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TEST REPORT No. 341290

Place and date of issue: Bellaria-Igea Marina - Italy, 12/04/2017

Customer: SESAMO S.r.l. - Strada Gabannone, 8/10 - 15030 TERRUGGIA (AL) - Italy

Date test requested: 21/03/2017

Order number and date: 72654, 22/03/2017

Date sample received: 30/03/2017

Test date: 31/03/2017

Purpose of test: air leakage of a sliding door in accordance with standard UL 1784:2015

Test site: Istituto Giordano S.p.A. - Via Erbosa, 72 - 47043 Gatteo (FC) - Italy

Sample origin: sampled and supplied by the Customer

Identification of sample received: No. 2017/0716

Sample name*

The test sample is called “ERMETIKA”.

(*) according to that stated by the Customer.

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Description of sample*

The test sample is a solid-panel automatic sliding door comprising:

- wrap-around frame covering the outside of the clear opening and rebate for the door seals made from extruded anodised-aluminium section with the following characteristics:
  - well-rounded corners;
  - no sharp edges;
  - area for installation of screws/wall plugs;
  - silicone-rubber seal to cover fixing points;
- door operator guaranteeing airtight closure comprising:
  - high-performance low-wear DC gear motor with encoder fitted to motor casing;
  - electronic control unit employing Sesamo Dualcore technology with dual processor and integrated switching power supply;
  - drive system with antistatic timing belt having internal steel-cord reinforcement;
  - heavy-duty extruded-aluminium track designed for fixing to standard walls and self-supporting systems;
  - extruded anodised-aluminium guide rail designed for horizontal and downward travel in order to allow the leaf to move towards the wrap-around frame and create an airtight seal by compressing the seals;
  - anodised-aluminium cover with well-rounded corners and no sharp edges or protrusions;
- leaf formed by:
  - anodised-aluminium extrusions with well-rounded corners designed to withstand high pressure. The heavy-duty top extrusion has a slot for insertion of hanger fixings. On the other hand, the bottom extrusion is shaped in such a way as to form a track for the runners secured to the base of the mock-up (floor);
  - flush-fitting door leaf of thickness 60 mm comprising a flame-retardant, expanded-polystyrene core enclosed by fire-resistant MDF edge strips; the entire panel is clad by two fire-resistant MDF panels of thickness 4 mm and faced with two layers of plastic laminate of thickness 0,9 mm;
  - 60Sh/A silicone-rubber perimeter bulb seals and bottom lip seal designed to provide optimum tightness;
  - runners designed to slide/move and keep the leaf in the correct position in order to obtain an airtight seal;
  - three heavy-duty roller hangers designed to guarantee sliding/linear motion towards the wrap-around frame.

(*) according to that stated by the Customer; the description of the sample also includes Customer-supplied drawings as set out hereafter.

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Leaf airtightness is obtained from a combined movement during closure that compresses the seals fitted to the leaf against the wrap-around frame.

Sample dimensions are as follows:

Opening height	2118 mm
Opening width	1365 mm
Clear opening height	2110 mm
Clear opening width	1350 mm
Leaf height	2152 mm
Leaf width	1450 mm

Customer-supplied list of materials

The mock-up includes the following hardware:

- 1 elbow-operated push button;
- 1 logic switch offering the following types of operation:
  - stop close;
  - stop open;
  - automatic;
  - only exit;
  - partly open;
  - manual opening;
  - reset;
  - battery operation.
- 1 set of storage batteries for opening in event of power outage;
- 1 D-shaped pull handle to facilitate manual opening of the leaf.

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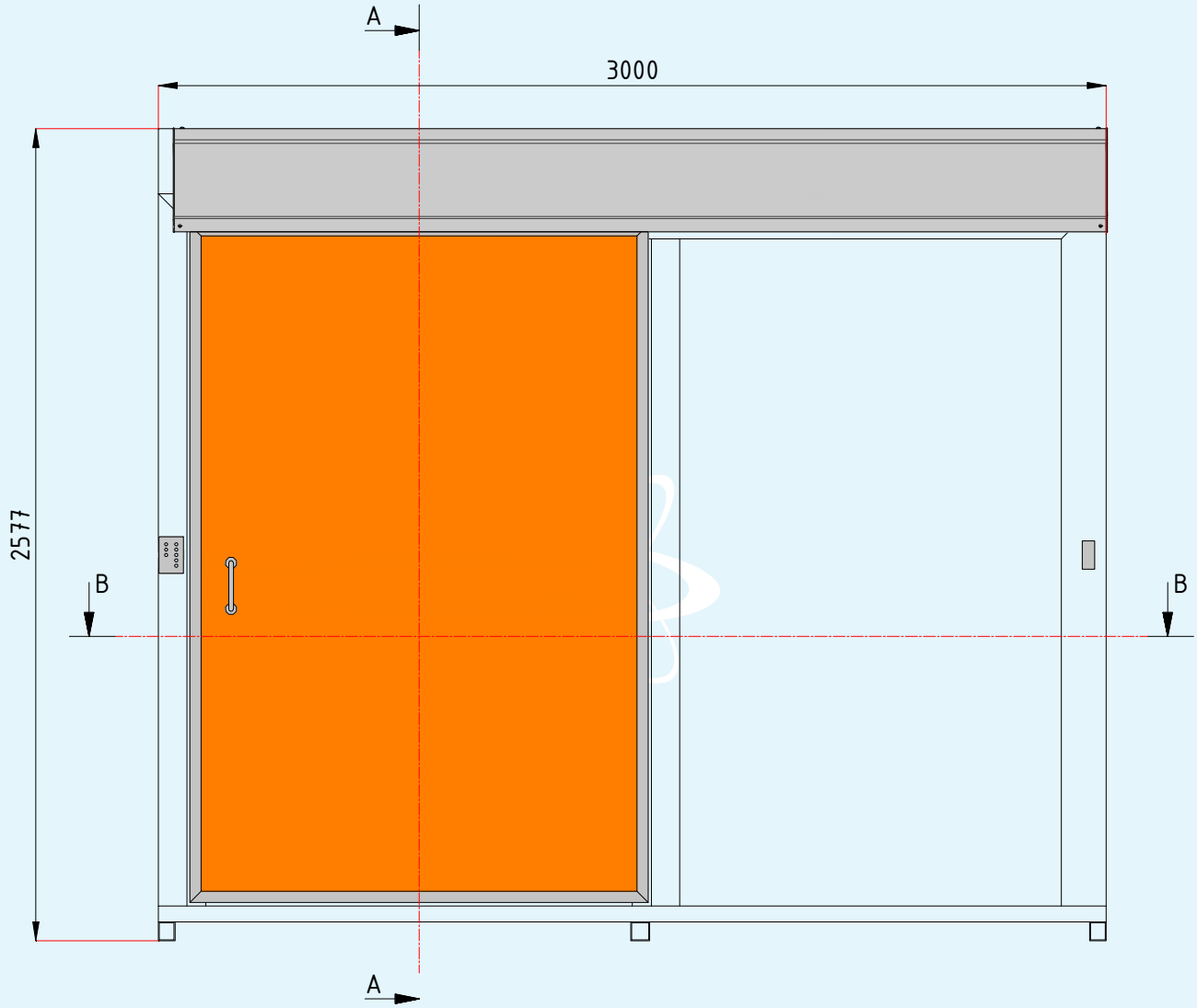
SAMPLE ELEVATION
(CUSTOMER-SUPPLIED)



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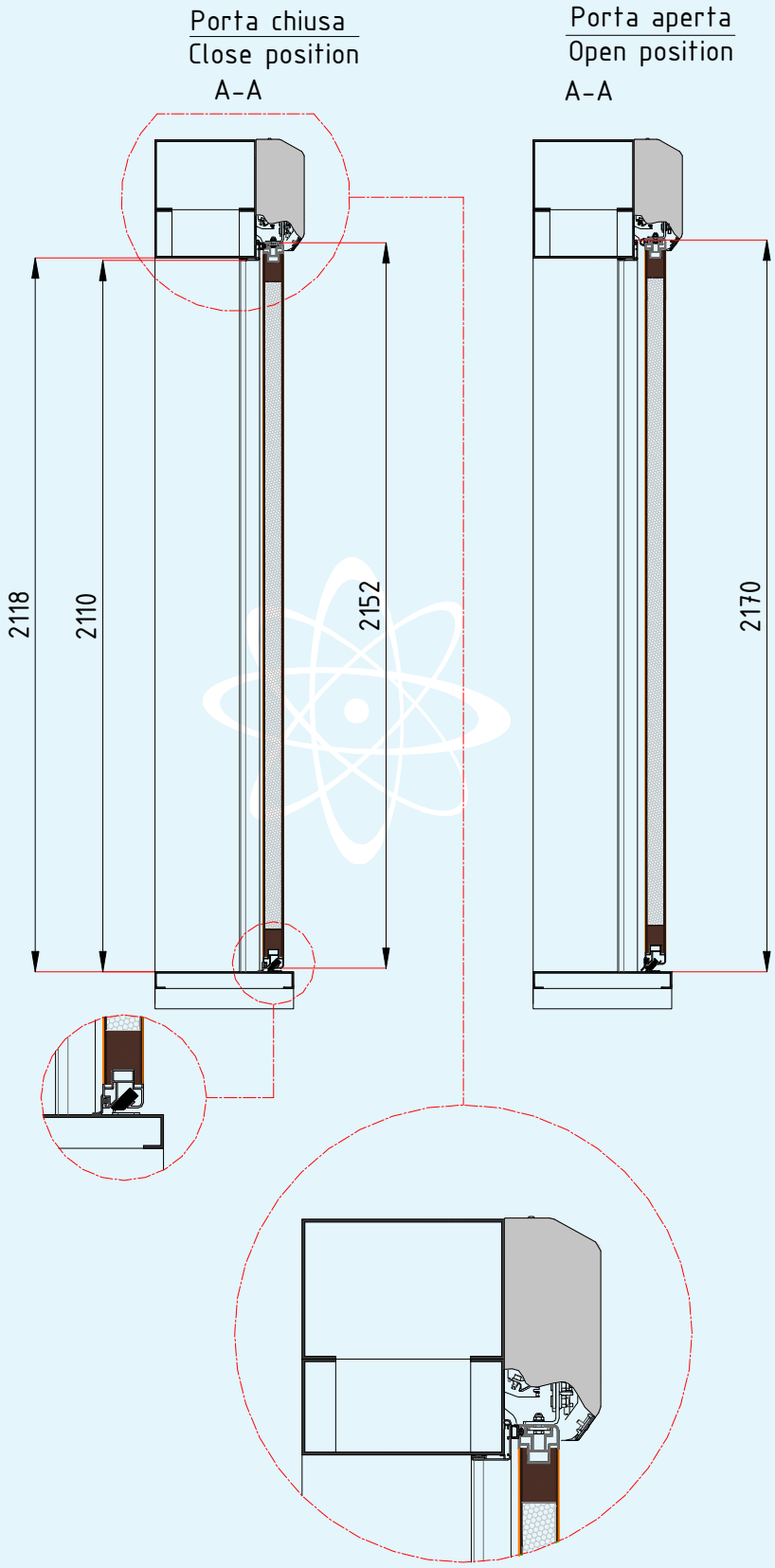
SECTION A:A
(CUSTOMER-SUPPLIED)



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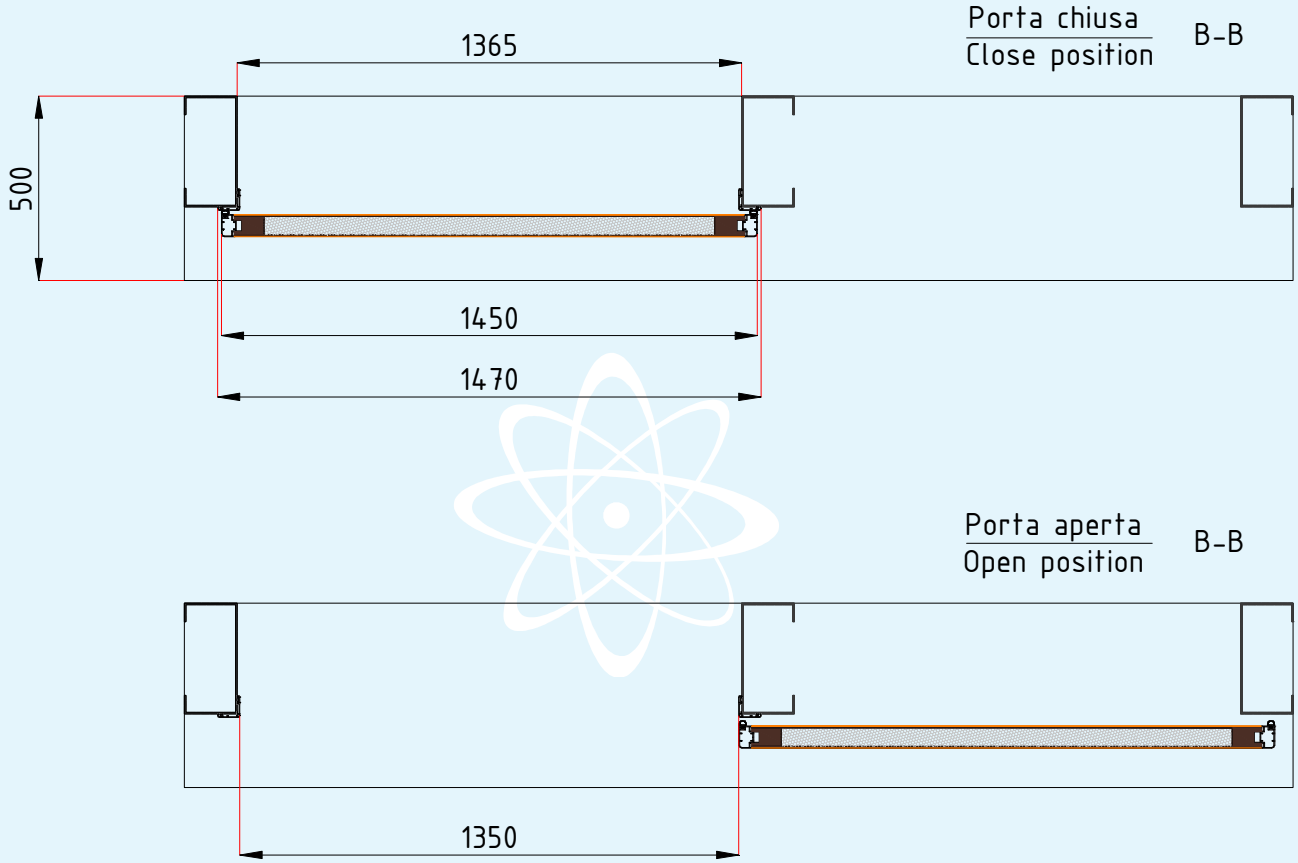
SECTION B:B
(CUSTOMER-SUPPLIED)



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Sample measurements

Overall dimensions	**width**	1470 mm
	height	2170 mm
Operable dimensions	**width**	1450 mm
	height	2150 mm
Overall area		3,190 m²
Operable area		3,118 m²
Operable perimeter		7,20 m

Normative References

The test was carried out in accordance with the requirements of standard UL 1784:2015 dated 17/02/2015 "Air Leakage Tests of Door Assemblies and Other Opening Protectives".

Test apparatus

The test was carried out using a computerised semiautomatic control and measurement system capable of performing all tests with the parameters requested by the normative reference and fitted with the following equipment:

- for the measurement of air leakage rate: pressure differential devices (orifice plates, nozzles and Venturi tubes) compliant with standards ASME MFC-14M:2003 "Measurement of fluid flow using small bore precision orifice meters", UNI EN ISO 5167-1:2004 dated 01/10/2004 "Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full - Part 1: General principles and requirements" and UNI EN ISO 5167-2:2004 dated 01/10/2004 "Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full - Part 2: Orifice plates";
- for measurement of pressure inside the test chamber: differential pressure transducers;
- Mitutoyo Corporation 5500 mm digital tape measure.

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Pre-test conditioning of sample

The sample was conditioned for four hours immediately prior to testing under the environmental conditions specified in the following table.

Temperature	(18 ± 3) °C
Relative humidity	(48 ± 10) %

Environmental conditions during test

Atmospheric pressure	(1020 ± 10) hPa
Ambient temperature	(18 ± 1) °C
Relative humidity	(48 ± 5) %

Test method

The test was performed using detailed internal procedure PP049 in the revision applicable at time of testing.

The sample was fitted to the test apparatus and subjected in sequence to:

- 5 full-stroke open and close cycles with automatic operation;
- air leakage measurement (at ambient temperature).

Test results

The test results are set out hereafter in the form of photos and tables.

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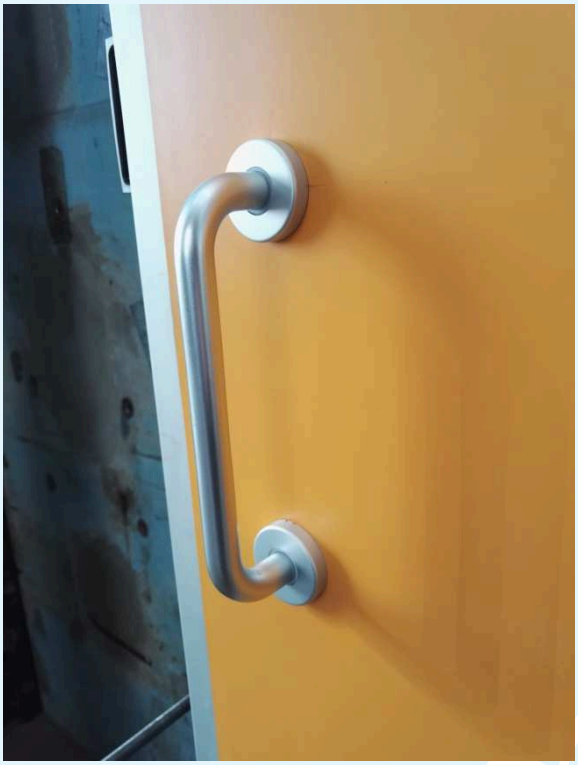
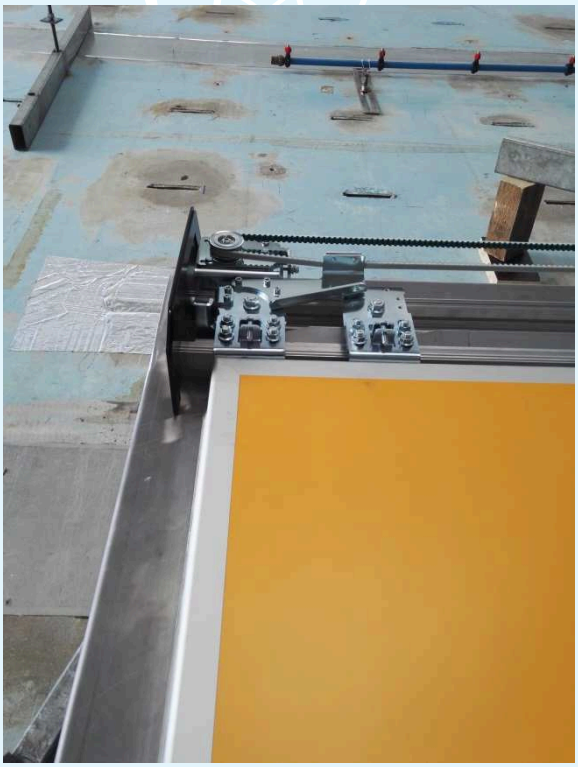
Sample photo





Sample close-ups

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Air leakage measurement (at ambient temperature)

Pressure		Air flow rate*			
nominal	test	total		related to the opening area and relative uncertainty**	
[Pa]	[Pa]	[m³/h]	[ft³/min]	[m³/h·m²]	[ft³/(min·ft²)]
25	25	0,776	0,457	0,249 ± 0,006	0,014 ± 0,000
50	50	1,237	0,728	0,397 ± 0,009	0,022 ± 0,000
75	75	1,640	0,965	0,526 ± 0,012	0,029 ± 0,001
-25	-25	0,736	0,433	0,236 ± 0,005	0,013 ± 0,000
-50	-50	1,151	0,678	0,369 ± 0,008	0,020 ± 0,000
-75	-75	1,469	0,864	0,471 ± 0,011	0,026 ± 0,001

(*) figures refer to pressure of 101,3 kPa and temperature of 293 K.

(**) uncertainty considers contributions caused by measurement of the following quantities: air flow rate, test chamber pressure and size of sample; expanded uncertainty has been calculated using a coverage factor "k" of 2, corresponding to a confidence level of 95,45 %.

Observations: //

The results given refer exclusively to the test sample itself and are only valid under the same conditions in which testing was carried out.

Test Technician:
Dott. Ing. Paolo Bertini

Head of Security and Safety Laboratory:
Dott. Andrea Bruschi

Chief Executive Officer
(Dott. Nazario Giordano)