

Building material



Concrete C20/25



Natural Stone, Rock

Approvals



FixCalc Calculation Software



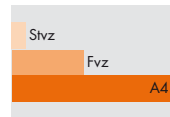
European Technical Approval

ETA Approval



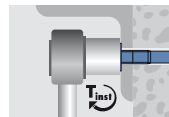
European Technical Approval Option 7 for uncracked concrete

Corrosion resistance



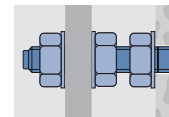
A4 = stainless steel A4/316
Fvz = hot dip galvanised > 40µm
Stvz = zinc plated > 5µm

Installation safety



by applying the prescribed torque when setting.

Distance fixing

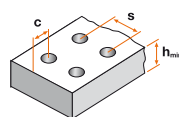
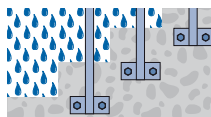
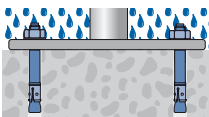


The long thread allows distance installations.

Features

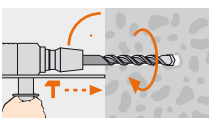
- European Technical Approval Option 7 for uncracked concrete
- Torque controlled expansion
- Applications in damp areas and outdoors
- Stainless steel A4/316
- Pre installation or through fixing

Applications

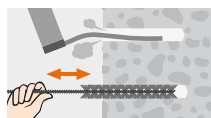


- facades
- cable trays
- railings
- steel constructions
- machines
- facade substructures
- high-racks
- profiles

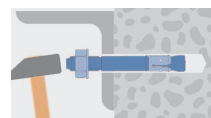
Installation



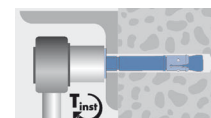
Make the drill hole



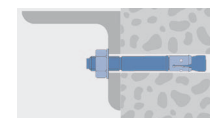
Clean the drill hole



Fix plug and building material



Tighten with a torque spanner to the predetermined value T_{inst}

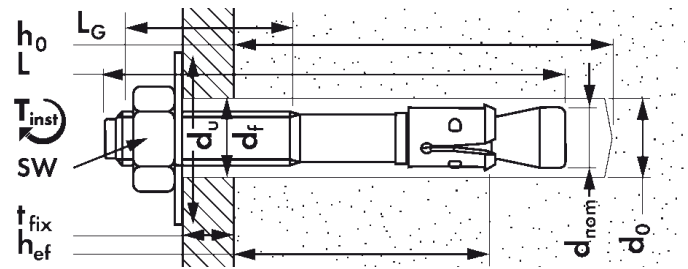


m2r Throughbolt with washer DIN 125A, stainless steel A4/316



| Type | M6 x 50 / 5 | | M6 x 65 / 10 | | M8 x 50 / 5 | | M8 x 60 / 10 | | M8 x 80 / 10 | | M8 x 85 / 15 | | M8 x 95 / 25 | | M8 x 115 / 45 | | M10 x 60 / 5 | | M10 x 70 / 10 | | M10 x 95 / 15 | | M10 x 110 / 30 | | M10 x 125 / 45 | | M10 x 140 / 60 | | M10 x 160 / 80 | | M10 x 180 / 100 | | M12 x 80 / 5 | | M12 x 110 / 15 | | M12 x 125 / 30 | | M12 x 145 / 50 | | M12 x 165 / 70 | | M12 x 185 / 90 | | M16 x 115 / 10 | | M16 x 130 / 15 | | M16 x 145 / 30 | | M16 x 160 / 45 | | M16 x 180 / 65 | | M20 x 160 / 30 | |
|---|-------------|---------|--------------|------------|-------------|---------|--------------|---------|--------------|------------|--------------|---------|--------------|---------|---------------|---------|--------------|---------|---------------|---------|---------------|---------|----------------|---------|----------------|---------|----------------|------------|----------------|--|-----------------|--|--------------|--|----------------|--|----------------|--|----------------|--|----------------|--|----------------|--|----------------|--|----------------|--|----------------|--|----------------|--|----------------|--|----------------|--|
| Plug and drill Ø mm d_{nom} | 6 | | | | 8 | | | | | | | | 10 | | | | | | | | 12 | | | | | | | | 16 | | | | | | | | 20 | | | | | | | | | | | | | | | | | | | |
| Length mm L | 50 | 65 | 50 | 60 | 80 | 85 | 95 | 115 | 60 | 70 | 95 | 110 | 125 | 140 | 160 | 180 | 80 | 110 | 125 | 145 | 165 | 185 | 115 | 130 | 145 | 160 | 180 | 160 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Drilling depth mm h_o | 50 | 60 | 45 | 50 | 65 | | | | 55 | 60 | 80 | | | | | | | | 75 | 90 | | | | | | | | 100 | 110 | | | | 130 | | | | | | | | | | | | | | | | | | | | | | | |
| Usable length mm t_{fix} | 5 | 10 | 5 | 10 | 15 | 25 | 45 | 5 | 10 | 15 | 30 | 45 | 60 | 80 | 100 | 5 | 15 | 30 | 50 | 70 | 90 | 10 | 15 | 30 | 45 | 65 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Setting depth min. mm h_{af} | 30 | 40 | 27 | 30 | 50 | | | | 33 | 35 | 58 | | | | | | | | 49 | 68 | | | | | | | | 70 | 80 | | | | 100 | | | | | | | | | | | | | | | | | | | | | | | |
| Clearance hole in fixture mm d_f | 7 | | | | 9 | | | | | | | | 12 | | | | | | | | 14 | | | | | | | | 18 | | | | 22 | | | | | | | | | | | | | | | | | | | | | | | |
| Washer Ø d_u | 12 | | | | 16 | | | | | | | | 20 | | | | | | | | 24 | | | | | | | | 30 | | | | 37 | | | | | | | | | | | | | | | | | | | | | | | |
| Thread length mm L_G | 19 | 32 | 18 | 24 | 43 | 48 | 58 | 78 | 23 | 27 | 52 | 67 | 82 | 97 | 117 | 120 | 32 | 62 | 77 | 97 | 117 | 120 | 58 | 73 | 88 | 103 | 120 | 100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Code of usable length | A | D | A | C | D | E | G | K | A | C | E | H | K | N | R | T | A | E | H | L | P | S | C | E | H | K | O | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Concrete C20/25 tension load (kN) | 3.6 | | | | 5.7 | | | | | | | | 7.6 | | | | | | | | 11.9 | | | | | | | | 14.3 | | | | 19.8 | | | | | | | | | | | | | | | | | | | | | | | |
| Concrete C20/25 shear load (kN) | 3.9 | | | | 7.1 | | | | | | | | 11.2 | | | | | | | | 16.3 | | | | | | | | 30.3 | | | | 32.0 | | | | | | | | | | | | | | | | | | | | | | | |
| Bending moment (Nm) | 6.4 | | | | 16.1 | | | | | | | | 32.2 | | | | | | | | 56.4 | | | | | | | | 142.8 | | | | 125.7 | | | | | | | | | | | | | | | | | | | | | | | |
| Distance betw. anchors (s) mm | 120 | | | | 150 | | | | | | | | 174 | | | | | | | | 204 | | | | | | | | 240 | | | | 300 | | | | | | | | | | | | | | | | | | | | | | | |
| Edge distance (c) mm | 60 | | | | 75 | | | | | | | | 87 | | | | | | | | 102 | | | | | | | | 120 | | | | 150 | | | | | | | | | | | | | | | | | | | | | | | |
| Min. distance betw. anchors/at edge distance (s_{min}/c) mm | 40/70 | | | | 50/90 | | | | | | | | 60/115 | | | | | | | | 75/150 | | | | | | | | 100/190 | | | | 200/400 | | | | | | | | | | | | | | | | | | | | | | | |
| Min. edge distance/at distance betw. anchors (c_{min}/s) mm | 40/80 | | | | 50/100 | | | | | | | | 60/120 | | | | | | | | 100/150 | | | | | | | | 130/190 | | | | 300/350 | | | | | | | | | | | | | | | | | | | | | | | |
| Min. thickness of found. (h_{min}) mm | 100 | | | | 120 | | | | | | | | 140 | | | | | | | | 160 | | | | 200 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tighten torque (Nm) T_{inst} | 6.5 | | | | 25 | | | | | | | | 35 | | | | | | | | 125 | | | | | | | | 140 | | | | 280 | | | | | | | | | | | | | | | | | | | | | | | |
| Spanner size SW | 10 | | | | 13 | | | | | | | | 17 | | | | | | | | 19 | | | | | | | | 24 | | | | 30 | | | | | | | | | | | | | | | | | | | | | | | |
| Box contents | 100 | | | | 50 | | | | | | | | 25 | | | | 50 | | | | | | | | 25 | | | | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Outer carton | 900 | | | | 300 | | | | | | | | 150 | | | | 75 | | | | 150 | | | | | | | | 75 | | | | 60 | | | | | | | | | | | | | | | | | | | | | | | |
| Quantity per pallet | 54000 | | | | 18000 | | | | | | | | 9000 | | | | 4500 | | | | 9000 | | | | | | | | 4500 | | | | 3600 | | | | | | | | | | | | | | | | | | | | | | | |
| Article code | 1) 3300605 | 3300606 | 1) 3300805 | 1) 3300806 | 3300808 | 3300885 | 3300809 | 3300811 | 1) 3301006 | 1) 3301007 | 3301009 | 3301011 | 3301012 | 3301014 | 3301016 | 3301018 | 1) 3301208 | 3301211 | 3301212 | 3301214 | 3301216 | 3301218 | 1) 3301611 | 3301613 | 3301614 | 3301616 | 3301618 | 1) 1442016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

1) Not part of the approval / The partial safety factors of the resistances as well as a partial safety factor of the effect of $\psi_F = 1.4$ are considered / Loads do not apply for reduced setting depths / 1 kN \approx 100 kg



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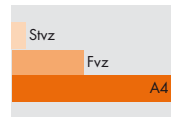
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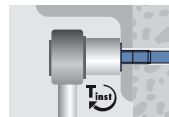
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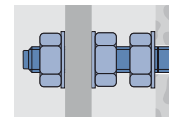
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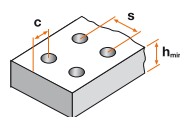
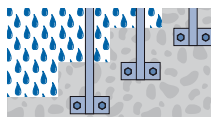
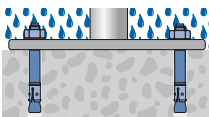


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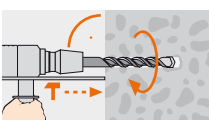
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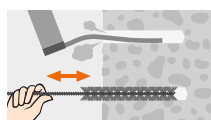


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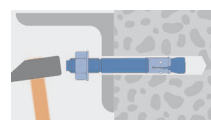
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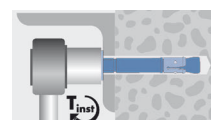
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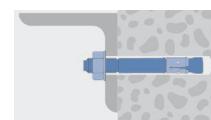
Clean the drill hole



Fix plug and building material



Tighten with a torque spanner to the predetermined value T_{inst}



m2r-C Throughbolt with big washer DIN 9021, stainless steel A4/316



| Type | M8 x 60 / 10 | M8 x 80 / 10 | M10 x 70 / 10 | M10 x 95 / 15 |
|--|--------------|--------------|---------------|---------------|
| Plug and drill \varnothing mm d_{nom} | 8 | | 10 | |
| Length mm L | 60 | 80 | 70 | 95 |
| Drilling depth mm h_o | 50 | 65 | 60 | 80 |
| Usable length mm t_{fix} | 10 | | 15 | |
| Setting depth min. mm h_{ef} | 30 | 50 | 35 | 58 |
| Clearance hole in fixture mm d_t | 9 | | 12 | |
| Washer \varnothing d_u | 24 | | 30 | |
| Thread length mm L_G | 24 | 43 | 27 | 52 |
| Code of usable length | C | D | C | E |
| Concrete C20/25 tension load (kN) | 5.7 | | 7.6 | |
| Concrete C20/25 shear load (kN) | 7.1 | | 11.2 | |
| Bending moment (Nm) | 16.1 | | 32.2 | |
| Distance betw. anchors (s) mm | 150 | | 174 | |
| Edge distance (c) mm | 75 | | 87 | |
| Min. distance betw. anchors/at edge distance (s_{min}/c) mm | 50/90 | | 60/115 | |
| Min. edge distance/at distance betw. anchors (c_{min}/s) mm | 50/100 | | 60/120 | |
| Min. thickness of found. (h_{min}) mm | 100 | | 120 | |
| Tighten torque (Nm) T_{inst} | 25 | | 35 | |
| Spanner size SW | 13 | | 17 | |
| Box contents | 100 | | | 50 |
| Outer carton | 300 | | | 150 |
| Quantity per pallet | 18000 | | | 9000 |
| Article code | 113310806 | 113310808 | 113311007 | 113311009 |

¹⁾ Not part of the approval / The partial safety factors of the resistances as well as a partial safety factor of the effect of $\gamma_F = 1.4$ are considered / Loads do not apply for reduced setting depths / 1 kN \approx 100 kg