

GARAGE CEILING STORAGE RACKS

My purpose in this comment is to share what I have learned about the addition of storage racks on garage ceilings. Our high garage ceilings are a tempting place to add storage capacity. I was considering adding one of the SafeRacks storage racks sold by Costco. These 4' x 8' racks are held in place by 3" long 5/16" lag screws which, per the instructions, must penetrate solid wood 2 x 6 or larger joists above.

The plans for our buildings show that the joists above the garages are not solid wood, even though it seems that's what they are when you use a stud finder and tap in some test nails. Rather most of the joists are a Weyerhaeuser product called Trus Joist TJI joists. Those are an engineered wood product with an "I" shaped profile — flanges at the top and bottom with an engineered wood "web" connecting them in the center. The flanges are 1-1/2" wide and only 1-1/4" thick, so that is all the 3" lag screws holding the racks would grab. After penetrating the sheet rock and the flange more than an inch of the lag screws would be sticking out above the flange.

Weyerhaeuser publishes a technical bulleting on attachments to the TJI joist bottom flange with calculations of screw withdrawal capacities for screws as large as 1/4" lag screws. They do not provide capacities for 5/16" lag screws. The bulleting clearly states, "Loads applied and/or attached to the bottom flange must be accounted for in the design of the joist."

After reading the SafeRacks instructions I decided not to proceed with the installation. The racks would clearly not have the weight capacity shown for the required minimum 2" penetration (after sheet rock) into solid wood, and in my view, there is too much risk that they would be accidentally overloaded over time. They would not have the weight capacity shown on the SafeRacks instructions, and it is not apparent what weight capacity they would actually have.

Warren Deras

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