

WORKERS BEHAVIOR AND DESIGN STANDARDS: A SPECIAL CASE ABOUT TAMPERING OR REASONABLY FORESEEABLE MISUSE

Heaven can wait....not run the risk

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RISK ASSESSMENT
EN 12100:2010

PRODUCTIVITY

- designer
- manufacturer
- supplier
- installer
- employer

EN 13857

Safety of machinery -
Safety distances to prevent hazard zones
being reached by the upper and lower limbs

Size



Opening shape



Safety distance



Height of hazard zone ^{a)}	Height of protective structure ^{b)}													
	1 000	1 200	1 400	1 600	1 800	2 000	2 200	2 400	2 600	2 800	3 000	3 200	3 400	3 600
2 700	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 600	900	800	700	600	500	400	300	200	100	0	0	0	0	0
2 400	1 300	1 000	800	600	500	400	300	200	100	0	0	0	0	0
2 200	1 500	1 200	1 000	900	800	700	600	500	400	300	200	100	0	0
2 000	1 400	1 300	1 100	900	800	700	600	500	400	300	200	100	0	0
1 800	1 500	1 400	1 100	900	800	700	600	500	400	300	200	100	0	0
1 600	1 500	1 400	1 100	900	800	700	600	500	400	300	200	100	0	0
1 400	1 500	1 400	1 100	900	800	700	600	500	400	300	200	100	0	0
1 200	1 500	1 400	1 100	900	700	0	0	0	0	0	0	0	0	0
1 000	1 500	1 400	1 000	800	0	0	0	0	0	0	0	0	0	0
800	1 500	1 300	900	800	0	0	0	0	0	0	0	0	0	0
600	1 400	1 200	800	0	0	0	0	0	0	0	0	0	0	0
400	1 400	1 200	400	0	0	0	0	0	0	0	0	0	0	0
200	1 200	900	0	0	0	0	0	0	0	0	0	0	0	0
0	1 100	500	0	0	0	0	0	0	0	0	0	0	0	0

^{a)} Protective structures less than 1 000 mm in height are not included because they do not sufficiently restrict movement of the body.
^{b)} Protective structures lower than 1 600 mm should not be used without additional safety measures.
The hazard zones above 2 700 mm refer to EN 121.

EN 13855

Safety of machinery -
Positioning of safeguards with respect to
the approach speeds of parts of the human body



Detection capability



Area of intrusion



Stopping time
of the machine



Reaction time of the
protection device

$$S = (K \times T) + C$$

S is the minimum distance, in millimetres (mm);
K is a parameter, in millimetres per second (mm/s), derived from data on approach speeds of the body or parts of the body;
T is the overall system stopping performance, in seconds (s),
C is the intrusion distance, in millimetres (mm).

