BRITISH STANDARD

BS EN
12046-2:2000

Operating forces — Test method —

Part 2: Doors

The European Standard EN 12046-2:2000 has the status of a British Standard

ICS 91.060.50

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National foreword

This British Standard is the official English language version of EN 12046-2:2000, which is included in a package of new European Standards being prepared by CEN/TC 33 relating to windows and doors. Other standards included in the package are ENs 1191, 12217, 12046-1, and 12400. Although the English language versions of these European Standards will be adopted as British Standards as they become available, the existing British Standards for windows and doors will be retained, but only until such time that the complete package of European Standards becomes available. The original group of British Standards will then be withdrawn and this will be notified in BSI *Standards Update*.

The UK participation in its preparation was entrusted by Technical Committee B/538, Doors, windows, shutters, hardware and curtain walling, to Subcommittee B/538/2, Doors, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 9 and a back cover.

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This British Standard, having been prepared under the direction of the Sector Committee for Building and Civil Engineering, was published under the authority of the Standards Committee and comes into effect on 15 July 2000

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EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

EN 12046-2

February 2000

ICS 91.060.50

English version

Operating forces - Test method – Part 2: Doors

Forces de manoeuvre - Méthode d'essai – Partie 2: Portes

Bedienungskräfte – Prüverfahren – Tiel 2: Türen

This European Standard was approved by CEN on 23 December 1999.

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 33, Doors, windows, shutters, building hardware and curtain walling, the Secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2000, and conflicting national standards shall be withdrawn at the latest by August 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This standard is one in series of standards for doors.

The Annexes A and B are informative.

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1 Scope

This standard is for hinged/pivoted and sliding doorsets with latches, for pedestrian use. It defines the test methods to determine the forces to open/close doors and to engage/release and lock/unlock the hardware using a key or handle.

It is only applicable to the manual operation doorsets.

The measurement of forces for doorsets with self closing devices engaged is excluded from this test method. It is also not applicable to doorsets with special hardware e.g. emergency exit devices.

The tests are applicable to doorsets of any material.

NOTE: The operation of some windows involves latches and may be tested in accordance with this standard.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

prEN 12519:1996 Doors and windows – Terminology

3 Definitions

For the purposes of this European Standard, definitions as given in prEN 12519:1996 and the following apply:

3.1 attachment point: A point adjacent to a single handle. With more than one handle, a point midway between the extreme handle positions.

4 Principle of test

The principle consists of measuring the minimum force or torque required to engage or disengage the hardware, (locks, handles etc.), commence opening and complete closing of the door leaf, sash or casement to the latched position or engagement of any safety device.

5 Test apparatus

The apparatus shall include a support frame into which the specimen shall be mounted using the fixing systems and devices provided or described by the manufacturer. The construction and stiffness of the support frame shall not influence the test result.

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Means shall be provided for the application of forces in increments not exceeding 1,0 N, to manipulate the hardware uniformly and without shock.

The test apparatus shall consist of either weights and pulleys (e.g. figures A.1 and B.1 in the informative annexes A and B) or apparatus other than a spring mechanism, with which the force or torque can be smoothly applied. This shall include suitable measuring and recording equipment all capable of providing measurements to an accuracy of 5 %.

5.1 Equipment with weights

Weights shall be used with a cord and a pulley for applying forces. See figures A.1 and B.2.

The diameter, stiffness and the weight of the cord shall not significantly influence the test result.

Forces shall be applied in increments without shock.

Alternatively forces can be gradually increased to reach the maximum force in not less than 1 min.

5.2 Actuator and recording device for determining linear forces and torques

A torque meter or suitable device capable of measuring the torques or the linear forces required to operate the mechanism within an accuracy of ±5 %.

The equipment shall have an attachment for connection to the hardware (handle/key) which will enable correct alignment of the forces during test.

The connection between the measuring device and the specimen shall be such as will avoid local damage to the specimen and which shall in no way effect its performance.

6 Test specimen

The specimen shall be fixed as intended for use in the works, without any twist or bends that may influence the test results. The specimen shall be provided for test in fully operable condition.

Sufficient time shall be allowed for the temperature of the specimen to reach that of the test environment.

Testing shall be carried out in an environment within the ranges of (10 to 30) °C and (25 to 75) % RH.

7 Procedure for basic operation

Tests shall be performed on the specimen as received and shall be immediately preceded by manual operation of all moving parts five times.

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7.1 Procedure for determining the dynamic closing force

Fasten the cord to the attachment point, lead it over the pulley and fasten the other end to a weight. The weight shall hang freely when the movable parts of the test specimen is closed (see figures A.1 and B.1).

For hinged and pivoted specimens open the movable part through at the distance that raises the weight 200 mm. For sliding specimens open the movable part through a distance that raises the weight 100 mm plus the distance required to engage any personal safety device. Release the movable part from this position and determine the minimum weight to engage the latch or personal safety device.

Perform the procedure of opening and closing the specimen three times and average the results to obtain the final value.

7.2 Procedure for determining the linear force and torque for operating the hardware

Apply the minimum force or torque to release the latch, lock an unlock the hardware and record the results.

Perform each of these tests three times and average the results to obtain the final value.

7.3 Procedure for determining the minimum force to commence and maintain the motion

Attach the linear actuator or a weight and pulley system to the test specimen and measure the minimum force to commence and maintain the motion. Perform this procedure three times and average the results to obtain the final value.

8 Test sequences

Operate all movable part and perform the tests in the following sequence.

8.1 Specimens without self closing devices

Open the movable part and perform the tests in the following sequence.

- Dynamic closing

  Follow procedure 7.1

- Operating of the lock

  a) locking

  b) unlocking

  c) unlatching

  Follow procedure 7.2

- To commence motion

  Follow procedure 7.3

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8.2 Specimens with self closing devices

Perform the tests in the following sequence.

- Device engaged

  Determine of minimum forces or torques to operate the hardware.

  Follow procedure 7.2.

  Determine of minimum force to fully open.

  Follow procedure 7.3.

- Device disengaged

  Follow procedure 8.1.

9 Expression of results

The separate results and final values (averaged to two significant figures) from the linear actuator or from the weights shall be recorded.

Forces shall be expressed in Newtons (N) and torques in Newton metres (Nm).

10 Test report

The test report shall include following details:

a) reference to this standard;

b) the name of the testing institute;

c) the company requesting the test;

d) test procedures, including storage and conditioning prior to test, and mounting the window ready for test;

e) all relevant details to fully describe the test specimen and its installation in the test rig;

f) dimensioned drawings of specimen;

g) details of glazing or infilling;

h) the results of the test (the average for each load, (N) or torque (Nm) shall be recorded);

i) product designation of manufacturer's literature;

j) observation as to the condition of the specimen;

k) date of test;

l) date of report.

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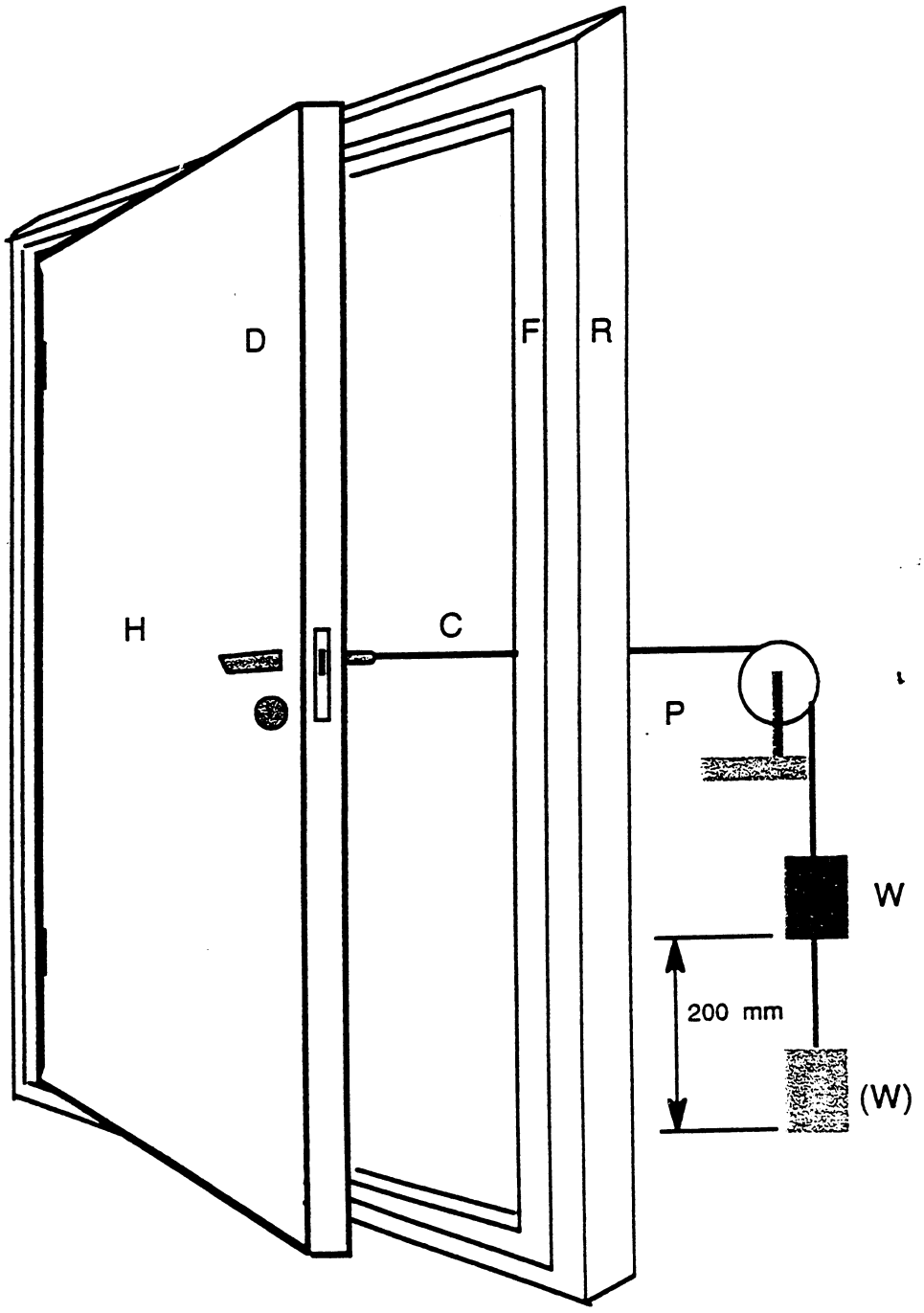
Annex A (informative)
Typical test set-up for hinged or pivoted door

Example



R = rigid support frame
F = door frame
D = door leaf
H = handle
C = cord
P = pulley
W = weight hanger and weight

Figure A1 - Typical test set-up for hinged or pivoted door

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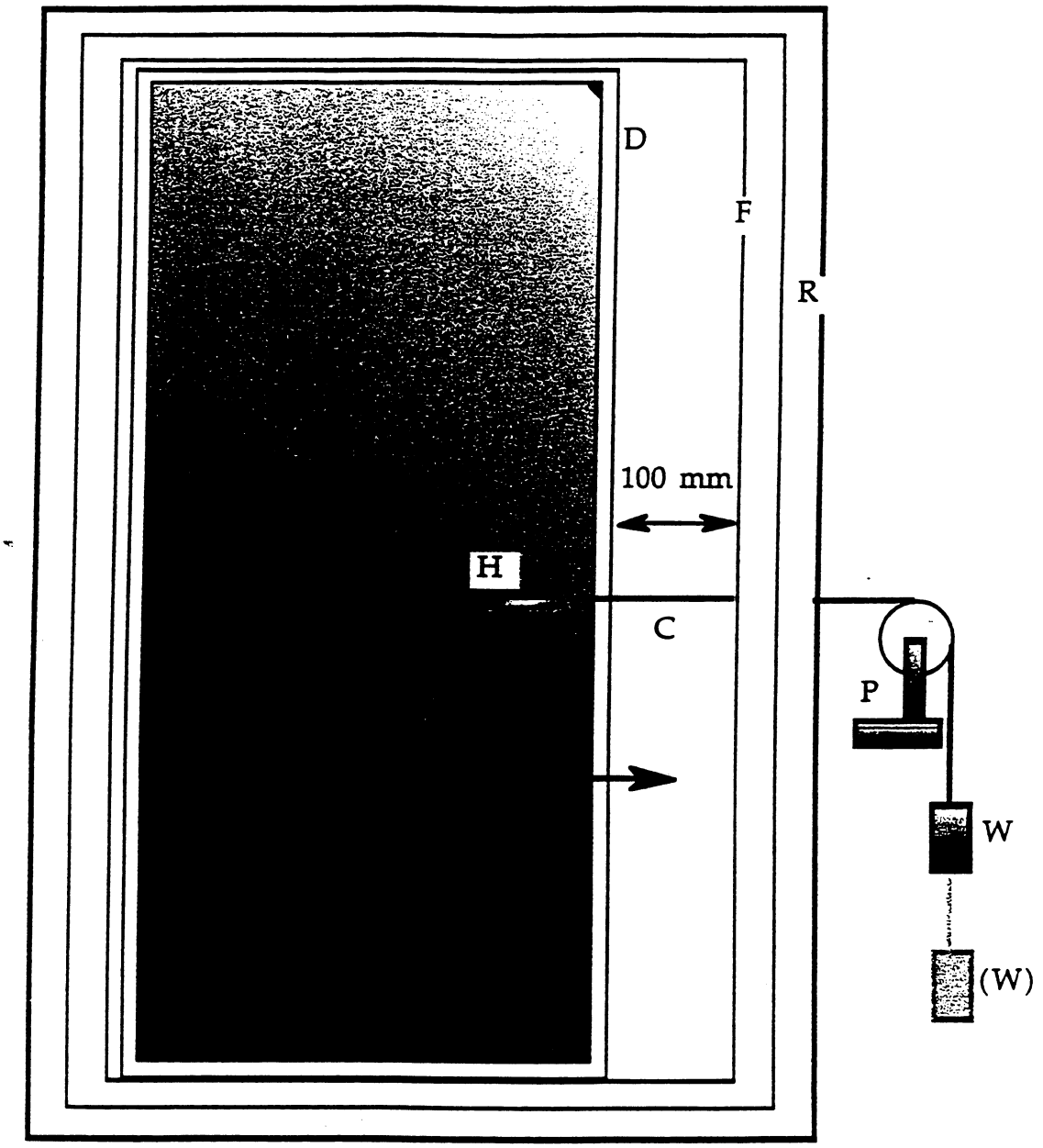
Annex B (informative)
Typical test set-up for sliding door

Example



R = rigid support frame
F = door frame
D = door leaf
H = handle
C = cord
P = pulley
W = weight hanger and weight

Figure B.1 - Typical test set-up for sliding door

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