



This Technical Information Note sets out the precautions that should be taken when carrying out load testing of both saddle and luffing jib tower cranes to prevent or minimise the effects of hoist, luffing or trolley winch failure during load testing.

When carrying out load tests on tower cranes there are a number of risks associated with the operation:-

1. On saddle jib tower cranes, masts and jibs deflect with load causing the jib to slope downwards. Failure of the trolley rope, trolley winch or its brakes will result in the trolley moving towards the end of the jib, increasing the load moment to a point where the crane may overturn or collapse;
2. On luffing jib cranes failure of the luffing winch or its brakes will result in the load radius increasing and the load moment increasing to a point where the crane may overturn or collapse;
3. On both saddle jib and luffing jib cranes failure of the hoist winch or its brakes will result in the load falling in an uncontrolled fashion with the consequent risk of injury and damage.

These risks may be minimised by taking the following actions:-

1. Ensuring that all winch brakes and rope brake devices are in good condition and correctly set;
2. Ensuring that an adequate thorough examination is carried out before a test load is applied;
3. Planning the test to ensure that the load path is clear of all obstructions;
4. Enforcing an exclusion zone to ensure that no one is under the load path;
5. Applying the load in stages i.e. functional test with no load, test with rated capacity and finally proof load test;
6. Ensuring that the magnitude of the proof load does not exceed that specified by the crane manufacturer;
7. Ensuring that the test load is not raised more than 200mm off the ground once every tooth in the train of gears in the winch gearbox has been subjected to the load.

Clause 9.5.2 of BS 7121-2-5:2012 says:-

*"With the trolley or jib at the maximum radius for the rated capacity, a load equivalent to the rated capacity should be raised until every tooth in the train of gears has been subjected to the load, then lowered to between 100 mm and 200 mm above the ground and the crane operated through all its permitted motions, to determine whether the crane is safe to proceed with the test.*

*The load should then be increased by the amount specified by the manufacturer and this load hoisted until each tooth in the train of gears has been subjected to the overload, then lowered to between 100 mm and 200 mm above the ground and the crane operated through its permitted motions."*

8. On some saddle jib cranes it may be possible to fit stops to the jib to limit the trolley travel in the event of a trolley brake or rope failure. This should only be carried out after consulting the crane manufacturer.