



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: Type XO Sliding Glass Door

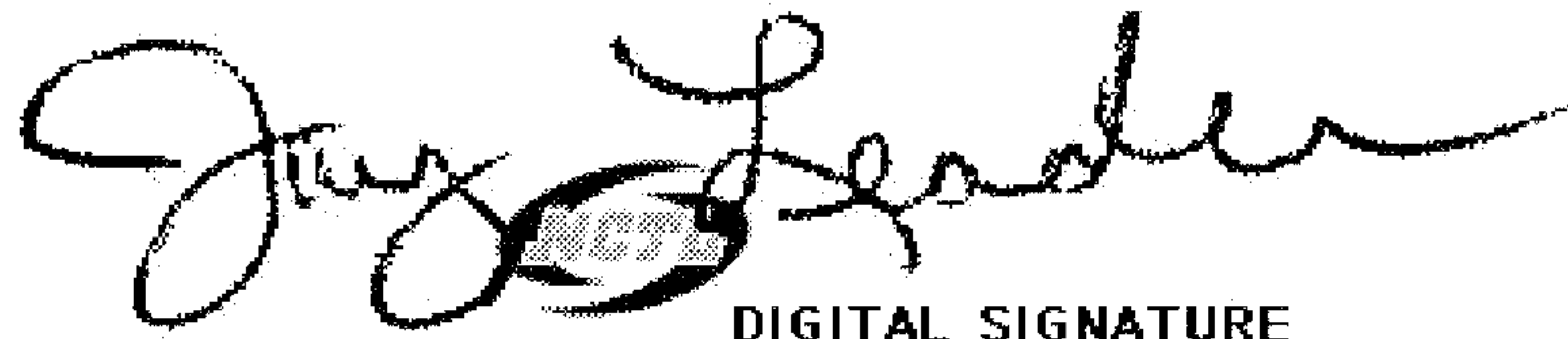
SERIES/ MODEL: "HST Premium 85"

Title	Summary of Results
Primary Product Designator AAMA/WDMA/CSA 101/I.S.2/A440-11	Class CW-PG70: Size tested 2413 x 2108 mm (~95 x 83 in) - Type SD
Positive Design Pressure	+3360 Pa (+70.18 psf)
Negative Design Pressure	-3360 Pa (-70.18 psf)
Operating Force (in motion _{max})	27 N (6 lbf)
Air Infiltration	0.3 L/s/m ² (0.05 cfm/ft ²)
Canadian Air Infiltration/Exfiltration	A3 Level
Water Penetration Resistance Test Pressure	580 Pa (12.11 psf)
Uniform Load Structural Test Pressure	±5040 Pa (±105.26 psf)
Forced Entry Resistance	ASTM F842-13 - Grade 10 Pass

Test Completed: 03/09/18

Reference must be made to Report No. NCTL-110-20790-1 dated 03/26/18 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-110-20790-1

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

REPORT NUMBER: NCTL-110-20790-1
REPORT DATE: 03/26/18

PRODUCT TYPE: TYPE XO SLIDING GLASS DOOR

SERIES/ MODEL: "HST PREMIUM 85"



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Report Number NCTL-110-20790-1

Report Date 03/26/18

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

Date Testing Started 03/09/18
Date Testing Completed 03/09/18

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-PG70: Size tested 2413 x 2108 mm (~95 x 83 in) - Type SD

Description of Specimen Tested

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

Model/ Series "HST Premium 85"

Configuration Type XO - Sliding Glass Door

Frame Size Overall
2413 mm x 2108 mm (95" x 83")

Panel Size (2) 1183 mm x 2008 mm (46.563" x 79.063")

Viewing Area (2) 981 mm x 1808 mm (38.625" x 71.188")

Frame & Panel Type Extruded vinyl with extruded aluminum threshold

Joint Construction Head/ Jambs
(2) Screw butt-type
Threshold/ Jambs
(2) Screw butt-type with plastic corner adapter with closed cell foam pad
Threshold to Fixed Meeting Stile
(2) Screw butt-type with plastic adapter and closed cell foam gasket
Panel
Mitered, welded
Fixed Panel
Fastened to the head and sill with (3) screws and the fixed jamb with (4) screws
Bottom rail fastened to sill track with (4) screws, top rail fastened to head panel adapter with (2) screws and fixed jamb stile fastened to fixed jamb panel adapter with (3) screws

Glazing Components

Overall	23.88 mm (0.940”) nominal
Glass Thickness	(2) Lites of 4 mm (0.150”) nominal annealed glass
Spacer Type/Size	16.26 mm (0.640”) Desiccant-filled aluminum spacer (Type A1-D)
Glazing System	Interior glazed with a (2)-leaf bulb-vinyl back-bedding and a snap-in (2)-leaf dual durometer rigid vinyl glazing bead

Weatherstrip

Type	(1) Strip center fin
Size	13.21 mm (0.520”) high
Location	Head, lock jamb and meeting stiles
Type	(2)-Leaf bulb-vinyl
Location	Meeting stiles
Type	(2) Strips (1)-leaf, multi-fin bulb-vinyl
Location	Rails and lock stile
Type	Closed cell foam pad
Size	76 mm x 57 mm x 17.78 mm (3” x 2.25” x 0.700”)
Location	Midspan of the head

Operating Hardware

Locks	
Type	Metal single handle (2)-point integrated lock system
Location	1000 mm (39.375”) From the bottom of the lock stile
Keeper	
Type	Metal
Location	Lock jamb at the lock locations

Auxiliary

Type	Neoprene bumper block
Location	102 mm (4”) From each end of the fixed jamb
Type	Rigid vinyl track
Location	Sill
Type	Aluminum track
Location	Head fastened with (7) screws
Type	Aluminum roller guide
Location	Sill track
Type	Aluminum stop
Location	Sill track
Type	Rigid vinyl interlock covers
Location	Meeting stiles fastened with (1) screw at each end
Type	Rigid vinyl cover
Location	Head and jambs
Type	Rigid vinyl panel adapter
Location	Fixed panel top rail, fixed jamb stile, lock jamb and fixed sill sections
Type	Dual nylon rollers with metal housing
Location	178 mm (7”) From each end of the bottom rail
Type	Plastic guide fastened with (2) screws
Location	Top of the lock stile and interior meeting stile
Type	Rubber stop fastened with (1) screw
Location	Top of the lock jamb

Reinforcement

Type	Galvanized steel tube
Thickness	2.92 mm (0.115")
Location	Top rails and fixed bottom rail fastened with (4) screws, meeting stiles and fixed jamb stiles fastened with (7) screws
Type	Contour-shaped aluminum
Location	Bottom rail fastened with (4) screws and lock stile fastened with (7) screws
Type	Contour-shaped aluminum
Location	Head and jambs fastened with double row of (4) screws

Weep Description

Size	33 mm (1.375") wide by 4.78 mm (0.188") high
Location	54 mm (2.125") From each end of the top and bottom rail glazing tracks
Size	32 mm (1.25") wide by 4.78 mm (0.188") high
Location	203 mm (8") From each end of the bottom rails

**Interior/ Exterior
Surface Finish**

White vinyl (PVC)

Sealant

Location	Frame corners, ends of the fixed meeting stile and interior sill stop
Material	Silicone

Insect Screen

No screen applied

Installation Method

The door was installed in a 102 mm (4") x 203 mm (8") spruce-pine-fir lumber test buck. The frame was fastened with #10 x 140 mm (5.5") flat head screws. A double row of screws were located at the head and jambs 152 mm (6") from the ends and 305 mm (12") on center thereafter and 152 mm (6"), 457 mm (18"), 762 mm (30") and 1067 mm (42") from the fixed jamb at the sill. (1) #10 x 140 mm (5.5") Flat head screw was located at 152 mm (6"), 457 mm (18"), 762 mm (30") and 1067 mm (42") from the lock jamb at the sill. 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>
9.3.1	Operating Force and Force to Latch - Method B (Force Gauge) ASTM E2068-00(08)
	Initiate Motion = 31 N (7 lbf)
	Allowed (CW Rating ₁₁) = 180 N (40.47 lbf)
	Maintain Motion - Opening = 22 N (5 lbf)
	Maintain Motion - Closing = 27 N (6 lbf)
	Allowed (CW Rating ₁₁) = 115 N (25.85 lbf)
	Latches = 36 N (8 lbf)
	Allowed = 100 N (22.5 lbf)

NOTE: The results above represent the maximum force among all sash tested.

<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 = 1.21 L/s (2.57 cfm) Extraneous Air Leakage _{Tare} = <0.01 L/s (<0.01 cfm) Net Air Leakage = 1.21 L/s (2.57 cfm) Air Infiltration Rate = 0.3 L/s/m² (0.05 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 580 Pa (12.11 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 3360 Pa (70.18 psf) held for 10 seconds No damage after negative 3360 Pa (70.18 psf) held for 10 seconds Measured Deflection _{Positive} = 9.3.5 mm (0.368 inches) Measured Deflection _{Negative} = 9.25 mm (0.364 inches) Maximum Allowed (_{L/175}) = 11.46 mm (0.451 inches)

<u>Paragraph</u>	<u>Test</u>
9.3.4.3	Uniform Load Structural Test ASTM E330-14 No damage after positive 5040 Pa (105.26 psf) held for 10 seconds No damage after negative 5040 Pa (105.26 psf) held for 10 seconds Measured Permanent Set _{Positive} = 0.23 mm (0.009 inches) Measured Permanent Set _{Negative} = 0.18 mm (0.007 inches) Maximum Allowed (0.3%) = 6.02 mm (0.237 inches) NOTE: Deflection and Permanent Set measurements taken on the meeting stile over a 2007 mm (79") span.

<u>Paragraph</u>	<u>Test</u>
9.3.5	Forced Entry Resistance ASTM F842-13
	<u>Type A SGD Assembly/Grade 10:</u> = Pass
	<u>Test</u>
	Hardware Manipulation Test = No Entry
	Test A1 = No Entry
	Test A2 = No Entry
	Test A3 = No Entry
	Test A4 = No Entry
	Test A5 = No Entry
	Test A6 = No Entry
	Hardware Manipulation Test = No Entry
	<u>Type D SGD Assembly/Grade 10:</u> = Pass
	<u>Test</u>
	Test D1 = No Entry
	Test D2 = No Entry
	Test D3 = No Entry
	Hardware Manipulation Test = No Entry
	NOTE: 1. T1 = 5 minutes, L1 = 1334 N (300 lbf), L2 = 778 N (175 lbf), L3 = 133 N (30 lbf), L4 = 222 N (50 lbf) plus weight of panel. 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>
9.3.6.3	Deglazing Test ASTM E987-88(09)
	<u>Active Panel (Interior)</u>
	Stiles – 320 N (71.94 lbf)
	Maximum Allowed = 90% (100%)
	Jamb Stile = 10.7%
	Meeting Stile = 11.0%
	Rails – 230 N (51.71 lbf)
	Maximum Allowed = 90% (100%)
	Top Rail = 6.1%
	Bottom Rail = 6.5%
	<u>Active Panel (Exterior)</u>
	Stiles – 320 N (71.94 lbf)
	Maximum Allowed = 90% (100%)
	Jamb Stile = 11.6%
	Meeting Stile = 10.8%
	Rails – 230 N (51.71 lbf)
	Maximum Allowed = 90% (100%)
	Top Rail = 6.8%
	Bottom Rail = 6.4%
	NOTE: The glass bite was approximately 12.7 mm (0.5")

Test Results - CSA A440S1-17

<u>Paragraph</u>	<u>Test</u>
5.2	Operating Force and Force to Latch - Method B (Force Gauge) ASTM E2068-00(08)
	Initiate Motion = 31 N (7 lbf)
	Allowed (Normal Use) = 135 N (30.35 lbf)
	Maintain Motion - Opening = 22 N (5 lbf)
	Maintain Motion - Closing = 27 N (6 lbf)
	Allowed (Normal Use) = 90 N (20.23 lbf)
	Latches = 36 N (8 lbf)
	Allowed = 100 N (22.5 lbf)

NOTE: The results above represent the maximum force among all sash tested.

<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 = 1.21 L/s (2.57 cfm)
	Extraneous Air Leakage _{Tare} = <0.01 L/s (<0.01 cfm)
	Net Air Leakage = 1.21 L/s (2.57 cfm)
	Air Infiltration Rate = 0.3 L/s/m ² (0.05 cfm/ft ²)
	<u>Exfiltration</u>
	Total Air Leakage = 1.28 L/s (2.72 cfm)
	Extraneous Air Leakage _{Tare} = <0.01 L/s (<0.01 cfm)
	Net Air Leakage = 1.28 L/s (2.72 cfm)
	Air Infiltration Rate = 0.3 L/s/m ² (0.05 cfm/ft ²)

<u>Paragraph</u>	<u>Test</u>
5.4	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 580 Pa (12.11 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 F842 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



DIGITAL SIGNATURE

Justin L. Bupp
Laboratory Manager

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	03/26/18	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-110-20790-1)

See Attached Documentation;
any deviations noted.

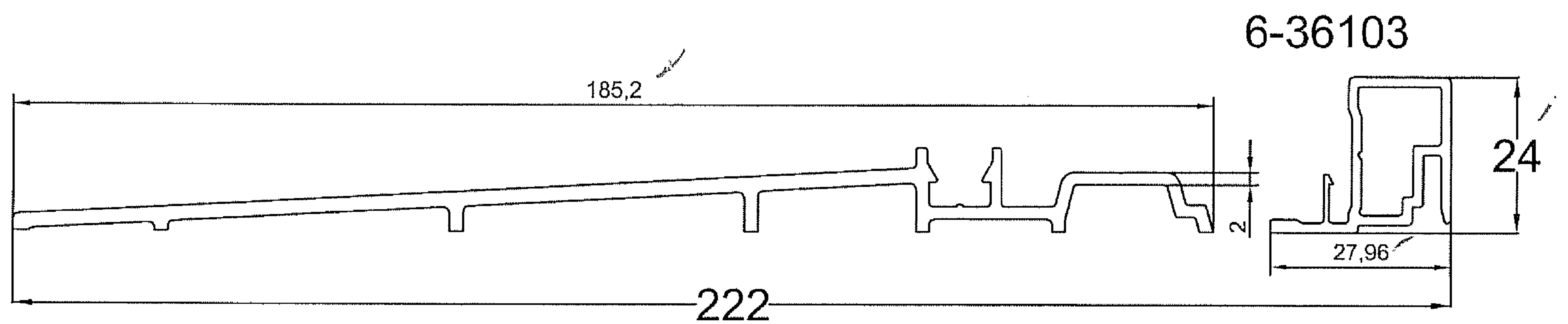
Note: The above referenced component drawings (if applicable) along with representative sections of the test specimen will be retained by NCTL per applicable retention requirements. This testing facility assumes that all information provided by the client is accurate.

BILL OF MATERIALS: HST Premium 85 Sliding Glass Door

<u>Part#</u>	<u>Part Name</u>	<u>Material</u>
6-36103	Sill Frame	Anodized Aluminum
170080	Head/Jamb Frame	Rigid Vinyl (PVC)
P-02002 19/77	Sill Frame Adapter	Rigid Vinyl (PVC)
170081	Main Sash	Rigid Vinyl (PVC)
PPI-ProwAlu	Right Head Sash Adapter	Anodized Aluminum
170102	Left Head/Left Jamb Sash Adapter	Rigid/Flexible Vinyl (PVC)
170105	Left Jamb/Interlock Frame Cover	Rigid Vinyl (PVC)
170104	Right Jamb Frame Cover	Rigid/Flexible Vinyl (PVC)
170100	Interlock Adapter	Rigid Vinyl (PVC)
279108	Head/Jamb Frame Reinforcement	Anodized Aluminum
229126	Steel Sash Reinforcement	Steel (rolled, ground)
279036	Aluminum Sash Reinforcement	Anodized Aluminum
PPI-120640	24-25mm Glazing Bead	Rigid/Flexible Vinyl (PVC)
PPI-120868	28-29mm Glazing Bead	Rigid/Flexible Vinyl (PVC)
1000	Upper Sash Gasket	Ethylene Propylene Diene Monomer (EPDM)
1001	Lower Sash Gasket	Ethylene Propylene Diene Monomer (EPDM)
1002	Interlock Gasket	Ethylene Propylene Diene Monomer (EPDM)
1003	Weatherstripping	Mohair
1004	Sill Frame Gasket	Silicone
500	8mm x 26mm Decorative Grid	Painted Aluminum
501	5.85mm x 8mm Decorative Grid	Painted Aluminum

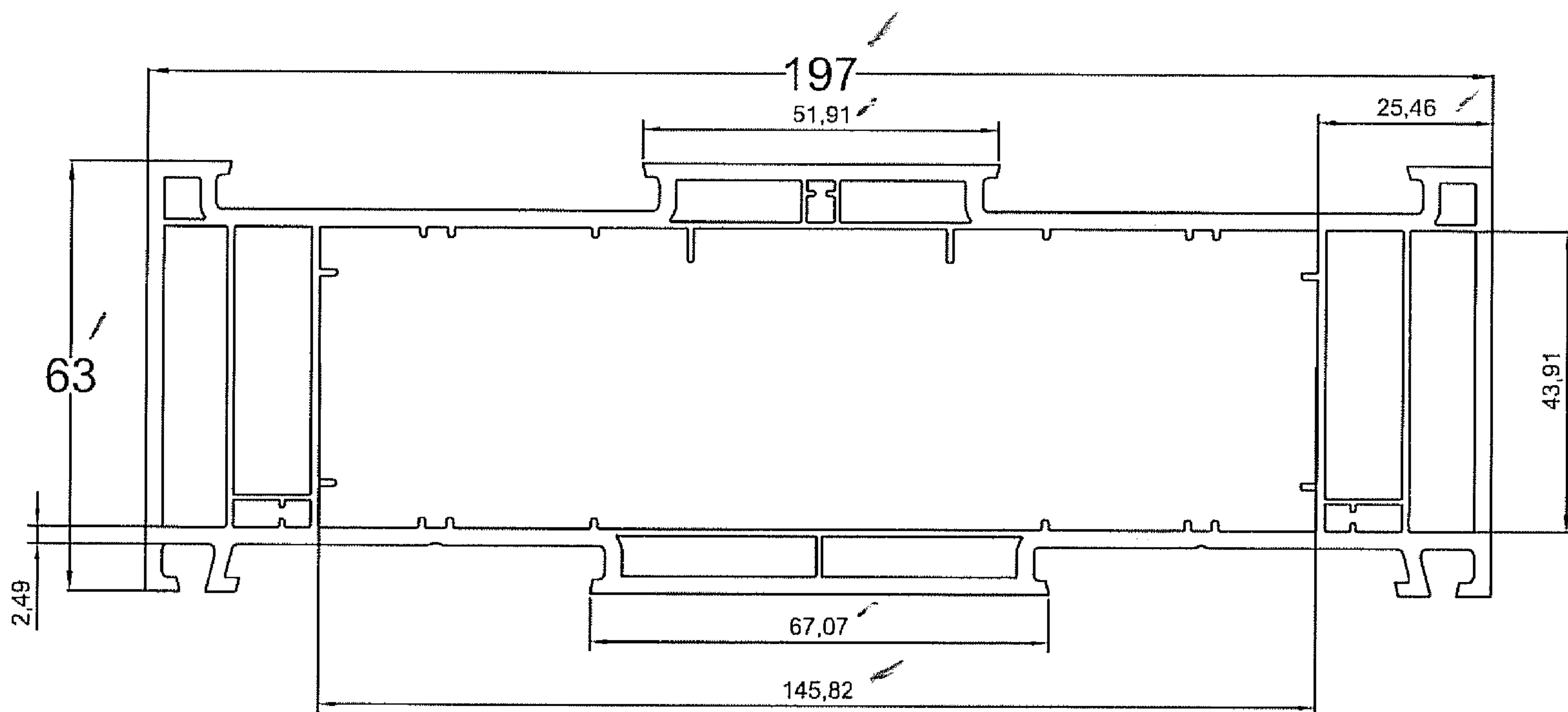
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WITH THESE DETAILS.
ANY DEVIATION IS NOTED
REPORT NO. NCTL-110-20790-1
TEST DATE 3/9/18

TEST SPECIMEN COMPLIES
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ANY DEVIATION IS NOTED
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TEST DATE 3/9/18



Anodized Aluminum

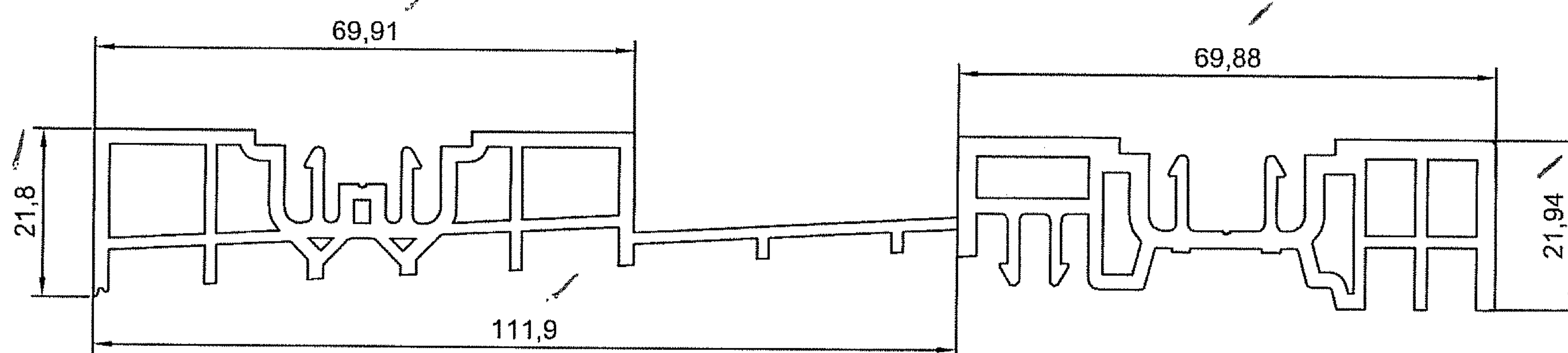
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TEST DATE 3/7/18



Rigid Vinyl (PVC)

170080

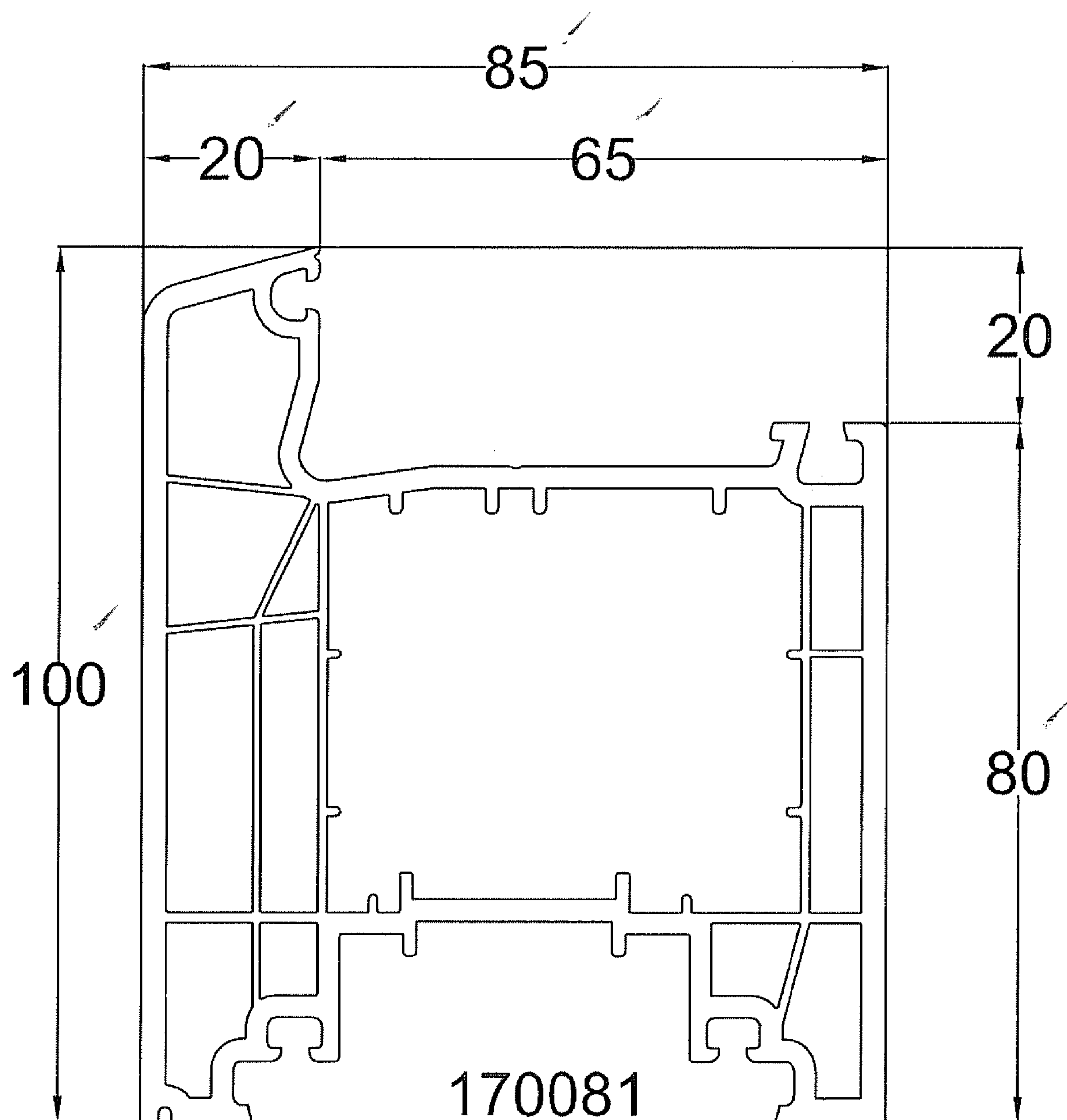
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TEST DATE 3/9/18



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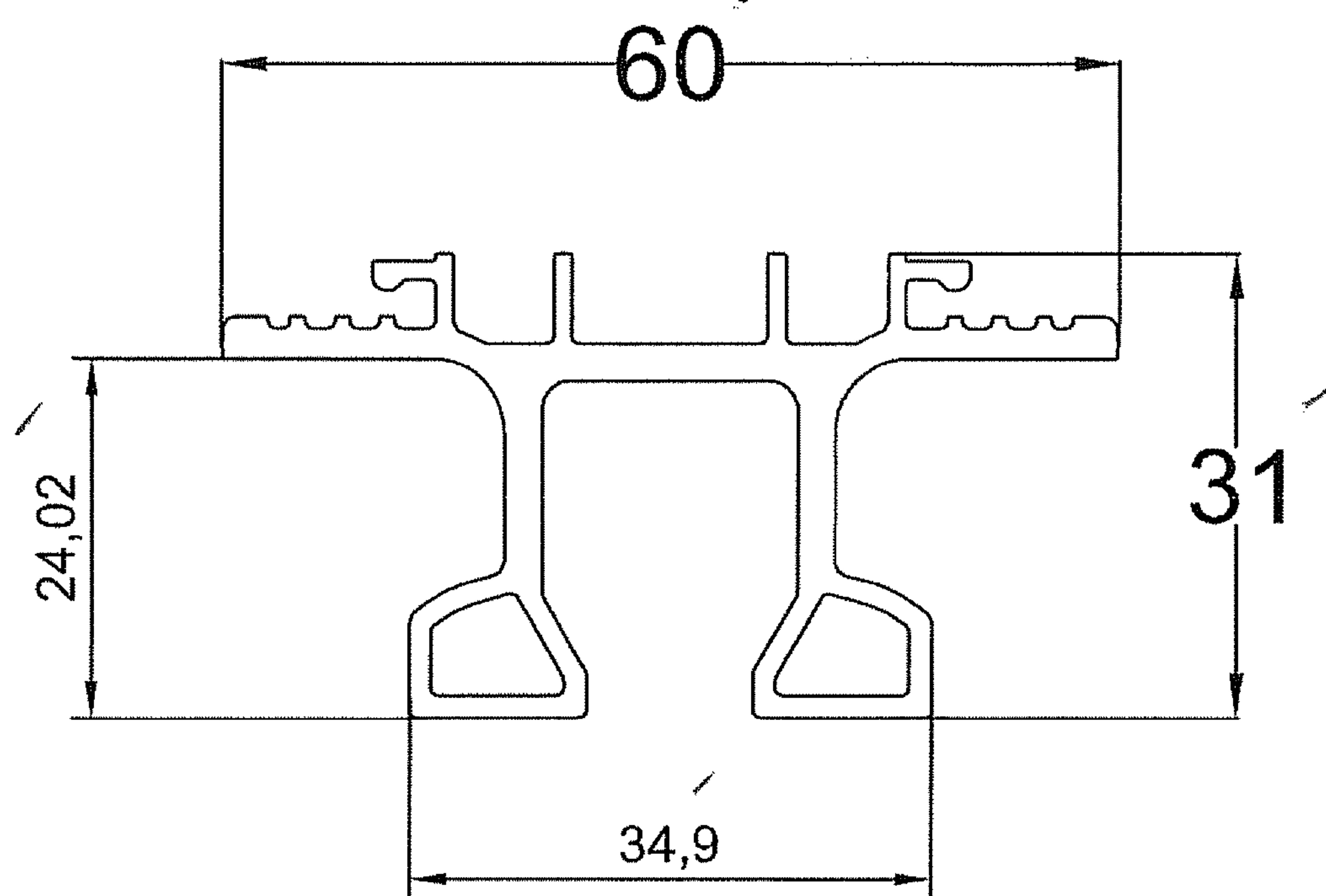
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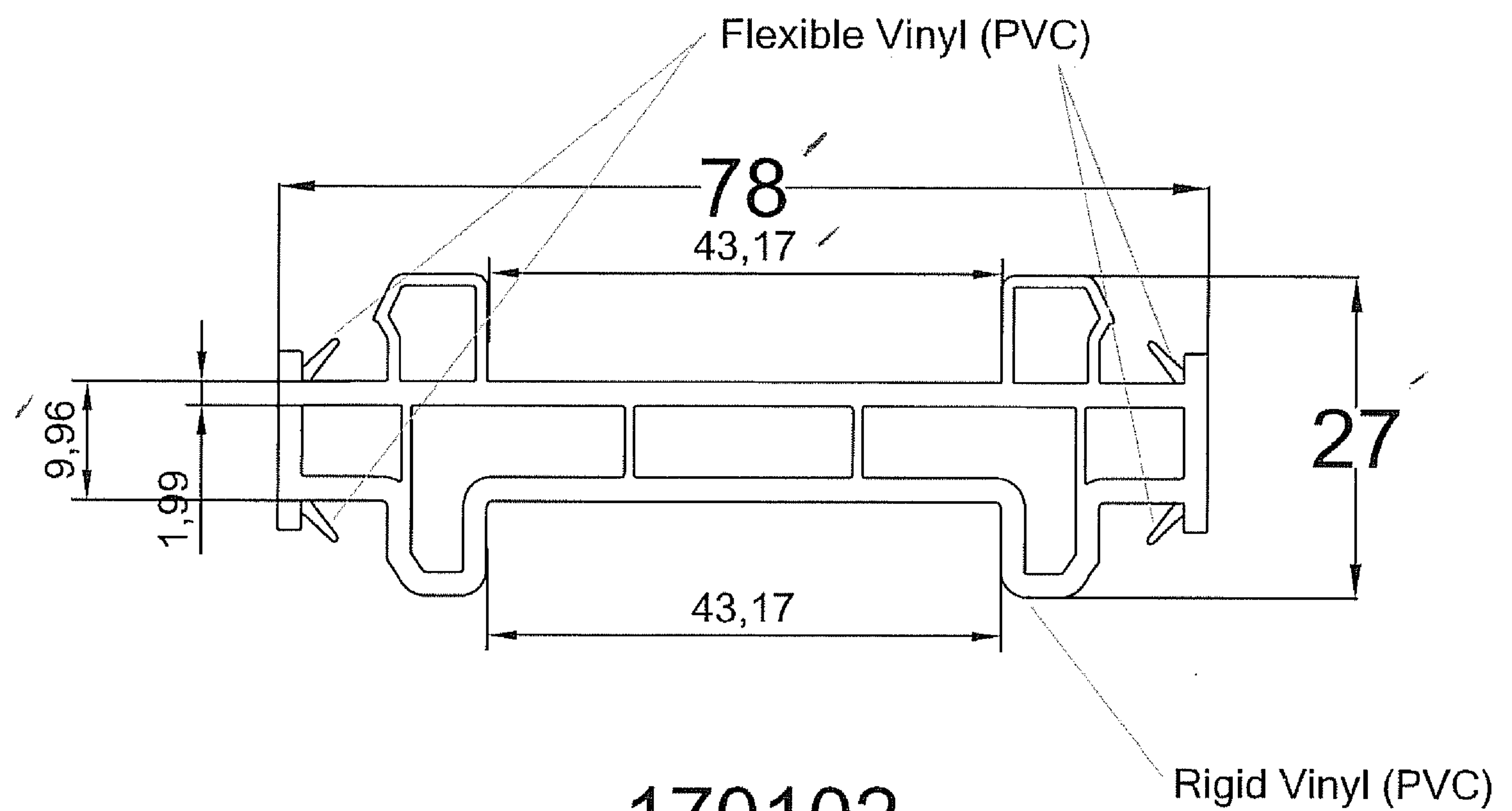
Rigid Vinyl (PVC)

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TEST DATE 3/9/18

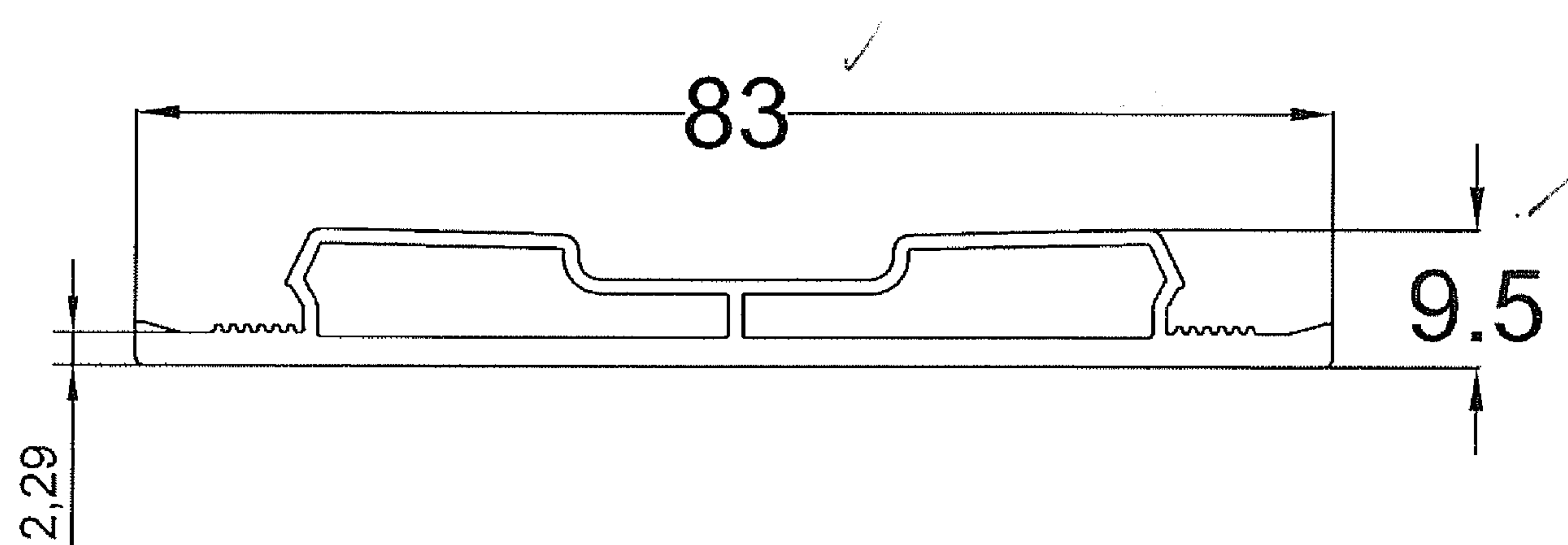


Anodized Aluminum

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REPORT NO. NCTL-110- 20790-1
TEST DATE 3/9/08



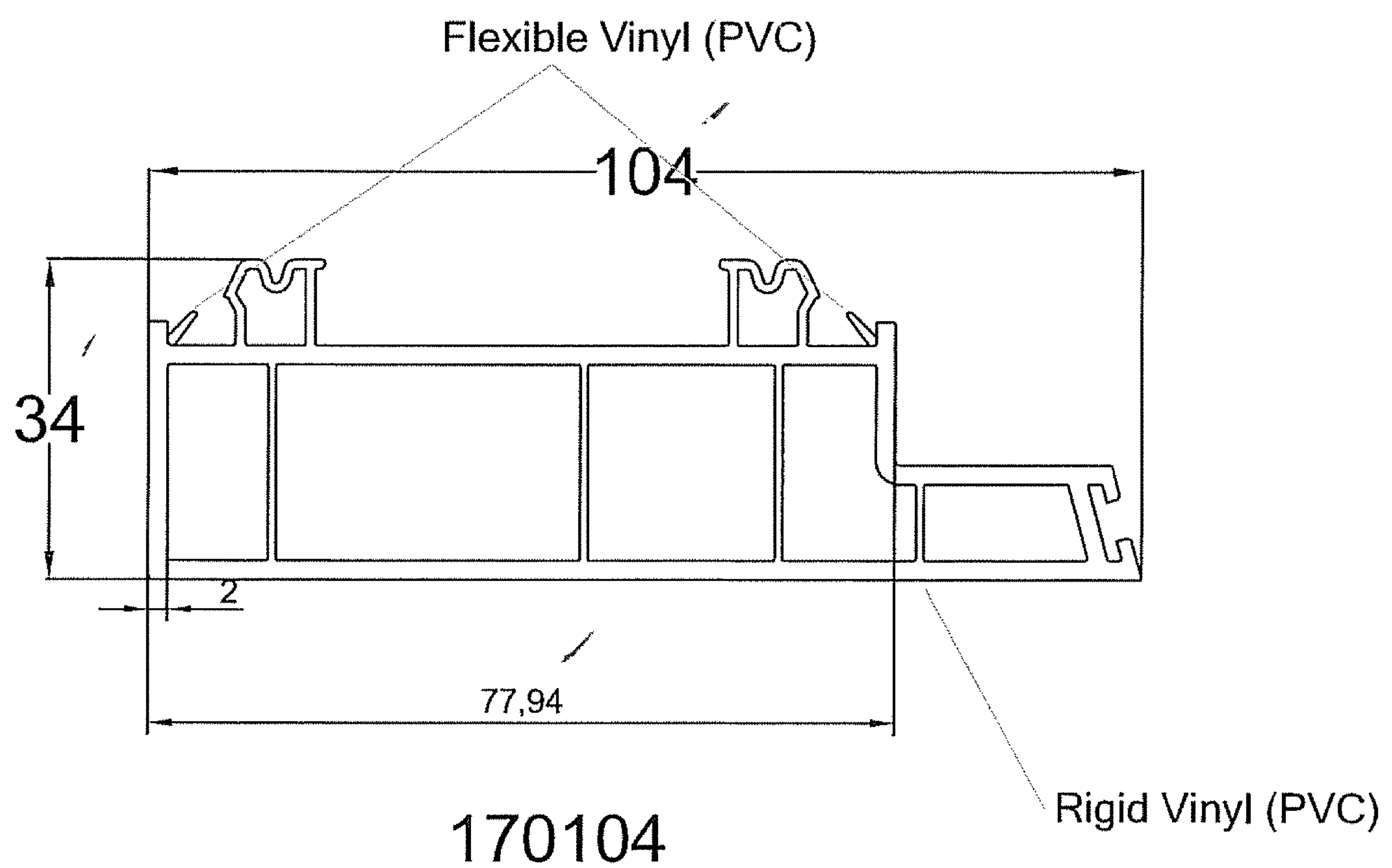
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REPORT NO. NCTL-110- 20770-1
TEST DATE 3/2/18



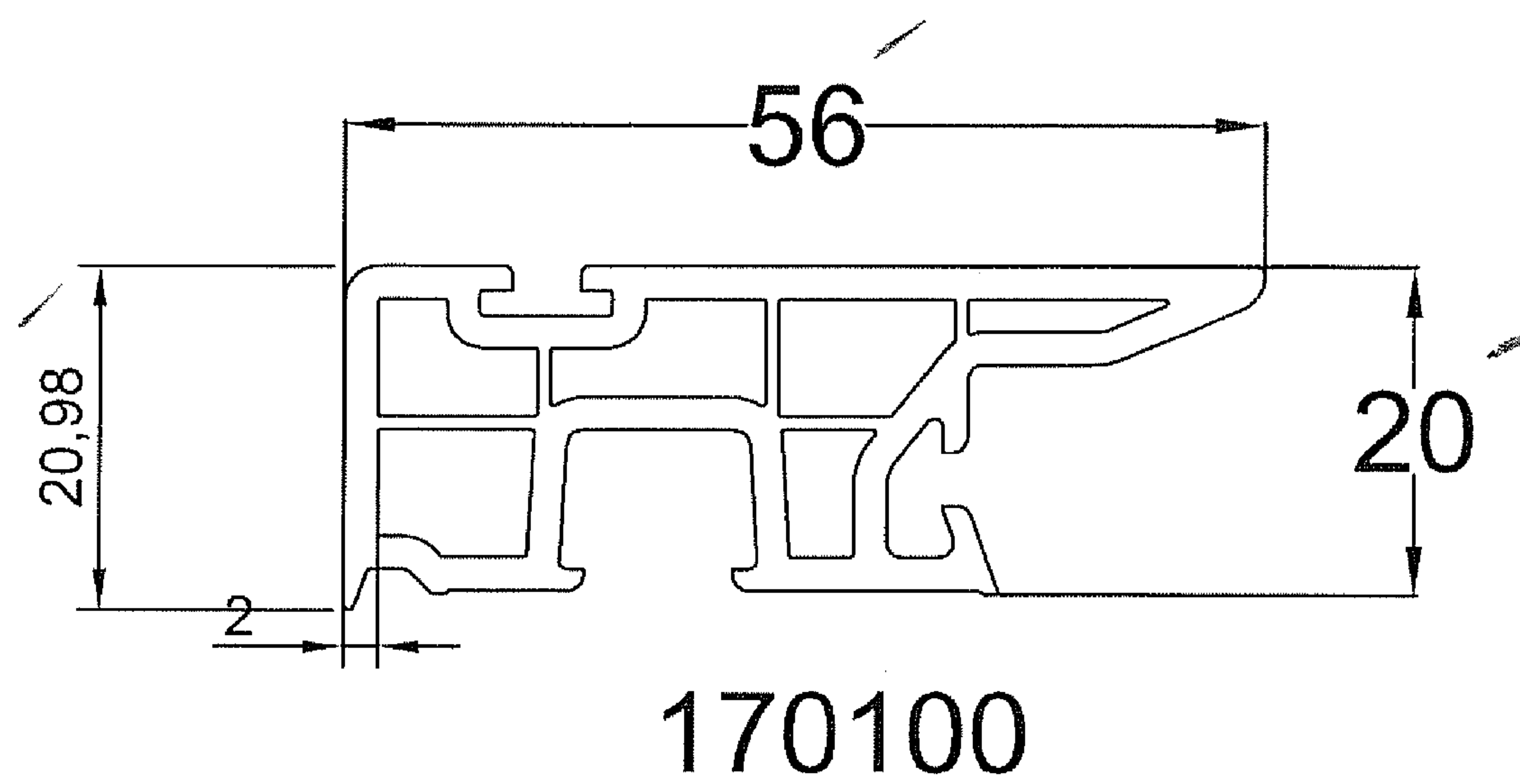
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Rigid Vinyl (PVC)

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ANY DEVIATION IS NOTED
REPORT NO. NCTL-110- 20790-1
TEST DATE 3/9/18

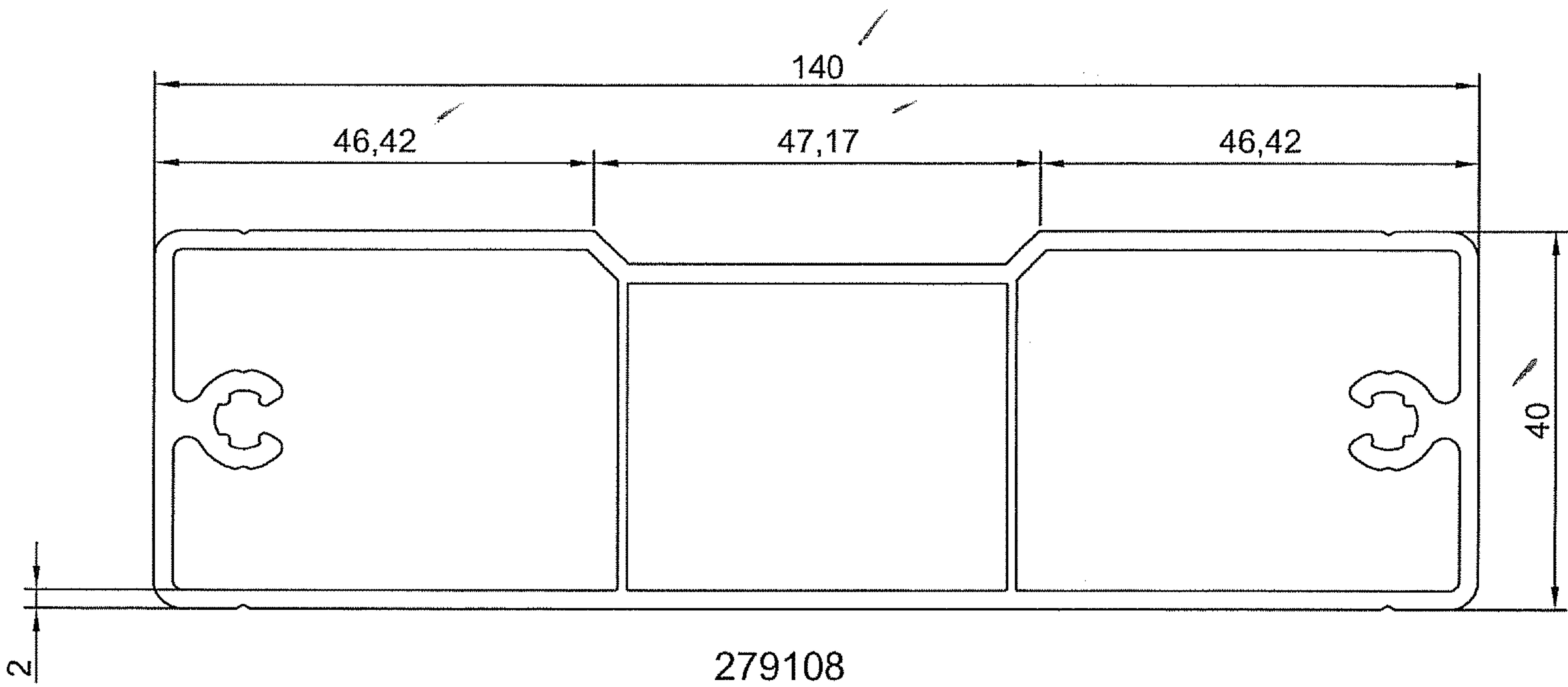


TEST SPECIMEN COMPLIES
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REPORT NO. NCTL-110-20790-1
TEST DATE 3/9/18



Rigid Vinyl (PVC)

TEST SPECIMEN COMPLIES
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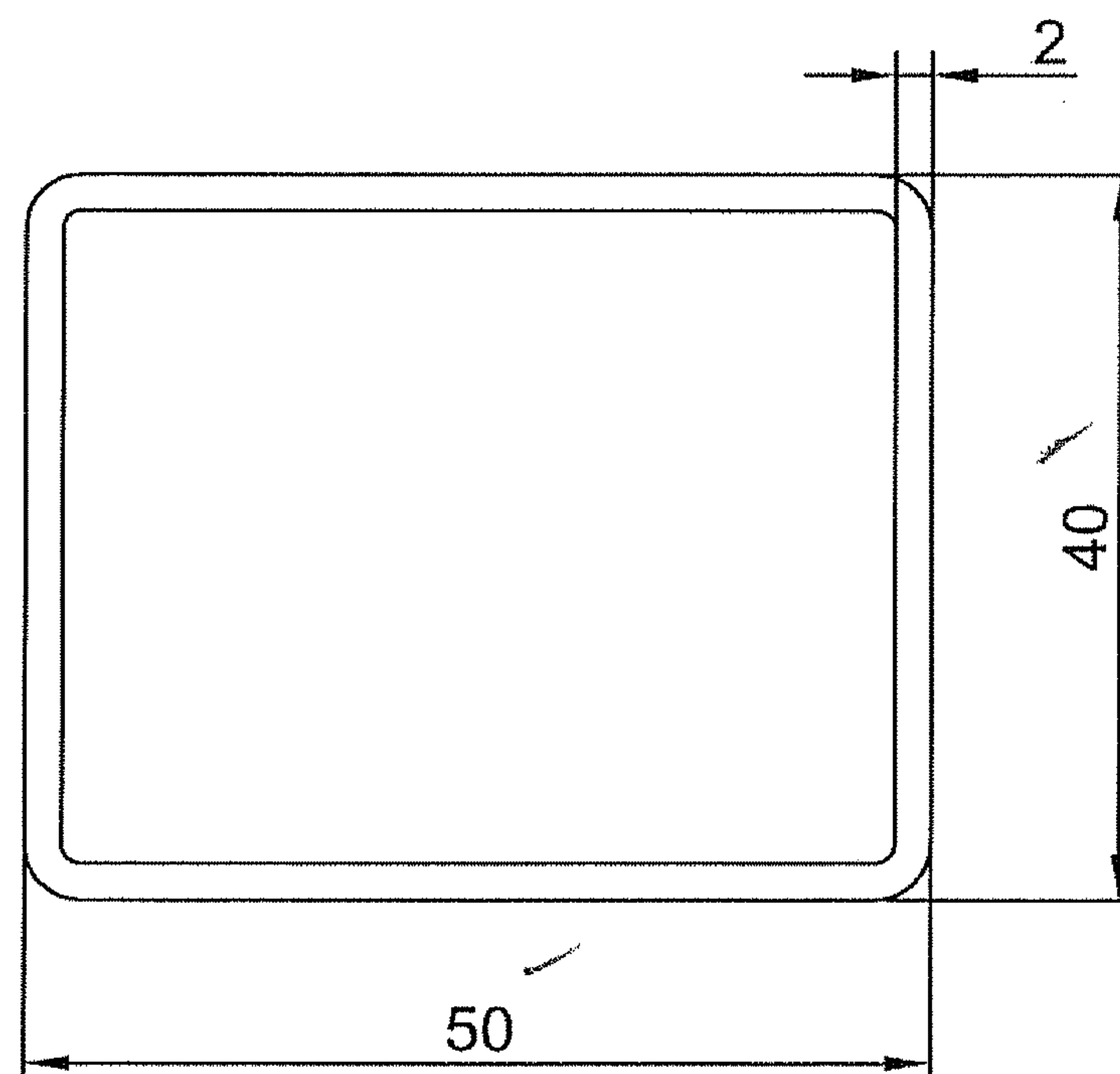
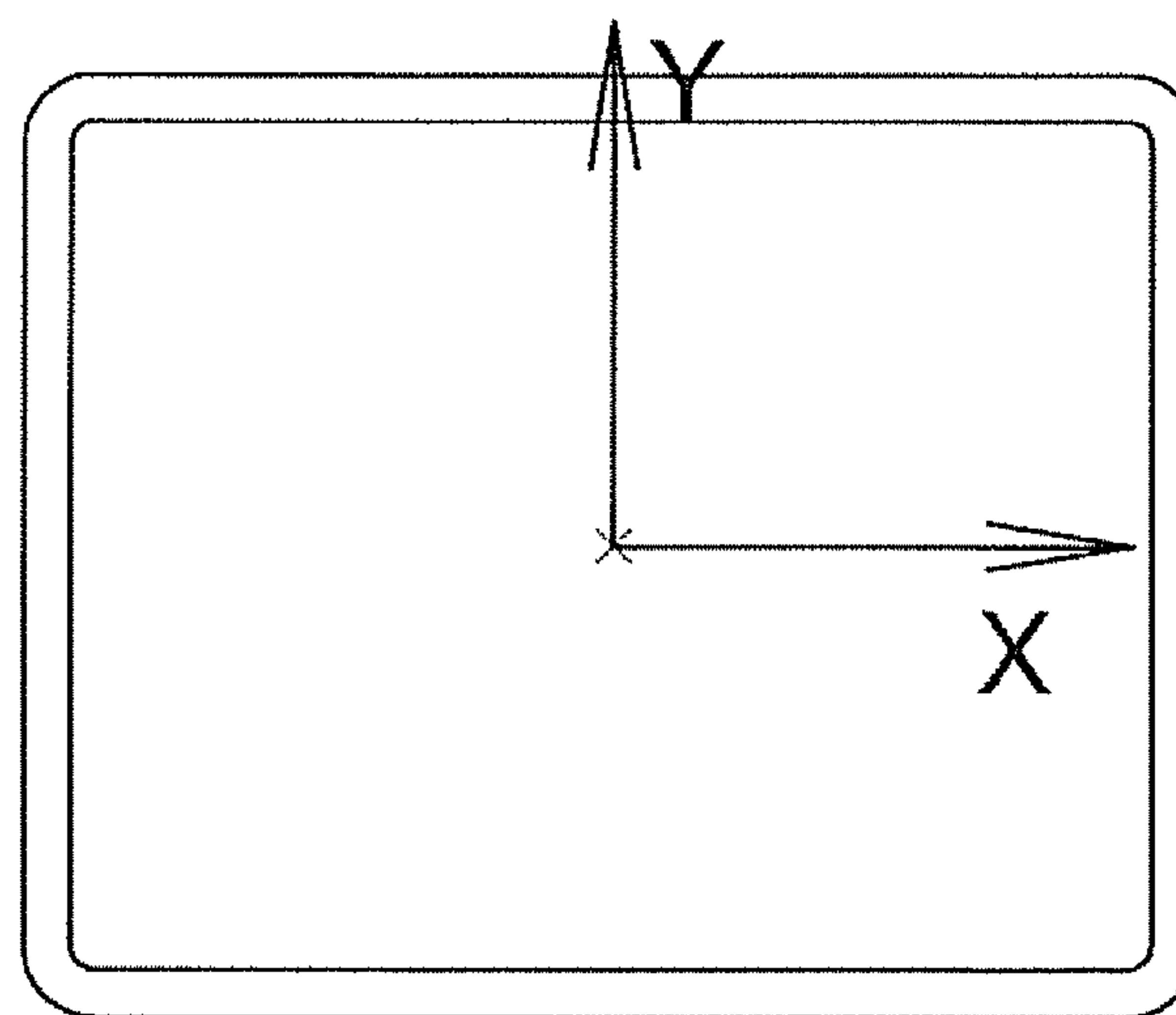
Anodized Aluminum

TEST SPECIMEN COMPLIES
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REPORT NO. NCTL-110-20790-1
TEST DATE 3/9/18

MOMENT OF INERTIA:

$I_x: 8,52 \text{ cm}^4$

$I_y: 12,04 \text{ cm}^4$



229126

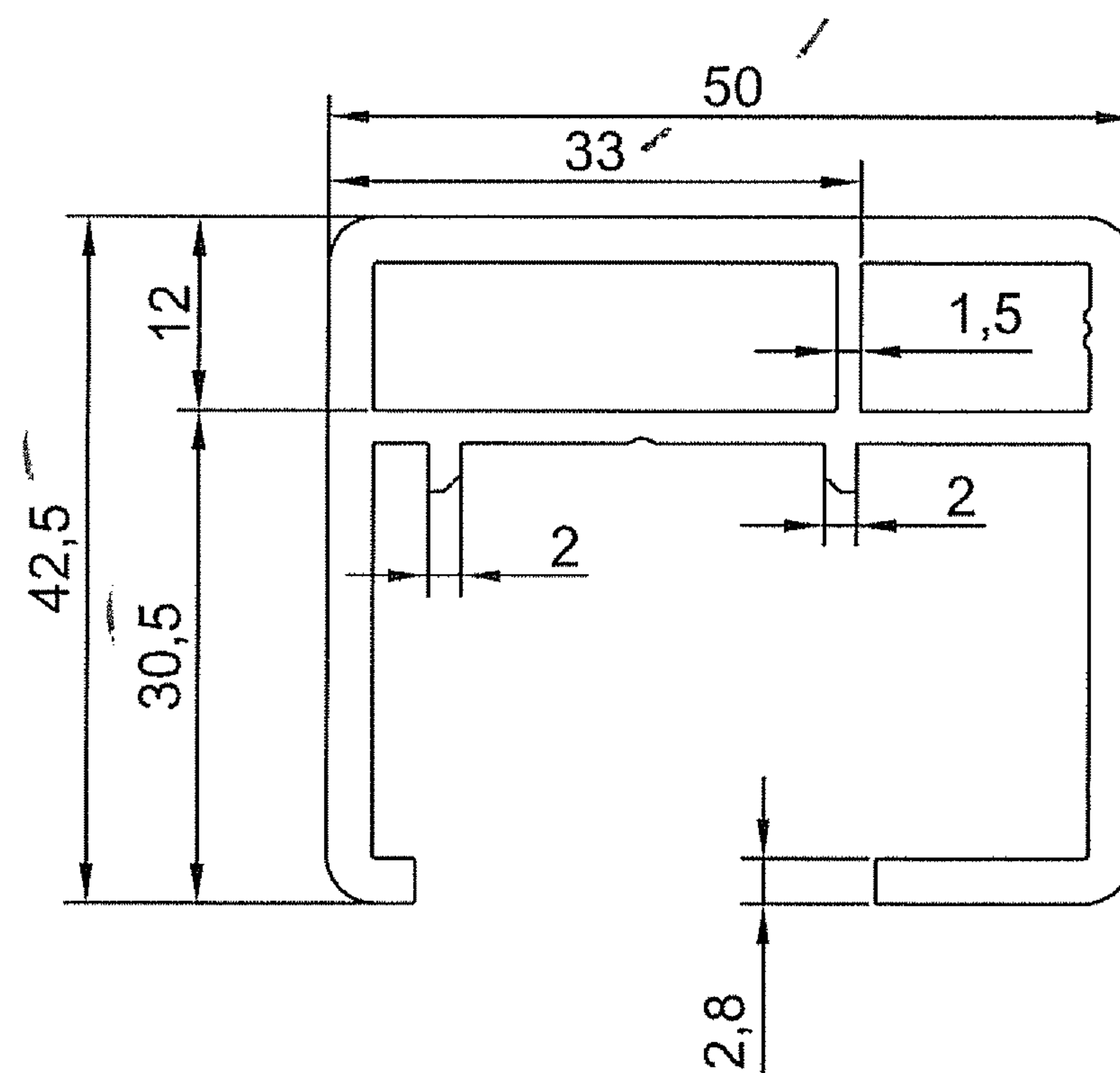
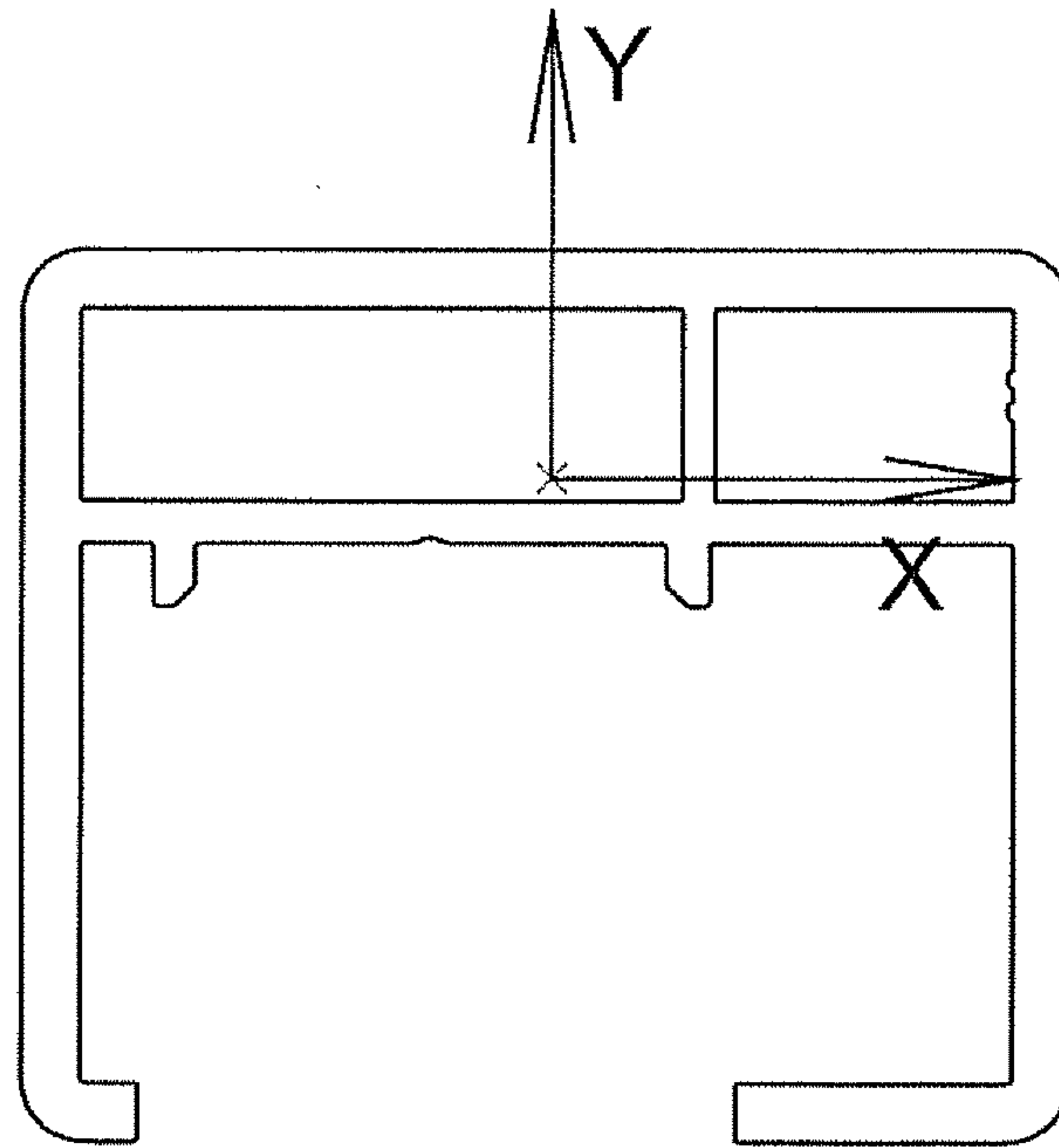
Steel (Rolled, Ground)

TEST SPECIMEN COMPLIES
WITH THESE DETAILS.
ANY DEVIATION IS NOTED
REPORT NO. NCTL-110- 20790-1
TEST DATE 3/9/18

MOMENT OF INERTIA:

$I_x: 12,52 \text{ cm}^4$

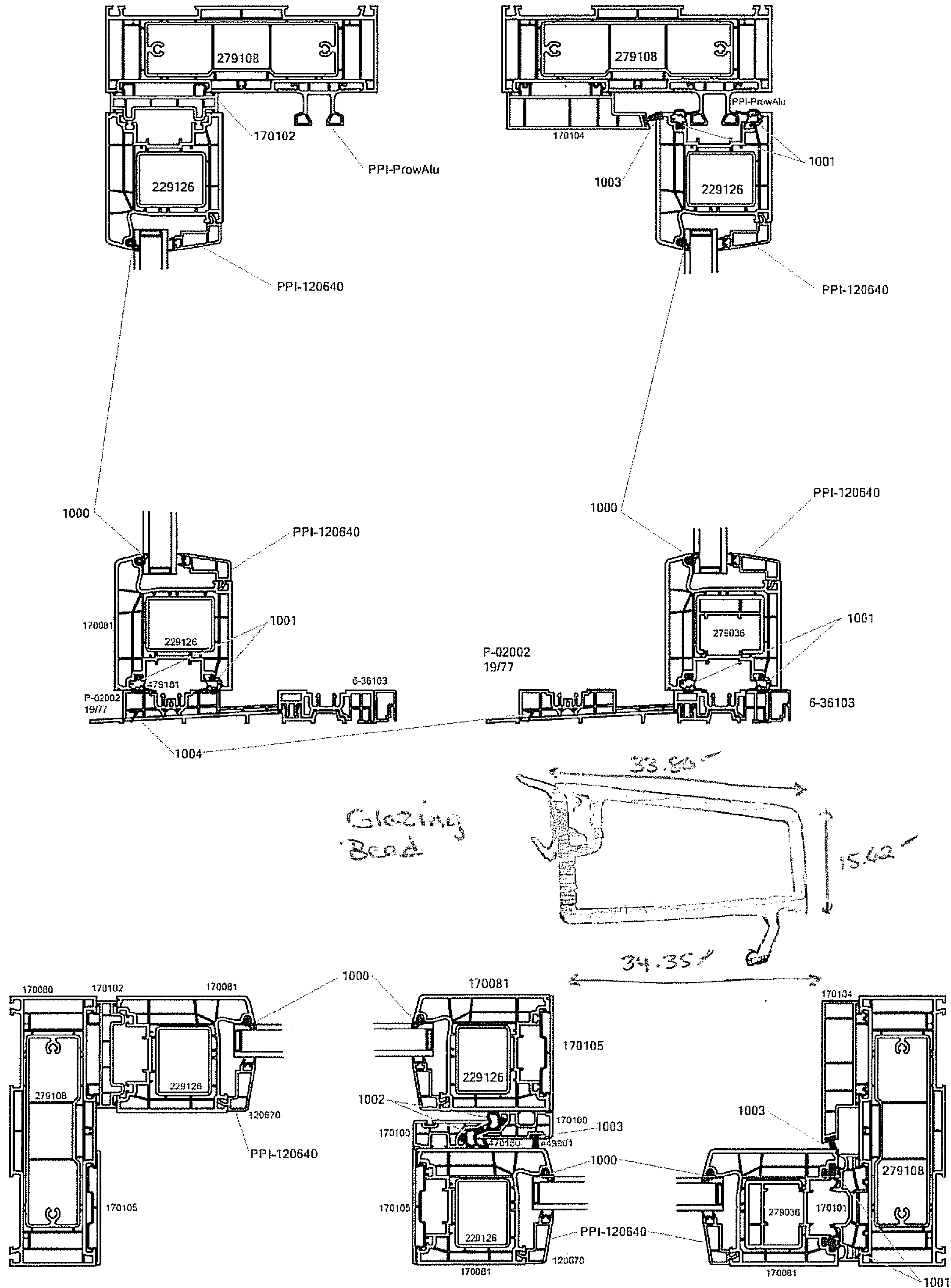
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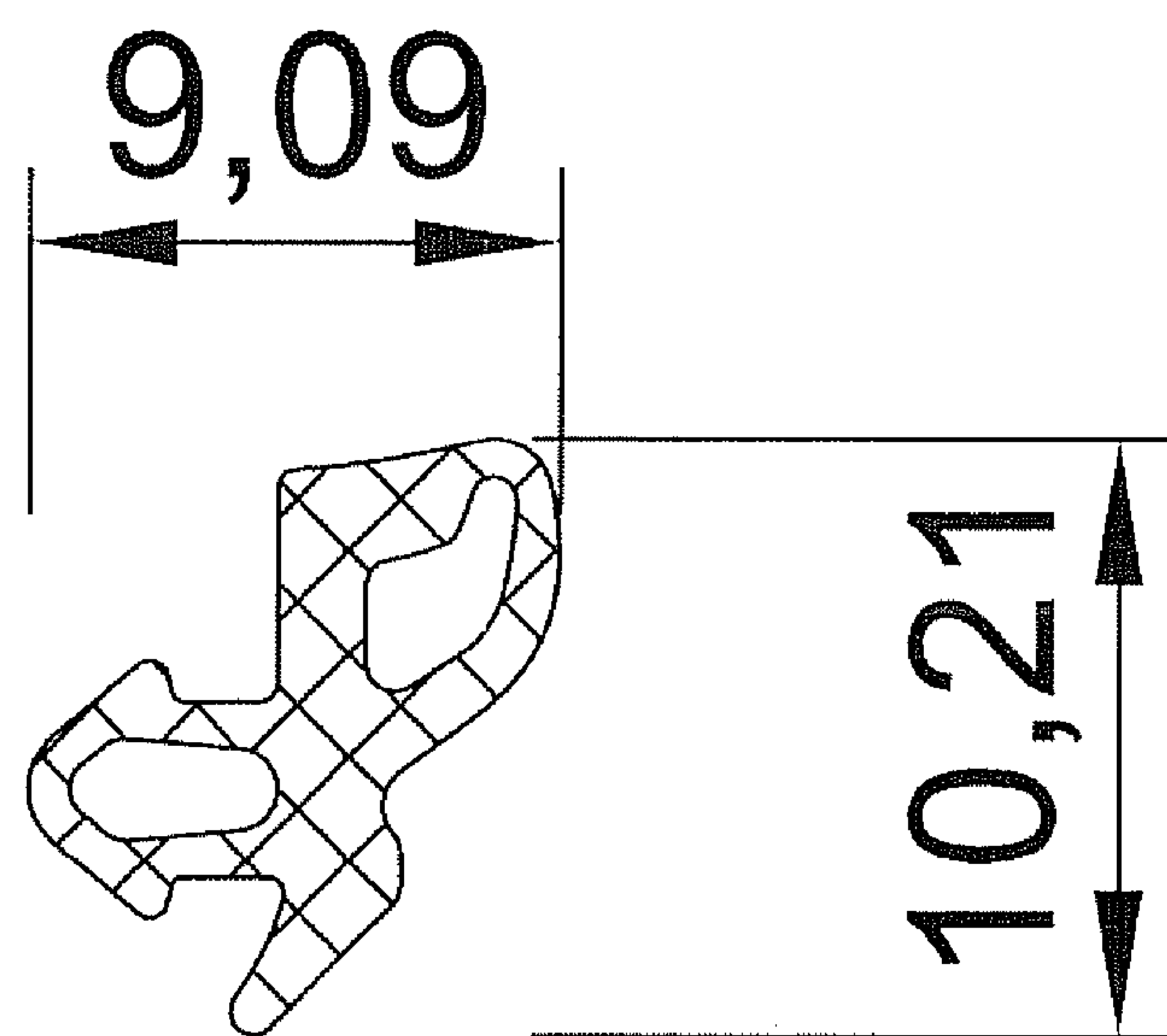
279036

Anodized Aluminum

TEST SPECIMEN COMPLIES
WITH THESE DETAILS.
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TEST DATE 3/9/18



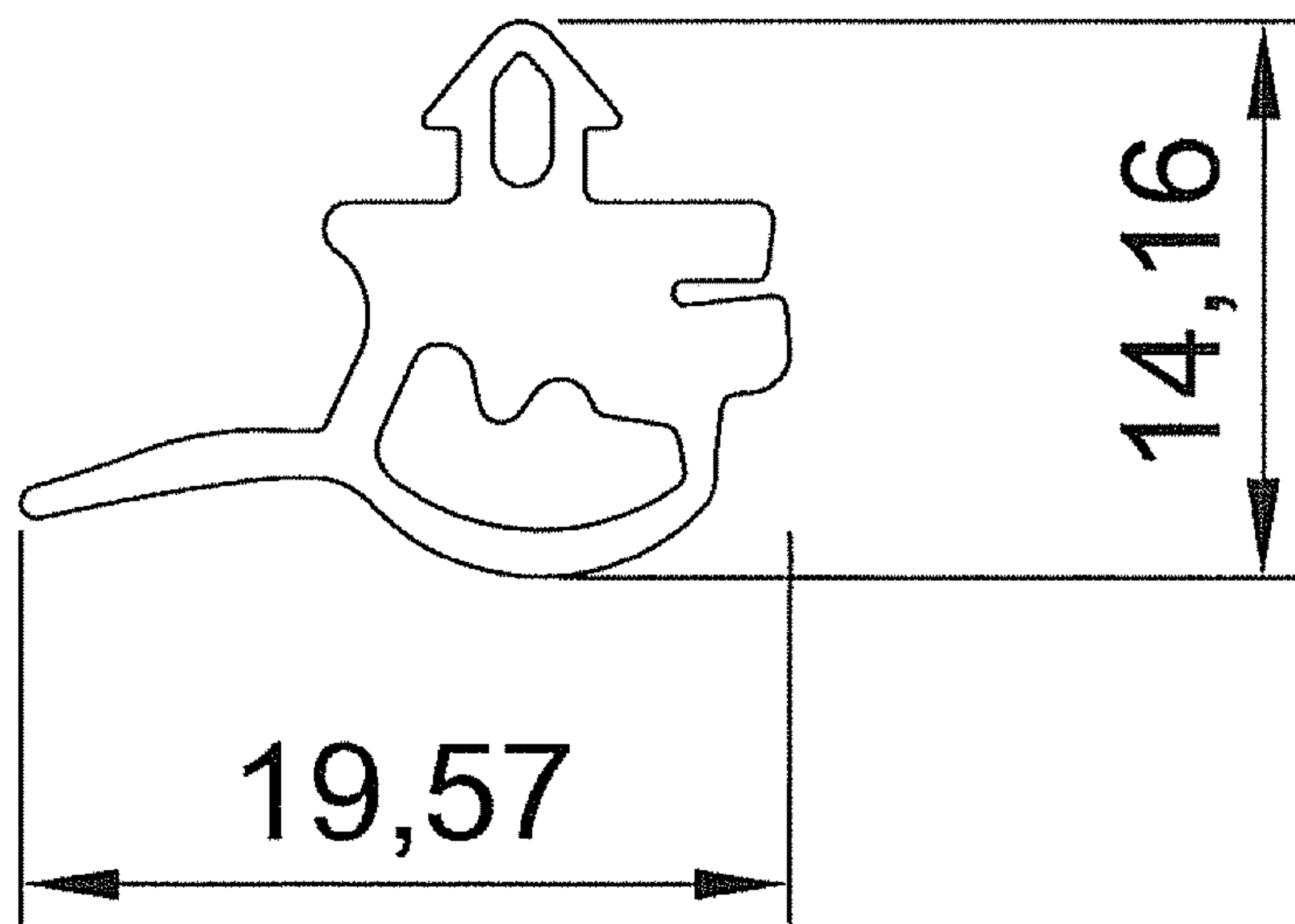
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REPORT NO. NCTL-110- 20796-1
TEST DATE 3/9/18



1000

Ethylene Propylene Diene Monomer (EPDM)

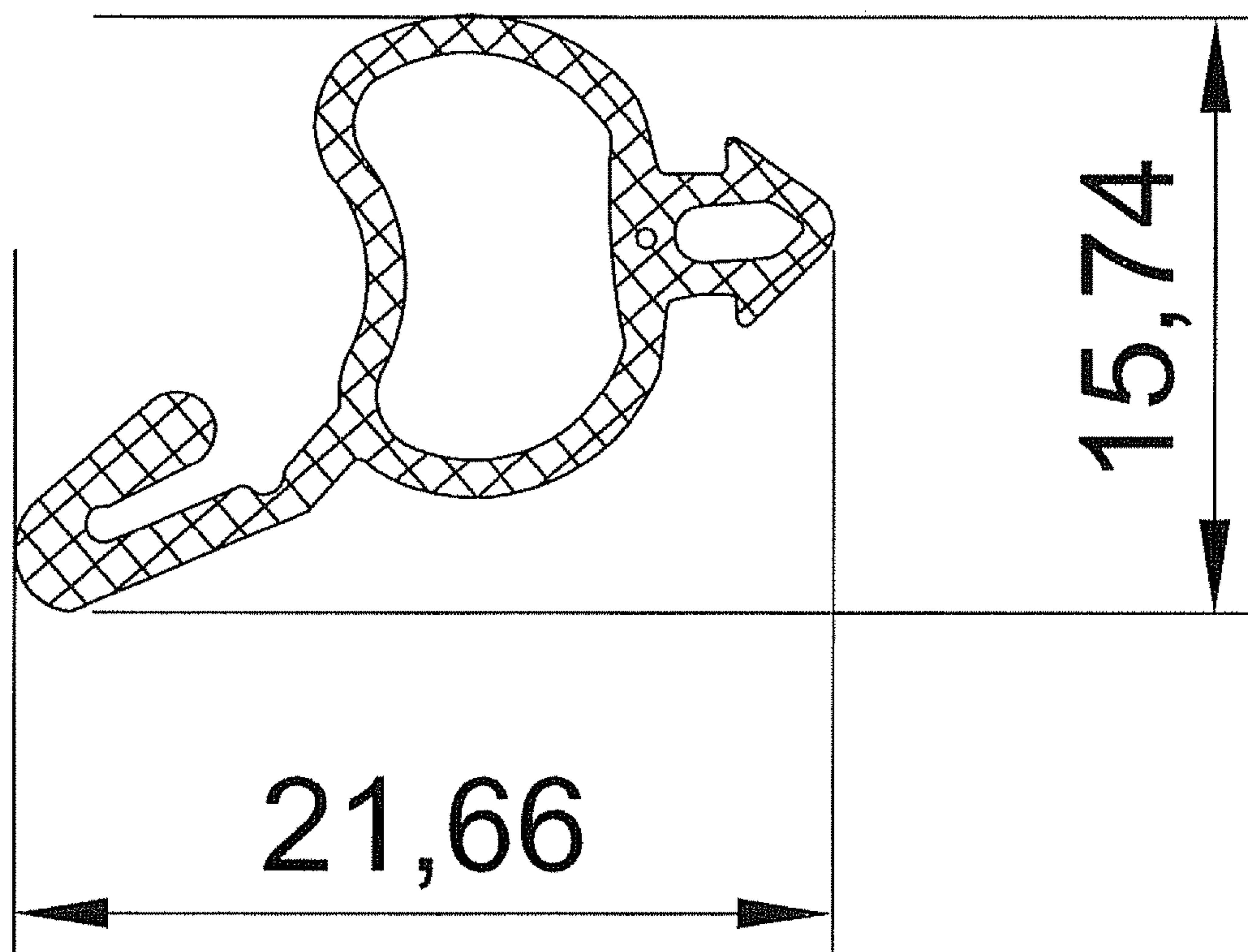
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TEST DATE 3/9/18



1001

Ethylene Propylene Diene Monomer (EPDM)

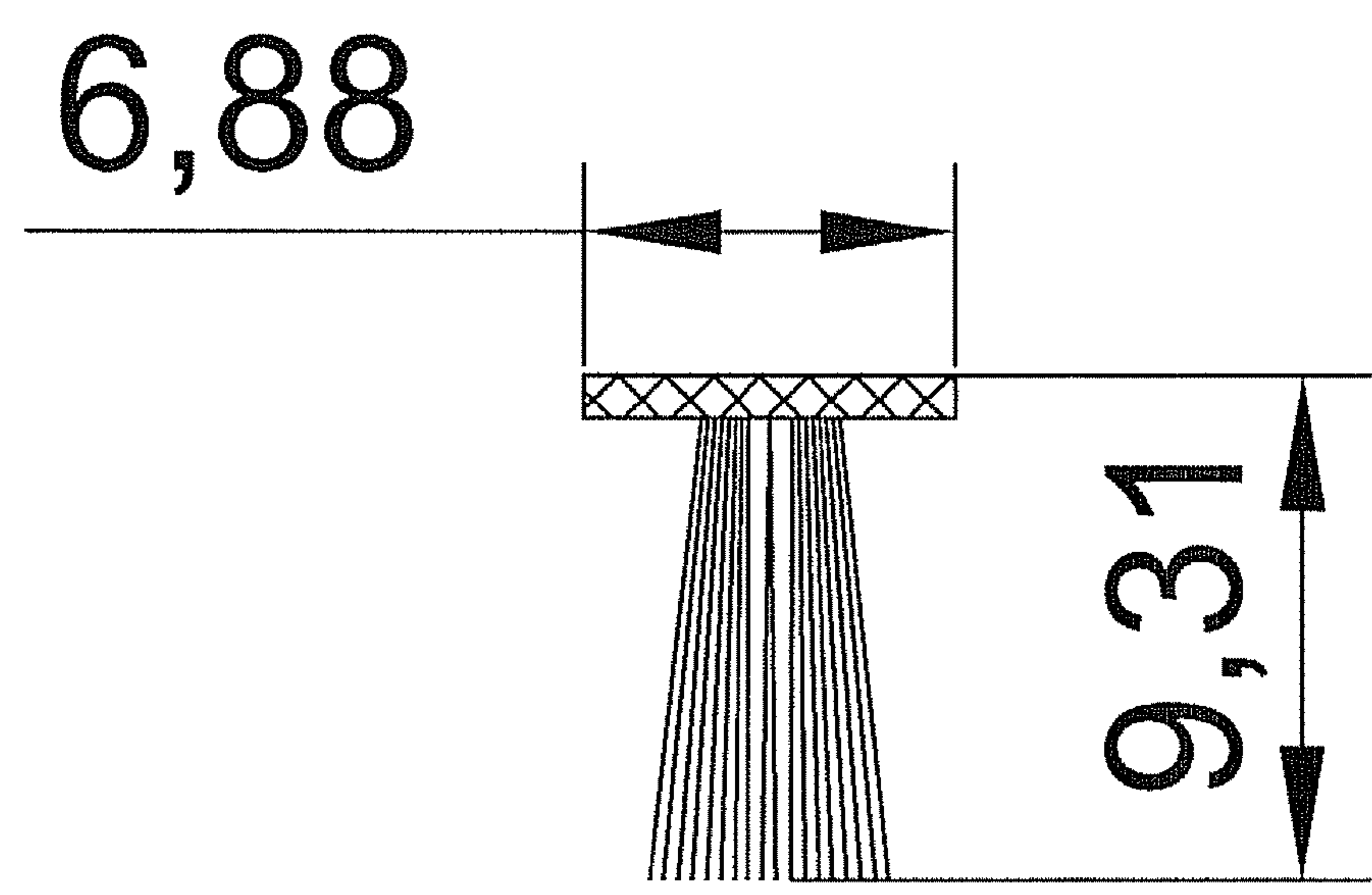
TEST SPECIMEN COMPLIES
WITH THESE DETAILS.
ANY DEVIATION IS NOTED
REPORT NO. NCTL-110- 26790-1
TEST DATE 3/9/18



1002

Ethylene Propylene Diene Monomer (EPDM)

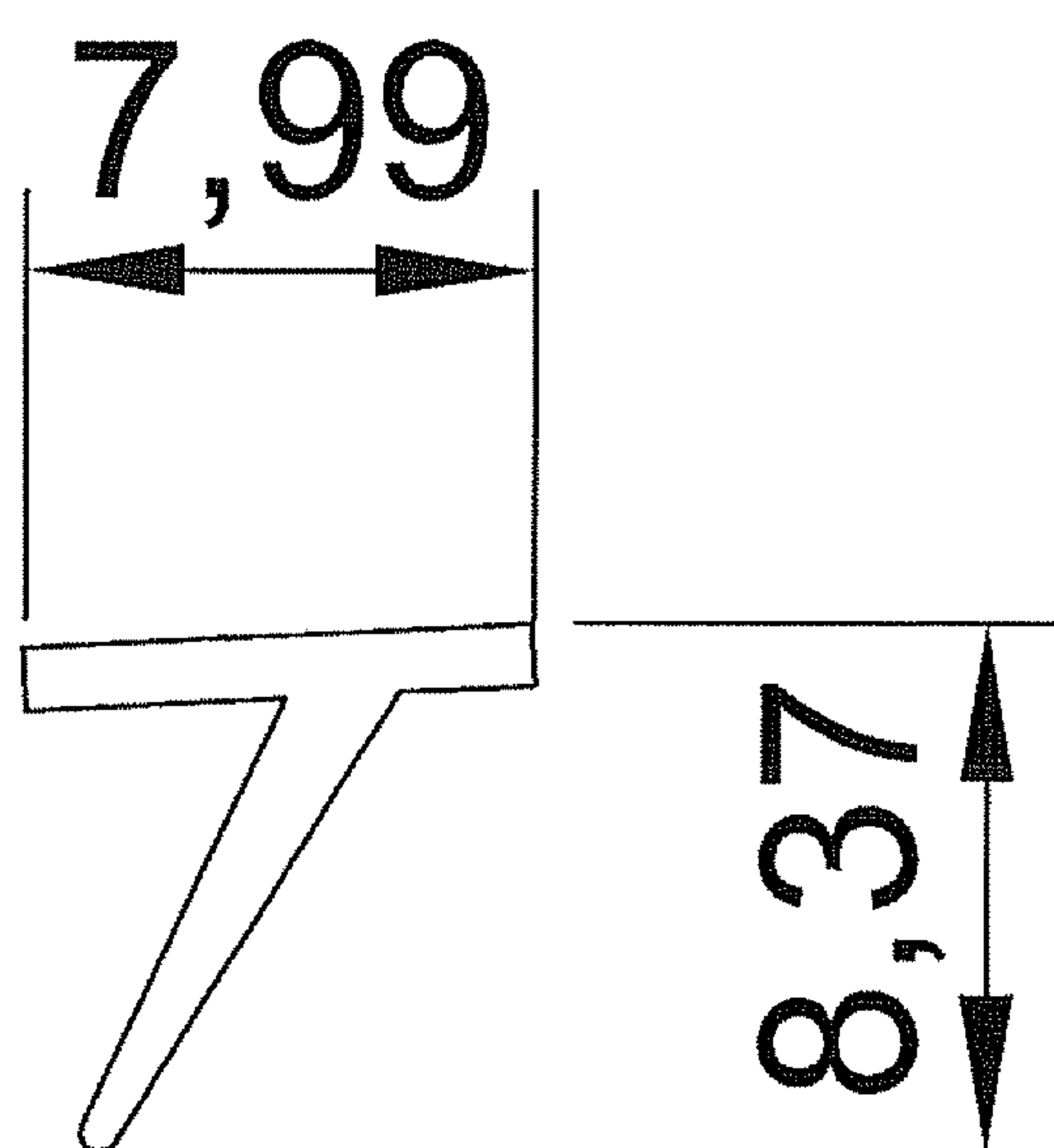
TEST SPECIMEN COMPLIES
WITH THESE DETAILS.
ANY DEVIATION IS NOTED
REPORT NO. NCTL-110- 20790-1
TEST DATE 3/7/18



1003

Mohair

TEST SPECIMEN COMPLIES
WITH THESE DETAILS.
ANY DEVIATION IS NOTED
REPORT NO. NCTL-110-20790-1
TEST DATE 3/9/18



Silicone

1004