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Agrément Certificate
17/5404
Product Sheet 3

YALE FRICTION HINGES

YALE STANDARD FRICTION STAYS

This Agrément Certificate Product Sheet[1] relates to Yale Standard Friction Stays, for use as friction hinges for PVC-U, timber or aluminium windows, to allow opening of top-hung and side-hung sashes.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Resistance to wear and fatigue — the products have sufficient resistance to wear under normal use to provide a service life consistent with that of a window (see section 5).

Resistance to mechanical loading — windows fitted with the products have adequate resistance to mechanical loading and achieved the classifications shown in this Certificate (see section 6).

Durability — the products have been tested and classified to BS EN 1670 : 2007 and have adequate resistance to corrosion in the conditions envisaged throughout the expected life of the windows, when installed in areas not subject to particularly corrosive conditions (see section 8).

The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 3 March 2017

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body – Number 113.
The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

Regulations

In the opinion of the BBA, the use of Yale Standard Friction Stays is not subject to the national Building Regulations.

Construction (Design and Management) Regulations 2015
Construction (Design and Management) Regulations (Northern Ireland) 2016

In the opinion of the BBA, this Certificate does not include any content which relates to the obligations of the client, designer (including Principal Designer) and contractor (including Principal Contractor) under these Regulations.

Additional Information

NHBC Standards 2017

NHBC accepts the use of Yale Standard Friction Stays, provided they are installed, used and maintained in accordance with this Certificate in relation to *NHBC Standards,* Chapter 6.7 *Doors, windows and glazing.*

Technical Specification

1 Description

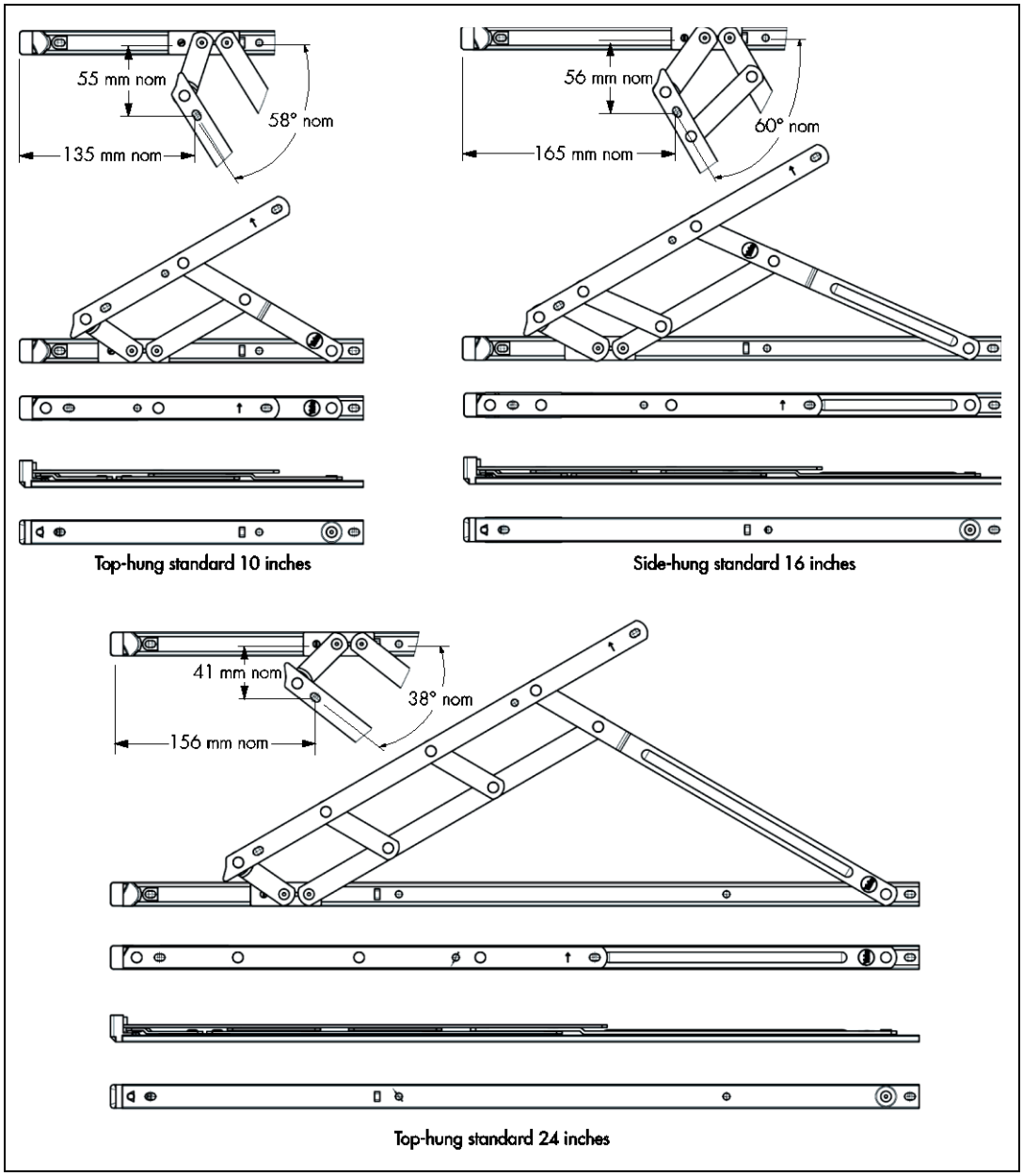
The metallic components of Yale Standard Friction Stays (see Figure 1) are made from stainless steel, number 1.4016 (ferritic) to BS EN 10088-2 : 2014. Sizes are given in Table 1.

Table 1 Yale Standard Friction Stays — range(1)

Product code	Stack height (mm)	Size (inches)	Maximum sash weight (kg)	Maximum sash height (mm)	Maximum sash width (mm)	Maximum opening angle(2) (°)
Side-hung						
YU8	13 – 14	8	18	—	400	60
YU8-H	16 – 18					
YU12	13 – 14	12	22	—	600	65
YU12-H	16 – 18					
YS16	13 – 14	16	24	—	700	60
YS16-H	16 – 18					
Top-hung						
YU8	13 – 14	8	12	350	—	60
YU8-H	16 – 18					
YT10	13 – 14	10	16	400	—	58
YT10-H	16 – 18					
YU12	13 – 14	12	20	550	—	65
YU12-H	16 – 18					
YT16	13 – 14	16	21	780	—	52
YT16-H	16 – 18					
YT20	13 – 14	20	24	1000	—	42
YT20-H	16 – 18					
YT24	13 – 14	24	35	1200	—	38
YT24-H	16 – 18					

(1) Manufacturer's own data.
(2) The resulting opening will vary, depending on profile and sash size. Tolerance: ± 2.5°.

Figure 1 Typical Yale Standard Friction Stays



2 Manufacture

2.1 The arms of the products are fastened to the slider using cold forged ferritic stainless steel rivets which are assembled by an impact riveting process. The assembled slider is made from acetal with an adjustable brass screw. A nylon end cap is staked onto the hinge.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control being operated by the manufacturer are being maintained.

2.3 The management systems of the manufacturer have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008.

3 Delivery and site handling

3.1 The products are packed in cardboard boxes, each containing up to 25 pairs of stays depending on size, and labelled with the BBA logo incorporating the number of this Certificate.

3.2 Boxes should be stored under cover in a clean area and suitably supported to avoid distortion or damage.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Yale Standard Friction Stays.

Design Considerations

4 Use

4.1 Yale Standard Friction Stays are suitable for use in top-hung and side-hung windows made from PVC-U, timber or aluminium, within the limits shown in Table 1. Windows must have an outer frame/sash design suitable for correct fixing of the stays using appropriate screws(1) through the profiles or reinforcement. The Certificate holder can advise on the suitability of window profiles. It is the responsibility of the specifier to ensure that the finished window meets any required safety specifications.

(1) Outside the scope of this Certificate.

4.2 The products are available in 13 to 14 mm and 16 to 18 mm stack heights, to suit the design of the window system.

5 Resistance to wear and fatigue

Yale Standard Friction Stays were tested for cyclic operation in accordance with BS EN 1191 : 2012, and achieved Class 3 — Heavy Duty when classified to BS EN 12400 : 2002 (see Table 2).

Table 2 Endurance results

Product code	Weight of sash tested (kg)	Comments
YS16-H (16 inches, side-hung)	24.0	Normal operation after 20, 000 cycles
YT24-H (24 inches, top-hung)	35.0	Normal operation after 20, 000 cycles

6 Resistance to mechanical loading

6.1 Selected samples from the range were tested on suitable windows in accordance with BS 6375-2 : 1987, BS 6375-2 : 2009 and BS EN 13126-6 : 2008 (see Table 3).

Table 3 Mechanical loading characteristics

Test method and year of Standard	Side-hung Standard Friction Stays YS16-H (16 inches)(1)	Top-hung Standard Friction Stays YT24-H (24 inches)(2)
Resistance to static torsion (BS 6375-2 : 2009)	Class 3	Class 3
Resistance to racking (BS 6375-2 : 2009)	Class 3	Class 3
Strength of maximum opening stops (BS 6375-2 : 1987)	Pass	Pass
Pull-in test (BS EN 13126-6 : 2008, clause 7.2)	Pass	Pass
Friction test (BS EN 13126-6 : 2008, clause 7.3)	Pass	Pass
Obstructed stay test (BS EN 13126-6 : 2008, clause 7.4)	Pass	Pass
Pull-in abuse test (BS EN 13126-6 : 2008, clause 7.5)	Pass	Pass
Static load test (BS EN 13126-6 : 2008, clause 7.9	Pass	N/A
Additional load test (BS EN 13126-6 : 2008, clause 7.10)	Pass	N/A

(1) Weight of tested sash, 24.0 kg; dimensions of tested sash, 710 mm wide by 1210 mm high.
(2) Weight of tested sash, 35.0 kg; dimensions of tested sash, 1140 mm wide by 1210 mm high.

6.2 If classification of mechanical strength of a particular window is required, the window itself should be tested in accordance with BS 6375-2 : 2009.

7 Maintenance

7.1 The products can be cleaned using a soft sponge and soapy water. Solvent-based, corrosive or abrasive cleaners must not be used. They should be lubricated at the time of installation using light machine oil, and then cleaned and lubricated at least every 5 years to minimise wear and to ensure smooth operation. Care should be taken to avoid applying lubricant to the sliders as this will impair their braking action.

7.2 If damage occurs, the products can be replaced by removing the fixing screws and replacing the hinge.

8 Durability

8.1 The products were tested for resistance to salt spray as defined in BS EN 1670 : 2007 and achieved Grade 3 — High corrosion resistance.

8.2 The products are constructed from durable materials and, when installed in accordance with this Certificate, will last the expected life of the window, where windows are installed in areas not subject to particularly corrosive conditions (such as coastal locations or near sources of industrial pollutants). In such cases, more durable materials, such as stainless steel number 1.4301 (austenitic) should be used.

8.3 The products may need to be replaced within the life of a window if they become damaged.

9 Reuse and recyclability

The products comprise ferritic stainless steel, which can be recycled.

Installation

10 General

10.1 Installation of Yale Standard Friction Stays must be carried out in accordance with the Certificate holder's instructions using suitable corrosion-resistant screws(1).

(1) Outside the scope of this Certificate.

10.2 The correct size of products should be chosen to suit the sash weight and height/width.

11 Procedure

The products are screwed first to the window sash and then to the outer frame.

Technical Investigations

12 Tests

Tests were carried out to determine:

- cyclic operation, in accordance with BS EN 1191 : 2012
- mechanical loading, in accordance with BS 6375-2 : 1987, BS 6375-2 : 2009 and BS EN 13126-6 : 2008
- resistance to salt spray, in accordance with BS EN 1670 : 2007.

13 Investigations

13.1 An assessment was made of the durability of the products.

13.2 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

BS 6375-2 : 1987 *Performance of windows — Specification for operation and strength characteristics*

BS 6375-2 : 2009 *Performance of windows and doors — Classification for weathertightness and guidance on selection and specification*

BS EN 1191 : 2012 *Windows and doors — Resistance to repeated opening and closing — Test method*

BS EN 1670 : 2007 *Building hardware — Corrosion resistance — Requirements and test methods*

BS EN 10088-2 : 2014 *Stainless steels — Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

BS EN 12400 : 2002 *Windows and pedestrian doors — Mechanical durability — Requirements and classification*

BS EN 13126-6 : 2008 *Building hardware — Requirements and test methods for windows and doors height windows — Variable geometry stay hinges (with or without a friction stay)*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

14 Conditions

14.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

14.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

14.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

14.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

14.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

14.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

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