BS EN 13126-2:2011

BSI Standards Publication

Building hardware — Requirements and test methods for windows and doors height windows

Part 2: Window fastener handles

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National foreword

This British Standard is the UK implementation of EN 13126-2:2011. It supersedes DD CEN/TS 13126-2:2004 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/538/4, Building hardware.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Building hardware - Requirements and test methods for windows and doors height windows - Part 2: Window fastener handles

Quincaillerie pour le bâtiment - Exigences et méthodes d'essai des ferrures de fenêtres et portes-fenêtres - Partie 2: Poignées à ergot de verrouillage

Baubeschläge - Beschläge für Fenster und Fenstertüren - Anforderungen und Prüfverfahren - Teil 2: Einreibverschlüsse

This European Standard was approved by CEN on 26 August 2011.

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Foreword

This document (EN 13126-2:2011) 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of an identical text or by endorsement, at the latest by April 2012, and conflicting national standards shall be withdrawn at the latest by April 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes CEN/TS 13126-2:2004.

The major changes of this document to CEN/TS 13126-2:2003 are:

- the addition of three grades and three extensions for the security

- the addition of security requirements and the corresponding tests

- the modification of the number of test samples (8 instead of 3)

- the increase to 550 cycles/h rate for the durability test.

4.8 Security (7 – seventh digit)

Three grades have been added into this draft to give similarity with prEN13126-3, three extensions have also been added for the locking style of the handle.

Grade 0: Without security

Grade 1: 35 Nm resistance against twisting-off and forcing-off

Grade 2: 100 Nm resistance against twisting-off and forcing-off

Extension 0: No locking mechanism

Extension 1: Non-key operated locking mechanism (e.g. ‘PTO’: Push-to-open)

Extension 2: Key-operated locking mechanism

Table 1 – Security

Grade	Description
0/0	No requirements against twisting-off and forcing-off / without locking mechanism
1/1	35 Nm resistance against twisting-off and forcing-off / Non-key operated locking mechanism ('PTO': push to open)
1/2	35 Nm resistance against twisting-off and forcing-off / Key operated locking mechanism
2/1	100 Nm resistance against twisting-off and forcing-off / Non-key operated locking mechanism ('PTO': push to open)
2/2	100 Nm resistance against twisting-off and forcing-off / Key operated locking mechanism

Digit seven will now contain two classifications i.e. 1/2

Digit 7 security - grade 1/2; rated as resisting 35 Nm twisting-off and forcing-off force, and has key operated locking mechanism.

With the addition of locking handles several additional points have been included:

5.8.1 General

5.8.2 Durability of the locking mechanism – new requirement

5.8.3 Torque resistance of the locking mechanism / Solid fixing – new requirement

5.8.4 Twist-off resistance – new requirement

5.8.5 Forcing off resistance – new requirement

7.1 Samples – Eight samples are to be submitted apposed to three

7.7 Durability Test Procedure, the rate that the cycle test is carried out has been increased to 550 cycles/h in line with prEN13126-3

7.9 Locking Mechanism durability test – new requirement

7.10 Torque resistance of the locking mechanism / solid fixing test – new requirement

7.11 Test – Resistance against twisting-off and forcing-off – new requirement

In general there has been a reduction in the tolerance band within the draft over the last published standard.

A full contribution to the preparation of this European Standard has been made by the European manufacturers´ organization 'ARGE' and national standards bodies.

EN 13126 *Building hardware — Requirements and test methods for windows and doors height windows* consists of the following parts:

Part 1: Requirements common to all types of hardware

Part 2: Window fastener handles[1)]

Part 3: Manoeuvring fittings for espagnolette bolts/sliding button[1)]

Part 4: Espagnolettes

Part 5: Devices that restrict the opening of windows[1)]

Part 6: Variable geometry stay hinges (with or without a friction stay)

Part 7: Finger catches

Part 8: Tilt&Turn, Tilt-First and Turn-Only hardware

Part 9: Pivot hinges[1)]

Part 10: Arm-balancing systems

Part 11: Top hung projecting reversible hardware

Part 12: Side hung projecting reversible hardware

Part 13: Sash balances[1)]

Part 14: Sash fasteners[1)]

Part 15: Rollers for horizontal sliding and sliding folding windows and doors

Part 16: Hardware for Lift&Slide windows and doors

Part 17: Hardware for Tilt&Slide windows and doors

Part 18: Requirements and test procedures for durability, strength, security and functionality of Fan light openers for windows and door height windows

Part 19: Sliding Closing Devices

The performance tests incorporated in this standard are considered to be reproducible and as such will provide a consistent and objective assessment of the performance of these products throughout CEN Member States.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

[1)] Under revision currently on Technical specification.

1 Scope

This European Standard specifies requirements and test methods for durability, strength, security and functionality of window fastener handles.

This European Standard does not apply to the following hardware:

a) handles - primarily for Tilt & Turn, Tilt-First and Turn-Only hardware, refer to EN 13126-3;

b) electromechanical hardware.

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 1670, *Building hardware — Corrosion resistance — Requirements and test methods*

EN 12519:2004, *Windows and pedestrian doors — Terminology*

EN 13126-1:2006, *Building hardware — Requirements and test methods for windows and doors height windows — Part 1: Requirements common to all types of hardware*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13126-1:2006 and EN 12519:2004 and the following apply.

3.1
window fastener handle
operating device, where applicable with releasable and / or locking mechanism, to hold the window in a closed position

NOTE Also known as Cockspur handles.

3.2
spur
device projecting from the handle that interacts with the compression wedge / keeper to close the window to give the desired pull-in

3.3
pull-in
distance the sash is moved towards the frame during operation of a window fastener handle from the initial contact of the handle spur to the fully closed position

3.4
non-key operated locking mechanism
device within the handle assembly that when engaged prevents movement of the handle from the locked position

EXAMPLE ‘push-to-open’, button, thumb turn

3.5
locking mechanism
key operated device within the handle assembly that when engaged prevents movement of the handle from the locked position (e.g. locking cylinder or key)

3.6
compression wedge / keeper
component applied to the window in a position to allow interaction with the handle spur to hold the window in a closed position

3.7
weatherseal
compressible gasket between the sash and the frame that prevents air and water ingress

3.8
closing conditions

3.8.1
closed position
position in which the moving part of the window is resting against the frame or weather seal on all sides and the fastening system is not engaged

3.8.2
closed and fastened position
position in which the moving part of the window is resting against the frame or compressed weather seal on all sides and the fastening system is engaged

3.8.3
closed and fastened and locked position
position in which the moving part of the window is resting against the frame or compressed weather seal on all sides and the fastening system is engaged and locked (e.g. by key)

4 Classification

4.1 General

The classification for window fastener handles shall be in accordance with the requirements of EN 13126-1:2006, Clause 4.

4.2 Category of use (1 – first digit)

No marking is required for the category of use in accordance with EN 13126-1:2006, 4.2.

4.3 Durability (2 – second digit)

Grades shall be in accordance with EN 13126-1:2006, 4.3 and 5.6 of this European Standard.

4.4 Mass (3 – third digit)

Grades shall be in accordance with EN 13126-1:2006, 4.4.

4.5 Fire resistance (4 – fourth digit)

One grade shall be identified in accordance with EN 13126-1:2006, 4.5.

— grade 0: no requirements.

4.6 Safety in use (5 – fifth digit)

One grade shall be identified in accordance with EN 13126-1:2006, 4.6.

— grade 1: the hardware shall conform to the requirements of EN 13126-1.

4.7 Corrosion resistance (6 – sixth digit)

Grades shall be in accordance with EN 13126-1:2006, 4.7.

4.8 Security (7 – seventh digit)

The following grades / extensions are identified:

— grade 0: without security;

— grade 1: 35 Nm resistance against twisting-off and forcing-off;

— grade 2: 100 Nm resistance against twisting-off and forcing-off;

— extension 0: no locking mechanism;

— extension 1: non-key operated locking mechanism (e.g. 'PTO': Push-to-open);

— extension 2: key-operated locking mechanism.

Table 1 — Security

Grade	Description
0/0	No requirements against twisting-off and forcing-off / without locking mechanism
1/1	35 Nm resistance against twisting-off and forcing-off / non-key operated locking mechanism ('PTO': push to open)
1/2	35 Nm resistance against twisting-off and forcing-off / key operated locking mechanism
2/1	100 Nm resistance against twisting-off and forcing-off / non-key operated locking mechanism ('PTO': push to open)
2/2	100 Nm resistance against twisting-off and forcing-off / key operated locking mechanism

4.9 Application (8 – eighth digit)

The eighth digit shows '2' indicating the part of the standard which was used for testing the window fastener handles, in accordance with EN 13126-1:2006, 4.9.

4.10 Test sizes – Size limitations (9 – ninth digit)

No requirement.

4.11 Example of classification for window fastener handles (EN 13126-2)

1	2	3	4	5	6	7	8	9
-	**5**	**-**	**0**	**1**	**2**	**1/2**	**2**	**-**

This denotes a window fastener handle, which has the following:

Digit 1 category of use — no requirement;

Digit 2 durability — grade 5 (25 000 cycles);

Digit 3 mass — no requirement;

Digit 4 fire resistance — grade 0 (no requirements);

Digit 5 safety in use — grade 1;

Digit 6 corrosion resistance — grade 2;

Digit 7 security — grade 1/2; rated as resisting 35 Nm twisting-off and forcing-off force, and has key operated locking mechanism;

Digit 8 applicable part — tested in accordance with part 2 of this suite of standards;

Digit 9 test sizes — no requirement.

5 Requirements

5.1 General

The requirements for window fastener handles shall be in accordance with EN 13126-1:2006, Clause 5.

The forces and torques shall be applied with moderate velocity as can be expected in practise in a jerk- and jolt-free manner.

5.2 Operating torque

The test specified in 7.2 shall be used to ensure the window fastener handle is capable of withstanding normal operation.

Upon completion of the operating torque test in accordance with 7.2, the operating torque shall not exceed 10 Nm.

5.3 Torsion strength

The test specified in 7.3 shall be used to ensure the window fastener handle is capable of withstanding additional force applied once the handle is closed.

Upon completion of the additional torque test in accordance with 7.3, the measured deformity at the point of the applied load shall not exceed 5 mm.

5.4 Tensile strength - eccentric

The tests specified in 7.4 shall be used to ensure a window fastener handle is capable of withstanding leverage force being applied away from the sash.

Upon completion of the tensile strength test in accordance with 7.4, the handle and its fixings shall withstand the load without breakage.

5.5 Simulated pressure

The tests specified in 7.5 shall be used to ensure a window fastener handle is capable of withstanding high loading to the handle in the direction of opening.

Upon completion of the simulated pressure test in accordance with 7.5, there shall be no more than 3 mm permanent deformation of the spur.

5.6 Pull-in

The test specified in 7.6 shall be used to ensure that the pull-in on the window fastener handle can maintain the contact between the edge of the sash and the window frame, or weather stripping, when the window fastener handle is closed, while under force.

On completion of the pull-in test in accordance with 7.6 the recorded additional displacement of the datum surfaces shall be a maximum of 1,0 mm.

5.7 Durability

The test specified in 7.7 shall be used to ensure the window fastener handle is capable of continued operation after cycling in accordance with the grades specified in 7.7, with regard given to normal maintenance.

5.8 Security

5.8.1 General

Lockable window fastener handles shall not be able to be unscrewed when fully closed.

Table 2 depicts the additional parameters for the security testing.

Table 2 — Additional test parameters for security

Requirement	Grade 1	Grade 2
Durability of the locking mechanism (% number of cycles of the durability test)	25 %	25 %
Torque resistance of the locking mechanism / solid fixing	2 Nm	2 Nm
Twist-off resistance	35 Nm	100 Nm
Forcing-off resistance	35 Nm	100 Nm

5.8.2 Durability of the locking mechanism

The locking mechanism shall in each case fulfil 25 % of the number of cycles in the designated durability test grade in accordance with 7.7.

— 2 500 $^{+10}_{0}$ for a durability grade 3 handle

— 3 750 $^{+10}_{0}$ for a durability grade 4 handle

— 6 250 $^{+10}_{0}$ for a durability grade 5 handle

In the case of handles with non-key-operated locking mechanisms that need to be operated together with the handle, the same number of cycles as stated in the durability test in accordance with 7.7 shall be fulfilled. (e.g. ‘PTO’: push-to-open).

5.8.3 Torque resistance of the locking mechanism / solid fixing

The closed locking mechanism shall withstand a torque of minimum 2 Nm.

NOTE Deformation of the locking cylinder as well as cylinder malfunctioning is permissible, if the handle remains locked.

5.8.4 Twist-off resistance

Handles with locking mechanism shall withstand a torque of 35 Nm in grade 1 or 100 Nm in grade 2 in the rotation direction.

In the case of loads of ≥ 40 Nm in grade 2 the handle’s lever may be damaged or destroyed, provided the blocking function still works after the test.

NOTE This can be a predetermined breaking point.

5.8.5 Forcing off resistance

Handles with locking mechanism shall withstand a torque of 35 Nm in grade 1 or 100 Nm in grade 2 perpendicular to the mounting plane.

In the case of loads of ≥ 40 Nm in grade 2 the handle's lever may be damaged or destroyed, provided the blocking function still works after the test.

NOTE This can be a predetermined breaking point.

6 Test equipment

The window fastener handle shall be installed in the test frame for testing as in EN 13126-1:2006, Clause 6 and in accordance with the manufacturer's fixing instructions.

The hardware manufacturer shall provide test frames for the testing institute. A drawing of the profile cross-section with relevant information shall be enclosed in the test application, which also contains the necessary hardware installation information for the window.

The test shall be conducted on a test rig which corresponds in function and shape to the window for which the hardware was intended.

The test rig shall be provided with adjustable datum surfaces that can be mounted alongside the window fastener handles, so that deviations of pull-in can be measured and documented.

7 Test procedure

7.1 Samples

Up to eight samples can be used for testing according to this European Standard.

Samples A1 to A4	main test parameters
Samples A1 to A6	main and additional test parameters
Sample B	corrosion resistance test
Sample C	retained for reference control

NOTE 1 Sample B should only be necessary if no test report can be supplied by the manufacturer regarding the testing of the hardware component or set in accordance with EN 1670.

NOTE 2 Sample C should be retained by the test institute for the duration of the validity of the test report.

NOTE 3 Right-hand and left-hand fasteners for both inward and outward opening windows should be mounted in the same position but inverted to engage with the appropriate compression wedge / keeper.

7.2 Operating torque test procedure

The spur of the window fastener handle is partially engaged or to a 20 % ± 2 % engagement angle onto the compression wedge / keeper (see Figure B.1).

Apply a force of 10 N ± 1 N to the sash horizontally in the direction of opening as close to the spur as possible.

The applied load shall be increased to 20 N ± 1 N without shock.

A force is applied at a distance of 85 mm measured from the handle rotation point, in the closing direction of the handle (see Figure B.1).

Measure the torque, or applied force as appropriate, required to turn the fastener handle until fully closed.

Acceptance criteria are in accordance with EN 13126-1:2006, 8.4 and 5.2 of this European Standard.

7.3 Torsion strength test procedure

The spur of the window fastener handle is fully closed onto the compression wedge / keeper.

The handle shall be secured against further movement by fitting a stop block (see Figure B.2) of a size appropriate to the handle dimensions.

Using a tensile testing machine and a round die of Ø 20 mm, an initial load of 50 N is applied to the window fastener handle at a distance of 85 mm measured from the handle rotation point, parallel to the plane of the window and in the closing direction of the handle, then increase to 200 N and hold for $30\ ^{+1}_{-0}$ s.

After the load is released the permanent deformation of the handle shall be measured.

Acceptance criteria are in accordance with EN 13126-1:2006, 8.4 and 5.3 of this European Standard.

7.4 Tensile strength test procedure – eccentric

The spur of the window fastener handle is fully closed onto the compression wedge / keeper.

Using a tensile testing machine a tensile load of 300 N is applied to the window fastener handle at a distance of 50 mm measured from the handle rotation point, perpendicular to the plane of the window and away from handle fixings for $30\ ^{+1}_{-0}$ s (see Figure B.3).

7.5 Simulated pressure test procedure

The spur of the window fastener handle is fully closed onto the compression wedge / keeper.

Apply a force of 700 N +10 N to the sash in the direction of opening as close to the window fastener spur as possible and maintain for $60\ ^{+10}_{-0}$ s (see Figure B.4).

Measure and record any permanent deformation between the spur and the wedge / keeper.

Acceptance criteria are in accordance with EN 13126-1:2006, 8.4 and 5.5 of this European Standard.

7.6 Pull-in test

The spur of the window fastener handle is fully engaged onto the compression wedge / keeper.

Establish the datum surfaces as close as possible to the spur of the handle.

Apply a force of 10 N ± 1 N to the sash horizontally in the direction of opening as close to the spur as possible.

Measure and record the distance between the datum points.

The applied load shall be increased to 20 N ± 1 N without shock.

Measure and record the distance between the datum points.

Record the difference.

The hardware shall conform to the acceptance criteria of EN 13126-1:2006, 8.4 and 5.6 of this European Standard.

7.7 Durability test procedure

The window fastener handle shall be mounted in accordance with the manufacturer's fitting instructions.

The handles shall always be tested in the same direction; commencing in the 0° position.

The window fastener handle shall be cycled from 0° to 90° (or maximum handle stop is less than 90°) and back to 0°. This operation is equivalent to one cycle.

Cycle the window fastener handle according to one of the following grades at the rate of (550 ± 20) cycles/h.

A rest time of approximately 3 s shall be adhered to after every complete cycle. The procedure shall be in conjunction with a continuous counteracting force of $20\ ^{+1}_{-0}$ N to the handle in the area of the spur (see Figure B.5).

— grade 3: 10 000 cycles (+ 1 %) cycles

— grade 4: 15 000 cycles (+ 1 %) cycles

— grade 5: 25 000 cycles (+ 1 %) cycles

NOTE All moving parts requiring lubrication may be lubricated in accordance with hardware manufacturers' instructions unless the manufacturer has specified the hardware as maintenance free.

Acceptance criteria are in accordance with EN 13126-1:2006, 8.4 and 5.7 of this European Standard.

7.8 Corrosion resistance

Unless a test report has already been submitted by the manufacturer, the corrosion test shall be carried out in accordance with EN 1670 (with neutral salt spray).

7.9 Locking mechanism durability test

The locking mechanism testing shall be carried out on a test apparatus with the quantity of locking and unlocking operations as defined in 5.8.1 with a maximum force of 1,5 Nm.

On handles with a locking mechanism, the key shall be removed from the locking mechanism and then re-inserted each time.

NOTE In the case of handles with non-key-operated locking mechanisms and the 'push to open' operating mode, the locking mechanism's durability test can be carried out in conjunction with the durability test in accordance with 5.7.

7.10 Torque resistance of the locking mechanism / solid fixing test

The closed handle shall be fixed with the accompanying screws or fixings. A torque of 2 Nm shall be applied with a lock-channel adapted tool and torque measurement equipment (see Figure B.6).

7.11 Test - Resistance against twisting-off and forcing-off

The closed handle shall be fixed with the accompanying screws or fixings. The predefined torques in 5.8.3 and 5.8.4 shall be carried out by means of an adapter and torque wrench in the following order on the same window handle: 1.) twisting-off (see Figure B.7) and 2.) forcing off (see Figure B.8). The adapter shall be fixed to the handle's lever in such a manner that the torque is applied axial to the handle rotation point when twisting-off, vertical to the handle rotation point when forcing off, and parallel to the mounting plane.

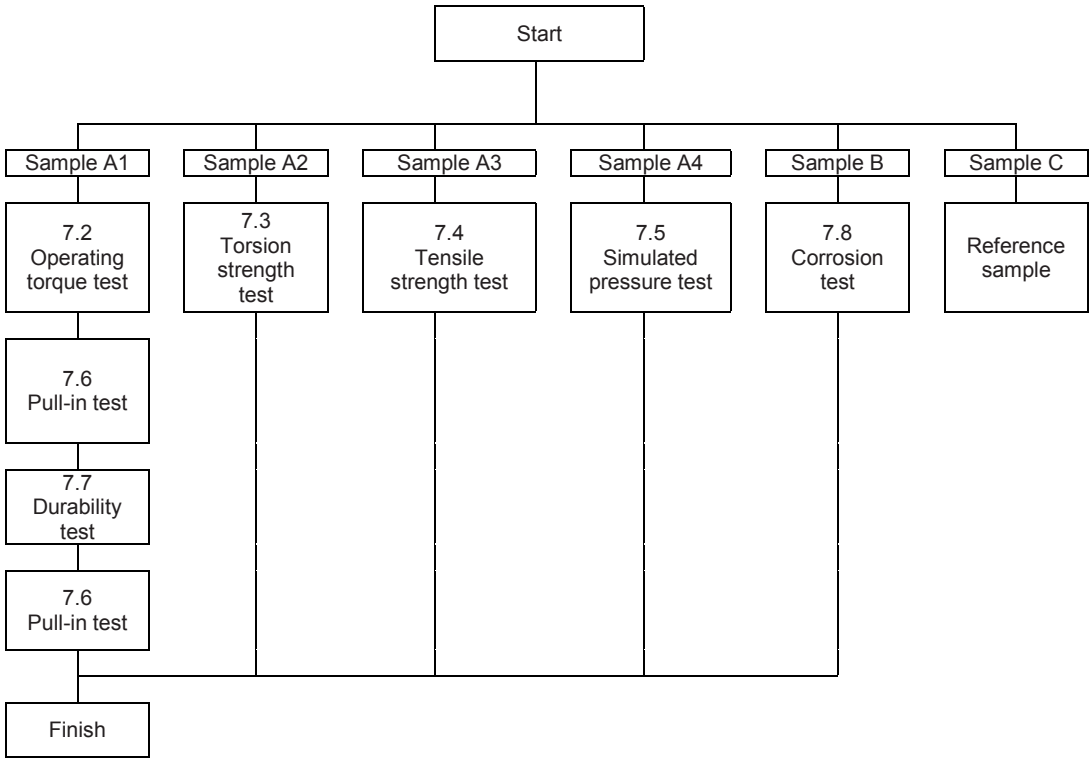
Apply a force of 35 Nm ± 1 Nm for grade 1 or 100 Nm ± 1 Nm for grade 2 at a distance of 85 mm measured from the handle rotation point.

Annex A
(informative)

Tests method diagrams

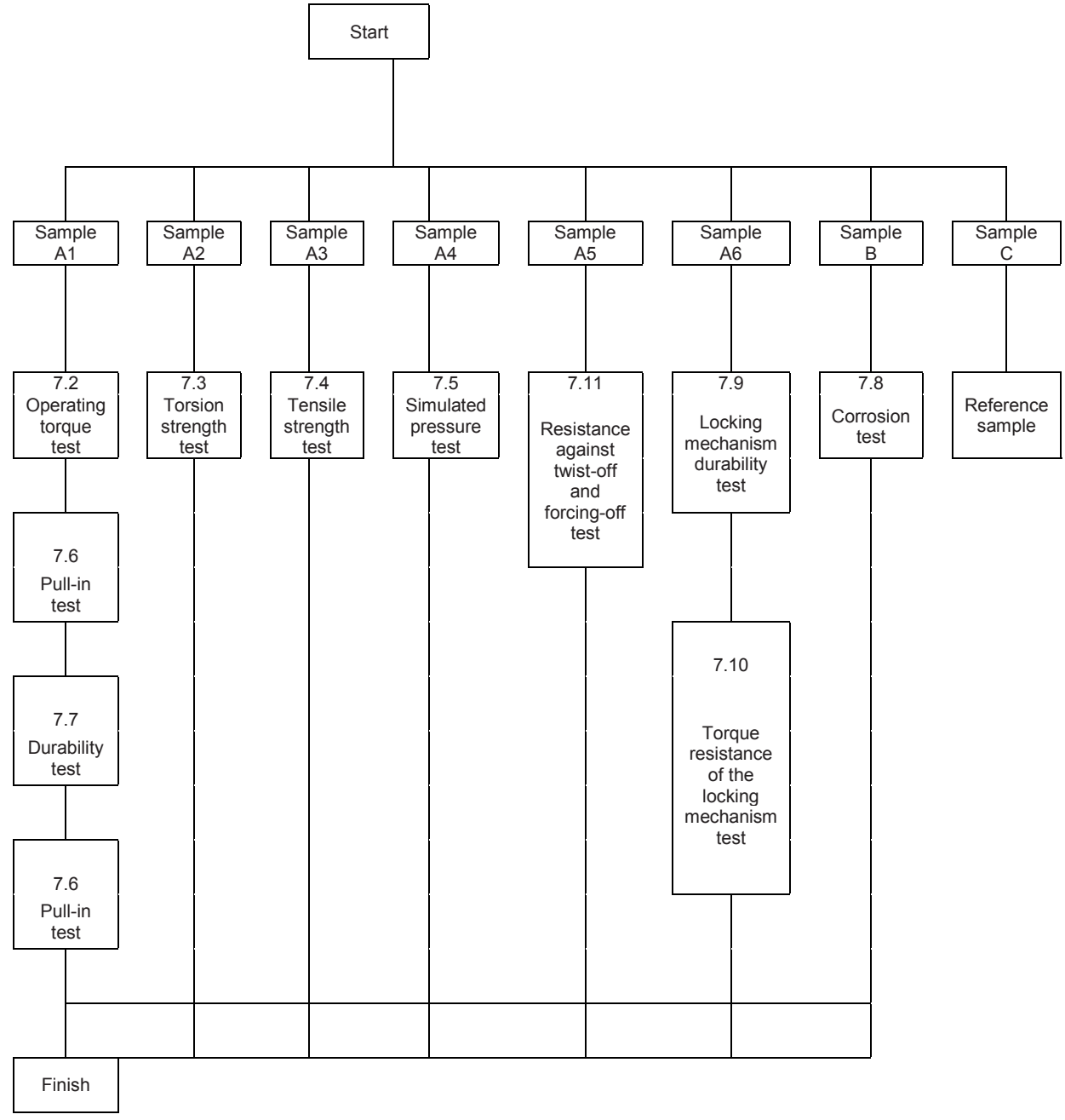
Tests of handles without security

(Main test parameters)



Tests of handles with security

(Main and additional test parameters)



Annex B
(informative)

Figures

Dimensions in millimetres

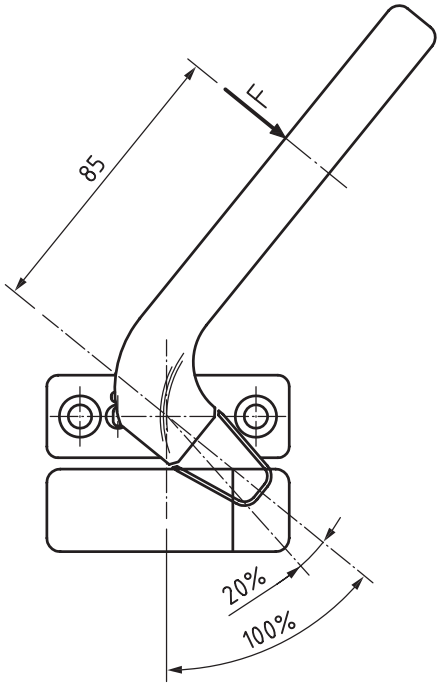


Figure B.1 — Operating torque test

Dimensions in millimetres

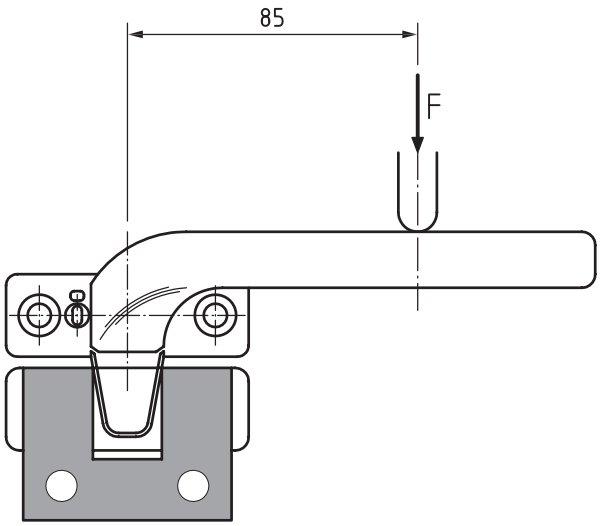


Figure B.2 — Torsion strength test

Dimensions in millimetres

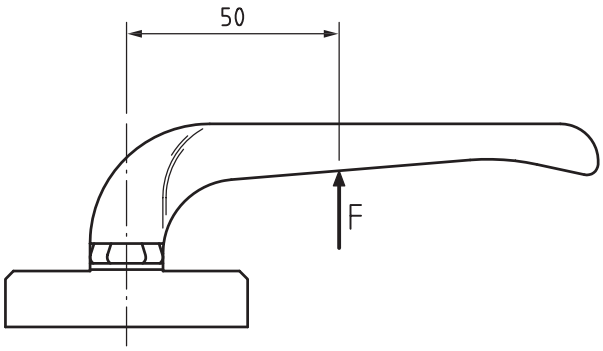


Figure B.3 — Tensile strength test

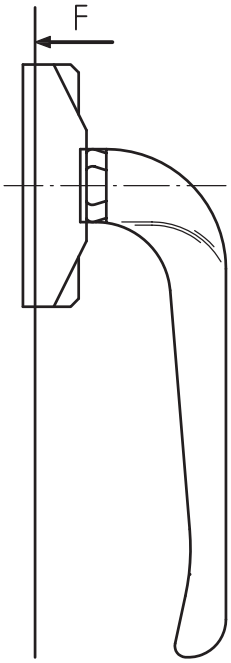


Figure B.4 — Simulated pressure test

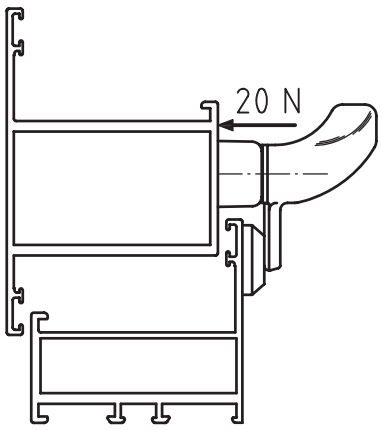


Figure B.5 — With a continuous counteracting force of 20N

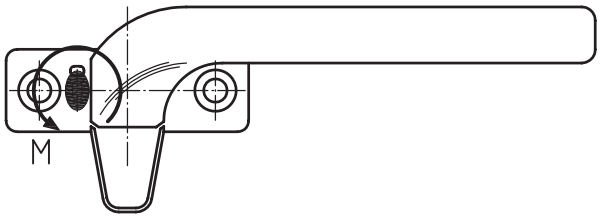


Figure B.6 — Torque resistance of the locking mechanism / solid fixing test

Dimensions in millimetres

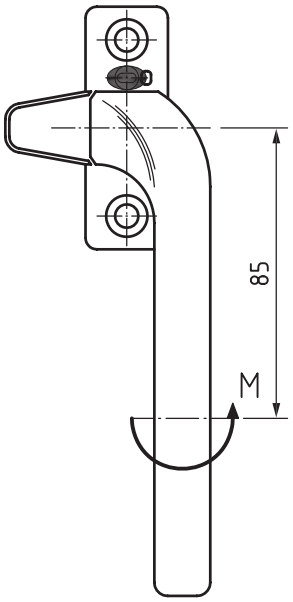


Figure B.7 — Resistance against twisting-off

Dimensions in millimetres

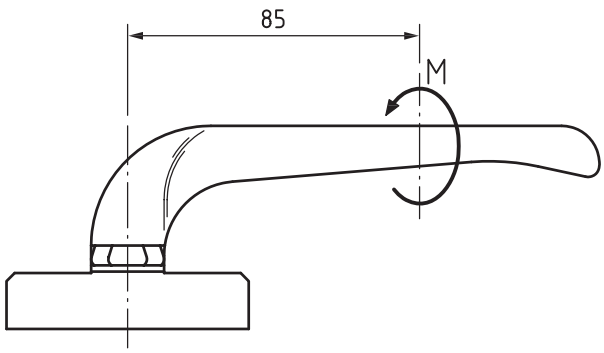


Figure B.8 — Resistance against forcing-off

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