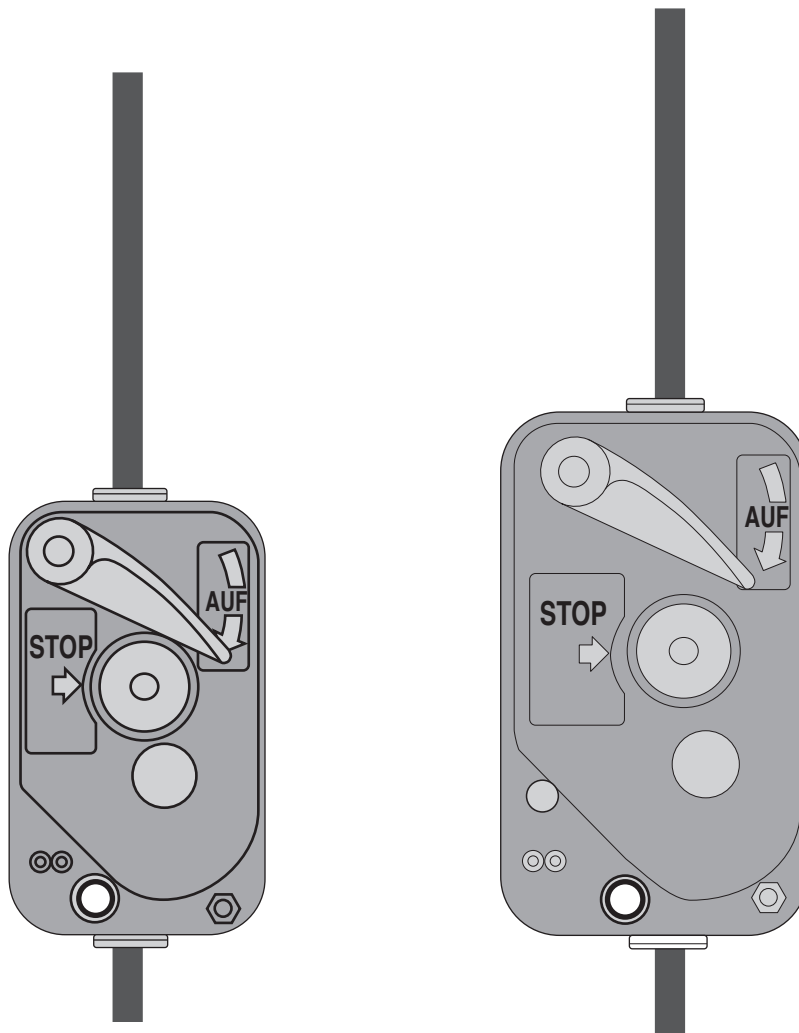


# blocstop®

## BSO 500 and BSO 1000 series

Fall arrest device for suspended man-riding installations

### Assembly and Operating Instructions



G671\_BA\_BSO5\_10\_US.pm6

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Griphoist® Division

[www.tractel.com](http://www.tractel.com)

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## A. Information for this manual

### A.1 Date of edition

1<sup>st</sup> edition: March 2007

### A.3 Address of the manufacturer

**GREIFZUG Hebezeugbau GmbH**





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51469 Bergisch Gladbach  
GERMANY

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### A.2 Copyright

The copyright of these assembly and operating instructions shall remain with the manufacturer.

## B. Explanation of symbols used

<u>Safety advice</u>			
Symbol	Code word	Meaning	Possible consequence of non-compliance
	<b>WARNING</b>	<b>IMMEDIATE or possibly imminent danger:</b>	<b>Fatal or serious injuries!</b>
	<b>CAUTION</b>	<b>possibly dangerous situation:</b>	<b>Minor injuries to persons!</b>
<u>Other advice</u>			
	<b>NOTE</b>	<b>possibly dangerous situation:</b>	<b>Damage to equipment or its surroundings</b>
	(none)	Instruction for <b>documentation in writing</b> (i.e. record keeping)	(none)

## C. Safety advice



### **CAUTION!**

**Avoid injuries by following all instructions and safety regulations.**

- a) DO NOT overload the **blocstop**<sup>®</sup> fall arrest device.
- b) Anchoring, maintenance, and/or the operation of a **blocstop**<sup>®</sup> fall arrest device must only be done by persons, who are familiar with it. Employees must have received the instruction to anchor, maintain, and/or operate the hoist by their employer.
- c) If more than one person is entrusted with one of the above mentioned activities, the employer must designate a supervisor who is authorised to give instructions.
- d) The operator must be familiar with the relevant accident prevention regulations e.g. "safety requirements on suspended access equipment (EN 1808)" etc. and have been instructed accordingly. They must have read and understood these assembly and operating instructions
- e) This instruction manual as well as the applicable safety regulations must be available for the user at all times.
- f) Use only defect-free **blocstop**<sup>®</sup> fall arrest devices, wire ropes and anchoring devices.
- g) Use only the prescribed rope in perfect condition. Use only normally commercially available multi-purpose greases for the required lubrication of the rope. Do not use any lubricants containing disulphide (e.g. Molycote<sup>®</sup>).
- h) When using a rope other than the prescribed rope, the warranty entitlement given by GREIFZUG Hebezeugbau GmbH or other company of the TRACTEL Group shall not apply.
- i) The electrical connection of **blocstop**<sup>®</sup> with limit switch must be carried out in accordance with EN 60204-1.
- k) **blocstop**<sup>®</sup> fall arrest devices of the BSO 5... and BSO 10... series must be anchored at the intended anchoring hole.
- l) **blocstop**<sup>®</sup> fall arrest devices must be anchored so that the wire rope is perpendicularly entering from above.
- m) The wire rope exiting under the **blocstop**<sup>®</sup> must be tensioned, either by a tensioning weight of approx. **9.5 kg** or by a reeling device.
- n) Checks and repairs to the electrical system must only be performed by qualified electricians.
- o) Other checks and repairs must only be performed by GREIFZUG Hebezeugbau GmbH, other company of the TRACTEL Group or a hoist workshop.
- p) GREIFZUG Hebezeugbau GmbH or an other company of TRACTEL Group shall assume no liability for damage as a result of conversions and alterations to the devices supplied by itself or as a result of the use of non-original parts.

## D. Machine description

### D.1 Purpose

The **blocstop® BSO 500 and BSO 1000** series with automatic overspeed device – hereafter also called **BSO secondary brake** – is a fall arrest device which stops the downward movement of a suspended load, in particular a working platform, in case of over-speed.

It works on the prescribed safety wire rope.

**It does not comply with the regulations if used:**

- on the lifting wire rope of the platform;
- with a safety wire rope which is anchored to the same suspension point as the lifting wire rope;
- with a slack safety wire rope, e.g. during lifting with a **blocstop®** in the closed position;
- with environmental temperatures under  $-20^{\circ}\text{C}$  and over  $70^{\circ}\text{C}$ ;
- with hoists whose wire rope speed is higher than **18 m/min**.

### D.2 Working principle

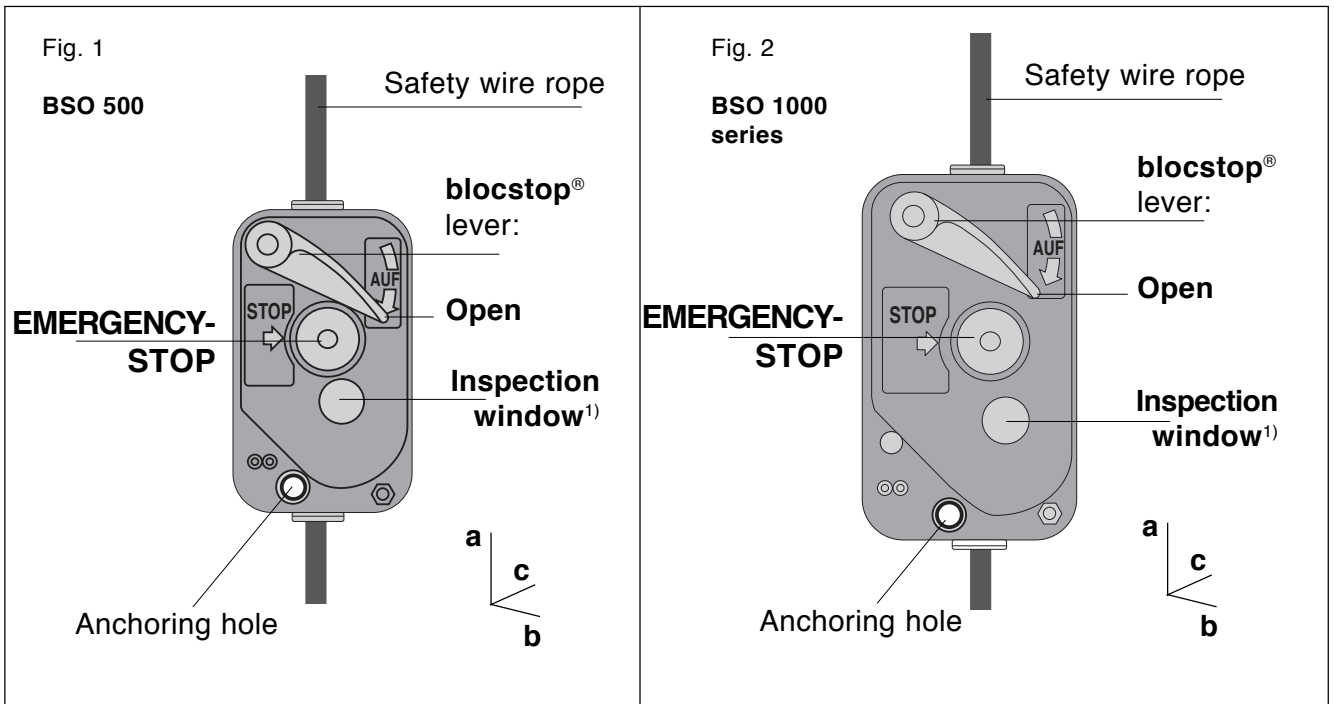
The **BSO secondary brake** operates automatically. A centrifugal detector continuously monitors the speed of the wire rope running through it. In the event of a sudden increase in speed the built-in pair of **griphoist®/tirfor®** jaws automatically locks onto the safety wire rope.

To release the **BSO secondary brake** the hand lever is depressed until it locks into position.

The **BSO secondary brake** may also be manually closed by pressing the EMERGENCY STOP button.

The **BSO secondary brake** may be equipped with a built-in limit switch, which stops the descent of the working platform as soon as the fall arrest device is tripped.

### D.3 Components and technical data



Fall arrest device	Capacity	for max. rope speed	Wire rope Ø	Self weight approx.	Dimensions		
					a	b	c
<b>blocstop® model</b>	kg	m/min	mm	kg	mm	mm	mm
<b>BSO 500</b>	500	18	8	4.7	214	121	131
<b>BSO 1000</b>	500	18	8	6	251	140	131
<b>BSO 1020</b>	800	18	9	6	251	140	131
<b>BSO 1030</b>	1000	18	10	6	251	140	131
<b>BSO 1040</b>	1000	18	11.5	6	251	140	131

1) The **inspection window** is used for regular checking of the rotation of the centrifugal detector.

Table 1

# 1. Evidence of carrying capacity

## Capacity of suspension and anchor component

The structure from which the safety wire rope is suspended and the component to which the **BSO secondary brake** is anchored should have at least **four times the carrying capacity** of the **blocstop®**.

This is necessary in order to withstand the dynamic load in the event of a fall.

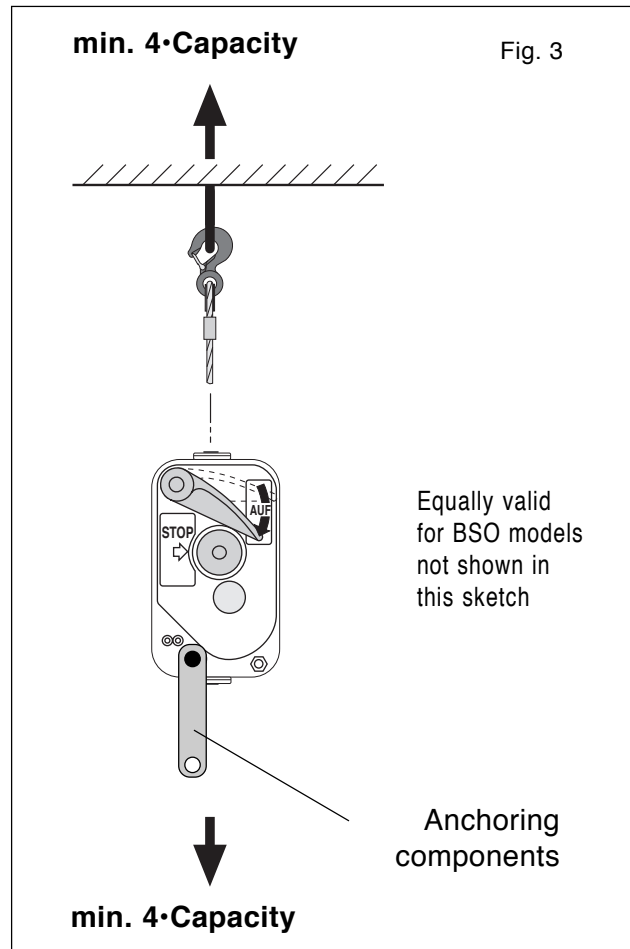
### ATTENTION!



The anchor component must, among other considerations, have two brackets so that the **BSO secondary brake** is connected to it on both sides.



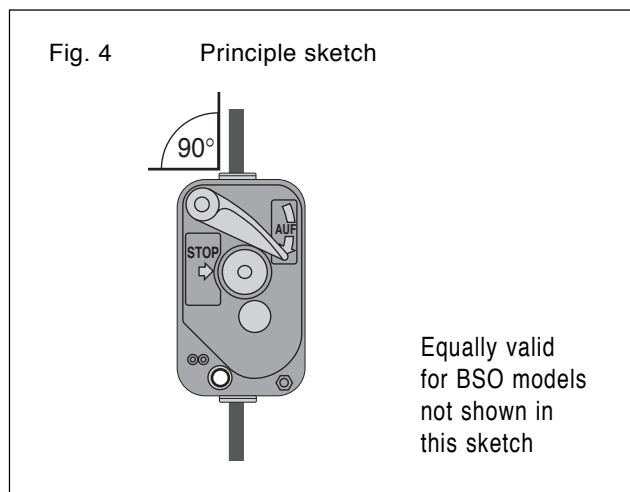
Static test results must be available for rope suspension and **blocstop®** anchor.



## 2. Assembly

### 2.1 Position of the anchor component

- The distance between the safety wire rope and suspension wire rope is not specified; however it should be kept as small as possible.
- The anchor component must be fitted on the man-riding equipment at an appropriate distance from the hoist, so that the safety wire rope vertically enters the **blocstop®** opening (Fig. 4).



## 2.2 Installing the blocstop®

### 2.2.1 Installing principles

Connect the equipment **to its anchor point** by a bolt (b) with the anchor component (a) of the working platform.

Bolt diameter: 12 mm

Minimum quality:

Grade 8.8 ( $800 \text{ N/mm}^2 \cong 800 \text{ MPa}$ )

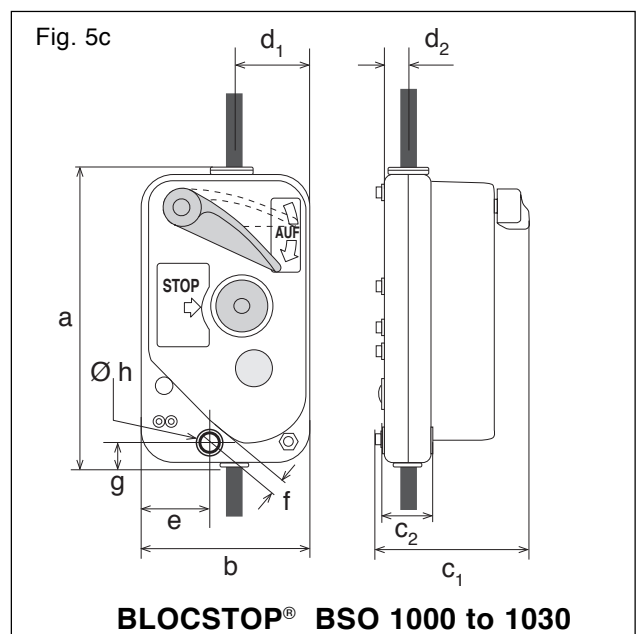
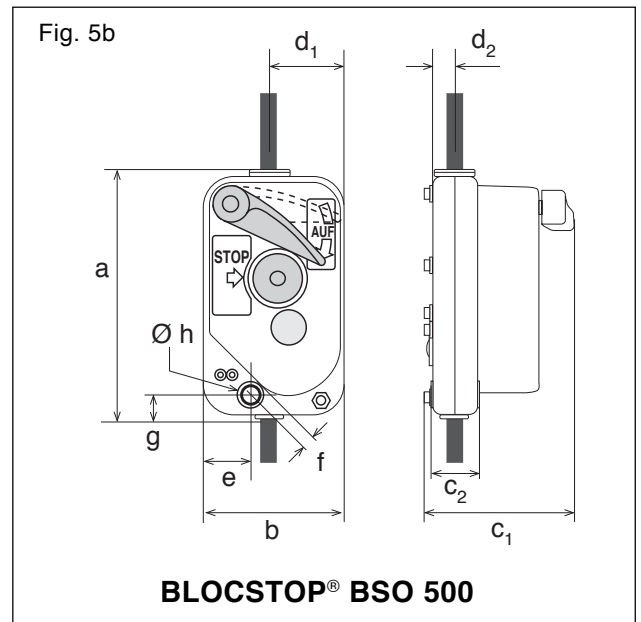
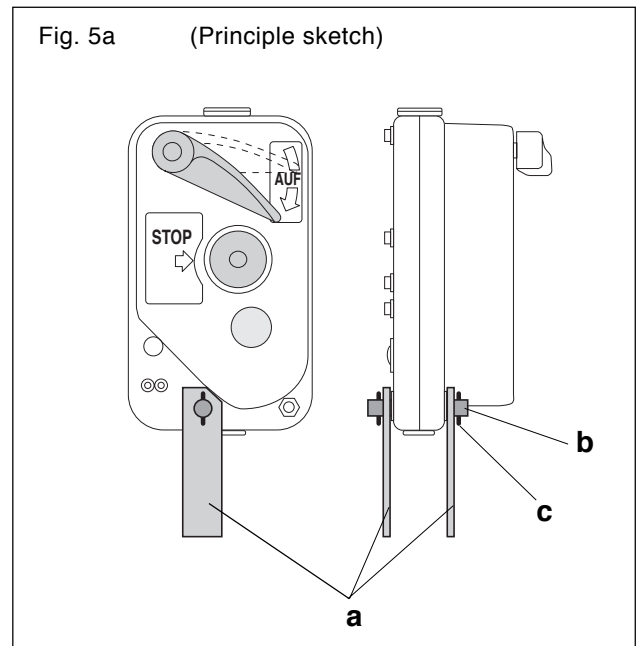
The bolts must be secured against loss by means of linch pins (c) or equivalent safety devices.

### 2.2.2 Dimensions

The dimensions are shown in Table 2 and Figures 5b to 5c.

Dimension	Dimensions in mm for <b>blocstop®</b> BSO	
	BSO 500	BSO 1000 to BSO 1030
a	214	251
b	121	140
c <sub>1</sub>	131	131
c <sub>2</sub>	37	37
d <sub>1</sub>	64	65
d <sub>2</sub>	20	20
e	40	56
f	12.5	12.5
g	21.5	21.5
Ø h	12.2	12.2

Table 2

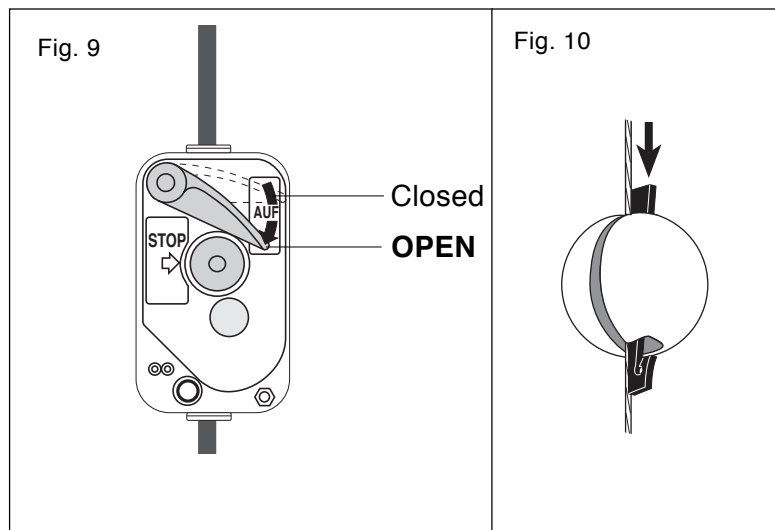


## 3.2 Wire rope anchoring

Fasten the safety wire rope to a **suspension structure** (see section 1) which has **sufficient load-carrying capacity**.

## 3.3 Wire rope installation

- The safety wire rope must be freely suspended.
- To open the **BSO secondary brake** depress the lever until it locks into position (Fig. 9).
- Insert the safety rope from above.
- Tension the safety wire rope manually.
- Clamp the counterweight of 9.5 kg onto the safety wire rope at approx. 20 cm above the ground (Fig. 10).
- Roll up the wire rope ends – 3 m or more – individually on the ground and tie up at least three times.



# 4. Electrical connections

Applicable only to equipment with a built-in limit switch

## 4.1 Function

If the **BSO secondary brake** is closed, the power supply controlling the **descent of the relevant hoist is interrupted**.

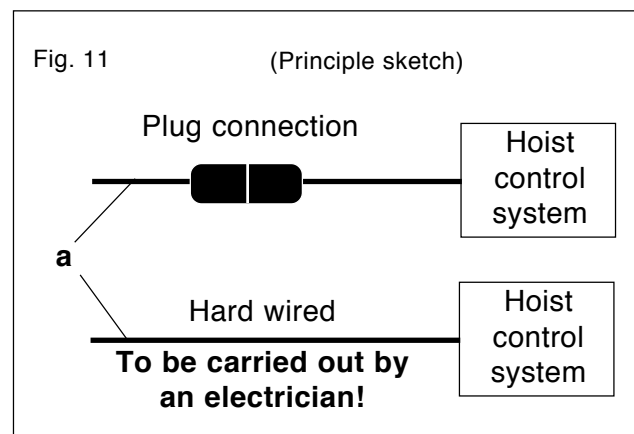
## 4.2 Connection

### 4.2.1 Plug connection

Connect limit switch cable (a) with plug connection to the control box of the relevant hoist.

### 4.2.2 Hard wired connection

Have the limit switch cable (a) connected to the relevant hoist by a qualified electrician in accordance with the wiring diagram supplied in the control box.



### 3. Wire rope installation



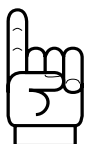
#### CAUTION!

Wear gloves when handling wire ropes.

#### 3.1 Preparing the wire rope

- Only use an **original wire rope** with the **correct diameter**.  
Design: 5 x 26 with polypropylene core  
Marking: one strand coloured red  
Diameter: marking on the ferrule (Fig. 6a):
- Check that the **wire rope is long enough**.
- Check that the wire rope is in **perfect condition**:
  - Undamaged end fitting: thimble eye and ferrule; for wire ropes with hooks: rope hooks not distorted and safety catch intact (Fig. 7).
  - Wire rope undamaged over the whole length; rope tip as in Fig. 6b.

#### d) Attention!

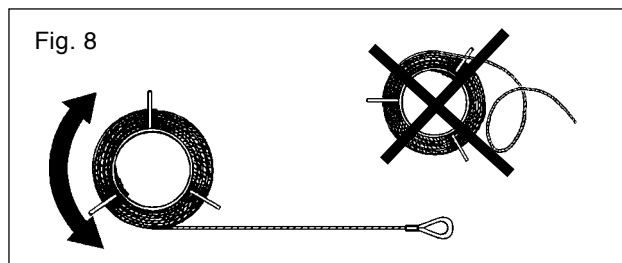
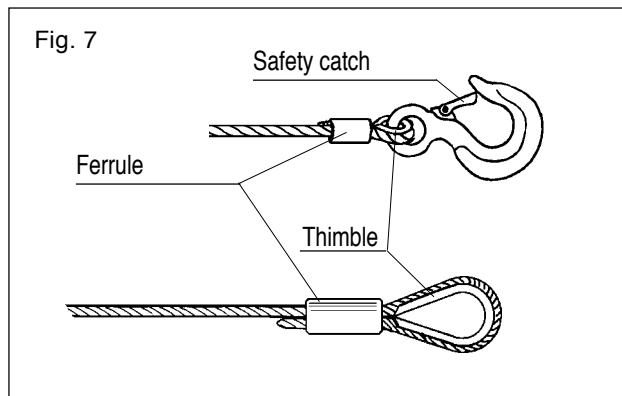
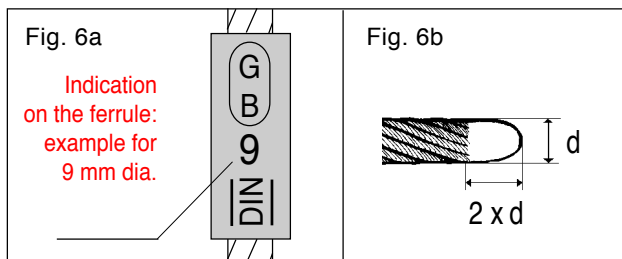


**Never use the safety wire rope to fix a load!**

**Never pull the wire rope over edges!**

Always keep the wire rope **lightly oiled!**

- Always unwind the safety wire rope** in an upright position (Fig. 8), so that no loops occur as these may make the wire rope unusable.



### 5. Checks

#### 5.1 Daily Checks before starting work

##### 5.1.1 Suspension and blocstop® fixing



**DANGER!** Incorrect suspension endangers working safety.

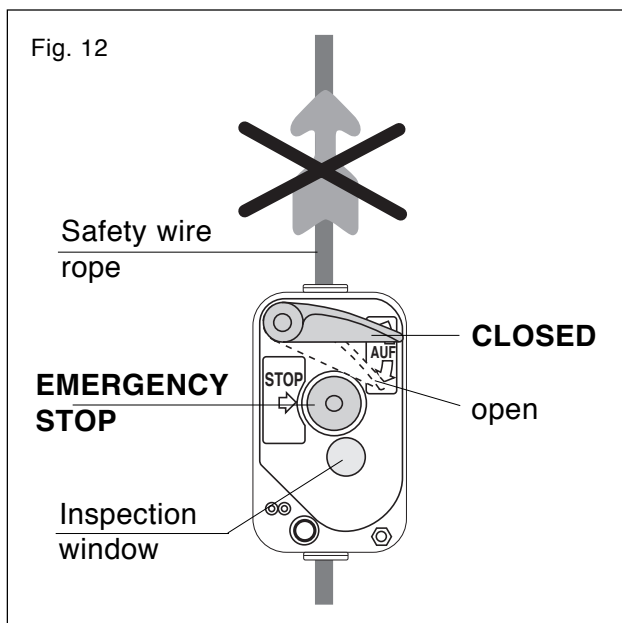
- Check the **wire rope fixing** on the suspension structure.
- Check the **connection between blocstop® and the working platform**.

##### 5.1.2 blocstop® operation



**DANGER!** It must not be possible to pull the safety wire rope upwards when the BSO secondary brake is closed.

- Close the **BSO secondary brake** by pressing the EMERGENCY STOP button – the lever should spring into the “CLOSED” position.  
If the safety rope can still be pulled upwards, replace the **blocstop®** and send it to the supplier for testing.



- Open the **BSO secondary brake** again by pressing the lever down and jerk the safety rope – the **blocstop®** must close automatically: if not, replace and send it to the supplier



## 5.2 Checks during operation

During operation check the rotation of the centrifugal governor regularly through the inspection window.



### CAUTION!

If the centrifugal governor is not turning:

- a) Check the **BSO secondary brake** operation in accordance with 5.1.2.  
**If the safety wire rope is not locked when the blocstop® is closed:**
- Evacuate the personnel from the platform;

- Secure the platform by appropriate measures so that the defective **blocstop®** on the suspended platform may be replaced.
- b) If the safety wire rope is locked when the **blocstop®** is closed:
- Open the **blocstop®** by depressing the lever,
  - lower the platform **carefully**; be prepared to stop the platform on the safety wire ropes by pressing the EMERGENCY STOP button;
  - after setting down the platform, replace **blocstop®** and send it to the supplier for testing.

## 6. Operation

### 6.1 Normal operation

Before operation open the **blocstop®** by depressing the lever.



### ATTENTION!

The **blocstop®** may only be opened in the unloaded condition. If it has held the load on the safety wire rope:

- Lift platform slightly until the hoist has taken the load on the suspension wire rope,
- then open the **blocstop®** and ensure that the safety wire rope between the suspension point and the **blocstop®** is again under tension.



### CAUTION!

Do not lift with the **blocstop®** closed!

This would force the safety wire rope up and it would no longer be in tension between the suspension point and the **blocstop®**. This would increase the fall distance in the event of a fall.

### 6.2 EMERGENCY STOP

By pressing the **EMERGENCY STOP button** the platform may be held on the safety wire rope at any time.

Follow the instructions under 6.1 to release the **blocstop®** load before proceeding further.

### 6.3 Action in the event of a fall

If the **blocstop®** has closed during lowering.



### DANGER!

There is a risk of uncontrolled descent!

Keep calm and check the cause!

#### a) Failure of the carrying rope?

#### b) Hoist failure?

In both cases:

- **Evacuate the personnel** from the platform;
- Secure the platform by appropriate measures so that the defective parts (suspension wire rope or hoist) on the suspended platform can be replaced.

If the cause is not obviously a) or b), try to lift – do not be afraid – , the platform is secured by the **blocstop®**. If it is not possible to lift, follow the above instruction.

#### c) Defects in the **blocstop®**?

If it is possible to lift, the cause is probably the incorrect operation of the **blocstop®** - proceed as follows:

- Open the **blocstop®** by depressing the lever,
- Lower the platform carefully - be prepared to stop the platform on the safety wire ropes by pressing the EMERGENCY STOP button; if this is necessary or the **blocstop®** cuts in again, follow the above instructions; if descent is possible.
- After setting down the platform, replace the **blocstop®** and send it to the supplier for testing.

### DANGER!



The safety wire rope suspension and the connection between **blocstop®** and working platform are subjected to great dynamic loads in the event of a fall.

Before resuming standard operation, **carry out the checks in accordance with section 5.1!**



## WARNING!

**Operation with a defective blocstop® endangers working safety!**

## 7. Troubleshooting

- Repairs must only be carried out by GREIFZUG Hebezeugbau GmbH or by a hoist workshop.
- Tests and repairs to the electrics (on equipment with built-in limit switches) must only be carried out by **qualified electricians!**

Fault	Cause	Remedy
1. Hoist goes up but not down.	BSO secondary brake is closed: Primary wire rope has run out or has failed.	<b>WARNING: STOP DOWNWARD TRAVEL!</b> <b>Proceed according para. 6.3, page 9.</b>
2. BSO secondary brake cannot be released.	a) BSO secondary brake is being held by the load on the safety rope. b) Mechanical defect	a) Transfer the load to the suspension rope by lifting. Release the BSO. b) Replace the BSO secondary brake <sup>1)</sup> and return unit to TRACTEL.
3. Hoist does not lift (on device with limit switch)	a) Limit switch connection to hoist control system interrupted. b) Limit switch defective	a) Check the plug connection or have the wiring checked. b) Have it checked by an electrician and if necessary take device for repair <sup>1)</sup> .
4. BSO secondary brake automatically closes without apparent reason.	a) Mechanical defect. b) Oversized or damaged wire rope c) Hoist speed too high. d) Triggering speed too low.	a) Contact the supplier. b) Check wire rope and replace, if necessary. c) Check hoist. d) Replace the BSO secondary brake <sup>1)</sup> and return unit to TRACTEL.
5. Secondary brake will not actuate manually.	Frozen parts	DO NOT USE the unit until the brake has thawed, dried and is in proper condition. Thawing may be accomplished by blowing ducted dry heat (200 degrees F. max.) on the brake area. <b>DO NOT USE OPEN FLAME!</b>
6. Centrifugal weights do not turn or do not turn smoothly during operation.	Dirty, corroded, or worn parts.	Check operation through the sightglass. Do not use if operating improperly. Return unit to TRACTEL.

If you cannot find a trouble's cause, contact the supplier.

- 1) If replacement of the man-riding equipment is necessary, proceed as set out in section 6.3.

## 8. Maintenance

### 8.1 Care and maintenance

#### 8.1.1 blocstop® device

**blocstop® fall arrest devices are largely maintenance free.**

Take the following measures for safe operation.

- Keep **blocstop®** fall arrest devices **clean** (e.g. when working with sprayed concrete) which avoids malfunctions.
- Lubrication:**
  - **during operation:** always **oil ropes lightly**.
  - **Lubricate blocstop® frequently and generously**, e.g. with high grade motor oil. Too much oil will never do any harm - the clamping action is not affected.

#### 8.1.2 Safety wire rope

- Always **wind/unwind the wire rope in an upright position** so that no loops can form as these may make the rope unusable.
- Never use the suspension or safety wire rope to fix a load!**  
**Never pull ropes over edges!**
- Always keep wire ropes **clean and lightly oiled**.

This extends their working life.

## 8.2 Inspection

### 8.2.1 Routine inspection

#### a) General

**Before use  
and  
during operation**

make sure that the **blocstop®** fall arrest device and the safety wire rope

- have been installed correctly
- and that they are free from any obvious defects.

#### **ATTENTION!**



- If defects occur when working,
- stop work
  - if necessary secure the site and
  - eliminate the defect

#### b) Wire rope replacement



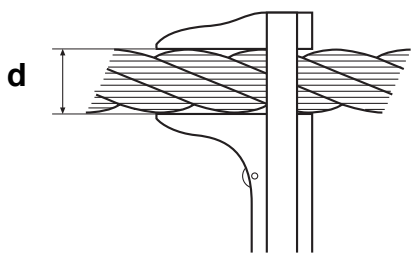
#### **DANGER!**

Faulty ropes endanger working safety!

Therefore replace wire ropes with the following defects\*):

- More than 10 wire breaks on a length of 42 cm.
- Formation of a considerable amount of rust on the surface or inside.
- Reduction of the rope diameter  $d$  (Fig. 13) by 5% or more compared with the nominal diameter.

Fig. 13



- **External deformations and damage, e.g.**
  - bird-caging deformations,
  - formation of loops,
  - kinks or
  - damage caused by slinging.
- **Heat damage** (can be identified by a change in surface colour).

\*) These are **only examples** of the most frequent types of damage to wire ropes. They do not replace DIN 15 020, sheet 2, resp. the ISO 4309 reference for wire rope checks!

### 8.2.2 Safety inspection

#### A) Annual inspection

A **safety inspection** is due once a year.

We recommend inspection on site by the manufacturer or an approved representative.

#### B) Special inspection

#### **ATTENTION!**



After a fall a competent person should check the operational safety of the **blocstop®** including the anchor parts, the safety wire rope and rope anchoring.

The test must be carried out in accordance with section 5 on page 8.



The **results of the annual inspection** and of a **special inspection** must be recorded in writing in a test certificate.

A **test book** must be kept.

## 8.3 Repair

Repairs to the **blocstop®** fall arrest device may only be carried out by the manufacturer or an authorised hoist workshop and only using original spare parts.

## 9. Spare part orders

### 9.1 blocstop® device

As well as the part number<sup>1)</sup> and the name of the spare part always quote

- **blocstop® model**
- **rope diameter** and
- **serial number.**

### 9.2 Nameplate

Check the nameplate (Fig. 14) for completeness and legibility.

Replace a missing or illegible identification plate.

- 1) Spare parts lists may be obtained from your supplier or directly from the manufacturer.

Fig. 14

<b>BLOCSTOP®</b> fall arrest device		
Model <b>BSO</b>		Serial number
Rated load kg lbs.	Wire rope Ø mm in.	Year of manuf.
<b>CHECKING</b> 1) Before going aloft, daily check as follows: – At ground level push <b>DOWN</b> button and allow the wire rope to form a bow between TIRAK® casing and BSO secondary brake. With gloved hands <b>sharply pull wire rope upwards</b> – the BSO secondary <b>brake should close immediately.</b> – Lift platform 3 ft. (1 m) above ground or safe surface, and <b>push EMERGENCY STOP</b> button of the BSO secondary brake. Lower the platform to <b>check that the BSO secondary brake holds the load.</b> Raise platform until the hoist supports the load. Reset BSO secondary brake by pushing down control lever until it locks. 2) During operation <b>centrifugal weights must rotate.</b> <b>Check regularly</b> through the window. <b>WARNING: If during the above checks the BLOCSTOP malfunctions, replace it and return to the supplier for inspection. Address see TIRAK nameplate.</b> Made in Germany		



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