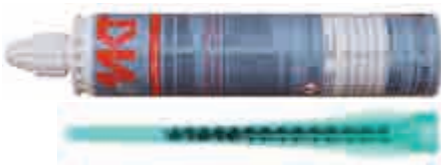


Injection Adhesive VM-PY



Cartridge VM-PY 300
Foil tube cartridge
suitable for silicon guns
Content: 300ml



Cartridge VM-PY 410
Coaxial cartridge
Content: 410ml

Range of loading: 0,3 kN - 39,4 kN

Concrete quality: C20/25 - C50/60

Masonry: Solid and perforated brickwork

Description

The Injection Adhesive is a polyester-resin based Injection Adhesive for bonding threaded rods and reinforcing steel in concrete, masonry or natural stone.

Both components are contained in the cartridge and mixed when dispensed through the static mixer. The Injection Adhesive is injected directly into the drilled hole or perfo sleeve with a dispenser gun. The anchoring element is inserted into the filled hole (perfo sleeve) by hand. After the adhesive has cured, the anchoring element can have the load applied.

Advantages

- Suitable for most construction base materials as concrete, masonry, natural stone
- Can be used as a repair adhesive
- Sealed drill-hole
- Opened cartridges can be re-used with a new static mixer
- Suitable for many anchoring elements e.g. threaded rods, female-thread sleeves, concrete steel, hooks, screws etc.



Injection Cartridge VM-PY



- For universal use in most base materials
- For solid and perforated brickwork, concrete

Description	Ref. No.	Content ml	Content of master box pcs	Weight per master box kg	Weight per piece kg
NEW Cartridge VM-PY 300	28252801	300	12	6,40	0,53
Cartridge VM-PY 410	28256002	410	12	9,95	0,83
Static mixer VM-X	28305111	-	12	0,12	0,01
Mixer extension VM-XE 10/200 (200mm)	28306011	-	12	-	-

One static mixer comes with each cartridge.
Usable length of static mixer see page 106.

Threaded Stud for applications in non-cracked concrete and brickwork

Threaded Stud VMU-A

Steel, zinc plated 5.8
Dimensions see page 107



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

Threaded Stud VMU-A A4

Stainless steel A4
Dimensions see page 107



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

Threaded Stud V-A

Steel, zinc plated 5.8
Dimensions see page 144



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

Threaded Stud V-A A4

Stainless steel A4
Dimensions see page 144



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

Threaded Stud V-A fvz

Steel, hot dip galvanized 5.8
Dimensions see page 144



- For use in structures subject to dry internal conditions
- Steel hot dip galvanized 8.8 on demand

Threaded Stud V-A HCR

Stainless steel HCR
Dimensions see page 144



- 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 108



- 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
Dimensions see page 108

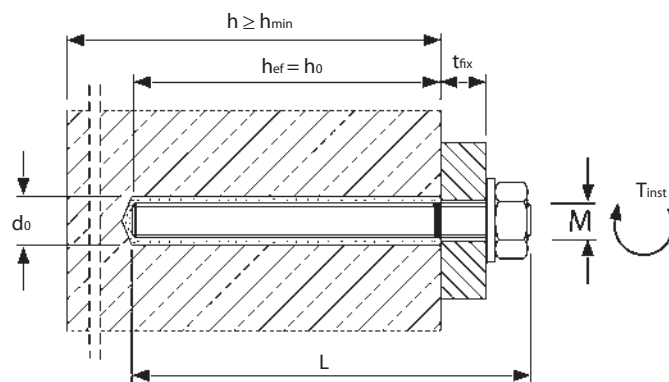


- Threaded studs, of 1 meter length, to be cut to the required length
- Comes with manufacturer's certificate (3.1 EN 10204) in every package

Recommended loads for single anchor without influence of spacing and edge distance for temperature range -40°C to +50°C/+80°C¹⁾.
 Total safety factor as per ETAG included (γ_M and γ_p).

Loads and performance data	Injection Adhesive VM-PY with Threaded Studs V-A/VM-A/VMU-A in concrete		M8	M 10	M 12	M 16	M20	
								non-cracked concrete
Rec. loads, tension (Steel 5.8)	$\geq C20/25$	rec. N	[kN]	4,4	6,7	9,5	10,7	18,3
Rec. loads, shear (Steel 5.8)	$\geq C20/25$	rec. V	[kN]	5,1	8,6	12,0	22,3	34,9
Rec. bending moments (Steel 5.8)		rec. M	[Nm]	10,9	21,1	37,1	94,9	185,1
Rec. loads, tension (A4)	$\geq C20/25$	rec. N	[kN]	4,4	6,7	9,5	10,7	18,3
Rec. loads, shear (A4)	$\geq C20/25$	rec. V	[kN]	6,0	9,2	13,7	25,2	39,4
Rec. bending moments (A4)		rec. M	[Nm]	11,9	23,8	42,1	106,2	207,9
Spacing and edge distance								
Effective anchorage depth		h_{ef}	[mm]	80	90	110	125	170
Characteristic spacing		$s_{cr,N}$	[mm]	160	180	220	250	340
Characteristic edge distance		$c_{cr,N}$	[mm]	80	90	110	125	170
Minimum thickness of concrete slab		h_{min}	[mm]	110	120	140	161	218
Minimum spacing		s_{min}	[mm]	40	50	60	80	100
Minimum edge distance		c_{min}	[mm]	40	50	60	80	100
Installation parameters								
Drill hole diameter		d_o	[mm]	10	12	14	18	24
Clearance hole in the fixture		d_f	[mm]	9	12	14	18	22
Depth of drill hole		h_o	[mm]	80	90	110	125	170
Installation torque		T_{inst}	[Nm]	10	20	40	60	120
Width across nut		SW	[mm]	13	17	19	24	30
Amount of adhesive per drill hole			[ml]	5,2	7,3	10,8	17,1	45,4
Drill holes per cartridge VM-PY 410			[pcs.]	71	50	34	21	8

¹⁾ max. long term temperature +50°C / max. short term temperature +80°C

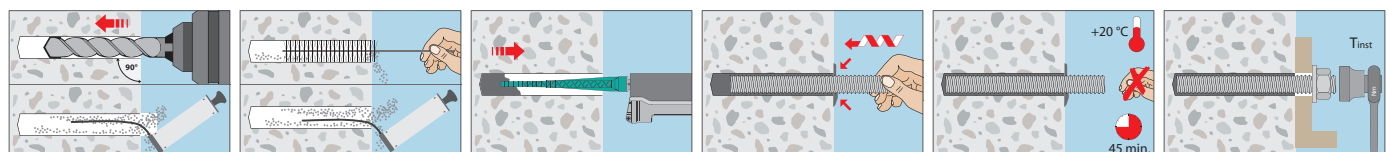


**Curing Time
Injection Adhesive VM-PY**

→ Cartridge temperature when installing min. + 5°C.

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

Installation in Concrete



Accessories for Injection Systems

Int. Threaded Sleeve VM-IG



- Steel, zinc plated
- Installation in hollow base materials

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

Int. Threaded Sleeve V-IG



- Steel, zinc plated grade 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 A4	24105501	14x90	M8x25	10	0,50
V-IG M 10 A4	24205501	16x90	M10x30	10	0,65
V-IG M 12 A4	24305501	18x100	M12x35	10	1,00
V-IG M 16 A4	24505501	25x120	M16x40	10	1,65

Perfo Sleeve VM-SH

Polypropylen



- Polypropylene
- Installation in hollow base materials

Description	Ref. No.	Drill hole Ø x depth mm	For threaded studs	For internally threaded sleeves	Suitable for cleaning brush	Package content	Weight per package
			mm			pcs.	kg
VM-SH 12 x 50	28151001	13 x 55	M8	-	RB 12 M6	10	0,01
VM-SH 12 x 80	28151201	12 x 85	M8	-	RB 12 M6	10	0,02
VM-SH 16 x 85	28152001	16 x 90	M8 / M10	VMU-IG M6 x 80	RB 16 M6	10	0,03
VM-SH 16 x 130	28153001	16 x 135	M8 / M10	-	RB 16 M6	10	0,04
VM-SH 20 x 85	28154001	20 x 90	M12 / M16	VMU-IG M8 x 80/VMU-IG M10 x 80	RB 20 M6	10	0,04
VM-SH 20 x 130	28154301	20 x 135	M12 / M16	-	RB 20 M6	10	0,07
VM-SH 20 x 200	28154601	20 x 205	M12 / M16	-	RB 20 M6	10	0,10

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

Centering Sleeve VM-ZR



- Plastic
- Avoid sliding of Threaded Stud in drill hole.

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

Cleaning Brush RB M6



RB M6, with connection thread M6



RBL M6, with internal and external thread M6



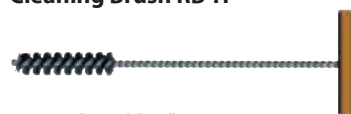
RBL M6 SDS, with internal thread M6

→ With connection thread M6 – extension for large depths of drill hole and/or for through-setting installation

→ For drilling machines with keyed chuck or with SDS plus adaptor for SDS plus drill holders

Description	Ref. No.	For drill hole Ø mm	Total length of brush mm	Base material	Suitable for Threaded stud	Pkg. cont. pcs	Weight per piece kg
RB 10 M6	33510101	10	130	concrete	M8	1	0,05
RB 12 M6	33512101	12	140	concrete	M10	1	0,05
RB 14 M6	33514101	14	180	concrete	M12	1	0,05
RB 18 M6	33518101	18	200	concrete	M16	1	0,05
RB 24 M6	33524101	24	250	concrete	M20	1	0,06
RB 28 M6	33528101	28	260	concrete	M24	1	0,06
RB 32 M6	33532101	32	350	concrete	M27	1	0,06
RB 35 M6	33535101	35	350	concrete	M30	1	0,08
RBL M6	33968101	Brush extension 150mm with connection thread M6				1	0,09
RBL M6 SDS	33350101	SDS Plus adapter with internal thread M6				1	0,06

Cleaning Brush RB-H



RB-H 18 Nylon, with handle

→ Drill hole cleaning in solid and hollow base material

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

Blow-out pump VM-AP



→ Drill hole cleaning by hand

Description	Ref. No.	Length mm	For drill hole Ø mm	For depth of drill hole mm	Pkg. cont. pcs	Weight per piece kg
Blow-out pump VM-AP 270	29990002	270	≤ 20	≤ 200	1	0,22
Blow-out pump VM-AP 360	33200101	360	≤ 20	≤ 300	1	0,27

Air gun VM-ABP



→ Drill hole cleaning with compressed air

Description	Ref. No.	Nozzle-Ø mm	For drill hole Ø mm	Max. drill hole depth ¹⁾ 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

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	For 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

Retaining Washer VM-IA



- For bubble-free filling of the drill hole
- Suitable for extension pipes 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

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 10/500	85951101	500	10	VM-XL, VM-X	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

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. 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 adhesive overrun to a minimum
- Single-hand pressure regulation to adjust the piston speed
- With compressed air connection nipple

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

Dispenser VM-P Akku



¹⁾ with Akku 18V/2,0 Ah

- Professional, solid battery cartridge dispenser in a plastic case
- 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 ¹⁾ kg	Dimensions ¹⁾ L x B x H mm	Pkg. cont. pcs.	Weight per piece 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
Accessories (for all models)							
Replacement battery	28352411			18 V/2,0 Ah		1	1,00
Shoulder strap	28359991			adjustable		1	0,02

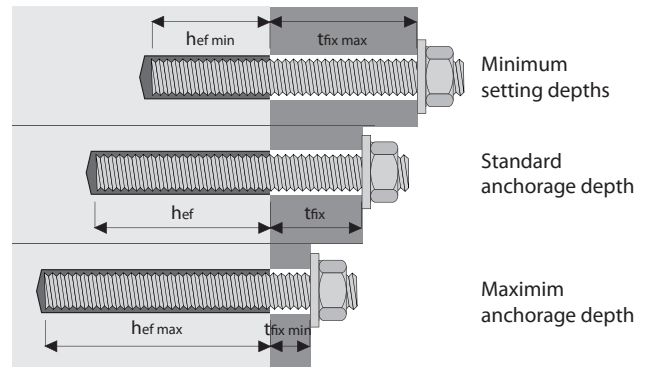
NEW

Threaded Studs for the Injection System VMU plus in concrete:
A flexible system means less inventory

The flexible anchoring depths of the Injection System VMU plus 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.

All anchor rod groups from the existing MKT range listed below can be used with the Injection System VMU plus. But these anchor rods can, according to the applied load, be set deeper or shallower. The minimum and maximum possible anchorage depths are specified in the assessment for each diameter and can be found in the extract from Permissible Service Conditions of ETA-11/0415 on the following pages.

Variable anchorage depth:



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

Threaded Studs for applications in cracked and non-cracked concrete

Threaded Stud VMU-A

Steel, zinc plated 5.8



- May be used 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 A4

Stainless steel A4



- May be used in structures subject to dry internal conditions or to external atmospheric exposure
- Stainless steel HCR (1.4529) on demand

Description	Ref. No.	Usable length in concrete mm	Pkg. cont. pcs.	Weight per pkg. kg
VMU-A 8x100	31510101	90	10	0,42
VMU-A 8x110	31515101	100	10	0,46
VMU-A 8x130	31525101	120	10	0,52
VMU-A 8x145	31528101	135	10	0,55
VMU-A 8x160	31530101	150	10	0,60
VMU-A 8x205	31550101	195	10	0,74
VMU-A 10x110	31605101	100	10	0,75
VMU-A 10x130	31625101	120	10	0,85
VMU-A 10x150	31630101	140	10	0,95
VMU-A 10x165	31635101	155	10	1,02
VMU-A 10x190	31645101	180	10	1,15
VMU-A 10x260	31655101	250	10	1,50
VMU-A 12x120	31717101	105	10	1,14
VMU-A 12x130	31718101	115	10	1,21
VMU-A 12x135	31710101	120	10	1,25
VMU-A 12x155	31720101	140	10	1,42
VMU-A 12x175	31730101	160	10	1,54
VMU-A 12x185	31734101	170	10	1,63
VMU-A 12x210	31740101	195	10	1,82
VMU-A 12x225	31748101	210	10	1,89
VMU-A 12x250	31750101	235	10	2,13
VMU-A 12x265	31757101	250	10	2,18
VMU-A 12x300	31760101	285	10	2,50
VMU-A 16x160	31810101	140	10	2,65
VMU-A 16x175	31815101	155	10	2,85
VMU-A 16x205	31820101	185	10	3,25
VMU-A 16x235	31830101	215	10	3,65
VMU-A 16x300	31840101	280	10	4,53
VMU-A 20x240	31910101	220	10	5,85
VMU-A 20x260	31915101	240	10	6,30
VMU-A 20x285	31920101	265	10	6,75
VMU-A 20x300	31925101	280	10	7,15
VMU-A 20x350	31930101	330	10	8,10
VMU-A 20x400	31935101	380	10	9,10
VMU-A 24x290	31960101	265	5	4,95
VMU-A 24x350	31965101	325	5	5,85
VMU-A 24x400	31970101	375	5	6,60
VMU-A 30x370	31990101	340	5	9,90

Description	Ref. No.	Usable length in concrete mm	Pkg. cont. pcs.	Weight per pkg. kg
VMU-A 8x100 A4	31510501	90	10	0,42
VMU-A 8x110 A4	31515501	100	10	0,46
VMU-A 8x130 A4	31525501	120	10	0,52
VMU-A 8x145 A4	31528501	135	10	0,55
VMU-A 8x160 A4	31530501	150	10	0,60
VMU-A 8x205 A4	31550501	195	10	0,74
VMU-A 10x110 A4	31605501	100	10	0,75
VMU-A 10x130 A4	31625501	120	10	0,85
VMU-A 10x150 A4	31630501	140	10	0,95
VMU-A 10x165 A4	31635501	155	10	1,02
VMU-A 10x190 A4	31645501	180	10	1,15
VMU-A 10x260 A4	31655501	250	10	1,50
VMU-A 12x120 A4	31717501	105	10	1,14
VMU-A 12x130 A4	31718501	115	10	1,21
VMU-A 12x135 A4	31710501	120	10	1,25
VMU-A 12x155 A4	31720501	140	10	1,42
VMU-A 12x175 A4	31730501	160	10	1,54
VMU-A 12x185 A4	31734501	170	10	1,63
VMU-A 12x210 A4	31740501	195	10	1,82
VMU-A 12x225 A4	31748501	210	10	1,89
VMU-A 12x250 A4	31750501	235	10	2,13
VMU-A 12x265 A4	31757501	250	10	2,18
VMU-A 12x300 A4	31760501	285	10	2,50
VMU-A 16x160 A4	31810501	140	10	2,65
VMU-A 16x175 A4	31815501	155	10	2,85
VMU-A 16x205 A4	31820501	185	10	3,25
VMU-A 16x235 A4	31830501	215	10	3,65
VMU-A 16x300 A4	31840501	280	10	4,53
VMU-A 20x240 A4	31910501	220	10	5,85
VMU-A 20x260 A4	31915501	240	10	6,30
VMU-A 20x285 A4	31920501	265	10	6,75
VMU-A 20x300 A4	31925501	280	10	7,15
VMU-A 24x290 A4	31960501	265	5	4,95
VMU-A 24x350 A4	31965501	325	5	5,85
VMU-A 24x400 A4	31970501	375	5	6,60
VMU-A 30x370 A4	31990501	340	5	9,90

Threaded Studs and Internally Threaded Sleeves for applications in cracked and non-cracked concrete

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 EN10204) in every package

Description	Ref. No.	Thread	Length mm	Package content pcs.	Weight per pkg. kg
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

Stainless steel A4



- Threaded studs, of 1 meter length, to be cut to the required length
- Comes with manufacturer's certificate (3.1 EN10204) in every package

Description	Ref. No.	Thread	Length mm	Package content pcs.	Weight per pkg. kg
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

Threaded Stud VM-A

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 EN10204) in every package

Description	Ref. No.	Thread	Length mm	Package content pcs.	Weight per pkg. kg
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

Threaded Stud V-A

Steel, zinc plated 5.8

Dimensions see page 144



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

Threaded Stud V-A A4

Stainless steel A4

Dimensions see page 144



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

Threaded Stud V-A fvz

Steel, hot dip galvanized 5.8

Dimensions see page 144



- For use in structures subject to dry internal conditions
- Steel hot dip galvanized 8.8 on demand

Threaded Stud V-A HCR

Stainless steel HCR

Dimensions see page 144



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

Internally Threaded Sleeve VMU-IG

Steel, zinc plated 5.8/Stainless steel A4



- With internal thread
- For cracked and non-cracked concrete

Description	Ref. No.		Drill hole-Ø x depth mm	Outer-Ø x Length mm	Thread depth min / max mm	Package content pcs.	Weight per pkg. kg
	Steel, zinc plated	Stainless steel A4					
VMU-IG M6x80	31502101	31502501	12 x 80	10 x 80	8 / 20	10	0,38
VMU-IG M6x90	31503101	31503501	12 x 90	10 x 90	8 / 20	10	0,42
VMU-IG M8x80	31562101	31562501	14 x 80	12 x 80	8 / 20	10	0,52
VMU-IG M8x100	31563101	31563501	14 x 100	12 x 100	8 / 20	10	0,66
VMU-IG M10x80	31601101	31601501	18 x 80	16 x 80	10 / 25	10	0,92
VMU-IG M10x100	31602101	31602501	18 x 100	16 x 100	10 / 25	10	1,18

Other dimensions on demand.

Threaded Stud V-A



- May be used in structures subject to dry internal conditions
- Steel, zinc plated 5.8
- Approved for non-cracked concrete

Description	Ref. No.	Drill hole Ø x depth mm	Fixture thickness t _{fix} mm	Usable length in concrete ¹⁾ mm	Package content pcs.	Weight per package kg
V-A 8-20/110	21101101	10 x 80	20	100	10	0,43
V-A 8-60/150	21105101	10 x 80	60	140	10	0,53
V-A 10-15/115	21202101	12 x 90	15	105	10	0,73
V-A 10-30/130	21203101	12 x 90	30	120	10	0,81
V-A 10-65/165	21207101	12 x 90	65	155	10	0,98
V-A 10-90/190	21210101	12 x 90	90	180	10	1,11
V-A 10-150/250	21216101	12 x 90	150	240	10	1,42
V-A 10-200/300	21221101	12 x 90	200	290	10	1,71
V-A 12-10/135	21304101	14 x 110	10	120	10	1,19
V-A 12-35/160	21306101	14 x 110	35	145	10	1,37
V-A 12-85/210	21312101	14 x 110	85	195	10	1,73
V-A 12-95/220	21313101	14 x 110	95	205	10	1,82
V-A 12-125/250	21316101	14 x 110	125	235	10	2,02
V-A 12-175/300	21321101	14 x 110	175	285	10	2,83
V-A 14-35/170 ²⁾	21408101	16 x 120	35	155	10	1,91
V-A 16-20/165	21507101	18 x 125	20	145	10	2,77
V-A 16-45/190	21510101	18 x 125	45	170	10	2,96
V-A 16-85/230	21514101	18 x 125	85	210	10	3,65
V-A 16-105/250	21516101	18 x 125	105	230	10	3,91
V-A 16-155/300	21521101	18 x 125	155	280	10	4,58
V-A 20-20/220	21613101	22 x 170	20	190	10	5,56
V-A 20-60/260	21617101	22 x 170	60	230	10	6,39
V-A 20-100/300	21621101	22 x 170	100	270	10	7,23
V-A 24-15/260	21717101	26 x 210	15	225	5	4,89
V-A 24-55/300	21721101	26 x 210	55	265	5	5,54
V-A 30-70/380 ²⁾³⁾	21829101	32 x 280	70	350	5	10,00

Other lengths and grade 8.8 on demand.

¹⁾For VMH/VMU plus/VM-EA/VME

²⁾Not part of assessment

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

Threaded Stud V-A A4



- May be used in structures subject to dry internal conditions or external atmospheric exposure
- Stainless Steel A4
- Approved for non-cracked concrete

Description	Ref. No.	Drill hole Ø x depth mm	Fixture thickness t _{fix} mm	Usable length in concrete ¹⁾ mm	Package content pcs.	Weight per package kg
V-A 8-20/110 A4	21101501	10 x 80	20	100	10	0,43
V-A 8-60/150 A4	21105501	10 x 80	60	140	10	0,53
V-A 10-15/115 A4	21202501	12 x 90	15	105	10	0,73
V-A 10-30/130 A4	21203501	12 x 90	30	120	10	0,81
V-A 10-65/165 A4	21207501	12 x 90	65	155	10	0,98
V-A 10-90/190 A4	21210501	12 x 90	90	180	10	1,11
V-A 10-150/250 A4	21216501	12 x 90	150	240	10	1,42
V-A 10-200/300 A4	21221501	12 x 90	200	290	10	1,71
V-A 12-10/135 A4	21304501	14 x 110	10	120	10	1,19
V-A 12-35/160 A4	21306501	14 x 110	35	145	10	1,37
V-A 12-55/180 A4	21309501	14 x 110	55	165	10	1,51
V-A 12-85/210 A4	21312501	14 x 110	85	195	10	1,73
V-A 12-95/220 A4	21313501	14 x 110	95	205	10	1,82
V-A 12-125/250 A4	21316501	14 x 110	125	235	10	2,02
V-A 12-175/300 A4	21321501	14 x 110	175	285	10	2,83
V-A 14-35/170 A4 ²⁾	21408501	16 x 120	35	155	10	1,91
V-A 16-5/150 A4	21505501	18 x 125	5	130	10	2,38
V-A 16-20/165 A4	21507501	18 x 125	20	145	10	2,77
V-A 16-45/190 A4	21510501	18 x 125	45	170	10	2,96
V-A 16-65/210 A4	21512501	18 x 125	65	190	10	3,20
V-A 16-85/230 A4	21514501	18 x 125	85	210	10	3,65
V-A 16-105/250 A4	21516501	18 x 125	105	230	10	3,91
V-A 16-155/300 A4	21521501	18 x 125	155	280	10	4,58
V-A 20-20/220 A4	21613501	22 x 170	20	190	10	5,56
V-A 20-60/260 A4	21617501	22 x 170	60	230	10	6,39
V-A 20-100/300 A4	21621501	22 x 170	100	270	10	7,23
V-A 24-15/260 A4	21717501	26 x 210	15	225	5	4,89
V-A 24-55/300 A4	21721501	26 x 210	55	265	5	5,54
V-A 30-70/380 A4 ²⁾³⁾	21829501	32 x 280	70	350	5	10,00

Other lengths on demand.

¹⁾For VMH/VMU plus/VM-EA/VME

²⁾Not part of assessment

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

Threaded Stud V-A fvz



- Improved corrosion protection
- Steel, hot dip galvanized 5.8 (≥ 40µm, EN ISO 1461)
- Approved for non-cracked concrete

Description	Ref. No.	Drill hole Ø x depth mm	Fixture thickness t _{fix} mm	Usable length in concrete ¹⁾ mm	Package content pcs.	Weight per package kg
V-A 8-20/110 fvz	21101201	10 x 80	20	100	10	0,43
V-A 10-30/130 fvz	21203201	12 x 90	30	120	10	0,81
V-A 10-90/190 fvz	21210201	12 x 90	90	180	10	1,11
V-A 12-35/160 fvz	21306201	14 x 110	35	145	10	1,37
V-A 12-95/220 fvz	21313201	14 x 110	95	205	10	1,82
V-A 16-20/165 fvz	21507201	18 x 125	20	145	10	2,77
V-A 16-45/190 fvz	21510201	18 x 125	45	170	10	2,96
V-A 16-65/210 fvz	21512201	18 x 125	65	190	10	3,20
V-A 20-20/220 fvz	21613201	22 x 170	20	190	10	5,56
V-A 20-60/260 fvz	21617201	22 x 170	60	230	10	6,39
V-A 24-15/260 fvz	21717201	26 x 210	15	235	5	4,89
V-A 24-55/300 fvz	21721201	26 x 210	55	265	5	5,54

Other lengths and grade 8.8 on demand.

¹⁾For VMH/VMU plus/VM-EA/VME

Threaded Stud V-A HCR



- For use in particularly corrosive environments
- High corrosion resistant steel 1.4529 (HCR)
- Approved for non-cracked concrete

Description	Ref. No.	Drill hole Ø x depth mm	Fixture thickness t _{fix} mm	Usable length in concrete ¹⁾ mm	Package content pcs.	Weight per package kg
V-A 8-20/110 HCR	21101651	10 x 80	20	100	10	0,43
V-A 10-30/130 HCR	21203651	12 x 90	30	120	10	0,81
V-A 12-35/160 HCR	21306651	14 x 110	35	145	10	1,37
V-A 16-45/190 HCR	21510651	18 x 125	45	170	10	2,96

Other lengths on demand.

¹⁾For VMH/VMU plus/VM-EA/VME