Pre-use visual inspection of lifting chains

Pre-Use Visual Inspection
Visual pre-use inspections of lifting chains and components for log trailer lifting.

Introduction

WHAT'S THE PURPOSE OF THIS GUIDE?

This guide is designed to help keep your people safe by offering guidance on best practice for pre-use inspection of lifting chains and components.

Daily or Pre-use inspection of lifting equipment doesn't negate the need for the regular annual inspection, testing & certification by a third-party provider such as Cookes.

WHAT WILL THIS GUIDE COVER?

- ✓ General information on lifting chains
- ✓ Inspection frequency
- ✓ Best practice when performing a visual inspection
- ✓ Compliance criteria for lifting chains
- ✓ Staying compliant

Lifting chains

There are many different types of chains and fittings designed and manufactured for specific purposes. Where your chains are being used in lifting applications, you should always use clearly marked and rated grade 80, 100, or 120 lifting chains.

BUT WHAT'S THE DIFFERENCE?

While all the above chain grades are designed for lifting their strength and weight properties differ, offering better handling and higher strengths.

Grade 80

Has been the choice of many users for over 40 years and offers the widest range of matching strength component items Standard features include:

- ✓ Wide range of available sizes and components
- ✓ High strength to weight ratio
- ✓ Safe for overhead lifting and general purpose lifting slings

Grade 100

Developed in Europe in the late 1990s, and standard features include:

- ✓ Approximately 25% higher Working Load Limit (WLL) than Grade 80
- ✓ Wide range of available sizes
- ✓ Higher strength to weight ratio than Grade 80
- ✓ Safe for overhead lifting and general purpose lifting slings

Grade 120

Developed in Europe in the mid-2000s, the German manufactured Rud ICE-120 chain, and components offer several unique features:

- ✓ 50% higher Working Load Limit (WLL) than Grade 80 lifting chains of the same diameter
- ✓ ICE-120 chain and components dynamically loaded to 20,000 cycles at 1.5 times WLL
- ✓ Double the impact toughness of Grade 80 chain to EN 818
- ✓ 30% better surface hardness than Grade 80

Visual Inspection

Visual inspection is an essential step when using lifting equipment and should be performed before every use to determine the condition and safety of your gear. If you have any concerns about the safety or condition of your equipment you should cease use and have it looked at by a third party inspection, testing and certification provider such as Cookes.

The following advice on pre-use visual inspection and discard should not replace mandatory periodic inspection, testing and certification.

Clean equipment

Prior to an inspection, you should ensure the equipment is clean and free from dirt, oil and road film. This ensures the chain is easy to inspect, and nicks, gouges, bent links, stretched chain links and hammerlocks are not hidden.

Check tag legibility

Ensure equipment serial numbers, name of manufacturer, size, grade, working load limit and reach all correspond to the original chain certification when the equipment was manufactured, tagged and supplied.

Measure chain length

Measure the reach of the chains to make sure they correspond to the values stamped on the identification tag. If one or more chains are longer, there is a possibility that the chain has been subjected to overloading or excessive wear.

The methods used to lift log trailers often lead to shock loading, stretching the chains & causing excessive wear. For this reason, chains must be measured during pre-use inspection.

Link-by-link inspection

Make a link by link inspection of the chain looking for:

1. Excessive wear.
2. Twisted, bent or cut links.
3. Cracks in the weld area or any portion of the link.
4. Nicks or gouges - see following pages for info on nicks and gouges.
5. Stretched links
6. Severe corrosion
7. Any degradation or deformation

Figure 1 - nicked and gouged links

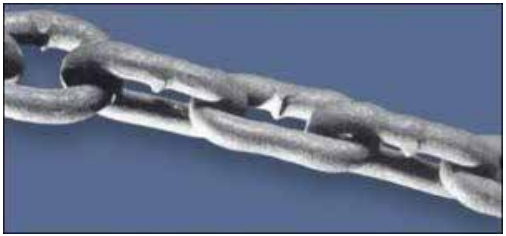


Figure 2 - Stretched chain links

Figure 3 - Bent and twisted links

Rings & Hammerlocks

Inspect Rings and Hammerlocks for:

1. Bent & Cracked links
2. Wear or elongation
3. Retaining rings are in the Hammerlocks
4. Spread or distorted fittings
5. Correct rigging of rings into hammerlocks

Anchor Points

Check achor points for

1. Bend or wear
2. Cracking welds around the anchor point

Check for nicks, gouges & wear

During regular use of lifting, pulling or securing loads, your chains can come into contact with other material and surfaces leading to external wear and damage. Nicks, gouges and other wear often occur on the sides of chain links, creating a potentially dangerous situation.

The design of the chain link generally protects tensile stress areas against damage (fig 1). However, gouges and nicks can cause localised increases in link stress and can be hazardous if located in areas of high tensile stress.

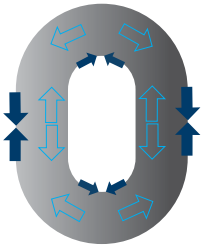


Figure 1 - the pattern of tensile and compression stress

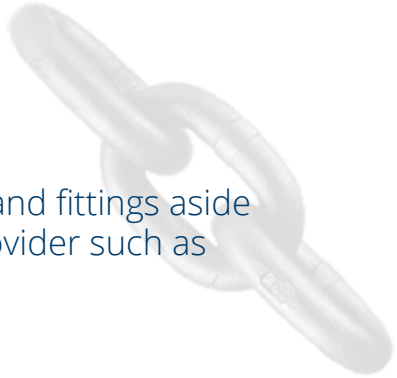
Figure 2 shows nicks of various degrees of severity. At three o'clock there is a longitudinal mark in a compressive stress area. Given this is located in a compressive stress area, its impact is reduced.

At about five o'clock, there is a deep, transverse nick in an area of high shear stress. A similar nick is located at six o'clock. Both in a zone of maximum tensile stress.

Figure 2 - location of nicks indicate the severity

Both of these nicks create a hazardous situation and should be inspected and tested by a trained professional before use.

Tag the equipment out



Where your equipment fails your pre-use inspection, set the chains and fittings aside (DO NOT USE) for inspection, testing by an accredited third party provider such as Cookes.

Maintenance & Repair

Our LEEA trained and accredited mobile technicians are capable of undertaking routine maintenance and repair of your equipment, ensuring you get back on the road and keep the NZ forestry sector moving.

Asset Management

Keep your people safe, ensure your peace of mind and maintain effective operations with Cookes' Asset Management and Compliance service.

Our cloud-based asset management system, BriCert, provides the ideal way to manage and certify your lifting, rigging, height safety and load restraint assets. BriCert allows you to; manage your assets across multiple locations, have an up to date registry of your assets and obtain guidance on discard criteria according to relevant standards.

> **Good asset management will keep your people safe & save you time and reduce the total cost of compliance.**
>
> ~Rob Smit - Business Manager - Services

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