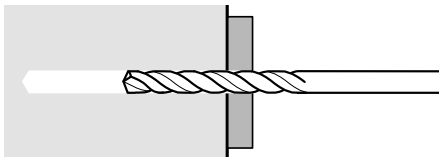
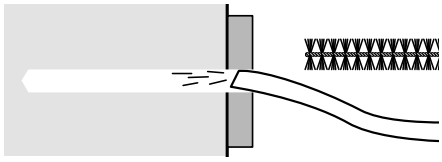
CE Technical Sheet No. 411 Mini

EXPANDET C-BOLT

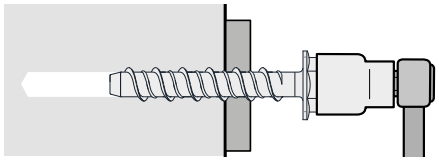
Installation:



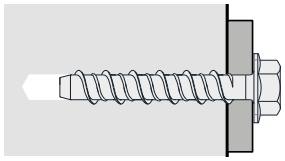
1 Drill a hole with correct diameter and depth through fixture and into the concrete



2 Clean the drilled hole thoroughly



3 Install C-Bolt using a socket ratchet or wrench - manual or machine driven



4 The installation is finished

For fixing of brackets, balcony railings, wood- and steel structures etc. in cracked and non-cracked concrete and other solid base materials

Materials:

C-Bolt is supplied zinc plated (min. 5 μm) and Mecanical Galvanised (min. 45 μm).

Approvals:

Zinc plated:
ø8 - ø14 is ETA approved , CE-marked in option 1 (ETA 16-0403).
ø8 - ø14 is fire approved (incl. in ETA 160403)

Advantages:

Expansion free.
Through fixing.
Installation is economic and easy - without use of special tools.
Reduction of installation time up to 50%.
Torque control is not required.
Can be installed close to edges.
ETA approved in Option 1, for use in cracked and non-cracked concrete.
Anchorages can be designed in Expandet Calculation Software.

European Technical Approval - Option 1 in concrete

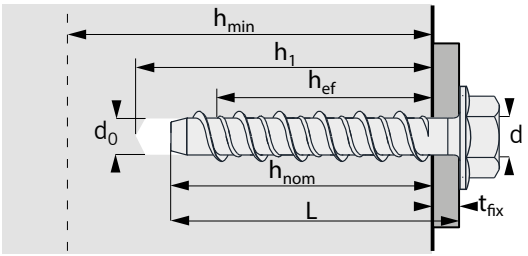
Ø8 til Ø14
Brand klassificeret
R120

Technical Sheet No. 411

EXPANDET A SENCO BRAND

EXPANDET C-BOLT

European Technical Approval - Option 1 in concrete



Type			Dimensions				Fixing							Load Capacities			
			d	L		t_{fix}	d_0	h_1	h_{nom}	h_{ef}	h_{min}	S_{min}	C_{min}	Non-cracked concrete N_{Rd}	Non-cracked concrete V_{Rd}	Cracked concrete N_{Rd}	Cracked concrete V_{Rd}
Expandet C-Bolt			Bolt diameter mm	Anchor length mm	Key size mm	Max. fitting thickness mm	Drill hole diameter mm	Depth of drilled hole (Min.) mm	Embedment depth mm	Effective anchorage depth mm	Thichness of concrete member min., mm	Minimum allowable spacing mm	Minimum allowable edge distance mm	Design resistance tension kN▼	Design resistance shear kN▽	Design resistance tension kN▼	Design resistance shear kN▽
Zinc plated																	
Ø5																	
Ø5 (6x40/5)		*	6	40	8	5	5	45	35	25	80	40	40	1,1	1,1	0,8	0,8
Ø5 (6x50/5)		*	6	50	8	5	5	55	45	35	80	40	40	1,7	1,7	1,2	1,2
Ø5 (6x50/15)		*	6	50	8	15	5	45	35	25	80	40	40	1,1	1,1	0,8	0,8
Ø5 (6x75/20)		*	6	75	8	30	5	55	45	35	80	40	40	1,7	1,7	1,2	1,2
Ø5 (6x75/30)		*	6	75	8	40	5	45	35	25	80	40	40	1,1	1,1	0,8	0,8
Ø6																	
Ø6 (8x30/1)		*	8	30	10	1	6	39	29	19	80	40	40	0,8	0,8	0,6	0,6
Ø6 (8x50/15)		*	8	50	10	15	6	45	35	25	80	40	40	1,7	1,7	1,1	1,1
Ø6 (8x80/25)		*	8	80	10	25	6	65	55	40	80	40	40	4,2	4,2	2,8	2,8
Ø6 (8x80/45)		*	8	80	10	45	6	45	35	25	80	40	40	1,7	1,7	1,1	1,1
Ø6 (8x100/45)		*	8	100	10	45	6	65	55	40	80	40	40	4,2	4,2	2,8	2,8
Ø6 (8x100/65)		*	8	100	10	65	6	45	35	25	80	40	40	1,7	1,7	1,1	1,1
Ø8																	
Ø8 (10x60/10)	■		10	60	13	10	8	60	50	34	110	60	60	3,3	3,3	2,2	2,2
Ø8 (10x60/15)	■		10	60	13	15	8	55	45	30	110	60	60	3,3	3,3	1,6	1,6
Ø8 (10x75/10)	■		10	75	13	10	8	75	65	37	110	60	60	6,6	6,6	4,1	4,1
Ø8 (10x75/25)	■		10	75	13	25	8	60	50	34	110	60	60	3,3	3,3	2,2	2,2
Ø8 (10x75/30)	■		10	75	13	30	8	55	45	30	110	60	60	3,3	3,3	1,6	1,6
Ø8 (10x100/35)	■		10	100	13	35	8	75	65	37	110	60	60	6,6	6,6	4,1	4,1
Ø8 (10x100/50)	■		10	100	13	50	8	60	50	34	110	60	60	3,3	3,3	2,2	2,2
Ø8 (10x100/55)	■		10	100	13	55	8	55	45	30	110	60	60	3,3	3,3	1,6	1,6
Ø8 (10x130/65)	■		10	130	13	65	8	75	65	37	110	60	60	6,6	6,6	4,1	4,1
Ø8 (10x130/80)	■		10	130	13	80	8	60	50	34	110	60	60	3,3	3,3	2,2	2,2
Ø8 (10x130/85)	■		10	130	13	85	8	55	45	30	110	60	60	3,3	3,3	1,6	1,6
Ø10																	
Ø10 (12x60/10)	■		12	60	15	10	10	60	50	33	110	70	70	5,4	5,4	3,9	3,9
Ø10 (12x85/10)	■		12	85	15	10	10	85	75	54	110	70	70	8,8	8,8	5,0	5,0
Ø10 (12x85/25)	■		12	85	15	25	10	70	60	42	110	70	70	5,4	5,4	3,9	3,9
Ø10 (12x85/35)	■		12	85	15	35	10	60	50	33	110	70	70	5,4	5,4	3,9	3,9
Ø10 (12x100/25)	■		12	100	15	25	10	85	75	54	110	70	70	8,8	8,8	5,0	5,0
Ø10 (12x100/40)	■		12	100	15	40	10	70	60	42	110	70	70	5,4	5,4	3,9	3,9
Ø10 (12x100/50)	■		12	100	15	50	10	70	50	33	110	70	70	5,4	5,4	3,9	3,9
Ø10 (12x130/55)	■		12	130	15	55	10	85	75	54	110	70	70	8,8	8,8	5,0	5,0
Ø10 (12x130/70)	■		12	130	15	70	10	70	60	42	110	70	70	5,4	5,4	3,9	3,9
Ø10 (12x130/80)	■		12	130	15	80	10	60	50	33	110	70	70	5,4	5,4	3,9	3,9
Ø14																	
Ø14 (16x80/10)			16	80	18	10	14	80	70	48	150	90	90	9,1	18,2	7,0	14,0
Ø14 (16x80/20)			16	80	18	20	14	70	60	40	150	90	90	9,1	18,2	7,0	14,0
Ø14 (16x120/5)			16	120	18	5	14	125	115	86	150	90	90	19,4	35,6	11,1	22,2
Ø14 (16x120/50)			16	120	18	50	14	80	70	48	150	90	90	9,1	18,2	7,0	14,0
Ø14 (16x120/60)			16	120	18	60	14	70	60	40	150	90	90	9,1	18,2	7,0	14,0

* Not included in ETA-approval.

▼ Design resistance for tension is valid for a single anchor in concrete C20/25 not influenced by edge distance and/or spacing: $C \geq 1{,}5\ h_{ef}$ 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 in concrete ≥C20/25 not influenced by edge distance and/or spacing: $C \geq 10\ h_{ef}$ and $S \geq 3\ h_{ef}$.

◈ Torque is recommended maximum.

■ Available Mechanical galvanised (min. 45 μm.)

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

When calculating load capacities for anchors 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.

Combined resistance shall be verified if both tension and shear actions are applied: $\left(\frac{N_{Sd}}{N_{Rd,c}}\right)^{1,5} + \left(\frac{V_{Sd}}{V_{Rd,c}}\right)^{1,5} \leq 1{,}0$

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)