



WASHINGTON STATE LOGGER SAFETY INITIATIVE

Keeping Washington loggers safe.

Quarterly Logging Safety Training: Rigging Inspections

May 18, 2016

In an industry such as logging where it is crucial to make every turn count, taking a few minutes to inspect all rigging for potential failure can save hours and thousands of dollars in down time.

Proper inspection of rigging is one of the best ways to make sure that you are doing your part to help prevent accidents. Good crews take great pride in safety and will not allow themselves and other members of the crew to take short cuts or work in an unsafe manner.

Eventually all rigging wears out and it is extremely important that crews are putting their best foot forward to ensure that no one ever gets hurt as a result of not properly inspecting their equipment. This training combines business management best practices, the LSI Monthly Checklist items and state law requirements to follow when inspecting your equipment and rigging.

Train everyone to learn to look for cracks, excessive wear, and excessive bight in lines. Familiarize your crew with the rules and regulations and how to inspect rigging. The biggest mistake is thinking that someone knows how to inspect rigging without the proper training.

Washington State Laws and the LSI Accident Prevention Program require that the following guidelines are followed.

Rigging Inspections

When inspecting rigging, such as blocks, straps, guy lines, and butt rigging, ensure that it is being performed by a qualified person that is experienced and trained to identify defects, damaged, cracked, and worn-out parts. The qualified person must also inspect for loose nuts and bolts and ensure that elements are of proper size to withstand the stress of the pull. It is also a necessity that all normal maintenance such as lubricating parts is being performed.

Per the LSI APP, "Rigging must be inspected before each use. All necessary repairs or replacements must be made before the rigging is used."

Wire Rope

When inspecting wire rope it is important that the wire rope being used is of the same or better grade as originally recommended by the equipment manufacturer.

Per the LSI APP, "Make a very close check of those points subject to the most wear, including the knob ends of lines, eye splices, and those sections of line that most often run through blocks or carriages.

When in doubt, it is far safer to replace a suspect line, or cut out and replace a defective area, than risk a failure during operation. Evaluation of the load-bearing yarder lines must be stringent. A competent person must do the inspection.”

All wire rope must be removed from service when any of the following conditions exist:

- In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay;
- Wear of one-third the original diameter of outside individual wires. Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure, heat damage;
- In standing ropes (guylines), more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection;
- Corroded, damaged, or improperly applied end connections.

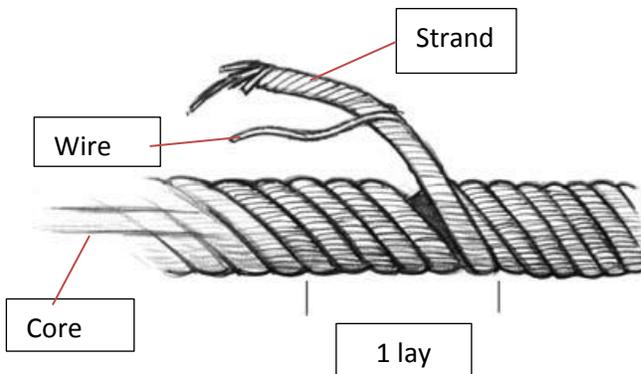


When inspecting running ropes look for the following:

- Broken wires - if six randomly distributed broken wires in one lay or three broken wires in one strand in one lay the rope or section must be taken out of service.
- Evidence of kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure.
- Indication of any heat damage from any cause.
- Reductions from nominal diameter may be cause to be taken out of service.

When inspecting standing ropes look for the following:

- Broken wires - if there is more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection the rope or section must be taken out of service. Sign of corroded, damaged, or improperly applied end connections.



Other areas to focus on:

What are the proper ways of spooling lines without damaging them?

What are ways to alter the skyline length to keep from pulling multiple times from the same spot?

When do we need to up end lines?

Shackles

Per the LSI App, "All shackles must be at least one size larger (breaking strength of the shackle must exceed the breaking strength of the line) than the lines they connect and made of forged steel or material of equivalent strength."

When inspecting shackles look for the following:

- Breaks, cracks, important to look closely around the eyes of the shackle
- Evidence of being exposed to heat (discoloration of the steel)
- Evidence of stress (crystallization of the steel)
- Disoriented shape from an abnormal pull or sprung shackle
- Ensure that the pin is in proper alignment with the eyes
- Replace pin when it has been reduced by more than 15%



On pressed eyes
check for wear
on end fittings



Common wear
spot is where the
eye meets the
shackle



Other areas to focus on:

What is the proper type of shackle to use in each application?

What is the shackle composed of?

Blocks

Per the LSI APP, “all logging systems must use enough corner or tail blocks to distribute the stress on anchors and attachments.”

When inspecting blocks look for the following:

- Look over blocks for cracks or excessively worn sheaves or shells.
- Ensure that blocks are fitted with line guards
- Inspect the yoke pins for wear and ensure that they are securely fastened.
- Ensure that block bearings are kept well lubricated.
- Confirm that all pins in blocks are properly secured by “Molle Hogans” or keys of the largest size the pin hole will accommodate.
- Ensure that there are not less than two bolts through the shells below the sheaves. This is to retain the sheave and line in case of bearing pin failure (this does not apply to haulback lead blocks).

Carriage and Grapple Inspections

When inspecting carriages and grapples assess the following:

Buttrigging and Drift Carriages

- Sheaves, bearings, and barrels
- Attachment points
- Shackles used to attach lines to carriage
- Butt hooks

Mechanical Slack Pullers and Grapples

- Sheaves & bearings
- Dropline wear
- Skyline clamps
- Hydraulic hoses and fittings
- Fluid level

Motorized Carriage

- Sheaves & bearings
- Dropline wear
- Skyline clamps
- Radios and horns
- Clear of oil and debris
- Fire extinguisher
- Spark arrester (if not turbo charged)

Climbing equipment Inspections

Standard climbing equipment must be furnished by the employer. However, the climber may use personal equipment, if it meets the requirements and is permitted by the employer.

Per the LSI Monthly Inspection Checklist, “remember that an extra set of climbing equipment must be kept at the jobsite and another person with climbing experience must be present. *Locate the gear before you go up, perhaps it’s stored in a pickup that is not on-site at that moment.*”

It is also important to know the history of your climbing equipment to ensure that it has never been stored outside where it was exposed to the elements (UV and/or rain), used to lift, lower, or pull something thus, damaging the integrity of the line. It is very important to know if the gear has never been shock loaded.

When inspecting climbing gear look for the following:

Climbing Saddle

- Burns, cuts, cracks, or tears
- Undone stretching
- Mildew
- Contacted with acid or other corrosion
- Broken stitching or excessive wear
- Bent, loose, or missing rivets
- Distorted or cracked buckles and D-rings
- Tongue does not bind on the buckle
- Buckle holes are not damaged
- Never alter a climbing saddle *such as add additional length to tongue in order to make it fit unless written permission is granted by manufacture*

Spurs

- Inspect straps for nicks, cuts, and wear & tear.
- Make sure buckles are in good condition and clasp.
- Check rings for crack and or breaks
- Ensure that all screws, nuts & bolts are tight
- If equipped make sure all pads are in place
- Inspect spurs to ensure that they are sharp

Climbing Rope

- Inspect for nicks, cuts, and abrasions
- Closely inspect all abrasions to the outer cover for broken wires beneath
- Check end connections for broken wires or rust
- Operate snap hoops to ensure they work correctly
- Inspect rope grabs to ensure that that all components are tight and are in good condition

Other areas to focus on:

Periodically inspect the condition of second set of climbing gear.

Before going up make sure the second set of climbing gear is accessible and on the job.

Applicable Logging Codes to reference:

Rigging Inspection	296-54-54710
Wire Rope	296-54-557
Blocks	296-545475
Climbing equipment	296-54-545
Shackles	296-54-54730

Applicable LSI guidelines to reference:

LSI Logging Accident Prevention Program