Mast and Tower Safety Group

promoting safety and best practice

Safety Bulletin

SB-002

The Use of Aluminium Pulley Blocks for Lifting Activities

MATS Group Safety Bulletin

The Use of Aluminium Pulley Blocks for Lifting Activities

1 Purpose

The purpose of this document is to clarify the position on the use of lightweight pulley blocks for materials lifting activities. Many of these blocks are not marked with a safe working load as required by LOLER.

2 Scope

The guidance covers lightweight, aluminium pulley blocks that have traditionally been used in the leisure industry or within climber rescue kits.

3 Definitions

Working Load Limit (WLL)	–	The maximum load an item can lift in a straight line pull, under ideal conditions
Safe Working Load (SWL)	–	The maximum load that can be lifted in the conditions and configuration in which the item is being used (a de-rating of the WLL)
Minimum Breaking Load	–	The minimum load at which the item failed at when tested to destruction (during product testing)
Factor of Safety (F.O.S)	–	The ratio of the maximum load that an item can lift to the maximum load estimated for it in the use for which it is designed. A minimum 5:1 F.O.S is applied to pulley blocks.

4 Lifting Capacity & Markings

The Lifting Operations & Lifting Equipment Regulations require that lifting accessories are marked with a Safe Working Load. The terminology used to describe the 'maximum load that can be lifted' has evolved since the introduction of the regulations, and it is now common to see 'Working Load Limit (WLL) expressed and marked on lifting accessories.

The terms SWL and WLL do describe different things, however as both are derived after dividing the Minimum Breaking Load (MBL) by an appropriate factor of safety, loads up to the SWL/WLL can be lifted with a degree of confidence (further de-rating of the equipment may be required depending on configuration, conditions etc).

Many lightweight aluminium pulley blocks are stamped with a minimum breaking load (MBL) in KN which presents two issues:

- A MBL is not derived after applying a suitable factor of safety; attempts to lift items of an equivalent weight to the marked MBL is highly likely to result in failure of the pulley block
- Whilst LOLER does not specify a unit of measurement for markings on lifting accessories, KN is a unit of force and therefore users of equipment with it marked need to ensure that they understand the calculation they need to do to convert force into load. As a rough guide, KN/10=tonne (e.g. 10KN =1t).

5 Use of pulley blocks with MBL marked

In order to use pulley blocks with MBL or KN marked, users should be able to demonstrate understanding of the rated capacity of the equipment, and be able to apply that to the load that they are lifting. This can be demonstrated in one of the following ways:

- The pulley blocks are permanently etched or marked with a SWL/WLL (after application of a suitable factor of safety). This marking should be undertaken, in a way that does not affect the equipment's integrity, by a competent person.
- The derivation of a suitable SWL/WLL for the equipment is recorded on a Declaration of Conformity or within the working party's risk assessment and method statement. The users of the equipment should be able to demonstrate cognisance and understanding of the SWL/WLL calculation where it is not marked on the equipment.

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The information in this document does not absolve contractors or suppliers from their responsibility to identify and comply with all relevant legislation, regulations and legal standards nor does it take precedence over laws, regulations and external standards.