BRITISH STANDARD

BS 4875-8:1998

Furniture — Strength and stability of furniture —

Part 8: Methods for determination of stability of non-domestic storage furniture

ICS 97.140

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee FW/2, Domestic and contract furniture, upon which the following bodies were represented:

Association of Building Engineers
Association of Manufacturers of Domestic Appliances
Association of Suppliers to the Furniture Industry Ltd
British Coatings Federation Ltd
British Contract Furnishing Association
British Furniture Manufacturers' Federation
British Laminated Plastics Federation
British Retail Consortium
British Shops and Stores Association
British Woodworking Federation
Castor Manufacturers (UK) Association
Consumer Policy Committee of BSI
Department of Trade and Industry
European Metal Sink Manufacturers' Association
Federation of the Electronics Industry
Flat Glass Manufacturers' Association
Furniture Industry Research Association
Glass and Glazing Federation
ICE Ergonomics
Institute of Trading Standards Administration
Kitchen Specialists Association
Leisure and Outdoor Furniture Association Ltd
LHC Building Components and Services
Mail Order Traders' Association
National Bed Federation Limited
Royal Society for the Prevention of Accidents
Society of British Gas Industries

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The following BSI references relate to the work on this standard:
Committee reference FW/2
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Contents

Foreword

This part of BS 4875 has been prepared by Technical Committee FW/2. It is a new edition of, and supersedes, BS 4875-8:1985 which is withdrawn. This new edition does not reflect a full review or revision of the standard, which will be undertaken in due course.

This part of BS 4875 does not include stability requirements for domestic storage furniture. These are specified in BS EN 1727:1998, *Domestic furniture — Storage furniture — Safety requirements and test methods*. This new edition was prepared because of the requirement to remove conflicting parts due to the publication of BS EN 1727.

The other parts of BS 4875 are as follows:

— Part 1: *Methods for determination of strength of chairs and stools*.
— Part 3: *Methods for determination of strength of settees*.
— Part 5: *Methods for determination of strength of tables and trolleys*.
— Part 6: *Methods for determination of stability of tables and trolleys*.
— Part 7: *Methods for determination of strength and durability of storage furniture*.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 6, an inside back cover and a back cover.

Methods

1 Scope

This part of BS 4875 describes methods for determination of the stability of free standing non-domestic storage furniture. The tests do not apply to domestic storage furniture, which is covered by BS EN 1727, nor to the stability of kitchen furniture, which is covered by BS EN 1153, nor to office furniture, which is covered by BS 5459-3.

2 References

2.1 Normative references

The following normative document contains provisions which, through reference in this text, constitute provisions of this British Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 4875-7:1998, *Furniture — Strength and stability of furniture — Part 7: Methods for determination of strength and durability of storage furniture.*

3 Definition

For the purposes of this part of BS 4875 the following definition applies.

stability
ability to withstand overturning

4 Principle

The overturning forces that occur in use are simulated and it is determined whether the article overturns.

NOTE The test results are valid only for the article tested. If the test results are intended to be applied to other similar articles, the test specimen should be totally representative of the production model. Information on the scale of sampling to be employed can be obtained from BS 6001.

5 General requirements for tests

5.1 Test loading

Unless otherwise stated the following tolerances are applicable:

forces:	± 5 %
velocities:	± 5 %
masses:	± 0.5 %
dimensions:	± 1.0 mm
angles:	± 2°

The accuracy for the positioning of loading pads shall be ± 5 mm.

NOTE The tests may in certain cases by carried out by means of loads or forces. For practical purposes, a force of 10 N may be taken to be equal to the downward force due to a mass of 1 kg.

5.2 Setting-up of furniture

The articles shall be tested as delivered.
Self-assembly furniture shall be assembled according to the instructions supplied with the articles. If the article can be combined in different ways the most adverse combination shall be used for each test.

6 Apparatus

NOTE For information on the availability of suitable test equipment contact the BSI Information Centre, BSI Head Office, 389 Chiswick High Road, London W4 4AL.

6.1 *Means of applying required loads or forces.*

6.2 *Means of measuring dimensions.*

6.3 *Loading pad*, 75 mm × 75 mm, having a smooth, hard surface and rounded edges.

6.4 *Horizontal impact device*, consisting of a basketball inflated to a pressure of 73.5 kPa ± 5 kPa and attached by a network of elastic cords to an annular seating. The ball seating shall consist of a ring of timber (or timber derivative) having an outside diameter of 150 mm and an inside diameter of 90 mm. Its rear face shall be attached to the main body of the impactor and its front face shaped to fit the ball.

The main body of the impactor shall consist of a mass supported by cords or flexible wires 850 mm long so that the longitudinal axis of the ball, mounting ring and main body assembly shall remain horizontal when the support cords are displaced from the vertical.

The main body of the impactor shall be of such a mass that the total mass of all moving parts, excluding the support cords, shall be 50 kg.

The impactor is illustrated in Figure 1.

6.5 *Stops*, to prevent the article from sliding but not from overturning. Stops shall be not higher than 12 mm except in cases where the design of the article necessitates the use of higher stops, where the lowest stop that will prevent the article from moving shall be used.

6.6 *Floor*, a rigid, horizontal and flat surface.

7 Procedures

7.1 General

Carry out the tests described in **7.2** and **7.3** with the article placed on the floor (**6.6**) and with stops (**6.5**) placed in such a position that the article is prevented from sliding, but not from overturning during each test.

7.2 Overturning test for an unloaded carcase

7.2.1 *Drawers*

With the article unloaded close all drawers and doors on the article. Load the drawer that has the longest travel with the appropriate load specified in Table 1. Pull it out two-thirds of its length, or to the point at which 100 mm remains in the carcase or, if it is fitted with a built-in stop, open the drawer fully without stressing the stop. Apply a downwards force of 100 N to the outer edge of the drawer by means of the loading pad (**6.3**) (see Figure 2). Observe whether the article overturns. Unload and close the drawer.

7.2.2 *Doors*

Open the pivoted door having the greatest width through an angle of 90°, or fully open the door if it is not possible to open the door through an angle of 90°. Apply a downward force of 100 N to the outer edge of the door by means of the loading pad (**6.3**) (see Figure 2). Observe whether the article overturns.

7.3 Overturning tests for a loaded article

7.3.1 *General*

Load all parts of the article with the appropriate load given in Table 1. Close all doors and drawers. Carry out the overturning tests described in **7.3.2** to **7.3.5** on those parts of the article.

7.3.2 *Doors and drawers*

Perform the tests as described in **7.2.1** and **7.2.2**, except that the downward forces applied shall be 300 N (see Figure 3).

7.3.3 *Drawer slamming*

Carry out the slam shut test as specified in BS 4875-7 at test level 4 (see Figure 4) and, if the drawer is fitted with open stops, also carry out the slam open test from BS 4875-7. Observe whether the article overturns. Any damage sustained by the drawer shall be disregarded.

7.3.4 *Flap*

Open the flap having the greatest depth. Apply a downwards force of 200 N to its outer edge by means of the loading pad (**6.3**) (see Figure 5). Observe whether the article overturns. Close the flap.

7.3.5 *Horizontal stability*

Apply a rearward horizontal force of 200 N perpendicular to the front edge of the highest shelf, flap, drawer or top by means of the loading pad (**6.3**) (see Figure 6). Observe whether the article overturns.

Repeat the test with the force applied forwards to the rear of the article. The maximum height of application of the force shall be 1.6 m.

Pull forwards on handles and hanging rails, if fitted, with a force of 200 N.

7.3.6 *Impact*

Place the article on the floor (**6.6**) with the stops positioned against the bottom or the legs furthest from the point of impact. Impact the article, using the impactor (**6.4**) through a height, *a* (see Figure 1), of 40 mm, so that the impactor strikes the edge of the article at the position likely to have the most adverse effect, for instance the top edge (see Figure 6). The maximum height of impact from the floor shall be 1.6 m. Record whether the article overturns.

8 Interpretation of results

Each article shall be considered to have passed the tests if the article did not overturn during the tests.

9 Test report

The test report shall include the following particulars:

a) the number of this British Standard, i.e. BS 4875-8;

b) details of the article of furniture tested;

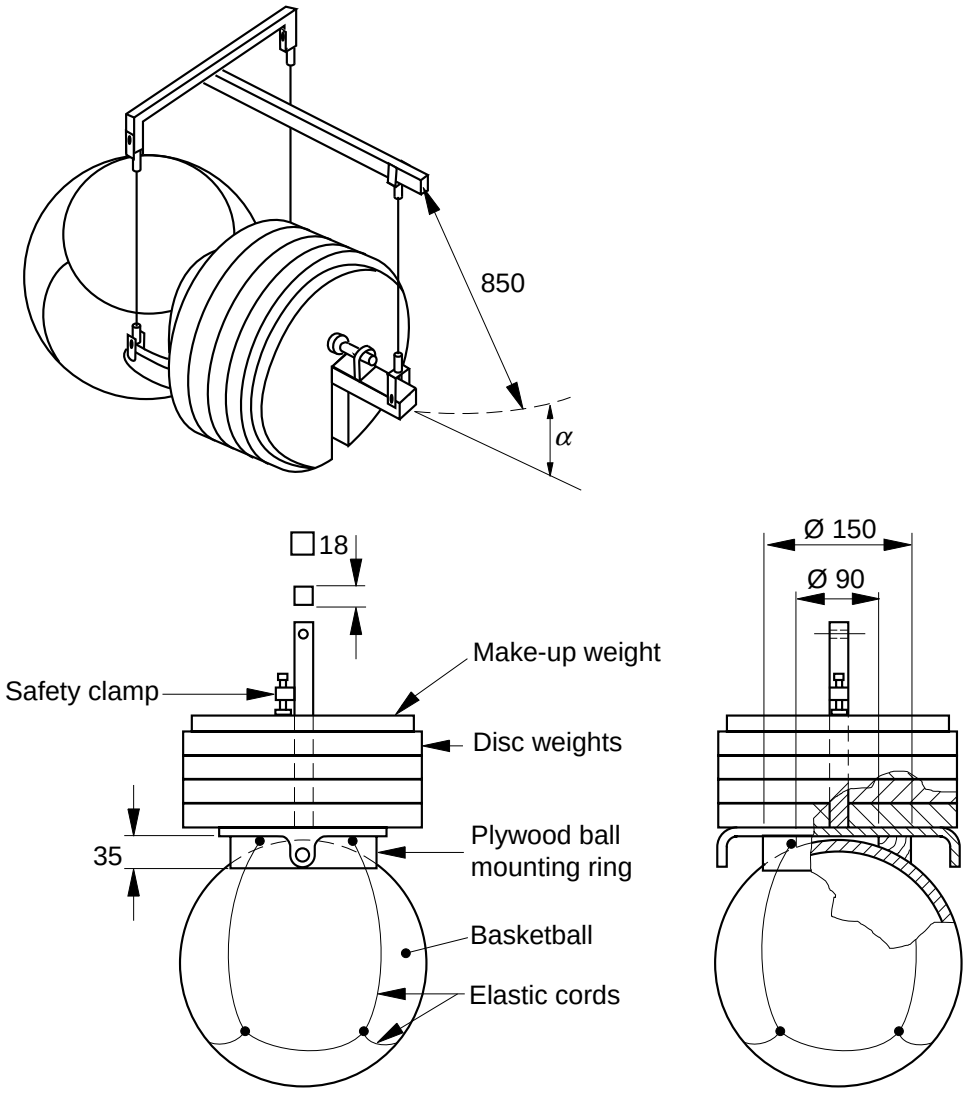
c) whether the article overturns during testing;

d) details of any deviation from the test procedure.

Table 1 — Loads applied

Part	Load applied
Horizontal surfaces, shelves and door baskets	1.0 kg/dm^2
Drawers and extension elements (cabinet not loaded)	0.25 kg/dm^3 internal volume
Drawers and extension elements (cabinet loaded)	0.25 kg/dm^3 internal volume[a]
Suspended pocket file fittings	1.25 kg/dm length
Clothes rails	2.0 kg/dm length

[a] For all tests except the drawer slam open test, where the drawer shall be loaded to 0.4 kg.



All dimensions are in millimetres

Figure 1 — Horizontal impact device

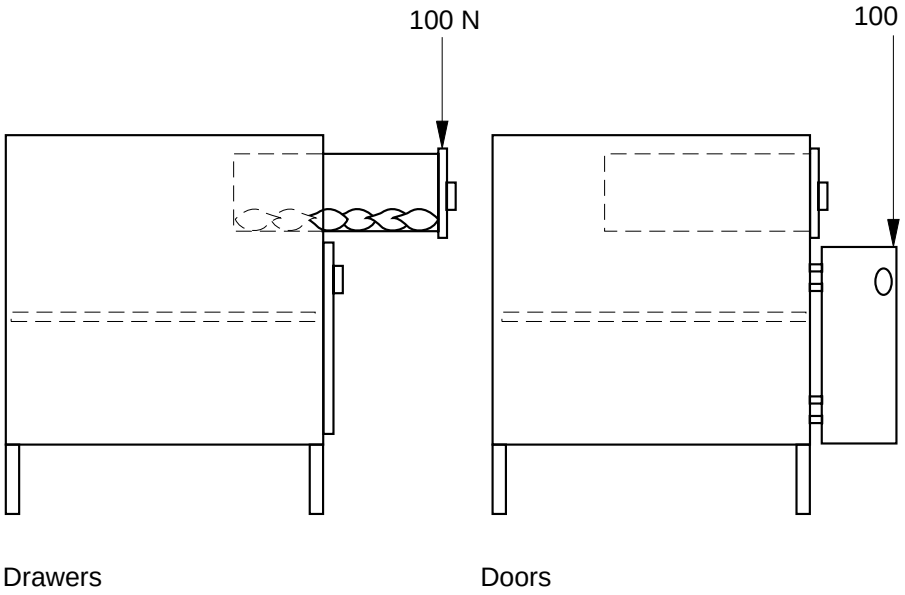


Figure 2 — Overturning tests for an unloaded article

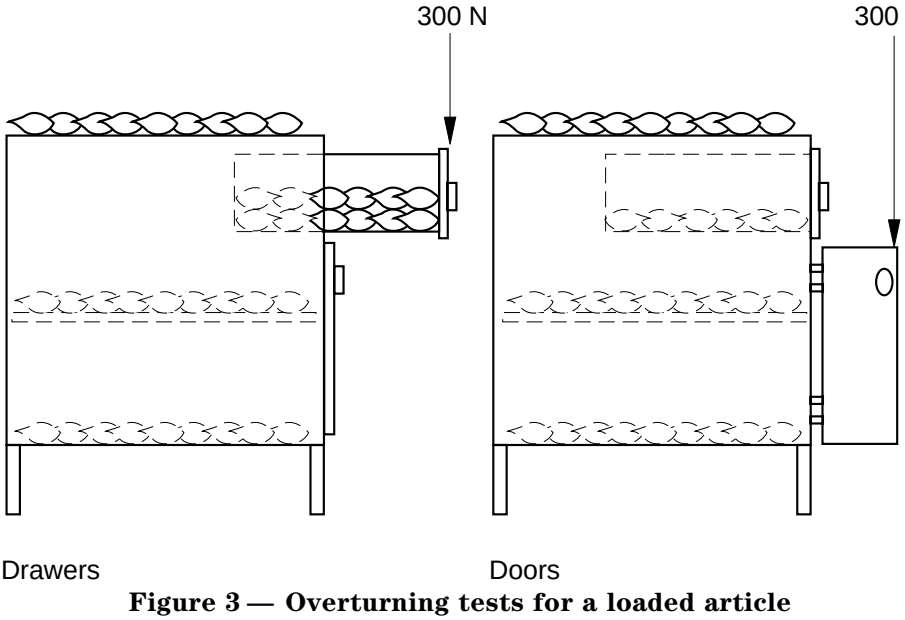


Figure 3 — Overturning tests for a loaded article

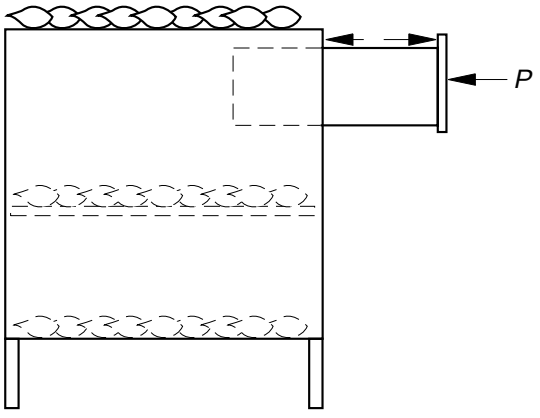


Figure 4 — Overturning test for a loaded article: slamming of drawers

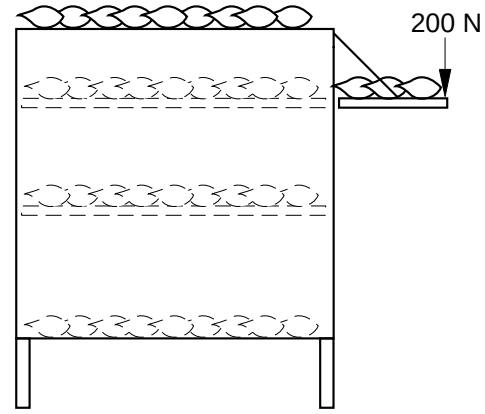


Figure 5 — Overturning test on flaps

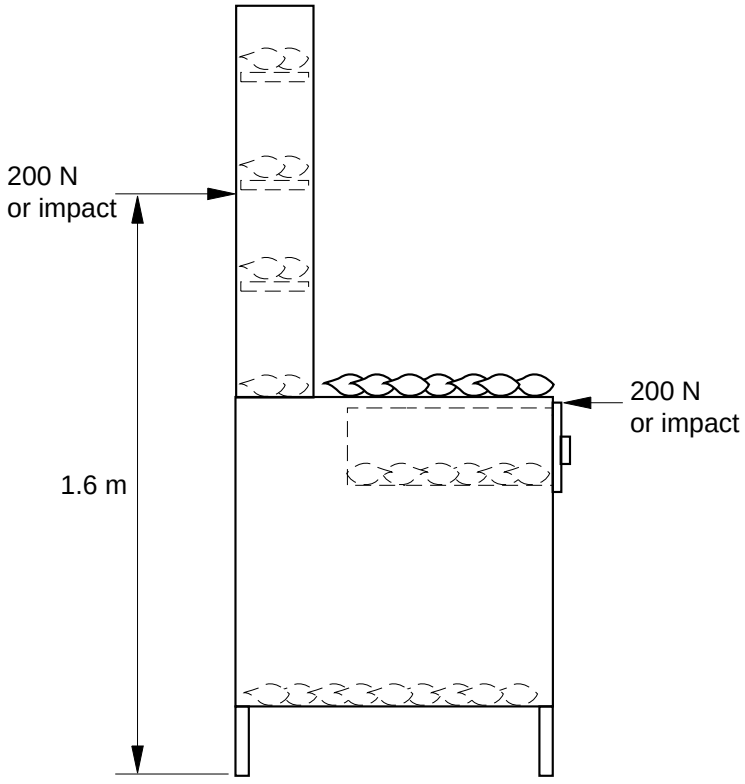


Figure 6 — Horizontal stability (force or impact)

Bibliography

Standards publications

BS 5459-3:1983, *Specification for performance requirements and tests for office furniture — Part 3: Storage furniture.*

BS 6001 (all parts), *Sampling procedures for inspection by attributes.*

BS EN 1153:1996, *Kitchen furniture — Safety requirements and test methods for built-in and free standing kitchen cabinets and work tops.*

BS EN 1727:1998, *Domestic furniture — Storage furniture — Safety requirements and test methods.*

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