Vorpa **VSA S A4 - Seismic category C1+C2**

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

cracked concrete

products group

VSA S A4+SEISMIC with A4 stainless steel flat countersunk head screw

Approved for

- cracked and non-cracked concrete M8-M12
- anchorage under static, quasi/static actions M8-M12
- seismic applications C1-C2 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-C2

product information

Characteristics

- special wedge anchor with central bush with European Technical Assesment for cracked concrete and performance category C1-C2 under seismic action
- approved for use in cracked and non-cracked concrete
- suitable for surface, through, and stand-of fastening
- fire tested in compliance with DIN 4102-2. Fire resistance ratings R30–R120

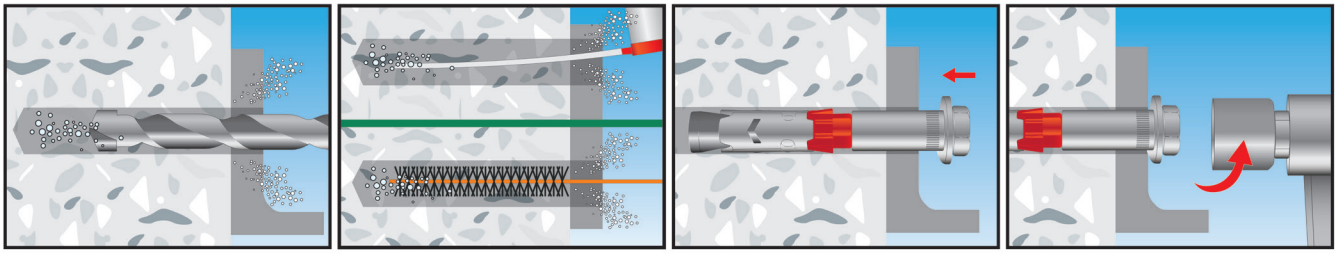
Installation

- through-setting anchor

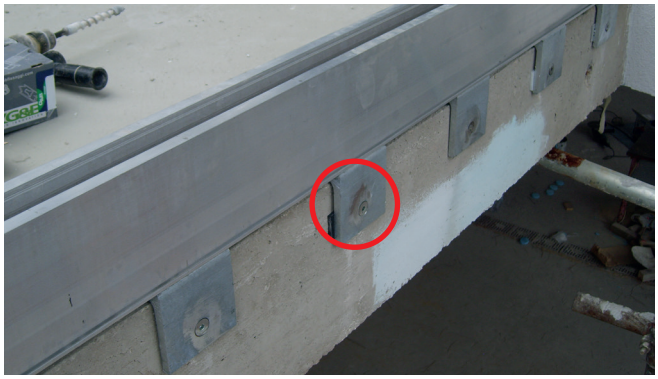
Suggestion for use

- 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**

installation sequence



Examples of applications



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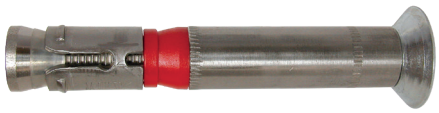
product code and technical data

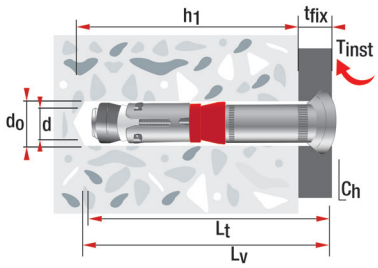


VSA S A4+SEISMIC
with A4 stainless steel flat countersunk head screw

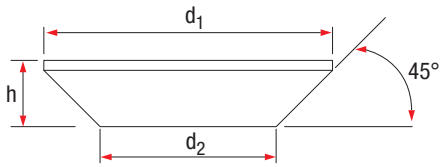
A4 INOX 316

Code	Description		L_t mm	Screw d x L_V mm	d_o mm	h_1 mm	t_{fix} max mm	T_{inst} Nm	Ch mm
10401	VSA S+SM A4	12/25-95	95	M8x95	12	80	25	17,5	5
10402	VSA S+SM A4	12/50-120	120	M8x120	12	80	50	17,5	5
10403	VSA S+SM A4	15/15-100	100	M10x100	15	95	15	42,5	6
10405	VSA S+SM A4	15/35-120	120	M10x120	15	95	35	42,5	6
10406	VSA S+SM A4	15/50-135	135	M10x135	15	95	50	42,5	6
10407	VSA S+SM A4	18/40-135	135	M12x135	18	105	40	50	8

Other sizes on request



L_t = Anchor length
L_v = Screw length
h_1 = Min. hole depth
d_o = Hole diameter
d = Screw diameter
t_{fix} = Fixture thickness
T_{inst} = Torque
Ch = Spanner



Dimensions countersunk head

Thread VSA S A4	d_1 mm	d_2 mm	h mm
VSA S A4-Ø12 M8	20,5	11,5	5,0
VSA S A4-Ø15 M10	24,5	14,5	5,7
VSA S A4-Ø18 M12	29,5	17,5	6,7

VSA S inox A4+SEISMIC

Installation data			VSA S M8	VSA S M10	VSA S M12
Nominal drill hole diameter	d_o	[mm]	12	15	18
Torque moment	T_{inst}	[Nm]	17,5	42,5	50
Setting depth	h_{nom}	[mm]	70	85	95
Minimum thickness of concrete member	h_{min}	[mm]	120	140	160
Drill hole depth	h_1	[mm]	80	95	105
Hole in the fixture	d_f	[mm]	14	17	20

Design method according to EAD 330232-00-0601

			VSA S M8	VSA S M10	VSA S M12
Steel failure					
Characteristic resistance					
Tension	$N_{Rk,s}$	[kN]	26	41	60
Partial safety factor	γ_{Ms}		1,87	1,87	1,87
Shear	$V_{Rk,s}$	[kN]	24	37	62
Partial safety factor	γ_{Ms}		1,36	1,36	1,36
Bending moment	$M^0_{Rk,s}$	[Nm]	26	52	92
Partial safety factor	γ_{Ms}		1,25	1,25	1,25
Tension loads C1	$N_{Rk,s,C1}$	[kN]	26	41	60
Tension loads C2	$N_{Rk,s,C2}$	[kN]	26	41	60
Partial safety factor	$\gamma_{Ms,seis}$		1,87	1,87	1,87
Shear loads C1	$V_{Rk,seis,C1}$	[kN]	11,5	23,3	31,6
Shear loads C2	$V_{Rk,seis,C2}$	[kN]	10,8	17,4	15,4
Partial safety factor	$\gamma_{Ms,seis}$		1,36	1,36	1,36
Pull-out failure					
Characteristics resistance non cracked concrete C20/25	$N_{Rk,p,ucr}$	[kN]	16	25	35
Characteristics resistance cracked concrete C20/25	$N_{Rk,p,cr}$	[kN]	9	16	1)
Characteristics resistance seismic performance C1	$N_{Rk,seis,C1}$	[kN]	9	16	26
Characteristics resistance seismic performance C2	$N_{Rk,seis,C2}$	[kN]	4,8	16,5	24,8
Increasing factor C30/37	ψ_c	[-]		1,22	$\left(\frac{fck}{20}\right)^{0.5}$
Increasing factor C40/50				1,41	
Increasing factor C50/60				1,58	

1) Pull out it not decisive