

Injection System VMU plus



Threaded Stud VMU-A
for concrete and brickwork



Threaded Stud VM-A
1 meter length, to be cut to the required length for concrete and brickwork



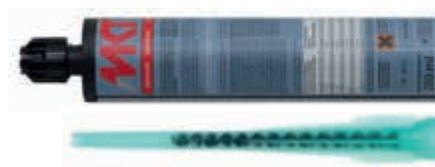
Threaded Stud VMU-AMH
for perforated brick with perfo sleeve



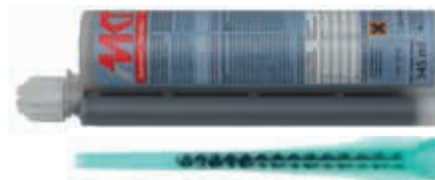
Perfo Sleeve VMU-SH
for perforated brick



Cartridge VMU plus 150
suitable for silicone guns
Content: 150ml



Cartridge VMU plus 280
suitable for silicone guns
Content: 280ml, including 2 mixers, attached to the cartridge



Cartridge VMU plus 345
Side-by-side cartridge
Content: 345ml



Cartridge VMU plus 410
Coaxial cartridge
Content: 410ml



Cartridge VMU plus 825
Side-by-side cartridge
Content: 825 ml
With big mixer VM-XL and reducers / extension tube for drill holes from 12mm diameter



Range of loading: 0,3 kN – 202,0 kN

Concrete quality: C20/25 - C50/60

Brickwork: Solid and perforated brick

Material: Steel zinc plated, hot dip galvanized, Stainless steel A4/316

On request: Stainless steel HCR

Description

The injection system VMU plus is a new universal injection system for almost all applications and materials. Besides the use in non-cracked concrete and masonry, VMU plus is also approved for fixings in cracked concrete and for post installed rebar connections. To complete the fastening, various anchor rods or internal sleeves can be used from the existing MKT-range (VMU-A, VM-A and VA), as well as standard threaded rods or reinforcing bars. In perforated brick, a perfo sleeve is required.

Advantages

- Only one mortar for almost all applications, more flexibility, less inventory, greater application security
- approved for cracked (M12-M30) and non-cracked concrete (M8-M30)
- approved for post-installed rebar connections (Ø8-Ø32)
- approved for solid and perforated brickwork
- approved with standard threaded studs (strength test required)
- base material temperature during installation -10°C (concrete) to +40°C
- environmental temperature when completely cured -40°C to +120°C (concrete)
- variable anchorage depth for less drilling efforts
- fire test report
- opened cartridges can be re-used with a new mixer nozzle
- styrene-free vinyl ester resin
- Approved application in wet or water-filled drill holes (M8-M16)
- Approved to use under seismic action according to the performance category C1

NEW

Applications

Fastenings in cracked and non-cracked concrete:

Base plates, supports, mounting of joint tapes, shelves, brackets, railings, facade substructures, wooden structures, cable trays, etc.

Fastenings with rebars in cracked and non-cracked concrete - with shear forces:

Shear connectors, wall connecting reinforcement, concrete overlay

Post-installed rebar connections:

Ceiling and wall connections, structural reinforcement, structural complement building extensions, connection of balconies and canopies, subsequent attaching of „forgotten“ reinforcing bars

Fastenings in Brickwork:

Canopies, door and window frames, facade substructures, battens, gates etc.



Injection Cartridge VMU plus



- Two component cartridge, styrene-free
- Approved for non-cracked concrete and brickwork

Description	Ref. No.	Content ml	Cont. of master box pcs	Weight per master box kg	Weight per piece kg
Cartridge VMU plus 150	28255271	150	12	4,20	0,34
Cartridge VMU plus 280 ¹⁾	28252401	280	12	6,70	0,56
Cartridge VMU plus 345	28254001	345	12	8,00	0,65
Cartridge VMU plus 410	28256041	410	12	10,1	0,83
Cartridge VMU plus 825	28259001	825	8	13,0	1,63
Static mixer VM-X	28305111	-	12	0,12	0,01
Static mixer VM-XL ²⁾	28305201	-	10	0,28	0,03
Mixer extension VM-XE 10/200 (200mm)	28306011	-	12	-	0,01
Mixer extension VM-XE 10/500 (500mm)	85951101	-	10	0,02	0,02

One static mixer VM-X as well as one screw-on cap comes with each cartridge. (VMU plus 825: VM-XL)

Usable length of static mixer see page 85.

¹⁾Cartridge VMU 280 comes with 2 mixers.

²⁾With larger cross section for larger drill holes or post-installed rebar connections.

Curing Time Injection Adhesive VMU plus

- Cartridge temperature when installing min. +5°C

Temperatur (°C) im Bohrloch	Verarbeitungszeit	Aushärtezeit	
		trockener Beton	feuchter Beton
≥ +40°C ¹⁾	1,5 min	15 min	30 min
≥ +35°C ¹⁾	2 min	20 min	40 min
≥ +30°C ¹⁾	2,5 min	25 min	50 min
≥ +25°C ¹⁾	4 min	45 min	90 min
≥ +20°C	6 min	45 min	90 min
≥ +10°C	15 min	80 min	160 min
≥ +5°C	25 min	2 h	4 h
≥ 0°C ²⁾	45 min	7 h	14 h
≥ -10°C ¹⁾²⁾	90 min	24 h	48 h

¹⁾Cartridge temperature ≤ +20°C

²⁾Processing brickwork ≥ +5°C

³⁾Cartridge temperature ≥ +15°C

The hole must be cleaned directly prior to the installation of the anchor.



Stock-Box

- In stackable multi-purpose container
- Stock-Box, the container for various items

Description	Ref. No.	Contents	Quantity pcs.	Weight per Box kg
Stock-Box VMU plus 345	28999640	Cartridge VMU plus 345 Static mixer VM-X	20 40	15,3
Stock-Box VMU plus 410	28999652	Cartridge VMU plus 410 Static mixer VM-X	20 40	18,0

Dimensions Stock-Box

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

Chemical Anchors

Threaded Studs for applications in solid and hollow base material

Threaded Stud VMU-A
Threaded Stud VMU-AMH
 Steel, zinc plated 5.8
 Stainless steel A4

- Threaded Stud VMU-A approved for solid base material and hollow base material with perfo sleeve
- Threaded Stud VMU-AH approved for solid- and hollow base material with perfo sleeve
- Steel hot dip galvanized and stainless steel HCR (1.4529) on demand

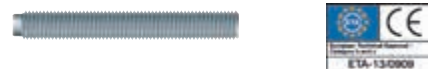


Description	Steel, zinc plated 5.8	Stainless steel A4	Maximum Fixture thickness t _{fix} mm	Solid base material without SH		Solid and hollow base material with SH		Pkg. cont.	Weight per pkt. kg
	Ref. No.	Ref. No.		Drill hole Ø x depth mm	perfo sleeve	Drill hole Ø x depth mm			
VMU-A 8-10/100	31510101	31510501	10	10 x 85	VMU-SH 14x100	14 x 105	10	0,42	
VMU-A 8-20/110	31515101	31515501	20	10 x 85	VMU-SH 14x100	14 x 105	10	0,46	
VMU-A 8-40/130	31525101	31525501	40	10 x 85	VMU-SH 14x100	14 x 105	10	0,52	
VMU-A 8-55/145	31528101	31528501	55	10 x 85	VMU-SH 14x100	14 x 105	10	0,55	
VMU-A 8-70/160	31530101	31530501	70	10 x 85	VMU-SH 14x100	14 x 105	10	0,60	
VMU-A 8-115/205	31550101	31550501	115	10 x 85	VMU-SH 14x100	14 x 105	10	0,74	
VMU-A 10-10/110	31605101	31605501	10	12 x 95	VMU-SH 16x100	16 x 105	10	0,75	
VMU-A 10-30/130	31625101	31625501	30	12 x 95	VMU-SH 16x100	16 x 105	10	0,85	
VMU-A 10-50/150	31630101	31630501	50	12 x 95	VMU-SH 16x100	16 x 105	10	0,95	
VMU-A 10-65/165	31635101	31635501	65	12 x 95	VMU-SH 16x100	16 x 105	10	1,02	
VMU-A 10-90/190	31645101	31645501	90	12 x 95	VMU-SH 16x100	16 x 105	10	1,15	
VMU-A 10-160/260	31655101	31655501	160	12 x 95	VMU-SH 16x100	16 x 105	10	1,50	
VMU-A 12-15/120	31717101	31717501	15	14 x 98	-	-	10	1,14	
VMU-A 12-25/130	31718101	31718501	25	14 x 98	-	-	10	1,21	
VMU-A 12-50/155	31732101	31732501	50	14 x 98	-	-	10	1,42	
VMU-A 12-80/185	31734101	31734501	80	14 x 98	-	-	10	1,63	
VMU-A 12-120/225	31748101	31748501	120	14 x 98	-	-	10	1,89	
VMU-A 12-160/265	31757101	31757501	160	14 x 98	-	-	10	2,18	
VMU-AMH 12-15/120	31302191	31302591	15	-	VMU-SH 16x100	16 x 105	10	0,92	
VMU-AMH 12-25/130	31304191	31304591	25	-	VMU-SH 16x100	16 x 105	10	0,99	
VMU-AMH 12-50/155	31306191	31306591	50	-	VMU-SH 16x100	16 x 105	10	1,18	
VMU-AMH 12-80/185	31310191	31310591	80	-	VMU-SH 16x100	16 x 105	10	1,38	
VMU-AMH 12-120/225	31312191	31312591	120	-	VMU-SH 16x100	16 x 105	10	1,68	
VMU-AMH 12-160/265	31315191	31315591	160	-	VMU-SH 16x100	16 x 105	10	1,97	

Chemical Anchors

Internally Threaded Sleeve VMU-IG
 Steel, zinc plated 5.8
 Stainless steel A4

- With internal thread
- Approved for solid base material without perfo sleeve



Description	Steel, zinc plated 5.8	Stainless steel A4	Drill hole Ø x depth mm	Outer-Ø x anchor length mm	Thread depth min s / max s mm	Package content pcs	Weight per pkg. kg
	Ref. No.	Ref. No.					
VMU-IG M6	31500101	31500501	12 x 98	10 x 93	8 / 20	10	0,50
VMU-IG M8	31560101	31560501	14 x 98	12 x 93	8 / 20	10	0,60

Internally Threaded Sleeve VMU-IGH¹⁾
 Steel, zinc plated 5.8
 Stainless steel A4

- With internal thread
- Recommended for solid and hollow base material with perfo sleeve



Description	Steel, zinc plated 5.8	Stainless steel A4	Drill hole Ø x depth mm	Outer-Ø x anchor length mm	Thread depth min s / max s mm	Package content pcs	Weight per pkg. kg
	Ref. No.	Ref. No.					
VMU-IGH M 6	31060111	31060511	16x105	12 x 93	8 / 20	10	0,50
VMU-IGH M 8	31160111	31160511	16x105	12 x 93	8 / 20	10	0,50

¹⁾not part of approval ET-13/0909

Perfo Sleeve VMU-SH

- Polypropylene
- Approved for solid and hollow base material



Description	Ref. No.	Drill hole Ø x depth mm	suitable for		Package content pcs	Weight per pkg. kg
			threaded studs	internally threaded sleeves		
VMU-SH 14x100	28171301	14x105	M8		10	0,03
VMU-SH 16x100	28171501	16x105	M10-M12 ¹⁾	IGH M6-M8	10	0,04

¹⁾M12 only as VMU-AMH

Accessoires

Cleaning brush RB M6



- With connection thread M6
- Extensions for large depths
- For drilling machines with keyed chuck or with SDS plus adaptor for SDS plus drills

Description	Ref. No.	Suitable for drill hole Ø mm	Total length of brush mm	Suitable for		Pkg. cont. pcs.	Weight per piece kg
				Threaded stud	Internally threaded sleeve		
RB 10 M6	33510101	10	130	M8	-	1	0,05
RB 12 M6	33512101	12	140	M10	Ø8	1	0,05
RB 14 M6	33514101	14	180	M12	Ø10	1	0,05
RB 16 M6	33516101	16	200	-	Ø12	1	0,05
RB 18 M6	33518101	18	200	M16	Ø14	1	0,05
RB 20 M6	33520101	20	220	-	Ø16	1	0,05
RB 24 M6	33524101	24	250	M20	Ø20	1	0,06
RB 26 M6	33526101	25,26	290	-	Ø20	1	0,06
RB 28 M6	33528101	28	260	M24	Ø22	1	0,06
RB 32 M6	33532101	32	350	M27	Ø24,25	1	0,08
RB 35 M6	33535101	35	350	M30	Ø28	1	0,08
RB 40 M6	33537101	40	350	-	Ø32	1	0,08
RBL M6	33968101	Brush extension 150 mm with connection thread M6				1	0,09
RBL M6 SDS	33350101	SDS Plus adapter with internal thread (M6)				1	0,06

Blow-out pump VM-AP



- Drill hole cleaning up to 240mm drill hole depth or up to Ø 20mm diameter

Description	Ref. No.	Suitable for maximum depth of drill hole mm	Pkg. cont. pcs.	Weight per piece kg
VM-AP 360	33200101	330	1	0,27

Accessories injecting

Retaining Washer VM-IA



- For bubble-free filling of the drill hole
- Suitable for extension tubes VM-XE and VM-XLE

Description	Ref. No.	Suitable for drill hole Ø mm	Color	Suitable for		Pkg. cont. pcs.	Weight per pkg. kg
				Threaded stud	Rebar		
VM-IA 14	85914201	14	black	M12	Ø10	20	0,02
VM-IA 16	85916201	16	black	-	Ø12	20	0,02
VM-IA 18	85918201	18	black	M16	Ø14	20	0,02
VM-IA 20	85920201	20	black	-	Ø16	20	0,06
VM-IA 24	85924101	24	black	M20	Ø20	20	0,06
VM-IA 25	85925201	25	black	-	Ø20	20	0,06
VM-IA 28	85928101	28	black	M24	Ø22	20	0,08
VM-IA 32	85932201	32	black	M27	Ø24, 25	20	0,08
VM-IA 35	85935201	35	black	M30	Ø28	20	0,08
VM-IA 40	85938201	40	black		Ø32	20	0,08

Cleaning brush RB-H 18

with handle



- Drill hole cleaning in solid and hollow base material

Description	Ref. No.	Suitable for drill hole Ø mm	Length of brush mm	Pkg. cont. pcs.	Weight per piece kg
RB-H 18/250	29918501	10-16	250	1	0,04
RB-H 18/400	33618101	10-16	400	1	0,05

Air gun VM-ABP



- Drill hole cleaning with compressed air for holes up to one meter

- For best drill hole cleaning the nozzle of the air-gun must reach to the bottom of the drill hole

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

Air gun VM-ABP



- Drill hole cleaning with compressed air for holes deeper than 240mm or larger than Ø 20mm diameter

- For best drill hole cleaning the nozzle of the air-gun must reach to the bottom of the drill hole

Description	Ref. No.	Nozzle Ø mm	Suitable for maximum depth of drill hole mm	For drill hole Ø mm	Pkg. cont. pcs.	Weight per piece kg
VM-ABP 250	33100101	16	240	18-40	1	1,00
VM-ABP 500	33106101	10	480	18-40	1	1,30

Extension tubes

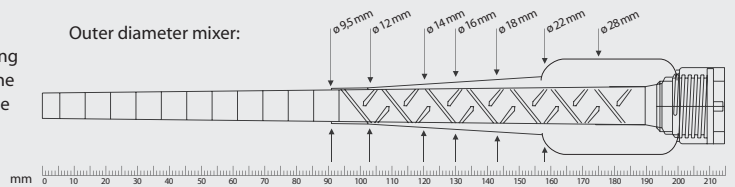


- Extension tubes for deeper drill holes
- Two diameters available

Description	Ref. No.	Length mm	Ø mm	To use in conjunction with	Pkg. cont. pcs.	Weight per pkg. kg
VM-XE 10/200	28306011	200	10	VM-XL, VM-X, VM-XP	12	0,12
VM-XE 10/500	85951101	500	10	VM-XL, VM-X, VM-XP	10	0,20
VM-XLE16/250	85959101	250	16	VM-XL	10	0,30
VM-XLE16/1000	85956101	1000	16	VM-XL	10	1,15

Usable length Static mixer VM-X/VM-XP

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



Possible combinations static mixer / Extension tube / Retaining Washer:



Dispenser VM-P Profi



- ➔ Professional dispenser with an ideal center of gravity for more comfortable working
- ➔ Automatic pressure release for minimum mortar overrun

Description	Ref. No.	Suitable for cartridge	Pkg. cont. pcs	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

Dispenser VM-P Standard



- ➔ For occasional use, metal version
- ➔ Piston rod with adjusting screw

Description	Ref. No.	Suitable for cartridge	Pkg. cont. pcs	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

Dispenser VM-P Pneumatic



- ➔ Professional air tool with an optimum center of gravity and quick cartridge exchange
- ➔ Automatic pressure release system reduces mortar overrun to a minimum
- ➔ Single-hand pressure regulation to adjust the piston speed

Description	Ref. No.	Suitable for cartridge	Pkg. cont. pcs	Weight per piece kg
VM-P 345 Pneumatic	28350601	345ml max. working pressure 8 bar, 40l/min	1	2,41
VM-P 380 Pneumatic	28352002	380ml, 410ml, 420ml max. working pressure 8 bar, 40l/min	1	2,00

Chemical Anchors

System case and accessories for post-installed rebar connections to use with injection system VMU plus (fast curing time) or the injection system VME (long curing times, optimized for very large and deep drill holes)

Description and content:

Compact system case including equipment for every rebar diameter as well as all the tools necessary for the installation of post-installed rebar connections using the Injection System VME or VMU plus. All parts also sold separately.



Drilling:

- Drilling aid device
- Flat- / Ring wrench

Accessories for drill hole cleaning:

- 1 of each air hose RS 25 and RS 35
- 1 of each blow-out nozzle RD 12/14, 16/18, 20/25, 30/35
- 1 of each cleaning brush RB 12 M8 – RB 35 M8
- Connection set RS with air valve and connector
- 5 Brush extensions RBL M8, L = 500 mm
- 1 SDS-plus adapter RBL M8-SDS

Accessories for injection:

- 5 Static mixer VM-XL
- 5 of each retaining washer VM-IA Ø12 mm - Ø35 mm
- 5 of each extension tube VM-XE 10/500 and VM-XLE 16/500
- Frame saw

Other:

- Approval
- Installation sheet and Installation report (available for download at www.mkt.de)
- Filling quantity tables
- Adhesive tape
- Measuring tape
- Thermometer
- Ear protection, Breathing protection, Protective goggles and protective gloves

Description	Ref. No.	Suitable for drill hole-Ø mm	Pkg. content pcs.	Weight per piece kg
VME System case	85999101	12 - 35	1	11,8

System Components

- Filling of drill hole
- For drill hole diameter 12 - 35 mm

Description	Ref. No.	Length mm	Rebar-Ø mm	Suitable for drill hole Ø mm	Colour	Package content pcs.	Weight per pck. kg
Extension pipe							
VM-XE 10/1000	85952101	1000	8 - 12	12 - 16	white	10	0,30
VM-XE 10/2000	85954101	2000	8 - 12	12 - 16	white	10	0,65
VM-XLE 16/1000	85956101	1000	14 - 28	18 - 35	grey	10	1,15
VM-XLE 16/2000	85958101	2000	14 - 28	18 - 35	grey	10	3,50
Retaining washer (only for post-installed rebar connections. Fits to the system case)							
VME-IA 12	85912101	-	8	12	white	20	0,04
VME-IA 14	85914101	-	10	14	yellow	20	0,01
VME-IA 16	85916101	-	12	16	blue	20	0,02
VME-IA 18	85918101	-	14	18	black	20	0,01
VME-IA 20	85920101	-	16	20	grey	20	0,02
VME-IA 25	85925101	-	20	25	green	20	0,05
VME-IA 32	85932101	-	25	32	brown	20	0,10
VME-IA 35	85935101	-	28	35	red	20	0,12

Extension pipe VM-XE and VM-XLE can be cut to corresponding drill hole depth.
Extension pipe > 2000 mm on demand.

Reinforced brushes RB M8

- Reinforced brushes with connecting thread M8 for deeper drill holes

Description	Ref. No.	Rebar-Ø mm	Suitable for drill hole Ø mm	Pkg. content pcs.	Weight per piece kg
RB 12 M8	85812101	8	12	1	0,05
RB 14 M8	85814101	10	14	1	0,05
RB 16 M8	85816101	12	16	1	0,05
RB 18 M8	85818101	14	18	1	0,05
RB 20 M8	85820101	16	20	1	0,05
RB 25 M8	85825101	20	25	1	0,06
RB 32 M8	85832101	25	32	1	0,08
RB 35 M8	85835101	28	35	1	0,08
Brush extension RBL M8, L= 500 mm	85871101	8 - 28	12 - 35	1	0,32
SDS-Plus adapter RBL M8 SDS	85881101	-	12 - 35	1	0,07

Please select Brush extension RBL and SDS-Plus adapter according to depth of drill hole.
For drill hole depth > 500 mm, the proper number of Brush extensions must be connected.

Blow-out nozzle



- Every nozzle covers two drill hole diameters
- Fits on the air hose RS

Description	Ref. No.	Rebar-Ø mm	Suitable for drill hole-Ø mm	Pkg. content pcs.	Weight per piece kg
Blow-out nozzle RD 12/14	85852101	8 - 10	12 - 14	1	0,01
Blow-out nozzle RD 16/18	85854101	12 - 14	16 - 18	1	0,02
Blow-out nozzle RD 20/25	85856101	16 - 20	20 - 25	1	0,03
Blow-out nozzle RD 30/35	85858101	24 - 28	30 - 35	1	0,05

Air hose



- Two diameters, pre-assembled set with connectors
- To use with air valve and blow-out nozzle

Description	Ref. No.	Rebar-Ø mm	Suitable for drill hole-Ø mm	Pkg. content pcs.	Weight per piece kg
Air hose RS 25 (2 m)	85802101	8 - 20	12 - 25	1	0,10
Air hose RS 35 (3 m)	85804101	24 - 28	30 - 35	1	0,40

Air Valve



- For drill hole cleaning with compressed air

Description	Ref. No.	Rebar-Ø mm	Suitable for drill hole-Ø mm	Pkg. content pcs.	Weight per piece kg
Connection Set RS with valve and connector	85890101	8 - 28	12 - 35	1	0,40



Auszug aus den Anwendungsbedingungen der Zulassung ETA-13/0909

Approved loads for single anchor without influence of spacing and edge distance.

Total safety factor as per ETAG included (γ_m und γ_r).

Loads and performance data	Injection system VMU plus with threaded stud VMU-A/AMH/IG, VM-A steel z.p. / s.S. A4 / s.S. HCR in masonry	Solid brick		Hollow block		Hollow block		
		KSV-NF	Mz-NF	KSL-R-12-1,2-16DF	KSL-12-1,2-16DF	Hz-12-0,8-xxDF	Hz-12-0,9-16DF	
Dimension	p	[kg/dm ³]	1,8	1,8	1,2	1,2	0,8	0,9
Compressive strength	f _b	[N/mm ²]	8	12	12	1,2	12	12
Range of temperature 24°C/40°C²⁾ - use category dry/dry²⁾								
without perfo sleeve:								
M8	appr. N/V ¹⁾	[kN]	1,1	1,1	-	-	-	-
M10, M12	appr. N/V ¹⁾	[kN]	1,2	1,4	-	-	-	-
IG M6, IG M8	appr. N/V ¹⁾	[kN]	1,2	1,4	-	-	-	-
with perfo sleeve:								
M8	appr. N/V ¹⁾	[kN]	1,2	1,0	1/0,7	0,7/0,6	0,6	0,9/0,6
M10, AMH M12	appr. N/V ¹⁾	[kN]	1,2	1,3	-	0,9/0,7	0,6/0,7	-
Temperaturbereich 50°C/80°C¹⁾ - Nutzungskategorie trocken/trocken²⁾								
without perfo sleeve:								
M8	appr. N/V ¹⁾	[kN]	0,9	0,9	-	-	-	-
M10, M12	appr. N/V ¹⁾	[kN]	1,2	1,3	-	-	-	-
IG M6, IG M8	appr. N/V ¹⁾	[kN]	1,2	1,3	-	-	-	-
with perfo sleeve:								
M8	appr. N/V ¹⁾	[kN]	1,2	0,9	1/0,7	0,7/0,6	0,6	0,9/0,6
M10, AMH M12	appr. N/V ¹⁾	[kN]	1,2	1	-	0,9/0,7	0,6/0,7	-
Min. spacing parallel to bearing joint	S _{min,}	[mm]	240	240	498	498	373	498
Min. spacing perpendicular to bearing joint	S _{min,⊥}	[mm]	71	71	248	238	238	238
Min. edge distance without perfo sleeve	C _{min}	[mm]	135 (120) ³⁾	135 (120) ³⁾	100	100	100	100
Min. edge distance with perfo sleeve	C _{min}	[mm]	150	150	100	100	100	100

			VMU-A / V-A			VMU-AMH	VMU-IG	
			M8	M10	M12	M12	M6	M8
Appr. bending moments (Steel, zinc plated 5.8)	appr. M	[Nm]	10,9	21,1	37,1	21,1	4,0	10,9
Appr. bending moments (Stainless steel A4/316)	appr. M	[Nm]	11,9	23,8	41,7	23,8	5,0	11,9

¹⁾ long term temperature/ short term temperature

²⁾ Installation / use

³⁾ Value in brackets with perfo sleeve

The installation in wet brickwork (at installation and in service) is also possible and approved. The capacities in wet brickwork are slightly lower than in dry brickwork. For load capacities refer to the approval ETA-13/0909.

Installation parameters in solid brickwork (without a perfo sleeve)

Type of Threaded Stud	VMU-A, VM-A, V-A				VMU-IG		
	M8	M10	M12	IG M6	IG M8		
Thread	M8	M10	M12	IG M6	IG M8		
Drill hole diameter	d _o	[mm]	10	12	14	12	14
Setting depth / anchorage depth	h _{ef}	[mm]	80	90	≥ 93	93	93
Depth of drill hole	h _o ≥	[mm]	85	95	98	98	98
Clearance hole in the fixture	d _f ≤	[mm]	9	12	14	7	9
Diameter cleaning brush	d _B ≥	[mm]	20	20	20	20	20
Installation torque	≤ T _{inst}	[Nm]	2	2	2	2	2
Amount of mortar per drill hole		[ml]	5,2	7,3	9,8	7,3	9,8

Installation parameters in solid and hollow base material (with a perfo sleeve)

	VMU-A, VM-A, V-A		VMU-AMH		
	M8	M10	M12		
Thread	M8	M10	M12		
Drill hole diameter	d _o	[mm]	14	16	16
Setting depth/anchorage depth perfo sleeve	h _{nom}	[mm]	100	100	100
Setting depth/anchorage depth stud	h _{ef}	[mm]	80	90	93
Depth of drill hole	h _o ≥	[mm]	105	105	105
Clearance hole in the fixture	d _f ≤	[mm]	9	12	14
Diameter cleaning brush	d _B ≥	[mm]	20	20	20
Installation torque	≤ T _{inst}	[kN]	2	2	2
Amount of mortar per drill hole		[ml]	15,0	21,0	21,0

Installation

