

TMS-600 OPERATING INSTRUCTIONS:

1. Protect your hands with gloves. Place the anchor pin end A against a support.
2. Turn the lock button B and push the rope release lever H firmly towards the anchor pin end until it locks into position when raised slightly at its limit. Release the lock button B. Both pairs of jaws are now open.
3. Push both lever L1 and L2 towards anchor pin end and insert the wire rope through the rope entry at the opposite to the anchor pin end and push until it passes completely through the machine.
4. Pull the slack rope when it appears through the anchor end.
5. Turn the lock button B, then push the rope release lever H vertically downwards allowing the wire to travel back to its original position.
6. Open the spring clip of the anchor pin and remove it. Slide the anchor pin out and fit the



7. Slide the anchor pin back through both casing sides thoroughly. Fit the spring clip and close its spring.
8. Push upwards levers of both machines (either both L1 or both L2) and place the special double handle T on both L1 or both L2 according to the desired direction of travel.
9. To remove wire rope from the machine, remove the load in it by moving the reverse lever until the rope is slack. Then, proceed as in 2.

griphoist® TMS-600

rated working load 1,320 lbs (600 kg)
wire rope: 5/16" (8.3 mm) diameter

- 1) **WARNING :** Before each operation, check that the **WIRE ROPE** is lubricated and **IN GOOD CONDITION** as explained in the manual.
NOTICE : The TMS-600 must always be used in pairs with a special handle (see manual)
- 2) The machine must be lubricated with SAE 90 to 120 grade motor oil through the lever slots.



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AS TO LOAD CAPACITY ONLY 4005

Misuse of the machine may be dangerous. **BEFORE** operation, it is essential for safety to read and understand the TMS-600 instruction manual supplied with the machine

- 1) Lubricate the mechanism generously and frequently.
- 2) Use only TMS-600 special wire rope.
- 3) Never use a damaged wire rope. See instruction manual.
- 4) When lowering, the **SLACK END** of the wire rope must **ALWAYS** remain **VISIBLE**.
- 5) Never attempt to release the mechanism whilst under load.
- 6) Should the shear pins break, replace them using spare pins located in the rope release lever. See instruction manual.

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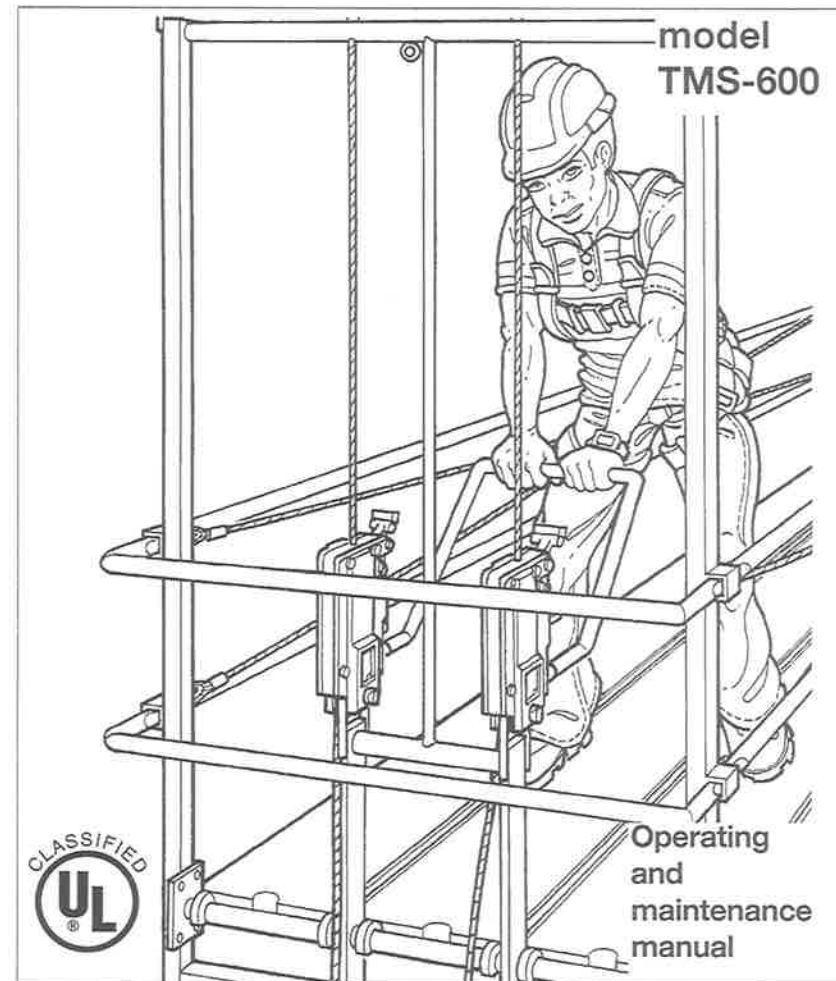
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⚠ GENERAL WARNING ⚠

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.

THIS TMS-600 MACHINE IS A LIFTING MACHINE FROM WHICH A LOAD IS TO BE **SUSPENDED**. THEREFORE SERIOUS INJURY AND EVEN DEATH OF THE OPERATORS **AND OTHERS** MAY RESULT FROM MISUSE OR IMPROPER RIGGING OR MAINTENANCE OF THE HOIST OR OF ITS ROPE, AND FROM NOT FOLLOWING THE INSTRUCTIONS CONTAINED IN THIS MANUAL.

A - It is imperative, for safety and efficiency, that this manual be read and fully understood by the rigger and the operator before rigging or operating the TMS-600 machine, and that all the instructions contained herein be carefully and strictly followed.

B - Always keep this manual ready for reference by the rigger or the operator at any time. Extra copies of this manual are available from TRACTEL. Should this manual not be available on site of operation in due time, do not fail to get another **BEFORE** rigging and operating.

C - Never rig or operate the machine if any warning, operating or capacity instruction, normally attached to the hoist, is obscured or missing, refer to fig.12 and page 16. TRACTEL will supply a new one on request.

D - Before rigging and operating this TMS-600 machine, the rigger and the operator must become aware of and conform to all the requirements of applicable federal, state and local safety regulations, specially those relating to the use of this equipment.

E - Every time the machine is to be rigged or used, check that the machine, wire rope, and installed equipment are in good and safe condition (see chapters 7 and 8). Never operate the machine if damage is noted on it or on the wire rope.

F - A careful and regular inspection of the TMS-600 machine and its wire rope is part of the maintenance requirements for safe operation. Servicing is available from the TRACTEL organization or its authorized representatives.

G - TRACTEL declines any responsibility for the consequences of dismantling or altering the machine, or repairing its wire rope, by anyone who is not authorized in writing by TRACTEL.

H - TRACTEL assumes no liability for the adequacy of particular installations incorporating TMS-600 machines, beyond the information given in this manual, and for use other than described in this manual. For special requirements, TRACTEL can assist on request.

I - Do not hand over this machine for use or rigging to anybody who is not reasonably fit to operate it in a responsible manner

J - The TMS-600 machines are designed exclusively for hand operation. NEVER ATTEMPT TO MOTORIZED OR TO MECHANICALLY OPERATE IT.

⚠ IMPERATIVE INSTRUCTIONS FOR MANRID... ⚠

I - AN OPERATOR MUST NOT BE ASSIGNED TO A SUSPENDED JOB IF HE IS NOT:

- A) COMPETENT FOR THE JOB TO BE PERFORMED IN SUSPENDED CONDITIONS
- B) FAMILIAR WITH ALL SAFETY REQUIREMENTS APPLICABLE TO SUCH CONDITIONS
- C) FAMILIAR WITH THE RIGGED EQUIPMENT
- D) MENTALLY AND PHYSICALLY FIT FOR THE PURPOSE
- E) TRAINED FOR THE ABOVE REQUIREMENTS

II - Rigging must be performed by or under the supervision of a competent person. « failure of rigging » could result in serious injury or even in death.

III - DISMANTLING AND REPAIR OF TMS-600 UNITS MUST BE EXCLUSIVELY ENTRUSTED TO REPAIRERS AUTHORIZED BY TRACTEL. TMS-600 SPARE PARTS IN ACCORDANCE WITH THE SERIAL NUMBER OF EACH MACHINE MUST BE EXCLUSIVELY UTILIZED. NO SUBSTITUTIONS ARE ALLOWED.

IV - Never apply to the machine, or to the platform which is suspended from it, a load or effort exceeding its rated capacity.

V - ONCE THE SUSPENDED PLATFORM HAS BEEN LIFTED OFF ITS INITIAL SUPPORT (GROUND OR ANY OTHER LEVEL), IT IS IMPERATIVE NOT TO REMOVE, ALTER OR OBSTRUCT ANY PART OF THE EQUIPMENT UNDER LOAD.

VI - NEVER ALLOW ANY CONDITION WHICH WOULD ALLOW BOTH SUSPENSION WIRE ROPES TO BECOME **SLACK, DURING THE OPERATION:**

- a) unless the suspended platform is safely supported on a sufficiently resistant level giving a safe access to the operator, in compliance with safety regulations; or,
- b) unless another suspension wire rope has been safely rigged to the suspended platform.

VII - The user, operator and rigger must comply with OSHA regulations relevant for rigging and operating the whole suspended scaffold system. In which the TMS-600 machine is operated.

VIII - A code of safe practices such as reproduced on page 14 and 15 of this manual, should be taken as a minimum general guideline for this purpose and given to the scaffold rigger and user or posted on site.

THE TMS-600 MODEL IS UL CLASSIFIED AS A "MANUALLY OPERATED SCAFFOLD HOIST".

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TMS-600

- A Wire rope exit
- P Anchor pin
- L1 Forward lever
- L2 Reverse lever
- R Rope release lever
- B Lock button
- T Operating handle
- S Shear pin
- E Wire rope entry
- W Wire rope

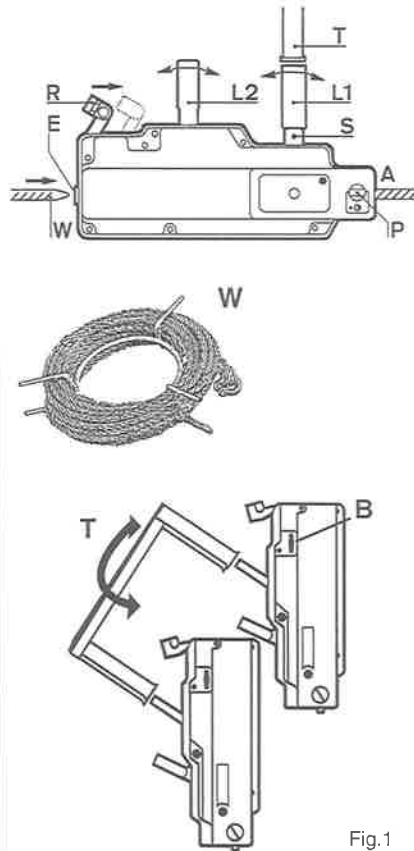


Fig.1

1. INTRODUCTION

The TMS-600 machine is a hand operated wire rope lifting machine used in pairs in a pre-engineered multi-point suspended scaffold system specially designed for manriding.

TMS-600 machines are shipped in a cardboard box which contains:

- the hoist
- this operating and maintenance manual
- a spare parts list
- a guarantee card

They are delivered by pairs with a special double handle. Each equipped wire rope assembly is composed of:

- a wire rope with a welded and tapered round end
- a hook with a safety latch, fitted at the other end by mechanically swaged sleeve and thimble.

TMS-600 machines are wire rope hoists; their special technical design requires that they be used exclusively with the appropriate special TMS-600 wire rope which is specially designed for them.

Δ WARNING: TMS-600 MACHINES MUST BE USED ONLY WITH WIRE ROPE AS SPECIFIED IN TABLE 1 - PAGE 6.

Each TMS-600 unit has been carefully manufactured and assembled from quality materials, and has been individually tested to 25 % overload. It will give you quality service, provided that the instructions of this manual are carefully followed.

2. DESCRIPTION

2.1. Working principle and its advantages

The principle of the TMS-600 machines is based on a unique arrangement of two pairs of grip jaws which are enclosed in a casing. These pairs of grip jaws work like two hands alternately seizing the wire rope to pull it for lifting the load, or retain it during lowering, or slackening, according to the lever which is operated, without any ratchet and pawl mechanism.

ADVANTAGES

A removable handle is connected on each machine to one of the two operating levers, according to the direction of the wire rope movement, and supplies the required leverage. Since no ratchet and pawl system is used, any handle movement moves the load.

1 THE WIRE ROPE MOVES WITH THE UTMOST PRECISION AT THE SLIGHTEST MOVEMENT OF THE HANDLE. THE LOAD IS HELD IN ANY POSITION OF THE OPERATING LEVER.

The jaws are self gripping under the action of the load or effort. The initial pressure which causes the jaws to grip the wire rope and engages them in the self gripping action, is provided by powerful springs.

2 THE HEAVIER THE LOAD, THE STRONGER THE GRIP.

The grip jaws are manufactured to a radius to suit the wire rope diameter. Their surfaces are smooth, and grip the wire rope in a straight line without damaging it.

3 THE WIRE ROPE HAS A LONG LIFE,

Instead of the wire rope being reeled on a drum, as it is on an ordinary winch, it is pulled through the TMS-600 in a straight line.

4 THE WIRE ROPE TRAVEL IS UNLIMITED.

Since the machine and the wire rope are separate parts when not in operation, they can be stored and transported separately.

5 THE MACHINE IS LIGHT AND PORTABLE, WHATEVER THE REQUIRED LENGTH OF WIRE ROPE FOR THE JOB.

6 The machine aligns itself with the wire rope when under load.

TECHNICAL SPECIFICATIONS - TABLE 1

Specification	Units	TMS-600	
Rated load for manriding	kg (lbs)	600	(1,320)
Wire rope breaking strength	kN (lbs)	45	(10,000)
Approx. speed per minute	m.p.m (ft.p.m)	2-3	(7 - 9)
Weight:			
hoist without operating handle	kg (lbs)	8	(19)
operating handle (for 2machines)	kg (lbs)	3	(6,5)
Overall dimensions	mm (ins.)	420	(16 - 1/2)
		222	(9 - 3/4)
		115	(4 - 1/2)
TMS-600 wire rope:			
diameter nominal	mm (in.)	8.3	(5/16)
Construction - Galv. XIPS		4 x 26	
maximum allowed		5 x 26	
Tolerance of NEW wire rope diameter	mm (in.)	8.1 to 8.3	(0,319 to 0,327)

Any odd lengths supplied on request.

Unless specified otherwise, wire rope is fitted with its standard eye hook with safety latch at one end and welded tip at the other end.

NOTE: The rated load includes the weight of lifted personnel and of all the equipment which is lifted with the main load. It is a safe working load.

2.3. Equipment required

The following standard equipment is required:

- a. A pair of TMS-600 machines with their common double handle,
- b. the corresponding wire rope assembly of sufficient length for the job,
- c. oil to lubricate the inner mechanism of the machine and the wire rope.

3. INSTALLATION INSTRUCTIONS

NOTE: Parts mentioned and referenced by a letter are illustrated on page four, Fig. 1.

△ WARNING: BEFORE EACH USE, CHECK THAT THE TMS-600 MACHINE AND ITS HANDLE, THE WIRE ROPE, THE ANCHORING ACCESSORIES AND OTHER EQUIPMENT ARE IN GOOD AND SAFE WORKING CONDITION.

CAUTION: Before using a TMS-600 machine, lubricate generously by pouring motor oil inside the machine through its openings. There is no risk of overlubricating.

CAUTION: Before fitting the wire rope into the machine, always uncoil it in a straight line in order to prevent loops which might untwist strands or form kinks when under tension. The correct and incorrect procedures are shown in Fig. 8.

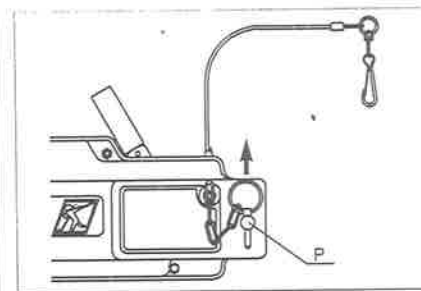


Fig. 2 Anchor locking pin in unlocked position for removing anchor pin

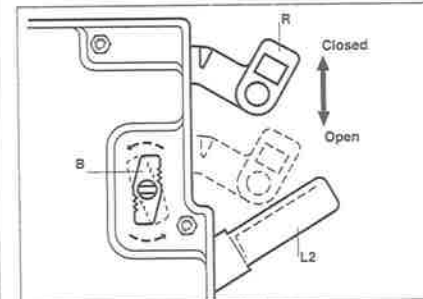


Fig. 3

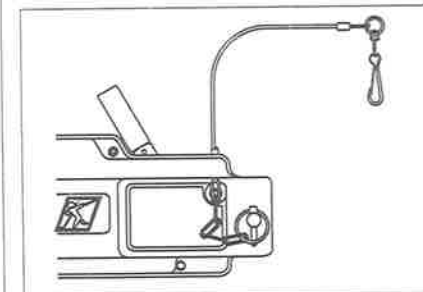


Fig.4 Anchor locking pin in locked position

3.1. Inserting wire rope

- 1- Remove the anchor locking pin (Fig. 2) and withdraw the anchor pin (P).
- 2- Tilt the machine until it rests vertically on its anchor pin end. Turn the lock button B. Push the rope release lever (R) firmly forward towards the anchor pin end, until it locks itself into open position (see Fig. 3). Both pairs of jaws are now open.
- 3- Now, place the machine horizontally. Push both levers (L1) and (L2) towards anchor pin end. Insert the end of the rope through the rope entry (E) at the opposite end from the anchor pin end and push until it passes completely through the machine.
- 4- Pull the slack wire rope through the machine by hand (wear gloves), until it becomes nearly tight on the load. (Allow some extra length for anchoring the machine).
- 5- Position the machine and refit the anchor pin (P) through the eyes of the sling. Refit the anchor locking pin in locking position (see Fig. 4). Ensure that the rope passes beneath the anchor pin. Anchor the wire rope hook. Check that the hook latch is closed.
- 6- To close jaws on the wire rope, push the rope release lever (R) downwards and allow the release lever to return to initial position. Machine is now ready for use.
- 7- Place the handle (T) on lever (L1) to lift or pull, or on lever (L2) to lower or slacken the wire rope.
- 8- To remove the wire rope from the machine, slacken the rope sufficiently so that no load is applied any longer. Remove the anchor pin as explained in 1 and proceed as explained in 2.

3.2. Rigging

△ WARNING: BEFORE EVERY USE, MAKE SURE THAT SUPPORTING STRUCTURES, AND ALL LOAD ATTACHING DEVICES USED IN CONJUNCTION WITH THE TMS-600 MACHINE, ARE INSPECTED, HAVE NOT BEEN ALTERED, AND CONFORM TO THE ENGINEERING DOCUMENTS SET UP FOR THE SPECIFIC JOB AS CONSIDERED.

△ WARNING CHECK EVERY TIME THE MACHINE IS TO BE RIGGED, THAT THE WIRE ROPE IS LONG ENOUGH SO THAT THE SLACK END ALWAYS REMAINS VISIBLE AT THE ANCHOR PIN END OF THE MACHINE.



⚠ CAUTION:
Before operating machine, check that the rope hook latch is closed and that the anchor pin is safely positioned and locked by the locking pin (see Fig. 4).

4. OPERATING INSTRUCTIONS

4.1. General

Place the handle (T) on lever (L1) of each machine for lifting or pulling, or on lever (L2) of each machine for lowering or slackening. When it is left in any position, it will, then, remain stationary. Attach the handle to its lanyards.

The machine are moved along the ropes by moving the operating handle to and fro.

As a TMS-600 machine is not a ratchet and pawl device, the operating handle need not be used through its full stroke; if space is confined, short strokes can be made.

⚠ CAUTION:
For operating a TMS-600 machine, never use any means other than TMS-600 special handle. If damaged, order a new one.

⚠ WARNING:
Never attempt to operate the release lever (R) when the machine is under load.

⚠ WARNING:
NEVER OPERATE THE FORWARD LEVERS (L1) AND REVERSE LEVERS (L2) AT THE SAME TIME.

The rope end emerging from the anchoring end of the hoist must remain slack under all circumstances. It should not be tied to anything, tensioned, loaded or utilized for any purpose.

⚠ WARNING:
WHEN INSERTING THE WIRE ROPE IN THE MACHINE OR WHEN OPERATING THE HANDLE, NEVER FORCE A DAMAGED SECTION OF ROPE INTO THE MACHINE. IF THE WIRE ROPE APPEARS DAMAGED, TAKE THE LOAD ONTO ANOTHER SAFE LOAD SUPPORTING LINE AND REMOVE THE MACHINE AND WIRE ROPE IMMEDIATELY.

4.2. Removing the wire rope

As the jaws are locked by the effort on the wire rope, the tension must first be removed. Slacken the rope completely by a few strokes on the reversing levers. When the tension has been removed, open the jaws by placing the release lever (R) on the open position, and remove wire rope by hand. Always handle wire rope with gloves to avoid injury.

4.3. Special notices

NOTE: The rated load for each hoist includes the weight of lifted personnel, of the platform and of all equipment, tools and materials as well as of any other items supported by the hoist.

CAUTION: In case of welding operations on a suspended platform or of any other work operating with a source of heat, take care to protect the wire ropes. An electrode can damage or cut a wire rope if contacted.

CAUTION: Special care must be taken for protecting and cleaning the TMS-600 when it is rigged and used for sand-blasting operation or under any contaminating conditions (cement, compound spray, etc. . .). Protection can be improved by individual covers. Special attention should be paid to overhaul and maintenance under such circumstances.

CAUTION: Check, before any operation, that there is enough wire rope to reach to the ground with about three feet extra for ensuring safety. Ensure that the hanging wire rope does not interfere with any structure, electric cable, etc... and does not cause danger to the environment. If it is not possible to secure a sufficient length of rope, it is imperative for safety to loop and clamp the bottom end of the wire rope as shown on Fig. 5.

CAUTION: Special care should be taken, attaching, for the handle on to the machine, by its anchor pin and lanyard. The operator must ensure that the handle cannot fall out of the platform.

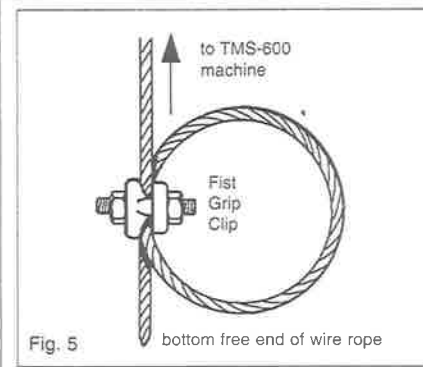


Fig. 5

5. OVERLOAD PROTECTION

5.1. Overload Protection Device

On TMS-600 machines the forward lever (L1) is connected to the crankshaft by means of one overload shear pin (See Fig. 6).

NOTE: The diameter and the composition of these shear pins have been predetermined to shear in case of noticeable overload, depending on working conditions.

This protects the machine from severe overloading. Although sheared pins prevent further lifting, reverse action is still possible using the reversing lever (L2) to remove the load.

Spare overload shear pins will be found inside the rope release lever (R). Just remove the plastic cap of the lever.

5.2. Replacement of shear pin

NOTE: Always have sufficient quantity of spare shear pins in stock so as to avoid interruption of work, in case of incident.

Broken shear pins can be replaced in a few minutes. Stop operating or lower the load, leave machine under light tension to facilitate the operation.

Remove shear pin by means of a pin punch. Align upper and lower parts of the forward lever (L1) and drive in the new shear pin smoothly, with a hammer. Place the side of the forward lever on a supporting plate while doing it

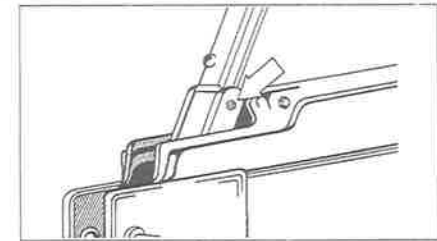


Fig. 6 Overload shear pin.

The machine is again ready for use.
NOTE: Do not use the shear pin to measure the maximum load to be lifted. It is an overload protective device only.

⚠ WARNING:
USE ONLY TMS-600 OVERLOAD SHEAR PINS. THE USE OF NON-STANDARD SHEAR PINS OR OF ANY OTHER MATERIAL COULD DAMAGE THE TMS-600 MACHINE, OR ALLOW A SEVERE OVERLOAD. NEVER WELD SHEAR PIN HOLES.

NOTE: The manufacturer will reject any liability in case of injury or damage caused to or by a TMS-600 machine on which the original TMS-600 shear pins have been replaced by any other means.

6. WIRE ROPE

The special TMS-600 wire rope has been developed specially to meet the requirements of the TMS-600 machine. Refer to table 1 - page 6.

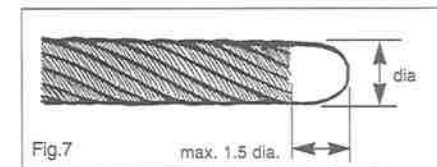


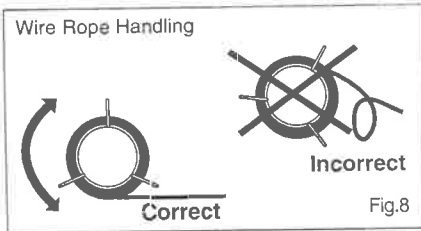
Fig.7

⚠ WARNING:
OTHER WIRE ROPES MAY DEFORM UNDER PRESSURE OF THE JAWS, OR DEVELOP OTHER DEFECTS CAUSING MALFUNCTION OF THE MACHINES. FOR THIS REASON USE ONLY THE SPECIAL TMS-600 WIRE ROPE, WHICH CAN ALONE ENSURE PROPER AND SAFE WORKING OF YOUR MACHINE.

△ WARNING:
BEFORE INSERTING WIRE ROPE INTO THE MACHINE, CHECK EVERY TIME, THAT YOU INSERT A WIRE ROPE HAVING THE PROPER DIAMETER. FOR WORN WIRE ROPE SEE SECTION 7.2.

CAUTION:
Before inserting the wire rope into the machine ensure that it is in good condition and wiped clean (metal brush). For longer life and better performance, the wire rope should be kept oiled regularly.

△ WARNING:
DAMAGED WIRE ROPES ARE DANGEROUS AND, SPECIALLY, KINKED OR CRUSHED WIRE ROPES WILL NOT WORK IN THE TMS-600 MACHINE. FOR THIS REASON:



- Never bend the wire rope over sharp edges.
- Never subject the wire rope to abrasion by rubbing over sharp edges.
- Never expose the wire rope to temperatures beyond 212° F (100° centigrade).
- Never use wire rope that has been subject to damage such as fire, corrosive chemicals or atmosphere, or exposed to electric current, etc. . .
- To avoid unwrapping the strands, never allow a wire rope which has a load, to rotate, specially for long hanging wire ropes.

CAUTION:
If you hold in your inventory several types or sizes of wire rope mark the TMS-600 model on each rope reel or thimble so as to avoid using wrong diameter rope in a machine. This would be very dangerous (see second warning on this page).

NOTE:
THE MANUFACTURER DECLINES ALL RESPONSIBILITY FOR MACHINES USED WITH A WIRE ROPE OTHER THAN WIRE ROPE AS SPECIFIED IN TABLE 1 - PAGE 6, OR WITH A WIRE ROPE WHICH HAS BEEN ALTERED BY ANYONE WHO IS NOT AUTHORIZED BY TRACTEL INC.

△ CAUTION:
When the anchoring end of a wire rope is fitted with an eye assembled by bolted clamps, CHECK BEFORE EACH OPERATION THAT THE CLAMPS ARE CORRECTLY FITTED for holding the load with a proper safety factor. Refer to safety regulations for proper fitting (see section 7.2.3.).

7. MAINTENANCE AND LUBRICATION

△ WARNING
PROPER MAINTENANCE AND LUBRICATION OF MACHINES AND ROPES ARE THE BEST GUARANTEE FOR THE GOOD WORKING AND SAFE USE OF TMS-600 MACHINE. CONDUCT PERIODIC VISUAL INSPECTIONS OF MACHINE AND WIRE ROPE, AND ENSURE THAT NECESSARY LUBRICATION AND REPAIRS ARE MADE.

△ WARNING:
Greases and oils containing additives such as molybdenum disulphide or graphite must not be used in TMS-600 machines and on their wire ropes, as it might reduce the gripping efficiency of the jaws.

7.1. Machine

Although the casing provides good protection, dust and dirt can penetrate into the mechanism through the openings of the casing, as well as through the guide holes of the wire rope. The machine should therefore never be left lying about in mud, and the wire rope should be cleaned before it is introduced into the machine.

For storage, the TMS-600 machine should be left with its release lever (R) in the closed working position, and well oiled. This will extend the life of the pre-gripping springs.

7.1.1. Lubrication

Lubricate the machine frequently, including each time before the machine is rigged or used.

For normal lubrication, squirt SAE 90 to 120 motor oil through the openings of the casing. To allow lubricant to penetrate to all the parts of the mechanism, alternately operate forward lever and reversing lever, preferably with jaws open. (If not under load). Lubrication may also be provided without releasing in operating conditions. Without wire rope in the machine, it is important that, for total penetration of oil into the jaw assembly, the release lever (R) be open. Otherwise oil does not easily get into the gripping mechanism.

NOTE: An excess of lubrication will not cause the wire rope to slip. Lack of lubrication is the greatest cause of malfunction.

7.1.2. General maintenance cleaning

Dip the machine into a cleaning solvent that will not attack nylon or rubber. Shake well to dislodge foreign materials and turn the machine quickly upside down to drain. Then do not fail to thoroughly lubricate as indicated in.

7.1.3. Thorough cleaning of very dirty machine

For thorough cleaning of the machine, it is necessary to unbolt and remove casing, and to fully lubricate after cleaning.

△ WARNING:
CONSIDERING THAT CERTAIN PRECAUTIONS HAVE TO BE TAKEN FOR DISMANTLING AND REASSEMBLING THE CASING, THE ABOVE OPERATIONS MUST BE DONE ONLY BY A REPAIR SHOP AUTHORIZED BY TRACTEL.

NOTE:
The manufacturer declines any responsibility for the consequences of dismantling the machine by anyone who is not authorized by TRACTEL.

7.1.4. Overhaul servicing

CAUTION:
Periodic inspection and overhaul servicing of the TMS-600 machines by TRACTEL authorized repairers (at least once per year) will provide the best working condition of each machine and protect against the risk of worn or damaged machines. If used in contaminated environments (abrasive or caustic materials, cement, compounds, etc. . .) the machine should be returned for inspection, at least every three months, to a TRACTEL authorized service center.

7.1.5. Repairs

A spare parts list is shipped with machine in order to allow the customer to communicate with the repairer. **TRACTEL strongly recommends shipping any machine for repair only to a TRACTEL authorized repairer.**

7.2. Wire rope

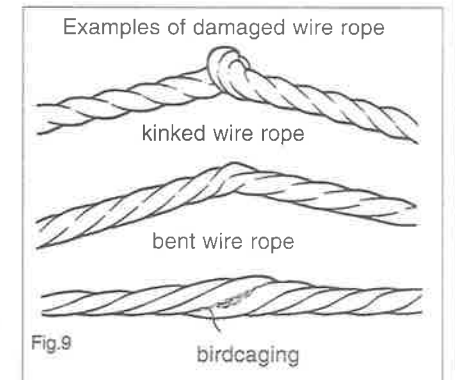
7.2.1. General

Periodically clean and oil it with a rag soaked with motor oil SAE 10 W 40 or equivalent **WITHOUT** molybdenum disulphide or graphite additive.

△ WARNING
Any abnormal appearance on the strands or wires of the wire rope should be considered as weakening the strength of the wire rope. In such a case replace it.

△ WARNING
Wire rope must be replaced, if any of the following conditions is noted :

- Protruding or broken wires or strands,
- Bending, loops, kinking, crushing, birdcaging, or any other distortion of the wire rope structure (See fig. 9),
- Excessive corrosion,
- Heat damage, evident through discolored wires,
- Reduction from nominal diameter of the wire rope by more than 10 %.



Note : We recommend consulting the «Wire Rope Users Manual» published by American Iron and Steel Institute, for a comprehensive list and pictures or examples of critical inspection and replacement factors for wire rope.

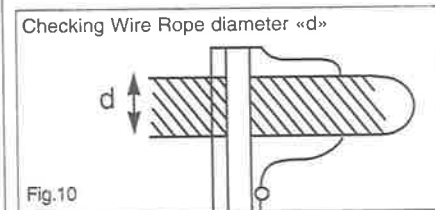
CAUTION :
Ropes with unwelded or damaged ends must be removed, and ends must be properly rewelded and groundround. Preparing and repairing wire rope is a specialist's job.

CAUTION :
Damaged wire ropes may injure without gloves. Always wear gloves to protect hands when handling a wire rope. After use, coil the wire rope on its reeler and store it in a dry location.

7.2.2. Measuring rope diameter

⚠ WARNING
CHECKING THE WIRE ROPE DIAMETER IS OF THE UTMOST IMPORTANCE.

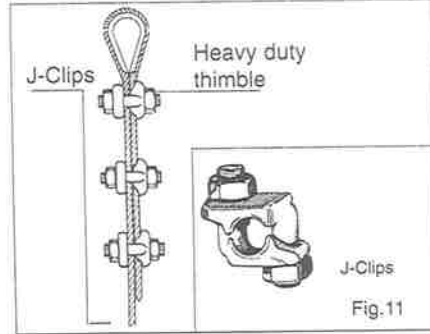
The correct diameter of the wire rope is the diameter of a circumscribed circle, which will enclose all strands. The measurement should be made carefully with precision calipers. Fig.10 shows the correct method of measuring the wire rope diameter. Inspect your wire ropes at regular intervals and at least every six months, keep records.



7.2.3. Clamping of wire rope end loops

In some cases, the TMS-600 user may be obliged to use wire ropes which have been cut and are fitted with a loop around a thimble, which is fixed by means of wire rope J-clips.

In such cases, the user must check that the following rules are respected. The clips used for that purpose must be of the type shown on Fig.11 and made of forged steel. They must meet Federal specification FF-C-450 Type III. Thimbles must be heavy duty models.



The following method is recommended for applying such J-clips:

- 1) Turn back the specified amount of rope from the thimble (see table below). Apply the first J-clip one base width from the dead end of the wire rope. Screw on nuts firmly.
- 2) Apply the next J-clip as near the loop as possible. Screw on nuts firmly, but do not tighten.
- 3) Space additional J-clip if required equally between the first two. Screw on their nuts. Then tighten all nuts evenly on all J-clips to recommended torque (see table below).
- 4) **CAUTION :** Apply the rated load and retighten nuts to the recommended torque. Rope will stretch and shrink in diameter when loads are applied. Inspect periodically and retighten.

The tightening torque values shown are based upon the threads being clean, dry and free of lubrication.

Wire rope diameter inch (mm)	Min. number of J-clips	Minimum amount of w.r. to turn back inch (mm)	Torque in ft / lbs (m / k g)
5/16 (8)	3	7.5 (200)	30 (7)

Note : If a greater number of J-clips is used than shown in the table, the amount of rope turnback should be increased proportionately.

⚠ WARNING
ONLY WIRE ROPE SECTION IN GOOD CONDITION AS NEW MUST BE USED FOR LOOP CLAMPING. ABOVE INDICATIONS ARE GIVEN ONLY FOR WIRE ROPES DESCRIBED IN THIS MANUAL.

When setting a J-clip on the wire rope, check that the size of the J-clip is appropriate for the wire rope diameter.

8. TROUBLESHOOTING

TMS-600 machines are designed to be troublefree. However, from time to time, certain problems may occur. These mainly result from insufficient oiling and cleaning, or from damaged wire ropes.

8.1. Pumping

A lack of lubricant in a TMS-600 hoist sometimes causes a condition known as "pumping". As the forward lever is moved to and fro, the machine moves up and down (if used for lifting) by about one inch. Pouring motor oil inside the casing, if the situation allows, should remedy it. If this cannot be done, then lower the machine or the load back to the ground by operating the reversing lever (L2), which is not affected by this trouble. The TMS-600 hoist should then be thoroughly lubricated with motor oil and it will be ready again for service.

8.2. Jerking

Another symptom of the lack of lubrication is jerking when lowering a load. Thorough oiling will cure that trouble.

8.3. Other problems

WARNING:
IN CASE OF OTHER PROBLEMS WHICH CANNOT BE CURED BY LUBRICATING, STOP OPERATING THE MACHINE IMMEDIATELY AND DO NOT CONTINUE USE.

Should damaged or badly maintained wire rope become jammed in the machine, place another lifting or pulling device or load line into a safe position in order to take the load, and remove the faulty unit with its rope. Then, if the rope is blocked inside the machine, cut it outside the casing, leaving the short damaged wire rope inside, and send back the equipment to TRACTEL, or to one of its authorized repairers.

Always concerned to improve the quality of its products, the manufacturer reserves the right to modify the specifications without prior notice.

9. Labels of TMS-600

Left side



Right side

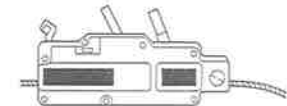


Fig.12

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

It shall be the responsibility of all employees 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, that statute or regulation shall supersede these guidelines. It is the responsibility of each user to comply therewith.

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 MANUFACTURER'S RECOMMENDATIONS** as well as all state, local and federal codes, ordinances and regulations, pertaining 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 powered scaffold systems.
- D. **INSPECT ALL EQUIPMENT BEFORE USING.** 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.**
- 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 SCAFFOLDS MUST NEVER BE OPERATED NEAR LIVE POWER LINES** unless proper precautions are taken. Consult the power service company for advice.
- N. **ALWAYS WEAR FALL ARREST EQUIPMENT** when using suspended powered scaffolds.
- O. **DO NOT WORK ON 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 the influence of alcohol or illegal drugs.

II. GUIDELINES FOR ERECTION AND USE OF SUSPENDED SCAFFOLD SYSTEMS

A. RIGGING :

1. **WEAR FALL PROTECTION 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. **OVERHEAD RIGGING, INCLUDING COUNTERWEIGHTS,** must be secured from movement in any direction.
5. **COUNTERWEIGHTS USED WITH OUTRIGGER BEAMS** must be of a non-flammable 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 PORTABLE 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 kinking or damage.
6. **TIGHTEN WIRE ROPE CLAMPS** in accordance with the clamp manufacturer's instructions.
7. **DO NOT USE WIRE ROPE THAT IS KINKED, BIRDCAGED, CORRODED, UNDERSIZED, OR DAMAGED IN ANY WAY.** Do not expose wire rope to fire, undue heat, corrosive atmospheres, chemicals or damage by rough handling. Insulate wire rope from contact with electrical current.
8. **USE THIMBLES AT ALL WIRE ROPE SUSPENSION TERMINATIONS.**
9. **USE J-TYPE (FIST GRIP) CLAMPS OR SWEDGE FITTINGS.** Do not use U-bolts. Retighten with grips under load and retighten daily.
10. **WIRE ROPES USED WITH TRACTION HOISTS MUST HAVE PREPARED ENDS** in accordance with the manufacturer's recommendation.

C. POWER SUPPLY :

1. **GROUND ALL ELECTRICAL POWER SOURCES AND POWER CORD CONNECTIONS** and protect 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 TO ATTACH POWER CORDS TO THE SUSPENDED SCAFFOLD** to prevent them from pulling.
5. **PROTECT POWER CORDS AT SHARP EDGES.**

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.
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 OR SIZE AND CONSTRUCTION** that are compatible with the fall device used.
8. **ASSURE FALL ARREST IS INSTALLED ON THE LIFELINE IN THE PROPER DIRECTION** and in accordance with the manufacturer's recommendations.
9. **KEEP FALL ARREST ABOVE YOUR HEAD LEVEL.**
10. **USE ONLY BODY HARNESSSES** of the proper size and that are tightly fastened.
11. **ASSURE BODY HARNESS HAS LANYARD** attachment with D-ring at the center of your back.
12. **CONSULT FALL PROTECTION SUPPLIER FOR INSPECTION PROCEDURE AND IN THE EVENT YOU ARE UNSURE OF YOUR FALL ARREST SYSTEM OR ITS COMPONENTS.**
13. **WHEN SECONDARY WIRE ROPES ARE USED,** a horizontal lifeline secured to two or more structural members of the scaffold may be used in lieu of vertical lifelines.

E. 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 recheck rigging to manufacturer's recommendations.
4. **INSPECT ALL RIGGING EQUIPMENT AND SUSPENDED POWERED SCAFFOLD 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 (4) FOUR 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 RERIGGING 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.

These safety guidelines set forth some common sense procedures for safety 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.

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