

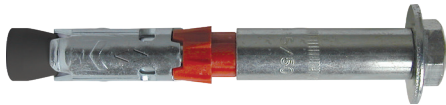
## Vorpa **VSA - Seismic category C1**

Heavy duty safety anchor with European Technical Assessment for cracked concrete and seismic zone

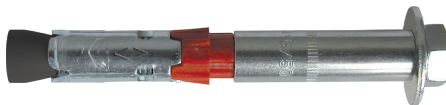


cracked concrete

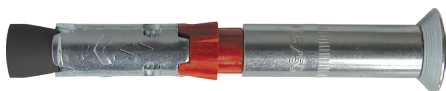
### products group



**VSA V**  
with 8.8 hexagonal head screw



**VSA B**  
with stud and nut



**VSA S**  
with 10.9 flat countersunk head screw

#### Approved for

- cracked and non-cracked concrete C20/25-C50/60
- anchorage under static, quasi/static actions M8-M12
- seismic applications C1 TR045 M8 - M12
- anchorage under fire exposure in standard TR 020 R30-R120

#### To fix

- parapets
- steel beams
- machine tools
- industrial systems
- heavy duty metal constructions
- static, quasi/static anchorages
- structural fixings



EAD 330232-00-0601  
for cracked and uncracked concrete and seismic zone.  
Seismic Category C1



### product information

#### Characteristics

- high performances through steel anchor with central bush and anti-rotation system with European Technical Assessment for cracked and non-cracked concrete
- approved use under seismic loading, performance category C1
- smooth expansion thanks to the three cuts on the expansion body
- high tensile loads with standard depth
- high shear resistances, applications are possible with minimum centre to centre and edge distance
- the red ring collar prevents the anchor turning in the hole on installation
- regular grip on the base material thanks to the expansion shell

#### Installation

- through-setting anchor

#### Suggestion for use

- choose the right size of the anchor according to the load
- always check load bearing capacity values in the table
- respect the installation data
- **clean the hole before the installation**

#### Examples of applications

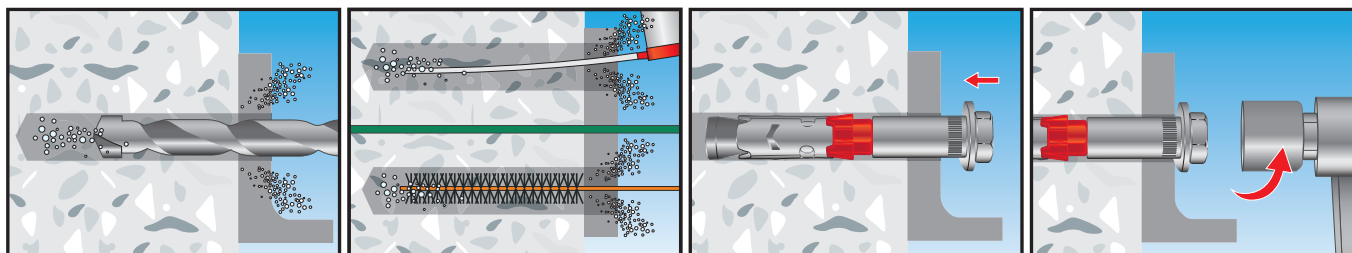


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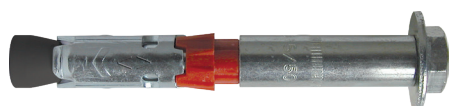
Heavy duty safety anchor with European Technical Assessment for cracked concrete and seismic zone



## installation sequence

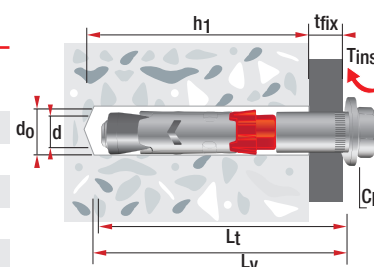


## product code and technical data

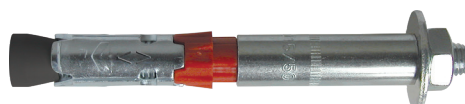


**VSA V**  
with 8.8 hexagonal head screw

Code	Description	L <sub>t</sub> mm	Screw d x L <sub>v</sub> mm	d <sub>o</sub> mm	h <sub>1</sub> mm	t <sub>fix</sub> max mm	T <sub>inst</sub> Nm	Ch
10880	VSA V 12/10-80	80	M8x80	12	85	10	25	13
10881	VSA V 12/20-90	90	M8x90	12	85	20	25	13
10882	VSA V 12/50-120	120	M8x120	12	85	50	25	13
10883	VSA V 15/10-90	90	M10x90	15	95	10	50	17
10884	VSA V 15/20-100	100	M10x100	15	95	20	50	17
10885	VSA V 15/50-130	130	M10x130	15	95	50	50	17
10886	VSA V 18/10-110	110	M12x120	18	120	10	80	19
10887	VSA V 18/25-125	125	M12x130	18	120	25	80	19
10888	VSA V 18/50-150	150	M12x160	18	120	50	80	19
10889	VSA V 18/100-200	200	M12x200	18	120	100	80	19
10890 *	VSA V 24/25-140	140	M16x 140	24	130	25	150	24
10891 *	VSA V 24/50-165	165	M16x 170	24	130	50	150	24

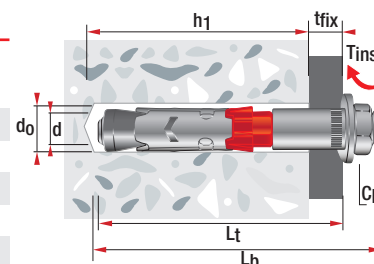


- L<sub>t</sub> = Anchor length
- L<sub>v</sub> = Screw length
- h<sub>1</sub> = Min. hole depth
- d<sub>o</sub> = Hole diameter
- d = Screw diameter
- t<sub>fix</sub> = Fixture thickness
- T<sub>inst</sub> = Torque
- Ch = Spanner



**VSA B**  
with stud and nut

Code	Description	L <sub>t</sub> mm	Stud d x L <sub>b</sub> mm	d <sub>o</sub> mm	h <sub>1</sub> mm	t <sub>fix</sub> max mm	T <sub>inst</sub> Nm	Ch mm
10900	VSA B 12/10-80	80	M8x92	12	85	10	25	13
10901	VSA B 12/20-90	90	M8x102	12	85	20	25	13
10902	VSA B 12/50-120	120	M8x132	12	85	50	25	13
10903	VSA B 15/10-90	90	M10x105	15	95	10	50	17
10904	VSA B 15/20-100	100	M10x115	15	95	20	50	17
10905	VSA B 15/50-130	130	M10x145	15	95	50	50	17
10906	VSA B 18/10-110	110	M12x135	18	120	10	80	19
10907	VSA B 18/25-125	125	M12x150	18	120	25	80	19
10908	VSA B 18/50-150	150	M12x180	18	120	50	80	19
10909	VSA B 18/100-200	200	M12x220	18	120	100	80	19
10910 *	VSA B 24/25-140	140	M16x165	24	130	25	150	24
10911 *	VSA B 24/50-165	165	M16x190	24	130	50	150	24



\* Not included in C1 fixing in seismic

## VSA V - VSA B

			VSA V - VSA B M8	VSA V - VSA B M10	VSA V - VSA B M12	VSA V - VSA B M16
Anchor diameter	d	mm	12	15	18	24
Anchor length	L	mm	80-90-110	90-100-130	110-125-150-200	140-165
Effective anchorage depth	h <sub>ef</sub>	mm	59	67	88	99
Fixture thickness	T <sub>fix</sub>	mm	10-20-50	10-20-50	10-25-50-100	25-50
Drill hole diameter	d <sub>o</sub>	mm	12	15	18	24
Drill hole depth	h <sub>1</sub>	mm	85	95	120	130
Drill hole diameter in the fixture	d <sub>f</sub>	mm	14	17	20	26
Torque moment	T <sub>inst</sub>	Nm	25	50	80	150

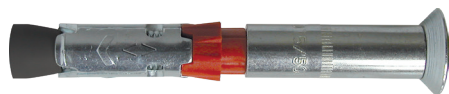
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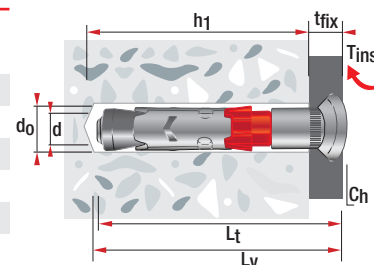
cracked concrete

product code and technical data



VSA S  
with 10.9 flat countersunk head screw

Code	Description	L <sub>t</sub> mm	Screw d x L <sub>v</sub> mm	d <sub>0</sub> mm	h <sub>1</sub> mm	t <sub>fix</sub> max mm	T <sub>inst</sub> Nm	Ch mm
10920	VSA S 12/16-85	85	M8x80	12	85	16	25	5
10921	VSA S 12/26-95	95	M8x90	12	85	26	25	5
10922	VSA S 12/56-125	125	M8x130	12	85	56	25	5
10923	VSA S 15/15-95	95	M10x100	15	95	15	50	6
10924	VSA S 15/25-105	105	M10x110	15	95	25	50	6
10925	VSA S 15/55-135	135	M10x140	15	95	55	50	6
10926	VSA S 18/18-120	120	M12x120	18	120	18	80	8
10927	VSA S 18/33-135	135	M12x140	18	120	33	80	8
10928	VSA S 18/58-160	160	M12x170	18	120	58	80	8

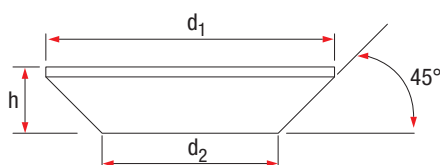


- L<sub>t</sub> = Anchor length
- L<sub>v</sub> = Screw length
- h<sub>1</sub> = Min. hole depth
- d<sub>0</sub> = Hole diameter
- d = Screw diameter
- t<sub>fix</sub> = Fixture thickness
- T<sub>inst</sub> = Torque
- Ch = Spanner

### Dimensions countersunk head

#### Head sizes VSA S

		d <sub>1</sub> mm	d <sub>2</sub> mm	h mm
VSA S - Ø12	M8	19,5	11,2	5,2
VSA S - Ø15	M10	24	15,2	5,3
VSA S - Ø18	M12	31	17,2	7,4



### Examples of applications



### VSA S

			VSA S M8	VSA S M10	VSA S M12
Anchor diameter	d	mm	12	15	18
Anchor length	L	mm	86-96-126	95-105-135	120-135-160
Effective anchorage depth	h <sub>ef</sub>	mm	59	67	88
Fixture thickness	T <sub>fix</sub>	mm	16-26-56	15-25-55	18-33-58
Drill hole diameter	d <sub>0</sub>	mm	12	15	18
Drill hole depth	h <sub>1</sub>	mm	85	95	120
Drill hole diameter in the fixture	d <sub>f</sub>	mm	14	17	20
Torque moment	T <sub>inst</sub>	Nm	25	50	80

heavy duty anchors

# Vorpa VSA - Seismic category C1

Heavy duty safety anchor with European Technical Assessment for cracked concrete and seismic zone



technical data

## VSA-seismic category C1

Installation data			VSA Ø12	VSA Ø15	VSA Ø18	VSA Ø24
Critical axial spacing	$S_{cr,N}$	mm	250	290	390	420
Critical edge distance	$C_{cr,N}$	mm	200	220	260	280
Minimum axial spacing	$S_{min}$	mm	120	140	180	240
Minimum edge distance	$C_{min}$	mm	80	90	110	130
Minimum thickness member	$h_{min}$	mm	125	13	190	220

### Characteristic values

Pull out failure		kN				
Non-cracked concrete	$N_{rk,P}$ C20/25		12	16	25	40
Cracked concrete	$N_{rk,P}$ C20/25		7	10	18	28
C30/37	$\psi$ 30/37		1,22	1,22	1,22	1,22
C40/50	$\psi$ 40/50		1,41	1,41	1,41	1,41
C50/60	$\psi$ 50/60		1,55	1,55	1,55	1,55
Shear failure	$V_{rk,S}$	kN	16,8	25	33,7	62,8
Bending moment	$M_{rk,S}$	Nm	30	60	105	266

### Design loads

Pull out failure		kN				
Non-cracked concrete	$N_{rk,P}$		10	13,3	20,8	33,3
Cracked concrete	$N_{rk,P}$		5,8	8,3	15	23,3
Shear failure	$V_{rk}$	kN	13,4	20	26,9	50,2
Bending moment	$M_{rk}$	Nm	24	48	84	212,8

### Recommended loads

Pull out failure		kN				
Non-cracked concrete	$N$		7,1	9,5	14,8	23,7
Cracked concrete	$N$		4,1	5,9	10,7	16,6
Shear failure	$V$	kN	9,5	14,2	19,2	35,8
Bending moment	$M$	Nm	17,1	34,2	60	152

### Characteristic values for seismic category C1

Pull out failure	$N_{rk,P,seis}$	kN	5,6	10	14,4	
Shear failure	$V_{rk,seis}$	kN	13,4	25	33,7	

### Design loads for seismic category C1

Pull out failure	$N_{rk,P,seis}$	kN	3,1	5,5	8	
Shear failure	$V_{rk,seis}$	kN	10,7	20	26,9	

## Examples of applications

