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TEST REPORT

Thermal brake one leaf window type W72 – RC 3,
single leaf window opening towards the protected area
producer: AluminTechno JLLC
Selitskogo str. 12-211, 220075 FEZ Minsk,
Minsk region, Minsk area, Republic of Belarus

number 12/2023

Date of issue: January 29, 2024

Approved by: Ing. Kamil MARYŠKO
Testing Laboratory Manager

Prepared by: Ing. Martin MARYŠKO



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1 INTRODUCTION

1.1 GENERAL

The certification body No. 3025 (hereinafter referred to as ACOV No. 3025), applied on February 2, 2023 for testing of Thermal brake one leaf window type W72 – RC 3. The application for testing was delivered to the accredited testing laboratory No. 1095 (further on only ATL No. 1095) on February 2, 2023 and was assigned with engagement number 12/2023.

The scope of the engagement is testing for the requested resistance class RC 3 according to EN 1628 Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Test method for determination of resistance under static loading, EN 1629 Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Test method for determination of resistance under dynamic loading and EN 1630 Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Test method for determination of resistance to manual burglary attempts in relevance to EN 1627 Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Requirements and classification and in application to EN ISO/IEC 17025:2018 General Requests for Competence of Testing and Calibrating Laboratories.

1.2 TESTING LABORATORY IDENTIFICATION

Accredited Testing Laboratory No. 1095
of the company TREZOR TEST s.r.o.
(range of accreditation please see www.cai.cz)
Na Vršku 67, 250 67 Klecany
Czech Republic
Company Registration No.: 47544147
Tax Registration No.: CZ47544147

1.3 IDENTIFICATION OF APPLICANT

Accredited Certification Body No. 3025 for product certification
of the company TREZOR TEST s.r.o.
(for the scope of accreditation see www.cai.cz)
Na Vršku 67, 250 67 Klecany
Czech Republic
Company Identification No.: 47544147
Tax Identification No.: CZ47544147

1.4 IDENTIFICATION OF TEST SAMPLE PRODUCER

AluminTechno JLLC
Selitskogo str. 12-211, 220075 FEZ Minsk,
Minsk region, Minsk area, Republic of Belarus

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1.5 PLACE OF TESTING

Technical hall of Accredited Testing Laboratory No. 1095
of company TREZOR TEST s.r.o.
Na Vršku 67, 250 67 Klecany
Czech Republic

2 DESCRIPTION AND IDENTIFICATION OF TESTED PRODUCTS

2.1 GENERAL

The company AluminTechno JLLC submitted for testing after agreement with the head of ATL No. 1095 three samples of Thermal brake one leaf window type W72 – RC 3, two sample with outer dimensions of 1188 mm x 2345 mm x 72 mm (height x width x thickness) and one sample of fixed window for glazing verification with outer dimensions 500 mm x 1500 mm x 72 mm (height x width x thickness) with P5 A glazing according EN 356. Test samples were assigned for testing with numbers 12/2023-1 and 12/2023-3. The test samples were delivered to the place of testing on February 20, 2023 and September 19, 2023 while production was completed according production labels.

The applicant submitted technical drawing documentation, description, and assembly instructions.

2.2 IDENTIFICATION AND DESCRIPTION OF THE PRODUCT TESTED

Thermal brake one leaf window type W72 – RC 3 consists of a set comprising one leaf window and supporting test frame.

The window locking system is operated by key operated lockable window handle Roto Line – lockable window handle 200 Nm, producer Roto, from the inside. The glazing consists of glass Stratobel 44.6, which corresponds to class P5 A according to EN 356 – see declaration of performances AGC from February 23 ,2015.

Further security technical parameters of the window and location of individual components are in the product description/technical drawing documentation – attachment No. 1 and assembly instructions – attachment No. 2.

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3 COURSE OF TESTS – MEASUREMENTS PERFORMED

3.1 GENERAL

Testing of the above-mentioned test sample took place on February 28, 2023, March 1, 2023 and October 16, 2023 and was carried out according to EN 1628, EN 1629, EN 1630 following EN 1627 and according to the Quality Management Manual of ATL No. 1095. Testing was performed by the testing laboratory expert team comprising:

Testing team leader: - Ing. Kamil Maryško
 Technician: - Ing. Martin Maryško
 - Jan Koktan
 - Pavel Martan

The testing team leader also kept the records and measured time. The applicant's representative wasn't present during the tests.

3.2 MEASURING EQUIPMENT USED

- M7 – Manual digital stop watch, CASIO (chronometer 3),
- M8 – Manual digital stop watch, CASIO (chronometer 4),
- M22 – Slide digital gauge 0 – 150/0,01 mm, KINEX,
- M3 – 3 meter tape measure LUX,
- Hydraulic load applicator of defined loading GLENTOR with accessories and with pressure transducer M36 – IFM PU5412,
- M35 – thermometer with hydrometer TFA type 30.5026.01,
- M30 – impactor 50 kg,
- K11 – Gap gauge type „A“,
- K12 – Gap gauge type „B“,
- K14 – Gap gauge type „C“,
- K8 – template E3 for break through opening – circle diameter 350 mm, length 420 mm

All above mentioned measuring equipment is calibrated and the results of calibration are recorded in the calibration sheets held at ATL No. 1095.

3.3 TOOLS USED

The following tools were used for performing the burglary resistance test:

No.	Tool – equipment – type	Sign	Specification	Tool marking
1	Screwdriver	Š1	length 365 mm	2.1
2	Screwdriver	Š2	length 260 mm	1.2
3	Multiple slip joint gripping pliers	SK	length 240 mm	1.1
4	Plastic wedge	KP	length 220 mm	2.3
5	Crowbar	ZH	length 710 mm	3.2
6	Locksmith hammer	ZK	weight 200 g	3.3
7	Set of pin punches	D	Ø 3 to 10 mm	3.4

For the categorization and specification of tools refer to the chapter 7 of EN 1630 Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Test method for determination of resistance to manual burglary attempts.

3.4 DOCUMENTATION EQUIPMENT USED

The testing process has been documented by the NIKON COOLPIX P900 digital camera and mobile XIAOMI Mi 11 Lite 5G.

3.5 DESCRIPTION OF TEST METHOD

Testing was made according to the EN 1628, EN 1629 and EN 1630 following the EN 1627 in application to EN ISO/IEC 17025:2018.

The test results can be either measured values, data gained by visual inspection or by practical use of the examined product, derivative results or any other observations resulting from the test activities. The test results can be supported by tables and photographs, which are appropriately identified.

3.6 CONDITIONS OF TESTING

The tests were carried out on February 28, 2023 and March 1, 2023 in a technical hall at artificial illumination and a temperature of 18 to 18,5 °C and relative air humidity of 40 to 45 % and October 16, 2023 in a technical hall at artificial illumination and a temperature of 18,1 °C and relative air humidity of 40 %. The test samples were installed into the test rig.

Before to the tests, the head of the testing team confirmed that the specified conditions would not affect the test results.

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3.7 TEST PROGRAM

Based on requested classification resistance class RC 3 and with regard to the design of the window, the following test program has been established:

- tests according to EN 1628 – resistance to static loading for resistance class RC 3 – corner of infilling F1 = load 6 kN, locking points F3 = load 6 kN
- tests according to EN 1629 – resistance to dynamic loading for resistance class RC 3 – mass of impactor 50 kg, drop height 750 mm
- tests according to EN 1630 – resistance to manual burglary attempts for resistance class RC 3 – A3 tool set, required resistance time 5 min

4 RESULTS OF TESTING – MEASUREMENTS MADE

4.1 Test No. 1 according to EN 1628 – Determination of resistance under static loading – test sample No. 12/2023-1 (tested in the window opening direction – from attack side)

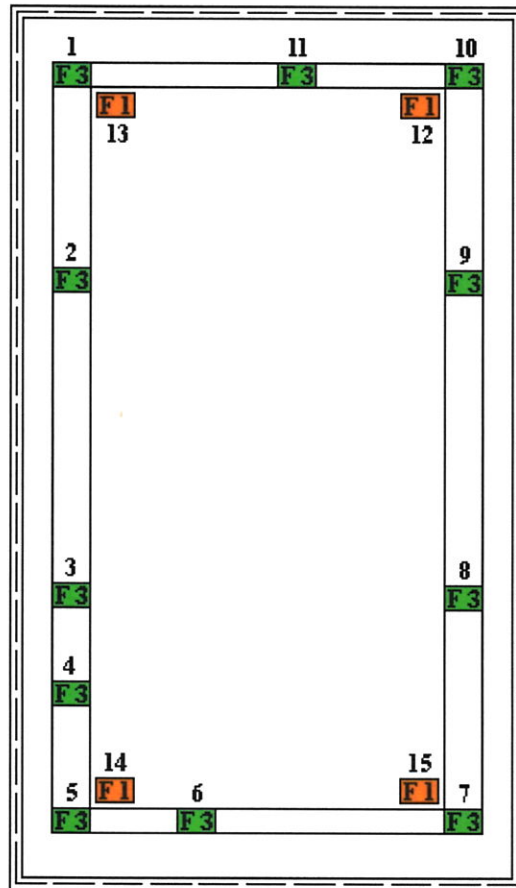
F1 – corner of infilling

F3 – locking points

Point No.	Loading point	Load [kN]	Testing gauge	Pressure pad
1	F3	6	A	1
2	F3	6	A	1
3	F3	6	A	1
4	F3	6	A	1
5	F3	6	A	1
6	F3	6	A	1
7	F3	6	A	1
8	F3	6	A	1
9	F3	6	A	1
10	F3	6	A	1
11	F3	6	A	1
12	F1	6	B	1
13	F1	6	B	1
14	F1	6	B	1
15	F1	6	B	1
Result of test	The test gauge “A” and “B” could not be inserted through for any of the loading points.			
The loading was gradually achieved at time from 10 seconds to 20 seconds and was maintained for time from 8 seconds to 12 seconds.				

F1 – corner of infilling
F3 – locking points

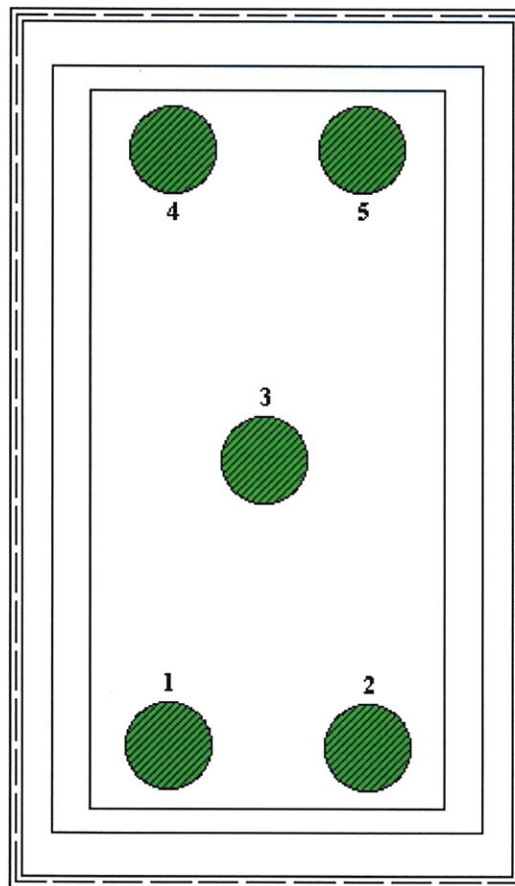
Overview of static loading points



4.2 Test No. 2 according to EN 1629 – Determination of resistance under dynamic loading – test sample No. 12/2023-1 (tested in the window opening direction – from attack side)

Impact points – mass of impactor 50 kg, drop height 750 mm	Number of impacts	Condition after impact
Position No. 1 – corner	1 x	Cracking of glazing.
Position No. 2 – corner	1 x	Cracking of glazing.
Position No. 3 – centre	3 x	Cracking of glazing.
Position No. 4 – corner	1 x	Cracking of glazing.
Position No. 5 – corner	1 x	Cracking of glazing.
The test sample was not damaged enough to insert the “C” test gauge at any of the above-mentioned impact points.		

Overview of dynamic loading points



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4.3 Test No. 3 according to EN 1630 – Resistance to manual burglary attempts with using the A3 tool set – Test sample No. 12/2023-1 (tested in the window opening direction – from attack side)

Test description: Destructive overcoming of the window leaf using tool set A3. Attack at the location of key operated lockable window handle and locking pins.			
Aim of test: Determination of resistance time value.			
No.	Operation	Resistance time chronometer 3 [min : s]	Total time of testing chronometer 4 [min : s]
1	Š1 + Š2 + ZH + KP – attack at the location of key operated lockable window handle and locking pins. Window was not overcome. Deformations from work tools have been created. The locking pins from the handle downwards have been pryed.	t _p 00 : 00 t _k 05 : 02	t _p 00 : 00 t _k 10 : 05
Test result: The resistance time value is 05 minutes 02 seconds. The total time of testing is 10 minutes 05 seconds.			

4.4 Test No. 4 according to EN 1630 – Resistance to manual burglary attempts with using the A3 tool set – Test sample No. 12/2023-1 (tested in the window opening direction – from attack side)

Test description: Destructive overcoming of the window leaf using tool set A3. Attack at the location of lower hinge and locking pins.			
Aim of test: Determination of resistance time value.			
No.	Operation	Resistance time chronometer 3 [min : s]	Total time of testing chronometer 4 [min : s]
1	Š1 + Š2 + ZH + KP – attack at the location of lower hinge and locking pins. Window was not overcome. Deformations from work tools have been created. All locking pins on the hinges side have been pryed.	t _p 00 : 00 t _k 05 : 02	t _p 00 : 00 t _k 09 : 20
Test result: The resistance time value is 05 minutes 02 seconds. The total time of testing is 09 minutes 20 seconds.			

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4.5 Test No. 5 according to EN 1630 – Resistance to manual burglary attempts with using the A3 tool set – Test sample No. 12/2023-2 (tested in the window opening direction – from attack side)

Test description: Destructive overcoming of the window leaf using tool set A3. Attempt to create a breakthrough opening through the glazing.			
Aim of test: Determination of resistance time value.			
No.	Operation	Resistance time chronometer 3 [min : s]	Total time of testing chronometer 4 [min : s]
1	Š1 + Š2 + ZH + SK – attempt to create a breakthrough opening through the glazing in the lower part of the window. Part of the glazing has been pulled out of the frame. The breakthrough opening of the prescribed dimensions was created. Template E3 for breakthrough opening can be insert through the opening.	t _p 00 : 00 t _k 04 : 43	t _p 00 : 00 t _k 10 : 31
Test result: The resistance time value is 04 minutes 43 seconds. The total time of testing is 10 minutes 31 seconds.			

4.6 Test No. 6 according to EN 1630 – Resistance to manual burglary attempts with using the A3 tool set – Test sample No. 12/2023-2 (tested in the window opening direction – from attack side)

Test description: Destructive overcoming of the window leaf using tool set A3. Attack at the location of key operated lockable window handle – the window closing system.			
Aim of test: Determination of resistance time value.			
No.	Operation	Resistance time chronometer 3 [min : s]	Total time of testing chronometer 4 [min : s]
1	Š1 + Š2 + ZH + SK – attack at the location of key operated lockable window handle – the window closing system. Window was not overcome. Window closing system revealed in the handle area, but cannot be pulled down and opened.	t _p 00 : 00 t _k 05 : 03	t _p 00 : 00 t _k 11 : 29
Test result: The resistance time value is 05 minutes 03 seconds. The total time of testing is 11 minutes 29 seconds.			

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The producer carried out structural modification of the glazing according to the technical drawing documentation – attachment No. 1 and submitted one sample of fixed window for glazing verification with outer dimensions 500 mm x 1500 mm x 72 mm (height x width x thickness) with P5 A glazing according EN 356.

4.7 Test No. 7 according to EN 1630 – Resistance to manual burglary attempts with using the A3 tool set – Test sample No. 12/2023-3 (fixed window smallest sample for glazing verification)

Test description: Destructive overcoming of the window leaf using tool set A3. Attempt to create a breakthrough opening through the glazing.			
Aim of test: Determination of resistance time value.			
No.	Operation	Resistance time chronometer 3 [min : s]	Total time of testing chronometer 4 [min : s]
1	Š1 + Š2 + ZH + ZK + D – attempt to create a breakthrough opening through the glazing in the lower part of the window. Part of the first layer of glazing has been pulled out of the frame and to break the 2nd layer, the 3rd layer intact.	t _p 00 : 00	t _p 00 : 00
	The breakthrough opening of the prescribed dimensions was not created.	t _k 05 : 01	t _k 07 : 48
Test result: The resistance time value is 05 minutes 01 second. The total time of testing is 07 minutes 48 seconds.			

5 CONCLUSION

5.1 TEST RESULTS

On the basis of the testing performed according to EN 1628 Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Test method for the determination of resistance under static loading, EN 1629 Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Test method for the determination of resistance under dynamic loading, EN 1630 Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Test method for the determination of resistance to manual burglary attempts following the EN 1627 Pedestrian doorsets, windows, curtain walling, grilles and shutters – Burglar resistance – Requirements and classification it has been assessed that for the product:

Thermal brake one leaf window type W72 – RC 3
single leaf window opening towards the protected area
producer: AluminTechno JLLC
Selitskogo str. 12-211, 220075 FEZ Minsk,
Minsk region, Minsk area, Republic of Belarus

- 1) **According to EN 1628 – resistance to static loading**
The gap gauge type “B” was not inserted through at static loading of corner of infilling F1 = load 6 kN
The gap gauge type “A” was not inserted through at static loading of locking points F3 = load 6 kN
- 2) **According to EN 1629 – resistance to dynamic loading**
The gap gauge type “C” was not inserted through after dynamic loading with impactor 50 kg, drop height 750 mm
- 3) **According to EN 1630 – resistance to manual burglary attempts**
The burglar resistance time was greater than 05 minutes 01 second with using the A3 tool set

Date of preparation: January 29, 2024

Prepared by: Ing. Martin MARYŠKO



Ing. Kamil MARYŠKO
Head of Testing laboratory

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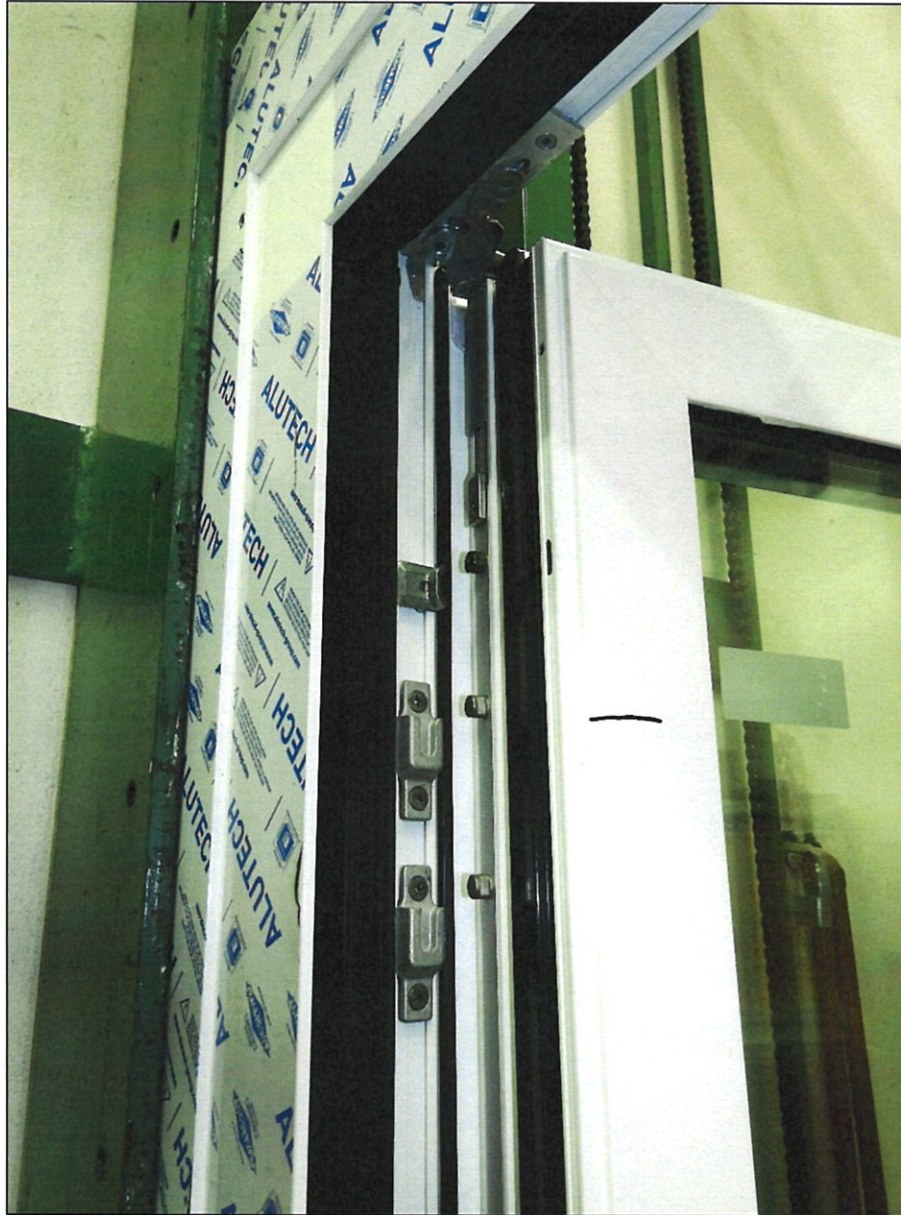
Photodocumentation



Pic. 1 – test sample No. 12/2023-1, Thermal brake one leaf window type W72 – RC 3



Pic. 2 – detail of lower hinge and locking pins



Pic. 3 – detail of upper hinge and locking pins



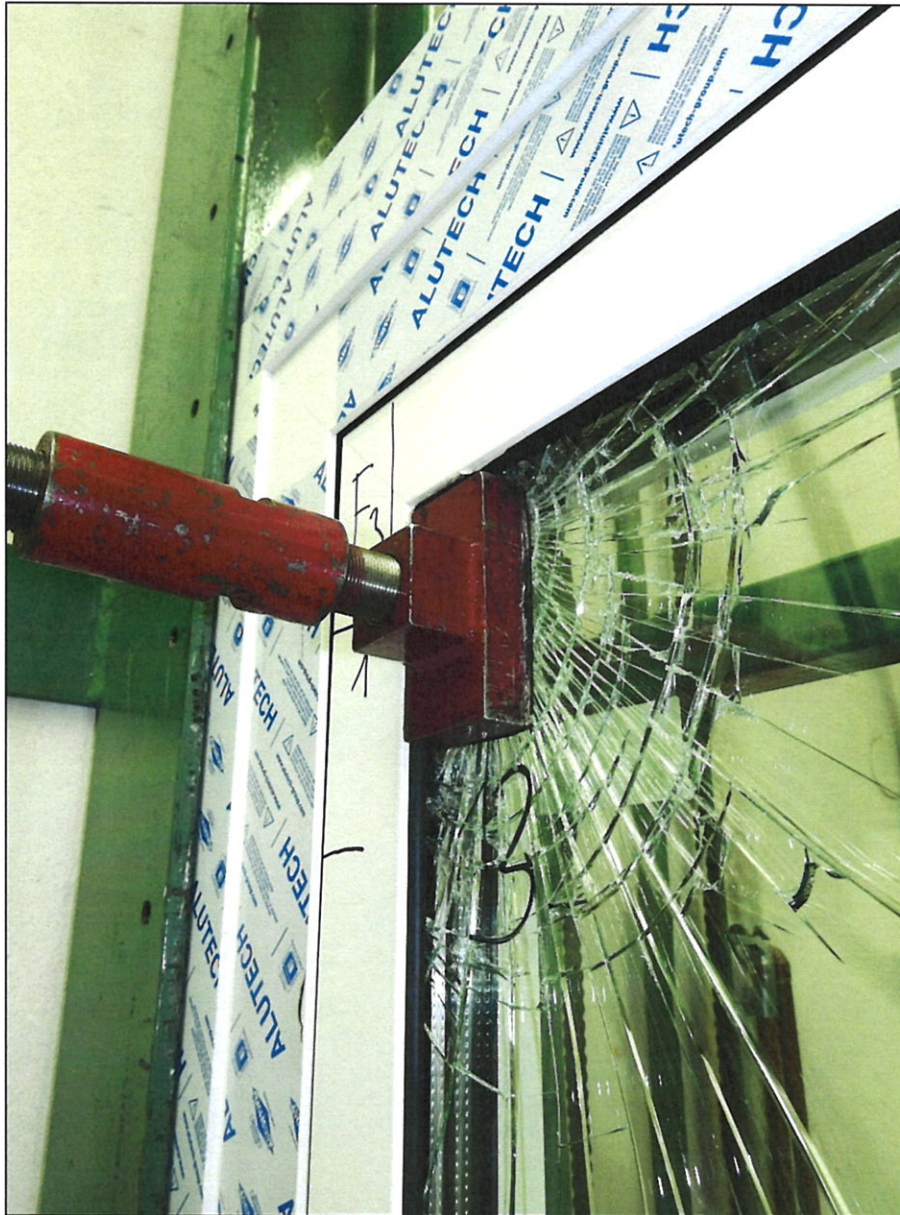
Pic. 4 – detail of key operated lockable window handle Roto Line
– lockable window handle 200 Nm



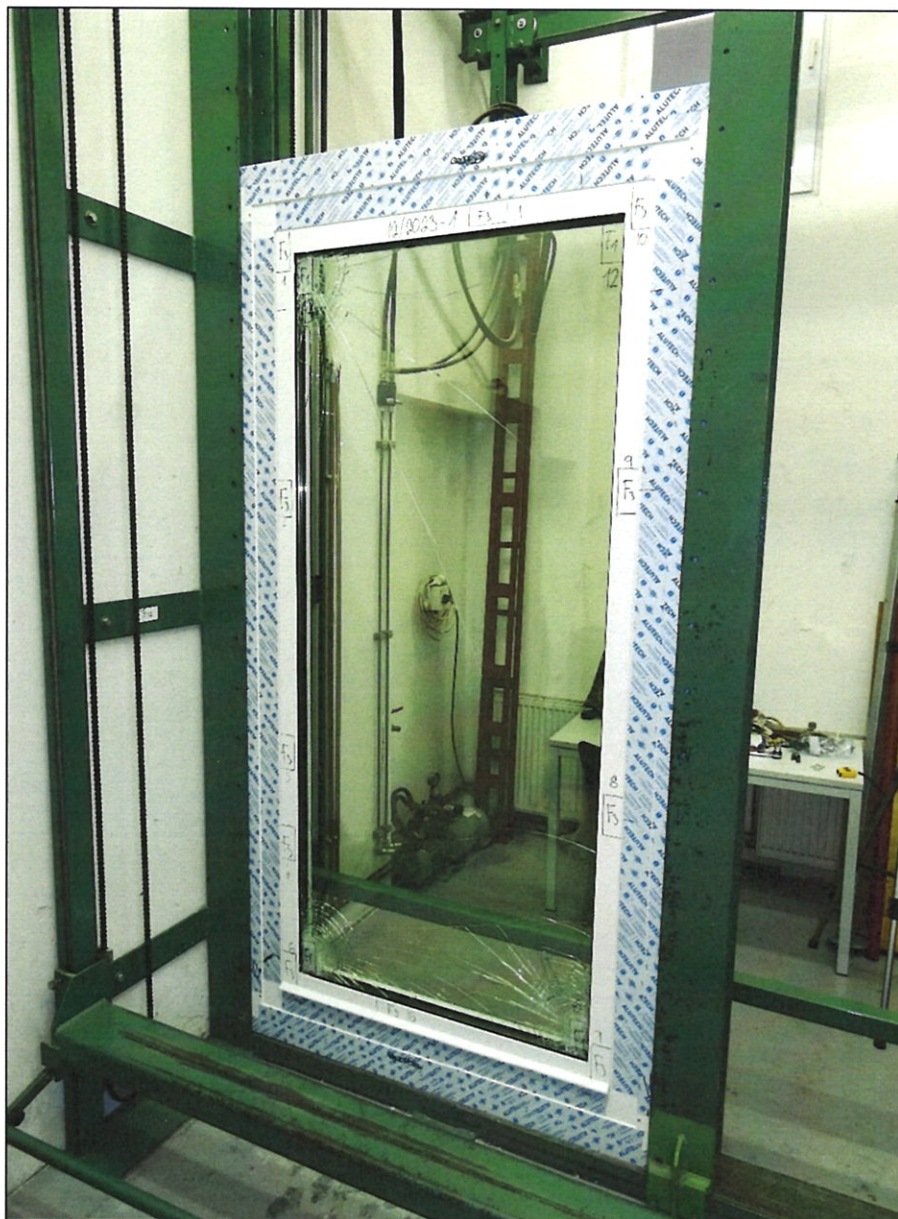
Pic. 5 – detail of locking pins



Pic. 6 – detail of fitting holes for locking pins



Pic. 7 – detail of point No. 13 during a static loading test, test sample No. 12/2023-1



Pic. 8 – test sample No. 12/2023-1 after static tests



Pic. 9 – test sample No. 12/2023-1 after static and dynamic tests



Pic. 10 – test sample No. 12/2023-1 after manual test No. 3
(view from the side of the attack – outside)



Pic. 11 – test sample No. 12/2023-1 after manual test No. 4
(view from the side of the attack – outside)



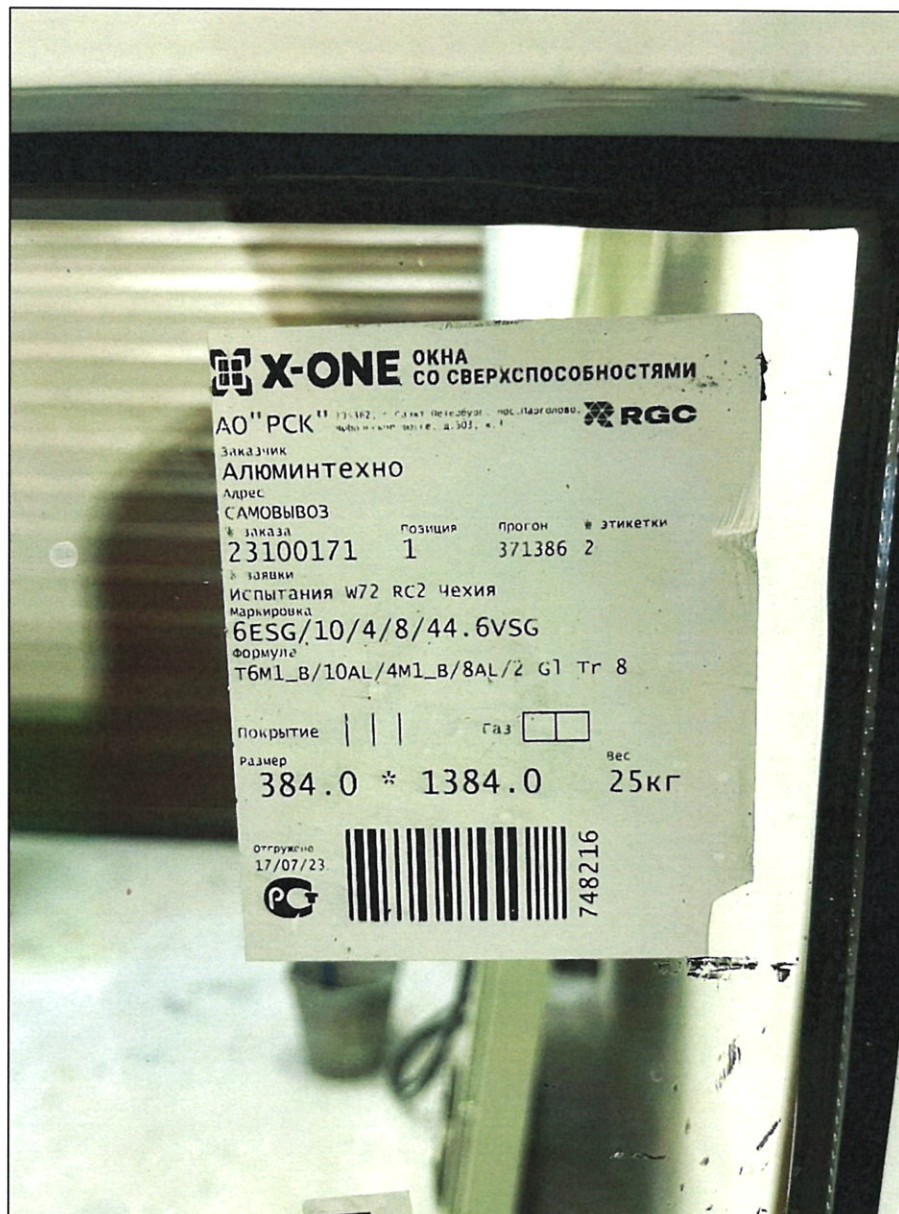
Pic. 12 – test sample No. 12/2023-2 after manual test No. 5
(view from the protected side – outside)



Pic. 13 – test sample No. 12/2023-2 after manual test No. 6
(view from the protected side – outside)



Pic. 14 – test sample No. 12/2023-3, Thermal brake one leaf window type W72 – RC 3



Pic. 15 – production label of glazing



Pic. 16 – test sample No. 12/2023-3 after manual test No. 7
(view from the side of the attack – outside)

Attachment No. 1 – Description/Technical drawings

Product Description Form

Project number:	OI.ALTW72_91
Product range name:	Thermal brake window ALTW72
Configuration:	One leaf window
Opening direction:	Inside open, Tilt&Turn hardware RC3
Is the sample typical of normal production?	Yes
Please define the closing condition of the sample i.e. closed, fastened, latched, locked and secured etc.	Locked and secured

Outer Frame

Outer frame width:	1188 mm	Outer frame material:	Aluminium
Outer frame height:	2345 mm	Outer frame gasket	
Outer frame Part Numbers		Gasket type:	EPDM
Top:	AYPC.W72.0103E	Manufacturer:	Secil, Turkey
Bottom:	AYPC.W72.0103E	Product name:	FRK195
Lock side:	AYPC.W72.0103E	Product code:	10940300
Hinge side:	AYPC.W72.0103E	Threshold	
Outer frame section size		Manufacturer:	AluminTechno, LLC
Width:	72 mm	Product name:	AYPC.W72.0103E
Depth:	72 mm	Product code:	10961021
Reinforcing:	none	Material:	Aluminium alloy 6060 and with two thermal break inserts PA66 GF25%
Manufacturer:	-	Outer frame joint method	
Product name:	-	Head:	Aluminium press corner with polyurethane glue
Product code:	-	Foot:	Aluminium press corner with polyurethane glue
Material:	-	Surface Finish	

Leaf

Leaf width:	1100 mm	Leaf material:	none
Leaf height:	2257 mm	Leaf gasket	
Leaf Part Numbers		Gasket type:	EPDM
Top:	AYPC.W72.0223E	Manufacturer:	Secil, Turkey
Bottom:	AYPC.W72.0223E	Product name:	FRK98
Lock side:	AYPC.W72.0223E	Product code:	10821000
Hinge side:	AYPC.W72.0223E	Leaf midrail:	
Leaf section size		Manufacturer:	AluminTechno, LLC
Width:	92 mm	Product name:	AYPC.W72.0223E
Depth:	80,4 mm	Product code:	10969021
Reinforcing:	none	Material:	Aluminium alloy 6060 and with two thermal break inserts PA66 GF25%

Manufacturer:	-	Leaf joint method	
Product name:	-	Head:	Aluminium press corner with polyurethane glue
Product code:	-	Foot:	Aluminium press corner with polyurethane glue
Material:	-	Surface Finish	-

Glazing

Glass unit		Glazing gasket	
Manufacturer:	AGC	Gasket type:	EPDM
Inner thickness:	6 ESG	Manufacturer:	Secil, Turkey
Spacer material:	aluminium	Product name:	FRK193
Outer thickness:	44.6 VSG	Product code:	10830700
Unit sizes:	942 x 2100	Glazing clip	none
Bead		Manufacturer:	-
Manufacturer:	AluminTechno, LLC	Product name:	-
Product name:	AYPC.C48.2607	Product code:	-
Product code:	10407821	Glazing tape details	none
Bead size:	22x28 mm	Manufacturer:	-
Bead material:	Aluminium alloy 6060	Product name:	-
		Product code:	-

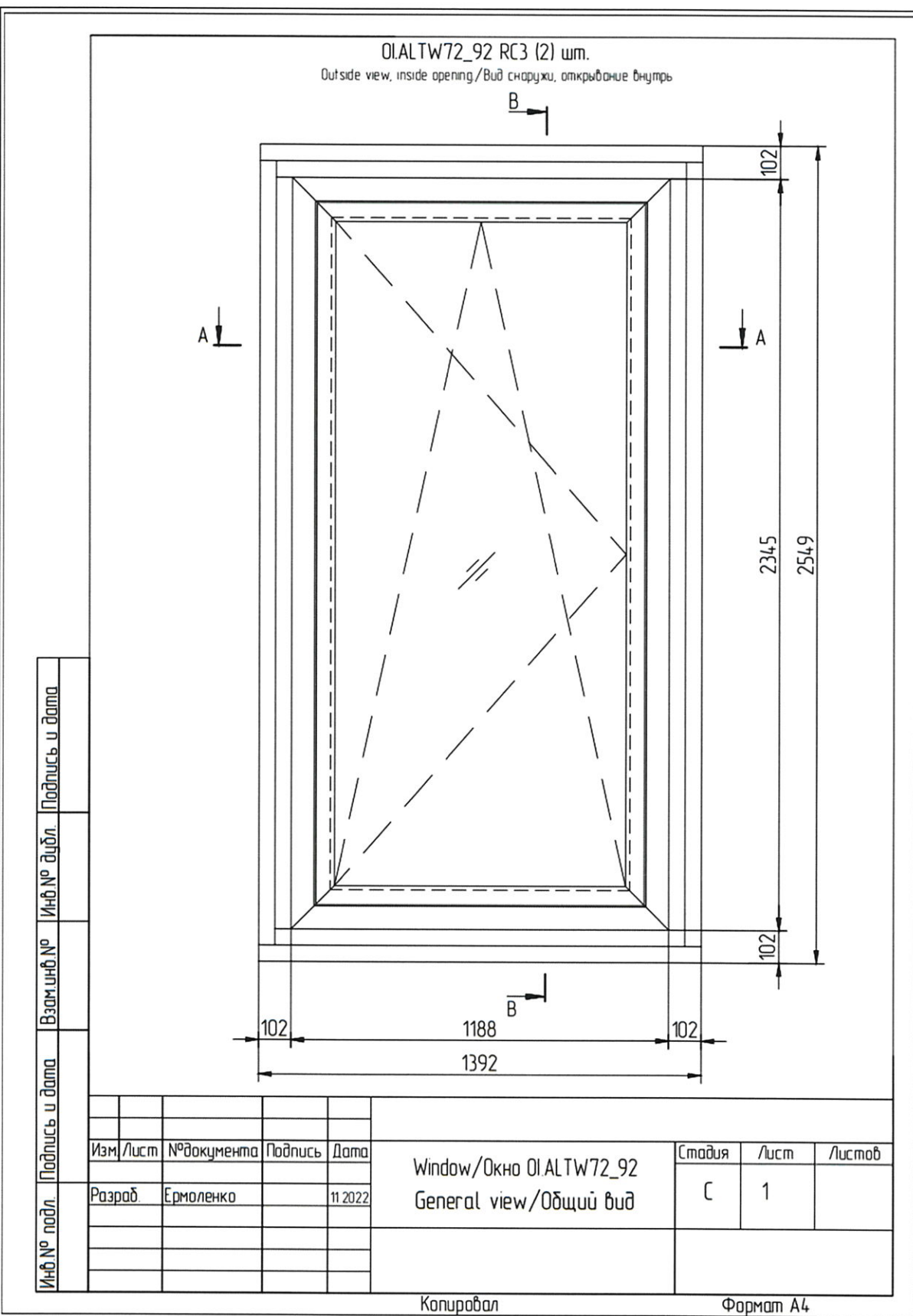
Hardware

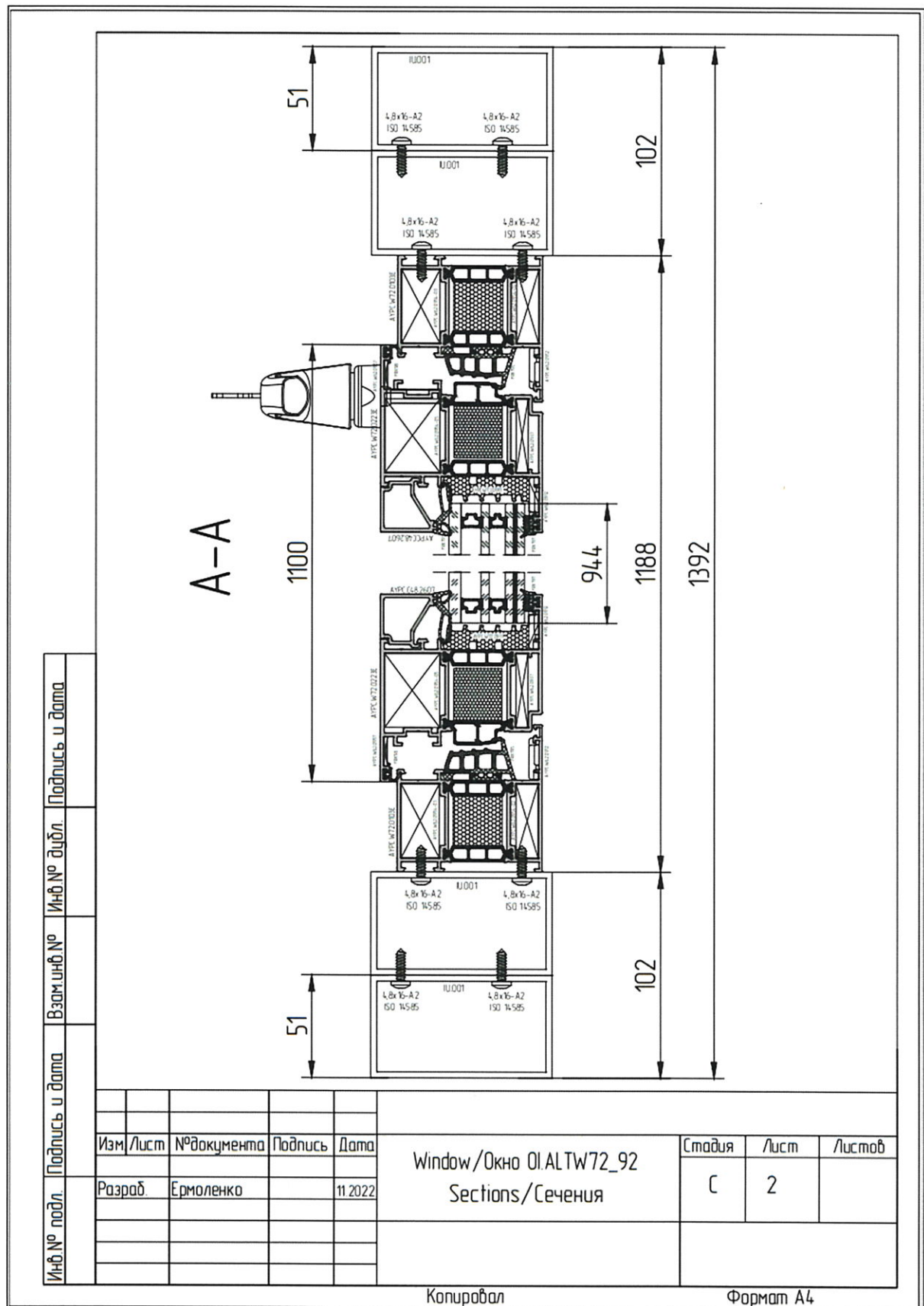
	Manufacturer:	Product description:	Product code:	Quantity:
Hinges:	ROTO (Germany)	Corner hinge incl. adjusting piece, R Pivot rest №4, R	739699 624973	1 pc. 1 pc.
Hinge fixing:	none	-	-	-
Hinge protectors:	ROTO (Germany)	Sash stay 735 №4, R Scissor-stay guide 735	624958 740838	1 pc. 1 pc.
Hinge protector fixings:	none	-	-	-
Lock:	ROTO (Germany)	Locking components v.01	728804	1 set
Lock fixings:	none	-	-	-
Cylinder:	none	-	-	-
Cylinder fixing:	none	-	-	-
Handle:	ROTO (Germany)	RotoLine 200Nm	227844	1 pc.
Handle fixings:		Screw M5x30 DIN965		2 pc.
Touch Bar	none	-	-	-
Cylinder Support	none	-	-	-
Cylinder Escutcheon	none	-	-	-
Keeps:	ROTO (Germany)	Upgrade-kit 150kg	739693	1 set
Keep fixings:	none	-	-	-
Keeps:	ROTO (Germany)	Striker v.01	728918	7 pc.
Keep fixings:	none	-	-	-
Keeps:	ROTO (Germany)	Locking cam, insertable	334671	7 pc.
Keep fixings:	none	-	-	-
Drip bar:	AluminTechno, LLC	Aluminium profile	AYPC.C48.0611	1 pc.

Drip bar fixings:	Durer, Russia	Screw 3,9x13-A2ISO14585	18100600	5 pc.
Security fitting:	ROTO (Germany)	SEC rebate clearance reduction set	728950	1 set
Security fitting:	ROTO (Germany)	SEC corner drive CL set	728944	1 set
Security fitting:	ROTO (Germany)	SEC flush-encased gearbox set	728947	1 set
Security fitting:	ROTO (Germany)	SEC locking cam, insertable, RC2	447245	7 pc.
Security fitting:	ROTO (Germany)	SEC striker v.01, RC2	212637	7 pc.
Security fitting:	ROTO (Germany)	Turn restrictor set V.01	740814	1 pc.
Security fitting fixings:		Screw 4,8x16-A2ISO14586		28 pc.

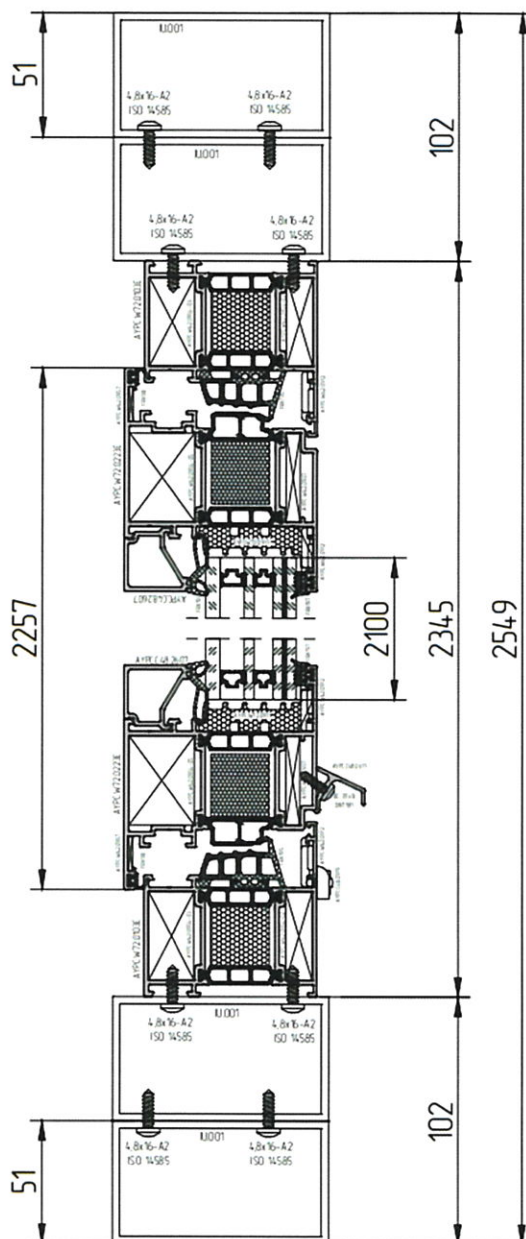
Confirmation

Please confirm that the samples provided for testing are representative of standard production?





B-B



Инв.№ подл.	Подпись и дата	Взам.инв.№	Инв.№ дубл.	Подпись и дата

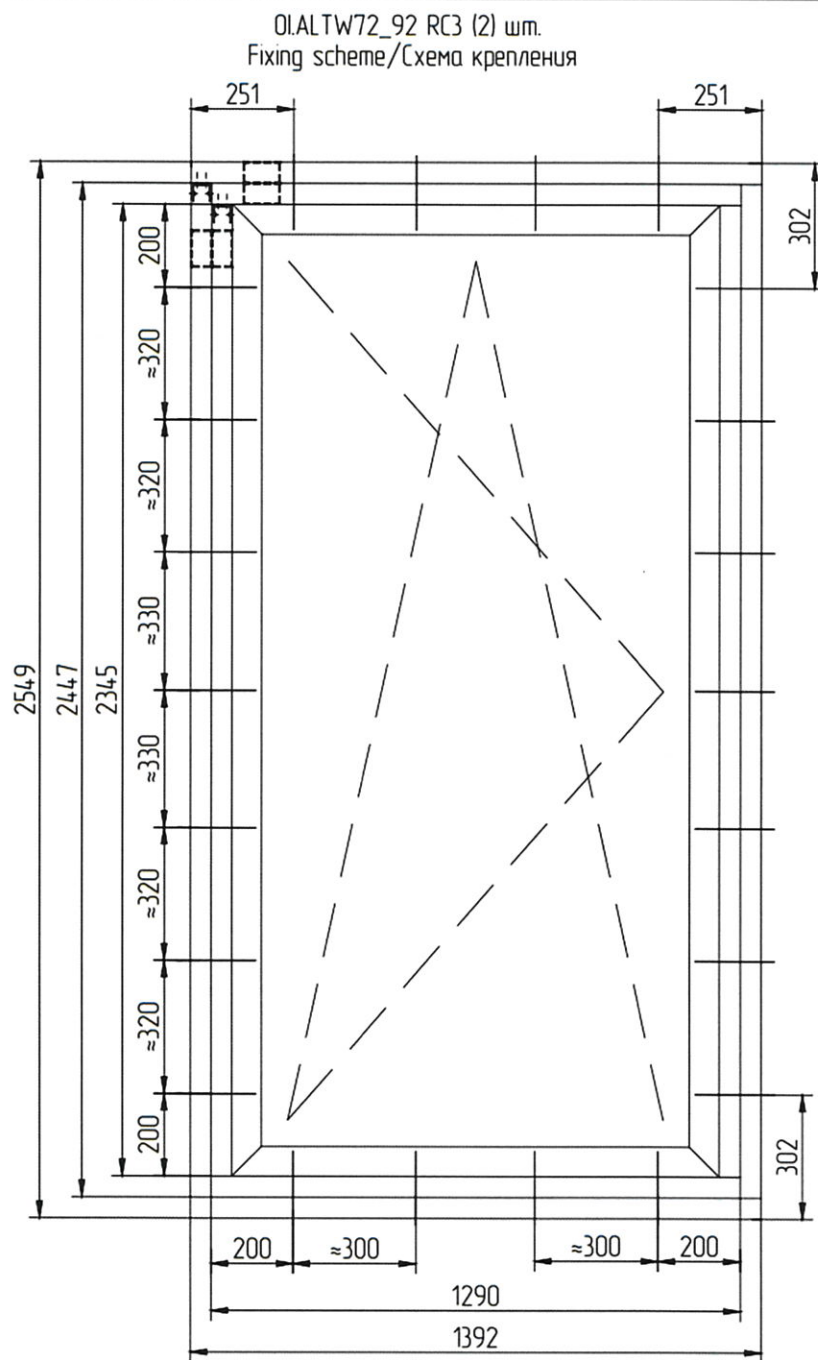
Изм.	Лист	№ документа	Подпись	Дата
Разраб.		Ермоленко		11.2022

Window/Окно 01.ALTW72_92
Sections/Сечения

Стадия	Лист	Листов
С	3	

Копировал

Формат А4



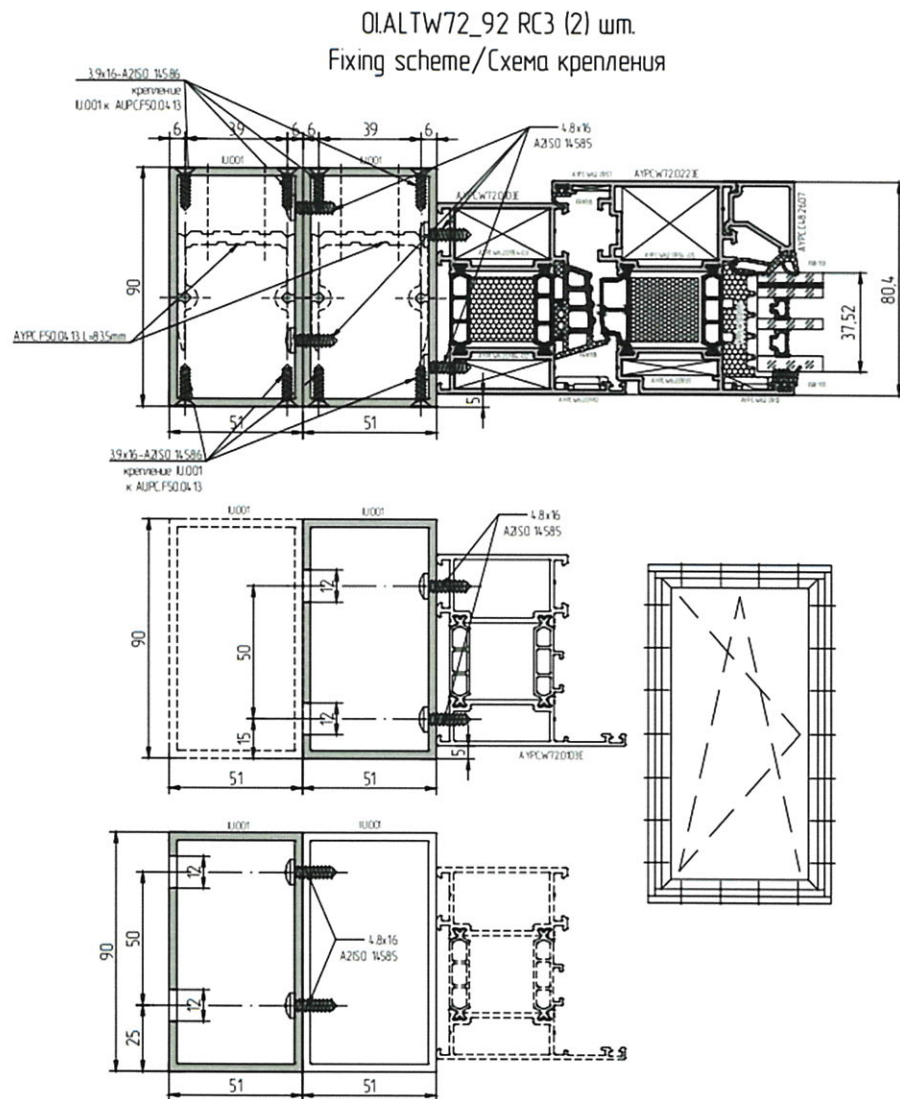
Инв.№ подл.	Подпись и дата	Взам.инв.№	Инв.№ дубл.	Подпись и дата

Изм.	Лист	№ документа	Подпись	Дата
Разраб.		Ермоленко		11.2022

Window/Окно 01.ALTW72_92	Стандія	Лист	Листов
Fixing scheme/Схема кріпежа	С	4	

Копировал

Формат А4



Инв.№ подл.	Подпись и дата	Взам.инв.№	Инв.№ дубл.	Подпись и дата

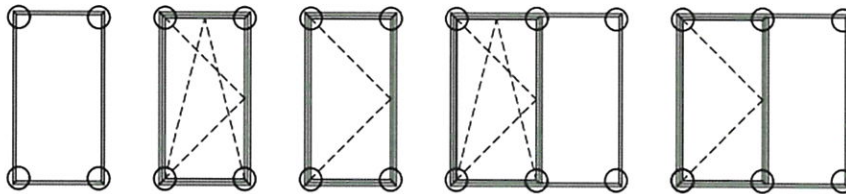
[illegible]

Копировал

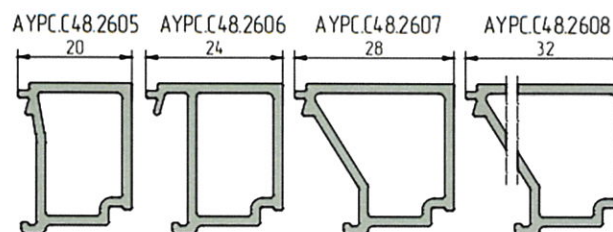
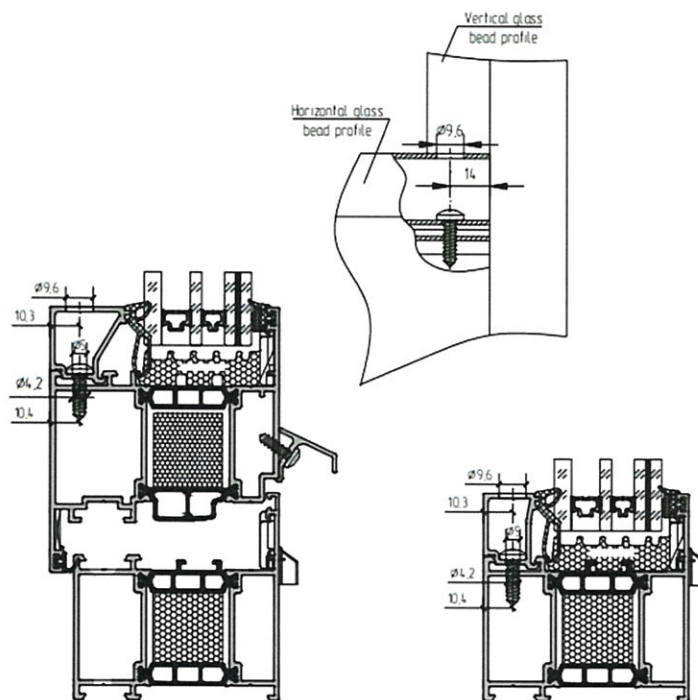
Формат А4

ALT W72
система профилей рамного
остекления с терморазрывом

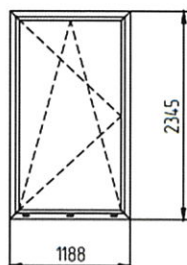
RC3 Configuration Details
Fixing of the horizontal glass bead profile with
4.8x16-A2ISO 14585 screw



The screw positioning over the length



DIALTW72_92 RC3, 2 pc.



Article	Name	Draft	1.
Accessories			
AYPC.W62.0917	Support		8
100x44x103	Leveling support		8 (8)
AYPC.C48.0919M-01	Drainage plug		3
AYPC.W62.0954-02	Corner insert		4
AYPC.W62.0954-03	Corner insert		4
AYPC.W62.0912	Leveling angle		8
Pin 5x10	Pin 5x10 DIN63250		32
AYPC.W62.0957	Corner insert		4
AYPC.W62.0937	Corner insert		4
AYPC.W62.0954-05	Corner insert		4
3,9x13-A2 DIN7981	Self-tapping screw		5
4,8x16-A2 DIN7981	Self-tapping screw		4
LOCTITE 406	Glue for rubber		7ml
COSMOPUR 819	Glue for aluminum		160ml

ALT W72система профилей рам-створа
остекления с терморазрывом

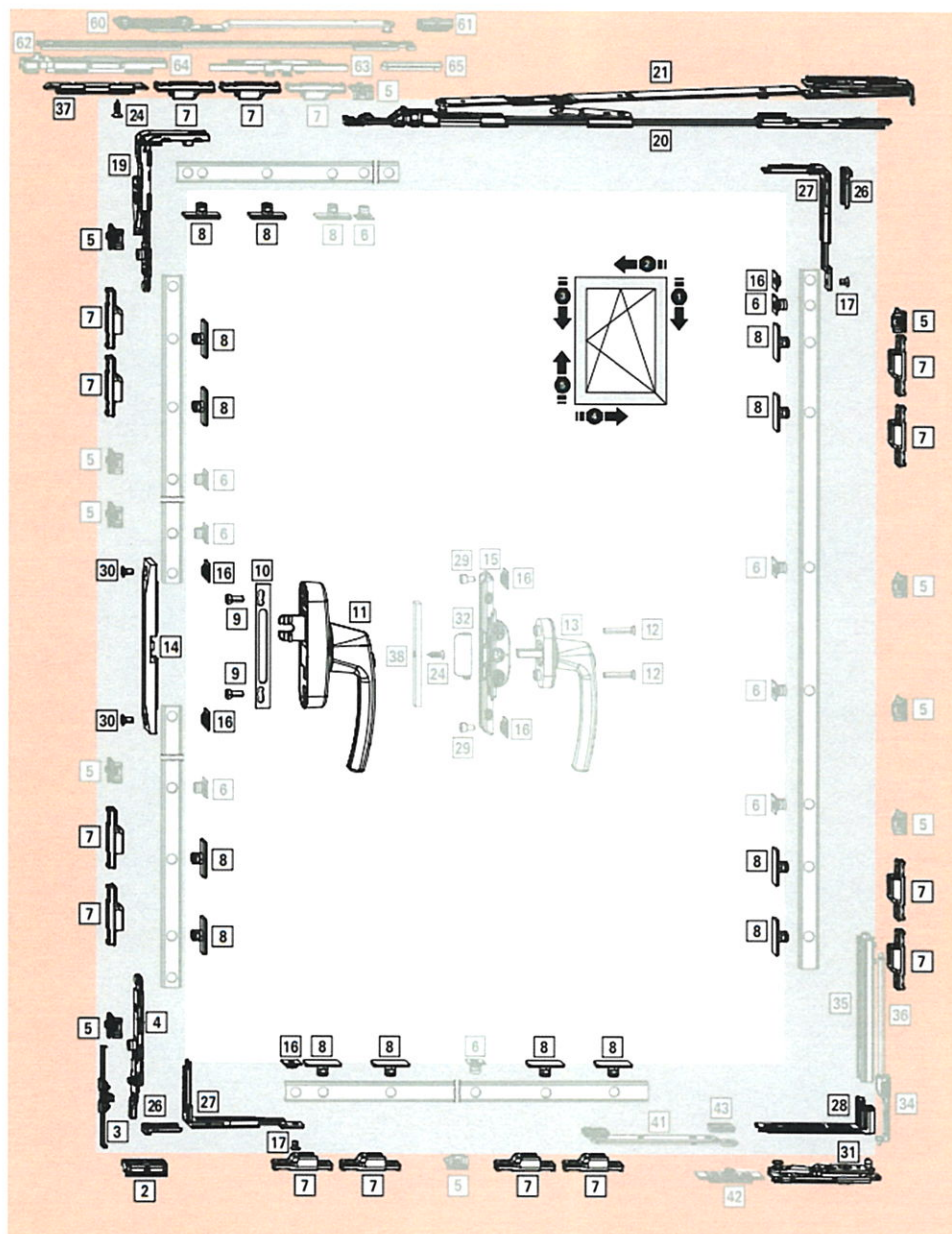
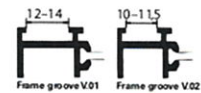
Article	Name	Draft	1.
Profile			
AYPC.W72.0103E	Frame profile		188
			2345
AYPC.W72.0223E	Sash profile		1100
			2257
AYPC.C48.0611	Drain profile		1034
AYPC.W62.0607	Rod profile		910.5
			910.5
			446
			1713
AYPC.C48.2607	Glass bead profile		960
			2073

Article	Name	Draft	1.
Accessories			
FRK98	Rubber sealant		7000
FRK195	Rubber sealant		7000
FRK196	Rubber corner		4
FRK193	Rubber sealant		6500
AYPC.W72.0911	Foam sealant		5500
FRK197	Rubber sealant		6500
FRK179	Rubber corner		4
Glazing 8 tempered/20/8 tempered (36 mm)			
942x2100 mm			1



T&T hardware overview**Hardware overview and parts list**

T&T RC3 | 150 kg



Grey components (optional) are not included in the basic set.



58 ■ May 2018 ■ IMO_386_EN_v3

Roto AL Designo

Subject to change.

T&T hardware overview**Hardware overview and parts list**

T&T RC3 | 150 kg

**Application range**Sash width **SW** 700 – 1600 mm ⁴⁾Sash height **SH** 870 – 2700 mm ³⁾Sash weight **S.kg** max. 100 / 150 kg ¹⁾Rebate clearance **RC** 11.5 – 12 mmOverlap width **OW** 21.5 – 22 mm**Basic sets****Locking side**

Pos.	Pct(s)	Description	PU	Material no.
1		T&T locking components V.01	10	728804
		T&T locking components V.02	10	728805
		consisting of:		
1		Run-up block (not used)		
[4]	1	Tilt lock bolt		
[2]	1	Tilt striker		
[3]	1	Anti-jemmy device V.01/V.02		
[5]	2	Striker V.01/V.02		
[19]	1	Corner drive with MD ³⁾		
1		Retaining fork (not shown)		

Additionally required locking components

Pos.	Pct(s)	Description	PU	Material no.
[8]	14	SEC cam RC3, insertable	100	443530
[7]	14	SEC striker V.01	100	212637
		SEC striker V.02	100	212638
1		SEC rebate-clearance reduction set	10	728950
		consisting of:		
[37]	1	SEC rebate-clearance reduction CD		
[24]	1	Countersunk tapping screw ST4.8 x 16		
2		SEC corner drive CL set	10	728944
		consisting of:		
[27]	1	SEC corner drive CL		
[26]	1	SEC retaining fork		
[16]	1	SEC connector		
[17]	1	Countersunk screw M5 x 7		

Hinge side

Pos.	Pct(s)	Description	DIN	PU	Material no.
[28]	1	Corner hinge incl. adjustment piece	L	10	739700
			R	10	739699
[31]	1	Pivot rest no. 1	L	10	624970
			R	10	624969
		Pivot rest no. 3	L	10	624972
			R	10	624971
		Pivot rest no. 4	L	10	624974
			R	10	624973

Sash stay

Pos.	Pct(s)	Description	DIN	PU	Material no.
[20]	1	Scissor stay guide 735 ⁴⁾		10	740838
		Scissor stay guide 500 ⁴⁾		10	740836
[21]	1	Sash stay 735 no. 1 ⁴⁾	L	10	624947
			R	10	624946
		Sash stay 735 no. 3 ⁴⁾	L	10	624953
			R	10	624952
		Sash stay 735 no. 4 ⁴⁾	L	10	624959
			R	10	624958
		Sash stay 500 no. 1 ⁵⁾	L	10	624945
			R	10	624944
		Sash stay 500 no. 3 ⁵⁾	L	10	624951
			R	10	624950
		Sash stay 500 no. 4 ⁵⁾	L	10	624957
			R	10	624956

NOTE!

Only use supports / clamping support-strips which have been approved for the profile. Further information can be obtained from Roto sales representatives.

Espagnolette and connector

Pos.	Pct(s)	Description	PU	Material no.
[11]	1	Roto Line AL geared-handle, lockable		→ CTL 1
[10]	1	Espagnolette support	100	331937
[9]	2	Flat-headed screw M5 x 12	100	728925
1		SEC espagnolette protection set	10	728952
		consisting of:		
[16]	2	SEC connector		
[14]	1	SEC espagnolette protection		
[30]	2	Countersunk screw M5 x 10		

Optional**Additional components, size-dependent**

Pos.	Pct(s)	Description	PU	Material no.
[5]	1-8	Striker V.01	100	728918
		Striker V.02	100	728920
[6]	1-8	Cam, insertable	100	334671
1		Additional stay arm V.01 ⁴⁾	10	728806
		Additional stay arm V.02 ⁴⁾	10	728807
		consisting of:		
[60]	1	Additional scissor stay arm, compl. V.01/V.02		
[61]	1	Retaining spring, compl.		
[62]	1	Coupling rod		
[63]	1	Scissor stay deadbolt		
[64]	1	Scissor stay guide, compl.		
[65]	1	Stop		
1		Turn restrictor set V.01 ⁷⁾	10	740814
		Turn restrictor set V.02 ⁷⁾	10	740835
		consisting of:		
[41]	1	Scissor stay, compl.		
[42]	1	Frame bearing V.01/V.02		
[43]	1	Turn stop		
[8]	1	SEC cam RC3, insertable	100	443530
[7]	1	SEC striker V.01	100	212637
		SEC striker V.02	100	212638

Additional components on the hinge side, weight-dependent | 100–150 kg

Pos.	Pct(s)	Description	DIN	PU	Material no.
1		Load transfer set V.01	L	10	739694
			R	10	739693
		Load transfer set V.02	L	10	739696
			R	10	739695
		consisting of:			
[35]	1	Sash component			
[36]	1	Support rod			
[34]	1	Frame bearing			

T&T hardware overview**Hardware overview and parts list**

T&T RC3 | 150 kg

Alternative espagnolettes and connectors

Pos.	Pcs(s)	Description	PU	Material no.
[13]	1	Handle, lockable		→ CTL 1
[12]	2	Countersunk screw (stainless steel) M5x30	100	212501
	1	SEC flush-encased gearbox set	10	728947
		consisting of:		
[15]	1	SEC flush-encased gearbox without MD⁶⁾		
[16]	2	SEC connector		
[24]	1	Countersunk tapping screw ST4.8x16		
[32]	1	SEC anti-drilling protection		
[36]	2	Cylinder-head screw M5x8		
[38]	1	SEC rebate-clearance reduction flush- encased gearbox		

1) S kg > 100 kg with load transfer 150 kg

2) The handle without escutcheon can only be used on profile systems with an overlap height (OH) of ≥ 10 mm.

3) Installation of the mishandling device is prescribed in accordance with DIN 18300 (German construction contract procedures (VOB)). When using the centre lock on the hinge side and the additional stay arm, the mishandling device is mandatory for technical reasons.

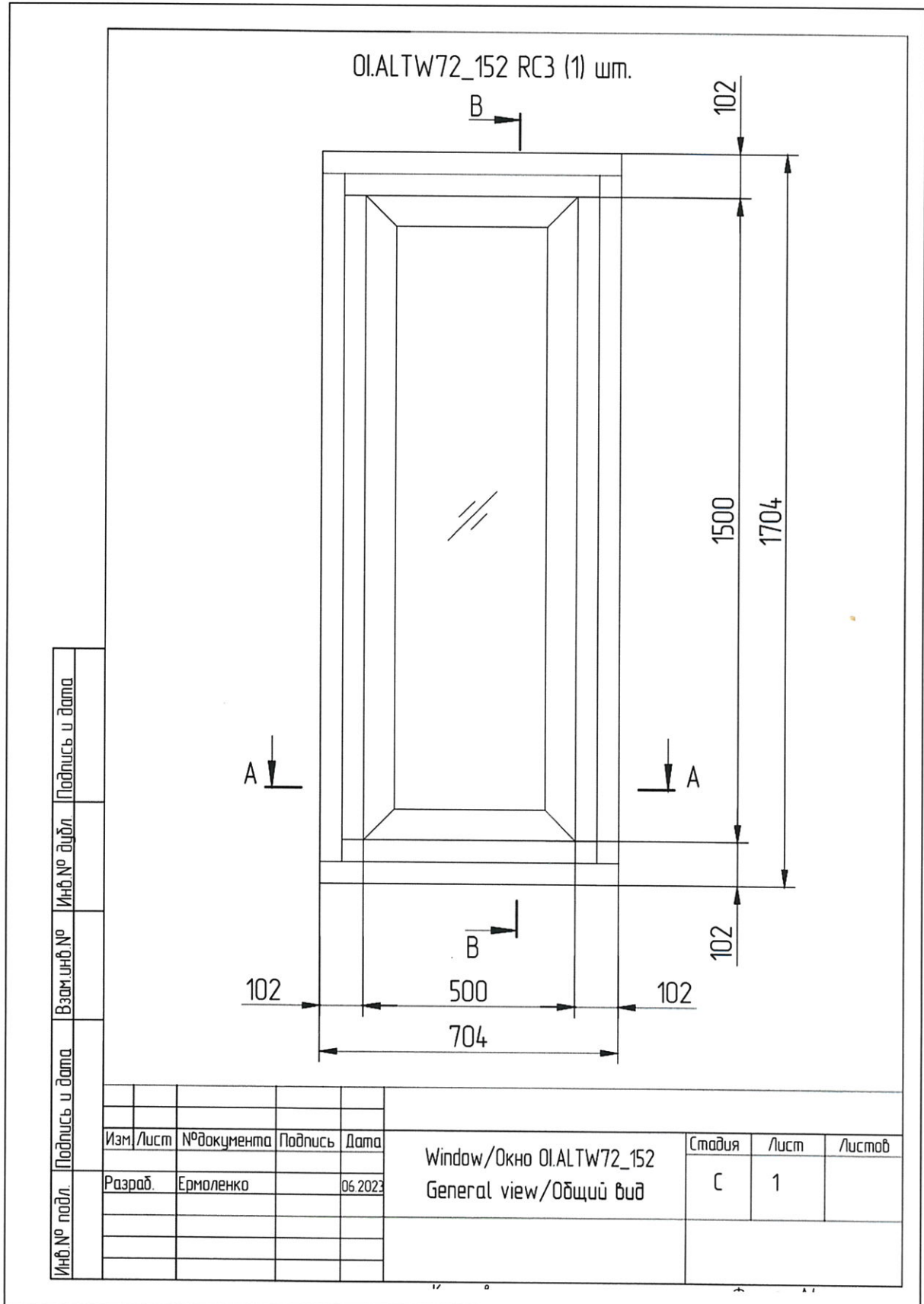
4) An additional stay arm is mandatory from SW > 1300 mm.

5) Sash stay 500 can be used up to max. SW 900 mm.

6) Sash stay 735 can be used from SW ≥ 875 mm.

7) Turn restrictor can be used from SW > 1200 mm; for the damped, braked turn restrictor, see page 238.

8) For the SEC flush-encased gearbox with blocking device, see page 237.



AGC

CE Marking of Laminated glass – EN 14449:2005 + AC:2005
Declaration of performances
Stratobel clear (44.x, 55.x)

CE

We

AGC Glass Europe
Building Division

Avenue Jean Monnet 4 - 1348 Louvain-la-Neuve - Belgium
Tel.: +32 - (0) 2 409.30.00 - Fax: +32 - (0) 2 672.44.62

Declare, under his sole responsibility, the following characteristics for the CE Marking of the glass products named **Stratobel**, intended to be used in buildings and construction works, following **EN 14449:2005 + AC:2005**

NB 0074 0336 0402 0432 0474 0497 0589 0620 0672 0679 0749 0757 0761 0833 1080 1121 1136 1154 1173 1174 1234 1314 1322 1343 1390 1391 1394 1396 1488 1643 1694 1717 1750 1812 2531

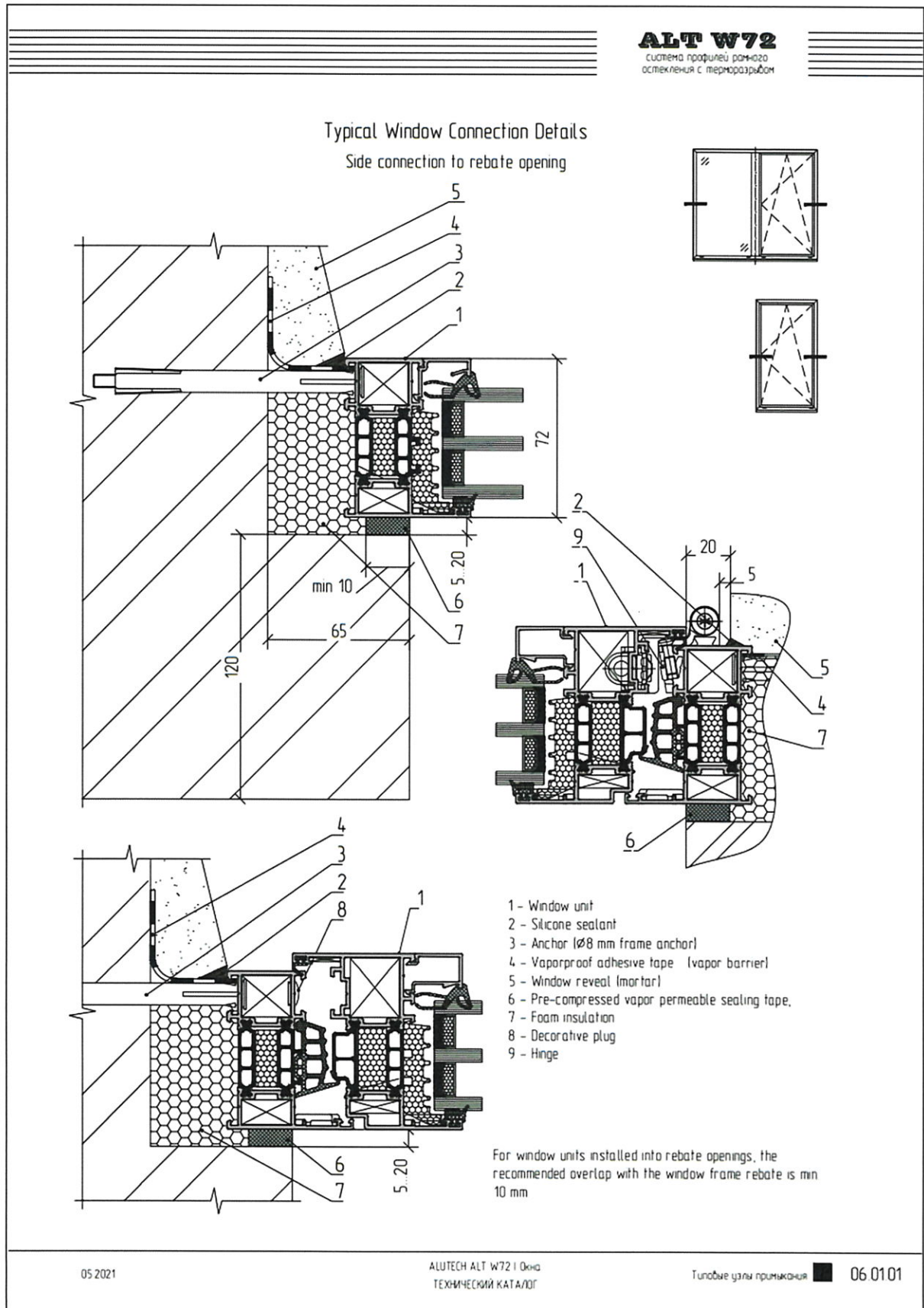
	Stratobel characteristics in :	AVCP Systems	44.1	44.2	44.4	44.6	55.1	55.2	55.4
1.	Resistance to fire (EN 13501-2)	1	NP	NP	NP	NP	NP	NP	NP
2.	Reaction to fire (EN 13501-1)	3, 4	NP	NP	NP	NP	NP	NP	NP
3.	External fire performances	3, 4	NP	NP	NP	NP	NP	NP	NP
4.	Bullet resistance (EN 1063)	1	NP	NP	NP	NP	NP	NP	NP
5.	Explosion resistance (EN 13541)	1	NP	NP	NP	NP	NP	NP	NP
6.	Burglar resistance (EN 356)	3	NP	P1A-P2A	P3A-P4A	P5A	NP	P1A-P2A	P3A-P4A
7.	Pendulum body impact resistance (EN 12600)	3	2B2	1B1	1B1	1B1	1B1	1B1	1B1
8.	Resistance against sudden temperature change and temperature differentials	4	NP	NP	NP	NP	NP	NP	NP
9.	Wind, snow, permanent and imposed load resistance	4	NP	NP	NP	NP	NP	NP	NP
10.	Direct airborne sound reduction (EN 12758): R_w (C:Ctr)	3	34 (-1;-2)	35 (-1;-3)	NP	35 (-1;-3)	35 (-1;-3)	NP	36 (-1;-4)
11.	- U-value (EN 673) - Normal emissivity ϵ_n coated side (EN 12898)	3	5,6 0,89	5,6 0,89	5,5 0,89	5,3 0,89	5,6 0,89	5,5 0,89	5,4 0,89
12.	Light transmission/reflection (EN 410): τ_v / ρ_v / ρ'_v	3	88 / 8 / 8	88 / 8 / 8	88 / 8 / 8	88 / 8 / 8	87 / 8 / 8	87 / 8 / 8	87 / 8 / 8
13.	- Solar transmission/reflection (EN 410): τ_e / ρ_e / ρ'_e - Solar factor: g	3	73 / 7 / 7 78	72 / 7 / 7 77	70 / 7 / 7 75	69 / 7 / 7 74	70 / 7 / 7 76	69 / 7 / 7 75	67 / 7 / 7 73
14.	Durability	3	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Louvain-la-Neuve
23rd of February 2015

E. Ceriani
Primary Sales & Strategic, Marketing Director, Building



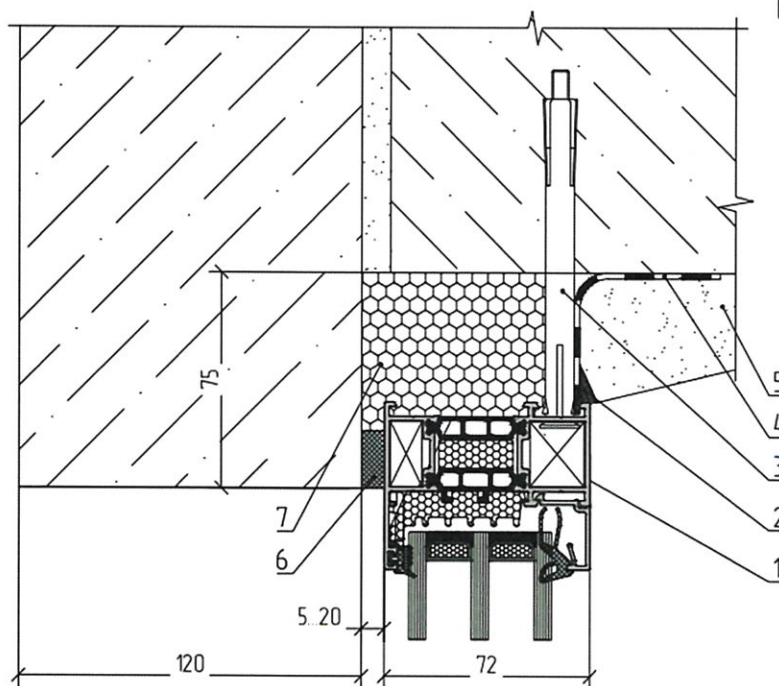
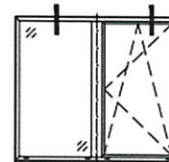
Attachment No. 2 – Assembly instructions



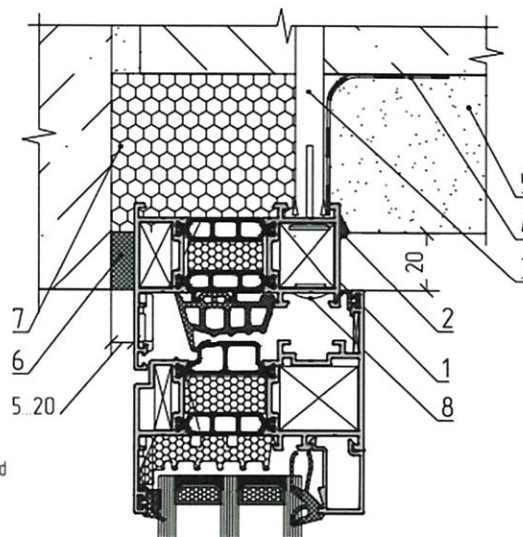
ALT W72система профилированного
остекления с терморазрывом

Typical Window Connection Details

Top connection to rebate opening



- 1 - Window unit
- 2 - Silicone sealant
- 3 - Anchor (Ø8 mm frame anchor)
- 4 - Vaporproof adhesive tape (vapor barrier)
- 5 - Window reveal (mortar)
- 6 - Pre-compressed vapor permeable sealing tape
- 7 - Foam insulation
- 8 - Decorative plug

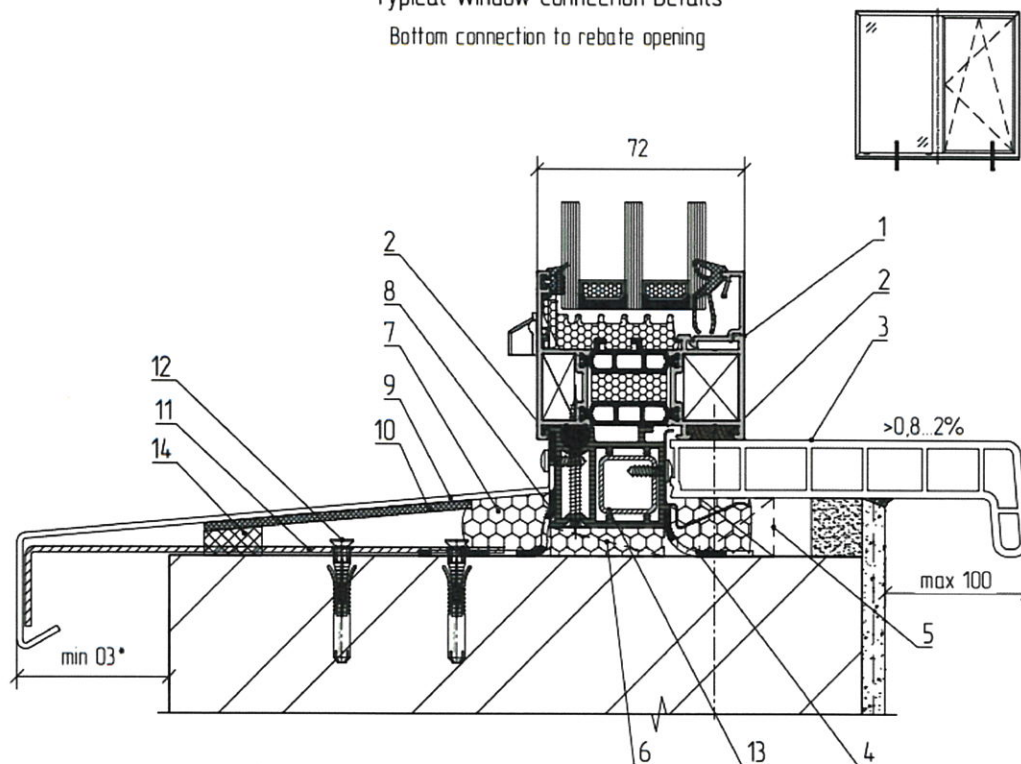


For window units installed into rebate openings, the recommended overlap with the window frame rebate is min. 10 mm

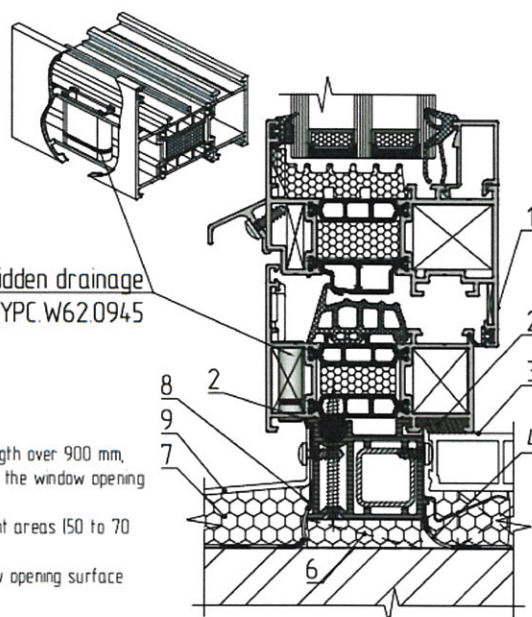
ALT W72система профилей рамного
остекления с терморазрывом

Typical Window Connection Details

Bottom connection to rebate opening



- 1 - Window unit
- 2 - Silicone sealant
- 3 - Window board (shown schematically)
- 4 - Vaporproof adhesive tape (vapor barrier)
- 5 - Support bar
- 6 - Support pad
- 7 - Foam insulation
- 8 - Waterproof vapor permeable sealing tape (vapor proof sealant)
- 9 - Window sill
- 10 - Noise absorbing pad
- 11 - Window sill bracket
- 12 - Expansion anchor
- 13 - Pipe 20x20x2
- 14 - Pre-compressed vapor permeable sealing tape

Hidden drainage
AYPC.W62.0945

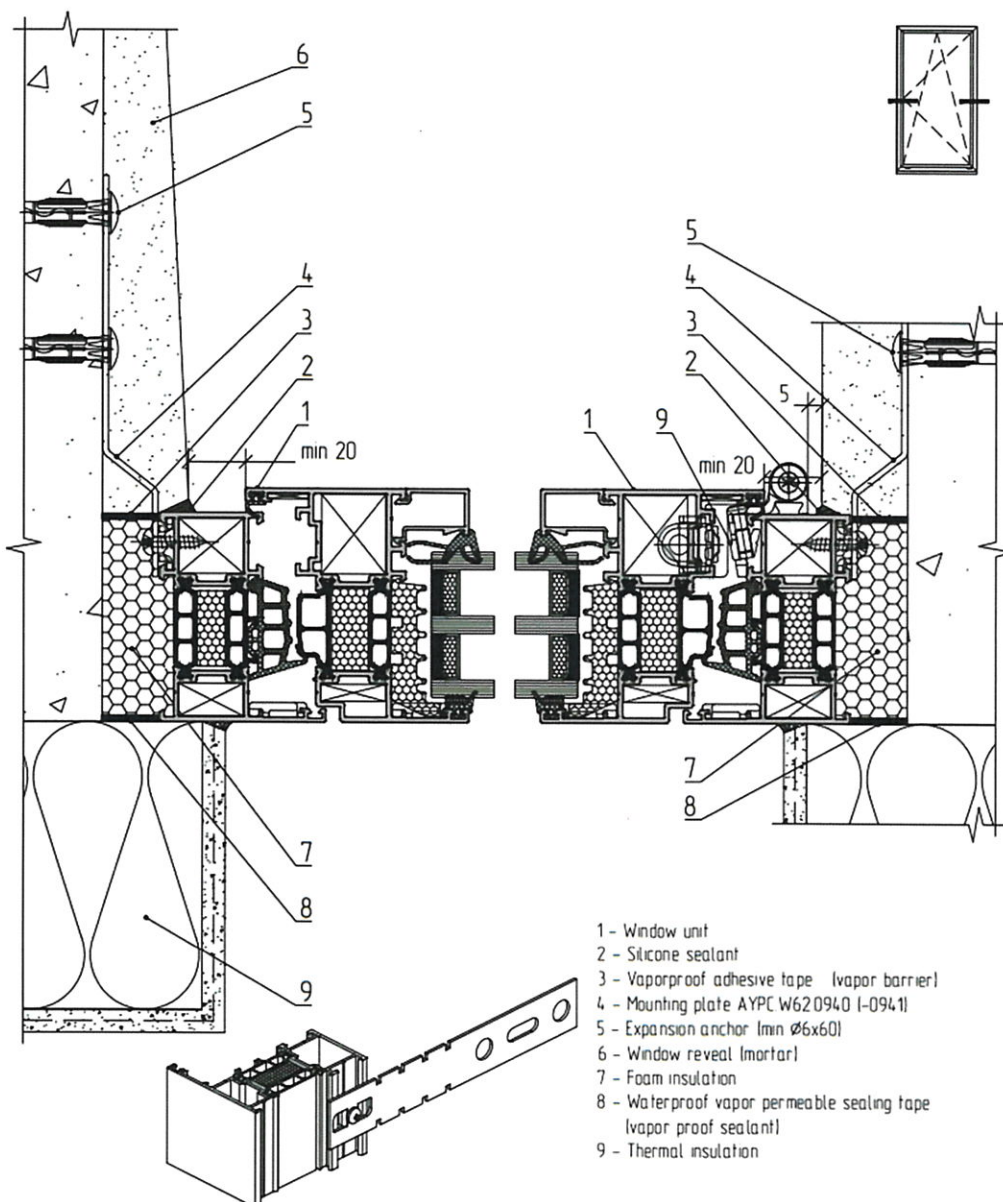
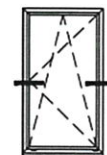
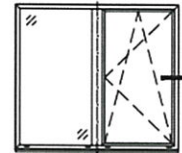
For window sill width over 150 mm and window opening length over 900 mm, support the sill with metal brackets fastened to the bottom of the window opening with expansion dowels

Window sill overhang from the facade may vary in different areas (50 to 70 mm in the Republic of Belarus)

Apply sand-cement mortar or foam insulation on the window opening surface under the sill

ALT W72
система профилей разного
остекления с терморазрывом

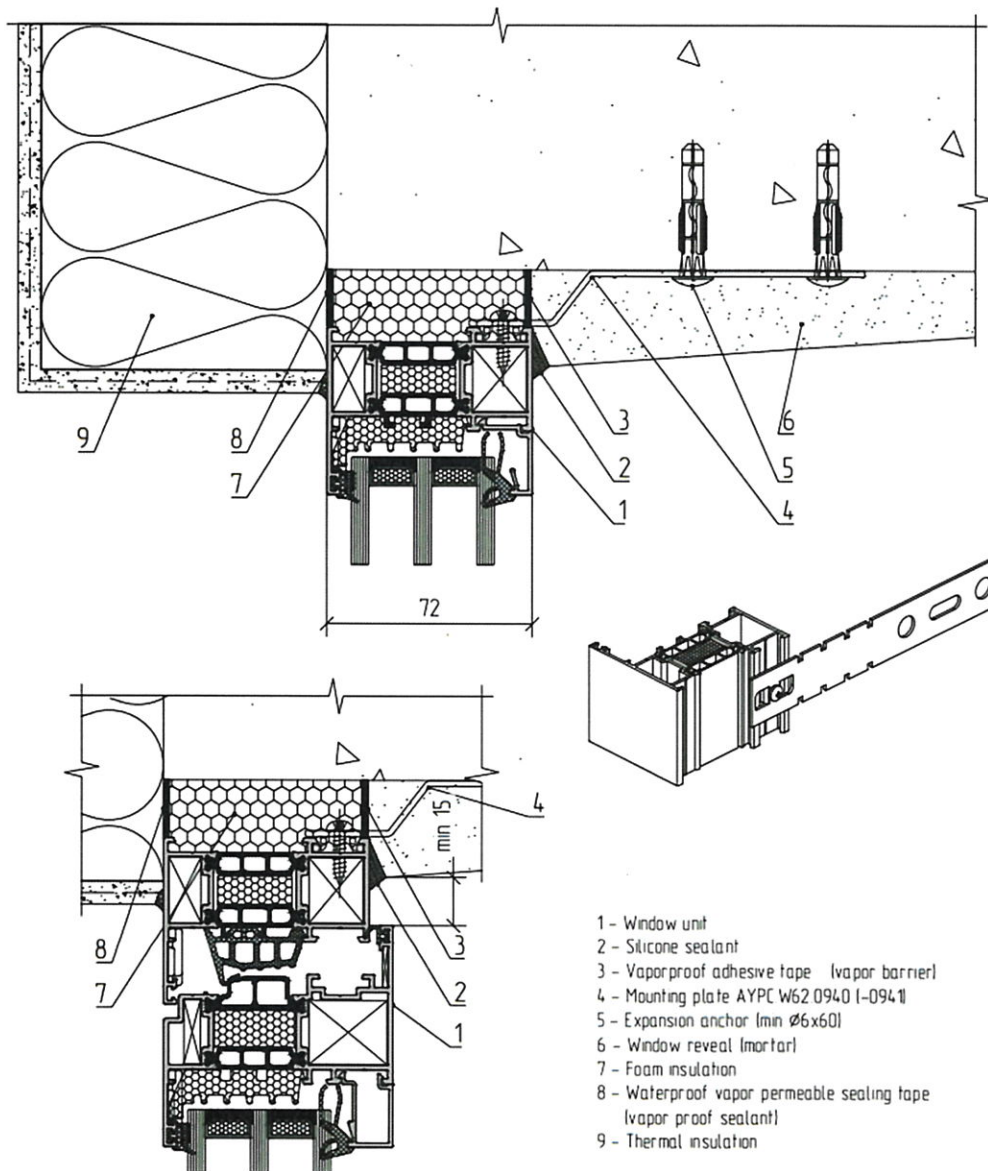
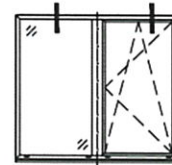
Typical Window Connection Details
Side connection to opening without rebate



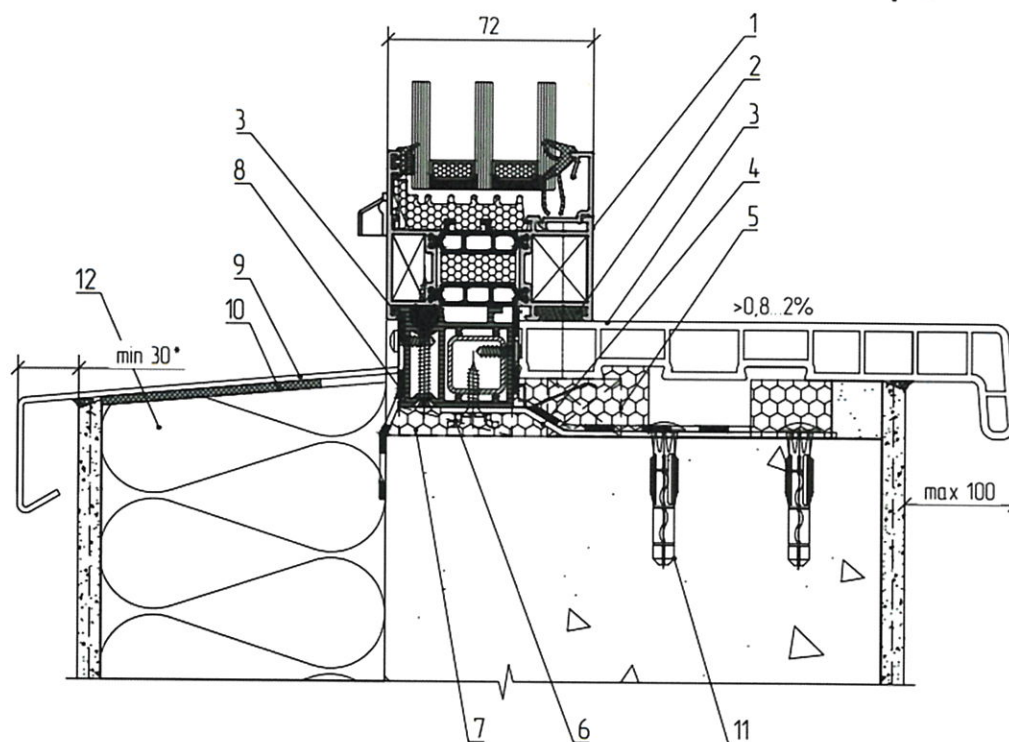
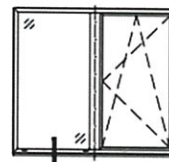
- 1 - Window unit
- 2 - Silicone sealant
- 3 - Vaporproof adhesive tape (vapor barrier)
- 4 - Mounting plate AYPC W62 0940 (I-0941)
- 5 - Expansion anchor (min Ø6x60)
- 6 - Window reveal (mortar)
- 7 - Foam insulation
- 8 - Waterproof vapor permeable sealing tape (vapor proof sealant)
- 9 - Thermal insulation

ALT W72
система профилей рамного
остекления с терморазрывом

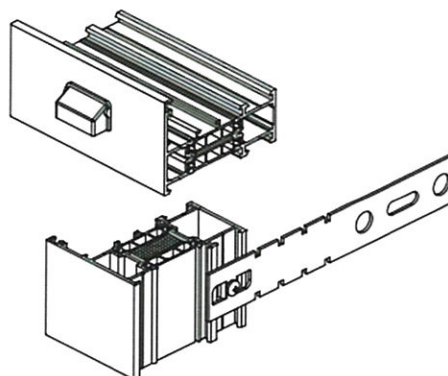
Typical Window Connection Details
Top connection to opening without rebate



Typical Window Connection Details
Bottom connection to opening without rebate



- 1 - Window unit
- 2 - Silicone sealant
- 3 - Window board (shown schematically)
- 4 - Vaporproof adhesive tape (vapor barrier)
- 5 - Support bar
- 6 - Support pad
- 7 - Foam insulation
- 8 - Waterproof vapor permeable sealing tape (vapor proof sealant)
- 9 - Window sill
- 10 - Structural adhesive
- 11 - Expansion anchor (1mm ϕ 6x60)
- 12 - Thermal insulation

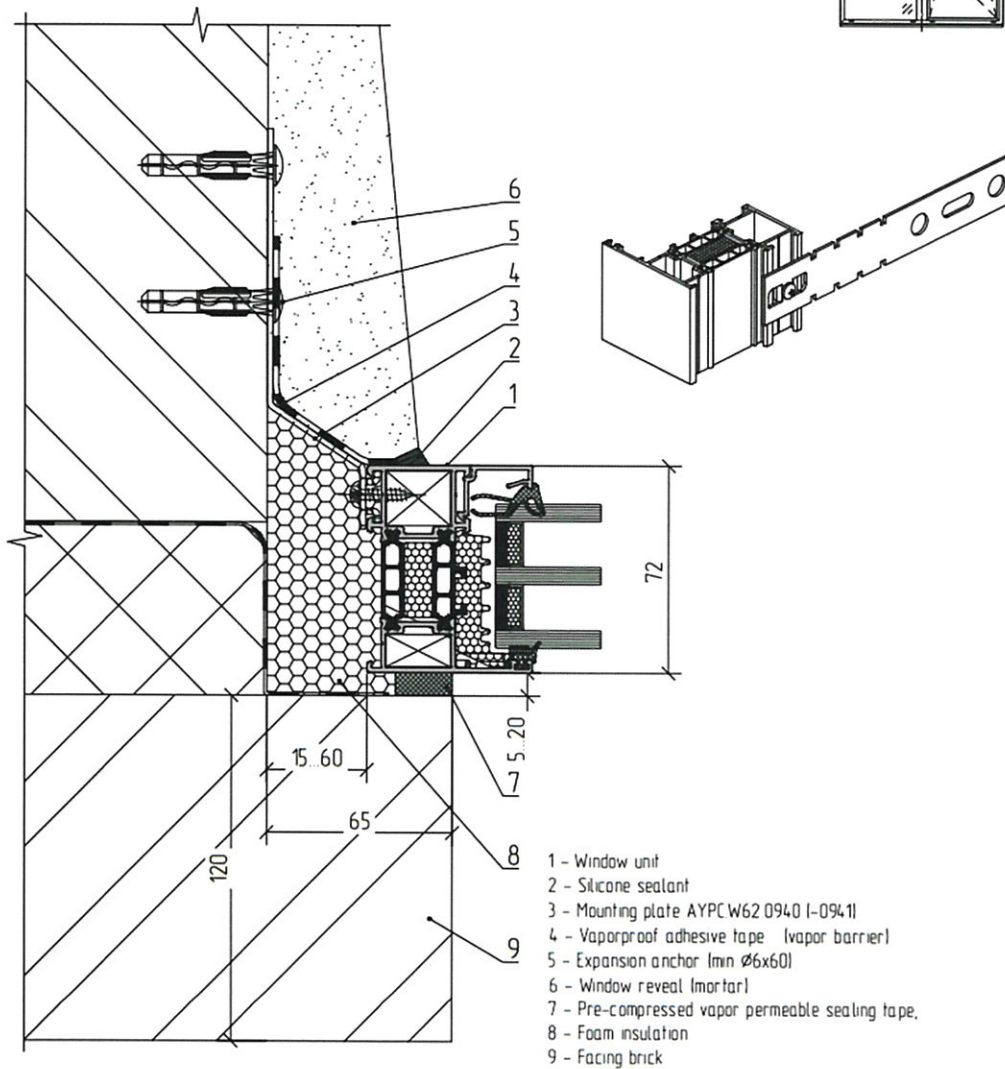
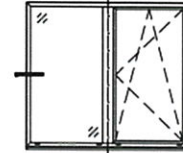


*Window sill overhang from the facade may vary in different areas (50 to 70 mm in the Republic of Belarus)

ALT W72система профилей рамного
остекления с терморазрывом

Typical Window Connection Details

Side connection to rebate opening



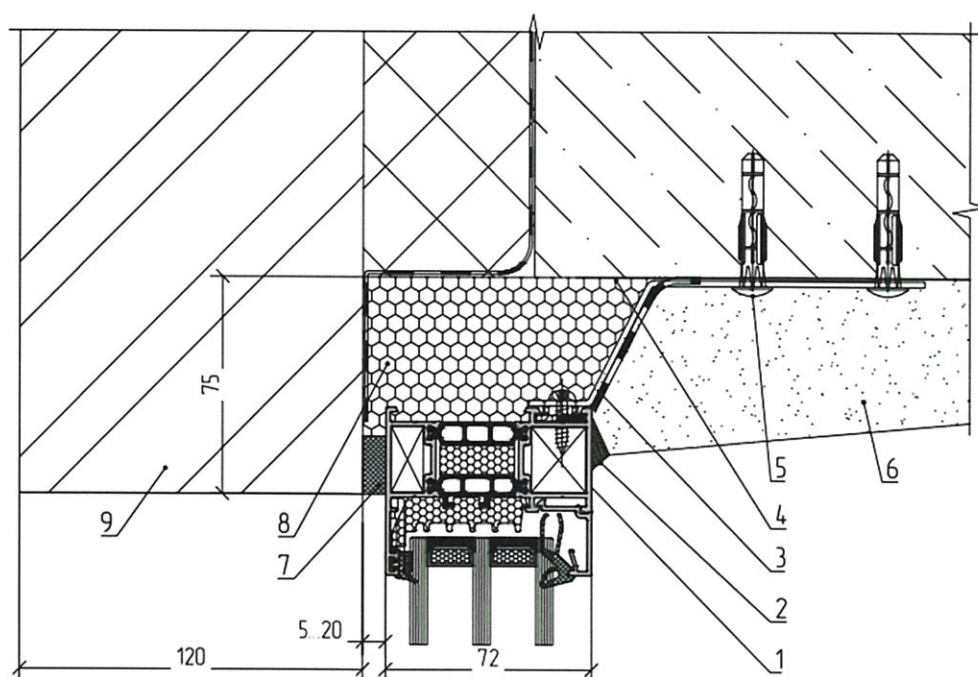
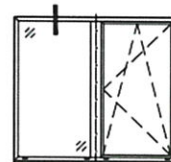
For window units installed into rebate openings, the recommended overlap with the window frame rebate is min 10 mm

Do not apply render, putty or paint over the vapor permeable tape in the joint exterior layer.

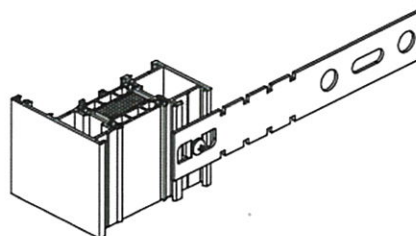
ALT W72
система профилей рамного
остекления с терморазрывом

Typical Window Connection Details

Top connection to rebate opening



- 1 - Window unit
- 2 - Silicone sealant
- 3 - Mounting plate AYPC W62 0940 (I-0941)
- 4 - Vaporproof adhesive tape (vapor barrier)
- 5 - Expansion anchor (min $\varnothing 6 \times 60$)
- 6 - Window reveal (mortar)
- 7 - Pre-compressed vapor permeable sealing tape
- 8 - Foam insulation
- 9 - Facing brick

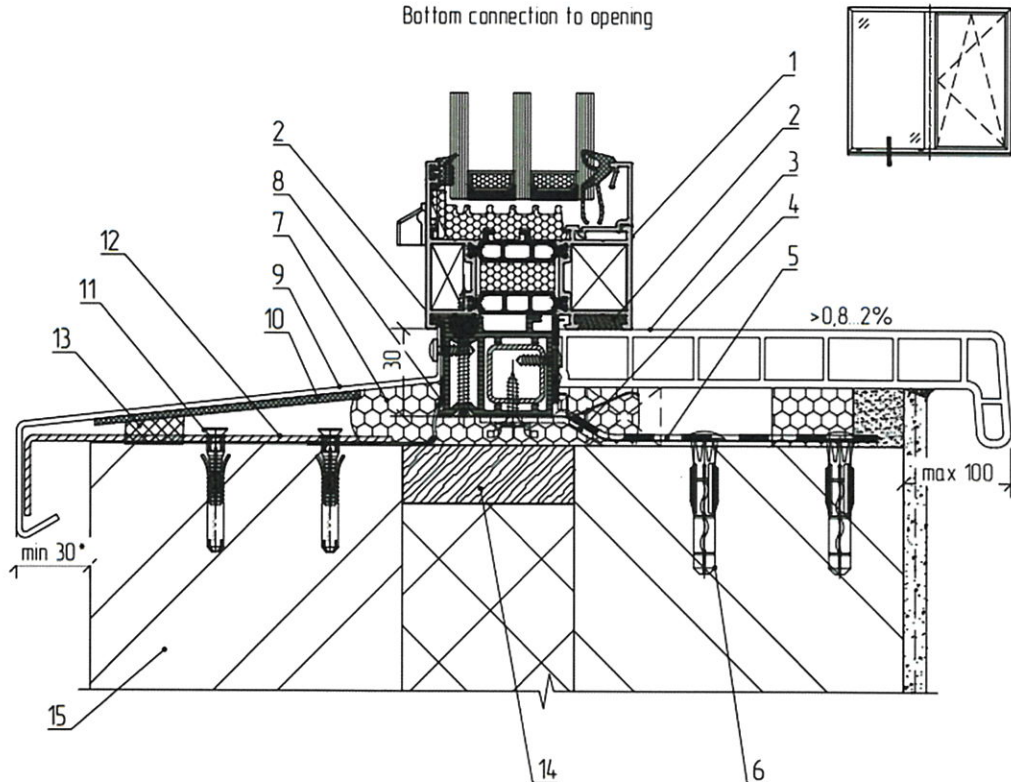


For window units installed into rebate openings, the recommended overlap with the window frame rebate is min. 10 mm

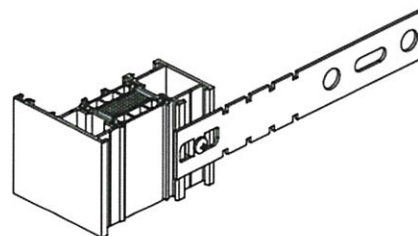
Do not apply render, putty or paint over the vapor permeable tape in the joint exterior layer

ALT W72
система профилей рамного
остекления с терморазрывом

Typical Window Connection Details
Bottom connection to opening



- 1 - Window unit
- 2 - Silicone sealant
- 3 - Window board (shown schematically)
- 4 - Mounting plate AYPE W62 0940 I-0941
- 5 - Vaporproof adhesive tape (vapor barrier)
- 6 - Expansion anchor (min Ø6x60)
- 7 - Foam insulation
- 8 - Waterproof vapor permeable sealing tape (vapor proof sealant)
- 9 - Window sill
- 10 - Noise absorbing pad
- 11 - Window sill bracket
- 12 - Expansion anchor
- 13 - Pre-compressed vapor permeable sealing tape
- 14 - Treated timber insert or leveling mortar layer
- 15 - Facing brick



For window sill width over 150 mm and window opening length over 900 mm, support the sill with metal brackets fastened to the bottom of the window opening with expansion dowels.

*Window sill overhang from the facade may vary in different areas (50 to 70 mm in the Republic of Belarus). Apply sand-cement mortar or foam insulation on the window opening surface under the sill.