Test Report

Resistance to wind load

Test report No.: 2023-0003-001_en

PLANECO
DEVELOPMENT CONSULTANTS

Client	VIOMAL S.A. Vatonta N.Artakis 34600 N.Artaki Greece
Product	Add-on roller shutter box with lateral guides
System Designation	Roller shutter H32 dot
Material	Roller shutter box: Aluminium Roller shutter guide: Aluminium Shutter curtains: Aluminium
Shutter curtain	Lamella cross section: 32 mm x 8.5 mm
Overall dimensions (WxH)	Test specimen 1: 1600 mm x 2700 mm Test specimen 2: 3400 mm x 1400 mm
Special features	-/-

Results

Resistance to wind loads according to EN 13659:2004+A1:2008

$W_{1,475}$ x $H_{2,485}$ *) Class: 6

$W_{3,270}$ x $H_{1,215}$ *) Class: 3

Non-harmonized version at the time of testing –
Resistance to wind loads according to EN 13659:2015

$W_{1,475}$ x $H_{2,485}$ *) Class: 6

$W_{3,270}$ x $H_{1,215}$ *) Class: 3

*) visible curtain size

PLANECO Mon. EPE
14 July 2023

Dr. Georgios Moustakidis
General Manager

Basis

EN 13659:2004+A1:2008
Shutters - Performance requirements including safety

EN 13659:2015
Shutters and external venetian blinds – Performance requirements including safety

*)and corresponding national versions e.g. ΕΛΟΤ ΕΝ

EN 1932:2013-06
External blinds and shutters – Resistance to wind loads – Method of testing an performance criteria

Method N°3:
use of a pneumatic device

Representation

Test Rig

LWW Test Rig – CFT P.C.
Calibrated by ift Rosenheim

Instruction for use

The results obtained can be used by the manufacturer for preparing the Declaration of Performance in accordance with the Construction Products Regulation 305/2011/EU. The provisions of the applicable product standard have to be observed.

Validity

There is no time limit.

When using this document the up-to-dateness of above basis and the conformity of the product have to be observed.

The report contains a total of 17 pages

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1. Object

1.1. Description of test specimen

Add-on roller shutter box with lateral guides		
Manufacturer	VIOMAL S.A.	
Product designation	Roller shutter H32 dot	
Date of manufacture	26.06.2023	
Test specimen	Test specimen 1	Test specimen 2
Size of test specimen (W x H)	1,600 mm x 2,700 mm	3,400 mm x 1,400 mm
Roller shutter box	Further details are given in drawings	
Material	Aluminium	Aluminium
Designation / Type / Item No.	21.12.0401, 21.12.0501, 21.26.1301	21.12.0601, 21.12.0701, 21.26.1201
Insulation	None	None
Dimensions (W x D x H)	1,585 mm x 200 mm x 200 mm	3,385 mm x 180 mm x 180 mm
Maintenance flap	Inside front	Inside front
Shutter curtains	Further details are given in drawings	
Material	Aluminium	Aluminium
Insulation	PU foam	PU foam
Surface treatment/finish	Electrostatic coated	Electrostatic coated
Profile No.	21.01.1501-050000	21.01.1501-050000
Profile cross section (W x D)	32 mm x 8.5 mm	32 mm x 8.5 mm
Core	PU-foam	PU-foam
Edge cover of roller curtain in guide grooves / each side	32 mm	25 mm
Overall dimensions (W x H)	1,539 mm x 2,485 mm	3,320 mm x 1,215 mm
Lamella width	1,539 mm	3,320 mm
Visible curtain size (W x H)	1,475 mm x 2,485 mm	3,270 mm x 1,215 mm
End bar	21.27.6801	21.27.6801
Material	Aluminium	Aluminium
Seals/gaskets	EPDM gasket	EPDM gasket
Drive/Mode of operation	Motorised	Motorised
Guide rail		
Material	Aluminium	Aluminium
Profile number	24.04.1901	24.04.1901
Groove depth x groove width	35 mm x 18 mm	35 mm x 18 mm
Silencing gasket	Brush seal, on both sides	Brush seal, on both sides
Material / type / manufacturer	Polyester mohair	Polyester mohair
Fastening of lateral cover	Bolted	
Fastening of maintenance flap	Bolted	

The description is based on information provided by the client and inspection of the test specimen at the test rig (item designations / numbers as well as material specifications were provided by the client).

1.2. Sampling

The below sampling data were provided to PLANECO:

Sampling by:	VIOMAL S.A.
Verification:	A sampling report has not been provided to PLANECO.
Delivered on:	29.06.2023
Specimen No.:	2023-0003-001_SP01 / 2023-0003-001_SP02

2. Procedure

2.1. Basis

EN 13659:s2004+A1:2008	Shutters - Performance requirements including safety
EN 13659 : 2015	Shutters and external venetian blinds – Performance requirements including safety
EN 1932 : 2013	External blinds and shutters – Resistance to wind loads – Method of testing and performance criteria

2.2. Test sequence

Resistance to wind load according to EN 1932 : 2013-06

According to the standard EN 13659, Clause 4.1, the load application process No. 3 has been applied in accordance with EN 1932: 2013-06.

For this purpose, the samples were placed in a test chamber for windows and facades and to develop the required test load a membrane applied over the entire surface of the specimen. The required dimension of the membrane according to the standard is recorded in the test report.

The first test was performed with nominal load and then by a factor of 1.5 the safe load. The test pressure in accordance with the corresponding category is applied for 1 min on the test specimen.

After each load applied to the specimen was checked for damage in accordance with the requirements of the standard and the result recorded in the test report.

3. Detailed results

Resistance to wind load according to EN 1932

Basis of test	EN 1932 : 2013-06 External blinds an shutters - Resistance to wind loads - Method of testing and performance criteria
Test equipment	Air/Water/Wind Test Rig - No. 026348 - ALUMIL S.A. Calibrated by: ift Rosenheim GmbH
Test specimen	Roller shutter
Test specimen No.	2023-0003-001_en
Date of test	29.06.2023
Testing engineer	Dr. Georgios Moustakidis

Test procedure

Deviations: there are no deviations to the test method according to the standard (basis of test)

Ambient conditions: Temperature 25,6 °C Air humidity 45,8 % Air pressure 1004 hPa

Test data / Results

	Test specimen 1	Test specimen 2
overall dimensions W x H	1600 x 2750 mm	3400 x 1400 mm
Visible curtain size W x H	1475 x 2485 mm	3270 x 1215 mm
Specimen surface area	3,67 m²	3,97 m²

Test specimen 1

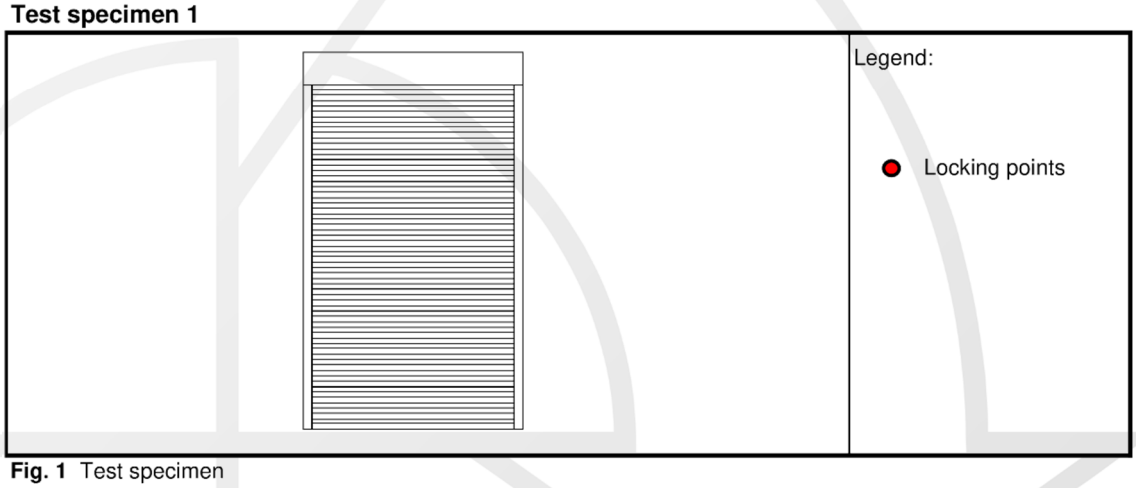


Fig. 1 Test specimen

Resistance to wind load

1 Nominal load

1.1 Directly nominal load (positive load)

Shutter curtain pushed to the far right ✓

Table 1 Directly nominal test pressure (loading time 1 min)

Class		1	2	3	4	5	6
Nominal test pressure p_N [N/m²]	<50	50	70	100	170	270	400
passed	w/o.M.	✓	✓	✓	✓	✓	✓

Control:
Permanent deformation of the curtain, the mounting means, the locking system or the guide: No
Permanent deformation of the cover frame (e.g. Axis, consoles, etc.): No

Remarks

Table 2 Nominal loaf test results

Test load p_N [Pa] (>1 min.)	Remarks
50	no visible damage of the test specimen
70	no visible damage of the test specimen
100	no visible damage of the test specimen
170	no visible damage of the test specimen
270	no visible damage of the test specimen
400	no visible damage of the test specimen

1.2 Inverted nominal load (negative load)

Shutter curtain pushed to the far right ✓

Table 3 Inverted nominal test pressure (loading time 1 min)

Class		1	2	3	4	5	6
Nominal test pressure -p_N [N/m²]	>-50	-50	-70	-100	-170	-270	-400
passed	w/o.M.	✓	✓	✓	✓	✓	✓

Control:

Permanent deformation of the curtain, the mounting means, the locking system or the guide:	No
Permanent deformation of the cover frame (e.g. Axis, consoles, etc.):	No

Remarks

Table 4 Nominal load test results

Test load -p_N [Pa] (>1 min.)	Remarks
-50	no visible damage of the test specimen
-70	no visible damage of the test specimen
-100	no visible damage of the test specimen
-170	no visible damage of the test specimen
-270	no visible damage of the test specimen
-400	no visible damage of the test specimen

2 Safety test

2.1 Directly safety test (positive load)

Shutter curtain pushed to the far right ✓

Table 5 Directly safety test pressure (loading time 1 min)

Class		**1**	**2**	**3**	**4**	**5**	**6**
Safety test pressure p_N [N/m²]	<75	75	100	150	250	400	600
passed	w/o.M.	✓	✓	✓	✓	✓	✓

Control:

Output of the curtain of the fixing means, the locking system or the guides:	No
Breakage of the curtain, the mounting means, the locking system or the guides:	No

Remarks

Table 6 Safety test load test results

Safety test load p_S [Pa] (>1 min.)	Remarks
75	no visible damage of the test specimen
100	no visible damage of the test specimen
150	no visible damage of the test specimen
250	no visible damage of the test specimen
400	no visible damage of the test specimen
600	no visible damage of the test specimen

2.2 Inverted safety load (negative load)

Shutter curtain pushed to the far right ✓

Table 7 Inverted safety test pressure (loading time 1 min)

Class		**1**	**2**	**3**	**4**	**5**	**6**
Safety test pressure $-p_S$ [N/m²]	>-75	-75	-100	-150	-250	-400	-600
passed	w/o.M.	✓	✓	✓	✓	✓	✓

Control:

Output of the curtain of the fixing means, the locking system or the guides: No

Breakage of the curtain, the mounting means, the locking system or the guides: No

Remarks

Table 8 Safety test load test results

Safety test pressure $-p_S$ [Pa] (>1 min.)	Remarks
-75	no visible damage of the test specimen
-100	no visible damage of the test specimen
-150	no visible damage of the test specimen
-250	no visible damage of the test specimen
-400	no visible damage of the test specimen
-600	no visible damage of the test specimen

Test specimen 2

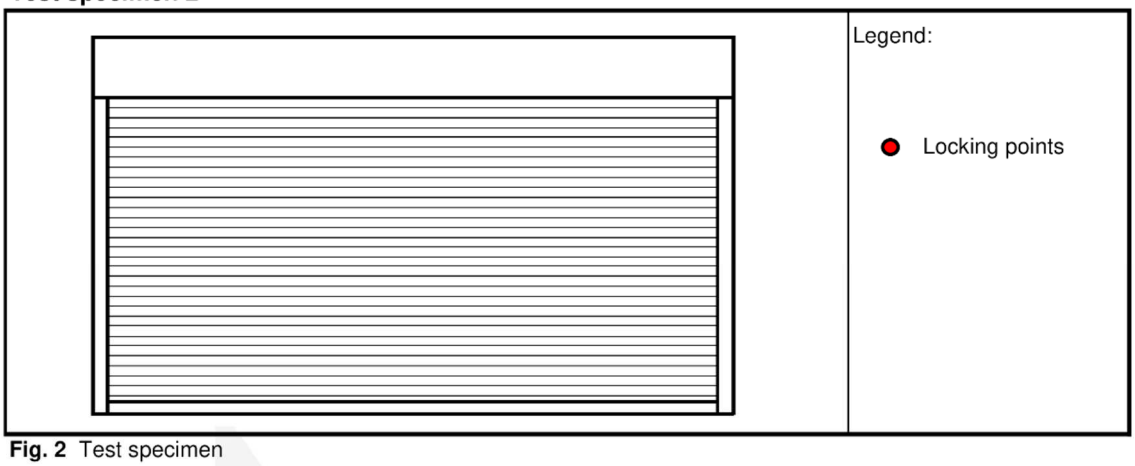


Fig. 2 Test specimen

Resistance to wind load

3 Nominal load

3.1 Directly nominal load (positive load)

Shutter curtain pushed to the far right ✓

Table 9 Directly nominal test pressure (loading time 1 min)

Class		1	2	3	4	5	6
Nominal test pressure p_N [N/m²]	<50	50	70	100	170	270	400
passed	w/o.M.	✓	✓	✓	✓		

Control:

Permanent deformation of the curtain, the mounting means, the locking system or the guide: No

Permanent deformation of the cover frame (e.g. Axis, consoles, etc.): No

Remarks

Table 10 Nominal loaf test results

Test load p_N [Pa] (>1 min.)	Remarks
50	No vision damage of the test specimen
70	No vision damage of the test specimen
100	No vision damage of the test specimen
170	No vision damage of the test specimen
270	
400	

3.2 Inverted nominal load (negative load)

Shutter curtain pushed to the far right ✓

Table 11 Inverted nominal test pressure (loading time 1 min)

Class		**1**	**2**	**3**	**4**	**5**	**6**
Nominal test pressure $-p_N$ [N/m²]	>-50	-50	-70	-100	-170	-270	-400
passed	w/o.M.	✓	✓	✓	✓		

Control:
Permanent deformation of the curtain, the mounting means, the locking system or the guide: No
Permanent deformation of the cover frame (e.g. Axis, consoles, etc.): No

Remarks

Table 12 Nominal load test results

Test load $-p_N$ [Pa] (>1 min.)	Remarks
-50	No vision damage of the test specimen
-70	No vision damage of the test specimen
-100	No vision damage of the test specimen
-170	No vision damage of the test specimen
-270	
-400	

4 Safety test

4.1 Directly safety test (positive load)

Shutter curtain pushed to the far right ✓

Table 13 Directly safety test pressure (loading time 1 min)

Class		1	2	3	4	5	6
Safety test pressure p_N [N/m²]	<75	75	100	150	250	400	600
passed	w/o.M.	✓	✓	✓	✓		

Control:

Output of the curtain of the fixing means, the locking system or the guides: No

Breakage of the curtain, the mounting means, the locking system or the guides: No

Remarks

Table 14 Safety test load test results

Safety test load p_S [Pa] (>1 min.)	Remarks
75	no visible damage of the test specimen
100	no visible damage of the test specimen
150	no visible damage of the test specimen
250	no visible damage of the test specimen
400	
600	

4.2 Inverted safety load (negative load)

Shutter curtain pushed to the far right ✓

Table 15 Inverted safety test pressure (loading time 1 min)

Class		1	2	3	4	5	6
Safety test pressure $-p_S$ [N/m²]	>-75	-75	-100	-150	-250	-400	-600
passed	w/o.M.	✓	✓	✓			

Control:

Output of the curtain of the fixing means, the locking system or the guides:	No
Breakage of the curtain, the mounting means, the locking system or the guides:	No

Remarks

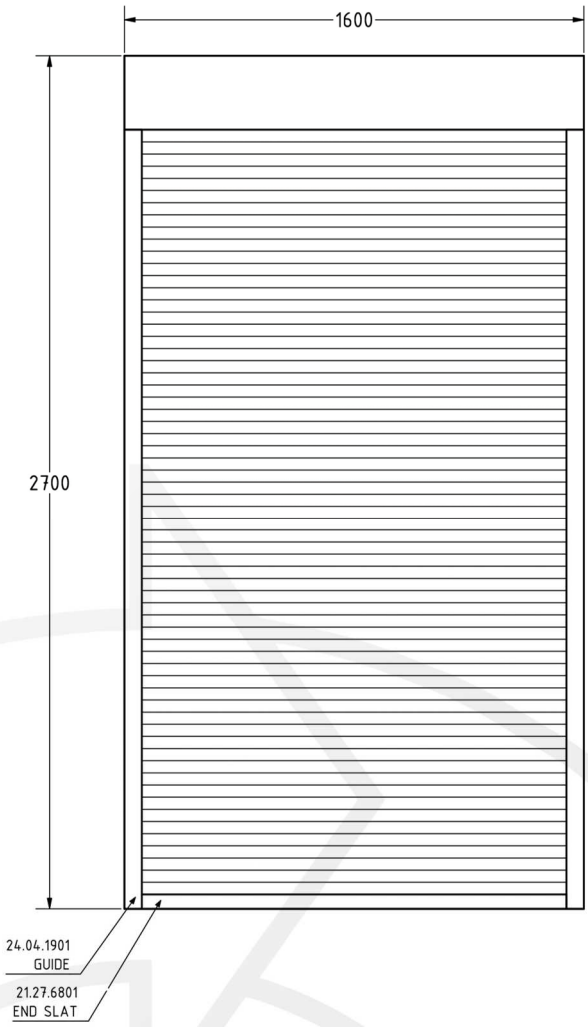
Table 16 Safety test load test results

Safety test pressure -p_s [Pa] (>1 min.)	Remarks
-75	no visible damage of the test specimen
-100	no visible damage of the test specimen
-150	no visible damage of the test specimen
-250	curtain out of the guides
-400	
-600	

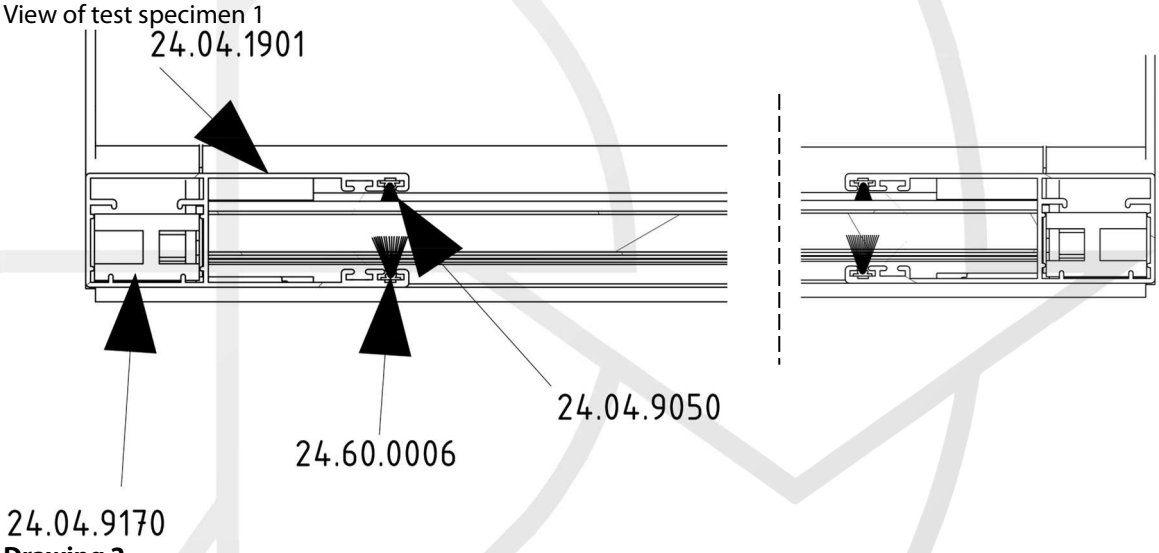
3.1. Total classification of the system according to EN 13659

Table Classification according to EN 13659

Test specimen: $\mathbf{W}_{1,475}$ **x** $\mathbf{H}_{2,485}$	**Class 6**
Test specimen: $\mathbf{W}_{3,270}$ **x** $\mathbf{H}_{1,215}$	**Class 3**

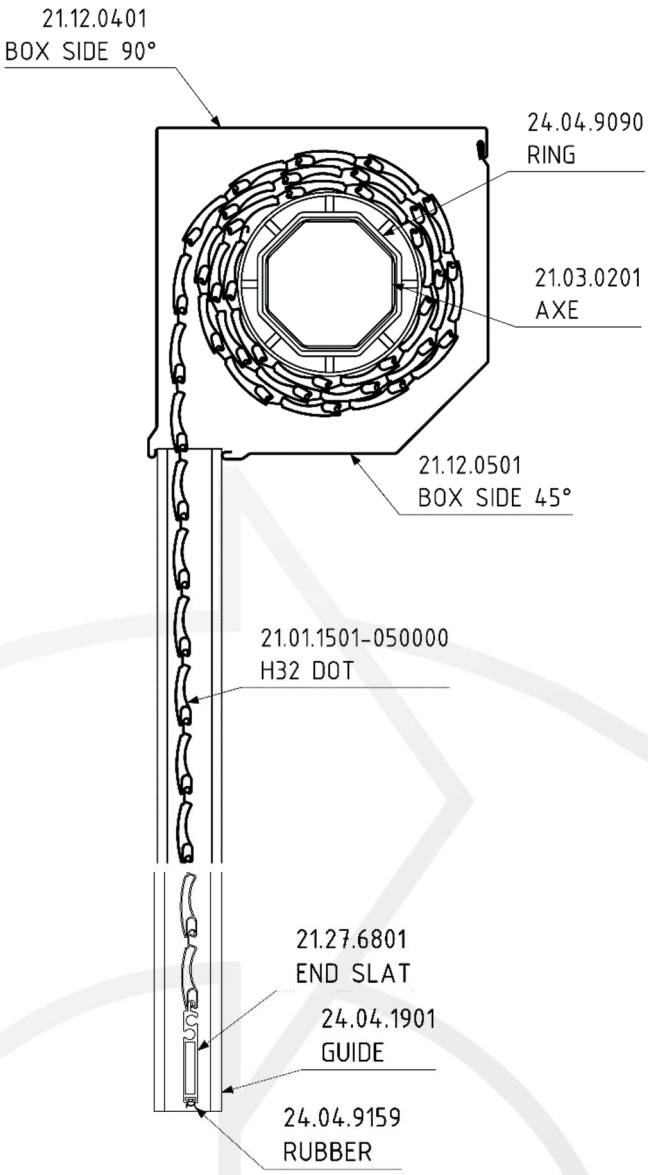


Drawing 1
View of test specimen 1

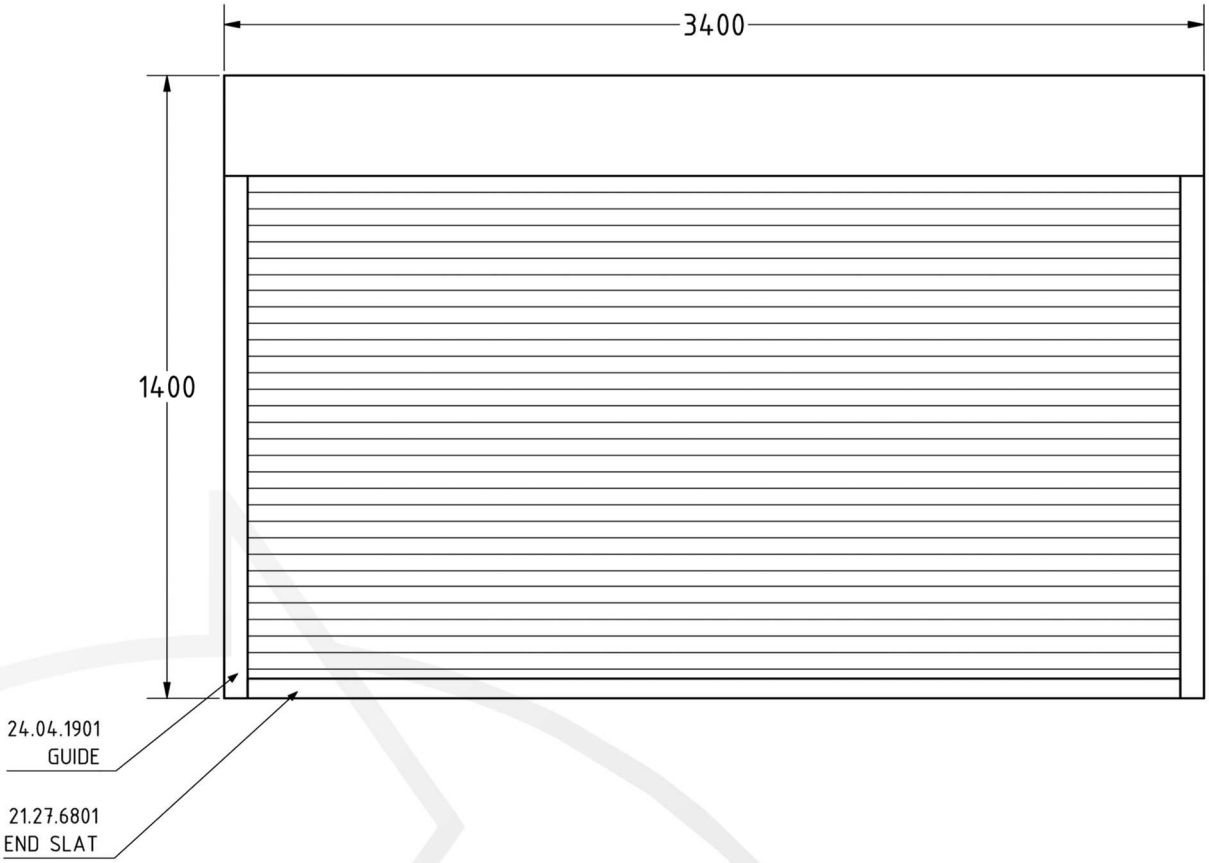


Drawing 2

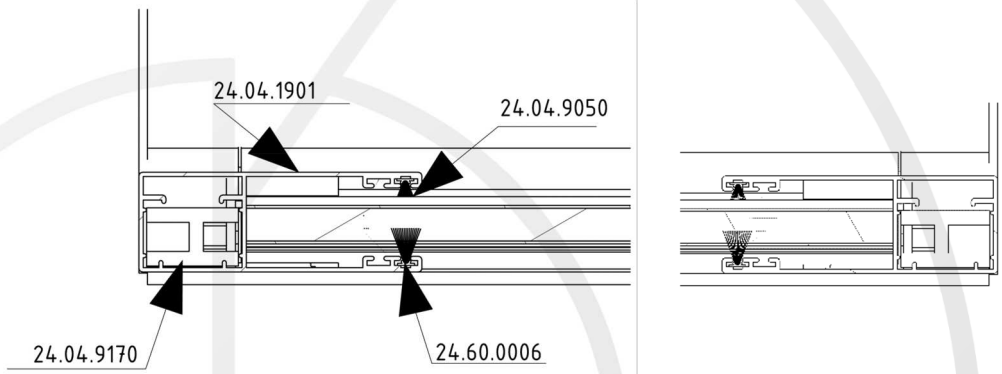
Horizontal section



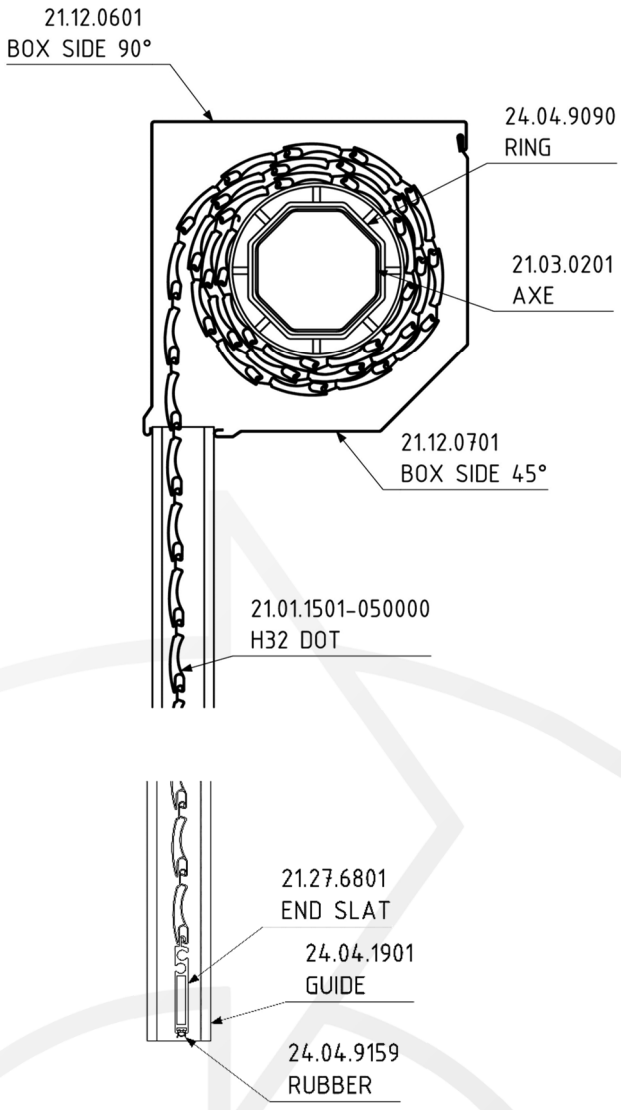
Drawing 3
Vertical section



Drawing 4
View of test specimen 2



Drawing 5
Horizontal section



Drawing 6
Vertical section

Photo 1
Test specimen 1

Photo 2
Test specimen 2

Photo 3
Inlet hopper

Photo 4
Roller shutter guide

Photo 5
Lateral cover plate

Photo 8
Connecting frame / guide rail

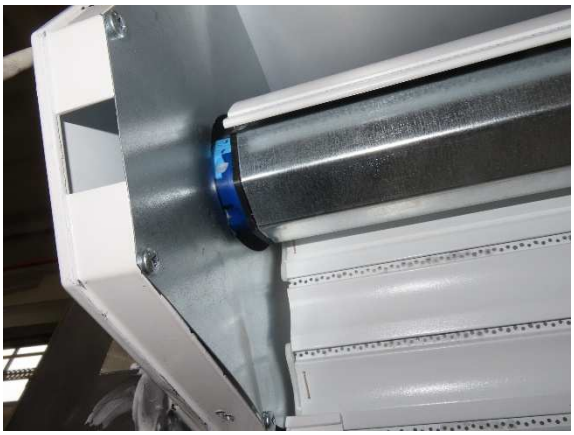


Photo 6
Detail spindle, left

Photo 7
Detail spindle, right

Photo 8
Remote control