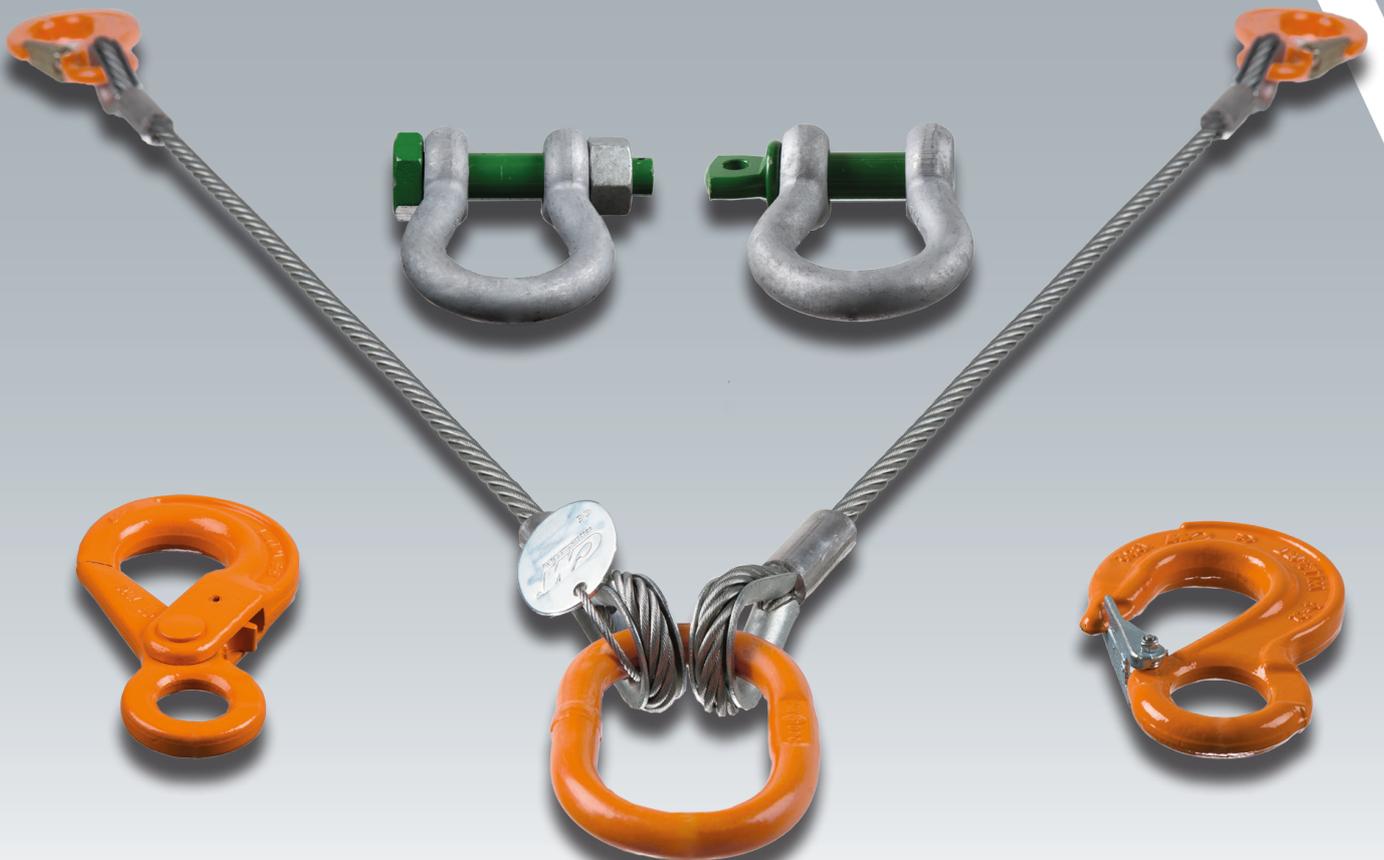


| | |
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Rope slings



User instructions

The following instructions only provide a general overview of the use of rope slings and do not replace the equipment manufacturers' operating instructions. Please also read our general user instructions for load carrying equipment and slings.

Lifting with slings should only be carried out by a trained and authorised rigger. Slings with broken, damaged or deformed links or accessories, or where an overload or other damaging occurrence is known, must be taken out of service and only be reused after inspection and required repairs have been carried out.

Delivery condition

The sling's shape and finish may not be changed by bending, welding, grinding, disassembly, drilling holes, removal of safety sections such as locks, bolts and safety pins without the manufacturer's permission. This will invalidate the manufacturer's warranty and liability.

Use limitations

Temperature

Rope slings are only suitable for use in the following temperature ranges:



If they are used within permissible temperature ranges there is no lasting reduction in capacity once the rope has returned to normal temperature. Operating the rope above the maximum permissible tempera-

| Rope end connection | Core | Permissible temperature °C | Load capacity % |
|---------------------------|-------|-------------------------------|--------------------|
| Aluminium wire rope clamp | Fibre | -40° to +100° | 100 |
| | Steel | -40° to +150° | 100 |
| Splice | Fibre | -40° to +100° | 100 |
| | Steel | -40° to +150° | 100 |
| | Steel | +150° to +200° | 90 |
| | Steel | +200° to +300° | 75 |
| | Steel | +300° to +400° | 65 |

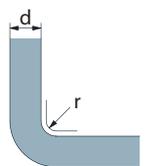
ture is not allowed and if this occurs it must be taken out of operation.

For use below -40C, contact the manufacturer.

Edge loading



Rope slings must not be placed under tension or pulled across sharp edges without protection. There are suitable edge protectors and protective hoses in the accessories section. A sharp edge is defined as one where the edge radius r is smaller than rope diameter d .



Chemicals



Rope slings are not designed for use in acids, strong alkalines or their gases. Please consult us before use in such environments and if they have been exposed to such chemicals they should be taken out of use and assessed by us. Aluminium clamps also only have limited chemical resistance.

Use in dangerous conditions



Use in extreme conditions such as galvanising plants, acid baths and ovens, or in the transport of dangerous goods such as molten metals, caustic substances or radioactive/nuclear materials is not permitted without clearance, approval and guidance from a trained inspector.

Lifting ropes for access xxxxx must comply with EN 14502-1 (suspended access equipment).

Usage instructions

Checking before first use

Before using a rope sling after delivery the following should be checked:

- The rope sling must match the order
- It must include the manufacturer's certificate
- The manufacturer's mark and load capacity on the sling must match the manufacturer's certificate

Check before starting work

Only use undamaged rope slings with legible load capacity information.

Before use check the rope for obvious defects such as kinks, corrosion, clamp damage etc:

- Check the rope sling for obvious defects (kinks, strong corrosion, damaged wire rope clamp, etc.)

Rope slings

▶ User instructions

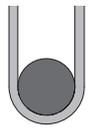
- Check the rope sling's load tag and the weight to be lifted
- Check if the sling type, rope sling, length and methods of attachment are suitable
- Check that the load can be moved freely and lifted safely
- Always wear gloves when working with rope slings

The load capacities specified assume impact-free loading. Slight impacts such as those caused by lifting, lowering or moving the load on the crane are allowed. Strong impact such as striking the load during transport or swinging the load are not permitted.

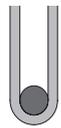
If rope slings with tight radii are bent, the load capacities should be reduced according to the table below to ensure optimum safety and service life, and to avoid lasting deformation or damage.

| Rope slings | | Cable-laid rope | |
|---------------|------------------------|-----------------|------------------------|
| Load diameter | % of the load capacity | Load diameter | % of the load capacity |
| >6 x d | 100 | >4 x d | 100 |
| >3 x d | 75 | >1 x d | 75 |
| >2 x d | 65 | | |

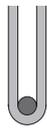
(d= rope diameter)



>6 x d
100%

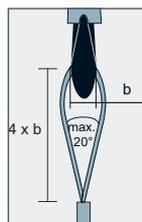


>3 x d
75%



>2 x d
65%

For single stranded or endless rope slings, the sling point should be located vertically above the centre of gravity. For multi-strand rope slings, the sling point should be on one level and around the centre of gravity. Make sure the correct sling type and rope sling are selected.



The opening angle of the rope loop may not exceed 20° otherwise the wire rope clamp will be damaged. If loops are to be suspended from a crane hook with inserted thimbles they must have enough space to move freely.

- Components such as lifting rings, load hooks and shackles must be able to move freely. Lifting rings must have enough space in the crane hook to move freely.

- If loads are slung more than once the rope swing windings must be laid close together and not cross.
- Rope slings may not be shortened by entwining the crane hook, knotted or lengthened by knotting together several slings.



- Wire rope clamps, splices and the red marked area of endless cable-laid ropes must not be allowed to bend. They should not lie on the load edges, in the crane hook area or in strappings. Otherwise the rope bundle of the cable-laid rope will be irreparably damaged (see image)!

- If a single rope sling is used (especially for spliced ropes) suitable measures are to be taken to counter the rope rotating under load – for example by attaching a load rope so the rigger can guide the load. Rope slings may not be tensioned by twisting, which risks damaging the load or rope bundle

- The load must not be set down directly onto the sling.

Rope sling storage

Rope slings should be stored in a dry, clean location, preferably hung up, away from harmful chemicals and not accidentally damaged. Storage temperatures must be within the permissible range (see permissible temperature ranges).

Rejection criteria

If during checking any one of the following criteria are met, the rope sling should be discarded:

- If the label is no longer in place or illegible.
- Cracks, deformation, wear or excessive corrosion are evident in lifting rings, links, load hooks or thimbles.
- Cracks and deformation or wear of more than 5% on wire rope clamps, loose or free splices.
- More than 10% wear of the rope's diameter.
- Braid breakage.
- Loosening of the outer layer of the free length.
- Core emerging.
- Burning of power lines, welds etc



- Kinks and bends.



- Compression of the free length.



- Excessive corrosion.



- Closely packed wire breaks such as three adjacent breaks in the outer braid wire; maximum permissible number of visible and random breaks in exterior wires (according to EN 13414-2):



slings

- Rope slings are to be kept in a safe operating condition through regular maintenance in line with the manufacturer's specifications and regulations.
- Regular inspection of slings according to section 8 (13) AMVO are to be carried out at least once a year by a qualified tester, or more frequently in heavy usage applications.
- After accidental damage or collision that could impact on safety such as a falling load, collision or exposure to excessive heat, all load-carrying devices must be inspected according to AMVO section 9 (1) for their condition.
- Ongoing records must be maintained on all inspection and maintenance work. Inspection means primarily visual and functional testing to assess the condition of components for damage, wear, corrosion or other faults, as well as the effectiveness of safety features.
- All inspections must be organised by a trained and approved operator.
- Repairs and overhauls may only be carried out by the manufacturer or authorised personnel using original spare parts.

| Rope sling type | Length of 6 x d | Length of 30 x d |
|-----------------|-----------------|------------------|
| Steel wire rope | 6 | 14 |
| Cable-laid rope | 15 | 40 |

d... Rope diameter

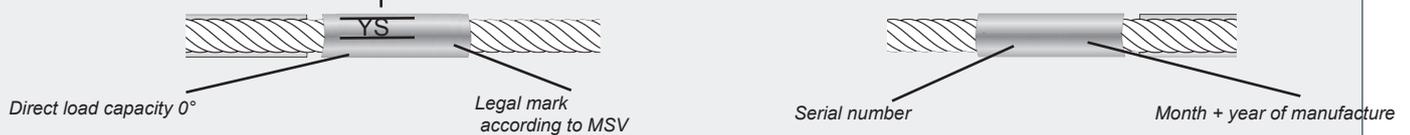
Maintenance, testing and repair of rope

Labelling

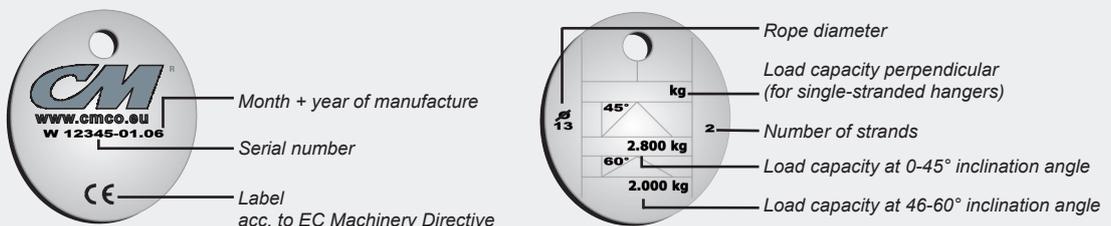
All wire rope and wire rope slings are shipped with a stamp or load capacity tag with a sequential test number, conformity and factory certification and user instructions.

Wire rope stops

Registered manufacturer mark of Yale Industrial Products Kft. Fachverband Seile und Anschlagmittel e.V. (Trade Association for Ropes and Load Attachment Rigging)



Wire rope slings



Rope slings

► User instructions

Load capacity table



Load capacity WLL in t for symmetrical loading according to EN 13414 (also see general advice for slings here.)

| Safety factor | | 1 strand | | 2 strands | | | | 3 and 4 strands | | Endless rope | |
|---------------------|-------------------|-------------------|-------|-----------|-----------|---------|-----------|-----------------|-----------|--------------|-------|
| 5 | | | | | | | | | | | |
| | Inclination angle | 0° | 0° | 0 - 45° | 46° - 60° | 0 - 45° | 46° - 60° | 0 - 45° | 46° - 60° | 0° | 0° |
| | Load factor | 1 | 0.8 | 1.4 | 1 | 1.12 | 0.8 | 2.1 | 1.5 | 2 | 1.6 |
| Rope thickness (mm) | Core | Load capacity (t) | | | | | | | | | |
| 8 | IWRC | 0.75 | 0.60 | 1.05 | 0.75 | 0.84 | 0.60 | 1.55 | 1.10 | 1.50 | 1.20 |
| 10 | IWRC | 1.15 | 0.92 | 1.60 | 1.15 | 1.28 | 0.92 | 2.40 | 1.70 | 2.30 | 1.85 |
| 12 | IWRC | 1.70 | 1.36 | 2.30 | 1.70 | 1.90 | 1.36 | 3.55 | 2.50 | 3.40 | 2.70 |
| 14 | IWRC | 2.25 | 1.80 | 3.15 | 2.25 | 2.52 | 1.80 | 4.80 | 3.40 | 4.50 | 3.60 |
| 16 | IWRC | 3.00 | 2.40 | 4.20 | 3.00 | 3.36 | 2.40 | 6.30 | 4.50 | 6.00 | 4.80 |
| 18 | FC | 3.40 | 2.72 | 4.80 | 3.40 | 3.80 | 2.72 | 7.20 | 5.20 | 6.80 | 5.65 |
| 20 | FC | 4.35 | 3.48 | 6.00 | 4.35 | 4.87 | 3.48 | 9.00 | 6.50 | 8.70 | 6.90 |
| 22 | FC | 5.20 | 4.16 | 7.20 | 5.20 | 5.82 | 4.16 | 11.00 | 7.80 | 10.40 | 8.40 |
| 24 | FC | 6.30 | 5.04 | 8.80 | 6.30 | 7.05 | 5.04 | 13.50 | 9.40 | 12.60 | 10.00 |
| 26 | FC | 7.20 | 5.76 | 10.00 | 7.20 | 8.06 | 5.76 | 15.00 | 11.00 | 14.40 | 11.80 |
| 30 | IWRC | 11.10 | 8.88 | 15.50 | 11.10 | 12.43 | 8.88 | 23.30 | 16.60 | 22.20 | 17.70 |
| 40 | IWRC | 18.50 | 14.80 | 26.00 | 18.50 | 20.72 | 14.80 | 39.00 | 28.00 | 37.00 | 30.00 |

Reduction factors

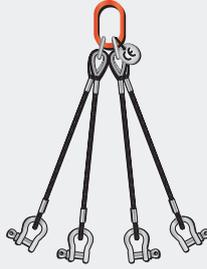


If the chains are subject to load obstacles (e.g. temperature too high, edge loading ...), the maximum loading capacities in the loading table are to be reduced. The load factors below are to be used for this. Please also note the details in the user information.

| Rope end connection | Core | Permissible temperature °C | Load factor |
|---------------------------|-------|-------------------------------|-------------|
| Aluminium wire rope clamp | Fibre | -40° to +100° | 1 |
| | Steel | -40° to +150° | 1 |
| Splice | Fibre | -40° to +100° | 1 |
| | Steel | -40° to +150° | 1 |
| | Steel | +150° to +200° | 0.9 |
| | Steel | +200° to +300° | 0.75 |
| | Steel | +300° to +400° | 0.65 |

| Rope slings | | Cable-laid rope | |
|---------------|-------------|-----------------|-------------|
| Load diameter | Load factor | Load diameter | Load factor |
| >6 x d | 1 | >4 x d | 1 |
| >3 x d | 0.75 | >1 x d | 0.75 |
| >2 x d | 0.65 | | |

Most commonly used wire rope slings

| 1 strand | 2 strands | 3 strands | 4 strands |
|---|---|--|---|
|  |  |  |  |
| CM08-1-**-****-ML-CSH | | | CM08CSH |
|  |  |  |  |
| CM08-1-**-****-ML-ASSP/BN | | | |
|  |  |  |  |
| CM08-1-**-****-ML-CSH-CGH | | | |

Designation

WRFC-2-08-300-ML-CSH

