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LEEA

Guidance to the Manufacturer and Repairer of Grade 8 Mechanically Assembled Chain Slings (UK & EU)

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1.0 Introduction

This guidance has been prepared by the LEEA, in collaboration with leading manufacturers and suppliers of grade 8 chain sling systems, in order to clarify the procedures to be adopted by the sling manufacturer (assembler) and repairer of grade 8 mechanically assembled chain slings to BS EN 818-4 (for information on the latest version of all standards referenced in this guidance, please refer to LEEA 015).

Note: references made within this document to standards and legislation apply to the current versions.

2.0 UK & EU legislation

The UK legislation that concerns the manufacturer and repairer of chain slings is the Supply of Machinery (Safety) Regulations (SOM(S)R), The Provision and Use of Work Equipment Regulations (PUWER) and the Lifting Operations and Lifting Equipment Regulations (LOLER).

In the EU this is the EC Machinery Directive 2006/42/EC and the national legislation that implements the Use of Work Equipment Directive

SOM(S)R includes requirements for the design, manufacture, marking and documentation to place lifting equipment on the GB market. For new lifting equipment it requires the manufacturer, or other responsible person, to issue a UK Declaration of Conformity. This permits the item to enter service providing that the equipment is new and the declaration was not drawn up more than 12 months before the equipment was put into service. The equipment must also be marked with the UKCA marking to indicate that it complies.

The EC Machinery Directive also includes requirements for the design, manufacture, marking and documentation to place lifting equipment in the European Economic Area. For new lifting equipment it requires the manufacturer, or other responsible person, to issue a EC Declaration of Conformity. This permits the item to enter service providing that the equipment is new and the declaration was not drawn up more than 12 months before the equipment was put into service. The equipment must also be marked with the CE mark to indicate that it complies.

These key pieces of legislation complete a circle of safety, based on legal requirements for lifting equipment. In summary, manufacturers, or other responsible persons, must ensure that the equipment they place on the market meets with the Essential Health and Safety requirements of the supply legislation. The Declaration of Conformity and conformity marking will confirm this. Employers must ensure that the equipment they obtain and provide to their employees for use at work complies with the relevant national regulations. The acceptance of a manufacturers Declaration of Conformity is evidence that they have fulfilled this requirement.

3.0 How the Sling Manufacturer Demonstrates Compliance with the Supply Legislation - The Technical File

The Supply of Machinery (Safety) Regulations and the Machinery Directive require the manufacturer to identify the potential hazards associated with their product, assess the risk and by good design and other means reduce the risk to an acceptable minimum. Also the product must be accompanied by adequate instructions for use and maintenance. For guidance to the development of such instructions for use, please refer to LEEA 062 General guidance to the manufacturer of lifting equipment to the development of instructions for use.

As evidence of how the manufacturer has done this, they must be able to compile a Technical File for presentation to the enforcing authority (HSE in the UK, HSA -Southern Ireland, etc.) when requested. This is an onerous duty as the information required is very detailed. However one means, and the easiest, is to manufacture the product to a harmonised standard, or designated standard as they are now known in the UK.

If the product is manufactured to a harmonised standard, then the technical file would only need to reference this standard and contain the evidence associated with each of the clauses within it.

If it is not manufactured to a harmonised/designated standard, for example by fitting a captivated component in the end termination of the sling, then the manufacturer would have to build their own technical specification, detailing the hazards associated with the use and foreseeable misuse of the product. Also they must be able to show how each of these hazards is addressed within the product

design or safe use instructions. It will also need to contain evidence that each of the identified hazards have been addressed. Refer to 'LEEA 056 Guidance to Products not fully Compliant with a Product Standard' and 'LEEA 064 Conformity assessing products for which there is no harmonised standard, for further information.

4.0 Standards requirements

On 1st Jan 2021, following the UK's departure from the EU, Harmonised European standards became known as Designated standards within the UK. Essentially though, they are still one and the same standard. These standards are safety standards and as such they go through a lengthy checking procedure prior to acceptance. This is to ensure that they comply with strict rules imposed by UK Legislation, BSI, and the European Commission and CEN, the European standards body (the UK is still a member of this). A harmonised/designated standard has a quasi-legal status in that products which comply with a harmonised standard are deemed to meet the essential health and safety requirements of the relevant supply legislation in so far as the standard addresses those requirements. Unlike the older standards they replace, harmonised/designated standards are intended to enable the manufacturer to demonstrate compliance with the legislation.

BS EN 818-4 is the harmonised/designated standard for grade 8 chain slings using chain and components which may comply with other, specified harmonised/designated standards. For mechanically assembled chain slings assembled from components of a sling system, the 'sling manufacturer' is the assembler of the sling and not the system manufacturer from whose chain and components the sling is assembled.

The sling system manufacturer's certificates for the chain and components are an important part of the Technical File. Full traceability for the chain and components used is therefore essential. This should not prove to be a problem for LEEA members as the LEEA Technical Requirements already call for a positive system to be in place that allows full traceability in both directions, i.e. from the supplier's records to the job and from the job to the supplier's records.

Copies of the sling system manufacturer's assembly instructions, technical information and the instructions for use as issued to the user are also important ingredients of the Technical File.

6.0 Rating of Chain Slings

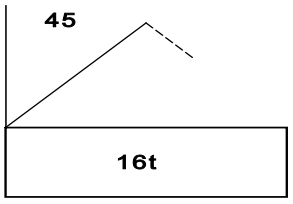
For chain slings intended for general lifting purposes, BS EN 818-4 permits only the uniform load method of rating. General purpose slings cannot be rated by the trigonometrical method and still be certified as in compliance with the standard. For specific application slings, the trigonometric method is allowed, however great care must be taken when choosing the master link, for further information refer to BS EN 818-4 annex A.2

The marking requirements for multi-leg slings to BS EN 818-4 differ from previous standards in that the angle of the sling legs is measured between the leg and the vertical instead of between opposite legs. Thus a typical marking to BS EN818-4 will be:

WLL 16t 0° - 45°

LEEA also recommends that all angles for the intended use are marked on the sling in accordance with the uniform load method of rating.

Alternatively the range of angles may be shown by a pictograph on the identification tag similar to that shown below. LEEA strongly recommends that such a pictograph is used.



Additional marking requirements are required by the standard and the legislation for chain slings and these are detailed in the check list below and in LEEA 059 Documentation and Marking – Part 5 Lifting Accessories, Slings.

7.0 Check List

(1) Check the certificates for the chain and components.

You must have the relevant certificates to hand and you must ensure that they are correct before you assemble the sling.

(2) Select the chain size.

Select the size of chain for the WLL required from table 3 of BS EN 818-4. Multi-leg slings for general purposes must be rated by the uniform load method.

(3) Assemble the sling.

Follow any specific instructions issued by the system manufacturer and ensure all the parts and their traceability information is recorded in the Works Instruction.

(4) Thoroughly examine the sling.

Ensure all components are correctly assembled and the locking devices are in place. We recommend that you choose the option not to proof test the assembled sling as the manufacturer of the chain and components has already certified them to the relevant standards.

(5) Mark the sling with all of the necessary information.

Single leg slings should be marked with the following information:

(a) Working load limit in tonnes or kilograms, units t or kg to be included
(b) Individual identification mark related to the manufacturer's certificate
(c) Grade of sling, i.e. 8
(d) The sling manufacturer's name or symbol
(e) The correct conformity mark for the UK or the EU
(f) Optionally, the nominal size of chain may also be shown.
(g) The year of manufacture (an additional mark required by the Directive)

Multi-leg slings should be marked with the following information:

(a) Working load limit and range of angles, 0° - 45° (additionally 45° - 60° may be shown)
(b) Individual identification mark related to the manufacturer's certificate
(c) Grade of sling, i.e. 8
(d) The sling manufacturer's name or symbol
(e) The number of legs
(f) The CE mark (an additional mark required by the Directive)
(g) Optionally, the nominal size of chain may also be shown.
(h) The year of manufacture (an additional mark required by the Directive)

We recommend that the marking is on a tag attached to the master link, or a link adjacent to the master link, and includes a pictograph showing the range of angles to the vertical and WLL. BS EN 818-4 allows the marking to be made directly onto the master link, provided that the mechanical properties of the link are not impaired. This is difficult to do, hence the use of the tag, but we recommend that the identification mark should be put on the master link so if the tag is damaged or lost, the remaining information can be retrieved from the certificate.

(6) Prepare the Manufacturer's Certificate and UK/EC Declaration of Conformity.

BS EN 818-4 requires each sling to have a manufacturer's certificate. In addition, to comply with the law, the sling manufacturer must issue a UK/ UK/EC Declaration of Conformity. They can be separate but as much of the information is the same, we recommend that a single combined document be used. For guidance refer to LEEA 059-5 Documentation and Marking – Part 5 Lifting Accessories; Slings

Guidance on the legislation warns against issuing copies of the Declaration of Conformity. To avoid subsequent difficulties we strongly recommend that the information for instruction for use, UK/EC Declaration of Conformity, Manufacturer's Certificate and any other documentation

issued with the sling should accompany the delivery and be listed on the delivery note so that a signature is obtained for it.

BS EN 818-4 requires the following minimum information to be shown on the manufacturer's certificate:

(a) The name of the sling manufacturer or supplier including the date of issue of the certificate and authentication;
(b) the number and Part of the standard, i.e. EN 818-4;
(c) the identification number or symbol of the sling;
(d) a description of the sling, to include a list of all component parts;
(e) the nominal size of chain and grade mark 8;
(f) the nominal length;
(g) the working load limit (WLL) and;
(h) in the case of a sling not proof-tested after assembly, the name of the competent person or establishment which carried out the visual examination.

The UK/EC Declaration of Conformity must:

(a) State the business name and full address of the sling manufacturer.
(b) States the name and address of the person to compile the technical file.
(c) EC DOC only - If supplied by a manufacturer from outside the EEA the name and address of their authorised representative must be stated.
(d) Contain a description of the sling including its make, type and serial number. (The 'make' in this case being the name of the sling system)
(e) State that the equipment complies with the SOM(S)R/Machinery Directive and any other relevant Community Directives.
(f) Specify the harmonised standard used i.e. BS EN818-4.
(g) State the year of manufacture.
(h) Identify the person authorised to sign the declaration.
(i) Be typed or written by hand in block capitals and be in English.

(7) Prepare adequate instruction for use.

It is a requirement of the Supply of Machinery (Safety) Regulations and Section 6 of the Health and Safety at Work Etc. Act that chain slings are supplied with adequate instructions for use. For guidance to the development of such instructions for use, please refer to LEEA 062 Guidance to the Development of Manufacturer's Instructions for Use.

(8) Ensure full traceability of records.

There must be full traceability in both directions between the record for the chain sling and the component supplier's records. In the event of a query it is essential that you are able to identify the original certificates for the components used as they form a part of your Technical File. Full traceability is also an important aspect of the LEEA Technical Requirements.

8.0 Guidance for the Repairer of Mechanically Assembled Slings

Chain slings will inevitably deteriorate and suffer damage over time and the need for repair. Whenever a chain sling requires repair, it is advisable that the cause of the damage is investigated. It may be that the sling is no longer adequate for the task.

If a chain sling is to be repaired, it is advised that the manufacturer's certificate is consulted, and damaged components are replaced with only those that are identified in the list. The use of equivalent components from other system manufacturers may result in the original declaration of conformity becoming void. In this case LEEA recommend that following the work, the details of the repair are recorded in the sling maintenance log and the equipment is thoroughly examined by a competent person and also recorded in the report of thorough examination.