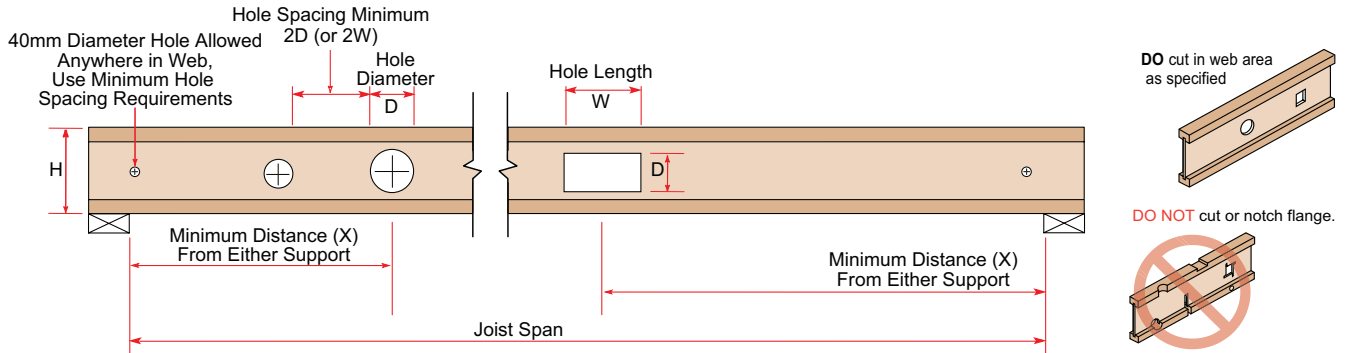


Hole Location and Sizing

BCI® Joists are manufactured with 38mm round prestamped knockouts in the web at approx. 305mm centres for ventilation, electrical wiring or small plumbing.



MINIMUM DISTANCE (X) FROM CENTRELINE OF HOLE TO ANY END SUPPORT (m)

| BCI® Joist Depth (mm) | Joist Span (m) | CIRCULAR HOLES Hole Diameter [D] (mm) | | | | | | | RECTANGULAR HOLES Hole Height [D] x Length [W] (mm) | | | | | | | | |
|-----------------------|----------------|--|------|------|------|------|------|------|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | 75 | 100 | 125 | 150 | 175 | 200 | 250 | 100 x 100 | 125 x 250 | 150 x 150 | 150 x 300 | 175 x 350 | 200 x 200 | 200 x 400 | 250 x 250 | 250 x 350 |
| 241 | 3.5 | 0.16 | 0.16 | 0.27 | 0.58 | | | | 0.54 | 1.03 | 0.96 | 1.18 | | | | | |
| | 4.0 | 0.16 | 0.21 | 0.52 | 0.83 | | | | 0.79 | 1.28 | 1.21 | 1.43 | | | | | |
| | 4.5 | 0.16 | 0.46 | 0.77 | 1.08 | | | | 1.04 | 1.53 | 1.46 | 1.68 | | | | | |
| | 5.0 | 0.40 | 0.71 | 1.02 | 1.33 | | | | 1.29 | 1.78 | 1.71 | 1.93 | | | | | |
| 302 | 4.0 | 0.16 | 0.16 | 0.21 | 0.26 | 0.43 | 0.73 | | 0.34 | 0.95 | 0.74 | 1.10 | 1.24 | 1.14 | 1.38 | | |
| | 4.5 | 0.16 | 0.16 | 0.21 | 0.38 | 0.68 | 0.98 | | 0.59 | 1.20 | 0.99 | 1.35 | 1.49 | 1.39 | 1.63 | | |
| | 5.0 | 0.16 | 0.16 | 0.33 | 0.63 | 0.93 | 1.23 | | 0.84 | 1.45 | 1.24 | 1.60 | 1.74 | 1.64 | 1.88 | | |
| | 5.5 | 0.16 | 0.28 | 0.58 | 0.88 | 1.18 | 1.48 | | 1.09 | 1.70 | 1.49 | 1.85 | 1.99 | 1.89 | 2.13 | | |
| 356 | 4.5 | 0.16 | 0.16 | 0.21 | 0.26 | 0.31 | 0.54 | 1.08 | 0.39 | 1.05 | 0.74 | 1.17 | 1.30 | 1.10 | 1.42 | 1.45 | 1.57 |
| | 5.0 | 0.16 | 0.16 | 0.21 | 0.26 | 0.53 | 0.79 | 1.33 | 0.64 | 1.30 | 0.99 | 1.42 | 1.55 | 1.35 | 1.67 | 1.70 | 1.82 |
| | 5.5 | 0.16 | 0.16 | 0.24 | 0.51 | 0.78 | 1.04 | 1.58 | 0.89 | 1.55 | 1.24 | 1.67 | 1.80 | 1.60 | 1.92 | 1.95 | 2.07 |
| | 6.0 | 0.16 | 0.22 | 0.49 | 0.76 | 1.03 | 1.29 | 1.83 | 1.14 | 1.80 | 1.49 | 1.92 | 2.05 | 1.85 | 2.17 | 2.20 | 2.32 |
| 406 | 5.0 | 0.16 | 0.16 | 0.21 | 0.26 | 0.31 | 0.36 | 0.68 | 0.16 | 0.95 | 0.51 | 1.08 | 1.22 | 0.89 | 1.35 | 1.27 | 1.46 |
| | 5.5 | 0.16 | 0.16 | 0.21 | 0.26 | 0.31 | 0.36 | 0.93 | 0.38 | 1.20 | 0.76 | 1.33 | 1.47 | 1.14 | 1.60 | 1.52 | 1.71 |
| | 6.0 | 0.16 | 0.16 | 0.21 | 0.26 | 0.32 | 0.61 | 1.18 | 0.63 | 1.45 | 1.01 | 1.58 | 1.72 | 1.39 | 1.85 | 1.77 | 1.96 |
| | 6.5 | 0.16 | 0.16 | 0.21 | 0.29 | 0.57 | 0.86 | 1.43 | 0.88 | 1.70 | 1.26 | 1.83 | 1.97 | 1.64 | 2.10 | 2.02 | 2.21 |

Notes:

- Table assumes joists are uniformly loaded by floor loading of 1.5 kN/m² imposed load and 0.75 kN/m² dead load, with the worst case joist spacing of 600mm.
- For joists resisting large point loads (e.g. trimming joists), or for a more accurate evaluation of the effect of holes, refer to the design equations opposite.
- The length-height ratio for rectangular holes must be between 0.5 and 2.0.
- Spacing between hole centrelines must be at least three times the greatest dimension of either hole.
- A 40mm circular hole may be cut anywhere in the joist web.
- With the exception of holes less than 40mm in diameter, the distance between a hole centreline and the end of the joist must exceed 200mm or twice the greatest dimension of the hole, whichever is the greater.
- **CUT ALL HOLES CAREFULLY, DO NOT OVERCUT OR CUT THE FLANGES.**

Design equation to calculate shear strength of a BCI® Joist with a CIRCULAR hole in its web

$$V_{\text{circ}} = 0.75 V_{\text{full-section}} (1 - D/H)$$

where V_{circ} = Shear strength of BCI-joist with a circular hole

$V_{\text{full-section}}$ = Shear strength of same size BCI® Joist without any holes (see p. 10)

D = Diameter of hole

H = Depth of BCI® Joist

Design equation to calculate shear strength of a BCI® Joist with a RECTANGULAR hole in its web

$$V_{\text{rect}} = 0.5 V_{\text{full-section}} (1 - D/H) (D/W)^{0.5}$$

where V_{rect} = Shear strength of BCI® Joist with a rectangular hole

$V_{\text{full-section}}$ = Shear strength of same size BCI® Joist without any holes (see p. 10)

D = Depth of hole

W = Length of hole

H = Depth of BCI-joist