
Specification for
Requirements and testing of
protective cabs and frames for
agricultural wheeled tractors

This British Standard, having been approved by the Agricultural Machinery and Implements Industry Standards Committee, was published under the authority of the Executive Board on 7 April, 1973.

© British Standards Institution, 1973

First published September 1966

First revision April 1973

ISBN: 0 580 07675 X

Copyright

Users of British Standards are reminded that copyright subsists in all BSI publications. No part of this publication may be reproduced in any form without the prior permission in writing of BSI. This does not preclude the free use, in the course of implementing the standard, of necessary details such as symbols and size, type or grade designations. Enquiries should be addressed to the BSI Secretariat.

Contract requirements

Attention is drawn to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

Revision of British Standards

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. **It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.** Full information on all BSI publications, numbering over 6000, will be found in the *British Standards Yearbook*. This information is supplemented by details published each month in *BSI News* of new publications, revisions and amendments.

BSI News is available to Subscribing Members of the Institution. All other publications may be purchased direct from Sales Department. Enquiries concerning subscribing membership, which has considerable advantages, will be welcomed, and should be made to Subscriptions Department. Both departments are located at:

101 Pentonville Road, London N1 9ND (Telephone 01-837 8801; Telex 23218).

The following BSI references relate to the work on this standard:

Committee reference AGE/6 Draft for comment 72/43640 DC

Co-operating organizations

The Agricultural Machinery and Implements Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government department and scientific and industrial organizations:

*Agricultural Engineers' Association
Agricultural Machine Parts Export Association
*British Agricultural and Garden Machinery Association
Institution of Agricultural Engineers Incorporated
*Ministry of Agriculture, Fisheries and Food

*National Farmers' Union
*National Institute of Agricultural Engineering
Royal Welsh Agricultural Society

The Government department and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

Association of Hydraulic Equipment Manufacturers
Department of Trade and Industry
National Union of Agricultural and Allied Workers
Society of Motor Manufacturers and Traders

Tyre Manufacturers' Conference (Service Committee)
University of Melbourne
Individual experts



**Amendment Slip No. 1, published 31 August, 1973
to BS 4063 : 1973**

**Requirements and testing of protective cabs and frames
for agricultural wheeled tractors**

Corrections

**AMD 1248
August 1973**

Clause 4.3 Wheel propping rig and beams

Delete the existing text and substitute the following:

'4.3 Wheel prop and beam. The beam shall be used as a prop for the wheel in the side blow as shown in Fig. 7. A softwood beam approximately 150 mm square shall be clamped to the floor to brace the tyres.'

**AMD 1248
August 1973**

Clause 4.8 Noise test site

In the last line delete '... or driven to a distance. ...' and substitute '... or driven at a distance. ...'.

**AMD 1248
August 1973**

Fig. 7. Method of impact from side

Delete the existing figure and substitute the new Fig. 7 attached.

**AMD 1248
August 1973**

Fig. 8. Propping rig used in side impact test

Delete this figure.

**AMD 1248
August 1973**

Clause 5.2.3 Impact at the side

Page 18. In line eight, delete the two sentences commencing with the words 'After lashing' and substitute the following:

'After lashing, a wooden beam shall be placed as a prop against the rear wheel opposite the weight and secured to the floor so that it is held tightly against the wheel rim during impact as shown in Fig. 7. The length of the beam shall be chosen so that when in position against the wheel it is at an angle of $30 \pm 3^\circ$ to the horizontal. Its length shall be 20 to 25 times its depth and its width 2 to 3 times its depth.'

**AMD 1248
August 1973**

**Fig. 11. Plan view of cab and weight showing location of plane of swing
in front and rear impact tests**

Insert the following caption adjacent to the top half of the diagram:

CABS WITH SQUARE CORNERS

Insert the following caption adjacent to the bottom half of the diagram:

CABS WITH CURVED CORNERS

Insert the following table in the left-hand margin of the diagram

	Dimension <i>X</i>
Rear blow	One sixth of width of top of cab (see 5.2.1)
Front blow	80 mm (see 5.2.2)

For tyre pressures and deflections
see 5.1.5 and 5.2.3

Strut: length = $20 - 25 \times \text{depth}$
width = $2 - 3 \times \text{depth}$

Angle $30^\circ \pm 3^\circ$
to horizontal

Locus of centre of gravity
of weight passing through
point of contact

Two wire ropes to provide a downward
force on axle adjacent to blow

Fig. 7. Method of impact from side

NOTE. The configuration of the cab/frame shown is solely for the purpose of illustration and for dimensional reference. It does not purport to denote design requirements.

Specification for Requirements and testing of protective cabs and frames for agricultural wheeled tractors

Amendments issued since publication

Amd. No.	Date of issue	Text affected

BS 4063 : 1973

Contents

	Page	Table	Page
Co-operating organizations	Inside front cover	1. Tyre pressures and deflections	15
Foreword	2		
Specification		Figures	
1. Scope	3	1. Apparatus for determination of seat reference point	5
2. Safety requirements	3	2. Method of determining seat reference point	6
3. General	3	3. Zone of clearance	7
4. Apparatus and equipment	8	4. Illustration of weight	9
5. Laboratory tests for establishing strength of cab or frame and attachment to tractor	15	5. Method of impact from rear	10
6. Overturning test	19	6. Method of impact from front	10
7. Measurement of noise	20	7. Method of impact from side	11
8. Report and specification	20	8. Propping rig used in side impact test	12
9. Conditions for acceptance	20	9. Method for crushing test	13
Appendix		10. Arrangement of ramp and guide for overturning test	14
A Specimen report	21	11. Plan view of cab and weight showing location of plane of swing in front and rear impact tests	16
		12. Position of beam in crushing tests	18

Foreword

This British Standard has been prepared under the authority of the Agricultural Machinery and Implements Industry Standards Committee. It was first published in 1966 at the request of the Ministry of Agriculture, Fisheries and Food and, arising from certain developments in the international field, it has now been revised. The main technical changes concern the zone of clearance, the formulae used to calculate the lift height of the pendulum for the impact tests and the noise test procedure.

The results of the tests specified in this standard indicate the behaviour to be expected during accidents which occur under normal agricultural conditions when rearing or overturning sideways.

NOTE. Attention is drawn to certification facilities offered by BSI; see the inside back cover of this standard.

British Standard Specification for

Requirements and testing of protective cabs and frames for agricultural wheeled tractors

1. Scope

This British Standard specifies the requirements for protective cabs and frames fitted to agricultural wheeled tractors. It lays down procedures for testing in order to establish:

- (1) Compliance with the requirements of this standard.
- (2) Whether the cab or frame may be expected to protect the driver adequately from being crushed during an overturning accident of a type likely to be encountered during practical work.
- (3) The noise level inside the cab or frame.

NOTE. The titles of British Standards referred to in this standard are given on the inside back cover.

2. Safety requirements

When tested in accordance with the procedures laid down in this standard protective cabs and frames shall meet the requirements given in Clause 9.

3. General

3.1 Tests. Tests made using special rigs are intended to simulate such loads as are imposed on the cab or frame when the tractor overturns rearwards or sideways.

These tests, described in Clause 5, enable observations to be made on the strength of the cab or frame and the attaching brackets to the tractor, and are made with the tractor stationary.

If the manufacturers of the cab or frame make any claim that the structure is intended to prevent the tractor from continuing to roll during an overturning accident on sloping ground, tests, detailed in Clause 6, shall be made to investigate this claim.

3.2 Cabs previously tested on different tractor models. In the case of a cab or frame which has fulfilled the conditions required for acceptance as a protective cab or frame designed to be used on other models of tractor, then the tests as specified in Clause 5 need not be carried out on each model of tractor provided that the cab or frame and tractor comply with the following conditions:

- (1) The unballasted weight, as defined in 3.5, does not exceed by more than 5 % the reference weight used in the test.
- (2) The method of attachment and the tractor's components to which the attachment is made are to all practical intents and purposes identical.
- (3) Any components such as mudguards and bonnet cowls which may provide support for the cab or frame are to all practical intents and purposes identical.
- (4) The test report contains a reference to and full details of the previous tests.

3.3 Selection and preparation for test of cab or frame and tractor. The cab or frame shall be in accordance with the current production specification and shall be fitted to the appropriate tractor model in accordance with the cab or frame manufacturer's declared method of attachment. The name and identification mark of the tractor shall be included in the title of the report. The tractor used for the test shall be complete* and in running order.

* Except as provided for in Clause 6.

BS 4063 : 1973

3.4 Measurement tolerances. Measurements shall be made during the tests to the following tolerances:

- (1) Linear dimensions measured during test (except (2) below): cab or frame and tractor dimensions, zone of clearance and tyre deflections when lashed for impact tests: ± 3 mm.
- (2) Height of pendulum weight set for impact tests: ± 6 mm.
- (3) Measured tractor weight: ± 20 kg.
- (4) Load applied in crushing tests: ± 2 %.
- (5) Angle of weight supporting chains at the point of impact: $\pm 2^\circ$.

3.5 Tractor weight. The measured tractor weight W , used in the formulae (see 5.2) to calculate the height of the pendulum weight and the crushing force, shall be the weight in kilograms of the tractor with full fuel tanks, coolant and lubricating oil quantities, and complete with cab or frame fitted with cladding but without driver. Not included are optional front or rear weights, tyre ballast, mounted implements, mounted equipment or any specialized components. In the case of a tandem tractor the weight of the standard version of that part to which the cab or frame is fitted shall be used.

3.6 Seat location and seat reference point. The seat shall be set at the mid point of any vertical adjustment range where this is independent of adjustment of its horizontal position. For definition of the zone of clearance in 3.7 it shall be at the rearmost point of any horizontal adjustment range, while for definition of microphone location in 7.3 it shall be at or as near as possible to the mid point of this range.

The reference point shall be obtained using the apparatus illustrated in Figs. 1 and 2 to simulate loading by a human occupant. The apparatus shall consist of a seat pan board and backrest boards. The lower backrest board shall be jointed in the region of the ischium humps (A) and loin (B), the joint (B) being adjustable in height.

NOTE. The reference point is defined as the point in the centre longitudinal plane of the seat where the tangential plane of the lower backrest and a horizontal plane intersect. This horizontal plane cuts the lower surface of the seat pan board 150 mm in front of the above mentioned tangent.

The apparatus shall be positioned on the seat. It shall then be loaded with a weight of 55 kg at a point 50 mm in front of joint (A), and the two parts of the backrest board shall be lightly pressed tangentially against the backrest. If it is not possible to determine a definite tangent to the lower area of the backrest, the lower part of the backrest board shall be lightly pressed against the backrest vertically.

Where a seat suspension is provided with adjustment for the weight of the driver this shall be set so that the seat is at the mid point of its dynamic range.

* Except as provided for in Clause 6.