

Quick Hitch Systems and Earth Moving Machines

From: BLL Global EHS

Issued by: Stephen Peckitt

Ref. No: GSA 07/01

Issue:

Quick hitch systems are commonly used for connecting tools such as earth moving buckets, to the arms (aka boom, dipper arm, jib, stick) of excavators (aka back hoe, track hoe, etc.). When quick hitch systems are used incorrectly (e.g. failing to install safety bars or pins) or poorly maintained (failing to keep clean and greased) the tools can be released unexpectedly. Many deaths and serious injuries have resulted from such failures around the world.

Background:

In the last six months we have experienced two such failures in the BLL business – one of which resulted in the death of a worker. In both incidents the quick hitch mechanism failed, allowing the excavator bucket to fall from the arm of an excavator.

Action Required:

I) Survey

Each business must ensure that all their projects where earth moving machines are operating using quick hitch systems conduct a survey using the attached survey form and report back a summary of these findings to their Regional BLL EHS leader within 14 days of receipt of this alert. EHS leaders will then feedback summary results to the BLL Global EHS team.

II) Performance Standards

Each business must immediately implement the following performance standards:

- 1) Exclusion zones must be established and maintained around operating earth moving machines to prevent workers being struck by either the machine or any tool due to the failure of any quick hitch system. No unauthorized persons should be allowed to work within 3 meters of an operating machine, or under any load or part of an operating machine at any time.
- 2) For tasks where close proximity working is absolutely necessary, authorized competent workers are allowed to work in close proximity to operating machines, if the hitch systems used have locking mechanisms which physically prevent the attachment accidentally falling out (i.e. manual or semi-automatic quick hitch systems with safety bars inserted and any retaining pins in place (see photos) and safe work method statements are provided for the specific tasks.
- 3) All earth moving machine operators must have written evidence of their training on how to operate the specific machines and quick hitch system they are required to use.
- 4) All earth moving machines and quick hitch systems must be fitted and maintained in accordance with the manufacturers' instructions and checks made to ensure compatibility with each other.

III) Management Systems

Each business must immediately implement the following management systems (check list provided):

- 1) Raise quick hitch safety performance standards at procurement stage with ground works contractors to ensure awareness of issues and ability to follow safe work practices. Appoint only competent contractors.
- 2) Before allowing earth work machine operations to commence on site – ensure that all operators are trained (make records/take copies - example of a training record sheet provided as part of this alert); check that manufacturers instructions and maintenance logs are available; and test operators understanding of the safe use and maintenance requirements of their specific machines and quick hitches by referring to manufacturers instructions.
- 3) Make regular checks (at least weekly using attached check list) to ensure that:
 - all machines using quick hitch systems are used safely following the manufacturers instructions (i.e. safety bars and pins are fitted to semi-automatic quick hitch systems);
 - that they have the manufacturers operating manuals for the machine and any attachments and an up to date maintenance log (daily and weekly check lists based on manufactures requirements for the plant, hitch and attachments completed and signed off daily by the operator) available in the cab at all times; and
 - effective exclusion zones to prevent workers being struck by machines or their tools are in operation.
- 4) Disciplinary action should be taken for any violation of the matters contained in this safety alert.

Photographs of an example of a safety bar on a semi-automatic quick hitch:

(Note there are many different types of quick hitch and locking mechanisms on the market – these photos are illustrative of how the safety bar system works)

Photo 1. Locking bar in place preventing ram block retracting and release of the bucket

Safety bar in place



Photo 2. Safety locking bar removed allowing ram block retraction and bucket to be released

Withdrawn safety bar

Ram block

Hydraulic rams

Ram block moved by rams opens and closed claw which retains bucket

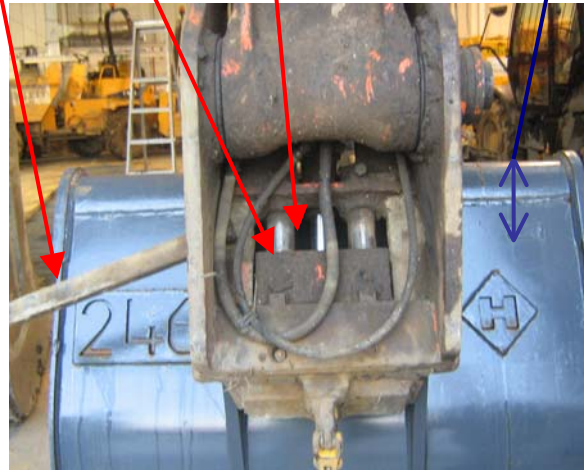


Photo 3. Best practice – **Welded lug** on end of safety bar prevents full withdrawal



Photo 4. View of hitch system with bucket removed

Hydraulic rams

Withdrawn safety bar



Note

Contractors should be encouraged to use retained safety bars (see photo 3) and paint the safety bars a bright colour so that they can be more readily observed and less likely to be forgotten by the operator.

QUICK HITCH SURVEY FORM

All projects to complete form and return to your Regional EHS Leader within 14 days of receipt of this Safety Alert.

EHS Regional leaders to summarise results and return summary data to Stephen Peckitt Global EHS Manager within 21 days.

Issue	Response
1. Type and number of machines fitted with quick hitch systems, (eg Volvo 30 ton back hoe)	
2. Are the manufacturers operating and maintenance instructions for the machine available in cab?	
3. Are all maintenance procedures for the machine followed by the driver (or other competent person)?	
4. Are the machines maintenance checks recorded in a log book kept in the cab?	
5. Type of quick hitch – (Semi automatic or Automatic), approximate age and manufacturers details (inc address). If the quick hitch is a retrofit check that the operating hydraulic pressures are compatible with the machine.	
6. For semi automatic quick hitches – is the manual locking mechanism (bar/pin) inserted by the driver during use? (observe use and process of attaching tools using quick hitch if possible)	
7. Are manufacturers instructions for use and maintenance of the quick hitch available with machine?	
8. Is the operator trained on the use and maintenance of the quick hitch?	
9. Is the quick hitch maintained in a good condition (clean and greased)?	
10. Are the quick hitch manufacturer's maintenance checks completed by the operator and recorded in a log kept with the machine?	
11. Are all unauthorised workers kept a safe distance away from earth moving machine operations at all times?	
12. Other relevant comments or observations?	

Quick Hitch and Earth Moving Machines SAFETY CHECK LIST

Scoring: Good standards / Minor failings Remedial Action Taken Non compliant Work Stopped

Pre-start checks – conduct for each new contactor operating earth moving machinery

1. Performance standards for the safe use of quick hitches detailed during procurement and contractor standards and competence checked.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Findings: Action:
2. Operator competence (training and knowledge) checks conducted and signed off before starting work on site.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Findings: Action:
Weekly site checks	
1. Manufacturers' instructions for use and maintenance of each quick hitch are available with the specific machine they are fitted to. If the quick hitch is a retrofit check that the operating hydraulic pressures are compatible with the machine.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Findings: Action:
2. Manufacturers' instructions for use and maintenance of quick hitches are followed by operators. Ensure semi automatic quick hitches are in good condition (cleaned and greased) and manual locking mechanism (bar/pin) is inserted by the driver during use.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Findings: Action:
3. All machine operators are trained and competent on the safe use and maintenance of the quick hitches they use. Check by questioning and observing operations.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Findings: Action:
4. Quick hitch manufacturers maintenance checks are completed by the operator (or competent person) and recorded in a log kept with the machine?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Findings: Action:
5. Exclusion zones are established so that all workers are kept a safe distance (3m) away from earth moving machinery operations at all times.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Findings: Action:
6. When specific operations are identified where it is absolutely necessary for a person to work in close proximity to an operating machine – they are conducted by authorised workers and machines are fitted with manual or semi-automatic quick hitches with safety locking mechanisms in place.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Findings: Action:
7. All earth moving machines operatives are trained in their use and have the manufacturer's operating and maintenance instructions available in the cab.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Findings: Action:
8. All maintenance procedures for earth moving machines are followed (by driver or undertaken by other other competent person) and recorded in a log book kept in the cab	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Findings: Action:
9. Details of any safety violations observed and actions taken	

Operator Training Log		
To be completed and submitted to BLL before every operator is allowed to work on site		
Project Name	Date of Submission	
Contractor Name	Package Name	Package No
Operators Full Name		
Machine/Plant Type competent to operate (inc Manufacturer and Model)		
I confirm that the Operator named has received Familiarisation training on the above specific plant.	I confirm that I have received and understood familiarisation training on the above specific plant.	
Name (Contractors Management)	Name of Operator	
Position:	Plant Operator	
Signature	Signature	
Date	Date	

Attachments used with any of the machines/plant listed as competent to operate				
Type	Make	Model	*Manager, I confirm the operator has received familiarisation training in the attachment fitting and use	*Operator, I confirm I have received familiarisation training in the attachment fitting and use
			Signature	Signature
			Signature	Signature
			Signature	Signature

Note

1. Operating Manuals for the machine and every attachment including hitches must be kept in the cab at all times for reference.
2. Daily maintenance checks, including attachments and hitch systems must be carried out against a specific checklist incorporating manufacturer's recommendations. This is to be recorded and the record kept in the cab or on file.

I note the above	Contractors manager signature	Operator Signature
	Date	Date

*Training is to be carried out by a competent person appointed by the contractor.

Operators understanding of safe methods of working and maintaining machine and attachments (using manufacturers instructions) tested by:
BLL Managers signature:

Operator Pass: ■	Operator Fail: ■
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Give reasons for failing competence test