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# US WEATHERSEAL WINDOWS & DOORS CORP.
# TEST REPORT

**SCOPE OF WORK**
AAMA/WDMA/CSA 101/I.S.2/A440 TESTING ON 2128, CASEMENT WINDOW

**REPORT NUMBER**
I1716.01-109-44

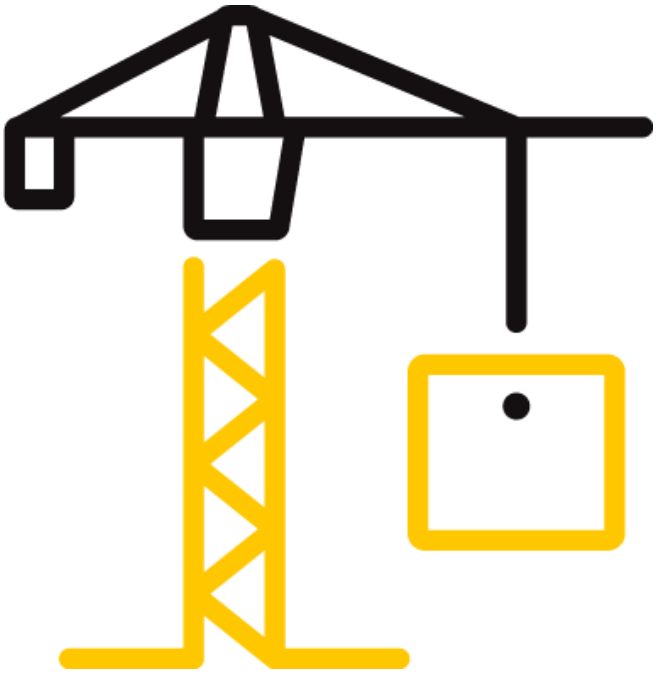
**TEST DATE(S)**
08/23/18 - 08/28/18

**ISSUE DATE**
06/21/19

**RECORD RETENTION END DATE**
08/28/22

**PAGES**
24

**DOCUMENT CONTROL NUMBER**
RT-R-AMER-Test-2804 (04/17/18)

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**TEST REPORT FOR US WEATHERSEAL WINDOWS & DOORS CORP.**
Report No.: I1716.01-109-44
Date: 06/21/19

## REPORT ISSUED TO

**US WEATHERSEAL WINDOWS & DOORS CORP.**
4916 3rd Avenue
Brooklyn, New York 11220

## SECTION 1

**SCOPE**

Intertek Building & Construction (B&C) was contracted by US Weatherseal Windows & Doors Corp. to perform testing in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 on their 2128, Casement Window. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at the Intertek B&C test facility in York, Pennsylvania. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

## SECTION 2

**SUMMARY OF TEST RESULTS**

| TITLE | RESULTS |
|---|---|
| AAMA/WDMA/CSA 101/I.S.2/A440 | Class LC – PG40 – 914 x 1524 (36 x 60) - C |
| Design Pressure | ±1920 Pa (±40.10 psf) |
| Air Infiltration | 1.1 L/s/m$^2$ (0.22 cfm/ft$^2$) |
| Water Penetration Resistance Test Pressure | 290 Pa (6.06 psf) |

Reference must be made to Intertek B&C Report No. I1716.01-109-44, dated 6/21/19 for complete test specimen description and detailed test results.

For INTERTEK B&C:

| | | | |
|---|---|---|---|
| **COMPLETED BY:** | Richard E. Hartman III | **REVIEWED BY:** | Timothy J. McGill |
| **TITLE:** | Technician – Product Testing | **TITLE:** | Manager – Product Testing |
| **SIGNATURE:** | Digitally Signed by: Richard Hartman III | **SIGNATURE:** | Digitally Signed for: Timothy J. McGill by Vicki L. McElwain |
| **DATE:** | 06/21/19 | **DATE:** | 06/21/19 |

REH:wnl

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## SECTION 3
## TEST SPECIFICATION(S)/METHOD(S)

The specimen was evaluated in accordance with the following:

**AAMA/WDMA/CSA 101/I.S.2/A440-17**- *North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

The following test methods were used during testing:

**ASTM E283-04(2012)**, *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*

**ASTM E330/E330M-14**, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

**ASTM E547-00(2016)**, *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference*

**ASTM E2068-00(2016),** *Standard Test Method for Determination of Operating Force of Sliding Windows and Doors1*

**ASTM F588-17,** *Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact*

## SECTION 4
## MATERIAL SOURCE/INSTALLATION

Test specimen(s) was provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date.

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1" shim space and the exterior perimeter of the specimen was sealed to the test buck. Installation of the tested product was performed by the Intertek B&C.

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| LOCATION | ANCHOR DESCRIPTION | ANCHOR SPACING |
|---|---|---|
| Jambs | 2" x 2" Aluminum L-angle | 3" from each corner and spaced 13-1/2" on center with one #10 x 1" hex head self-tapping screw through the clip and into the frame. One #10 x 1-1/2" pan head screw through the clip and into the wood buck |
| Head and sill | | 3" from each corner with one at the midspan with one #10 x 1" hex head self-tapping screw through the clip and into the frame. One #10 x 1-1/2" pan head screw through the clip and into the wood buck |

## SECTION 5
## EQUIPMENT

**Tape Measure Verification**: 63788
**Force Gauge**: INT00155
**Weather Station**: 63316
**Control Panel**: 005644
**Spray Rack**: 003956-B
**Linear Transducer**: INT00147, 65990, 65989
**Stop Watch**: INT00975
**Spring Scale**: INT00009, 63395

## SECTION 6
## LIST OF OFFICIAL OBSERVERS

| NAME | COMPANY |
|---|---|
| Ben Lai | US Weatherseal Windows & Doors Corp. |
| Ru Zhang Zhao | US Weatherseal Windows & Doors Corp. |
| Timothy J. McGill | Intertek B&C |
| Richard E. Hartman III | Intertek B&C |

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## SECTION 7
## TEST SPECIMEN DESCRIPTION

**Product Type**: Casement Window
**Series/Model**: 2128

**Product Size(s)**:

| OVERALL AREA: | WIDTH | | HEIGHT | |
|---|---|---|---|---|
| 1.4 m² (15.0 ft²) | millimeters | inches | millimeters | inches |
| Overall size | 914 | 36 | 1524 | 60 |
| Vent | 848 | 33-3/8 | 1457 | 57-3/8 |

**Frame Construction**:

| MEMBER | MATERIAL | DESCRIPTION |
|---|---|---|
| Head, sill, and jambs | Aluminum | Extruded, dual-strutted, and thermally broken |

| | JOINERY TYPE | DETAIL |
|---|---|---|
| All corners | Mitered | Sealed and secured using corner keys located in the interior and exterior hollows. The keys were staked and lanced once on each side of the key. |

**Vent Construction**:

| MEMBER | MATERIAL | DESCRIPTION |
|---|---|---|
| Rails and stiles | Aluminum | Extruded, dual-strutted, and thermally broken |

| | JOINERY TYPE | DETAIL |
|---|---|---|
| All corners | Mitered | Sealed and secured using corner keys located in the interior and exterior hollows. The keys were staked and lanced once on each side of the key. |

**Reinforcement**: No reinforcement was utilized.

**Weatherstripping**:

| DESCRIPTION | QUANTITY | LOCATION |
|---|---|---|
| 0.187" backed by 0.230" diameter bulb seal | 1 Row | Vent, interior perimeter between vent and frame |
| Custom rubber gasket | 1 Row | Frame, interior perimeter |
| 0.187" backed by 0.230" diameter bulb seal | 1 Row | Vent, exterior perimeter between vent and frame |

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**Glazing**: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

| GLASS TYPE | INTERIOR LITE | SPACER TYPE | INTERMEDIATE LITE | SPACER TYPE | EXTERIOR LITE | GLAZING METHOD |
|---|---|---|---|---|---|---|
| 1-5/8" IG | 1/4" clear tempered | Desiccant-filled aluminum box spacer | 1/4" clear tempered | Desiccant-filled aluminum box spacer | 1/4" clear tempered | The glazing was set from the interior onto a vinyl glazing strip against the frame. The glazing was securing using an extruded aluminum snap-in glazing stop with a vinyl glazing strip against the glazing. Silicone was utilized along the exterior perimeter of the glazing on top of the vinyl glazing strip. |

| LOCATION | QUANTITY | DAYLIGHT OPENING | | GLASS BITE |
|---|---|---|---|---|
| | | millimeters | inches | |
| Vent | 1 | 686 x 1295 | 27 x 51 | 1" |

**Drainage**:

| METHOD | SIZE | QUANTITY | LOCATION |
|---|---|---|---|
| Weepslot | 1-3/8" wide by 1/4" high | 2 | Sill, 6-1/2" from each corner, draining from the interior sill frame to the exterior |

**Hardware**:

| DESCRIPTION | QUANTITY | LOCATION |
|---|---|---|
| Handle and multi-point lock assembly | 1 Set | Handle located on the latch stile 28-1/2" from the bottom rail |
| Lock points | 3 | Latch jamb, 10-1/2", 37-3/4", and 49-1/4" from the sill |
| Limit device | 1 | Sill, 2-1/2" from the latch jamb |
| Barrel hinges | 3 | Hinge jamb, 9-1/2", 19", and 50-3/4" from the head |

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## SECTION 8
**TEST RESULTS**

The temperature range during testing was 23 - 30°C (73 - 86F). The results are tabulated as follows:

| TITLE OF TEST | RESULTS | ALLOWED | NOTE |
|---|---|---|---|
| **Operating Force,**<br>per ASTM E2068 | Initiate Motion:<br><4 N (<1 lbf)<br>Maintain Motion:<br>58 N (13 lbf)<br>Latches:<br>62 N (14 lbf) | 155 N (34.85 lbf) max<br><br>100 N (22.48 lbf) max<br><br>100 N (22.48 lbf) max | |
| **Air Leakage,**<br>Infiltration per ASTM E283<br>at 75 Pa (1.57 psf) | 1.1 L/s/m$^2$<br>(0.22 cfm/ft$^2$) | 1.5 L/s/m$^2$<br>(0.3 cfm/ft$^2$) max. | 1, 2 |
| **Water Penetration,**<br>per ASTM E547<br>at 180 Pa (3.76 psf) | Pass | No leakage | 3 |
| **Uniform Load Deflection,**<br>per ASTM E330<br>Deflections taken between lock points<br>+1200 Pa (+25.06 psf)<br>-1200 Pa (-25.06 psf) | <br><br><br><0.3 mm (<0.01")<br>0.3 mm (0.01") | <br><br><br>Report only | <br><br><br>4, 5, 6 |
| **Uniform Load Structural,**<br>per ASTM E330<br>Permanent set taken between lock points<br>+1800 Pa (+37.59 psf)<br>-1800 Pa (-37.59 psf) | <br><br><br>0.3 mm (0.01")<br>0.5 mm (0.02") | <br><br><br>2.8 mm (0.11") max.<br>2.8 mm (0.11") max. | <br><br><br><br>5, 6 |
| **Forced Entry Resistance,**<br>per ASTM F588,<br>Type: B - Grade: 10 | Pass | No entry | |
| **Sash Vertical Deflection**<br>200 N (45 lbf) | 1.3 mm (0.05") | 1.3 mm (0.05") max. | |

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| TITLE OF TEST | RESULTS | ALLOWED | NOTE |
|---|---|---|---|
| **OPTIONAL PERFORMANCE** | | | |
| **Water Penetration,** per ASTM E547 at 290 Pa (6.06 psf) | Pass | No leakage | 3 |
| **Uniform Load Deflection,** per ASTM E330 Deflections taken between lock points<br>+1920 Pa (+40.10 psf)<br>-1920 Pa (-40.10psf) | <br>0.3 mm (0.01")<br>0.5 mm (0.02") | <br><br>Report only | <br><br>4, 5, 6 |
| **Uniform Load Structural,** per ASTM E330 Permanent set taken between lock points<br>+2880 Pa (+60.15 psf)<br>-2880 Pa (-60.15psf) | <br>0.5 mm (0.02")<br>0.3 mm (0.01") | <br>2.8 mm (0.11") max.<br>2.8 mm (0.11") max. | <br><br>5, 6 |

*Note 1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.*

*Note 2:* Test Date 08/24/18 / Time: 9:30 AM

*Note 3: Without insect screen.*

*Note 4: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation. The deflection data is recorded in this report for special code compliance and information only.*

*Note 5: Loads were held for 10 seconds.*

*Note 6: Tape and film were not used to seal against air leakage during structural testing.*

## SECTION 9
**ALTERATIONS**

*No alterations were required.*

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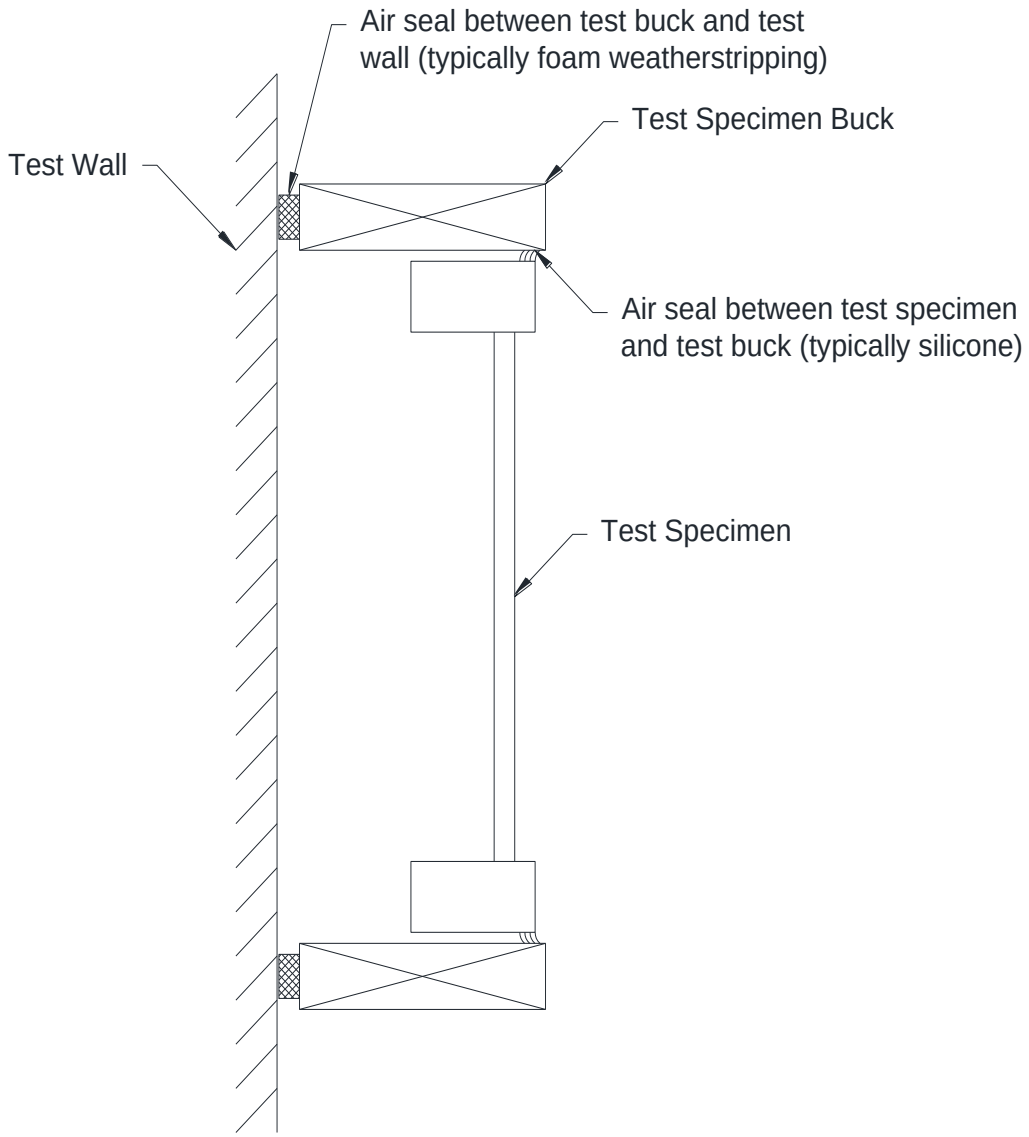
## SECTION 10
## LOCATION OF AIR SEAL

The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weatherstripping and is attached to the edge of the test specimen buck. The test specimen buck is placed against the test wall and clamped in place, compressing the weatherstripping and creating a seal.



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## SECTION 11
## CONCLUSION

The specimen tested successfully met the performance requirements for a **Class LC – PG40 – 914 x 1524 (36 x 60) - C** rating

Reference must be made to Intertek B&C Report No. I1716.01-109-44, dated 6/21/2019 for complete test specimen description and detailed test results.

## SECTION 12
## PHOTOGRAPH

**Photo No. 1**
**Test Specimen**

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## SECTION 13
## DRAWINGS

The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

# window glass

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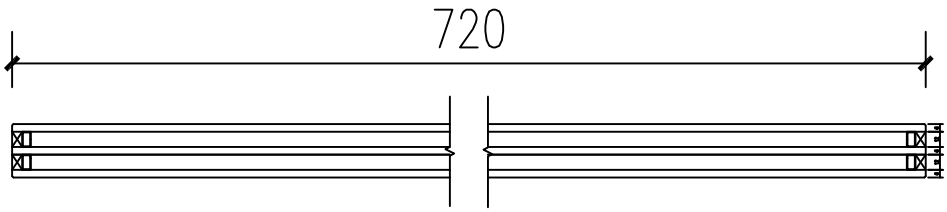


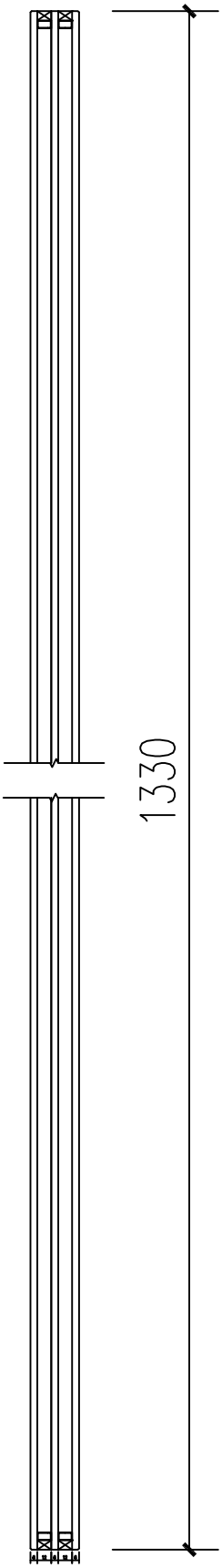

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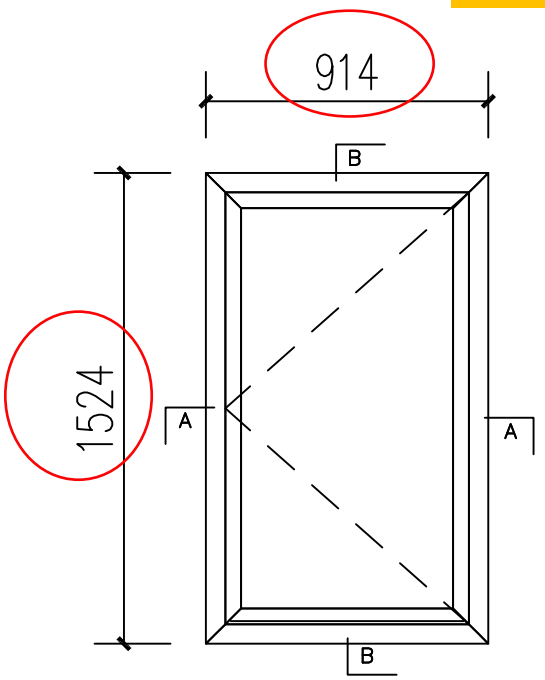


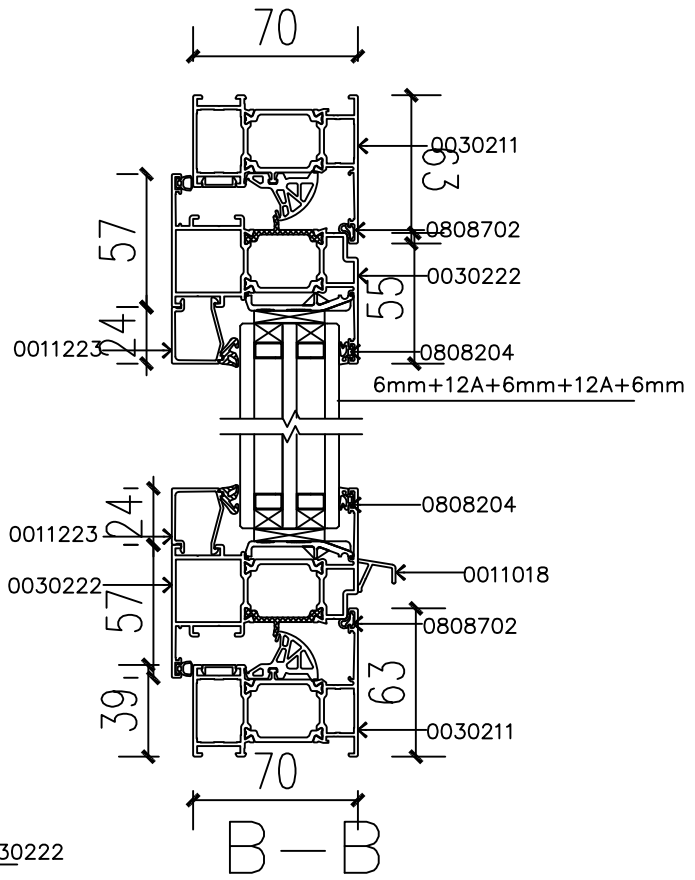


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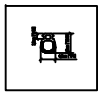

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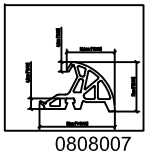

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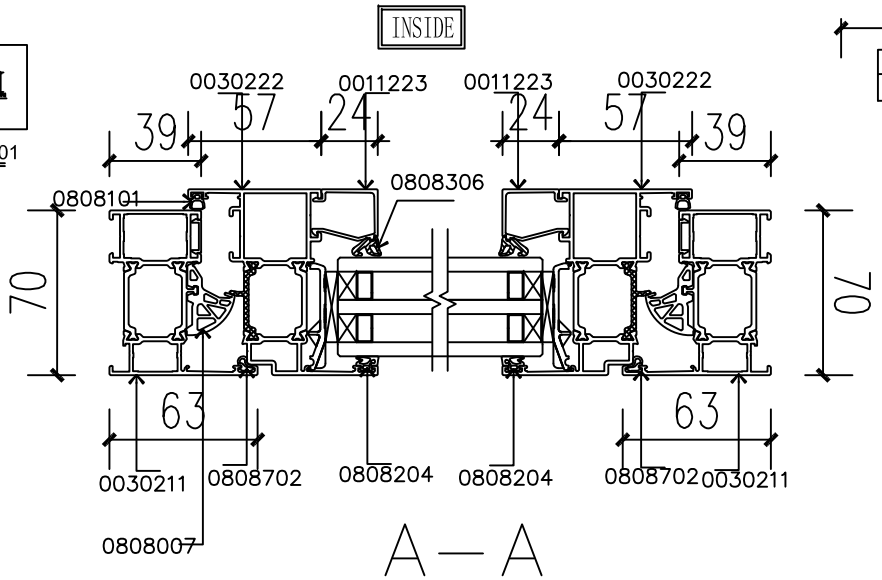


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中山市星光铝窗

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E-mail: starspangle@163.com

| | |
|---|---|
| ITEM | 2128 |
| | |
| PROJECT | ALUMINUM DOOR & WINDOW |
| DESIGN | STARLIGHT |
| CONTENT | DETAIL DWG |
| ITEM MARK | |
| DATE | 2018-1-16 |

CHANGED

| No. | DATE | CONTENT |
|---|---|---|
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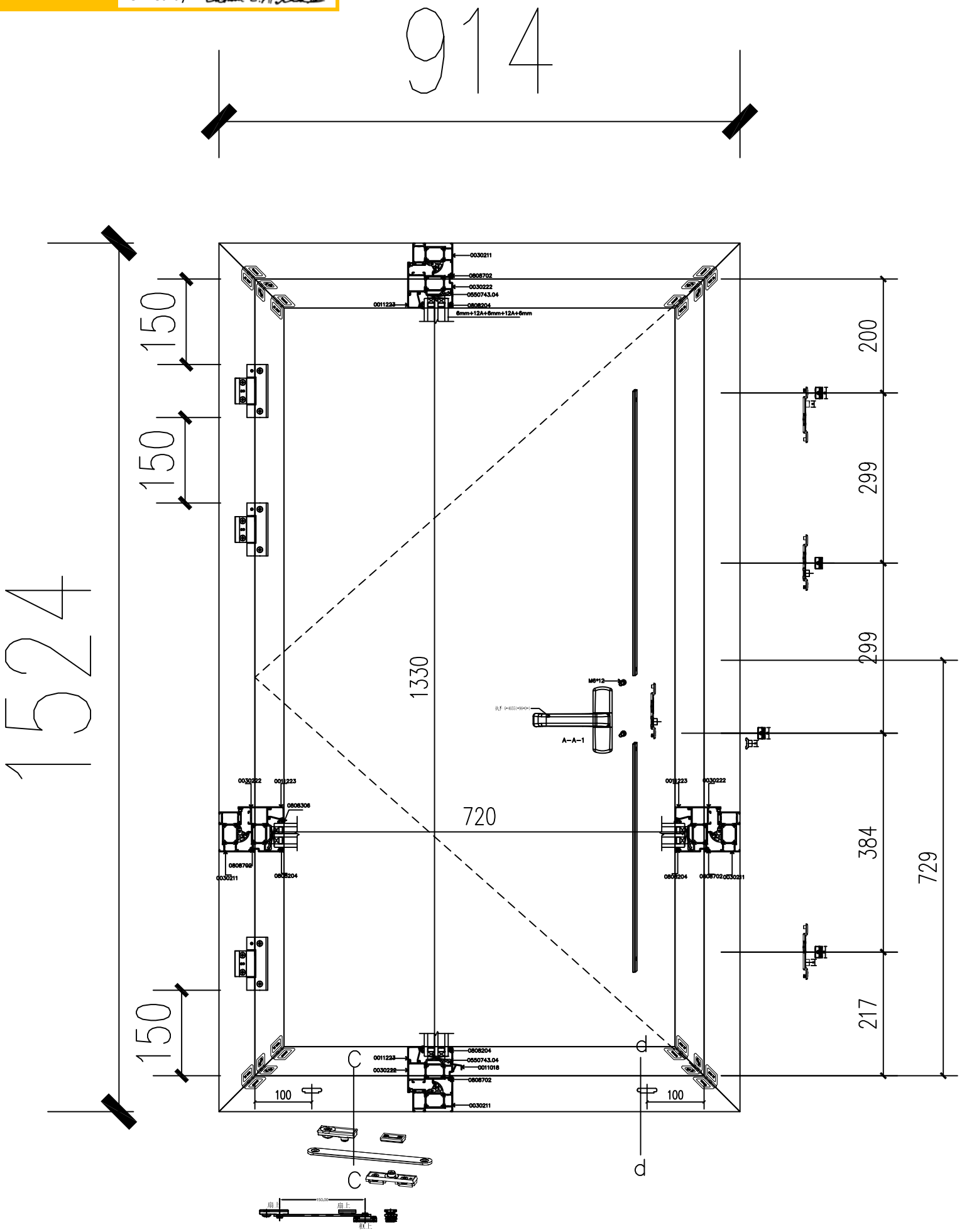
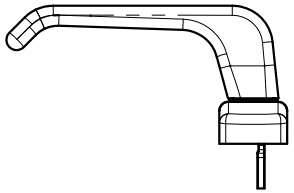
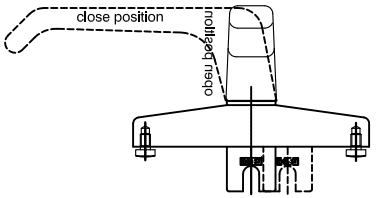
CONFIRM SIGNING:

DWG MARK JD-04





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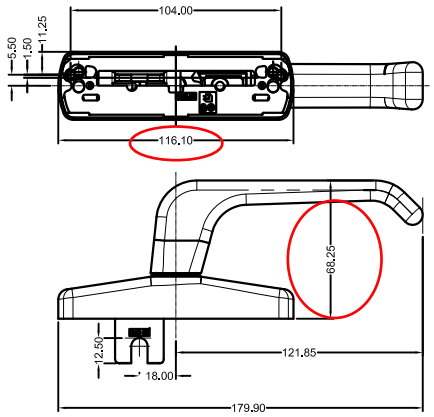


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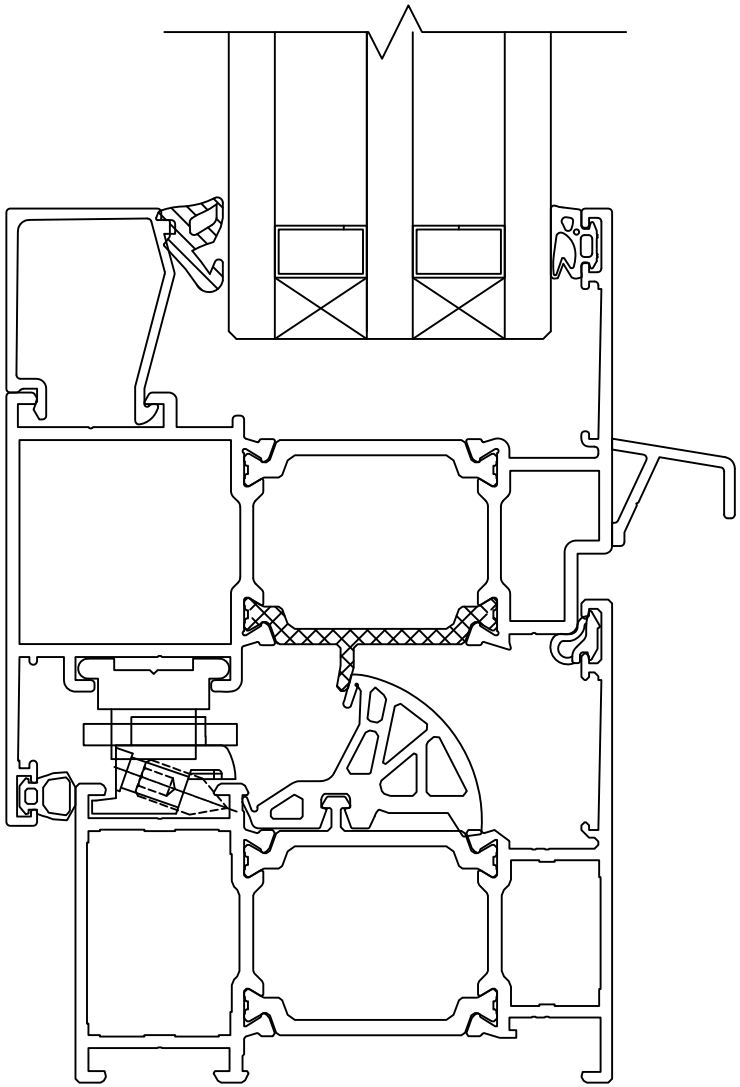

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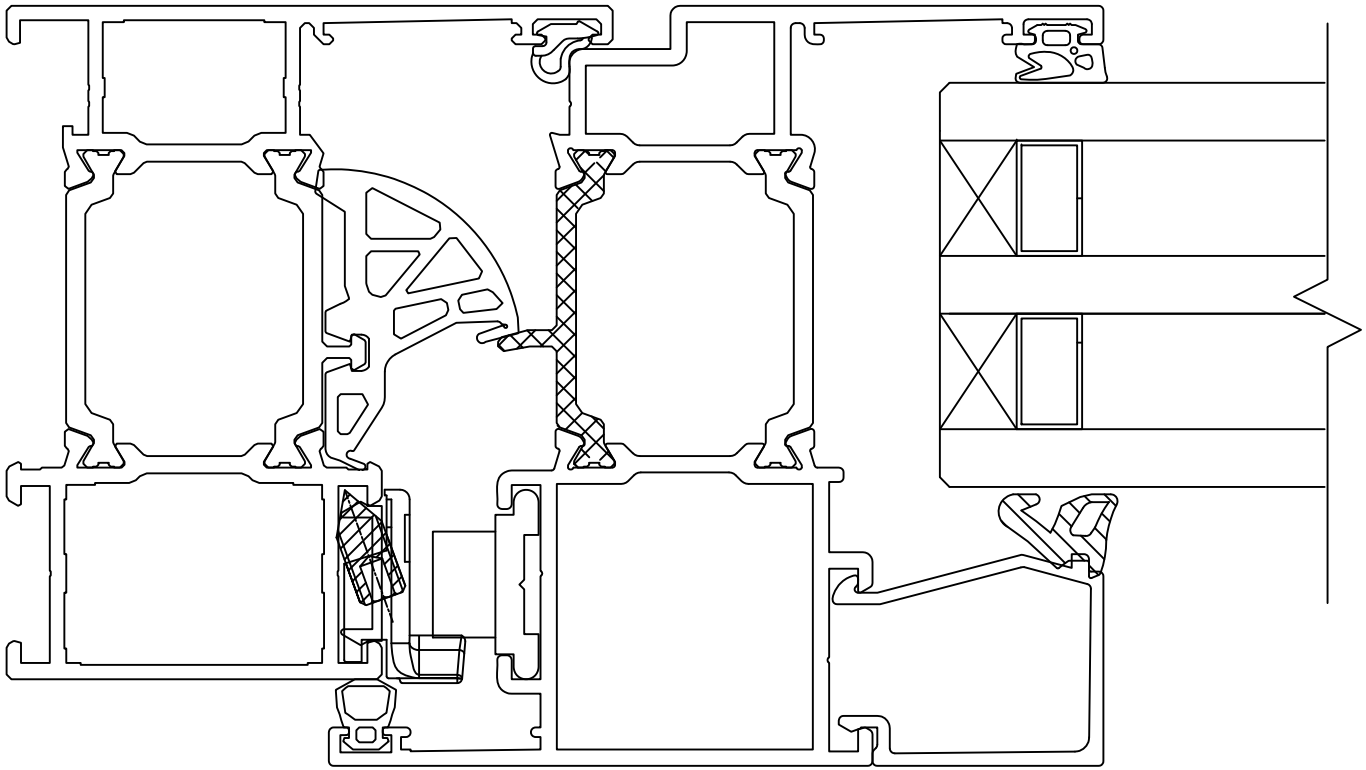

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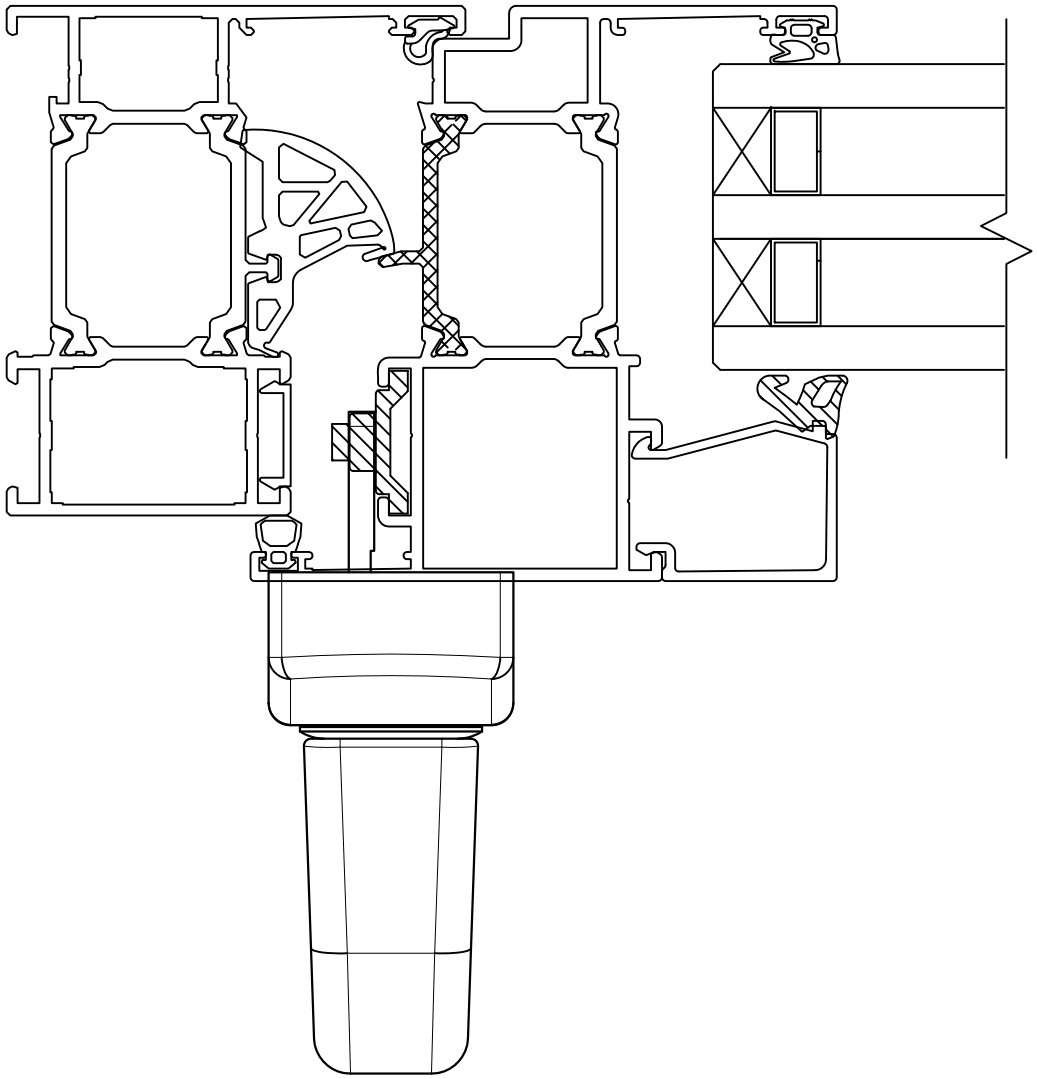

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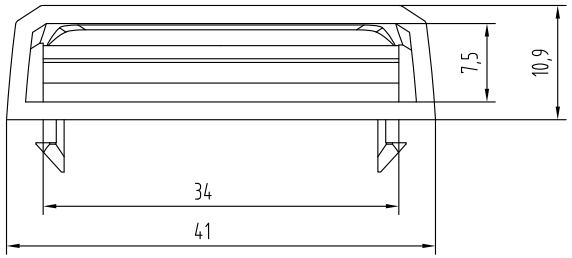


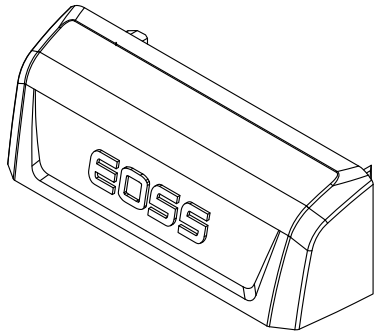


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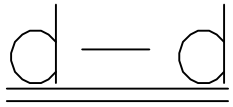

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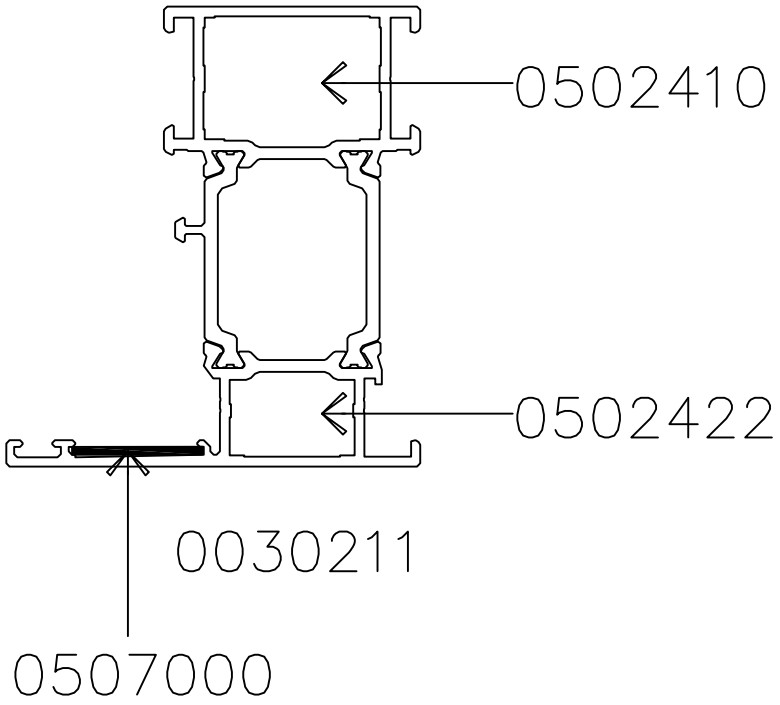


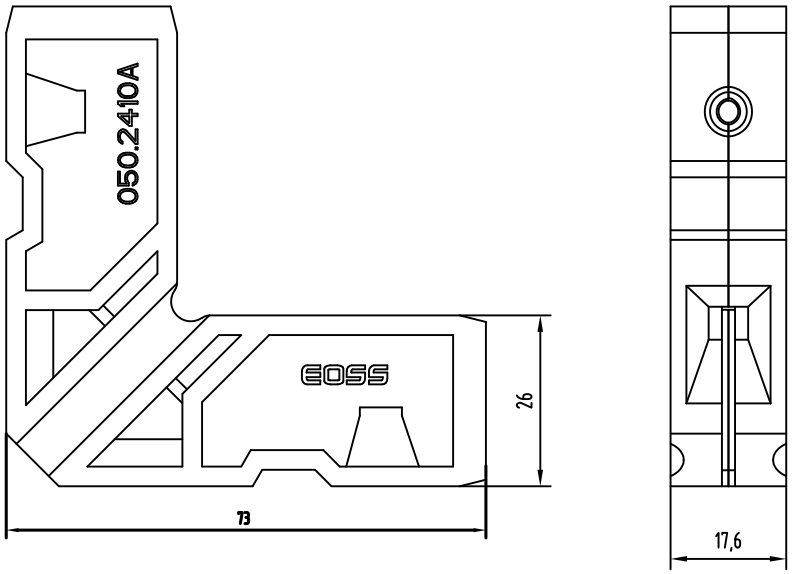


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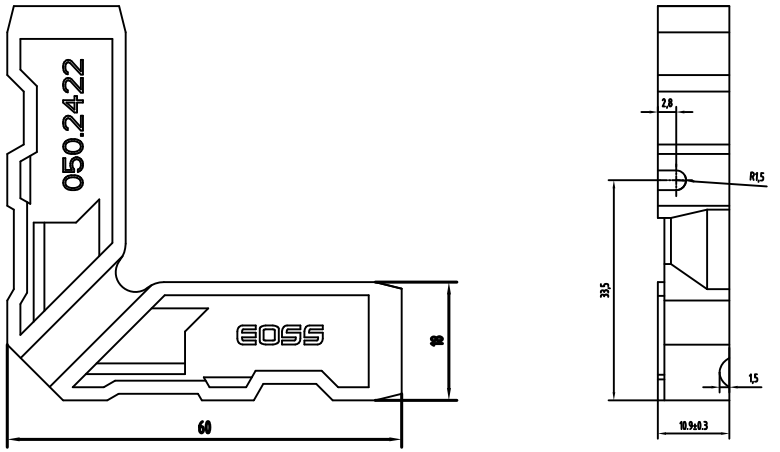


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| Date: | 9/5/2018 |
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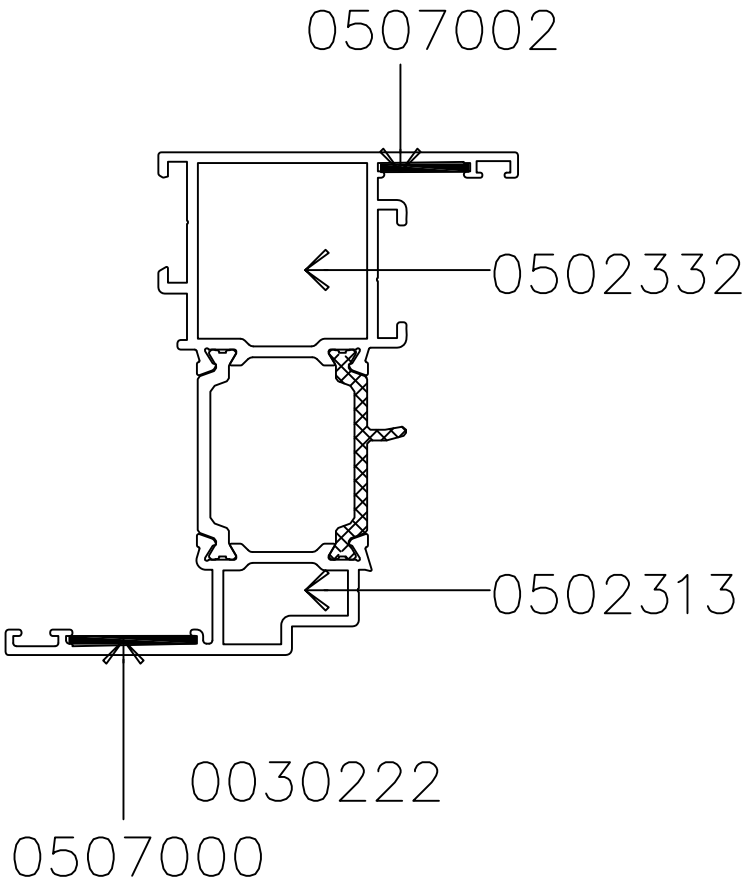


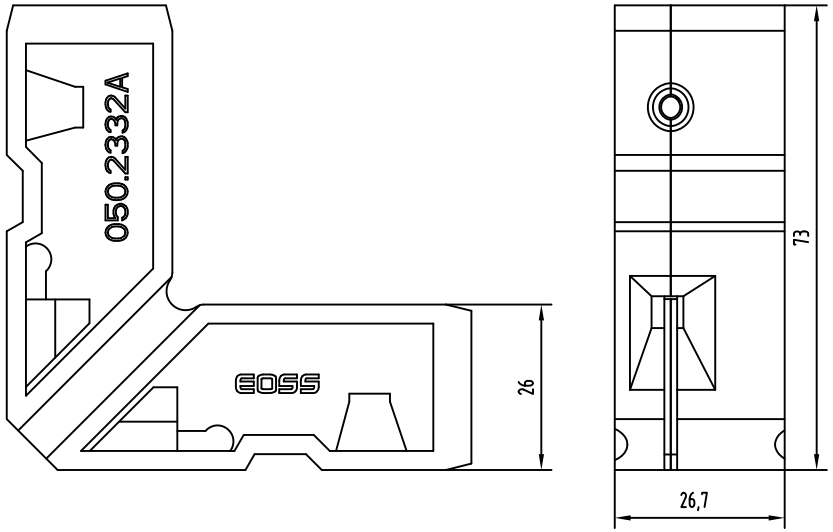


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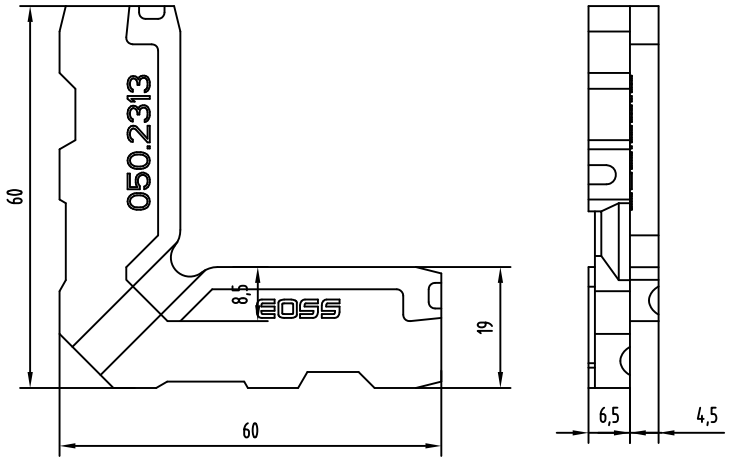


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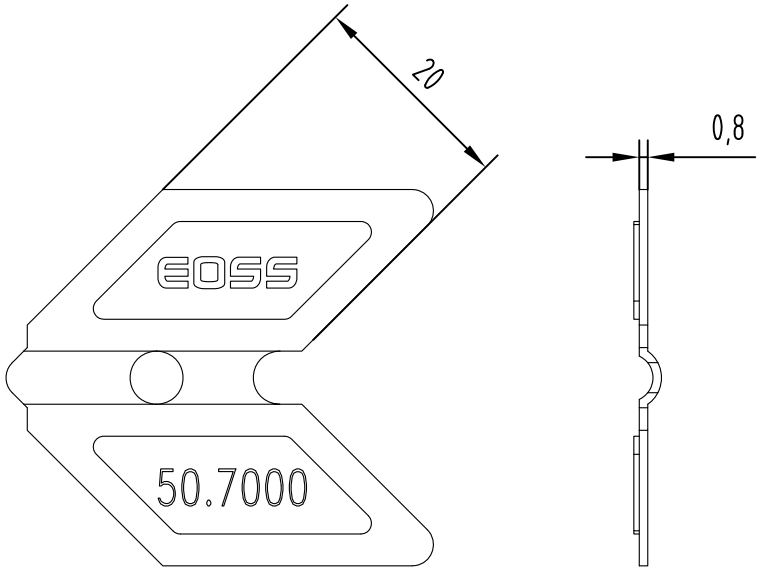


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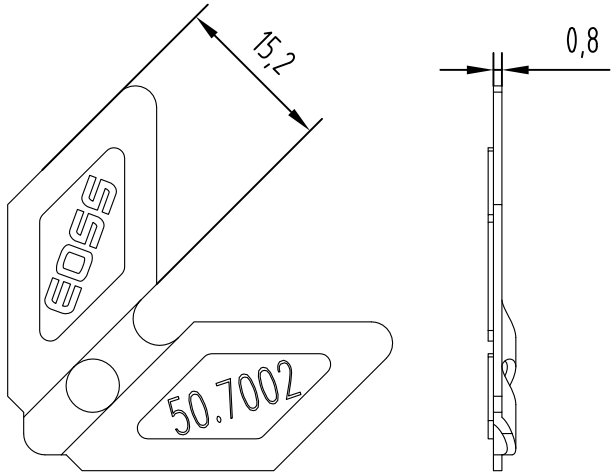


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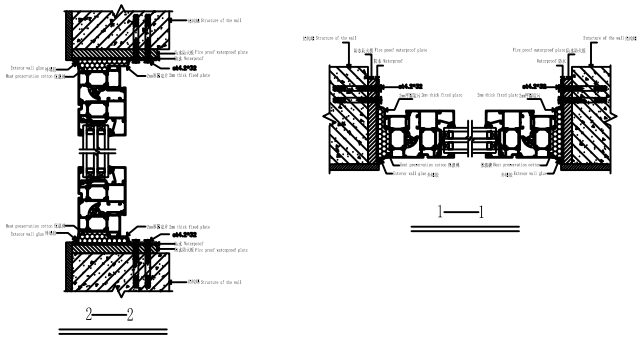
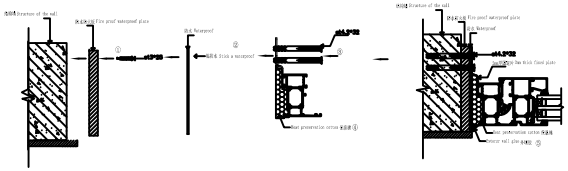
Total Quality. Assured.

Report #: I1716.01
Date: 9/5/2018
Verified by:



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## SECTION 14
## REVISION LOG

| REVISION # | DATE | PAGES | REVISION |
|---|---|---|---|
| 0 | 06/21/19 | N/A | Original Report Issue |