

1. Introduction to Proshore's Lifting Chains:

Proshore's User Guide aims to provide all the necessary information required to allow for safe, effective and well-informed use of Proshore's lifting chains. Aspects of the guide will assume general competence within the field, however item specifics such as design components and the best practice for safe slinging will be comprehensively described.

All lifting operations with regards to this product are to be controlled by an appointed person in accordance with BS7121 and LOLER regulations. This user information should be read in conjunction with the proprietary product user information for which it is intended to be used.

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Operative Note

The working load limits indicated in this UserGuide become invalid if any one of the following factors occur:

- Twisting
- Corrosion and wear
- Jerking of loads
- Permanent deformation of components
- Angles greater than those shown.

Limits are also invalidated if lifting chains are used differently from the purposes to which the chain is intended.

Lifting Sling Certificates

Customers will receive the following documentation with each sling:

- For older slings re-rated to EN 818- Test Certificate
- Newer slings manufactured to EN 818- Manufacturers certificate.
- If it is more than 6 months from the date of the test certificate or if the sling has been repaired since manufacture, a report of thorough examination is also supplied.

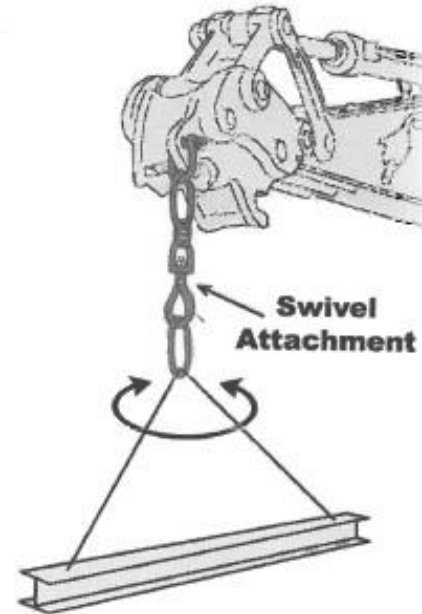
The documentation carries:

- The slings Serial number (also carried by the sling)
- The slings working load limit
- The date of test/thorough examination

N.B - Certificates and reports are only valid for a maximum of 6 months from the date of examination.

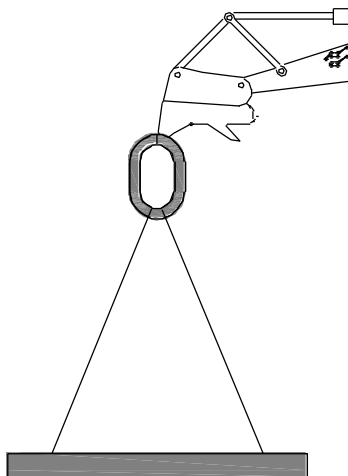
Operative Warning

It is very important that a means of allowing the sling to swivel be introduced above the top ring. This will allow the sling, and in particular the top ring, to turn and align with the load. Without a swivel arrangement the load may severely twist the top ring resulting in damage or failure.

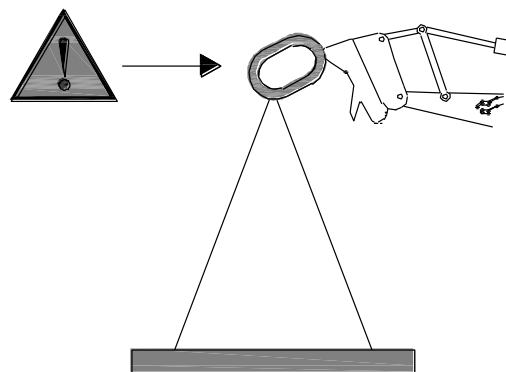


All lifting accessories attached to the excavator lifting point must hang freely and be free to move at all times.

Tilting the head of the dipper arm may prevent freedom of movement and so twist, damage or fail the lifting equipment.



Correct



Incorrect

Working Load Limits - Multi Leg Chain Slings

Working Load Limits - Multi Leg Chain Slings						
Lifting Sling	Chain Link Dia (mm)	Leg Length (m)	Leg Config	Weight (approx Kg)	Working Load Limit 0-45 Degrees	Working Load Limit 45-60 Degrees
	10	3	4-Leg	37	6.7	4.75
	10	4	4-Leg	47	6.7	4.75
	10	4.5	4-Leg	54	6.7	4.75
	13	4	4-Leg	84	11.2	8
	13	4.5	4-Leg	86	11.2	8

Working Load Limits - Single Leg Chain Slings

Working Load Limits - Multi Leg Chain Slings					
Lifting Sling	Chain Link Dia (mm)	Leg Length (m)	Leg Config	Weight (approx Kg)	Working Load Limit
	16	1.6	1-Leg	18	8
	19	1.5	1-Leg	25	11.2

The ratings for multi leg slings refer to normal use and equally loaded sling legs. Mode factors will need to be applied if using the chains in other modes. For example with less than the full number of legs or with shorteners.

N.B - Restraint chains use for the planned restraint of hydraulic frames in excavations do not fall under the above statement.

Safe use and operative handling of chain slings

Please note that this is based on the LEEA Code of Practice for the safe use of lifting equipment and to be read in conjunction with the requirements for general purpose slinging.

Operatives Should Always

- ✓ Store and handle chain slings correctly.
- ✓ Inspect chain slings and accessories before use and after placing into storage.
- ✓ Follow safe slinging practices.
- ✓ Fit slings carefully, protect them from sharp edges and position hooks face outward from the load.
- ✓ Apply the correct mode factor for the slinging arrangement.
- ✓ Back hook free legs onto the master link.

Operatives Must Never

- × Attempt to shorten a sling leg other than by means of an integral chain clutch.
- × Force, hammer or wedge chain slings or their fittings into position.
- × Lift on the point of a hook.
- × Expose chain slings to chemicals, particularly acidic conditions, without consulting the supplier.
- × Shock load chain slings.

Use of Shortening Clutch



Correct



Incorrect

Note: the loaded end of the chain must come out of the bottom of the clutch

Selecting the correct sling

Chain slings are available in a range of material grades, sizes and assemblies. Operatives must select the slings to be used and plan the lift taking the following into account:

- Type of sling to be used- endless, single, two, three or four leg.
- Capacity- the sling must be both long enough and strong enough for the load and the slinging method.
- Apply the mode factor for the slinging method.

If adjustment of the leg length is necessary, select a sling with chain shortening clutches. For use at temperatures exceeding 200°C or below minus 40°C refer to the suppliers instructions. Where slings may come into contact with chemicals, particularly acids or acidic fumes, operatives must consult the supplier before use.

In case of multi-leg slings the angle between the legs should not be less than 30° or exceed the maximum marked.

Multi-leg slings exert a gripping force on the load which in turn increases as the angle between the legs increases which must be taken into account.

Storing and handling chain slings

Never return damaged or contaminated slings to storage. Operatives must ensure that they should be dry, clean and protected from corrosion.

Store chain slings on a rack and not lying on the ground. The storage area should be dry, clean and free of any contaminants which may harm the sling.

Never galvanise or subject a chain sling to any other plating process without prior consent of Proshore.

Using chain slings safely

- Do not attempt lifting operations unless you are trained and competent in the use of the equipment, the slinging procedures and the mode factors to be applied.
- Do not use defective slings or accessories.
- Do not force, hammer or wedge chain slings or fittings into position
- Check the correct engagement of fittings and appliances.
- Position hooks of multi-leg slings facing outward from the load. Do not lift on the point of the hook and ensure that the chain is not twisted or knotted.
- Back hook free legs to the master link to avoid lashing legs which might accidentally become engaged or otherwise become a hazard.
- Take the load steadily and avoid shock loads.
- Do not leave suspended loads unattended. In an emergency cordon off the area.

In-service inspection and maintenance

Keep chain slings clean and protect from corrosion.

Regularly inspect chain slings and if in any doubt operatives should refer the sling to a competent person for thorough examination. Inspections should be used to monitor for:

- illegible markings
- distortion of fittings
- ineffective safety catches
- worn, stretched bent or twisted links
- cuts, nicks, gouges, cracks, corrosion or heat discolouration
- any other defect apparent to the chain or fittings

Reference Guidance

Further and more detailed advice on this equipment can be found in:

- The code of practice for the Safe Use of Lifting Equipment, published by LOLER Regulations.
- HSE Guidance Note PM39- Hydrogen Embrittlement of Grade T Chain.
- 1998 ACOP and guidance on safe use of lifting equipment.
- EN818 Short link chain for lifting purposes-Safety
- CPA Publications Reference No. CIG 0801 Guidance on Lifting Operations in Construction when using Excavators.

General Purpose Slinging Practice

Operatives Should Always

- ✓ Plan the lift, establish the weight of the load and prepare the landing area ensuring that it will take the weight.
- ✓ Check slings and equipment are free of damage, use slings/slinging methods suitable for the load and protect slings from sharp edges and corners.
- ✓ Attach the sling securely to the load and appliance and position hooks to face outwards.
- ✓ Ensure the load is balanced and will not tilt or fall.
- ✓ Keep fingers, toes etc. clear when tensioning slings and when landing loads.
- ✓ Ensure the load is free to be lifted.
- ✓ Make a trial lift and trial lower.

Operatives Must Never

- × Use damaged slings or accessories.
- × Twist, knot or tie the slings.
- × Hammer sling into position.
- × Overload slings due to the weight of the load or the mode of use.
- × Trap slings when landing the load.
- × Drag slings over floors etc. or attempt to pull trapped slings from under loads.
- × Allow personnel to ride on loads.
- × Stand under a suspended load.

Sling configuration and rating

Slings are available in single, two, three and four leg or endless form. The maximum load that a sling may lift in use will be governed by its mode of use and may vary. In the case of textile slings the SWL for the various modes of use is usually given on the information label. In other cases it is necessary to multiply the marked SWL by a mode factor.

The following three simple rules will ensure that the sling is not overloaded. In some cases this will mean that the sling will be underutilised although this is unlikely to hinder the user unduly. Where the maximum utilisation is required reference should be made to a competent person who understands the factors involved and who can perform the necessary calculations.

N.B - With multi-leg slings, when using less than the full number of legs, reduce the maximum load in proportion to the number of legs in use. Simply multiply the marked SWL by the number of legs in use expressed as a fraction of the total thus; one leg of a two leg sling = $\frac{1}{2}$ marked SWL, three legs of a four leg sling = $\frac{3}{4}$ marked SWL and so on.

Safe use of Slings -

- ✓ Good slinging practice must ensure that the load is as safe and secure in the air as it was on the ground and that no harm is done to the load, lifting equipment, other property or persons.
- ✓ Prior to use the sling attachments must be inspected for obvious defects. Then ensure the weight of the load and the lifting method is suitable before preparing the landing area making sure the floor is strong enough to take the load. Follow any specific instructions from the supplier.
- ✓ Ensure the lifting point is over the centre of gravity and that any loose parts of the load are removed or secured. Secure the sling firmly to the load by hooks onto lifting points or shackles, ensuring the sling is not be twisted, knotted or kinked in any way.
- ✓ Use packing to prevent damage to the sling from corners or edges and to protect the load.
- ✓ When attaching more than one sling to the hook of the appliance, use a shackle to join the slings and ensure that the hook is not overcrowded.
- ✓ Use a previously arranged, practiced and established code of signals to instruct the crane driver.
- ✓ Ensure the load is free to be lifted and not, for example, bolted down.
- ✓ Check that there are no overhead obstacles such as power lines.
- ✓ Make a trial lift by raising the load a little to ensure it is balanced, stable and secure and if not lower it and adjust the slinging arrangement. N.B - Where appropriate use tag lines to control the load.
- ✓ Make a trial set down, ensure the sling will not become trapped and the load will not tip when the slings are released. Use supports which are strong enough to sustain the load without crushing.
- ✓ Place hooks of free legs back onto the master link and take care to ensure that empty hooks do not become accidentally engaged.
- ✓ On completion of the lift, return all equipment to proper storage, as per guidance.
- × Never use damaged or contaminated slings or slings that may have come in contact with chemicals or heat.
- × Never drag slings over floors or attempt to drag a trapped sling from under a load.
- × Do not allow anyone to pass under or ride upon the load. Except under previously organised and agreed circumstance, the area should be kept clear.
- × Do not hammer, force or wedge slings or accessories into position.
- × Do not exceed the SWL or rated angle. Any choke angle must not exceed 120° and any basket angle must not exceed 90°.

Title: Lifting Chains

Issue: 1

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The customer's responsibilities

A safe system of work remains the customers responsibility at all times

Responsibilities include:

- Site Induction for the demonstrator.
- Preparation of a method statement.
- A risk assessment.
- Positioning of the crane or lifting appliance.
- Banking the crane.
- Slings the components.
- Assembling the components and installing them.