

Unit 001: Engineering and environmental health and safety

Lifting equipment



Starter activity

What are the two pieces of legislation or regulations that cover the lifting of loads and lifting equipment?





LOLER

(Lifting Operations and Lifting Equipment Regulations) 1998

PUWER

(Provision and Use of Work Equipment Regulations) 1998

Two Types of Slings



Steel slings



Synthetic slings

Chain Slings



Only chain slings purchased from the manufacture are allowed.

No homemade slings allowed!!



Chain Sling Inspections

Check for:

- Cracks, Stretched, nicks, gouges, welding splattered or deformed master links
- One leg of a double or Triple chain sling is longer than the others.



Chain Sling Inspections

Check for:

- Hooks have been opened more than 25% of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.
- Chain size at any point of a link is less than the normal.



Wire Rope Slings



Soft Eye Hand Spliced



Thimble Eye Hand Spliced



Soft Eye Machine Swaged



Thimble Eye Machine Swaged



Steel Ferrule Machine Swaged



Closed Swag Socket



Wire Rope Sling Inspections



Check for:

- Three randomly distributed broken wires in one strand, in one rope lay.
- Wearing of 1/3 of the original diameter of outside individual wires.



Wire Rope Sling Inspections



Check for:

- Kinking, crushing or any damage resulting in distortion of the wire rope.
- End attachments that are cracked, worn or deformed.
- Corrosion of the rope or end attachments.



Polyester Slings



Synthetic Sling Inspection



Check for:

- Acid or caustic burns on the sling.
- Melting or charring of any part of the sling's surface
- Snags, punctures, tears or cuts
- Stitch is broken or worn
- The sling has been stretched (Check the **red wear cord**)



Special Precautions

- Chain slings should never be modified or repaired by operators.
- It is important to realise the capacity of a sling decreases as the angle at which it is used to lift increases.



Load Capacity and Sling Angles

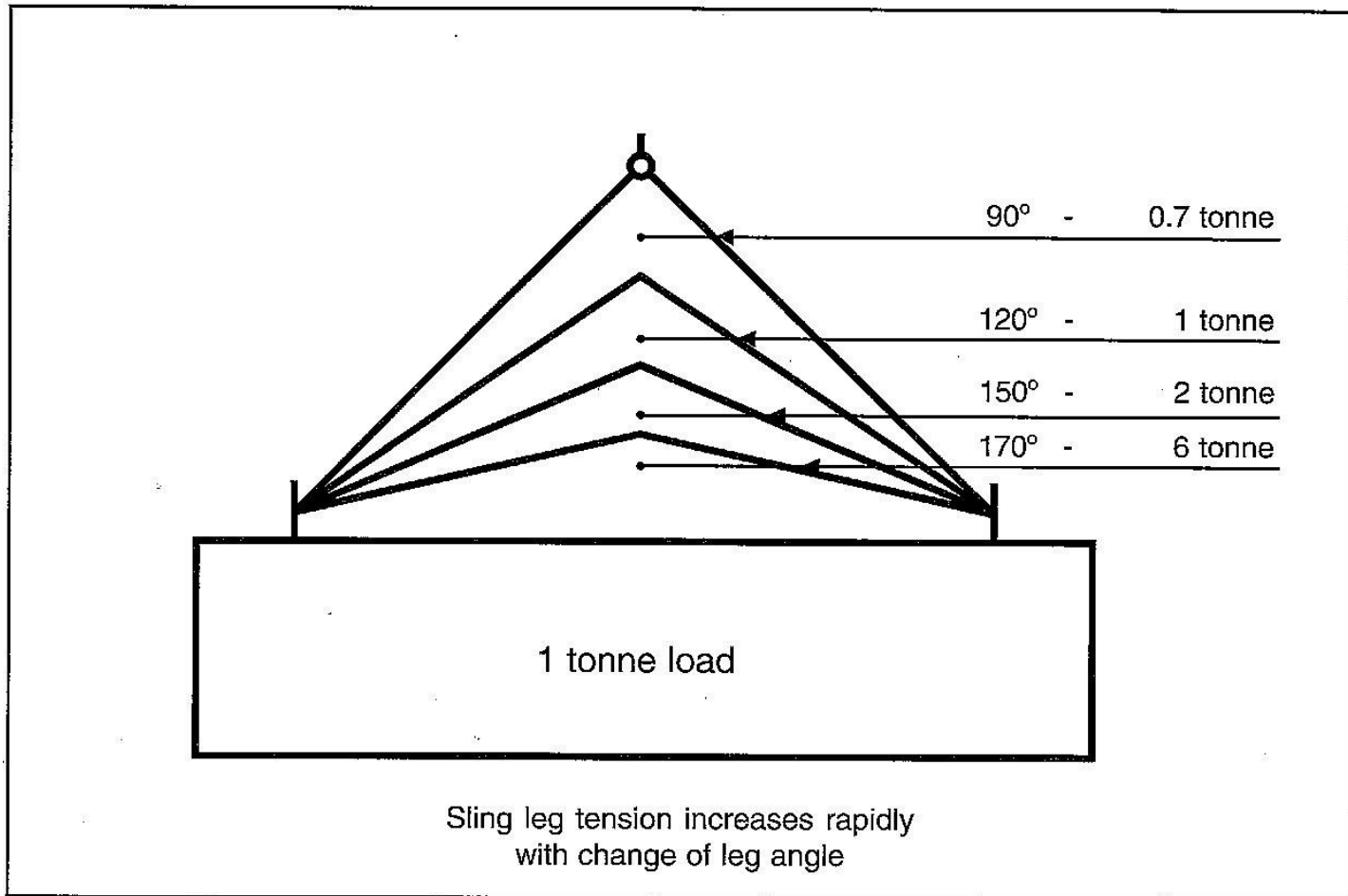
The load capacity of the sling is determined by its weakest component

Never Overload a Sling

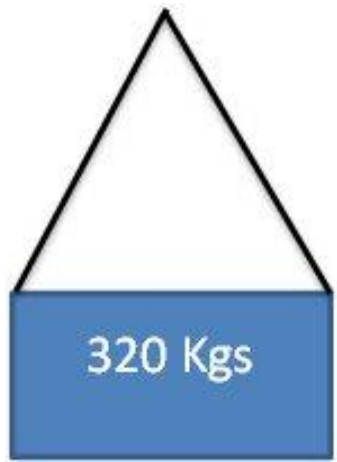
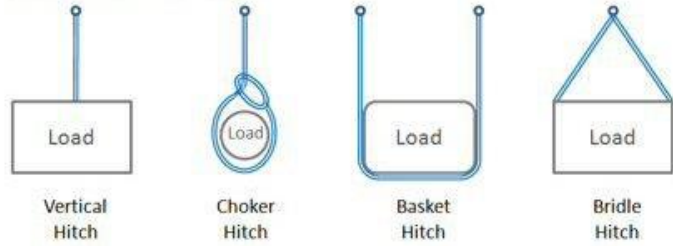
Remember, the wider the sling legs are spread apart, the less the sling can lift.



Margin of Safety



Hitches



Equipment covers

Pull lifts



Tirfors



Tirfor in use



GRIPHOIST TIRFOR TU

www.AllHandsFire.com/HEAVY-DUTY-RANGE-GRIPHOIST



Equipment covers

Chain blocks



Eyebolts and 'D' links



Safe usage Practices



- ***Never drag slings*** across the floor.
- Slings should be stored ***off the floor*** and in a clean, dry place.
- Always hook with a closed hook arrangement with hooks facing out.
- ***Never shock load slings***
- Keep loads balanced to ***prevent overloading slings***



Safe usage Practices



- Always lift loads ***straight up***
- Never ***rest a load on a sling***, or pinch a sling between the floor and the load
- A sling should not be ***pulled from under a load*** when the load is resting on the sling
- Make sure the hook is always over the centre of gravity of the load before lifting it



Safe usage Practices



- Do not apply a load to a ***twisted, knotted or kinked*** chain
- Do not force or ***hammer hooks*** or chains into position
- Hands and fingers shall not be placed between the sling and the load while the sling is being tightened around the load



Safe usage Practices



- ***Clean chains regularly*** as dirt and grit can cause excessive wear at the link bearing points
- Never shorten a sling with knots, bolts or other ***makeshift devices***
- ***Protect the chain's surface*** from contact with sharp corners, which can cause permanent damage through gouging or abnormal stress and wear



Conclusions

- 1. Select the right sling for the job***
- 2. Inspect slings prior to use, removing from service any in question***
- 3. Remember the effect of sling angles on the load capacities***
- 4. Properly store slings when finished to avoid damage***



Assessment for learning

You need be able to know what equipment to use on a lift.

Completing H&S WS054 will help reinforce your knowledge on the topic in line with H&S VID016?

