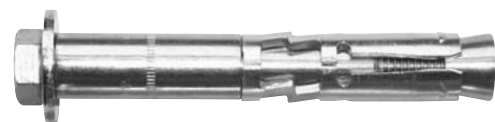


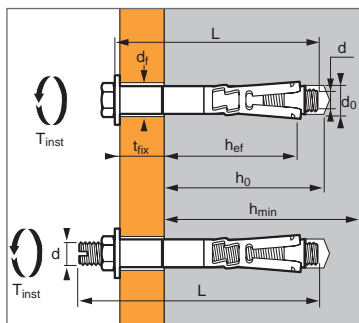
SPIT TRIGA Z

Zinc coated steel

1/4



ETA Option 1
n° 05/0044



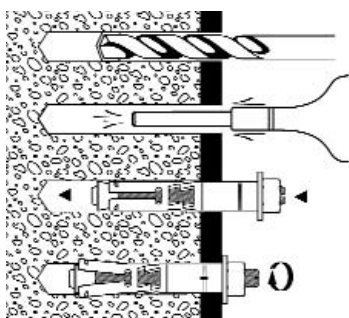
APPLICATION

- Safety critical loads
- Overhead crane rails
- Steel columns and walkways
- Wall plates
- Safety rails

MATERIAL

- **Bolt:** class 8.8 NF EN 20898-1
- **Threaded stud:** class 8.8 NF EN 20898-1
- **Nut:** class 8 NF EN 20898-2
- **Washer:** F12T4 as per NF A37501
- **Sleeve:** TS37-a BK extended as per NF A49341
- **Expansion cone:** 35 MF6Pb
- **Expansion sleeve:** 355 MC as per NF EN 10-149-2
- **Min. Zinc coating** 5 µm

INSTALLATION



High security, high performance fixing

Technical data

| SPIT TRIGA Z | Min. anchor depth (mm) | Max. thick of part to be fixed (mm) | Min thick of base material (mm) | Ø thread (mm) | Drilling depth (mm) | Ø drill bit (mm) | Ø clearance (mm) | Total anchor length (mm) | Max. tighten torque (Nm) | Code |
|--------------|------------------------|-------------------------------------|---------------------------------|---------------|---------------------|------------------|------------------|--------------------------|--------------------------|--------|
| | h_{ef} | t_{fix} | h_{min} | d | h_0 | d_0 | d_f | L | T_{inst} | |
| V6-10/5 | | 5 | | | | | | 65 | | 050673 |
| V6-10/20 | 50 | 20 | 100 | M6 | 70 | 10 | 12 | 80 | 15 | 050674 |
| E6-10/50 | | 50 | | | | | | 117 | | 050675 |
| V8-12/1* | | 1 | | | | | | 65 | | 050677 |
| V8-12/10 | | 10 | | | | | | 80 | | 050678 |
| V8-12/20 | | 20 | | | | | | 90 | | 050679 |
| V8-12/50 | | 50 | | | | | | 120 | | 053001 |
| E8-12/20 | 60 | 20 | 120 | M8 | 80 | 12 | 14 | 99 | 25 | 050681 |
| E8-12/35 | | 35 | | | | | | 114 | | 050683 |
| E8-12/55 | | 55 | | | | | | 134 | | 050684 |
| E8-12/95 | | 95 | | | | | | 174 | | 050685 |
| V10-15/1* | | 1 | | | | | | 75 | | 050687 |
| V10-15/10 | | 10 | | | | | | 95 | | 050688 |
| V10-15/20 | | 20 | | | | | | 105 | | 050689 |
| V10-15/55 | | 55 | | | | | | 140 | | 053003 |
| E10-15/20 | 70 | 20 | 140 | M10 | 90 | 15 | 17 | 114 | 50 | 050691 |
| E10-15/35 | | 35 | | | | | | 129 | | 050692 |
| E10-15/55 | | 55 | | | | | | 149 | | 050693 |
| E10-15/100 | | 100 | | | | | | 194 | | 050694 |
| V12-18/10 | | 10 | | | | | | 105 | | 050696 |
| V12-18/25 | | 25 | | | | | | 120 | | 050697 |
| V12-18/55 | | 55 | | | | | | 150 | | 053004 |
| E12-18/25 | 80 | 25 | 160 | M12 | 105 | 18 | 20 | 132 | 80 | 050698 |
| E12-18/45 | | 45 | | | | | | 152 | | 050699 |
| E12-18/65 | | 65 | | | | | | 172 | | 050701 |
| E12-18/100 | | 100 | | | | | | 207 | | 050702 |
| V16-24/10 | | 10 | | | | | | 130 | | 050704 |
| V16-24/25 | | 25 | | | | | | 145 | | 050705 |
| V16-24/50 | | 50 | | | | | | 170 | | 050710 |
| E16-24/25 | 100 | 25 | 200 | M16 | 131 | 24 | 26 | 159 | 120 | 050706 |
| E16-24/55 | | 55 | | | | | | 189 | | 050707 |
| E16-24/100 | | 100 | | | | | | 234 | | 050708 |
| V20-28/25 | | 25 | | | | | | 170 | | 050711 |
| E20-28/25 | 125 | 25 | 250 | M20 | 157 | 28 | 31 | 192 | 200 | 050712 |
| E20-28/60 | | 60 | | | | | | 227 | | 050713 |
| E20-28/100 | | 100 | | | | | | 267 | | 050714 |
| 8-12/16 TF | 60 | 16 | 120 | M8 | 80 | 12 | 14 | 85 | 25 | 050686 |
| 8-12/26 TF | 60 | 26 | 120 | M8 | 80 | 12 | 14 | 95 | 25 | 053002 |
| 10-15/27 TF | 70 | 27 | 140 | M10 | 90 | 15 | 17 | 105 | 50 | 050695 |
| 12-18/40 TF* | 80 | 40 | 160 | M12 | 105 | 18 | 20 | 130 | 80 | 050715 |
| E12-18/0* | 80 | - | 160 | M12 | 105 | 18 | - | 120 | 80 | 050669 |
| E12-18/A* | 80 | - | 160 | M12 | 105 | 18 | - | 162 | 80 | 050703 |
| QDC M12* | 80 | - | 160 | M12 | 105 | 18 | - | 178 | 80 | 050671 |

* Do not belong to ETA

Anchor mechanical properties

| | M6 | M8 | M10 | M12 | M16 | M20 |
|---|------|------|-------|-------|-------|-------|
| f_{uk} (N/mm ²) Min. tensile strength | 800 | 800 | 800 | 800 | 800 | 830 |
| f_{yk} (N/mm ²) Yield strength | 640 | 640 | 640 | 640 | 640 | 660 |
| $S_{eq,V}$ (mm ²) Equivalent stressed cross-section bolt version | 39,2 | 76,1 | 108,8 | 175,3 | 335,1 | 520,2 |
| $S_{eq,E}$ (mm ²) Equivalent stressed cross-section threaded stud version | 35,2 | 61,8 | 82,0 | 104,1 | 183,3 | 277,3 |
| W_{el} (mm ³) Elastic section modulus | 12,7 | 31,2 | 62,3 | 109,2 | 277,5 | 541,0 |
| $M^0_{rk,s}$ (Nm) Characteristic bending moment | 12,2 | 30,0 | 59,8 | 104,8 | 266,4 | 538,8 |
| M (Nm) Recommended bending moment | 5,8 | 12,4 | 24,8 | 43,5 | 110,7 | 216,0 |

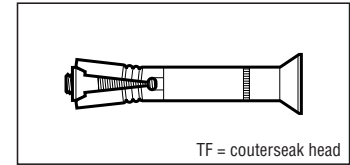
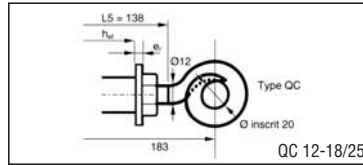
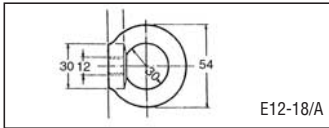
SPIT TRIGA Z

Zinc coated steel



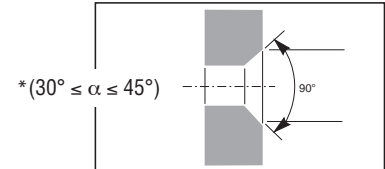
2/4

Special products



Recommended loads in kN

| Dimensions | TENSILE \geq C20/25 | OBLIQUE \geq C20/25 | SHEAR \geq C20/25 |
|-------------|--|-----------------------|---------------------|
| E12-18/A | 3,4 | 2,4* | Not recommended |
| QC 12-18/25 | 4,0 | 1,0 | 0,5 |
| TF8-12/10 | The resistance given for the bolt version with the same diameter can be used | | |
| TF10-15/20 | | | |



The loads specified on this page allow judging the product's performances, but cannot be used for the designing. The data given in the pages "CC method" have to be applied.

Ultimate ($N_{Ru,m}$, $V_{Ru,m}$) / characteristic loads (N_{Rk} , V_{Rk}) in kN

Mean Ultimate loads are derived from test results in admissible service conditions, and characteristic loads are statistically determined.

TENSILE

| Anchor size | M6 | M8 | M10 | M12 | M16 | M20 |
|-----------------------------|------|------|------|------|-------|-------|
| Non cracked concrete | | | | | | |
| h_{ef} | 50 | 60 | 70 | 80 | 100 | 125 |
| $N_{Ru,m}$ | 18,2 | 27,5 | 45,9 | 54,4 | 103,6 | 124,4 |
| N_{Rk} | 16,0 | 19,9 | 36,0 | 34,2 | 61,9 | 85,9 |
| Cracked concrete | | | | | | |
| h_{ef} | 50 | 60 | 70 | 80 | 100 | 125 |
| $N_{Ru,m}$ | 15,1 | 20,3 | 33,3 | 50,3 | 88,5 | 113,3 |
| N_{Rk} | 11,5 | 14,8 | 26,5 | 36,6 | 70,4 | 90,1 |

SHEAR

| Anchor size | M6 | M8 | M10 | M12 | M16 | M20 | |
|---|------------|------|------|------|------|-------|-------|
| Cracked and non-cracked concrete | | | | | | | |
| Type V/TF | $V_{Ru,m}$ | 29,2 | 41,7 | 68,0 | 95,7 | 159,0 | 228,2 |
| | V_{Rk} | 25,9 | 38,6 | 58,8 | 83,3 | 141,6 | 206,0 |
| Type E | $V_{Ru,m}$ | 20,0 | 26,2 | 43,1 | 57,0 | 116,0 | 135,9 |
| | V_{Rk} | 15,7 | 22,0 | 36,4 | 52,0 | 110,0 | 124,9 |

Design Loads (N_{Rd} , V_{Rd}) for one anchor without edge or spacing influence in kN

$$N_{Rd} = \frac{N_{Rk} *}{\gamma_{Mc}} \quad \text{* Derived from test results}$$

$$V_{Rd} = \frac{V_{Rk} *}{\gamma_{Ms}}$$

TENSILE

| Anchor size | M6 | M8 | M10 | M12 | M16 | M20 |
|-----------------------------|------|------|------|------|------|------|
| Non cracked concrete | | | | | | |
| h_{ef} | 50 | 60 | 70 | 80 | 100 | 125 |
| N_{Rd} | 10,7 | 13,2 | 24,0 | 22,8 | 41,3 | 57,3 |
| Cracked concrete | | | | | | |
| h_{ef} | 50 | 60 | 70 | 80 | 100 | 125 |
| N_{Rd} | 7,7 | 9,9 | 17,7 | 24,4 | 47,0 | 60,1 |

$\gamma_{Mc} = 1,5$

SHEAR

| Anchor size | M6 | M8 | M10 | M12 | M16 | M20 | |
|---|----------|------|------|------|------|-------|-------|
| Cracked and non-cracked concrete | | | | | | | |
| Type V/TF | V_{Rd} | 20,7 | 30,8 | 47,0 | 66,6 | 113,3 | 164,8 |
| Type E | V_{Rd} | 12,6 | 17,6 | 29,1 | 41,6 | 88,0 | 99,9 |

$\gamma_{Ms} = 1,25$

Recommended loads (N_{Rec} , V_{Rec}) for one anchor without edge or spacing influence in kN

$$N_{Rec} = \frac{N_{Rk} *}{\gamma_M \cdot \gamma_F} \quad \text{* Derived from test results}$$

$$V_{Rec} = \frac{V_{Rk} *}{\gamma_M \cdot \gamma_F}$$

TENSILE

| Anchor size | M6 | M8 | M10 | M12 | M16 | M20 |
|-----------------------------|-----|-----|------|------|------|------|
| Non cracked concrete | | | | | | |
| h_{ef} | 50 | 60 | 70 | 80 | 100 | 125 |
| N_{Rec} | 7,6 | 9,5 | 17,1 | 16,3 | 29,5 | 40,9 |
| Cracked concrete | | | | | | |
| h_{ef} | 50 | 60 | 70 | 80 | 100 | 125 |
| N_{Rec} | 5,5 | 7,0 | 12,6 | 17,4 | 33,5 | 42,9 |

$\gamma_F = 1,4$; $\gamma_{Mc} = 1,5$

SHEAR

| Anchor size | M6 | M8 | M10 | M12 | M16 | M20 | |
|---|-----------|------|------|------|------|------|-------|
| Cracked and non-cracked concrete | | | | | | | |
| Type V/TF | V_{Rec} | 14,8 | 22,0 | 33,6 | 47,6 | 80,9 | 117,7 |
| Type E | V_{Rec} | 9,0 | 12,5 | 20,8 | 29,7 | 62,9 | 71,4 |

$\gamma_F = 1,4$; $\gamma_{Ms} = 1,25$

SPIT TRIGA Z

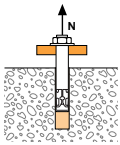
Zinc coated steel



3/4

SPIT CC- Method (values issued from ETA)

TENSILE in kN



- Pull-out resistance

$$N_{Rd,p} = N_{Rd,p}^O \cdot f_b$$

| $N_{Rd,p}^O$ Anchor size | M6 | M8 | M10 | M12 | M16 | M20 |
|-----------------------------|----|----|-----|-----|-----|-----|
|-----------------------------|----|----|-----|-----|-----|-----|

Non cracked concrete

| | | | | | | |
|----------|----|----|----|----|-----|-----|
| h_{ef} | 50 | 60 | 70 | 80 | 100 | 125 |
|----------|----|----|----|----|-----|-----|

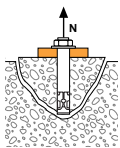
| | | | | | | |
|-----------------------|---|------|---|---|---|---|
| $N_{Rd,p}^O$ (C20/25) | - | 13,3 | - | - | - | - |
|-----------------------|---|------|---|---|---|---|

Cracked concrete

| | | | | | | |
|----------|----|----|----|----|-----|-----|
| h_{ef} | 50 | 60 | 70 | 80 | 100 | 125 |
|----------|----|----|----|----|-----|-----|

| | | | | | | |
|-----------------------|-----|---|------|---|---|---|
| $N_{Rd,p}^O$ (C20/25) | 3,3 | 8 | 10,6 | - | - | - |
|-----------------------|-----|---|------|---|---|---|

$$\gamma_{Mc} = 1,5$$



- Concrete cone resistance

$$N_{Rd,c} = N_{Rd,c}^O \cdot f_b \cdot \Psi_s \cdot \Psi_{c,N}$$

| $N_{Rd,c}^O$ Anchor size | M6 | M8 | M10 | M12 | M16 | M20 |
|-----------------------------|----|----|-----|-----|-----|-----|
|-----------------------------|----|----|-----|-----|-----|-----|

Non cracked concrete

| | | | | | | |
|----------|----|----|----|----|-----|-----|
| h_{ef} | 50 | 60 | 70 | 80 | 100 | 125 |
|----------|----|----|----|----|-----|-----|

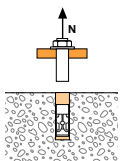
| | | | | | | |
|-----------------------|------|------|------|------|------|------|
| $N_{Rd,c}^O$ (C20/25) | 11,9 | 15,6 | 19,7 | 24,0 | 33,6 | 47,0 |
|-----------------------|------|------|------|------|------|------|

Cracked concrete

| | | | | | | |
|----------|----|----|----|----|-----|-----|
| h_{ef} | 50 | 60 | 70 | 80 | 100 | 125 |
|----------|----|----|----|----|-----|-----|

| | | | | | | |
|-----------------------|-----|------|------|------|------|------|
| $N_{Rd,c}^O$ (C20/25) | 8,5 | 11,2 | 14,1 | 17,2 | 24,0 | 33,5 |
|-----------------------|-----|------|------|------|------|------|

$$\gamma_{Mc} = 1,5$$



- Steel resistance

| $N_{Rd,s}$ Anchor size | M6 | M8 | M10 | M12 | M16 | M20 |
|---------------------------|----|----|-----|-----|-----|-----|
|---------------------------|----|----|-----|-----|-----|-----|

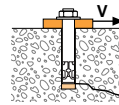
| | | | | | | |
|------------|------|------|------|------|------|-------|
| $N_{Rd,s}$ | 10,7 | 19,5 | 30,9 | 44,9 | 83,7 | 130,7 |
|------------|------|------|------|------|------|-------|

$$\gamma_{Ms} = 1,5$$

$$N_{Rd} = \min(N_{Rd,p}; N_{Rd,c}; N_{Rd,s})$$

$$\beta_N = N_{Sd} / N_{Rd} \leq 1$$

SHEAR in kN



- Concrete edge resistance

$$V_{Rd,c} = V_{Rd,c}^O \cdot f_b \cdot f_{\beta,V} \cdot \Psi_{S-C,V}$$

| $V_{Rd,c}^O$ Anchor size | M6 | M8 | M10 | M12 | M16 | M20 |
|-----------------------------|----|----|-----|-----|-----|-----|
|-----------------------------|----|----|-----|-----|-----|-----|

Non cracked concrete

| | | | | | | |
|----------|----|----|----|----|-----|-----|
| h_{ef} | 50 | 60 | 70 | 80 | 100 | 125 |
|----------|----|----|----|----|-----|-----|

| | | | | | | |
|-----------|----|----|----|----|-----|-----|
| C_{min} | 50 | 60 | 70 | 80 | 100 | 150 |
|-----------|----|----|----|----|-----|-----|

| | | | | | | |
|-----------|-----|-----|-----|-----|-----|-----|
| S_{min} | 100 | 100 | 160 | 200 | 220 | 300 |
|-----------|-----|-----|-----|-----|-----|-----|

| | | | | | | |
|-----------------------|-----|-----|-----|-----|------|------|
| $V_{Rd,c}^O$ (C20/25) | 3,4 | 4,9 | 6,8 | 9,3 | 13,6 | 26,1 |
|-----------------------|-----|-----|-----|-----|------|------|

Cracked concrete

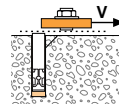
| | | | | | | |
|----------|----|----|----|----|-----|-----|
| h_{ef} | 50 | 60 | 70 | 80 | 100 | 125 |
|----------|----|----|----|----|-----|-----|

| | | | | | | |
|-----------|----|----|----|----|-----|-----|
| C_{min} | 50 | 60 | 70 | 80 | 100 | 150 |
|-----------|----|----|----|----|-----|-----|

| | | | | | | |
|-----------|-----|-----|-----|-----|-----|-----|
| S_{min} | 100 | 100 | 160 | 200 | 220 | 300 |
|-----------|-----|-----|-----|-----|-----|-----|

| | | | | | | |
|-----------------------|-----|-----|-----|-----|-----|------|
| $V_{Rd,c}^O$ (C20/25) | 2,4 | 3,5 | 4,8 | 6,6 | 9,7 | 18,7 |
|-----------------------|-----|-----|-----|-----|-----|------|

$$\gamma_{Mc} = 1,5$$



- Steel resistance

| $V_{Rd,s}$ Anchor size | M6 | M8 | M10 | M12 | M16 | M20 |
|---------------------------|----|----|-----|-----|-----|-----|
|---------------------------|----|----|-----|-----|-----|-----|

Cracked and non cracked concrete

| | | | | | | | |
|-----------|------------|------|------|------|------|------|-------|
| Type V/TF | $V_{Rd,s}$ | 18,7 | 26,1 | 39,3 | 58,2 | 93,8 | 138,8 |
|-----------|------------|------|------|------|------|------|-------|

| | | | | | | | |
|--------|------------|------|------|------|------|------|------|
| Type E | $V_{Rd,s}$ | 11,4 | 15,2 | 24,8 | 37,9 | 74,5 | 87,9 |
|--------|------------|------|------|------|------|------|------|

$$\gamma_{Ms} = 1,25$$

$$V_{Rd} = \min(V_{Rd,c}; V_{Rd,s})$$

$$\beta_V = V_{Sd} / V_{Rd} \leq 1$$

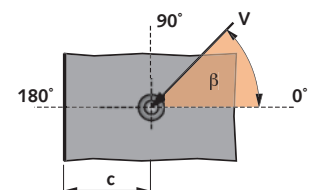
$$\beta_N^{1,5} + \beta_V^{1,5} \leq 1$$

f_B INFLUENCE OF CONCRETE

| Concrete class | f_B | Concrete class | f_B |
|----------------|-------|----------------|-------|
| C25/30 | 1,1 | C40/50 | 1,41 |
| C30/37 | 1,22 | C45/55 | 1,48 |
| C35/45 | 1,34 | C50/60 | 1,55 |

$f_{\beta,V}$ INFLUENCE OF SHEAR LOADING DIRECTION

| Angle β [°] | $f_{\beta,V}$ |
|-------------------|---------------|
| 0 to 55 | 1 |
| 60 | 1,1 |
| 70 | 1,2 |
| 80 | 1,5 |
| 90 to 180 | 2 |



SPIT TRIGA Z

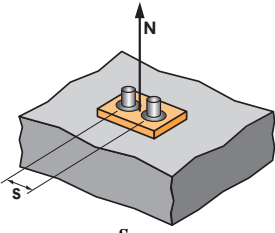
Zinc coated steel



4/4

SPIT CC- Method (values issued from ETA)

Ψ_s INFLUENCE OF SPACING FOR CONCRETE CONE RESISTANCE IN TENSILE LOAD



$$\Psi_s = 0,5 + \frac{s}{6 \cdot h_{ef}}$$

$s_{min} < s < s_{cr,N}$

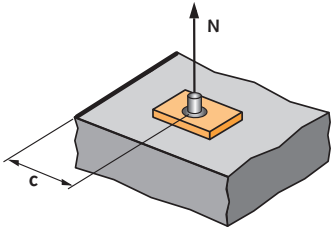
$s_{cr,N} = 3 \cdot h_{ef}$

Ψ_s must be used for each spacing influenced the anchors group.

SPACING S

| | Reduction factor Ψ_s Cracked and non-cracked concrete | | | | | |
|-----|---|------|------|------|------|------|
| | M6 | M8 | M10 | M12 | M16 | M20 |
| 50 | 0,67 | | | | | |
| 60 | 0,70 | 0,67 | | | | |
| 70 | 0,73 | 0,69 | 0,67 | | | |
| 80 | 0,77 | 0,72 | 0,69 | 0,67 | | |
| 100 | 0,83 | 0,78 | 0,74 | 0,71 | 0,67 | |
| 125 | 0,92 | 0,85 | 0,80 | 0,76 | 0,71 | 0,67 |
| 150 | 1,00 | 0,92 | 0,86 | 0,81 | 0,75 | 0,70 |
| 180 | | 1,00 | 0,93 | 0,88 | 0,80 | 0,74 |
| 210 | | | 1,00 | 0,94 | 0,85 | 0,78 |
| 240 | | | | 1,00 | 0,90 | 0,82 |
| 300 | | | | | 1,00 | 0,90 |
| 375 | | | | | | 1,00 |

$\Psi_{c,N}$ INFLUENCE OF EDGE FOR CONCRETE CONE RESISTANCE IN TENSILE LOAD



$$\Psi_{c,N} = 0,25 + 0,5 \cdot \frac{c}{h_{ef}}$$

$c_{min} < c < c_{cr,N}$

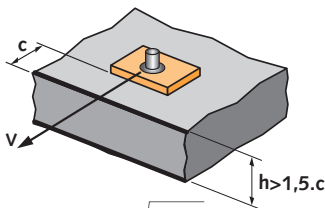
$c_{cr,N} = 1,5 \cdot h_{ef}$

$\Psi_{c,N}$ must be used for each distance influenced the anchors group.

EDGE C

| | Reduction factor $\Psi_{c,N}$ Cracked and non-cracked concrete | | | | | |
|-----|---|------|------|------|------|------|
| | M6 | M8 | M10 | M12 | M16 | M20 |
| 50 | 0,75 | | | | | |
| 60 | 0,85 | 0,75 | | | | |
| 70 | 0,95 | 0,83 | 0,75 | | | |
| 80 | 1,00 | 0,92 | 0,82 | 0,75 | | |
| 90 | | 1,00 | 0,89 | 0,81 | | |
| 100 | | | 0,96 | 0,88 | 0,75 | |
| 120 | | | | 1,00 | 0,85 | |
| 150 | | | | | 1,00 | 0,85 |
| 170 | | | | | | 0,93 |
| 190 | | | | | | 1,00 |

$\Psi_{s-c,V}$ INFLUENCE OF SPACING AND EDGE DISTANCE FOR CONCRETE EDGE RESISTANCE IN SHEAR LOAD

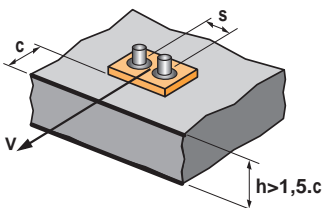


$$\Psi_{s-c,V} = \frac{c}{c_{min}} \cdot \sqrt{\frac{c}{c_{min}}}$$

For single anchor fastening

Factor $\Psi_{s-c,V}$
Cracked and non-cracked concrete

| $\frac{c}{c_{min}}$ | 1,0 | 1,2 | 1,4 | 1,6 | 1,8 | 2,0 | 2,2 | 2,4 | 2,6 | 2,8 | 3,0 | 3,2 |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| $\Psi_{s-c,V}$ | 1,00 | 1,31 | 1,66 | 2,02 | 2,41 | 2,83 | 3,26 | 3,72 | 4,19 | 4,69 | 5,20 | 5,72 |



$$\Psi_{s-c,V} = \frac{3 \cdot c + s}{6 \cdot c_{min}} \cdot \sqrt{\frac{c}{c_{min}}}$$

For 2 anchors fastening

Factor $\Psi_{s-c,V}$
Cracked and non-cracked concrete

| $\frac{s}{c_{min}}$ | $\frac{c}{c_{min}}$ | 1,0 | 1,2 | 1,4 | 1,6 | 1,8 | 2,0 | 2,2 | 2,4 | 2,6 | 2,8 | 3,0 | 3,2 |
|---------------------|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | 1,0 | 0,67 | 0,84 | 1,03 | 1,22 | 1,43 | 1,65 | 1,88 | 2,12 | 2,36 | 2,62 | 2,89 |
| 1,5 | 0,75 | 0,93 | 1,12 | 1,33 | 1,54 | 1,77 | 2,00 | 2,25 | 2,50 | 2,76 | 3,03 | 3,31 | |
| 2,0 | 0,83 | 1,02 | 1,22 | 1,43 | 1,65 | 1,89 | 2,12 | 2,38 | 2,63 | 2,90 | 3,18 | 3,46 | |
| 2,5 | 0,92 | 1,11 | 1,32 | 1,54 | 1,77 | 2,00 | 2,25 | 2,50 | 2,77 | 3,04 | 3,32 | 3,61 | |
| 3,0 | 1,00 | 1,20 | 1,42 | 1,64 | 1,88 | 2,12 | 2,37 | 2,63 | 2,90 | 3,18 | 3,46 | 3,76 | |
| 3,5 | | 1,30 | 1,52 | 1,75 | 1,99 | 2,24 | 2,50 | 2,76 | 3,04 | 3,32 | 3,61 | 3,91 | |
| 4,0 | | | 1,62 | 1,86 | 2,10 | 2,36 | 2,62 | 2,89 | 3,17 | 3,46 | 3,75 | 4,05 | |
| 4,5 | | | | 1,96 | 2,21 | 2,47 | 2,74 | 3,02 | 3,31 | 3,60 | 3,90 | 4,20 | |
| 5,0 | | | | | 2,33 | 2,59 | 2,87 | 3,15 | 3,44 | 3,74 | 4,04 | 4,35 | |
| 5,5 | | | | | | 2,71 | 2,99 | 3,28 | 3,71 | 4,02 | 4,33 | 4,65 | |
| 6,0 | | | | | | | 2,83 | 3,11 | 3,41 | 3,71 | 4,02 | 4,33 | 4,65 |

For other case of fastenings

$$\Psi_{s-c,V} = \frac{3 \cdot c + s_1 + s_2 + s_3 + \dots + s_{n-1}}{3 \cdot n \cdot c_{min}} \cdot \sqrt{\frac{c}{c_{min}}}$$

