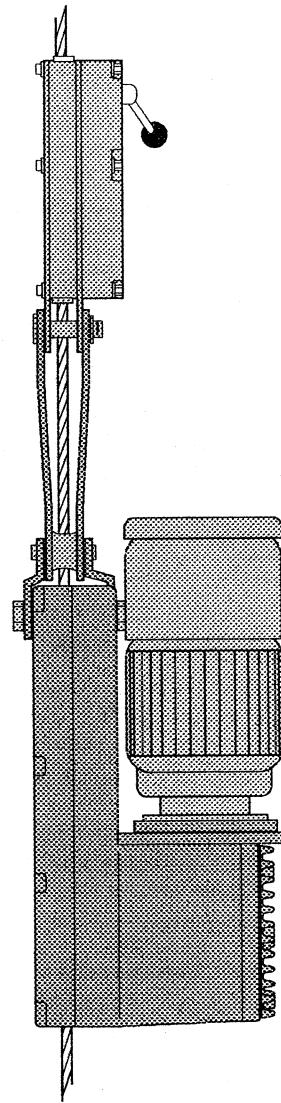
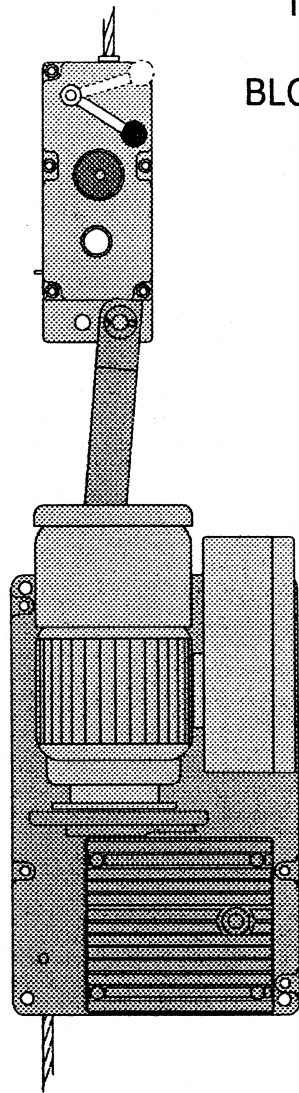


tirak[®]

Scaffolding Hoist

Instruction Manual

TIRAK[®] XE 2050 P
with
BLOCSTOP[®] BSO 2050







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Explanation of Symbols used in this manual

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

INTRODUCTION

Based on an original design, the TIRAK® wire rope scaffold hoist is specially manufactured for lifting personnel in a suspended platform system.



For that purpose it is UL classified.

The TIRAK® hoist is composed of the following main assemblies (Fig. 1):

- A Wire rope driving mechanism
- B Gearbox
- C Electric motor with primary brake and electric controls
- D BLOCSTOP® BSO secondary brake,

The main advantages of the TIRAK® hoist is:

- Powerful, fast, and lightweight.
- Simple, rugged, and reliable.
- Unlimited lifting height.
- Constant speed on any height.
- Gentle for its wire rope.
- Emergency descent with a mechanical emergency descent device.

The **secondary brake (D)**, marked BLOCSTOP® BSO **MUST ALWAYS BE ATTACHED AND USED.**

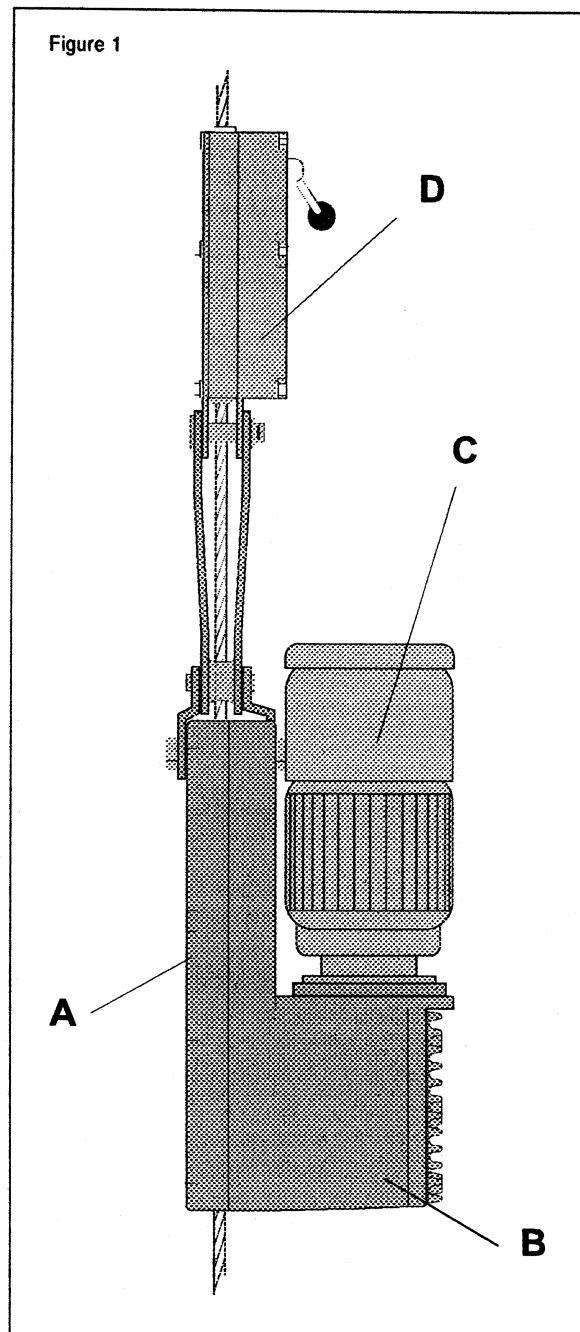
The original design requires, for safety and efficiency, that it be used with a **special TIRAK® wire rope** specified by the manufacturer¹⁾.

The TIRAK® hoist is intended to be used for work going up and down a vertical hanging wire rope.

The TIRAK® hoist is designed to be rigged to a **compatible platform**. It is equipped with a mechanical overload device stopping the upwards motion in case of overload.

The BLOCSTOP® BSO secondary brake is equipped with a limit switch stopping the downward motion in case that it has locked on the wire rope.

This manual gives the required information for rigging, operating and maintaining the TIRAK® hoists. Responsibility for the complete suspended platform system lies upon the rigger of that system.



1) "manufacturer" definition:

GREIGZUG Hebezeugbau GmbH
Scheidtbachstr. 19-21
51469 Bergisch Gladbach

Postfach 20 04 40
51434 Bergisch Gladbach

"Supplier" definition regarding contact advice in this manual:

TRACTEL Inc. Griphoist® Division
110 Shawmut Rd., P.O. Box 68 · Canton, MA. 02021
Tel.: (800) 421-0246 · Fax: (781) 828-3642
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315 Cloverleaf Dr., Unit E · BALDWIN PARK, CA. 91706
Tel.: (800) 675-6727 · Fax: (626) 937-6730



1. GENERAL WARNING



READ THIS GENERAL WARNING FIRST

IN SUSPENDED SCAFFOLD OPERATIONS, SAFETY IS A MATTER OF LIFE OR DEATH FOR RIGGERS, OPERATORS AND BY-STANDERS. THIS WARNING IS YOUR SHARE OF DUTIES FOR ACHIEVING SAFETY.

YOUR DUTY TO UNDERSTAND AND COMPLY

1. It is the rigger's and the operator's responsibility, and their employer's responsibility, if they operate under an employer's control, to strictly conform to the following warnings.
2. It is imperative for safety and efficiency of the operations that this manual be read and **fully understood** by the rigger and the operator before rigging or operating the TIRAK®. **ALL instructions** contained herein must be carefully and strictly **followed**, including applicable S.I.A. guidelines for safe practice (see pages 26 and 27).
3. Should you hand over a TIRAK®, under whatever conditions, to any party operating out of your control, you must join a clean copy of this manual and draw other party's attention that strictly following all the instructions therein is a matter of life or death.
4. Before rigging and operating this TIRAK® hoist, the rigger and the operator must become aware of all the requirements of federal, state, provincial and local safety regulations not only applicable to the TIRAK® hoist but also to the entire suspended scaffold system and any component of it.
5. Never use the TIRAK® hoist for any job other than lifting personnel on suspended scaffold according to the instructions of this manual
6. Never load the TIRAK® hoist above its rated load.

YOUR DUTY TO INSPECT AND MAINTAIN

7. Keep this manual available at all times for easy reference whenever required. Extra copies are available from the supplier.
8. Carefully take notice of all the labels affixed to the TIRAK®. Never rig or operate the hoist if any label, normally fixed on the hoist is obscured or missing (see page 22 and 23). The supplier will supply extra labels on customer's request.
9. Every time the hoist is to be rigged or used, check that the hoist, wire rope and other components of the suspended scaffold system are complete and in good working condition, prior to proceeding.
10. A careful and regular inspection of the TIRAK® hoist, its wire rope and other components of the installation is part of the safety requirements. If you have any questions, call the supplier.
11. After each de-rigging and before re-rigging, the TIRAK® must be inspected by a competent person familiar with the TIRAK® hoist and professionally trained for the purpose.

YOUR DUTY TO TRAIN AND CONTROL PEOPLE

12. An operator must not be assigned to a suspended job or to rigging for a suspended job, or to de-rigging after the job, if that person is not:
 - a) mentally and physically fit for the purpose, specially at heights,
 - b) competent for the job to be performed,
 - c) familiar with all applicable safety rules and requirements,
 - d) familiar with the scaffold equipment as rigged,
 - e) provisionally trained for working under the above requirements.
13. Never disassemble the TIRAK® by yourself or by your staff. People's life may be at risk.
14. Except for the operations described in this manual, the maintenance of the TIRAK® hoists, as well as disassembly and repair, must be exclusively done by qualified repairers authorized in writing by the supplier. TIRAK® spare parts in accordance with the serial number of each machine must be exclusively utilized. No substitutions are allowed.
14. Never let the TIRAK® hoist and other equipment of a suspended scaffold system be managed or operated by a person other than authorized and assigned to the job. Keep the equipment, either rigged or unrigged, out of reach of unauthorized persons, while out of operation.

15. Training operators and riggers includes setting up rescue procedure should a scaffold be brought to a standstill during a job. Such procedure must be set up by a competent person of the user, or of its technical consultant, according to the working conditions, prior to putting the equipment into operation.
16. Every suspended job must be placed under the control of a person having the required competence and the authority for checking that all the instructions prescribed by this manual be regularly and efficiently carried out.

YOUR DUTY OF SAFETY BEYOND THE TIRAK

As being only one piece of the scaffold system, the TIRAK® hoist can contribute to the required **safety only**, if ...:

17. ... it is fitted on compatible scaffold equipment, including the wire rope used in the TIRAK® hoist.
18. ... other components meet the requirements of the applicable safety regulations and are of the proper quality, and assembled to form a safe suspended scaffold system.
19. ... every upper support of the scaffold is stable, sufficiently strong and properly tied back to the structure, according to the load either static or dynamic.
20. ... supporting structure and tie-back provide the requested resistance to every load to be applied, either static or dynamic, during rigging or operating the scaffold equipment;
21. ... all the requirements in strength and resistance are obtained with the necessary safety factor (see regulations and professional standards);
22. ... all the calculations, design and subsequent work necessary to the above requirements have been made by a competent person on the basis of proper technical information regarding the site.

YOUR DUTY TO AVOID TAKING CHANCES

23. The BLOCSTOP® BSO secondary brake located at the upper part of the unit is an **integral piece of the TIRAK® hoist**. It is strictly forbidden to detach it from the main body of the hoist for whatever reason. Doing so would be a misuse creating an extreme hazard and placing operators and bystanders in danger of death resulting from the possible fall of the suspended equipment: scaffold or any other items or components.
24. Once the suspended scaffold has been lifted off its initial support (ground or any other level), it is imperative not to release, remove, alter or obstruct any part of the equipment under load.
25. NEVER allow any condition which would result in a suspension wire rope becoming SLACK during the operation, unless ...:
 - a) ... the suspended scaffold is supported on a safe surface giving a safe access to the operator in compliance with safety regulations, or unless ...
 - b) ... another suspension wire rope has been safely rigged to the suspended scaffold.
26. Never operate the TIRAK® hoist and its accessories, especially electric ones, in a potentially explosive atmosphere.
27. For any job to be performed on the suspended equipment, consider and control the specific risks related to the nature of the job.
28. Should you decide that the TIRAK® hoist is no longer to be used, take precautions in disposing of it so that it cannot be used any more.

AN ULTIMATE RECOMMENDATION

Never neglect means to improve safety. Due to the risks inherent in the use of suspended scaffold systems, the manufacturer strongly recommends that every installation be equipped with secondary wire rope(s) fitted with a separate fall arrest system.

This manual is neither a regulations compliance manual nor a general training guide on suspended scaffold operations. You must refer to proper instructions delivered by manufacturers of the other pieces of equipment included in your suspended scaffold installation. Whenever calculations and specific rigging and handling are involved, the operator should be professionally trained to that end and secure relevant information prior to commencing such work.

2. DESCRIPTION

2.1 Motor and Primary Brake

TIRAK® hoists are driven by a three phase motor, totally enclosed fan cooled (TEFC) type with an electromagnetic brake.

2.2 Gear Reducer

The gear reducer consists of a worm gear drive in connection with a spur gear, synthetic oil bath lubricated in a sealed aluminum casing.

2.3 Secondary Brake

The BLOCSTOP® BSO overspeed locking device (D) – hereafter called BSO secondary brake – stops the descent immediately in case of accelerating overspeed.

It is equipped with a limit switch stopping the downward motion in case that it has locked on the wire rope.

THE SECONDARY BRAKE MUST ALWAYS BE ATTACHED AND USED.

2.4 Emergency Descent without power

TIRAK® hoists are equipped with a mechanical centrifugal braking system, permitting a descent at moderate speed in case of emergency. No handcranking is needed.

2.5 Wire Rope Driving Mechanism

The wire rope enters the hoist from the top, is led through by the patented driving system, and exits opposite its entry. As the wire rope is not stored inside the hoist, its length (i. e. the possible rope travel) is unlimited on principle.

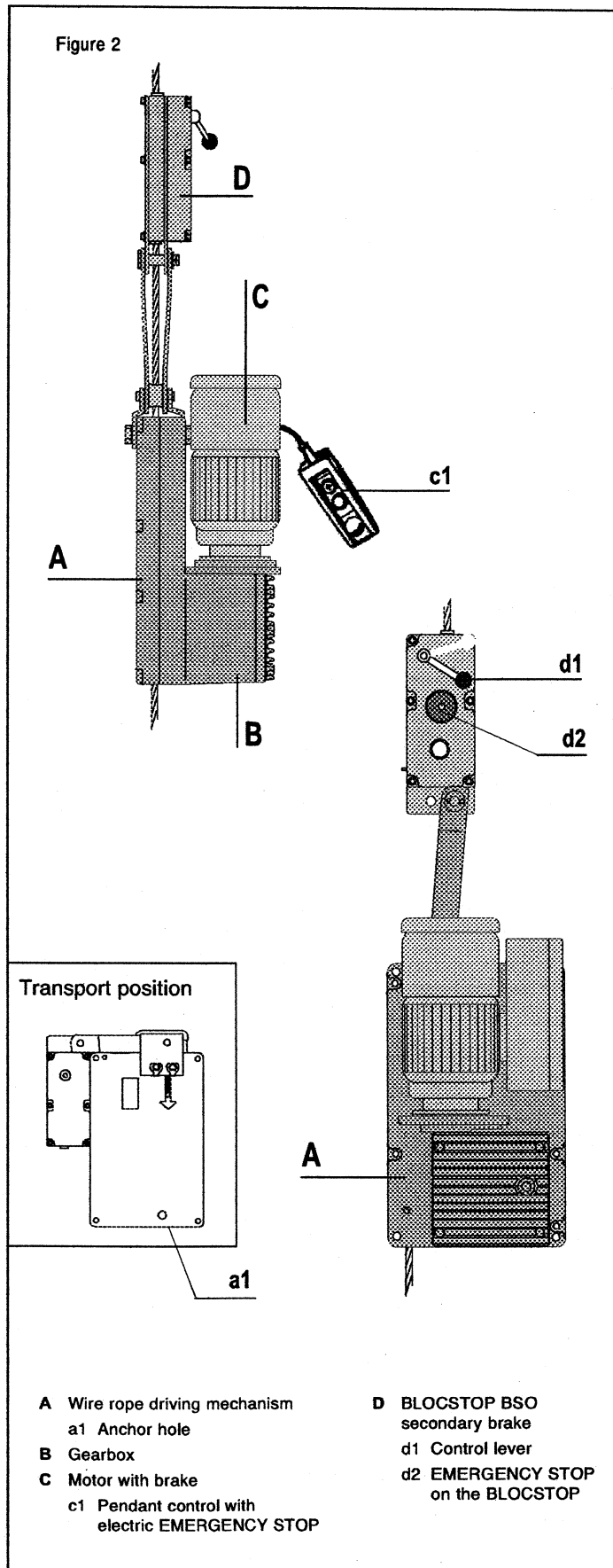
The driving system is independent of the load applied to the wire rope. The whole mechanism is housed in an aluminum casing.

It is equipped with a mechanical overload device stopping the upwards motion in case of overload.

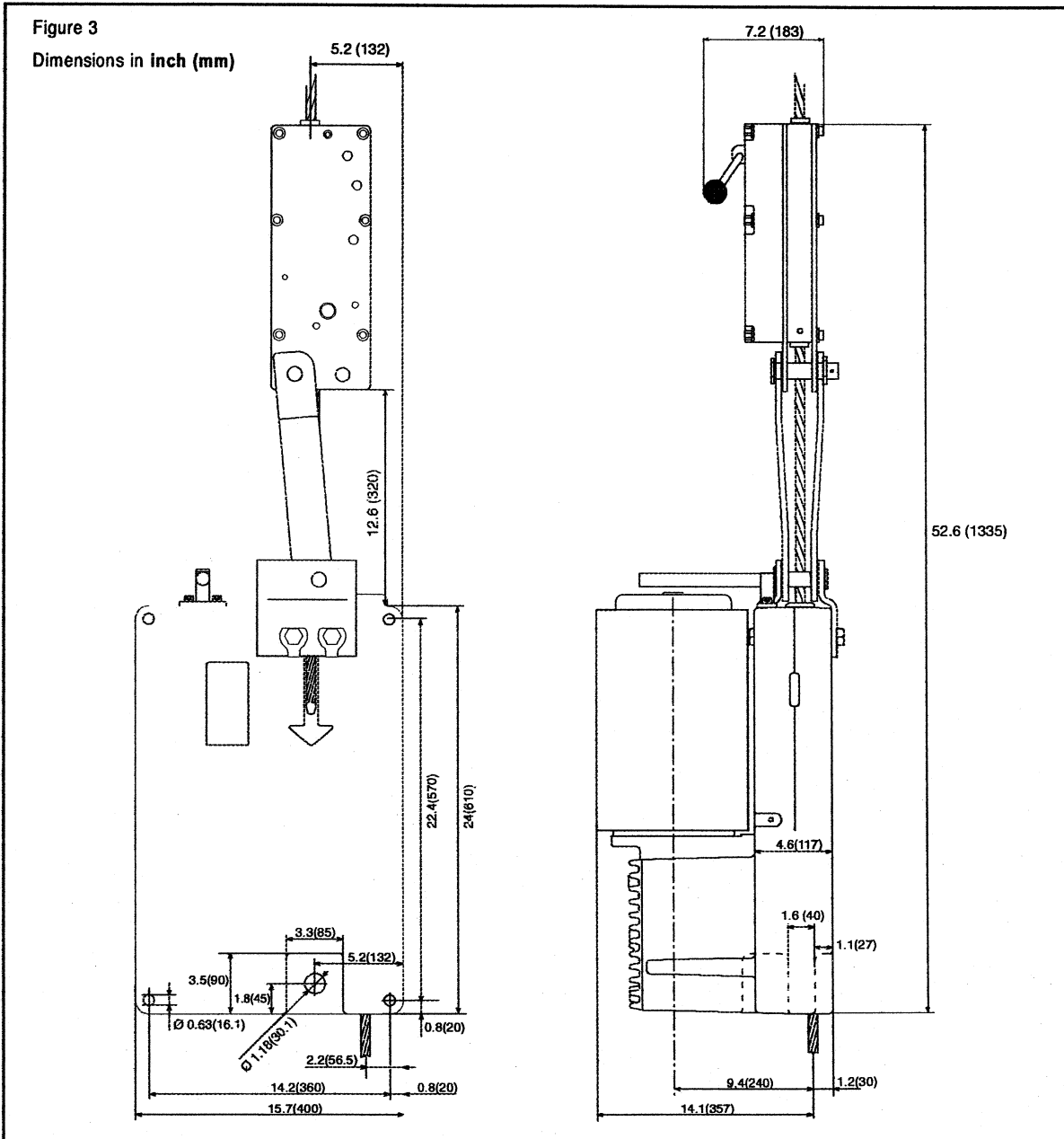
2.6 Wire Rope

TIRAK® hoists use a **Special TIRAK® Wire rope** (see chapter 4). Unless specifically specified in writing by the manufacturer, only this special TIRAK® Wire Rope may be used.

NOTE: The manufacturer declines all responsibility for machines used with a wire rope other than specified by them.



2.7 Technical Data



Hoist model	Rated Load	Lifting speed	Weight (with BSO)	Power supply	Output	Rated current	Wire rope classification/construction
XE 2050 P	4,400 lbs (2000 kg)	23 ft./min (7 m/min)	185 lbs (84kg)	3-phase 220 VAC 60 cycles	3.1 kW 4.1 HP	16 A	9/16 in. (14.2 mm) nominal diam. 5 x 26, polypropylene core, galvanized, lubricated, preformed. Allowable diameter range of new wire rope: 0.547 to 0.559 in. (13.9 to 14.2 mm) Min. actual breaking strength: 35,300 lbs (157 kN)

Table 1: Technical Data

CAUTION:

Correct wire rope diameter is very important for the TIRAK® and the BLOCSTOP® function!



Details on page 11.

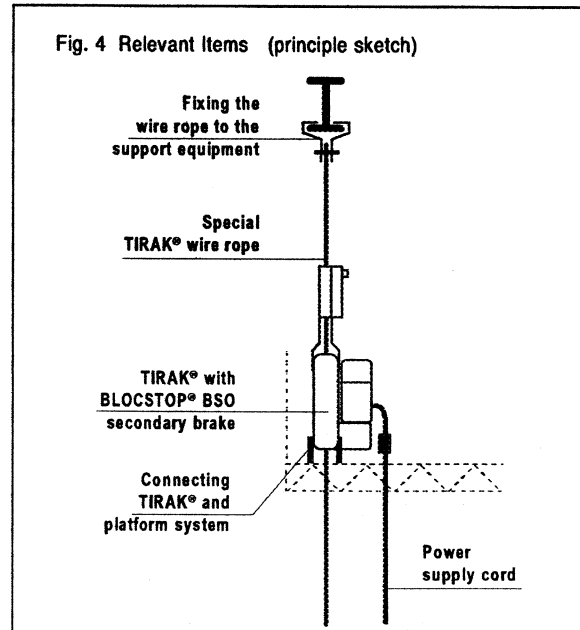
3. RIGGING INSTRUCTIONS

3.1 GENERAL

3.1.1 Scope

Instructions and advice in this manual exclusively refer to the following items (see Fig. 4):

- TIRAK scaffold hoist with BLOCSTOP® BSO secondary brake ;
- Special TIRAK wire rope;
- Power supply cord.



3.1.2 Checks before rigging

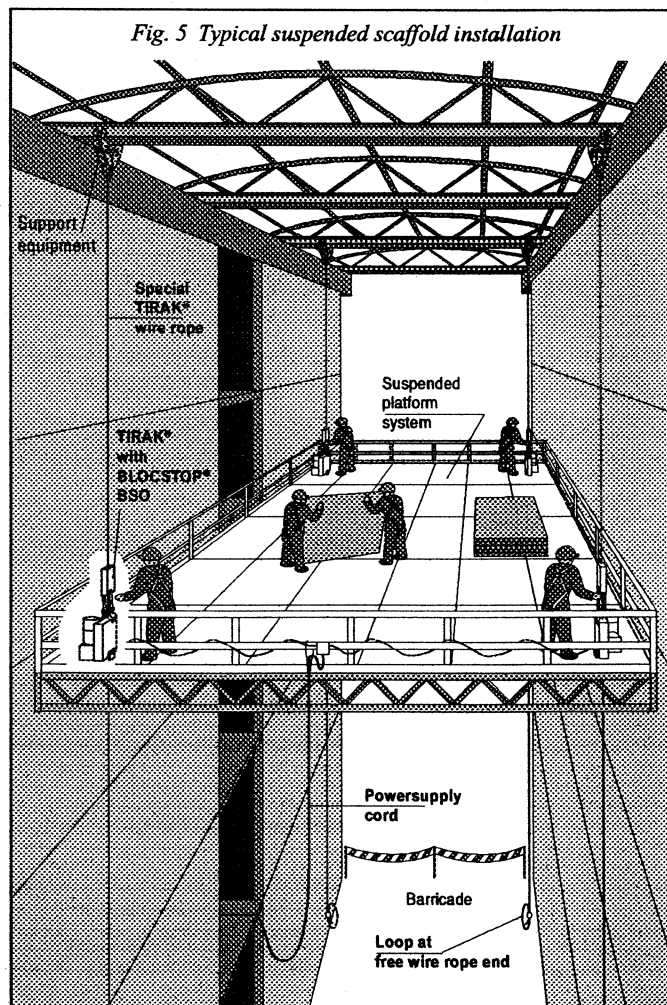
It is a qualified person's responsibility to check the whole installation to meet all safety requirements of:

- OSHA regulations and federal, state, provincial or local safety regulations,
- the proper instructions delivered by the manufacturers of the other pieces of equipment included in your suspended scaffold installation.

Some pieces are:

- Support equipment including tie-back;
- platform system;
- safety equipments (personal fall arrest system);
- barricade below the drop of the platform.

NOTE: This information is **NOT to be considered** as a complete checklist for your specific installation. It is only a sample list of some general components, which make part of a typical suspended scaffold installation (Fig. 5).



3.2 Power Supply and Hoist Control

3.2.1 General

- (1) Check if voltage indicated on the hoist nameplate corresponds to the power supply rating.
- (2) **Three phase machines** are factory connected for 220 VAC, 3 Ø.
- (3) In case of power supply difficulties have an electrician or qualified person read voltage at motor terminal during lifting operation. Especially for high lifting operations, which require long cords, it is essential to use power cords of sufficient size (see par. 3.2.3) to avoid excessive voltage drop.

- (4) **WARNING: NEVER OPERATE THE HOIST OR ANY OTHER ELECTRIC EQUIPMENT IN A POTENTIALLY EXPLOSIVE ATMOSPHERE: around distilleries, refineries, chemical plants, ship or silo interiors.**



Always obtain official approval before commencing operations at these or similar locations.

3.2.2 Fuses / Circuit breakers

If connected to a circuit protected by a fuse, use **Time-Delay-Fuse**.

Check if specification of fuses, which protect electrical equipment, corresponds to the amperage indicated on the machine nameplate. The recommended service requirements per hoist are:

Three phase	amps.
220 V	30

3.2.4 Hoist Control

Control (Fig. 7) is by

- **push-buttons**, which automatically return into STOP-position, when not activated.

DO NOT fix push-buttons in run position.

- **EMERGENCY STOP button.**

Button depressed = mains supply interrupted.

3.2.3 Power Cords and Grounding

- (1) To prevent voltage drop exceeding the allowable 10% we recommend to use at least #10, STO type power cords, 600 VAC rating.

To minimize voltage drop due to power cord length on high lifts, select an outlet at the halfway point to reduce the total power cord length on the job.

- (2) In some cases, a booster transformer will be needed to compensate for power cord losses or low-source voltage. If a booster transformer is needed, call supplier.

- (3) **CAUTION: DO NOT OPERATE THE MOTOR FOR ANY REASONS, IF THE MEASURED RUN VOLTAGE IS LESS THAN THE MOTOR NAME-PLATE RATING!**



- (4) Always secure the power cord to the platform with a strain relief fitting and shackle (Fig. 6), so the cord weight will be off the connector.
- (5) When finished for the day, make certain the power cord is disconnected at the hoist pigtail as well as at the main outlet.
- (6) Be sure to **ground all electric equipment. Do not use wire rope as a ground!**

Fig. 6 Strain Relief Fitting

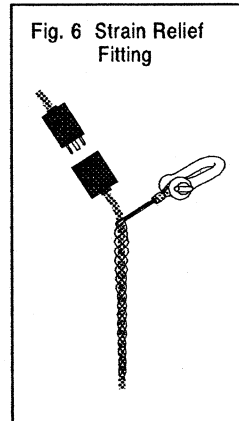
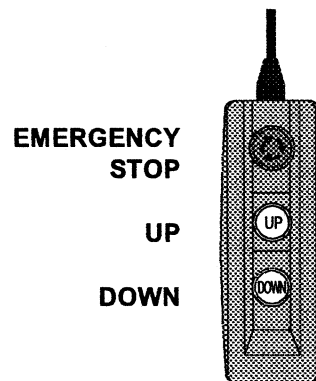


Fig. 7 Pendant control for 1 speed



3.3 Hoist Mounting

There are two ways to anchor the hoist by means of bolts or other connecting devices of sufficient strength to an appropriate part of the platform:

- A) Anchor TIRAK® hoist with bolt or shackle at anchor hole (B), 1.18 (30.1 mm) diameter.



Attention:

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

- B) Or anchor the TIRAK® hoist at least at two of the four anchor holes (A₁ to A₄);

allowed: A₁↔A₂, A₂↔A₃, A₃↔A₄,

WARNING! DO NOT ANCHOR USING ONLY THE DIAGONAL ANCHOR HOLES A₁↔A₃ or A₂↔A₄.

DO NOT ANCHOR USING ONLY THE ANCHOR HOLES A₁↔A₄ WHICH ARE FARTHEST AWAY FROM THE APPLIED LOAD.

Attention:



For lateral anchoring at points A₂↔A₃ it must be ensured by means of the mounting (C) that the force is evenly distributed over both anchor points.

Note:

When planning the anchoring we recommend consultation with the supplier.



WARNING:
HOIST CONNECTION BOLTS MUST NOT BEAR ON THREADS.



WARNING:
THE HOIST MUST BE MOUNTED SUCH THAT THE WIRE ROPE PERPENDICULARLY ENTERS THE HOIST.

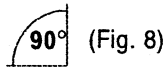


Figure 8 Hoist mounting / Anchoring Holes

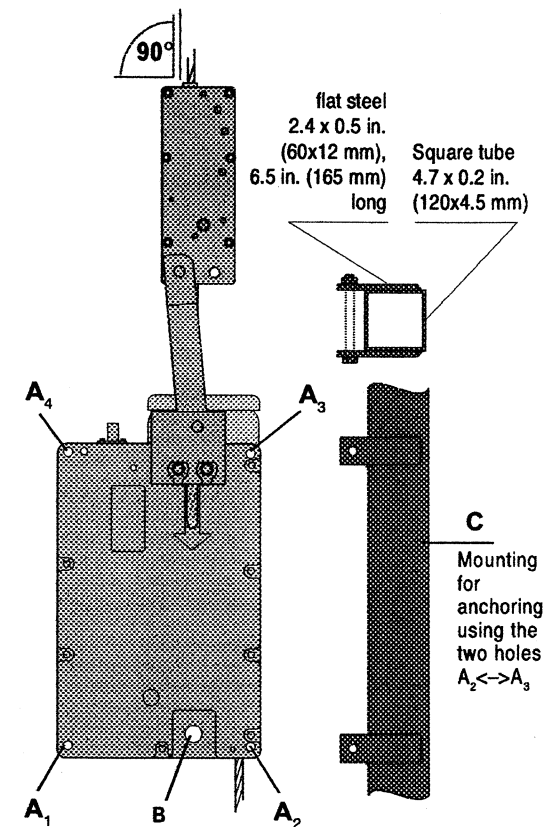
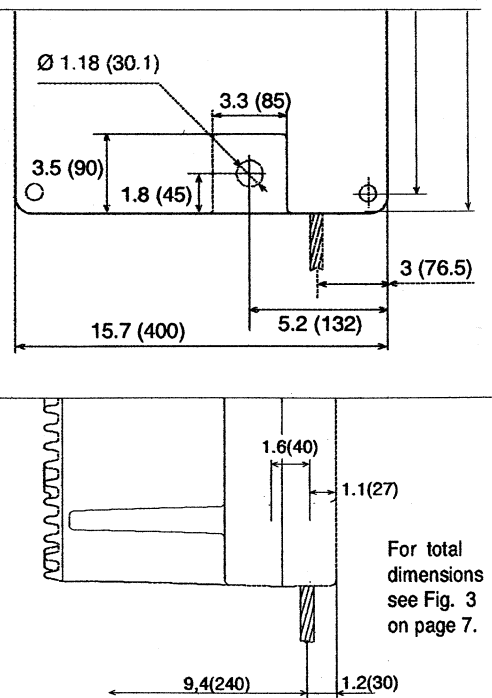


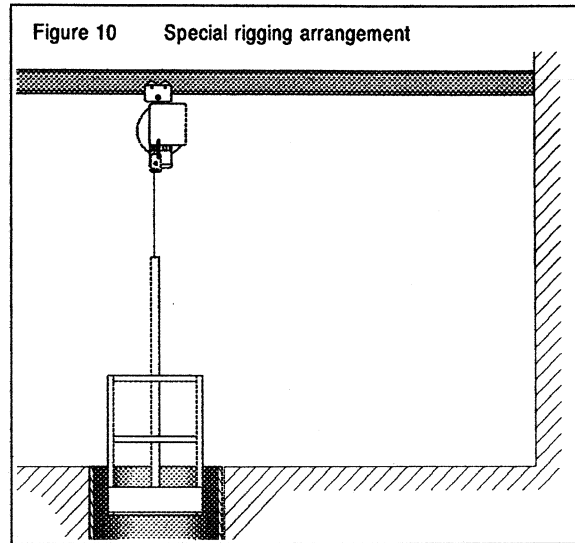
Figure 9 Dimensions of anchoring holes inch (mm)



NOTE: Any rigging arrangement other than described in this manual is entirely under the rigger's responsibility.



For special projects like shown in figure 10 contact the supplier for additional information.



4. Wire Rope

4.1 Wire rope specification

Use only wire rope specified by the manufacturer:

- (1) **Classification/Construction:**
5x26, with fiber core, galvanized, lubricated, preformed IPS or XIPS.
- (2) **Wire rope diameter:**

CAUTION:



Correct wire rope diameter is very important for the TIRAK® function!

An oversized wire rope may cause damage to the guide band and other internal parts or jam in the hoist causing damage to the wire rope itself!

It also may cause the BLOCSTOP® secondary brake to malfunction.

NOTE: How to measure wire rope diameter:



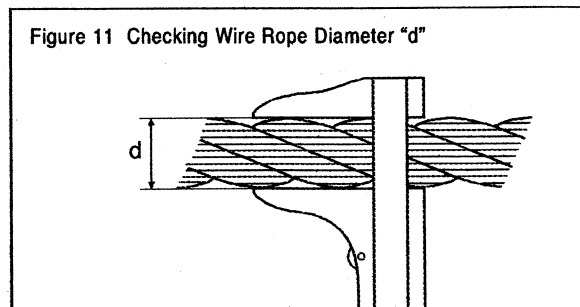
The correct diameter of the wire rope is the largest cross-sectional measurement across the strands (and not the valleys).

The measurement should be made carefully with calipers as shown in Fig. 11.

Table 2: Wire Rope Diameter and min. actual Breaking Strength

wire rope diameter ¹⁾	min. actual breaking strength	for TIRAK® hoist with rated load up to
9/16 in. 14.2 mm	35,300 lbs 157 kN	4,400 lbs 2,000 kg

1) Allowable diameter range of NEW wire rope:
0.547 to 0.559 in. (13.9 to 14.2 mm)



4.2 Wire rope rigging instructions



WARNING:
Be sure to use a wire rope with the diameter marked on the TIRAK® nameplate.

(1) RIG FROM TOP.

You should have enough wire rope to reach to the ground or other safe level with about five feet (1.5m) extra for ensuring safety.



CAUTION:
Always unreel and reel the wire rope in a straight line (Fig. 12) to prevent kinks, which make it unusable for the hoist.

(2) If the wire rope is not equipped with a swaged fitting as shown in Fig. 13, proceed as follows:

- Install heavy duty thimble with a minimum of three (3) J-Type (Fist Grip) Clamps (Fig. 14).
- Apply first clamp approximately 12 inches (30 cm) from thimble. Tighten nuts moderately.
- Attach second clamp as close to thimble as possible. Leave nuts loose.
- Attach the third clamp half-way between first and second clamp, leaving the nuts loose. Take up wire rope slack.
- Tighten nuts evenly on all clamps (approx. 130 ft-lbs. torque) as specified by the clamp manufacturer.

WARNINGS:



- a) Retighten after the wire rope is loaded for the first time
- b) Inspect fastening periodically.

In use, wire ropes will stretch and reduce in diameter.

Retighten all "Fist Grip" nuts periodically.

(3) Anchor the wire rope end to a rigging device, which complies with all relevant safety requirements.

Be sure to use compatible connecting devices with adequate strength and safety factor. Secure it.

(4) Insure that the anchor points of the wire rope are directly above the position of the hoists (Fig. 15).



WARNING:
Improper spacing is dangerous and could cause failure of the support system.

(5) Check that wire rope tip is welded round (Fig. 16). IF NOT:

- a) Prepare ends by brazing or welding – make sure all end wires are captured.
- b) Grind end to approximately 1/4" diameter. DO NOT grind end flat or to a cone shape. End must be rounded (Fig. 16).

Figure 12 Wire Rope Handling

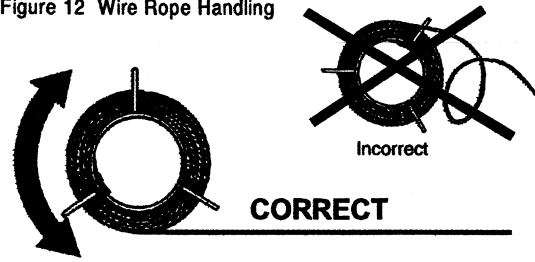


Figure 13

Wire Rope Termination by Swaged Fitting

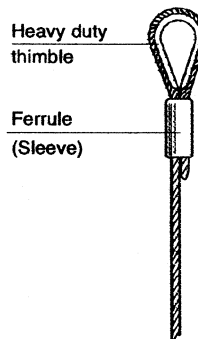


Figure 14

Wire Rope Termination by Fist Grip Clamps

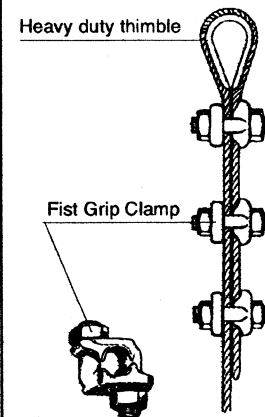


Figure 15 Suspension Distance

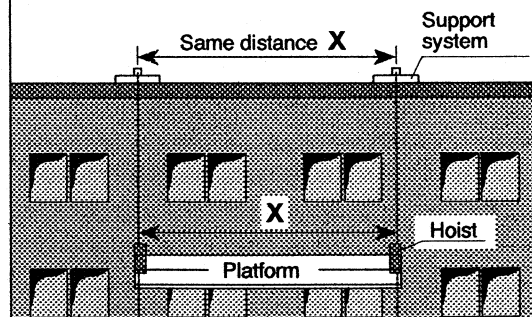
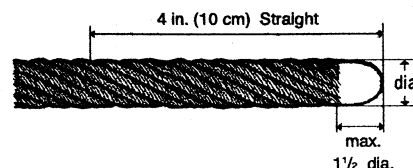


Figure 16 Wire Rope Tip



- c) The last 4 in. (10 cm) of wire rope must be straight for proper reeving.

4.3 Wire rope reeving

- (1) Open the BSO secondary brake by pushing down the control lever (d1) until it locks (Fig. 17).
- (2) Push the rope through the BSO secondary brake at (A) into the hoist inlet (B).

Push it inside, and press UP-button, until the wire rope reeves itself automatically and exits at (C) on the other side (Fig. 18).

CAUTION:



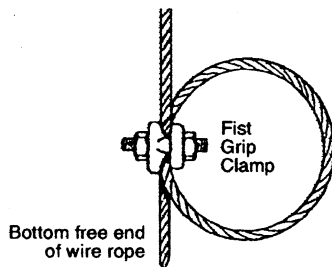
Check that wire rope exit (C) is not blocked in any manner.

Never load the wire rope exiting from (C).

- (3) After reeving through the hoist, be sure to loop and clamp the free end of the wire rope, to prevent the rope from inadvertently unreeving through the hoist.

Always tie this loop, using a fist grip clamp, when the platform is at ground level or other safe surface (Fig. 19).

Figure 19 Loop at Free Wire Rope End



WARNING:



AT EVERY SET-UP OR RERIGGING check the wire rope length to ensure that it reaches the ground or other safe level with about five feet (1.5 m) extra for safety.

4.4 De-Rigging

- (1) Before de-rigging each TIRAK® hoist must be unloaded by bringing down the platform to a safe and stable support.
- (2) Remove the loop at the free wire rope end.
- (3) Press DOWN button to let the wire rope run out.
- (4) With gloved hands slowly pull the wire rope through BSO secondary brake.
- (5) Clean the wire rope, reel it (Fig. 20), and store it in a clean and dry place.

Figure 17 Opening of BSO Secondary Brake

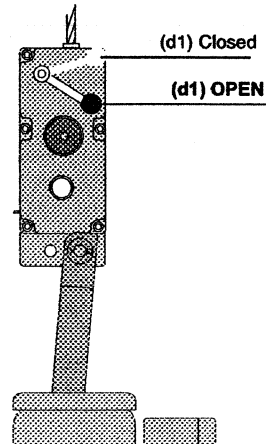


Figure 18 Wire Rope Reeving

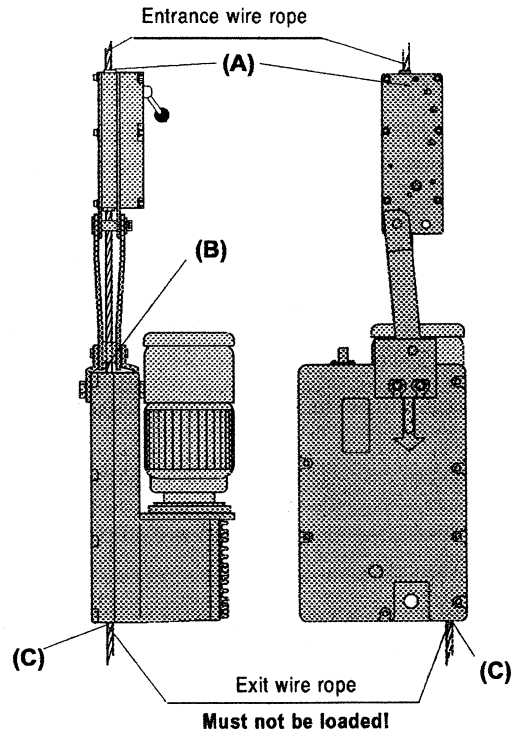
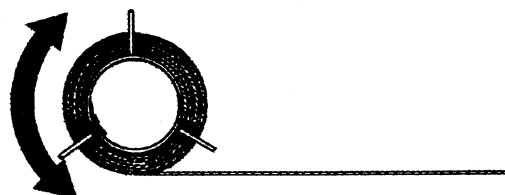


Figure 20 Wire Rope Handling



5. Operating Instructions

5.1 GENERAL

- (1) BE FAMILIAR with the equipment and its proper care.

DO NOT operate hoist, if adjustment or repairs are necessary, if any warning, operating or capacity label normally attached to the hoist is obscured, damaged, or missing. (See labels' list on page 35).

REPORT same promptly to your supervisor and also notify next operator, when changing shifts.

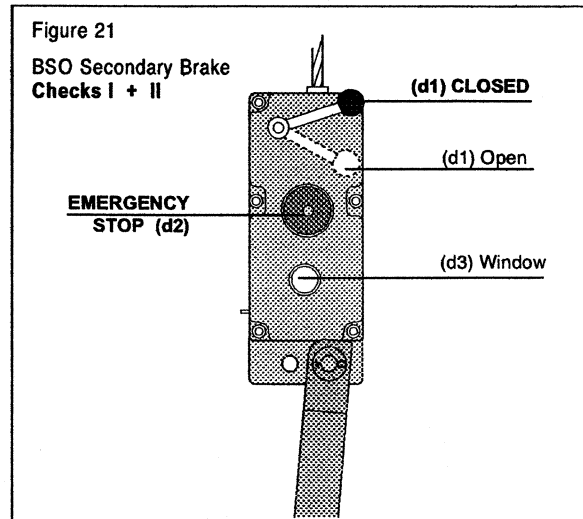
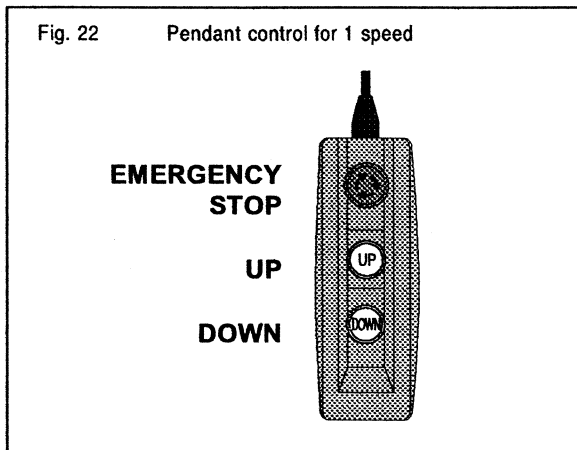
(2)  **WARNING: SAFETY DEMANDS THAT YOU TEST THE SYSTEM BEFORE GOING ALOFT:**

- a) CHECK **PLATFORM** fully rigged and loaded by cycling UP and DOWN several times near ground level or safe surface.
- b) CHECK **PRIMARY BRAKE** for mechanical function: When stopping the hoist the load must be held immediately.
- c) CHECK **BSO SECONDARY BRAKE:**

I Lift platform 3 ft. (1 m) above ground or safe surface, and push EMERGENCY STOP button (d2) of the BSO secondary brake (Fig. 21).

- i) Try to lower the platform by DOWN button of the pendant control – it **must be not possible**, the limit switch inside the BSO secondary brake should have cut off power for the downward movement of the hoist.
- ii) Manually open primary motor brake (see chapter 5.3 on page 16) to check that the load is held by the BSO secondary brake.

Raise platform until the hoist supports the load. Reset BSO secondary brake by pushing down control lever (d1) until it locks in the open position.



- II During operation regularly check through the window (d3) that the centrifugal weights are rotating (Fig. 21).



WARNING: IF DURING ONE OF THE CHECKS THE BSO SECONDARY BRAKE MALFUNCTIONS, IT MUST BE REPLACED.

- d) Check EMERGENCY STOP button and pushbutton control (Fig. 22)
 - i) Check that the UP and DOWN pushbuttons return to their normal open position when released. They should move freely without sticking.
 - ii) Push the red EMERGENCY STOP button. It should lock and remain depressed. Now try pushing the UP or DOWN pushbutton – the motor should not turn. Twist the EMERGENCY STOP button in the arrow direction to disengage it – it should pop out, and the hoist should now operate normally.

Repeat this check a few times to check function of pushbuttons and the EMERGENCY STOP.



WARNING: If the pushbuttons or EMERGENCY STOP button do not function properly, remove hoist from service until repaired by a qualified person.

- e) CONTINUOUSLY CHECK rigging, lines, clearances, and all other elements throughout the entire time on the job.

5.2 Normal operation

- (1) For **UP** and **DOWNWARD MOTION** of the platform just press the corresponding button.
- (2) When operating platform, take care to operate hoists so that the platform stays level without tilting one end more than the other.

(3) WARNINGS

- a) **DO NOT** fix push-buttons in run position.
- b) **DO NOT** operate the hoist, if it is functioning improperly, or damage is noted.
- c) **NEVER** pick up a load beyond the rated capacity appearing on the hoist.
- d) **STOP OPERATIONS IMMEDIATELY**, if at any time, when the hoist operates, the wire rope does not move (i.e. no UP or DOWN travel).
It is likely that damaged wire rope is jamming the hoist. Continued operation might cause wire rope failure or damage to the hoist.
CONTACT the SUPPLIER!
- e) **IN CASE OF AN INCIDENT** involving injury, or property damage, contact the supplier immediately.
DO NOT disturb, alter, or move any equipment at the scene of the incident.
- f) **OPERATING IN EXPLOSIVE ATMOSPHERE:** Never operate hoist or any other electric equipment in a potentially explosive atmosphere – such as around distilleries, refineries, chemical plants, ship or silo interiors. Always obtain official approval before commencing operations at these or similar locations.

(4) Special Operating Notes for Welding or Arc scarfing

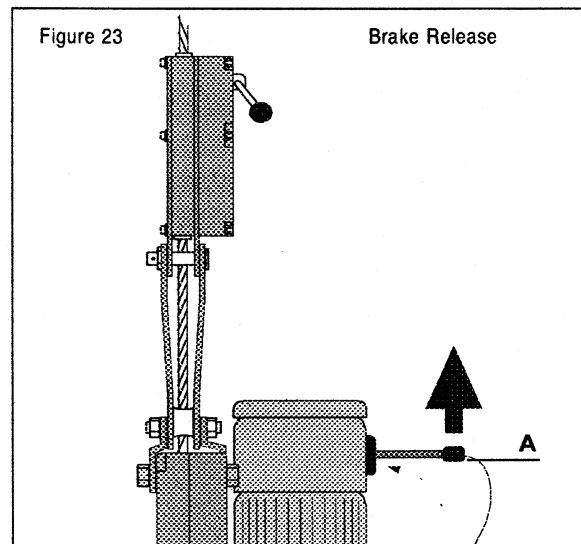
- ALWAYS PROTECT your equipment and yourself from the danger of arcing.
- BE SURE supporting equipment is grounded to prevent arcing across wire rope to the structure.
- DO NOT use wire rope as a ground for welding.
- DO NOT allow your welding gun to contact wire rope, hoist, or any other metal equipment or structure.
- PROTECT work area above and below hoist with insulation.
Split a section of air rubber hose, and wrap around wire ropes.
- Use an insulated thimble assembly to attach all wire rope(s) to the suspension system.


5.3 Emergency Descent

In case of emergency you can descend with the platform without power proceeding as follows:

- (1) Take the brake release lever (A) from the carrying handle, and insert it through the motor fan cover hole into the brake release bow. Lift in arrow direction (Fig. 23). The hoist begins to lower at moderate speed, which is regulated by a mechanical centrifugal brake.
- (2) To **STOP** just release the lever.
- (3) **After use:** restore brake release lever (A) into its storage position.

 **CAUTION:**
DO NOT USE EMERGENCY DESCENT AS REGULAR TECHNIQUE TO LOWER.



 **NOTE:** If during emergency descent the BSO Secondary brake closes, you have to wait for electric power to go up. The hoist must move up to get the BSO free. Reset BSO by pushing down control lever (d1) in open position (see Fig. 25 on page 16).
DO NOT force it open!

If electric power is not available you have to require help or a rescue!

WARNING:
 **If the BSO secondary brake stops downward travel during emergency descent, DO NOT DETACH BSO secondary brake FROM HOIST!**

5.4 BSO Secondary Brake Action

(1) EMERGENCY STOP

Push EMERGENCY STOP button of the BSO Secondary brake, if – for whatever reason – you want to absolutely stop downward travel of the platform.

(2) To reset BSO secondary brake:

Raise the platform until the hoist supports the load.

Push the control lever in the OPEN position (d1) (Fig. 24). **DO NOT** force it open.

(3) If the BSO secondary brake has automatically closed:

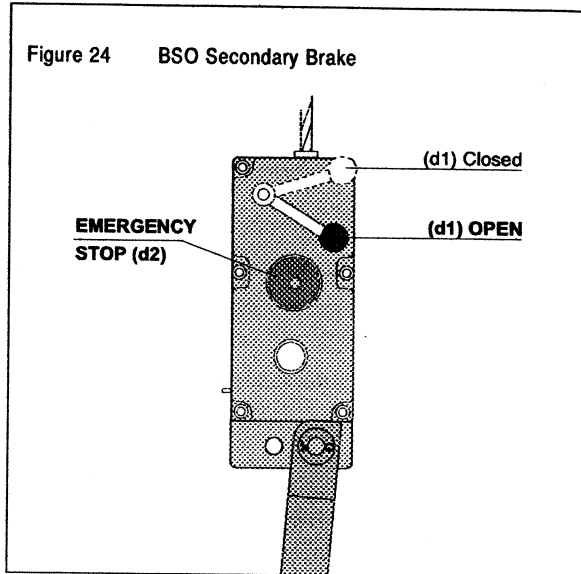
WARNING: STOP DOWNWARD TRAVEL! YOU MAY HAVE RUN OFF THE WIRE ROPE CAUSING OVERSPEED. WITH EXTREME CAUTION TRY TO GO UP.



IF YOU CANNOT GO UP, A RESCUE IS REQUIRED.

When the hoist supports the load, reset the BSO secondary brake as described above.

CAUTION: If the BSO secondary brake repeatedly stops downward travel, contact the supplier for advice. Check wire rope diameter (see page 11).



WARNING: DURING USE OF THE HOIST NEVER DETACH BSO SECONDARY BRAKE!

6. TROUBLE SHOOTING



WARNINGS!

Avoid injuries:

1. Checks and repair of the electric equipment must only be carried out by **QUALIFIED ELECTRICIANS!** Wiring diagrams are found in the control box of the motor.

2. **DO NOT OPEN ANY CONTROL BOX OR PENDANT CONTROL WITH POWER SUPPLY TO HOIST!**
3. Any other repair should only be carried out by the supplier (TRACTEL Group Company) or by a qualified person, and only original spare parts shall be used.

6.1 Wire Rope Drive Mechanism Troubles

Problem	Cause	Remedy
Wire rope does not move through, i. e. no UP nor DOWN movement.	It is likely that damaged wire rope is jamming the hoist.	<p>WARNING: STOP OPERATIONS IMMEDIATELY! Continued operation might cause wire rope failure. Contact the supplier.</p>


6.2 Motor Troubles

Problem	Cause	Remedy
1. Motor does not run at all.	a) Power failure b) Incorrect wiring c) On 3 phase motor: stop by the phase control relay	a) Check fuses, power cords, connections, and starting capacitor. b) Compare wiring with wiring diagram. c) Check wiring.
2. Motor does not start with a load.	a) Overload b) Brake not released c) Voltage too low d) Incorrect wiring	a) Check load and reduce, if necessary. b) Check motor with brake released by hand. Check brake according to para. 5.1 (2), page 14. c) Check voltage when running the motor. Use power cord(s) with higher cross section. d) Compare wiring with wiring diagram.
3. Motor stalls under load.	Low voltage	Check voltage when running the motor. Use power cord(s) with higher cross sections.
4. Overheating when running without load	a) Insufficient cooling b) Incorrect wiring c) Voltage too high d) Short circuit in the coil	a) Clean motor fan cover. b) Compare wiring with wiring diagram. c) Check voltage and no-load current. d) Contact the supplier.
5. Overheating	a) Overload b) High or low voltage c) Starting capacitor still activated. Centrifugal switch defect. d) Crooked motor shaft. e) Brake not (correctly) released.	a) Check load and reduce if necessary. b) Check current consumption, and compare with motor label specifications. Check current and voltage. Check power cords c) Check current at the auxiliary winding in the control box, when running the motor. For centrifugal switch repair contact the supplier. d) Contact the supplier. e) Check brake according para. 6.3.
6. Abnormal motor noise	a) Electric parts (noise disappearing immediately, when stopping motor) b) Mechanical parts (noise continuous until hoist stands still)	a) Causes/remedies see above 1. to 5. b) Contact the supplier.

6.3 Primary Brake Troubles

Problem	Cause	Remedy
Brake does not open (lack of "click" switch noise, when starting/stopping the hoist)	a) Defective supply conductor, brake coil, rectifier. b) Worn brake rotor	a) Have supply conductor, current passage in brake coil, rectifier checked by an electrician or qualified person. b) Contact the supplier.

6.4 BSO Secondary Brake Troubles

Problem	Cause	Remedy
1. Hoist goes up but not down.	BSO secondary brake is closed: Primary wire rope has run out or has failed.	 WARNING: STOP DOWNWARD TRAVEL! Proceed according para. 5.4, (3), page 16.
2. BSO secondary brake automatically closes without apparent reason.	a) Mechanical defect. b) Oversized or damaged wire rope	a) Contact the supplier. b) Check wire rope and replace, if necessary.

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

7. INSPECTIONS and MAINTENANCE



NOTE: A maintenance program should start for each hoist immediately after it is entered into service.

This maintenance program should comply with recommendations in the applicable parts and Instruction Manual, and all pertinent Federal, State, Provincial and Local regulations.

Unauthorized replacement parts:

Use only Tractel replacement parts. The replacement of any part with anything other than a Tractel authorized replacement part may adversely affect the function and safety of this hoist and voids the warranty. Tractel disclaims liability for any claims of damages, whether warranty, property damage, personal injury or death arising from the use of unauthorized parts.



Regular inspections should be followed for the life of the hoist and written inspection records kept as specified.

7.1 Inspections

7.1.1 DAILY INSPECTIONS

EACH DAY PRIOR TO USE AND DURING OPERATION CHECK:

- (1) **Primary brake function:** "click" noise, when starting/stopping the hoist.
- (2) **BLOCSTOP BSO secondary brake function.**

I At ground level first close the BSO secondary brake by pushing EMERGENCY STOP button (d2). Then push DOWN-button and make the wire rope form a loop between TIRAK® casing and BSO secondary brake (Fig. 28). Open BSO secondary brake by pulling down control lever (d1) until it locks in the open position.

With gloved hands sharply pull wire rope in arrow direction (Fig. 25) – the BSO secondary brake should close immediately. Reset BSO secondary brake by pulling down control lever (d1) until it locks in the open position.

II Lift platform 3 ft. (1 m) above ground or safe surface, and push EMERGENCY STOP button (d2) of the BSO secondary brake (Fig. 26). Try to lower the platform to check that the BSO secondary brake holds the load. A loop should form as shown in Fig. 25, which means the BSO secondary brake is supporting the load.

Raise platform until the hoist supports the load Reset (d1) to the open position.

III During operation regularly check through the window (d3) that the centrifugal weights are rotating (Fig. 26).

Figure 25

BSO Secondary Brake
Check I

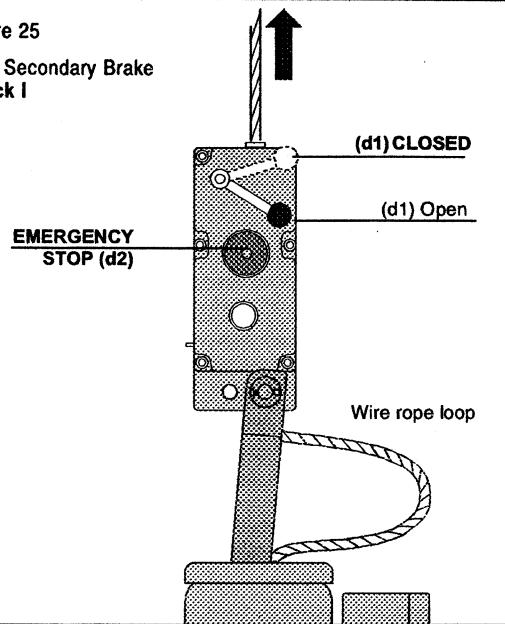
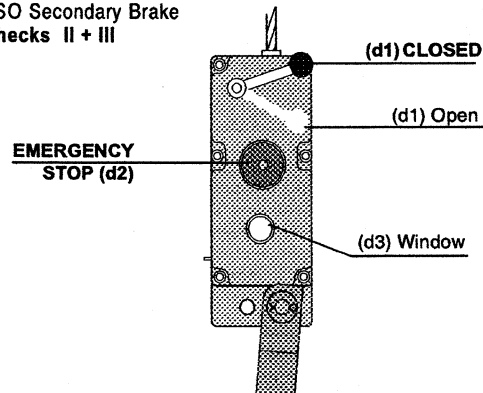


Figure 26

BSO Secondary Brake
Checks II + III



- (3) **Wire rope:** free of kinks, cuts, broken wires, bird-cages, heat damage, contamination etc.
- (4) **Wire rope corrosion** due to acid or caustics. Replace wire rope if exposed to these contaminants.
- (5) **Wire rope lubrication:** The wire rope has to be clean and lightly lubricated.
- (6) **Rigging**
Wire rope termination, connection to the suspension system. It must be aligned and secure.
- (7) Check for **parts damage**.



WARNING: If there is any: **STOP** working, unless the damaged part(s) is (are) replaced.

- (8) **Safety harness(es), lifeline(s), fall arrester(s) and lanyard(s) must be used at all times** in accordance with the requirements of OSHA regulations and state, provincial or local codes.

7.1.2 MONTHLY INSPECTIONS

(1) All items under daily inspection.

(2) BLOCSTOP BSO secondary brake function.

At ground level

- i) remove fist grip clamp from loop at free wire rope end (see Fig. 19, page 13) and push DOWN button until the wire rope leaves the TIRAK® casing beyond the BSO secondary brake.
- ii) With gloved hands sharply pull wire rope in arrow direction (Fig. 25) – the BSO secondary brake should close immediately.

Reset BSO secondary brake by pushing down control lever (d1) until it locks in the open position.

Re-install wire rope according to chapter 4.3, page 13.

(3) Wire Rope Inspection



All wire rope should be inspected once a month, and a **signed and dated inspection record** maintained.

The inspection check list at back of this manual can be used to record these inspections.

WIRE ROPE SHOULD BE REPLACED, IF ANY OF THE FOLLOWING CONDITIONS ARE NOTED:

Conditions for replacing wire rope:

- Broken wires or strands.
- Excessive corrosion.
- Heat damage, evident through discolored wires.
- Reduction from nominal diameter of more than 5%.
- Kinking, crushing, birdcaging, or any other distortion of the wire rope structure (Fig. 27).

NOTE: How to measure wire rope diameter:



The correct diameter of the wire rope is the largest cross-sectional measurement across the strands (and not the valleys).

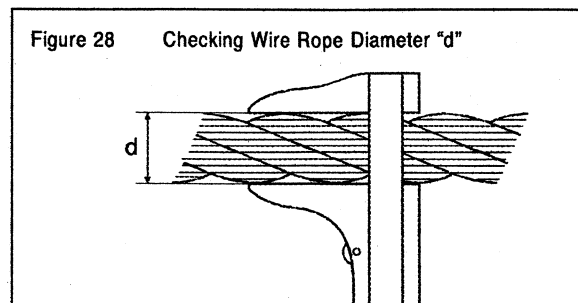
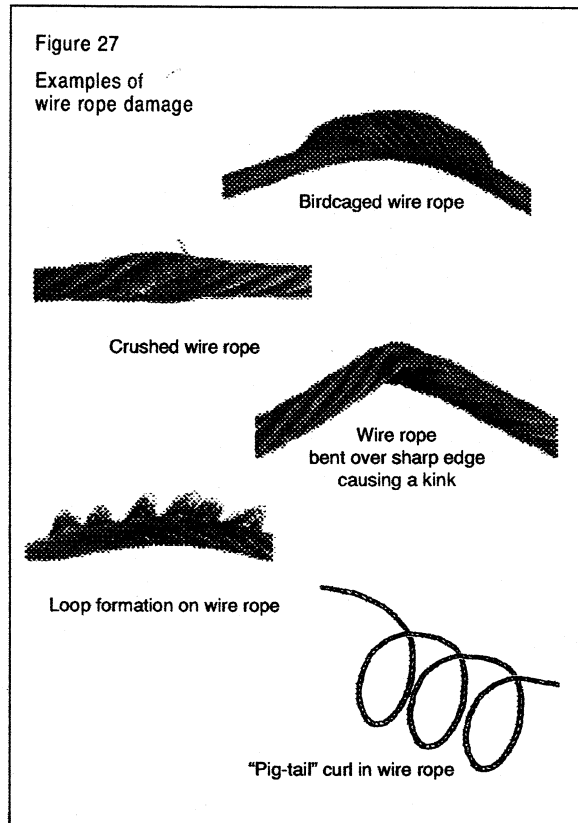
The measurement should be made carefully with calipers as shown in Fig. 28.

WARNING: REPLACEMENT WIRE ROPE MUST BE SAME SIZE, GRADE, AND CONSTRUCTION AS THE WIRE ROPE SPECIFIED BY THE MANUFACTURER!



(See pages 7, 11)

THE MANUFACTURER DECLINES ALL RESPONSIBILITY FOR MACHINES USED WITH A WIRE ROPE OTHER THAN SPECIFIED BY THEM.



7.1.3 1/2-YEAR INSPECTION

NOTE: The hoist should be examined every 6 months by the supplier or a repair shop agreed by him.



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



A signed and dated inspection record should be maintained.

Quantities required: 5.0 litres

Table 4

Temperature range	-5 to 176 degF -15 to +80 °C	-31 to 104 degF -35 to +40 °C
API Specification	Synthetic oils ²⁾ CLPPG or PGLP ISO VG 460 ¹⁾ CLPPG or PGLP ISO VG 100	
Sample oils	BP Enersyn SG-XP 460 SHELL Tivela Oil SD 460 TEXACO Synlube CLP 460	BP Enersyn SG-XP 100 SHELL Tivela Oil SD 100 TEXACO Synlube CLP 100

- 1) Standard charge
2) Use only synthetic oils!

7.2 Maintenance

7.2.1 TIRAK® Hoist

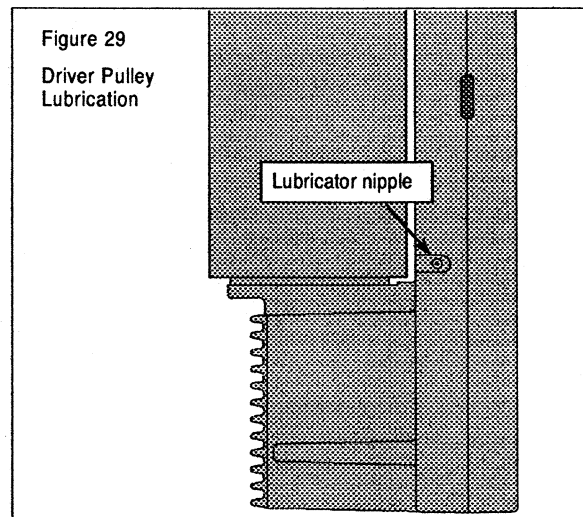
- (1) Daily check the primary and BSO secondary brake.
- (2) Daily check for visible part damage.
- (3) Keep wire ropes clean and lightly lubricated to prevent abnormal wear of the wire rope driving mechanism.
- (4) Lubrication of driver pulley external tothing:

Every 50 working hours fill up the reservoir behind the lubricator nipple (see Fig. 29) by means of a grease gun.

Specification: water-insoluble and thermoduric adhesive gear box grease, **without solid lubricants** (molybdenbisulfite (MoS₂), graphite, or similar)
e. g. **VARILUB**

Quantity: two times approx. 5 cubic centimeter (= approx. 1/3 cubic inch)

- put on the grease gun and push in first portion with 3 to 5 strokes;
- let the TIRAK® run for approx. two seconds;
- push in second portion.



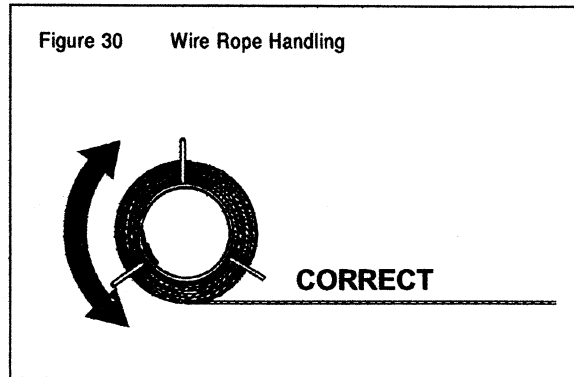
7.2.2 Wire Ropes

- (1) Use only wire ropes, which meet the manufacturer's specifications. For details see pages 7 and 11.

This will ensure the reliable function of the hoist.

- (2) To warrant maximum lifetime we recommend:
- The wire rope must be unreeled and reeled in a straight line (Fig. 30).
 - Keep wire ropes clean.
 - Lubricate wire ropes regularly with a rag soaked with oil.
 - Never let the wire ropes rub against sharp edges.
 - Always see that the wire rope outlet is not obstructed.
 - Let the free wire rope end untwist to prevent wire rope from making loops.
 - If the wire rope changes direction, it should be guided by sheaves or rollers to avoid damage.

Figure 30 Wire Rope Handling



7.2.3 BLOCSTOP BSO Secondary Brake

Besides the daily checks, keep all wire rope clean and lightly lubricated.

8. NAMEPLATES & LABELS

8.1 Nameplates

- ① TIRAK® nameplate
- ② BLOCSTOP® Secondary brake nameplate
- ③ Motor nameplate
- ④ Primary brake nameplate

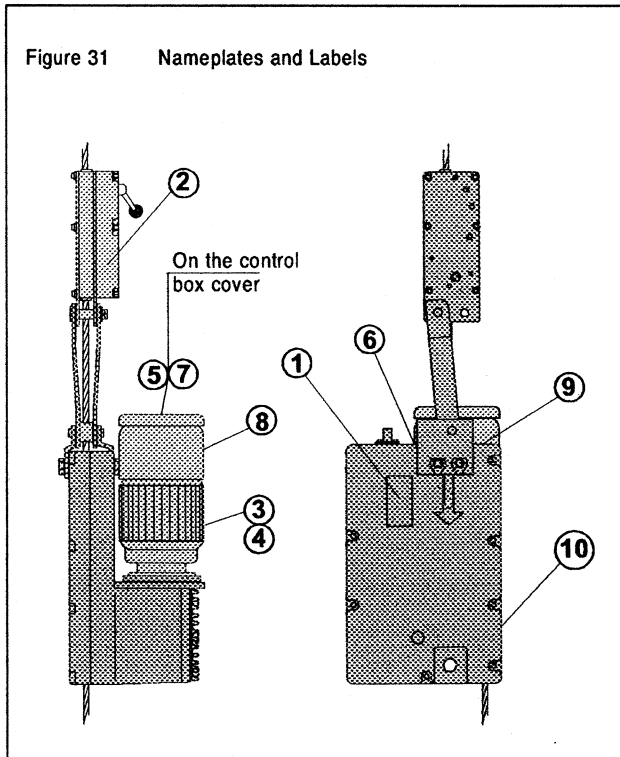
8.2 Labels

- ⑤ General Warning label
- ⑥ Warning label (wire rope jam)
- ⑦ Advice label (secondary brake operation)
- ⑧ Emergency Descent label
- ⑨ Wire rope diameter label
- ⑩ UL classification label



NOTE: If any nameplate or label is missing or obscured, contact the supplier for replacement nameplates/labels.

Figure 31 Nameplates and Labels



①

tirak ®		Made in Germany
Model XE 2050 P		
<small>US Patents No. 3,965,767 / 4,193,311 / 4,345,741 / 4,706,940. Other US Patents pending.</small>		
Rated load:	4,400 lbs	2,000 kgs
Travel speed:	23 ft/min	7 m/min
Operating voltage:	Current consumption:	
220 VAC	220 VAC	16 A
Power-supply cord:	#10, Type STO, 600 VAC.	
Maximum length:	750 ft.	
Do not let the voltage at motor terminals drop below motor nameplate rating under load.		
Serial No.:	Year of manufacture:	
	200 /	
Wire rope diameter:	9/16 in. 14.2 mm	
Wire rope classification/construction:		
<small>5x26 with fiber core, galvanized, lubricated, preformed, IPS or XIPS.</small>		
<small>G -03/02</small>	<small>Printed in Germany</small>	
Supplier's address		

②

BLOCSTOP ®		
secondary brake		
<small>Model</small>	<small>Serial number</small>	
BSO 2050		
<small>Rated load</small>	<small>Wire rope Ø</small>	<small>Year of manuf.</small>
2,000 kg	14.2 mm	
4,400 lbs.	9/16 in.	
CHECKING		
1) Before going aloft, daily check as follows:		
- At ground level push DOWN button and allow the wire rope to form a bow between TIRAK® casing and BSO secondary brake. With gloved hands sharply pull wire rope upwards - the BSO secondary brake should close immediately.		
- Lift platform 3 ft. (1 m) above ground or safe surface, and push EMERGENCY STOP button of the BSO secondary brake. Lower the platform to check that the BSO secondary brake holds the load. Raise platform until the hoist supports the load. Reset BSO secondary brake by pushing down control lever until it locks.		
2) During operation centrifugal weights must rotate. Check regularly through the window.		
WARNING: If during the above checks the BLOCSTOP malfunctions, replace it and return to the supplier for inspection. Address see TIRAK nameplate.		
<small>Made in Germany</small>		

Code 25920

3

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

Code 16206

4

GREIFZUG GmbH Bergisch Gladbach			
Bremstyp			
Leistung	W	Spulenspannung	V
Moment	Nm		

Code 16706

5



WARNING:

Only authorized, properly trained, and physically fit personnel shall operate this hoist in strict accordance with the instructions on the hoist and applicable codes! Copy of instructions must be kept with the hoist.



Operating WARNING:

Immediately STOP RUNNING THE HOIST, if wire rope does not move through.

EMERGENCY DESCENT:

Take brake release lever out of its storage position, insert in motor cover hole, and push upwards. To STOP release lever.

CAUTION:

The TIRAK® can only be used in conjunction with the BLOC-STOP® OVERSPEED device, which is an integral part of the equipment. Use of this equipment is unsafe and unlawful without proper fall protection equipment used in accordance with OSHA requirements.

SET-UP INSTRUCTIONS:

Anchor the hoist, and connect to electric supply. Red button must be out to start the motor. Start motor, and introduce wire rope, lightly push until it reeves itself automatically.

Ensure free rope exit.

Use only specified wire rope in good condition with short tapered end! **Daily check** for broken wires and kinks.

For spare parts or in case of inquiry please mention **Machine Type and Serial No.!**

G442.1-03/02 Printed in Germany

Code 22510

6



If the motor energizes but the wire rope does not move through the hoist: STOP THE HOIST IMMEDIATELY!

Damaged wire rope may be jammed inside the hoist. Any attempt to move the hoist up or down could cause a dangerous situation and result in bodily injury.

Code 22080

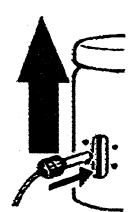
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NOTICE: This hoist is equipped with a controlled descent device that will automatically engage in case of primary brake failure. Descent can be stopped with manual operation of the secondary brake.

Code 22230

8



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

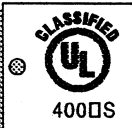
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Code 22220

9

Wire rope
Ø
9/16"

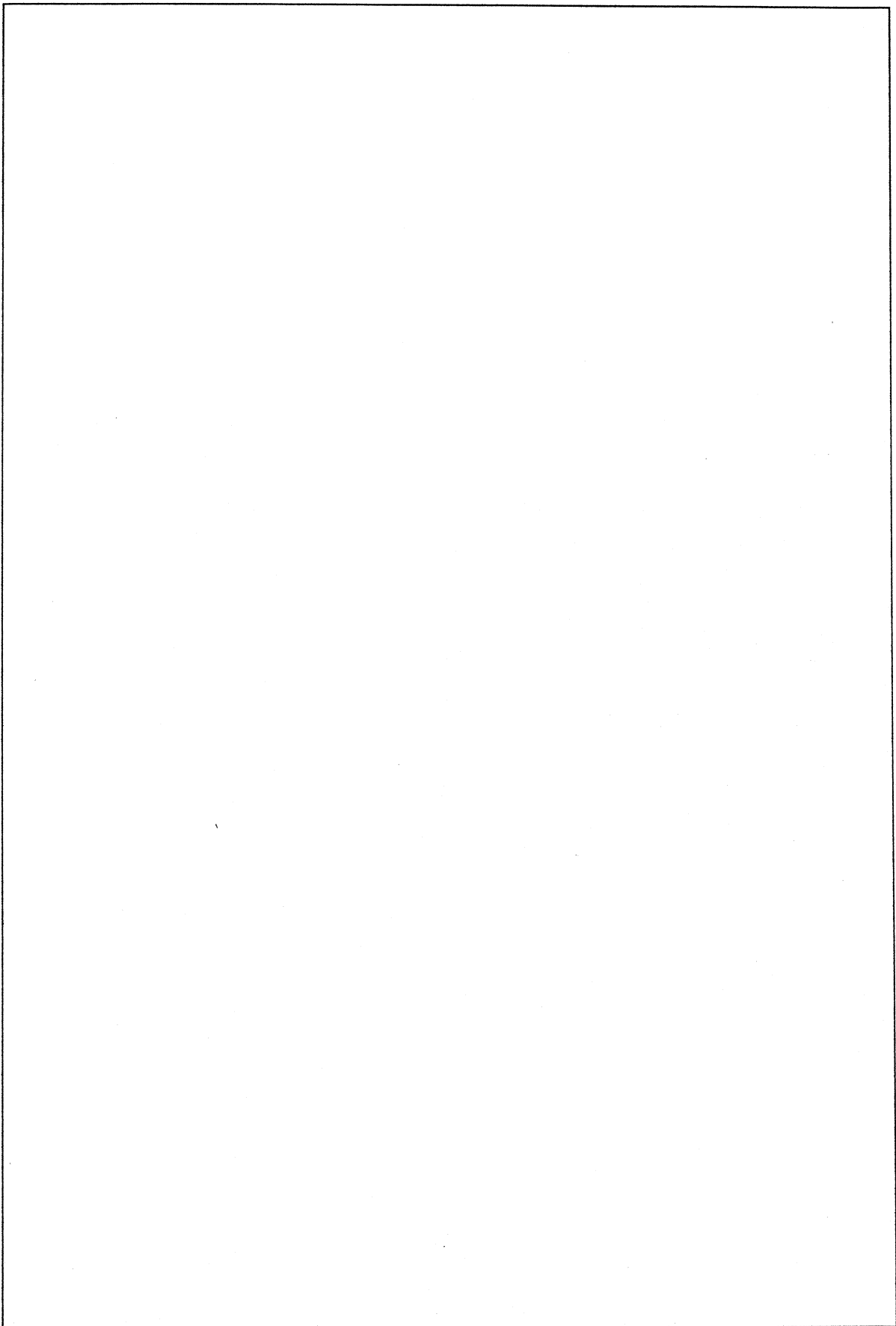
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Classified by Underwriters Laboratories Inc.* as to load capacity, electrical fire and shock hazards only.

G0212-10/01

Code 22240



9. WARRANTY INFORMATION

- (1) TRACTEL INC. warrants its equipment to be free from defects in material and workmanship under normal use and service.
- (2) Our obligation under this warranty is limited to repairing or replacing, at our option, any part of the unit, which proves examination to our satisfaction to be defective in material or workmanship, if the item in question is returned through a TRACTEL INC. distributor, transportation prepaid, within one (1) year from the equipment is sold to the original purchaser¹⁾. Return shipment must be prepaid.
- (3) Any parts proved to be defective upon our inspection will be repaired or replaced at no cost for the parts themselves.
- (4) The obligation under this warranty does not include labor or travelling costs, or consequential damages of any kind.
- (5) Any defect in this equipment must immediately be brought to attention of the distributor from whom the unit was purchased. The distributor will make arrangements with the factory for repairs or replacement of parts within the terms of this warranty.
- (6) TRACTEL INC.'s obligation is limited to replacing parts and does not include replacing the complete unit. This warranty is void on any unit that has been modified or tampered with, repaired by persons other than a factory representative or an authorized TRACTEL INC. distributor, repaired with other than TRACTEL INC. standard parts, or damaged by reasons of accident, alteration, misuse, or abuse.
- (7) This warranty is in lieu of all other warranties, expressed or implied. We do not authorize any person or representative to make other guarantee or to assume for us any liability in connection with the sale of our appliances other than those contained herein. Any agreement outside of or contradictory to the foregoing shall be void and of no effect.
- (8) Warranty is void, if wire rope does not comply with specifications found in this document.
- (9) The replacement of anything other than a TRACTEL INC. authorized replacement part voids the warranty. TRACTEL INC. disclaims liability for any claims of damages, whether warranty, property, damage, personal injury, or death arising from the use of unauthorized parts.

1) "Original purchaser" definition:
for rental machines: Dealer,
for resale machines: First user.

10. ADDITIONAL SOURCES AND TRAINING

The Scaffold Industry Association Inc.
offers a certificated training course for suspended scaffold users.

Information may be obtained from

Scaffold Industry Association Inc.
20335 Ventura Blvd. Suite 310
Woodlands Hills, California 91364

Telephone: (818) 610-03 20

Fax: (818) 610-03 23

www.scaffold.org

e-mail: sia@scaffold.org

GIVE TO SCAFFOLD ERECTOR & USER OR POST ON JOB
CODE OF SAFE PRACTICES FOR
SUSPENDED POWERED SCAFFOLDS

It shall be the responsibility of all employers and users to read and comply with the following common sense guidelines, which are designed to promote safety in the erection and use of suspended powered scaffolds. These guidelines do not purport to be all-inclusive nor to supplant or replace other additional safety and precautionary measures to cover usual or unusual conditions.

If these guidelines conflict in any way with any state, local or federal statute or governmental regulation, said statute or regulation shall supersede these guidelines. It is the responsibility of each user to comply with these guidelines.

I. GENERAL GUIDELINES

- A. **POST THESE SAFETY GUIDELINES** in a conspicuous place and be sure that all persons who erect, use, locate, or dismantle suspended scaffold systems are fully aware of them.
- B. **FOLLOW ALL EQUIPMENT MANUFACTURERS' RECOMMENDATIONS** as well as all state, local and federal codes, ordinances and regulations relating to suspended powered scaffolding.
- C. **SURVEY THE JOBSITE.**
A survey shall be made of the jobsite for hazards such as exposed electrical wires, obstructions that could overload or tip the suspended powered scaffold when it is raised or lowered, unguarded roof edges or openings, inadequate or missing tiebacks.
Those conditions should be corrected before installing or using suspended powered scaffold systems.
- D. **INSPECT ALL EQUIPMENT BEFORE EACH USE.**
Never use any equipment that is damaged or defective in any way. Tag damaged or defective equipment and remove it from the jobsite.
- E. **ERECT AND DISMANTLE SUSPENDED POWERED SCAFFOLD EQUIPMENT** in accordance with design and/or manufacturer's recommendations.
- F. **DO NOT ERECT, DISMANTLE, OR ALTER SUSPENDED POWERED SCAFFOLD SYSTEMS** unless under the supervision of a competent person.
- G. **DO NOT ABUSE OR MISUSE SUSPENDED POWERED SCAFFOLD EQUIPMENT.**
Never overload platforms or hoists.
- H. **ERECTED SUSPENDED POWERED SCAFFOLDS SHOULD BE CONTINUOUSLY INSPECTED** by the user to ensure that they are maintained in a safe condition. Report any unsafe condition to your supervisor.
- I. **NEVER TAKE CHANCES! IF IN DOUBT REGARDING THE SAFETY OR USE OF SUSPENDED SCAFFOLDS, CONSULT YOUR SCAFFOLD SUPPLIER.**
- J. **NEVER USE SUSPENDED SCAFFOLDS EQUIPMENT FOR PURPOSES OR IN WAYS FOR WHICH IT WAS NOT INTENDED.**
- K. **CARE SHOULD BE TAKEN WHEN OPERATING AND STORING EQUIPMENT DURING WINDY CONDITIONS.**
- L. **SUSPENDED POWERED SCAFFOLD SYSTEMS** should be installed and used in accordance with the manufacturer's recommended procedures.
Do not alter components in the field.

- M. **SUSPENDED POWERED PLATFORMS MUST NEVER BE OPERATED NEAR LIVE POWER LINES,** unless proper precautions are taken.
Consult the power service company for advice.
- N. **ALWAYS ATTACH FALL ARREST EQUIPMENT** when working on suspended powered scaffolds.
- O. **DO NOT WORK ON OR INSTALL SUSPENDED POWERED SCAFFOLDS** if your physical condition is such that you feel dizzy, or unsteady in any way.
- P. **DO NOT WORK ON SUSPENDED POWERED SCAFFOLDS** when under influence of alcohol or illegal drugs.

II. GUIDELINES FOR ERECTION AND USE OF SUSPENDED SCAFFOLD SYSTEMS.

A. RIGGING:

- 1. **WEAR FALL PREVENTION EQUIPMENT** when rigging on exposed roofs or floors.
- 2. **ROOF HOOKS, PARAPET CLAMPS, OUTRIGGER BEAMS, OR OTHER SUPPORTING DEVICES** must be capable of supporting the hoist machine rated load with a factor of safety of 4.
- 3. **VERIFY THAT THE BUILDING OR STRUCTURE WILL SUPPORT** the suspended loads with a factor of safety of 4.
- 4. **ALL OVERHEAD RIGGING** must be secured from movement in any direction.
- 5. **COUNTERWEIGHTS USED WITH OUTRIGGER BEAMS** must be of a non-flowable material and must be secured to the beam to prevent accidental displacement.
- 6. **OUTRIGGER BEAMS THAT DO NOT USE COUNTERWEIGHTS** must be installed and secured on the roof structure with devices specifically designed for that purpose. Direct connections shall be evaluated by a competent person.
- 7. **TIE BACK ALL TRANSPORTABLE RIGGING DEVICES.** Tiebacks shall be equivalent in strength to suspension ropes.
- 8. **INSTALL TIEBACKS AT RIGHT ANGLES TO THE FACE OF THE BUILDING** and secure, without slack, to a structurally sound portion of the structure, capable of supporting the hoisting machine rated load with a safety factor of 4.
IN THE EVENT TIEBACKS CANNOT BE INSTALLED AT RIGHT ANGLES, two tiebacks at opposing angles must be used to prevent movement.
- 9. **RIG AND USE HOISTING MACHINES DIRECTLY UNDER THEIR SUSPENSION POINTS.**

B. WIRE ROPE AND HARDWARE:

1. USE ONLY WIRE ROPE AND ATTACHMENTS as specified by the hoisting machine manufacturer.
2. ASSURE THAT WIRE ROPE IS LONG ENOUGH to reach to the lowest possible landing.
3. CLEAN AND LUBRICATE WIRE ROPE in accordance with the wire rope manufacturer's instructions.
4. HANDLE WIRE ROPE WITH CARE.
5. COIL AND UNCOIL WIRE ROPE in accordance with the wire rope manufacturer's instructions in order to avoid kinks or damage.
6. TIGHTEN WIRE ROPE CLAMPS in accordance with the clamp manufacturer's instructions.
7. DO NOT USE WIRE ROPE THAT IS KINKED, BIRD-CAGED, CORRODED, UNDERSIZED, OR DAMAGED IN ANY WAY. Do not expose wire rope fire, undue heat, corrosive atmospheres, electricity, chemicals, or damage by tool handling.
8. USE THIMBLES AND SHACKLES AT ALL WIRE ROPE SUSPENSION TERMINATIONS.
9. USE J-TYPE CLAMPS OR SWEDGE FITTINGS. Do not use U-bolts. Retighten J-Clamps under load and retighten daily.
10. WIRE ROPES USED WITH TRACTION HOISTS MUST HAVE PREPARED ENDS. Follow manufacturer's recommendations.

C. POWER SUPPLY:

1. GROUND ALL ELECTRICAL POWER SOURCES AND POWER CORD CONNECTIONS and protect them with circuit breakers.
2. USE POWER CORDS OF THE PROPER WIRE SIZE THAT ARE LONG ENOUGH for the job.
3. POWER CORD CONNECTIONS MUST BE RESTRAINED to prevent their separation.
4. USE STRAIN RELIEF DEVICES TO ATTACH POWER CORDS TO THE SUSPENDED SCAFFOLD to prevent them from falling.
5. PROTECT POWER CORDS AT SHARP EDGES.
6. USE GFI WITH POWER TOOLS.

D. FALL ARREST EQUIPMENT:

1. EACH PERSON ON A SUSPENDED POWERED SCAFFOLD must be attached to a separate fall arrest system unless the installation was specifically designed not to require one.
2. EACH LIFELINE MUST BE FASTENED to a separate anchorage capable of holding a minimum of 5000 pounds.
3. DO NOT WRAP LIFELINES AROUND STRUCTURAL MEMBERS unless lifelines are protected and a suitable anchorage connection is used.
4. PROTECT LIFELINES AT SHARP CORNERS to prevent chafing.
5. RIG FALL ARREST SYSTEMS to prevent free fall in excess of six feet.

6. SUSPEND LIFELINES FREELY without contact with structural members or building facade.
7. USE LIFELINES OF SIZE AND CONSTRUCTION that are compatible with the rope grab used.
8. ASSURE A PROPERLY ATTACHED ROPE GRAB IS INSTALLED ON EACH LIFELINE. Install in accordance with the manufacturer's recommendations.
9. KEEP FALL ARREST DEVICE POSITIONED ABOVE YOUR HEAD LEVEL.
10. USE ONLY FULL BODY HARNESSSES of the proper size and that are tightly fastened.
11. ASSURE FULL BODY HARNESS HAS LANYARD attachment with D-ring at the center of your back.
12. CONSULT FALL PROTECTION SUPPLIER FOR INSPECTION PROCEDURE. INSPECT FALL PROTECTION ANCHORAGE EQUIPMENT BEFORE EACH USE.
13. WHEN A SECONDARY WIRE ROPE SYSTEM IS USED, a horizontal lifeline secured to two or more structural members of the scaffold may be used in lieu of vertical lifelines.

E. DURING USE:

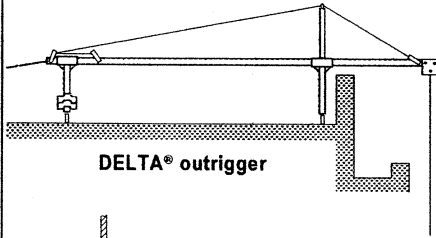
1. USE ALL EQUIPMENT AND ALL DEVICES in accordance with the manufacturer's instructions.
2. DO NOT OVERLOAD, MODIFY, OR SUBSTITUTE EQUIPMENT.
3. BEFORE COMMENCING WORK OPERATIONS preload wire rope and equipment with the maximum working load, then retighten wire rope rigging clamps and check rigging to manufacturer's recommendations.
4. INSPECT ALL RIGGING EQUIPMENT AND SUSPENDED POWERED SCAFFOLDS SYSTEMS DAILY.
5. INSPECT WIRE ROPE DURING EACH ASCENT OR DESCENT FOR DAMAGE.
6. USE CARE TO PREVENT DAMAGE TO EQUIPMENT by corrosive or other damaging substances.
7. CLEAN AND SERVICE EQUIPMENT REGULARLY.
8. ALWAYS MAINTAIN AT LEAST FOUR (4) WRAPS OF WIRE ROPE ON DRUM TYPE HOISTS.
9. DO NOT JOIN PLATFORMS unless the installation was designed for that purpose.
10. ONLY MOVE SUSPENDED SCAFFOLDS HORIZONTALLY WHEN NOT OCCUPIED.
11. WHEN RIGGING FOR ANOTHER DROP assure sufficient wire rope is available before moving the suspended scaffold system horizontally.
12. WHEN WELDING FROM SUSPENDED POWERED SCAFFOLDS:
 - a. Assure platform is grounded to structure.
 - b. Insulate wire rope above and below the platform.
 - c. Insulate wire rope at suspension point and assure wire rope does not contact structure along its entire length.
 - d. Prevent the bitter end from touching the ground.

These safety guidelines set forth some common sense procedures for safely erecting, dismantling and using suspended powered scaffolding equipment. However, equipment and scaffolding systems differ, and accordingly, reference must always be made to the instructions and procedures of the supplier and/or manufacturer of the equipment.

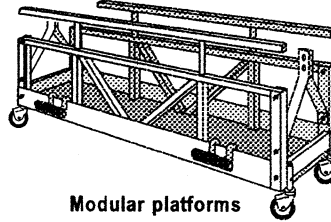
Since field conditions vary, and are beyond the control of the Scaffolding, Shoring and Forming Institute and Scaffold Industry Association, safe and proper use of scaffolding is the sole responsibility of the user.



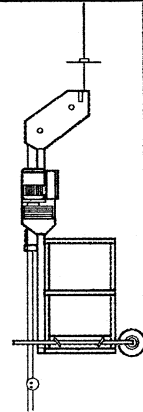
More information
about access equipment...



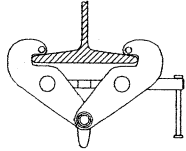
DELTA® outrigger



Modular platforms



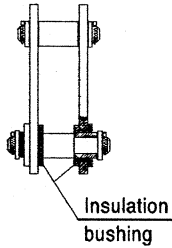
Workcages



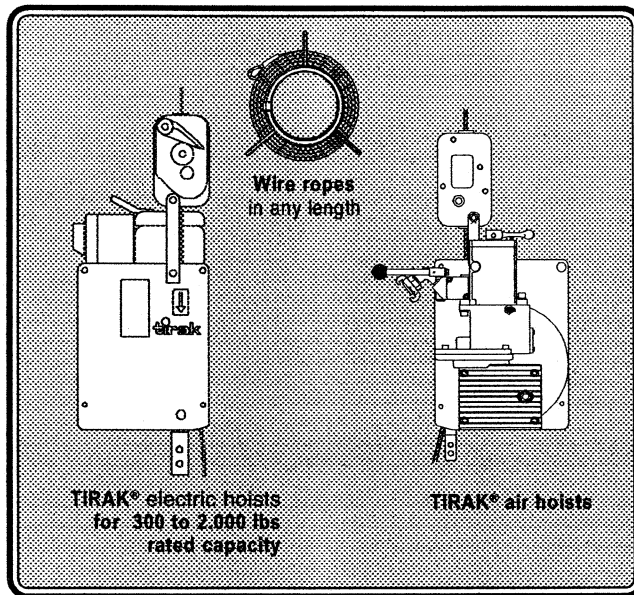
Beam clamps

Electrical Accessories:

- Power cords
- Power yokes
- Booster transformer
- Insulated thimbles:



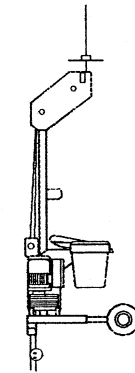
Insulation
bushing



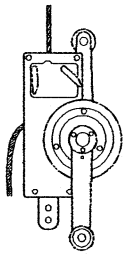
Wire ropes
in any length

TIRAK® electric hoists
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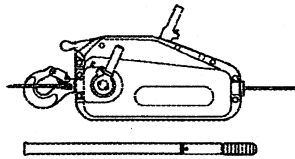
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Bosun's chair



SCAFOR® manual hoist



GRIPHOIST® manual hoists



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Personal
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