



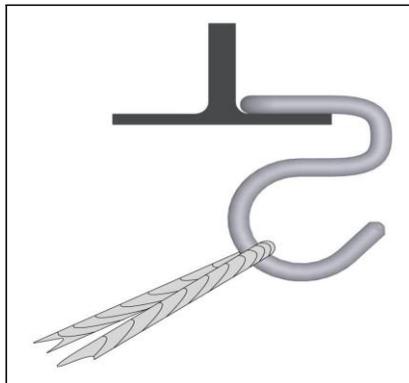
www.lion-trading.co.uk

Tel: 01405 812285

Proof load testing of the 'Lion Hook' safety net system

Introduction

The 'Lion Hook' safety net hook system is designed to attach a standard type S net to a steel building framework. A series of 'Lion Hook' safety net hooks are applied to the framework via the Lion Hook Applicator. These hooks each steel component around the lower flange of the I-beam. The lower half of each 'Lion Hook' safety net hook contains the peripheral rope of the net, thus attaching the net to the I-beam framework.



Traditionally, these nets are attached to the building framework by means of ropes. The deployment of these nets and the strength requirements of the ropes are covered by BS EN 1263 parts 1 & 2.

Proof load test procedure

Section 5 of BS EN 1263 Part 2 outlines the load bearing requirement of the net attachment points, and hence the strength requirement for these ropes. It states that each attachment point should be able to withstand a load of 6 kN acting at 45 degrees to the vertical. As this defines a strength requirement for the net attachment points it therefore follows that each 'Lion Hook' safety net hook should also be able to withstand a 6kN load acting at 45 degrees to the vertical.

This figure roughly equates to the dynamic strength requirements needed to arrest a 100kg mass falling 6m into the net. However, because this reaction force will be shared by a number of attachment points, opinion would suggest that this figure can be seen as being quite conservative and It is therefore believed that this figure of 6 KN already includes a significant safety factor. No multiplying safety factor will therefore be applied to the figure of 6 KN.

However, this test does not consider the forces that would act on each 'Lion Hook' safety net hook if a mass were to fall midway between two attachment points. It is therefore suggested that a secondary test be performed in order to simulate this eventuality. This test will comprise of a load being applied at a compound angle of 45 degrees to the vertical and 45 degrees to the horizontal (in effect the flange of the I-beam). The value of this load will be 4.5KN which is slightly greater than the 4 KN load requirement for the attachment points adjacent to the attachment point taking the maximum load as outlined in BS EN 1263-2.

The two above mentioned tests will be carried out on Leeds University's Dartec Universal Testing machine which has been calibrated to the relevant British Standard. Two rigs have been manufactured to enable the simulation of each 'Lion Hook' safety net hook being positioned at the required angle of 45 degrees and the required compound angle of 45 x 45 degrees for each test. The rigs themselves have been fabricated out of 10mm thick steel plate.



6 KN Proof Load Test – Test code - LDO-01- 6KN



4.5 KN Compound Angle Proof Load Test – Test Code - LDO-02- 4.5KN

Proof load test - Pass criteria

The 'Lion Hook' safety net hook will be deemed fit for purpose and to have passed the test if upon examination after testing, there is no plastic deformation of any of the components after 6KN load has been applied at an angle of 45 degrees to the vertical. This requirement also applies to the 4.5 KN compound angle test intended to simulate a fall arrest situation where the object lands in between two anchor points.

Summary of test procedures

6 KN Proof Load Test – Test code - LDO-01- 6KN

The 'Lion Hook' safety net hook will be subjected to a proof load test of 6KN at an angle of 45 degrees to the vertical. The 'Lion Hook' safety net hook will be considered fit for purpose and to have passed the test if the component does not yield under load and show any signs of plastic deformation.

4.5 KN Compound Angle Proof Load Test – Test Code - LDO-02- 4.5KN

The 'Lion Hook' safety net hook will be subjected to a proof load test of 4.5KN at a compound angle of 45 degrees to the vertical and 45 degrees to the horizontal. The 'Lion Hook' safety net hook will be considered fit for purpose and to have passed the test if the component does not yield under load and show any signs of deformation.

Proof load test results

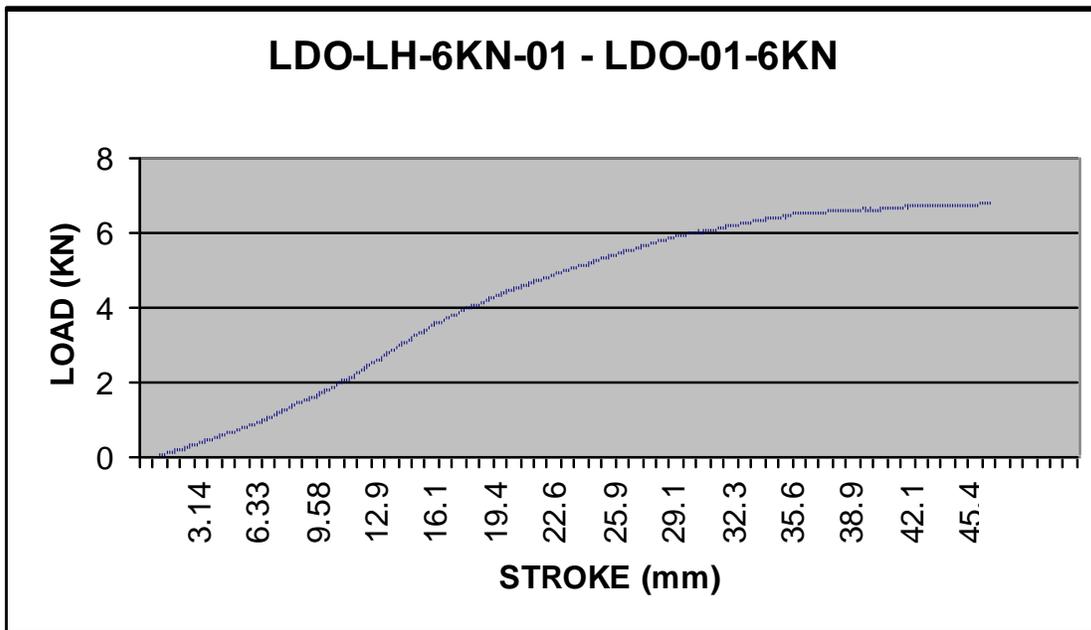
Introduction

A number of 'Lion Hook' samples were taken to Leeds University for Proof Load testing in accordance with the procedures outlined above. The Load testing was undertaken at Leeds University – Mechanical Engineering department under the supervision and observation of the department technical staff. Four of these clamps were tested in accordance with test procedure LDO-01- 6KN and the remaining four clamps in accordance with test procedure LDO-02- 4.5KN. Both tests were carried out on a certified Dartec universal testing machine.

Results

6 KN Proof Load Test – LDO-01- 6KN

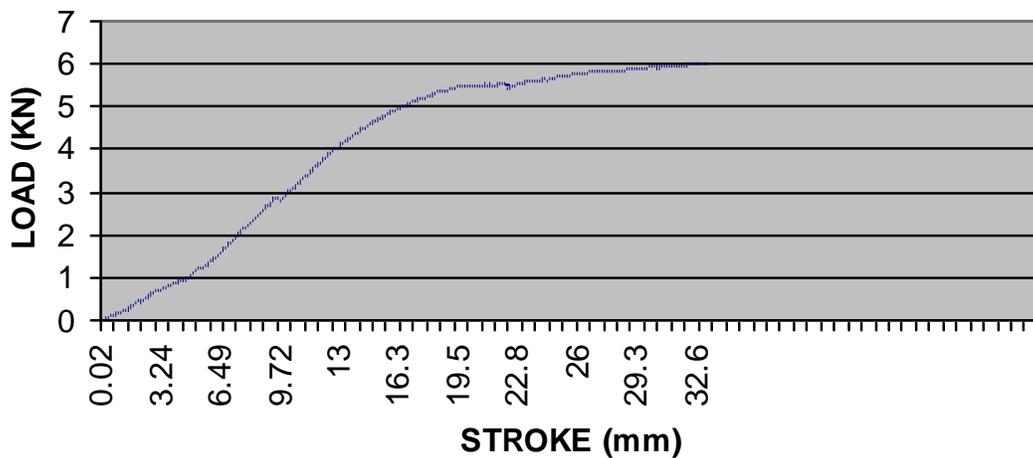
Sample ID	Test ID	Pass/Fail
LDO-LH-6KN-01	LDO-01-6KN	PASS



4 KN Proof Load Test – LDO-02- 4.5KN

Sample ID	Test ID	Pass/Fail
LDO-LH-4.5KN-01	LDO-02-4.5KN	PASS
LDO-LH-4.5KN-02	LDO-02-4.5KN	PASS

LDO-LH-4.5KN-01 - LDO-02-4.5KN



LDO-LH-4.5KN-02 - LDO-02-4.5KN

