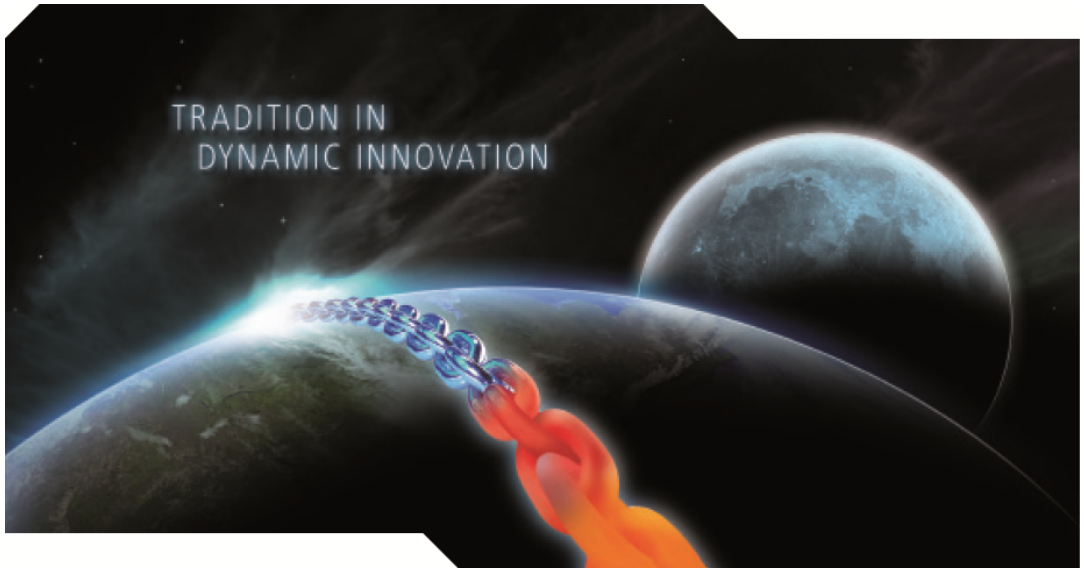
Source:
GDV

Source:
GDV



Load securing
with chains

Hidden Champion of the 21st Century
TOP 100
Top-Innovator

WORLDWIDE PRESENCE

- All of our plants are among the most modern chain production sites, forges and machining centres on the planet. All are highly automated.
- The RUD Group has more than 50 locations and approximately 1,200 employees.

Production Units
(with sales activity)

Sales Units
(with manufacturing activity)

PRODUCT RANGE

Sling and Lashing Systems

Military Technology

Conveyor & Drives

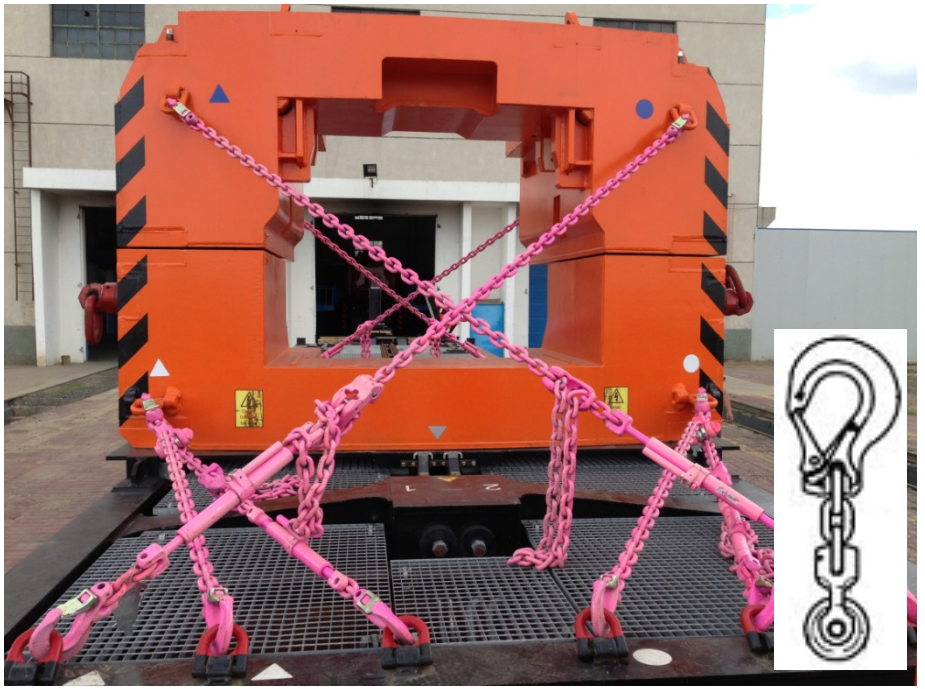
Tyre Protection Chains

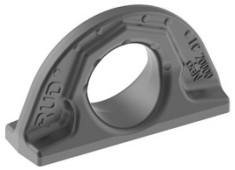
Non skid chains

Object Equipment

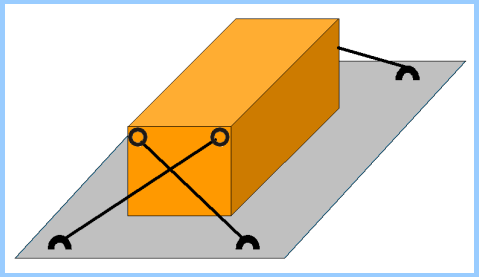
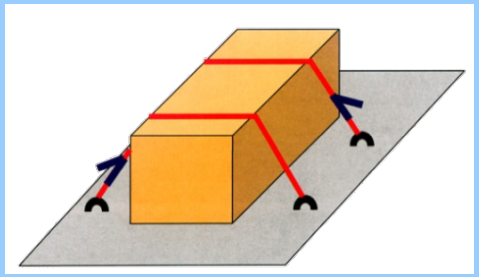
Barriertech

Lashing products



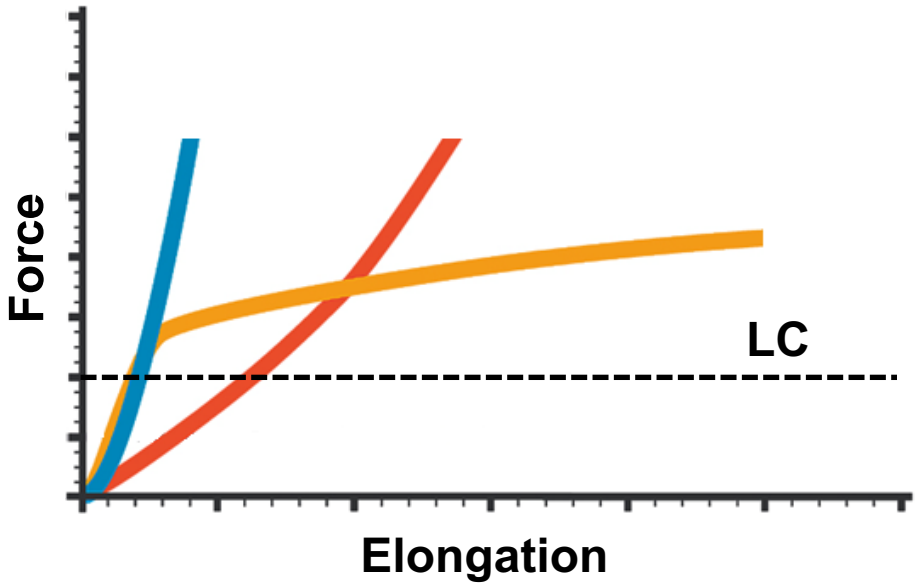


Right choice of lashing means

Lashing type	Chain	Belt
	++heavy loads++	++light loads++ !!! elongation!!! !!!edges!!!
	++ heavy loads ++ !!! elongation!!! !!! damaging!!!	++ light loads ++ !!!edges!!!

Lashing chains - Pro

- High forces
- Robust
- Long life
- Low elongation at LC
- High energy absorption



Basket chain

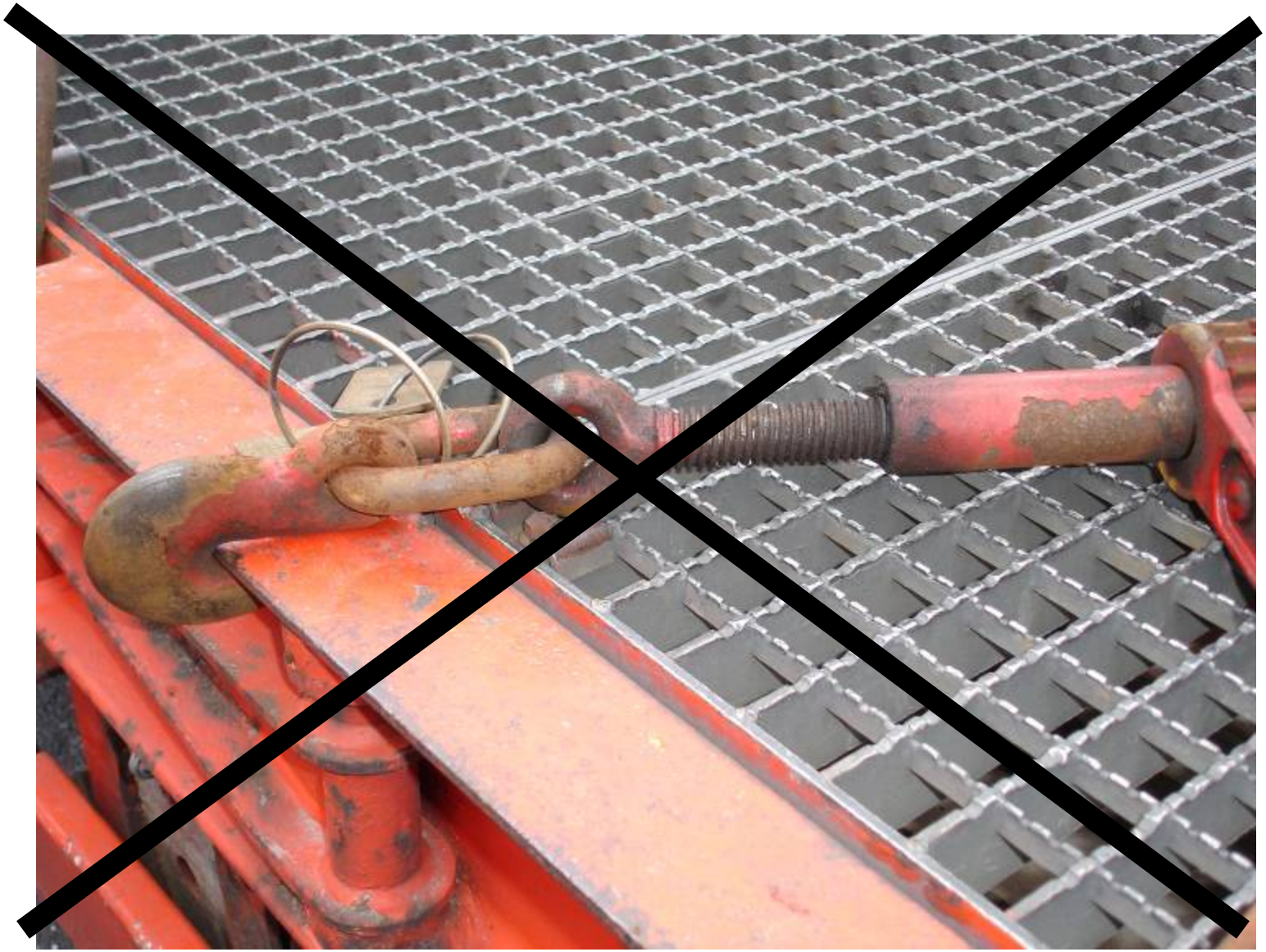
Handling

Assessment:

Hook load/ choke hitch/ sharp edge

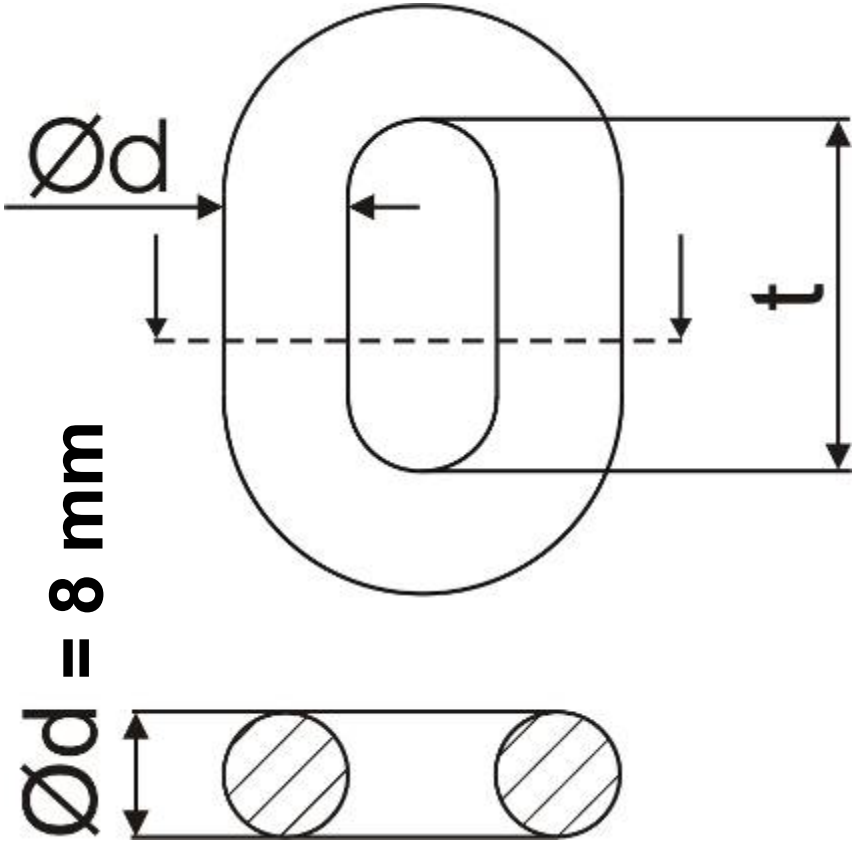
Unsuitable “lashing points”

Unsuitable “lashing points”



Basics of chain technology:

What does grade mean?



$$Area\ A = \frac{d^2(mm)\ x\ \pi}{4}\ x\ 2$$

$$A = \frac{8\ x\ 8\ x\ 3{,}14}{4}\ x\ 2 = 100\ mm^2$$

$$Example: breaking\ strength\ 80\ kN = 80.000\ N$$

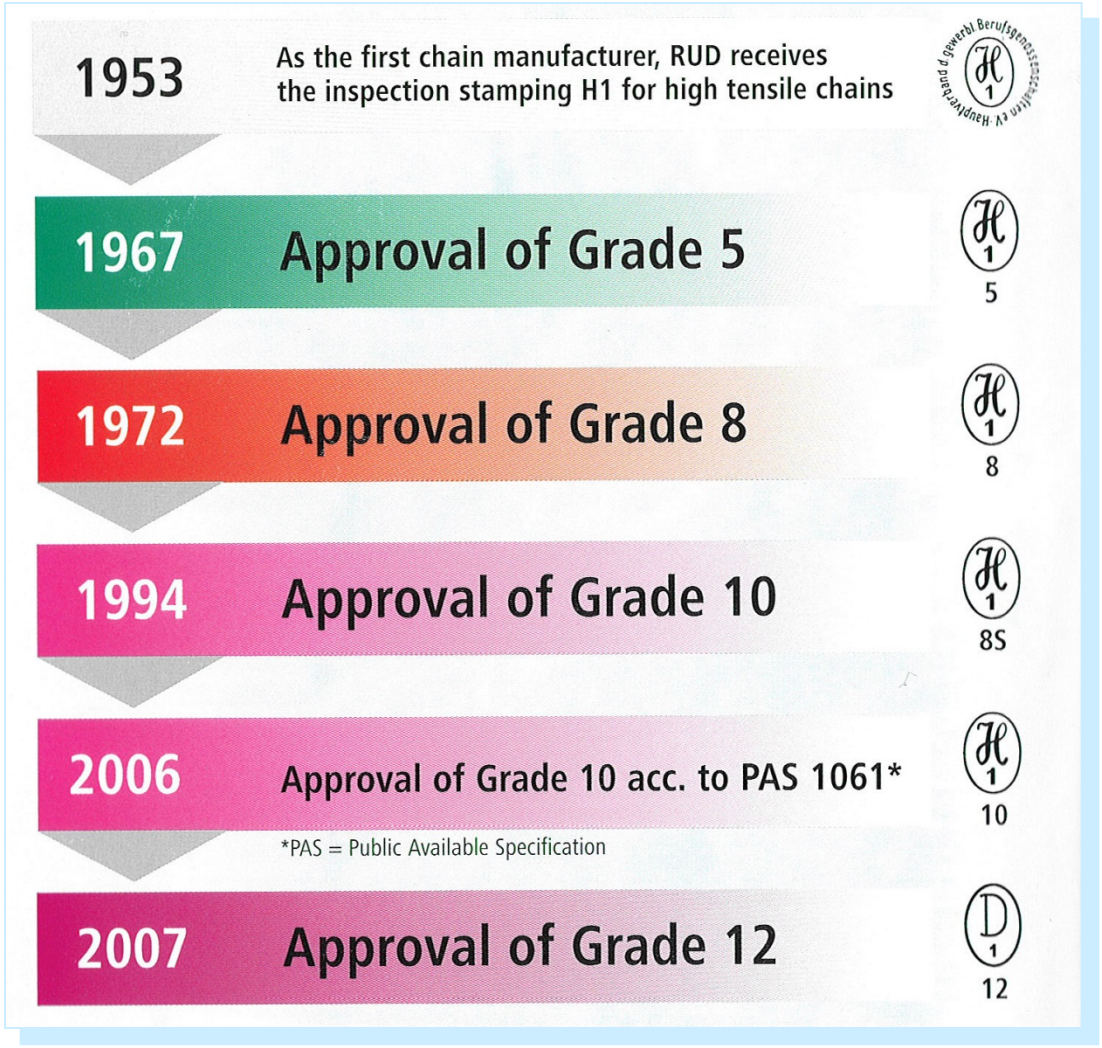
$$\sigma_B = \frac{F}{A} = \frac{80.000\ N}{100\ mm^2} = 800\ \frac{N}{mm^2}$$

(spec. min. breaking strength)

$$grade\ 8\ or\ 80$$

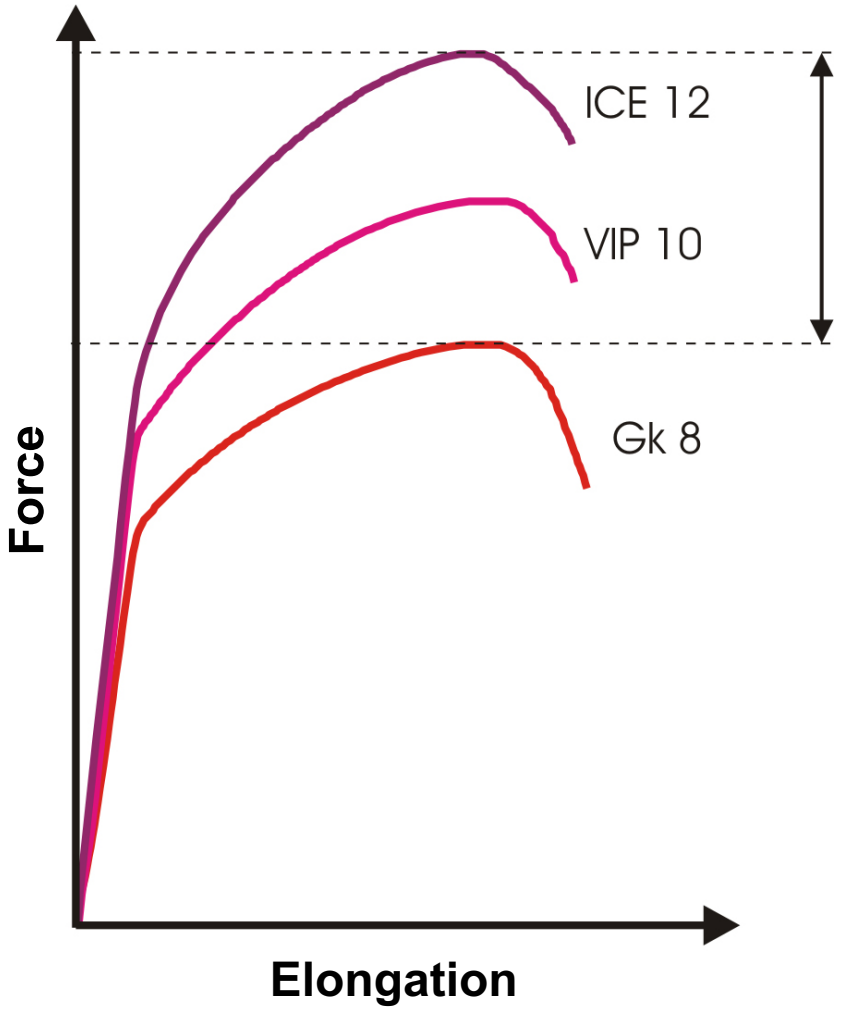
History of the chain technology:

Grades



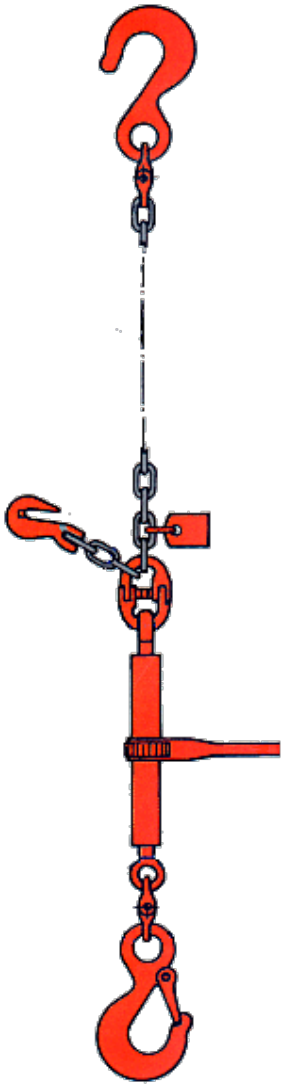
History of the chain technology:

Grades



Lashing chains on trial

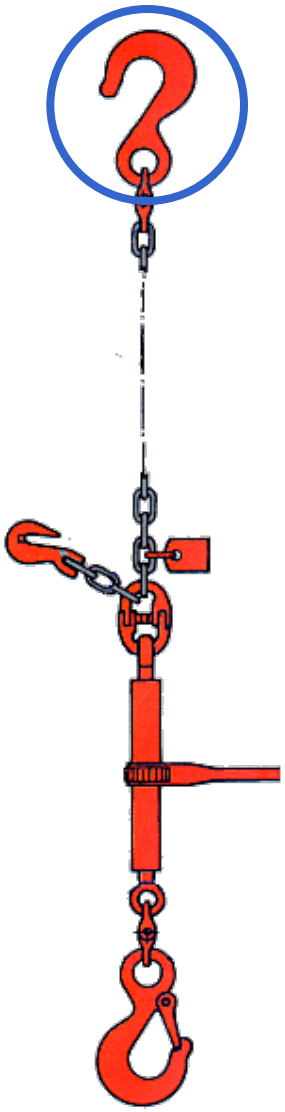
Norm conformity test – EN 12195-3



Prohibited

Lashing chains on trial

Norm conformity test – EN 12195-3

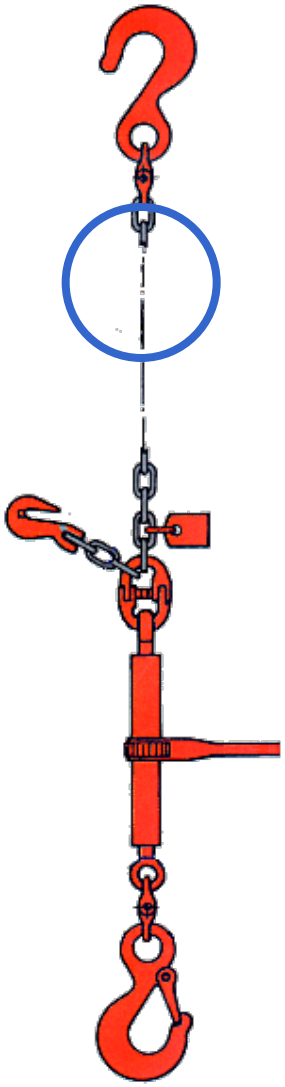


Prohibited

Connecting device
without safety latch (EN 1677-2)

Lashing chains on trial

Norm conformity test – EN 12195-3



Prohibited

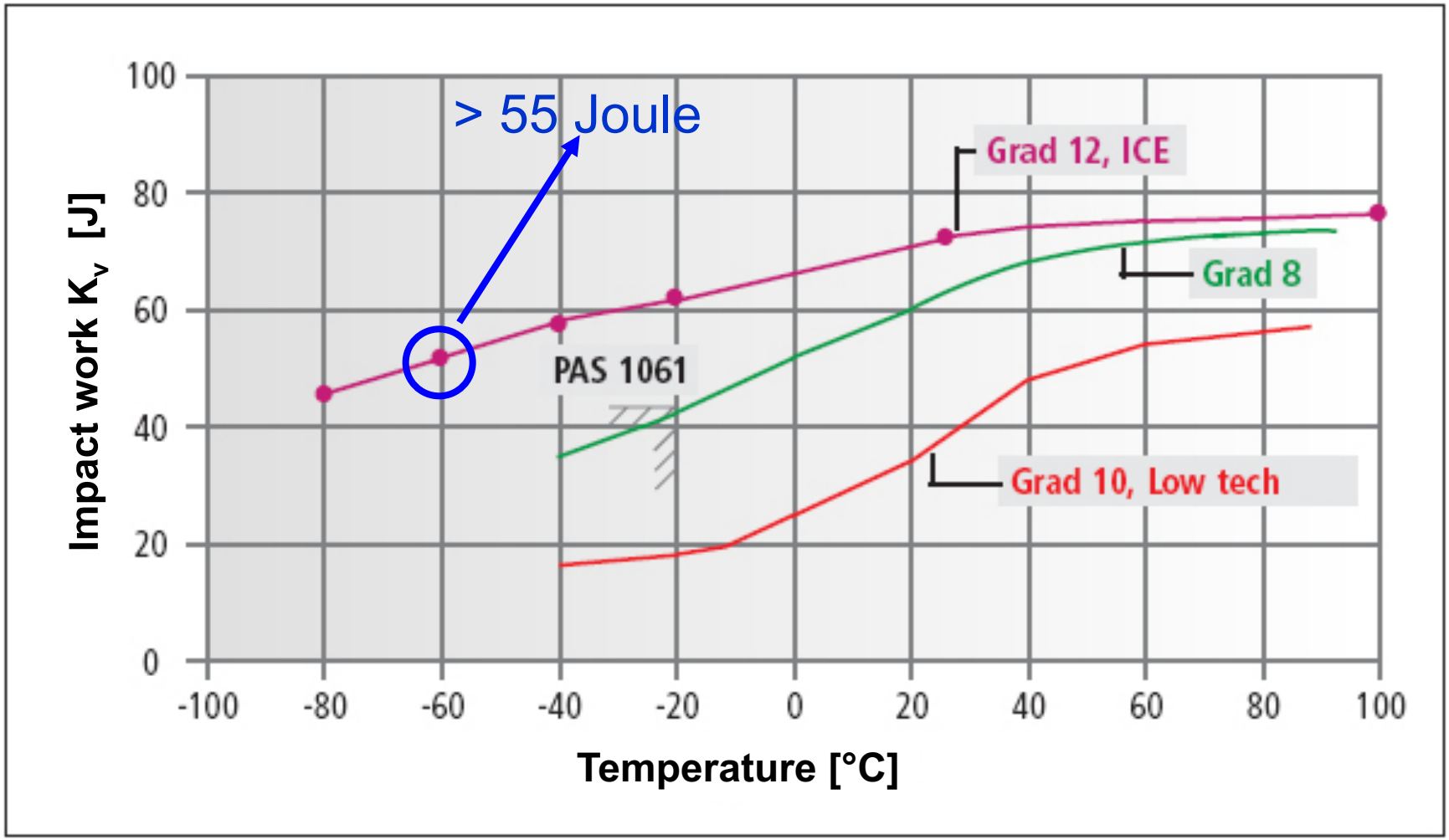
Chain:
- Lower than Grade 8
- No manufacturer‘s mark (EN 818-2)
- Long link chain

Application of round steel chains

Correct lashing chain (t = 3 x d)

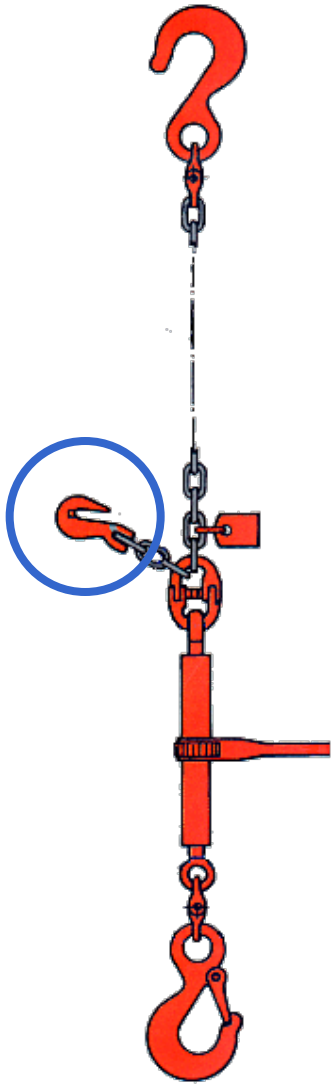
Diagram

Notched bar impact work - Temperature - Curves



Lashing chains on trial

Norm conformity test – EN 12195-3



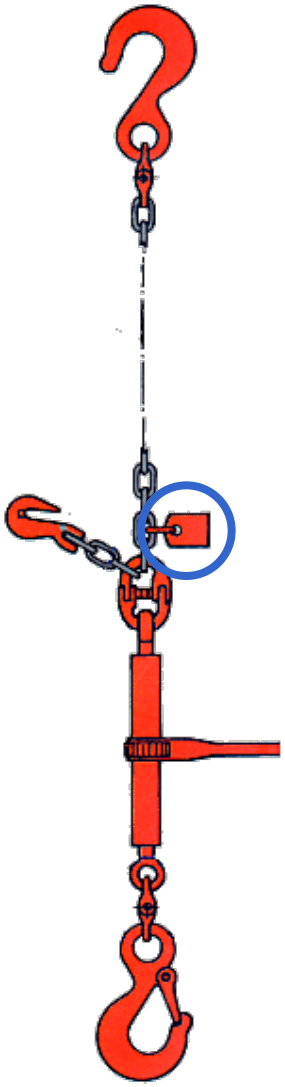
Prohibited

Shortening device:
- No locking device (DIN 5692)
- Breaking force reduction

(groove depth ≥ 5 x D)

Lashing chains on trial

Norm conformity test – EN 12195-3



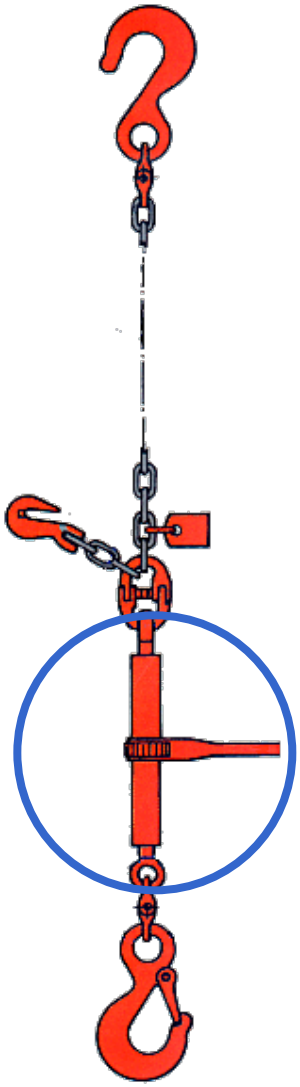
Prohibited

Identification tag :

- Not according to EN 12195-3
- Missing

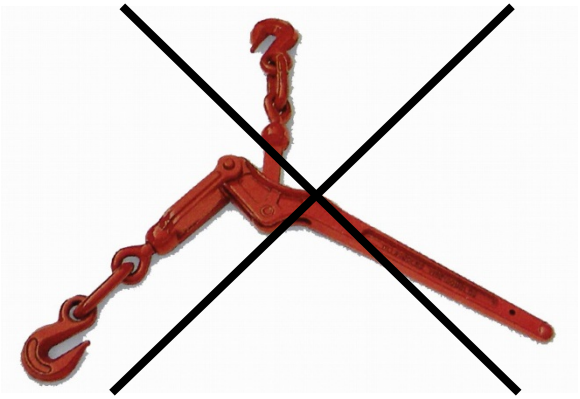
Lashing chains on trial

Norm conformity test – EN 12195-3

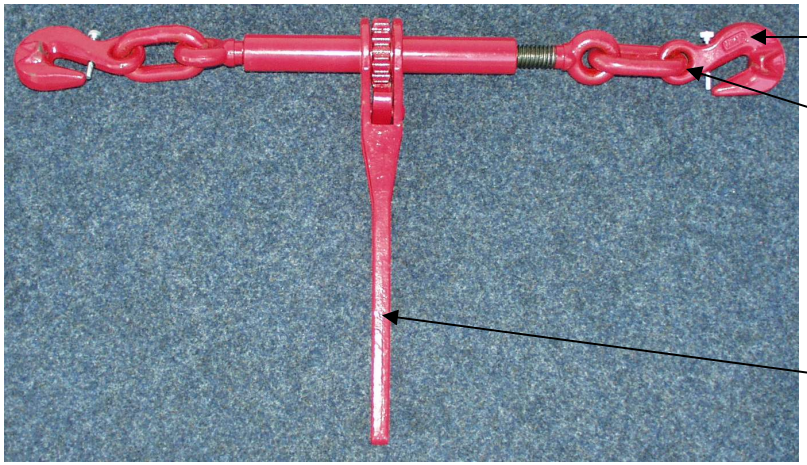


Prohibited

Tensioner:
- STF > 50% LC
- No manufacturer mark
- No take out securing
- Kickback > 150 mm



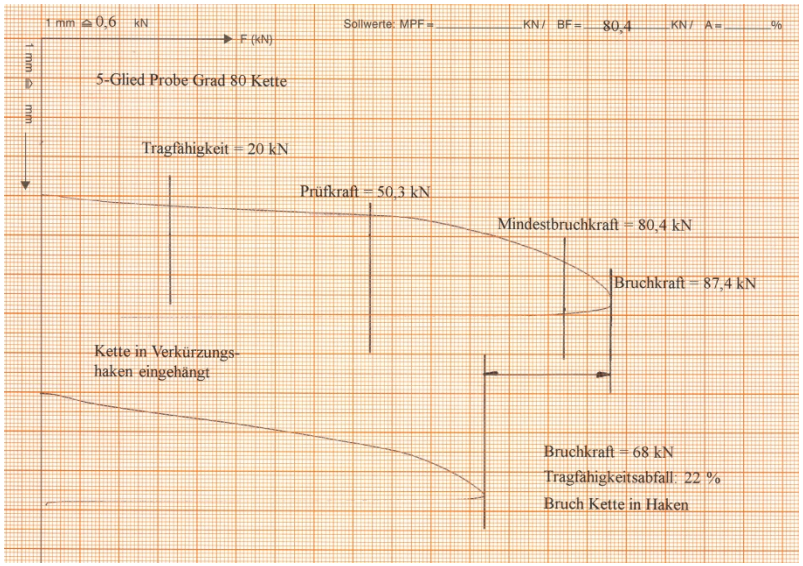
Investigation of a „cheap import“



No manufacturer mark

Breaking force reduction

Long ratchet lever



Test results:

- 22% breaking force reduction of the Grade 8-chain
- STF = 0,93 x LC

➔ 86% over allowed max. level

The use of hoists for load securing

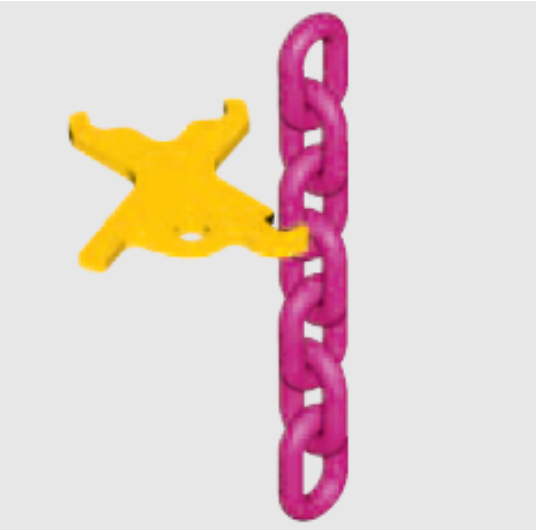
LC = WLL

Replacement criterias
according to DIN EN 12195-3

- Cracks on the surface, deformation of the link
- Extension more than 5 % of the pitch
- Wearout of a link more than 10 % of the nominal thickness
- Deformation, cracks, strong wearout or strong corrosion on the tensioner or connection devices

VDI 2700-3.1: annual inspection!

Testing gauge



Testing wear of nominal diameter

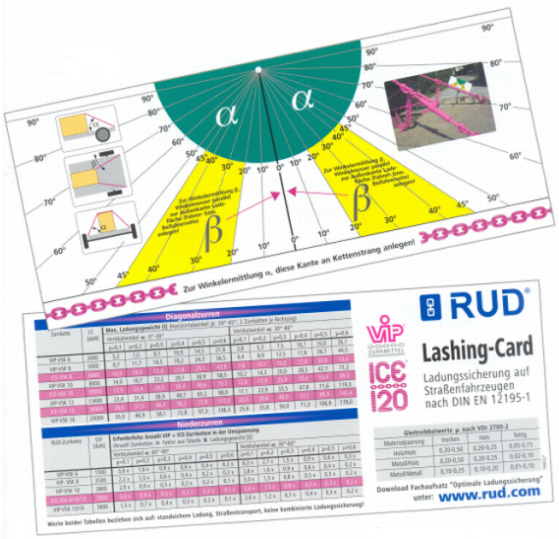
(10%)

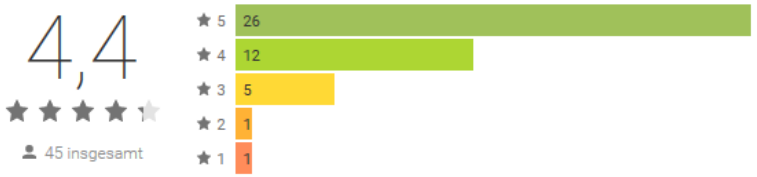
Testing plastic elongation caused by overload

(5% of pitch = 3% of link length)

Testing elongation of pitch caused by wear of nominal diameter

Optimal load securing





Thank you

for your attention!