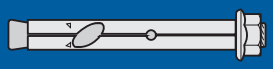
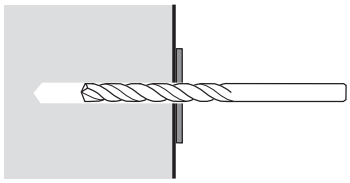


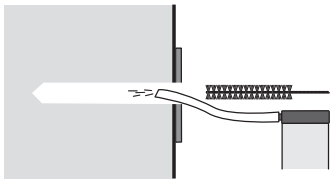
SLEEVE ANCHOR

Installation:

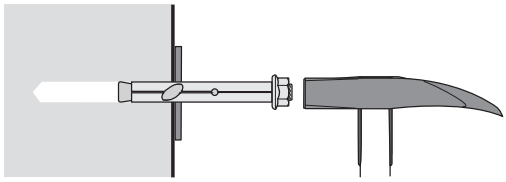
For fixing in brickwork, concrete and hollow core concrete



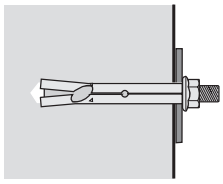
1 Drill a hole with correct diameter and depth through fixture and into the base-material



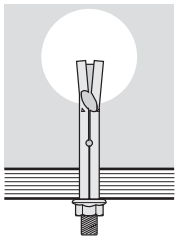
2 Clean the drilled hole thoroughly



3 Insert Sleeve Anchor and tighten the nut or bolt to required setting torque



4 The installation is finished



note Expandet Sleeve Anchor in hollow core concrete

Advantages:

Suitable in hollow core concrete.
Through fixing.
Is supplied assembled with nut or bolt.
Design of sleeve provides high pull down effect.

Materials:

Expandet Sleeve Anchor is zinc plated min. 5 μm.
Bolt and nut: 5.8 steel.

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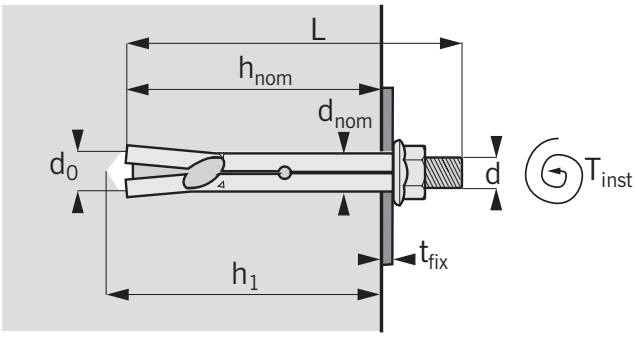
Graphic: Vedkom /Expandet

SLEEVE ANCHOR



Type	Dimension				Fixing					Load Capacities			
Assortment	**d**	**d_{nom}**	**L**	**t_{fix}**	**d_o**	**h_1**	**h_{nom}**	**T_{inst}**	**h_{min}**	**S_{rec}**	**C_{rec}**	**N_{Rd}**	**V_{Rd}**
Expandet Sleeve Anchor with nut	Bolt dia-meter mm	Outside diameter of anchor mm	Anchor length mm	Thickness of fixture (max.) mm	Drill hole diameter mm	Depth of drill hole (Min.) mm	Embed-ment 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◆
6x 25*	4,5	6	25	5	6	25	20	10	46	75	75	1,20	-
6x 40	4,5	6	40	13	6	32	27	10	46	75	75	1,80	2,10
6x 60*	4,5	6	60	33	6	32	27	10	46	75	75	1,80	2,10
8x 40	6	8	40	7	8	38	33	15	54	150	75	2,20	3,30
8x 65*	6	8	65	32	8	38	3	15	54	150	75	2,20	3,30
8x 95*	6	8	95	62	8	38	33	15	54	150	75	2,20	3,30
10x 40*	8	10	40	2	10	43	38	35	62	200	100	2,90	5,25
10x 50	8	10	50	12	10	43	38	35	62	200	100	2,90	5,25
10x 75	8	10	75	37	10	43	38	35	62	200	100	2,90	5,25
10x100	8	10	100	62	10	43	38	35	62	200	100	2,90	5,25
10x125*	8	10	125	87	10	43	38	35	62	200	100	2,90	5,25
12x 60	10	12	60	10	12	55	50	55	84	200	100	4,10	7,60
12x 70	10	12	70	20	12	55	50	55	84	200	100	4,10	7,60
12x100	10	12	100	50	12	55	50	55	84	200	100	4,10	7,60
12x125*	10	12	125	75	12	55	50	55	84	200	100	4,10	7,60
16x 65*	12	16	65	12	16	58	53	85	92	200	125	4,50	8,60
16x110*	12	16	110	57	16	58	53	85	92	200	125	4,50	8,60
16x140*	12	16	140	87	16	58	53	85	92	200	125	4,50	8,60
20x 80*	16	20	80	23	20	62	57	165	100	225	150	5,08	12,30
20x115*	16	20	115	58	20	62	57	165	100	225	150	5,08	12,30
20x160*	16	20	160	103	20	62	57	165	100	225	150	5,08	12,30
Expandet Sleeve Anchor with bolt													
8x 40*	6	8	40	7	8	38	33	15	54	150	75	2,20	3,30
8x 65*	6	8	65	32	8	38	33	15	54	150	75	2,20	3,30
8x 95*	6	8	95	62	8	38	33	15	54	150	75	2,20	3,30
10x 50*	8	10	50	12	10	43	38	35	62	200	100	2,90	5,25
10x 75*	8	10	75	37	10	43	38	35	62	200	100	2,90	5,25
10x100*	8	10	100	62	10	43	38	35	62	200	100	2,90	5,25
12x 60*	10	12	60	10	12	55	50	55	84	200	100	4,10	7,60
12x 70*	10	12	70	20	12	55	50	55	84	200	100	4,10	7,60
12x100*	10	12	100	50	12	55	50	55	84	200	100	4,10	7,60
16x 65*	12	16	65	15	16	58	53	85	90	200	125	4,50	8,60
16x110*	12	16	110	57	16	58	53	85	90	200	125	4,50	8,60

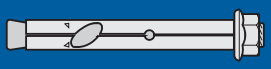
* Available on request.

◆ Design resistance is valid for a single anchor in concrete C20/25 (B20), not influenced by edge distance and/or spacing.
1 kN ≈ 100 kg.

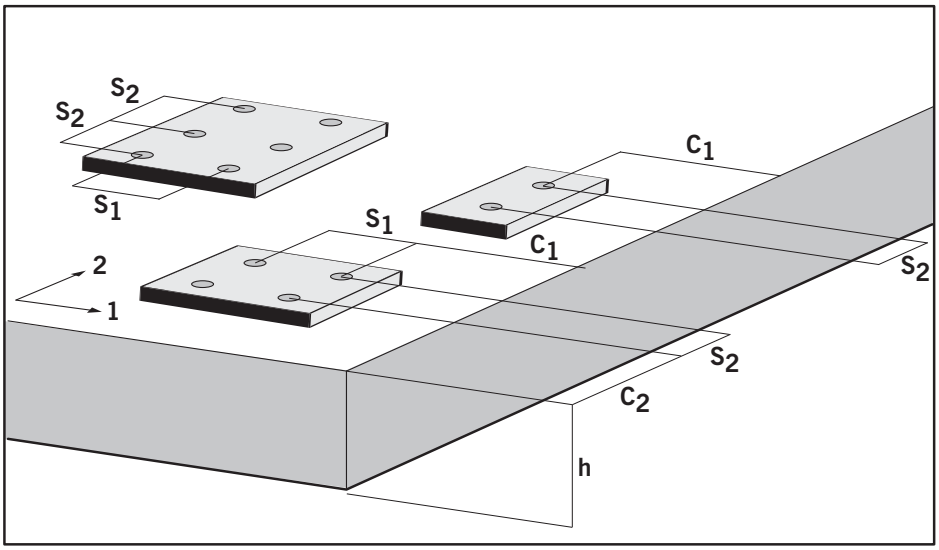
Partial safety factor for material (γ_m) is included. Partial safety factor for actions (γ_f) must be applied according to national building code.

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

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)



REDUCTION OF LOAD CAPACITIES



Tension load Reduction factor for edge distance (r_{Nc})						
Edge distance in mm	M4,5	M6	M8	M10	M12	M16
40	1,00					
50	1,00	1,00				
55	1,00	1,00	1,00	0,91		
60	1,00	1,00	1,00	0,97	0,97	
65	1,00	1,00	1,00	1,00	1,00	0,96
75	**1,00**	**1,00**	1,00	1,00	1,00	1,00
100			**1,00**	**1,00**	1,00	1,00
125					**1,00**	1,00
150						**1,00**

Shear load Reduction factor for edge distance (r_{vc})						
Edge distance in mm	M4,5	M6	M8	M10	M12	M16
40	0,49					
50	0,62	0,60				
55	0,69	0,70	0,48	0,45		
60	0,77	0,80	0,55	0,52	0,43	
65	0,84	0,86	0,62	0,58	0,48	0,36
75	**1,00**	**1,00**	0,74	0,72	0,58	0,44
100			**1,00**	**1,00**	0,78	0,65
125					**1,00**	0,82
150						**1,00**

Tension load Reduction factor for spacing (r_{Ns})						
Spacing in mm	M4,5	M6	M8	M10	M12	M16
40	0,79					
50	0,86	0,81				
55	0,90	0,84	0,80	0,72		
60	0,93	0,87	0,82	0,74	0,74	
65	0,97	0,90	0,85	0,76	0,76	0,74
75	**1,00**	0,96	0,90	0,80	0,80	0,77
100		1,00	1,00	0,90	0,90	0,86
125		1,00	1,00	1,00	1,00	0,95
150		**1,00**	1,00	1,00	1,00	1,00
200			**1,00**	**1,00**	**1,00**	1,00
225						**1,00**

Shear load Reduction factor for spacing (r_{Vs})						
Spacing in mm	M4,5	M6	M8	M10	M12	M16
40	0,87					
50	0,90	0,70				
55	0,92	0,72	0,72	0,68		
60	0,94	0,73	0,73	0,69	0,76	
65	0,96	0,75	0,74	0,70	0,77	0,73
75	**1,00**	0,78	0,76	0,72	0,79	0,75
100		0,85	0,82	0,78	0,85	0,79
125		0,93	0,88	0,83	0,90	0,83
150		**1,00**	0,94	0,89	0,95	0,88
200			**1,00**	**1,00**	**1,00**	0,96
225						**1,00**

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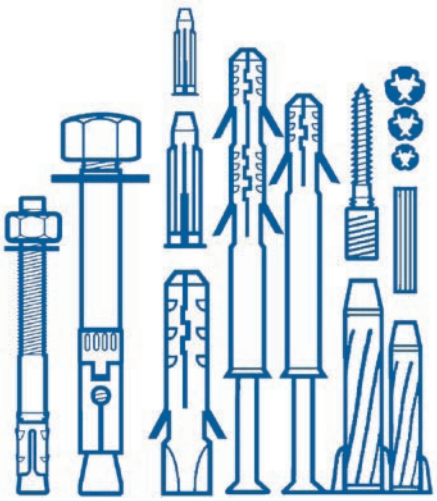
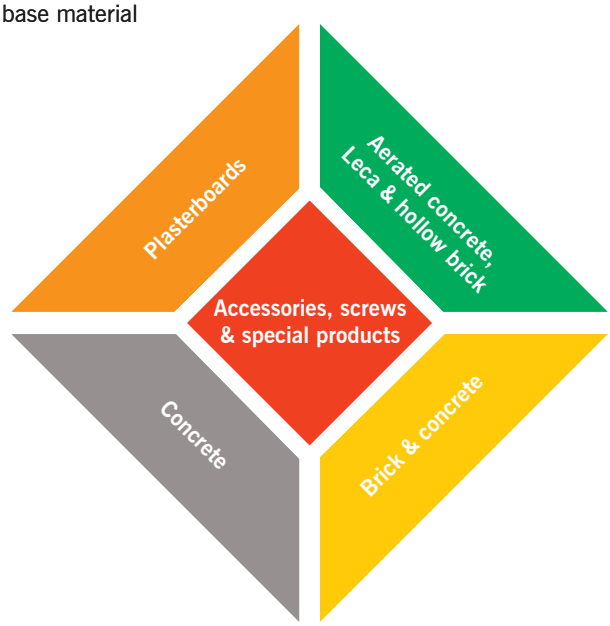


Expandet Screw Anchors A/S was established in 1955 and was pioneers in the field of fastener products for concrete and brickwork - being the first company to patent a fastener made in plastic. We are devoted to a constant development of our product range, which now covers the entire range of anchors 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_{sdmin}	mm	Minimum screw in depth
d_o	mm	Drill hole diameter
h_1	mm	Depth of drilled hole
h_{nom}	mm	Anchor embedment depth
h_{ef}	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	Witdt of fixture: b_{fix1} (direction 1) & b_{fix2} (direction 2)
T_{inst}	Nm	Required setting touque
S	mm	Spacing between anchors in an anchorgroup
S_1; S_2	mm	Spacing between anchors in an anchorgroup: 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 difined 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 directioin
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/mm²	Characteristic concrete compression strength messured on cylinders
$f_{ck, cube}$	N/mm²	Characteristic concrete compression strength messured on cubes
F_{yk}	N/mm²	Characteristic steel yield strength
F_{uk}	N/mm²	Characteristic steel ultimate tensile strength

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