



Work Safety - Edition 2014 Concise cards of major risks in agricultural activity

4 Mechanization - Card 04.05 Control, locking, hydraulic and electric system



Card 04.05 Control, locking, hydraulic and electric systems

THE RISKS:

- a. *Entangling and dragging*
- b. *Crushing* (due to pressure reduction or load loss)
- c. *Running over*
- d. *Boiling oil burns* (caused by overpressure and pressure pipes break)
- e. *Worker coming into contact with electrical parts*

It is necessary to remind that:

Sometimes machine parts are neglected. They are considered superfluous, less important than others for production performance, or even considered of limitless lasting and without maintenance needs. It is necessary to remember each machine part shall be checked and requires adequate maintenance.

PRACTICAL AND OPERATING INDICATIONS:

Controls, such as steering-wheel or steering gear, gear levers, command levers, cranks, pedals and switches have been chosen, projected, built and positioned by the builder in an adequate way and shall not be modified without respecting their respective rules.

Control devices shall be easily recognizable through places with graphic symbols which help the operator to understand the command function.

If the command activation can be activated accidentally, it is necessary to provide it with locking devices in rest position ("dead man switch" actuation).

Levers shall be provided with a protective bow to avoid operator's accidental bumps causing their activation.

Occasionally, some machines require workers to introduce hands or other body parts among devices which start to operate when the machine activates. These shall be equipped with a multiple locking device command system. It will let the machine start only after each operator disconnects his/her particular locking device..

Some machines require a worker, for loading operations, settings, changing pieces, cleaning, repairing and carrying out maintenance, to introduce him/herself or other body parts among devices which could be activated. These shall be provided with devices which guarantee that the machine and its devices will not run during these operations.

Measures and prudence shall be adopted so that the machine or its others parts will not be activated by others.

If the slow locking of the energy transmission elements matching among moving working equipment and its accessories and trailers could pose specific risks, the working equipment shall be provided with or positioned to prevent energy transmission elements locking. At least every possible precaution shall be taken to avoid harmful consequences.

If the energy transmission devices, matching among several moving working equipment, may become dirty and get ruined by scraping along the ground, a fastener shall be taken into consideration.

When the working equipment or its dangerous parts stop running, the activators feeding must be interrupted.



System components shall be kept accessible and setting or maintenance operations shall be carried out in safety conditions.

In oil hydraulic systems, it is necessary to facilitate fluid pressure dissipation to prevent unexpected activation (mechanical lock of isolation valve in "close" position; oil hydraulic system pressure dissipation though electric supply isolation).

Mechanical movements, expected or unexpected (including effects due to acceleration, deceleration and lift) must not cause hazardous situations for people.

Oil hydraulic systems shall be projected to protect operators from superficial temperatures which exceed contact tolerability.

Pipeline system shall be projected in a way it will not be used as a ladder or as a step.

Pipes shall be identified and placed in accordance with the law to avoid connection mistakes which could result in danger

Pipes, both rigid and flexible, shall be placed in a way they are protected from expected damaging and they shall not block access for settings, repairs, component substitutions or daily work.

Pipes shall not be used to support components which may result in abnormal loads.

Plumbing system shall be protected to avoid liquid spill in case of burst.

An adequate maintenance programme shall be adopted: substitute plumbing pipes following the builder's instructions; evaluate the wear and tear and substitute pipes no later than 3 years.

The floor crane, equipped with a hook, is compared to other lifting equipment. If it has a capacity superior to 200 kg the ISPESL validation is required as well as the following recurring controls by AUSL.

Electric wires on machines shall be protected if they may potentially touch abrasive metallic surfaces. They shall resist to contact with lubricant or fuel or shall be protected against these substances and located in a way none of their parts touch the unloading system, moving parts or sharp edges.

Except from starting circuit and high voltage ignition system, each electric circuit shall be provided with fuses or other protection devices against overcharge.



FURTHER INDICATIONS AND ADVICE

- Before raising steam pressure to the hydraulic line, check if the connections are correct and if the plumbing system is not suffering from damages.
- To avoid connection mistakes, consider carefully identification codes (colours, signs, one-way linking joint etc) of the plumbing system, tractor's oil plugs and quick joints.
- Before disconnecting the plumbing system, check if the circuit is not under pressure.

