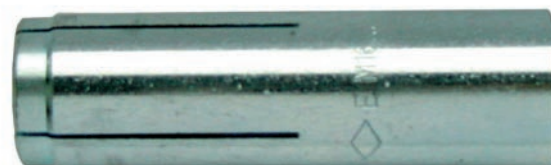
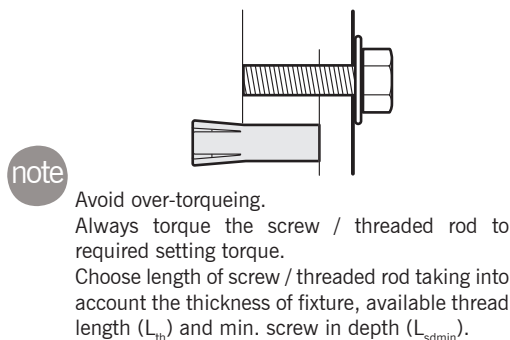
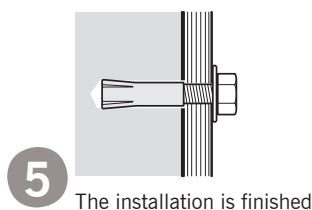
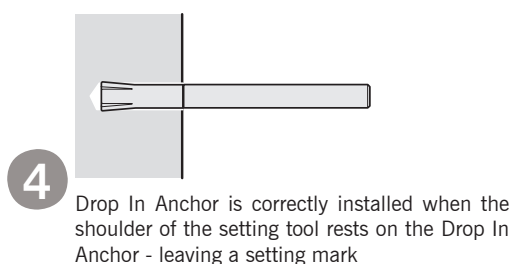
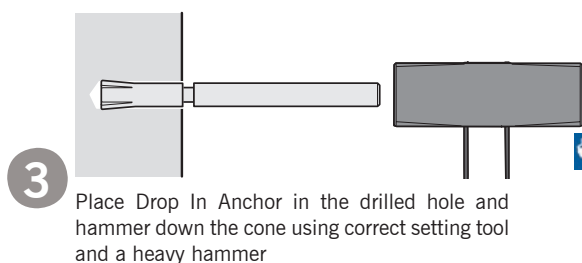
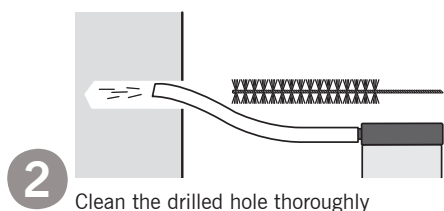
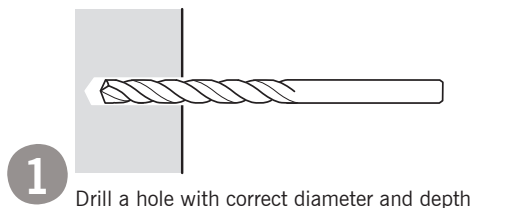


DROP IN ANCHOR - E

Installation:

For fixing with metric screws, threaded rods etc. of suspended ceilings, structural steel and brackets in concrete



Advantages:

- Easy and flush to the wall fixing.
- High load capacity.
- Small drill and setting depth.
- Fixture, screw or threaded rod can be removed without affecting the anchor.
- Visible control of correct installation: original setting tool leaves four marks in the Drop In Anchor.
- Ideal for distance fixing (lever arm).
- Possible to combine Drop In Anchor with bolt/rod in steel strength 4.6 to 8.8.
- Can be designed in Expandet Calculation Software.



Materials:

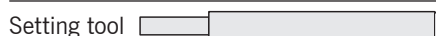
- Drop In Anchor E:**
 - Expansion sleeve: Free-cutting steel in accordance with EN 10 087
 - Threaded cone: Cold formed steel in accordance with EN 10 263
 - Zinc plated min. 5 μ m in accordance with EN ISO 4042
- Drop In Anchor E-A4:**
 - Expansion sleeve and threaded cone: A4 steel in accordance with EN 10 088

Approvals:

- Drop In Anchor E and E-A4 are CE-marked.
- Drop In Anchor E has European Technical Approval: ETA 02/0020
- Drop In Anchor E-A4 has European Technical Approval: ETA 03/0031
- Fire tested in accordance with DIN 4102-2 (ISO834)
- VdS-approved.



Accessories:



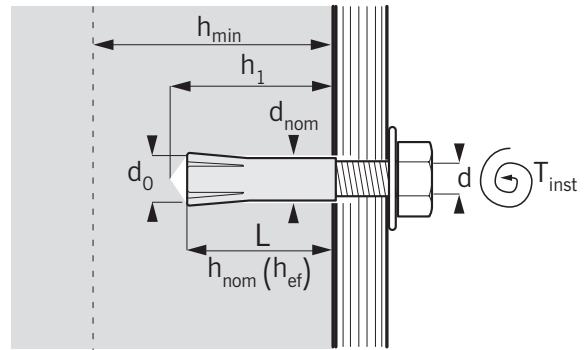
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Drop In Anchor E, zinc plated													
Type	Dimensions			Fixing								Load Capacities	
	d	L	L _{th}	d ₀	h ₁	h _{ef}	L _{s dmin}	T _{inst}	h _{min}	S _{min}	C _{min}	N _{Rd}	V _{Rd}
Drop In Anchor E	Bolt diameter mm	Anchor length mm	Available thread length mm	Drill hole diameter mm	Depth of drilled hole (Min.) mm	Effective anchorage depth mm	Screw in depth (Min.) mm	Required setting torque Nm	Minimum thickness of material mm	Minimum allowable spacing mm	Min. allowable edge distance mm	Design resistance tension kN*	Design resistance shear kN [◊]
E 6x30	M 6	30	13	8	33	30	7	4	100	55	95	4,60	4,00
E 8x30	M 8	30	13	10	33	30	9	8	100	60	95	3,90	5,50
E 10x40	M10	40	15	12	44	40	11	15	120	100	135	7,10	5,70
E 12x50	M12	50	18	15	54	50	13	35	130	120	165	9,90	16,80
E 16x65	M16	65	23	20	71	65	18	60	160	150	200	14,60	25,10
E 20x80	M20	80	34	25	86	80	22	120	200	160	260	20,00	40,00

Drop In Anchor E-A4, stainless steel													
Type	Dimensions			Fixing								Load Capacities	
	d	L	L _{th}	d ₀	h ₁	h _{ef}	L _{s dmin}	T _{inst}	h _{min}	S _{min}	C _{min}	N _{Rd}	V _{Rd}
Drop In Anchor E-A4	Bolt diameter mm	Anchor length mm	Available thread length mm	Drill hole diameter mm	Depth of drilled hole (Min.) mm	Effective anchorage depth mm	Screw in depth (Min.) mm	Required setting torque Nm	Minimum thickness of material mm	Minimum allowable spacing mm	Min. allowable edge distance mm	Design resistance tension kN*	Design resistance shear kN [◊]
E-A4 6x30	M 6	30	13	8	33	30	7	4	100	55	95	2,99	4,50
E-A4 8x30	M 8	30	13	10	33	30	9	8	100	60	95	2,99	6,10
E-A4 10x40	M10	40	15	12	44	40	11	15	120	100	135	5,95	8,30
E-A4 12x50	M12	50	18	15	54	50	13	35	130	120	165	8,91	15,10
E-A4 16x65	M16	65	23	20	71	65	18	60	160	150	200	14,50	26,90
E-A4 20x80	M20	80	34	25	86	80	22	120	250	160	260	21,60	42,90

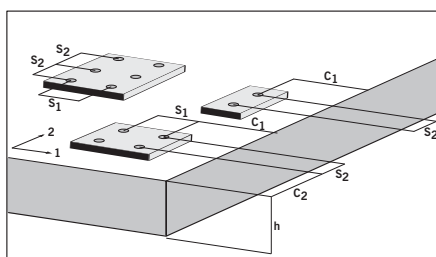
- Design resistance for tension is valid for a single anchor together with metric screw or threaded rod steel strength ≥ 5.8 in non-cracked concrete C20/25 not influenced by edge distance and/or spacing: $C \geq C_{min}$ and $S \geq 3 h_{ef}$.
 $\Psi_{re,N} = 1$ (Normal reinforcement according to ETAG 001, Annex C - 5.2.2.4).
- ◊ Design resistance for shear is valid for a single anchor together with metric screw or threaded rod steel strength ≥ 5.8 in non-cracked concrete $\geq C20/25$ not influenced by edge distance and/or spacing: $C \geq 10 h_{ef}$ and $S \geq 3 h_{ef}$.

Combined resistance shall be verified if both tension and shear actions are applied. Se "Principles for Fastening" page 5 (Verification Method 2)

Partial safety factor for material (γ_m) is included in accordance with product ETA. Partial safety factor for action (γ_t) has to be applied in accordance with national building code. If no guidance for γ_t exists ETAG 001, Annex C recommends factor 1,35 for permanent action and factor 1,5 for variable action.

When calculating load capacity for anchor or anchorgroup use Expandet Calculation Software allowing for design with individual edge distance and spacing in accordance with ETAG 001, Annex C, Design Method A. Download Expandet Calculation Software for free at www.expandet.com.

Important: See Expandet's "Principles for fastening" for general information on fastening as well as information on limited liability. (Can be downloaded at www.expandet.com)



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DROP IN ANCHOR - E

Design shear load capacity for a single anchor at minimum edge distance (C_{min})[♦]

Drop In Anchor E		M6	M8	M10	M12	M16	M20
$V_{Rd,c}$	kN	4,0	5,5	5,7	14,3	22,1	35,5
C_{min}	mm	95	95	135	165	200	260
S_{cr}	mm	285	285	405	495	600	780
Drop In Anchor E-A4		M6	M8	M10	M12	M16	M20
$V_{Rd,c}$	kN	4,5	6,1	8,3	15,0	22,1	41,3
C_{min}	mm	95	95	135	165	200	260
S_{cr}	mm	285	285	405	495	600	780

♦ Design shear load capacities are valid at minimum edge distance in concrete C20/25 providing that characteristic spacing is $\geq S_{cr}$.

Partial safety factor for edge failure (γ_{mc}) is included in accordance with product ETA.

Use Expandet Calculation Software for calculation of load capacities for single anchors and anchor groups in accordance with ETAG 001, Annex C – Design Method A. Download Expandet Calculation Software for free at www.expandet.com.

Design shear load capacity for steel failure and resistance against bending (lever arm) for a single anchor[◇]

Zinc plated			M6	M8	M10	M12	M16	M20
$V_{Rd,S}$	(4.6)	kN	2,27	4,37	5,78	10,05	18,74	29,34
$M_{Rd,S}$	(4.6)	Nm	3,05	8,98	17,96	31,14	79,64	155,08
$V_{Rd,S}$	(5.6)	kN	2,99	5,44	5,74	12,57	23,47	36,64
$M_{Rd,S}$	(5.6)	Nm	3,83	11,37	22,15	38,92	99,40	194,01
$V_{Rd,S}$	(5.8)	kN	4,00	5,52	5,76	16,80	25,18	40,00
$M_{Rd,S}$	(5.8)	Nm	5,12	15,20	29,60	52,00	132,80	259,20
$V_{Rd,S}$	(8.8)	kN	4,00	5,52	5,76	16,80	25,18	40,00
$M_{Rd,S}$	(8.8)	Nm	8,16	24,00	48,00	84,00	212,80	415,20
Stainless Steel A4			M6	M8	M10	M12	M16	M20
$V_{Rd,S}$	(A4-70)	kN	4,49	6,41	8,33	16,66	29,92	42,94
$M_{Rd,S}$	(A4-70)	Nm	7,05	16,66	33,33	58,97	149,35	291,02
$V_{Rd,S}$	(A4-80)	kN	4,49	6,41	8,33	16,66	29,92	42,94
$M_{Rd,S}$	(A4-80)	Nm	9,02	22,55	45,11	78,94	200,00	390,22

◇ Design shear load capacities (steel failure) and resistance against bending (lever arm) include partial safety factor for material (γ_{ms}) in accordance with product ETA.

Use Expandet Calculation Software for calculation of load capacities for single anchors and anchor groups in accordance with ETAG 001, Annex C – Design Method A. Download Expandet Calculation Software for free at www.expandet.com.

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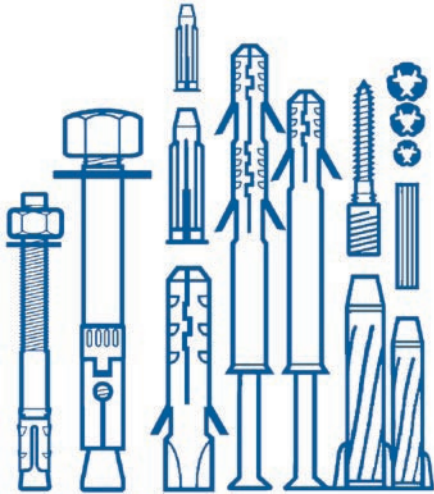
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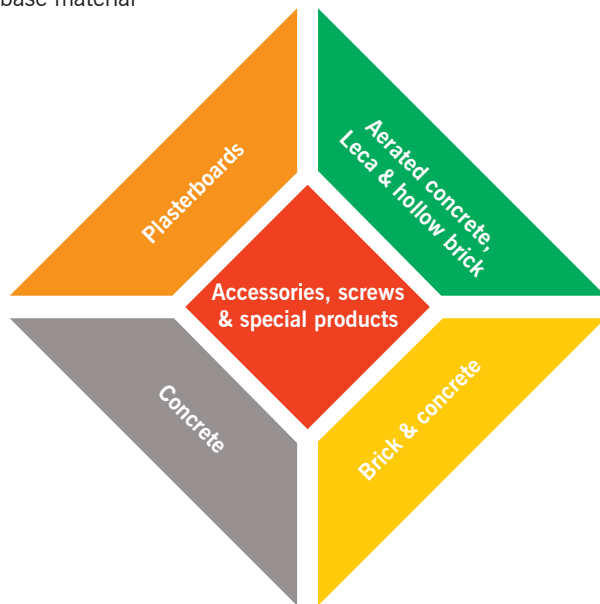
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EXPANDET SCREW ANCHORS A/S



Expandet Screw Anchors A/S was established in 1955 and was pioneers in the field of fastener products for concrete and brickwork - being the first company to patent a fastener made in plastic. We are devoted to a constant development of our product range, which now covers the entire range of anchors and fasteners for both professional and DIY.

We have - with our base-material orientated colour code system - made it easy to choose the right anchor for the right base material



EXPANDET CALCULATION SOFTWARE

Expandet Calculation Software offers the possibility for design of single anchors and anchors groups in concrete according to ETAG 001, Annex C with our range of products that are defined according to CC Method. This includes our range of anchor systems approved for structural connections with CE-marking.

Code	Unit	Definition
d	Mx	Bolt diameter
d _{nom}	mm	Outside diameter of anchor
L	mm	Anchor length
L _{bolt}	mm	Bolt / screw length
L _{thread}	mm	Length of metric thread
L _{th}	mm	Available internal thread length
L _{smin}	mm	Minimum screw in depth
d _o	mm	Drill hole diameter
h _i	mm	Depth of drilled hole
h _{nom}	mm	Anchor embedment depth
h _{er}	mm	Effective anchorage depth
h	mm	Thickness of member (concrete, brickwall etc.)
h _{min}	mm	Minimum thickness of member
h _f	mm	Minimum cavity behind wall
t _{fix}	mm	Thickness of fixture
b _{fix1,2}	mm	Width of fixture: b _{fix1} (direction 1) & b _{fix2} (direction 2)
T _{inst}	Nm	Required setting torque
S	mm	Spacing between anchors in an anchorage group
S ₁ ; S ₂	mm	Spacing between anchors in an anchorage group: S ₁ (direction 1) & S ₂ (direction 2)
S _{cr,N}	mm	Characteristic spacing for ensuring the transmission of the characteristic resistance of a single anchor in case of concrete cone failure
S _{cr,sp}	mm	Characteristic spacing for ensuring the transmission of the characteristic resistance of a single anchor in case of splitting failure
S _{rec}	mm	Recommended spacing (for full resistance)
S _{min}	mm	Minimum allowable spacing
S _{cr}	mm	Characteristic spacing at a defined edge distance
C	mm	Edge distance
C ₁ ; C ₂	mm	Edge distance fra anchor to edge: C ₁ (direction 1) & C ₂ (direction 2)
C _{cr,N}	mm	Characteristic edge distance for ensuring the transmission of the characteristic resistance of a single anchor in case of concrete cone failure
C _{cr,sp}	mm	Characteristic edge distance for ensuring the transmission of the characteristic resistance of a single anchor in case of splitting failure
C _{rec}	mm	Recommended edge distance (for full resistance)
C _{min}	mm	Minimum allowable edge distance
C _{cr}	mm	Characteristic edge distance at a defined spacing
N _{Rd}	kN	Design resistance, tension
N _{Rd,s}	kN	Design resistance, tension (steel failure)
N _{Rd,p}	kN	Design resistance, tension (pull out failure)
N _{Rd,c}	kN	Design resistance, tension (concrete cone failure)
N _{Rd,sp}	kN	Design resistance, tension (splitting failure)
V _{Rd}	kN	Design resistance, shear
V _{Rd,s}	kN	Design resistance, shear (steel failure)
V _{Rd,c}	kN	Design resistance, shear (concrete pryout failure, concrete edge failure)
F _{Rd}	kN	Design resistance, independent of load direction
M _{Rd}	Nm	Design resistance, bending moment
γ _M		Partial safety factor for material
γ _{Ms}		Partial safety factor for material, steel failure
γ _{Mp}		Partial safety factor for material, pull out failure
γ _{Mc}		Partial safety factor for material, concrete cone failure
γ _{Msp}		Partial safety factor for material, splitting failure
N _{Sd}	kN	Design value of tensile actions acting on a single anchor or the fixture of an anchor group
V _{Sd}	kN	Design value of shear actions acting on a single anchor or the fixture of an anchor group
γ _f		Partial safety factor for actions
N _{rec}	kN	Maximum recommended tension load
V _{rec}	kN	Maximum recommended shear load
F _{rec}	kN	Maximum recommended load, independent of load direction
f _{ck}	N/mm ²	Characteristic concrete compression strength measured on cylinders
f _{ck,cube}	N/mm ²	Characteristic concrete compression strength measured on cubes
F _{yk}	N/mm ²	Characteristic steel yield strength
F _{uk}	N/mm ²	Characteristic steel ultimate tensile strength



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