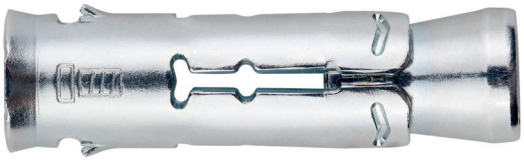
# Controlled torque expansion anchor, for use in hollow-core slabs

**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.

15
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.

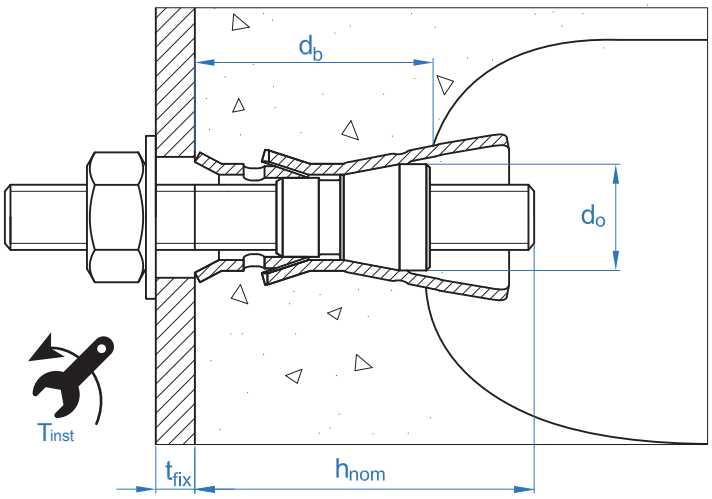
### MATERIALS
**Sleeve:** Carbon steel, zinc-plated ≥ 5 µm.
**Cone:** Carbon steel, zinc-plated ≥ 5 µm.

### 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 | | | | |

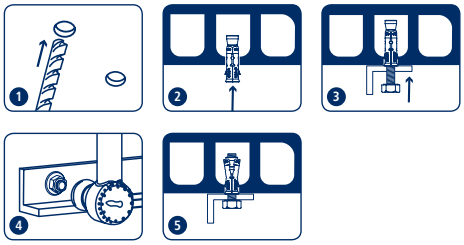
| INSTALLATION DATA | | | | | |
|---|---|---|---|---|---|
| METRIC | | | M6 | M8 | M10 |
| $d_0$ | Nominal diameter of drill bit | [mm] | 10 | 12 | 16 |
| $T_{ins}$ | Installation torque moment | [Nm] | 10 | 20 | 30 |
| $d_f \leq$ | Diameter of clearance hole in the fixture | [mm] | 7 | 9 | 12 |
| $h_1$ | 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**



**HC**

## 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.**

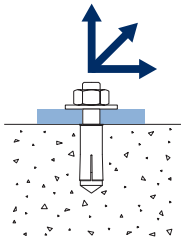
**INDEXcal**

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.

# HC

## ALL LOAD DIRECTIONS

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

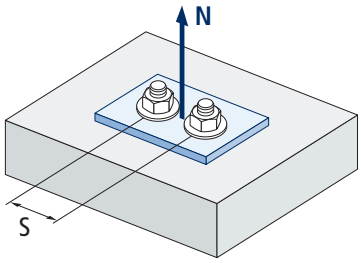


| Design resistance $F_{Rd}$ | | | | | | |
|---|---|---|---|---|---|---|
| ALL LOAD DRECTIONS | | | | | | |
| Metric | | | | M6 | M8 | M10 |
| $F_{Rd}$ | Hollow-core concrete ≥ C40/50 | [kN] | $d_b$≥25;<30mm | 1,9 | 3,3 | 4,4 |
| | | | $d_b$≥30;<40mm | 3,9 | 6,7 | 7,8 |
| | | | $d_b$≥40 mm | 4,7 | 7,7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

HC

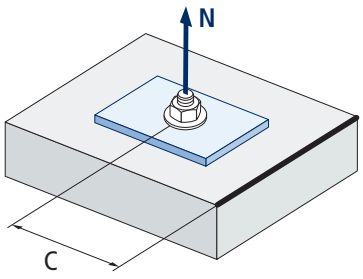
## Coefficients of influence

| 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 |