QUALITY ASSURANCE REPORT

Safe and Secure

Abstract

The objective of the thorough examination is to check whether the equipment is fit for the coming period of service. Implicit in this is the objective that, given normal wear and tear and the forecast usage

Rigging hardware thorough examination guidance

This examination report follows ASME, and LEEA thorough examination guidance to obtain the best practices used around the globe. This report demonstrates a thorough examination of rigging hardware material before using new equipment and discarding criteria of rigging hardware.

1.0 OBJECTIVE OF THE EXAMINATION SCHEME

The objective of the thorough examination is to check whether the equipment is fit for the coming period of service. Implicit in this is the objective that, given normal wear and tear and the forecast usage of the equipment, it should still be safe to use at the end of the period of service.
Clearly unforeseen events may occur which render the equipment unsafe and LOLER makes provision for such eventualities by requiring inspection at suitable intervals between thorough examinations. The LEEA has long recommended the inspection of lifting equipment before each use, particularly lifting accessories which can easily be damaged if misused.
The examination scheme should therefore ensure that all parts of the equipment upon which safety depends are thoroughly examined by appropriate means and at such frequency as will allow defects to be detected and remedial action taken before the equipment becomes dangerous.

All inspections shall be performed by a designated person. Any deficiencies identified shall be examined and a determination made by a qualified person as to whether they constitute a hazard.

1.2 Initial Assessment

The initial step to start any inspection of lifting equipment is to analyze the condition of the equipment service, for instance,

- Older equipment may need more frequent monitoring particularly if fatigue or corrosion is beginning to set in. Additional tests, measurements, or NDT techniques may be required at certain stages of its life.
- It may be possible that equipment with a defect can continue to be used until a repair can be made subject to more frequent or stringent monitoring

1.3 Environment conditions

- Weather conditions if used outdoors including exposure to wind, rain, and low temperatures;
- Corrosive environments such as salt water, exposure to fumes, chemicals, and high temperatures;
- The risk to the environment by the equipment e.g. explosive atmospheres;
- The effect of such environments on key components particularly whilst not in use e.g. brakes;

- Does the load affect the lifting machine e.g. a hot load
- Is it a well-controlled lift or shock conditions and overload possible

2.0 Shackles

There are, in the main, three types of shackles used for lifting: the bow, dee, and grab types. They are normally forged from various grades of steel, the higher quality alloy steels giving, size for size, a higher working load limit than those made in higher tensile steels, and correspondingly higher tensile steel shackles have a higher working load limit than those made in mild steel.

2.1 Frequent inspection

- A visual inspection shall be performed each shift before the shackle is used. Rigging hardware in semi-permanent and inaccessible locations where frequent inspections are not feasible shall have periodic inspections performed.
- Conditions such as those listed in removal criteria or any other condition that may result in a hazard shall cause the shackle to be removed from service. Shackles shall not be returned to service until approved by a qualified person

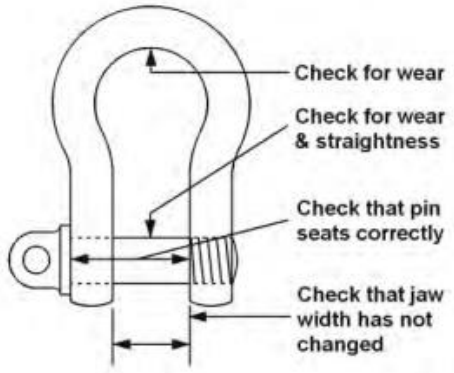


Figure 1 frequent and periodic inspection Areas

2.2 Interim inspection

In addition to the thorough examination and pre-use inspection, some shackles will require an interim inspection(s). The number, frequency, and extent of the interim inspections are based on a risk assessment taking into account the possibility of deterioration of components or assemblies due to the

specific conditions of use, to ensure that defects are identified and remedied before they become a danger to persons.

Periodic inspection intervals shall not exceed 6 months to 1 yr. The frequency of periodic inspections should be based on

- Frequency of use
- The severity of service conditions
- Nature of lifting or load-handling activities
- Experience gained in the service life of

2.3 Removal criteria

Shackles shall be removed from service if conditions such as the following are present and shall only be returned to service when approved by a qualified person:

- missing or illegible identifications (SWL, ID, Grade)
- indications of heat damage, including weld spatter or arc strikes
- excessive pitting or corrosion
- bent, twisted, distorted, stretched, elongated, cracked, or broken load-bearing components
- excessive nicks or gouges
- a 10% reduction of the original or catalog dimension at any point around the body or pin
- incomplete pin engagement
- doubtful shackles may proceed for NDT

3.0 Hooks

Hooks shall be forged, cast, stamped, or welded, and heat treated by the manufacturer. Shank hook-securing devices shall have thread or shank diameter and length as recommended by the manufacturer or qualified person. The hook shall be designed to withstand all stresses imposed under normal operating conditions while handling loads within the rated load. The hook design factor shall, as a minimum, conform to those specified for the equipment or system in which the hook is a component.

All inspections shall be performed by a designated person. Any deficiencies identified shall be examined and a determination made by a qualified person as to whether they constitute a hazard. Inspection procedure and record-keeping requirements for hooks in regular service shall be governed by the kind of equipment in which they are used. When more stringent requirements for hooks are stated in the standards for the specific equipment, they shall take precedence over the following.

3.1 Frequent

Frequent inspections shall include observations during operation. A visual inspection shall be performed for conditions listed in (the removal criteria) .

Semi-permanent and inaccessible locations where frequent inspections are not feasible shall have periodic inspections performed at a frequency as determined by a qualified person.

The inspection intervals should be based on

(1) frequency of hook use

(2) severity of service conditions

(3) nature of load-handling activities

(4) experience gained on the service life of hooks used in similar circumstances

(5) guidelines for the time intervals

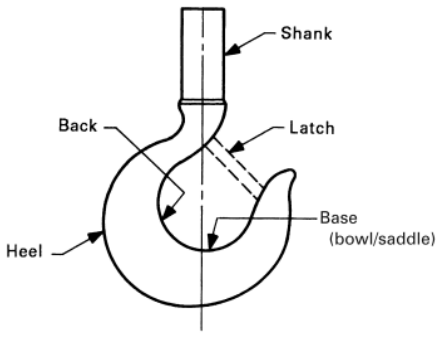


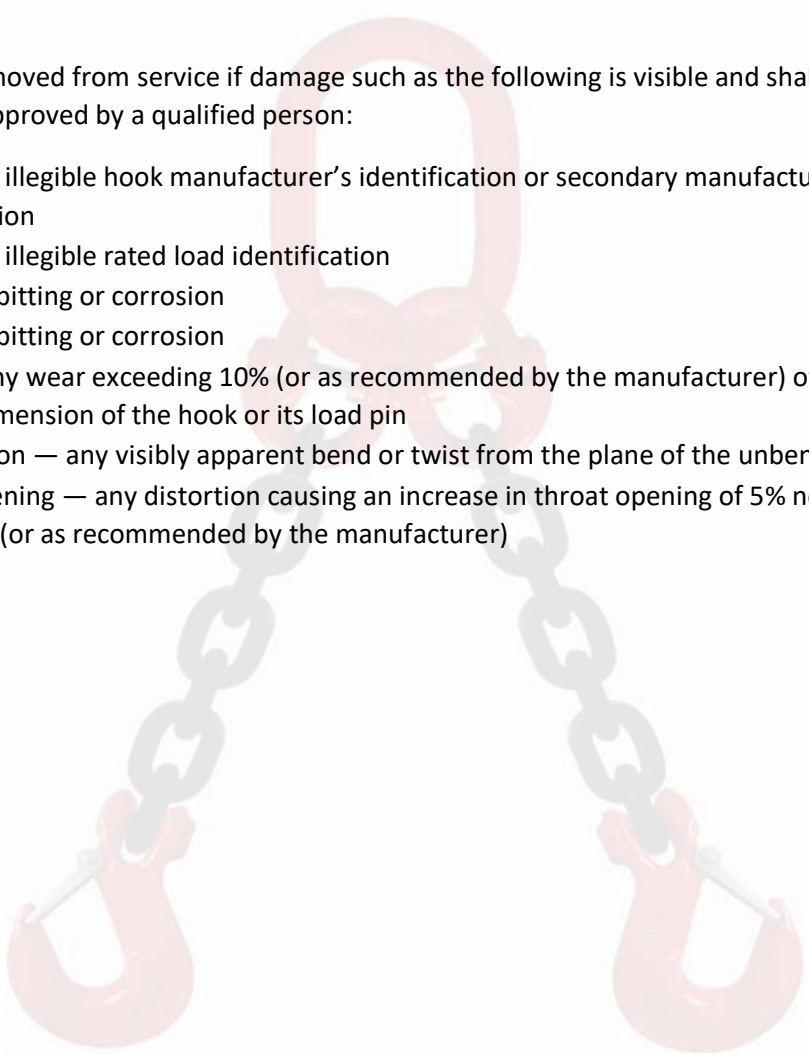
Figure 2 hook description

Prior to use, all new, altered, modified, or repaired hooks shall be inspected to verify compliance with the applicable provisions of this Volume

3.2 Removal criteria

Hooks shall be removed from service if damage such as the following is visible and shall only be returned to service when approved by a qualified person:

- missing or illegible hook manufacturer's identification or secondary manufacturer's identification
- missing or illegible rated load identification
- excessive pitting or corrosion
- excessive pitting or corrosion
- wear — any wear exceeding 10% (or as recommended by the manufacturer) of the original section dimension of the hook or its load pin
- deformation — any visibly apparent bend or twist from the plane of the unbent hook
- throat opening — any distortion causing an increase in throat opening of 5% not to exceed 1⁄4 in.(6 mm) (or as recommended by the manufacturer)



4.0 Chain slings

chain slings are manufactured with Grade80 and Grade100 alloy steel chain slings shall be fabricated in accordance with accordance to standards globally used ASTM, EN) For fabrication of endless slings, only welded or mechanical coupling links suitable for the purpose and recommended by the link manufacturer or a qualified person shall be used.

The safety factor for alloy steel chain slings shall be a minimum of 4.

4.1 Frequent inspection

A complete inspection of the sling shall be performed. Each link and fitting shall be examined individually, taking care to expose and examine all surfaces, including the inner link surfaces. Slings found with conditions such as those listed in (removal criteria) shall be removed from service. Slings shall not be returned to service until approved by a qualified person. Periodic inspection intervals shall not exceed 1 year the frequency of periodic inspections should be based on

4.2 Removal criteria

An alloy steel chain sling shall be removed from service if any of the following conditions are present:

- missing or illegible sling identification
- cracks or breaks
- Excessive wear, nicks, or gouges. The minimum thickness on chain links shall not be below the values listed in
- Stretched chain links or fittings.
- Bent, twisted, or deformed chain links or fittings.
- Evidence of heat damage.
- lack of ability of chain or fittings to hinge (articulate) freely
- wear on the chain sling shall not exceed more than 8%
- The seized chain connectors can be indication for overloading.

SAFE & SECURE TRADING CO.
Rigging, Industrial and Project Supplies
P.O. Box 69493 - Dammam 31547 - Kingdom of Saudi Arabia
C.R. # 2050048669
VAT # 311304139300003

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شركة السلام والامان التجارية
توريد أدوات و تجهيز كافة المشاريع الصناعية
ص.ب : ٦٩٤٩٣ الدمام ٣١٥٤٧ - المملكة العربية السعودية
س.ت : ٢٠٥٠٠٤٨٦٦٩
الرقم الضريبي : ٣١١٣٠٤١٣٩٣٠٠٠٠٣

Report of thorough examination

Date of a thorough examination	Date of Report:	Report number:			
Name and Address of employer for whom the thorough examination was made		Address of premises at which the examination was made			
Description and identification of the equipment:					
Date of manufacture if known:	Date of last thorough examination:				
Is this the first examination after installation or assembly at a new site or location?		Yes		No	
If the answer to the above question is yes has the equipment been installed correctly?		Yes		No	
Was the examination carried out					
Within an interval of 6 months?		Yes		No	
Within an interval of 12 months?		Yes		No	
In accordance with an examination scheme?		Yes		No	
After the occurrence of exceptional circumstances?		Yes		No	
Is the above an existing or imminent danger to persons **Note*-This is a reportable defect		Yes		No	
Identification of any part found to have a defect which is or could become a danger to persons and a description of the defect: (If none state NONE)					
Particulars of any repair, renewal or alteration required to remedy the defect identified above:					
Particulars of any tests carried out as part of the examination: (If none state NONE)					

IS THIS EQUIPMENT SAFE TO OPERATE?	Yes	No	If no state the observation
Name & Qualifications of the person making this report:	Signature:	The Latest & next thorough examination must be carried out:	