



NATIONAL CERTIFIED TESTING LABORATORIES

FIVE LEIGH DRIVE • YORK, PENNSYLVANIA 17406 • TELEPHONE (717) 846-1200
FAX (717) 767-4100
www.nctlinc.com

AAMA/WDMA/CSA 101/I.S.2/A440-11 CSA A440S1-17

TEST REPORT SUMMARY

Rendered to:

Oknoplast Spolka z.o.o.
Ochmanow 117, 32-003 Podleze

PRODUCT TYPE: Dual Action Window

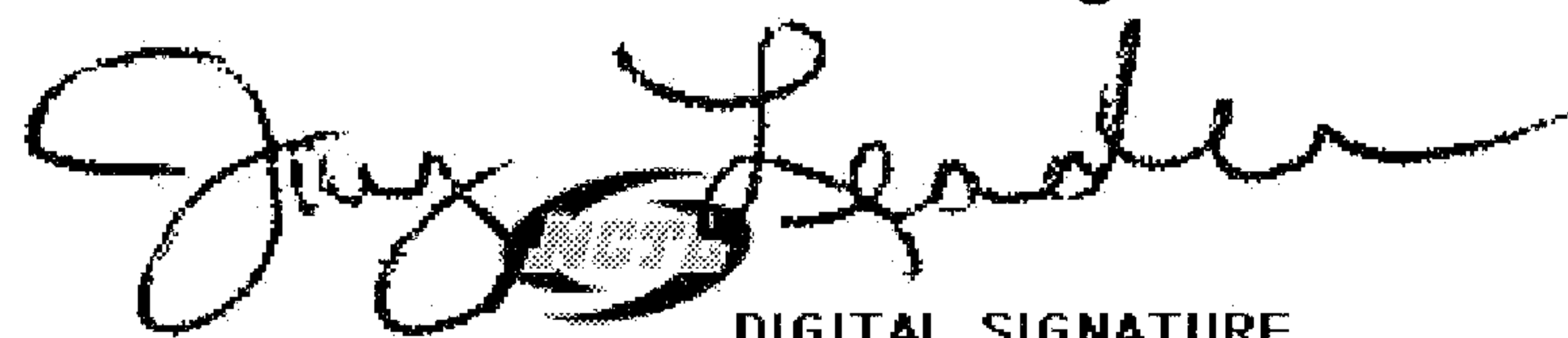
SERIES/ MODEL: "Pixel"

Title	Summary of Results
Primary Product Designator AAMA/WDMA/CSA 101/I.S.2/A440-11	Class CW-PG75: Size tested 1219 x 1803 mm (~48 x 71 in) - Type DAW
Positive Design Pressure	+3600 Pa (+75.19 psf)
Negative Design Pressure	-3600 Pa (-75.19 psf)
Air Infiltration	0.1 L/s/m ² (0.01 cfm/ft ²)
Canadian Air Infiltration/Exfiltration	A3 Level
Water Penetration Resistance Test Pressure	720 Pa (15.04 psf)
Uniform Load Structural Test Pressure	±5400 Pa (±112.78 psf)
Forced Entry Resistance	ASTM F588-07 - Grade 10 Pass

Test Completed: 12/14/17

Reference must be made to Report No. NCTL-110-20686-1 dated 01/11/18 for complete test specimen description and data.

For National Certified Testing Laboratories



DIGITAL SIGNATURE

Jay Leader
Technician



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**AAMA/WDMA/CSA 101/I.S.2/A440-11
CSA A440S1-17**

STRUCTURAL TEST REPORT

NCTL-110-20686-1

REPORT TO:
**OKNOPLAST SPOLKA z.o.o.
OCHMANOW 117, 32-003 PODLEZE**

REPORT NUMBER: NCTL-110-20686-1
REPORT DATE: 01/11/18

PRODUCT TYPE: DUAL ACTION WINDOW

SERIES/ MODEL: "PIXEL"



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Report Number NCTL-110-20686-1

Report Date 01/11/18

Report To Oknoplast Spolka z.o.o.
Ochmanow 117, 32-003 Podleze

Date Testing Started 12/11/17
Date Testing Completed 12/14/17

Specification AAMA/WDMA/CSA 101/I.S.2/A440-11
NAFS 2011 - North American Fenestration Standard/Specification for windows, doors, and skylights

CSA A440S1-17
Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440-11, NAFS - North American Fenestration Standard/ Specification for windows, doors, and skylights

Performance Results AAMA/WDMA/CSA 101/I.S.2/A440-11
Class CW-PG75: Size tested 1219 x 1803 mm (~48 x 71 in) - Type DAW

Description of Specimen Tested

Note: All dimensions are in the order (Width x Height x Thickness) unless otherwise noted.

Model/ Series "Pixel"

Configuration Dual Action Window

Frame Size Overall
1219 mm x 1803 mm (48" x 71")

Vent Size 1143 mm x 1727 mm (45.063" x 68")

Viewing Area 1006 mm x 1588 mm (39.625" x 62.5")

Frame & Vent Type Extruded vinyl

Joint Construction Frame & Vent
Mitered, welded

Glazing Components
Overall 24.13 mm (0.950") nominal
Glass Thickness (2) Lites of 5 mm (0.150") nominal annealed glass
Spacer Type/Size 16.51 mm (0.650") Desiccant-filled stainless steel spacer (Type SS-D)
Glazing System Interior glazed against a single-fin bulb-vinyl gasket with a snap-in (2)-leaf dual durometer rigid vinyl glazing bead

Weatherstrip
Type (1) Strip single-leaf bulb-vinyl
Location Vent perimeter

Type (1) Strip (2)-fin bulb-vinyl
Location Frame and vent perimeter

Operating Hardware

Locks	
Type	Single handle (9)-point integrated lock system
Location	572 mm (22.5") From the bottom of the lock stile with (2) lock points on the lock stile, (2) lock points on the top rail, (3) lock points on the hinge stile and (2) lock points on the bottom rail
Keeper	
Type	Metal
Location	Frame at the lock locations
Hinge Hardware	
Type	Dual action hinge hardware
Location	Top rail/ top of the hinge jamb
Type	Pin type
Location	Bottom of the hinge stile/ hinge jamb

Auxiliary

Type	Rigid vinyl filler
Location	Sills

Reinforcement

Type	Contour-shaped galvanized steel
Location	Vent perimeter secured with evenly spaced screws
Type	Tube-shaped galvanized steel
Thickness	1.30 mm (0.051")
Location	Frame perimeter secured with evenly spaced screws

Weep Description

Size	29 mm (1.125") wide by 6.35 mm (0.25") high
Location	25.4 mm (1") From each end of the top and bottom rail glazing tracks
Size	29 mm (1.125") wide by 4.78 mm (0.188") high
Location	178 mm (7") From each end of the top and bottom rails
Size	6.35 mm (0.25") diameter weep hole
Location	108 mm (4.25") From each end of the head
Size	29 mm (1.125") wide by 6.35 mm (0.25") high
Location	32 mm (1.25") From each end of the sill track
Size	29 mm (1.125") wide by 4.78 mm (0.188") high with plastic weep cover
Location	152 mm (6") From each end of the exterior sill face

Interior/ Exterior
Surface Finish

White vinyl (PVC)

Sealant

No apparent sealant applied

Insect Screen

No screen applied

Installation Method

The window was installed in a 51 mm x 254 mm (2" x 10") spruce-pine-fir lumber test buck and was fastened through the frame with (1) #10 x 117 mm (4.625") flat head screw located at 152 mm (6") and 254 mm (10") from each end of the head and sill and 152 mm (6") from each end and 254 mm (10") on center thereafter at the jambs.. The exterior perimeter was sealed with silicone sealant.

Test Results - AAMA/WDMA/CSA 101/I.S.2/A440-2011

<u>Paragraph</u>	<u>Test</u>
9.3.2	Air Leakage Resistance ASTM E283-04(12) The tested specimen meets or exceeds the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-2011 for air infiltration at 75 Pa (1.6 psf). Maximum Allowable = 1.5 L/s/m² (0.3 cfm/ft²) Total Air Leakage = 0.42 L/s (0.88 cfm) Extraneous Air Leakage _{Tare} = 0.33 L/s (0.69 cfm) Net Air Leakage = 0.09 L/s (0.19 cfm) Air Infiltration Rate = 0.1 L/s/m² (0.01 cfm/ft²)

<u>Paragraph</u>	<u>Test</u>
9.3.3	Water Penetration Resistance ASTM E547-00(09) <u>3.4 L/ (min• m²) (5.0 gph/ft²)</u> No Leakage after 4 cycles of 5 minutes at 720 Pa (15.04 psf) NOTE: Tested without insect screen

<u>Paragraph</u>	<u>Test</u>
9.3.4.2	Uniform Load Deflection at Design Pressure ASTM E330-14 No damage after positive 3600 Pa (75.19 psf) held for 10 seconds No damage after negative 3600 Pa (75.19 psf) held for 10 seconds Measured Deflection _{Positive} = 1.75 mm (0.069 inches) Measured Deflection _{Negative} = 1.68 mm (0.066 inches) Maximum Allowed (L/175) = 4.34 mm (0.171 inches)

<u>Paragraph</u>	<u>Test</u>
9.3.4.3	Uniform Load Structural Test ASTM E330-14 No damage after positive 5400 Pa (112.78 psf) held for 10 seconds No damage after negative 5400 Pa (112.78 psf) held for 10 seconds Measured Permanent Set _{Positive} = 0.08 mm (0.003 inches) Measured Permanent Set _{Negative} = 0.28 mm (0.011 inches) Maximum Allowed (0.3%) = 2.29 mm (0.090 inches) NOTE: Deflection and Permanent Set measurements taken on the lock stile over a 762 mm (30”) span.

<u>Paragraph</u>	<u>Test</u>
9.3.5	Forced Entry Resistance ASTM F588-07
	<u>Type B Window Assembly/ Grade 10:</u> = Pass
	<u>Test</u>
	Disassembly = No Entry
	Lock Manipulation = No Entry
	Sash Manipulation = No Entry
	Test B1 = No Entry
	Test B2 = No Entry
	Test B3 = No Entry
	Hardware Manipulation Test = No Entry
	Sash Manipulation Test = No Entry
	NOTE: 1. T1 = 5 minutes, L1 = 667 N (150 lbf), L2 = 333 N (75 lbf), L3 = 111 N (25 lbf) 2. Loads were held for 60 seconds.

<u>Paragraph</u>	<u>Test</u>
9.3.6.2	Thermoplastic Corner Weld Test (PVC products only) = Pass

<u>Paragraph</u>	<u>Test</u>
9.3.6.4.3	Sash/ Leaf Concentrated Load Test on the Latch Rail
	Concentrated load applied 135 N (30.35 lbf) held for 10 seconds
	Deflection Limit = 1.5 mm (0.06 inches)
	Maximum Perpendicular Load Deflection = 0.76 mm (0.03 inches)

<u>Paragraph</u>	<u>Test</u>
9.3.6.5.3	Stabilizing Arm Load Test
	Load applied 890 N (200.08 lbf) at 10 seconds
	Sash Corners = Pass
	Load applied 1780 N (400.16 lbf) at 10 seconds
	Top Rail at Center = Pass
	NOTE: At the conclusion of the test there was no damage to the frame, sash or leaf, glass, stabilizing arm or hardware and the specimen functioned normally.

Test Results - CSA A440S1-17

<u>Paragraph</u>	<u>Test</u>
5.3	Canadian Air Infiltration/Exfiltration ASTM E283-04(12)
	The tested specimen meets or exceeds the performance levels specified in CSA A440S1-17 for air infiltration at 75 Pa (1.57 psf)
	A3 Level Maximum Allowable = 0.5 L/s/m ² (0.1 cfm/ft ²)
	<u>Infiltration</u>
	Total Air Leakage = 0.42 L/s (0.88 cfm)
	Extraneous Air Leakage _{Tare} = 0.33 L/s (0.69 cfm)
	Net Air Leakage = 0.09 L/s (0.19 cfm)
	Air Infiltration Rate = 0.1 L/s/m ² (0.01 cfm/ft ²)

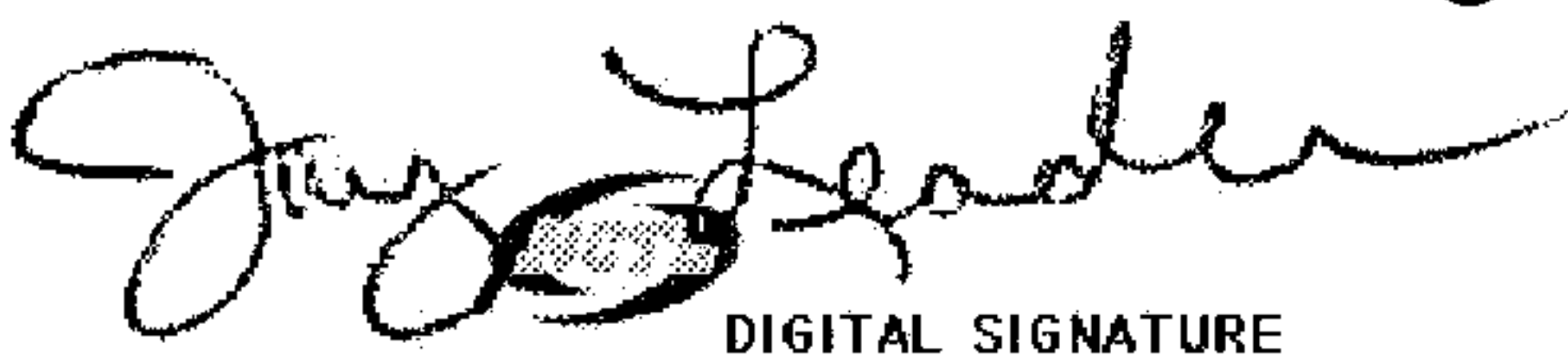
Exfiltration	
Total Air Leakage	= 0.35 L/s (0.75 cfm)
Extraneous Air Leakage _{Tare}	= 0.22 L/s (0.69 cfm)
Net Air Leakage	= 0.03 L/s (0.06 cfm)
Air Infiltration Rate	= 0.1 L/s/m ² (<0.01 cfm/ft ²)

Paragraph	Test
5.4	Water Penetration Resistance ASTM E547-00(09) 3.4 L/ (min• m ²) (5.0 gph/ft ²) No Leakage after 4 cycles of 5 minutes at 720 Pa (15.04 psf) NOTE: Tested without insect screen

This test report was prepared by National Certified Testing Laboratory (NCTL), for the exclusive use of the above named client and it does not constitute certification of this product. The results are for the particular specimen tested and do not imply the quality of similar or identical products manufactured or installed from specifications identical to the tested product. The test specimen was supplied to NCTL by the above named client. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen are to be drawn from the ASTM E330 test. Forced entry resistance test equipment used is in compliance with Section 7 of the ASTM F588-07 test method. Foam tape is mounted to the perimeter of the test buck prior to clamping to the test wall. It is the assertion of this laboratory that any film employed during testing does not affect measurement values. NCTL is a testing lab and assumes that all information provided by the client is accurate and does not guarantee or warranty any product tested or installed. The results in this report are actual tested values and are applicable to the specimen tested only, using the components and construction methods described herein.

Detailed drawings were available for laboratory records and compared to the test specimen at the time of this report. Component drawings were reviewed for product verification. The bill of materials contains details with any deviations noted. Ambient conditions during the referenced testing are available upon request. A copy of this report along with representative sections of the test specimen will be retained per applicable requirements by NCTL. This report does not constitute certification or approval of the product, which may only be granted by a certification program validator or recognized approval entity. All tests were conducted in full compliance with the referenced specifications and/or test methods. Tests were performed in the order set forth by the applicable standard or specification. This report is the joint property of National Certified Testing Laboratories Inc. and the Client to whom it is issued. Permission to reproduce this report by anyone other than National Certified Testing Laboratories Inc and the Client must be granted in writing by both of the above parties. This report may not be reproduced, except its entirety, without the written consent of NCTL.

National Certified Testing Laboratories


DIGITAL SIGNATURE

Jay Leader
Technician



Raymond W. Lamb, PE
Engineering Manager (P.E. Reg. #: PE 03858 E)
Professional Engineer

NJL/ dro
Attachments
Appendix A – Revision Summary
Appendix B – Drawings

Appendix A

Revision Log

<u>Identification</u>	<u>Date</u>	<u>Page & Revision</u>
Original Issue	01/11/18	Not Applicable

Appendix B

Drawings

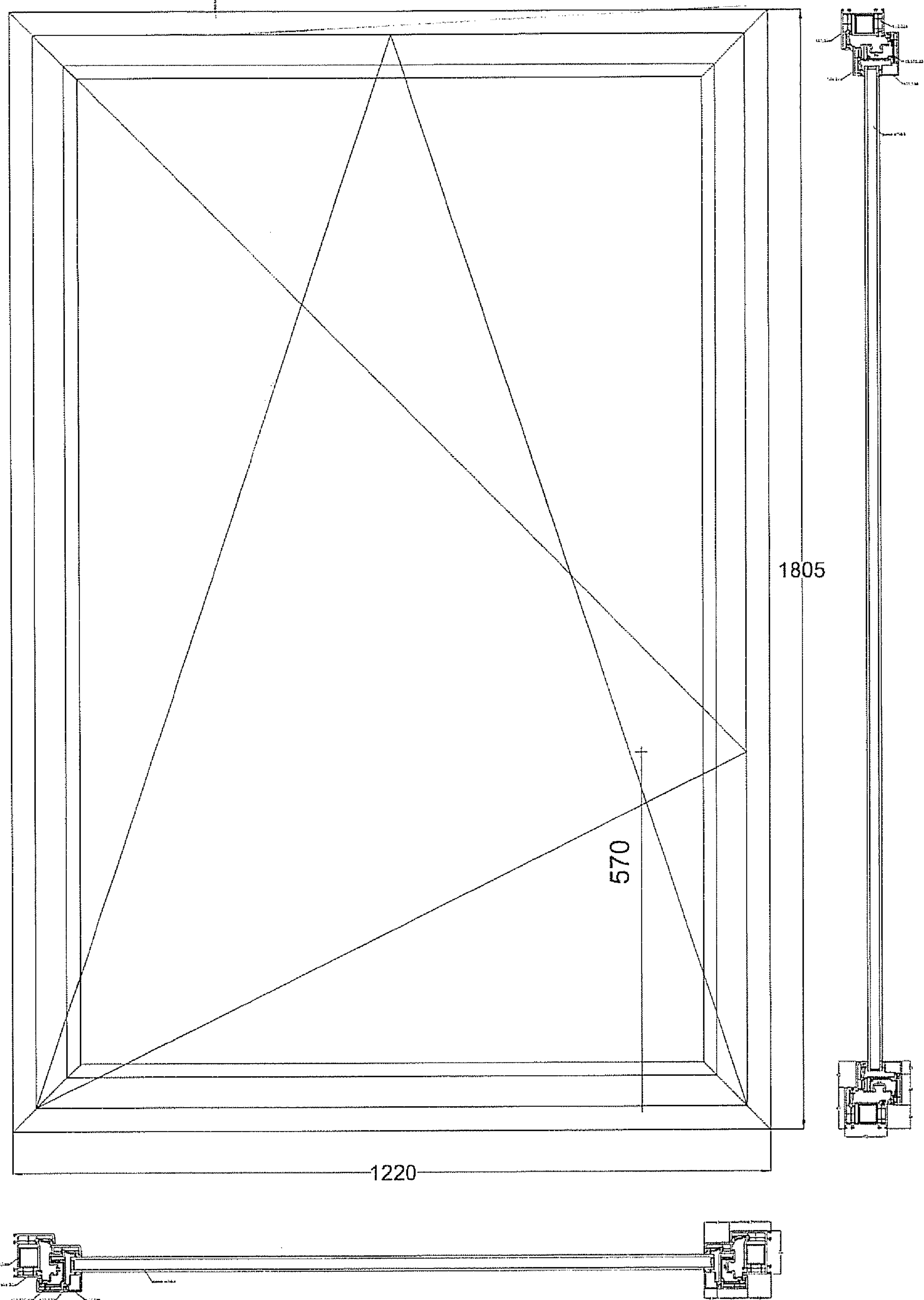
Component Drawings, with Applicable Part Numbers, Manufacturing and Modeling Details, were reviewed (as submitted) for Product Verification. Detailed assembly drawings showing wall thicknesses of all members, corner construction and hardware application are on file and have been compared to the test sample submitted.

(Reference: NCTL-110-20686-1)

See Attached Documentation;
any deviations noted.

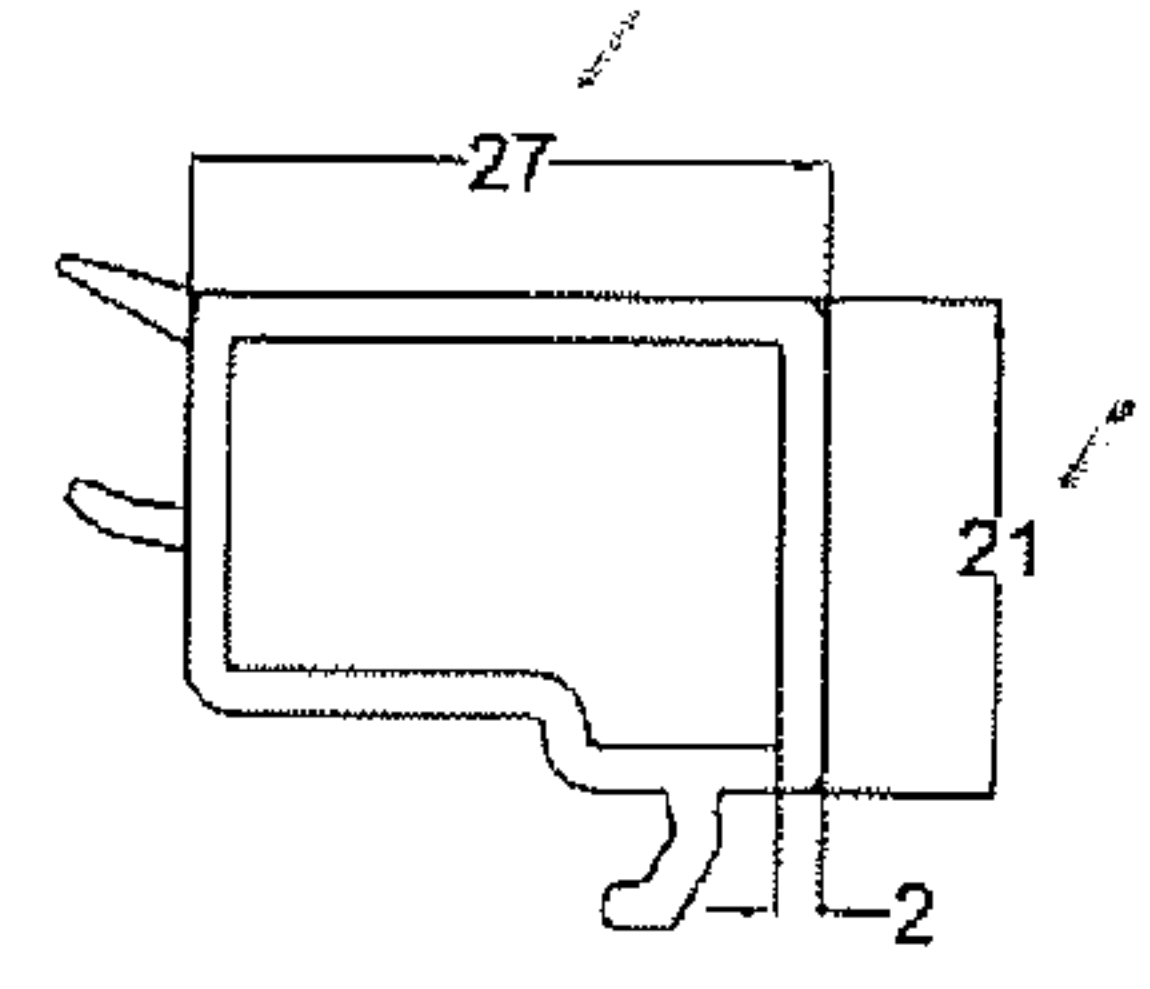
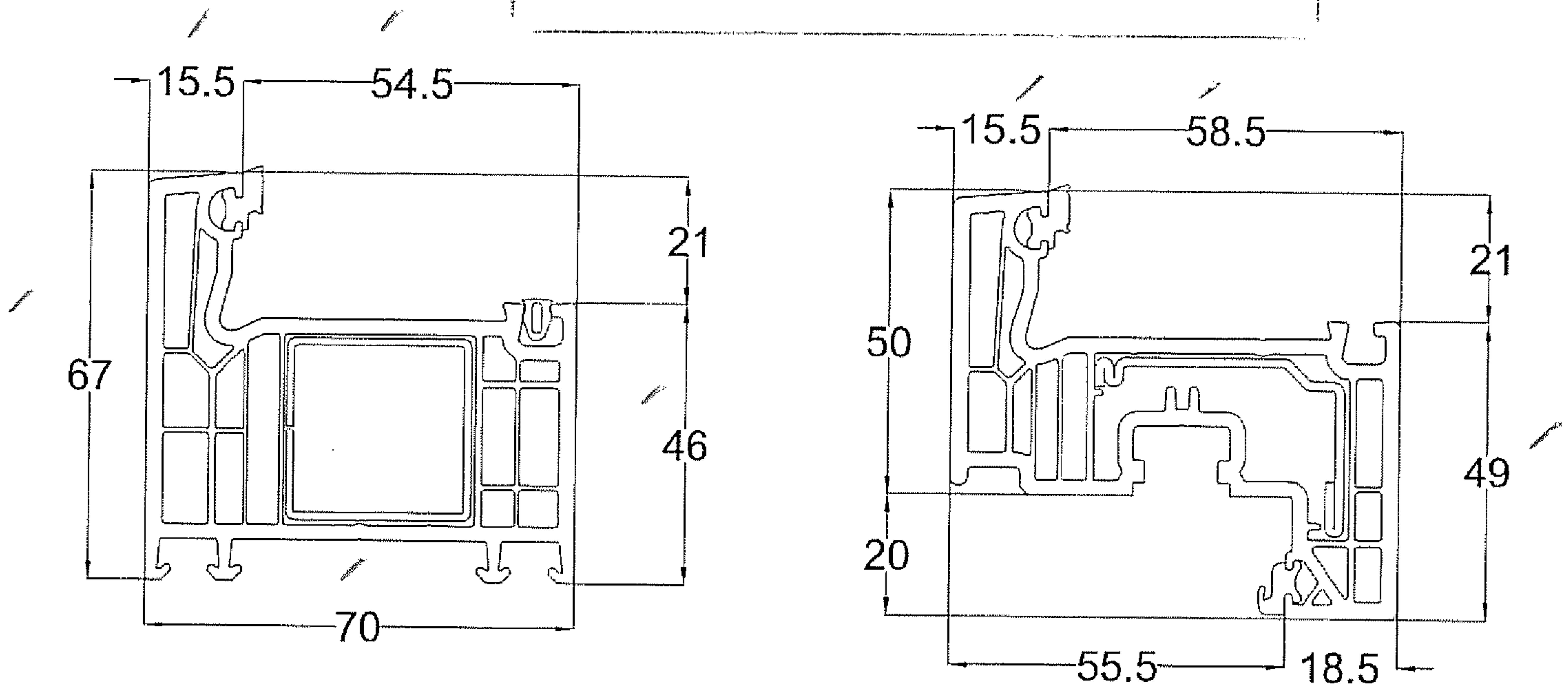
Note: The above referenced component drawings (if applicable) along with representative sections of the test specimen will be retained by NCTL per applicable retention requirements. This testing facility assumes that all information provided by the client is accurate.

TEST SPECIMEN COMPLIES
WITH THESE DETAILS.
ANY DEVIATION IS NOTED
REPORT NO. NCTL-110-20686-1
TEST DATE 12/14/17

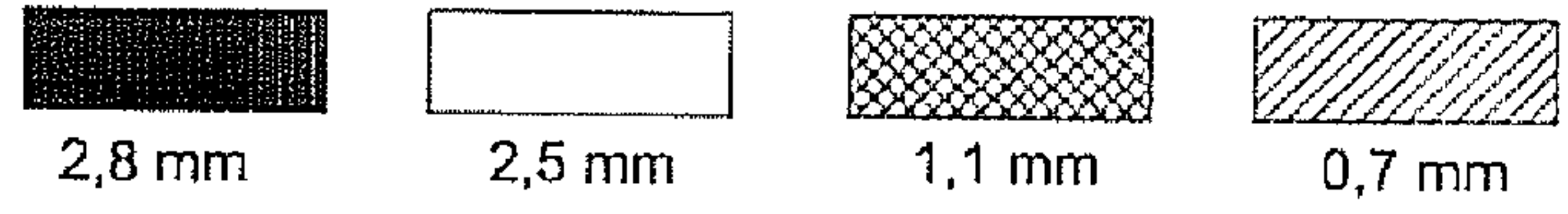
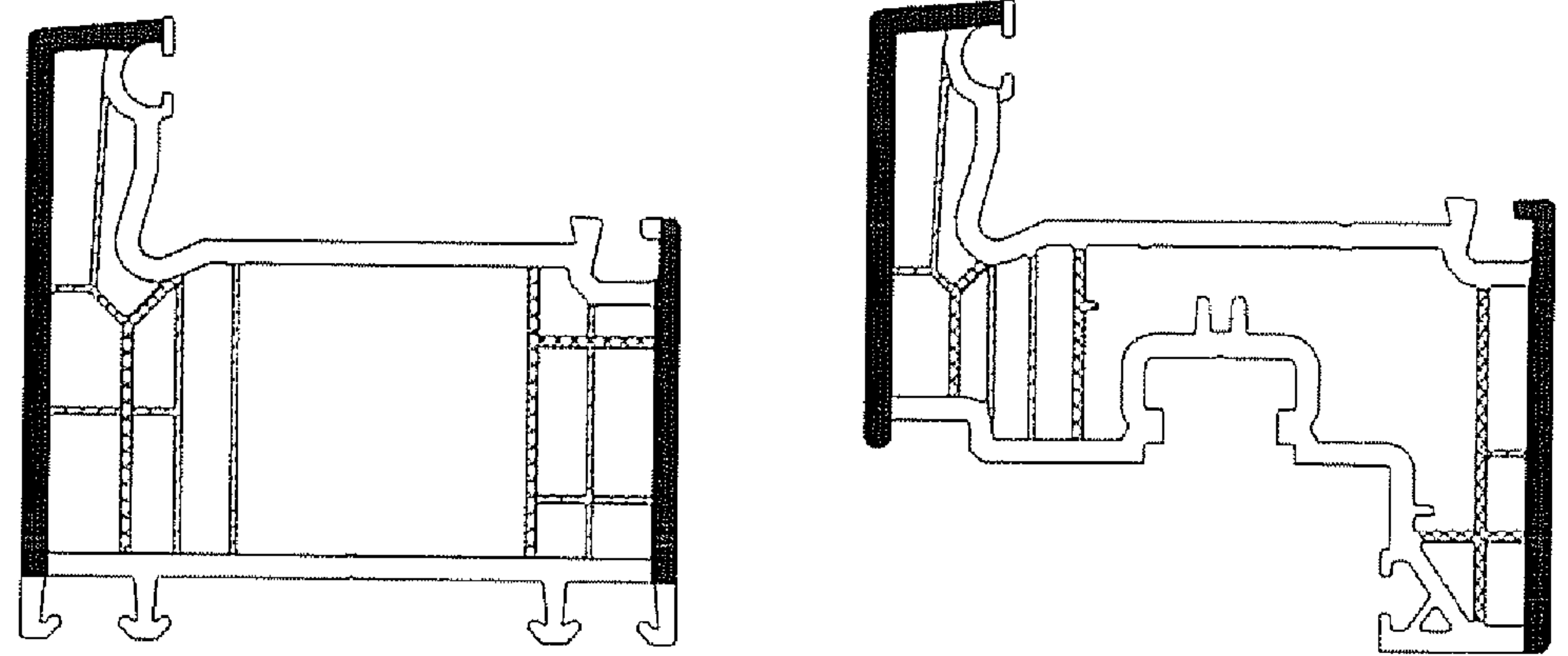


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NARYSOWAŁ: BERNADETA KOPEĆ	SPRAWDZIŁ: JAROSŁAW RUDKA	ZATWIERDZIŁ: JAROSŁAW RUDKA
SKALA: 1:1	WERSJA:	DATA: 22.09.2017
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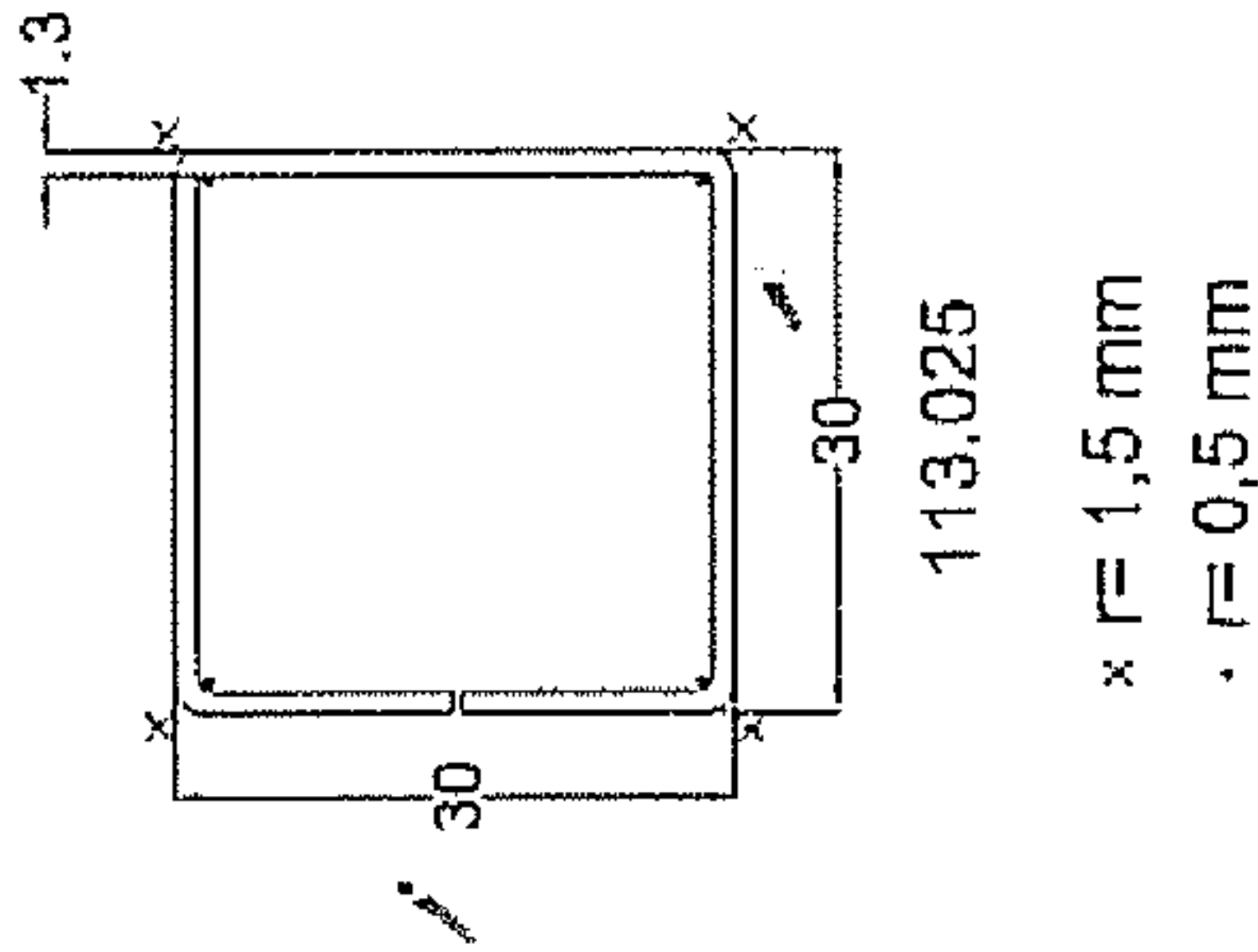
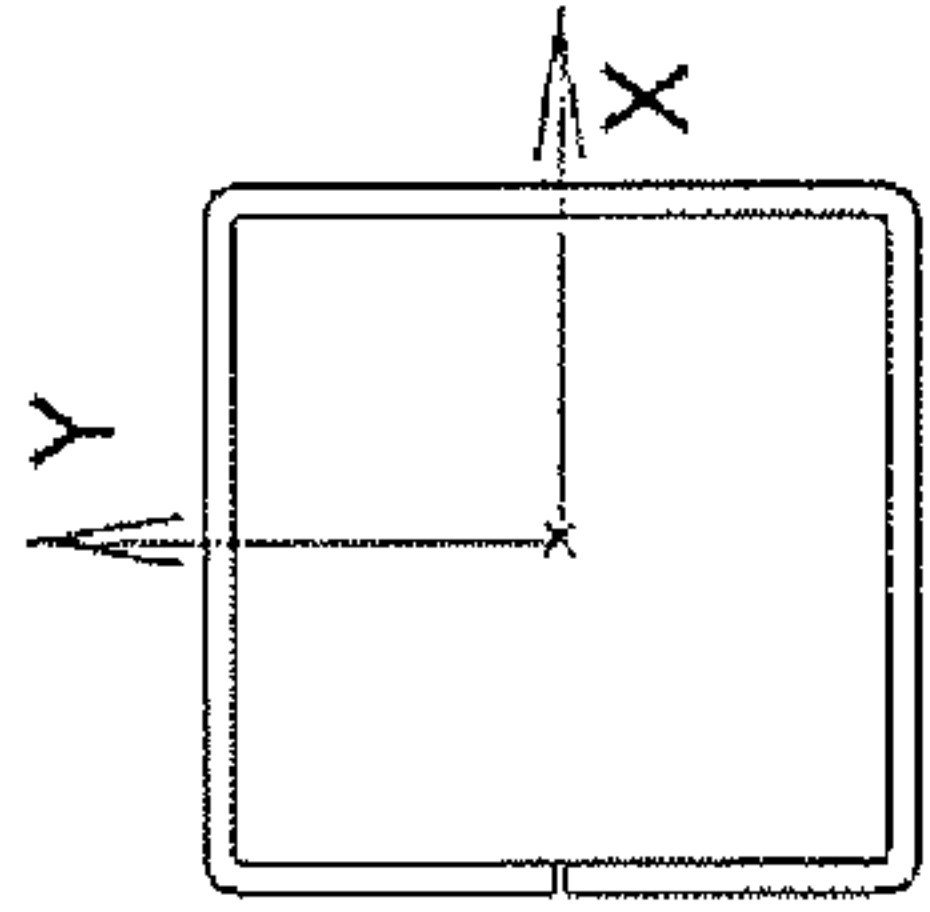


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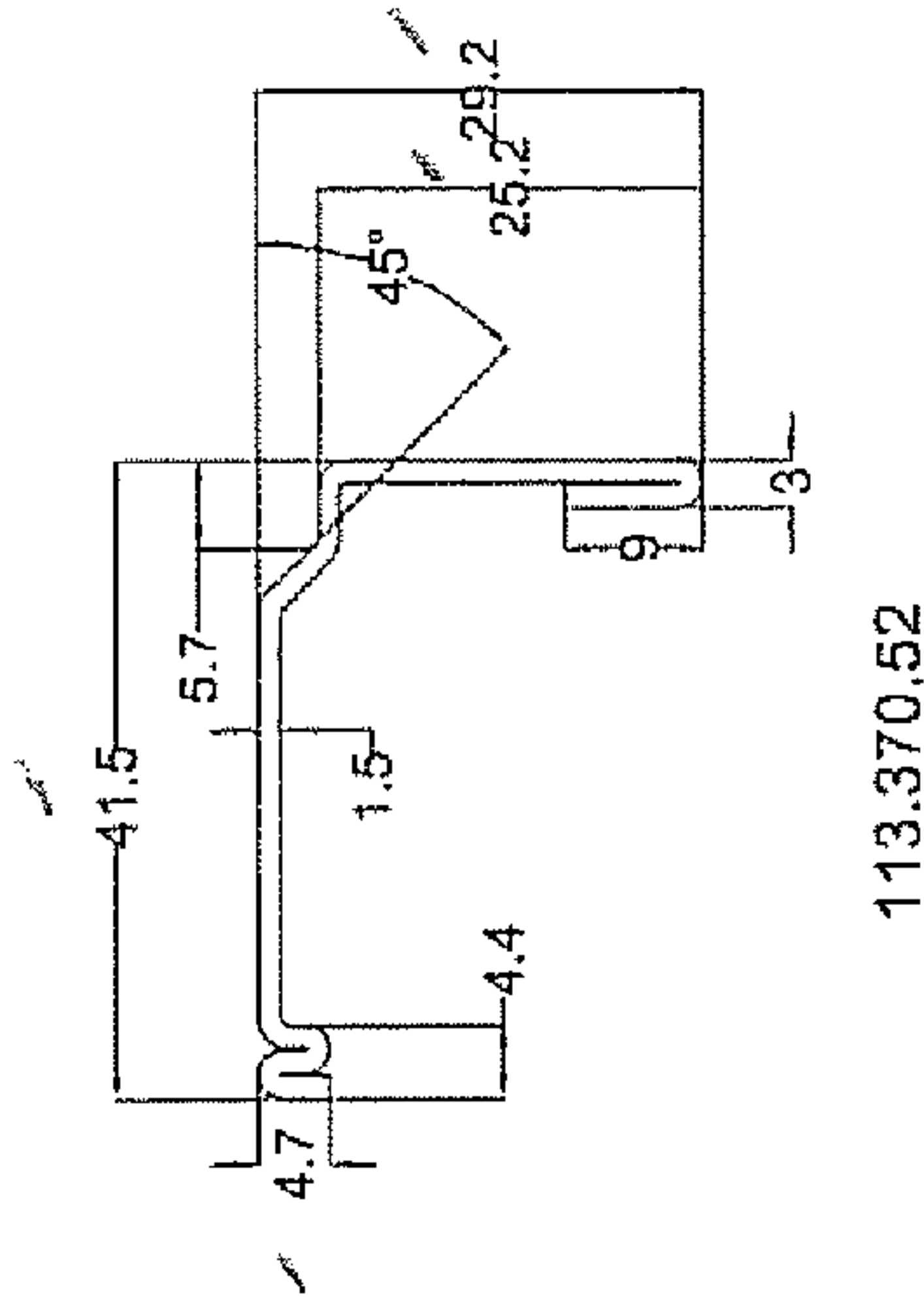
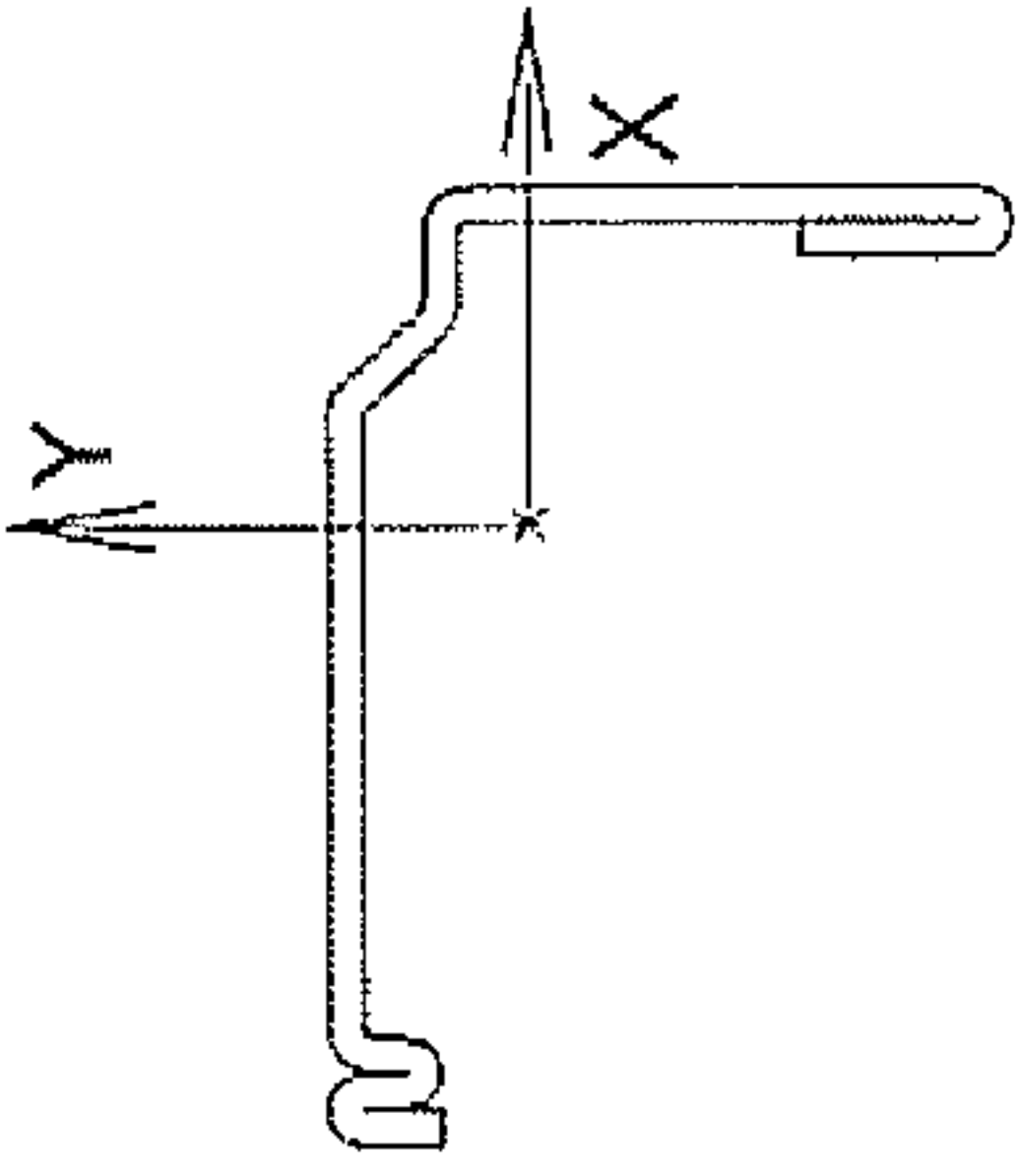


TYTUŁ: PIXEL 1220X1805 1678981 poz. 1	
NARYSOWAŁ: BERNADETA KOPEĆ	SPRAWDZIŁ: JAROSŁAW RUDKA
SKALA: 1:1	DATA: 22.09.2017
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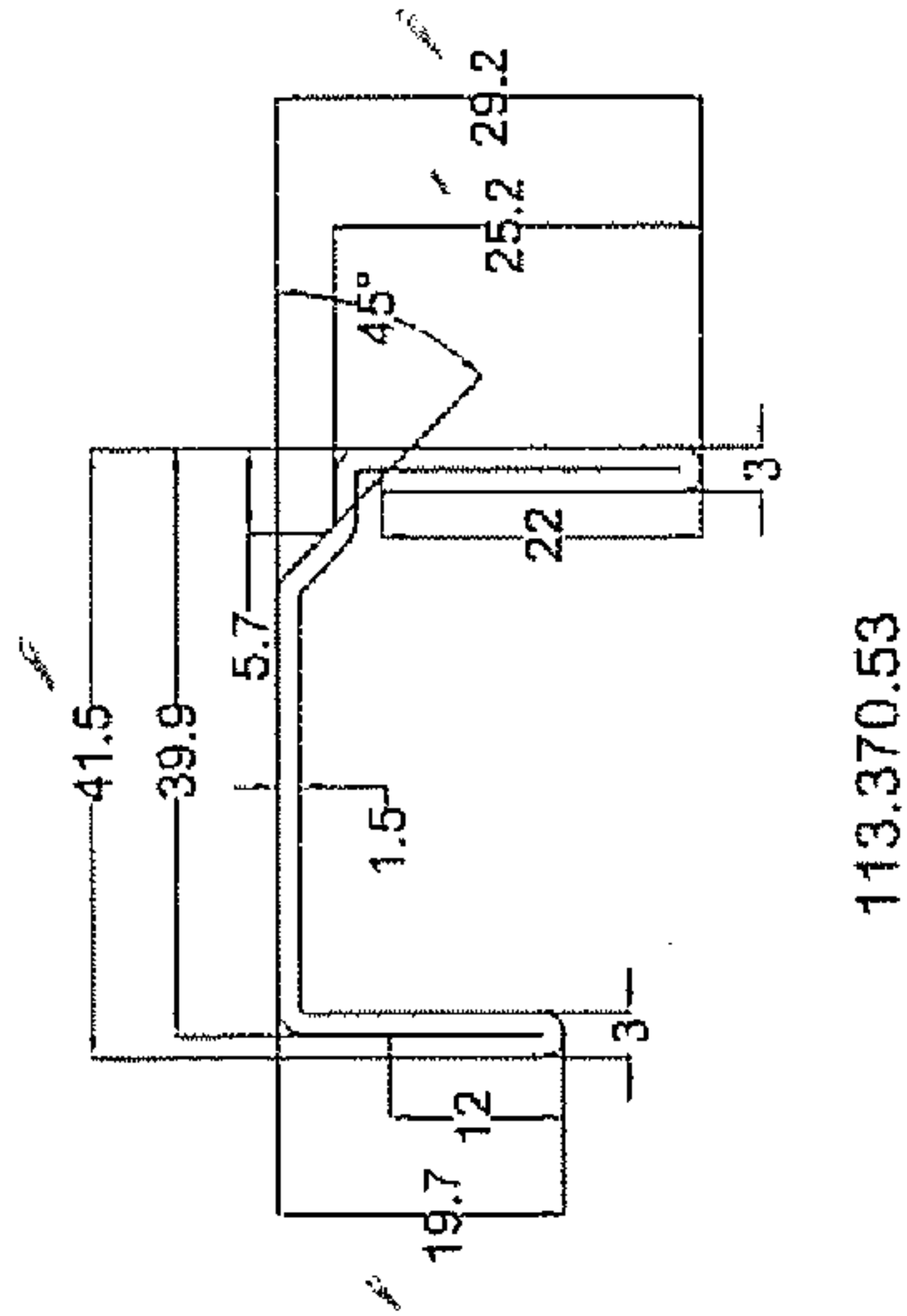
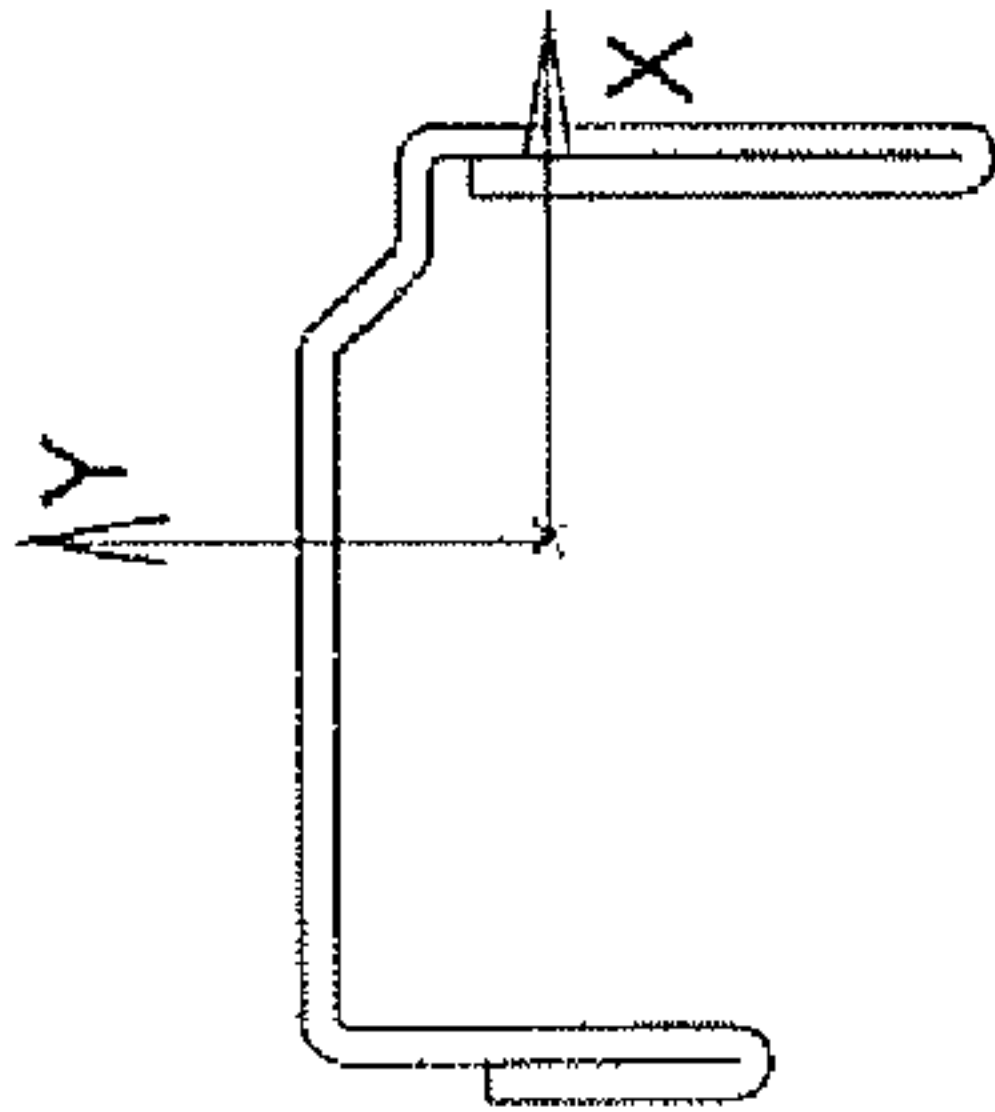
MOMENT OF INERTIA:
Ix: 1,94 cm⁴
Iy: 1,94 cm⁴



MOMENT OF INERTIA:
Ix: 1,13 cm⁴
Iy: 2,70 cm⁴



MOMENT OF INERTIA:
Ix: 1,24 cm⁴
Iy: 4,73 cm⁴



TEST SPECIMEN COMPLIES
WITH THESE DETAILS.
ANY DEVIATION IS NOTED
REPORT NO. NCTL-110-2006-1
TEST DATE 12/14/17

TYTUŁ:	PIXEL 1220X1805 1678981 poz. 1		
NARYSOWAŁ:	BERNADETA KOPEĆ	SPRAWDZIŁ:	JAROSŁAW RUDKA
SKALA:	1:1	WERSJA:	DATA:
			22.09.2017
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