Chain and Sling Safety

WHAT’S AT STAKE?

The slings that cranes use to hold suspended loads are a key element in this kind of material handling.

The size and type of load and the environmental conditions in the work area determines the type of sling to use.

WHAT’S THE DANGER?

For cranes and slings to perform properly, they have to be in top condition. So, good inspection and maintenance are especially important. A substandard or faulty chain or sling can injure or kill. It is critical that chains and slings conform to specifications at all times.

GENERAL HAZARDS

There are two main hazards when we use cranes and slings:

1. Dropping the load.
2. Hitting someone with the load or the equipment.

Avoid damaging the load or the equipment itself. That can be very costly both in terms of equipment repair and replacement and in ability to meet our productivity and quality goals.

These hazards are present any time you skip a step or ignore a problem at any point in the inspection, maintenance and use of this equipment. To avoid danger to the operator and others in the crane’s vicinity, understand the safety procedures and follow them closely.

Identify Hazards

The best way to identify a crane and sling hazard is to keep your eyes open. Anyone who works around an operating crane has to be constantly aware of its movements. Stay out of the way of the machine and its moving parts. If the operator sounds the crane’s warning signal, get out of the way fast. It’s also a good idea to become familiar with the crane signalman’s hand signals. They’re much like the ones used by traffic cops and can alert you to the crane’s movement.

HOW TO PROTECT YOURSELF

All slings (new, altered, modified, or repaired) should be inspected by a competent person before they are used in the workplace to make sure they are built to specifications, not damaged, and will be appropriate for the work being performed. For record keeping purposes it is useful if each chain has a metal tag with an identification number and load limit information. Information about the chain length and other characteristics and an inspection schedule should be recorded in a log book.

A competent person must also inspect chain slings periodically, and at least once a year. Inspection frequency is based on how often the sling is used, the types of lifts being performed, the conditions in which the sling is being used, and past experience with service life of similar slings and usage. If the sling is used in more severe conditions, then the inspection should be performed every 3 months. Inspections must be recorded.

Use chain slings safely

- Always know how to properly use the equipment, slinging procedures before attempting the lift operation.
- Inspect the slings and accessories before use for any defects.
- Replace broken safety latches.
- Find out load weight before lifting. Do not exceed rated load of the sling.
- Check whether chain slings fit freely. Do not force, hammer

or wedge chain slings or fittings into position.
- Keep hands and fingers from between load and chain when tensioning slings and when landing loads.
- Ensure the load is free to be lifted.
- Make a trial lift and trial lower to ensure the load is balanced, stable and secure.
- Balance the load to avoid overstress on one sling arm or the load slipping free.
- Lower the working load limit if severe impact may occur.
- Pad sharp corners to prevent bending links and to protect the load.
- Position hooks of multi-leg slings facing outward from the load.
- Cordon off the area.
- Reduce the load limit when using chain in temperatures above 425°C (800°F).
- Store chain sling arms on racks in assigned areas and not lying on the ground. The storage area should be dry, clean and free of any contaminants which may harm the sling.

Care

- Chain requires careful storage and regular maintenance.
- Store chain slings by hanging.
- Oil chains to avoid corrosion before prolonged storage.
- Do not heat alloy chain as this will alter its molecular structure and strength.

USE

To protect both operators and materials, observe these precautions when using chain slings:

- Before each use, inspect chain and attachments for damage.
- Do not exceed working load limit. Any of the following factors can reduce the working load limit of the sling:
- Shock loading can produce dangerous overloading.
- Angle of inclination of sling in relation to the load will affect the working load limit of the sling. As the angle

decreases the force exerted by the load increases.
- Twisting, knots or kinks subject links to unusual stress decreasing the strength of the sling.
- Using slings for purposes other than that which they are designed for can reduce the strength of the sling.
- Free chain of all twists, knots and kinks
- Properly load hooks so that point loading of hook does not occur.
- Hook latches must never support load.
- Avoid sudden jerks when lifting or lowering loads
- Balance all loads: avoid off center loading that could cause load to shift during lift.
- Pad around sharp and square corners.
- Do not drop loads on chain or attachments.
- Block under all loads to avoid crushing chain.
- Match all attachments (hooks, rings, etc.) to working load limit of chain.
- Never force or hammer hooks or chain into position.
- Do not use in acid solutions
- Clean chain slings regularly as dirt and grit can cause wear at link bearing points
- For overhead lifting use only grade 80 or higher alloy chain.

CHAIN AND SLING OVERVIEW

The following is a point key point **“Hand Book”** that users toil and personnel who toil in the chain and sling workplace.

DO’s. These are preventative and precautionary guidelines that must be strictly adhered to.

DO´s

- Always fasten the sling or chain to a rigid, fixed point on the load. In some cases, temporary eye hooks may be fastened to the load.
- While hoisting and carrying a load, always try to ensure it is centered. This will help minimize an awkward center of

gravity or shift of the load which could increase strain on the chain or sling.
- Always ensure hooks have a clasp to avoid inadvertent slipping of the hook.
- Inspect the condition of the chains and slings for link damage, cracking, separation, fraying, etc. Some slings are designed so that any exposed red material means the sling should be replaced.
- Understand the rated load for the chain, sling, or hook. Hooks are usually stamped accordingly.
- If you cannot read the rated tag on a sling, take the sling out of service.
- If the chain does not have an affixed tag, remove it from service to be inspected and tagged.
- Make sure there is a routine inspection for preventative maintenance for the chains and slings.

2 Critical DONT’s

- NEVER stand directly underneath a load- You cannot always trust that the sling or chain will support a load.
- NEVER modify or improperly use chains, slings, or hooks; use them only for their intended purpose.

FINAL WORD

Apart from a careful and competent inspection process of the chain and sling infrastructure, the working load weight limit must be not be exceeded in any circumstances.