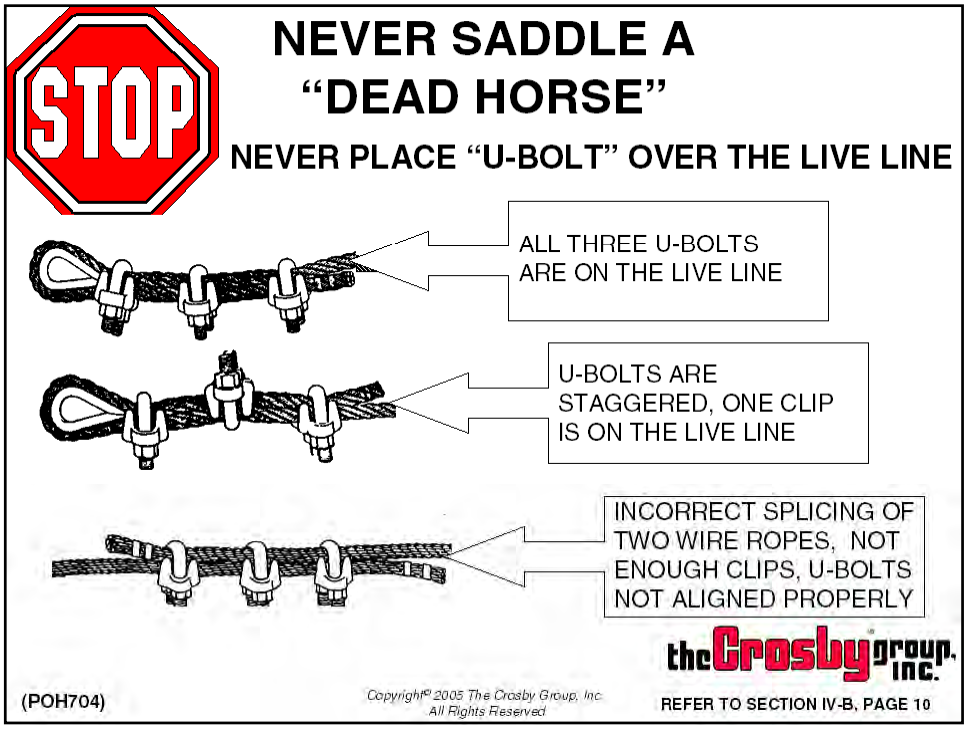
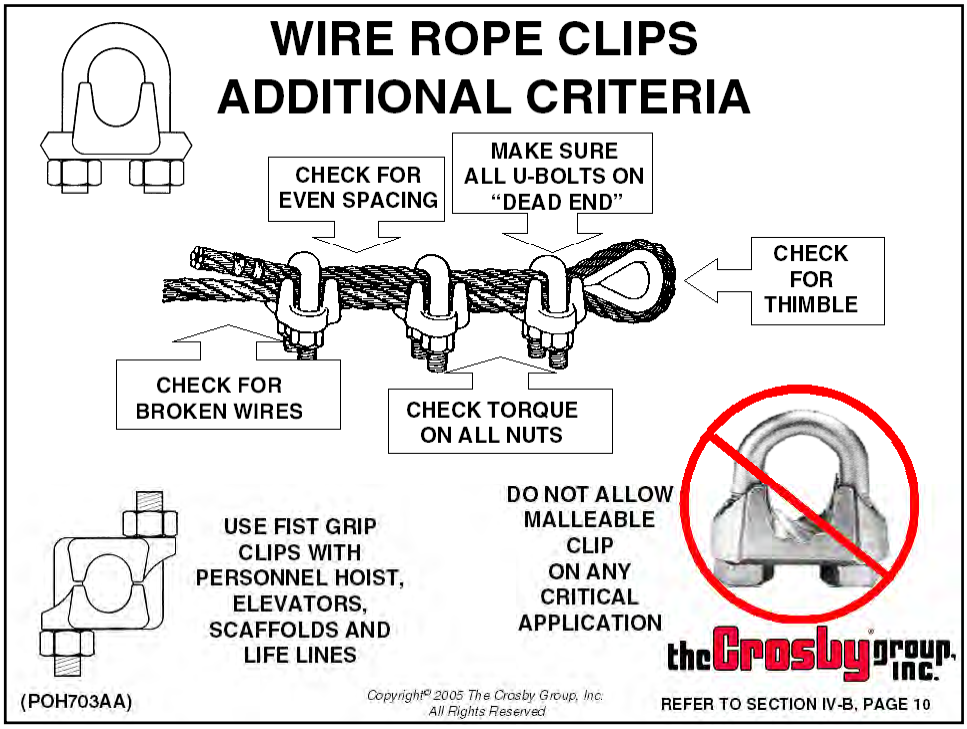
RIGGING INSPECTION

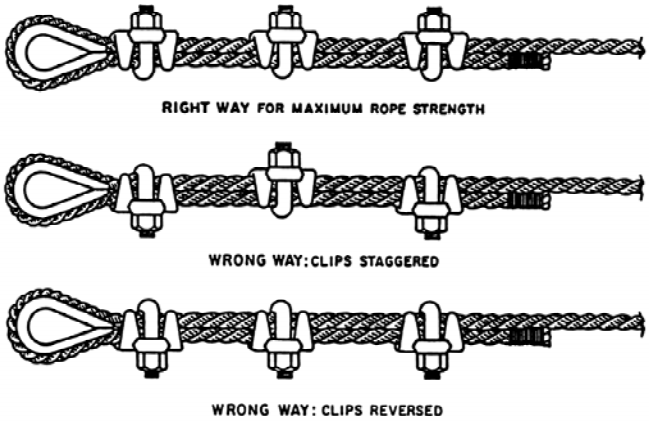
2017 NAARSO
Safety Seminar

Orlando, FL

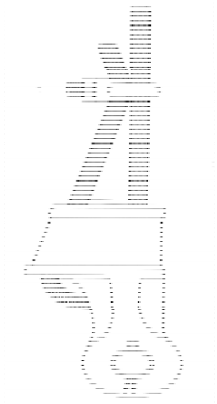




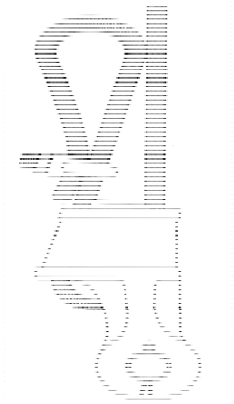
U-Bolt Clip Installation



Wedge Socket Installation



Incorrect



Correct

SLING INSPECTION AND RECORD KEEPING

Presented by C W Craven

INSPECTION FREQUENCY

- FREQUENT INSPECTIONS
  - By the user (competent person) each day or shift (written record not required)
  - Additional inspections during use as service conditions warrant (written record not required).
- PERIODIC INSPECTIONS – **Written Record Required.**
  - At intervals not exceeding 1 year. (frequency based on use)
    - Normal service – Yearly
    - Severe service – Monthly to quarterly
    - Special service – As recommended by a qualified person

Safe Operating Practices

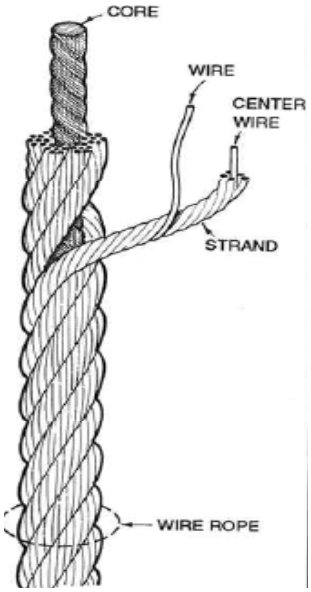
1. Slings that are damaged or defective shall not be used.
2. Slings shall not be shortened with knots or bolts or other makeshift devices.
3. Sling legs shall not be kinked.
4. Slings shall not be loaded in excess of their rated capacities.
5. Slings used in a basket hitch shall have the loads balanced to prevent slippage.
6. Slings shall be securely attached to their loads.
7. Slings shall be padded or protected from the sharp edges of their loads.
8. Suspended loads shall be kept clear of all obstructions.
9. All employees shall be kept clear of loads about to be lifted and of suspended loads.
10. Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around
the load.
11 Shock loading is prohibited.
12. A sling shall not be pulled from under a load when the load is resting on the sling.

Removal Criteria: Alloy Steel Chain ASME B30-9.1.9.4

a) Missing or illegible sling identification.
b) Cracks or breaks
c) Excessive wear, nicks, or gouges.
d) Stretched chain links or components
e) Bent, twisted, or deformed chain links or components.
f) Evidence of heat damage.
g) Excessive pitting or corrosion.
h) Lack of ability of chain or components to hinge (articulate) freely.
i) Weld splatter.
j) For hooks, removal criteria as stated in **ASME B30.10**
k) Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

Wire Rope Terms

The Core can be:
Fiber
Plastic
Another Strand
or even Another Rope
(WSC – IWRC)



Removal Criteria: Wire Rope Slings ASME B30.9-2.9.4

a) Missing or illegible sling identification.
b) Broken Wires (see additional)
c) Severe localized abrasion or scraping.
d) Kinking, crushing, bird caging, or any other damage resulting in damage to the rope structure.
e) Evidence of heat damage
f) End attachments that are cracked, deformed, or worn to the extent that the strength of the sling is substantially affected.
g) Severe corrosion of the rope, end attachments, or fittings.
h) For hooks, removal criteria at stated in ASME B30.10.
i) Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

Allowable Broken Wires in Wire Rope Slings ASME B30-9.2.4.9b

1) For strand laid grommets and single part slings:
   - 10 randomly broken wires in 1 rope lay
   - or 5 broken wires in 1 strand in 1 rope lay
2) For cable laid slings:
   - 20 broken wires per lay
3) For six-part braided slings:
   - 20 broken wires per braid (lay)
4) For eight-part braided slings:
   - 40 broken wires per braid (lay)

Removal Criteria: Wire Mesh Slings ASME B30.9-3.9.4

a) Missing or illegible sling identification.
b) Broken weld or a broken brazed joint along the sling edge
c) Broken wire in any part of the mesh.
d) Reduction in wire diameter of 25% due to abrasion or 15% due to corrosion.
e) Lack of flexibility due to distortion of the mesh.
f) Distortion of the choker fitting so the depth of the slot is increased by more that 10%.
g) Distortion of either end fitting so the width of the eye opening is decreased by more than 10%

Removal Criteria: Wire Mesh Slings ASME B30.9-3.9.4 (Continued)

h) A 15% reduction of the original cross-sectional area of any point around the hook opening of the end fitting.
i) Visible distortion of either end fitting out of its plane.
j) Cracked end fitting.
k) Slings in which the spirals are locked or without free articulation shall not be used.
l) Fitting that are pitted, corroded, cracked, bent, twisted, gouged, or broken.
m) Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

Removal Criteria: Synthetic Rope Slings ASME B30.9-4.9.4

a) Missing or illegible sling identification.
b) Cuts, Gouges, Areas of extensive fiber breakage along the length, and abraded areas on the rope.
c) Damage that is estimated to have reduced the effective diameter of the rope by more than 10%.
d) Uniform fiber breakage along the major part of the length of the rope in the sling such that the entire rope appears covered with fuzz or whiskers.
e) Inside the rope, fiber breakage, fused or melted fiber (observed by prying or twisting to open the strands) involving damage estimated at 10% of the fiber in any strand or the rope as a whole.
f) Discoloration, brittle fibers, and hard or stiff areas that may indicate chemical, ultraviolet, or heat damage.

Removal Criteria: Synthetic Rope Slings ASME B30.9-4.9.4 (Continued)

g) Dirt and grit in the interior of the rope structure that is deemed excessive.
h) Foreign matter that has permeated the rope and makes it difficult to handle and may attract and hold grit.
i) Kinks or distortion in the rope structure, particularly if caused by forcibly pulling on loops (known as hockles).
j) Melted, hard, or charred areas that affect more than 10% of the diameter of the rope or affect several adjacent strands along the length that affect more that 10% of strand diameter.
k) Poor condition of thimbles or other components manifested by corrosion, cracks, distortion, sharp edges, or localized wear.
l) Other visible damage that cause doubt as to the strength of the sling.

Removal Criteria: Synthetic Web Slings ASME B30.9-5.9.4

a) Missing or illegible sling identification.
b) Acid or caustic burns.
c) Melting or charring of any part of the sling.
d) Holes, tears, cuts, or snags.
e) Broken or worn stitching in load bearing splices.
f) Excessive abrasive wear.
g) Knots in any part of the sling.
h) Discoloration and brittle or stiff areas on any part of the sling, which may mean chemical or ultraviolet/sunlight damage.
i) Fitting that are pitted, corroded, cracked, bent, twisted, gouged, or broken.
j) For hooks, removal criteria as stated in **ASME B30.10**
k) Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

Removal Criteria: Synthetic Round Slings ASME B30.9-6.9.3

a) Missing or illegible sling identification.
b) Acid or caustic burns.
c) Evidence of heat damage.
d) Holes, tears, cuts, abrasive wear, or snags that expose the core yarns.
e) Broken or damaged core yarns.
f) Weld splatter that exposes core yarns.
g) Round slings that are knotted.
h) Discoloration and brittle or stiff areas on any part of the slings, which may mean chemical or ultraviolet/sunlight damage.
i) Fitting that are pitted, corroded, cracked, bent, twisted, gouged, or broken.
j) For hooks, removal criteria as stated in **ASME B30.10**
k) Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

PROOF TEST REQUIREMENTS

- After any repair (ex. replacement of ID tag).
- Any new sling with used or welded fittings.
- New chain slings
- New wire rope – Only poured or swaged sockets, turnback eye, mechanical joint, and endless wire rope slings.
- OSHA wants to see cert. (B30 not req.)

RECORDKEEPING

- Required Documents to be Maintained:
  - Periodic Inspection Records
    - Include condition of sling
    - ASME B30 & OSHA
  - Proof Test Certificates
    - OSHA
- Document Retention
  - Most recent periodic inspection + proof test certs.
  - Life of the sling
  - Accident / Litigation
  - Owners document retention policy.