

Chemical Anchor VZ



Range of loading: 3,6 kN–64,4 kN
Range of concrete quality: C20/25–C50/60
Material: Steel, zinc plated, Steel, hot dip galvanized, Stainless steel A4, HCR

Description

The new Chemical Anchor VZ, consisting of the styrene-free Resin Anchor Capsule VZ-P and Threaded Stud V-A, has the European Technical Assessment for cracked and uncracked concrete. Installation is quick and easy: after inserting the composite adhesive cartridge into the cleaned drill hole, the Threaded Stud V-A is driven in using a drill hammer. Since the composite reaction is not started until the threaded stud is driven in, the composite adhesive cartridge and threaded stud can be set independently of each other and it is possible to interrupt work without problem. This makes the Chemical Anchor VZ ideal for series installation. The very short curing time enables heavy components to be fastened quickly without long waiting times. Processing of the Chemical Anchor VZ is permissible from a concrete temperature of -20°C to +40°C. This means that it can be used indoors and outdoors all year round and is also ideally suited for use in cold stores.

Hammer drills, compressed air drills or suction drills can be used to create the drill holes. When using the hollow drill bit SB, fine dust exposure is reduced to a minimum and subsequent drill hole cleaning is not necessary.

Advantages

- European Technical Assessment for cracked and uncracked concrete
- High permissible loads at low anchorage depths and component thicknesses
- Small spacings and very small edge distances
- Fire certificates for all sizes
- General design approval by 'Deutsches Institut für Bautechnik' in Berlin, Germany as concrete-to-concrete connector (Z-21.8-2126)
- Approved processing from -20°C substrate temperature
- Very fast, reliable curing, thus hardly any waiting time before installation
- No longer curing times in wet concrete
- Threaded Studs V-A with external hexagon for fast and easy installation; every package includes an adapter for the drilling machine
- Also with large washer for crash-barrier mounting
- Economic special lengths without external hexagon available
- When using the hollow drill bit SB, subsequent drill hole cleaning is not necessary
- Styrene free



Applications

Anchoring of large loads in cracked and uncracked concrete: steel structures, railings, shelves, base plates, supports, brackets, crash barriers, noise-protection walls, fastenings in cold stores.

Resin Anchor Capsule VZ-P



- Two component glass capsule, Styrene free
- European Technical Assessment for cracked and uncracked concrete

Description	Ref. No.	Capsule Ø	Capsule length	Content of master box pcs.	Weight per master box kg	Package content pcs.	Weight per package kg
		mm	mm				
VZ-P 8	64200801	9	85	500	7,2	10	0,14
VZ-P 10	64201001	11	90	500	9,7	10	0,19
VZ-P 12	64201201	13	95	500	12,8	10	0,25
VZ-P 16	64201601	17	95	500	19,5	10	0,38
VZ-P 20	64202001	17	145	200	12,9	10	0,63

Curing time Chemical Anchor VZ

- Capsule temperature when installing -15°C to +40°C

Temperature (°C) of base material	Curing time
-20°C to -16°C	17 h
-15°C to -11°C	7 h
-10°C to -6°C	4 h
-5°C to -1°C	3 h
0°C to +4°C	50 min
+5°C to +9°C	25 min
+10°C to +19°C	15 min
+20°C to +29°C	6 min
+30°C to +40°C	6 min

Accessories for Chemical Anchor VZ

Chemical Anchor	Threaded Stud	Drill hole Ø mm	Blow-out pump / Air gun	Cleaning brush RB
VZ-P 8	M8	10	VM-AP 270 / 360 VM-ABP 200	RB 10 M6
VZ-P 10	M10	12	VM-AP 270 / 360 VM-ABP 200	RB 12 M6 RB 12 M8
VZ-P 12	M12	14	VM-AP 270 / 360 VM-ABP 200	RB 14 M6 RB 14 M8
VZ-P 16	M16	18	VM-AP 270 / 360 VM-ABP 200 / 250 / 500	RB 18 M6 RB 18 M8
VZ-P 20	M20	22	VM-AP 270 / 360 VM-ABP 250 / 500	RB 22 M6
See page			178	179

Threaded Studs for Chemical Anchor VZ

Threaded Stud V-A



→ For use in structures subject to dry internal conditions

→ Steel, zinc plated 5.8

Description	Ref. No.	Drill hole Ø x depth mm	Fixture thickness t _{fix} mm	Usable Length 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 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

Other lengths on request.

A setting tool is included with each anchor rod package.

Threaded Stud V-A 8.8



→ For use in structures subject to dry internal conditions

→ Steel, zinc plated 8.8

Description	Ref. No.	Drill hole Ø x depth mm	Fixture thickness t _{fix} mm	Usable Length mm	Package content pcs.	Weight per package kg
V-A 8-20/110 8.8	21101171	10 x 80	20	100	10	0,43
V-A 8-60/150 8.8	21105171	10 x 80	60	140	10	0,53
V-A 10-15/115 8.8	21202171	12 x 90	15	105	10	0,73
V-A 10-30/130 8.8	21203171	12 x 90	30	120	10	0,81
V-A 10-65/165 8.8	21207171	12 x 90	65	155	10	0,98
V-A 10-90/190 8.8	21210171	12 x 90	90	180	10	1,11
V-A 12-10/135 8.8	21304171	14 x 110	10	120	10	1,19
V-A 12-35/160 8.8	21306171	14 x 110	35	145	10	1,37
V-A 12-85/210 8.8	21312171	14 x 110	85	195	10	1,73
V-A 12-125/250 8.8	21316171	14 x 110	125	235	10	2,02
V-A 12-175/300 8.8	21321171	14 x 110	175	285	10	2,83
V-A 16-20/165 8.8	21507171	18 x 125	20	145	10	2,77
V-A 16-45/190 8.8	21510171	18 x 125	45	170	10	2,96
V-A 16-85/230 8.8	21514171	18 x 125	85	210	10	3,65
V-A 16-105/250 8.8	21516171	18 x 125	105	230	10	3,91
V-A 16-155/300 8.8	21521171	18 x 125	155	280	10	4,58
V-A 20-20/220 8.8	21613171	22 x 170	20	190	10	5,56
V-A 20-60/260 8.8	21617171	22 x 170	60	230	10	6,39
V-A 20-100/300 8.8	21621171	22 x 170	100	270	10	7,23

Other lengths on request.

A setting tool is included with each anchor rod package.

Threaded Stud V-A A4



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

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

Other lengths on request.

A setting tool is included with each anchor rod package.

Threaded Stud VA-U for anchoring crash barriers



- Threaded Stud VA-U for anchoring crash barriers
- Steel 5.8, hot dip galvanized ≥ 50 µm (average plating thickness according to EN ISO 10684)
- With large washer DIN EN ISO 7093 (DIN 9021, Ø=50 mm)

Description	Ref. No.	Drill hole Ø x depth mm	Fixture thickness t _{fix} mm	Package content pcs.	Weight per package kg	Weight per pcs. kg
VA-U 16-20/165 fvz ¹⁾	21507791	18x125	M16x165	20	10	2,99

¹⁾Suitable Resin Anchor Capsule VZ-P 16 see page 159.

A setting tool is included with each anchor rod package.

Threaded Stud V-A fvz



- Improved corrosion protection
- Steel 5.8, hot dip galvanized ≥ 50 µm (average plating thickness according to EN ISO 10684)

Description	Ref. No.	Drill hole Ø x depth mm	Fixture thick- ness t _{fix} mm	Package content pcs.	Weight per package kg
V-A 8-20/110 fvz	21101201	10 x 80	20	10	0,43
V-A 10-30/130 fvz	21203201	12 x 90	30	10	0,81
V-A 10-90/190 fvz	21210201	12 x 90	90	10	1,11
V-A 12-35/160 fvz	21306201	14 x 110	35	10	1,37
V-A 12-95/220 fvz	21313201	14 x 110	95	10	1,82
V-A 16-20/165 fvz	21507201	18 x 125	20	10	2,77
V-A 16-45/190 fvz	21510201	18 x 125	45	10	2,96
V-A 16-65/210 fvz	21512201	18 x 125	65	10	3,20
V-A 20-20/220 fvz	21613201	22 x 170	20	10	5,56
V-A 20-60/260 fvz	21617201	22 x 170	60	10	6,39

Other lengths on request.

A setting tool is included with each anchor rod package.

Threaded Stud V-A HCR



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

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

Other lengths on request.

A setting tool is included with each anchor rod package.

Setting Tool V-M



- Only needed for special length and studs without external Hexagon

Description	Ref. No.	Suitable for threaded stud	Package content pcs.	Weight per pcs. kg
V-M 8	27105160	M8	1	0,02
V-M 10	27205160	M10	1	0,03
V-M 12	27305160	M12	1	0,05
V-M 16	27505160	M16	1	0,06
V-M 20	27605160	M20	1	0,20



Extract from Permissible Service Conditions of European Technical Assessment ETA-20/0533 for use in cracked and uncracked concrete (Option 1)

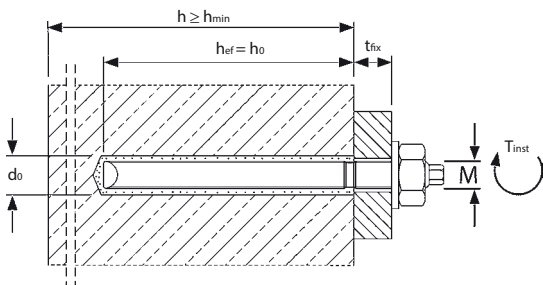
Approved loads according to EN 1992-4 for single anchors without the influence of spacing and edge distances in dry and wet concrete for temperature range I -40°C to +24°C (short term temperature +40°C) and for temperature range II -40°C to +50°C (short term temperature +80°C). The influence of the sustained load has been taken into account by the factor $\Psi_{sus} = 1,0$ and the total safety factor (γ_M and γ_F) is included. For further details and temperature ranges see ETA.

Loads and performance data				M8	M10	M12	M16	M20
Anchorage depth	h_{ef}	[mm]		80	90	110	125	170
Chemical Anchor VZ, Threaded Stud V-A Steel 5.8								
Mean ultimate loads (Range of temperature: 24°C/40°C ¹⁾)				cracked concrete / uncracked concrete				
Mean ultimate loads tension	C20/25	$N_{u,m}$	[kN]	18,8 / 19,2	30,5	44,3	64,2 / 82,3	101,8 / 128,5
Mean ultimate loads, shear	C20/25	$V_{u,m}$	[kN]	11,5	18,3	26,6	49,4	77,1
Approved loads, tension				cracked concrete				
Range of temperature	24°C/40°C ¹⁾	C20/25	rec. N	[kN]	4,0	7,3	11,5	18,7
	50°C/80°C ¹⁾	C20/25	rec. N	[kN]	3,6	6,2	9,9	15,0
Approved loads, tension				uncracked concrete				
Range of temperature	24°C/40°C ¹⁾	C20/25	rec. N	[kN]	8,0	13,8	20,0	27,3
	50°C/80°C ¹⁾	C20/25	rec. N	[kN]	6,8	12,3	18,1	27,3
Approved loads, shear				cracked and uncracked concrete				
Range of temperature	24°C/40°C ¹⁾	C20/25	rec. V	[kN]	6,3	9,7	14,3	26,9
	50°C/80°C ¹⁾	C20/25	rec. V	[kN]	6,3	9,7	14,3	26,9
Chemical Anchor VZ, Threaded Stud V-A Steel 8.8								
Mean ultimate loads (Range of temperature: 24°C/40°C ¹⁾)				cracked concrete / uncracked concrete				
Mean ultimate loads tension	C20/25	$N_{u,m}$	[kN]	18,8 / 30,7	30,5 / 47,7	44,3 / 70,8	64,2 / 91,7	101,8 / 145,4
Mean ultimate loads, shear	C20/25	$V_{u,m}$	[kN]	15,4	24,4	35,4	65,8	102,8
Approved loads, tension				cracked concrete				
Range of temperature	24°C/40°C ¹⁾	C20/25	rec. N	[kN]	4,0	7,3	11,5	18,7
	50°C/80°C ¹⁾	C20/25	rec. N	[kN]	3,6	6,2	9,9	15,0
Approved loads, tension				uncracked concrete				
Range of temperature	24°C/40°C ¹⁾	C20/25	rec. N	[kN]	8,0	14,6	21,4	27,3
	50°C/80°C ¹⁾	C20/25	rec. N	[kN]	6,8	12,3	18,1	27,3
Approved loads, shear				cracked and uncracked concrete				
Range of temperature	24°C/40°C ¹⁾	C20/25	rec. V	[kN]	8,6	13,1	19,4	36,0
	50°C/80°C ¹⁾	C20/25	rec. V	[kN]	8,6	13,1	19,4	35,9 ²⁾
Chemical Anchor VZ, Threaded Stud V-A Stainless Steel \geq A4-70, \geq HCR-70								
Mean ultimate loads (Range of temperature: 24°C/40°C ¹⁾)				cracked concrete / uncracked concrete				
Mean ultimate loads tension	C20/25	$N_{u,m}$	[kN]	18,8 / 26,9	32,1 / 42,6	49,9 / 62,0	64,2 / 91,7	101,8 / 145,4
Mean ultimate loads, shear	C20/25	$V_{u,m}$	[kN]	13,5	21,3	31,0	57,6	90,0
Approved loads, tension				cracked concrete				
Range of temperature	24°C/40°C ¹⁾	C20/25	rec. N	[kN]	4,0	7,3	11,5	18,7
	50°C/80°C ¹⁾	C20/25	rec. N	[kN]	3,6	6,2	9,9	15,0
Approved loads, tension				uncracked concrete				
Range of temperature	24°C/40°C ¹⁾	C20/25	rec. N	[kN]	8,0	14,6	21,4	27,3
	50°C/80°C ¹⁾	C20/25	rec. N	[kN]	6,8	12,3	18,1	27,3
Approved loads, shear				cracked and uncracked concrete				
Range of temperature	24°C/40°C ¹⁾	C20/25	rec. V	[kN]	7,4	11,4	17,1	31,4
	50°C/80°C ¹⁾	C20/25	rec. V	[kN]	7,4	11,4	17,1	31,4
Minimum thickness of concrete slab, spacing and edge distance								
Minimum thickness of concrete slab	h_{min}	[mm]		110	120	140	160	220
Minimum spacing	s_{min}	[mm]		40	50	60	75	90
Minimum edge distance	c_{min}	[mm]		40	45	45	50	55
Installation parameters								
Drill hole diameter	d_o	[mm]		10	12	14	18	22
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]		9	12	14	18	22
Depth of drill hole	h_o	[mm]		80	90	110	125	170
Installation torque	$T_{inst} \leq$	[Nm]		10	20	40	80	150
Width across nut (Nut)	SW	[mm]		13	17	19	24	30
Width across nut (Threaded Stud)	SW	[mm]		5	6	8	12	14

¹⁾max long term temperature / max short term temperature

²⁾36,0 kN in uncracked concrete

For anchor designing an easy to operate CD-ROM is available on request or can be downloaded at www.mkt.de.



Installation

