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Test Report No. AFS-R1075

All tests reported herein, have been performed in accordance with the laboratory's scope of accreditation.

18th June 2023 **Report Date:**

Test Date(s): 10th March 2023

Neuffer Fenster + Tueren GMBH Sample Designer:

Sample Installer: Glazing 360 Limited

Test & Sample

Details:

Performance testing of the Neuffer Eco Plano Wood/Alu French Door unit in

accordance with the NZS 4211:2008 Specification for Performance of

Windows.

Client Details: Neuffer Fenster + Tueren GMBH

> Kronprinzstrasse 8, 70173 Stuttgart,

Germany

Laboratory

All Facade Services Limited

Details:

47 Bell Road Beachlands Auckland 2018

Test Location: 149 Park Road,

Miramar,

Wellington 6022

Tested By: Darryl Scott

KTP / Signatory **Darryl Scott**

IANZ 1347

Accreditation No.

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1. Test Summary

1.1 Summary Description

The Neuffer Eco Plano Wood/Alu French door unit comprised of a nominal 2300mm high x 1900mm wide outer box frame which incorporated a clear triple glazed IGU, retained by external glazing beads.

1.2 Summary Results

The following summarises the outcome of the individual tests only. Full test results are recorded at clause 3.1 of this report.

1.2.1 Deflection of Structural Members

The FL A089-IXEP-080 timber lock stile of the Neuffer Eco Plano Wood/Alu French door unit, when triple glazed with a 44mm IGU and tested with a differential test booth pressure of ±1515 Pa, complied with Serviceability span/200 deflection requirements of NZS 4211:2008 Clause 6, for an Extra High wind zone.

1.2.2 Air Infiltration

The Neuffer Eco Plano Wood/Alu French door unit complied with the "Air Conditioned" air infiltration rating of NZS 4211:2008 Clause 8 at a differential test pressure of ±150 Pa.

1.2.3 Water Penetration

The Neuffer Eco Plano Wood/Alu French door unit complied with the Water Penetration requirement of NZS 4211:2008 Clause 9 for the Extra High Wind Zone water penetration test pressure of 455 Pa.

Following testing at 455 Pa, the Neuffer Eco Plano Wood/Alu French door unit was tested and complied with the Water Penetration requirement of NZS 4211:2008 Clause 9 at the increased differential pressures of 533 Pa and 1000 Pa.

1.2.4 Ultimate Strength

The Neuffer Eco Plano Wood/Alu French door unit met the Ultimate strength requirements of NZS 4211:2008 Clause 10 for the Extra High Wind Zone at ±2130 Pa.

1.2.5 Torsional Strength

The Neuffer Eco Plano Wood/Alu French door unit, as supplied, and when triple glazed with a 44mm IGU and tested in accordance with NZS 4211:2008 Appendix A, complied with the performance requirements of NZS 4211 Clause 11.

1.3 Overall Compliance

The Neuffer Eco Plano Wood/Alu French door unit, when triple glazed with a 44mm IGU, complied with the requirements of NZS 4211:2008 for the Extra High wind zone and an Air Conditioned rating.

These ratings apply to this specific sample and may be used to claim compliance of the range within the stated limitations of clause 5.2 of NZS 4211:2008.

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2. Test Sample Description

The Neuffer Eco Plano Wood/Alu open in French door unit with overall (box size) dimensions of 2298mm high x 1900mm wide, was installed by Glazing 360 Limited into the timber framed opening of the test booth with the window exterior facing the inside of the booth.

The open in French door unit comprised of 2 x hinged door panels and was manufactured using the BR-A667-I850 timber frame profile with square cut corners and integrated FB88-18 aluminium cladding profile with mitred corners to the perimeter frame head and jambs, and the BR-A629-I850 timber frame profile with square cut corners and integrated SS66-19 and SB36-17 aluminium cladding profiles with mitred corners to the sill.

The primary door panel was configured as both a hinged and tilting door panel.

The French door panels were manufactured using the FL-A089-IXEP-080 timber sash profile and FL41-14 aluminium cladding profile to the to the lock stile of the primary door panel, the hinge stiles, head and sill with square cut corners to both door panels, and the and the FL-8093-IXEP-070 timber sash profile and SL58-18 aluminium cladding profile with mitred corners to the lead stile of the secondary door panel.

The French door panels were clear triple glazed with a 44mm thick insulated glazing unit comprising of 3 x 4mm glass panes separated by 2 x 16mm spacers, installed into the glazing platform using external FL40-20 aluminium glazing beads, an external AA3198 glazing gasket and Durasil W15 Plus sealant.

The Durasil W15 Plus sealant was applied as a wet seal of unspecified size to the interior junction of the IGU with the timber sash.

The triple glazed French door was secured to the surrounding timber framing with manufacturer supplied proprietary fixing brackets screw fixed to the timber window frame and adjacent timber framing at 150 mm from the corners and 450 mm (max) centres thereafter.

Drainage was by way of surface shed only with no integrated drainage pathways.

Details of the Neuffer Eco Plano Wood/Alu French door unit are shown on the attached Neuffer Fenster drawings numbered 1 - 24.

The drawings identified the following timber profiles, aluminium extrusions and components being used in the construction of the Neuffer Eco Plano Wood/Alu French door unit.

BR-A667-I850	Outer frame – head and jambs
BR-A629-I850	Outer frame – sill
FL-A089-IxEP-080	Timber sash profile
FL-A093-IxEP-070	Timber sash profile
FB88-18	Aluminium cladding profile (88mm)
FL41-14	Aluminium cladding profile
SL58-18	Aluminium cladding profile
FB68-18	Aluminium cladding profile (68mm)
SB36-17	Aluminium cladding profile
AA3198	EPDM glazing gasket

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FF2048 EPDM sealing gasket
AFK2613 EPDM sealing gasket
A31168 EPDM sealing gasket
MFK2037 EPDM sealing gasket

FL 18 x 24.5 Wooden strip
FL 41 x 24.5 Wooden strip
DC340 Plastic clip
MEH40 Plastic clip
MG01 Handle Shell

615-F9016 Atlanta secustic window handle

Screw 2.3 x 1.7mm

Sealant Durasil W15 Plus

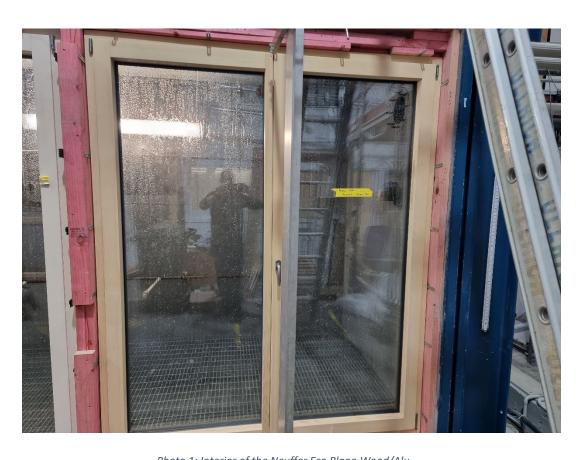


Photo 1: Interior of the Neuffer Eco Plano Wood/Alu French doors installed in the test booth.

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3. Testing

The Neuffer Eco Plano Wood/Alu French door unit was tested in accordance with NZS 4211:2008, Specification for Performance of Windows, with test procedures as detailed in sections of AS/NZS 4420.1:2016.

3.1 Test Results

3.1.1 SERVICEABILITY DEFLECTION (Test Procedure ASNZS 4420.1 Clause 3)

Deflection measurements were made on the FL A089-IXEP-080 timber lock stile with compliance assessments made against the tabled Serviceability Wind Pressures at a deflection ratio of span/200

FL A089-Ix68-80 Lock Stile

Overall height	2213 mm
Test Span	2194 mm
Maximum permitted deflection span/200)	10.97 mm

Positive Pressure Test	Net Deflection	Result
Deflection at 303 Pa	0.95 mm	Complies
Deflection at 606 Pa	1.92 mm	Complies
Deflection at 909 Pa	3.05 mm	Complies
Deflection at 1212 Pa	4.10 mm	Complies
Deflection at 1515 Pa	4.96 mm	Complies
Negative Pressure Test		
Deflection at -303 Pa	-0.80 mm	Complies
Deflection at -606 Pa	-1.86 mm	Complies
Deflection at -909 Pa	-2.93 mm	Complies
Deflection at -1212 Pa	-4.07 mm	Complies
Deflection at -1515 Pa	-5.34 mm	Complies

The FL A089-IXEP-080 timber lock stile of the Neuffer Eco Plano Wood/Alu French door unit, when triple glazed with a 44mm IGU and tested with a differential test booth pressure of ±1515 Pa, complied with Serviceability span/200 deflection requirements of NZS 4211:2008 Clause 6, for an Extra High wind zone.

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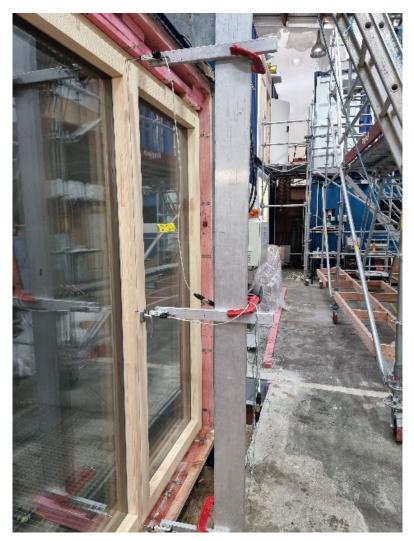


Photo 2: Location of the deflection transducers on the FL A089-Ix68-80 meeting stile.

3.1.1 AIR INFILTRATION (Test Procedure AS/NZS 4420.1 Clause 5)

Overall Window Area	4.36m ²
Opening Joint Length	9.98m

Maximum permitted infiltrations/exfiltration's were calculated as follows:

Overall window area x 1.6 - Air Conditioned	6.98 l/s
Overall window area x 8 - Non-Air Conditioned	34.88 l/s
Opening joint length x 0.6 - Air Conditioned	5.93 l/s
Opening joint x 2 - Non-Air Conditioned	19.77 l/s

Geometric Mean

Air Conditioned	6.43 l/s
Non-Air Conditioned	26.3 l/s

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Air Pressure Direction @ 150PA	Air Flow	Result
Positive Air Infiltration Test Net air flow	0.21 l/s	Complies
Negative Air Infiltration Test Net air flow	0.26 l/s	Complies

The airflow through the sample in the positive direction is (0.21 ± 0.4) l/s. The uncertainty in the airflow through the sample is ± 0.4 l/s. This expanded uncertainty is calculated with a coverage factor, k of 2.01, and defines an interval estimated to have a 95% level of confidence. The standard uncertainty is ± 0.2 l/s, (with 68% probability).

The airflow through the sample in the negative direction is (-0.26 ± 0.48) l/s. The uncertainty in the airflow through the sample is ± 0.48 l/s. This expanded uncertainty is calculated with a coverage factor, k of 2.07, and defines an interval estimated to have a 95% level of confidence. The standard uncertainty is ± 0.23 l/s, (with 68% probability).

The Neuffer Eco Plano Wood/Alu French door unit complied with the "Air Conditioned" air infiltration rating of NZS 4211:2008 Clause 8 at a differential test pressure of ±150 Pa.

3.1.4 WATER PENETRATION (Test Procedure AS/NZS 4420.1 Clause 6)

Wind Zone Extra High Maximum rated pressure 455 Pa

The Neuffer Eco Plano Wood/Alu French door unit complied with the Water Penetration requirement of NZS 4211:2008 Clause 9 for the Extra High Wind Zone water penetration test pressure of 455 Pa.

Following testing at 455 Pa, the Neuffer Eco Plano Wood/Alu French door unit was tested and complied with the Water Penetration requirement of NZS 4211:2008 Clause 9 at the increased differential pressures of 533 Pa and 1000 Pa.

3.1.5 ULTIMATE LIMIT STATE STRENGTH (Test Procedure AS/NZS 4420.1 Clause 7)

Wind Zone Extra High Maximum rated ULS pressure 2130 Pa

The Neuffer Eco Plano Wood/Alu French door unit met the Ultimate strength requirements of NZS 4211:2008 Clause 10 for the Extra High Wind Zone at a differential pressure of ±2130 Pa.

3.1.6 TORSIONAL STRENGTH OF SASHES (NZS 4211:2008 Clause 11)

Tilt Sash

Length of shortest sash member (mm) 925 mm

Calculated maximum allowed deflection = 0.04 * shortest 37.0 mm sash member (mm)

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Table 19. NZS 4211 Appendix A Torsional strength of sashes measurements

Force (N)	Direction	Displacement (mm)	Result
10	Opening	1.41 mm	Complies
20	Opening	3.34 mm	Complies
30	Opening	5.61 mm	Complies
40	Opening	8.86 mm	Complies
10	Closing	1.53 mm	Complies
20	Closing	3.49 mm	Complies
30	Closing	6.02 mm	Complies
40	Closing	9.14 mm	Complies

The Neuffer Eco Plano Wood/Alu French door unit, as supplied, and when triple glazed with a 44mm IGU and tested in accordance with NZS 4211:2008 Appendix A, complied with the performance requirements of NZS 4211 Clause 11.

4.0 Qualifications

- 4.1 This test report "Test Report No. AFS-R1075" relates solely to NZS 4211:2008 testing carried out on the 09th 10th March 2023 on the Neuffer Eco Plano Wood/Alu French door test sample, at the test facility located at 149 Park Road, Miramar, Wellington.
- 4.2 Drawings of the test specimen as attached to this report have been provided by the client and All Facade Services Ltd accepts no liability with regards the accuracy or entirety of the drawings and/or, in respect of any element missing or concealed from view.
- 4.3 This report has been prepared solely for the party to whom it is addressed within the terms of the brief provided to this company. This report may not be used in any other context or for any other purpose without our prior written agreement.
- 4.4 This report may not be read or reproduced other than as a complete document.
- 4.5 This test report does not constitute endorsement of the window design or the manufacturer in any form.

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Checked by:

John Moore

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5.0 References

NZS 4211:2008 Specification for performance of windows (Including Amendment 1,

May 2014)

Standards New Zealand, Wellington, 2008

NZS 3604:1999 Timber framed buildings.

Standards New Zealand, Wellington, 1999

AS/NZS 4420.1: 2016 Windows – Methods of Test

Part (a) Deflection test
Part (b) Operating force test
Part (c) Air infiltration test

Part (d) Water penetration resistance test

Part (e) Ultimate strength test

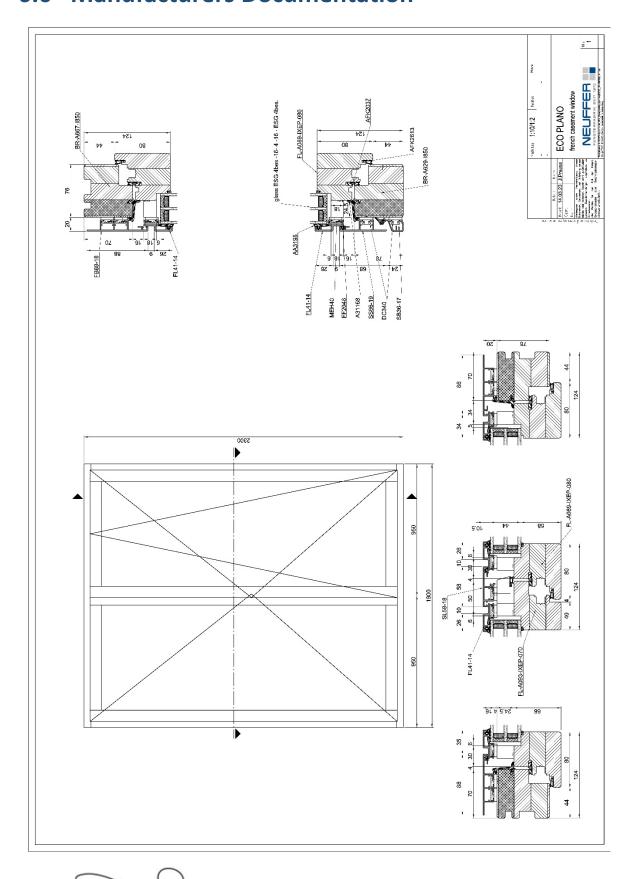
Standards Australia, Sydney

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6.0 Manufacturers Documentation



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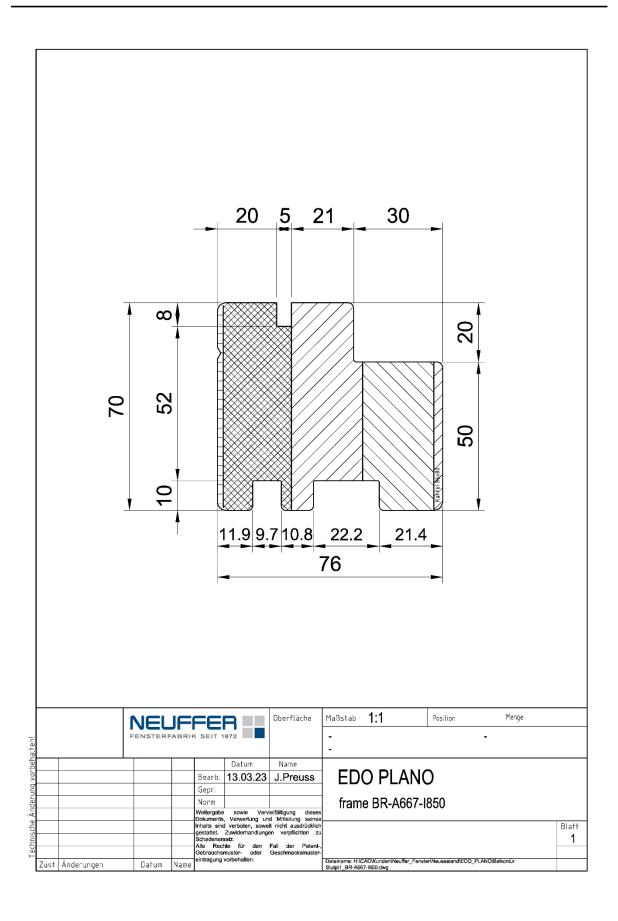
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	Bill of materials				
	Product: ECO PLANO, french casemant window				
no.	description	quantity	item number	material	supplier
1	frame	3	BR-A667-I850	pinewood	IDEAL
2	frame	1	BR-A629-I850	pinewood	IDEAL
3	sash	7	FL-A089-IxEP-080	pinewood	IDEAL
4	sash	1	FL-A093-IxEP-070	pinewood	IDEAL
5	glass ESG 4bes-16Ar-4-16-4bes. 0,6Ug	2	WS 0,6/48	glass	Glaskontor
6	window handle Atlanta secustic	1	615-F9016	aluminium	Норре
7	gasket	4	FF2048	EPDM	Stemeseder
8	gasket	8	AFK2613	EPDM	Stemeseder
9	gasket	1	A31168	EPDM	Stemeseder
10	gasket	7	MFK2037	EPDM	Stemeseder
11	gasket	1	AA3198	EPDM	Stemeseder
12	cladding profile	3	FB88-18	aluminium	Stemeseder
13	cladding profile	8	FL41-14	aluminium	Stemeseder
14	cladding profile	1	SL58-18	aluminium	Stemeseder
15	cladding profile	1	FB68-18	aluminium	Stemeseder
16	cladding profile	1	SB36-17	aluminium	Stemeseder
17	clip	4	DC340	plastic	Stemeseder
18	clip	51	MEH40	plastic	Stemeseder
19	handle shell	1	MG01	aluminium	Stemeseder
20	screw 2.3x17mm	2	MEH40	steel	Würth
21	wooden strip	9	FL 18x24,5	pinewood	IDEAL
22	wooden strip	1	FL 41x24,5	pinewood	IDEAL

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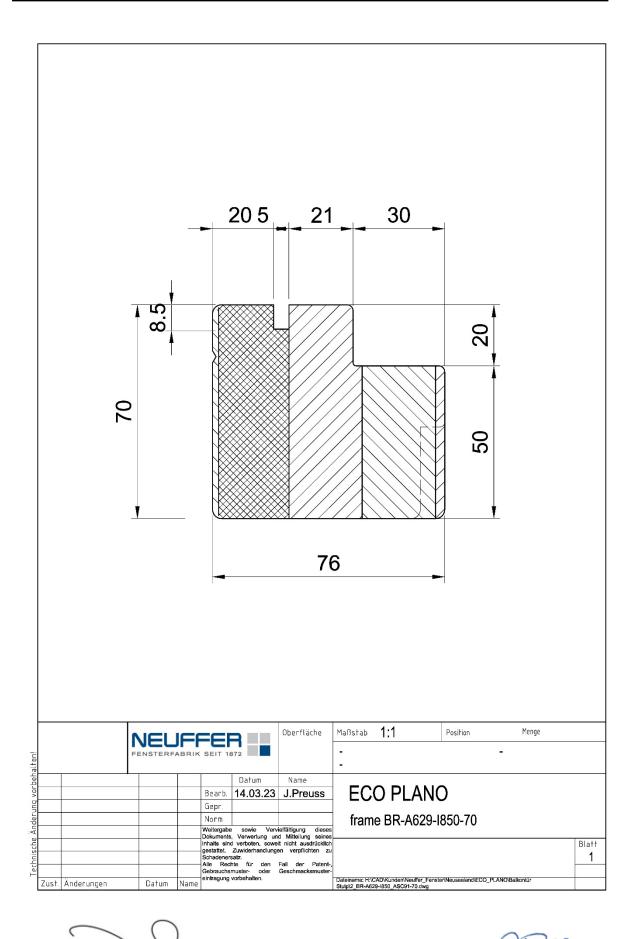
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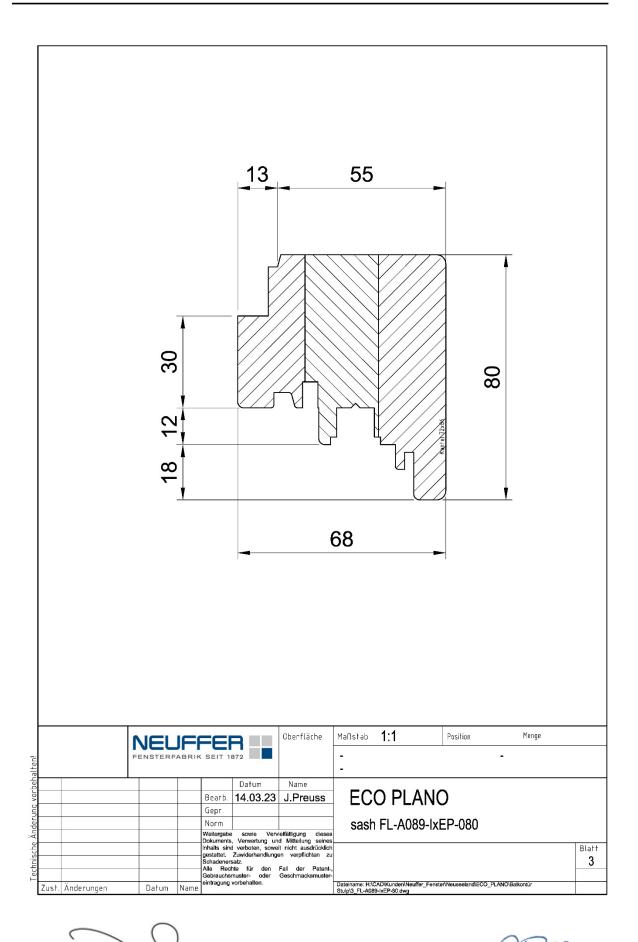
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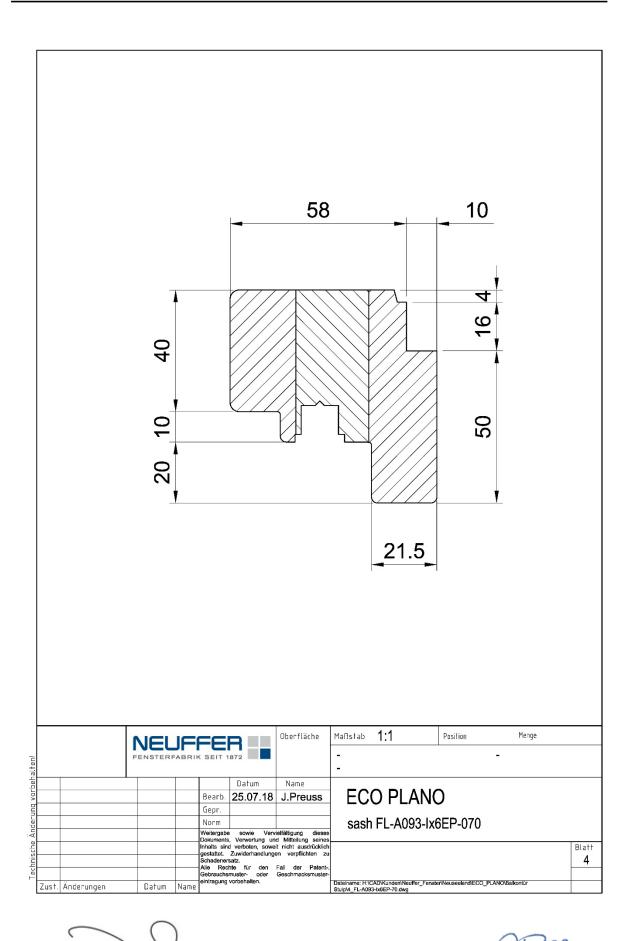
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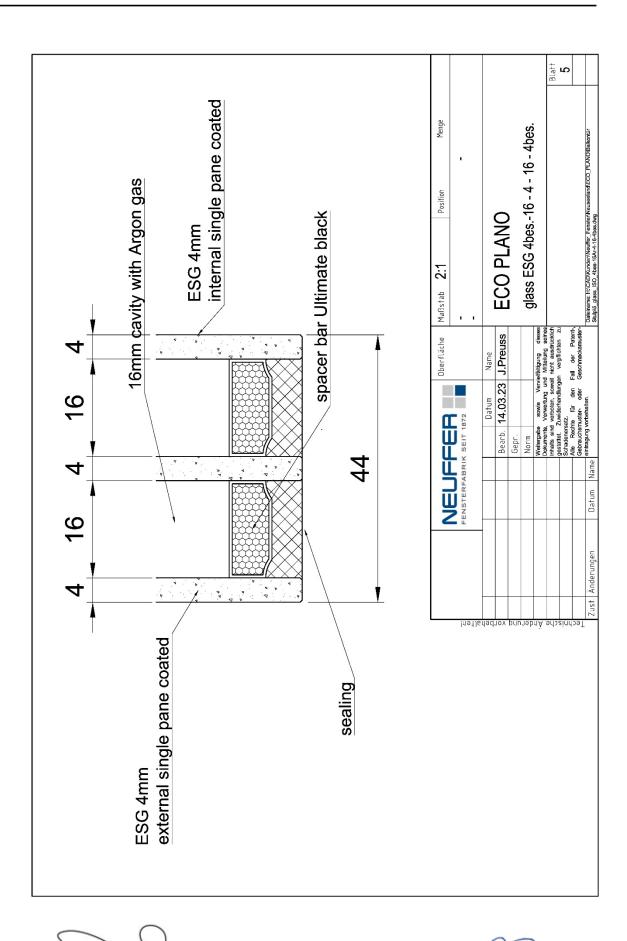


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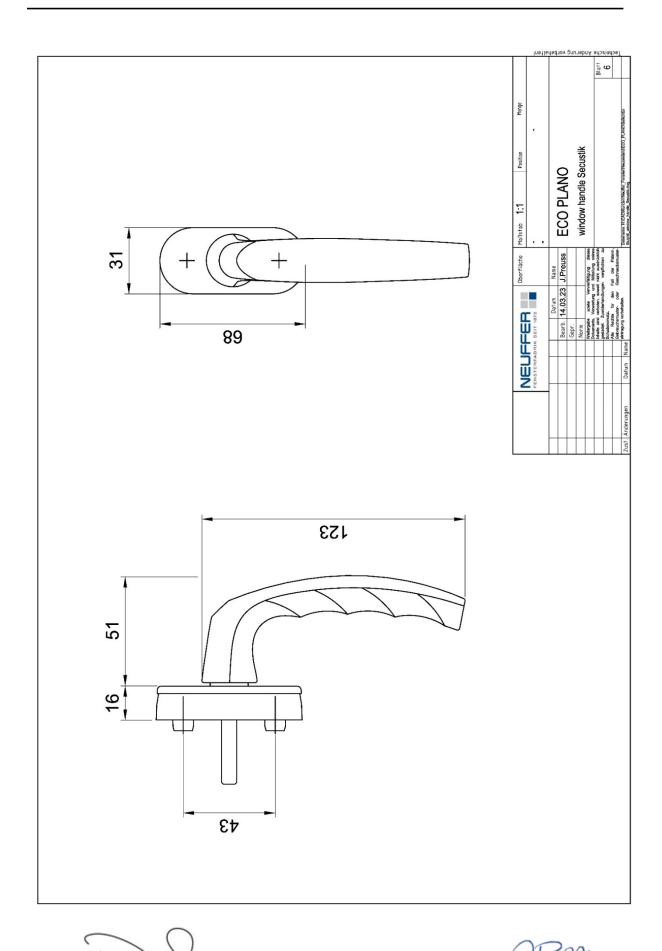
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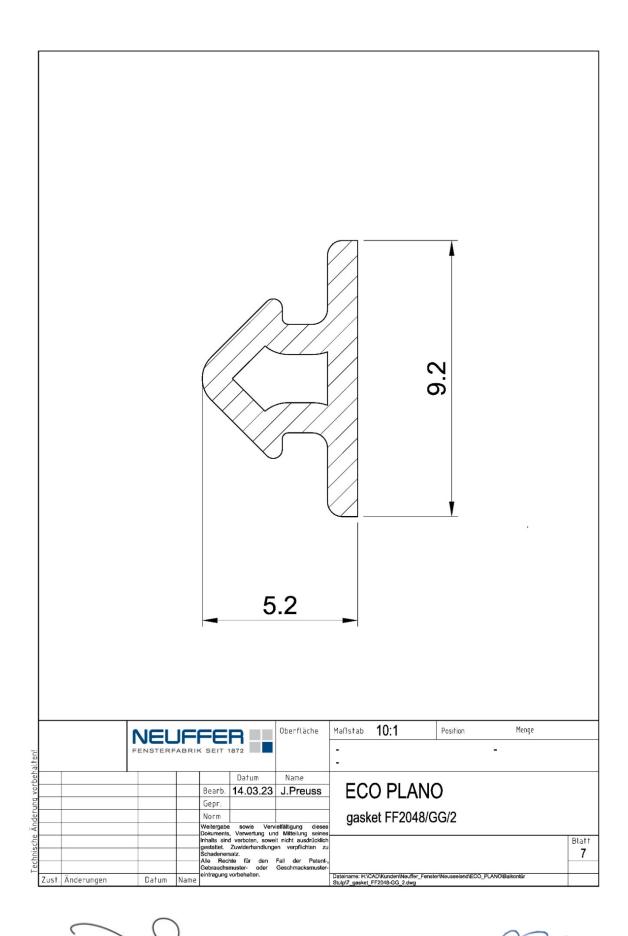
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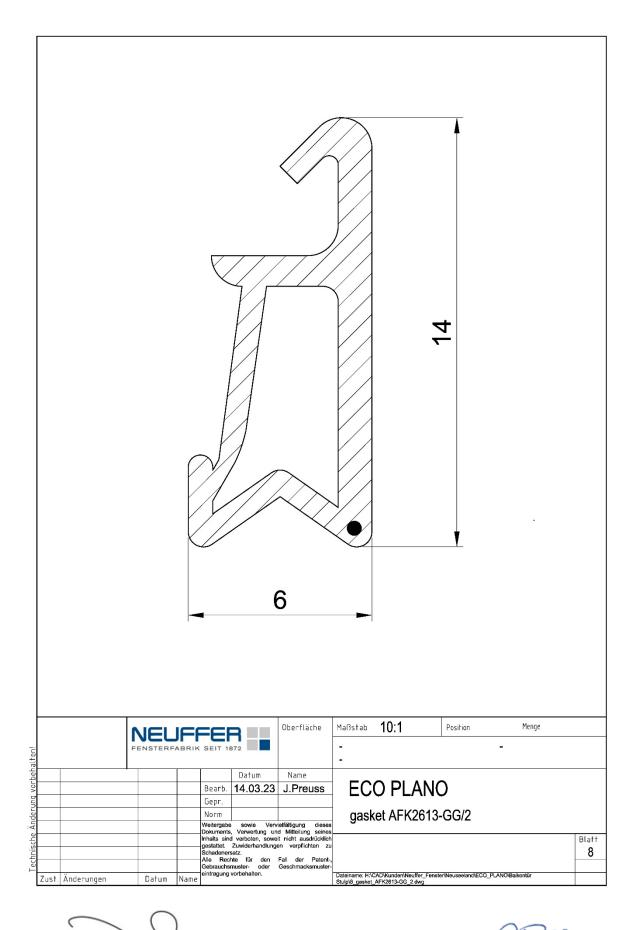
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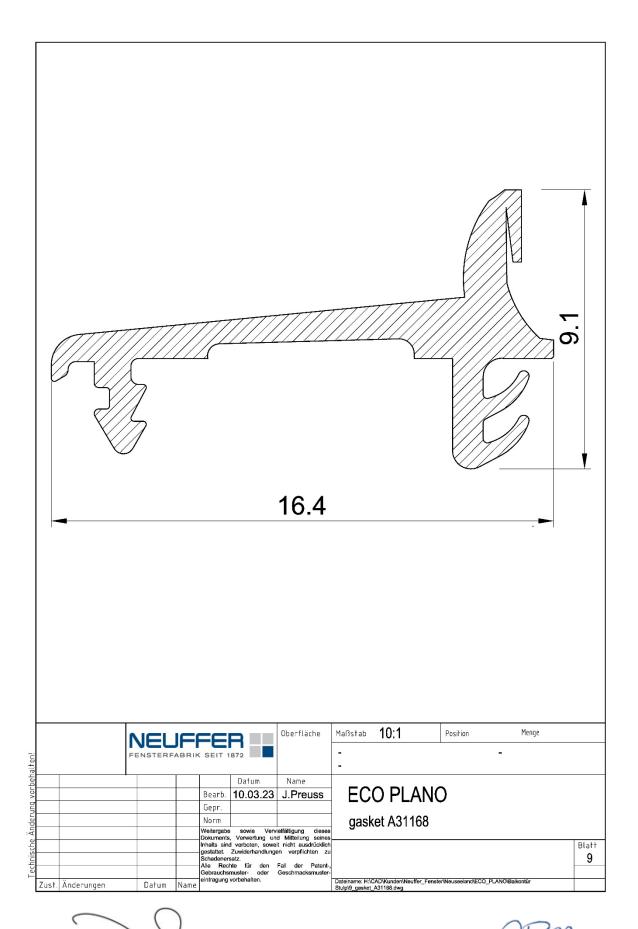
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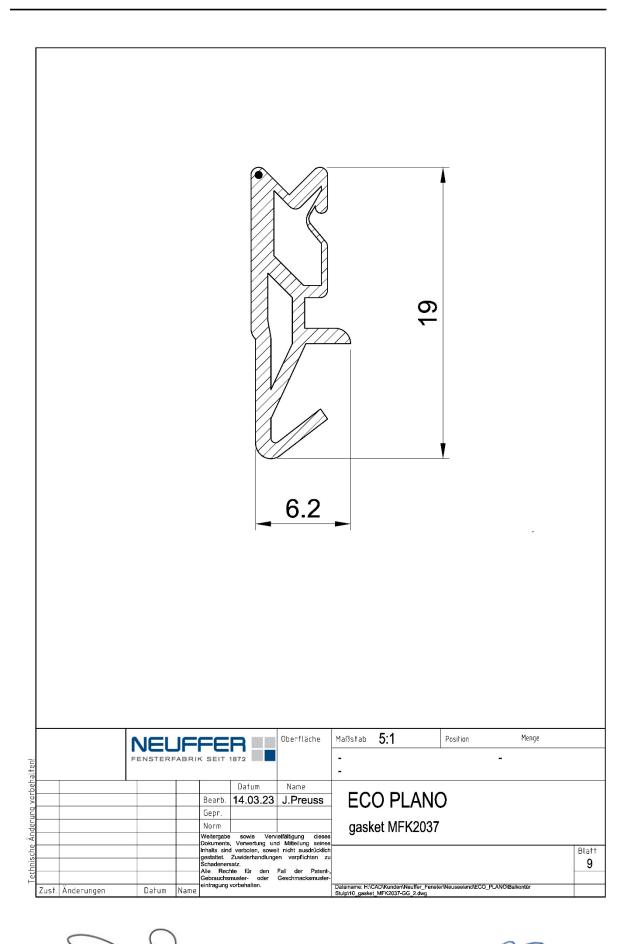
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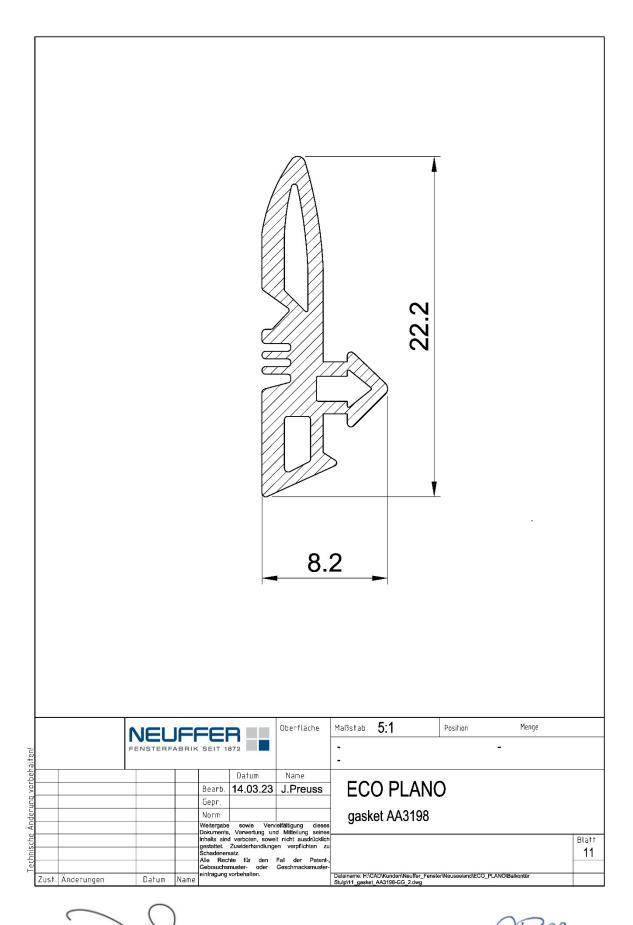
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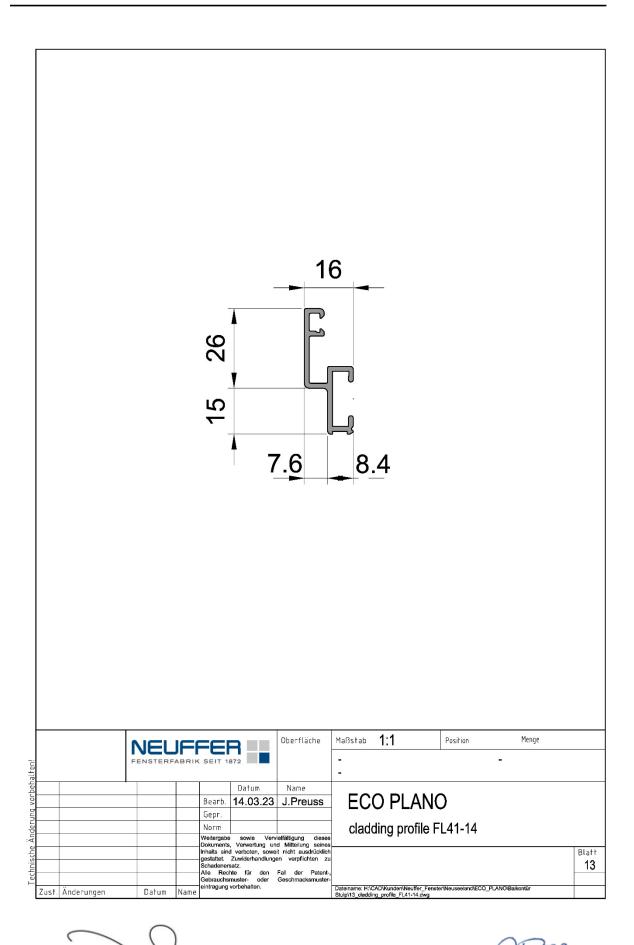
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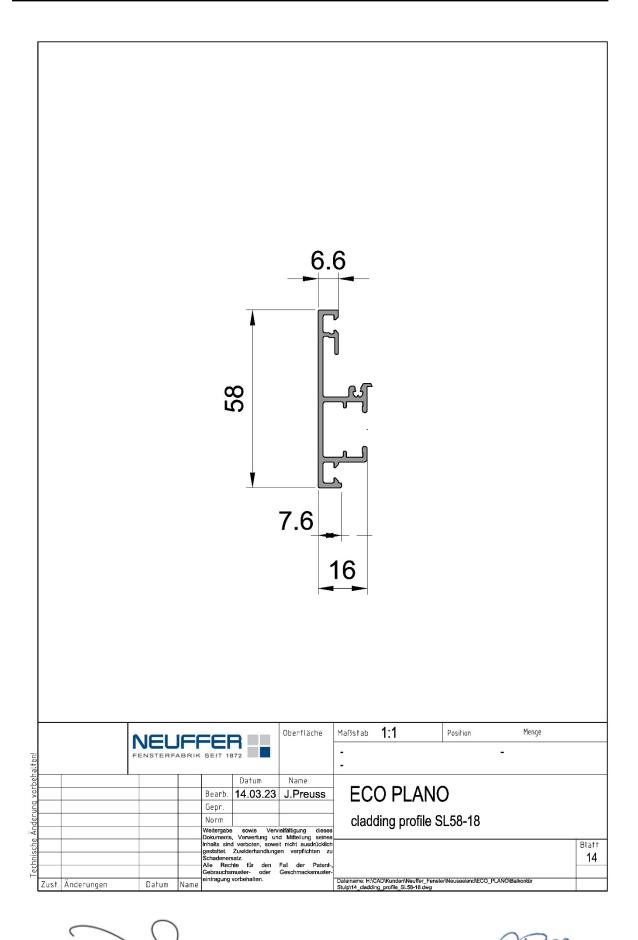
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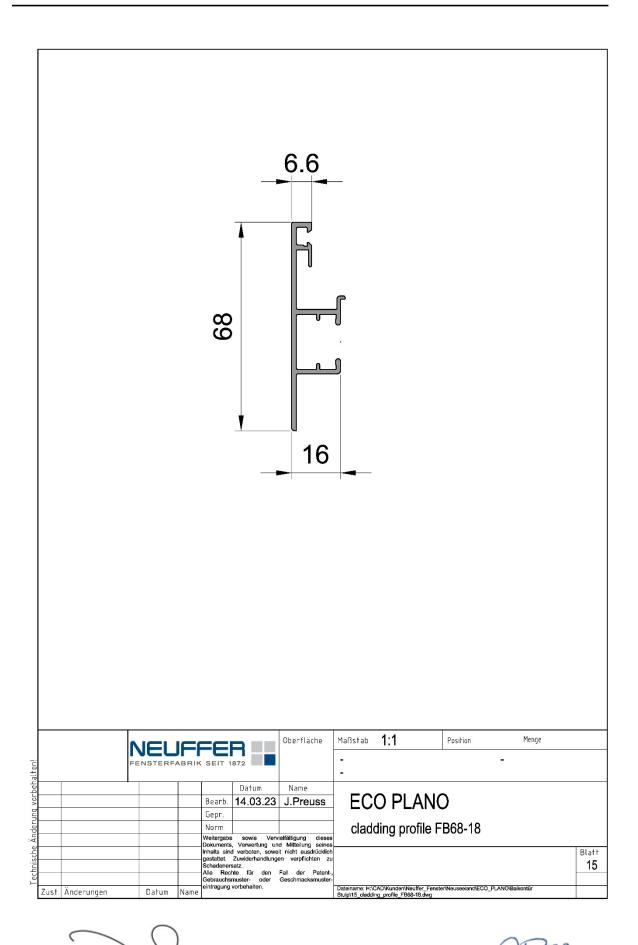
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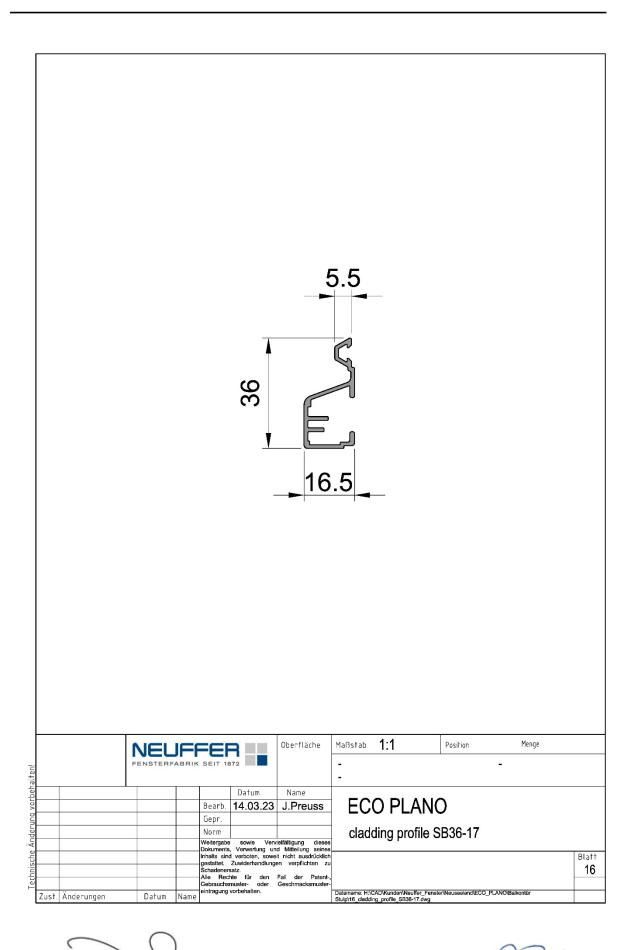
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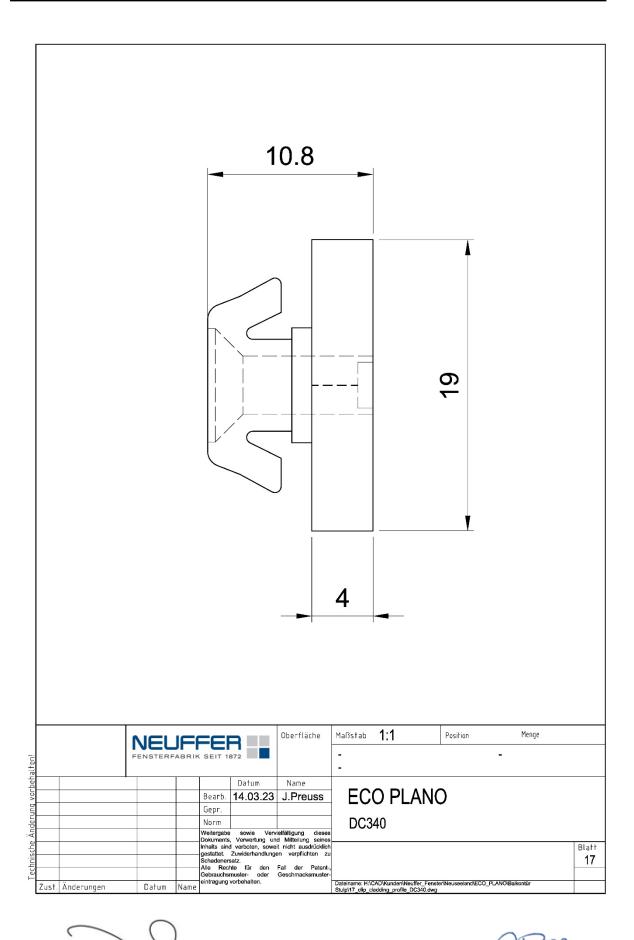
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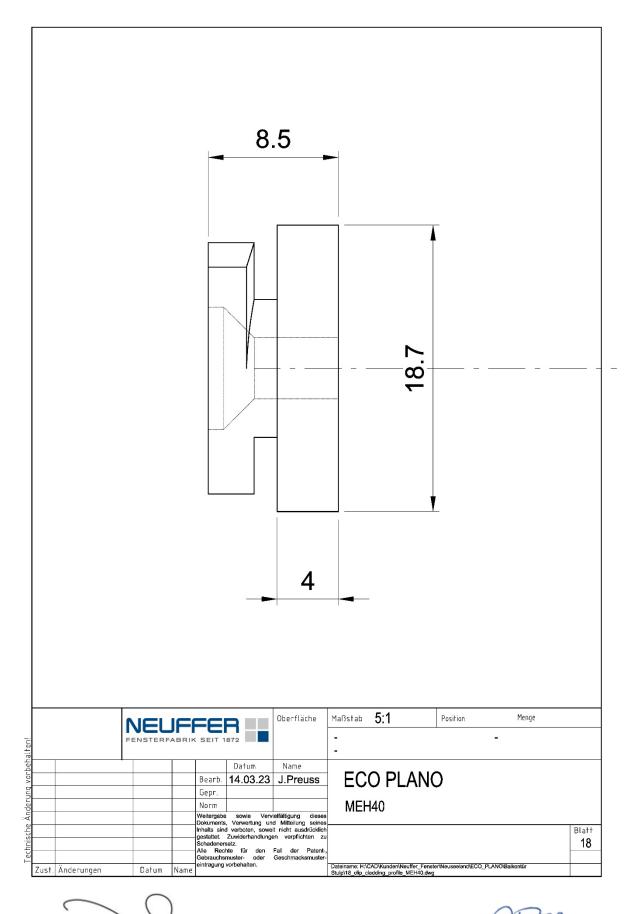


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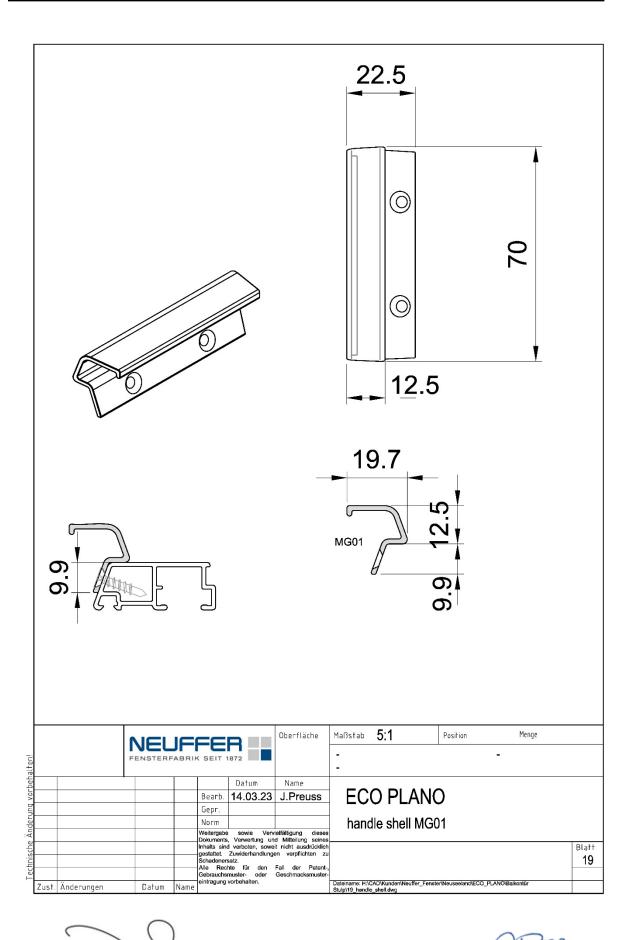


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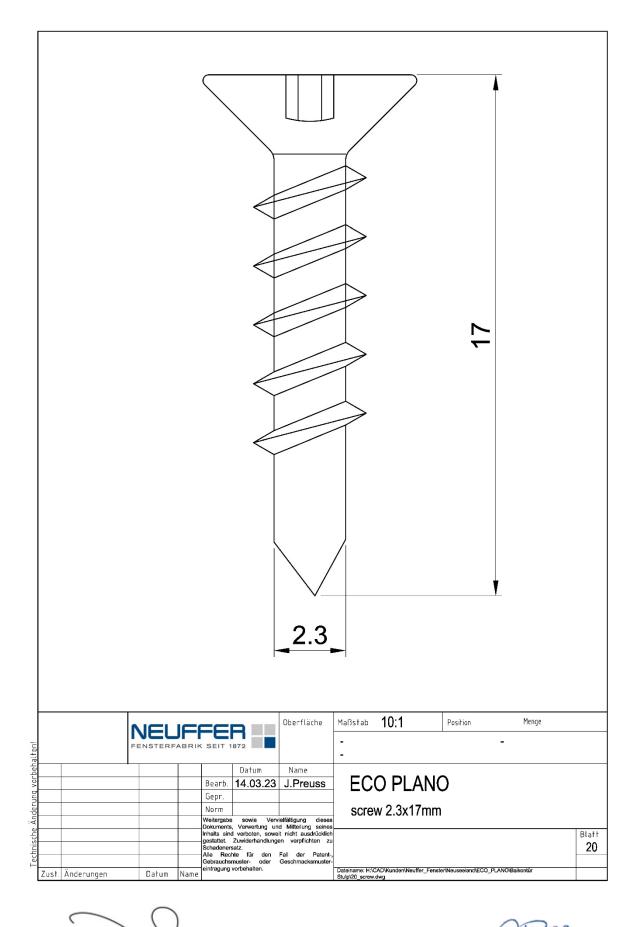
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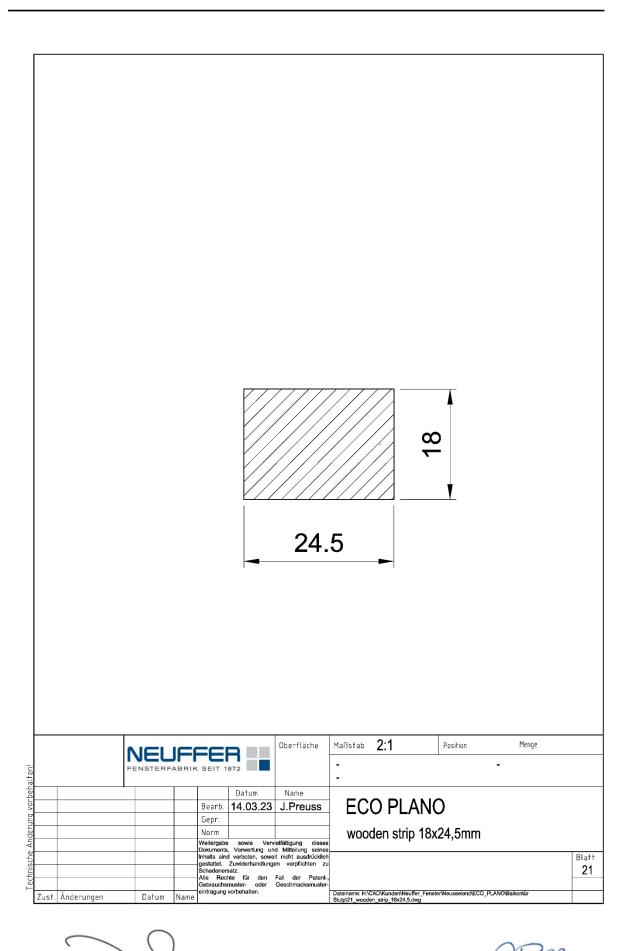
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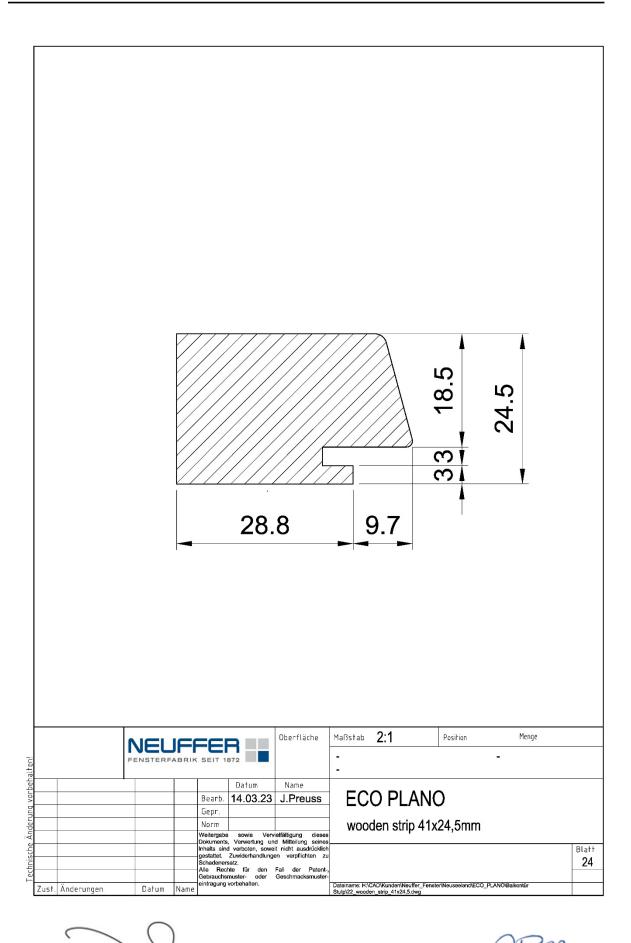
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