

Hydraulic Ladder Rack

The Problem

- General contractors and repair technicians use their work vans to transport tools and equipment to/from various worksites. With limited amounts of space the larger tools, such as ladders, are stored at suboptimal locations.
- Storing large ladders on the roof racks of the vehicle requires workers to lift and lower a large weight above the head, which places the worker at risk of back, shoulder and arm injury.
- Lifting of heavy objects overhead can put workers at risk of injury because of the weight of the ladder (often exceeding 50 Lbs) and the extended reach that is needed to handle the ladder.



Storing ladder on a traditional roof rack

One Solution

- Implementing a hydraulic ladder rack which repositions the ladder to the side of the vehicle enables workers to retrieve and store the load at a lower vertical height.
- The hydraulic drop down ladder rack eliminates the need for overhead lifting, which results in a reduced injury risk to the worker.



Storing ladder on a hydraulic drop down ladder rack

How It Works

- To unload a ladder using the hydraulic drop down ladder rack, the worker pulls the lever from the holder and swings the lever to rotate the ladder rack to the side of the vehicle. Next the worker lifts one end of the ladder out of the holder, lowering it to the ground, and then unhooks the opposite end.
- Loading a ladder onto the hydraulic ladder rack requires the worker to position the top portion of the ladder into the holder then swing the lower portion of the ladder up into the other holder. To raise the ladder rack onto the top of the truck the worker pulls the hydraulic lever up, with the ladder automatically locking into the rack once the lever is fully raised.

Benefits

- Using the drop down ladder rack lowers the compressive force on the back, as demonstrated by an ergonomic assessment comparing traditional and hydraulic ladder racks¹, which could lead to a reduction in back injuries.
- The arm elevation angle is also significantly decreased when using the hydraulic ladder rack. Reducing the vertical height from an overhead position to lifting the ladder to shoulder height lowers the risk of shoulder injury.

- A usability questionnaire comparing the traditional and hydraulic ladder rack found more than 75% of the respondents preferred using the hydraulic ladder rack, as they felt the physical effort to load/unload the ladder was decreased and the risk of slipping or falling while retrieving the ladder was reduced¹.
- The hydraulic ladder rack is also likely to lower slip and fall injuries since the rack lowers the ladder to the curbside, eliminating the exposure to traffic hazards, and the need to step onto the bumper of the van in order to reach the ladder or secure the ladder to the roof rack.

For More Information

- Products may also be found on the internet using the following search terms: “ergonomic ladder rack.”
- Local contractor tool and equipment suppliers or rental companies may be another source of information on products.
- Visit the IHSA website at: https://www.ihsa.ca/topics_hazards/msds.aspx

The information was developed as part of a project “Kramer, D., Bigelow, P., Vi, P., Garritano, E., Wells, R. Encouraging construction companies to adopt innovations to reduce MSDs using different knowledge transfer techniques. 2008-2011. Workplace Safety and Insurance Board (Ontario)”. In partnership with the Infrastructure Health and Safety Association of Ontario and CRE-MSD.

¹Vi. P, Garritano. E, Kramer. D, Wells. R, Bigelow. P & Carlin. N. (2007). A pilot Study Investigating Manual Material Handling of Ladders from Construction Service Vans. ACE Conference Proceedings.