

Straps and Rigging

A competent person must inspect all rigging (blocks, shackles, etc.) for damage, cracks or wear including wire and synthetic rope, straps, guylines and other lines before they are used. Repairs or replacements must be made before they are used. Wire rope must be taken out of service or repaired when there is evidence of chafing, sawing, crushing, kinking, crystallization, bird-caging, corrosion, heat damage, and other damage that weakens the rope.

A shackle must have a rated breaking strength greater than the rated breaking strength of the line that they are used with and the manufacturer's rated breaking strength of shackles must be used. The shackle pin diameter must be 1/8-inch larger than the indicated shackle size for shackles up to 1 3/4 inches and 1/4-inch larger than the indicated shackle size for shackles 1 3/4-inch up through 3 inches.



Safety pins must secure shackles used to hang blocks, jacks, or rigging on trees, anchor guylines and join guyline or deadman strap eyes. When skylines are attached with a shackle using a knockout pin, the pin must be one size larger than the skyline and secured with a molly, latchpin, or cotterkey large enough to retain the shackle pin.

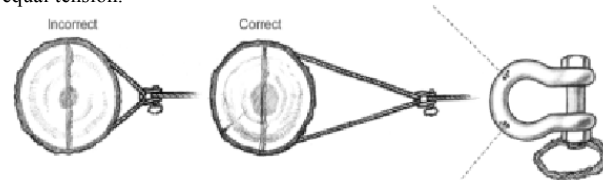
Sleeve shackle with "mollie" & knockout pin

Mollies must be rolled in with the lay of the line. Mollies must not be used to connect eyes of load-bearing lines.

Replacement shackle pins must meet the manufacturer's original specifications. Shackle pins and nuts must be replaced when the threads are worn or stripped, or when the original diameter is reduced by 15%. Sleeve shackles or choker bells must be used where choked lines are permitted. Sleeve shackles are required for guylines.

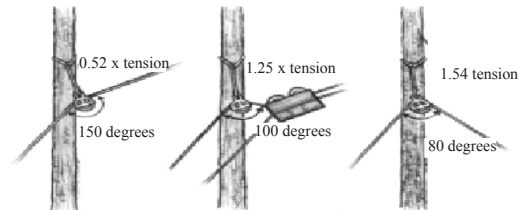
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Straps must be of the same or better material than the lines they support. After a strap is passed around an anchor and the two eyes are contained in the "U" part of the shackle, the angle created by the strap eyes must not be greater than 90 degrees. Another guide is that the shackle and eyes must not be closer than the same diameter of the anchor where the strap is attached. When a two part strap or two chokers are used to hang a block, jack, tree shoe, or rigging, both eyes or ends must be under approximately equal tension.



Straps or chokers are used at or near the ground or when rigging is hung in trees to hang or support blocks, jacks, tree shoes, or etc., straps must be sized in accordance with Tables in Div. 7, Forest Activities Code. When rigging is suspended in one eye of a strap, the strap must be sized larger than when it is hung in both eyes.

For straps hung in trees where the interior angle (smaller angles between where lines enter and leave the block) create excessive loading on the strap, additional precautions must be taken, such as using a larger strap, lightening loads, moving the carriage ahead on the line, and so forth to reduce the load on the strap.



Prepared by John J. Garland, PE, Oregon State University with financial support from OR-OSHA Training Grants