
International Standard



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Calibrated round steel link lifting chains — Guidelines to proper use and maintenance

Chaînes de levage calibrées en acier rond — Principes directeurs pour une utilisation et un entretien appropriés

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 7592 was developed by Technical Committee ISO/TC 111, *Round steel link chains, lifting hooks, and accessories*, and was circulated to the member bodies in July 1982.

It has been approved by the member bodies of the following countries:

Australia	Germany, F.R.	Romania
Austria	India	South Africa, Rep. of
Belgium	Ireland	Spain
Canada	Japan	Sweden
Czechoslovakia	Korea, Rep. of	United Kingdom
Egypt, Arab Rep. of	Netherlands	USSR
France	Poland	

No member body expressed disapproval of the document.

Calibrated round steel link lifting chains — Guidelines to proper use and maintenance

1 Scope and field of application

This International Standard specifies the main principles for the use, inspection, in-service testing and maintenance of calibrated round steel link chains operating over chain wheels. The principal applications include manual and power driven hoists.

NOTE — Lifting chains may be governed by national and local laws and regulations.

2 References

ISO 1836, *Short link chain for lifting purposes — Grade M(4) calibrated, for chain hoists and other lifting appliances.*

ISO 3077, *Short link chain for lifting purposes — Grade T(8) calibrated, for chain hoists and other lifting appliances.*

ISO 4301, *Lifting appliances — Classification.*

3 Chain usage

3.1 In the interests of safety, reliable operation and satisfactory life, proper usage of chain is very important. Some of the responsibility rests with the equipment manufacturer, being dependent upon choice of relative dimensions of chain and pocket wheel, as well as the means provided for guiding, where necessary, the chain on and off the pocket wheel, and in and out of the equipment.

There are also important factors under the direct control of the user. One essential requirement is that the chain be aligned correctly with the chain wheel. If the chain forms a closed loop, aligned with the wheel and always under tension, no external guide is needed. In any installation where the chain may become slack or twisted or where it may approach the wheel at an angle to the plane of rotation, a suitable chain guide must be provided. Usage should be avoided that prevents direct entry of the chain into a hoist or lower hook block or that twists the chain upon entry.

3.2 In order to maintain the gauge length dimensions, it is necessary that the chain be under tension. Very little tension (for example the weight of a few links) is sufficient to maintain the gauge length, provided that the chain is otherwise free and not subjected to restraining side forces.

The chain should not be allowed to pick up dirt, etc. which would impair its free movement and which if carried into the equipment and deposited in the pockets of the pocket wheel could affect the proper seating of the chain in the pockets.

3.3 There are two types of pocket wheels over which chain may be required to run:

a) idler wheels, which change the direction of the chain but do not substantially affect its tension;

b) driving wheels, which change both tension in the chain and its direction. This type also includes driven wheels, such as the wheel driven by the hand chain of a manually operated hoist.

3.3.1 Idler wheels of relatively large diameter (not less than 6 X pitch of chain recommended) used with lightly loaded chain may be plain sheaves with circular grooves. Smaller wheels, or a higher chain tension, require flats or pockets to accommodate the link as chords to the wheel circumference to avoid bending and to provide sufficient bearing area.

In most installations guides are required to remove twist from the approaching chain and to align it correctly in the rotational plane of the wheel. Such guides should also prevent the chain disengaging the wheel should it become slack.

3.3.2 Driving wheels are more demanding and generally pocketed wheels are essential. In addition to the guiding requirements as for idler wheels, there are two conditions which require additional restraints, both involving the chain at the slack side.

One is stripping, or forcible removal from the wheel, of chain whose pitch appears to be too short. When the wheel is rotated to draw in chain under tension, the links at the slack side tend to remain in the wheel and must be mechanically disengaged. The condition may occur with new chain of too short pitch for the wheel or with chain of correct pitch operating over a worn wheel. The stripper usually takes the form of a finger installed between the chain strands and extending well into the centre groove of the wheel. It engages links in the plane of rotation and forces them to leave the wheel.

The other condition occurs with chain, either new or worn, whose pitch is too long for the wheel. In this case it is necessary to guide the slack chain approaching the wheel into engagement by advancing the links which are transverse to the plane of rotation. This is a difficult task at best, and in extreme conditions, may cause high rubbing forces and severe external wear.