

## LIFTING EQUIPMENT ENGINEERS ASSOCIATION

### Guidance on the Repair of Grade 8 Mechanically Assembled Chain Slings

(Document reference LEEA 031 dated 13 April 1999)

#### Scope

This guidance covers the repair of mechanically assembled grade 8 chain slings manufactured to BS EN 818-4 and earlier standards.

#### The relevant legislation

The relevant legislation for the use of lifting equipment is the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) which came into force on 5th December 1998.

Regulation 2 deals with interpretation and the term 'thoroughly examined' includes testing where appropriate.

Regulation 9 deals with thorough examination and inspection. It requires inter alia lifting equipment to be 'thoroughly examined-

- (i) in the case of lifting equipment for lifting persons or an accessory for lifting, at least every 6 months;
- (ii) in the case of other lifting equipment, at least every 12 months; or
- (iii) in either case, in accordance with an examination scheme; and
- (iv) each time that exceptional circumstances which are liable to jeopardise the safety of the lifting equipment have occurred'

Regulation 10 deals with reports and defects.

#### General procedure

*(Note: Despite the definition of 'thorough examination' given in LOLER, for the sake of clarity the following guidance uses the term in the older sense and excludes proof-testing but may, if appropriate, include non-destructive testing.)*

Any guidance provided by the sling manufacturer or the sling system manufacturer relevant to repairing the sling should be followed. In the absence of such guidance we recommend the following procedure.

The procedure depends upon whether the user can provide adequate documentary evidence about the standard to which the sling was manufactured and any subsequent repairs made. To be adequate, the documents must show the identification mark of the sling and the standard to which it was manufactured. If it has been repaired, the reports following repair should be appended and they should identify the components replaced, the standards to which they were made and their traceability codes. The description and other information such as traceability codes should tally with the sling.

If adequate documentary evidence is not available then, following repair, the sling should be proof-tested using a force equivalent to twice\* the working load limit (or a higher force if specified by the system manufacturer) thoroughly examined and, if found to be satisfactory, a report issued in accordance with regulation 10 of LOLER.

\* Slings rated by the uniform load method must be tested in sections with a force equivalent to twice the working load limit of the section.

If adequate documentary evidence is available, then there is no need to proof-test the sling

following repair provided that suitable certified components have been used. In such cases the sling should be thoroughly examined and, if found to be satisfactory, a report should be issued in accordance with regulation 10 of LOLER and appended to the other documents. Although not required by LOLER, to facilitate future repairs by the same procedure, the report should list the components used, the standards to which they are made and their traceability codes.

#### **Repair of mechanically assembled grade 8 chain slings manufactured to BS EN 818-4**

The sling manufacturer should have issued information for use in accordance with (*when published*) BS EN 818-6 'Chain Slings - Specification for information for use and maintenance to be provided by the manufacturer'. That includes information about repair, re-testing and re-certification. Informative Annex A states 'where repair is carried out by inserting a mechanically assembled component, proof-testing is not required providing that the component has already been tested by the manufacturer in accordance with the relevant European standard.' If the sling manufacturer's instructions adopt this guidance then the procedure set out above, for when adequate documentary evidence is available, can be followed.

#### **Repair of mechanically assembled grade 8 chain slings manufactured to standards preceding BS EN 818-4**

There are two additional issues relating to such slings:

- (1) Should they be re-rated to the new method specified in BS EN 818-4?
- (2) New supplies of chain and fittings will generally be to the new standards and in some cases the WLL is slightly lower size for size. Can the new supplies be used to repair existing slings without derating?

With regard to (1), there is no legal reason why existing equipment with existing ratings and markings should not continue to be used. However there is the potential for confusion if similar looking slings in the one location are marked and rated differently. There is an opportunity to tell your customer about the new method of rating and marking multi-leg slings and see whether a programme of re-rating/re-marking might be appropriate for them.

With regard to (2), the WLL of chain to BS EN 818-2 is obtained by calculating the theoretical maximum for the size then rounding down to the nearest value in the R40 series of numbers. For some sizes this reduces the WLL slightly from that previously given. However the manufacturing proof force and the minimum breaking load are based on the calculated maximum and not the rounded value so there is no reason why the chain cannot be rated at the calculated value. This should enable it to be used for repair without derating the sling.

With regard to other components such as hooks, the manufacturing proof force and the minimum breaking load of these are exactly related to the component WLL which in turn matches the rounded WLL for the chain. However the manufacturer's proof force on these is now 2.5 times WLL instead of approximately 2 times as previously required by ISO standards. Despite the slightly lower WLL, the new components are designed to withstand a higher proof force and can therefore be used for repair without derating the sling.