

# ASSA ABLOY

Test Report No: TR 264-14  
Date: 15<sup>th</sup> September 2014

Test of:

Smart Systems Ltd double pivot hinged  
door set

Tested to:

PAS 24:2012

Prepared for:

Mark Walford

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

Tested to: PAS 24:2012

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## AUTHORISATION

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Report issued by: Richard Darrell (Senior Test Engineer)

Signed: *R Darrell*

Date: *15<sup>th</sup> September 2014*

For and on behalf of ASSA ABLOY UK Test Laboratory

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Signed: *I. Bridge*

Date: *15<sup>th</sup> September 2014*

For and on behalf of ASSA ABLOY UK Test Laboratory

Date report issued: 15<sup>th</sup> September 2014

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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 double 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	9 <sup>th</sup> September 2014
Date test completed	10 <sup>th</sup> September 2014
Job Number	2014-269
Any special test requirements	None

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### Sample Details

Sample Details:	Smart Systems Ltd double 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 040 Secondary 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: 2457mmW x 2500mmH Each Door: 1150mmW 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)

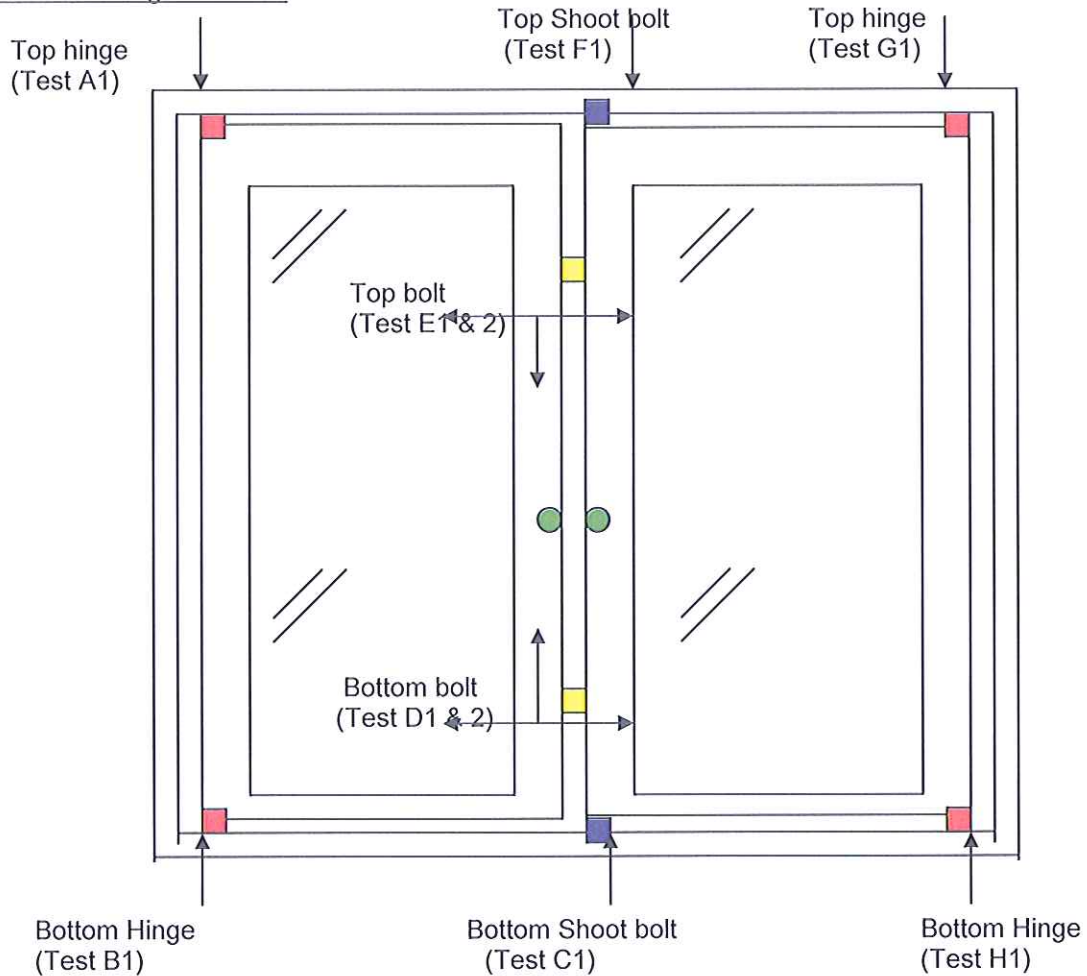
Without letter plate - D K

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## Test Results

### Door Layout & Loading Directions



- Hinges
- Master Lock
- Shoot Bolts
- Handles

Laboratory Temperature: 20°C

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

### B.4.3 - Manipulation Test

- Attempt to operate bottom lock bolt with impacts with the paint scrapper – 3 minutes
- Attempt to operate bottom shoot bolt with the paint scrapper – 3 minutes
- Attack the bottom pivot point with the paint scrapper – 3 minutes

No progress was made with the techniques and testing was terminated after 9 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 the sides and bottom external gaskets from the master leaf glazed panel. Following 3 minutes the infill remained secure Pass

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

The 4 corners of the glazed unit on the slave leaf were loaded with 2kN 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 skin of the leaf near the lower locking unit just above the cylinder. Following 3 minutes only the first skin was damaged with no access gained 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	4.507kN	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	4.501kN	Pass

##### Test C1 – Bottom Shoot Bolt

Load Positions	Requirement	Actual	Assessment
Parallel to plane at right angles to the edge	1.5kN (153Kg)	153Kg	----
Perpendicular to plane	4.5kN	4.504kN	Pass

##### Test D1 – Bottom hook

Load Positions	Requirement	Actual	Assessment
Parallel to plane along the edge	1.5kN (153Kg)	153Kg	----
Perpendicular to plane	4.5kN	4.520kN	Pass

##### Test D2 – Bottom Hook

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

##### Test E1 – Top Hook

Load Positions	Requirement	Actual	Assessment
Parallel to plane along the edge	1.5kN (153Kg)	153Kg	----
Perpendicular to plane	4.5kN	4.502kN	Pass

##### Test E2 – Top Hook

Load Positions	Requirement	Actual	Assessment
Parallel to plane at right angles to the edge	1.5kN (153Kg)	153Kg	----
Perpendicular to plane	4.5kN	4.511kN	Pass



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#### Test F1– Top Shoot bolt

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 G1 – 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	4.505kN	Pass

#### Test H1 – 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	4.507kN	Pass

#### B.4.6 – Manual Check Test

The door was attacked below the top hook bolt, the bottom corner of the lock side master leaf, near the bottom pivot along the threshold of the master leaf, between the bottom pivot hinge and top pivot hinge of the slave leaf and near the pivot hinge along the threshold of the slave leaf using the two nail bars. Each area was attacked for 3 minutes resulting in a total attack time of 15 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 each door at 0.8m, 1.25m and 1.7m

Impact points were also marked on the junction between the active and inactive leaves at 0.8m, 1.25m and 1.7m

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 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

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

#### A.3.2 - Part 1

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

The flat bladed screwdriver was used in an attempt to create a gap between the escutcheon and the fascia

Total test time 3 minutes. Cylinder and escutcheon remained secure

Pass

#### A.3.3 - Part 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 10 seconds

The screw was then levered with the torque wrench until the screw lost traction and pulled from the cylinder – 1 minute 25 seconds

Total test time 1 minute 25 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 078 – Spring balance
- 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



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Pictures



Samples were received in a good condition



Sample before and following clause A.3.2 part 1

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Sample during clause A.3.3 Part 2



Sample following clause B.4.4.4