

Protech Machinery

P200S Post Driver

Operator and Parts Manual



Protech Machinery Ltd,
Woolridge Farm,
Gloucester Road,
Hartpury,
Gloucestershire.
GL19 3BG Telephone: 07971 079751

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: **POSTDRIVER**
Product Code **P230S**
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:

- **THE SUPPLY OF MACHINERY (SAFETY) REGULATIONS 2008.**
- **S.I. No.299 of 2007.** Safety, Health and Welfare at work.
- **Health and Safety at Work Act, 1974 (UK).**
- **EN ISO 14121-1: 2007** `Safety of machinery. Principles for risk assessment`.
- **EN ISO 13857 – Safety of machinery: Safety distances to prevent hazard zones being reached by upper and lower limbs.**

Signed.....
On behalf of Protech Machinery

Status.....

Date.....

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IMPORTANT NOTICE

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

Introduction

Dear customer,

Thank you for purchasing a Protech P230S Contractor Post Driver. Protech machinery Ltd has produced this User Guide to assist and help you get the most from your post driver.

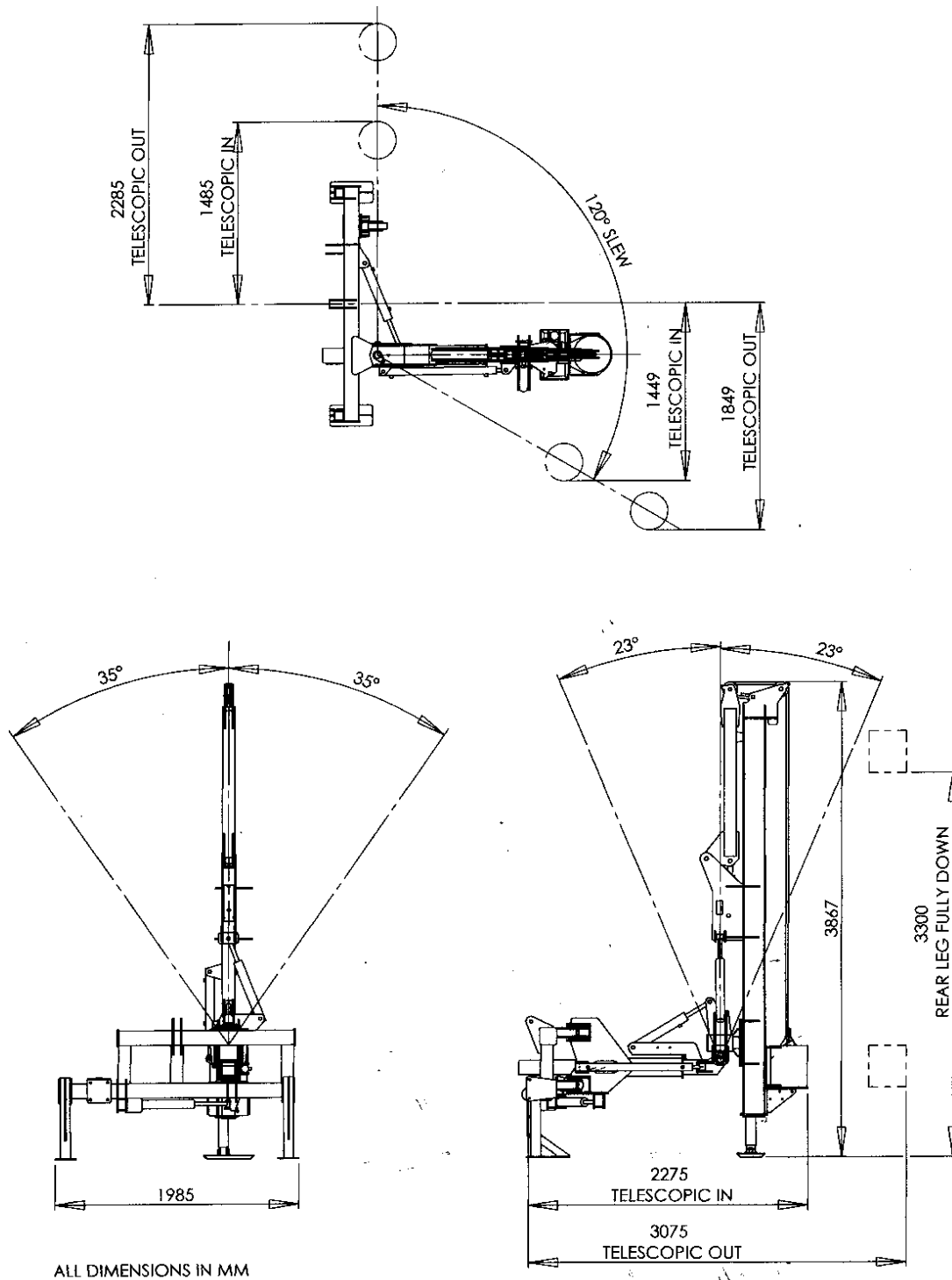
This manual is line with the relevant Health and Safety regulations to assist you with operating this machine without harm to yourself.

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.

Where as 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.

Please advise Protech if this manual is required in foreign language.

P200S Product Specification



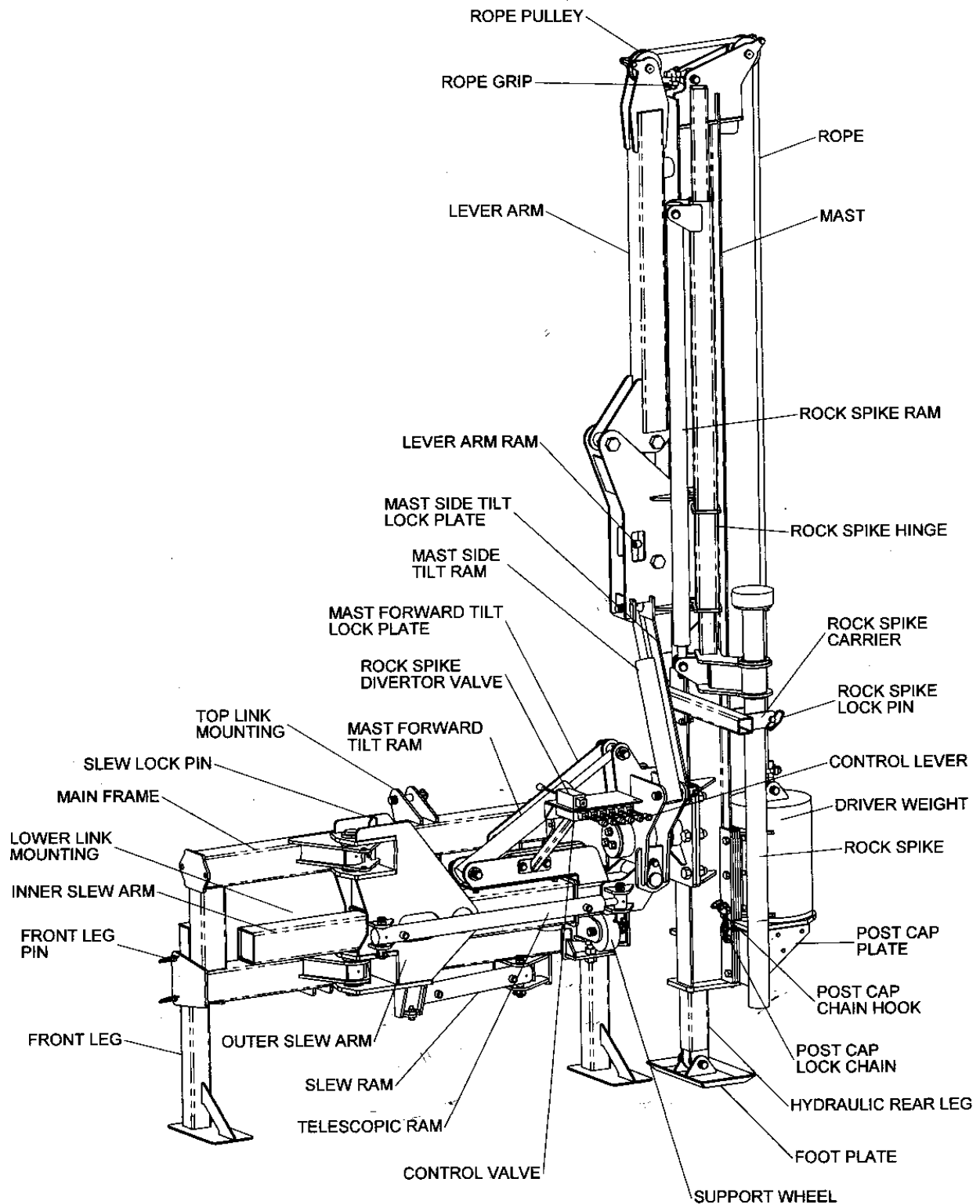
All dimensions are in millimetres.

Weight (including rock spike)	1150kg
Driver weight	300kg
Tractor Horsepower (minimum)	90 hp
Auxiliary oil flow (minimum)	50L/MIN
Auxiliary oil pressure (minimum)	170 bar

Please note: the total machine weight will vary depending on driver weight option.

P200S Part References

The diagram below displays all the P230S parts referred to in this manual.



SAFETY INFORMATION

This machine has the potential to be extremely dangerous, in the wrong hands it can kill. It is therefore imperative that the owner and the operator of this machine read the following section to ensure that they are both fully aware of the dangers that do, or may exist, and their responsibilities surrounding its use.

The operator of this machine is responsible not only for their safety but equally for the safety of others who may come into close proximity of the machine, as the owner you are responsible for both

Daily PUWER checklist to be completed by Competent Person.

All defects to be reported.

Any defects found must be rectified before using the machine.

Before working on site, risk assessment to be done by the operator (competent person) and signed and dated.

Extra care to be taken in urban areas and ground with dense vegetation

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.

Becoming trapped between tractor and machine when hitching or unhitching.

Machine overbalancing when freestanding (out of use).

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.

Beware of low bridges and other overhead obstructions, always measure and be aware of the maximum height when hitched to the tractor before transporting.

BEFORE USING THIS MACHINE YOU MUST:

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

Ensure the operator is fully competent 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, all other operatives and spectators must be kept away from the machine at all times.

Ensure that the tractor meets the minimum weight recommendations of the machine manufacturer.

Ensure that the tractor is in correct working condition, with correct fluid levels.

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 working area is free from debris/obstacles that may cause tripping hazard.

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 ensure no person is operating or on the tractor while the operator is near to or using the machine.

Always ensure when you remove your machine from the tractor that it is left in a safe and stable position using the stands, and lock plates are in place and secured.

Always check for worn hydraulic components.

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

When working difficult ground conditions/gradients, an additional risk assessment must be made and introduce the control measures to make safe to carry out operations.

During maintenance or adjustments:

- Ensure that the weight is fully down, with the rope relaxed.
- Ensure that the hydraulic pressure is released.
- Ensure that the Tractor engine is switched off.

During Transport ensure:

- That the weight is fully down
- That the Post Driver is carried low to the ground and with the mast crowded back for stability and maximum clearance from overhead obstructions.
- Always drive at a safe speed and in complete control of the vehicle.
- Ensure that the hydraulic `Lock Plates` are fitted for Mast forward tilt and Mast side tilt
- Ensure the Slew arm locking pin is fitted.



WHEN NOT TO USE THIS MACHINE:

Never attempt to use this machine if you are not familiar or competent with the machine.

Never use a machine until you have read and fully understood the operator handbook, are familiar with and practiced the controls, and `on site` specific risk assessment has been completed and understood by all persons.

Never use a machine that is poorly maintained

Never use a machine on which the hydraulic system shows signs of wear or damage.

Never fit, or use a machine on a tractor that does not meet the manufacturers minimum specification level.

Never start or continue to work a machine if people are nearby or approaching – stop and wait until they are at a safe distance before continuing.

Never use a machine to perform a task it has not been designed to do.

Never operate the tractor from any other position other than from the driving seat, especially whilst hitching or unhitching the machine.

Never carry out maintenance of a machine or a tractor whilst the engine is running – the engine should be switched off, the key removed and pocketed.

Never leave a machine unattended in a raised position – it should be lowered to the ground on a level firm site.

Never leave a tractor with the key in or the engine running.

Never attempt to detect a hydraulic leak with your hand – use a piece of cardboard.

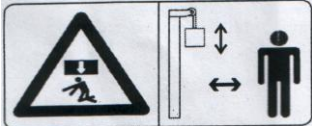
Never allow children near to, or play on, a tractor or machine under any circumstances.

Never move the position of the control panel.

Notes

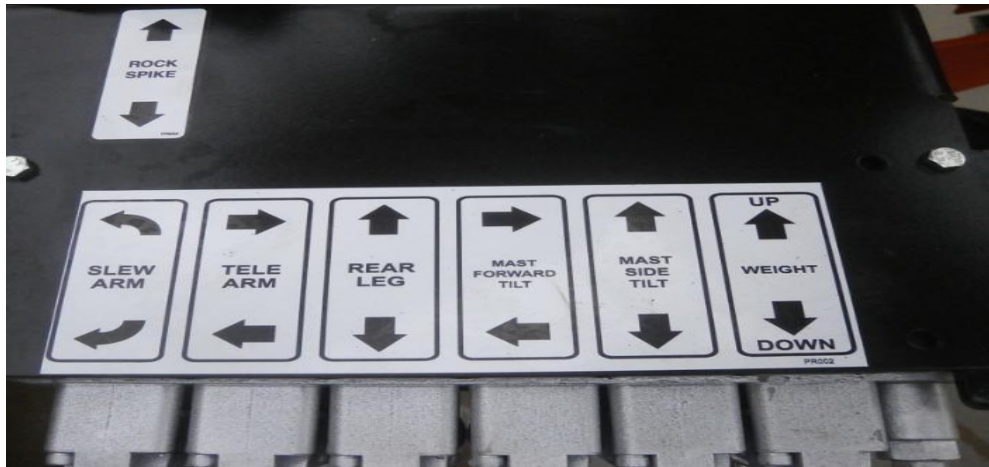
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Machine Safety Stickers

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

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.



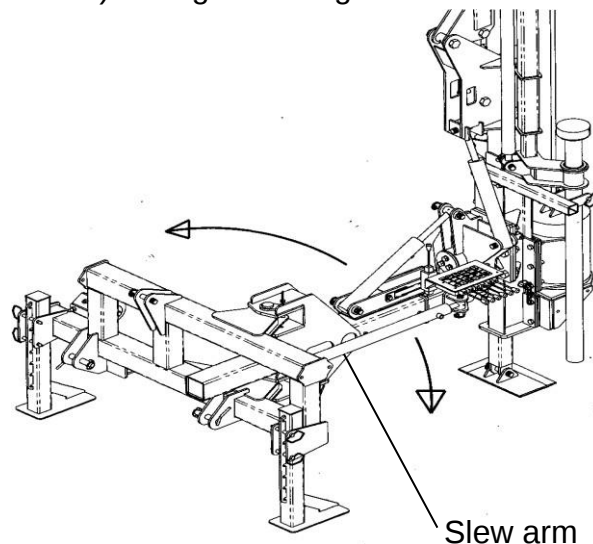
The Post driver controls are positioned to keep the operator at a safe distance and provide good visibility of the work area. The operator must stay within a safe working zone (defined later in this manual) around the control panel while operating the post driver controls.

Slew Arm Control



TRAPPING ZONE

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



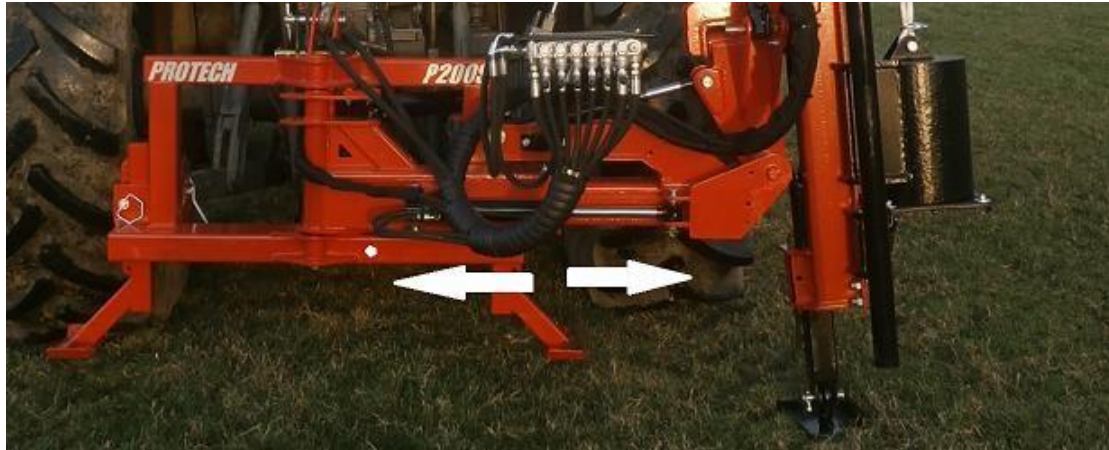
As the control is mounted to the slew arm, it will move with operation of the slew control. The operator must work in the control area of the post driver to avoid all trapping zones.

Telescopic Arm Control



TRAPPING ZONE

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 with operation of the telescopic control. The operator must work in the control area of the post driver to avoid all trapping zones.

Hydraulic Rear Leg Control



TRAPPING ZONE

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.

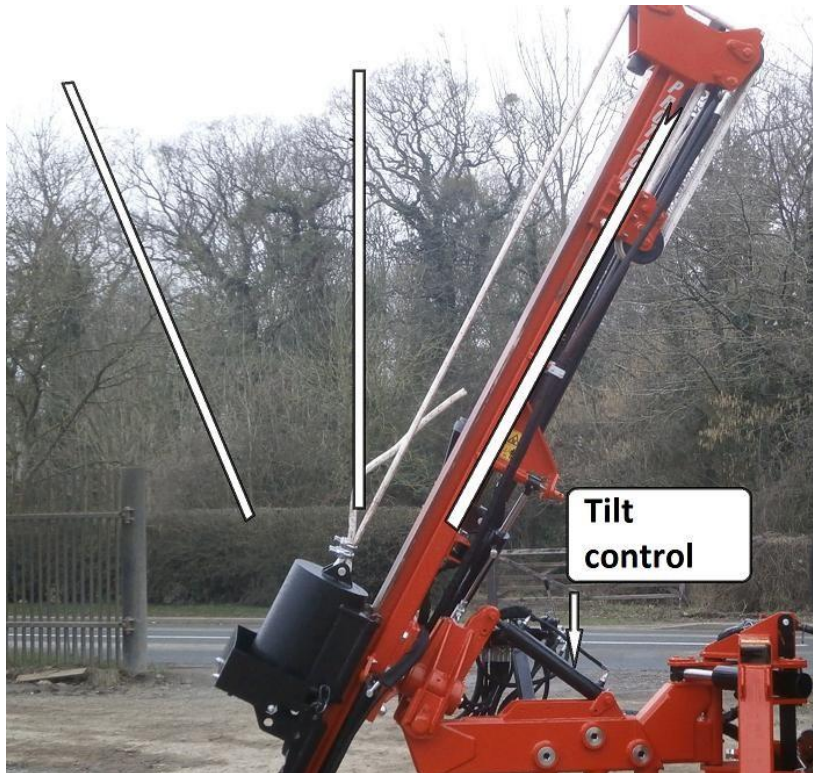


Mast Forward Tilt Control



TRAPPING ZONE

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.



Mast Side Tilt Control



TRAPPING ZONE

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.

Everyone must be kept clear from this trapping zone during operation of this control.



Driver Weight Control



CRUSHING ZONE
Mast side tilt

Operating the Driver Weight control powers the lever arm forward and back which raises and lowers the weight. Everyone must be kept clear from this crushing zone during operation of this control.



Rock Spike Control



TRAPPING POINT

CRUSHING ZONE

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



Left and right leg controls



TRAPPING ZONE

Manual operation

Remove lock pin and lower leg to desired height. Re-insert lock pin when desired level is reached.



Installation of the Post Driver.

Preferred method of lifting the post driver:-



- 1.** The Post driver is delivered with Slew arm perpendicular to the main frame and with the Slew lock pin fitted to lock the arm. Ensure the machine is manoeuvred in this position before hitching or unhitching from the tractor.
- 2.** With the machine positioned on a firm level site and securely supported, manoeuvre the tractor squarely up to the machine with the tractors link arms set to a height level with the machines lower link brackets.



3. Connect the tractors link arms to the machine lower link brackets and retain in position with the linkage and lynch pins supplied.

4. Connect the tractor top link (not supplied) to the machine and secure with the linkage and lynch pin supplied. The tractor top link must be category 2 on the machine end or conversion bush used if category 3.

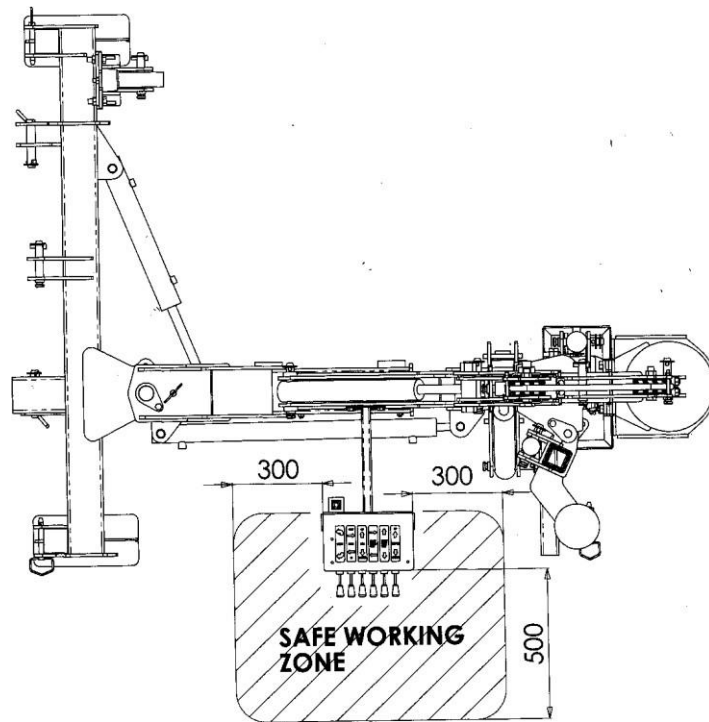
Fitted to machine:-



5. Adjust the Tractor link arm stabilisers to centralise the Post Driver and reduce excessive lateral sway

6. You must familiarise yourself and understand the controls and their functions; therefore after studying the previous section practise moving the levers before connecting any hydraulic hoses the tractor. The diagram shows

the safe working zone the operator must work in while operating the post driver controls. All dimensions are in millimetres.



7. Connect the pressure and return hoses to and from the control valve to the tractor hydraulic service.

8. Before removing the safety lock plates very carefully move each control lever forward and back a small distance until each cylinder is able to extend and retract slightly. Care must be taken as to not damage or strain any fabrication with the safety lock plates in position. This procedure will prime all cylinders with oil and remove any air trapped in the hydraulic circuit. Removing the safety lock plates before doing so could cause the mast to fall if the cylinders are not charged with oil.

9. Remove the safety lock plates and slew lock pin.

10. Fully operate all controls. Always raise the hydraulic rear leg and foot plate off the ground before using the slew or telescopic control. Care must be taken with the weight control, with the weight lifted up the mast operate the control very carefully to slowly lower the weight. A falling weight down to the bottom of the mast will cause damage.

11 The Post Driver is now ready for use.

Transporting the Post Driver.

To put the Post driver into transport position, operate the slew control to position the slew arm parallel with the main frame (slew cylinder closed). If the rock spike option is fitted ensure the diverter lever is pulled towards to operate the slew function.

Fit the slew lock pin and mast forward tilt and mast side tilt safety lock plates. Always ensure the telescopic is fully retracted and the mast tilt ram is fully closed.

Always transport the post driver with the weight fully lower and with the front legs fully raised so the machine is carried as low as possible on the tractor linkage without causing obstruction

Always ensure the rock spike (if fitted) is retained with the rock spike lock pin in the rock spike carrier.

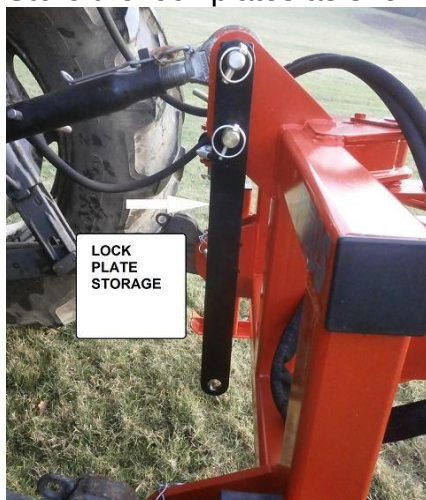
Safe use of the Post Driver.

**NEVER PUT HANDS ON TOP OF THE POST
UNDER ANY CIRCUMSTANCES.**

1. Manually start a post in the desired location so it becomes self supported. Under no circumstances should the post be held manually while operating the Post Driver. The Post driver controls are positioned to keep the operator at a safe distance and provide good visibility of the work area. Under no circumstances should the control panel position be moved, and the operator must stay within a **safe working zone**

2. With the tractor and machine near to the work area remove to slew lock pin and safety lock plates.

Store the lock plates as shown below:-

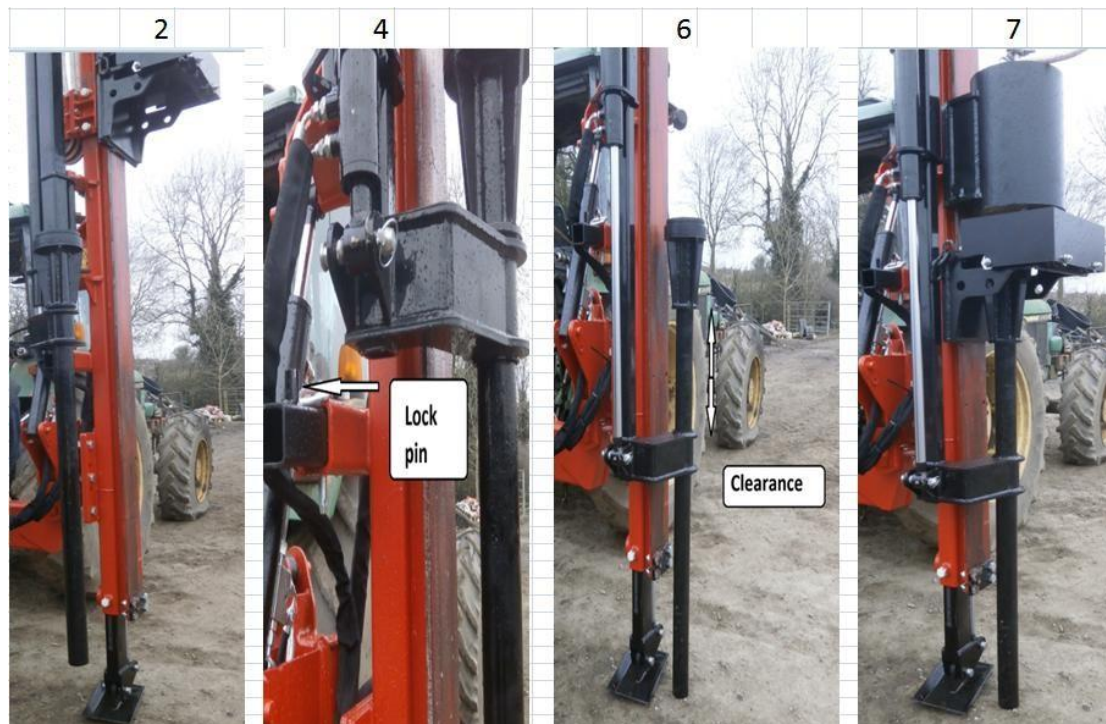


3. Drive the tractor near to the post so it can be reached while operating the external controls. Lower the machine onto the ground so it stands on its front legs and firmly apply the tractor handbrake. If working on a sloping ground it is far safer to drive up and down than across the slope. Engage the auxiliary service to provide oil flow to the control valve.
4. The operator can now enter the safe working zone. With the driver weight fully down ensure the post cap lock chain is hooked onto the post cap chain hook and retained with lynch pin. This connects the driver weight to the post cap plate.
5. Operate the control to raise the driver weight and post cap plate a short distance above the post.
6. With the hydraulic rear leg raised off the ground, operate the controls to position the post cap plate above the post. Ensure the mast is angled to match the desired angle of the post. **With the Post driver in this position, the operator must never put their hands on top of the post or move the post manually.**
7. Lower the rear leg and foot plate only enough to stabilise the machine. If the front legs are raised off the ground then the rear leg has been lowered too far.
8. Carefully lower the driver weight and post cap plate onto the post.
9. Unhook the post cap lock chain from the post cap plate.
10. Operate the control to raise the driver weight then move the control lever fully in the down position to drop the weight with maximum impact.
11. Repeat step 10 until the post has been driven into the ground to the desired depth.
12. With the driver weight and cap plate lowered on top of the post hook the post cap lock chain onto the post cap chain hook.
13. Operate the driver weight control to raise the weight and post cap plate of the post.
14. Operate the control to raise the rear leg and foot plate off the ground.
15. Operate the Slew or telescopic control to move the mast away from the post.
- 16 Carefully operate the driver weight control to slowly lower the weight and post cap plate fully to the bottom of the mast.
17. At this position the operator can move away from the safe working zone.
17. Repeat the safe working procedure steps for each post. To transport the post driver then ensure the transportation procedure is followed.

Safe Use of the Rock Spike.

The rock spike is an optional extra is recommended for use on stony or hard ground and creates a pilot hole for the post.

1. Follow steps 2, 3 and 4 from the Safe use of Post Driver section.
2. Operate the weight control to carefully raise the weight and post cap plate a short distance above the rock spike.
3. Operate the control fully retract the rock spike ram. This should slightly raise the rock spike above the rock spike carrier.
4. Remove the rock spike lock pin.
5. The operator must remain in the safe working zone and push the rock spike hinge around and underneath the post cap plate. Never push the rock spike itself and never put hands on top of the rock spike. Pushing the rock spike hinge keeps the operators hands and arms clear from the suspended weight and post cap plate.
6. Operate the control to extend to the rock spike ram and lower the rock spike onto the ground. Continue to extend the rock spike ram until the rock spike hinge is lowered 500mm below the rock spike collar.
7. Operate the control to slowly lower the weight and post cap plate onto the rock spike.



8. Unhook the post cap lock chain from the post cap chain hook.

9. Operate the control to fully raise the driver weight then move the control lever into the fully down position to drop the weight.
10. Repeat step 9 to drive in the rock spike. Ensure the rock spike hinge is lowered between hits to always ensure the hinge collar is below the rock spike collar otherwise causing damage to the rock spike ram and fabrication.
11. Once the rock spike has been driven to the desired depth and with the driver weight and post cap plate lowered on top of the rock spike, hook the post cap lock chain onto the post cap chain hook and retain with lynch pin.
12. Operate the control to fully retract the rock spike ram.
13. Operate the control to raise the driver weight and post cap plate a short distance above the rock spike.
14. The operator must remain in the safe working zone and pull the rock spike hinge (which keeps hands and arm clear from the suspended driver weight and post cap plate) back into the rock spike carrier and retain with the rock spike lock pin. Never pull the rock spike itself and never put hands on top of the rock spike.
15. Carefully operate the control to slowly lower the driver weight and post cap plate down to the bottom of the mast.
16. At this position the operator can move away from the safe working zone.

Storage of the Post Driver

Where possible, store the Post Driver away from areas that have public access.

Operate the controls to manoeuvre the slew arm so it is perpendicular to the main frame and lock in position with the slew lock pin

Ensure the weight is fully lowered.

Operate the controls to fully retract the rear leg, front hydraulic legs (if fitted) and hydraulic counter balance weight (if fitted).

Fit all safety locking bars.

Always unhitch from tractor on level, stable ground.

Store the hydraulic hose in a clean, secure place.

The Post Driver must be stored in a position to be easily reconnected to the tractor.

Maintenance of the Post Driver

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.

Grease all pivots

Check all nuts and bolts are tight.

Weekly

Check the hydraulics for leaks

Check the rope pulleys turn freely

Check all pivots for wear

Check pins and lynch pins

Monthly

Check engine oil level, top up as necessary.

Check hydraulic oil level, top up as necessary.

Check tightness of wear pads. Tighten as necessary.



Check visibility of warning stickers.

RECORD OF CHECKS.

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