MILA TEST CENTRE

TEST REPORT

TEST NUMBER	:	2133
NUMBER OF PAGES	:	17 plus cover
SUBJECT	:	Door Performance: General Requirements
DATE	:	16th February 2004
ITEMS TESTED	:	External Door Assemblies
SAMPLE REFERENCE	:	Inwards Opening / Internal Bead
DATES OF TEST	:	Various dates between November 2003 and January 2004
TEST SPECIFICATIONS	:	PAS 23-1:1999: General performance requirements for door assemblies. Part 1: Single leaf, external door assemblies to dwellings.
TEST EQUIPMENT	:	Weathertighness: `Rosenheim` System by Holten Gmbh. All other equipment purpose designed and built for the application of tests as described within PAS23-1:1999.

Report Prepared By: JOHN MILES Job Title: TEST CENTRE MANAGER

Signature: .....

Checked By: DANIEL MILES Job Title: TEST CENTRE DEPUTY MANAGER

Signature: .....

Test(s) Conducted for:

[redacted]

SAMPLE REFERENCE: Inwards Opening / Internal Bead

This report relates to door assemblies manufactured from the items identified as selected, submitted and tested and to those assemblies alone. Details of the door system and hardware used are supplied by the client and / or persons acting on their behalf and the onus for the accuracy of those details rests with the client.

The results obtained are only relevant to the conditions applicable at the time of testing and do not necessarily relate to samples from the production line, nor do they imply performance or quality of the continuing production.

The results and conclusions shown in this report are given in good faith. Mila Hardware accept no liability or responsibility for any loss or damage occurring from the use of same.

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NOTE. Accreditation Schedule is for testing windows and doors in accordance with the following Standard specifications:-

Ÿ windows; BS 7950: 1997. Specification for enhanced security performance of casement and tilt/turn windows for domestic applications.

Ÿ doors; PAS 23-1: 1999. General performance requirements for door assemblies- Part 1: Single leaf, external door assemblies to dwellings.

Ÿ doors; PAS 24-1: 1999. Enhanced security performance requirements for door assemblies-

Part 1: Single leaf, external door assemblies to dwellings.

All tests reported within this document were conducted in accordance with our scope of UKAS accreditation. However, accreditation includes only factual reporting therefore any expression of opinion and interpretation are outside and excluded from that scope of accreditation.

SAMPLE REFERENCE: Inwards Opening / Internal Bead

1. INTRODUCTION

1.1 At the request of Paddock Fabrications Ltd. door assemblies manufactured by [redacted]., as identified below and described on Pages 3 and 4, were tested using test methods detailed within:-

PAS 23-1:1999
General performance requirements for door assemblies.
Part 1: Single leaf, external door assemblies to dwellings.

1.2 For the purpose of assessment two sample inwards opening door assemblies were supplied, in keeping with the requirements of PAS 23-1: 1999. Samples were as identical as production methods permit and selection to nominate as sample one or sample two was at the discretion of the Test Centre personnel.

1.3 Tests were conducted on the door assembly samples in the sequence as detailed elsewhere within this report.

2. TEST SAMPLE DESCRIPTION

PVCu single leaf external door assembly. Two Samples

3. PERFORMANCE SUMMARY

When assessed using tests and test methods defined within the edition of PAS 23-1:1999 current at time of testing, incorporating SBDTSG Resolutions Numbers 1, 2 and 9, the door assemblies successfully completed all performance requirements as defined within

the standard specification for the tests conducted.

SAMPLE REFERENCE: Inwards Opening / Internal Bead

DESCRIPTION OF TEST SAMPLES

UNIT TYPE an infills	:	Door assembly comprising of an outer frame with low threshold and internally beaded, inwards opening door leaf featuring two glass separated by a midrail.
UNIT SIZE	:	Outer frame size, 0.950 m x 2.100 m Leaf size, 0.848 m x 2.008 m
MATERIAL	:	Swiftframe System; white PVCu extruded hollow section strategically reinforced with metal section. Client reference:- Frame, 55102 KM with Reinforcing 55707 Leaf, 55203 KM with Reinforcing 55706 Midrail, 55303 KM with Reinforcing 55703
CONSTRUCTION	:	Frame is hot plate fusion welded at top corners and mechanical jointed at bottom corners / low threshold. Leaf is hot plate fusion welded at all corner and midrail joints.
WEATHER SEAL	:	Frame and Leaf; client reference Seal 55601
GLAZING	:	2 off 28 mm insulating double glazed units, 4 mm toughened glass with 20 mm spacer. Dry glazed using client reference Gasket 71300940, external and client reference Co-extruded Bead 55404 KM, internal.

Glazed sizes:- Top unit 0.648 m wide x 1.010 m high
Lower unit 0.648 m wide x 0.702 m high

HARDWARE AND FASTENINGS	:	Per sample:-	(client reference)
		3 x Paddock; 'Wel Secure' 3DL hinge	(5971-720-P)
		4.8mm x 38mm self drill screw	(SDS4838D)
		Window Master 4.2mm x 25mm screw	(3500/25Y)

1 x Paddock; 'Lockmaster' Lock (PL64)
1 x Paddock; 'High Security' one piece keep (PLK316HS) RH
(PLK315HS) LH
Window Master 4.2mm x 25mm screw (3500/25Y)
Architectural supplies 3.9mm x 38mm screw (CSR3.9x38Y)

1 x ISEO; Euro cylinder 40/50, removable key. (8209405091)

1 x Paddock; 'Classic' lever/lever handle set (P817)
Paddock 80mm Machine screw (1431)
1 x Swiftframe; 'Aluminium' low threshold (55801)

SAMPLE REFERENCE: Inwards Opening / Internal Bead

(A) Hinge

(B) Sealing Cam }
}
(C) Hook / Pin Bolt }
}Combined Keep
(D) Mortice Bolt }
}
(E) Latch }

Drawing not to scale, for reference only
Viewed from outside.

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TEST EQUIPMENT

Mila Test Rig Nos. 02, 03, 09 and 11 Purpose designed and built for the application of tests as described within PAS23-1: 1999.

All equipment used for the measurement of time, force or distance is calibrated, with traceability to National Standards, using UKAS Accredited Testing Laboratories. At the time of this test all equipment was within its calibration period and all recorded results within the tolerances permitted by the Test Standard.

TEST PREPARATION AND TESTS

In order to simplify installing into the test apparatus, the test sample was mounted into a sub-frame made from 100mm x 75 mm (Nominal) timber. Mounting screws being driven from opening cavity of outer frame, through the frame section and into timber subframe, so as to simulate normal installation work practice.

The complete assembly was installed vertically in the test rig and checked for correct overlap (cover) at the over-rebate flanges.

Tests were conducted in accordance with the methods as detailed within PAS23-1: 1999 Clauses 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11 and 6.14 incorporating SBDTSG Resolution Nos. 1,2 and 9.

This report deals with the assessment in the sequence applicable to each test sample and PLEASE NOTE that reported results are 'rounded' to two decimal places.

TEST CONDUCTED BY	**:**	**John Miles**	**}**	**Mila Test Centre**
		Daniel Miles	**}**	
TEST SET-UP	**:**	**Paul Jelly**	**}**	**Paddock Fabrications Ltd. /**
WITNESSEDBY			**}**	[redacted]

TEST CENTRE ENVIRONMENT DURING 24 HR CONDITIONING PERIOD AND TESTING

Laboratory Temperature: Minimum : 17° c Maximum : 21°c

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS: Sequence, Procedures and Results, Sample No. 1

Clause 6.3: Operating Forces.

Assess the forces and / or torque required in order to:-

close the door on the latch
engage and disengage all hardware including locking mechanisms and handles
initiate movement in the direction of opening.

All conducted to meet the requirements of clause 5.3.1.

FUNCTION TESTED	MAXIMUM VALUE PERMITTED AND UNIT OF MEASUREMENT	APPLIED OR MEASURED	RESULT OR MEASURED VALUE	PASS OR FAIL
LATCHING	70 Newtons	Apply	Yes	Pass
HANDLE FORCE TO ENGAGE LOCKING HARDWARE	100 Newtons	Measure	67.54	Pass
HANDLE FORCE TO DISENGAGE LOCKING HARDWARE	100 Newtons	Measure	55.28	Pass
KEY FORCE TO ROTATE CYLINDER TO LOCK	2 Newton metres	Measure	0.16	Pass
KEY FORCE TO ROTATE CYLINDER TO UNLOCK	2 Newton metres	Measure	0.19	Pass
INITIATE MOVEMENT IN THE DIRECTION OF OPENING	50 Newtons	Apply	Yes	Pass

Clause 6.2: Weathertightness. (results are reported on pages 7, 8, 9 and 10)

Using test methods detailed within BS 5368: Parts 1 and 2 and the interpretation of Part 3 as detailed within BS 6375: Part 1, assess sample for:-

air permeability
watertightness
ability to resist wind loads.

Conducted to meet the requirements of clause 5.2 and classified in accordance with clause 5.2.4.

Results of Weathertightness Test classified the sample as Exposure Category 800X
On completion of 'Weathertightness', repeat Clause 6.3: Operating Forces.

FUNCTION TESTED	MAXIMUM VALUE PERMITTED AND UNIT OF MEASUREMENT	APPLIED OR MEASURED	RESULT OR MEASURED VALUE	PASS OR FAIL
LATCHING	70 Newtons	Apply	Yes	Pass
HANDLE FORCE TO ENGAGE LOCKING HARDWARE	100 Newtons	Measure	33.88	Pass

HANDLE FORCE TO DISENGAGE LOCKING HARDWARE	100 Newtons	Measure	37.8	Pass
KEY FORCE TO ROTATE CYLINDER TO LOCK	2 Newton metres	Measure	0.17	Pass
KEY FORCE TO ROTATE CYLINDER TO UNLOCK	2 Newton metres	Measure	0.19	Pass
INITIATE MOVEMENT IN THE DIRECTION OF OPENING	50 Newtons	Apply	Yes	Pass

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS: Sequence, Procedures and Results, Sample No. 1 (Continued)

Clause 6.2 Weathertightness:

Test method and Preparation

Sample was prepared for test in accordance with the requirement set out in the relevant part of BS 5368:1976-1980 and secured into the test apparatus, all joints between sample and test apparatus were sealed.

Air infiltration characteristics were determined in accordance with BS 5368: Pt 1:1976. Air flow through the test sample was measured at pressure differential increments until the required test criterion. By calculation, air flow was redefined as permeability relative to total length of opening joints. Results are recorded in table 1 and are given in graph form on page 8.

Water penetration characteristics were determined in accordance with BS 5368:Pt 2:1980. Water was sprayed on the test sample using spray method No.2, grid pattern. During the initial period of 15 minutes, air pressure was not applied. Following this 15 minutes soaking, air pressure was applied in specified increments and held for 5 minute intervals at each increment. The results are recorded in table 2 on page 9.

Ability to Resist Windloads were determined in accordance with BS 5368:Pt 3: 1978 using the interpretation outlined within BS 6375:Pt 1:1989. During the test, 5 pulses at 800 pascals were applied in the positive direction, followed by 5 pulses at 800 pascals applied in the negative direction. Deflection results are reported in table 3 on page 9.

Summary of Results (As detailed in the following pages of this report)

Exposure Category : 800X

Air Permeability : 200 Pascals(1)

Watertightness : 50 Pascals(2)

Resistance to Wind Loading : 800 Pascals

Following windloading the door assembly operated correctly and the above grades were retained.

1) 200 Pascals is the air permeability requirement for Exposure Category 800X and testing was terminated at this pressure differential.

(2) 50 Pascals is the watertightness test criterion for Exposure Category 800X and testing was terminated at this pressure differential.

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS: Sequence, Procedures and Results, Sample No. 1 (Continued)

Clause 6.2 Weathertightness:

Table Number 1, Air Infiltration; Opening Perimeter = 5.72 Metres

	Test No. W/1; before wind loading			**Test No. W/4; after wind loading**	
AIR PRESSURE	MAXIMUM CORRECTED AIR FLOW	MAXIMUM PER METRE OF OPENING PERIMETER		MAXIMUM CORRECTED AIR FLOW	MAXIMUM PER METRE OF OPENING PERIMETER
PASCALS	m^3/h	$m^3/m/h$		m^3/h	$m^3/m/h$
50	6.50	1.14		6.50	1.14
100	11.90	2.08		11.50	2.01
150	16.80	2.94		16.20	2.82
200	21.80	3.81		21.90	3.83
300	N/A	N/A		N/A	N/A
400	N/A	N/A		N/A	N/A
500	N/A	N/A		N/A	N/A
600	N/A	N/A		N/A	N/A

N/A = Not Applicable

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS: Sequence, Procedures and Results, Sample No. 1 (Continued)

Clause 6.2 Weathertightness:

Table Number 2, Watertightness;

UNIT AREA	:	1.97 m²
WATER FLOW	:	260 litres per hour
SPRAY METHOD NUMBER	:	No 2
WATER TEMPERATURE:		12^0 - 13^0 C
CHAMBER TEMPERATURE	:	15^0 - 17^0 C
LABORATORY TEMPERATURE	:	17^0 - 20^0 C

	Test No. W/2; before wind loading		**Test No. W/5; after wind loading**
AIR PRESSURE	Observation	|	Observation
PASCALS		|	
0	No Leakage	|	No Leakage
50	No Leakage	|	No Leakage
100	Not Conducted	|	Not Conducted

DEFINITION OF LEAKAGE:

Sufficient leakage which, if permitted to persist, would cause damage to room decoration, furnishing and/or building fabric.

Table Number 3, Resistance to Wind Loads;

Test No. W/3: Deflection in millimetres

Wind Load	Average of End Deflection	Centre Deflection	Resultant Deflection
+800	1.65	2.00	0.35
Residual	0,15	0.20	0.05
-800	2.00	2.10	0.10
Residual	0.40	0.40	0.00

Span / Edge of Glazing : 0.780 m

Permitted deflection : 0.780 m / 175 = 4.46 mm

NOTE: Results are ‘rounded’ to two decimal places

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS: Sequence, Procedures and Results, Sample No. 1 (Continued)

Clause 6.2 Weathertightness:

Test No. W/3: Resistance to Wind Loads;

A,B,C are positions of measuring devices, view from inside

Clause 6.4: Resistance to Vertical Loads

With the leaf at 90^0 to the frame apply a load of 500 N to the top edge, vertically downwards in line with the handle.
Conducted to meet the requirements of clause 5.3.2.

On completion of 'Resistance to Vertical Loads', repeat Clause 6.3: Operating Forces.

FUNCTION TESTED	MAXIMUM VALUE PERMITTED AND UNIT OF MEASUREMENT	APPLIED OR MEASURED	RESULT OR MEASURED VALUE	PASS OR FAIL
LATCHING	70 Newtons	Apply	Yes	Pass
HANDLE FORCE TO ENGAGE LOCKING HARDWARE	100 Newtons	Measure	32.88	Pass
HANDLE FORCE TO DISENGAGE LOCKING HARDWARE	100 Newtons	Measure	35.28	Pass

KEY FORCE TO ROTATE CYLINDER TO LOCK	2 Newton metres	Measure	0.16	Pass
KEY FORCE TO ROTATE CYLINDER TO UNLOCK	2 Newton metres	Measure	0.18	Pass
INITIATE MOVEMENT IN THE DIRECTION OF OPENING	50 Newtons	Apply	Yes	Pass

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS: Sequence, Procedures and Results, Sample No. 1 (Continued)

Clause 6.5: Resistance to Static torsion

Restrain the opening edge of the leaf at the lower corner, disengage all locking hardware including the latch, apply 350 N in the direction of opening to the unrestrained top corner. Maintain load for 60 seconds then remove.
Conducted to meet the requirements of clause 5.3.3.

On completion of 'Resistance to Static Torsion' repeat Clause 6.3: Operating Forces.

FUNCTION TESTED	MAXIMUM VALUE PERMITTED AND UNIT OF MEASUREMENT	APPLIED OR MEASURED	RESULT OR MEASURED VALUE	PASS OR FAIL
LATCHING	70 Newtons	Apply	Yes	Pass
HANDLE FORCE TO ENGAGE LOCKING HARDWARE	100 Newtons	Measure	33.12	Pass
HANDLE FORCE TO DISENGAGE LOCKING HARDWARE	100 Newtons	Measure	34.78	Pass
KEY FORCE TO ROTATE CYLINDER TO LOCK	2 Newton metres	Measure	0.15	Pass
KEY FORCE TO ROTATE CYLINDER TO UNLOCK	2 Newton metres	Measure	0.18	Pass
INITIATE MOVEMENT IN THE DIRECTION OF OPENING	50 Newtons	Apply	Yes	Pass

Clause 6.6: Slamming Resistance

Open the leaf to an angle of 60^0 to the frame then 'slam closed' through the action of a descending 15 kg weight attached to a line running vertically from the weight, over a round steel horizontal bar positioned parallel to the leaf and secured to the lock stile in the region of the handle position so as to apply a horizontal load to the door leaf. Test repeated for 20 operations.
Conducted to meet the requirements of clause 5.3.4.

On completion of 'Slamming Resistance' repeat Clause 6.3: Operating Forces.

FUNCTION TESTED	MAXIMUM VALUE PERMITTED AND UNIT OF MEASUREMENT	APPLIED OR MEASURED	RESULT OR MEASURED VALUE	PASS OR FAIL

LATCHING	70 Newtons	Apply	Yes	Pass
HANDLE FORCE TO ENGAGE LOCKING HARDWARE	100 Newtons	Measure	82.56	Pass
HANDLE FORCE TO DISENGAGE LOCKING HARDWARE	100 Newtons	Measure	82.56	Pass
KEY FORCE TO ROTATE CYLINDER TO LOCK	2 Newton metres	Measure	0.16	Pass
KEY FORCE TO ROTATE CYLINDER TO UNLOCK	2 Newton metres	Measure	0.17	Pass
INITIATE MOVEMENT IN THE DIRECTION OF OPENING	50 Newtons	Apply	Yes	Pass

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS: Sequence, Procedures and Results, Sample No. 1 (Continued)

Clause 6.7: Closure against an obstruction

Insert a 50 x 50 x 10 mm aluminium block vertically in the gap between the bottom corner of the leaf and the hinge-side frame jamb so as to hold the leaf ajar. Progressively apply a force to the leaf lock-side stile at handle height and in the direction of closing, but acting perpendicular to the plane of the frame, until 200 N is achieved then remove.
Conducted to meet the requirements of clause 5.3.5.

On completion of 'Closure against an obstruction' repeat Clause 6.3: Operating Forces.

FUNCTION TESTED	MAXIMUM VALUE PERMITTED AND UNIT OF MEASUREMENT	APPLIED OR MEASURED	RESULT OR MEASURED VALUE	PASS OR FAIL
LATCHING	70 Newtons	Apply	Yes	Pass
HANDLE FORCE TO ENGAGE LOCKING HARDWARE	100 Newtons	Measure	85.46	Pass
HANDLE FORCE TO DISENGAGE LOCKING HARDWARE	100 Newtons	Measure	75.56	Pass
KEY FORCE TO ROTATE CYLINDER TO LOCK	2 Newton metres	Measure	0.17	Pass
KEY FORCE TO ROTATE CYLINDER TO UNLOCK	2 Newton metres	Measure	0.17	Pass
INITIATE MOVEMENT IN THE DIRECTION OF OPENING	50 Newtons	Apply	Yes	Pass

Clause 6.8: Abusive Forces on Handles

Progressively apply a 500 N load to the handle, perpendicular to and away from the plane of the leaf, hold for 60 seconds then remove.
Conducted to meet the requirements of clause 5.3.6.

On completion of 'Abusive Forces on Handles' repeat Clause 6.3: Operating Forces.

FUNCTION TESTED	MAXIMUM VALUE PERMITTED AND UNIT OF MEASUREMENT	APPLIED OR MEASURED	RESULT OR MEASURED VALUE	PASS OR FAIL
LATCHING	70 Newtons	Apply	Yes	Pass
HANDLE FORCE TO ENGAGE LOCKING HARDWARE	100 Newtons	Measure	83.48	Pass
HANDLE FORCE TO DISENGAGE LOCKING HARDWARE	100 Newtons	Measure	78.34	Pass
KEY FORCE TO ROTATE CYLINDER TO LOCK	2 Newton metres	Measure	0.17	Pass
KEY FORCE TO ROTATE CYLINDER TO UNLOCK	2 Newton metres	Measure	0.16	Pass
INITIATE MOVEMENT IN THE DIRECTION OF OPENING	50 Newtons	Apply	Yes	Pass

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS: Sequence, Procedures and Results, Sample No. 1 (Continued)

Clause 6.9: Door Assembly; Resistance to Soft and Heavy Body Impact

With the door assembly held in the closed position using only the latch, the leaf is impacted by a spheroconical leather bag of 30 kg total mass, suspended as a pendulum. Impactor is raised through an arc to an height of 500 mm above the impact point then released. Three impacts conducted against the direction of opening followed by three impacts conducted in the direction of opening.
Conducted to meet the requirements of clause 5.3.7.

	Impact Against Direction Of Opening
1st	No visible damage or distortion of Door Assembly
2nd	No visible damage or distortion of Door Assembly
3rd	No visible damage or distortion of Door Assembly

	Impact in Direction Of Opening
1st	No visible damage or distortion of Door Assembly
2nd	No visible damage or distortion of Door Assembly

3rd	No visible damage or distortion of Door Assembly

On completion of 'Soft and Heavy Body Impact' repeat Clause 6.3: Operating Forces.

FUNCTION TESTED	MAXIMUM VALUE PERMITTED AND UNIT OF MEASUREMENT	APPLIED OR MEASURED	RESULT OR MEASURED VALUE	PASS OR FAIL
LATCHING	70 Newtons	Apply	Yes	Pass
HANDLE FORCE TO ENGAGE LOCKING HARDWARE	100 Newtons	Measure	85.54	Pass
HANDLE FORCE TO DISENGAGE LOCKING HARDWARE	100 Newtons	Measure	75.68	Pass
KEY FORCE TO ROTATE CYLINDER TO LOCK	2 Newton metres	Measure	0.17	Pass
KEY FORCE TO ROTATE CYLINDER TO UNLOCK	2 Newton metres	Measure	0.17	Pass
INITIATE MOVEMENT IN THE DIRECTION OF OPENING	50 Newtons	Apply	Yes	Pass

Sample Number 1; General Performance and Operating forces.
The door assembly met all performance requirements. Result**: PASS**

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS: Sequence, Procedures and Results, Sample No. 1 (Continued)

Clause 6.10: Door Leaf ; Resistance to Hard Body Impact

Mount the leaf horizontal. Select one of the designated 'aiming patterns' so as to include the theoretically weakest point of the leaf surface and impact the leaf surface with a 50 mm diameter steel ball dropped from an height calculated for an impact applied energy of 8 J. Measure the depth of any indentation damage. Permitted = 2 mm average; 3 mm maximum.

Conducted to meet the requirements of clause 5.3.8.

Aiming Pattern Number 1 used

IMPACT POINT	INDENTATION (mm)	OBSERVATIONS
1	0.2	Slight Indentation
2	0.3	Slight Indentation
3	0.2	Slight Indentation
4	N/A	N/A
5	0.2	Slight Indentation

6	N/A	N/A
7	N/A	N/A
8	N/A	N/A
9	0.4	Slight Indentation
10	N/A	N/A
11	N/A	N/A
12	0.3	Slight Indentation
13	N/A	N/A
14	N/A	N/A
15	0.4	Slight Indentation

NOTE. IMPACT POINTS NUMBERED FROM BOTTOM OF LEAF UPWARDS WHERE N/A APPEARS THIS IS A GLAZED AREA OR OUT OF THE AIMING PATTERN AS SPECIFIED IN CLAUSE 6.10.2.

Sample Number 1; Hard Body Impacts.

The door assembly met all performance requirements. Result**: PASS**

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS: Sequence, Procedures and Results, Sample No. 2

Clause 6.3: Operating Forces.

Assess the forces and / or torque required in order to:-

close the door on the latch

engage and disengage all hardware including locking mechanisms and handles

initiate movement in the direction of opening.

All conducted to meet the requirements of clause 5.3.1.

FUNCTION TESTED	MAXIMUM VALUE PERMITTED AND UNIT OF MEASUREMENT	APPLIED OR MEASURED	RESULT OR MEASURED VALUE	PASS OR FAIL
LATCHING	70 Newtons	Apply	Yes	Pass
HANDLE FORCE TO ENGAGE LOCKING HARDWARE	100 Newtons	Measure	35.68	Pass
HANDLE FORCE TO DISENGAGE LOCKING HARDWARE	100 Newtons	Measure	35.6	Pass
KEY FORCE TO ROTATE CYLINDER TO LOCK	2 Newton metres	Measure	0.15	Pass

KEY FORCE TO ROTATE CYLINDER TO UNLOCK	2 Newton metres	Measure	0.23	Pass
INITIATE MOVEMENT IN THE DIRECTION OF OPENING	50 Newtons	Apply	Yes	Pass

Clause 6.11: Cyclic Operation.

With the door assembly held plumb, square and without twist in the test apparatus it is operated through 50,000 cycles as follows:-

Start position; leaf held closed using only the latch,
engage all hardware locking mechanisms then rotate key to lock,
rotate key to unlock then disengage all hardware locking mechanisms,
open leaf to 90 ^{0} then return to start position.

Conducted to meet the requirements of clause 5.4.1. The cyclic test apparatus is adjusted so that the forces applied do not exceed the maximum permitted in the above table**.**

CYCLES	COMMENTS
5,000	Operation normal, lubricate keeps and latch strike plate with petroleum jelly.
10,000	Operation normal, lubricate keeps and latch strike plate with petroleum jelly.
15,000	Operation normal, lubricate keeps and latch strike plate with petroleum jelly.
20,000	Operation normal, lubricate keeps and latch strike plate with petroleum jelly.
25,000	Operation normal, lubricate keeps and latch strike plate with petroleum jelly.
30,000	Operation normal, lubricate keeps and latch strike plate with petroleum jelly.
35,000	Operation normal, lubricate keeps and latch strike plate with petroleum jelly.
40,000	Operation normal, lubricate keeps and latch strike plate with petroleum jelly.
45,000	Operation normal, lubricate keeps and latch strike plate with petroleum jelly.
50,000	Cylinder ‘notchy’ but no excessive increase in operational forces, otherwise operation normal.

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS: Sequence, Procedures and Results, Sample No. 2 (Continued)

Clause 6.11: Cyclic Operation.

On completion of ‘Cyclic Operation’ repeat Clause 6.3: Operating Forces.

FUNCTION TESTED	MAXIMUM VALUE PERMITTED AND UNIT OF MEASUREMENT	APPLIED OR MEASURED	RESULT OR MEASURED VALUE	PASS OR FAIL

LATCHING	70 Newtons	Apply	Yes	Pass
HANDLE FORCE TO ENGAGE LOCKING HARDWARE	100 Newtons	Measure	26.88	Pass
HANDLE FORCE TO DISENGAGE LOCKING HARDWARE	100 Newtons	Measure	27.66	Pass
KEY FORCE TO ROTATE CYLINDER TO LOCK	2 Newton metres	Measure	0.17	Pass
KEY FORCE TO ROTATE CYLINDER TO UNLOCK	2 Newton metres	Measure	0.23	Pass
INITIATE MOVEMENT IN THE DIRECTION OF OPENING	50 Newtons	Apply	Yes	Pass

Sample Number 2; Cyclic Operation.
The door assembly met all performance requirements. Result**: PASS**

Clause 6.14: Basic Security

For a period not exceeding 3 minutes, attempt to gain entry from the exterior face by removal of gaskets, beads, security devices and any infill (including glass) using tools as specified within clause 6.14.1.
Conducted to meet the requirements of clause 5.4.4.

Basic Security Test.

Attack was conducted at the top right hand corner of the lower glazing infill, lockside.

Using ‘Wood Chisel (6.14.1.3)’, attempts were made cut away the glazing then reach the internal bead and remove the glazing infill.

Sample Number 2; Basic Security.
The door assembly resisted all attempts to gain entry. Result**: PASS**

SAMPLE REFERENCE: Inwards Opening / Internal Bead

APPENDIX.

1. RESULTS.

The door assemblies met all the performance requirements of the tests conducted within this report.

2. EXCLUSIONS.

This report is an assessment of a complete doorset assembly system only. It is NOT an assessment of the individual items used to manufacture the complete unit, nor is it an assessment of the manufacturer's production control either before or after the issue of this report.

2. CONCLUSIONS.

It is reasonable to assume that other doorset assemblies of the same style within the size range as below would also offer a similar degree of performance provided that:-

- Ÿ the doorset assembly is made from the materials as identified on page 3 of this report*.
- Ÿ the doorset assembly is made using hardware components from the same product range, as identified on page 3 of this report.
- Ÿ the fastenings used have the same component details as identified on page 3 of this report.
- Ÿ there is no reduction in the quality or strength of those materials and components.
- Ÿ the doorset assembles are manufactured using the same degree of skill, work practices and manufacturing tolerances.
- Ÿ the locking mechanisms provide hookbolt, deadbolt and roller cam to keep engagement system with the same dimensional configuration and same compression of weather seals.
- Ÿ the distance between those "locking points" is NO GREATER than that as fitted to the test samples.

Size Range: opening height up to the sizes tested
opening width up to the sizes tested

***Note:** Where Toughened glass units are fitted for Test Operative safety only they may be replaced by annealed or laminated glass units, where regulations permit.

Our UKAS Accreditation is applicable to factual reporting only therefore any expression of opinion and interpretation are outside and excluded from our UKAS Scope of Accreditation.

END of REPORT