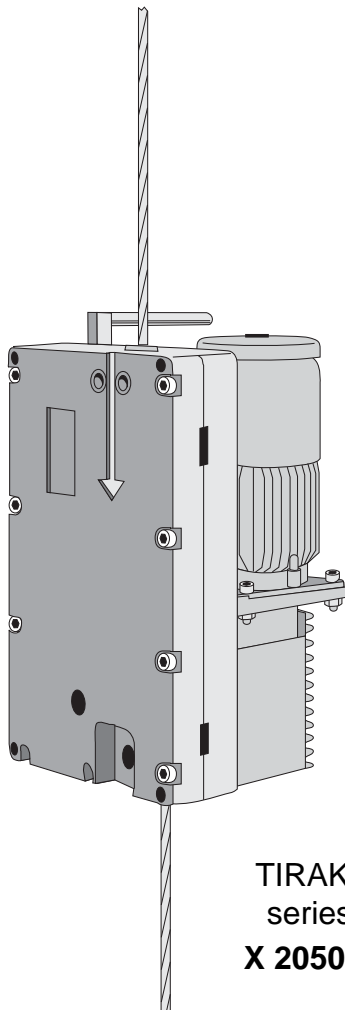


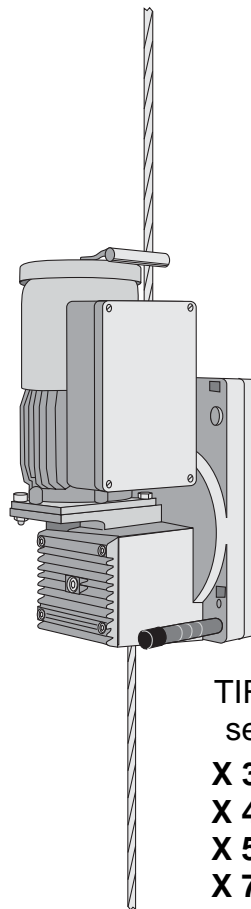
tirak[®]

Electrically powered endless hoist
for man-riding

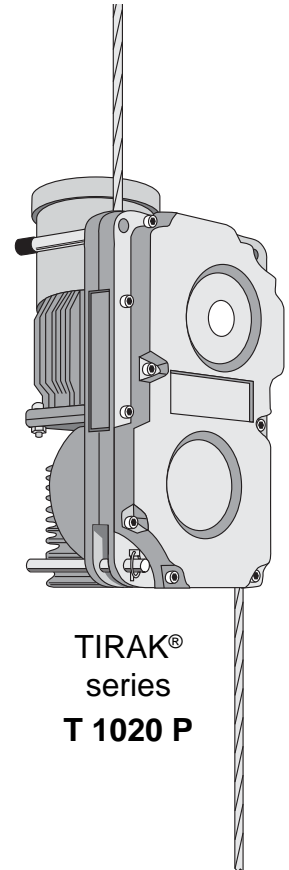
Original Operating Instructions



TIRAK[®]
series
X 2050 P



TIRAK[®]
series
X 300 P
X 400 P
X 500 P
X 720 P
X 820 P
X 1030 P



TIRAK[®]
series
T 1020 P

This instruction manual must be available for the
user at all times
Additional copies may be obtained on request.

Contents

	Page		Page
Information for this manual	2	4.5 Slack wire rope	
Notes for manufacturers of suspended suspended access equipment	3	4.5.1 Slack wire ropes	18
Explanation of symbols used	3	4.5.2 Use of rope winders	18
1. Safety Advice	4	4.6 Electric connections	19
2. Exclusion of non-intended use	5	4.7 Electric controls	
3. Machine Description		4.7.1 Push button control UP/DOWN	20
3.1 Purpose	5	4.7.2 Examples for central control	20
3.2 Working principle	5	4.8 Wire rope installation	
3.3 Allowed TIRAK® wire rope for man-riding	5	4.8.1 Preparing the rope	20
3.4 Noise emission	5	4.8.2 Lifting rope installation	21
3.5 Main components and operating controls	6	4.8.3 Safety rope installation	22
3.6 Technical data		5. Operation	
3.6.1 TIRAK® hoists	7	5.1 Checks before starting	22
3.6.2 BLOCSTOP® Fall arrest device	7	5.2 Daily checks	23
3.7 Typical examples	8	5.3 Weekly checks of wire rope and cable	24
3.8 Safety devices		5.4 Operation	
3.8.1 Primary brake	9	5.4.1 Stop / EMERGENCY-STOP	24
3.8.2 Emergency STOP	9	5.4.2 Service operation	24
3.8.3 Phase control relay	9	5.5 Manual operation	
3.8.4 Load limiting device	9	5.5.1 Emergency descent	25
3.8.5 Manual operation	10	5.5.2 Manual lifting	25
3.8.6 Fall arrest devices	10	5.6 Action in the event of operation of the fall arrest device	25
3.8.7 Upper limit switch	11	6. Troubleshooting	26-28
3.9 Residual risks	11	7. Out of operation	28
4. Setting up		8. Maintenance	
4.1 General	12	8.1 Maintenance	
4.2 Required equipment	12	8.1.1 Hoist	29
4.3 Anchoring the TIRAK® hoist		8.1.2 Wire rope	29
4.3.1 Anchoring devices and dimensions	12-13	8.1.3 Motor, brake, and gear box	29
4.3.2 Anchoring the TIRAK® hoist	14	8.1.4 BLOCSTOP® fall arrest device	29
4.4 Installation of the fall arrest device		8.2 Checks	
4.4.1 Evidence of carrying capacity	15	8.2.1 Essential checks	30
4.4.2 Dimensions of BSA devices	15	8.2.2 Safety inspection	31
4.4.3 Anchoring the fall arrest device	16	8.3 Repair	31
4.4.4 Connection to the TIRAK® control system	17	9. Spare parts	
4.4.5 Dimensions of BSO Devices	18	9.1 Hoist	32
		9.2 Motor and brake	32
		9.3 Elektric control	32
		9.4 BLOCSTOP® fall arrest device	32
		9.5 Nameplates and labels	32-33

Date of edition

2nd Edition: February 2004

Copyright

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

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For addresses of other TRACTEL Group Companies see page 36.

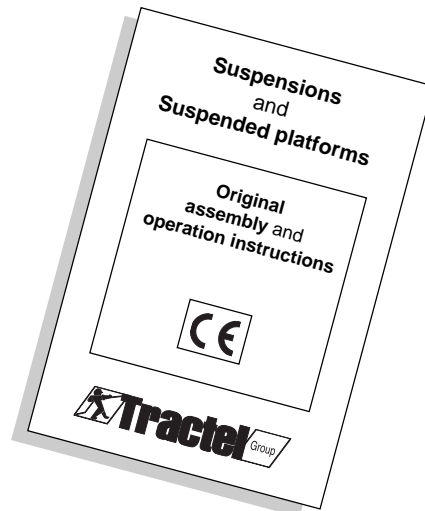
Notes for manufacturers of suspended access equipment

Important!







The manufacturer of “Suspended access equipment (SAE)” (working platforms, baskets, seats or similar) into which a TIRAK® device with corresponding BLOCSTOP® fall arrest device is installed, **must indicate all notes of these operating instructions required for safe use at the appropriate point of the instructions which the manufacturer must prepare for the SAE.**

Merely enclosing these instructions does not satisfy the requirements of the EC Machinery Directive or of the applicable standards!

Users of “Suspended access equipment” from GREIFZUG GmbH or from another company of the TRACTEL Group shall receive the complete instructions for the corresponding installation.




Explanation of symbols used

<u>Safety advice</u>			
Symbol	Code word	Meaning	Possible consequences of non-compliance
	DANGER	IMMEDIATE or possibly imminent danger:	Fatal or serious injuries!
	DANGER	IMMEDIATE or possibly imminent danger through dangerous voltage:	Fatal or serious injuries!
	CAUTION	Possibly dangerous situation:	Injuries to persons or damage to property.
<u>Other advice</u>			
	Attention	Possibly dangerous situation:	Damage to appliance or its surroundings.
	Important	Useful tips for optimum working:	None
<u>Directions</u> (without code word)			
		Instruction to operation/ documentation in writing.	

1. Safety advice



Follow all instructions and safety regulations contained in this manual to avoid injuries.

- a) TIRAK® hoists for man-riding with BLOCSTOP® fall arrest devices are designed for installation in “Suspended access equipment (SAE)”.
 - b) TIRAK® hoists with standard electric equipment must not be used in a potentially explosive atmosphere¹⁾.
 - c) Anchoring, maintenance, and/or the operation of a TIRAK® hoist 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.
 - d) They must be familiar with the relevant accident prevention regulations e.g. “Hoists, lifting and pulling devices”, “load carrying devices in hoist operation”, “safety requirements on suspended access equipment (EN 1808)” etc. and have been instructed accordingly.
They must have read and understood the assembly and operating instructions prepared by the manufacturer of the SAE.
 - e) If more than one person is entrusted with one of the above mentioned activities, the manufacturer of the SAE must designate a supervisor who is authorised to give instructions.
 - f) Only TIRAK® hoists, BLOCSTOP® fall arrest devices, ropes, anchoring devices as well as leads and control cables in good condition must be used.
 - g) The **safety equipment** supplied with the TIRAK® hoist (e.g. the BLOCSTOP® fall arrest device) **must be assembled on the SAE.**
-  **The manufacturer of the SAE is responsible for the installation of the limit switches for LIFTING and if applicable LOWERING.**
- h) Before starting with the assembly, please check that all parts are complete and defect-free.
 - i) Anchor TIRAK® hoist and BLOCSTOP® fall arrest device so that the lifting or safety ropes are vertical.
 - k) Only anchor TIRAK® hoist and BLOCSTOP® fall arrest device at the points provided for this purpose (connection rods, anchor points, or load pins).
 - l) When using self-locking nuts please observe the following:
 - the screw must **protrude from the nut** with at least half of its thread diameter;
 - **do not re-use nuts** if they can be unscrewed by hand!
 - m) **DO NOT** overload the TIRAK® hoist.
 - n) Use only the prescribed TIRAK® 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®).
 - o) When using a rope other than the prescribed TIRAK® rope, the warranty entitlement given by GREIFZUG Hebezeugbau GmbH or other company of the TRACTEL Group shall not apply.
 - p) The electrical connection of the TIRAK® hoists as well as of electrical accessories must be carried out in accordance with EN 60204-1.
 - q) Checks and repairs to the electrical system must only be performed by qualified electricians.
 - r) Other checks and repairs must only be performed by GREIFZUG Hebezeugbau GmbH, other company of the TRACTEL Group or a hoist workshop.
 - s) 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.

1) TIRAK® hoists can be supplied for these applications on request.

2. Exclusion of non-intended use

Use of standard TIRAK® hoists and other equipment for man-riding under the following conditions **is prohibited**:

- at temperatures **below -10 °C** or **above +50 °C**,
for **X 1030 to 2050 P** series **below -15 °C** or **above +80 °C**
(for advice regarding gearbox oils for lower/higher temperatures see chapter 8.3);
- in potentially explosive atmosphere.

Machines for these conditions can be supplied on request.

3. Machine description

3.1 Purpose

TIRAK® hoists of the series

**X 300 P, X 400 P, X 500 P, X 720 P,
X 820 P, X 1030 P, T 1020 P und X 2050 P**
are portable, electric driven hoists for

Lifting and Lowering of

“Suspended access equipment”

by means of a TIRAK® wire rope prescribed by the manufacturer.

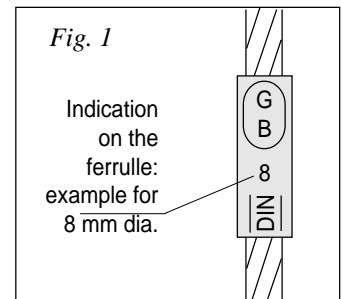
This wire rope is mandatory for the safe and troublefree working with TIRAK® hoists.

3.3 Allowed TIRAK® wire rope for man-riding

for TIRAK®-Series	Wire-rope-Ø
X 300 P X 400 P X 500 P	8 mm
X 720 P X 820 P T 1020 P	9 mm
X 1030 P	10 mm
X 2050 P	14 mm

Table 1

Identification:
one **red** strand.
Diameter indication
on the ferrule:



3.2 Working principle

A TIRAK® hoist is installed on suspended access equipment with which it moves up and down on wire ropes.

For either lifting or lowering there is one corresponding push button.

The wire rope is driven through the winch with constantly equal safety, and the length of wire rope i. e. the possible pulling length, is practically unlimited.

All TIRAK® hoists referred to in 3.1 have an integrated load limiting device.

3.4 Noise emission

TIRAK®-Series	(Distance 1 m)
X 300/400 P:	max. 72 dB(A)
X 500/720/820/1030 P, T 1020 P:	max. 70 dB(A)
X 2050 P	max. 78,5 dB(A)

3.5 Main components and operating controls

Fig. 2a

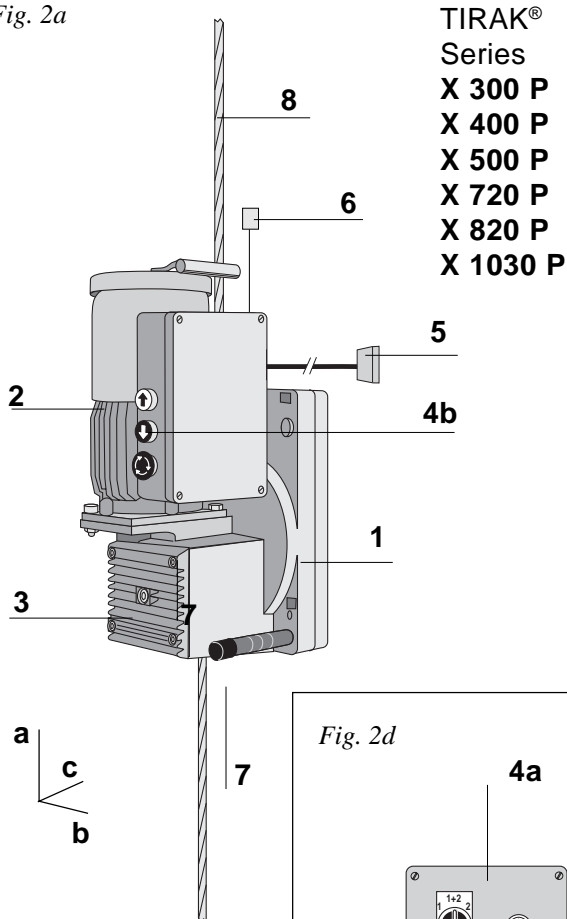


Fig. 2b

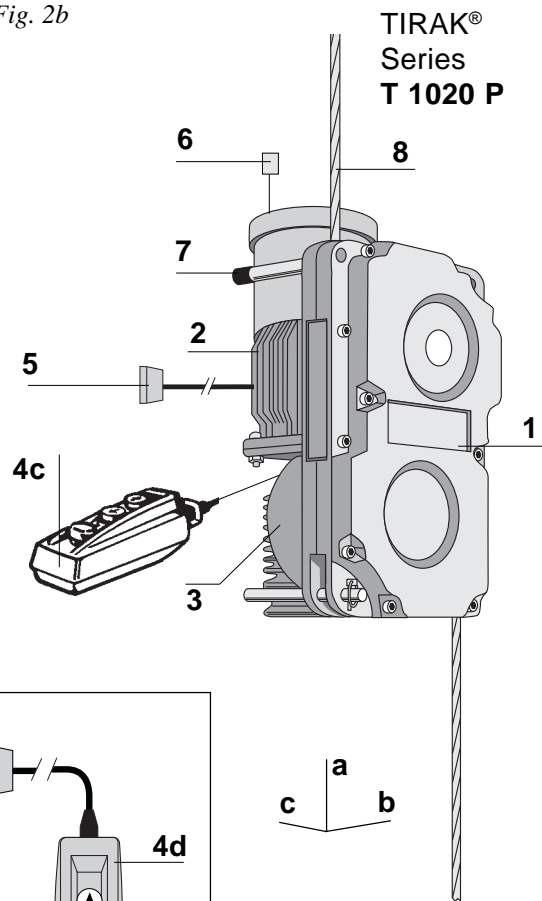


Fig. 2d

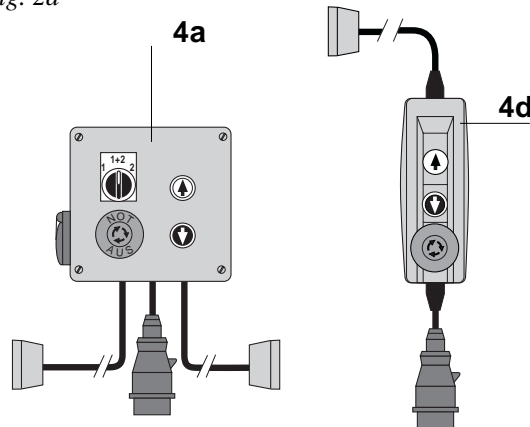
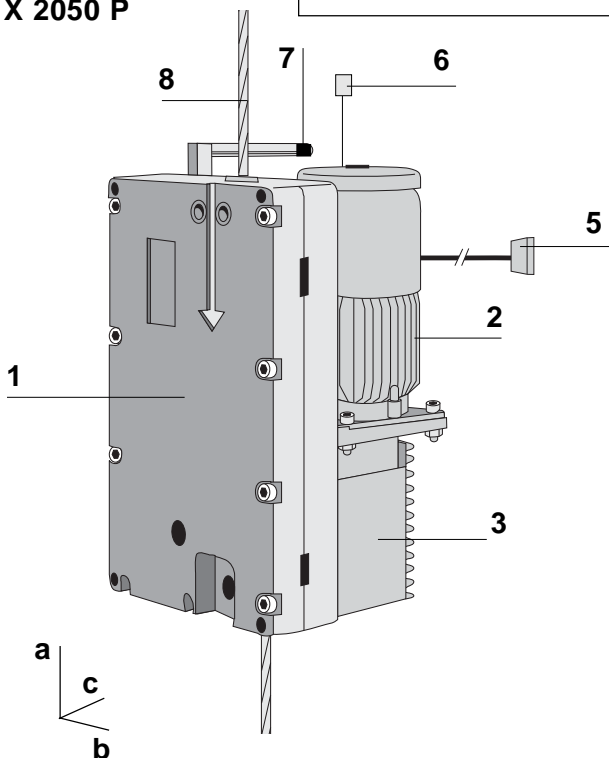


Fig. 2c

TIRAK®
Series
X 2050 P



1. Wire rope drive mechanism
2. Motor
3. Gearbox
4. Controls
 - a with central control box
 - b at the terminal box
 - c with pendant control, mounted on the terminal box
 - d with pendant control, with connector
5. Where applicable: connector to the central control box
6. Always: connector to the upper limit switch (at the TIRAK® terminal box)
7. Brake release lever
8. Lifting rope

3.6 Technical Data

Design according to DIN 15 020, transmission group 1_mBor1_m C_m
 Technical modifications reserved.

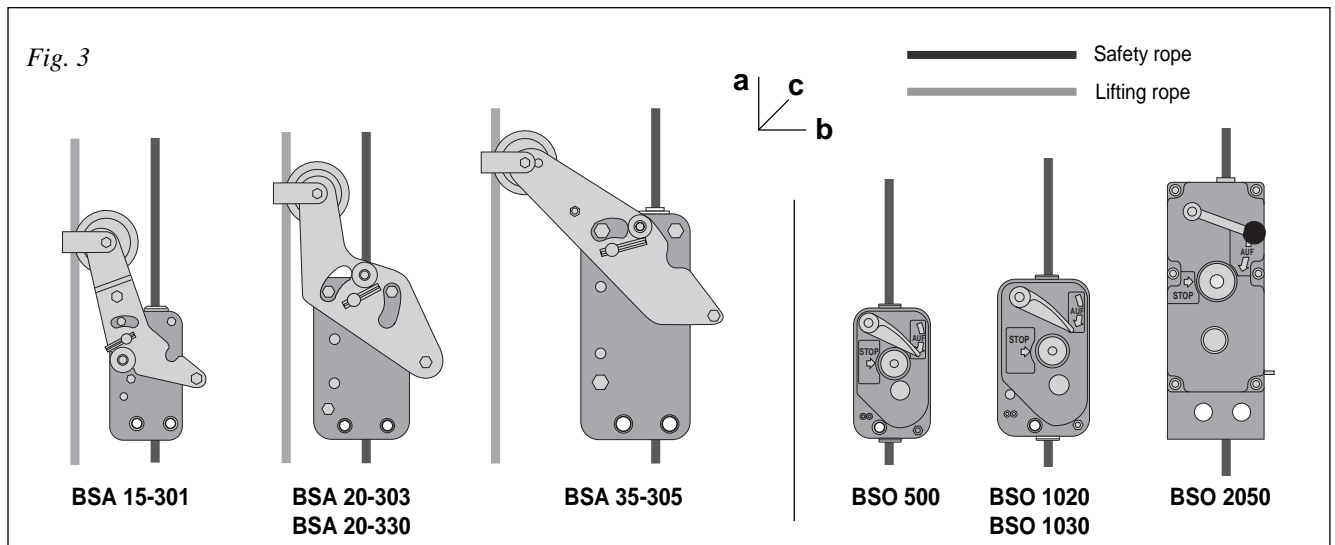
3.6.1 TIRAK® Hoists

Hoist	Capacity	Rope speed	Type of drive	Output	Rated-Current	TIRAK® rope Ø	Dead-weight approx.	Dimensions		
								a	b	c
TIRAK® Model	kg ²⁾	m/min	— ³⁾	kW	A	mm	kg ⁴⁾	mm	mm	mm
X 300 P	300	9	D	0,5	1,6	8	28	437	272	285
X 302 P		18	D	0,9	2,6	8	28	437	272	285
X 301 P		9	W	0,5	4,5	8	29	476	272	285
X 400 P	400	9	D	0,7	1,6	8	29	437	272	285
X 402 P		18	D	1,4	2,5	8	30	485	272	285
X 401 P		9	W	0,7	5,5	8	32	485	250	220
X 500 P	500	9	D	0,9	2,8	8	39	485	297	250
X 502 P		18	D	1,8	5,0	8	39	495	297	250
X 503 P		9/18	D	0,9/1,8	2,8/5,1	8	41	495	297	250
X 501 P		9	W	0,9	6,5	8	43	546	297	256
X 720 P	700	9	D	1,5	3,9	9	43	546	297	256
X 820 P	800	9	D	1,25	4,0	9	48	525	297	285
X 822 P		18	D	3,5	7,0	9	60	563	307	285
X 823 P		9/18	D	1,75/3,5	4,5/9,0	9	61	563	307	315
T 1020 P	800	9	D	1,9	4,6	9	74	577	320	315
T 1023 P		9/18	D	1,9/3,6	5,5/9,5	9	84	645	320	315
X 1030 P	1000	9	D	1,9	4,6	10	48	525	297	285
X 1032 P		18	D	3,6	9,5	10	60	563	307	285
X 1033 P		9/18	D	1,9/3,6	5,5/9,5	10	61	563	307	315
X 2050 P	2000	6	D	2,2	6	14	85	650	400	340
X 2052 P		12	D	5,5	12	14	110	660	400	350

Table 2

- 1) Hoist to 9 m/min = Driving group 1B_m, Hoists over 9 m/min = Driving group 1C_m
- 2) If the capacity is not sufficient in direct pull, multiply it by reeving the rope according to the block and tackle principle.
- 3) D = 415 V three phase current; W = 110/220 V single phase current.
- 4) Weight without wire rope.

3.6.2 BLOCSTOP® Fall arrest device



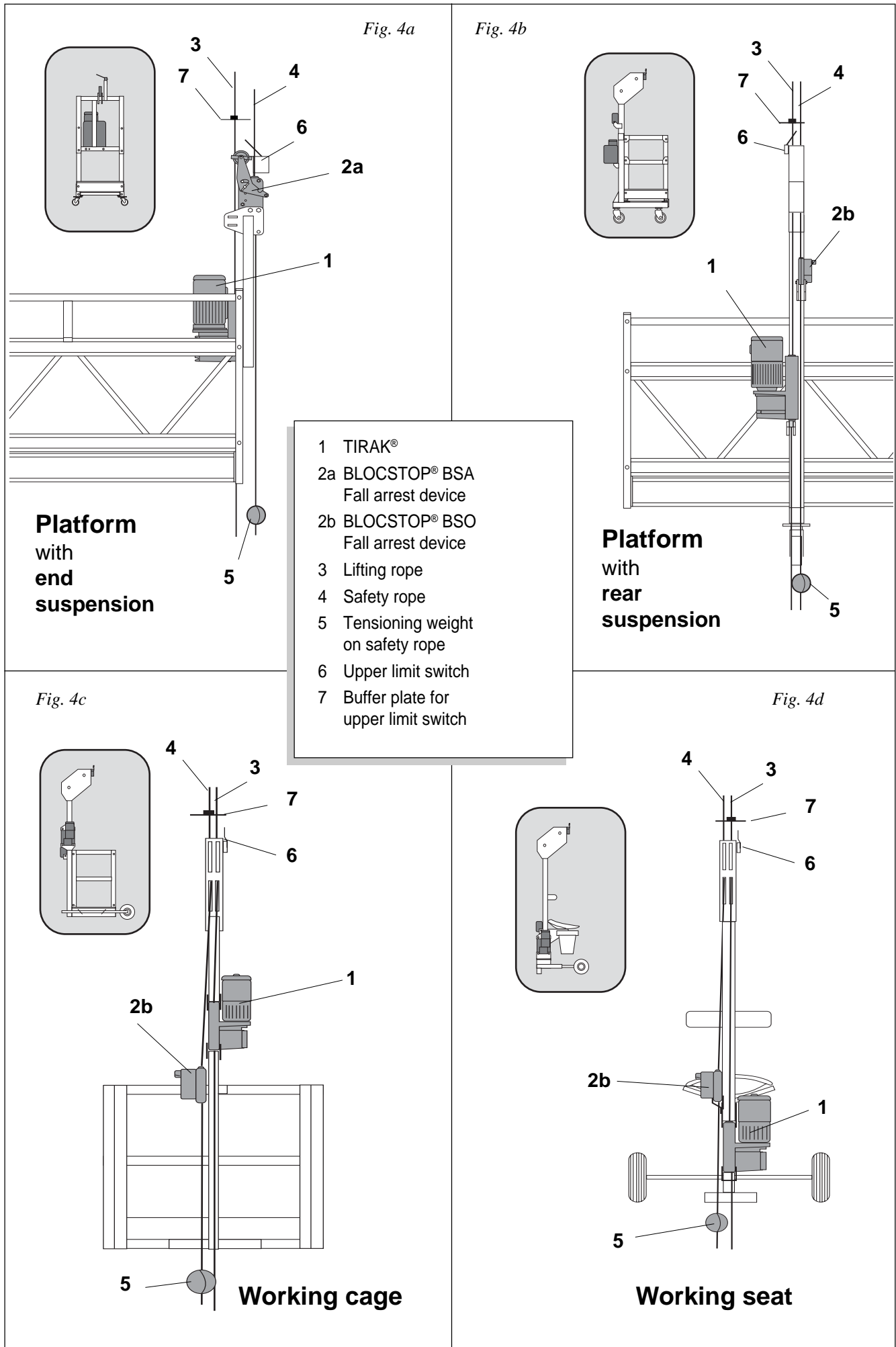
Fall arrest device	Capacity	for max. wire rope speed	TIRAK® Rope Ø	Dead weight approx.	Dimensions		
					a	b	c
BLOCSTOP® Model	kg ¹⁾	m/min	mm	kg	mm	mm	mm
BSA 15-301	500	—	8	4	286	191	76
BSA 20-303	800	—	9	6	350	222	76
BSA 20-330	1000	—	10	6	350	222	76
BSA 35-305	2000	—	14	10,5	395	313	90
BSO 500	500	18	8	4,7	214	121	131
BSO 1020	800	18	9	6	251	140	131
BSO 1030	1000	18	10	6	251	140	131
BSO 2050	2000	18	14	14	408	150	183

The BLOCSTOP®-Models BSO... can if desired be equipped with a limit switch which stops the downward travel of the assigned hoist in the event of the BLOCSTOP® being closed.

Table 3

3.7 Typical Examples

(Schematical Drawing)



3.8 Safety devices

3.8.1 Primary brake

Electromagnetic brake which closes automatically

- if the UP/DOWN-button is released
- in case of power supply failure.

3.8.2 Emergency Stop

Pushing the red EMERGENCY STOP button in case of emergency completely switches off the hoist control. To start after clearing the problem, **turn** the EMERGENCY-STOP button **clockwise** until it releases.

3.8.3 Phase control relay

On hoists with 3-phase motors, the integrated phase control relay stops the operation, if the phases are reversed. This prevents wrong coordination of the UP/DOWN-buttons, which would prevent operation of the load limiting device as well as the upper limit switch.

Correction: turn the **phase inverter** of the plug by 180° (Fig. 6).

3.8.4 Load limiting device

3.8.4.1 Electronic load limiting device

The load limiting device is set by the manufacturer in such a manner that it switches off the lifting movement at the latest when the load has reached 1.25 times the rated capacity of the hoist. A warning signal (lamp or buzzer) must be provided for on the control box which notifies the operator of the overload.

Possible **causes for switching off:**

- overloading of the suspended access equipment, possibly as a result of unfavourable load distribution, or
- the suspended access equipment being blocked by an obstacle during upward travel.

Action following switching off:

Press DOWN button,

- until the suspended access equipment is once again on the ground and reduce the load to such an extent that, or redistribute it until there is no longer any overload
- or
- until the suspended access equipment is free from the obstacle which must be removed before travel is continued.

Function of the load limiting device

The electronic load limiting device reacts to the current consumption of the motor. The overload is detected during lifting.

Fig. 5

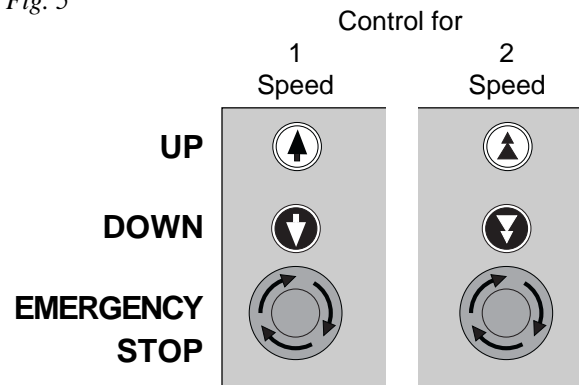
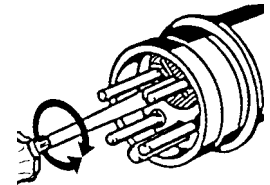


Fig. 6

Phase inverter in CE-plug



Reducing the switch-off threshold value

Setting to a lower threshold value e.g. as a result of a lower carrying capacity of the suspended access equipment, can only be carried out by a qualified electrician or a hoist workshop (fig. 7):

A Pre-setting

A.1 Nominal current

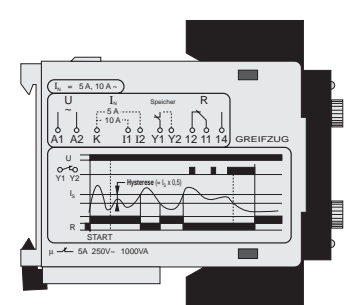
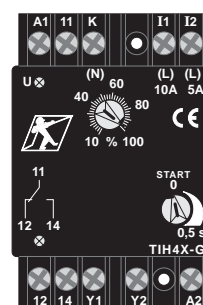
Turn **upper regulator** to the right as far as the stop.

A.2 Start-bridging

Turn **lower regulator** to the right as far as the stop.

Fig. 7

Electronic load limiting device



B. Setting

(Example for Tirak X 500 P)

B.1 Setting the overload

Attach **overload = rated load + 25 %**
(e. g. 625 kg)

During the lifting of the overload turn the **upper regulator** to the left until the hoist stops.

Lower overload until the rope is slack.

Again lift overload – the hoist must stop as soon as it comes under load.

B.2 Setting the rated load

Attach **rated load** (e. g. **500 kg**) and lift the nominal load from ground.

Turn **lower regulator** to the left as far as the stop.

Press UP button – the hoist must stop immediately.

Following each stopping of the hoist during this setting procedure, press the DOWN button shortly so that the upward travel is again possible.

Step by step

– turn the **lower regulator** slightly to the right,
– then press UP button,
until lifting of the **suspended nominal load** is possible.

Important note for TIRAK® with 2 speeds (pole changing motor):

i The control system contains **2 load limiting devices**, the **setting** must be carried out **for both speeds**.

3.8.4.2 Mechanical load limiting device

The load limiting device is installed in the rope drive and switches off the UPWARD travel in the event of overload.

A warning signal (lamp/buzzer) is triggered which does not go off until the cause of the overload has been removed.

Possible **causes for the switching off**:

- overload of the suspended access equipment, possibly as a result of unfavourable load distribution
- or
- the suspended access equipment being blocked by an obstacle during upward travel

Action following switching off:

- reduce load to such an extent that, or redistribute it until there is no longer any overload,
- or
- move downwards until the suspended access equipment is free from the obstacle which must be removed before travel is continued.

3.8.5 Manual operation

Details in chapter 5.5 on page 25.

3.8.5.1 Emergency Descent

In case of power failure you can **manually open the brake** with lever (1) (Fig. 8).

3.8.5.2 Manual lifting

With the **brake opened** the suspended access equipment can be lifted with the hand wheel (2) placed on the motor shaft. (Fig. 8).

3.8.6 Fall arrest devices

Suspended access equipment must be equipped with a **fall arrest device** which secures the load against falling **using a safety rope**.

The two systems available from the manufacturer of the TIRAK® hoists are described below.

3.8.6.1 BLOCSTOP® Model BSA

The fall arrest device model BLOCSTOP® BSA is opened by the loaded lifting rope (fig. 9) and secures the suspended access equipment against:

- rupture of the lifting rope,
- failure of the hoist,
- interlocking/becoming caught during downward travel with the result that the lifting rope is no longer under tension,
- inclined position of more than the maximum admissible 14° (on suspended platforms with the two hoists attached at the ends).

3.8.6.2 BLOCSTOP® model BSO

The fall arrest device model BLOCSTOP® BSO is released manually (fig. 10).

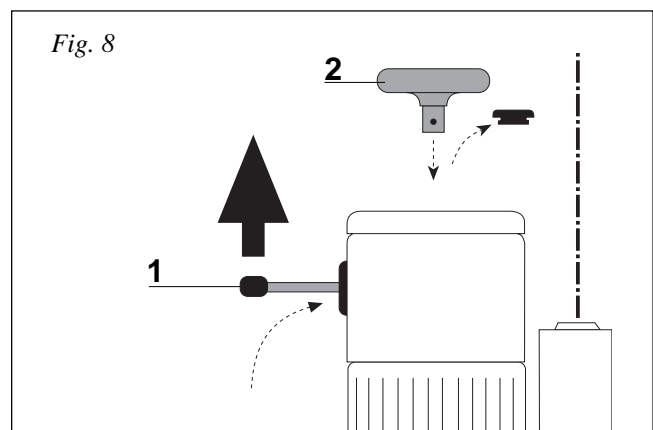
The speed of the safety rope is constantly monitored and the clamping mechanism closed automatically in the event of a sudden occurrence of excessive speed. As a result, the suspended access equipment is secured against

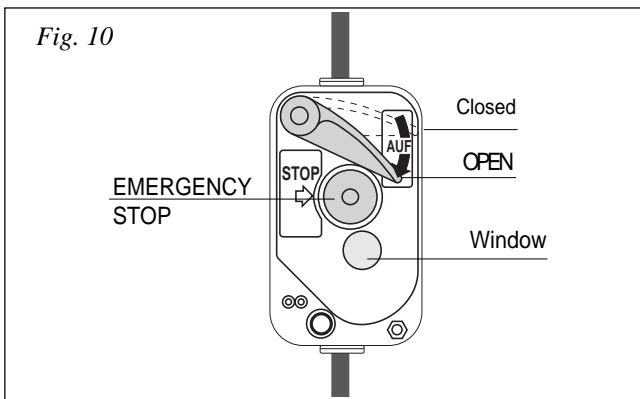
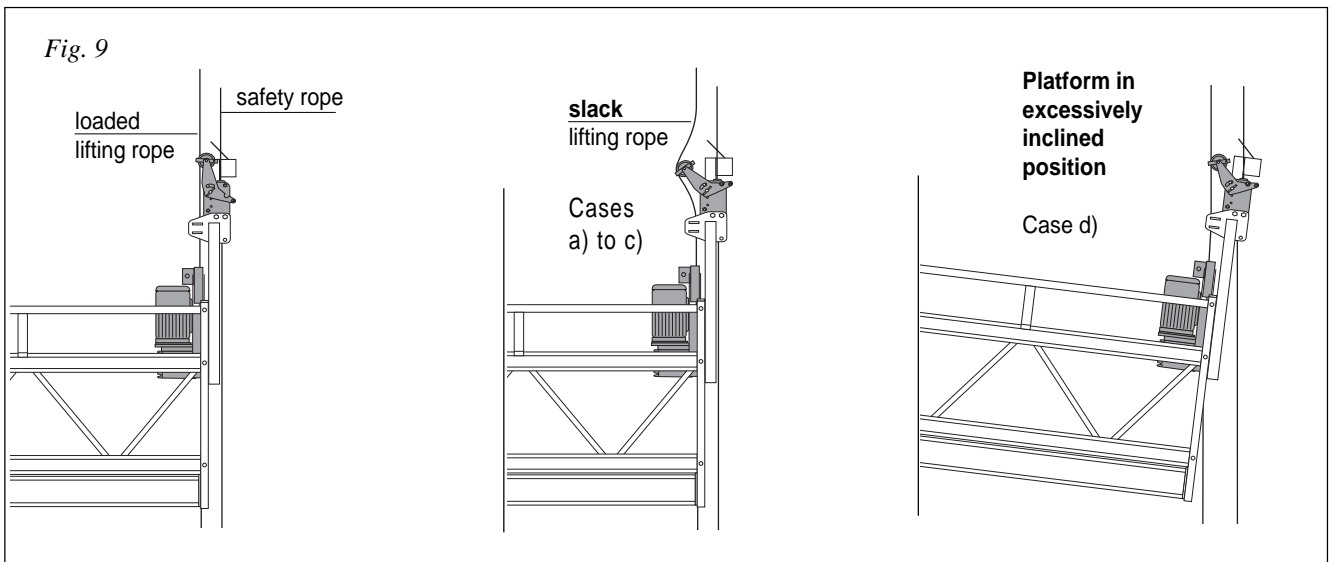
- rupture of the lifting rope and
- failure of the hoist

By pressing the **EMERGENCY STOP button** the fall arrest device can also be closed manually **in an emergency**. This offers the advantage that a defective hoist can be replaced on the hanging man-riding device.

The **viewing window** serves to enable to check the operation of the centrifugal weights during service.

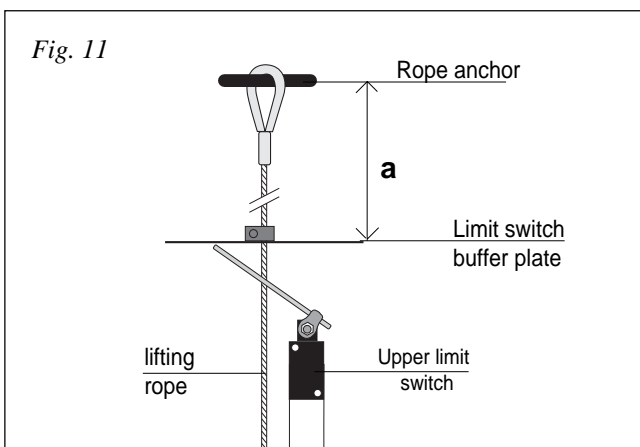
See section 5.6 on page 25 for **action in the event of operation of the fall arrest device**.





3.8.7 Upper limit switch

For each TIRAK® hoist a limit switch must be assembled at the upper end of the support frame/support stirrup of the suspended access equipment which stops operation of upward travel when pressed (fig. 11).



A buffer plate must be assembled underneath the rope anchor on the lifting rope which triggers the limit switch. If possible the interval (a) to the rope anchor should be 1.5 metres or more.

With projecting components attach the buffer plate sufficiently well below the rope anchor that the suspended access equipment stops in good time.



Attention! If the limit switch has been triggered, press the DOWN button until the limit switch is again switched free.

3.9 Residual risks



CAUTION!

The following risks are not constructively covered for the TIRAK® hoist and the BLOCSTOP® fall arrest devices:

- The **load limiting device** is set to the maximum rated capacity of the respective hoist; the manufacturer of the suspended access equipment must check whether the admissible overall weight of his installation (own weight + working load) corresponds to this value.

Should a lower value be necessary,

- have **electronic load limiting device** set by qualified personnel;
(see section 3.8.4 load limiting device)
- have **mechanical load limiting device** set by the manufacturer.

- The **electronic load limiting device** only detects an overload **during lifting/upward travel**.

Therefore special care must be given to the distribution of the loads.

- The **BLOCSTOP® fall arrest devices** only fulfil their safety function if the safety rope between rope anchor and BLOCSTOP® is tensioned (no slack rope!).

Therefore on safety ropes hanging down loosely, a counterweight must always be secured 20 cm above the ground (see 4.8.3).

4. Setting up

4.1 General

The manufacturer of the suspended access equipment is responsible for ensuring that the device, including the suspension construction, conforms to the applicable standards.

Required equipment

- | | |
|--|---|
| <p>a) TIRAK® hoist(s) of correct capacity, speed and voltage with load limiting device.</p> <p>b) Fall arrest device(s), e.g. BLOCSTOP® machine(s) with at least the same capacity as the TIRAK® hoist(s) in use.</p> <p>c) TIRAK® wire rope with correct diameter and of sufficient length. Also multi-purpose grease to lubricate the rope</p> | <p>d) Electric supply cable of correct type and required length, with correct number of wires and cross sectional area.</p> <p>e) Pulleys for diverting or reeving the wire rope of sufficient strength and diameter.</p> <p>Check condition of all components.</p> |
|--|---|

4.3 Anchoring the TIRAK® hoist

4.3.1 Anchoring devices and dimensions

Anchoring devices

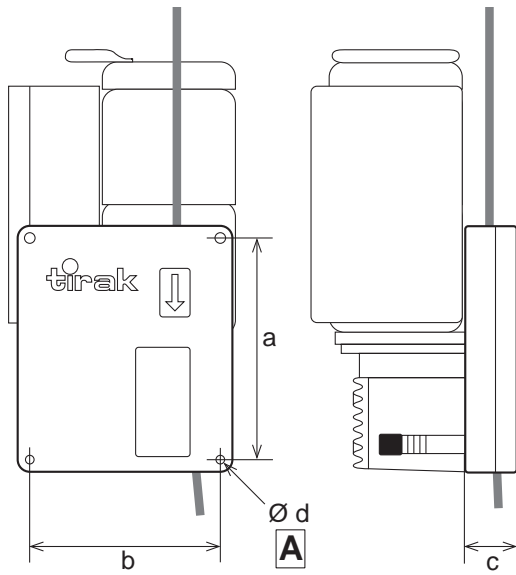


- Series **X 300/400/500/720/820 P** and **X 1030 P** when screwing the housing to the points **(A)**:
M10x... screws, at least grade 8.8 with self-locking nuts;
 - series **X 300/400/500/720/820 P** and **X 1030 P** when anchoring by means of the adapter (Fig. 14):
M12x... screws, at least grade 8.8 with self-locking nuts;
 - Series **X 500/720/820/1030 P** when screwing the housing to point **(B)**:
M16x... screws, at least grade 8.8 with self-locking nuts;
 - Series **T 1020 P** at points **(C + D)**:
M16x... screws, at least grade 8.8 with self-locking nuts;
 - Series **X 2050 P** when screwing the housing to the points **(A)**:
M16x... screws, at least grade 8.8 with self-locking nuts;
 - Series **X 2050 P** when screwing to point **(B)**:
M30x... screws, at least grade 8.8 with self-locking nuts;
- Instead of the screws, bolts or similar with at least the same strength can be used.

Table 4

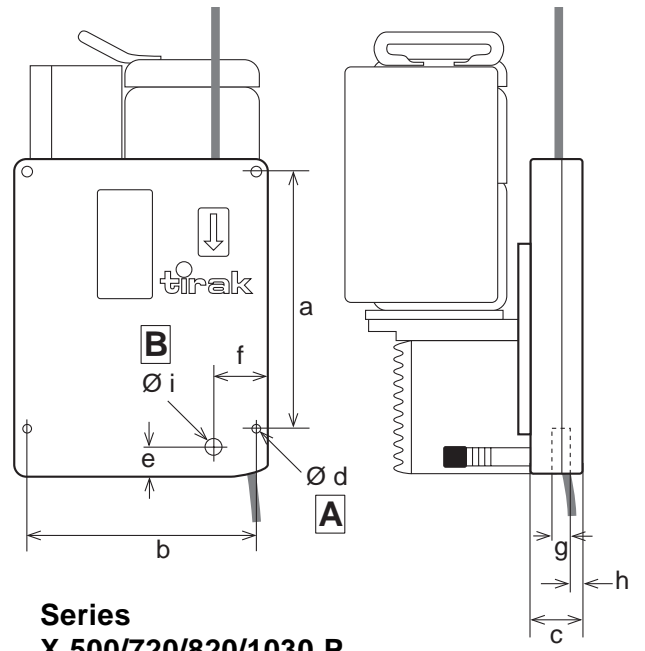
Dimension	TIRAK® Series			
	X 300/400 P	X 500/720/820 P X 1030 P	T 1020 P	X 2050 P
	Dimensions [mm]			
a	255	300	449	570
b	220	267	250	360
c	60	60	56	117
Ø d	10.5	10.5	-	16,1
e	-	35	-	45
e ₁	-	-	-	35
f	-	67	-	132
g	-	26	28	40
h	-	19	14	27
h ₁	-	-	-	70
Ø i	-	16.5	16.5	30,1
k	112	100	-	-
l	40	40	-	70
m	12	12	-	-
n	98	98	-	-
o	32	32	-	-
p	26	26	-	-
Ø q	13	13	-	-

Fig. 12



Series X 300/400 P

Fig. 13



Series X 500/720/820/1030 P

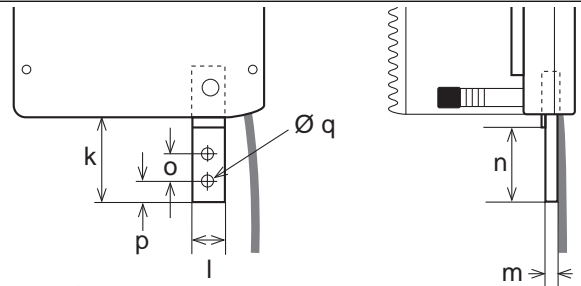
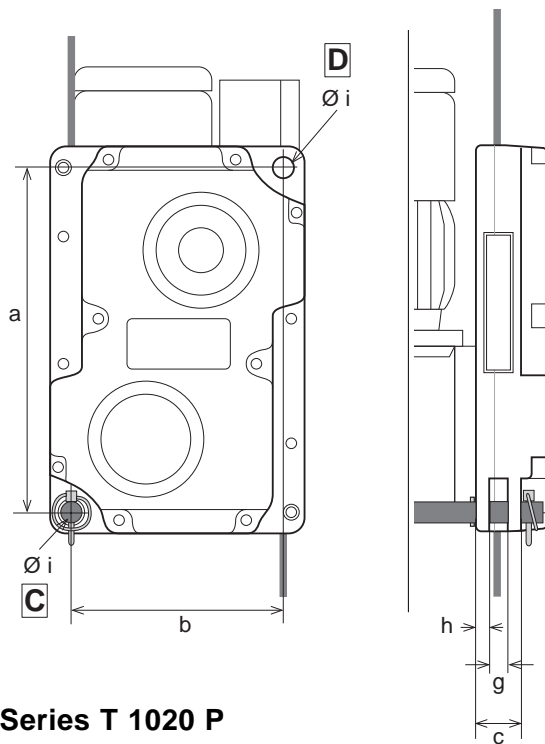


Fig. 14

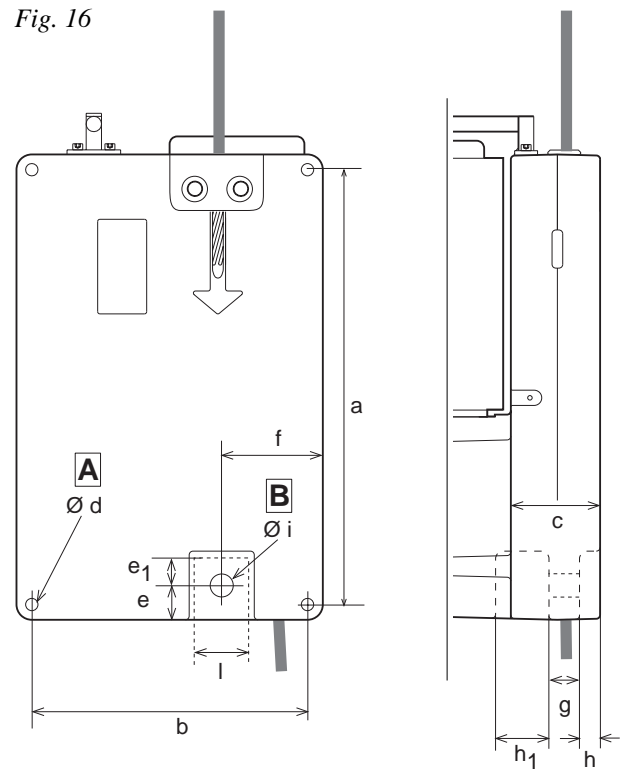
Adapter (optional)
for Series X 300/400/500/720/820/1030 P

Fig. 15



Series T 1020 P

Fig. 16



Series X 2050 P

4.3.2 Anchoring the TIRAK® hoist



Attention:

ALWAYS anchor the TIRAK® hoist in such way that the **wire rope enters** the hoist **perpendicularly**, when under load (Fig. 17 to 19).

**A) TIRAK®-Series
X 300 / 400 / 7500 / 720 / 820 / 1030 P**
(Fig. 17)

- Anchor TIRAK® hoist with **bolt or shackle at point (B)**, or
- anchor the TIRAK® hoist **at least at two** of the four anchoring points (A);
allowed: $A_1 \leftrightarrow A_2$, $A_2 \leftrightarrow A_3$, $A_3 \leftrightarrow A_4$



Attention!

NOT allowed: anchoring only at points $A_1 \leftrightarrow A_3$ or $A_1 \leftrightarrow A_4$ or $A_2 \leftrightarrow A_4$.

B) TIRAK®-Series X 2050 P
(Fig. 18)

- Anchor TIRAK® hoist with **bolt or shackle at point (B)**.



Attention:

Support TIRAK® hoist with additional adapters in the direction of pull.

- Or anchor the TIRAK® hoist **at least at two** of the four anchoring points (A_1 to A_4);
allowed: $A_1 \leftrightarrow A_2$, $A_2 \leftrightarrow A_3$, $A_3 \leftrightarrow A_4$,



Attention!

NOT allowed: anchoring only at points $A_1 \leftrightarrow A_3$ or $A_1 \leftrightarrow A_4$ or $A_2 \leftrightarrow A_4$.



Attention:

It must be ensured by means of the mounting (C) that the force is distributed evenly over both anchoring points.



Important:

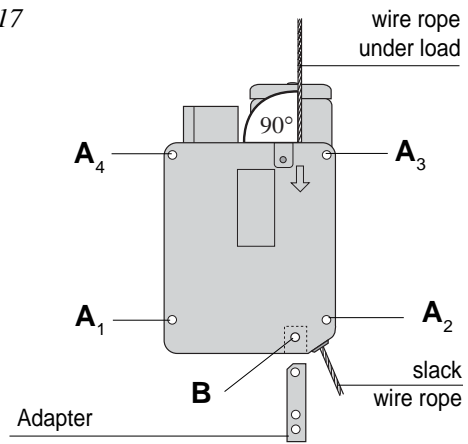
When planning the anchoring we recommend consultation with the manufacturer.

C) TIRAK®-Series T 1020 P
(Fig. 19)

- Anchor the TIRAK® hoist **at the two points (C and D)**.

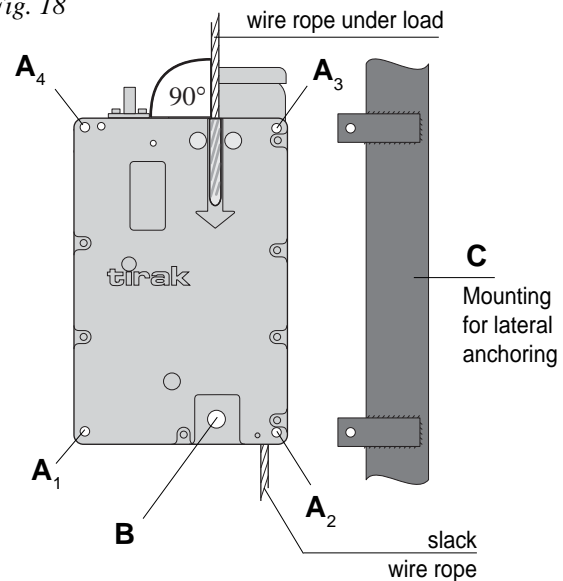
In this respect the anchoring point at (C) must be sufficient for the full carrying capacity of the hoist whilst the anchoring at (D) merely serves to stabilise the hoist.

Fig. 17



Series X 300/400/500/720/820/1030 P

Fig. 18



Series X 2050 P

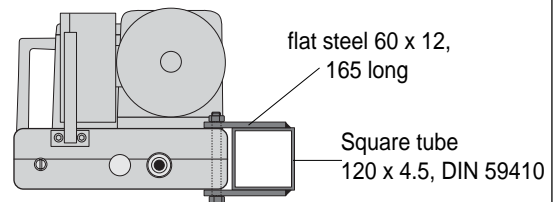
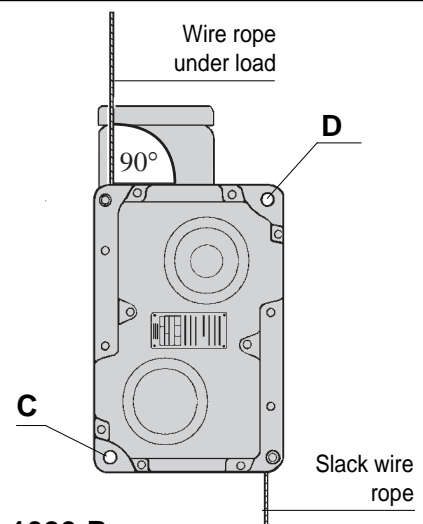


Fig. 19



Series T 1020 P

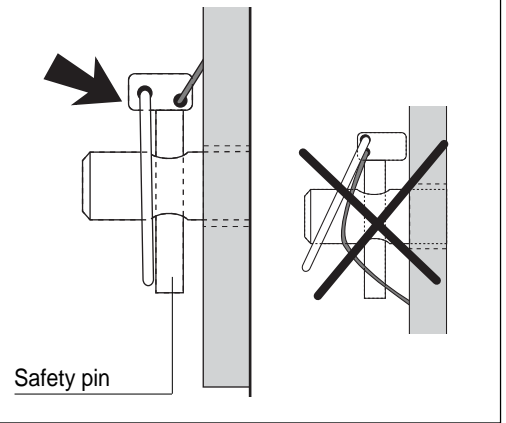
D) All TIRAK®-Hoists!



Attention:

When using an anchor bolt with safety pin: Check the **correct position of the safety pin** according to Fig. 20

Fig. 20



4.4 Installation of the fall arrest device

4.4.1 Evidence of carrying capacity

The construction for hanging the safety rope as well as the component to which the BLOCSTOP® fall arrest device is anchored must have **at least four times the carrying capacity** (against rupture) of the BLOCSTOP®.

This is necessary in order to cope with the dynamic load in the event of fall arresting.

4.4.2 Dimensions for BSA-Devices

Dim.	Dimensions in mm for BLOCSTOP® BSA		
	BSA 15-301	BSA 20-303/330	BSA 35-305
a	286	350	395
b ₁	191	222	313
b ₂	269	324	370
c ₁	34	37	53
c ₂	75	75	90
d	91	121	140
e	42.5	55	60
f	14	25	28
g	20	19.5	22
∅ h	12.1	12.1	22.2
S	100	100	200

Table 5

c₁ = Casing breadth; c₂ = Breadth over all

Fig. 21

BLOCSTOP® BSA 15-301

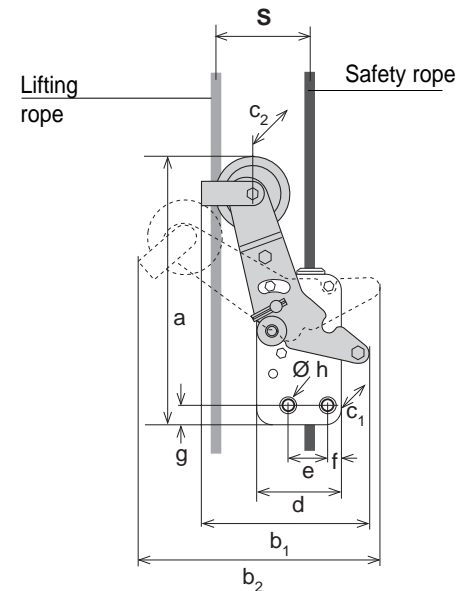


Fig. 22

BLOCSTOP® BSA 20-303/330

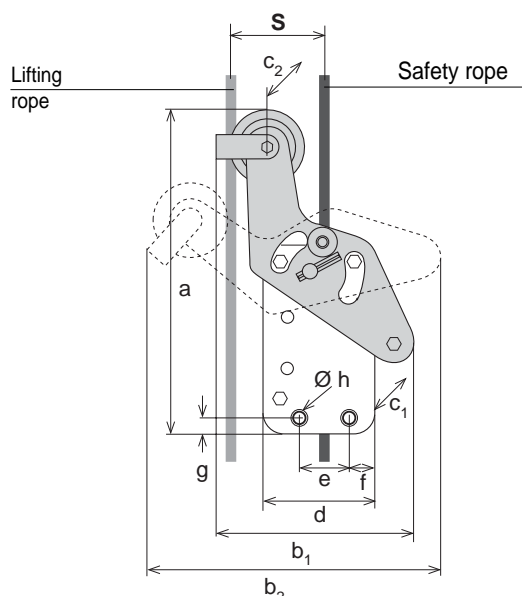
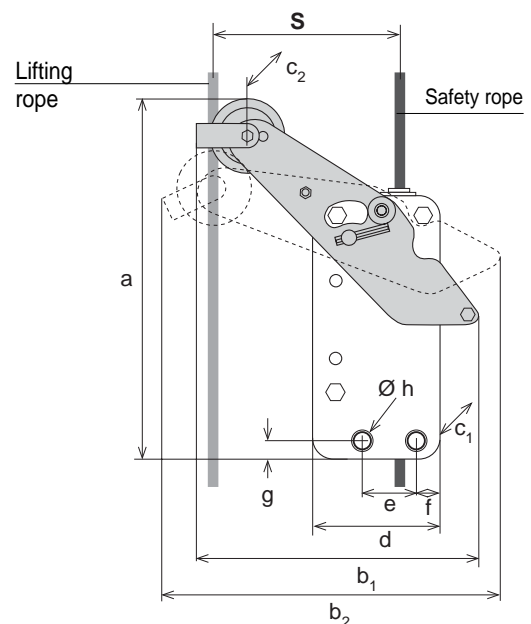


Fig. 23

BLOCSTOP® BSA 35-305



4.4.3 Anchoring the fall arrest device

A) BLOCSTOP® BSA ...

- Anchor the BLOCSTOP® Device to both anchor points (A) in such a manner (fig. 24) that there is
10 cm interval (S) BSA 15/20...or
20 cm interval (S) BSA 35-305
between safety rope and lifting rope
 (fig. 21 to 23).
- The component to which the BLOCSTOP® type BSA... is anchored must be connected rigidly to the suspended access equipment. Otherwise the BLOCSTOP® cannot function as an inclination limiting device (fig. 25).



Attention!

Protect BLOCSTOP® devices against dirt!
(Details see page 17).

Anchoring devices

BSA 15-301 / 20-303 / 20-330:

M12x... screws, at least grade 8.8 with self-locking nuts;

BSA 35-305:

M22x... screws, at least grade 8.8 with self-locking nuts;

or **bolts** or similar with at least the same strength.



B) BLOCSTOP® BSO 500 und BSO 1020/1030

(Installation dimensions on page 18)

- The interval between **safety and lifting rope** is not laid down; however it should be kept as small as possible.
- Anchor the BLOCSTOP® device to the anchoring point (A)** in such a manner that the **safety rope runs vertically into the opening** of the BLOCSTOP® (fig. 26). If necessary guide the safety rope over deflection pulleys.



Attention: Do not fully tighten screw; the BLOCSTOP® models **BSO 500** and **BSO 1020/1030** must be capable of swivelling around the anchoring point (A).

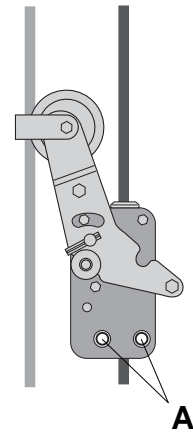
Anchoring devices

M12x... screws, at least grade 8.8 with self-locking nuts;

or **bolts** or similar with at least the same strength.

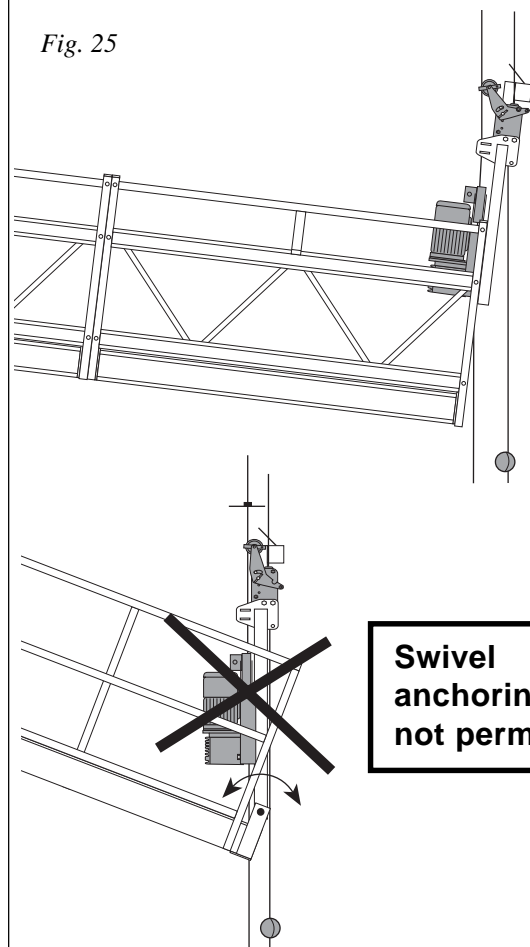


Fig. 24



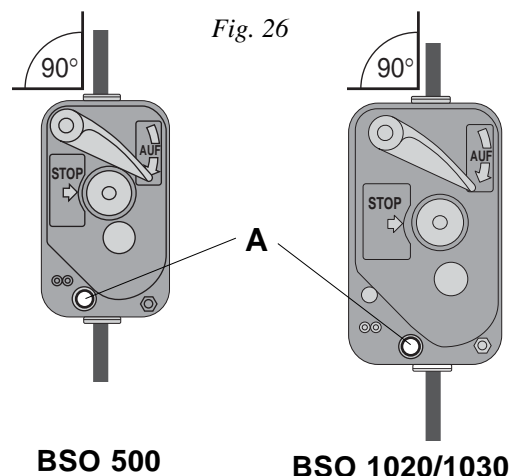
Applies to all BSA models not illustrated.

Fig. 25



Swivel anchoring not permitted!

Fig. 26



BSO 500

BSO 1020/1030

C) BLOCSTOP® BSO 2050

(Installation dimensions on page 18)

- The interval between **safety and lifting rope** is not laid down; however it should be kept as small as possible.
- The anchoring component must be provided for at an appropriate interval to the hoist on the suspended access equipment and indeed in such a manner that the **safety rope runs vertically into the opening** of the BLOCSTOP® (fig. 27).

Attention!



The anchoring component (a) must consist of two brackets so that the BLOCSTOP® is linked to this on both sides (fig.28).

- Connect both anchor points of the BLOCSTOP® to the anchor component (a) of the working platform with bolts (b).

Bolt diameter: 22 mm

Minimum quality:

Grade 8.8 (800 N/mm² ≅ 800 MPa)

- The bolts must be secured against loss by forelocks (c) or equal value securing elements.

Fig. 27

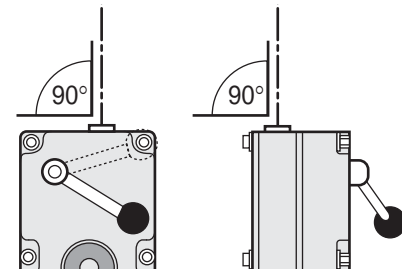
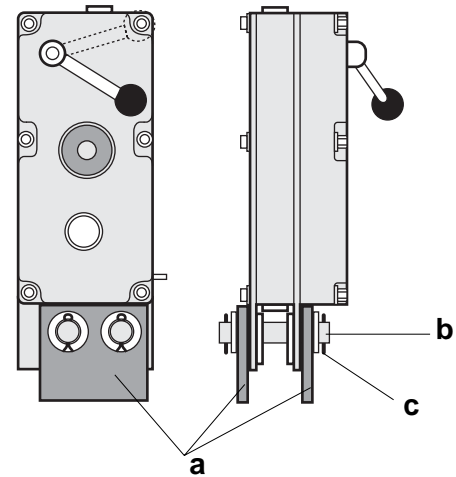


Fig. 28



BLOCSTOP® BSO 2050

Attention!



Protect BLOCSTOP® devices against dirt!

Take appropriate action for ensuring that no debris is carried into the BLOCSTOP® by the rope.

This applies in particular **during work with air-placed concrete or with synthetic resin coatings or similar!**

Deposits of this nature can lead to malfunction which endanger work safety!

Applies only for BSO models with built-in limit switch:

4.4.4 Connection to the TIRAK® control system

4.4.4.1 Function

If the BLOCSTOP® fall arrest device is closed, the control current for the downward travel of the assigned hoist will be interrupted.

4.4.4.2 Connection (fig. 29)

A) Plug connection

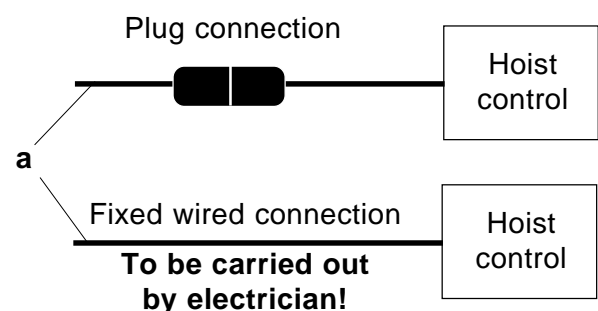
Connect limit switch cable (a) to the control box of the assigned hoist with plug connection.

B) Fixed wired connection

Have limit switch cable (a) connected in the control box of the assigned hoist **by a qualified electrician** in accordance with the wiring diagram provided.

Fig. 29

(Principle sketch)



4.4.5 Dimensions of BLOCSTOP® BSO models

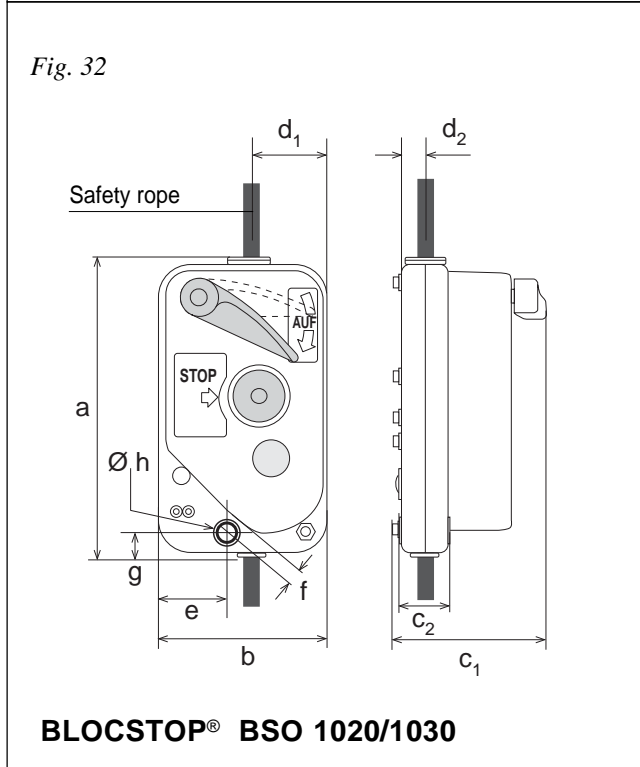
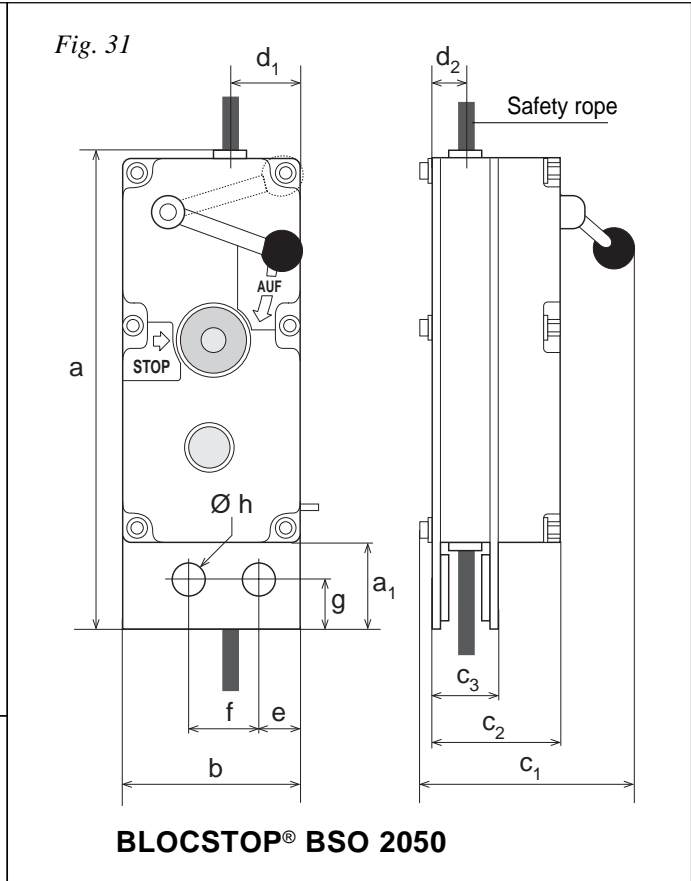
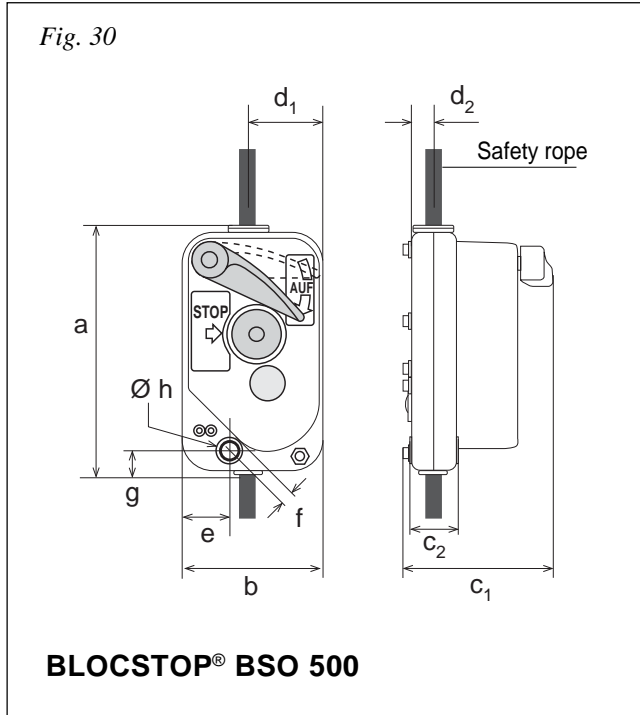


Table 6

Dimension	Dimensions in mm for BLOCSTOP® BSO		
	BSO 500	BSO 1020 BSO 1030	BSO 2050
a	214	251	408
a ₁	-	-	70
b	121	140	150
c ₁	131	131	183
c ₂	37	37	110
c ₃	-	-	55
d ₁	64	65	60
d ₂	20	20	27.5
e	40	56	35
f	12.5	12.5	60
g	21.5	21.5	36
Ø h	12.2	12.2	22.2

4.5 Slack wire rope

4.5.1 Free-hanging wire ropes

Always ensure that the wire rope exit is not obstructed!

Use a diverter pulley or other wire rope guiding systems for the slack wire rope to prevent damage from rubbing over sharp edges. Make sure that the slack wire rope

- is freely hanging down and able to untwist itself or
- is properly reeled to prevent the formation of loops.

4.5.2 Use of rope winders

The loose, unloaded end of the rope can also be stored on suitable rope winders (e.g. motor or spring rope drums).

When planning, we recommend consulting the manufacturer of the TIRAK® hoists regarding design and arrangement of the rope winders.

4.6 Electrical Connections

The manufacturer of the suspended access equipment is responsible for the connection of the TIRAK® hoists taking into consideration the wiring diagrams provided.

DANGER!



The electrical connection for TIRAK® winches must conform to EN 60204-1.

The lead must be protected by fuse by the customer.

Always pull the plug out before opening a central control!

- a) Ensure that the **mains voltage** is adequate for the **motor** of the TIRAK®:

– **Three phase:**

400 V (3P + E + 0), 50 Hz,
16 amp rated plug and socket

– **Single phase:**

230 V (2P + E), 50 Hz,
16 amp rated plug and socket

If in doubt ask.

- b) To avoid power loss between power source and the TIRAK® always use power cables with **adequate cross sectional area**.
See tables 6a and 6b.

Table 7a

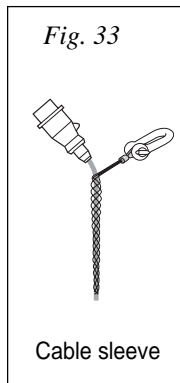
indicates the reference letter of the TIRAK® model and the mains supply voltage.

Maximum speed must be used for TIRAK® with two speeds.

Table 7b

gives the **minimum cable cross section** based on the reference letter.

- c) Use only **heavy duty cables with incorporated strain relief**.
- d) **Hanging cables** longer than 30 m should be fixed by means of a cable sleeve or cable clamp. (Fig. 33).
- e) When using a **generator** its output must be at least **2.5 times greater** than the **TIRAK® power consumption**.



TIRAK® Series	Max. wire rope speed m/min	1 TIRAK			2 TIRAK		
		3 phase 400V	230V	1 Ph 230V~	3 Phase 400V	230V	1 Ph 230V~
X 300 P	9	A	B	C	A	D	E
	18	A	C	-	B	E	-
X 500 P	9	A	C	E	B	E	F
	18	B	E	-	D	G	-
X 720 P	9	A	-	F	D	-	-
	18	B	-	-	E	-	-
X 820 P	9	B	D	-	D	-	-
	18	C	E	-	E	-	-
T 1020 P	9	B	E	-	D	F	-
	18	C	F	-	F	G	-
X 1030 P	9	B	E	-	D	-	-
	18	C	F	-	F	-	-
X 2050 P	6	C	F	-	F	G	-
	12	D	F	-	F	G	-

Table 7a

		For cable lengths up to ...			
		20 m	50 m	100 m	200 m
Reference letter of table 7a	A	1,5	1,5	1,5	1,5
	B	1,5	1,5	1,5	2,5
	C	1,5	1,5	2,5	4
	D	1,5	2,5	4	6
	E	1,5	2,5	4	10
	F	1,5	4	10	16
	G	2,5	6	10	16
		Cross section (mm ²)			

Table 7b



Important!

Connect **limit switch for the upward travel limitation** to the plug connection of the TIRAK® terminal box.

For this see fig. 35 on page 20.

Wiring diagrams for the electrical connection are in the TIRAK® terminal box, as well as in the central control cabinet, if provided.

4.7 Electrical Controls

4.7.1 Function / Starting the hoist

Push button control for **UP/DOWN**.

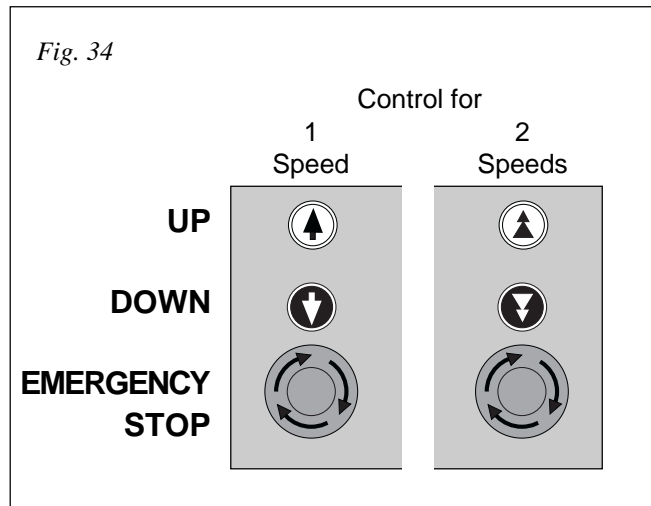
On TIRAK® with **two speed motor**:

half depressed	=	low speed
fully depressed	=	high speed.

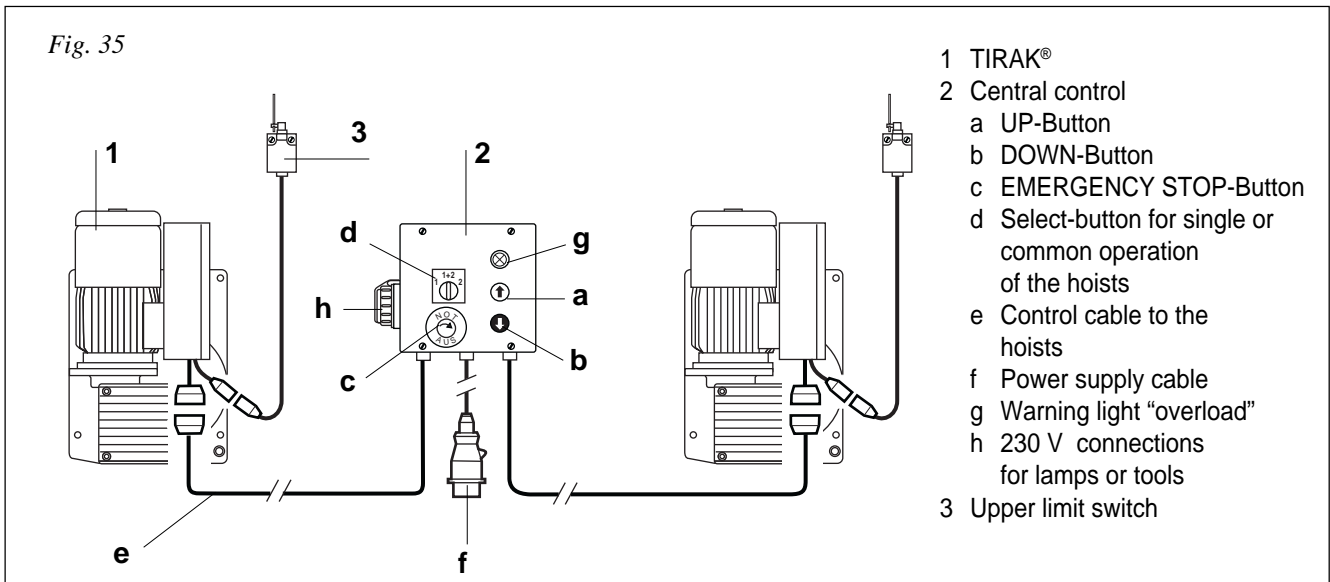
EMERGENCY-STOP button:

Button depressed	=	mains supply interrupted.
------------------	---	---------------------------

To **START**, turn the EMERGENCY-STOP button **clockwise** until it releases.



4.7.2 Example of a central control:



4.8 Wire rope installation

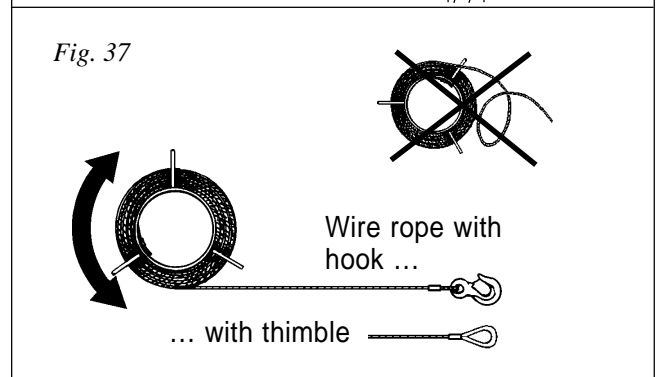
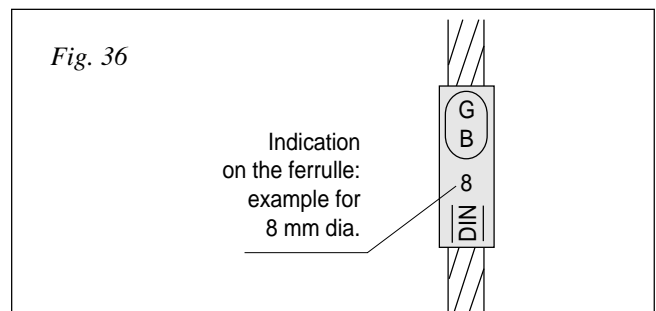
4.8.1 Preparing the wire ropes



CAUTION!

Use gloves, when handling wire ropes.

- Use only **TIRAK®** wire ropes specified by the **TIRAK®** manufacturer.
- Check **correct diameter** (Fig. 36) and **sufficient length** of the wire rope.
- Always **unreel** the wire rope **in a straight line** (Fig. 37), to prevent it from becoming unusable because of loops.
- Check the **rope condition** for damage:
 - proper connections (thimble, ferrule); on wire ropes with hook: hook is not bent, safety catch is in place (Fig. 38);
 - the wire rope has no visible damage along its total length; the fused and tapered end is according to Fig. 39.



e) **Attention!**



Never use the TIRAK® wire rope for fixing a load!

Never let the wire rope rub over sharp edges!

Always ensure a **clear rope exit!**

Always keep it **lightly lubricated!**

Use normally commercially available multi-purpose grease; **do not use** lubricants containing disulphide (e.g. Molycote®).

Important!



If the anchoring point for the rope is **above** the TIRAK® hoist, **first anchor the rope** and then insert into the TIRAK® device.

4.8.2 Lifting rope installation

Attention!



When using a fall arrest device of the models **BLOCSTOP® BSA...** first **insert the lifting rope between roll and rope guide of the sensor arm** from above (fig. 40)!

- Feed the wire rope as far as possible into the wire rope entry (fig. 41).
- Press **UP**-button, and push in the wire rope, until it starts to reeve itself automatically and exits at the opposite side.

Attention!



Never use DOWN button to install the wire rope, the load limiting device will not function!

On three-phase motors: Turn the **phase inverter** of the plug for 180° (Fig. 41).

Ensure a clear rope exit (fig. 42)!

- If the wire rope does not reeve, check:
 - Is the **wire rope tip** in good condition?
 - Did you press **the correct button**?

Fig. 38

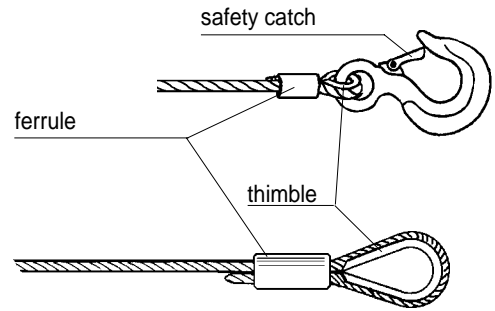


Fig. 39

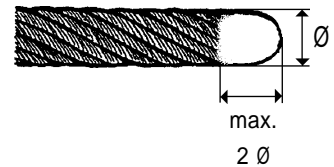


Fig. 40

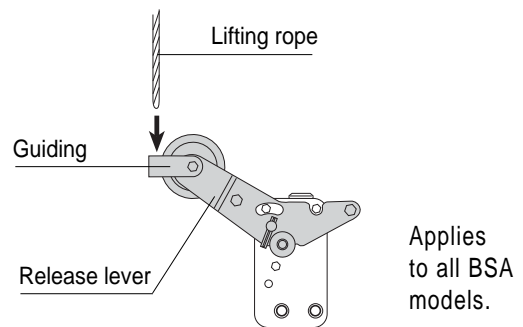


Fig. 41

Phase inverter on CE-plug

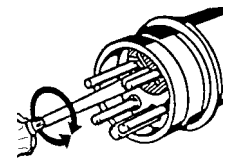
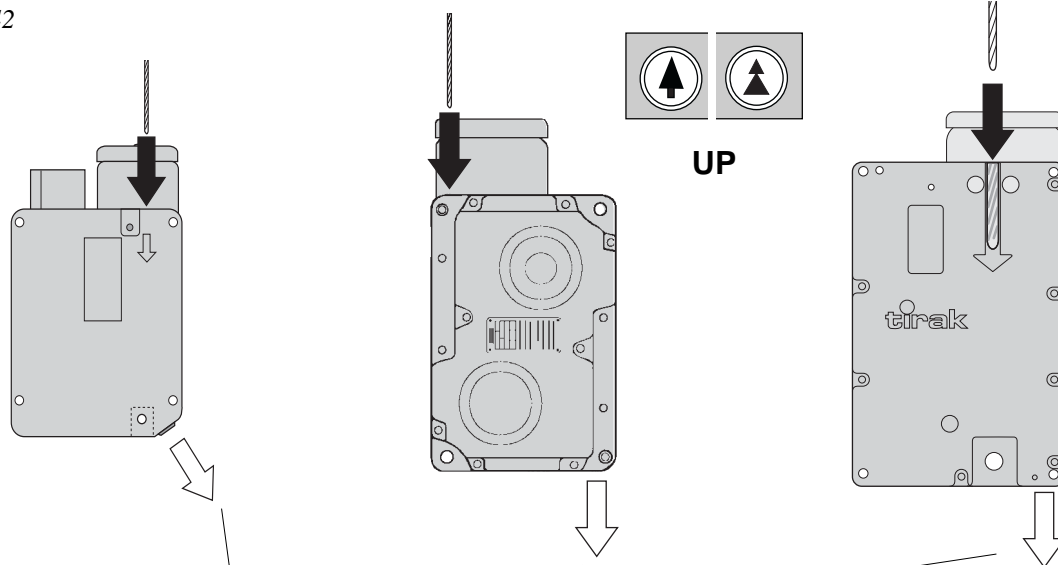


Fig. 42



Ensure a clear rope exit

4.8.3 Safety rope installation

- The safety rope must hang free alongside the lifting rope.
- Open BLOCSTOP® (Abb. 43 + 44):

A) BLOCSTOP® BSA ...

- push sensor arm (A) upwards by hand if it is not already raised by the tensioned lifting rope.

B) BLOCSTOP® BSO ...

- press lever (B) down until it locks into position.

- Place safety rope through the fall arrest device from above and pull taught by hand.

On the BLOCSTOP® BSO 2050 the forward protruding control pin (C) indicates that the rope has been introduced correctly. Otherwise remove the rope and push through again.

Attention!



Should it still **not** protrude forward, send the device to the supplier for checking.

- Anchor **counterweight** to the safety rope approx. 20 cm above the ground (fig. 45):

9.5 kg for BSA 15-301 / 20-303 / 20-330 and BSO 500 / 1020 / 1030;

2 x 9.5 kg for BSA 35-305 and BSO 2050

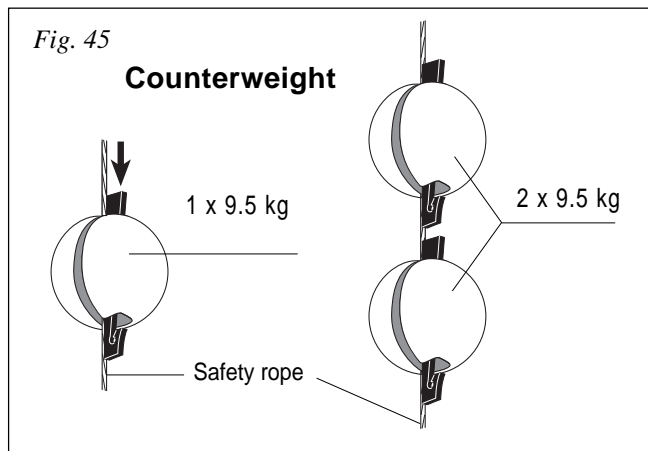


Fig. 43

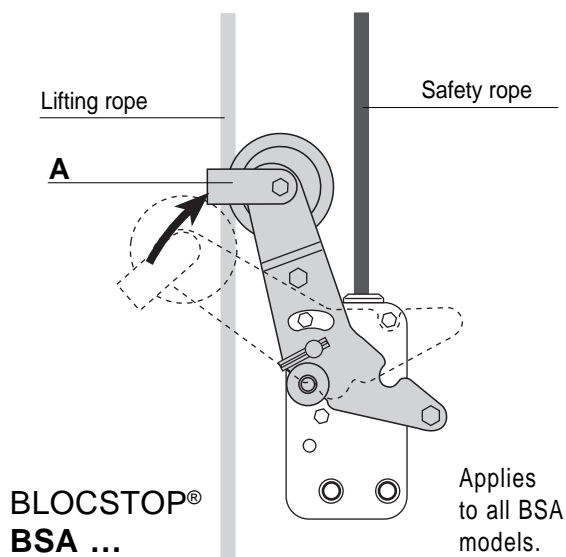
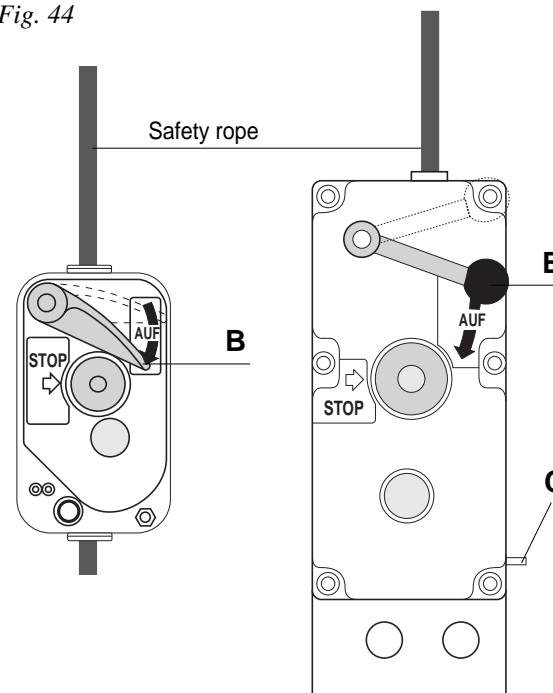


Fig. 44



5. Operation

5.1 Checks before starting

A qualified person must

- carry out the checks as per sections 5.2 and 5.3,
- make a trial journey with the working load limit of the suspended access equipment and when so doing
- press the **EMERGENCY STOP** button, the suspended access equipment must come to a standstill.

To switch back on, turn EMERGENCY STOP button to the right. Carry on travelling and

- check the **upper limit switches**: when travelling upwards press down individually by hand, the corresponding hoist must stop immediately.



Make a **written note of the result** of this check and keep the report.

5.2 Daily checks

- Check correct anchoring of TIRAK® hoist and BLOCSTOP® fall arrest device to the suspended access equipment.
- Check function of **UP** and **DOWN** button as well as of **EMERGENCY STOP** button (fig. 46).
- Check the function of the upper limit switch: when travelling upwards press the tripping devices down individually by hand, the corresponding hoist must stop immediately.
- Pay attention to ensuring that nobody stands underneath the suspended access equipment.
- Check BLOCSTOP® fall arrest device.

DANGER!



It must not be possible to pull the safety rope upwards when the BLOCSTOP® fall arrest device is closed.

BLOCSTOP® models BSA...

- The fall arrest device closes automatically if the lifting rope is not tensioned e.g. when the suspended access equipment is set on the ground (fig. 47).

If the safety rope can however still be pulled upwards, replace BLOCSTOP® and send to the supplier for checking.

BLOCSTOP® models BSO...

- Close fall arrest device by pressing the EMERGENCY STOP button – the lever must jump to the “**CLOSED**” position (fig. 48).

If the safety rope can however still be pulled upwards, replace BLOCSTOP® and send to the supplier for checking.

- Re-open the fall arrest device by pressing down the lever and **sharply pull the safety rope upwards** – the BLOCSTOP® must close automatically; if this is not the case replace and send to the supplier for checking.

During operation check the rotation of the centrifugal weights regularly through the viewing window.



CAUTION!

If the centrifugal weights do not rotate:

- Check BLOCSTOP® function (see above).
If the safety rope is not blocked by the closed BLOCSTOP®:
 - take **measures for evacuating the platform crew**;
 - anchor the platform suitably so that the defective BLOCSTOP® can be replaced on the suspended platform.
- If the closed BLOCSTOP® is blocking the rope:
 - Open BLOCSTOP® by pressing down the lever.
 - move platform downward carefully** – at all times be prepared to catch the platform on the safety rope by pressing the EMERGENCY STOP button.
 - After setting down the platform replace BLOCSTOP® and send to the supplier for checking.

Fig. 46

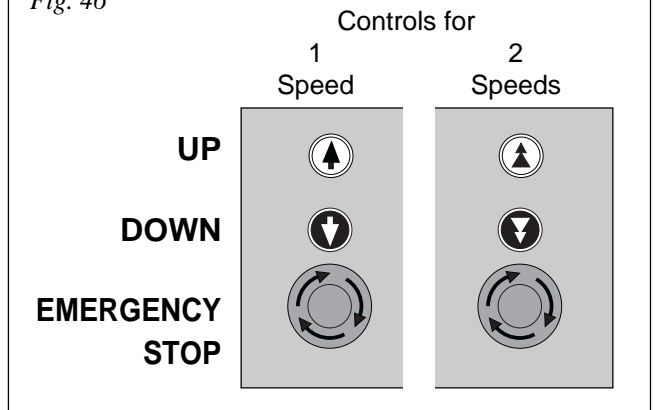


Fig. 47

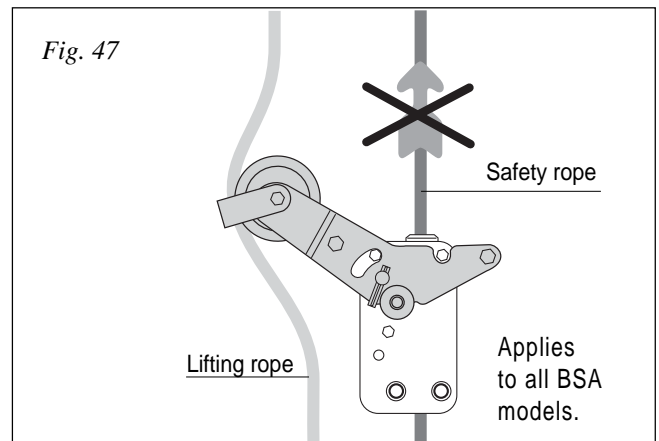
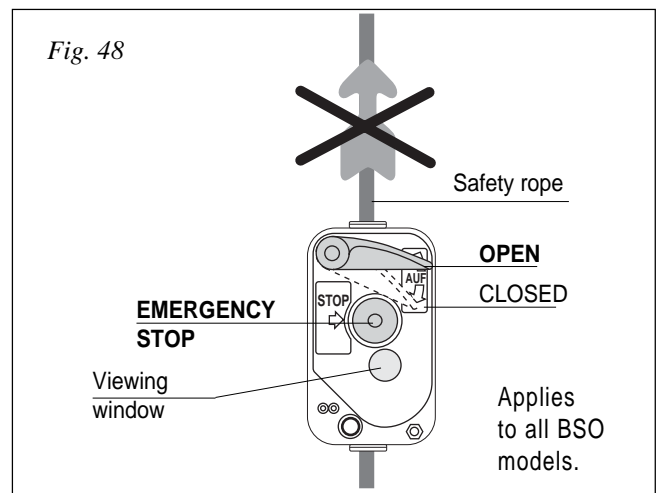


Fig. 48



5.3 Weekly checks of wire rope and cable



DANGER!

Damaged wire ropes endanger operational safety!

Therefore examine **lifting and safety ropes** in accordance with section 8.2.1 on page 30 for damage which requires replacement.

Attention!



Lubrication: Keep the wire rope lightly lubricated. This will not affect the gripping power but will prolong the life of wire rope to a maximum.

Check all **power supply and control cables** and if necessary replace.

5.4 Operation

5.4.1 Stop / Emergency Stop (Fig. 49)

- a) To **STOP** movement release **UP** or **DOWN** button – the suspended access equipment stops.

If not:

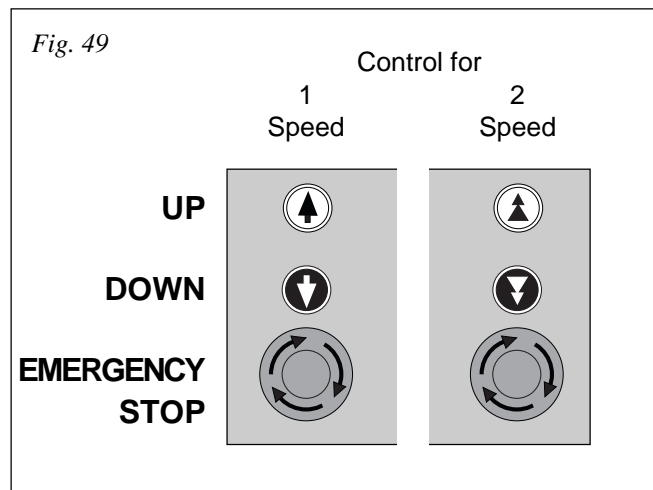
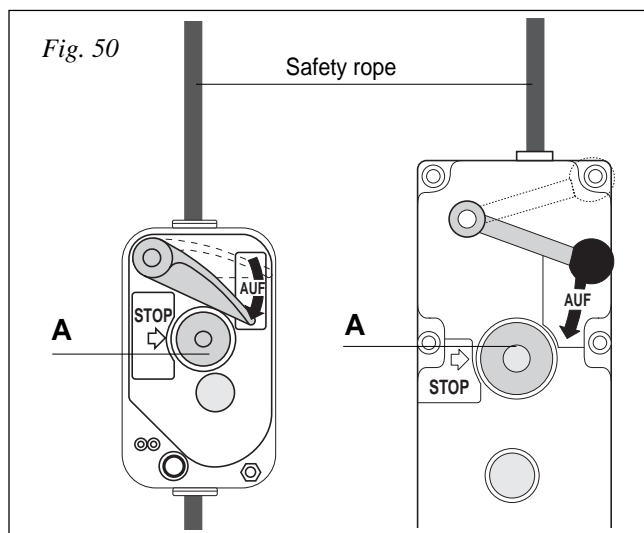
- b) Press **EMERGENCY STOP-Button**, the control must stop completely.

if that does not function:

- c) Pull out the plug!

CAUTION! in cases b) and c):
STOP working!
 Have the TIRAK checked/repared by a qualified electrician.

- d) When using fall arrest devices of the type **BSO...** press **EMERGENCY STOP button (A)** to catch the suspended access equipment on the safety rope (fig. 50).



5.4.2 Service operation (Fig. 49)

- a) To **START**, turn the **EMERGENCY-STOP button** clockwise until it releases – it comes out, the control is on function.
 b) To **Climb**: press **UP**-button.
 To **Descend**: press **DOWN**-button.
 To **STOP**, release button (see also chapter 5.4.1).



Important: If the hoist will not start, it might be possible that two phases of power supply are reversed so that the integrated phase control relay blocks the control.

Correction: turn the **phase inverter** of the plug by 180°.

- c) When stopping the hoist the load is securely held at any position by the primary brake.
 d) In the event of **inclined position**:
 – **Move lower TIRAK® upwards** with the UP button until the platform again hangs horizontally.

With central control, follow instructions for individual control of the hoists.



CAUTION!

Do not move the hoist UP with closed BLOCSTOP® fall arrest device!

The safety rope would be pushed up and would no longer be taught between suspension and BLOCSTOP®, which would dangerously extend the fall distance in the event of a fall arresting.



CAUTION!

On BLOCSTOP® models BSO ...:

In normal travelling operation the **EMERGENCY STOP button** must not be used for stopping the suspended access equipment.

5.5 Manual operation

5.5.1 Emergency Descent

In case of power failure you can **manually open the brake**:

- Take the control lever (1) from the carrying handle, insert it through the motor cover into the brake release point, and raise it (fig. 51).

Important:



On working platforms with more than one TIRAK®, if possible **open brakes simultaneously** on all hoists – if only one operator is on the platform, open brakes alternately so that no inadmissible inclined position occurs.

- Move the suspended access equipment down the rope(s). The **centrifugal brake** ensures a limited descent speed.

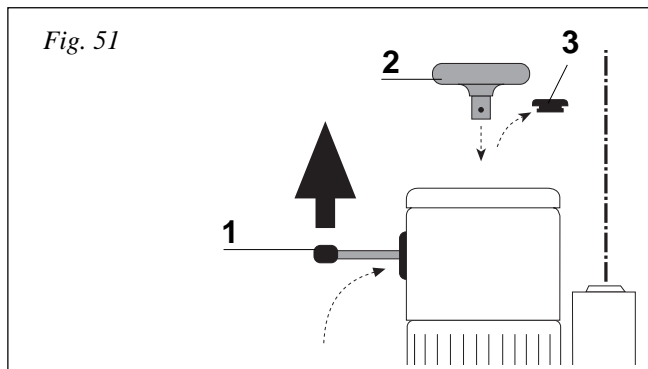
To STOP: release the control lever (1).

After use: put back the control lever (1) in the carrying handle.



CAUTION!

Emergency descent in case of overload is prohibited!



5.5.2 Manual lifting

- Take off rubber cap (3).
- Put the hand wheel (2) on the motor shaft and with the **brake opened** (see above) turn to the right (TIRAK® T...) or to the left (TIRAK® X...) to let the TIRAK® climb the wire rope together with the suspended access device.
- **After use:** put brake release lever (1), hand wheel (2) and rubber cap (3) back to their original positions.

5.6 Action in the event of operation of the fall arrest device

A) DANGER!



In the event of **rupture of the lifting rope** or **failure of the hoist**, evacuate the crew of the man-riding equipment.

In the event of operation of the fall arrest device the suspension of the safety rope and the connection between BLOCSTOP® and suspended access equipment are submitted to dynamic loads.

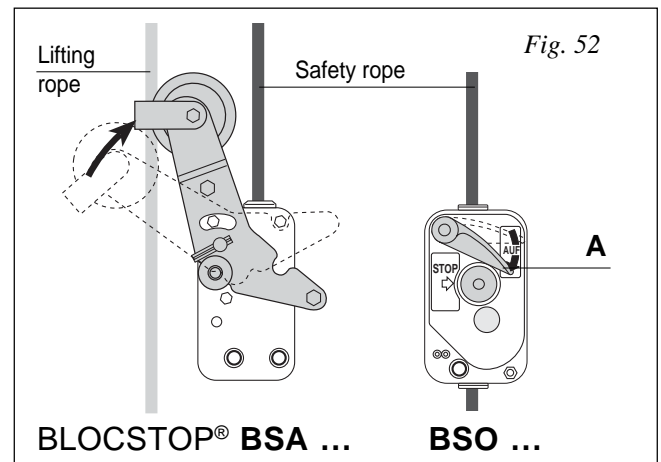
Before resuming normal operation **carry out checks as per section 5.1!**

- B)** In the event of **interlocking/becoming caught** during downward travel so that the lifting rope is no longer under tension (only on BLOCSTOP® models BSA...),

in the event of **inclined position** of more than 14° (only on BLOCSTOP® models BSA... on platforms with two hoists attached to the ends),

on **BLOCSTOP® models BSO...** which are closed by pressing the EMERGENCY STOP button:

- release the safety rope by moving the suspended access equipment upwards – in the event of inclined position, only the lower end.
- In the event of a power failure move upwards in manual operation as per section 5.5.2.



- The fall arrest device BLOCSTOP® BSA... is automatically re-opened by the tensioned lifting rope (fig. 52).

- Open BLOCSTOP® models BSO... manually: Press down lever (A) until it locks into position (fig. 52).

Attention!



When the suspended access equipment is on the ground again, **check the fall arrest device operation as per section 5.2 on page 23.**



CAUTION!

Replace defective BLOCSTOP® devices and send for repair by the manufacturer or by a hoist workshop.



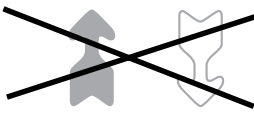
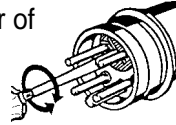
6. Troubleshooting



WARNING!

Avoid injuries:




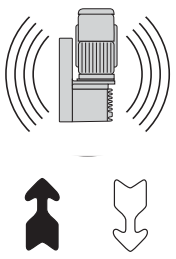

1. Checks and repairs of the electrical equipment must only be carried out by **qualified electricians!** **Wiring diagrams** are shown in the control box of the motor.
2. Any other repairs should only be carried out by the manufacturer (or Group company) or by a qualified person, and only original spare parts shall be used.


Breakdown	Cause	Remedy
<p>The platform moves neither up nor down although the motor starts when the UP/DOWN buttons are pressed.</p> 	 WARNING! IMMEDIATELY STOP WORKING! Any attempt to continue operating the TIRAK® hoist jeopardizes the operational safety!	
	<p>A1 Rope jam in the TIRAK® hoist. Defective or incorrect wire rope or obstructed rope exit.</p>	<p>Stop working immediately! Request assistance from the supplier or the manufacturer.</p>
<p>The hoist doesn't move at all</p> 	<p>A2 The platform has become caught on an obstacle or the platform is held tight.</p>	<p>Release platform carefully from the obstacle or untie platform. Check affected platform parts for their operational safety. Inform supervisor.</p>
	<p>A3 Power failure</p> <p>a) Control switched off.</p> <p>b) Interrupted power supply.</p> <p>c) On 3-phase motors: two phases changed in the supply, the built-in phase control relay blocks the hoist control.</p> <p>d) Defect connection between power supply and hoist control.</p>	<p>a) Turn the EMERGENCY-STOP button clockwise until it releases.</p> <p>b) Check reason and wait, until power returns.</p> <p>c) Turn phase inverter of the central control plug by 180°. </p> <p>d) Check lead and control cable, fuses and connections or wiring of central control and terminal boxes and repair if necessary.</p>
	<p>A4 Wrong connection, e. g. no neutral conductor</p>	<p>Compare connection with wiring diagram. If necessary conversion by the manufacturer.</p>
	<p>A5 Protective switching off due to overheating:</p> <p>a) One phase is missing</p> <p>b) Insufficient cooling</p> <p>c) Voltage too high/too low</p>	<p>a) Check/repair fuses, leads and connections.</p> <p>b) Clean air inlet at the motor cover.</p> <p>c) Check voltage and current consumption on the motor under load. If necessary increase lead cross section.</p>
	<p>A6 Brake does not open (no "click" noise, when switching on/off)</p> <p>a) Defective supply conductor, brake coil, or rectifier.</p> <p>b) Worn brake rotor.</p>	<p>a) Have supply conductor, brake coil and rectifier checked by an electrician and repaired/replaced.</p> <p>b) Send the TIRAK® for repairs.</p>



DANGER!

Always pull the plug out before opening a terminal box or a pendant or central control!

Breakdown	Cause	Remedy
<p>Platform moves down but not up.</p>   <p>DANGER!</p> <p>Always pull the plug out before opening a terminal box or a pendant or central control!</p>	 <p>DANGER! Thoughtless behaviour endangers the safety of the installation!</p> <p>B1 The platform has become caught on an obstacle.</p> <p>B2 Overload, the load limiting device has switched off the hoist.</p> <p>B3 Lifting rope run out with platform set down.</p> <p>B4 Upper limit switch:</p> <p>a) Limit switch defective or not connected. b) Limit switch activated.</p> <p>B5 One phase is missing.</p> <p>B6 Error in the UP control circuit of the central control. or the TIRAK® hoist.</p> <p>B7 lack of motor power</p> <p>a) Defective starting capacitor b) Defective centrifugal switch (starting capacitor overloaded)</p>	<p>Move the platform carefully downwards and remove the obstacle. Check platform parts affected for their operational safety. Inform the supervisor.</p> <p>Check load and if necessary reduce or distribute more evenly.</p> <p>Install lifting rope again. Check why it had run out, avoid repetition, e. g. by installing longer lifting rope(s).</p> <p>a) Check switch connection/function; if necessary replace. b) Move down until the limit switch is free.</p> <p>Check fuses and leads.</p> <p>Check connections, wiring, contactors and replace if necessary.</p>
<p>On single phase motors only</p>		<p>a) Have starting capacitor checked/replaced by an electrician. b) Check the current at the auxiliary winding in the terminal box. Repair by the manufacturer or a hoist workshop.</p>
<p>Excessive motor noise or hoist is crunching,</p>  <p>although UP and DOWN travel are possible.</p>	<p>C1 Overheating</p> <p>C2 Dirt in the rope drive</p>  <p>Attention! Continuing travel can lead to damage on the rope and the rope drive.</p>	<p>Individual causes as well as their correction see page 26 point A5.</p> <p>Replace the TIRAK® as urgently as possible and have checked/repared by the manufacturer or a hoist workshop.</p>

Breakdown	Cause	Remedy
<p>Platform moves up but not down</p> 	<p>STOP DANGER! Thoughtless behaviour endangers the safety of the installation!</p> <p>D1 The platform has hit an obstacle or has become caught on an obstacle.</p>	<p>Move platform carefully upwards, and remove the obstacle. Check platform parts affected for their operational safety. Inform the supervisor.</p>
	<p>D2 BLOCSTOP® fall arrest device holds the platform on the safety rope.</p> <p>a) Lifting rope rupture b) Failure of the hoist c) Platform becoming caught (with BLOCSTOP® BSA...) d) Inclined position of the platform (with BLOCSTOP® BSA...) e) Hoist speed too high (with BLOCSTOP® BSO...) f) Triggig speed too low (with BLOCSTOP® BSA...)</p> <p>STOP DANGER! Defective BLOCSTOP® fall arrest devices endanger the operational safety of the installation! They must be replaced as a matter of urgency!</p>	<p>a) + b) Evacuate platform and follow the instructions in section 5.6, page 25. c) Move upwards until the loaded lifting rope opens the BLOCSTOP®. d) Move lower platform end upwards until the loaded lifting rope opens the BLOCSTOP®. e) Check hoist. f) Replace BLOCSTOP® and send for checking.</p>
<p>DANGER! Always pull the plug out before opening a terminal box or a pendant or central control!</p>	<p>D3 Error in DOWN control circuit of the central control system or the TIRAK® hoist.</p>	<p>If necessary Emergency descent (details in section 5.5) Check connections, wiring, contactors etc. and replace if necessary.</p>

Should these steps not explain the cause and provide a remedy please contact GREIFZUG Hebezeugbau GmbH, other TRACTEL Group company, or a hoist workshop.

7. Out of operation

- a) **Amchoring the platform:**
- Lower working platform to the ground with slightly tensioned ropes
 - or
 - anchor working platform to the building in order to secure it against swinging motion.
- b) **Disconnect the power supply** to prevent any unauthorised operation:
- Disconnect power supply cable from site distributor
 - or, if available
 - turn and lock the main switch to “0”.

8. Maintenance

Deadline (Performer)	Test item	Regulations	Details on page
Each working day: (Supervisor)	Anchoring parts TIRAK® hoists BLOCSTOP® fall arrest devices	Safety requirements on suspended access equipment EN 1808	23 23 23
Each working week: (Supervisor)	Wire ropes Electrical cables	ISO 4309 Manufacturer' s advice	30
Annually: (qualified person)	Entire installation	EN 1808 (see above)	-
Annually, at the latest however after 500 or 250 operating hours (qualified person)	TIRAK® hoists	EN 1808 (see above)	31
Annually (qualified person)	BLOCSTOP® fall arrest devices	EN 1808 (see above)	31

8.1 Maintenance

8.1.1 Hoist

The mechanism does not require any special maintenance.

Lubrication: Keep the wire ropes lightly lubricated. This will not affect the gripping power but will prolong the life of wire rope to a maximum.

TIRAK® series X 2050 P

Lubrication of the drive disks - outer toothing:

Replenish the reservoir behind the lubricating nipple every 50 operating hours with a grease gun (fig. 53).

Specification: Water-insoluble and thermoduric adhesive gear box grease,
e. g. VARILUB

Quantity: two times approx. 5 cm³

- Prepare grease gun and press in first portion with 3 to 5 shots;
- Allow TIRAK® to run for approx. two seconds;
- Press in second portion.

8.1.2 Wire ropes

- a) Always unreel and reel the wire rope.
- b) Do not use the wire rope for fixing a load and do not pull it over sharp edges.
- c) Always keep the wire rope **clean** and **lightly lubricated**. Use normally commercially available multi-purpose grease; **do not use** lubricants containing disulphide (e.g. Molycote®).

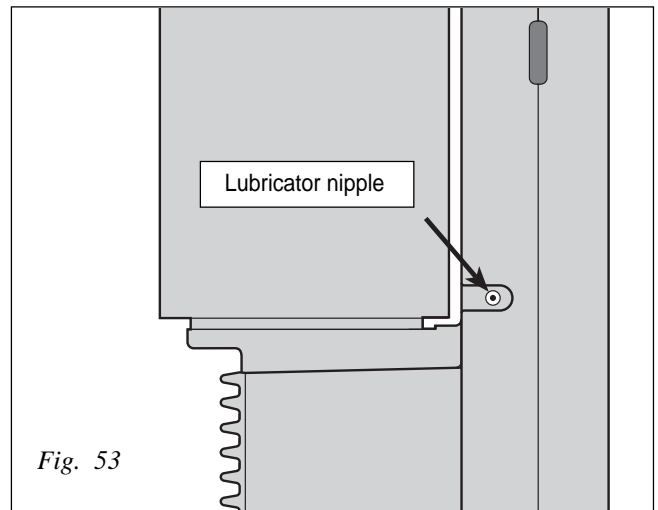


Fig. 53

8.1.3 Motor, brake, and gear box

- a) The **motor** does not require any special maintenance. If it is **very dirty**, it should be cleaned to ensure an effective air flow.
- b) The **brake** does not require any special maintenance. If it is **very dirty**, it should be cleaned. **Keep it free of oil or grease!**
- c) The **gear box** is maintenance-free.

8.1.4 BLOCSTOP® fall arrest device

The BLOCSTOP® fall arrest device does not require any special maintenance.

Always keep the mechanism **clean** and **lightly lubricated**, e. g. with GREIFZUG® oil or motor oil. Too much oil is never bad – this will not affect the gripping power.

8.2 Checks

8.2.1 Essential checks

a) General

Prior to every operation

and

during operation make sure, that

- the TIRAK® hoist,
- and all other used equipment (anchoring devices, pulleys etc.)

are properly installed

and

without visible damage

Attention!



If **during operation** damage appears:

- **STOP operating**,
- if necessary: **cordon off the danger zone**, and
- have the **damage removed** by a qualified person!

b) Nameplates and labels

Make sure that all nameplates and labels are in place and not obscured (see section 9.5, pages 32 to 33).

Replace missing labels and those which are not legible!

c) Wire ropes

Attention!



Replace wire ropes, if one of the following defects is determined **during** the prescribed **weekly check**:

- **8 or more wire breaks** (fig. 54) on a length which corresponds to 30 times the rope diameter.

Fig. 54

broken wires

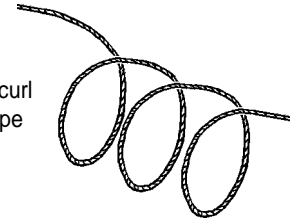


- Heavy **rust formation** on the surface or inside.
- **Heat damage**, recognisable through discoloured wires.
- **Reduction of the diameter** by 5% or more compared with the nominal diameter (fig. 56).
- **External damage** to the rope – fig. 55 shows the most frequent forms of damage.

These **examples** do not however replace the **ISO 4309 reference for wire rope checks!**

Fig. 55

“Pig-tail” curl
in wire rope



Kinked wire rope



Damage
caused by improper use,
(e.g. by fixing a load with the rope)



Crushed wire rope



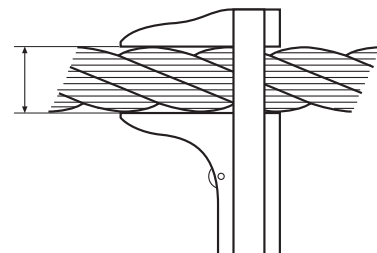
Birdcaged wire rope



Loop formation
on wire rope

Fig. 56

Wire rope
diameter



d) Electric cables

Replace lead and control cables if damage to the insulation or to cable connections is determined during the prescribed weekly check.

8.2.2 Safety inspection

Checking the TIRAK® hoists and the BLOCSTOP® fall arrest device by a qualified person:

1. The TIRAK® should be thoroughly examined **every twelve months** or more regularly (see 2 below) depending on the working practice and current safety regulations in force.
2. The TIRAK® should be thoroughly examined at the latest **after 500 running hours** but for hoists with 18 m/min. and hoists of the series X 2050 P with 12 m/min. speed **after 250 running hours**.

3. Extraordinary check

Attention!



Following a fall arrest, a qualified person must check the operational safety of the BLOCSTOP® fall arrest device including anchor points, as well as the safety rope and the rope anchoring.



It is the responsibility of the employer that a **written register is kept** showing the **dates, period of use, and inspection record**.

8.3 Repair

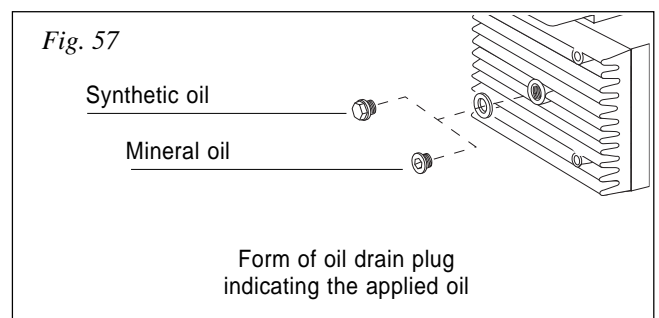
Repair of TIRAK® hoists must only be carried out by the manufacturer (or Group company), or by a **qualified person** and **only original spare parts** shall be used.

If a **gearbox oil change** is necessary, take one of the oils specified below according to the temperature range that the hoist will be usually used in.

Quantities required:

X 300/400 P series:	1,4 l
X 500-1030 P series:	2,0 l
T 1020 P series:	2,0 l
X 2050 P series:	5,0 l

Table 8



Temperature range	-10 to +50 °C	-35 to +40 °C	-15 to +80 °C
API Specification	Mineral oils ³⁾ SAE85W-140 GL5 ¹⁾	Synthetic oils ³⁾ CLPPG or PGLP ISO VG 100 CLPPG or PGLP ISO VG 460 ²⁾	
Sample oils (other oils on request)	BP Hypogear EP 90 SHELL Spirax HD 90 TEXACO Multigear EP6 S80 W90	Klübersynth GH6 100	Klübersynth GH6 460 Applying other synthetic oils is not allowed without official agreement by the manufacturer!

1) Standard charge on series X 300 P, X 500 to 820 P and T 1020 P; also see foot note 3)
(Marking: Socket head cap oil drain plug, Fig. 57)

2) Standard charge on series X 400 P and X 1030 to 2050 P
(Marking: Hexagon oil drain plug, Fig. 57)

3) Important: Changing between mineral and synthetic oils requires the complete cleaning of the gearbox parts.

9. Spare Parts

9.1 Hoist

As well as the **spare part number** and **description** please always quote

- **TIRAK® model**
- **wire rope diameter**, and
- **serial number**.

9.2 Motor and brake

As well as the **spare part number** and **description** please always quote

- **Motor type**
- or
- **Type and supply voltage of the brake**.

9.3 Electric controls

In case of enquiries or spare parts order please always quote the

wiring diagram number.

The wiring diagram is situated in the control box of the motor.

9.4 BLOCSTOP® fall arrest device

As well as the **spare part number** and **description** please always quote

- **BLOCSTOP® model**
- **wire rope diameter** and
- **serial number**.

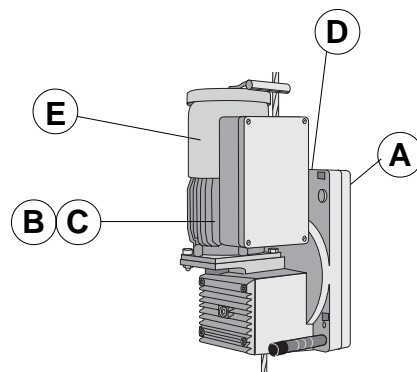
9.5 Nameplates and labels

Make sure that all nameplates and labels are in place and not obscured (see figs. 57 and 58).

Replace missing labels and those which are not legible!

Spare parts lists are available from your supplier or from the manufacturer.

Fig. 57



- A) TIRAK® nameplate
- B) Motor nameplate
- C) Brake nameplate
- D) Adhesive "Wire rope diameter"
- E) Adhesive "EMERGENCY STOP"
- F) BLOCSTOP® BSA ... nameplate!
- G) BLOCSTOP® BSO ... nameplate!

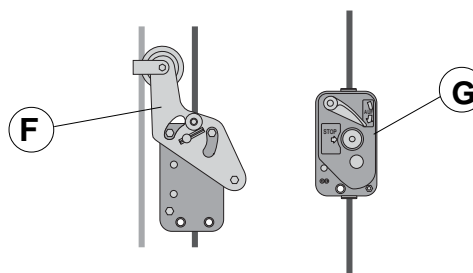
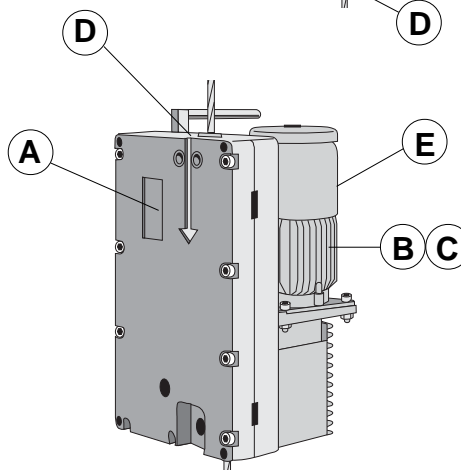
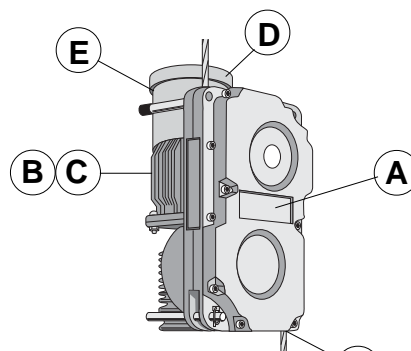


Fig. 58

A

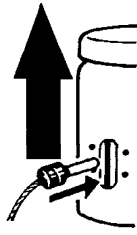
tirak[®] Motorized traction machine

1. SET-UP INSTRUCTIONS
Anchor the machine. Connect to electric/air supply (see motor name plate). Feed in the wire rope. Start the motor. Push wire rope inside, until it reeves itself automatically.
Do not obstruct the wire rope outlet!
For details consult Operating Manual.
IMPORTANT: Use only special TIRAK wire rope in good condition with short fused and tapered end.
Lightly lubricate the wire rope.
Only TIRAK P models may be used for man-riding. Use a BLOCSTOP[®] fall arrest device

2. TECHNICAL DATA

Model:	Capacity (daN/kg):
Admissible load for man-riding (kg):	
Working speed (meters/min):	
Wire rope diameter (mm):	Breaking strength (kg):
Year of manufacture: 200	Serial-No.:
In case of inquiry or spare parts order, please mention type, wire rope diameter , and serial number .	

E



Notablaß
Bremslüfterhebel im Handgriff

Emergency Descent
Brake release lever in TIRAK handle

Descente d'urgence
Manette de commande du frein dans la poignée de portage

G 207-09/94

F

BLOCSTOP Abfangsicherung

Typ:	Sauber halten. Oft und reichlich schmieren.
Für Seil-Ø:	
Max. Traglast:	

GREIFZUG Hebezeugbau GmbH · D-51469 Berg. Gladbach

B

GREIFZUG GmbH Bergisch Gladbach

Type	Nr.	
E-Mot.	60 Hz	U _{min}
	kW	cos φ
	V	A
Schalt.	Schutzart IP 55	F Is.Kl.

C

GREIFZUG GmbH Bergisch Gladbach

Bremstyp	
Leistung W	Spulenspannung V
Moment Nm	

D

∅ 8 mm	∅ 9 mm
∅ 10 mm	∅ 14 mm

G

BLOCSTOP[®] fall arrest device

Type	Serial number	
BSO		
Rated load kg lbs.	Wire rope Ø mm in.	Year of manuf. 200

Replace wire rope, if the reduction from nominal diameter is 10 % or more.
Never use damaged wire rope.

CHECKING

1) Daily check as follows:

- Push down the control lever in its "OPEN" position and **press the EMERGENCY STOP button**. The BLOCSTOP should close automatically, and the control lever has to return to its "CLOSED" position.
- Open the BLOCSTOP again, and **quickly pull the wire rope upwards**. The BLOCSTOP should close automatically, and the control lever has to return to its "CLOSED" position.

2) During operation the centrifugal weights must rotate. Check regularly through the window.

If during the above checks the BLOCSTOP malfunctions, replace it and return to the supplier for inspection.
Address see TIRAK nameplate.

3) Yearly inspection by the supplier.

Wire rope exchange: To pull the wire rope through **push and hold** the control lever in its OPEN position!

G 128.5-02/00 Made in Germany

TIRAK® hoist for silo inspection

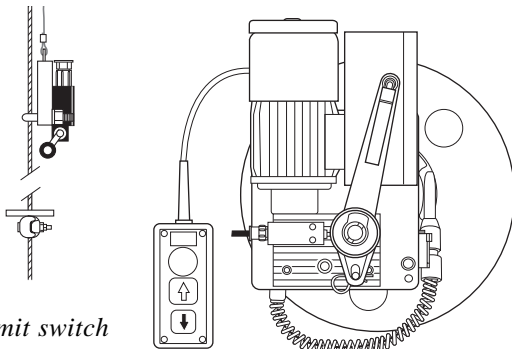
Series XS 300 P

These devices conform to the special safety requirements applicable for inspecting silos:

- Hand operation,
- hanging limit switch for manual operation when passing through the silo opening.

The device illustrated is equipped with an automatic rope reeler for a 40 m rope.

Details on request



Limit switch

TIRAK® hoists for material handling

Compact & versatile

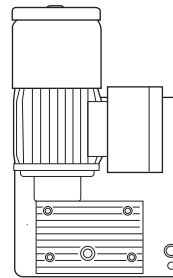
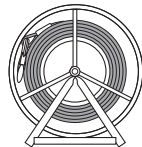
- Unlimited rope travel.
- Small dimensions, portable.
- Working position: horizontal, inclined, vertical.
- Also moves with load on the rope
- T 1020 series pulls in both directions.



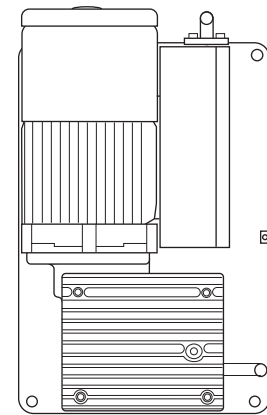
Capacity 0.3 to 3 t



TIRAK® wire ropes
in any length required
on hand or
drum reel.



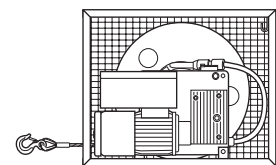
300 kg hoist



3 t hoist

TIRAK® with rope storage as “Mobile Winch” for rope lengths from 60 to 500 m

- The ideal hoist for frequently changing places of use.
- Quick, simple, versatile:
 - Assembly on construction site.
 - Repair and maintenance work in finished buildings.
 - Drive for internal transport systems.

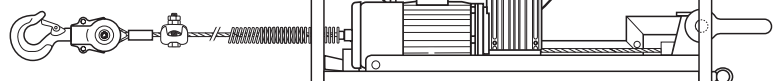


300 kg hoist with
60 m rope reeler

Saves space, weight and costs

compared to a crane
or drum winch of the
same carrying capacity and range!

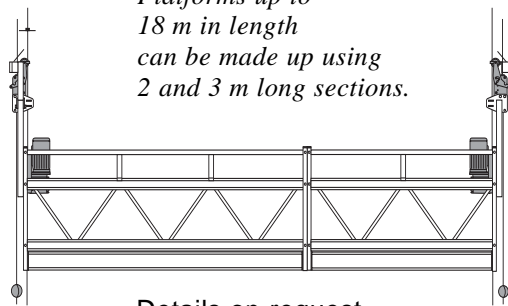
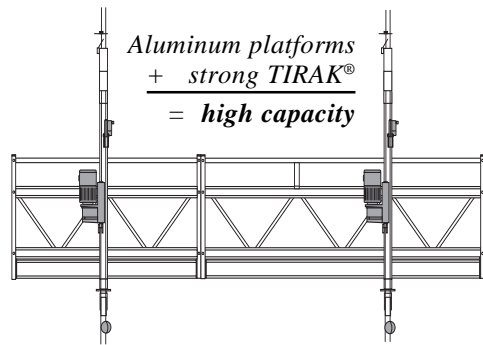
3 t hoist with
500 m rope winder



Details on request

Access solutions from the TRACTEL Group

Suspended platforms, working cage & seat



Details on request

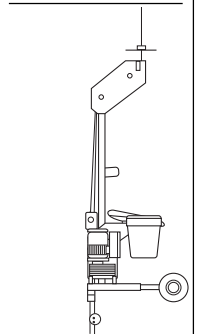
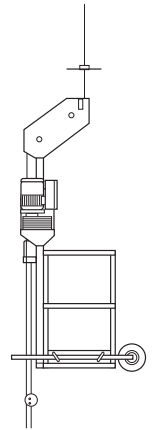
These new, mobile platforms and seats with unlimited travel height for assembly, inspection and repairs offer you **the comfort of a lift combined with a working platform.**

Whether you have to **work at height** as façade designer or window cleaner, as insulation specialist, as chimney, boiler and tank setter or as painter and corrosion protection personnel:

Make use of this sensible replacement for standing scaffolding! **Travel to height**, and indeed to precisely that height which gets you to the most productive working position. Because that helps to **save time and money!**

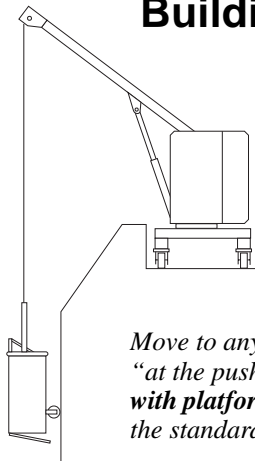
Increase your **competitiveness** by **reducing operating costs.**

That improves the bottom line!



Whether purchased or rented – the economic alternative to scaffolding!

Building maintenance and inspection installations

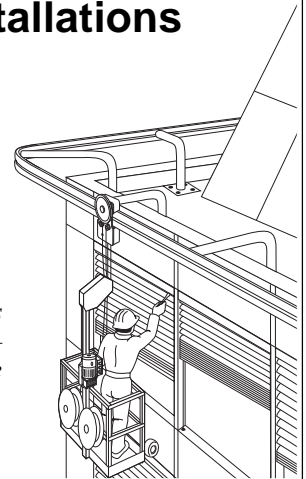


Move to any position of the facade “at the push of a button” – **with platform and roof car, the standard solution.**

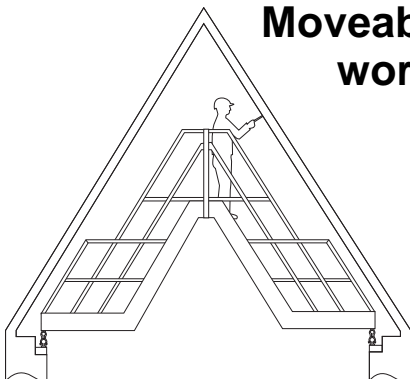
Modern, daring building constructions demand creative solutions.

The earlier you involve our team in your planning the easier and cheaper the installation will be!

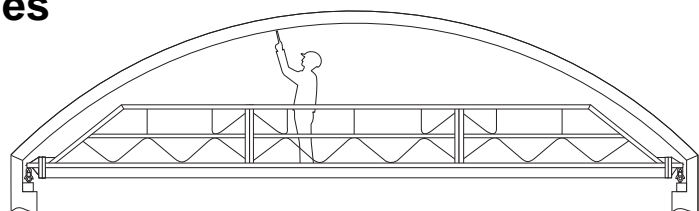
For inspecting building constructions **outside and inside** – with platforms which traverse on rail systems.



Moveable stairs and work gantries



Details on request

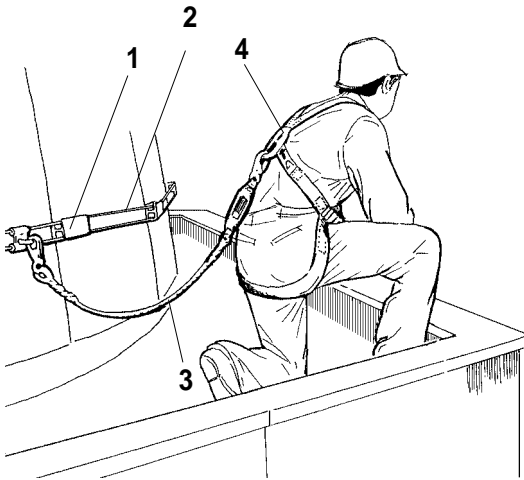


For cleaning, inspecting and repairing windows, facades and glass roofs, inside and outside.

Let your buildings always shine!

The TRACTEL Group safety package

TRAVSAFE® – horizontal travelling lifeline system



TRAVSAFE® is a patented horizontal running protection system for working at heights in which there is a risk of falling.

Areas of use: buildings and roofs, aircraft hangars, shopping centres, bridges and viaducts, industrial installations, overhead cranes, oil and gas containers, telecommunication towers ...

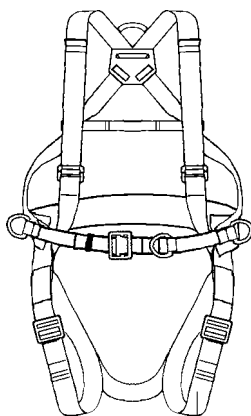
The TRAVSAFE® system consists of two wire ropes along which a traveller (1) slides. These lifelines are held by brackets (2) anchored to the building. The user anchors the connection devices (3) of his personal protective equipment (4) to the holding ring of the traveller.

The TRAVSAFE® travelling lifeline enables free and unhindered movement and work.

TRAVSAFE® systems require thorough planning and professional installation – challenge us to provide extensive advice.

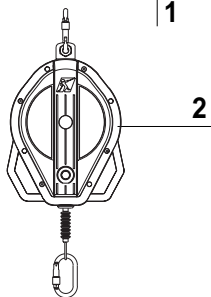
**Gives a sure hold,
just where you need it!**

Fall arrest equipment for personal protection



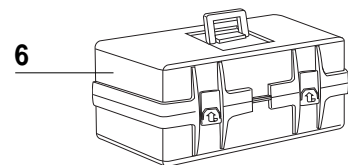
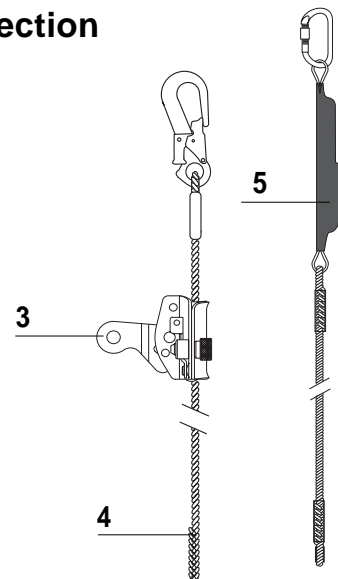
For all work in which there is a risk of falling “Safety first” is the overriding objective. The appropriate equipment must be put together depending on the location and work to be performed. The product range of our safety program offers the following, amongst other things:

- Harnesses and working belts, also as a practical combination (1)
- retractable lifelines (2)
- rope grabs (3)
- climbing protection devices
- retaining ropes
- lanyards (4)
- shock absorber (5)
- various connectors



For common applications we offer a series of **complete sets** in a practical carrying case (6).

All components are approved under the strict European Standards.



Challenge us to provide extensive advice – we shall assist you in putting together your equipment.

Your life could be hanging on this!



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