

Problems and suggestions /self propelled machines

Stability



Many major/fatal accidents are caused by the overturning of different types of machines in the field



forklift trucks safety



An example **Work phase** “*travelling when empty*”

Task	Operating procedure	Competence	Critical aspects Risks	Solutions, suggestions for prevention; need of further research
To adopt the driving position Operation involving frequent climbing on and off the vehicle (over 50 times a day)	To sit in the driver's seat and to secure the restraint device. (seatbelts, gates, etc.)	To be able to use restraint devices properly and to be aware of their importance.	Risk of serious damage and injury due to vehicle tip-over.	Adoption of efficient, easy-to-use and mandatory restraint devices. (At present seatbelts to be secured only around the waist are rarely used.....)



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.... the protection devices are not used by workers when representing an obstacle to the work activity and the productivity ...



Work on slopes



Work phase: Harvesting

Critical aspects / risks: **Overturning, rollover, capsizing ...**

Suggestions (I, S, UK)



-Provide an incline indicator system of the machine with at least an indication of absolute safety, danger and alarm situations (some machines are already fitted with such a device);

-The machines must be equipped with systems that in case of capsizing (through an accident, wrong manoeuvre, loss of stability during use, etc.), provide a safe space in the driver's cab and maintain the operator seated in the driver's post;

-A tyre pressure indicator in the driver's cab is useful;

-Appropriate overall design of self-levelling machines which today seem to be derived from machines designed for the plain.

-All combine harvesters must have ROPS;

-Safety belt shall be standard, even for passengers, if there is a seat for them;

-Seat belts as standard. ROPs (Roll over protection) as standard.

-Tyre-pressure indication in-cab and preferably automatic tyre inflation/deflation from cab.



Problems and suggestions - Unification and improvement of control



... different control systems are adopted for the same action in the same type of machines so determining further risk of accident due to human error



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..... **Work phase** “*travelling when empty*”

Task	Operating procedure	Competence	Critical aspects Risks	Solutions, suggestions for prevention; need of further research
To drive in a forward gear	<p>To switch on the board...</p> <p>.....</p> <p>To accelerate and move in the desired direction by steering and applying the brakes whenever necessary.</p>	<p>Arrangement and functioning of truck operating controls (<i>paying particular attention to the use of pedals</i>). Stopping distance.</p> <p>Degree of stability of the vehicle depending on ground conformation ...</p>	<p>Forklift tip-over, danger of knocking down people and objects (<i>due to excessive speed, obstructed paths</i> ... <i>soft, rough or sloping ground....</i>)</p>	<p>Normalized, preferably car-like pedals.</p> <p>Speed reduction system to avoid tipping over (<i>there is always a risk even when a forklift travels unloaded on a flat terrain and with lowered forks</i>).</p> <p>Use on suitable and safe grounds.</p> <p>Automatic speed reduction when travelling down a slope.</p> <p>Manufacturer's certification stating the limits of the vehicle stability.</p> <p>.....</p>



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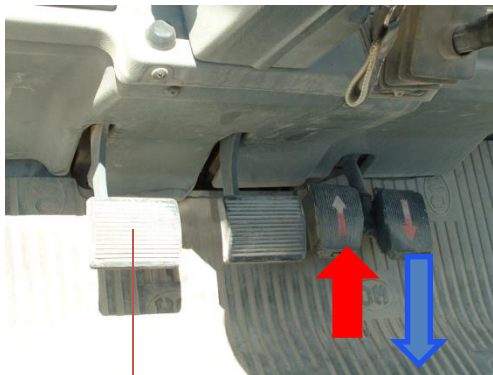


Arrangement of accelerating and braking pedals

Type I* **(49)**

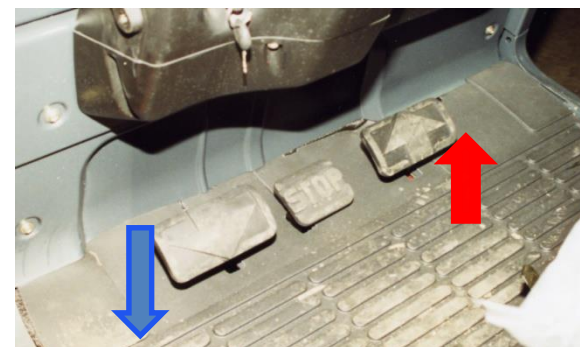


Type III* **(32)**



Clutch or approach at reduced speed

Type IV* **(24)**



Inverted pedals

Problems and suggestions /self propelled machines

Visibility



... limited visibility during the work with telehandlers, fork lift trucks, combine harvesters and tractors

Visibility



**“view” on
the right
side**





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Visibility



Truck with forks at 120 cm.





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Accessibility



Work phase: cabin access (operator station)

Critical aspects / risks: **Risk of falls, pinching injuries. etc....**

Suggestions (*D, I, S, UK*)



- Fall protector which acts/swivels automatically when the access equipment is in the "highway travel" position;
- Reduce the height from the ground to the first rung or make it adjustable, including when there is a self-levelling system;
- The telescopic ladder must be impossible to use unless it is completely open; The ladders must be usable with minimal effort and without the risk of losing one's balance;
- The access platforms must have adequate room for the operator to move safely and for the access door to the cab to be opened easily;
- Delayed lightning in operators cabin and lightning specially for the steps or the ladder, which the operator could start from either the platform or from the ground;
- better handrails on ladders and platforms;
- suggest hydraulic ladders operated inside with cab controls;
- more room to move about e.g. bigger platforms;

<https://ergomach.wordpress.com/information-and-solutions/good-solutions-from-end-users-feedback/>

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Ergonomics and design, ordering and using of Machinery

results



Good Solutions from End Users' Feedback

The '**Feedback' method** was designed to collect the contribution of users for the reconstruction and comprehension of the actual work and real activity for the improvement of the technical standards, design, manufacturing and use of machinery. The method has recently been codified from CEN as Technical Report *CEN/TR 16710-1 "Ergonomics methods – Part 1: Feedback method – A method to understand how end users perform their work with machines"*.

Here you can find and comment some **examples for good solutions** which have been extracted from 'Feedback' Projects:

-> Driver's cab and lubrication for [Combine Harvesters](#)

-> Use of controls for [Angle grinders](#)

-> Visibility for [Telehandlers](#)

SEARCH

NEWS

2015: World Congress of the International Ergonomics Association, 9 – 14 August 2015, Melbourne, Australia

2018: World Congress of the International Ergonomics Association, 25 August to 1 September 2018, Florence, Italy

FUTHER INFORMATION



FEES

etui.
european trade union institute



WORKERS AND CREATIVITY:

How to improve working conditions by participative methods?

26-27 June 2017 - Brussels

Workers' participation by Feedback method

CEN/TR 16710-1:2015

Ergonomics methods - Part 1: Feedback method - A method to understand how end users perform their work with machines

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