

Threaded Studs, Internally Threaded Sleeves and Perfo Sleeves for applications in solid and hollow base material

Threaded Stud V-A

Steel, zinc plated 5.8/Stainless steel A4



→ Steel hot dip galvanized and stainless steel HCR (1.4529) on demand



Description	Ref. No.		Usable length	Solid base material without SH			Solid and hollow base material with VM-SH						Package content	Weight per pkg.
	Steel, zinc plated	Stainless steel A4		Drill hole-Ø x depth	Maximum Fixture thick- ness t _{fi}	VM-SH 12x80	VM-SH 16x85	VM-SH 16x130	VM-SH 20x85	VM-SH 20x130	VM-SH 20x200			
						Drill hole Ø x depth mm								
						12x85	16x90	16x135	20x90	20x135	20x205			
Maximum Fixture thickness t _{fi} mm												Pcs.	kg	
VMU-A 8 x 100	31510101	31510501	90	10 x 80	10	10	5	-	-	-	-	10	0,42	
VMU-A 8 x 110	31515101	31515501	100	10 x 80	20	20	15	-	-	-	-	10	0,46	
VMU-A 8 x 130	31525101	31525501	120	10 x 80	40	40	35	-	-	-	-	10	0,52	
VMU-A 8 x 145	31528101	31528501	135	10 x 80	55	55	50	5	-	-	-	10	0,55	
VMU-A 8 x 160	31530101	31530501	150	10 x 80	70	70	65	20	-	-	-	10	0,60	
VMU-A 8 x 205	31550101	31550501	195	10 x 80	115	115	110	65	-	-	-	10	0,74	
VMU-A 10 x 110	31605101	31605501	100	12 x 90	10	-	15	-	-	-	-	10	0,75	
VMU-A 10 x 130	31625101	31625501	120	12 x 90	30	-	35	-	-	-	-	10	0,85	
VMU-A 10 x 150	31630101	31630501	140	12 x 90	50	-	55	10	-	-	-	10	0,95	
VMU-A 10 x 165	31635101	31635501	155	12 x 90	65	-	70	25	-	-	-	10	1,02	
VMU-A 10 x 190	31645101	31645501	180	12 x 90	90	-	95	50	-	-	-	10	1,15	
VMU-A 10 x 260	31655101	31655501	250	12 x 90	160	-	165	120	-	-	-	10	1,50	
VMU-A 12 x 120	31717101	31717501	105	14 x 100	5	-	-	-	20	-	-	10	1,14	
VMU-A 12 x 130	31718101	31718501	115	14 x 100	15	-	-	-	30	-	-	10	1,21	
VMU-A 12 x 135	31710101	31710501	120	14 x 100	20	-	-	-	35	-	-	10	1,25	
VMU-A 12 x 155	31720101	31720501	140	14 x 100	40	-	-	-	55	10	-	10	1,42	
VMU-A 12 x 175	31730101	31730501	160	14 x 100	60	-	-	-	75	30	-	10	1,54	
VMU-A 12 x 185	31734101	31734501	170	14 x 100	70	-	-	-	85	40	-	10	1,63	
VMU-A 12 x 210	31740101	31740501	195	14 x 100	95	-	-	-	110	65	-	10	1,82	
VMU-A 12 x 225	31748101	31748501	210	14 x 100	110	-	-	-	125	80	10	10	1,89	
VMU-A 12 x 250	31750101	31750501	235	14 x 100	135	-	-	-	150	105	35	10	2,13	
VMU-A 12 x 265	31757101	31757501	250	14 x 100	150	-	-	-	165	120	50	10	2,18	
VMU-A 12 x 300	31760101	31760501	285	14 x 100	185	-	-	-	200	155	85	10	2,50	
VMU-A 16 x 160	31810101	31810501	140	18 x 100	40	-	-	-	55	10	-	10	2,65	
VMU-A 16 x 175	31815101	318015501	155	18 x 100	55	-	-	-	70	25	-	10	2,85	
VMU-A 16 x 205	31820101	31820501	185	18 x 100	85	-	-	-	100	55	-	10	3,25	
VMU-A 16 x 235	31830101	31830501	215	18 x 100	115	-	-	-	130	85	15	10	3,65	
VMU-A 16 x 300	31840101	31840501	280	18 x 100	180	-	-	-	195	150	80	10	4,53	

Internally Threaded Sleeve VMU-IG

Steel, zinc plated 5.8/Stainless steel A4



→ With internal thread

→ Approved for solid and hollow base material



Description	Ref. No.		Solid base material without SH	Solid and hollow base material with SH		Outer-Ø x Length	Thread depth	Package content	Weight per pkg.
	Steel, zinc plated	Stainless steel A4		VM-SH 16x85	VM-SH 20x85				
				Drill hole Ø x depth mm	Drill hole-Ø x depth mm				
VMU-IG M6x80	31502101	31502501	-	16 x 90	-	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	-	-	20 x 90	12 x 80	8 / 20	10	0,52
VMU-IG M8x100	31563101	31563501	14 x 100	-	-	12 x 100	8 / 20	10	0,60
VMU-IG M10x80	31601101	31601501	-	-	20 x 90	16 x 80	10 / 25	10	0,92
VMU-IG M10x100	31602101	31602501	18 x 100	-	-	16 x 100	10 / 25	10	1,18

Perfo Sleeve VM-SH

Polypropylen

→ Approved for hollow base material



Description	Ref. No.	Drill hole Ø x depth mm	For threaded studs	For internally threaded sleeves	Appropriate for cleaning brush	Package content Pcs.	Weight per pkg. kg
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



Extract from Permissible Service Conditions of European Technical Assessment ETA-13/0909

Approved loads for single anchor without influence of spacing and edge distance. Butt joint and horizontal joint with adhesive. (Temperature range -40°C to +24°C/+40°C¹⁾ – use category dry/dry). Total safety factor as per ETAG included (γ_M and γ_P).

Injection system VMU plus, perforated brick with Perfo Sleeve

Calcium silicate hollow brick KSL-12DF according EN 771-2, Bulk density ρ : 1,4 kg/dm³, Minimum brick size: 498x175x238 mm (e.g. Wemding)

Threaded Stud: Steel: ≥ FKL 5.8, A4, HCR: ≥ FKL 70			M8	M8 / M10		M12 / M16		IG-M6	IG-M8 / IG-M10
Perfo Sleeve VM-SH			12x80	16x85	16x130	20x85	20x130	16x85	20x85
Anchorage depth	h _{ef}	[mm]	80	85	130	85	130	85	85
Spacing parallel to horizontal joint	S _{cr,II}	[mm]	498	498	498	498	498	498	498
Spacing perpendicular to horizontal joint	S _{cr,I}	[mm]	238	238	238	238	238	238	238
Minimum spacing	S _{min}	[mm]	120	120	120	120	120	120	120
Edge distance	C _{cr}	[mm]	100	100	100	120	120	100	120
Minimum edge distance	C _{min} ²⁾	[mm]	100	100	100	120	120	100	120
Min. thickness of base material (masonry)	h _{min}	[mm]	115	115	175	115	175	115	115
Approved tension load for compressive strength	f _b ≥ 10 N/mm ²	appr. N	0,17	0,17	0,71	0,43	0,71	0,17	0,43
	f _b ≥ 12 N/mm ²	appr. N	0,21	0,21	0,86	0,43	0,86	0,21	0,43
	f _b ≥ 16 N/mm ²	appr. N	0,26	0,26	1,14	0,57	1,14	0,26	0,57
Approved shear load for compressive strength	f _b ≥ 10 N/mm ²	appr. V	0,71	1,57	1,57	1,57	1,57	1,57	1,57
	f _b ≥ 12 N/mm ²	appr. V	0,86	1,86	1,86	1,86	1,86	1,86	1,86
	f _b ≥ 16 N/mm ²	appr. V	1,00	2,29	2,29	2,29	2,29	2,29	2,29

Hollow lightweight concrete Bloc creux B40 according EN 771-3, Bulk density ρ : 0,8 kg/dm³, Minimum brick size: 494x200x190 mm (e.g. Sepa)

Threaded Stud: Steel: ≥ FKL 5.8, A4, HCR: ≥ FKL 70			M8	M8 / M10		M12 / M16		IG-M6	IG-M8 / IG-M10
Perfo Sleeve VM-SH			12x80	16x85	16x130	20x85	20x130	16x85	20x85
Anchorage depth	h _{ef}	[mm]	80	85	130	85	130	85	85
Spacing parallel to horizontal joint	S _{cr,II}	[mm]	494	494	494	494	494	494	494
Spacing perpendicular to horizontal joint	S _{cr,I}	[mm]	190	190	190	190	190	190	190
Minimum spacing	S _{min}	[mm]	100	100	100	100	100	100	100
Edge distance	C _{cr}	[mm]	100	100	100	120	120	100	120
Minimum edge distance	C _{min} ²⁾	[mm]	100	100	100	120	120	100	120
Min. thickness of base material (masonry)	h _{min}	[mm]	115	115	175	115	175	115	115
Approved tension load for compressive strength f _b ≥ 4 N/mm²	appr. N	[kN]	0,34	0,34	0,34	0,34	0,34	0,34	0,34
Approved shear load for compressive strength f _b ≥ 4 N/mm²	appr. V	[kN]	0,86	0,86	0,86	0,86	0,86	0,86	0,86

Installation parameter in perforated bricks with Perfo Sleeve

Threaded Stud: Steel: ≥ FKL 5.8, A4, HCR: ≥ FKL 70			M8	M8 / M10		M12 / M16			IG-M6	IG-M8 / IG-M10
Perfo Sleeve VM-SH			12x80	16x85	16x130	20x85	20x130	20x200	16x85	20x85
Drill hole diameter	d _o	[mm]	12	16	16	20	20	20	16	20
Depth of drill hole	h _o	[mm]	85	90	135	90	135	205	90	90
Minimum wall thickness	h _{min}	[mm]	115	115	175	115	175	240	115	115
Clearance hole in the fi ture	d _f ≤	[mm]	9	9 / 12	9 / 12	14 / 18	14 / 18	14 / 18	7	9 / 12
Diameter of cleaning brush	d _b ≥	[mm]	14	18	18	22	22	22	18	22
Installation torque	T _{inst,max}	[Nm]	2							
Amount of adhesive per drill hole	[ml]		11,2	24,9	38,0	41,1	62,9	96,7	24,9	41,1
Drill holes per cartridge VMU plus 280 / 300	[pcs.]		21 / 23	9 / 10	6 / 6	5 / 6	3 / 4	2 / 2	9 / 10	5 / 6
Drill holes per cartridge VMU plus 345 / 410	[pcs.]		27 / 33	12 / 14	8 / 9	7 / 9	4 / 5	3 / 3	12 / 14	7 / 9
Drilling method						Rotary drilling				

¹⁾Max. long term temperature/max. short term temperature

²⁾For $V_{Rk,c}$: C_{min} see ETAG 029, Annex C

Curing Time Injection Adhesive VMU plus

Temperature in drill hole	Cartridge temperature ¹⁾	Max. Gel time	Curing time	
			Dry base material	Wet base material
-10°C – -6°C	+15°C – +40°C	90 min	24 h	48 h
-5°C – -1°C		90 min	14 h	28 h
0°C – +4°C		45 min	7 h	14 h
+5°C – +9°C	+5°C – +40°C	25 min	2 h	4 h
+10°C – +19°C	(+5°C – +25°C) ²⁾	15 min	80 min	160 min
+20°C – +24°C		6 min	45 min	90 min
+25°C – +29°C		6 min (4 min) ²⁾	45 min (25 min) ²⁾	90 min (50 min) ²⁾
+30°C – +34°C		4 min (2,5 min) ²⁾	25 min (15 min) ²⁾	50 min (30 min) ²⁾
+35°C – +39°C	+5°C – +40°C	2 min (2,5 min) ²⁾	20 min (15 min) ²⁾	40 min (30 min) ²⁾
+40°C	($\leq$ +20°C) ²⁾	1,5 min (2,5 min) ²⁾	15 min	30 min

¹⁾When installing

²⁾Values in brackets for rebar connection (ETA-11/0514)

Installation

