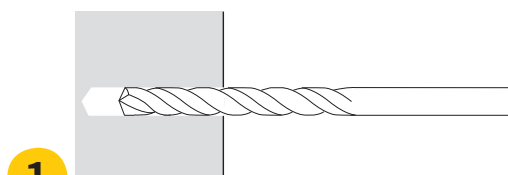


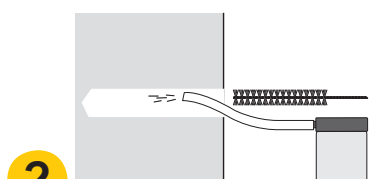
**EXPANSION BOLT**

**Installation:**

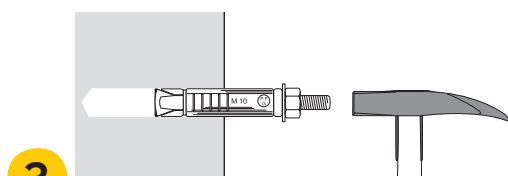
**For fixing of heavy objects in solid brick and concrete**



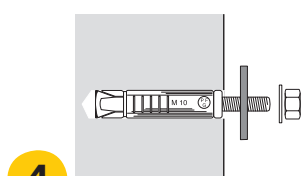
**1** Drill a hole with correct diameter and depth



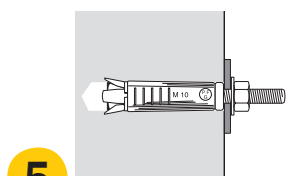
**2** Clean the drilled hole thoroughly



**3** Insert the Expansion Bolt flush with the wall



**4** Mount the fixture and tighten the nut to required setting torque



**5** The installation is finished

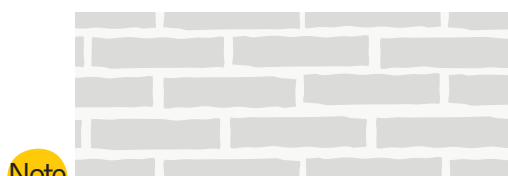


 **Advantages:**

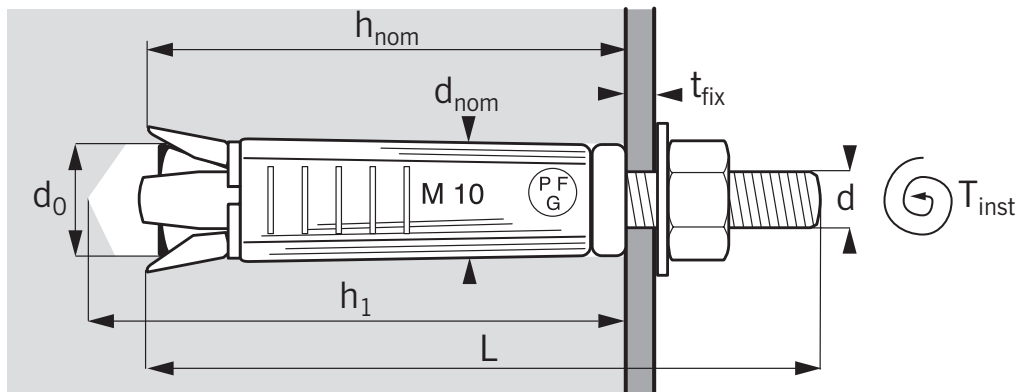
- Extensive programme.
- Fixture can be removed without affecting the anchor.
- Torque-controlled expansion.

 **Materials:**

- Expandet Expansion Bolt is supplied with conical bolt, washer and nut in 5.8 steel.
- Zinc plated min. 5 µm.



**Note** Only use M6 and M8 bolts in solid brick



Type	Dimensions				Fixing					Load Capacities			
	Assortment	d	d <sub>nom</sub>	L	t <sub>fix</sub>	d <sub>0</sub>	h <sub>1</sub>	h <sub>nom</sub>	T <sub>inst</sub>	h <sub>min</sub>	S <sub>rec</sub>	C <sub>rec</sub>	N <sub>Rd</sub>
Expandet Expansion bolt	Bolt diameter mm	Outside diameter of anchor mm	Anchor length mm	Thickness of fixture (max.) mm	Drill hole diameter mm	Depth of drill hole (Min.) mm	Embedment depth mm	Required setting torque Nm	Thickness of concrete member, min. mm	Recommended spacing mm	Recommended edge distance mm	Design resistance tension kN*	Design resistance Shear kN*
K540AC *	6	10	50	8	10	55	40	6,0	80	120	80	2,55	1,70
K550AC	6	10	60	15	10	55	40	6,0	80	120	80	2,55	1,70
K560AC	6	10	75	30	10	55	40	6,0	80	120	80	2,55	1,70
K570AC *	6	10	100	53	10	55	40	6,0	80	120	80	2,55	1,70
K590AC	8	14	85	30	14	55	40	14,0	100	150	100	4,46	3,31
K600AC	8	14	75	20	14	65	50	14,0	100	150	100	4,46	3,31
K610AC	8	14	100	45	14	65	50	14,0	100	150	100	4,46	3,31
K610AAC *	8	14	120	62	14	65	50	14,0	100	150	100	4,46	3,31
K650AC	10	16	90	20	16	75	60	27,0	120	180	120	7,10	5,07
K670AC	10	16	110	40	16	75	60	27,0	120	180	120	7,10	5,07
K680AC	10	16	100	30	16	75	60	27,0	120	180	120	7,10	5,07
K690AC	10	16	120	50	16	75	60	27,0	120	180	120	7,10	5,07
K700AC	10	16	140	70	16	75	60	27,0	120	180	120	7,10	5,07
K750AC	12	20	110	20	20	100	80	46,0	160	240	160	9,22	7,83
K770AC	12	20	120	30	20	100	80	46,0	160	240	160	9,22	7,83
K800AC	12	20	155	65	20	100	80	46,0	160	240	160	9,22	7,83
K870AC	16	25	140	25	25	120	110	110,0	200	300	200	17,11	13,35

\* Design resistance is valid for a single anchor in concrete C20/25 not influenced by edge distance and/or spacing. Safety factor is included ( $\geq 3$ ). 1 kN  $\approx$  100 kg.

Partial safety factor for material ( $\gamma_m$ ) is included. Partial safety factor for actions ( $\gamma_f$ ) must be applied according to national building code.

Combined resistance shall be verified if both tension and shear actions are applied. See "Principles for Fastening" page 5 (Verification Method 1).

\* Discontinued/supplied as long as stock is available.

**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](http://www.expandet.com))



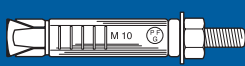
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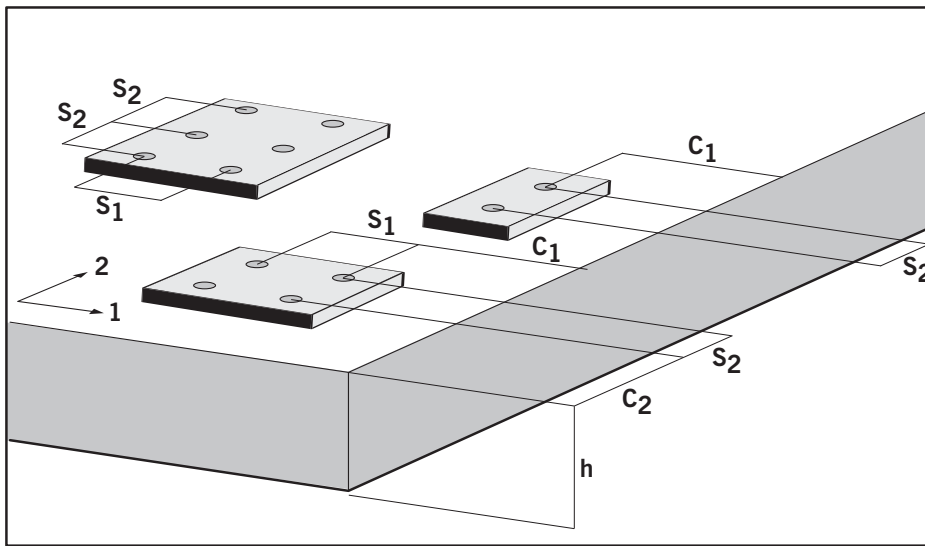
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[expandet@expandet.dk](mailto:expandet@expandet.dk)

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# REDUCTION OF LOAD CAPACITIES



Tension load Reduction factor for edge distance ( $r_{Nc}$ )					
Edge distance in mm	M6	M8	M10	M12	M16
40	0,65				
50	0,74	0,65			
60	0,83	0,72	0,65		
80	<b>1,00</b>	0,86	0,77	0,65	
100		<b>1,00</b>	0,88	0,74	0,65
120			<b>1,00</b>	0,83	0,72
160				<b>1,00</b>	0,86
200					<b>1,00</b>

Shear load Reduction factor for edge distance ( $r_{vc}$ )					
Edge distance in mm	M6	M8	M10	M12	M16
40	0,65				
50	0,74	0,65			
60	0,83	0,72	0,65		
80	<b>1,00</b>	0,86	0,77	0,65	
100		<b>1,00</b>	0,88	0,74	0,65
120			<b>1,00</b>	0,83	0,72
160				<b>1,00</b>	0,86
200					<b>1,00</b>

Tension load Reduction factor for spacing ( $r_{Ns}$ )					
Spacing in mm	M6	M8	M10	M12	M16
60	0,94				
65	1,00				
75	1,00	0,67			
80	1,00	1,00			
90	1,00	1,00	1,00		
110	1,00	1,00	1,00		
120	<b>1,00</b>	1,00	1,00	1,00	
150		<b>1,00</b>	1,00	1,00	1,00
180			<b>1,00</b>	1,00	1,00
240				<b>1,00</b>	1,00
300					<b>1,00</b>

Shear load Reduction factor for spacing ( $r_{Vs}$ )					
Spacing in mm	M6	M8	M10	M12	M16
60	0,75				
65	0,77				
75	0,81	0,75			
80	0,83	0,77			
90	0,88	0,80	0,75		
110	0,96	0,87	0,80		
120	<b>1,00</b>	0,90	0,83	0,75	
150		<b>1,00</b>	0,92	0,81	0,75
180			<b>1,00</b>	0,92	0,80
240				<b>1,00</b>	0,90
300					<b>1,00</b>

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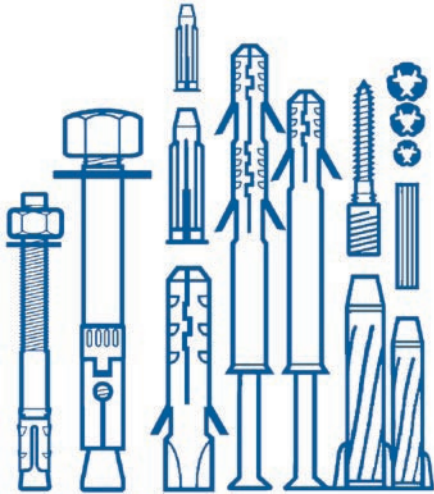
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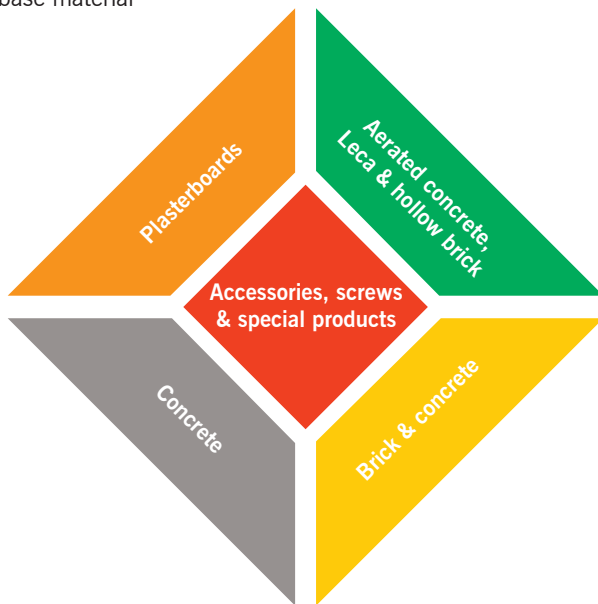
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## EXPANDET SCREW ANCHORS A/S



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



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