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To:	Mr Uwe CORSEPIUS, Secretary-General of the Council of the European Union
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Subject:	ANNEXES to the Commission Delegated Regulation of XXX supplementing and amending Regulation (EU) No 167/2013 of the European Parliament and of the Council with regard to vehicle construction and general requirements for the approval of agricultural and forestry vehicles

Delegations will find attached document C(2014) 6494 final - Annexes 15 to 30.

Encl.: C(2014) 6494 final - Annexes 15 to 30



EUROPEAN
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ANNEXES 15 to 30

ANNEXES

to the

Commission Delegated Regulation

of XXX

**supplementing and amending Regulation (EU) No 167/2013 of the European Parliament
and of the Council with regard to vehicle construction and general requirements for the
approval of agricultural and forestry vehicles**

ANNEX XV

Requirements applying to operating space and to access to the driving position

1. Definition

For the purposes of this Annex 'reference plane' means the plane parallel to the median longitudinal plane of the tractor passing through the Seat Reference Point (S).

2. Operating space

- 2.1. For all tractors, with the exception of those that fall within categories T2/C2, T4.1/C4.1 and T4.3/C4.3 and those where the driver's Seat Reference Point (S) is more than 300 mm from the median longitudinal plane of the tractor, the width of the operating space must be at least 900 mm, from 400 to 900 mm above the seat reference point (S) and over a length of 450 mm forward of that point (see Figures 1 and 3).

For tractors of categories T2/C2 and T4.1/C4.1, the operating space must comply with the minimum dimensions of Figure 7.

For tractors of category T4.3/C4.3 and those where the driver's Seat Reference Point (S) is more than 300 mm from the median longitudinal plane of the tractor, the operating space must, over the zone extending to 450 mm in front of the seat reference point (S), have at a height of 400 mm above the seat reference point (S), a total width of at least 700 mm, and at a height of 900 mm above the seat reference point (S), a total width of at least 600 mm.

- 2.2. Vehicle parts and accessories must not hamper the driver when driving the tractor.
- 2.3. For all positions of the steering column and the steering wheel, with the exception of those intended solely for entry and exit, the clearance between the base of the steering wheel and the fixed parts of the tractor must be at least 50 mm, except for tractors of categories T2/C2 and T4.1/C4.1 for which must be at least 30 mm; in all other directions this clearance must be at least 80 mm from the rim of the steering wheel, as measured from outside the area occupied by the steering wheel (see Figure 2), except for tractors of categories T2/C2 and T4.1/C4.1 for which must be at least 50 mm.
- 2.4. For all tractors, except those of categories T2/C2 and T4.1/C4.1, the rear wall of the cab from 300 to 900 mm above the Seat Reference Point (S) must be a minimum of 150 mm behind a vertical plane which is perpendicular to the reference plane and passes through the reference point (see Figures 2 and 3).
- 2.4.1. This wall must have a width of at least 300 mm on either side of the seat reference plane (see Figure 3).
- 2.5. The manual control devices must be located in relation to one another and to the other parts of the tractor so that no danger of injury to the operator's hands arises from their operation.
- 2.5.1. Hand-operated control devices shall have minimum clearances in accordance with paragraph 4.5.3. of ISO 4254-1:2013. This requirement does not apply to fingertip operation control devices, such as push-buttons or electric switches.
- 2.5.2. Alternative locations for the control devices which achieve equally satisfactory safety standards are acceptable.
- 2.6. For all tractors, except those of categories T2/C2 and T4.1/C4.1, no rigid point on the roof

must be less than 1 050 mm from the seat reference point (S) in a section situated forward of a vertical plane passing through the reference point and perpendicular to the reference plane (see Figure 2). The padding may extend downwards to 1 000 mm above the Seat Reference Point (S).

- 2.6.1. The radius of curvature of the surface between the rear panel of the cab and the roof of the cab may extend up to a maximum of 150 mm.

3. Access to the driving position (means of entry and exit)

- 3.1. It must be possible to use the means of entry and exit without danger. Wheel hubs, hub caps or wheel rims are not acceptable as steps or rungs.
- 3.2. The points of access to the driving position and to the passenger seat must be free of any parts liable to cause injury. Where an obstruction such as a clutch pedal is present, a step or footrest must be provided to ensure safe access to the driving position.
- 3.3. Steps, integral foot recesses and rungs.
- 3.3.1. Steps, integral foot recesses and rungs must have the following dimensions:

depth clearance:	150 mm minimum, (except for tractors of categories T2/C2 and T4.1/C4.1)
width clearance:	250 mm minimum, (Values lower than this minimum width are authorized only where justified as being necessary on technical grounds. Where this is the case, the aim must be to achieve the greatest possible width clearance. It must not, however, be less than 150 mm.)
height clearance:	120 mm minimum,
distance between surface of two steps:	300 mm maximum (see Figure 4).

- 3.3.2. The upper step or rung must be easily identifiable and accessible for a person leaving the vehicle. The vertical distance between successive steps or rungs must as far as possible be equal.
- 3.3.3. The lowest foothold must not be more than 550 mm above the ground when the tractor is fitted with the largest tyre size recommended by the manufacturer (see Figure 4).
- 3.3.4. Steps or rungs must be designed and constructed in such a way that feet will not slip on them (eg. steel or mesh grilles).
- 3.3.5. Alternative requirements for vehicles of category C
- 3.3.5.1. In the case of step(s) integrated in the track frame (see Figure 5), it can be retracted under an angle of $\leq 15^\circ$, if at least the basic dimension of riser height dimension B, and the tread depth F1 according to the Table 1 of EN ISO 2867:2006 is met, measured from the outer edges of the track shoes.
- 3.3.5.2. In addition, taken into account the limited view during egress, the step width shall be at least as wide as the minimum set out in Table 1 of EN ISO 2867:2006.
- 3.3.5.3. For vehicles of category C with steel tracks with the access step installed on the frame of the track-rollers, the outer edge of the step does not need to extend beyond the vertical plane

formed by the external edge of the track shoes, but shall be as close as practically possible.

3.4. Handrails/handholds

3.4.1. Handrails or handholds shall be provided and designed so that the operator can maintain three-point contact support while accessing or exiting the operator's station. The lower end of the handrail/handhold shall be located no higher than 1 500 mm from the ground surface. A minimum clearance of 30 mm shall be provided for hand clearance between the handrail/handhold and the adjacent parts (except at attaching points).

3.4.2. A handrail or handhold shall be provided above the uppermost step/rung of the boarding means at a height between 850 mm and 1 100 mm. The handhold on tractors shall be at least 110 mm long.

4. Access to other positions than the driving position

4.1. It must be possible to use the accesses to other positions (e.g. for adjusting the right mirror or cleaning actions) without danger. Wheel hubs, hub caps or wheel rims are not acceptable as steps or rungs. Handrails or handholds shall be provided and designed so that the operator can maintain three-point contact support at all times.

4.2. Steps, integral foot recesses and rungs must have the following dimensions:

depth clearance:	150 mm minimum,
width clearance:	250 mm minimum, (Values lower than this minimum width are authorized only where justified as being necessary on technical grounds. Where this is the case, the aim must be to achieve the greatest possible width clearance. It must not, however, be less than 150 mm.)
height clearance:	120 mm minimum,
distance between surface of two steps:	300 mm maximum (see Figure 6).

4.2.1. Such boarding means shall comprise a series of successive steps as shown in Figure 6: each step shall have a anti-slip surface, a lateral boundary on each side and have to be designed so that dirt and snow accumulation in normal working conditions can be largely prevented. The vertical and horizontal distance between successive stages must have a tolerance of 20 mm; It must not, however, be less than 150 mm.

5. Doors and windows

5.1. The devices operating the doors and windows must be designed and installed in such a way that they neither constitute a danger to the driver nor impede him while driving.

5.2. The opening angle of the door must permit entry and exit without danger.

5.3. The access doors to the cabin must have a minimum width of 250 mm at floor height.

5.4. Ventilation windows, if any, must be easily adjustable.

6. Emergency exits

6.1. Number of emergency exits

- 6.1.1. Single-door cabs must have two extra exits constituting emergency exits.
- 6.1.2. Two-door cabs must have one extra exit constituting an emergency exit, except for tractors of categories T2/C2 and T4.1/C4.1.
- 6.2. Each of the exits must be on a different cab wall (the term 'wall' may include the roof). Windscreens and side, rear and roof windows may be regarded as emergency exits if provision is made to open them or to move them quickly from inside the cab.
- 6.3. For all tractors, except those of categories T2/C2 and T4.1/C4.1, emergency exits must have the minimum dimensions required to circumscribe an ellipse with a minor axis of 440 mm and a major axis of 640 mm.
- Tractors of categories T2/C2 and T4.1/C4.1 fitted with a cab that do not respect the minimum dimensions of the emergency exits indicated in the previous paragraph shall be provided with at least two doors.
- 6.4. Any window of sufficient size may be designated as an emergency exit if they are made of breakable glass and can be broken with a tool provided in the cab for that purpose. Glass referred to in Appendices 3, 4, 5, 6, 7, 8 and 9 of Annex I to UNECE Regulation No 43 is considered to be not breakable glass for the purpose of this Annex.
- 6.5. The surrounds of emergency exits shall not present any danger. When to evacuate the cabin is required to overcome differences in height exceeding 1,000 mm means to facilitate the evacuation shall be provided. For this purpose, when the exit is from the rear side, the supporting points offered by the arms of the three point lifting mechanism or by the PTO guard shall be considered sufficient if they have a resistance to vertical loads of at least 1,200 N.
- 6.6. Emergency exits must be marked with pictograms containing instructions for the operator in accordance with Annex XXVI.

Appendix 1

Figures

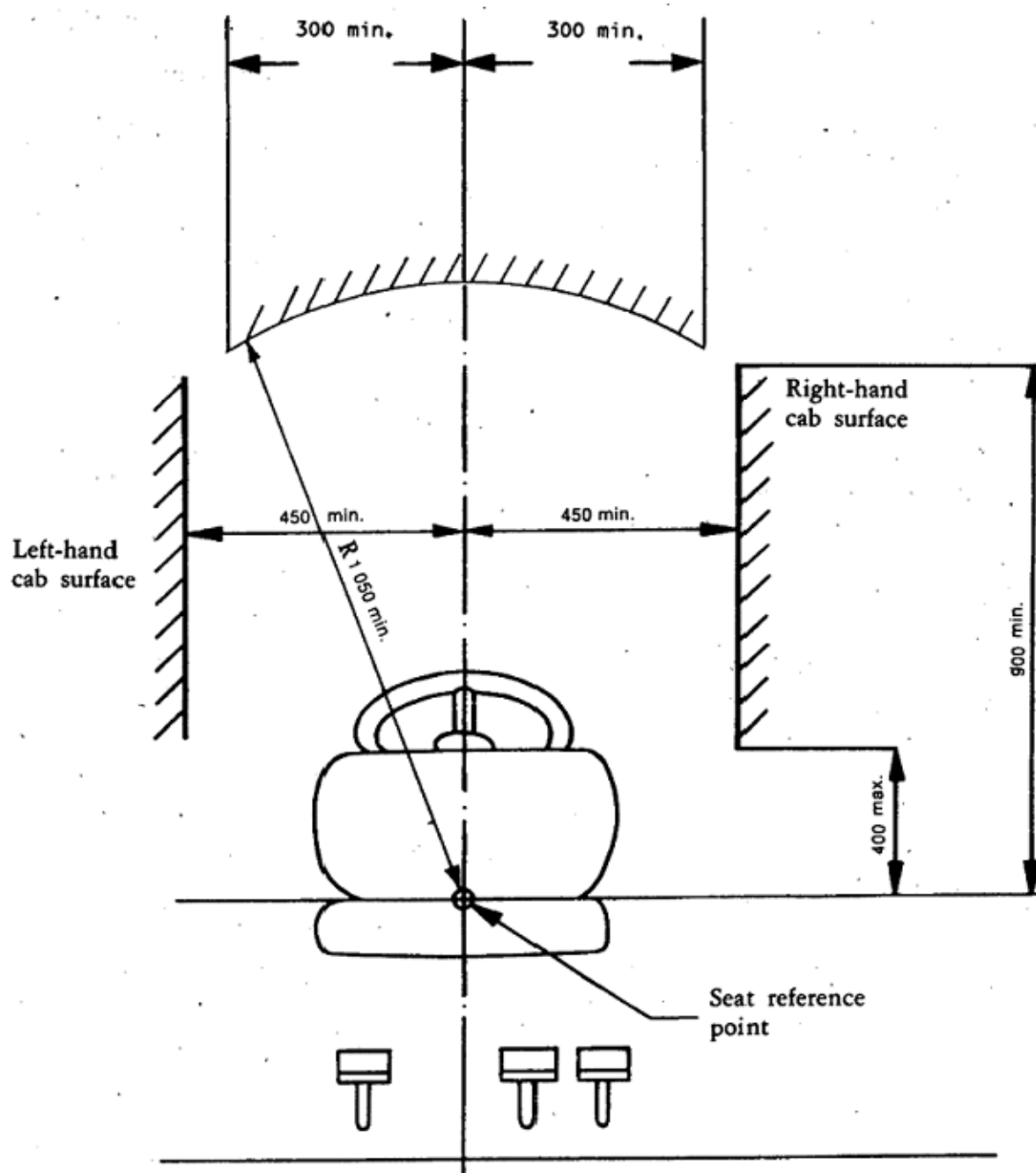


Figure 1

(Dimensions in millimeters)

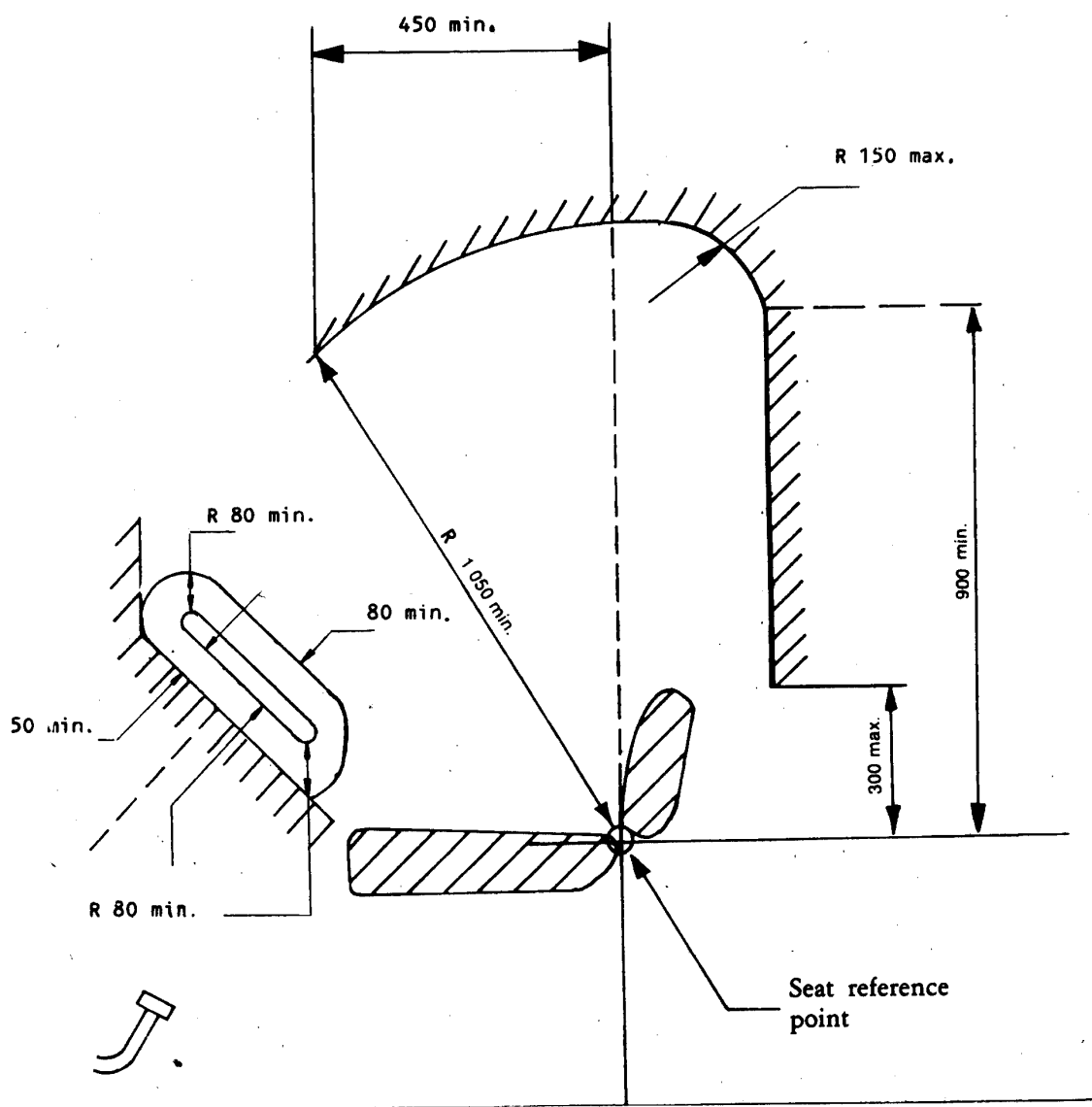


Figure 2

(Dimensions in millimeters)

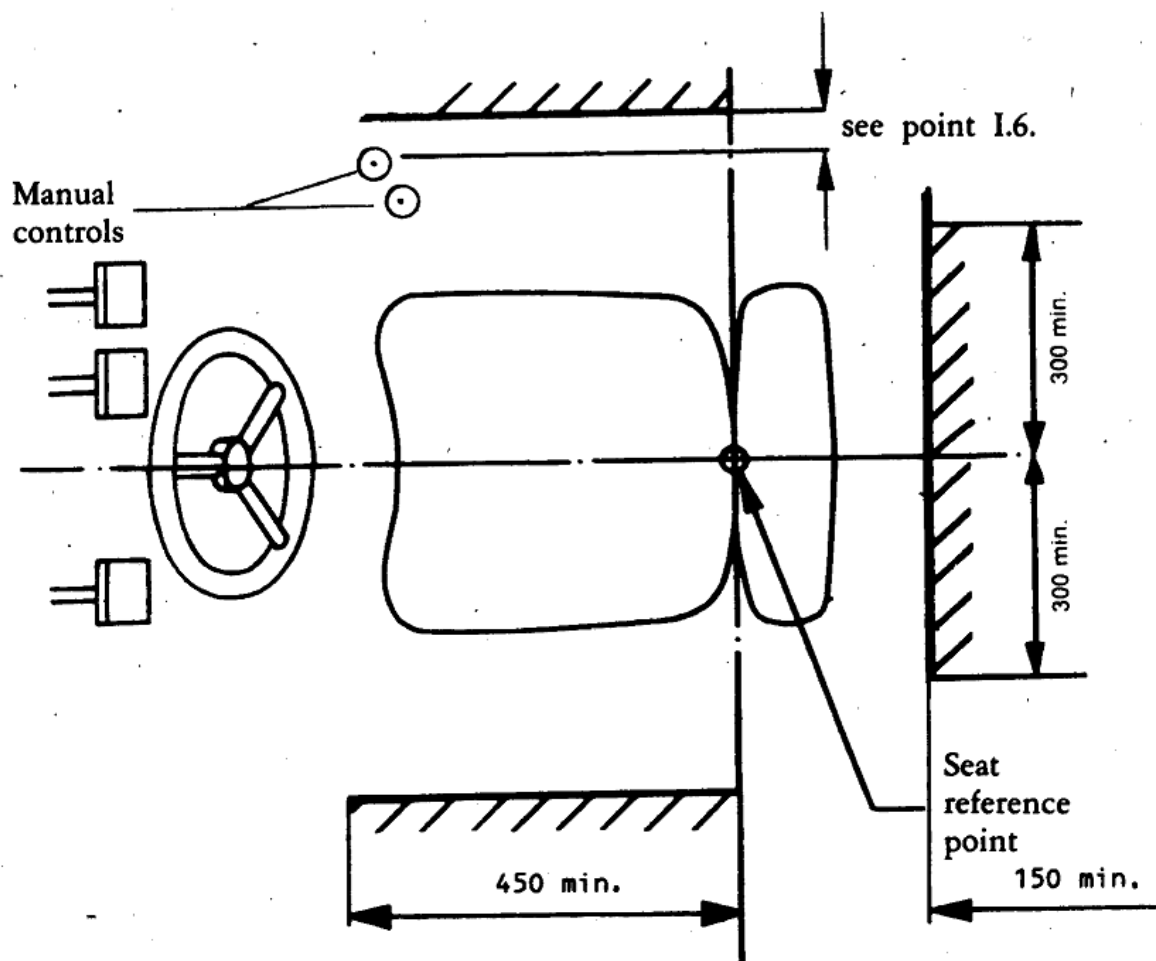


Figure 3

(Dimensions in millimeters)

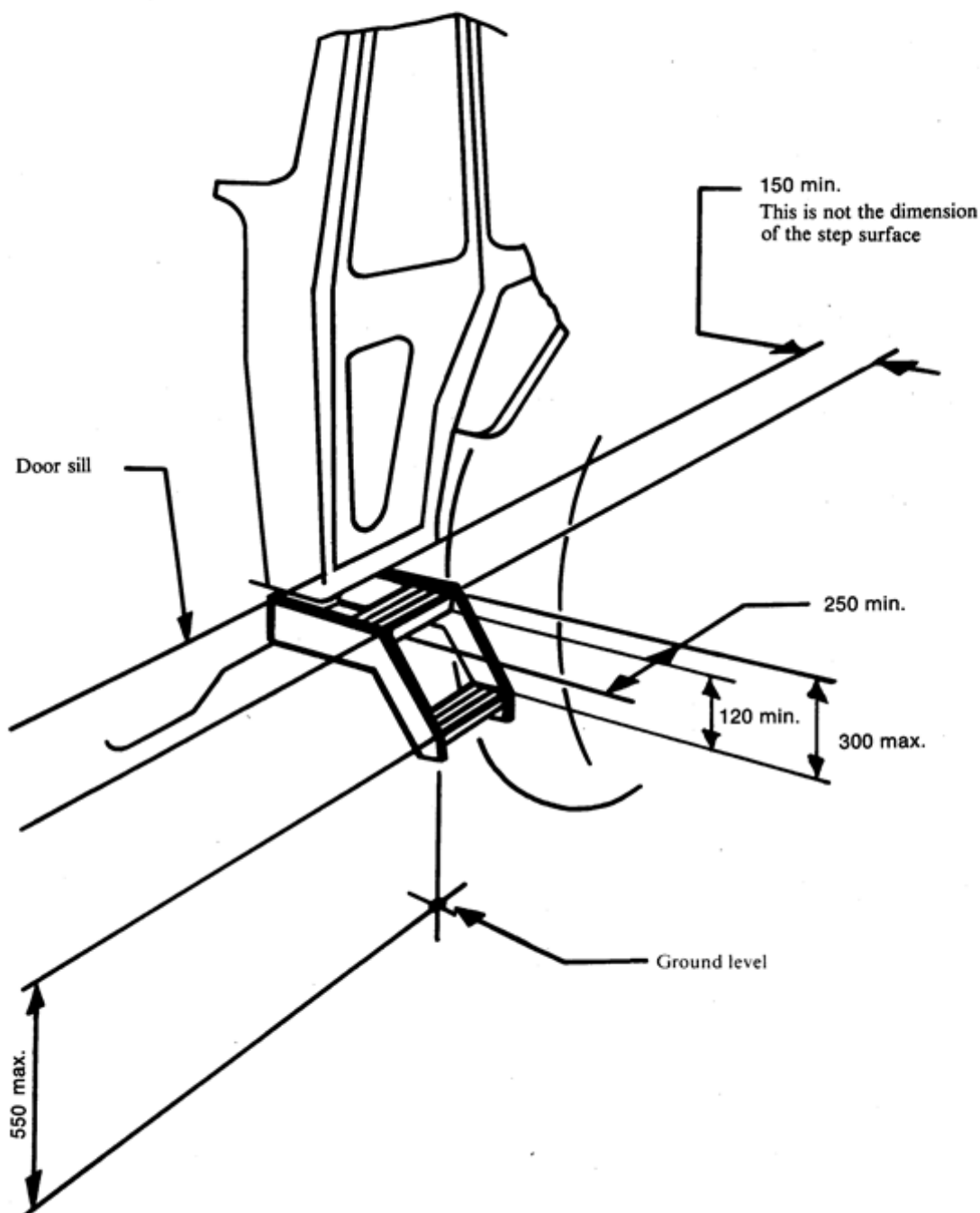
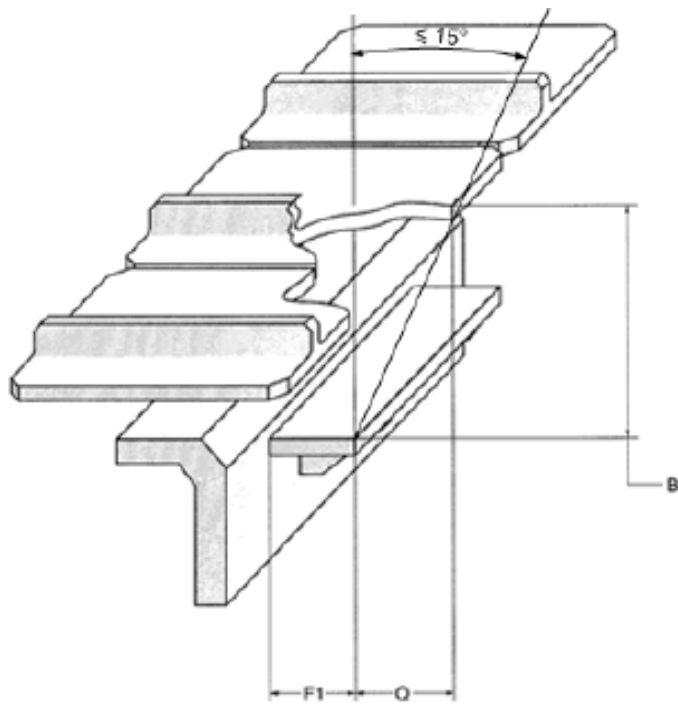


Figure 4



$B \leq 400 \text{ mm}$

$F1 \geq 130 \text{ mm}$

Q maximum retraction of a step

Figure 5

Dimensions of access step integrated in the track frame of
track-laid tractors (source:EN ISO 2867:2006)

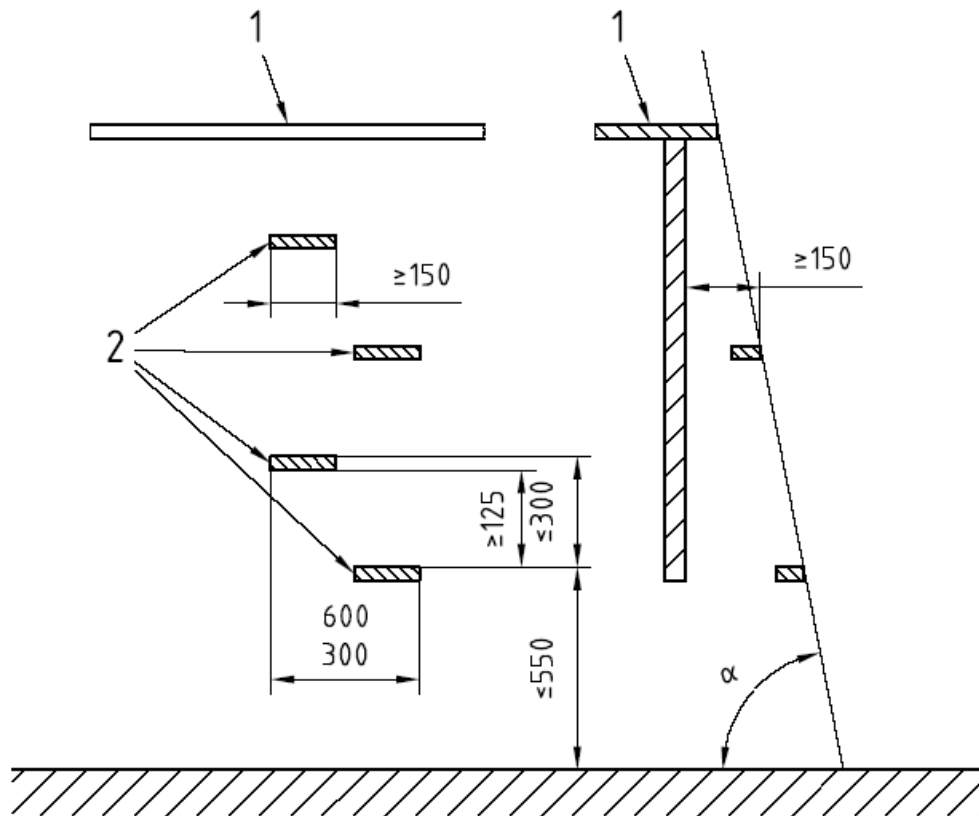


Figure 6
Source:EN ISO 4254-1 No. 4.5

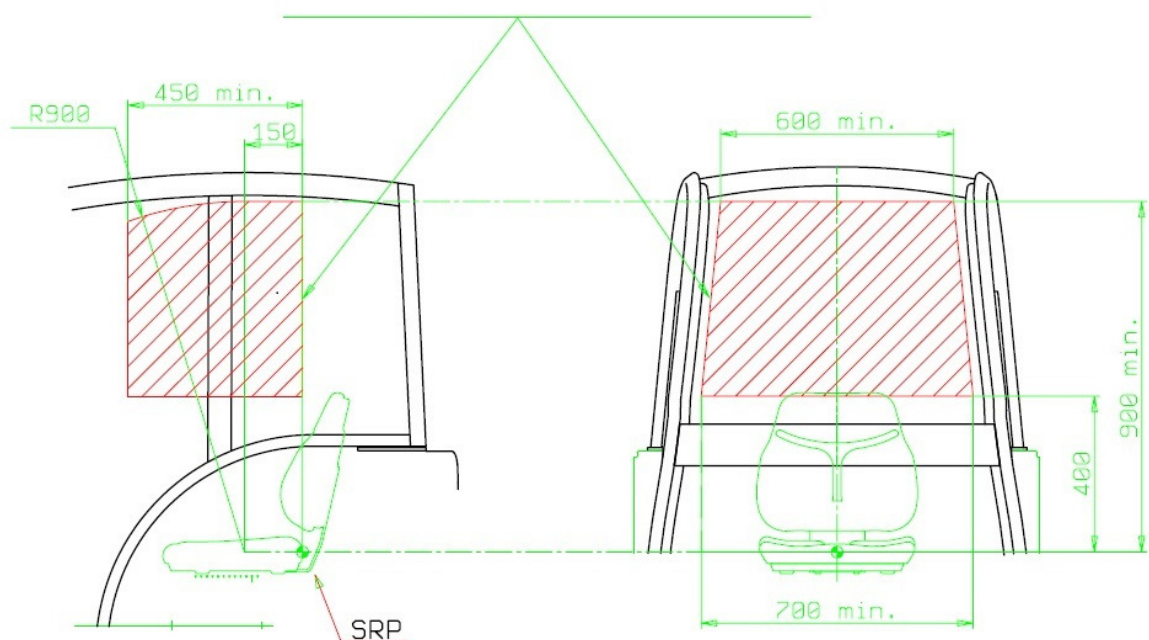


Figure 7
Minimum dimensions of the operating space in tractors of categories T2/C2 and T4.1/C4.1

ANNEX XVI

Requirements applying to power take-offs

1. Requirements for rear power take-offs

The specifications of ISO 500-1:2014 and ISO 500-2:2004 apply to tractors with rear power take-offs according to Table 1.

Table 1

Application of standards for rear power take-offs of the different tractor categories

Standard applicable	T1 C1	T2 C2	T3 C3	T4.1 C4.1	T4.2 C4.2	T4.3 C4.3
ISO 500-1:2014(*)(***)	X	--	X ₁₎	X ₁₎	X ₁₎	X
ISO 500-2:2004(**)	--	X	X ₂₎	X ₂₎	--	--
X	Standard applicable.					
--	Standard not applicable.					
X ₁₎	Standard applicable for tractors with a track width of more than 1 150 mm.					
X ₂₎	Standard applicable for tractors with a track width of 1 150 mm or less.					
(*)	In the standard ISO 500-1:2014, the last sentence in section 6.2 is not applicable.					
(**)	For the purposes of this Annex, this standard also applies to tractors with a power take-off, the power of which exceeds 20 kW, measured in accordance with ISO 789-1:1990					
(***)	For power take-offs of type 3 and where it is possible to reduce the dimension of the opening of the protective guard in order to adapt to the coupling elements to be used, the user manual must contain the following elements:					
–	warning relating to the consequences and risks caused by the reduced dimension of the protective guard,					
–	instructions and specific warnings relating to coupling and releasing the power take-offs,					
–	instructions and specific warnings relating to the use of tools or machines coupled to the rear power take-off.					

2. Requirements for front power take-offs

The specifications of ISO 8759-1:1998, with the exception of its clause 4.2, apply to tractors of all T and C categories which are equipped with front power take-offs as specified in this standard.

ANNEX XVII
Requirements applying to the protection of drive components

1. Definitions

For the purposes of this Annex the following definitions shall apply:

- 1.1. 'Dangerous part' means any point which, owing to the arrangements or design of the fixed or movable part of a tractor, involves a risk of injury. The dangerous parts are, in particular, pinching, shearing, cutting, piercing, penetrating, snatching and attack points.
 - 1.1.1. 'Pinching point' means any dangerous point where parts move in relation to each other or to fixed parts in such a way as may cause persons or certain parts of their bodies to be pinched.
 - 1.1.2. 'Shear point' means any dangerous point where parts move along each other or along other parts in such a way as may cause persons or certain parts of their bodies to be pinched or shorn.
 - 1.1.3. 'Cutting, piercing or penetration point' means any dangerous point where parts, either moving or fixed, sharp-edged, pointed or blunt, may injure persons or certain parts of their bodies.
 - 1.1.4. 'Snatching point' means any dangerous point where sharp-edged projections, teeth, pins, screws and bolts, grease nipples, shafts, shaft ends and other parts move in such a way that persons, certain parts of their bodies or clothing may be snatched and pulled along.
 - 1.1.5. 'Attack point' means any dangerous point whose parts, by moving, narrow an aperture in which persons, certain parts of their bodies or clothes may be caught.
- 1.2. 'Reach' means the maximum distance which can be reached by persons or certain parts of their bodies upwards, downwards, inwards, above, around or across without the aid of any object (Figure 1).
- 1.3. 'Safety distance' means the distance corresponding to the reach or to the body dimension plus a safety margin (Figure 1).
- 1.4. 'Normal operation' means the use of the tractor for the purpose intended by the manufacturer and by an operator familiar with the tractor characteristics and complying with the information for operation, service and safe practices, as specified by the manufacturer in the operator's manual and by signs on the tractor.
- 1.5. 'Clearance zone around the drive wheels' means the space which must remain clear around the tyres of the drive wheels in relation to the adjacent parts of the vehicle.
- 1.6. 'seat Index Point (SIP)' means the point determined in accordance with ISO 5353:1995.

2. General requirements

- 2.1. Drive components, projections and wheels on tractors must be designed, fitted and protected in such a way as to prevent accidents to persons under normal conditions of use.
- 2.2. The requirements of section 2 are regarded as being fulfilled if the requirements set out in section 3 have been complied with. Solutions other than those described in section 3 are

authorised if the manufacturer provides proof that they are at least equivalent to the requirements of section 3.

- 2.3. Protective devices must be firmly attached to the tractor.
- 2.4. Lids and hoods which could cause injury if they are slammed shut must be made in such a way as to preclude their shutting accidentally (e.g. by means of safety devices or suitable mounting or design).
- 2.5. A single protective device may protect a number of dangerous points. However, if adjustment, maintenance or interference suppression devices - which can be actuated only when the engine is running - are fitted beneath a single protective device, then further protective devices must be fitted.
- 2.6. Securing devices (e.g. spring clips or flaps)
 - to secure quick-release mounting components (e.g. socket pins),
and such components of
 - protective devices which open without the aid of tools (e.g. engine hood)
must be firmly attached either to the tractor mounting or to the protective device.

3. Safety distances for avoiding contact with dangerous parts

- 3.1. The safety distance is measured from those points which may be reached to actuate, service and inspect the tractor, and also from ground level in accordance with the operator's manual. In determining the safety distances the basic principle is that the tractor is in the state for which it has been designed and that no means has been used in order to reach the dangerous part.

Safety distances are set out in points 3.2.1 to 3.2.5. In certain specific areas or for certain specific component parts an appropriate safety level is provided if the tractor corresponds to the requirements set out in points 3.2.6 to 3.2.14.

- 3.2. Protection of dangerous points

- 3.2.1. Upwards

The upward safety margin is 2500 mm (see Figure 1) in the case of persons standing upright.

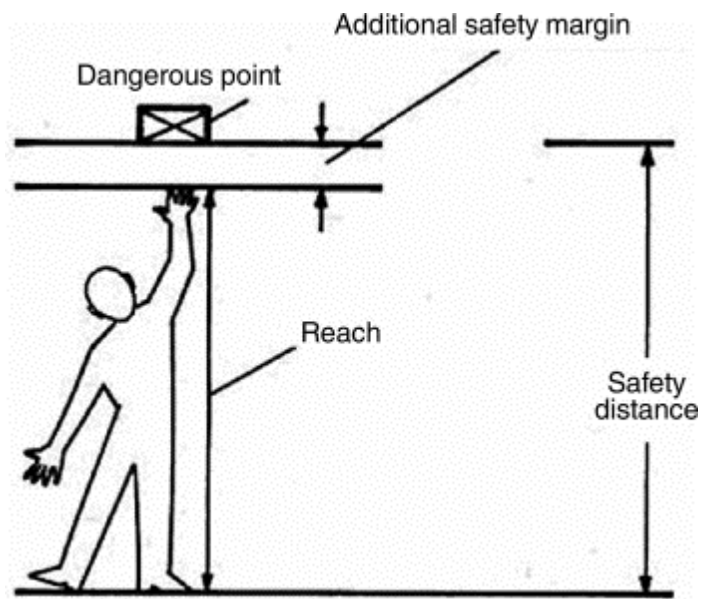


Figure 1

3.2.2. 1.1.1. Downwards, above

The safety margin for reaching above a barrier is:

<i>a</i>	=	from ground level up to the dangerous point;
<i>b</i>	=	height of barrier or protective device;
<i>c</i>	=	horizontal distance between dangerous point and barrier (see Figure 2).

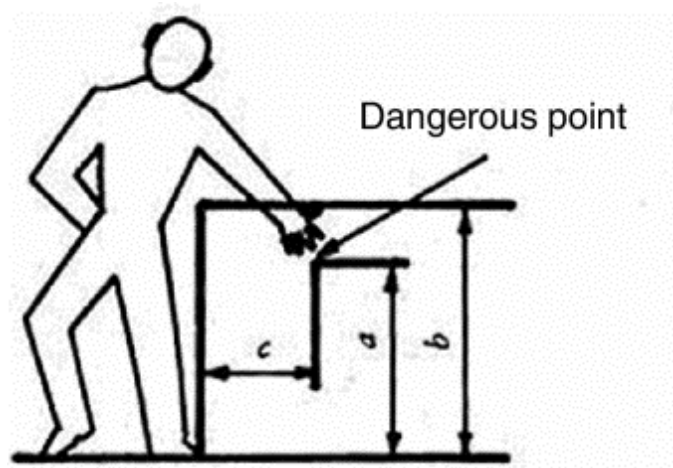


Figure 2

When reaching both downwards and above the safety distances set out in Table 1 must be maintained.

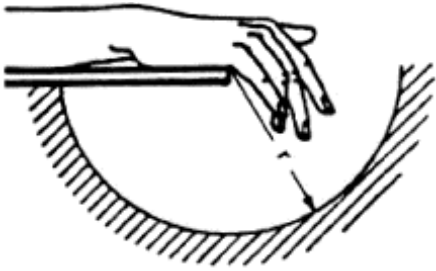
Table 1

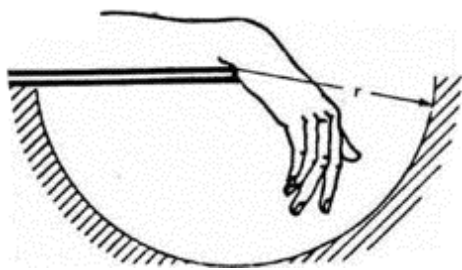
(mm)								
<i>a</i> : Distance from ground of dangerous point	Height between barrier and protective device <i>b</i>							
	2 400	2 200	2 000	1 800	1 600	1 400	1 200	1 000
	Horizontal distance <i>c</i> from dangerous point							
2 400	-	100	100	100	100	100	100	100
2 200	-	250	350	400	500	500	600	600
2 000	-	-	350	500	600	700	900	1 100
1 800	-	-	-	600	900	900	1 000	1 100
1 600	-	-	-	500	900	900	1 000	1 300
1 400	-	-	-	100	800	900	1 000	1 300
1 200	-	-	-	-	500	900	1 000	1 400
1 000	-	-	-	-	300	900	1 000	1 400
800	-	-	-	-	-	600	900	1 300
600	-	-	-	-	-	-	500	1 200
400	-	-	-	-	-	-	300	1 200
200	-	-	-	-	-	-	200	1 100

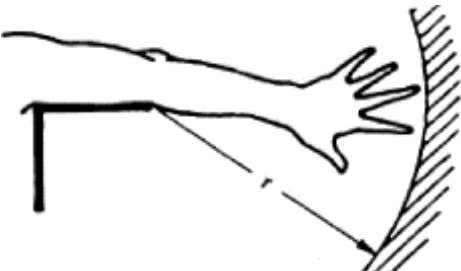

3.2.3. Reach around

The safety margin shown in Table 2 below must, at the minimum, be maintained if the part of the body concerned is not to reach a dangerous point. In applying the safety margin it is assumed that the main body joint concerned is pushed firmly against the edge of the protective device. The safety margins are not considered to have been maintained until one is satisfied that part of the body may quite definitely not advance or penetrate further.

Table 2

Part of the body	Safety distance	Figure
Hand From the fist knuckle to the fingertips	≥ 120 mm	

Hand From the wrist to the fingertips	$\geq 230 \text{ mm}$	
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Limb	Safety distance	Illustration
Arm From the elbow to the fingertips	$\geq 550 \text{ mm}$	
Arm From the shoulder to the fingertips	$\geq 850 \text{ mm}$	

3.2.4. Penetration and reach across

If penetration is possible into or across openings and up to dangerous parts, the minimum safety distances set out in Tables 3 and 4 must be maintained.

Parts which move in relation to one another or moving parts set alongside fixed parts are not regarded as risk factors provided they are no more than 8 mm apart.

In addition to these requirements, vehicles equipped with a straddled seat and handlebars must comply with the requirements of EN 15997:2011 on moving parts.

Table 3

Safety distances for elongated and parallel openings

a is the smaller dimension of the aperture.

b is the safety distance from danger point

Fingertip	Finger	Hand to ball of thumb	Arm to armpit	—
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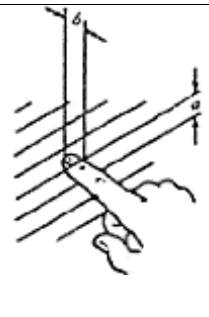
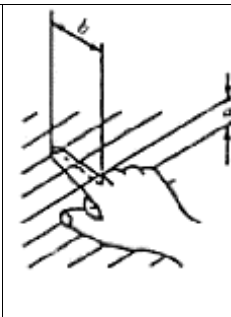
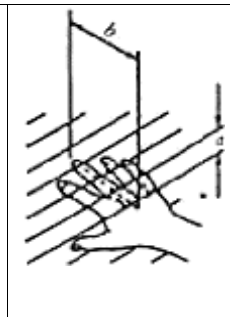
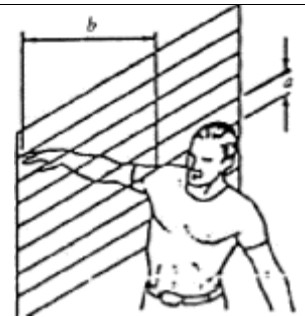
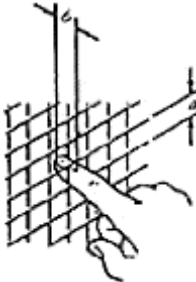
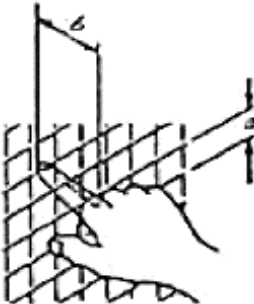
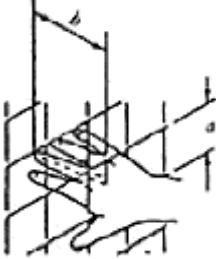
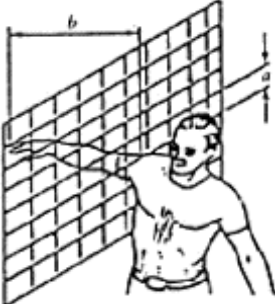
					
$4 < a \leq 8$	$8 < a \leq 12$	$12 < a \leq 20$	$20 < a \leq 30$	$30 < a \leq 135$ maximum	> 135
$b \geq 15$	$b \geq 80$	$b \geq 120$	$b \geq 200$	$b \geq 850$	—

Table 4

Safety distances for square or circular apertures

a is the aperture/diameter or length of side.

b is the safety distance from danger point.

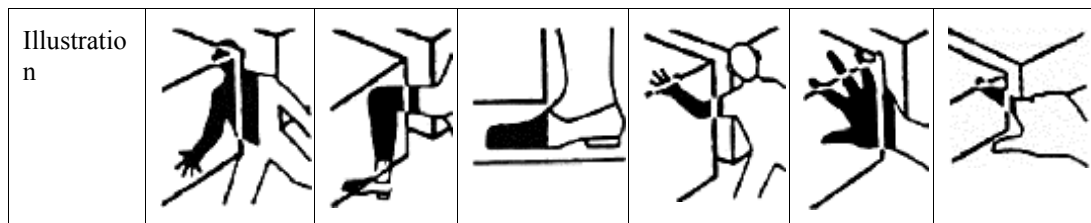
Fingertip	Finger		Hand to thumb root	Arm to armpit	—
					
$4 < a \leq 8$	$8 < a \leq 12$	$12 < a \leq 25$	$25 < a \leq 40$	$40 < a \leq 250$ maximum	250
$b \geq 15$	$b \geq 80$	$b \geq 120$	$b \geq 200$	$b \geq 850$	—

3.2.5. Safety distances at pinching points

A pinching point is not considered dangerous for the part of the body shown if the safety distances are not less than those set out in Table 5, and if it is ensured that the adjacent, wider part of the body cannot be introduced.

Table 5

Limb	Body	Leg	Foot	Arm	Hand, joint, fist	Finger
Safety distances	500	180	120		100	25



3.2.6. Control devices

The gap between two pedals and the holes through which control devices pass are not regarded as being pinching or shearing points.

3.2.7. Rear three-point coupling

- 3.2.7.1. Behind a plane passing through the median plane of the pivot points of the lifting rods in a three-point coupling system a minimum safety margin of 25 mm must be maintained between the moving parts for each point or of the lifting device's travel — but not for the extreme upper and lower positions $0,1 n$, together with a distance of 25 mm or a minimum angle of 30° for the parts in shear which cause a change in angularity (see Figure 3). Travel n' , reduced by $0,1 n$ at both its upper and lower ends is defined as follows (see Figure 4). Where the lower links are directly activated by the lifting mechanism, the reference plane is determined by the median transverse vertical plane of those links.

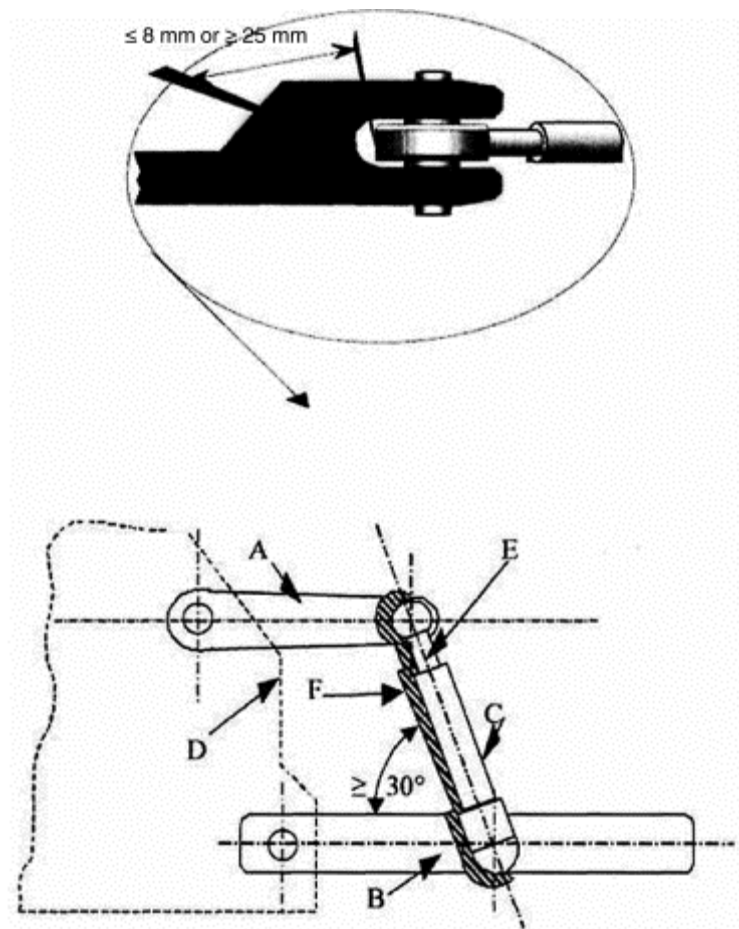


Figure 3

Legend:

A	=	Lift arm
B	=	Lower link
C	=	Lift rod
D	=	Tractor chassis
E	=	Plane passing through the axes of the lift rod pivot points
F	=	Clearance envelope

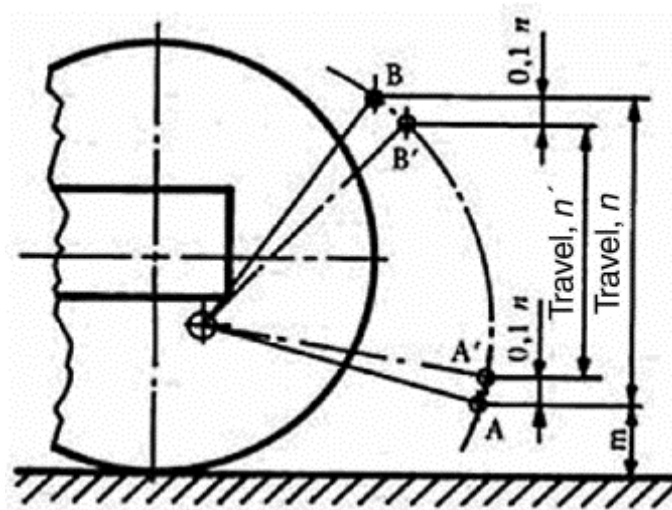


Figure 4

- 3.2.7.2. For travel n of the hydraulic lifting unit, lower position A of the coupling point of the lower link is limited by dimension '14' in accordance with the requirements laid down in standard ISO 730:2009, while upper position B is limited by the maximum hydraulic travel. Travel n' corresponds to travel n reduced upwards and downwards by $0,1 n$, and constitutes the vertical distance between A' and B'.
- 3.2.7.3. Moreover, within travel n' a minimum safety margin of 25 mm in relation to the adjacent parts must be maintained around the profile of the lifting rods.
- 3.2.7.4. If, in the case of a three-point coupling, coupling devices are used which do not require the presence of an operator between the tractor and the implement carried (for example, in the case of a quick coupling), the provisions of point 3.2.7.3 do not apply.
- 3.2.7.5. The operating manual should contain specific information on the dangerous points located at the front of the plane defined in the first sentence of point 3.2.7.1.
- 3.2.8. Front three-point coupling

- 3.2.8.1. At each point of the lifting unit's travel n — but not for the extreme upper and lower reaches $0,1 n$ — a minimum safety margin of 25 mm must be maintained between the moving parts together with a minimum angle of 30° or a safety margin of 25 mm in the case of the change of angularity caused by the parts in shear with each other. Travel n' reduced by $0,1 n$ at both its upper and lower ends, is defined as follows (see also Figure 4).
- 3.2.8.2. For travel n of the hydraulic lifting unit, the extreme lower position A of the coupling point of the lower link is limited by dimension '14' in accordance with ISO Standard 8759, Part 2, of March 1998 while extreme upper position B is limited by the maximum hydraulic travel. Travel n' is reduced upwards and downwards by $0,1 n$ and the vertical distance between A' and B'.
- 3.2.8.3. If, for the lower links of a front three-point coupling, coupling devices (such as a rapid-action coupling) are used which do not require the presence of a person between the tractor and the implement attached during coupling, the requirements under 3.2.8.1 do not apply within the reach of a radius of 250 mm from the points at which the lower links are coupled to the tractor. However, a minimum safety margin of 25 mm from neighbouring parts within the defined travel n' must in any case be maintained around the outside of the travel rods/cylinders.
- 3.2.9. Driving seat and environment

When he is in a sitting position, all pinching or shearing points must be out of range of the driver's hands or feet. This requirement is considered to have been met if the following conditions are fulfilled:

- 3.2.9.1. The driver's seat is at the mid-point in its longitudinal and vertical adjustment range. The driver's reach limit is divided into zones A and B. A central spherical point of these zones is 60 mm in front of and 580 mm above the Seat Index Point (SIP) (see Figure 5). Zone A consists of a sphere having a radius of 550 mm while zone B is located between that sphere and a sphere having a radius of 1000 mm.

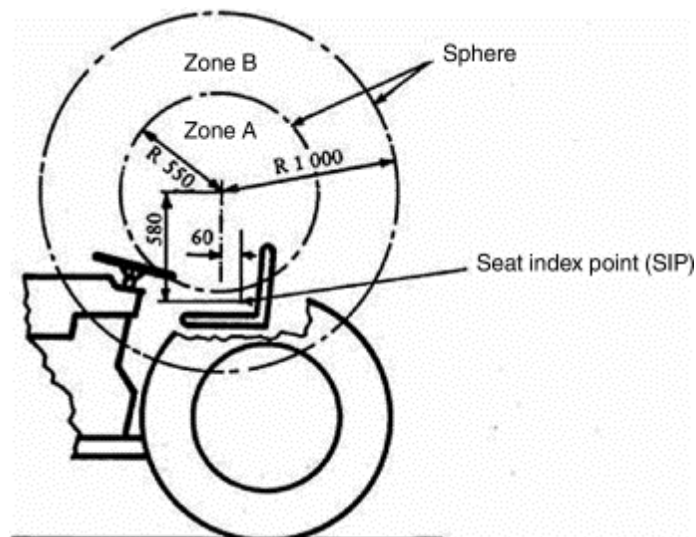


Figure 5

- 3.2.9.2. A safety distance of 120 mm in zone A and 25 mm in zone B is maintained near the pinching and shearing points, whilst a minimum angle of 30° is maintained in the case of shearing parts causing a change in angularity.

- 3.2.9.3. In zone A, only the pinching and shearing points caused by parts set in motion by an outside energy source must be taken into account.
- 3.2.9.4. If a dangerous point is due to the presence of structural parts adjacent to the seat, a safety distance of a least 25 mm is maintained between that structural part and the seat. There is no dangerous point between the seat backrest and the adjacent structural parts located behind that backrest if the adjacent structural parts are smooth and the seat backrest itself is rounded in the surrounding area and has no sharp points.
- 3.2.9.5. Gearboxes and other vehicle parts and accessories generating noise, vibrations and/or heat shall be isolated from the driving seat.
- 3.2.10. Passenger seat (if any)
- 3.2.10. 1. If parts may constitute a danger for the feet, provision must be made for protective devices within a hemispherical radius of 800 mm starting from the forward edge of the seat cushion and pointing downwards.
- 3.2.10. 2. As described in point 3.2.9 (see Figure 6) the dangerous points in zones A and B must be protected within a sphere whose centre is 670 mm above the centre of the front edge of the passenger seat.

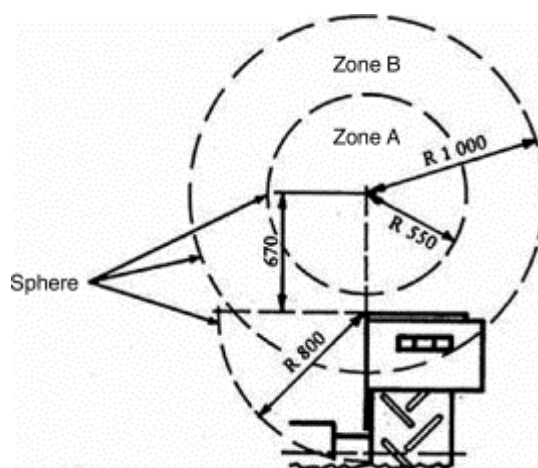


Figure 6

- 3.2.11. Tractors of categories T2/C2, T4.1/C4.1 and T4.3/C4.3
- 3.2.11. 1. In the case of tractors of categories T2/C2, T4.1/C4.1 and T4.3/C4.3, the requirements of point 3.2.9 shall not apply to the zone situated below a plane inclined at 45° to the rear and transverse to the direction of travel and passing through a point located 230 mm behind the Seat Index Point (SIP) (see Figure 7). If there are any dangerous points in this zone, corresponding warnings must be affixed to the tractor.

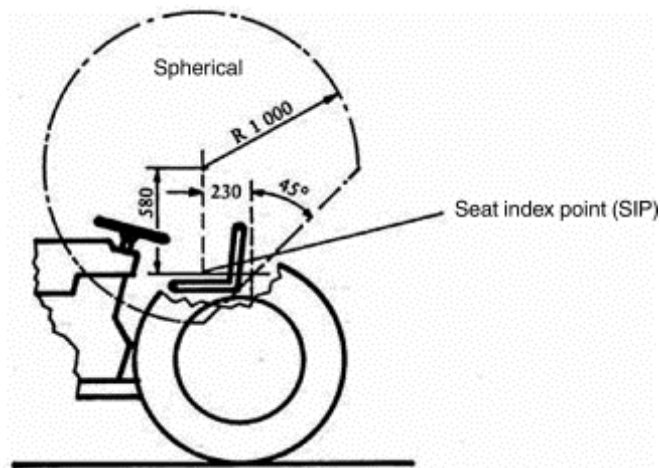


Figure 7

3.2.12. Steering and swing axle

Parts moving in relation to each other or to fixed parts must be protected if they lie within the zone defined in points 3.2.9 and 3.2.10.

When articulated steering is fitted, there must be indelible and clear markings within the articulation range on both sides of the tractor, indicating by means of an illustrative sign or in words that remaining within the unprotected range of articulation is not permitted. The corresponding indications must be included in the operating manual.

3.2.13. Transmission shafts fixed on the tractor

Transmission shafts (for example, for four-wheel drive) which can only rotate while the tractor is in motion must be protected if they are located within the zone defined in points 3.2.9 and 3.2.10.

3.2.14. Clearance zone around the drive wheels

3.2.14.1. The clearance zone around the drive wheels on tractors without an enclosed cab, when fitted with largest-size tyres, must correspond to the dimensions set out in the following Figure 8 and Table 6.

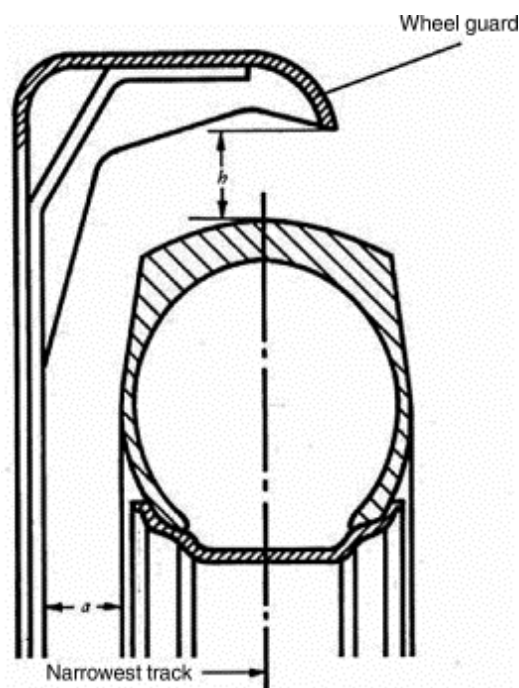


Figure 8

Table 6

Categories T1/C1, T3/C3 and T4.2/C4.2		Categories T2/C2, T4.1/C4.1 and T4.3/C4.3	
a	h	a	h
mm	mm	mm	mm
40	60	15	30

3.2.14.2. A clearance zone around the drive wheels smaller than that illustrated in Figure 8 and Table 6 is permissible in addition to the zones referred to in points 3.2.9 and 3.2.10 in the case of tractors of categories T2/C2, T4.1/C4.1 and T4.3/C4.3, where wheel guards are also used to scrape off earth stuck to the wheels.

4. Strength requirements for protective devices

4.1. Protective devices, and in particular those with a vertical height from the ground of up to 550 mm, whose use as access steps during normal use cannot be prevented, shall be designed so that they can withstand a vertical load of 1 200 N. Conformance with this requirement shall be checked using the test given in Annex C of ISO 4254-1:2013 or an equivalent method which fulfils the same test acceptance criteria.

5. Engine hood

- 5.1. The engine hinged hood shall be opened only with a tool (release mechanism located in the cabin is acceptable) and with a self-locking mechanism when closed.
- 5.2. Side hoods shall be mounted as:
- 5.2.1. Fixed guards held in place by welding or screws and bolts and which are openable only by means of a tool. The fixed guards must not remain in place if the fixing elements are missing;
- or
- 5.2.2. Hinged guards that can be opened only through the use of a tool and self-locked when closed;
- or
- 5.2.3. Guards with its opening linked to the opening of the hood, and that can be opened only through the use of a tool.
- 5.3. Additional means of protection must be installed if beneath the engine hood there are adjustment, maintenance or interference suppression systems that can be handled only while the engine is running.
- 5.4. Mechanical supports or hydraulic locking devices (e.g. struts or gas springs) shall be provided to prevent the engine hoods from falling when opened.
- 5.5. Devices that facilitate the safe handling of the hood (e.g. handles, ropes or parts of the hood itself appropriately shaped to grip it better) without risk of crushing, impact or excessive effort shall be provided.
- 5.6. The engine hood openings shall be identified with pictograms in accordance with Annex XXVI, and instructions shall be provided in the operator's manual.
- 6. Hot surfaces**
- 6.1. Hot surfaces which can be reached by the operator during normal operation of the tractor shall be covered or insulated. This applies to hot surfaces which are near to steps, handrails, handholds, integral tractor parts used as boarding means and which may be inadvertently touched and parts directly accessible from the driver's seat (e.g. gearbox-transmission in tractors not equipped with platform).
- 6.2. This requirement shall be satisfied by properly positioning fixed guards or by safety distances to segregate or thermally isolate the hot surfaces of the vehicle.
- 6.3. Contact with other not particularly dangerous hot surfaces or those that may be dangerous only in particular situations of use which go beyond the ordinary shall be identified with pictograms in accordance with Annex XXVI and identified in the operator's manual.
- 6.4. In addition, vehicles equipped with a straddled seat and handlebars must comply with the requirements of EN 15997:2011 concerning hot surfaces.

ANNEX XVIII

Requirements applying to seat-belt anchorages

A. General Requirements

- 1.1. When a vehicle of category T or C is fitted with ROPS, it shall be fitted with seat-belt anchorages complying with the standard ISO 3776-1:2006.
- 1.2. In addition, the seat-belt anchorages shall comply with the requirements laid down in one of the points B, C or D.

B. Additional requirements applying to seat-belt anchorages (alternative to those set out in points C and D)⁽¹⁾

1. Scope

- 1. Seat belts are one of the operator restraint systems used for securing the driver in motor vehicles.

This recommended procedure provides minimum performance and tests requirements for anchorage for agricultural and forestry tractors.

It applies to the anchorage of pelvic restraint systems.

2. Explanation of terms used in the performance testing

- 2.1. The *seat belt assembly* is any strap or belt device fastened across the lap or pelvic girdle area designed to secure a person in a machine.
- 2.2. The *extension belt* is intended as any strap, belt, or similar device that aids in the transfer of seat belt loads.
- 2.3. The *anchorage* is intended as the point where the seat belt assembly is mechanically attached to the seat system or tractor.
- 2.4. The *seat mounting* is intended as all intermediary fittings (such as slides, etc.) used to secure the seat to the appropriate part of the tractor.
- 2.5. The *Operator Restraint System* is intended as the total system composed of seat belt assembly, seat system, anchorages and extension which transfers the seat belt load to the tractor.
- 2.6. *Applicable Seat Components* comprise all components of the seat whose mass could contribute to loading of the seat mounting (to the vehicle structure) during a roll-over event.

3. Test procedure

The procedure is applicable to a seat belt anchorage system provided for a driver or a

person in addition to the driver carried by the tractor.

Only static tests for anchorages are given in this procedure

If, for a given protective structure, a manufacturer provides more than one seat with identical components which transfer the load from the seatbelt anchorage, to the seat mounting on the ROPS floor or tractor chassis, the Testing Station is authorized to test only one configuration, corresponding to the heaviest seat (see also below).

The seat shall be in position during the tests and fixed to the mounting point on the tractor using all intermediary fittings (such as suspension, slides, etc.) specified for the complete tractor. No additional non-standard fittings contributing to the strength of the construction may be used.

The worst case loading scenario for seat belt anchorage performance testing should be identified with consideration to the following points:-

- If the masses of alternative seats are comparable, those featuring seat belt anchorages which transfer loading through the seat structure (e.g. via the suspension system and/or adjustment slides), will be required to withstand much higher test loading. They are therefore likely to represent the worst case;
- If the applied loading will pass through the seat mountings to the vehicle chassis, the seat should be adjusted longitudinally to achieve the minimum amount of overlap of the mounting slides / rails. This will usually be when the seat is in the fully-rearward position but, if certain vehicle installations limit seat rearward travel, the fully-forward seat position may provide the worst case loading position. Observation of the amount of seat movement and mounting slide / rail overlap is required.

The anchorages shall be capable of withstanding the loads applied to the seat belt system using a device as shown in Figure 1. The seat belt anchorages shall be capable of withstanding these test loads applied with the seat adjusted in the worst position of the longitudinal adjustment to ensure that the test condition is met. The test loads shall be applied with the seat in the mid-position of the longitudinal adjustment if a worst position among the possible seat adjustments is not recognised by the testing station. For a suspended seat, the seat shall be set to the midpoint of the suspension travel, unless this is contradictory to a clearly stated instruction by the seat manufacturer. Where special instructions exist for the seat setting, these shall be observed and specified in the report.

After the load is applied to the seat system, the load application device shall not be repositioned to compensate for any changes that may occur to the load application angle.

3.1.

Forward loading

A tensile force shall be applied in a forward and upward direction at an angle of $45^\circ \pm 2^\circ$ to the horizontal, as shown in Figure 2. The anchorages shall be capable of

withstanding a force of 4 450 N. In the event that the force applied to the seat belt assembly is transferred to the vehicle chassis by means of the seat, the seat mounting shall be capable of withstanding this force plus an additional force equal to four times the force of gravity on the mass of all applicable seat components, applied $45^\circ \pm 2^\circ$ to the horizontal in a forward and upward direction, as shown in Figure 2.

3.2. Rearward loading

A tensile force shall be applied in a rearward and upward direction at an angle of $45^\circ \pm 2^\circ$ to the horizontal, as shown in Figure 3. The anchorages shall be capable of withstanding a force of 2 225 N. In the event that the force applied to the seat belt assembly is transferred to the vehicle chassis by means of the seat, the seat mounting shall be capable of withstanding this force plus an additional force equal to two times the force of gravity on the mass of all applicable seat components, applied $45^\circ \pm 2^\circ$ to the horizontal in a rearward and upward direction, as shown in Figure 3.

Both tensile forces shall be equally divided between the anchorages.

3.3. Seatbelt buckle release force (if required by the manufacturer)

The seat belt buckle shall open with a maximum force of 140 N following the load applications. This requirement is fulfilled for seat belt assemblies that satisfy the requirements of UNECE Regulation No 16 or Directive 77/541/EEC¹.

3.4. Test result

Condition of acceptance

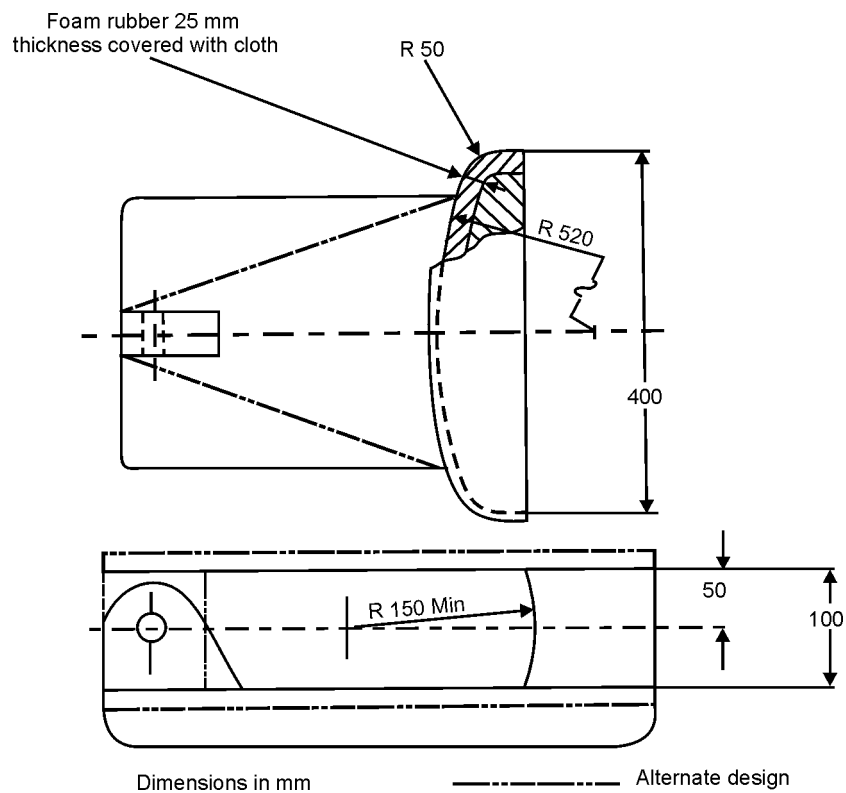
Permanent deformation of any system component and anchorage area is acceptable under the action of the forces specified in 3.12.3.1 and 3.12.3.2. However, there shall be no failure allowing release of the seat belt system, seat assembly, or the seat adjustment locking mechanism.

The seat adjuster or locking device need not be operable after application of the test load.

¹ Council Directive of 28 June 1977 on the approximation of the laws of the Member States relating to safety belts and restraint systems of motor vehicles (OJ L 220, 29.8.1977, p. 95).

Figure 1

The load application device



Note: The dimensions not shown are optional to satisfy the test facility and do not influence the test results.

Figure 2

Load application in the upward and forward direction

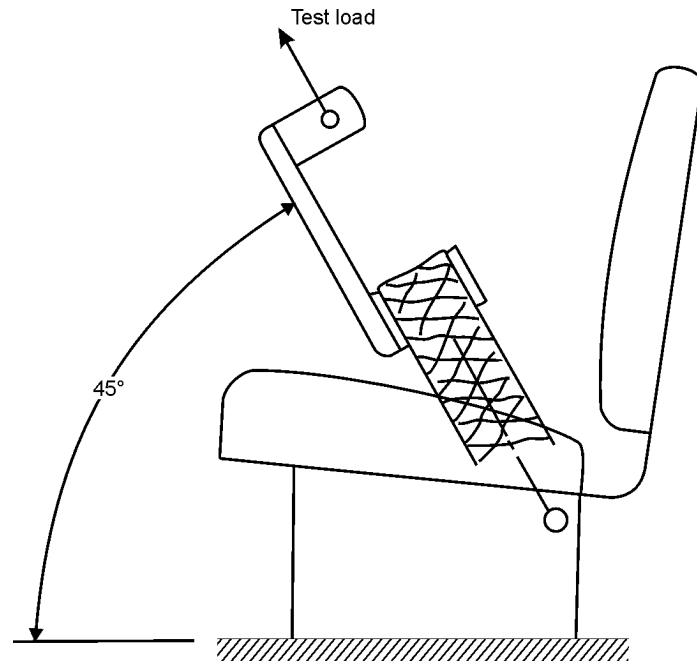
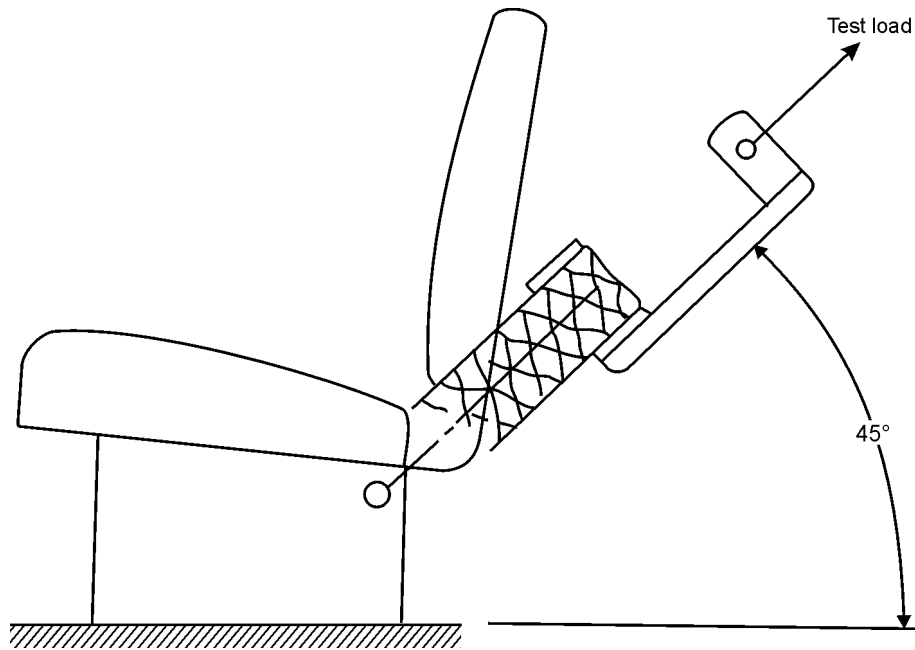


Figure 3

Load application in the upward and rearward direction



C. Additional requirements applying to seat-belt anchorages (alternative to those set out in points B and D)

Vehicles of categories T and C fitted with seat belt anchorages complying with the requirements laid down in standard ISO 3776-2:2013 shall be deemed to be complying with this Annex.

D. Additional requirements applying to seat-belt anchorages (alternative to those set out in points B and C)

Vehicles of categories T and C, fitted with seat belt anchorages tested and granted a test report on the basis of UNECE Regulation No 14, shall be deemed to be complying with this Annex.

Explanatory notes to Annex XVIII

(1)

Unless the numbering, the requirements set out in point B are identical with the text of the OECD standard code for the official testing of for the official testing of protective structures on agricultural and forestry tractors (static test), OECD Code 4, Edition 2015 of July 2014.

ANNEX XIX
Requirements applying to safety belts

1. When a vehicle of category T or C is fitted with roll-over protection structures, the vehicles shall be fitted with safety belts and shall comply with the requirements laid down in ISO 3776-3:2009.
2. As an alternative to the requirements set out in point 1, vehicles of category T or C fitted with roll-over protection structures, which have been tested and granted a test report on the basis of the UNECE Regulation No 16, as amended, shall be deemed to be complying with this Annex.

ANNEX XX

Requirements applying to the protection against penetrating objects

1. Vehicles of categories T and C equipped for forestry applications shall comply with the requirements for protection against penetrating objects laid down in ISO 8084:2003.
2. All other vehicles of categories T and C, if equipped with protection against penetrating objects, shall comply with the requirements of point 1. of UNECE Regulation No 43², Annex 14 on safety glazing.

² OJ L 230, 31.8.2010, p. 119

ANNEX XXI

Requirements applying to exhaust systems

1. Definitions

For the purpose of this Annex, 'exhaust system' means the combination of the exhaust pipe, the expansion box and the exhaust silencer and pollution control device.

2. General requirements

- 2.1. The exhaust tailpipe must be positioned in such a way that the exhaust gases cannot penetrate inside the cab.
- 2.2. The parts of the exhaust pipe outside the hood must be protected by means of segregation, guards or grids, so as to avoid the possibility of accidental contact with hot surfaces.

3. Tractors of categories T2/C2 and T4.1/C4.1

For tractors of categories T2/C2 and T4.1/C4.1, the following requirements shall apply:

- 3.1. In front of a reference plane which passes at right angles to the longitudinal axis of the vehicle and through the centre of the load-free pedal (clutch and/or service brake), very hot exhaust components must be protected if located within 300 mm in the upper zone (700 mm above ground level) and within 150 mm in the lower zone (see Figure 1). Laterally, the area to be protected is limited by the external outline of the tractor and the external outline of the exhaust system.
- 3.2. Very hot exhaust system components passing beneath the entry step must be covered in their vertical projection or otherwise thermally protected.

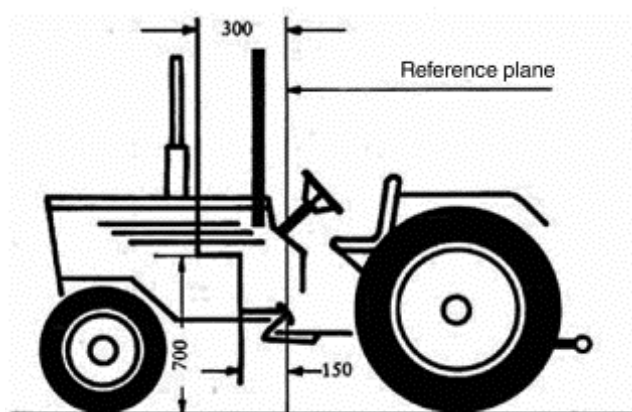


Figure 1
(dimensions in mm)

ANNEX XXII
Requirements applying to the operator's manual

1. The operator's manual shall comply with the requirements set out in standard ISO 3600:1996, with the exception of section 4.3 (Machine identification).
2. In addition, the operator's manual shall contain relevant information with regard to the following topics:
 - (a) adjustment of the seat and suspension related to the ergonomic position of the operator with respect to the control devices and in order to minimise the risks from whole body vibration;
 - (b) use and adjustment of the system for heating, ventilation and air-conditioning, if provided;
 - (c) starting and stopping of the engine, including the principles of safe starting/stopping, involving use of handbrake, placing control devices in neutral and removing the key;
 - (d) location and method of opening of emergency exits;
 - (e) instructions for boarding and leaving the tractor;
 - (f) the hazard area near to the pivot axis of articulated tractors;
 - (g) use of special tools, if any are provided;
 - (h) safe methods used for service and maintenance, including cleaning and working at height;
 - (i) information about the interval of inspection of hydraulic hoses;
 - (j) instructions about how to tow the tractor;
 - (k) Instructions about the procedures for safe use of jacks and recommended jacking points;
 - (l) hazards related to batteries and fuel tank;
 - (m) prohibited use of the tractor, where overturning hazards exist with mention that the list is not exhaustive;
 - (n) risks related to contact with hot surfaces, including residual risks such as filling of oil or coolant in hot engines or transmissions;
 - (o) the level of protection of the falling objects protective structure, if applicable;
 - (q) the level of protection of the operator's protection structure against penetrating objects, if applicable.

- (r) warning of the hazard of contact with overhead power lines
- (s) lightning strikes
- (t) regular cleaning of spray suppression valances
- (u) Tyre risks, including those associated with handling, repair, over inflation and installation of tyres.
- (v) stability degradation when using heavy attached implements at height
- (w) risks of overturning when travelling over sloping ground or rough ground
- (x) carrying of passengers only in approved passenger seats
- (y) use of the vehicle by appropriately trained operators only
- (z) information about safe loading of the vehicle.
- (aa) information about towing: location and conditions for a safe process.
- (ab) information about the location and conditions of use of battery isolators (mechanical devices, electrical switches or electronic systems);
- (ac) use of safety belts and other types of operator seat restraints;
- (ad) for tractor with auto-guidance system, relevant instructions and safety information;
- (ae) for vehicles with foldable ROPS, information about safe use of foldable ROPS, including: erecting/lowering operations and locking in the erected position.
- (af) for vehicles with foldable ROPS, warning of consequences in the event of roll over with the ROPS folded;
- (ag) for vehicles with foldable ROPS, description of the situations where might need to be folded (e.g. work within a building, orchard, hop or vineyard) and a reminder that the ROPS should be re-deployed on completion of the aforementioned tasks.
- (ah) information about the location of the greasing points and the safe greasing process;
- (ai) information about the minimum requirements of the seats and their compatibility with the vehicle, in order to meet the vibration declaration set out in point 5.

3. Additional information concerning attaching, detaching and working with mounted machinery, trailers and interchangeable towed machinery

The operator's manual shall include the following:

- (a) a warning to strictly follow the instructions outlined in the operator's manual of the mounted or trailed machinery or trailer, and not to operate the combination tractor — machine or tractor — trailer unless all instructions have been followed;

- (b) a warning to stay clear from the area of the three-point linkage and of the pick-up hitch (where fitted) when controlling them;
- (c) a warning that mounted machinery must be lowered to the ground before leaving the tractor;
- (d) speed of the power take-off drive shafts in function of the mounted machinery or trailed vehicle;
- (e) a requirement to use only power take-off drive shafts with adequate guards and shields, and to fit a cap or cover if the shield is removed from the tractor;
- (f) information about hydraulic coupling devices and their function;
- (g) information about the maximum lift capacity of the three-point linkage;
- (h) information about the determination of the total mass, the axle loads, the tyre load carrying capacity and the necessary minimum ballasting;
- (i) information on intended use, installation, removal and maintenance of ballast weights
- (j) information about the available trailer braking systems and their compatibility with the trailed vehicles;
- (k) the maximum vertical load on the rear hitch, related to the rear tyre size and type of hitch;
- (l) information about using implements with power take-off drive shafts and that the technically possible inclination of the shafts depend on the shape and size of the master shield and/or clearance zone, including the specific information required in case of PTO type 3 with reduced dimension;
- (m) a repeat of the data on the statutory plate about maximum allowed trailed masses;
- (n) a warning to stay clear from the area between tractor and trailed vehicle.
- (o) For tractors with machinery mounted on them, the information required in the operator's manual of the machinery mounted in accordance with Directive 2006/42/EC.

4. Noise declaration

The operator's manual shall give the value of the noise at the operator's ear, measured according to Annex XIII.

5. Vibration declaration

The operator's manual shall give the value of the vibration level measured according to Annex XIV.

6. Operating modes

The operator's manual shall include relevant information to enable the safe use of the

tractor when it is used in the following operational situations:

- (a) work with front-end loader (risk of falling objects);
- (b) forestry application (risk of falling and/or penetrating objects);
- (c) work with crop sprayers mounted or trailed (risk of hazardous substances).

Particular attention shall be given in the operator's manual to the use of the tractor in combination with the above equipment.

6.1. Front-end loader

- 6.1.1 The operator's manual shall outline the hazards associated with front-end loader work, and explain how to avoid those hazards.
- 6.1.2 The operator's manual shall indicate the fixation points on the body of the tractor where the front-end loader must be installed, together with the size and quality of the hardware to be used. If no such attachment points are foreseen, the operator's manual shall prohibit the installation of a front-end loader.
- 6.1.3 Tractors fitted with programmable hydraulic sequencing functions shall provide information on how to connect the loader hydraulics so that this function is inoperable.

6.2. Forestry application

- 6.2.1 In case of use of an agricultural tractor in a forestry application, the identified hazards include the following:
 - (a) toppling trees, for example in case a rear-mounted tree grab-crane is mounted at the rear of the tractor;
 - (b) penetrating objects in the operator's enclosure, especially in case a winch is mounted at the rear of the tractor;
 - (c) falling objects, such as branches, logs or tree limbs;
 - (d) steep slope or rough terrain working conditions.
- 6.2.2 The operator's manual shall provide information about the following:
 - (a) the existence of the hazards described in point 6.2.1.;
 - (b) any optional equipment that might be available to deal with those hazards;
 - (c) fixation points on the tractor where protective structures can be fixed, together with the size and quality of the hardware to be used; when no means are foreseen to fit adequate protective structures, this shall be mentioned;
 - (d) protective structures provided, which may consist of a frame protecting the operating station against toppling trees or (mesh) grids in front of the cab doors, roof and windows, etc.;
 - (e) the FOPS level, if provided.

6.3. Crop sprayers (protection against hazardous substances):

6.3.1. In case of use of an agricultural tractor with crop sprayers, the identified risks include the following:

- (a) risks encountered when spraying hazardous substances with a tractor fitted with a cabin or not;
- (b) risks related with entering or exiting the cabin when spraying hazardous substances;
- (c) risks related with the possible contamination of the operating space;
- (d) risks related with the cleaning of the cabin and the maintenance of the air filters;

6.3.2. The operator's manual shall provide information about the following:

- (a) the existence of at least the risks described in point 6.3.1.;
- (b) the protection level against hazardous substances provided by the cabin and the filter. In particular, the information required by standards EN 15695-1:2009 and EN 15695-2:2009/AC 2011 shall be indicated.
- (c) the selection and cleaning of the cabin air filter, as well as the replacement intervals required in order to provide a continuous protection. Including how to carry out such tasks safely and without risks to health;
- (d) maintaining the operating space uncontaminated, in particular when the tractor is used with personal protective equipment;
- (e) a reminder that a safe spraying operation requires compliance with the label of the hazardous substance and the instructions of the mounted or towed sprayer.

ANNEX XXIII
Requirements applying to control devices, including safety and reliability of control systems and emergency and automatic stop devices

List of Appendices

Appendix Number	Appendix title	Page
1	Figures	
2	Complex electronic vehicle control systems that must comply with the provisions of Annex 6 of UNECE Regulation 79	

1. General requirements

- 1.1. Control devices must be easily accessible and must not constitute a danger to the operator, who must be able to actuate them without difficulty or risk; they must be so designed and laid out, or protected, as to preclude any inadvertent switching operation or any unintentional triggering of a movement or any other operation which might be dangerous.
- 1.2. Control devices must satisfy whatever particular requirements, insofar as they apply, set out in points 1.2.1. to 1.2.5. as regards the installation, location, operation and identification of control devices. Other arrangements are permitted, should a manufacturer provide evidence that they have an effect at least equivalent to the requirements specified in this Annex.
 - 1.2.1. Control devices such as steering wheels or steering levers, gear levers, control levers, cranks, pedals and switches shall be chosen, designed, constructed and arranged so that their actuating forces, displacement, locations, methods of operation and colour coding are in accordance with ISO 15077:2008, and shall comply with the provisions set out in Annexes A and C of that standard.
 - 1.2.2. Hand-operated control devices shall have minimum clearances in accordance with paragraph 4.5.3. of ISO 4254-1:2013. This requirement does not apply to fingertip operation control devices, such as push-buttons or electric switches.
 - 1.2.3. Pedals shall have an appropriate size and space and be adequately spaced. Pedals shall have a slip-resistant surface and shall be easy to clean.

In order to avoid confusing the driver, the pedals (clutch, brake and accelerator) shall have the same function and arrangement as those of a motor vehicle, except for those vehicles equipped with a straddle seat and handlebars which are deemed to comply with the requirements of EN 15997:2011 for throttle control and manual clutch control.
 - 1.2.4. For tractors without enclosed cab, the accessibility to internal control devices from the ground shall be limited; in particular, it shall be avoided the possibility of reaching the internal rear PTO control device, the rear three point lifting control device and any propulsion control device from inside the area determined by the vertical planes passing on the inner edge of the mud-guards (see Figure 3).

2. Identification of control devices

- 2.1. The symbols used for identification of control devices shall conform to those shown in Annex XXVI.
- 2.2. Symbols other than those set out in Annex XXVI may be used for other purposes, provided that there is no danger of confusion with those shown in that Annex.
- 2.3. The symbols shall appear on or in the immediate proximity of the control devices.
- 2.4. The symbols shall stand out clearly against the background.
- 2.6. Control devices may be identified with pictograms in accordance with Annex XXVI and instructions of use shall be provided in the operator's manual.

3. Safe start of the engine

It must not be possible to start the engine if there is a risk that this might cause an uncontrolled movement of the tractor or of any implement or equipment connected to it.

- 3.1. The requirement set out in point 3. is deemed to be fulfilled if the engine cannot be started unless:

the clutch mechanism is disengaged and at least one of the following control devices of the vehicle transmission is in neutral position:

- the reverse shuttle control lever, or
- the gear change control lever, or
- the range selection control lever.

- 3.1.1. In addition, it shall not be possible to start the engine if a hydrostatic device is fitted, and is not in neutral position or depressurized or if a hydraulic transmission is fitted and the engagement device does not revert automatically to a neutral position.

- 3.2. The possibility of performing this start from the ground, or from a different position than the driving position shall be avoided.

4. Engine shut-off control device

Actuating this device must stop the engine without sustained manual effort; it must not be possible for the engine to start again automatically.

When the engine shut-off control device is not combined with the starter control device, it must be of a colour contrasting clearly with the background and the other control devices. If the shut-off control device is a button, it must be coloured red.

5. Differential lock control device

Identification of this control device, where fitted, is mandatory. The functioning of the differential lock must be clearly indicated, if this is not apparent from the position of the control device.

6. Three-point lifting mechanism control device(s)

- 6.1. Either the three-point lifting mechanism control device(s) shall be fitted in such a way as to ensure that lifting and lowering manoeuvres can be carried out safely, and/or automatic coupling parts shall be fitted on the attachment devices of the lifting equipment so that the presence of an operator between the tractor and the equipment is not required. The presence of such a control device(s), where fitted, must be indicated.

- 6.2. The safety requirements for the lifting and lowering of the tools being carried are deemed to be fulfilled where the following conditions are met:

- 6.2.1. Main control device(s)

The main control device(s) and any linkage are arranged or protected in such a way that the operator is unable to reach them if he is standing on the ground between the tractor and the mounted implement, or external control device(s) shall be fitted;

- 6.2.2. External control device(s)

6.2.2.1. The rear external control device(s) of the three-point hydraulic lifting mechanism, when fitted, shall be laid out in such a way that the operator can actuate them from outside of the rear hazard zone (Figure 1). This requirement is deemed to be fulfilled if are located outside the area identified by the vertical planes passing on the inner edge of the mud-guards and at:

- (a) a horizontal distance of minimum 550 mm from the PTO axis or, when this is not technically possible, on the outer side of the mud-guard/fender.
- (b) a maximum height of 1 800 mm from the ground or, when this is not technically possible, 2 000 mm.

6.2.2.2. The front three-point lift external control device(s) shall be located outside the front hazard zone (Figure 2) and at a maximum height above the ground of 1,800 mm or, when this is not technically possible, 2 000 mm.

And

6.2.2.3. The three-point hydraulic lifting mechanism is actuated by means of control device(s) which restrict the amount of movement to a maximum of 100 millimetres each time the control device is actuated. The measurement points in this case are formed by the coupling points on the lower arms of the three-point coupling,

Or

6.2.2.4. The three-point hydraulic lifting mechanism is actuated by means of control device(s) which operate on the “hold-to-run principle”.

6.2.3. Tractors of categories T2/C2 and T4.1/C4.1

In the case of tractors of categories T2/C2 and T4.1/C4.1, the main control device(s) shall be located in front of the vertical plane passing through the seat reference point (S), the seat being in a central position.

6.2.4. Other arrangements are permitted if the manufacturer provides evidence that they have an effect at least equivalent to the requirements set out in points 6.2.1. to 6.2.3.

7. Power Take-Off (PTO) control device(s)

7.1. PTO control device(s) shall be designed in a way which avoids unintentional actuation.

7.1.1. The PTO control device(s) shall be clearly identified by yellow color and shall not be subject to confusion with other control device(s) if provided (e.g. three-point linkage control device, hydraulic control devices).

7.2. It shall not be possible to start the engine with the PTO engaged.

7.3. It shall always be possible to shut off the PTO from the driving position as well as from the associated external control device(s). The shut off shall be always an override control device.

7.4. Additional requirements for the PTO external control device(s)

7.4.1. The start control device shall operate according to the “hold-to-run principle” for at

least the first three seconds of actuation.

- 7.4.2. After actuating the control device(s) the time delay to the intended operation shall not be more than the time for the power take-off technical engage/disengage system to operate. If this delay time is exceeded, an automatic deactivation of the PTO drive shall occur.
- 7.4.3. Interaction between external PTO control device(s) and operator's seat position PTO control device(s) shall not be permitted.
- 7.4.4. The rear PTO external control device(s), when fitted, shall be laid out in such a way that the operator can actuate them from outside of the rear hazard zone (Figure 1). This requirement is deemed fulfilled if the external control device(s) are located outside the area identified by the vertical planes passing on the inner edge of the mud-guards and at:
 - (a) a horizontal distance of minimum 550 mm from the PTO axis or, when this is not technically possible, on the outer side of the mud-guard/fender.
 - (b) a maximum height of 1 800 mm from the ground or, when this is not technically possible, 2 000 mm.
- 7.4.5. The front PTO external control device(s), when fitted, shall be located outside the front hazard zone (see Figure 2) and at a maximum height above the ground of 1,800 mm, or, when this is not technically possible, 2 000 mm.
- 7.4.6. An external PTO stop red or yellow single button shall be located outside the hazard zones identified in Figures 1 and 2.
- 7.4.6.1. The external PTO stop red or yellow single button shall stop simultaneously the three-point lifting mechanism if the requirements set out in point 6.2.2.4 are not fulfilled in accordance with point 6.2.4.

8. Remote valve control device(s)

- 8.1. The rear remote valve control device(s), when fitted, shall be laid out in such a way that the operator can actuate them from outside of the rear hazard zone (Figure 1). This requirement is deemed fulfilled if the external control device(s) are located outside the area identified by the vertical planes passing on the inner edge of the mud-guards and at:
 - (a) a horizontal distance of minimum 550 mm from the PTO axis or, when this is not technically possible, on the outer side of the mud-guard/fender.
 - (b) a maximum height of 1 800 mm from the ground or, when this is not technically possible, 2 000 mm.
- 8.2. The front remote valve control device(s), when fitted, shall be located outside the front hazard zone (see Figure 2) and at a maximum height above the ground of 1,800 mm, or, when this is not technically possible, 2 000 mm.

9. Operator Presence Control (OPC)

- 9.1. Park brake OPC

Vehicles of categories T and C, with the exception of those equipped with a straddled seat and handlebars which require an active driving position shall have an audible and visible alarm that alerts the operator when he leaves the driving position with the park brake not applied. This audible and visible alarm shall be activated after the operator has been detected out of the driving position and the park brake is not applied. The time-out of the alarm shall be not less than 10 seconds. The alarm shall be de-activated when the operator is detected to be present again in the driving position within this time period or when the park brake is applied within this time period.

- 9.1.1. Vehicles which require an active driving position, shall have an audible and visible alarm that alerts the operator when he leaves the driving position with vehicle is stationary and the park brake or park lock not applied. This audible and visible alarm shall be activated after the operator has been detected out of the driving position, the park brake or park lock is not applied. The time-out of the alarm shall be not less than 10 seconds. The alarm shall be de-activated when the operator is detected to be present again in the driving position within this time period or when the park brake or park lock is applied within this time period.

9.2. Power take-off OPC

For vehicles of categories T and C the stationary power take-off operation shall be enabled by an intentional command from an operator when the tractor is not in motion.

When the operator leaves the driving position with the PTO engaged and the vehicle is not in motion, the drive of the power take-off shaft shall shut off automatically within 7 seconds. The automatic PTO shut off action shall not have negative effects on safety related functions (e.g. braking). A restart of the Power take-off shall only be possible by an intentional actuation of the operator.

10. Auto-guidance systems

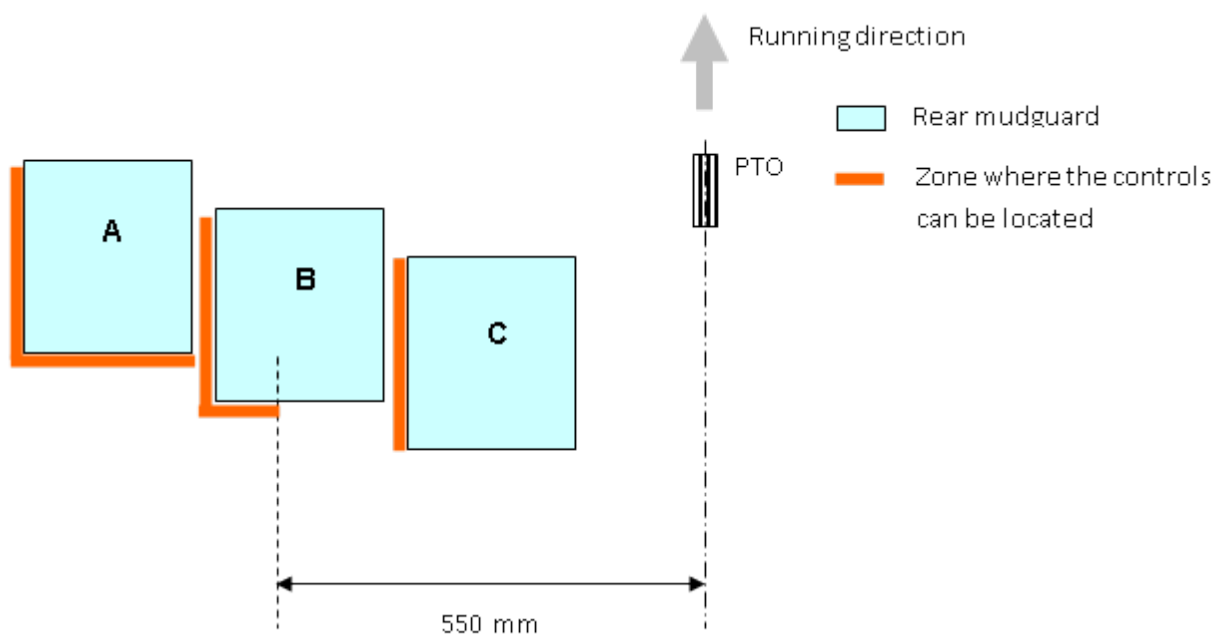
Auto-guidance systems for tractors (categories T and C) shall be in accordance with the requirements of, ISO 10975:2009.

11. Complex electronic vehicle control systems

Complex electronic control systems, as listed in appendix 2 of and as defined by (UNECE) Regulation No. 79 shall comply with the provisions of Annex 6 to that Regulation.

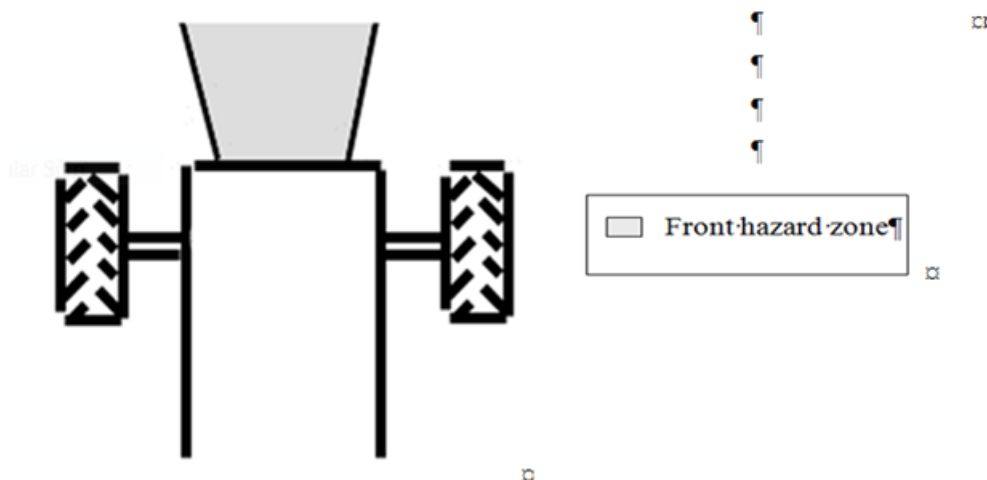
Appendix 1

Figures



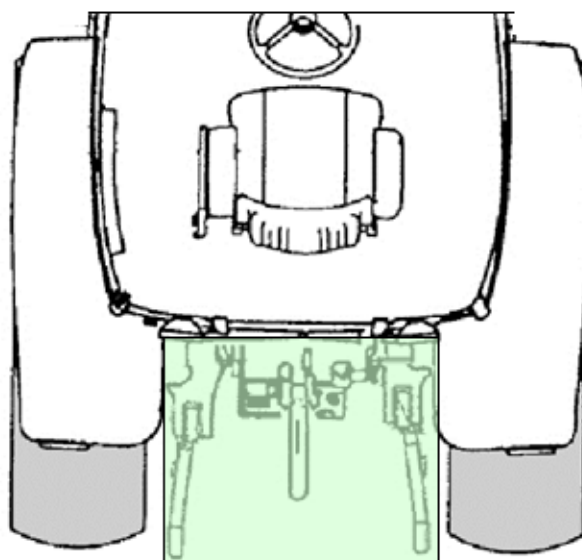
-Figure 1-

Rear hazard zone for location of hydraulic three point lift, PTO and remote valve external control device(s) (three possible locations: A, B or C)



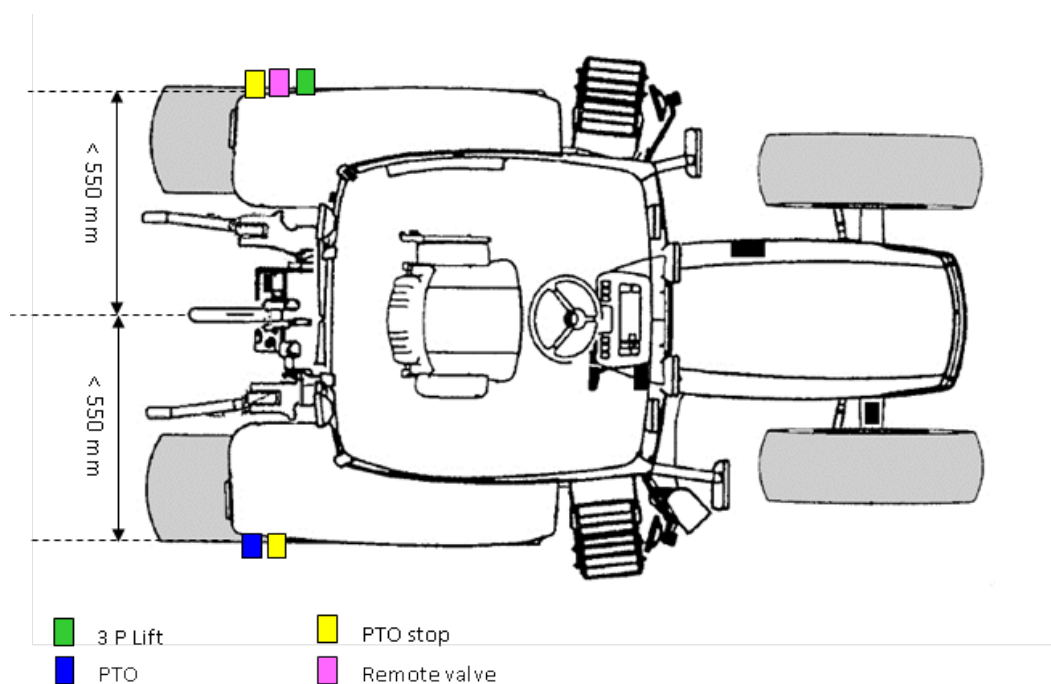
-Figure 2-

Front hazard zone for location of hydraulic three point lift, PTO and remote valve external control device(s). In the plan view, the front hazard zone is the isosceles trapezoid area, the oblique sides of which are the three-point lift arms: the smaller base of which is the projection of the front part of the tractor's body and the larger base of which is the line passing through the ends of the three-point lift arms.



-Figure 3-

Area without access to rear PTO and rear three point lifting internal control device(s) for tractors without cab, determined by the vertical planes passing on the inner edge of the mud-guards



-Figure 4-

Example of external control device(s) arrangement without presumption of comprehensiveness

Appendix 2

Complex electronic vehicle control systems that must comply with the provisions of Annex 6 of UNECE Regulation 79

1. Systems that affect the steering function
2. ...

ANNEX XXIV

Requirements applying to the protection against other mechanical hazards

1. Layout and marking of flexible hydraulic hoses

- 1.1. Flexible hydraulic hoses must be arranged in such a way as to prevent mechanical and thermal damage.
- 1.2. Flexible hydraulic hoses in the vicinity of the driver's or the passenger's seat must be arranged or protected in such a way that in the event of their failure there can be no danger to any person.
- 1.3. Flexible hydraulic hoses must be clearly identifiable and indelibly marked with the following information:
 - the flexible hose manufacturer's mark,
 - manufacturing date (year and month of manufacture),
 - maximum permissible dynamic excess pressure in operation.

2. R-category trailers with tipping capability (supports for service and maintenance)

- 2.1. When it is necessary for the operator to work under raised parts of the machine in order to carry out maintenance or service, mechanical supports or hydraulic locking devices shall be provided to prevent inadvertent lowering.
 - 2.1.1. Means other than mechanical or hydraulic devices are acceptable, provided an equal or greater level of safety is ensured.
- 2.2. It shall be possible to control hydraulic locking devices and mechanical supports from outside the hazard zones.
- 2.3. Mechanical supports and hydraulic locking devices shall be identified by use of a colour that contrasts with the overall machine colour or by a safety sign located either on, or in close proximity to, the device.
- 2.4. Supports or hydraulic devices manually controlled shall be identified with pictograms in accordance with Annex XXVI and instructions of use shall be provided in the operator's manual.
- 2.5. Mechanical supports
 - 2.5.1. Mechanical supporting devices shall withstand a load of 1,5 times the maximum static load to be supported.
 - 2.5.2. Detachable mechanical supports shall have a dedicated and clearly visible and identifiable storage position on the machine.
- 2.6. Hydraulic locking devices
 - 2.6.1. Hydraulic locking devices shall be located on the hydraulic cylinder or connected to the

hydraulic cylinder by rigid or flexible lines. In the latter case, the lines connecting the locking device to the hydraulic cylinder shall be designed to withstand a pressure at least four times the rated maximum hydraulic pressure.

- 2.6.2. The rated maximum hydraulic pressure shall be specified in the operator's manual. The conditions for the replacement of such flexible lines shall also be given in the operator's manual.

3. Rough surfaces and sharp edges

Parts that are likely to be contacted by the driver or passengers, while driving, shall have no sharp edges or rough surfaces hazardous to the occupants.

4. Greasing points

- 4.1. Greasing points shall be directly accessible by the operator or provided of rigid pipes or flexible high pressure lines to allow the greasing process from an accessible location.
- 4.2. Greasing points shall be identified with pictograms in accordance with Annex XXVI and instructions of use shall be provided in the operator's manual.

ANNEX XXV
Requirements applying to guards and protective devices

1. Vehicles of categories T and C

For vehicles of categories T and C, the definitions and requirements are identical to those laid down in Annex XVII for the protection of drive components.

2. Vehicles of categories R and S

For vehicles of categories R and S, the following requirements of Annex XVII for the protection of drive components shall apply:

- section 2. General requirements;
- section 3. Safety distances for avoiding contact with dangerous parts: points 3.1 to 3.2.6.; and
- section 4. Strength requirements for guards and barriers.

ANNEX XXVI
Requirements applying to information, warnings and markings

1. Symbols

- 1.1 Symbols used for the control devices indicated in Annex XXIII and other displays should comply with the requirements laid down in ISO 3767 Parts 1 (1998+A2:2012) and, if applicable, Part 2 (:2008).
- 1.2 Alternatively to the requirements set out in point 1.1., vehicles with symbols complying with the requirements laid down in UNECE Regulation No 60 shall be deemed to be complying with this Annex.

2. Pictorials

- 2.1. Hazard pictorials should comply with the requirements laid down in ISO 11684:1995.
- 2.2. Pictorials for personal protective equipment should comply with the requirements laid down in ISO 7010:2011.

3. Hydraulic couplings

- 3.1. Hydraulic couplings shall be durable indicated with the flow direction Plus (+) for pressure side and Minus (-) for return flow.
- 3.2. Where the vehicle is fitted with more than one hydraulic circuit, each one of them shall be clearly indicated by a durable colour coding or numbering.

4. Jacking points

Safe jacking points shall be identified by the manufacturer and clearly marked on the vehicle (e.g. with pictorials).

5. Additional warning signals with regard to braking

Tractors shall be equipped with the following visual warning signals, in accordance with the relevant installation provisions of Annex I (3) to Regulation (EU) 167/2013:

- 5.1. a red warning signal, indicating failures, within the vehicle braking equipment which preclude achievement of the prescribed service braking performance and/or which preclude the functioning of at least one of two independent service braking circuits;
- 5.2. where applicable, a yellow warning signal indicating an electrically detected defect within the vehicle braking equipment, which is not indicated by the red warning signal described in point 5.1;
- 5.3. a separate yellow warning signal to indicate a defect within the electric control transmission of the braking equipment of the towed vehicle, for tractors equipped with an electric control line and/or authorized to tow a vehicle equipped with an electric control transmission;
- 5.4. alternatively, in the case of tractors equipped with an electric control line, when

electrically connected to a towed vehicle with an electric control line, instead of the warning signal specified in point 5.1. and the accompanying warning signal in point 5.3, a separate red warning signal, to indicate certain specified failures within the braking equipment of the towed vehicle, whenever the towed vehicle provides corresponding failure information via the data communication part of the electric control line.

ANNEX XXVII
Requirements applying to materials and products

1. Oil reservoirs and coolant systems

Oil reservoirs and coolant systems shall be located, constructed, coated and/or sealed to minimize the risk of spillage that might be injurious to the operator in the event of an overturn.

Burning rate of cab material

- 2.** The burning rate of cab interior material such as the seat covering, wall, floor and headliner coverings when provided shall not exceed the maximum rate of 150 mm/min when tested in accordance with ISO 3795:1989.

ANNEX XXVIII

Requirements applying to batteries

1. Batteries shall be located so they can be properly maintained and exchanged, from the ground or a platform, and shall be secured to remain in position and located or constructed and sealed so as to reduce the possibility of spillage in the event of an overturn.
2. The battery housing must be designed and constructed in such a way as to prevent the electrolyte being ejected on to the operator in the event of roll-over or tip-over and to avoid the accumulation of vapours in places occupied by operators.
3. The electrical, non-earth terminals of batteries shall be protected to prevent unintentional contact and shorting to earth.
4. Battery isolator
 - 4.1. A vehicle must be designed and constructed in such a way that the battery electrical circuit can be easily disconnected with the aid of an electronic system or an accessible device provided for that purpose (e.g. the tractor's ignition key, common tools or a switch).
 - 4.2. The position of the battery isolator must be easily accessible and not near dangerous areas.
 - 4.3. When the battery isolator has neither a specific pictogram for its identification nor the indication of its operation (on-off), the specific graphical symbol indicated in the Figure 1 shall be affixed.

2063



0247



code 2063 battery disconnected code 0247 battery connected

-Figure 1-

Graphical symbols for the identification of the battery isolator according to ISO 7000:2014 codes.

ANNEX XXIX
Requirements applying to protection against hazardous substances

1. Definitions

For the purposes of this Annex the following definitions shall apply:

- 1.1. 'hazardous substances' means any substance, such as dust, vapour and aerosol except fumigant which can occur when applying plant protection products and fertiliser and which can expose an operator to a risk of harm.
- 1.2. 'plant protection product' means any product falling within the scope of Regulation (EC) No 1107/2009.

2. Requirements for the cabin

Vehicles of categories T and C providing protection against hazardous substances shall be fitted with a cab of level 2, 3 or 4 according to the definition and complying with the requirements set out in the standard EN 15695-1:2009 (e.g. for a vehicle providing protection against plant protection products that produce vapours which can expose the operator to a risk or harm, the cabin shall be of level 4).

3. Requirements for the filters

- 3.1. Filters housing must have adequate sizes to allow convenient filter maintenance operations with no risks for the operator.
- 3.2. Vehicles of categories T and C providing protection against hazardous substances shall be fitted with a filter meeting the requirements of EN 15695-2:2009/AC 2011.

ANNEX XXX
Performance standards and assessment of technical services

1. General Requirements

Technical services shall demonstrate appropriate skills, specific technical knowledge and proven experience in the specific fields of competence covered by Regulation (EU) No 167/2013 and its delegated and implementing acts adopted pursuant to that Regulation.

2. Standards with which the technical services have to comply

2.1. Technical services of the different categories set out in Article 59 of Regulation (EU) No 167/2013 shall comply with the standards listed in Appendix 1 to Annex V to Directive 2007/46/EC of the European Parliament and of the Council³ which are relevant for the activities they carry out.

2.2.1. Reference to Article 41 of Directive 2007/46/EC in that Appendix shall be construed as a reference to Article 59 of Regulation (EU) No 167/2013.

2.2.3. Reference to Annex IV of Directive 2007/46/EC in that Appendix shall be construed as a reference to Annex I to Regulation (EU) No 167/2013.

3. Procedure for the assessment of the technical services

3.1. The compliance of the Technical services with the requirements of Regulation (EU) No 167/2013 and the delegated acts adopted pursuant to that Regulation shall be assessed in accordance with the procedure set out in Appendix 2 to Annex V to Directive 2007/46/EC.

3.2. References to Article 42 of Directive 2007/46/EC in Appendix 2 to Annex V to Directive 2007/46/EC shall be construed as references to Article 62 of Regulation (EU) No 167/2013.

4. Accredited in-house technical services of the manufacturer

4.1. When a manufacturer or a subcontracting party acting on his behalf satisfies the standards set out in section 2. and the assessment procedure set out in section 2. may be allowed to be designated as a technical service by the approval authority within the meaning Article 60 of Regulation (EU) 167/2013.

4.2. However, in order to prevent potential conflicts of interest, the responsibilities of the manufacturer should be specified and the conditions under which a manufacturer may subcontract tests shall be also indicated.

³ Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles (OJ L 263, 9.10.2007, p. 1).