Solar Panel Attachment to Trus Joist® TJI® Joist Flanges

Solar panels may be attached directly to Trus Joist® TJI® joists. This technical bulletin provides some considerations when analyzing a TJI® joist to support a solar panel.

To begin, the designer must determine the proper size of the TJI® roof joist members such that they can support:

- Uniform design roof loads.
- Additional dead load of solar panel (may be a point load if on legs or uniform plf load if on a curb).
- Additional snow loads at panel supports if applicable.
- Wind force, positive or negative, at panel supports if applicable.

Excessive wind uplift may require additional straps or fasteners at the supports of the roof joist member. Structural composite lumber like Parallam® PSL, Microllam® LVL, or TimberStrand® LSL may be a preferred structural support for heavy loads or for simple connections.

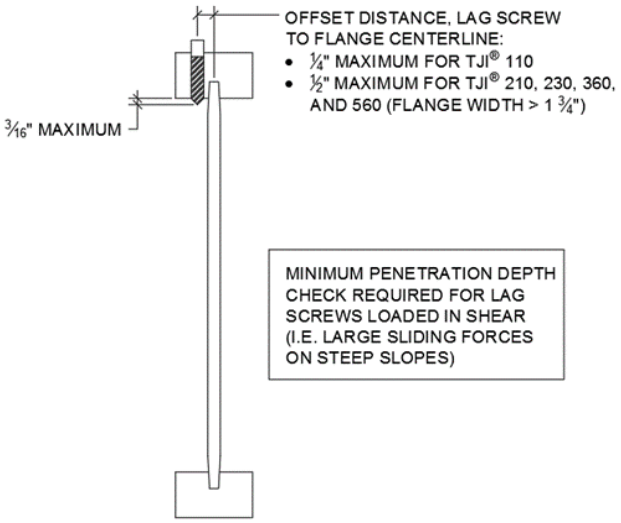
Fasteners

Proper installation of the fasteners is important to the structural integrity of the TJI® joist. Drilling oversized holes in the webs or flanges of TJI® joists can weaken the structural integrity of the member to the point where it will need to be repaired or replaced. For common screw withdrawal capacities, refer to *Bottom Flange Trus Joist® TJI® Joist Attachment Connections* (TB-808).

Lag screws shall be installed in pre-bored holes using a wrench or a drill. Drive screws, those driven in with a hammer, are not allowed in TJI® joists.

TABLE 1: LEAD HOLE AND FASTENER SIZES FOR TJI® JOIST FLANGES

	Fastener Size (diameter)	Lead Hole Size (diameter)
Lag Screws	1/4″	1/8″
	5/16″	5/32″
	3/8″	3/16″



General Notes

- Only one hole may be drilled in any cross section of any flange.
- Requires pre-bored lead hole.
- ¼″ maximum diameter lag screw when joist flange width is 1¾″.
- Lead hole size applies to the threaded part of the lag screw; For the unthreaded length of screw, the lead hole is equal to the shank diameter.
- Maximum allowed uplift load on any TJI® joist flange is 500 lb every 5 ft for lag screws centered within flange width; 250 lb for lag screws not centered within flange width.

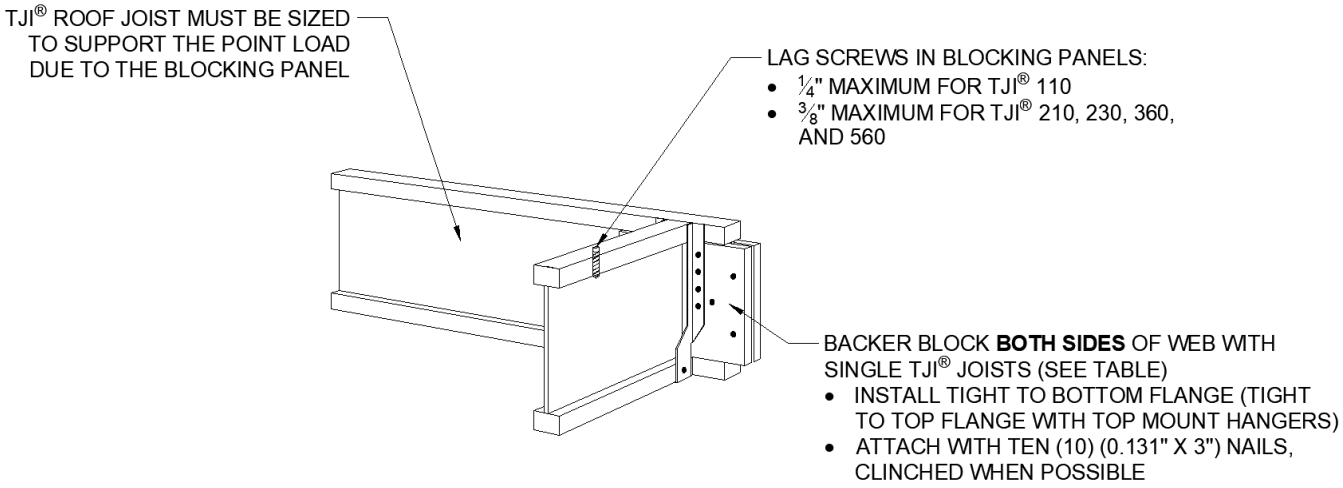


TABLE 2: BACKER BLOCK

TJI® Series	Backer Block
TJI® 110	¾″ x 12″ Minimum Length
TJI® 210	¾″ x 12″ Minimum Length
TJI® 230, 360	⅞″ x 12″ Minimum Length
TJI® 560	2x_ x 12″ Minimum Length

Hangers may be inverted for connections requiring a large uplift capacity. If using top flange hangers, backer blocks are required only for downward loads exceeding 250 lb or for uplift conditions.

For additional information regarding fasteners with Trus Joist® TJI® joists, refer to Fastener Spacing in Weyerhaeuser Engineered Lumber Products (TB-206).

If you have any questions, please contact your Weyerhaeuser representative.