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RAM INDUSTRIES
TEST REPORT

SCOPE OF WORK

AAMA/WDMA/CSA 101/I.S.2/A440 TESTING ON SERIES S800 INSIDE GLAZED TWIN HEAVY PICTURE WINDOW

REPORT NUMBER
J3067.01-801-44-R0

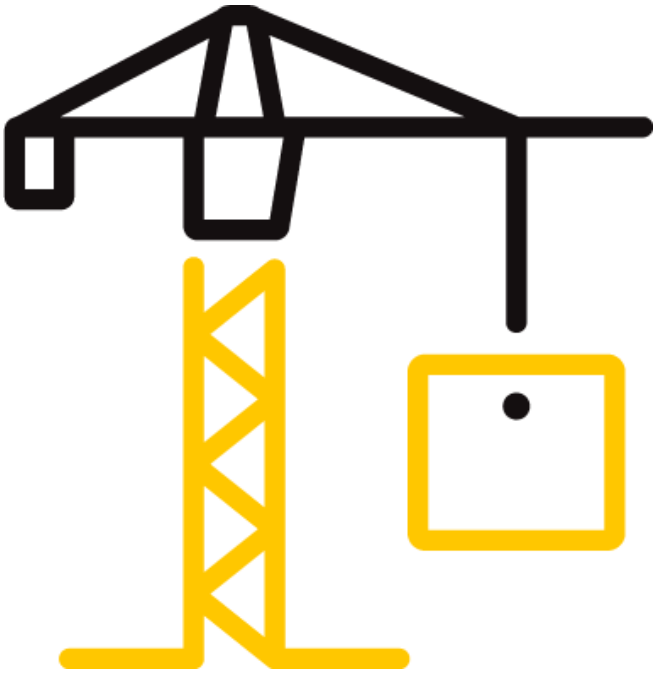
TEST DATE(S)
01/17/19

ISSUE DATE
03/05/19

RECORD RETENTION END DATE
01/17/23

PAGES
13

DOCUMENT CONTROL NUMBER
RT-R-AMER-Test-2804 (04/17/18)
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TEST REPORT FOR RAM INDUSTRIES
Report No.: J3067.01-801-44-r0
Date: 03/05/19

REPORT ISSUED TO

RAM INDUSTIRES
8600 Commerce Park Dr.
Houston, TX 77036

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Ram Industries to perform testing in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 on their Series S800 Outside Glazed Twin Heavy Picture Window. Results obtained are tested values and were secured by using the designated test methods. Testing was conducted at the Intertek test facility in Plano, TX. 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/A440-17	CW-PG30-FW
Design Pressure	±1440 Pa (±30.08 psf)
Air Infiltration	0.15 L/s/m^2 (0.03 cfm/ft^2)
Water Penetration Resistance Test Pressure	580 Pa (12.03 psf)

Reference must be made to Intertek B&C Report No. J3067.01-801-44, dated 02/25/19 for complete test specimen description and detailed test results.

For INTERTEK B&C:

COMPLETED BY:	Jeffrey Crump	**REVIEWED BY:**	Andy Cost
TITLE:	Sr. Project Manager – AWS	**TITLE:**	Laboratory Manager
SIGNATURE:	Digitally Signed by: Jeffrey Crump	**SIGNATURE:**	Digitally Signed by: Andy Cost
DATE:	03/05/19	**DATE:**	03/05/19

JC:cm

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SECTION 3
TEST SPECIFICATION(S)/METHODS

The specimens were 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:

AAMA 205-15, *In-Plant Testing Guidelines for Manufacturers and Independent Laboratories*

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

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Date: 03/05/19

SECTION 4
MATERIAL SOURCE/INSTALLATION

Test specimens were 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 Pine wood buck. The rough opening allowed for a 1/8" shim space and the exterior perimeter of the specimen was sealed to the test buck. Installation of the tested product was performed by the client.

LOCATION	ANCHOR DESCRIPTION	ANCHOR SPACING
Interior perimeter of frame nail fin	Nail fin specimen installed in a (2" x 6") yellow pine wood test buck with #6 x 1-1/4" hex head screws which is attached to outer (2" x 10") yellow pine wood wrap. Interior of nail fin is supported by (2" x 4") yellow pine which is not attached.	Hex head screws attached 2" from each frame end and 12" on center at frame head, sill and jambs.

SECTION 5
EQUIPMENT

Calibration of test equipment was performed by Intertek B&C in accordance with AAMA 205-15.

SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Jeff Ashcraft	Ram Industries
John Blattel	Ram Industries
Jeffrey Crump	Intertek B&C

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Date: 03/05/19

SECTION 7
TEST SPECIMEN DESCRIPTION

Product Type: Inside Glazed Fixed Window
Series/Model: S840 Twin Heavy Picture Window

Product Size(s):

Test Specimen #1

OVERALL AREA:	**WIDTH**		**HEIGHT**	
0.0 m² (00.0 ft²)	**millimeters**	**inches**	**millimeters**	**inches**
Overall size	2880	60	2489	98
Daylight Opening	686	27	2413	95

Frame Construction:

MEMBER	**MATERIAL**	**DESCRIPTION**
Head, sill and jambs	Aluminum	Extruded aluminum thermally broken with polyurethane break at frame head, sill and jambs.

	JOINERY TYPE	**DETAIL**
All corners and mullion	Mechanical	Frame corners are attached with two (2) #8 x 1" HX WSHR Type A SMA, each. Aluminum frame corner bracket (2" x .062" thick) located at frame interior pocket. Frame vertical mullion attached with four (4) #8 x 1" HX WSHR Type A SMA. All corners sealed.

Reinforcement: *No reinforcement was utilized.*

Weatherstripping: *No weatherstripping was utilized.*

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	**SPACER TYPE**	**INTERIOR LITE**	**EXTERIOR LITE**	**GLAZING METHOD**
1" IG	Aluminum	3/16" annealed	3/16" annealed	Interior glazed with 1/16" x 3/8" glazing tape at the exterior face of glass and aluminum glazing bead with rubber stop at the interior face of glass.

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Date: 03/05/19

LOCATION	QUANTITY	DAYLIGHT OPENING		GLASS BITE
		millimeters	inches	
Head sill and jambs	4	686 x 2413	27 x 95	9/16

Drainage: *Weeps were not utilized.*

Hardware: *No hardware was utilized.*

SECTION 8
TEST RESULTS

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

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Air Leakage, Infiltration per ASTM E283 at 75 Pa (1.57 psf)	 0.15 L/s/m^2 (0.03 cfm/ft^2)	 1.5 L/s/m^2 (0.3 cfm/ft^2) max.	 1, 2
Water Penetration, per ASTM E547 at 220 Pa (4.59 psf)	 Pass	 No leakage	
Uniform Load Deflection, per ASTM E330 Deflections taken at anchors +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	 11 mm (0.43") 11 mm (0.42")	 14 mm (0.54") max. 14 mm (0.54") max.	
Uniform Load Structural, per ASTM E330 Permanent set taken at anchors +2160 Pa (+45.11 psf) -2160 Pa (-45.7 psf)	 0.50 mm (0.02") 0.50 mm (0.02")	 1 mm (0.29") max. 1 mm (0.29") max.	
Forced Entry Resistance, per ASTM F588, Type: A - Grade: 10	 Pass	 No entry	

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Date: 03/05/19

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 01/17/19 / Time: 10:00 AM(Air Note Only)

Note 3: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

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. In our opinion, the tape and film did not influence the results of the test.

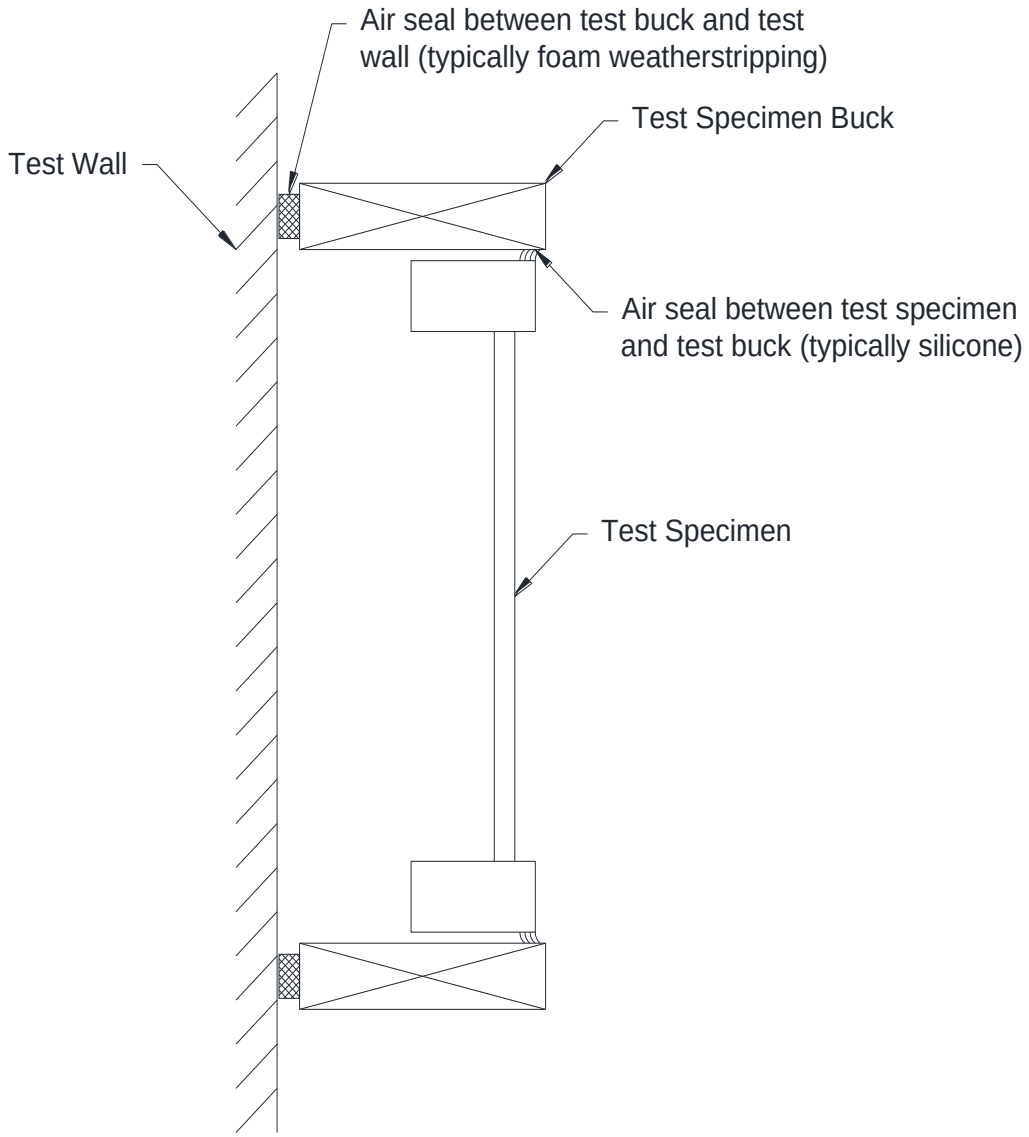
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SECTION 9
LOCATION OF AIR SEAL

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 10
CONCLUSION

The specimen tested successfully met the performance requirements for a **CW-PG30-FW** rating.

Reference Intertek B&C Report No. J3067.010-801-44, dated 02/25/19 for complete *Gateway* test specimen description and test results.

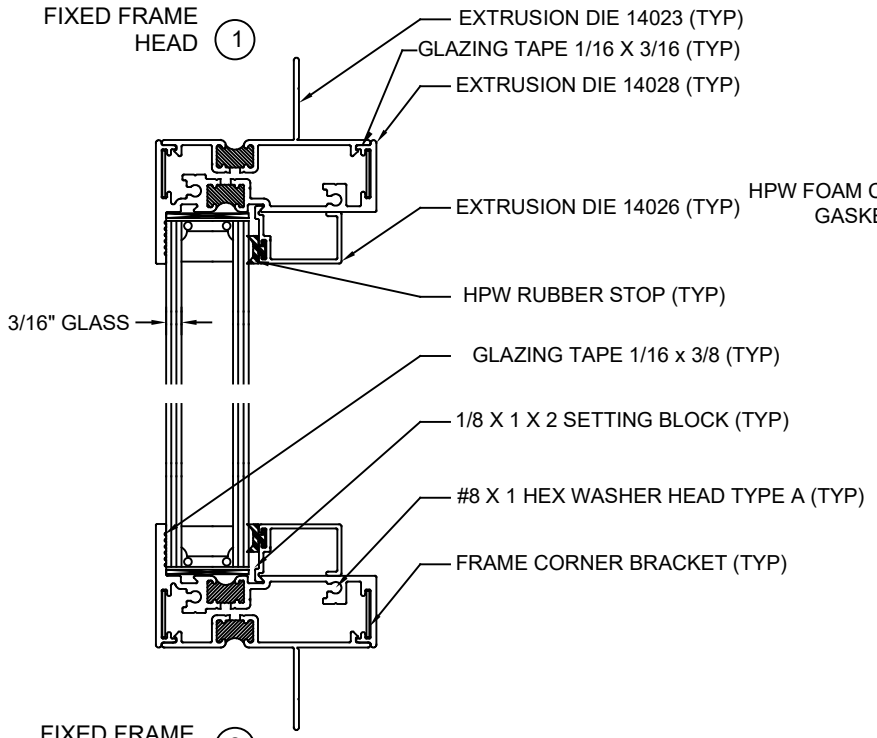
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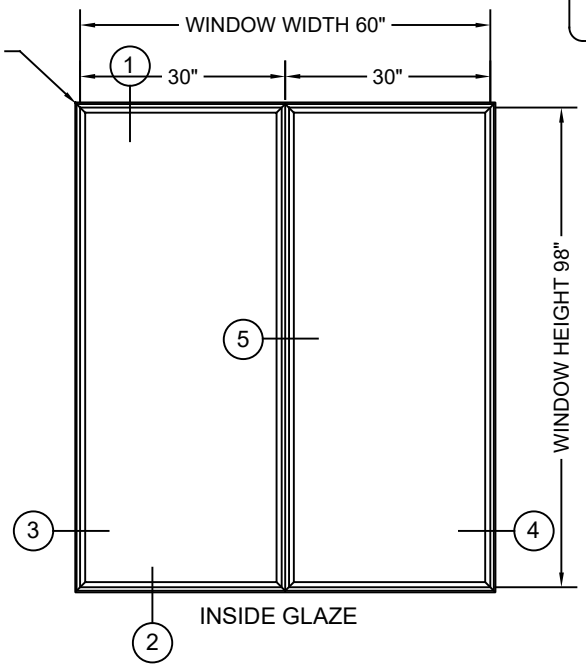
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SECTION 11
DRAWINGS

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.

Ram S840 Heavy Picture



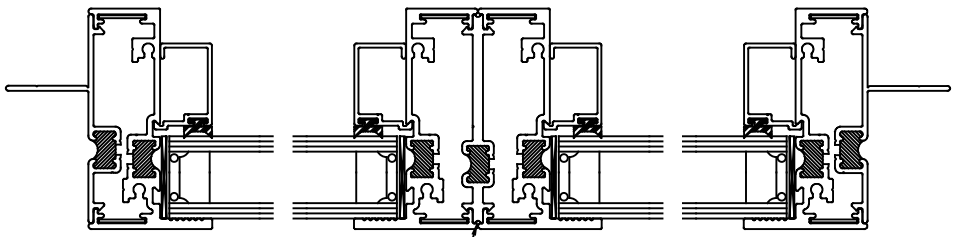


DRAWING APPROVAL

- ☐ APPROVED
- ☐ APPROVED AS NOTED
- ☐ REVISE AND RESUBMIT

SIGN _____ DATE _____

Please return one print set marked with your signature, any comments, and notation of approval for fabrication.



3 FIXED FRAME JAMB

5 MULL

4 FIXED FRAME JAMB

Report #:	J3067.01-801-44
Date:	03/05/19
Verified by:	J.Crump

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REV	DESCRIPTION	BY	DATE

PROPRIETARY AND CONFIDENTIAL

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LEAD TIME	10-12	WEEKS	CUSTOMER	Intertek
GLASS WARRANTY	2	YEARS	PROJECT	Foam Corner, Wrapping Gasket
FRAME WARRANTY	2	YEARS	CITY	Dallas
FINISH WARRANTY	2	YEARS	STATE	Texas
U-FACTOR			OUTER GLASS	
SHGC			AIR SPACE	
DA GLASS THICKNESS			INNER GLASS	

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/16
ANGULAR: MACH/BEND ± .5
TWO PLACE DECIMAL ±.01
THREE PLACE DECIMAL ±.004

MATERIAL
6063-T5 ALUMINUM

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	JSA	11/26/2018
MARK	A	
QTY.	2	
FINISH	---	
DP		

COMMENTS:

RAM INDUSTRIES

TITLE:
S840 HPW TWIN

SIZE	DWG. NO.	REV
A	RAM-HPW 1 LT	

SCALE: | SHEET 1 OF 1

☆ MINOR DEFECTS ON RUN OUT SURFACE MAY NOT BE REASON FOR REJECTION.

* STRUCTURAL AND/OR HEAT STREAKS ARE POSSIBLE IN THIS AREA AND MAY NOT BE REASON FOR REJECTION.

↑ LIGHT PAINT COVERAGE TO BE EXPECTED IN THIS AREA AND MAY NOT BE REASON FOR REJECTION.

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Date:	03/05/19
Verified by:	J.Crump

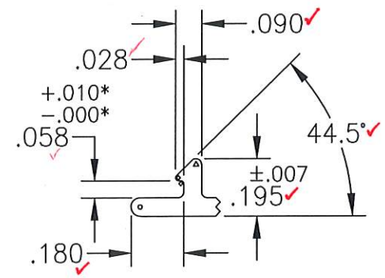
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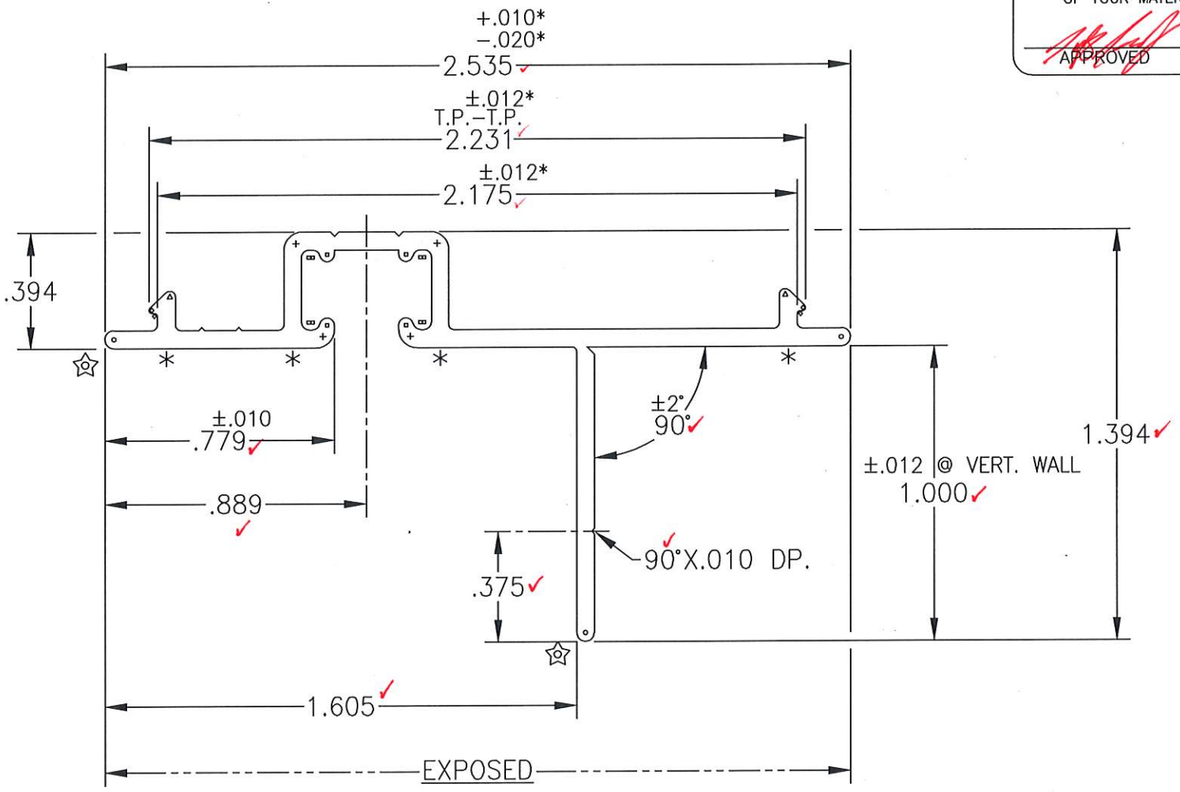
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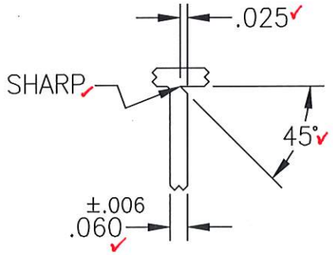
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BOLS. NO.	
FDR. PLT.	10X1
EXT. RATIO	

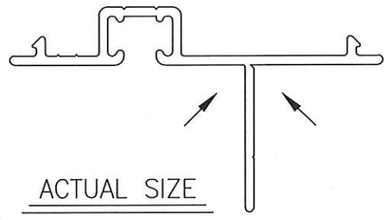
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FULL R.–(•)	(3)



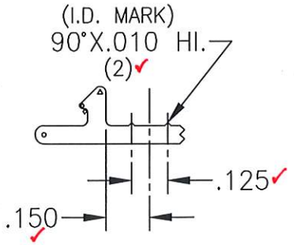
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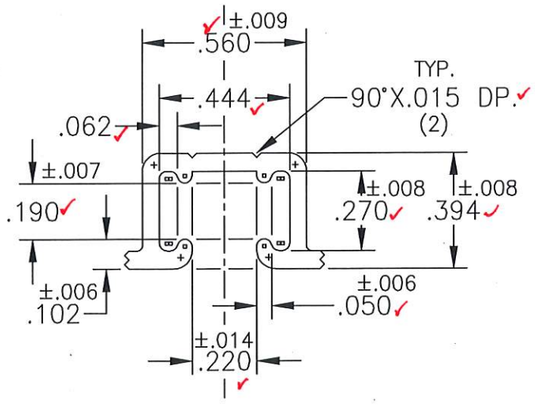






ACTUAL SIZE





NOTES: ±.006
1. .062 TYP. WALL THKN. EXCEPT AS NOTED.
2. BREAK SHARP CORNERS AT .015 R.

REVISION

ALUMINUM ASSOCIATION STANDARD TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED

EST. AREA	.289	TOTAL PERIM.	9.512	DATE:	04–23–18	DRAWN BY:	M.MARKULY
EST. WT/FT.	.347	CIRCLE SIZE	2.53	HOLES	3	PREF. PRESS	7"
OUTSIDE PERIM.	9.512	FACTOR	27	DIE SIZE	10X2	SCALE	2X F

tel EXTRUDERS
A DIVISION OF TOWER EXTRUSIONS, LTD.

NAME: RAM INDUSTRIES

PART NO.	DWG. NO. D–042318–01
END USE	APPLIED FIN

CLASS	ALLOY	CAVITY	DIE NO.
SOLID	6063–T5	B–B	14023

DIE NO. 14023

☆ MINOR DEFECTS ON RUN OUT SURFACE MAY NOT BE REASON FOR REJECTION.

* STRUCTURAL AND/OR HEAT STREAKS ARE POSSIBLE IN THIS AREA AND MAY NOT BE REASON FOR REJECTION.

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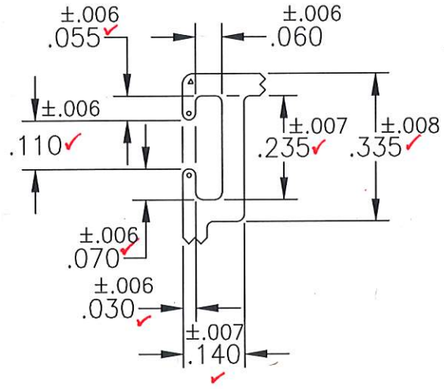
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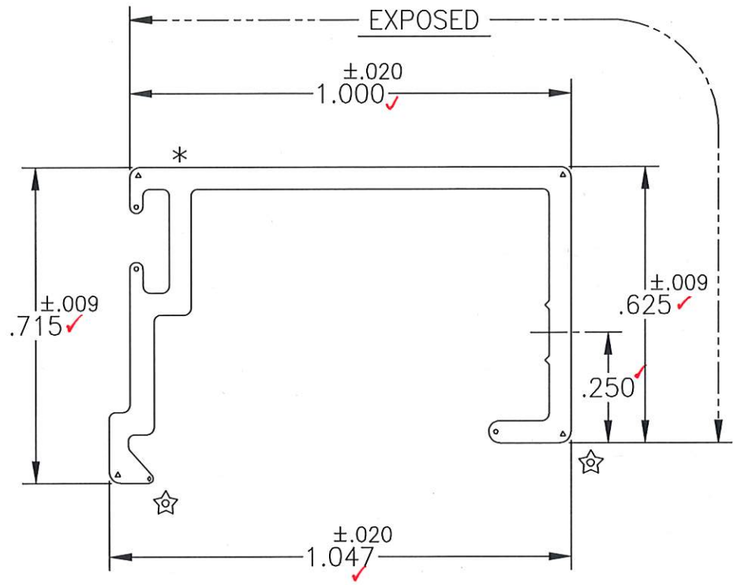
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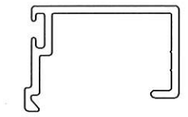
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BOLS. NO.	
FDR. PLT.	10X1
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FULL R.–(•) (3)

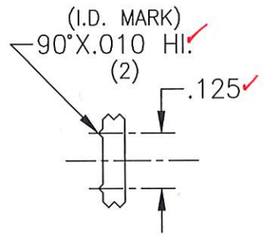


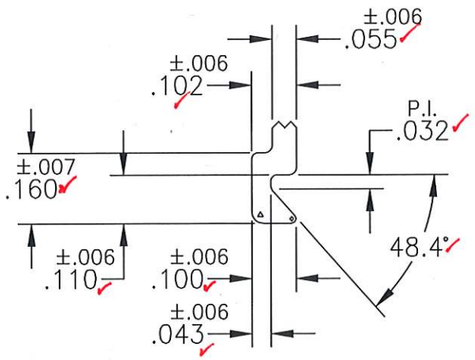




ACTUAL SIZE

NOTES: ±.006
1. .050 TYP. WALL THKN. EXCEPT AS NOTED.
2. BREAK SHARP CORNERS AT .015 R.





REVISION	

ALUMINUM ASSOCIATION STANDARD TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED

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EST. WT/FT.	.158	CIRCLE SIZE 1.25	HOLES 6	PREF. PRESS 7"	
OUTSIDE PERIM.	5.294	FACTOR 34	DIE SIZE 10X2	SCALE 3X	F

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NAME
RAM INDUSTRIES

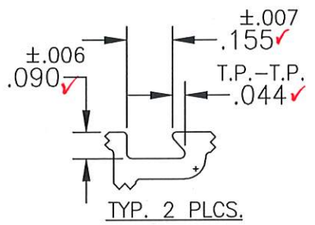
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	D–042318–04

END USE
GLAZE STOP

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SOLID	6063–T5		14026

DIE NO. 14026

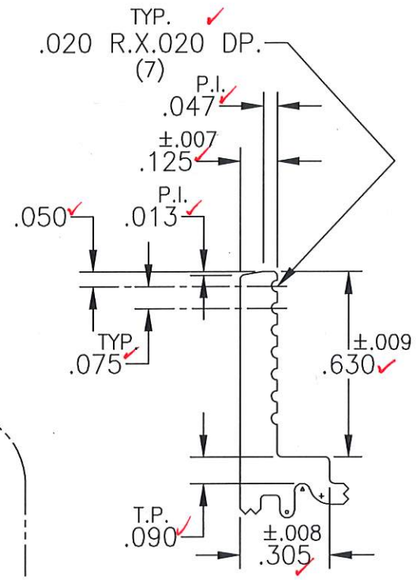
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- ∗ STRUCTURAL AND/OR HEAT STREAKS ARE POSSIBLE IN THIS AREA AND MAY NOT BE REASON FOR REJECTION.
- ↑ LIGHT PAINT COVERAGE TO BE EXPECTED IN THIS AREA AND MAY NOT BE REASON FOR REJECTION.



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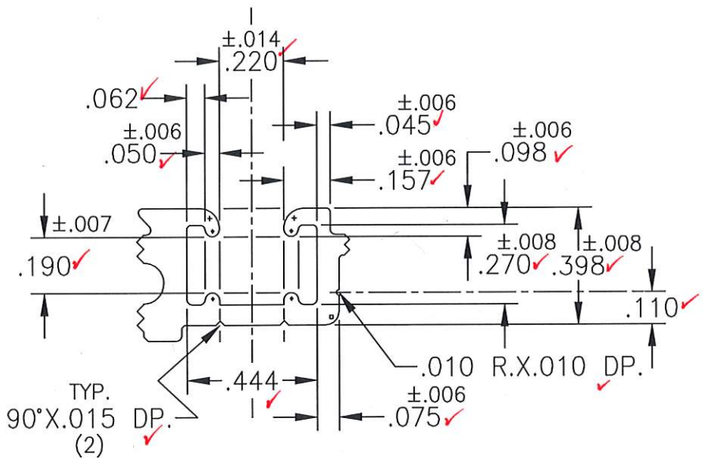
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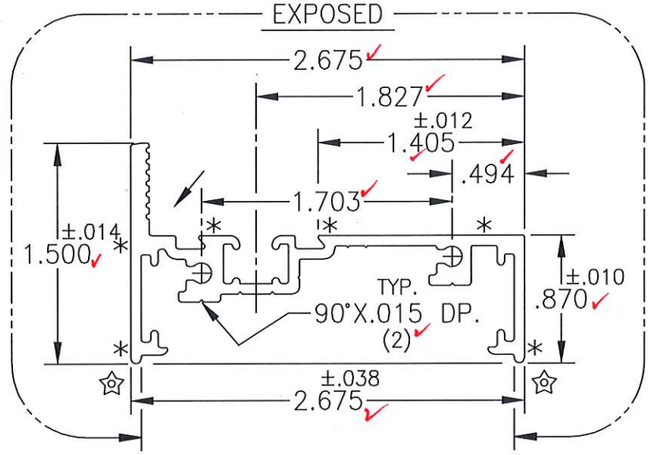
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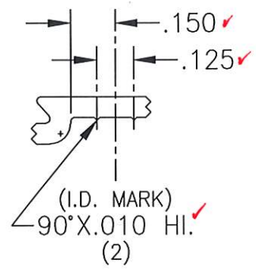
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14028
8" PRESS
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BOLS. NO.
FDR. PLT. 11X1
EXT. RATIO 47.57

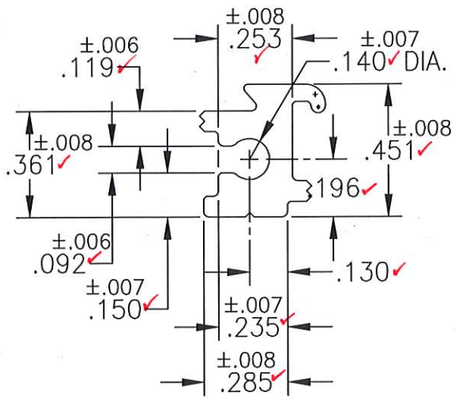
.025 R.–(•)	(4)
.027 R.–(•)	(1)
.045 R.–(◦)	(3)
.070 R.–(•)	(4)
FULL R.–(◦)	(6)

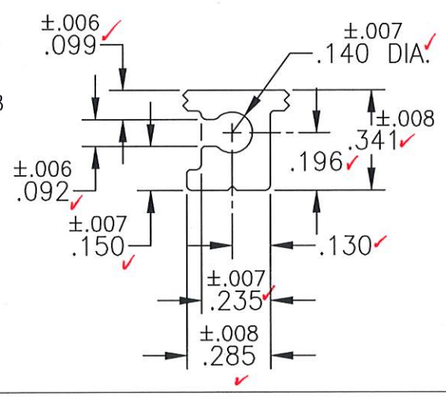




intertek Total Quality. Assured.		
	Report #:	J3067.01-801-44
	Date:	03/05/19
	Verified by:	J.Crump







NOTES: ±.006
1. .070 TYP. WALL THKN. EXCEPT AS NOTED.
2. BREAK SHARP CORNERS AT .015 R.

DIE NO.
14028

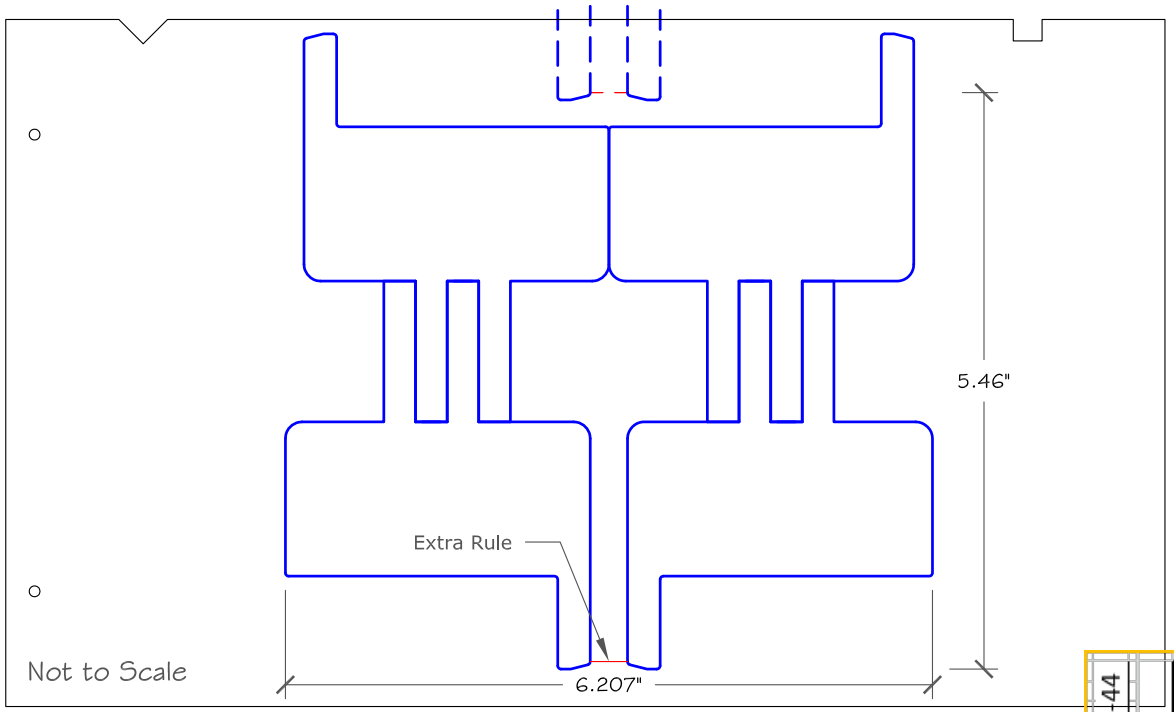
REVISION				

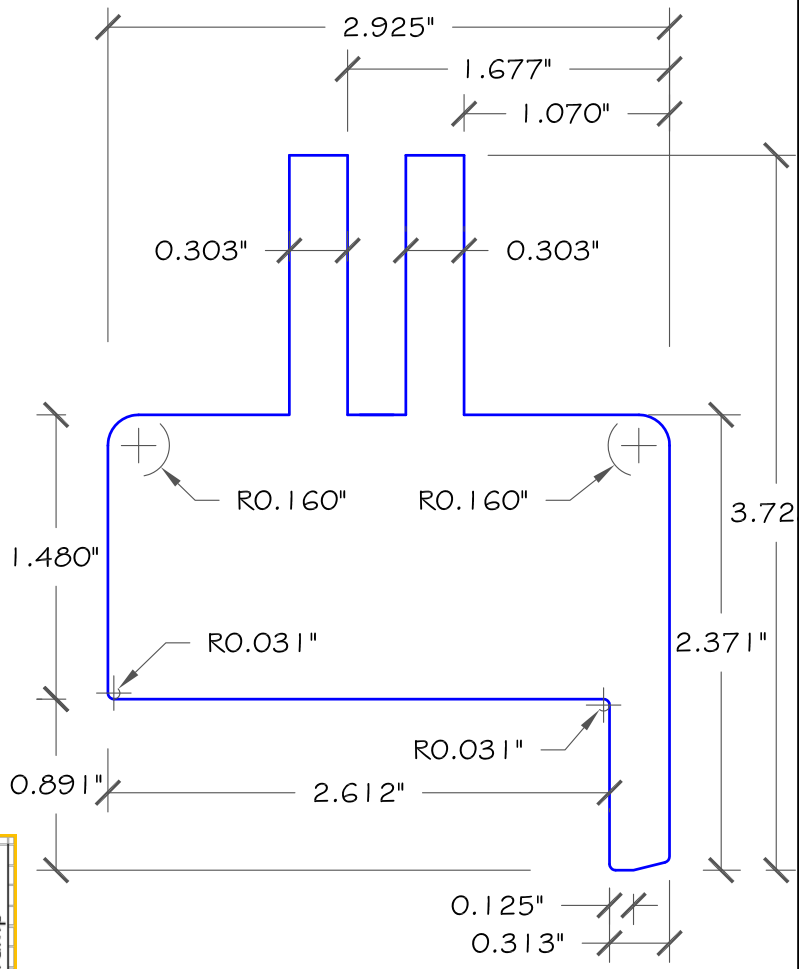
ALUMINUM ASSOCIATION STANDARD TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED

EST. AREA	.579	TOTAL PERIM.	14.823	DATE:	04–23–18	DRAWN BY:	M.MARKULY
EST. WT/FT.	.716	CIRCLE SIZE	3.04	HOLES	2	PREF. PRESS	8"
OUTSIDE PERIM.	14.823	FACTOR	21	DIE SIZE	11X2	SCALE	FULL F

tel EXTRUDERS
A DIVISION OF TOWER EXTRUSIONS, LTD.

NAME			
RAM INDUSTRIES			
PART NO.		DWG. NO.	D–042318–06
END USE	HPW		
CLASS	ALLOY	CAVITY	DIE NO.
SOLID	6063–T5	B–B	14028





Micrometer:	3.598	PRECO DIE #749	
Progression:	5.350	Board:	5/8" thick wood
Batch / Amount:		Typ/Size:	12" x 20" Preco
Rate / Acceleration:	10 / 5	Rule:	2 pt 0.937" high long dbl cntr bevel
Tons:	16	Punches:	Feed-through
Upstroke:	3.20	/Roll:	
RF2/3 / RF3:	10 / 10	/Box:	
Feed: Before/After:		Box type:	

NOTES

1 SET = 1 Left Hand Gasket
+ 1 Right Hand Gasket
Supplied kiss cut on rolls with
web scrap removed

MATERIAL

1/8" thick 2# XLP w/PSA

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Date: 03/05/19
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intertek Total Quality Assured.

TOLERANCES UNLESS OTHERWISE SPECIFIED

	DATE
A.V.	9-28-2018
PPF:	SLIT WIDTH: 7"

FRANK LOWE RUBBER & GASKET CO., INC. 44 Ramsey Road • Shirley, New York 11967-4704 631-777-2737 • 800-777-0202 • Fax 631-777-2560

SCALE		SHEET
1:1	O-RA1002-HPWCNRGSKTW125 HPW Corner Gskt Rev. B	1 of 1

Ram Industries

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Plano, Texas 75074

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www.intertek.com/building

SECTION 12
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	03/05/19	N/A	Original Report Issue