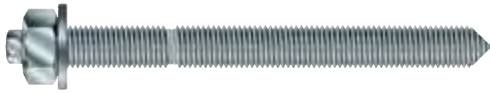


# Chemical Anchor V



Threaded Stud V-A



Chemical Capsule V-P

Range of loading: 3,0 kN - 80,6 kN

Range of concrete quality: C12/15 - C50/60

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

### Description

The Chemical Anchor V with ETA approval consists of a glass capsule filled with resin, hardener and filler-material, as well as the Threaded Stud V-A. The components in the capsule are mixed to a fast curing resin-mortar when the threaded stud is inserted into the drill-hole. This stress free anchoring system has been tried and tested for decades and allows for mounting of heavy loads even with smaller spacings and edge distances in non-cracked concrete. All Sizes of Threaded Stud V-A are also available in grade 8.8 steel on demand.

### Advantages:

- Anchor-rods with external hexagon for fast and easy installation
- every package includes an adapter for the drilling machine
- excellent suitability for high volume fixing
- sealed drill-hole
- extensive product range for all uses
- usable in damp and dry concrete
- also with large washer for crash-barrier mounting
- economic special lengths without external hexagon available



### Applications

Anchoring of heavy loads in non-cracked concrete: trusses, foot and headplates, consoles, crash-barriers, noise-protection walls.

### Chemical Capsule V-P



→ Two component glass capsule

→ Approved for non-cracked concrete

Description	Ref. No.	Capsule		Content of master box	Weight per master box	Package content	Weight per package
		Ø	length				
		mm	mm	pcs.	kg	pcs.	kg
V-P 8	25100801	9	80	500	7,02	10	0,13
V-P 10	25101001	11	80	500	8,50	10	0,16
V-P 12	25101201	13	95	500	12,30	10	0,25
V-P 14 <sup>1)</sup>	25101401	15	95	500	15,82	10	0,27
V-P 16	25101601	17	95	500	19,36	10	0,36
V-P 20	25102001	22	175	-	-	10	1,20
V-P 24	25102401	24	210	-	-	5	0,87
V-P 30 <sup>1)</sup>	25103001	33	265	-	-	5	2,64

<sup>1)</sup> Not part of approval.

### 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	Fixture thickness t <sub>fix</sub>	Usable length (VMU <sub>plus</sub> /VME)	Package content	Weight per package
		mm	mm	mm	pcs.	kg
V-A 8-20/110	21101101	10 x 80	20	99	10	0,43
V-A 8-60/150	21105101	10 x 80	60	139	10	0,53
V-A 10-15/115	21202101	12 x 90	15	101	10	0,73
V-A 10-30/130	21203101	12 x 90	30	116	10	0,81
V-A 10-65/165	21207101	12 x 90	65	151	10	0,98
V-A 10-90/190	21210101	12 x 90	90	176	10	1,11
V-A 10-150/250	21216101	12 x 90	150	236	10	1,42
V-A 10-200/300	21221101	12 x 90	200	282	10	1,71
V-A 12-10/135	21304101	14 x 110	10	117	10	1,19
V-A 12-35/160	21306101	14 x 110	35	142	10	1,37
V-A 12-85/210	21312101	14 x 110	85	192	10	1,73
V-A 12-95/220	21313101	14 x 110	95	202	10	1,82
V-A 12-125/250	21316101	14 x 110	125	232	10	2,02
V-A 12-175/300	21321101	14 x 110	175	278	10	2,83
V-A 14-35/170 <sup>1)</sup>	21408101	16 x 120	35	151	10	1,91
V-A 16-20/165	21507101	18 x 125	20	140	10	2,77
V-A 16-45/190	21510101	18 x 125	45	165	10	2,96
V-A 16-85/230	21514101	18 x 125	85	205	10	3,65
V-A 16-105/250	21516101	18 x 125	105	225	10	3,91
V-A 16-155/300	21521101	18 x 125	155	273	10	4,58
V-A 20-20/220	21613101	25 x 170	20	188	10	5,56
V-A 20-60/260	21617101	25 x 170	60	228	10	6,39
V-A 20-100/300	21621101	25 x 170	100	266	10	7,23
V-A 24-15/260	21717101	28 x 210	15	221	5	4,89
V-A 24-55/300	21721101	28 x 210	55	259	5	5,54
V-A 30-70/380 <sup>1) 2)</sup>	21829101	35 x 280	70	345	5	10,00

Other lengths and grade 8.8 on demand.

<sup>1)</sup> Not part of approval.

<sup>2)</sup> 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	Fixture thickness t <sub>fix</sub>	Usable length (VMU <sub>plus</sub> /VME)	Package content	Weight per package
		mm	mm	mm	pcs.	kg
V-A 8-20/110 A4	21101501	10 x 80	20	99	10	0,43
V-A 8-60/150 A4	21105501	10 x 80	60	139	10	0,53
V-A 10-15/115 A4	21202501	12 x 90	15	101	10	0,73
V-A 10-30/130 A4	21203501	12 x 90	30	116	10	0,81
V-A 10-65/165 A4	21207501	12 x 90	65	151	10	0,98
V-A 10-90/190 A4	21210501	12 x 90	90	176	10	1,11
V-A 10-150/250 A4	21216501	12 x 90	150	236	10	1,42
V-A 10-200/300 A4	21221501	12 x 90	200	282	10	1,71
V-A 12-10/135 A4	21304501	14 x 110	10	117	10	1,19
V-A 12-35/160 A4	21306501	14 x 110	35	142	10	1,37
V-A 12-55/180 A4	21309501	14 x 110	55	162	10	1,51
V-A 12-85/210 A4	21312501	14 x 110	85	192	10	1,73
V-A 12-95/220 A4	21313501	14 x 110	95	202	10	1,82
V-A 12-125/250 A4	21316501	14 x 110	125	232	10	2,02
V-A 12-175/300 A4	21321501	14 x 110	175	278	10	2,83
V-A 14-35/170 A4 <sup>1)</sup>	21408501	16 x 120	35	151	10	1,91
V-A 16-5/150 A4	21505501	18 x 125	5	125	10	2,38
V-A 16-20/165 A4	21507501	18 x 125	20	140	10	2,77
V-A 16-45/190 A4	21510501	18 x 125	45	165	10	2,96
V-A 16-65/210 A4	21512501	18 x 125	65	185	10	3,20
V-A 16-85/230 A4	21514501	18 x 125	85	205	10	3,65
V-A 16-105/250 A4	21516501	18 x 125	105	225	10	3,91
V-A 16-155/300 A4	21521501	18 x 125	155	273	10	4,58
V-A 20-20/220 A4	21613501	25 x 170	20	188	10	5,56
V-A 20-60/260 A4	21617501	25 x 170	60	228	10	6,39
V-A 20-100/300 A4	21621501	25 x 170	100	266	10	7,23
V-A 24-15/260 A4	21717501	28 x 210	15	221	5	4,89
V-A 24-55/300 A4	21721501	28 x 210	55	259	5	5,54
V-A 30-70/380 A4 <sup>1) 2)</sup>	21829501	35 x 280	70	345	5	10,00

Other lengths on demand.

<sup>1)</sup> Not part of approval.

<sup>2)</sup> 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	Fixture thickness t <sub>fix</sub>	Usable length (VMU <sub>plus</sub> /VME)	Package content	Weight per package
		mm	mm	mm	pcs.	kg
V-A 8-20/110 fvz	21101201	10 x 80	20	99	10	0,43
V-A 10-30/130 fvz	21203201	12 x 90	30	116	10	0,81
V-A 10-90/190 fvz	21210201	12 x 90	90	176	10	1,11
V-A 12-35/160 fvz	21306201	14 x 110	35	142	10	1,37
V-A 12-95/220 fvz	21313201	14 x 110	95	202	10	1,82
V-A 16-20/165 fvz	21507201	18 x 125	20	140	10	2,77
V-A 16-45/190 fvz	21510201	18 x 125	45	165	10	2,96
V-A 16-65/210 fvz	21512201	18 x 125	65	185	10	3,20
V-A 20-20/220 fvz	21613201	25 x 170	20	188	10	5,56
V-A 20-60/260 fvz	21617201	25 x 170	60	228	10	6,39
V-A 24-15/260 fvz	21717201	28 x 210	15	221	5	4,89
V-A 24-55/300 fvz	21721201	28 x 210	55	259	5	5,54

Other lengths and grade 8.8 on demand.

### 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	Fixture thickness t <sub>fix</sub>	Usable length (VMU <sub>plus</sub> /VME)	Package content	Weight per package
		mm	mm	mm	pcs.	kg
V-A 8-20/110 HCR	21101651	10 x 80	20	99	10	0,43
V-A 10-30/130 HCR	21203651	12 x 90	30	116	10	0,81
V-A 12-35/160 HCR	21306651	14 x 110	35	142	10	1,37
V-A 16-45/190 HCR	21510651	18 x 125	45	165	10	2,96

Other lengths on demand.



**Extract from Permissible Service Conditions of ETA-05/0231**

Approved loads for single anchor without influence of spacing and edge distance for temperature range -40 °C to +80 °C<sup>2)</sup>. Total safety factor as per ETAG 001 included ( $\gamma_M$  and  $\gamma_P$ ).

Loads and performance data		Chemical Anchor V, steel, zinc plated / hot dip galvanized		M 8	M 10	M 12	M 14 <sup>1)</sup>	M 16	M 20	M 24	M 30 <sup>1)</sup>
				non-cracked concrete							
Mean ultimate loads, tension (steel 5.8) C25/30	N <sub>um</sub>	[kN]	18,3	29,0	42,1	57,7	78,3	123,0	177,0	280,3	
Mean ultimate loads, shear (steel 5.8) C25/30	V <sub>um</sub>	[kN]	11,0	17,4	25,3	34,6	47,0	73,8	106,2	168,2	
Mean ultimate loads, tension (steel 8.8) C25/30	N <sub>um</sub>	[kN]	27,0	38,6	58,2	73,5	104,3	169,8	250,2	442,9	
Mean ultimate loads, shear (steel 8.8) C25/30	V <sub>um</sub>	[kN]	15,0	23,2	33,7	46,2	63,0	98,0	141,0	224,3	
Recommended loads, tension	C12/15 <sup>1)</sup> rec. N	[kN]	3,0	5,0	7,0	8,0	10,0	19,0	26,0	42,0	
Approved loads, tension	≥ C20/25 appr. N	[kN]	7,9	11,9	15,9	12,0	19,8	29,8	35,7	60,0	
Recommended loads, shear	C12/15 <sup>1)</sup> rec. V	[kN]	3,0	5,0	7,0	8,0	10,0	19,0	26,0	42,0	
Approved loads, shear	≥ C20/25 appr. V	[kN]	5,1	8,0	12,0	12,0	22,3	34,9	50,3	60,0	
Approved loads, shear (steel, grade 8.8)	≥ C20/25 appr. V	[kN]	8,6	13,1	18,9	-	36,0	56,0	80,6	-	
Approved bending moments (steel, grade 5.8)	appr. M	[Nm]	10,9	21,1	37,1	59,4	94,9	185,7	320,6	642,0	
Approved bending moments (steel, grade 8.8)	appr. M	[Nm]	17,1	34,3	60,0	-	152,0	296,6	513,1	-	

		Chemical Anchor V, stainless steel A4 / HCR		M 8	M 10	M 12	M 14 <sup>1)</sup>	M 16	M 20	M 24	M 30 <sup>1)</sup>
				non-cracked concrete							
Mean ultimate loads, tension C25/30	N <sub>um</sub>	[kN]	26,0	38,6	58,2	73,5	104,3	169,8	247,0	280,3	
Mean ultimate loads, shear C25/30	V <sub>um</sub>	[kN]	13,0	20,3	29,5	40,4	55,0	86,0	124,0	140,2	
Recommended loads, tension	C12/15 <sup>1)</sup> rec. N	[kN]	3,0	5,0	7,0	8,0	10,0	19,0	26,0	42,0	
Approved loads, tension	≥ C20/25 appr. N	[kN]	7,9	11,9	15,9	12,0	19,8	29,8	35,7	60,0	
Recommended loads, shear	C12/15 <sup>1)</sup> rec. V	[kN]	3,0	5,0	7,0	8,0	10,0	19,0	26,0	42,0	
Approved loads, shear	≥ C20/25 appr. V	[kN]	6,0	9,2	13,3	12,0	25,2	39,4	56,8	60,0	
Approved bending moments	appr. M	[Nm]	11,9	23,8	42,1	66,9	106,7	207,9	359,4	402,0	

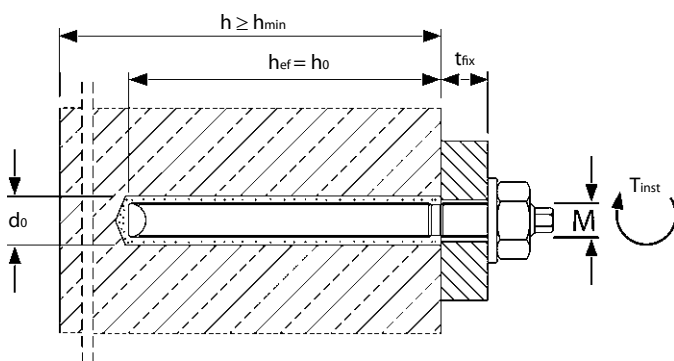
Spacing and edge distance				M 8	M 10	M 12	M 14	M 16	M 20	M 24	M 30
Effective anchorage depth	h <sub>ef</sub>	[mm]	80	90	110	120	125	170	210	280	
Spacing	s <sub>cr,N</sub>	[mm]	240	180	220	300	250	340	420	700	
Edge distance	c <sub>cr,N</sub>	[mm]	120	90	110	150	125	170	210	350	
Minimum spacing	s <sub>min</sub>	[mm]	40	45	55	120	65	85	105	280	
Minimum edge distance	c <sub>min</sub>	[mm]	40	45	55	60	65	85	105	140	
Minimum thickness of concrete slab	h <sub>min</sub>	[mm]	110	120	140	170	160	220	260	330	

Installation parameters			M 8	M 10	M 12	M 14	M 16	M 20	M 24	M 30
Drill hole diameter	d <sub>o</sub>	[mm]	10	12	14	16	18	25	28	35
Clearance hole in the fixture	d <sub>f</sub>	[mm]	9	12	14	16	18	22	26	33
Depth of drill hole	h <sub>o</sub>	[mm]	80	90	110	120	125	170	210	280
Installation torque	T <sub>inst</sub>	[Nm]	10	20	40	60	80	120	180	400
Width across nut	SW	[mm]	13	17	19	22	24	30	36	46
Width across nut (Threaded Stud)	SW	[mm]	5	6	8	10	12	14	17	-

<sup>1)</sup> Not part of approval. Recommended loads for size M 14 and M 30 and in concrete C12/15.  
<sup>2)</sup> max long term temperature +50 °C / max short term temperature +80 °C

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



**Curing time Chemical Anchor V**

→ Cartridge temperature when installing min. +5°C

Temperature (°C) of base material	curing time	
	dry base material	wet base material
-5°C	5:00 h	10:00 h
0°C	5:00 h	10:00 h
+5°C	1:00 h	2:00 h
+10°C	1:00 h	2:00 h
+20°C	20 min	40 min
+30°C	10 min	20 min
+35°C	10 min	20 min

**Installation**

