

# ASSA ABLOY

Test Report No: TR 251-14  
Date: 9<sup>th</sup> September 2014

Test of:  
Smart Systems Ltd single pivot hinged  
door set with 2 x Adams Rite Sentinel 6  
locks and low aluminium threshold

Tested to: PAS 24:2012

Prepared for: Mark Walford

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## AUTHORISATION

Tests performed by: Richard Darrell & Ian Bridge

Report issued by: Richard Darrell (Senior Test Engineer)

Signed:



Date: 9<sup>th</sup> September 2014

For and on behalf of ASSA ABLOY UK Test Laboratory

Report authorised by: Ian Bridge (Laboratory Manager)

Signed:



Date: 9<sup>th</sup> September 2014

For and on behalf of ASSA ABLOY UK Test Laboratory

Date report issued: 9<sup>th</sup> September 2014

**ASSA ABLOY UK Test Laboratory**

Well Lane

Wednesfield

West Midlands

WV11 1TB

Telephone + 44 (0) 1902 867730

Fax + 44 (0) 1902 867789

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## Origin of Request

### Client Details

Company Name	Smart Systems Ltd
Address	Arnolds Way Yatton North Somerset
Post Code	BS49 4QN
Contact	Mark Walford

### Order Details

Order Number	N/A
Dated	N/A

## Test Details

Product	Smart Systems Ltd single pivot hinged door set with 2 x Sentinel 6 locks and low aluminium threshold
Model	
Marking / Brand	Smart Systems Ltd
Manufacturer	Smart Systems Ltd
Date of Manufacture	Not known
Other information	None
Test Specification / Details	PAS 24 : 2012 – Enhanced security performance requirements for door sets and windows in the UK
Date samples received	4 <sup>th</sup> September 2014
Date test commenced	8 <sup>th</sup> September 2014
Date test completed	8 <sup>th</sup> September 2014
Job Number	2014-267
Any special test requirements	None

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### Sample Details

Sample Details:	Smart Systems Ltd single pivot hinged door set with 2 x sentinel 6 locks and low aluminium threshold
Fabricator:	Smart Systems Ltd
Material:	Aluminium Extrusions with Polyamide Thermal Break. IMP 210 Jamb section IMP 310 infill strip IMP 110 Head section. IMP 011 over head closure box IMP 035 AFT Adaptor IMP 036N AFT Stile IMP 039 Primary Lock Stile. IMP 300 Stile Infill IMP 120 Top Rail IMP 027 Bottom Rail IMP 034 Midrail IMP 411 Threshold GL 526 Glazing bead
Finish:	White
Lock:	ACIM 440 Sentinel 6 x 2 ACIM 008 door keep x 2
Hinges:	ACIM 425B Closure Kit.
Cylinder:	ACIM 442 Cylinder ACIM 443 Cylinder Guards
Handle:	ACMX05522 200mm Pad Handles
Fixings:	Hinge to Frame : Adams Rite Closure Kits. Hinge to leaf : Adams Rite Closure Kits. Lock : Sentinel six lock Kits. With Smarts ACIM 022 fixing brackets. Keeps :ACET 190 Polyamide screw 4.5x 45mm. from SFS. Handle : ACIM 030 M6 x 100mm. From Smarts. Glazing/Panel fixings : Glazing Bead Fixings ACET 060 No 7 25.5mm. Supplier : Smarts.
Letterplate:	N/A
Weather sealing:	ACVG 31 External gasket ACVG 34 Internal Wedge
Glass:	Total thickness : 28mm Clear Toughened. 6/16/6 Individual thickness (including air gap)
Glazing system:	VG12 External Glazing Beads GL 536 Internal Glazing Beads
Sample dimensions:	Frame : 1200mmW x 2500mmH Door : 1065mmW x 2408mmH



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## Test Conclusions

Clause No.	Description	Compliance / Comment
A.3	Security hardware and cylinder test	Yes
B.4.3	Manipulation test	Yes
B.4.4.2	Infill medium removal test – Manual	Yes
B.4.4.3	Infill medium removal test – Mechanical	Yes
B.4.4.4	Infill Medium Removal test – Manual Cutting	Yes
B.4.5	Mechanical loading test	Yes
B.4.6	Manual check test	Yes
B.4.7	Additional mechanical loading test	N/A
B.4.8	Soft body impact test	Yes
B.4.9	Hard body test	Yes
7.2	Letter plate test	N/A

### Classification (according to 4.4)

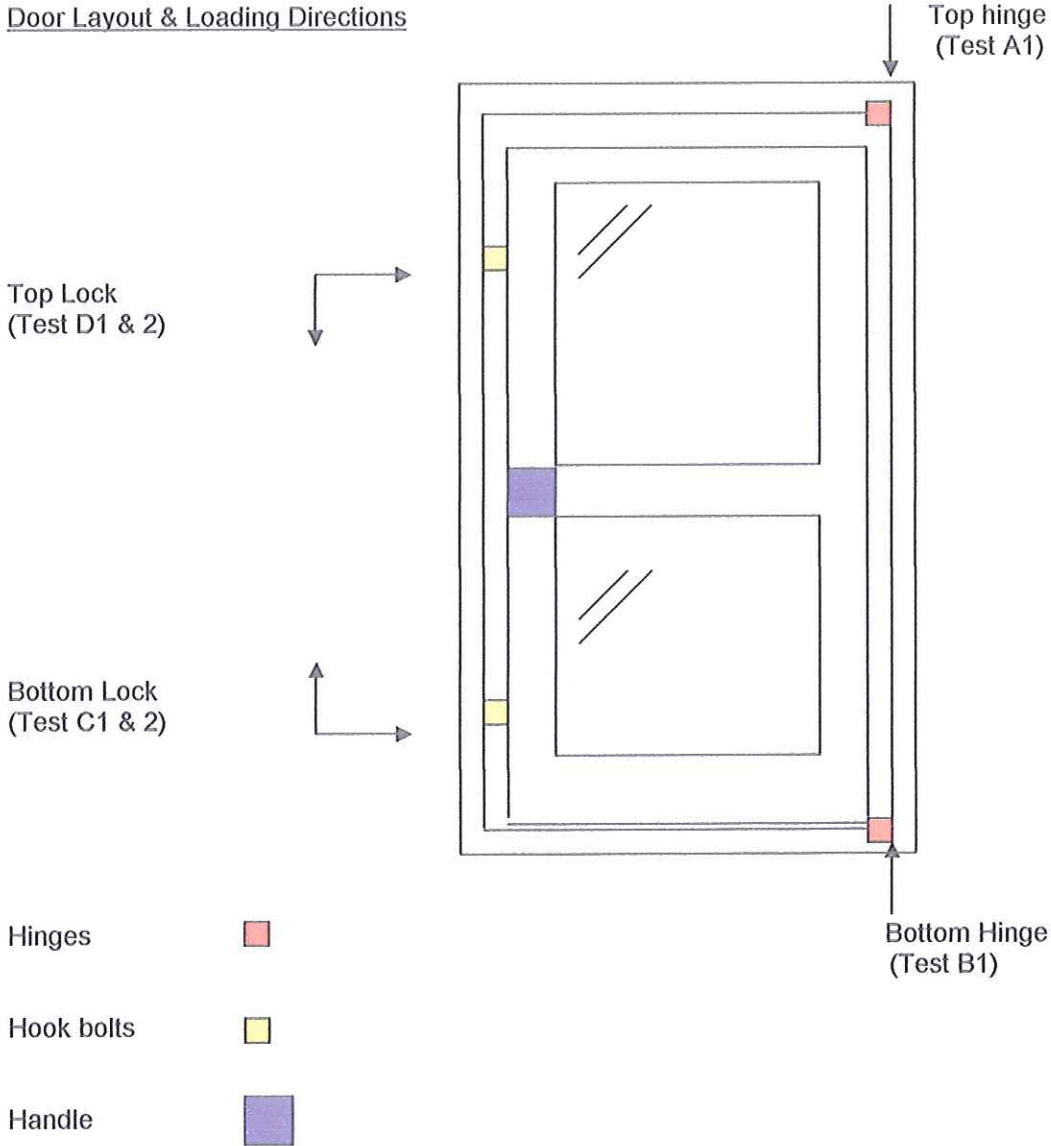
Without letter plate - D KT

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### Test Results

Door Layout & Loading Directions



Laboratory Temperature: 18°C

All hardware was checked for correct operation prior to the commencement of the test

B.4.3 - Manipulation Test

Attack the bottom lock using the paint scrapper – 3 minutes

The paint scrapper and flat bladed screwdrivers were used to attack the bottom pivot hinge – 3 minutes

No progress was made with the techniques and testing was terminated after 6 minutes total working time. Pass

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#### B.4.4 – Cutting & Infill Medium Removal Test

##### B.4.4.2 – Infill Medium Removal Test – Manual test

The paint scrapper was used to remove all external gasket from the bottom glazed panel and from the bottom and sides of the top glazed panel in an attempt remove the internal gaskets and beads by creating a gap. Following 3 minutes the infills remained secure and no beads were removed. Pass

##### B.4.4.3 – Infill Medium Removal Test – Mechanical test

The 4 corners of the bottom glazed unit were loaded with 2 kN for a period of 8-12 seconds. The infill showed no signs of damage or displacement following the test. Pass

##### B.4.4.4 – Manual Cutting test

The 6mm wood chisel was used in an attempt to create a hole through the external fascia of the leaf near the bottom cylinder escutcheon to gain entry to the lock. Following 3 minutes no hole was produced through to the locking unit. Pass

#### B.4.5 – Mechanical Load Test

##### Test A1– Top Pivot

Load Positions	Requirement	Actual	Assessment
Parallel to plane at right angles to the edge	1.5kN (153Kg)	153Kg	----
Perpendicular to plane	4.5kN	4.517kN	Pass

##### Test B1 – Bottom Pivot

Load Positions	Requirement	Actual	Assessment
Parallel to plane at right angles to the edge	1.5kN (153Kg)	153Kg	----
Perpendicular to plane	4.5kN	4.508kN	Pass

##### Test C1 – Bottom Lock

Load Positions	Requirement	Actual	Assessment
Parallel to plane along the edge	1.5kN (153Kg)	153Kg	----
Perpendicular to plane	4.5kN	4.509kN	Pass

##### Test C2 – Bottom Lock

Load Positions	Requirement	Actual	Assessment
Parallel to plane at right angles to the edge	1.5kN (153Kg)	153Kg	----
Perpendicular to plane	4.5kN	4.510kN	Pass

##### Test D1 – Top Lock

Load Positions	Requirement	Actual	Assessment
Parallel to plane along the edge	1.5kN (153Kg)	153Kg	----
Perpendicular to plane	4.5kN	4.514kN	Pass

##### Test D2 – Top Lock

Load Positions	Requirement	Actual	Assessment
Parallel to plane at right angles to the edge	1.5kN (153Kg)	153Kg	----
Perpendicular to plane	4.5kN	4.512kN	Pass



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#### B.4.6 – Manual Check Test

The door was attacked between the bottom lock and top lock, the bottom corner of the lock side, along the threshold near the bottom pivot and between the bottom pivot hinge and top pivot hinge using the two nail bars. Each area was attacked for 3 minutes resulting in a total attack time of 12 minutes.  
Door remained secure and no weaknesses were identified. Pass

#### B.4.8 – Soft Body Impact Test

Impact points were marked on the centreline of the door at 0.8m, centre of the midrail and centre of the top infill. The door bolts were thrown and locked.

Each impact point was struck 3 times with the impactor. In each instance the door remained closed Pass

#### B.4.9 – Hard Body Impact Test

Impact points were marked on the door as follows;

- at each corner of the leaf
- on the door at each hinge point
- on the door at each locking point
- at the midrail
- at the cylinder

The door bolts were thrown and locked.

Each impact point was struck 3 times with the impactor. In each instance the door remained closed Pass

#### A.3 – Security Hardware and cylinder Test

##### A.3.2 - Part 1

Carried out on sample 2

The test consists of 3 activities

- (1) Attempt to remove, dislodge or gain access to the cylinder by attacking any item protecting the cylinder
- (2) Attempt to break and defeat the cylinder by applying a twisting and/or a bend force
- (3) If access to the internal workings can be gained then attempt to defeat the lock and gain access by operating the mechanism

The total attack time shall not exceed 3 minutes and the total rest time shall not exceed 7 minutes

An attempt was made to create a gap behind the escutcheon so the torque bar could be used but this was unsuccessful – 3 minutes

Total test time 3 minutes. Cylinder remained secure. Pass

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### A.3.3 - Part 2

Carried out on sample 2

The test consists of 4 activities

- (1) Attempt to remove, dislodge or gain access to the cylinder attacking any item protecting the cylinder. (Covered by part 1 test above)
- (2) Attempt to screw the self cutting traction screw (maximum of 2 allowed) into any exposed part of the cylinder so that it provides suitable fixing for activity (4).
- (3) Attempt to break and defeat the cylinder by applying a nominal axial force to the screw using the hooked head attachment and torque gauge.
- (4) If the cylinder is broken attempt to override the lock mechanism.

The total attack time shall not exceed 3 minutes and the total rest time shall not exceed 7 minutes

A 3.9mm self cutting screw was inserted into the keyway – 1 minute 27seconds

The screw was then levered with the torque wrench until the screw lost traction and pulled clear of the cylinder – 1 minute 33 seconds

Total test time 1 minute 22 seconds. The door remained secure

Pass

### Test Equipment

The pieces of equipment used to carry out the tests are referenced below.

- LEN 195 – loading frame
- LEN 082 – max / min thermometer
- LEN 087 – PAS 24 marking out block
- LEN 090 – tool sets A & B
- LEN 091 – tool set (clause A.7)
- LEN 109 – torque wrench
- LEN 118 – wood block
- LEN 156 – Spring balance
- LEN 177 – Curved jaw grips

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### Pictures



Samples received in a good condition



Sample following clause A.3.2 part 1



Sample during clause A.3.3 Part 2