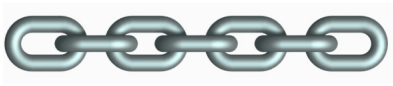
TATA STEEL

TATA

TECHNICAL INFORMATION SHEET

Transport chains and tensioners

1. Terminology



Lashing capacity

The maximum allowable tension in the chain.

- **Lashing capacity is NOT to be mistaken for the allowable weight of product the lashing can safely restrain.**
- When designing a restraint system and determining the required number of restraints, it is the lashing capacity and not the breaking force which must be taken into account.
- A 4-tonne lashing capacity chain will be denoted by LC 40 kN.

Breaking force

Maximum force the complete chain lashing, including load binder and connection components, can withstand.

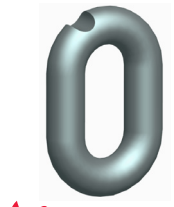
- The breaking force of the lashing assembly will be twice the lashing capacity.

2. Chain condition

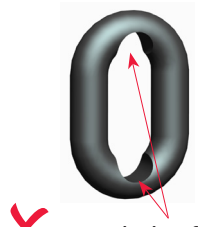
The following are considered to be signs of damage:

- Excessive wear: chain exceeds allowable wear.
  - 8 mm chain reduced to 7.2 mm.
  - 10 mm chain reduced to 9 mm.
- Twisted, bent or elongated links.
- Gouges or nicks: corners of product leading to damage on chain.
- Key hole effect.
- Cracks in the weld area.
- Severe corrosion.

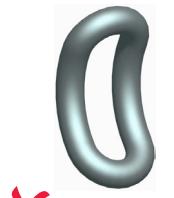
Never heat, weld or heat treat a chain.
Never secure a chain with a knot.
Never bolt two chains together to increase length.



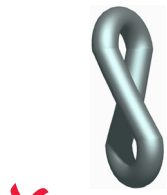
Gouged.



Key hole effect.



Bent.



Twisted.

3. Chain hooks

Snap hooks are the preferred chain hook when lashing chains are attached to lashing points.

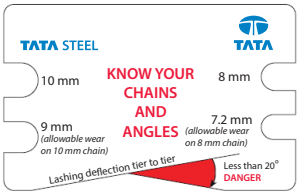
Attaching lashings directly to the trailer body can result in premature failure of the lashing assembly when the chain hook is incorrectly stressed.

Snap hooks in particular, are loaded at the tip of the hook when attached to trailer side raves or chassis beams instead of lashing points, leading to an opening of the hook and ultimately failure.

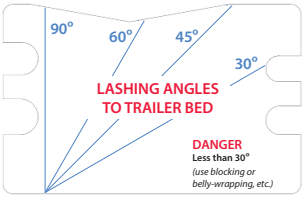
4. Chain Checker Card

A useful tool, the size of a credit card,
for determining lashing angles and wear of chain links.

Images of card are not to scale.



Front.



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5. Chain grades and sizes

7 mm Grade 8 chain
- 3 tonne lashing capacity.
- 1.1 kg per metre length of chain.

8 mm Grade 8 chain
- 4 tonne lashing capacity.
- 1.4 kg per metre length of chain.

10 mm Grade 8 chain
- 6.3 tonne lashing capacity.
- 2.2 kg per metre length of chain.

The most important factor to establish is the lashing capacity.

All chains must be Grade 8 minimum. Higher grade chains, such as Grade 10 and Grade 12, can offer higher lashing capacities in combination with a reduction in weight. For example, a 7mm Grade 12 chain has a lashing capacity of 4.7 tonnes and weighs only 1.28 kg per metre length of chain.

According to EN 12195-3, transport chains are to be marked with a metal tag in the same way that webbing straps have identification labels.

The capacities of chains are down-rated by 25% from the figures shown opposite to allow for bending of links over the product, against trailer and/or in the tensioner grab hooks.

6. Tensioner types

Bottle tensioner

- Can achieve a pre-tension of up to 3150 daN, but typically this figure will be closer to 1000 daN.
- Can be procured to match the lashing capacity of the chain.

Webbing ratchet

- Caution must be taken when webbing ratchets are to be used in combination with transport chains.
- The chain restraint rating is governed by the webbing ratchet rating (typically 2500 daN).

CAUTION

Overcentre loadbinder

- Overcentre loadbinders, also known as Sylvesters, are banned on all Tata Steel sites.

BANNED

7. Storage

Never leave unsecured chains or tensioners on the deck of the trailer.

Loose chains on trailer deck can slide off.

Securing equipment contained in a tray.

Warning!

Do NOT substitute a chain with a webbing strap. Do NOT substitute a webbing strap with a chain.

Lashing capacities and stretch characteristics of webbing straps and chains differ significantly.
When loaded to lashing capacity a webbing may stretch by up to 7%, whereas a chain will only stretch 2%.