

SAFETY AND OPERATIONS MANUAL

P240T Skid-Steer Post-Driver

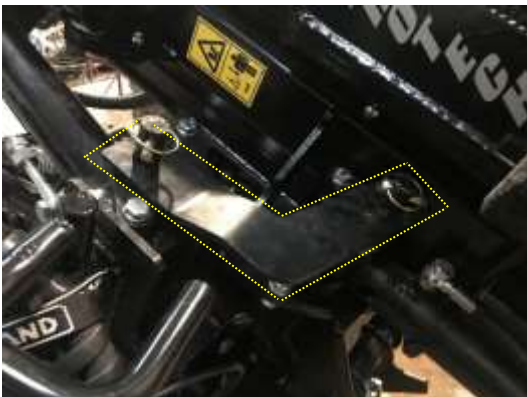


Protech Machinery

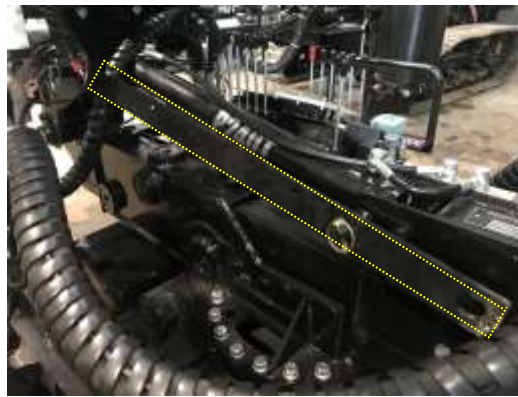
WOOLRIDGE FARM
HARTPURY
GLOUCESTERSHIRE
GL19 3BG



When delivered in a container, the machine will be folded with stay bars and hoses and rock spike will be standing in the way of the mast.
Before using the mast with hydraulics, all parts must be cleared.



Keep your stay bars for transportation



**EC DECLARATION OF CONFORMITY
Conforming to EEC Directive 98/37/EC**

We Protech Machinery Ltd

Of Woolridge Farm,
Gloucester Road,
Hartpury,
Gloucestershire.
GL19 3BG

Hereby declare that the product: **P240T SKIDSTEER POST-DRIVER**
Product Code **P240T**
Serial Number series

Manufactured by the above Company complies with the required provisions of the Directive 98/37/EC

To effect the correct application of the safety requirements stated in the EEC Directives, the following standards and/or technical specification have been used:

BS EN ISO 12100 : 2010 Safety of Machinery - General principles for Design; Risk assessment & risk reduction

BS EN 953 : 1997 + A1 : 2009 Safety of Machinery - Guards: General requirements for the design & construction of fixed & moveable guards.

BS EN 349 : 1993 + A1 : 2008 Safety of Machinery - Minimum gaps to avoid crushing of parts of the human body.

BS EN 13857 : 2008 Safety of Machinery – Safety distances to prevent hazard zones being reached by upper & lower limbs.

BS EN 4413 : 2010 Hydraulic fluid power - General rules & safety requirements for systems & their components

BS 5401: 1990 Guide to information content and presentation of operator's manuals provided for tractors and machinery for agriculture and forestry.

Signed



On behalf of Protech Machinery

Date...Tuesday, 28 January 2020

LIST OF CONTENTS

INTRODUCTION.....5

PRODUCT SPECIFICATION.....5

PARTS REFERENCE.....6

SAFETY STATEMENT8

SAFETY INFORMATION.....9

PERSONAL PROTECTIVE EQUIPMENT.....12

MACHINE OPERATION.....13

MACHINE SAFETY DECALS.....14

CONTROL FUNCTIONS OF THE POST DRIVER15

SLEW ARM.....16

TELESCOPIC ARM16

REAR LEG.....16

MAST FORWARD AND SIDE TILT.....17

POST-DRIVER WEIGHT CONTROL17

TELEMAST CONTROL17

ROCK SPIKE CONTROL.....18

AUGER DRIVE.....19

AUTO-LEVEL.....21

Auto-level setup22

USING THE POST DRIVING EQUIPMENT23

MAINTENANCE.....24

TRANSPORT.....25

IMPORTANT NOTICE

This manual must be read and fully understood before operating this machine. Whenever any doubt exists please contact Protech Machinery for assistance. If the machine is resold the Manual must be transmitted to the new owner.

Dear customer,
Thank you for purchasing a Protech Post Driver. Protech machinery Ltd has produced this User Guide to assist and help you get the most from your post driver.

This manual is line with the relevant Health and Safety regulations to assist you with operating this machine without harm to yourself.

You should be aware that any person operating this machine with your permission must be given adequate guidance and information to allow him or her to use the machine safely.

Whereas every effort has been made to ensure the Post Driver conforms to Protech policy of quality, the machine cannot be expected to withstand abuse caused by misuse and negligence by the operator.

Each machine will have a degree of customization. Final definition on each sales order.

P240T Standard configuration

P240T configuration

- ✓ 300kg hammer
- ✓ 180 deg hydraulic operated slew
- ✓ Tele arm 500 mm
- ✓ all controls on the machine
- ✓ 1500 mm telescopic mast extension
- ✓ 75 mm diameter rock spike and hydraulic extractor (can drive 12ft posts)
- ✓ Steel toolbox
- ✓ Flow limiting valve to protect the system

Options for P240T :

- o Post twister
- o Tractor frame (3 points linkage)
- o Auger drive + 4" and 6" Rock Drill
- o 2-Axis Auto-level system

	P240T
Machine overall max height	4.6 m
Overall Length	1.3 m
Overall machine Width	2.4 m
Weight	1140 kg
Auger Drive	110 kg

PARTS REFERENCE



HAMMER WEIGHT

TELEMAST

ROCK SPIKE MAST

AUGER DRIVE



ROCK SPIKE HOLDING PLACE

SLEW TELE ARM

SAFETY STATEMENT

Protech Machinery Ltd are concerned for your safety and that of others around you when operating this machinery and its associated equipment. This safety statement is our primary way of notifying you and bringing to your attention the potential hazards associated with the P240T and its equipment.

We advise that you follow the precautions listed throughout this manual before operation, during operation and during routine maintenance procedures for your safety and for the safety of others.

Protech Machinery Ltd advice that the minimum age for the safe operation of this machinery and equipment be at least 18 years of age.

Protech Machinery Ltd also advice that a form of basic training be carried out before operating the machinery and its equipment. This will be provided to the end user upon receipt of the machine and its equipment. A certificate of competence will be issued on completion of basic training.

For further training requirements please contact Protech Machinery Ltd. Please keep all warning labels and symbols from becoming dirty or defaced so others may be able to read and understand the hazards associated with this machine and its equipment. When replacing parts with a warning label or symbol attached to it, please ensure that the labels or symbols are also replaced.

Please keep this manual available at all times in the protective cover supplied with it to prevent defacement of this manual. If I doubt about operation of this machine please refer to this manual for guidance or contact Protech Machinery Ltd.

Failure to read and understand this manual before operation including misuse of this machinery and equipment could lead to injuries, severe injuries with life changing consequences or even **DEATH**.

Protech Machinery Ltd cannot be held liable for any injury or death caused by operator negligence, misuse of this machinery and equipment or general breach of the standard health and safety practices within the work place

SAFETY INFORMATION



This machine has the potential to be extremely dangerous - in the wrong hands it can maim, cause serious injury or even kill. It is therefore imperative that both the owner and operator of the machine reads and understands the following section to ensure they are fully aware of the dangers that do, or may exist, and their responsibilities surrounding the use and operation of the machine.

The operator of this machine is responsible not only for their own safety but equally for the safety of others who may come into close proximity of the machine.

When the machine is not in use it should be parked on a firm level site and the starting key removed.

In the event of any fault being detected with the machine operation it must be stopped immediately and not used again until the fault has been corrected by a qualified technician.

- Before starting the machine the operator must read and understand all aspects of use and maintenance of the machine as stated in this manual
- The machine must only be used by a responsible adult who is familiar with all aspects relating to safe operation
- The machine must not be operated by children or non-authorized persons
- Operators must know the meaning of all operation and safety decals on the machine
- Operators must know the procedure for switching the machine off normally and by using the Emergency Stop
- Do not attempt to use the machine if the Emergency Stop switch is damaged or malfunctioning.
- Never use the machine with safety removed or defective
- Operators should practice on flat open ground to familiarise themselves with driving and manoeuvring the machine before attempting to use it on sloping ground

- Never leave a running machine unattended. Always switch the engine off and remove the ignition key
- Always stop and switch off the machine if persons or animals enter the work area. Do not restart the machine until they are at a safe distance.
- Never use the machine to perform a task it was not designed for.
- Never allow persons to ride on the machine.
- It is the users responsibility to protect persons in or near the work zone
- When servicing or maintaining the machine no one should be allowed beneath it when it is raised unless it is securely supported on suitable ramps or stands.
- Never attempt to service or maintain the machine whilst it is running: always switch off the engine and remove the starting key
- Beware of stored energy in the hydraulic circuits when the machine is switched off.
- Always press the Emergency Stop switch before refuelling.
- Wherever possible refuel the machine before work when the engine is cold. If refuelling during work, switch the engine off and allow to cool before adding fuel.
- Test the Emergency Stop switch before each period of work to ensure it functions correctly.
- Never leave the ignition key in the machine control unit where it could be started and used by unauthorised persons.
- Never stand in front of the machine when it is being operated.
- Always wear PPE (personal protective equipment)

POTENTIAL SIGNIFICANT DANGERS ASSOCIATED WITH THE USE OF THIS MACHINE:

Injuring of feet. No person must be in this area when the Post Driver is raised or lowered by the tractor or near to the rear leg and foot plate when operating this control.

Crushing under the falling weight. No person must be near the post when the weight is falling. **Never put a hand on top of the post or rock spike under any circumstances.**

A trapping zone from the forward and side tilting mast, no person must be in this area.

A trapping zone between the Slew arm and Main frame, no person must be in this area.

Electrocution from Overhead Power Lines (by contact with or flashover from).

Being hit by flying debris such as splinters from wooden posts.

Injection of high pressure oil from damaged couplings or hydraulic hoses.

Misuse of hydraulic accumulator, which is filled up with 350 bar nitrogen pressure

Beware of low bridges and other overhead obstructions, always measure and be aware of the maximum height when transporting the machine.

PERSONAL PROTECTIVE EQUIPMENT

It is advised that the following personal protective safety equipment be worn at all times when operating this machinery.

EC Personal Protective Equipment Directive (89/686/EEC).



- Eye wear to a minimum of high energy low impact protection.
- Face shield for high energy and high impact protection, (advised).
- Hearing protectors with active noise reduction.
- Safety boots.
- High visibility clothing.
- Hard wearing safety gloves.

MACHINE OPERATION

BEFORE USING THIS MACHINE YOU MUST:

Ensure you read and fully understand all sections of the operator handbook,

Ensure the operator is, or has been, properly trained to use this machine.

Ensure the operator has been issued with, reads and fully understands the operator handbook.

The post cap plate must be used to hold posts at all times. Under no circumstances should the post be held manually while operating the Post Driver.

Only the operator must control the Post Driver, Spectators must be kept away from the machine at all times.

Ensure that all safety guards are fitted and in good condition.

Ensure that machine fittings and couplings are in good condition.

Ensure that all warning labels are always visible and not damaged, defaced or missing

Ensure the operator is protected from noise. Ear defenders should be worn.






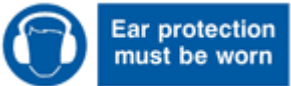


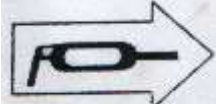

Ensure the operator is protected from flying debris. Safety glasses should be worn.

Always check for worn hydraulic components.

Always ensure the rope is not damaged. Replacements must be a certified Protech rope.

When working on sloping ground, it is far safer to drive up and down rather than across the slope.

MACHINE SAFETY DECALS

	<p>Standard Triangle to indicate Alert/Warning</p>
	<p>Warning read Product Manual</p>
	<p>Warning danger area from tilting mast</p>
	<p>Warning danger of feet being crushed.</p>
	<p>Warning eye protection must be worn</p>
	<p>Warning ear protection must be worn</p>
	<p>Warning Danger of falling weight</p>
	<p>Warning Danger of overhead cables</p>
	<p>Lubrication Point</p>
	<p>Warning danger of fingers and hands being crushed</p>

CONTROL FUNCTIONS OF THE POST DRIVER

The photo below displays the layout of the control panel. Moving the control lever up or down operates the function in the direction displayed of the Post Driver.



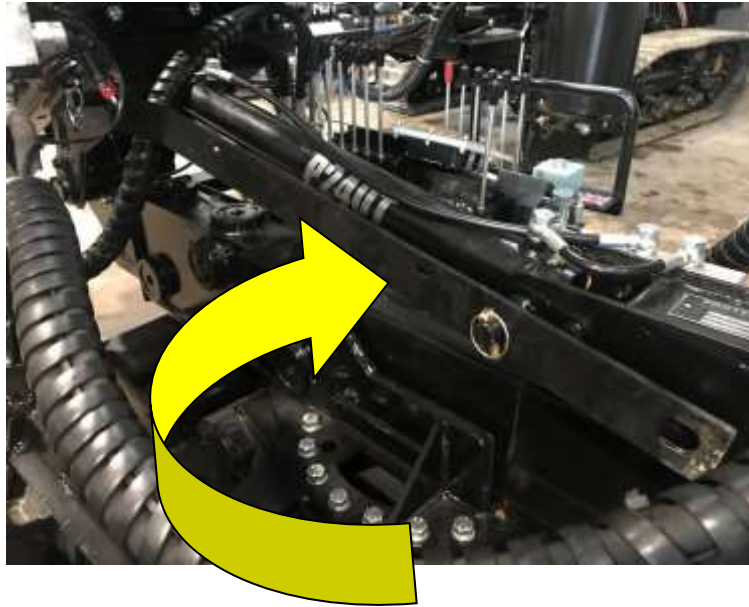
Relief valve (will protect your machine from excessive skid-steer flow). Adjustable.



Check valve. Protects your controls.

SLEW ARM

Operating the slew control lever pivots the slew arm from parallel to the main frame through 120 degrees.



TRAPPING ZONE
CRUSHING ZONE

As the control is mounted to the slew arm, it will move with operation of the slew control. The operator must work in the control area of the post driver to avoid all trapping zones.

TELESCOPIC ARM

Operating the Telescopic control lever extends and retracts the inner slew arm through 800mm. As the control is mounted to the inner slew arm, it will move as the telescopic control. The operator must work in the control area of the post driver to avoid all trapping zones.

REAR LEG

Operating the Rear Leg control lever extends and retracts the leg and foot plate which is powered down once the mast is in position to stabilise the machine during the post driving operation.

Feet must be kept clear from this crushing zone during operation of this control.

MAST FORWARD AND SIDE TILT

Operating the Mast Forward Tilt control lever pitches the mast forward and back (23 degrees forward and back from mast vertical position). This maintains a vertical mast while on undulating ground.

Operating the Mast Side Tilt control lever pitches the mast side to side (35 degrees each side from mast vertical position). This maintains a vertical mast while on undulating ground.



Check clearance prior tilting your mast.
Keep people away from this trapping zone during this operation.

POST-DRIVER WEIGHT CONTROL

Operating the Driver Weight control will immediately raise and lower the weight.
Everyone must be kept clear from this crushing zone during operation of this control.



CRUSHING ZONE
TRAPPING ZONE

TELEMAST CONTROL

This controls the telescopic mast



ROCK SPIKE CONTROL

Before using the rock spike the weight will have to be raised so that the rock spike can be moved into position.

The rock spike is located on a support pin when not in use. Raise the rock spike using the control lever to give clearance, then manually swing into position.



The rock spike control valve is used to maintain sufficient clearance of the support collar from the head of the rock spike.



1. Put machine in `park` position.



2. Lower rear leg for stability.
3. Raise the weight.
4. Use `rock spike` lever to swing the auger into position.



5. Slowly lower the weight to lock the auger in position



6. Use the `Right Track` lever to rotate the drill and `Rock Spike` lever to lower the drill

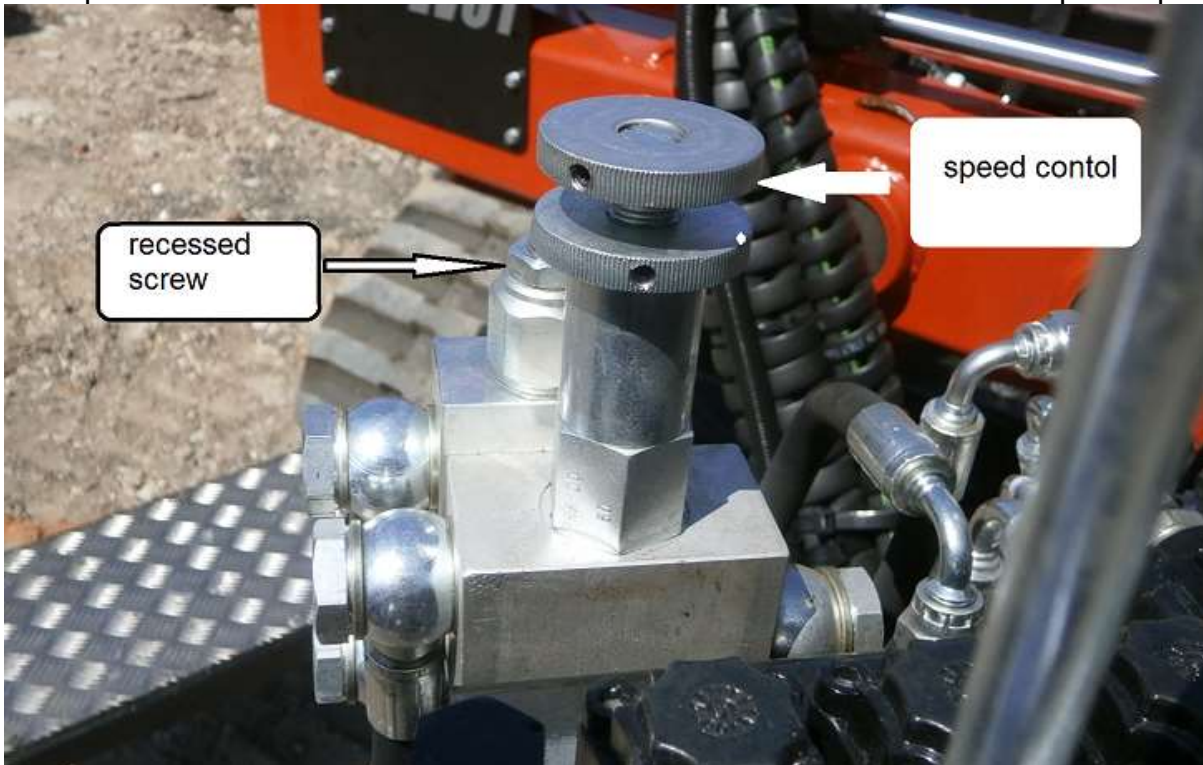


7. On completion, `right track` forward and `rock spike` up.
8. Lift the weight up clear of the auger.
9. Use the `rock spike` lever to swing the auger clear of the mast



10. AUGER CONTROLS

The recessed screw controls the hydraulic power to the auger motor.
The speed control is `clockwise` to slow down and `counter clockwise` to speed up



Auto-level operating

Your machine has been fitted with Protech auto-level system. This is a single button hit to level your mast.



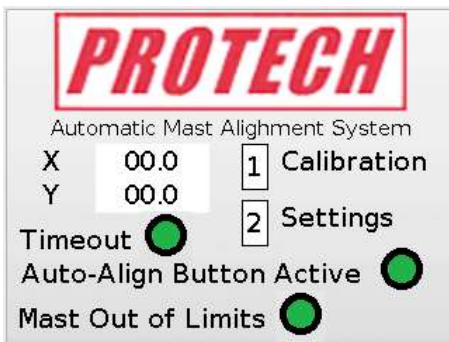
2-Axis Auto Levelling system

One-push button to align your post-driver mast to the vertical position.

One of contractors' favourites, as it is a Substantial time saver for intensive fencing.



Just beware your mast has enough clearance before hitting the button as it will start moving immediately



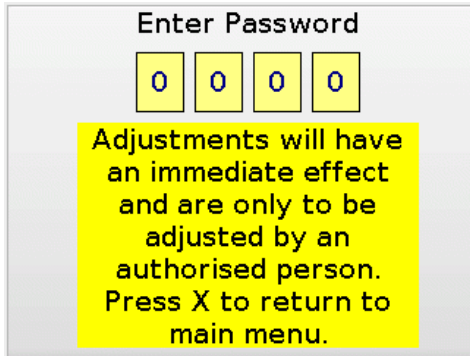
'Timeout' turns green when the auto-align button is held for more than a certain amount of time (time can be adjusted in the settings window).

'Auto-Align Button Active' turns green whenever the button is pressed.

'Mast Out of Limits' turns green when the mast is greater than or equal to $\pm 30^\circ$.

Auto-level setup

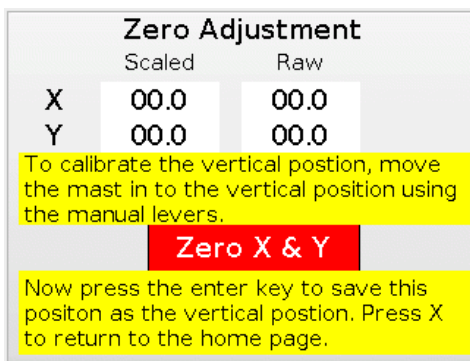
You should not have to go to setup as the fixture has been calibrated at factory. After intensive usage or due to power shortage, you may have to re-calibrate. In such case, follow the instructions below :



By pressing the arrows then enter buttons, the calibration and settings windows can be accessed.

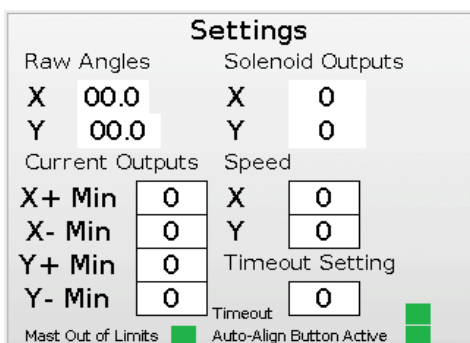
Use the arrows to highlight a digit, press enter to select the digit, use the arrows again to increase or decrease the digit and press enter again to deselect the digit. Repeat for the remaining digits. Once the password is entered, it will automatically take you to the settings window.

The password is set as 4925.



Before using a spirit level, the user can get the mast in an approximate even position by using the hydraulic levers. The raw value from the inclinometer may read different to the scaled values but it's the scaled values that the PLC uses to adjust its alignment. Once the user is satisfied with their angles, they can press the enter button and the scaled values will set to 0.

Pressing the X button on any window will return to the home screen



The raw values can display up to $\pm 90^\circ$ on both axes.

The solenoid outputs are scaled -100 – +100.

Minimum current outputs can be adjusted by the user. Use the arrows to highlight a digit, press enter to select the digit, use the arrows again to increase or decrease the digit and press enter again to deselect the digit. The current will change as the value is edited.

The speed of which the cylinders move can be changed here, again by using the arrow and enter keys. The speed is scaled 0 – 100 on both axis. There may be no movement at low values.

The maximum time in which the PLC outputs when the auto-align button is pressed can be changed here. The time setting ranges from 1 – 60 seconds.

USING THE POST DRIVING EQUIPMENT



Failure to observe the following could result in *Serious Injury* or *Death*

When the machine is in position, apply the park and remove any transportation bars that may be fitted ready for operation. After checking your surroundings for any hazards and observing the relevant labeled lever, move it in the required direction of travel. This will supply hydraulic pressure to the associated ram causing it to either extend or retract. Please be aware that moving hydraulic mechanisms can cause severe crushing injuries or **Death**.

Once you have the mast in the required position, lower the leg to the ground supporting the rear of the machine. Please be aware that this is a crush zone and caution should be taken to prevent injury.

Carefully raise the hammer and gripper plate together to the required height of the post. Standing aside, insert the post under the gripper plate locating it in the three small spikes.

When ready, lower the hammer and gripper plate down on to the post and remove the links attaching the gripper plate to the hammer.

NEVER place any body part or object between the gripper plate and hammer.

Raise the hammer slowly and smoothly to the top avoiding the end stop and allow to drop on to the gripper plate. At this point the force will be transferred in to the top of the post via the gripper plate and thus driving the post into the ground. Repeat this operation until the post has been inserted to the required height. Once complete, lower the hammer on to the gripper plate and reattached the links. Raise the gripper plate from the post and rear leg. You can then move onto the next position.

To use the rock spike, carry out the same operation but with the rock spike under the gripper plate. You may have to constantly adjust the rock spike retraction system to allow for ease of movement. After you have made the required pilot hole, raise the hammer and gripper plate together. To remove the rock spike from the ground operate the required lever to pull the rock spike from the ground using the rock spike retraction system.

A falling hammer weight can be fatal and every caution should be taken to prevent injury or **Death**

Daily

Check the lift rope for any signs of wear. If in doubt, change the rope.
Check hydraulic hoses for any signs of wear. If in doubt change the hose.
Grease the mast where the driver weight runs.
Check all nuts and bolts are tight.

Weekly

Check the hydraulics for leaks
Check the rope pulleys turn freely
Check all pivots for wear
Grease all pivots



Grease all pivots

Monthly maintenance

Check tightness of wear pads. Tighten as necessary.
Take special care to Hydraulic slew rings. They require monthly greasing. If you have very intensive usage, grease weekly

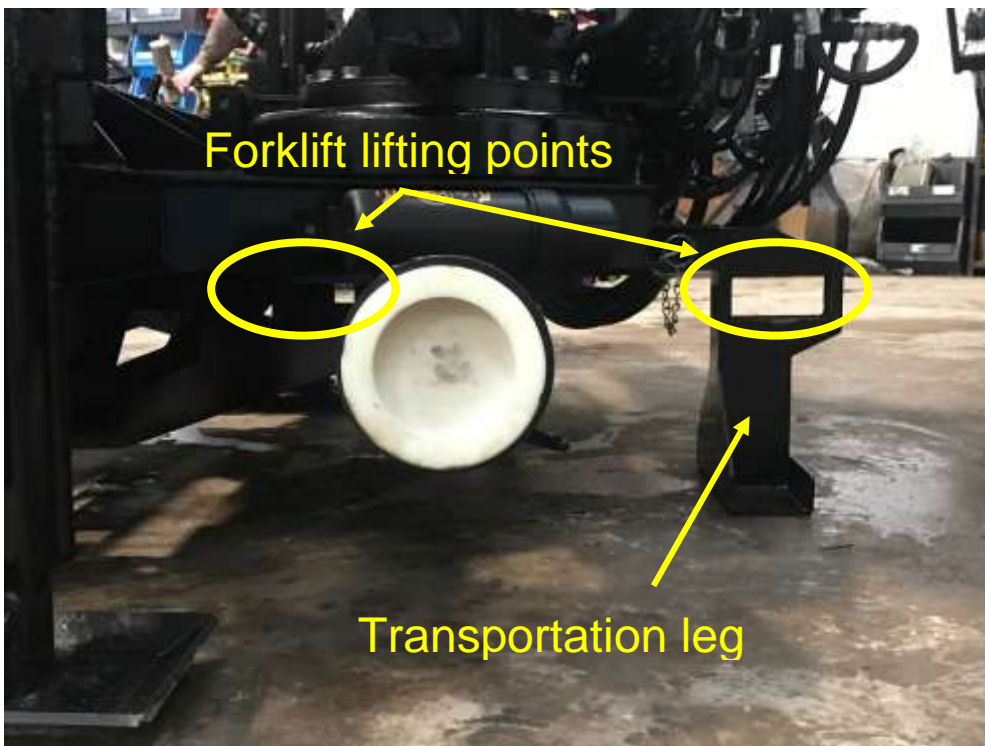


Use a manual or pneumatic grease pump gun

TRANSPORT

The machine is delivered with an additional resting leg. Those are only to be used for transportation purposes and not in operation.

Also, the machine was designed with forklift lifting holes so it can be carefully offloaded from a truck.



When delivered in a container, the machine will be folded with stay bars and hoses and rock spike will be folded with the mast. Before using the mast with hydraulics, all parts must be cleared.