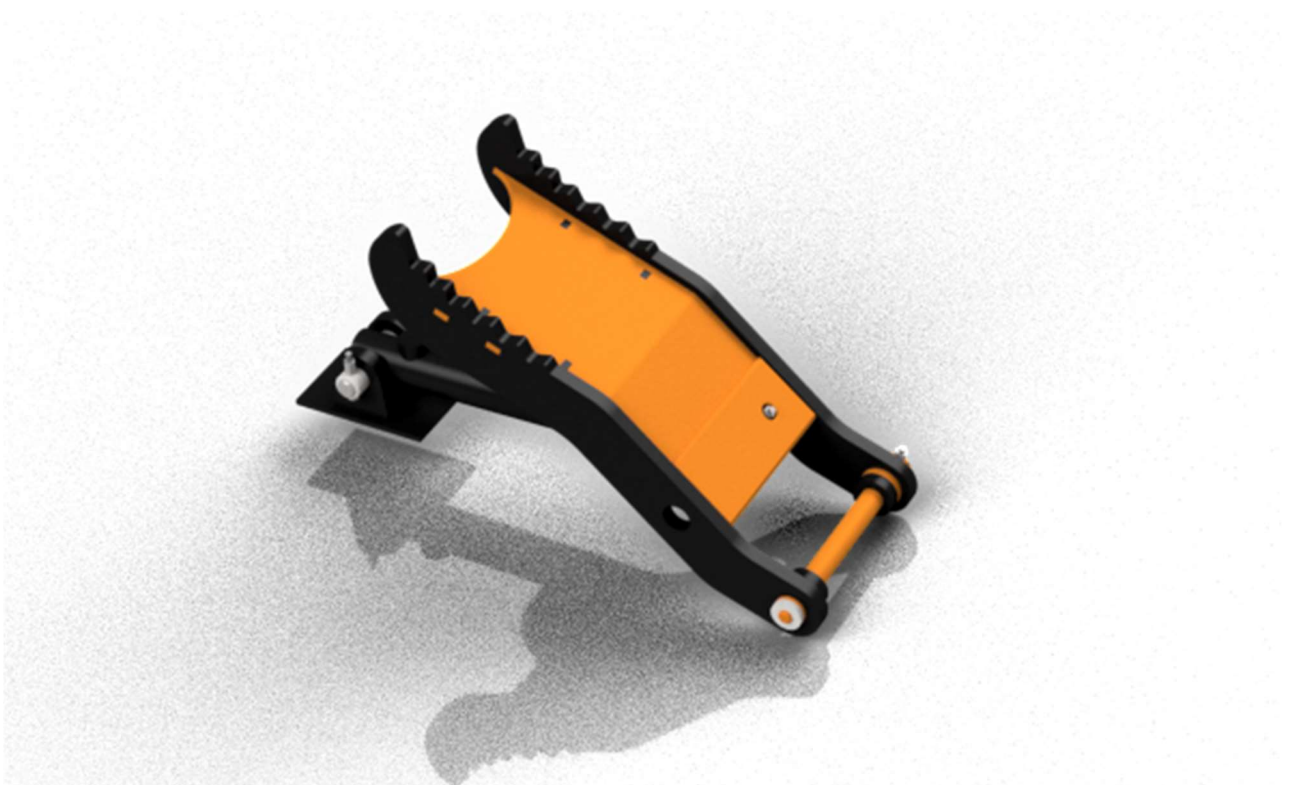






HARFORD HYDRAULIC THUMB

Installation & Operation Manual

Important: This manual must be kept with the attachment at all times.
Please read prior to installing or operating the attachment.



Guide to Safety Symbols

| | |
|---|---|
|  | <p>SAFETY NOTICE: These indicate specific precautions and recommended personal protective equipment (PPE) for use during the given situations.</p> |
|  | <p>IMPORTANT: Specific points to note and situations to be aware of.</p> |
|  | <p>IMPORTANT: Prohibited situations are specified and should be avoided.</p> |
|  | <p>WARNING: Situations of danger in which the operator or installer must pay particular attention to the information provided to minimise the risk of injury to self or others</p> |

| Serial Number Location | Serial Number |
|--------------------------------|---------------|
| Stamped plate on side of thumb | |

Serial number table (above) for completion by owner

This manual part number POHYDTHB/MAN01/Rev1



If this accessory is to be used on a jobsite, the operator shall follow the site rules where the machine is to be used.

The units used in this manual are: size given in millimetres (mm), pressure in bar (PSI follows in brackets), and torque (in Nm)

If at any time in the future, you require additional information on the **HARFORD PIN-ON HYDRAULIC THUMB**, or any aspects of its use, please contact us at:

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General Safety Information



WARNING: Hydraulic oil pressure and fluid can cause serious personal injury. When escaping under pressure it can penetrate body tissue, cause severe tissue damage, loss of limb and possible fatal injury. Always check for leaks with the use of a shield and not against any part of your skin. Alternatively shut off the pressure and allow time to de-pressurize. If fluid is injected into your skin, you must seek emergency treatment **immediately and without delay** by medical personnel that have knowledge of this kind of injury. Remember, some hydraulic fluids are also flammable. Refer to relevant COSHH data sheets for substances that you may come into contact with.



IMPORTANT:

Due to the weight of the product, handling of the thumb prior to installation should be done using appropriate lifting aids for the weight, which can be found on the punched information plate affixed to the side of the thumb.



IMPORTANT:

Ensures that the machine to which the Hydraulic Thumb is installed does not exceed its safe working load (SWL), taking into account the additional weight of the thumb, which is stated on the punched information plate affixed to the side of the thumb.



IMPORTANT:

Be aware that the addition of the Hydraulic Thumb will increase the width of the excavator arm, which may cause it to impact nearby objects and people or to impact the operators cab, leading potentially to property damage, injury, loss of limb or, in extreme cases, fatal injury.



IMPORTANT:


It is recommended for safety reasons that the machine to which this Hydraulic Thumb is installed is operated by an experienced, competent person, trained to ISO 7130:2013 or later.



IMPORTANT:

During installation, no alterations must be undertaken to any protective structure (e.g., rollover protective structures (ROPS), tip-over protective structures (TOPS), or falling object protective structures (FOPS) are permitted except where authorised by the manufacturer, or according to the manufacturer's specifications.

Preparing the Thumb and Excavator

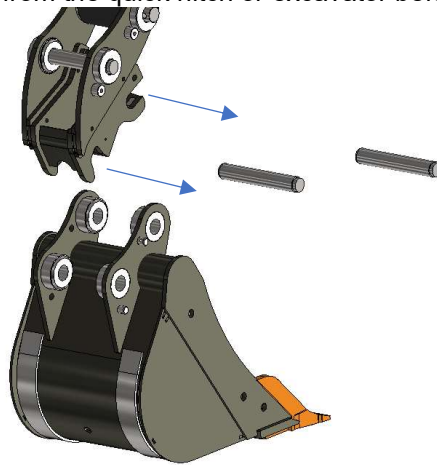
1. To install the thumb, the front hitch pin must be removed and replaced with the supplied hardened pin to provide the additional length to hold the thumb.
2. Remove any attachments that may cause obstruction to the thumb installation. It is advised that the surface to which the thumb will be welded is cleaned.
3. Drop any attachments currently on the quick hitch or directly mounted to the excavator.
4. All pins should be greased prior to being inserted. Maintenance grease points are located at the cylinder pivots and on the main hardened pin.
 - a. The short pin must be greased and fed through the thumb base and the cylinder base.
 - b. The long main pin must be greased and inserted through both the thumb, pin grabber and excavator arm.
5. It is recommended that the hydraulic ram is installed with its connection hardware outermost, away from the excavator arm, to prevent damage from crushing during operation.
6. Pins are removable as required so can be used to adjust the manual thumb's position or to remove the attachment for storage when not in use.
7. For weld-on cylinder bases **ONLY**: 
 - a. Disconnect the negative/earth lead from the excavator battery prior to any welding operation. Remove paint from the weld area prior to welding and use anti-spatter to protect the arm. Protect hydraulic rams and any existing hoses from weld spatter.
 - b. It is advisable for the weld plate to be clamped into place to cater for a 'test fit' prior to welding the fixture in place. Firstly, identify the desired installation location. With the ram at its minimum length and the thumb fully folded, ensure there is no interference between the hydraulic components of the thumb and the underside of the thumb grip. Failure to check this can lead to crush damage of the hydraulic components during operation.

Fitting the Hydraulic Components

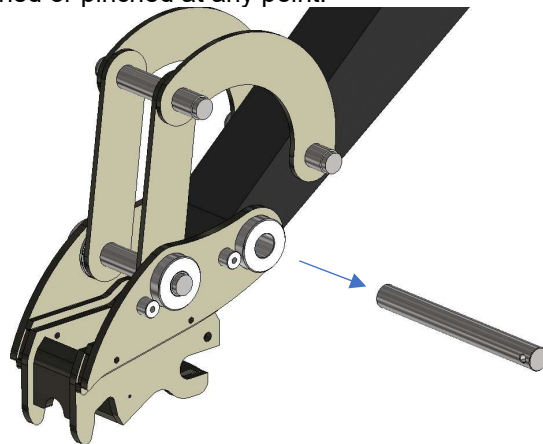
1. All relevant PPE should be worn during the installation of the Thumb attachment.
2. Ensure all hydraulic components are suitable for the working pressure (200 BAR)
3. Disconnect the negative/earth lead from the excavator battery prior to any welding operation. Weld pipe clamps to the excavator arms to retain hose at appropriate positions as required. Hydraulic hoses should follow the paths of existing hydraulic lines of the excavator. Remove paint from the weld area prior to welding and use anti-spatter to protect the arm. Protect hydraulic rams and any existing hoses from weld spatter.
4. Cut and fit hose protector as required.
5. Hydraulic hoses should be long enough to accomplish their intended function whilst ensuring that during operation the minimum bend radius stated by the hose manufacturer is adhered to. Allowance should be also made for changing characteristics of the hose under differing operating conditions.

Installing the Thumb – Manufacturer Installed Mount

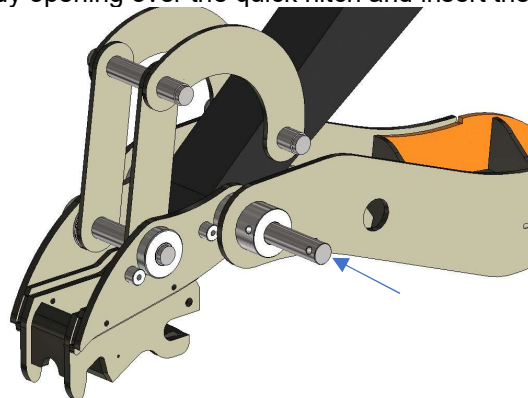
1. Remove any attachment from the quick hitch or excavator before beginning the installation



2. Lower the quick hitch to the ground and remove the front pin of the quick hitch. If a hydraulic quick hitch is installed, please ensure, throughout the installation process, that its hydraulic hoses are not over-stretched or pinched at any point.

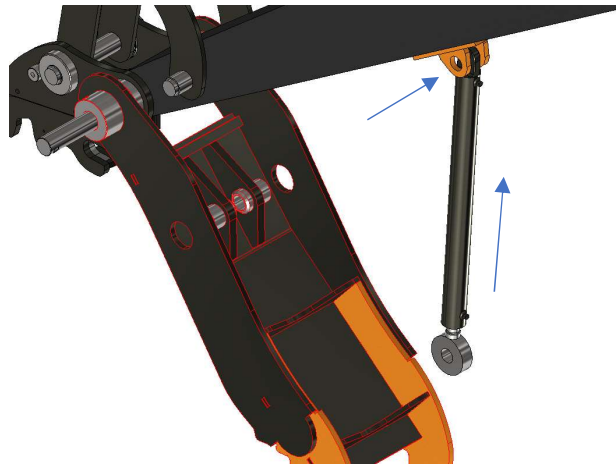


3. Support the thumb body on the ground, teeth down, with the main pin location raised and aligned with the quick hitch.
4. Manoeuvre the thumb body opening over the quick hitch and insert the new, extended pin.

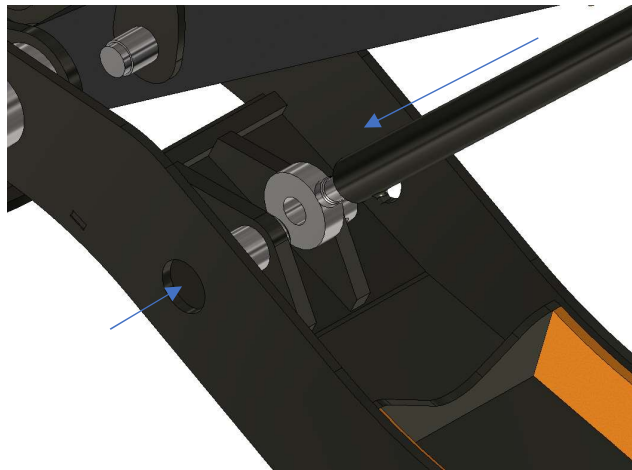


5. Lift the boom and ensure free movement of the thumb body. Secure the pin with the included hardware.

6. With the boom at a suitable height, pin the base of the cylinder to the existing point with the pin supplied and secure with the included retention hardware.



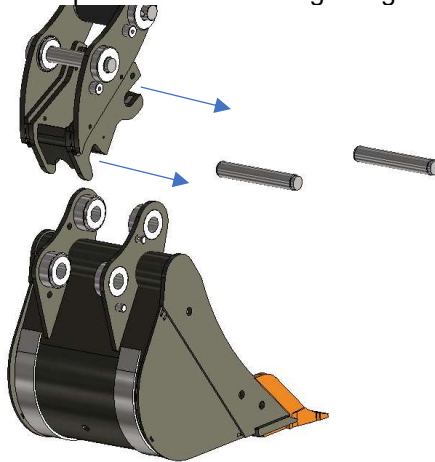
7. Manipulate the top of the cylinder into the thumb mount and pin in place with the supplied pin and retention hardware.



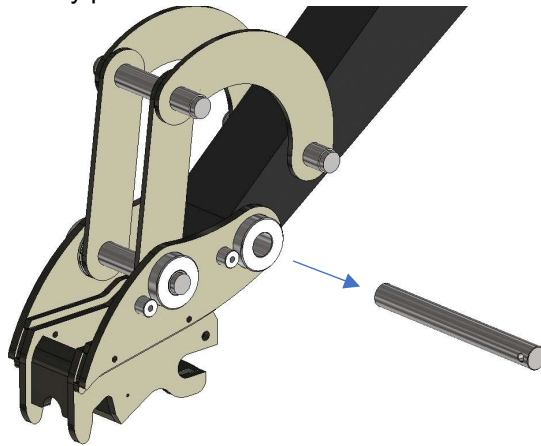
8. Attach the hydraulic lines to the ports on the cylinder manifold and complete the hydraulic initiation as per the excavator manufacturer's instructions
9. Check the full range of motion of the thumb, with and without buckets, slowly and carefully to ensure there are no collisions, impacts, or bindings and to check that the hoses are of a suitable length and routed appropriately.

Installing the Thumb – Weld-On Mount

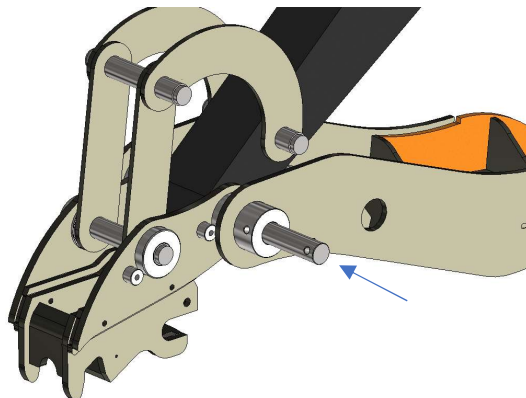
1. Drop any attachment from the quick hitch before beginning the installation



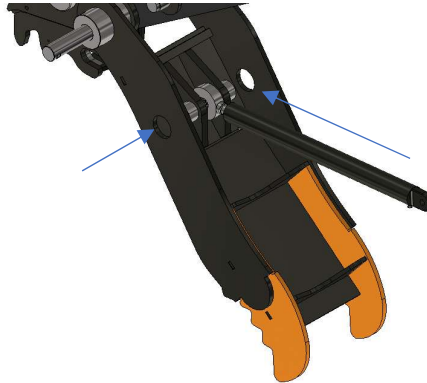
2. Lower the quick hitch to the ground and remove the front pin. If a hydraulic quick hitch is installed, please ensure, throughout the installation process, that its hydraulic hoses are not over-stretched or pinched at any point.



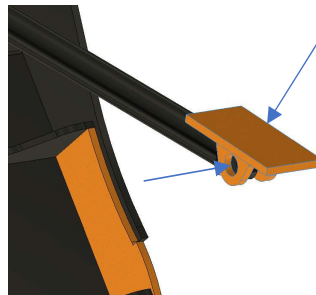
3. Support the thumb body on the ground, teeth down, with the main pin location raised and aligned with the quick hitch.
4. Lower the boom into the quick hitch and push the pin all the way through and secure with the included retention hardware.



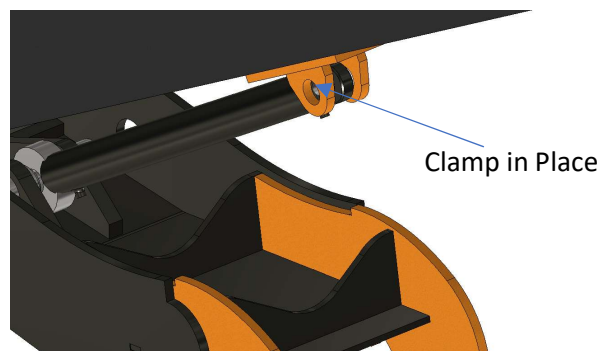
5. Lift the boom and ensure free movement of the thumb body. Secure the pin with the included hardware.
6. Lower the boom and install the cylinder into the thumb mount and pin in place with the provided pin and secure with the included retention hardware.



7. Install the weld-on mount to the base of the cylinder with the included pin and retention hardware.



8. Lift the boom to a suitable height and securely clamp the mount centrally on the arm. The ideal distance from the quick hitch pin is when the cylinder is fully retracted but not parallel to the arm.



9. The angle of the cylinder to the arm must be at least 1-degree away from the arm when fully retracted to allow the cylinder to close the thumb as it extends. Below this angle, the cylinder may attempt to open the thumb towards the arm, potentially damaging the thumb, the boom, or the cylinder.
10. Remove the retention pin from the cylinder mount and carefully lower the thumb body and cylinder out of the way.
11. Mark around the mount and remove it. Using the marks as a guide, clean away the manufacturers paint to leave bare metal ready for welding.
12. Tack the mount into the selected location and reassemble with the cylinder to check the location. If the position and orientation is correct, disassemble the mount and cylinder in preparation for welding.



- a. Disconnect the negative/earth lead from the excavator battery prior to any welding operation. Remove paint from the weld area prior to welding and use anti-spatter to protect the arm. Protect hydraulic rams and any existing hoses from weld spatter.
 - b. It is advisable for the weld plate to be clamped into place to cater for a 'test fit' prior to welding the fixture in place. Firstly, identify the desired installation location. With the ram at its minimum length and the thumb fully folded, ensure there is no interference between the hydraulic components of the thumb and the underside of the thumb grip. Failure to check this can lead to crush damage of the hydraulic components during operation and invalidate the product warranty.
13. Complete the welding process to finish securing the cylinder mount.
 14. Once cooled, it is recommended to paint any exposed metal or weld to prevent corrosion.
 - a. Please ensure no paint enters the mount bosses to prevent binding of the pins or difficulty with assembly or maintenance.
 15. Manipulate the top of the cylinder into the thumb mount and pin in place with the supplied pin and retention hardware.
 16. Attach the hydraulic lines to the ports on the cylinder manifold and complete the hydraulic initiation as per the excavator manufacturer's instructions
 17. Check the full range of motion of the thumb, with and without buckets, slowly and carefully to ensure there are no collisions, impacts, or bindings and to check that the hoses are of a suitable length and routed appropriately.



Maintenance of the Thumbs



WARNING: Hydraulic oil pressure and fluid can cause serious personal injury. When escaping under pressure it can penetrate body tissue, cause severe tissue damage, loss of limb and possible fatal injury. Always check for leaks with the use of a shield and not against any part of your skin. Alternatively shut off the pressure and allow time to de-pressurize. If fluid is injected into your skin, you must seek emergency treatment **immediately and without delay** by medical personnel that have knowledge of this kind of injury. Remember, some hydraulic fluids are also flammable. Refer to relevant COSHH data sheets for substances that you may come into contact with.

Daily Checks:

1. Clean away any material build up affecting the pins, cylinder and grips.
2. Grease pins using the grease nipples (Hydraulic) OR grease pins (if required) when changing the thumb position (Manual),
3. Visually inspect the removable pins for tightness and ensure two nuts are on each bolt.
4. Check hydraulic hoses for damage, leakage or weeping, stiffness (as hose ages it can become stiff causing it to crack or split when flexed), blistering and general wear. Replace as required.
5. Check hose fittings at connection points for leaks, poor interfacing with hose or other connectors. Tighten and replace as required.
6. Check hydraulic thumb operation by using the full range of motion whilst not gripping anything.
7. Check Thumb grips, pins and base holders for wear, fatigue or failure.



Thumb Misuse

Whilst using the thumb it is important that an excessive amount of pressure is not applied by the bucket or equivalent attachment. Excessive force will bend the pins, grips and bosses of the thumb and invalidate the product warranty.

When the thumb is not in use, it is important to fully retract the unit or remove the thumb from the machine using the pins. Accidental knocks may damage the pins, grips and bosses of the thumb and may pressurize the cylinder.

The hydraulic cylinder used on the hydraulic thumb is rated at **200 BAR (2900 PSI)**. If the excavator's hydraulic circuit is rated to a higher pressure than the cylinder provided, any factory-fitted pressure relief valve will require adjustment or replacement. Using the bucket to push against the thumb will pressurize the cylinder, could cause damage and invalidate the product warranty.

Always push the thumb against the bucket and **STOP APPLYING PRESSURE** when positioned.

Warranty

Warranty Policy

Harford warrants attachments and non-hydraulic components against defaults in materials, faulty design and workmanship for a period of 2 years from the date of delivery. The warranty policy does not extend to purchased sub-assemblies, including teeth assemblies, cylinders, auxiliary edges, electrical components and hydraulics. If a warranty claim is deemed appropriate on such items, they must be returned for assessment by Harford.

NOT EVERYTHING IS COVERED

Excavators are powerful machines and due to the nature of construction activity, some things are expected to wear and need replacing. Careless or inexperienced operators can also cause attachment failure. Here is a list of reasons why Harford will not consider warranty claims: -

- Product failed due to misuse, improper storage or neglect.
- Electrical components, hydraulic hosing, and fittings (past 3 months from installation)
- Paint finish
- Wear parts and consumables
- Product has been altered post manufacture.
- Travel, labour costs, loss of productivity or profit
- Personal injury, damage to property or machinery.

Should the product fail during the 2ND year from the date of purchase due to faulty design, workmanship or materials, Harford will repair or replace products only and will not be responsible for any costs associated with travel, repair or installation, or labour. Harford will approve all warranty decisions prior to any action being taken. To start a warranty, claim or initiate a product return, please complete the Contact form on our website and submit relevant photographic or video evidence to help Harford best assess your case.

Returns Policy

Harford will not accept return of any used, custom-made/designed, altered or non-standard product. Any returned item must be pre-authorized by a Harford Customer Service Representative and have Harford generated Return Goods paperwork attached. No paperwork, no return. All returns must be in a clean condition i.e., free from hazardous materials, contaminants, or biohazards. Attachments received in less than clean condition may be rejected and returned to the customer at their expense; they could also be subject to a cleaning surcharge. All returns accepted for return or exchange will be subject to a re-stocking charge of 15% of the product value.

Cancellation Policy

Cancellation of orders already in production will carry a penalty of a percentage of the order value, subject to product turnover. Cancellation of orders which are complete and awaiting shipment carry a penalty of 100% of net invoice.

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IMPORTANT AND SAFETY INFORMATION



SAFETY NOTICE:

It is important that the correct PPE, including safety gloves and eye protection, is worn during the installation of the Hydraulic Thumb.



WARNING:

Before carrying out any welding or work on the electrics of the machine, ensure the excavator battery has been disconnected to prevent any damage occurring to the machine circuit.

Hydraulic oil pressure and fluid can cause serious personal injury. When escaping under pressure it can penetrate body tissue, cause severe tissue damage, loss of limb and, in extreme cases, be fatal. Always check for leaks with the use of a shield and not against any part of your skin. Alternatively shut off the pressure and allow time to de-pressurize. If fluid is injected into your skin, you must seek emergency treatment straight away by medical personnel that have knowledge of this kind of injury. Remember some hydraulic fluids are also flammable. Refer to your relevant COSHH data sheets for substances that you may come into contact with.

The thumb is designed to fit a range of machines manufactured to OEM specifications and capacities. The use of third-party attachments with this coupler could be hazardous, cause damage to the machine and impede function as intended. Please check with the manufacturer before installation.

When using the Hydraulic Thumb, please ensure not to use more force than required to carry out the task at hand. This could lead to machine or attachment damage and may invalidate any warranties.

The thumb protrudes out from the dipper arm and some buckets could hit the thumb in certain positions. The thumb can be disassembled through the three removable pins when not in use to avoid potential issues.

Thumb installation and removal should be done with two persons attending. Many of the thumb's components weigh upwards of 25KG whilst disassembled.



IMPORTANT:

The Thumb is designed to operate at the excavator's maximum working pressure. If this is more than the hydraulic cylinder's maximum pressure (200 BAR or as stamped) a pressure reducing valve must be fitted. All components must be to the correct specification and installed by a qualified, competent person.

