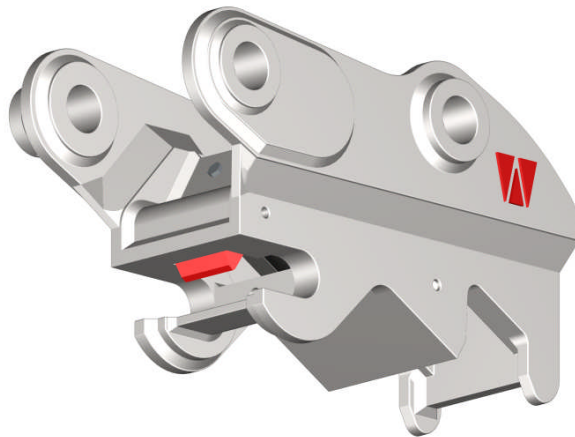




## **I-LOCK HYDRAULIC QUICK HITCH**

### **Installation & Operation Manual**

**Important: This manual must be kept with the excavator at all times and referred to as required**



**Harford Attachments Ltd**

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If at any time in the future, you require additional information on the **HARFORD I- LOCK** quick hitch or any aspects of its use, please do not hesitate to contact:

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## Introduction

### Harford I-Lock quick hitch for excavators

Thank you for choosing to purchase the **Harford I-Lock** quick hitch for excavators. The information contained in this manual should be thoroughly read and understood by all operators of this quick hitch.

The I-lock quick hitch provides an immediate safety system that is totally independent of the primary locking mechanism. This functionality provides instant safety prior to activating the primary lock.

The attachment is latched to the quick hitch and can only be removed when the operator releases the safety knuckle. This ensures that the I-Lock safety knuckle is in use for the maximum possible period of time.

Due to the large number of excavator makes and models available worldwide, it is not possible to provide a rigid set of installation instructions that will cover every situation. It is, therefore, extremely important that the installation be carried out by properly skilled persons, preferably with past quick hitch installation experience.

It is essential that the operation and maintenance instructions are followed carefully to ensure safe and reliable operation of the quick hitch at all times. Failure to do so could result in serious injury and invalidate warranties.

This manual contains the installation and operation instructions for the I-Lock quick hitch. If the quick hitch you are about to fit or operate is not the I-Lock, please refer to the separate manual.



**WARNING:**

The quick hitch extends the length of the dipper arm and some attachments may hit the cab or boom in certain positions.



**WARNING:**

The quick hitch is designed to accept attachments which are manufactured to OEM specifications and capacities. Oversized attachments could be hazardous when used with this quick hitch and could invalidate any warranties.



**IMPORTANT:**

This quick hitch has undergone CE certification by Harford Attachments Ltd. Any modification could invalidate this certification and therefore new certification would be required.

## Installation

### Fitting the quick hitch to the excavator

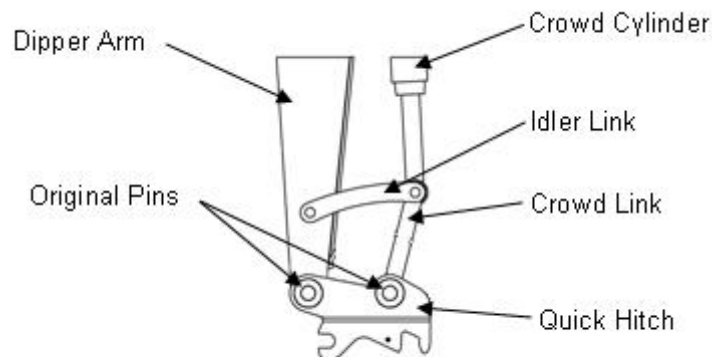


#### **SAFETY NOTICE:**

It is recommended that safety gloves are worn during the installation of the quick hitch.

1. Remove any existing attachment from the machine dipper arm and crowd link arm. The two original pins that are removed from these pivot points must be used to attach the quick hitch to the excavator (These pins are usually hardened and have greasing facilities).
2. Carefully align the dipper arm between the two front bosses on the hitch as shown by diagram 1. Replace any 'O' rings that were removed previously and slide one of the original pins through the quick hitch and dipper arm. Securely fix the pin in place by using the original or supplied retention method.
3. Repeat step 2 with the crowd link arm linkage.
4. Grease the two pins and visually check that they are located and secured correctly.
5. Use the excavator hydraulics to carefully rotate the quick hitch to the extremes of the crowd cylinder (e.g. no stroke and full stroke). Check the clearance of the quick hitch with any part of the dipper arm and linkage.
6. Fit the supplied warning label in the cab in a prominent position.
7. Medium tensile pins (or better) should be used in both pin location holes of the attachment. Visually check to ensure the pins are correctly fitted and are secure before the attachment is used. Ensure any retention bolts are tightened using double nuts to lock against each other.

**Diagram 1**



## Installation

### Fitting the hydraulic components.



#### **IMPORTANT:**

To install this hitch requires a solenoid valve, hoses and fittings. The fitting kit consists of these components. All components must be the correct specification for the excavator and be installed by skilled and suitably experienced persons.

### Solenoid Valve



#### **WARNING:**

Ensure that the solenoid valves are not energised when the quick hitch is in the locked position. This will ensure the coil will not burn out and will also ensure that in the event of an electrical failure, the quick hitch will stay in the locked position.

1. Position solenoid valve in a safe, dry area close to the hydraulic pump, or main valve assembly.
2. The solenoid valve must be connected to the main pressure line of the excavator between the pump and main control valve. It is recommended that the main test port is used.

### Hydraulic hoses



#### **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 death. 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 relevant COSHH data sheets for substances that you may come into contact with.



#### **WARNING:**

Before doing any welding and work on the electrics of the machine, ensure that battery has been disconnected to prevent damage to the machine circuit.



#### **IMPORTANT:**


The I-Lock cylinder has a safe working pressure of 3750psi. If the excavator mains pressure exceeds this, and you are not using a Harford supplied Solenoid Valve, it will need to be reduced to the cylinder safe working pressure.

1. Ensure all hydraulic components are suitable for the working pressures.
2. The hydraulic lines must be connected to the correct ports as per the circuit diagram shown by appendix 1.
3. Where appropriate, hydraulic hoses should follow the paths of existing hydraulic lines of the excavator. Weld pipe clamps to the excavator arms to retain hose at appropriate positions.
4. Cut and fit spring guard protector to suit hoses between hose clamp and the hydraulic cylinder on the hitch.
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.
6. Avoid contamination within the hydraulic circuit.

## Installation


7. If hoses are not pre-assembled ensure any assembly follows hose manufacturers recommendations.
8. Do not re-use old or damaged hose or fittings. If fittings come off during use, do not re-attach but replace the whole hose assembly.
9. Do not mix hydraulic hose and adaptors from different manufacturers and ensure all fittings used are compatible.

### **IMPORTANT:**

 The Harford hydraulic kit supplied by Gates Hydraulics uses hoses that comply with EN 853-2SN (DIN 20 022) and have a minimum bend radius of 50mm. All hoses must be crimped by somebody who is familiar with the Gates hose system. Further information can be obtained from the following.

Harford Attachments Ltd	+ 44 (0) 1603 403099
Parker Hydraulics	+ 44 (0) 1603 403190
Gates Rapid Response (UK)	01480 225274

## Fitting the electrical components

 **IMPORTANT:** To install this hitch requires a solenoid valve, dual switch arrangement, warning buzzer, appropriate wiring and fuse. The Harford fitting kit consists of these components. All components must be the correct specification for the excavator and be installed by skilled and suitably experienced persons.

### Electrical wiring/switching

1. Ensure all electrical components are the correct voltage for the excavator.
2. The electrical circuit must be wired as per the circuit diagram shown by appendix 2.
3. The switches should be positioned in the cab within easy reach of the operator but not in a position so they can be inadvertently operated.
4. Ensure the warning buzzer is placed in a position so that it can be heard.

## Safe Operation



### **IMPORTANT**



The attachment is locked/unlocked to the quickhitch by a dual switch arrangement. A primary lockable on/off switch is used to operate the locking/unlocking of the wedge and a secondary hold to run switch is used to open the safety knuckle when disconnecting an attachment.



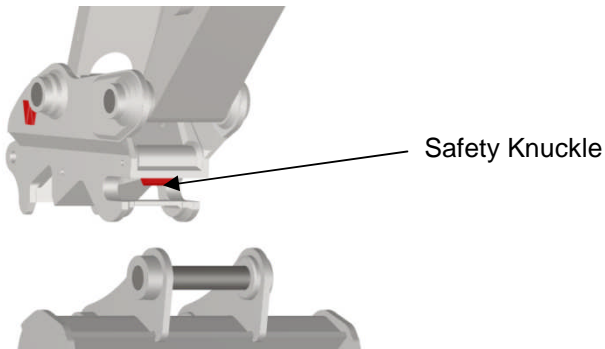
### **WARNING:**

The secondary switch must not be used when connecting an attachment.

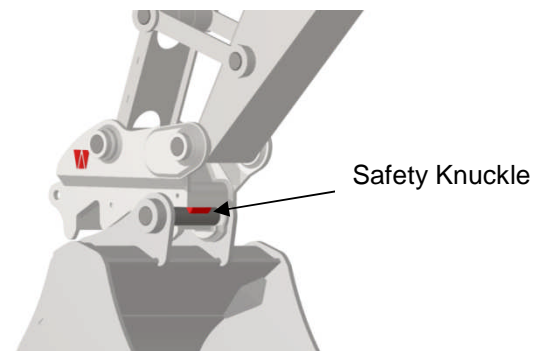
### Connecting an attachment

- 1 Lower the Quick hitch front 'C' shaped jaw down towards the front attachment pin ensuring the Safety Knuckle is in the down (safe) position as shown by diagram 2.
- 2 Engage 'C' shaped jaw fully with front attachment pin as shown by diagram 3. Ensure Safety Knuckle returns to its down (safe) position.
- 3 Extend bucket cylinder to locate rear jaw of the quick hitch as shown in diagram 4.
- 4 Extend the bucket cylinder fully and maintain operation of the control stick to ensure pump works at full pressure.
- 5 Operate the primary on/off switch  to retract locking wedge (this activates the warning buzzer and makes the secondary switch live) while still maintaining operation of bucket control stick (the rear pin will locate fully in the rear jaw of the quick hitch).
- 6 Operate the main on/off switch  to engage the locking wedge while maintaining operation of bucket control stick. This also de-activates the warning buzzer and secondary switch.
- 7 Conduct rattle test to ensure full engagement of locking wedge.

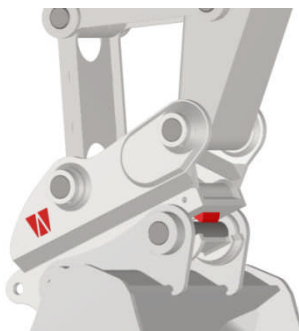
**Diagram 2** - Lower quick hitch to front attachment pin



**Diagram 3** - Engage 'C' shaped jaw with front attachment pin



**Diagram 4** - Crowd quick hitch to engage with rear jaw



## Safe Operation



### **WARNING:**

During operation there should be no movement between the quick hitch and attachment. If any movement is detected, stop operation immediately, lower attachment to the ground and inspect the hitch.



### **WARNING:**

The quick hitch extends the length of the dipper arm and some attachments may hit the cab or boom in certain positions.



### **WARNING:**

The quick hitch is designed to accept attachments which are manufactured to OEM specifications and capacities. Oversized attachments could be hazardous when used with this quick hitch and could invalidate any warranties.



### **WARNING:**





Ensure the Safe Working Load of the excavator is not exceeded. Refer to the excavator manufacturer's information.



### **IMPORTANT:**

If hammers are to be used for long periods of time the quick hitch should be removed to prevent unnecessary wear.

## Releasing an attachment

- 1 Position attachment just above the ground where it is to be released. Ensure people and property are well clear of the immediate area.
- 2 Extend the bucket cylinder fully and maintain operation of the control stick to ensure full pressure.
- 3 Operate the primary on/off switch  to retract locking wedge (this activates the warning buzzer and makes the secondary switch live) while still maintaining operation of bucket control stick.
- 4 Operate the secondary switch  to open the Safety knuckle while still maintaining operation of bucket control stick.
- 5 When the Safety Knuckle is fully open carefully retract the bucket cylinder to disengage the attachment from the Quick hitch. Use the bucket control stick to raise/lower the boom to ensure the attachment doesn't fall to the ground.
- 6 Release the secondary switch  to return the Safety Knuckle to its down (safe) position.
- 7 Operate the primary on/off switch  to extend the locking wedge (this de-activates the warning buzzer and secondary switch.)
- 8 The Quick hitch is now ready to connect another attachment (see connecting an attachment).

## Lifting a load



### **IMPORTANT:**

This section only applies to quick hitches that are manufactured with a lifting eye.

1. Ensure that the load to be lifted does not exceed the safe working load of the lifting eye.
2. The lifting eye is designed to be used with a lifting shackle with the same safe working load rating.
3. Release the attachment from the quick hitch prior to using it to lift load.



### **IMPORTANT:**

Ensure the safe lifting capacity of the excavator is not exceeded. Refer to excavator manufacturer's information.

## Maintenance



### **WARNING:**

Hydraulic oil pressure and fluid can cause serious personal injury. When escaping under pressure can penetrate body tissue, cause severe tissue damage, loss of limb and possible death. Always check for leaks with the use of a shield and not against any part of your skin. 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 relevant COSHH data sheets for substances that you may come into contact with.



### **SAFETY NOTICE:**

It is recommended that safety gloves are worn during the maintenance of the quick hitch.

### **Daily:**

1. Check all pin retainers bolts & nuts for tightness on quick hitch and attachments
2. Grease all wedge slide housing points
3. Check hydraulic hoses for damage, leakage or weeping, stiffness (as hose ages it can become stiff causing it to crack when flexed), blistering and general wear. Replace as required.
4. Check hose fittings at connection points for leaks, poor interfacing with hose or other connectors. Tighten and replace as required
5. Check operation of warning buzzer.
6. Check quick hitch for correct operation by connecting an attachment.

### **Weekly**

1. Check hydraulic cylinder cover plate bolts. Tighten as required. Torque settings are M8 - 26Nm (19ft/lbs), M10 – 45Nm (32ft/lbs)
2. Check quick hitch and wedge for evidence of wear, fatigue, weld failure or stress.
3. Clean away any material build up around the quick hitch cylinder and wedge.



### **IMPORTANT:**

Due to the self tightening and infinite wear feature accommodated with the hydraulic cylinder, if any attachment is fitted to the hitch for long periods of time it should be released daily. If the daily maintenance tasks are adhered to, this will happen automatically.



### **WARNING:**

If the hitch should be damaged in any way and there is any doubt as to the continued safety of the product please contact Harford Attachments Ltd, Technical Department on +44 (0) 1603 403099.

## Item Checklist

### Earthmoving attachment

Harford Attachments Ltd (the seller) warrants their quick hitches as follows:

1. The seller shall repair or replace at the seller's option any of the goods which are, or which become, defective within 12 months from delivery due to faulty workmanship, materials or faulty design if the seller is responsible for design, provided that the buyer shall have notified the seller in writing of such defect and have given the seller a reasonable opportunity to inspect the defective goods.
2. All expenses incurred by the seller in connection with the repair or replacement of the defective goods, including all costs of transportation, shall be paid by the seller.
3. If the seller shall fail to so repair or replace the defective goods within reasonable time of having been notified by the buyer, then the buyer shall be entitled to have the work of repair or replacement carried out by others, and the seller shall pay to the buyer the costs reasonably incurred to the buyer in so doing.
4. The seller's liability in respect of defects in the goods shall be limited to those stated in this clause and subject to Clause 2(1) of the **Unfair Contract Terms Act 1997**, the seller shall not be liable whether in contract or in tort, including but not limited to negligence, or by reason of breach of statutory duty or otherwise, for any damage or loss whatsoever suffered by the buyer arising out of or attributable to such defects.

## Item Checklist

The following items are supplied.

Item	Supplied
Hydraulic quick hitch	✓
Installation and operation manual	✓
Warning label	✓
Electrical fitting kit	see note 1
Hydraulic fitting kit	see note 1

### Notes

1. The electrical and hydraulic kits are essential parts of the hydraulic quick hitch system but may not have been supplied by Harford Attachments Ltd.

## **Harford Attachments Ltd**

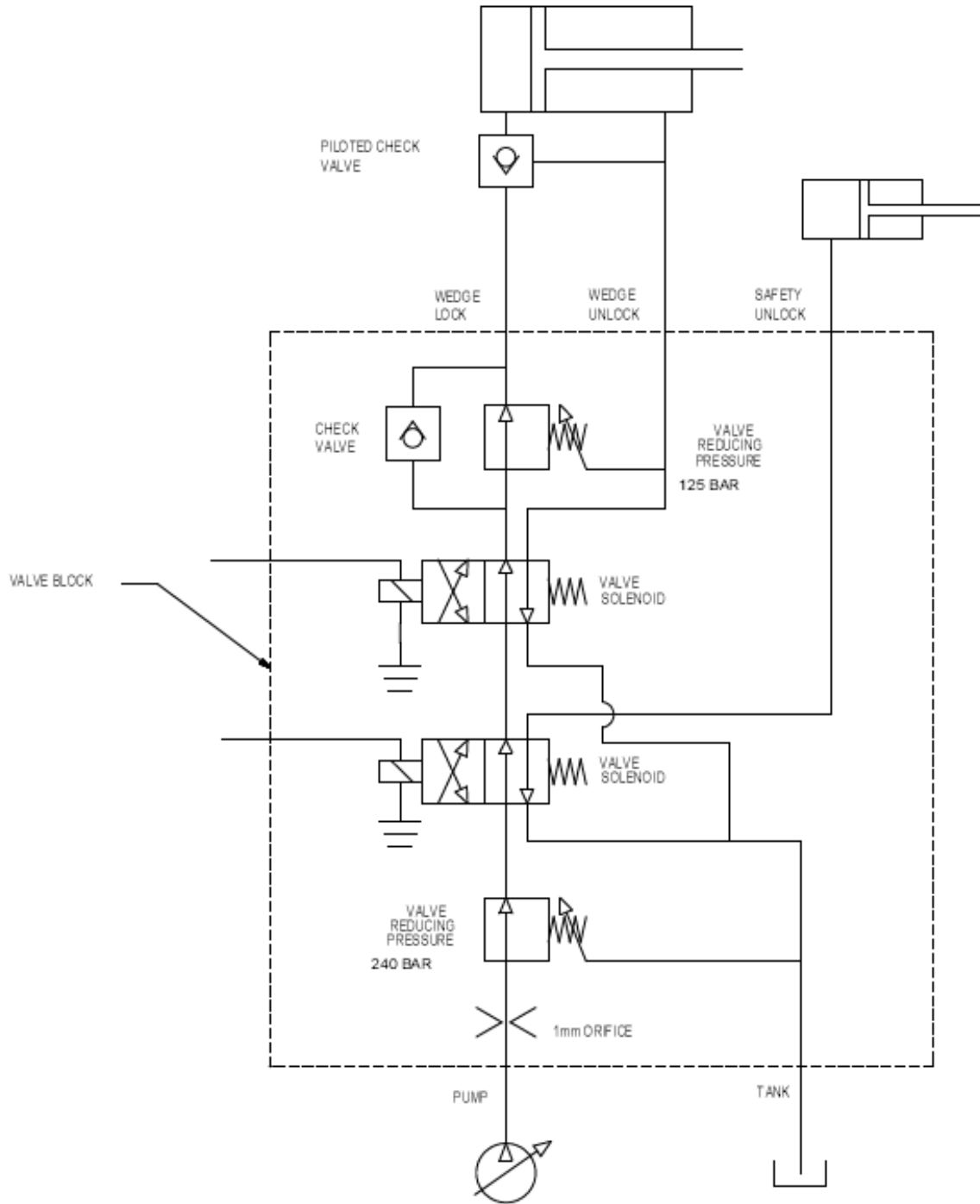
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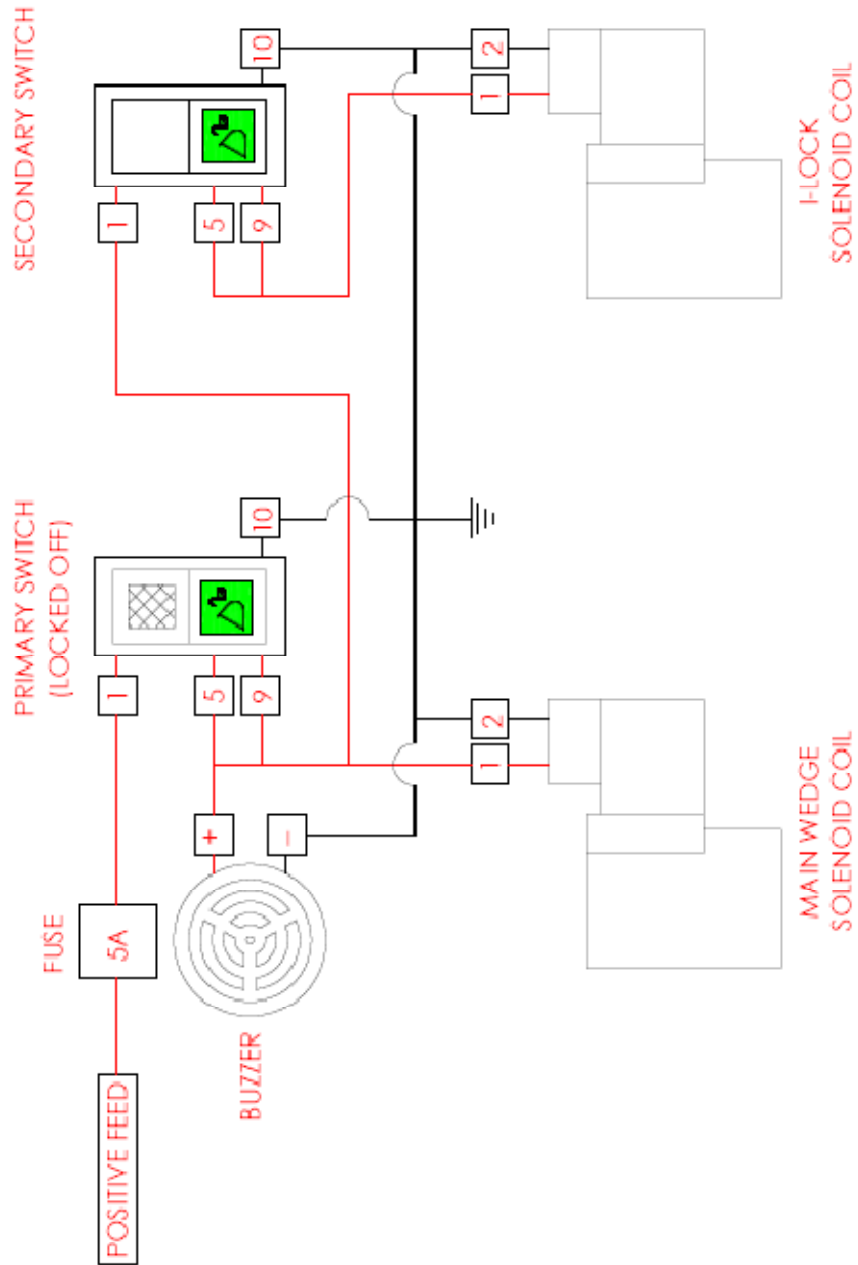
# Appendix 1

## Hydraulic Circuit



## Appendix 2

### Electric Circuit



## DECLARATION OF CONFORMITY

Description	Quick Hitch
Make	I-Lock
Type	Hydraulic
Serial Number	

We hereby declare that the above Machinery complies with the essential health and safety requirements of the Machinery Directive 98/37/EC enacted in the United Kingdom by The Supply of Machinery (Safety) Regulations 1992, (SI 1992 No. 3073) as amended by The Amendment Regulations 1994 (SI 1994 No. 2063).

This machinery has been designed and manufactured in accordance with the following harmonised European standards.

BSEN 12100:2003	Safety of machinery-Basic concepts, general principles for design. Pt 1 Basic terminology and methodology. Pt 2 Technical principles.
BSEN 474:2006	Earth-moving machinery-Safety. Pt 1 General Requirements Pt 5 Requirements for hydraulic excavators.
BSEN 14121:2007	Safety of machinery. Risk assessment. Pt 1 Principles

Signed D. Lake  
Name D. Lake

Date 09 March 2009  
Position Technical Sales Manager

HARFORD ATTACHMENTS LTD, BURTON ROAD, NORWICH, NORFOLK. NR6 6AU

This Declaration of Conformity complies with Regulation 22 of The Supply of Machinery (Safety) Regulations 1992.