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FRAMELESS HARDWARE COMPANY LLC

THERMAL PERFORMANCE TEST REPORT

SCOPE OF WORK
FHC G52 SERIES BI-FOLD

REPORT NUMBER
R3633.01-116-46 R0

TEST DATE
09/05/24

ISSUE DATE
09/16/24

PAGES
33

DOCUMENT CONTROL NUMBER
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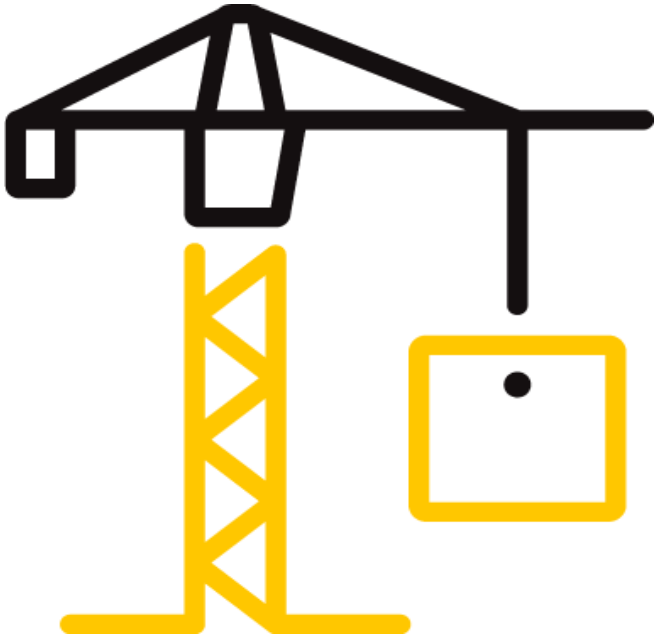

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York, Pennsylvania 17406

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www.intertek.com/building

TEST REPORT FOR FRAMELESS HARDWARE COMPANY LLC
Report No.: R3633.01-116-46 R0
Date: 09/16/24

REPORT ISSUED TO

FRAMELESS HARDWARE COMPANY LLC
4361 Firestone Blvd.
South Gate, California 90280

SECTION 1

SCOPE

SERIES/MODEL: FHC G52 Series Bi-Fold
TYPE: Swinging Entrance Door (Single)

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Frameless Hardware Company LLC to evaluate the thermal performance per NFRC 102-2023. Results obtained are tested values and were secured by using the designated test method. Testing was conducted at Intertek B&C test facility in York, Pennsylvania.

Intertek B&C will service this report for the entire test record retention period. The test record retention period ends five years after the test date. Test records, such as detailed drawings, datasheets, or other pertinent project documentation, will be retained for the entire test record retention period. Representative samples of the test specimen will be retained by Intertek B&C for a minimum of two and a half years from the submittal date to the Inspection Agency and no more than five years from the test date.

For INTERTEK B&C:

COMPLETED BY	Ryan P. Moser	**REVIEWED BY**	Shon W. Einsig
TITLE	Technician Team Lead, IIRC	**TITLE**	Project Lead, IIRC
SIGNATURE	Ryan P. Moser Digitally Signed by: Ryan P. Moser	**SIGNATURE**	Shon W. Einsig Digitally Signed by: Shon W. Einsig
DATE	09/16/24	**DATE**	09/16/24

RPM:pan

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SECTION 2
SUMMARY OF TEST RESULTS

Standardized U-factor (Ust): 0.43 Btu/hr·ft^2·F (CTS Method)

SECTION 3
TEST SPECIMEN SUMMARY

SERIES/MODEL	FHC G52 Series Bi-Fold
TYPE	Swinging Entrance Door (Single)
OVERALL SIZE	38" x 82-3/8" (965 mm x 2092 mm) (Model Size)
NFRC STANDARD SIZE	37.8" x 82.3" (960 mm wide x 2090 mm high)
TEST SAMPLE SUBMITTED BY	Client
TEST SAMPLE SUBMITTED FOR	Validation for Initial Certification (Production Line Unit) & Plant Qualification

SECTION 4
TEST METHOD

The specimens were evaluated in accordance with the following:

NFRC 102-2023, Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems

SECTION 5
MATERIAL SOURCE/INSTALLATION

The test specimen was provided by the client.

The test sample was installed in a vertical orientation, the exterior of the specimen was exposed to the cold side.

SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Shon W. Einsig	Intertek B&C
Ryan P. Moser	Intertek B&C

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SECTION 7
TEST SAMPLE DESCRIPTION

FRAME

MATERIAL	AT (0.24"): Aluminum w/ Polyamide Thermal Breaks*		
SIZE	38" x 82-3/8" (Model Size)		
DAYLIGHT OPENING	N/A	**GLAZING METHOD**	N/A
EXTERIOR COLOR	Black	**EXTERIOR FINISH**	Anodized
INTERIOR COLOR	Black	**INTERIOR FINISH**	Anodized
CORNER JOINERY	Coped / Screws / Sealed		

PANEL

MATERIAL	AT (0.24"): Aluminum w/ Polyamide Thermal Breaks*		
SIZE	33-3/4" x 78-5/8"		
DAYLIGHT OPENING	28" x 72-5/8"	**GLAZING METHOD**	Interior
EXTERIOR COLOR	Black	**EXTERIOR FINISH**	Anodized
INTERIOR COLOR	Black	**INTERIOR FINISH**	Anodized
CORNER JOINERY	Mitered / Screws / Sealed		

*Lock jamb insert and lock stile insert wer AT (0.24"). All other thermal breaks were AT (0.31")

GLAZING INFORMATION

LAYER 1	1/4"	Guardian SunGuard SNX 62/27 (e=0.020*, #2)	
GAP 1	0.63"	ZF-S: Silicone Foam Spacer	90% Argon*
LAYER 2	1/4"	Guardian SunGuard IS 20 (e=0.198*, #3)	
GAS FILL METHOD		Single-Probe Method*	

**Stated per the client/manufacturer and can affect the validity of results*
N/A Non-Applicable

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SECTION 7 (CONTINUED)

TEST SAMPLE DESCRIPTION (CONTINUED)

WEATHERSTRIPPING

DESCRIPTION	QUANTITY	LOCATION
Flexible hollow bulb gasket	1 Row	Head, sill and hinge jamb
Single-fin flexible hollow bulb gasket	1 Row	Lock jamb and lock stile
Single-fin gasket	1 Row	Head and sill
Flexible hollow bulb gasket	1 Row	Hinge jamb and stile
Single-fin flexible hollow bulb gasket	1 Row	Hinge jamb and stile
Glazing gasket	1 Row	Exterior glazing perimeter
Glazing gasket	1 Row	Interior glazing perimeter

HARDWARE

DESCRIPTION	QUANTITY	LOCATION
Multi-point lock assembly	1	Lock stile
Metal keeper	3	Lock jamb
Metal hinge	4	Hinge jamb/stile

DRAINAGE

DRAINAGE METHOD	SIZE	QUANTITY	LOCATION
No visible weeps			

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SECTION 8
THERMAL TRANSMITTANCE (U-FACTOR): MEASURED TEST DATA

HEAT FLOWS

1.	Total Measured Input into Metering Box (Qtotal)	728.39	Btu/hr
2.	Surround Panel Heat Flow (Qsp)	29.11	Btu/hr
3.	Surround Panel Thickness	6.00	inches
4.	Surround Panel Conductance	0.0304	$Btu/hr \cdot ft^2 \cdot F$
5.	Metering Box Wall Heat Flow (Qmb)	3.23	Btu/hr
6.	EMF vs Heat Flow Equation (equivalent information)	0.0114*EMF + -0.006	
7.	Flanking Loss Heat Flow (Qfl)	3.92	Btu/hr
8.	Net Specimen Heat Loss (Qs)	692.14	Btu/hr

AREAS

1.	Test Specimen Projected Area (As)	21.74	ft^2
2.	Test Specimen Projected Frame Area (Af)	7.62	ft^2
3.	Test Specimen Projected Glazing Area (Ag)	14.12	ft^2
4.	Metering Box Opening Area (Amb)	36.11	ft^2
5.	Metering Box Baffle Area (Ab1)	33.94	ft^2
6.	Surround Panel Interior Exposed Area (Asp)	14.37	ft^2

TEST CONDITIONS

1.	Average Metering Room Air Temperature (th)	69.81	F
2.	Average Cold Side Air Temperature (tc)	-0.39	F
3.	Average Guard/Environmental Air Temperature	71.25	F
4.	Metering Room Average Relative Humidity	13.38	%
5.	Metering Room Maximum Relative Humidity	13.65	%
6.	Metering Room Minimum Relative Humidity	13.08	%
7.	Measured Cold Side Wind Velocity (Perpendicular Flow)	12.66	mph
8.	Measured Warm Side Wind Velocity (Parallel Flow)	N/A	mph
9.	Measured Static Pressure Difference Across Test Specimen	0.00" ± 0.04"	H_2O

AVERAGE SURFACE TEMPERATURES

1.	Metering Room Surround Panel	67.33	F
2.	Cold Side Surround Panel	0.82	F

RESULTS

1.	Thermal Transmittance of Test Specimen (Us)	0.45	$Btu/hr \cdot ft^2 \cdot F$
2.	Standardized Thermal Transmittance of Test Specimen (Ust)	0.43	$Btu/hr \cdot ft^2 \cdot F$

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SECTION 9
THERMAL TRANSMITTANCE (U-FACTOR): CALCULATED TEST DATA

CTS METHOD RESULTS

1.	Warm Side Surface Emittance of CTS (e1)	0.84	
2.	Warm Side Area-Weighted Surface Emittance of Specimen Frame (ef1)	0.80	
3.	Warm Side Area-Weighted Surface Emittance of Specimen Glazing (eg1)	0.84	
4.	Warm Side Surface Emittance of Surround Panel (esp1)	0.90	
5.	Warm Side Area-Weighted Surface Emittance in View of the Baffle (es1)	0.86	
6.	Warm Side Baffle Emittance (eb1)	0.92	
7.	Cold Side Baffle Emittance (eb2)	N/A	
8.	Equivalent Warm Side Surface Temperature (t1)	47.11	F
9.	Equivalent Cold Side Surface Temperature (t2)	5.99	F
10.	Warm Side Baffle Surface Temperature	67.81	F
11.	Cold Side Baffle Surface Temperature	N/A	F
12.	Measured Warm Side Surface Conductance (hh)	1.40	$Btu/hr \cdot ft^2 \cdot F$
13.	Measured Cold Side Surface Conductance (hc)	4.99	$Btu/hr \cdot ft^2 \cdot F$
14.	Test Specimen Thermal Conductance (Cs)	0.77	$Btu/hr \cdot ft^2 \cdot F$
15.	Convection Coefficient (Kc)	0.33	$Btu/(hr \cdot ft^2 \cdot F^{1.25})$
16.	Radiative Test Specimen Heat Flow (Qr1)	339.51	Btu/hr
17.	Conductive Test Specimen Heat Flow (Qc1)	352.63	Btu/hr
18.	Radiative Heat Flux of Test Specimen (qr1)	15.62	$Btu/hr \cdot ft^2 \cdot F$
19.	Convective Heat Flux of Test Specimen (qc1)	16.22	$Btu/hr \cdot ft^2 \cdot F$
20.	Standardized Warm Side Surface Conductance (hsth)	1.22	$Btu/hr \cdot ft^2 \cdot F$
21.	Standardized Cold Side Surface Conductance (hstc)	5.28	$Btu/hr \cdot ft^2 \cdot F$
22.	Standardized Thermal Transmittance (Ust)	0.43	$Btu/hr \cdot ft^2 \cdot F$

SECTION 10
TEST DURATION

1. The environmental systems were started at 15:22 hours, 09/04/24.
2. The test parameters were considered stable for two consecutive four hour test periods from 21:58 hours, 09/04/24 to 05:58 hours, 09/05/24.
3. The thermal performance test results were derived from 01:58 hours, 09/05/24 to 05:58 hours, 09/05/24.

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SECTION 11
GLAZING DEFLECTION

	PANEL
EDGE GAP WIDTH	0.63"
ESTIMATED CENTER GAP WIDTH upon receipt of specimen in laboratory (after stabilization)	0.63"
CENTER GAP WIDTH at laboratory ambient conditions on day of testing	0.63"
CENTER GAP WIDTH at test conditions	0.53"

Glass collapse determined using a digital glass and air space meter

The sample was inspected for the formation of frost or condensation, which may influence the surface temperature measurements. The sample showed no evidence of condensation/frost at the conclusion of the test.

"This test method does not include procedures to determine the heat flow due to either air movement through the specimen or solar radiation effects. As a consequence, the thermal transmittance results obtained do not reflect performances which are expected from field installations due to not accounting for solar radiation, air leakage effects, and the thermal bridge effects that have the potential to occur due to the specific design and construction of the fenestration system opening. The latter can only be determined by in-situ measurements. Therefore, it is important to recognize that the thermal transmittance results obtained from this test method are for ideal laboratory conditions and should only be used for fenestration product comparisons and as input to thermal performance analyses which also include solar, air leakage and thermal bridge effects."

Required annual calibrations for the Intertek B&C, 'thermal test chamber' (ICN 000001) in York, Pennsylvania were last conducted in May 2024 in accordance with Intertek B&C calibration procedure. A CTS Calibration verification was performed August 2024. A Metering Box Wall Transducer and Surround Panel Flanking Loss Characterization was performed July 2024.

The reported Standardized Thermal Transmittance (Ust) was determined using CTS Method, per Section 9.2(A) of NFRC 102.

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SECTION 12
CTS CALIBRATION DATA

1.	CTS Test Date	02/03/24	
2.	CTS Size	21.53	ft^2
3.	CTS Glass/Core Conductance	0.41	$Btu/hr \cdot ft^2 \cdot F$
4.	Warm Side Air Temperature	69.80	F
5.	Cold Side Air Temperature	-0.40	F
6.	Warm Side Average Surface Temperature	54.29	F
7.	Cold Side Average Surface Temperature	3.78	F
8.	Convection Coefficient (Kc)	0.33	$Btu/(hr \cdot ft^2 \cdot F^{1.25})$
9.	Measured Cold Side Surface Conductance (hc)	4.99	$Btu/hr \cdot ft^2 \cdot F$
10.	Measured Thermal Transmittance	0.31	$Btu/hr \cdot ft^2 \cdot F$

ANSI/NCSL Z540-2-1997 type B uncertainty for this test was 1.54%.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule also called "Shared Risk Approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

"Ratings included in this report are for submittal to an NFRC licensed IA for certification purposes and are not meant to be used for labeling purposes. Only those options identified on a valid Certificate of Authorization (CA) are to be used for labeling purposes."

The direction of heat transfer was from the interior (warm side) to the exterior (cold side) of the specimen. The ratings were rounded in accordance to NFRC 601, NFRC Unit and Measurement Policy. The data acquisition frequency is 5 minutes.

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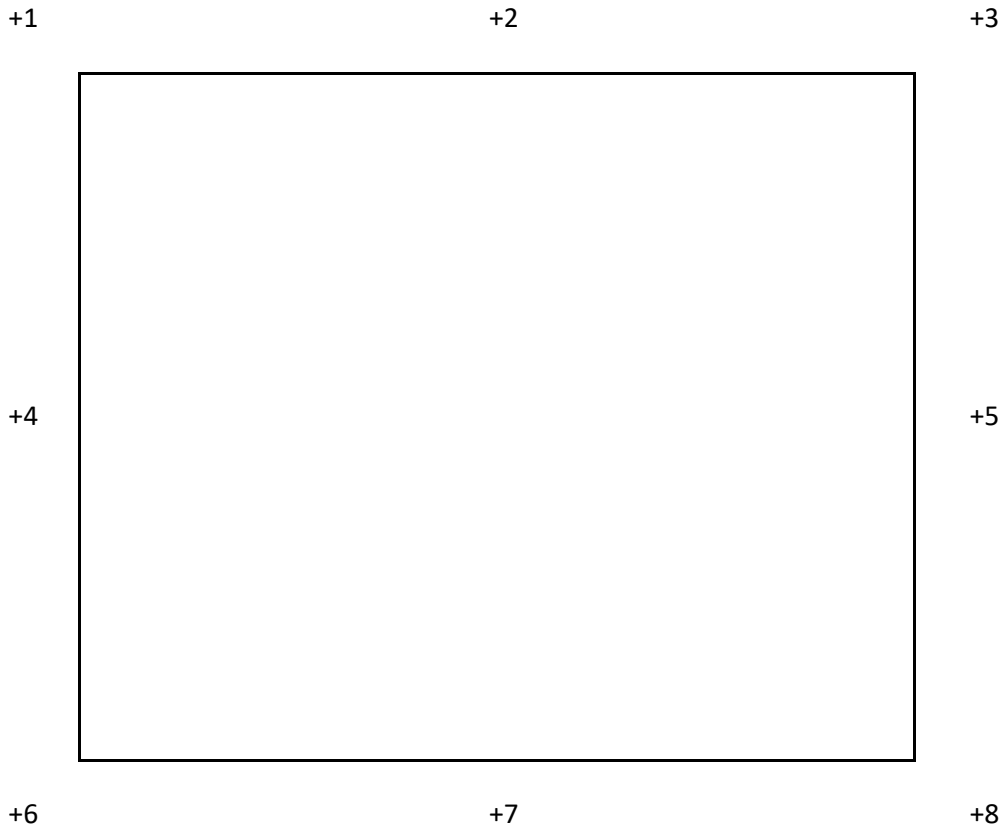
SECTION 13
SURROUND PANEL WIRING DIAGRAM



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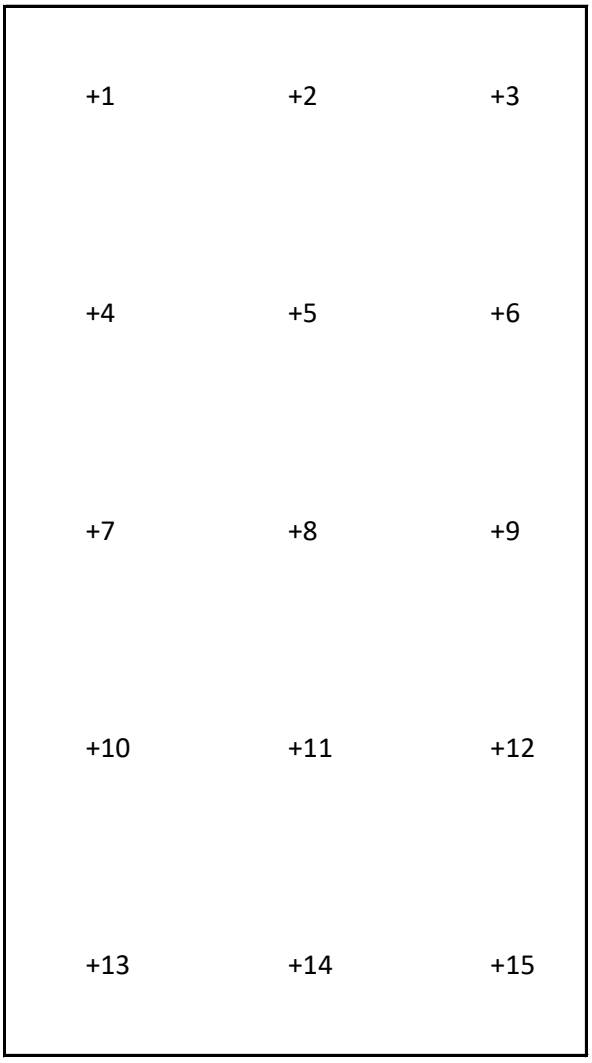
SECTION 14
BAFFLE WIRING DIAGRAM



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SECTION 15
SUBMITTAL FORM AND DRAWINGS

The test specimen drawings which follow 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.

NFRC PRODUCT CERTIFICATION PROGRAM

Submittal Form for Test Samples

National Fenestration Rating Council®

For use by Manufacturers, Lineal Suppliers and Fabricators

1. Information on Production of the Test Sample (complete **ALL** fields):

Manufacturer: FHC Frameless Hardware Company Date of sample manufacture: 7/17/2024

Plant Address where manufactured: 2323 Firestone Blvd

City: South Gate State: CA Zip Code: 90280

Name of IA: Associated Laboratories Inc Phone: 888-295-4531 Fax: 323-336-8307

2. Product Information (complete **APPLICABLE** fields):

Existing Product Line ID (CPD) No.: _____ Product/Operator Type (Table 4-3 of NFRC 100): Side-Hinged Exterior Door

Series/Model: FHC G52 Bi-Fold

3. Test sample is being submitted for (select **ONE**):

a. ☐ Validation for Initial Certification (prototype only) no plant qualification

b. ☑ Validation for Initial Certification or Recertification (production line unit) & plant qualification

c. ☐ Plant Qualification Only (production line unit)

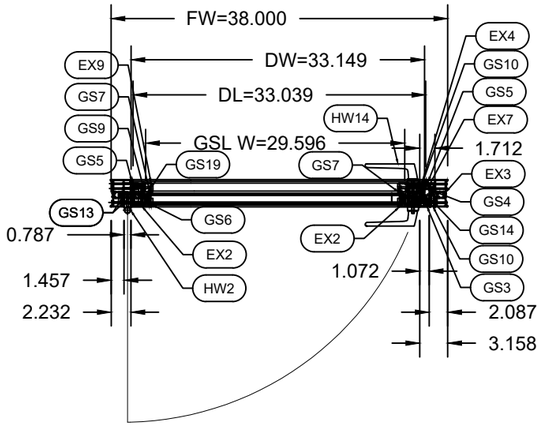
d. ☐ Test Only Alternative (production line unit) & plant qualification

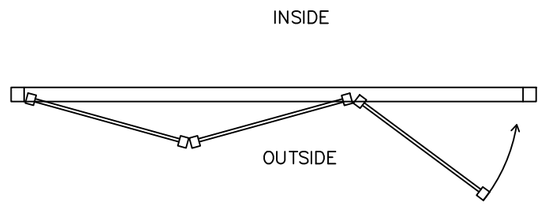
I, Mario Salazar, as the designated agent for FHC do hereby attest that the foregoing information is true to the best of my information, knowledge, and belief. Further, if the unit is identified in Section 3 as a production line unit, I hereby authorize the NFRC-accredited testing laboratory to send a copy of the test report to the IA identified above for plant qualification purposes pursuant to the NFRC Product Certification Program.

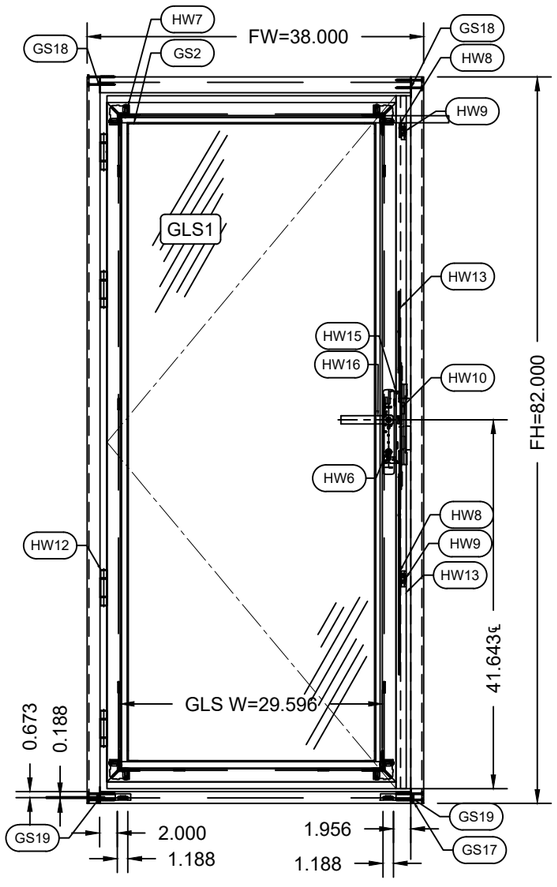
Signature: M-SL Date: 9/6/2024

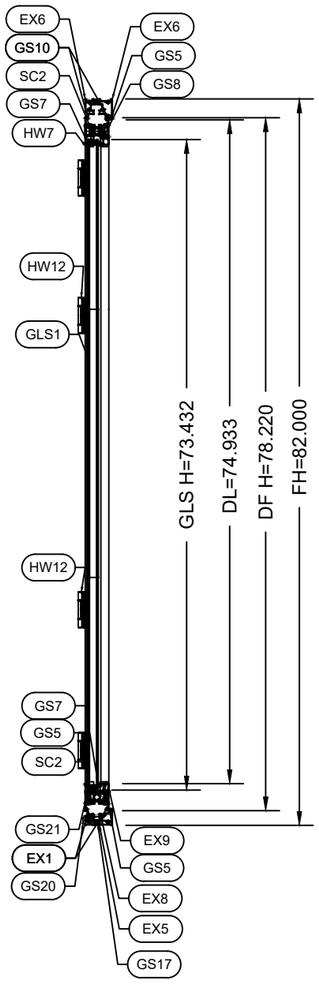
For Laboratory Use Only

1. Laboratory: Intertek
2. Date Sample Received: 7/22/24 Test Report #: R3633
3. Date Sample Tested: 9/5/24 By: RBm
4. Modifications made:









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Verified by: Ryan C. Moser

FHC
FHC-USA.COM 888-295-4531

ENGINEER STAMP

Job Name: NAFR - Thermal
INTERTEK (ATI) FHC BI-FOLD DOOR G52
REF QUOTEE:
Phone: N/A
Fax:
Contact: KIRBY MOSER

Customer:
Phone:
Fax:
Contact:

REV#	DATE	DRAWN BY
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Checked By:
Date: 5/25/24
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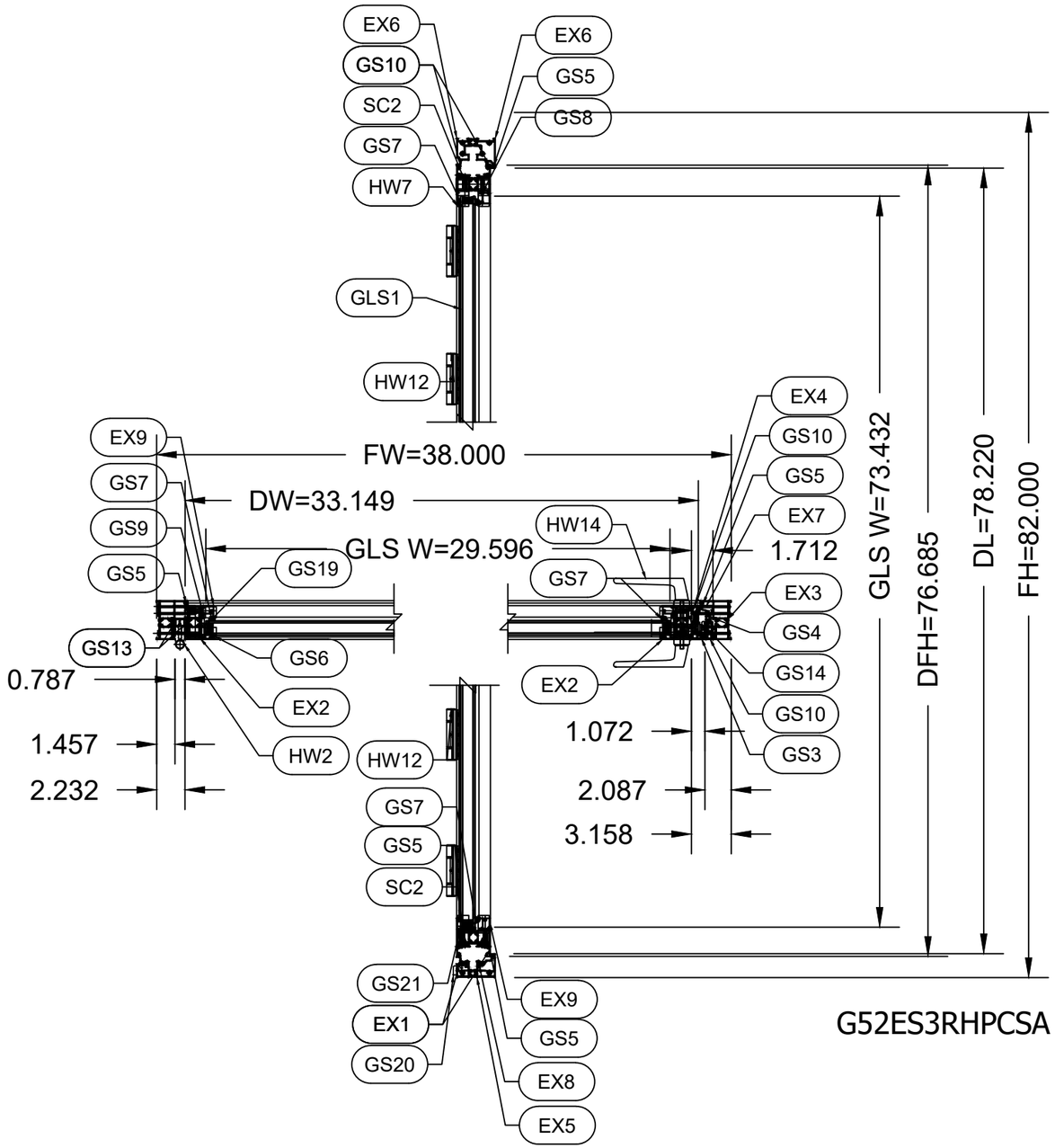

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ENGINEER STAMP

Job Name: NAFR - Thermal
INTERTEK (ATI) FHC BI-FOLD DOOR G52
REF QUOTEE:
Phone: N/A
Fax:
Contact: KIRBY MOSER

Customer:
Phone:
Fax:
Contact:

REV#	DATE	DRAWN BY
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EXTRUSIONS		
Mark	Part Number	Discription
EX1	BF52ESEAL1NG_	BI FOLD52 EDGE SEALING MATERIALS SATIN ANODIZE CLASS I 20' LONG
EX2	BF52SASHSA	BI FOLD52 SASH SATIN ANODIZE CLASS I 20' LONG
EX3	BF52SFRAMESA	BI FOLD52 SIDE FRAME SATIN ANODIZE CLASS I 20' LONG
EX4	BF52MLC0VERSA	BI FOLD52 MULTIPOINT LOCKING COVER PROFILE SATIN ANODIZE CLASS I 20' LONG
EX5	BF52HFRAMESA	BI FOLD52 HORIZONTAL FRAME SATIN ANODIZE CLASS I 20' LONG
EX6	BF52HHFRAMESA	BI FOLD52 HEAVY HORIZONTAL FRAME SATIN ANODIZE CLASS I 20' LONG
EX7	BF52LC0VERSA	BI FOLD52 LOCKING COVER PROFILESATIN ANODIZE CLASS I 20' LONG
EX8	BF52UTRACK	BI FOLD52 4*12 U TYPE TRACK
EX9	BF52GBEADDU	BI FOLD52 GLAZING BEAD SATIN ANODIZE CLASS I 20' LONG

GLASS		
Mark	Part Number	Discription
GLS1	BF14CLRSNX62/27	1–3/16" Thick Insulated Temp Glass panel unit. 1/4" (6MM) SNX 62/27 Temp X 3/4" Black G3 warn edge spacer X 3/16" Guardian IS20 Temp SNX 62/27 on surface #2 Low –E Surface # 3)

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FHC
FHC-USA.COM 888-290-4531

ENGINEER STAMP

Job Name: NAFR - Thermal
INTERTEK (ATI) FHC BI-FOLD DOOR G52
REF QUOTEE:
Phone:
Fax: N/A
Contact: KIRBY MOSER

Customer:
Phone:
Fax:
Contact:

REV#	DATE	DRAWN BY
	------	--

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Date: 5/25/24
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Project #: JOB #

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GASKET & SEALANT		
Mark	Part Number	Discription
GS1	BF52CSANGLE	BI FOLD52 CORNER SUPPORT ANGLE
GS2	BF520GANGLE	BI FOLD52 OUTSIDE GASKET ANGLE
GS3	BF52MPLCSBAG	BI FOLD52 MULTI-POINT LOCK CLOSING SEALING BAG
GS4	BF52SCSBAG	BI FOLD52 SASH CLOSED SEALING BAG
GS5	BF52SEAL1NG	BI FOLD52 SEALING GASKET
GS6	BF520UTS1DE	BI FOLD52 OUTSIDE GASKET
GS7	BF521NS1DE	BI FOLD52 INSIDE GASKET
GS8	BF52R0UNDB	BI FOLD52 Φ4 ROUND BAR GASKET
GS9	BF52SSEAL1NG	BI FOLD52 SASH SEALING GASKET
GS10	BF52LAM1NAT1NG	BI FOLD52 LAMINATING GASKET
GS11	BF52CBTAPE	BI FOLD52 CLOSURE BSEALING TAPE
GS12	BF52SM1DDLE	BI FOLD52 SASH MIDDLE GASKET
GS13	BF52CGC0VER	BI FOLD52 C GROOVE COVER (SOFT)
GS14	BF52SASHR	BI FOLD52 SASH U TURN LAP GLUE ANGLE R
GS15	BF52SASHL	BI FOLD52 SASH U TURN LAP GLUE L
GS16	BF52SFSPAD	BI FOLD52 SIDE FRAME SPONGE PAD
GS17	BF52HDUHDRAME	BI FOLD52 HEAVY-DUTY UPPER HORIZONTAL FRAME GASGET
GS18	BF52ULHFRAME	BI FOLD52 UPPER AND LOWER HORIZONTAL FRAME GASKET
GS19	BF52CGBL0CK	BI FOLD52 CORNER GLASS BLOCK (33-44)
GS20	BF52DHC0VER	BI FOLD52 DRAINING-HOLE COVER
GS21	NSB795	5/16X1X2 NEOPRENE SETTING BLOCK GRADE 60 - BOX OF 100

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Verified by: Ryan A. Moser

FHC
FAMILIES HARDWARE COMPANY
FHCUSA.COM 888-290-4331

ENGINEER STAMP

Job Name: NAFR - Thermal
INTERTEK (ATI) FHC BI-FOLD DOOR G52
REF QUOTEE:
Phone:
Fax: N/A
Contact: KIRBY MOSER

Customer:
Phone:
Fax:
Contact:

REV#	DATE	DRAWN BY
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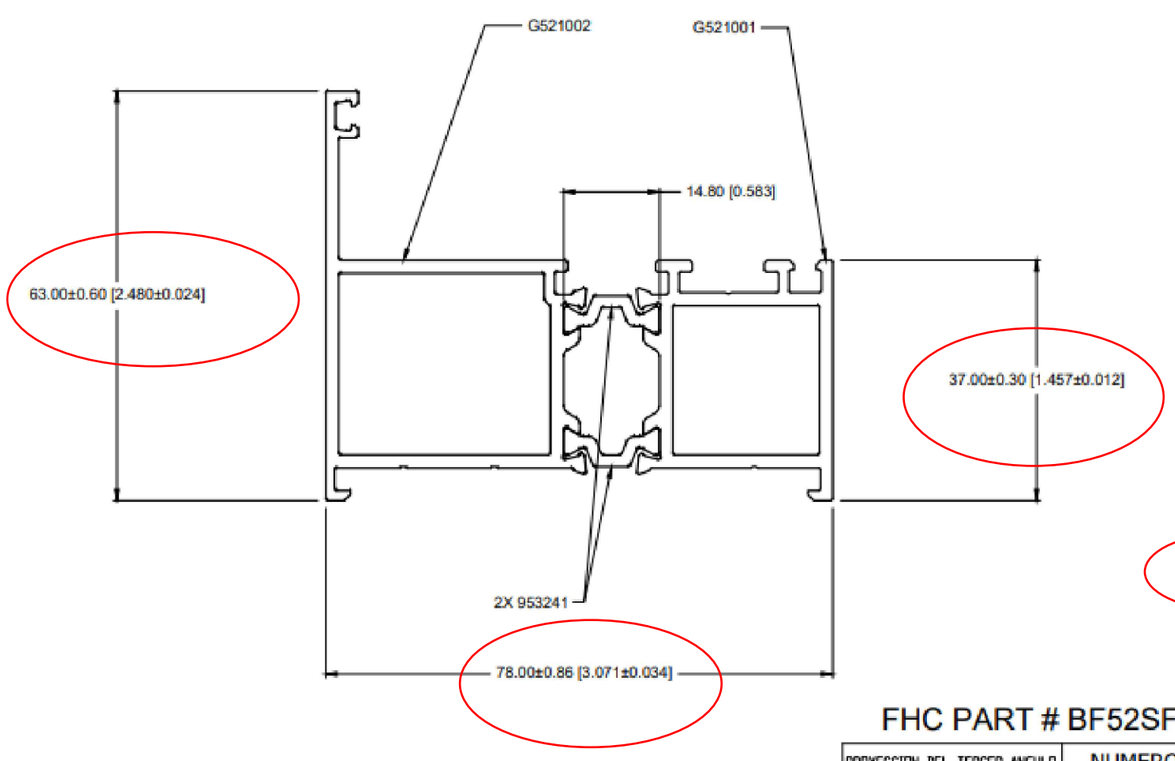
3 of 3

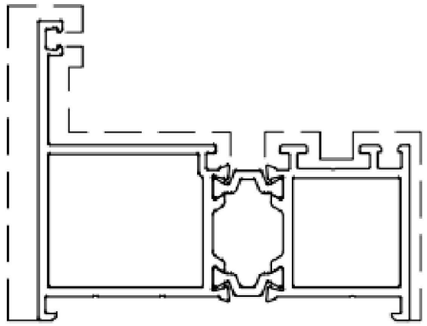
Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan A. Moser

FHC PART: BF52SFRAME_ (EX3)

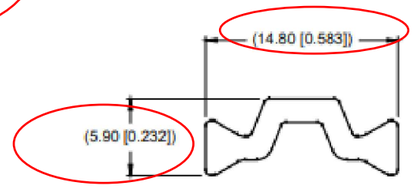
Núm. Articulo	Codigo	Núm. Parte	Cant.	Especificaciones
1	111690	G521001	1	Aluminum 6063-T5
2	111691	G521002	1	Aluminum 6063-T5
3	1009997	953241	2	Thermal

TOLERANCIA
RECTITUD: 0.0125"/FT
TORSION: ½°/FT; 5° MAX.
PLANICIDAD: 0.006"/IN
ANGULARIDAD: ±2°





SUPERFICIE EXPUESTA
SIN ESCALA



DETALLE THERMAL
ESCALA 2:1

VALIDO PARA APROBACION DE NUEVOS PROYECTOS

FHC PART # BF52SFRAME

REVISIONES				
REV	DESCRIPCION	ELABORO	FECHA	ECO/PROYECTO
1	DIBUJO ORIGINAL	IVAN R.	SEP/12/22	7540-01/7540-02
2	Se modifica formato de maquinado FORM-ING-45 a Ensamble FORM-ING-46	ISIS C.	OCT/13/22	7540-01/7540-02
3				
4				
5				
6				
7				

PROYECCION DEL TERCER ANGULO

NUMERO DE PARTE	DESCRIPCION
G521000	SIDE FRAME

PROPIEDAD Y CONFIDENCIALIDAD

DIBUJO PARA ENSAMBLE

ALUMINUM SOLUTIONS

DIBUJO 1:1
DIMENSION MM [IN]

CLIENTE: MIURA
DADO: 111690/111691

FORM-ING-46

Rev. 01

ENGINEER STAMP

Job Name: NAFR - AWS
INTERTEK (ATI) FHC BI-FOLD DOOR G52
REF QUOTEE:
Phone:
Fax: N/A
Contact: KIRBY MOSER

Customer:
Phone:
Fax:
Contact:

DRAWN BY: -
DATE: -----
REV#

Drawn By: MR
Checked By:
Date: 5/25/24
Scale: AS NOTED
Project #: JOB #

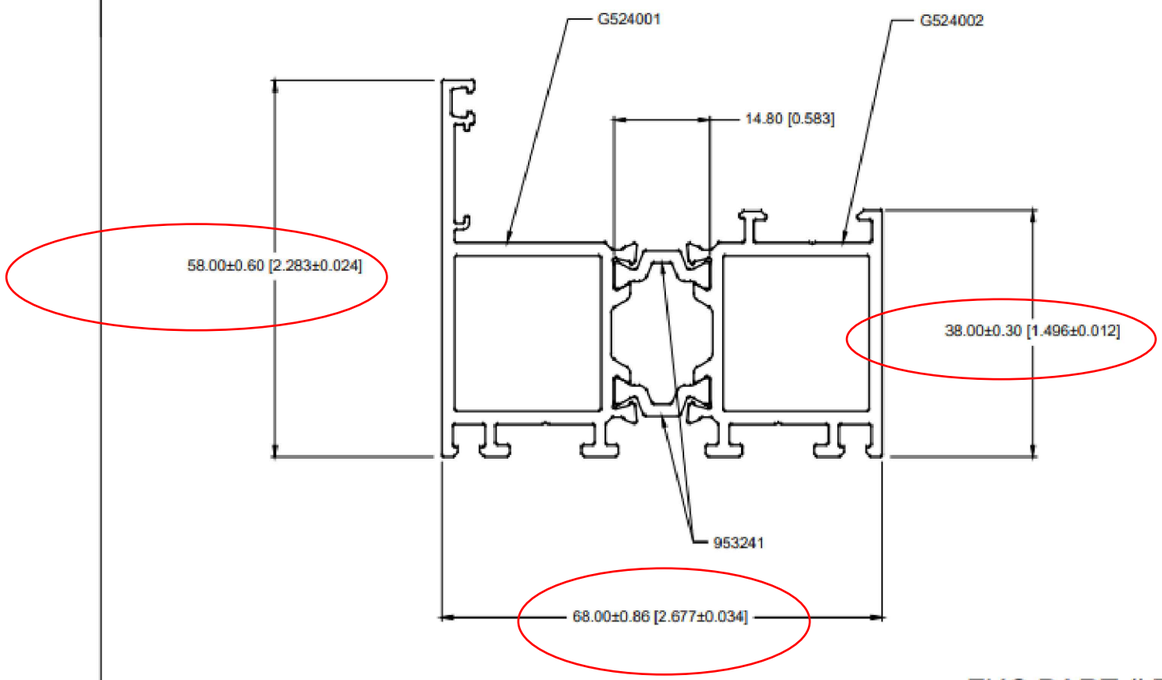
Sheet No.
1.01

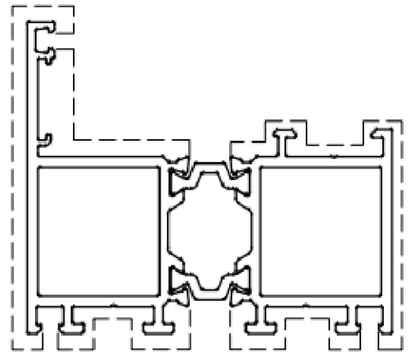
Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan P. Moser

FHC PART: BF52SASH_ (EX2)

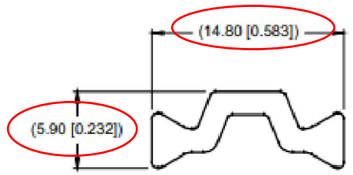
No. Article	Die/Warehouse	Part No.	QTY	Specifications
1	111698	G524001	1	Aluminum 6063-T5
2	111699	G524002	1	Aluminum 6063-T5
3	1009997	953241	2	Thermal

TOLERANCIA
RECTITUD: 0.0125"/FT
TORSION: ½°/FT; 5° MAX.
PLANICIDAD: 0.006"/IN
ANGULARIDAD: ±2°





SUPERFICIE EXPUESTA
SIN ESCALA



DETALLE THERMAL
ESCALA 2:1

VALIDO PARA APROBACION DE NUEVOS PROYECTOS

FHC PART # BF52SASH

PROYECCION DEL TERCER ANGULO	NUMERO DE PARTE	DESCRIPCION
	G524000	SASH

REVISIONES				
REV	DESCRIPCION	ELABORO	FECHA	ECO/PROYECTO
1	DIBUJO ORIGINAL	IVAN R.	SEP/12/22	7540-09/7540-10
2	Se modifica formato de maquinado FORM-ING-45 a Ensamble FORM-ING-46	ISIS C.	OCT/13/22	7540-09/7540-10
3				
4				
5				
6				
7				

DIBUJO PARA ENSAMBLE

ALUMINUM SOLUTIONS

DIBUJO 1.5:1
DIMENSION MM [IN]

CLIENTE: MIURA
DADO: 111698/111699

FORM-ING-46

Rev. 01

FHC

ENGINEER STAMP

Job Name: NAFR - AWS
INTERTEK (ATI) FHC BI-FOLD DOOR G52
REF QUOTEE:
Phone:
Fax: N/A
Contact: KIRBY MOSER

Customer:
Phone:
Fax:
Contact:

DRAWN BY
DATE
REV#

Drawn By: MR
Checked By:
Date: 5/25/24
Scale: AS NOTED
Project #: JOB #

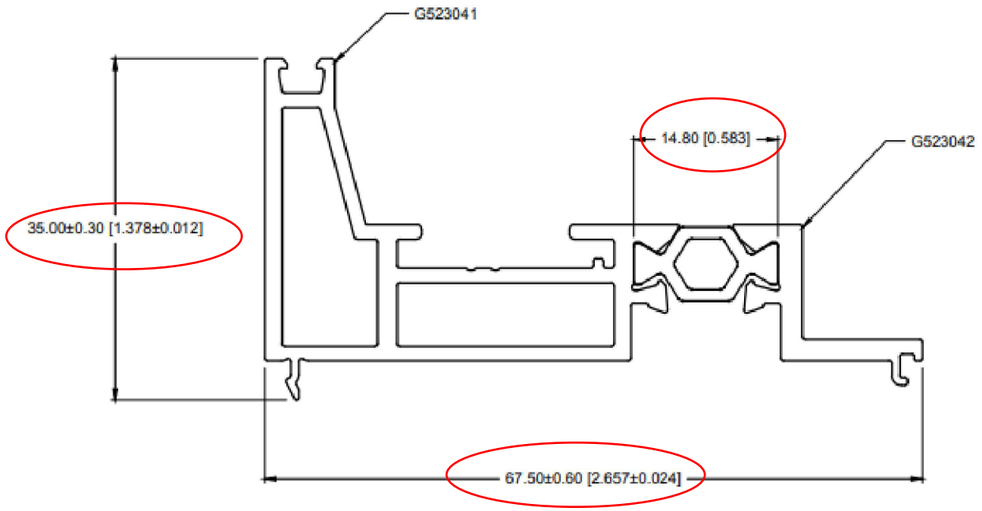
Sheet No.
1.02

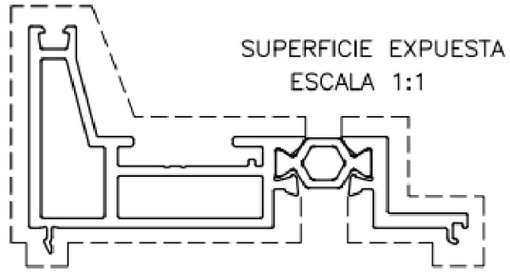
Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan P. Moser

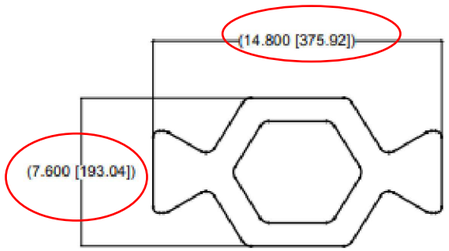
FHC PART: BF52MLC0VER_ (EX4)

No. Article	Die/Warehouse	Part No.	QTY	Specifications
1	110702	G523041	1	Aluminum 6063-T5
2	110703	G523042	1	Aluminum 6063-T5
3	1011638	---	1	Thermal

TOLERANCIA
RECTITUD: 0.0125"/FT
TORSION: ½°/FT; 5° MAX.
PLANICIDAD: 0.006"/IN
ANGULARIDAD: ±2°







DETALLE THERMAL
ESCALA 3:1

VALIDO PARA APROBACION DE NUEVOS PROYECTOS FHC PART # BF52MLC0VER

PROYECCION DEL TERCER ANGULO	NUMERO DE PARTE	DESCRIPCION
	G523040	Multipoint locking cover profile

REVISIONES				
REV	DESCRIPCION	ELABORO	FECHA	ECO/PROYECTO
1	DIBUJO ORIGINAL	IVAN R.	SEP/12/22	7540-13/7540-14
2	Se modifica formato de maquinado FORM-ING-45 a Ensamble FORM-ING-46	ISIS C.	OCT/13/22	7540-13/7540-14
3	Se Modifica codigo de plastico Thermal	M. Rdgz	NOV/16/22	7540-11/7540-12
4				
5				
6				
7				

DIBUJO PARA ENSAMBLE

ALUMINUM SOLUTIONS

DIBUJO 1.5:1
DIMENSION MM [IN]

CLIENTE: MIURA
DADO: 111702/111703

FORM-ING-46

Rev. 01

FHC

ENGINEER STAMP

Job Name: NAFR - AWS
INTERTEK (ATI) FHC BI-FOLD DOOR G52
REF QUOTEE:
Phone: N/A
Fax:
Contact: KIRBY MOSER

Customer:
Phone:
Fax:
Contact:

DRAWN BY
DATE
REV#

Drawn By: MR
Checked By:
Date: 5/25/24
Scale: AS NOTED
Project #: JOB #

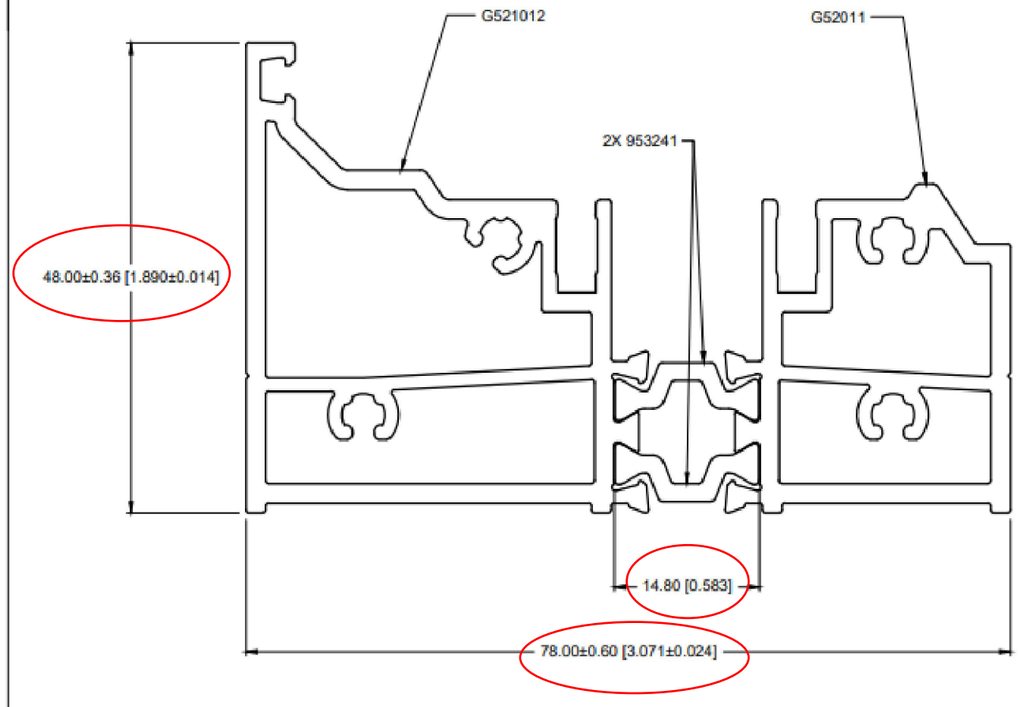
Sheet No.
1.03

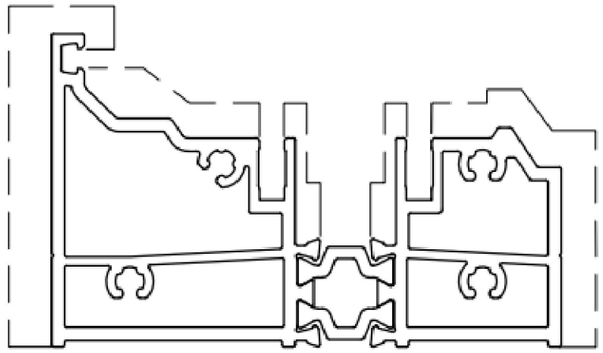
FHC PART: BF52HFRAME_ (EX5)

Núm. Articulo	Codigo	Núm. Parte	Cant.	Especificaciones
1	111694	G52011	1	Aluminum 6063-T5
2	111695	G52012	1	Aluminum 6063-T5
3	1009997	953241	2	Thermal

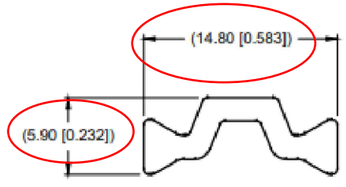
TOLERANCIA
RECTITUD: 0.0125"/FT
TORSION: ½°/FT; 5° MAX.
PLANICIDAD: 0.006"/IN
ANGULARIDAD: ±2°

intertek
Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan P. Moser





SUPERFICIE EXPUESTA
ESCALA 1:1



DETALLE THERMAL
ESCALA 2:1

FHC PART # BF52HFRAME

VALIDO PARA APROBACION DE NUEVOS PROYECTOS

REVISIONES				
REV	DESCRIPCION	ELABORO	FECHA	ECO/PROYECTO
1	DIBUJO ORIGINAL	IVAN R.	SEP/12/22	7540-05/7540-06
2	Se modifica formato de maquinado FORM-ING-45 a Ensamble FORM-ING-46	ISIS C.	OCT/13/22	7540-05/7540-06
3				
4				
5				
6				
7				

FORM-ING-46

PROYECCION DEL TERCER ANGULO

NUMERO DE PARTE	DESCRIPCION
G521010	Horizontal frame

DIBUJO PARA ENSAMBLE

ALUMINUM SOLUTIONS

DIBUJO 2:1
DIMENSION MM [IN]

CLIENTE: MIURA
DADO: 111694/111695

Rev. 01

FHC

ENGINEER STAMP

Job Name: NAFR - AWS
INTERTEK (ATI) FHC BI-FOLD DOOR G52
REF QUOTEE:
Phone:
Fax: N/A
Contact: KIRBY MOSER

Customer:
Phone:
Fax:
Contact:

REV#	DATE	DRAWN BY
	-----	-

Drawn By: MR
Checked By:
Date: 5/25/24
Scale: AS NOTED
Project #: JOB #

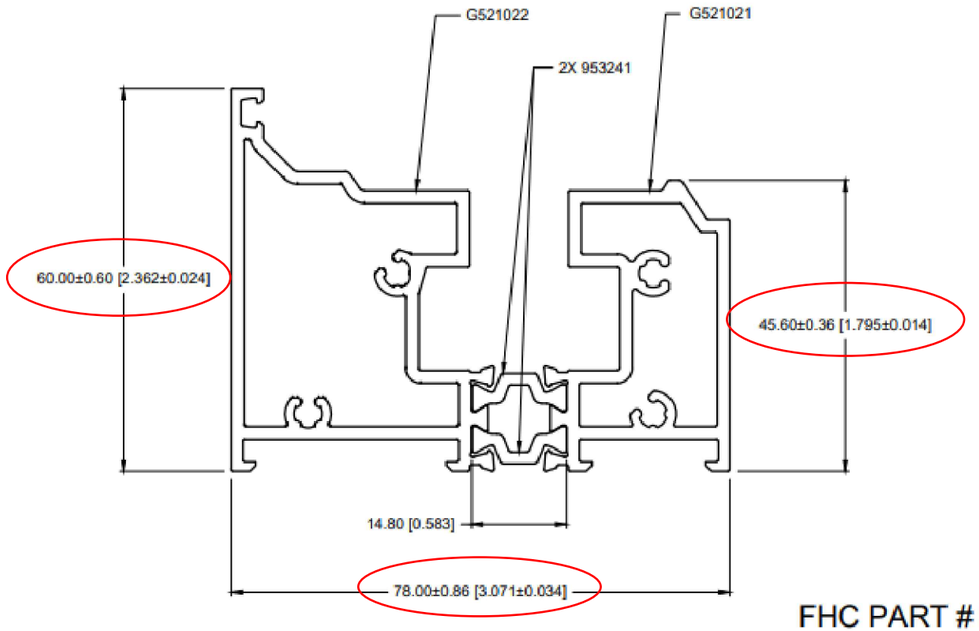
Sheet No.
1.04

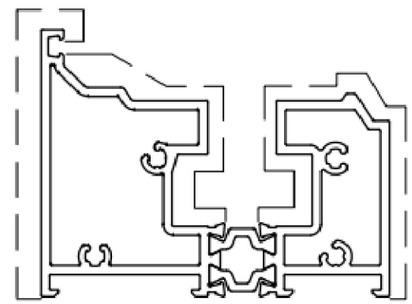
FHC PART: BF52HHFRAME_ (EX6)

Núm. Articulo	Codigo	Núm. Parte	Cant.	Especificaciones
1	111692	G521021	1	Aluminum 6063-T5
2	111693	G521022	1	Aluminum 6063-T5
3	1009997	953241	2	Thermal

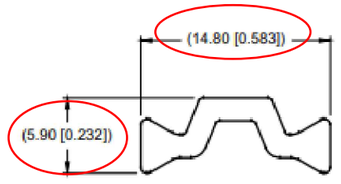
TOLERANCIA
RECTITUD: 0.0125"/FT
TORSION: ½°/FT; 5° MAX.
PLANICIDAD: 0.006"/IN
ANGULARIDAD: ±2°

intertek
Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan C. Moser





SUPERFICIE EXPUESTA
SIN ESCALA



DETALLE THERMAL
ESCALA 2:1

FHC PART # BF52HHFRAME

VALIDO PARA APROBACION DE NUEVOS PROYECTOS

PROYECCION DEL TERCER ANGULO	NUMERO DE PARTE	DESCRIPCION
	G521020	Heavy Horizontal frame

REVISIONES				
REV	DESCRIPCION	ELABORO	FECHA	ECO/PROYECTO
1	DIBUJO ORIGINAL	IVAN R.	SEP/12/22	7540-03/7540-04
2	Se modifica formato de maquinado FORM-ING-45 a Ensamble FORM-ING-46	ISIS C.	OCT/13/22	7540-03/7540-04
3				
4				
5				
6				
7				

DIBUJO PARA ENSAMBLE

ALUMINUM SOLUTIONS

DIBUJO 1:1
DIMENSION MM [IN]

CLIENTE: MIURA
DADO: 111692/111693

FORM-ING-46

Rev. 01

FHC
FHC-USA.COM 888-205-4331

ENGINEER STAMP

Job Name: NAFR - AWS
INTERTEK (ATI) FHC BI-FOLD DOOR G52
REF QUOTEE:
Phone:
Fax: N/A
Contact: KIRBY MOSER

Customer:
Phone:
Fax:
Contact:

REV#	DATE	DRAWN BY
1	-----	--
2		
3		
4		
5		
6		

Drawn By: MR
Checked By:
Date: 5/25/24
Scale: AS NOTED
Project #: JOB #

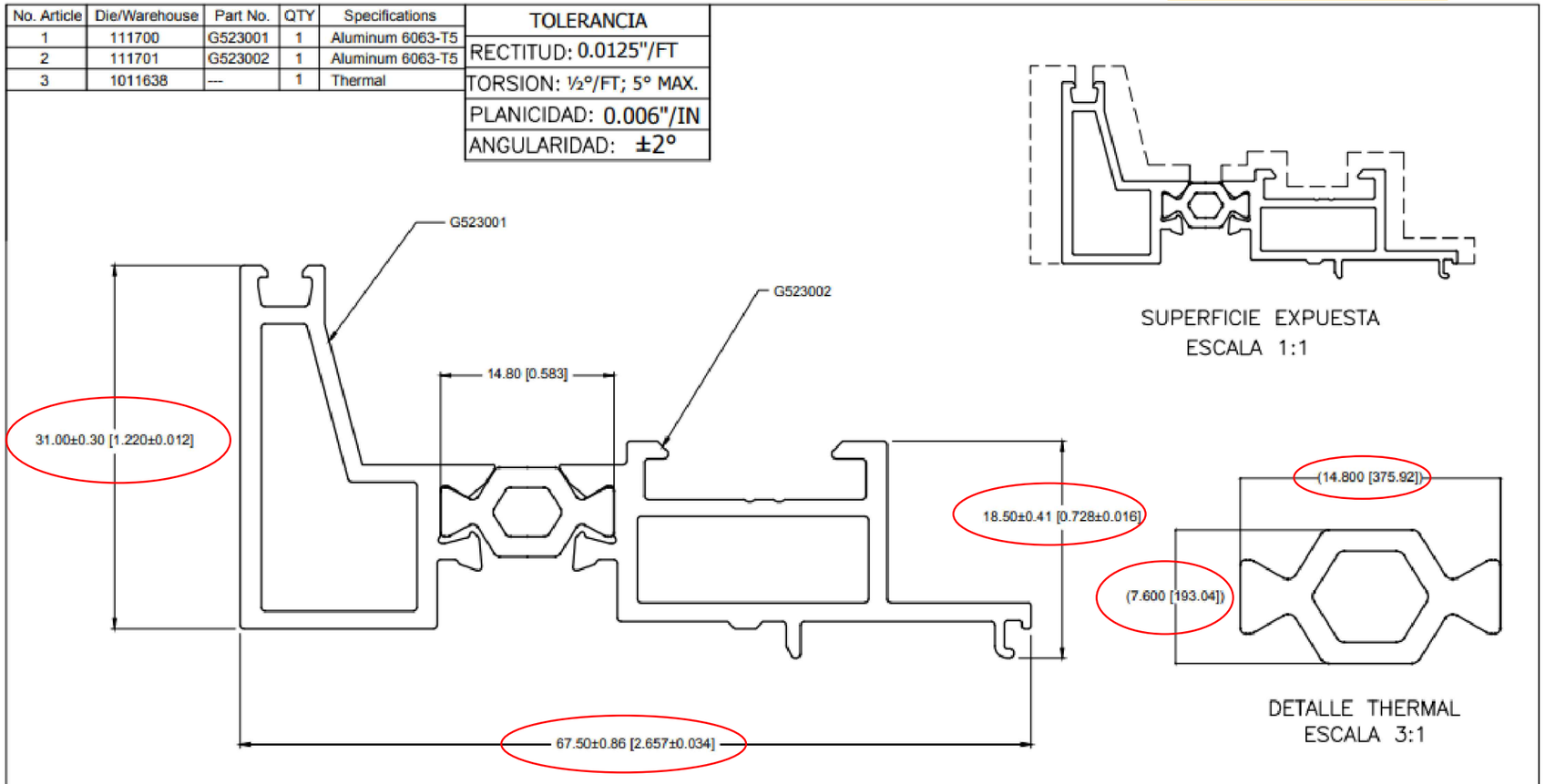
Sheet No.
1.05

FHC PART: BF52LC0VER_ (EX7)

intertek Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan P. Moser

No. Article	Die/Warehouse	Part No.	QTY	Specifications
1	111700	G523001	1	Aluminum 6063-T5
2	111701	G523002	1	Aluminum 6063-T5
3	1011638	---	1	Thermal

TOLERANCIA
RECTITUD: 0.0125"/FT
TORSION: ½°/FT; 5° MAX.
PLANICIDAD: 0.006"/IN
ANGULARIDAD: ±2°



SUPERFICIE EXPUESTA
ESCALA 1:1

DETALLE THERMAL
ESCALA 3:1

VALIDO PARA APROBACION DE NUEVOS PROYECTOS

FHC PART # BF52LC0VER

PROYECCION DEL TERCER ANGULO	NUMERO DE PARTE	DESCRIPCION
	G523000	Locking cover profile

REVISIONES				
REV	DESCRIPCION	ELABORO	FECHA	ECO/PROYECTO
1	DIBUJO ORIGINAL	IVAN R.	SEP/12/22	7540-11/7540-12
2	Se modifica formato de maquinado FORM-ING-45 a Ensamble FORM-ING-46	ISIS C.	OCT/13/22	7540-11/7540-12
3	Se Modifica codigo de plastico Thermal	M. Rdgz	NOV/16/22	7540-11/7540-12
4				
5				
6				
7				

DIBUJO PARA ENSAMBLE

ALUMINUM SOLUTIONS

DIBUJO 1:1
DIMENSION MM [IN]

CLIENTE: MIURA
DADO: 111700/111701

FORM-ING-46

Rev. 01

FHC

ENGINEER STAMP

Job Name: NAFR - AWS
INTERTEK (ATI) FHC BI-FOLD DOOR G52
REF QUOTEE:
Phone:
Fax: N/A
Contact: KIRBY MOSER

Customer:
Phone:
Fax:
Contact:

DRAWN BY
DATE
REV#

Drawn By: MR
Checked By:
Date: 5/25/24
Scale: AS NOTED
Project #: JOB #

Sheet No.
1.06

FHC PART: BF52GBEAD_ (EX9)

intertek Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan C. Moser

POR FAVOR REVISE TODAS LAS TOLERANCIAS Y LA SUPERFICIE EXPUESTA. TODAS LAS MEDIDAS Y TOLERANCIAS APLICAN PARA MATERIAL SIN ACABADO.	TIPO: HUECO	DADO: 111705	REV. 2

TOLERANCIA ESTANDAR
RECTITUD: 0.0125"/FT
TORSION: ½°/FT; 5° MAX.
PLANICIDAD: 0.006"/IN
ANGULARIDAD: ±2°

SE APLICAN TOLERANCIAS COMERCIALES DE LA ALUMINUM ASSOCIATION AL MENOS QUE ESPECIFIQUEN OTRAS

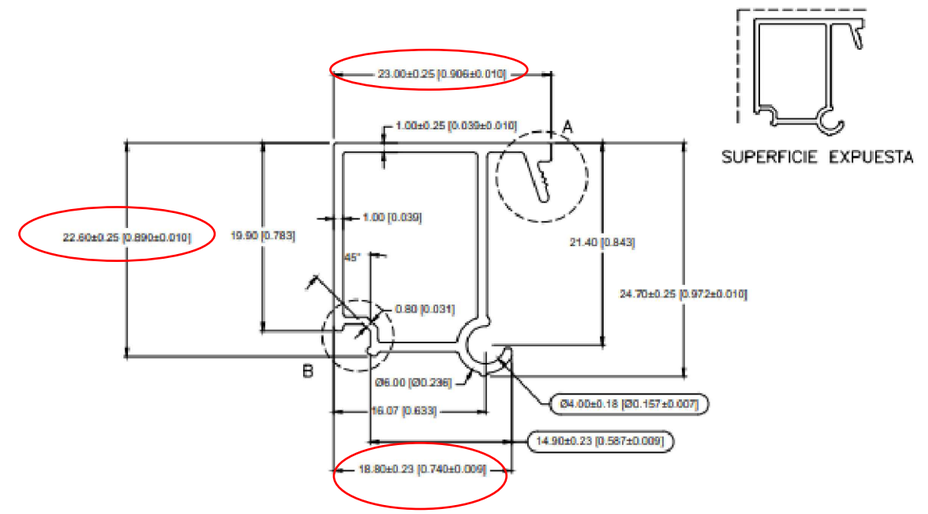
Este dibujo se preparó de acuerdo a la muestra o dibujo proporcionado por **(HOPO)**, el buen funcionamiento o ensamble dependerá del correcto análisis de las especificaciones y tolerancias marcadas en este dibujo, y es responsabilidad de **(HOPO)**, verificarlo

La responsabilidad de ABC se limita a enviar material dentro de las especificaciones marcadas en este dibujo.

Aprobado por:_____ Fecha:_____

VALIDO PARA APROBACION DE NUEVOS PROYECTOS

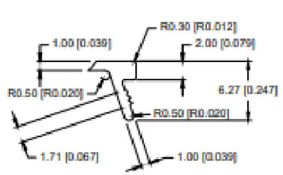
ESCALA NATURAL



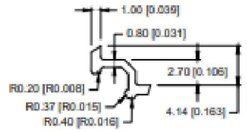
SUPERFICIE EXPUESTA

Criterio Cosmético:
La apariencia es evaluada en la **superficie significativa.**
La superficie significativa debe ser definida por el cliente y es la parte de la superficie total que es esencial a la apariencia y servicibilidad de la parte.
Ninguno de los defectos listados abajo deben ser visibles a una distancia de 3 metros:

- Rugosidad excesiva.
- Burbujas.
- Inclusiones.
- Rayguños.
- Lineas de flujo.



DETALLE A
ESCALA 2:1



DETALLE B
ESCALA 2:1

Matar filos a R0.010"
Dimensiones criticas son denotadas por un ovalo.

FHC PART # BF52GBEAD

REV	DESCRIPCION	ELABORO	FECHA	ECO
1	DIBUJO ORIGINAL	ISIS C.	JUL/08/2022	--
2	SE AGREGARON TOLERANCIAS	ISIS C.	29/08/2022	--

ALUMINUM SOLUTIONS

PESO	0.256	KG/MT	0.172	LB/FT:	CLIENTE: HOPO
PERIMETRO	11.481	CM	4.520	IN	DESCRIPCION: GLAZING BEAD
AREA	0.926	CM^2	0.144	SQIN	No.PARTE: GE021110
CIRCULO	3.042	CM	1.198	IN	REVISO: IVAN RODRIGUEZ — ESCALA: 2:1
ALEACION	6063/6060	TEMPLE	T5		DWG: 7540-16 — ACOTACIONES: MM
					FORM-ING-43 REV.01

FHC
FHC-USA.COM 888-295-4331

ENGINEER STAMP

Job Name: NAFR - AWS
INTERTEK (ATI) FHC BI-FOLD DOOR G52
REF QUOTEE:
Phone:
Fax: N/A
Contact: KIRBY MOSER

Customer:
Phone:
Fax:
Contact:

REV#	DATE	DRAWN BY
	------	;

Drawn By: MR
Checked By:
Date: 5/25/24
Scale: AS NOTED
Project #: JOB #

Sheet No.
1.08

FHC PART: BF52ESEAL1NG_ (EX1)

intertek Report #: R3633-116-46 Date: 09/05/2024 Verified by: Ryan A. Moser

POR FAVOR REVISE TODAS LAS TOLERANCIAS Y LA SUPERFICIE EXPUESTA. TODAS LAS MEDIDAS Y TOLERANCIAS APLICAN PARA MATERIAL SIN ACABADO.	TIPO: SOLIDO	DADO: 111704	REV. 2

TOLERANCIA ESTANDAR
RECTITUD: 0.0125"/FT
TORSION: ¼°/FT; 3° MAX.
PLANICIDAD:0.008"/IN
ANGULARIDAD: ±2°

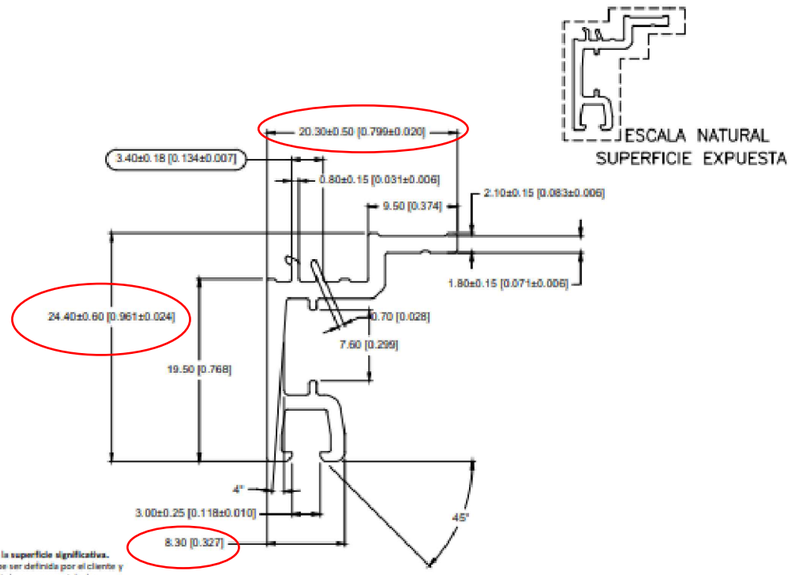
SE APLICAN TOLERANCIAS COMERCIALES DE LA ALUMINUM ASSOCIATION AL MENOS QUE ESPECIFIQUEN OTRAS

Este dibujo se preparó de acuerdo a la muestra o dibujo proporcionado por **(HOPO)**, el buen funcionamiento o ensamble dependerá del correcto análisis de las especificaciones y tolerancias marcadas en este dibujo, y es responsabilidad de **(HOPO)**, verificarlo

La responsabilidad de ABC se limita a enviar material dentro de las especificaciones marcadas en este dibujo.

Aprobado por:_____ Fecha:_____

VALIDO PARA APROBACION DE NUEVOS PROYECTOS



Criterio Cosmético
La apariencia es evaluada en la **superficie significativa.**
La superficie significativa debe ser definida por el cliente y es la parte de la superficie total que es esencial a la apariencia y servicibilidad de la parte.
Ninguno de los defectos listados abajo deben ser visibles a una distancia de 3 metros:

- Rugosidad excesiva.
- Burbujas.
- Inclusiones.
- Rasgados.
- Lineas de flujo.

FHC PART # BF52ESEAL1NG

Matar filos a R0.010"
Dimensiones criticas son denotadas por un ovalo.

REV	DESCRIPCION	ELABORO	FECHA	ECO
1	DIBUJO ORIGINAL	ISIS C.	JUL/08/2022	--
2	SE AGREGARON TOLERANCIAS	ISIS C.	29/08/2022	--

ALUMINUM SOLUTIONS

		0.457	KG/MT	0.307	LB/FT:
	PERIMETRO	15.125	CM	5.955	IN
		1.652	CM²	0.256	SQIN
	CIRCULO	4.251	CM	1.674	IN
	ALEACION	6063/6060	TEMPLE	T5	

CLIENTE: HOPO
DESCRIPCION: EDGE SEALING MATERIALS
No.PARTE: G524106
REVISO: IVAN RODRIGUEZ
ESCALA: 2:1
DWG: 7540-15
ACOTACIONES: MM
FORM-ING-43 REV.01

FHC

ENGINEER STAMP

Job Name: NAFR - AWS
INTERTEK (ATI) FHC BI-FOLD DOOR G52
REF QUOTEE:
Phone: N/A
Fax:
Contact: KIRBY MOSER

Customer:
Phone:
Fax:
Contact:

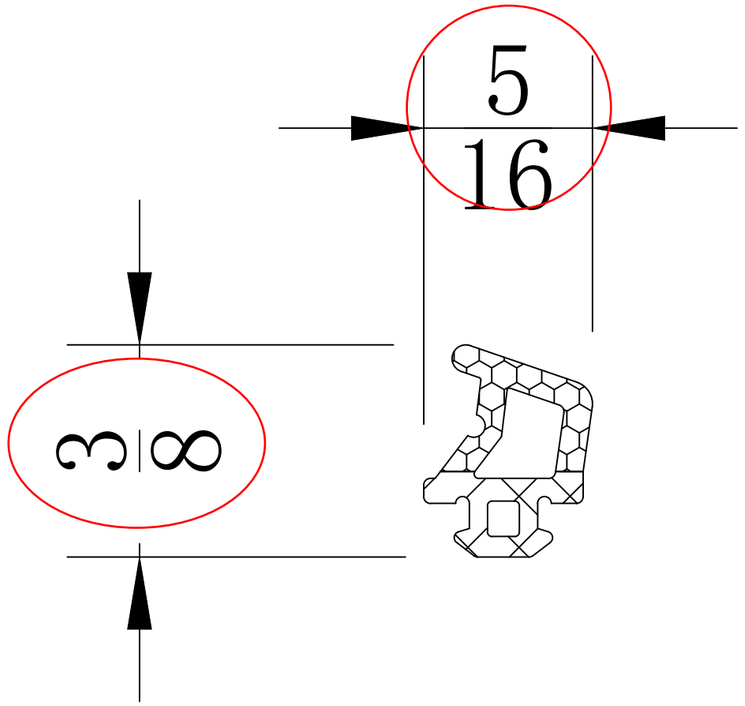
DRAWN BY | DATE | REV#

Drawn By: MR
Checked By:
Date: 5/25/24
Scale: AS NOTED
Project #: JOB #

Sheet No.
1.09

STORO

FHC PART: BF52SEAL1NG (GS5)



Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan P. Moser

THIRD ANGLE PROJECTION	PART NUMBER	DESCRIPTION
	G701433	---

REVISIONS

Rev.	DESCRIPTION	DATE	DRAW BY	REVIEWED
A	DRAWING FOR PRODUCTION.	06/MAR/2023	Karen N.	Abraham L.
B				
C				
D				
E				
F				
G				

DRAWING FOR MACHINING

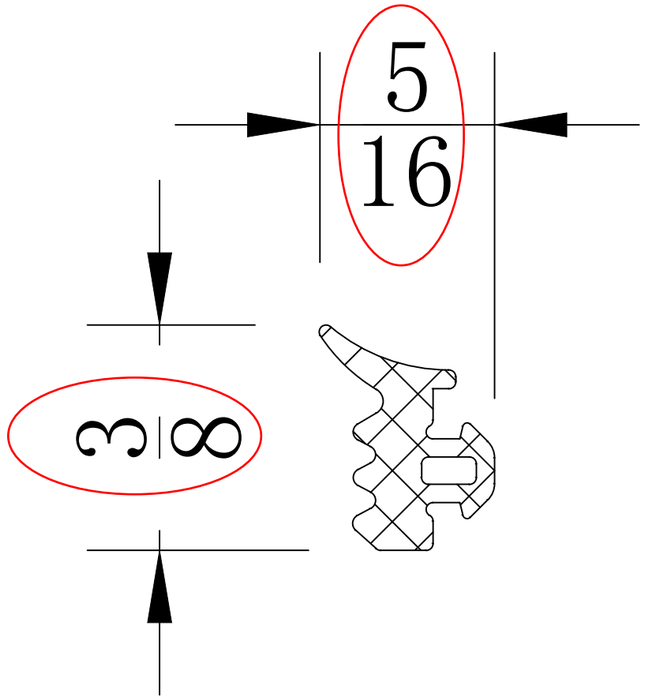
ALUMINUM SOLUTIONS

DRAWING	MATERIAL		FINISH	
S/E	ALLOY 6063/6060 TEMPER T5		Anodized Black	
DIMENSION inch	Angularity ±1°	.X ±0.100	.XX ±0.020	.XXX ±0.010

CUSTOMER: #
DIE #: ---

FHC PART: BF520UTS1DE (GS6)

STORO



Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan P. Moser

REVISIONS				
Rev.	DESCRIPTION	DATE	DRAW BY	REVIEWED
A	DRAWING FOR PRODUCTION.	06/MAR/2023	Karen N.	Abraham L.
B				
C				
D				
E				
F				
G				

THIRD ANGLE PROJECTION

PART NUMBER	DESCRIPTION
G701011.X	OUTSIDE GASKET

DRAWING FOR MACHINING

ALUMINUM SOLUTIONS

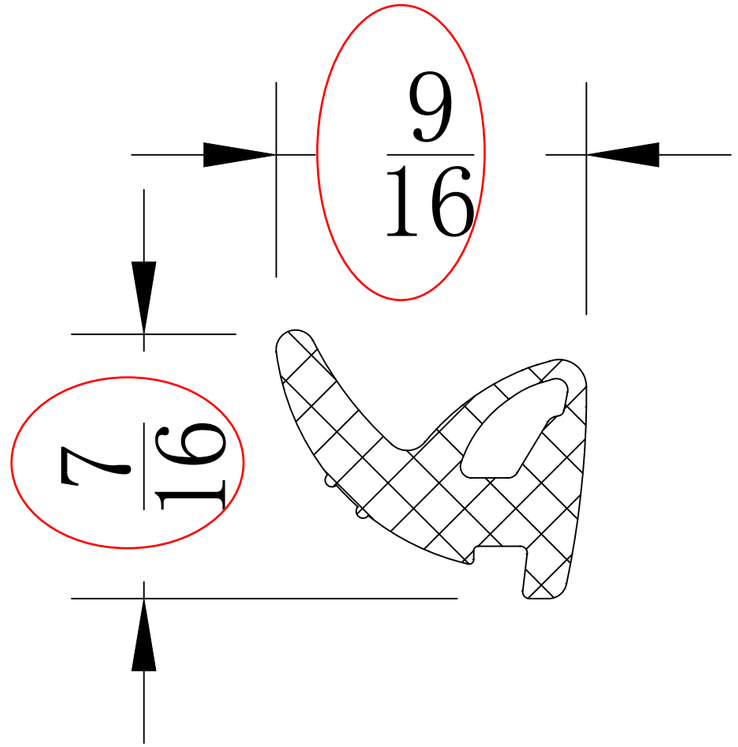
DRAWING S/E	MATERIAL ALLOY 6063/6060 TEMPER T5		FINISH Anodized Black	
DIMENSION inch	Angularity ±1°	.X ±0.100	.XX ±0.020	.XXX ±0.010

CUSTOMER: #

DIE #: ---

FHC PART: BF521NS1DE (GS7)

STORO



intertek Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan P. Moser

THIRD ANGLE PROJECTION	PART NUMBER	DESCRIPTION
	G701141	---

REVISIONS

Rev.	DESCRIPTION	DATE	DRAW BY	REVIEWED
A	DRAWING FOR PRODUCTION.	06/MAR/2023	Karen N.	Abraham L.
B				
C				
D				
E				
F				
G				

DRAWING FOR MACHINING

ALUMINUM SOLUTIONS

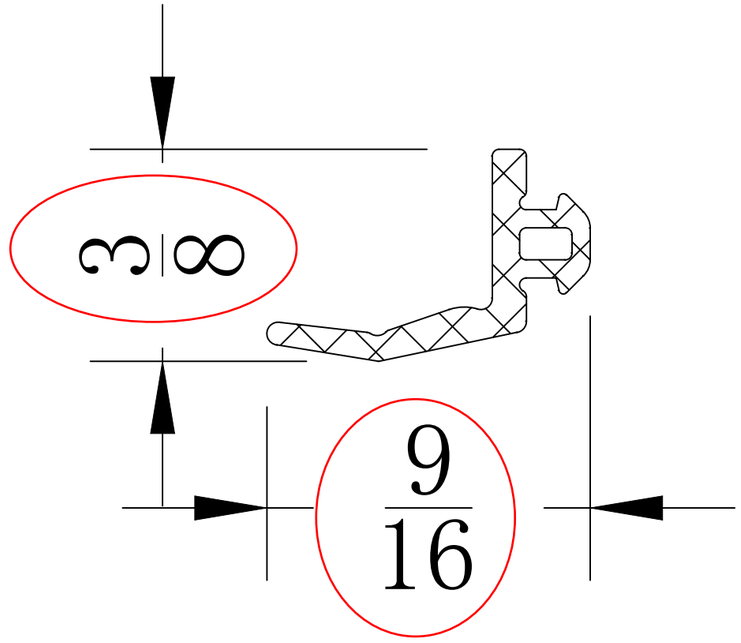
DRAWING	MATERIAL		FINISH	
S/E	ALLOY 6063/6060 TEMPER T5		Anodized Black	
DIMENSION inch	Angularity ±1°	.X ±0.100	.XX ±0.020	.XXX ±0.010

CUSTOMER: #

DIE #: ---

FHC PART: BF52LAM1NAT1NG (GS10)

STORO



intertek Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan P. Moser

REVISIONS				
Rev.	DESCRIPTION	DATE	DRAW BY	REVIEWED
A	DRAWING FOR PRODUCTION.	06/MAR/2023	Karen N.	Abraham L.
B				
C				
D				
E				
F				
G				

THIRD ANGLE PROJECTION

PART NUMBER	DESCRIPTION
G705811.X	OVERLAP GASKET

DRAWING FOR MACHINING

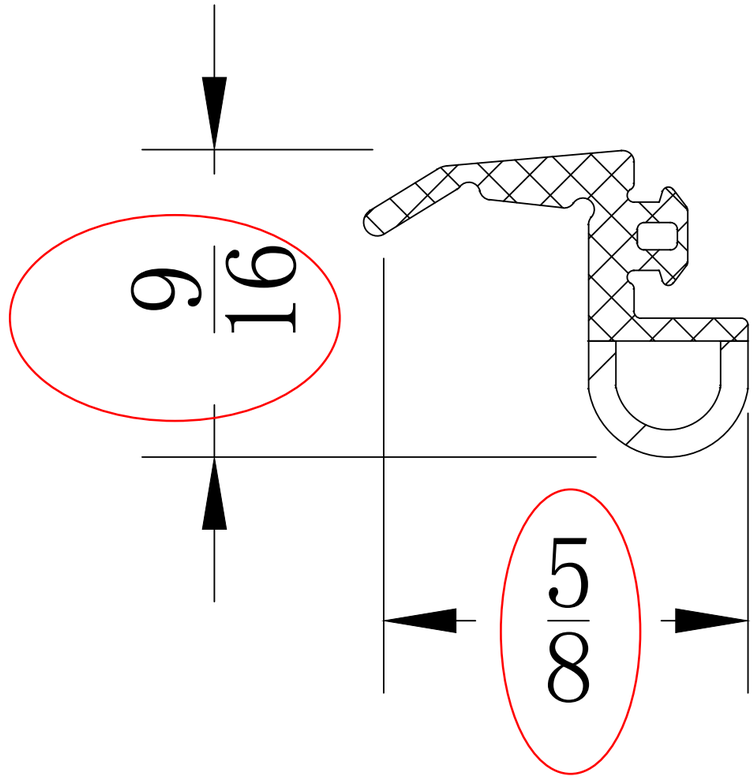
ALUMINUM SOLUTIONS

DRAWING S/E	MATERIAL ALLOY 6063/6060 TEMPER T5		FINISH Anodized Black	
DIMENSION inch	Angularity ±1°	.X ±0.100	.XX ±0.020	.XXX ±0.010

CUSTOMER: #
DIE #: ---

FHC PART: BF52CBTAPE (GS11)

STORO



Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan P. Moser

THIRD ANGLE PROJECTION

PART NUMBER	DESCRIPTION
G705833.X	OVERLAP GASKET FOR COVER

REVISIONS

Rev.	DESCRIPTION	DATE	DRAW BY	REVIEWED
A	DRAWING FOR PRODUCTION.	06/MAR/2023	Karen N.	Abraham L.
B				
C				
D				
E				
F				
G				

DRAWING FOR MACHINING

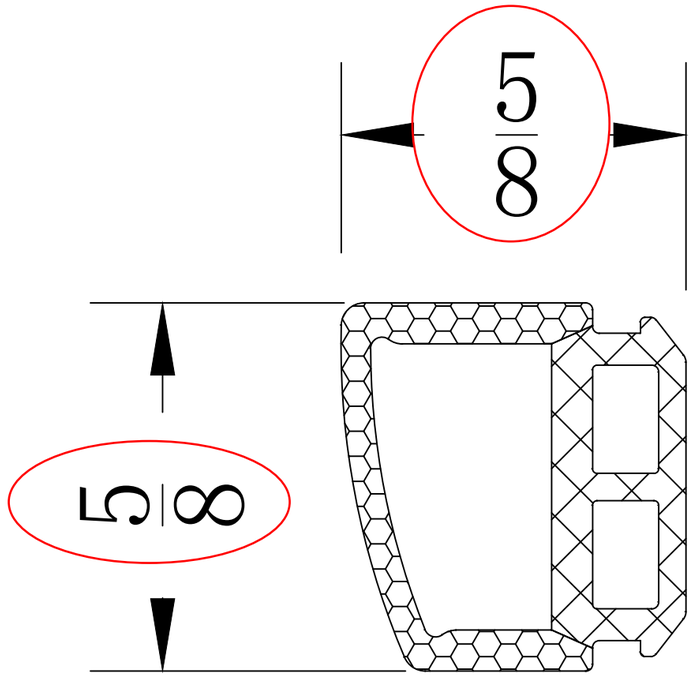
ALUMINUM SOLUTIONS

DRAWING	MATERIAL		FINISH	
S/E	ALLOY 6063/6060 TEMPER T5		Anodized Black	
DIMENSION inch	Angularity ±1°	.X ±0.100	.XX ±0.020	.XXX ±0.010

CUSTOMER: #
DIE #: ---

FHC PART: BF52SM1DDLE (GS13)

STORO



Report #: R3633-116-46
Date: 09/05/2024
Verified by: Ryan P. Moser

THIRD ANGLE PROJECTION	PART NUMBER	DESCRIPTION
	G705853.X	SASH SEALING GASKET

REVISIONS

Rev.	DESCRIPTION	DATE	DRAW BY	REVIEWED
A	DRAWING FOR PRODUCTION.	06/MAR/2023	Karen N.	Abraham L.
B				
C				
D				
E				
F				
G				

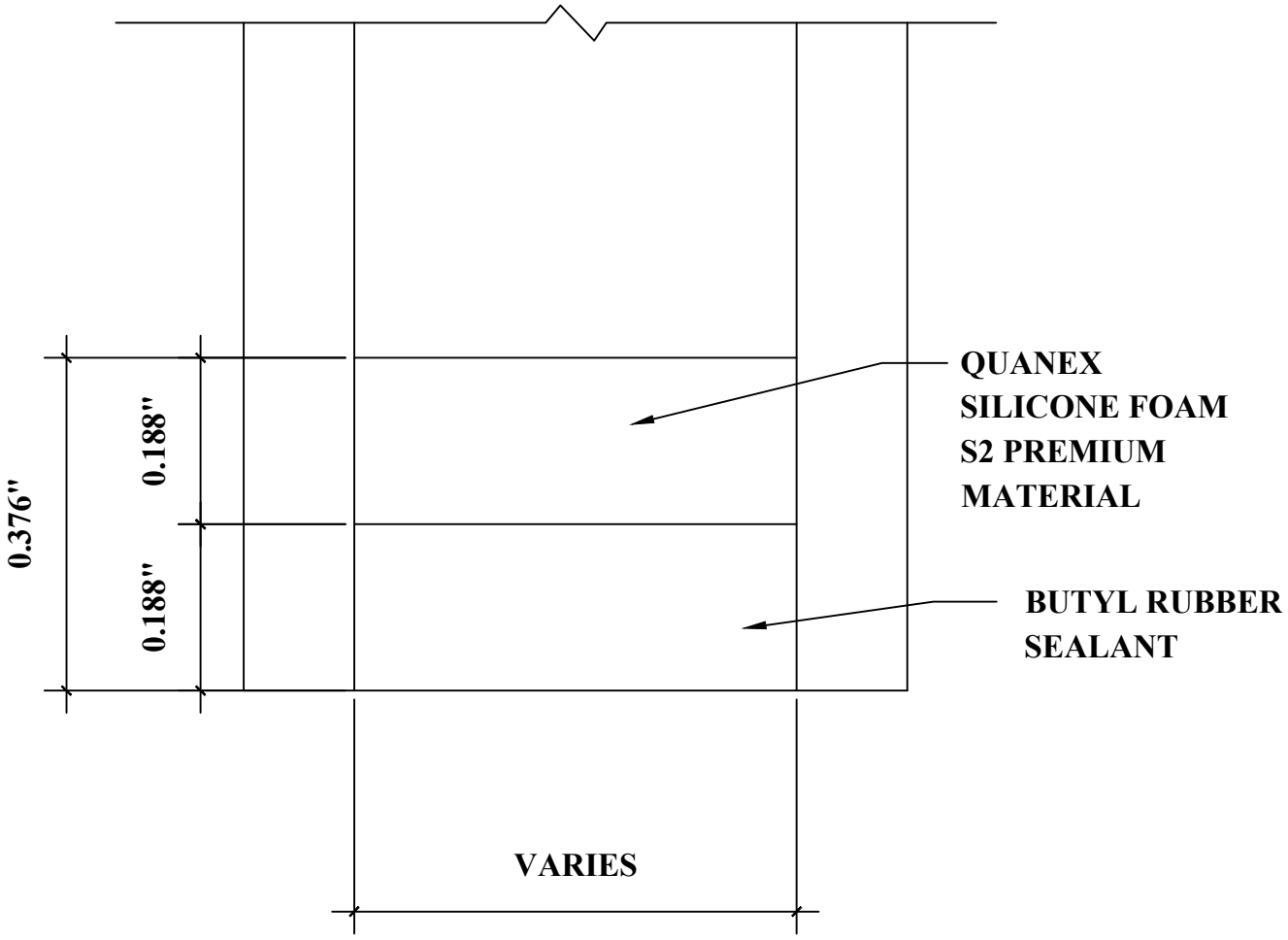
DRAWING FOR MACHINING

ALUMINUM SOLUTIONS

DRAWING	MATERIAL		FINISH	
S/E	ALLOY 6063/6060 TEMPER T5		Anodized Black	
DIMENSION inch	Angularity ±1°	.X ±0.100	.XX ±0.020	.XXX ±0.010

CUSTOMER: #

DIE #: ---



DETAIL FOR THERMAL MODELING OF
QUANEX SUPER SPACER PREMIUM (ZF-S)

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

SECTION 16
REVISION LOG

REVISION #	DATE	PAGES	REVISION
.01 R0	09/16/24	N/A	Original Report Issue