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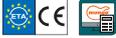


Metal
Catalog

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METAL ANCHOR

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Sleeve Anchor

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Hammer Anchors & Hammer Nails

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MUNGO Legend Explanation of symbols

INDUSTRIES

-  Facade / Scaffolding
-  Structural / Civil engineering
-  Infrastructure
-  Drywall / Interior fittings
-  Steel / Metal constructions
-  Wood construction
-  Electrical installations
-  Building services

BUILDING MATERIALS

-  Concrete, cracked
-  Concrete, non-cracked
-  Natural Stone, Rock
-  Brick
-  Calcium Silicate Brick
-  Perforated Brick
-  Lightweight Concrete
-  Plasterboard
-  Panels / Boards
-  Insulation Boards
-  Wood

MATERIAL

-  Zinc plated
-  Stainless steel A4
-  Hot dip galvanized
-  Green Tec® > 750h EN ISO 9227
Corrosion resistant
zinc alloy layer

APPROVALS

-  European Organisation for Technical Assessment EOTA, Brussels
-  Schwiss Testing Service, RUAG
-  Fire resistance test certification
-  Seismic action
Performance category C1
-  Seismic action
Performance category C2

SYMBOLS

-  Hammer setting
-  MUNGO Design Software – calculate fastenings quickly and easily.



HIGH-QUALITY METAL – reliable and durable

We use only high-quality metals – including stainless steel (A2/A4) and high-quality carbon steels. This ensures that our products are not only robust but also highly resistant to weathering.

GreenTec® CORROSION RESISTANT ZINC ALLOY LAYER



GreenTec® is a special alloy layer system based on zinc and nickel that provides hard, wear- and tear-resistant layers with very high corrosion resistance, even at very low layer thicknesses. The **GreenTec®** layer system, with its excellent metal distribution and consistent alloy composition, can be used in a wide range of applications when combined with the appropriate after care.

Thanks to its outstanding corrosion resistance at low layer thicknesses, **GreenTec®** is used for high-quality applications, particularly in the automobile, hydraulic and electronic industry. Another advantage of the layer system is that hydrogen de-embrittlement can be carried out after the coating process without affecting the properties of the applied coating.

Typical applications include coatings for connecting elements in the mid-cost range with corrosion and wear-and-tear requirements, as well as high-quality applications extending into the high-tech industry.

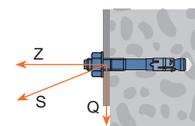
An economically important factor in the use of **GreenTec®** is the exceptional extension of durability compared with conventionally applied zinc layers, even at significantly lower layer thicknesses.

Spacing distance



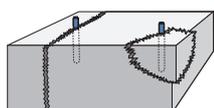
Consideration must be given to the minimum distances required when setting groups of fixings to avoid failure of the building material. A factor of 3 times the setting depth must be used to achieve maximum loads.

Load directions



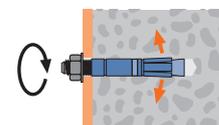
Tension (Z), Shear (Q), Combined (S)

Edge distance



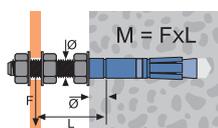
Consideration must be given to the minimum Edge distances to avoid failure of the building material.

Different anchor types



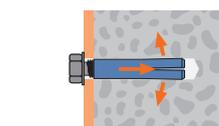
Torque controlled expansion anchors (e.g. m1, m2). Expansion achieved by application of torque.

Bending moment M

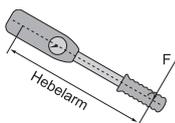


For some applications anchors are subjected to bending moments. For example, at a distance fixing.

Hammer set expansion anchor (e.g. MEA). Expansion is achieved by hammering a cone in the body of the anchor.



Torque



Force (F) x lever arm, measured at fulcrum, Nm = Newton meter
The anchor should be set using the recommended torque settings.

Corrosion protection

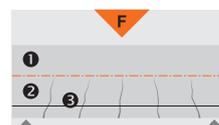


Anchors made from galvanic zinc coated steel are used for fixings of fixtures indoors, with the exception of wet rooms. The thickness of the zinc coating is 5 microns. For external applications, wet rooms, areas of high humidity found in industrial atmospheres and locations in close proximity to the sea, require fixings of stainless steel A4 (e. g. 1.4401, 1.4404).

Installation torque

When the anchor is set using the correct torque a guaranteed fixing can be achieved.

Concrete non-cracked/cracked



1 Compression Zone: concrete non-cracked, 2 Tension Zone: Tensile strength: concrete cracked, 3 Reinforcing steel

m1 powerGrip Throughbolt

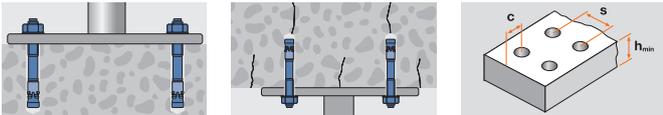


BUILDING MATERIALS



APPLICATIONS

Steel constructions, Profiles, Machines, Substructures, High-racks, Cable trays, Railings, Guard rails



FEATURES

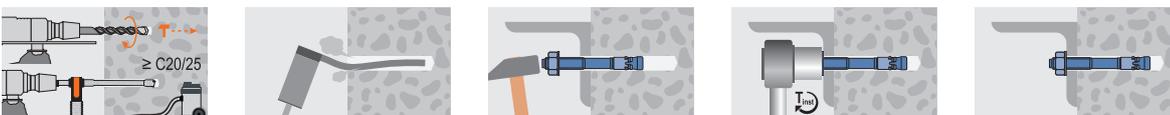
- The m1 powerGrip Throughbolt for highest performance in cracked concrete
- European Technical Assessment for cracked and non-cracked concrete
- Resistance under fire exposure R120 is part of the assessment
- The anchor may also be used under seismic influence for performance category C1 and C2
- GreenTec® corrosion protection - Extra long lasting
- Advanced corrosion resistance ≥ 750 hours in salt spray test
- High-quality and stainless steel appearance
- Reduced setting depths for a faster installation
- Innovative clip design; higher loads and best expansion
- Additional slide coating „T5“ ensures a uniform expansion in cracked concrete
- With a big DIN 9021 washer (m1-C) for fixings with slotted holes and for wooden structures
- Setting depth mark for correct installation
- Small edge and spacing distances
- Simple setting process due to low resistance to impacts
- Fast achievement of installation torque
- Pre installation or through fixing
- Indoor applications and unweathered outdoor applications

TECHNICAL DATA

	Concrete, non-cracked C20/25 tension load (kN)	Concrete, cracked C20/25 tension load (kN)	Concrete C20/25 shear load (kN)	Bending moment (Nm)	min. distance betw. anchors/at edge distance mm	min. edge distance/ at distance betw. anchors mm	min. component thickness mm	Installation torque (Nm)	Wrench size
					s_{min}/c	c_{min}/s	h_{min}	T_{inst}	SW
M8	4.3	1.9	5.5	23	60/70	70/60	110	20	13
M10	7.1	3.6	10.1	44.9	80/55	55/80	120	45	17
M12	8.6	7.6	15.7	77.6	110/60	60/110	140	60	19
M16	12.4	9.5	22.5	183.8	130/90	90/130	160	80	24

The partial safety factors of the resistances as well as a partial safety factor of the load of $\gamma_F = 1.4$ are considered / The technical data is only valid for single fixings without consideration of edge and anchor distances / The loads are not valid for reduced effective anchorage depths. / 1 kN = 100 kg

INSTALLATION



m1 powerGrip Throughbolt with washer DIN 125A

Article code	Plug and drill Ø mm	Length mm	Drilling depth / reduced setting depth mm	Usable length / reduced setting depth mm	Eff. anchorage depth / reduced setting depth mm	Unit content	Outer carton quantity	Pallet quantity
	$d_{\text{con}} = d_0$	L	$h_d / h_{d,\text{red}}$	$t_{\text{st}} / t_{\text{st},\text{red}}$	$h_{\text{ef}} / h_{\text{ef},\text{red}}$	[FS]	[SK]	
3100807	8	70	65	5	48	100 [41]	300 [12]	18000
3100808	8	80	65	10	48	100 [41]	300 [12]	18000
3100809	8	95	65	25	48	100 [51]	300 [22]	18000
3100811	8	115	65	45	48	100 [51]	300 [22]	18000
3100816	8	165	65	95	48	50 [51]	150 [22]	9000
3101009	10	95	80/60	15/35	60/40	100 [51]	300 [22]	18000
3101011	10	110	80/60	30/50	60/40	50 [51]	150 [22]	9000
3101012	10	125	80/60	45/65	60/40	50 [51]	150 [22]	9000
3101014	10	140	80/60	60/80	60/40	50 [51]	150 [22]	9000
3101016	10	160	80/60	80/100	60/40	50 [51]	150 [22]	9000
3101018	10	180	80/60	100/120	60/40	25 [51]	75 [22]	4500
3101211	12	110	90	15	70	50 [51]	150 [22]	9000
3101212	12	125	90	30	70	50 [51]	150 [22]	9000
3101214	12	145	90	50	70	25 [41]	75 [12]	4500
3101216	12	165	90	70	70	50 [51]	150 [22]	9000
3101218	12	185	90	90	70	50 [51]	150 [22]	9000
3101613	16	130	110	15	80	25 [51]	75 [22]	4500
3101614	16	145	110	30	80	25 [51]	75 [22]	4500
3101618	16	180	110	60	80	25 [51]	75 [22]	4500



01

Metal anchors

02

03

m1-C powerGrip Throughbolt with big washer DIN 9021

Article code	Plug and drill Ø mm	Length mm	Drilling depth / reduced setting depth mm	Usable length / reduced setting depth mm	Eff. anchorage depth / reduced setting depth mm	Unit content	Outer carton quantity	Pallet quantity
	$d_{\text{con}} = d_0$	L	$h_d / h_{d,\text{red}}$	$t_{\text{st}} / t_{\text{st},\text{red}}$	$h_{\text{ef}} / h_{\text{ef},\text{red}}$	[FS]	[SK]	
3110808	8	80	65	10	48	100 [51]	300 [22]	18000
3111009	10	95	80/60	15/35	60/40	50 [51]	150 [22]	9000
3111211	12	110	90	15	70	25 [41]	75 [12]	4500



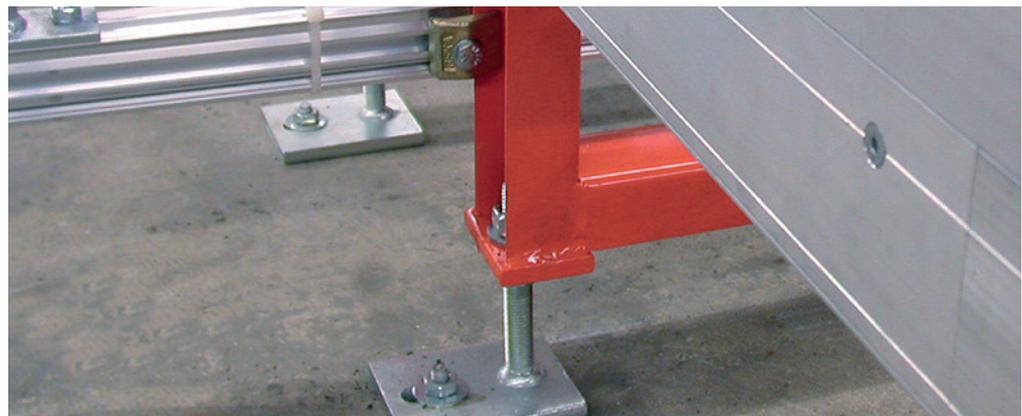
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m1r powerGrip Throughbolt, stainless steel A4

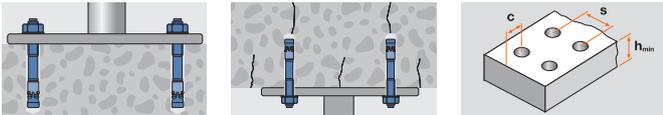


BUILDING MATERIALS



APPLICATIONS

Railings, Steel constructions, Profiles, Machines, Substructures, Guard rails



FEATURES

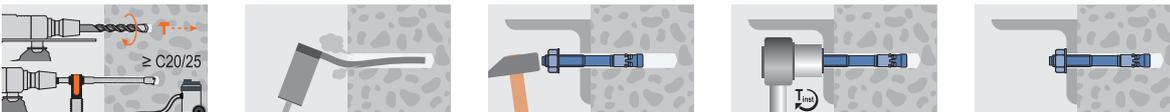
- The m1r powerGrip Throughbolt for highest performance in cracked concrete
- European Technical Assessment for cracked and non-cracked concrete
- Resistance under fire exposure R120 is part of the assessment
- The anchor may also be used under seismic influence for performance category C1 and C2
- Reduced setting depths for a faster installation
- Innovative clip design; higher loads and best expansion
- With a big DIN 9021 washer (m1r-C) for fixings with slotted holes and for wooden structures
- Setting depth mark for correct installation
- Small edge and spacing distances
- Simple setting process due to low resistance to impacts
- Fast achievement of installation torque
- Stainless steel A4/316
- Pre installation or through fixing
- Indoor and outdoor applications

TECHNICAL DATA

	Concrete, non-cracked C20/25 tension load (kN)	Concrete, cracked C20/25 tension load (kN)	Concrete C20/25 shear load (kN)	Bending moment (Nm)	min. distance betw. anchors/at edge distance mm	min. edge distance/ at distance betw. anchors mm	min. component thickness mm	Installation torque (Nm)	Wrench size
					s_{min}/c	c_{min}/s	h_{min}	T_{inst}	SW
M8	5.7	1.9	5.5	25.9	50/50	50/50	100	20	13
M10	9.5	4.3	12.5	50.6	80/65	65/80	120	45	17
M12	11.4	7.6	18.1	87.5	100/60	60/100	140	60	19
M16	12.4	9.5	23.5	207.3	120/70	70/120	160	80	24

The partial safety factors of the resistances as well as a partial safety factor of the load of $\gamma_F = 1.4$ are considered / The technical data is only valid for single fixings without consideration of edge and anchor distances / The loads are not valid for reduced effective anchorage depths. / 1 kN = 100 kg

INSTALLATION



m1r powerGrip Throughbolt with washer DIN 125A, stainless steel A4

Article code	Plug and drill Ø mm	Length mm	Drilling depth / reduced setting depth mm	Usable length / reduced setting depth mm	Eff. anchorage depth / reduced setting depth mm	Unit content	Outer carton quantity	Pallet quantity
	$d_{\text{con}} = d_0$	L	$h_{ef} / h_{ef,red}$	$t_{ef} / t_{ef,red}$	$h_{ef} / h_{ef,red}$	[FS]	[SK]	
3900807	8	70	65	5	48	100 [41]	300 [12]	18000
3900808	8	80	65	10	48	100 [41]	300 [12]	18000
3900809	8	95	65	25	48	100 [51]	300 [22]	18000
3900811	8	115	65	45	48	100 [51]	300 [22]	18000
3900816	8	165	65	95	48	50 [51]	150 [22]	9000
3901009	10	95	80/60	15/35	60/40	100 [51]	300 [22]	18000
3901011	10	110	80/60	30/50	60/40	50 [51]	150 [22]	9000
3901012	10	125	80/60	45/65	60/40	50 [51]	150 [22]	9000
3901014	10	140	80/60	60/80	60/40	50 [51]	150 [22]	9000
3901016	10	160	80/60	80/100	60/40	50 [51]	150 [22]	9000
3901018	10	180	80/60	100/120	60/40	25 [51]	75 [22]	4500
3901211	12	110	90	15	70	50 [51]	150 [22]	9000
3901212	12	125	90	30	70	50 [51]	150 [22]	9000
3901214	12	145	90	50	70	25 [41]	75 [12]	4500
3901216	12	165	90	70	70	50 [51]	150 [22]	9000
3901218	12	185	90	90	70	50 [51]	150 [22]	9000
3901613	16	130	110	15	80	25 [51]	75 [22]	4500
3901614	16	145	110	30	80	25 [51]	75 [22]	4500
3901618	16	180	110	60	80	25 [51]	75 [22]	4500



01

Metal anchors

02

03

m1r-C powerGrip Throughbolt with big washer DIN 9021, stainless steel A4

Article code	Plug and drill Ø mm	Length mm	Drilling depth / reduced setting depth mm	Usable length / reduced setting depth mm	Eff. anchorage depth / reduced setting depth mm	Unit content	Outer carton quantity	Pallet quantity
	$d_{\text{con}} = d_0$	L	$h_{ef} / h_{ef,red}$	$t_{ef} / t_{ef,red}$	$h_{ef} / h_{ef,red}$	[FS]	[SK]	
3910808	8	80	65	10	48	100 [51]	300 [22]	18000



04

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m2 Throughbolt

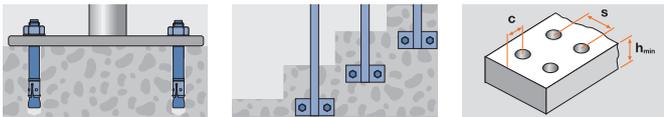


BUILDING MATERIALS



APPLICATIONS

Steel constructions, Profiles, Machines, High-racks, Cable trays



FEATURES

- European Technical Assessment for non-cracked concrete
- Fire resistance R120 (evaluation by external test report)
- GreenTec® corrosion protection - Extra long lasting
- Advanced corrosion resistance ≥ 750 hours in salt spray test
- Higher loads, higher security
- Improved clip design; higher loads and best expansion
- High-quality and stainless steel appearance
- Small edge and spacing distances
- Highest shear loads and bending moment for safe distance fixing
- With a big DIN 9021 washer (m2-C) for fixings with slotted holes and for wooden structures
- Setting depth mark for correct installation
- Simple setting process due to low resistance to impacts
- Fast achievement of installation torque
- Pre installation or through fixing
- Indoor applications and unweathered outdoor applications

TECHNICAL DATA

	Concrete C20/25 tension load (kN)	Concrete C20/25 shear load (kN)	Bending moment (Nm)	min. distance betw. anchors/at edge distance mm	min. edge distance/ at distance betw. anchors mm	min. component thickness mm	Installation torque (Nm)	Wrench size
				s_{min}/c	c_{min}/s	h_{min}	T_{inst}	SW
M8	5.7	6.1	14.9	45/45	45/45	100	15	13
M10	7.6	10.1	31.9	50/50	50/50	120	30	17
M12 L ≤ 185 mm	11.4	13.7	52.3	75/80	80/75	140	50	19
M12 L > 185 mm	9.5	15	56.2	110/200	150/210	140	50	19
M16	11.9	15.7	118.6	100/190	130/190	160	100	24
M20	19.8	24.3	231.5	200/400	300/350	200	200	30

The partial safety factors of the resistances as well as a partial safety factor of the load of $\gamma_F = 1.4$ are considered /
The technical data is only valid for single fixings without consideration of edge and anchor distances / Only valid for setting depths according to assessment / 1 kN = 100 kg

INSTALLATION



m2 Throughbolt with washer DIN 125A

Article code	Plug and drill Ø mm	Length mm	Drilling depth / reduced setting depth mm	Usable length / reduced setting depth mm	Eff. anchorage depth / reduced setting depth mm	Unit content	Outer carton quantity	Pallet quantity
	$d_{nom} = d_0$	L	h_d / h_{dref}	t_{bx} / t_{bxref}	h_{ef} / h_{efref}	[FS]	[SK]	
3200805 ¹⁾	8	50	45	5	27	100 [21]	900 [22]	54000
3200806 ¹⁾	8	60	50	10	30	100 [21]	900 [22]	54000
3200808	8	80	65	10	50	100 [41]	300 [12]	18000
3200885	8	85	65	15	50	100 [41]	300 [12]	18000
3200809	8	95	65	25	50	100 [51]	300 [22]	18000
3200811	8	115	65	45	50	100 [51]	300 [22]	18000
3200816	8	165	65	95	50	50 [51]	150 [22]	9000
3201006	10	60	50	5	33	100 [41]	300 [12]	18000
3201007	10	70	50	10	33	100 [51]	300 [22]	18000
3201009	10	95	80/50	15/35	58/33	100 [51]	300 [22]	18000
3201011	10	110	80/50	30/50	58/33	50 [51]	150 [22]	9000
3201012	10	125	80/50	45/65	58/33	50 [51]	150 [22]	9000
3201014	10	140	80/50	60/80	58/33	50 [51]	150 [22]	9000
3201016	10	160	80/50	80/100	58/33	50 [51]	150 [22]	9000
3201018	10	180	80/50	100/120	58/33	25 [51]	75 [22]	4500
3201208 ¹⁾	12	80	70	5	49	50 [41]	150 [12]	9000
3201211	12	110	90	15	68	50 [51]	150 [22]	9000
3201212	12	125	90	30	68	50 [51]	150 [22]	9000
3201214	12	145	90	50	68	25 [41]	75 [12]	4500
3201216	12	165	90	70	68	50 [51]	150 [22]	9000
3201218	12	185	90	90	68	50 [51]	150 [22]	9000
3201609 ¹⁾	16	90	80	5	50	25 [51]	75 [22]	3600
3201611 ¹⁾	16	115	100	10	70	25 [51]	75 [22]	3600
3201613	16	130	110	15	80	25 [51]	75 [22]	3600
3201614	16	145	110	30	80	25 [51]	75 [22]	3600
3201616	16	160	110	45	80	25 [51]	75 [22]	3600
3201618	16	180	110	65	80	20 [51]	75 [22]	3600
1452013	20	130	110	10	76	20 [51]	60 [22]	2880
1452016	20	160	130	30	100	20 [51]	60 [22]	2880



¹⁾ Not part of the assessment

01

Metal anchors

02

03

04

m2 Throughbolt with washer DIN 125A in Mini-Box, bulk packed

Article code	Plug and drill Ø mm	Length mm	Drilling depth / reduced setting depth mm	Usable length / reduced setting depth mm	Eff. anchorage depth / reduced setting depth mm	Box quantity	Pallet quantity
	$d_{nom} = d_0$	L	h_d / h_{dref}	t_{bx} / t_{bxref}	h_{ef} / h_{efref}	[SK]	
3200080	8	80	65	10	50	300 [22]	18000
3200095	10	95	80/50	15/35	58/33	150 [22]	18000
3200110	12	110	90	15	68	100 [12]	9000



05

m2-C Throughbolt with big washer DIN 9021

Article code	Plug and drill Ø mm	Length mm	Drilling depth / reduced setting depth mm	Usable length / reduced setting depth mm	Eff. anchorage depth / reduced setting depth mm	Unit content	Outer carton quantity	Pallet quantity
	$d_{nom} = d_0$	L	h_d / h_{dref}	t_{bx} / t_{bxref}	h_{ef} / h_{efref}	[FS]	[SK]	
3210805 ¹⁾	8	50	45	5	27	100 [41]	300 [12]	18000
3210806 ¹⁾	8	60	50	10	30	100 [41]	300 [12]	18000
3210808	8	80	65	10	50	100 [51]	300 [22]	18000
3210816	8	165	65	95	50	50 [51]	150 [22]	9000
3211007	10	70	50	10	33	100 [51]	300 [22]	18000
3211009	10	95	80/50	15/35	58/33	50 [51]	150 [22]	9000
3211011	10	110	80/50	30/50	58/33	25 [41]	75 [12]	4500
3211012	10	125	80/50	45/65	58/33	25 [41]	75 [12]	4500
3211016	10	160	80/50	80/100	58/33	25 [51]	75 [22]	4500
3211018	10	180	80/50	100/120	58/33	25 [51]	75 [22]	4500
1471021	10	210	80/50	130/150	58/33	25 [41]	75 [12]	4500
3211211	12	110	90	15	68	25 [41]	75 [12]	4500
3211212	12	125	90	30	68	25 [41]	75 [12]	4500
3211216	12	165	90	70	68	25 [51]	75 [22]	4500
3211218	12	185	90	90	68	25 [51]	75 [22]	4500
1471220	12	200	90	105	68	25 [51]	75 [22]	4500
1471222	12	220	90	125	68	20 [51]	60 [22]	3600
1471224	12	240	90	145	68	20 [51]	60 [22]	3600
1471226	12	260	90	165	68	20 [61]	40 [12]	2400
1471228	12	280	90	185	68	10	10	-
1471230	12	300	90	205	68	15	15	-
1471233	12	330	90	235	68	10	10	-
1471236	12	360	90	265	68	15	15	-
1471622	16	220	80	105	80	10 [51]	30 [22]	1800
1471624	16	240	100	125	80	10 [61]	20 [22]	1200
1471626	16	260	110	145	80	10 [61]	20 [22]	1200
1471628	16	280	110	165	80	5	5	-
1471630	16	300	110	185	80	5	5	-
1471633	16	330	110	215	80	5	5	-
1471644	16	440	110	325	80	5	5	-



¹⁾ Not part of the assessment

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m2r Throughbolt, stainless steel A4

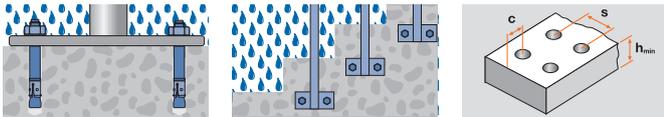


BUILDING MATERIALS



APPLICATIONS

Facades, Cable trays, Railings, Steel constructions, Machines, High-racks, Profiles



FEATURES

- European Technical Assessment for non-cracked concrete
- Fire resistance R120 (evaluation by external test report)
- Higher loads, higher security
- Improved clip design; higher loads and best expansion
- Torque controlled expansion
- Highest shear loads and bending moment for safe distance fixing
- With a big DIN 9021 washer (m2r-C) for fixings with slotted holes and for wooden structures
- Setting depth mark for correct installation
- Simple setting process due to low resistance to impacts
- Stainless steel A4/316
- Pre installation or through fixing
- Indoor and outdoor applications

TECHNICAL DATA

	Concrete C20/25 tension load (kN)	Concrete C20/25 shear load (kN)	Bending moment (Nm)	min. distance betw. anchors/at edge distance mm	min. edge distance/ at distance betw. anchors mm	min. component thickness mm	Installation torque (Nm)	Wrench size
				s_{min}/c	c_{min}/s	h_{min}	T_{inst}	SW
M8	5.7	7.0	16.1	45/45	45/45	100	15	13
M10	7.6	11.2	32.2	55/55	55/55	120	30	17
M12	11.9	16.1	56.4	75/75	75/75	140	50	19
M16	14.3	30.1	142.8	100/190	130/190	160	140	24

The partial safety factors of the resistances as well as a partial safety factor of the load of $\gamma_F = 1.4$ are considered / The technical data is only valid for single fixings without consideration of edge and anchor distances / Only valid for setting depths according to assessment / 1 kN = 100 kg

INSTALLATION



m2r Throughbolt with washer DIN 125A, stainless steel A4

Article code	Plug and drill Ø mm	Length mm	Drilling depth mm	Usable length mm	Eff. anchorage depth mm	Unit content	Outer carton quantity	Pallet quantity
	$d_{nom} = d_0$	L	h_0	t_{st}	h_{ef}	[FS]	[SK]	
3300805 ¹⁾	8	50	45	5	27	100 [21]	900 [22]	54000
3300806 ¹⁾	8	60	50	10	30	100 [21]	900 [22]	54000
3300808	8	80	65	10	50	100 [41]	300 [12]	18000
3300885	8	85	65	15	50	100 [41]	300 [12]	18000
3300809	8	95	65	25	50	100 [51]	300 [22]	18000
3300811	8	115	65	45	50	100 [51]	300 [22]	18000
3301006 ¹⁾	10	60	55	5	33	100 [41]	300 [12]	18000
3301007 ¹⁾	10	70	60	10	35	100 [51]	300 [22]	18000
3301009	10	95	80	15	58	100 [51]	300 [22]	18000
3301011	10	110	80	30	58	50 [51]	150 [22]	9000
3301012	10	125	80	45	58	50 [51]	150 [22]	9000
3301014	10	140	80	60	58	50 [51]	150 [22]	9000
3301016	10	160	80	80	58	50 [51]	150 [22]	9000
3301018	10	180	80	100	58	25 [51]	75 [22]	4500
3301208 ¹⁾	12	80	70	5	49	50 [41]	150 [12]	9000
3301211	12	110	90	15	68	50 [51]	150 [22]	9000
3301212	12	125	90	30	68	50 [51]	150 [22]	9000
3301214	12	145	90	50	68	25 [41]	75 [12]	4500
3301216	12	165	90	70	68	50 [51]	150 [22]	9000
3301218	12	185	90	90	68	50 [51]	150 [22]	9000
3301611 ¹⁾	16	115	100	10	70	25 [51]	75 [22]	3600
3301613	16	130	110	15	80	25 [51]	75 [22]	3600
3301614	16	145	110	30	80	25 [51]	75 [22]	3600
3301616	16	160	110	45	80	25 [51]	75 [22]	3600
3301618	16	180	110	65	80	25 [51]	75 [22]	3600



¹⁾ Not part of the assessment

01

Metal anchors

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

Article code	Plug and drill Ø mm	Length mm	Drilling depth mm	Usable length mm	Eff. anchorage depth mm	Unit content	Outer carton quantity	Pallet quantity
	$d_{nom} = d_0$	L	h_0	t_{st}	h_{ef}	[FS]	[SK]	
3310806	8	60	50	10	30	100 [41]	300 [12]	18000
3310808	8	80	65	10	50	100 [51]	300 [22]	18000
3311007	10	70	60	10	35	100 [51]	300 [22]	18000
3311009	10	95	80	15	58	50 [51]	150 [22]	9000



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m2-l Internally Threaded Bolt



BUILDING MATERIALS

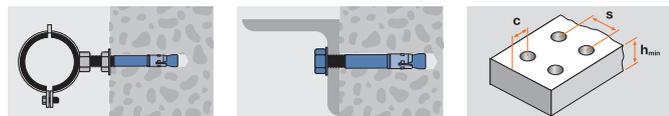


APPLICATIONS

Pipes, Ventilation systems, Substructures, Wooden structures

FEATURES

- ⦿ Higher loads, higher security
- ⦿ Improved clip design; higher loads and best expansion
- ⦿ Suitable for metric screws and rods
- ⦿ Zinc plated > 5µm (m2-l)
- ⦿ Stainless steel A4/316 (m2r-l)
- ⦿ Pre installation
- ⦿ Indoor (zinc plated) and outdoor (stainless steel) applications



TECHNICAL DATA

	Concrete C20/25 tension load (kN) m2-l	Concrete C20/25 tension load (kN) m2r-l	distance betw. anchors mm	edge distance mm	min. distance betw. anchors mm	min. edge distance mm	min. component thickness mm	Installation torque (Nm)
			s	c	S _{min}	C _{min}	h _{min}	T _{inst}
M6	3.1	3.0	117	60	40	50	100	7
M8	3.5	3.4	141	71	47	60	120	10
M10	4.0	4.8	150	75	50	63	140	20
M12	5.4	6.5	177	89	60	75	160	50

Safety factor 3 / The technical data is only valid for single fixings without consideration of edge and anchor distances / 1 kN = 100 kg

INSTALLATION



m2-l Internally Threaded Bolt

Article code	Internal thread	Internal thread length mm	Plug and drill Ø mm	Length mm	Drilling depth mm	Eff. anchorage depth mm	Min. drive-in depth mm	Unit content	Outer carton quantity	Pallet quantity
	d	L _{th}	d _{nom} = d ₀	L	h ₀	h _{ef}	e _{min}	[FS]	[SK]	
1450645	M6	15	8	45	60	39	6	100 [21]	900 [22]	21600
1450850	M8	17	10	51	69	47	8	100 [21]	900 [22]	21600
1451055	M10	17	12	55	75	50	10	100 [41]	300 [12]	7200
1451268	M12	20	16	69	96	59	12	50 [41]	150 [12]	3600



01

Metal anchors

02

m2r-l Internally Threaded Bolt, stainless steel A4

Article code	Internal thread	Internal thread length mm	Plug and drill Ø mm	Length mm	Drilling depth mm	Eff. anchorage depth mm	Min. drive-in depth mm	Unit content	Outer carton quantity	Pallet quantity
	d	L _{th}	d _{nom} = d ₀	L	h ₀	h _{ef}	e _{min}	[FS]	[SK]	
14406455	M6	15	8	45	60	39	6	100 [21]	900 [22]	21600
14408505	M8	17	10	51	69	47	8	100 [21]	900 [22]	21600
14410555	M10	17	12	55	75	50	10	100 [41]	300 [12]	7200
14412685	M12	20	16	69	96	59	12	50 [41]	150 [12]	3600



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m2f Throughbolt, hot dip galvanised

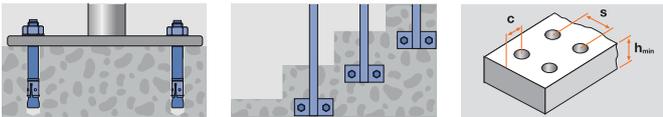


BUILDING MATERIALS



APPLICATIONS

Cable trays, Railings, Steel constructions, Machines, High-racks, Profiles



FEATURES

- ⦿ Higher loads, higher security
- ⦿ Improved clip design; higher loads and best expansion
- ⦿ Torque controlled expansion
- ⦿ Small edge and spacing distances
- ⦿ Highest shear loads and bending moment for safe distance fixing
- ⦿ Setting depth mark for correct installation
- ⦿ Simple setting process due to low resistance to impacts
- ⦿ Fast achievement of installation torque
- ⦿ Hot dip galvanised > 40µm
- ⦿ Pre installation or through fixing
- ⦿ Indoor and outdoor applications

TECHNICAL DATA

	Concrete C20/25 tension load (kN)	Concrete C20/25 shear load (kN)	Bending moment (Nm)	min. distance betw. anchors/at edge distance mm	min. edge distance/ at distance betw. anchors mm	min. component thickness mm	Installation torque (Nm)	Wrench size
				S_{min}/C	C_{min}/S	h_{min}	T_{inst}	SW
M8	5.7	6.1	14.9	45/45	45/45	100	15	13
M10	7.6	10.1	31.9	50/50	50/50	120	30	17
M12	9.5	13.7	52.3	75/80	80/75	140	50	19
M16	11.9	15.7	118.6	100/190	130/190	160	100	24
M20	19.8	24.3	231.5	200/400	300/350	200	200	30

The partial safety factors of the resistances regulated in the zinc plated m2 assessment as well as a partial safety factor of the load of $\gamma_F = 1.4$ are considered / The technical data is only valid for single fixings without consideration of edge and anchor distances / Only valid for setting depths according to assessment / 1 kN = 100 kg

INSTALLATION



m2f Throughbolt with washer DIN 125A, hot dip galvanised



Article code	Plug and drill Ø mm	Length mm	Drilling depth mm	Usable length mm	Eff. anchorage depth mm	Unit content	Outer carton quantity	Pallet quantity
	$d_{nom} = d_b$	L	h_b	t_{sa}	h_{ef}	[FS]	[SK]	
3400805	8	50	45	5	27	100 [21]	900 [22]	54000
3400806	8	60	50	10	30	100 [21]	900 [22]	54000
3400808	8	80	65	10	50	100 [41]	300 [22]	18000
3400809	8	95	65	25	50	100 [51]	300 [22]	18000
3400811	8	115	65	45	50	100 [51]	300 [22]	18000
3401006	10	60	55	5	33	100 [41]	300 [22]	18000
3401007	10	70	60	10	35	100 [51]	300 [22]	18000
3401009	10	95	80	15	58	100 [51]	300 [22]	18000
3401011	10	110	80	30	58	50 [51]	150 [22]	9000
3401012	10	125	80	45	58	50 [51]	150 [22]	9000
3401014	10	140	80	60	58	50 [51]	150 [22]	9000
3401016	10	160	80	80	58	50 [51]	150 [22]	9000
3401018	10	180	80	100	58	25 [51]	75 [22]	4500
3401208	12	80	70	5	49	50 [41]	15 [22]	9000
3401211	12	110	90	15	68	50 [51]	150 [22]	9000
3401212	12	125	90	30	68	50 [51]	150 [22]	9000
3401214	12	145	90	50	68	25 [41]	75 [22]	4500
3401216	12	165	90	70	68	50 [51]	150 [22]	9000
3401218	12	185	90	90	68	50 [51]	150 [22]	9000
3401609	16	90	80	5	50	25 [51]	75 [22]	3600
3401611	16	115	100	10	70	25 [51]	75 [22]	3600
3401613	16	130	110	15	80	25 [51]	75 [22]	3600
3401614	16	145	110	30	80	25 [51]	75 [22]	3600
3401616	16	160	110	45	80	25 [51]	75 [22]	3600
3402016	20	160	130	30	100	20 [51]	60 [22]	2880

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Metal anchors

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MSS Shield Anchor



BUILDING MATERIALS

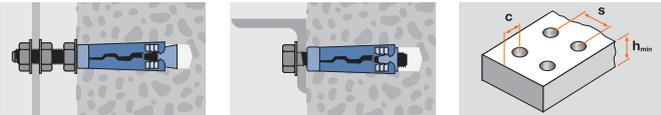


FEATURES

- Torque controlled expansion
- Zinc plated > 5µm
- Pre installation
- Indoor applications

APPLICATIONS

Pipes, Steel constructions

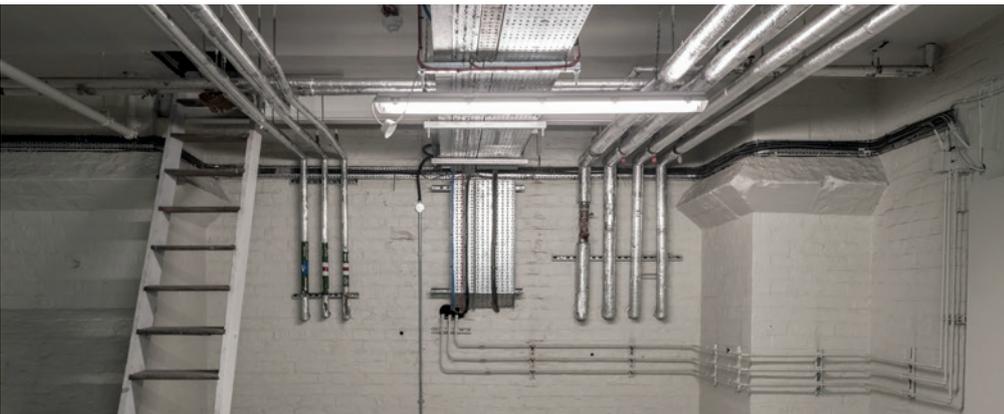
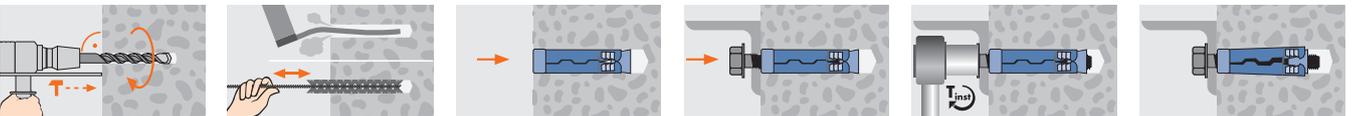


TECHNICAL DATA

	Concrete C20/25 tension load (kN)	Concrete C20/25 shear load (kN)	Bending moment (Nm)	Distance betw. anchors mm	Edge distance tension load mm	Edge distance shear load mm	min. component thickness mm	Installation torque Concrete (Nm)	Wrench size
				s	c	c	h _{min}	T _{inst}	SW
M6	2.7	4.6	7.0	120	80	100	70	6.5	10
M8	4.8	8.7	17.1	150	100	120	80	15	13
M10	6.2	13.7	34.2	180	120	160	100	27	17
M12	9.7	19.9	60	250	160	180	120	50	19
M16	13.0	35.9	152	290	190	260	190	120	24

Sicherheitsfaktoren: Betonversagen 3 / Stahlversagen 2.2 / The technical data is only valid for single fixings without consideration of edge and anchor distances / 1kN = 100 kg

INSTALLATION



MSS Shield Anchor

Article code	Internal thread	Drill Ø mm	Clearance hole in fixture mm	Length mm	Drilling depth mm	Unit content	Outer carton quantity
	d	d ₀	d _f	L	h ₀	[FS]	[SK]
1240604	M6	11	7	45	50	50 [11]	600 [22]
1240805	M8	13	9	50	55	50 [21]	450 [22]
1241006	M10	16	12	60	65	50 [31]	300 [22]
1241207	M12	18	14	75	80	25 [31]	150 [22]
1241611	M16	25	18	115	120	10 [21]	90 [22]



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Metal anchors

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MHA Sleeve Anchor



BUILDING MATERIALS

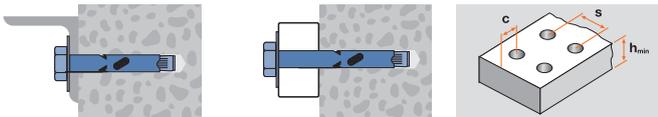


FEATURES

- Small edge and spacing distances
- Torque controlled expansion
- Zinc plated > 5µm
- Through fixing
- Indoor applications

APPLICATIONS

Steel constructions, Profiles



TECHNICAL DATA

	Concrete C20/25 tension load (kN)	Concrete C20/25 shear load (kN)	Bending moment (Nm)	Distance betw. anchors mm	Edge distance mm	min. component thickness mm	Installation torque (Nm)	Wrench size MHA-S	Wrench size MHA-B
				s	c	h _{min}	T _{inst}	SW	SW
M6	2	3.2	4.2	105	55	70	8	10	10
M8	3	3.5	5.3	120	60	80	15	13	13
M10	5	6.0	12.8	150	75	100	30	17	15
M12	7.5	8.5	25	225	115	150	40	-	19

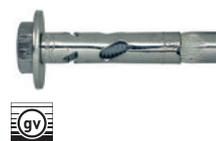
Safety factor 3 / 1 kN = 100 kg

INSTALLATION



MHA-S Sleeve Anchor with hexagon screw

Article code	Drill Ø mm	Length mm	Internal thread	Drilling depth mm	Usable length mm	Eff. anchorage depth mm	Unit content	Outer carton quantity
	d_0	L	d	h_0	t_{ex}	h_{ef}	[FS]	[SK]
1590804	8	45	M6	55	5	35	50 [11]	600 [22]
1590806	8	60	M6	55	20	35	100 [21]	900 [22]
1591006	10	60	M8	60	15	40	50 [21]	450 [22]
1591008	10	80	M8	60	35	40	50 [31]	300 [22]
1591207	12	70	M10	70	15	50	50 [31]	300 [22]
1591210	12	100	M10	70	45	50	25 [31]	150 [22]



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Metal anchors

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MHA-B Sleeve Anchor with threaded bolt and nut

Article code	Drill Ø mm	Length mm	Internal thread	Drilling depth mm	Usable length mm	Eff. anchorage depth mm	Unit content	Outer carton quantity
	d_0	L	d	h_0	t_{ex}	h_{ef}	[FS]	[SK]
1580804	8	40	M6	50	5	30	100 [11]	1200 [22]
1580806	8	65	M6	55	25	35	50 [11]	600 [22]
1581005	10	50	M8	60	5	40	50 [11]	600 [22]
1581007	10	75	M8	60	30	40	50 [21]	450 [22]
1581009	10	95	M8	60	50	40	25 [11]	300 [22]
1581012	10	125	M8	60	80	40	25 [21]	225 [22]
1581014	10	145	M8	60	100	40	25 [31]	150 [22]
1581207	12	75	M10	70	15	50	25 [11]	300 [22]
1581210	12	100	M10	70	40	50	20 [11]	240 [22]
1581213	12	130	M10	70	70	50	20 [21]	180 [22]
1581215	12	150	M10	70	90	50	20 [31]	120 [22]
1581606	16	65	M12	70	5	50	20 [11]	240 [22]
1581611	16	110	M12	95	25	75	10 [11]	120 [22]
1581614	16	145	M12	95	60	75	20 [41]	60 [12]
1581617	16	170	M12	95	85	75	15 [41]	45 [12]



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MHDA Hollow Ceiling Anchor



BUILDING MATERIALS



FEATURES

- Suitable for screws or bolts with metric thread
- Zinc plated > 5µm
- Pre installation
- Indoor applications

APPLICATIONS

Pipes, Ventilation systems, Cable trays, Substructures, Gates



TECHNICAL DATA

	Concrete, non-cracked C40/50 tension load (kN) component thickness ≥25mm	Concrete, non-cracked C40/50 tension load (kN) component thickness ≥30mm	Concrete, non-cracked C40/50 tension load (kN) component thickness ≥40mm	distance betw. anchors mm	Edge distance mm	Installation torque (Nm)
				s	c	T _{inst}
M6	1.2	1.6	-	300	150	10
M8	1.4	1.9	2.5	300	150	10
M10	2.0	3.0	4.0	300	150	20

Single fixing / Safety factor 5 / 1 kN = 100 kg

INSTALLATION



MHDA Hollow Ceiling Anchor

Article code	Internal thread	Thread length mm	Plug and drill Ø mm	Length mm	Drilling depth mm	Unit content	Outer carton quantity
	d	L _s	d _{max} = d ₀	L	h ₀	[FS]	[SK]
1300006	M6	11	10	37	50	100 [11]	1200 [22]
1300008	M8	14	12	43	60	50 [11]	600 [22]
1300010	M10	19	16	52	65	25 [11]	300 [22]



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Metal anchors

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MEA-X Drop in Anchor



BUILDING MATERIALS



APPLICATIONS

Pipes, Ventilation systems, Cable trays



FEATURES

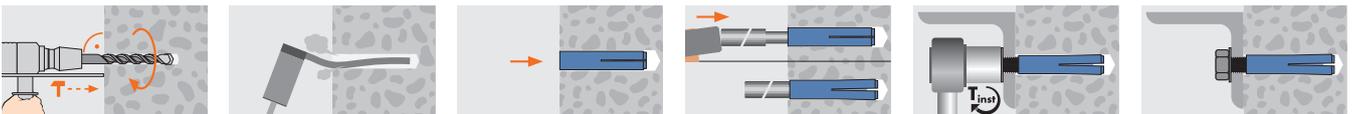
- European Technical Assessment for non-cracked concrete
- European Technical Assessment for multiple use in cracked and non-cracked concrete for non-structural applications
- Resistance under fire exposure R120 is part of the assessment
- Use in reinforced or non reinforced concrete
- Use in prestressed hollow-core slabs
- Suitable for metric screws and rods
- Quick and simple installation
- Low edge and anchor distances
- Short drilling depth
- Zinc plated > 5µm
- Pre installation
- Version with and without collar

TECHNICAL DATA

	Concrete, non-cracked C20/25 tension load (kN)	Concrete C20/25 use as multiple fastening tension load (kN)	Prestressed concrete C30/37 use as multiple fastening tension load (kN)	min. distance betw. anchors Concrete, non-cracked mm	min. distance betw. anchors use as multiple fastening mm	min. edge distance Concrete, non-cracked mm	min. edge distance use as multiple fastening mm	min. component thickness Concrete, non-cracked mm	min. component thickness use as multiple fastening mm	Min. mirror thickness prestressed concrete mm	Installation torque (Nm)
				S_{min}	S_{min}	C_{min}	C_{min}	h_{min}	h_{min}		T_{inst}
M6	¹⁾ 2	¹⁾ 0.7	-	120	120	100	100	100	100	-	6
M8	¹⁾ 3.2	1.4	-	200	200	150	150	100	80	-	11
M8x25	-	1.2	1.2	-	200	-	150	-	80	35	11
M10	¹⁾ 4.9	1.8	-	200	200	150	150	100	80	-	17
M10x25	-	1.9	1.9	-	200	-	150	-	80	35	17
M12	8.3	2.8	-	68	250	150	68	100	80	-	35
M12x25	-	1.9	1.9	-	200	-	150	-	80	35	35
M16	10.2	-	-	88	300	200	88	130	130	-	60

¹⁾ not part of the ETA assessment, MUNGO lab tested
 The partial safety factors of the resistances as well as a partial safety factor of the load of $\gamma_F = 1.4$ are considered /
 The values are valid only for individual fastenings, without effects from spacing to axes or edges. / The loads are not valid for reduced effective anchorage depths / 1 kN = 100 kg

INSTALLATION



MEA-X Drop in Anchor

Article code	ETA multiple fastening	ETA single fastening	Internal thread		Length mm		Plug and drill Ø mm	Drilling depth mm	Unit content	Outer carton quantity	Pallet quantity
			d	L	$d_{max} = d_0$	h_0					
1760625			M6	25	8	25	100	2000	144000		
1760830	⊗		M8	30	10	33	100	1600	72000		
1761040	⊗		M10	40	12	43	50	1000	36000		
1761250		⊗	M12	50	15	54	50	500	20000		
1761252	⊗	⊗	M12	50	16	54	50	500	20000		
1761665		⊗	M16	65	20	70	25	200	10000		



01
Metal anchors

MEAK-X Lipped Drop in Anchor

Available on request (minimum order quantity)

Article code	Internal thread		Length mm		Plug and drill Ø mm	Drilling depth mm	Unit content	Outer carton quantity	Pallet quantity
	d	L	$d_{max} = d_0$	h_0					
1760825	M8	25	10	27	50	2000	72000		
1761025	M10	25	12	27	50	1000	48000		
1761225	M12	25	15	27	25	500	24000		



02

03

MEA-WZ

Setting Tool for MEA with hand guard



Article code	For	Unit content
1770625	M6 x 25	1
1770825	M8 x 25	1
1770830	M8 x 30	1
1770840	M8 x 40	1
1771025	M10 x 25	1
1771030	M10 x 30	1
1771040	M10 x 40	1
1771225	M12 x 25	1
1771250	M12 x 50	1
1771665	M16 x 65	1

MEA-SDS

Setting Tool for MEA, SDS-Plus



Article code	For	Unit content
1772625	M6 x 25	1
1772825	M8 x 25	1
1772830	M8 x 30	1
1772840	M8 x 40	1
1772025	M10 x 25	1
1772030	M10 x 30	1
1772040	M10 x 40	1
1772225	M12 x 25	1
1772250	M12 x 50	1
1772665	M16 x 65	1

04

MEA-BB Stop Drill Bit

Article code	For	Drill-Ø mm		Drilling depth mm	Unit content
		d_0	h_0		
1773625	M6 x 25	8	25	1	
1773825	M8 x 25	10	25	1	
1773830	M8 x 30	10	30	1	
1773840	M8 x 40	10	40	1	
1773025	M10 x 25	12	25	1	
1773030	M10 x 30	12	30	1	
1773040	M10 x 40	12	40	1	
1773225	M12 x 25	15	25	1	
1773250	M12 x 50	15	50	1	
1773251	M12 x 50	16	50	1	
1773665	M16 x 65	20	65	1	



05

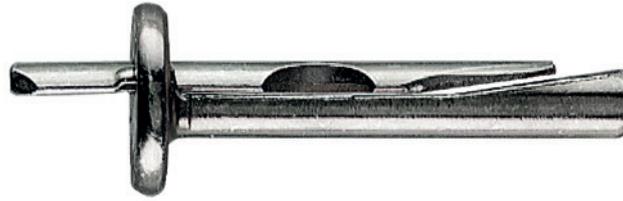
06

07

08



MAN Ceiling Anchor

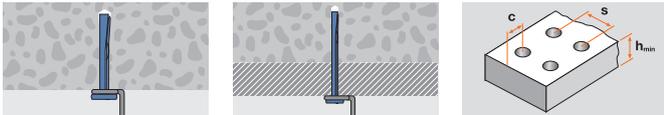


BUILDING MATERIALS



APPLICATIONS

Suspended ceilings, Wire hanger, Substructures, Profiles, Ventilation systems



FEATURES

- Approved for multiple fixings of light weight suspended ceilings according to DIN 18168, also in cracked concrete
- Resistance under fire exposure R120 is part of the assessment
- Suitable for overhead fixings
- Simple setting process by flush hitting of overlaying pin
- For fast to install ceiling systems
- Head of ceiling anchor rests wide and covers neatly
- Top load values
- Zinc plated > 5µm
- Through fixing
- Indoor applications (zinc plated)

TECHNICAL DATA

	Concrete C20/25 - C50/60 tension load (kN)	Bending moment (Nm)	min. distance betw. anchors mm	min. edge distance mm	min. component thickness mm
			S _{min}	C _{min}	h _{min}
MAN	1.4	3.0	200	150	80

The partial safety factors of the resistances as well as a partial safety factor of the load of γ_F = 1.4 are considered / 1 kN = 100 kg

INSTALLATION



MAN Ceiling Anchor

Also available in 35 mm usable length for fastening wooden battens



Article code	Drill-Ø mm	Drilling depth mm	Length mm	Usable length mm	Unit content	Outer carton quantity	Pallet quantity
	d ₀	h ₀	L	t _{fix}	[FS]	[SK]	
1127064	6	40	40	5	100 [11]	1200 [22]	72000
1127067	6	40	70	35	100 [31]	600 [22]	36000

01

Metal anchors

02

03

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MEN Express Nail



BUILDING MATERIALS



FEATURES

- Economical installation
- No screw and plug required
- Through fixing with the Metal Disc, the MEN is appropriate for overhead installation of insulation
- Zinc plated > 5µm
- Through fixing

APPLICATIONS

Squared timbers, Substructures, Profiles

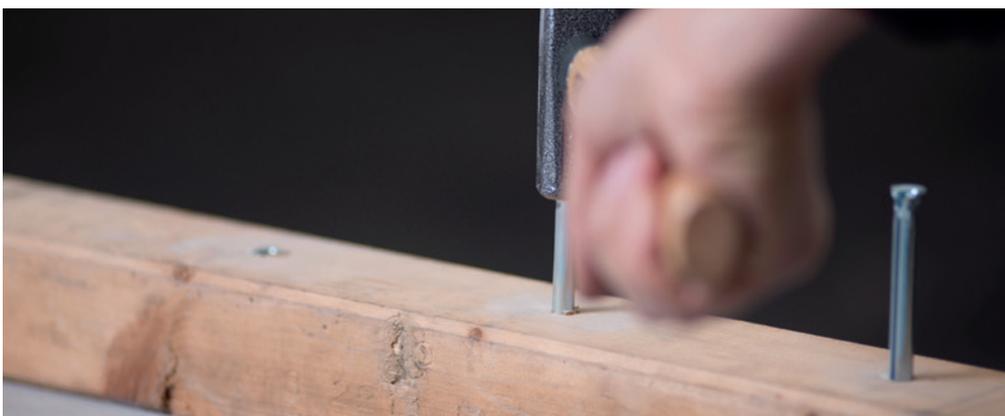


TECHNICAL DATA

	Concrete C20/25 tension load (kN)	Brick tension load (kN)
MEN 5	0.3	-
MEN 6	0.7	0.5
MEN 8	1.0	0.8

Safety factor 3 / 1 kN = 100 kg / Perforated brick: Pull-out values must be determined, as they depend on the hole ratio of the brick.

INSTALLATION



MEN Express Nail

Article code	Plug and drill Ø mm	Length mm	Drilling depth mm	Usable length mm	Eff. anchorage depth mm	Unit content	Outer carton quantity	Pallet quantity
	$d_{nom} = d_0$	L	h_0	t_{sa}	h_{ef}	[FS]	[SK]	
1125026	5	26	30	3	23	100 [01]	2400 [22]	57600
1126030	6	30	35	3	27	100 [01]	2400 [22]	57600
1126060	6	60	40	30	30	100 [11]	2400 [32]	57600
1126080	6	80	40	50	30	100 [21]	1800 [32]	43200
1128070	8	70	50	30	40	100 [31]	1200 [32]	28800
1128090	8	90	50	50	40	100 [31]	1200 [32]	28800
1128110	8	110	50	70	40	100 [41]	900 [32]	21600
1128130	8	130	50	90	40	100 [41]	900 [32]	21600
1128150	8	150	50	110	40	100 [41]	900 [32]	21600
1128180	8	180	50	140	40	100 [41]	900 [32]	21600



01

Metal anchors

02

MDB-M Metal Disc, Ø 38 mm (Metal & Metal white)

Article code	Disc-Ø mm	Hole-Ø mm	Description	For	Unit content	Outer carton quantity	Pallet quantity
	$d_{nom} = d_0$	d_w			[FS]	[SK]	
1120875	38	9.0	Metal, white	MNA-S 8 / MEN 8 / MRS	200 [21]	3600 [32]	86400
1120867	38	9.0	Metal	MNA-S 8 / MEN 8 / MRS	200 [21]	3600 [32]	86400



03

MDB-M Metal Disc, Ø 70 mm

Article code	Disc-Ø mm	Hole-Ø mm	Description	For	Unit content	Outer carton quantity	Pallet quantity
	$d_{nom} = d_0$	d_w			[FS]	[SK]	
1120860	70	8.5	Metal	MNA-S 8 / MEN 8	100 [31]	1200 [32]	28800
1120862	70	10.5	Metal	MNA-S 10 / MEN 8	100 [31]	1200 [32]	28800



04

05

06

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08

Modular PACKING SYSTEM

We pack the majority of our products in just 9 different folding boxes and 3 collective cartons. This enables an optimal combination of products for shipping.

There are various combinations, which can easily be taken from the table.

All packaging quantities are coded accordingly in the product tables so that the dimensions and quantities can be easily determined.

THE ADVANTAGES AT A GLANCE

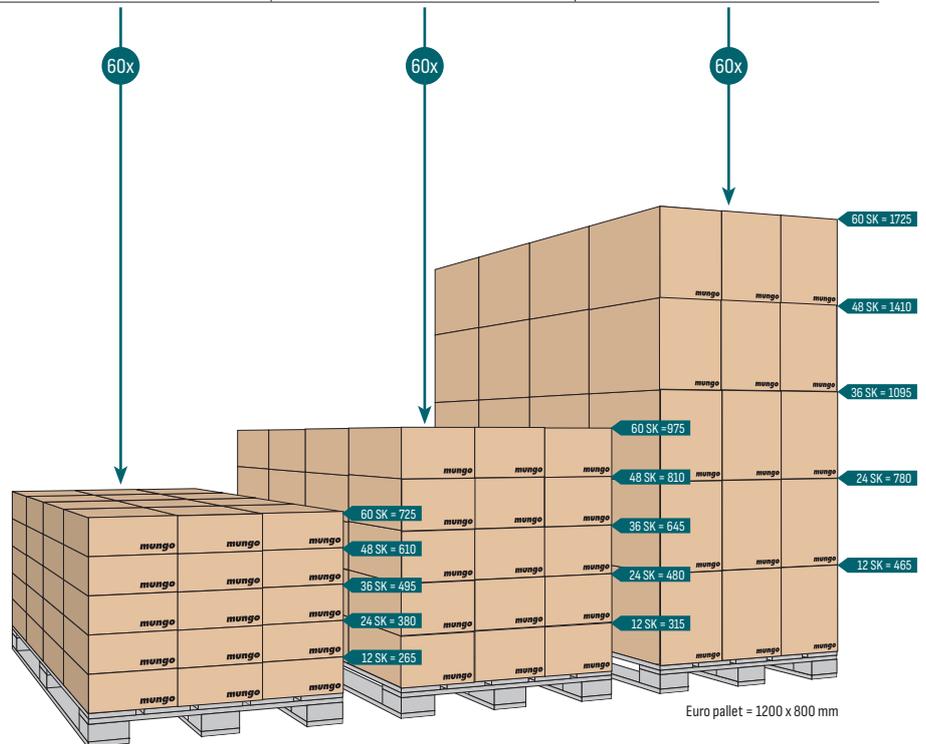
- ⦿ Optimized appearance thanks to the uniform width of the boxes
- ⦿ Greater stability thanks to new design
- ⦿ Packaging tailored to MUNGO products
- ⦿ Folding boxes are always compatible with at least two larger packaging units



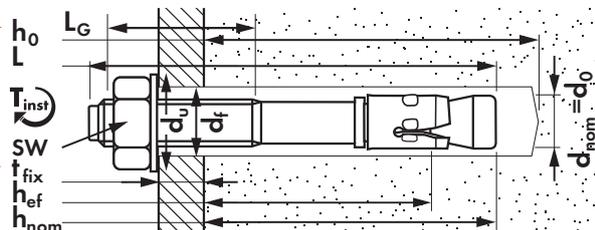
	FS 1/4	97 x 128 x 49 mm	-	18x	36x
	FS 01	97 x 64 x 75 mm	-	24x	48x
	FS 11	97 x 64 x 150 mm	-	12x	24x
	FS 21	97 x 85 x 150 mm	-	9x	18x
	FS 31	97 x 128 x 150 mm	-	6x	12x
	FS 41	97 x 100 x 256 mm	3x	-	9x
	FS 51	97 x 150 x 256 mm	-	3x	6x
	FS 61	97 x 128 x 292 mm	2x	-	6x

		
SK 12	SK 21	SK 32
265 x 115 x 300 mm	265 x 165 x 300 mm	265 x 315 x 300 mm

50	61	300	32	1440
25	61	50	12	720
50	61	300	32	3000
25	61	50	12	7200
50	61	300	32	3000
25	61	50	12	7200



80	80	30
100	100	50
120	120	70
40	140	90
60		





MUNGO Befestigungstechnik AG
Webereiweg 6
4802 Strengebach / Switzerland
Phone +41 62 206 75 75
mungo@mungo.swiss

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www.mungo.swiss

The Swiss way of fixing.