Griphoist-Tirfor
TU-17/TU-8 & TU-28/TU-16

Date: 04/05/04
Version: 2a

Service and Maintenance Manual
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Manually operated scaffold hoists, Model TMS-600, maximum load 1320 lbs; Model TU-17, maximum load 1500 lbs; Model TU-28, maximum load 3000 lbs; Model TU-32, maximum load 6000 lbs; Model 408, maximum load 880 lbs.

Pneumatic scaffold hoists, Models ATH32L, -32LB, XA300P, -300PB, maximum load 700 lbs; Models ATH35C ATH35X, -35XB, LA500P, XA500P, -500PB, maximum load 1000 lbs; Models XA700P, -700PB, XA720PB, maximum load 1500 lbs; Model XA1030PO, maximum load 1850 lbs; Model TA1020P, maximum load 2000 lbs; Model XA1020P, maximum load 2400 lbs; Model XA2050P, maximum load 4400 lbs; Model XA2650P, maximum load 5300 lbs.

Independent secondary brakes, Model BS15.301, maximum load 1500 lbs; Model BS20.301, maximum load 3000 lbs; Model BS35.30, maximum load 6000 lbs.

Modular work platform, “Modular Staging”, 2 to 12 m, rated 750 lbs; Models KD01, MP03, 2 to 18m, rated 750 to 1500 lbs; “PFD”, 2 to 15m, load 6000 lbs.

Work Cages, Model PMR0700D, PMR0701D, VSMV-PMR0710D, rated 1000 lbs; Model WC01, rated 400 lbs.

This equipment consists of separate parts inspected at the factory by Underwriters Laboratories Inc. and is intended for use in complete installations. Installations are not inspected by Underwriters Laboratories Inc. but should be made in accordance with requirements of authorities having jurisdiction.
Tools required

Hammer
Screwdriver (Flat head)
Gear puller
Pliers
Wrenchs
  -10mm (TU-17 / TU-8)
  -13mm (TU-28 / TU-16)
2 nails (for jaw spring compression)
General purpose grease

General Inspection

Check for casing deformation or damage as shown above. Severe deformity needs casing replacement. Small dents can be hammered flat on an anvil.
Disassemble TU-17 / TU-8

Use a gear puller to remove power stroke lever and shear pins.

Remove the handle and aluminum shear pins. (2 shear pins for TU-17, 3 shear pins from TU-28) If shear pins are broken, hoist has been overloaded. If shear pins have been replaced by steel fasteners, screws or welded the crankshaft / power stroke lever assembly must be replaced.

Place Tirfor on vice for easier removal of casing screws.

2 sets of spare shear pins are found in the power stroke lever under a plastic cap. If missing replace them.

Check that mushroom capped rivet is in place. It holds the telescopic handle in place.
Remove casing screws.
10mm wrench TU-17 / TU-8

Check for wear or any loose parts (snap rings) inside casing cover.

Check that both casing bushings are in place and in good condition. No splits, etc.

Remove casing cover once casing screws are removed.
Check for bent safety latch on hook. Repair or replace as necessary. Check latching function. Make sure that the hook is not opened due to a tip load.

Check for roller damage. If axle has punched out hole in center of roller replace it.

Broken roller (TU-17/TU-8) as shown above need to be replaced.

Use pliers to adjust bent safety latch. Side plates should be parallel.

Check that clutch pusher has not been mushroomed by hammering. This shows that user tried to move it with anchor hook extended.
Disassemble the two jaw blocks

Remove pin snap ring (5 mm) from upper pin of reversing lever (Position 040) and clutch pin (Position 041)

Push pins through reversing lever and disassemble reversing lever connecting rod

Remove pin snap from reversing lever pin (Position 39) and remove reversing lever connecting rod from assembly.

Remove pin snap from crankshaft connecting rod (Position 919) and remove crankshaft power stroke lever. Check that nylon bushings are in place and not broken.
Compress the springs and place a nail in jaw spring shaft before removing spring from jaw assembly.

Inspect jaw wear and replace when necessary. (see appendix B for jaw inspection)

Dissassemble front jaw the same way.

Thoroughly clean and inspect all parts before reassemble. New grease must be applied for reassembly.

Warning! Do not use any grease with graphite or molydisulphide. These can cause slippage between the wire rope and jaws.

Warning: Never remove jaw pins until springs has been compressed and nail is placed through hole in shaft to prevent it from flying upon disassembly.
Generously grease each part and start assembly by laying down jaw actuating cam and free cam (Position. 14 & Position. 15).

Assemble jaw as shown above. (Refer to exploded view in appendix A for assembly)

Note: Make sure to apply extreme pressure grease to the jaw keys. Lack of lubrication on the S shaped jaw keys can cause the jaws to stick and “pumping occurs where the rope does not advance through the machine when operating.
Slide rear jaw connecting plate over the jaw assembly. Be careful that the S shaped jaw keys do not fall out.

Place 4 flat washers and 1 spacer in to assembly for complete rear jaw assembly. (Refer to appendix A for exploded assembly view)

Place spring in position, apply pressure to aw cam to compress the spring slightly and remove the nail. Finalize assembly by placing pin snap back on pin and center the axle for the rollers.
Grease nylon roller and place roller with washers on to jaw assembly pin. (Position 034)

Place crankshaft on to rear jaw connecting plates. Make sure that the stop pin is recessed in the side plate slot.

Generously grease each part and assemble jaw the same way as rear jaw.
Place bushing between free cams. Place jaw assembly into front jaw assembly plate. Place 4 flat washer and pin in alignment. Once assembly finalized, remove nail and secure pin in assembly by pin snap ring.
Grease roller and place roller on jaw assembly pin on guide roller. (Position. 034)

Connect front and rear jaw with crankshaft. (Position. 919)

Secure crankshaft connecting pin with pin snap ring.

Start reversing lever assembly by fasten lever in place with reversing lever pin (Position. 039)
Place spacer and fasten reversing lever connecting rods with reversing lever pin. (Position. 039)

Assemble reversing connecting rods (Position.021) to Reversing lever (Position. 903)

Assemble clutch actuating lever sub assembly to reversing lever. Secure assembly with pin and pin snap ring.
Grease right hand casing and check for casing deformity, nylon bushing, and bearing wear.

Make sure casing spacer thread (Position 045) is fastened before placing the jaws into cover.

Place jaws into casing and tuck the spring on clutch actuating lever in to casing. Use a vise grip to hold clutch actuating lever in place.
Assemble clutch lock pusher into casing.

Place rope entry in position.

Place anchoring hook in position.

Place left hand casing over assembly.

Start tightening all casing screws.
Place hoist on vise for easier assembly.

Make sure casing flange is in place for fastening.

Fasten through casing screw.

TU-17 / TU-8 & TU-28/TU-16 Physical Differences

TU-28 appears to look like the TU-17 with the exception in size and several minor differences which are described below.

The Hook

TU-28 shown above has a loose casing strengthener to reinforce the area around the hook. 

TU-17 shown above does not have a loose casing strengthener, but has reinforcement in the hook area of the casing.

TU-28 has a carrying handle.

TU-17 does not have carrying handle.

The clutch lock pusher with spring

TU-28’s clutch lock pusher with.

TU-17’s clutch lock pusher with spring.

TU-28’s crankshaft w/ power stroke lever has 3 aluminum shear pins.

TU-17’s crankshaft w/ power stroke lever has 2 aluminum shear pins.
TU-17 Dimensions

Telescopic Control Lever

<table>
<thead>
<tr>
<th>Rated Load lbs. (kg)</th>
<th>Wire Rope in. (mm)</th>
<th>Effort to control lever lbs. (kg)</th>
<th>Rope Travel in. (mm)</th>
<th>Dimensions in.</th>
<th>Weight lbs. (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,000 (800)</td>
<td>5/16 (8.3)</td>
<td>79 (36)</td>
<td>40 (18)</td>
<td>2.4 (50)</td>
<td>10.6 (270)</td>
</tr>
</tbody>
</table>

Tractel Group
Griphoist Division
TU-28 Dimensions

Telescope Control Lever

<table>
<thead>
<tr>
<th>Rated Load lbs. (kg)</th>
<th>Wire Rope in. (mm)</th>
<th>Effort to control lever lbs. (kg)</th>
<th>Rope Travel in. (mm)</th>
<th>Dimensions in.</th>
<th>Weight lbs. (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.000 (1,600)</td>
<td>7/16 (11.5)</td>
<td>119</td>
<td>44</td>
<td>2.2 (56)</td>
<td>2.8 (70)</td>
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Tractel Group
Griphoist Division
The hydraulic powered Tifors are special machines that is powered by a self-reciprocating hydraulic cylinder. Since fatigue of the operator is not a factor, these machines are typically used for heavy loads over a longer distance. For extra durability and more severe service, the hydraulic machines have bearings in place of bushings and heat treated components.
TU-28H vs. TU-28 Comparison

TU-28H is a hydraulic powered device. It differs from a regular TU-28 in the components used. Below are illustrations of the differences.

Power stroke lever shown above clearly demonstrates the difference between a hydraulic unit which is on the left and a standard unit on the right.

Note: Shear pins for hydraulic units are steel compared to aluminum for regular hand operated unit.

Crankshaft for hydraulic units has needle bearings demonstrated above on the left vs. standard hand operated unit which does not have bearing shown on above right.

Hydraulic unit has tapered hook base shown on left vs. rigid base on a regular hand operated unit shown on right.

Left picture shows reinforced TU-28H casing with needle bearing vs. right picture that has nylon bushing for standard hand operated unit.

Both front and rear jaws for hydraulic unit has red paint indicating extra hardening shown on above left.
## Appendix A

### Exploded View for TU-17

<table>
<thead>
<tr>
<th>N°</th>
<th>SSA</th>
<th>Code</th>
<th>TSI</th>
<th>N° per machine</th>
<th>Assemblies complete</th>
<th>Description</th>
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<td>901</td>
<td>4227</td>
<td></td>
<td>528</td>
<td>244</td>
<td>corner base with power stroke lever</td>
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<td>corner base with power stroke lever</td>
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</tbody>
</table>

**Important Note:** When ordering spare parts, please mention code "n° of parts required" as well as serial number of machine in need of repair.
Appendix B

Jaw inspection

The Wear on the jaws of the tirfor hoists is generally very small. It is nevertheless recommended to check periodically the wear when inspecting and repairing the machines. This checking can be made on mounted jaws.

1) Introduce the measuring rod (see table for diameter according to model) between both jaws;

2) Place a square under jaw assembly pins:
   a) if the hole of reversing lever pin is still partially covered by the square, the jaws are OK;
   b) if this hole is completely uncovered, the jaws are worn and must be replaced. In this case, better check also the other wear parts mentioned in the list hereunder and eventually replace them at the same time.

![Diagram of the jaw assembly with wear indicators and a table showing the parts list and their code numbers.](image-url)