LEEA-079
Guidance to lifting sets associated with BS 7072 Offshore Containers

Lifting Equipment Engineers Association

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LIFTING EQUIPMENT ENGINEERS ASSOCIATION

3 Osprey Court Hinchingbrooke Business Park Huntingdon PE29 6FN

United Kingdom

Tel: + 44 (0) 1480 432801

E-mail: Technical Support technicaladvice@leeaint.com

General enquiries mail@leeaint.com

Website: www.leeaint.com

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1.0 Introduction

Following the withdrawal of BS 7072 in 1999 there remains a number of containers and slings in-service that were manufactured in accordance with it. The differences between BS 7072 and later standards (EN12079:1999, EN12079-1, -2, -3:2006 and BS EN ISO 10855-1, -2, -3:2018) has resulted in much confusion as to the requirements for testing, inspection and repair of this equipment. The following sections of this guidance offer some clarity to the common issues.

Please note that LEEA strongly supports full compliance with the relevant product standards, particularly the harmonised European standards which carry a presumption of conformity with the legal requirements for the supply of new lifting equipment. However, it is recognised that there are applications for which it is necessary to deviate from the product standard or work to old now withdrawn standards. In such cases the standard will often provide the majority of the specification and the manufacturer need only address those requirements with which their product does not comply. However, it is important that any reference to the standard in the manufacturer's literature or documentation is clear and not ambiguous or misleading. For further guidance refer to LEEA 056.

2.0 Lifting sets

Typically lifting sets used with containers will either be.

- Slings designed in accordance with BS 1290 and terminating in shackles to either BS 3032 or BS 3551.
- Slings designed in accordance with EN 13414-1 and terminating in a shackle to EN 13889.

Note: for offshore applications a design enhancement factor (DAF) may apply to these sling sets to account for the increased dynamics involved with high-speed lifting off the deck of a floating vessel for example.

2.1 BS 1290 Lifting sets.

These slings shall only be used in conjunction with BS 7072 containers, or other general lifting applications covered by the scopes of the standards to which they were made. Although they comply with a withdrawn standard, they may remain in service provided they are thoroughly examined, in accordance with national legislation according to geographical location, or an examination scheme (see LEEA 032 Guidance to written schemes for further information) and found free from defects affecting safety.

Minor repairs, such as replacing a shackle of the same specification or the original sling manufacturers approved equivalent in accordance with the standards to which the sling assembly was originally designed, are acceptable. These shackles shall comply with BS 3032 or BS 3551. They may also be either EN 13889, an appropriate edition of US Federal Specification RR-C-271, or to another appropriate nationally adopted standard according to geographical location.

Following such a repair, the lifting set shall be thoroughly examined, and a new report of thorough examination issued stating that the equipment is safe before being put back into service. However, significant repairs such as replacing individual wire rope leg assemblies is not recommended and it is advised in these cases to scrap and replace the sling with an EN 13414-1 sling-set or to an appropriate standard according to geographical location.

The Working Load Limit of the replacement sling set shall be based on a minimum enhancement of 1.3 x Maximum Gross Weight of the unit as per the requirements of BS 7072 Section 8.1. The minimum diameter of utilised rope shall be 13 mm as per Section 8.2.1 of BS 7072. Master links/Quad Assemblies shall comply with EN 1677-4 or to another appropriate nationally adopted standard according to geographical location.

The crane hook link (Master link) shall have a minimum dimension of 270 mm x 140 mm (to comply with Section 8.2.5 of BS 7072 and the requirements of Oil & Gas UK "Best Practice for the Safe Packing & Handling of Cargo to & from Offshore Locations).

End terminations shall comply with EN 13414-1 and EN 13411-3 or to an appropriate standard according to geographical location.

Load testing replacement sling sets legs is not required (as was required by BS 1290) unless required by a standard according to geographical location, however, only 90% of the wire rope MBF shall be utilised as per the K_T factor in EN 13414-1 (K_T factor for FSET slings).

Repairs using components that do not comply with the original manufacturer's specification, standards to which the sling complies with, or modifications to suit other applications, i.e. for use with EN12079:1999, and the current EN12079-1,-2,-3:2006 containers, are not recommended. Such alterations to lifting equipment would require reassessment of the equipment in accordance with the Essential Health and Safety Requirements (EHSRs) of the machinery directive and a new EC Declaration and CE mark issued by the repairer or modifier. The modifier or repairer would also be responsible for supplying new instructions for use.

2.2 EN 13414-1 Lifting sets.
Lifting sets used in conjunction with EN 12079 containers, shall be manufactured and certified in accordance to EN 13141-1.

Minor repairs in accordance with the standards to which they were originally designed are acceptable. An example of this is replacing a shackle of the same specification or the original sling manufacturers approved equivalent. Following such a repair the lifting set shall be thoroughly examined and a new report of thorough examination issued stating that the equipment is safe before being put back into service

Major repairs or repairs using components that do not comply with the original manufacturer's specification, standards to which the equipment was originally manufactured to, or modifications to suit other applications are acceptable. However, such alterations to the lifting equipment would require reassessment of the equipment in accordance with the Essential Health and Safety Requirements (EHSRs) of the machinery directive and a new EC Declaration and CE mark issued by the repairer or modifier. In this case the repairer / modifier, may accept the CE mark as evidence that existing components comply with the EHSRs.

3.0 Container Modifications
Due to the conditions of use, containers will require regular repair over time. Minor repairs are common, and it is acceptable to conduct them in accordance with the standard to which the equipment was made. However, the general rule for significant repairs is to bring the equipment in line with modern requirements where it is practical to do so or to replace.

Under this general rule, there is a misconception that BS 7072 containers have to be inspected in accordance with EN12079:1999, and EN12079-1,-2,-3:2006.The exclusion of BS 7072 for lifting dangerous goods and costs are typically the reason for attempting to modify BS 7072 containers.

Unfortunately, simply modifying the pad eyes to resolve compatibility issues, which is the common practice, is insufficient and not recommended. This is due to fact that the testing requirements of EN 12079 are much more arduous than those required by BS 7072. Containers designed to BS 7072 are subjected to a test load of twice their rated capacity, whereas a load of two and a half times is required by EN 12079. This means that the load bearing structures of a BS 7072 container are likely to be insufficient and will need to be strengthened.

Whilst there may be a perceived benefit (reduction in periodic re-validation requirements) upgrading/conversion of a BS 7072 container to the significantly enhanced design and build requirements of subsequent CCU standards is unrealistic. The retrospective design and documentation requirements would include, but are not limited to:

- material requirements and certification, e.g., EN 10204/ISO 10474 inspection certificates compliance with 3.2 certificated for pad eyes and 3.1 for primary structure,
- acquisition of approved Welding Procedures,
- acquisition of qualifications for the welder(s) undertaking the fabrication,
- NDE reports for welds,
- dimensional control reports,
- general arrangement drawings, etc.

In addition to design, build and documentation aspects, the owner should seek design review/approval from a recognised design/verification body, e.g., Lloyds Register (LR), Bureau Veritas (BV), Det Norske Veritas-Germanischer Lloyd (DNV-GL)(DNV since 2021), American Bureau of Shipping (ABS), or similar. Therefore, strengthening the structure would be costly and retrospective acquisition of the design and build documentation and verification of such, would be required (if such were possible). Therefore, replacing the container would be a much more viable option.