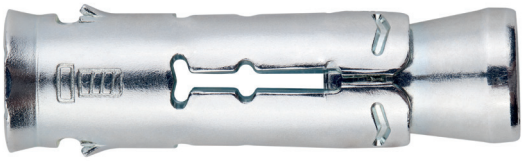
Controlled torque expansion anchor, for use in hollow-core slabs

HC

ETA Assessed for multiple use for non-structural applications in hollow-core slabs. Zinc-plated sleeve. Zinc-plated cone.



PRODUCT INFORMATION

DESCRIPTION
Metallic anchor, with female thread, expansion by controlled torque.

OFFICIAL DOCUMENTATION
- CE-1219-CPR-0117.
- ETA 15/0912 for multiple use for non-structural applications in hollow-core slabs.
- Declaration of performance DoP HC.

SIZES
M6 to M10.

DESIGN LOAD RANGE
From 1,9 to 7,8 kN.

BASE MATERIAL
Hollow-core slabs, concrete class ≥ C40/50.

Hollow-core slabs

ASSESSMENTS
- Multiple use.

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Técnicas Expansivas S.L.
Segador 13. Logroño. Spain
ETA 15/0912
1219
Structural fixings in concrete

FIRE RESISTANCE

CHARACTERISTICS AND BENEFITS
- Easy installation.
- Use in hollow-core slabs.
- Use for medium loads.
- Pre-installation of the fixture.
- The collar doesn't allow the anchor to go through the hole, making the installation easier.
- For static and quasi-static loads.
- Three sizes assesssed M6, M8 and M10.
- Suitable when reduced distance to edge and between anchors is required.
- Suitable for use with metric threaded rods and bolts.
- Available in INDEXcal.

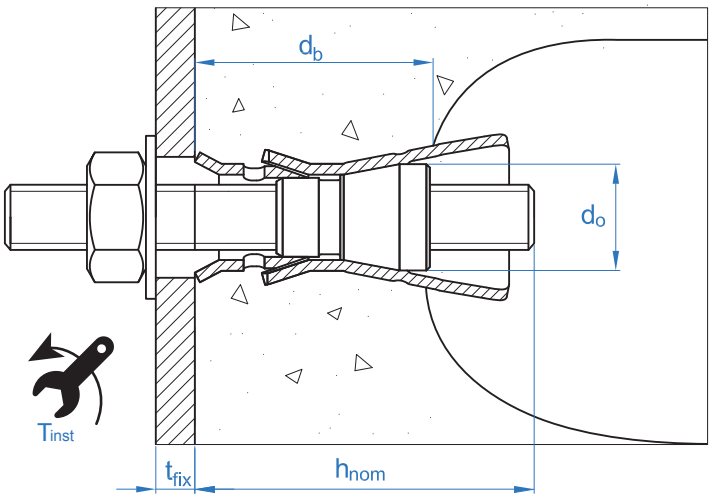
MATERIALS
Sleeve: Carbon steel, zinc-plated ≥ 5 µm.
Cone: Carbon steel, zinc-plated ≥ 5 µm.

APPLICATIONS
- Fixings in suspendes ceilings, sprinkler and ventilation systems.
- Non-structural fixings, fittings in interiors and/ or exteriors.
- Fixings of threaded rods.

MECHANICAL PROPERTIES												
Bolt diameter			M6		M8		M10					
A_s	(mm^2)	Threaded area section	20,1		36,6		58,0					
Screw steel grade			4.6	4.8	5.6	5.8	6.8	8.8				
f_{uk}	(N/mm^2)	Screw characteristic resistance	400	400	500	500	600	800				

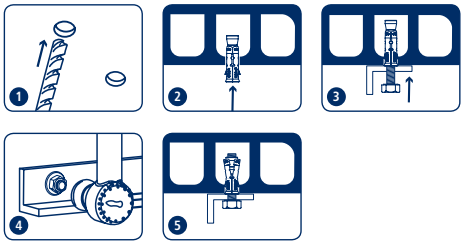
INSTALLATION DATA					
METRIC			M6	M8	M10
d_0	Nominal diameter of drill bit	[mm]	10	12	16
T_{ins}	Installation torque moment	[Nm]	10	20	30
$d_f \leq$	Diameter of clearance hole in the fixture	[mm]	7	9	12
h_1	Drill hole depth	[mm]	45	50	60
h_{nom}	Installation depth	[mm]	38	44	53
l_s	Bolt minimum length*	[mm]	t_{fix} + 40	t_{fix} + 46	t_{fix} + 55
$s_{cr,N}$	Critical spacing	[mm]	200	200	200
$c_{cr,N}$	Critical edge distance	[mm]	100	100	100
s_{min}	Minimum spacing	[mm]	100	100	100
c_{min}	Minimum edge distance	[mm]	60	70	90

*t_{fix} = thickness of fixture



Code	INSTALLATION PRODUCTS
	Hammer drill
BHDSXXXXX	Concrete Drill bits
MOBOMBA	Blow pump
MORCEPKIT	Cleaning Brush
	Torque wrench
	Hexagonal socket

INSTALLATION



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Resistance in hollow-core concrete ≥ C40/50 and for an isolated anchor, without effects of edge distance or spacing

Characteristic Resistance F_{Rk}						
ALL LOAD DIRECTIONS						
Metric				M6	M8	M10
F_{Rk}	Hollow-core concrete ≥ C40/50	[kN]	d_b≥25;<30mm	3,5	5,0	8,0
			d_b≥30;<40mm	7,0	10,0	14,0
			d_b≥40 mm	8,5	11,5	14,0

Design Resistance F_{Rd}						
ALL LOAD DIRECTIONS						
Metric				M6	M8	M10
F_{Rd}	Hollow-core concrete ≥ C40/50	[kN]	d_b≥25;<30mm	1,9	3,3	4,4
			d_b≥30;<40mm	3,9	6,7	7,8
			d_b≥40 mm	4,7	7,7	7,8

Maximum Loads Recommended F_{rec}						
ALL LOAD DIRECTIONS						
Metric				M6	M8	M10
F_{rec}	Hollow-core concrete ≥ C40/50	[kN]	d_b≥25;<30mm	1,4	2,4	3,2
			d_b≥30;<40mm	2,8	4,8	5,6
			d_b≥40 mm	3,4	5,5	5,6

Simplified calculation method

European Technical Assessment ETA 15/0912

Simplified version of the calculation method according to ETAG 001, annex C. Resistance is calculated according to the data shown in assessment ETA 15/0912.

- Influence of concrete strength.
- Influence of edge distance.
- Influence of spacing between anchors.
- Valid for a group of two anchors.

The calculation method is based on the following simplification: **Different loads do not act on individual anchors, without eccentricity.**

INDEXcal

For a more precise calculation and to take more constructive provisions into account, INDEX Fixing Systems is developing a calculation software for multiple use for nonstructural applications in concrete.

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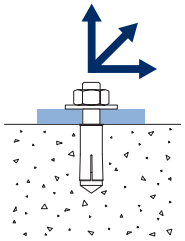
ALL LOAD DIRECTIONS

- Design resistance for all load directions: $F_{Rd} = F^{o}_{Rd} \cdot \Psi_s \cdot \Psi_c$

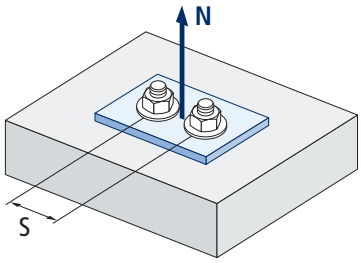


Design resistance F_{Rd}						
ALL LOAD DRECTIONS						
Metric				M6	M8	M10
F_{Rd}	Hollow-core concrete ≥ C40/50	[kN]	d_b≥25;<30mm	1,9	3,3	4,4
			d_b≥30;<40mm	3,9	6,7	7,8
			d_b≥40 mm	4,7	7,7	7,8

HC

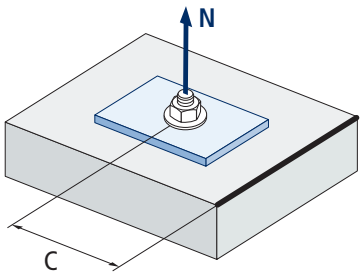
Coefficients of influence

Influence of spacing (concrete cone) $\Psi_{s,N}$			
s [mm]	HC		
	M6	M8	M10
60	Invalid value		
70			
80			
90			
100	0,75	0,75	0,75
110	0,78	0,78	0,78
120	0,80	0,80	0,80
130	0,83	0,83	0,83
140	0,85	0,85	0,85
150	0,88	0,88	0,88
160	0,90	0,90	0,90
170	0,93	0,93	0,93
180	0,95	0,95	0,95
190	0,98	0,98	0,98
200	1,00	1,00	1,00
210	Value without reduction = 1		
220			
230			
240			
250			



$$\Psi_{s,N} = 0{,}5 + \frac{s}{2 \cdot s_{cr,N}} \leq 1$$

Influence of concrete edge distance (concrete cone) $\Psi_{c,N}$			
c [mm]	HC		
	M6	M8	M10
60	0,70	Invalid value	
65	0,74		
70	0,77	0,77	
75	0,81	0,81	
80	0,85	0,85	0,85
85	0,88	0,88	0,88
90	0,92	0,92	0,92
95	0,96	0,96	0,96
100	1,00	1,00	1,00
105	Value without reduction = 1		
110			
115			
120			



$$\Psi_{c,N} = 0{,}35 + \frac{0{,}5 \cdot c}{C_{cr,N}} + \frac{0{,}15 \cdot c^2}{C_{cr,N}^{\ 2}} \leq 1$$

HC

FIRE RESISTANCE

Characteristic Resistance*			
	ALL LOAD DIRECTIONS		
	M6	M8	M10
RF30	0,20	0,37	0,87
RF60	0,18	0,33	0,75
RF90	0,14	0,26	0,58
RF120	0,10	0,18	0,46

*The safety factor for design resistance under fire exposure is Resistance $\gamma_{M,fi}$=1 (in abscence of other national regulations). As a eresult the Characteristic Resistance is the same as Design.

Maximum Load Recommended			
	ALL LOAD DIRECTIONS		
	M6	M8	M10
RF30	0,14	0,30	0,60
RF60	0,13	0,20	0,50
RF90	0,10	0,20	0,40
RF120	0,07	0,10	0,30

RANGE

Code	Size	Ø drill bit		
HCM06	M6	10	100	600
HCM08	M8	12	50	600
HCM10	M10	16	25	300