

through-setting heavy duty anchors

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

Heavy duty safety anchor with European Technical Assessment 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 Assessment 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-off fastening
- fire tested in compliance with DIN 4102-2. Fire resistance ratings R30-R120

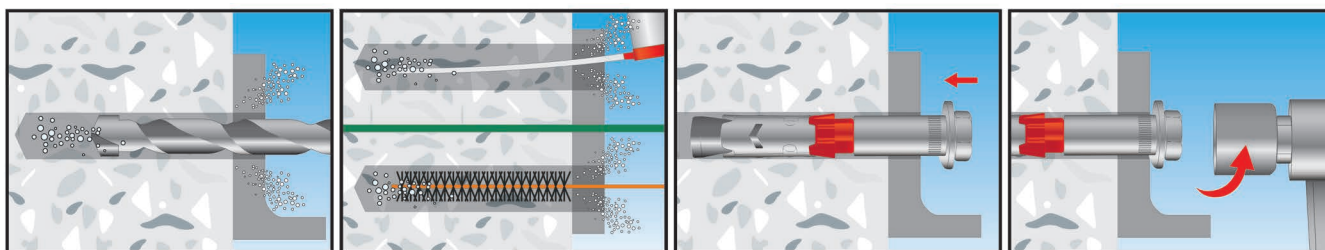
Installation

- 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



Clean the hole before the installation

Examples of applications



through-setting heavy duty anchors



cracked concrete

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

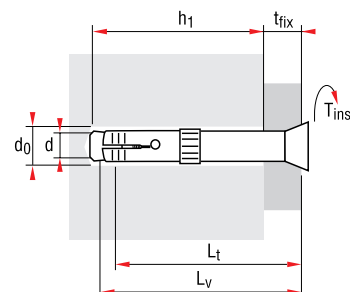
product code and technical data



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

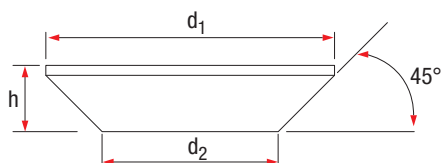


| Code | Description | L _t mm | Screw d x L _v mm | d ₀ mm | h ₁ mm | t _{fix} max mm | T _{inst} Nm | Ch mm |
|-------|-----------------------|-------------------|-----------------------------|-------------------|-------------------|-------------------------|----------------------|-------|
| 10401 | 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

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 |

- h₁ = Min. hole depth
- L_t = Anchor length
- L_v = Screw length
- d₀ = Hole diameter
- d = Screw diameter
- t_{fix} = Fixture thickness
- T_{inst} = Torque
- Ch = Spanner

VSA S inox A4+SEISMIC

| Installation data | | VSA S M8 | VSA S M10 | VSA S M12 |
|--------------------------------------|------------------------|----------|-----------|-----------|
| Nominal drill hole diameter | d ₀ [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 | Y _{Ms} | 1,87 | 1,87 | 1,87 |
| Shear | V _{Rk,s} [kN] | 24 | 37 | 62 |
| Partial safety factor | Y _{Ms} | 1,36 | 1,36 | 1,36 |
| Bending moment | M ⁰ _{Rk,s} [Nm] | 26 | 52 | 92 |
| Partial safety factor | Y _{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 | Y _{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 | Y _{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 | ψ _c [-] | 1,22 | | (f _{ck} /20) ^{0,5} |
| | | 1,41 | | |
| | | 1,58 | | |

1) Pull out it not decisive