

# Operating manual

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## Rope pulley

AL-A

ST-A



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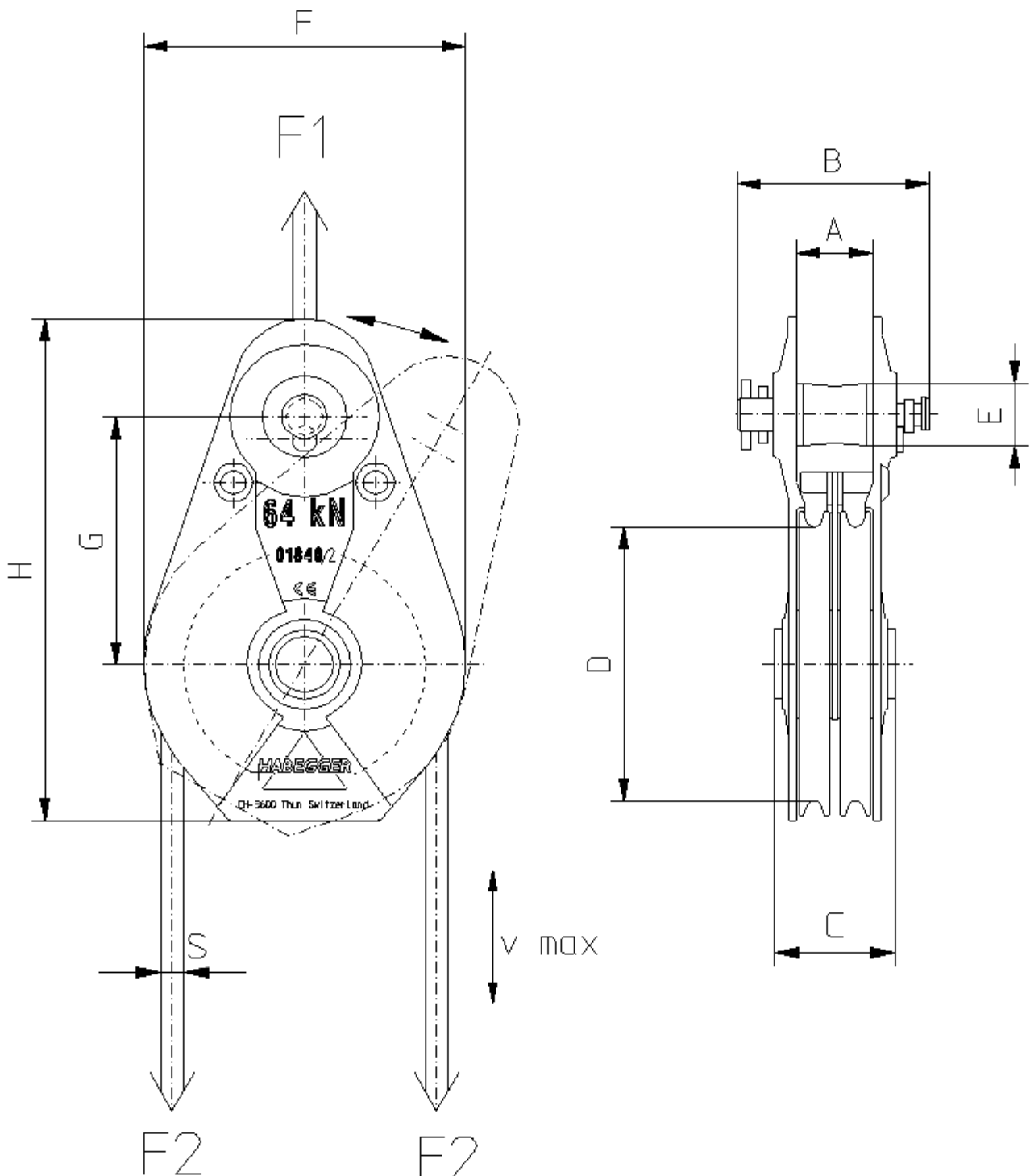
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## Content

|       |  |   |
|-------|--|---|
| 1     | General description.....                         | 3 |
| 2     | General safety rules .....                       | 4 |
| 2.1   | Safety information in this operation manual..... | 4 |
| 2.2   | Intended use.....                                | 4 |
| 2.3   | Warranty and liability .....                     | 4 |
| 2.4   | Behavior in an emergency situation .....         | 4 |
| 2.5   | Preparation .....                                | 5 |
| 2.5.1 | Anchoring .....                                  | 5 |
| 2.5.2 | Load.....  | 5 |
| 2.5.3 | Rope .....                                       | 5 |
| 2.6   | Working .....                                    | 5 |
| 2.6.1 | Pulling and lifting.....                         | 5 |
| 3     | Design and function .....                        | 6 |
| 3.1   | Technical specifications AL-A.....               | 6 |
| 3.1   | Technical specifications ST-A.....               | 6 |
| 4     | Operation .....                                  | 7 |
| 4.1   | Preparation .....                                | 7 |
| 4.1.1 | Anchoring .....                                  | 7 |
| 4.1.2 | Load.....  | 7 |
| 4.1.3 | Inserting rope.....                              | 8 |
| 4.2   | Storage and transport.....                       | 8 |
| 5     | Maintenance .....                                | 8 |
| 6     | Spare parts .....                                | 8 |
| 7     | Disposal.....                                    | 8 |

## 1 General description

| Rope pulley | Rollers | A (mm) | B (mm) | C (mm) | D (mm) | E (mm) | F (mm) | G (mm) | H (mm) |
|-------------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| AL-A 32kN   | 1       | 24     | 87     | 58     | ∅100   | ∅32    | 120    | 115    | 200    |
| AL-A 64kN   | 1       | 49     | 130    | 85     | ∅170   | ∅45    | 226    | 180    | 364    |
|             | 2       | 54     | 135    | 85     | ∅195   | ∅45    | 226    | 180    | 364    |
| ST-A 32 kN  | 1       | 32     | 87     | 57     | ∅105   | ∅35    | 130    | 120    | 226    |
|             | 2       | 64     | 119    | 89     | ∅105   | ∅50    | 130    | 120    | 226    |
| ST-A 64 kN  | 1       | 49     | 130    | 85     | ∅170   | ∅45    | 226    | 180    | 348    |
| ST-A 128 kN | 1       | 70     | 144    | 100    | ∅260   | ∅65    | 325    | 275    | 526    |
|             | 2       | 70     | 144    | 100    | ∅260   | ∅65    | 325    | 275    | 526    |



## 2 General safety rules



The Jakob Rope Systems products comply with the current safety requirements of the European Union according to Directive 2006/42/EC (Machinery Directive), the relevant standards for rope systems and requirements for product safety.

However: Laws, regulations and safety devices do not offer protection against carelessness and negligence!

Only use the rope pulley in perfect condition, complying with the operation manual.

Before you work with the rope pulley, you must carefully read and comply with the safety information below.

**This is for your safety!**

### 2.1 Safety information in this operation manual

For hazards, notes and important information, the following symbols and descriptions are used:



- Notices are particularly important information which you must comply with when operating the equipment for its intended use.



- Caution! Note indicates hazard for the machine, machine parts and the environment.



- Danger! Note referring to hazards to health and the life of the operator and other persons in the work area.

### 2.2 Intended use

The rope pulley is designed for temporary installations for deflecting wires and fiber ropes, or to double pulling force. It is not designed for continuous loading or for deflecting continuously moving ropes.



- The rope pulley must not be used to transport persons.

### 2.3 Warranty and liability

The liability and warranty provisions of the general T&C of Jakob Rope Systems apply. Especially T&C points 10 and 11.

### 2.4 Behavior in an emergency situation

Before starting work, always inform yourself whether and where there is a mobile phone network or where a traditional telephone is available. Check the availability of a first-aid box.

## 2.5 Preparation

### 2.5.1 Anchoring



- The anchors must have a sufficient rated load.
- Always slide in anchor bolts fully and lock by rotating.
- Attach the rope pulley to tested attachment equipment with a suitable rated load, such as wire rope strops or textile lifting slings on the anchor bolt.
- Never use damaged attachment equipment.
- In the unloaded condition, rope couplings and fixings must not come undone of their own accord.
- The rope pulley must be able to adjust freely in the pulling direction of the rope. Otherwise there is a risk of the housing breaking.
- When remaining in the same location for longer periods: Regularly check attachments.

### 2.5.2 Load



- The efficiency of deflection devices must be considered when designing the system, see section 4.1.3.

### 2.5.3 Rope



- The wire or fiber rope must be suitable for moving applications and for the bending radius of the roller.
- The rope diameter must match the groove diameter of the roller. Please note the maximum wire diameter in section 3.1. The rope must not jam in the groove. With used rope pulleys pay attention to grooves which may be damaged.
- Spiral ropes such as 1x7, 1x19 or 1x38 and sealed spiral ropes must not be used in the rope pulleys.
- Damage of the rope: crushed, unwound, non-circular, kinked ropes or ropes with strand breaks or tangles must not be used. **(ISO 4309)**
- Ropes with broken wires: remove carefully and correctly.
- Rope connections, sleeves, compression heads, short splices and so on must not run through the rope pulley.
- When deflecting the rope over sharp edges, obstacles and so on protect the rope using suitable floor rollers or supports made of wood or plastic.

## 2.6 Working

### 2.6.1 Pulling and lifting



- Never pull hooks against the rope pulley.
- In situations where the work cannot easily be seen: Observations by assistants, if necessary with radio contact.
- Never stand inside or below the rope lines.
- Never touch the live rope near the rope pulley.



- Observe the rope during the movement.
- Observe the movement of the load.

### 3 Design and function

#### 3.1 Technical specifications AL-A

| Rope pulley                                     | AL-A           |        |         |          |           |         |           |           |             |
|---|----------------|--------|---------|----------|-----------|---------|-----------|-----------|-------------|
| Item  | 01740          | 01840  | 01840/K | 01840/B  | 01840/K/B | 01840/2 | 01840/2/K | 01840/2/B | 01840/2/K/B |
| Load capacity F1 (kN)                           | 32             | 64     |         |          |           |         |           |           |             |
| Rollers   | 1              | 1      |         |          |           | 2       |           |           |             |
| Max. rope diameter (mm)                         | Ø11.2          | Ø16.2  |         |          |           | Ø11.2   |           |           |             |
| Max. rope tensile force F2 (kN)                 | 2 x 16         | 2 x 32 |         | 3 x 21.3 |           | 4 x 16  |           | 5 x 12.8  |             |
| Max. rope velocity (m/min)                      | 10             | 100    | 10      | 100      | 10        | 100     | 10        | 100       |             |
| Own weight (kg)                                 | 1.2            | 4.8    | 5.6     | 7        | 7.8       | 5,8     | 6.6       | 8         | 8.8         |
| Sliding bearings                                | x              | x      | -       | x        | -         | x       | -         | x         | -           |
| Ball bearings                                   | -              | -      | x       | -        | x         | -       | x         | -         | x           |
| Bracing   | -              | -      | -       | x        | x         | -       | -         | x         | x           |
| Rope roller                                     | Plastic        |        |         |          |           |         |           |           |             |
| Side flange (2)                                 | Aluminum       |        |         |          |           |         |           |           |             |
| Permitted temperature range for use and storage | -20°C to +50°C |        |         |          |           |         |           |           |             |

#### 3.1 Technical specifications ST-A

| Rope pulley                                     | ST-A            |          |          |        |          |        |         |          |        |          |
|---|-----------------|----------|----------|--------|----------|--------|---------|----------|--------|----------|
| Item  | 01871           | 01871/B  | 01947    | 01889  | 01889/B  | 01909  | 01909-1 | 01909/B  | 01910  | 01910/B  |
| Load capacity F1 (kN)                           | 32              |          |          | 64     |          |        | 128     |          |        |          |
| Rollers   | 1               |          | 2        | 1      | 1        | 1      | 1       | 1        | 2      | 2        |
| Max. rope diameter (mm)                         | Ø11.2           |          |          | Ø16.2  |          | 20.0   | 20.0    | 22.0     | 16.2   | 16.2     |
| Max. rope tensile force F2 (kN)                 | 2 x 16          | 3 x 10.6 | 4 x 8 kN | 2 x 32 | 3 x 21.3 | 2 x 64 | 2 x 64  | 3 x 42.7 | 4 x 32 | 5 x 25.6 |
| Max. rope velocity (m/min)                      | 100             |          |          |        |          |        |         |          |        |          |
| Own weight (kg)                                 | 3.3             | 3.8      | 5.5      | 8      | 10.2     | 20.5   | 20.5    | 29       | 23     | 31.5     |
| Sliding bearings                                | -               | -        | -        | -      | -        | -      | -       | -        | -      | -        |
| Ball bearings                                   | x               | x        | x        | x      | x        | x      | x       | x        | x      | x        |
| Bracing   | -               | x        | -        | -      | x        | -      | -       | x        | -      | x        |
| Rope roller                                     | Steel           |          |          |        | Plastic  |        |         |          |        |          |
| Side flange (2)                                 | Steel           |          |          |        |          |        |         |          |        |          |
| Permitted temperature range for use and storage | -20°C bis +50°C |          |          |        |          |        |         |          |        |          |

## 4 Operation

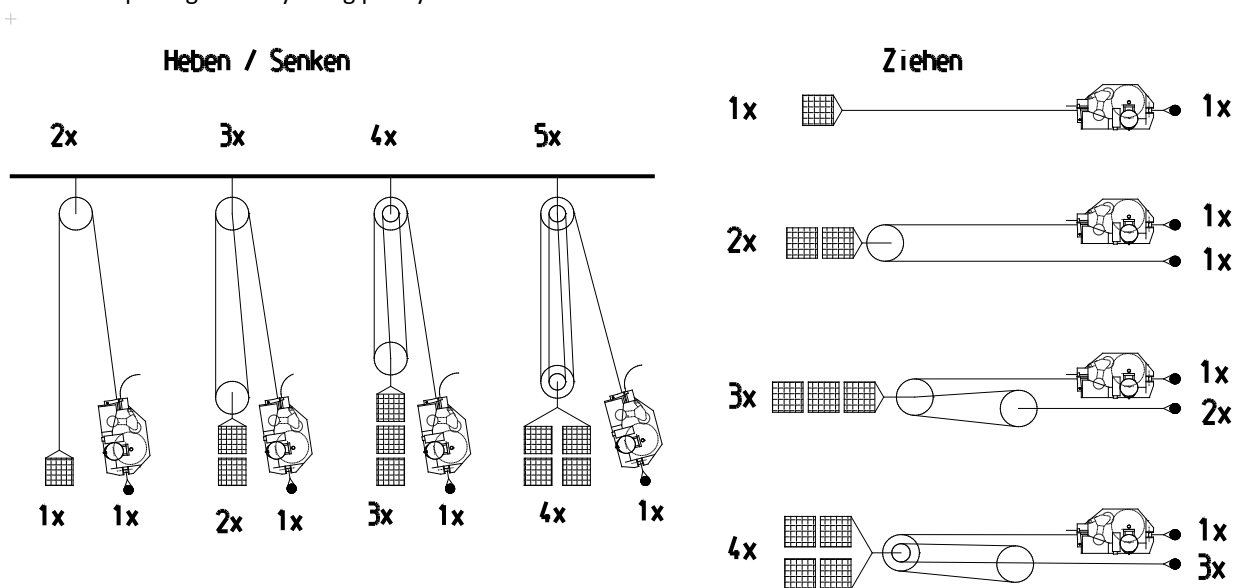
### 4.1 Preparation

#### 4.1.1 Anchoring

|                                    |   |
|------------------------------------|---|
| <b>The best anchor points are:</b> | <ul style="list-style-type: none"> <li>- solid objects and constructions</li> <li>- concreted rings</li> <li>- eyelets or rods</li> </ul>   |
| <b>Natural anchoring points:</b>   | <ul style="list-style-type: none"> <li>- Heavy/strong boulders</li> <li>- Trees</li> <li>- other suitable objects</li> </ul>  |
| <b>Technical anchor points:</b>    | <ul style="list-style-type: none"> <li>- Rock anchor, concrete anchor</li> <li>- Round wood anchor in ground</li> <li>- These anchors depend very much on the ground conditions.</li> </ul> |

#### 4.1.2 Load

Reduce the pulling force by using pulleys.



- The efficiency of the rope pulley must be incorporated when calculating the specifications of the rope system. An efficiency of 98% per deflection can be assumed in general.



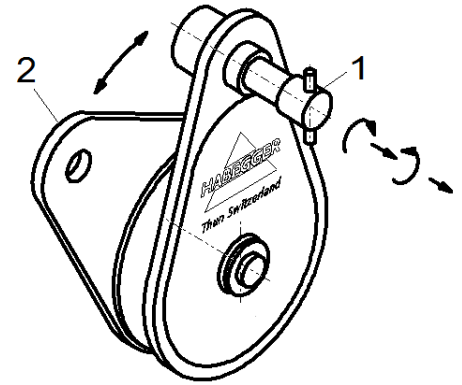
- Caution: Iced-up rollers or stiff bearings can lead to extreme deterioration in the efficiency. Before threading, the ease of movement of the rollers must be checked.
- Caution: The selection of the reeving can influence the alignment of the pulleys when a tensile force is applied. If they become misaligned during operation, this can cause extreme deterioration of the efficiency. In this case the threading must be changed. The original operating manual of the pulleys must be complied with.

#### Calculation example:

| Force transmission | Number of rollers | Efficiency (guideline value) | Pulling force at 64 kN |
|--------------------|-------------------|------------------------------|------------------------|
| 1x                 | 0                 | 100%                         | 64 kN                  |
| 2x                 | 1                 | 98%                          | 125.44 kN              |
| 3x                 | 2                 | 96% (0.98 x 0.98)            | 184.32 kN              |
| ...                | ...               | ...                          | ...                    |
| 8x                 | 7                 | 87% (0.98 ^ 7)               | 445.44 kN              |

#### 4.1.3 Inserting rope

1. Rotate anchor bolt (1) until it can be pulled out slightly. Then turn a further 180° and pull out as far as it will go.
2. Turn away side flange (2).
3. Hook in attachment equipment with sufficient load capacity onto the anchor bolt.
4. Insert rope.
5. Turn side flange (2) back into position.
6. Slide in - turn - slide anchor bolt (1) until it can be secured in the second groove.



#### 4.2 Storage and transport

The device must be stored in a dry place. During transport and storage, the device must be covered against dust.

### 5 Maintenance

The following items of inspection and maintenance work must be carried out:

| Work  | At the start of work | As required | Comments                    |
|---|----------------------|-------------|-----------------------------|
| General visual inspection:<br>- side flange<br>- anchor bolt<br>- rope roller / rope groove | X                    | X           |                             |
| Bolt check  |                      | X           | after first use or overhaul |

The rope pulley must be inspected at least **annually** (see sticker on the device) by an approved inspector for lifting equipment.

The tests must be arranged by the operating company.

In addition to this additional tests must be arranged by an expert according to the local regulations as well as after harsh use conditions, at a shortened interval.



### 6 Spare parts

The spare parts are provided on a separate list. This can be requested from Jakob Rope Systems.

### 7 Disposal

Please comply with the local regulations on disposal.

Please dispose of even the smallest quantities of oil properly or bring them to a responsible location.

When dismantling, separate material types as far as possible, to allow recycling: Keep metal and plastic parts separate and send for recycling.

Please bear in mind that protecting the environment and re-use of materials benefits everybody.