NORDIC JOIST™
9-1/4" AND 11-1/4" NI-40x I-JOISTS
Chantiers Chibougamau Ltd. harvests its own trees, which enables Nordic products to adhere to strict quality control procedures throughout the manufacturing process. Every phase of the operation, from forest to the finished product, reflects our commitment to quality.

Nordic Engineered Wood I-joists use only finger-jointed black spruce lumber in their flanges, ensuring consistent quality, superior strength, and longer span carrying capacity.

For further technical information, please refer to the Nordic Joist Construction Guide or contact your local distributor. Consult the Installation Guide for Residential Floors for proper procedures.

### DESIGN PROPERTIES FOR NORDIC I-JOISTS (a)(b)

<table>
<thead>
<tr>
<th>JOIST DEPTH</th>
<th>JOIST SERIES</th>
<th>EI (106 lbf-in²)</th>
<th>Mₖ (lbf-ft)</th>
<th>Vₐ (lbf)</th>
<th>IRₐ (lbf) w/ BS (lbf)</th>
<th>IRₐ (lbf) w/o BS (lbf)</th>
<th>ERₐ (lbf)</th>
<th>ERₐ w/ BS (lbf)</th>
<th>ERₐ w/o BS (lbf)</th>
<th>Kₐ (lbf)</th>
<th>Kₐ (10⁶ lbf)</th>
<th>WEIGHT (plf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-1/4&quot;</td>
<td>NI-40x</td>
<td>198</td>
<td>4675</td>
<td>1850</td>
<td>3710</td>
<td>3730</td>
<td>4000</td>
<td>4020</td>
<td>1790</td>
<td>1790</td>
<td>1850</td>
<td>1850</td>
</tr>
<tr>
<td>11-1/4&quot;</td>
<td>NI-40x</td>
<td>313</td>
<td>5880</td>
<td>2230</td>
<td>4490</td>
<td>4530</td>
<td>5210</td>
<td>5260</td>
<td>1970</td>
<td>2230</td>
<td>2230</td>
<td>2230</td>
</tr>
</tbody>
</table>

For SI: 1 lbf = 4.448 N, 1 lbf-ft = 1.356 N-m, 1 lbf-in² = 0.00287 N-m², 1 inch = 25.4 mm.

(a) The tabulated values are design values for the standard term load duration (KD = 1.0).
All values, except for EI and K, may be adjusted for other load durations as permitted by the code for solid sawn lumber.
(b) The factored vertical (bearing) linear load resistance is 3,300 lbf/ft without load or bearing stiffeners.
(c) Bending stiffness (EI) of the I-joist.
(d) Factored moment resistance (Mr) of the I-joist, which shall not be increased by any code allowed system effect factor.
(e) Factored shear resistance (Vr) of the I-joist, which shall not be increased by any code allowed system effect factor.
(f) Factored intermediate (IRr) reaction of the I-joist with and without bearing stiffeners (BS).
Minimum required bearing lengths as indicated. Interpolation of the intermediate reaction between 3-1/2 and 5-1/2-inch bearing is permitted.
(g) Factored end (ERr) reaction of the I-joist with and without bearing stiffeners (BS). Minimum required bearing lengths as indicated. Interpolation of the end reaction between 1-3/4 and 4-inch bearing is permitted.
(h) Coefficient of shear deflection (K). For calculating uniform load and centre-point load deflections of the I-joist in a simple-span application, use Eqs. 1 and 2.

Uniform Load:  \[ \delta = \frac{500w^4}{384EI} + \frac{w\ell^2}{K} \] (1)
Centre-Point Load:  \[ \delta = \frac{8P\ell^3}{48EI} + \frac{2P\ell}{K} \] (2)

Where:
- \( \delta \) = calculated deflection (in.)
- \( w \) = unfactored uniform load (lbf/in.)
- \( \ell \) = design span (in.)
- \( P \) = unfactored concentrated load (lbf)
- \( EI \) = bending stiffness of the I-joist (lbf-in²)
- \( K \) = coefficient of shear deflection (lbf)
# Maximum Spans

## Maximum Floor Spans

### Bare Joist

<table>
<thead>
<tr>
<th>Joist Depth</th>
<th>Joist Series</th>
<th>Simple Spans On Centre Spacing</th>
<th>Multiple Spans On Centre Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-1/4&quot;</td>
<td>NI-40x</td>
<td>15'-10&quot; 14'-11&quot; 14'-5&quot; 14'-6&quot;</td>
<td>17'-1&quot; 16'-1&quot; 15'-6&quot; 15'-2&quot;</td>
</tr>
<tr>
<td>11-1/4&quot;</td>
<td>NI-40x</td>
<td>17'-5&quot; 16'-5&quot; 15'-11&quot; 16'-0&quot;</td>
<td>19'-1&quot; 17'-9&quot; 17'-2&quot; 17'-1&quot;</td>
</tr>
</tbody>
</table>

### 1/2" Gypsum Ceiling

<table>
<thead>
<tr>
<th>Joist Depth</th>
<th>Joist Series</th>
<th>Simple Spans On Centre Spacing</th>
<th>Multiple Spans On Centre Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-1/4&quot;</td>
<td>NI-40x</td>
<td>16'-3&quot; 15'-4&quot; 14'-10&quot; 14'-9&quot;</td>
<td>17'-6&quot; 16'-7&quot; 16'-0&quot; 15'-2&quot;</td>
</tr>
<tr>
<td>11-1/4&quot;</td>
<td>NI-40x</td>
<td>17'-11&quot; 16'-11&quot; 16'-4&quot; 16'-5&quot;</td>
<td>19'-10&quot; 18'-5&quot; 17'-8&quot; 17'-1&quot;</td>
</tr>
</tbody>
</table>

### Notes:

1. Maximum clear span applicable to residential floor construction with a design live load of 40 psf and dead load of 15 psf. The ultimate limit states are based on the factored loads of 1.50L + 1.25D. The serviceability limit states include the consideration for floor vibration, a live load deflection limit of L/480, and a total load deflection limit of L/240. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
2. Spans are based on a composite floor with glued-nailed oriented strand board (OSB) sheathing with a minimum thickness of 5/8 inch for a joist spacing of 19.2 inches or less, or 3/4 inch for a joist spacing of 24 inches. Adhesive shall meet the requirements given in CGBS-71.26 Standard. No concrete topping or bridging element was assumed. Increased spans may be achieved with the use of a row of blocking at mid-span.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches for the intermediate bearings.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacing given in these tables, except as required for hangers.
5. These span charts are based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties.

## Maximum Roof Spans

### Snow Load = 40 psf, Dead Load = 15 psf

<table>
<thead>
<tr>
<th>Joist Depth</th>
<th>Joist Series</th>
<th>Slope of 1/4:12 to 4:12</th>
<th>Slope of 4:12 to 8:12</th>
<th>Slope of &gt;8:12 to 12:12</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-1/4&quot;</td>
<td>NI-40x</td>
<td>19'-2&quot; 17'-4&quot; 15'-0&quot; 14'-5&quot;</td>
<td>18'-5&quot; 16'-8&quot; 14'-5&quot;</td>
<td>17'-2&quot; 15'-6&quot; 13'-5&quot;</td>
</tr>
<tr>
<td>11-1/4&quot;</td>
<td>NI-40x</td>
<td>22'-5&quot; 20'-3&quot; 16'-11&quot; 16'-4&quot;</td>
<td>21'-6&quot; 19'-5&quot; 16'-8&quot;</td>
<td>20'-0&quot; 18'-1&quot; 15'-9&quot;</td>
</tr>
</tbody>
</table>

### Snow Load = 50 psf, Dead Load = 15 psf

<table>
<thead>
<tr>
<th>Joist Depth</th>
<th>Joist Series</th>
<th>Slope of 1/4:12 to 4:12</th>
<th>Slope of 4:12 to 8:12</th>
<th>Slope of &gt;8:12 to 12:12</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-1/4&quot;</td>
<td>NI-40x</td>
<td>17'-9&quot; 16'-0&quot; 13'-10&quot; 17'-0&quot;</td>
<td>15'-5&quot; 13'-4&quot; 16'-2&quot;</td>
<td>14'-8&quot; 12'-8&quot; 14'-10&quot;</td>
</tr>
<tr>
<td>11-1/4&quot;</td>
<td>NI-40x</td>
<td>20'-9&quot; 18'-9&quot; 15'-6&quot; 19'-11&quot;</td>
<td>18'-0&quot; 15'-3&quot; 18'-11&quot;</td>
<td>17'-1&quot; 14'-8&quot; 14'-10&quot;</td>
</tr>
</tbody>
</table>

### Notes:

1. Maximum clear span applicable to simple-span roof construction with a design roof snow load as shown and dead load of 15 psf. The maximum span is based on the horizontal distance between inside face of supports. The ultimate limit states are based on the factored loads of 1.50S + 1.25D. The serviceability limit states are based on a live load deflection limit of L/360 and a total load deflection limit of L/240, and an importance factor of 0.9.
2. Spans include a cantilever of up to 2 feet on one end of the I-joist.
3. Minimum bearing length shall be 1-3/4 inches for the end bearings, and 3-1/2 inches on end bearing adjacent to cantilever.
4. Bearing stiffeners are not required when I-joists are used with the spans and spacing given in these tables, except as required for hangers.
5. These span charts are based on uniform loads. For applications with other than uniformly distributed loads, an engineering analysis may be required based on the use of the design properties.
Knockouts are prescored holes provided for the contractor's convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

Never drill, cut or notch the flange, or over-cut the web.

Holes in webs should be cut with a sharp saw.

For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.

### TABLE 1
**HOLE SIZES AND LOCATIONS — Simple or Multiple Span**

<table>
<thead>
<tr>
<th>JOIST DEPTH</th>
<th>JOIST SERIES</th>
<th>MINIMUM DISTANCE FROM INSIDE FACE OF ANY SUPPORT TO CENTRE OF HOLE (ft-in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROUND HOLE DIAMETER (in.)</td>
<td>2</td>
</tr>
<tr>
<td>9 1/4&quot;</td>
<td>NI-40x</td>
<td>0.7&quot;</td>
</tr>
<tr>
<td>11 1/4&quot;</td>
<td>NI-40x</td>
<td>0.7&quot;</td>
</tr>
</tbody>
</table>

**NOTES:**
1. Above tables may be used for I-joist spacing of 24 inches on centre or less.
2. Hole and duct chase opening location distance is measured from inside face of supports to centre of hole or opening.
3. For continuous joists with more than one span, use the longest span to determine hole location in either span.
4. Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480.
5. The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch (maintain a minimum of 1/8 inch between the top or bottom of the hole or opening and the adjacent I-joist flange).
6. The duct chase opening table is based on simple-span joists only. For other applications, contact your local distributor.
7. The above tables are based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

### TABLE 2
**DUCT CHASE OPENING SIZES AND LOCATIONS — Simple Span Only**

<table>
<thead>
<tr>
<th>JOIST DEPTH</th>
<th>JOIST SERIES</th>
<th>MINIMUM DISTANCE FROM INSIDE FACE OF ANY SUPPORT TO CENTRE OF OPENING (ft-in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DUCT CHASE LENGTH (in.)</td>
<td>8</td>
</tr>
<tr>
<td>9 1/4&quot;</td>
<td>NI-40x</td>
<td>5.1&quot;</td>
</tr>
<tr>
<td>11 1/4&quot;</td>
<td>NI-40x</td>
<td>6.4&quot;</td>
</tr>
</tbody>
</table>

**NOTES:**
1. Above tables may be used for I-joist spacing of 24 inches on centre or less.
2. Hole and duct chase opening location distance is measured from inside face of supports to centre of hole or opening.
3. For continuous joists with more than one span, use the longest span to determine hole location in either span.
4. Distances are based on uniformly loaded floor joists that meet the span requirements for a design live load of 40 psf and dead load of 15 psf, and a live load deflection limit of L/480.
5. The maximum size hole or the maximum depth of a duct chase opening that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus 1/4 inch (maintain a minimum of 1/8 inch between the top or bottom of the hole or opening and the adjacent I-joist flange).
6. The duct chase opening table is based on simple-span joists only. For other applications, contact your local distributor.
7. The above tables are based on the I-joists being used at their maximum spans. The minimum distance as given above may be reduced for shorter spans; contact your local distributor.

### FIELD-CUT HOLE LOCATOR

- Knockouts are prescored holes provided for the contractor’s convenience to install electrical or small plumbing lines. They are 1-1/2 inches in diameter, and are spaced 15 inches on centre along the length of the I-joist. Where possible, it is preferable to use knockouts instead of field-cut holes.

- Never drill, cut or notch the flange, or over-cut the web.

- Holes in webs should be cut with a sharp saw.

For rectangular holes, avoid over-cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Starting the rectangular hole by drilling a 1-inch diameter hole in each of the four corners and then making the cuts between the holes is another good method to minimize damage to the I-joist.