











Standard Fixings

FX		24
F		27
FL		30
MZ/MZK		32
AZ/AZK		36
GB		38
GR		
OES		40
AK		
MSD		42

Plug FX



Advantages



- 4-side expansion for high pull out loads
- Compatible with different types of screws such as wood screws, chipboard screws, self-tapping screws, etc.
- Efficient anti-rotation lugs prevents rotation in the drill hole
- Plug collar prevents slipping into the drill hole
- High quality and ageing resistant nylon
- Temperature resistant from -40°C to +80°C

Suitable building materials

Very suitable



- | | |
|--|---|
| <ul style="list-style-type: none"> • Concrete • Lightweight solid concrete blocks • Solid brick • Solid sand-lime brick • Natural stone • Aerated concrete | <ul style="list-style-type: none"> • Hollow brick • Hollow sand-lime brick • Lightweight hollow concrete blocks • Gypsum blocks |
|--|---|

Suitable to a limited extent

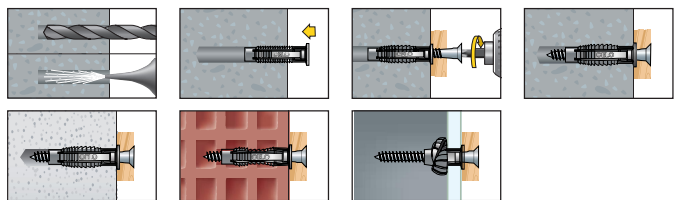


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|--|--|
| <ul style="list-style-type: none"> • Plasterboard/
Fibreboard | <ul style="list-style-type: none"> • Boards |
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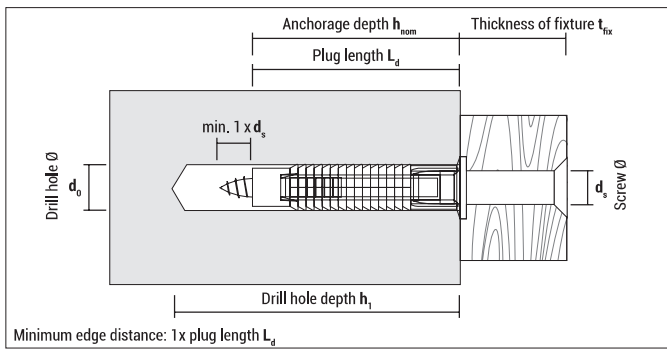
Approvals and certificates



Mounting



Plug FX



FX without screw

Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	d_s [mm]	€ / 100 pcs	[pcs]	[pcs]
FX 5	95FX	5	35	25	25	2,5 - 4		100	6.000
FX 6	96FX	6	40	30	30	3,5 - 5		100	6.000
FX 8	98FX	8	55	40	40	4,5 - 6		100	2.700
FX 10	910FX	10	70	50	50	6 - 8		50	1.350
FX 12	912FX	12	80	60	60	8 - 10		25	675



FX incl. PZ chipboard screw (FX6 and FX8) respectively hex-head wood screw (FX 10)

Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	$d_s \times L_s^1$ [mm]	€ / 100 pcs	[pcs]	[pcs]
FX 6 SPS	96FXSZ	6	40	30	30	4,5 x 45		50	3.000
FX 8 SPS	98FXSZ	8	55	40	40	5,0 x 60		50	1.350
FX 10 SKS	910FXK	10	70	50	50	7,0 x 65		25	675

¹ L_s = Screw length



FX in round box

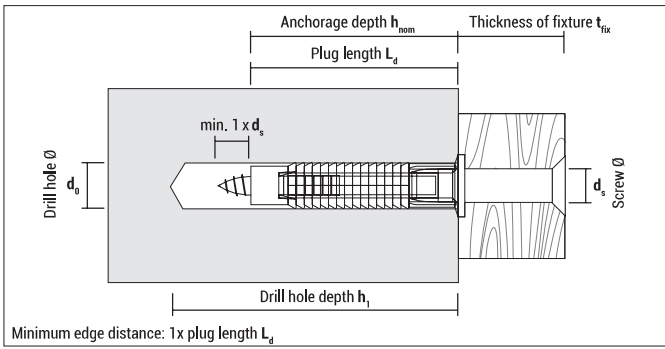
Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	d_s [mm]	€ / box	[pcs]	[boxes]
FX 6	96EXPFX	6	40	30	30	3,5 - 5		300	10
FX 8	98EXPFX	8	55	40	40	4,5 - 6		125	10
FX 10	910EXPFX	10	70	50	50	6 - 8		70	10



FX Round box dispenser (empty); 44 x 56 x 30 cm (W x H x D)

Type	Art-No	€ / pcs	[pcs]
FX-cover for round box dispenser	CARTELAFX	on request	1
Round box dispenser	010507411	on request	1
Hook for dispenser	010507441	on request	1

Plug FX



Blister FX without screw



Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	d_s [mm]	€ / Blister	[pcs]	[Blister]
FX 5	55FX50	5	35	25	25	2,5 - 4		50	10
FX 6	56FX30	6	40	30	30	3,5 - 5		30	10
FX 8	58FX20	8	55	40	40	4,5 - 6		20	10
FX 10	510FX10	10	70	50	50	6 - 8		10	10
FX 12	512FX6	12	80	60	60	8 - 10		6	10



Blister FX incl. PZ chipboard screw (FX 5, 6 and 8) respectively hex-head wood screw (FX 10 and 12)



Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	$d_s \times L_s$ [mm]	Type of screw	€ / Blister	[pcs]	[Blister]
FX 5 SPS	55FXSZ20	5	35	25	25	3,5 x 35			20	10
FX 6 SPS	56FXSZ15	6	40	30	30	4,5 x 45			15	10
FX 8 SPS	58FXSZ10	8	55	40	40	5,0 x 60			10	10
FX 10 SKS	510FXK5	10	70	50	50	7,0 x 65			5	10
FX 12 SKS	512FXK2	12	80	60	60	8,0 x 80			2	10

Recommended loads F_{rec} using wood screws with the largest applicable screw diameter and full anchorage depth

Type	Screw \varnothing d_s [mm]	Concrete F_{rec} [kN]	Solid stone Mz 12 F_{rec} [kN]	Solid sand- lime brick KS 12 F_{rec} [kN]	Aerated concrete AAC2 F_{rec} [kN]	Aerated concrete AAC4 F_{rec} [kN]	Hollow brick HLz 12 F_{rec} [kN]	Hollow sand- lime brick KSL 12 F_{rec} [kN]
FX 5	4	0,20	0,21	0,21	0,03	0,05	0,15	0,23
FX 6	5	0,47	0,42	0,42	0,05	0,10	0,20	0,39
FX 8	6	0,52	0,50	0,50	0,10	0,14	0,23	0,60
FX 10	8	1,28	0,90	0,90	0,16	0,30	0,45	0,67
FX 12	10	1,91	1,10	1,10	0,28	0,40	0,50	0,74

F_{rec} : Recommended loads incl. safety factor of 7

Values must be reduced by ca. 40% when using chipboard screws (especially in solid building materials)

Standard plug

F

Advantages



- High pull out loads due to high expansion ability (four-sided expansion in the middle section)
- Very good screw guidance, i.e. the screw cannot move out of the plug during the screwing in
- Good twist resistance
- Strong design prevents bending when hammered in
- Good load values even in many perforated bricks and aerated concrete

Suitable building materials

Very suitable



- Concrete
- Natural stone
- Solid brick
- Solid sand-lime brick
- Lightweight solid concrete blocks
- Aerated concrete
- Gypsum blocks

Suitable to a limited extent



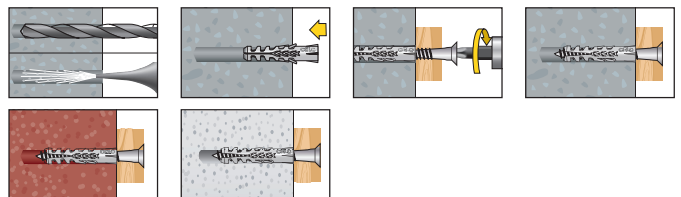
- Hollow brick
- Hollow sand-lime brick
- Lightweight solid concrete blocks



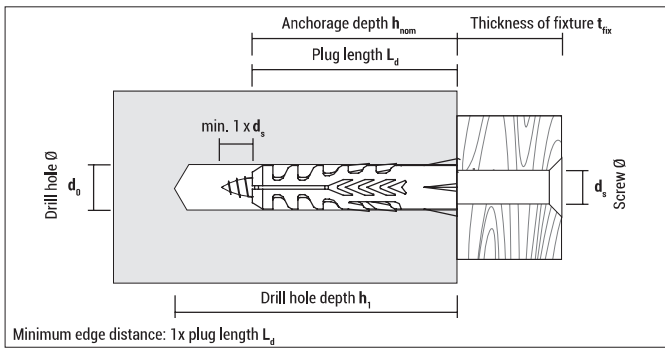
Approvals and certificates



Mounting

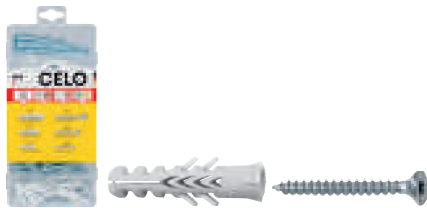


Standard plug F



F without screw

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	d _s [mm]	€/100 pcs	[pcs]	[pcs]
F 4	94NF	4	30	20	20	2-3		200	12.000
F 5	95NF	5	35	25	25	2,5-4		100	6.000
F 6	96NF	6	40	30	30	3,5-5		100	6.000
F 7	97NF	7	40	30	30	4-5,5		50	3.000
F 8	98NF	8	55	40	40	4,5-6		100	2.700
F 10	910NF	10	70	50	50	6-8		50	1.350
F 12	912NF	12	80	60	60	8-10		25	675
F 14	914NF	14	90	70	70	10-12		20	540
F 16	916NF	16	100	80	80	12-14		10	270
F 20	920NF	20	120	90	90	16		5	135



Assortment box F with screw (210 pieces in total)

Type	Art-No	Box contains	d ₀ [mm]	h ₁ ≥ [mm]	L _d [mm]	d _s [mm]	€/box	[box]	Min. sales unit [pcs]
F	MIXNFSZ210	60 Standard plug F 5 incl. SPS 3,5x35 V, Pozi 30 Standard plug F 6 incl. SPS 4,5x45 V, Pozi 15 Standard plug F 8 incl. SPS 5,0x60 V, Pozi	5 6 8	35 40 55	25 30 40	3,5 x 35 4,5 x 45 5,0 x 60		1	5

Packed in robust plastic box



Assortment box MZK and F without screw (156 pieces in total)

Type	Art-No	Box contains	d ₀ [mm]	h ₁ ≥ [mm]	L _d [mm]	d _s [mm]	€/box	[box]	Min. sales unit [pcs]
MZK and F	MIXNFMZK156	30 Multi-purpose plug MZK 6 15 Multi-purpose plug MZK 8 6 Multi-purpose plug MZK 10 60 Standard plug F 5 30 Standard plug F 6 15 Standard plug F 8	6 8 10 5 6 8	40 60 75 35 40 55	30 49 60 25 30 40	3,0 - 4,5 4,0 - 6,0 6,0 - 8,0 2,5 - 4,0 3,5 - 5,0 4,5 - 6,0		1	5

Packed in robust plastic box

Standard plug F



Blister F without screw



Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	d_s [mm]	€/Blister	[pcs]	[Blister]
F 4	54NF20	4	30	20	20	2-3		20	10
F 4	54NF50	4	30	20	20	2-3		50	10
F 5	55NF20	5	35	25	25	2,5-4		20	10
F 5	55NF50	5	35	25	25	2,5-4		50	10
F 6	56NF20	6	40	30	30	3,5-5		20	10
F 6	56NF50	6	40	30	30	3,5-5		50	10
F 7	57NF20	7	40	30	30	4-5,5		20	10
F 7	57NF50	7	40	30	30	4-5,5		50	10
F 8	58NF20	8	55	40	40	4,5-6		20	10
F 8	58NF40	8	55	40	40	4,5-6		40	10
F 10	510NF5	10	70	50	50	6-8		5	10
F 10	510NF20	10	70	50	50	6-8		20	10
F 12	512NF5	12	80	60	60	8-10		5	10
F 12	512NF8	12	80	60	60	8-10		8	10



Blister F with screw



Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	$d_s \times L_s$ [mm]	Type of screw	€/Blister	[pcs]	[Blister]
F 4 SPS	54NFSZ20	4	30	20	20	3,0 x 25			20	10
F 5 SPS	55NFSZ20	5	35	25	25	3,0 x 35			20	10
F 6 SPS	56NFSZ20	6	40	30	30	4,0 x 40			20	10
F 6 WH	56NFWH5	6	40	30	30	4,2 x 40			5	10
F 6 RH	56NFRH5	6	40	30	30	4,2 x 65			5	10
F 8 SKS	58NFK5	8	55	40	40	5,0 x 50			5	10
F 8 WH	58NFWH5	8	55	40	40	5,0 x 50			5	10
F 8 RH	58NFRH5	8	55	40	40	5,4 x 80			5	10
F 8 SPS	58NFSZ20	8	55	40	40	5,0 x 50			20	10
F 10 SKS	510NFK5	10	70	50	50	7,0 x 65			5	10
F 12 SKS	512NFK2	12	80	60	60	8,0 x 80			2	10
F 12 SKS	512NFK5	12	80	60	60	8,0 x 80			5	10
F 14 SKS	514NFK2	14	90	70	70	10,0 x 90			2	10

Recommended loads F_{rec} using wood screws with the largest applicable screw diameter and full anchorage depth

Type	Screw \varnothing d_s [mm]	Concrete F_{rec} [kN]	Solid stone Mz 12 F_{rec} [kN]	Solid sand-lime brick KS 12 F_{rec} [kN]	Aerated concrete AAC2 F_{rec} [kN]	Aerated concrete AAC4 F_{rec} [kN]	Hollow brick HLz 12 F_{rec} [kN]
F 4	3	0,12	0,14	0,14	-	-	0,08
F 5	4	0,23	0,24	0,33	0,04	0,04	0,09
F 6	5	0,31	0,38	0,37	0,05	0,06	0,12
F 8	6	0,34	0,46	0,43	0,07	0,07	0,13
F 10	8	0,77	0,79	0,78	0,10	0,10	0,22
F 12	10	1,55	1,57	1,90	0,15	0,16	0,30
F 14	12	2,71	-	-	-	0,28	0,43
F 20	16	5,50	-	-	-	-	-

F_{rec} : Recommended loads incl. safety factor of 7

Values must be reduced by ca. 40% when using chipboard screws (especially in solid building materials)

Standard plug extra long FL



Advantages



FL 6-60, 8-80, 10-90



FL with sleeve: FL 8-100, 8-120

- The extra long expansion area enables fixings in solid and perforated material with dense and porous structure (e.g. old buildings)
- The multiple wing construction secures an anti-rotating effect
- The FL has no collar; it can be used for pre-inserted mounting and through-mounting
- The FL is also suitable for reduced setting depth for bridging thin insulations, plaster, etc.

Suitable building materials

Very suitable

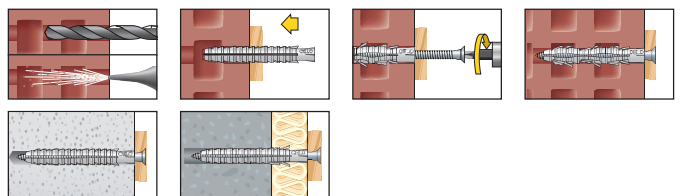


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|--|---|
| <ul style="list-style-type: none"> • Concrete • Natural stone • Solid brick • Solid sand-lime brick • Lightweight solid concrete blocks | <ul style="list-style-type: none"> • Aerated concrete • Gypsum blocks • Hollow brick • Hollow sand-lime brick • Lightweight hollow concrete blocks |
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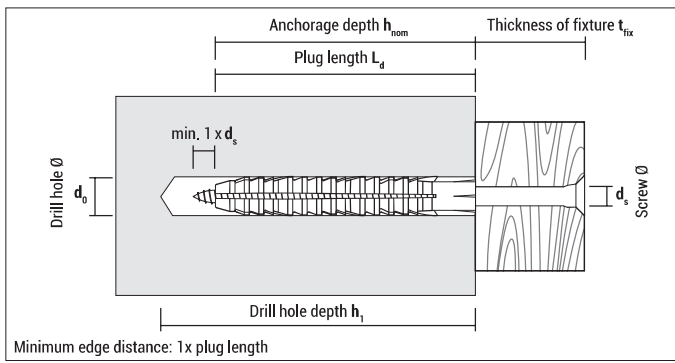
Approvals and certificates



Mounting



Standard plug FL long



FL without screw

Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	$t_{fix} \leq$ [mm]	d_s [mm]	€ / 100 pcs	[pcs]	[pcs]
FL 6-60	9660FL	6	70	60	60	–	3,5 - 4,5		100	2.700
FL 8-80	9880FL	8	90	80	80	–	4,5 - 5,5		50	600
FL 8-100*	98100FL	8	90	80	100	20	4,5 - 5,5		50	600
FL 8-120*	98120FL	8	90	80	120	40	4,5 - 5,5		50	600
FL 10-90	91090FL	10	105	90	90	–	6 - 7		25	300

* with sleeve



Blister FL without screw

Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	d_s [mm]	€ / Blister	[pcs]	[Blister]
FL 6-60	5660FL10	6	70	60	60	3,5 - 4,5		10	10
FL 8-80	5880FL10	8	90	80	80	3,5 - 5,5		10	10
FL 10-90	51090FL5	10	105	90	90	6 - 7		5	10

Recommended loads F_{rec} using wood screws with the largest applicable screw diameter and full anchorage depth

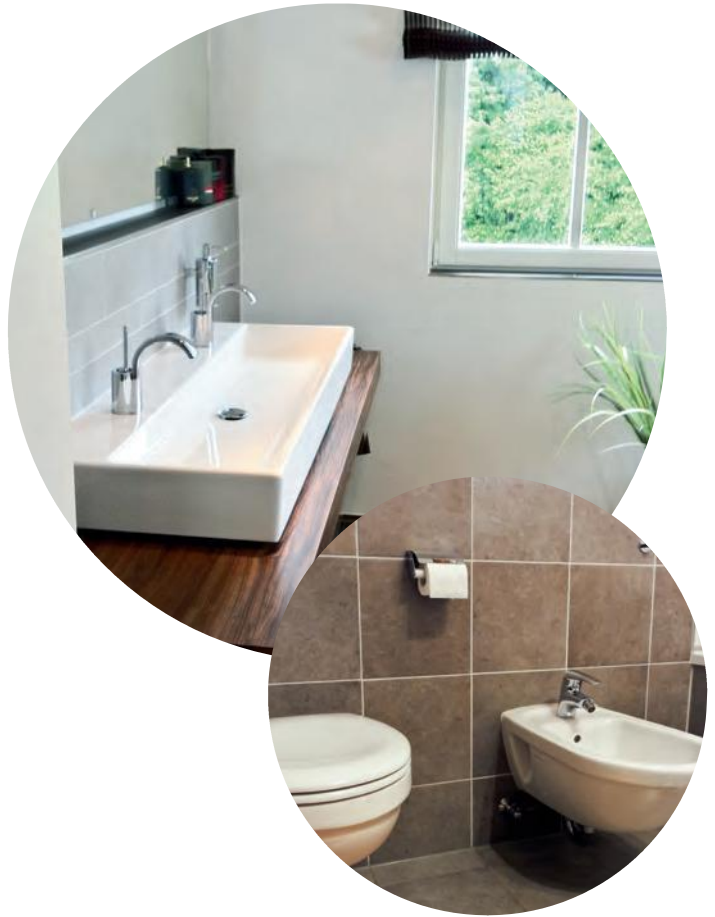
Type	Screw \emptyset d_s [mm]	Concrete F_{rec} [kN]	Aerated concrete AAC2 F_{rec} [kN]	Aerated concrete AAC4 F_{rec} [kN]	Aerated concrete AAC6 F_{rec} [kN]	Hollow sand-lime brick KSL 12 F_{rec} [kN]	Hollow brick HLz 12 F_{rec} [kN]
FL 6-60	4,5	0,17	0,05	0,07	0,15	0,13	0,10
FL 8-80, 8-100, 8-120	5,5	0,33	0,09	0,14	0,30	0,15	0,12
FL 10-90	7	0,56	0,19	0,25	0,33	0,22	0,20

F_{rec} : Recommended loads incl. safety factor of 7

In solid building materials use smaller screw diameter

Values must be reduced by ca. 30% when using chipboard screws (especially in solid building materials)

Multi-purpose plug MZ & MZK



Advantages



Multi-purpose plug MZ



Multi-purpose plug MZK with collar

- Knotting plug that has proven its qualities millions of times; excellent performance in almost every building material
- The 4-sided expansion in solid building materials and the knotting in perforated bricks or board materials always provides a secure fixing with high pull out loads
- High quality polyethylene guarantees long lasting elasticity and reliable knotting behaviour
- Compatible with many types and sizes of screws

Approvals and certificates



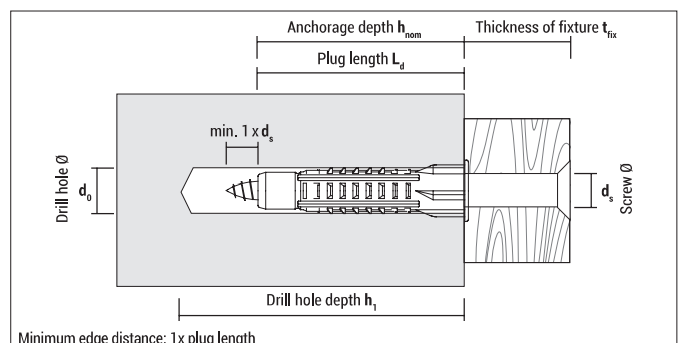
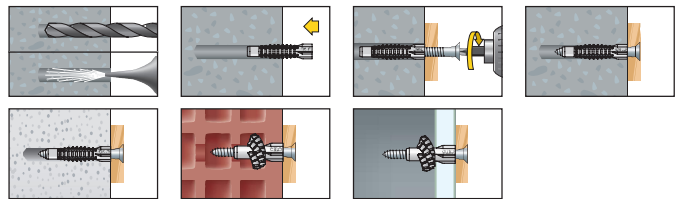
Suitable building materials

Very suitable



- Concrete
- Natural stone
- Solid brick
- Solid sand-lime brick
- Lightweight solid concrete blocks
- Aerated concrete
- Gypsum blocks
- Hollow brick
- Hollow sand-lime brick
- Lightweight hollow concrete blocks
- Plasterboard/ Fibreboard
- Chipboard

Mounting



Multi-purpose plug MZ & MZK



MZ without collar

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	h _{min} ¹ [mm]	d _s [mm]	€/100 pcs	[pcs]	[pcs]
MZ 6	96MZ	6	40	29	29	7	3-4,5		100	6.000
MZ 6-40	9640MZ	6	50	40	40	7	3-4,5		100	4.800
MZ 8	98MZ	8	60	48	48	9	4-6		100	1.800
MZ 10	910MZ	10	75	59	59	12	6-8		50	900
MZ 12	912MZ	12	85	71	71	15	8-10		50	600
MZ 14	914MZ	14	95	75	75	15	10-12		25	300

¹ Min. thickness of structural part or board (e. g. for applications in plasterboard)



MZK with collar

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	h _{min} ¹ [mm]	d _s [mm]	€/100 pcs	[pcs]	[pcs]
MZK 6	96MZK	6	40	29	30	7	3-4,5		100	4.800
MZK 6-41	9641MZK	6	50	40	41	7	3-4,5		100	2.700
MZK 8	98MZK	8	60	48	49	9	4-6		100	1.800
MZK 10	910MZK	10	75	59	60	12	6-8		50	900
MZK 12	912MZK	12	85	71	72	15	8-10		50	600
MZK 14	914MZK	14	95	75	76	15	10-12		25	300

¹ Min. thickness of structural part or board (e. g. for applications in plasterboard)



MZK with collar, incl. PZ chipboard screw (MZK 6, 6-41 and 8) respectively hex-head wood screw (MZK 10)

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	h _{min} ¹ [mm]	d _s x L _s ² [mm]	€/100 pcs	[pcs]	[pcs]
MZK 6 SPS	96MZKKSZ	6	40	29	30	7,0	4,5 x 45		50	2.400
MZK 6-41 SPS	9641MZKKSZ	6	50	40	41	7,0	4,5 x 50		50	1.350
MZK 8 SPS	98MZKKSZ	8	60	48	49	9,5	5,0 x 70		50	900
MZK 10 SKS	910MZKK	10	75	59	60	12,0	6,0 x 80		25	450

¹ Min. thickness of structural part or board (e. g. for applications in plasterboard)

² Screw length



MZK with collar, in round box

Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	h _{min} ¹ [mm]	d _s [mm]	€/box	[pcs]	[boxes]
MZK 6-41	9641EXPMZK	6	50	40	41	7,0	3-4,5		200	10
MZK 8	98EXPMZK	8	60	48	49	9,5	4-6		90	10
MZK 10	910EXPMZK	10	75	59	60	12,0	6-8		50	10
MZK 12	912EXPMZK	12	85	71	72	15,0	8-10		25	10

¹ Min. thickness of structural part or board (e. g. for applications in plasterboard)



MZK Round box dispenser (empty); 44 x 56 x 30 cm (W x H x D)

Type	Art-No	€/pcs	[pcs]
MZK-cover for round box dispenser	010507420	on request	1
Round box dispenser	010507411	on request	1
Hook for dispenser	010507441	on request	1

Multi-purpose plug MZ & MZK



Blister MZ without collar



Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	h _{min} ¹ [mm]	d _s [mm]	€ / Blister	[pcs]	[Blister]
MZ 6	56MZ20	6	40	29	29	7,0	3-4,5		20	10
MZ 6-40	5640MZ10	6	50	40	40	7,0	3-4,5		10	10
MZ 8	58MZ15	8	60	48	48	9,5	4-6		15	10
MZ 10	510MZ10	10	75	59	59	12,0	6-8		10	10
MZ 12	512MZ5	12	85	71	71	15,0	8-10		5	10

¹ Min. thickness of structural part or board (e. g. for applications in plasterboard)



Blister MZ without collar, incl. screw



Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	h _{min} ¹ [mm]	d _s x L _s [mm]	Type of screw	€ / Blister	[pcs]	[Blister]
MZ 6 SPS	56MZSZ20	6	40	29	29	7,0	4,5 x 40			20	10
MZ 6-40 SPS	5640MZSZ10	6	50	40	40	7,0	4,5 x 50			10	10
MZ 8 SPS	58MZSZ8	8	60	48	48	9,5	5,0 x 70			8	10
MZ 10 SKS	510MZK5	10	75	59	59	12,0	6,0 x 80			5	10
MZ 12 SKS	512MZK2	12	85	71	71	15,0	8,0 x 90			2	10

¹ Min. thickness of structural part or board (e. g. for applications in plasterboard)



Blister MZK with collar



Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	h _{min} ¹ [mm]	d _s [mm]	€ / Blister	[pcs]	[Blister]
MZK 6	56MZK20	6	40	29	30	7,0	3-4,5		20	10
MZK 6-41	5641MZK10	6	50	40	41	7,0	3-4,5		10	10
MZK 8	58MZK15	8	60	48	49	9,5	4-6		15	10
MZK 10	510MZK10	10	75	59	60	12,0	6-8		10	10
MZK 12	512MZK5	12	85	71	72	15,0	8-10		5	10

¹ Min. thickness of structural part or board (e. g. for applications in plasterboard)



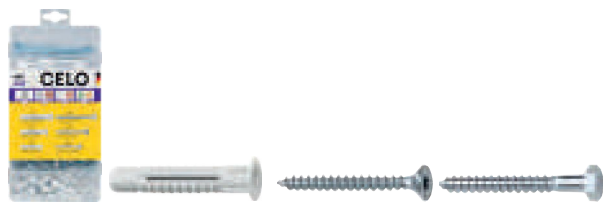
Blister MZK with collar, incl. screw




Type	Art-No	d ₀ [mm]	h ₁ ≥ [mm]	h _{nom} ≥ [mm]	L _d [mm]	h _{min} ¹ [mm]	d _s x L _s [mm]	Type of screw	€ / Blister	[pcs]	[Blister]
MZK 6 SPS	56MZKSZ20	6	40	29	30	7,0	4,5 x 40			20	10
MZK 6-41 SPS	5641MZKSZ10	6	50	40	41	7,0	4,5 x 50			10	10
MZK 6-41 WH	5641MZKWH5	6	50	40	41	7,0	4,5 x 52			5	10
MZK 6-41 RH	5641MZKRH5	6	50	40	41	7,0	4,5 x 68			5	10
MZK 8 SPS	58MZKSZ8	8	60	48	49	9,5	5,0 x 70			8	10
MZK 8 WH	58MZKWH5	8	60	48	49	9,5	5,0 x 70			5	10
MZK 8 RH	58MZKRH5	8	60	48	49	9,5	5,0 x 86			5	10
MZK 10 SKS	510MZKK5	10	75	59	60	12,0	6,0 x 80			5	10
MZK 12 SKS	512MZKK2	12	85	71	72	15,0	8,0 x 90			2	10

¹ Min. thickness of structural part or board (e. g. for applications in plasterboard)

Multi-purpose plug MZ & MZK




Assortment box MZK with screw (102 pieces in total)

Type	Art-No	Box contains	d_0 [mm]	$h_1 \geq$ [mm]	L_d [mm]	$d_s \times L_s$ [mm]	€/box	 [box]	Min. sales unit [pcs]
MZK	MIXMZKSZ102	30 Multi-purpose plug MZK 6 incl. SPS 4,5x45 V, Pozi 15 Multi-purpose plug MZK 8 incl. SPS 5,0x60 V, Pozi 6 Multi-purpose plug MZK 10 incl. SKS 6,0x80 DIN 571	6 8 10	40 60 75	30 49 60	4,5 x 45 5,0 x 60 6,0 x 80		1	5

Packed in robust plastic box



Assortment box MZK and F without screw (156 pieces in total)

Type	Art-No	Box contains	d_0 [mm]	$h_1 \geq$ [mm]	L_d [mm]	d_s [mm]	€/box	 [box]	Min. sales unit [pcs]
MZK and F	MIXNFMZK156	30 Multi-purpose plug MZK 6 15 Multi-purpose plug MZK 8 6 Multi-purpose plug MZK 10 60 Standard plug F 5 30 Standard plug F 6 15 Standard plug F 8	6 8 10 5 6 8	40 60 75 35 40 55	30 49 60 25 30 40	3,0 - 4,5 4,0 - 6,0 6,0 - 8,0 2,5 - 4,0 3,5 - 5,0 4,5 - 6,0		1	5

Packed in robust plastic box

Loads for wood screws F_{rec} for the largest applicable screw diameter and full anchorage depth

Type	Screw \varnothing d_s [mm]	Concrete F_{rec} [kN]	Solid sand-lime brick KS 12 F_{rec} [kN]	Solid brick Mz 12 F_{rec} [kN]	Aerated concrete AAC2 F_{rec} [kN]	Aerated concrete AAC4 F_{rec} [kN]	Hollow brick HLz 12 F_{rec} [kN]	Plasterboard 12,5 mm F_{rec} [kN]	Chipboard 16 mm F_{rec} [kN]
MZ/MZK 6	4,5	0,30	0,26	0,16	0,04	0,06	0,22	0,06	0,21
MZ/MZK 6-41	4,5	0,52	0,51	0,27	0,06	0,12	0,21	0,08	0,15
MZ/MZK 8	6	0,72	0,59	0,43	0,11	0,14	0,27	0,09	0,23
MZ/MZK 10	8	1,56	1,07	0,68	0,13	0,25	0,31	0,08	0,25
MZ/MZK 12	10	2,02	1,31	–	0,23	0,39	0,42	0,11	0,37
MZ/MZK 14	12	2,27	–	–	0,37	0,59	0,33	0,09	0,30

 F_{rec} : Recommended loads incl. safety factor of 7Loads for chipboard screws F_{rec} for the largest applicable screw diameter and full anchorage depth

Type	Screw \varnothing d_s [mm]	Concrete F_{rec} [kN]	Solid sand-lime brick KS 12 F_{rec} [kN]	Solid brick Mz 12 F_{rec} [kN]	Aerated concrete AAC2 F_{rec} [kN]	Aerated concrete AAC4 F_{rec} [kN]	Hollow brick HLz 12 F_{rec} [kN]	Plasterboard 12,5 mm F_{rec} [kN]	Chipboard 16 mm F_{rec} [kN]
MZ/MZK 6	4,5	0,06	0,06	0,05	0,02	0,03	0,08	0,03	0,14
MZ/MZK 6-41	4,5	0,17	0,15	0,08	0,04	0,05	0,17	0,09	0,21
MZ/MZK 8	6	0,24	0,24	0,21	0,06	0,10	0,26	0,09	0,29
MZ/MZK 10 ¹	6	0,17	0,17	0,16	0,07	0,12	0,35	0,10	0,29

 F_{rec} : Recommended loads incl. safety factor of 7¹ Load values apply to chipboard screws with \varnothing 6

Universal plug AZ & AZK



Advantages



Universal plug AZ



Universal plug AZK with collar

- Suitable for nearly all building materials. In solid building materials the plug's body expands against the drill hole. In perforated building materials, plasterboards, etc. the plug knots
- Usable with wood screws and chipboard screws with different diameters
- High-quality polyethylene guarantees long-lasting elasticity and consequently no brittle breaks, even after years

Approvals and certificates



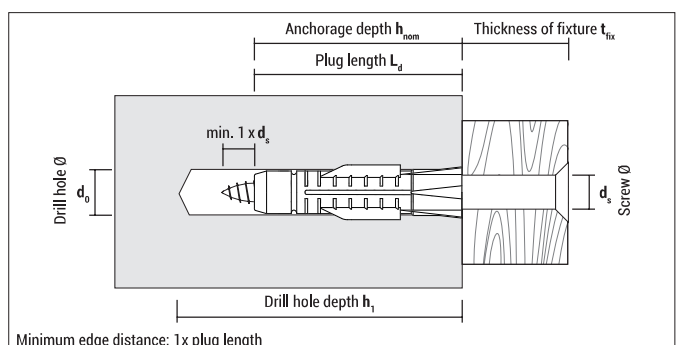
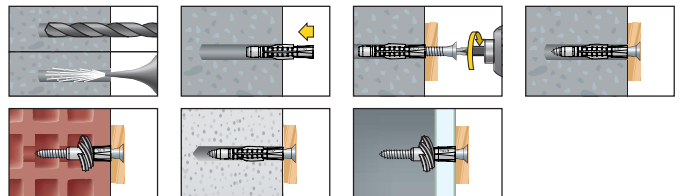
Suitable building materials

Very suitable



- Concrete
- Natural stone
- Solid brick
- Solid sand-lime brick
- Lightweight solid concrete blocks
- Aerated concrete
- Gypsum blocks
- Hollow brick
- Hollow sand-lime brick
- Lightweight hollow concrete blocks
- Plasterboard/ Fibreboard
- Chipboard

Mounting



Universal plug AZ & AZK



AZ without collar

Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	h_{min}^1 [mm]	d_s [mm]	€/100 pcs	[pcs]	[pcs]
AZ 5	95AZ	5	40	30	30	7,0	3 - 4		100	4.800
AZ 6	96AZ	6	50	37	37	9,5	4 - 5		100	4.800
AZ 8	98AZ	8	60	50	50	12,5	5 - 6		100	1.800
AZ 10	910AZ	10	75	60	60	15,0	7 - 8		50	900
AZ 12	912AZ	12	85	70	70	18,0	8 - 10		25	450

¹ Min. thickness of structural part or board (e. g. for applications in plasterboard)



AZK with collar

Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	h_{min}^1 [mm]	d_s [mm]	€/100 pcs	[pcs]	[pcs]
AZK 5	95AZK	5	40	30	31	7,0	3 - 4		100	4.800
AZK 6	96AZK	6	50	37	38	9,5	4 - 5		100	2.700
AZK 8	98AZK	8	60	50	51	12,5	5 - 6		100	1.800
AZK 10	910AZK	10	75	60	61	15,0	7 - 8		50	900
AZK 12	912AZK	12	85	70	71	18,0	8 - 10		25	450

¹ Min. thickness of structural part or board (e. g. for applications in plasterboard)

Loads for wood screws F_{rec} for the largest applicable screw diameter and full anchorage depth

Type	Screw \varnothing d_s [mm]	Concrete F_{rec} [kN]	Solid brick KS 12 / Solid brick Mz 12 F_{rec} [kN]	Aerated concrete AAC2 F_{rec} [kN]	Hollow sand- lime brick KSL 12 F_{rec} [kN]	Hollow sand- lime brick HLz 12 F_{rec} [kN]	Hollow brick Poroton T12 F_{rec} [kN]	Plasterboard 12,5 mm F_{rec} [kN]	Plasterboard 2 x 12,5 mm F_{rec} [kN]
AZ/AZK 5	4	0,16	0,16	0,03	0,17	0,21	0,10	0,07	–
AZ/AZK 6	5	0,23	0,19	0,05	0,34	0,23	0,13	0,09	–
AZ/AZK 8	6	0,46	0,27	0,06	0,31	0,32	0,15	0,09	–
AZ/AZK 10	8	1,25	0,86	0,11	0,52	0,31	0,19	0,09	0,17
AZ/AZK 12	10	1,47	0,91	0,20	0,48	0,35	0,25	–	0,22

F_{rec} : Recommended loads incl. safety factor of 7

Loads for chipboard screws F_{rec} for the largest applicable screw diameter and full anchorage depth

Type	Screw \varnothing d_s [mm]	Concrete F_{rec} [kN]	Solid brick KS 12 / Solid brick Mz 12 F_{rec} [kN]	Aerated concrete AAC2 F_{rec} [kN]	Hollow sand- lime brick KSL 12 F_{rec} [kN]	Hollow brick HLz 12 F_{rec} [kN]	Hollow brick Poroton T12 F_{rec} [kN]	Plasterboard 12,5 mm F_{rec} [kN]	Plasterboard 2 x 12,5 mm F_{rec} [kN]
AZ/AZK 5	4	0,07	0,12	0,02	0,15	0,24	0,14	0,06	–
AZ/AZK 6	5	0,11	0,12	0,05	0,30	0,27	0,12	0,08	–
AZ/AZK 8	6	0,16	0,18	0,07	0,34	0,22	0,13	0,09	–

F_{rec} : Recommended loads incl. safety factor of 7

Aerated concrete plug

GB

Advantages



- Specialised plug with excellent pull out loads in aerated concrete
- Once the screw has been screwed in, the expansion force is transferred over three flanks optimally by developing a type of undercut
- All CELO aerated concrete plugs can also be hammered into a smaller drill hole in AAC4 aerated concrete; generally even without pre-drilling in AAC2
- The GB should be used together with wood screws



Suitable building materials

Very suitable

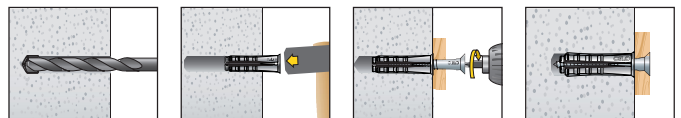


- Aerated concrete
- Gypsum blocks

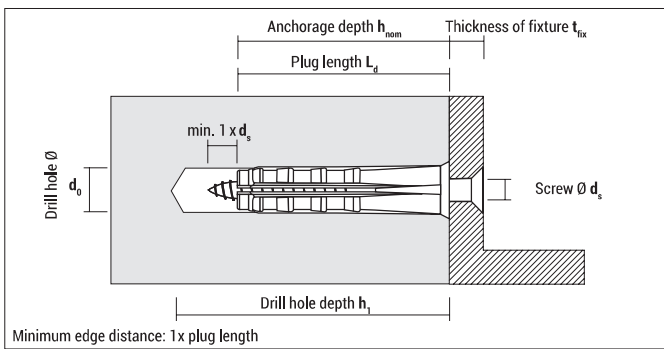
Approvals and certificates



Mounting



Aerated concrete plug GB



GB

Type	Art-No	d_0^* [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	d_s [mm]	€/100 pcs	[pcs]	[pcs]
GB 10	910GB	10	65	55	55	4,5 - 6		25	675
GB 12	912GB	12	70	60	60	7 - 8		20	540
GB 14	914GB	14	90	75	75	10		10	270

* All GB sizes can be hammered into a smaller drill hole when used in aerated concrete AAC4, in AAC2 usually without pre-drilling



Blister GB without screw

Type	Art-No	d_0^* [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	d_s [mm]	€/Blister	[pcs]	[Blister]
GB 10	510GB4	10	65	55	55	4,5 - 6		4	10
GB 12	512GB4	12	70	60	60	7 - 8		4	10

* All GB sizes can be hammered into a smaller drill hole when used in aerated concrete AAC4, in AAC2 usually without pre-drilling

Loads F_{rec}

Type	Wood screw-Ø [mm]	Aerated concrete AAC2		Aerated concrete AAC4	
		F_{rec} [kN]		F_{rec} [kN]	
GB 10	6	0,25		0,55	
GB 12	7	0,33		0,66	
GB 14	10	0,50		1,10	

F_{rec} : Recommended loads incl. safety factor of 6

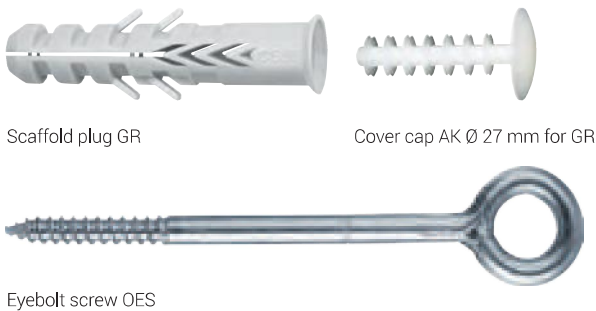
Spacing and edge distance for GB 12 according to former German approval by DIBt

Type	Spacing $a \geq$		Edge distance $a_e \geq$		Min. thickness of structural part d [mm]
	PB2 / AAC2 [mm]	\geq PB4 / AAC4 [mm]	PB2 / AAC2 [mm]	\geq PB4 / AAC4 [mm]	
GB 12	150	200	100	150	120

Scaffold plug GR



Advantages



Scaffold plug GR

Cover cap AK Ø 27 mm for GR

Eyebolt screw OES

- Specialised plug for all scaffold installations in solid building materials in according to DIN 4420 and the guidelines of the German professional construction associations
- Nylon Plug GR matches optimally with the eyebolt OES for high pull out loads
- Markings on the eyebolt screw help to screw in the screw with the correct depth
- Cover cap AK to seal the plug (UV stabilized)

Suitable building materials

Very suitable



- Concrete
- Natural stone
- Solid brick
- Solid sand-lime brick

Suitable to a limited extent

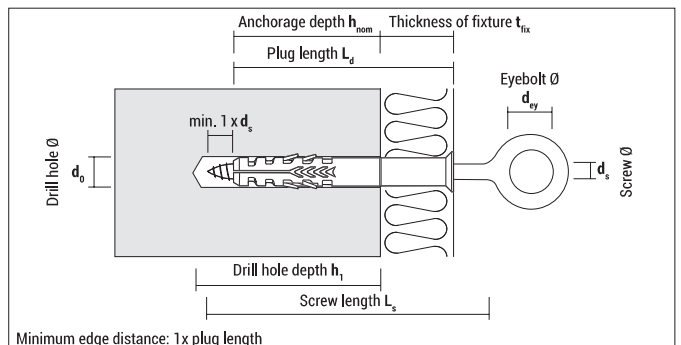
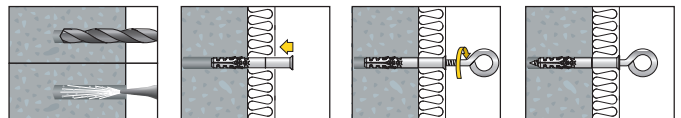


- Hollow brick
- Hollow sand-lime brick
- Lightweight hollow concrete blocks

Approvals and certificates



Mounting



Scaffold plug GR



GR

Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	$t_{fix} \leq$ [mm]	€/100 pcs	[pcs]	[pcs]
GR 14-70	91470GR	14	90	70	70	0		40	320
GR 14-100	914100GR	14	90	70	100	30		40	320
GR 14-135	914135GR	14	90	70	135	65		40	320
GR 14-185	914185GR	14	90	70	185	115		40	320



OES, zinc plated

Type	Art-No	d_s [mm]	L_s [mm]	d_{ey} [mm]	€/100 pcs	[pcs]
OES 12-90	91290OES	12	90	23		20
OES 12-120	912120OES	12	120	23		20
OES 12-160	912160OES	12	160	23		20
OES 12-190	912190OES	12	190	23		20
OES 12-230	912230OES	12	230	23		20
OES 12-300	912300OES	12	300	23		20
OES 12-350	912350OES	12	350	23		20



Single label, OES, zinc plated

Type	Art-No	d_s [mm]	L_s [mm]	d_{ey} [mm]	€/pcs	[pcs]
OES 12-90	11290OES	12	90	23		20
OES 12-120	112120OES	12	120	23		20
OES 12-160	112160OES	12	160	23		20
OES 12-190	112190OES	12	190	23		20
OES 12-230	112230OES	12	230	23		20

AK Cover cap \varnothing 27 mm for GR

Type	Art-No	Suitable for d_s [mm]	Length L_d [mm]	€/100 pcs	[pcs]	[pcs]
AK	91AKGR	GR 14	53		50	600

Loads F_{rec} and F_{eff} using eyebolt screws OES \varnothing 12

Type	Concrete C20/25		Solid brick Mz 12		Solid sand-lime brick KS 12	
	F_{rec} [kN]	F_{eff} [kN]	F_{rec} [kN]	F_{eff} [kN]	F_{rec} [kN]	F_{eff} [kN]
GR 14	3,0	12,2	2,8	11,0	3,0	12,2

F_{rec} : Recommended loads incl. safety factor of 4

F_{eff} : Effective pull out loads / ultimate loads excl. safety factors

Blockwork anchor MSD



Advantages



- Suitable for fastening water pipes with pipe clamps using wood screws and chipboard screws
- When used with hanger bolts, the metal blockwork anchor MSD complies the technical guidelines for gas pipe installations (TRGI 3.3.7.2.)
- Toothed surface provides a secure grip in different base materials

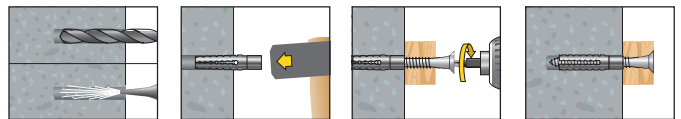
Suitable building materials

Very suitable

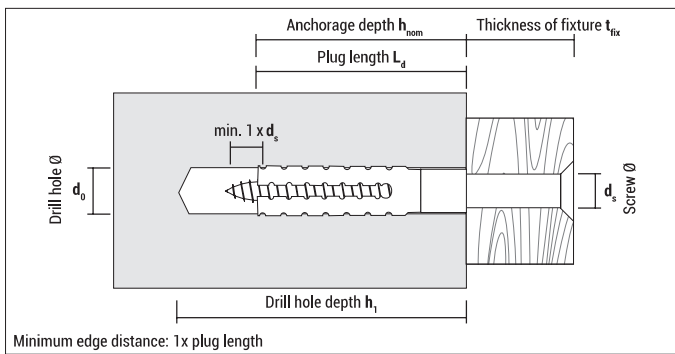


- | | |
|--|---|
| <ul style="list-style-type: none"> • Concrete • Natural stone • Solid brick • Solid sand-lime brick • Lightweight solid concrete blocks | <ul style="list-style-type: none"> • Aerated concrete • Gypsum blocks • Hollow brick • Hollow sand-lime brick • Lightweight hollow concrete blocks |
|--|---|

Mounting



Blockwork anchor MSD



MSD

Type	Art-No	d_0 [mm]	$h_1 \geq$ [mm]	$h_{nom} \geq$ [mm]	L_d [mm]	d_s [mm]	€/100 pcs	[pcs]	[pcs]
MSD 6-32	9B632MSD	7-9*	38	32	32	5-6		100	2.000
MSD 8-38	9B838MSD	10-12*	46	38	38	6-8		100	2.000
MSD 8-60	9B860MSD	10-12*	68	60	60	6-8		50	1.000

* Depending on building material, see following table "Loads"

Loads F_{rec} at largest applicable screw diameter and full anchorage depth

Type	Concrete		Solid sand-lime brick		Solid stone Mz 12		Aerated concrete AAC2		Aerated concrete AAC4		Lightweight solid concrete blocks		Hollow brick HLz 12	
	d_0 [mm]	F_{rec} [kN]	d_0 [mm]	F_{rec} [kN]	d_0 [mm]	F_{rec} [kN]	d_0 [mm]	F_{rec} [kN]	d_0 [mm]	F_{rec} [kN]	d_0 [mm]	F_{rec} [kN]	d_0 [mm]	F_{rec} [kN]
MSD 6-32	9	0,25	8	0,20	8	0,20	without	0,10	7	0,20	5	0,15	7	0,15
MSD 8-38	12	0,30	11	0,30	11	0,30	without	0,20	10	0,35	6	0,20	10	0,25
MSD 8-60	12	0,55	11	0,50	11	0,50	6	0,30	10	0,45	6	0,30	10	0,30

F_{rec} : Recommended loads in all directions incl. safety factor of 6