

**Test Report 3833815 Issue 2.**  
Aluminios Cortizo, S.A.U.


## Introduction.

This report has been prepared by Errol Creary and relates to the activity detailed below:

Job/Registration Details	Client Details
<b>Job number:</b> 3833815 Job type: Testing Samples Submitted Start Date: 08/02/2023 Test type: Direct Sample ID: 10206508 10208111 <b>Registration: NA</b> Protocol: NA Quality system: NA <b>Registration: NA</b> Protocol: NA Quality system: NA	Aluminios Cortizo, S.A.U. Extramundi s/n Padron (A Coruna) 15910 Spain

The report has been approved for issue by Mohamed Abukar – Subject Matter Expert

This issue 2 report amends the parts list provided by the client to reflect 14/1 quantity of hinges, as opposed to, 15/1. This issue supersedes the previous document supplied.

Approved For Issue	
	Issue Date: 17 May 2023

## Objectives.

Direct test

## Product Scope.

Cortizo Aluminium Bi-fold door

## Report Summary.

The samples were received on 2 February 2023 and 18 April 20223 and the testing was started on 8 February 2023 and 12 May 2023. The samples submitted complied with the requirements of the test work conducted.

Decision rule: Simple acceptance – guard band <https://page.bsigroup.com/adr>

## PAS 24:2022 Type Test.

3 off three leaf open out bi-fold fully glazed door assembly with a standard threshold

(Sample ID No 10206508 and 10208111)

Date sample received: 8 February 2023 and 12 May 2023.

## Test Results.

- |    |                                     |   |
|----|-------------------------------------|---|
| 1. | Manipulation                        | Previously assessed   |
| 2. | Infill Removal (Mechanical)         | Previously assessed   |
| 3. | Mechanical Loading                  | The test sample met the requirements of the Specification in respect of B.4.5     |
| 4. | Infill Removal (Manual)             | The test sample met the requirements of the Specification in respect of B.4.4     |
| 4. | Manual Check Test                   | The test sample met the requirements of the Specification in respect of B.4.6     |
| 5. | Soft Body Impact                    | The test sample met the requirements of the Specification in respect of B.4.8     |
| 6. | Hard Body Impact                    | The test sample met the requirements of the Specification in respect of B.4.9.2.2 |
| 7. | Security Hardware and Cylinder Test | The test sample met the requirements of the Specification in respect of Annex A   |

## B.2 Sample Selection.

The samples submitted for tests were selected using the criteria in B.2 of the Specification. The samples were submitted for test mounted in a 75mm x 100mm timber subframe in accordance with the manufacturer's installation requirements. The test samples were manufactured by the client.

## B.3 Requirements for Test Apparatus.

The test apparatus for the manual and mechanical tests is shown in figures B.2 to B.5.

## B.4 Test Methods.

The method of testing the samples followed the sequence detailed in B.4 of the Specification.

## Description of Sample.

<b>Sample Type -</b>	Three leaf open out glaze in bi-folding door assembly with full glass infill and a <b>standard threshold</b>		
<b>Material -</b>	Aluminium		
<b>Construction -</b>	Cleated		
<b>Fittings -</b>	<p>Master - a five-point locking (two hooks, one dead bolt and two shoot bolts) FUHR espagnolette system, handle with a key lockable cylinder and four hinges</p> <p>Slaves - a two-point locking (two shoot bolts) espagnolette system, twelve pin hinges and two rollers</p>		
<b>Classification -</b>	D		
<b>Glass -</b>	Double glazed 6-16-6mm toughened glass sealed units		
<b>Panel -</b>	Not applicable		
<b>Glass Retention System -</b>	Internal beads and gaskets		
<b>Sample dimensions -</b>	Overall length:	2700mm	Height: 2500mm
	Master length:	870mm	Height: 2420mm
	Slave length:	890mm	Height: 2420mm
	Slave length:	890mm	Height: 2420mm

Date of test – 8 February 2023 12 May 2023. and 21 May 2023  
 Test engineer(s) – S Chandrathas, L Marchant and C Corby  
 Laboratory temperature – 17°C  
 Laboratory humidity – 49.5%RH

## Description of Test Sample.

<b>Outer Frame width</b>	2700 mm	<b>Outer Frame Material</b>	Aluminium
<b>Outer Frame height</b>	2500 mm	<b>Outer Frame Gasket</b>	
<b>Outer Frame Part Numbers</b>		Gasket Type	EPDM
Top	COR-3750	Manufacturer	CORTIZO
Bottom	COR-3750 & COR-3700 (rail)	Product Name	-
Lock Side	COR-3750	Product Code	353794 & 423713 & 423714 & 423711 & 423702
Hinge Side	COR-3750	<b>Threshold</b>	N/A
<b>Outer Frame section dimensions</b>		Manufacturer	
Width	46.50 mm	Product name	
Depth	80.00 mm	Product Code	
<b>Reinforcing:</b>	N/A	Materials	
Manufacturer		<b>Outer Frame Joint Method</b>	
Product Name		Head	Corner Cleat
Product code		Foot	Corner Cleat
Material			

<b>Leaf</b>		<b>Leaf Material:</b>	Aluminium
Leaf Width:	857 mm	<b>Leaf Gasket</b>	
Leaf Height:	2419 mm	Gasket type:	EPDM
Leaf Part Numbers:		Manufacturer:	-
Top:	COR-3755	Product Name:	-
Bottom:	COR-3755	Product Code	423711 & 423702 & 353794 & 423712
Lock side:	COR-3755	<b>Leaf Midrail:</b>	N/A
Hinge Side	COR-3755	Manufacturer:	
<b>Leaf section size</b>		Product name:	
Width:	49 mm	Product code:	
Depth:	80 mm	Material:	
<b>Reinforcing</b>	N/A	<b>Leaf joint method</b>	
Manufacturer:		Head:	Corner Cleat
Product Name:		Foot:	Corner Cleat
Product Code:			
Material:			
<b>Bead</b>			
Manufacturer:	CORTIZO		
Product Name:	-		
Product Code:	COR-3712		
Material:	Aluminium		
Bead Size:	20 x 32 mm		

## Description of Test Sample. (Continued)

Glazing Unit		Glazing Gasket	
Manufacturer:	Guardian Glass	Gasket Type:	EPDM
Inner Thickness:	6 Tempered	Manufacturer:	CORTIZO
Spacer Material:	Aluminium	Product Name:	-
Outer Thickness:	6 Tempered	Product Code	423702
Unit Sizes:	6 (16) 6	<b>*Glazing Clip</b>	(6 pieces)
<b>Glazing Tape Details</b>	N/A	Manufacturer:	CORTIZO
Manufacturer:		Product Name:	Glazing Clip Kit
Product Name:		Product Code	407920
Product Code			

Hardware			Fixings	Quantity
Hinges:	433702/433732			14 / 1
Top & bottom half rollers with fixings:	433752/72 & 433762/82			1 1
Hinge Protectors:	N/A			N/A
Lock:	423730/31		341127	1
*Cylinder:	353793 (Security)			1
Intermediate lock	423760			1
Handle:	308502 / 423782			1/1
Touch Bar:	N/A			N/A
Cylinder Support:	N/A			N/A
Cylinder Escutcheon:	321811			2
Keeps:	(Included in lock)			1
Drip Bar	N/A			N/A
Short extension lock	373734			1
Top shotbolt (Door)	353733			1
Bottom shotbolt (Door)	423734			1
*Top shotbolt (Slide)	423741/423739			1/1
*Bottom shotbolt (Slide)	423741/423739			1/1
Shotbolt keeps (Door)	423738			2
Rod M10	353743			1
Frame Slide	423743			1
Screws for lock	341127			22
*Anti-Elevation	353799			2

\*PAS24 Pieces

**Note** – parts list supplied by client but not verified by BSI

## Test Results.

### Performance Requirements

#### B.4.3 Manipulation Test A

Previously assessed

#### B.4.4 Cutting and Infill Medium Removal Test

##### B.4.4.2 Infill Manual Test

The sample was mounted, vertically and square, in the test rig as described in B.3.1.

The test was carried out in accordance with the requirements of this Annex using the tools described in Group A and Group B where applicable.

A craft knife was used to cut the gasket

No entry gained within three minutes.

Pass

Assessment – Pass

##### B.4.4.3 Infill Mechanical Test

The sample was mounted, vertically and square, in the test rig as described in B.3.1.

The test was carried out with a perpendicular-to-plane load of 2.0kN applied to each corner of the glazing.

No evidence of bead failure. No entry gained.

Assessment – Pass

##### B.4.4.4 Manual Cutting Test

Not applicable

## Test Results (Continued).

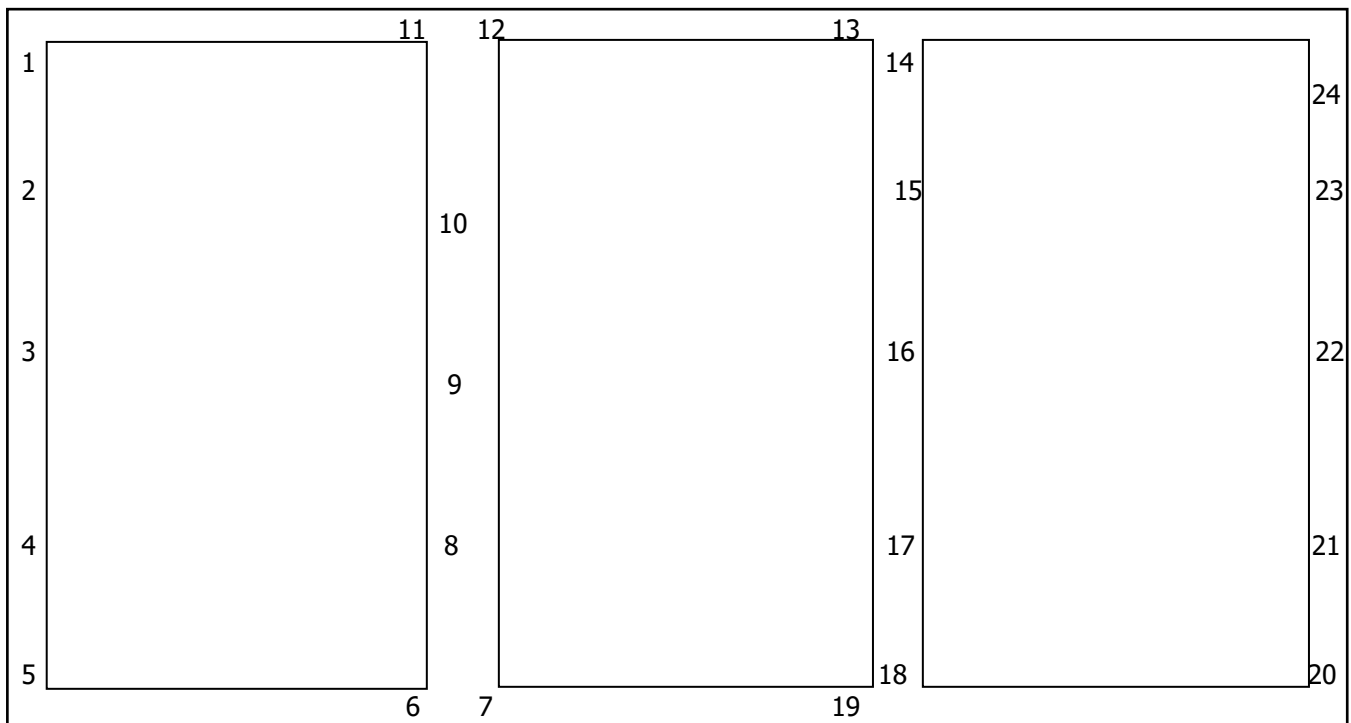
### Performance Requirements (Continued).

#### B.4.5 Mechanical Loading Test

The sample was mounted, vertically and square, in the test rig.

The test was carried out in accordance with the procedures detailed in B.4.5, using loading cases B.1 to B.6 and Figures B.12 for loading sequence, and using the test apparatus detailed in Figures B.6 to B.6.

Diagram of load points



#### B.4.5.2 Loading Procedure

Point of application of load

##### First Sequence

1. Hinge (upper left master leaf)

Standard loading case used: 1

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

## Test Results (Continued).

### B.4.5.2 Loading Procedure (continued)

Point of application of load

#### **First Sequence (continued)**

2. Hinge (upper left master leaf)

Standard loading case used: 1

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

3. Hinge (lower centre master leaf)

Standard loading case used: 1

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

4. Hinge (lower left master leaf)

Standard loading case used: 1

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

5. Hinge (lower left master leaf)

Standard loading case used: 1

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

6. Shoot bolt (threshold of master leaf)

Standard loading case used:5

Load applied in plane: 1.5kN centred over loading point and towards the opposite edge  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

7. Roller (threshold of slave leaf)

Standard loading case used: 11

Load applied in plane: 1.5kN centred over loading point and towards the opposite edge  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

## Test Results (Continued).

### B.4.5.2 Loading Procedure (continued)

Point of application of load

#### **First Sequence (continued)**

#### 8. Hook (lower mullion)

Standard loading cases used: 8

Load applied in plane: 1.5kN along edge in a direction to disengage the cam  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge  
1.5kN to oppose the above load

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

#### 9. Dead Bolt (centre mullion)

Standard loading case used: 6

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge  
1.5kN to oppose the above load

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

#### 10. Hook Bolt (upper mullion)

Standard loading cases used: 8

Load applied in plane: 1.5kN along edge in a direction to disengage the bolts  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge  
1.5kN to oppose the above load

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

## Test Results (Continued).

### Performance Requirements.

#### B.4.5.2 Loading Procedure (continued)

Point of application of load

##### **First Sequence (continued)**

11. Shoot bolt (head of master leaf)

Standard loading case used:5

Load applied in plane: 1.5kN centred over loading point and towards the opposite edge  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

12. Roller (head of slave)

Standard loading case used: 11

Load applied in plane: 1.5kN centred over loading point and towards the opposite edge  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

13. Shoot bolt (head of slave leaf)

Standard loading case used:5

Load applied in plane: 1.5kN centred over loading point and towards the opposite edge  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

14. Hinge (upper mullion slave to slave leaf)

Standard loading case used: 2

Load applied in plane:1.5kN at right angles to the edge and towards the opposite edge  
1.5kN to oppose the above load  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

15. Hinge (upper mullion slave to slave leaf)

Standard loading case used: 2

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge  
1.5kN to oppose the above load  
Load applied perpendicular to plane: 4.5kN applied for 10 seconds

## Test Results (Continued).

### Performance Requirements.

### Assessment

#### B.4.5.2 Loading Procedure (continued)

Point of application of load

##### **First Sequence (continued)**

##### 16. Hinge (upper mullion slave to slave leaf)

Standard loading case used: 2

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge  
1.5kN to oppose the above load

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

##### 17. Hinge (upper mullion slave to slave leaf)

Standard loading case used: 2

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge  
1.5kN to oppose the above load

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

##### 18. Hinge (upper mullion slave to slave leaf)

Standard loading case used: 2

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge  
1.5kN to oppose the above load

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

##### 19. Shoot Bolt (threshold slave leaf)

Standard loading case used: 5

Load applied in plane: 1.5kN along the edge in the direction to disengage the bolt

Load applied perpendicular to plane: 3.9kN

No entry gained

Assessment – Pass

## Test Results (Continued).

### Performance Requirements (Continued).

#### B.4.3 Manipulation Test B

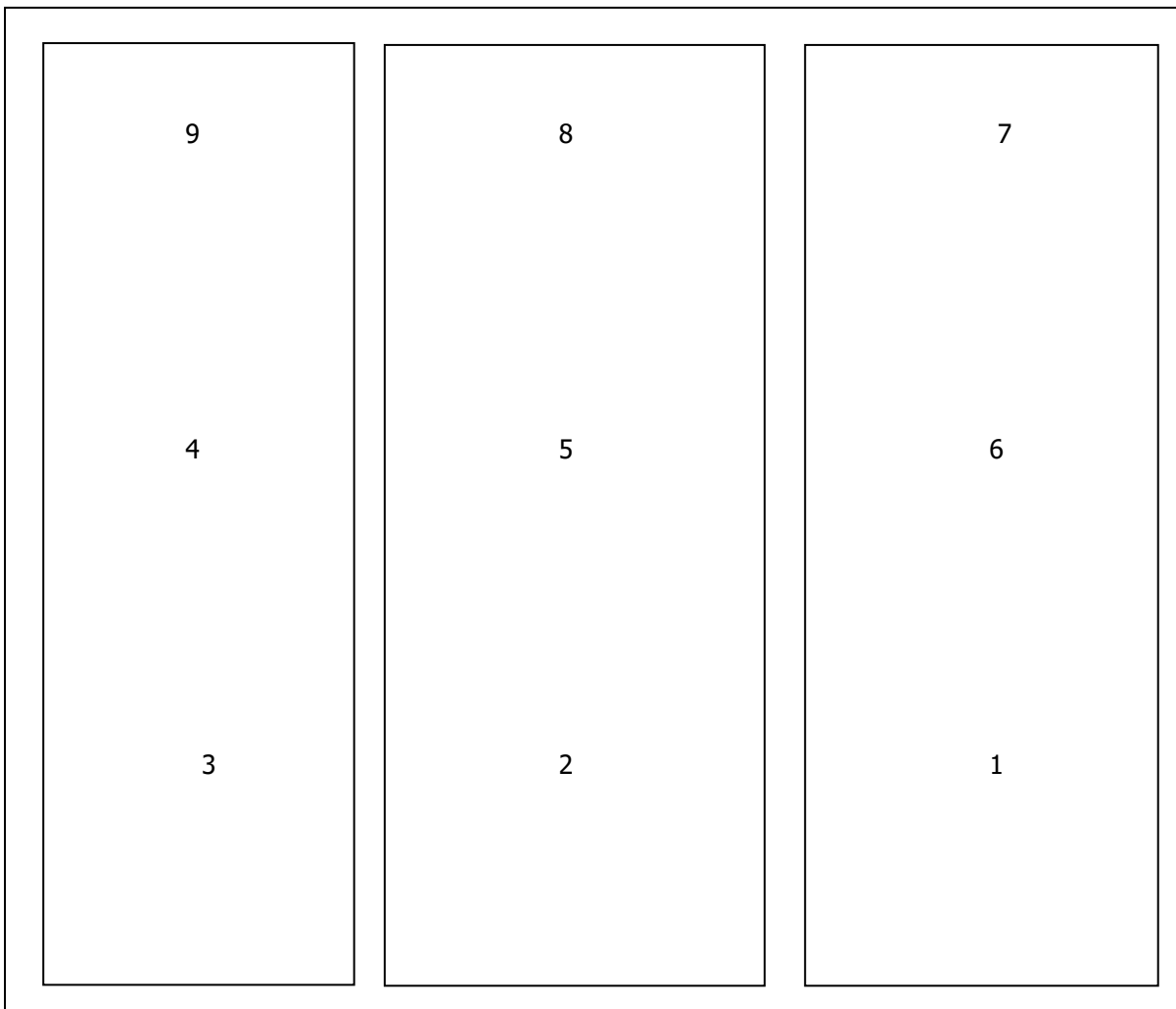
No fixing exposed

#### Clause B.4.8 Soft Body Impact Test

The sample was mounted, vertically and square, in the test rig as described in B.3.1

The test was carried out in accordance with the requirements, objectives and procedures Detailed in B.4.8.1 using the impact points and procedure described in B.4.8.2 and B.4.8.3 and Figure B.10.

Diagram of points of application of loads



## Test Results (Continued).

### Performance Requirements (Continued).

### Assessment

#### Clause B.4.8 Soft Body Impact Test

<b>Impact point</b>	<b>Position from floor level</b>	<b>Effect</b>
1	0.80m	None
2	0.80m	None
3	0.80m	None
4	1.25m	None
5	1.25m	None
6	1.25m	None
7	1.70m	None
8	1.70m	None
9	1.70m	None

No entry gained

Assessment – Pass

## Test Results (Continued).

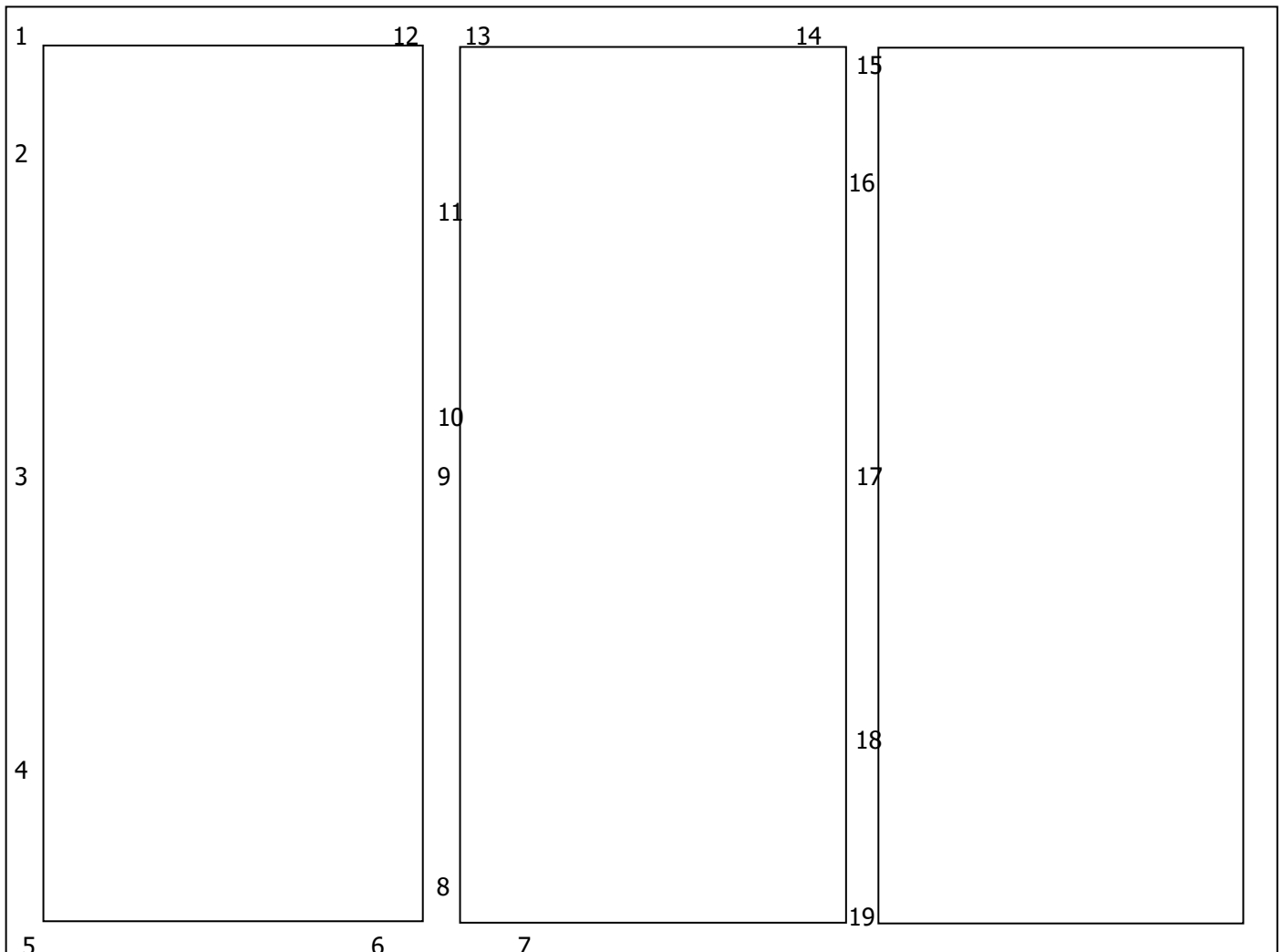
### Performance Requirements (Continued).

#### Clause B.4.9 Hard Body Impact Test

The sample was mounted, vertically and square, in the test rig as described in B.3.1.

The test was carried out in accordance with the requirements, objectives and procedures detailed in B.4.9.1, B.4.9.2.1, B.4.9.2.2 and B.4.9.2.3 using procedure B.4.9.3, using the test apparatus detailed in B.11 and using the impact sequence in figure B.14.

Diagram of points of application of loads



## Test Results (Continued).

### Performance Requirements (Continued).

#### Clause B.4.9 Hard Body Impact Test (continued)

<b>Impact point</b>	<b>Position</b>	<b>Effect</b>
1	Corner / Hinge	None
2	Hinge	None
3	Hinge	None
4	Hinge	None
5	Corner / Hinge	None
6	Corner / Shoot	None
7	Corner / Roller	None
8	Hook Bolt	None
9	Cylinder	None
10	Deadbolt	None
11	Hook Bolt	None
12	Corner / Shoot	None
13	Corner / Roller	None
14	Corner / Shoot	None
15	Hinge	None
16	Hinge	None
17	Hinge	None
18	Hinge	None
19	Hinge	None

No entry gained

Assessment – Pass

## Test Results (Continued).

### Performance Requirements (Continued).

#### Clause B.4.6 Manual Check Test

The sample was mounted, vertically and square, in the test rig as described in B.3.1.

The test was carried out in accordance with the given objectives of this clause using the procedure detailed in B.4.6.3 and the tools described in B.4.6.2.

No one technique was used for more than three minutes.

Alternative method of entry found. / No alternative method of entry could be found.

#### Clause B.4.7 Additional Mechanical Loading Test

Not applicable – no alternative method of entry found during manual check testing.

### Annex A Security Hardware and Cylinder Test

#### **Annex A.3.2 (Part 1)**

The sample was mounted, vertically and square, in the test rig as described in Clause 3.1.

The test was carried out in accordance with the given objectives of this Annex using the procedure detailed in Annex A.3.1 and the tools described in A.2.

Mole grips were used to remove the handle and snap the cylinder.

No entry gained within three minutes.

Assessment – Pass

## Test Results (Continued).

### Performance Requirements (Continued).

#### **Annex A.3.3 (Part 2)**

The sample was mounted, vertically and square, in the test rig as described in Clause 3.1.

The test was carried out in accordance with the given objectives of this Annex using the procedure detailed in Annex A.3.1 and the tools described in A.2.

The sample was closed and locked and the key removed.

The total attack time was three minutes and the total rest time was seven minutes.

No entry gained within three minutes.

Assessment – Pass

#### **Annex A.3.4 (Part 3)**

The sample was mounted, vertically and square, in the test rig as described in Clause 3.1.

The test was carried out in accordance with the given objectives of this Annex using the procedure detailed in Annex A.3.1 and the tools described in A.2.

The sample was closed and locked and the key removed.

The total attack time was three minutes and the total rest time was seven minutes.

No entry gained within three minutes.

Assessment – Pass

Photograph of Sample.



## Test Samples.

Sample Id	ER Number	Description
1	10206508 and 10208111	Aluminium Bi-fold door

## Description of Test Samples.

Sample Description
3 off three leaf open out bi-fold fully glazed door assembly with a standard threshold

## Test Requirements.

PAS 24 door direct

Clause	Requirements
<b>Results table</b>	<i>PAS 24 door direct</i>

## Glossary of Terms.

PASS: Complies. Tested by BSI engineers at BSI laboratories.

PASS1: Complies. Witnessed by BSI engineers in manufacturers laboratory.

PASS2: Complies. Tests carried out by third party lab; results accepted by BSI.

PASS\*: Report resulted in uncertainty and states that Compliance is more probable than non-compliance.

FAIL: Non compliance – Product does not meet the requirements of this clause.

FAIL\*: Report resulted in uncertainty and states that Non-compliance is more probable than compliance.

N/A: Not applicable to design under consideration.

N/T: Not tested due to similarity to previously tested item; reference earlier test report.

## Conditions of Issue.

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\*\*\* End of Report \*\*\*