	<p>U.S. Department of Agriculture Forest Service</p> <p>JOB HAZARD ANALYSIS (JHA) References-FSH 6709.11 and -12 (Instructions on Reverse)</p>	<p>1. WORK PROJECT/ACTIVITY Gripchoist Use</p> <p>4. NAME OF ANALYST Multiple</p>	<p>2. LOCATION Los Padres National Forest</p> <p>5. JOB TITLE Gripchoist Use</p>	<p>3. UNIT MRD/SLRD/MPRD/ SBRD/ORD</p> <p>6. DATE PREPARED 01/06/2015</p>	
<p>7. TASKS/PROCEDURES</p> <p>Preparing to Use the Gripchoist Ensuring compliance with all applicable OSHA rigging regulations 1926 and 1910 and their subparts</p>		<p>8. HAZARDS</p> <p>Injuries resulting from lack of training</p> <p>Unmaintained Equipment</p> <p>Using equipment not rated for the job</p> <p>Injuries due to improper PPE</p> <p>Unprepared for injuries</p>	<p>9. ABATEMENT ACTIONS Engineering Controls * Substitution * Administrative Controls * PPE</p> <p>All gripchoist crew members directly involved in rigging operations should be trained and supervised by experienced gripchoist operators.</p> <p>Gripchoists should be serviced at least one a year by removing the case, dropping in 5 gals of paint thinner, inspecting and repairing parts, reassembling and dropping in 5 gals of 90 to 120 wt motor oil before assembling the case back on.</p> <p>Gripchoist accessories such as slings, snatch blocks and towstraps should be inspected before and after use for damage or defects by a competent person.</p> <p>A record of inspection must be kept.</p> <p>Rigging equipment should have permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load, not be in excess of its safe working load using a safety factor of 5:1</p> <p>A load calculation should be done before every operation.</p> <p>When using multi part pulls, make sure that the additional mechanical advantage does not exceed the safe working load limits of anchors, shackles or other system components.</p> <p>Make sure that users understand the safe working loads, angle limits and basic techniques of using snatch blocks.</p> <p>Slip hooks and blocks should be equipped with operational gates.</p> <p>Hardhats are mandatory as well as safety glasses, leather gloves long pants, long sleeves and durable boots with skid resistant soles.</p> <p>Gripchoist users should have a minimum type 4 first aid kit and emergency action plan at the work site.</p>		

Injury due to improper SOPs

Crew leaders will conduct appropriate tailgate safety sessions to provide orientation, discuss project, safety concerns, assign roles, etc.

- Size Up
 - What is the objective?
 - What are the hazards?
- Estimate Weights
 - Weight x Volume
- System Design
 - Calculations
 - Anchors
 - Components
 - Attachments
- Inspection, Safety, Plan, Test

Injuries from poor communication

Crewmembers should be aware of their surroundings, the location of other crewmembers and other trail users while using the griphoist.

Good communication between crew members should reinforce individual awareness of real and potential hazards.

Communication methods and jargon should be discussed and agreed upon prior to moving materials.

Instruction should come from one person.

If at any point, a job is deemed unsafe, workers should feel entitled to stop until the right conditions exist to get the job done safely.

Setting up the griphoist, trouble shooting

Explore options, fill holes, build structures to maximize safety, especially on steep or loose slopes.

Clear the escape routes and area of hazards and debris.

Post lookouts on trails in either direction and below switchbacks.

Questions to ask:

- Where is the most useful location for setting up the operation?
- Are there any conflicts with the public?
- Where is the direction of pull?
- What are the types and soundness of anchors?
- What will happen if the anchor fails?
- What will happen if equipment fails?
- Are snatch blocks necessary or beneficial to safety?
- Where is the greatest strain placed on the system?

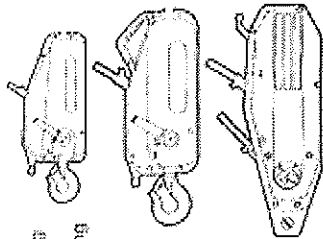
<p>Using/operating system</p>	<p>Injuries from equipment</p>	<p>- Will the load clear obstacles in its path? -What is the worst case scenario? -How can equipment be retrieved safely at the end of the pull? -Is there anyway to retain safety and function, yet reduce the system to fewer components?</p> <p>Workers should never: - step, sit, straddle, or stand on the cable - occupy the "dead man" zone -needlessly touch a cable under tension</p> <p>When moving materials or applying tension, workers need to remain aware of direct and potential hazards and position themselves in such a way to minimize their exposure.</p> <p>Shock loading is prohibited.</p> <p>Slings and other accessories should not be shortened with knots, bolts or other devices and be padded or otherwise protected from sharp edges.</p> <p>Workers should be kept clear of loads about to be moved.</p> <p>Makeshift links or fasteners should not be used.</p>	<p>11. TITLE</p> <p>Santa Lucia + Mt. Pinos District Ranger</p> <p>SIBED- ORD District Ranger</p> <p>MAD</p>	<p>12. DATE</p> <p>3/15/17</p> <p>3/23/17</p> <p>4-3-17</p>
<p>Job Completion</p>	<p>Injuries due to rigging equipment left unattended</p>	<p>10. LINE OFFICERS' SIGNATURES</p> <p><i>[Signature]</i></p> <p><i>[Signature]</i></p> <p><i>[Signature]</i></p>		

(over)

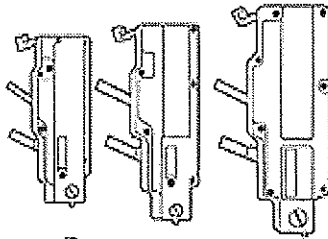
Technical specification

model	Approx speed per min. (rpm)	nominal capacity lbs (kg)	weight machine lbs (kg)	lvs (kg) wire rope	dimensions in. (mm) machine	special TIRFOR w. l. dia. in. (mm) ext./folded	special TIRFOR w. l. break strength (lb) (kg)
TU-17	7-9	2,000* (1,500)** (650/600)	18.5 (8.4)	30/19m 8 (3.6)	20-3/4x9-3/4x4-1/2 (528x284x113)	28/18 (730/450)	10,000 (4,500)
TU-26	7-8	4,000* (3,000)** (1,600/1,200)	41 (20)	60/19m 28.9 (13)	28x13x5-3/4 (650x350x145)	45/26 (1147/648)	20,000 (9,000)
TU-32	5	8,000* (6,000)** (3,200/2,400)	59.5 (27)	30/19m 8 (3.5)	27x13x5-1/8 (655x355x156)	45/26 (1147/648)	40,000 (18,200)
T-508	7-9	2,000* (600)	14.25 (6.5)	30/19m 8 (3.5)	16-1/2x9-7/8x3-7/8 (420x250x99)	27/16 (680/405)	10,000 (4,500)
T-516	6	4,000* (1,000)	30 (13.5)	60/16m 28.9 (13)	20-7/8x12-7/16x5 (530x315x127)	45/26 (1147/648)	20,000 (9,000)
T-532	6	6,000* (3,200)	51 (24)	30/19m 8 (3.5)	24-7/16x14x5-1/8 (631x357x148)	45/26 (1147/648)	40,000 (18,200)

TU
range
material
handling
and
expanding

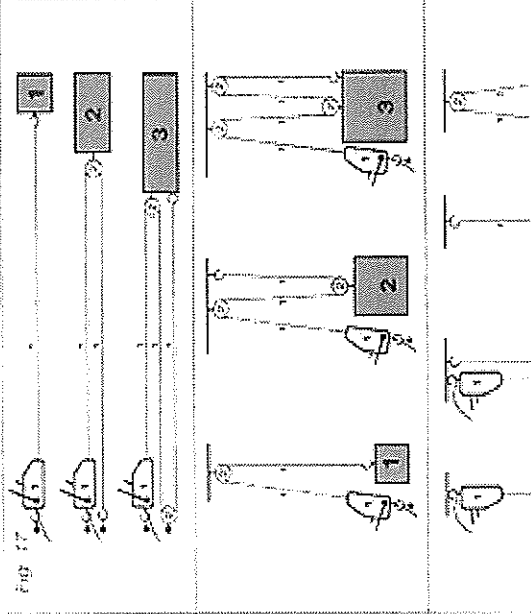
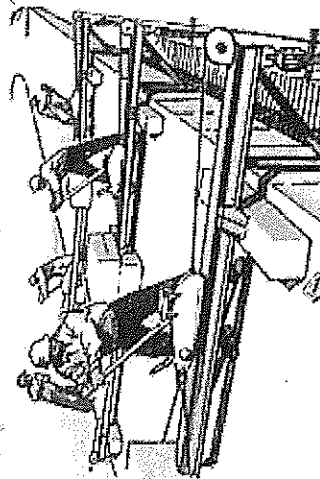


light-duty
range
only for
material
handling



Increase the capacity of the TIRFOR

The lifting and pulling power of GRIFHO ST-TIRFOR machines can be greatly increased by the use of multiple sheave blocks. These can increase the nominal capacity of the GRIFHO ST-TIRFOR machines by 2, 3 or 4 times or more (see diagram opposite). For most applications, an allowance must be made for friction at the sheaves. Ensure the capacity of the blocks and fittings and anchor points are suitable for the load. When using the GRIFHO ST-TIRFOR for pulling purposes it should be remembered that the necessary starting effort is not equal to the weight of the load to be moved - it should be calculated.

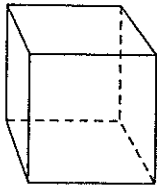


* Capacity for material handling ** Capacity for manning (All conversions are approximate)

Computing Weights for Rigging and Pulling

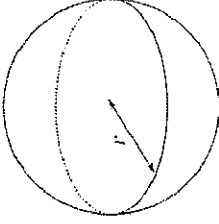
The **Safety Factor** for pulling equipment safely is 5 times the weight of the object to be moved. (5,000 lb object requires a 25,000 lb minimum rigging rating)

Formula for the Volume of a Rectangular Prism:



Length x Width x Height

Formula for the Volume of a Sphere:

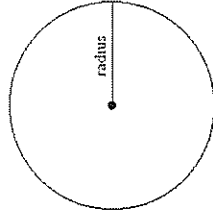
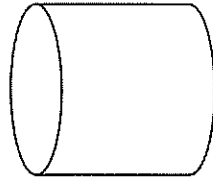


$\frac{4}{3}\pi r^3$

Formula for the Volume of a Cylinder:

$\pi r^2 h$

($\pi = 3.1416$)



Weights:

Rock : 165 lbs per ft³

Wood : Conifer 30 lbs per ft³
 Green Oak 70 lbs per ft³

Examples:

A pine tree is 4ft in diameter and 20 ft long, what is its weight?

Formula = $\pi r^2 h$ Weight of a conifer = 30lbs/ft³

$\pi 2^2(20)(30)$
 $3.146 \times 2^2 \times 600$
 $3.1416 \times 4 \times 600$
 7536 lbs

A round rock is 4 ft in diameter, what is its weight?

Formula = $\frac{4}{3}\pi r^3$ Weight of a rock = 165lbs/ft³

$\frac{4}{3}\pi r^3 (165)$
 $\frac{4}{3} \times 3.1416 \times 2^3 \times 165$
 $\frac{4}{3} \times 3.1416 \times 8 \times 165$
 5526 lbs

