

# Certification scheme

## Hardware

### as per EN 13126-8:2017



Product quality  
Hardware (QM 328)  
EN 13126-8:2017  
No. 228 XXX

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## 1 Basis

### 1.1 Purpose and scope

This certification scheme defines the requirements and procedure for the certification of parallel sliding tilting hardware according to EN 13126-8:2017 in the classes H1, H2 and H3 as well as hardware with concealed hinges (tilt mechanism pivots and corner pivots) whose application range is specified as having a rotation opening position of significantly more than 90° to a maximum of 180°. The test sequences according to EN 1191:2012 are considered.

Introduction and application of the specified provisions and tests ensure the sustainability of the characteristics of the hardware demonstrated during initial type testing. The specified requirements are higher than the requirements set out in EN 13126-8:2017, representing a further quality characteristic. This is documented by affixing the "ift-certified" mark to the hardware.

Hardware certified and monitored in accordance with this Certification Scheme fulfils the requirements for side-hung and tilt-and-turn hardware according to RAL-GZ 695:2016 (Windows, facades and external pedestrian doorsets – Quality assurance RAL-GZ 695) and RAL-GZ 716:2013 (PVC window profile systems – Quality assurance RAL-GZ 716).

Information on the interchangeability of hardware in building components in accordance with EN 14351-1:2006 + A2:2016) is given in Annex 1 and Annex 4.

### 1.2 Basis of testing and certification

This Certification Scheme lays down the requirements for the certification and monitoring of hardware covered by EN 13126-8:2017. For certification and surveillance of hardware, ift-Cert must be provided with the following evidence:

- Test reports according to EN 13126-8:2017, for hardware with concealed hinges (tilt mechanism pivots and corner pivots) whose application range is specified with a turn-open position of significantly more than 90° to max. 180°, must also be tested according to Annex 3,
- Verification is optionally possible on the basis of the combination test as specified in Annex 2; for hardware with concealed hinges (tilt mechanism pivots and corner pivots), whose area of application is specified with a rotational opening position of significantly more than 90° up to a maximum of 180°, testing must also be carried out as per Annex 3,
- All test reports and evidence/verifications documents shall be issued by a testing body accredited to EN ISO/IEC 17025 and recognised by ift-Cert,
- Product documentation with application diagrams for the intended use and/or application (shapes, sash weights, sizes, frame material) of the hardware,
- Documentation of the mandatory factory production control
- A certification and surveillance contract with ift-Cert to produce products covered by EN 13126-8:2017,



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- Consideration of “Beschlussbuch“ (Resolution Guide) referring to the ift-Certification Scheme QM 328 in its currently applicable version, as well as of the requirements for bodies certifying products, processes and services according to EN ISO/IEC 17065.

### **1.3 Use of historical data**

For assessment according to Section 1.2 of the currently applicable QM 328 version, hardware systems certified according to the version 2014-05-01 of QM 328, can be certified based on the underlying test evidence. In the case of compliance with the requirements set out in EN 13126-8:2017 – Clause 5.4.1 "Sash operation tolerance", of 100 N, all requirements of the new grade H2 of EN 13126-8:2017 are fulfilled.

### **1.4 Terms and definitions**

#### **1.4.1 Owner of test report**

Organization which commissions a testing body with identifying or testing specific or more than one product characteristic of a product/component and receives from the testing body evidence of performance/a report of the results obtained.

#### **1.4.2 Production site/manufacturer**

Organization which manufactures/further processes products/components/building materials.

#### **1.4.3 Hardware system**

Tilt&Turn, Tilt-First and Turn-Only hardware components or hardware sets for windows and door height windows.

#### **1.4.4 Product**

Under the present Certification Scheme, product is defined as a hardware system that is distributed based on the specifications provided by the manufacturer.

#### **1.4.5 Measurement points of reference velocity**

The speed of the moving sash is measured at the corresponding closing edge of the sash (external edge of sash).

## **2 Procedure and contents of certification**

The general procedure and the contents of the measures required for initial certification and renewal of certification are documented by ift-Cert in the applicable "General requirements for certification, surveillance and inspection of products and services". The specifications defined in the following refer only to hardware systems.

### **2.1 Certification procedure**

- ❑ Conclusion of a certification and surveillance contract
- ❑ Definition of the scope of product certification/certificate,
- ❑ Evaluation of test evidence/reports and product documentation,
- ❑ Initial type test/s, as necessary,
- ❑ Positive initial inspection,
- ❑ Certification.

## **3 Initial audit**

### **3.1 Test evidence / reports**

Initial type testing of a hardware system requires presentation of test evidence/reports as set out in Section 1.2. All test evidence/reports must be based on the maximum sash weights specified by the hardware manufacturer and essentially rely on the appropriate test sizes defined in EN 13126-8:2017.

For evaluation of the documents, ift-Cert may rely on further documentation provided by an ift recognised testing body.

In addition, a reference sample with casement/sash and frame parts is to be formed and made available. The reference sample shall be deposited with the commissioned testing body for the duration of the verification/test report for a maximum of 10 years.

## **4 Initial audit**

The objective of the initial inspection is to check the personnel and manufacturing technology conditions for manufacturing hardware according to this Certification Scheme. Initial inspection includes the evaluation of the existing factory production control.

## **5 Product certificate**

### **5.1 Validity of the certificate**

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

Recertification is possible for an extension of validity by further 5 years. As part of the recertification, ift-Cert shall evaluate the available test evidence/reports of the hardware system. If all certification requirements have been passed, the certificate will be renewed for a period of another 5 years.

As a rule, the verification/evidence of performance underlying the certification shall be renewed after 10 years, also in the period between the re-certifications.

The procedure for modifying or extending the certified scope as well as the suspension and revocation of certification is specified by ift-Cert in the applicable "General requirements for certification, surveillance and inspection of products and services".

The certificate remains valid only as long as the provisions and requirements of this certification scheme as well as the product as such remain unchanged. Any changes to the product that have an effect on the characteristics verified by the initial type test, shall be communicated to the certification body without being asked.

In case of failure to comply with the provisions and measures specified by this certification scheme, the certificate as well as the right of affixing the mark to the respective products, will be withdrawn.

### **5.2 Marking**

The products can be marked by affixing the "ift-certified" mark. The applicable documents listed in Section 2 - procedure and contents of certification - shall be observed. In addition to applying the mark on shipping documents, catalogues, technical documentation, advertising documents or packaging, marking may also be in a digital format.

The right of affixing the quality mark expires automatically by terminating the certification and surveillance contract, or in the event of non-compliance with the criteria laid down by this certification scheme.

## **6 Factory production control**

### **6.1 General**

The hardware manufacturer undertakes to establish a system of factory production control to assure consistent hardware characteristics. The manufacturer shall name an employee responsible for certification who has the authority, knowledge and experience in the hardware production process. This employee is responsible for due implementation of factory production control. If unallowed non-conformities are detected during factory production control, the person responsible for factory production control shall immediately initiate measures to eliminate such non-conformities or defects.

Factory production control includes the following mandatory inspections/tests:

- ❑ Material control/control of incoming goods
- ❑ Production control
- ❑ Inspection of marking

Suitable equipment and devices shall be provided for performing factory production control. For the sample's quantity, an AQL-value (Acceptance Quality Limit) of at least 1.5 in the S2 list of samples in accordance with ISO 2859-1:1999 + Cor. 1:2001 + Amd.1:2011 is applicable.

### **6.2 Material control/control of incoming goods**

The following shall be observed for material control/control of incoming goods:

- ❑ Material - control of incoming goods,
- ❑ Mechanical strength test documentation (corner pivot/stay bearing),
- ❑ Inspection of assemblies for dimensional accuracy
- ❑ Smooth operation of espagnolettes/corner drives.

Factory certificates of compliance in accordance with EN 10204:2004, at least in accordance with Section 2.1 or acceptance test certificates in accordance with EN 10204:2004, Clause 3.1, are permitted in this context.

### **6.3 Production control**

Production control to assure consistent hardware characteristics of the hardware shall be carried out at least according to ISO 2859-1:1999 + Cor. 1:2001 + Amd.1:2011, S2, AQL 1.5 and documented accordingly.

The following shall be observed for production control:

- ❑ Mechanical strength test documentation (corner pivot/stay bearing),
- ❑ Inspection of assemblies for dimensional accuracy
- ❑ Smooth operation of espagnolettes/corner drives.

### **6.3.1 Durability test**

The durability test shall be performed and documented at least once a year. The requirements of EN 13126-8:2017, Clause 7.6 shall be fulfilled.

If the size specified for a defined hardware combination in the test matrix refers to both a window and a door-height window, the different sizes shall be tested on an alternating yearly basis in the context of the factory production control.

Consequently, each item, i.e. each defined hardware combination listed in the test matrix, shall be subjected to only one annual test in the context of the factory production control.

The following additional tests as per EN 13126-8:2017 shall be conducted in the context of the factory production control every two years:

- ▣ Additional load test of 1000 N,
- ▣ Reveal test,
- ▣ Rebate hindrance test.

If the size specified for a defined hardware combination listed in the test matrix, refers to both a window and a door-height window, these additional tests conducted in the context of the factory production control shall always be carried out on the window size.

### **6.3.2 Corrosion protection**

Compliance with the requirements for corrosion protection as per EN 13126-8:2017, Clause 5.7 shall be demonstrated by corrosion tests at least every 3 months, or by fulfilling the provisions set out in Section 6.2.

### **6.4 Inspection of the marking**

The marking shall be in conformity with EN 13126-8:2017, Clause 8.

## **7 Third-party control/surveillance**

### **7.1 General**

Contents, rights and duties are described by ift-Cert in the applicable relevant documents "General requirements for certification, surveillance and inspection of products and services".

### **7.2 Regular inspection/audit of monitored site**

#### **7.2.1 Intervals and contents**

The third-party audit is performed twice a year in the form of a regular site inspection at the monitored location (production site or sales organisation).

For hardware manufacturers operating a certified QM-system in accordance with the series of standards EN ISO 9001, the regular audit/inspection may be performed only once per year and consists of:

- ▣ Audit/inspection of factory production control
- ▣ Checking of staff qualifications and manufacturing conditions
- ▣ Inspection for any obvious defects of the measuring instruments used as well as verification of availability of valid certificates referring to calibration and service/maintenance of the measuring instruments. Inspections of measuring instruments must be documented.
- ▣ Inspection of procedure to record and handle customer complaints.

#### **7.2.2 Sampling**

During every regular audit/inspection, representative hinges are selected from the running production or warehouse on a random basis for inspection and tested in accordance with EN 13126-8:2017, Clause 5.2.2. It must be ensured that sampling is possible on the day of the regular inspection. If, in exceptional cases, it is not possible to take samples on the day of the standard test for technical production reasons, the manufacturer must take samples from the next production run and send them to the certification body. The samples must be clearly marked with the short code of the employee responsible for the selection. During the standard test that follows, samples must be taken from ongoing production or the warehouse, however.

#### **7.2.3 Surveillance report**

An audit report is prepared on the findings of the regular audit/inspection. If one or more measured values are beyond the specified limit values, the cause of the non-conformity must be identified and eliminated at short term. After elimination of the defects, the certification body decides whether additional quality assurance measures are required (e.g. a special audit).

#### **7.2.4 Elimination of defects/non-conformities – special audit**

Special audits may become necessary as a consequence of:

- ▣ negative evaluation of a regular audit or
- ▣ complaints received from the market about the certified products

#### **7.2.5 Deadlines to remedy defects/non-conformities**

As a rule, the deadline provided for discharge of nonconformities detected during the regular audit should not exceed one month. The deadline provided for discharge of nonconformities detected during the special audit shall be 3 months (as regards the conditions for special audits, refer to "General requirements for product certification").

**Annex 1:** Rules for the interchangeability of hardware systems certified under this Scheme in building components as per EN 14351-1:2006 + A2:2016

No.	Characteristic	Rules	Interchangeability
1.	Resistance to wind load	Comparative test on calibrated test rig; test size in accordance with original initial type test (ITT)	Yes, for positive results; same or better grades
2.	Resistance to snow load	none	no
3.	Reaction to fire	not available	no
4.	Resistance to external fire	not available	no
5.	Watertightness	Comparative test on calibrated test rig; test size in accordance with original initial type test (ITT)	yes, for positive results; same or better grades
6.	Dangerous substances	not available	no
7.	Impact resistance	Comparative test on test rig; test size in accordance with original initial type test (ITT)	yes, for positive results; same or better grades
8.	Load-bearing capacity of safety devices	Comparative test	Yes, for positive results
9.	Ability to release	not available	no
10.	Acoustic insulation	yes, under consideration of no. 13	yes
11.	Thermal transmittance	without influence	yes
12.	Radiation properties	without influence	yes
13.	Air permeability	Comparative test on calibrated test rig; test size in accordance with original initial type test (ITT)	yes, for positive results; same or better grades
14.	Operating forces	Comparative test on calibrated test rig; test size in accordance with original initial type test (ITT)	yes, for positive results; same or better grades
15.	Mechanical resistance	Yes	Yes, for comparable fixing of loadbearing hardware parts
16.	Ventilation	without influence	yes
17.	Bullet resistance	not available	no
18.	Explosion resistance	not available	no
19.	Mechanical durability	Yes	Yes, refer to Annex 4
20.	Behaviour between different climates	without influence	yes
21.	Burglar resistance	not available	no

## **Annex 2:** Combination test as per QM 328 – optional

If a manufacturer requires verification both in accordance with EN 13126-8:2017 and EN 1191:2012, the two tests can be combined as described below. After successful testing of the combination, test reports or a summary test report can then be issued for both European standards.

### **Combination of tests as per EN 13126-8:2017 and EN 1191:2012**

- ❑ Test sizes as specified in EN 13126-8:2017, Clause 5,
- ❑ Test using the maximum sash weight specified by the hardware manufacturer,
- ❑ The materials used for test specimens may be timber, PVC, aluminium or a combination of these materials. The adequate fixing system shall be identified and documented in accordance with the material used for the test specimens.
- ❑ The casement/sash weight is set by using glazing of corresponding weight and setting blocks, as specified. Optionally, a timber-based panel, PVC, steel or timber-based composite panel with additional weights as per EN 13126-8:2017 can be used,
- ❑ Determination of the reference velocity at the respective closing edge of the sash (external edge of sash).
- ❑ The test specimen shall be equipped with the sealing system provided for the intended purpose.
- ❑ Preparation of the test specimen, testing and documentation, as well as pass/fail criteria in accordance with EN 13126-8:2017 and EN 1191:2012.

### **Additional tests as per EN 13126-8:2017**

- ❑ Mechanical strength of hinges as per Clause 5.2.2,
- ❑ Minimum closing device resistance as per Clause 7.7,
- ❑ Corrosion resistance as per Clause 7.8.

After completion of the turn cycles the following additional test shall be carried out:

- ❑ Additional loading test 1,000 N as per Clause 7.6.6,
- ❑ Reveal test as per Clause 7.6.7,
- ❑ Test for hardware with turn restrictor as per Clause 7.6.8 (as applicable),
- ❑ Rebate hindrance test as per Clause 7.6.9,
- ❑ Applicable failure criteria as per EN 13126-8:2017.

### **Annex 3:** Combination test as per QM 328 for hinges for rotational opening positions significantly greater than 90° - Addition to EN 13126-8 - optional

This is an option for hardware with hinges for which the technical documentation and/or the manufacturer's advertising statements specify the possibility of a rotary movement of significantly more than 90° (up to max. 180°).

#### **Durability test**

The current version of EN 13126-8:2017 is supplemented for the testing of hardware with hinges that allow the sashes of windows and French doors equipped with them to be opened at a significantly greater angle than 90° (up to max. 180°). The design of the turning cycles according to chapter 7.6 in EN 13126-8:2017 is carried out as follows for turning cycles with an opening position significantly greater than 90° (up to max. 180°):

- The course of the accelerations / speeds for opening the sash is adapted to the rotation significantly greater than 90° based on the specifications in EN 1191.
- The reference velocity of 0.5 m/s must be achieved with an opening of 60%. This reference velocity is then maintained up to an opening of 70%. The reference velocity of the sash must then be reduced smoothly and jerk-free via the window handle connected to the operating device of the test rig until it stops in the maximum open rotary opening position.  
Note: Preferably, the reference velocity can already be reached at an opening of 30% (e.g. at 180° = 54°) in order to keep the cycle times as short as possible.
- This is followed by a rest period before the sash is closed. The acceleration / speed curve for closing the sash is essentially as described in 7.6.3 of EN 13126-8.

#### **Additional tests as per EN 13126-8:2017**

- Additional loading test (1000 N) as per Clause 7.6.6

#### **Execution for hinge sides with 180° rotation**

For hardware with hinges for which the technical documentation and/or advertising claims indicate the possibility of a rotation of significantly more than 90° (max. up to 180°), tests with additional load (1000 N) must be carried out as follows:

- First, a test is carried out at a 90° rotational opening position. The window sash is swivelled into the 90° turn position and an additional vertical force of 1000 N is applied near the window handle and maintained for 5 minutes.
- Then carry out a test with the 1000 N additional load at the maximum intended rotary opening position (max. at 180 (+0/-10)°). The vertical load of 1000 N is applied in the vicinity of the window handle as described above and maintained for 5 minutes.
- The acceptance criteria are as listed in EN 13126-8:2017.

**Annex 4:** Interchangeability of hardware – Durability (Annex 1, Section 19)

- The hardware systems must fulfil all requirements of this Certification Scheme,
- The hardware and fixing systems must be technically comparable\*.
- The performance characteristics (permissible sash weight and number of cycles) of the replacement hardware system must be at least equivalent to the hardware system subjected to the initial type test as per EN 14351-1:2006 + A2:2016.

Subject to compliance with these rules, certified hardware systems of building components for which evidence as per EN 1191:2000 or EN 1191:2012 has already been provided, may be replaced in accordance with EN 14351-1:2006 + A2:2016.

\*The term technical comparability of hardware systems is understood as the equivalence of certified hardware in terms of intended use (PVC profiles and/or timber profiles and/or aluminium profiles and/or a combination of materials) and maximum possible casement/sash weight. Technical comparability exists if the values of both characteristics are the same.