To test or not to test

Hand blocks and lever hoists should be load-tested if new load bearing parts are fitted.

Two of the most frequently used and abused items of lifting equipment are hand chain blocks and lever hoists. However, one of the questions we are still frequently asked by users and suppliers is whether they should be regularly tested, usually meaning should they be proof load tested. The answer, as with so many such questions, is never a simple yes or no.

To decide what, if any, tests are required, one has to think about what the potential problems are and what the various tests can reveal. Many companies combine the thorough examination with maintenance. Because hand chain blocks are simple machines, they are usually completely dismantled and the parts thoroughly cleaned. That provides the ideal opportunity to visually examine all the parts. These days it is rarely economic to replace major load bearing parts, except for items such as brake disks and latches on hooks. However, if new load bearing parts are fitted, and they have not already been tested or verified in some way, then the block should be proof load tested after assembly.

If no new load bearing parts are fitted then there is little, if any, value in re-testing components that have already proved satisfactory and been examined and found to be serviceable. Remember that every proof load test is actually an overload which will shorten the life of the equipment.

There are two tests always worth doing, particularly when it is not possible to dismantle the block or hoist. Neither of them requires an overload. Irrespective of whether the block or hoist has been dismantled or not, a light load test should always be made. The reason for this is that, when lowering a load, the brake depends upon the torque generated by the descending load to screw the brake closed. The lighter the load, the less the torque. It is therefore more likely to slip at a low load than at the maximum load. Extra friction in the drive-train, particularly that arising from corrosion, can significantly increase the minimum load it will hold. The block or hoist should arrest and hold a descending load down to 5% of its working load limit (WLL).

The other test is a simple operation. If possible, this should be at a load near to the WLL. This will reveal if the equipment operates smoothly and with a reasonable amount of effort.

If, when hoisting, there is a distinct noise or any jerking as the load chain enters the load wheel, the pitch of the chain and wheel are not properly matched. The noise and jerking may be caused by dirt in the wheel pockets, but they can also indicate a worn chain or load wheel. If, when lowering, it is difficult to start moving, or if once started the hoist is hard to control, then the brake needs attention. Except for very high capacity hand chain blocks, all blocks and lever hoists are designed to be operated by one person. If the amount of effort required is excessive, something is amiss and maintenance is required.

A simple operational test, lifting up and down, together with a light load test, can tell a lot about the condition of the block or hoist without overloading it. Furthermore, the

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equipment needed for testing is not complex. For light load testing, one, two or three 25kg weights (depending on the WLL) are sufficient for the most popular range of easily portable equipment. For operational testing, any suitable load can be used, provided its weight is known with reasonable accuracy. For those situations where a proof load test is required, the weight must be accurate to within at least 2% of the intended weight and it must be possible to lift and lower it through sufficient height to ensure that all the gears rotate at least once. The weights can be lifted directly or through a multiplying mechanism, such as a lever, often referred to as a nodding donkey. If a lever is used, it is essential that the pivot points are in a straight line, otherwise the ratio will vary as the lever rocks. Over the years we have seen many levers whose pivots are not in a straight line and so cannot give the required accuracy.

Hydraulic test machines can be used provided that they accurately simulate the dynamics of a live load. However, such sophisticated test machines are expensive and we sometimes see a simple hydraulic load frame used as a cheap substitute. A test on such a device has no value because it lacks the required accuracy and cannot simulate a dynamic load.

One final word on testing concerns the tester's own safety. Because hand chain blocks and lever hoists are manual machines, the tester must be in close proximity to operate them. As with any test, there is always the possibility that the equipment will fail. Feet in particular are vulnerable, so sensible precautions should always be taken.

Chain slings and lever hoists need to be well cared for, and tested if new parts are added

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