

Hardware certification programme in accordance with EN 13126-8



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1 Basics

1.1 Objective and scope

This certification programme defines the requirements and procedure for the certification of hardware in accordance with EN 13126-8 under consideration of EN 1191.

By means of the implementation and use of the specified procedures and tests, the proven characteristics during the initial type testing shall be permanently ensured. The specified requirements are higher than the requirements set out in EN 13126-8, representing a further quality characteristic. This is documented by the “ift-certified”-mark.

This certification programme provides the foundation for the interchangeability of hardware in building components in accordance with EN 14351-1. Further details concerning the interchangeability of hardware are listed in Annex 1.

Hardware in accordance to this certification program also full fill the requirements of hardware according to RAL-GZ 695.

1.2 Certification and test fundamentals

This certification programme lays down the requirements for the certification and monitoring of hardware within the valid framework of EN 13126-8. For hardware certification and surveillance, the following shall be verified and submitted to ift-Q-Zert:

- Test reports in accordance with EN 13126- 8 and EN 1191 or alternatively, a combination test in accordance with Annex 2 as well as the confirmation of threshold (load-bearing capacity of safety devices) of 350 N according to EN 14351-1, issued by a test laboratory accredited in accordance with EN 17025 and recognised by ift-Q-Zert,
- Product documentation with application tables for the purpose of use and application range of hardware (shapes, sash weights, sizes and frame material),
- Documentation of a factory production control,
- A certification and surveillance contract with ift-Q-Zert for products within the framework of EN 13126- 8,
- ISO/IEC Guide 65:1996,
- IAF utilisation handbook for the ISO/IEC Guide 65:1996.

1.3 Terms

1.3.1 Test report owner

An organisation that commissions a test laboratory to test one or more product/building component characteristic, and receives verifications/test reports from the test laboratory.

1.3.2 Production plant/producer

An organisation that produces/fabricates products/components/building materials.

1.3.3 Hardware system

Tilt&Turn, Tilt-First and Turn-Only hardware components or hardware sets for windows and balcony doors.

1.3.4 Product

In terms of this certification programme, a product is understood to be a hardware system in line with the specifications of what is marketed by the manufacturer.

2 Procedures and certification content

The general procedure and contents of the measures for initial certification and maintenance of certification are documented by ift-Q-Zert in the "General requirements for product certification". Only hardware system specifications are defined hereafter.

2.1 Certification procedure

- Conclusion of a certification and surveillance contract,
- Definition of the scope for the product certification/the certificate,
- Evaluation of test- and product documentation,
- If applicable, the required initial test(s),
- Positive initial inspection,
- Certification.

3 Initial test

3.1 Verifications

Within the framework of the initial test for hardware systems, test reports in accordance with EN 13126-8 and EN 1191 or alternatively, a combination test in accordance with Annex 2 as well as the confirmation of threshold (load-bearing capacity of safety devices) of 350 N according to EN 14351-1, issued by a test laboratory accredited in accordance with EN 17025 and recognised by ift-Q-Zert shall be submitted. All documentation shall list both the maximum sash weight as stipulated by the hardware manufacturer, and the appropriate test formats (defined in EN 13126-8).

In order to evaluate the documents, ift-Q-Zert may take further documentation into account from an ift-recognised test laboratory.

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4 Initial inspection

The initial inspection is to determine the personnel and manufacturing technology conditions for manufacturing hardware in accordance with EN 13126-8, within the framework of this certification programme. During the initial inspection, the factory production control system shall be evaluated.

5 Product certificate

5.1 Certificate validity

The product certificate is issued for a period of 5 years.

Within the recertification framework, a hardware system test shall be carried out at the same scale as the initial test, by a test laboratory accredited in accordance with EN 17025 and recognised by ift-Q-Zert.

In the case of a positive evaluation, the certificate shall be issued for a further 5 years.

The procedure for modifying or extending the certified scope, as well as the suspension and revocation of certification is stated by ift-Q-Zert in the "General requirements for product certification".

The certificate however is only valid as long as these certification programme's specifications and requirements, as well as the product itself, do not change. Product modifications that influence the characteristics tested in the initial test shall be disclosed unsolicited to the certification body.

In case of failure to comply with the certification programme's specified measures, the certificate shall be withdrawn as well as the right to mark one's products.

5.2 Marking

The products may be marked with the "ift-certified"-mark. The methods and contents of certification as listed in paragraph 2 shall be adhered. In addition to the marking on shipping documents, catalogues, technical documentations, commercial brochures or packaging, marking in digital format is also acceptable.

The right to bear the quality mark expires automatically however by terminating the certification and monitoring contract or non-compliance of the certification programme's criteria.

6 Factory production control

6.1 General

The hardware systems manufacturer commits to implementing a factory production control system ensuring consistent hardware characteristics. The manufacturer shall nominate an employee responsible who has the suitable authority, knowledge and experience in hardware production. This employee is responsible for the proper implementation of a factory production control. Should impermissible deviations be determined in the factory production control, measures to correct these deviations and defects shall be implemented immediately by the factory production control appointee.

The following tests are to be carried out within the framework of a factory production control:

- Good inwards inspection,
- Production monitoring,
- Inspection of the marking.

In order to implement the factory production control, suitable facilities and equipment must be made available. For the samples quantity, an AQL-value (Acceptance Quality Limit) of at least 1.5 in the S2 list of samples in accordance with ISO 2859-1 is valid.

6.2 Good inwards inspection

The following points shall be noted for the good inwards inspection:

- Incoming material test,
- Mechanical strength test documentation (pivot rest/stay bearing),
- Dimensional accuracy testing of component groups,
- Espagnolettes'/corner drives' smooth operation.

Factory certificates of compliance in accordance with EN 10204, at least in accordance with paragraph 2.1 or an acceptance test certificate in accordance with EN 10204, paragraph 3.1b, are valid.

6.3 Production monitoring

Production monitoring to ensure consistent hardware characteristics shall be carried out at least in accordance with ISO 2859-1. S2, AQL 1.5 and documented accordingly.

The following points shall be noted for the production monitoring:

- Mechanical strength test documentation (pivot rest/stay bearing),
- Dimensional accuracy testing of component groups,
- Espagnolettes'/corner drives' smooth operation.

6.3.1 Durability test

The durability test shall be carried out and documented at least once per year. The requirements of EN 13126-8, paragraph 7.3 or 7.4 and EN 1191, or alternatively combined testing in accordance with Annex 2 shall be fulfilled.

6.3.2 Corrosion protection

The fulfilment of the corrosion protection requirements in accordance with EN 13126-8, paragraph 5.7 are mostly carried out within the framework of corrosion tests every 3 months, or by fulfilling the requirements laid out in paragraph 6.2 of EN 13126-8.

6.4 Inspecting the marking

The marking shall be carried out in accordance with EN 13126-1, paragraph 9.

7 Inspection

7.1 General

The contents, conditions and responsibilities are described by ift-Q-Zert in the “General requirements for product certification”.

7.2 Regular inspection of the monitored location

7.2.1 Interval and contents

The inspection shall be carried out twice a year in the form of a regular inspection visit on site at the monitored location (production site or sales organisation).

For hardware manufacturers in possession of a certified QM-system in accordance with EN ISO 9001:2000, the regular inspection visits shall be carried out only once per year and shall consist of:

- Inspecting the factory production control system,
- Inspecting the personnel and production technical conditions,
- Inspecting the measuring equipment in use for obvious defects, as well as inspecting the measuring equipment's valid calibration and maintenance documentation. The measuring equipment inspection shall be documented,
- Inspecting the customer complaints' recording and processing procedures.

7.2.2 Sampling

During every regular inspection visit, samples are selected randomly from representative locations in the running production or warehouse, and tested in accordance with EN 13126-8, paragraph 5.2.2. It shall be warranted that it is possible to carry out sampling on the day of the regular inspection visit. In exceptional cases, where there is no possibility for sampling due to production reasons, the manufacturer shall take samples from the next production batch and forward these to the certification body. The samples shall be labelled clearly with a short code depicting the responsible staff member that selected each sample. Sampling must however be carried out from the running production or warehouse during the next regular inspection visit.

7.2.3 Inspection report

The results of the regular inspection shall be summarised in a inspection report. Should one or more of the measured values be above the specified threshold values, the deviation reason must be clarified and corrective action taken at short notice. After having eliminated the defects, the certification body decides which further quality securing measures are necessary (for example, a special inspection).

7.2.4 Defect elimination – special inspection

Special inspections can be necessary as a result of:

- Negative appraisal of a regular inspection visit, or
- Complaints received from the market concerning certified products.

7.2.5 Deadline to eliminate defects

The deadline to eliminate defects resulting from a regular inspection visit should, as a rule, not exceed one month. The deadline to eliminate defects resulting from a special inspection is set at 3 months (refer to the “General requirements for product certification” for the special inspection conditions).

Annex 1: Interchangeability regulations for certified hardware systems in building products in accordance with EN 14351-1 of this certification programme

No.	Property	Regulations	Interchangeability
1	Wind load resistance	Comparative test on a calibrated test rig, test format in accordance with original ITT	Yes, if the results are positive; same grade or better
2	Resistance to snow and permanent load	Non-existent	No
3	Reaction to fire	Non-existent	No
4	Protection against fire from outside	Non-existent	No
5	Watertightness	Comparative test on a calibrated test rig, test format in accordance with original ITT	Yes, if the results are positive; same grade or better
6	Dangerous substances	Non-existent	No
7	Impact resistance	Comparative test on a test rig, test format in accordance with original ITT	Yes, if the results are positive; same grade or better
8	Load-bearing capacity of safety devices	Comparative test	Yes, if results are positive
9	Ability to release	Non-existent	No
10	Acoustic performance	Yes, in consideration of point No. 13	Yes
11	Heat transfer transmittance	No influence	Yes
12	Radiation properties	No influence	Yes
	Air permeability	Comparative test on a calibrated test rig, test format in accordance with original ITT	Yes, if the results are positive; same grade or better
13	Operating forces	Comparative test on a calibrated test rig, test format in accordance with original ITT	Yes, if the results are positive; same grade or better
	Mechanical strength	Yes	By comparable fixing of load-bearing hardware components
	Ventilation	No influence	Yes
	Bullet resistance	Non-existent	No
	Explosion resistance	Non-existent	No
	Durability test	Yes	Yes, refer to Annex 3
	Behaviour between different climates	No influence	Yes
	Burglar resistance	Non-existent	No

The evaluation of these results, the changeability and the usage in the line with EN 14351-1 is in the responsibility of the window manufacturer respectively in the terms of contract of the system house in shared- or cascading-systems.

Annex 2: Combination test in accordance with EN 13126-8 and EN 1191

General stipulations:

- The test specimen is installed in the sub-frame using common-practice building procedures. (Allow a circumferential clearance of 5-10mm between the frame and the sub-frame; Underlay in the vicinity of the fixing points with pressure-proof material. The fixing locations are usually located 150mm from each corner; As a rule further screw-fixing points are positioned at intervals of 400-600mm),
- The building product is fixed to the test rig using a metal sub frame (i.e. steel or aluminium),
- Test formats are in accordance with the specifications laid down in EN 13126-8, paragraph 5.1,
- The test is carried out with the maximum sash weight as specified by the hardware manufacturer,
- The test specimen's material may be timber, PVC, aluminium or a combination of these materials. The fixing system is selected in accordance with the specimen material and documented,
- The sash weight is set by using an appropriately heavy and compliant glazing unit and glazed in using spacer-blocks. Alternatively, an adequately rigid timber, PVC, steel or timber-composite material may be used with additional weights in accordance with EN 13126-8,
- The evaluation of reference speed shall be carried out on the respective sash locking-edge (sash rebate).

A Test procedure for Tilt&Turn or Tilt-First hardware

Test specimen preparation, implementation of measurements and documentation in accordance with EN 13126-8 and EN 1191.

Depending on the operation sequence of the hardware to be tested, the Tilt&Turn or Tilt-First cycles are to be carried out in accordance with **A.1.1** or **A.1.2**

A.1.1 15.000 Tilt&Turn cycles (for Tilt&Turn hardware)

For hardware with a "Tilt&Turn" operation sequence, the cycles are to be carried out as follows:

- **Cycle initiation:** The initial position is the closed position,
- Switch the hardware into the tilt position,
- Tilt the sash in the direction of the tilted position*,

- Reach the tilt position at a velocity of 0.5 m/s*,
- Close the sash from the tilted position into the direction of the closed position*,
- Reach the closed position at a velocity of 0.5 m/s*,
- Switch the hardware into the closed position,
- Switch the hardware into the turn position,
- Open the sash into the turn position (100mm) in accordance with EN 13126-8,
- Close over the sash from the turned position (100mm) into the closed position in accordance with EN 13126-8,
- Reach the closed position in accordance with EN 13126-8,
- **Cycle conclusion:** switch the hardware into the closed position,
- Lubrication and adjustment in accordance with EN 13126-8,
- Failure criteria in accordance with EN 13126-8 and EN 1191.

A.1.2 15.000 Tilt-First cycles (for Tilt-First hardware)

For hardware with a “Tilt-First” operation sequence (otherwise known as “Tilt-Before-Turn”), the cycles are to be carried out as follows:

- **Cycle initiation:** The initial position is the closed position,
- Switch the hardware into the turn position,
- Open the sash into the turn position (100mm) in accordance with EN 13126-8,
- Close over the sash from the turned position (100mm) into the closed position in accordance with EN 13126-8,
- Reach the closed position in accordance with EN 13126-8,
- Switch the hardware into the closed position,
- Switch the hardware into the tilt position,
- Tilt the sash in the direction of the tilted position*,
- Reach the tilt position at a velocity of 0.5 m/s*,
- Close the sash from the tilted position into the direction of the closed position*,
- Reach the closed position at a velocity of 0.5 m/s*,
- **Cycle conclusion:** switch the hardware into the closed position,
- Lubrication and adjustment in accordance with EN 13126-8,
- Failure criteria in accordance with EN 13126-8 and EN 1191.

A.1.3 10.000 turn cycles (for Tilt&Turn and Tilt-First hardware)

After carrying out the Tilt&Turn or Tilt-First cycles in accordance with **A.1.1** or **A.1.2**, the turn cycles shall be carried out as follows:

- **Cycle initiation:** The initial position is the closed position,
- Switch the hardware into the turn position,
- Open the sash into the turn position*,
- Reach the 90° turn end-position at a velocity of 0.5 m/s*,
- Close over the sash from the turn end-position in the direction of the closed position*,
- **Cycle conclusion:** reach the closed position at a velocity of 0.5 m/s*,
- Lubrication and adjustment in accordance with EN 13126-8,
- Failure criteria in accordance with EN 13126-8 and EN 1191.

A.1.4 Additional test in accordance with EN 13126-8

After carrying out the turn cycles, additional tests in accordance with EN 13126-8 shall be carried out:

- Additional weight test - 1000 N,
- Reveal test,
- Rebate-hindrance test,
- Minimum closing device resistance
- Respective failure criteria in accordance with EN 13126-8.

B Test procedure for Turn-Only hardware

Test specimen preparation, implementation of measurements and documentation in accordance with EN 13126-8 and EN 1191.

B.1.1 30,000 turn cycles

- The hardware operating sequences shall be in accordance with EN 13126 - part 8,
- **Cycle initiation:** The initial position is the closed position,
- Switch the hardware into the turn position,
- Open the sash into the turned position*,
- Reach the 90° turn end-position at a velocity of 0.5 m/s*,
- Close over the sash from the turn end-position in the direction of the closed position*,



- **Cycle conclusion:** reach the closed position at a velocity of 0.5 m/s* ,
- Lubrication and adjustment in accordance with EN 13126 - part 8,
- Failure criteria in accordance with EN 13126 - part 8 and EN 1191.

B.1.2 Additional tests in accordance with EN 13126-8

After carrying out the turn cycles, additional tests in accordance with EN 13126-8 shall be carried out:

- Additional weight test - 1000 N,
- Reveal test,
- Rebate-hindrance test,
- Respective failure criteria in accordance with EN 13126-8.

* In due consideration of the tolerances and the corresponding reference velocity diagrams in accordance with EN 1191.

Annex 3: Interchangeability of hardware in terms of durability (Annex 1, paragraph 19)

- The hardware system must fulfil all of the certification programme's requirements,
- The hardware and fixing systems must be technically comparable *,
- The capability characteristics (sash weight and cycle quantity) of the replacement hardware must be at least equivalent to the ITT-tested in accordance with EN 14351-1.

An interchangeability of certified hardware systems is granted by adhering to these regulations for building products in accordance with EN 14351-1, and already has verification in accordance with EN 1191.

* Technical comparability of hardware systems is understood to be equality of certified hardware systems in terms of its purpose/application range (PVC and/or timber and/or aluminium and/or a combination of materials) and the maximal possible sash weight. Technical comparability exists if the values for both characteristics are the same.