BRITISH STANDARD

BS EN
14450:2005

Secure storage units — Requirements, classification and methods of test for resistance to burglary — Secure safe cabinets

The European Standard EN 14450:2005 has the status of a British Standard

ICS 13.310

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee GW/2, Safes, which has the responsibility to:

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 18 April 2005

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 18, an inside back cover and a back cover.

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Amendments issued since publication

Amd. No.	Date	Comments

ISBN 0 580 45856 3

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14450

March 2005

ICS 13.310

English version

Secure storage units - Requirements, classification and methods of test for resistance to burglary - Secure safe cabinets

Unités de stockage en lieux sûrs - Prescriptions, classification et méthodes de test pour la resistance à l'effraction - Compartiment de sécurité

Wertbehältnisse - Anforderungen, Klassifizierung und Methoden zur Prüfung des Widerstandes gegen Einbruchdiebstahl - Sicherheitsschränke

This European Standard was approved by CEN on 23 September 2004.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 14450:2005: E

Contents

Foreword

This document (EN 14450:2004) has been prepared by the Technical Committee CEN /TC 263 "Secure storage of cash, valuables and data media", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by September 2005, and conflicting national standards shall be withdrawn at the latest by September 2005.

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Introduction

Tests are made and the results used to classify resistance to burglary. The resulting resistance classification may be used for designing security systems with the provision that, depending on the criminal, the conditions at the place of the crime and the availability of tools, considerably longer times are likely to occur in real burglary attacks than in a test.

There is no requirement under this standard to test for resistance to fraudulent access.

The standard covers products meant for purposes where the security resistance required is less than that of EN 1143-1.

Manual tests are included whose results and repeatability is dependent on the skill of the testing team.

1 Scope

This document establishes the basis for testing and classifying secure safe cabinets.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1300, *Secure storage units — Classification for high security locks according to their resistance to unauthorised opening*

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

3.1
secure safe cabinet
storage unit which protects its content against burglary and when closed has at least one internal side ≤ 1 m length. The interior of a secure safe cabinet is accessed through a lockable door or lid

3.2
free-standing unit
secure safe cabinet whose protection against burglary depends only upon the materials and construction of its primary manufacture and not upon materials added or attached during installation

3.3
wall unit
secure safe cabinet for installation into a wall and whose protection against burglary is partly dependent upon the wall(s) and the materials added during installation

3.4
floor unit
secure safe cabinet for installation into a floor and whose protection against burglary is partly dependent upon materials added during installation

3.5
working time
time spent during testing during which one or more tools are used to create a change in the test specimen

3.6
gross time
time from when a test is started to when the test is complete or abandoned

3.7
encasement
material added at installation to protect and anchor wall units and floor units

3.8
tool point, TP
numerical value assigned to test tool

3.9
security units, SU
numerical value expressing resistance against burglary attack

4 Classification and requirements

4.1 Classification

Secure safe cabinets are classified to a resistance level according to Table 1.

Table 1 — Requirements for classification of security safe cabinets

	S1	S2
Minimum resistance for access to the interior	2,00 SU	5,00 SU
Limit to number and type of tools used for testing	40 TP	60 TP
Minimum strength per anchoring hole	20 kN	30 kN
Minimum locking	One lock to EN 1300	One lock to EN 1300

Gross attack time is limited as described in 7.2.4b.

4.2 Requirements

4.2.1 There shall be no holes through the protection material other than those for locks, cables or anchoring. One cable hole is allowed, this shall not exceed 100 mm^2.

4.2.2 A free-standing unit with a mass less than 1000 kg shall have at least two holes by which it can be anchored. These holes shall both be in the face through which it is to be anchored. The anchoring assembly for each anchoring hole shall sustain the minimum anchoring strength given in Table 1.

4.2.3 Secure safe cabinets shall be provided with operating and installation instructions, including instructions in respect of the locks and anchoring.

5 Technical Documentation

5.1 General

The technical documentation shall contain the following information:

5.2 Date of issue and the name of the manufacturer (or the name and status of the applicant requesting testing) shall be on each page;

5.3 Statement of the type and model number of secure safe cabinet, e.g. free-standing unit, wall unit or floor unit;.

5.4 Drawings of the test specimen and documents giving the following:

a) weight, outside and inside dimensions, and the manufacturing tolerances of the dimensions;

b) horizontal and vertical cross-sections;

c) the quantity, layout and features of locks, boltwork and relocking devices;

d) the quantity, pitch and position of door bolts, their dimensions (e.g. cross-section), throw and engagement and their type (e.g. moving or fixed);

e) the location and design of any local areas of special protection material;

f) purpose, position and dimensions of any holes which pass through the protection material with details of any associated special protection;

g) details of optional features, e.g. time locking and time delay locking;

h) specification of the materials of construction.

5.5 Operating and installation instructions, including instructions in respect of the locks and anchoring

5.6 In addition to 5.2, 5.3 and 5.4, for wall units and floor units the following information shall be provided:

a) details of the recommended procedure for installation;

b) drawing showing the recommended plane of door or lid in relation to the surface of the wall or floor into the unit is to be installed;

c) details of encasement materials (see 3.7);

d) recommendation for the proportion of the body to be encased and the thickness of the encasement;

identification of any areas of the body which are not protected by material added at installation;**5.7** List of all locks that may be fitted, giving the manufacturer and model number;

5.8 Details of any materials or device(s) intended to generate gas, smoke, soot, etc., in the event of physical attack or which could generate harmful substances during testing.

6 Test specimen

6.1 The test specimen shall be a complete secure safe cabinet. Optional features which could decrease resistance time shall be present in the test specimen. Optional features which could increase resistance time shall either not be present or shall be made inoperative.

6.2 Wall units and floor units shall be encased according to the recommended procedure for installation (see 5.6.), using a supporting angle steel frame as illustrated in Figure A.1.

6.3 Cable entrance specified in the documentation shall be present in the test specimen.

6.4 When a range of different size secure safe cabinets is submitted for testing, the testing laboratory shall specify which sizes are to be tested. More than one size may be tested.

7 Tool attack test

7.1 Tool attacks

7.1.1 Tool list

Table 2 — Permitted tools, coefficients (SU/min) and tool points (TP)

Tool	Maximum overall size/amount/power	Coefficient SU/min	Tool Points TP
Non-tools			
String, wire, adhesive tape	5 m	1	0
Chalk, marking pens	2 pieces	1	0
Measuring tape	3 m	1	0
Steel rule	300 mm	1	0
Self tapping screws	12 mm	1	0
Electric torch	1 torch	1	0
Hammer	0,2 kg 300 mm length	1	0
Small tools			
Wedges made fof wood or plastic	200 mm by 80 mm by 40 mm	1	10
Cold chisel, flat or pointed	30 mm blade width, 250 mm length	1	10
Wood chisel	40 mm blade width, 350 mm length	1	10
Screwdriver	10 mm bit, 260 mm length	1	10
Pliers	200 mm length	1	10
Pinchers	240 mm length	1	10
Spanner	180 mm length	1	10
Allen key	120 mm length	1	10
Crowbar	300 mm length	1	10
Hacksaw	330 mm blade length	1	10
Punch	250 mm length	1	10
Knife	120 mm length	1	10
Large tools			
Hammer	1,5 kg head 400 mm length	2	10
Crowbar	710 mm length	2	30
Angle grinder	≤ 800 W input power, wheel diameter 125 mm (1,6mm ≤ thickness ≤ 2,5 mm)	2	30
Screwdriver	16 mm bit, 375 mm length	2	30
Electric drill without percussion action	≤ 500 W input power, HSS drill bit, diameter 10 mm 250 mm length	2	30
Additional tool accessories			
Additional hacksaw blade	330 mm blade length	0	10
Additional HSS drill bit	10 mm diameter, 250 mm length	0	10
Additional abrasive wheel or disc (no diamond disc)	125 mm diameter (1.6 mm ≤ thickness ≤ 2,5 mm)	0	10

7.1.2 Tool attack procedure

7.1.2.1 Free-standing units shall be anchored according to the recommended procedure for installation (see 5.5).

7.1.2.2 Tool attack tests are timed and shall use only the tools listed in Table 2. The number and types of tool which can used in any one test is limited according to the tool unit values specified in Table 1, e.g. to a maximum of 40 TP for a level S 1 secure safe cabinet and to a maximum of 60 TP for a level S 2 secure safe cabinet. Table 2 gives the tool points for each permitted tool.

7.1.2.3 The tools and programme of attack used during testing shall be those most likely, in the opinion of the testing team, to result in the lowest security units.

7.1.2.4 The testing team shall comprise:

a) a team leader responsible for the conduct of the test and whose function is to plan, direct and supervise testing;

b) time keeper(s) responsible for both timekeeping and the compiling of a test record;

c) testing operatives whose function is to carry out the tool attacks against the test specimen as directed by the test leader.

NOTE 1 The team leader may be the timekeeper.

NOTE 2 Testing should be carried out according to the current state of knowledge. To ensure maximum consistency of test results, testing laboratories shall have EN ISO/IEC 17 025 accreditation and shall participate in audits, co-operative tests and experience-sharing events and other relevant training.

7.1.2.5 In any one test only one test operative is to perform work on the test specimen. A second operative is allowed to ensure safe working conditions, but is not allowed to work simultaneously on the test specimen.

7.1.2.6 Prior to starting a test, the team leader and the test operative shall agree a plan for the test and shall bring together near the test specimen all of the tools to be used. They shall ensure these tools are ready for immediate and effective use. Set-up times are included in the tool points and shall not be additionally added for the determination of the tool points. For example, power drills shall be fitted with a drill bit, angle grinder fitted with a cutting disc.

7.1.2.7 To avoid replacement of tool accessories during the working time/gross time, additional tools with new accessories shall be available. If a tool accessory is replaced by an identical tool with a new accessory, only the tool points for this new accessory to Table 2 will be added to the test record.

7.1.2.8 Any holes present in the test specimen, other than those in use for anchoring, may be exploited in the testing.

7.1.2.9 Exploratory tests can be carried out prior to performing tool attack tests.

7.1.2.10 Testing shall not be interrupted for reasons other than fatigue of the testing operative or a change in planned test attack (see 7.1.2.6.).

NOTE Either the test leader or the test operative may initiate an interruption to the test for the above purposes.

7.1.2.11 Tools shall be used for the purpose for which they are designed. If a tool replaces another type of tool, the tool units and the coefficient of the replaced tool (if higher) are applicable.

7.1.3 Timing

7.1.3.1 Timing shall be done with clocks whose accuracy is better than 0,05 min in a 10 min measuring period and whose scaling shall be at least 0,01 min.

7.1.3.2 The clocks recording gross time and working time shall both be started when a tool first touches the test specimen. For door attacks there will be a time allowance of 0,15 min for marking. In this case the gross time and working time clocks will pre-set for starting at the marking time.

7.1.3.3 The working time clock shall only be stopped during the interruption periods specified in 7.1.2.10.

7.1.3.4 The gross time clock shall not be stopped until the test is completed or abandoned and shall continue to run during the interruption periods specified in 7.1.2.10.

7.1.4 Test criteria

7.1.4.1 Test blocks shall be made from rigid material and have a length of $\geq$ 150 mm.

7.1.4.2 When the test specimen is sufficiently large the test block shall be a square with 150 mm ± 0,5 mm sides and corners having 5 mm radii.

7.1.4.3 An alternative size of test block shall be used only when the sides of all models of the range of products are smaller than those of the test block specified in 7.1.4.2. For this circumstance the test block shall have dimensions of m and n which are determined by the dimensions of the test specimen, e.g. (see Figure A.2)

- (m – 10 mm) shall be either the internal length of one of the sides of a rectangular test specimen or be the inside diameter of a test specimen having a circular cross-section,

- (n – 10 mm) shall be the internal length of another side of the test specimen.

7.1.4.4 A penetration access to the interior shall be deemed to have been achieved if the appropriate test block can be passed to the interior to a depth of at least 100 mm, or 50 % of the depth of the storage area if this depth is less than 100 mm.

7.1.4.5 Access through the door or lid is deemed to have been achieved if the door or lid has been removed or displaced by 100 mm inwards or outwards. If the storage space is less than 100 mm deep, door displacement inwards is defined as 50 % of the depth of the storage space as illustrated in Figure A.3.

7.1.4.6 Removal of a wall or floor unit shall be considered completed if the test specimen is separated from the majority of the encasement material and separation demonstrated by moving the test specimen from its installed position.

7.2 Testing programme

7.2.1 Free-standing units

7.2.1.1 The tests shall comprise at least one tool attack test for:

a) Penetration access to the interior of the test specimen through the body or the door; and

b) Access through the door or lid.

Additional tool attack tests according to a) and b) are required against wall, top, base or door if the test specimen has areas or zones of a different construction and for which the resistance value can reasonably expected to be lower (e.g. in the area of pre-existing holes).

7.2.2 Wall or floor units

7.2.2.1 The test shall comprise at least one tool attack test for:

a) Access through the door or lid. To achieve this it is allowed to damage the doorframe or encasement.

b) Removal of the test specimen from its encasement.

c) Penetration access to the interior through any surface of the test specimen not encased.

Additional tool attack tests according to a) are required if the test specimen has areas or zones of a different construction and for which the resistance value can reasonably expected to be lower. (e.g. in the area of pre-existing holes).

7.2.3 Calculation of tool attack resistance

7.2.3.1 Tool attack resistance is calculated by multiplying the recorded working time with the coefficient of the largest tool used.

Resistance (SU) = working time (min) x coefficient (SU/min)

The result shall be expressed in decimal units to the nearest 0,01 SU

7.2.4 Completion of tool attack test

A test shall be terminated, and the test specimen deemed to have satisfied the requirement for the test, if before either access to the interior or removal:

a) the calculated resistance value exceeds the requirement for the respective level (see Table 1); or

b) the gross time exceeds twice the working time necessary to reach the resistance value with the selected tools; or

c) the tool points (TP) required to complete the test exceed the maximum value given in Table 1.

Any tool attack shall be continued until no more information necessary for determining the security level can be reasonably expected.

8 Anchoring strength test

The anchoring strength of free-standing units shall be measured using the test equipment shown in Figure A.4.

Tensile test equipment having a capacity of at least 50 kN. The load shall be applied in principle as shown in Figure A.4. Measurement of applied load shall be made with an accuracy within ± 5 % of the applied load.

NOTE If the dimensions of all models/sizes of the range to be tested are too small to allow the 100 mm internal diameter pressure cylinder, then the largest possible pressure cylinder shall be used.

8.1 Attach the test specimen for free standing units to the loading equipment. Use an anchoring assembly through one of the anchoring holes according to the installation instructions (see 5.5.).

8.2 The required load (see Table 1) shall be applied in a direction which attempts to pull the assembly through the unit's wall or base. Apply the load smoothly up to the load required within 2 to 3 min. Hold the load at this level for 1 min and then release.

8.3 The applied load shall be noted, with a statement as to whether this load was sustained without the bolt failing or the bolt head being pulled through the wall or the base.

8.4 The anchoring assembly shall not fail or be pulled through the wall or base when tested.

9 Test report

The testing laboratory shall allocate a unique identification number to the test report and shall report the following:

a) name of manufacturer and place and year of manufacture;

b) name and status of applicant if different from (a);

c) manufacturer's identification of the test specimen;

d) product type, model number and size of the test specimen;

e) technical documentation supplied;

f) nature of any encasement work done by the testing laboratory;

g) description and results of any exploratory work;

h) date and place of testing;

i) composition of testing team;

j) tools used for each tool attack test together with the sum of the tool points (TP) used in the test;

k) working time and gross time for each tool attack test;

l) result of anchoring strength test (if carried out) and description of any failure which occurred;

m) The report should contain a statement that the results obtained relate only to the sample tested, and should be regarded as only the basis for certification. The report itself should not be considered to be a Certificate of Conformance.

10 Marking

A metal plate shall be securely fixed to the inside of; door or lid and showing at least;

a) manufacturers name or identification code;

b) designation of this standard and the security level (S1 or S2) achieved;

c) year of manufacture.

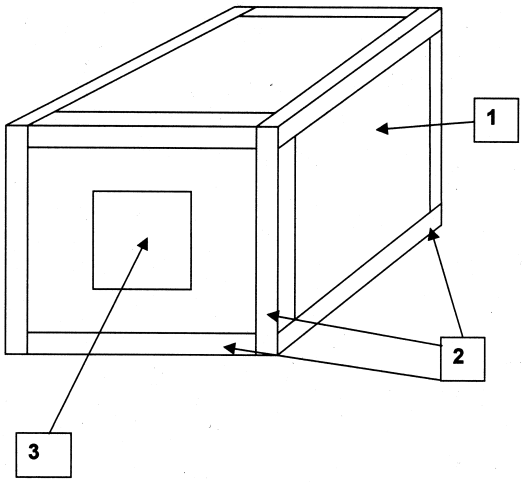
Additional marking that may be included is:

d) type, model number, description or size of product;

e) serial number;

f) class of lock fitted, according to EN 1300.

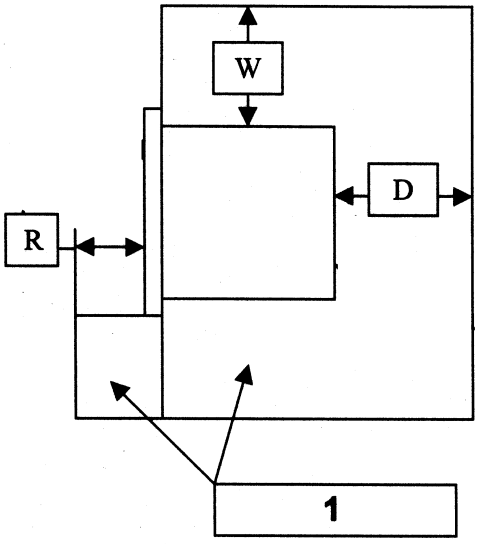
Annex A
(normative)



Key

1 Encasement
2 Frame from 40x40 angle section
3 Lid of test specimen

Figure A.1a — Requirements for Encasement of Test Specimen

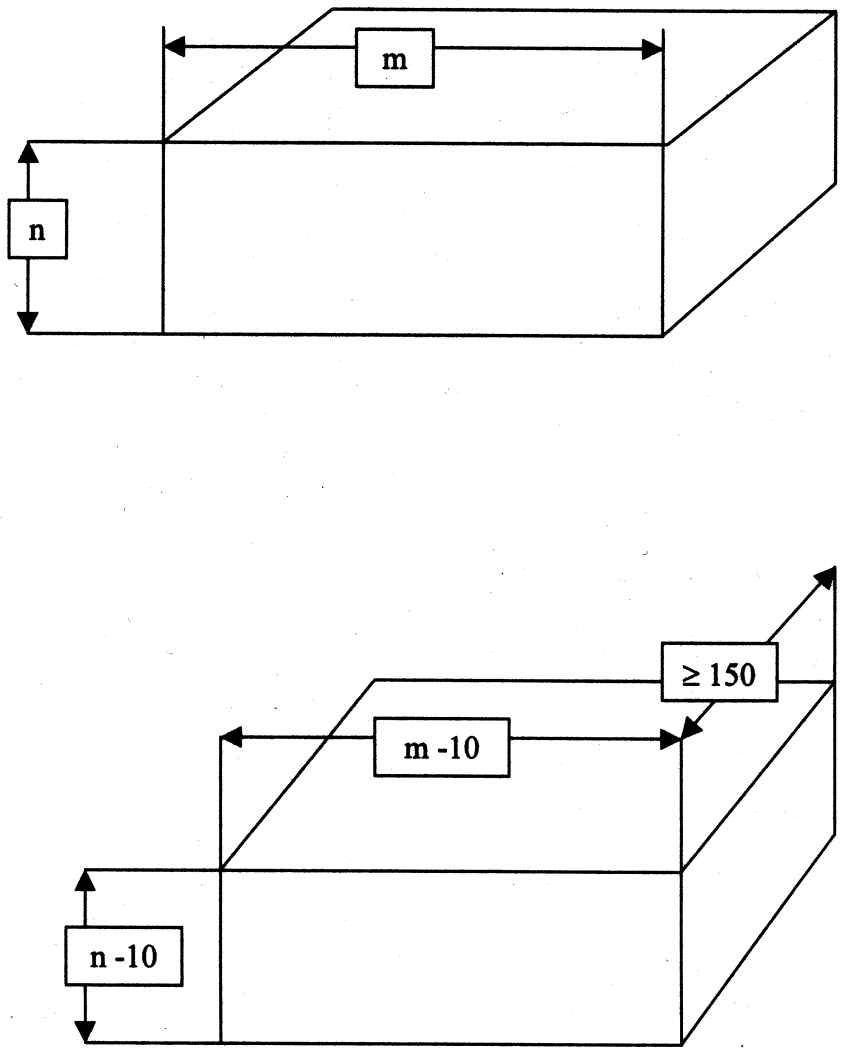


Key

1 Encasement
W Encasement thickness at top, bottom and sides of specimen (2x Supplier's instructions (see .5.6.d))
D Encasement thickness at rear of specimen (1x Supplier's instructions (see 5.6 d))
R Recess depth from face of wall (1 x Supplier's instructions (see 5.6 d))

Figure A.1b — Requirements for Encasement of Test Specimen

Dimensions in mm



Key

m – 10 mm shall be either the internal length of one of the sides of a rectangular test specimen or be the inside diameter of a test specimen having a circular cross-section (see 7.1.4.3)

n – 10 mm shall be the internal length of another side of the test specimen (see 7.1.4.3)

Figure A.2 — Alternative test blocks

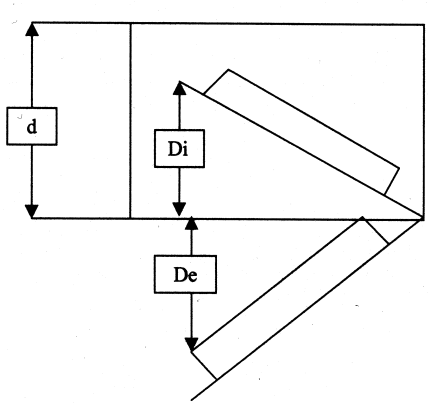


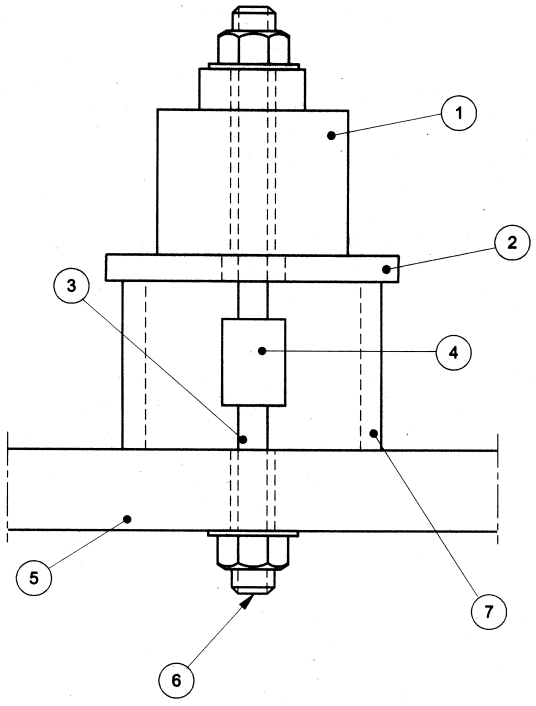
Figure A.3 — Definition of Door Displacement

Complete access is achieved if:

Di ≥ 100 or d/2 if d < 100

or

De ≥ 100



Key

1) Hydraulic jack
2) Steel plate support
3) Anchoring assembly
4) Adapter and load measuring unit
5) Secure safe cabinet wall with the thickness d mm and with an anchoring hole
6) Anchoring components as described in the instructions
7) Cylinder support with internal diameter of (100 ± 2) mm

Figure A.4 — Anchor Point Test Rig

Bibliography

[1] EN 1143-1, *Secure storage units — Requirements, classification and methods of test for resistance to burglary – Part 1: Safes, strongroom doors and strongrooms*

[2] EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:1999)*

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