

MKT Fixing



Quality
Management



Environmental
Management



Energy
Management

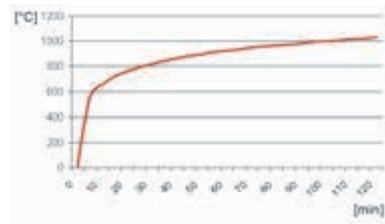










Occupational Health
and Safety
Management System

Fire Resistant Anchor Systems

...a solid connection

Tested according to standardized temperature curve (ISO 834, DIN EN 1363-1: 1999-10, DIN 4102-2: 1977-09) in cracked concrete, exposed to open flames, without fire protection. The full IBMB test reports are available on request.



| Anchor system | IBMB test report / approval | Size | Maximum tension load [kN] in fire tests according to DIN 4102-2 for the fire resistance classes | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------|---------------|-----------------|------|------|
| | | | R 30 (30 min) | R 60 (60 min) | R 90 (90 min) | R 120 (120 min) | | |
| Wedge Anchor BZ plus Steel, zinc plated  | ETA-99/0010 | M 8 hef = 46 | 1,25 | 1,10 | 0,80 | 0,70 | | |
| | | M 10 hef = 60 | 2,20 | 1,80 | 1,40 | 1,20 | | |
| | | M 12 hef = 70 | 3,20 | 2,80 | 2,40 | 2,20 | | |
| | | M 16 hef = 85 | 6,00 | 5,20 | 4,40 | 4,00 | | |
| | | M 20 hef = 100 | 9,00 | 8,20 | 6,90 | 6,30 | | |
| | | M 24 hef = 115 | 11,10 | 11,10 | 10,00 | 8,90 | | |
| Wedge Anchor BZ plus A4/HCR Stainless steel A4/316, Stainless steel 1.4529  | ETA-99/0010 | M 8 hef = 46 | 1,25 | 1,25 | 1,25 | 1,00 | | |
| | | M 10 hef = 60 | 2,25 | 2,25 | 2,25 | 1,80 | | |
| | | M 12 hef = 70 | 4,00 | 4,00 | 4,00 | 3,20 | | |
| | | M 16 hef = 85 | 6,25 | 6,25 | 6,25 | 5,00 | | |
| | | M 20 hef = 100 | 9,00 | 9,00 | 9,00 | 7,20 | | |
| | | M 24 hef = 125 | 10,00 | 10,00 | 10,00 | 8,00 | | |
| Wedge Anchor B, B-U SSteel, zinc plated/hot dip galvanised  | 3738/395/11 | M 6 | 0,59 | 0,46 | 0,34 | 0,27 | | |
| | | M 8 | 0,88 | 0,72 | 0,56 | 0,48 | | |
| | | M 10 | 1,40 | 1,14 | 0,88 | 0,76 | | |
| | | M 12 | 2,04 | 1,66 | 1,29 | 1,10 | | |
| | | M 16 | 3,79 | 3,09 | 2,40 | 2,05 | | |
| | | M 20 | 5,97 | 4,87 | 3,77 | 3,22 | | |
| Wedge Anchor B A4 Stainless steel A4  Values for reduced anchorage depth please see testreport. | 12035CT/15 | M 6 hef = 40 | 1,80 | 1,40 | 0,90 | 0,70 | | |
| | | M 8 hef = 44 | 2,30 | 2,30 | 2,10 | 1,00 | | |
| | | M 10 hef = 48 | 2,90 | 2,90 | 2,90 | 2,20 | | |
| | | M 12 hef = 65 | 6,10 | 6,10 | 4,80 | 3,90 | | |
| | | M 16 hef = 80 | 6,40 | 6,40 | 6,40 | 5,10 | | |
| | | M 20 hef = 100 | 8,90 | 8,90 | 8,90 | 7,10 | | |
| Highload Anchor SZ Steel, zinc plated  | ETA-02/0030 | M 6 | 1,00 | 0,80 | 0,60 | 0,40 | | |
| | | M 8 | 1,90 | 1,50 | 1,00 | 0,80 | | |
| | | M 10 | 4,00 | 3,20 | 2,10 | 1,50 | | |
| | | M 12 | 6,30 | 4,60 | 3,00 | 2,00 | | |
| | | M 16 | 8,80 | 8,60 | 5,00 | 3,10 | | |
| | | M 16 | 18,80 | 8,60 | 5,00 | 3,10 | | |
| Highload Anchor SZ A4 Stainless steel A4  | ETA-02/0030 | M 8 | 2,30 | 2,30 | 2,30 | 1,80 | | |
| | | M 10 | 4,00 | 4,00 | 4,00 | 2,80 | | |
| | | M 12 | 6,40 | 6,40 | 6,40 | 4,10 | | |
| | | M 16 | 9,00 | 9,00 | 9,00 | 7,20 | | |
| | | Injection System VMU Steel, zinc plated /Stainless steel A4/316 and 1.4529  | 3681/0206 | M 8 | 1,90 | 0,85 | 0,55 | 0,40 |
| | | | | M 10 | 4,50 | 2,10 | 1,35 | 1,00 |
| M 12 | 6,00 | | | 3,00 | 2,00 | 1,50 | | |
| M 16 | 11,00 | | | 6,60 | 4,90 | 4,00 | | |
| M 20 | 16,00 | | | 9,00 | 6,40 | 5,00 | | |
| M 24 | 19,83 | | | 11,49 | 7,31 | 5,32 | | |
| Injection System VME Steel, zinc plated /Stainless steel A4/316 and 1.4529  | 3062/066/12 | ≥ 80 M 8 | 0,90 | 0,50 | 0,30 | 0,20 | | |
| | | ≥ 90 M 10 | 3,20 | 1,80 | 1,10 | 0,75 | | |
| | | ≥ 110 M 12 | 4,20 | 2,30 | 1,40 | 0,90 | | |
| | | ≥ 125 M 16 | 8,25 | 5,30 | 3,80 | 3,00 | | |
| | | ≥ 170 M 20 | 17,25 | 10,20 | 6,70 | 5,00 | | |
| | | ≥ 210 M 24 | 24,85 | 14,75 | 9,70 | 7,20 | | |
| | | ≥ 250 M 27 | 32,30 | 19,15 | 12,60 | 9,30 | | |
| | | ≥ 280 M 30 | 39,50 | 23,40 | 15,40 | 11,35 | | |

Wedge Anchor B

Steel, zinc plated



Description

The tried and tested wedge anchor B with European technical approval, Option 7, is ideal for time-saving through fastenings in non-cracked concrete.

Its two effective anchorage depths make it very flexible, reducing contacts with reinforcements when holes are drilled. The long thread also makes stand-off fastenings possible.

Applications

Metal constructions, channels, brackets, supports, hand rails, cable trays, ducts, shelf bases.

Range of loading: 2,9 kN-37,2 kN

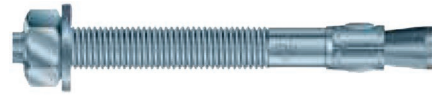
Range of concrete quality: C20/25-C50/60

Approvals and Certificates



Wedge Anchor B

Hot dip galvanized



Description

The Wedge Anchor B hot dip galvanized, with ETA-Approval Option 7, offers all the advantages of the zinc plated version with a better corrosion protection. All sizes covered by the approval are assembled with a stainless steel expansion clip.

Applications

Indoor medium to heavy duty applications: metal constructions, channels, brackets, supports, cladding systems, hand rails, cable trays, ducts.

Range of loading: 2,9 kN-37,2 kN

Range of concrete quality: C20/25-C50/60

Approvals and Certificates



MKT-B Zinc Plated (minimum 5µm)

MKT-B Hot Dip Galvanized (minimum 45µm)

| Item Number (Zinc Plated) | Item Number (HDG) | Description | Anchor Length l (mm) | Fixture thickness tfix (mm) | Package Content (pcs) |
|---------------------------|-------------------|-------------------|----------------------|-----------------------------|-----------------------|
| 2020206052 | 2020506052 | B6 5/52mm | 52 | 5 | 100 |
| 2020206067 | 2020506067 | B6 10-20/67mm | 67 | 10 | 100 |
| 2020206082 | 2020506082 | B6 25-35/82mm | 82 | 25 | 100 |
| 2020206097 | 2020506097 | B6 40-50/97mm | 97 | 40 | 100 |
| 2020208060 | 2020508060 | B8 4/60mm | 60 | - | 100 |
| 2020208075 | 2020508075 | B8 10-19/75mm | 75 | 10 | 100 |
| 2020208085 | 2020508085 | B8 20-29/85mm | 85 | 20 | 100 |
| 2020208095 | 2020508095 | B8 30-39/95mm | 95 | 30 | 100 |
| 2020208110 | 2020508110 | B8 45-54/110mm | 110 | 45 | 100 |
| 2020208120 | 2020508120 | B8 55-64/120mm | 120 | 55 | 100 |
| 2020210085 | 2020510085 | B10 10-16/85mm | 85 | 10 | 50 |
| 2020210090 | 2020510090 | B10 15-24/90mm | 90 | 15 | 50 |
| 2020210105 | 2020510105 | B10 30-36/105mm | 105 | 30 | 50 |
| 2020210120 | 2020510120 | B10 45-51/120mm | 120 | 45 | 50 |
| 2020210125 | 2020510125 | B10 50-56/125mm | 125 | 50 | 50 |
| 2020210145 | 2020510145 | B10 70-76/145mm | 145 | 70 | 50 |
| 2020210175 | 2020510175 | B10 100-106/175mm | 175 | 100 | 50 |

MKT-B Zinc Plated (minimum 5µm)

MKT-B Hot Dip Galvanized (minimum 45µm)

| Item Number (Zinc Plated) | Item Number (HDG) | Description | Anchor Length l (mm) | Fixture thickness tfix (mm) | Package Content (pcs) |
|---------------------------|-------------------|-------------------|----------------------|-----------------------------|-----------------------|
| 2020212075 | 2020512075 | B12 5/75mm | 75 | - | 25 |
| 2020212095 | 2020512095 | B12 13/95mm | 95 | - | 25 |
| 2020212115 | 2020512115 | B12 20-35/115mm | 115 | 20 | 25 |
| 2020212125 | 2020512125 | B12 50-60/125mm | 125 | 50 | 25 |
| 2020212145 | 2020512145 | B12 70-76/145mm | 145 | 70 | 25 |
| 2020212180 | 2020512180 | B12 85-100/180mm | 180 | 85 | 25 |
| 2020212200 | 2020512200 | B12 105-120/200mm | 200 | 105 | 25 |
| 2020212220 | - | B12 125-140/220mm | 220 | 125 | 25 |
| 2020216090 | 2020516090 | B16 5/90mm | 90 | - | 20 |
| 2020216115 | 2020516115 | B16 13/115mm | 115 | - | 20 |
| 2020216130 | 2020516130 | B16 10-28/130mm | 130 | 10 | 20 |
| 2020216150 | 2020516150 | B16 30-48/150mm | 150 | 30 | 20 |
| 2020216180 | 2020516180 | B16 60-78/180mm | 180 | 60 | 20 |
| 2020216250 | - | B16 130-148/250mm | 250 | 130 | 20 |
| 2020220150 | 2020520150 | B20 10/150mm | 150 | 10 | 10 |
| 2020220180 | 2020520180 | B20 35-57/180mm | 180 | 35 | 10 |

Wedge Anchor B A4

Stainless Steel, A4/316



Description

The tried and tested wedge anchor B with European technical approval, Option 7, is ideal for time-saving through fastenings in non-cracked concrete. Its two effective anchorage depths make it very flexible, reducing contacts with reinforcements when holes are drilled. The long thread also makes stand-off fastenings possible.

The wedge anchor B M6 is also approved for multiple use for non-structural applications and similar fixtures in cracked and non-cracked concrete.

Applications

Medium to heavy duty indoor and outdoor use, metal structures, brackets, machines.

Wedge Anchor B M6 A4 and HCR: Multiple use for non-structural applications and similar fixtures in tunnels and or external atmospheric exposures.



Range of loading: 2,9 kN-37,2 kN
Range of concrete quality: C20/25-C50/60

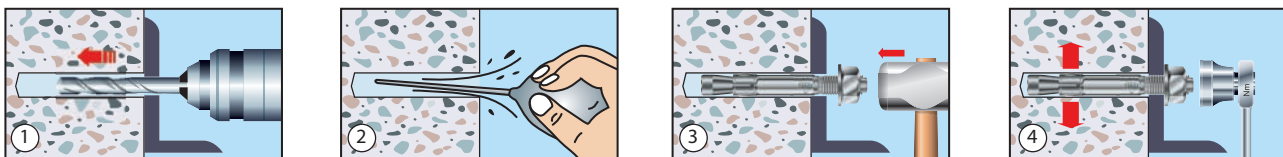
Approvals and Certificates



| MKT-B A4 Stainless Steel | | | | |
|--------------------------|-------------------|----------------------|-----------------------------|-----------------------|
| Item Number (A4) | Description | Anchor Length l (mm) | Fixture thickness tfix (mm) | Package Content (pcs) |
| 2020106052 | B6 5/52mm | 52 | 5 | 100 |
| 2020106067 | B6 10-20/67mm | 67 | 10 | 100 |
| 2020106082 | B6 25-35/82mm | 82 | 25 | 100 |
| 2020108060 | B8 4/60mm | 60 | - | 100 |
| 2020108075 | B8 10-19/75mm | 75 | 10 | 100 |
| 2020108085 | B8 20-29/85mm | 85 | 20 | 100 |
| 2020108095 | B8 30-39/95mm | 95 | 30 | 100 |
| 2020108110 | B8 45-54/110mm | 110 | 45 | 100 |
| 2020110085 | B10 10-16/85mm | 85 | 10 | 50 |
| 2020110090 | B10 15-24/90mm | 90 | 15 | 50 |
| 2020110105 | B10 30-36/105mm | 105 | 30 | 50 |
| 2020110120 | B10 45-51/120mm | 120 | 45 | 50 |
| 2020110125 | B10 50-56/125mm | 125 | 50 | 50 |
| 2020110145 | B10 70-76/145mm | 145 | 70 | 50 |
| 2020110175 | B10 100-106/175mm | 145 | 100 | 50 |

| MKT-B A4 Stainless Steel | | | | |
|--------------------------|-------------------|----------------------|-----------------------------|-----------------------|
| Item Number (A4) | Description | Anchor Length l (mm) | Fixture thickness tfix (mm) | Package Content (pcs) |
| 2020112075 | B12 5/75mm | 75 | - | 25 |
| 2020112095 | B12 13/95mm | 95 | - | 25 |
| 2020112115 | B12 20-35/115mm | 115 | 20 | 25 |
| 2020112125 | B12 50-60/125mm | 125 | 50 | 25 |
| 2020112145 | B12 70-76/145mm | 145 | 70 | 25 |
| 2020112180 | B12 85-100/180mm | 180 | 85 | 25 |
| 2020112200 | B12 105-120/200mm | 200 | 105 | 25 |
| 2020112220 | B12 125-140/220mm | 220 | 125 | 25 |
| 2020116090 | B16 5/90mm | 90 | - | 20 |
| 2020116115 | B16 13/115mm | 115 | - | 20 |
| 2020116130 | B16 10-28/130mm | 130 | 10 | 20 |
| 2020116150 | B16 30-48/150mm | 150 | 30 | 20 |
| 2020116180 | B16 60-78/180mm | 180 | 60 | 20 |
| 2020120150 | B20 5/150mm | 150 | 5 | 10 |
| 2020120180 | B20 35-57/180mm | 180 | 35 | 10 |

Installation of MKT B A4 Wedge Anchor



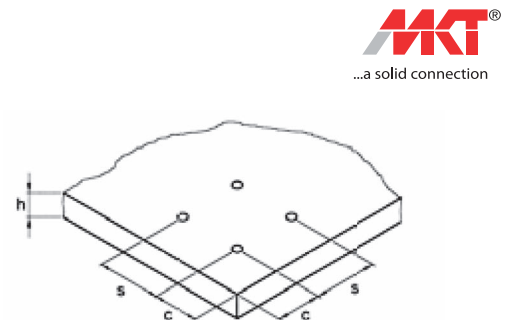
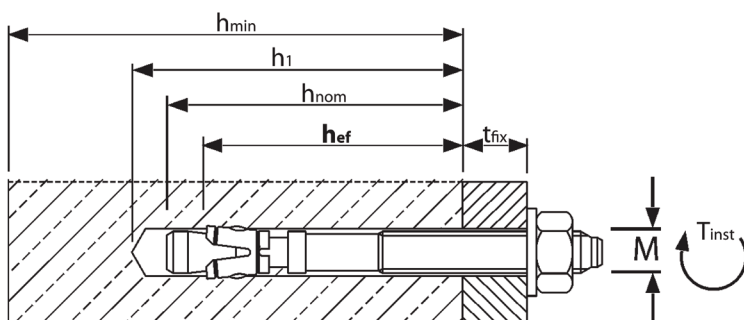
1. Drill to specified diameter and depth.
2. Clean the hole with blow-out bulb.
3. Drive anchor carefully with hammer into hole until nut and washer are flush with fixture.
4. Install fixture and tighten anchor to specified torque. If the marking in the threaded part of the anchor bolt becomes visible, do not load anchor. Refer to approvals and schedules for design and building code compliance.

| Loads and Performance Data | | | | M 6 | M8 | M 10 | M 12 | M 16 | M 20 |
|--------------------------------------------------------------|--------|-------------------|------|-----|-----|------|------|------|------|
| Wedge Anchor B (Zinc Plated & Hot Dip Galvanized) | | | | | | | | | |
| non-cracked concrete | | | | | | | | | |
| Recommended loads, tension | C20/25 | N _{rec} | [kN] | 2.9 | 4.0 | 5.3 | 8.8 | 12.5 | 16.8 |
| Recommended loads, shear | C20/25 | V _{rec} | [kN] | 2.0 | 4.4 | 5.6 | 10.0 | 16.5 | 25.9 |
| Spacing and Edge distance | | | | | | | | | |
| Effective anchorage depth | | h _{ef} | [mm] | 40 | 44 | 48 | 65 | 82 | 100 |
| Minimum thickness concrete slab | | h _{min} | [mm] | 100 | 100 | 100 | 130 | 170 | 200 |
| Charateristic spacing | | S _{cr,N} | [mm] | 120 | 132 | 144 | 195 | 246 | 300 |
| Charateristic edge distance | | C _{cr,N} | [mm] | 60 | 66 | 72 | 98 | 123 | 150 |
| Minimum Spacing | | S _{min} | [mm] | 35 | 40 | 55 | 75 | 90 | 105 |
| Minimum Edge Distance | | C _{min} | [mm] | 40 | 45 | 65 | 90 | 105 | 125 |
| Installation parameters | | | | | | | | | |
| Drill hole diameter, | | d _o | [mm] | 6 | 8 | 10 | 12 | 16 | 20 |
| Diameter of clearance hole in the fixture | | d _f | [mm] | 7 | 9 | 12 | 14 | 18 | 22 |
| Depth of Drill hole | | h ₁ | [mm] | 55 | 65 | 70 | 90 | 110 | 110 |
| Installation torque | | T _{inst} | [Nm] | 8 | 15 | 30 | 50 | 100 | 200 |
| Width across nut | | SW | [mm] | 10 | 13 | 17 | 19 | 24 | 30 |

Recommended loads for single anchor without influence of spacing and edge distance.
With overall global safety factor = 3.0.

| Loads and Performance Data | | | | M 6 | M8 | M 10 | M 12 | M 16 | M 20 |
|--------------------------------------------|--------|-------------------|------|-----|-----|------|------|------|------|
| Wedge Anchor B (A4 Stainless Steel) | | | | | | | | | |
| non-cracked concrete | | | | | | | | | |
| Recommended loads, tension | C20/25 | N _{rec} | [kN] | 2.9 | 4.0 | 5.3 | 8.8 | 12.5 | 16.8 |
| Recommended loads, shear | C20/25 | V _{rec} | [kN] | 2.0 | 4.4 | 5.6 | 10.0 | 16.5 | 25.9 |
| Spacing and Edge distance | | | | | | | | | |
| Effective anchorage depth | | h _{ef} | [mm] | 40 | 44 | 48 | 65 | 80 | 100 |
| Minimum thickness concrete slab | | h _{min} | [mm] | 100 | 100 | 100 | 130 | 160 | 200 |
| Charateristic spacing | | S _{cr,N} | [mm] | 120 | 132 | 144 | 195 | 240 | 300 |
| Charateristic edge distance | | C _{cr,N} | [mm] | 60 | 66 | 72 | 97.5 | 120 | 150 |
| Minimum Spacing | | S _{min} | [mm] | 35 | 35 | 45 | 60 | 80 | 100 |
| Minimum Edge Distance | | C _{min} | [mm] | 35 | 45 | 55 | 70 | 80 | 100 |
| Installation parameters | | | | | | | | | |
| Drill hole diameter, | | d _o | [mm] | 6 | 8 | 10 | 12 | 16 | 20 |
| Diameter of clearance hole in the fixture | | d _f | [mm] | 7 | 9 | 12 | 14 | 18 | 22 |
| Depth of Drill hole | | h ₁ | [mm] | 55 | 65 | 70 | 90 | 110 | 130 |
| Installation torque | | T _{inst} | [Nm] | 6 | 15 | 25 | 50 | 100 | 160 |
| Width across nut | | SW | [mm] | 10 | 13 | 17 | 19 | 24 | 30 |

Recommended loads for single anchor without influence of spacing and edge distance.
With overall global safety factor = 3.0.



Wedge Anchor BZ plus

Steel, zinc plated

...a solid connection



Wedge Anchor BZ plus



Wedge Anchor BZ plus M24/M27

Description

There has been further improvement to the performance and application range of the wedge anchor BZ plus. The new European Technical Assessment replaces the previous European technical approval. Now its suitability has been verified for seismic loading, performance categories C1 and C2. Variants include a second effective anchorage depth, longer thread, and new sizes with a shorter overall length and only one effective anchorage depth.

For timber structures, the BZ-U plus variant is also available with the DIN EN ISO 7091 (DIN 440) washer.

- Suitable for sprinkler system installations complying with VdS requirements
- FM approval for the installation of sprinkler systems (M10 to M16)
- Shock approval by the Swiss Federal Office for Civil Protection

Applications

Medium to heavy duty anchoring in cracked and non-cracked concrete: Steel beams, base plates, channels, tracks, wood structures.



Range of loading: 2,4 kN-96,8 kN
Range of concrete quality: C20/25-C50/60

Approvals and Certificates

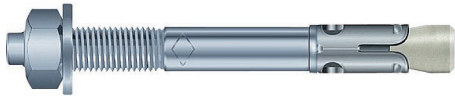


| MKT-BZ Plus Zinc Plated (minimum 5µm) | | | | |
|---------------------------------------|--------------------|-------------------------|--------------------------------|--------------------------|
| Item Number (Zinc Plated) | Description | Anchor Length l (mm) | Fixture thickness tfix (mm) | Package Content (pcs) |
| 2020708075 | BZ8 10-21/75mm | 75 | 10 | 100 |
| 2020708095 | BZ8 30-41/95mm | 95 | 30 | 100 |
| 2020708115 | BZ8 50-61/115mm | 115 | 50 | 100 |
| 2020710090 | BZ10 10-30/90mm | 90 | 10 | 50 |
| 2020710095 | BZ10 15-35/95mm | 95 | 15 | 50 |
| 2020710110 | BZ10 30-50/110mm | 110 | 30 | 50 |
| 2020710130 | BZ10 50-70/130mm | 130 | 50 | 50 |
| 2020710155 | BZ10 75-95/155mm | 155 | 75 | 50 |
| 2020712115 | BZ12 10-30/115mm | 115 | 20 | 25 |
| 2020712125 | BZ12 30-50/125mm | 125 | 30 | 25 |
| 2020712180 | BZ12 85-105/180mm | 180 | 85 | 25 |
| 2020712200 | BZ12 105-125/200mm | 200 | 105 | 25 |

| MKT-BZ Plus Zinc Plated (minimum 5µm) | | | | |
|---------------------------------------|-------------------|-------------------------|--------------------------------|--------------------------|
| Item Number (Zinc Plated) | Description | Anchor Length l (mm) | Fixture thickness tfix (mm) | Package Content (pcs) |
| 2020716135 | BZ16 15-35/135mm | 135 | 15 | 20 |
| 2020716170 | BZ16 50-70/170mm | 170 | 50 | 20 |
| 2020716200 | BZ16 80-100/200mm | 200 | 80 | 20 |
| 2020716220 | BZ16 100/220mm | 220 | 100 | 20 |
| 2020716260 | BZ16 140/260mm | 260 | 140 | 20 |
| 2020716300 | BZ16 180/300mm | 300 | 180 | 20 |
| 2020720165 | BZ20 30/165mm | 165 | 10 | 10 |
| 2020720195 | BZ20 60/195mm | 195 | 35 | 10 |
| 2020724190 | BZ24 30/190mm | 190 | 10 | 10 |
| 2020724220 | BZ24 60/220mm | 220 | 35 | 10 |
| 2020727210 | BZ27 30/210mm | 210 | 10 | 10 |
| 2020727240 | BZ27 60/240mm | 240 | 35 | 10 |

Wedge Anchor BZ plus A4

Stainless Steel A4/316



Wedge Anchor
BZ plus A4



Description

The Wedge Anchor BZ plus A4 (ETA, Option 1) combines high ultimate loads with close anchor spacing and edge distances. The special coating covering the expansion cone is heat resistant and durable enough to prevent cold welding of the expansion mechanism. This MKT patented invention also provides the proper friction between the stainless steel clip and the expansion cone throughout the entire service life of the anchor, which is a requirement for reliable crack-tested anchors.

Range of loading: 2,4 kN - 52,6 kN
Range of concrete quality: C20/25 - C50/60

Approvals and Certificates



Applications

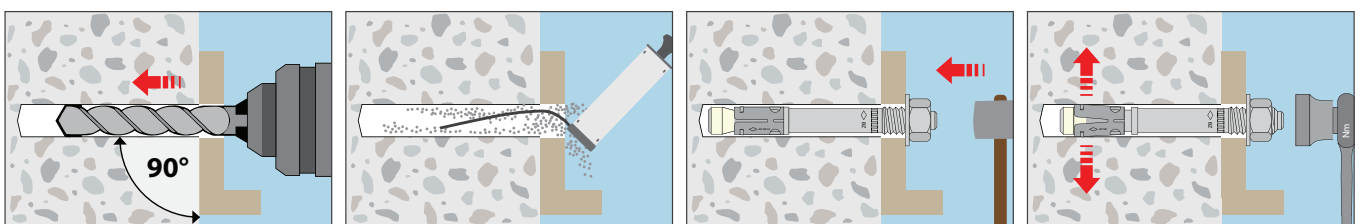
Medium to heavy duty anchoring in cracked and non-cracked concrete: Steel beams, channels, facade substructures, chairs in sports arenas, wood structures.



| MKT-BZ Plus A4 Stainless Steel | | | | |
|--------------------------------|--------------------|----------------------|-----------------------------|-----------------------|
| Item Number | Description | Anchor Length l (mm) | Fixture thickness tfix (mm) | Package Content (pcs) |
| 2021508075 | BZ8 10-21/75mm | 75 | 10 | 100 |
| 2021508080 | BZ8 15-26/80mm | 80 | 15 | 100 |
| 2021508095 | BZ8 30-41/95mm | 95 | 30 | 100 |
| 2021508115 | BZ8 50-61/115mm | 115 | 50 | 100 |
| 2021510090 | BZ10 10-30/90mm | 90 | 10 | 50 |
| 2021510095 | BZ10 15-35/95mm | 95 | 15 | 50 |
| 2021510110 | BZ10 30-50/110mm | 110 | 30 | 50 |
| 2021510130 | BZ10 50-70/130mm | 130 | 50 | 50 |
| 2021510155 | BZ10 75-95/155mm | 155 | 75 | 50 |
| 2021512105 | BZ12 10-30/105mm | 105 | 10 | 25 |
| 2020512115 | BZ12 20-40/115mm | 115 | 20 | 25 |
| 2021512145 | BZ12 50-70/145mm | 145 | 50 | 25 |
| 2021512180 | BZ12 85-105/180mm | 180 | 85 | 25 |
| 2021512200 | BZ12 105-125/200mm | 200 | 105 | 25 |

| MKT-BZ Plus A4 Stainless Steel | | | | |
|--------------------------------|------------------|----------------------|-----------------------------|-----------------------|
| Item Number | Description | Anchor Length l (mm) | Fixture thickness tfix (mm) | Package Content (pcs) |
| 2021512220 | BZ12 125/220mm | 220 | 125 | 25 |
| 2021512255 | BZ12 160/255mm | 255 | 160 | 20 |
| 2021516135 | BZ16 15-35/135mm | 135 | 15 | 20 |
| 2021516145 | BZ16 25-45/145mm | 145 | 25 | 20 |
| 2021516170 | BZ16 50-70/170mm | 170 | 50 | 20 |
| 2021516220 | BZ16 100/220mm | 220 | 100 | 10 |
| 2021516280 | BZ16 160/280mm | 280 | 160 | 10 |
| 2021520165 | BZ20 30/165mm | 165 | 30 | 10 |
| 2021520195 | BZ20 60/195mm | 195 | 60 | 10 |
| 2021520265 | BZ20 130/265mm | 265 | 130 | 5 |
| 2021520285 | BZ20 150/285mm | 285 | 150 | 5 |
| 2021524190 | BZ24 30/190mm | 190 | 30 | 10 |
| 2021524230 | BZ24 60/230mm | 230 | 60 | 5 |
| 2021524245 | BZ24 75/245mm | 245 | 75 | 5 |

Installation



| Loads and Performance Data | | | M8 | M 10 | M 12 | M 16 | M 20 | M 24 | M 27 | |
|------------------------------------------------------------------------------------|--------|-------------------|------|--------|--------|--------|--------|---------|---------|---------|
| Wedge Anchor BZ Plus (Zinc Plated) | | | | | | | | | | |
| cracked concrete | | | | | | | | | | |
| Recommended loads, tension | C20/25 | N _{rec} | [kN] | 1.7 | 3.0 | 5.3 | 8.3 | 12.0 | 14.8 | 16.8 |
| Recommended loads, shear | C20/25 | V _{rec} | [kN] | 4.1 | 6.7 | 10.0 | 18.3 | 23.0 | 38.0 | 47.0 |
| non-cracked concrete | | | | | | | | | | |
| Recommended loads, tension | C20/25 | N _{rec} | [kN] | 4.0 | 5.3 | 8.3 | 11.7 | 16.8 | 20.8 | 23.5 |
| Recommended loads, shear | C20/25 | V _{rec} | [kN] | 4.1 | 6.7 | 10.0 | 18.3 | 23.0 | 38.0 | 56.5 |
| Spacing and Edge distance | | | | | | | | | | |
| Effective anchorage depth | | h _{ef} | [mm] | 46 | 60 | 70 | 85 | 100 | 115 | 125 |
| Charateristic spacing | | S _{cr,N} | [mm] | 138 | 180 | 210 | 255 | 300 | 345 | 375 |
| Charateristic edge distance | | C _{cr,N} | [mm] | 69 | 90.0 | 105 | 127,5 | 150 | 172,5 | 187,5 |
| Minimum spacing and edge distance for standard thickness of concrete member | | | | | | | | | | |
| Minimum thickness concrete slab | | h _{min} | [mm] | 100 | 120 | 140 | 170 | 200 | 230 | 250 |
| cracked concrete | | | | | | | | | | |
| Minimum spacing / for edge distance c | | S _{min} | [mm] | 40/70 | 45/70 | 60/100 | 60/100 | 95/150 | 100/180 | 125/300 |
| Minimum edge Distance/ for spacing s | | C _{min} | [mm] | 40/80 | 45/90 | 60/140 | 60/180 | 95/200 | 100/220 | 180/540 |
| non-cracked concrete | | | | | | | | | | |
| Minimum spacing / for edge distance c | | S _{min} | [mm] | 40/80 | 45/70 | 60/120 | 65/120 | 90/180 | 100/180 | 125/300 |
| Minimum edge Distance/ for spacing s | | C _{min} | [mm] | 50/100 | 50/100 | 75/150 | 80/150 | 130/240 | 100/220 | 180/540 |
| Installation parameters | | | | | | | | | | |
| Drill hole diameter, | | d _o | [mm] | 8 | 10 | 12 | 16 | 20 | 24 | 28 |
| Diameter of clearance hole in the fixture | | d _f | [mm] | 9 | 12 | 14 | 18 | 22 | 26 | 30 |
| Depth of Drill hole | | h ₁ | [mm] | 60 | 75 | 90 | 11 | 125 | 145 | 160 |
| Installation torque | | T _{inst} | [Nm] | 20 | 25 | 45 | 90 | 160 | 200 | 300 |
| Width across nut | | SW | [mm] | 13 | 17 | 19 | 24 | 30 | 36 | 41 |

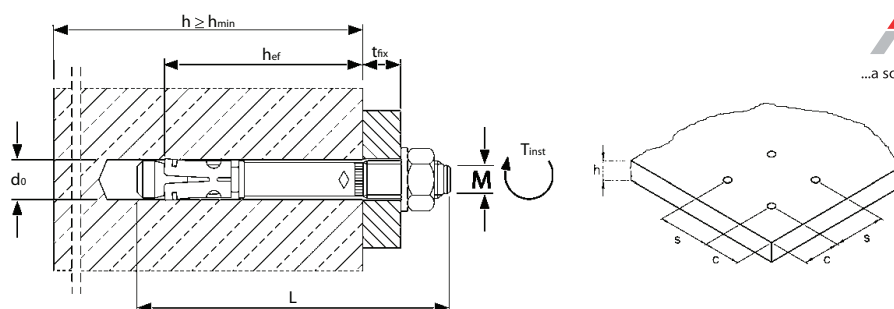
Recommended loads for single anchor without influence of spacing and edge distance.

With overall global safety factor = 3.0.

| Loads and Performance Data | | | M8 | M 10 | M 12 | M 16 | M 20 | M 24 | |
|------------------------------------------------------------------------------------|--------|-------------------|------|--------|--------|--------|--------|---------|---------|
| Wedge Anchor BZ Plus (A4 Stainless Steel) | | | | | | | | | |
| cracked concrete | | | | | | | | | |
| Recommended loads, tension | C20/25 | N _{rec} | [kN] | 1.7 | 3.0 | 5.3 | 8.3 | 12.0 | 13.3 |
| Recommended loads, shear | C20/25 | V _{rec} | [kN] | 4.3 | 6.7 | 10.0 | 18.3 | 28.7 | 41.2 |
| non-cracked concrete | | | | | | | | | |
| Recommended loads, tension | C20/25 | N _{rec} | [kN] | 4.0 | 5.3 | 8.3 | 11.7 | 16.8 | 23.5 |
| Recommended loads, shear | C20/25 | V _{rec} | [kN] | 4.3 | 6.7 | 10.0 | 18.3 | 28.7 | 41.2 |
| Spacing and Edge distance | | | | | | | | | |
| Effective anchorage depth | | h _{ef} | [mm] | 46 | 60 | 70 | 85 | 100 | 125 |
| Charateristic spacing | | S _{cr,N} | [mm] | 138 | 180 | 210 | 255 | 300 | 375 |
| Charateristic edge distance | | C _{cr,N} | [mm] | 69 | 90.0 | 105 | 128 | 150 | 188 |
| Minimum spacing and edge distance for standard thickness of concrete member | | | | | | | | | |
| Minimum thickness concrete slab | | h _{min} | [mm] | 100 | 120 | 140 | 160 | 200 | 250 |
| cracked concrete | | | | | | | | | |
| Minimum spacing / for edge distance c | | S _{min} | [mm] | 40/70 | 50/75 | 60/100 | 60/100 | 95/150 | 125/125 |
| Minimum edge Distance/ for spacing s | | C _{min} | [mm] | 40/80 | 55/90 | 60/140 | 60/180 | 95/200 | 125/125 |
| non-cracked concrete | | | | | | | | | |
| Minimum spacing / for edge distance c | | S _{min} | [mm] | 40/80 | 50/75 | 60/120 | 65/120 | 90/180 | 125/125 |
| Minimum edge Distance/ for spacing s | | C _{min} | [mm] | 50/100 | 60/120 | 75/150 | 80/150 | 130/240 | 125/125 |
| Installation parameters | | | | | | | | | |
| Drill hole diameter, | | d _o | [mm] | 8 | 10 | 12 | 16 | 20 | 24 |
| Diameter of clearance hole in the fixture | | d _f | [mm] | 9 | 12 | 14 | 18 | 22 | 26 |
| Depth of Drill hole | | h ₁ | [mm] | 60 | 75 | 90 | 110 | 125 | 155 |
| Installation torque | | T _{inst} | [Nm] | 20 | 35 | 50 | 110 | 200 | 290 |
| Width across nut | | SW | [mm] | 13 | 17 | 19 | 24 | 30 | 36 |

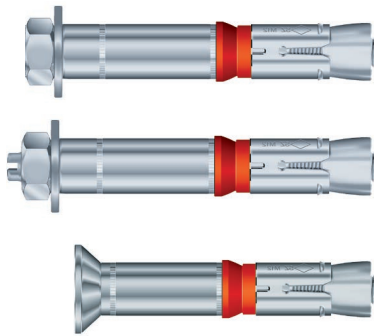
Recommended loads for single anchor without influence of spacing and edge distance.

With overall global safety factor = 3.0.



Highload Anchor SZ

Steel, zinc plated



Highload Anchor SZ-S

Highload Anchor SZ-B

Highload Anchor SZ-SK



Venetian Macau, Phase III
澳門威尼斯人度假村酒店三期

Description

The ETA (Option 1) approval Highload Anchor SZ is a high-performance through fastening Anchor System with three part expansion sleeve. This allows for smaller spacings and edge distances with high loads. The plastic compression ring ensures the clamping of the mounted piece to the work surface. Three different models of the Highload Anchor SZ are available: Screw/washer SZ-S, Bolthead SZ-B and for a flush surface mounting SZ-SK. All models have been shock-tested by the federal office for population protection in Bern/Switzerland.

New

The sizes M16 and M20 now are approved to use under seismic action according to the performance category C1.

Advantages

- High tension and shear loads
- Screw/washer (SZ-S) model and flat head (SZ-SK) model for finished surfaces
- Can be dismantled with a flush surface result (only the cone and expansion sleeve remain in the drill-hole)
- Smaller spacings and edge distances
- Fire protection approved (See Page 37)

Applications

Medium to highload mounting in cracked and non-cracked concrete, e.g. trusses, railings, machines, scaffolding and consoles. Even in damp rooms and outdoors.

Range of loading: 2,3 kN - 73,8 kN
Range of concrete quality: C20/25 - C50/60

Approvals and Certificates

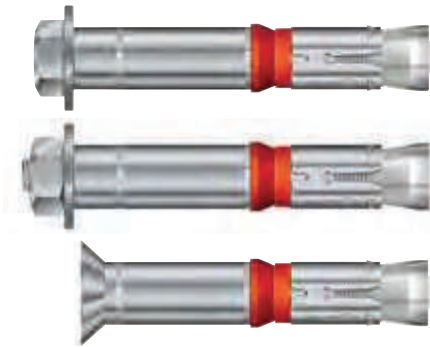


MKT-SZ Zinc Plated (minimum 5µm)

| Item Number | Item Number | Description | Description | Anchor Length | Anchor Length | Fixture thickness | Hole Diameter | Package Content |
|---------------|---------------|--------------------|--------------------|---------------|---------------|-------------------|---------------|-----------------|
| Type S | Type B | Type S | Type B | Type S | Type B | | | |
| (Zinc Plated) | (Zinc Plated) | (Zinc Plated) | (Zinc Plated) | l (mm) | l (mm) | tfix (mm) | do (mm) | (pcs) |
| 2022010075 | 2021910077 | SZ-S M6-10/75mm | SZ-B M6-10/77mm | 75 | 77 | 10 | 10 | 50 |
| 2022010095 | 2021910097 | SZ-S M6-30/95mm | SZ-B M6-30/97mm | 95 | 97 | 30 | 10 | 50 |
| 2022010115 | 2021910117 | SZ-S M6-50/115mm | SZ-B M6-50/117mm | 115 | 117 | 50 | 10 | 50 |
| - | 2021910167 | - | SZ-B M6-100/167mm | - | 167 | 100 | 10 | 25 |
| 2022012085 | 2021912090 | SZ-S M8-10/85mm | SZ-B M8-10/90mm | 85 | 90 | 10 | 12 | 50 |
| 2022012105 | 2021912110 | SZ-S M8-30/105mm | SZ-B M8-30/110mm | 105 | 110 | 30 | 12 | 50 |
| 2022012125 | 2021912130 | SZ-S M8-50/125mm | SZ-B M8-50/130mm | 125 | 130 | 50 | 12 | 25 |
| - | 2021912180 | - | SZ-B M8-100/180mm | - | 180 | 100 | 12 | 25 |
| 2022015091 | 2021915096 | SZ-S M10-0/91mm | SZ-B M10-0/96mm | 91 | 96 | 0 | 15 | 25 |
| 2022015110 | 2021915111 | SZ-S M10-15/110mm | SZ-B M10-15/111mm | 110 | 111 | 15 | 15 | 25 |
| 2022015116 | 2021915121 | SZ-S M10-25/116mm | SZ-B M10-25/121mm | 116 | 121 | 25 | 15 | 25 |
| 2022015136 | 2021915141 | SZ-S M10-45/136mm | SZ-B M10-45/141mm | 136 | 141 | 45 | 15 | 25 |
| 2022015186 | 2021915191 | SZ-S M10-95/186mm | SZ-B M10-95/191mm | 186 | 191 | 95 | 15 | 25 |
| 2022018117 | 2021918122 | SZ-S M12-10/117mm | SZ-B M12-10/122mm | 117 | 122 | 10 | 18 | 20 |
| 2022018127 | 2021918132 | SZ-S M12-20/127mm | SZ-B M12-20/132mm | 127 | 132 | 20 | 18 | 20 |
| 2022018147 | 2021918152 | SZ-S M12-40/147mm | SZ-B M12-40/152mm | 147 | 152 | 40 | 18 | 20 |
| 2022018177 | 2021918182 | SZ-S M12-70/177mm | SZ-B M12-70/182mm | 177 | 182 | 70 | 18 | 20 |
| - | 2021918212 | - | SZ-B M12-100/212mm | - | 212 | 100 | 18 | 10 |
| 2022024130 | 2021924137 | SZ-S M16-0/130mm | SZ-B M16-0/137mm | 130 | 137 | 0 | 24 | 10 |
| 2022024150 | 2021924157 | SZ-S M16-20/150mm | SZ-B M16-20/157mm | 150 | 157 | 20 | 24 | 10 |
| 2022024180 | 2021924187 | SZ-S M16-50/180mm | SZ-B M16-50/187mm | 180 | 187 | 50 | 24 | 10 |
| - | 2021924237 | - | SZ-B M16-100/237mm | - | 237 | 100 | 24 | 5 |
| 2022028172 | 2021928181 | SZ-S M20-10/172mm | SZ-B M20-10/181mm | 172 | 181 | 10 | 28 | 10 |
| 2022028192 | 2021928201 | SZ-S M20-30/192mm | SZ-B M20-30/201mm | 192 | 201 | 30 | 28 | 5 |
| 2022028222 | 2021928231 | SZ-S M20-60/222mm | SZ-B M20-60/231mm | 222 | 231 | 60 | 28 | 5 |
| 2022028262 | 2021928271 | SZ-S M20-100/262mm | SZ-B M20-100/271mm | 262 | 271 | 100 | 28 | 5 |

Highload Anchor SZ A4

Stainless steel A4/316



Highload Anchor SZ-S A4

Highload Anchor SZ-B A4

Highload Anchor SZ-SK A4

Description

The new SZ A4 is the stainless-steel version of the tried and tested Highload anchor SZ. It also possesses ETA (Option 1) approval. Highload Anchor SZ is a high-performance through fastening Anchor System with three part expansion sleeve. This allows for smaller spacings and edge distances with high loads. The plastic compression ring ensures the clamping of the mounted piece to the work surface. Three different models of The Highload Anchor SZ are available: Screw/washer SZ-S, Bolthead SZ-B and for a flush surface mounting SZ-SK. All models have been shock-tested by the federal office for population protection in Bern/Switzerland.

New

The Highload Anchor SZ A4/316 is now approved to use under seismic action according to the performance category C1.

Advantages

- High tension and shear loads
- Screw/washer (SZ-S) model and flat head (SZ-SK) model for finished surfaces
- Can be dismantled with a flush surface result (only the cone and expansion sleeve remain in the drill-hole)
- Smaller spacings and edge distances
- Fire protection approved (See Page 37)

Applications

Medium to highload mounting in cracked and non-cracked concrete, e.g. trusses, railings, machines, scaffolding and consoles. Even in damp rooms and outdoors.

Range of loading: 4,3 kN - 52,6 kN

Range of concrete quality: C20/25 - C50/60

Approvals and Certificates



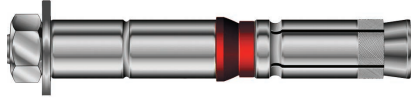
| MKT-SZ A4 Stainless Steel | | | | | | | | | |
|---------------------------|-------------|-------------------|--------------------|---------------|---------------|-------------------|---------------------|-----------------|--|
| Item Number | Item Number | Description | Description | Anchor Length | Anchor Length | Fixture thickness | Drill Hole Diameter | Package Content | |
| Type S | Type B | Type S | Type B | Type S | Type B | | | | |
| (A4 Stainless Steel) | | | | | | | | | |
| 2022212085 | 2022112089 | SZ-S M8-10/85mm | SZ-B M8-10/89mm | 85 | 89 | 10 | 12 | 50 | |
| 2022212105 | 2022112109 | SZ-S M8-30/105mm | SZ-B M8-30/109mm | 105 | 109 | 30 | 12 | 50 | |
| 2022212125 | 2022112129 | SZ-S M8-50/125mm | SZ-B M8-50/129mm | 125 | 129 | 50 | 12 | 25 | |
| - | 2022112179 | - | SZ-B M8-100/179mm | - | 179 | 100 | 12 | 25 | |
| 2022215110 | 2022115110 | SZ-S M10-15/110mm | SZ-B M10-15/110mm | 106 | 110 | 15 | 15 | 25 | |
| 2022215116 | 2022115120 | SZ-S M10-25/116mm | SZ-B M10-25/120mm | 116 | 120 | 25 | 15 | 25 | |
| 2022215136 | 2022115140 | SZ-S M10-45/136mm | SZ-B M10-45/140mm | 136 | 140 | 45 | 15 | 25 | |
| 2022215186 | 2022115190 | SZ-S M10-95/186mm | SZ-B M10-95/190mm | 186 | 190 | 95 | 15 | 25 | |
| 2022218118 | 2022118122 | SZ-S M12-10/118mm | SZ-B M12-10/122mm | 118 | 122 | 10 | 18 | 20 | |
| 2022218127 | 2022118131 | SZ-S M12-20/127mm | SZ-B M12-20/131mm | 128 | 131 | 20 | 18 | 20 | |
| 2022218148 | 2022118151 | SZ-S M12-40/148mm | SZ-B M12-40/151mm | 148 | 151 | 40 | 18 | 20 | |
| 2022218178 | 2022118182 | SZ-S M12-70/178mm | SZ-B M12-70/182mm | 178 | 182 | 70 | 18 | 20 | |
| - | 2022118212 | - | SZ-B M12-100/212mm | - | 212 | 100 | 18 | 10 | |
| 2022224150 | 2022124157 | SZ-S M16-20/150mm | SZ-B M16-20/157mm | 150 | 157 | 20 | 24 | 10 | |
| 2022224180 | 2022124187 | SZ-S M16-50/180mm | SZ-B M16-50/187mm | 180 | 187 | 50 | 24 | 10 | |
| - | 2022124237 | - | SZ-B M16-100/237mm | - | 237 | 100 | 24 | 5 | |

Highload Anchor SL

Steel, zinc plated / Stainless steel A4/316



Highload Anchor SL



Highload Anchor SL A4

Description

The Highload Anchor SL is a torque controlled sleeve anchor for through fastenings in non-cracked concrete. Three versions are available: SL-S with hexagon head screw, SL-B with hexagon nut and SL-SK with countersunk head screw. New: European technical approval, Option 7 for anchor size M10 steel galvanized. German approval in concrete strength class C12/15.

Applications

Medium to heavy duty anchorings of base plates, supports, pallet racks, brackets, railings in non-cracked concrete.

Range of loading: 5,4 kN - 66,8 kN
Range of concrete quality: C12/15 - C50/60

Approvals and Certificates



M10 zinc plated

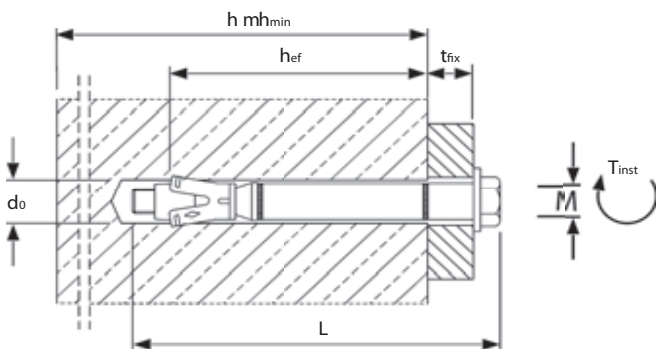


M10 zinc plated



MKT-SL A4 Stainless Steel

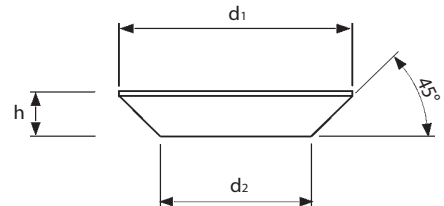
| Item Number | Item Number | Description | Description | Anchor Length | Anchor Length | Fixture thickness | Drill Hole Diameter | Package Content |
|----------------------|-------------|-------------------|-------------------|---------------|---------------|-------------------|---------------------|-----------------|
| Type S | Type B | Type S | Type B | Type S | Type B | | | |
| (A4 Stainless Steel) | | | | | | | | |
| 2021010069 | 2021210069 | SL-S M6-10/69mm | SL-B M6-10/69mm | 69 | 69 | 10 | 10 | 50 |
| 2021010084 | 2021210084 | SL-S M6-25/84mm | SL-B M6-25/84mm | 84 | 84 | 25 | 10 | 50 |
| 2021010104 | 2021210106 | SL-S M6-50/104mm | SL-B M6-50/106mm | 104 | 106 | 50 | 10 | 50 |
| 2021028182 | 2021228188 | SL-S M20-30/182mm | SL-B M20-30/188mm | 182 | 188 | 30 | 28 | 5 |
| 2021028212 | 2021228218 | SL-S M20-60/212mm | SL-B M20-60/218mm | 212 | 218 | 60 | 28 | 5 |



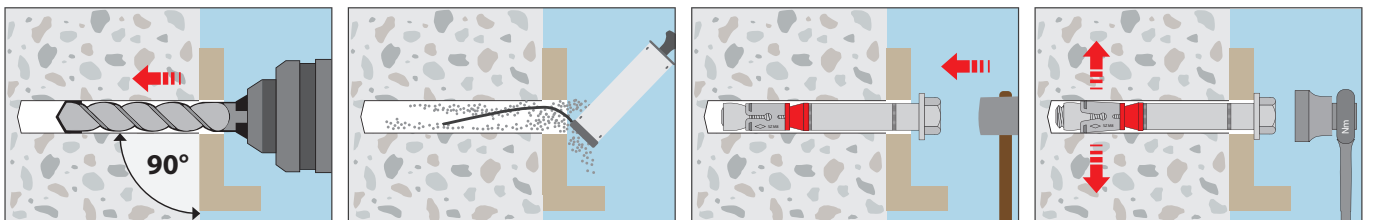
Dimensions countersunk head SZ-SK [mm]

| | d1 | d2 | h |
|---------------|------|------|-----|
| SZ-SK 10 M 6 | 16,5 | 9,5 | 3,9 |
| SZ-SK 12 M 8 | 20,5 | 11,5 | 5,0 |
| SZ-SK 15 M 10 | 24,5 | 14,5 | 5,7 |
| SZ-SK 18 M 12 | 29,5 | 17,5 | 6,7 |

Countersunk head (type SZ-SK).



Installation





| Loads and Performance Data | | | | SZ 10 | SZ 12 | SZ 15 | SZ 18 | SZ 24 | SZ 28 |
|------------------------------------------------------------------------------------|--------|--------------------|------|--------|--------|--------|--------|---------|---------|
| Highload Anchor SZ (Zinc Plated) | | | | M6 | M8 | M10 | M12 | M16 | M20 |
| cracked concrete | | | | | | | | | |
| Recommended loads, tension | C20/25 | N _{rec} | [kN] | 1.7 | 4.0 | 5.3 | 8.3 | 12.0 | 16.7 |
| Recommended loads, shear SZ-B | C20/25 | V _{rec} | [kN] | 5.9 | 9.2 | 13.2 | 23.1 | 33.4 | 44.7 |
| Recommended loads, shear SZ-S / SZ - SK | C20/25 | V _{rec} | [kN] | 6.6 | 11.0 | 17.6 | 26.8 | 46.2 | 55.0 |
| non-cracked concrete | | | | | | | | | |
| Recommended loads, tension | C20/25 | N _{rec} | [kN] | 6.0 | 6.7 | 10.0 | 11.7 | 16.7 | 24.0 |
| Recommended loads, shear SZ-B | C20/25 | V _{rec} | [kN] | 5.9 | 9.2 | 13.2 | 23.1 | 33.4 | 44.7 |
| Recommended loads, shear SZ-S / SZ - SK | C20/25 | V _{rec} | [kN] | 6.6 | 11.0 | 17.6 | 26.8 | 46.2 | 55.0 |
| Minimum spacing and edge distance for standard thickness of concrete member | | | | | | | | | |
| Effective anchorage depth | | h _{ef} | [mm] | 50 | 60 | 71 | 80 | 100 | 125 |
| Characteristic spacing | | S _{cr,N} | [mm] | 150 | 180 | 213 | 240 | 300 | 375 |
| Characteristic edge distance | | C _{cr,N} | [mm] | 75 | 90 | 106.5 | 120 | 150 | 187.5 |
| Minimum spacing / for edge distance c | | S _{min/C} | [mm] | 50/80 | 60/100 | 70/120 | 80/160 | 100/180 | 125/300 |
| Minimum edge distance / for spacing s | | C _{min/S} | [mm] | 50/100 | 60/120 | 70/175 | 80/200 | 100/220 | 180/540 |
| Minimum thickness of concrete slab | | h _{min} | [mm] | 100 | 120 | 140 | 160 | 200 | 250 |
| Installation parameters | | | | | | | | | |
| Drill hole diameter, | | d _o | [mm] | 10 | 12 | 15 | 18 | 24 | 28 |
| Diameter of clearance hole in the fixture | | d _f | [mm] | 12 | 14 | 17 | 20 | 26 | 31 |
| Depth of Drill hole | | h ₁ | [mm] | 65 | 80 | 95 | 105 | 130 | 160 |
| Installation torque | | T _{inst} | [Nm] | 15 | 30 | 50 | 80 | 160 | 280 |

Recommended loads for single anchor without influence of spacing and edge distance.
With overall global safety factor = 3.0.

| Loads and Performance Data | | | | SL 10 | SZ 12 | SZ 15 | SZ 18 | SZ 24 | SL 28 |
|------------------------------------------------------------------------------------|--------|--------------------|------|-------|--------|--------|---------|----------|-------|
| Highload Anchor SZ (A4 Stainless Steel) / SL (A4 Stainless Steel) | | | | M6 | M8 | M10 | M12 | M16 | M20 |
| cracked concrete | | | | | | | | | |
| Recommended loads, tension | C20/25 | N _{rec} | [kN] | - | 3.0 | 5.3 | 8.6 | 12.0 | - |
| Recommended loads, shear SZ-B | C20/25 | V _{rec} | [kN] | - | 8.0 | 14.4 | 17.2 | 24.0 | - |
| Recommended loads, shear SZ-S / SZ-SK | C20/25 | V _{rec} | [kN] | - | 8.0 | 12.3 | 17.2 | 24.0 | - |
| non-cracked concrete | | | | | | | | | |
| Recommended loads, tension | C20/25 | N _{rec} | [kN] | 3.8 | 5.3 | 8.3 | 11.7 | 16.8 | 145.9 |
| Recommended loads, shear SZ-B | C20/25 | V _{rec} | [kN] | - | 8.0 | 12.3 | 24.1 | 33.7 | - |
| Recommended loads, shear SZ-S / SZ-SK | C20/25 | V _{rec} | [kN] | - | 8.0 | 12.3 | 20.7 | 33.7 | - |
| Recommended loads, shear SL | C20/25 | V _{rec} | [kN] | 4.7 | - | - | - | - | 36.4 |
| Minimum spacing and edge distance for standard thickness of concrete member | | | | | | | | | |
| Effective anchorage depth | | h _{ef} | [mm] | 45 | 60 | 71 | 80 | 100 | 125 |
| Characteristic spacing | | S _{cr,N} | [mm] | 135 | 180 | 213 | 240 | 300 | 375 |
| Characteristic edge distance | | C _{cr,N} | [mm] | 67.5 | 90 | 106.5 | 120 | 150 | 187.5 |
| Minimum spacing / for edge distance c | | S _{min/C} | [mm] | 70 | 70/100 | 85/130 | 100/170 | 180/180 | 190 |
| Minimum edge distance / for spacing s | | C _{min/S} | [mm] | 90 | 75/135 | 85/185 | 100/210 | 180/180 | 250 |
| Minimum thickness of concrete slab | | h _{min} | [mm] | 130 | 120 | 140 | 160 | 200 | 350 |
| Installation parameters | | | | | | | | | |
| Drill hole diameter, | | d _o | [mm] | 10 | 12 | 15 | 18 | 24 | 28 |
| Diameter of clearance hole in the fixture | | d _f | [mm] | 12 | 14 | 17 | 20 | 26 | 31 |
| Depth of Drill hole | | h ₁ | [mm] | 60 | 80 | 95 | 105 | 130 | 150 |
| Installation torque SL, SZ-S / SZ-B | | T _{inst} | [Nm] | 10 | 30/ 35 | 50/ 55 | 80/ 90 | 170/ 170 | 400 |

Recommended loads for single anchor without influence of spacing and edge distance.
With overall global safety factor = 3.0.

Injection System VME



Cartridge VMU 585
Side-by-side cartridge
Content: 585ml
With big mixer VM-XL
and reducers / extension
tube for drill holes from
12mm diameter

Description

The Injection System VME is an approved system for fixings of threaded studs or reinforcement bars in cracked and non-cracked concrete. In the cartridge, the epoxy resin and the hardener are separated. By means of the dispenser gun VM-P the components are pushed through the mixer nozzle, activated and injected into the drill hole. The Injection System VME can be used with the threaded Studs V-A and VMU-A. It can be used with VM-A studs, sold by meter to be cut to the required length or with standard reinforcement bars.

Range of loading: 3,1 kN - 128 kN
Range of concrete quality: C20/25 - C50/60
Material: Steel zinc plated, hot dip galvanized,
Stainless steel A4/316, Stainless steel HCR,
Bst 500S

Curing Time

| Temperature (°C) of the base material | Maximum working time (min) | Minimum Curing time | |
|---------------------------------------|----------------------------|---------------------|-------------------|
| | | dry base material | wet base material |
| 5°C - 9°C | 1:00h | 72h | 144h |
| 10°C - 19°C | 45min | 36h | 72h |
| 20°C - 29°C | 30min | 10h | 20h |
| 30°C - 39°C | 20min | 6h | 12h |
| 40°C | 12min | 4h | 8h |

Applications

Fixing of rack systems, railings, steel structures, noise barriers, stairs and machines.

Subsequent closure of wall and ceiling openings, reinforcement of existing concrete structures, installation of reinforcement for the connection of the following concrete components (if the installation of reinforcement was missed or not possible because of the working process), connection of steel structures.

Advantages:

- Approved in cracked and non-cracked concrete
- Approved with threaded studs and reinforcement bars
- Approved with standard threaded studs (strength test required)
- Approved to use under seismic action according to the performance category C1
- Also approved for post-installed rebar connections according to ETA-07/0299 / Z-21.8-1872
- Approved for diamond coring (ETA 13/0773)
- Variable anchorage depth for less drilling efforts
- Long curing times for an economic working process with serial installations and/or large drill holes
- Suitable for dry and wet concrete and in water-filled drill holes
- Styrene-free
- Fire test report

Approvals and Certificates



Loads and Performance Data

| | | | | M8 | M10 | M12 | M16 | M20 | M24 | M27 | M30 |
|------------------------------------------------------------------------------------|--------|-------------------|------|---------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| VME 585 + Gr. 8.8 Fully Threaded Rod, Range of temperature 24°C/40°C | | | | | | | | | | | |
| cracked concrete | | | | | | | | | | | |
| Recommended loads, Tension | C20/25 | N _{rec} | [kN] | - | - | 5.5-11.3 | 7.1-17.4 | 7.3-21.5 | 8.0-28.4 | - | - |
| Recommended loads, Shear | C20/25 | V _{rec} | [kN] | - | - | 13.1-13.6 | 17.1-25.2 | 20.5-39.2 | 22.6-56.4 | - | - |
| non-cracked concrete | | | | | | | | | | | |
| Recommended loads, Tension | C20/25 | N _{rec} | [kN] | 6.3-9.7 | 6.5-15.3 | 8.2-22.3 | 10.0-37.3 | 10.3-44.7 | 11.3-58.7 | 13.5-70.1 | 15.8-82.0 |
| Recommended loads, Shear | C20/25 | V _{rec} | [kN] | 6.0 | 9.2 | 13.6 | 24.1-25.2 | 28.7-39.2 | 31.6-56.4 | 37.8-73.5 | 44.2-89.5 |
| VME 585 + A4-80 Fully Threaded Rod, Range of temperature 24°C/40°C | | | | | | | | | | | |
| cracked concrete | | | | | | | | | | | |
| Recommended loads, Tension | C20/25 | N _{rec} | [kN] | - | - | 5.5-11.3 | 7.1-17.4 | 7.3-21.5 | 8.0-28.4 | - | - |
| Recommended loads, Shear | C20/25 | V _{rec} | [kN] | - | - | 9.6 | 17.1-17.6 | 20.5-27.6 | 22.5-39.7 | - | - |
| non-cracked concrete | | | | | | | | | | | |
| Recommended loads, Tension | C20/25 | N _{rec} | [kN] | 6.3-6.9 | 6.5-11.0 | 8.2-15.7 | 10.0-29.4 | 10.3-44.7 | 11.3-38.7 | 13.5-40.1 | 15.8-49.1 |
| Recommended loads, Shear | C20/25 | V _{rec} | [kN] | 4.2 | 6.4 | 9.6 | 17.6 | 27.6 | 31.6-39.7 | 24.1 | 29.4 |
| Minimum spacing and edge distance for standard thickness of concrete member | | | | | | | | | | | |
| Range of anchorage depths | | | | 60-96 | 60-120 | 70-144 | 80-192 | 90-240 | 96-288 | 108-324 | 120-360 |
| Minimum spacing | | S _{min} | [mm] | 40 | 50 | 60 | 80 | 100 | 120 | 135 | 150 |
| Minimum edge distance | | C _{min} | [mm] | 40 | 50 | 60 | 80 | 100 | 120 | 135 | 150 |
| Minimum thickness of concrete slab | | h _{min} | [mm] | 100-126 | 100-150 | 140 | 161 | 218 | 266 | 172-388 | 350 |
| Installation parameter | | | | | | | | | | | |
| Drill hole diameter, | | d _o | [mm] | 10 | 12 | 14 | 18 | 24 | 28 | 32 | 35 |
| Diameter of clearance hole in the fixture | | d _i | [mm] | 9 | 12 | 14 | 18 | 22 | 26 | 30 | 33 |
| Depth of Drill hole | | h _o | [mm] | 60-96 | 60-120 | 70-144 | 80-192 | 90-240 | 96-288 | 108-324 | 120-360 |
| Installation torque | | T _{inst} | [Nm] | 10 | 20 | 40 | 80 | 120 | 160 | 180 | 200 |

Recommended loads for single anchor without influence of spacing and edge distance.
With overall global safety factor = 3.0.

Injection System VMU plus



Cartridge VMU plus 410
Coaxial cartridge
Content: 410ml, 420ml

Applications

Fastenings in cracked and non-cracked concrete:

Base plates, supports, mounting of joint tapes, shelves, brackets, railings, facade substructures, wooden structures, cable trays, etc.

Fastenings with rebars in cracked and non-cracked- with shear forces:

Shear connectors, wall connecting reinforcement, concrete overlay

Description

The injection system VMU plus is a new universal injection system for almost all applications and materials. Besides the use in non-cracked concrete and masonry, VMU plus is also approved for fixings in cracked concrete and for post installed rebar connections. To complete the fastening, various anchor rods or internal sleeves can be used from the existing MKT-range (VMU-A, VM-A and VA), as well as standard threaded rods or reinforcing bars. In perforated brick, a perfor sleeve is required.

- Range of loading:** 0,3 kN – 202,0 kN
- Range of concrete quality:** C20/25 - C50/60
- Brickwork:** Solid and perforated brick
- Material:** Steel zinc plated, hot dip galvanized, Stainless steel A4/316
- On request:** Stainless steel HCR

Curing Time

| Temperature (°C) of the base material | Maximum working time (min) | Minimum Curing time | |
|---------------------------------------|----------------------------|---------------------|-------------------|
| | | dry base material | wet base material |
| ≥+40°C | 1.5min | 15min | 30min |
| ≥+35°C | 2min | 20min | 40min |
| ≥+30°C | 2.5min | 25min | 50min |
| ≥+25°C | 4min | 45min | 90min |
| ≥+20°C | 6min | 45min | 90min |
| ≥+10°C | 15min | 80min | 160min |

Advantages

- Only one mortar for almost all applications, more flexibility, less inventory, greater application security
- Approved for cracked (M12-M30) and non-cracked concrete (M8-M30)
- Approved for post-installed rebar connections (Ø8-Ø32)
- Approved for solid and perforated brickwork
- Approved with standard threaded studs (strength test required)
- Base material temperature during installation -10°C (concrete) to +40°C
- Environmental temperature when completely cured -40°C to +120°C (concrete)
- Variable anchorage depth for less drilling efforts
- Fire test report
- Opened cartridges can be re-used with a new mixer nozzle
- Styrene-free vinyl ester resin
- Approved application in wet or water-filled drill holes (M8-M16)
- Approved to use under seismic action according to the performance category C1

Approvals and Certificates



Loads and Performance Data

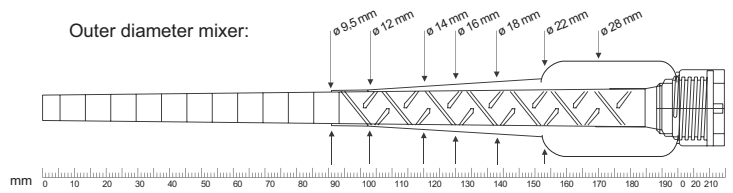
| | | | | M8 | M10 | M12 | M16 | M20 | M24 | M27 | M30 |
|------------------------------------------------------------------------------------|--------|-------------------|------|---------|----------|----------|-----------|-----------|-----------|------------|------------|
| VMU Plus 410 + Gr. 8.8 Fully Threaded Rod, Range of temperature 24°C/40°C | | | | | | | | | | | |
| cracked concrete | | | | | | | | | | | |
| Recommended loads, Tension | C20/25 | N _{rec} | [kN] | 2.0-5.4 | 2.6-8.8 | 4.1-13.8 | 6.2-24.5 | 8.5-38.4 | 9.4-55.2 | 11.2-82.6 | 13.1-102.0 |
| Recommended loads, Shear | C20/25 | V _{rec} | [kN] | 4.0-5.9 | 6.4-9.3 | 7.1-13.6 | 10.7-25.2 | 15.0-39.2 | 19.3-56.4 | 26.9-73.5 | 31.5-89.5 |
| non-cracked concrete | | | | | | | | | | | |
| Recommended loads, Tension | C20/25 | N _{rec} | [kN] | 5.0-9.7 | 6.3-15.3 | 8.2-22.3 | 10.0-41.6 | 12.0-65.2 | 13.1-93.9 | 15.7-122.5 | 18.4-141.3 |
| Recommended loads, Shear | C20/25 | V _{rec} | [kN] | 6.0 | 9.2 | 13.6 | 24.0-25.2 | 28.7-39.2 | 31.5-56.4 | 37.7-73.5 | 44.1-89.5 |
| VMU Plus 410 + A4-80 Fully Threaded Rod, Range of temperature 24°C/40°C | | | | | | | | | | | |
| cracked concrete | | | | | | | | | | | |
| Recommended loads, Tension | C20/25 | N _{rec} | [kN] | 2.0-5.4 | 2.6-8.8 | 4.1-13.8 | 6.2-24.5 | 8.5-38.4 | 9.4-55.2 | 11.2-40.1 | 13.1-49.1 |
| Recommended loads, Shear | C20/25 | V _{rec} | [kN] | 4.0-4.1 | 6.3-6.5 | 9.6 | 14.8-17.6 | 20.5-27.6 | 22.5-39.7 | 24.1 | 29.4 |
| non-cracked concrete | | | | | | | | | | | |
| Recommended loads, Tension | C20/25 | N _{rec} | [kN] | 5.0-6.9 | 6.3-11.0 | 8.2-15.7 | 10.0-29.4 | 12.0-45.7 | 13.1-65.9 | 15.7-40.1 | 18.4-49.1 |
| Recommended loads, Shear | C20/25 | V _{rec} | [kN] | 4.2 | 6.4 | 9.6 | 17.6 | 27.6 | 31.5-39.7 | 24.1 | 29.4 |
| Minimum spacing and edge distance for standard thickness of concrete member | | | | | | | | | | | |
| Range of anchorage depths | | | | 60-160 | 60-200 | 70-240 | 80-320 | 90-400 | 96-480 | 108-540 | 120-600 |
| Minimum spacing | | S _{min} | [mm] | 40 | 50 | 60 | 80 | 100 | 120 | 135 | 150 |
| Minimum edge distance | | C _{min} | [mm] | 40 | 50 | 60 | 80 | 100 | 120 | 135 | 150 |
| Minimum thickness of concrete slab | | h _{min} | [mm] | 100-190 | 100-230 | 140 | 161 | 218 | 266 | 172-604 | 350 |
| Installation parameters | | | | | | | | | | | |
| Drill hole diameter, | | d _o | [mm] | 10 | 12 | 14 | 18 | 24 | 28 | 32 | 35 |
| Diameter of clearance hole in the fixture | | d _i | [mm] | 9 | 12 | 14 | 18 | 22 | 26 | 30 | 33 |
| Depth of Drill hole | | h _o | [mm] | 60-160 | 60-200 | 70-240 | 80-320 | 90-400 | 96-480 | 108-540 | 120-600 |
| Installation torque | | T _{inst} | [Nm] | 10 | 20 | 40 | 80 | 120 | 160 | 180 | 200 |

Recommended loads for single anchor without influence of spacing and edge distance.
With overall global safety factor = 3.0.

Usable length Static mixer VM-X/VM-XP



Drill holes must always be filled from the bottom of the hole to ensure no air pockets are trapped in the mortar. This is only possible when the tip of the mixing nozzle reaches the very bottom of the drill hole before injecting the mortar. If the mixing nozzle does not reach the bottom of the drill hole, a mixer extension tube must be used.



Possible combinations static mixer / Extension tube / Retaining Washer:



Dispenser VM-P Profi



- ➔ Professional dispenser with an ideal center of gravity for more comfortable working
- ➔ Automatic pressure release for minimum mortar overrun

| Description | Ref. No. | Suitable for cartridge | Pkg. cont. pcs | Weight per piece kg |
|----------------|----------|------------------------------------------------------------------|----------------|---------------------|
| VM-P 345 Profi | 28350511 | 150ml, 280ml, 300ml, 345ml also suitable for silicone cartridges | 1 | 1,00 |
| VM-P 380 Profi | 28351001 | 380ml, 410ml, 420ml | 1 | 1,10 |

Dispenser VM-P Standard



- ➔ For occasional use, metal version
- ➔ Piston rod with adjusting scrow

| Description | Ref. No. | Suitable for cartridge | Pkg. cont. pcs | Weight per piece kg |
|-------------------|----------|------------------------------------------------------------------|----------------|---------------------|
| VM-P 345 Standard | 28350505 | 150ml, 280ml, 300ml, 345ml also suitable for silicone cartridges | 1 | 1,00 |
| VM-P 380 Standard | 28353005 | 380ml, 410ml, 420ml | 1 | 1,15 |

Dispenser VM-P Pneumatic



- ➔ Professional air tool with an optimum center of gravity and quick cartridge exchange
- ➔ Automatic pressure release system reduces mortar overrun to a minimum
- ➔ Single-hand pressure regulation to adjust the piston speed

| Description | Ref. No. | Suitable for cartridge | Pkg. cont. pcs | Weight per piece kg |
|--------------------|----------|----------------------------------------------------------|----------------|---------------------|
| VM-P 345 Pneumatic | 28350601 | 345ml max. working pressure 8 bar, 40l/min | 1 | 2,41 |
| VM-P 380 Pneumatic | 28352002 | 380ml, 410ml, 420ml max. working pressure 8 bar, 40l/min | 1 | 2,00 |

MKT Anchor Design Software



...a solid connection



Software for an easy and fast design of anchoring connections.

The software:

- Easy and clear input
- Detailed display of results
- For single anchors and anchor groups, small edge distances, spaced fixings
- Detailed printout Design according to European design guideline:
- Guideline for European Technical Approval of Metal Anchors, ETAG 001, Annex C
- Guideline for European Technical Approval of Metal Anchors, ETAG 001, Part 6 (multiple use)
- Technical Report TR 020 (Design of Anchorages in Concrete Concerning Fire Resistance)
- Technical Report TR 029 (Design of Bonded Anchors)
- Design of fatigue loads according to Z-21.3-1906

MKT Anchor Design Software 4.21

new in 4.21:

- more variability in the design of the anchor plate by eccentric layout of the anchors
- Design with the new MKT Injection System VMU *plus* including the optimization of the anchorage depth
- Design of the MKT Wedge Anchor BZ plus according to the new European Technical Assessment, also with reduced anchorage depth

→ Easy and fast design of anchoring connections

→ Clear input, detailed printout

→ Design according to CC-method, ETAG annex C

PC requirements:

- Windows XP (SP 3) / Vista / Windows 7 / Windows 8
- Screen resolution min. 600 x 800 pixel

Please order our MKT software or use our free download service at www.mkt.de

