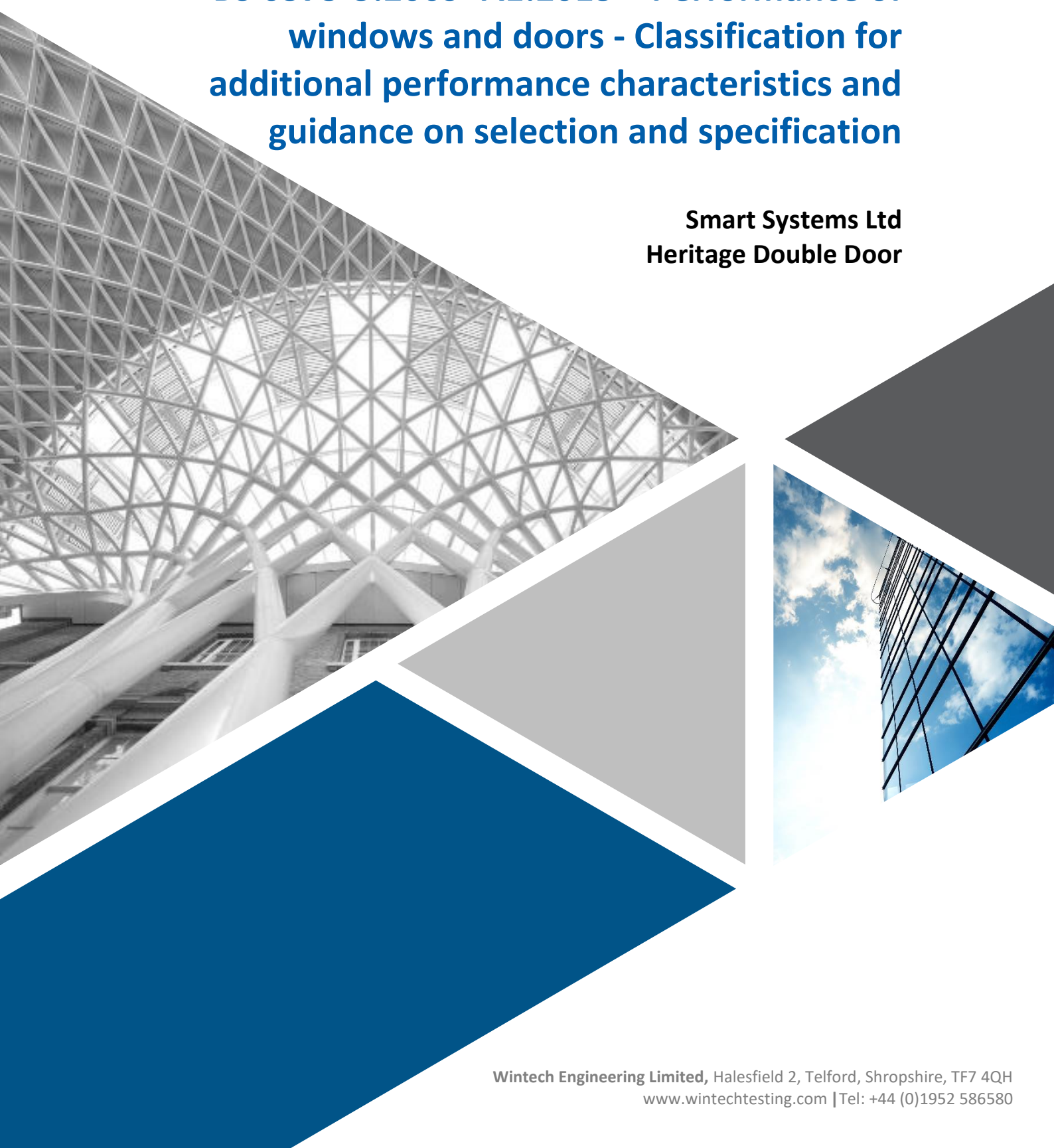


Technical Report – R20604
BS 6375-3:2009+A1:2013 – Performance of
windows and doors - Classification for
additional performance characteristics and
guidance on selection and specification

Smart Systems Ltd
Heritage Double Door





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1. Introduction

This report describes tests carried in order to determine compliance with BS 6375-3:2009+A1:2013.

| Test Details | |
|--------------------|---|
| Customer: | Smart Systems Ltd Arnolds Way Yatton North Somerset BS49 4QN |
| Product Tested: | Heritage Double Door |
| Date of Test: | 15 th October 2019 |
| Test Conducted at: | Wintech Engineering Limited Halesfield 2 Telford Shropshire TF7 4QH |
| Test Conducted by: | D Knight - Senior Laboratory Technician D Adams - Engineering Technician |

| Report Authorisation | |
|----------------------|---|
| Report Compiled by: | D Price Senior Engineering Associate  |
| Authorised by: | M Witkowska Deputy Quality Manager  |

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2. Summary of Results

The following summarises the results of testing carried out, in accordance with BS 6375-3:2009+A1:2013.

The performance of the sample tested has been assessed against the criteria described in below standards. The results as reported will be used to determine the conformance or non-conformance with the specification without making any consideration of the uncertainty.

| Test Description | Result |
|--|--------|
| Annex A – Basic security test | Pass |
| Annex C – Closure against obstruction test | Pass |

More comprehensive details are reported in Section 6.

Note: These results are valid only for the conditions under which the test was conducted

Note: All measurement devices, instruments and other relevant equipment were calibrated and traceable to National Standards.

3. Description of Test Sample

The description of the test sample in this section has been supplied by Smart Systems Ltd and has not been verified by Wintech Engineering Limited.

See Section 7 for test sample drawings as provided by the customer.

| | |
|--|-------------------------------|
| Project number: | 20604 |
| Product range name: | Alitherm Heritage Full Frame. |
| Configuration: | Double door |
| Opening direction: | Open in |
| Product manufacturer: | Smart systems |
| Is the sample typical of normal production? | yes |
| Please define the closing condition of the sample i.e. closed, fastened, latched, locked and secured etc. | locked |

Outer Frame

| | | | |
|---------------------------------|--------|---------------------------------|--------------------------|
| Outer frame width: | 1800mm | Outer frame material: | Aluminium |
| Outer frame height: | 2200mm | Outer frame gasket | |
| Outer frame Part Numbers | W20015 | Gasket type: | EDPM |
| Top: | W20015 | Manufacturer: | Smarts |
| Bottom: | W20015 | Product name: | Bubble Gasket |
| Lock side: | W20015 | Product code: | ACVL031N |
| Hinge side: | W20015 | Threshold | |
| Outer frame section size | | Manufacturer: | SMARTS |
| Width: | 33mm | Product name: | Alitherm Heritage |
| Depth: | 47mm | Product code: | W20015 |
| Reinforcing: | NA | Material: | Aluminium |
| Manufacturer: | | Outer frame joint method | |
| Product name: | | Head: | Glue and Crimp |
| Product code: | | Foot: | Screw Joint with bracket |
| Material: | | Surface Finish | Powder coat |

Leaf

| | | | |
|------------------------------------|------------|-----------------------------------|-------------------|
| Leaf/Casement width: | 883mm | Leaf/ Casement material: | Aluminium |
| Leaf/ Casement height: | 2175mm | Leaf/ Casement gasket | |
| Leaf/ Casement Part Numbers | | Gasket type: | EDPM |
| Top: | W20129 | Manufacturer: | Smarts |
| Bottom: | W20129 | Product name: | Flipper Gasket |
| Lock side: | W20129 | Product code: | ACET160 |
| Hinge side: | W20129 | Leaf Transom and lockbox | |
| Leaf/ Casement section size | | Manufacturer: | Smarts |
| Width: | 54mm | Product name: | Alitherm Heritage |
| Depth: | 59mm | Product code: | W20135, W20038 |
| Mullion | | Material: | Aluminium |
| Manufacturer: | Smarts | Leaf/Casement joint method | |
| Product name: | Mullion | Head: | Glue and Crimp |
| Product code: | W20149 | Foot: | Glue and Crimp |
| Material: | Aluminium. | Surface Finish | Powder Coating |

Glazing

| | | | |
|-------------------|---|-----------------------------|--|
| Glass unit | | Glazing gasket | |
| Manufacturer: | Ashton Glass | Gasket type: | Glazing gasket |
| Inner thickness: | 6mm | Manufacturer: | Smarts |
| Spacer material: | Aluminium | Product name: | Alitherm Heritage |
| Outer thickness: | 6mm | Product code: | ACET 843 E Gasket ACET 840 Wedge Gasket |
| Unit sizes: | 798mm x 789mm 731mm x 281mm 798mm x 978mm | Glazing clip | NA |
| Bead | | Manufacturer: | |
| Manufacturer: | Smarts | Product name: | |
| Product name: | Alitherm Heritage | Product code: | |
| Product code: | W20171 | Glazing tape details | NA |
| Bead size: | 15.5mm x 8.5mm | Manufacturer: | |
| Bead material: | Aluminium | Product name: | |
| | | Product code: | |

Hardware

| | Manufacturer: | Product description: | Product code: | Quantity: |
|--------------------------|---------------|---------------------------------------|-----------------------|-----------|
| Hinges: | Banks | Open in Hinge | ACW20162 | 8 |
| Hinge fixing: | Banks | M4 X 20MM M4 Riv Nut | Supplied with hinge | |
| Hinge protectors: | Fuhr | | ACW20375 | 8 |
| Hinge protector fixings: | Smart | M4 x 20MM M4 Riv Nut, Fixing plate | | |
| Locking hardware: | Fuhr | Primary Door Lock | ACW20465 | 1 |
| | | Secondary Door Lock | ACW20466 | 1 |
| | | Top Shoot bolt | ACDV738 | 2 |
| | | Bottom Shootbolt | ACDV737 | 2 |
| Locking hardware fixing: | Smarts | M4 x 25MM M4 Insert | | 16 |
| Cylinder: | ERA | 45/40 Three Star Cylinder | ACCY304553 | 2 |
| Cylinder fixing: | | M5 X 100MM | | 2 |
| Handle: | Trojan | Lever/Lever. | ACW20061 | 2 |
| Handle fixings: | | M5X70mm | Supplied with handles | 6 |
| Touch Bar | NA | | | |
| Cylinder Support | NA | | | |
| Center Keep | Fuhr. | Center Keep | ACW20066 | 1 |
| Keeps: | Fuhr | Supplied with locks | | |
| Keep fixings: | Smarts | Lock keeps | No .8 x 32mm | 15 |
| | | ShootBolt Keeps | No.7 x 25mm | 11 |
| | | Center Keep | No.8 x 32mm | 3 |
| Drip bar: | NA | | | |
| Drip bar fixings: | NA | | | |
| Run Up Blocks | Smart | Run Up Blocks | ACET380 | 4 |

Confirmation

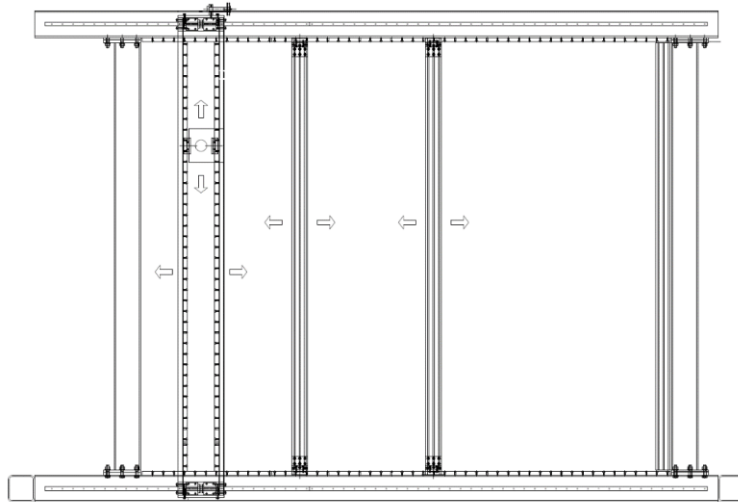
| | |
|---|------|
| Please confirm that the samples provided for testing are representative of standard production? | Yes. |
|---|------|

4. Test Arrangement

4.1 Test Rig

The test sample was supplied mounted in 100 x 50 mm timber sub-frame in accordance with manufacturer's installation requirements. It was fitted into the test rig, shown below which was constructed to meet the requirements of the test specification and was fitted plumb, square and without twist or bends.

Figure 1 – Test rig used for testing



4.2 Attack Tools (defined in Annex A of BS 6375-3:2009+A1:2013)

- A.2.1 Assorted mild steel wire, each not more than 2 mm in diameter and not more than 700 mm in length.
- A.2.2 Two credit cards, of size (55 ± 5) mm \times (85 ± 5) mm and (0.7 ± 0.3) mm thick.
- A.2.3 Two paint scrapers, with a blade width of approximately (75 ± 15) mm width.
- A.2.4 One craft knife, with a maximum overall length of 180 mm, a straight blade (0.6 ± 0.1) mm thick and an exposed blade of length (28 ± 7) mm, e.g. a Stanley®-trimming type knife⁴.
- A.2.5 Two flat-blade screwdrivers, of length (150 ± 20) mm overall, a shank length of (75 ± 15) mm, a shank diameter of (3 ± 0.5) mm and a blade width of (3 ± 1) mm. The shank shall be of vanadium/chrome tool grade steel.
- A.2.6 One flat-blade screwdriver, of length (200 ± 20) mm overall, a shank diameter of (6 ± 1) mm and a blade width of (6 ± 1) mm.
- A.2.7 One cross-point screwdriver, of length (200 ± 20) mm overall, a shank diameter of (6 ± 1) mm and point size 2.
- A.2.8 One cross-head screwdriver, of length (200 ± 20) mm overall, a shank diameter of (6 ± 1) mm and point size PZ2 (posi-drive).
- A.2.9 One brick bolster, of length (250 ± 25) mm and a blade width of (60 ± 15) mm.

4.3 Closure against Obstruction Equipment (defined in Annex C of BS 6375-3:2009+A1:2013)

- C.2.1 Aluminium block, of size $(50 \times 50 \times 10)$ mm ± 1.0 mm.
- C.2.2 Weight and pulley system, capable of applying 200 N with an accuracy of $\pm 2\%$.

4.4 Temperature

A digital data logger capable of measuring temperature with an accuracy of $\pm 1^\circ\text{C}$ was used.

5. Test Procedures

5.1 Basic Security Test

The objective of this test was to establish that there is no inherent vulnerability in the design of the window or doorset, which from the outside would permit entry by defeating the glazing and or locking system.

The tools defined in section 4.2 were used in order to gain entry through the window or doorset.

The test total test time was limited to a total of 3 minutes.

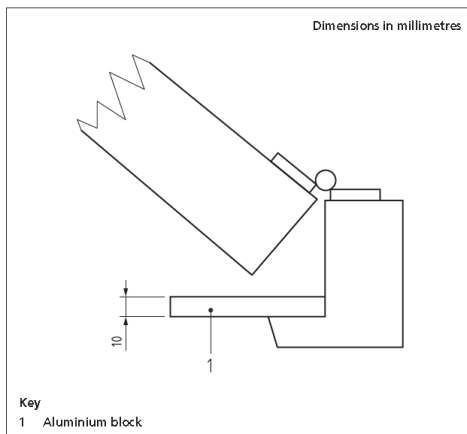
5.2 Closure against Obstruction Test

The objective of this test was to determine any damage resulting from the door leaf being closed against an object.

An Aluminium block was placed in the gap between the leaf and bottom of the hinge side jamb as shown in Figure 2. A load of 200 N was applied in the closing direction at the handle, perpendicular to the plane of the frame. The load was held in place for a period of 15 +/- 5 seconds.

A check of operating forces was carried out before and following the test in order to assess any change in operating performance.

Figure 2 – Closure against obstruction



6. Test Results

6.1 Lab Conditions

The conditions measured inside the laboratory were as follows:

| Temperature °C | Humidity %rh |
|-------------------|-----------------|
| 18.8 | 53.8 |

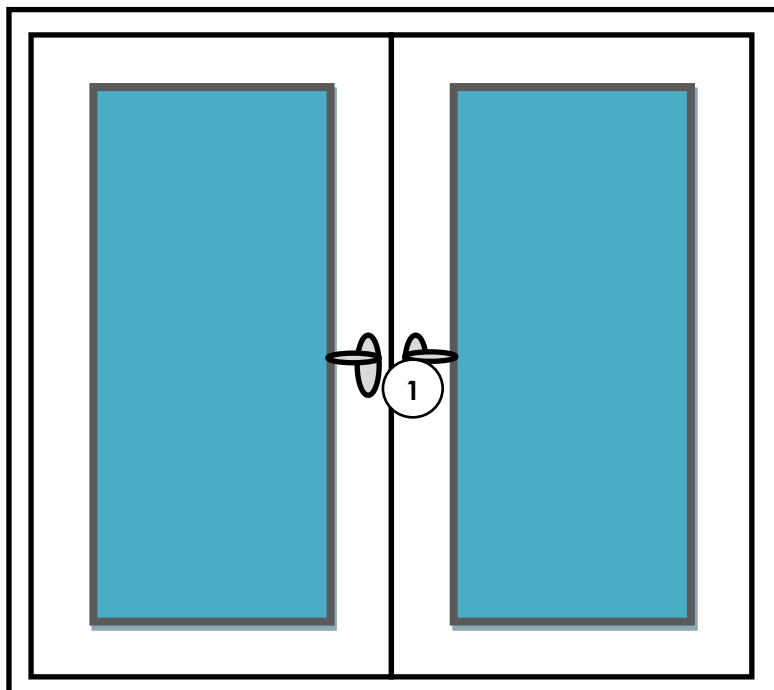
6.2 Basic Security Test

Attempts were made from the external face to gain entry through the sample in accordance with Annex A of BS 6375-3:2009+A1:2013. The results are as follows:

Table 1

| Location | Description of method used | Attack time (minutes) |
|---|---|-----------------------|
| 1 – Hinge/Dogbolt | Using 1 x paint scraper to try and manipulate the dead bolt. No entry gained. | 3:00 |
| Summary: No entry was gained throughout the test | | |

Figure 3 – Attack locations



6.3 Closure against Obstruction Test

6.3.1 Operating Forces prior to the Closure against Obstruction Test

| Master Door | | | | | |
|--|--------|--------|--------|---------|---------|
| Operating forces measured prior to closure against obstruction | Test 1 | Test 2 | Test 3 | Average | Class |
| Closing Force [N] | 20.0 | 17.9 | 17.3 | 18.4 | 3 |
| Engage Hardware [N] | 84.5 | 85.8 | 84.8 | 85.0 | 1 |
| Lock Hardware [Nm] | 0.2 | 0.2 | 0.2 | 0.2 | 4 |
| Un-Lock Hardware [Nm] | 0.2 | 0.2 | 0.2 | 0.2 | 4 |
| Disengage Hardware [N] | 61.8 | 61.0 | 59.8 | 60.9 | 1 |
| Commence Opening [N] | 56.4 | 52.7 | 50.8 | 53.3 | 1 |
| Maintain Opening [N] | 8.3 | 9.6 | 8.5 | 8.8 | 4 |
| Overall Class | | | | | Class 1 |

Note: Operating forces were measured in accordance with BS EN 12046-2:2000

| Slave Door | | | | | |
|--|--------|--------|--------|---------|---------|
| Operating forces measured prior to closure against obstruction | Test 1 | Test 2 | Test 3 | Average | Class |
| Closing Force [N] | 25.3 | 19.3 | 19.6 | 21.4 | 2 |
| Engage Hardware [N] | 66.9 | 65.1 | 62.7 | 64.9 | 1 |
| Lock Hardware [Nm] | 0.2 | 0.2 | 0.2 | 0.2 | 4 |
| Un-Lock Hardware [Nm] | 0.2 | 0.2 | 0.2 | 0.2 | 4 |
| Disengage Hardware [N] | 37.7 | 42.0 | 38.9 | 39.5 | 2 |
| Commence Opening [N] | 29.4 | 28.0 | 30.1 | 22.5 | 3 |
| Maintain Opening [N] | 4.0 | 3.8 | 3.8 | 3.8 | 4 |
| Overall Class | | | | | Class 1 |

Note: Operating forces were measured in accordance with BS EN 12046-2:2000

6.3.2 Closure against Obstruction

An Aluminium block was placed in the gap between the leaf and bottom of the hinge side jamb and a load of 200 N was applied in the closing direction at the handle, perpendicular to the plane of the frame. The load was held in place for a period of 15 +/- 5 seconds.

There were no signs of any damage following the test.

6.3.3 Operating Forces following the Closure against Obstruction Test

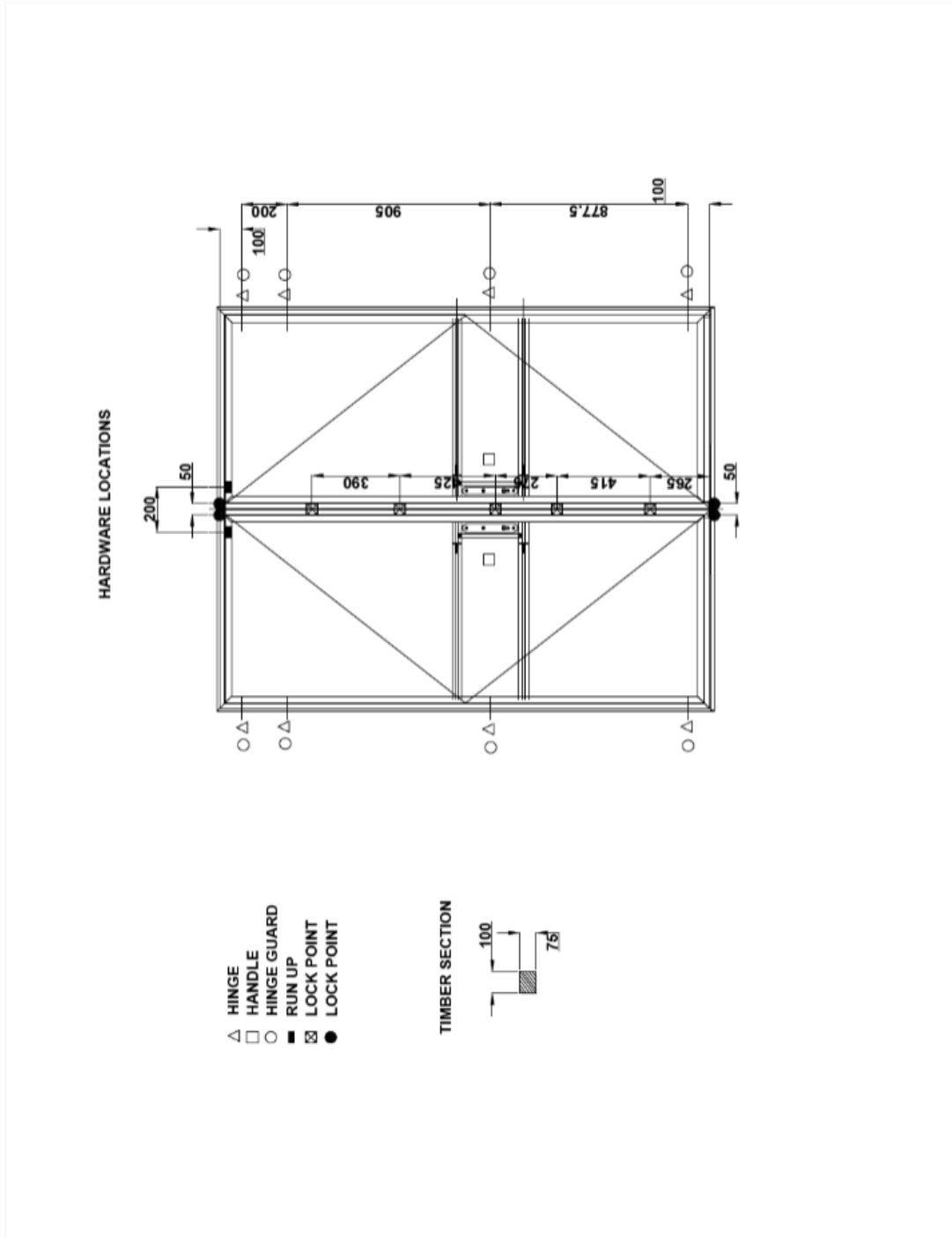
| Master Door | | | | | |
|--|--------|--------|--------|---------|---------|
| Operating forces measured prior to closure against obstruction | Test 1 | Test 2 | Test 3 | Average | Class |
| Closing Force [N] | 14.1 | 15.7 | 14.6 | 14.8 | 3 |
| Engage Hardware [N] | 82.7 | 79.8 | 82.8 | 81.7 | 1 |
| Lock Hardware [Nm] | 0.16 | 0.16 | 0.16 | 0.16 | 4 |
| Un-Lock Hardware [Nm] | 0.16 | 0.16 | 0.16 | 0.16 | 4 |
| Disengage Hardware [N] | 72.0 | 73.4 | 75.4 | 73.6 | 1 |
| Commence Opening [N] | 74.4 | 71.8 | 73.0 | 73.0 | 1 |
| Maintain Opening [N] | 5.8 | 5.1 | 5.1 | 5.3 | 4 |
| Overall Class | | | | | Class 1 |

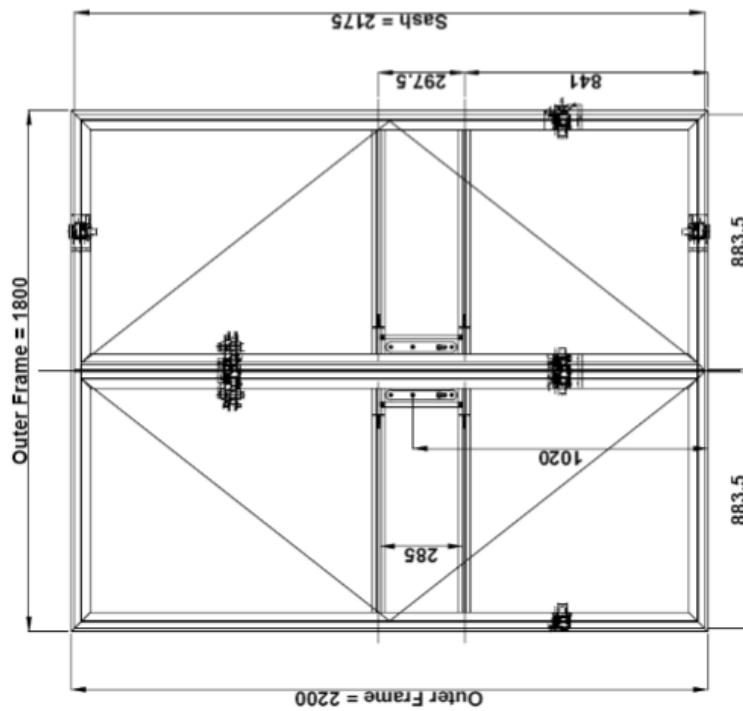
Note: Operating forces were measured in accordance with BS EN 12046-2:2000

| Slave Door | | | | | |
|--|--------|--------|--------|---------|---------|
| Operating forces measured prior to closure against obstruction | Test 1 | Test 2 | Test 3 | Average | Class |
| Closing Force [N] | 20.3 | 15.1 | 19.7 | 18.3 | 3 |
| Engage Hardware [N] | 60.6 | 55.1 | 56.2 | 57.3 | 1 |
| Lock Hardware [Nm] | 0.2 | 0.2 | 0.2 | 0.2 | 4 |
| Un-Lock Hardware [Nm] | 0.2 | 0.2 | 0.2 | 0.2 | 4 |
| Disengage Hardware [N] | 38.4 | 39.2 | 45.3 | 29.3 | 2 |
| Commence Opening [N] | 25.7 | 23.4 | 23.4 | 24.1 | 3 |
| Maintain Opening [N] | 4.3 | 4.0 | 4.2 | 4.1 | 4 |
| Overall Class | | | | | Class 1 |

Note: Operating forces were measured in accordance with BS EN 12046-2:2000

7. System Drawings





| | | | | | | | |
|-----------------------|------------------------------|-----------------|-------|------------------------------|--|------------------|--|
| SECTION AREA | 0 | mm ² | DRAWN | DATE | PART NUMBER | ULTIMATE FINISH | |
| | 0.00 | mm | DATE | DATE | Alitherm Heritage Open In Double Door with Eurogroove Std T/hold | MILL FINISH ONLY | |
| OUTSIDE PERIMETER | 0.000 | kg | SCALE | Copyright Smart Systems Ltd. | | POWDER COATED | |
| EST. WEIGHT PER METRE | | | | | | ANODISED | |
| Material : 6063 T6 | Generally to BS EN - 755 - 9 | | | | | | |
| | Toler to BS EN 12020 | | | | | | |



----- END OF REPORT-----

WINTECH

TESTING & CERTIFICATION



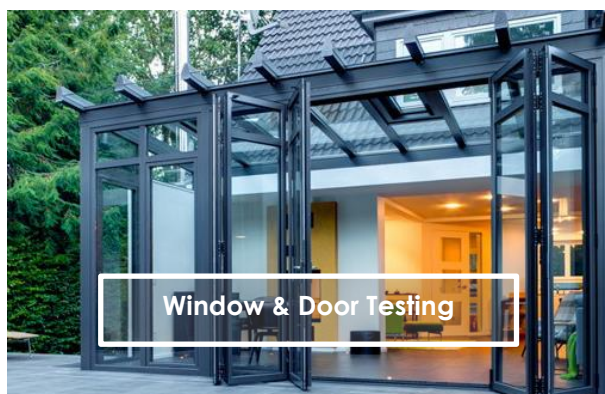
Facade Testing



Onsite Testing



WinMark Certification



Window & Door Testing

Wintech Testing & Certification is an independent UKAS accredited testing laboratory and certification body. We provide a comprehensive range of services to the building and construction industries, either onsite or at our own state-of-the-art test laboratory in Telford, Shropshire, in the heart of industrial England.

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