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Agrément Certificate

17/5404

Product Sheet 4

YALE FRICTION HINGES

YALE EGRESS/EASY CLEAN FRICTION STAYS

This Agrément Certificate Product Sheet⁽¹⁾ relates to Yale Egress/Easy Clean Friction Stays, for use as friction hinges for PVC-U, timber or aluminium windows, to allow opening of side-hung sashes with the option of an extended opening for escape in an emergency.

(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

Means of escape — windows fitted with the products can provide adequate means of escape by providing a clear opening of not less than 0.33 m² (see section 4.2).

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 6).

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 7).

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 9).



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.*

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Regulations

In the opinion of the BBA, Yale Egress/Easy Clean Friction Stays, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulation in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: Comment:	B1	Means of warning and escape The products can contribute to satisfying this Requirement. See section 4.2 of this Certificate.
Requirement: Comment:	K5.4	Safe access for cleaning of windows, etc (applicable to England only) In buildings other than dwellings, the products can contribute to satisfying this Requirement, allowing opening lights to be safely cleaned from inside the building. See section 5 of this Certificate.
Requirement: Comment:	N3	Safe access for cleaning windows etc (applicable to Wales only) In buildings other than dwellings, the products can contribute to satisfying this Requirement, allowing opening lights to be safely cleaned from inside the building. See section 5 of this Certificate.
Regulation: Comment:	7	Materials and workmanship The products are acceptable. See section 9.2 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: Comment:	8(1)(2)	Durability, workmanship and fitness of materials The products satisfy this Regulation. See sections 8.1 and 9.2 and the <i>Installation</i> part of this Certificate.
Regulation: Standard: Comment:	9 2.9	Building standards applicable to construction Escape The products can contribute to satisfying this Regulation, with reference to clause 2.9.4 ⁽¹⁾ . See section 4.2 of this Certificate.
Standard: Comment:	4.18(c)	Danger from accidents The products can contribute to satisfying this Standard, allowing opening lights to be safely cleaned from inside the building, with reference to clause 4.8.3 ⁽¹⁾⁽²⁾ . See section 5 of this Certificate.

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation: Comment:	23	Fitness of materials and workmanship The products are acceptable. See section 9.2 and the <i>Installation</i> part of this Certificate.
Regulation: Comment:	33(c)	Means of escape The products can contribute to satisfying this Regulation. See section 4.2 of this Certificate.

Regulation:	99	Safe means of access for cleaning glazing
Comment:		The products can contribute to satisfying this Regulation, allowing opening lights to be safely cleaned from inside the building. See section 5 of this Certificate.

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 Egress/Easy Clean 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 Egress/Easy Clean Friction Stays (see Figure 1) are made from stainless steel, number 1.4016 (ferritic) to BS EN 10088-2 : 2014. The sash opens to a nominal 81° (12 inches stays) and 84° (16 inches stays) for emergency exit. The built-in release lever mechanism allows the sash to be moved for cleaning. Sizes are given in Table 1.

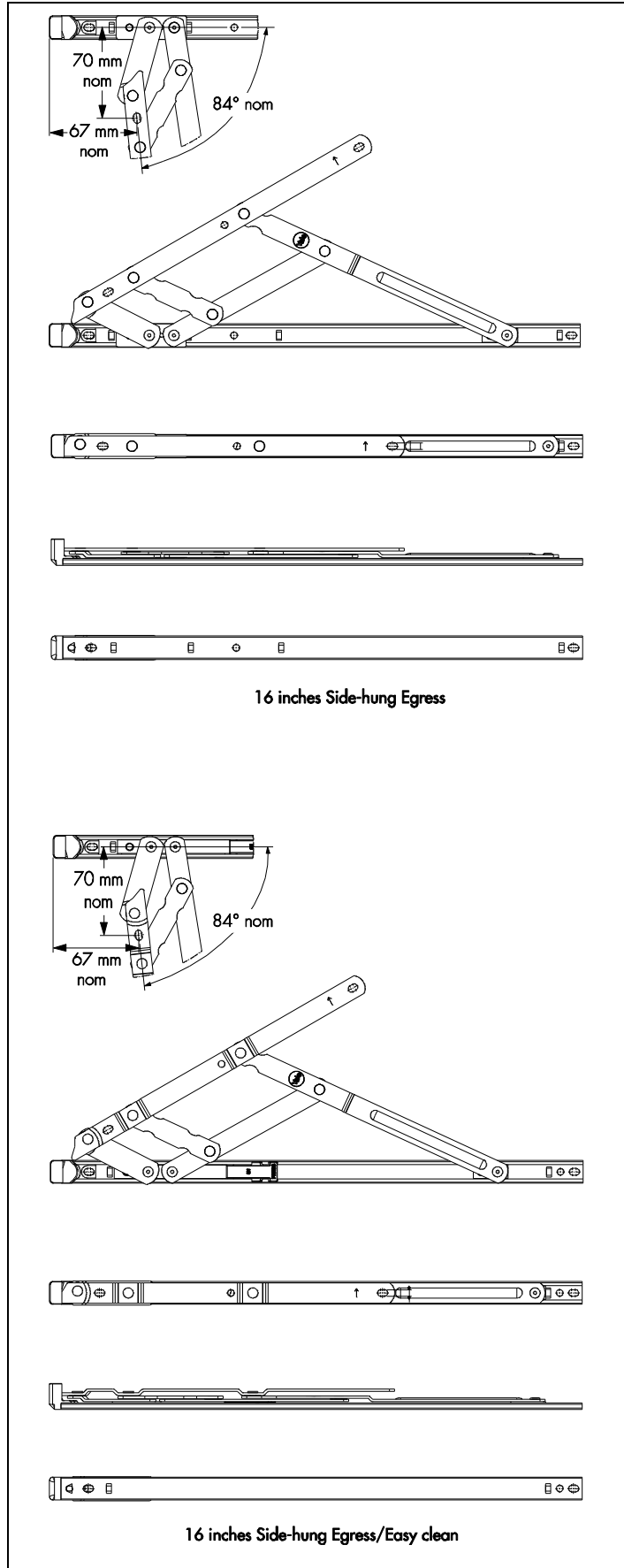
Table 1 Yale Egress/Easy Clean Friction Stays — range⁽¹⁾

Product code	Stack height (mm)	Size (inches)	Maximum sash weight (kg)	Minimum sash width (mm)	Maximum sash width (mm)	Maximum opening angle ⁽²⁾ (°)
Egress						
YEO12	13 - 14	12	22	300	600	81
YEO12-H6	16 - 17					
YEO12-H7	17 - 18					
YEO16	13 - 14	16	24	400	700	84
YEO16-H6	16 - 17					
YEO16-H7	17 - 18					
Egress/Easy Clean						
YEC12	13 - 14	12	22	300	600	81
YEC12-H6	16 - 17					
YEC12-H7	17 - 18					
YEC16	13 - 14	16	24	400	700	84
YEC16-H6	16 - 17					
YEC16-H7	17 - 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 Egress/Easy Clean Friction Stay



2 Manufacture

2.1 The arms of the products are fastened to the main slider using cold forged ferritic stainless steel rivets which are assembled by an impact riveting process. The main and secondary sliders are made from acetal with an adjustable brass screw. A nylon end cap is staked onto the hinge. For the Easy Clean variant, an additional zinc die-cast lever is attached to the main slider by a moulded leaf spring and interacts with cut-outs in the track.

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 Egress/Easy Clean Friction Stays.

Design Considerations

4 Use

4.1 Yale Egress/Easy Clean Friction Stays are suitable for use in 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.

Means of escape



4.2 The products can be fitted to side-hung windows to have a clear opening of not less than 0.33 m², to allow for emergency egress. Windows of this type shall have a clear opening at least 450 mm high and at least 450 mm wide.

4.3 The products are available in 13 to 14 mm, 16 to 17 mm and 17 to 18 mm stack heights, to suit the design of the window system.

5 Safety



Yale Egress/Easy Clean Friction Stays are manufactured to allow the opening sash to be opened in such a way to allow safe cleaning of the window from inside the building. To achieve this, the slider can be moved by hand to the Easy Clean position. Consideration should be given to reach capabilities and the danger of over-reaching (see BS 8213-1 : 2004).

6 Resistance to wear and fatigue

Yale Egress/Easy Clean 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
YEC16-H7 (16 inches, side-hung)	24.0	Normal operation after 20, 000 cycles

7 Resistance to mechanical loading

7.1 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 YEC16-H7 (16 inches) ⁽¹⁾
Resistance to static torsion (BS 6375-2 : 2009)	Class 3
Resistance to racking (BS 6375-2 : 2009)	Class 3
Strength of maximum opening stops (BS 6375-2 : 1987)	Pass
Pull-in test (BS EN 13126-6 : 2008, clause 7.2)	Pass
Friction test (BS EN 13126-6 : 2008, clause 7.3)	Pass
Obstructed stay test (BS EN 13126-6 : 2008, clause 7.4)	Pass
Pull-in abuse test (BS EN 13126-6 : 2008, clause 7.5)	Pass
Static load test (BS EN 13126-6 : 2008, clause 7.9)	Pass
Additional load test (BS EN 13126-6 : 2008, clause 7.10)	Pass

(1) Weight of tested sash, 24 kg; dimensions of tested sash, 710 mm wide by 1210 mm high.

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

8 Maintenance



8.1 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.

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

9 Durability

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



9.2 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, friction stays made from more durable materials, such as stainless steel number 1.4301 (austenitic), should be used.

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

10 Reuse and recyclability

The products are made from ferritic stainless steel, which can be recycled.

Installation

11 General

11.1 Installation of Yale Egress/Easy Clean 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.

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

12 Procedure

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

Technical Investigations

13 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.

14 Investigations

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

14.2 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 8213-1 : 2004 *Windows, doors and rooflights — Design for safety in use and during cleaning of windows, including door-height windows and roof windows — Code of practice*

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*

15 Conditions

15.1 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.

15.2 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.

15.3 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.

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

15.5 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.

15.6 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.