LIFTING TACKLE INSPECTIONS – WHY, HOW AND BY WHO?

INTRODUCTION

- Lifting tackle, also referred to as loose lifting gear, must be inspected at regular intervals to ensure safety in the work place, as well as for the user to be legally compliant.
- Additional legal requirements are proper sling and component traceable markings, correct certification, keeping of proper records as well as storage.
- It is also a legal requirement to only use lifting tackle that conforms to acceptable quality standards such as SANS, DIN, EN or other ISO aligned standards.

WHY INSPECT?

- The OHSA lifting equipment requirements are specified in DMR 18.
- Inspection requirements are covered in DMR 18.10 (e) which specifies visual inspections of lifting tackle in use at regular intervals not exceeding three month periods.
- Although the Lifting Equipment Regulations of the MHSA do not specify inspections parameters, it is up to Mine Management to include these requirements in their written operating procedures and implement accordingly.
- Some users inspect monthly or even weekly, but three months is the accepted norm, not only for lifting tackle but also for hoists, including chain blocks, lever hoists and electric or air hoists.

HOW TO INSPECT

- Inspections must be conducted in accordance with scheduled maintenance schedules and procedures.
- The results of these inspections must be recorded properly in an inspection register or file, which needs to be kept on the user's premises, and available for scrutiny by auditors or other interested parties.
- These registers must contain proper check lists that specify what the Inspector must look for on each separate item of lifting tackle that he inspects.
- It is not good enough to simply put a tick mark or cross on a checklist or, simply state “suitable for use, or not”, on a generic check list.
- Apart from the Inspection Register, the User also needs to have an up to date Inventory of all lifting tackle on site, as well as Certificates of Test or Certificates of Conformance, for each item in use.

WHO DOES THE INSPECTION?

- Firstly, lifting tackle does not have to be inspected by a registered LMI but can be inspected by a contracted service provider, normally a supplier, or an in house appointed Inspector.
- This person is referred to as the LTI, and should be appointed by management in writing. His appointment should be based on his experience, skills and knowledge of lifting tackle inspection requirements.
- It must be stressed that lifting tackle must not be load tested once it has been put into use. This practice is not recommended as the User is not allowed to subject lifting tackle to a load in excess of the OEM’s WLL.
Therefore load testing a sling in use is not recommended and serves no purpose if one considers the applicable factors of safety, which varies from 4:1 for alloy chain, to 7:1 for webbing slings.

Lastly, if service provider’s LTI’s are used, their appointments, from the service provider, should also be scrutinized.

Also no SANS exists for testing slings in use.

GUIDE TO LIFTING EQUIPMENT TESTING AND INSPECTIONS

There appears to be a lot of confusion in the workplace, including at major construction sites, Mines and Plants regarding the legal requirements for the inspection and/or testing of lifting equipment, which includes lifting machines, lifting tackle, hoists and fabricated lifting equipment.

1. Visual Inspections compared to Examinations

- A visual inspection is done by "visually checking all visible components" (SANS 500) of a sling or hoist for example, and completing a properly prepared check list.
- This can be done by a person or inspector appointed in writing by virtue of the person’s knowledge, experience and training.
- An examination is a "detailed study by a competent person in such depth and detail as he considers necessary to enable him/her to determine whether the equipment being examined is safe to remain in use" (SANS 500).
- This could include stripping a unit and conducting an operational test such as on a hoist. An examination should be done by a LMI or competent appointed technician or artisan.
- As a start it is common knowledge that all lifting machines which are classified according to different Codes in Appendix 12 of the OHSA, DMR, must be load tested (performance tested) at intervals not exceeding 12 months.
- This load test must be conducted by a DOL registered LME. This actual load test must be conducted, or be supervised by an ECSA registered LMI.
- The LMI is assessed and found competent by ECSA.
- The LMI can only test the types of lifting machines that he has been registered for as a LMI by ECSA.
- ECSA do not print the scope of competence of the LMI on his LMI certificate.
- The only method for the user to establish whether this LMI is competent to load test a specific type of machine is to request a copy of his ECSA confirmation of registration letter which reflects the scope of his competence.
- Where the MHSA does not specify any issue relating to health and safety, such as OHSA LME/LMI requirements, the requirements of the OHSA DMR 18 apply by interpretation of the MHSA Section 103.

The following questions are regularly asked in the workplace. Our comments, if not a legal requirement, is provided based on best practice.

2. Who is a Competent Person to conduct examinations, as well as inspections of Lifting Machines?

- As there is no definition for a Competent Person (CP) in the DMR, one should consider the definition of a CP as it is specified in the OHSA CR as these where published in 2003 and since been updated compared to the DMR which was
• published in 1993.
• No recent updates in DMR have mentioned the definition for a CP other than the requirements for an LMI.
• It is clear that the LMI has to conduct or supervise the periodic actual load testing of lifting machines but it is not clear whether the 6 monthly thorough examinations have to be conducted by a LMI.
• The Draft DMR 2015 mentions a “person with knowledge and experience......” and therefore would imply that, in future, you would not have to be a LMI to do these thorough examinations.
• Comment: Wait for the new DMR definitions, but at least appoint someone in writing, with the necessary back ground, experience and training to conduct these thorough examinations according to SANS standards and properly prepared check lists without stripping or disassembling the machine.

3. Must a Lifting Tackle Inspector (LTI) be a LMI?

• The answer is no.
• The purpose and reason for appointing LMI’s is to conduct or supervise lifting machine load testing only and although they have to be qualified or competent to inspect lifting tackle as well.
• This issue was cleared up with government notice No: GRN 257 of the 7th of March 2008; “This registration does not apply to persons who examine lifting tackles in terms of regulation 18 (10) (e) of the Driven Machinery Regulations.”

4. Who can inspect lifting tackle?

• Lifting tackle has to be inspected at least every 3 months by a LTI who should keep a register of these inspections on site.
• This is a specific requirement in terms of DMR 18.10(e).
• It must be noted that inspections can be conducted at more frequent intervals if so required by the user.
• No specific inspection periods are specified in the MHSA, Chapter 8 Regulations and mines have to specify in their Standard Operating Procedures (SOP) their inspection method, requirements and inspector qualifications etc.
• Persons who inspect LT are suitably qualified persons who by virtue of their knowledge, experience and training are appointed in writing by their employer to do so.
• There is currently no DOL requirement to register LTI’s although this is anticipated in future.
• Nothing has changed and these inspections can be conducted by in house appointed LTI’s or contracted service providers.
• If the user is using a service provider to conduct these inspections the user should insist on the contractor’s staff providing proof of training and experience and that they have been appointed in writing by their employer.

5. Must lifting tackle in use be subjected to annual load testing?

The answer is an emphatic NO!!!
Over the last few years this practice has become popular, mostly as a result of the user’s ignorance due to lack of training as well as service providers who provide this
service for commercial reasons only and therefore promote it. It must be stated that manufacturers/suppliers of chain, wire rope and webbing, are totally against this practice as:

(a) It is not a legal requirement in terms of OHSA DMR 18 (10) or any MHSA Chapter 8 Regulations to conduct periodic load testing on slings.

(b) It can be detrimental to the service life of a sling or component as a test in excess of the WLL can develop a latent defect in the sling that could cause it to fail later on under repeated loading.

For example to subject a sling with a WLL of 5 ton that is 5 years old to a static test load of 10 ton which is equal to a 100% overload can be detrimental or damaging to the sling or to certain components of the sling such as hooks and coupling links etc.

(c) All OEMs specify a WLL for the size and type of sling supplied. This WLL is specified in the Standard, such as SANS, to which the sling or product is manufactured. The Standard as well as the OEM will state that the sling must not be subjected to a load in excess of this WLL.

Once again, if you are testing the sling to a load above the stated WLL, normally 100% you are contravening the OEM’s specification and are therefore, by implication, contravening legal requirements.

If it can be proved by the OEM of a sling that it was proof load tested in excess of the WLL and it fails later in service any claim against the manufacturer by the user may be repudiated.

(d) For practical purposes, to proof load a webbing sling that has a design factor (FOS) of 7:1, you are not proving anything if the sling complies with SANS 94/EN 1492.

To test a 2 ton sling to 4 ton proves nothing as the sling should not fail at a load of less than 14 tons. The worst quality 2 ton sling should withstand a proof load of 4 tons but does not confirm that the sling is legal in terms of the Standard.

(e) All testing of lifting equipment, including lifting tackle, must be conducted in accordance with an “accepted or appropriate technical standard”. There is no SANS or International Standard for load testing slings in use. There are only standards for the OEM to test new slings or components after manufacture and necessary heat treatment etc.

Load testing of slings in use is therefore not allowed. Only lifting machines, not lifting tackle must be periodically load tested.

6. What type of certificates must be supplied with LT and hoists?

- The word “Test Certificate” does not appear in the OHSA or MHSA.
- It is common practice and the user should insist on suppliers to issue Certificates of Test and/or Certificates of Conformance to a specific quality manufacturing Standard when purchasing lifting tackle.
A Certificate of Test must state the actual test load, the date of test and other relevant details whereas a Certificate of Conformance must state the Standard, such as SANS, DIN, EN etc. to which the product has been manufactured.

This certificate is regarded as the “birth certificate” of the sling and must be kept on record until the sling is discarded after which the certificate can also be cancelled as the equipment has been removed from the work place.

Slings must be marked with the relevant certificate number, or brand name of the manufacturer, for traceability back to the supplier.

The rule of thumb is “where does it come from and what can it lift?”

If a sling is not marked with this information do not use it!

It is also important that users have a written discarding procedure that specifies the steps to take when discarding LT which must include cancelling the suppliers certificate as the sling is no longer in service.

Lastly it must be noted that companies which supply Lifting Tackle or are OEM appointed distributors do not have to be registered as LME’s if these companies are only suppliers and do not conduct repairs or load testing of lifting machines.

7. WLL versus SWL

These terms are often confused and there is a difference.

The WLL is the maximum load to be lifted, lowered or suspended by a hoist or sling as specified by the OEM.

The WLL is clearly marked on the hoist or sling tag and is based on the design factor (FOS) and must never be exceeded.

All LT and hoists must be manufactured to a Standard and all Standards specify that hoists and slings be marked with the WLL, and not the SWL.

The SWL can be the same or less than the WLL and depends on operational conditions.

To name a few examples:

- The SWL of a sling reduces as the angle increases between the sling legs.
- If chain is used to lift hot loads the SWL reduces as the chain temperature increases. For example the SWL of Grade 80 alloy chain at 400°C is 25% less than the rated WLL.
- If shackles are used at angles the SWL reduces accordingly (at 90° less 50%)
- The SWL of a sling or hoist can be reduced by the User depending on the conditions under which the sling or hoist is used. This new safe load is then the SWL and not the original WLL.

This reduced OEM WLL is then specified as the SWL.

Beams are marked SWL as the designers had to calculate what the beam can lift safely.

To conclude, it must be stressed that the above information supplied is the writer’s opinion only and should not be construed as legal advice or legally binding, but as a guide to promote lifting equipment safety in the work place.
### CHANGES TO DMR 18

- You may be aware that the DOL published the long awaited new OHSA DMR 18 Regulations on June 19, 2015 number R527, Government Gazette No 10450 No 38887.
- Sadly there are various problem areas and if not addressed will cause major problems in Industry for Users as well as Suppliers and OEM’s.
- We hope that the DOL will be forced to publish some amendments as there are areas of conflict and uncertainty and the Regulations cannot be implemented as is.
- The first major change is the new definition of “hand powered lifting devices” (HPLD).
- This includes chain blocks and lever hoists etc.
- The requirements for HPLDs is different to that of Lifting Machines (LM).
- The most glaring mistake is that the legislator has ignored to define, and include, the term WLL.
- It specifies in various paragraphs that all lifting equipment, including HPLD and lifting tackle (LT) must be marked with the SWL. The term WLL does not appear anywhere.
- As all lifting equipment products must be designed to a “generally accepted technical standard” such as SANS EN, DIN etc. these products have to be marked with the WLL as specified in these Standards and not marked with the SWL.
- The Act also now incorporates various safety standards such as SANS 500 and SANS 2972 which specify marking the WLL.
- Regulation 18. 10 now also states that lifting tackle must be marked with the SWL which once again is not correct.
- All chain, wire rope and webbing slings are manufactured to relevant Standards and once again all these have to be marked with WLL as specified in the respective Standards.
- This also applies to loose items of lifting tackle such as shackles and eye bolts.
- Sling hooks should not be marked with the WLL as per EN1677 as the SWL depends on how and with what the hooks are used.
- It will be impossible for all OEMs based overseas to mark SWL instead of WLL on their products for the SA marked only.
- Bear in mind that apart from alloy chain used on slings and hoists all other items such as shackles and components are imported and apart from sling hooks are all marked with the WLL and not the SWL.

To conclude, it must be stressed that the above information supplied is the writer’s opinion only and should not be construed as legal advice or legally binding, but as a guide to promote lifting equipment safety in the work place.

Above information compiled by Piet Otto from Phakamisa Safety