

## User information

# Wire Rope Slings

The following information does not claim to be exhaustive. Further information on the use of slings and load suspension equipment should be taken from the relevant employers' insurance association regulations and state regulations.

Intended use:  
for anchoring and lifting loads only

**The original documents are those in German.**

**Versions in other languages have been translated from the German original.**

**1.) Improper use**



The improper use of wire rope slings poses a risk to people and property. People in close proximity to or beneath the load are at particular risk. Beware of suspended loads.

**Hauling ropes must not be used to lift loads!**

Use is solely permitted by trained and instructed persons and under consideration of the following standards and guidelines: DIN EN 13414 1-3, DGUV regulation 100-500, DGUV regulation 109-005, Industrial Health and Safety Ordinance (BetrSichV).

**2.) Before every use:**

- a. Conduct a careful visual inspection of the wire rope slings to check for damage and a safe usage condition.
- b. Read the user information and comply with this during use.

**3.) The product must not be used in the event of:**



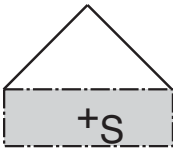
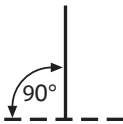
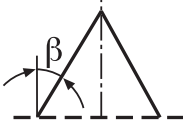
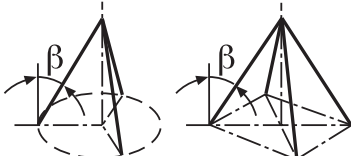
- a. Broken strands
- b. Wire breaks involving more than 6 wires over a length of 6xD
- c. Wire breaks involving more than 14 wires over a length of 30xD
- d. Three adjacent wire breaks on the outer wires of a strand or wire break nests.
- e. Expansion of the hook by more than 10%.
- f. Kinks, bends, birdcages, protrusion of the rope core or other damage that causes the deformation of the wire rope construction.
- g. Loosening of the outer layer in the free length.
- h. Crushing in the free length.
- i. Crushing in the support area with more than 4 wire breaks in stranded ropes and with more than 10 wire breaks in cable-laid ropes.
- j. Signs of corrosion
- k. Damage or severe wear to the rope and/or the terminals.
- l. Rope wear of 10% of the nominal diameter.
- m. Wear, deformation, tears and similar damage to press fittings.
- n. Extracted splice stitches.
- o. Protruding rope ends when using grommets (in the impact area – red marking).
- p. Heat-induced damage visible due to the discolouration of the strands and/or pitting on the strands due to electric arcs.
- q. Pitting corrosion on strands or a reduction in the flexibility of the rope due to severe internal corrosion.

3.) r. Faulty hook locking mechanism. (Not applicable to foundry hooks)  
**Grounds: Foundry hooks are only used for special purposes.**  
**Their connection to anchors or similar is therefore not permitted!**

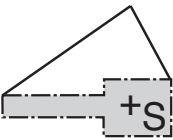
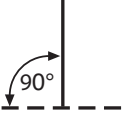
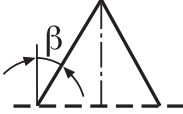
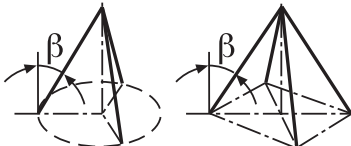
- 4.) **Determine the load weight and centre of gravity:**
- The wire rope sling's working load limit (WLL) must not been exceeded (**Table P. 6**).
  - Rope nominal diameter: **minimum 8 mm**
  - The angle of inclination of each leg must not exceed  $60^\circ$  (**Fig. 1**).
  - Hang unused chain legs in the suspension head.
  - Note the reduced working load limit of the legs used!

**Fig. 1**

**Symmetrical load**

	1 leg 	2 legs 	3 and 4 legs 
Angle of inclination $\beta$	$0^\circ$	$0^\circ-45^\circ$ $45^\circ-60^\circ$	$0^\circ-45^\circ$ $45^\circ-60^\circ$
Load factor	1	1.4   1.0	2.1   1.5

**Non-symmetrical load**

	1 leg 	2 legs 	3 and 4 legs 
Angle of inclination $\beta$	$0^\circ$	$0^\circ-45^\circ$ $45^\circ-60^\circ$	$0^\circ-45^\circ$ $45^\circ-60^\circ$
Load factor	1	1   1	1.5   1

5.) **Anchorage points:** only use suitable anchorage points of a sufficient size.

## 6.) Basket hitch slinging:



### The use of basket hitch slinging is prohibited!

This rule excludes:

- Large loads if the sling legs will not slide together and the load cannot shift (**Fig. 2a**).
- Long, bar-shaped loads may only be lifted using basket hitch slinging if the load is prevented from skewing, the sling legs are prevented from sliding and the load or parts thereof are prevented from shooting out (**Fig. 2b**).



Fig. 2a



Fig. 2b

## 7.) Identification tags:

Wire rope slings with no or illegible test data tags and load indicators must not be used.

## 8.) Safety instructions:



- Do not subject ferrules to bending stresses.
- Do not knot chains or move them over sharp edges (**Fig. 3**) (edge radius smaller than nominal rope diameter). Protect the chain using an edge guard or buffers (**Fig. 4**).
- Attached loads must not be welded **without** an isolating connection!
- Loops, master links and thimbles must be freely movable on the crane hook (**Fig. 5**).
- Strain must not be placed on the narrow ends of hooks.
- The load must only be hoisted from the base of the hook and in the direction of the load.
- Maximum sewn termination opening angle is  $20^\circ$ .
- Do not grasp under the strapping.

Fig. 3

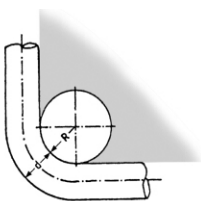
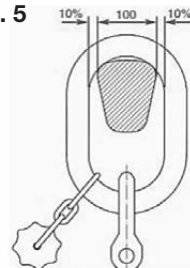


Fig. 4



Fig. 5



## 9.) Deviations from normal operating conditions

These require reductions to the working load limit, for example, in the case of:

- Non-symmetrical (uneven) loads (reduced load lifting factors).
- Using a choker hitch (20% reduction in the working load limit)

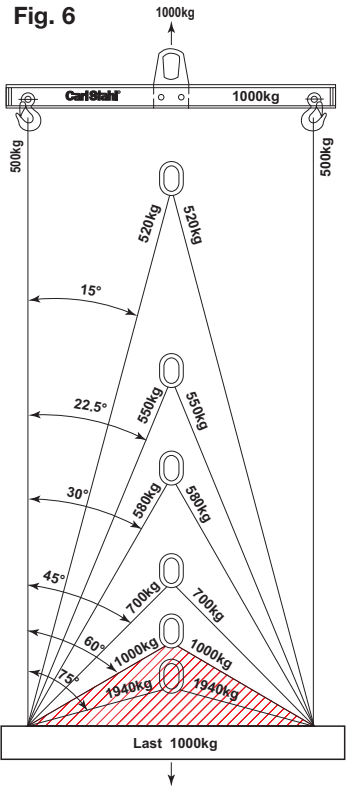
### Reduction in the working load limit of slings at different angles of inclination (Fig. 6)

#### Reduction in the working load limit with:

- Choker hitch: Loss = 20%
- Angle of inclination:
  - 0° - 45° Loss = 30%
  - 45° - 60° Loss = 50%

**Angles of inclination over 60° are prohibited!**

- Use outside the temperature range -40° to +100°C.



## 10.) Ban on the use of chain slings:



In acids and lyes (corrosive) due to the invisible corrosion pits between the strands and wires.

## 11.) Fittings and accessories for wire rope slings:




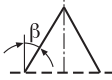

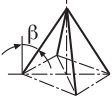

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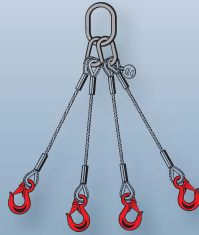
- Mechanical damage due to crushing, indentations or crack formation.
- Deformation caused by bending, twisting, or impressions.
- Damage to securing devices and cross-section reductions of 5% or more in the case of eyelets, bolts and brackets on shackles and hooks.
- Damage to the terminals: wear, deformation or cracks on ferrules or extended splices.

## 12.) Wire rope sling inspections and repair:

- Only to be conducted by qualified persons.
- After one year at most.
- Fittings must be inspected at least every 3 years to ensure they are free from cracks.
- Implementation at or by Carl Stahl.

**In the case of the continual use of wire rope slings, the inspection intervals must be shortened in accordance with the Industrial Health and Safety Ordinance!**

	Single leg wire rope sling	Two leg wire rope sling		Three and four leg wire rope slings		Continuous rope
Angle of inclination	0°	0°-45°	Over 45° Up to 60°	0°-45°	Over 45° Up to 60°	0°
						
	Direct	Direct	Direct	Direct	Direct	Tied
Rope nominal Ø mm	Working load limits					
	kg					
8	700	950	700	1450	1050	1000
9	850	1200	850	1800	1300	1400
10	1000	1400	1000	2100	1500	1600
11	1250	1800	1250	2600	1900	2000
12	1500	2100	1500	3200	2300	2400
13	1750	2500	1750	3700	2600	2800
14	2000	2800	2000	4200	3000	3200
16	2700	3800	2700	5700	4000	4300
18	3150	4400	3150	6600	4700	5000
20	4000	5600	4000	8400	6000	6400
22	5000	7000	5000	10500	7500	8000
24	6300	8800	6300	13200	9400	10000
26	7000	9800	7000	14700	10500	11200
28	8000	11200	8000	16800	12000	12800
32	11000	15400	11000	23000	16500	17600
36	14000	19000	14000	29000	21000	22400
40	17000	23500	17000	36000	26000	27200
44	21000	29000	21000	44000	31500	33500
48	25000	35000	25000	52000	37000	40000
Factor $K_L$	1	1.4	1	2.1	1.5	1.6
<p>NOTE 1 The working load limits in the table above assume that for one-legged wire rope slings without a thimble loops, the anchorage has a diameter of at least twice the rope nominal diameter.</p> <p>NOTE 2 The table above shows the working load limits for wire rope slings with pressed terminals in various arrangements.</p>						



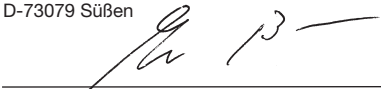
# EC Declaration of Conformity

Acc. to the EC Machinery Directive 2006/42/EC, Appendix IIA

We hereby declare that the machine/equipment indicated below, in its design and construction and in the version that we market, conforms to the fundamental safety and health requirements of EC directive 2006/42/EC and the harmonized and national standards and the technical specifications below.

Any modification to the machine/equipment that the manufacturer have not authorized voids this declaration.

This declaration shall also become invalid if the machinery/equipment is not used in line with the intended use illustrated in the operating instructions and if the regular inspections required in accordance with the Industrial Health and Safety Ordinance and DGUV regulation 100-500 are not conducted.

<b>Description</b>	<b>Wire rope slings</b>
Manufacturer	Carl Stahl GmbH Tobelstr. 2 D-73079 Sülben
Applied harmonized standards	DIN EN ISO 12100 DIN EN 13414 – 1/ -2/ -3 DIN EN 1677 – 2/ -3/ -4/ -5/ -6
Applied national standards and technical specifications	DGUV regulation 100-500 DGUV regulation 109-005 Industrial Health and Safety Ordinance
Person authorised to compile the Declaration of Conformity	Michael Baumann Carl Stahl GmbH D-73079 Sülben 
Sülben, 28/10/2014	_____ Michael Baumann - CE agent Name, position and signature of the agent

**Carl Stahl GmbH**

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