



NORDIC JOIST™

9-1/4" AND 11-1/4" NI-40x I-JOISTS



Built for life



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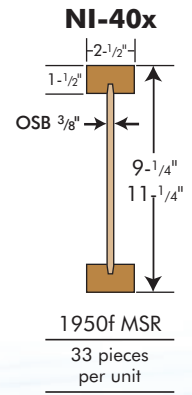
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NORDIC JOIST™

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)

JOIST DEPTH	JOIST SERIES	EI ^(c) (10 ⁹ lbf-in. ²)	M _r ^(d) (lbf-ft)	V _r ^(e) (lbf)	IR _r ^(f) (lbf)	ER _r ^(g) (lbf)	K ^(h) (10 ⁶ lbf)	WEIGHT (lbf/ft)
9-1/4"	NI-40x	198	4675	1850	3540	1770	4.81	2.61
11-1/4"	NI-40x	313	5880	2230	4340	1970	5.85	2.81

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 (K_D = 1.0). All values, except for EI and K, are permitted to be adjusted for other load durations as permitted by the code.
- (b) The factored vertical (bearing) load resistance is 3,300 lbf/ft without bearing stiffeners.
- (c) Bending stiffness (EI) of the I-joist.
- (d) Factored moment resistance (M_r) of the I-joist, which shall **not** be increased by any code allowed system effect factor.
- (e) Factored shear resistance (V_r) of the I-joist.
- (f) Factored intermediate reaction (IR_r) of the I-joist with a minimum bearing length of 3-1/2 inches without bearing stiffeners.
- (g) Factored end reaction (ER_r) of the I-joist with a minimum bearing length of 1-3/4 inches with out bearing stiffeners. Higher end reactions are permitted. For a bearing length of 4 inches, the end reaction may be set equal to the tabulated shear value. Interpolation of the end reaction between 1-3/4 and 4-inch bearing is permitted. For end reaction values over 2,450 lbf, bearing stiffeners are required.
- (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.

$$\text{Uniform Load: } \delta = \frac{5\omega\ell^4}{384 EI} + \frac{\omega\ell^2}{K} \quad (1)$$

$$\text{Centre-Point Load: } \delta = \frac{P\ell^3}{48 EI} + \frac{2P\ell}{K} \quad (2)$$

Where: δ = calculated deflection (in.)

ω = unfactored uniform load (lbf/in.)

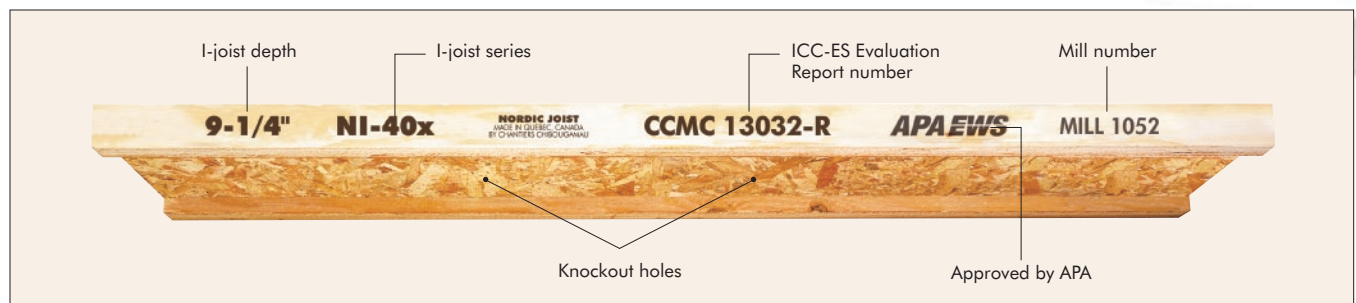
ℓ = design span (in.)

P = unfactored concentrated load (lbf)

EI = bending stiffness of the I-joist (lbf-in.²)

K = coefficient of shear deflection (lbf)

NORDIC JOIST™





MAXIMUM FLOOR SPANS

Bare Joist

JOIST DEPTH	JOIST SERIES	SIMPLE SPANS				MULTIPLE SPANS			
		ON CENTRE SPACING				ON CENTRE SPACING			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/4"	NI-40x	15'-10"	14'-11"	14'-5"	13'-7"	17'-1"	16'-1"	15'-6"	14'-9"
11-1/4"	NI-40x	17'-5"	16'-5"	15'-11"	15'-10"	19'-1"	17'-9"	17'-2"	17'-1"

1/2" Gypsum Ceiling

JOIST DEPTH	JOIST SERIES	SIMPLE SPANS				MULTIPLE SPANS			
		ON CENTRE SPACING				ON CENTRE SPACING			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"
9-1/4"	NI-40x	16'-3"	15'-4"	14'-7"	13'-7"	17'-6"	16'-7"	15'-11"	14'-9"
11-1/4"	NI-40x	17'-11"	16'-11"	16'-4"	15'-10"	19'-10"	18'-5"	17'-8"	17'-1"

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

JOIST DEPTH	JOIST SERIES	SLOPE OF 1/4:12 TO 4:12			SLOPE OF >4:12 TO 8:12			SLOPE OF >8:12 TO 12:12		
		ON CENTRE SPACING			ON CENTRE SPACING			ON CENTRE SPACING		
		12"	16"	24"	12"	16"	24"	12"	16"	24"
9-1/4"	NI-40x	19'-2"	17'-4"	15'-0"	18'-5"	16'-8"	14'-5"	17'-2"	15'-6"	13'-5"
11-1/4"	NI-40x	22'-5"	20'-3"	16'-11"	21'-6"	19'-5"	16'-8"	20'-0"	18'-1"	15'-9"

Snow Load = 50 psf, Dead Load = 15 psf

JOIST DEPTH	JOIST SERIES	SLOPE OF 1/4:12 TO 4:12			SLOPE OF >4:12 TO 8:12			SLOPE OF >8:12 TO 12:12		
		ON CENTRE SPACING			ON CENTRE SPACING			ON CENTRE SPACING		
		12"	16"	24"	12"	16"	24"	12"	16"	24"
9-1/4"	NI-40x	17'-9"	16'-0"	13'-10"	17'-0"	15'-5"	13'-4"	16'-2"	14'-8"	12'-8"
11-1/4"	NI-40x	20'-9"	18'-9"	15'-6"	19'-11"	18'-0"	15'-3"	18'-11"	17'-1"	14'-10"

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.



TABLE 1
HOLE SIZES AND LOCATIONS — Simple or Multiple Span

JOIST DEPTH	JOIST SERIES	MINIMUM DISTANCE FROM INSIDE FACE OF ANY SUPPORT TO CENTRE OF HOLE (ft-in.)														
		ROUND HOLE DIAMETER (in.)														
		2	3	4	5	6	6-1/4	7	8	8-5/8	9	10	10-3/4	11	12	12-3/4
9-1/4"	NI-40x	0'-6"	1'-6"	3'-0"	4'-6"	6'-0"	---	---	---	---	---	---	---	---	---	---
11-1/4"	NI-40x	0'-6"	0'-6"	2'-0"	3'-6"	4'-6"	5'-0"	6'-0"	8'-0"	---	---	---	---	---	---	---

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

JOIST DEPTH	JOIST SERIES	MINIMUM DISTANCE FROM INSIDE FACE OF ANY SUPPORT TO CENTRE OF OPENING (ft-in.)								
		DUCT CHASE LENGTH (in.)								
		8	10	12	14	16	18	20	22	24
9-1/4"	NI-40x	4'-6"	5'-0"	5'-6"	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"
11-1/4"	NI-40x	6'-0"	6'-6"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"

NOTES:

- Above tables may be used for I-joist spacing of 24 inches on centre or less.
- Hole and duct chase opening location distance is measured from inside face of supports to centre of hole or opening.
- For continuous joists with more than one span, use the **longest** span to determine hole location in either span.
- 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.
- 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).
- The duct chase opening table is based on simple-span joists only. For other applications, contact your local distributor.
- 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.



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