

Attachment Details to the Bottom Flange of Nordic I-Joists

The purpose of this technical note is to provide connection details to attach items to the bottom flange, such as ductwork, lights, bike racks, storage racks, etc. For sprinkler attachment details, refer to the construction details.

This technical note only applies if the following design requirements are met:

1. Edge and end distances specified in the NDS Table 12.5.1E.
2. Fasteners must applied a resultant force aligned with the joist center of gravity. In other words, no torsion must be applied to the joist.
3. Verify I-joist capacity to support concentrated loads.
4. Maximum allowable bottom flange concentrated load of 500 lbf.

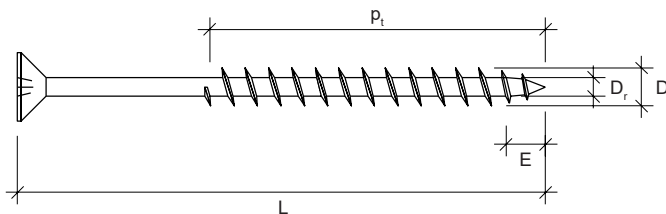
Reference Withdrawal Design Values

Fastener	Screw diameter (in.)	Screw number	W (lbf/in.)	W _{max} (lbf)
Wood screw	0.151	No. 7	76	114
	0.164	No. 8	82	124
	0.177	No. 9	89	133
	0.190	No. 10	96	143
	0.216	No. 12	109	163
	0.242	No. 14	122	182
Lag screw	0.250	1/4"	173	260

Notes:

1. The tabulated design values are based on dry service conditions, normal duration of loading, and a specific gravity of 0.42.
 2. Unit reference withdrawal design values, W, are in pounds per inch (lbf/in.) of thread penetration, for a single (wood or lag) screw inserted in the side grain of the wood member, with the (wood or lag) screw axis perpendicular to the wood fibers.
 3. Maximum reference withdrawal design values, W_{max}, are in pounds (lbf) and are based on the threaded portion of the screw engaging the full thickness of the flange (1-1/2 inch).
 4. For calculation of the fastener reference withdrawal design value in pounds (lbf), the unit reference withdrawal design value in lbf/in. of thread penetration from the above table shall be multiplied by the length of thread penetration, p_t in inches (in.), into the wood member, excluding the length of the tapered tip:

$$W \text{ (lbf)} = W \text{ (lbf/in.)} \times [p_t \text{ (in.)} - E \text{ (in.)}]$$
1. Installation requirements are as follows:
 - Lead holes: 50% of lag screw diameter; not required for wood screws
 - Minimum end distance = 4D
 - Minimum edge distance = 1.5D
 - Minimum spacing = 4D
 where D is the screw diameter.



- D = diameter
- D_r = root diameter
- L = wood screw length
- p_t = length of thread penetration
- E = length of tapered tip