32,2 - 60,6	38,5 - 78,9	45,1 - 96,0
Approved loads, shear for $h_{ef,min} - h_{ef,max}$ non-cracked concrete												
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. V	[kN]	6,3	9,7	14,3	26,9	41,1 - 42,3	45,2 - 60,6	54,0 - 78,9	63,2 - 96,0
	50°C/72°C <sup>1)</sup>	C20/25	appr. V	[kN]	6,3	9,7	14,3	26,9	41,1 - 42,3	45,2 - 60,6	54,0 - 78,9	63,2 - 96,0

<b>Injection System VME plus, threaded stud steel 8.8</b>												
Approved loads, tension for $h_{ef,min} - h_{ef,max}$ cracked concrete												
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. N	[kN]	5,0 - 13,4	6,3 - 20,9	10,0 - 31,9	12,3 - 59,5	14,6 - 93,3	16,1 - 134,3	19,2 - 175,2	22,5 - 213,8
	50°C/72°C <sup>1)</sup>	C20/25	appr. N	[kN]	4,3 - 11,5	5,4 - 18,0	8,8 - 30,2	12,3 - 53,6	14,6 - 83,8	16,1 - 120,6	19,2 - 152,7	22,5 - 188,5
Approved loads, tension for $h_{ef,min} - h_{ef,max}$ non-cracked concrete												
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. N	[kN]	11,2 - 13,8	11,2 - 21,9	14,1 - 31,9	17,2 - 59,5	20,5 - 93,3	22,6 - 134,3	27,0 - 175,2	31,6 - 213,8
	50°C/72°C <sup>1)</sup>	C20/25	appr. N	[kN]	10,8 - 13,8	11,2 - 21,9	14,1 - 31,9	17,2 - 59,5	20,5 - 93,3	22,6 - 134,3	27,0 - 175,2	31,6 - 213,8
Approved loads, shear for $h_{ef,min} - h_{ef,max}$ cracked concrete												
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. V	[kN]	8,6	12,6 - 13,1	19,4	24,5 - 36,0	29,3 - 56,0	32,2 - 80,6	38,5 - 105,1	45,1 - 128,0
	50°C/72°C <sup>1)</sup>	C20/25	appr. V	[kN]	8,6	10,8 - 13,1	17,6 - 19,4	24,5 - 36,0	29,3 - 56,0	32,2 - 80,6	38,5 - 105,1	45,1 - 128,0
Approved loads, shear for $h_{ef,min} - h_{ef,max}$ non-cracked concrete												
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. V	[kN]	8,6	13,1	19,4	34,4 - 36,0	41,0 - 56,0	45,2 - 80,6	54,0 - 105,1	63,2 - 128,0
	50°C/72°C <sup>1)</sup>	C20/25	appr. V	[kN]	8,6	13,1	19,4	34,4 - 36,0	41,0 - 56,0	45,2 - 80,6	54,0 - 105,1	63,2 - 128,0

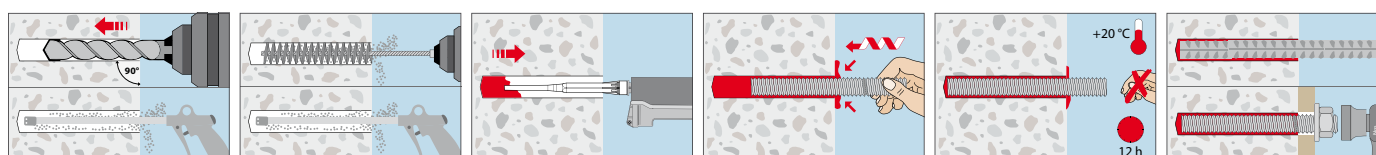
<b>Injection System VME plus, threaded stud stainless steel A4-70, HCR-70</b>												
Approved loads, tension for $h_{ef,min} - h_{ef,max}$ cracked concrete												
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. N	[kN]	5,0 - 9,9	6,3 - 15,7	10,0 - 22,5	12,3 - 42,0	14,6 - 65,3	16,1 - 94,3	19,2 - 57,4	22,5 - 70,2
	50°C/72°C <sup>1)</sup>	C20/25	appr. N	[kN]	4,3 - 9,9	5,4 - 15,7	8,8 - 22,5	12,3 - 42,0	14,6 - 65,3	16,1 - 94,3	19,2 - 57,4	22,5 - 70,2
Approved loads, tension for $h_{ef,min} - h_{ef,max}$ non-cracked concrete												
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. N	[kN]	9,9	11,2 - 15,7	14,1 - 22,5	17,2 - 42,0	20,5 - 65,3	22,6 - 94,3	27,0 - 57,4	31,6 - 70,2
	50°C/72°C <sup>1)</sup>	C20/25	appr. N	[kN]	9,9	11,2 - 15,7	14,1 - 22,5	17,2 - 42,0	20,5 - 65,3	22,6 - 94,3	27,0 - 57,4	31,6 - 70,2
Approved loads, shear for $h_{ef,min} - h_{ef,max}$ cracked concrete												
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. V	[kN]	6,0	9,2	13,7	24,5 - 25,2	29,3 - 39,4	32,2 - 56,8	34,5	42,0
	50°C/72°C <sup>1)</sup>	C20/25	appr. V	[kN]	6,0	9,2	13,7	24,5 - 25,2	29,3 - 39,4	32,2 - 56,8	34,5	42,0
Approved loads, shear for $h_{ef,min} - h_{ef,max}$ non-cracked concrete												
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. V	[kN]	6,0	9,2	13,7	25,2	39,4	45,2 - 56,8	34,5	42,0
	50°C/72°C <sup>1)</sup>	C20/25	appr. V	[kN]	6,0	9,2	13,7	25,2	39,4	45,2 - 56,8	34,5	42,0

<b>Spacing and edge distance</b>											
Min. thickness of concrete for $h_{ef,min} - h_{ef,max}$	$h_{min}$	[mm]		100 - 190	100 - 230	100 - 270	116 - 356	134 - 444	152 - 536	168 - 600	190 - 670
Minimum spacing	$s_{min}$	[mm]		40	50	60	75	95	115	125	140
Minimum edge distance	$c_{min}$	[mm]		35	40	45	50	60	65	75	80

<b>Installation parameters</b>											
Drill hole diameter	$d_o$	[mm]		10	12	14	18	22	28	30	35
Clearance hole in the fixture for Pre-setting installation	$d_{f \leq}$	[mm]		9	12	14	18	22	26	30	33
Clearance hole in the fixture for Through-setting installation	$d_{f \leq}$	[mm]		12	14	16	20	24	30	33	40
Range of drill hole depth for $h_{ef,min} - h_{ef,max}$	$h_o$	[mm]		60 - 160	60 - 200	70 - 240	80 - 320	90 - 400	96 - 480	108 - 540	120 - 600
Installation torque	$T_{inst \leq}$	[Nm]		10	20	40 (FKL4.6: 35)	60	100	170	250	300
Amount of adhesive per 100 mm drill hole depth	[ml]			6,53	8,16	9,82	13,61	17,89	32,25	30,69	48,67

<sup>1)</sup> max. long term temperature / max. short term temperature  
 Higher concrete strength may lead to higher approved loads. Using a hollow drill bit without subsequent cleaning can lead to lower loads in non-cracked concrete. Technical data for water-filled drill holes see approval.  
 For anchor designing, an easy to operate Software is available on request or can be downloaded at [www.mkt.de](http://www.mkt.de)

**Installation**





**Extract from Permissible Service Conditions of European Technical Assessment ETA-19/0483**

Approved loads for working life of up to 50 years without influence of spacing and edge distance in dry or wet concrete for temperature range I -40°C to +24°C/+40°C<sup>1)</sup> and for temperature range II -40°C to +50°C/+72°C<sup>1)</sup> Total safety factor as per ETAG included ( $\gamma_M$  and  $\gamma_P$ ).

Loads and performance data				Range of temperature I and II (I: -40°C to 24/40°C; II: -40°C to 50/72°C <sup>1)</sup> )								
Internally Threaded Sleeve				IG M6 x 80	IG M6 x 90	IG M8 x 80	IG M8 x 100	IG M10 x 80	IG M10 x 100	IG M12 x 125	IG M16 x 170	IG M20 x 200
Anchorage depth $h_{ef}$		[mm]		80	90	80	100	80	100	125	170	200
<b>Injection System VME plus, Internally Threaded Sleeve VMU-IG steel 5.8</b>												
<b>Approved loads, tension for <math>h_{ef}</math></b>												
Cracked concrete	C20/25	appr. N	[kN]	4,8	4,8	8,1	8,1	12,3	13,8	20,0	36,2	48,5
Non-cracked concrete	C20/25	appr. N	[kN]	4,8	4,8	8,1	8,1	13,8	13,8	20,0	36,2	58,6
<b>Approved loads, shear for <math>h_{ef}</math></b>												
Cracked concrete	C20/25	appr. N	[kN]	3,4	3,4	5,7	5,7	9,7	9,7	14,3	25,7	42,3
Non-cracked concrete	C20/25	appr. N	[kN]	3,4	3,4	5,7	5,7	9,7	9,7	14,3	25,7	42,3
<b>Injection System VME plus, Internally Threaded Sleeve VMU-IG Stainless steel A4-70, HCR-70</b>												
<b>Approved loads, tension for <math>h_{ef}</math></b>												
Cracked concrete	C20/25	appr. N	[kN]	5,3	5,3	9,9	9,9	12,3	15,7	22,5	38,0	31,0
Non-cracked concrete	C20/25	appr. N	[kN]	5,3	5,3	9,9	9,9	15,7	15,7	22,5	42,0	31,0
<b>Approved loads, shear for <math>h_{ef}</math></b>												
Cracked concrete	C20/25	appr. N	[kN]	3,2	3,2	6,0	6,0	9,2	9,2	13,7	25,2	18,6
Non-cracked concrete	C20/25	appr. N	[kN]	3,2	3,2	6,0	6,0	9,2	9,2	13,7	25,2	18,6
<b>Spacing and edge distance</b>												
Min. thickness of concrete	$h_{min}$	[mm]		110	120	110	130	116	136	169	226	270
Minimum spacing	$s_{min}$	[mm]		50	50	60	60	75	75	95	115	140
Minimum edge distance	$c_{min}$	[mm]		40	40	45	45	50	50	60	65	80
<b>Installation parameters</b>												
Drill hole diameter	$d_o$	[mm]		12	12	14	14	18	18	22	28	35
Clearance hole in the fixture	$d_f \leq$	[mm]		7	7	9	9	12	12	14	18	22
Drill hole depth	$h_o$	[mm]		80	90	80	100	80	100	125	170	200
Installation torque	$T_{inst} \leq$	[Nm]		10	10	10	10	20	20	40	60	100
Amount of adhesive per 100mm drill hole		[ml]		6,6	7,4	7,9	9,9	10,9	13,6	22,4	54,9	97,4

<sup>1)</sup>Max. long term temperature/max. short term temperature

Higher concrete strength may lead to higher approved loads. Using a hollow drill bit without subsequent cleaning can lead to lower loads in non-cracked concrete. Technical data see European Technical Assessment ETA-19/0483.

For anchor designing, an easy to operate Software is available on request or can be downloaded at [www.mkt.de](http://www.mkt.de).



**Extract from Permissible Service Conditions of European Technical Assessment ETA-19/0483**

Approved loads for working life of up to 50 years without influence of spacing and edge distance in dry or wet concrete for temperature range I -40°C to +24°C/+40°C<sup>1)</sup> and for temperature range II -40°C to +50°C/+72°C<sup>1)</sup>. Total safety factor according to ETAG included ( $\gamma_M$  and  $\gamma_P$ ).

Injection System VME plus, rebar B500B				Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø25	Ø28	Ø32
Range of anchorage depths	$h_{ef,min} - h_{ef,max}$	[mm]		60 - 160	60 - 200	70 - 240	75 - 280	80 - 320	90 - 400	96 - 480	100 - 500	112 - 560	128 - 640
<b>Approved loads, tension for <math>h_{ef,min} - h_{ef,max}</math></b>													
cracked concrete													
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. N [kN]	5,0 - 13,4	6,3 - 20,9	10,0 - 31,2	11,1 - 42,4	12,3 - 55,4	14,6 - 86,6	16,1 - 124,6	17,1 - 135,2	20,3 - 169,6	24,8 - 221,6
	50°C/72°C <sup>1)</sup>	C20/25	appr. N [kN]	4,3 - 11,5	5,4 - 18,0	8,8 - 30,2	11,0 - 41,1	12,3 - 53,6	14,6 - 83,8	16,1 - 120,6	17,1 - 130,9	20,3 - 164,2	24,8 - 214,5
non-cracked concrete													
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. N [kN]	11,2 - 13,8	11,2 - 21,6	14,1 - 31,2	15,6 - 42,4	17,2 - 55,4	20,5 - 86,6	22,6 - 124,6	24,0 - 135,2	28,5 - 169,6	34,8 - 221,6
	50°C/72°C <sup>1)</sup>	C20/25	appr. N [kN]	8,6 - 13,8	10,8 - 21,6	14,1 - 31,2	15,6 - 42,4	17,2 - 55,4	20,5 - 86,6	22,6 - 124,6	24,0 - 135,2	28,5 - 169,6	34,8 - 221,6
<b>Approved loads, shear for <math>h_{ef,min} - h_{ef,max}</math></b>													
cracked concrete													
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. V [kN]	6,5	10,1	14,5	19,8	24,5 - 25,9	29,3 - 40,4	32,2 - 58,2	34,3 - 63,1	40,6 - 79,2	49,7 - 103,4
	50°C/72°C <sup>1)</sup>	C20/25	appr. V [kN]	6,5	10,1	14,5	19,8	24,5 - 25,9	29,3 - 40,4	32,2 - 58,2	34,3 - 63,1	40,6 - 79,2	49,7 - 103,4
non-cracked concrete													
Range of temperature	24°C/40°C <sup>1)</sup>	C20/25	appr. V [kN]	6,5	10,1	14,5	19,8	25,9	40,4	45,2 - 58,2	48,1 - 63,1	57,0 - 79,2	69,6 - 103,4
	50°C/72°C <sup>1)</sup>	C20/25	appr. V [kN]	6,5	10,1	14,5	19,8	25,9	40,4	45,2 - 58,2	48,1 - 63,1	57,0 - 79,2	69,6 - 103,4
<b>Spacing and edge distance</b>													
Min. thickness of concrete for $h_{ef,min} - h_{ef,max}$	$h_{min}$	[mm]		100 - 190	100 - 230	100 - 270 / 102 - 272 <sup>2)</sup>	111 - 316	120 - 360	140 - 450	160 - 544	164 - 564	182 - 630	208 - 720
Minimum spacing	$s_{min}$	[mm]		40	50	60	70	75	95	120	120	130	150
Minimum edge distance	$c_{min}$	[mm]		35	40	45	50	50	60	70	70	75	85
<b>Installation parameters</b>													
Drill hole diameter	$d_o$	[mm]		10/12 <sup>2)</sup>	12/14 <sup>2)</sup>	14/16 <sup>2)</sup>	18	20	25	32	32	35	40
Range of drill hole depth for $h_{ef,min} - h_{ef,max}$	$h_o$	[mm]		60 - 160	60 - 200	70 - 240	75 - 280	80 - 320	90 - 400	96 - 480	100 - 500	112 - 560	128 - 640
Amount of adhesive per 100mm drill hole depth		[ml]		4,16/8,46 <sup>3)</sup>	5,07/10,12 <sup>3)</sup>	5,97/11,78 <sup>3)</sup>	13,44	15,09	23,11	44,65	40,03	44,22	57,32

<sup>1)</sup>Max. long term temperature/max. short term temperature

<sup>2)</sup>For rebar Ø8, Ø10 and Ø12 both drill hole diameters are possible

<sup>3)</sup>The first value applies to the smaller drill diameter, the second value to the larger drill diameter.

Higher concrete strength may lead to higher approved loads. Using a hollow drill bit without subsequent cleaning can lead to lower loads in non-cracked concrete. Technical data see European Technical Assessment ETA-19/0483.

For anchor designing, an easy to operate Software is available on request or can be downloaded at [www.mkt.de](http://www.mkt.de).

# Injection System VME plus

## for post-installed rebar connection



**Reinforcement Bars BSSt 500 S**

NEW



**Cartridge VME plus 440**  
Side-by-side cartridge  
Content: 440ml

NEW



**Cartridge VME plus 585**  
Side-by-side cartridge  
Content: 585ml

### Description

The Injection System VME plus also has the European Technical Assessment for post-installed rebar connection. Reinforcement Bars with diameters from 8mm to 40mm as well as tension anchors from M12 to M24 with a setting depth of up to 2m can be fixed.

By using the hollow drill bit SB the drilling dust is sucked off during drilling directly at the point of origin. This reduces pollution and dust load of the respiratory tract to a minimum. Subsequent well cleaning - brushing and blowing out - is also no longer necessary.

### Advantages

- Long processing time, therefore ideal for large embedment depths and for high temperatures
- Wide range of application, as up to 40mm rebar diameter allowed
- Drill hole creation with hammer drill, compressed air drill or hollow drill bit
- When using the hollow drill bit SB the subsequent cleaning of the borehole is not necessary
- Approved for installation in dry and wet concrete
- Approved for use under fire exposure
- Opened cartridges can be reused with a new static mixer
- Tie rods ZA with connecting thread M12 - M24 can be supplied in individual lengths on request

### Applications for post-installed rebar connection:

Subsequent connection of stairs, balconies, walls or columns, closing of wall and ceiling openings

### Application examples tension anchor:

Anchoring of railing posts and of supports subject to bending loads, anchoring of cantilevered components



### Injection Cartridge VME plus



- ➔ Long processing time
- ➔ No shrinkage

Description	Ref. No.	Content ml	Content of master box pcs.	Weight per master box kg	Weight per piece kg
Cartridge VME plus 440	28258001	440	12	9,79	0,78
Cartridge VME plus 585	28258243	585	12	12,28	1,02
Static mixer VM-XHP	28305301	-	12	0,18	0,01

One static mixer VM-XHP comes with each cartridge

### Curing Time Injection Adhesive VME plus

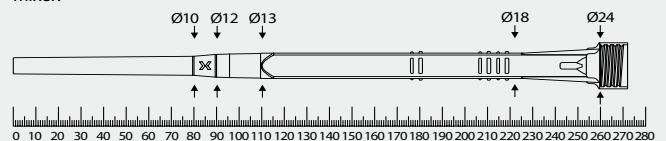
- ➔ Cartridge temperature when installing +5°C to +40°C

Temperature (°C) of the base material	maximum working time	minimum curing time	
		dry base material	wet base material
+5°C to +9°C	80 min	48 h	96 h
+10°C to +14°C	60 min	28 h	56 h
+15°C to +19°C	40 min	18 h	36 h
+20°C to +24°C	30 min	12 h	24 h
+25°C to +34°C	12 min	9 h	18 h
+35°C to +39°C	8 min	6 h	12 h
+40°C	8 min	4 h	8 h

### Usable length static mixer VM-XHP

Drill holes must always be filled from the bottom of the hole to ensure no air pockets are trapped in the adhesive. This is only possible when the tip of the mixing nozzle reaches the very bottom of the drill hole before injecting the adhesive. If the mixing nozzle does not reach the bottom of the drill hole, a mixer extension tube must be used.

Outer diameter mixer:



## Accessories Injection System VME plus for post-installed rebar connection

Rebar Ø	Tension Anchor	Drill Bit Ø	Blow-out pump / Air gun <sup>1)</sup>	Cleaning brush RB <sup>1)</sup>	Retaining washer VM-IA <sup>2)</sup>	Extension tube <sup>2)3)</sup>	Maximum permissible drilling depth for dispenser		
							VM-P 585 Standard, VM-P 585 Profi, VM-P 585 Akku	VM-P 585 Pneumatic	VM-P 585 Pneumatic
mm		mm					mm	mm	mm
8		10	VM-ABP 200	RB 10 M6		VM-XE 10	250	250	250
8		12	VM-ABP 200 DLS with RS, RS25	RB 12 M6 RB 12 M8		VM-XE 10	700	800	800
10		12	VM-ABP 200 DLS with RS, RS25	RB 12 M6 RB 12 M8		VM-XE 10	250	250	250
10		14	VM-ABP 200 DLS with RS, RS25	RB 14 M6 RB 14 M8	VM-IA 14	VM-XE 10	700	1000	1000
12	ZA-M12	14	VM-ABP 200 DLS with RS, RS25	RB 14 M6 RB 14 M8	VM-IA 14	VM-XE 10	250	250	250
12	ZA-M12	16	VM-ABP 200 / 1000 DLS with RS, RS25	RB 16 M6 RB 16 M8	VM-IA 16	VM-XE 10	700	1300 <sup>1)</sup>	1200 <sup>1)</sup>
14		18	VM-ABP 200 / 250/ 500 / 1000 DLS with RS, RS25	RB 18 M6 RB 18 M8	VM-IA 18	VM-XE 10 VM-XLE 16	700	1300 <sup>1)</sup>	1400 <sup>1)3)</sup>
16	ZA-M16	20	VM-ABP 200 / 250/ 500 / 1000 DLS with RS, RS25	RB 20 M6 RB 20 M8	VM-IA 20	VM-XE 10 VM-XLE 16	700	1300 <sup>1)</sup>	1600 <sup>1)3)</sup>
20	ZA-M20	25 <sup>4)</sup>	VM-ABP 250 / 500 / 1000 DLS with RS, RS25	RB 25 M8 <sup>4)</sup>	VM-IA 25	VM-XE 10 VM-XLE 16	500	1000	2000 <sup>1)3)</sup>
22		28	VM-ABP 250 / 500 / 1000 DLS with RS, RS25	RB 28 M6	VM-IA 28	VM-XE 10 VM-XLE 16	500	1000	2000 <sup>1)3)</sup>
24/25	ZA-M24	32	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 32 M6 RB 32 M8	VM-IA 32	VM-XE 10 VM-XLE 16	500	1000	2000 <sup>1)3)</sup>
28		35	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 35 M6 RB 35 M8	VM-IA 35	VM-XE 10 VM-XLE 16	500	1000	2000 <sup>1)3)</sup>
32		40	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 40 M6	VM-IA 40	VM-XE 10 VM-XLE 16	500	1000	2000 <sup>1)3)</sup>
34		40	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 40 M6	VM-IA 40	VM-XE 10 VM-XLE 16		1000	2000 <sup>1)3)</sup>
36		45	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 45 M6	VM-IA 45	VM-XE 10 VM-XLE 16		1000	2000 <sup>1)3)</sup>
40		55	VM-ABP 250 / 500 / 1000 DLS with RS, RS35	RB 55 M6	VM-IA 55	VM-XE 10 VM-XLE 16		1000	2000 <sup>1)3)</sup>
<b>See page</b>			<b>169</b>	<b>170</b>	<b>172</b>	<b>171</b>	<b>172 / 173</b>	<b>173</b>	<b>173</b>

<sup>1)</sup>When using the hollow drill SB the subsequent cleaning of the borehole is not necessary (drill-Ø d<sub>0</sub> ≤ 40 mm, drill hole depth h<sub>1</sub> ≤ 1.000 mm)

<sup>2)</sup>If the static mixer does not reach the bottom of the borehole (see usable length of static mixer), a extension tube must be used. From a drill-Ø d<sub>0</sub> ≥ 14 mm, retaining washer and extension tube must be used for horizontal and overhead installation and for drill hole depths > 240 mm.

<sup>3)</sup>From an anchoring depth of l<sub>v</sub> > 1300 mm only the mixer extension VM-XLE 16 is permitted

<sup>4)</sup>Hammer- or suction drilling. Pneumatic drilling: drill-Ø 26, Cleaning Brush RB 26 M6

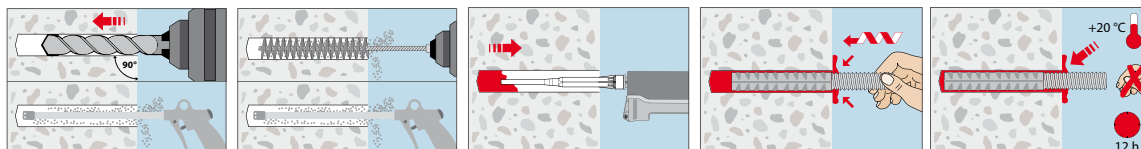


### Extract from Permissible Service Conditions of European Technical Assessment ETA-19/0671 for post-installed Rebar Connections with VME plus

Rod diameter		Ø8	Ø8	Ø10	Ø10	Ø12	Ø12	Ø14	Ø16	Ø20	Ø22	Ø24	Ø25	Ø28	Ø32	Ø34	Ø36	Ø40
Tension Anchor ZA / threaded stud							ZA M12	ZA M16	ZA M20			ZA M24						
Drill hole diameter	d <sub>0</sub> [mm]	10	12	12	14	14	16	18	20	25	28	32	32	35	40	40	45	55
Design value of bond strength <sup>1)</sup> f <sub>bd,PIR</sub> [N/mm <sup>2</sup> ]																		
Concrete strength	C12/15 f <sub>bd,PIR</sub> [N/mm <sup>2</sup> ]	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,6	1,5	1,5
	C16/20 f <sub>bd,PIR</sub> [N/mm <sup>2</sup> ]	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	1,9	1,8
	C20/25 f <sub>bd,PIR</sub> [N/mm <sup>2</sup> ]	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,3	2,2	2,1
	C25/30 f <sub>bd,PIR</sub> [N/mm <sup>2</sup> ]	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,7	2,6	2,5
	C30/37 f <sub>bd,PIR</sub> [N/mm <sup>2</sup> ]	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	3,0	2,9	2,9	2,8
	C35/45 f <sub>bd,PIR</sub> [N/mm <sup>2</sup> ]	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,4	3,3	3,3	3,1
	C40/50 f <sub>bd,PIR</sub> [N/mm <sup>2</sup> ]	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,7	3,6	3,6	3,4
	C45/55 f <sub>bd,PIR</sub> [N/mm <sup>2</sup> ]	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	3,9	3,8	3,7
	C50/60 f <sub>bd,PIR</sub> [N/mm <sup>2</sup> ]	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,3	4,2	4,1	4,0
<b>Installation parameters reinforcing steel B500B</b>																		
Amount of adhesive /100 mm setting depth	[ml]	4,16	8,46	5,07	10,12	5,97	11,78	13,44	15,09	23,11	30,40	44,65	40,03	44,22	57,32	44,88	72,11	138,47
<b>Installation parameters Tension Anchor ZA</b>																		
Tension Anchor ZA / threaded stud							ZA M12	ZA M16	ZA M20			ZA M24						
Clearance hole in the fixture	d <sub>f</sub> [mm]						14	18	22			26						
Effective setting depth	l <sub>v</sub> [mm]																	
Installation torque	T <sub>inst</sub> ≤ [Nm]						50	100	150			150						
Width across nut	SW [mm]						19	24	30			36						
Amount of adhesive /100 mm setting depth	[ml]						11,78	15,09	23,11			44,65						
<b>Different tension anchors see page</b>							<b>167</b>	<b>167</b>	<b>167</b>			<b>on request</b>						

<sup>1)</sup>The values for f<sub>bd,PIR</sub> are valid for good bonding conditions according to EN 1992-1-1:2004

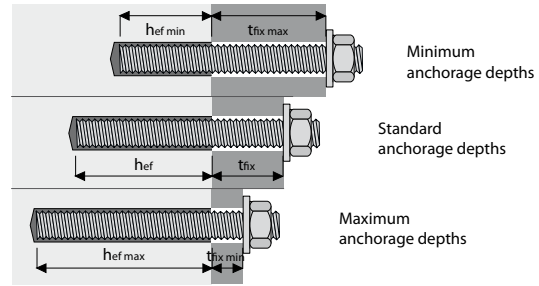
### Installation



# Threaded Studs, Perfo Sleeves and Tension Anchors for MKT Injection Systems

**Threaded Studs for the Injection Systems VMH, VMU plus, VME plus, VME and VM-EA in concrete and brickwork:**  
**A flexible system means less inventory**

The flexible anchoring depths of the Injection Systems VMH, VMU plus, VME plus, VME and VM-EA in concrete make it possible to adjust the setting depths to the required load. This allows at low loads, the use of shorter anchor rods with correspondingly shorter drilling depths, high loads can be supported by correspondingly deeper anchorage depths.



hef + tfix = Usable length of the threaded rod (without nut and washer)

## Threaded Stud VMU-A

Steel, zinc plated 5.8



- For use in structures subject to dry internal conditions
- Steel, zinc plated grade 8.8 on demand or as threaded studs VM-A

## Threaded Stud VMU-A fvz

Steel, hot dip galvanized 5.8



- For use in structures subject to dry internal conditions

NEW

## Threaded Stud VMU-A A4

Stainless steel A4-70



- For use in structures subject to dry internal conditions or external atmospheric exposure
- Stainless steel HCR on request

Description	Ref. No.			Use in								Package content	Weight per package	
	Steel, zinc plated 5.8	Steel, hot dip galvanized 5.8	Stainless steel A4-70	Concrete <sup>1)</sup> Usable length mm	Solid base material without Perfo Sleeve Drill hole Ø x depth mm	Maximum fixture thickness tfix mm	Solid and hollow base material with VM-SH <sup>2)</sup>							
							12x85	16x90	16x135	20x90	20x135			20x205
							Maximum fixture thickness tfix						pcs.	kg
VMU-A 8x100	31510101	-	31510501	90	10x80	10	10	5	-	-	-	-	10	0,42
VMU-A 8x110	31515101	31515201	31515501	100	10x80	20	20	15	-	-	-	-	10	0,46
VMU-A 8x130	31525101	-	31525501	120	10x80	40	40	35	-	-	-	-	10	0,52
VMU-A 8x145	31528101	-	31528501	135	10x80	55	55	50	5	-	-	-	10	0,55
VMU-A 8x160	31530101	-	31530501	150	10x80	70	70	65	20	-	-	-	10	0,60
VMU-A 8x205	31550101	-	31550501	195	10x80	115	115	110	65	-	-	-	10	0,74
VMU-A 10x110	31605101	-	31605501	100	12x90	10	-	15	-	-	-	-	10	0,75
VMU-A 10x130	31625101	31625201	31625501	120	12x90	30	-	35	-	-	12x90	-	10	0,85
VMU-A 10x150	31630101	31630201	31630501	140	12x90	50	-	55	10	-	-	-	10	0,95
VMU-A 10x165	31635101	-	31635501	155	12x90	65	-	70	25	-	-	-	10	1,02
VMU-A 10x190	31645101	31645201	31645501	180	12x90	90	-	95	50	-	-	-	10	1,15
VMU-A 10x260	31655101	-	31655501	250	12x90	160	-	165	120	-	-	-	10	1,50
VMU-A 12x120	31717101	-	31717501	105	14x100	5	-	-	-	20	-	-	10	1,14
VMU-A 12x130	31718101	-	31718501	115	14x100	15	-	-	-	30	-	-	10	1,21
VMU-A 12x135	31710101	-	31710501	120	14x100	20	-	-	-	35	-	-	10	1,25
VMU-A 12x155	31720101	31720201	31720101	140	14x100	40	-	-	-	55	10	-	10	1,42
VMU-A 12x175	31730101	31730201	31730501	160	14x100	60	-	-	-	75	30	-	10	1,54
VMU-A 12x185	31734101	-	31734501	170	14x100	70	-	-	-	85	40	-	10	1,63
VMU-A 12x210	31740101	31740201	31740501	195	14x100	95	-	-	-	110	65	-	10	1,82
VMU-A 12x225	31748101	-	31748501	210	14x100	110	-	-	-	125	80	10	10	1,89
VMU-A 12x250	31750101	-	31750501	235	14x100	135	-	-	-	150	105	35	10	2,13
VMU-A 12x265	31757101	-	31757501	250	14x100	150	-	-	-	165	120	50	10	2,18
VMU-A 12x300	31760101	-	31760501	285	14x100	185	-	-	-	200	155	85	10	2,50
VMU-A 16x160	31810101	-	31810501	140	18x100	40	-	-	-	55	10	-	10	2,65
VMU-A 16x175	31815101	31815201	31815501	155	18x100	55	-	-	-	70	25	-	10	2,85
VMU-A 16x205	31820101	31820201	31820501	185	18x100	85	-	-	-	100	55	-	10	3,25
VMU-A 16x235	31830101	-	31830501	215	18x100	115	-	-	-	130	85	15	10	3,65
VMU-A 16x300	31840101	-	31840501	280	18x100	180	-	-	-	195	150	80	10	4,53
VMU-A 20x240	31910101	-	31910501	220	-	-	-	-	-	-	-	-	10	5,85
VMU-A 20x260	31915101	-	-	240	-	-	-	-	-	-	-	-	10	6,30
VMU-A 20x285	31920101	-	31920501	265	-	-	-	-	-	-	-	-	10	6,75
VMU-A 20x300	31925101	-	31925501	280	-	-	-	-	-	-	-	-	10	7,15
VMU-A 20x350	31930101	-	-	330	-	-	-	-	-	-	-	-	10	8,10
VMU-A 20x400	31935101	-	-	380	-	-	-	-	-	-	-	-	10	9,10
VMU-A 24x290	31960101	-	31960501	265	-	-	-	-	-	-	-	-	5	4,95
VMU-A 24x350	31965101	-	31965501	325	-	-	-	-	-	-	-	-	5	5,85
VMU-A 24x400	31970101	-	31970501	375	-	-	-	-	-	-	-	-	5	6,60
VMU-A 30x370	31990101	-	31990501	340	-	-	-	-	-	-	-	-	5	9,90

<sup>1)</sup>Drill hole Ø and drill depth depend on selected injection system and anchorage depth

<sup>2)</sup>Drill hole Ø and drill depth see Perfo Sleeves on page 166



**Threaded Stud V-A**



- For use in structures subject to dry internal conditions
- Steel, zinc plated 5.8

**Threaded Stud V-A A4**



- For use in structures subject to dry internal conditions or external atmospheric exposure
- Stainless steel A4-70

**Threaded Stud V-A 8.8**



- For use in structures subject to dry internal conditions
- Steel, zinc plated 8.8

**Threaded Stud V-A HCR**



- For use in particularly corrosive environments
- High corrosion resistant steel 1.4529 (HCR)

**Threaded Stud V-A fvz**



- For use in structures subject to dry internal conditions
- Steel, hot dip galvanized 5.8

Description	Ref. No.					Use in										Package content	Weight per package
	Steel, zinc plated 5.8	Steel, zinc plated 8.8	Steel, hot dip galvanized 5.8	Stainless steel A4-70	Stainless steel HCR-70	Concrete <sup>1)</sup>		Solid base material without Perfo Sleeve	Solid and hollow base material with VM-SH <sup>2)</sup>								
						Usable Length	Drill hole Ø x depth	Maximum fixture thickness t <sub>fix</sub>	12x85	16x90	16x135	20x90	20x135	20x205			
						mm	mm	mm	Maximum fixture thickness t <sub>fix</sub>						pcs.	kg	
V-A 8-20/110	21101101	21101171	21101201	21101501	21101651	100	10x80	20	20	15	-	-	-	-	10	0,43	
V-A 8-60/150	21105101	21105171	-	21105501	-	140	10x80	60	60	55	-	-	-	-	10	0,53	
V-A 10-15/115	21202101	21202171	-	21202501	-	105	12x90	15	-	20	-	-	-	-	10	0,73	
V-A 10-30/130	21203101	21203171	21203201	21203501	21203651	120	12x90	30	-	35	-	-	-	-	10	0,81	
V-A 10-65/165	21207101	21207171	-	21207501	-	155	12x90	65	-	70	25	-	-	-	10	0,98	
V-A 10-90/190	21210101	21210171	21210201	21210501	-	180	12x90	90	-	95	50	-	-	-	10	1,11	
V-A 10-150/250	21216101	-	-	21216501	-	240	12x90	150	-	155	110	-	-	-	10	1,42	
V-A 10-200/300	21221101	-	-	21221501	-	290	12x90	200	-	205	160	-	-	-	10	1,71	
V-A 12-10/135	21304101	21304171	-	21304501	-	120	12x90	20	-	-	-	35	-	-	10	1,19	
V-A 12-35/160	21306101	21306171	21306201	21306501	21306651	145	14x100	45	-	-	-	60	15	-	10	1,37	
V-A 12-55/180	-	-	-	21309501	-	165	14x100	65	-	-	-	80	35	-	10	1,51	
V-A 12-85/210	21312101	21312171	-	21312501	-	195	14x100	95	-	-	-	110	65	-	10	1,73	
V-A 12-95/220	21313101	-	-	21313501	-	205	14x100	105	-	-	-	120	75	5	10	1,82	
V-A 12-125/250	21316101	21316171	-	21316501	-	235	14x100	135	-	-	-	150	105	35	10	2,02	
V-A 12-175/300	21321101	21321171	-	21321501	-	285	14x100	185	-	-	-	200	155	85	10	2,40	
V-A 16-5/150	-	-	-	21505501	-	130	18x100	30	-	-	-	45	-	-	10	2,38	
V-A 16-20/165	21507101	21507171	21507201	21507501	-	145	18x100	45	-	-	-	60	15	-	10	2,77	
V-A 16-45/190	21510101	21510171	21510201	21505501	21510651	170	18x100	70	-	-	-	85	40	-	10	2,96	
V-A 16-65/210	-	-	21512201	21512501	-	190	18x100	90	-	-	-	105	60	-	10	3,20	
V-A 16-85/230	21514101	21514171	-	21514501	-	210	18x100	110	-	-	-	125	80	10	10	3,65	
V-A 16-105/250	21516101	21516171	-	21516501	-	230	18x100	130	-	-	-	145	100	30	10	3,91	
V-A 16-155/300	21521101	21521171	-	21521501	-	280	18x100	180	-	-	-	195	150	80	10	4,58	
V-A 20-20/220	21613101	21613171	21613201	21613501	-	190	-	-	-	-	-	-	-	-	10	5,56	
V-A 20-60/260	21617101	21617171	21617201	21617501	-	230	-	-	-	-	-	-	-	-	10	6,39	
V-A 20-100/300	21621101	21621171	-	21621501	-	270	-	-	-	-	-	-	-	-	10	7,23	
V-A 24-15/260	21717101	21717171	21717201	21717501	-	225	-	-	-	-	-	-	-	-	5	4,89	
V-A 24-55/300	21721101	21721171	-	21721501	-	265	-	-	-	-	-	-	-	-	5	5,54	
V-A 30-70/380 <sup>3)</sup>	21829101	-	21721201	21829501	-	350	-	-	-	-	-	-	-	-	5	10,00	

<sup>1)</sup>Drill hole Ø and drill depth depend on selected injection system and anchorage depth. For maximum fixture thickness for Chemical Anchor V, see page 158 / 159.

<sup>2)</sup>Drill hole Ø and drill depth see Perfo Sleeves on page 166

<sup>3)</sup>Setting tool V-A 30-70/380 ref. no. 27805160 to be ordered separately.

Other lengths on demand.

### Threaded Stud VM-A

Steel, zinc plated 5.8



→ Threaded studs, of 1 meter length, to be cut to the required length

→ Comes with manufacturer's certificate (3.1 EN 10204 ) in every package

Description	Ref. No.	Threaded Studs	Length mm	Package content pcs.	Weight per package kg
VM-A 8x1000	31199101	M8	1000	10	3,91
VM-A 10x1000	31299101	M10	1000	10	5,5
VM-A 12x1000	31399101	M12	1000	10	7,76
VM-A 16x1000	31599101	M16	1000	10	13,6
VM-A 20x1000	31699101	M20	1000	5	10,8
VM-A 24x1000	31799101	M24	1000	5	15,35

### Threaded Stud VM-A 8.8

Steel, zinc plated 8.8



→ Threaded studs, of 1 meter length, to be cut to the required length

→ Comes with manufacturer's certificate (3.1 EN 10204 ) in every package

Description	Ref. No.	Threaded Studs	Length mm	Package content pcs.	Weight per package kg
VM-A 8x1000 8.8	31199181	M8	1000	10	3,91
VM-A 10x1000 8.8	31299181	M10	1000	10	5,5
VM-A 12x1000 8.8	31399181	M12	1000	10	7,76
VM-A 16x1000 8.8	31599181	M16	1000	10	13,6

### Internally Threaded Sleeve VMU-IG

Steel, zinc plated 5.8



→ For use in structures subject to dry internal conditions

Description	Ref. No.	Use in			Outer Ø x Length	Thread depth min / max	Package content	Weight per package		
		Steel, zinc plated 5.8	Stainless steel A4	Concrete					Solid base material without Perfo Sleeve	Solid and hollow base material with VM-SH <sup>2)</sup>
				Drill hole Ø x depth mm					Drill hole Ø x depth mm	
VMU-IG M6x80	31502101	31502501	12 x 80	-	VM-SH 16x85	10 x 80	8 / 20	10	0,38	
VMU-IG M6x90	31503101	31503501	12 x 90	12x90	-	10 x 90	8 / 20	10	0,42	
VMU-IG M8x80	31562101	31562501	14 x 80	-	VM-SH 20x85	12 x 80	8 / 20	10	0,52	
VMU-IG M8x100	31563101	31563501	14 x 100	14x100	-	12 x 100	8 / 20	10	0,66	
VMU-IG M10x80	31601101	31601501	18 x 80	-	VM-SH 20x85	16 x 80	10 / 25	10	0,92	
VMU-IG M10x100	31602101	31602501	18 x 100	18x100	-	16 x 100	10 / 25	10	1,18	
VMU-IG M12x125	31652101	31652501	22/24 <sup>1)</sup> x 125	-	-	20 x 125	12 / 30	10	2,51	
VMU-IG M16x170	31702101	31702501	28 x 170	-	-	24 x 170	16 / 32	5	2,41	
<b>NEW</b> VMU-IG M20x200	31802101	31802501	35 x 200	-	-	30 x 200	20 / 40	5	4,18	

<sup>1)</sup>Drill hole Ø depend on selected injection system

<sup>2)</sup>Drill hole Ø and drill depth see Perfo Sleeves on page 166

### Threaded Stud VM-A A4

Stainless steel A4-70



→ Threaded studs, of 1 meter length, to be cut to the required length

→ Comes with manufacturer's certificate (3.1 EN 10204 ) in every package

Description	Ref. No.	Threaded Studs	Length mm	Package content pcs.	Weight per package kg
VM-A 8x1000 A4	31199501	M8	1000	10	3,77
VM-A 10x1000 A4	31299501	M10	1000	10	5,43
VM-A 12x1000 A4	31399501	M12	1000	10	8,03
VM-A 16x1000 A4	31599501	M16	1000	10	13,95
VM-A 20x1000 A4	31699501	M20	1000	5	11,0
VM-A 24x1000 A4	31799501	M24	1000	5	15,6

### Internally Threaded Sleeve VMU-IG A4

Stainless steel A4-70



→ For use in structures subject to dry internal conditions or external atmospheric exposure

**Internally Threaded Sleeve V-IG**


- Steel, zinc plated 5.8
- Flush with concrete surface; with internal thread
- For fastenings not subject to approval

Description	Ref. No.	Suitable for perfo sleeve	Outer-Ø x Length mm	Drill hole Ø x depth mm	Thread mm	Package content pcs.	Weight per package kg
V-IG M 8	24105101	V-P 12	12 x 90	14 x 90	M8 x 25	10	0,50
V-IG M 10	24205101	V-P 14	14 x 90	16 x 90	M10 x 30	10	0,65
V-IG M 12	24305101	V-P 16	16 x 100	18 x 100	M12 x 35	10	1,00
V-IG M 16	24505101	V-P 16 IG	22 x 120	25 x 120	M16 x 40	10	1,65

A setting tool is included with each internally threaded sleeve package.

**Internally Threaded Sleeve V-IG A4**


- Stainless steel A4
- Flush with concrete surface; with internal thread
- For fastenings not subject to approval

Description	Ref. No.	Suitable for perfo sleeve	Outer-Ø x Length mm	Drill hole Ø x depth mm	Thread mm	Package content pcs.	Weight per package kg
V-IG M 8 A4	24105501	V-P 12	12 x 90	14 x 90	M8 x 25	10	0,50
V-IG M 10 A4	24205501	V-P 14	14 x 90	16 x 90	M10 x 30	10	0,65
V-IG M 12 A4	24305501	V-P 16	16 x 100	18 x 100	M12 x 35	10	1,00
V-IG M 16 A4	24505501	V-P 16 IG	22 x 120	25 x 120	M16 x 40	10	1,65

A setting tool is included with each internally threaded sleeve package.

**Internally Threaded Sleeve VM-IG**


- Steel, zinc plated
- Installation in hollow base material
- For fastenings not subject to approval

Description	Ref. No.	Suitable for perfo sleeve	Internal thread	Outer Ø mm	Length mm	Package content pcs.	Weight per package kg
VM-IG M 6	28101001	VM-SH 12 / 16	M 6	8	45	10	0,11
VM-IG M 8	28102001	VM-SH 16 / 22	M 8	12	80	10	0,38
VM-IG M 10	28103001	VM-SH 20 / 22	M 10	14	80	10	0,45
VM-IG M 12	28104001	VM-SH 22	M 12	16	80	10	0,52

**Perfo Sleeve VM-SH**


- Material: Polypropylene
- Installation in hollow base material

Description	Ref. No.	Drill hole Ø x depth mm	suitable for		Amount of mortar per 100 mm drill hole depth ml	Package content pcs.	Weight per package kg
			Threaded Studs	Threaded Sleeve			
VM-SH 12 x 50 <sup>1)</sup>	28151001	13 x 55	M8	-	7,5	10	0,01
VM-SH 12 x 80	28151201	12 x 85	M8	-	11,9	10	0,02
VM-SH 16 x 85	28152001	16 x 90	M8 / M10	VMU-IG M6x80	24,9	10	0,03
VM-SH 16 x 130	28153001	16 x 135	M8 / M10	-	38,0	10	0,04
VM-SH 16 x 130/330 <sup>2)</sup>	28153201	16 x 135 + tfix <sup>2)</sup>	M8 / M10	-	96,5	10	0,16
VM-SH 20 x 85	28154001	20 x 90	M12 / M16	VMU-IG M8x80 / M10x80	41,1	10	0,04
VM-SH 20 x 130	28154301	20 x 135	M12 / M16	-	62,9	10	0,07
VM-SH 20 x 200	28154601	20 x 205	M12 / M16	-	96,7	10	0,10

<sup>1)</sup>For fastenings not subject to approval

<sup>2)</sup>VM-SH 16 x 130/330 is only approved in combination with VM-EA. tfix = shortened length perfo sleeves -130 mm

**Perfo Sleeve VM-SH**


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

Description	Ref. No.	Drill hole Ø x depth mm	suitable for		Amount of mortar per 100 mm drill hole depth ml	Package content pcs.	Weight per package kg
			Threaded Studs	Threaded Sleeve			
VM-SH 12 x 1000	28403001	12	M6 / M8	VM-IG M6	15,0	50	2,88
VM-SH 16 x 1000	28404001	16	M10	VM-IG M6 / M8	29,3	50	3,38
VM-SH 22 x 1000	28405001	22	M12 / M16	VM-IG M8 - M12	68,4	25	2,70

## Hollow drill bit SB



### Description

The hollow drill bit SB combines two steps in one: it drills and at the same time removes the drilling dust from the hole. As a result, it significantly reduces the dust created, resulting in a cleaner work space and reduces air contamination. Contamination in the work area is also avoided, making it the ideal hammer drill for indoors. Many MKT injection systems eliminate the need for additional cleaning, increasing efficiency and installation safety. Thanks to its SDS shank and its 38mm suction pipe connection, it can be used universally and flexibly with any SDS hammer drill and industrial vacuum cleaners.

### Advantages

- 98% less air borne dust than during conventional drilling processes
- Permitted for use with approved anchors
- The separate cleaning of the drill hole can be omitted if this is permitted in the ETA
- Easy handling, insert in a hammer drill and connect to an industrial vacuum cleaner
- Efficient dust extraction and drilling thanks to extra large vacuum holes
- Optimum health and safety at the workplace, reduce respiratory complaints of dust particles by using an industrial vacuum cleaner of the M-Class
- Save money and time: there is no dirt generated, so no need to clean up afterwards
- Can be used with all standard SDS-max and SDS-plus hammer drills in conjunction with commercial industrial vacuum cleaners

### Applications

For dust-free drilling in concrete, solid brick, solid lime and stone and natural stone indoors and outdoors.

### Hollow drill bit with SDS-plus shank

→ 2-cutter with big vacuum holes for a fast drilling

Description	Ref.No.	Ø mm	Drilling depth mm	Total length mm	Adaptor	Type	Pkg. Content pcs.	Weight per pcs. kg
Hollow drill bit SB plus 8x270	50235501	8	150	270	SDS-plus	2-cutter	1	0,21
Hollow drill bit SB plus 10x270	50245501	10	150	270	SDS-plus	2-cutter	1	0,24
Hollow drill bit SB plus 12x320	50256001	12	200	320	SDS-plus	2-cutter	1	0,31
Hollow drill bit SB plus 14x370	50266501	14	250	370	SDS-plus	2-cutter	1	0,39
Hollow drill bit SB plus 16x370	50286501	16	250	370	SDS-plus	2-cutter	1	0,43
Hollow drill bit SB plus 18x370	50296501	18	250	370	SDS-plus	2-cutter	1	0,53
Hollow drill bit SB plus 20x370	50306501	20	250	370	SDS-plus	2-cutter	1	0,64
Hollow drill bit SB plus 24x370	50326501	24	250	370	SDS-plus	2-cutter	1	0,81

### Hollow drill bit with SDS-max shank

→ Y-Cutter for more stable drilling

Description	Ref.No.	Ø mm	Drilling depth mm	Total length mm	Adaptor	Type	Pkg. Content pcs.	Weight per pcs. kg
Hollow drill bit SB max 18x600	50698001	18	400	600	SDS-max	Y-cutter	1	0,99
Hollow drill bit SB max 24x600	50728001	24	400	600	SDS-max	Y-cutter	1	1,21
Hollow drill bit SB max 25x600	50738001	25	400	600	SDS-max	Y-cutter	1	1,23
<b>NEW</b> Hollow drill bit SB max 26x600	50748001	26	400	600	SDS-max	Y-cutter	1	1,25

## Suction bell ASG



Description	Ref.No.	Connection diameter to a vacuum cleaner Ø [mm]	Suitable for drill hole Ø [mm]	Pkg. Content pcs.	Weight per pc. kg
Suction bell ASG	29980001	30-38	6-32	1	0,06

### Description

For removing drilling dust when drilling or cleaning holes.

### Advantages

- Easy handling, connection to a vacuum cleaner is sufficient
- No mounting is necessary, because the suction bell sticks tight to floor, wall and ceiling by a strong vacuum
- Prevents contamination and provides a clear visibility due to almost dust-free drilling
- Reduce respiratory complaints due to tiny dust particles by using a vacuum cleaner of the M-Class

# Accessories for MKT Injection Systems

## Blow-out pump VM-AP



- For assessment-compliant drill hole cleaning of many anchor systems
- For best drill hole cleaning, the hose must reach the bottom of the drill hole

Description	Ref. No.	For drill hole Ø mm	Max. drill hole depth <sup>1)</sup> mm	Length mm	Pkg. cont. pcs.	Weight per piece kg
Blow-out pump VM-AP 270	29990002	12 - 20	200	270	1	0,22
Blow-out pump VM-AP 360	33200101	8 <sup>2)</sup> - 20	330	360	1	0,27

<sup>1)</sup>For through fastening: Maximum drill hole depth through fixture

<sup>2)</sup>With extension tube Ø6 x 100mm

## Air gun VM-ABP



- For assessment-compliant drill hole cleaning with compressed air for drill holes with a diameter larger than 6 mm
- For best drill hole cleaning, the nozzle of the air gun must reach the bottom of the drill hole

Description	Ref. No.	Nozzle-ø mm	For drill hole Ø mm	Max. drill hole depth <sup>1)</sup> mm	Pkg. cont. pcs.	Weight per piece kg
VM-ABP 200	33090101	5	6-20	240	1	0,55
VM-ABP 250	33100101	16	18-40	240	1	1,00
VM-ABP 500	33106101	16	18-40	480	1	1,30

<sup>1)</sup>For through fastening: Maximum drill hole depth through fixture

## Air gun VM-ABP 1000



- For assessment-compliant drill hole cleaning with compressed air for drill holes with a diameter larger than 16 mm
- For best drill hole cleaning, the nozzle of the air gun must reach the bottom of the drill hole

Description	Ref. No.	Nozzle-ø mm	For drill hole Ø mm	Max. drill hole depth <sup>1)</sup> mm	Pkg. cont. pcs.	Weight per piece kg
VM-ABP 1000	85806101	14	16-40	1000	1	0,32

<sup>1)</sup>For through fastening: Maximum drill hole depth through fixture

## Compressed Air System DLS

- For blowing out drill holes up to 3 m deep
- The connection set RS for connection to a compressor, an air hose RS and, for the injection system VME, the corresponding blow-out nozzle RD are required

## Air Valve RS



- Connection set RS with manual slide valve with air valve and connector for connection to a compressor

## Air hose RS



- Air hose RS, pre-assembled with connectors for connection between connection set RS and blow-out nozzle RD

## Blow-out nozzle RD



- Blow-out nozzles RD for optimum cleaning of the drill hole and the drill hole walls
- Fits on the air hose RS

Description	Ref. No.	For drill hole Ø mm	Max. drill hole depth <sup>1)</sup> mm	Length mm	Pkg. cont. pcs.	Weight per piece kg
Air hose RS	85890101	12 - 35	-	-	1	0,42
Air Valve RS 25	85802101	12 - 28	2000	2000	1	0,11
Air Valve RS 35	85804101	30 - 35	3000	3000	1	0,44
Blow-out nozzle RD 12/14	85852101	12 - 14	-	-	1	0,01
Blow-out nozzle RD 16/18	85854101	16 - 18	-	-	1	0,02
Blow-out nozzle RD 20/25	85856101	20 - 25	-	-	1	0,03
Blow-out nozzle RD 30/35	85858101	30 - 35	-	-	1	0,05

<sup>1)</sup>For through fastening: Maximum drill hole depth through fixture

**Cleaning Brush RB M6**

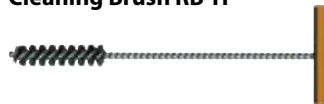

- For machine cleaning of drill holes
- Stainless steel trim for a long service life
- With connection thread M6
- For drilling machines with keyed chuck
- SDS plus adapter for use in a hammer drill
- Use brush extensions according to the drilling depth. Several brush extensions can be screwed together for further extension.

Description	Ref. No.	Suitable for drill hole Ø mm	Length mm	Filling length mm	Pkg. cont. pcs.	Weight per piece kg
RB 10 M6	33510101	10	130	80	1	0,03
RB 12 M6	33512101	12	140	80	1	0,03
RB 14 M6	33514101	14	180	80	1	0,04
RB 16 M6	33516101	16	200	100	1	0,05
RB 18 M6	33518101	18	200	100	1	0,06
RB 20 M6	33520101	20	220	100	1	0,10
RB 22 M6	33522101	22	220	100	1	0,10
RB 24 M6	33524101	24	250	100	1	0,11
RB 26 M6	33526101	25 / 26	290	100	1	0,12
RB 28 M6	33528101	28	260	100	1	0,11
RB 30 M6	33530101	30	350	100	1	0,12
RB 32 M6	33532101	32	350	100	1	0,13
RB 35 M6	33535101	35	350	100	1	0,14
RB 40 M6	33537101	40	350	100	1	0,15
RB 45 M6	on request	45	-	-	1	-
RB 55 M6	on request	55	-	-	1	-
Brush extention RBL M6	33968101	-	150	-	1	0,09
SDS Plus adapter RBL M6 SDS	33350101	-	110	-	1	0,06

**Cleaning Brush RB M8**


- Extra sturdy construction for machine cleaning of particularly deep drill holes
- Stainless steel trim for a long service life
- With connection thread M8
- For drilling machines with keyed chuck
- SDS plus adapter for use in a hammer drill
- Use brush extensions according to the drilling depth. Several brush extensions can be screwed together for further extension.

Description	Ref. No.	Suitable for drill hole Ø mm	Length mm	Filling length mm	Pkg. cont. pcs.	Weight per piece kg
RB 12 M8	85812101	12	180	140	1	0,05
RB 14 M8	85814101	14	180	140	1	0,05
RB 16 M8	85816101	16	180	140	1	0,05
RB 18 M8	85818101	18	180	140	1	0,05
RB 20 M8	85820101	20	180	140	1	0,05
RB 25 M8	85825101	25	180	140	1	0,06
RB 32 M8	85832101	32	180	140	1	0,08
RB 35 M8	85835101	35	180	140	1	0,08
Brush extention RBL M8	85871101	-	550	-	1	0,32
SDS Plus adapter RBL M8 SDS	85881101	-	110	9	1	0,07

**Cleaning Brush RB-H**


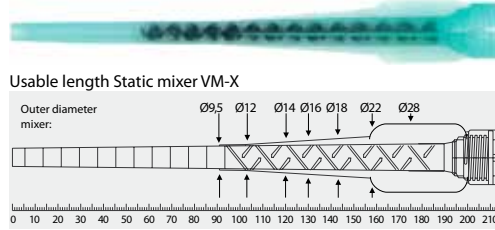
- For manual drill hole cleaning of non-approved systems in solid and perforated masonry
- Nylon trim
- With wooden handle

Description	Ref. No.	Suitable for drill hole Ø mm	Length mm	Pkg. cont. pcs.	Weight per piece kg
RB-H 12/250	29914501	8-12	250	1	0,04
RB-H 18/250	29918501	10-18	250	1	0,04
RB-H 18/400	33618101	10-18	400	1	0,05
RB-H 28/280	29928501	20-28	280	1	0,05
RB-H 28/400	33628101	20-28	400	1	0,06

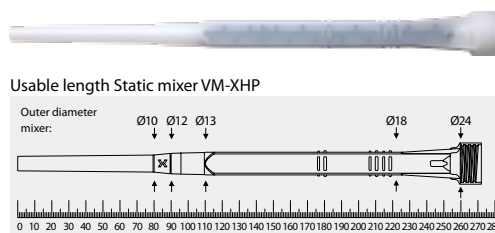
Static mixer

- ➔ To mix the two components of the injection adhesive
- ➔ Before each application, squeeze out an approx. 10cm long strand (initial strand). The initial strand is not suitable for fastening. (See European Technical Assessment and Installation Instructions)
- ➔ Usable length static mixer: Drill holes must always be filled from the bottom of the hole to ensure no air pockets are trapped in the adhesive. This is only possible when the tip of the mixing nozzle reaches the very bottom of the drill hole before injecting the adhesive. If the mixing nozzle does not reach the bottom of the drill hole, a mixer extension tube must be used.

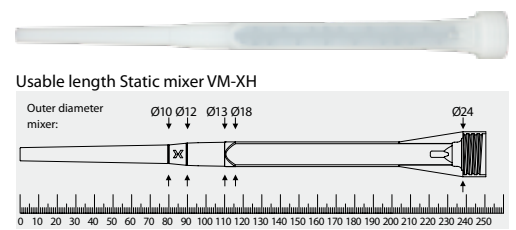
VM-X



VM-XHP



VM-XH



VM-XL



Description	Ref. No.	Suitable for Injection Systems / Cartridges	Length mm	Package content pcs.	Weight per pkg. kg
VM-X	28305111	VMZ: all Cartridges, VMU plus: 150ml, 280ml, 300ml, 345ml, 410ml VM-EA: all Cartridges VM-PY: all Cartridges	215	12	0,12
VM-XH	28304801	VMH: all Cartridges	250	12	0,16
<b>NEW</b> VM-XHP	28305301	VME plus: all Cartridges VMH: all Cartridges	272	12	0,18
VM-XL <sup>1)</sup>	28305201	VMU plus: all Cartridges VME: all Cartridges	245	10	0,28

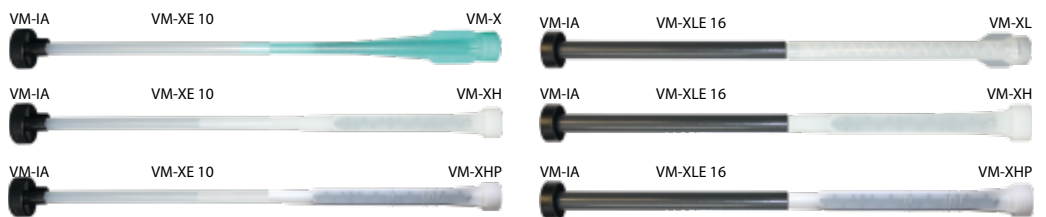
<sup>1)</sup>Static mixer VM-XL comes with a reducers / extension tube. Suitable for drill holes from 12mm diameter.

Extension tubes



- ➔ Extension tubes for deeper drill holes
- ➔ Extension tubes VM-XE and VM-XLE can be cut to the required length

Possible combinations static mixer / Extension tube / Retaining Washer:



Description	Ref. No.	Diameter mm	Length mm	Drill hole-Ø mm	Suitable for static mixer	Package content pcs.	Weight per pkg. kg
VM-XE 10/200	28306011	10	200	12 - 40		12	0,12
VM-XE 10/500	85951101	10	500	12 - 40	VM-X	10	0,20
VM-XE 10/1000	85952101	10	1000	12 - 40	VM-XHP VM-XL	10	0,30
VM-XE 10/2000	85954101	10	2000	12 - 40		10	0,65
VM-XLE 16/250	85959101	16	250	18 - 55	VM-XHP	10	0,30
VM-XLE 16/1000	85956101	16	1000	18 - 55	VM-XH	10	1,15
VM-XLE 16/2000	85958101	16	2000	18 - 55	VM-XL	10	3,50

**Retaining Washer VM-IA**


→ For bubble-free filling of the drill hole

→ Suitable for extension tubes VM-XE 10 and VM-XLE 16

Description	Ref. No.	Suitable for drill hole Ø mm	Pkg. cont. pcs.	Weight per pkg. kg
VM-IA 14	85914201	14	20	0,04
VM-IA 16	85916201	16	20	0,04
VM-IA 18	85918201	18	20	0,04
VM-IA 20	85920201	20	20	0,06
VM-IA 22	85922201	22	20	0,06
VM-IA 24	85924101	24	20	0,06
VM-IA 25	85925201	25 / 26	20	0,06
VM-IA 28	85928101	28	20	0,06
VM-IA 30	on request	30	-	-
VM-IA 32	85932201	32	20	0,08
VM-IA 35	85935201	35	20	0,10
VM-IA 40	85938201	40	20	0,10
VM-IA 45	on request	45	-	-
VM-IA 55	on request	55	-	-

**Dispenser VM-P Standard**


→ For occasional use, metal version

→ Piston rod with adjusting screw

Description	Ref. No.	Suitable for cartridge	Pkg. cont.	Weight per piece kg
VM-P 345 Standard	28350505	150ml, 280ml, 300ml, 345ml also suitable for silicone cartridges	1	1,00
VM-P 380 Standard	28353005	380ml, 410ml, 420ml	1	1,15
VM-P 385 Standard	28353010	385ml	1	1,33
VM-P 585 Standard	28352151	385ml, 440ml, 585ml	1	1,60

**Dispenser VM-P Profi**


→ Professional dispenser with an ideal center of gravity for more comfortable working

→ Automatic pressure release for minimum adhesive overrun

Description	Ref. No.	Suitable for cartridge	Pkg. cont.	Weight per piece kg
VM-P 345 Profi	28350511	150ml, 280ml, 300ml, 345ml also suitable for silicone cartridges	1	1,00
VM-P 380 Profi	28351001	380ml, 410ml, 420ml	1	1,10
VM-P 385 Profi	28353015	385ml	1	1,20

**Dispenser VM-P 585 Profi**


→ Professional dispenser with an ideal center of gravity for more comfortable working

→ Combi-tool for many different types of cartridges

→ Automatic pressure release for minimum adhesive overrun

Description	Ref. No.	Suitable for cartridge	Pkg. cont.	Weight per piece kg
VM-P 585 Profi	28353201	280ml, 300ml, 330ml, 380ml, 385ml, 410ml, 420ml, 440ml, 585ml also suitable for silicone cartridges	1	1,67



## Dispenser VM-P Akku



- Professional, solid battery cartridge dispenser
- Repeat function, for retrieving the last fill quantity
- Stepless variable pressing speed
- Overrun-quantity-stop by automatic return after release of the dispensing switch

Description	Ref. No.	Suitable for cartridge	Press-out force kN	Weight <sup>1)</sup> kg	Dimensions <sup>1)</sup> L x B x H mm	Pkg. cont.	Weight pro pcs. kg
VM-P 345 Akku	28350801	345ml	5,0	3,53	395 x 180 x 285	1	7,72
VM-P 380 Akku	28352601	380ml, 410ml, 420ml	3,95	3,62	375 x 180 x 285	1	7,80
VM-P 585 Akku	28353301	385ml, 440ml, 585ml	5,0	3,86	440 x 180 x 285	1	8,05
VM-P 825 Akku	28353501	825 ml	5,0	4,14	410 x 180 x 285	1	8,34
Accessories (for all models)							
Replacement battery	28352411		18 V/2,0 Ah			1	1,00
Shoulder strap	28359991		adjustable			1	0,18

<sup>1)</sup> with Akku 18V/2,0 Ah

## Dispenser VM-P Pneumatic



VM-P 345  
Pneumatic Eco



VM-P 380 /  
585 Pneumatic



VM-P 1400  
Pneumatic

- Professional air tool with an optimum center of gravity and quick cartridge exchange
- Automatic pressure release system reduces adhesive overrun to a minimum
- Single-hand pressure regulation to adjust the piston speed
- With compressed air connection nipple
- VM-P 825 Pneumatic and VM-P 1400 Pneumatic with additional handle

Description	Ref. No.	Suitable for cartridge	Maximum working pressure bar	Maximum Luftverbrauch l/min	Maximum Press-out force kN	Pkg. cont. pcs	Weight per piece kg
VM-P 345 Pneumatic Eco	28351601	280ml, 300ml, 345ml	6,8	40	2,2	1	2,55
VM-P 380 Pneumatic	28352002	380ml, 410ml, 420ml	8	40	4,0	1	2,80
VM-P 585 Pneumatic	28352101	385ml, 440ml, 585ml	8	40	4,0	1	3,20
VM-P 825 Pneumatic	28352110	825ml	8	40	4,0	1	5,00
VM-P 1400 Pneumatic	28352201	1400ml	8	40	8,3	1	7,00