

Test Report



Number	21-003271-PR01 (PB-A01-02-en-01)
Owner (Client)	EXALCO S.A. 5th Km of National Road Larisa-Athens 41110 Larisa Greece
Product	Double tilt and turn casement door with opening central meeting stile
Designation	System: 905C EXALCO Shipping name: 905C EXALCO
Details	Manufacturer EXALCO S.A., - Larisa; Material Aluminium system with thermal break; Type of opening Turn / tilt and turn; Opening direction Active casement DIN right (opening) to the inside, Inactive casement DIN left (opening) to the inside; Overall dimensions (W x H) 1550 mm x 2150 mm
Special features	Punctual sealing systems, which must be carried out accordingly. Test sequence. Position of locking. The vapour pressure equalisation of the glazing rebate has to be ensured. Material compatibility must be taken into account. Material durability must be taken into account.
Order	Testing of air permeability, resistance to wind load, watertightness
Contents	The test report contains a total of 14 pages and annexes (15 pages).
Note	The test report shall only be published in its unabbreviated form. The "Guidance Sheet for the Use of ift Test Documents" applies.

Ve-PB0-4390-en/ (01.11.2019



Testing of air permeability, resistance to wind load, watertightness

1 Execution

1.1 Sampling and product description

The following details have been presented to ift:

Sampler: EXALCO S.A., 41110 Larisa (Greece)
Evidence: ift Rosenheim did not receive a sampling report.
Date of delivery: 29.07.2021
Description: For product identification the specimen tested is described/represented in the Annex. Material specifications, item numbers and other company-specific descriptions are details provided by the client and will be checked for plausibility by ift.

Test specimen no.: 21-003271-PK01 / WE: 54094-001

1.2 Basic documents *) of the procedures

EN 1026:2016 - 03
Windows and doors - Air permeability - Test method
EN 1027:2016 - 03
Windows and doors - Watertightness - Test method
EN 12211:2016 - 03
Windows and doors - Resistance to wind load - Test method

*) and the relevant national versions, e.g. DIN EN

1.3 Short description of the procedures

The tests were performed according to the following sequence:

- Air permeability
- Watertightness
- Resistance to wind load
- Air permeability - Repeated test after wind load test
- Resistance to wind load - Safety test

Air permeability according to EN 1026:2016-03

Leakages of the test set-up were made visible using artificially generated fog and were sealed using permanently resilient sealant.

Air permeability was tested for the respective pressure steps at negative pressure and positive pressure in accordance with the following diagram. At the beginning of each measurement the test specimen was exposed to three pressure pulses.

Testing of air permeability, resistance to wind load, watertightness

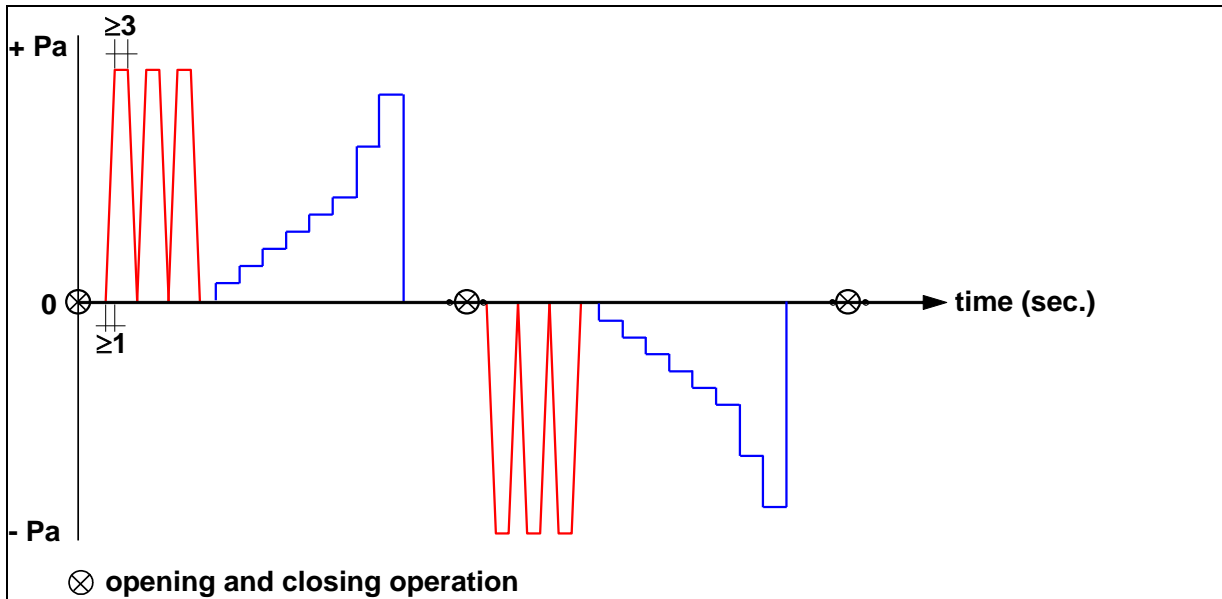


Illustration Test sequence for air permeability

Watertightness according to EN 1027:2016-03

Prior to the test, three positive pressure pulses were applied to the test specimen. Subsequently, the external surface of the test specimen was constantly sprayed with water through nozzles, conforming to the standard. After a 15-minute pressure-less spraying period an additional overpressure in terms of subsequent pressure steps was applied. The pressure steps were defined by the standard and were kept for 5 minutes each (see illustration). Watertightness was tested up to the maximum test pressure difference.

The water volume applied and the angle of spray depend on the intended type of installation of the component (protected / unprotected) and the height of the component (< / > 2.5 m) according to the standard. The required water volume and the angle of spray are documented in the measuring data sheet.

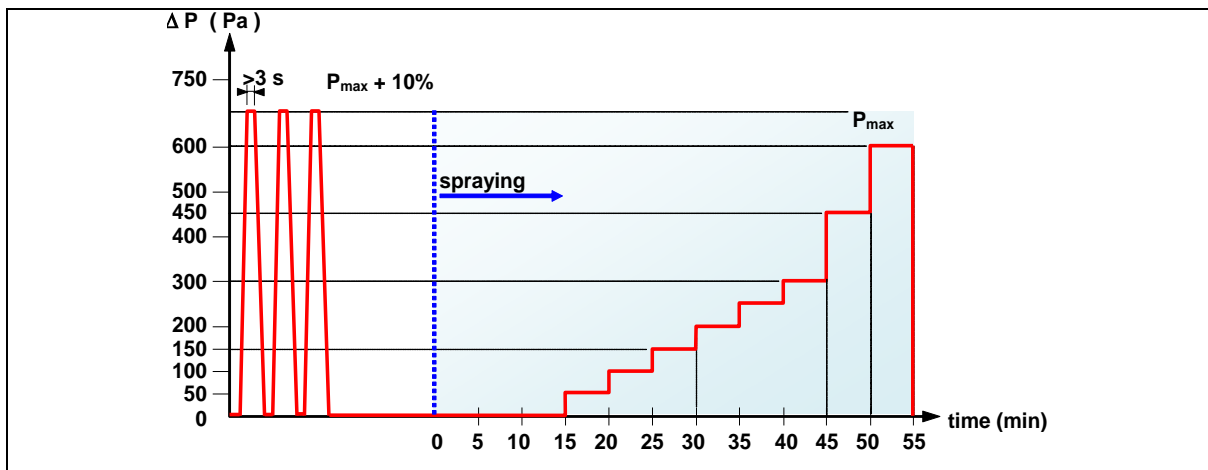


Illustration Test sequence for watertightness

Resistance to wind load according to EN 12211:2016-03

Testing of air permeability, resistance to wind load, watertightness

Resistance to wind load was tested in accordance with the standard and conducted in steps at positive pressure and negative pressure up to the test pressure p_1 . The test specimen was exposed to three pressure pulses $\Delta p_1 + 10\%$. This was followed by determination of the frontal deflection of test specimen for each pressure step when exposed to positive test pressure Δp_1 and negative test pressure $-\Delta p_1$. Then the test specimen was subjected to 50 cycles including alternating positive and negative pressures of $\pm \Delta p_2 = \Delta p_1 - 50\%$.

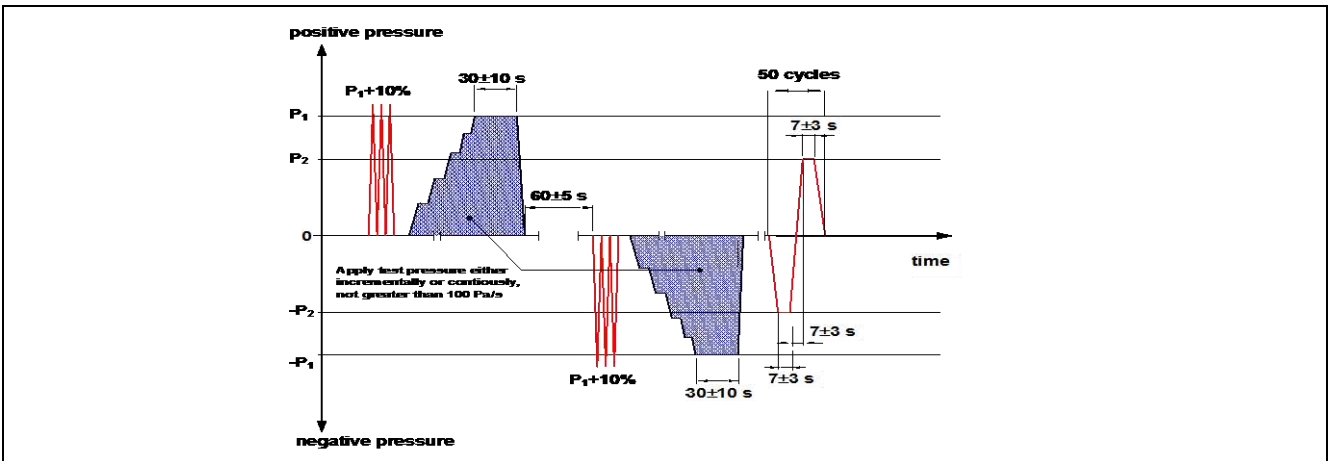


Illustration Test sequence for resistance to wind load - Deflection and alternating positive/negative pressures

Air permeability - Repetition of test after wind load according to EN 1026:2016-03

Following the static resistance to wind load test (deflection) and alternating positive/negative pressure the test for air permeability was repeated in conformity with EN 12210.

Resistance to wind load - Safety test according to EN 12211:2016-03

The wind resistance test (safety test) was conducted at negative pressure and positive pressure in accordance with EN 12211 up to test pressure $\Delta p_3 = \Delta p_1 + 50\%$.

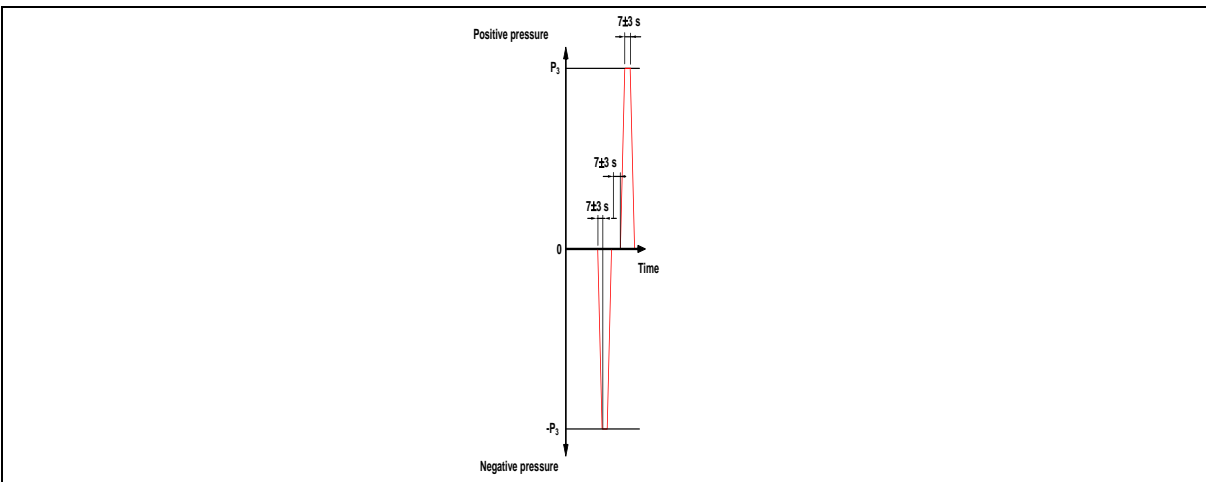


Illustration Test sequence for resistance to wind load - safety test

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 Owner (client) EXALCO S.A., 41110 Larisa (Greece)

Testing of air permeability, resistance to wind load, watertightness



2 Detailed results

Air permeability according to EN 1026:2016-03

Project-No. 21-003271-PR01
 Basis EN 1026:2016-03
 Windows and doors - Air permeability - Test method
 Test equipment PMEx/026582 - Multifunction measurement device
 EPst/026585 - Window and facade test rig
 Test specimen Double tilt and turn casement door with opening central meeting stile
 Test specimen No. 54094-001
 Date of test 29.07.2021
 Test engineer in charge Dimitrios Moustakidis
 Test engineer Alexandros Simeonidis

Implementation of tests
 Deviations There have been no deviations from the test method as specified in the standard/basis.

Ambient conditions Temperature 29,7 °C Air humidity 43,6 % Air pressure 1006 hPa
 The ambient conditions are in accordance with the standard/basis requirements.

Measurement data/Results

Closing condition closed and locked
 Size of window frame 1550 mm x 2150 mm
 Rated joint length of active casement 745 mm x 2100 mm
 Rated joint length of inactive casement 745 mm x 2100 mm
 Area of test specimen 3,33 m²
 Length of opening joints 9,28 m

Table: Measurement of operating forces

Individ. measured result	1	2	3	Average value
in Nm	9,0	9,5	9,3	9,3

Testing of air permeability, resistance to wind load, watertightness

Initial load before positive wind pressure and negative wind pressure: 660 Pa

Table: Air permeability at positive wind pressure


Measured results at positive wind pressure 	Pressure differential Pa	50	100	150	200	250	300	450	600
	Flow rate (volume) m³/h	2,3	3,2	3,9	4,6	5,1	5,7	7,5	9,0
	Joint length-related m³/hm	0,25	0,34	0,42	0,49	0,55	0,62	0,81	0,97
	Overall area-related m³/hm²	0,68	0,96	1,18	1,37	1,54	1,72	2,25	2,71

Table: Air permeability at negative wind pressure



Measured results at negative wind pressure 	Pressure differential Pa	50	100	150	200	250	300	450	600
	Flow rate (volume) m³/h	1,3	2,5	3,3	4,0	4,6	5,2	6,6	7,8
	Joint length-related m³/hm	0,14	0,27	0,36	0,43	0,50	0,56	0,72	0,84
	Overall area-related m³/hm²	0,39	0,74	1,00	1,21	1,39	1,56	1,99	2,33

Table: Air permeability from average values from positive and negative wind pressures

Average value from positive and negative wind pressures 	Pressure differential Pa	50	100	150	200	250	300	450	600
	Flow rate (volume) m³/h	1,8	2,8	3,6	4,3	4,9	5,5	7,1	8,4
	Joint length-related m³/hm	0,2	0,3	0,4	0,5	0,5	0,6	0,8	0,9
	Overall area-related m³/hm²	0,5	0,9	1,1	1,3	1,5	1,6	2,1	2,5

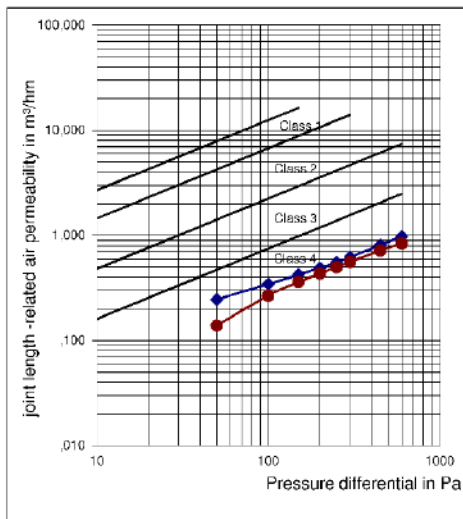


Diagram: Joint length-related air permeability (positive and negative wind pressures)

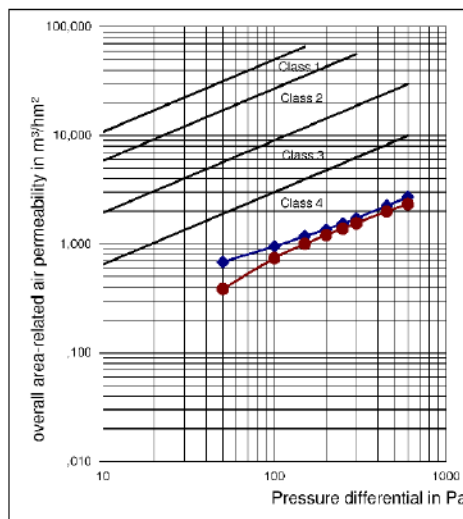


Diagram: Overall area-related air permeability (positive and negative wind pressures)



Testing of air permeability, resistance to wind load, watertightness

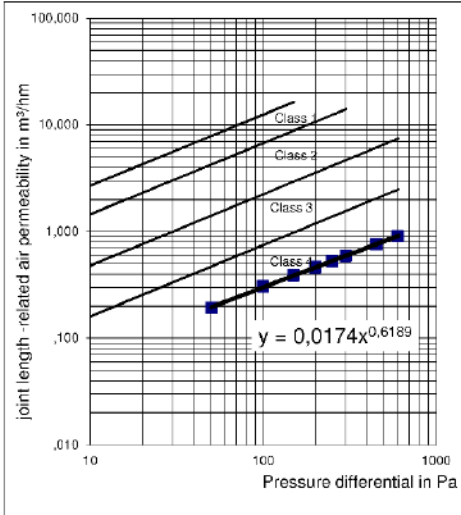


Diagram: Joint length-related air permeability (average value from positive and negative wind pressures)

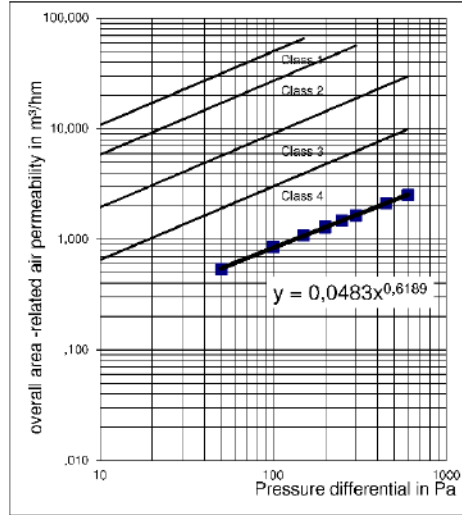


Diagram: Overall area-related air permeability (average value from positive and negative wind pressures)

Table: Measured results

Reference air permeability related to joint length	Q100 = 0,30 m³/hm
Reference air permeability related to overall area	Q100 = 0,84 m³/hm²

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Testing of air permeability, resistance to wind load, watertightness

Watertightness according to EN 1027:2016-03

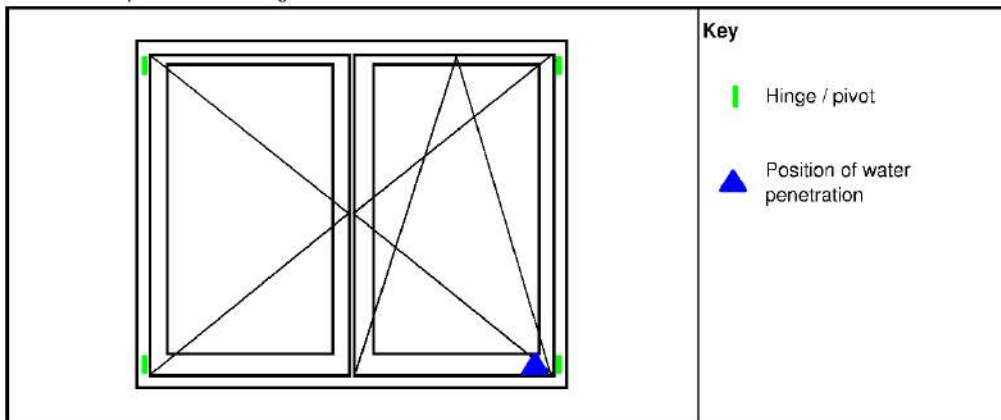
Project-No. 21-003271-PR01
Basis EN 1027:2016-03
Windows and doors - Watertightness - Test method
Test equipment EPst/026585 - Window and facade test rig
Test specimen Double tilt and turn casement door with opening central meeting stile
Test specimen No. 54094-001
Date of test 29.07.2021
Test engineer in charge Dimitrios Moustakidis
Test engineer Alexandros Simeonidis
Implementation of tests
Deviations There have been no deviations from the test method as specified in the standard/basis.
Ambient conditions Temperature 30.0 °C Air humidity 43,1 % Air pressure 1006 hPa
The ambient conditions are in accordance with the standard/basis requirements.

Measurement data/Results

Closing condition closed and locked
Size of window frame 1550 mm x 2150 mm
Spray method A (Spray angle 24°)
Number of spray nozzles 4
Water amount 480 l/h
0.48 m³/h

Initial load was applied before testing.

View of test specimen - watertightness



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Testing of air permeability, resistance to wind load, watertightness

Table: Test

Pressure/Pa	Notice
0	No water penetration
50	No water penetration
100	No water penetration
150	No water penetration
200	No water penetration
250	No water penetration
300	No water penetration
450	No water penetration
600	Water penetration after 1 minute, active casement, hinge side at bottom

No water penetration at up to 450 Pa detected.

Testing of air permeability, resistance to wind load, watertightness

Resistance to wind load according to EN 12211:2016-03

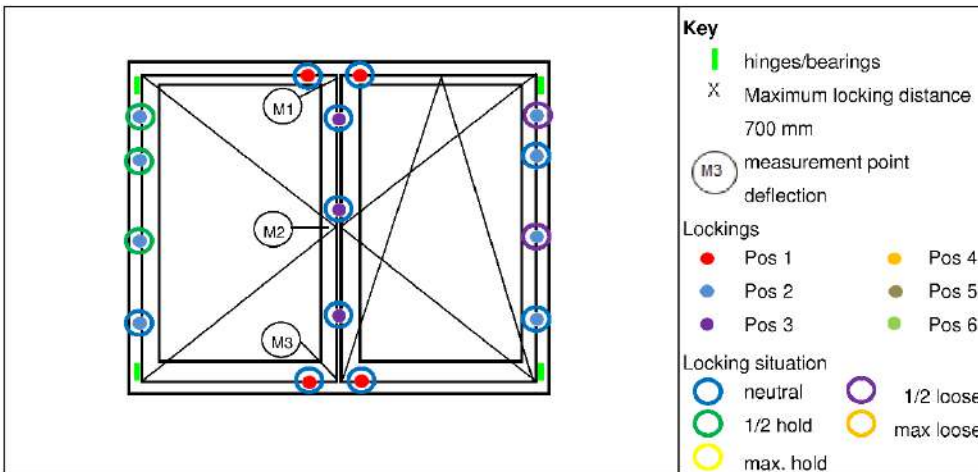
Project-No. 21-003271-PR01
 Basis EN 12211:2016-03
 Windows and doors - Resistance to wind load - Test method
 Test equipment EPs/026585 - Window and facade test rig
 Test specimen Double tilt and turn casement door with opening central meeting stile
 Test specimen No. 54094-001
 Date of test 29.07.2021
 Test engineer in charge Dimitrios Moustakidis
 Test engineer Alexandros Simeonidis

Implementation of tests
 Deviations There have been no deviations from the test method as specified in the standard/basis.

Ambient conditions Temperature 29,5 °C Air humidity 47,1 % Air pressure 1006 hPa
 The ambient conditions are in accordance with the standard/basis requirements.

Measurement data/Results

Closing condition closed and locked





Testing of air permeability, resistance to wind load, watertightness

Maximum test pressure: ± 1600 Pa 3 pressure pulses of 1760 Pa

Table: Maximum deflection for classification at effective span $l = 2100$ mm

Class		maximum permissible relative deflection in mm
A	($l/150$)	14.0
B	($l/200$)	10.5
C	($l/300$)	7.0

Table: Measured results of frontal deflection in mm at negative / positive wind pressures

	p_1 in Pa	Positive wind pressure					Negative wind pressure				
		400	800	1200	1600	2000	-400	-800	-1200	-1600	-2000
Measured results of frontal deflection in mm	M1 in mm				1.3					2.2	
	M2 in mm				5.4				6.7		
	M3 in mm				2.9				3.0		
	f_{rel} in mm				3.4				4.1		
	l/f_{rel}				622				517		

Table: Permanent deformation measured at 0 Pa after 60 seconds

		Positive pressure	Negative pressure
		Permanent deflection	
	M1 in mm	0.0	0.1
	M2 in mm	0.0	0.1
	M3 in mm	0.0	0.0
	f_{rel} in mm	0.0	0.0

Key

- p_1, p_2 Test pressure
- M1, M2, M3 Frontal dislodgement at measurement points M1, M2, M3
- f_{rel} Frontal deflection
- l Effective span

Dynamic wind loads (negative / positive pressures)

Table: pressure pulses

p_2 in Pa	200	400	600	800	1000
passed				✓	

50 cycles at $p_2 \pm 800$ Pa

Malfunctions at test specimen

At the test specimen were no malfunctions detected.

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Testing of air permeability, resistance to wind load, watertightness



Air permeability - Repetition of test after wind load according to EN 1026:2016-03

Project-No.	21-003271-PR01		
Basis	EN 1026:2016-03 Windows and doors - Air permeability - Test method		
Test equipment	EPst/026585 - Window and facade test rig		
Test specimen	Double tilt and turn casement door with opening central meeting stile		
Test specimen No.	54094-001		
Date of test	30.07.2021		
Test engineer in charge	Dimitrios Moustakidis		
Test engineer	Alexandros Simeonidis		
Implementation of tests Deviations	There have been no deviations from the test method as specified in the standard/basis.		
Ambient conditions	Temperature	30,4 °C	Air humidity 45 % Atmospheric pressure 1005 hPa
	The ambient conditions are in accordance with the standard/basis requirements.		

Measurement data/Results

Closing condition	closed and locked		
Size of window frame	1550 mm	x	2150 mm
Rated joint length of active casement	745 mm	x	2100 mm
Rated joint length of inactive casement	745 mm	x	2100 mm
Area of test specimen	3,33 m ²		
Length of opening joints	9,28 m		

Subsequent to the test of resistance to wind load by application of test pressures p_1 and p_2 , the upper limit of the achieved air permeability class must not be exceeded by more than 20% as set out by EN 12207.

The requirements were fulfilled.

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Testing of air permeability, resistance to wind load, watertightness

Resistance to wind load - Safety test according to EN 12211:2016-03

Project-No. 21-003271-PR01
 Basis EN 12211:2016-03
 Windows and doors - Resistance to wind load - Test method
 Test equipment EPst/026585 - Window and facade test rig
 Test specimen Double tilt and turn casement door with opening central meeting stile
 Test specimen No. 54094-001
 Date of test 29.07.2021
 Test engineer in charge Dimitrios Moustakidis
 Test engineer Alexandros Simeonidis

Implementation of tests
 Deviations There have been no deviations from the test method as specified in the standard/basis.

Ambient conditions Temperature 30 °C Air humidity 45 % Atmospheric pressure 1005 hPa
 The ambient conditions are in accordance with the standard/basis requirements.

Measurement data/Results**Safety test****Table:** Pressure steps

		Positive wind pressure						Negative wind pressure					
p ₃	Pa	600	1200	1800	2400	3000	xxxx	-600	-1200	-1800	-2400	-3000	xxxx
passed					✓						✓		

Safety test passed at up to p₃ ± 2400 Pa.

Malfunctions at test specimen

At the test specimen were no malfunctions detected.

Testing of air permeability, resistance to wind load, watertightness

3 Summary

3.1 Result

The test results are shown in the measuring data sheet, see item "Detailed results".

3.2 Instructions for use

This test/evaluation does not allow any statement to be made on further characteristics of the present structure regarding performance and quality, in particular the effects of weathering and ageing.

The test was performed according to standard and the details for identification of the test specimen are complete; on the basis of this Test Report an "ift-Nachweis" (Evidence) can be issued.

ift Rosenheim
03.08.2021



Thomas Stefan, Dipl.-Ing. (FH)
Head of Testing Department
Building Component Testing



Dimitrios Moustakidis, MSc, Dipl.-Ing.
Operating Testing Officer
Building Component Testing

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 owner (client) EXALCO S.A., 41110 Larisa (Greece)



Die Beschreibung des geprüften Probekörpers dient der normkonformen Identifizierung des Produkttyps, für den die festgestellten Werte gelten. Alternativ zur vorgegebenen tabellarischen Datenerfassung kann die Beschreibung auch in Form von technischen Zeichnungen, Verarbeitungsrichtlinien, Stücklisten etc. erfolgen. Zusätzliche Produktdetails bitte ergänzen.

Die *Mindest-Angaben sind Voraussetzung für die Erstellung eines ift-Nachweises. Nur bei Angabe aller in diesem Dokument angeforderten Daten ist ggf. eine nachträgliche Gutachtliche Stellungnahme möglich. Alle *Mindest-Angaben des Auftraggebers werden vom ift auf Plausibilität geprüft; ggf. festgestellte Abweichungen und/oder ergänzende Feststellungen werden dokumentiert.

The description of the specimen to be tested serves to identify, in conformity with the standards, the product type, for which the values determined will apply. Alternatively to the specified tabulated data collection, the description may also be made by technical drawings, processing instructions, parts lists, etc. Please supplement additional product details.

The *minimum details are the precondition for issuing the "ift-Nachweis". Only upon provision of all requested data subsequently requested Expert Statements may be issued. All *minimum details provided by the client will be checked for plausibility by ift, any deviations observed and/or additional findings will be documented.

* Mindestangaben

* minimum details

Alle Maßangaben in mm

All dimensions in mm

Nicht Zutreffendes bitte löschen.

Please delete non-appropriate.

Wareneingang-Nr.: 54094-001

ID of goods received :

ift Mitarbeiter: Moustakidis

ift staff member :

Eigenschaft Characteristic	Angaben des Auftraggebers Information provided by client
Produkt Product	* Double tilt and turn casement door with opening central meeting stile
Hersteller Manufacturer	* EXALCO S.A.
Bezeichnung Designation	* 905C EXALCO
Profilsystem Profile system	* 905C EXALCO
Öffnungsart, Öffnungsrichtung Type of opening, opening direction	* Active casement: Tilt and turn, DIN right inward opening Inactive casement: Turn-only, DIN left, inward opening
Rahmenmaterial Frame material	* Aluminium profiles with thermal break
Blendrahmenaußenmaß (B x H) Overall frame dimensions (W x H)	* 1,550 mm x 2,150 mm
Bewertetes Flügelaußenmaß (B x H) Rated casement dimensions (W x H)	* 745 mm x 2,100 mm, active casement 745 mm x 2,100 mm, inactive casement
Blendrahmen Frame member	
Bezeichnung / Typ / Art.-Nr. Designation / type / item no.	* 109-809
Rahmenverbindung Frame joint	* Mitred, bonded, compressed and sealed using pourable sealant

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owner (client) EXALCO S.A., 41110 Larisa (Greece)



Eigenschaft Characteristic	Angaben des Auftraggebers Information provided by client
Flügelrahmen Casement member	
Bezeichnung / Typ / Art.-Nr. Designation / type / item no.	*109-810
Flügelgewicht (in kg) Casement weight (in kg)	*120
Rahmenverbindung Frame joint	*Mitred, bonded, compressed and sealed using pourable sealant
Zusatzprofile (falls vorhanden) Supplementary profiles (if appropriate)	
Bezeichnung Designation	*Dummy mullion profile 109-812
Rahmenverbindung Frame joint	*Screwed and sealed using pourable sealant
Falzausbildung Rebate design	
Falzentwässerung Rebate drainage	*Inside rebate: 5 drillings Ø 12 mm with ball valves Item No. SV-9 NEBC + 4 drillings, to outside front: 2 slots 5 mm x 24 mm, with cover caps
Druckausgleich Pressure equalisation	*Without pressure equalization
Falzdichtung außen External rebate seal	
Hersteller / Lieferant Manufacturer / supplier	EXALCO S.A.
Artikelnummer Item no.	*60.4
Material	*EPDM
Eckausbildung Corner design	*Mitred, bonded and sealed using pourable sealant
Eckausbildung Standflügel Corner design inactive casement	*On lock side, vertical, butt-jointed at top and bottom
Falzdichtung Mitte Centre rebate seal	
Hersteller / Lieferant Manufacturer / supplier	EXALCO S.A.
Artikelnummer Item no.	*805
Material	*EPDM
Eckausbildung Corner design	*Mitred, bonded and sealed using pourable sealant, with additional EPDM part (gr01) glued on top of 805 gasket.

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Eigenschaft Characteristic	Angaben des Auftraggebers Information provided by client
Eckausbildung Standflügel Corner design inactive casement	*On lock side, vertical, butt-jointed at top and bottom
Falzdichtung innen Internal rebate seal	
Hersteller / Lieferant Manufacturer / supplier	EXALCO S.A.
Artikelnummer Item no.	*70C GRS X-01, additional corner EPDM accessories 50 mm x 50 mm.
Material Material	*EPDM
Eckausbildung Corner design	*Mitred and bonded
Eckausbildung Standflügel Corner design inactive casement	*On three sides, on lock side butt-jointed to dummy mullion profile und bonded
Füllung Infill panel	IGU
Glasaufbau Glass configuration	*6 mm LSG / 12 mm Cavity / 6 mm LSG
Gesamtdicke Total thickness	*24 mm
Verglasungsdichtung außen External glazing gasket	
Hersteller / Lieferant Manufacturer / supplier	EXALCO S.A.
Artikelnummer Item no.	*42
Material Material	*EPDM
Eckausbildung Corner design	*Mitred and sealed using pourable sealant
Verglasungsdichtung innen Internal glazing gasket	
Hersteller / Lieferant Manufacturer / supplier	EXALCO S.A.
Artikelnummer Item no.	*43
Material Material	*EPDM
Eckausbildung Corner design	*Butt-jointed
Glashalteleiste Glazing bead	
Typ Type	*101-078A

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Eigenschaft Characteristic	Angaben des Auftraggebers Information provided by client
Eckausbildung Corner design	*Butt-jointed
Befestigung Fixing method/fasteners	*Clamped and sealed using pourable sealant
Dampfdruckausgleich Vapour pressure equalisation	*Each casement at bottom: 1 slot 5 mm x 24 mm
Beschlag Hardware	*Tilt & turn hardware
Typ Type	*UNI- JET C
Hersteller Manufacturer	*Gretsch-Unitas GmbH
Lager Bearings	*Tilt mechanism pivot Corner pivot
Anzahl Verriegelungen (wo vorhanden): Number of locking devices (where appropriate):	
Unten At bottom	*Active casement: 1 Inactive casement: 1
Oben At top	*Active casement: 1 Inactive casement: 1
Bandseitig On hinge side	*Active casement: 4 Inactive casement: 4
Schließseitig On lock side	*3
Max. Verriegelungs- abstand Max. locking distance	*700 mm
Stellung der Verriegelung Position of locking device	*Locking points partly under partly hold
Befestigung des Probekörpers am Montagerahmen / an die Tragkonstruktion Fixing of test specimen to sub- frame / supporting construction	
Material Montagerahmen Material of subframe	*Steel frame with welded corners
Befestigungsmittel Fasteners	*
Schraubentyp Screw type	*Self drilling screws
Schraubenanzahl Number of screws	*20
Schraubendimension Screw dimensions	*4,5 mm x 60 mm
Befestigungsmittel- abstände Fasteners spaced	*

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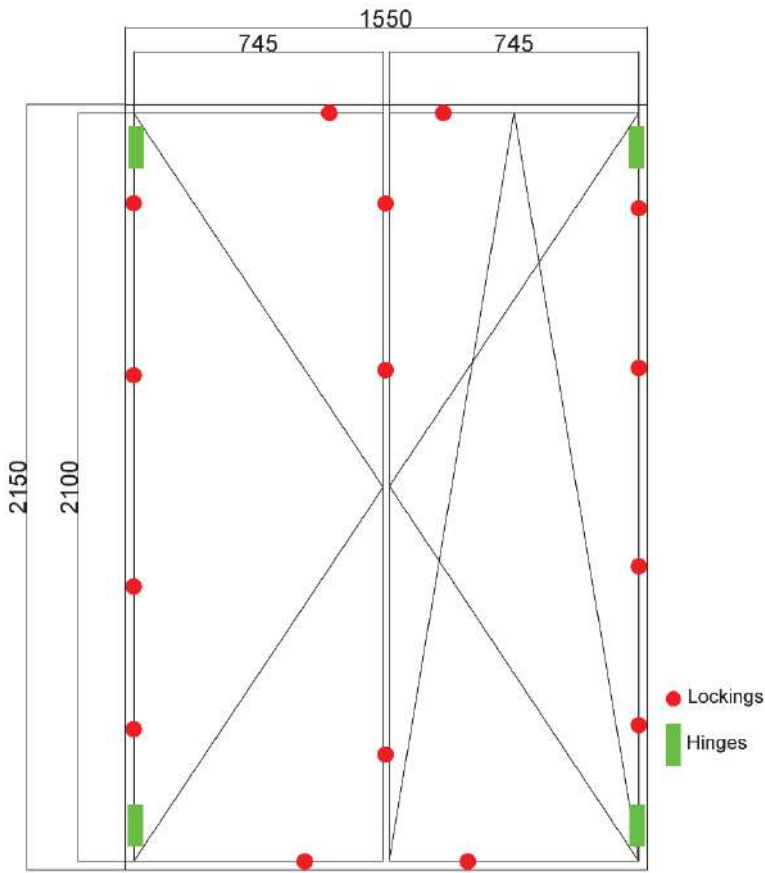


Eigenschaft Characteristic	Angaben des Auftraggebers Information provided by client
Aus der Ecke From corner	*150 mm
Dazwischen In-between	*400 mm
Ausführung Design	*Spacer blocks towards steel frame on each fixing point
Füllung der Anschlussfuge Infill of installation gap	*Existent, continuous and open from frame profile to steel surround frame

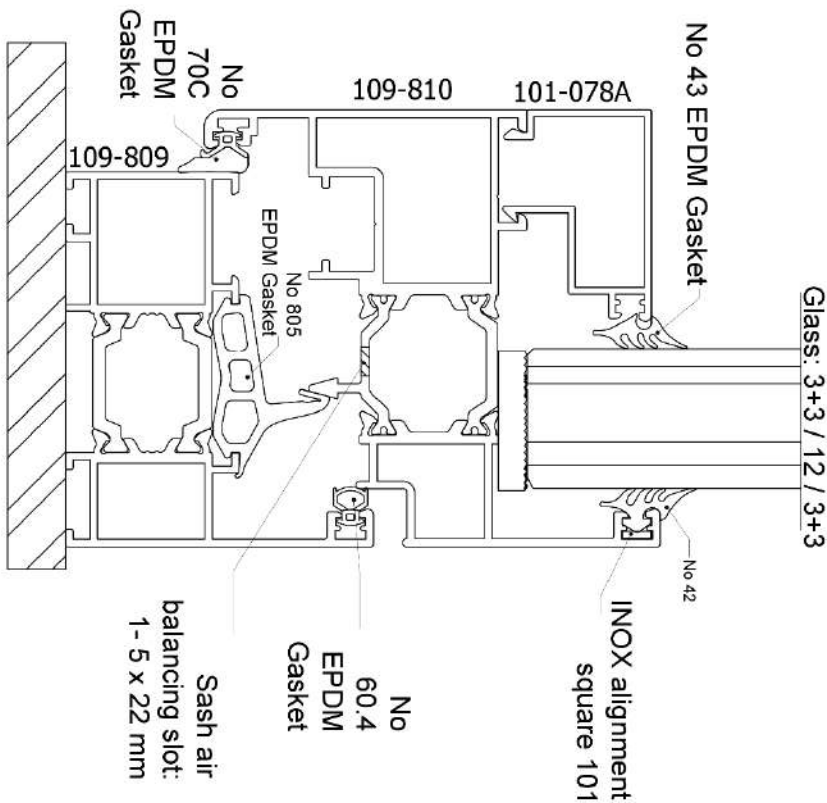
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Picture 1 View

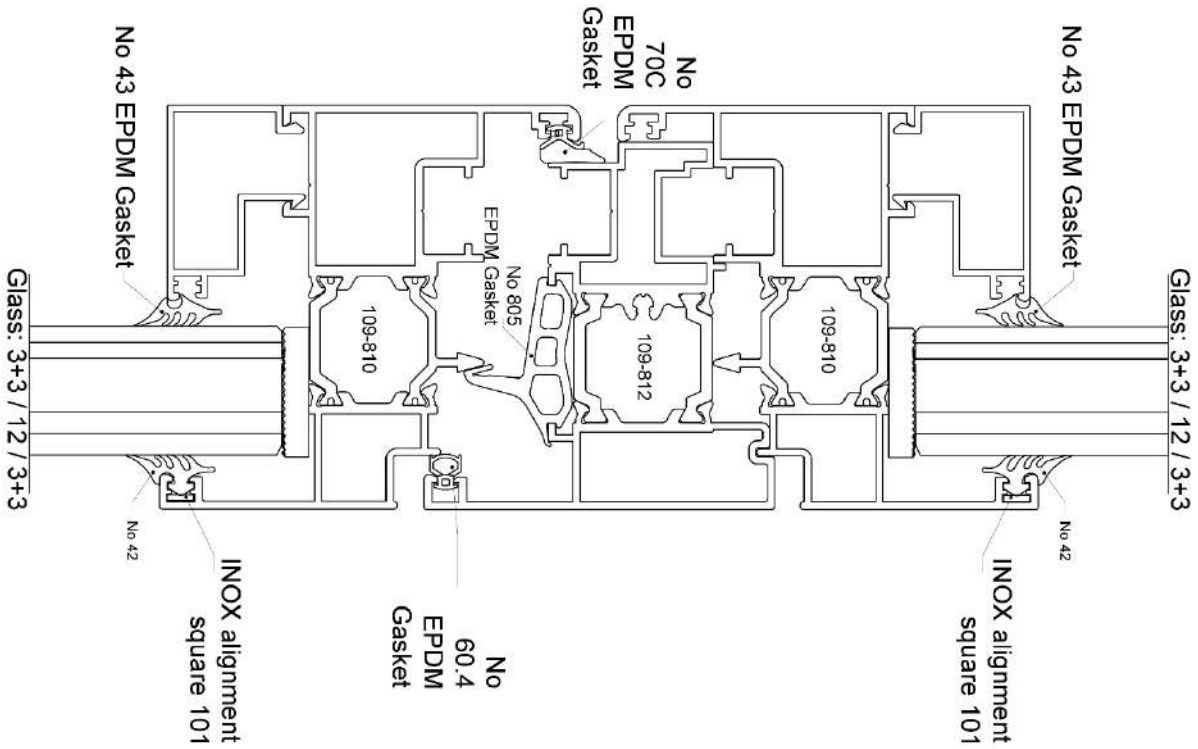


Picture 2 Horizontal section, frame - active casement

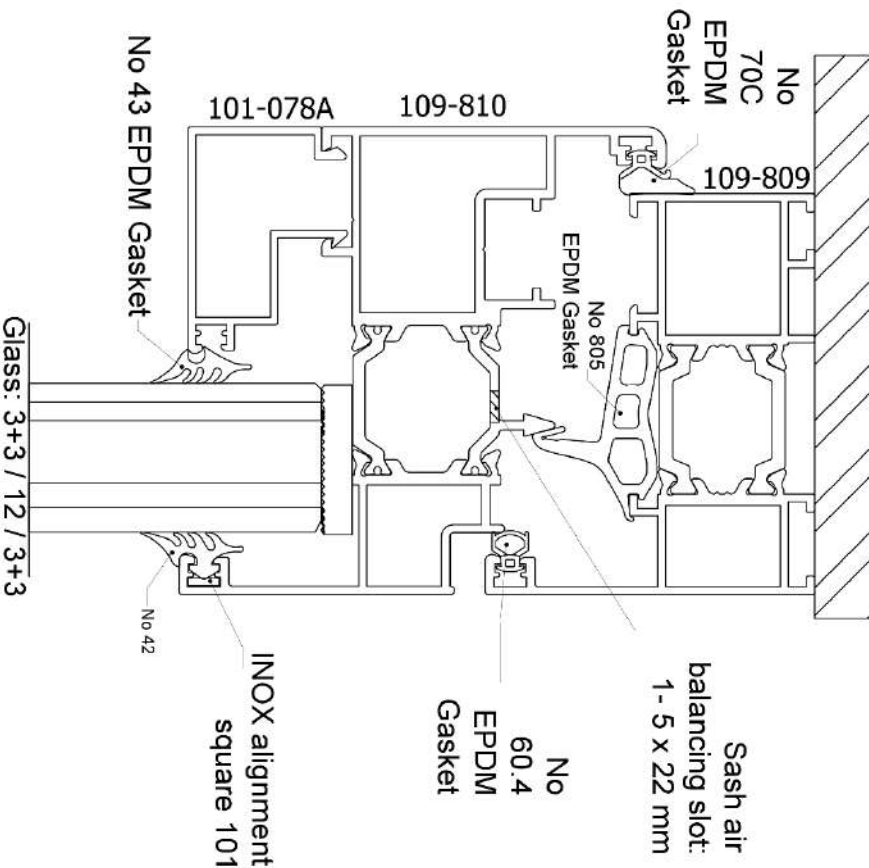
Test Report

no. 21-003271-PR01 (PB-A01-02-en-01) dated 03.08.2021

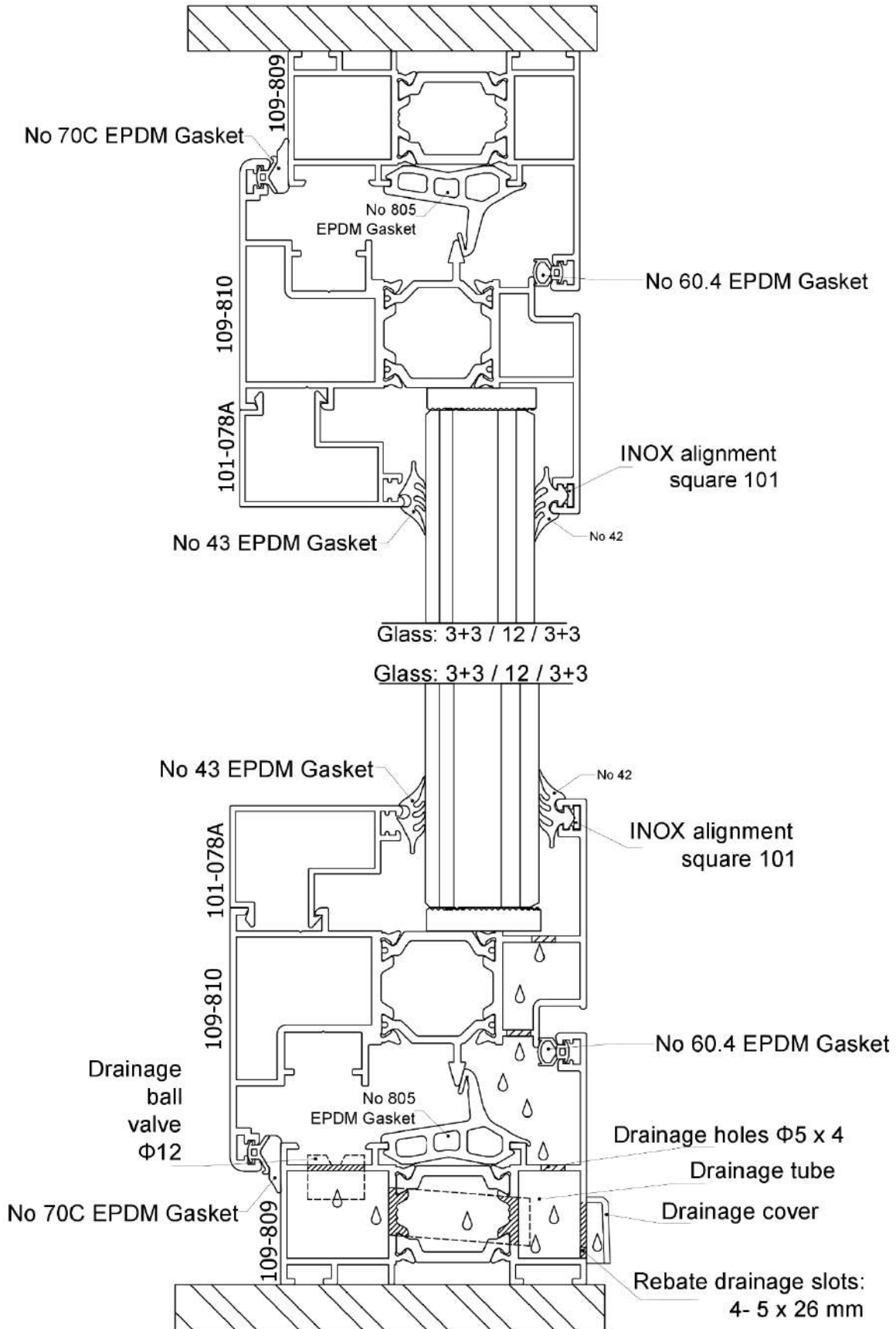
owner (client) EXALCO S.A., 41110 Larisa (Greece)



Picture 3 Horizontal section, dummy mullion



Picture 4 Horizontal section, frame – inactive casement



Picture 5 Vertical section

Test Report

no. 21-003271-PR01 (PB-A01-02-en-01) dated 03.08.2021

owner (client) EXALCO S.A., 41110 Larisa (Greece)



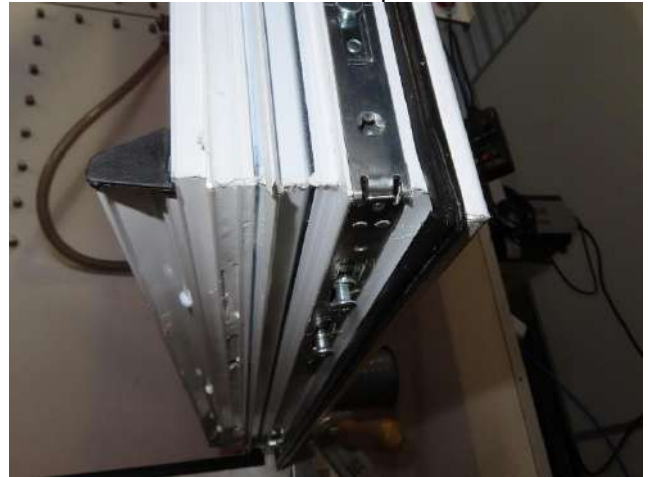
Picture 1 View



Picture 2 Corner of test specimen



Picture 3 Glazing bead



Picture 4 Casement seen from rebate



Picture 5 Hinge view of opening side, inactive casement at top



Picture 6 Hinge view of opening side, inactive casement at bottom



Picture 7 Hinge view of opening side, active casement at top



Picture 8 Hinge view of opening side, active casement at bottom



Picture 9 Hinge rebate view, inactive casement at top



Picture 10 Hinge rebate view, inactive casement at bottom



Picture 11 Hinge rebate view, active casement at top



Picture 12 Hinge rebate view, active casement at bottom



Picture 13 Casement seal at top



Picture 14 Casement seal at bottom



Picture 15 Central rebate seal at top



Picture 16 Central rebate seal at bottom



Picture 17 External rebate seal at top



Picture 18 External rebate seal at bottom



Picture 19 Dummy mullion at top



Picture 20 Dummy mullion at bottom



Picture 21 Dummy mullion end cap at top



Picture 22 Dummy mullion end cap at bottom



Picture 23 Internal glazing gasket



Picture 24 External glazing gasket and additional sealing



Picture 25 Vapour pressure equalisation slot, casement at bottom



Picture 26 Vapour pressure equalisation drills, casement lateral



Picture 27 Weather bar, casement



Picture 28 Frame at bottom with rebate drainage slot



Picture 29 Drainage valve



Picture 30 Drainage drilling



Picture 31 Drainage slot with cover cap, seen from outside



Picture 32 Corner design of central gasket



Picture 33 Additional sealing plane at corners



Picture 34 Additional sealing plane at corners



Picture 35 Locking situation 1, frame



Picture 36 Locking situation 1, casement



Picture 37 Locking situation 2, frame



Picture 38 Locking situation 2, casement



Picture 39 Locking situation 3, inactive casement



Picture 40 Locking situation 3, active casement



Picture 41 Handles