DRAFT

AUTOMOTIVE INDUSTRY STANDARD

Requirements on Operating Space & Access to Driving Position for Agricultural Tractors

Date of hosting on website: 22nd May 2018
Last date for comments: 21st June 2018

Status chart of the standard to be used by the purchaser for updating the record

Sr. No.	Corrigenda.	Amendment	Revision	Date	Remark	Misc.
General Remarks						

INTRODUCTION

0.1 Introductory clause to be added later on

0.6 The AISC panel responsible for formulation of this standard is given in Annex …. (To be added)

0.7 The Automotive Industry Standards Committee (AISC) responsible for approval of this standard is given in Annex …. (To be added)

CHECKLIST FOR PREPARING AUTOMOTIVE INDUSTRY STANDARD

Requirements on Operating Space & Access to Driving Position for Agricultural Tractors

SR. NO.	PARTICULARS	REMARKS
1.	Indicate details of the base reference standard. (eg. ECE / EEC Directive/GTR etc.)	ANNEX XV of 1322/2014 (COMMISSION DELEGATED REGULATION (EU) No 1322/2014)
2.	Add an explanatory note indicating differences between the above standard and the draft, if any.	1. Cross references to respective Indian Standards. (e.g. AIS) 2. Marking requirements. 3. Transitional provisions. 4. Administrative provisions, e.g. Type approval & extension of approvals. 5. Deviations to be decided if required
3.	Specify details of technical specifications to be submitted at the time of type approval relevant to the requirements of this standard covered.	TO be added
4.	Are the details of Worst Case Criteria covered?	The Criteria shall be as agreed between the testing agency and applicant. TO be added
5.	Are the performance requirements covered?	Yes, Clauses to be added here
6.	Is there a need to specify dimensional requirements?	Yes.
7.	If yes, are they covered?	Yes. As per Annex XX
8.	Is there a need to specify COP requirements? If yes, are they covered?	Not Applicable
9.	Is there a need to specify type approval, and routine test separately, as in the case of some of the Indian Standards? If yes, are they covered?	Not Applicable
10.	If the standard is for a part/component or sub-system; i) AIS-037 or ISI marking scheme be implemented for this part? ii) Are there any requirements to be covered for this part when fitted on the vehicle? If yes, has a separate standard been prepared?	i) NA ii) NA
11.	If the standard is intended for replacing or revising an already notified standard, are transitory provisions for re-certification of	NO

	already certified parts/vehicles by comparing the previous test result, certain additional test, etc. required? If yes, are they included?	
12.	Include details of any other international or foreign national standards which could be considered as alternate standard.	ANNEX XV of 1322/2014 (COMMISSION DELEGATED REGULATION (EU) No 1322/2014)
13.	Are the details of accuracy and least counts of test equipment/meters required to be specified? If yes, have they been included?	To be reviewed by test agency
14.	What are the test equipment for establishing compliance?	As specified in this standards
15.	If possible, identify such facilities available in India.	To be reviewed by test agency
16.	Are there any points on which special comments or information is to be invited from members? If yes, are they identified?	Comments / discussion required on yellow highlighted points.
17.	Does the scope of standard clearly identify vehicle categories?	Yes
18.	Has the clarity of definitions been examined?	Yes

Requirements on Operating Space & Access to Driving Position for Agricultural Tractors

Clause No.	Clause as compared with REGULATION (EU) No 1322/2014 – changes are marked Red
1	**SCOPE**
	This standard lays down operating space and access to Driver position for agricultural tractors. This AIS shall apply only to wheeled agricultural tractors of Category A & its sub categories A1 to A4 as defined in AIS 053 .
	Each wheeled tractor category described in AIS 053 (A1,A2,A3,A4 & their subcategories) supplemented at the end by an 'a' or 'b' index according to its design speed: (a) 'a' for wheeled tractors with a maximum design speed below or equal to 40 km/h; (b) 'b' for wheeled tractors with a maximum design speed above 40 km/h;
	These additional requirements are being laid down for the following reasons. (i) To maximize safety and minimize severity of injuries. (ii) To take care of specific needs related to operator's safety & comfort to improve overall safety while plying on road.
2	**DEFINITIONS**
	For the purpose of this standard following definitions shall apply:-
2.1	Agricultural Tractors as per AIS 053
2.2	'Operating space' means the minimum volume of space between any fixed parts of the structure which is available to the driver of the tractor to enable him to operate the tractor from his seat in any way required with complete safety.
2.3	'Seat reference point' means the point of intersection in the median longitudinal plane of the seat between the tangential plane at the base of the padded backrest and a horizontal plane. This horizontal plane intersects the lower surface of the seat 150 mm in front of the seat reference point (S).
2.4	'Reference plane' means the plane parallel to the median longitudinal plane of the tractor passing through the Seat Reference Point (S).
2.5	Emergency Exit means exit, which is capable of being opened from the inside of the cab.
3	**Requirement for Operating space**
3.1	For all tractors, with the exception of those that fall within categories A2, A4.1 and A4.3 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 A2, A4.1, the operating space must comply with the minimum dimensions of Figure 7.

	For tractors of category A4.3 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.
3.2	Vehicle parts and accessories must not hamper the driver when driving the tractor.
3.3	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 A2 and A4.1.
	For tractors of categories A2 and A4.1 for which must be at least 30 mm. 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 except A2 and A4.1.
	For tractors of categories A2 and A4.1 for which must be at least 50 mm. (See Figure 2).
3.4	For all tractors, except those of categories A2 and A4.1, the rear wall of the cab from 300 to 900 mm above the Seat Reference Point (S) and 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).
3.4.1	This wall must have a width of at least 300 mm on either side of the seat reference plane (see Figure 3).
3.5	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.
3.5.1	Hand-operated control devices shall have minimum clearances requiring an actuating force ≥100 N shall have a minimum clearance 50 mm between the outer contours or from adjacent parts of the machines. Controls requiring an actuating force <100 N shll have a minimum clearance of 25 mm. This requirement does not apply to fingertip operation control devices, such as push- buttons or electric switches.
3.5.2	Alternative locations for the control devices, which achieve equally satisfactory safety standards, are acceptable.
3.6	For all tractors, except those of categories A2 and A4.1, 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).
3.6.1	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.
4.0	**Access to the driving position (means of entry and exit)**
4.1	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.
4.2	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.
4.3	Steps, integral foot recesses and rungs.

<table>
<tr><td>4.3.1</td><td>Steps, integral foot recesses and rungs must have the following dimensions:</td></tr>
<tr><td></td><td>
<table>
<tr><td>Depth clearance</td><td>150 mm minimum, (except for tractors of categories A2 and A4.1</td></tr>
<tr><td>Width clearance</td><td>250 mm minimum, (Values lower than this minimum width are authorised 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.</td></tr>
<tr><td>height clearance:</td><td>120 mm minimum,</td></tr>
<tr><td>distance between surface of two steps:</td><td>300 mm maximum (see Figure 4).</td></tr>
</table>
</td></tr>
<tr><td>4.3.2</td><td>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.</td></tr>
<tr><td>4.3.3</td><td>The lowest foot-step 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).</td></tr>
<tr><td>4.3.4</td><td>Steps or rungs must be designed and constructed in such a way that feet will not slip on them (e.g. steel or mesh grilles).</td></tr>
<tr><td>4.3.5</td><td>~~Alternative requirements for vehicles of category C~~</td></tr>
<tr><td>4.3.5.1</td><td>~~In the case of step(s) integrated in the track frame (see Figure 5), it can be retracted under an angle of ≤ 15°. The basic dimension of riser height dimension B is min 230 and max 400 mm. The tread depth F1 is 130 mm minimum. According to the EN ISO 2867:2006 is met, measured from the outer edges of the track shoes.~~</td></tr>
<tr><td>4.3.5.2</td><td>~~In addition, taken into account the limited view during egress, the step width shall be at least ≤ 200 mm as wide as the minimum set out in EN ISO 2867:2006.~~</td></tr>
<tr><td>4.3.5.3</td><td>~~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.~~</td></tr>
<tr><td>4.4</td><td>Handrails/handholds</td></tr>
<tr><td>4.4.1</td><td>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).</td></tr>
<tr><td>4.4.2</td><td>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.</td></tr>
</table>

5.0	**Access to other positions than the driving position**
5.1	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.
5.2	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 authorised 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).

	Such boarding means shall comprise a series of successive steps as shown in Figure 6: each step shall have an 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.
	Note :- The vertical and horizontal distance between consecutive steps shall not be less than 150 mm; however, a tolerance of 20 mm between stages is allowed.
6.0	**Doors and windows**
6.1	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.
6.2	The opening angle of the door must permit entry and exit without danger.
6.3	The access doors to the cabin must have a minimum width of 250 mm at floor height.
6.4	Ventilation windows, if any, must be easily adjustable.
6.5	The force needed to open or close a hinged primary enclosure door shall not exceed 135 N. The force needed to open or close all other hinged access doors or covers shall not exceed 245 N. This applies to the opening and closing of the door, not to the activation of the latch.(ISO 2867)
7.	**Emergency Exits**
7.1	Number of emergency exits
7.1.1	Single-door cabs must have two extra exits constituting emergency exits.
7.1.2	Two-door cabs must have one extra exit constituting an emergency exit, except for tractors of categories A2 and A4.1.
7.2	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.

7.3	For all tractors, except those of categories A2 and A4.1, 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 A2 and A4.1 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.
7.4	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.
7.5	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.

Annexure- 1

Figures

Figure 1

(Dimensions in millimetres)

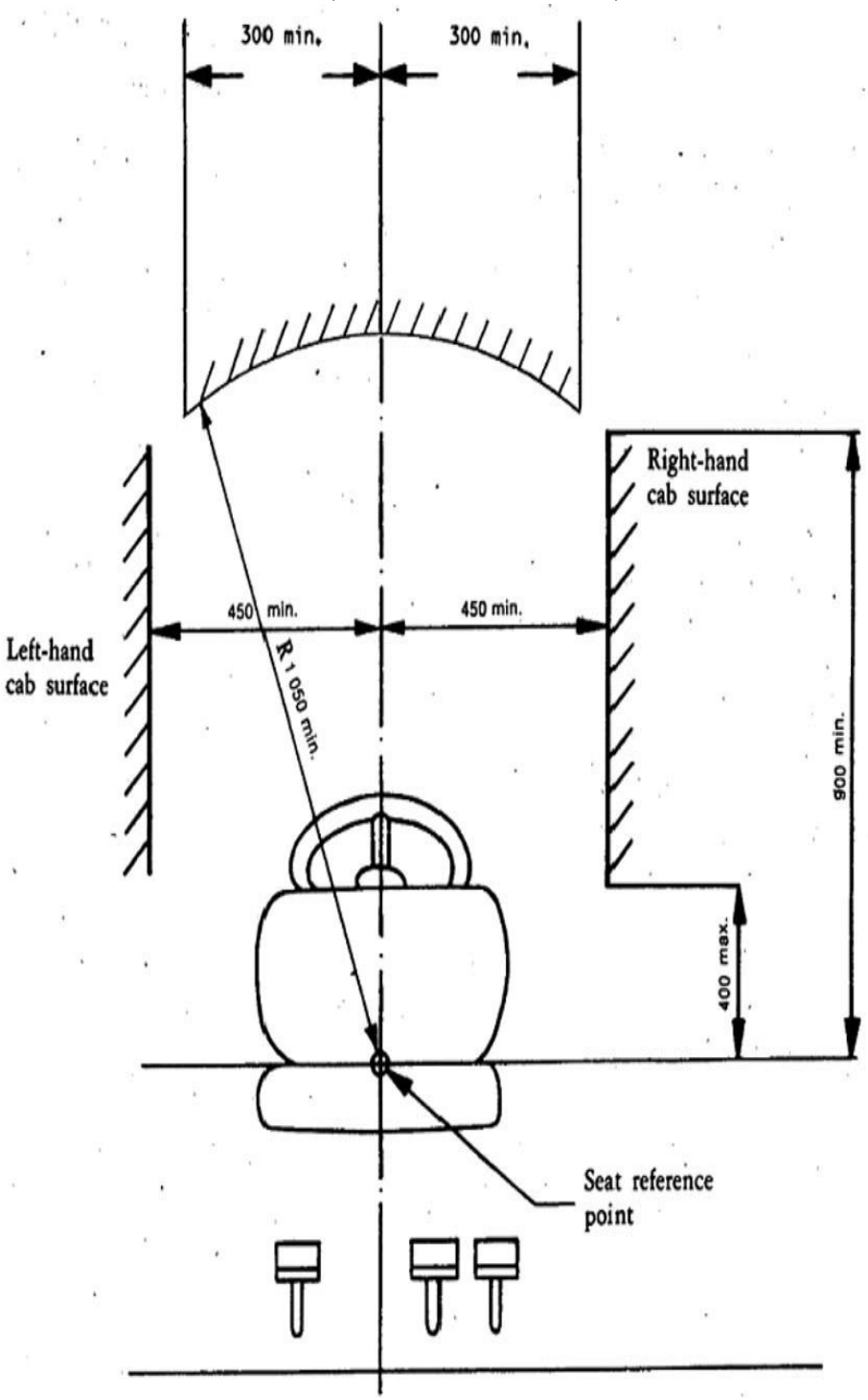


Figure 2
(All Dimensions are in mm)

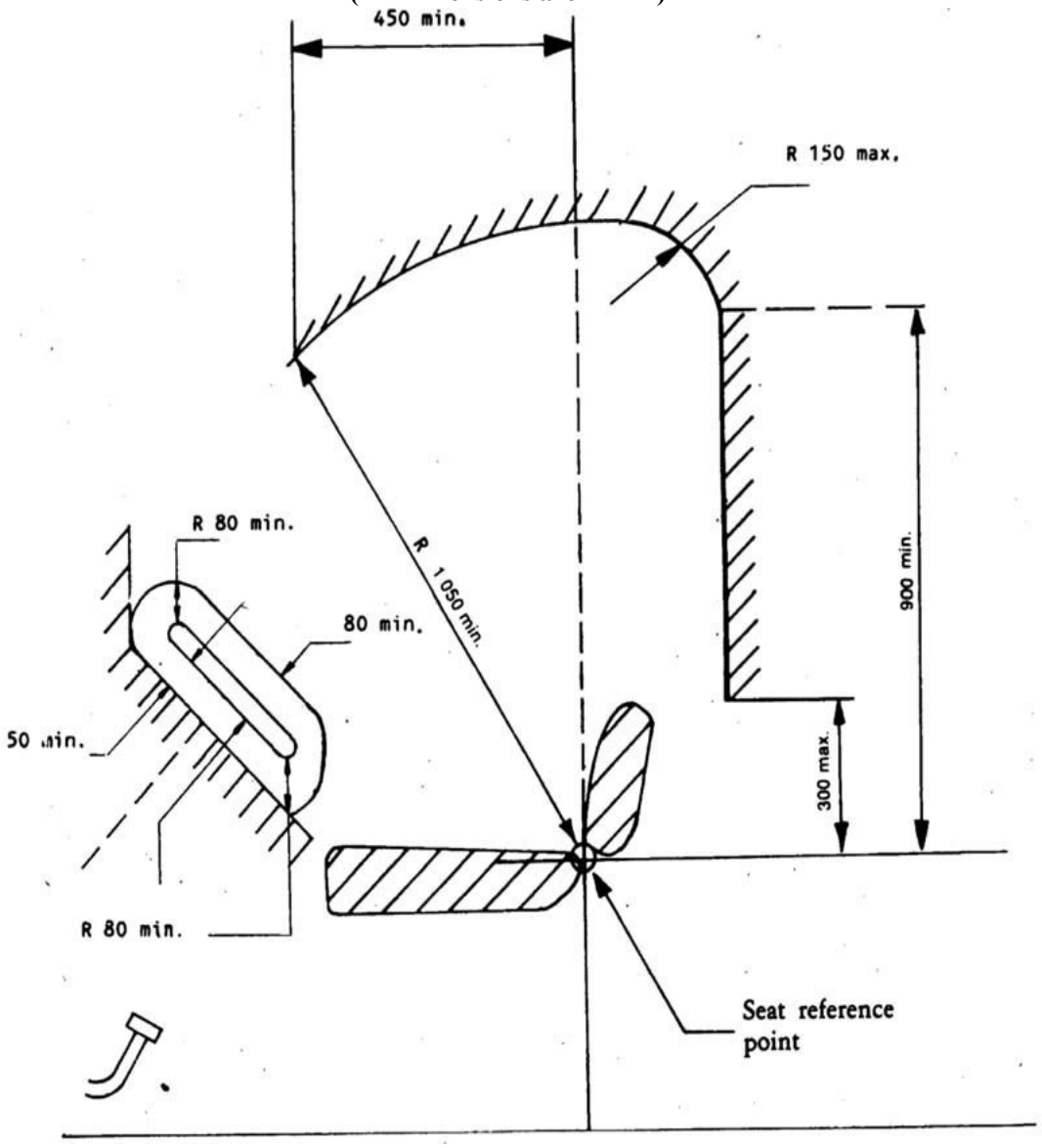


Figure 3
(All Dimensions are in mm)

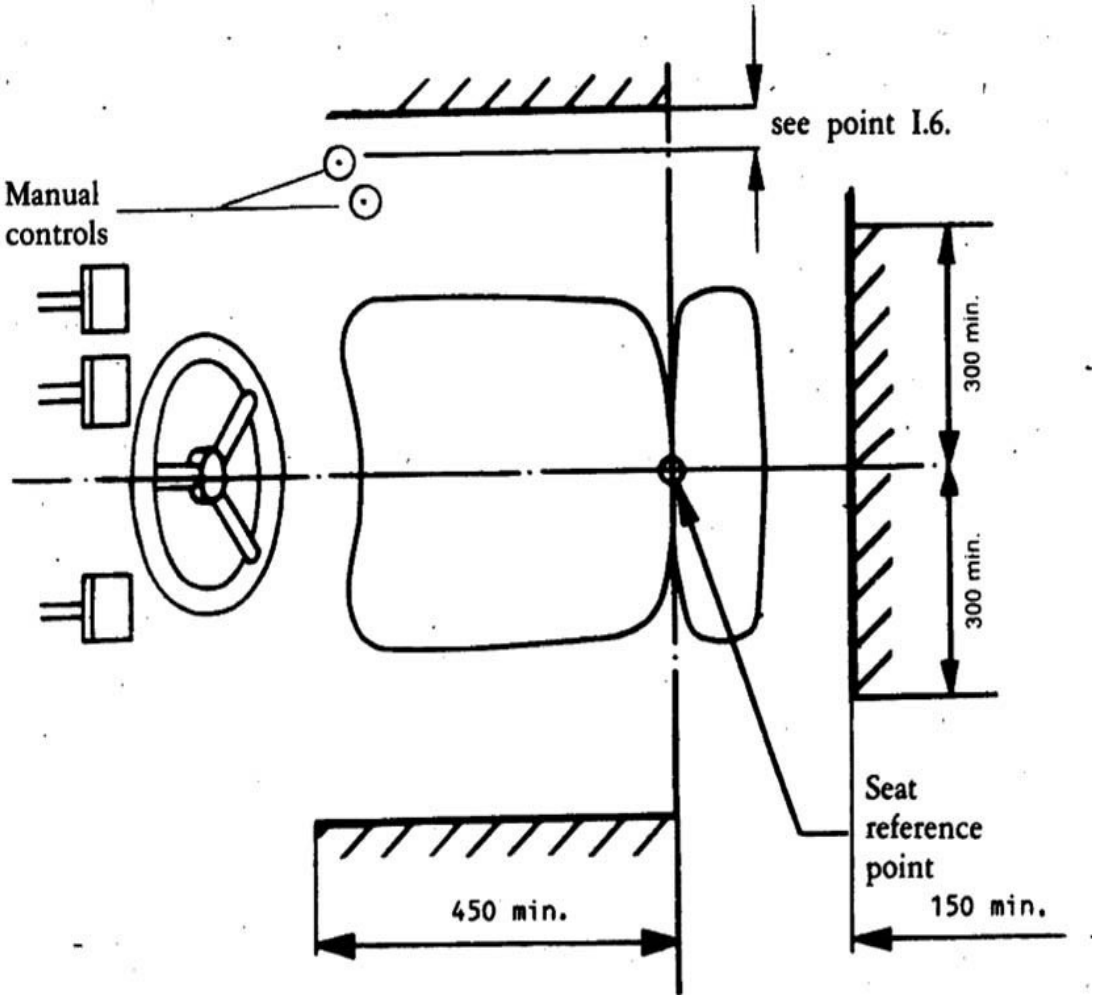


Figure 4

(Dimensions in mm)

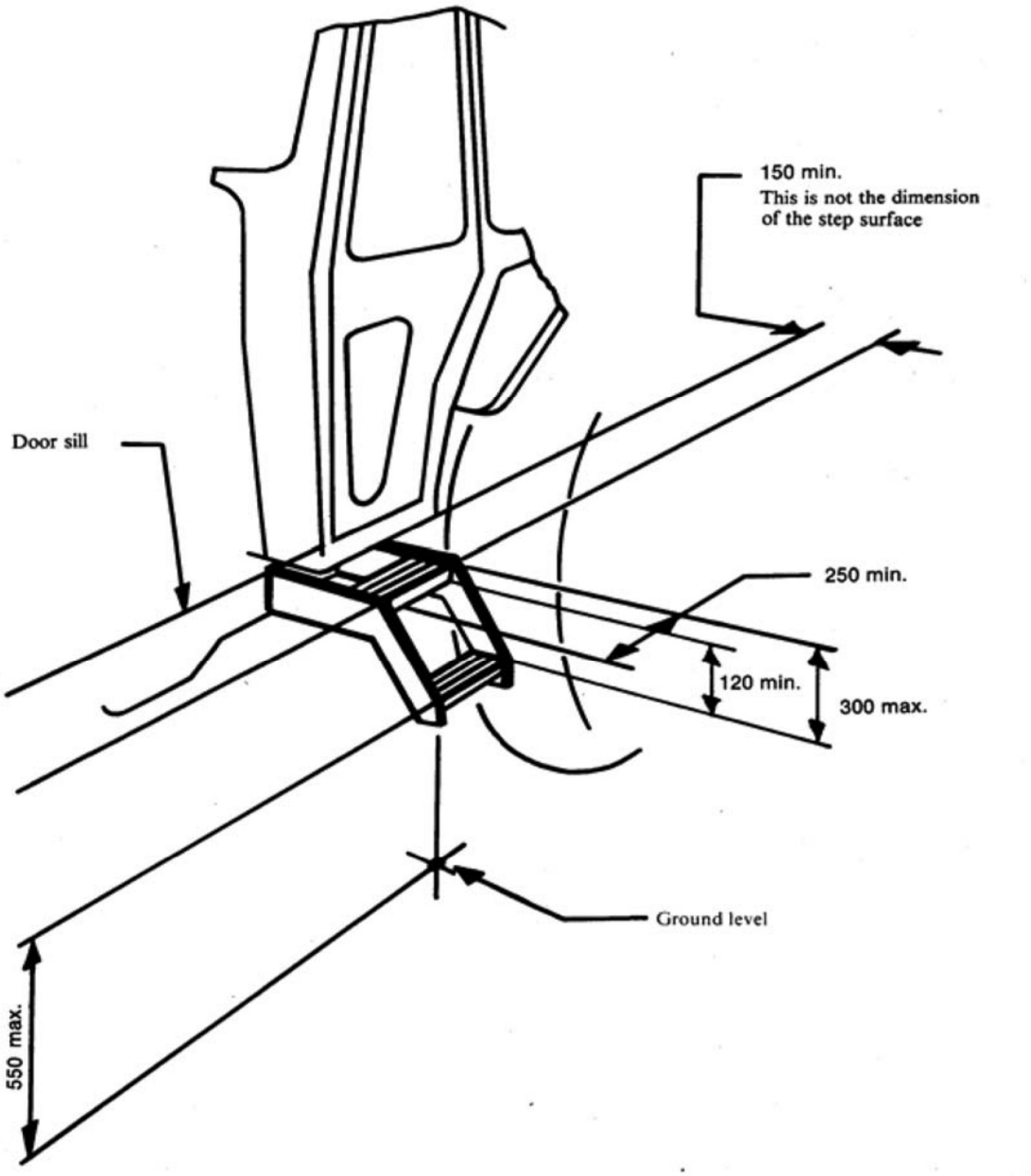
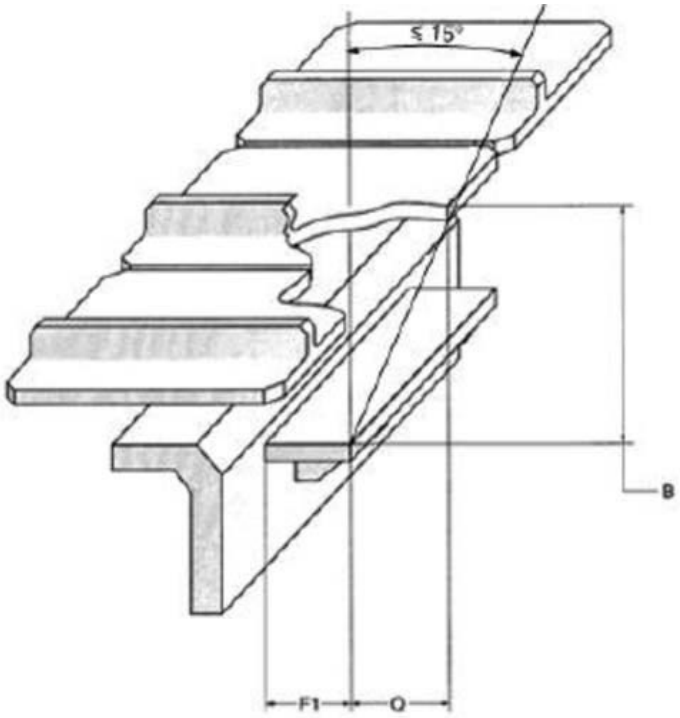


Figure 5

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



$B \leq 400$ mm

$F1 \geq 130$ mm

Q maximum retraction of a step

Figure 6

(Source: EN ISO 4254-1 No. 4.7)

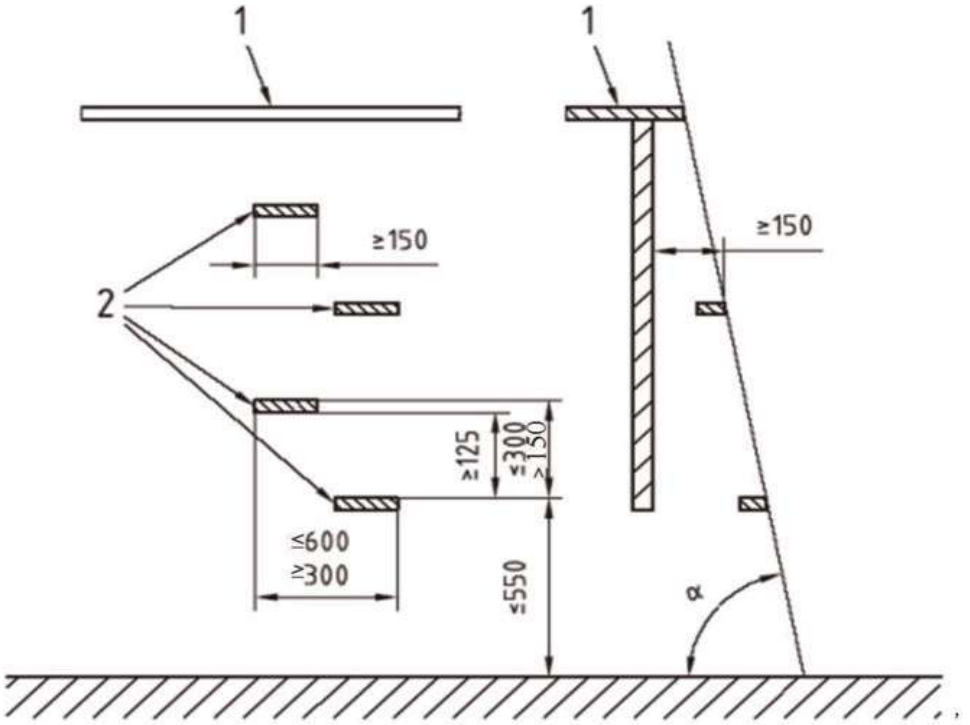
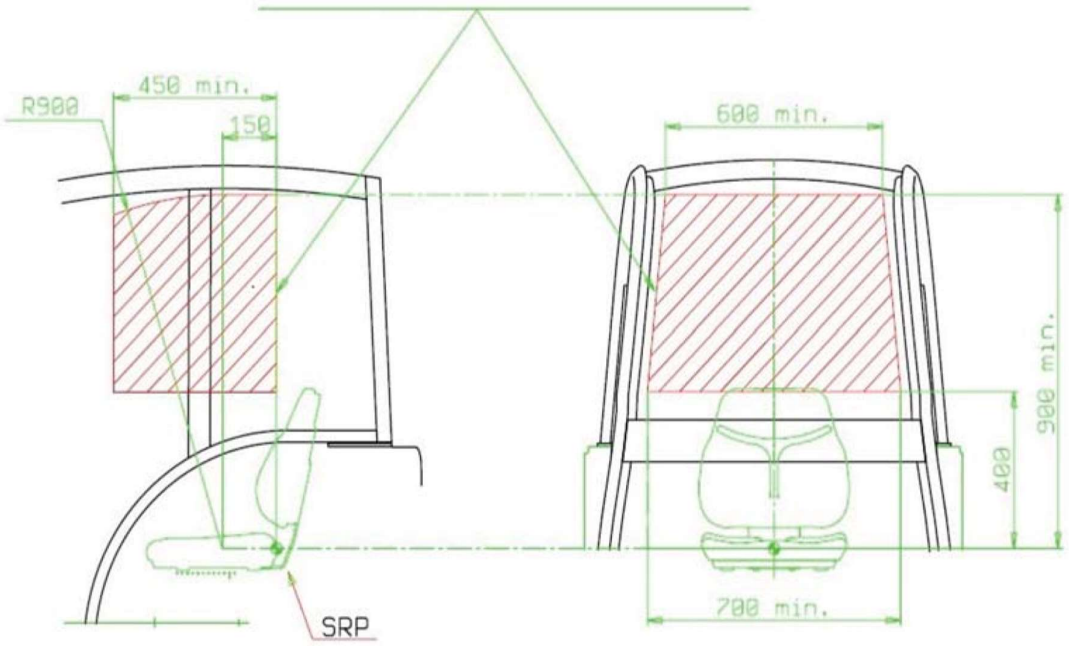


Figure 7

Minimum dimensions of the operating space in tractors of categories A2 and A4.1



ANNEXURE II

APPLICATION FORMATS

(To be Added in Table 17 in AIS 007 after discussion with test agencies)

1	**GENERAL**	
1.1	Name and address of manufacturer	
1.2	Name(s) and address(es) of assembly plant(s)/	
1.3	Type of vehicle	
1.4	Model Name	
1.5	Variant if any	
1.6	Means of identification of Model, if marked on the tractor	
1.7	Manufacturer´s plate (location and method of affixing)	
1.8	Chassis identification number	
1.9	Category of tractor	
2	**GENERAL CONSTRUCTION CHARACTERISTICS OF THE TRACTOR** (Attach front and rear photographs or drawings of a representative version, and a dimensioned drawing of the entire tractor)	
2.1	Number of axles and wheels	
2.2	Number and position of steered axles	

2.3	Powered axles(Number, position, interconnection)			
2.4	Position and arrangement of the engine			
2.5	Position of the steering wheel(right,left,centre)/			
2.6	Chassis (backbone/chassis with side members/articulated chassis/other)			
3.	**MASSES AND DIMENSIONS [MM, KG]**			
3.1.	Unladen mass(es)			
3.2	Unladen mass(es) of the tractor in running condition (including the roll-over protection structure if available, excluding optional accessories, but with coolant, lubricants, fuel, tools and driver	2WD	4WD	
3.2.1	Distribution of this (these) mass(es) among the axle	Model	Front	Rear
3.2.2	Maximum mass(es) as declared by the manufacturer			
3.2.3	Wheelbase (mm)	2 WD	4WD	
3.2.4	Maximum and minimum width of track of each axle (measured between the symmetry planes of the single or twin tyres normally fitted) (to be stated by the manufacturer) (mm)	Front axle		
		Rear axle		
3.3	Range of vehicle dimensions (overall and for on-road use			
3.3.1	Lengh			
3.3.1.1	Maximum & Minimum permissible length for the completed vehicle mm)			
3.3.2	Width			
3.3.2.1	Maximum & Minimum permissible width for the completed vehicle (mm)			

3.3.3	Maximum height for the completed vehicle (mm)	
4	**ENGINE**	
4.1	**Part 1 – General Parte**	
4.1.1	Engine Model	
	Manufacturer´s Name	
4.1.2	Address of manufacturer	
4.1.3	Addresses of assembly plants	
4.1.4	Operating principle - Spark/compression ignition/direct/indirect injection - cycle: two stroke/four stroke	
4.1.5	Fuel	
4.1.6	Working principle	
4.1.7	Bore	
4.1.7	Stroke	
4.1.8	Number and arrangement of cylinders	
4.1.9	Engine displacement	
4.1.10	Engine rating	
4.1.11	Maximum torque	
5	**TRANSMISSION**	
5.1	Type (mechanical, hydraulic, electric, etc.)	
5.2	Gear speed	
5.3	Clutch (type) (if any)	
5.4	Gear ratios (if any) with or without transfer box	
	Total speed reduction	Speed in Km/ hour

5.5	Maximum dimension of tyres & Radius index ,		
	Optional rear tyre Size		
5.6	Calculated maximum tractor design speed in top gear , kmph		
6	**AXLES**		
6.1.	Description of each axle	Front axle	Rear
6.2	**SUSPENSION**		
6.2.1	Extreme (maximum-minimum) tyre/wheel combinations (if any) (dimensions, inflation pressure for road use, maximum permissible load)	**Front tyre**	**Rear tyre**
7	Driver's seat		
	Position of the driving seat: left/right/centre		
	Driver's seat type category: category A class I/II/III, category B (4)		
	Reversible driving position: yes/no (4)		
	Description of the reversible driving		
	Dimensions of the driving seat, including the depth and width of the seat surface, the position and inclination of the backrest, as well as the inclination of the seat surface :		
8	Components details- material/overall dimention		

Annexure III

Extension of Certificate

1. Certificate can be extend in case of variant model addition.
2. Certificate can be extend in case, Rear Tractor width is similar and/or ±100 mm but tractor should be of similar height of platform & category- Manufacturer's declaration require.
3. Certificate can be extend in case component along with same seat fitted on any other tractor model. Manufacturer's declaration require.