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All FOD Inspectors inspecting Agriculture

USE OF SKID STEER LOADERS IN POULTRY SHEDS

This SIM informs inspectors about the safety requirements for Skid Steer Loaders and the action to take when users have removed part or all of the ROPS/FOPS for use in old style poultry sheds. It updates information previously issued in NIGM/13AG/1992/10 and AIC 1989/19.

1 It has become common practice in the poultry industry to use skid steer loaders to remove manure etc. from the growing sheds at the end of each batch of birds. The skid steer loader is the choice of most contractors and growers due to a combination of its speed and manoeuvrability in tight spaces. This enables them to clear poultry sheds in a relatively short time.

2 Many older sheds are only 1.5 to 2 metres high at the eaves. Most larger capacity skid steer loaders are over 2 metres in height with the Roll Over Protective Structure (ROPS)/Falling Object Protective Structure (FOPS) in position. This height can be greatly reduced by owners/operators removing all or part of the ROPS/FOPS allowing them to operate in the reduced headroom of some poultry sheds.

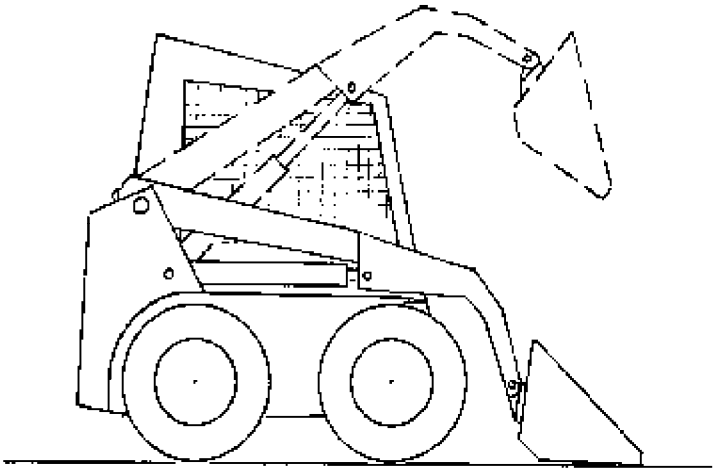
3 When owners/operators have removed the ROPS/FOPS in the past they have also disabled other safety features in the process. These include the safety interlock bar that isolates the foot operated controls which the operator has to step over in order to reach the driving position. There have been fatalities and other serious injuries to operators who have accidentally operated the foot controls when mounting or dismounting the machine.

4 These machines have a short wheelbase so are unstable on anything other than level, even ground, thus the removal of the ROPS/FOPS potentially puts the operator at significant risk.

5 The complete removal of the ROPS/FOPS also exposes the operator to a shearing hazard between the loader arms and the frame of the machine because they incorporate the Side Protection Screens (SPS). In September 2001 an operator was killed when he leaned out of the central zone and was crushed to death by the descending loader arm; the ROPS/FOPS had been completely removed.

Design features of skid steer loaders

6 Skid Steer loaders manufactured to EN 474-3 are very compact machines with a short wheelbase and narrow track. Independent motors are used for left and right pairs of wheels. Steering is accomplished by varying the speed of the hydraulic motors on respective sides: tight turns can be achieved by reversing the motor driving the wheels on the inside of the corner.



7 Because the operator occupies a central position very close to the zone of movement of the loader frame, they must enter and exit through the front of the machine and over the bucket. Inadvertent operation of the lift arms, bucket or other attachments may also be possible. The operator is enclosed by a ROPS/FOPS frame, often consisting of perforated steel plate to the sides, rear and top.

8 The ROPS/FOPS is required to protect the operator from:

a. falling objects;

b. roll-over.

9 The SPS are required to protect the operator from crush injuries from the loader movements at the side of the cab (EN 474-3: clause 4.3.6 refers).

10 Common Safety Features:

a. ROPS/ FOPS/SPS;

b. hand-holds are provided for secure access, as are non-slip areas on the loader frame for the operator to use as a step;

c. to keep workers from unintentionally activating controls, manufacturers of skid steer loaders began to equip them with interlocked control systems in the early 1980s. These interlocked controls require that a non-operational control or fixture

(such as a seat belt or restraint bar) be secured or activated before operational controls can function, these include:

i. the seat belt to be fastened;

ii. a bar to be lowered in front of the operator or;

iii. a pressure switch in the seat.

d. manufacturers have recently introduced electronic systems to perform the interlocking function. Most bars isolate the hydraulics when raised, several apply the parking brake and/or engage locks to prevent the forward/reverse levers from being moved, and some switch off the engine [some old machines use a switch in the seat belt to indicate operator presence];

e. some machines have a safety interlock which will prevent the engine from starting unless either the seat is occupied or the seat belt is buckled up. The engine will stop if either switch is deactivated;

f. some form of locking device will be supplied/fitted to lock the loader in the up position for maintenance purposes – for example ram stops and extending pins built into the ROPS frame.

Accident history

11 Typical accidents with Skid Steer Loaders:

a. being crushed between the bucket and frame of the machine or between the lift arms and frame;.

b. leaning out of the operator's zone into the path of the loader frame;

c. entering/exiting the loader and being pinned between loader and frame;

d. rollovers;

e. pinning between loader and other objects;

f. being run over by the loader.

12 Typical causes of accidents/deaths:

a. operating controls from outside the machine;

b. by-passing interlocking devices;

c. faulty and poorly maintained equipment;

d. removal of all or part of the ROPS/FOPS/SPS protection.

Advice to users

13 Since 17 September 2002 regulation 10(1) of the Provision and Use of Work Equipment Regulations 1998 has required duty holders to ensure that work equipment complies at all times with the essential health and safety requirements (EHSR) that applied to the equipment at the time of its first supply or first use. Skid steer loaders are made to a 'C' standard, EN474-3, and this means they are regarded as meeting the relevant EHSRs, in particular EHSR 3.4.3 that requires specified earthmoving machinery, including loaders, with a capacity exceeding 15 kW, to be fitted with ROPS. The 'C' standard also prescribes the fitting of FOPS. If a user subsequently removes any part of the ROPS or FOPS the machine becomes non-compliant, i.e. the requirements of regulation 10(1) are no longer met and the risk of injury to operators is increased.

14 It is the intention to prohibit the use of non-compliant, modified/adapted skid steer loaders in poultry houses as there are now some alternative types of machine and low profile machines available with more expected to be developed. **BUT** the sector recognises that the industry cannot adopt these changes over night and so this SIM sets out how contractors etc. should control the risks with currently modified machines and the planning required in order to achieve the goal of using compliant machines only.

15 The Sector has agreed with the British Poultry Council that they will have until 31 December 2007 to remove non-compliant skid steer loaders from use. In the interim period the use of non-compliant skid steer loaders must be severely restricted as outlined below.

Interim strategy

16 Preferably use alternative solutions e.g. smaller machines or other equipment to access the sides of the sheds and then skid steer loaders to remove the debris from the centre of the shed, (where generally there are greater clearances), together with a written safe system of work. N.B. it is not the Sector's intention that operators should use other machines, e.g. articulated loaders, if these are used in a way that gives rise to risks similar to those found with non-compliant skid steer loaders.

17 Otherwise, implement a control strategy that includes the following elements:

a. draw up a positive replacement plan to bring in smaller/alternative machines which do not have to be modified, i.e. they would be fully compliant, before the 31 December 2007 deadline. This may provide for buying or hiring in smaller machines and building sheds with greater clearances when old sheds become obsolete;

b. do not use skid steer loaders with any part of the SPS removed that would result in a shear-trap being created for the driver by the movement of the loader booms (arms). In exceptional circumstances the use of mechanical restraint systems, e.g. on the rams, should be used to limit the movement of the loader booms so that no shear traps are created

c. ensure no other safety devices are removed (e.g. the safety interlock bar is still fitted & working);

d. implement a written safe system of work including method statements. This should make it clear that non-compliant skid steer loaders are not to be used where it is practicable to use a machine with full ROPS/FOPS/SPS fitted, (also see paragraph 18 c below).

18 Key elements of the written safe system of work/method statements would include:

a. tailoring method statements for each individual shed where non-compliant skid steer loaders have to be used;

b. specifying named drivers who would be the only persons permitted to use the non-compliant machines;.

c. specifying that non-compliant machines are used in the low sheds only and these are identified in the safe systems of work.

d. prohibiting the use of non-compliant machines in sheds having adequate headroom for the use of fully compliant machines;

e. describing the arrangements for monitoring the systems of work by supervisory staff on site;

f. specifying that the system of work must NOT depend on operators having to duck under roof joists etc;

g. requiring hard hats to be worn.

Action by inspectors

19 If the following deficiencies are encountered Inspectors should consider taking the following action:

a. Prohibition Notice (PN) - Skid steer loader with any part of SPS removed creating a shear or crushing trap [H & S at Work Act, 1974, Reg 2 or 3, alternatively Provision and Use of Work Equipment Regulations (PUWER) reg 10(1)];

b. PN - Safety systems have been removed or by-passed [PUWER, 1998 regs 10(1) and 11];

c. Improvement Notice (IN) - No Training in use of equipment [PUWER, 1998 reg 9];

d. IN - No safe systems of work [PUWER, 1998 reg 8];

e. PN - Parts of ROPS/FOPS/SPS removed and loader is being used in a shed

where an unmodified machine could be used (PUWER regs 10 and 4);

f. PN - No restricted use of skid steers, with roof section removed, [PUWER Reg 4 and 8];

g. IN - No maintenance regime [PUWER Reg 5];

h. IN - FOPS removed and not inspected by a competent person within a period of 12 months or in accordance with the written scheme of examination [Lifting Operations and Lifting Equipment Regulations (LOLER) Reg 9];

i. IN - No risk assessment [Management of H & S at Work Regs, 1999 Reg 3].

Benchmark standard

20 The benchmark is compliance with PUWER 98 and all the relevant BS, EN or ISO standards including BS EN 474-1: 1995 and BS EN 474-3: 1996. BS EN 474-3 requires the fitting of a FOPS, ROPS and SPS that prevents the operator from reaching the trapping parts between the side arms and fixed parts of the machine when the operator is seated in the operator's position.

Risk gap

21 The risk gap from Enforcement Management Model (EMM) table 2.1 for the key scenarios summarised below. Inspectors may use these scenarios as a guide to making their assessment of actual risk and the subsequent risk gap. However, inspectors must ensure that they base their assessment of risk on the actual operator protective measures found on the machine.

Scenario	Actual risk	Risk gap
Top of cab removed but adequate headroom in shed	Risk of a serious personal injury	Substantial
Any part of the side protection removed	Risk of a serious personal injury	Substantial
Any machine where, the protection restraining device has been removed	Risk of a serious personal injury	Substantial

Appropriate standards

Title	Authority
Provision and use of work equipment Regulations 1998	Defined
EN 474-1 Earth Moving Machinery - Safety - General Requirements	Established
EN 474-3 Earth Moving Machinery - Safety - Requirements for loaders	Established
EN 294 Safety of Machinery - Safety distance to prevent	Established

danger zones being reached by the upper limbs (for gravity-fed machines)	

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