

WORKING LOAD LIMIT FOR CHAINS

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The term working load limit (WLL) of steel chains is an important requirement in lifting applications. The load that needs to be lifted becomes the working load limit and the chain grade and size will be selected to ensure that the working load limit will not be exceeded during normal service conditions.

For high Grade alloy chains (Grade 8 and -10) the WLL is equal to 25% of the minimum break force for a certain chain size and grade. Thus, the minimum break force is four times higher than the WLL which relates to a factor of safety of 4:1. This is a requirement from the Occupational Health and safety act- Driven machinery regulation 18.

When operating at the WLL, the material will remain in its elastic region which simply means that the chain will resume its original dimensions after the load is terminated. Chain that is overloaded will normally enter into the materials plastic region where permanent deformation remains after the load is terminated. This is normally observed as an increase in inside length (pitch) and a reduced inside width (W1) value.

In sling applications with two or more legs, the angle to the normal will result in an increase in load (original load divided by the cos of the angle). The higher the angle the higher the increase in load. This must be taken into consideration when a sling is designed in order to ensure that the factor of safety (FOS) of 4:1 is met.



**McKinnon
Chain**