

4

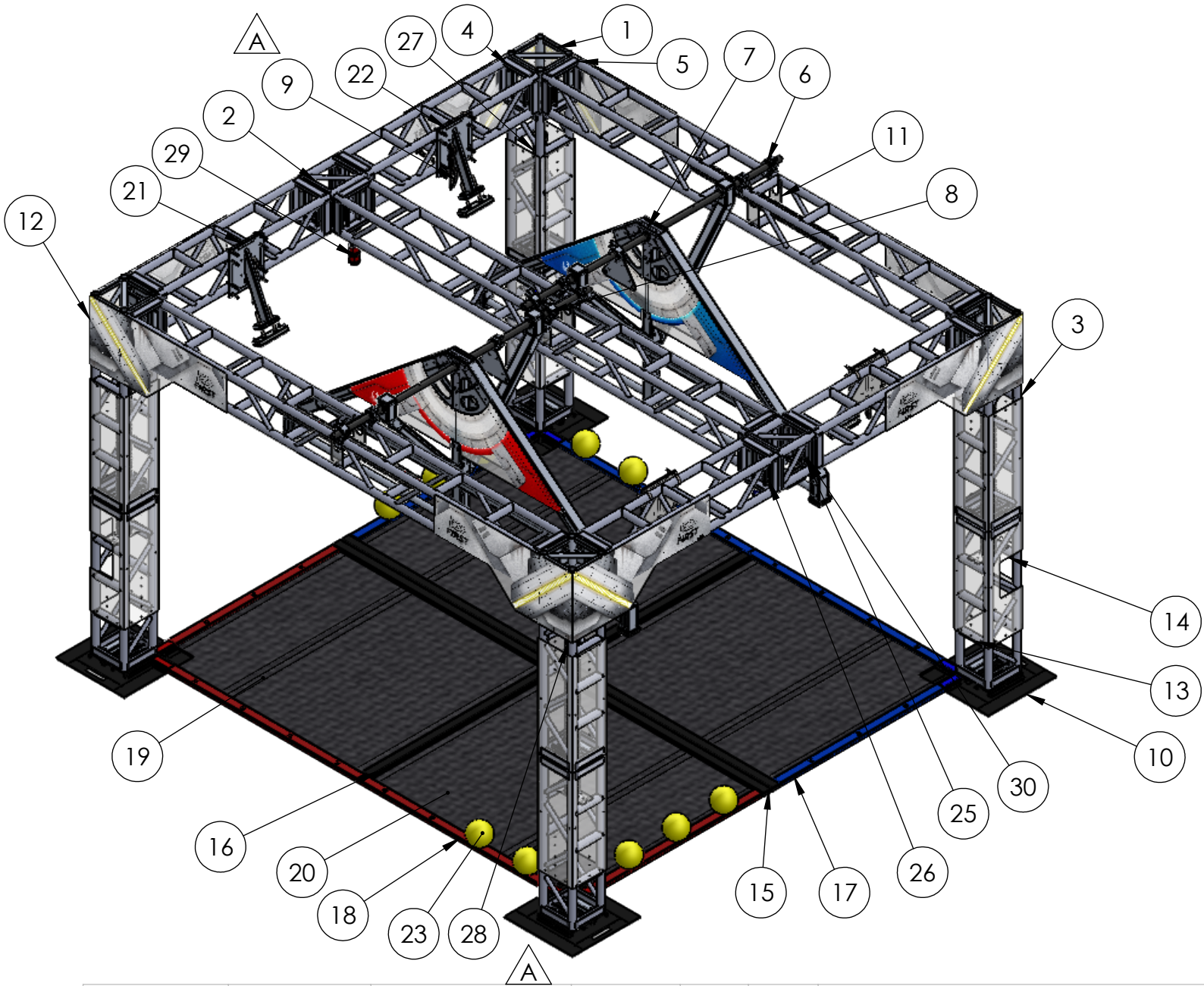
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ITEM NO.	PART NUMBER	DESCRIPTION	
1	GE-20001	TS 1212LD-C3P, 3 Way Corner Block Light Duty Truss, Total Structures	4
2	GE-20002	TS 1212LD-C4P, 4 Way Corner Block Light Duty Truss, Total Structures	2
3	GE-20003	TS 1212LD-48P, 48" x 12" x 12" Light Duty Truss, Total Structures	8
4	GE-20004	TS 1212LD-60P, 60" x 12" x 12" Light Duty Truss, Total Structures	4
5	GE-20005	TS 1212LD-144P, 144" x 12" x 12" Light Duty Truss, Total Structures	3
6	GE-20006	Cheeseborough for Truss _ Stacked	8
7	GE-20020	Generator Switch Assembly	2
8	GE-20022	Pivot Pole to Generator Switch Shaft Collar	2
9	GE-20028	Generator Switch Lock Out - Field Attachment	4
10	GE-20031	Truss Base with Nut Chassis	4
11	GE-20035	Jig for Cheeseboroughs	6
12	GE-20041	Truss Vinyl Plastic	8
13	GE-20043	Shield Generator Truss Leg Plastic	12
14	GE-20044	Shield Generator Truss Leg Plastic_Trench	4
15	GE-20046	Boundary 75.38" w/ hook	4
16	GE-20047	Boundary 63.5" w/ hook	2
17	GE-20048	Boundary 57.5" w/ hook	4
18	GE-20049	Boundary 66.25" w/ hook	4
19	GE-20057	Floor Protector Assembly, Left	2
20	GE-20058	Floor Protector Notched Carpeted Assembly, Right	2
21	GE-20067	Hard Stop, Large	2
22	GE-20068	Hard Stop, Small	2
23	GE-20500	Power Cell	10
25	hex_.625_11_2.00	Hex Head Bolt, 5/8"-11 Thread, 2" length	104
26	hexnut_.625_11	5/8"-11 hex nut	88
27	Light Assembly for Shield Generator_Blue	Light Assembly for Shield Generator_Red	3
28	Light Assembly for Shield Generator_Red	Light Assembly for Shield Generator_Red	3
29	StackLight_Assembly	Stack Light Assembly	2
30	washer_flat_.625	Flat washer for 5/8" screw	192

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, B2, B3, 2-A2, 2-A3, 2-B2, 3-A2, 4-A2, 4-A3, 4-B1, 4-B2, 5-A2	A	Added Generator Switch Lock Out - Field Attachment, Added Sheet 5 to Detail Assembly, Updated Tolerance in Title Blocks, Updated Tolerances.	2/6/2020	KAMC



A

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL +/- 1/2 ONE PLACE DECIMAL: +/- 0.5 TWO PLACE DECIMAL: +/- 0.50	DRAWN			TITLE: <h1>Shield Generator</h1>			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
			Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:						
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON					SIZE	DWG. NO.		REV
						<b>B</b>	<b>GE-20000</b>		<b>A</b>
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:36		WEIGHT:	SHEET 1 OF 5



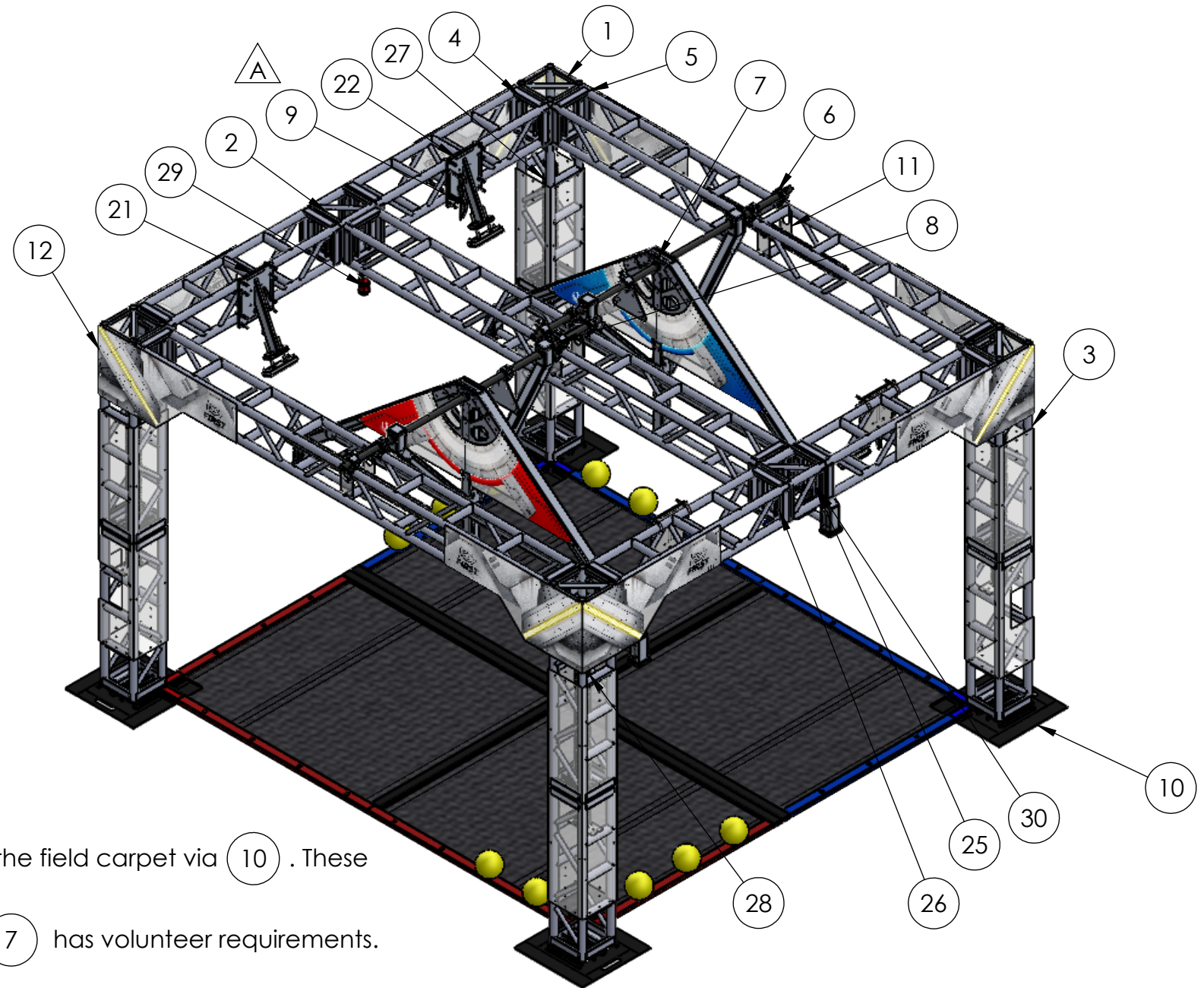
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Notes:

1. (1), (2), (3), (4), (5) are attached via (25), (26), (30), and secured to the field carpet via (10). These parts have volunteer requirements for assembly.
2. (7) is attached to (5) via (6) and aligned using (11). Lifting and securing (7) has volunteer requirements.
3. Attach (8) flush to (6) on both (7) assemblies.
4. Attach (9) to (4) by looping around Truss. Ensure loops on (9) are facing towards (7). To move out of the way, attach (9) to (22) or (21) using the attached magnet. 
5. Attach (21) and (22) using appropriate hardware.
6. Secure (28) and (27) to Truss using 50-lb cable ties.
7. Secure (12) to Truss using 50-lb cable ties.
8. Secure (29) to Truss using 50-lb cable ties.

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL +/- 1/2 ONE PLACE DECIMAL: +/- 0.5 TWO PLACE DECIMAL: +/- 0.50	DRAWN			TITLE: <h1>Shield Generator</h1>		
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			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B GE-20000 A</b>		
		MATERIAL	COMMENTS:					
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:36				WEIGHT:	SHEET 2 OF 5



## A

- A**



A triangle with the letter 'A' inside it.

1



4

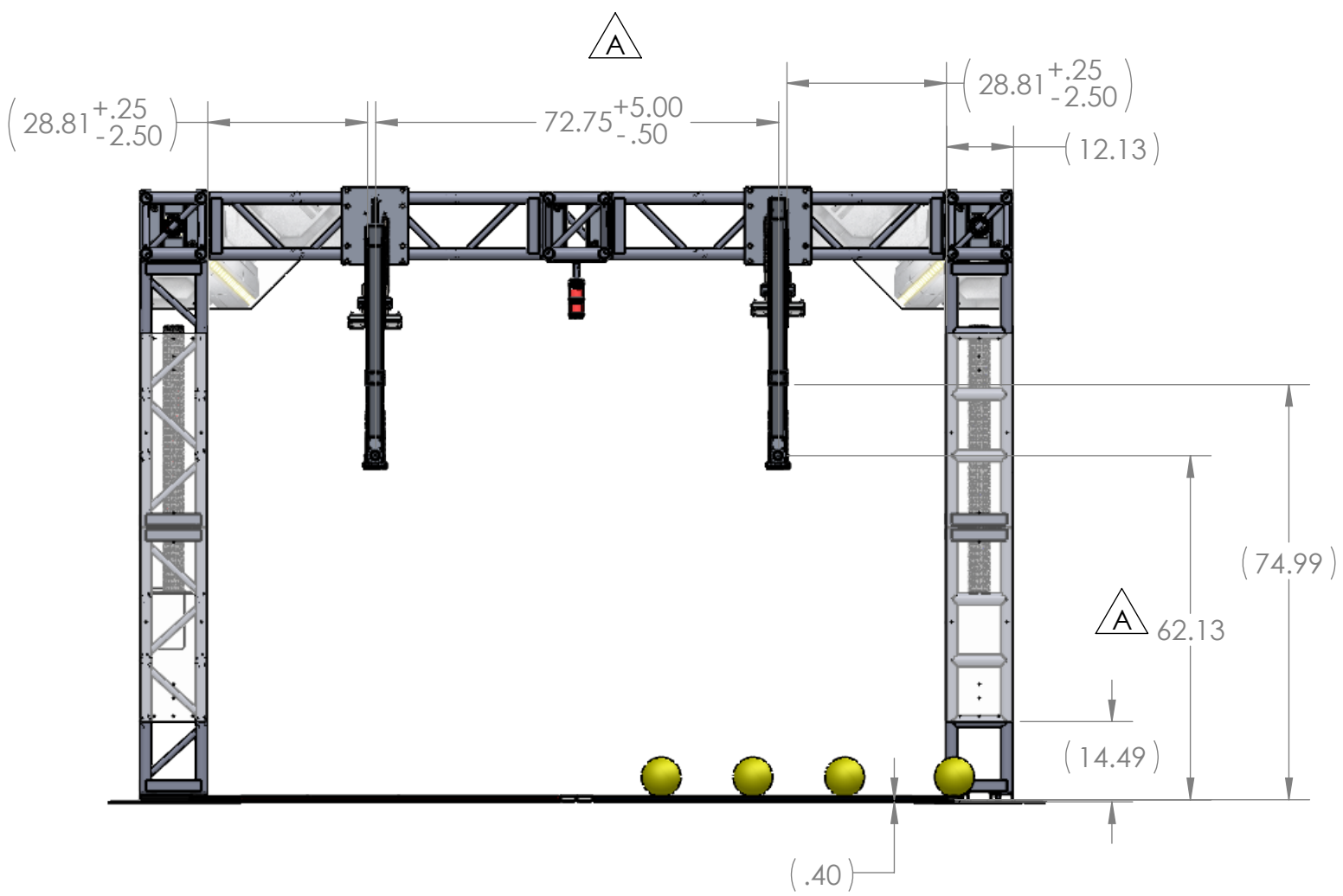
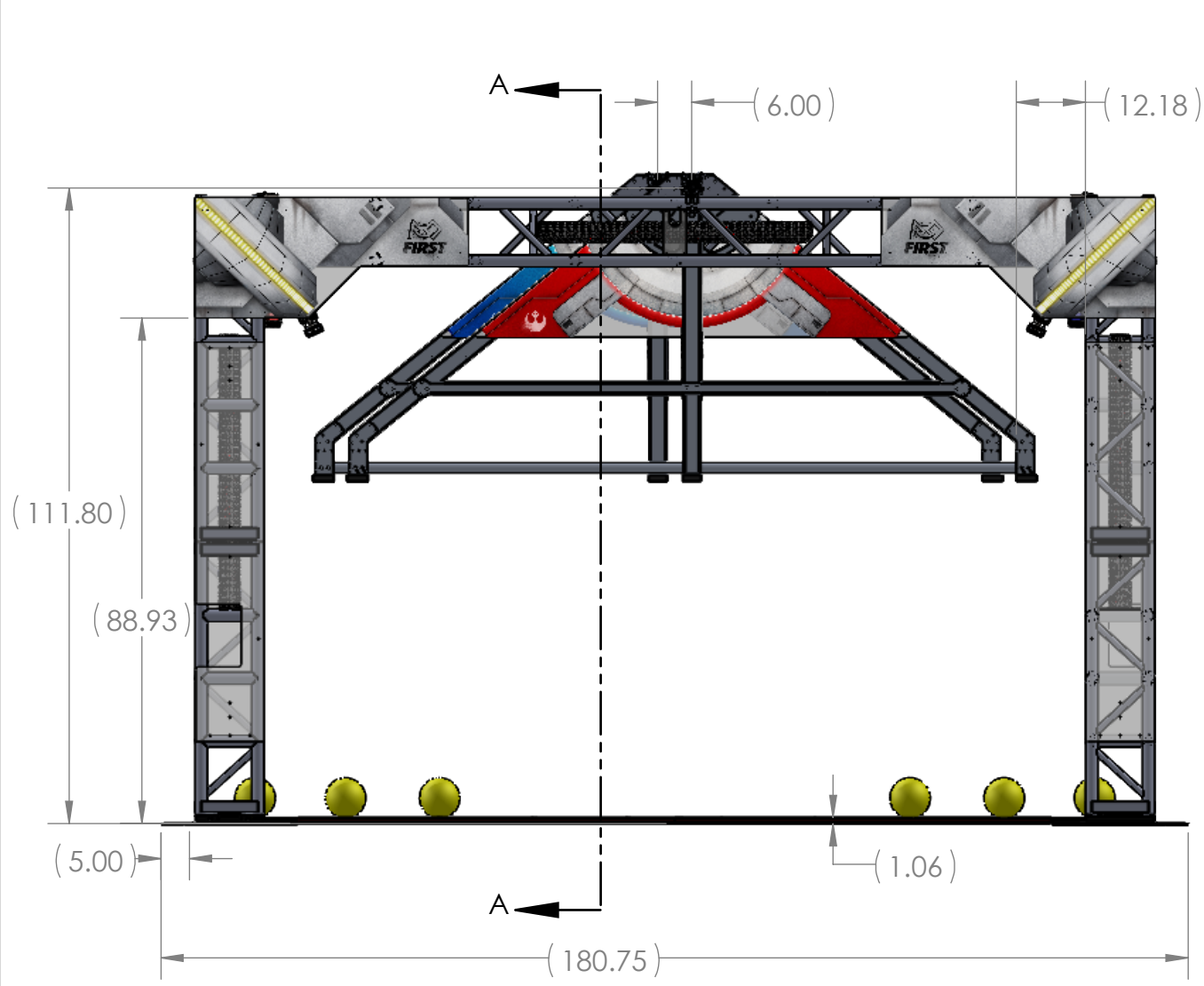
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B


B



SECTION A-A



A

A

Notes:  
All dimensions in parentheses ( ) are REFERENCE dimensions. 

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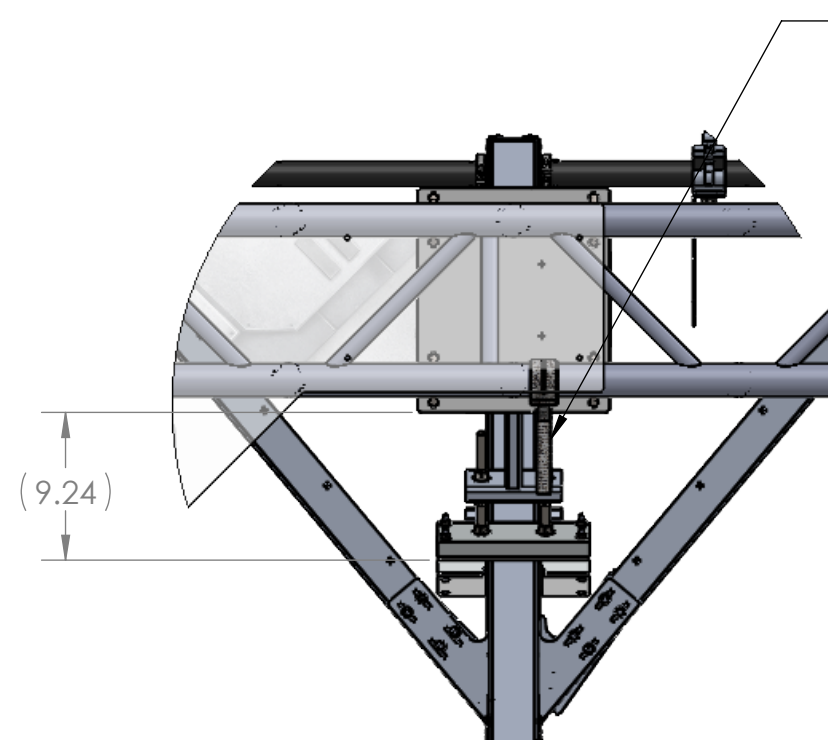
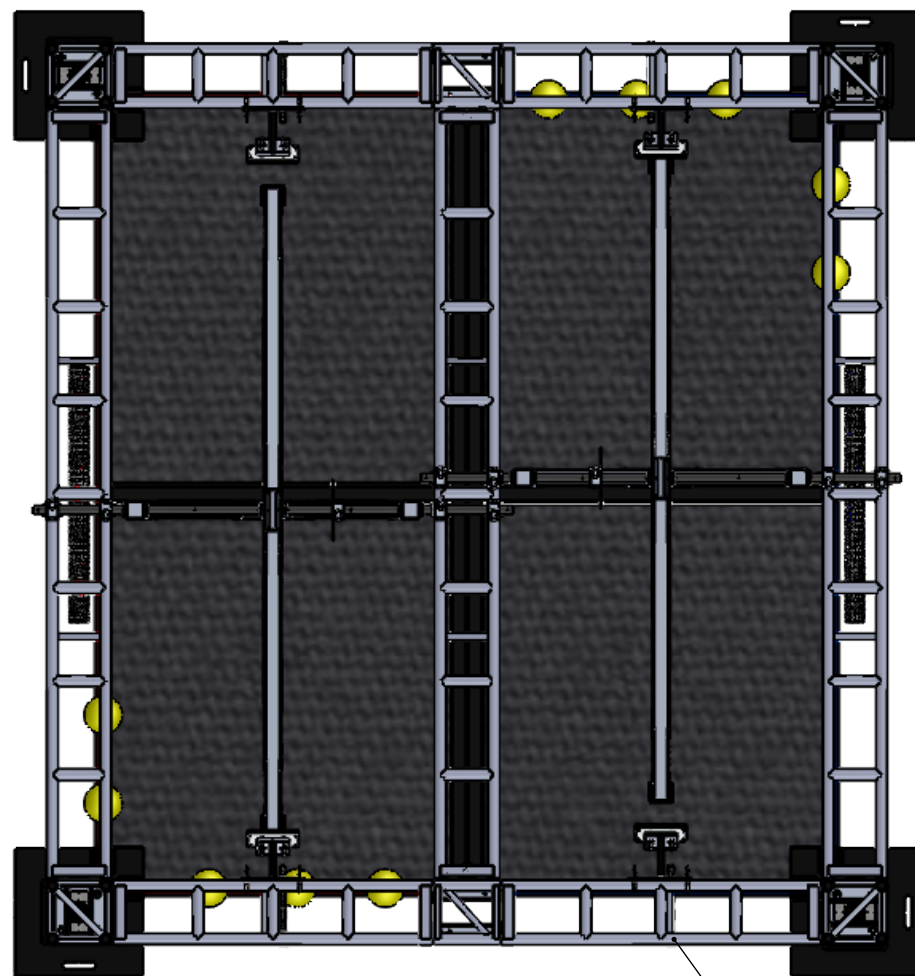
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			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
**Shield Generator**

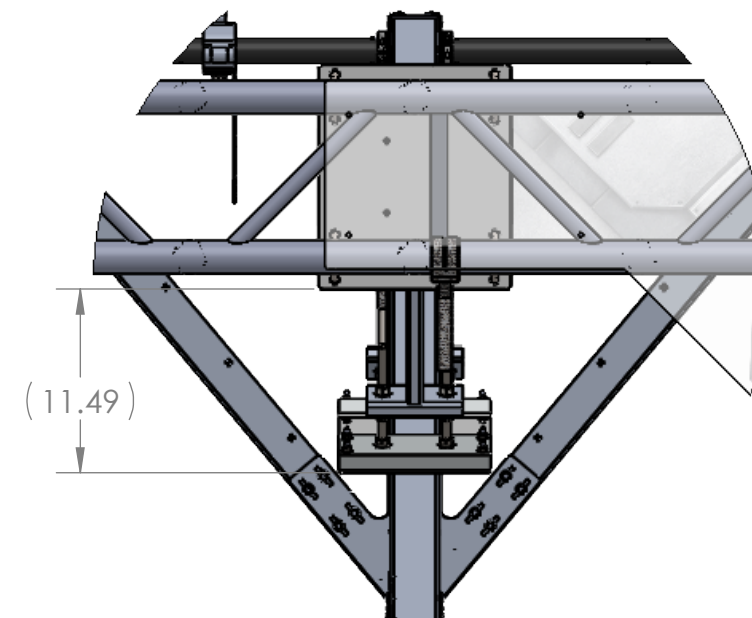
SIZE <b>B</b>	DWG. NO. <b>GE-20000</b>	REV <b>A</b>
SCALE: 1:30 WEIGHT:		SHEET 4 OF 5





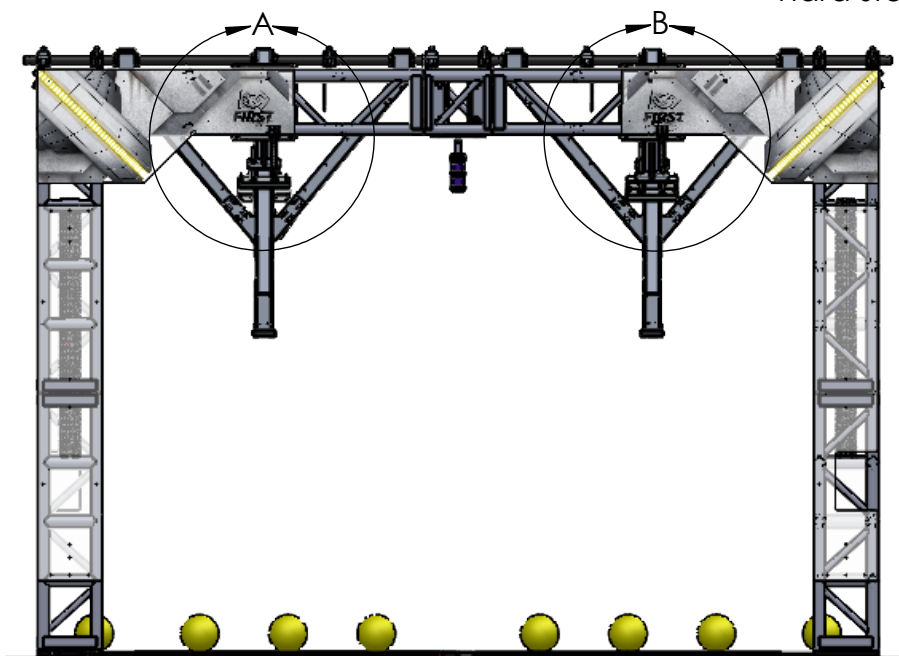
DETAIL A  
SCALE 1 : 12

Daisy Chain may extend below truss, or wrap over truss. Daisy Chain will not extend lower than Hard Stop Hitting Plate.



DETAIL B  
SCALE 1 : 12



Generator Switch Lock Out - Field Attachment is attached to lower rung of Truss, positioned behind hard stops.



Notes:  
All dimensions in parentheses ( ) are REFERENCE dimensions.

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	CHECKED		
	ENG APPR.		
	MFG APPR.		
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
	COMMENTS:		
MATERIAL			
FINISH			
NEXT ASSY	USED ON		
APPLICATION		DO NOT SCALE DRAWING	

Sheet added in Rev. A			
 			
TITLE: Shield Generator			
SIZE <b>B</b>	DWG. NO. GE-20000	REV <b>A</b>	
SCALE: 1:36		WEIGHT:	SHEET 5 OF 5

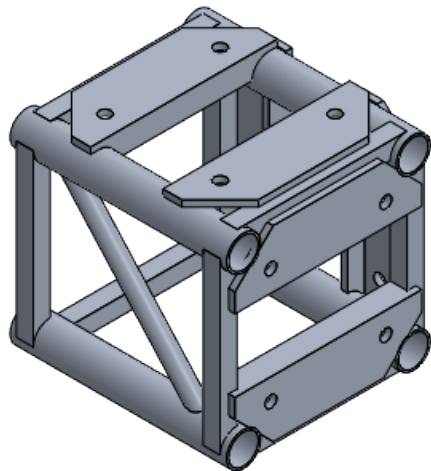
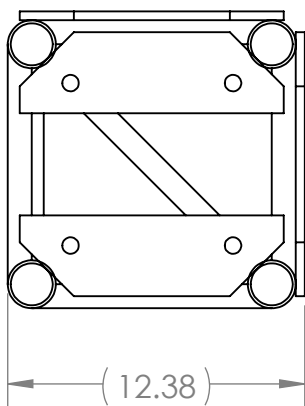
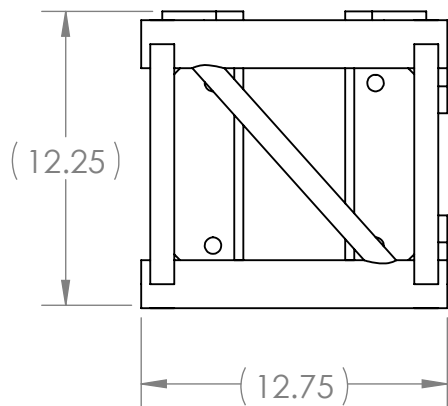
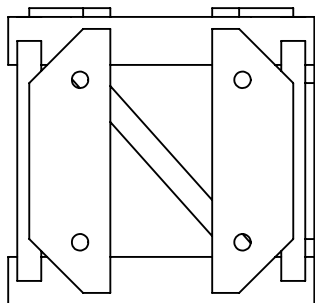
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Added Note	10/28/2019	KAMC





**DESCRIPTION:** 6061-T6 ALUMINUM - LIGHT DUTY TRUSS,  
3-SIDED CORNER BLOCK

**VENDOR:** TOTAL STRUCTURES

**PART NUMBER:** TS 1212LD-C3P

**NOTE:** SUBSTITUTIONS NOT ALLOWED 

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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/23/19	
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			TITLE: TS 1212LD-C3P, 3 Way Corner Block Light Duty Truss, Total Structures
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				SIZE DWG. NO. REV
		MATERIAL				<b>B</b> <b>GE-20001</b> <b>A</b>
NEXT ASSY	USED ON	FINISH				SCALE: 1:8 WEIGHT: SHEET 1 OF 1
APPLICATION		DO NOT SCALE DRAWING				

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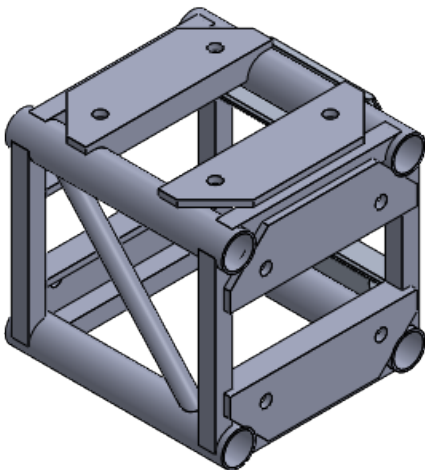
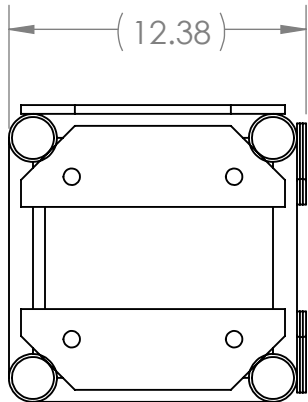
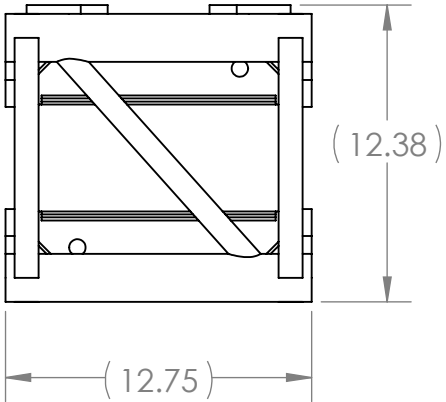
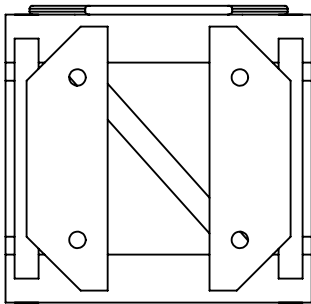
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Added Note	10/28/2019	KAMC



**DESCRIPTION:** 6061-T6 ALUMINUM - LIGHT DUTY TRUSS,  
4-SIDED CORNER BLOCK

**VENDOR:** TOTAL STRUCTURES



**PART NUMBER:** TS 1212LD-C4P

**NOTE:** SUBSTITUTIONS NOT ALLOWED



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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/23/19
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
TS 1212LD-C4P, 4 Way Corner  
Block Light Duty Truss, Total  
Structures

SIZE  
**B**

DWG. NO.  
**GE-20002**

REV  
**A**

SCALE: 1:8 WEIGHT: SHEET 1 OF 1

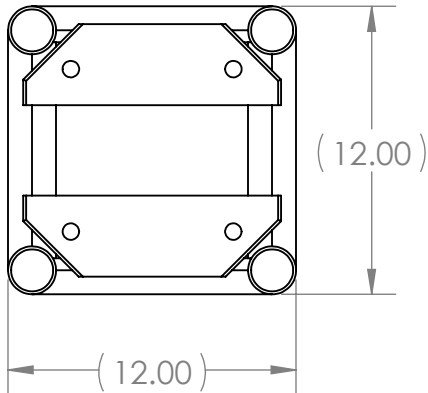
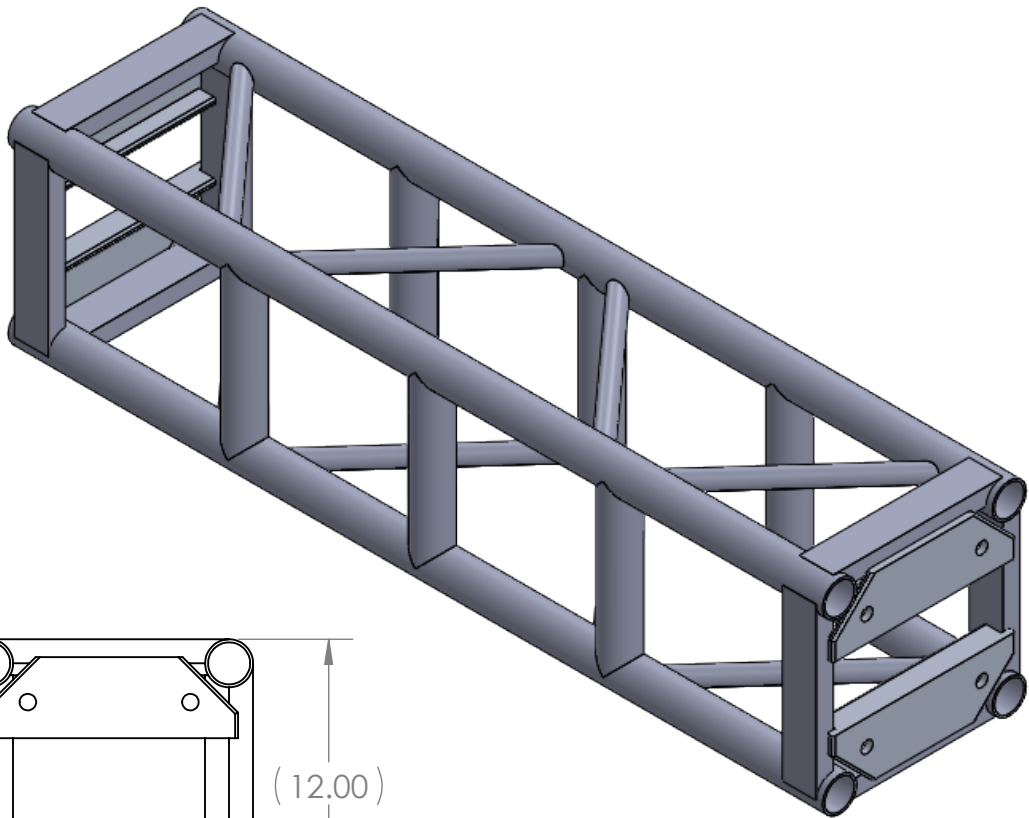
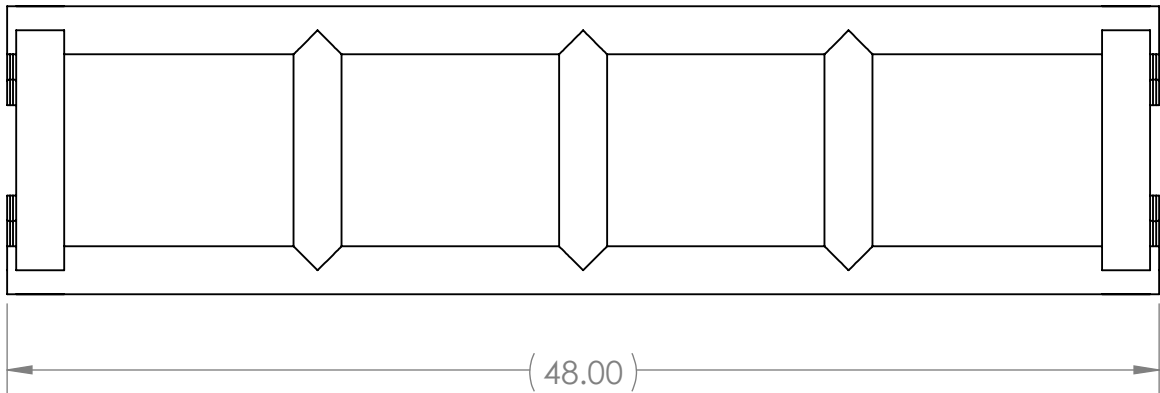
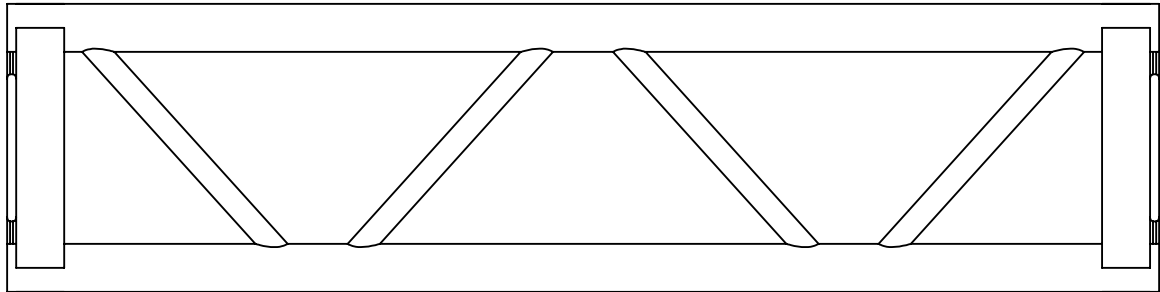
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Added Note	10/28/2019	KAMC



**DESCRIPTION:** 6061-T6 ALUMINUM - LIGHT DUTY TRUSS,  
48" X 12" X 12"



**VENDOR:** TOTAL STRUCTURES

**PART NUMBER:** TS 1212LD-048P

**NOTE:** SUBSTITUTIONS NOT ALLOWED



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	  TITLE: TS 1212LD-48P, 48" x 12" x 12" Light Duty Truss, Total Structures	
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	9/23/19		
			CHECKED				
			ENG APPR.				
			MFG APPR.				
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE	DWG. NO.
		MATERIAL	COMMENTS:			<b>B</b>	GE-20003
		FINISH				SCALE: 1:8	WEIGHT:
NEXT ASSY	USED ON	DO NOT SCALE DRAWING					REV
APPLICATION							SHEET 1 OF 1

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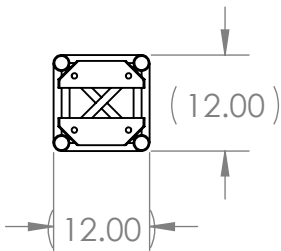
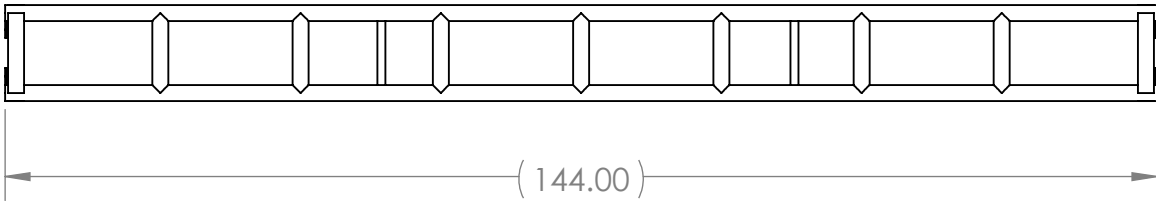
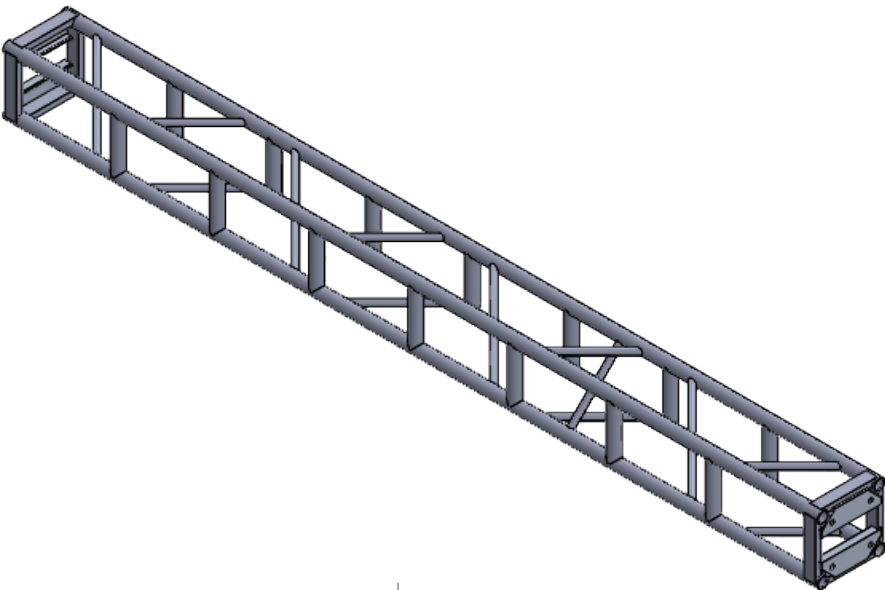
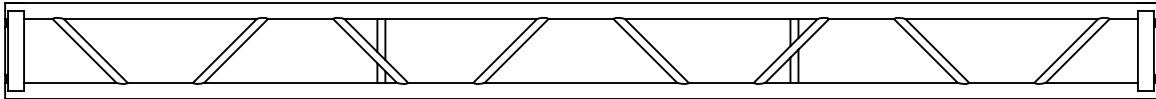
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Added Note	10/28/2019	KAMC



**DESCRIPTION:** 6061-T6 ALUMINUM - LIGHT DUTY TRUSS,  
144" X 12" X 12"



**VENDOR:** TOTAL STRUCTURES

**PART NUMBER:** TS 1212LD-144P

**NOTE:** SUBSTITUTIONS NOT ALLOWED



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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/23/19	TITLE: TS 1212LD-144P, 144" x 12" x 12" Light Duty Truss, Total Structures		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20005</b> <b>A</b>		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:24 WEIGHT: SHEET 1 OF 1		

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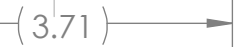
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(5.94)



		UNLESS OTHERWISE SPECIFIED:	NAME		DATE	 <b>FIRST</b> <b>ROBOTICS</b> <b>COMPETITION</b>		 <b>SOLIDWORKS</b> Modeling Solutions Partner	
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	10/28/19	TITLE:  <h1>Cheeseborough for Truss _ Stacked</h1>			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.						
		MATERIAL	COMMENTS:						
		FINISH	CHEESEBOROUGH NAME BRAND: MEGA COUPELR						
		SILVER							
NEXT ASSY	USED ON					SIZE <b>B</b>	DWG. NO. <b>GE-20006</b>		REV <b>0</b>
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2		WEIGHT:	SHEET 1 OF 1

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FASTENS FROM  
1.25" OD PIPE TO 2" OD PIPE

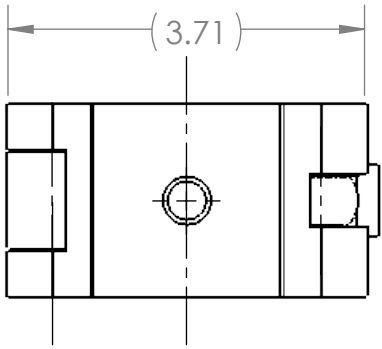
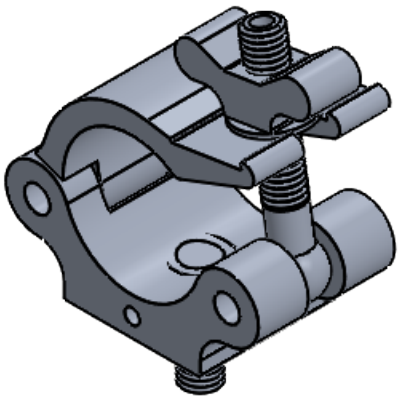
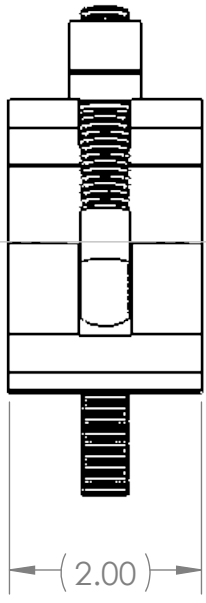
THE LIGHT SOURCE WING NUT

1/2" X 1-1/4" THREADED ROD

( Ø 2.03 )

1/2" X 1-1/4" HEX HEAD BOLT

( 3.71 )





**DESCRIPTION:** CHEESE BOROUGH FOR TRUSS - MLM MEGA COUPLER, SILVER

**VENDOR:** TOTAL STRUCTURES VIA THE LIGHT SOURCE

**PART NUMBER:** MLM MEGA COUPLER

**NOTE:** SUBSTITUTIONS NOT ALLOWED

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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	10/28/19	TITLE:  Cheeseborough for Truss _ Single			
		TOLERANCES:	CHECKED						
		FRACTIONAL ±1/16	ENG APPR.						
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.						
		TWO PLACE DECIMAL ±.01	Q.A.						
		THREE PLACE DECIMAL ±.001	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20007</b> <b>0</b>			
		INTERPRET GEOMETRIC TOLERANCING PER:	CHEESEBOROUGH NAME BRAND: MEGA COUPELR						
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON	SILVER							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2 WEIGHT: SHEET 1 OF 1			

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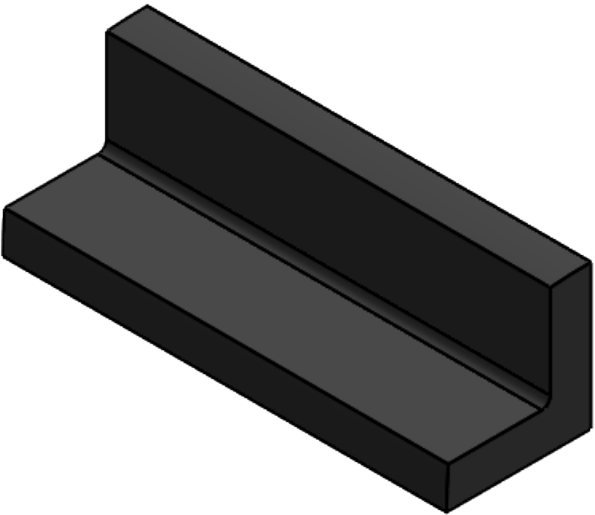
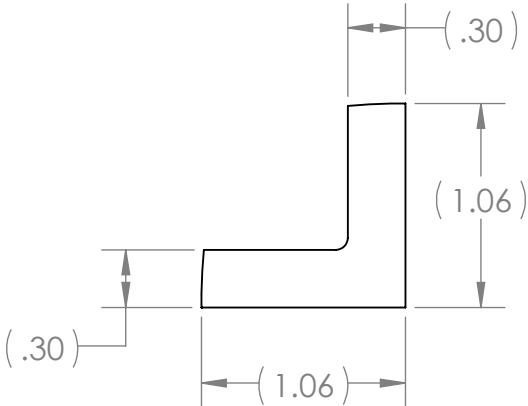
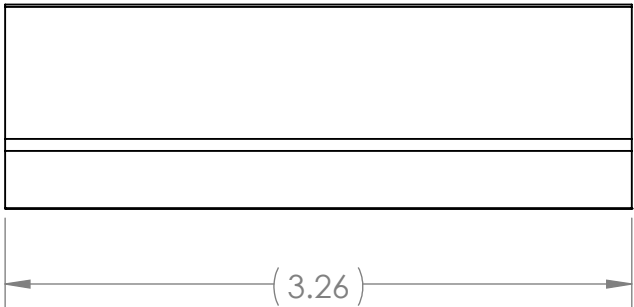
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B

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A

A

**DESCRIPTION:** SAFETY EDGE & CORNER GAURD, NBR FOAM, ONYX  
**VENDOR:** ROVING COVE  
**PART NUMBER:** 1305  
**PACKAGE QUANTITY:** 18FEET  
**NOTE:** CUT TO LENGTH

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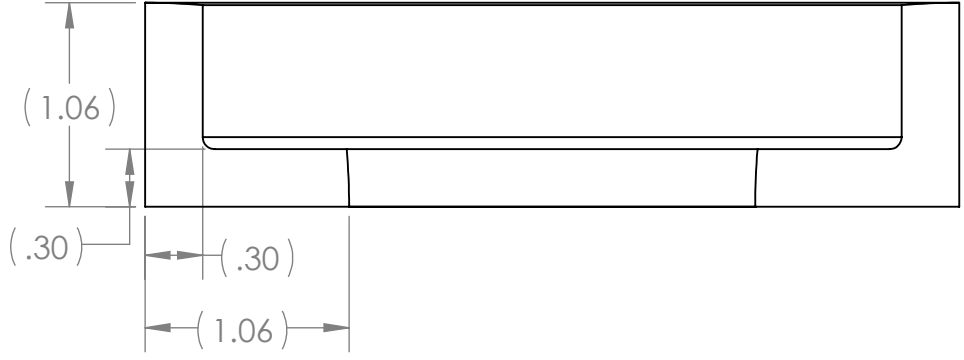
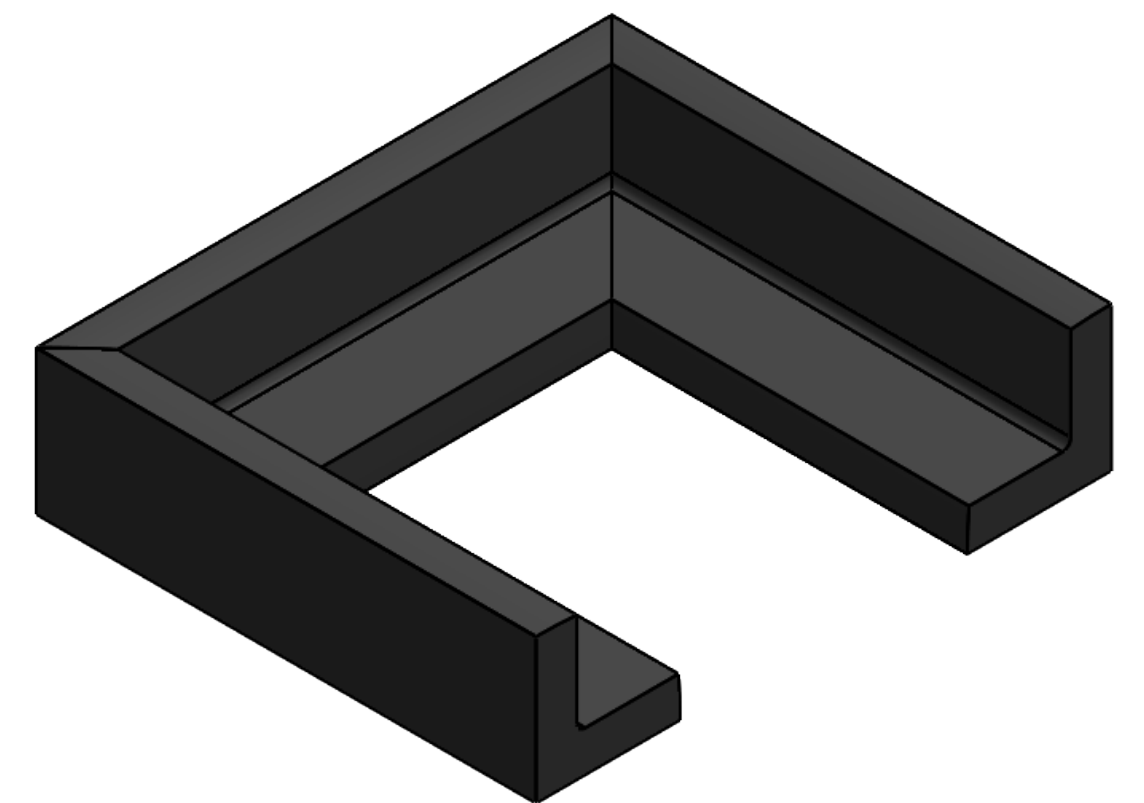
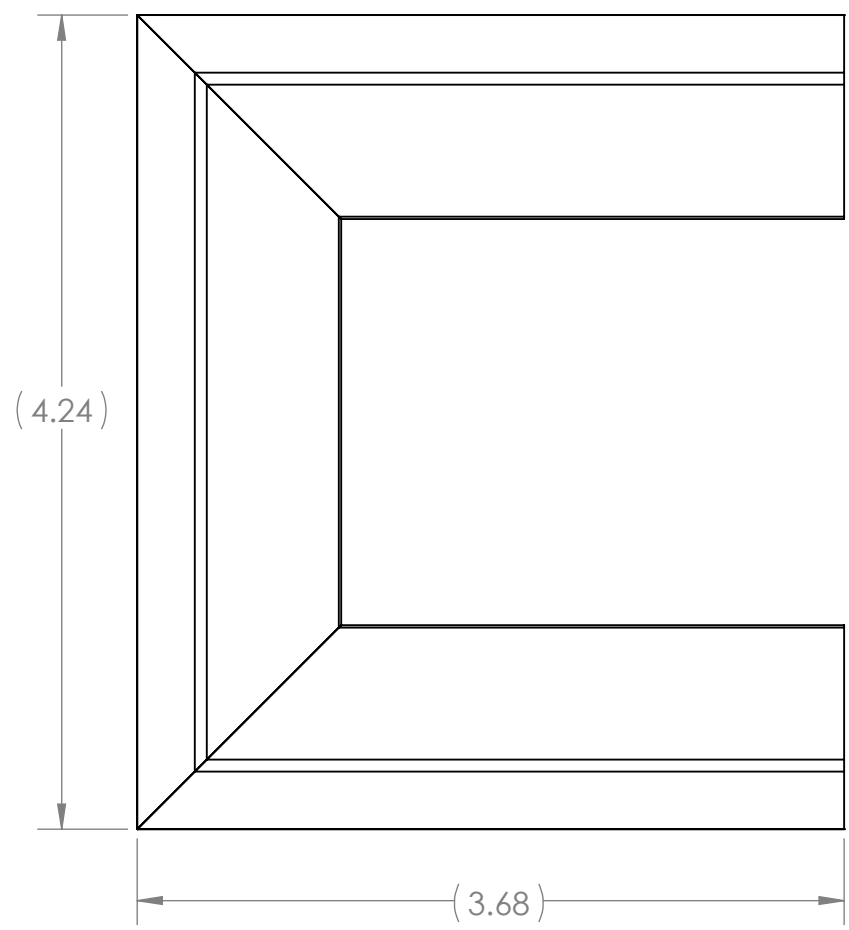
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	12/15/19
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			
			TITLE: Foam Cushion for Generator Switch		
			SIZE <b>B</b>	DWG. NO. <b>GE-20008</b>	REV
			SCALE: 1:1	WEIGHT:	SHEET 1 OF 2

4

3



2

1



**DESCRIPTION:** SAFETY EDGE & CORNER GAURD, NBR FOAM, ONYX  
**VENDOR:** ROVING COVE  
**PART NUMBER:** 1305  
**PACKAGE QUANTITY:** 18FEET  
**NOTE:** CUT TO LENGTH

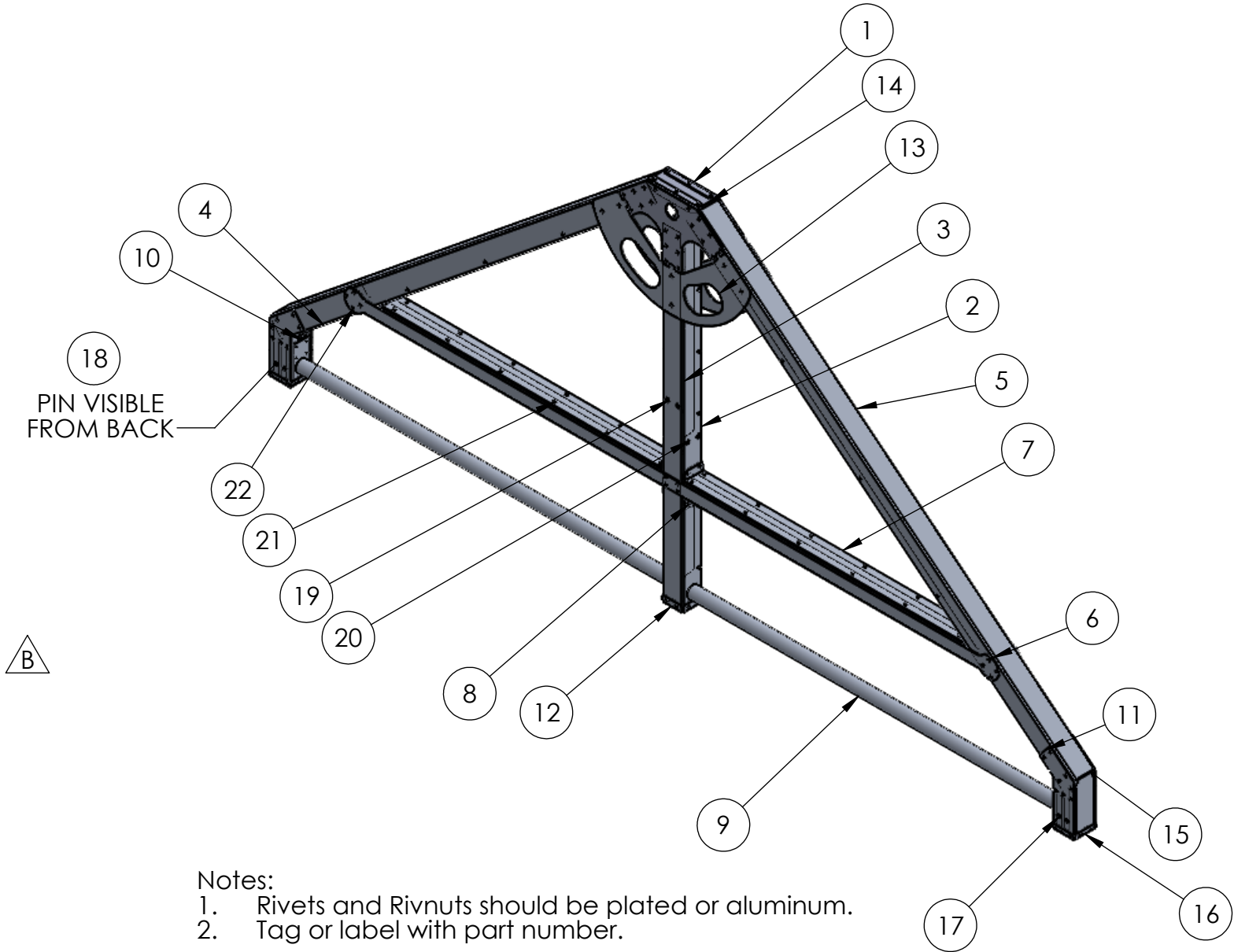
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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 	
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/15/19	TITLE: Foam Cushion for Generator Switch	
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.			SIZE DWG. NO. REV	
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:				
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL				SCALE: 1:1 WEIGHT: SHEET 2 OF 2	
		FINISH					
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING					





4				3			
ITEM NO.	PART NUMBER		DESCRIPTION		QTY.		
1	GE-20010 - 01		Hanger - Top		2		
2	GE-20010 - 02		Hanger - Center Leg		1		
3	GE-20010 - 03		Hanger - Center Leg, Face		1		
4	GE-20010 - 04		Hanger - Side Leg		2		
5	GE-20010 - 05		Hanger - Side Leg, Face		2		
6	GE-20010 - 06		Hanger - Cross Bar		2		
7	GE-20010 - 07		Hanger - Cross Bar, Top		2		
8	GE-20010 - 08		Hanger - Cross Bar, Bottom		2		
9	GE-20010 - 09		Hanger - Hanging Pole		1		
10	GE-20010 - 10		Hanger - Hanging Pole Holder		4		
11	GE-20010 - 11		Hanger - Hanging Pole Holder, Face		4		
12	GE-20010 - 12		Hanger - Center Leg, End Cap		1		
13	GE-20010 - 13		Hanger - Sensor Feature		2		
14	GE-20010 - 14		Hanger - Top, Face		1		
15	GE-20010 - 15		Hanger - Hanging Pole Holder, End		2		
16	GE-20010 - 16		Hanger - Hanging Pole Holder, End Cap		2		
17	pin_clevis_.25_3.5		Clevis Pin, 1/4" diameter, 3.5" length		4		
18	pin_hairpincotter_0.078_1.5		Cotter Pin_ 0.078in x 1.5in		4		
19	rivnut_.25_20_.027-.165		Rivnut, 1/4"-20 bolt, material thickness: .027" - .165"		4		
20	rivnut_.25_20_.165-.260		Rivnut, 1/4"-20 bolt, material thickness: .165"-.260"		4		
21	rivet_.1875_.251-.375		3/16" Aluminum Rivet, .251-.375 Grip Range		130		
22	rivet_.1875_.376-.5		3/16" Aluminum Rivet, .376-.5 Grip Range		92		

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	MULTIPLE PARTS UPDATED, WEIGHT UPDATED, OVERALL ASSEMBLY OTHERWISE UNCHANGED	9/10/2019	KAMC
A3, 8-B2	B	POST PRODUCTION - CHANGED PIN TO COTTER PIN STYLE	11/18/2019	KAMC



- Notes:
1. Rivets and Rivnuts should be plated or aluminum.
  2. Tag or label with part number.

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 			
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/10/19	TITLE:  Hanger		
		TOLERANCES:	CHECKED					
		FRACTIONAL ±1/16	ENG APPR.					
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.					
		TWO PLACE DECIMAL ±.01	Q.A.					
		THREE PLACE DECIMAL ±.001	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20010</b> <b>B</b>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
GE-20015		FINISH	WEIGHT: 67.14 LBS			SCALE: 1:16 WEIGHT: SHEET 1 OF 8		
NEXT ASSY	USED ON	BARE						
APPLICATION		DO NOT SCALE DRAWING						

4

3

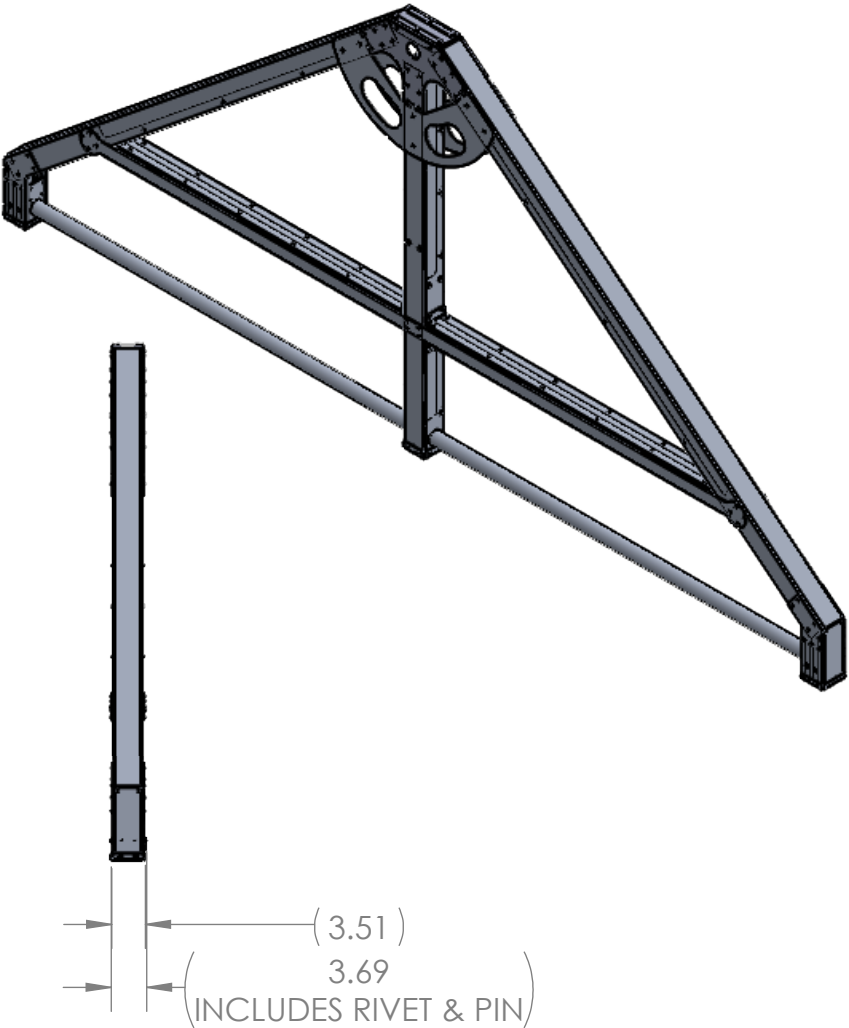
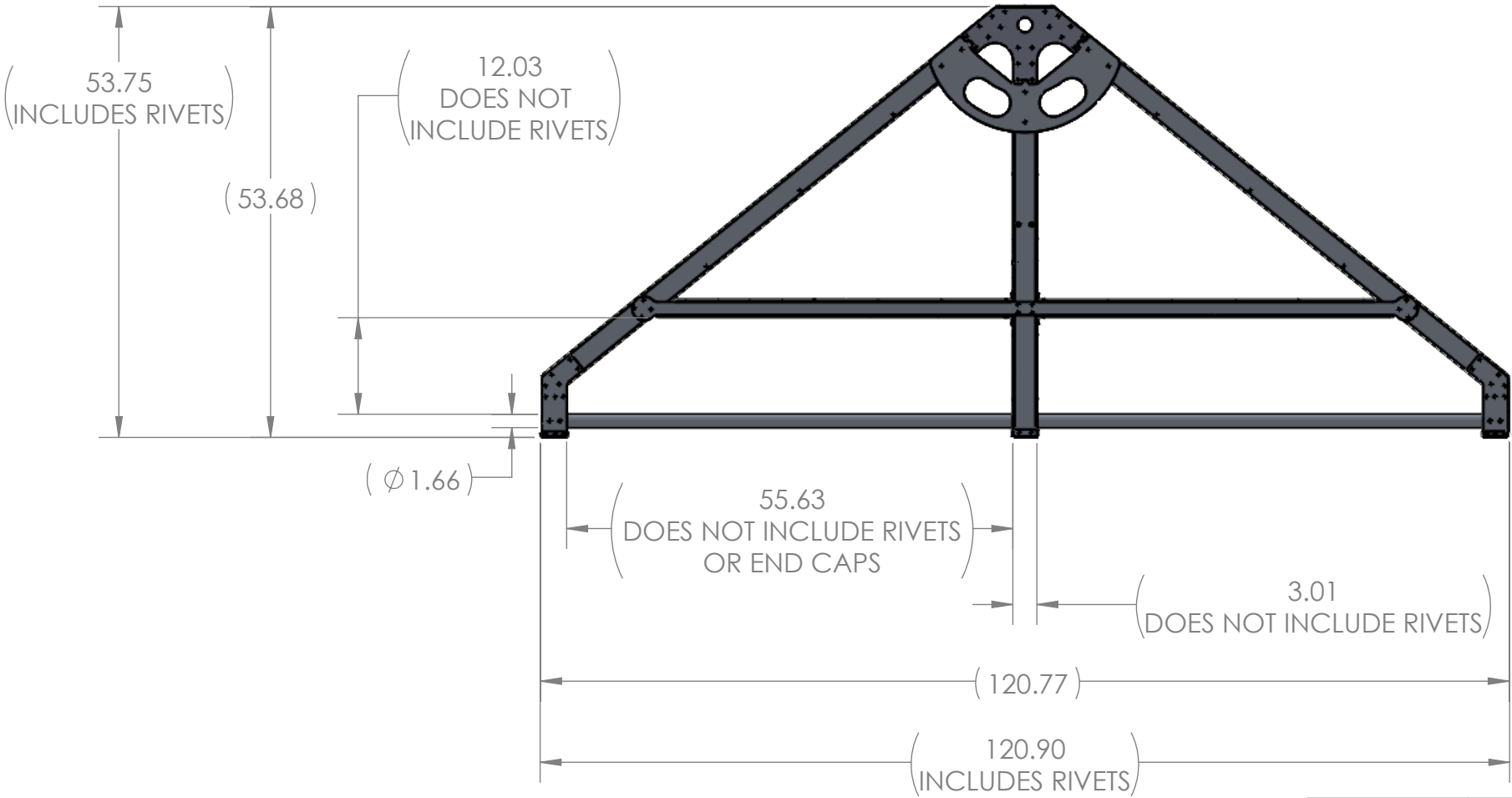
2



1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



Note: Assembly is symmetric - Left/Right



		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/10/19	TITLE:  <h1>Hanger</h1>	
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.				
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20010</b> <b>B</b>	
GE-20015		INTERPRET GEOMETRIC TOLERANCING PER:	WEIGHT SHOWN ON SHEET 1				
		MATERIAL				SCALE: 1:20 WEIGHT: SHEET 2 OF 8	
NEXT ASSY	USED ON	FINISH <b>BARE</b>					
APPLICATION		DO NOT SCALE DRAWING					

DIMENSIONS SHOWN FOR REF.

4

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2

1

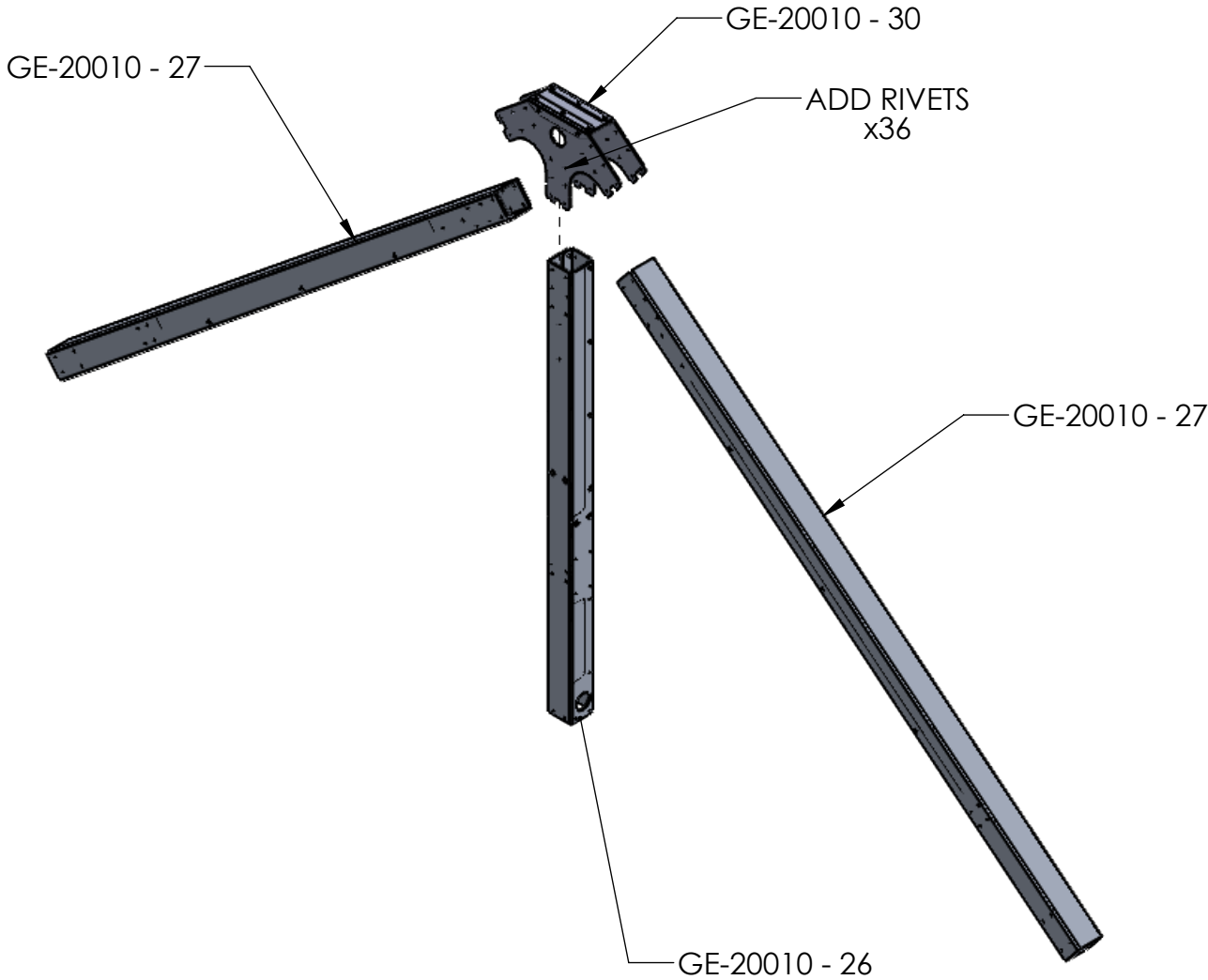
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2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	  TITLE: <h1>Hanger</h1>	
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/10/19		
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20010</b> <b>B</b>	
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:				
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL				SCALE: 1:16 WEIGHT: SHEET 3 OF 8	
NEXT ASSY	USED ON	FINISH BARE					
APPLICATION		DO NOT SCALE DRAWING					

4

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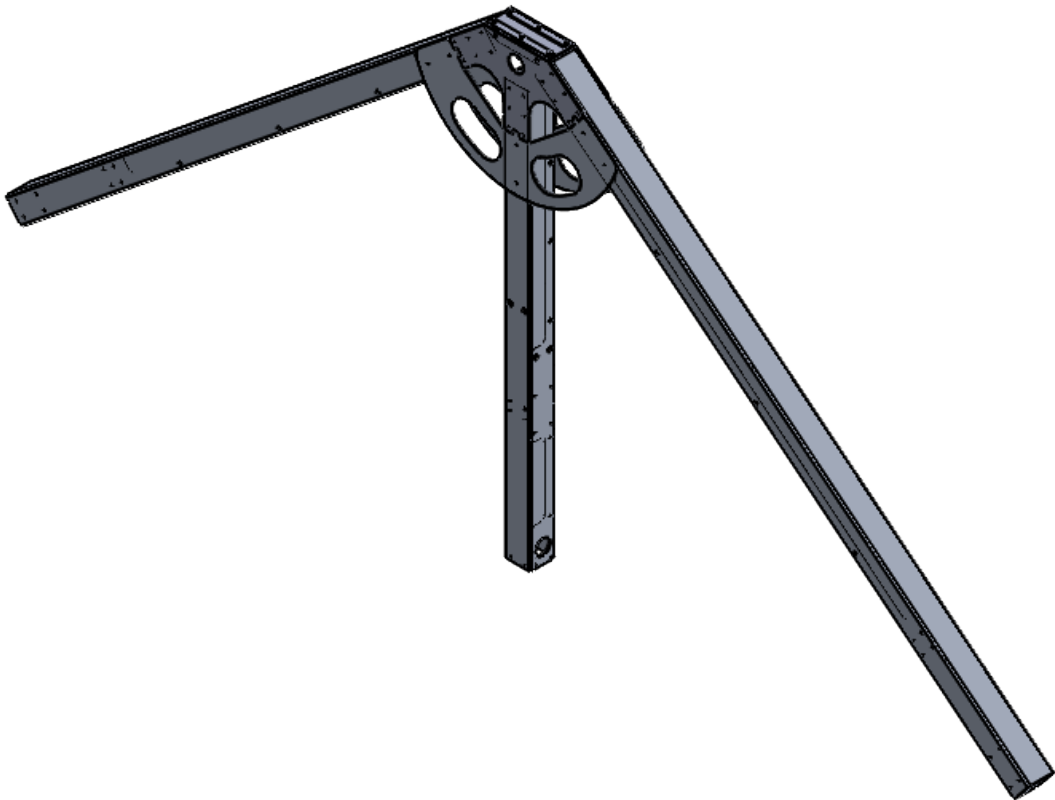
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-

ADD RIVETS  
X6




GE-20010 - 13

ADD RIVETS  
X6

GE-20010 - 13



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	  			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	9/10/19	TITLE:  <h1>Hanger</h1>			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
			Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20010</b> <b>B</b>			
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:16 WEIGHT: SHEET 4 OF 8			

4

3

2

1



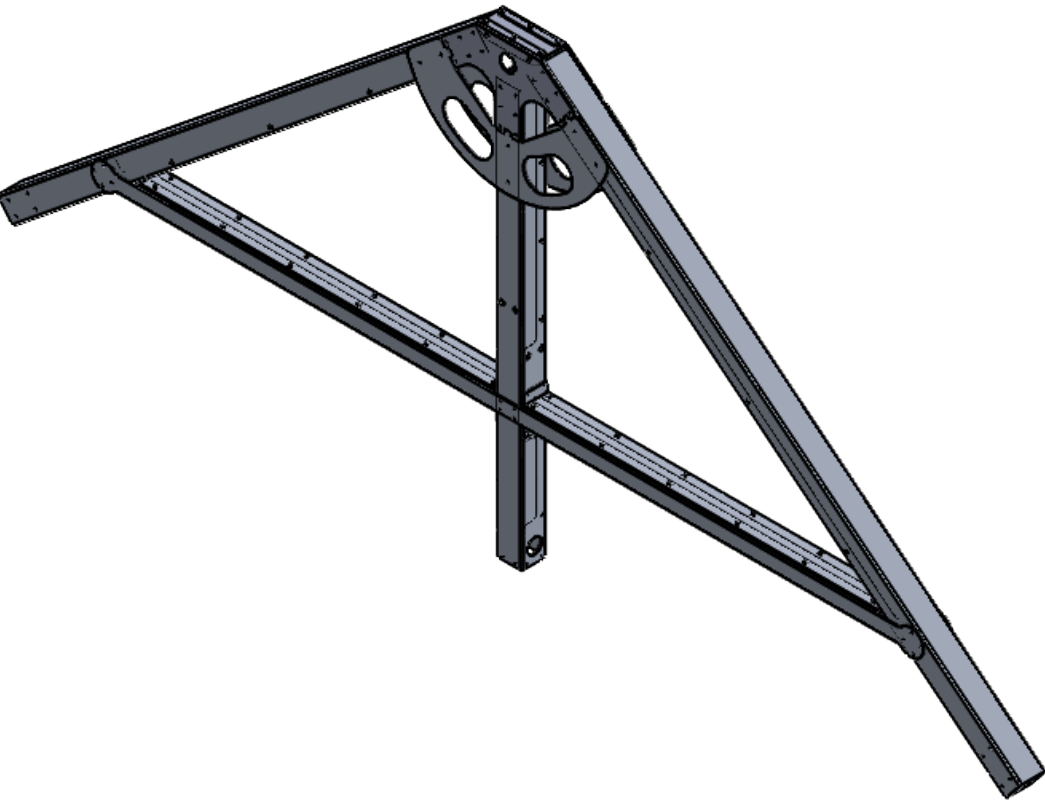
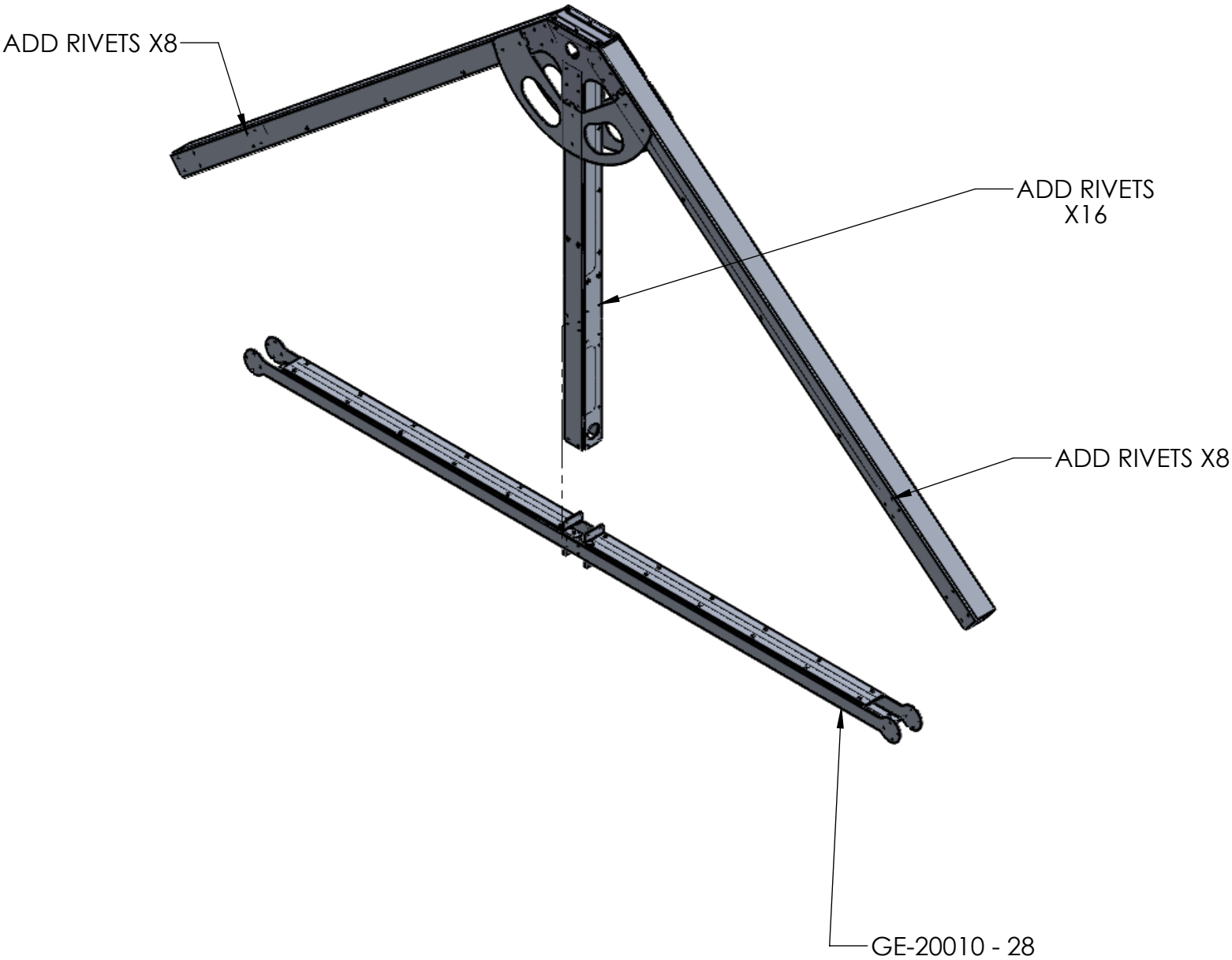
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2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 			
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/10/19	TITLE:  <h1>Hanger</h1>			
		TOLERANCES:	CHECKED						
		FRACTIONAL $\pm 1/16$	ENG APPR.						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.						
		TWO PLACE DECIMAL $\pm .01$	Q.A.						
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20010</b> <b>B</b>			
		INTERPRET GEOMETRIC TOLERANCING PER:							
		MATERIAL							
		FINISH				SCALE: 1:16 WEIGHT: SHEET 5 OF 8			
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING							

4

3

2

1

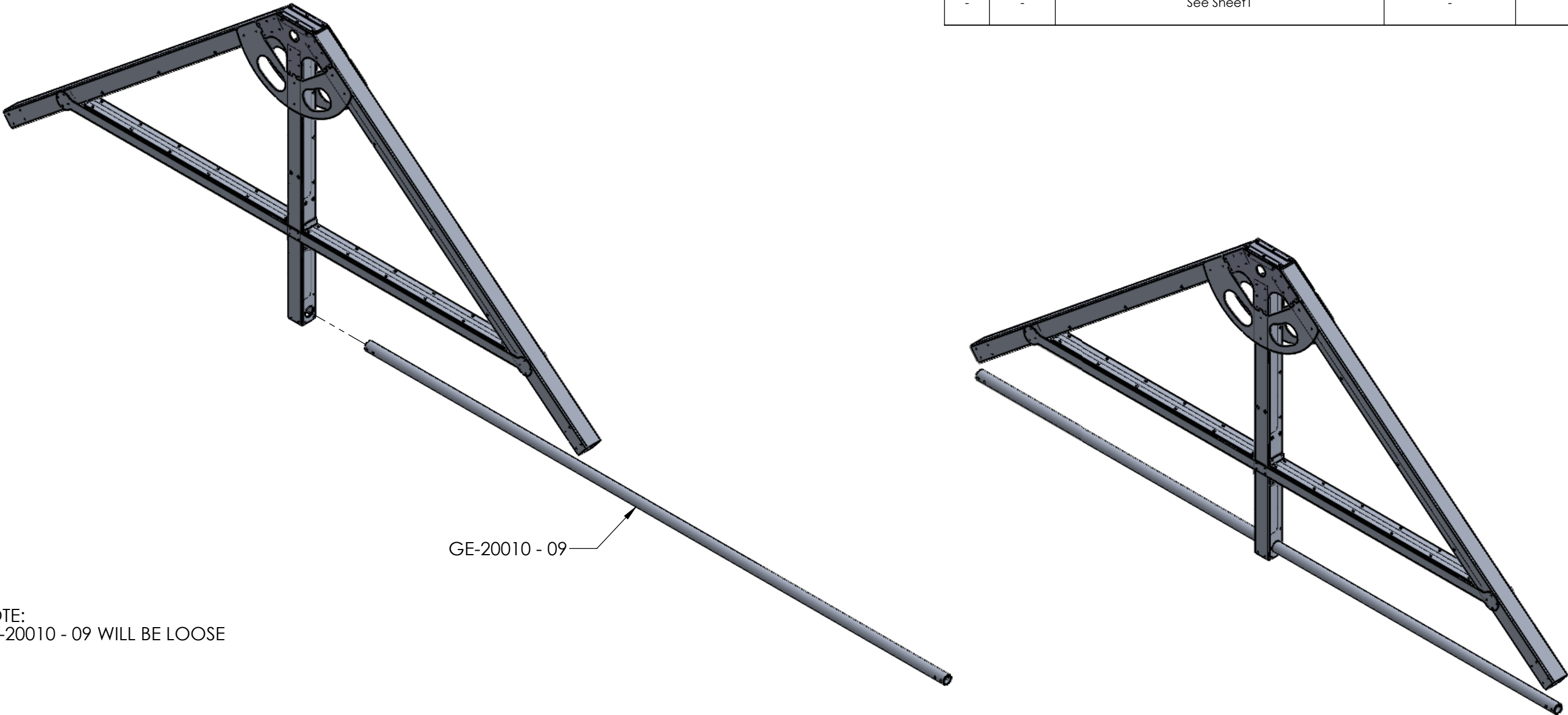
4

3

2



1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



NOTE:  
GE-20010 - 09 WILL BE LOOSE

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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/10/19		
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.			TITLE: <h1>Hanger</h1>	
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:				
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL				SIZE <b>B</b>	DWG. NO. <b>GE-20010</b>
		FINISH				REV <b>B</b>	
NEXT ASSY	USED ON					SCALE: 1:16 WEIGHT:	
APPLICATION		DO NOT SCALE DRAWING				SHEET 6 OF 8	

4

3

2

1

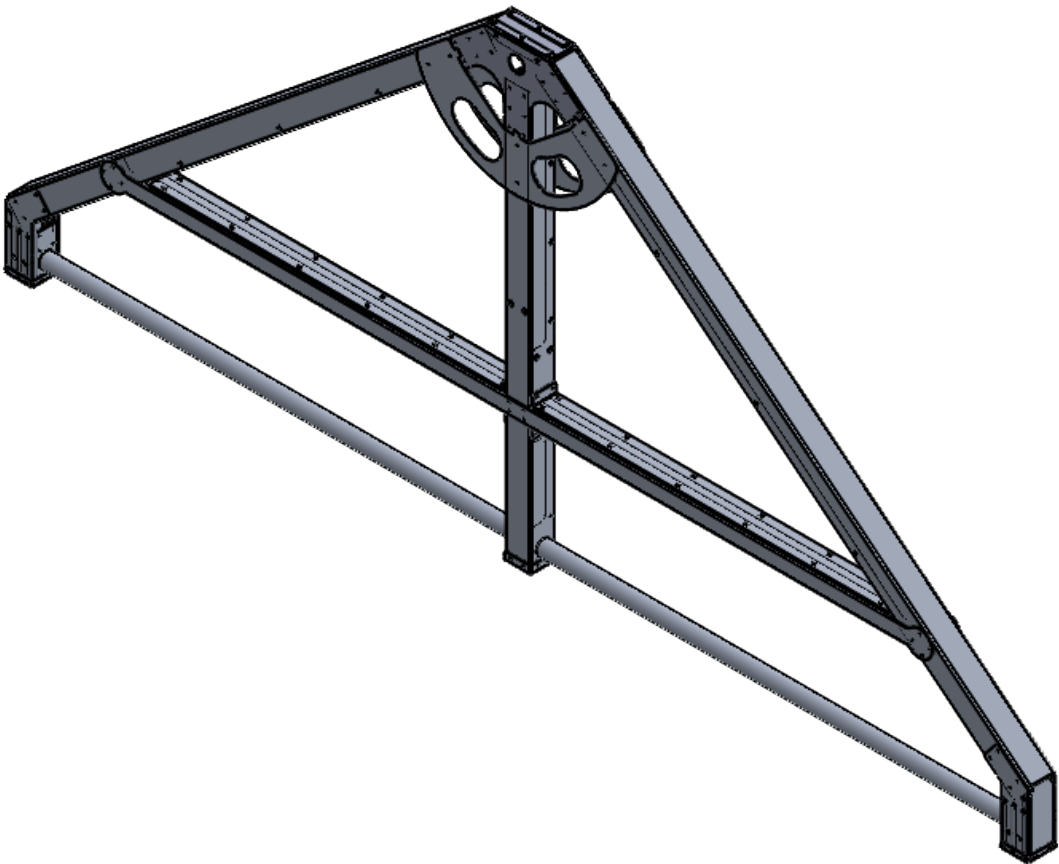
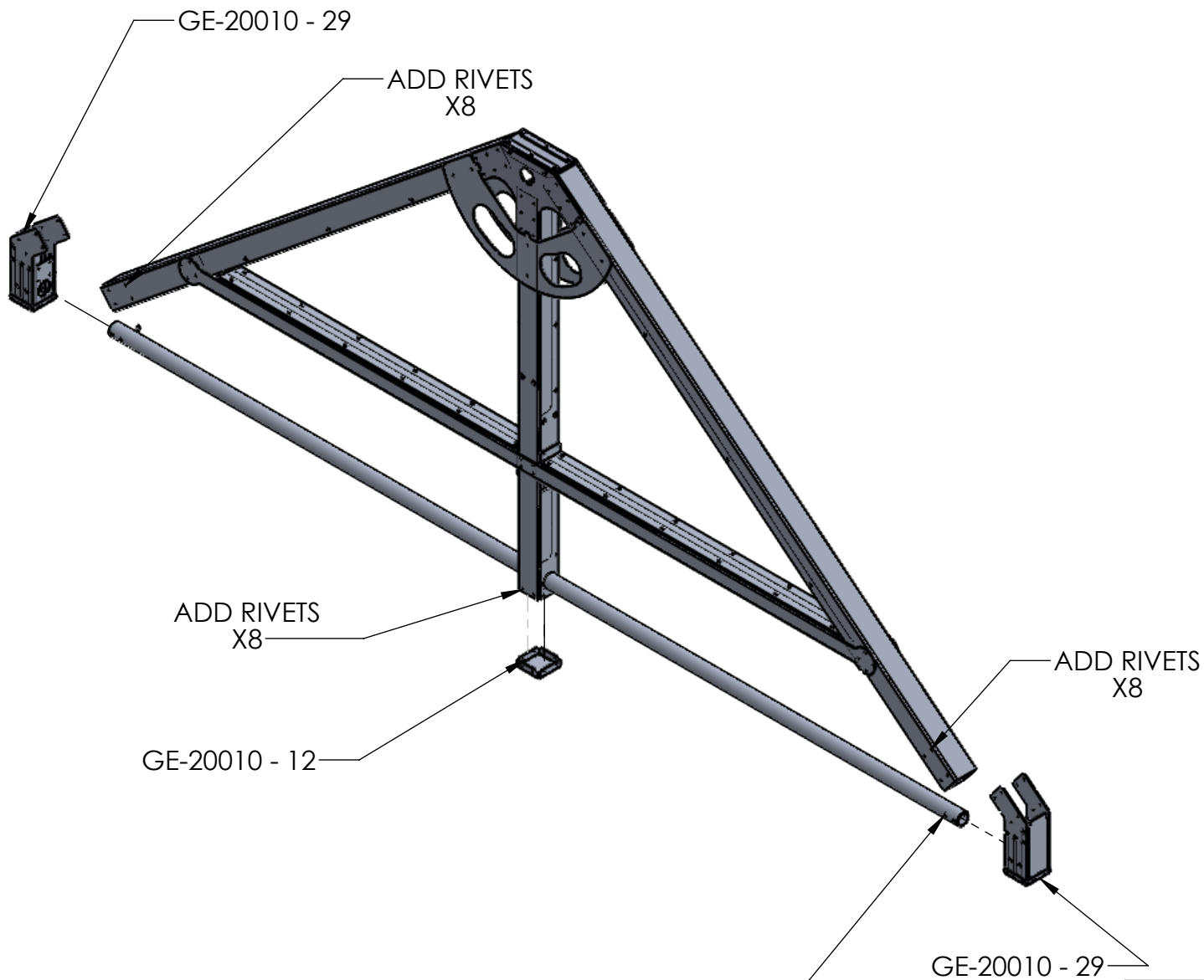
4

3

2



1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



NOTE:  
ALIGN HOLES IN GE-20010 - 09 WITH  
THE SLOTS ON GE-20010 - 30,  
SPECIFICALLY GE-20010 - 11  
USE PINS TO LOCK POLE IN PLACE

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/10/19	TITLE:  <h1>Hanger</h1>	
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.				
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20010</b> <b>B</b>	
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL					
NEXT ASSY	USED ON	FINISH					
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:16 WEIGHT: SHEET 7 OF 8	

4

3

2

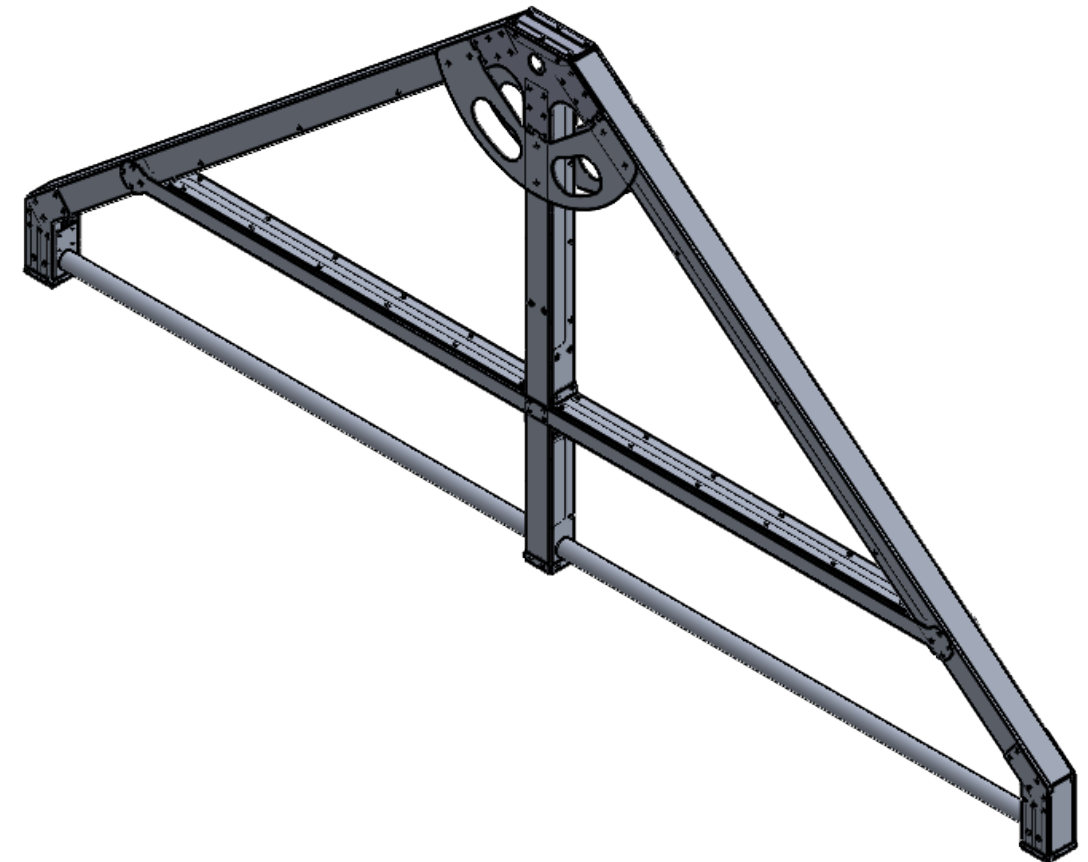
1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	pin_clevis_.25_3.5	Clevis Pin, 1/4" diameter, 3.5" length	4
2	pin_hairpincotter_0.078_1.5	Cotter Pin_ 0.078in x 1.5in	4
3	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	28
4	GE-20010 - 30	Hanger - Top Sub Assembly	1
4.1	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	10
4.2	GE-20010 - 01	Hanger - Top	2
4.3	GE-20010 - 14	Hanger - Top, Face	1
5	GE-20010 - 26	Hanger - Center Bar Sub Assembly	1
5.1	rivnut_.25_20_.027-.165	Rivnut, 1/4"-20 bolt, material thickness: .027" - .165"	4
5.2	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	8
5.3	GE-20010 - 02	Hanger - Center Leg	1
5.4	rivnut_.25_20_.165-.260	Rivnut, 1/4"-20 bolt, material thickness: .165"-.260"	4
5.5	GE-20010 - 03	Hanger - Center Leg, Face	1
6	GE-20010 - 27	Hanger - Side Leg Assembly	2
6.1	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	6
6.2	GE-20010 - 04	Hanger - Side Leg	1
6.3	GE-20010 - 05	Hanger - Side Leg, Face	1
7	GE-20010 - 28	Hanger - Center Bar Sub Assembly	1
7.1	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	48
7.2	GE-20010 - 06	Hanger - Cross Bar	2
7.3	GE-20010 - 07	Hanger - Cross Bar, Top	2
7.4	GE-20010 - 08	Hanger - Cross Bar, Bottom	2
8	GE-20010 - 09	Hanger - Hanging Pole	1
9	GE-20010 - 29	Hanger - Hanging Pole Holder Sub Assembly	2
9.1	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	12
9.2	GE-20010 - 10	Hanger - Hanging Pole Holder	2
9.3	GE-20010 - 11	Hanger - Hanging Pole Holder, Face	2
9.4	rivet_.1875_.376-.5	3/16" Aluminum Rivet, .376-.5 Grip Range	6
9.5	GE-20010 - 15	Hanger - Hanging Pole Holder, End	1
9.6	GE-20010 - 16	Hanger - Hanging Pole Holder, End Cap	1
10	GE-20010 - 12	Hanger - Center Leg, End Cap	1
11	GE-20010 - 13	Hanger - Sensor Feature	2
12	rivet_.1875_.376-.5	3/16" Aluminum Rivet, .376-.5 Grip Range	80

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



DETAILED BOM SHOWN FOR REF.

Notes:

1. Rivets and Rivnuts should be plated or aluminum.
2. Tag or label with part number.

		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 <b>FIRST ROBOTICS COMPETITION</b>		 <b>SOLIDWORKS</b> Modeling Solutions Partner			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/10/19	TITLE:  <h1>Hanger</h1>				
			CHECKED							
			ENG APPR.							
			MFG APPR.							
			Q.A.							
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:  <h2>WEIGHT SHOWN ON SHEET 1</h2>							
GE-20020		MATERIAL				SIZE	DWG. NO.		REV	
NEXT ASSY	USED ON	FINISH  BARE				<b>B</b>	<b>GE-20010</b>		<b>B</b>	
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:16 WEIGHT:		SHEET 8 OF 8		



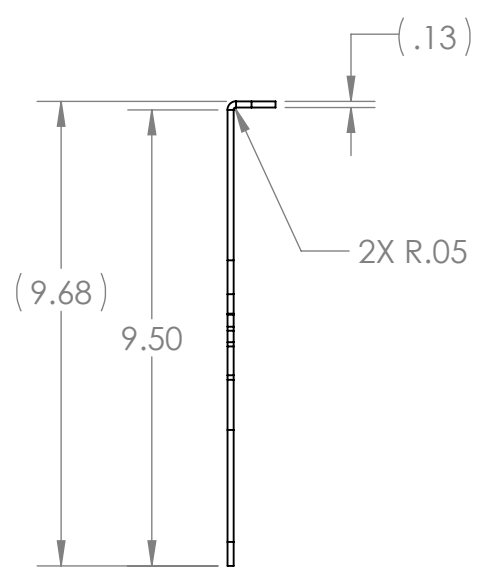
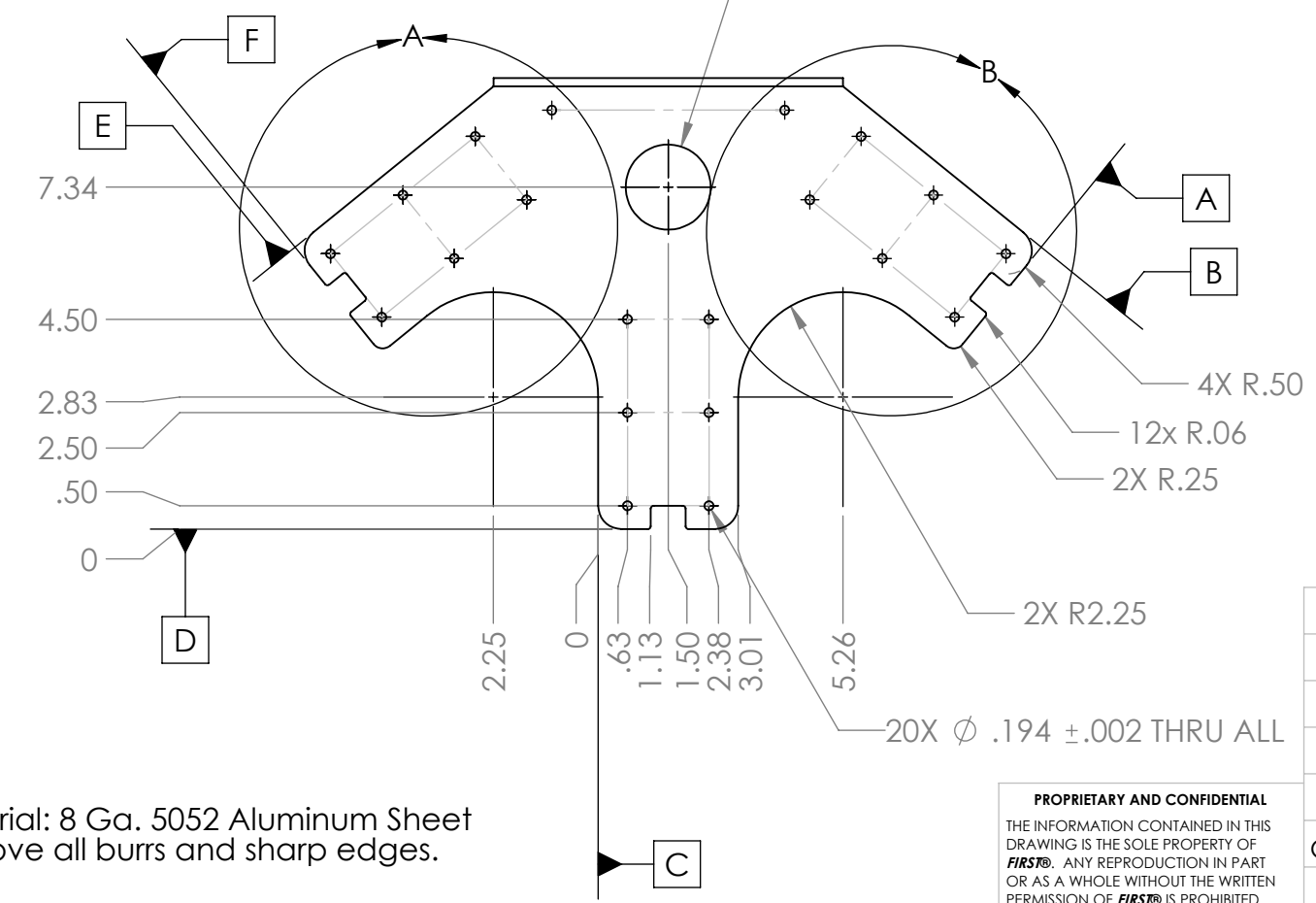
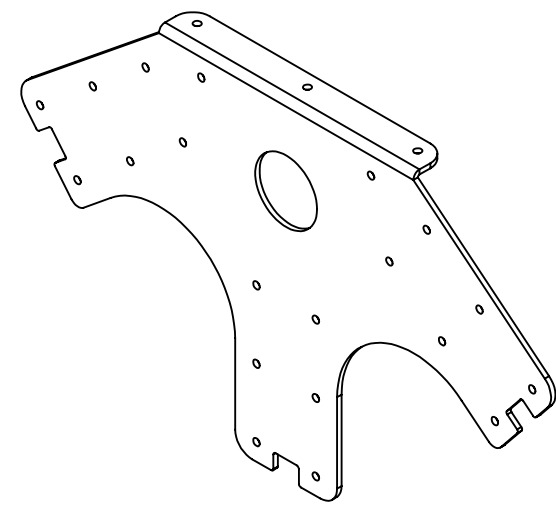
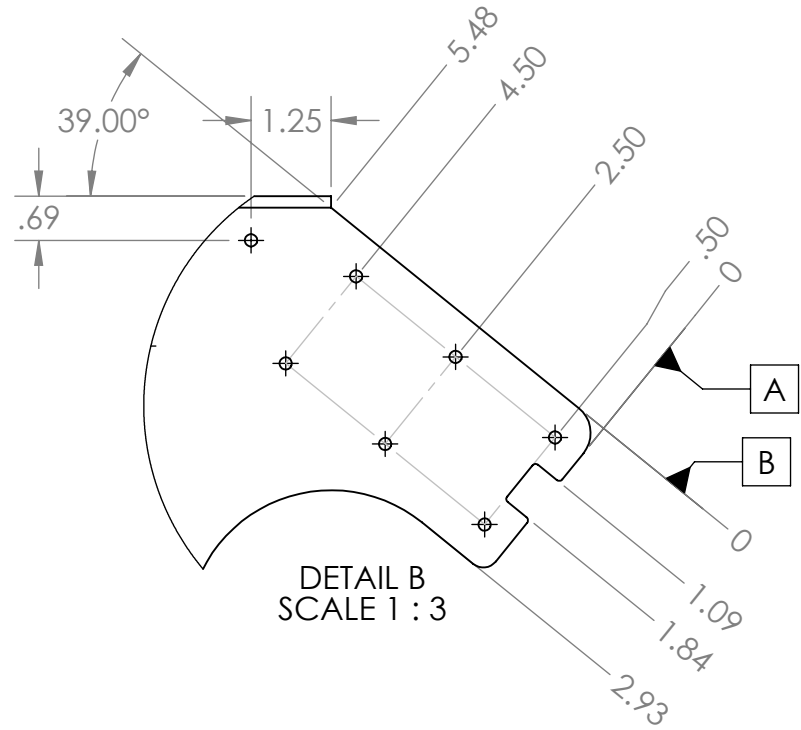
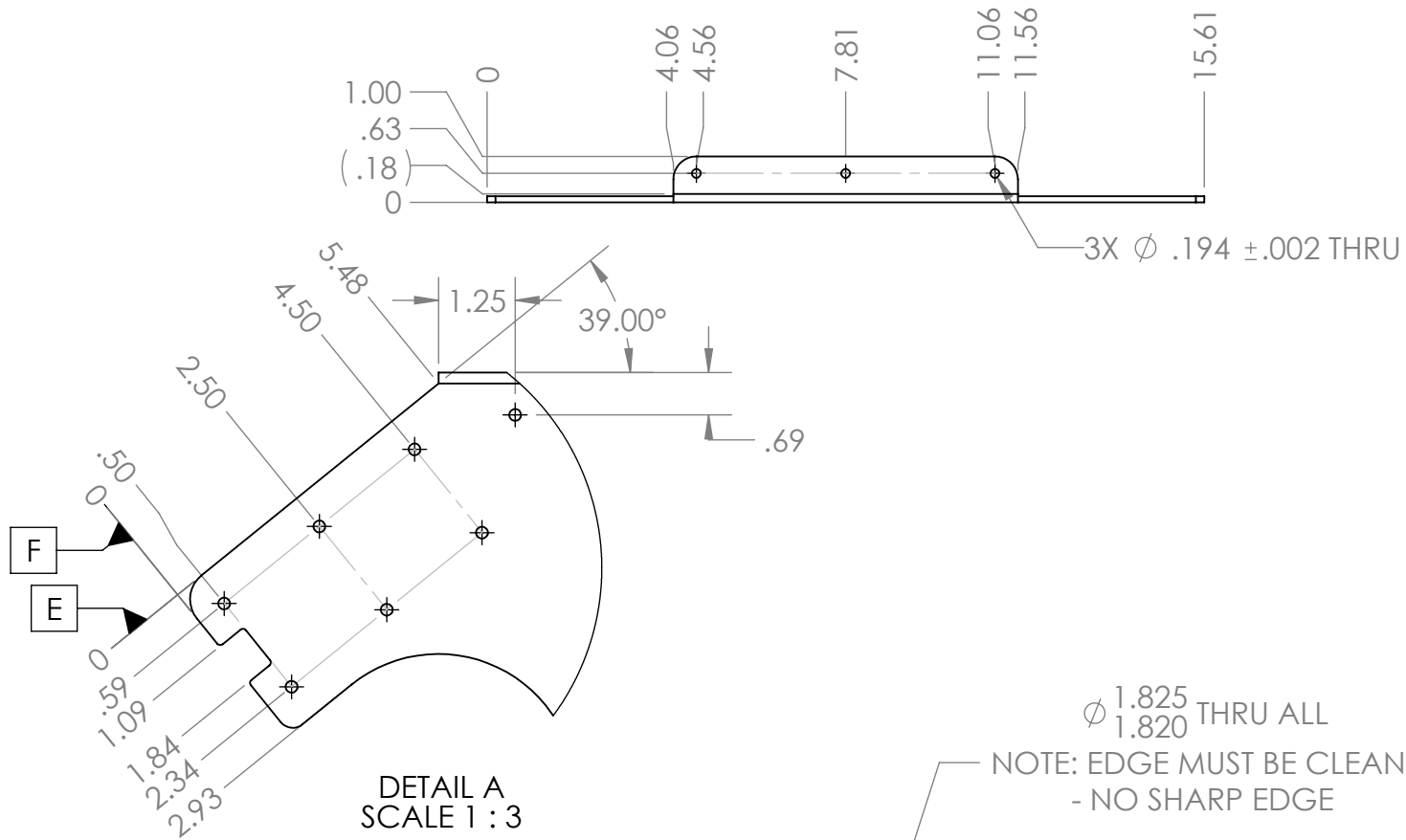
4

3

2



1

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	MAJOR GEOMETRY CHANGE	9/16/19	KAMC

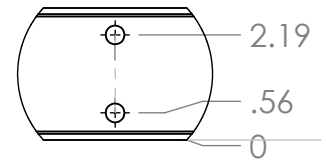
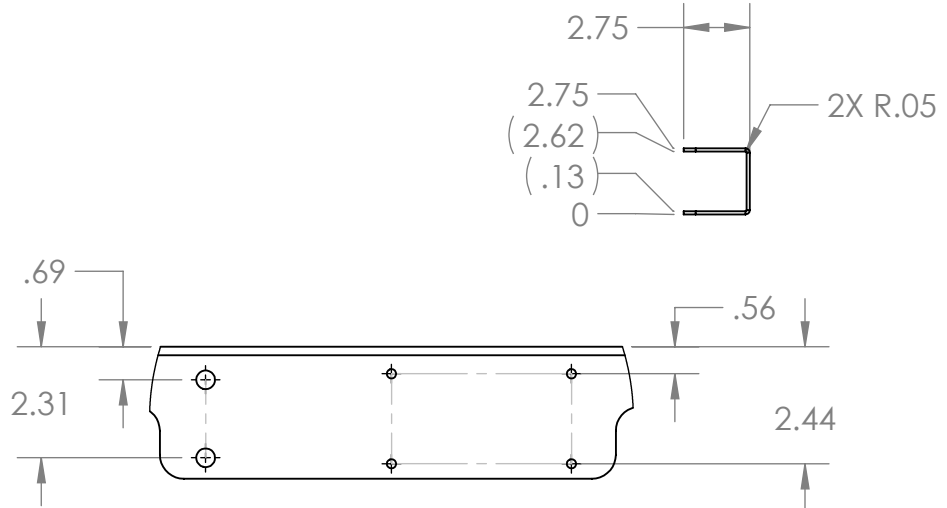
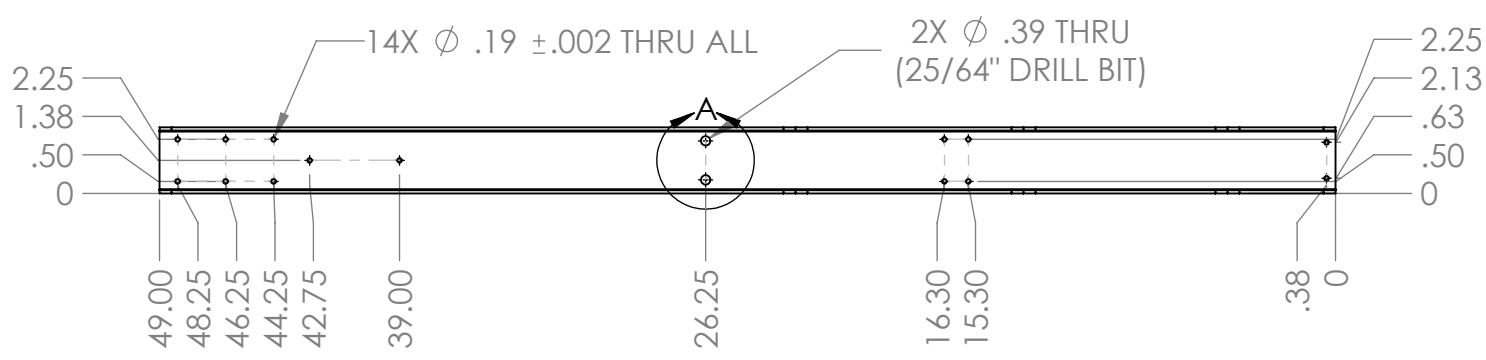
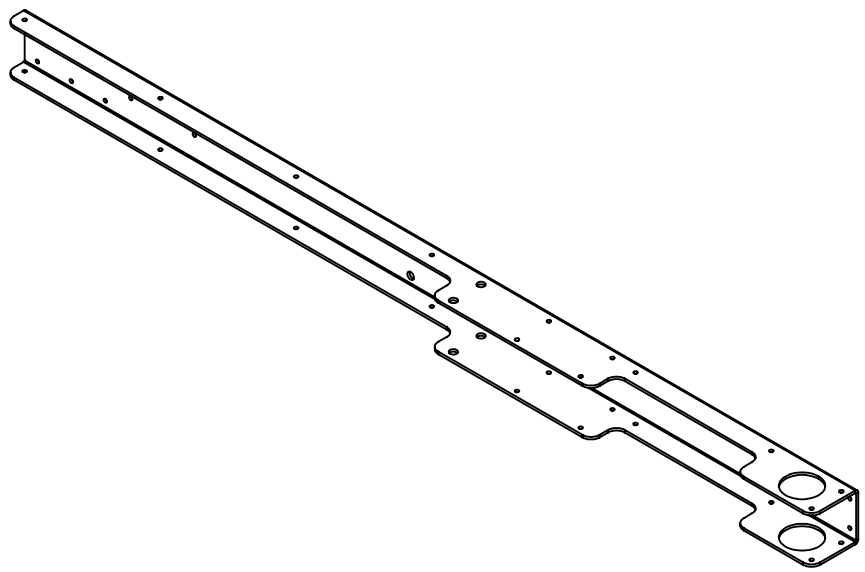
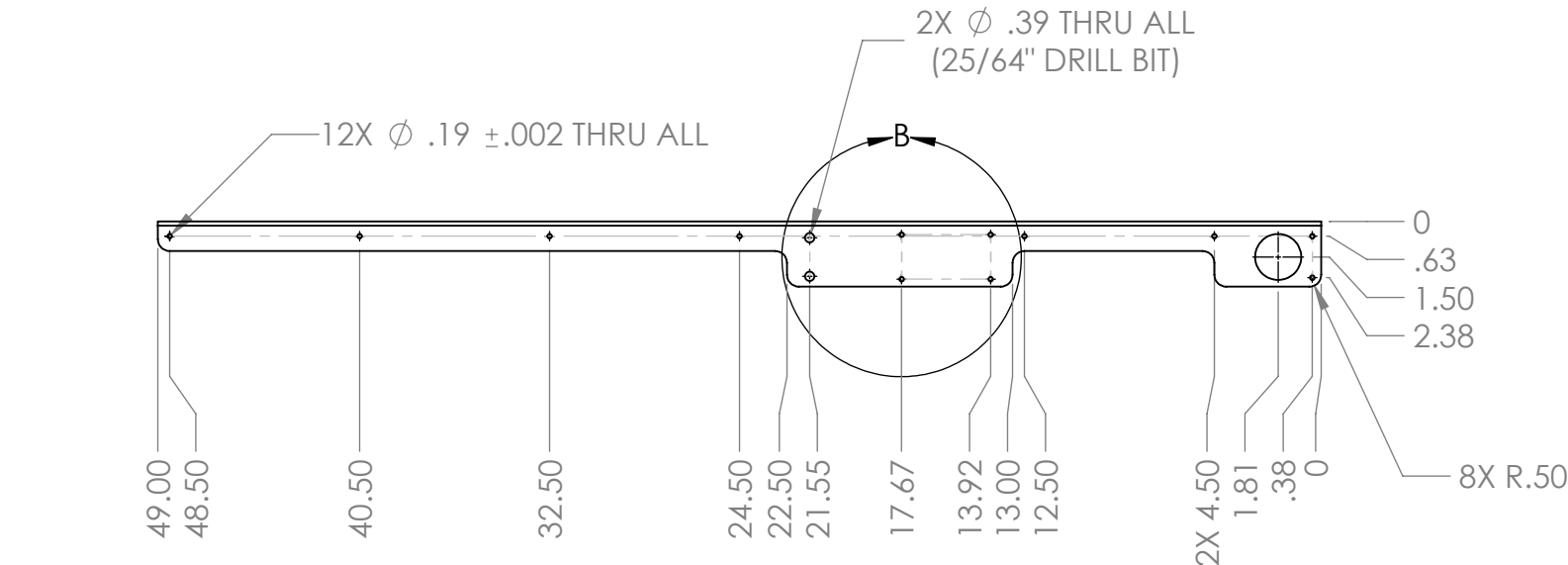


- Notes:
1. Material: 8 Ga. 5052 Aluminum Sheet
  2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/10/19	TITLE:  <h1>Hanger - Top</h1>	
		TOLERANCES: FRACTIONAL $\pm 1/16$	CHECKED				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	ENG APPR.				
		TWO PLACE DECIMAL $\pm .01$	MFG APPR.				
		THREE PLACE DECIMAL $\pm .001$	Q.A.				
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20010 - 01 <b>A</b>  SCALE: 1:4 WEIGHT: SHEET 1 OF 1	
GE-20010 - 30	GE-20010	MATERIAL ALUMINUM SHEET					
NEXT ASSY	USED ON	FINISH BARE					
APPLICATION		DO NOT SCALE DRAWING					

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	MAJOR GEOMETRY CHANGES	9/17/19	KAMC





DETAIL A  
SCALE 1 : 4

DETAIL B  
SCALE 1 : 4

- Notes:
1. Material: 8 Ga. 5052 Aluminum Sheet
  2. Remove all burrs and sharp edges

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/10/19	TITLE: <h1>Hanger - Center Leg</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE <b>B</b>		
GE-20010 - 26	GE-20010	MATERIAL ALUMINUM SHEET						
NEXT ASSY	USED ON	FINISH BARE						
APPLICATION		DO NOT SCALE DRAWING				DWG. NO. GE-20010 - 02		REV <b>A</b>
						SCALE: 1:8		WEIGHT:
						SHEET 1 OF 1		



TITLE:  
**Hanger - Center Leg**

SIZE  
**B**

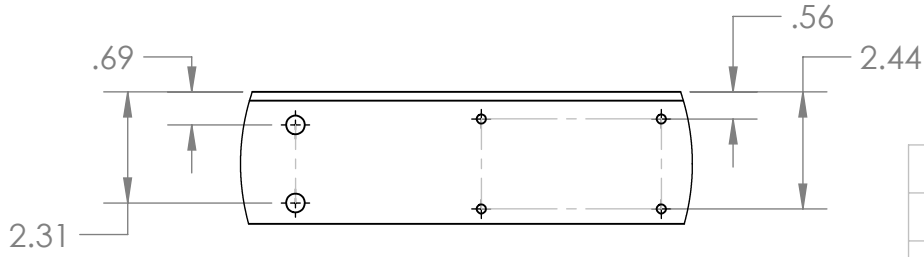
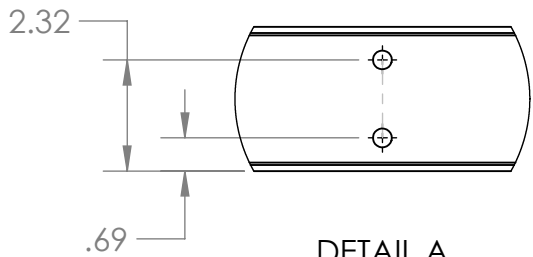
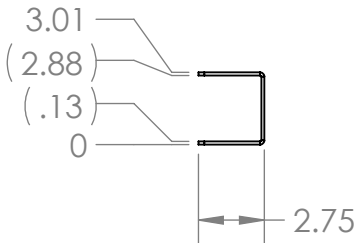
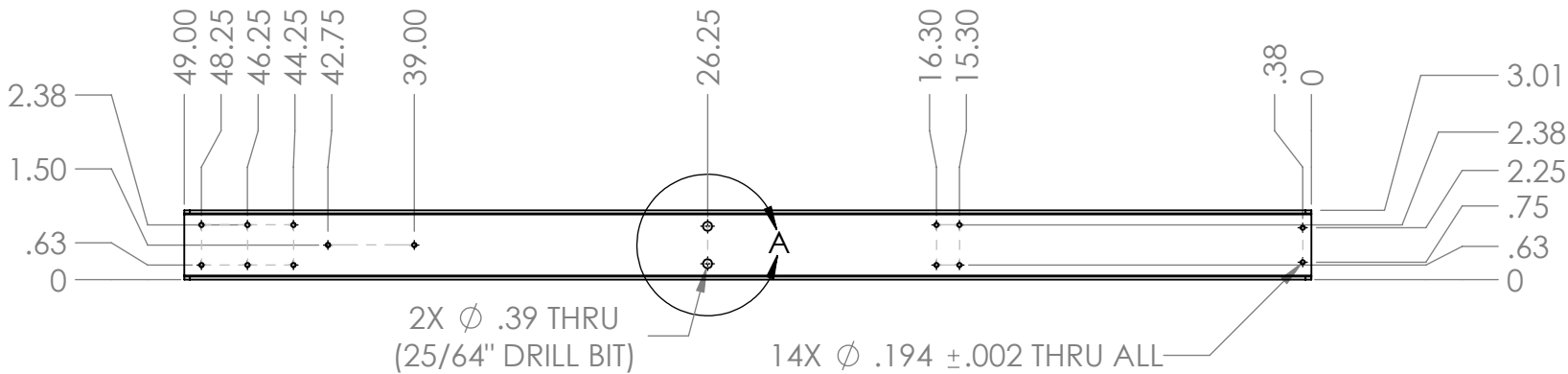
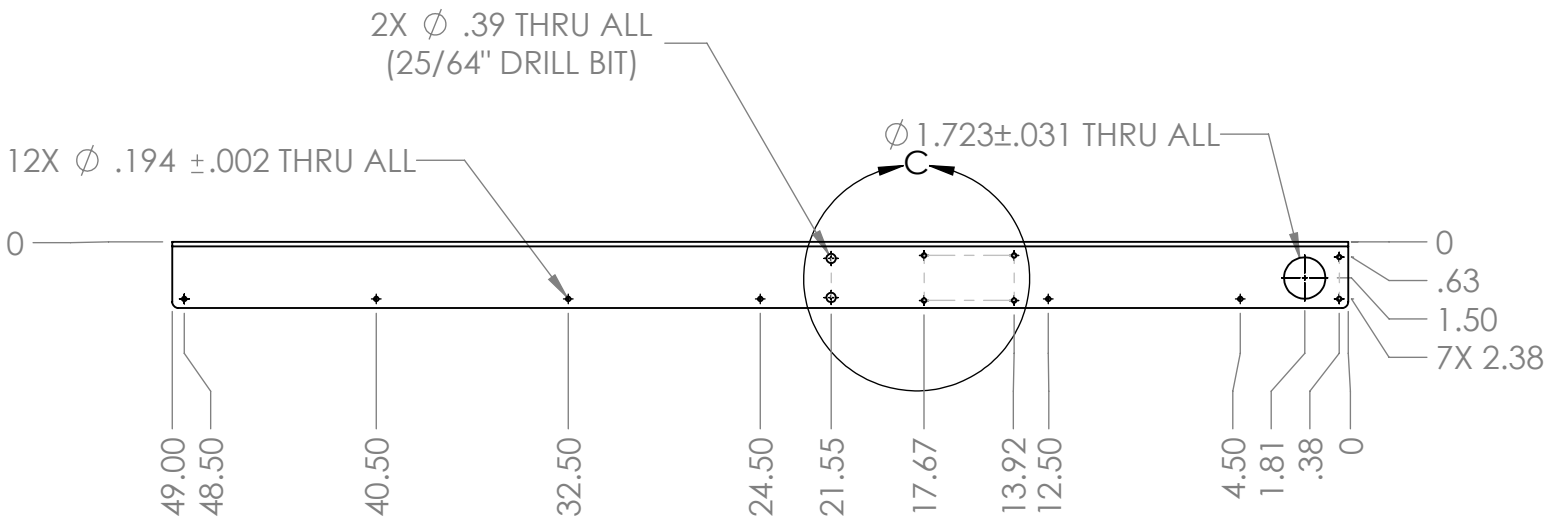
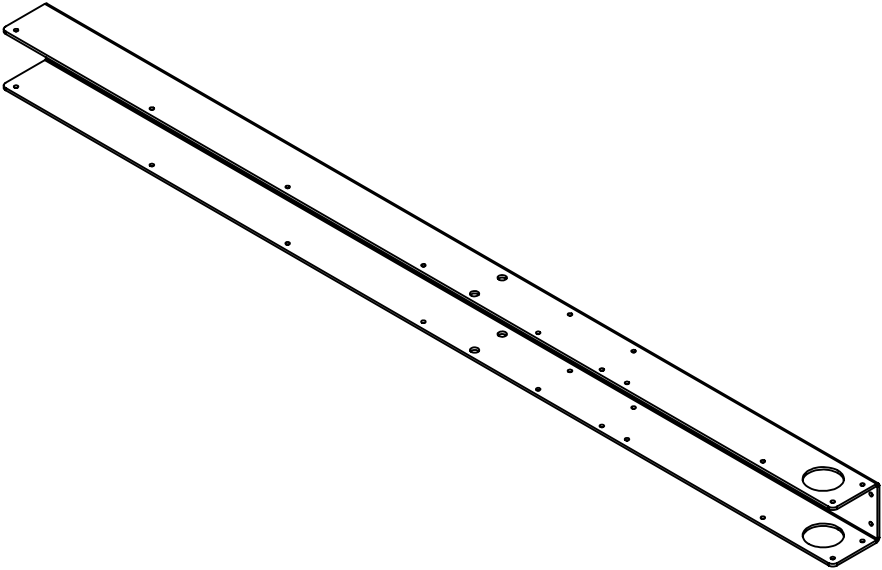
DWG. NO.  
GE-20010 - 02

SCALE: 1:8

WEIGHT:

SHEET 1 OF 1

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	MAJOR GEOMETRY CHANGES	9/16/19	KAMC



- Notes:
- Material: 8 Ga. Aluminum Sheet
  - Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:			NAME	DATE
		DIMENSIONS ARE IN INCHES			DRAWN	KAMC
		TOLERANCES:			CHECKED	
		FRACTIONAL $\pm 1/16$			ENG APPR.	
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$			MFG APPR.	
		TWO PLACE DECIMAL $\pm .01$			Q.A.	
		THREE PLACE DECIMAL $\pm .001$			COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				
		ALUMINUM SHEET				
		FINISH				
		BARE				
		DO NOT SCALE DRAWING				
GE-20010 - 26	GE-20010					
NEXT ASSY	USED ON					
APPLICATION						

**FIRST ROBOTICS COMPETITION**

**SOLIDWORKS**  
Modeling Solutions Partner

TITLE:  
**Hanger - Center Leg, Face**

SIZE	DWG. NO.	REV
<b>B</b>	<b>GE-20010 - 03</b>	<b>A</b>

SCALE: 1:8 WEIGHT: SHEET 1 OF 1

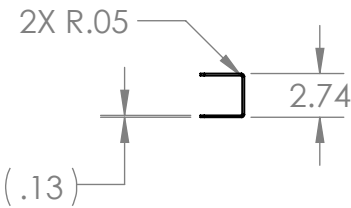
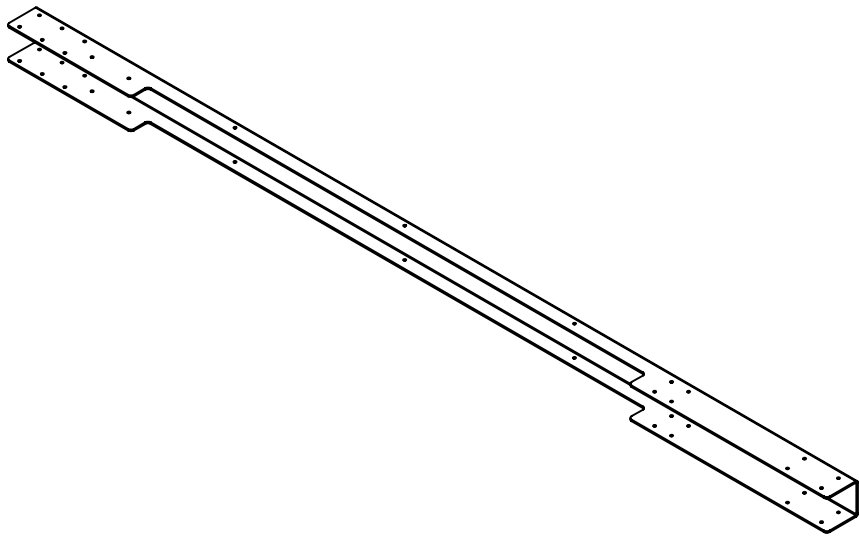
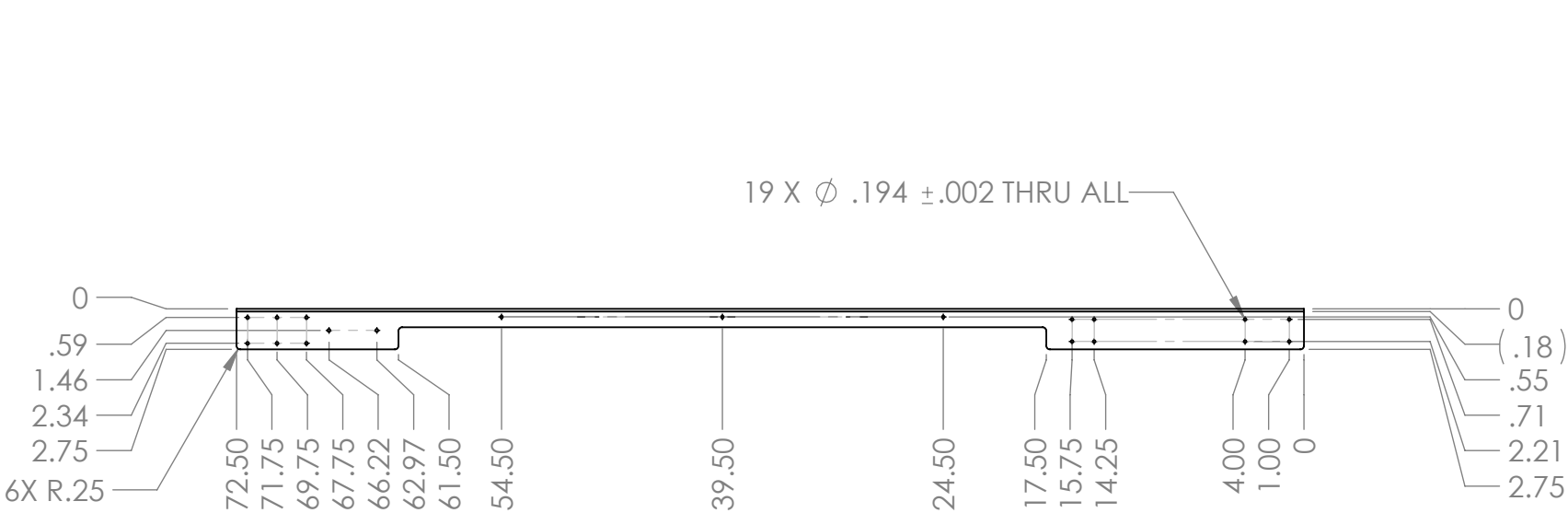
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3

2



1

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	MAJOR GEOMETRY CHANGE	9/16/19	KAMC



- Notes:
- Material: 8 Ga. 5052 Aluminum
  - Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	9/10/19	TITLE:  <h1>Hanger - Side Leg</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20010 - 04</b> <b>A</b>		
GE-20010-27	GE-20010	MATERIAL ALUMINUM SHEET						
NEXT ASSY	USED ON	FINISH BARE						
APPLICATION		DO NOT SCALE DRAWING						

4

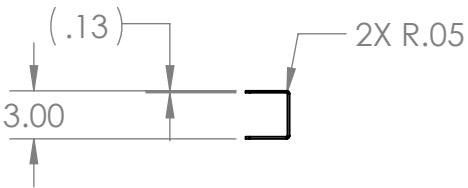
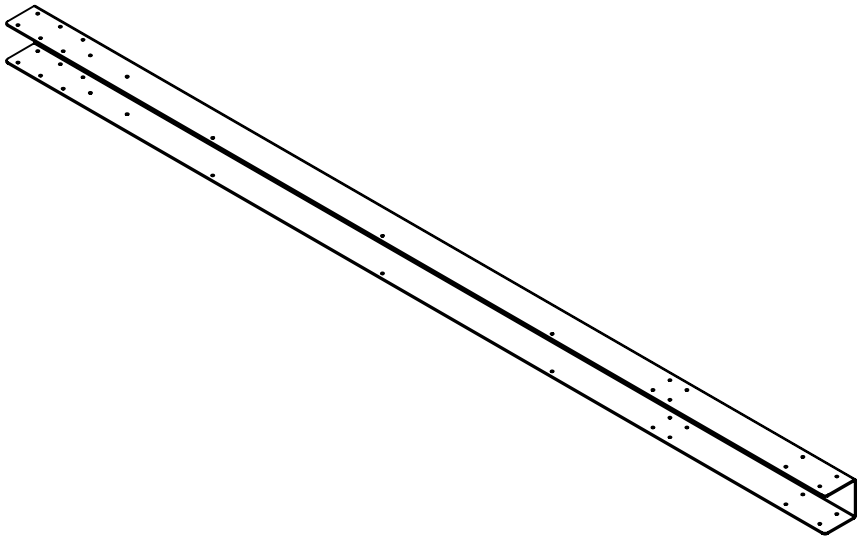
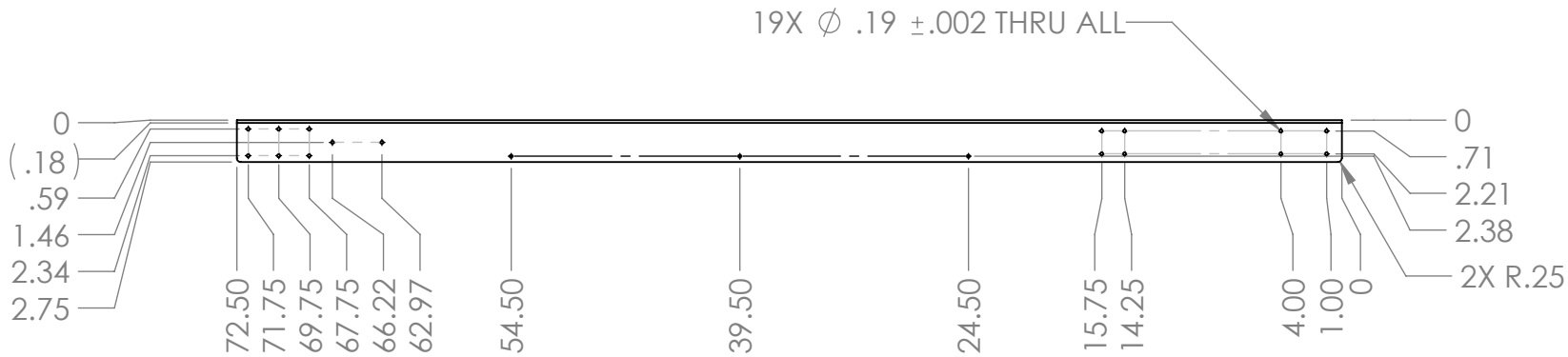
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REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	MAJOR GEOMETRY CHANGES	9/16/19	KAMC

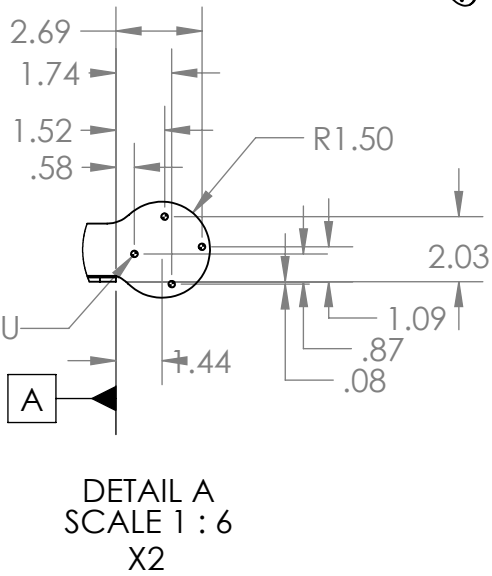
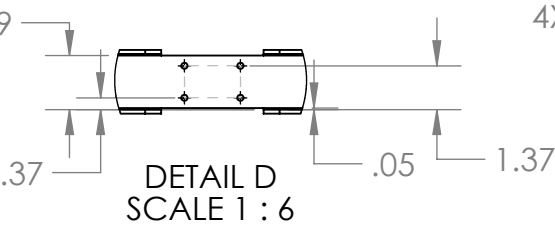
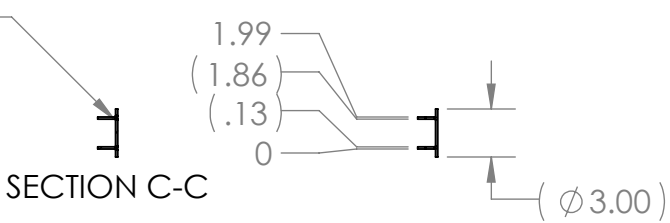
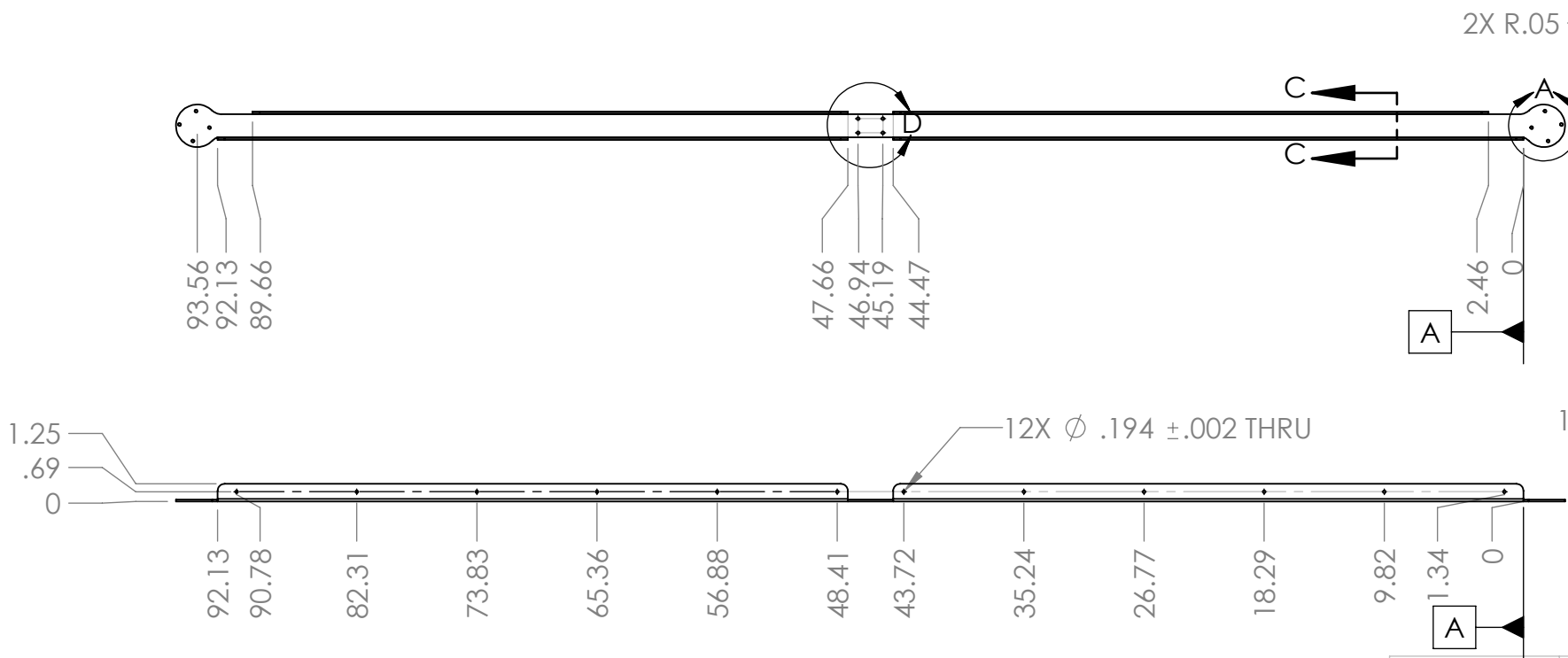
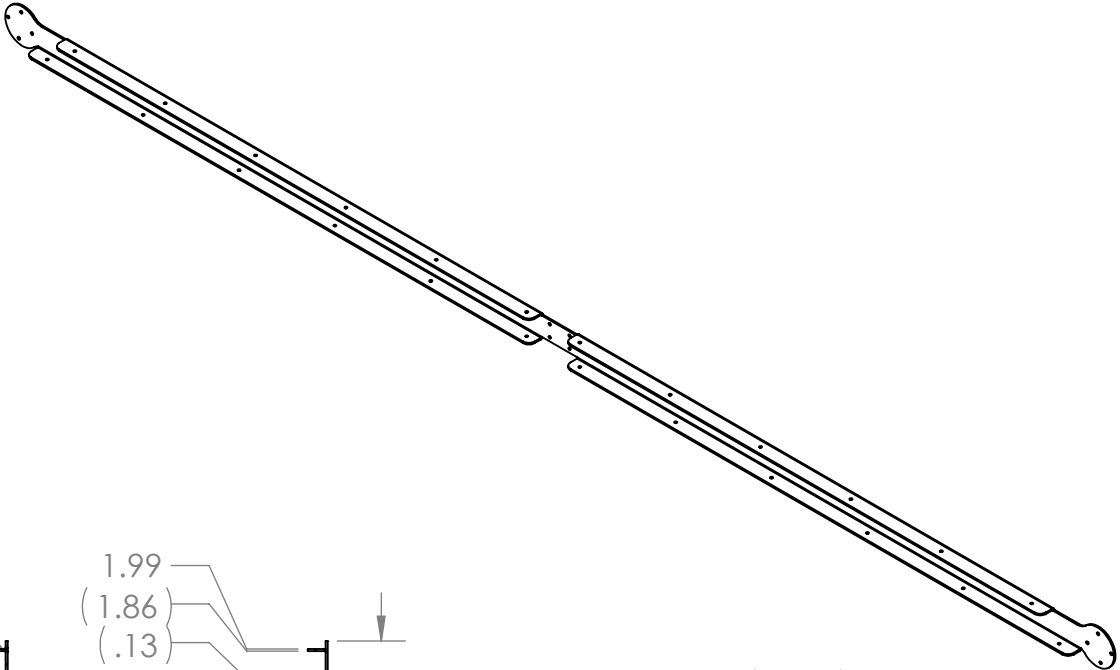
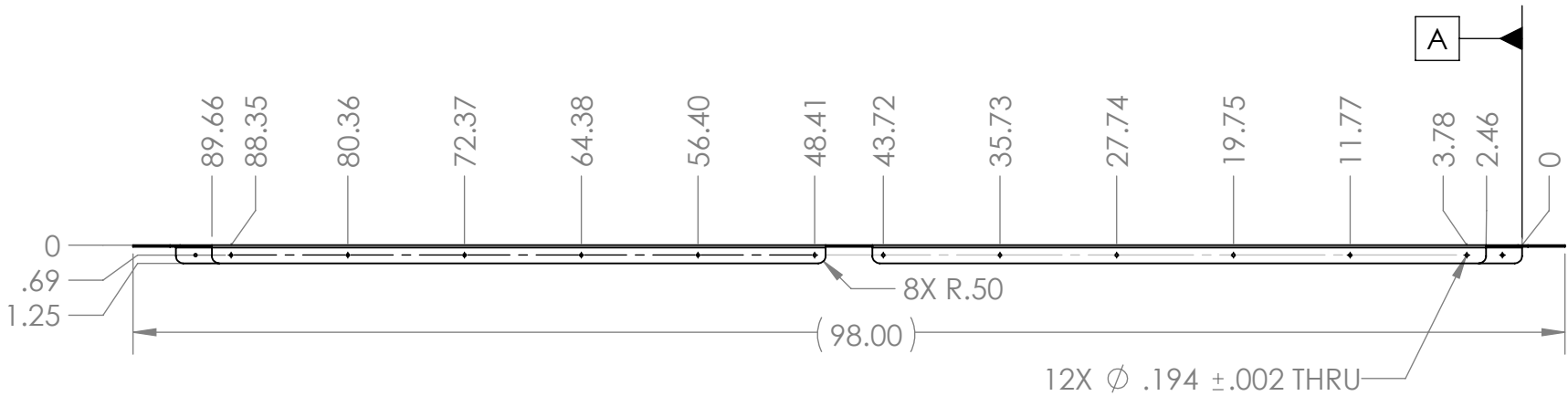


- Notes:
- Material: 8 Ga. 5052 Aluminum
  - Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 			
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/10/19	TITLE:  <h1>Hanger - Side Leg, Face</h1>			
		TOLERANCES: FRACTIONAL $\pm 1/16$	CHECKED						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	ENG APPR.						
		TWO PLACE DECIMAL $\pm .01$	MFG APPR.						
		THREE PLACE DECIMAL $\pm .001$	Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE <b>B</b> DWG. NO. <b>GE-20010 - 05</b> REV <b>A</b>  SCALE: 1:12   WEIGHT:   SHEET 1 OF 1			
GE-20010-27	GE-20010	MATERIAL ALUMINUM SHEET							
NEXT ASSY	USED ON	FINISH BARE							
APPLICATION		DO NOT SCALE DRAWING							

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	UPDATED HOLE PATTERN AND PART LENGTH	9/16/19	KAMC



- Notes:
1. Material: 8 Ga. 5052 Aluminum
  2. Remove all burrs and sharp edges.

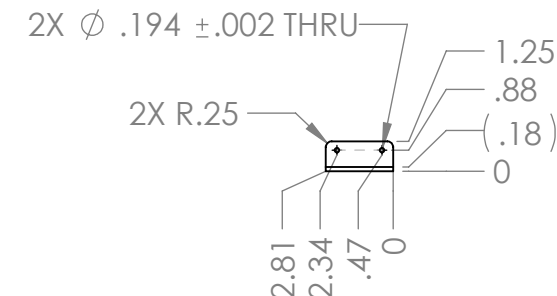
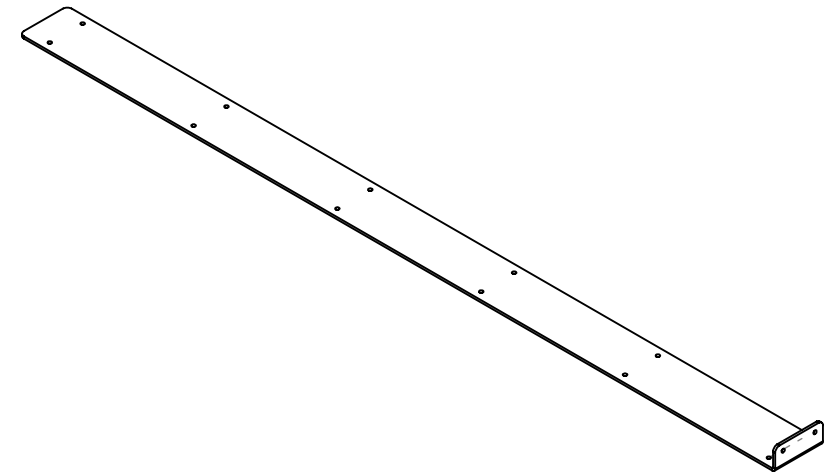
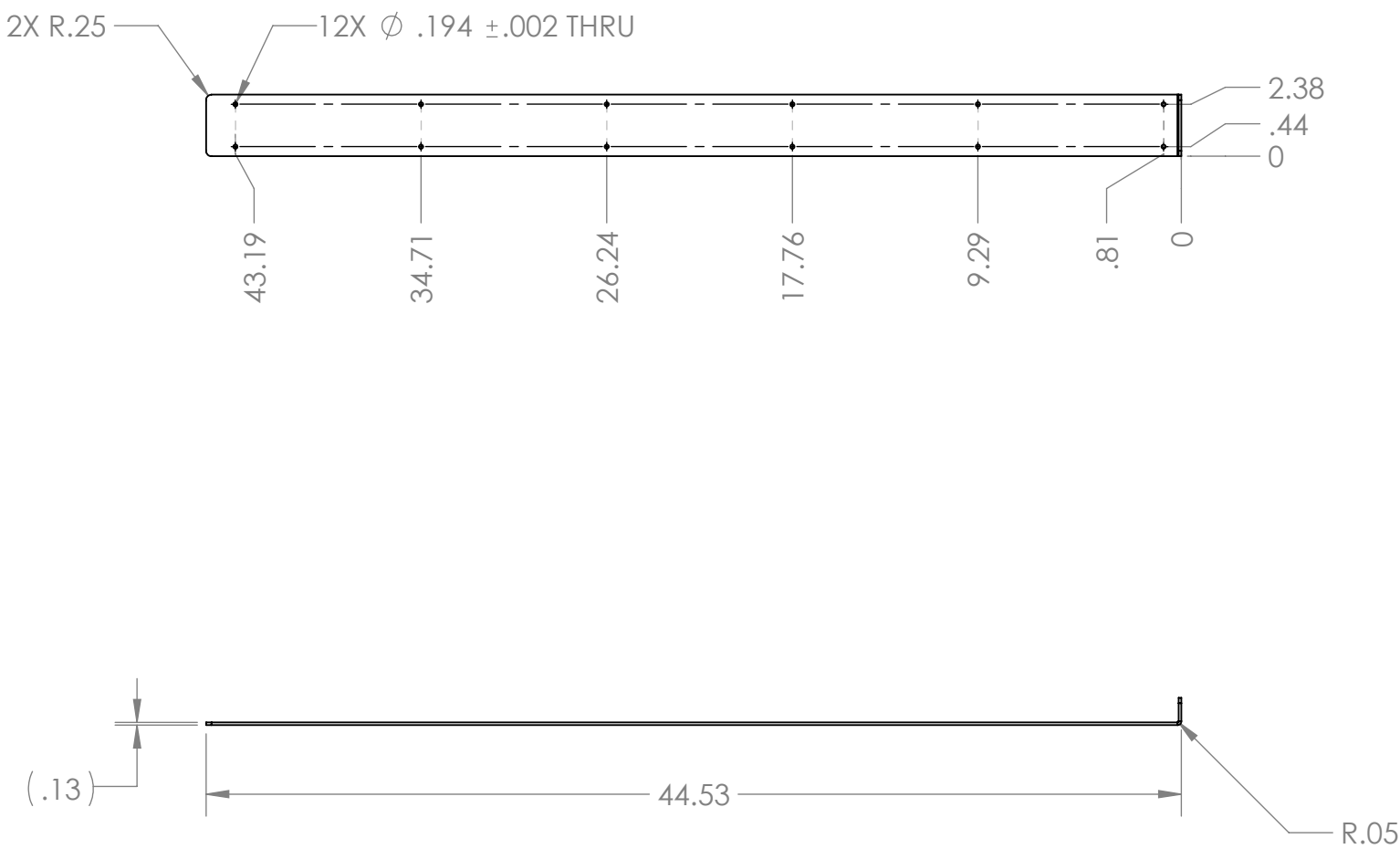
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PERMISSION OF FIRST® IS PROHIBITED.

		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 							
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/10/19	TITLE: <div>Hanger - Cross Bar</div>						
		TOLERANCES: FRACTIONAL $\pm 1/16$	CHECKED									
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	ENG APPR.									
		TWO PLACE DECIMAL $\pm .01$	MFG APPR.									
		THREE PLACE DECIMAL $\pm .001$	Q.A.									
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE <b>B</b>						
GE-20010-28	GE-20010	MATERIAL ALUMINUM SHEET								DWG. NO. GE-20010 - 06		
NEXT ASSY	USED ON	FINISH BARE										
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:12		WEIGHT:	SHEET 1 OF 1						







REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	PART LENGTH INCREASED	9/16/2019	KAMC



- Notes:
1. Material: 8 Ga. 5052 Aluminum
  2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	8/29/19	TITLE:  <h1>Hanger - Cross Bar, Bottom</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20010 - 08</b> <b>A</b>		
GE-20010-28	GE-20010	MATERIAL ALUMINUM SHEET						
NEXT ASSY	USED ON	FINISH BARE						
APPLICATION		DO NOT SCALE DRAWING						



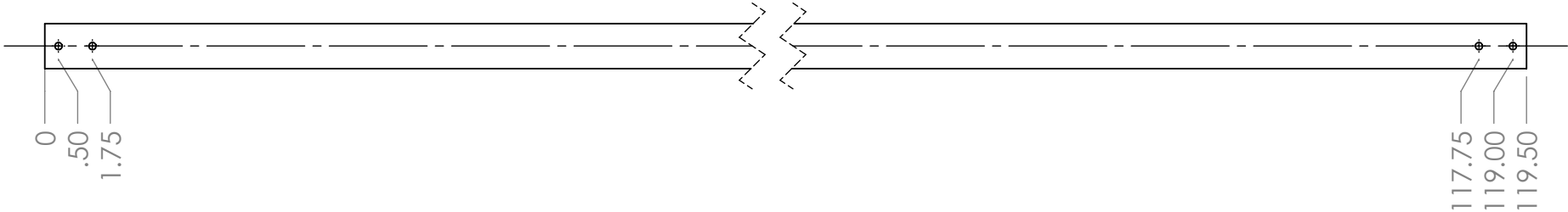
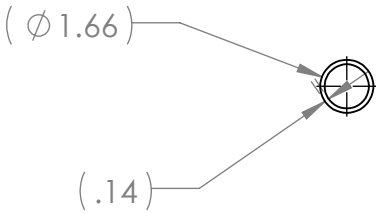
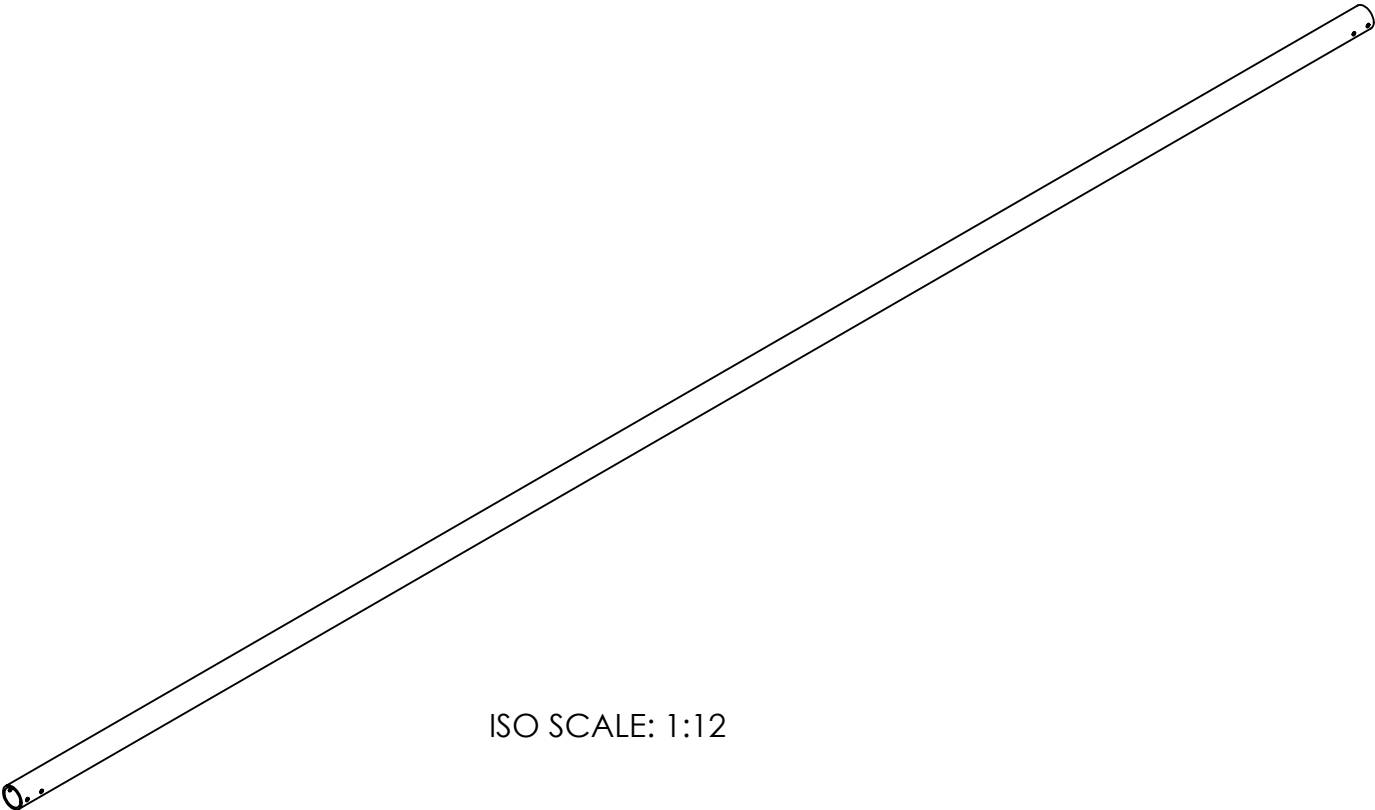
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3

2



1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	PART LENGTH AND HOLE PATTERN MODIFIED	9/17/2019	KAMC



- Notes:
- Material: 1.66" OD x 0.14" WALL x 1.38" ID Aluminum Pipe 6061-T6-Extruded Schedule 40
  - Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/2/19	TITLE:  <h1>Hanger - Hanging Pole</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20010 - 09</b> <b>A</b>		
GE-20010		MATERIAL ROUND TUBE						
NEXT ASSY	USED ON	FINISH BARE						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:6 WEIGHT: SHEET 1 OF 1		

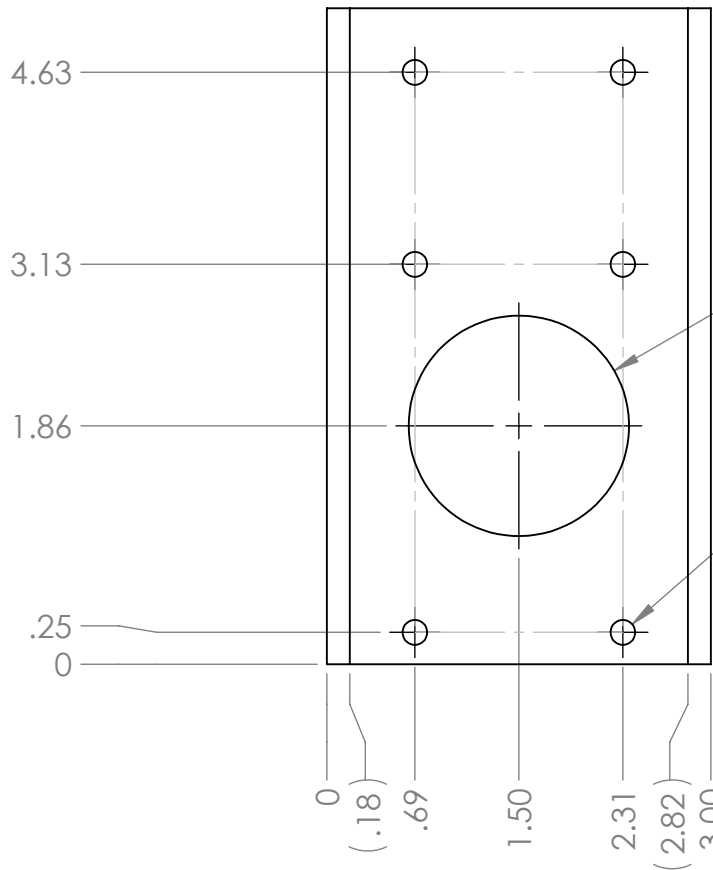
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2

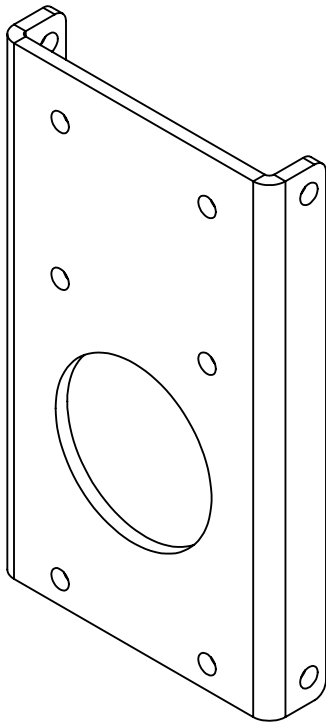
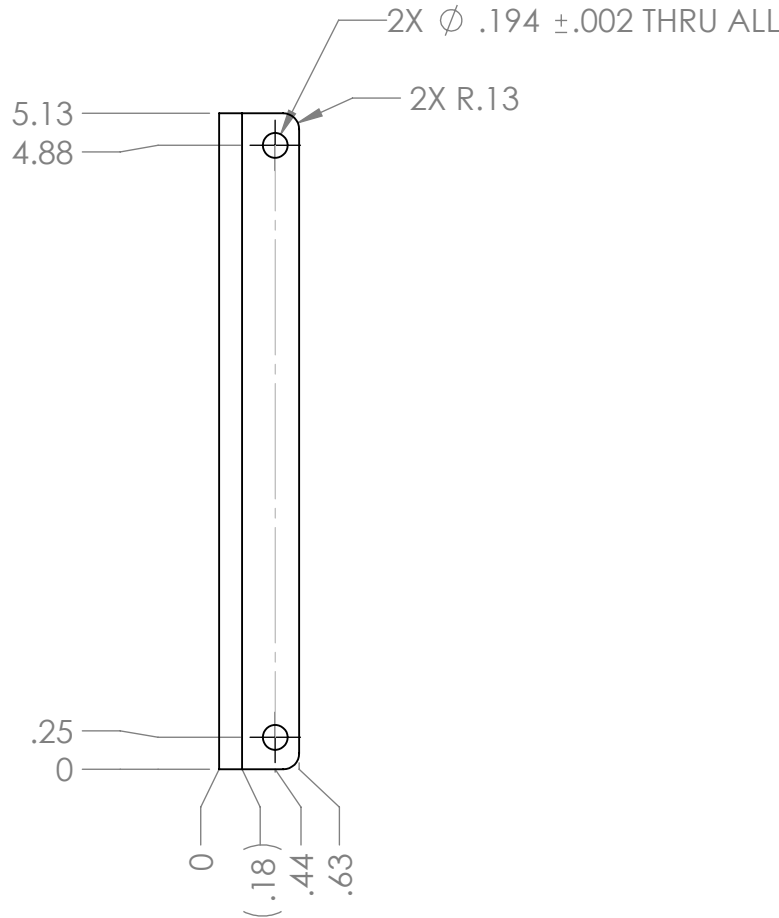
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	MAJOR GEOMETRY CHANGE	9/16/2019	KAMC



$\phi 1.728$   
 $\phi 1.723$  THRU  
NOTE: EDGE MUST BE CLEAN  
- NO SHARP EDGE

6X  $\phi .194 \pm .002$  THRU



- Notes:
1. Material: 8 Ga. 5052 Aluminum Sheet
  2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/16/19
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
GE-20011 - 16	GE-20011	MATERIAL ALUMINUM SHEET			
NEXT ASSY	USED ON	FINISH BARE			
APPLICATION		DO NOT SCALE DRAWING			
			TITLE: Hanger - Hanging Pole Holder		
			SIZE <b>B</b>	DWG. NO. GE-20010 - 10	REV <b>A</b>
			SCALE: 2:3	WEIGHT:	SHEET 1 OF 1

4

3

2

1

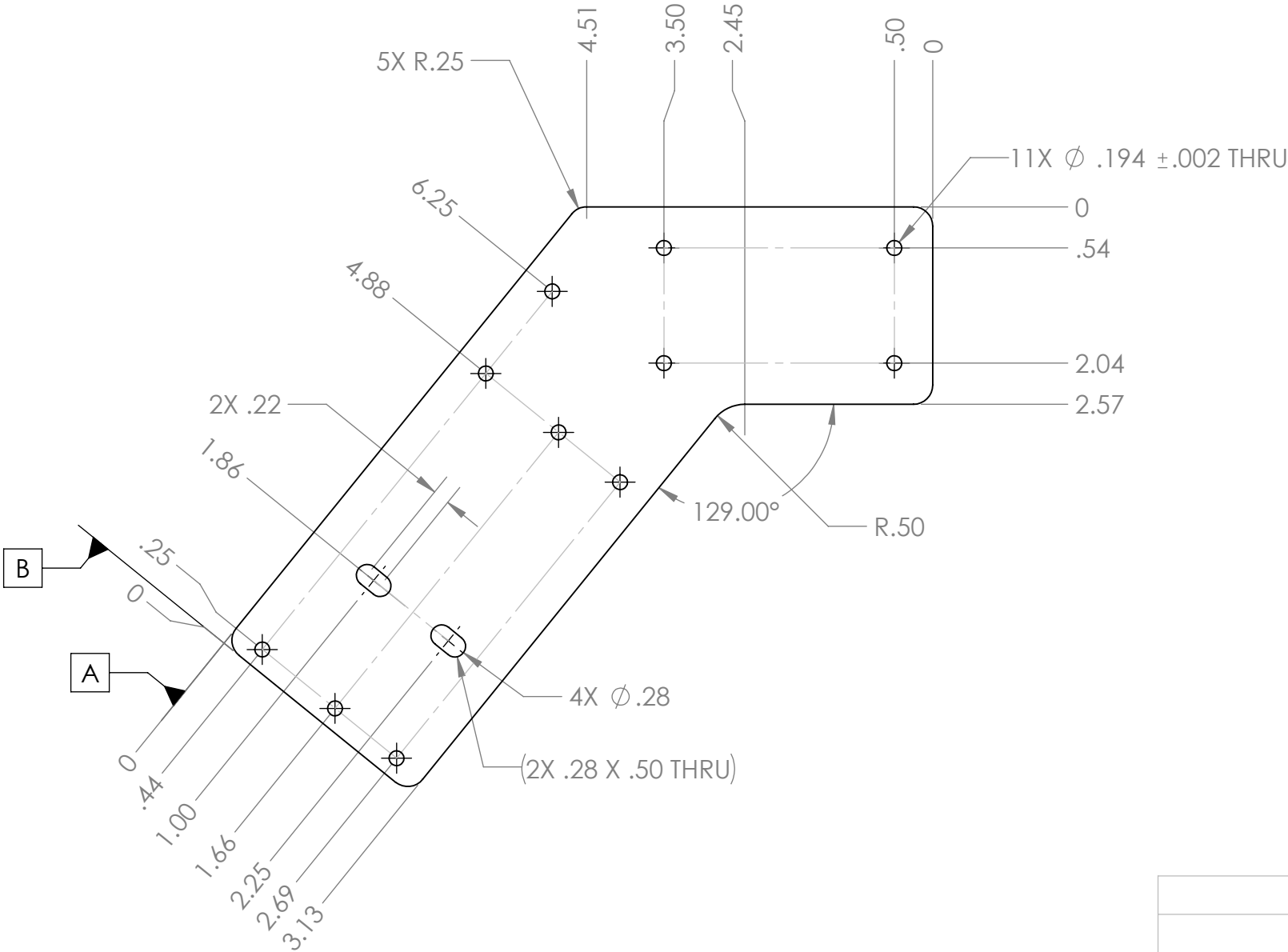
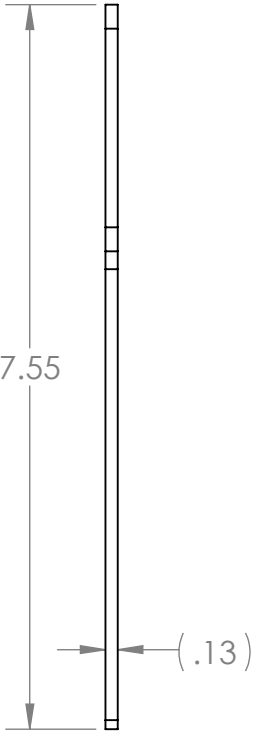
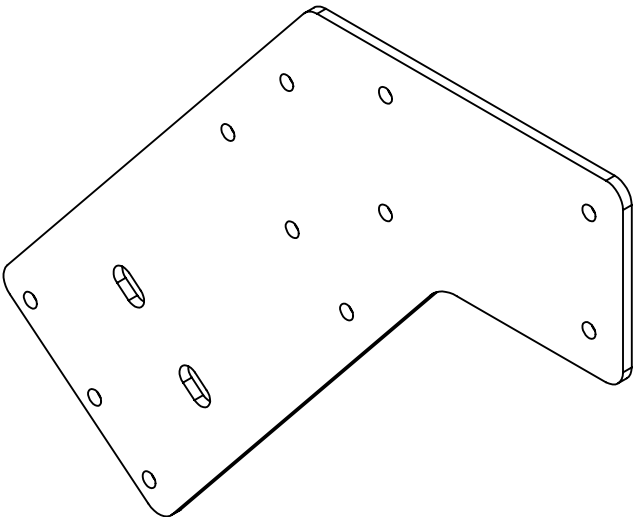
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3

2



1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	HOLE PATTERN AND GENERAL GEOMETRY MODIFIED	9/16/2019	KAMC



- Notes:
- Material: 8 Ga. 5052 Aluminum Sheet.
  - Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 			
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/16/19	TITLE:  Hanger - Hanging Pole Holder, Face			
		TOLERANCES: FRACTIONAL $\pm 1/16$	CHECKED						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	ENG APPR.						
		TWO PLACE DECIMAL $\pm .01$	MFG APPR.						
		THREE PLACE DECIMAL $\pm .001$	Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20010 - 11</b> <b>A</b>  SCALE: 1:2 WEIGHT: SHEET 1 OF 1			
GE-20010 - 29	GE-20010	MATERIAL ALUMINUM SHEET							
NEXT ASSY	USED ON	FINISH BARE							
APPLICATION		DO NOT SCALE DRAWING							



4

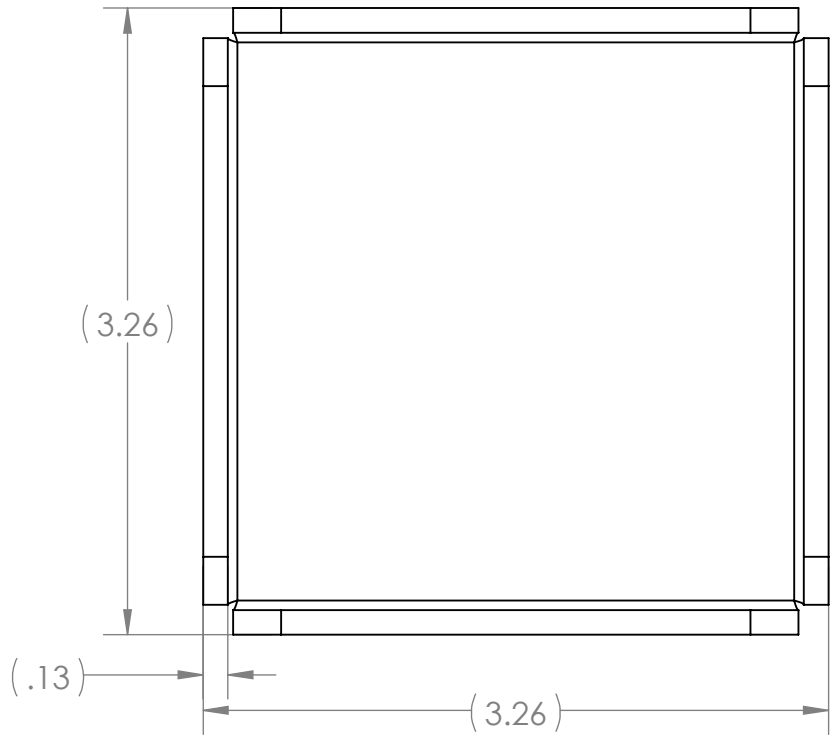
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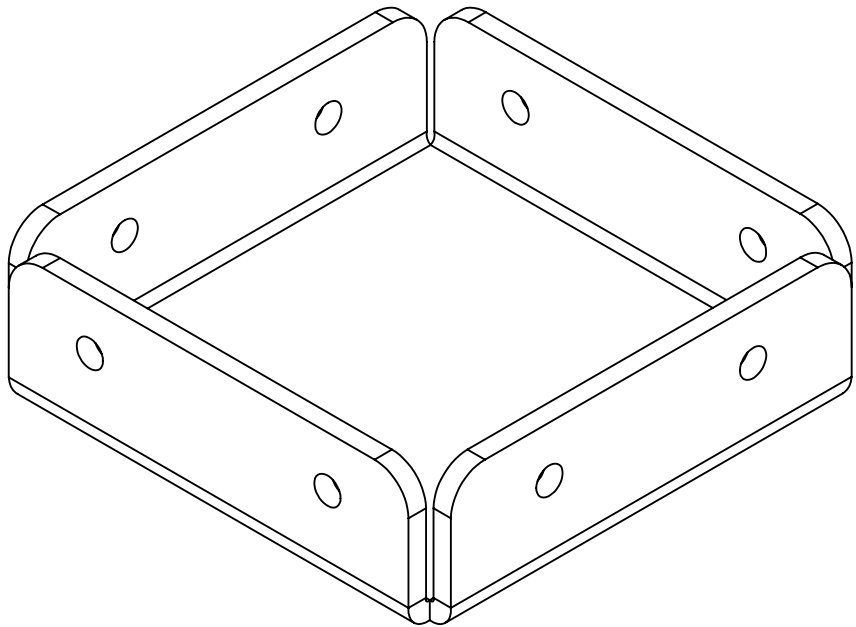
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	MINOR GEOMETRY CHANGES	9/16/2019	KAMC

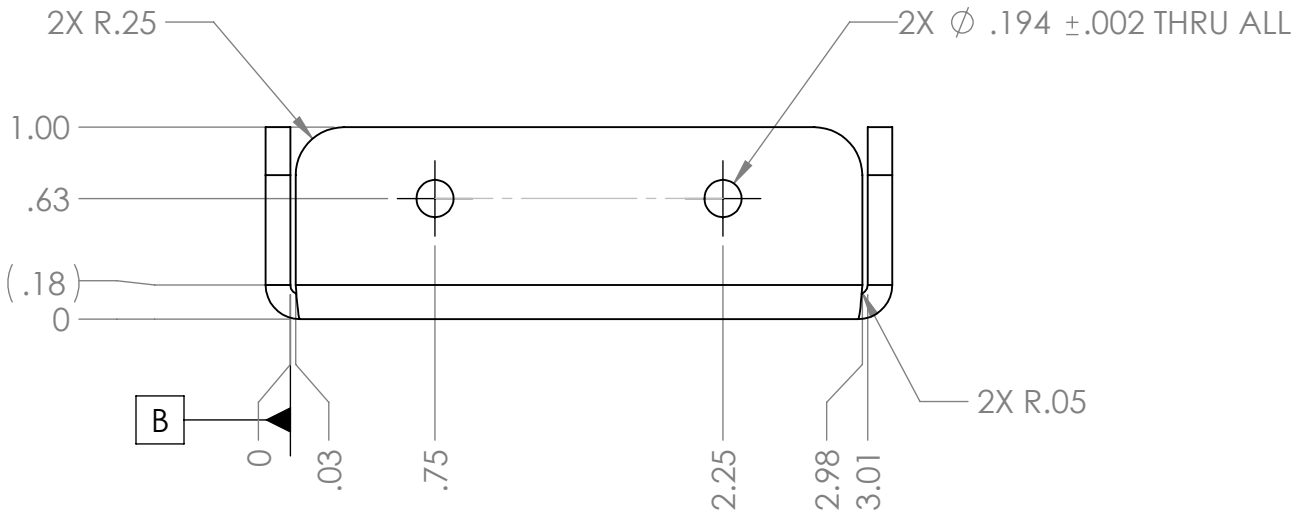
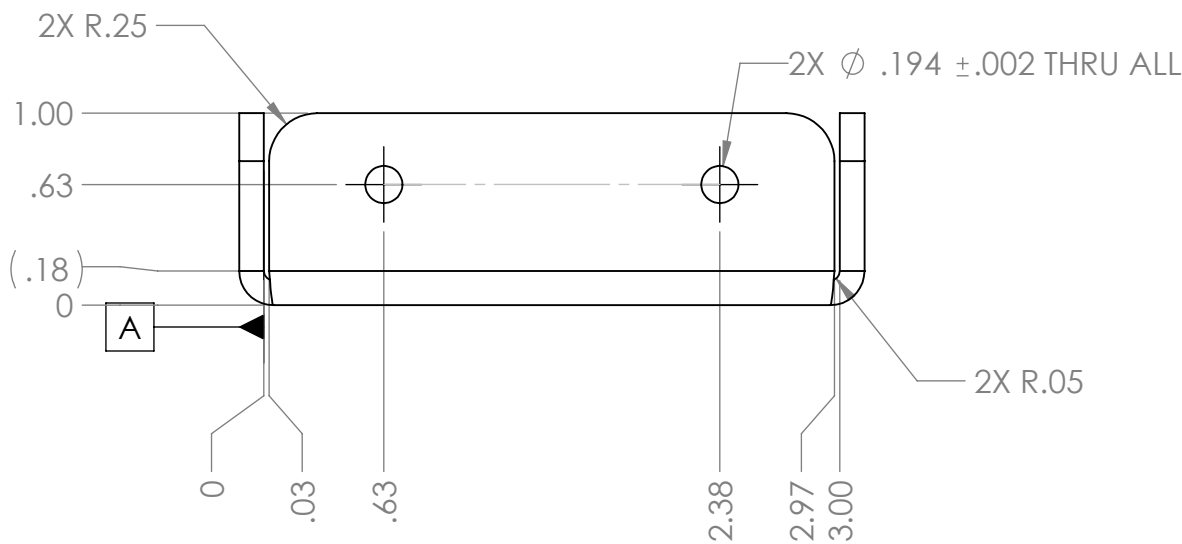
B



B





A



A

- Notes:
- Material: 8 Ga. 5052 Aluminum Sheet
  - Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	9/16/19	TITLE:  Hanger - Center Leg, End Cap	
			CHECKED				
			ENG APPR.				
			MFG APPR.				
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> GE-20010 - 12 <b>A</b>	
GE-20010		MATERIAL ALUMINUM SHEET	COMMENTS:				
NEXT ASSY	USED ON	FINISH BARE					
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:1 WEIGHT: SHEET 1 OF 1				







4

3

2

1

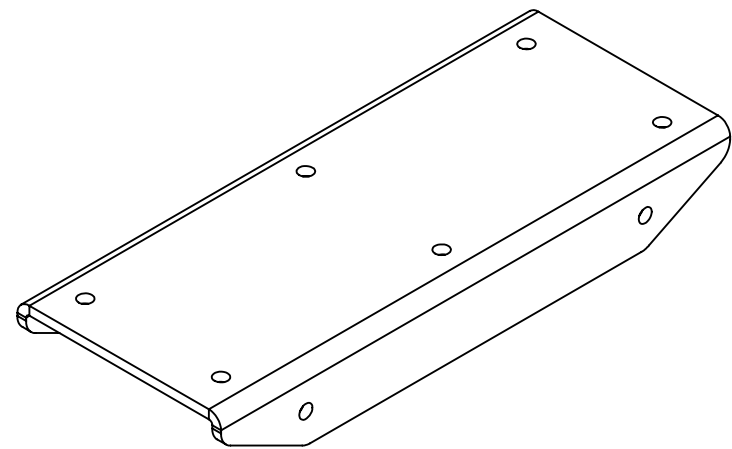
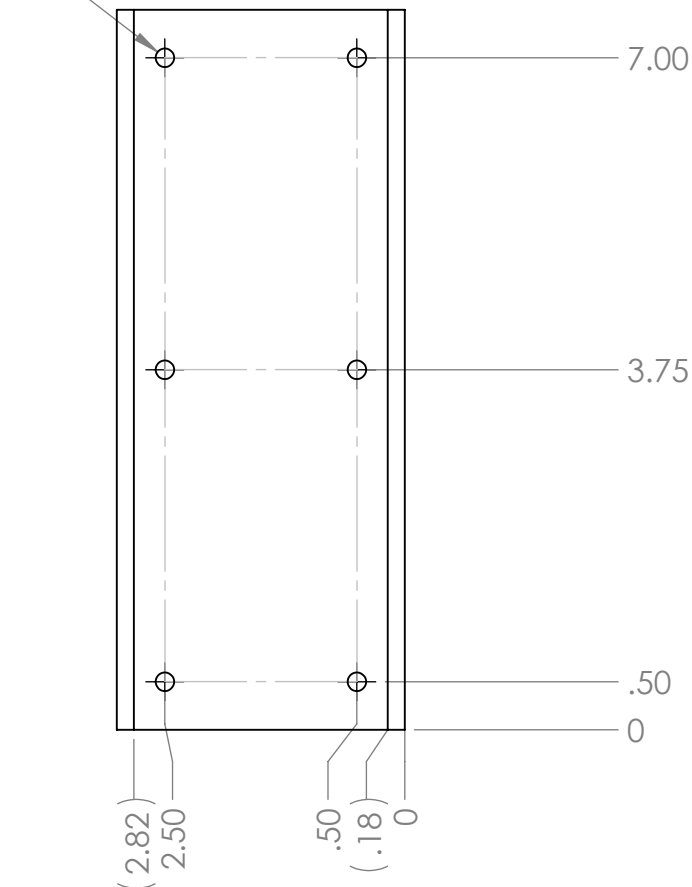
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B

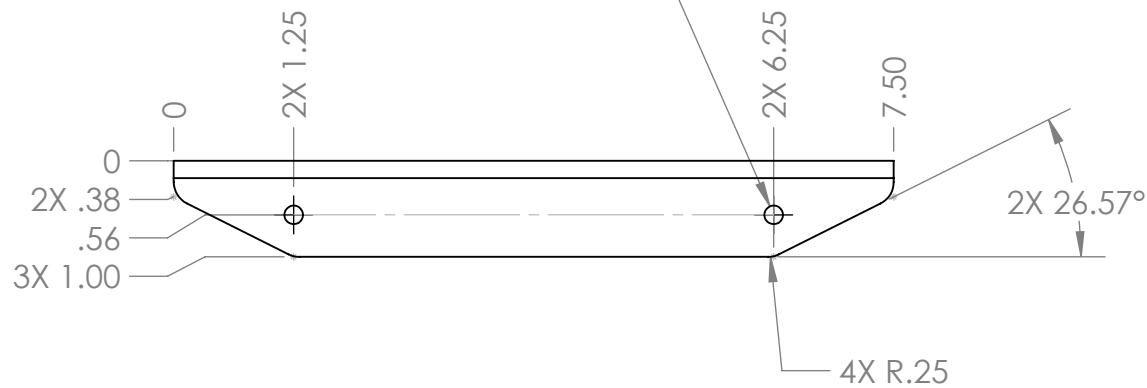
A

A

6X  $\varnothing$  .19  $\pm$ .002 THRU





2X  $\varnothing$  .19  $\pm$ .002 THRU ALL



- Notes:
1. Material: 8 Ga. 5052 Aluminum Sheet
  2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 			
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/16/19	TITLE:  <h1>Hanger - Top, Face</h1>		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$						
		THREE PLACE DECIMAL $\pm .001$						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20010 - 14</b> <b>0</b>		
GE-20010 - 30	GE-20010	MATERIAL ALUMINUM SHEET	COMMENTS:					
NEXT ASSY	USED ON	FINISH BARE						
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:2			WEIGHT:	SHEET 1 OF 1	



TITLE:  
**Hanger - Top, Face**

SIZE  
**B**

DWG. NO.  
**GE-20010 - 14**

REV  
**0**

SCALE: 1:2

WEIGHT:

SHEET 1 OF 1

4

3

2

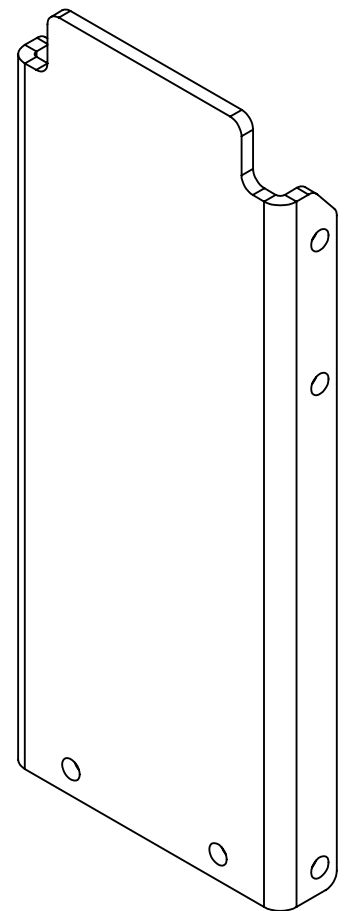
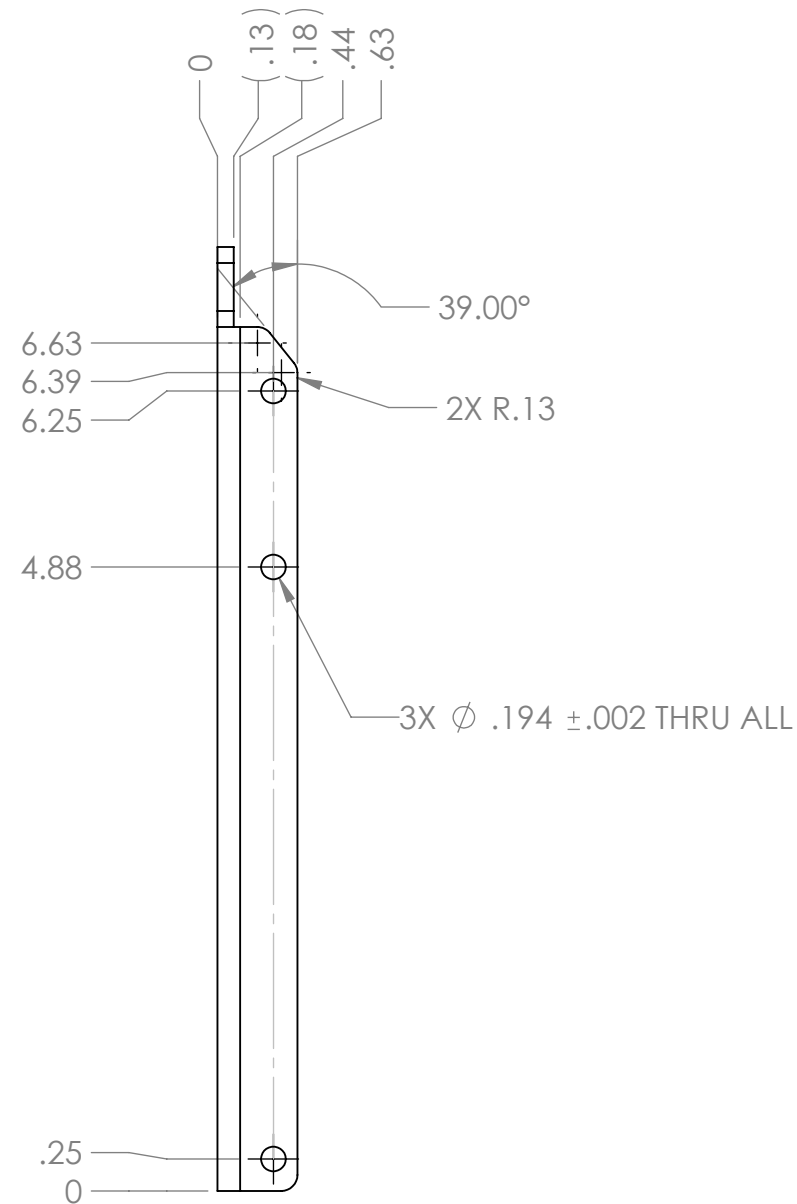
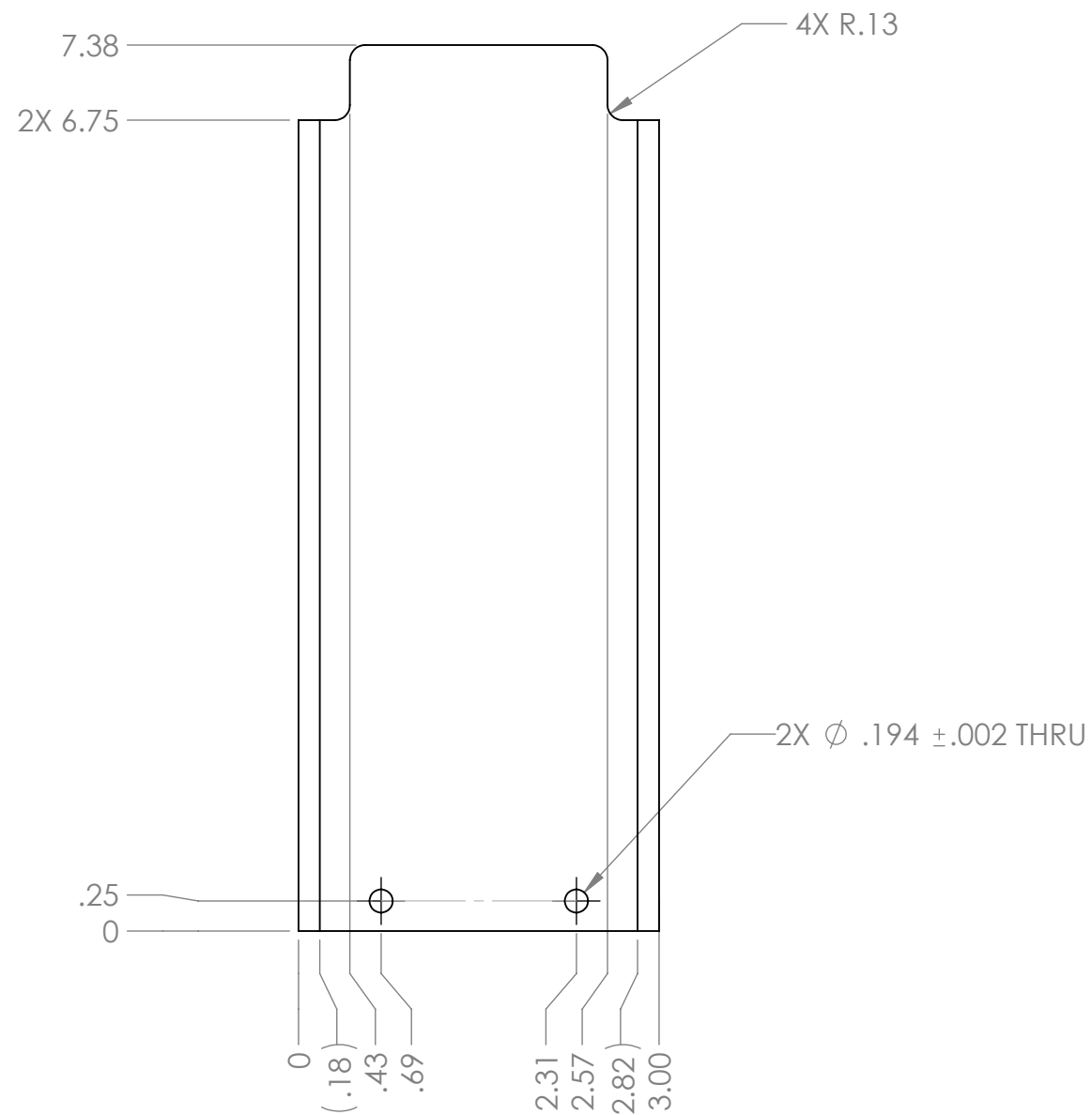
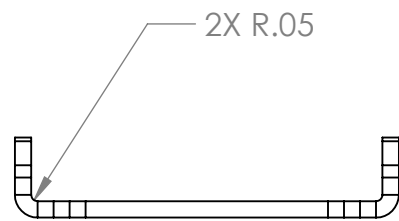
1

4

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2

1



- Note:
1. Material: 8 Ga. 5052 Aluminum Sheet
  2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 <b>FIRST ROBOTICS COMPETITION</b>  <b>SOLIDWORKS</b> Modeling Solutions Partner			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	9/16/19	TITLE:  Hanger - Hanging Pole Holder, End			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			COMMENTS:			
GE-20010 - 29	GE-20010	MATERIAL ALUMINUM SHEET							
NEXT ASSY	USED ON	FINISH BARE				SIZE <b>B</b>	DWG. NO. GE-20010 - 15	REV <b>0</b>	
APPLICATION		DO NOT SCALE DRAWING				SCALE: 2:3	WEIGHT:	SHEET 1 OF 1	

4

3

2

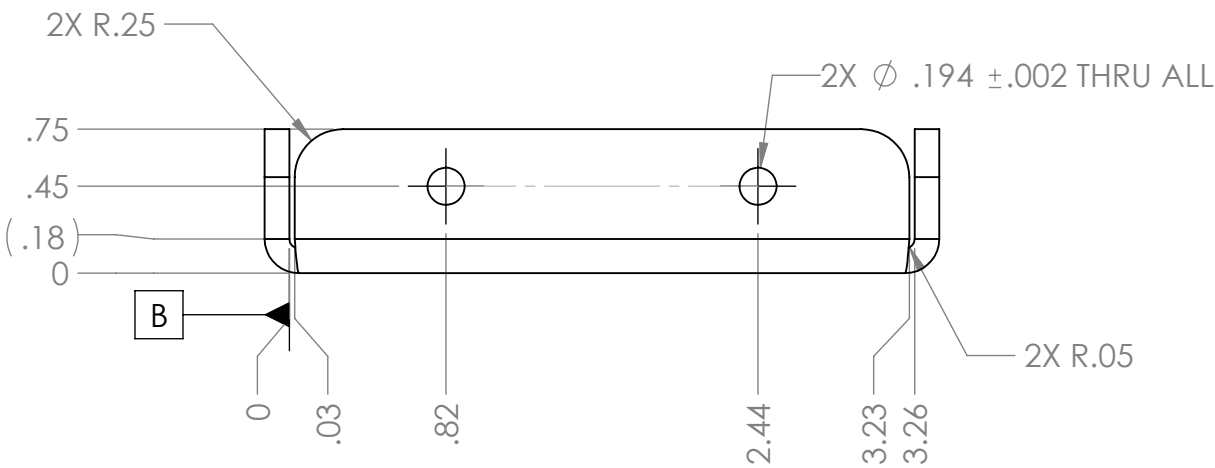
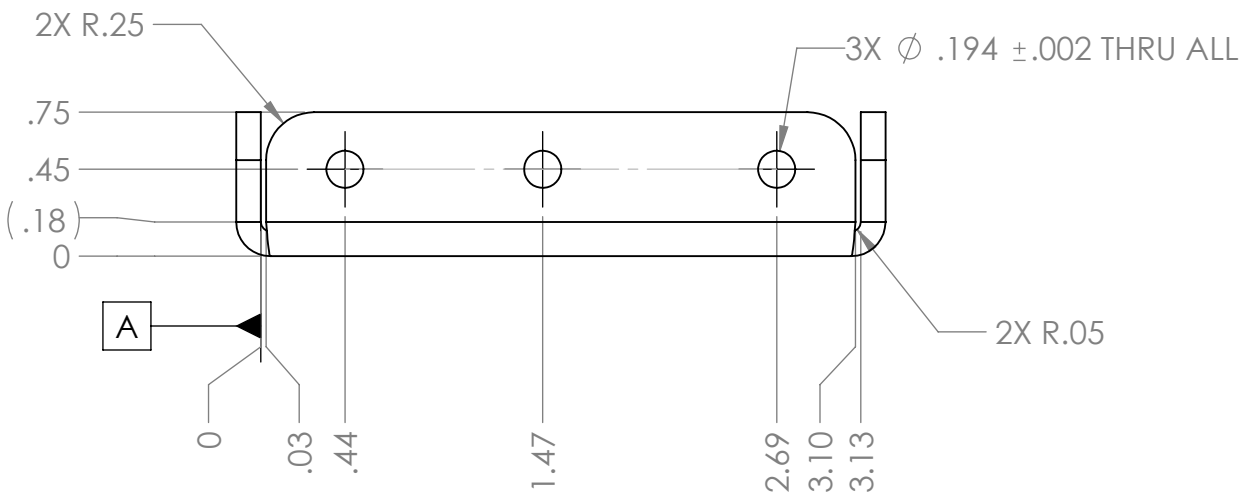
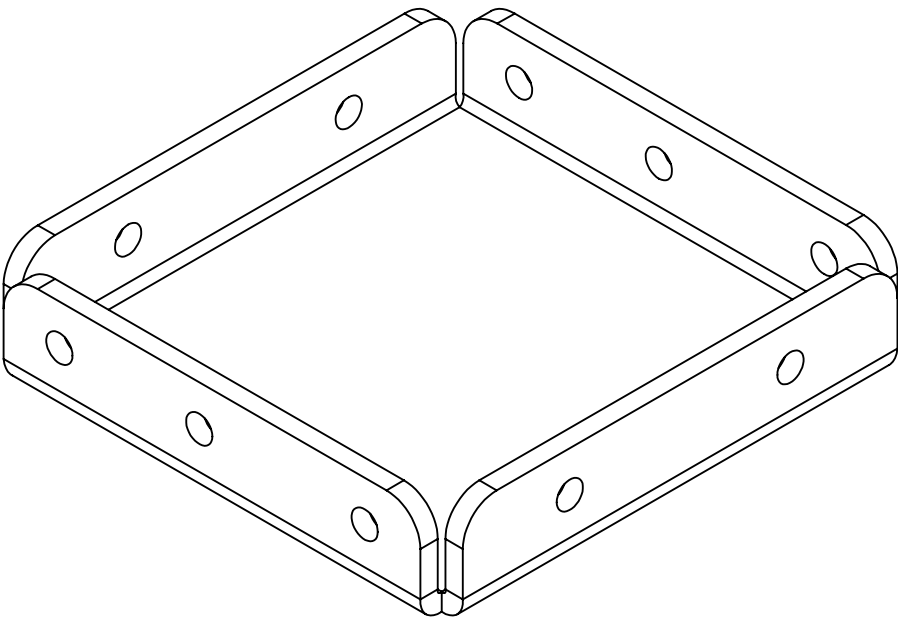
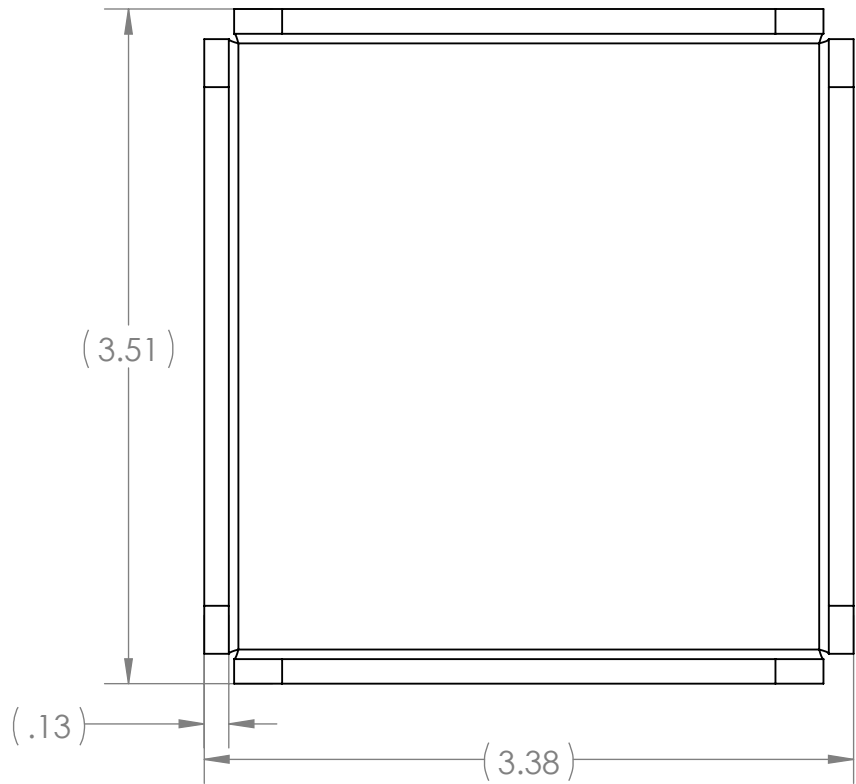
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4

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2

1



- Notes:
1. Material: 8 Ga. 5052 Aluminum Sheet
  2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 				
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/16/19	TITLE:  Hanger - Hanging Pole Holder, End Cap			
		TOLERANCES: FRACTIONAL $\pm 1/16$	CHECKED						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	ENG APPR.						
		TWO PLACE DECIMAL $\pm .01$	MFG APPR.						
		THREE PLACE DECIMAL $\pm .001$	Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE <b>B</b>			
GE-20010 - 29	GE-20010	MATERIAL ALUMINUM SHEET						DWG. NO. GE-20010 - 16	REV 0
NEXT ASSY	USED ON	FINISH BARE						SCALE: 1:1	WEIGHT:
APPLICATION		DO NOT SCALE DRAWING							



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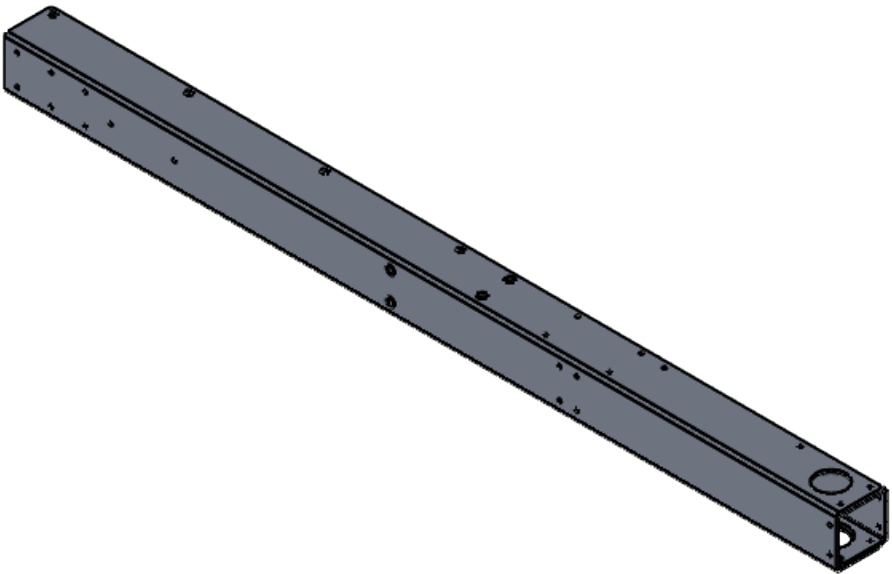
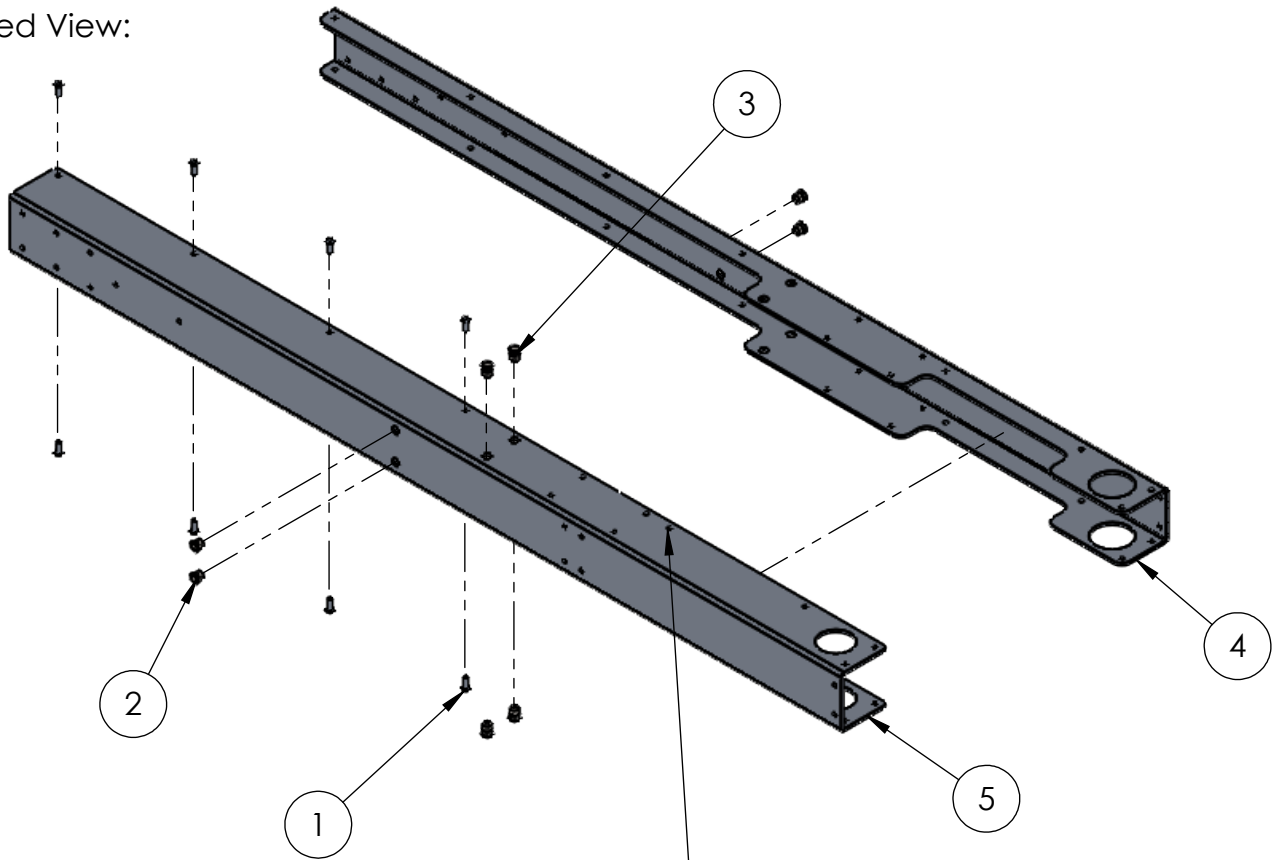
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2

1

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	GE-20010-02 & GE-20010-03 UPDATED, BOM UPDATED (REMOVED ONE STYLE OF RIVNUT), WEIGHT COMMENT UPDATED	9/10/2019	KAMC

Exploded View:





RIVETS INTENTIONALLY LEFT OUT AT THIS STEP  
x16

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	8
2	rivnut_.25_20_.027-.165	Rivnut, 1/4"-20 bolt, material thickness: .027" - .165"	4
3	rivnut_.25_20_.165-.260	Rivnut, 1/4"-20 bolt, material thickness: .165"-.260"	4
4	GE-20010 - 02	Hanger - Center Leg	1
5	GE-20010 - 03	Hanger - Center Leg, Face	1

Notes:  
1. Rivets and Rivnuts should be plated or aluminum.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	9/10/19	TITLE:  Hanger - Center Bar Sub Assembly		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE   DWG. NO.   REV  <b>B</b> <b>GE-20010 - 26</b> <b>A</b>		
		MATERIAL						
GE-20010		FINISH	WEIGHT: 8.39 LBS					
NEXT ASSY	USED ON	BARE						
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:8					

4

3

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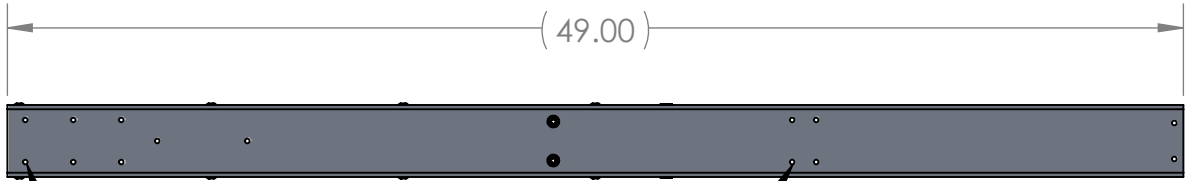
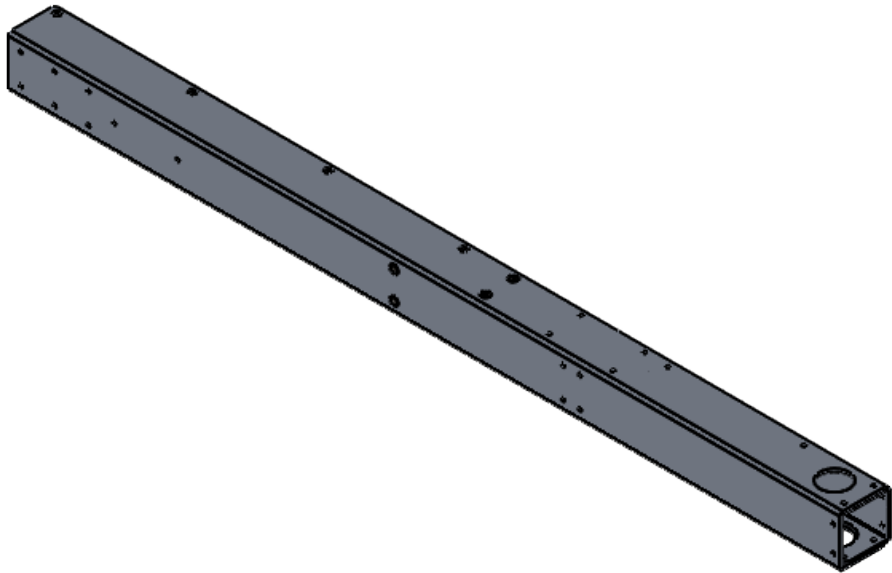
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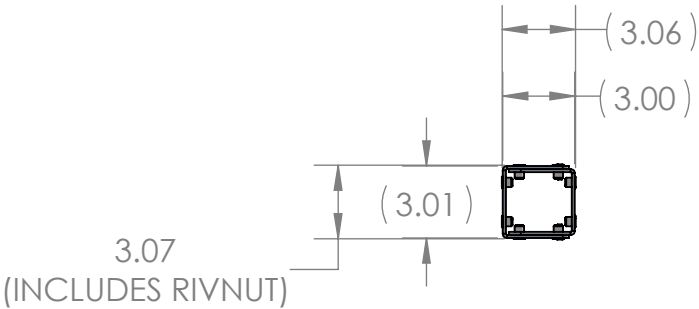
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



RIVETS INTENTIONALLY LEFT OUT X8





RIVET INTENTIONALLY LEFT OUT X14



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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	9/10/19	TITLE:  Hanger - Center Bar Sub Assembly			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
			Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20010 - 26 <b>A</b>			
GE-20010		MATERIAL	WEIGHT SHOWN ON SHEET 1						
NEXT ASSY	USED ON	FINISH BARE							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8		WEIGHT:	SHEET 2 OF 2

4

3

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1

4

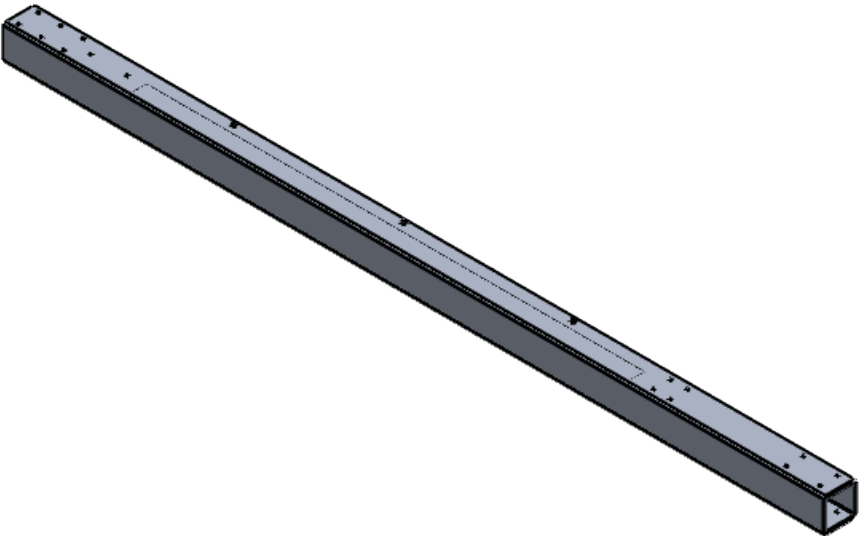
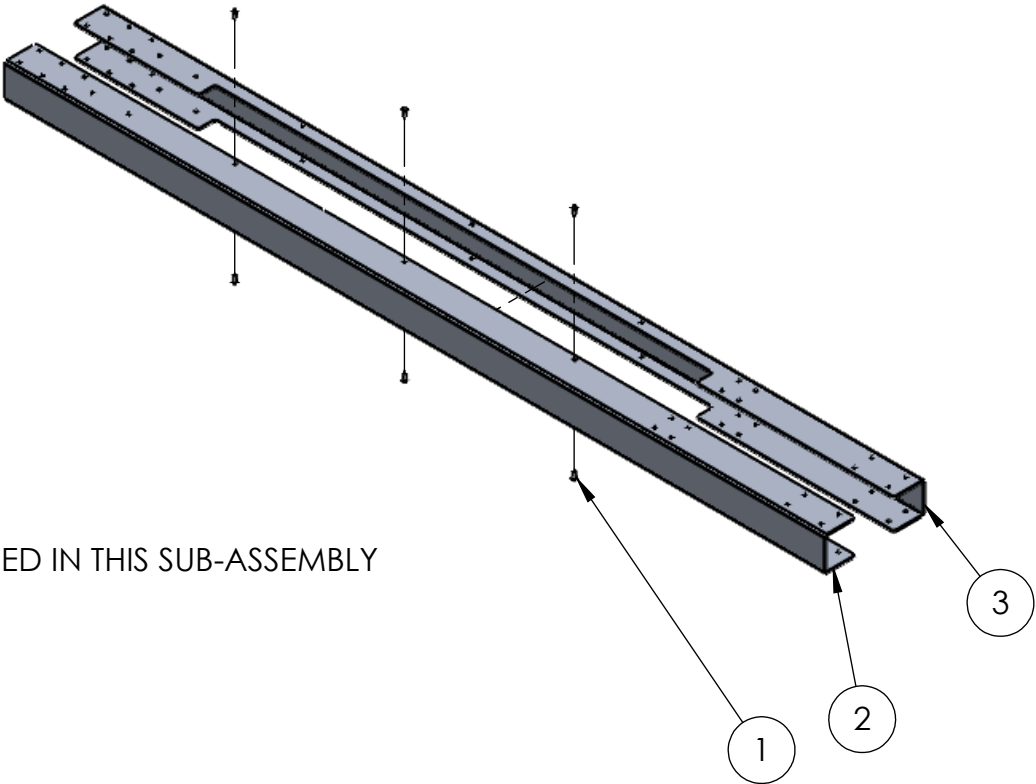
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2

1

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	MAJOR GEOMETRY CHANGE TO PARTS	9/16/19	KAMC

Exploded View:





ONLY 6 RIVETS APPLIED IN THIS SUB-ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	6
2	GE-20010 - 05	Hanger - Side Leg, Face	1
3	GE-20010 - 04	Hanger - Side Leg	1

Notes:  
1. Rivets should be plated or aluminum.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 	
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/10/19	TITLE:  Hanger - Side Leg Assembly	
			CHECKED				
			ENG APPR.				
			MFG APPR.				
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			WEIGHT: 12.80 LBS	
		MATERIAL	COMMENTS:				
GE-20010							
NEXT ASSY	USED ON	FINISH  BARE					
APPLICATION		DO NOT SCALE DRAWING					
			SIZE <b>B</b>		DWG. NO. GE-20010 - 27		REV <b>A</b>
			SCALE: 1:12		WEIGHT:		SHEET 1 OF 2

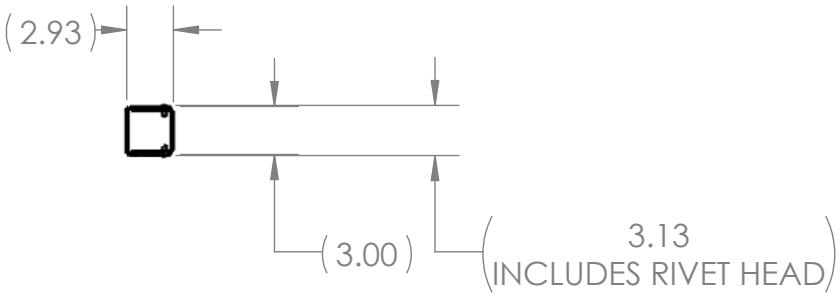
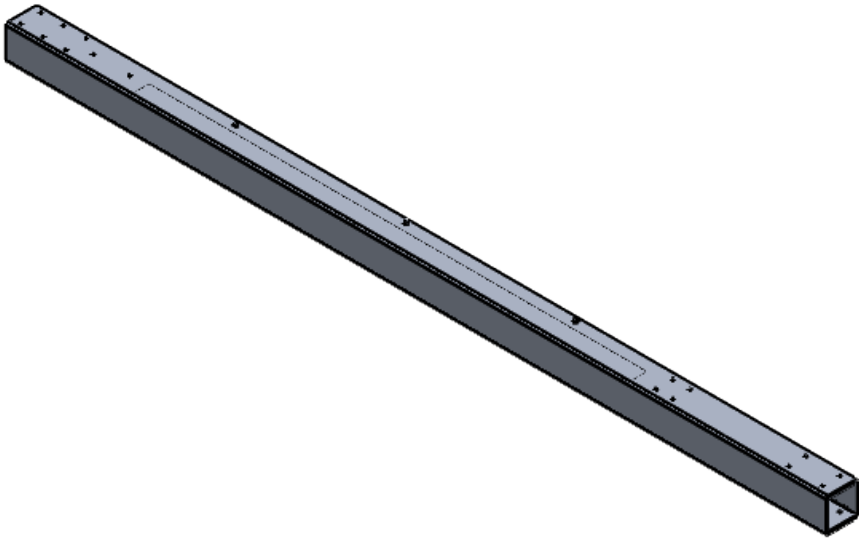
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2



1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



DIMENSIONS SHOWN FOR REFERENCE

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 				
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	9/10/19	TITLE:  <h1>Hanger - Side Leg Assembly</h1>				
			CHECKED							
			ENG APPR.							
			MFG APPR.							
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20010 - 27</b> <b>A</b>				
GE-20010		MATERIAL	COMMENTS:  <h2>WEIGHT SHOWN ON SHEET 1</h2>							
NEXT ASSY	USED ON	FINISH  BARE								
APPLICATION		DO NOT SCALE DRAWING					SCALE: 1:12		WEIGHT:	SHEET 2 OF 2

4

3

2

1

4

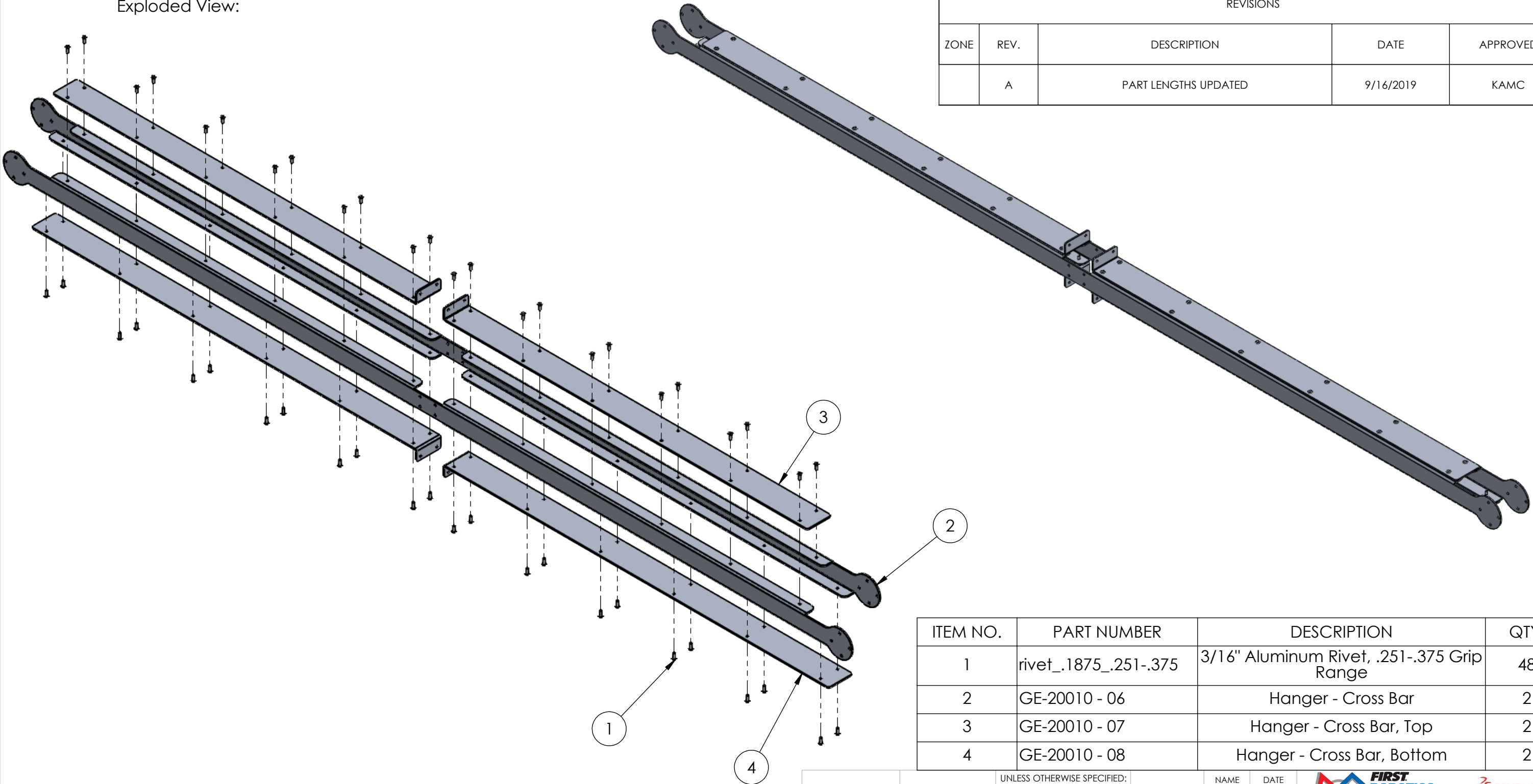
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2

1

Exploded View:



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	PART LENGTHS UPDATED	9/16/2019	KAMC



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	48
2	GE-20010 - 06	Hanger - Cross Bar	2
3	GE-20010 - 07	Hanger - Cross Bar, Top	2
4	GE-20010 - 08	Hanger - Cross Bar, Bottom	2

Notes:  
1. Rivets should be plated or aluminum.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/10/19	TITLE: <h1>Hanger - Center Bar Sub Assembly</h1>		
		TOLERANCES:	CHECKED					
		FRACTIONAL ±1/16	ENG APPR.					
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.					
		TWO PLACE DECIMAL ±.01	Q.A.					
		THREE PLACE DECIMAL ±.001	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20010 - 28 <b>A</b>		
GE-20010		INTERPRET GEOMETRIC TOLERANCING PER:	WEIGHT: 15.74 LBS					
		MATERIAL						
NEXT ASSY	USED ON	FINISH BARE				SCALE: 1:8 WEIGHT: SHEET 1 OF 2		
APPLICATION		DO NOT SCALE DRAWING						



4

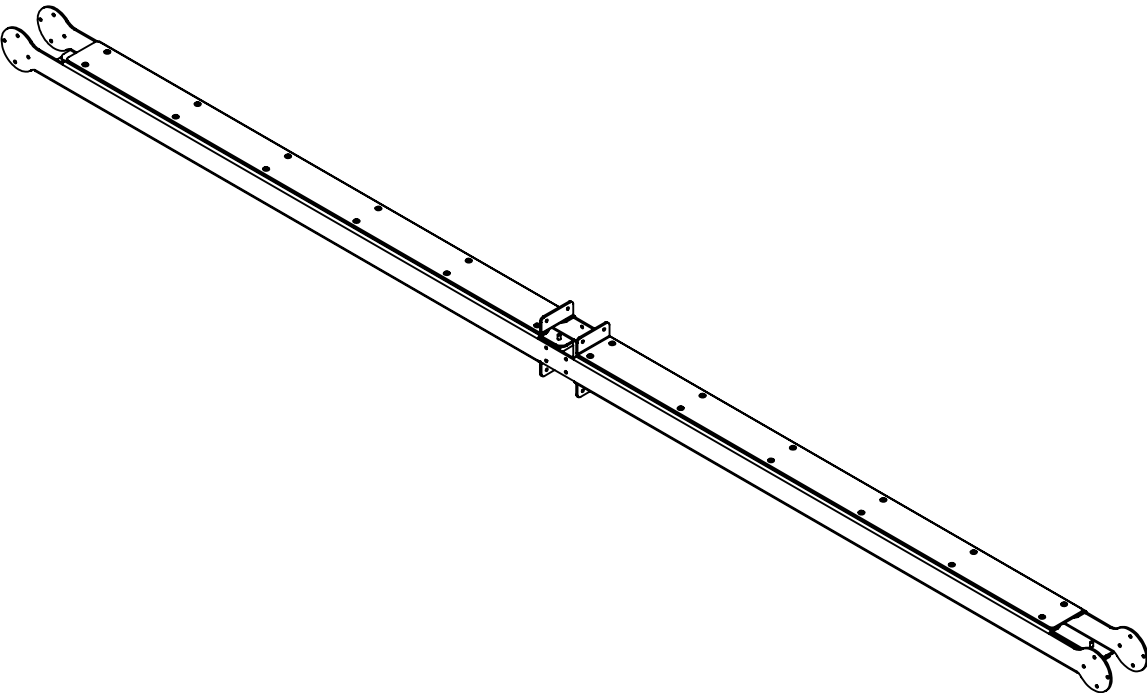
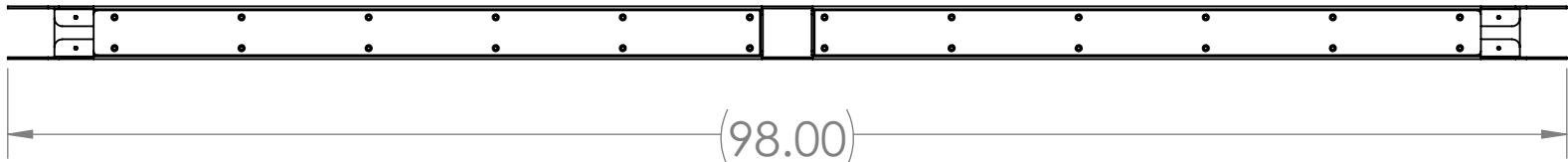
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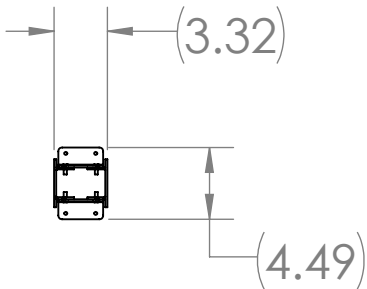
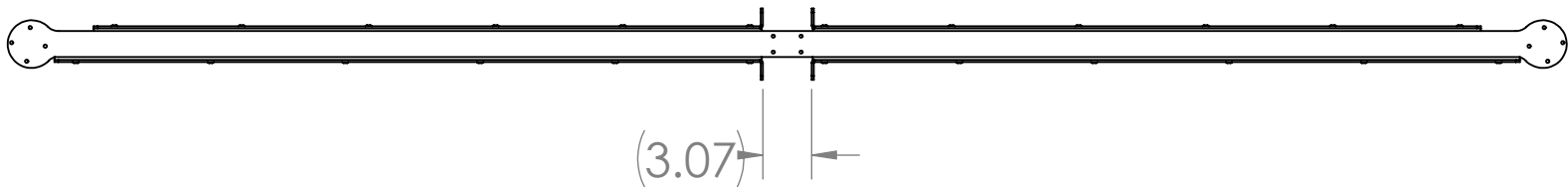
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-

B



B





A

A

DIMENSIONS SHOWN FOR REFERENCE

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 			
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/10/19	TITLE: <div>Hanger - Center Bar Sub Assembly</div>			
		TOLERANCES:	CHECKED						
		FRACTIONAL $\pm 1/16$	ENG APPR.						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.						
		TWO PLACE DECIMAL $\pm .01$							
		THREE PLACE DECIMAL $\pm .001$							
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.						
		MATERIAL	COMMENTS:						
GE-20010			WEIGHT SHOWN ON SHEET 1			SIZE	DWG. NO.	REV	
NEXT ASSY	USED ON	FINISH				<b>B</b>	GE-20010 - 28	<b>A</b>	
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:12		WEIGHT:	SHEET 2 OF 2

4

3

2

1

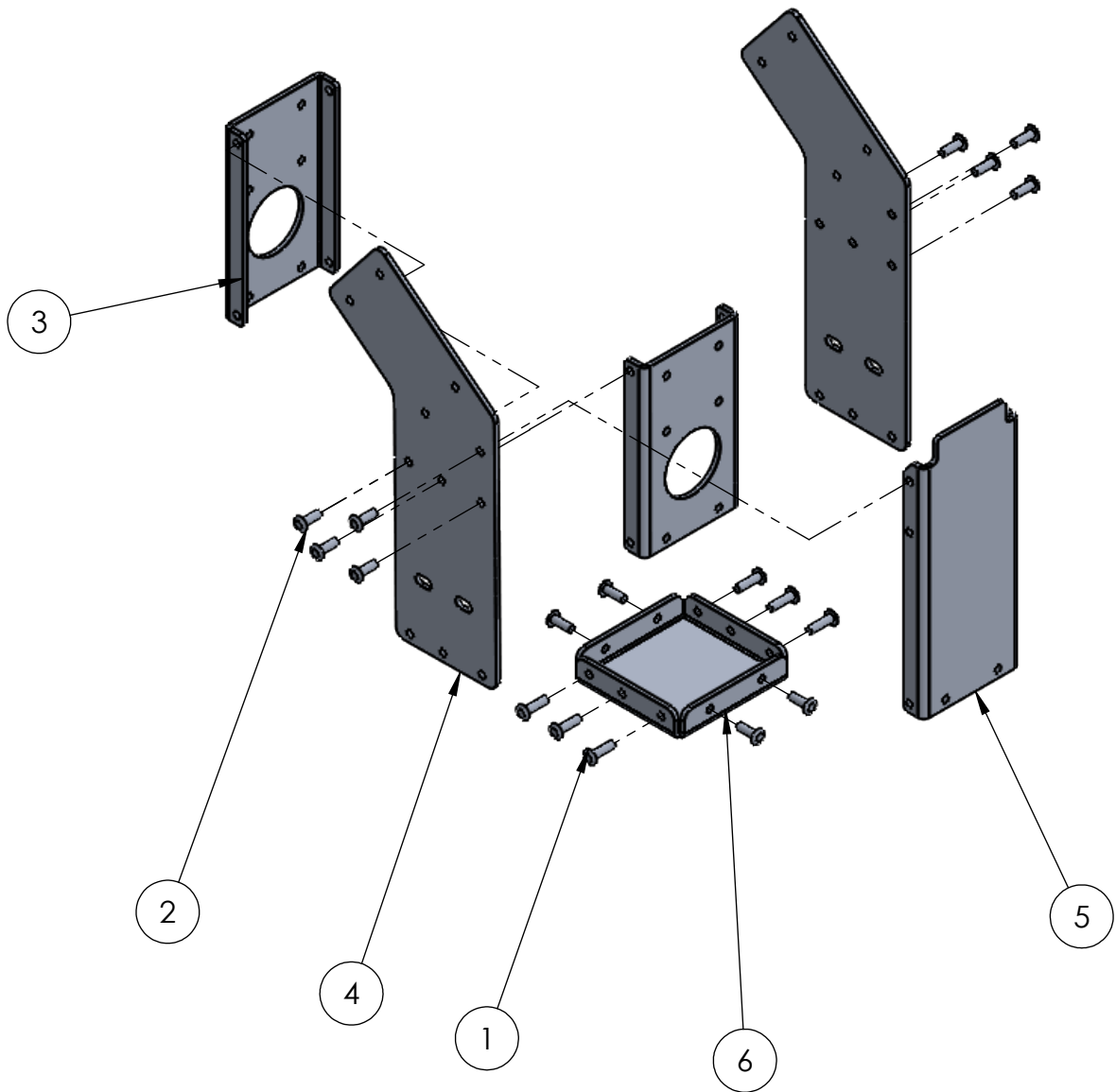
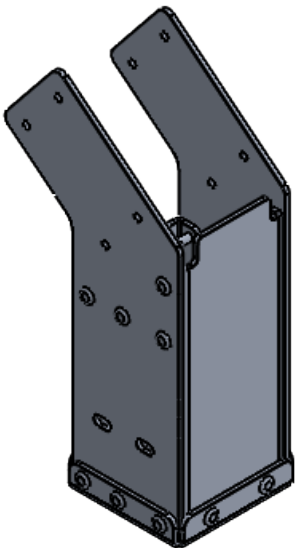
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3

2

1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	MAJOR GEOMETRY CHANGES TO PARTS AND OVERALL ASSEMBLY	9/16/2019	KAMC



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivet_.1875_.376-.5	3/16" Aluminum Rivet, .376-.5 Grip Range	6
2	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	12
3	GE-20010 - 10	Hanger - Hanging Pole Holder	2
4	GE-20010 - 11	Hanger - Hanging Pole Holder, Face	2
5	GE-20010 - 15	Hanger - Hanging Pole Holder, End	1
6	GE-20010 - 16	Hanger - Hanging Pole Holder, End Cap	1

Notes:  
1. Rivets should be plated or aluminum.

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 				
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	8/25/19	TITLE:  Hanger - Hanging Pole Holder Sub Assembly			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.						
		MATERIAL	COMMENTS:			SIZE	DWG. NO.	REV	
GE-20010			WEIGHT: 1.80 LBS			<b>B</b>	GE-20010 - 29	<b>A</b>	
NEXT ASSY	USED ON	FINISH  BARE				SCALE: 1:4		WEIGHT:	SHEET 1 OF 2
APPLICATION		DO NOT SCALE DRAWING							

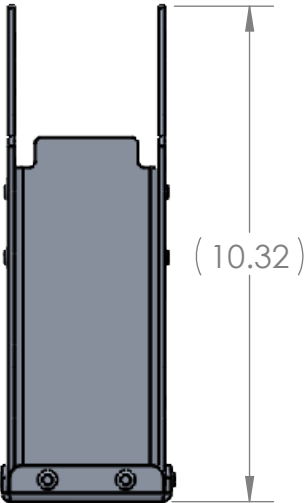
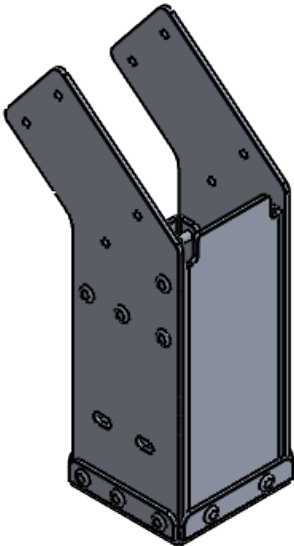
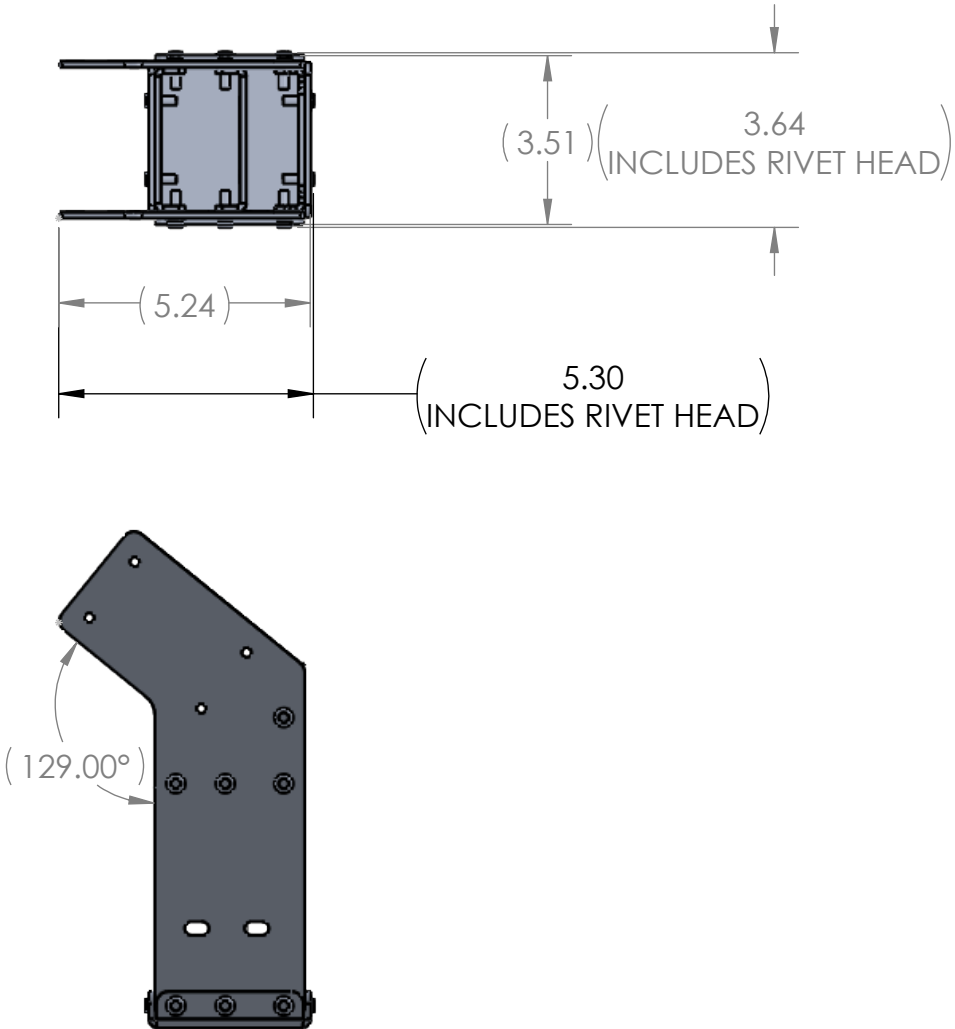
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1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



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			CHECKED						
			ENG APPR.						
			MFG APPR.						
				Q.A.					
				COMMENTS:					
				WEIGHT SHOWN ON SHEET 1					
GE-20010						SIZE	DWG. NO.		REV
NEXT ASSY	USED ON					<b>B</b>	GE-20010 - 29		<b>A</b>
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4		WEIGHT:	SHEET 2 OF 2

4

3

2

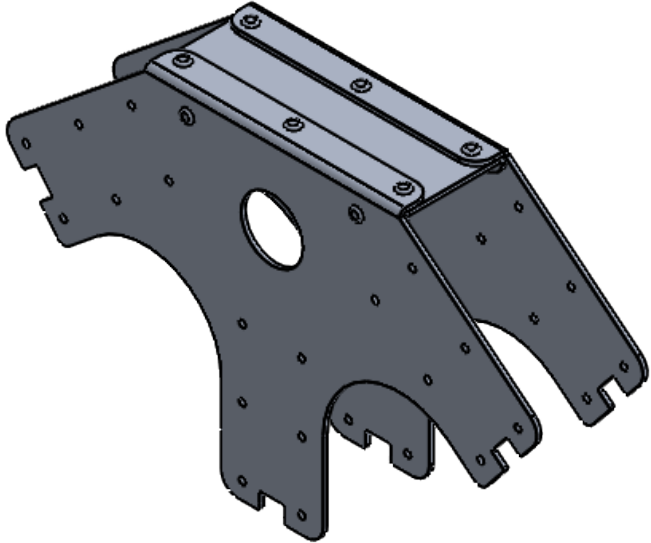
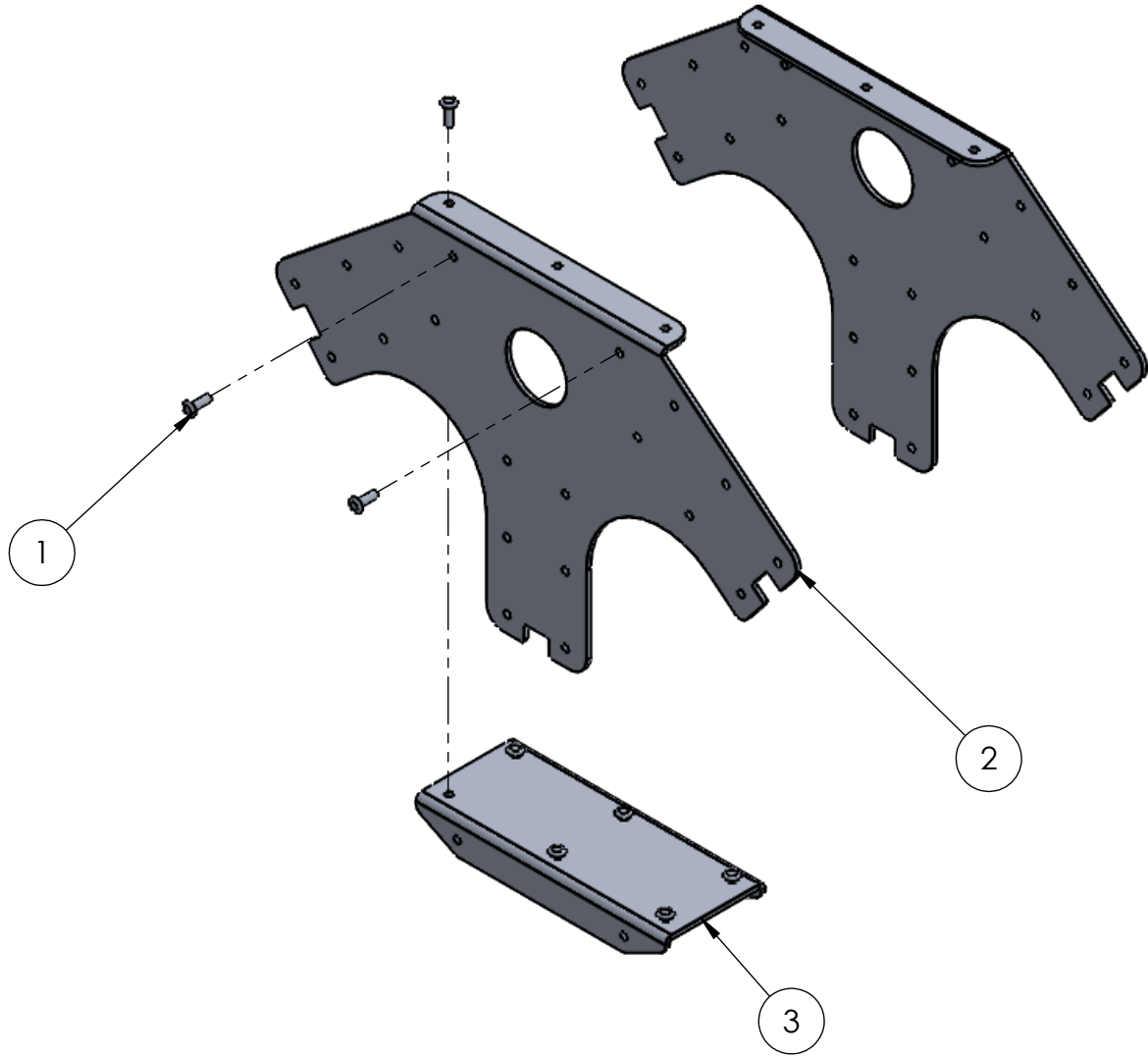
1

A

B

A



B



Notes:  
1. Rivets should be plated or aluminum.

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ITEM NO.		PART NUMBER	DESCRIPTION			QTY.
1		rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range			10
2		GE-20010 - 01	Hanger - Top			2
3		GE-20010 - 14	Hanger - Top, Face			1

		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/16/19			
		TOLERANCES:	CHECKED					
		FRACTIONAL ±1/16	ENG APPR.					
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.					
		TWO PLACE DECIMAL ±.01				TITLE:  Hanger - Top Sub Assembly		
		THREE PLACE DECIMAL ±.001						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
		MATERIAL	COMMENTS:					
			WEIGHT: 2.40 LBS					
GE-20010						SIZE	DWG. NO.	REV
NEXT ASSY	USED ON	FINISH				B	GE-20010 - 30	0
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT:		SHEET 1 OF 2

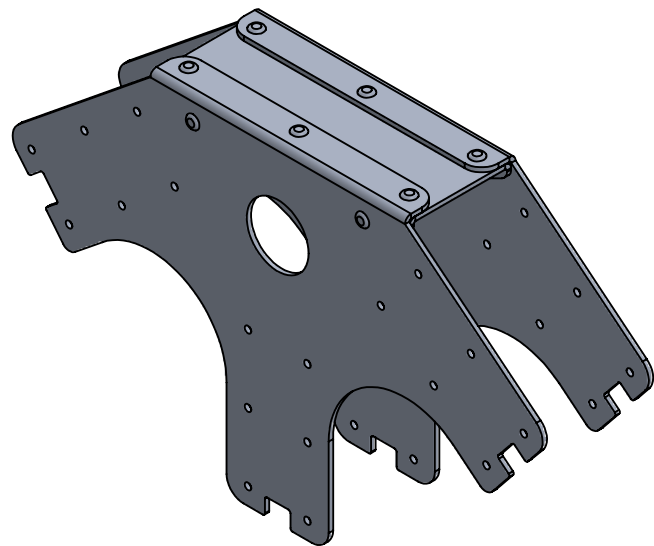
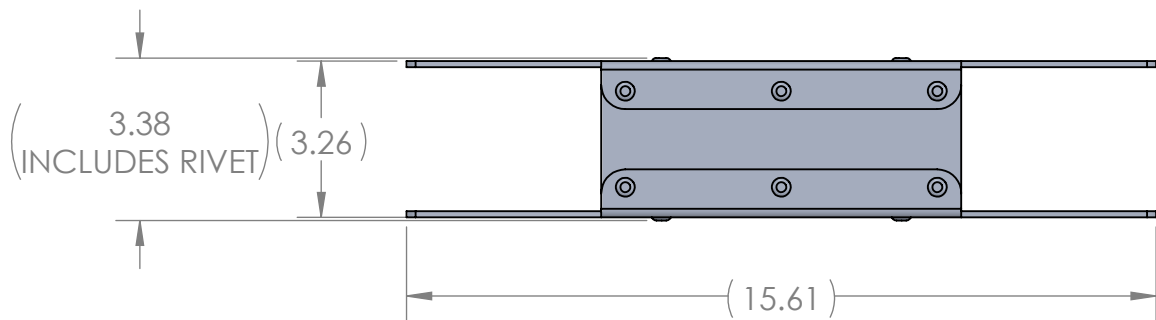
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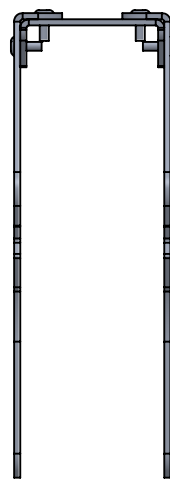
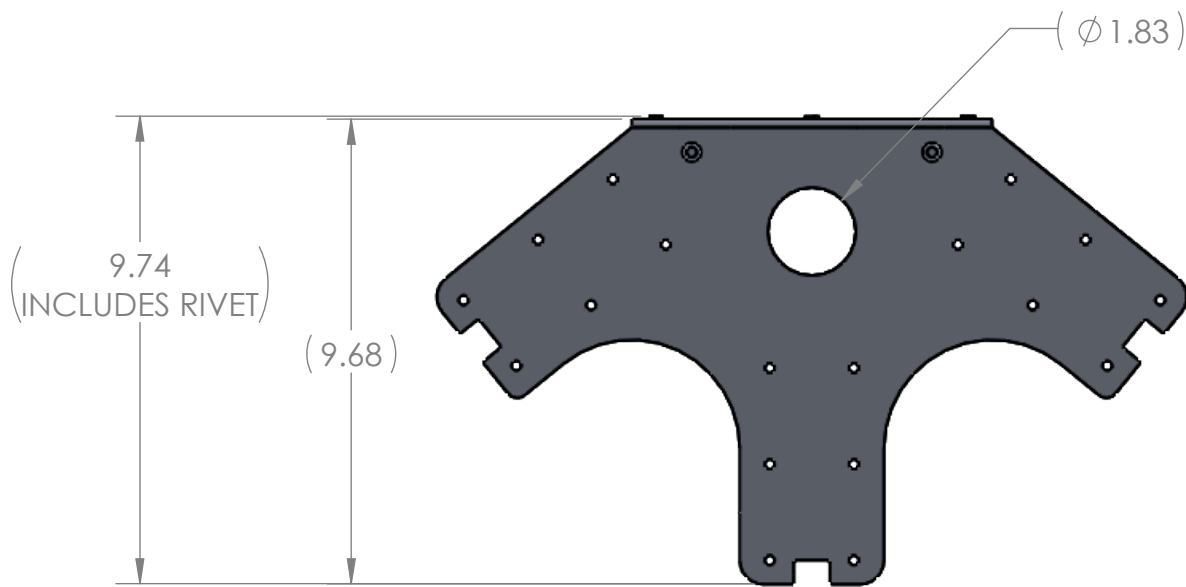
2

1

B



B



A

A

DIMENSIONS FOR REF.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/16/19
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:  WEIGHT SHOWN ON SHEET 1		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL	TITLE:  Hanger - Top Sub Assembly		
		FINISH			
GE-20010		BARE	SIZE DWG. NO. REV <b>B</b> GE-20010 - 30 0		
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:4 WEIGHT: SHEET 2 OF 2		

4

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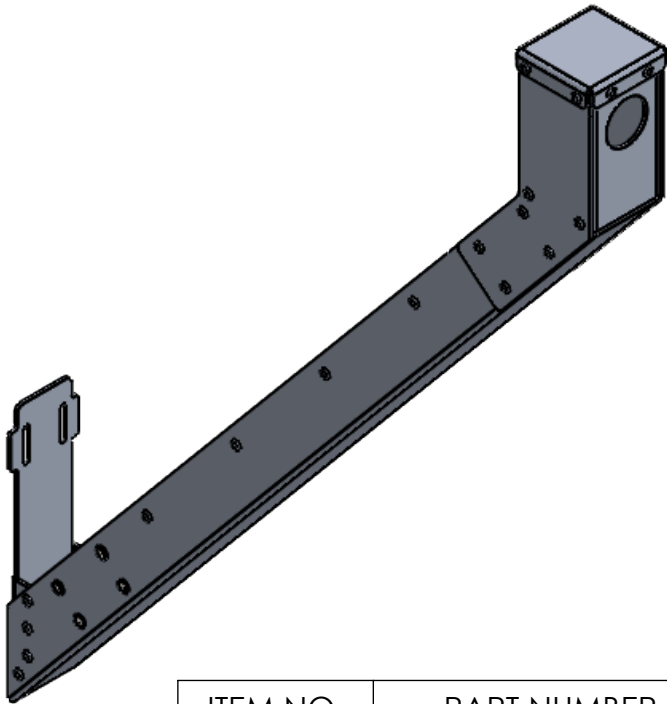
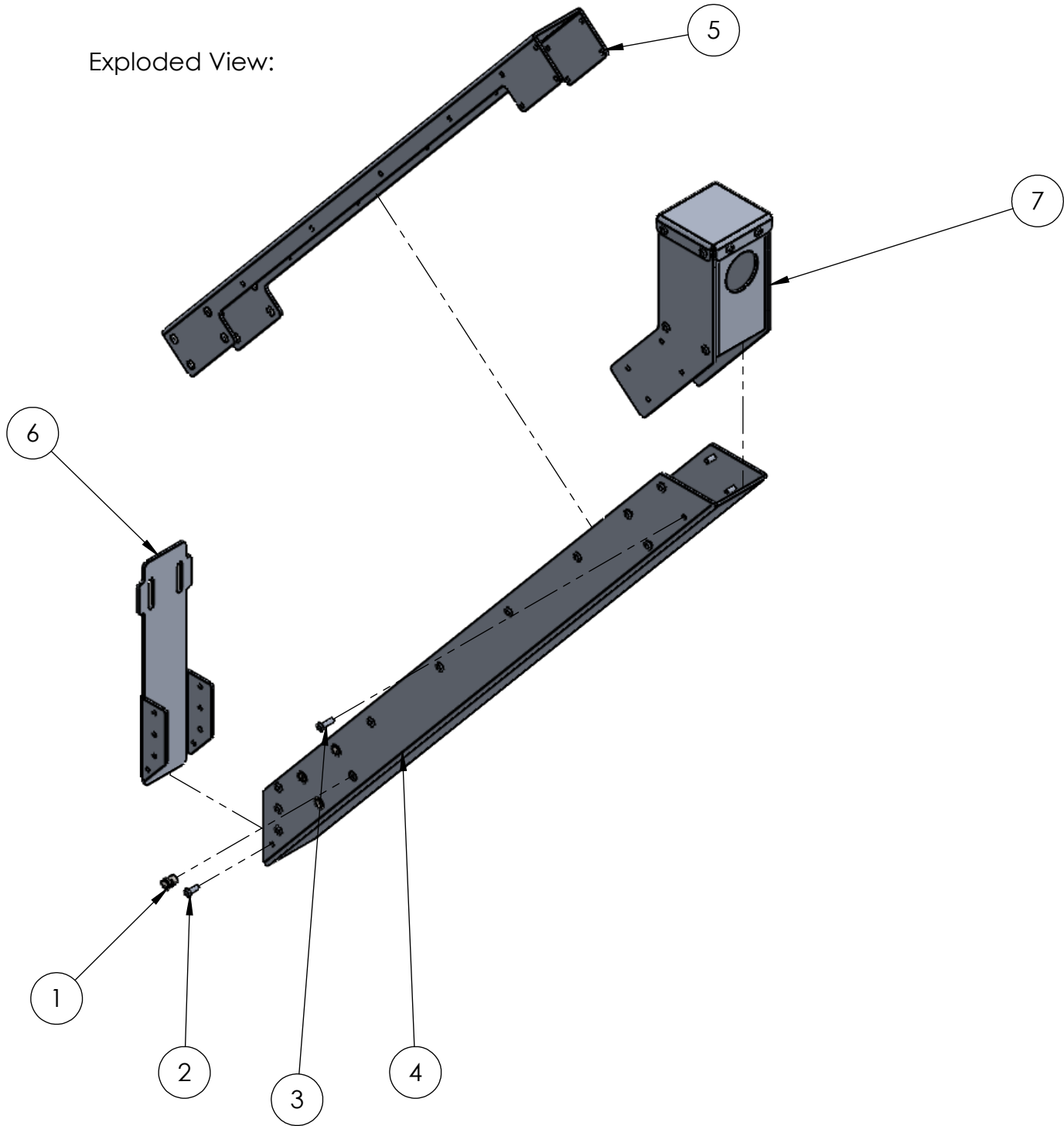
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	MAJOR GEOMETRY CHANGE TO PARTS, PARTS AND SUB ASSEMBLY ADDED	9/16/2019	KAMC

Exploded View:



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivnut_.25_20_.165-.260	Rivnut, 1/4"-20 bolt, material thickness: .165"-.260"	8
2	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	16
3	rivet_.1875_.376-.5	3/16" Aluminum Rivet, .376-.5 Grip Range	8
4	GE-20011 - 01	Hanger Brace - Channel	1
5	GE-20011 - 02	Hanger Brace - Face	1
6	GE-20011 - 06	Hanger Brace - Connection to Hanger	1
7	GE-20011 - 16	Hanger Brace - Pivot Pole Holder Sub Assembly	1

		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/16/19	TITLE:  <h1>Hanger Brace</h1>		
		TOLERANCES: FRACTIONAL ±1/16	CHECKED					
		ANGULAR: MACH ±1° BEND ±1°	ENG APPR.					
		TWO PLACE DECIMAL ±.01	MFG APPR.					
		THREE PLACE DECIMAL ±.001						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20011</b> <b>A</b>		
GE-20020		MATERIAL	COMMENTS:   <					

- Notes:
- Rivets and Rivnuts should be plated or aluminum.
  - Tag or label with part number.

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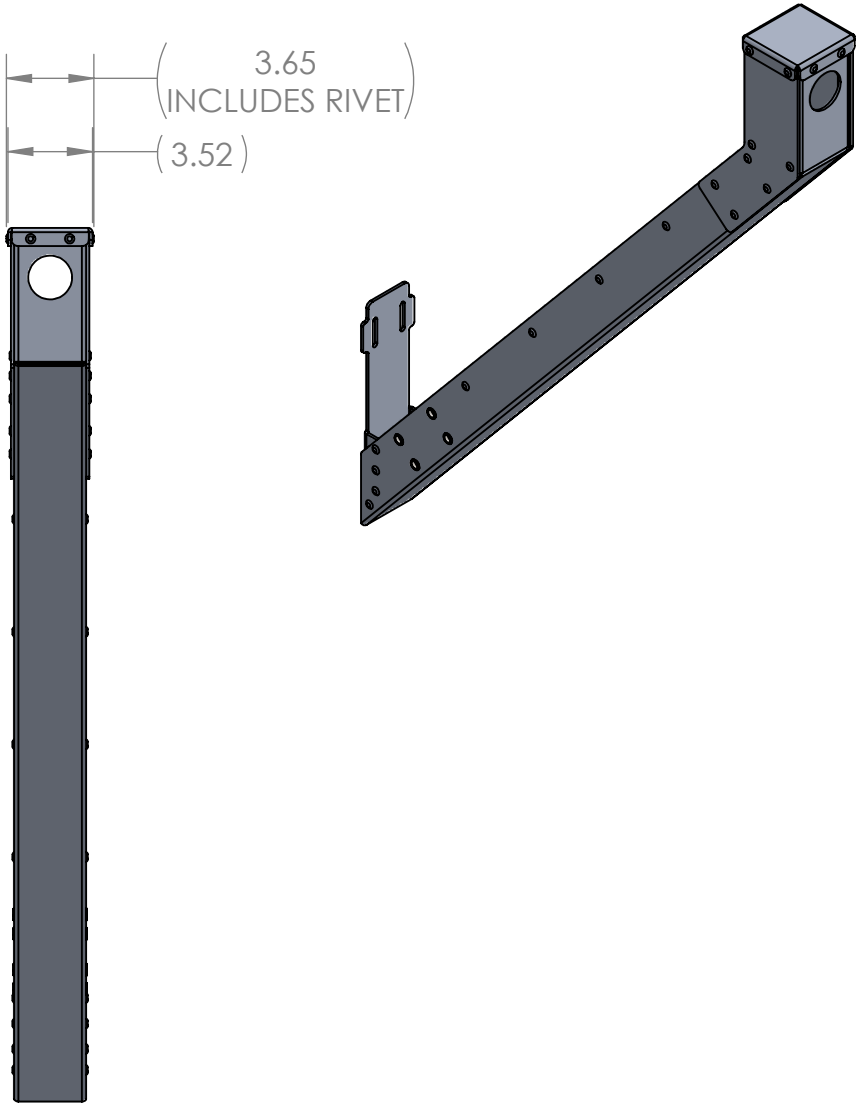
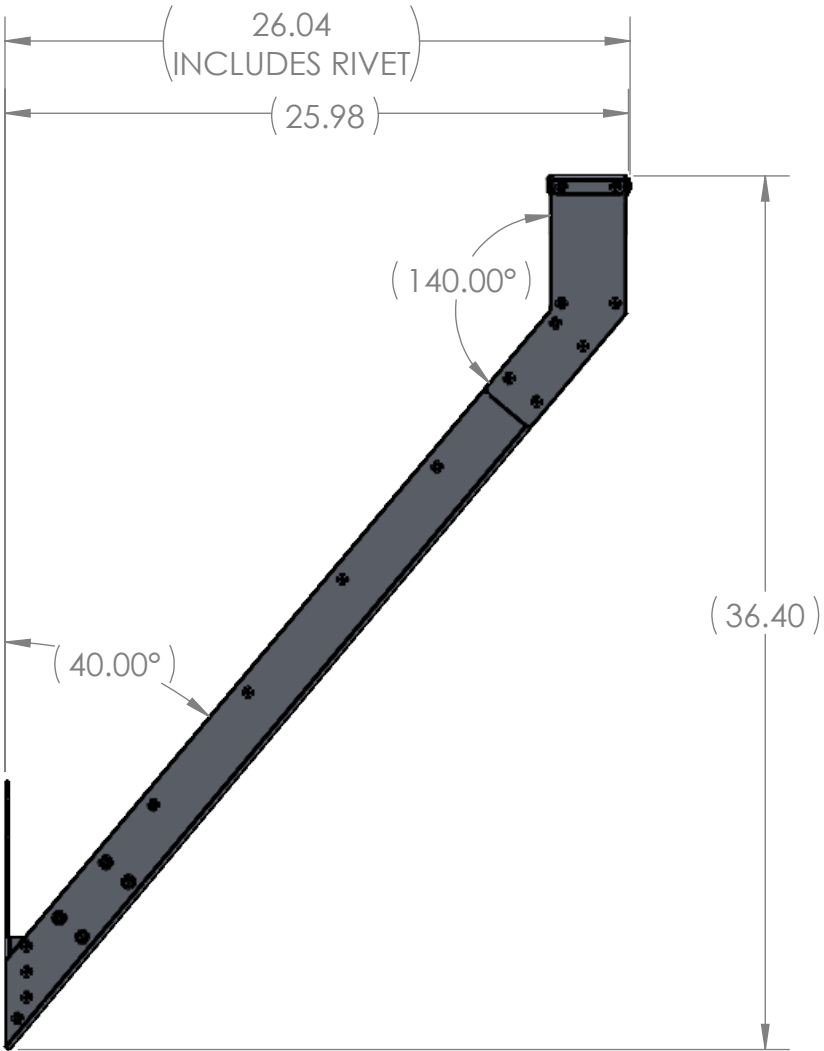
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



DIMENSIONS SHOWN FOR REF.

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		UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	NAME	DATE	  		
			CHECKED	KAMC	9/10/19	TITLE:  Hanger Brace		
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			WEIGHT SHOWN ON SHEET 1		
		MATERIAL						
GE-20020		FINISH						
NEXT ASSY	USED ON	BARE						
APPLICATION		DO NOT SCALE DRAWING				SIZE	DWG. NO.	REV
						B	GE-20011	A
						SCALE: 1:8	WEIGHT:	SHEET 2 OF 2

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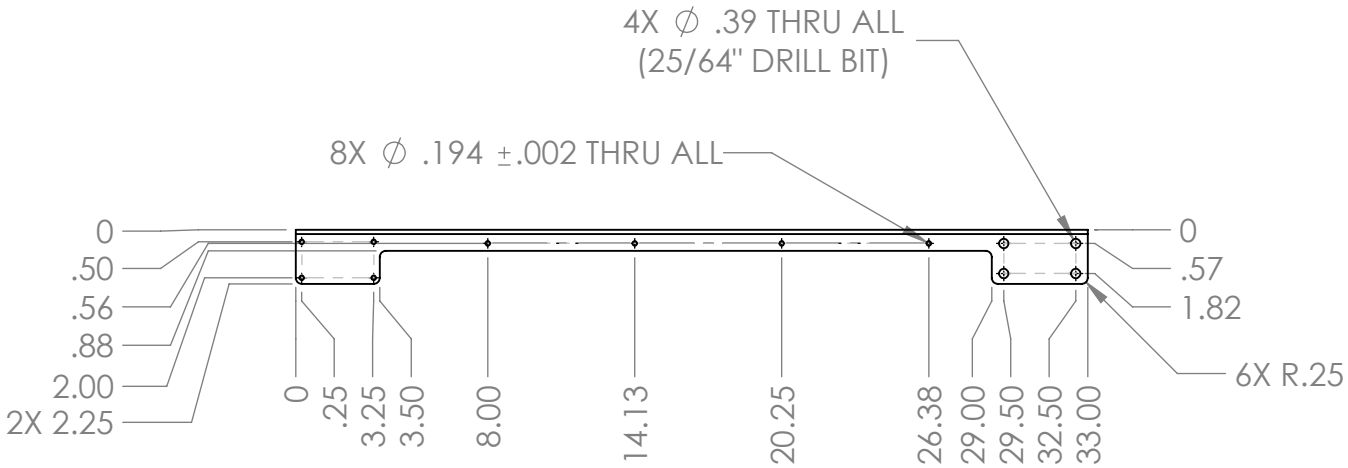
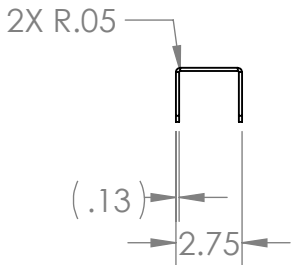
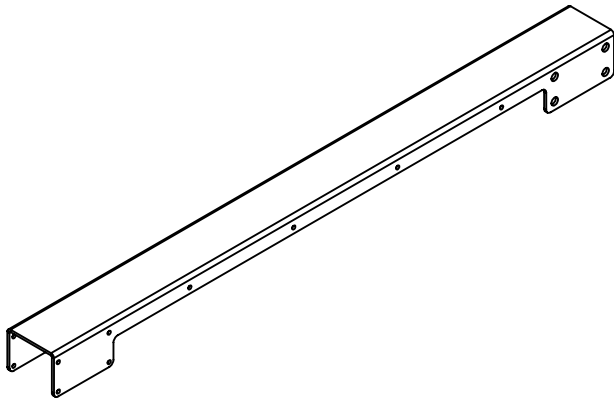
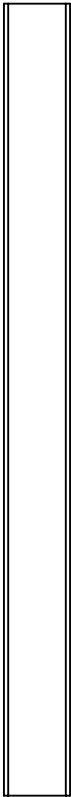
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	MAJOR GEOMETRY CHANGE	9/16/2019	KAMC

B

B



A

A



- Notes:
1. Material: 8 Ga. 5052 Aluminum Sheet
  2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 									
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/16/19	TITLE:  <h1>Hanger Brace - Face</h1>								
			CHECKED											
			ENG APPR.											
			MFG APPR.											
			Q.A.											
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE <b>B</b>			DWG. NO. <b>GE-20011 - 02</b>			REV <b>A</b>		
GE-20011		MATERIAL ALUMINUM SHEET												
NEXT ASSY	USED ON	FINISH BARE												
APPLICATION														
DO NOT SCALE DRAWING						SCALE: 1:8			WEIGHT:			SHEET 1 OF 1		



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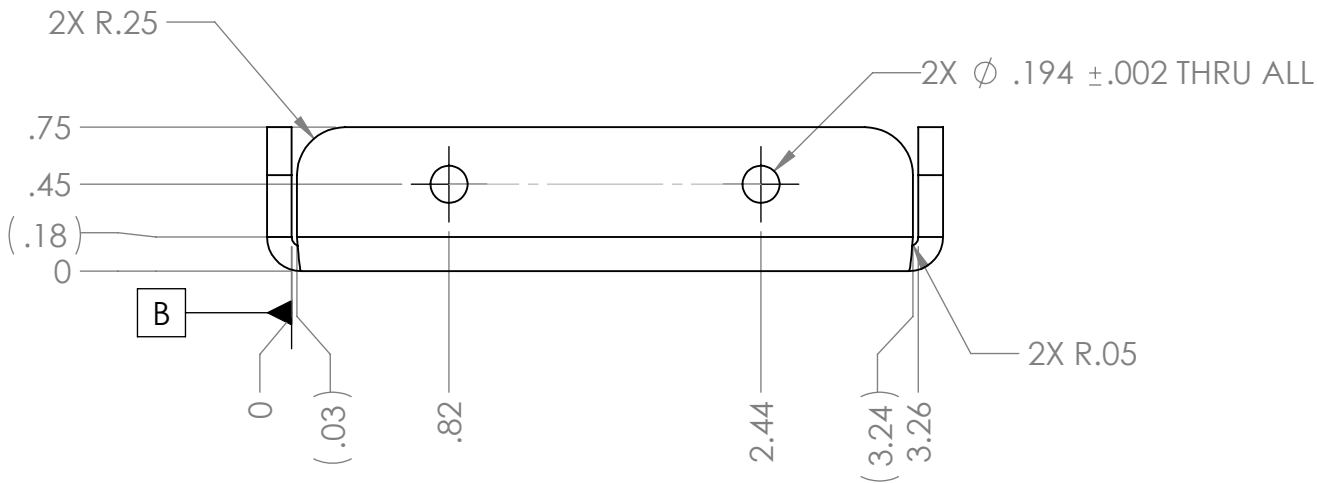
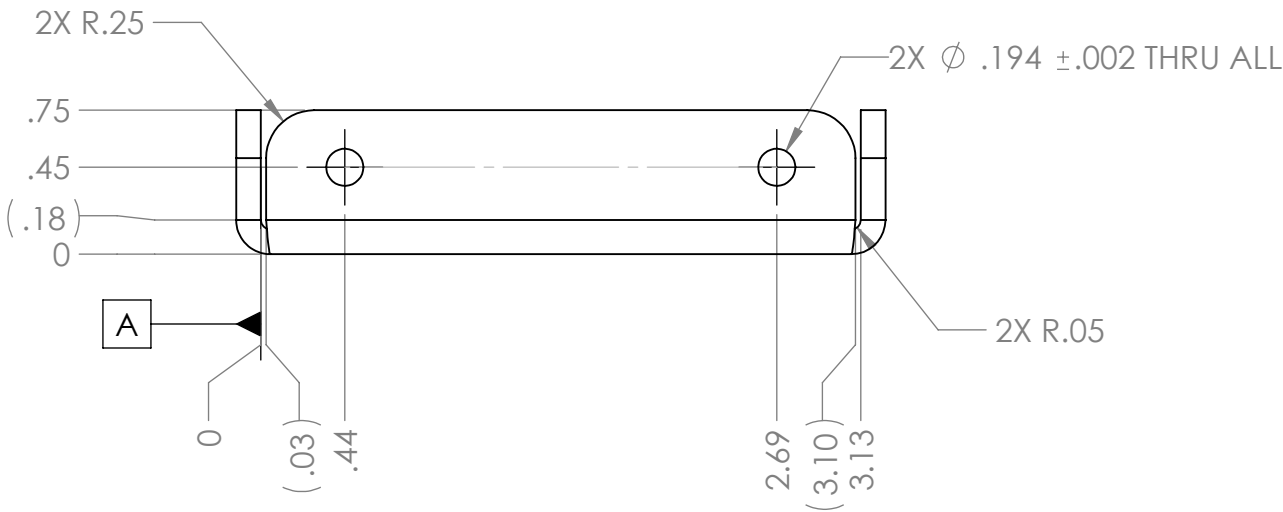
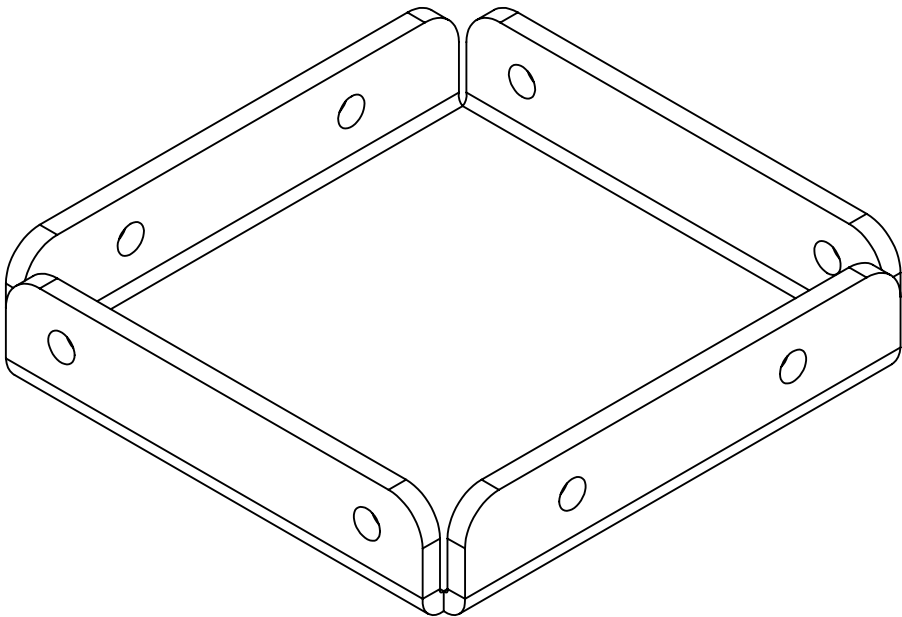
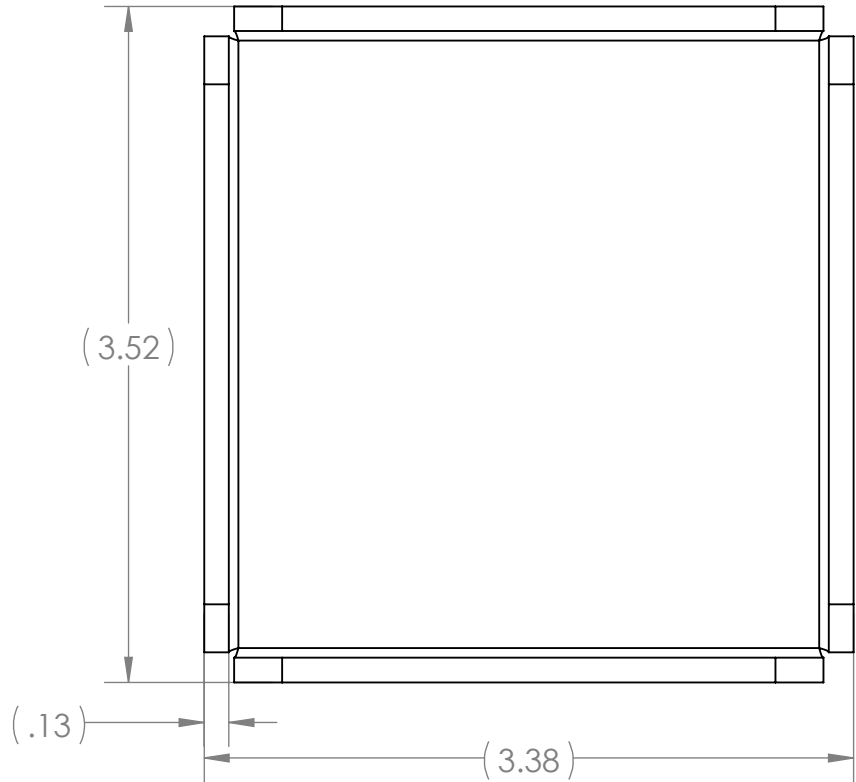
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	MAJOR GEOMETRY CHANGE TO ALLOW FOR MANUFACTURING. NAME MODIFICATION MADE.	9/16/2019	KAMC



- Notes:
- Material: 8 Ga. 5052 Aluminum Sheet
  - Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 							
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/16/19	TITLE:  Hanger Brace - Pivot Pole Top Cap							
		TOLERANCES: FRACTIONAL ± 1/16	CHECKED										
		ANGULAR: MACH ± 1° BEND ± 1°	ENG APPR.										
		TWO PLACE DECIMAL ±.01	MFG APPR.										
		THREE PLACE DECIMAL ±.001	Q.A.										
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE <b>B</b>							
		MATERIAL ALUMINUM SHEET											
GE-20011 - 16	GE-20011	FINISH BARE								DWG. NO. GE-20011 - 03		REV A	
NEXT ASSY	USED ON									SCALE: 1:1		WEIGHT:	SHEET 1 OF 1
APPLICATION		DO NOT SCALE DRAWING											



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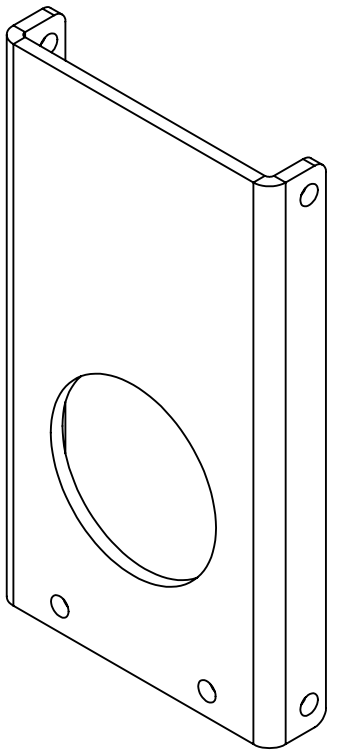
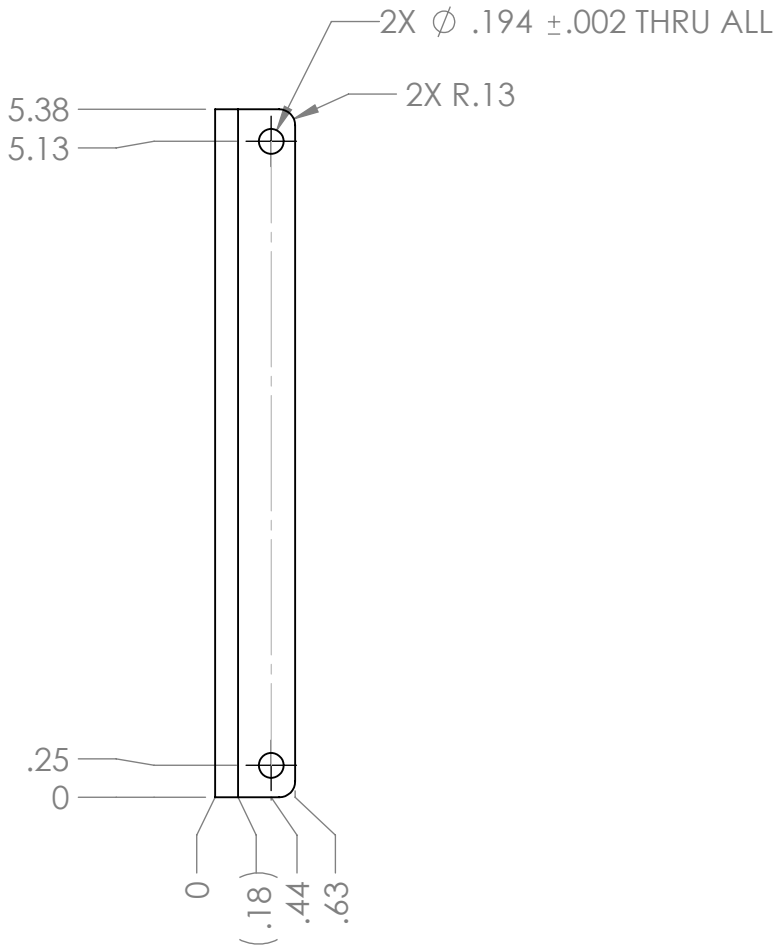
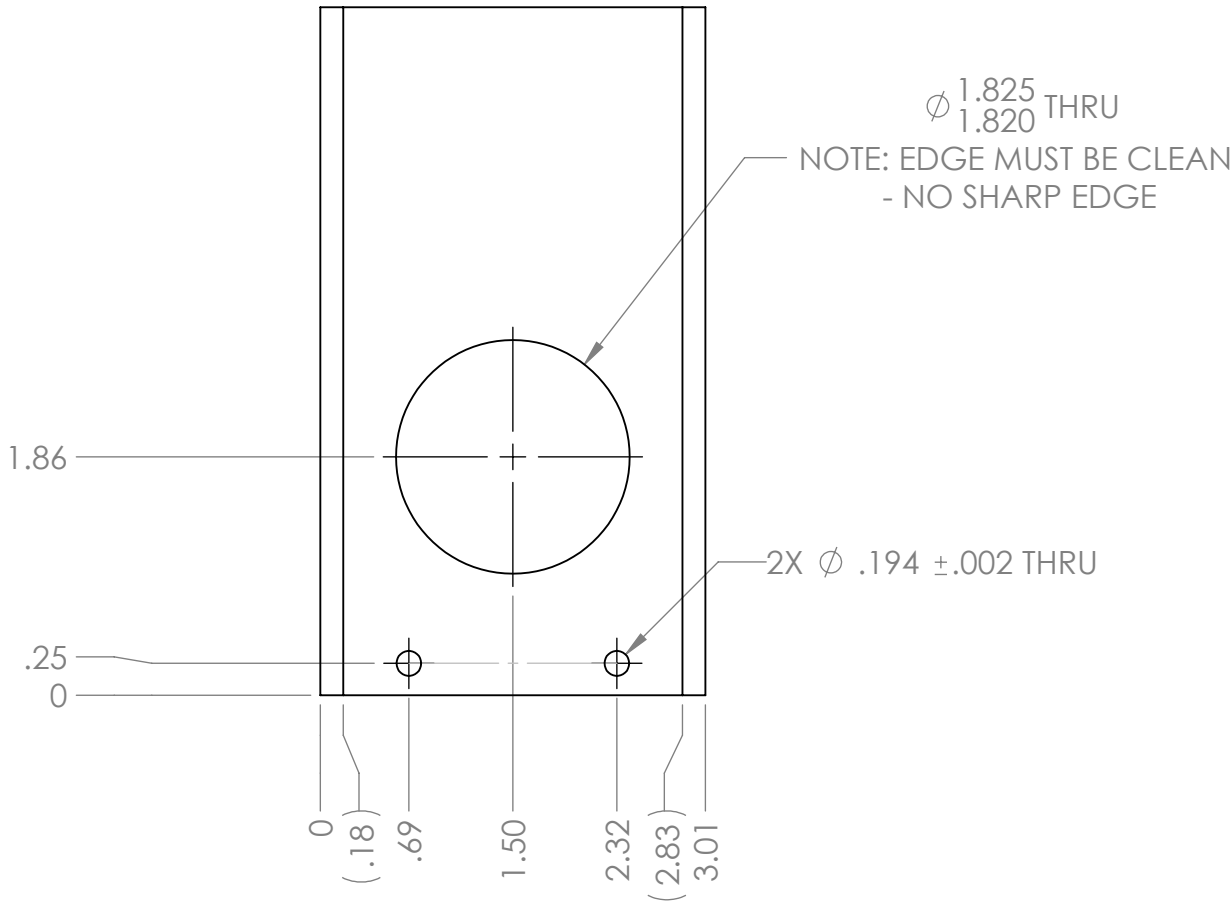
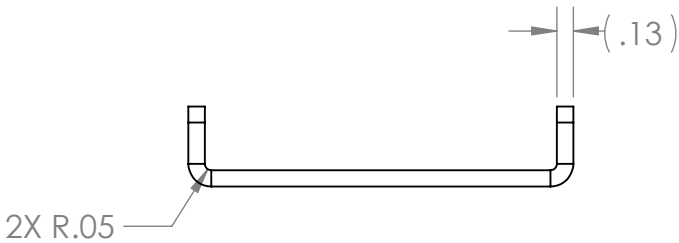


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- Notes:
1. Material: 8 Ga. 5052 Aluminum Sheet
  2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 			
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/16/19	TITLE:  <h1>Hanger Brace - Pivot Pole Holder</h1>		
		TOLERANCES: FRACTIONAL $\pm 1/16$	CHECKED					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	ENG APPR.					
		TWO PLACE DECIMAL $\pm .01$	MFG APPR.					
		THREE PLACE DECIMAL $\pm .001$	Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20011 - 04 0		
GE-20011 - 16	GE-20011	MATERIAL ALUMINUM SHEET						
NEXT ASSY	USED ON	FINISH BARE						
APPLICATION		DO NOT SCALE DRAWING						

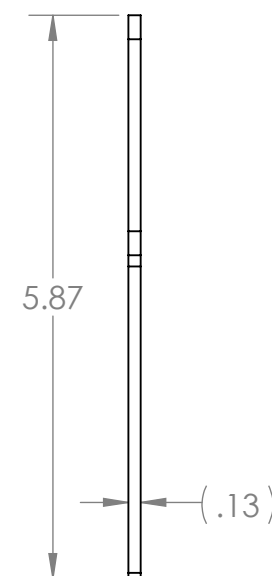
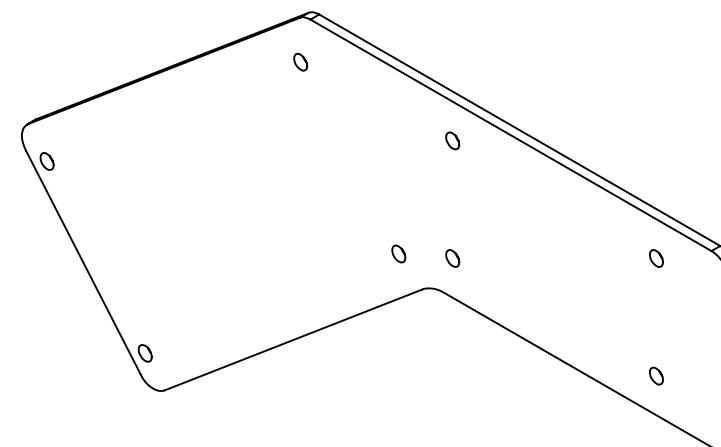
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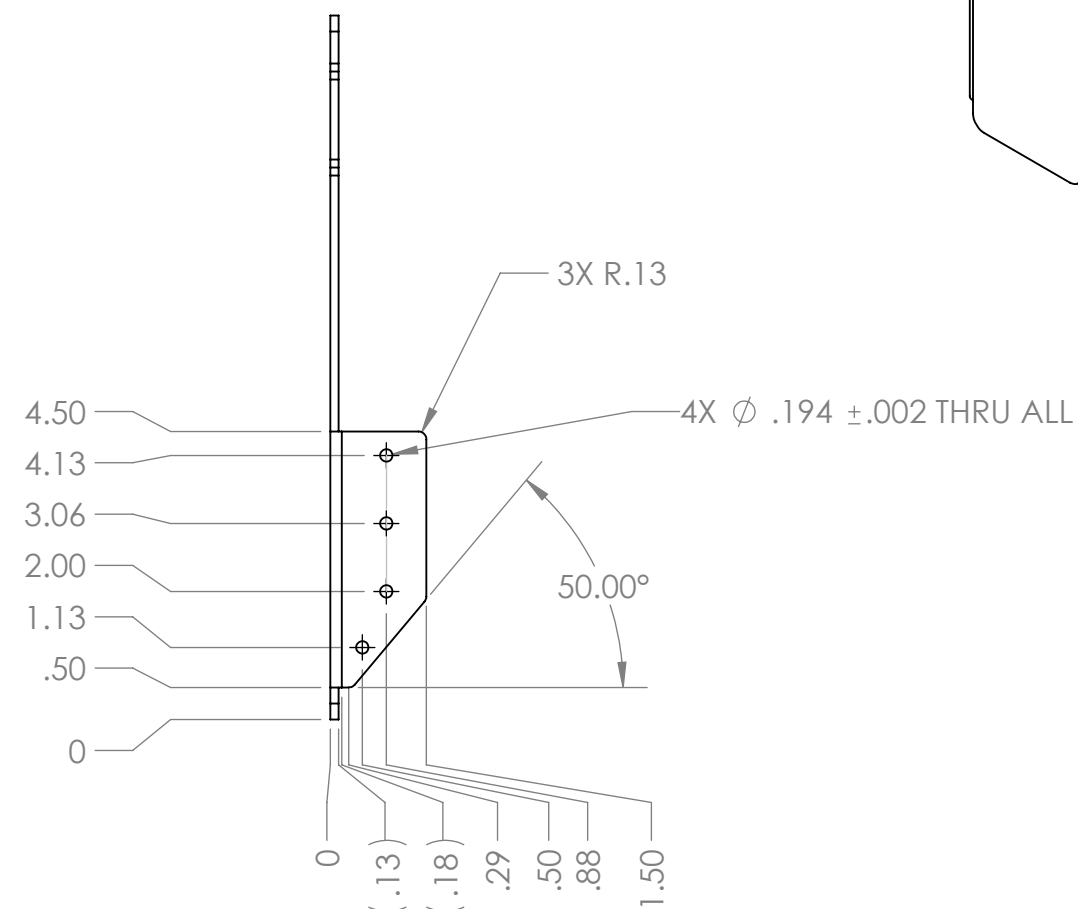
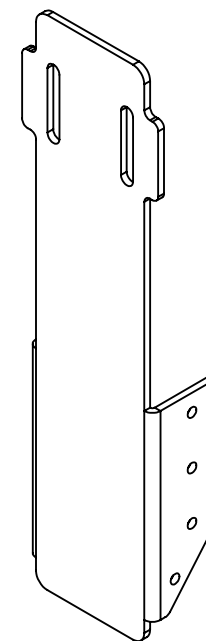


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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 				
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/16/19	TITLE:  Hanger Brace - Connection to Hanger				
			CHECKED							
			ENG APPR.							
			MFG APPR.							
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> GE-20011 - 06 <b>0</b>				
GE-20011		MATERIAL ALUMINUM SHEET	COMMENTS:							
NEXT ASSY	USED ON	FINISH BARE								
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:3				WEIGHT:		SHEET 1 OF 1	

1

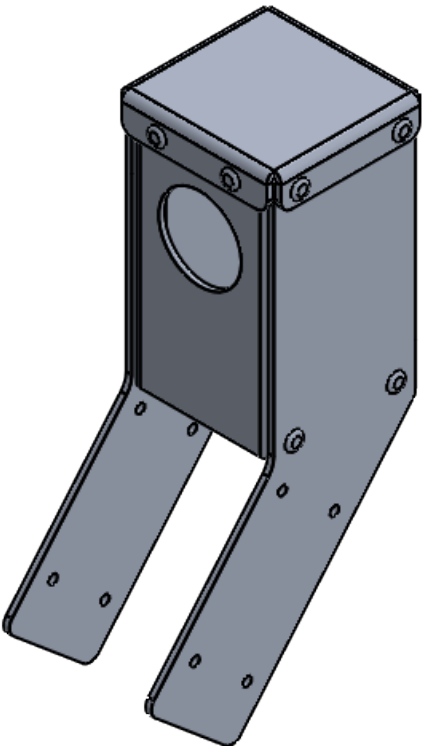
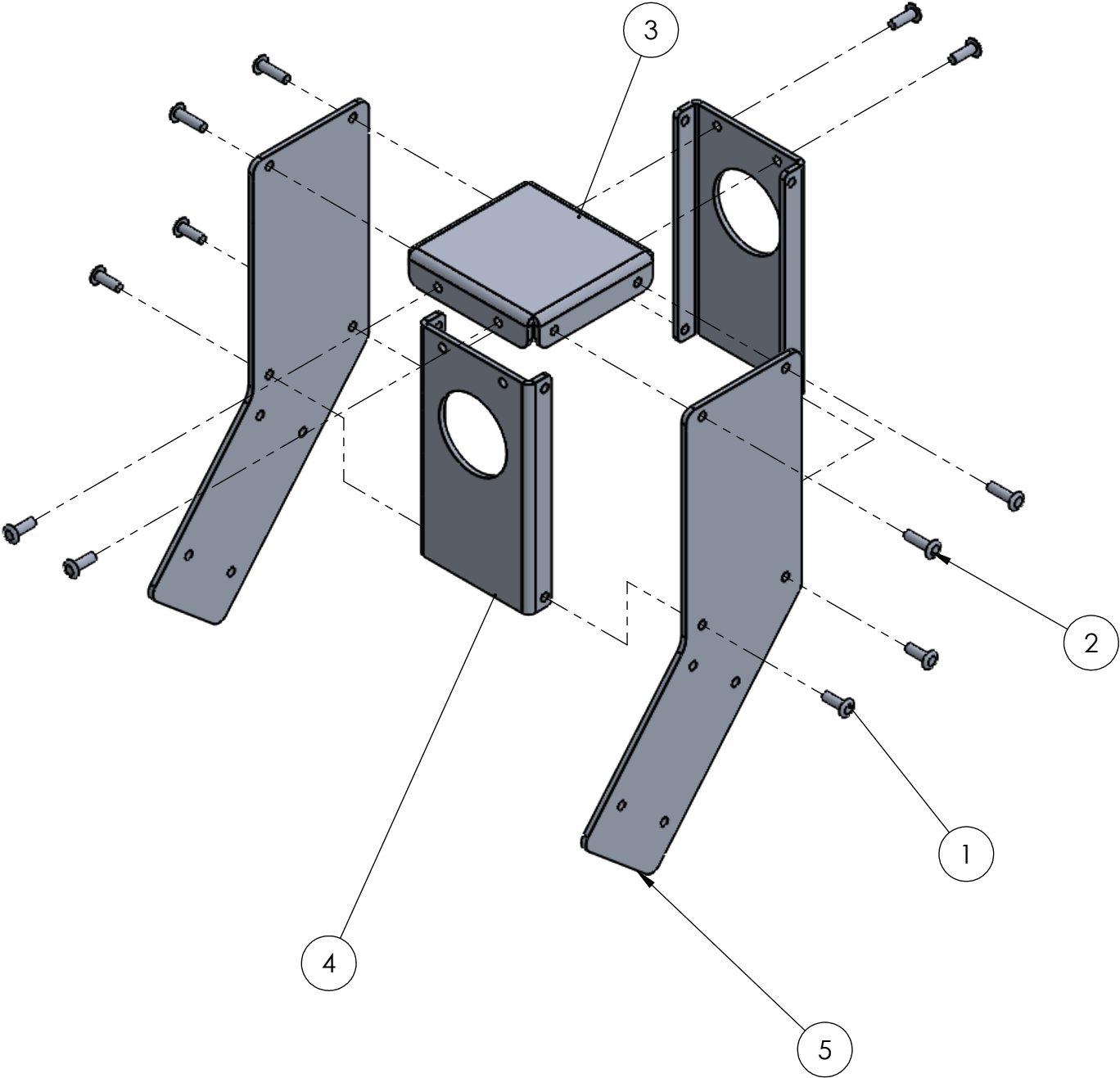
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Exploded View:



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	8
2	rivet_.1875_.376-.5	3/16" Aluminum Rivet, .376-.5 Grip Range	4
3	GE-20011 - 03	Hanger Brace - Pivot Pole Top Cap	1
4	GE-20011 - 04	Hanger Brace - Pivot Pole Holder	2
5	GE-20011 - 05	Hanger Brace - Pivot Pole Holder, Face	2

		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 			
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/16/19	TITLE:  Hanger Brace - Pivot Pole Holder Sub Assembly		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20011 - 16 0		
GE-20011		INTERPRET GEOMETRIC TOLERANCING PER:	WEIGHT: 1.46 LBS					
		MATERIAL						
NEXT ASSY	USED ON	FINISH BARE						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:3 WEIGHT: SHEET 1 OF 2		

Notes:  
1. Rivets should be plated or aluminum.

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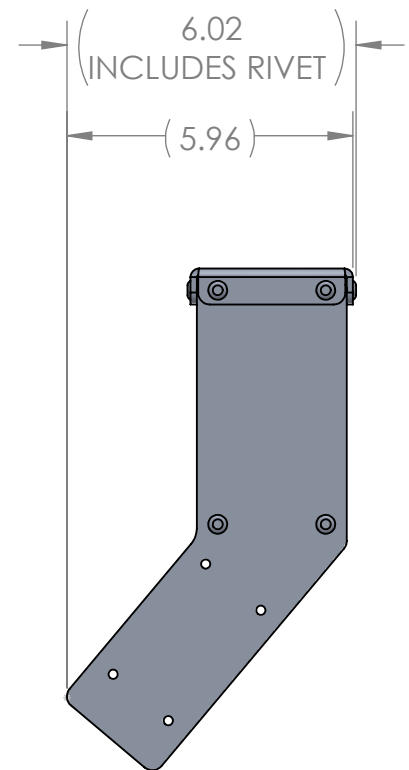
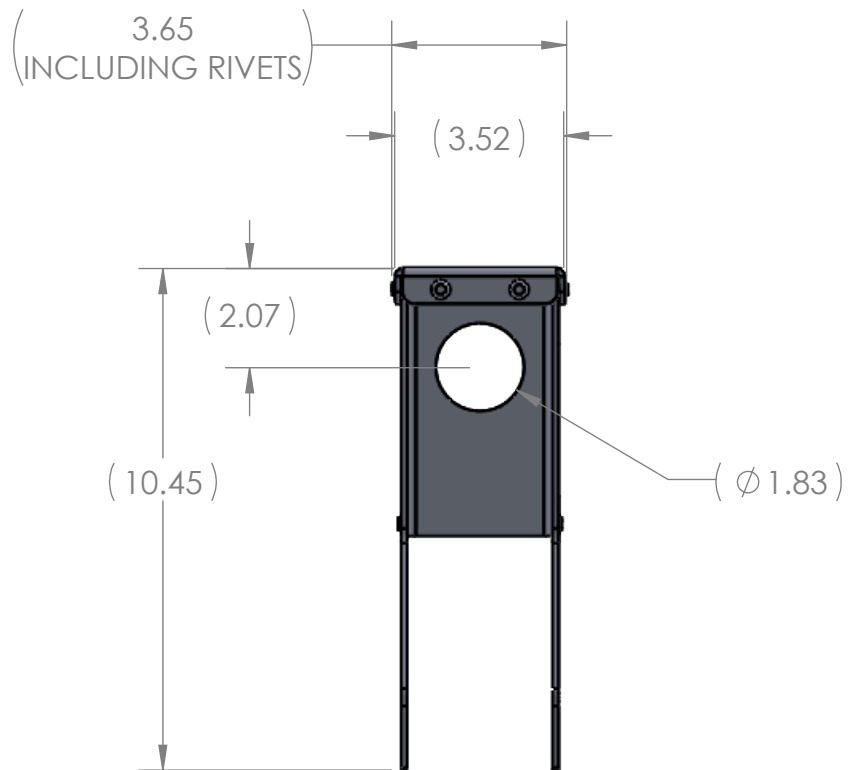
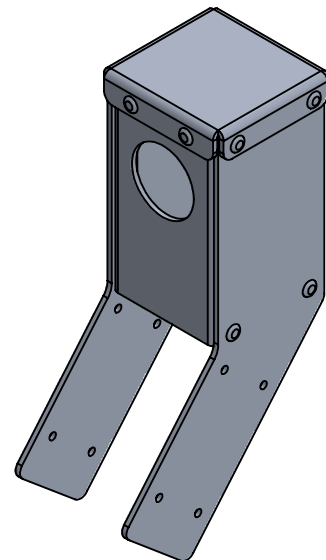
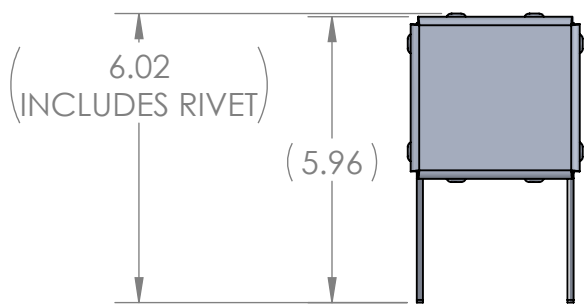
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B

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DIMENSIONS SHOWN FOR REF.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/16/19
		TOLERANCES:	CHECKED		
		FRACTIONAL ± 1/16	ENG APPR.		
		ANGULAR: MACH ± 1° BEND ± 1°	MFG APPR.		
		TWO PLACE DECIMAL ± .01	Q.A.		
		THREE PLACE DECIMAL ± .001	COMMENTS:  WEIGHT SHOWN ON SHEET 1		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL	TITLE:  Hanger Brace - Pivot Pole Holder Sub Assembly		
		FINISH			
GE-20011		BARE	SIZE DWG. NO. REV <b>B</b> GE-20011 - 16 0		
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:4 WEIGHT: SHEET 2 OF 2		

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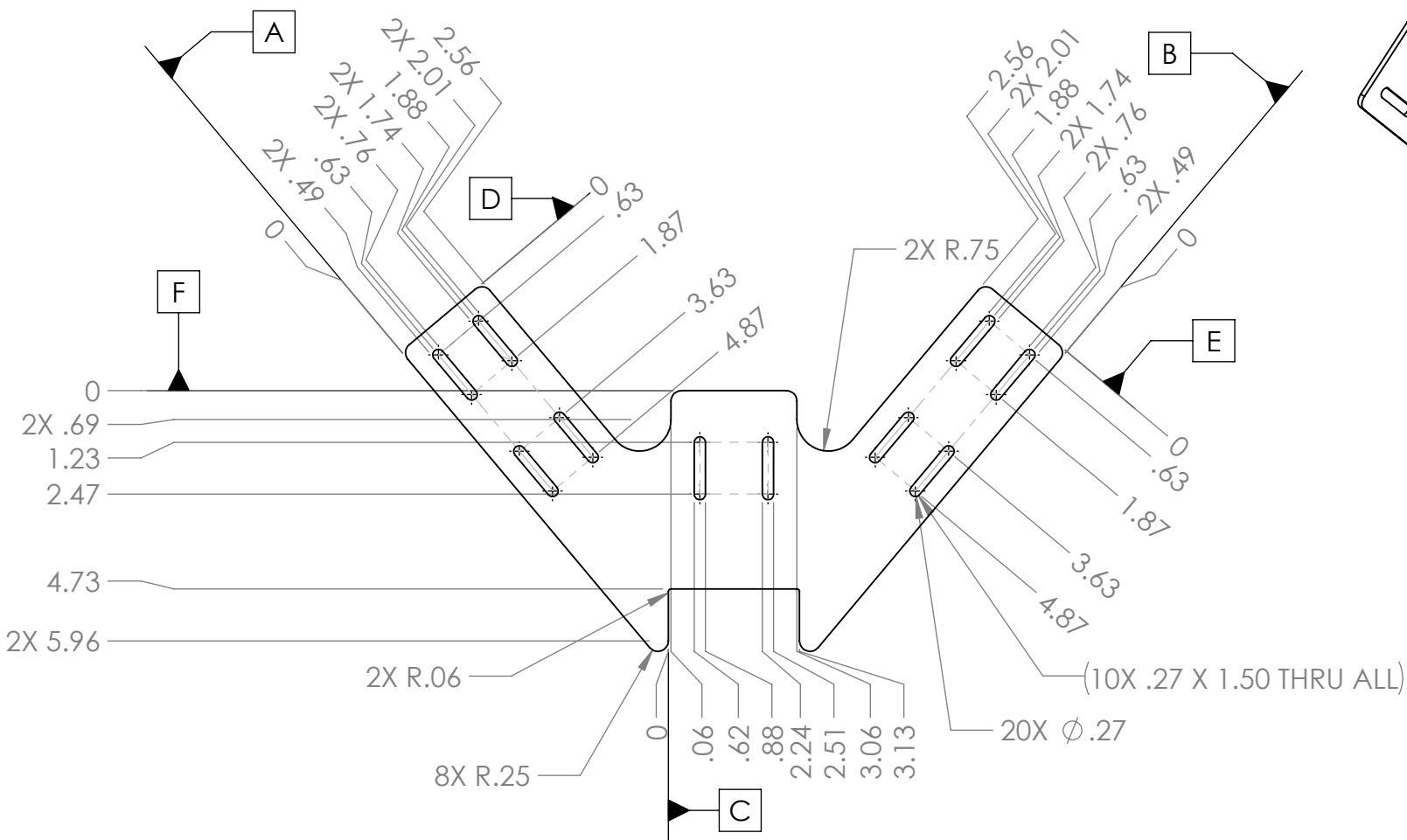
REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	MINOR GEOMETRY CHANGES	9/17/2019	KAMC

15.65

8.69

(.13)



- Notes:
1. Material: 8 Ga. Aluminum Sheet
  2. Remove all burrs and sharp edges.
  3. Tag or label with part number.

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UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES  
TOLERANCES:  
FRACTIONAL  $\pm 1/16$   
ANGULAR: MACH  $\pm 1^\circ$  BEND  $\pm 1^\circ$   
TWO PLACE DECIMAL  $\pm .01$   
THREE PLACE DECIMAL  $\pm .001$

INTERPRET GEOMETRIC  
TOLERANCING PER:

MATERIAL  
ALUMINUM SHEET

FINISH  
BARE

GE-20020

NEXT ASSY

USED ON

APPLICATION

DO NOT SCALE DRAWING

NAME

DATE

KAMC

9/5/19

DRAWN

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:



**FIRST**  
ROBOTICS  
COMPETITION



TITLE:

Hanger Brace -  
Mounting Plate

SIZE

**B**

DWG. NO.

GE-20012

REV

**A**

SCALE: 1:4

WEIGHT:

SHEET 1 OF 1

4

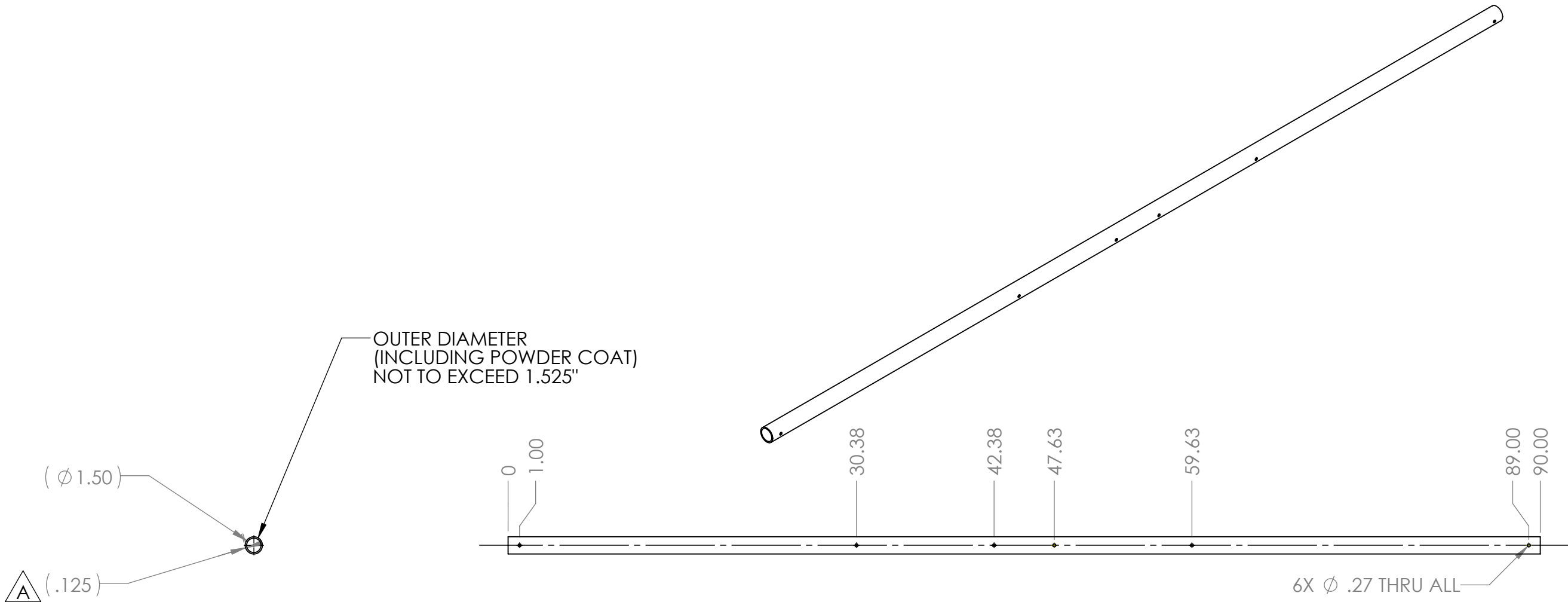
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A4	A	UPDATED WALL THICKNESS TO 0.125"	10/7/2019	KAMC



- Notes:
- Material: 1.50" diameter x 0.125" wall, 1020 DOM A513 Round Tube
  - Remove all burrs and sharp edges.
  - Powder Coated Black.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/9/19	TITLE:  <h1>Hanger - Pivot Pole</h1>		
		TOLERANCES: FRACTIONAL ± 1/16	CHECKED					
		ANGULAR: MACH ± 1° BEND ± 1°	ENG APPR.					
		TWO PLACE DECIMAL ±.01	MFG APPR.					
		THREE PLACE DECIMAL ±.001	Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20013</b> <b>A</b>		
GE-20020		MATERIAL ROUND TUBE						
NEXT ASSY	USED ON	FINISH POWDER COAT BLACK						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:10 WEIGHT: SHEET 1 OF 1		

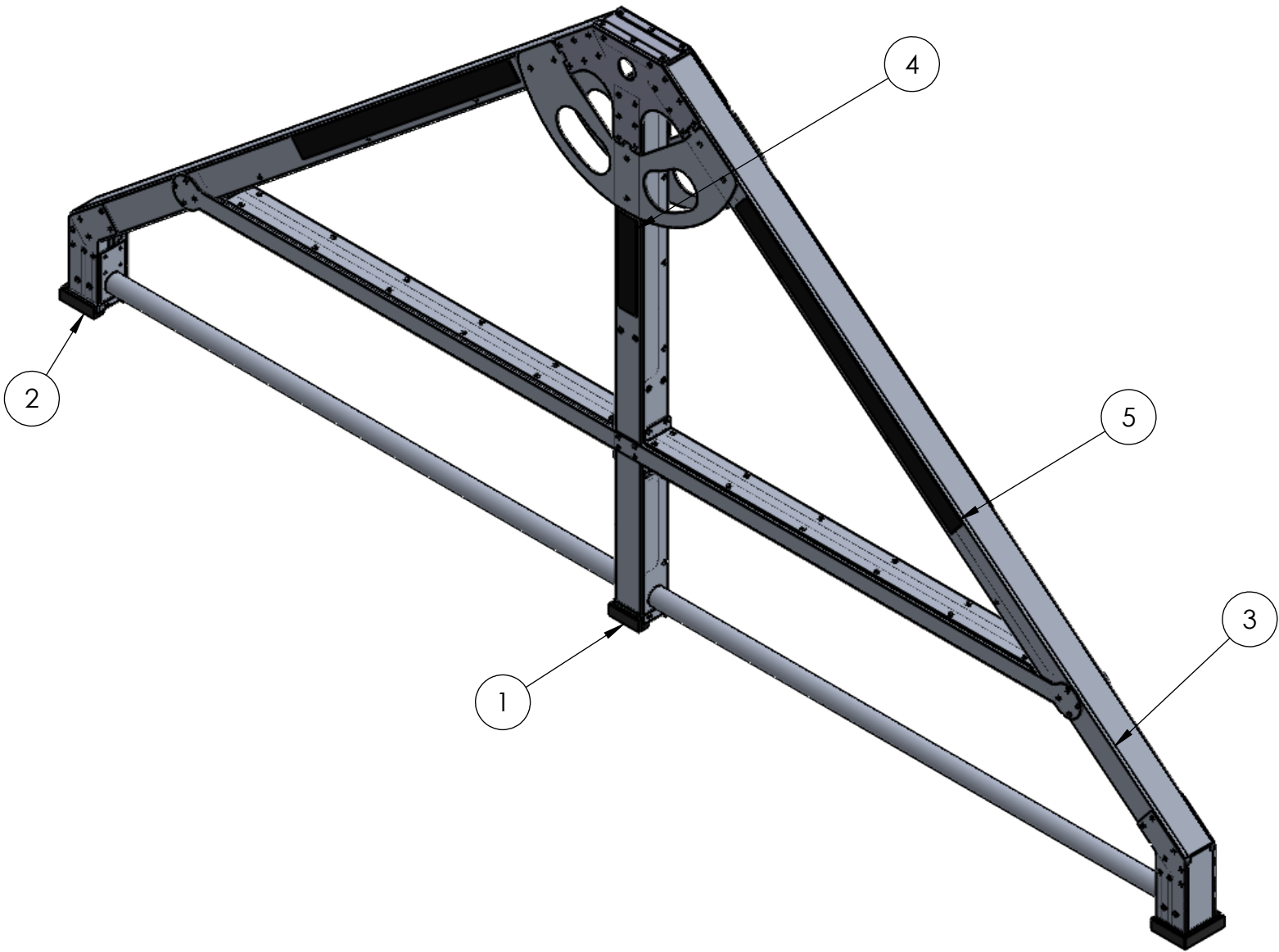


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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20008	Foam Cushion for Generator Switch	1
2	GE-20008	Foam Cushion for Generator Switch	2
3	GE-20010	Hanger	1
4	Hook_2_9	Hook 2" x 9", Adhesive Backed	2
5	Hook_2_30	Hook 2" x 30", Adhesive Backed	4

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	12/17/19	TITLE:  Generator Switch with Hook and Corners		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV  <b>B</b> GE-20015		
GE-20020		MATERIAL						
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING						
			SCALE: 1:12					

4

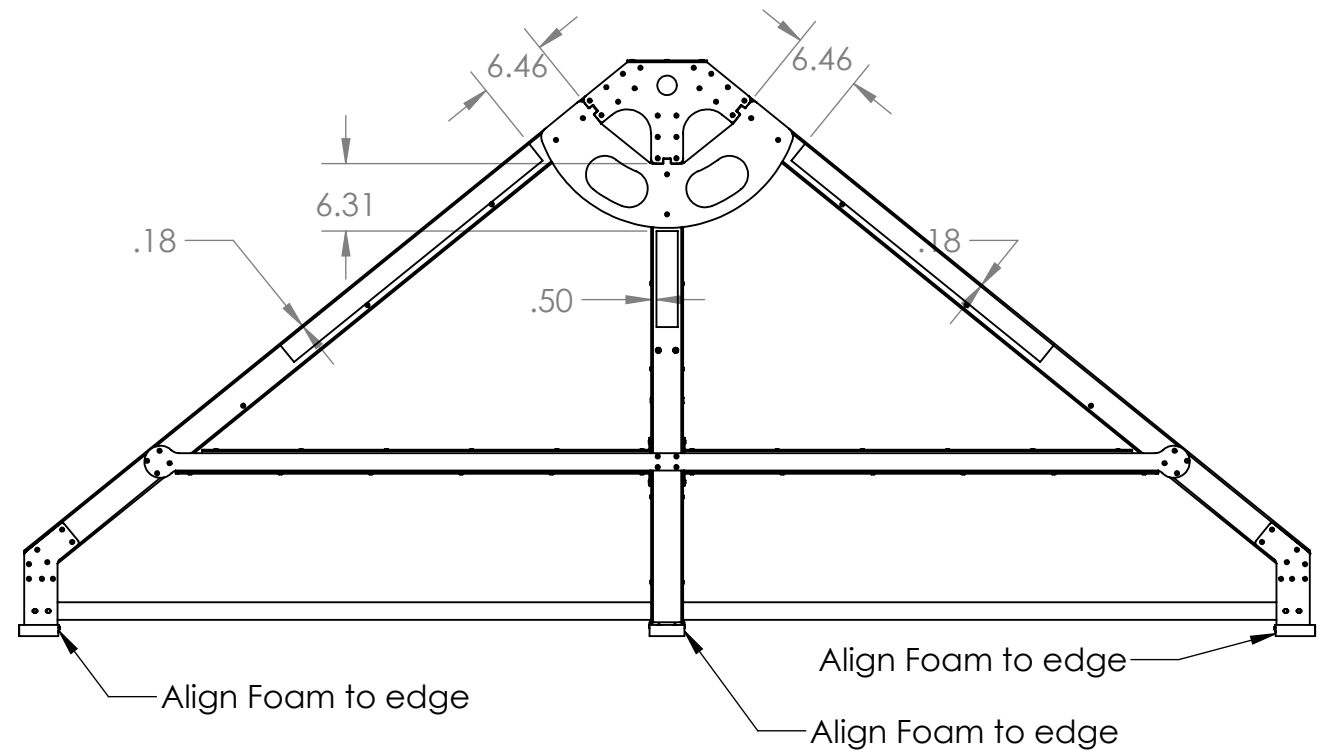
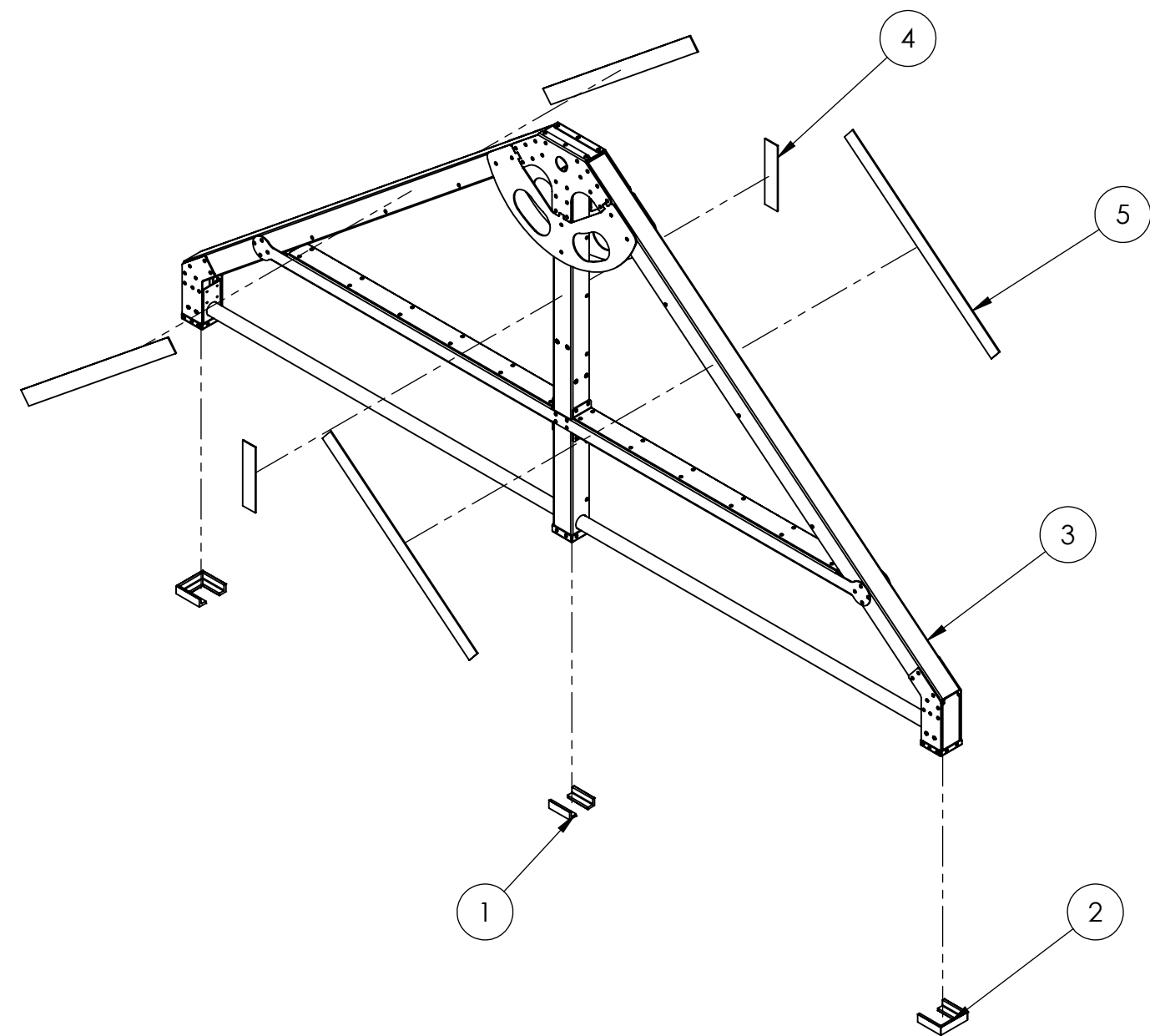
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- Notes:
1. Make sure surface of GE-20010 is clean prior to hook and foam application.
  2. Press firmly on hook and foam to ensure adhesion.

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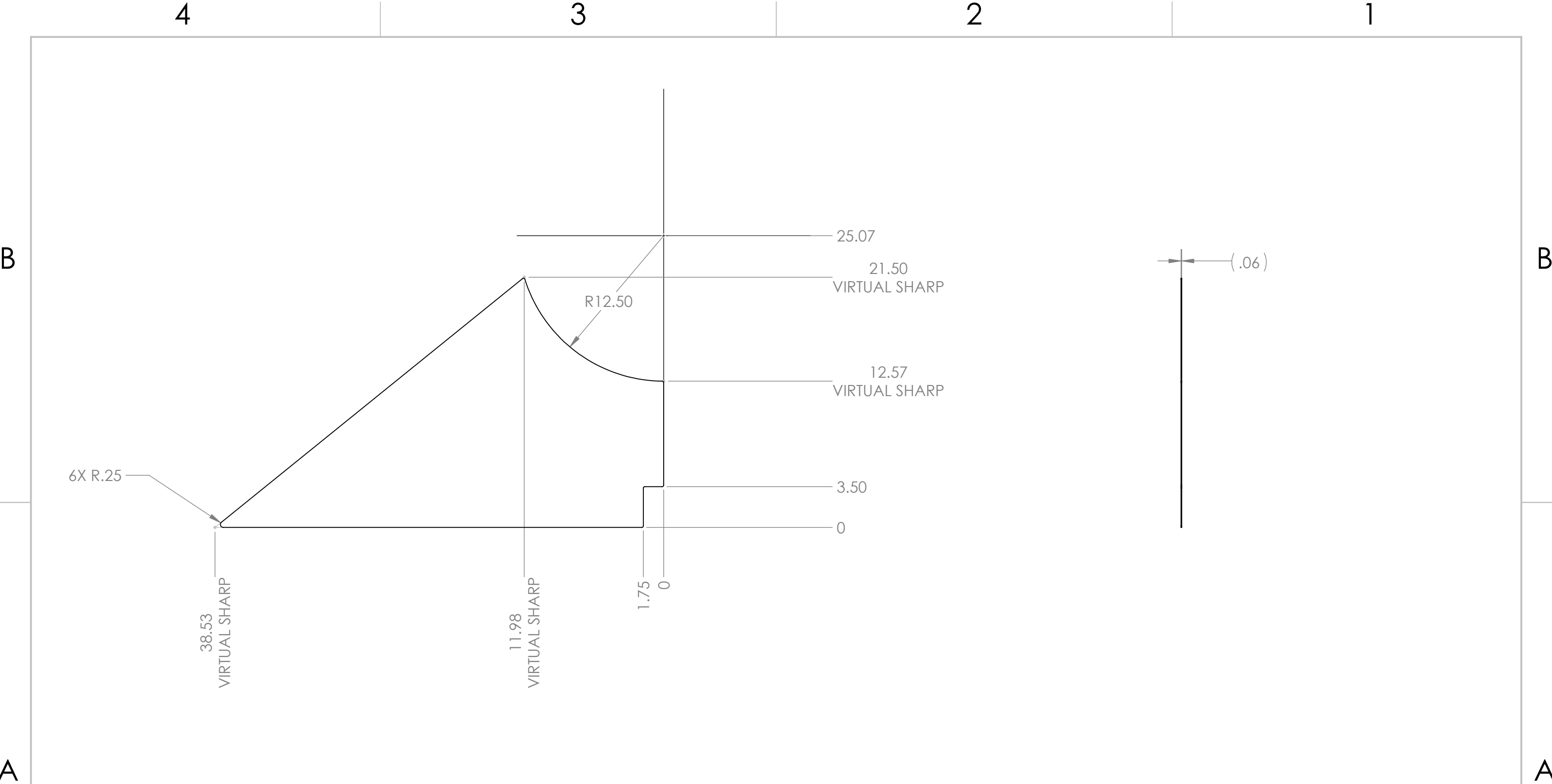
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/17/19	
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			TITLE: Generator Switch with Hook and Corners
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
GE-20020		INTERPRET GEOMETRIC TOLERANCING PER:				SIZE DWG. NO. REV
NEXT ASSY	USED ON	MATERIAL				<b>B</b> GE-20015
		FINISH				SCALE: 1:18 WEIGHT: SHEET 2 OF 2
APPLICATION		DO NOT SCALE DRAWING				

4

3



2

1



- Notes:
1. Material: 1/16" Polycarbonate, Clear
  2. Remove all burrs and sharp edges
  3. Tag or label with part number
  4. Finish: Bare - Vinyl will be applied to face, either side

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 				
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	10/9/19	TITLE:  <h1>Generator Switch Plastic</h1>				
			CHECKED							
			ENG APPR.							
			MFG APPR.							
			Q.A.							
GE-20018		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE	DWG. NO.	REV		
GE-20017		MATERIAL POLYCARB				B	GE-20016	0		
NEXT ASSY	USED ON	FINISH BARE				SCALE: 1:8			WEIGHT:	SHEET 1 OF 1
APPLICATION		DO NOT SCALE DRAWING								

4

3

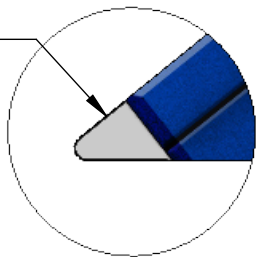
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1

B

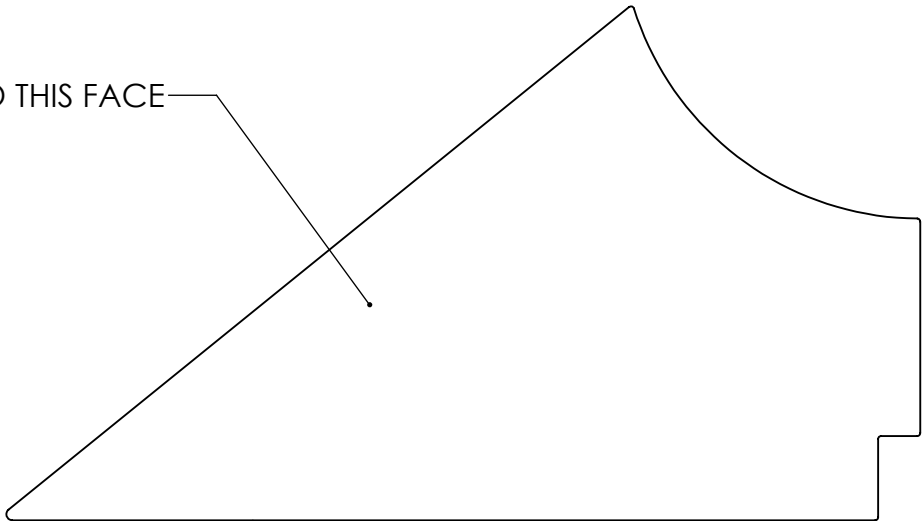
B

TRIM VINYL  
(RED AND BLUE)



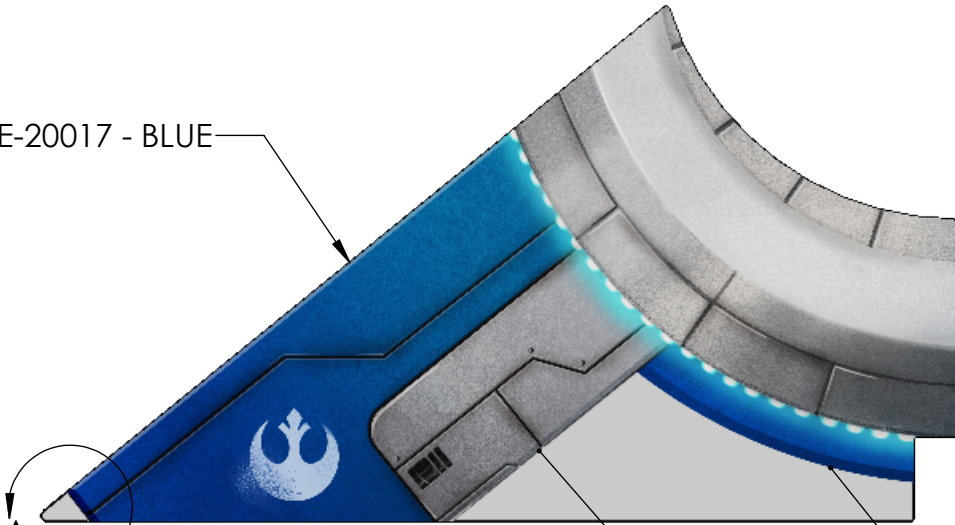
DETAIL A  
SCALE 1 : 4

VINYL APPLIED TO THIS FACE



GE-20016

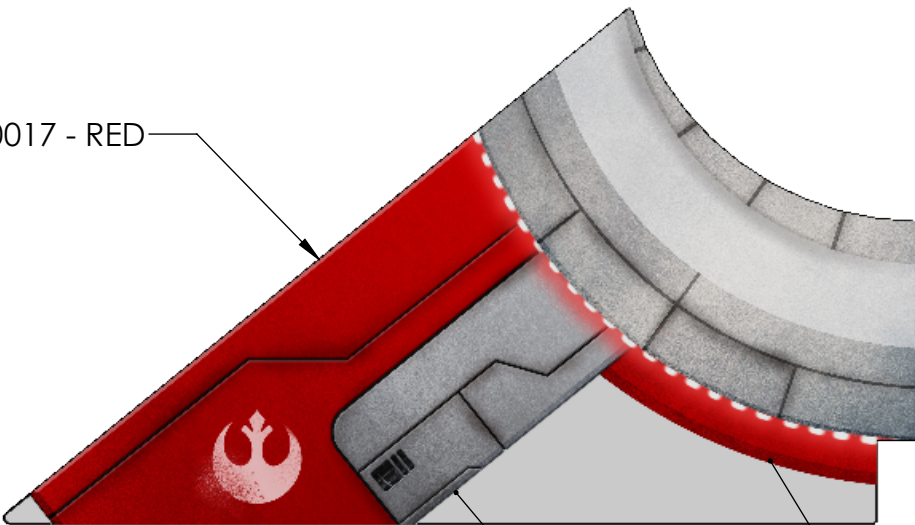
GE-20017 - BLUE



TRIM VINYL

TRIM VINYL

GE-20017 - RED



TRIM VINYL

TRIM VINYL

A



Notes:  
1. Tag or label with part number

A

Color Variations		
Part Number	Vinyl Image	Qty per Field
GE-20017 - Blue	GE-20017 - Blue - Vinyl	2
GE-20017 - Red	GE-20017 - Red - Vinyl	2

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		DIMENSIONS ARE IN INCHES		DRAWN	KAMC
		TOLERANCES:		CHECKED	10/25/19
		FRACTIONAL $\pm 1/16$		ENG APPR.	
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$		MFG APPR.	
		TWO PLACE DECIMAL $\pm .01$		Q.A.	
		THREE PLACE DECIMAL $\pm .001$		COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
		VINYL			
		APPLICATION			
		DO NOT SCALE DRAWING			



TITLE:  
Generator Switch Vinyl  
Plastic\_ Left - with vinyl

SIZE  
**B**

DWG. NO.  
**GE-20017**

REV  
**0**

SCALE: 1:8

WEIGHT:

SHEET 1 OF 1



4

3

2

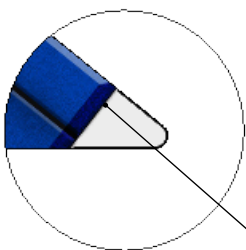
1

B

B

A

A



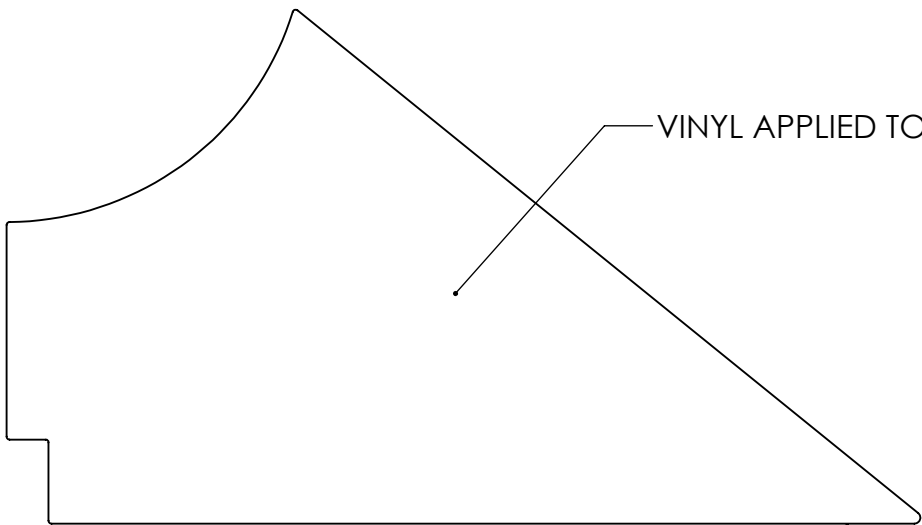
DETAIL A  
SCALE 1 : 4

TRIM VINYL  
(RED AND BLUE)

GE-20018 - BLUE

TRIM VINYL

TRIM VINYL



VINYL APPLIED TO THIS FACE

GE-20016

GE-20018 - RED



TRIM VINYL

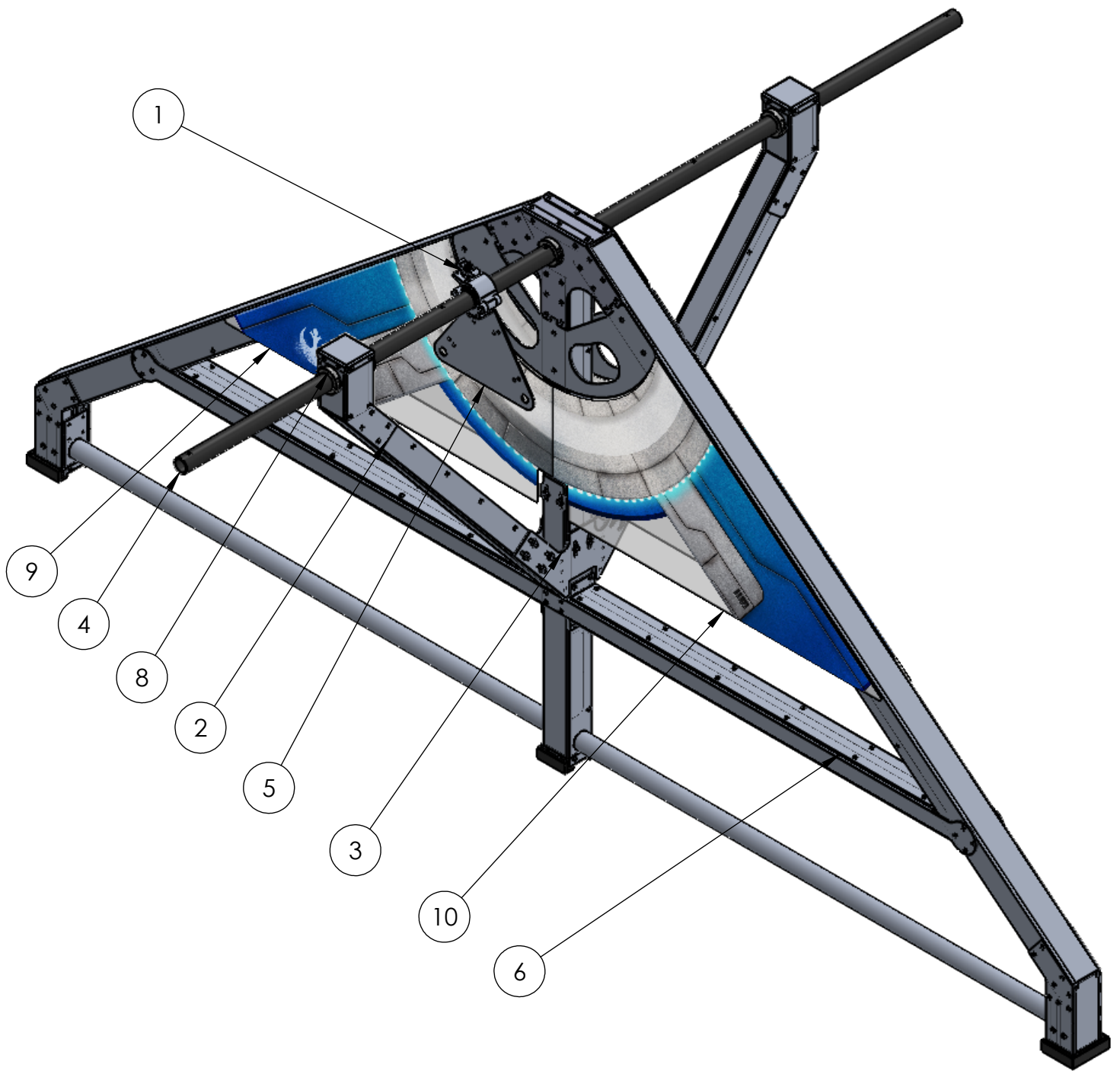
TRIM VINYL

- Notes:  
1. Tag or label with part number

Color Variations		
Part Number	Vinyl Image	Qty per Field
GE-20018 - Blue	GE-20018 - Blue - Vinyl	2
GE-20018 - Red	GE-20018 - Red - Vinyl	2

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	10/25/19	TITLE:  Generator Switch Vinyl Plastic_Right - with vinyl		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20018</b> <b>0</b>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
		FINISH						
GE-20024		VINYL				SCALE: 1:8 WEIGHT: SHEET 1 OF 1		
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20007	Cheeseborough for Truss _ Single	1
2	GE-20011	Hanger Brace	2
3	GE-20012	Hanger Brace - Mounting Plate	2
4	GE-20013	Hanger - Pivot Pole	1
5	GE-20014	Hanger - Sensor Mount	1
6	GE-20015	Generator Switch with Hook and Corners	1
7	GE-20021	Pivot Pole to Generator Switch Bearing	6
8	GE-20022	Pivot Pole to Generator Switch Shaft Collar	6
9	GE-20023	Generator Switch Vinyl Left _ With Loop	2
10	GE-20024	Generator Switch Vinyl Right _ With Loop	2
11	hex_.25_20_1.25	Hex Head Bolt, 1/4-20 x 1.25", Steel	24
12	nylock_.5_13	steel nylon-insert locknut, 1/2" - 13	1
13	washer_flat_.25	Flat Washer for 1/4" Screw	24
14	washer_flat_.5	Flat Washer for 1/2" Screw	1

Note:  
1. Vinyl may be red or blue.

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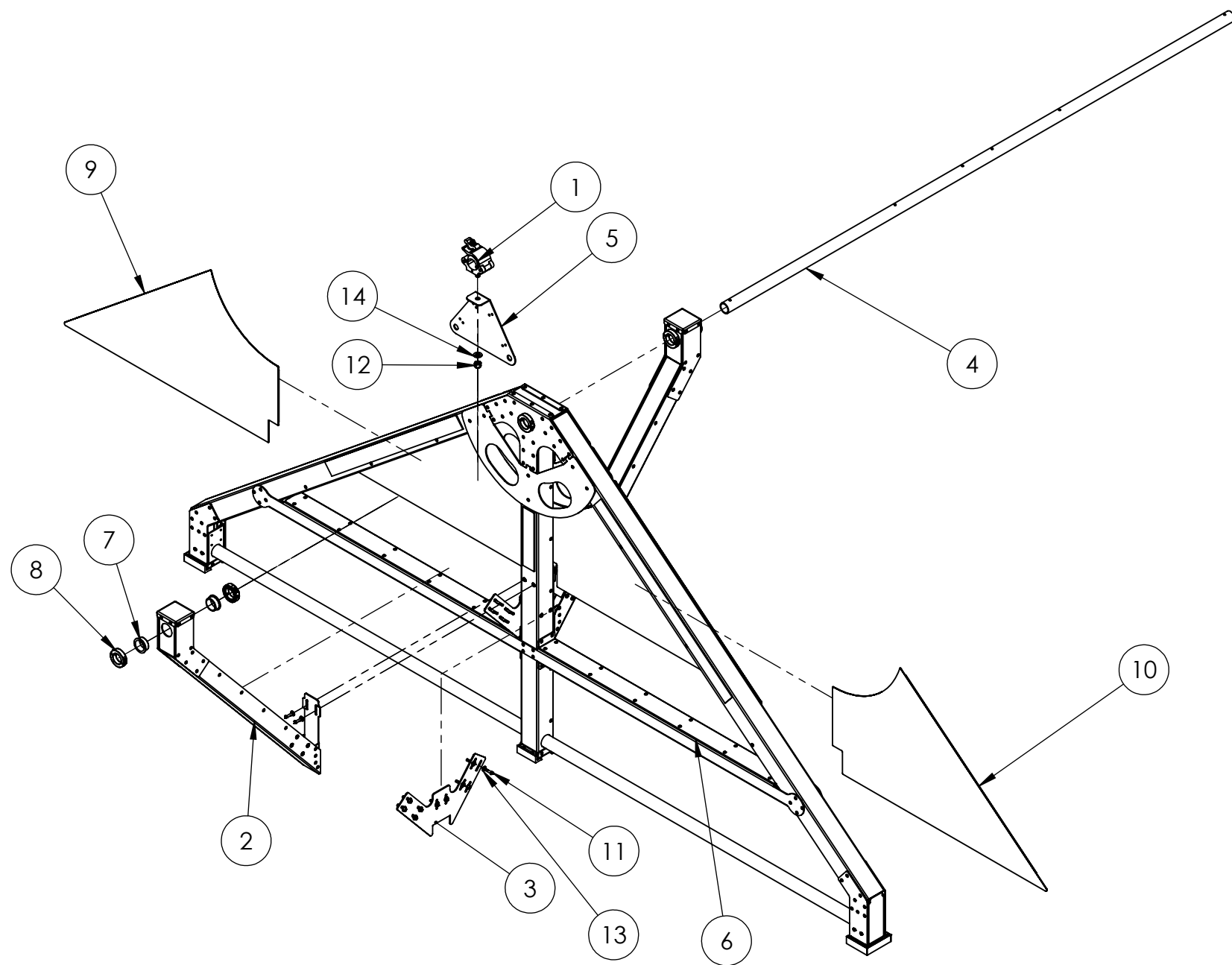
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	8/27/19	TITLE:  <h1>Generator Switch Assembly</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
		MATERIAL	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20020		
NEXT ASSY	USED ON	FINISH	WEIGHT: 111.81 LBS					
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:12 WEIGHT: SHEET 1 OF 4		

4



3

2

1



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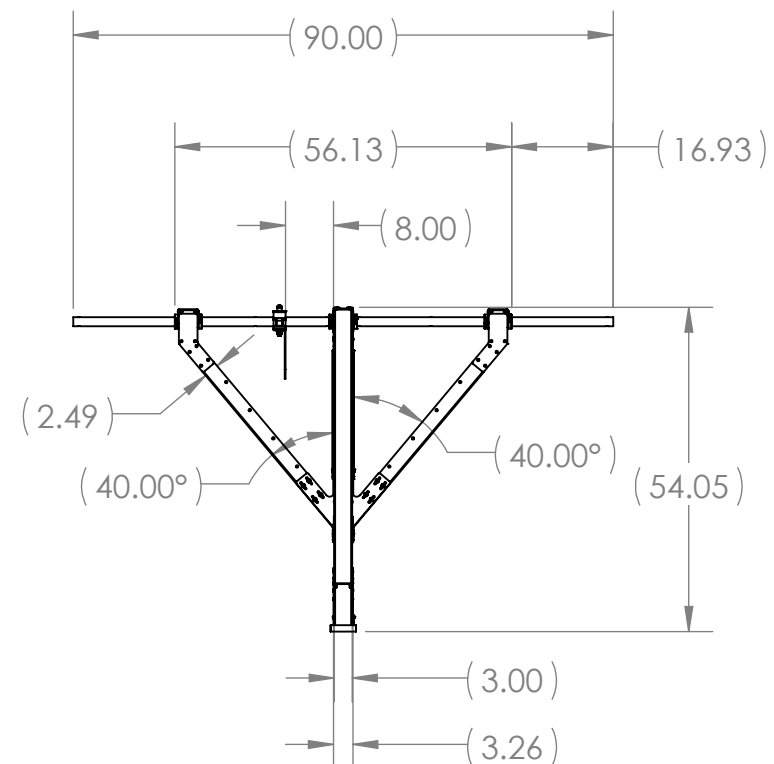
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			CHECKED			Generator Switch Assembly		
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			COMMENTS:		
		MATERIAL						
		FINISH				SIZE DWG. NO. REV		
NEXT ASSY	USED ON					B GE-20020		
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:18 WEIGHT: SHEET 2 OF 4		

4

3

2

1



UNLESS OTHERWISE SPECIFIED:

FINISH

NAME \_\_\_\_\_

DATE \_\_\_\_\_

DRAWN

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:

NEXT ASSY

USED ON

## APPLICATION

TITLE:

# Generator Switch Assembly

SIZE  
**B**

DWG. NO.  
**GE-20020**

REV

SCALE: 1:32 WEIGHT:

SHEET 3 OF 4



4

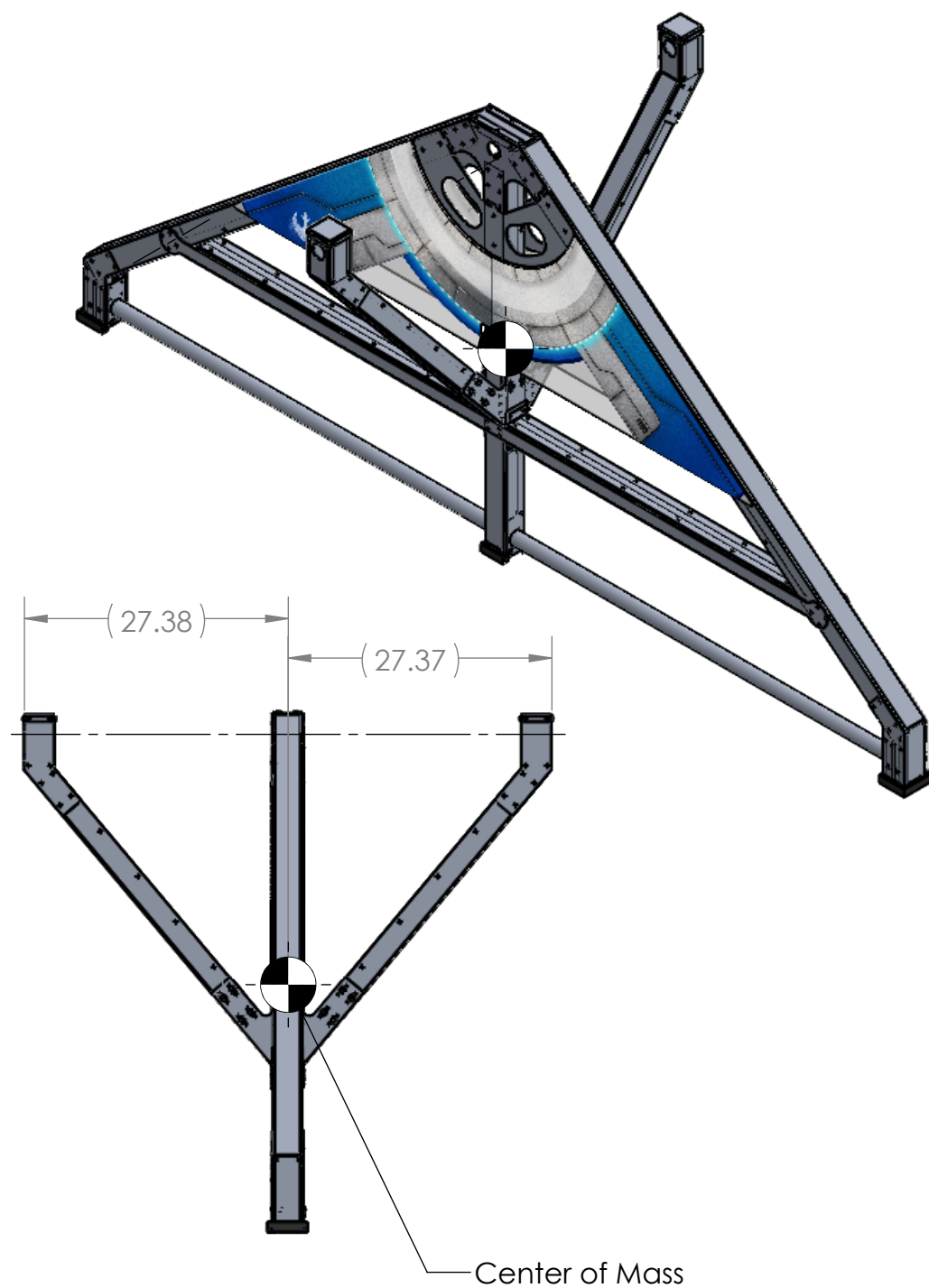
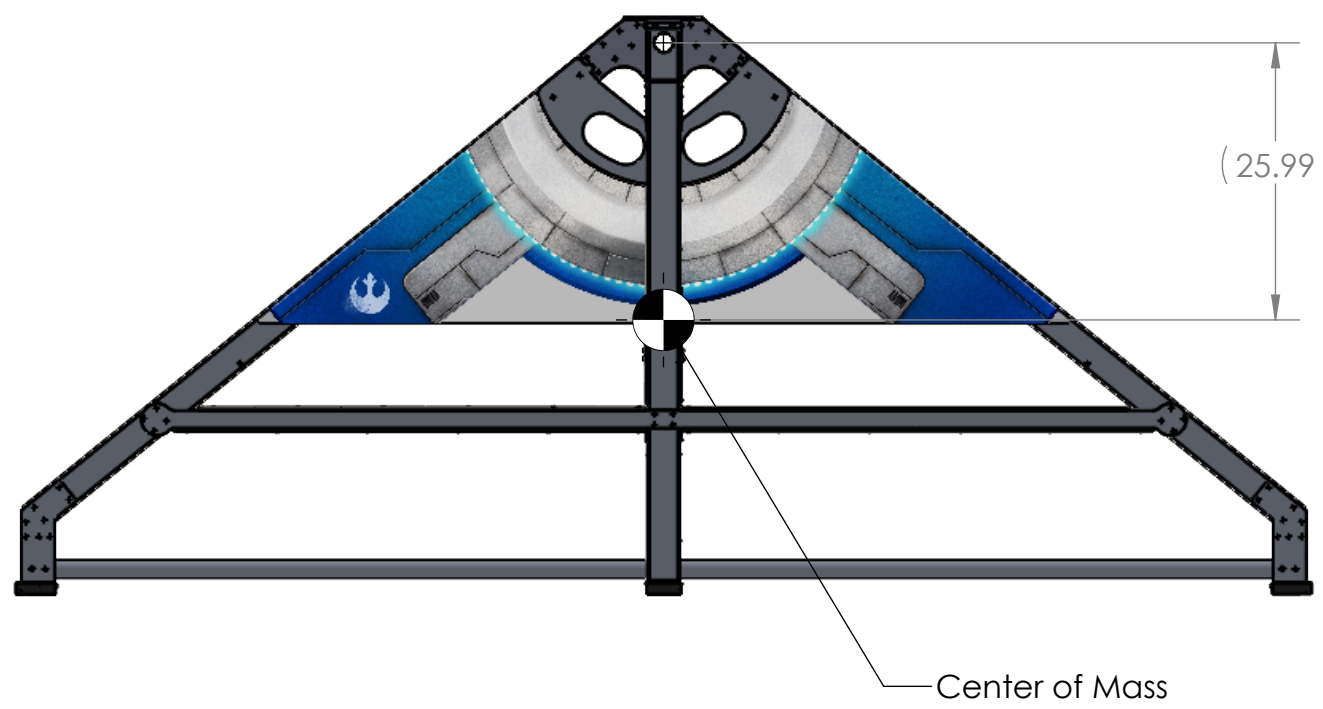
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NOTE:  
1. Only pieces that pivot are shown here. Approximate mass of pivoting system is 93 lbs.

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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/18/19	
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			TITLE: <b>Generator Switch Assembly</b>
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				SIZE DWG. NO. REV
		MATERIAL				<b>B</b> <b>GE-20020</b>
NEXT ASSY	USED ON	FINISH				SCALE: 1:18 WEIGHT: SHEET 4 OF 4
APPLICATION		DO NOT SCALE DRAWING				

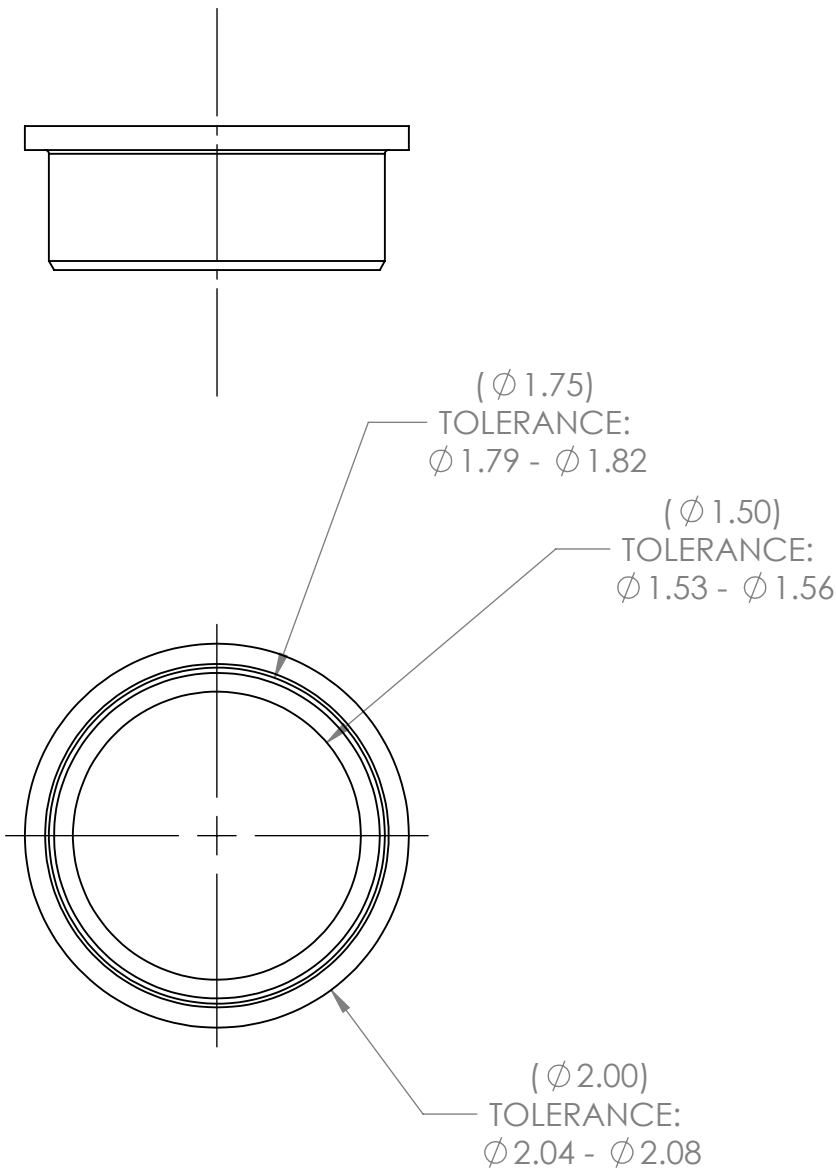
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3

2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Updated Notes	10/29/2019	KAMC



**DESCRIPTION:** IGLIDE M250 FLANGE BEARING - INCH

**VENDOR:** IGUS

**PART NUMBER:** MFI-2428-12

**NOTE:** SUBSTITUTIONS NOT ALLOWED



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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	10/8/19
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			
			TITLE:		
			Pivot Pole to Generator Switch Bearing		
SIZE	DWG. NO.	REV			
<b>B</b>	GE-20021	<b>A</b>			
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1			



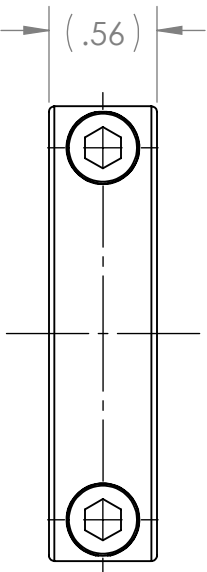
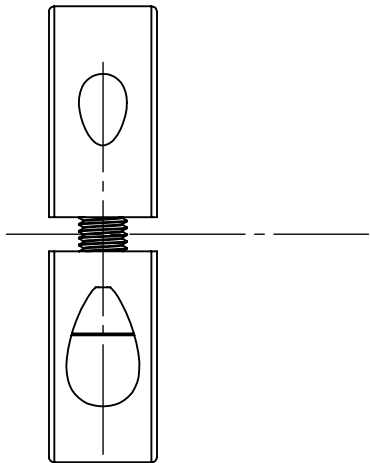
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3

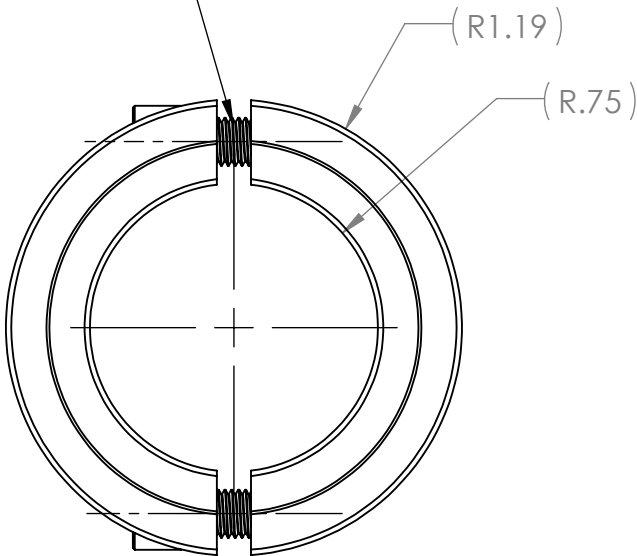
2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Updated Notes.	10/29/2019	KAMC



2X FORGED CLAMP SCREWS  
1/4-28  
HEX WRENCH SIZE: 3/16"





**DESCRIPTION:** TWO-PIECE SHAFT COLLAR, BLACK OXIDE STEEL, CLAMP STYLE

**VENDOR:** RULAND

**PART NUMBER:** SP-24-F

**NOTE:** EQUIVALENT SUBSTITUTIONS ALLOWED

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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	10/25/19	
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			TITLE: Pivot Pole to Generator Switch Shaft Collar
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				SIZE DWG. NO. REV
		MATERIAL				<b>B</b> <b>GE-20022</b> <b>A</b>
		FINISH				SCALE: 1:1 WEIGHT: SHEET 1 OF 1
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

4

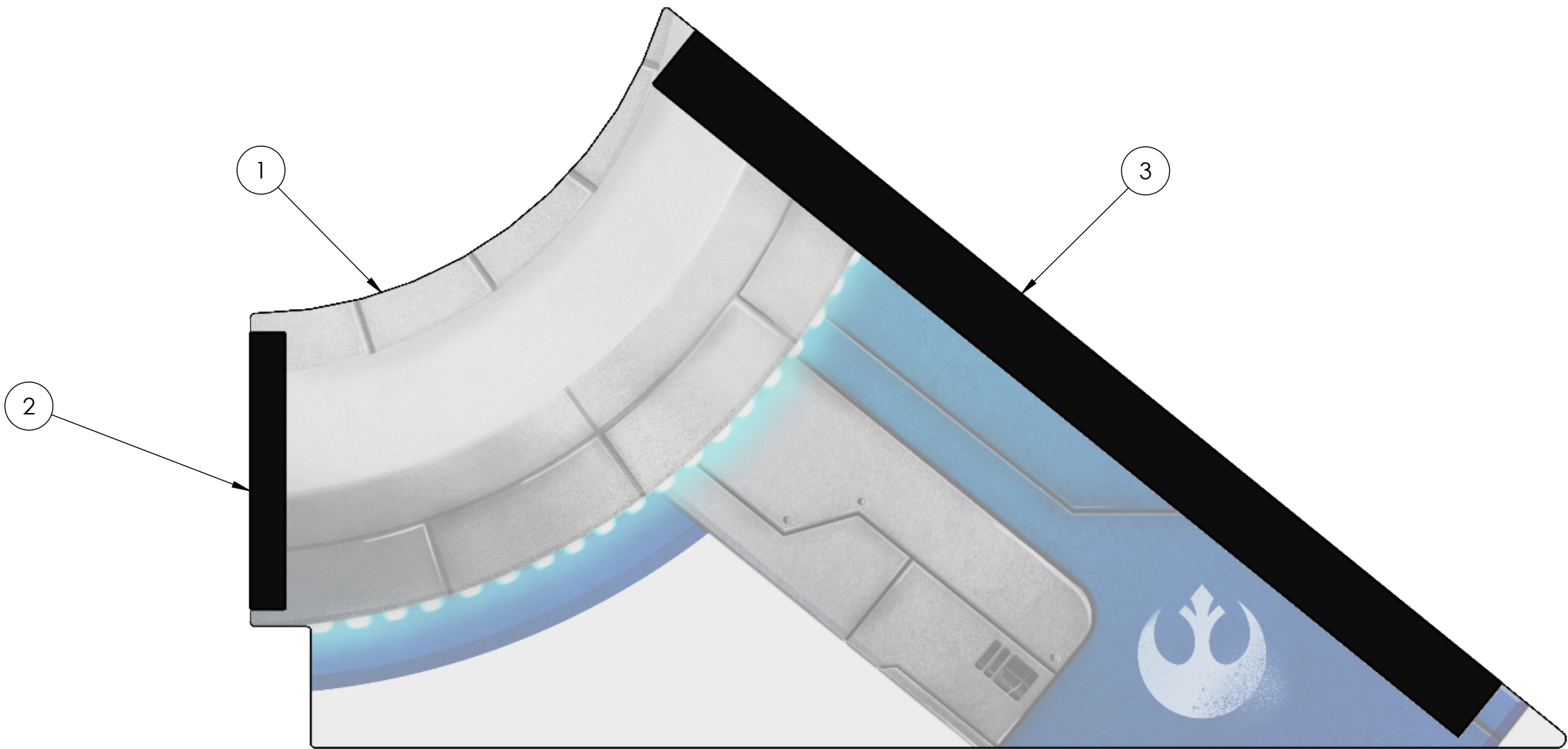
3

2

1

B

B





A

A

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20017-Blue	Generator Switch Vinyl Plastic_ Left - with vinyl	1
2	Loop_1_8	1" x 8" Loop, Adhesive Backed	1
3	Loop_2_30	2" x 30" Loop, Adhesive Backed	1

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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/18/19	
		TOLERANCES:	CHECKED			
		FRACTIONAL ±1/16	ENG APPR.			
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.			
		TWO PLACE DECIMAL ±.01	Q.A.			TITLE: Generator Switch Vinyl Left _ With Loop
		THREE PLACE DECIMAL ±.001	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				SIZE DWG. NO. REV
		MATERIAL				B GE-20023
NEXT ASSY	USED ON	FINISH				SCALE: 1:4 WEIGHT: SHEET 1 OF 2
APPLICATION		DO NOT SCALE DRAWING				

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4

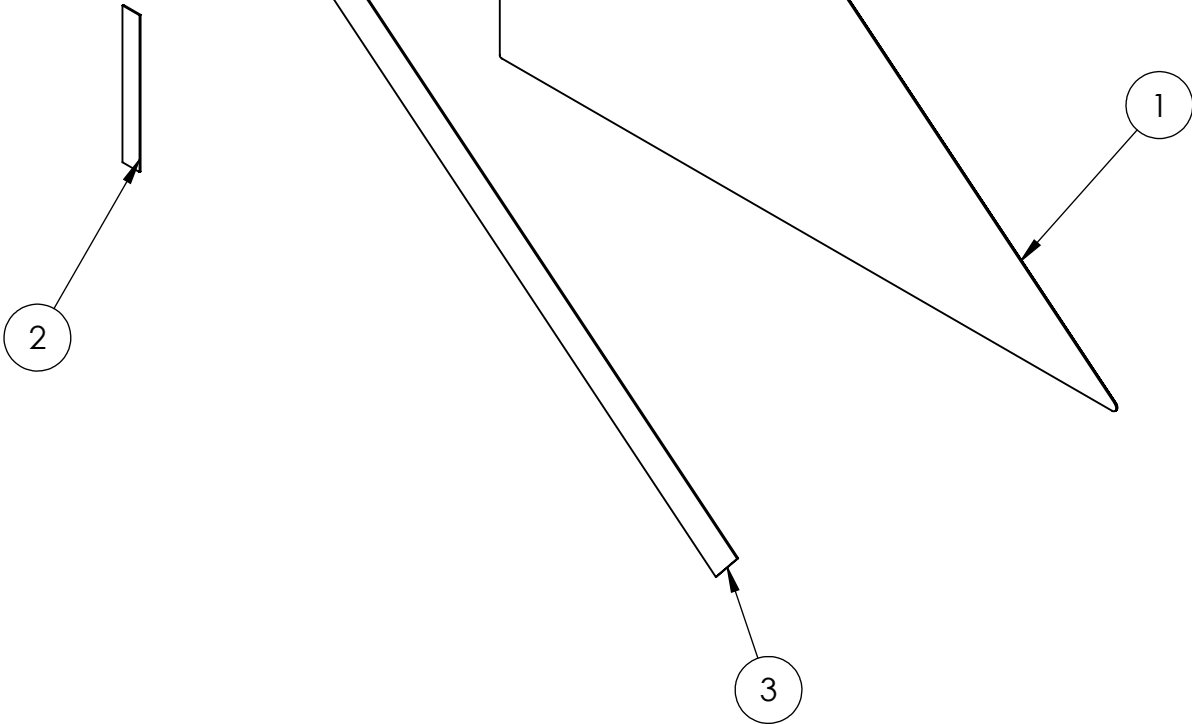
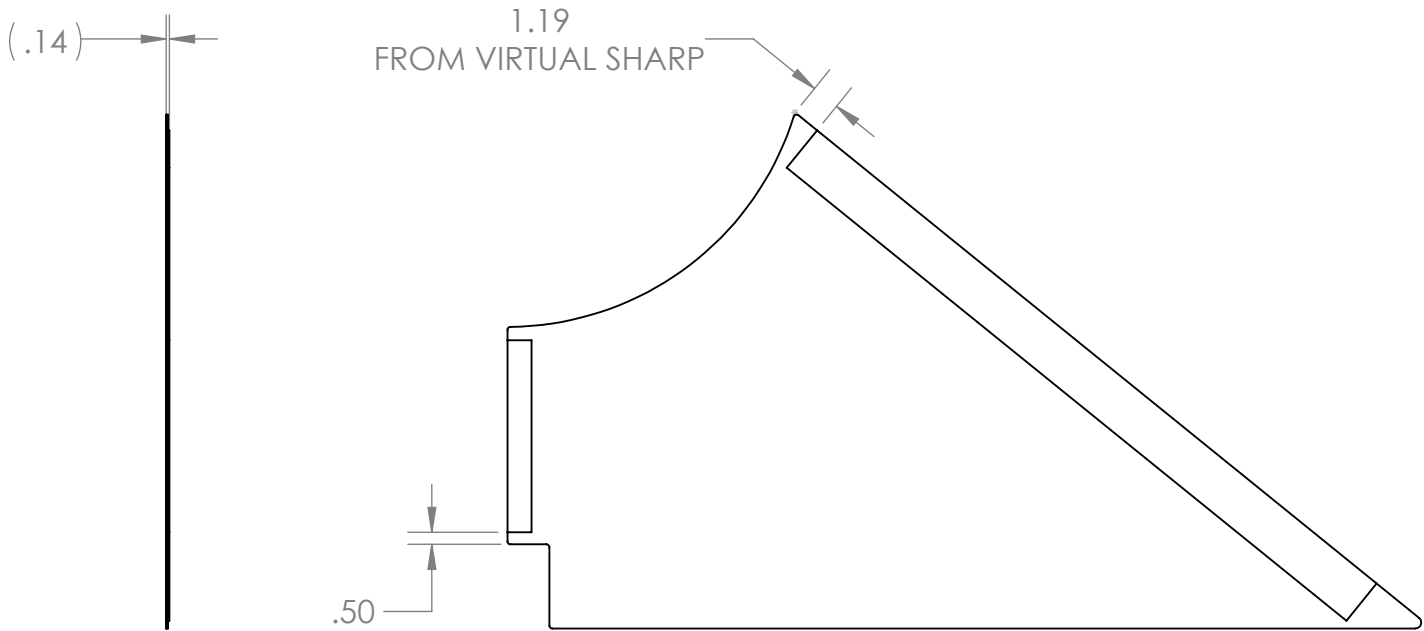
3

2

1

B



B



- Notes:
1. Make sure non-vinyl surface of GE-20017 is clean prior to loop application.
  2. Press firmly on loop to ensure adhesion.

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		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
Generator Switch  
Vinyl Left \_ With Loop

SIZE  
**B**

DWG. NO.  
**GE-20023**

REV

SCALE: 1:8

WEIGHT:

SHEET 2 OF 2

4

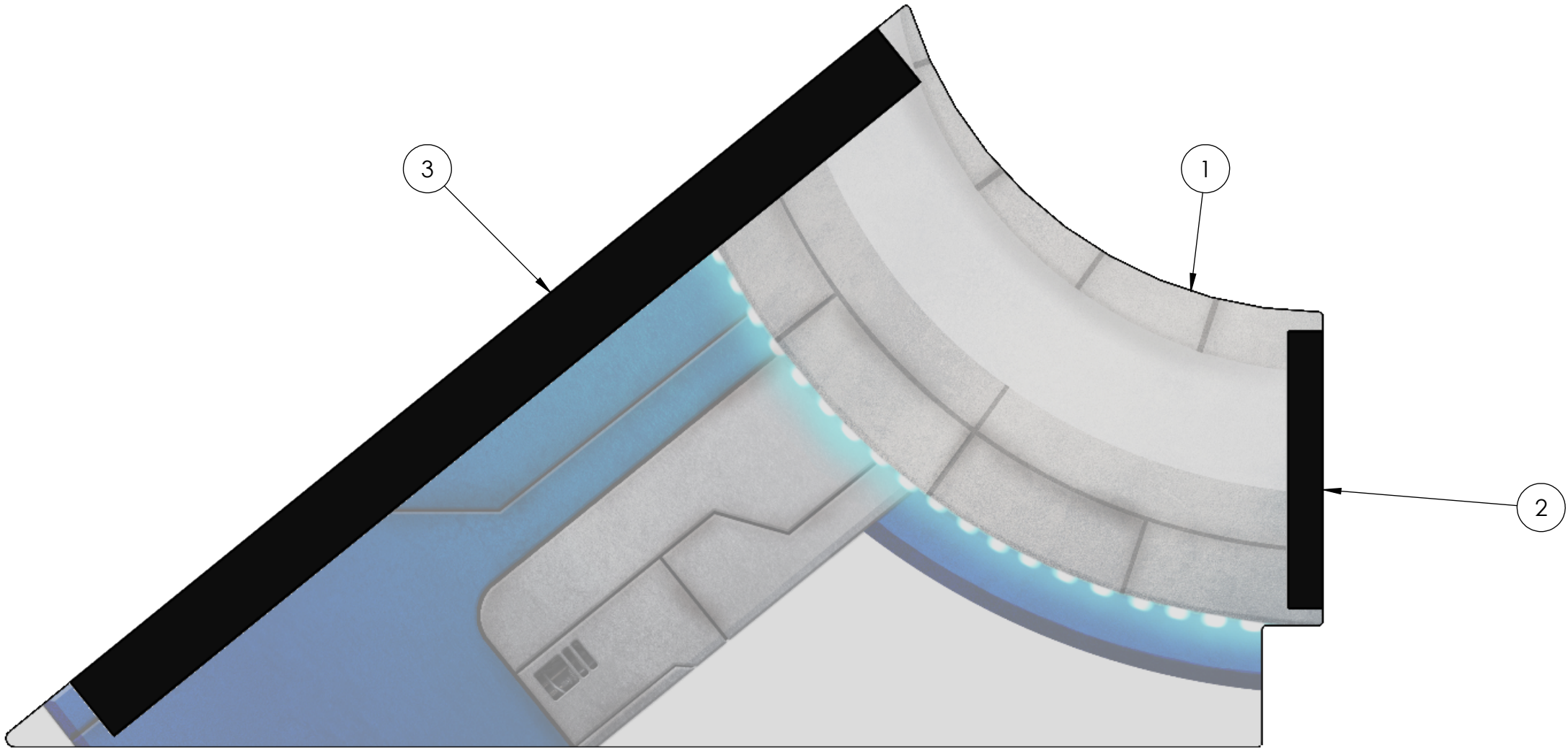
3

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1



A

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20018-Blue	Generator Switch Vinyl Plastic_Right - with vinyl	1
2	Loop_1_8	1" x 8" Loop, Adhesive Backed	1
3	Loop_2_30	2" x 30" Loop, Adhesive Backed	1

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/18/19	TITLE:  Generator Switch Vinyl Right _ With Loop	
		TOLERANCES:	CHECKED				
		FRACTIONAL ±1/16	ENG APPR.				
		ANGULAR: MACH±1° BEND ±1°	MFG APPR.				
		TWO PLACE DECIMAL ±.01	Q.A.				
		THREE PLACE DECIMAL ±.001	COMMENTS:			SIZE <b>B</b>	
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL					
		FINISH					
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING				REV	
						SCALE: 1:4	
						WEIGHT:	
						SHEET 1 OF 2	

4

3

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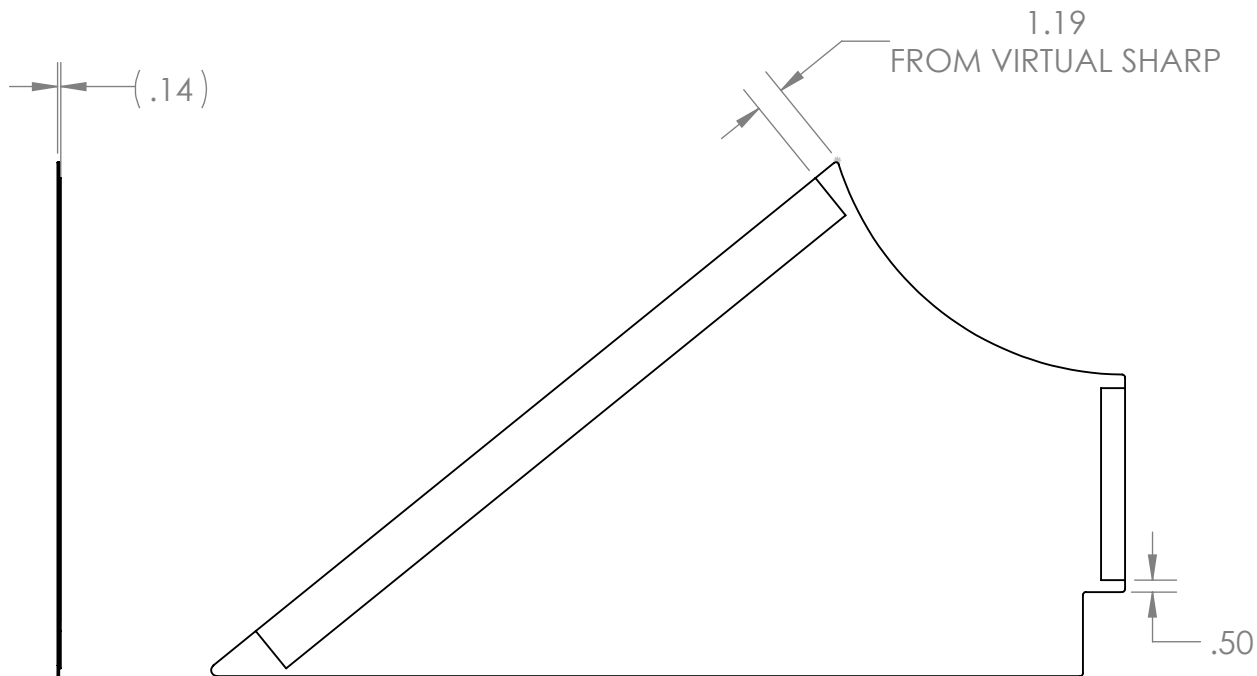
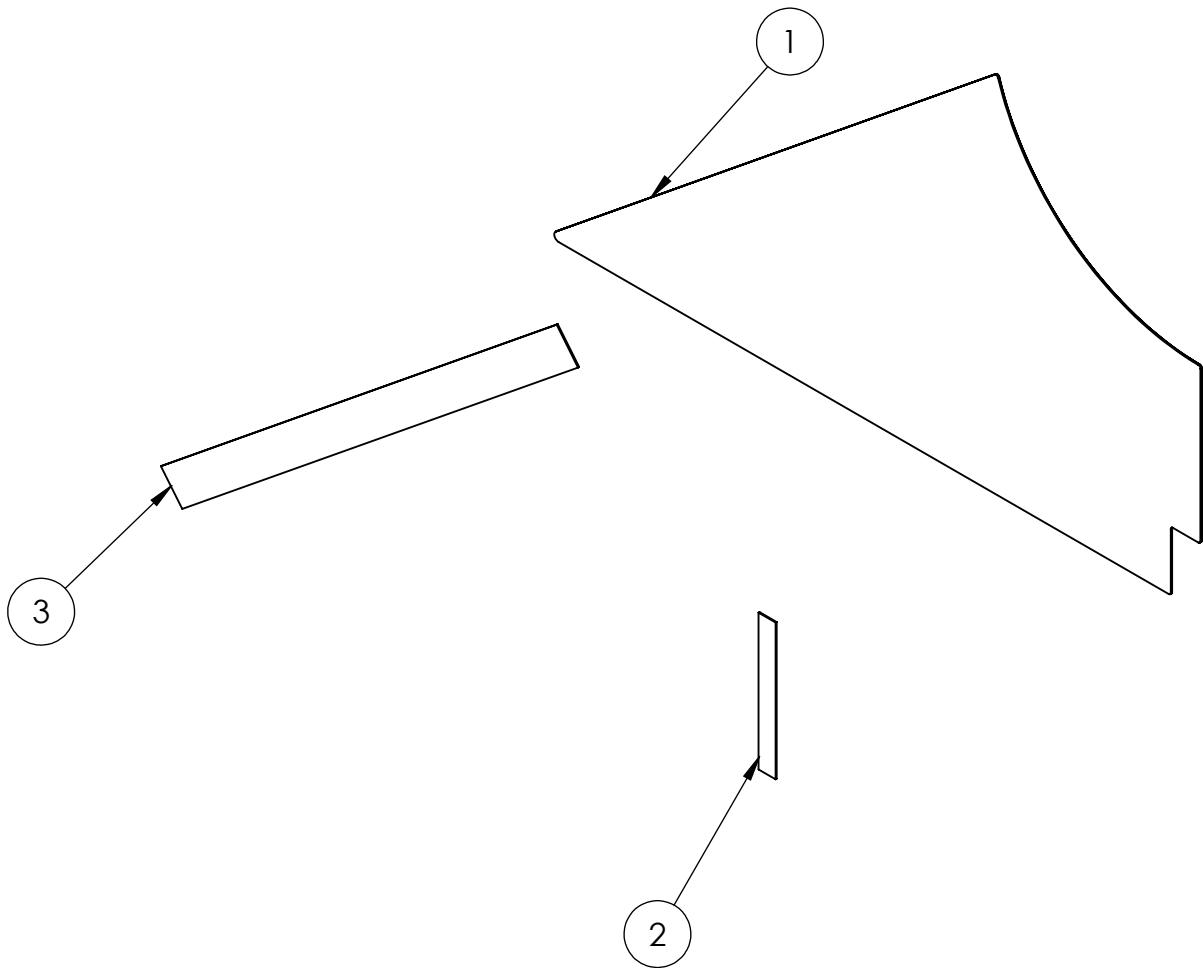
1

B

B



A

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- Notes:
1. Make sure non-vinyl surface of GE-20018 is clean prior to loop application.
  2. Press firmly on loop to ensure adhesion.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 	
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/18/19	TITLE:  Generator Switch Vinyl Right _ With Loop	
		TOLERANCES:	CHECKED				
		FRACTIONAL ±1/16	ENG APPR.				
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.				
		TWO PLACE DECIMAL ±.01	Q.A.			COMMENTS:	
		THREE PLACE DECIMAL ±.001					
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL				SIZE	DWG. NO.
		FINISH				<b>B</b>	GE-20024
NEXT ASSY	USED ON					SCALE: 1:8	WEIGHT:
APPLICATION		DO NOT SCALE DRAWING				SHEET 2 OF 2	

4

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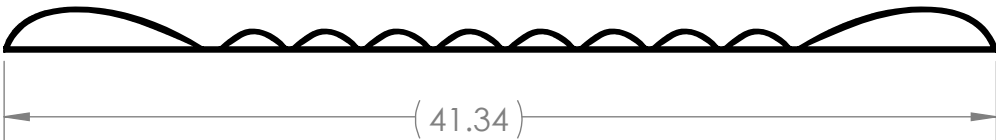
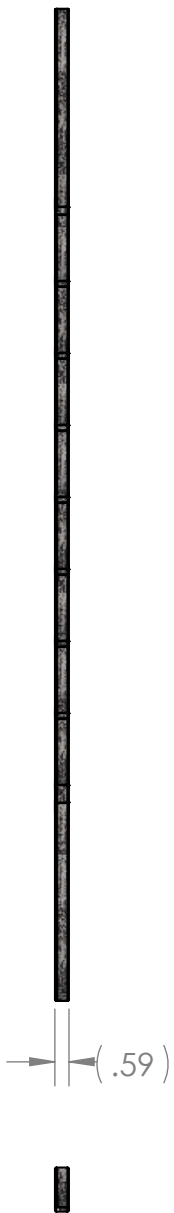
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B

B





**DESCRIPTION:** SAFETY DAISY CHAINS, BEARING CAPACITY 23 KN, GREY

**VENDOR:** KIKIGOAL VIA AMAZON

**PART NUMBER:** B072Z87DD5

**NOTE:** SUBSTITUTIONS NOT ALLOWED

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	2/5/2020	TITLE:  Generator Switch Lock Out - Daisy Chain		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV  <b>B</b> <b>GE-20026</b>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL NYLON						
		FINISH GREY						
NEXT ASSY	USED ON					SCALE: 1:8 WEIGHT: SHEET 1 OF 1		
APPLICATION		DO NOT SCALE DRAWING						

4

3

2

1

A

A

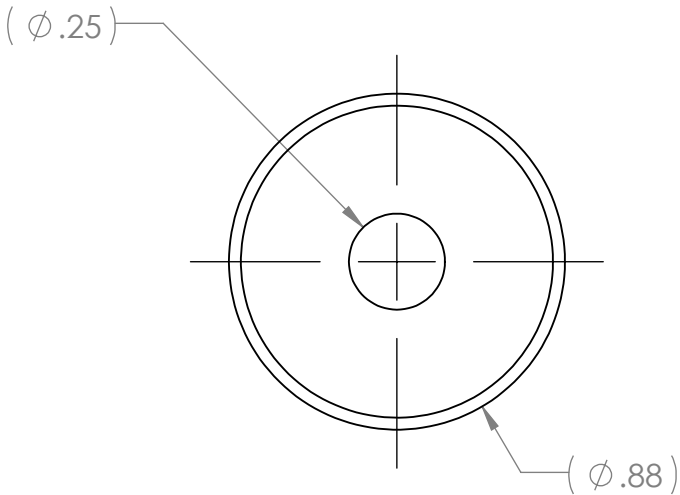
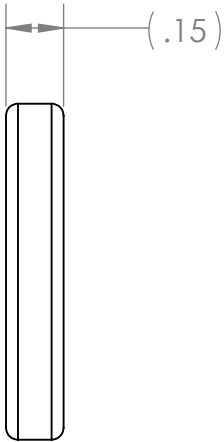
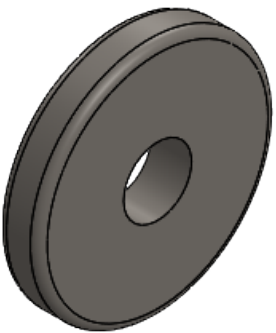


4

3

2

1



**DESCRIPTION:** NEODYMIUM LATCH MAGNET



**VENDOR:** MASTER MAGNETICS, INC. - MAGNET SOURCE

**PART NUMBER:** NMLKIT4

**NOTE:**

- 1. SUBSTITUTIONS NOT ALLOWED
- 2. MAGNET MUST BE INSTALLED INTO HOUSING
- 3. DIMENSIONS SHOWN ARE FOR MAGNET + HOUSING ASSEMBLY

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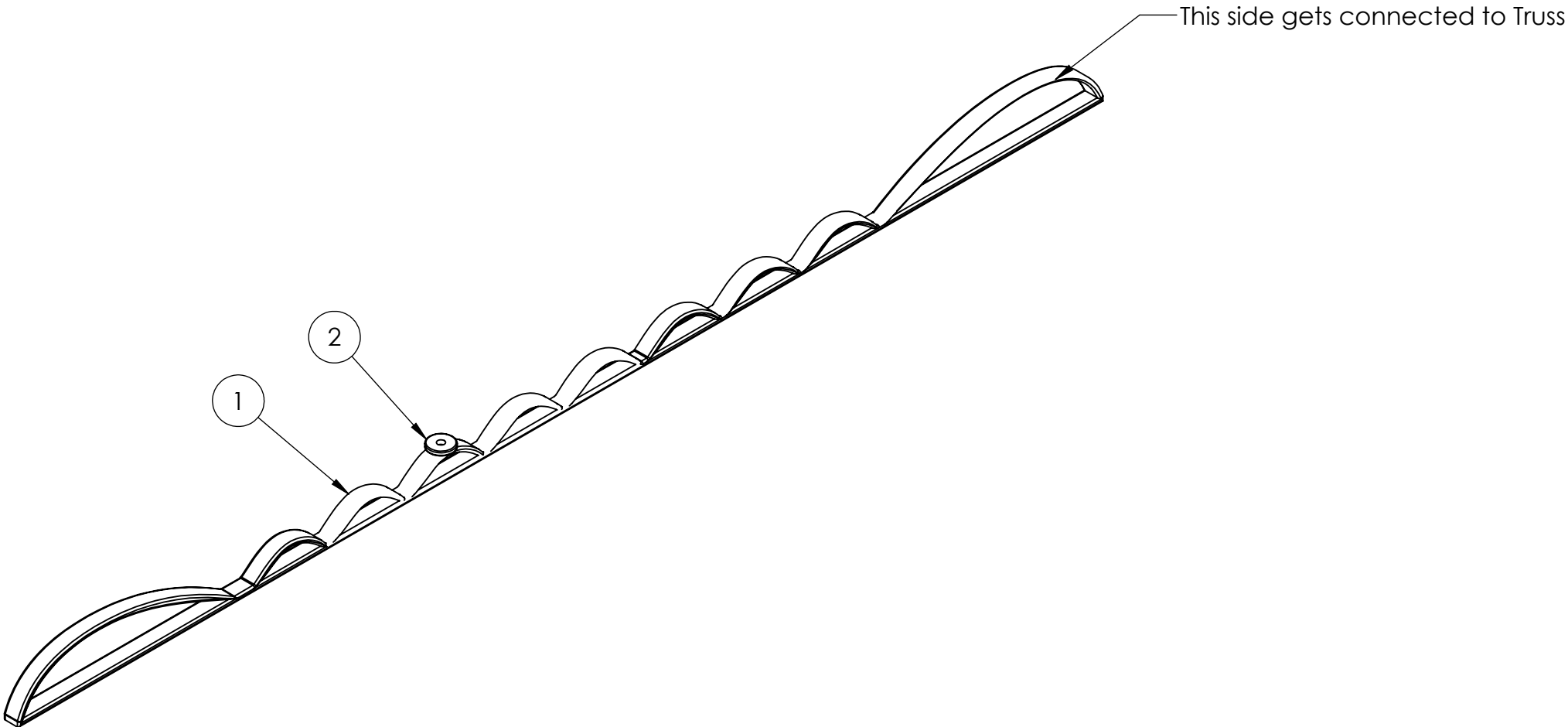
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	2/6/2020	TITLE:  Generator Switch Lock Out - Magnet		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			COMMENTS:		
		MATERIAL NEODYMIUM						
		FINISH BARE						
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING			SIZE <b>B</b>	DWG. NO. <b>GE-20027</b>	REV
						SCALE: 2:1	WEIGHT:	SHEET 1 OF 1

4

3

2

1





Notes:

1. Attach ② to ① where shown, using 2x 18 lb. cable ties. Cable tie heads should be inside Daisy Chain (i.e. not showing).

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20026	Generator Switch Lock Out - Daisy Chain	1
2	GE-20027	Generator Switch Lock Out - Magnet	1

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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	2/5/2020
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
Generator Switch Lock Out - Field Attachment

SIZE **B** DWG. NO. **GE-20028** REV

SCALE: 1:4 WEIGHT: SHEET 1 OF 2

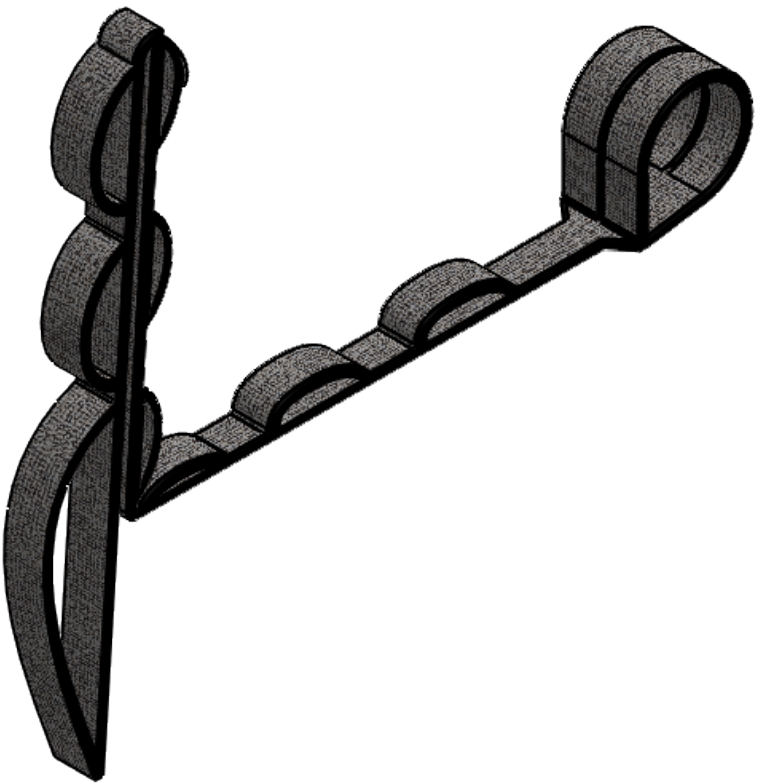
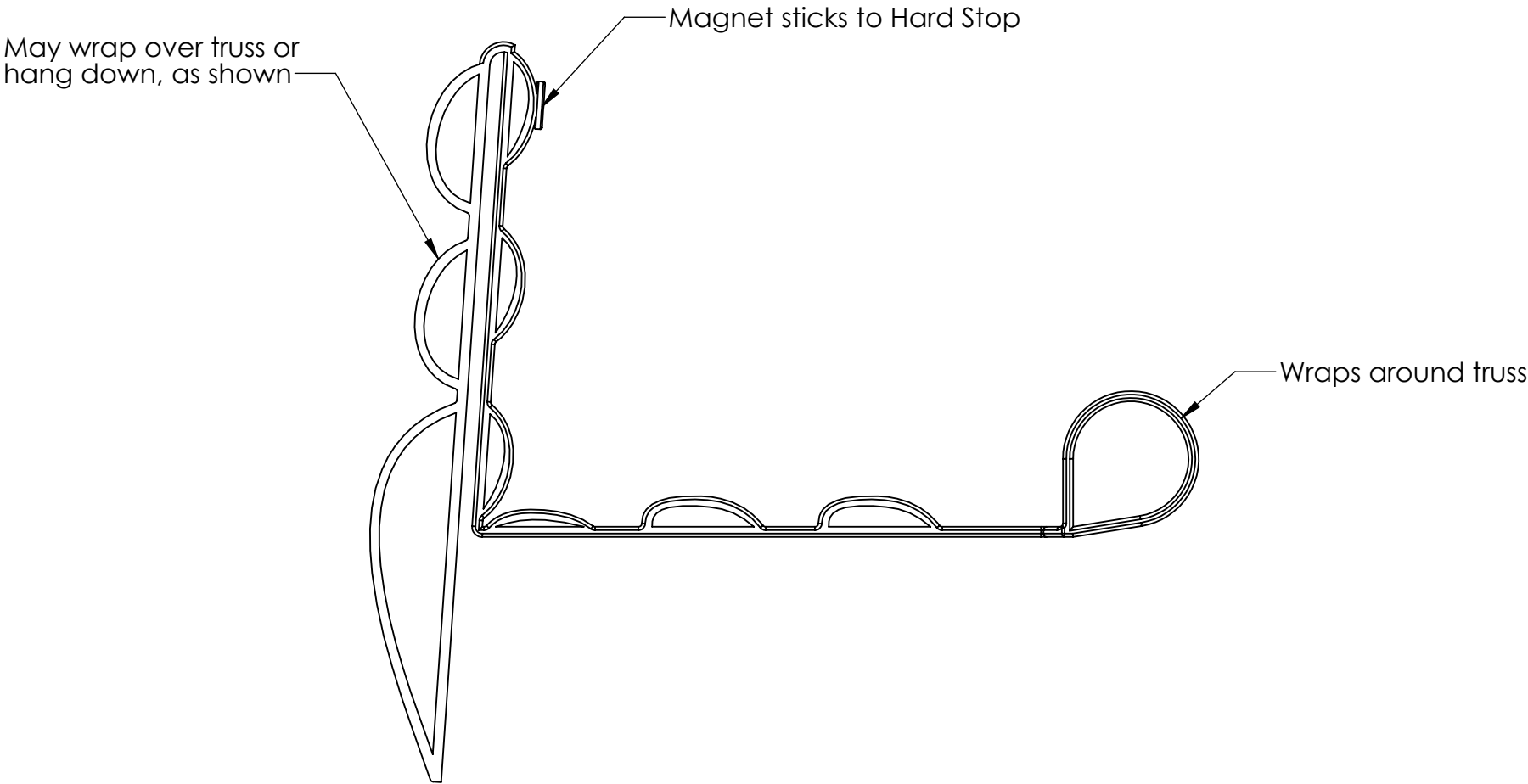
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3

2



1

INSTALLED CONFIGURATION

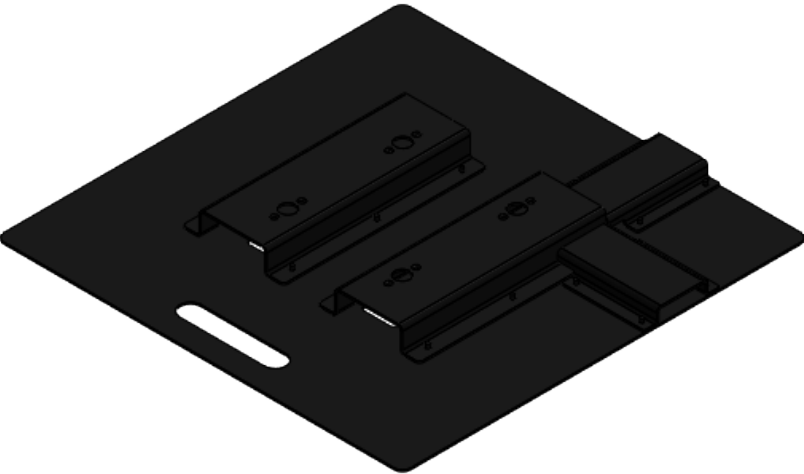
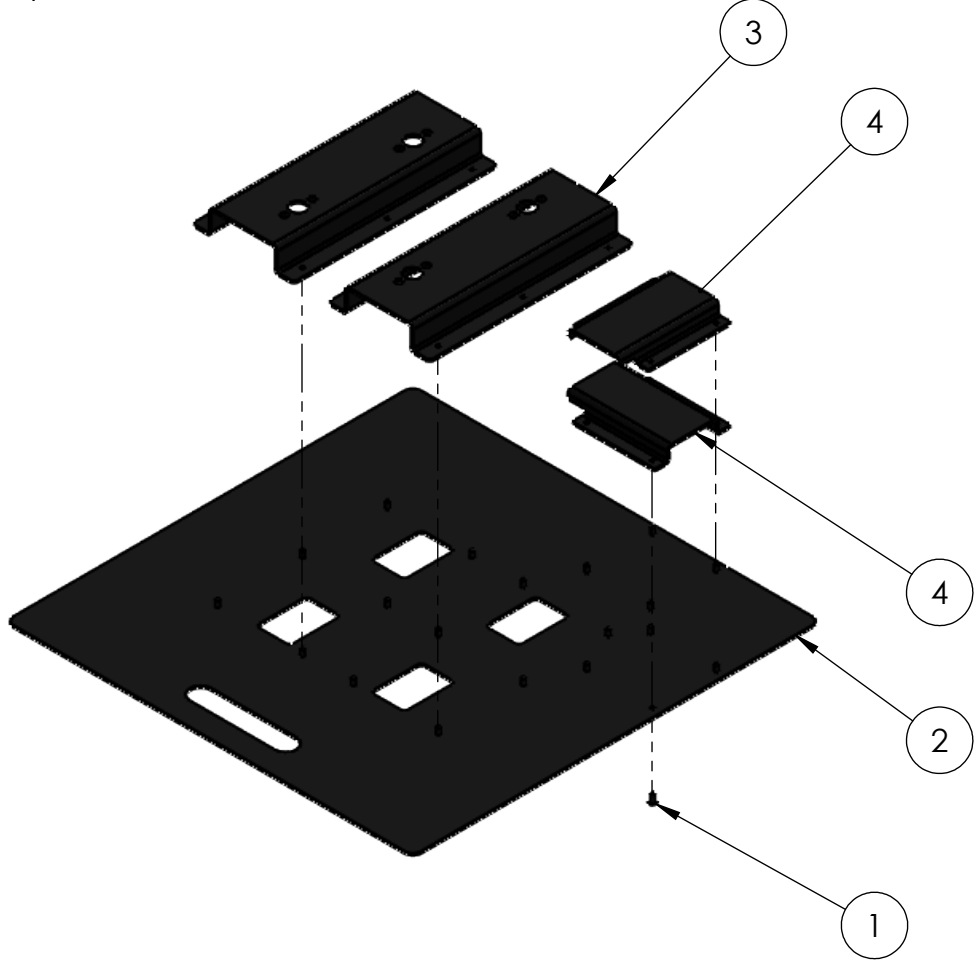


Note:  
See GE-20000 for installation information & lengths relative to the Truss

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	2/5/2020	TITLE:  Generator Switch Lock Out - Field Attachment		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV  <b>B</b> GE-20028		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:3					



Exploded View:



- Notes:
1. Rivets should be plated or stainless steel
  2. Tag or label with part number.
  3. Powder Coated Black (Full Assembly).

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	20
2	GE-20030 - 01	Truss Base - Sheet Metal Assembly, Base Plate	1
3	GE-20030 - 02	Truss Base - Sheet Metal Assembly, Truss Feet	2
4	GE-20030 - 03	Truss Base - Sheet Metal Assembly, Berm - Red	2

		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/9/19	TITLE:  Truss Base - Sheet Metal Assembly		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20030</b> <b>0</b>		
		MATERIAL	COMMENTS:					
		FINISH POWDER COAT BLACK	WEIGHT: 24.93 LBS					
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8 WEIGHT: SHEET 1 OF 2		

4

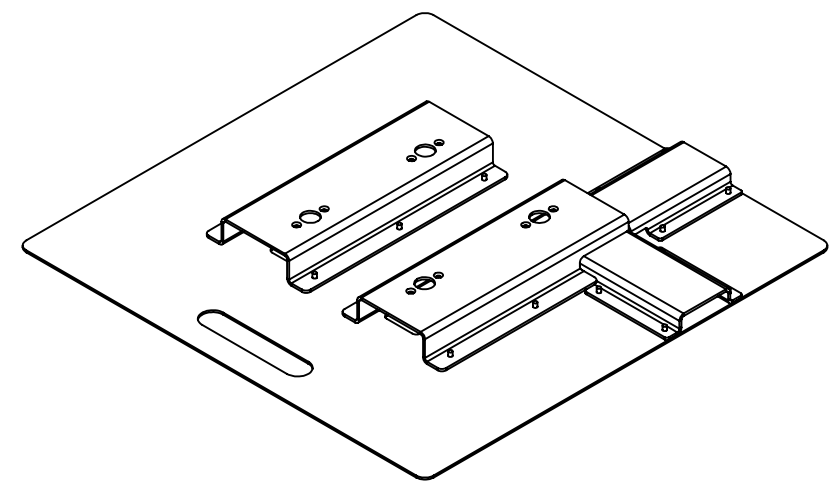
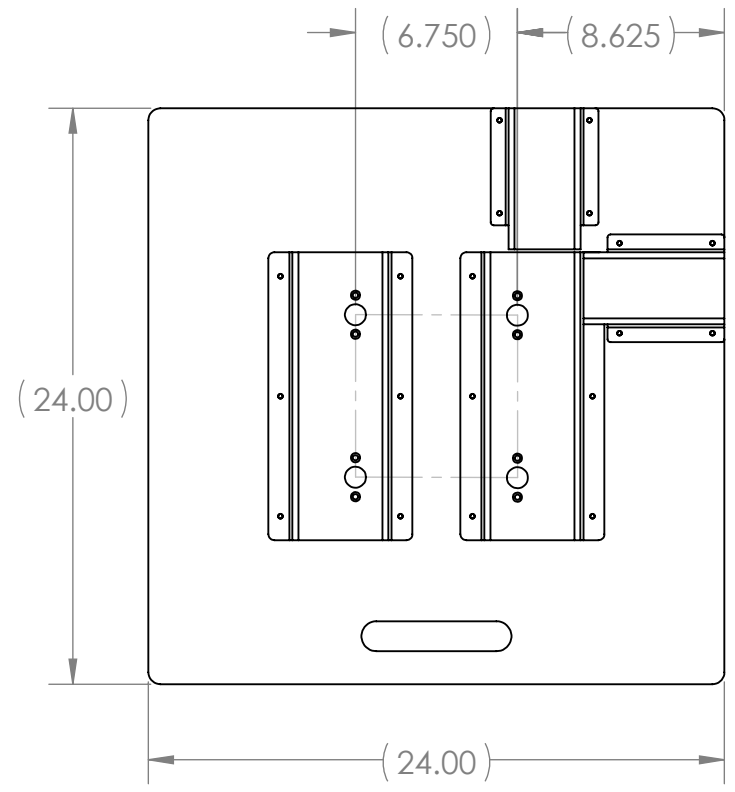
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2

1

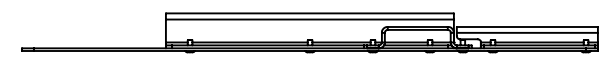
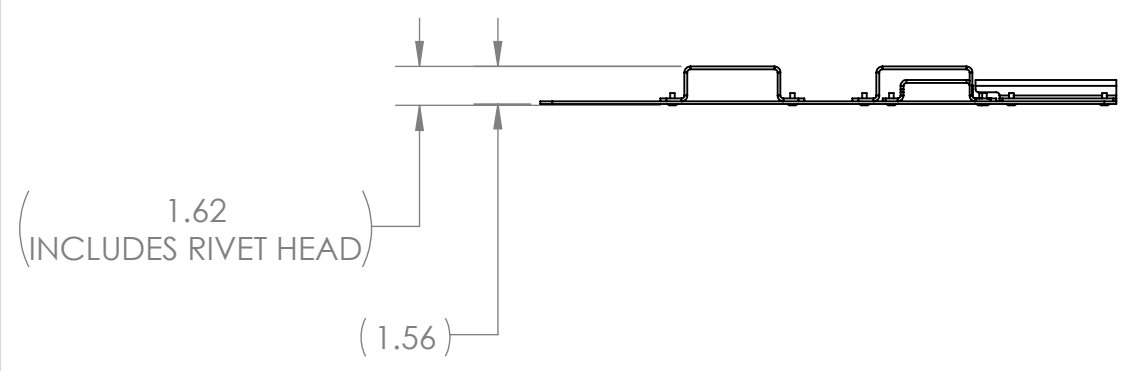
B

B





A

A



DIMENSIONS SHOWN FOR REFERENCE

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/2/19	TITLE:  Truss Base - Sheet Metal Assembly		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20030</b> <b>0</b>		
		MATERIAL	COMMENTS:  WEIGHT: 24.93 LBS					
NEXT ASSY	USED ON	FINISH POWDER COAT BLACK						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8 WEIGHT: SHEET 2 OF 2		

4

3

2

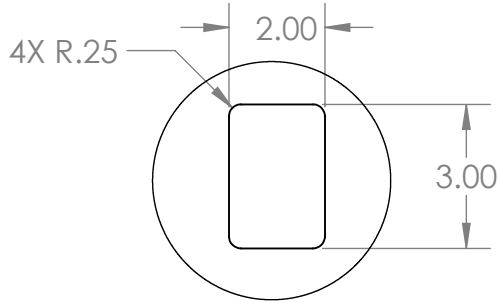
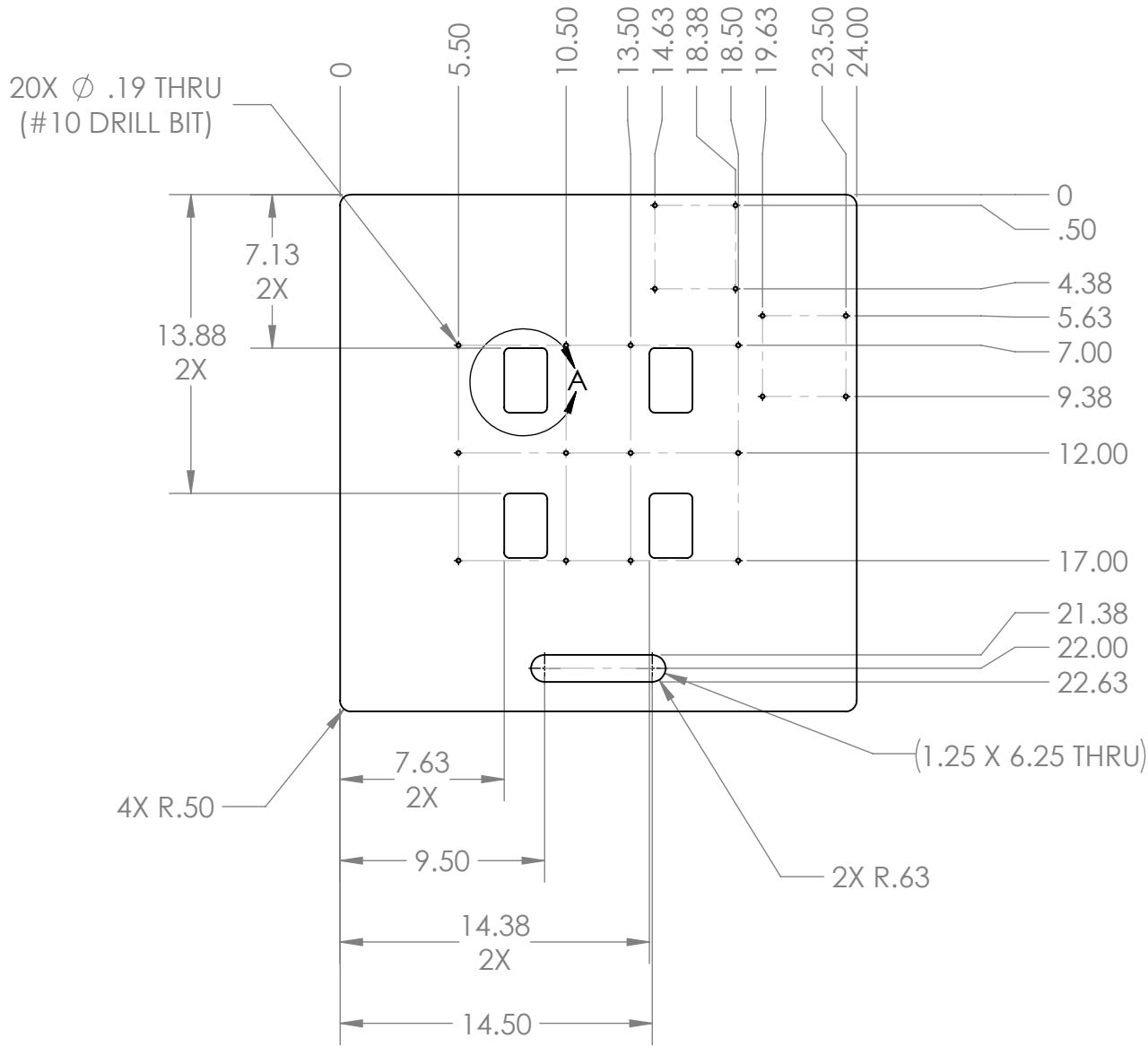
1

B

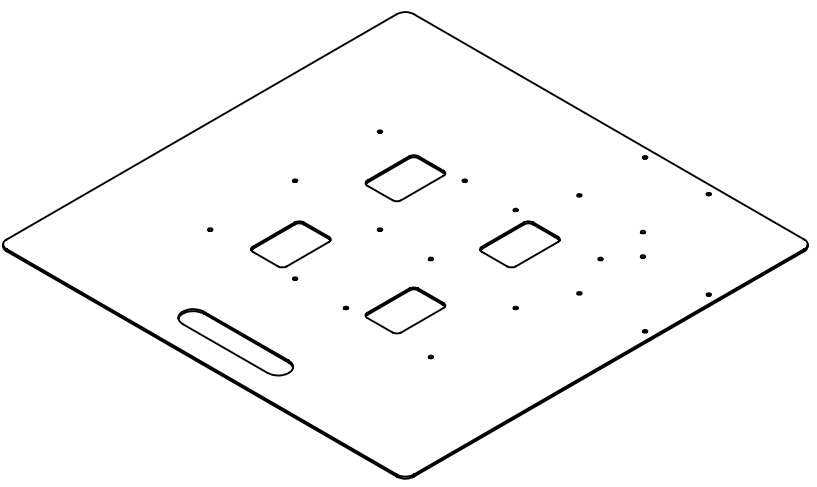
B

A

A





DETAIL A  
SCALE 1 : 4  
4X

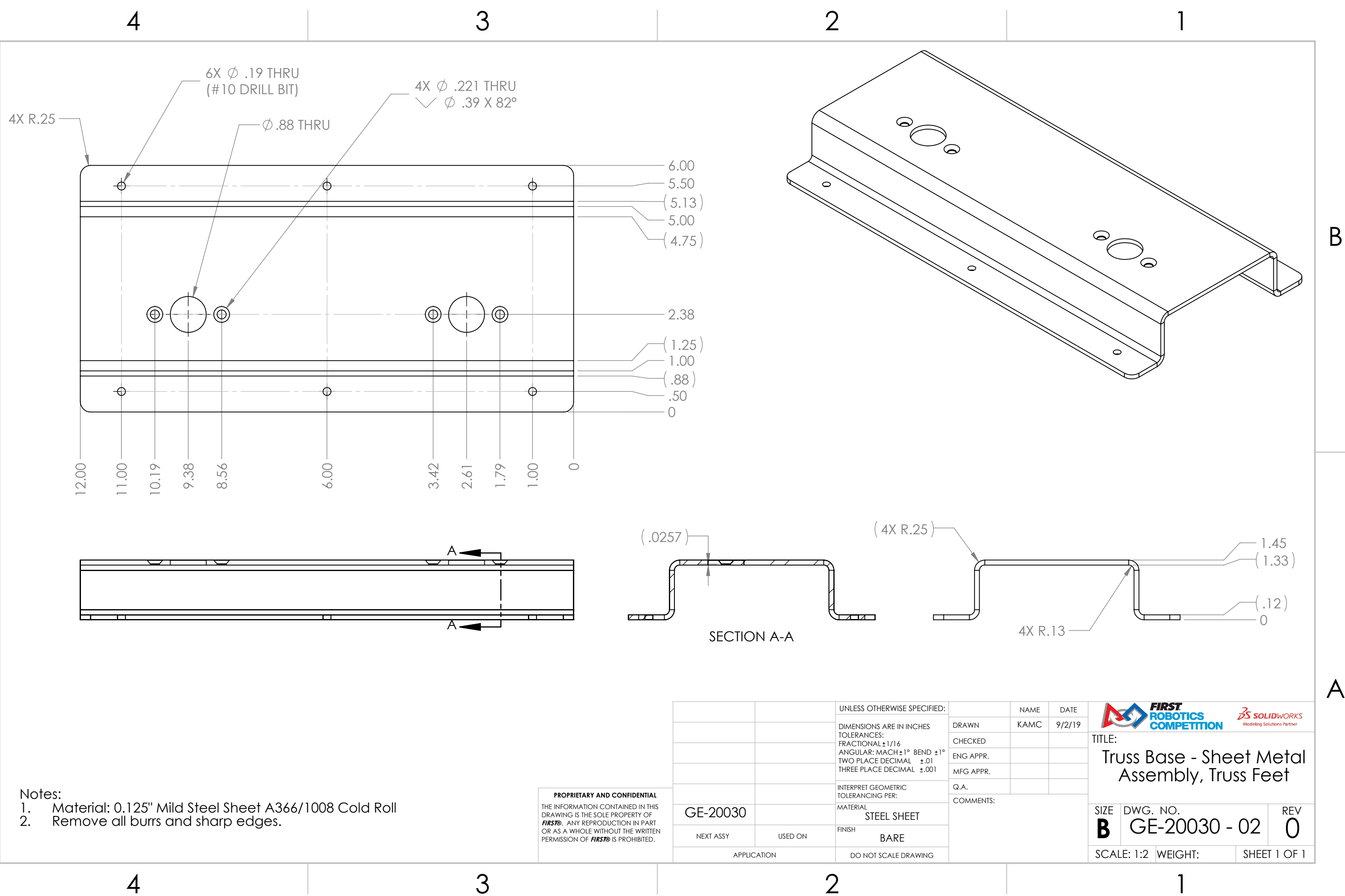


- Notes:
- Material: 12 Ga. (0.105") Mild Steel Sheet A366/1008 Cold Roll
  - Remove all burrs and sharp edges.

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	9/2/19	TITLE:  Truss Base - Sheet Metal Assembly, Base Plate			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			COMMENTS:			
GE-20030		MATERIAL STEEL SHEET							
NEXT ASSY	USED ON	FINISH BARE							
APPLICATION		DO NOT SCALE DRAWING							
			SIZE B	DWG. NO. GE-20030 - 01	REV 0	SCALE: 1:8 WEIGHT: SHEET 1 OF 1			





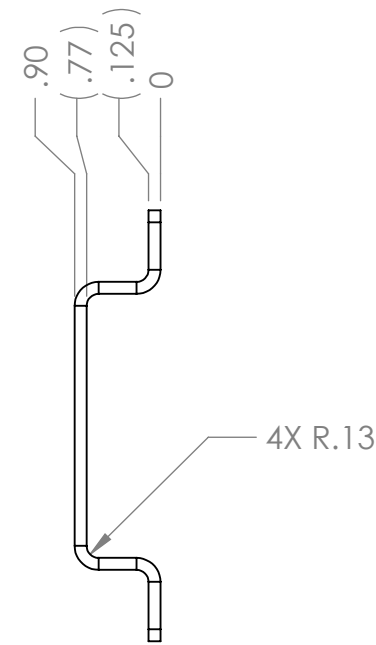
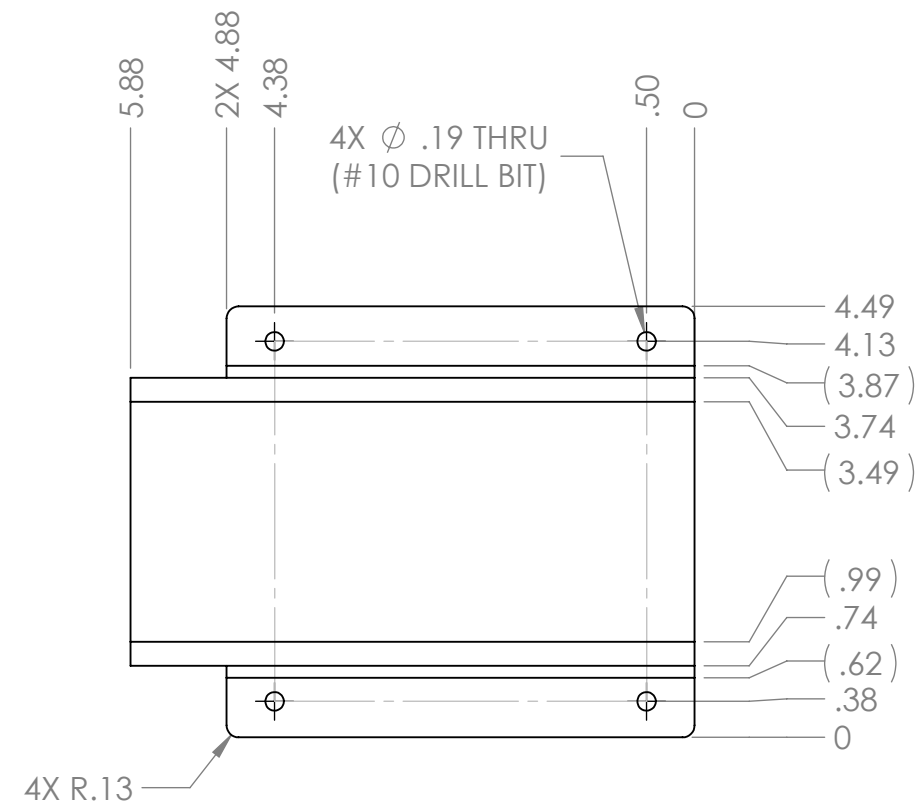
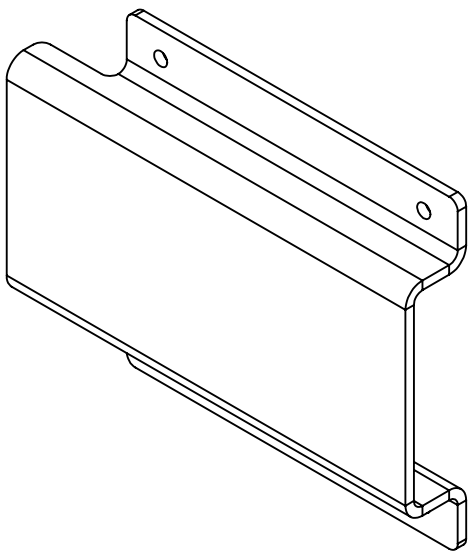
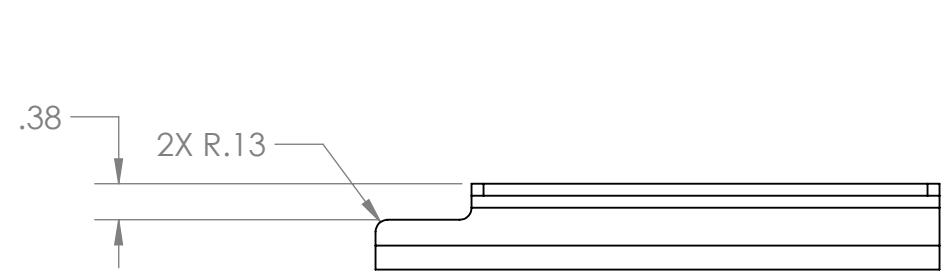
4321

B

A



B

A



- Notes:
- 1. Material: 0.125" Mild Steel Sheet A366/1008 Cold Roll
  - 2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 				
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	9/2/19	TITLE:  Truss Base - Sheet Metal Assembly, Berm				
		TOLERANCES:	CHECKED							
		FRACTIONAL ±1/16	ENG APPR.							
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.							
		TWO PLACE DECIMAL ±.01	Q.A.							
		THREE PLACE DECIMAL ±.001	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20030 - 03 <b>0</b>				
		INTERPRET GEOMETRIC TOLERANCING PER:								
		MATERIAL								
GE-20030		SHEET STEEL								
NEXT ASSY	USED ON	FINISH								
		BARE								
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2 WEIGHT: SHEET 1 OF 1				

4321

4

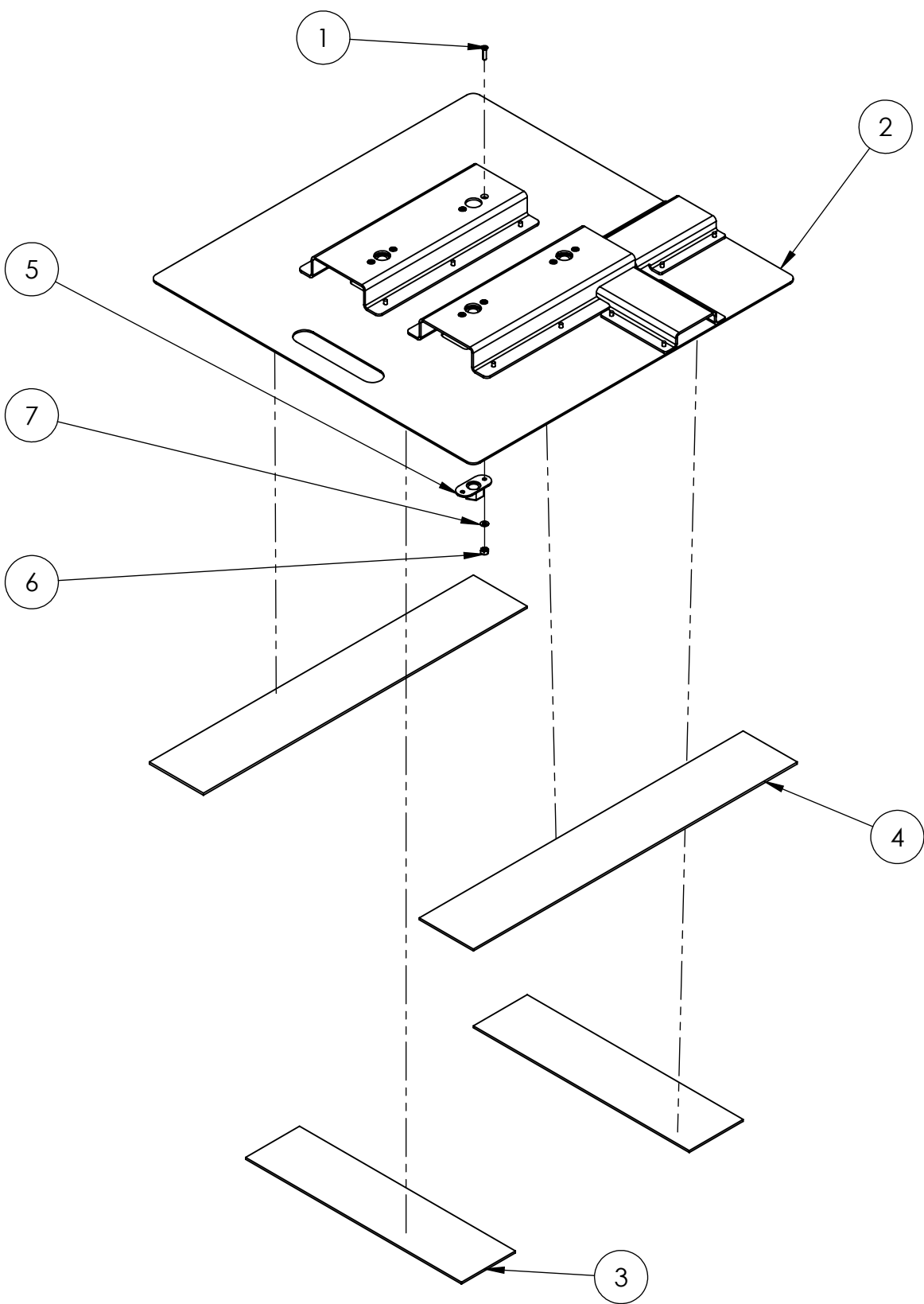
3

2

1

B

A



- Note:
1. Make sure surface of GE-20030 is clean prior to hook application.
  2. Pres firmly on hook to ensure adhesion.
  3. ⑥ should be loose to allow ⑤ to float.

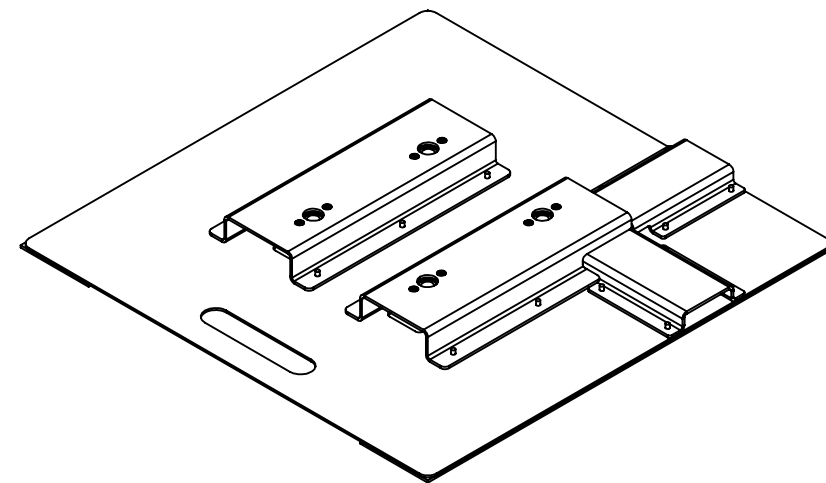
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2



1

B

A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	flat_phillips_10 24_.75	Flat Head, Phillips, .75in Length, 10 24	8
2	GE-20030	Truss Base - Sheet Metal Assembly	1
3	Hook_4_16	4" x 16" Hook Fastener, Adhesive Backed	2
4	Hook_4_24	4" x 24" Hook Fastener, Adhesive Backed	2
5	nut_chassis_.625_11	Nut, Chassis, 5/8-11	4
6	nylock_10_24	Nylock #10-24	8
7	washer_flat_10	Flat Washer for #10 Screw	8

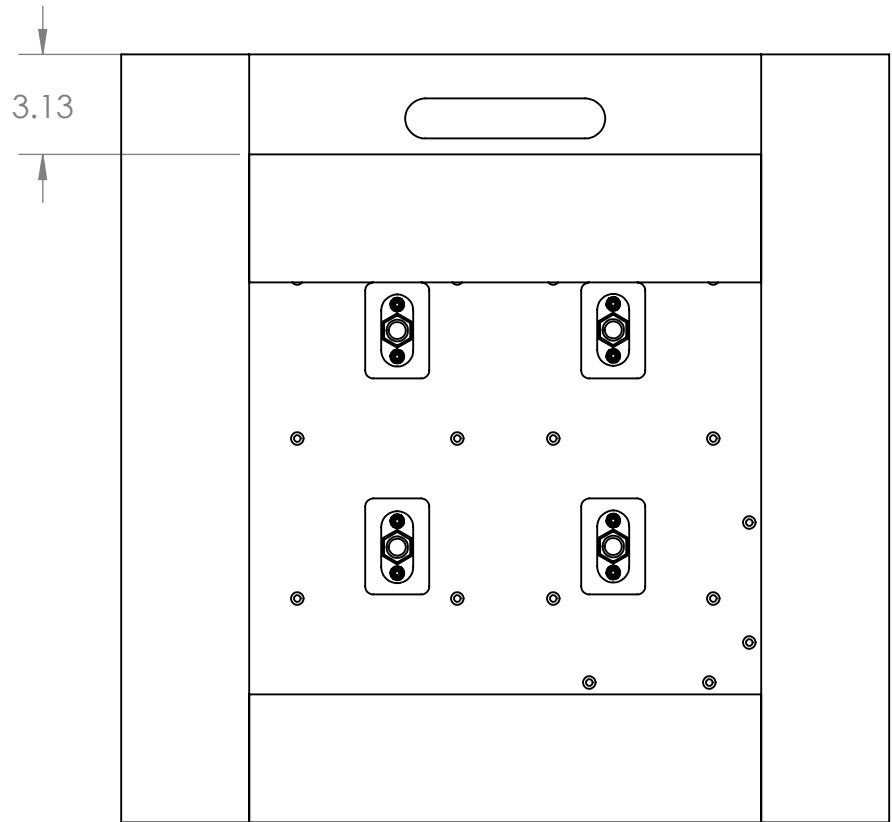
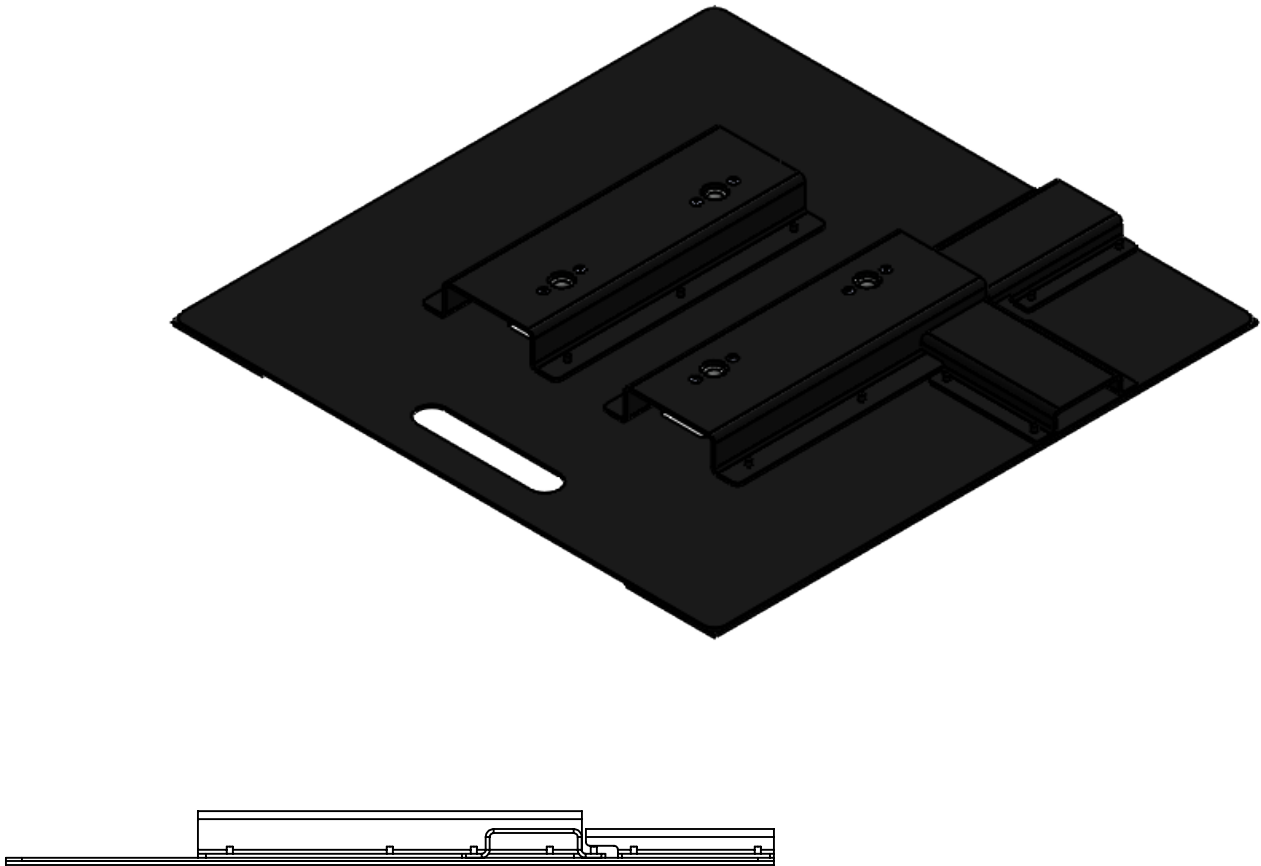
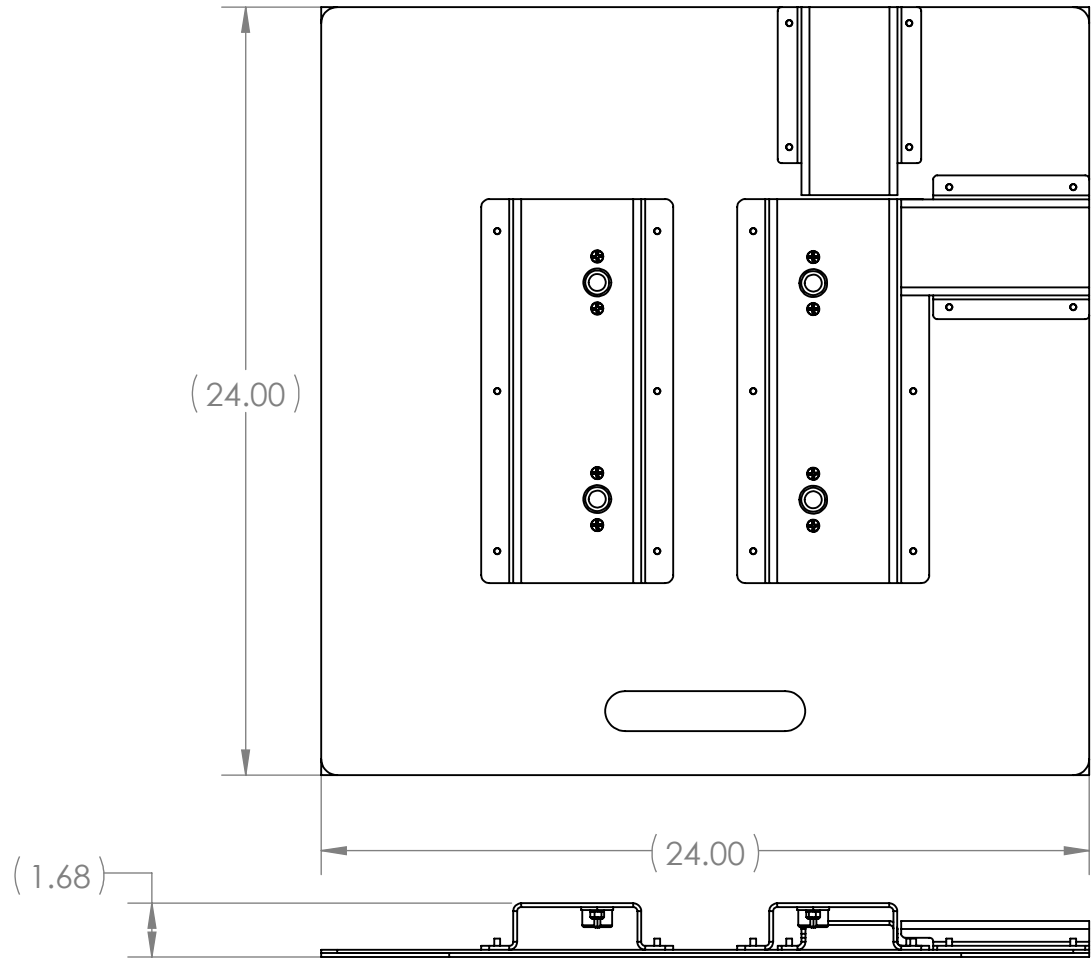
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	8/29/19	TITLE:  <h1>Truss Base with Nut Chassis</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV  <h1>B GE-20031</h1>		
		MATERIAL						
		FINISH	WEIGHT: 24.4 LBS					
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						

4



3

2

1



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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	8/29/19	TITLE:  Truss Base with Nut Chassis		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20031</b>		
		MATERIAL						
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:6 WEIGHT: SHEET 2 OF 2		

4

3

2

1

B

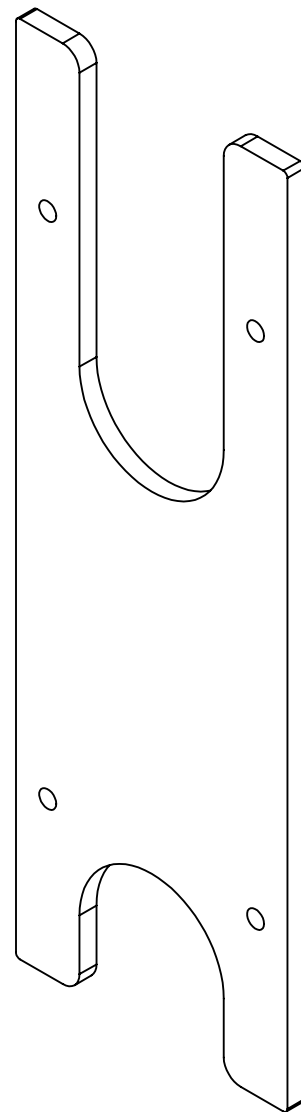
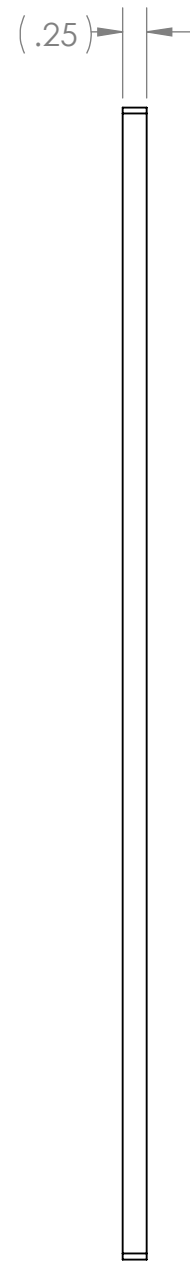
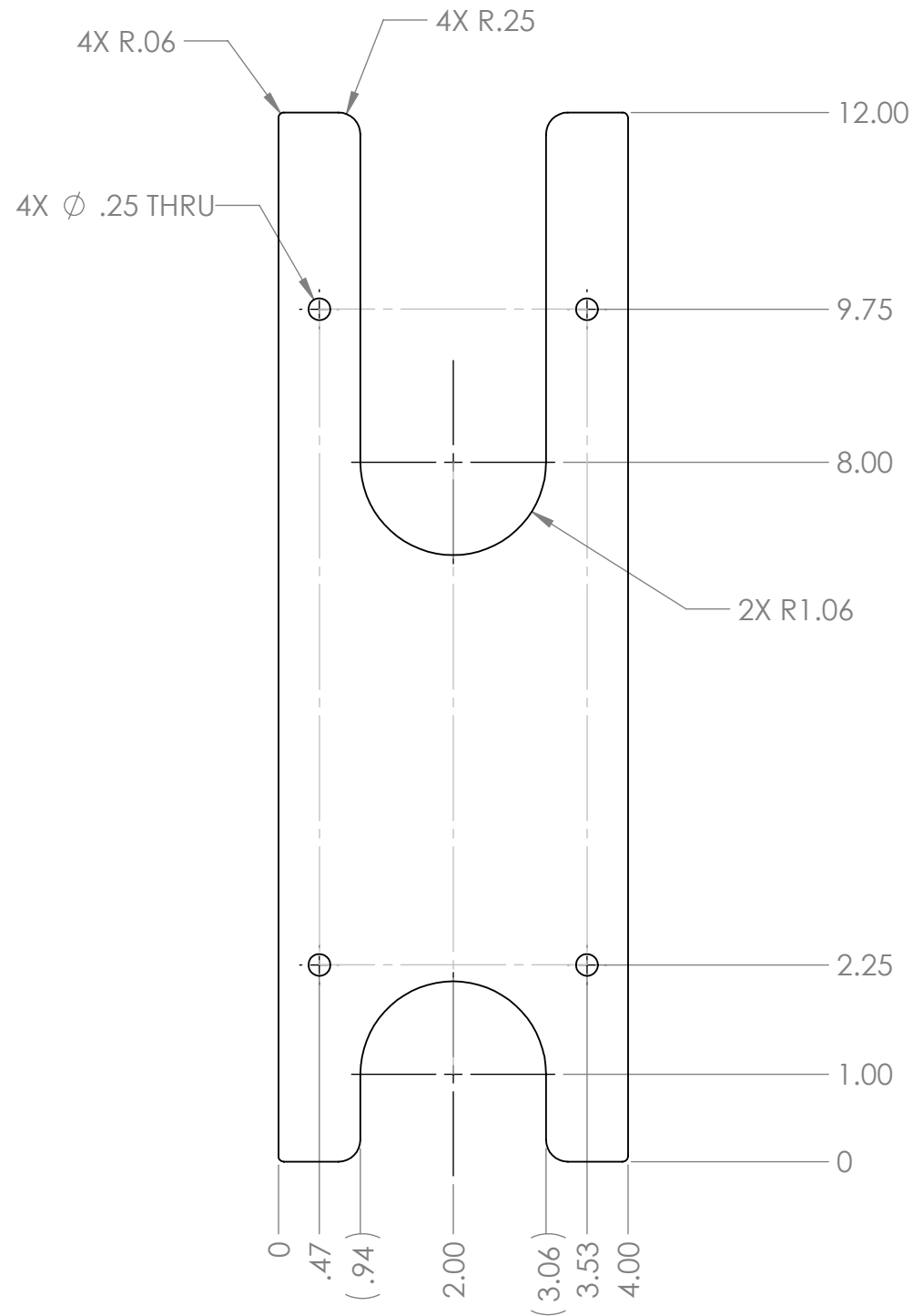
A

B

B



A

B



- Notes:
1. Material: 1/4" Polycarbonate, Clear
  2. Remove all burrs and sharp edges
  3. Tag or label with part number

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	12/2/19	TITLE:  <h1>Jig for Cheeseboroughs</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
		MATERIAL POLYCARB	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20035</b>		
		FINISH BARE						
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING			SCALE: 1:2 WEIGHT: SHEET 1 OF 1		





4

3

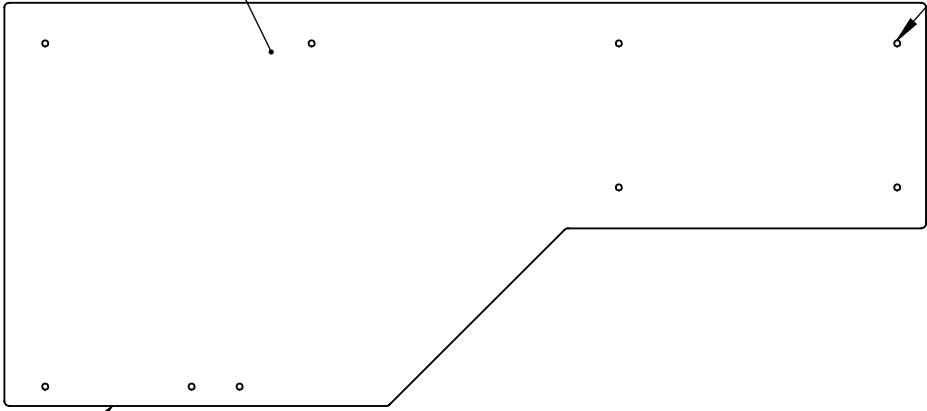
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1

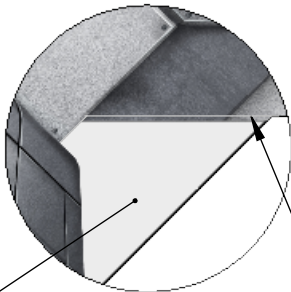
VINYL APPLIED TO THIS FACE

CUT OUT HOLES  
(X9)

VINYL CUT AWAY

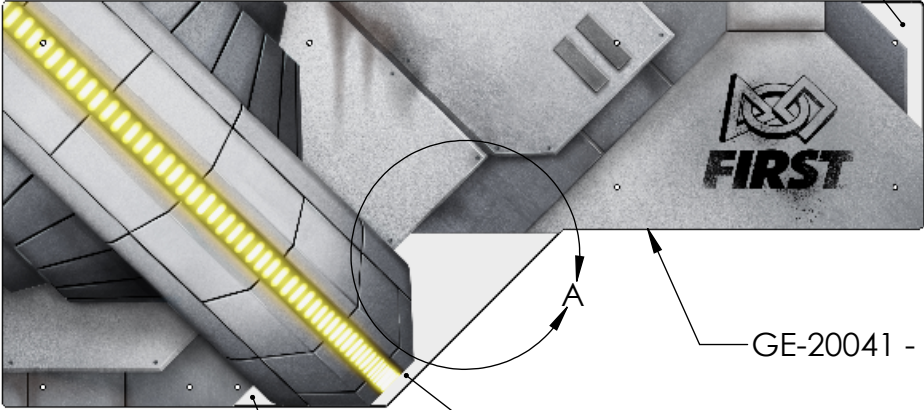


GE-20040



DETAIL A  
SCALE 1 : 8

FOLLOW EDGE OF PLASTIC  
CUT AWAY VINYL



GE-20041 - LEFT

VINYL CUT AWAY

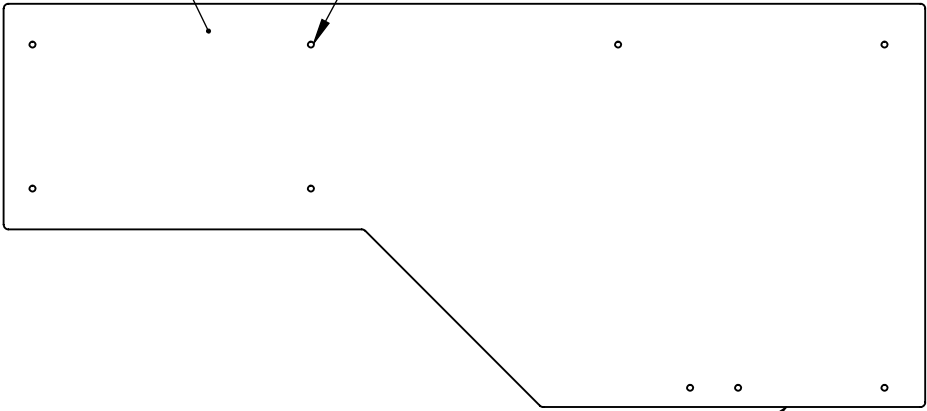
VINYL CUT AWAY

CUT AWAY VINYL

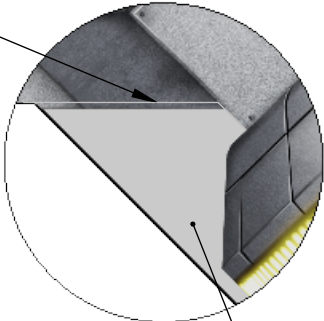
VINYL APPLIED TO THIS FACE

CUT OUT HOLES  
(X9)

FOLLOW EDGE OF PLASTIC  
CUT AWAY VINYL

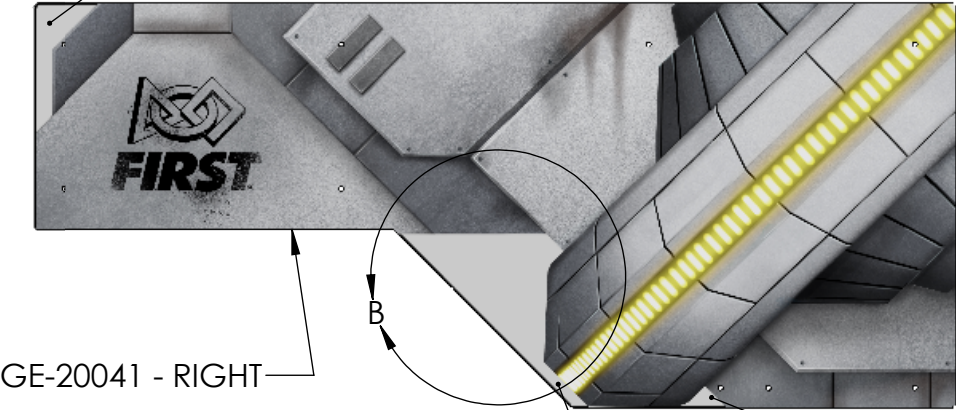


GE-20040



DETAIL B  
SCALE 1 : 8

GE-20041 - RIGHT



VINYL CUT AWAY



VINYL CUT AWAY

CUT AWAY VINYL

Notes:  
1. Tag or label with part number

Left/Right Variations		
Part Number	Vinyl Image	Qty per Field
GE-20041 - Left	GE-20041 - Left - Vinyl	4
GE-20041 - Right	GE-20041 - Right - Vinyl	4

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	<div></div> <div>TITLE: <h1>Truss Vinyl Plastic</h1></div>			
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC				10/28/19
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$						
		THREE PLACE DECIMAL $\pm .001$						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
		MATERIAL	COMMENTS:			SIZE	DWG. NO.	REV
		FINISH				<b>B</b>	<b>GE-20041</b>	<b>0</b>
NEXT ASSY	USED ON	VINYL						
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:10 WEIGHT: SHEET 1 OF 1					

4

3

2

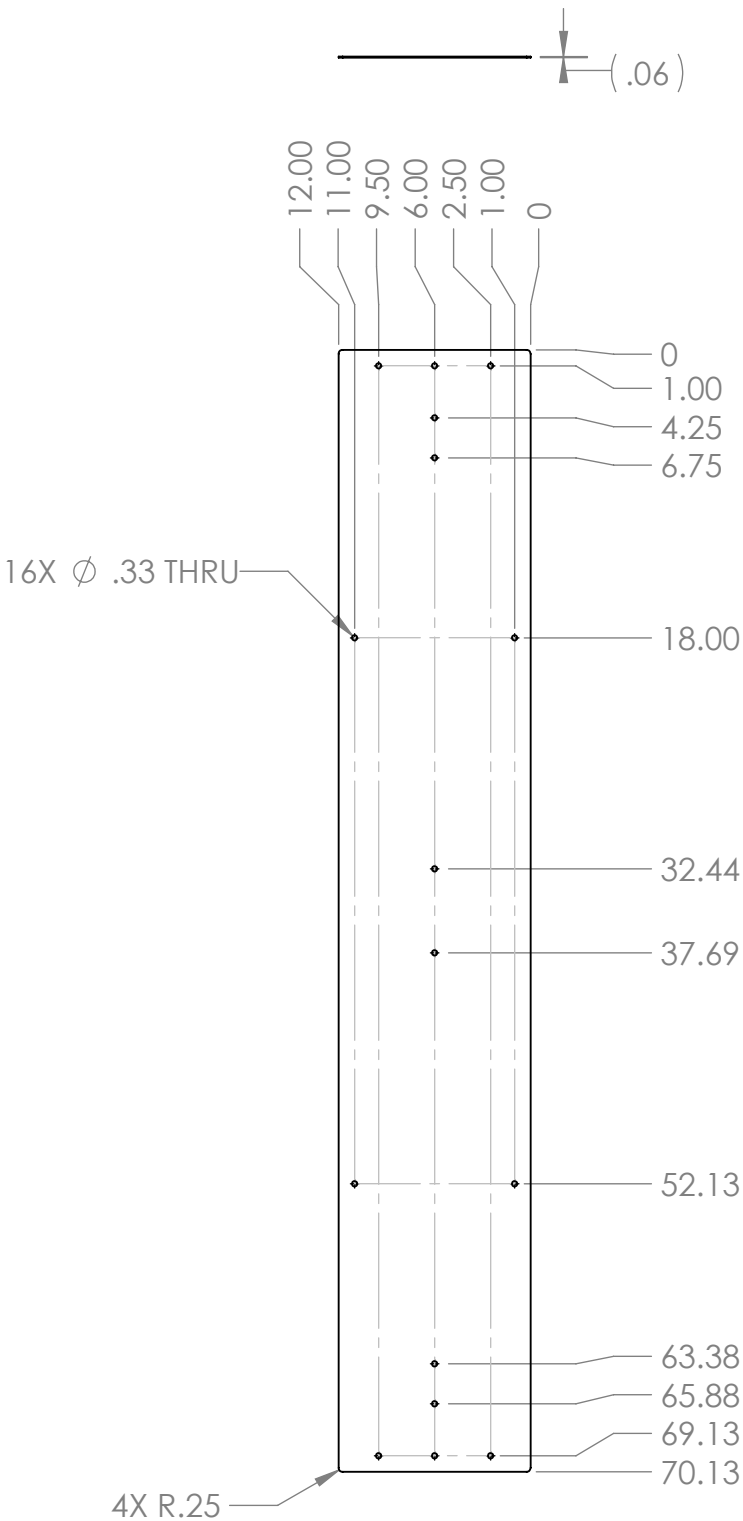
1

B

B



A

A



- Notes:
1. Material: 1/16" Polycarbonate, Clear
  2. Remove all burrs and sharp edges
  3. Tag or label with part number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	10/23/19	TITLE:  <b>Shield Generator Truss Leg Plastic</b>		
		TOLERANCES: FRACTIONAL $\pm 1/16$	CHECKED					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	ENG APPR.					
		TWO PLACE DECIMAL $\pm .01$	MFG APPR.					
		THREE PLACE DECIMAL $\pm .001$	Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20043</b> <b>0</b>		
		MATERIAL POLYCARB						
		FINISH BARE						
NEXT ASSY	USED ON					SCALE: 1:12 WEIGHT: SHEET 1 OF 1		
APPLICATION		DO NOT SCALE DRAWING						

4

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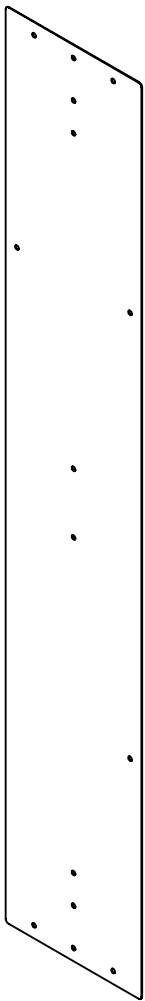
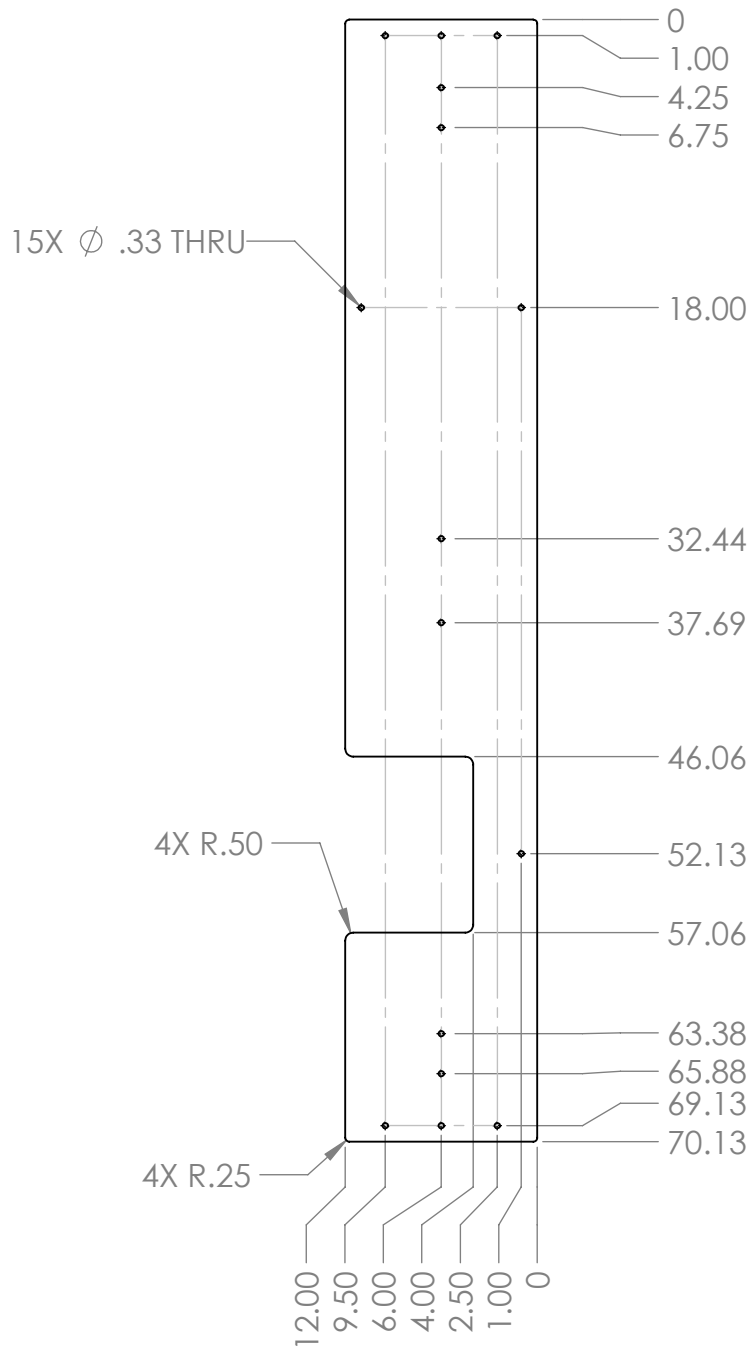
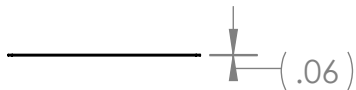
1

B

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- Notes:
- 1. Material: 1/16" Polycarbonate, Clear
  - 2. Remove all burrs and sharp edges
  - 3. Tag or label with part number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	10/23/19	TITLE:  Shield Generator Truss Leg Plastic_Trench		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20044</b> <b>0</b>		
		MATERIAL POLYCARB						
NEXT ASSY	USED ON	FINISH BARE						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:12 WEIGHT: SHEET 1 OF 1		

4

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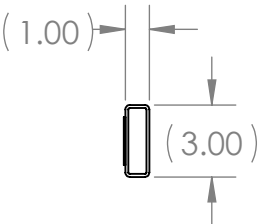
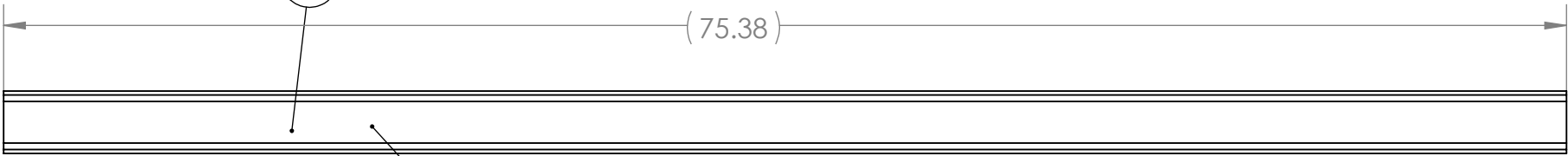
1

B

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Note:  
Hook should be placed centered on the width of the part.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20051	Boundary, Black 75.38"	1
2	Hook_2_75.-375	2" x 75.375" Hook, Adhesive Backed	1

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		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC			
		TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
**Boundary 75.38"**  
**w/ hook**

SIZE  
**B**

DWG. NO.  
**GE-20046**

REV

SCALE: 1:12

WEIGHT:

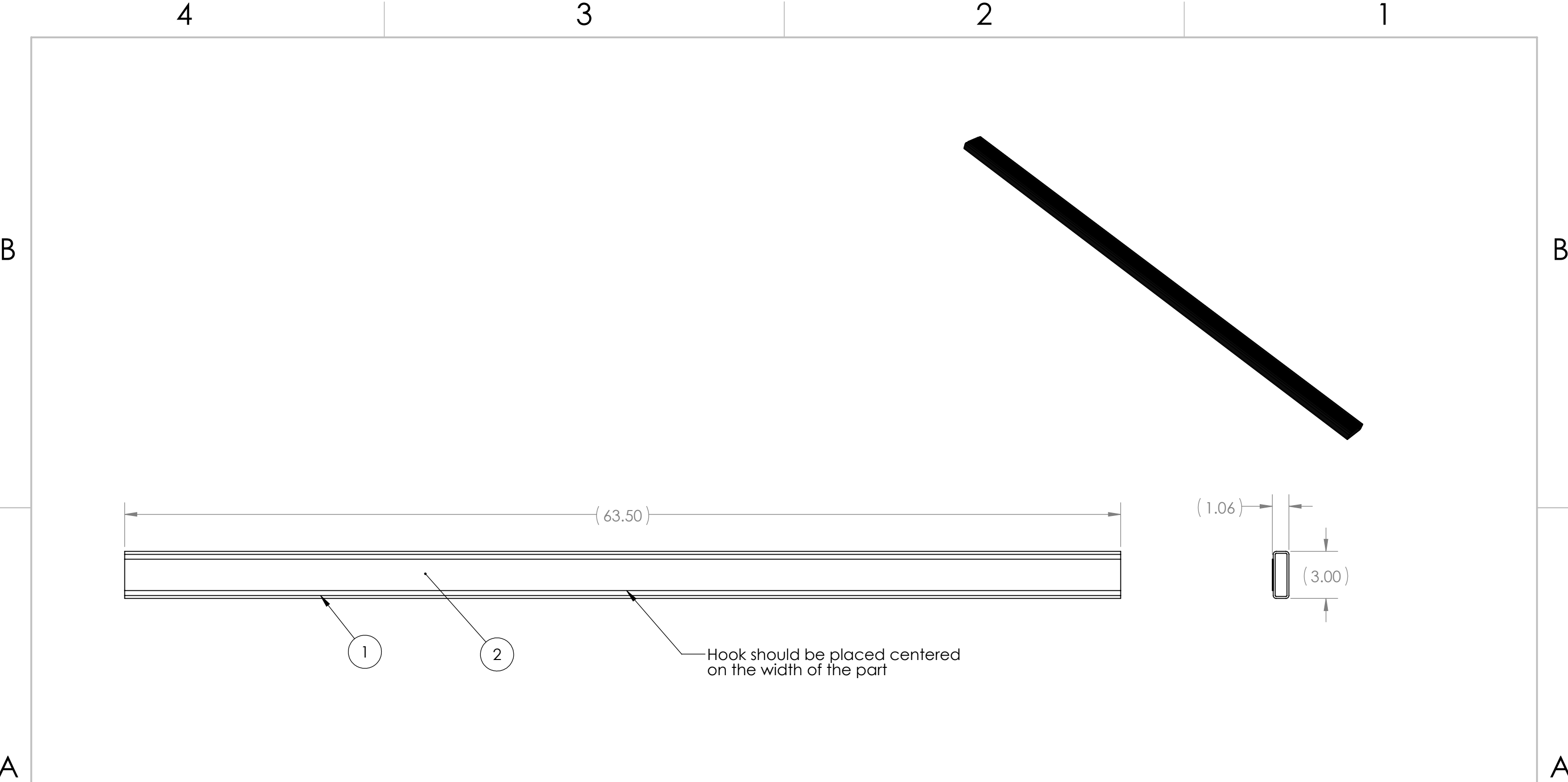
SHEET 1 OF 1

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1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20052	Boundary, Black 63.5"	1
2	Hook_2_63-50	2" x 63.5" Hook, Adhesive Backed	1

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL ±1/16	ENG APPR.		
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.		
		TWO PLACE DECIMAL ±.01	Q.A.		
		THREE PLACE DECIMAL ±.001	COMMENTS:		
		INTERPRET GEOMETRIC			
		TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
**Boundary 63.5"  
w/ hook**

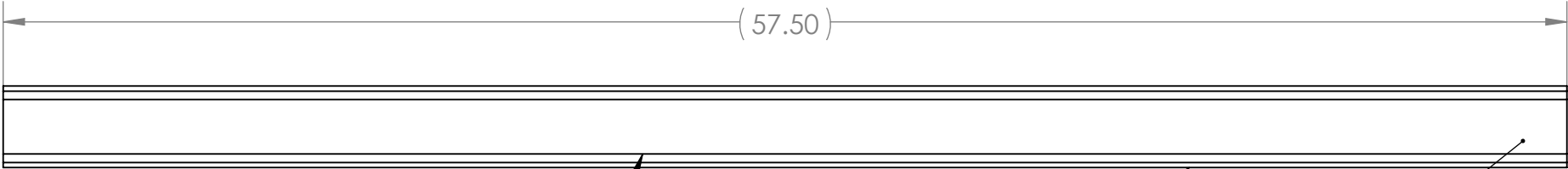
SIZE <b>B</b>	DWG. NO. <b>GE-20047</b>	REV
SCALE: 1:6	WEIGHT:	SHEET 1 OF 1

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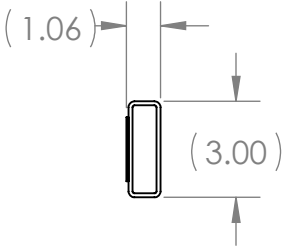
A



Hook should be placed centered on the width of the part.

1

2



Note: Item 1 can be red or blue. See part drawing for more details.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20053	Boundary, Red/Blue 57.5"	1
2	Hook_2_57-50	2" x 57.5" Hook, Adhesive Backed	1

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		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL ±1/16	ENG APPR.		
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.		
		TWO PLACE DECIMAL ±.01	Q.A.		
		THREE PLACE DECIMAL ±.001	COMMENTS:		
		INTERPRET GEOMETRIC			
		TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
Boundary 57.5"  
w/ hook

SIZE	DWG. NO.	REV
B	GE-20048	
SCALE: 1:6	WEIGHT:	SHEET 1 OF 1



4

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Note:  
Hook should be placed centered on the width of the part.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20054-red	Boundary, Red 66.25"	1
2	Hook_2_66-25	hook 2" adhesive back	1

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UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		DRAWN	
TOLERANCES:		CHECKED	
FRACTIONAL $\pm 1/16$		ENG APPR.	
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$		MFG APPR.	
TWO PLACE DECIMAL $\pm .01$		Q.A.	
THREE PLACE DECIMAL $\pm .001$		COMMENTS:	
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL			
FINISH			
NEXT ASSY	USED ON		
APPLICATION		DO NOT SCALE DRAWING	



TITLE:  
**Boundary 66.25"  
w/ hook**

SIZE	DWG. NO.	REV
<b>B</b>	<b>GE-20049</b>	

SCALE: 1:8    WEIGHT:    SHEET 1 OF 1

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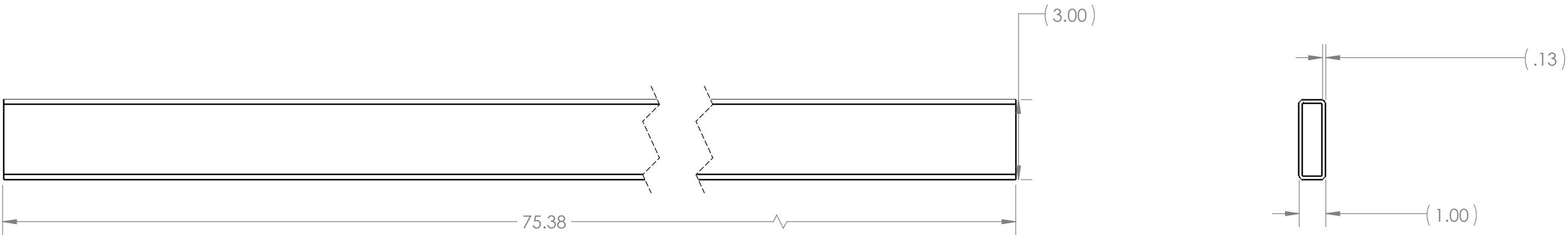
3

2

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B

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- Notes:
- 1. Material: 1" x 3" x .125" A513 Rectangular Tube
  - 2. Finish: Tiger Drylac Powder Coating, Or Equivalent
  - 3. Remove All Sharp Edges and Burrs
  - 4. Lable or Tag with part number

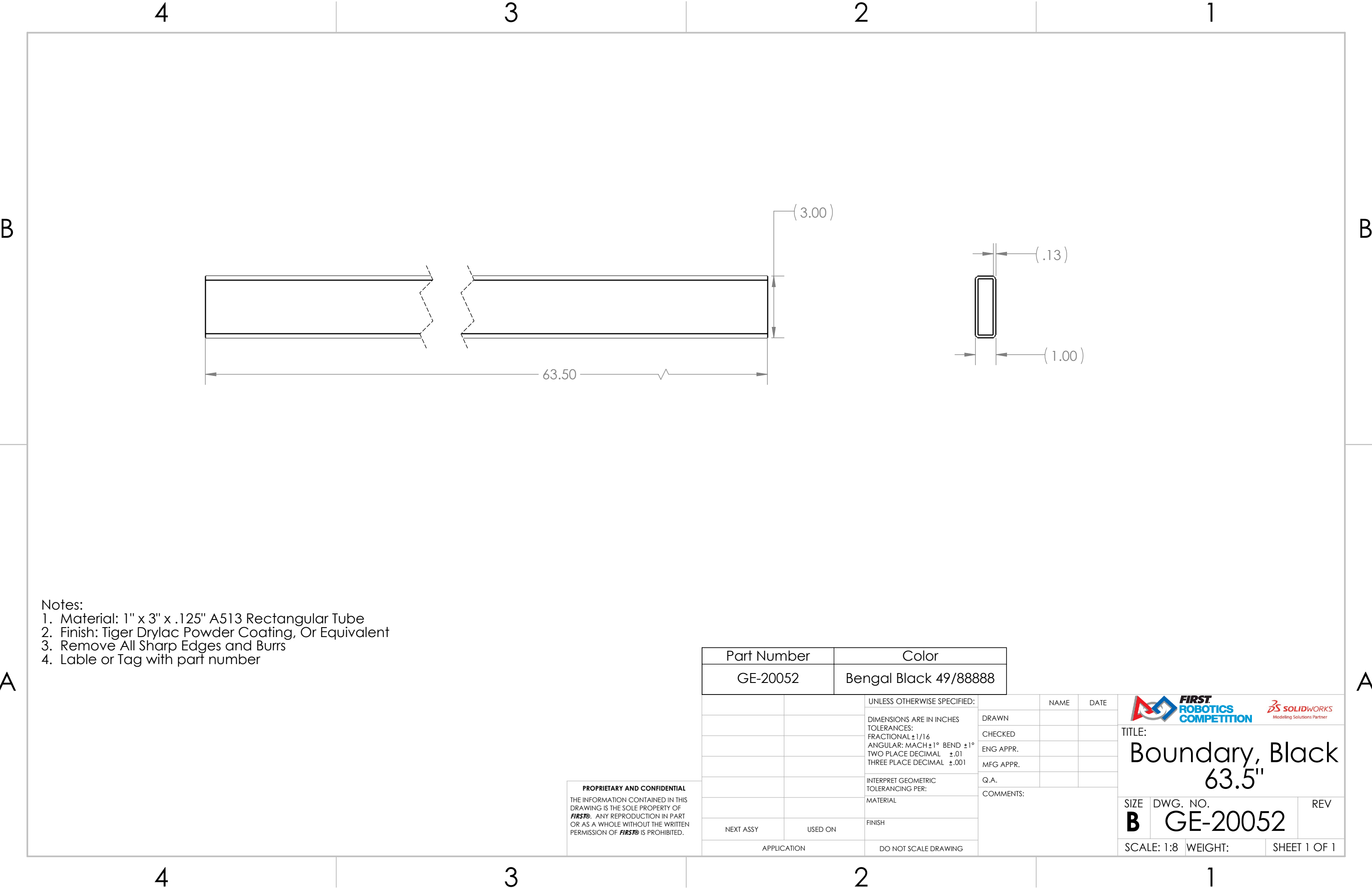
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Part Number	Color
GE-20051	Bengal Black 49/88888



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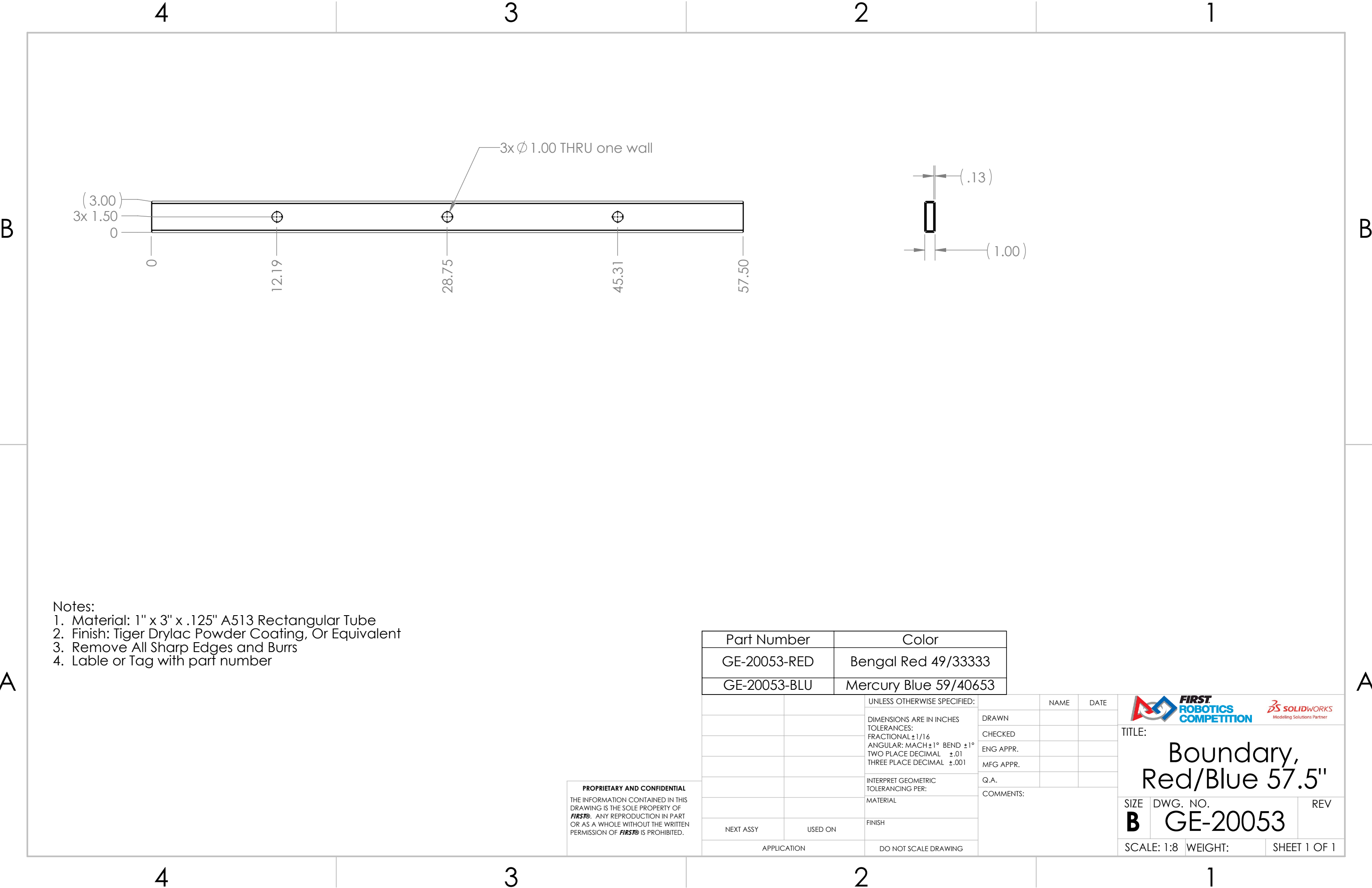
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <div>Boundary, Black</div> <div>75.38"</div>		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$						
		THREE PLACE DECIMAL $\pm .001$						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
		MATERIAL	COMMENTS:					
NEXT ASSY	USED ON	FINISH				SIZE <b>B</b>	DWG. NO. <b>GE-20051</b>	REV
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:12	WEIGHT:	SHEET 1 OF 1



Part Number	Color
GE-20052	Bengal Black 49/88888

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE: <div>Boundary, Black 63.5"</div>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <div>BGE-20052</div>		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8 WEIGHT: SHEET 1 OF 1		





- Notes:
- 1. Material: 1" x 3" x .125" A513 Rectangular Tube
  - 2. Finish: Tiger Drylac Powder Coating, Or Equivalent
  - 3. Remove All Sharp Edges and Burrs
  - 4. Lable or Tag with part number

Part Number	Color
GE-20053-RED	Bengal Red 49/33333
GE-20053-BLU	Mercury Blue 59/40653

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		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL ±1/16	ENG APPR.		
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.		
		TWO PLACE DECIMAL ±.01	Q.A.		
		THREE PLACE DECIMAL ±.001	COMMENTS:		
		INTERPRET GEOMETRIC			
		TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

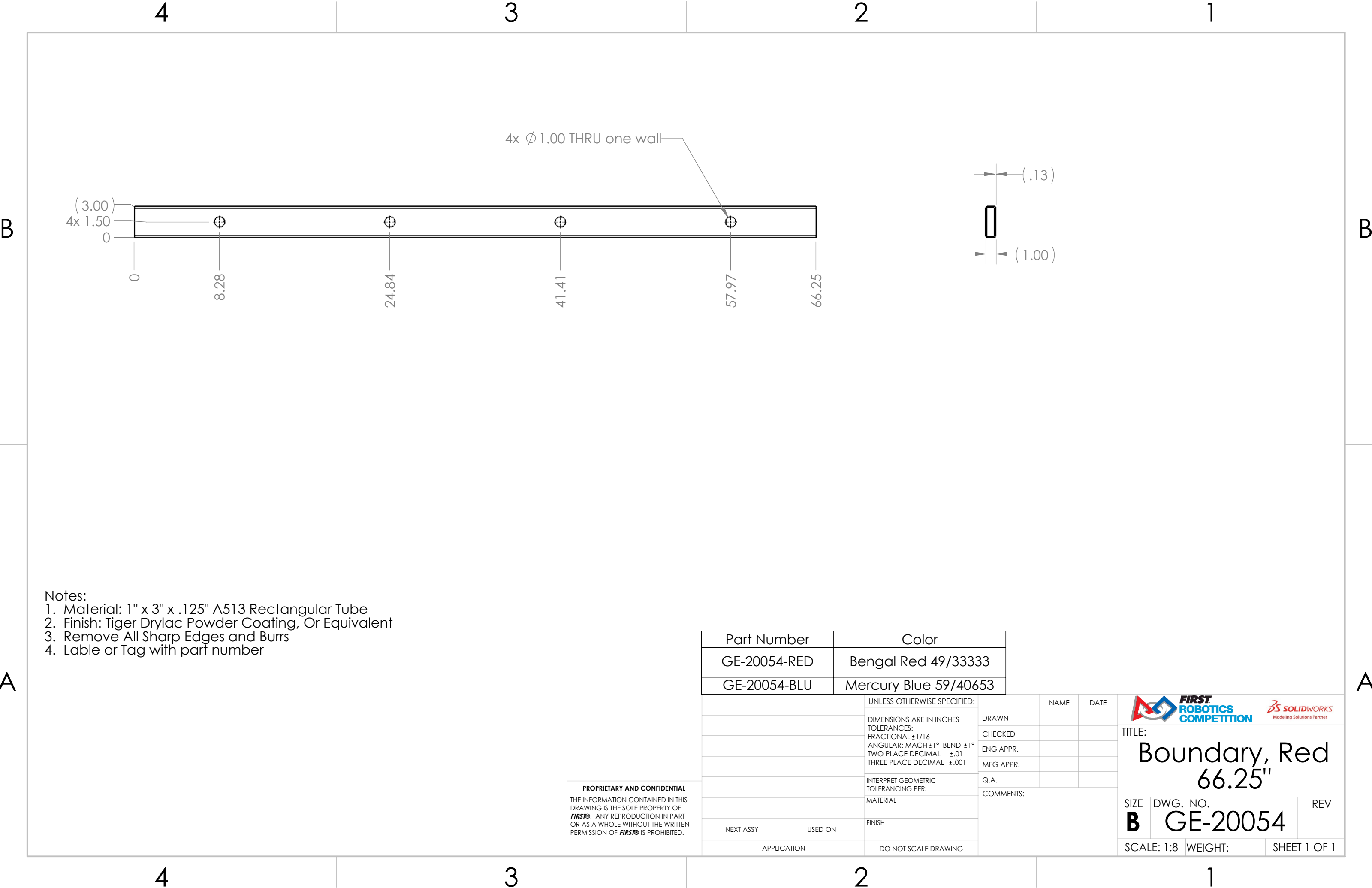


TITLE:

Boundary,  
Red/Blue 57.5"

SIZE	DWG. NO.	REV
B	GE-20053	



SCALE: 1:8	WEIGHT:	SHEET 1 OF 1
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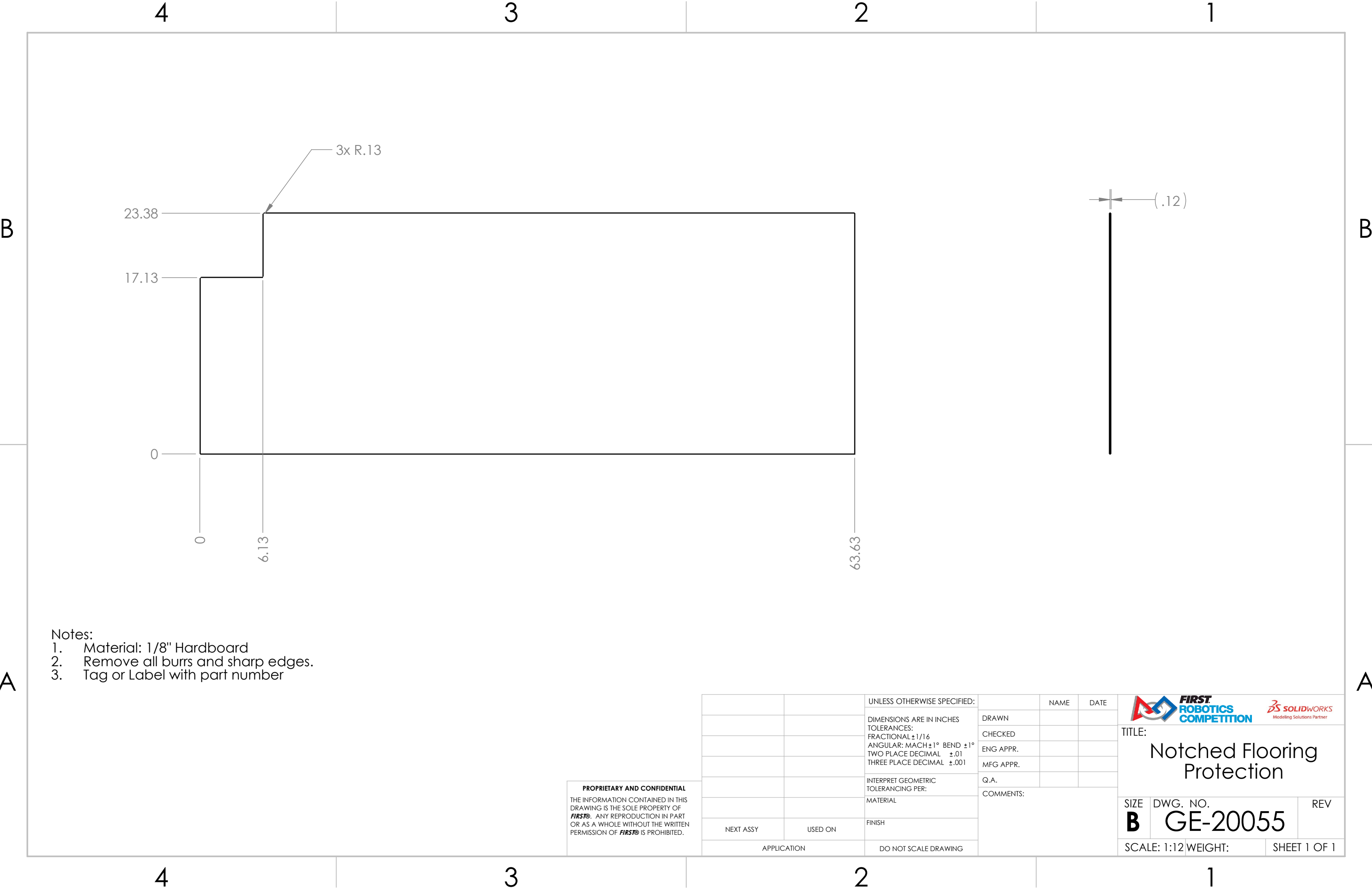


- Notes:
- 1. Material: 1" x 3" x .125" A513 Rectangular Tube
  - 2. Finish: Tiger Drylac Powder Coating, Or Equivalent
  - 3. Remove All Sharp Edges and Burrs
  - 4. Lable or Tag with part number

Part Number	Color
GE-20054-RED	Bengal Red 49/33333
GE-20054-BLU	Mercury Blue 59/40653



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <div>Boundary, Red 66.25"</div>		
		TOLERANCES:	CHECKED					
		FRACTIONAL ±1/16	ENG APPR.					
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.					
		TWO PLACE DECIMAL ±.01	Q.A.					
		THREE PLACE DECIMAL ±.001	COMMENTS:			SIZE DWG. NO. REV <div>BGE-20054</div>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL				SCALE: 1:8 WEIGHT: SHEET 1 OF 1		
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						

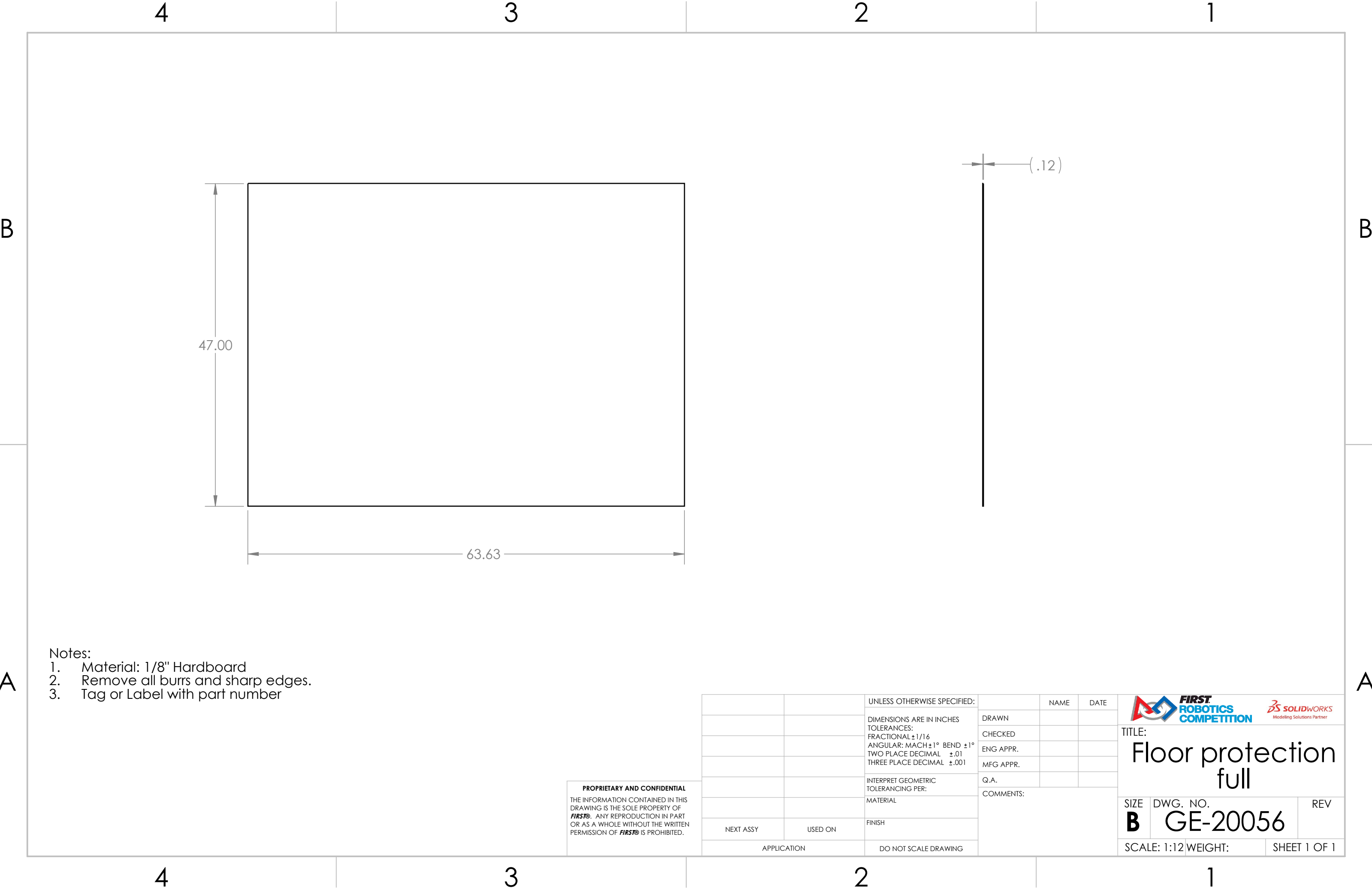


- Notes:
- 1. Material: 1/8" Hardboard
  - 2. Remove all burrs and sharp edges.
  - 3. Tag or Label with part number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  Notched Flooring Protection		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20055		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
		FINISH				SCALE: 1:12 WEIGHT: SHEET 1 OF 1		
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						

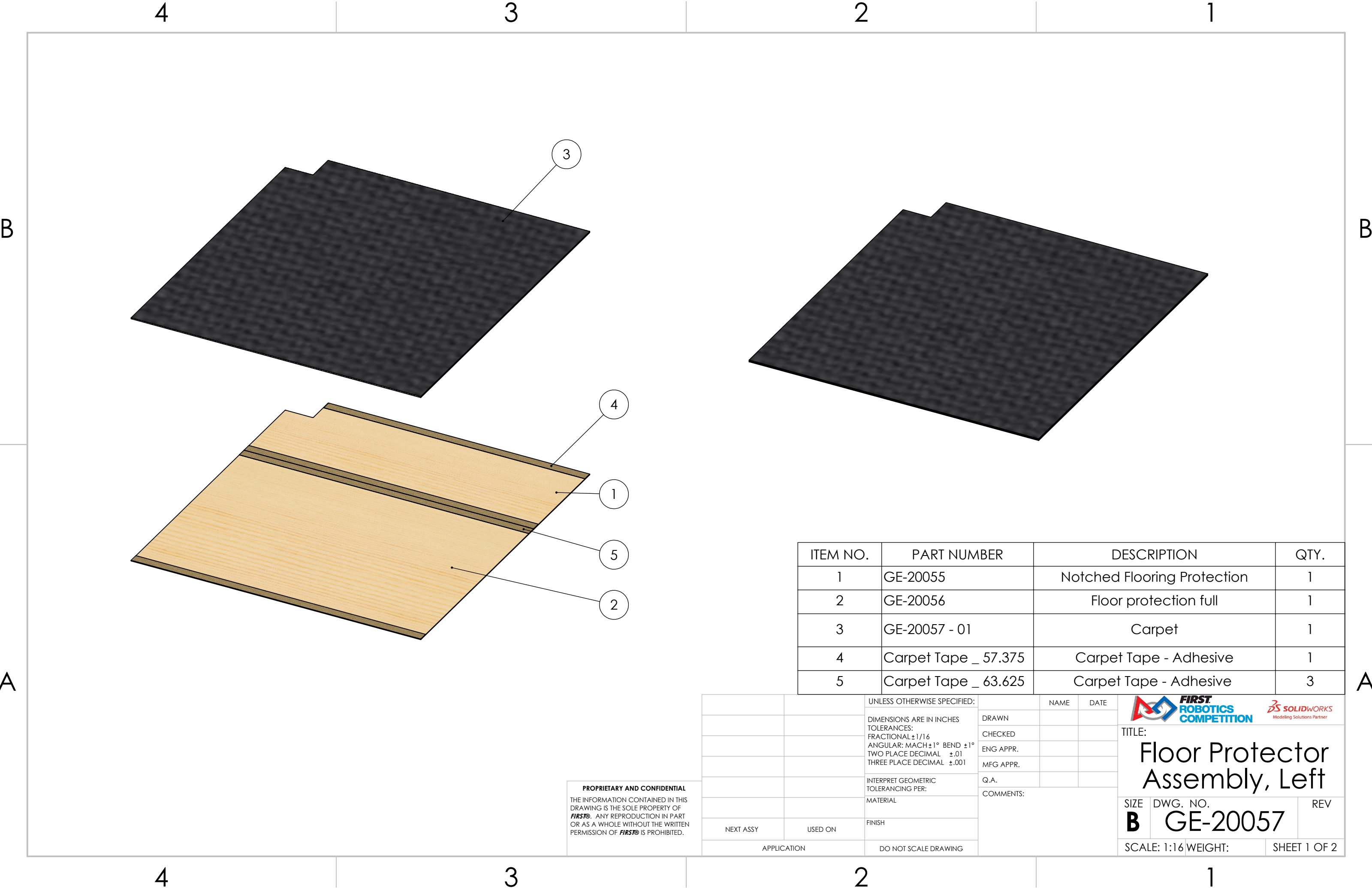




- Notes:
- 1. Material: 1/8" Hardboard
  - 2. Remove all burrs and sharp edges.
  - 3. Tag or Label with part number

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			TITLE:  Floor protection full		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
		MATERIAL	COMMENTS:			SIZE	DWG. NO.	REV
NEXT ASSY	USED ON	FINISH				B	GE-20056	
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:12	WEIGHT:	SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20055	Notched Flooring Protection	1
2	GE-20056	Floor protection full	1
3	GE-20057 - 01	Carpet	1
4	Carpet Tape _ 57.375	Carpet Tape - Adhesive	1
5	Carpet Tape _ 63.625	Carpet Tape - Adhesive	3

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		UNLESS OTHERWISE SPECIFIED:			NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC				
		TOLERANCING PER:				
		MATERIAL				
		FINISH				
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				
					TITLE:	
					Floor Protector Assembly, Left	
			SIZE		DWG. NO.	REV
			B		GE-20057	
			SCALE: 1:16		WEIGHT:	SHEET 1 OF 2

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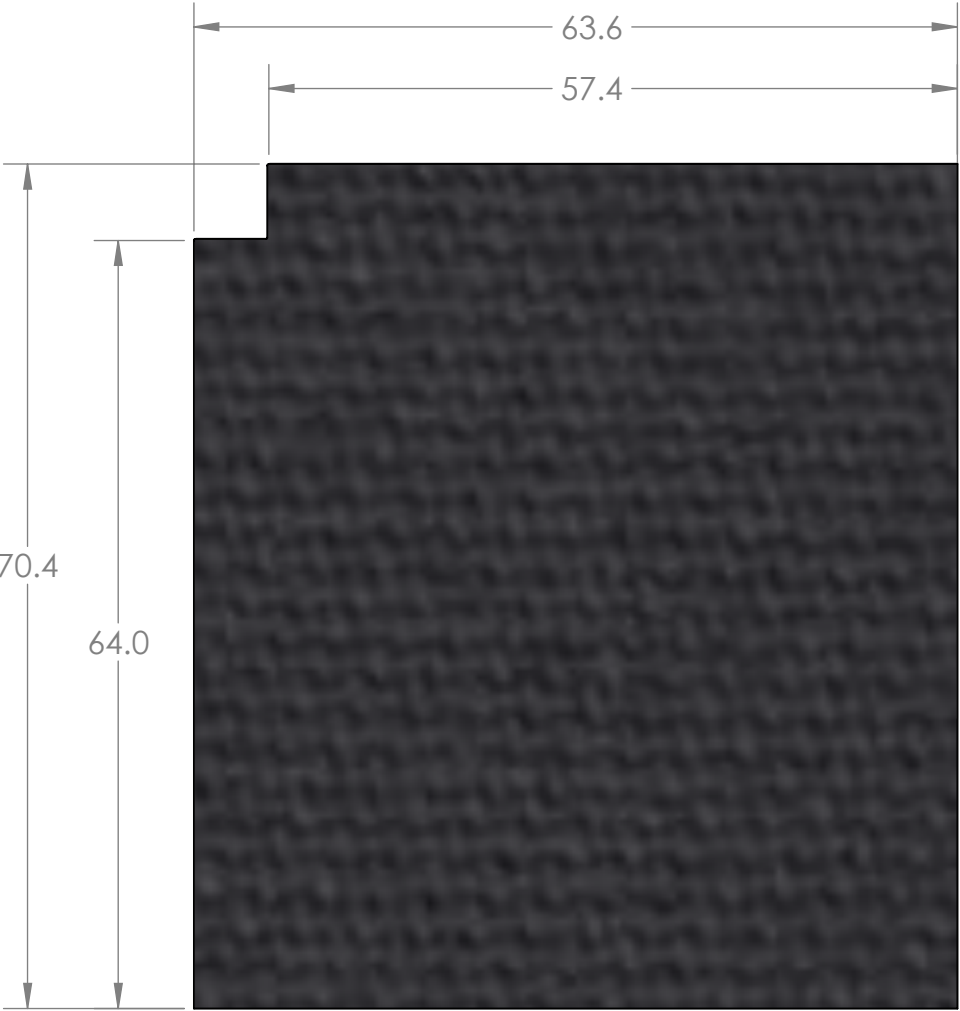
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Carpet Dims

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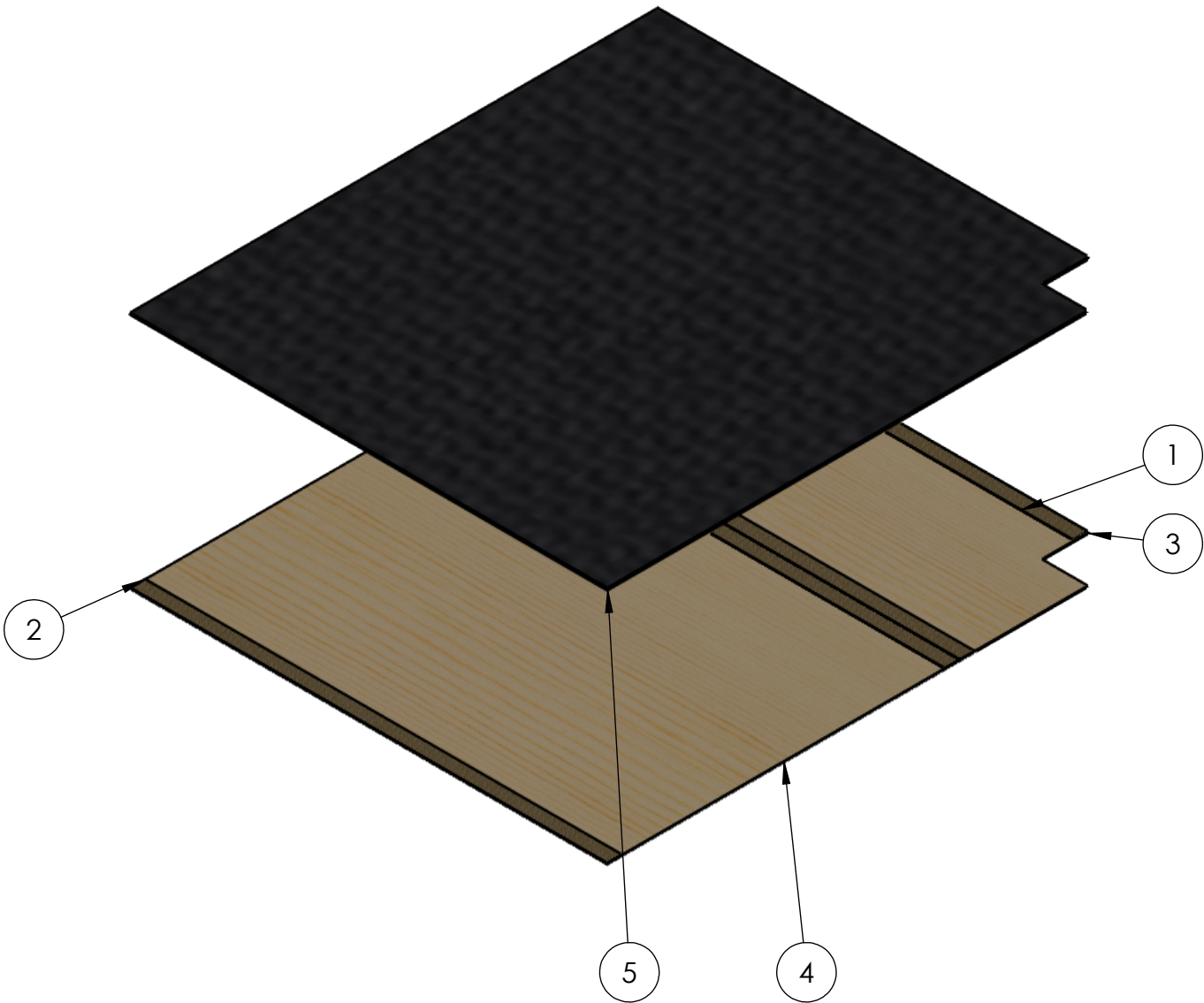
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE: <h1>Floor Protector Assembly, Left</h1></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN					
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SCALE: 1:16 WEIGHT: SHEET 2 OF 2		
		MATERIAL	COMMENTS:					
		FINISH						
NEXT ASSY	USED ON					SIZE <b>B</b>	DWG. NO. <b>GE-20057</b>	REV
APPLICATION		DO NOT SCALE DRAWING						

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Carpet Tape _ 57.375	Carpet Tape - Adhesive	1
2	Carpet Tape _ 63.625	Carpet Tape - Adhesive	3
3	GE-20055	Notched Flooring Protection	1
4	GE-20056	Floor protection full	1
5	GE-20058 - 01	Floor Protector Notched - Carpet, Right	1

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  Floor Protector Notched Carpeted Assembly, Right		
		TOLERANCES: FRACTIONAL ±1/16	CHECKED					
		ANGULAR: MACH ±1° BEND ±1°	ENG APPR.					
		TWO PLACE DECIMAL ±.01	MFG APPR.					
		THREE PLACE DECIMAL ±.001	Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20058</b>		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON					SCALE: 1:16 WEIGHT: SHEET 1 OF 1		
APPLICATION		DO NOT SCALE DRAWING						

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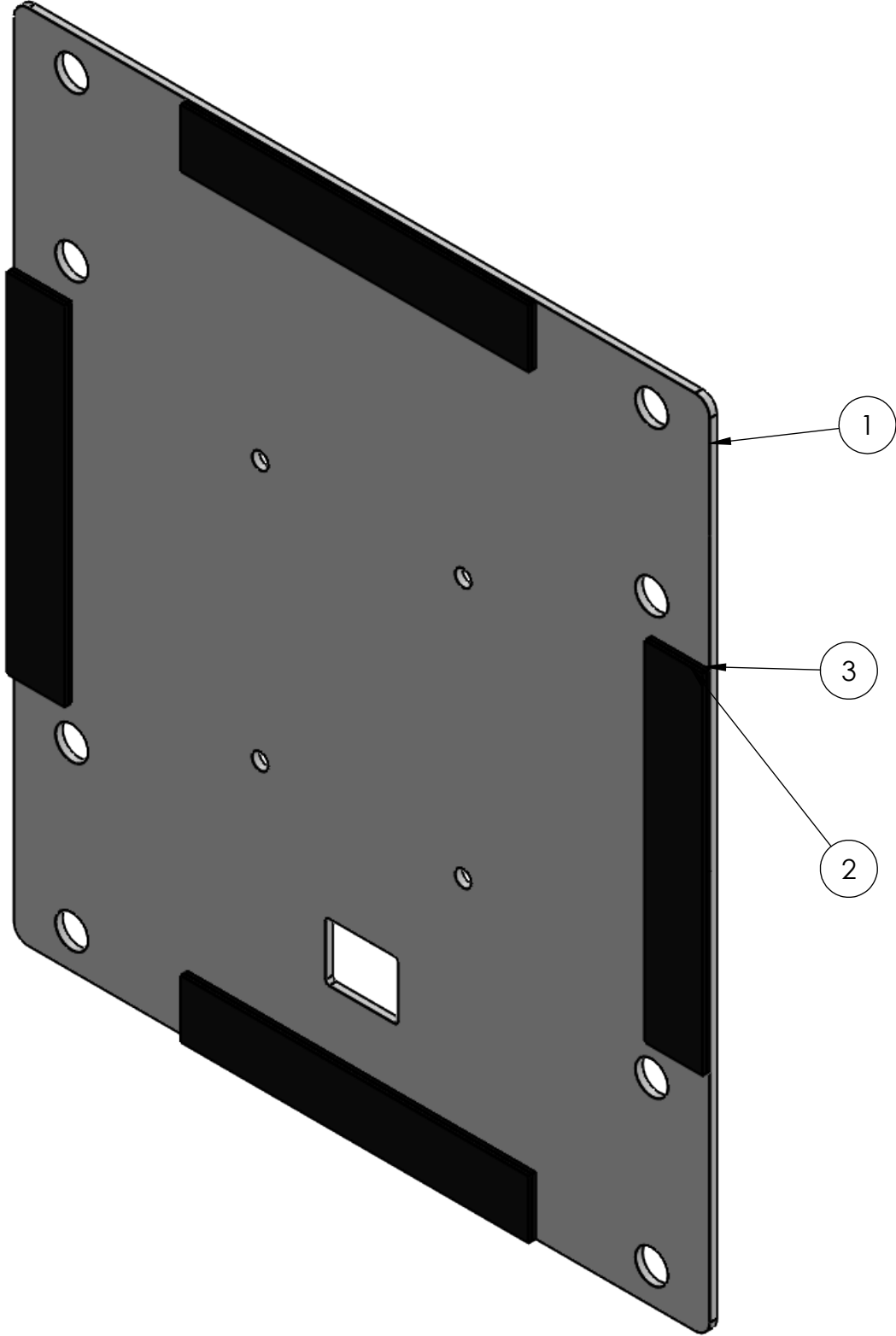
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20087	Hard Stop, Truss Protection	1
2	Hook_1_6	1" x 6" Hook, Adhesive Backed	4
3	Loop_1_6	1" x 6" Loop, Adhesive Backed	4

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/16/19	TITLE:  Hard Stop, Truss Protection , with Hook and Loop		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20066		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2 WEIGHT: SHEET 1 OF 3		

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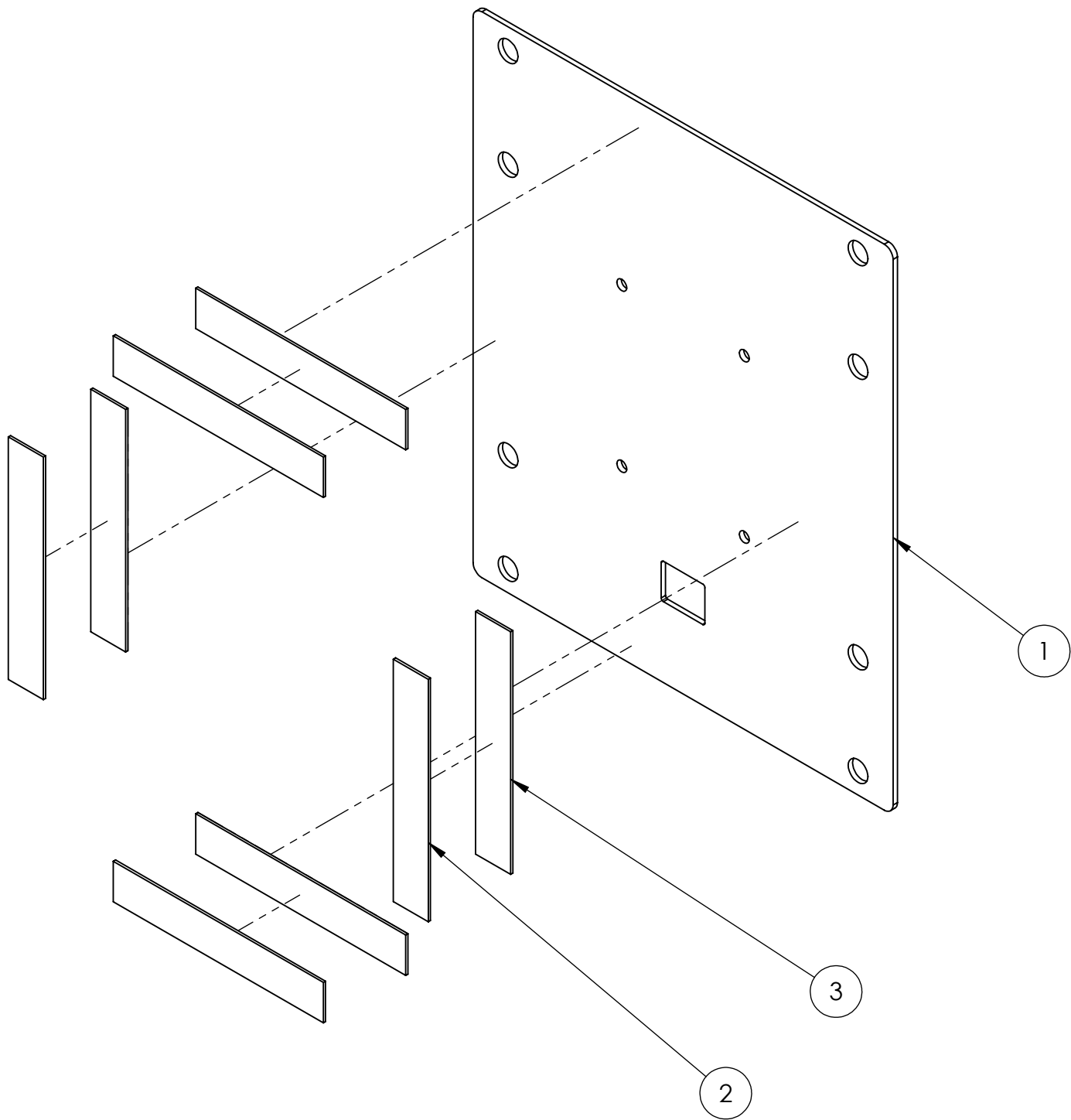
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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 			
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/16/19	TITLE:  Hard Stop, Truss Protection , with Hook and Loop			
		TOLERANCES:	CHECKED						
		FRACTIONAL $\pm 1/16$	ENG APPR.						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.						
		TWO PLACE DECIMAL $\pm .01$	Q.A.						
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20066			
		INTERPRET GEOMETRIC TOLERANCING PER:							
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:3 WEIGHT: SHEET 2 OF 3			

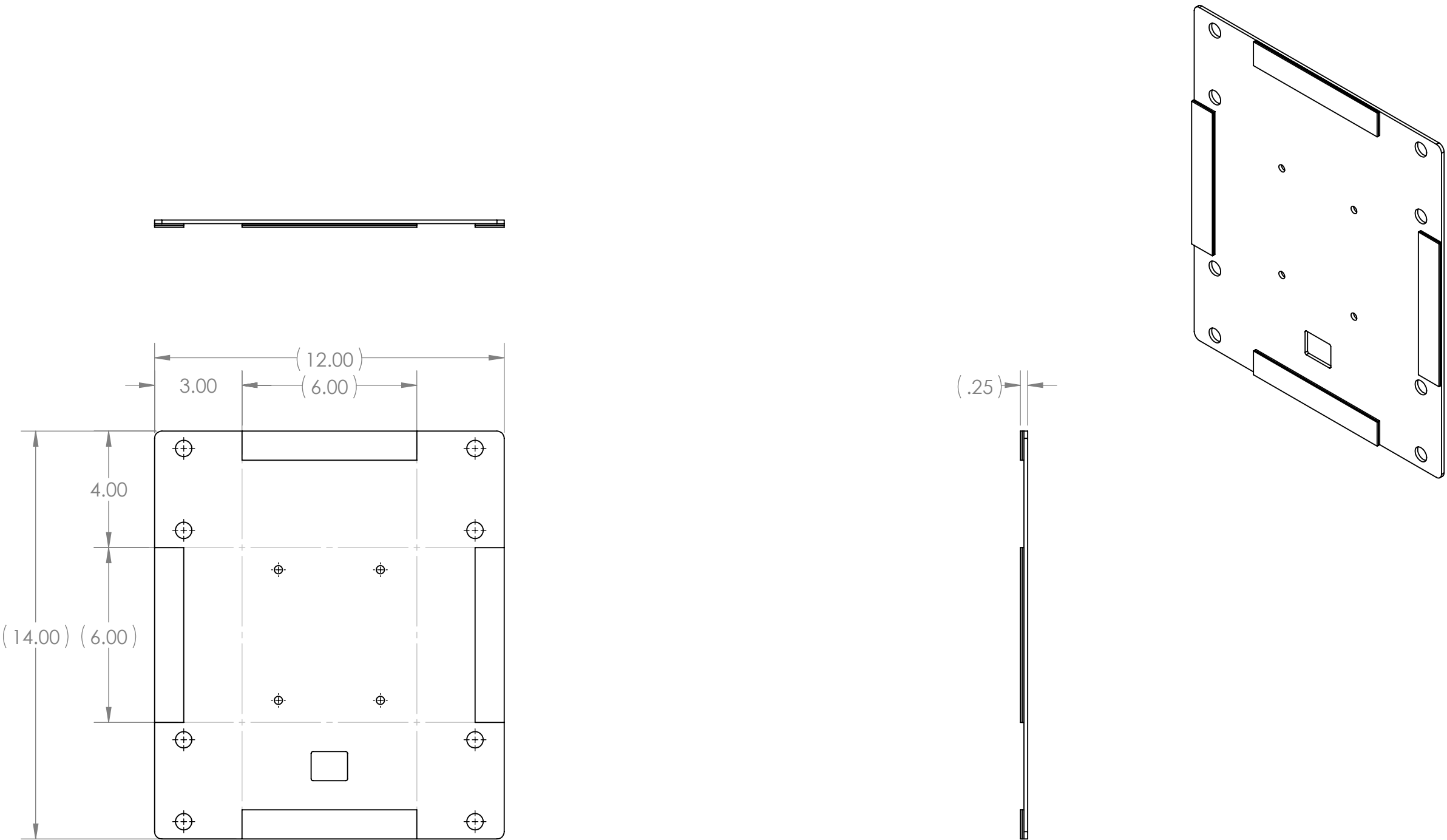
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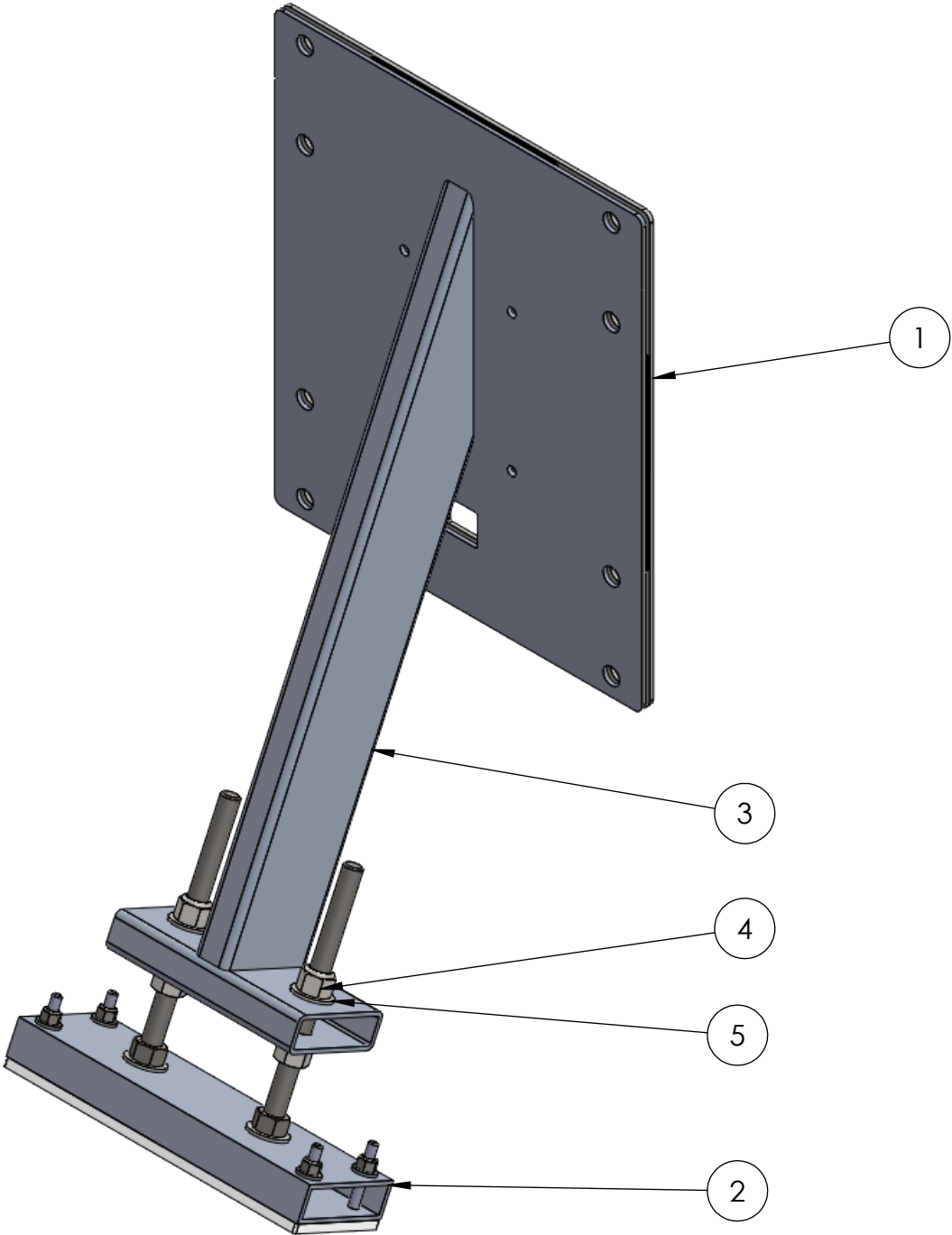
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	12/16/19	TITLE:  Hard Stop, Truss Protection , with Hook and Loop		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20066</b>		
		MATERIAL	COMMENTS:					
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT:		SHEET 3 OF 3

4

3

2

1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20066	Hard Stop, Truss Protection , with Hook and Loop	1
2	GE-20072	Hard Stop, Hitting Assembly	1
3	GE-20088	Hard Stop, Weldment, Large	1
4	nylock_.5_13	steel nylon-insert locknut, 1/2" - 13	4
5	washer_flat_.5	Flat Washer for 1/2" Screw	4

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		UNLESS OTHERWISE SPECIFIED:	NAME		DATE
		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL ±1/16	ENG APPR.		
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.		
		TWO PLACE DECIMAL ±.01	Q.A.		
		THREE PLACE DECIMAL ±.001	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			
			TITLE:		
			Hard Stop, Large		
			SIZE	DWG. NO.	REV
			B	GE-20067	
			SCALE: 1:4	WEIGHT:	SHEET 1 OF 3



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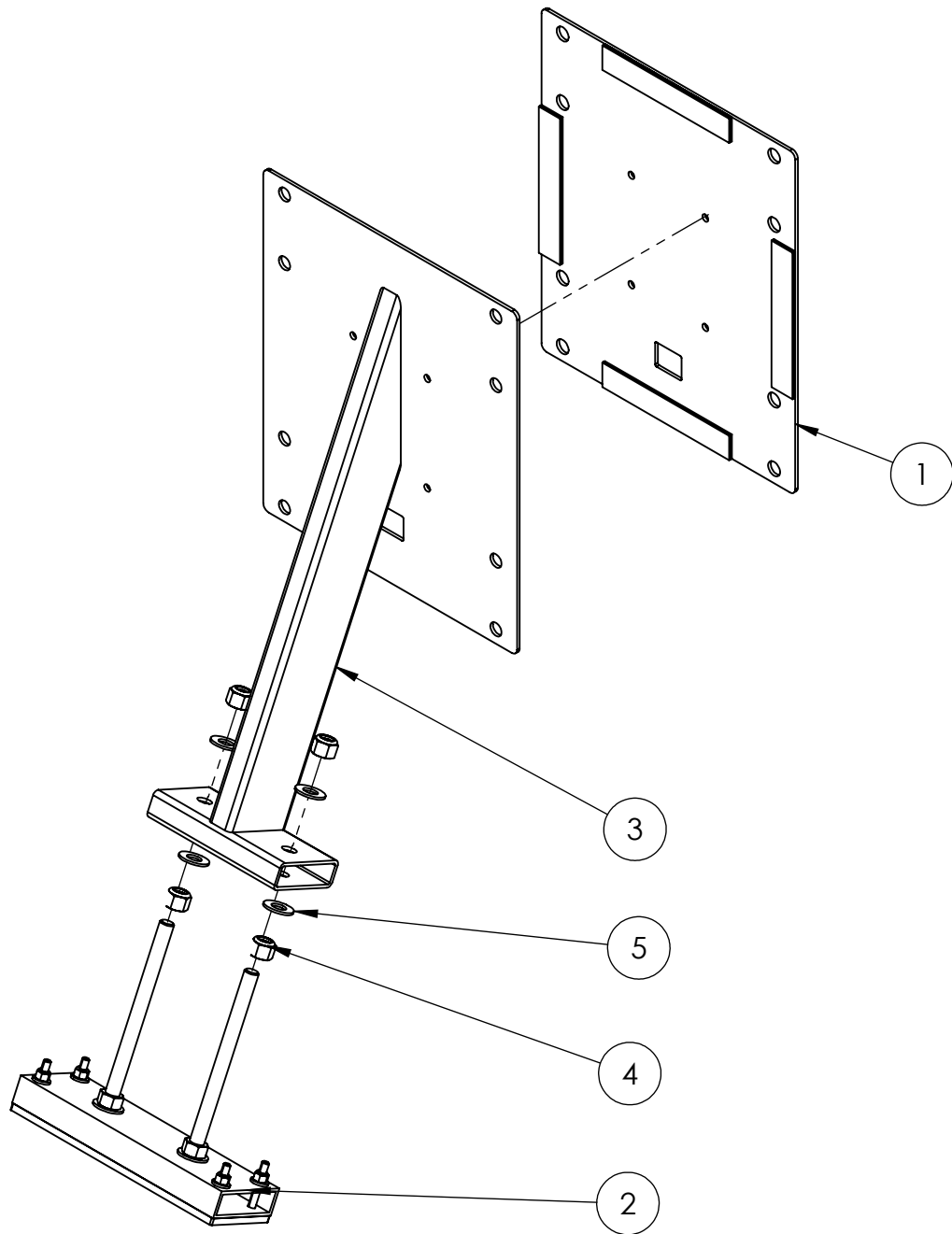
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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	12/16/19	TITLE:  Hard Stop, Large		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV  B GE-20067		
		MATERIAL	COMMENTS:					
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:6				WEIGHT:	SHEET 2 OF 3

4

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2

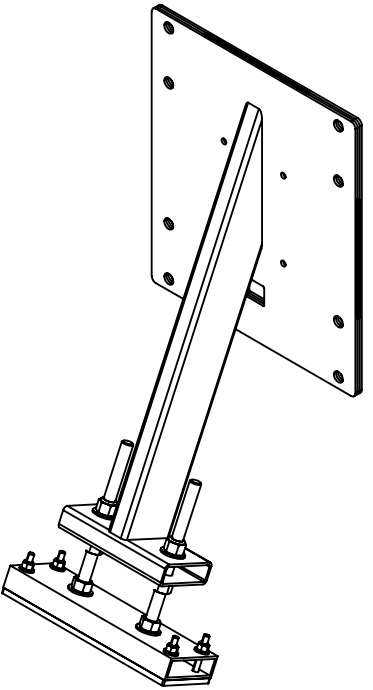
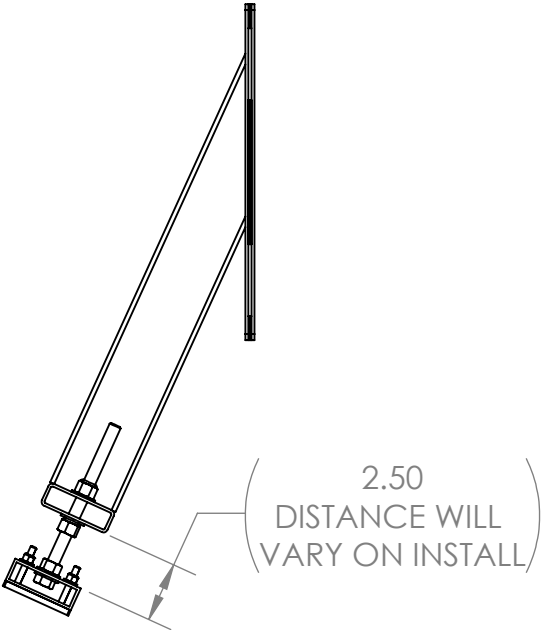
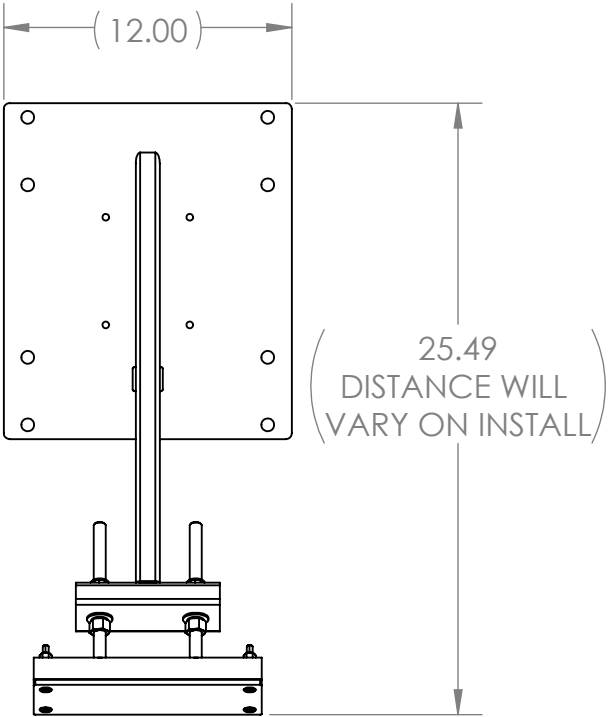
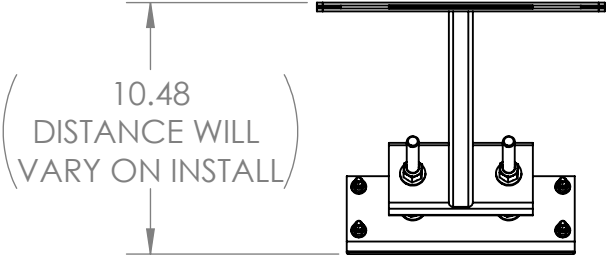
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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/16/19	TITLE: <h1>Hard Stop, Large</h1>		
		TOLERANCES: FRACTIONAL ±1/16	CHECKED					
		ANGULAR: MACH ±1° BEND ±1°	ENG APPR.					
		TWO PLACE DECIMAL ±.01	MFG APPR.					
		THREE PLACE DECIMAL ±.001	Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20067</b>		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8 WEIGHT: SHEET 3 OF 3		

4

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2

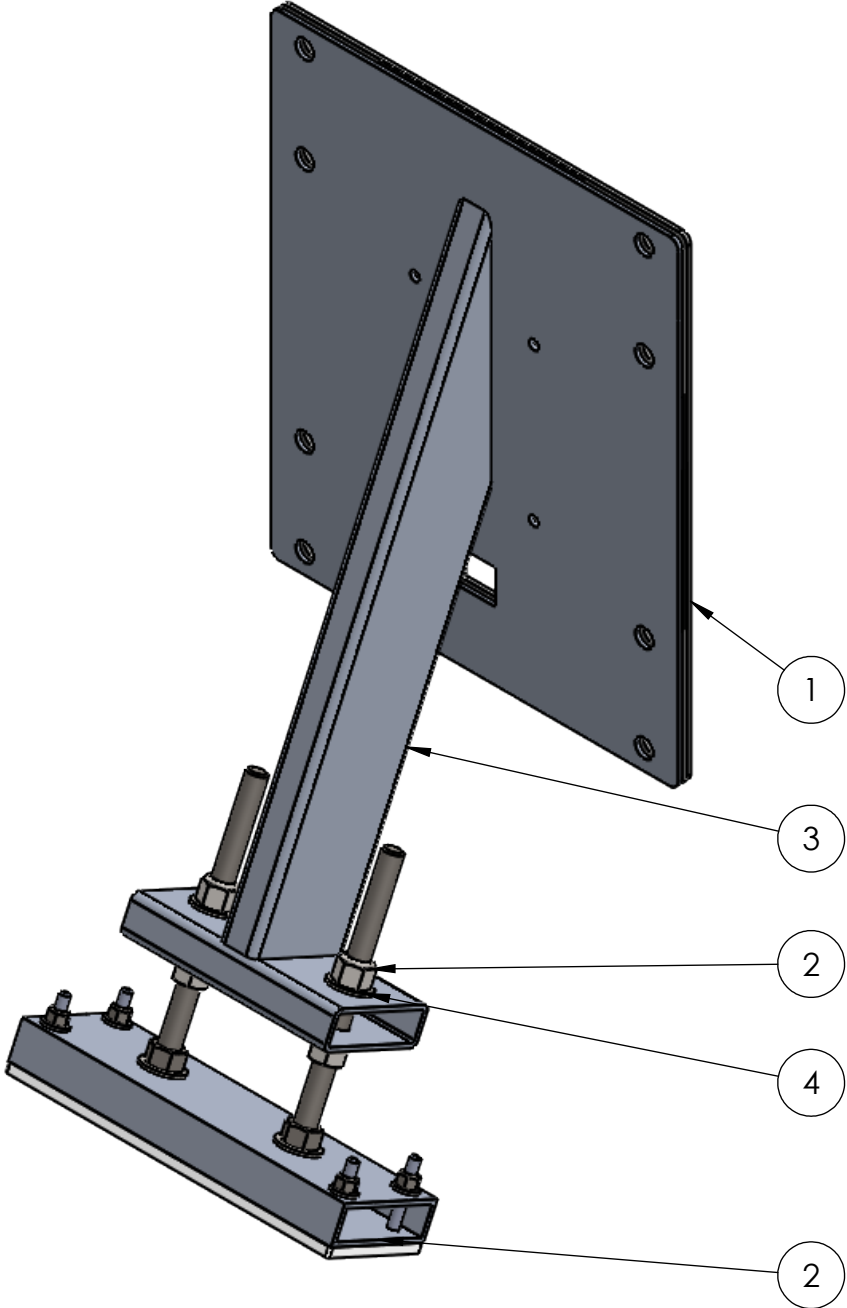
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ITEM NO.	PART NUMBER	DESCRIPTION	
1	GE-20066	Hard Stop, Truss Protection , with Hook and Loop	1
2	GE-20072	Hard Stop, Hitting Assembly	1
3	GE-20089	Hard Stop, Weldment, Small	1
4	washer_flat_.5	Flat Washer for 1/2" Screw	4
5	nylock_.5_13	steel nylon-insert locknut, 1/2" - 13	4

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 <b>FIRST ROBOTICS COMPETITION</b> 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/16/19	TITLE: <h1>Hard Stop, Small</h1>		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$				SIZE DWG. NO. REV <b>B GE-20068</b>		
		THREE PLACE DECIMAL $\pm .001$						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
		MATERIAL	COMMENTS:					
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						
					SCALE: 1:4	WEIGHT:	SHEET 1 OF 3	

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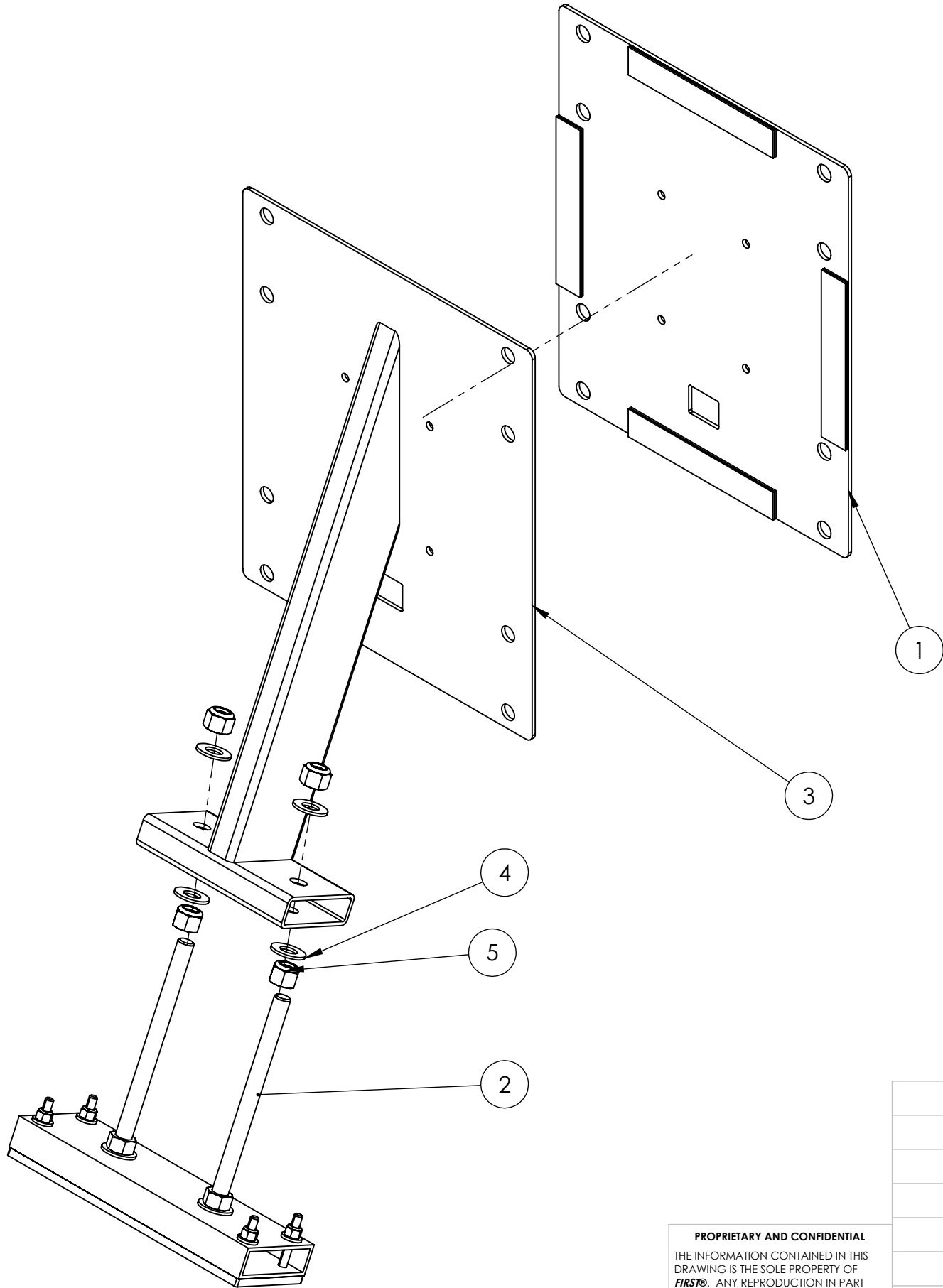
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		DIMENSIONS ARE IN INCHES	DRAWN					
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20068</b>		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:					
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL				SCALE: 1:4	WEIGHT:	SHEET 2 OF 3
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING						



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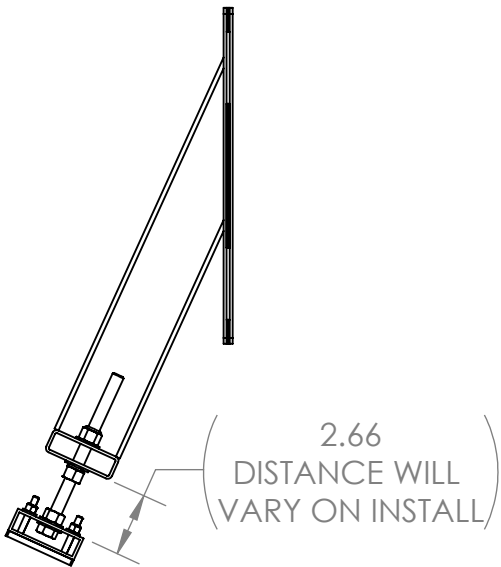
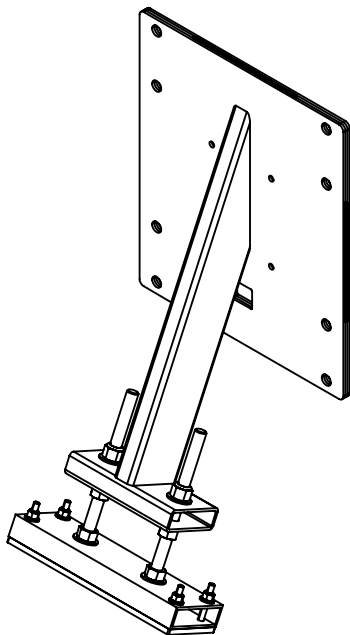
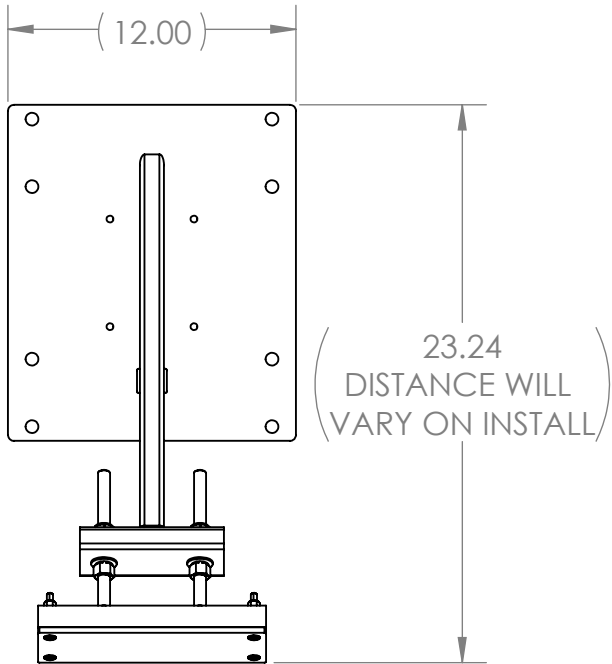
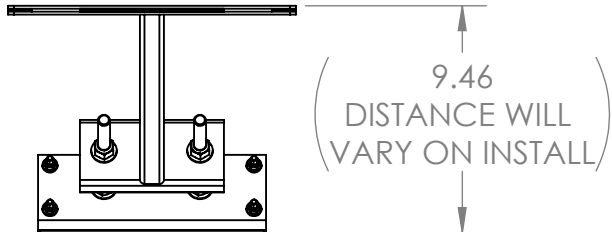
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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/16/19		
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20068</b>	
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:				
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL				SCALE: 1:8	WEIGHT:
		FINISH					SHEET 3 OF 3
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING				

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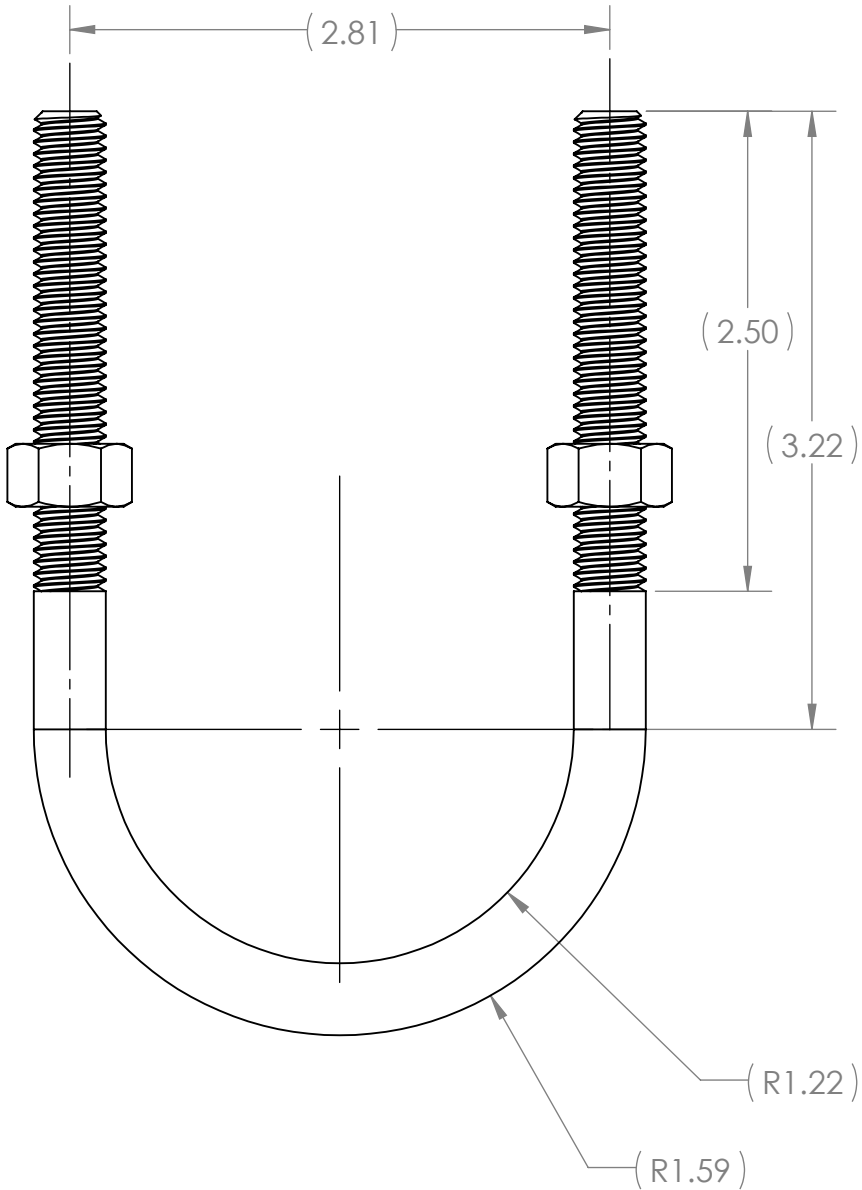
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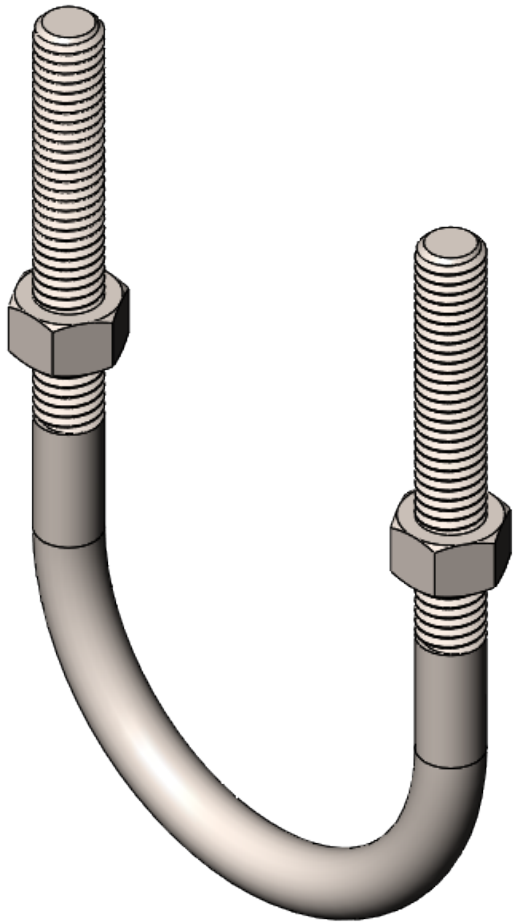
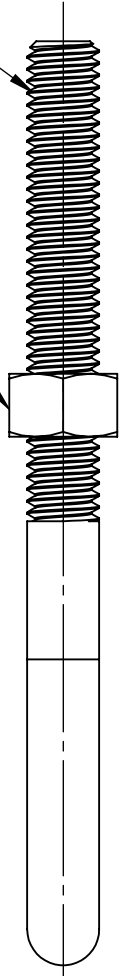
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3/8" - 16 THREAD

NUTS INCLUDED



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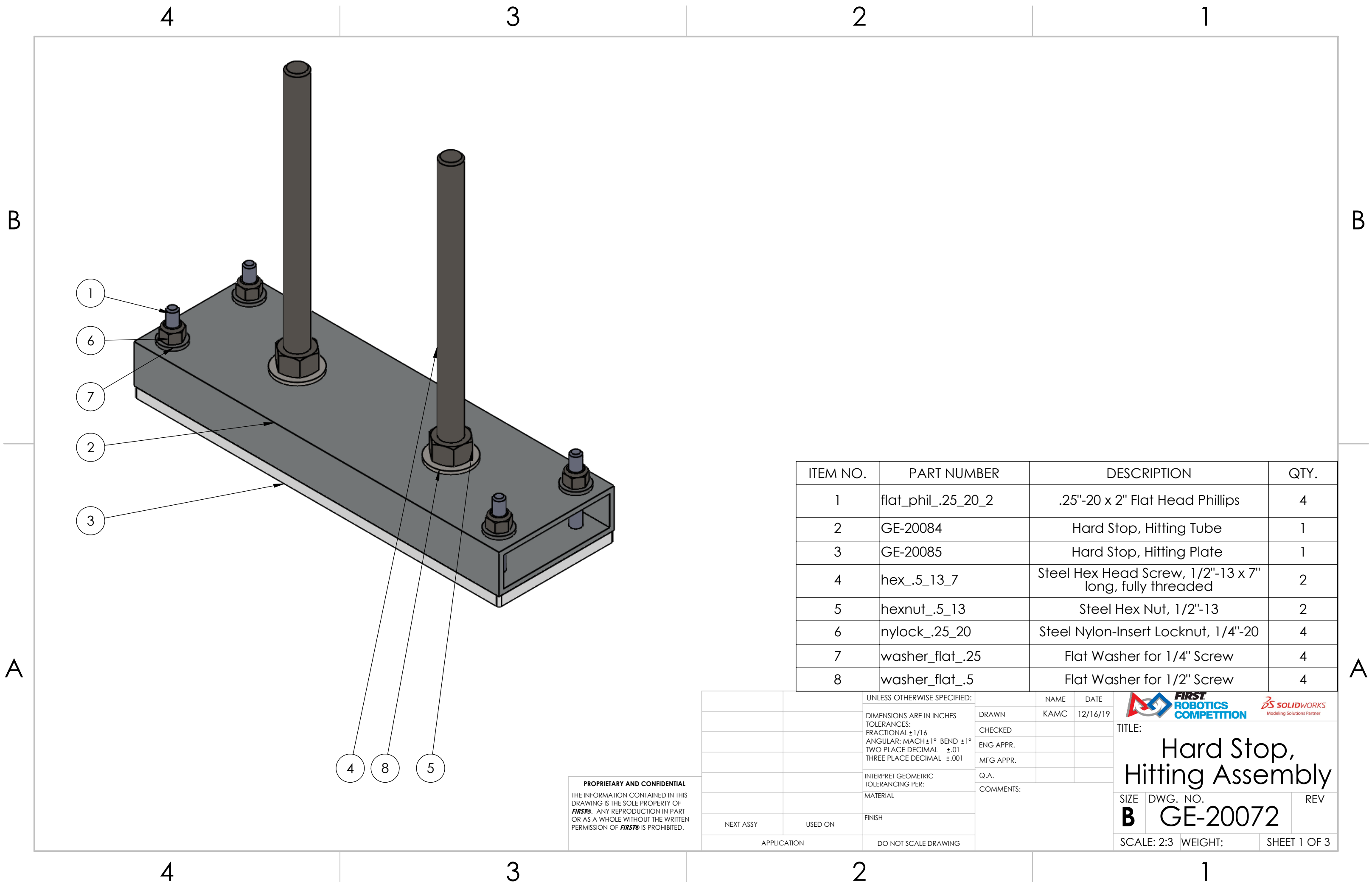
**DESCRIPTION:** STEEL U-BOLT, 3/8"-16, 2-7/16" ID

**VENDOR:** MCMaster CARR

**VENDOR PART NUMBER:** 8880T959



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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/16/19	
		TOLERANCES:	CHECKED			
		FRACTIONAL ±1/16	ENG APPR.			
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.			
		TWO PLACE DECIMAL ±.01	Q.A.			TITLE: U-Bolt, Truss to Hard Stop
		THREE PLACE DECIMAL ±.001	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				SIZE DWG. NO. REV
		MATERIAL				<b>B</b> GE-20069
		FINISH				SCALE: 1:1 WEIGHT: SHEET 1 OF 1
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	flat_phil_.25_20_2	.25"-20 x 2" Flat Head Phillips	4
2	GE-20084	Hard Stop, Hitting Tube	1
3	GE-20085	Hard Stop, Hitting Plate	1
4	hex_.5_13_7	Steel Hex Head Screw, 1/2"-13 x 7" long, fully threaded	2
5	hexnut_.5_13	Steel Hex Nut, 1/2"-13	2
6	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4
7	washer_flat_.25	Flat Washer for 1/4" Screw	4
8	washer_flat_.5	Flat Washer for 1/2" Screw	4

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE: <b>Hard Stop, Hitting Assembly</b></div> <div>SIZE <b>B</b> DWG. NO. <b>GE-20072</b> REV</div> <div>SCALE: 2:3 WEIGHT: SHEET 1 OF 3</div>
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	12/16/19	
			CHECKED			
			ENG APPR.			
			MFG APPR.			
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			COMMENTS:
		MATERIAL				
		FINISH				
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

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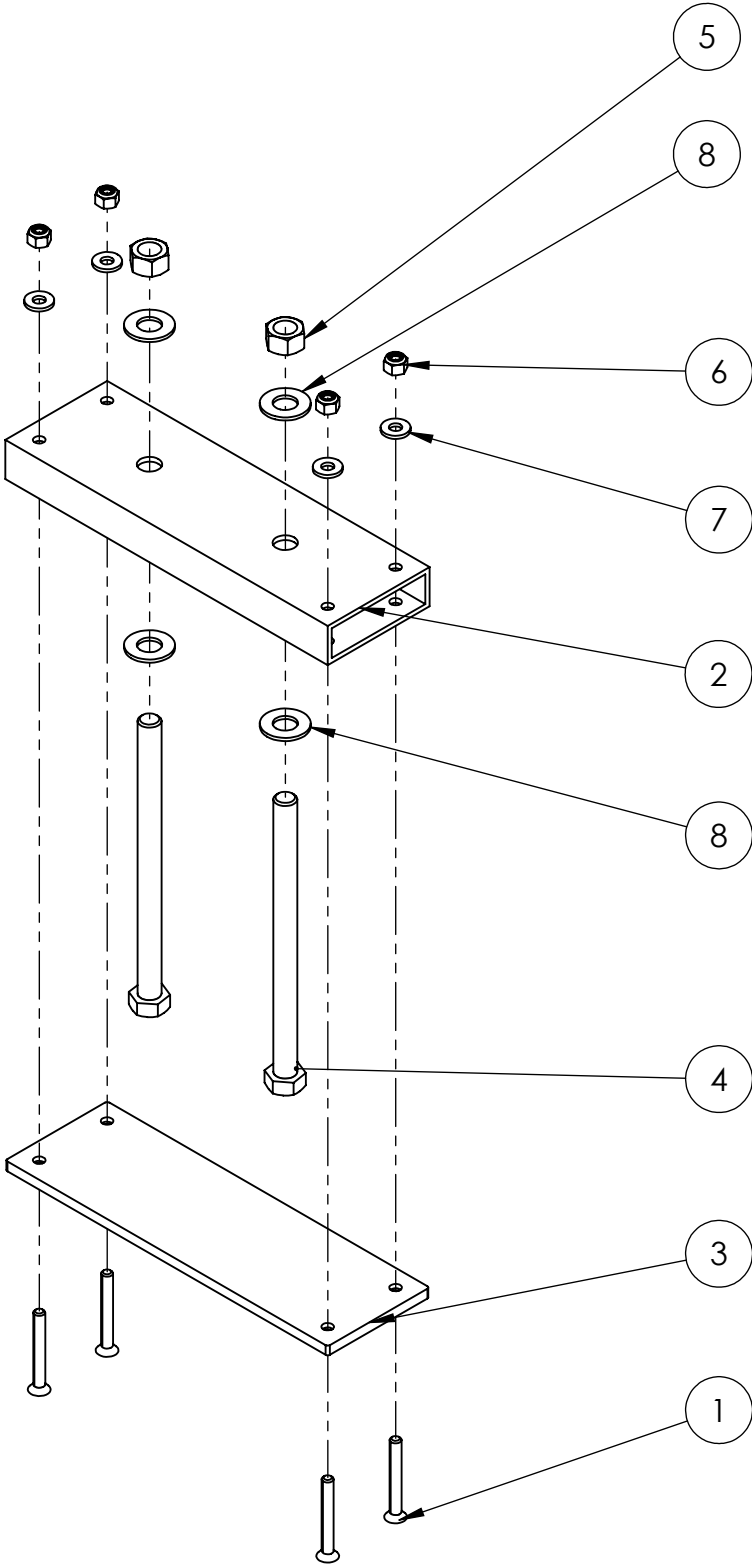
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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/16/19	TITLE:  <h1>Hard Stop, Hitting Assembly</h1>		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20072</b>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
		FINISH				SCALE: 1:4 WEIGHT: SHEET 2 OF 3		
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						

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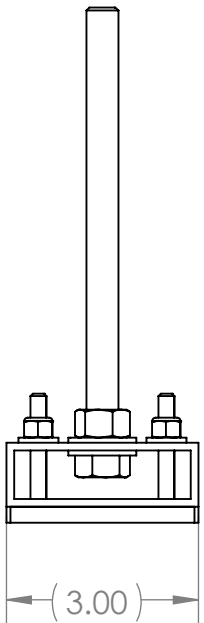
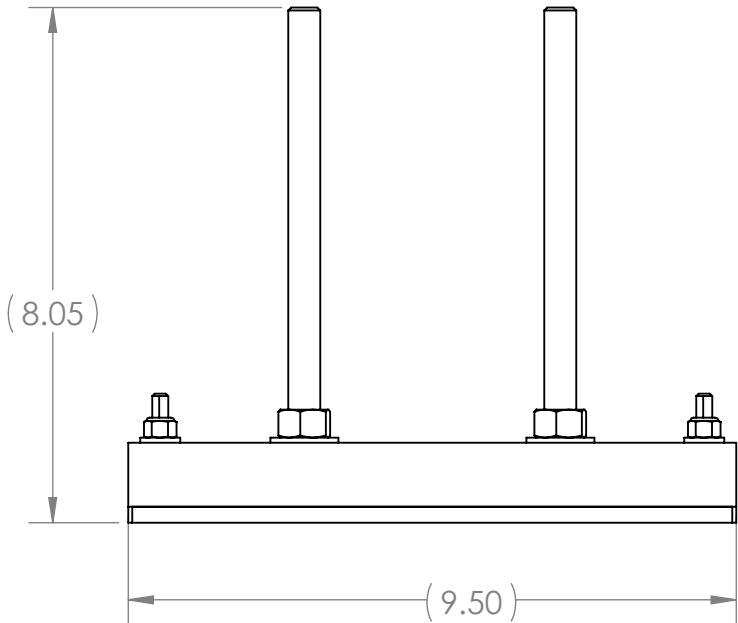
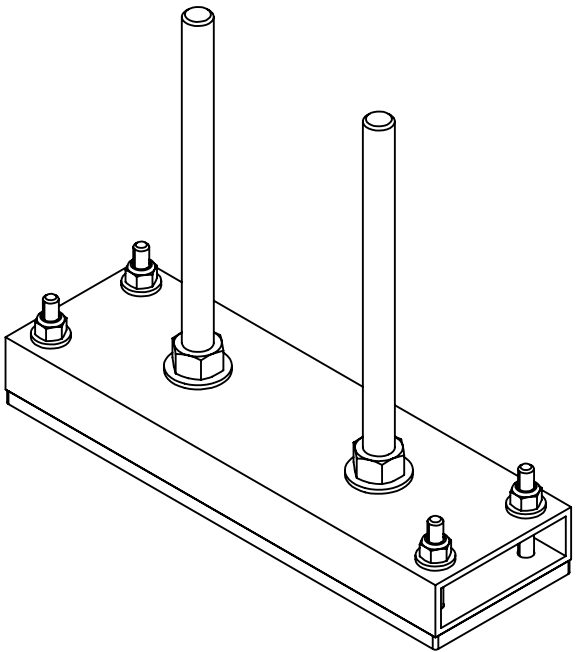
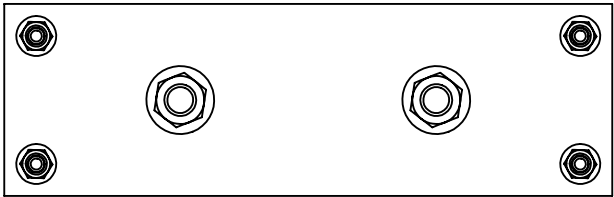
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		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	12/16/19	TITLE:  <h1>Hard Stop, Hitting Assembly</h1>			
		TOLERANCES:	CHECKED						
		FRACTIONAL $\pm 1/16$	ENG APPR.						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.						
		TWO PLACE DECIMAL $\pm .01$	Q.A.						
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20072</b>			
		INTERPRET GEOMETRIC TOLERANCING PER:							
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:3 WEIGHT: SHEET 3 OF 3			

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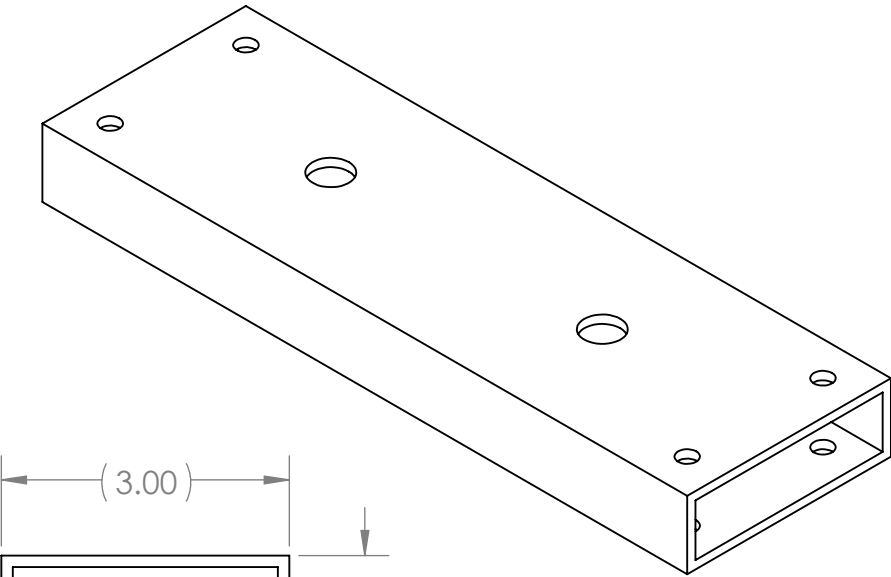
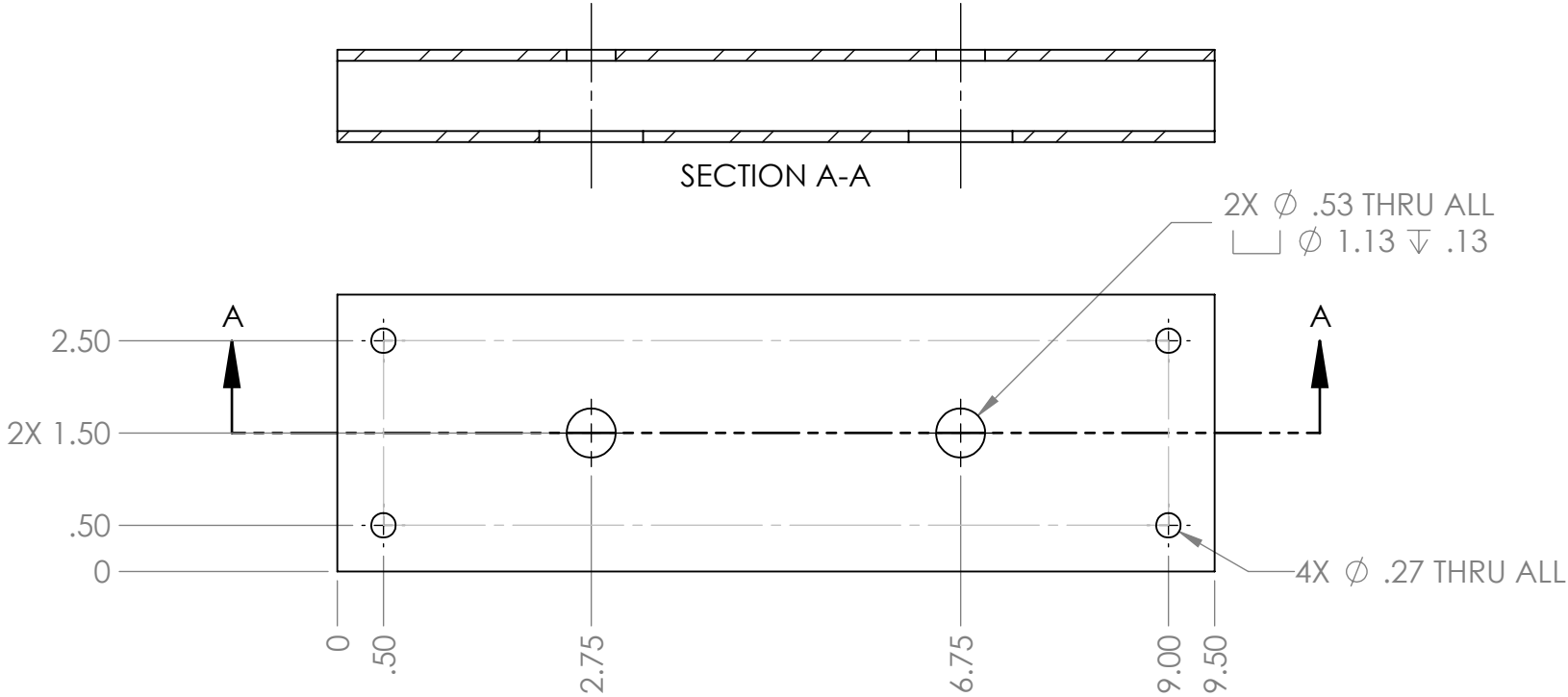
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, A4	A	UPDATED FINISH & APPLICATION TABLE	10/21/2019	KAMC



ROUND CORNERS PERMITTED

- Notes:
- Material: 1" x 3" x 0.12" Mild Steel Rectangle Tube A500/A513 Hot Rolled
  - Remove all burrs and sharp edges.
  - Tag or label with part number.
  - Finish: Gray/Silver - Painted



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TOLERANCES:		CHECKED	
FRACTIONAL ±1/16		ENG APPR.	
ANGULAR: MACH ±1° BEND ±1°		MFG APPR.	
TWO PLACE DECIMAL ±.01		Q.A.	
THREE PLACE DECIMAL ±.001		COMMENTS:	
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL			
STEEL TUBE			
FINISH			
PAINT			
APPLICATION			
DO NOT SCALE DRAWING			

TITLE:		Hard Stop, Hitting Tube	
SIZE	DWG. NO.	REV	
B	GE-20084	A	
SCALE: 1:2	WEIGHT:	SHEET 1 OF 1	



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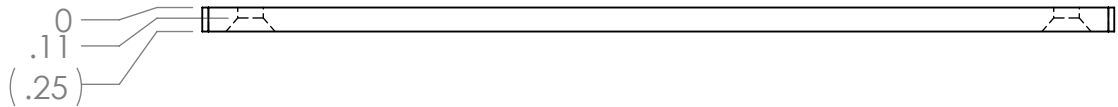
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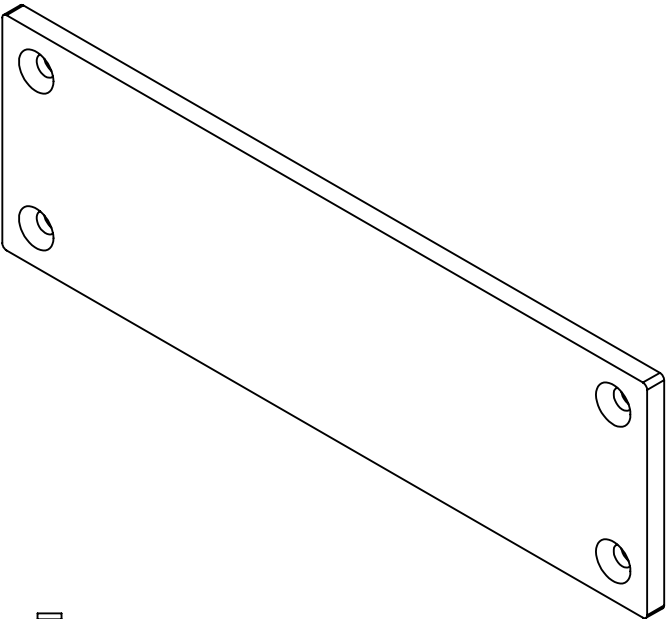
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, A3	A	PART SIZE, NUMBER OF HOLES, AND APPLICATION TABLE MODIFIED	10/22/2019	KAMC

HIDDEN LINES SHOWN - FOR HOLE REF.





4X  $\phi$  .27 THRU  
 $\checkmark$   $\phi$  .51 X 82°

4X R.06



- Notes:
- Material: 0.25" HDPE, Texture: Natural/Smooth, Color: White
  - Remove all burrs and sharp edges.
  - Tag or label with part number.

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	10/3/19	TITLE:  <h1>Hard Stop, Hitting Plate</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20085</b> <b>A</b>		
GE-20072		MATERIAL HDPE						
NEXT ASSY	USED ON	FINISH BARE						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2 WEIGHT: SHEET 1 OF 1		

4

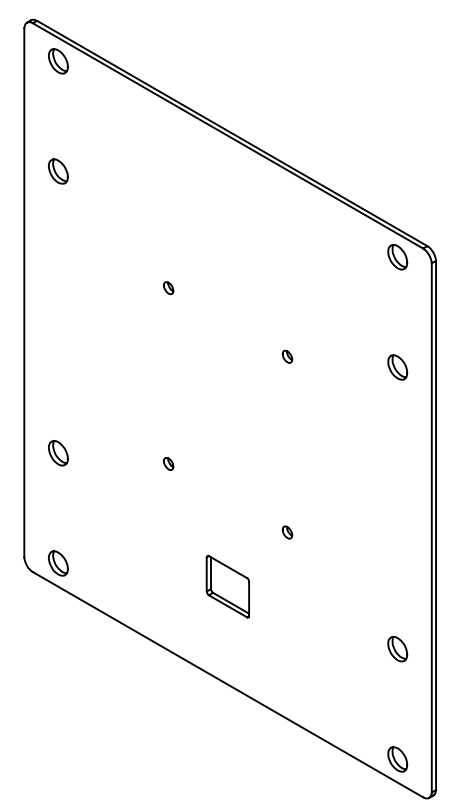
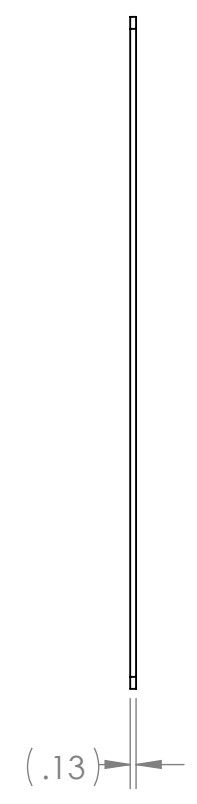
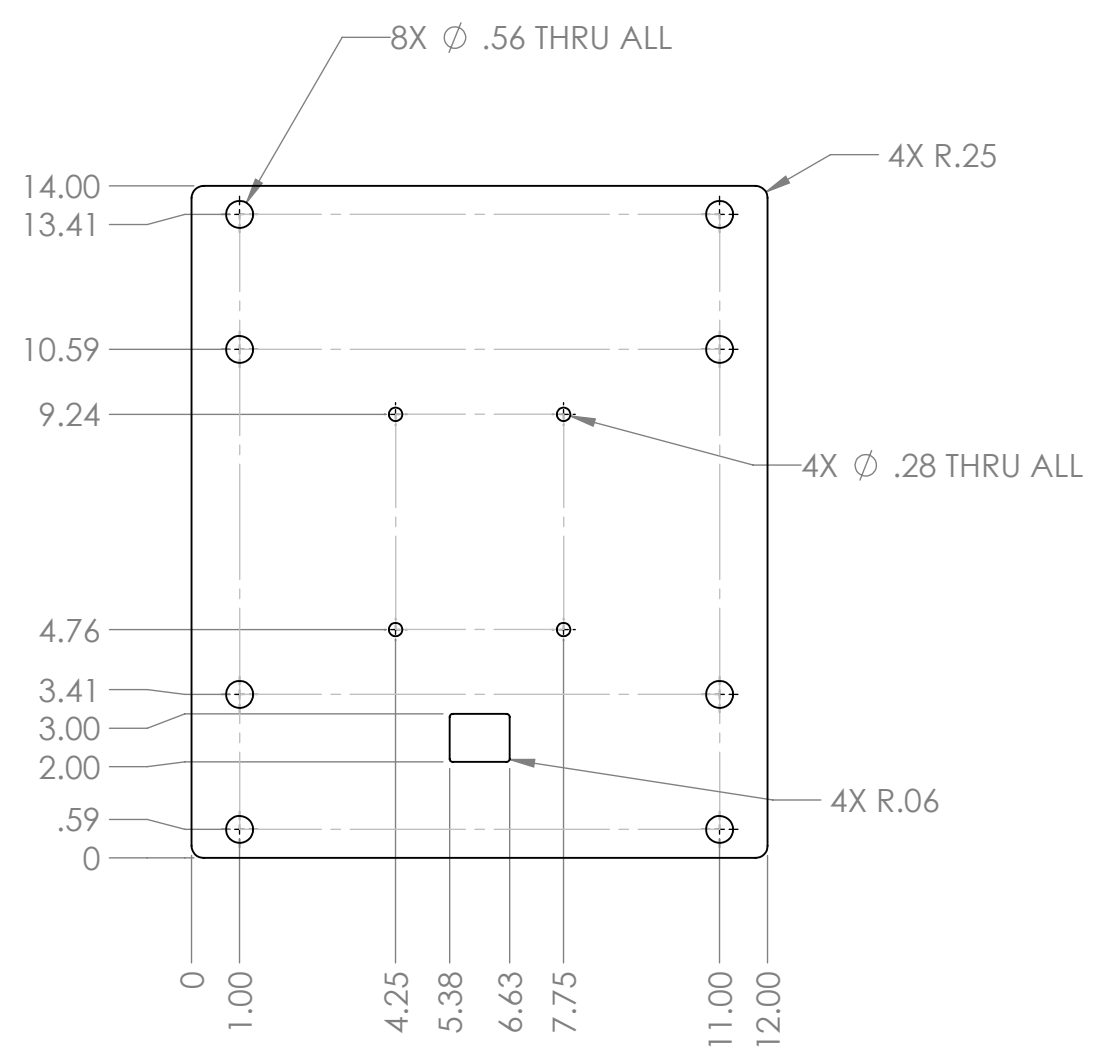
3

2

1

B

B





A

A

- Notes:
1. Material: 0.125" HDPE, Texture: Natural/Smooth, Color: White
  2. Remove all burrs and sharp edges.
  3. Tag or label with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	10/21/19	TITLE:  Hard Stop, Truss Protection		
		TOLERANCES:	CHECKED					
		FRACTIONAL ±1/16	ENG APPR.					
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.					
		TWO PLACE DECIMAL ±.01	Q.A.					
		THREE PLACE DECIMAL ±.001	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20087</b>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
		HDPE						
		FINISH						
NEXT ASSY	USED ON	BARE						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT: SHEET 1 OF 1		

4

3

2

1

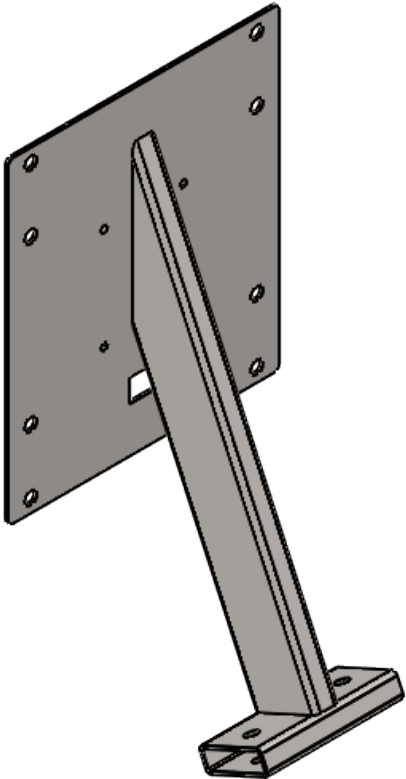
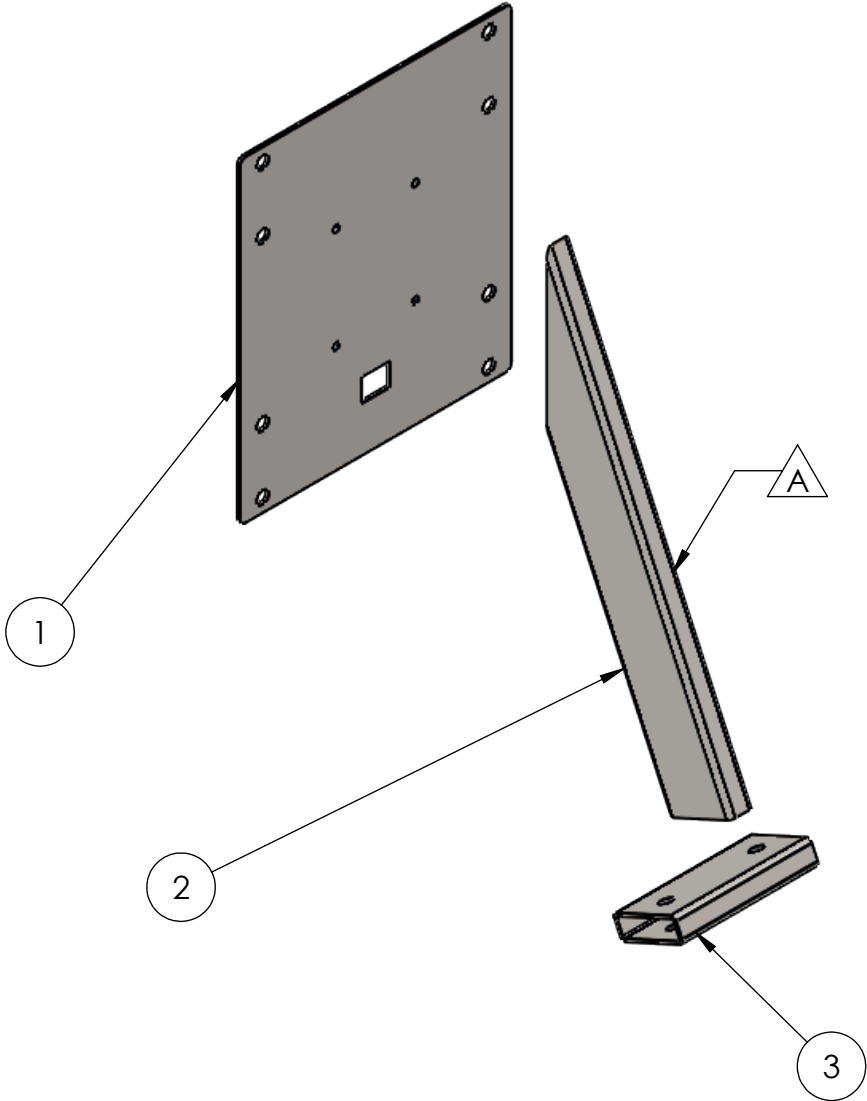
4

3



2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, B3, 2-A2, 2-A4	A	GE-20082 Part Length Modified	10/30/2019	KAMC



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20081	Hard Stop, Weldment, Truss Mount Plate	1
2	GE-20082	Hard Stop, Weldment, Tube, Long	1
3	GE-20086	Hard Stop, Weldment, Tube, Hitting Assembly Mount	1

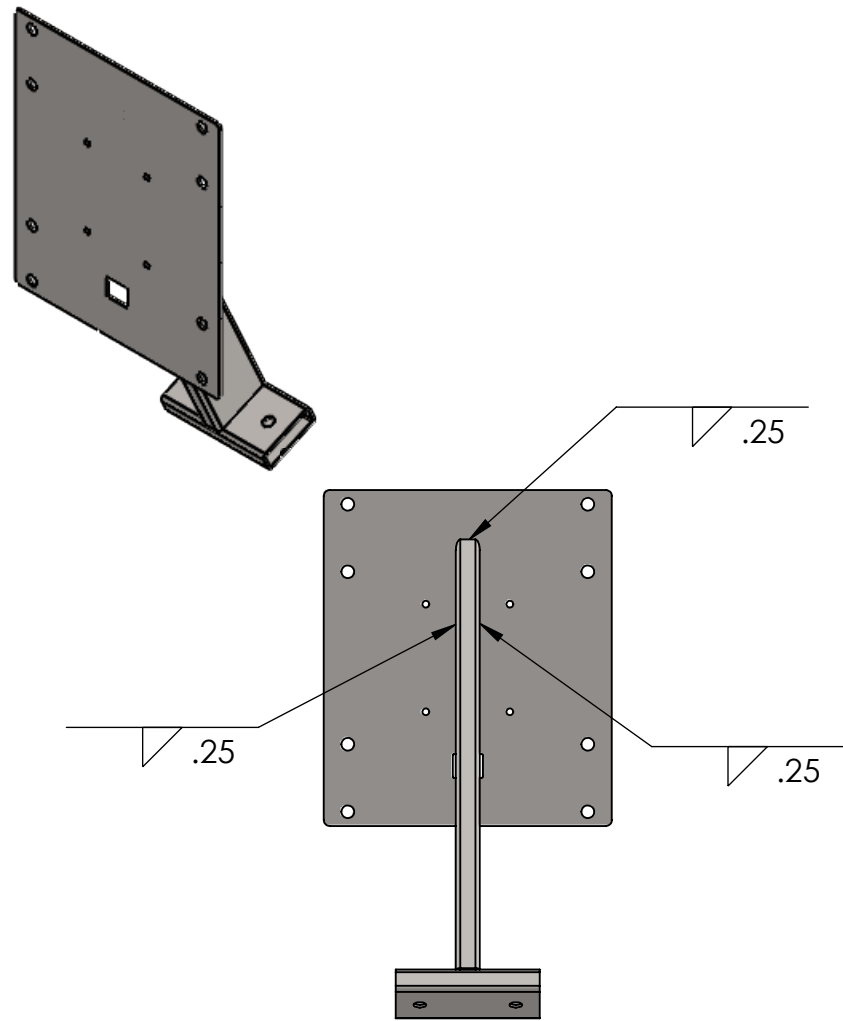
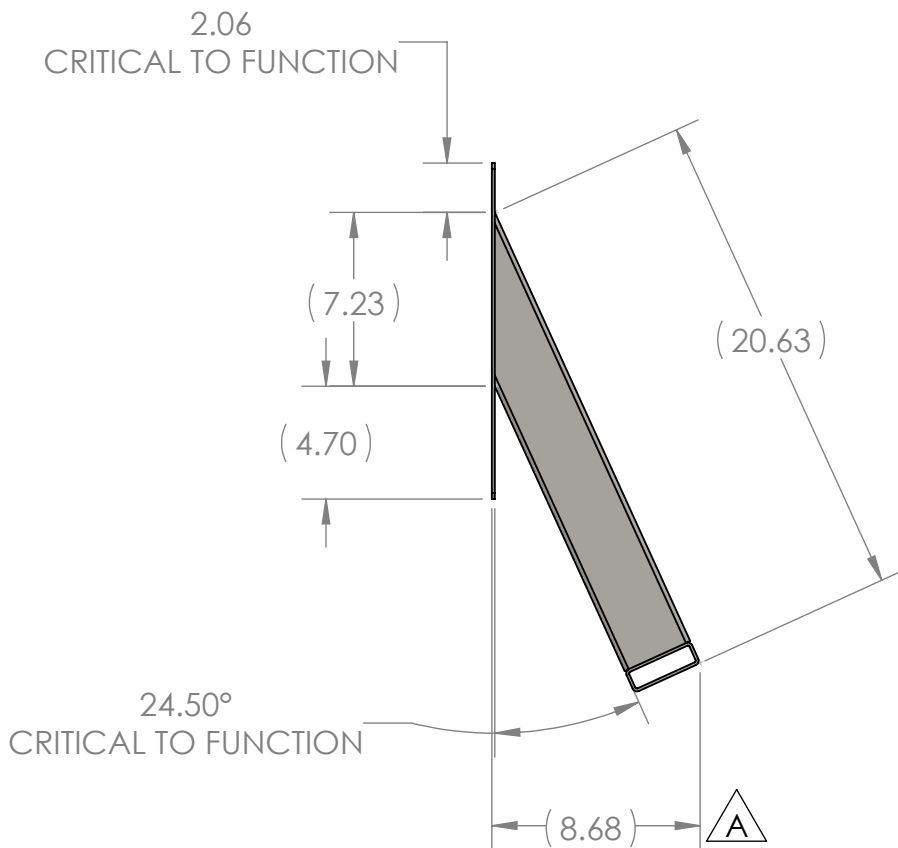
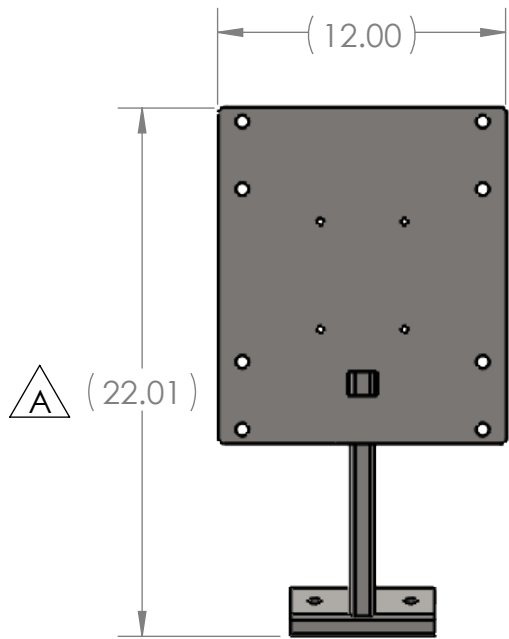
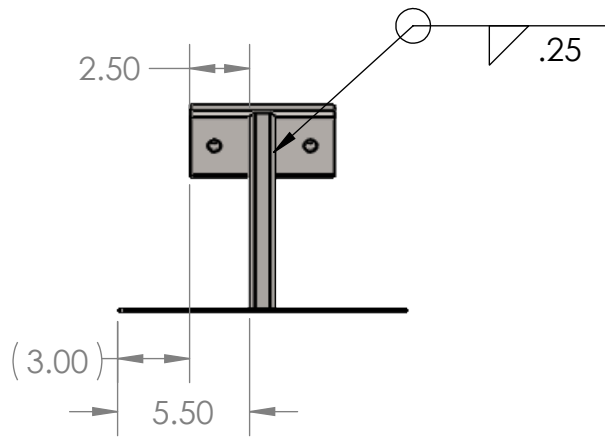
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	10/22/19	TITLE:  <h1>Hard Stop, Weldment, Large</h1>		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B GE-20088 A</b>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
NEXT ASSY	USED ON	FINISH PAINT						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:6 WEIGHT: SHEET 1 OF 2		

- Notes:
- 1. Finish: Silver/Gray - Paint
  - 2. Remove all burrs and sharp edges.
  - 3. Tag or label with part number.

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-



B



A

A

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 <b>FIRST ROBOTICS COMPETITION</b> 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	10/22/19	TITLE:  <b>Hard Stop, Weldment, Large</b>	
		TOLERANCES: FRACTIONAL ±1/16	CHECKED				
		ANGULAR: MACH ±1° BEND ±1°	ENG APPR.				
		TWO PLACE DECIMAL ±.01	MFG APPR.				
		THREE PLACE DECIMAL ±.001	Q.A.				
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B GE-20088 A</b>	
		MATERIAL					
NEXT ASSY	USED ON	FINISH PAINT					
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:8 WEIGHT: SHEET 2 OF 2				



SCALE: 1:8 WEIGHT: SHEET 2 OF 2

4

3

2

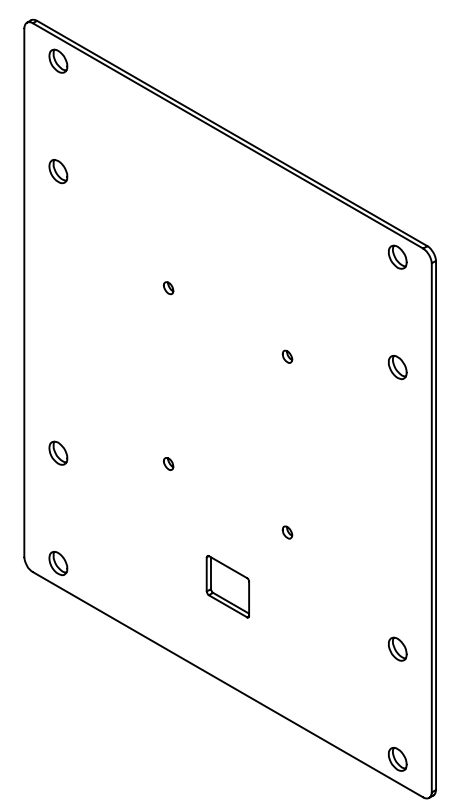
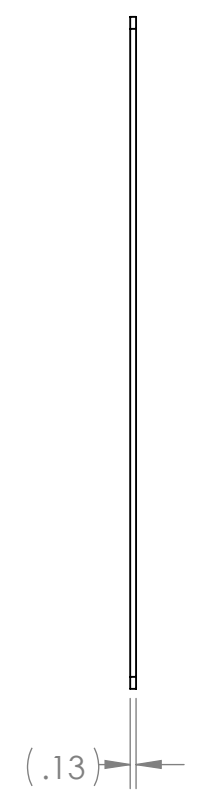
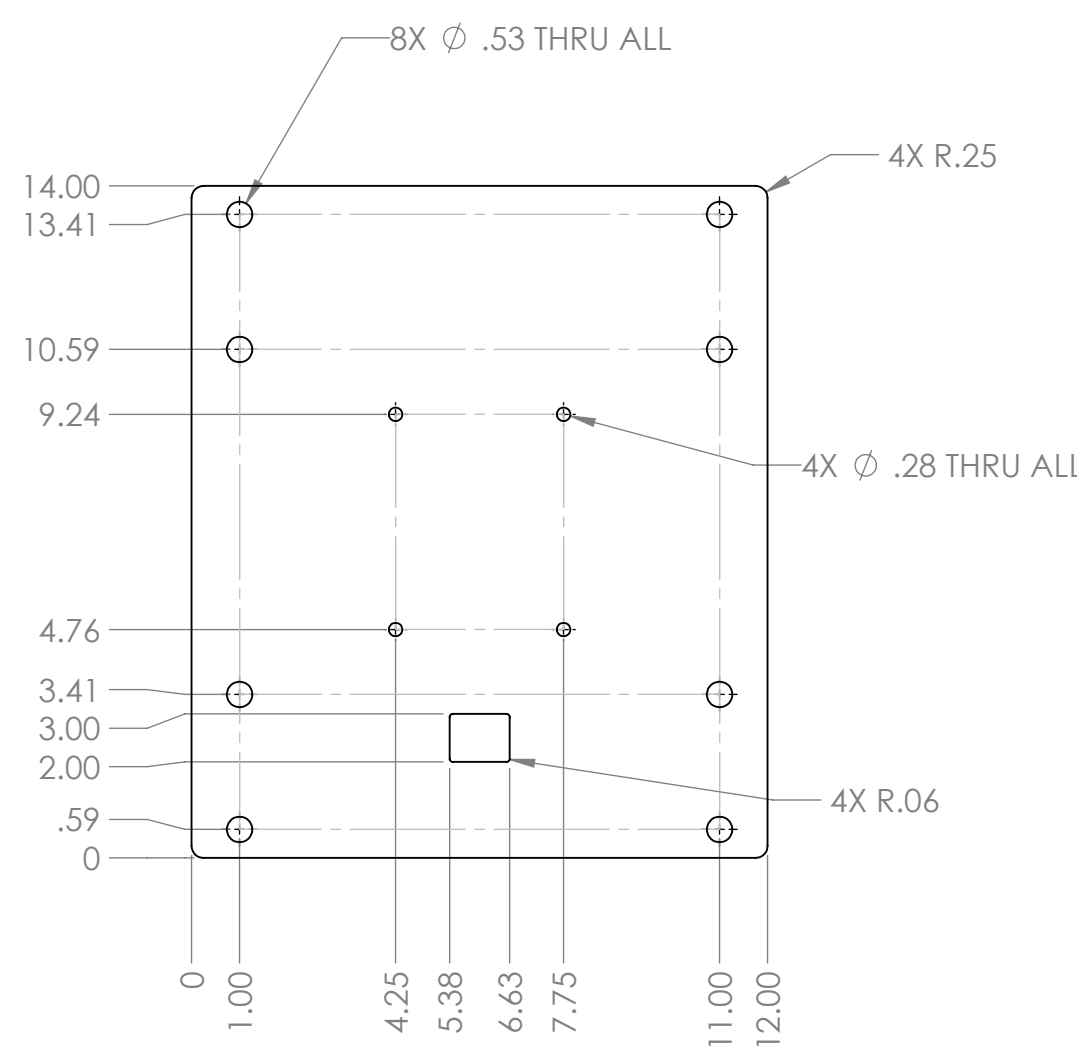
1

B

A



B

A



- Notes:
1. Material: 0.125" Mild Steel A366/1008 Cold Roll
  2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE: Hard Stop, Weldment, Truss Mount Plate</div>	
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	10/21/19		
		INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL STEEL PLATE FINISH BARE	CHECKED				
			ENG APPR.				
GE-20089			MFG APPR.				
GE-20088			Q.A.			COMMENTS:	
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING				SIZE <b>B</b>	DWG. NO. <b>GE-20081</b>
						REV <b>0</b>	
						SCALE: 1:4	WEIGHT:
						SHEET 1 OF 1	

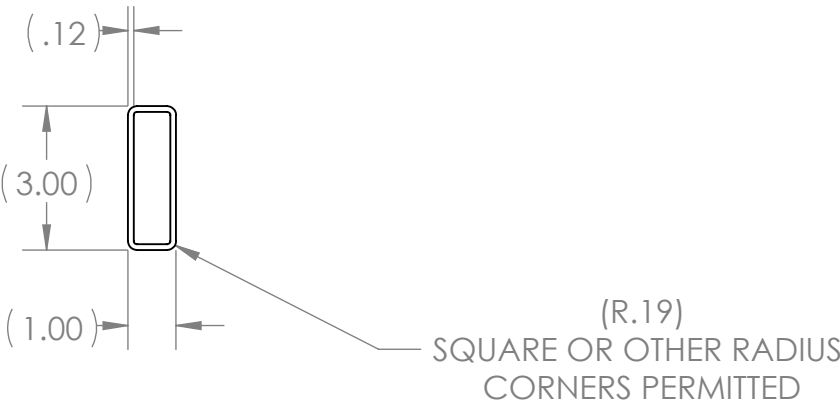
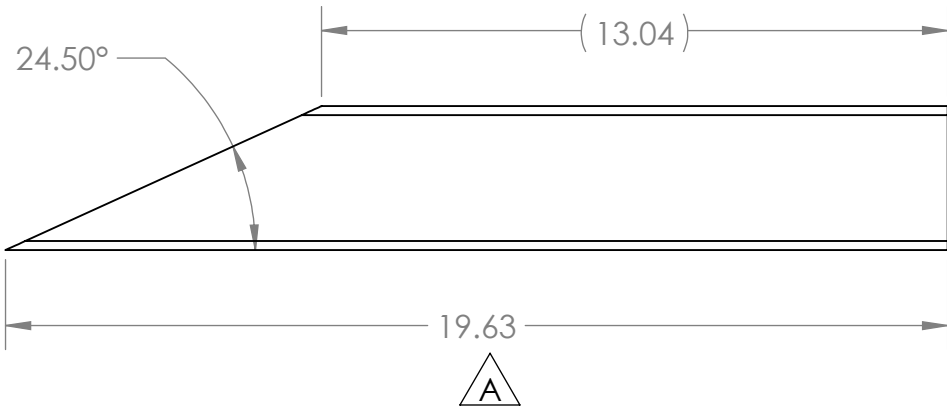
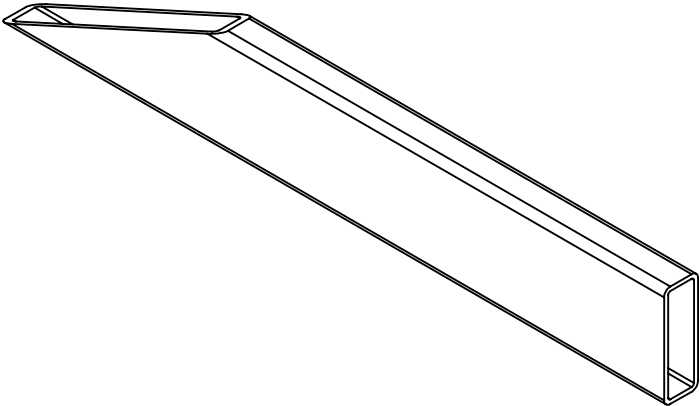
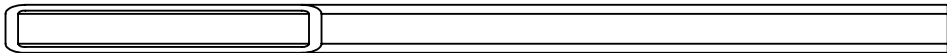
4

3

2

1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, A3	A	Updated Part Length & Application Table	10/30/2019	KAMC



A

- Notes:
- Material: 1" x 3" x 0.12" Mild Steel Rectangle Tube A500/A513 Hot Rolled
  - Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	10/22/19	TITLE:  Hard Stop, Weldment, Tube, Long		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20082</b> <b>A</b>		
GE-20088		MATERIAL STEEL TUBE						
NEXT ASSY	USED ON	FINISH BARE						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT: SHEET 1 OF 1		

4

3

2

1

4

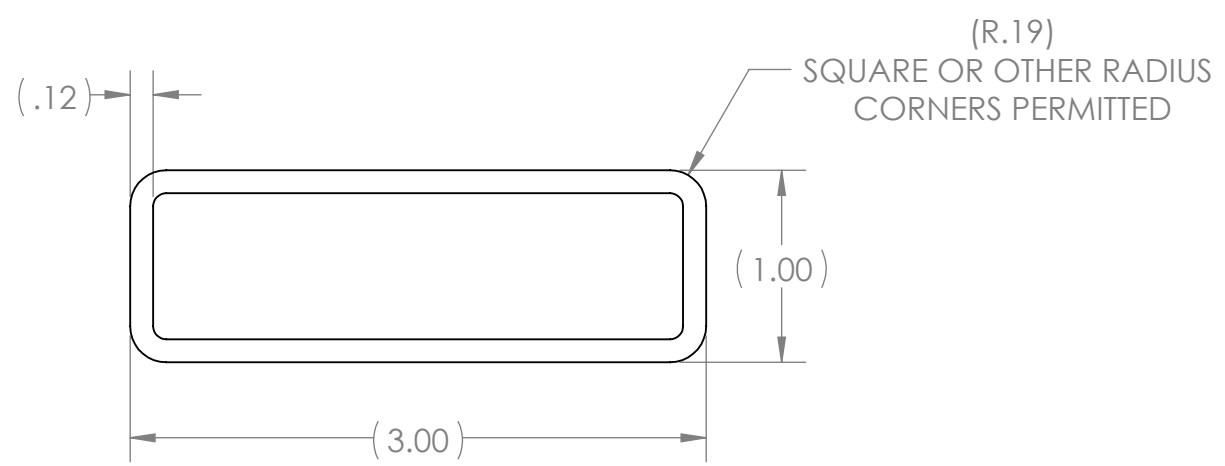
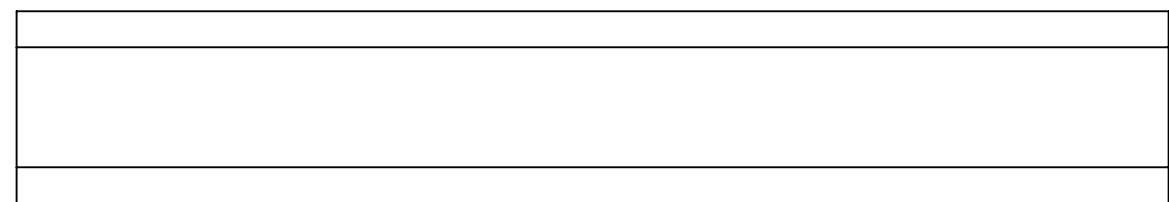
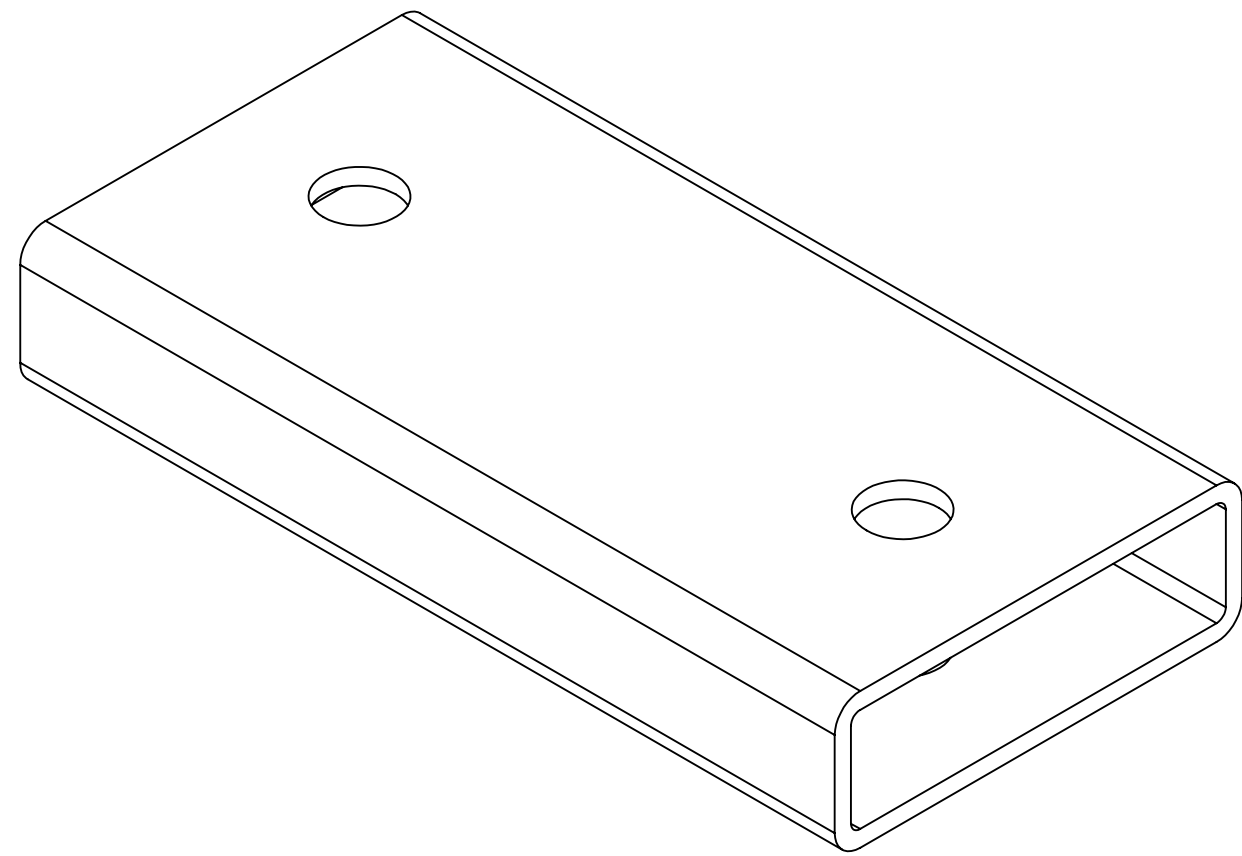
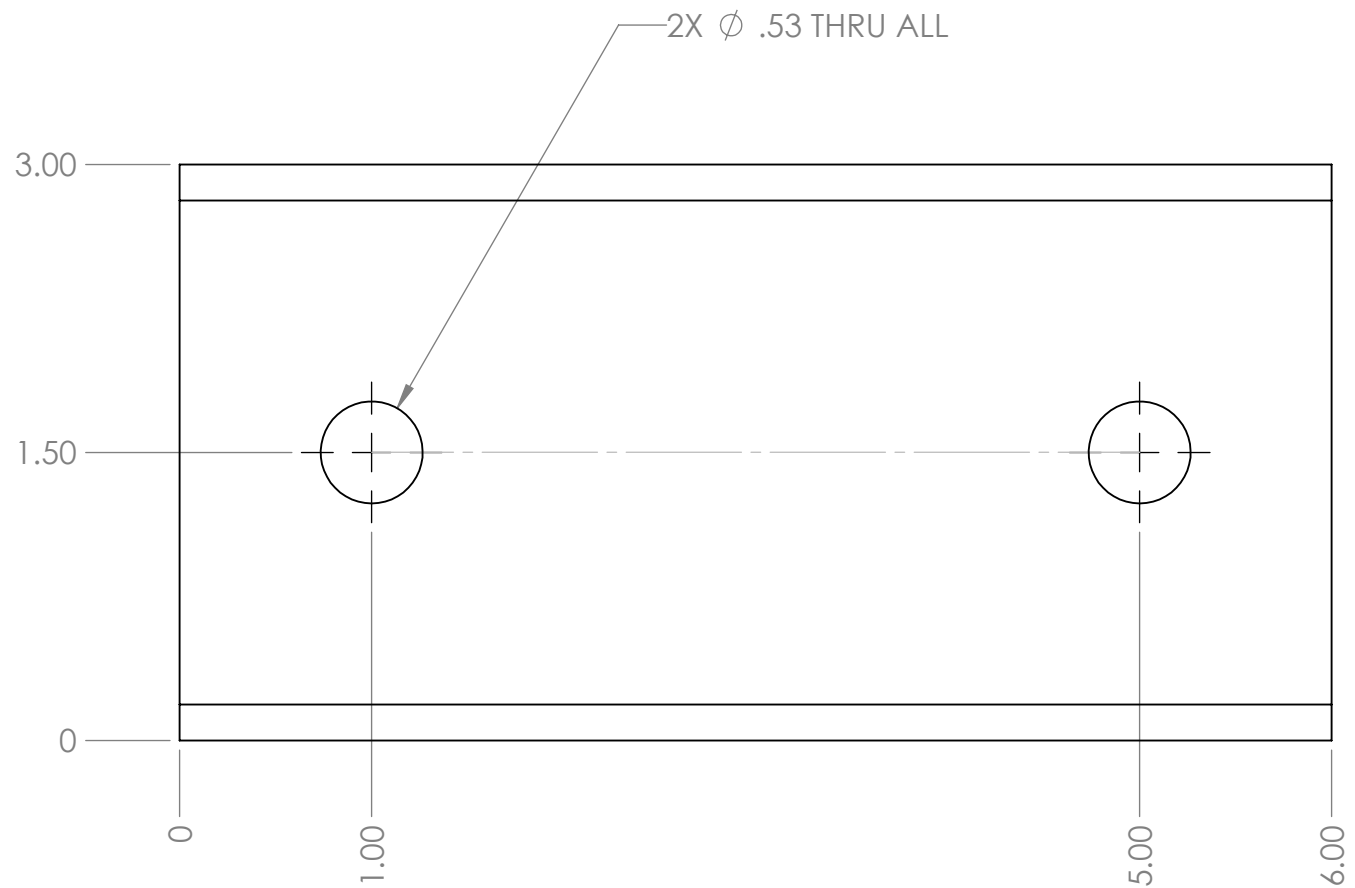
3

2

1

B

B





A

A

- Notes:
1. Material: 1" x 3" x 0.12" Mild Steel Rectangle Tube A500/A513 Hot Rolled
  2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE: Hard Stop, Weldment, Tube, Hitting Assembly Mount</div>	
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	10/22/19		
			CHECKED				
			ENG APPR.				
			MFG APPR.			SIZE DWG. NO. REV <b>B</b> <b>GE-20086</b> <b>0</b>	
			Q.A.				
			COMMENTS:				
GE-20088		INTERPRET GEOMETRIC TOLERANCING PER:				SCALE: 1:1	WEIGHT:
GE-20089		MATERIAL STEEL TUBE					SHEET 1 OF 1
NEXT ASSY	USED ON	FINISH BARE					
APPLICATION		DO NOT SCALE DRAWING					

4

3

2

1



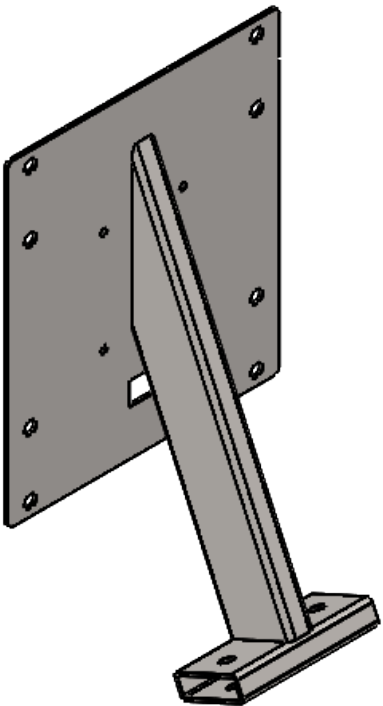
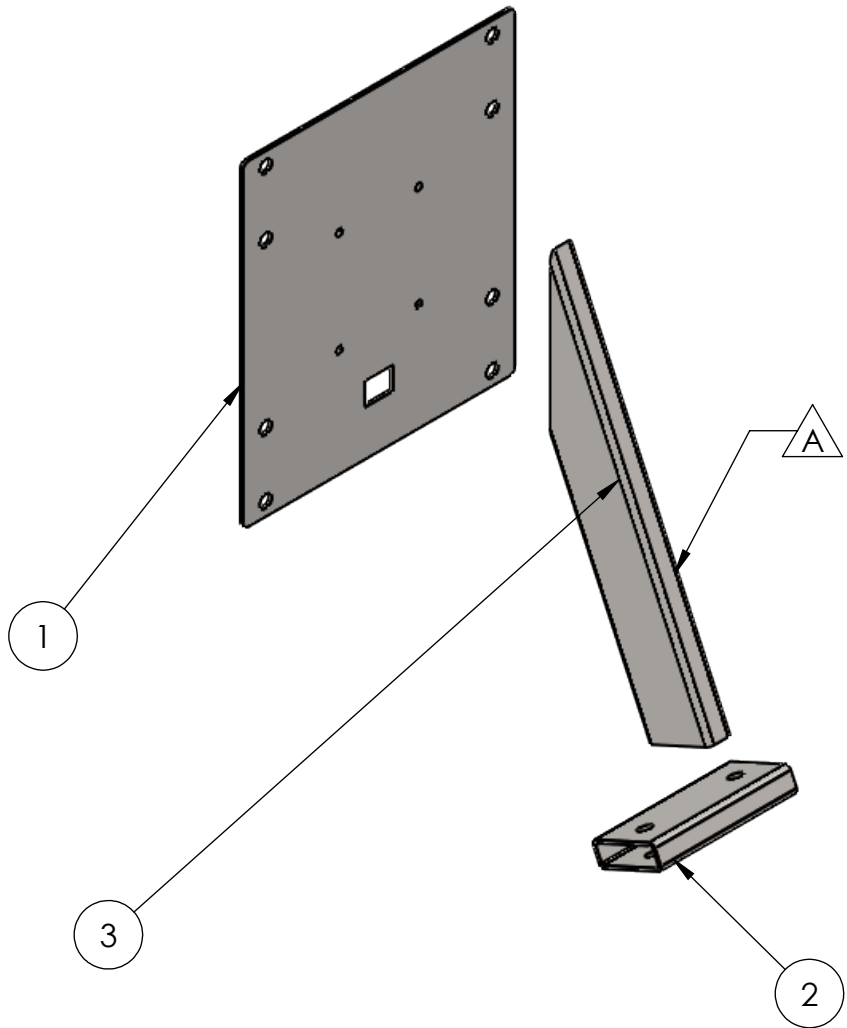
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3

2



1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, B3, 2-A2, 2-A4, 2-B3	A	Updated Length of Part GE-20083 & Changed Mounting Location to GE-20081	10/30/2019	KAMC



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20081	Hard Stop, Weldment, Truss Mount Plate	1
2	GE-20086	Hard Stop, Weldment, Tube, Hitting Assembly Mount	1
3	GE-20083	Hard Stop, Weldment, Tube, Short	1



		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	10/22/19	TITLE:  Hard Stop, Weldment, Small	
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.				
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20089</b> <b>A</b>	
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL				SCALE: 1:6 WEIGHT: SHEET 1 OF 2	
NEXT ASSY	USED ON	FINISH PAINT					
APPLICATION		DO NOT SCALE DRAWING					

- Notes:
1. Finish: Silver/Gray - Paint
  2. Remove all burrs and sharp edges.
  3. Tag or label with part number.

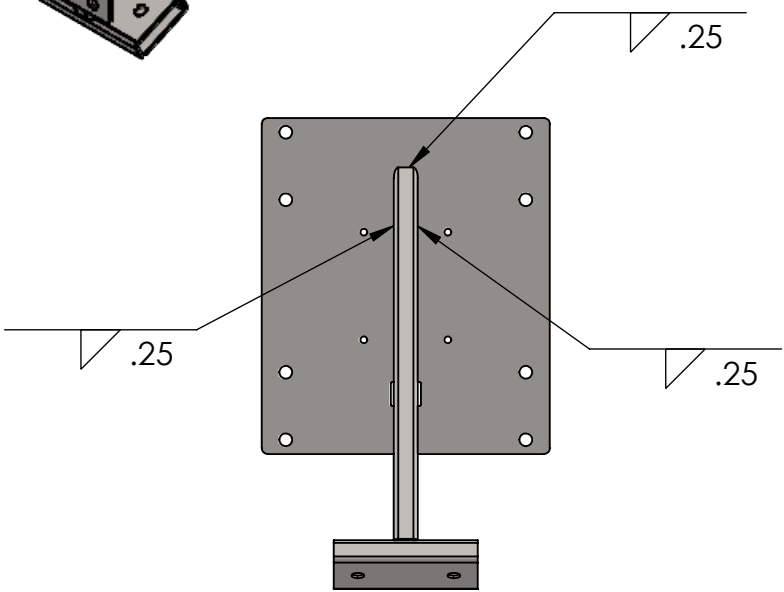
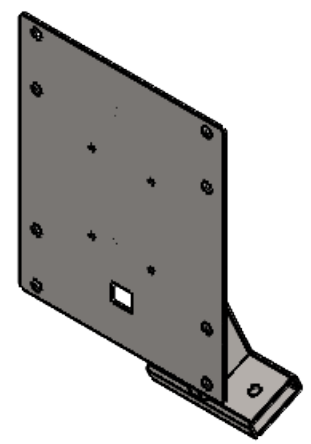
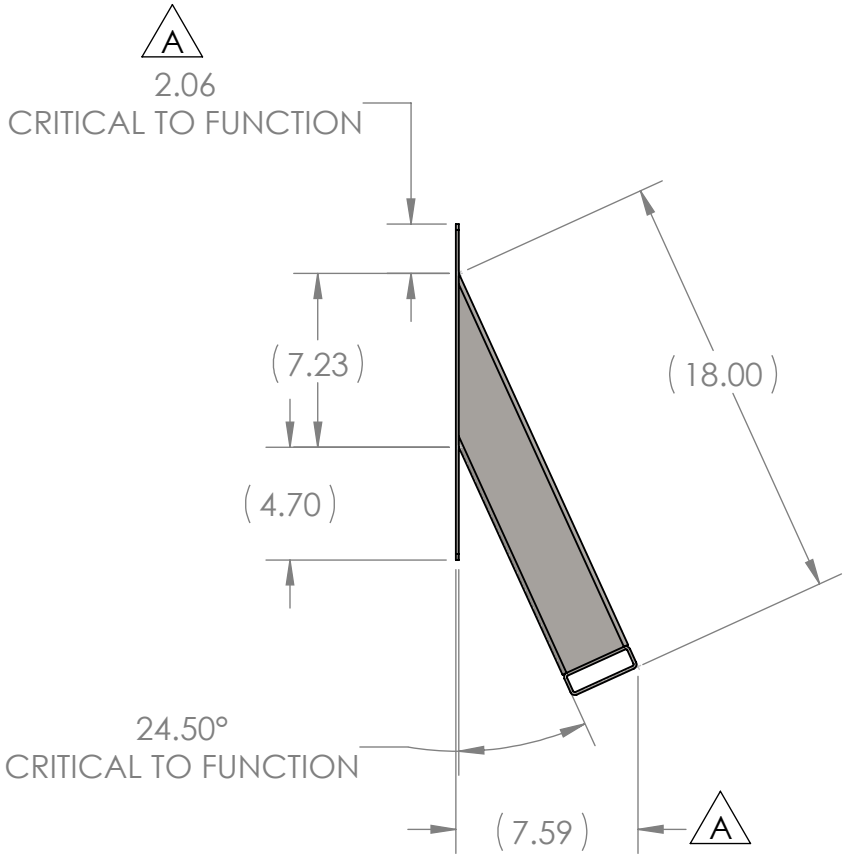
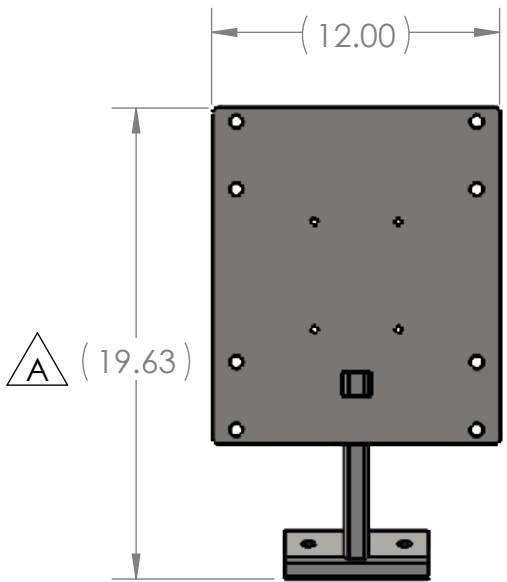
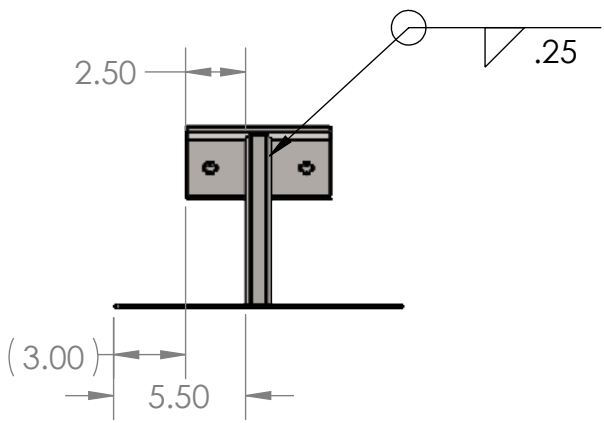
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B

B



A

A



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
-	-	See Sheet1	-	-

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE: <b>Hard Stop, Weldment, Small</b></div>
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	10/22/19	
		TOLERANCES:	CHECKED			
		FRACTIONAL ±1/16	ENG APPR.			
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.			
		TWO PLACE DECIMAL ±.01	Q.A.			SIZE DWG. NO. REV
		THREE PLACE DECIMAL ±.001	COMMENTS:			<b>B GE-20089 A</b>
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				SCALE: 1:8 WEIGHT: SHEET 2 OF 2
		FINISH PAINT				
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

4

3

2

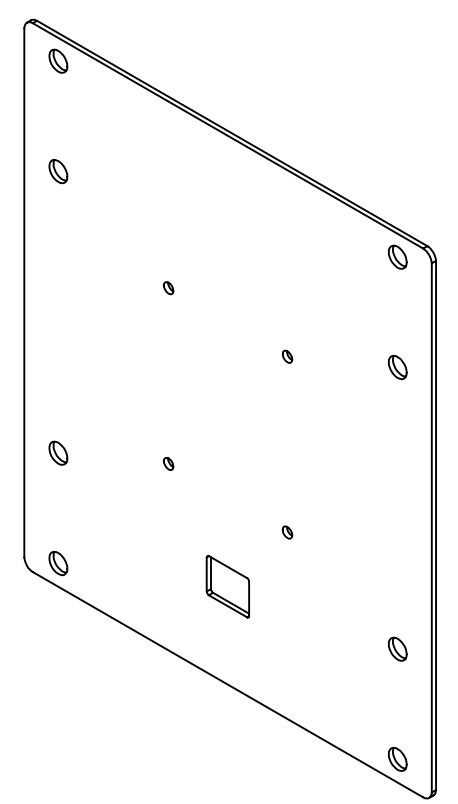
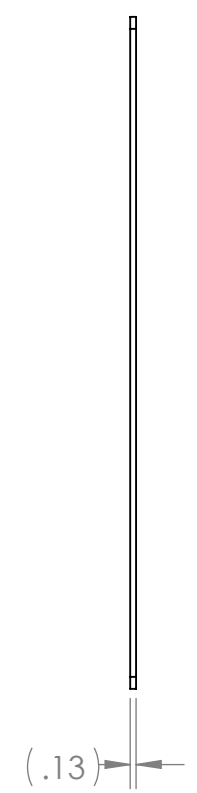
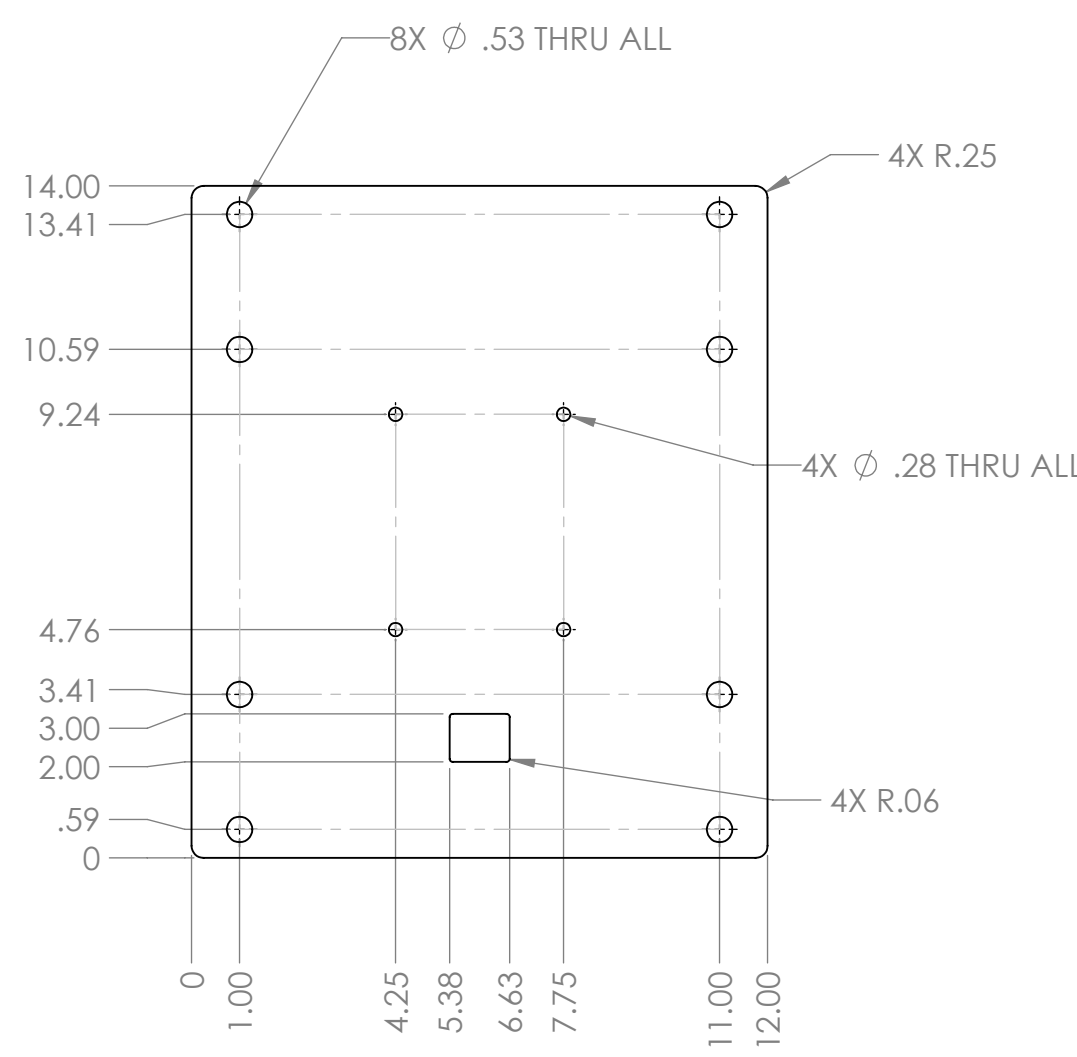
1

B

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B

A



- Notes:
1. Material: 0.125" Mild Steel A366/1008 Cold Roll
  2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN	KAMC	10/21/19	TITLE:  Hard Stop, Weldment, Truss Mount Plate		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
GE-20089		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
GE-20088		MATERIAL STEEL PLATE	COMMENTS:			SIZE	DWG. NO.	REV
NEXT ASSY	USED ON	FINISH BARE				B	GE-20081	0
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4	WEIGHT:	SHEET 1 OF 1

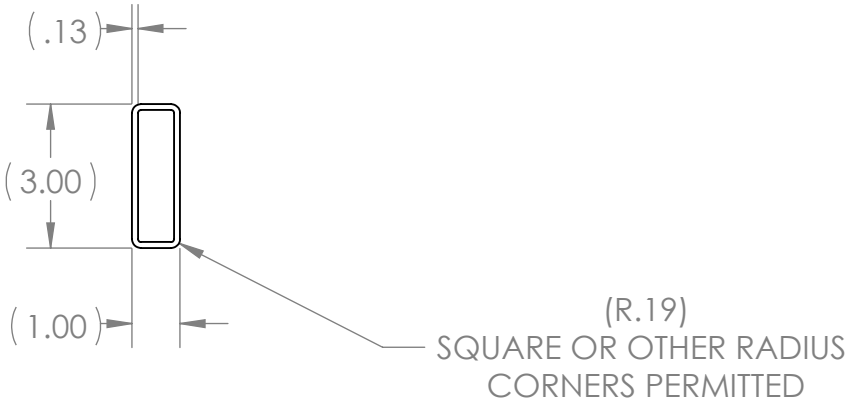
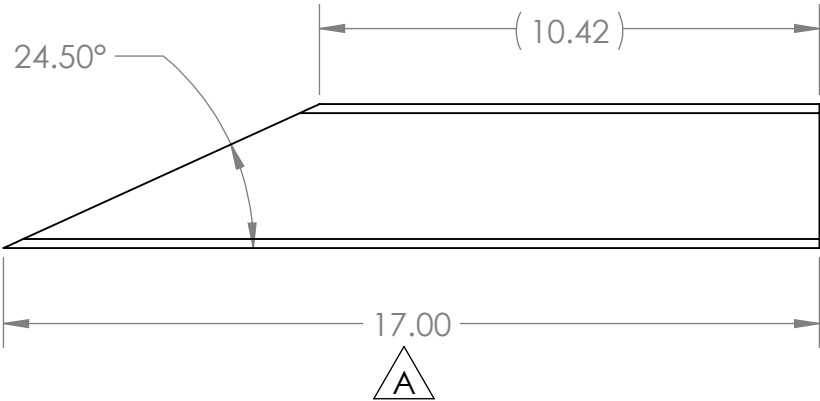
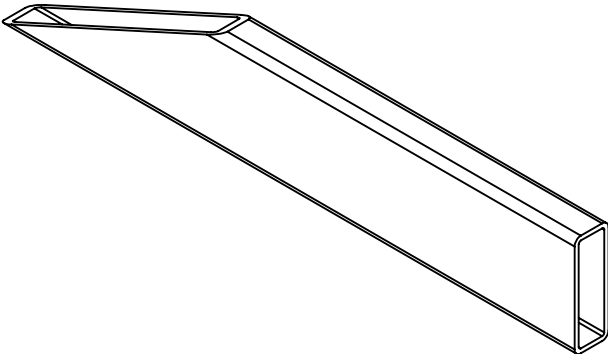
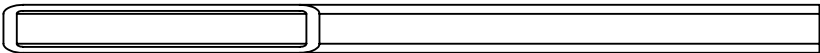
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3

2



1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, A3	A	Updated Part Length & Application Table	10/30/2019	KAMC



- Notes:
- Material: 1" x 3" x 0.12" Mild Steel Rectangle Tube A500/A513 Hot Rolled
  - Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	KAMC	10/22/19	TITLE:  Hard Stop, Weldment, Tube, Short		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
GE-20089		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE	DWG. NO.	REV
NEXT ASSY	USED ON	MATERIAL STEEL TUBE				B	GE-20083	A
		FINISH BARE						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4	WEIGHT:	SHEET 1 OF 1

4

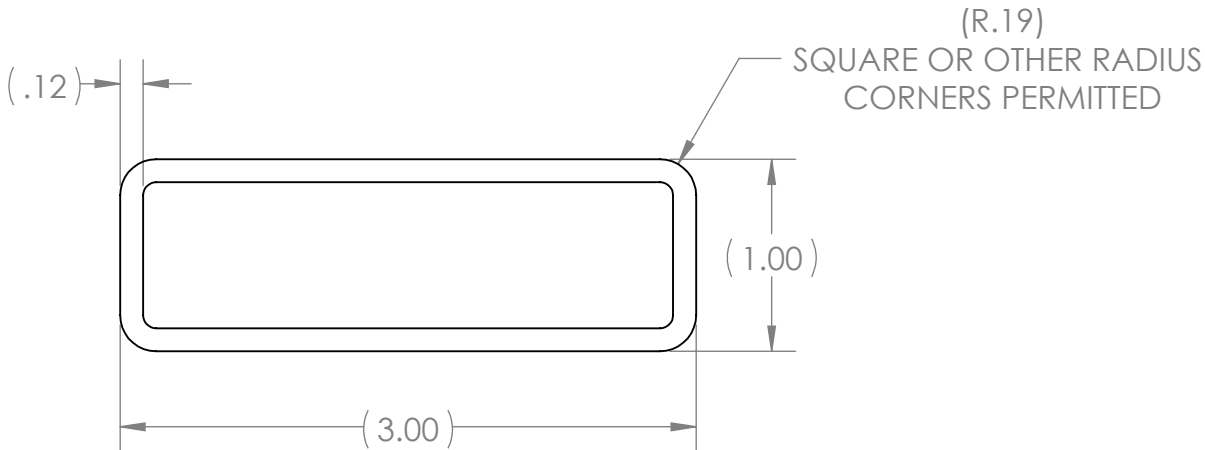
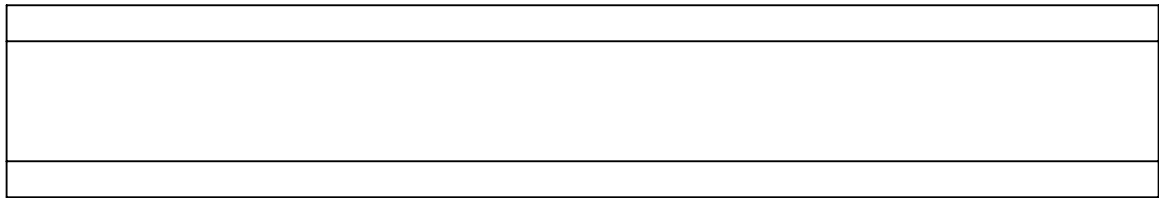
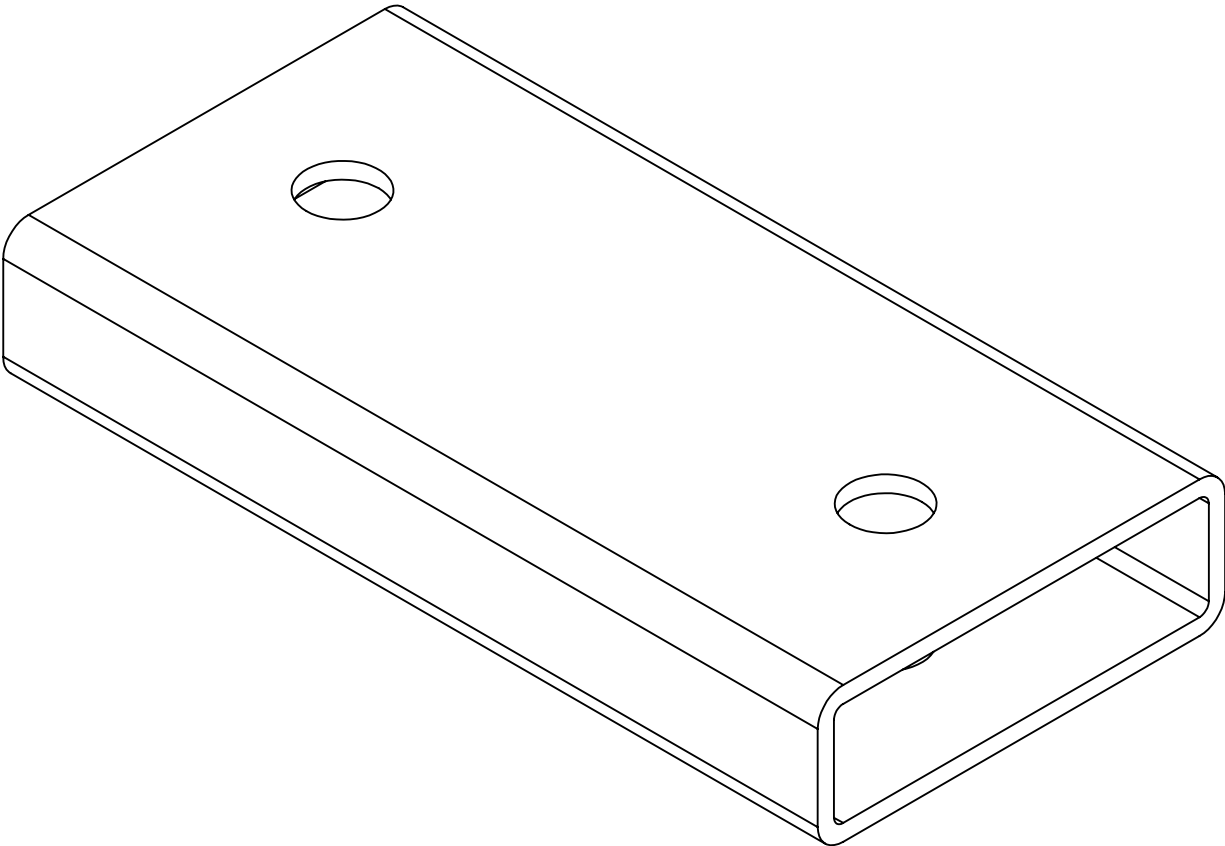
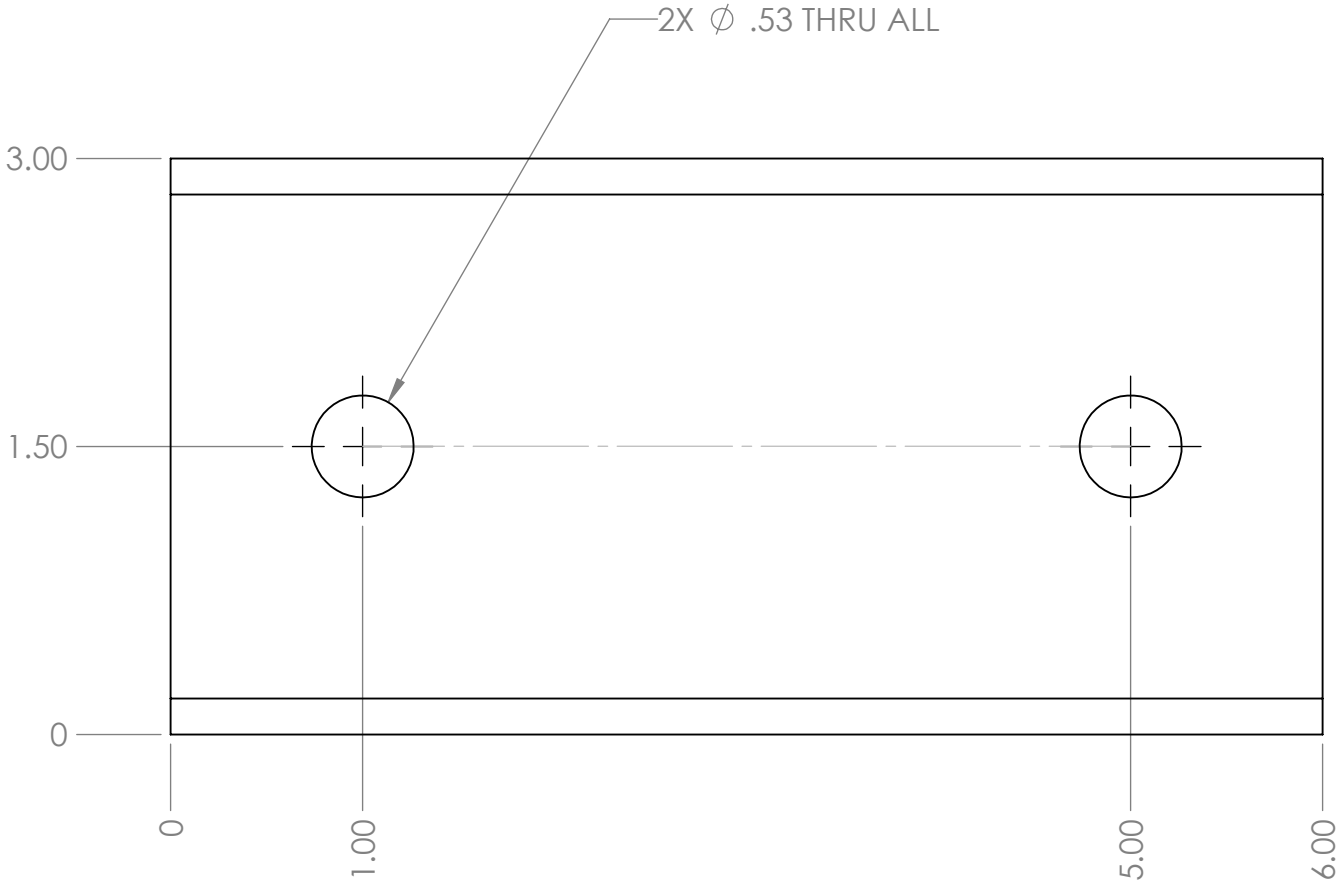
3

2

1

B

B





A

A

- Notes:
1. Material: 1" x 3" x 0.12" Mild Steel Rectangle Tube A500/A513 Hot Rolled
  2. Remove all burrs and sharp edges.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 	
		DIMENSIONS ARE IN INCHES	DRAWN	KAMC	10/22/19		
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			TITLE: Hard Stop, Weldment, Tube, Hitting Assembly Mount	
		TWO PLACE DECIMAL $\pm .01$	Q.A.				
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE	DWG. NO.
GE-20088		INTERPRET GEOMETRIC				<b>B</b>	GE-20086
GE-20089		TOLERANCING PER:					
		MATERIAL					
		STEEL TUBE					
NEXT ASSY	USED ON	FINISH					
		BARE					
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:1	WEIGHT:
							SHEET 1 OF 1

4

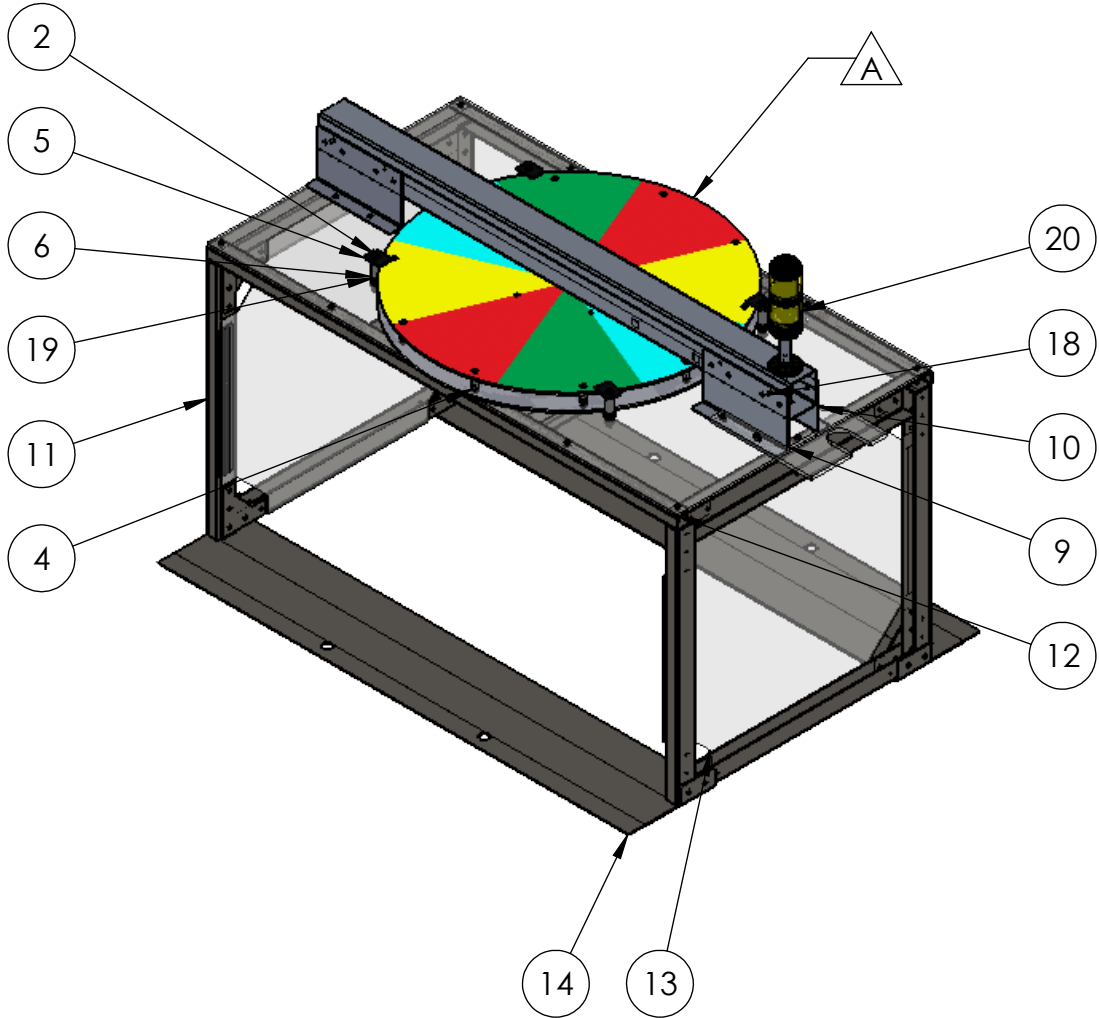
3

2

1



4		3	
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	46CLR	46CLR	1
2	Button_hex_.375_16_2.5	Button hex drive 3/8-16 x 2.5"	4
3	Flat_phil_.25_20_2.25	Flat Head Phil .25-20 x 2.25"	4
4	GE-20104	Control Panel	1
5	GE-20121	Flange for control panel	4
6	GE-20122	0.375" id bearing shielded	8
7	GE-20141	Mounting Bracket (46CLR ColorSight)	2
8	GE-20142	Sensor Tray Lid	1
9	GE-20143	Trench to Truss Gusset	1
10	GE-20160	Sensor Housing Assembly with cable tie mounts	1
11	GE-20161	GE-20101 with hook	2
12	GE-20162	GE-20102 with GE-20114	1
13	GE-20163	GE-20115 with loop	2
14	GE-20164	GE-20123 with 4" hook	2
15	Pan_phil_10-32_1	Pan Head 10-32 1"	4
16	Pan_phil_10-32_.625	Pan head Phil 10-32 x 5/8	24
17	Pan_phil_M3_35	Pan Head M3 x 35mm	2
18	Pin_quick_ring_.25_0.6875	Quick Release Pin with ring 11/16" usable	4
19	Spacer_.375_.75_2	3/4" OD 2" spacer for 3/8" screw	4
20	StackLight_Assembly	Stack Light Assembly	1
21	flat_phil_.25_20_.75	Steel Phillips Flat Head Screw, 1-4"-20 x 3/4" long, fully threaded	2
22	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	7
23	nylock_.375_16	Steel Nylon-Insert Locknut, 3/8"-16	5
24	nylock_10_32	Low-Strength Steel Nylon-Insert Locknut, Zinc-Plated, 10-32 Thread Size	16
25	nylock_M3	nylock M3	2

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B1	A	Fixed color pattern appearance to match GE-20105 and GE-20106 drawings	1/6/2020	CPO



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		TOLERANCES:			CHECKED	
		FRACTIONAL ±1/16			ENG APPR.	
		ANGULAR: MACH ±1° BEND ±1°			MFG APPR.	
		TWO PLACE DECIMAL ±.01			Q.A.	
		THREE PLACE DECIMAL ±.001			COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				
		FINISH				
		NEXT ASSY				
		USED ON				
		APPLICATION				
		DO NOT SCALE DRAWING				



TITLE:  
**Trench with Control Panel**

SIZE **B** DWG. NO. **GE-20100** REV **A**

SCALE: 1:16 WEIGHT: SHEET 1 OF 6





4

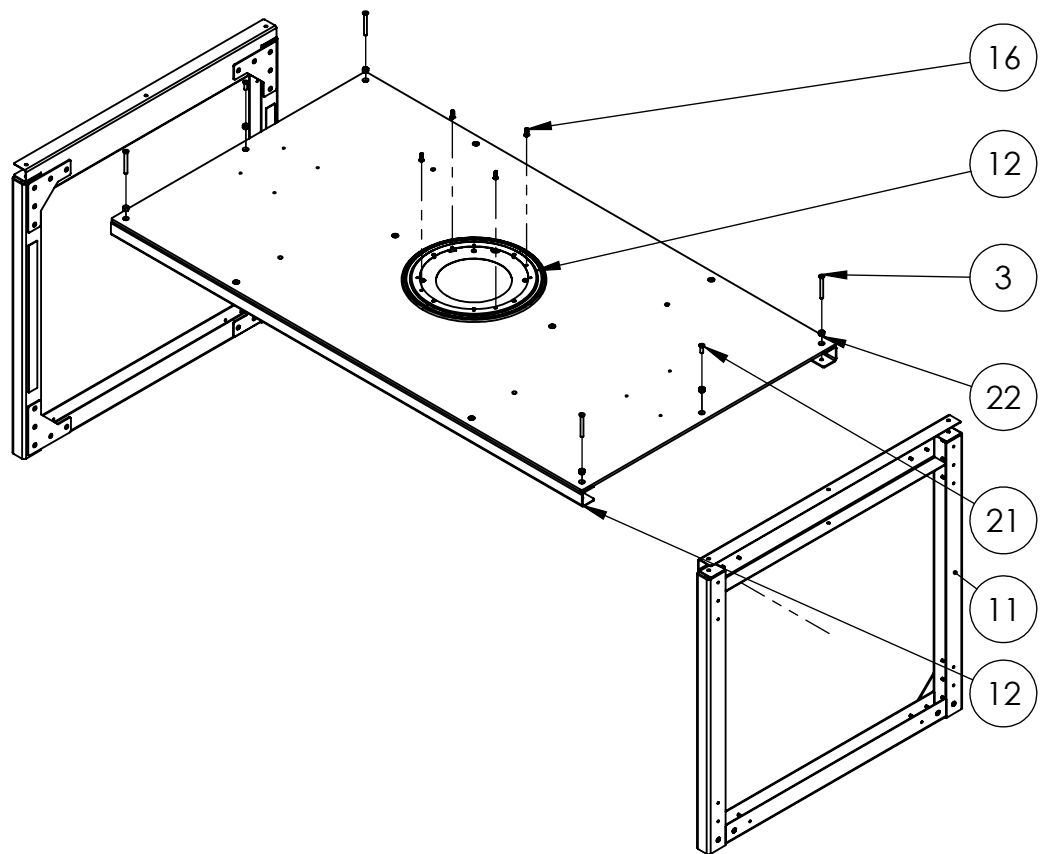
3

2

1

B

B



Notes:

- 1. Slide 11 into 12
- 2. Attach 12 to 11 using 3, 21 and 22 in three spots per side

A

A

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		FRACTIONAL ±1/16	ENG APPR.		
		ANGULAR: MACH±1° BEND ±1°	MFG APPR.		
		TWO PLACE DECIMAL ±.01	Q.A.		
		THREE PLACE DECIMAL ±.001	COMMENTS:		
		INTERPRET GEOMETRIC			
		TOLERANCING PER:			
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
Trench with  
Control Panel

SIZE	DWG. NO.	REV
B	GE-20100	A
SCALE: 1:16 WEIGHT:		SHEET 3 OF 6

4

3

2

1

4

3

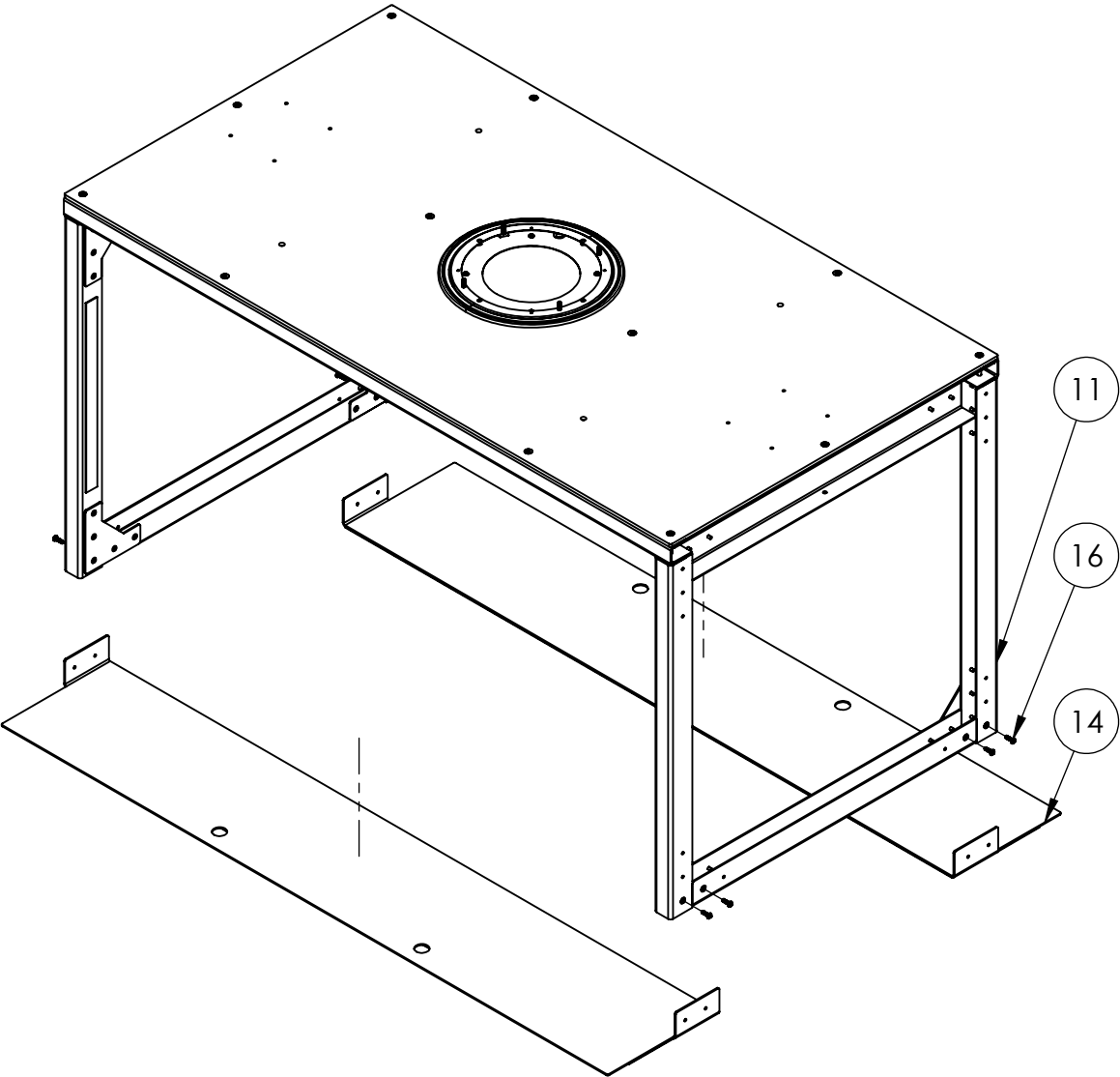
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1

B

B

- Notes:
- 1. Attach 14 to 11 on the outside
  - 2. Use 16 to assemble. Rivet nut is in 11



A

A

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		ANGULAR: MACH ± 1° BEND ± 1°	MFG APPR.		
		TWO PLACE DECIMAL ±.01	Q.A.		
		THREE PLACE DECIMAL ±.001	COMMENTS:		
		INTERPRET GEOMETRIC			
		TOLERANCING PER:			
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			



TITLE:			Trench with Control Panel		
SIZE	DWG. NO.			REV	
B	GE-20100			A	
SCALE: 1:16		WEIGHT:	SHEET 4 OF 6		

4

3

2

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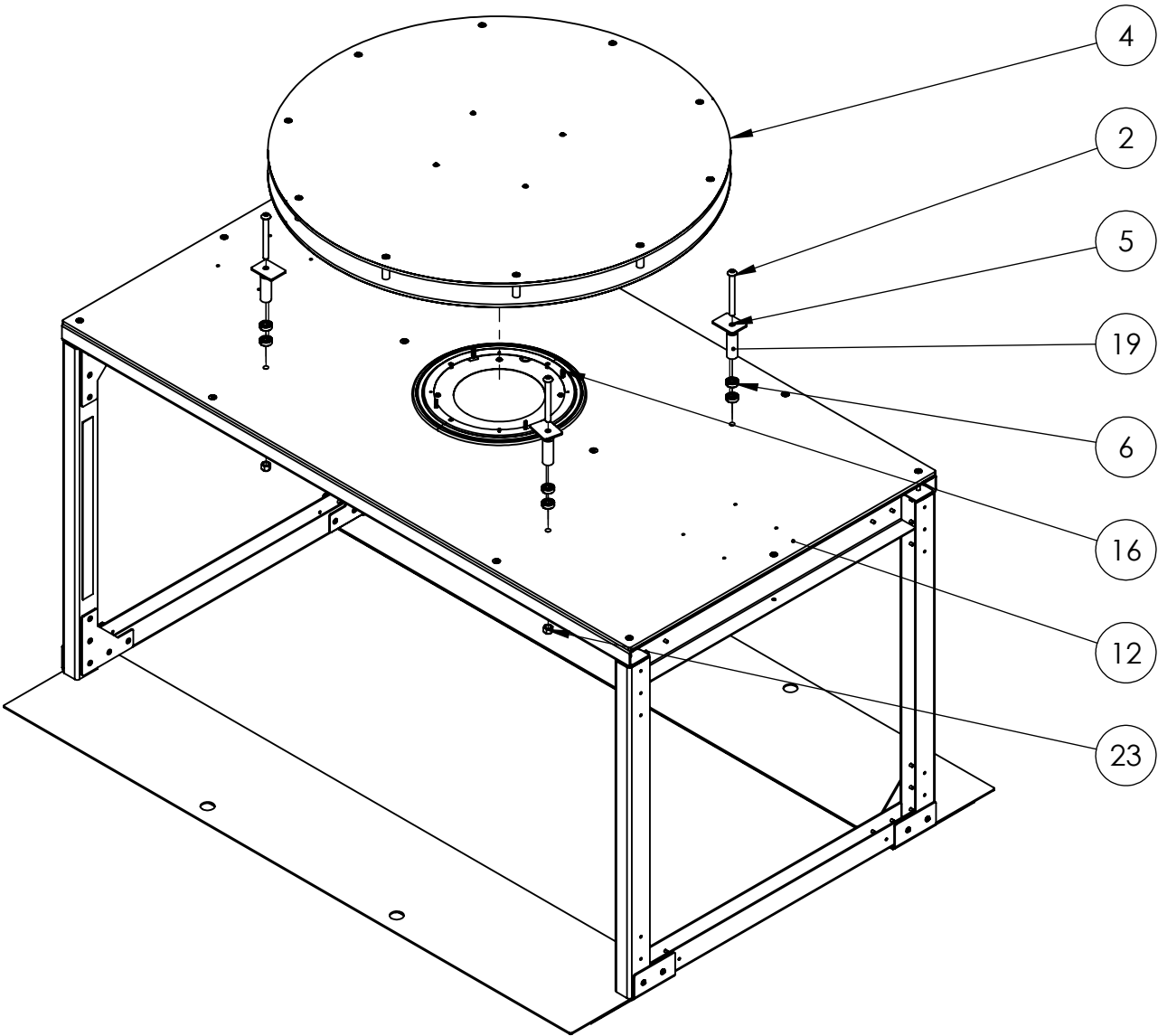
1

B

B

Notes:

- 1. Attach 4 to 12 on the Susan with 16 .
- 2. Assemble from top to bottom the following. 2 5 19 6 .
- 3. Insert Step 2 into 12 and secure with 23



A

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			DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
			Q.A.		
			COMMENTS:		
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE: Trench with Control Panel		
SIZE B	DWG. NO. GE-20100	REV A
SCALE: 1:16 WEIGHT:		SHEET 5 OF 6

4

3

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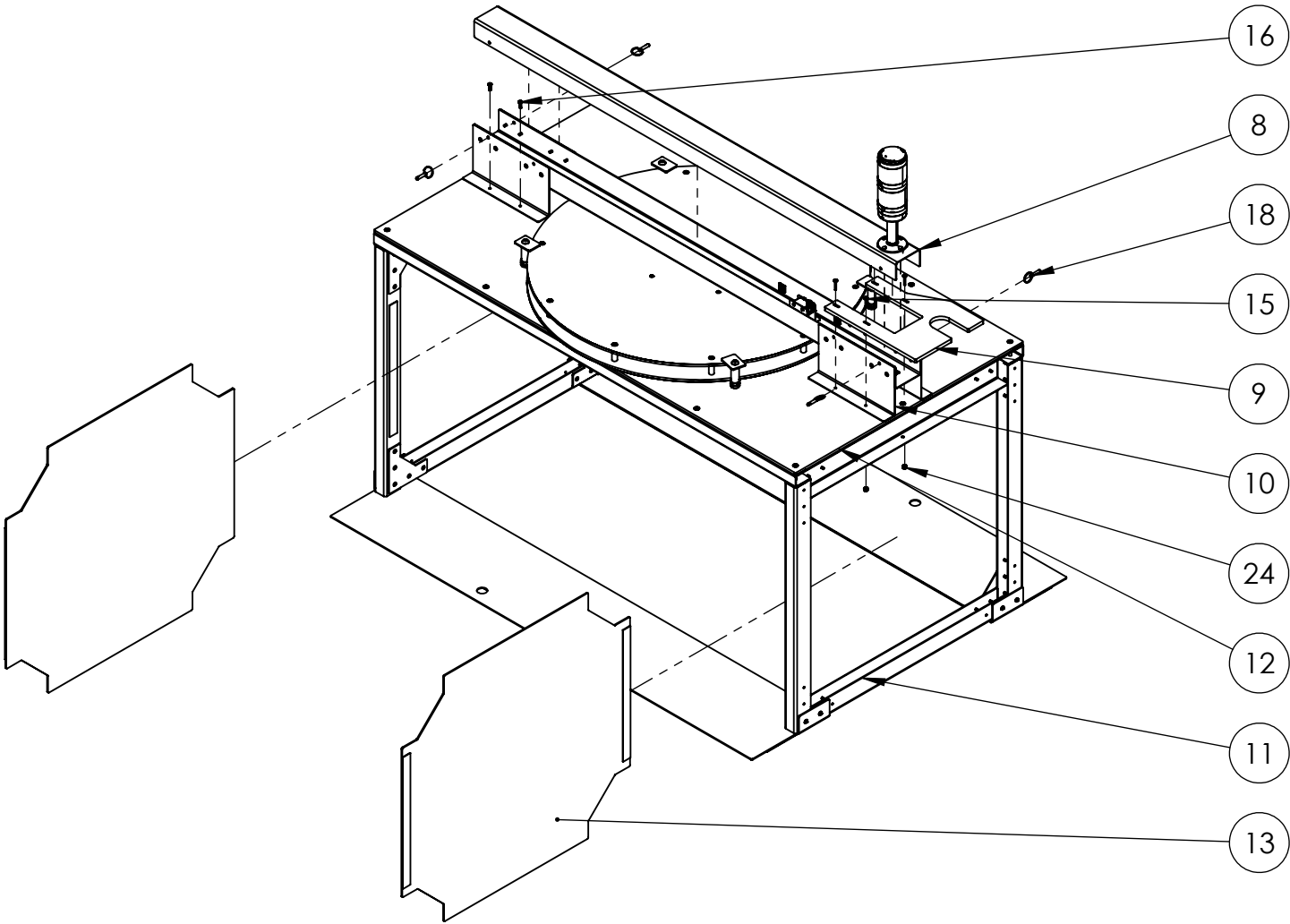
1

B

B

Notes:

- 1. Attach 13 to 11 with hook and loop
- 2. Attach 10 to 12 using 16 just on one side
- 3. After placement on the field attach 9 to 10 and 12 with 15.
- 4. After wiring and pass through of cable attach 8 to 10 using 18



A

A

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		TOLERANCES:	CHECKED		
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		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.		
		TWO PLACE DECIMAL ±.01	Q.A.		
		THREE PLACE DECIMAL ±.001	COMMENTS:		
		INTERPRET GEOMETRIC			
		TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
Trench with  
Control Panel

SIZE DWG. NO. REV  
B GE-20100 A

SCALE: 1:16 WEIGHT: SHEET 6 OF 6

4

3

2

1

4

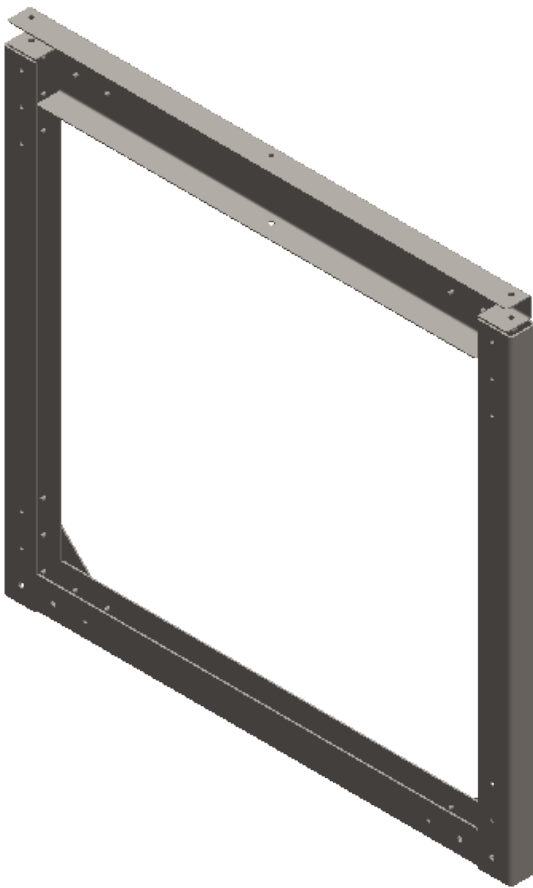
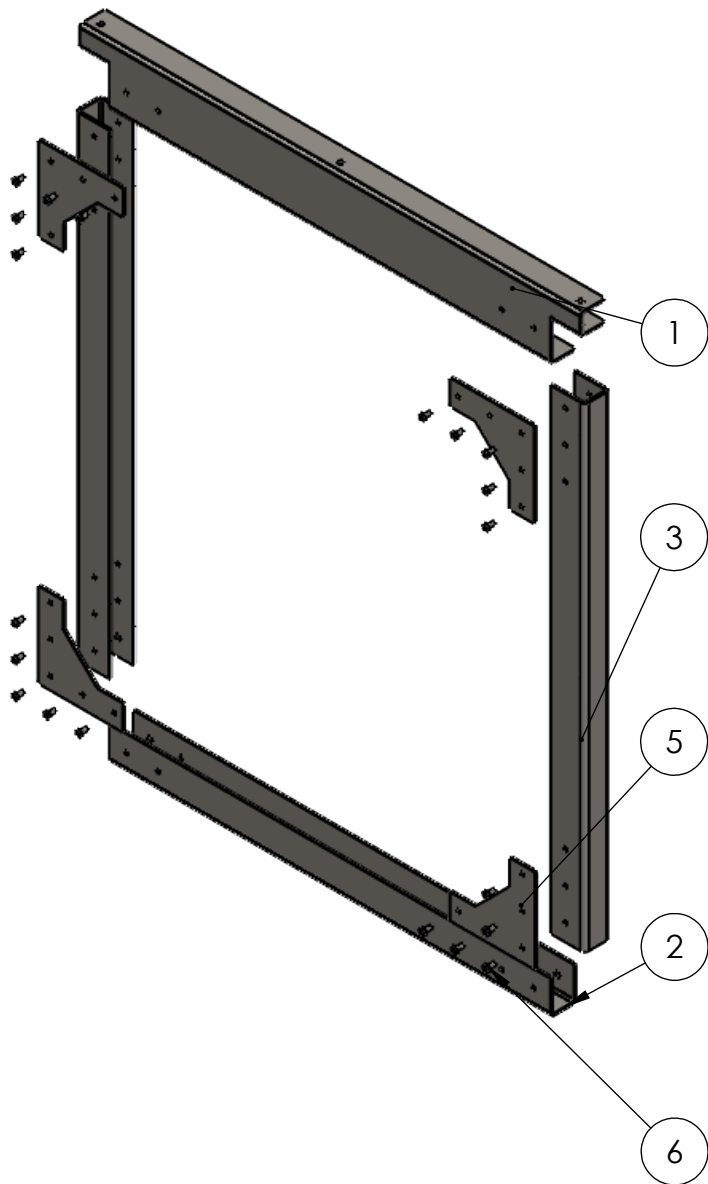
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2

1

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
4-A4, 5-B2	A	Add 19/64 holes for rivnuts	12/10/2019	NTW





Notes:

1. Label or Tag with Part Number

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20101-01	14 Gauge Pre-plated steel	1
2	GE-20101-02	12 Gauge Pre-plated Steel	1
3	GE-20101-03	12 Gauge Pre-plated steel	1
5	GE-20101-04	12 Gauge Pre-plated steel	4
6	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	20

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ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$		MFG APPR.	
TWO PLACE DECIMAL $\pm .01$		Q.A.	
THREE PLACE DECIMAL $\pm .001$		COMMENTS:	
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL			
FINISH			
NEXT ASSY	USED ON		
APPLICATION		DO NOT SCALE DRAWING	



TITLE:  
**Trench Leg**

SIZE <b>B</b>	DWG. NO. <b>GE-20101</b>	REV <b>A</b>
SCALE: 1:8 WEIGHT:		SHEET 1 OF 5

4

3

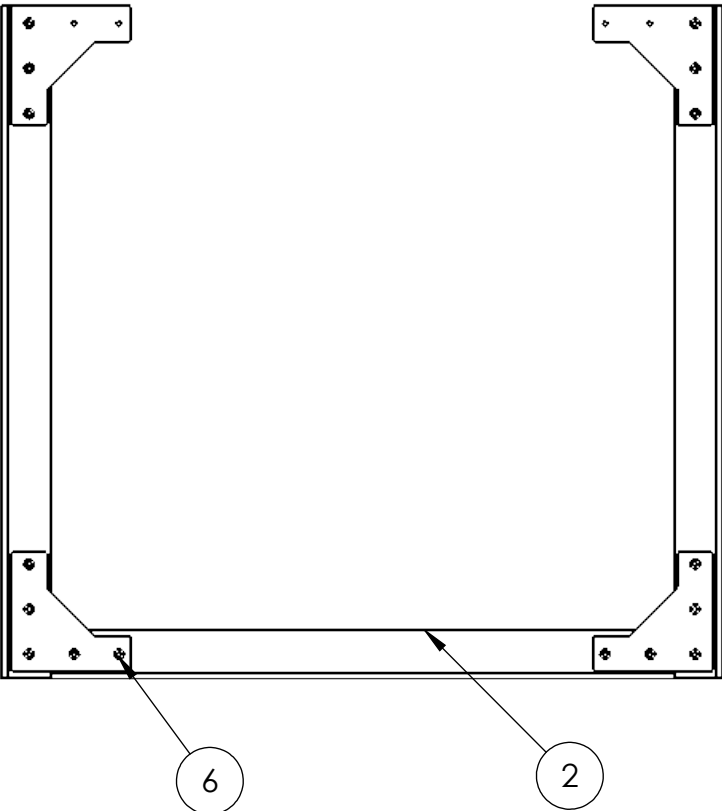
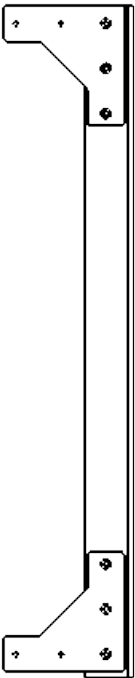
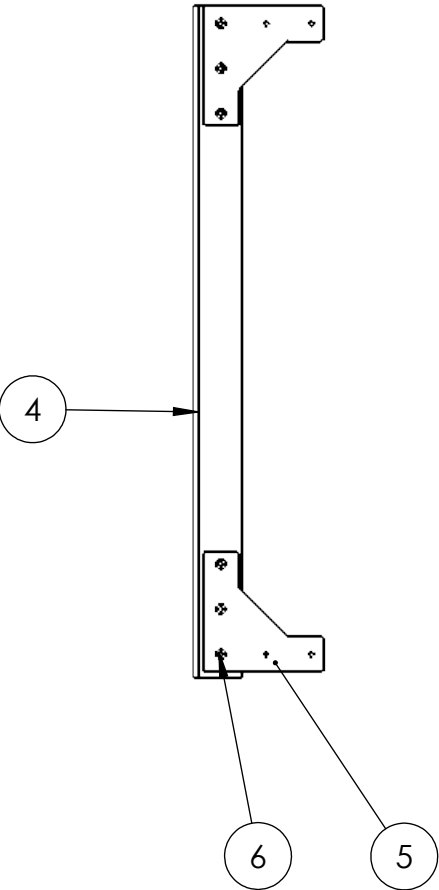
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Step 1:

Step 2:

Step 3:



Assembly 5 to 4 with 6 QTY (6)  
Note: Zinc Plated Steel Rivets

Attach 2 to Step 2: with channel facing up with 6 QTY (4)  
Note: Zinc Plated Steel Rivets

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		TOLERANCES:	CHECKED		
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		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$			
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON		COMMENTS:		
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
**Trench Leg**

SIZE	DWG. NO.	REV
<b>B</b>	<b>GE-20101</b>	<b>A</b>
SCALE: 1:8	WEIGHT:	SHEET 2 OF 5

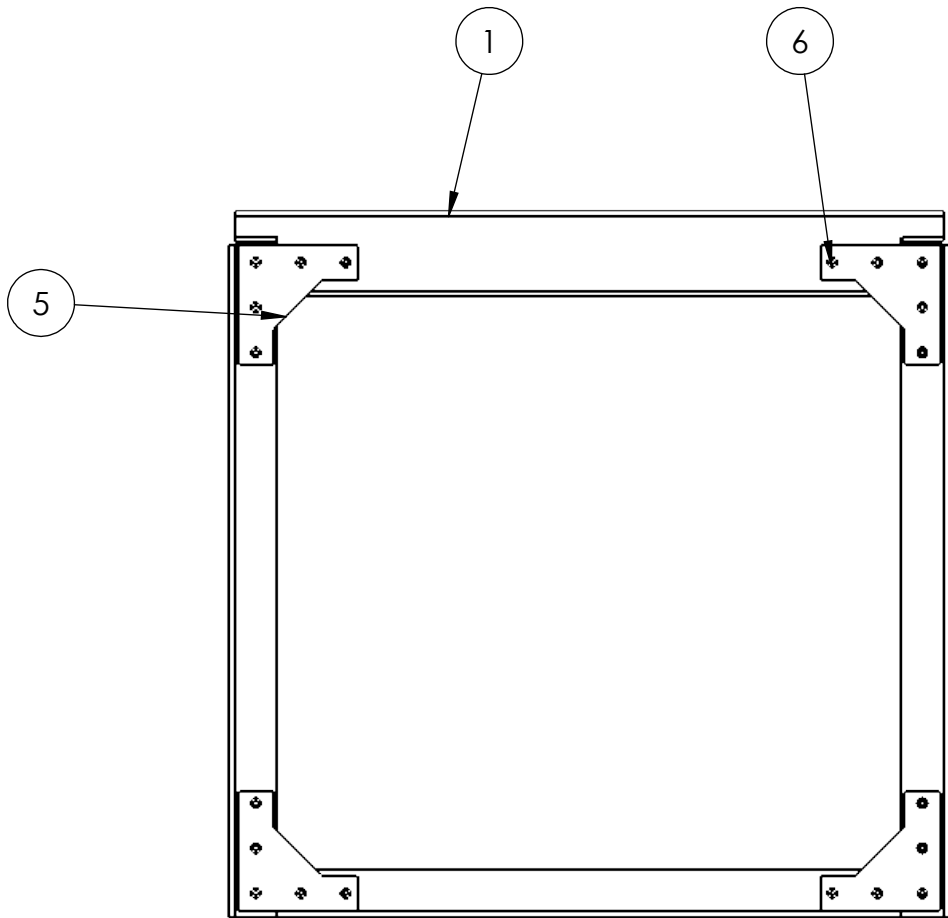
4

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1

Step 4:



Attach 1 to Step 3: with 6 QTY(4). Flanges away from 5

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		TOLERANCES:	CHECKED					
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		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.			SIZE DWG. NO. REV B GE-20101 A		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:					
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL				SCALE: 1:8	WEIGHT:	SHEET 3 OF 5
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING						

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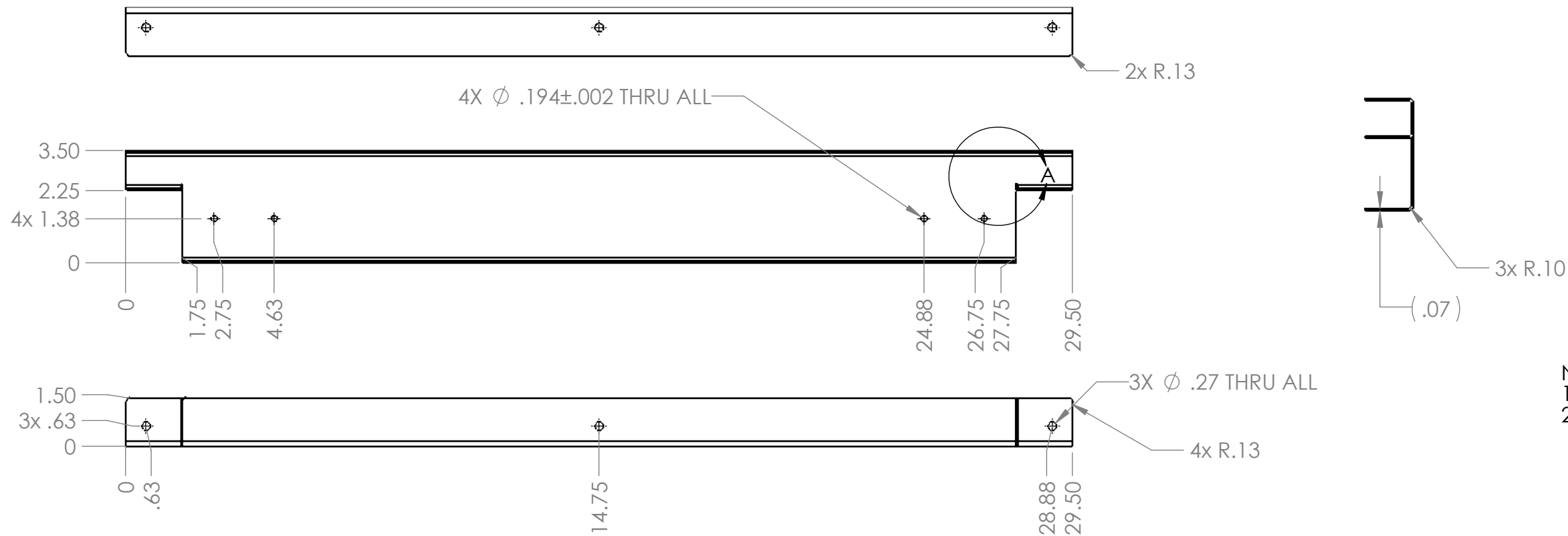
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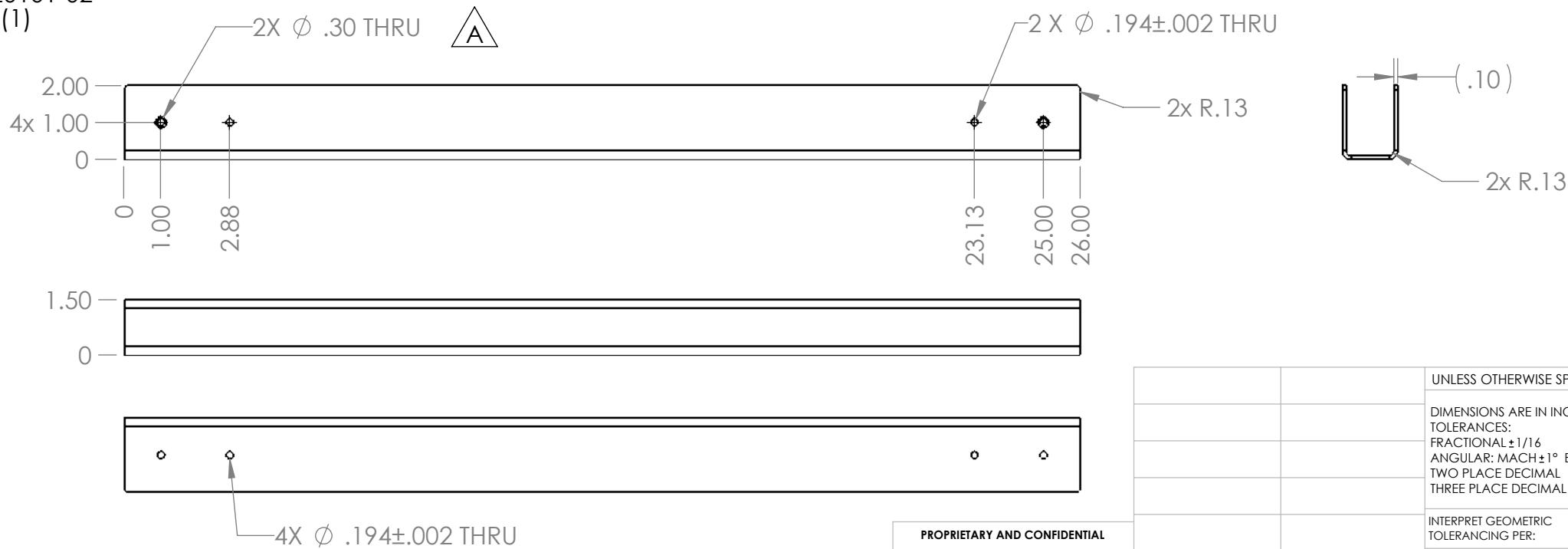
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GE-20101-01  
QTY (1)





- Notes:
1. Material: 14 Ga. Pre-plated steel
  2. Remove all burrs and sharp edges.

GE-20101-02  
QTY (1)



- Notes:
1. Material: 12 Ga. Pre-plated steel
  2. Remove all burrs and sharp edges.

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  <h1>Trench Leg</h1>				
			CHECKED							
			ENG APPR.							
			MFG APPR.							
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.							
		MATERIAL	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20101</b> <b>A</b>				
		FINISH								
NEXT ASSY	USED ON					SCALE: 1:8 WEIGHT: SHEET 4 OF 5				
APPLICATION		DO NOT SCALE DRAWING								

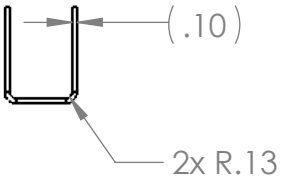
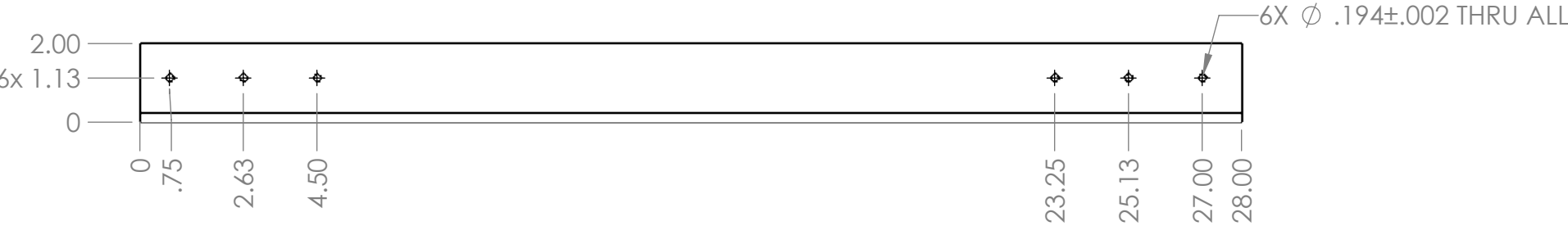
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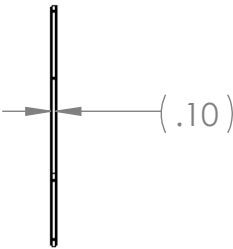
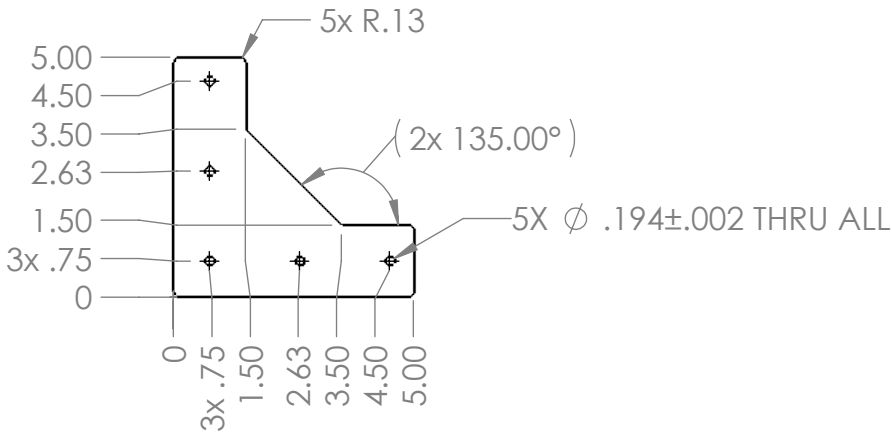
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GE-20101-03  
QTY(2)



- Notes:
1. Material: 12 Ga. Pre-plated steel
  2. Remove all burrs and sharp edges.



GE-20101-04  
QTY(4)



- Notes:
1. Material: 12 Ga. Pre-plated steel
  2. Remove all burrs and sharp edges.

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			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
		FINISH			
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING		



TITLE:  
**Trench Leg**

SIZE  
**B**

DWG. NO.  
**GE-20101**

REV  
**A**

SCALE: 1:8

WEIGHT:

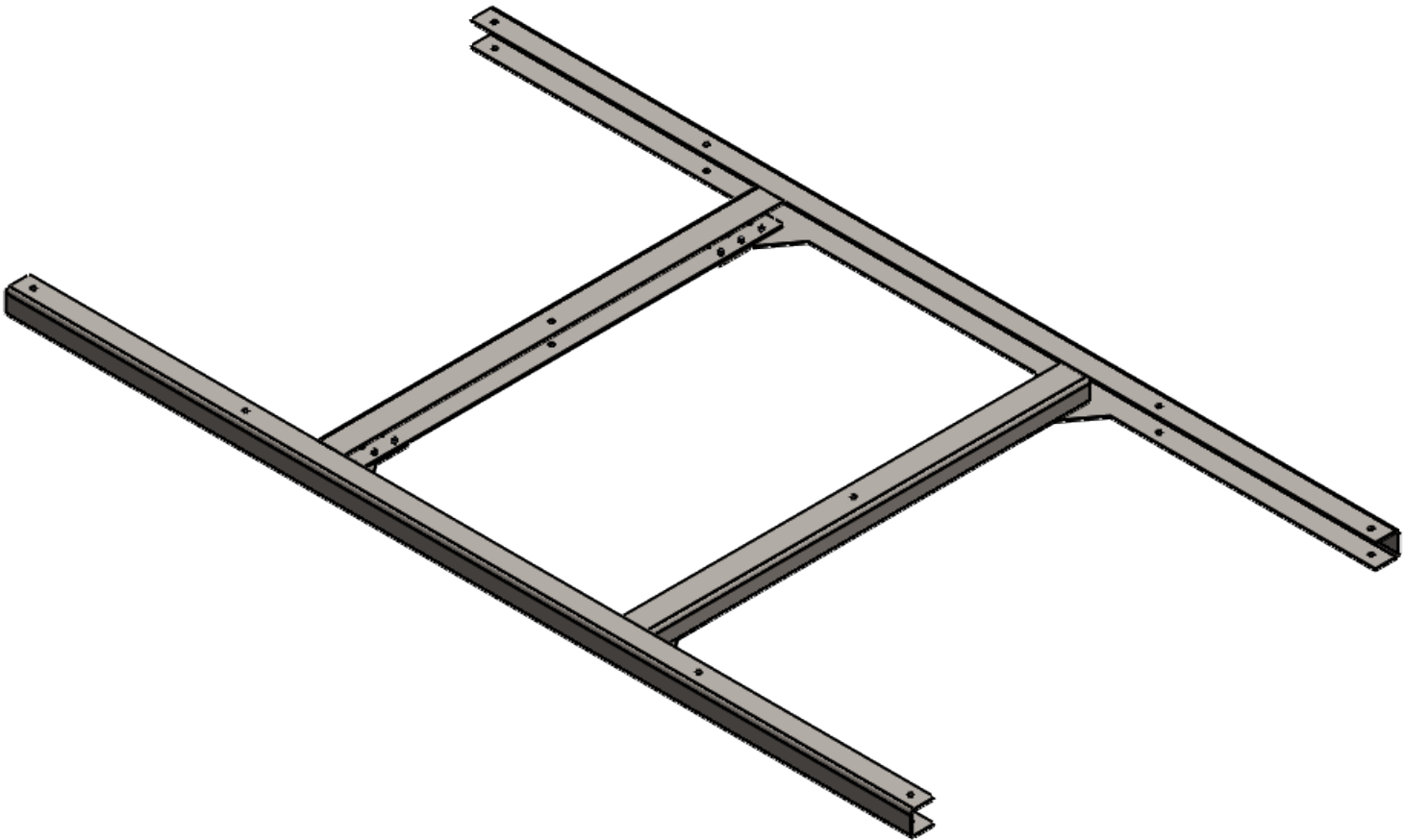
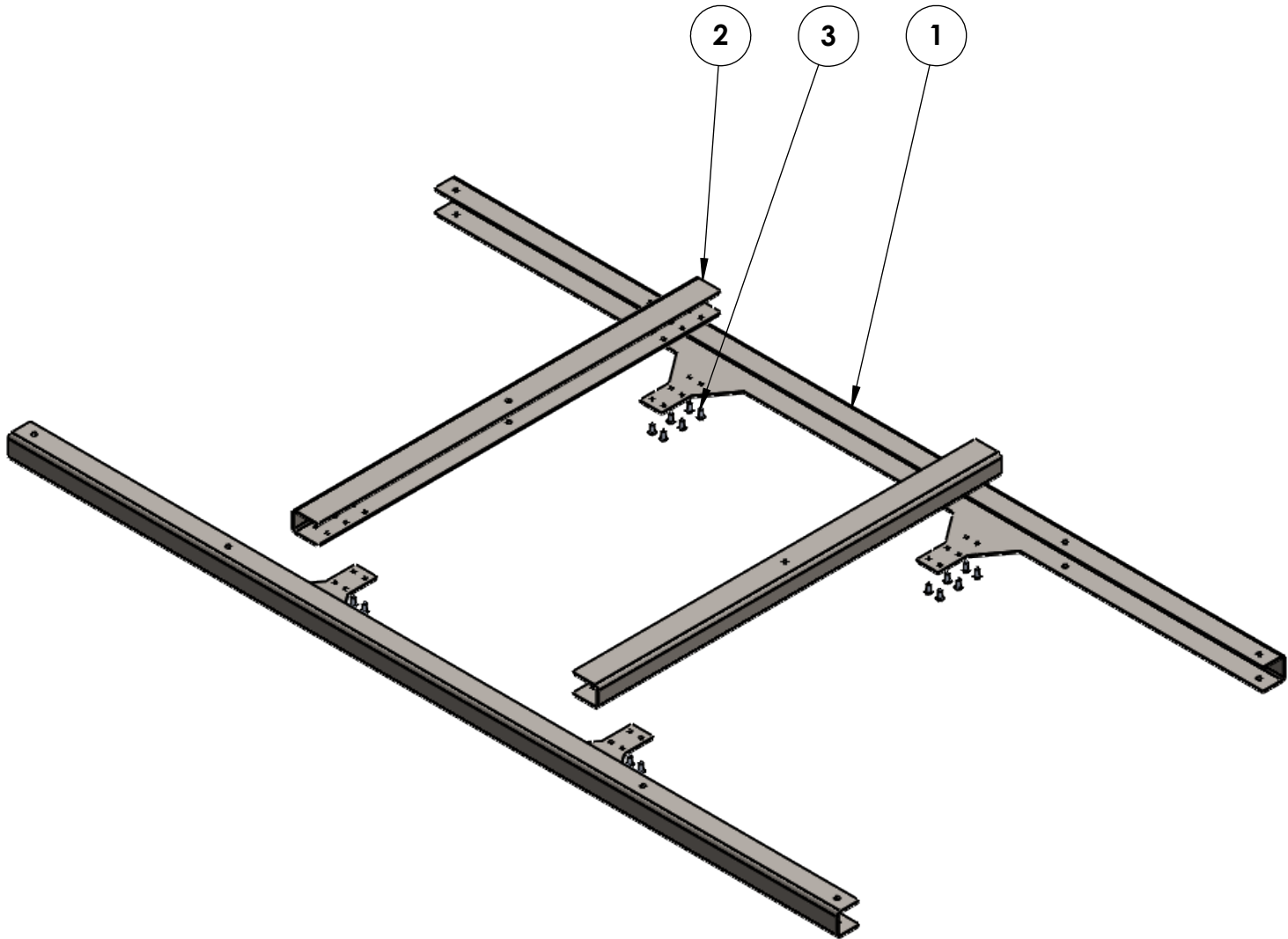
SHEET 5 OF 5

4

3

2



1



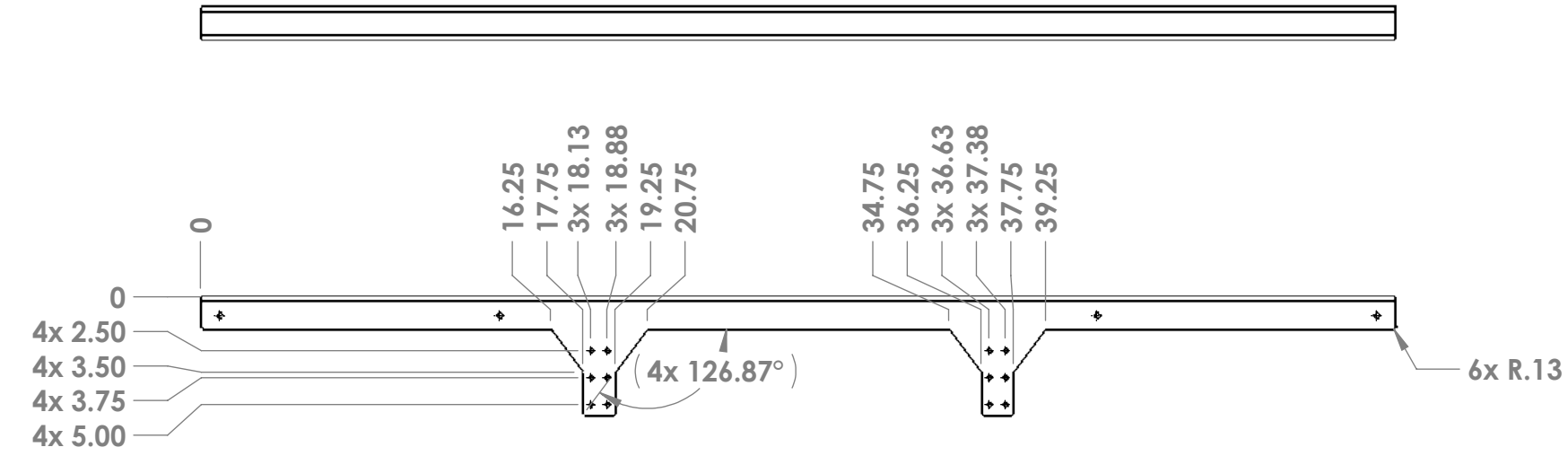
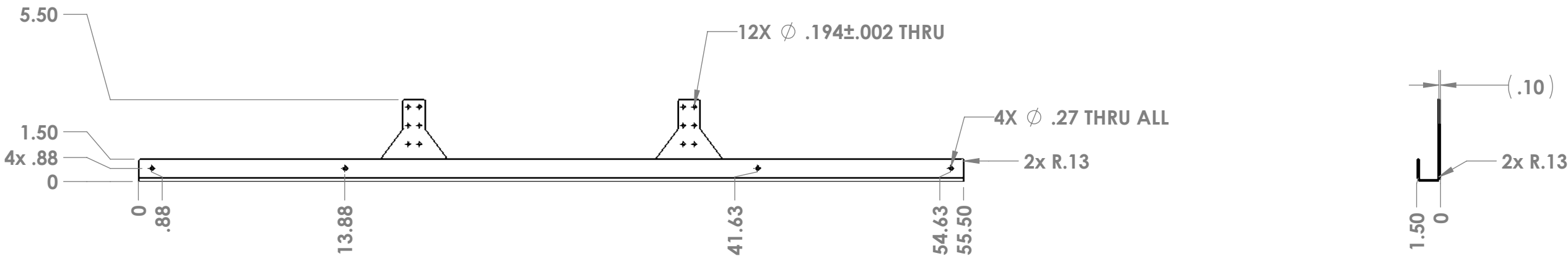
- Note:
- 1. Tag or Label with Part Number
  - 2. Zinc Plated Steel Rivets

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20102-01	12 Gauge Pre-plated Steel	2
2	GE-20102-02	12 Gauge Pre-plated Steel	2
3	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	24

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		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				
		FINISH				
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

GE-20102-01  
QTY (2)

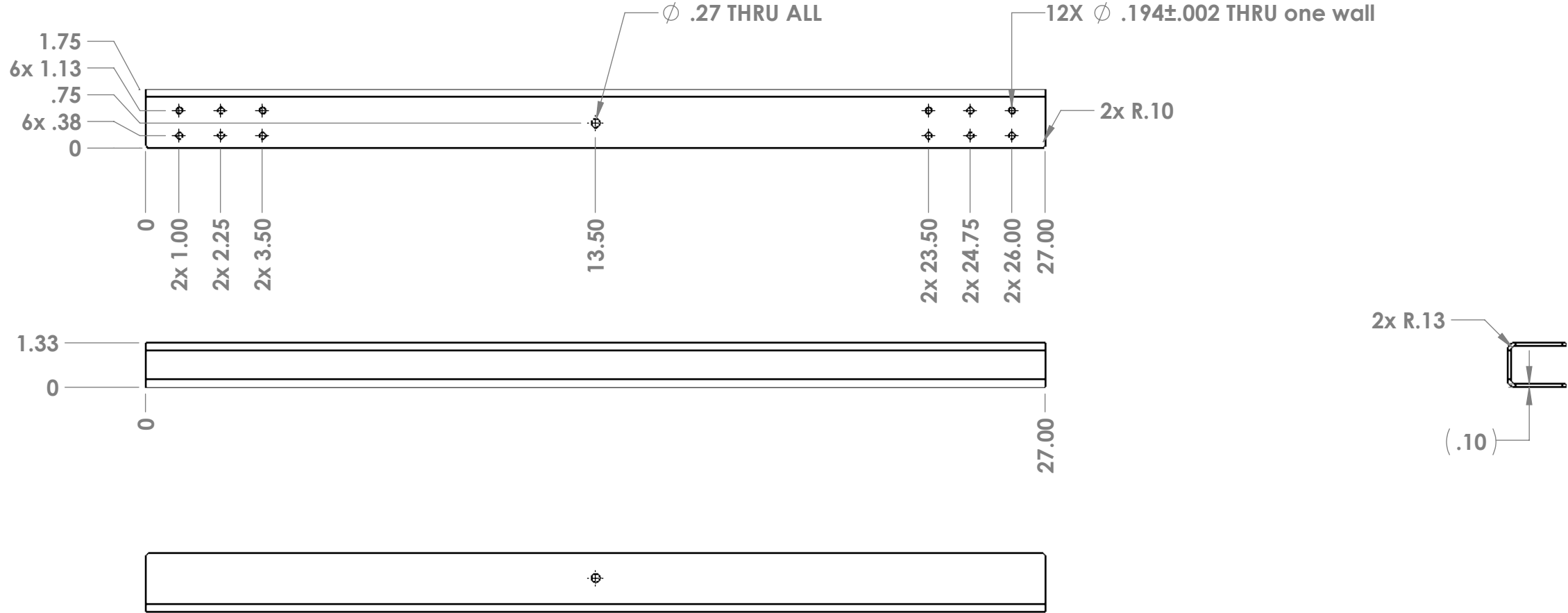


- Notes:
1. Material: 12 Ga. Pre-plated steel
  2. Remove all burrs and sharp edges

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			DRAWN			
			CHECKED			
			ENG APPR.			
			MFG APPR.			
			Q.A.			COMMENTS:
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

GE-20102-02  
QTY (2)



- Notes:
- Material: 12 Ga. Pre-plated steel
  - Remove all burrs and sharp edges.

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DIMENSIONS ARE IN INCHES		DRAWN		
TOLERANCES:		CHECKED		
FRACTIONAL $\pm 1/16$		ENG APPR.		
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$		MFG APPR.		
TWO PLACE DECIMAL $\pm .01$		Q.A.		SIZE DWG. NO. REV
THREE PLACE DECIMAL $\pm .001$		COMMENTS:		
INTERPRET GEOMETRIC TOLERANCING PER:				
MATERIAL				SCALE: 1:12 WEIGHT: SHEET 3 OF 3
FINISH				
NEXT ASSY	USED ON			
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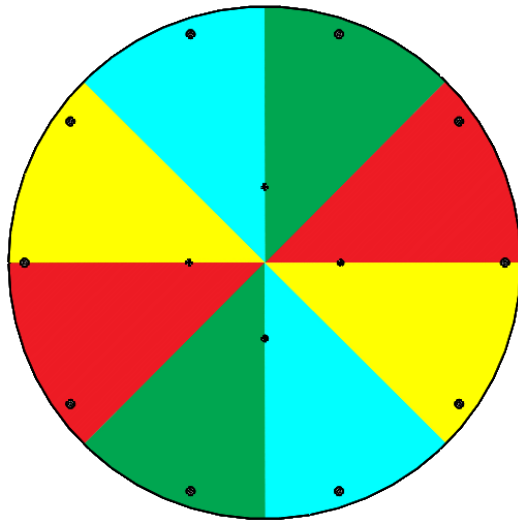
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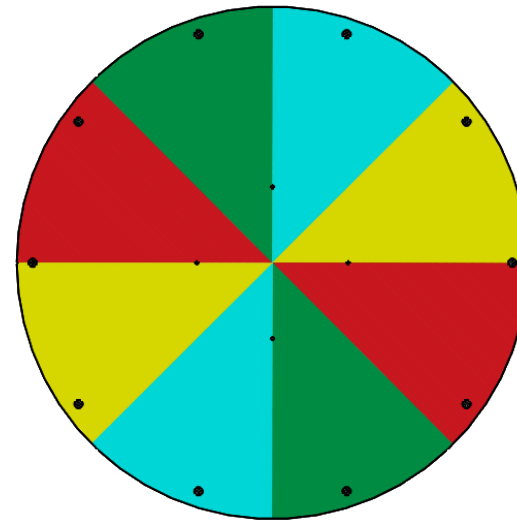
## REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B1, B2, 2-A1, 2-B1, 2-B2, 3-B2, 4-A1, 5-B1, 5-B2	A	Fixed broken Item No. callouts, fixed color pattern application to match GE-20105 and GE-20106 drawings. Updated Part Numbers of standoffs in BOM.	1/6/2020	CPO

Top



Bottom



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NEXT ASSY

USED ON

APPLICATION

## UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES  
TOLERANCES:  
FRACTIONAL  $\pm 1/16$   
ANGULAR: MACH  $\pm 1^\circ$  BEND  $\pm 1^\circ$   
TWO PLACE DECIMAL  $\pm .01$   
THREE PLACE DECIMAL  $\pm .001$

INTERPRET GEOMETRIC  
TOLERANCING PER:

MATERIAL

FINISH

DO NOT SCALE DRAWING

NAME DATE

DRAWN

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:



**FIRST**  
**ROBOTICS**  
**COMPETITION**



TITLE:

Control Panel

SIZE

A

DWG. NO.

GE-20104

REV

A

SCALE: 1:12 WEIGHT:

SHEET 1 OF 5

2

1

2

1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20105	Bottom Control Panel	1
2	GE-20106	Top Control Panel	1
3	Threaded_standoff_.25_1.5	Threaded_standoff_.25_1.5	10
4	Threaded_standoff_10-32_1.5	Threaded_standoff 10-32 x 1.5"	4
5	Flat Hex .25_20_.75	Flat Hex .25_20_.75	20
6	round_hex_10_32_.625_full	Round Hex Head, #10-32 x 5/8" long, fully threaded	4

A

A

3

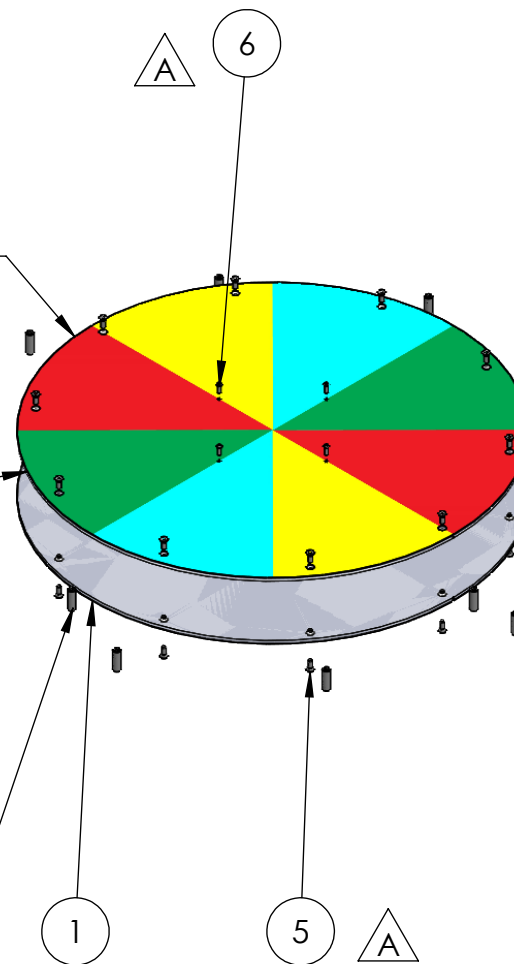
2

4

1

5

A



B

A

A

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			



**FIRST**  
**ROBOTICS**  
**COMPETITION**

**SOLIDWORKS**  
Modeling Solutions Partner

TITLE:

Control Panel

SIZE

A

DWG. NO.

GE-20104

REV

A

SCALE: 1:12 WEIGHT:

SHEET 2 OF 5

2

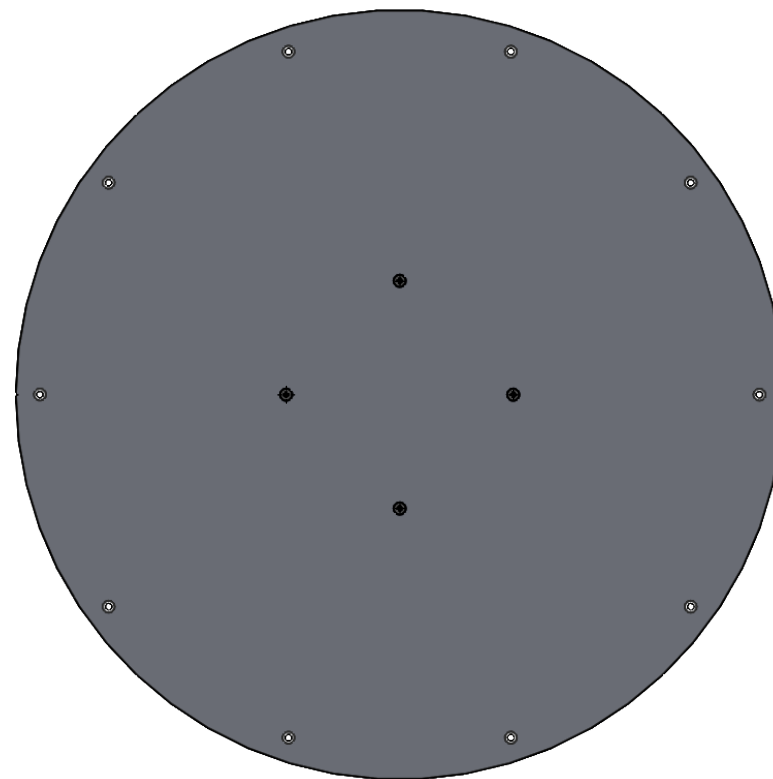
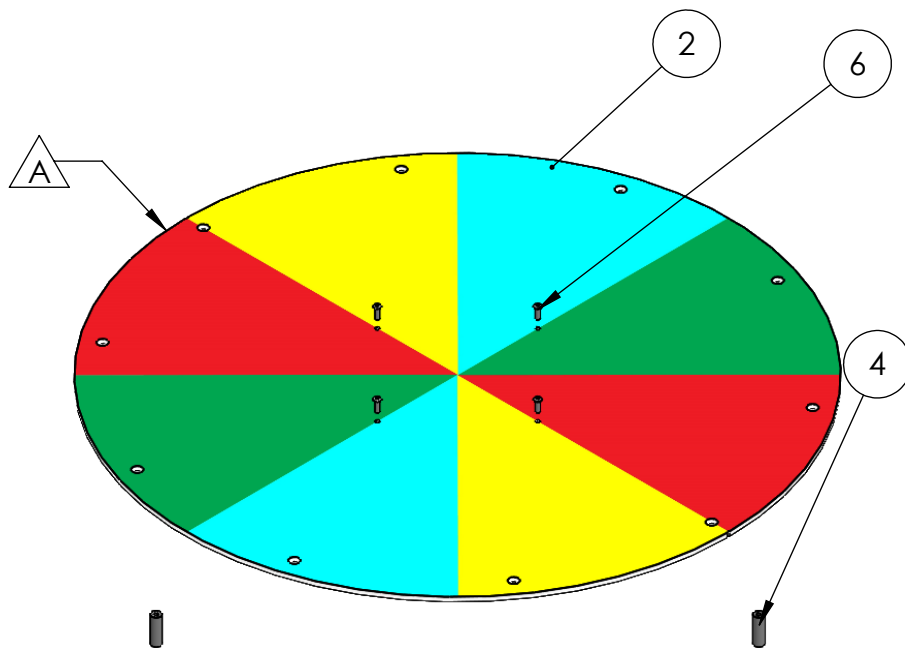
1



2

1

B



B

Bottom

Notes:

1. Remove Protective backing
2. Attach (4) to (2) using (6) 4 spots.

A

A

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		TOLERANCES:
		FRACTIONAL $\pm 1/16$
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
		TWO PLACE DECIMAL $\pm .01$
		THREE PLACE DECIMAL $\pm .001$
		INTERPRET GEOMETRIC TOLERANCING PER:
		MATERIAL
NEXT ASSY	USED ON	FINISH
APPLICATION		DO NOT SCALE DRAWING

	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		



TITLE:

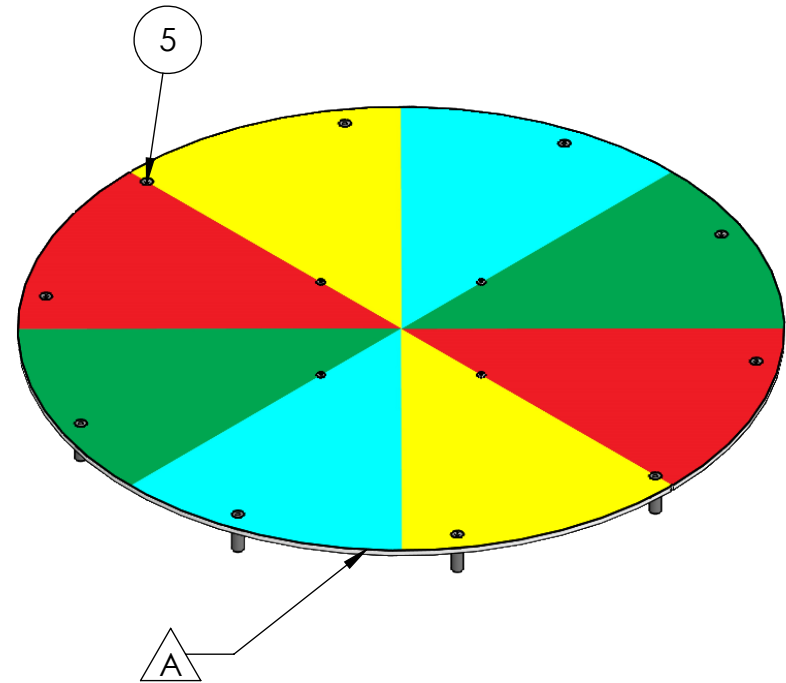
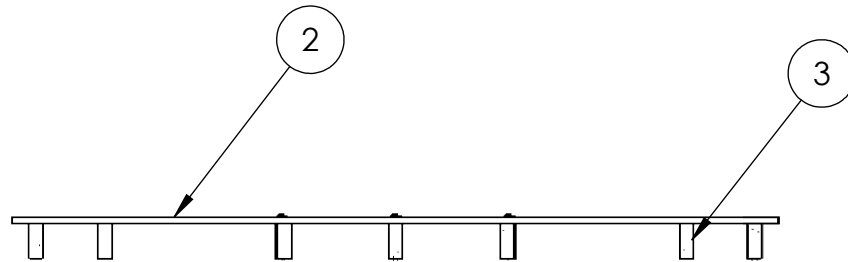
Control Panel

SIZE	DWG. NO.	REV
<b>A</b>	<b>GE-20104</b>	<b>A</b>
SCALE: 1:12 WEIGHT:		SHEET 3 OF 5

2

1

B



B

Notes:

1. Attach (3) to (2) using (5).

A

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		DIMENSIONS ARE IN INCHES
		TOLERANCES:
		FRACTIONAL $\pm 1/16$
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
		TWO PLACE DECIMAL $\pm .01$
		THREE PLACE DECIMAL $\pm .001$
		INTERPRET GEOMETRIC TOLERANCING PER:
		MATERIAL
NEXT ASSY	USED ON	FINISH
APPLICATION		DO NOT SCALE DRAWING

	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		



**FIRST  
ROBOTICS  
COMPETITION**

**SOLIDWORKS**  
Modeling Solutions Partner

TITLE:

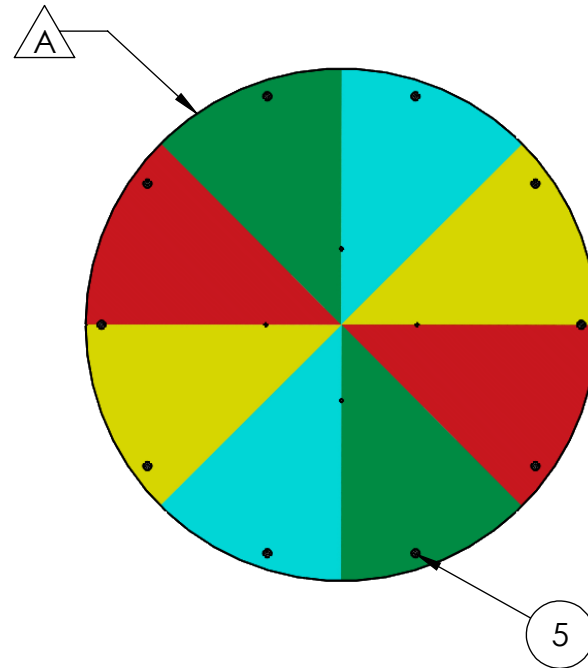
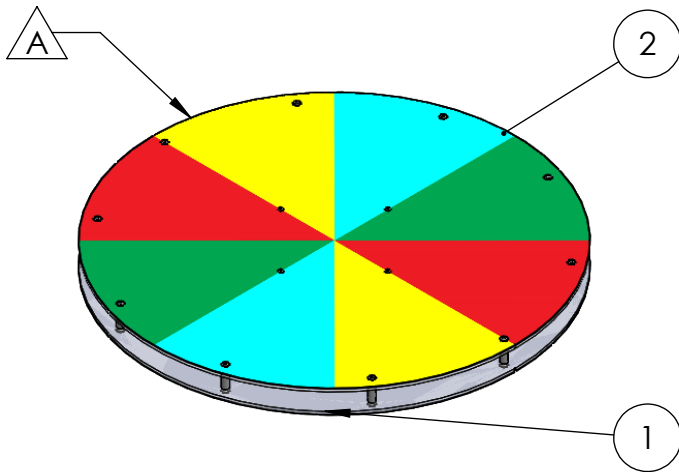
# Control Panel

SIZE	DWG. NO.	REV
<b>A</b>	<b>GE-20104</b>	<b>A</b>
SCALE: 1:12		WEIGHT:
		SHEET 4 OF 5

2

1

B



B

Notes:

1. Remove the protective backing from (1).
2. Align colors to match
3. Attach (1) to (2) using (5)

A

A

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		UNLESS OTHERWISE SPECIFIED:
		DIMENSIONS ARE IN INCHES
		TOLERANCES:
		FRACTIONAL $\pm 1/16$
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
		TWO PLACE DECIMAL $\pm .01$
		THREE PLACE DECIMAL $\pm .001$
		INTERPRET GEOMETRIC TOLERANCING PER:
		MATERIAL
NEXT ASSY	USED ON	FINISH
APPLICATION		DO NOT SCALE DRAWING

	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		



TITLE:

Control Panel

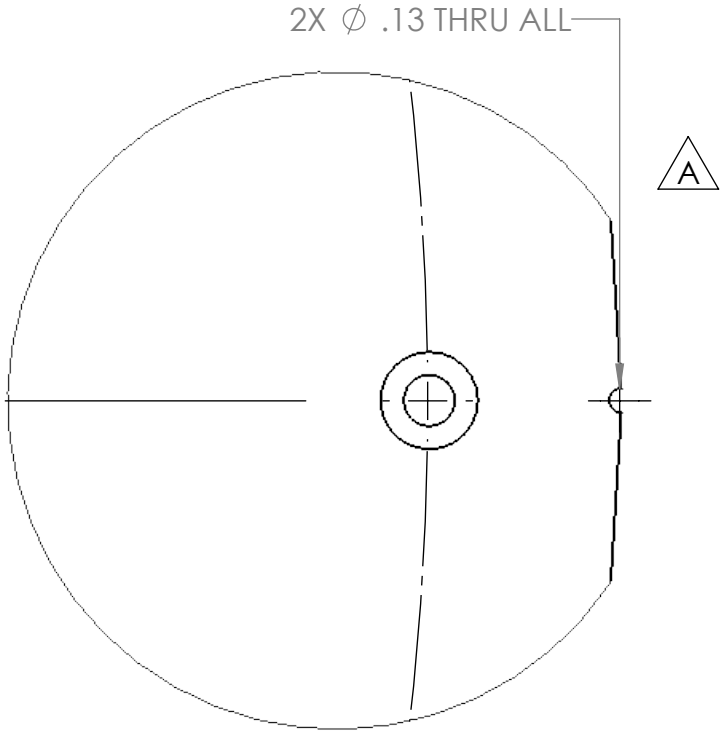
SIZE	DWG. NO.	REV
<b>A</b>	<b>GE-20104</b>	<b>A</b>
SCALE: 1:12		WEIGHT:
		SHEET 5 OF 5

2

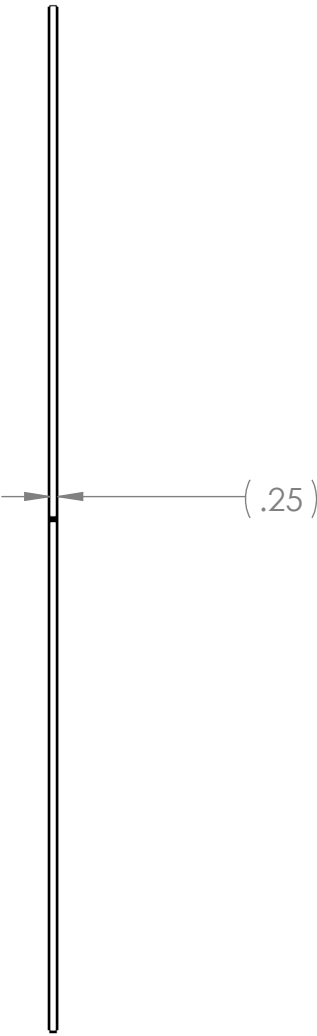
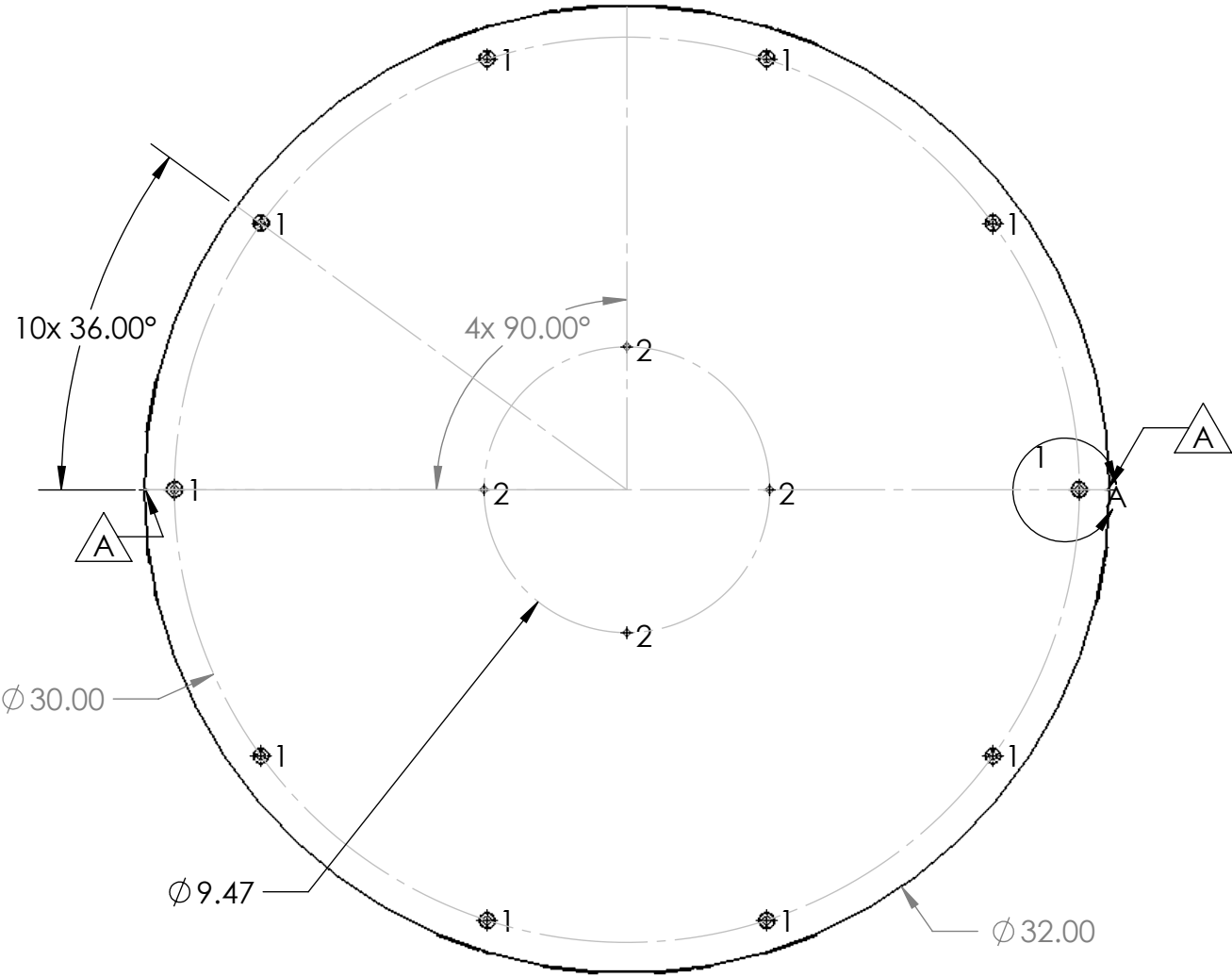
1

TAG	SIZE	QUANTITY
1	$\phi$ .27 THRU ALL ✓ $\phi$ .51 X 82°	10
2	$\phi$ .19 THRU ALL	4

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2, B3, B4	A	0.125" Alignment holes for vinyl	10/21/2019	NTW





DETAIL A  
SCALE 1 : 1



- Notes:
- 1. Material: 0.25" Clear Polycarbonate
  - 2. Remove all burrs and sharp edges.
  - 3. Label or Tag with Part Number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
**Control Panel Plastic**

SIZE  
**B**

DWG. NO.  
**GE-20107**

REV  
**A**

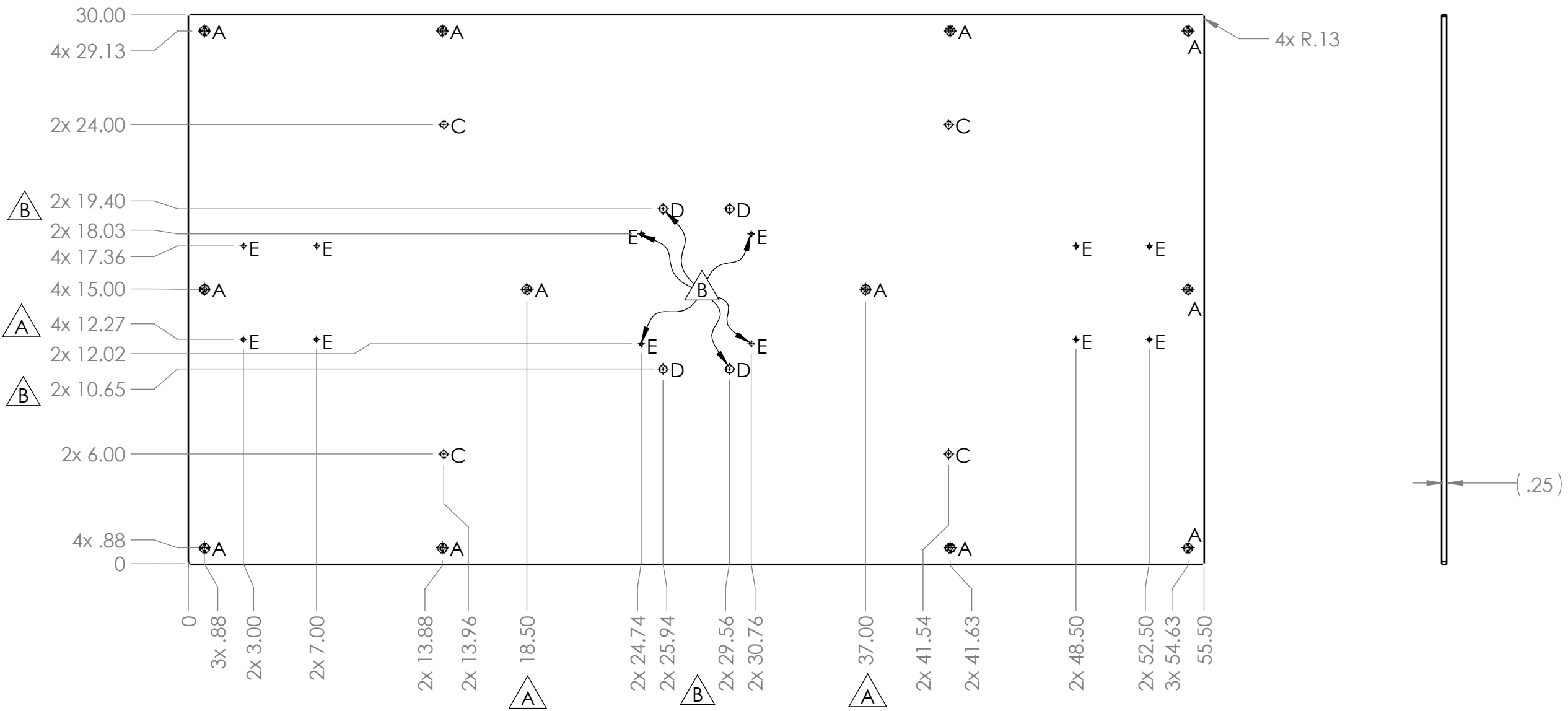
SCALE: 1:8

WEIGHT:

SHEET 1 OF 1



TAG	SIZE	QUANTITY
A	$\varnothing$ .27 THRU ALL $\varnothing$ .51 X 82°	12
C	$\varnothing$ .38 THRU ALL	4
D	$\varnothing$ .44 THRU ALL	4
E	$\varnothing$ .20 THRU ALL	12

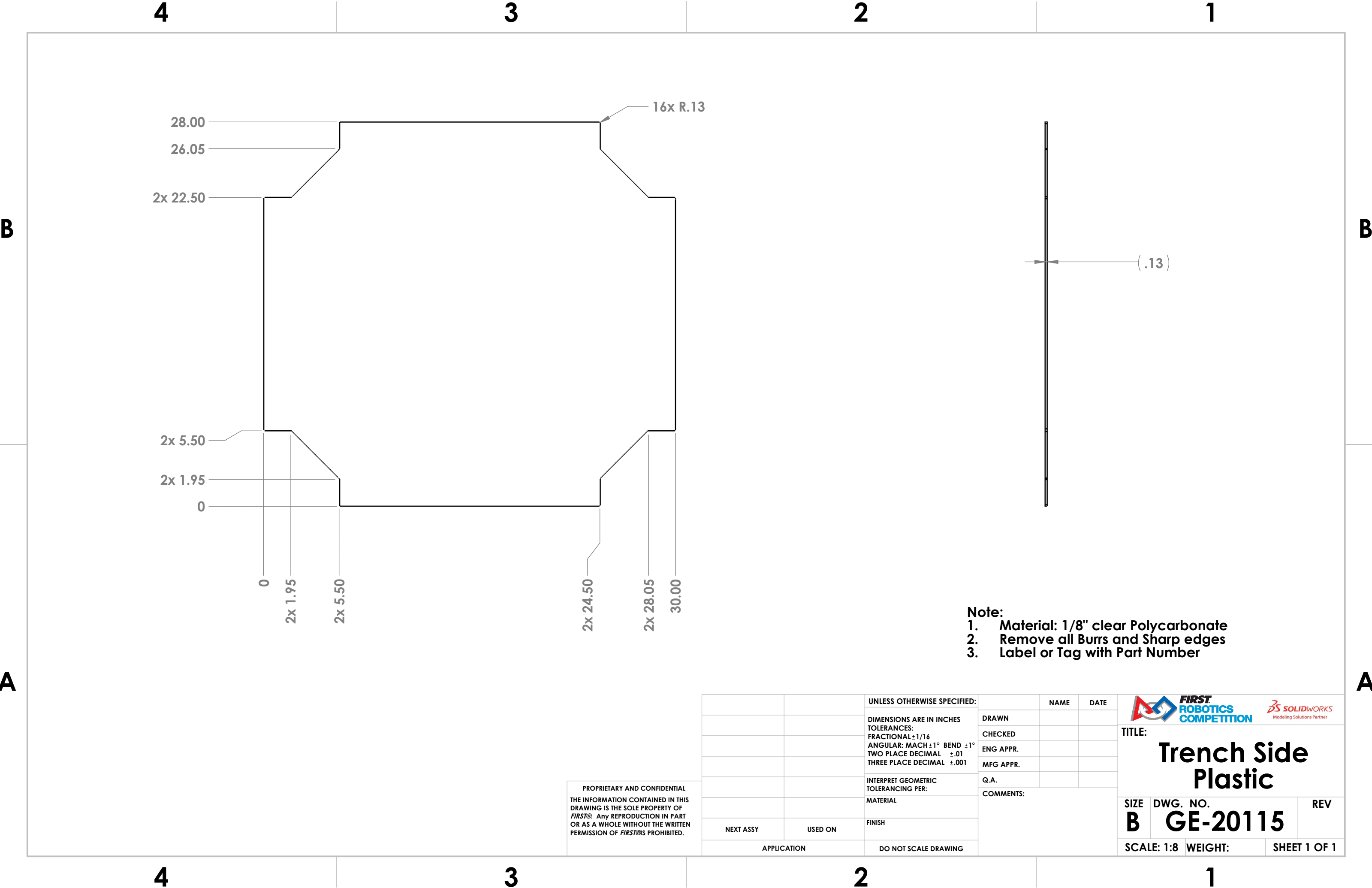
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, A3, B4	A	Moved holes to align with part	9/19/2019	NTW
A3, A4, B2, B3, B4	B	Added Second set of D size holes. Change holes to match #10 size to match remaining E size	9/24/2019	NTW



- Notes:
- Material: 0.25" Clear Polycarbonate
  - Remove all burrs and sharp edges.
  - Label or Tag with Part Number

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	 			
		DIMENSIONS ARE IN INCHES	DRAWN	NTW	8/29/19	TITLE:  <h1>Trench Top Plastic</h1>		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20114</b> <b>B</b>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:12 WEIGHT: SHEET 1 OF 1		



28.00

26.05

2x 22.50

2x 5.50

2x 1.95

0

0

2x 1.95

2x 5.50

2x 24.50

2x 28.05



30.00

16x R.13

(.13)

- Note:
1. Material: 1/8" clear Polycarbonate
  2. Remove all Burrs and Sharp edges
  3. Label or Tag with Part Number

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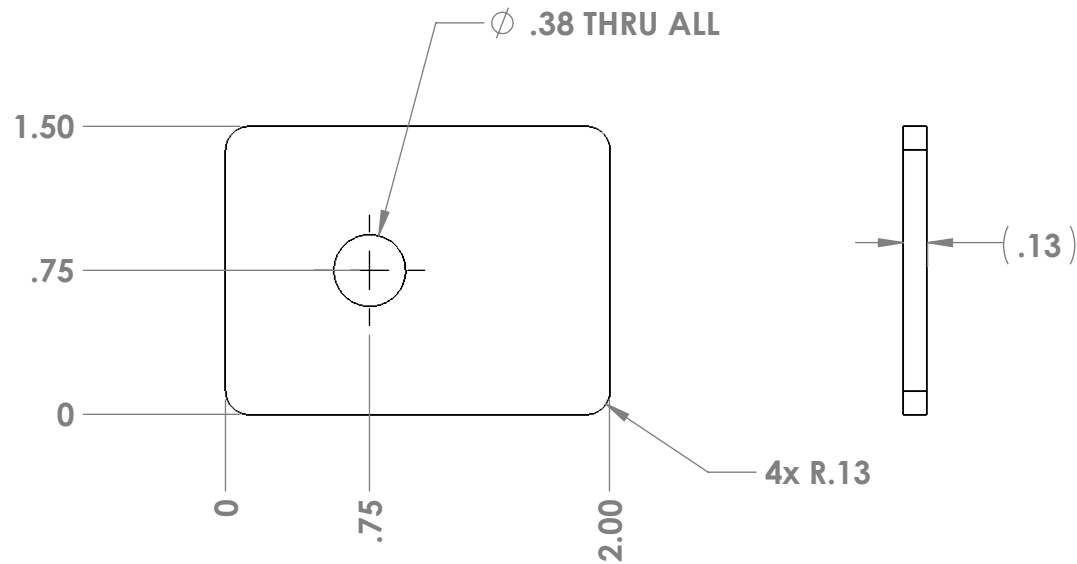
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  <b>Trench Side Plastic</b>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B GE-20115</b>		
		MATERIAL	COMMENTS:					
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8 WEIGHT:		SHEET 1 OF 1

2

1

B

B





Notes:

1. Material: 0.125" Black HDPE Smooth Finish
2. Remove all burrs and sharp edges.
3. Bag and Label with part number

A

A

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			DIMENSIONS ARE IN INCHES	DRAWN				SIZE	DWG. NO.	REV
			TOLERANCES:	CHECKED				<b>A</b>	<b>GE-20121</b>	
			FRACTIONAL $\pm 1/16$	ENG APPR.				SCALE: 1:1 WEIGHT: SHEET 1 OF 1		
			ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.						
			TWO PLACE DECIMAL $\pm .01$	Q.A.						
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:							
		INTERPRET GEOMETRIC TOLERANCING PER:								
		MATERIAL								
	NEXT ASSY	USED ON	FINISH							
	APPLICATION		DO NOT SCALE DRAWING							

2

1

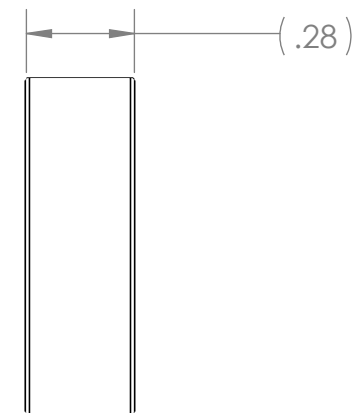
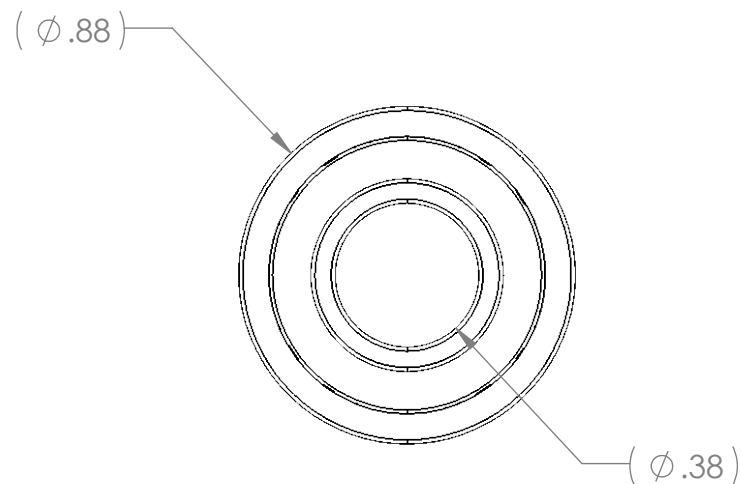


2

1

B

B



Notes:

1. 0.375" id shielded bearing (R6ZZ)

A

A

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		TOLERANCES:
		FRACTIONAL $\pm 1/16$
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
		TWO PLACE DECIMAL $\pm .01$
		THREE PLACE DECIMAL $\pm .001$
		INTERPRET GEOMETRIC TOLERANCING PER:
		MATERIAL
NEXT ASSY	USED ON	FINISH
APPLICATION		DO NOT SCALE DRAWING

	NAME	DATE
DRAWN		
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		
COMMENTS:		



**FIRST  
ROBOTICS  
COMPETITION**



Modeling Solutions Partner

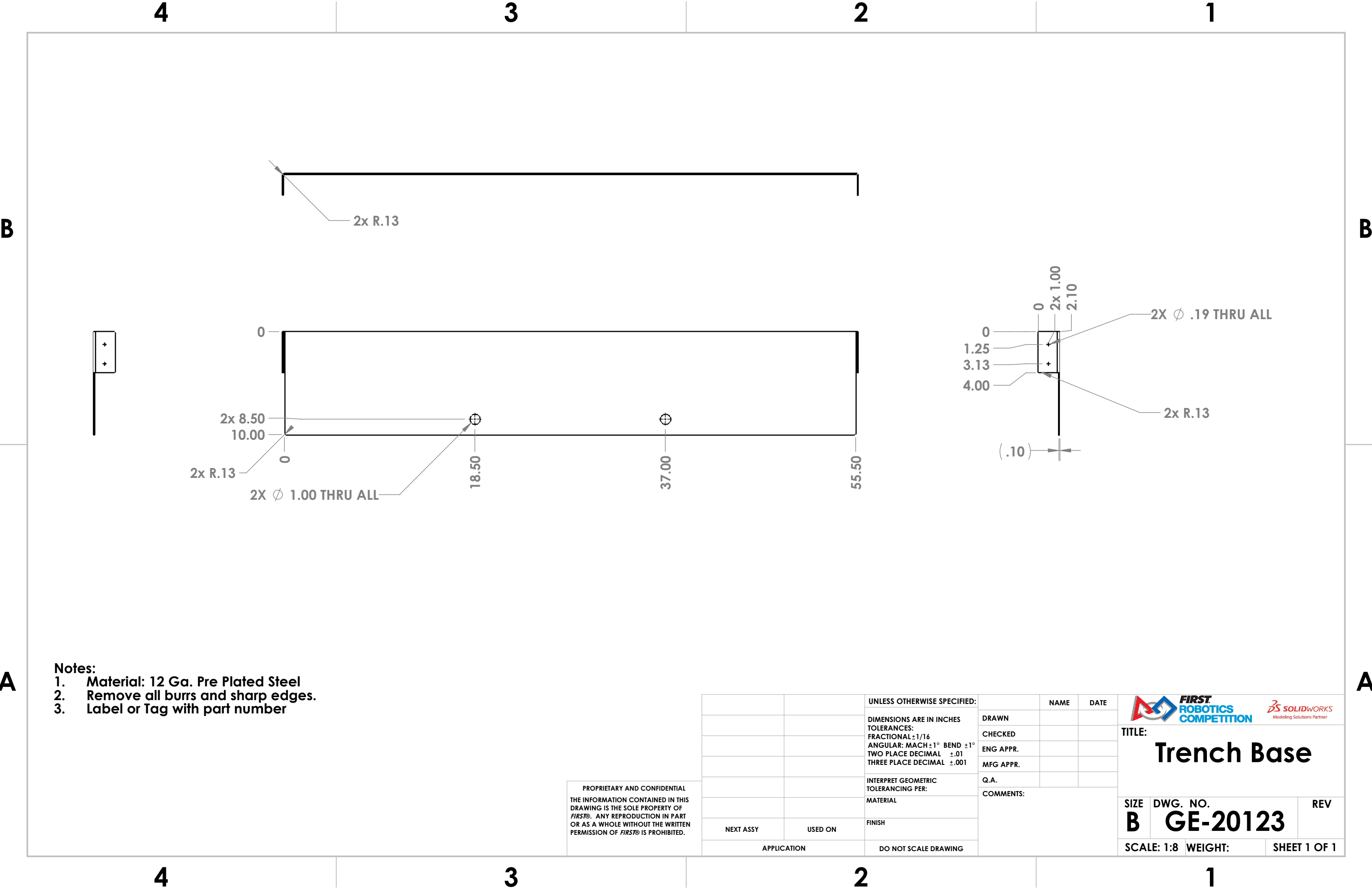
TITLE:

0.375" id bearing  
shielded

SIZE	DWG. NO.	REV
<b>A</b>	<b>GE-20122</b>	
SCALE: 2:1	WEIGHT:	SHEET 1 OF 1



2

1



- Notes:
1. Material: 12 Ga. Pre Plated Steel
  2. Remove all burrs and sharp edges.
  3. Label or Tag with part number

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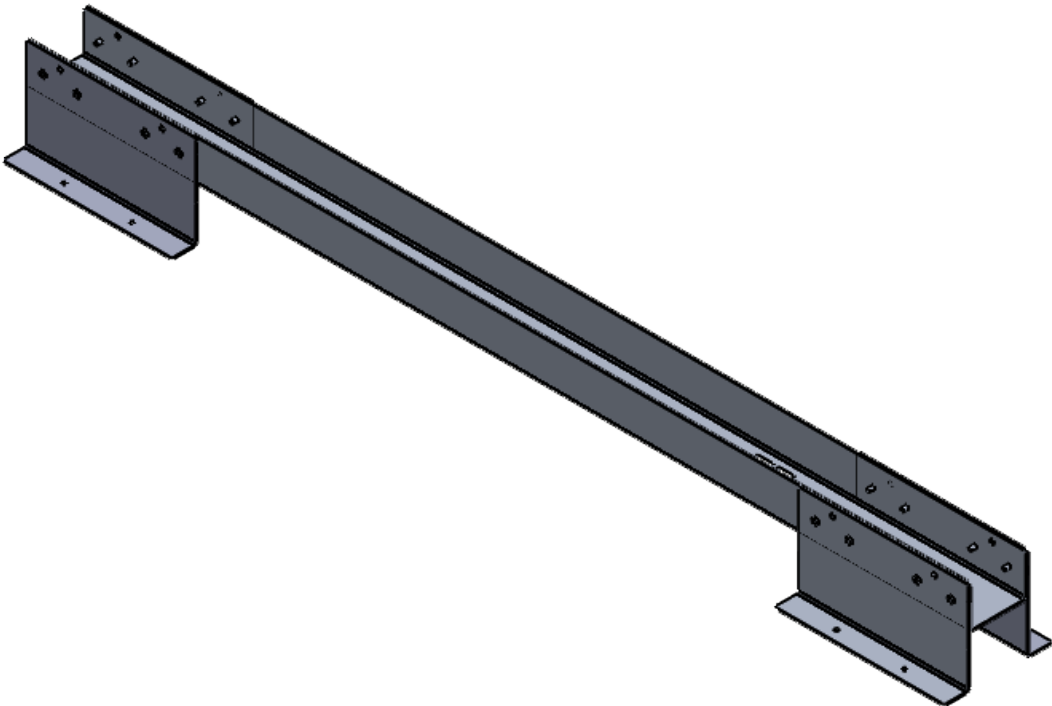
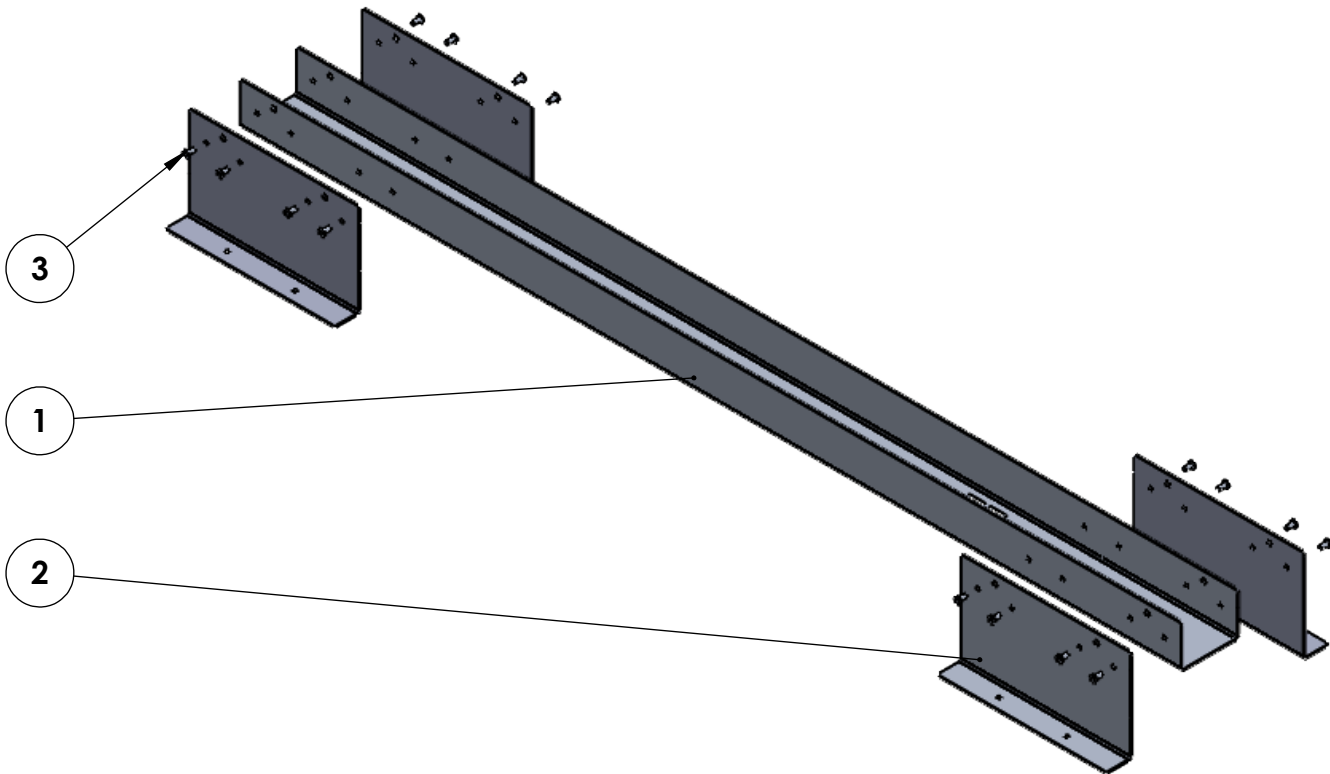
		UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001  INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL  FINISH		NAME	DATE	<div></div> <b>TITLE:</b> <h1>Trench Base</h1>
			DRAWN			
			CHECKED			
			ENG APPR.			
			MFG APPR.			SIZE DWG. NO. REV <b>B GE-20123</b>
			Q.A.			
			COMMENTS:			SCALE: 1:8 WEIGHT: SHEET 1 OF 1
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING			

4

3

2



1



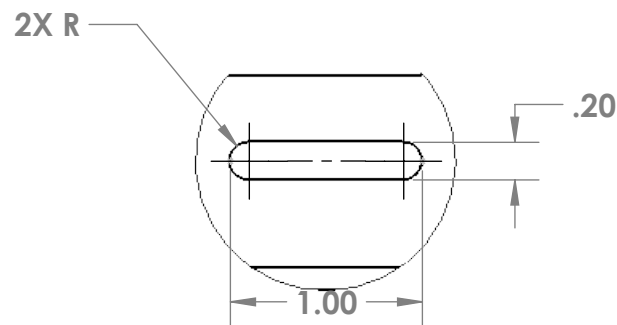
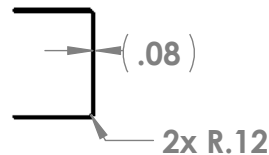
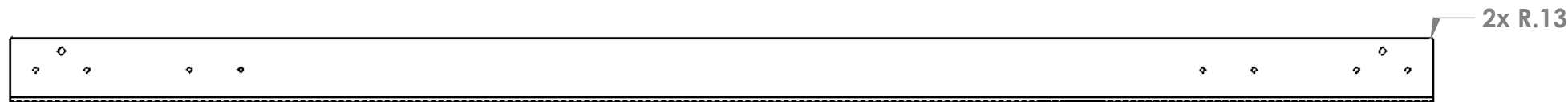
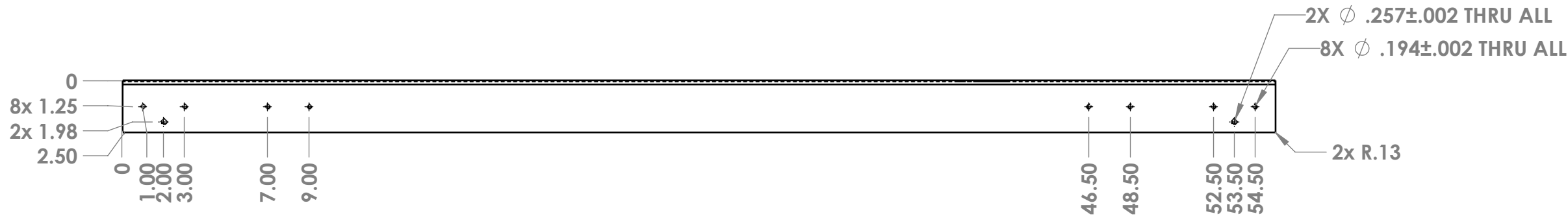
Note:  
Tag or Label with part number

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20140-01	12 Gauge Aluminum	1
2	GE-20140-03	12 Gauge Aluminum	4
3	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	16

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE: <b>Sensor Housing Assembly</b></div> <div>SIZE <b>B</b> DWG. NO. <b>GE-20140</b> REV</div> <div>SCALE: 1:8 WEIGHT: SHEET 1 OF 3</div>
		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			COMMENTS:
		THREE PLACE DECIMAL $\pm .001$				
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				
NEXT ASSY	USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING				

GE-20140-01  
QTY(1)



DETAIL A  
SCALE 1 : 1

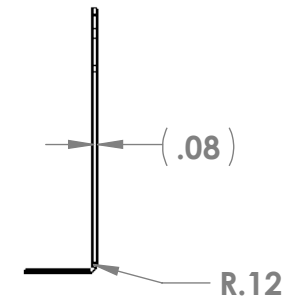
- Notes:
1. Material: 12 Ga. Aluminum 5052
  2. Remove all burrs and sharp edges.

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DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN		
	CHECKED		
	ENG APPR.		
	MFG APPR.		
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
MATERIAL	COMMENTS:		
FINISH			
NEXT ASSY	USED ON		
APPLICATION		DO NOT SCALE DRAWING	

TITLE:	
Sensor Housing Assembly	
SIZE	DWG. NO.
B	GE-20140
SCALE: 1:8	WEIGHT:
SHEET 2 OF 3	

# B



# A

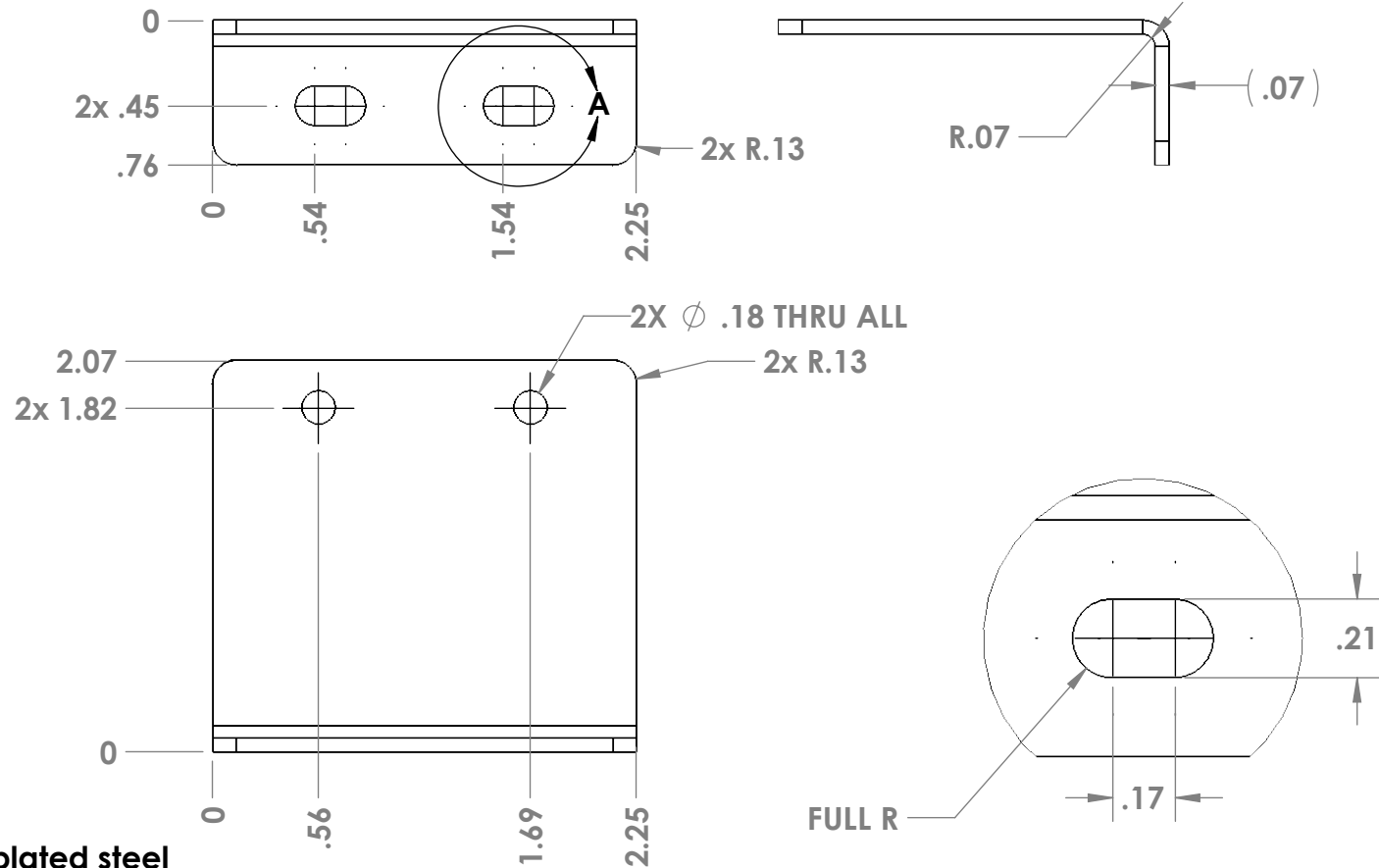
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			CHECKED						
			ENG APPR.			SIZE DWG. NO. REV <b>B GE-20140</b>			
			MFG APPR.						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SCALE: 1:8 WEIGHT: SHEET 3 OF 3			
		MATERIAL	COMMENTS:						
NEXT ASSY	USED ON	FINISH							
APPLICATION		DO NOT SCALE DRAWING							

2

1

B

B



Notes:



1. Material: 14 Ga. Pre-plated steel
2. Remove all burrs and sharp edges.
3. Bag or Tag with Part Number

DETAIL A  
SCALE 2 : 1

A

A

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$		DRAWN			
				CHECKED			
				ENG APPR.			
				MFG APPR.			
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.				
		MATERIAL	COMMENTS:				
NEXT ASSY		USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING					



TITLE:

**Mounting Bracket  
(46CLR ColorSight)**

SIZE	DWG. NO.	REV
<b>A</b>	<b>GE-20141</b>	

SCALE: 1:1	WEIGHT:	SHEET 1 OF 1
------------	---------	--------------

2

1

4

3

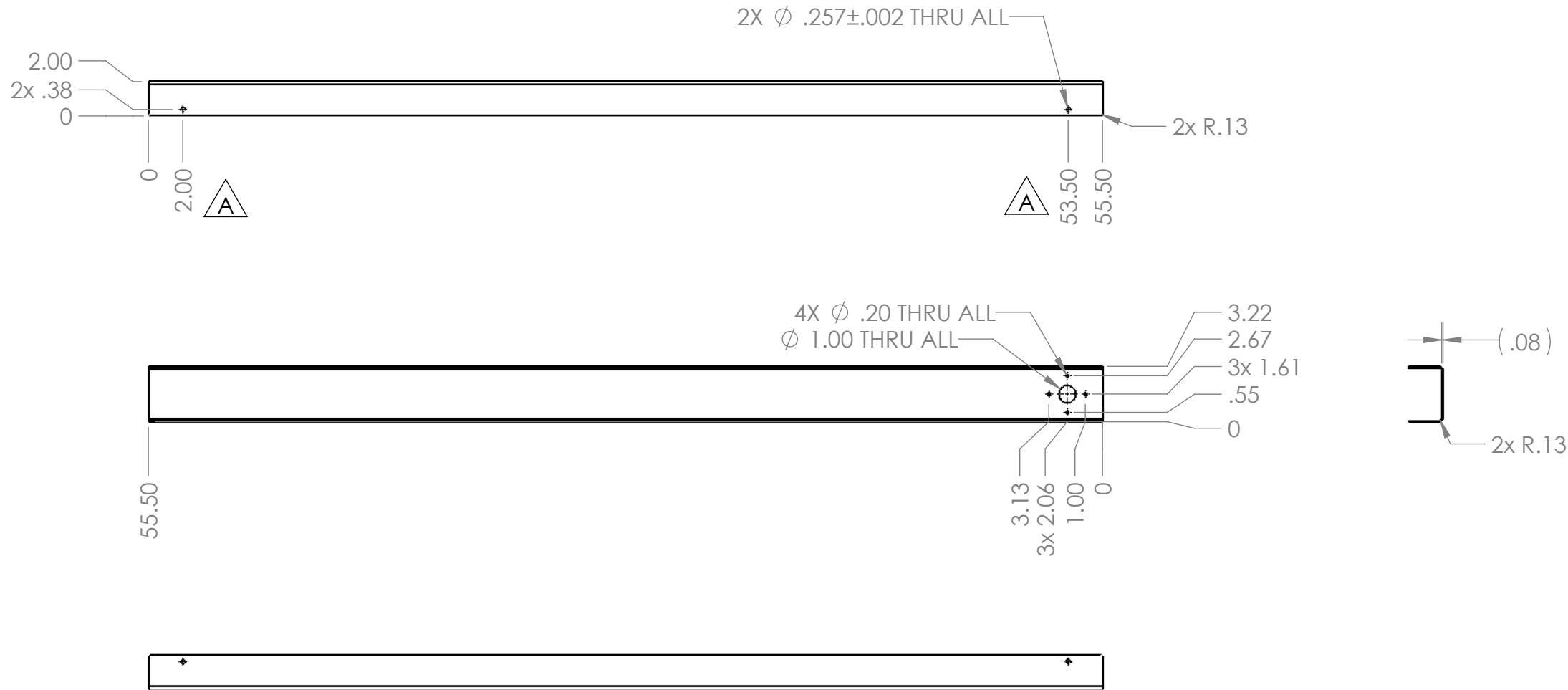
2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2, B4	A	Moved holes for pins	9/20/2019	NTW

B

A



- Notes:
1. Material: 12 Ga. Aluminum 5052
  2. Remove all burrs and sharp edges.
  3. Tag or Label with part number

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UNLESS OTHERWISE SPECIFIED:		NAME	DATE	TITLE: <b>Sensor Tray Lid</b>
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			
	CHECKED			
	ENG APPR.			
	MFG APPR.			
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20142</b> <b>A</b>
MATERIAL	COMMENTS:			
FINISH				
NEXT ASSY	USED ON			SCALE: 1:8 WEIGHT: SHEET 1 OF 1
APPLICATION		DO NOT SCALE DRAWING		

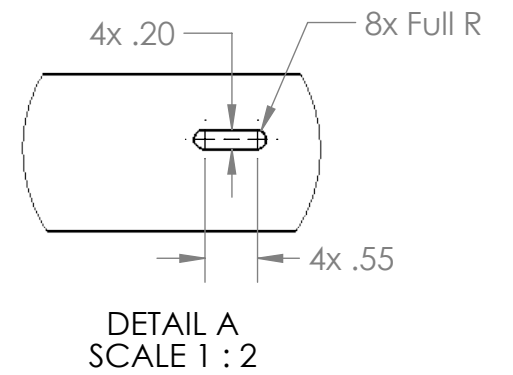
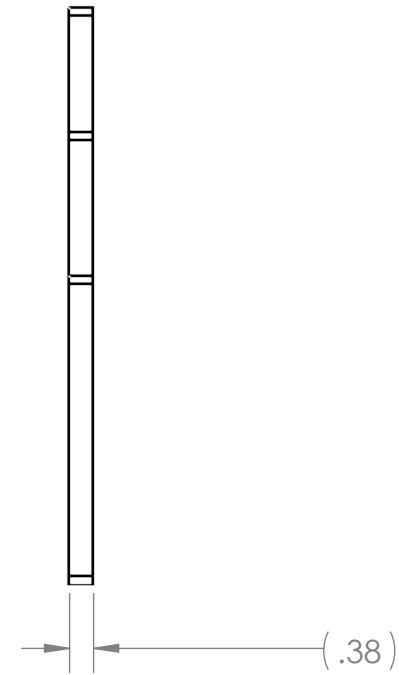
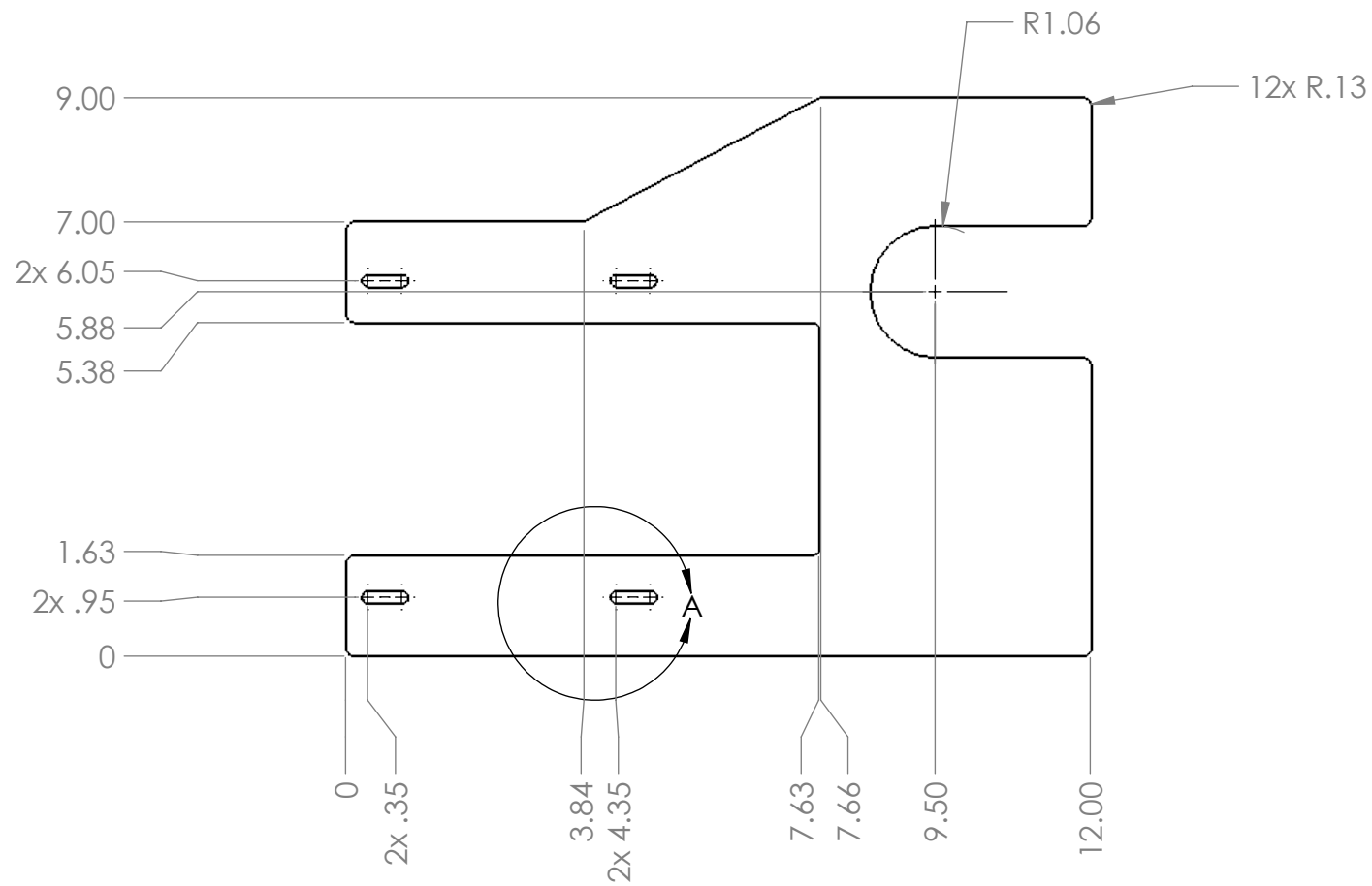
4

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- Note:
1. Material 0.375" Polycarbonate, Clear
  2. Remove all burrs and sharp edges
  3. Tag or Label with part number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div><b>FIRST</b> ROBOTICS COMPETITION</div> <div><b>SOLIDWORKS</b> Modeling Solutions Partner</div>			
		DIMENSIONS ARE IN INCHES		DRAWN		TITLE:  <b>Trench to Truss Gusset</b>			
		TOLERANCES:		CHECKED					
		FRACTIONAL $\pm 1/16$		ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$		MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$		Q.A.					
		THREE PLACE DECIMAL $\pm .001$		COMMENTS:		SIZE DWG. NO. REV			
		INTERPRET GEOMETRIC TOLERANCING PER:							
		MATERIAL				SIZE <b>B</b> DWG. NO. <b>GE-20143</b> REV			
NEXT ASSY	USED ON	FINISH		SCALE: 1:4 WEIGHT: SHEET 1 OF 1					
APPLICATION		DO NOT SCALE DRAWING							

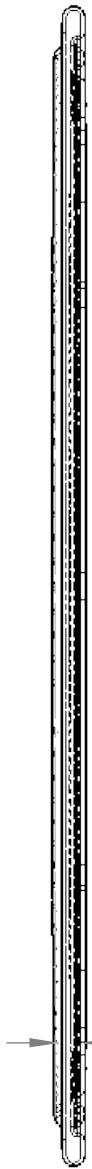
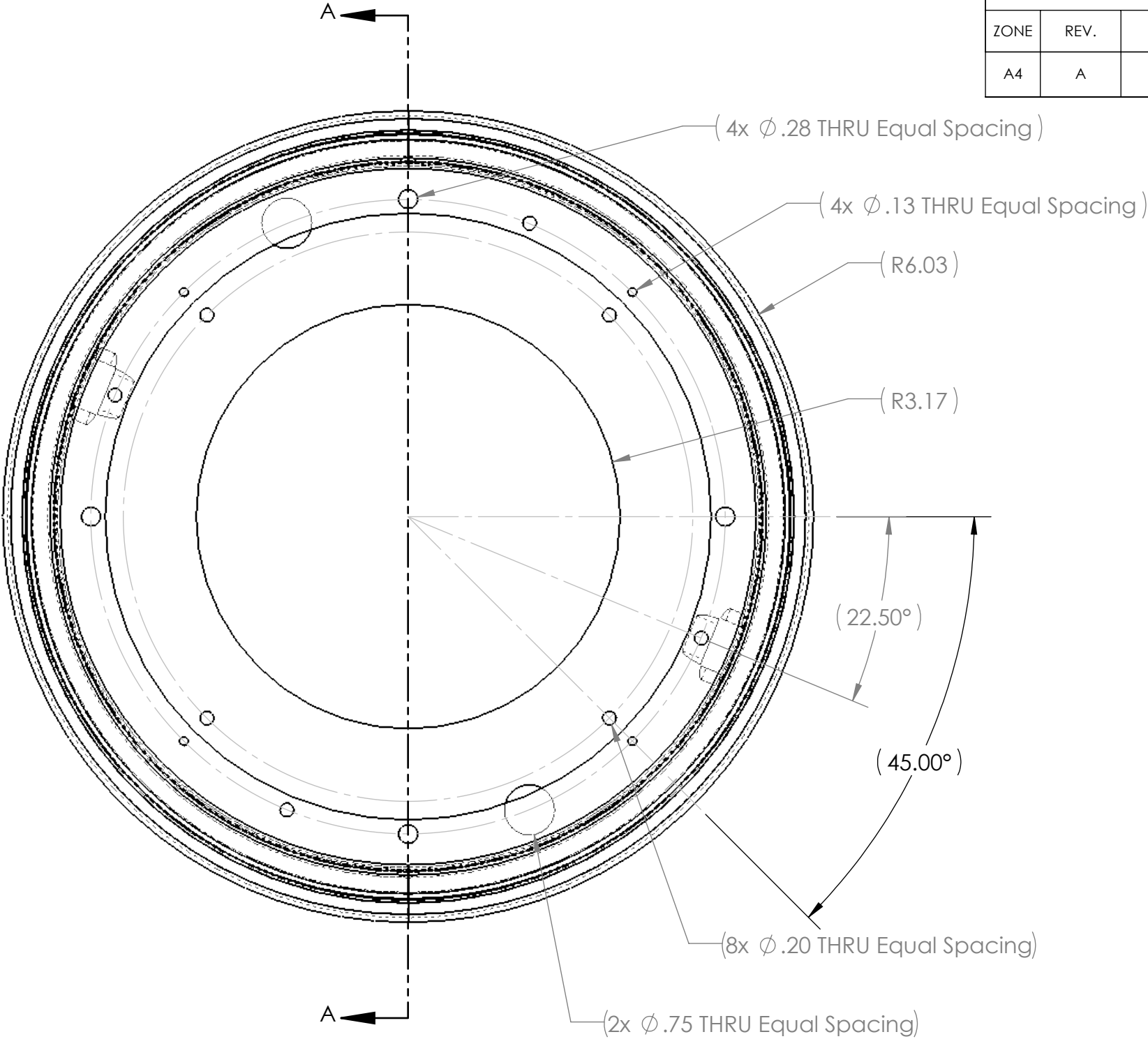
4

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A4	A	Updated manufacturer part number.	1/9/2020	CPO



SECTION A-A  
SCALE 1 : 2

Note:  
Triangle Manufacturing  
Steel Round Lazy Susan Turntable Bearing 22gau-12" with 4 detents  
Manufacturer part number: 12D10346



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		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

TITLE:  

# Lazy Susan

SIZE  
**B**

DWG. NO.  
**GE-20150**

REV  
**A**

SCALE: 1:4

WEIGHT:

SHEET 1 OF 1

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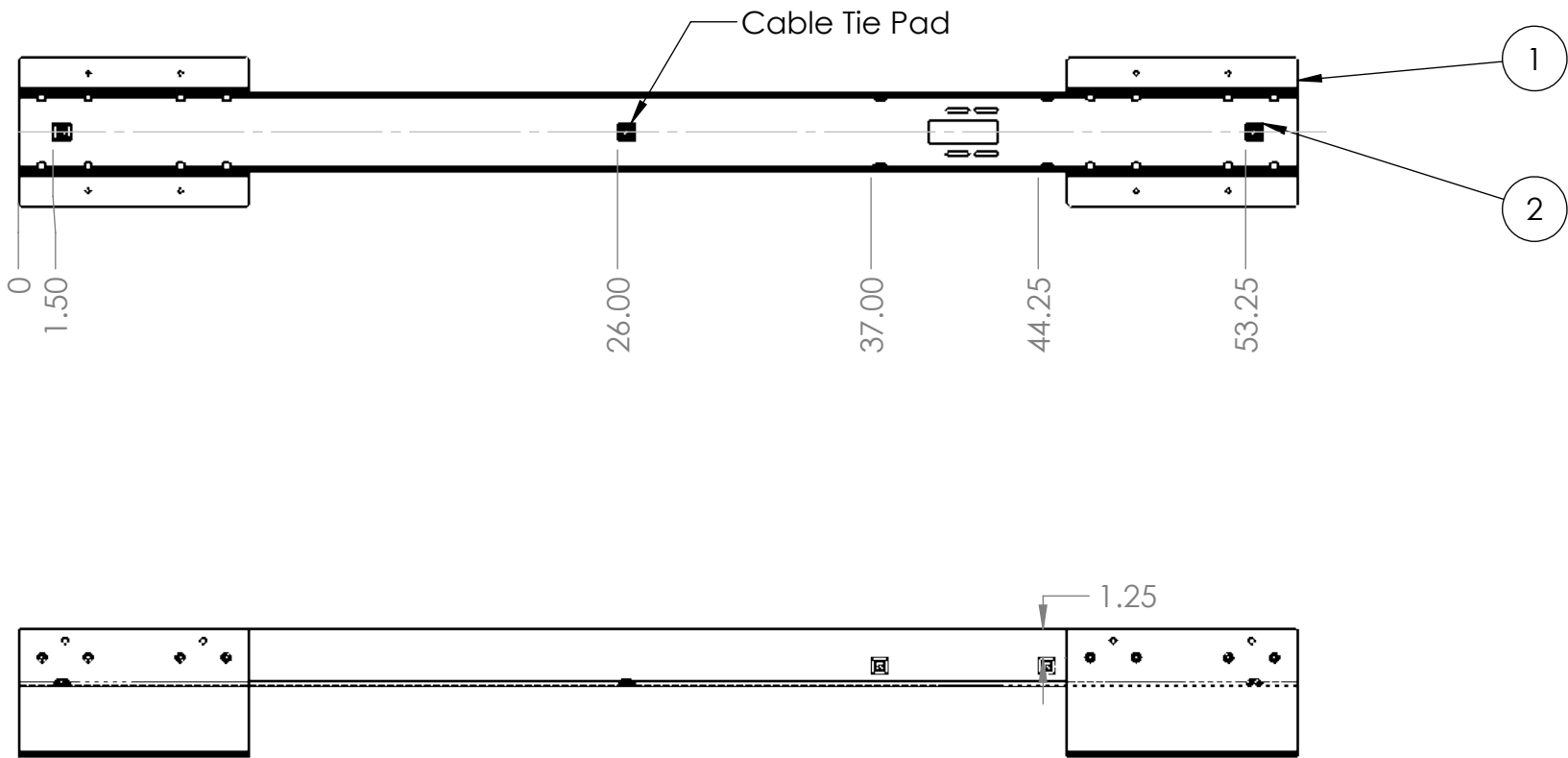
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Cable Tie placement

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20140	Sensor Housing Assembly	1
2	CABLE TIE MOUNT	CABLE TIE MOUNT	7

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  Sensor Housing Assembly with cable tie mounts		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV  B GE-20160		
		MATERIAL						
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:12 WEIGHT: SHEET 1 OF 1					

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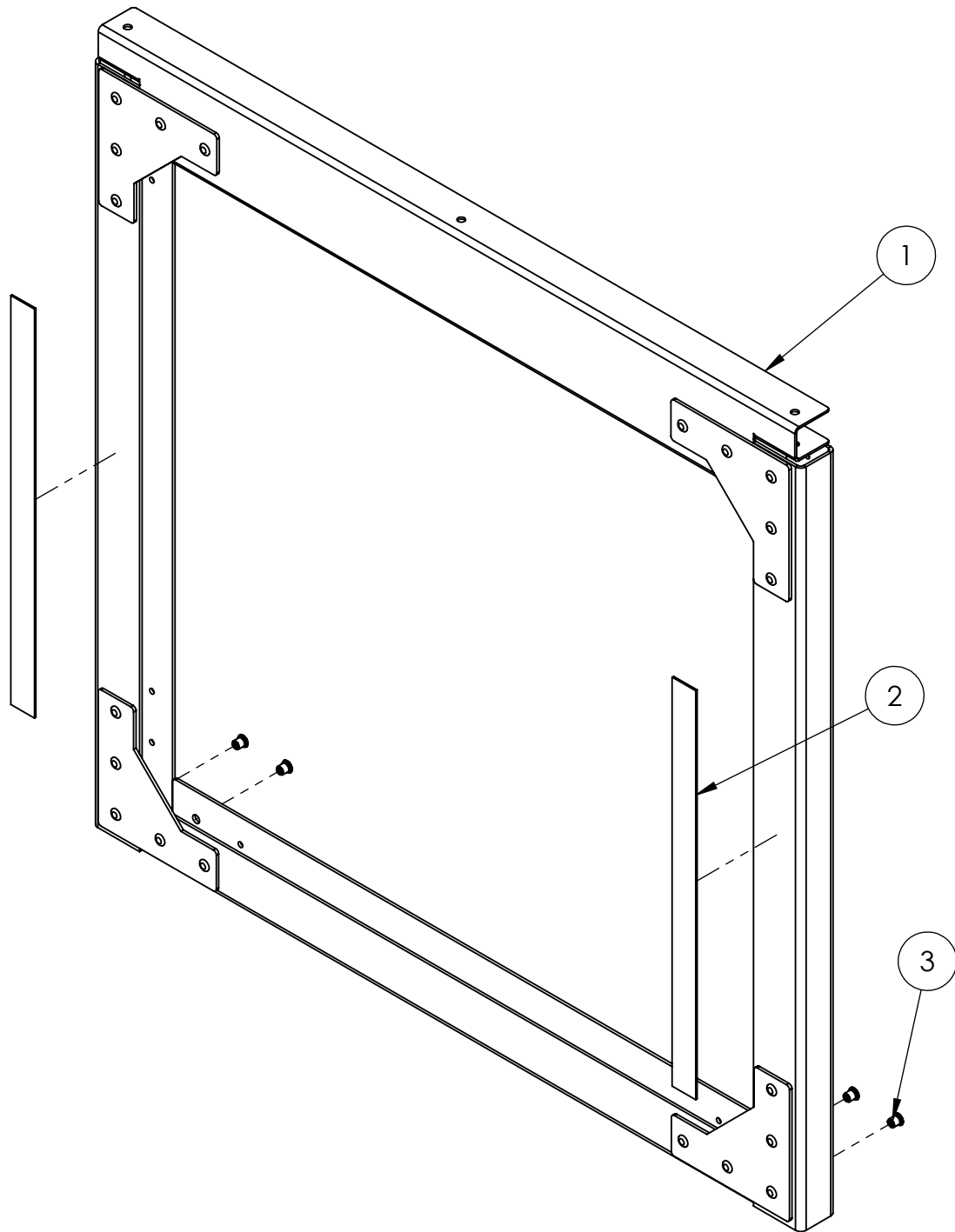
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20101	Trench Leg	1
2	Hook_1_15	1" x 15" Hook, Adhesive Backed	2
3	rivnut_10-32_.130	rivnut 10-32 grip range .020 to .130	4

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
**GE-20101 with hook**

SIZE  
**B**

DWG. NO.  
**GE-20161**

REV

SCALE: 1:8

WEIGHT:

SHEET 1 OF 2

4

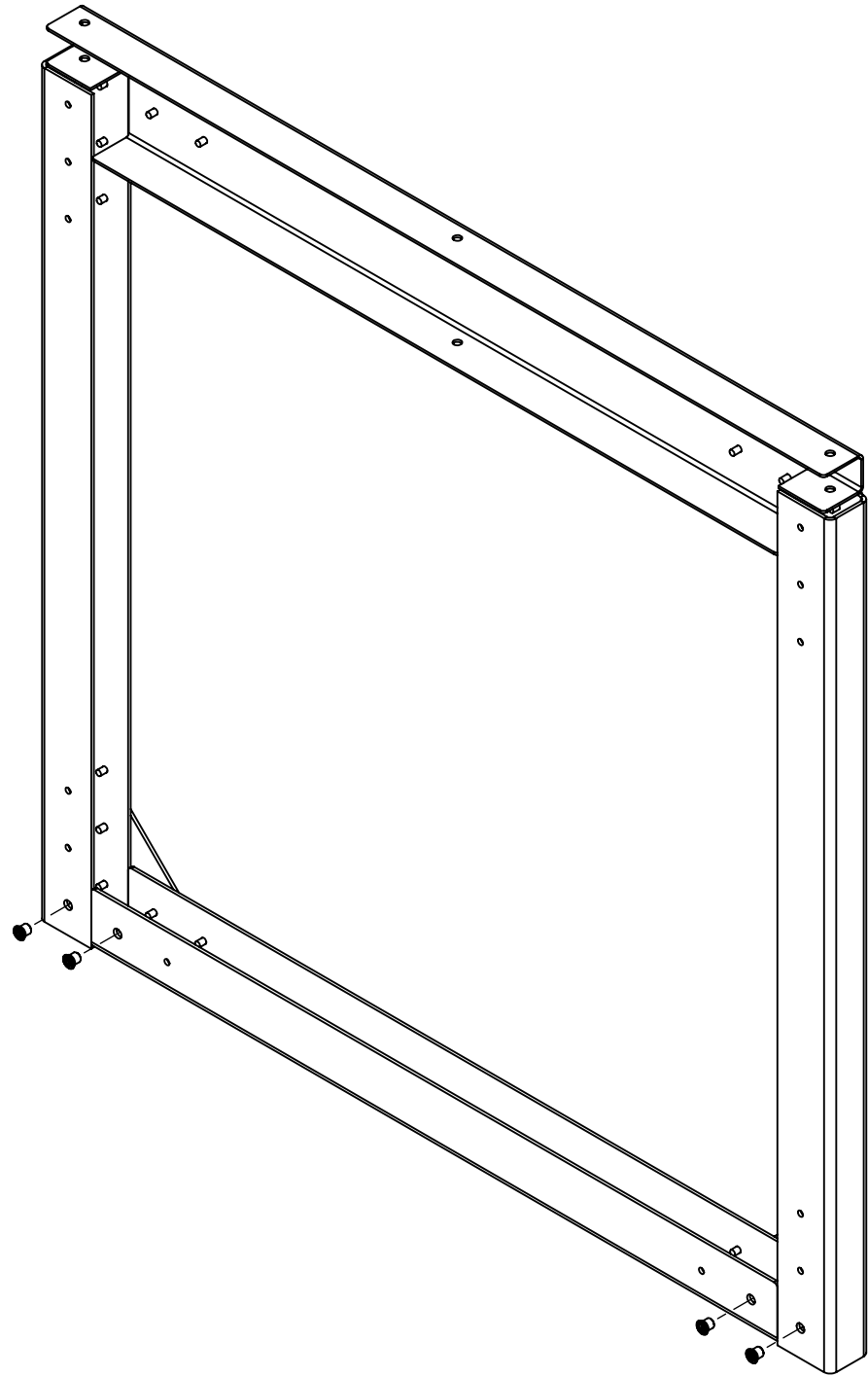
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Notes:  
1. Install #10-32 rivet nuts to GE-20101 as shown

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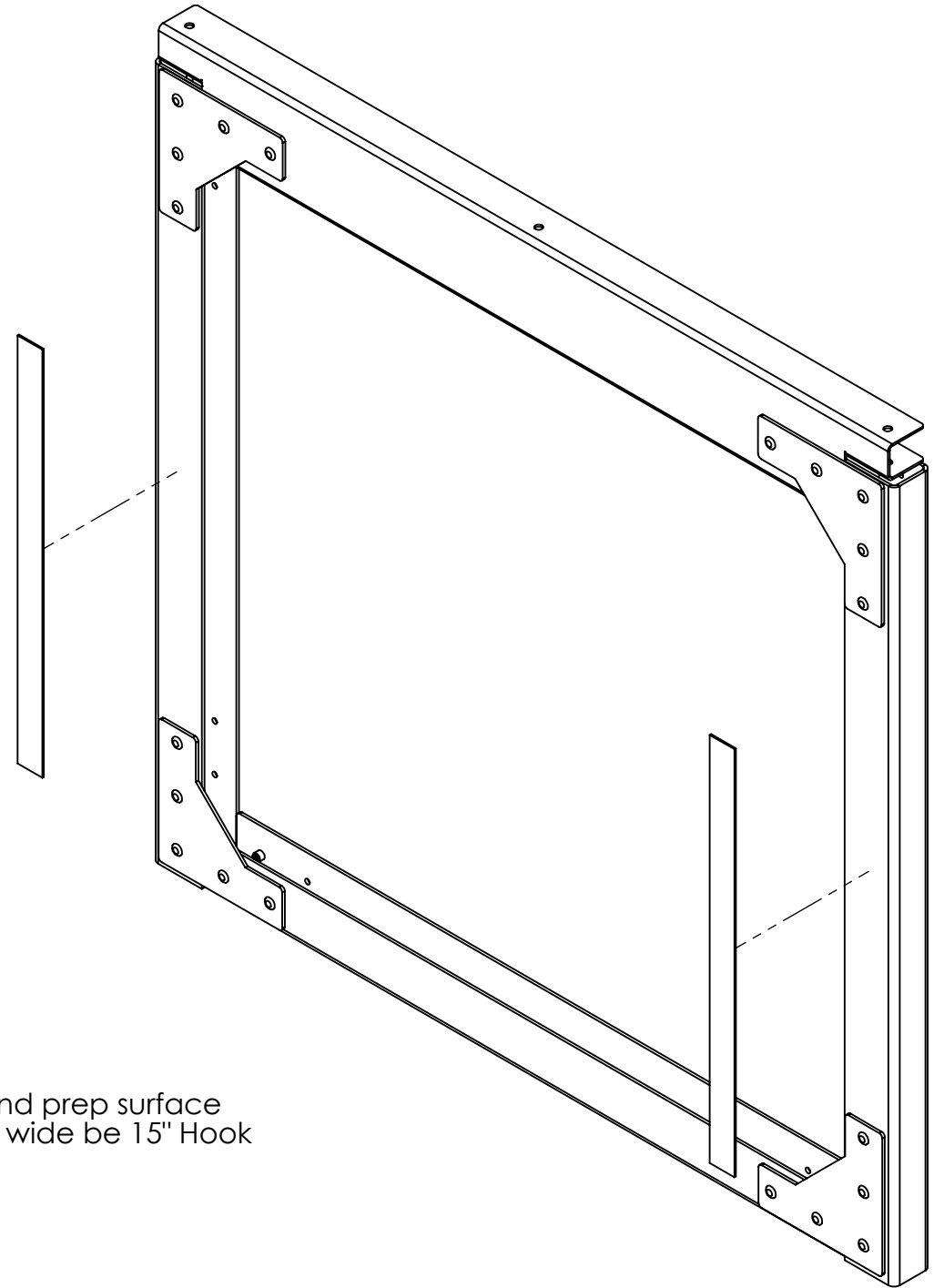
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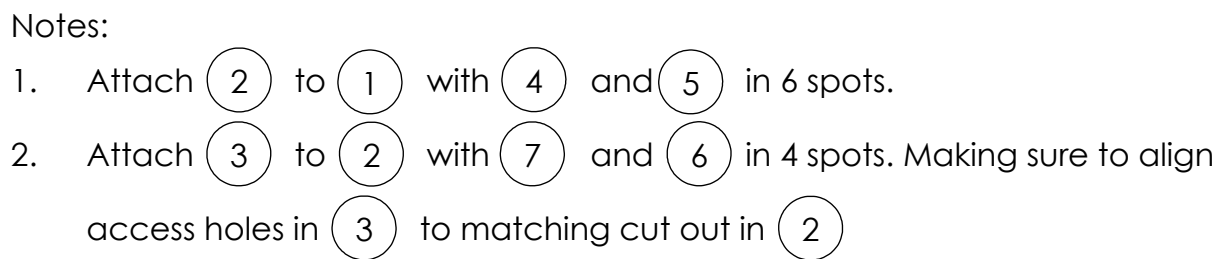


Notes:  
1. Clean and prep surface  
2. Apply 1" wide be 15" Hook



		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 <b>FIRST ROBOTICS COMPETITION</b>  <b>SOLIDWORKS</b> Modeling Solutions Partner			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  <b>GE-20101 with hook</b>			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
			Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20161</b>			
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8 WEIGHT: SHEET 2 OF 2			

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE: <h1>GE-20102 with GE-20114</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <h1>B GE-20162</h1>		
		MATERIAL	COMMENTS:					
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:12 WEIGHT: SHEET 1 OF 1		

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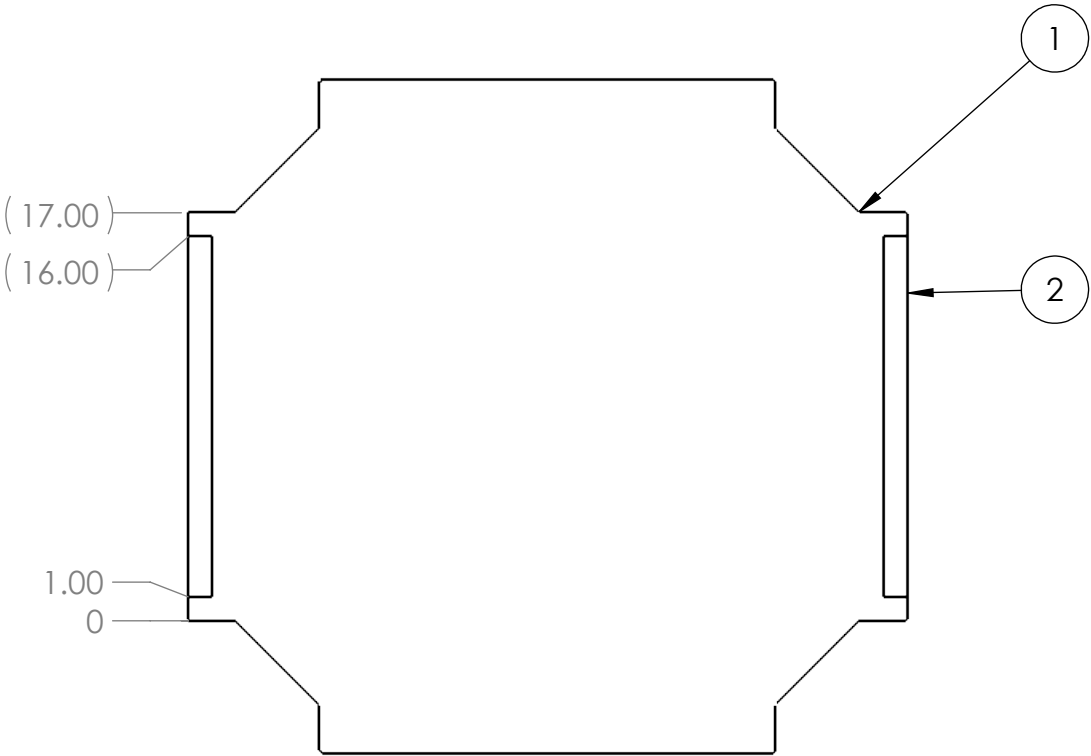
1

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Notes:

- 1. Remove protective Plasic.
- 2. Attach (2) to (1) as shown on back side only.





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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20115	Trench Side Plastic	1
2	Loop_1_15	1" x 15" Loop, Adhesive Backed	2

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			TITLE:  GE-20115 with loop		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV  B GE-20163		
		MATERIAL	COMMENTS:					
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8 WEIGHT:		SHEET 1 OF 1

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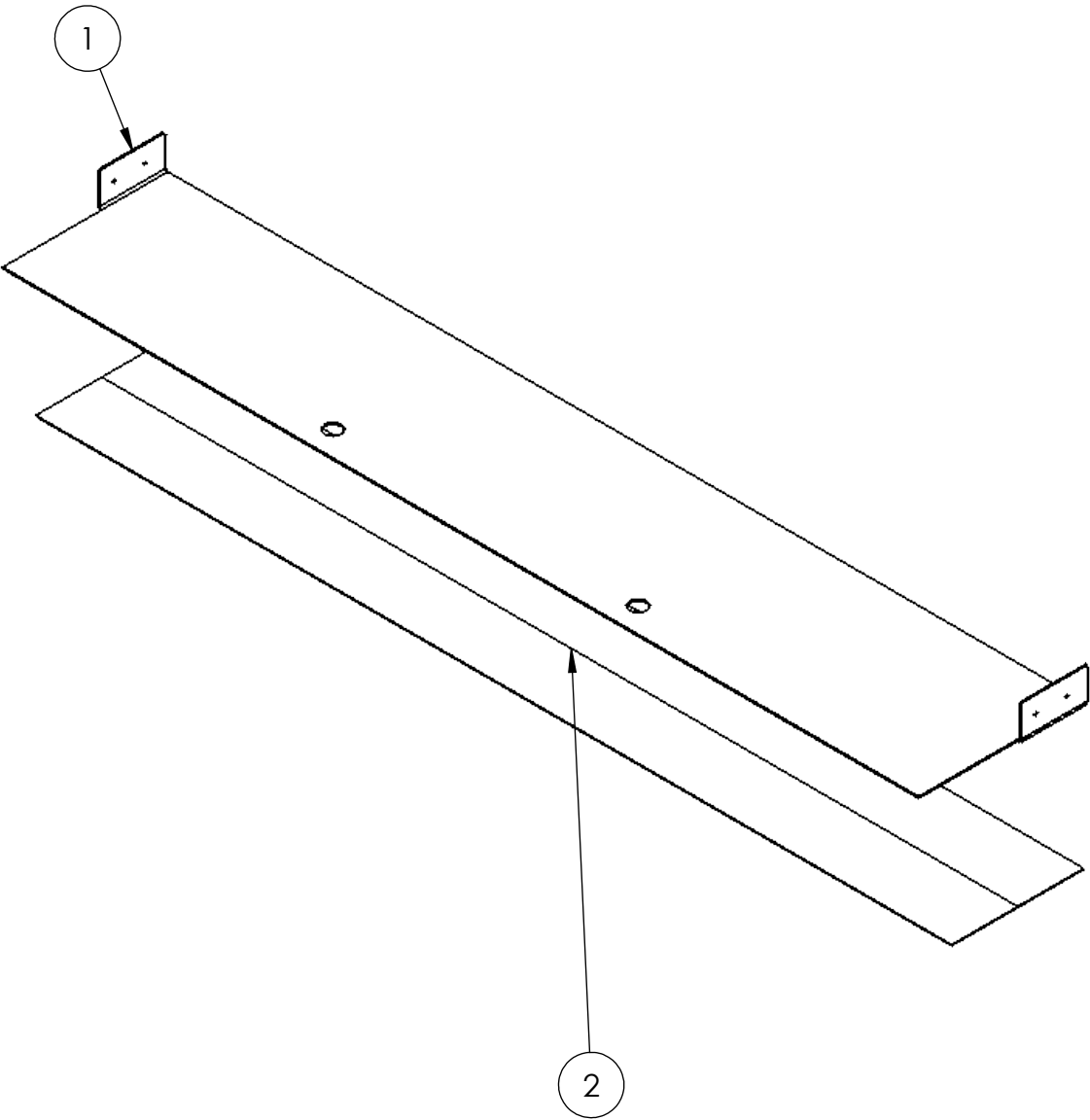
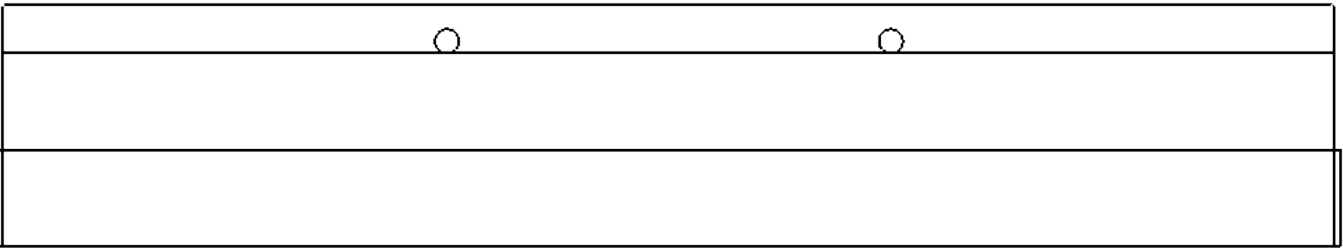


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- Notes:
- 1. Clean and prep bottom surface
  - 2. Attach (2) to (1) as shown above.
  - 3. No Hook permissable in the circular cut outs.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20123	Trench Base	1
2	Hook_4_55	4" x 55" Hook, Adhesive Backed	2

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <div>GE-20123 with 4"</div> <div>hook</div>		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$						
		THREE PLACE DECIMAL $\pm .001$						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
		MATERIAL	COMMENTS:					
		FINISH				SIZE	DWG. NO.	REV
NEXT ASSY	USED ON					<b>B</b>	<b>GE-20164</b>	
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8		SHEET 1 OF 1

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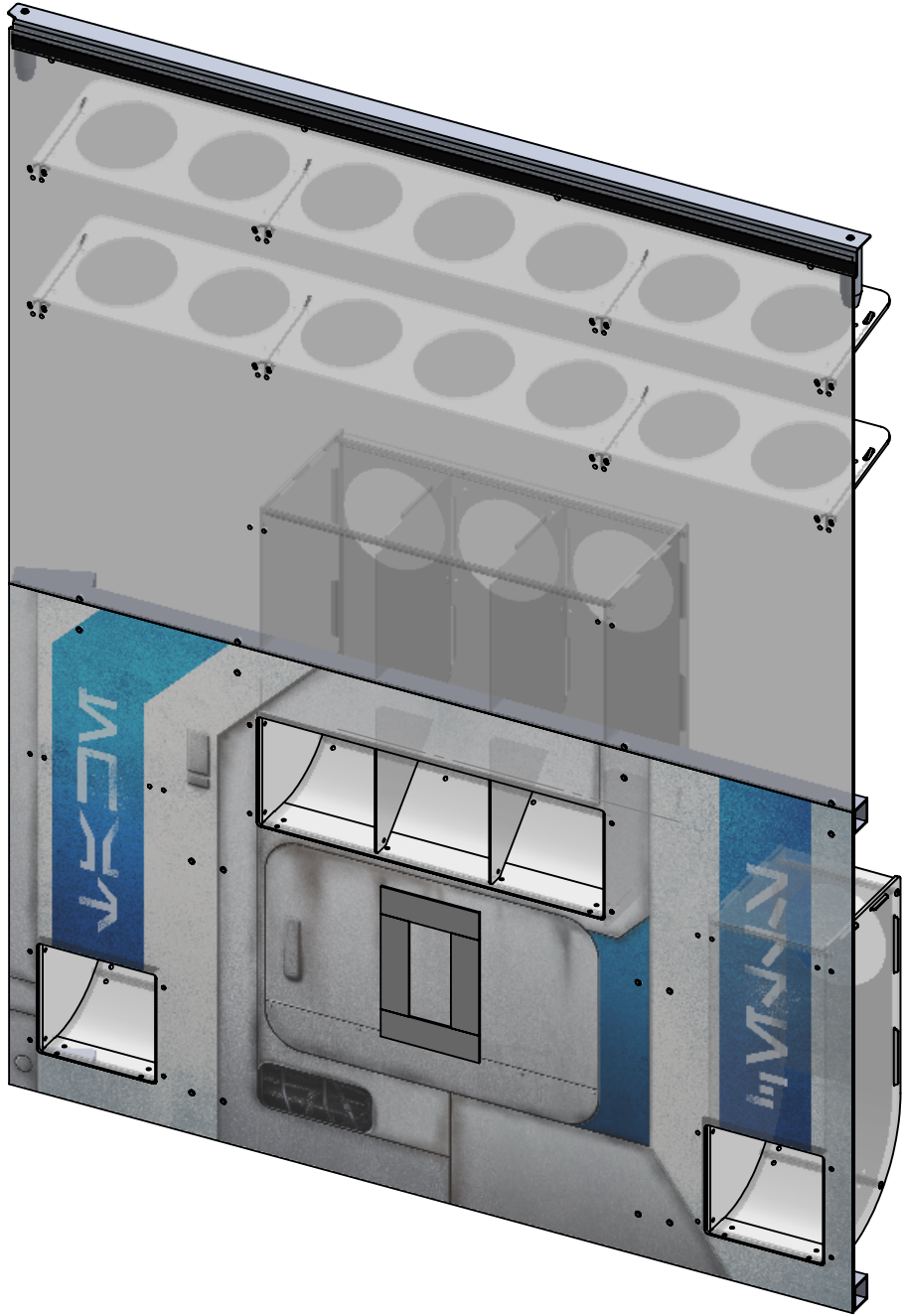
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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20201	Frame, Bay	1
2	GE-20203	Ball Rack, Bay	2
3	GE-20204	Hook, Pegboard, 6.75"	8
4	GE-20205	Chute Assembly, Lower	2
5	GE-20210	Chute Assembly, Upper	1
6	GE-20216	Top Rail, Standard	1
7	GE-20221	Front Face, with Target	1
8	GE-20313	Anchor with hook	1
9	Hook_1_60	1" x 60" Hook, Adhesive Backed	1
10	Loop_1_60	1" x 60" Loop, Adhesive Backed	1

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  Loading Bay		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20200</b>		
		MATERIAL						
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING						

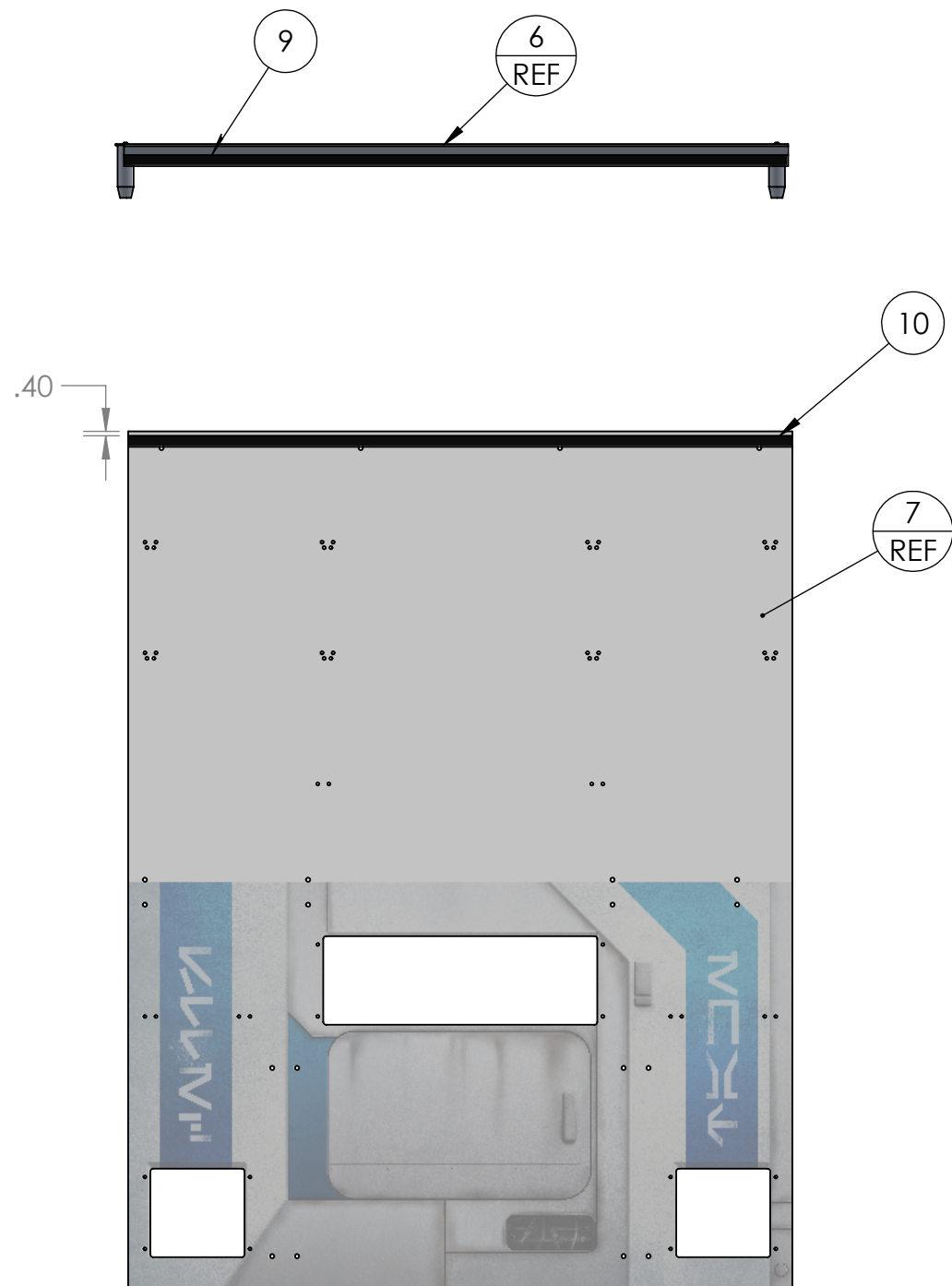
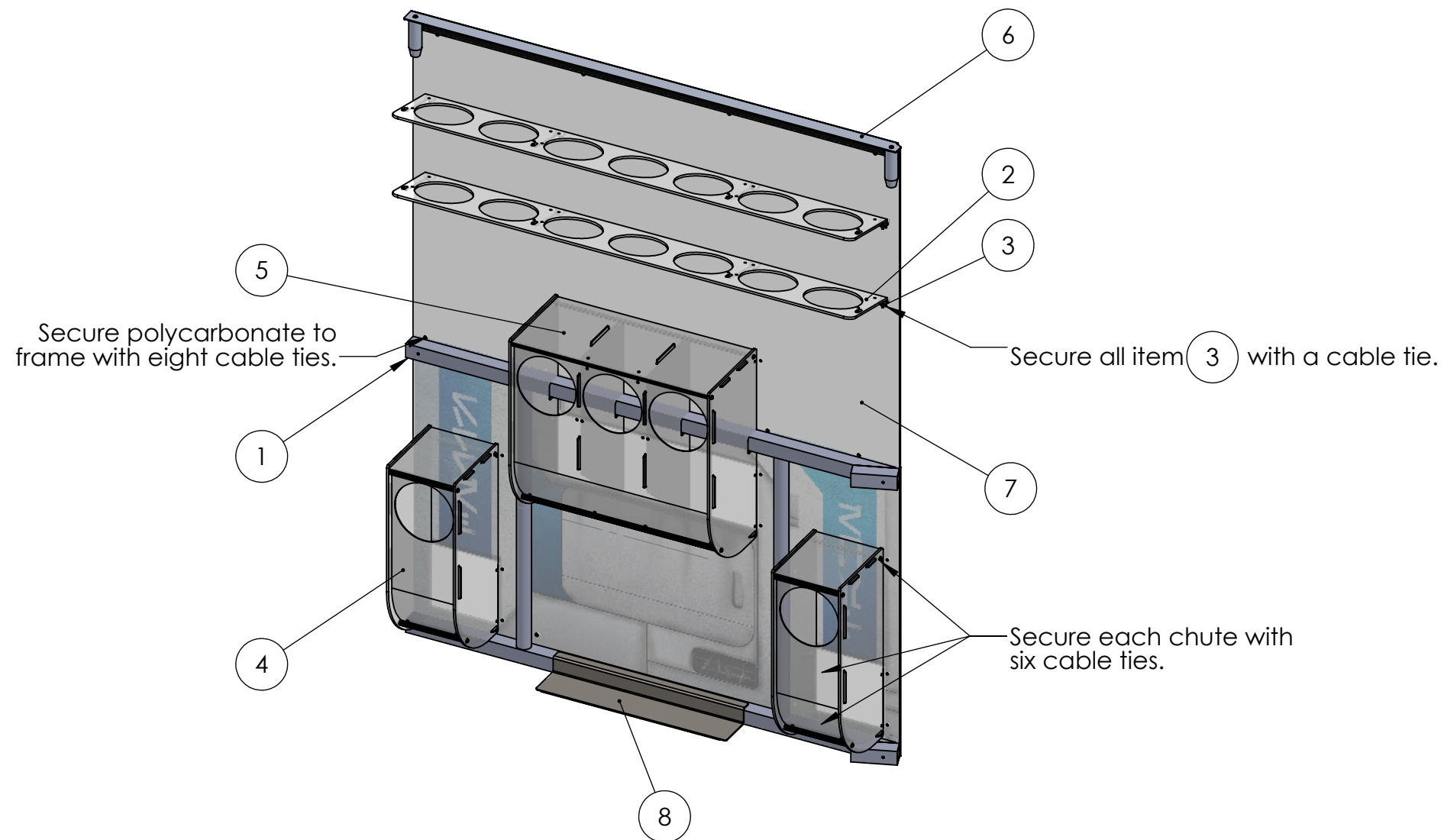
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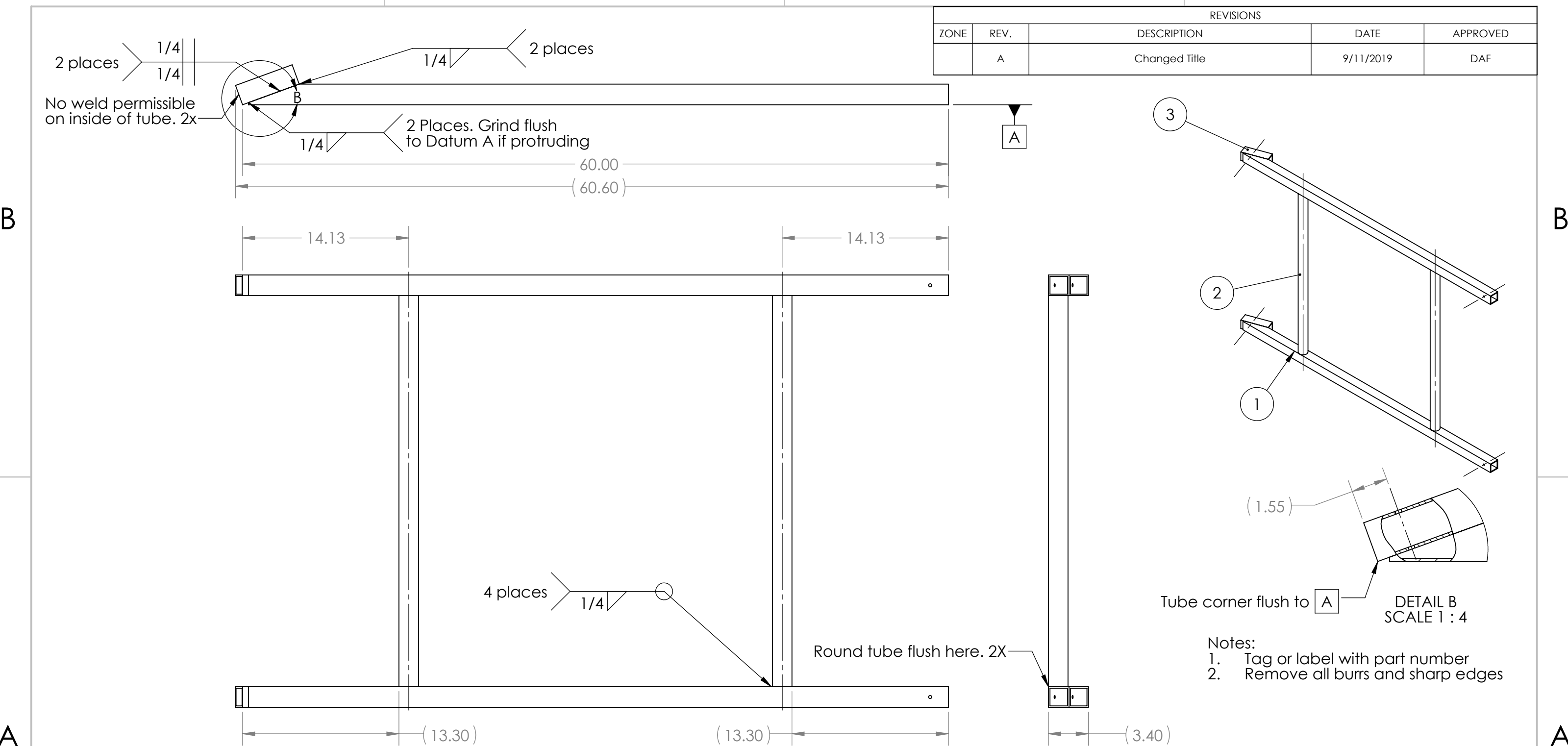
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			CHECKED			
			ENG APPR.			
			MFG APPR.			
			Q.A.			
			COMMENTS:			
						SIZE DWG. NO. REV
						B GE-20200
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:16 WEIGHT: SHEET 2 OF 2

4

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2



1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20201-01	1.75" x .125" thk. Square Tubing, 6063 Aluminum	2
2	GE-20201-02	1-1/4" Schedule 40 Pipe, 6061 Aluminum	2
3	GE-20201-03	1.75" x .125" thk. Square Tubing, 6063 Aluminum	2

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		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	COMMENTS:		
		THREE PLACE DECIMAL $\pm .001$			
		INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.	
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE: **Frame, Bay**

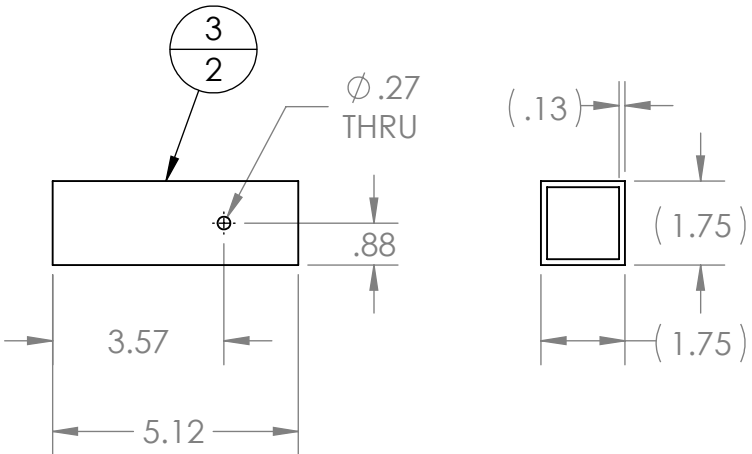
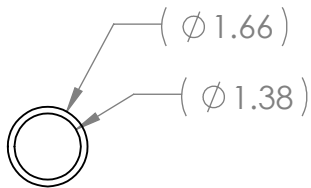
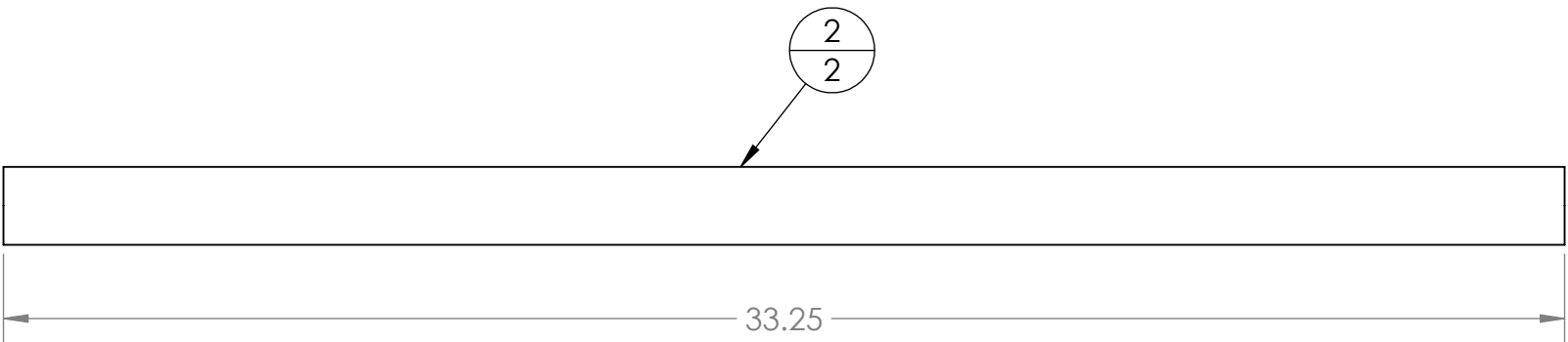
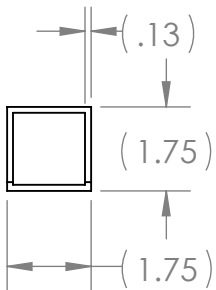
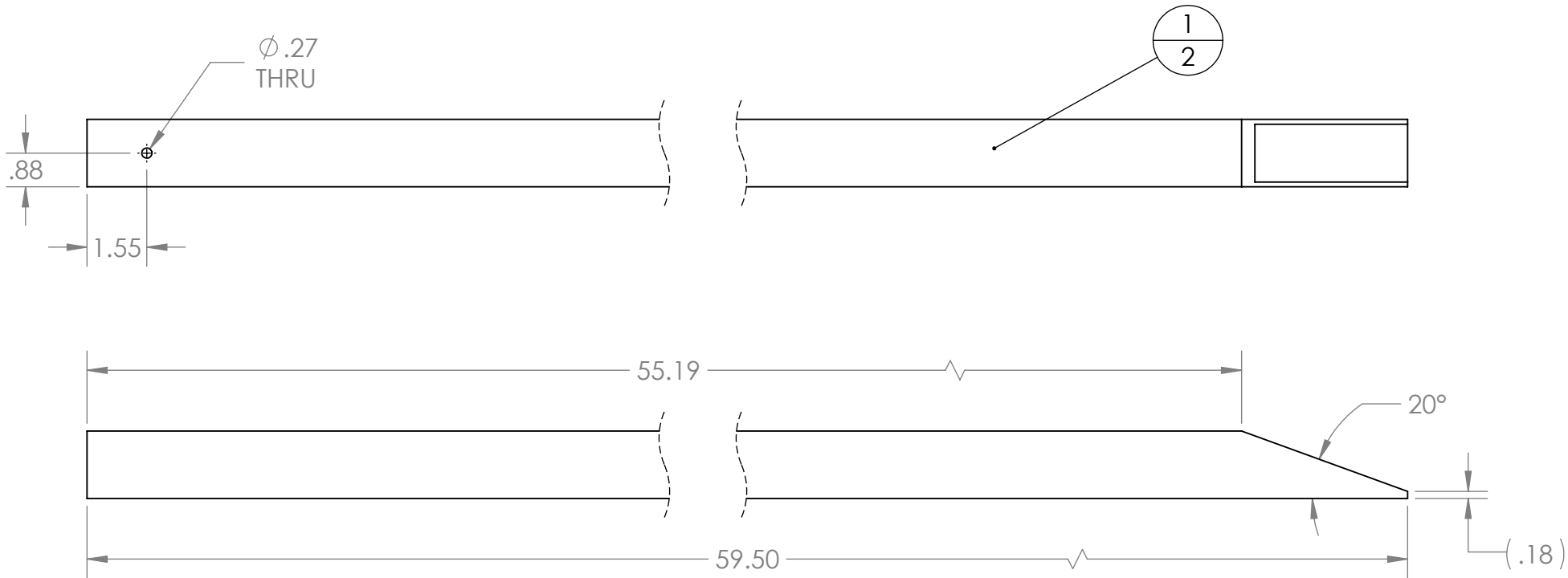
SIZE <b>B</b>	DWG. NO. <b>GE-20201</b>	REV <b>A</b>
SCALE: 1:8	WEIGHT:	SHEET 1 OF 2

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			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20201</b> <b>A</b>		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						
			SCALE: 1:4			WEIGHT:		SHEET 2 OF 2

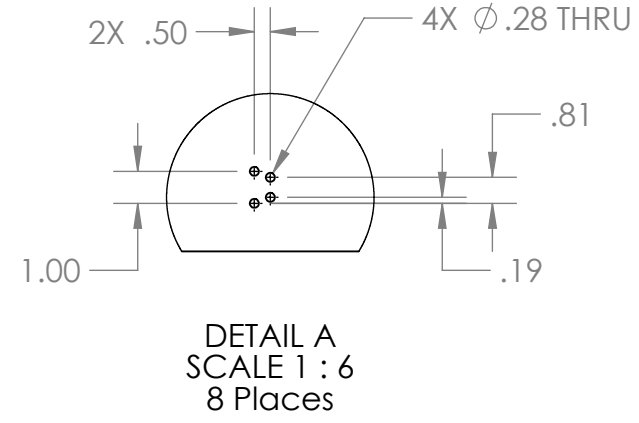
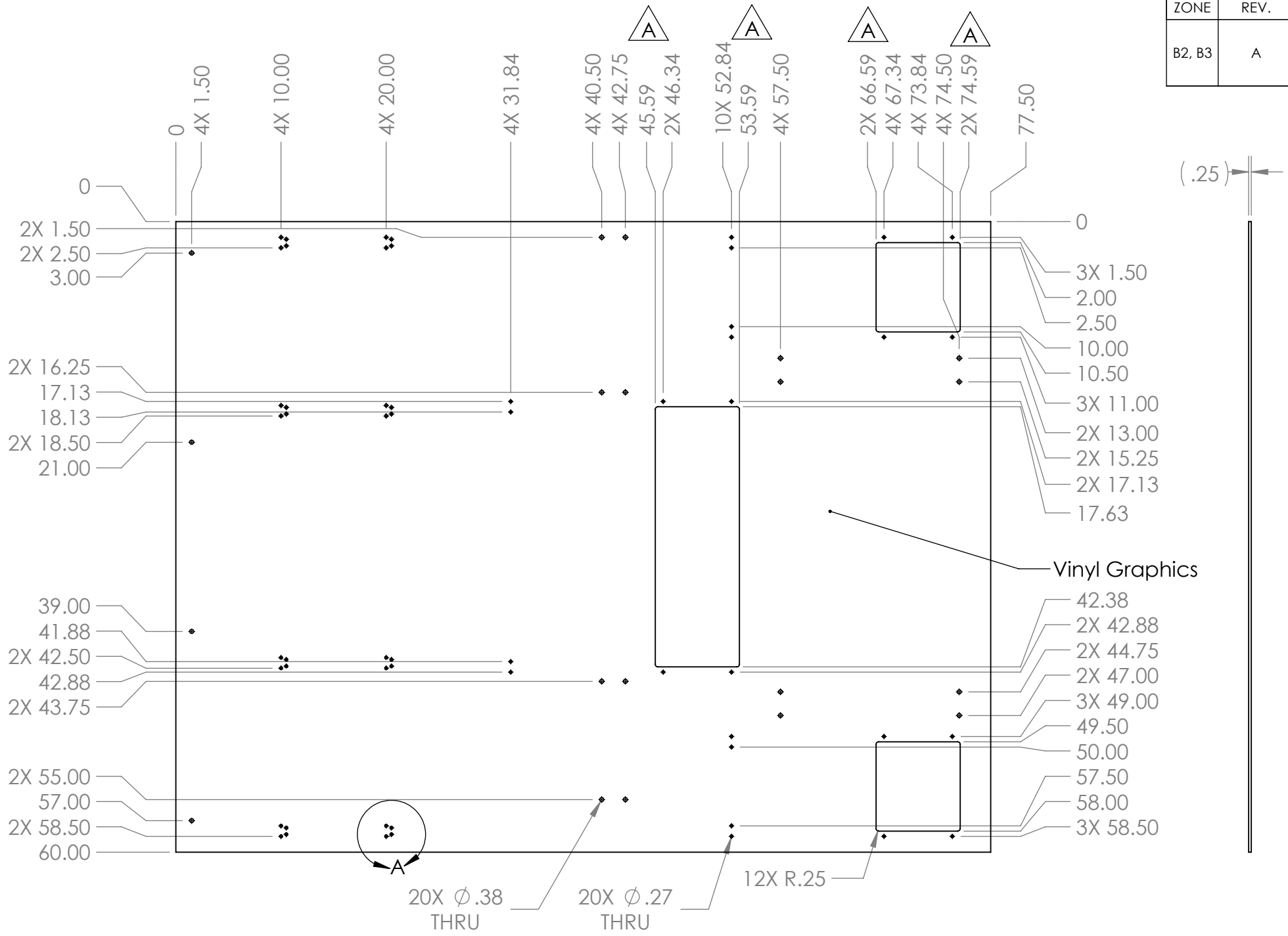
B

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B2, B3	A	45.59 was 45.50, 66.59 was 66.5, 74.59 was 74.5. Added 53.59	9/16/2019	DAF



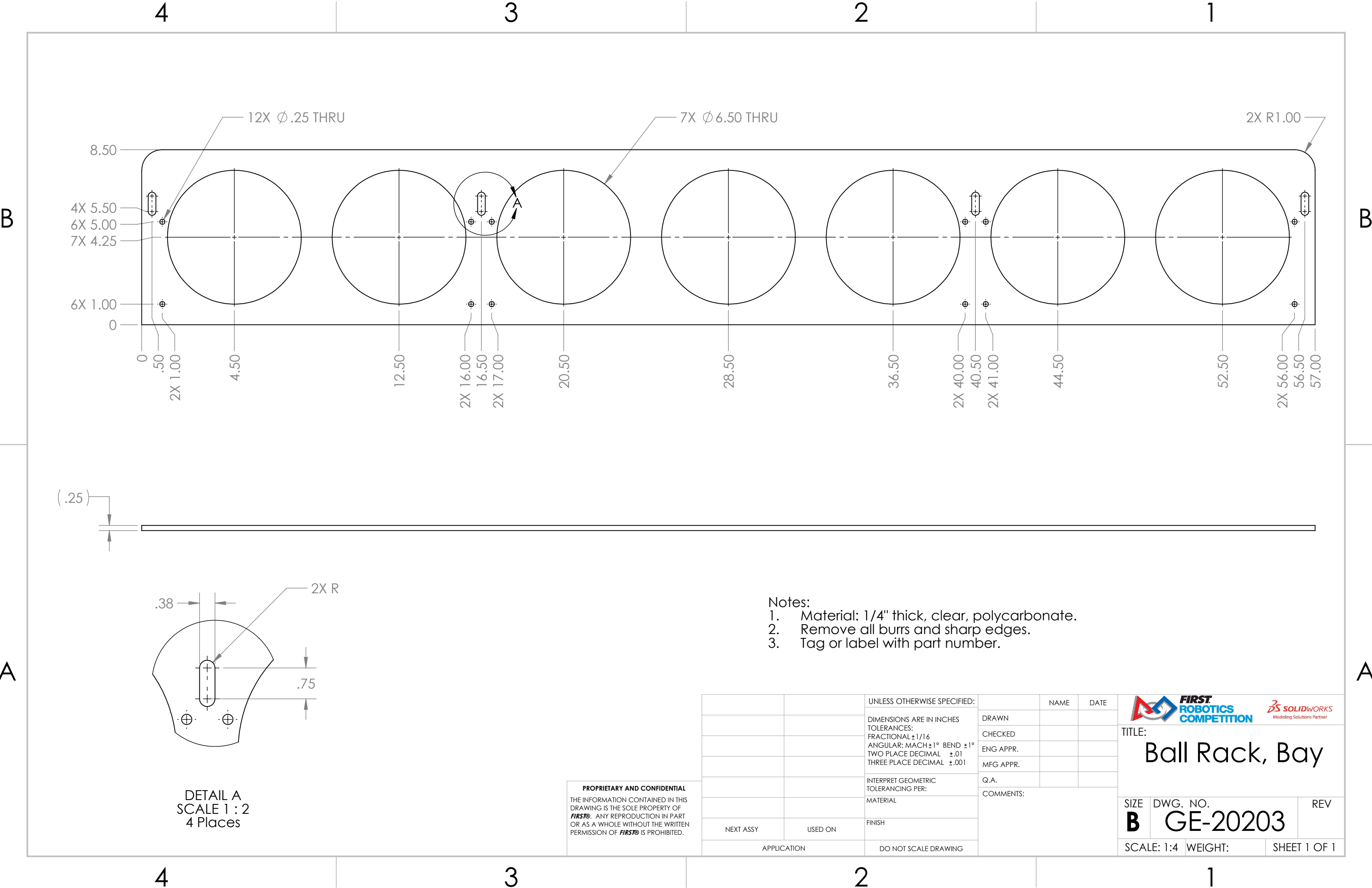
Vinyl Graphics

- Notes:
- Material: 1/4" thick, clear polycarbonate.
  - Remove all burrs and sharp edges.
  - Part will have vinyl applied.
  - Tag or label with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 			
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  Front Face, Bay			
		TOLERANCES:	CHECKED						
		FRACTIONAL ±1/16	ENG APPR.						
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.						
		TWO PLACE DECIMAL ±.01	Q.A.						
		THREE PLACE DECIMAL ±.001	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20202</b> <b>A</b>			
		INTERPRET GEOMETRIC TOLERANCING PER:							
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:12				WEIGHT:	SHEET 1 OF 1	





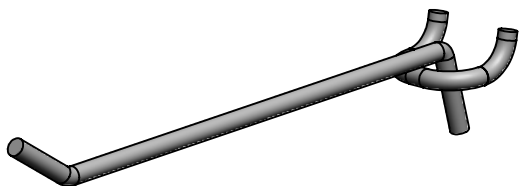
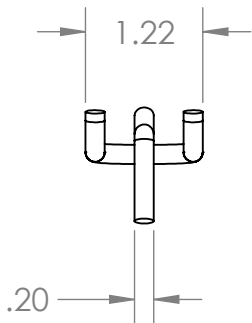
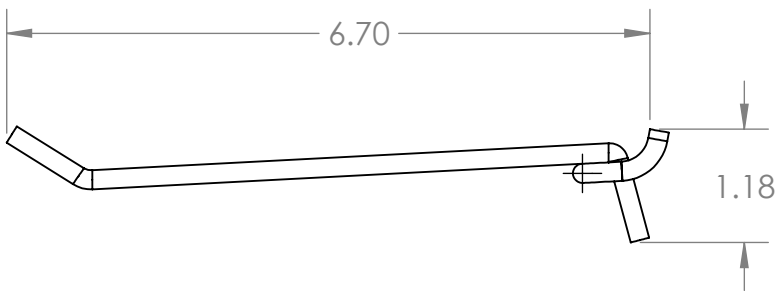


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**DESCRIPTION:** ZINC-PLATED STEEL  
PEGBOARD HOOK FOR 3/16" AND 9/32"  
DIAMETER PEG HOLE, 6-3/4" PROJECTION

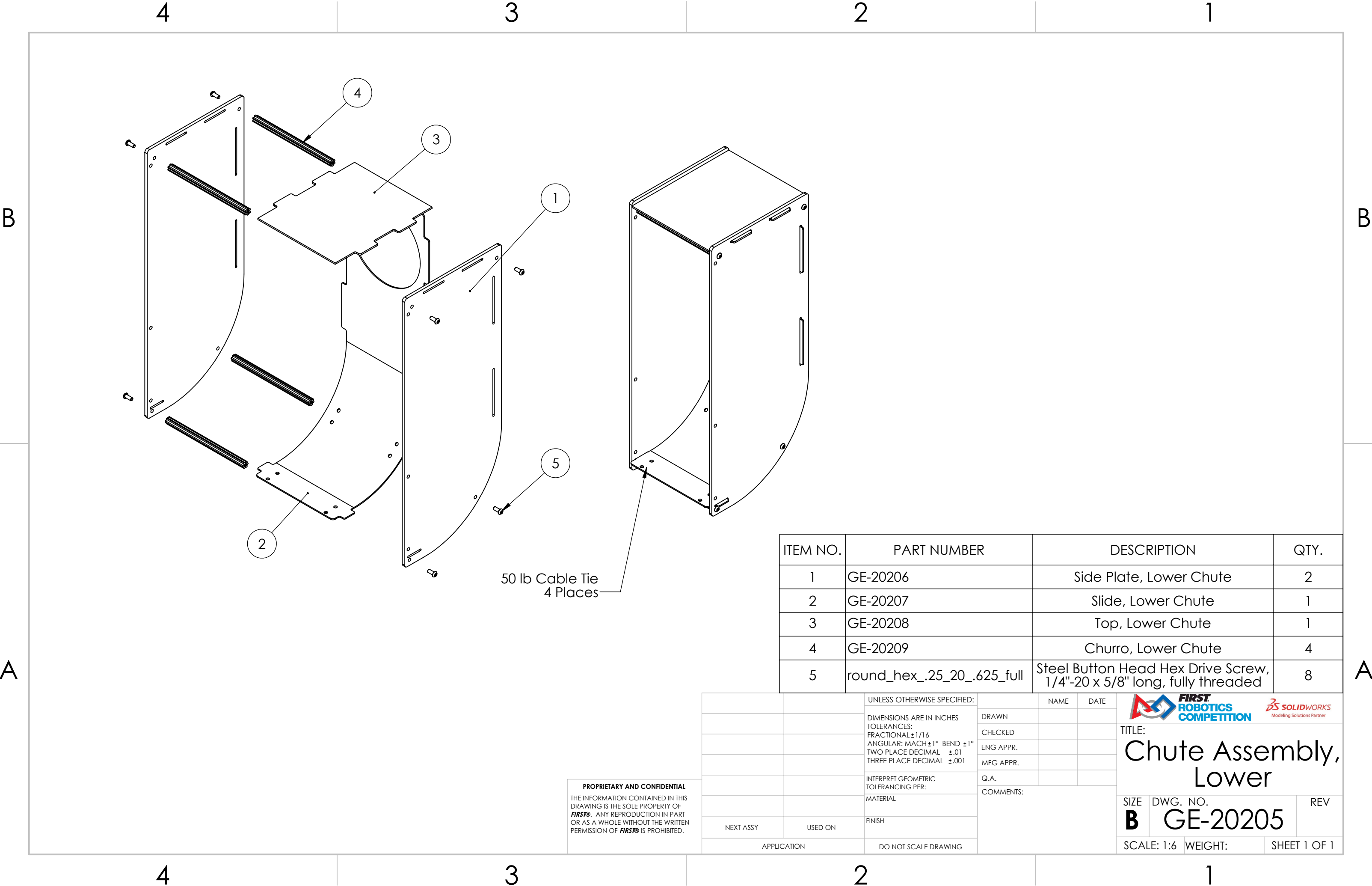
**VENDOR:** MC MASTER-CARR

**PART NUMBER:** 18535A63

**PACKAGE QUANTITY:** 10



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>				
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  <div>Hook, Pegboard, 6.75"</div>				
		TOLERANCES:	CHECKED							
		FRACTIONAL $\pm 1/16$	ENG APPR.							
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.							
		TWO PLACE DECIMAL $\pm .01$	Q.A.							
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE		DWG. NO.	REV	
		INTERPRET GEOMETRIC TOLERANCING PER:				B		GE-20204		
		MATERIAL								
		FINISH								
NEXT ASSY	USED ON					SCALE: 1:2		WEIGHT:	SHEET 1 OF 1	
APPLICATION		DO NOT SCALE DRAWING								



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20206	Side Plate, Lower Chute	2
2	GE-20207	Slide, Lower Chute	1
3	GE-20208	Top, Lower Chute	1
4	GE-20209	Churro, Lower Chute	4
5	round_hex_.25_20_.625_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 5/8" long, fully threaded	8

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE: <b>Chute Assembly, Lower</b></div> <div>SIZE <b>B</b> DWG. NO. <b>GE-20205</b> REV</div> <div>SCALE: 1:6 WEIGHT: SHEET 1 OF 1</div>
		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL ±1/16	ENG APPR.			
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.			
		TWO PLACE DECIMAL ±.01	Q.A.			
		THREE PLACE DECIMAL ±.001	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				
		FINISH				
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

4

3

2

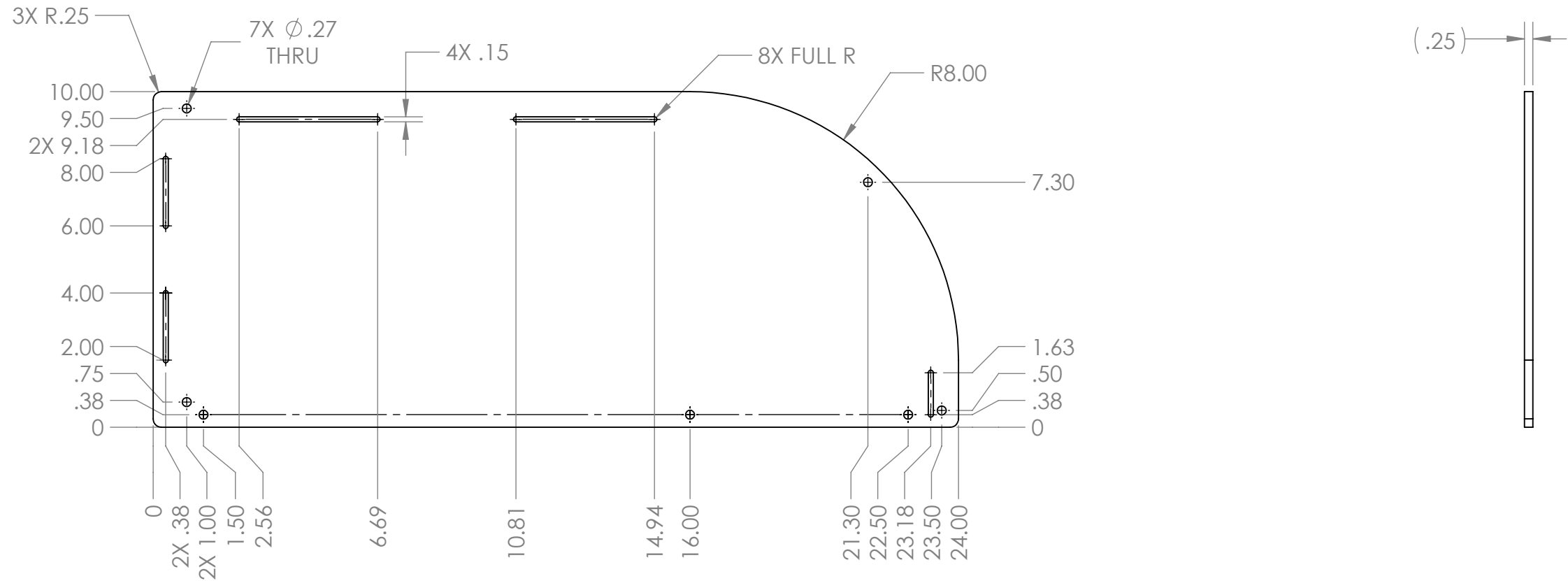
1

B

B



A

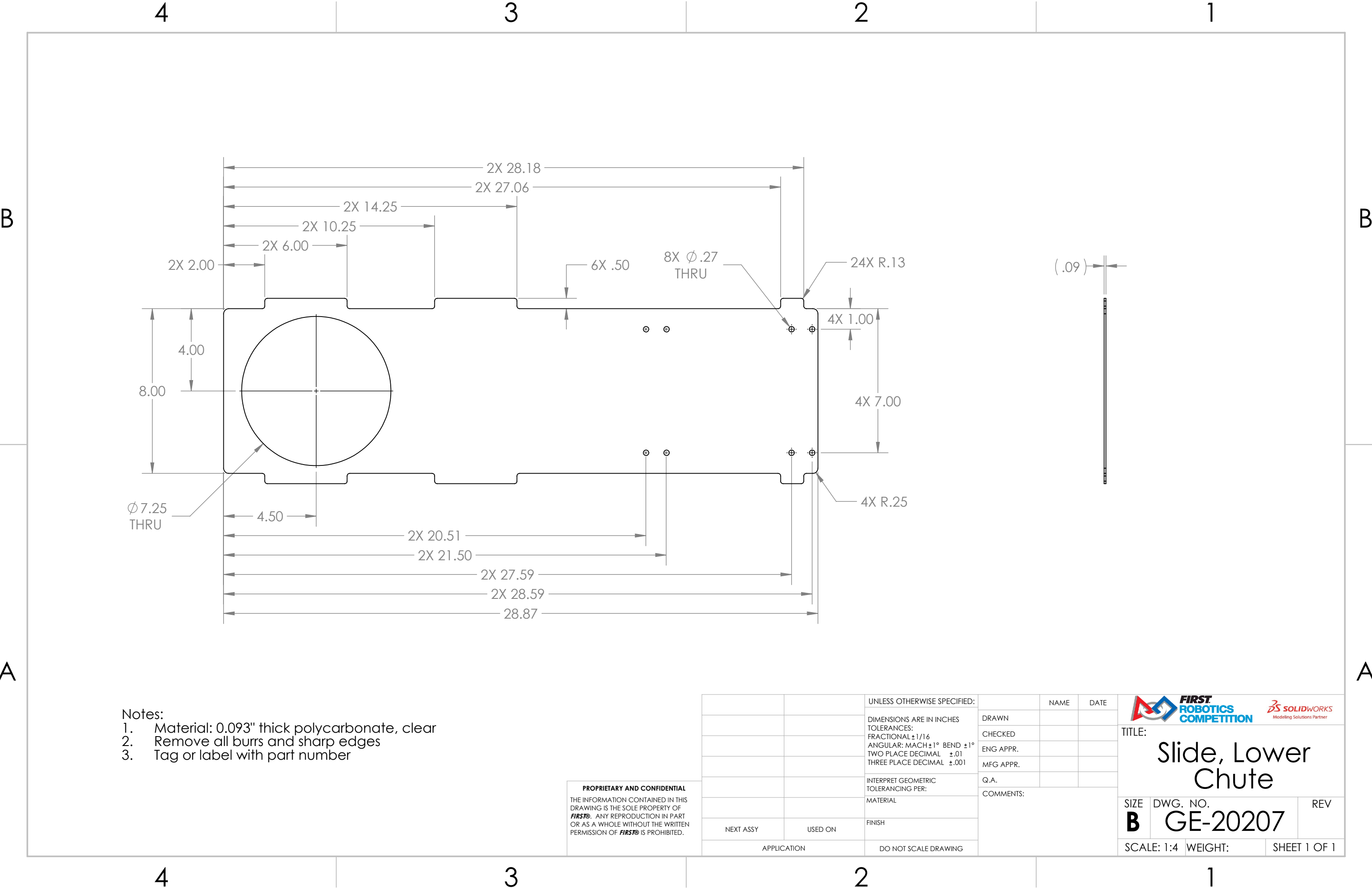
A



- Notes:
1. Material: 1/4" Polycarbonate, Clear
  2. Remove all burrs and sharp edges.
  3. Tag or label with part number.



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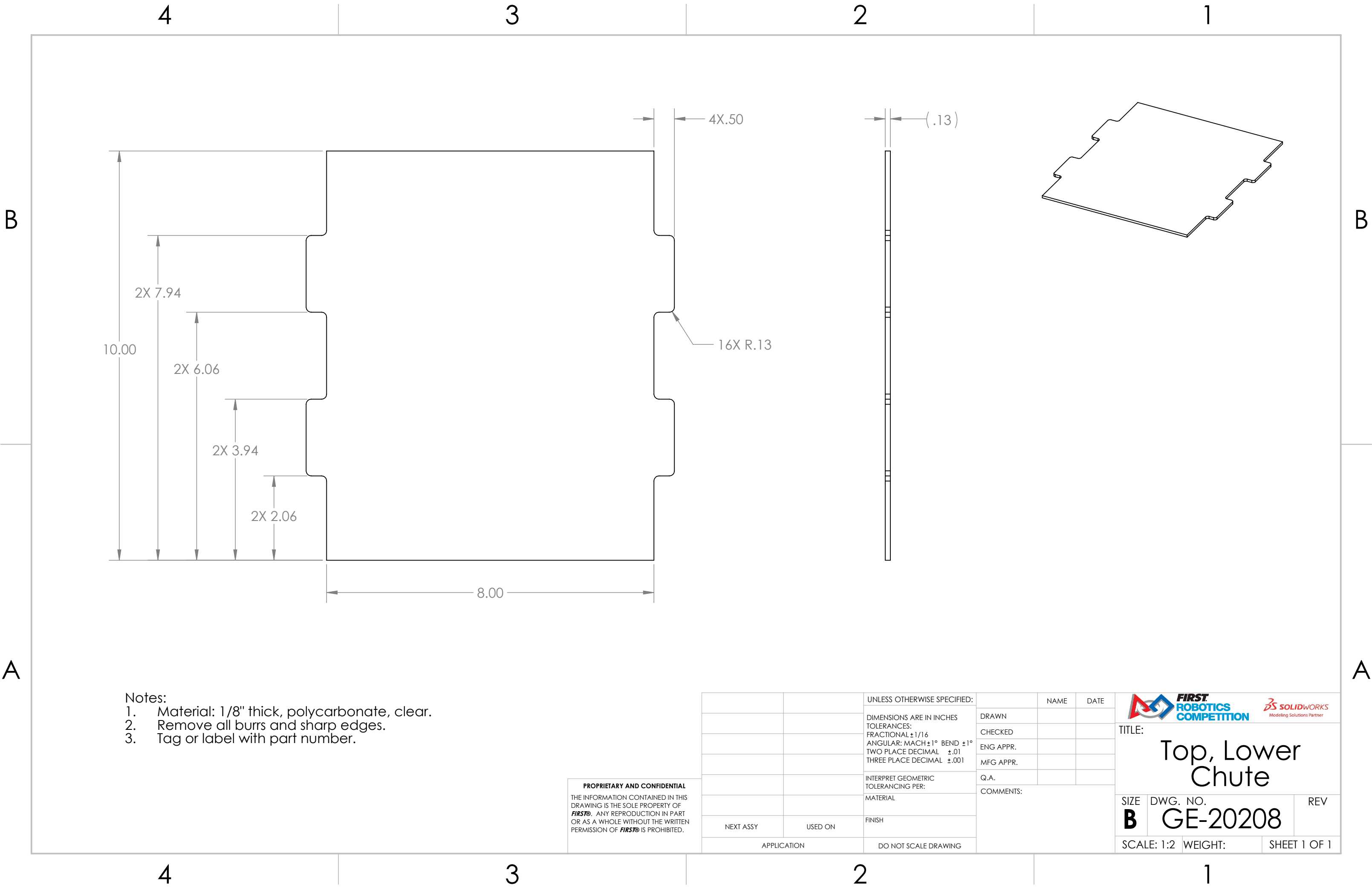
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 	
		DIMENSIONS ARE IN INCHES	DRAWN				TITLE:  Side Plate, Lower Chute
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.				
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:				
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL					
		FINISH					
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING	SIZE DWG. NO. REV <b>B</b> GE-20206				
			SCALE: 1:4		WEIGHT:	SHEET 1 OF 1	



- Notes:
1. Material: 0.093" thick polycarbonate, clear
  2. Remove all burrs and sharp edges
  3. Tag or label with part number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div></div> <div><div>SOLIDWORKS Modeling Solutions Partner</div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  Slide, Lower Chute		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20207</b>		
		MATERIAL						
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT: SHEET 1 OF 1		



4

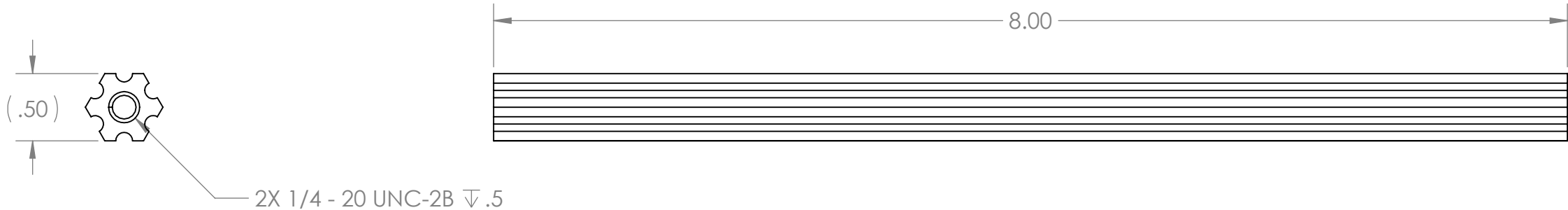
3

2

1



B

B



- Notes:
- 1. Material: Aluminum
  - 2. Description: AndyMark Churro
  - 3. Make from AndyMark PN: am-3101-6, or equivalent.
  - 4. Bag or tag with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE: <b>Churro, Lower Chute</b></div> <div>SIZE <b>B</b> DWG. NO. <b>GE-20209</b> REV</div> <div>SCALE: 1:1 WEIGHT: SHEET 1 OF 1</div>
		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			COMMENTS:
		THREE PLACE DECIMAL $\pm .001$				
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				
NEXT ASSY	USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING				

4

3

2

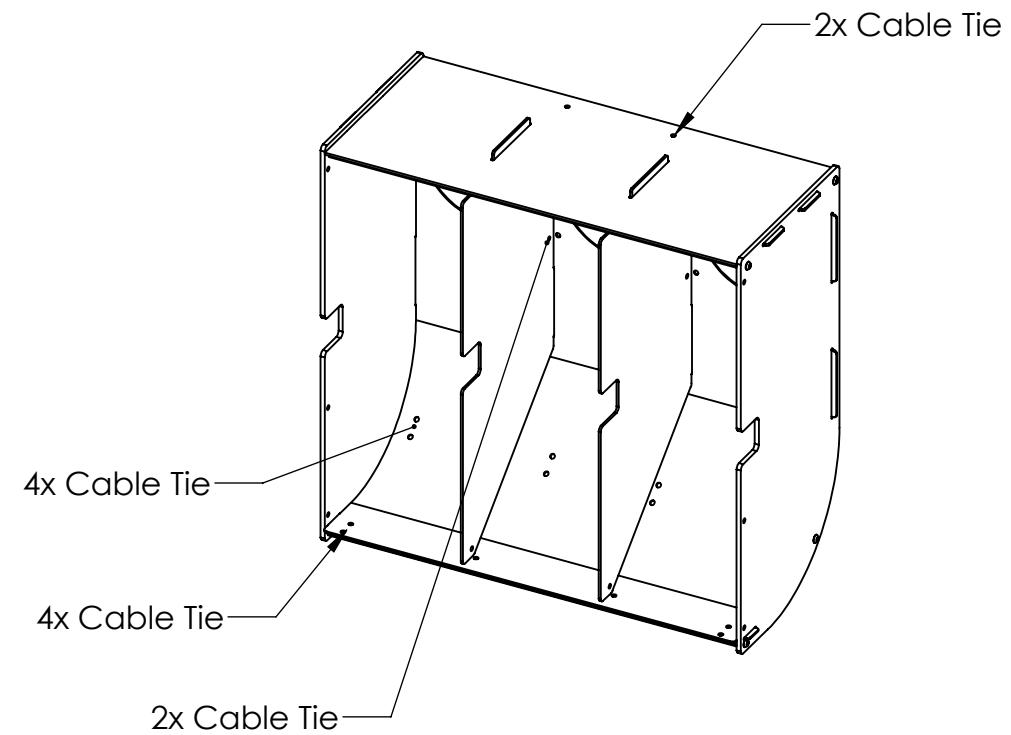
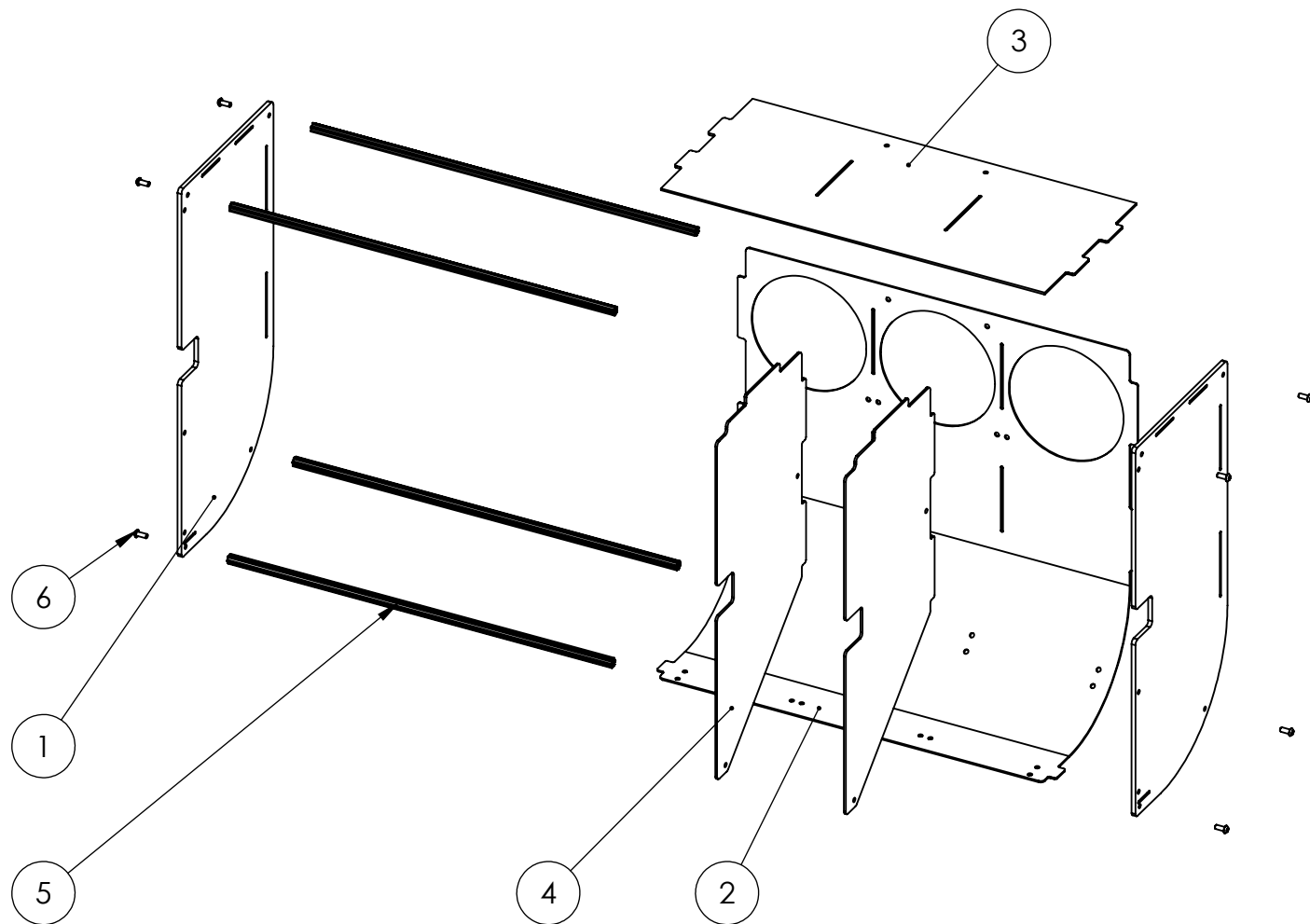
1

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20211	Side Plate, Upper Chute	2
2	GE-20212	Slide, Upper Chute	1
3	GE-20213	Top, Upper Chute	1
4	GE-20214	Divider, Upper Chute	2
5	GE-20215	Churro, Upper Chute	4
6	round_hex_.25_20_.625_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 5/8" long, fully threaded	8

A

B

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		UNLESS OTHERWISE SPECIFIED:			NAME	DATE	<div></div> <div>TITLE: <b>Chute Assembly, Upper</b></div> <div>SIZE <b>B</b> DWG. NO. <b>GE-20210</b> REV</div> <div>SCALE: 1:10 WEIGHT: SHEET 1 OF 1</div>
		DIMENSIONS ARE IN INCHES	DRAWN				
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.				
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:				
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL					
		FINISH					
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING					



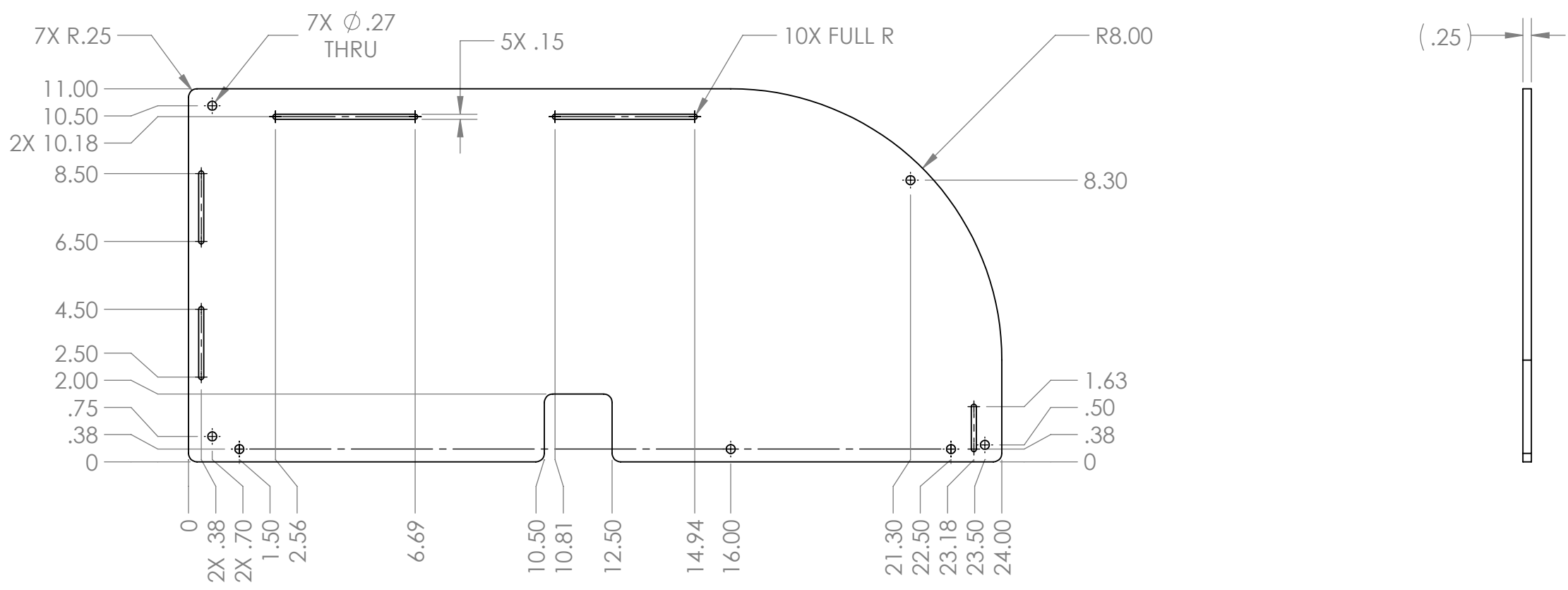
4

3

2

1

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- Notes:
1. Material: 1/4" Polycarbonate, Clear
  2. Remove all burrs and sharp edges.
  3. Tag or label with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 	
		DIMENSIONS ARE IN INCHES	DRAWN				TITLE:  Side Plate, Upper Chute
		TOLERANCES:	CHECKED				
		FRACTIONAL ±1/16	ENG APPR.				
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.				
		TWO PLACE DECIMAL ±.01	Q.A.				
		THREE PLACE DECIMAL ±.001	COMMENTS:				
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL					
		FINISH					
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING					
			SIZE		DWG. NO.	REV	
			B		GE-20211		
			SCALE: 1:4		WEIGHT:	SHEET 1 OF 1	

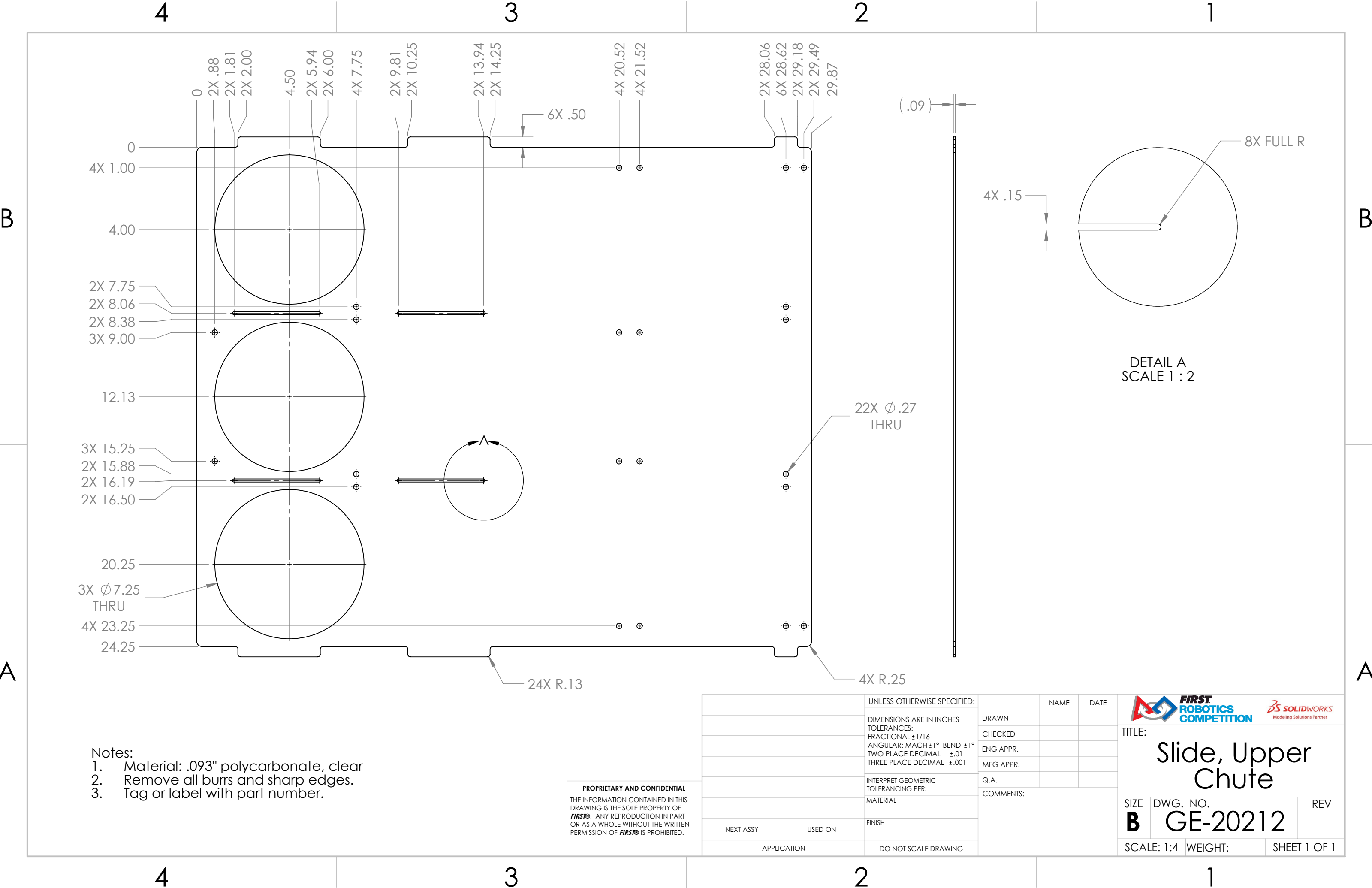
4

3

2



1

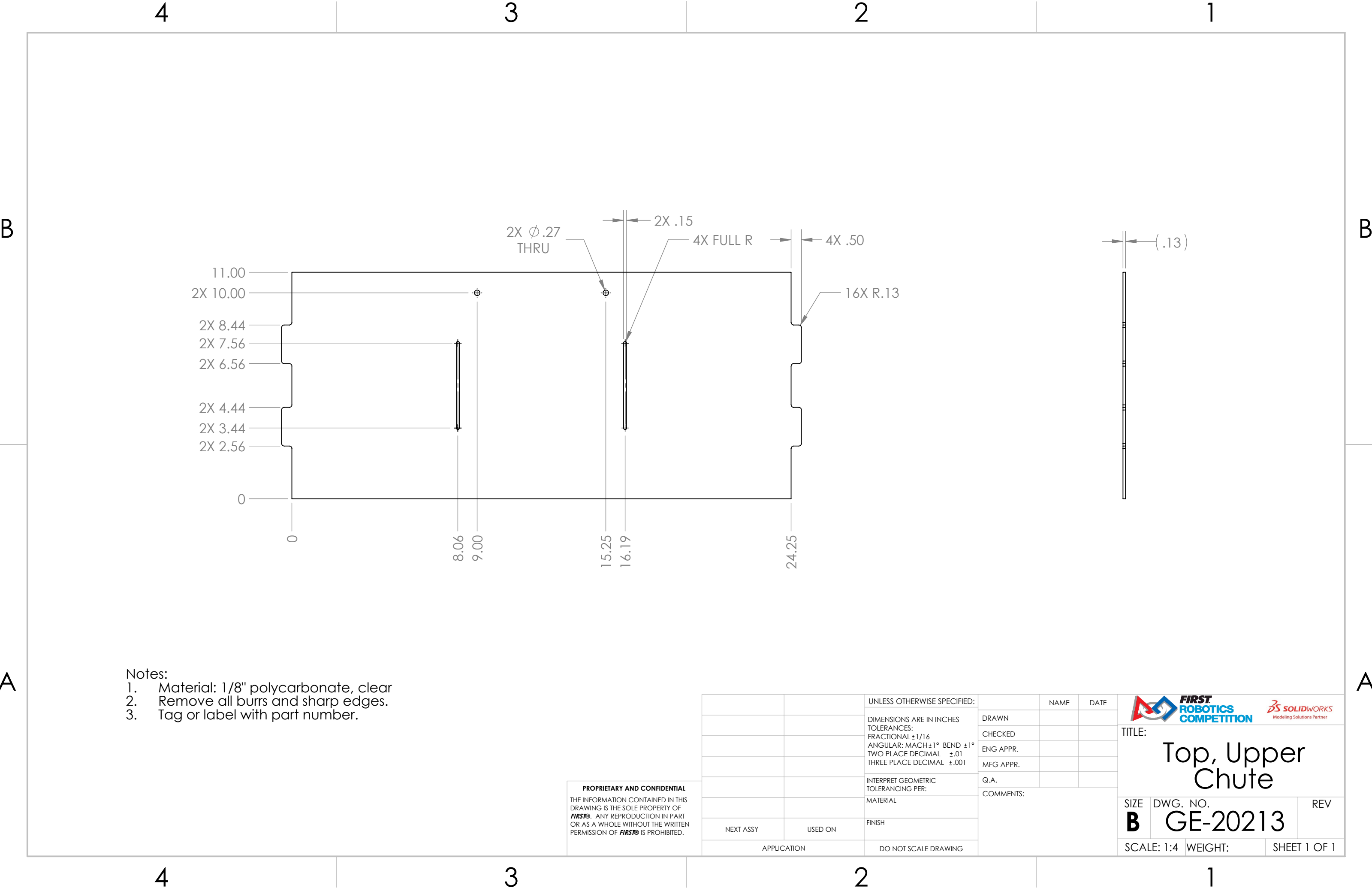
A



- Notes:
1. Material: .093" polycarbonate, clear
  2. Remove all burrs and sharp edges.
  3. Tag or label with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 					
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  <h1>Slide, Upper Chute</h1>					
		TOLERANCES:	CHECKED								
		FRACTIONAL $\pm 1/16$	ENG APPR.								
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.								
		TWO PLACE DECIMAL $\pm .01$	Q.A.								
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20212</b>					
		INTERPRET GEOMETRIC TOLERANCING PER:									
		MATERIAL									
		FINISH									
NEXT ASSY	USED ON										
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT: SHEET 1 OF 1					





Notes:

1. Material: 1/8" polycarbonates, clear
2. Remove all burrs and sharp edges.
3. Tag or label with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
**Top, Upper  
Chute**

SIZE **B** DWG. NO. **GE-20213** REV

SCALE: 1:4 WEIGHT: SHEET 1 OF 1

4

3

2

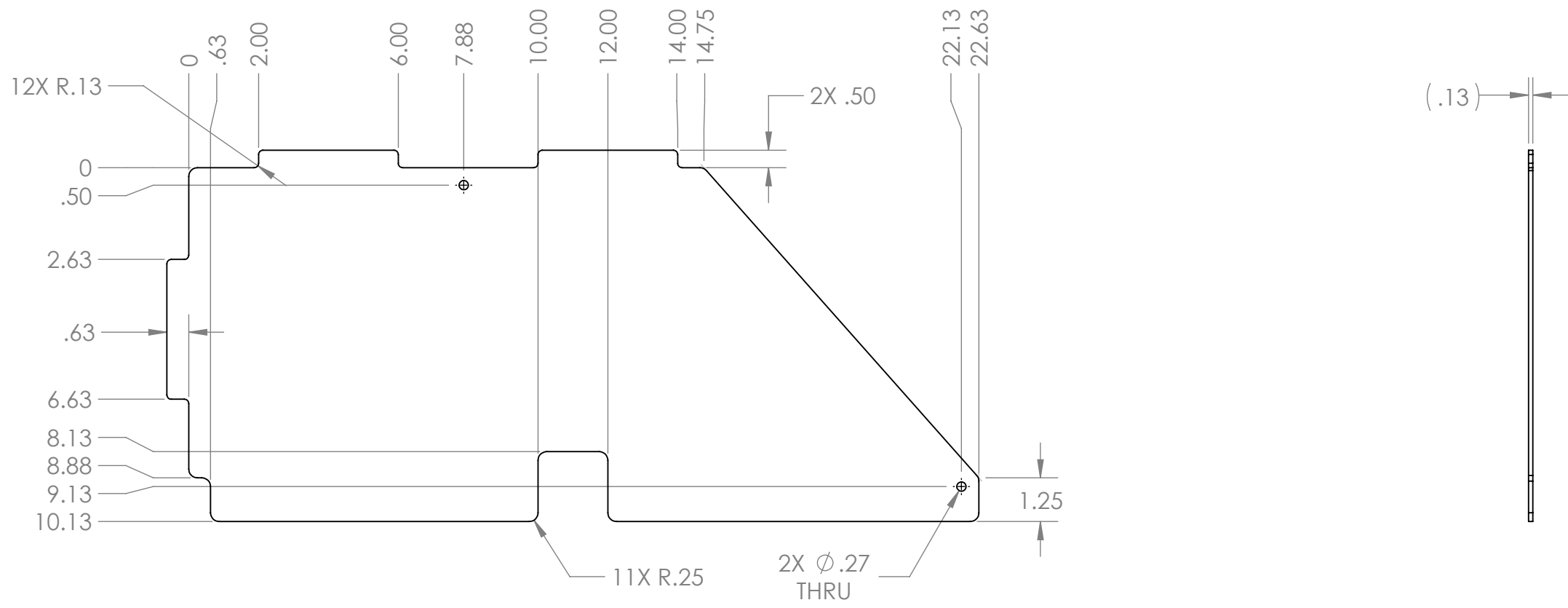
1

B

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B

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- Notes:
1. Material: 1/8" thick polycarbonate, clear
  2. Remove all burrs and sharp edges.
  3. Tag or label with part number.

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			DRAWN			
			CHECKED			
			ENG APPR.			
			MFG APPR.			
			Q.A.			COMMENTS:
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

4

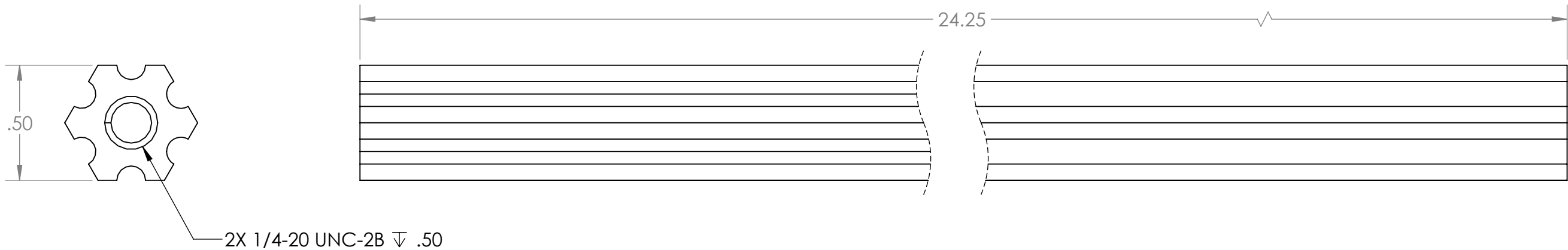
3

2

1

B



B



Notes:

1. Material: Aluminum
2. Description: AndyMark Churro
3. Make from AndyMark PN: am-3101-6 or equivalent.
4. Bag or tag with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div><b>FIRST</b> ROBOTICS COMPETITION</div> <div><b>SOLIDWORKS</b> Modeling Solutions Partner</div>			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			TITLE:  <h1>Churro, Upper Chute</h1>			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
			Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20215</b>			
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING				SCALE: 2:1 WEIGHT: SHEET 1 OF 1			

4

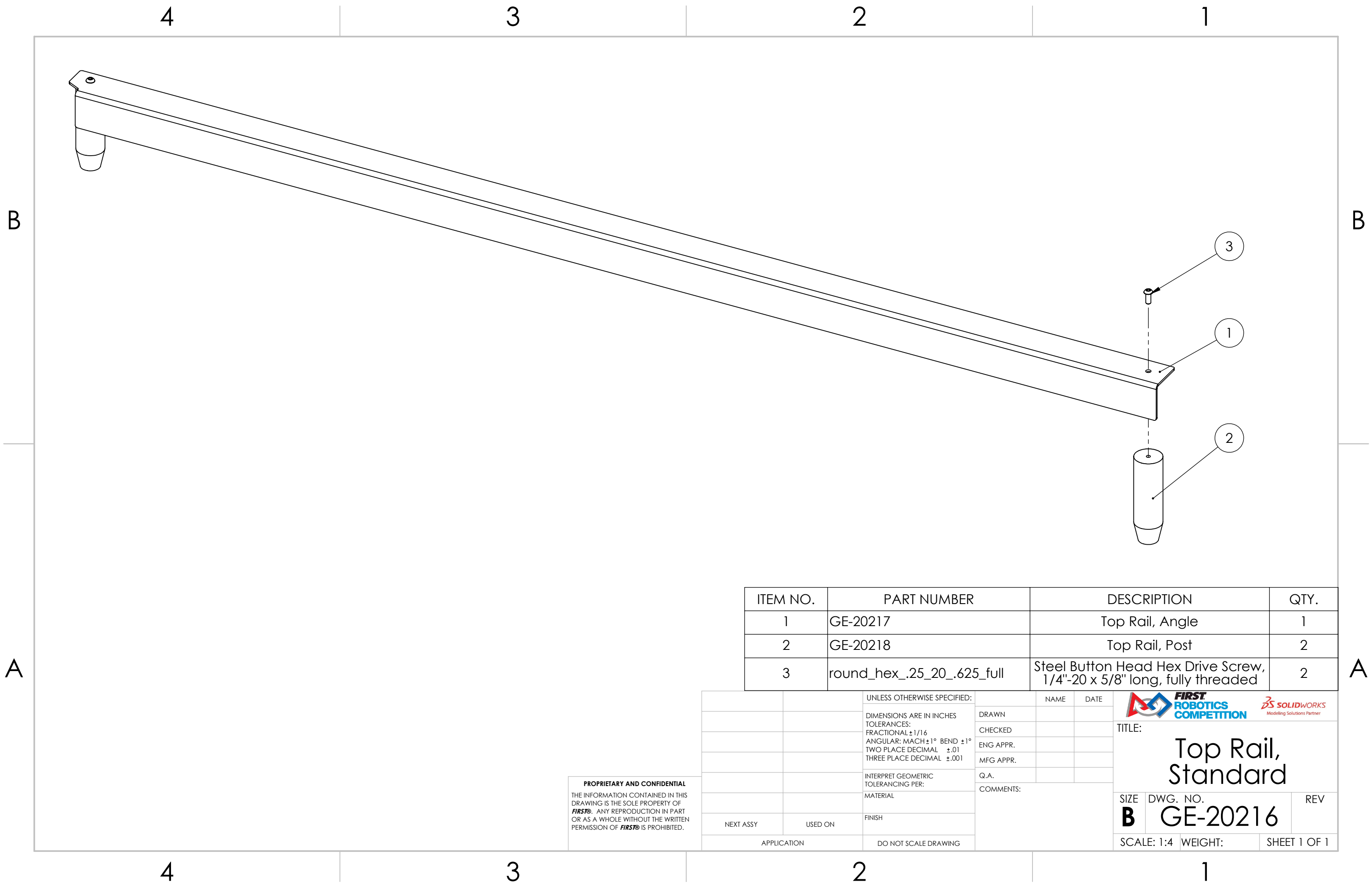
3

2

1



A

A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20217	Top Rail, Angle	1
2	GE-20218	Top Rail, Post	2
3	round_hex_.25_20_.625_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 5/8" long, fully threaded	2

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 	
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <b>Top Rail, Standard</b>	
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.			SIZE	DWG. NO.
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			<b>B</b>	<b>GE-20216</b>
		INTERPRET GEOMETRIC TOLERANCING PER:				SCALE: 1:4	WEIGHT:
		MATERIAL					SHEET 1 OF 1
		FINISH					
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING					

4

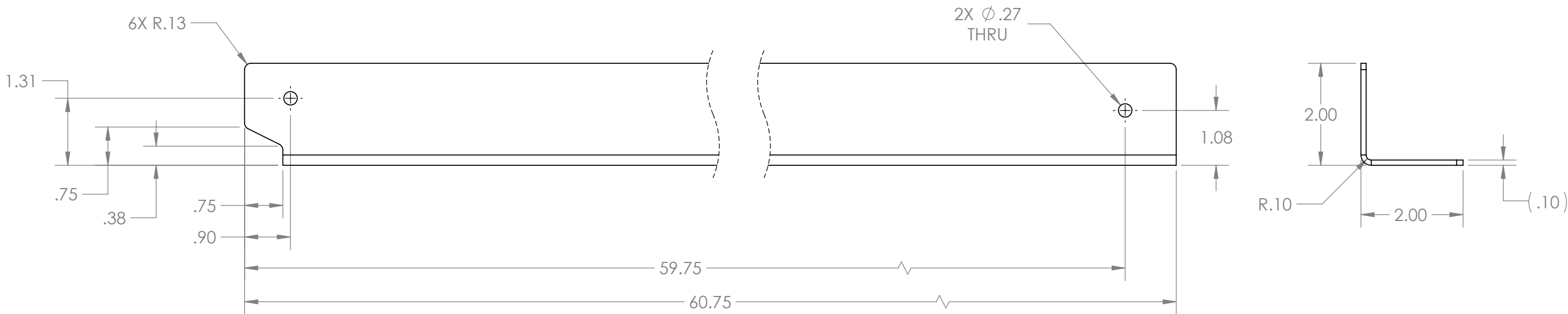
3

2

1

B

B





A

A

Notes:

1. Material: 5052 Aluminum Sheet, 10 GA.
2. Remove all burrs and sharp edges.
3. Tag or Label with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  Top Rail, Angle		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV  B GE-20217		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2 WEIGHT: SHEET 1 OF 1		

4

3

2

1



4

3

2

1

1/4-20 UNC-2B  $\nabla$  .50

(  $\varnothing$  1.44 )



4.75

1.00

$\varnothing$  1.00

- Notes:
- 1. Material: 1-7/16 diameter, 6061 Aluminum.
  - 2. Remove all burrs and sharp edges.
  - 3. Bag or tag with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  Top Rail, Post		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> GE-20218		
		MATERIAL	COMMENTS:					
		FINISH						
NEXT ASSY	USED ON					SCALE: 1:1 WEIGHT: SHEET 1 OF 1		
APPLICATION		DO NOT SCALE DRAWING						

4

3

2

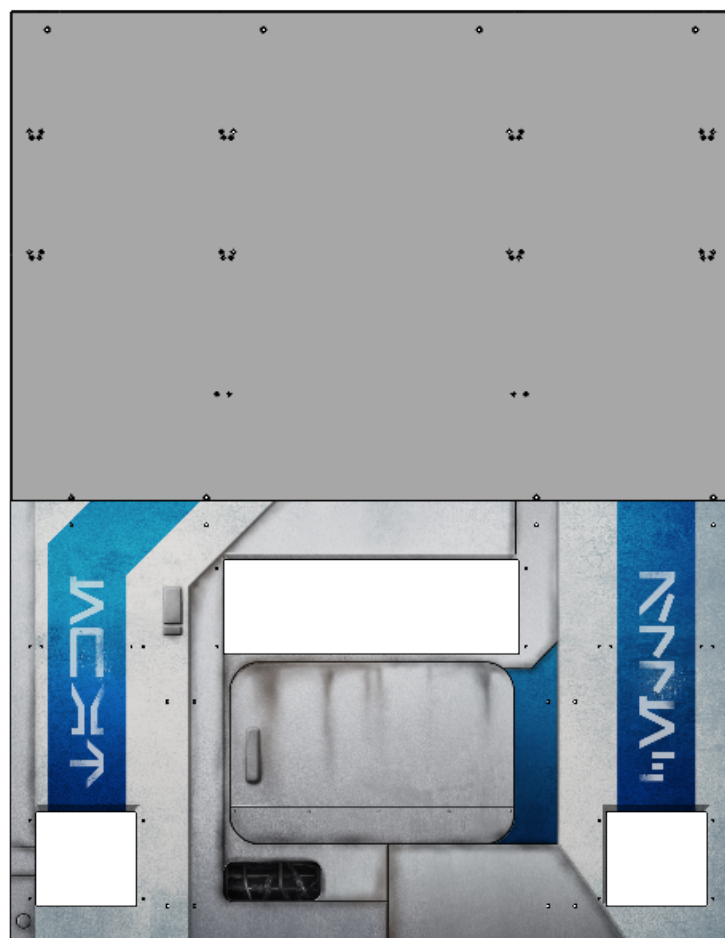
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1

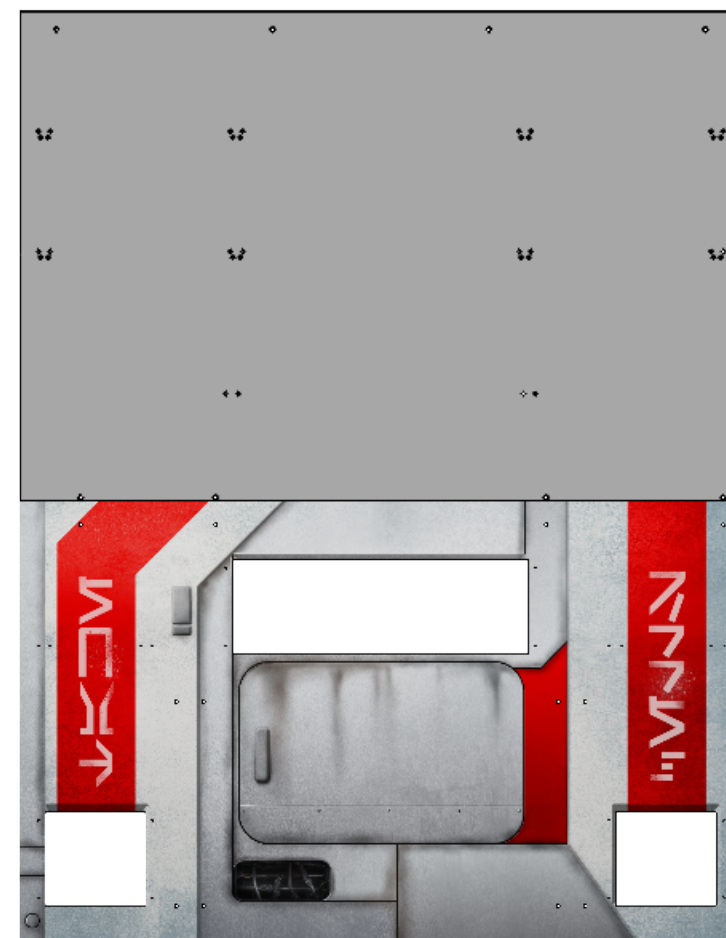
Vinyl applied to one face. Front and back of part are identical.—

Notes:  
1. Tag or label with part number



Color Variations		
Part Number	Vinyl Image	QTY per field
GE-20220-Blue	GE-20220-Blue-Vinyl	1
GE-20220-Red	GE-20220-Red-Vinyl	1



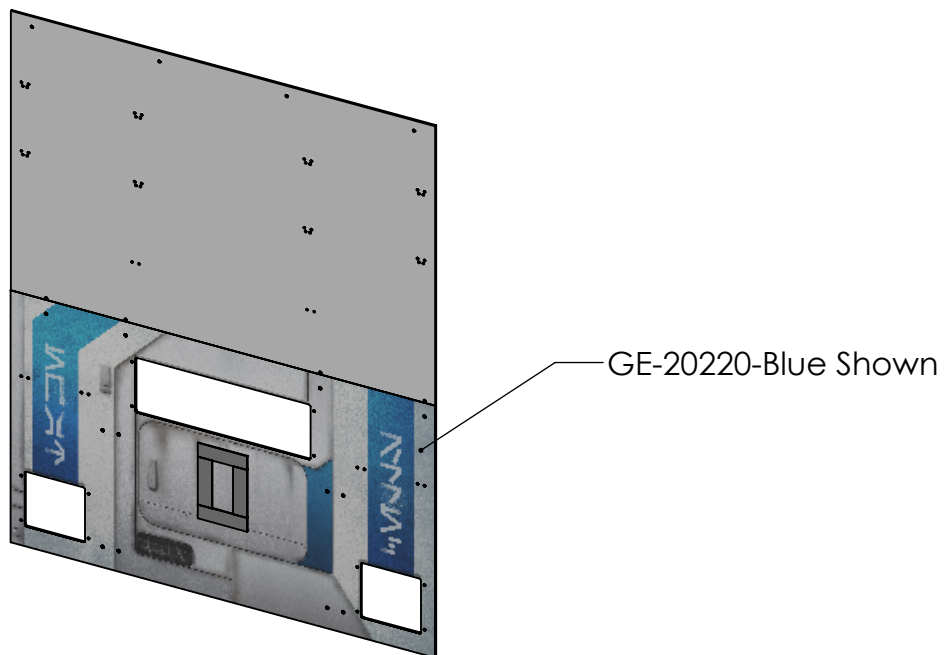
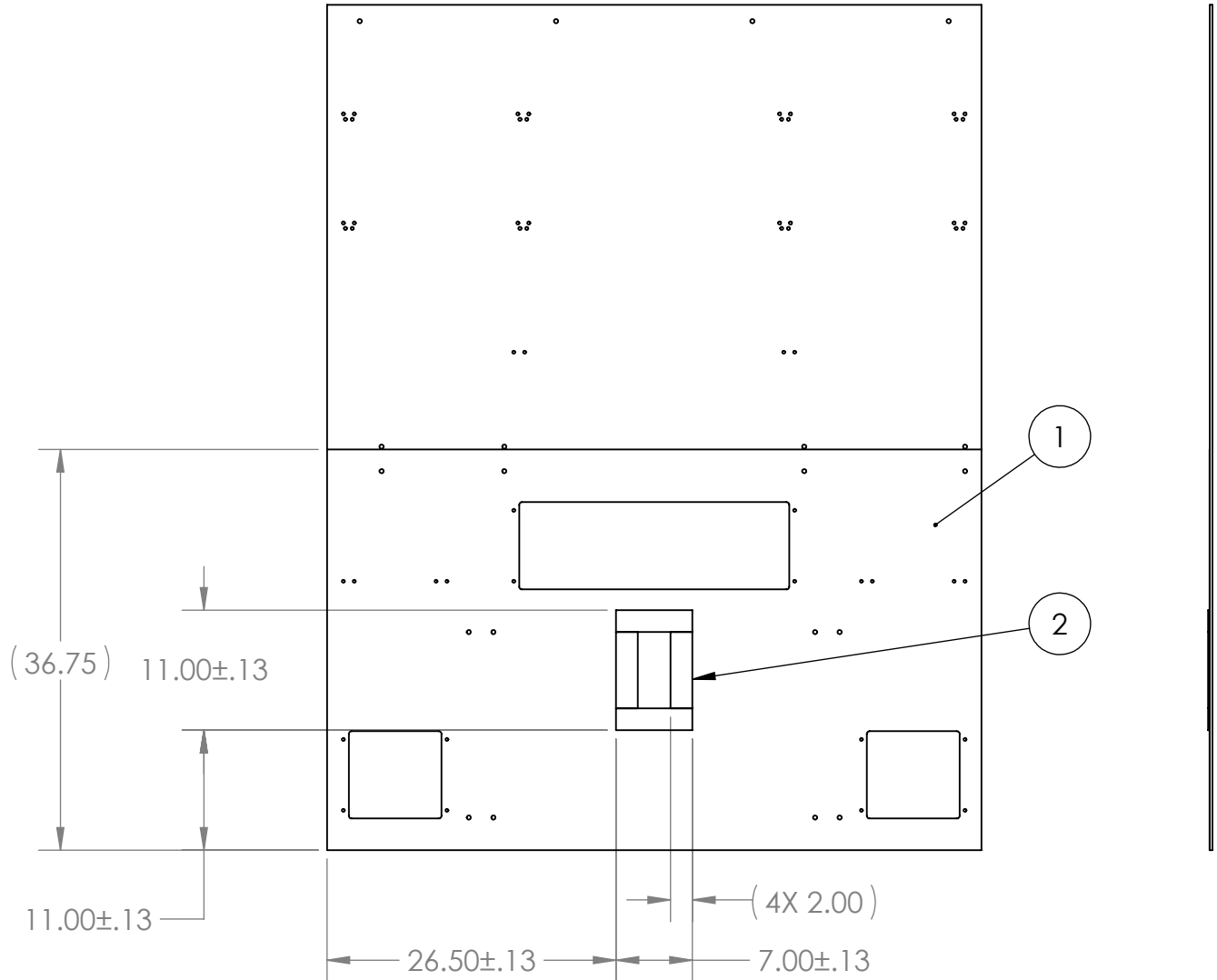
GE-20220-Blue-



GE-20220-Red-



		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 <b>FIRST</b> <b>ROBOTICS</b> <b>COMPETITION</b>	 <b>SOLIDWORKS</b> Modeling Solutions Partner	
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN					TITLE:  Front Face with Vinyl
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20220</b>		
		MATERIAL	COMMENTS:					
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:16 WEIGHT:	SHEET 1 OF 1	

1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20220	Front Face with Vinyl	1
2	Vision_LoadingBay	2" Wide, 3M 8830 Scotchlite Reflective Material	4

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div><div></div><div>TITLE: <b>Front Face, with Target</b></div><div>SIZE <b>B</b> DWG. NO. <b>GE-20221</b> REV</div><div>SCALE: 1:16 WEIGHT: SHEET 1 OF 1</div></div>
		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				
		FINISH				
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

4

3

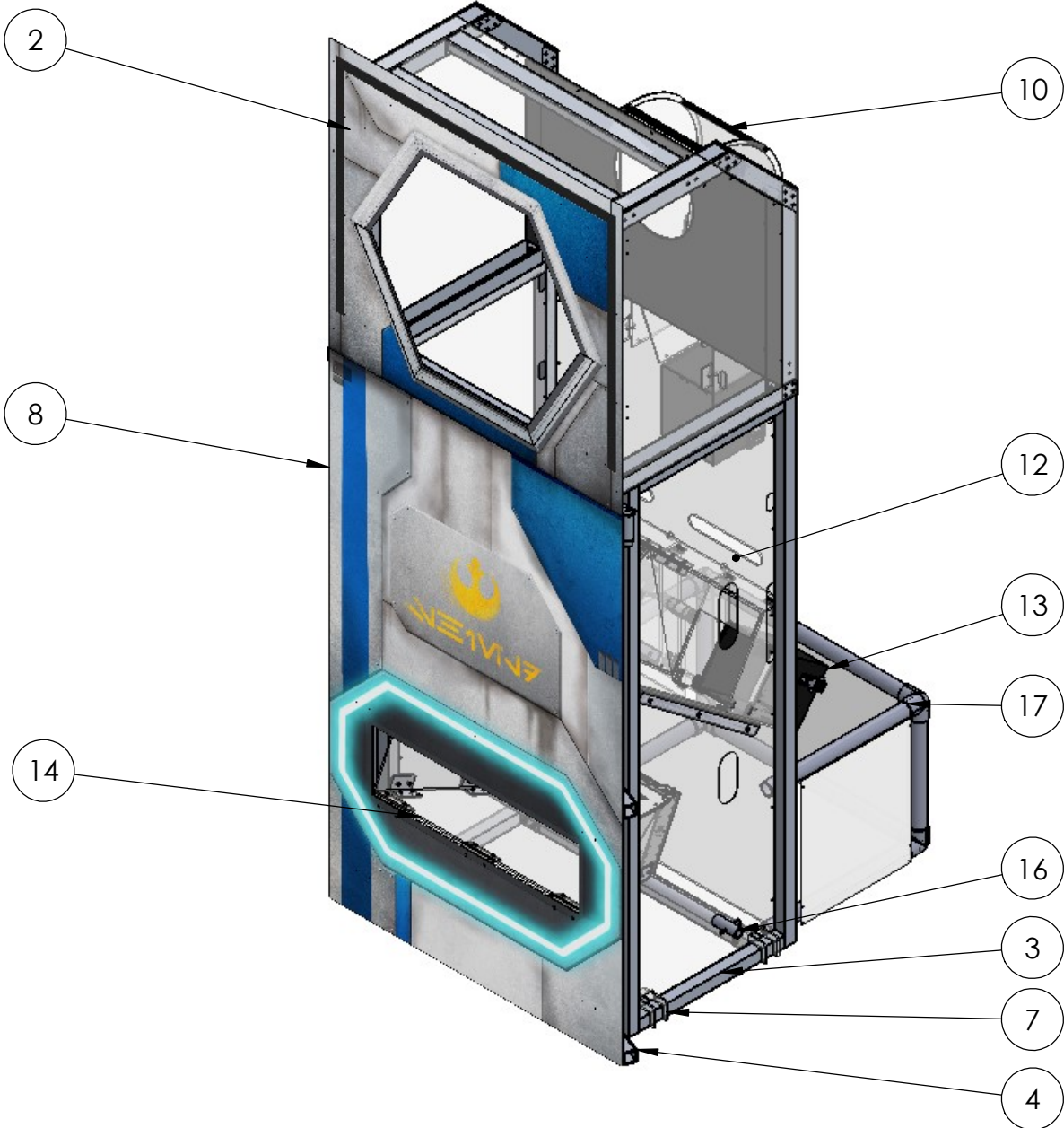
2



1

Notes:  
1. This assembly exists in red and blue configurations. Only blue is shown here.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	flat_phil_.25_20_.75	Steel Phillips Flat Head Screw, 1-4"-20 x 3/4" long, fully threaded	6
2	GE-20301	Power Port Top Assembly	1
3	GE-20309	Goal Base Upright	2
4	GE-20310	Low Power Port Frame	1
5	GE-20313	Anchor with hook	1
6	GE-20316	Power Port Base Back Top	1
7	GE-20319	Power Port Base Brace Assembly	2
8	GE-20321	Low Power Port with Vinyl	1
9	GE-20323	Top Rail, Standard	1
10	GE-20337	Inner Port Chute Assembly	1
11	GE-20338	Side Polycarbonate Assembly, Right	1
12	GE-20339	Side Polycarbonate Assembly, Left	1
13	GE-20340	Outer Port Serializer	1
14	GE-20350	Plastic Serializer Assembly	1
15	GE-20370	Counter Assembly	1
16	GE-20387	support bar	1
17	GE-20390	Corral Assembly	1
18	GE-20398	Power Port Base Back Bottom	1
19	hex_.25_20_2.25_partial	Steel Hex Head Screw, 1/4"-20 x 2-1/4" long, partially threaded	4
20	hex_.25_20_.625	Steel Hex Head Screw, 1/4"-20 x 5/8" long, fully threaded	2
21	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	12
22	pin_quick_ring_.25_1.8125	Ring-Grip Quick-Release Pin, 1/4" diameter, 1-13/16" long	2

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL: ±1/16	ENG APPR.		
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.		
		TWO PLACE DECIMAL ±.01	Q.A.		
		THREE PLACE DECIMAL ±.001	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			
			 		
			TITLE: Power Port		
SIZE	DWG. NO.	REV			
B	GE-20300				
SCALE: 1:20		WEIGHT:	SHEET 1 OF 4		

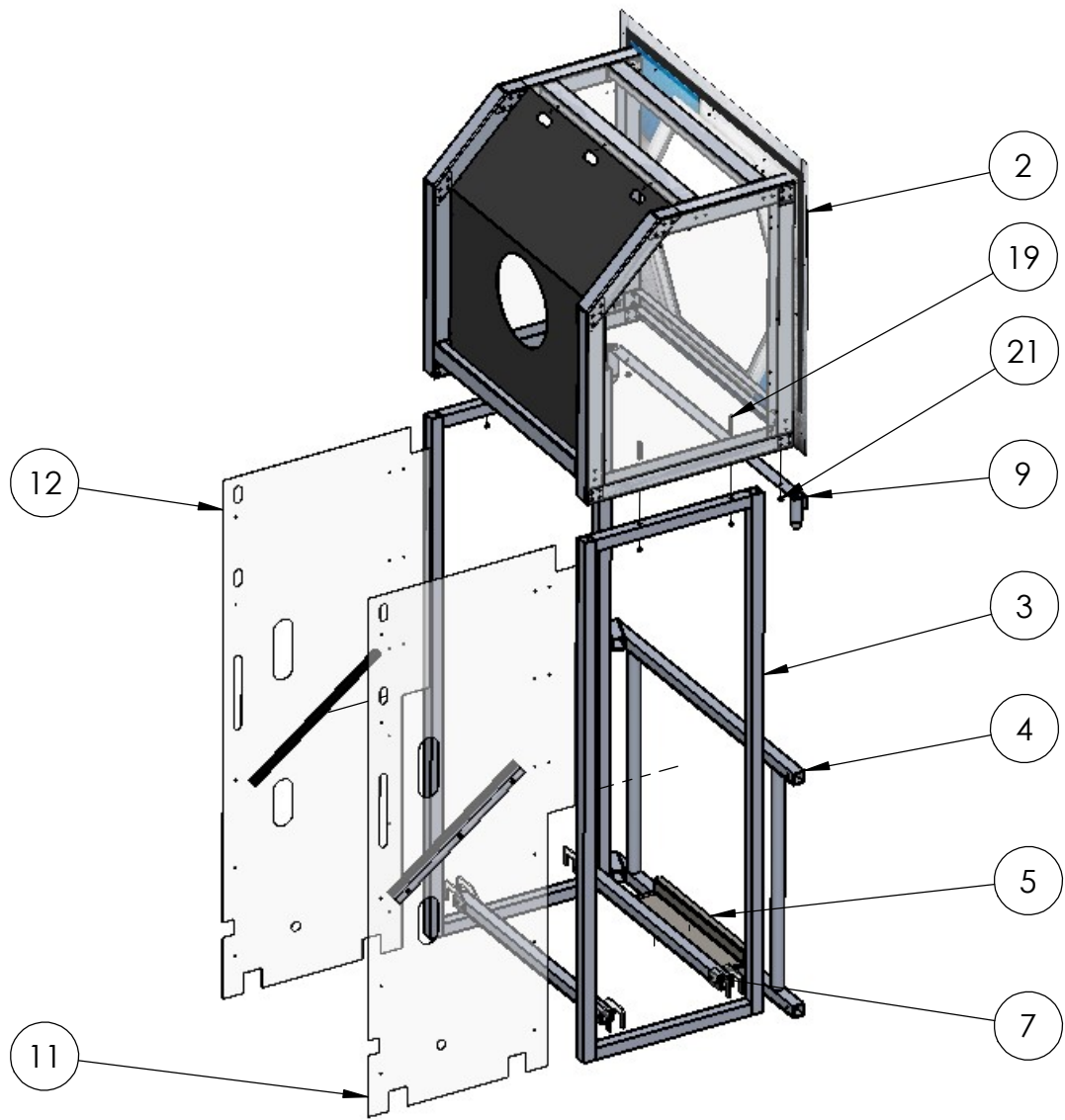
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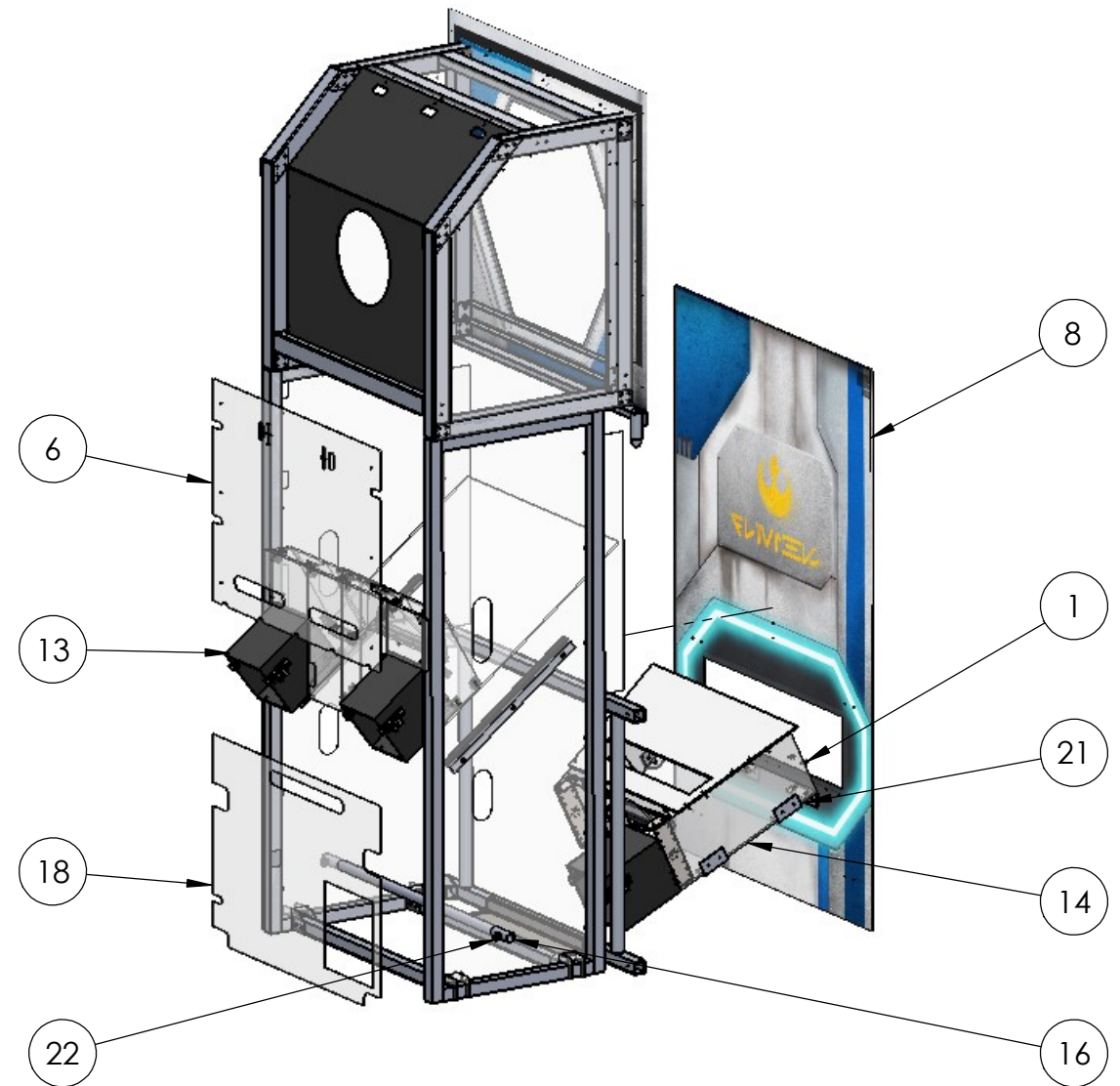




Notes:



- Items (9) and (4) should be installed during creation of Alliance Wall.
- Attach (2) to (3) and (9) using (19), (20), and (21).
- Place item (5) in place and affix to carpet.
- Attach the item (7) pieces to (3) using the plastic hooks.
- Slide (11) and (12) into place and secure using 50 lb. cable ties.

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Notes:

- Insert (16) into the assembly, secure in place using (22).
- Attach (14) to (8) using (1) and (21).
- Slide this subassembly into place and secure using 120 lb. cable ties.
- Attach (13) to the assembly using the hook and loop fastener.
- Attach (6) and (18) using 50 lb. cable ties.

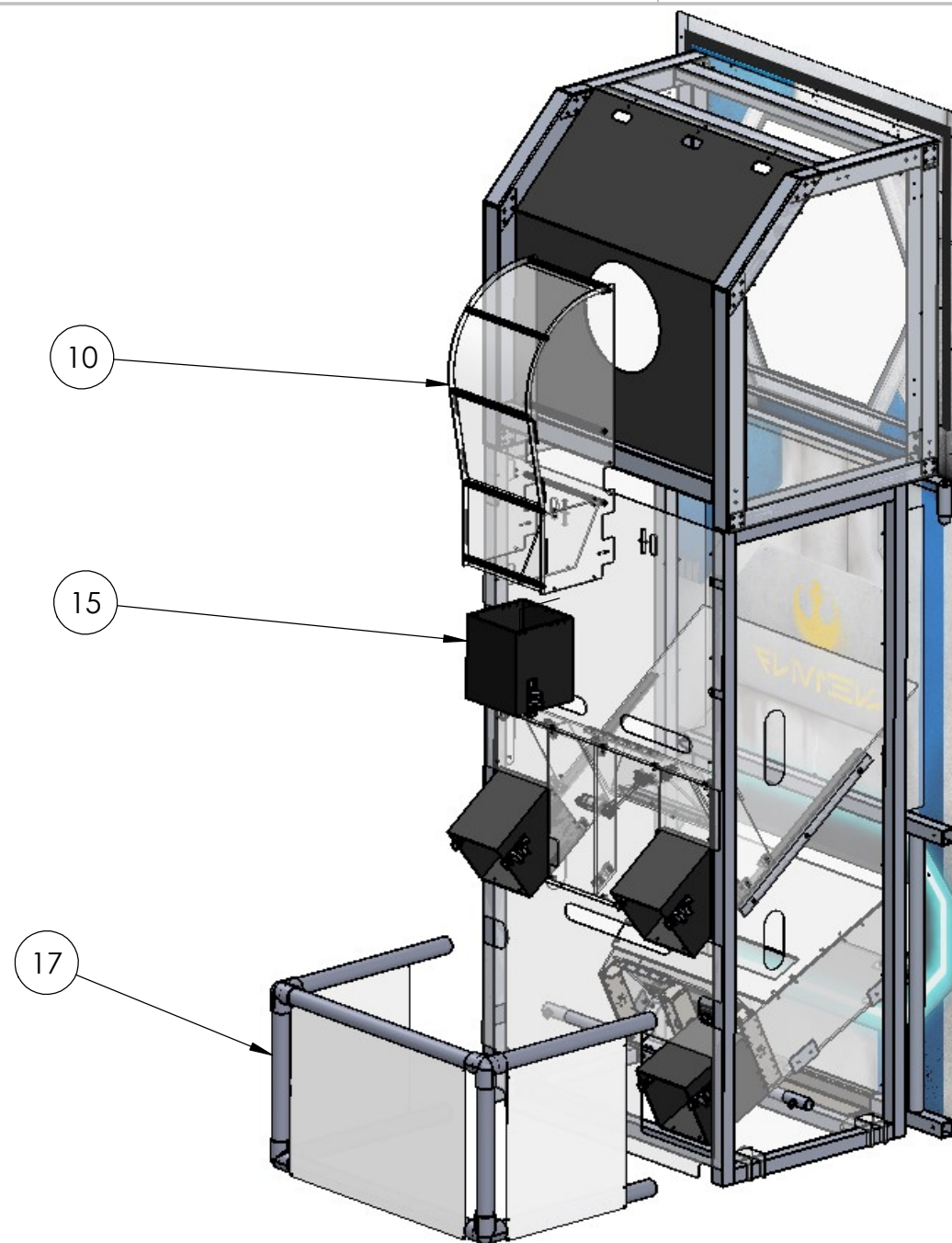
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		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.				
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE <b>B</b>	DWG. NO. <b>GE-20300</b>
		INTERPRET GEOMETRIC TOLERANCING PER:				SCALE: 1:25	WEIGHT:
		MATERIAL					SHEET 2 OF 4
		FINISH					
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING				

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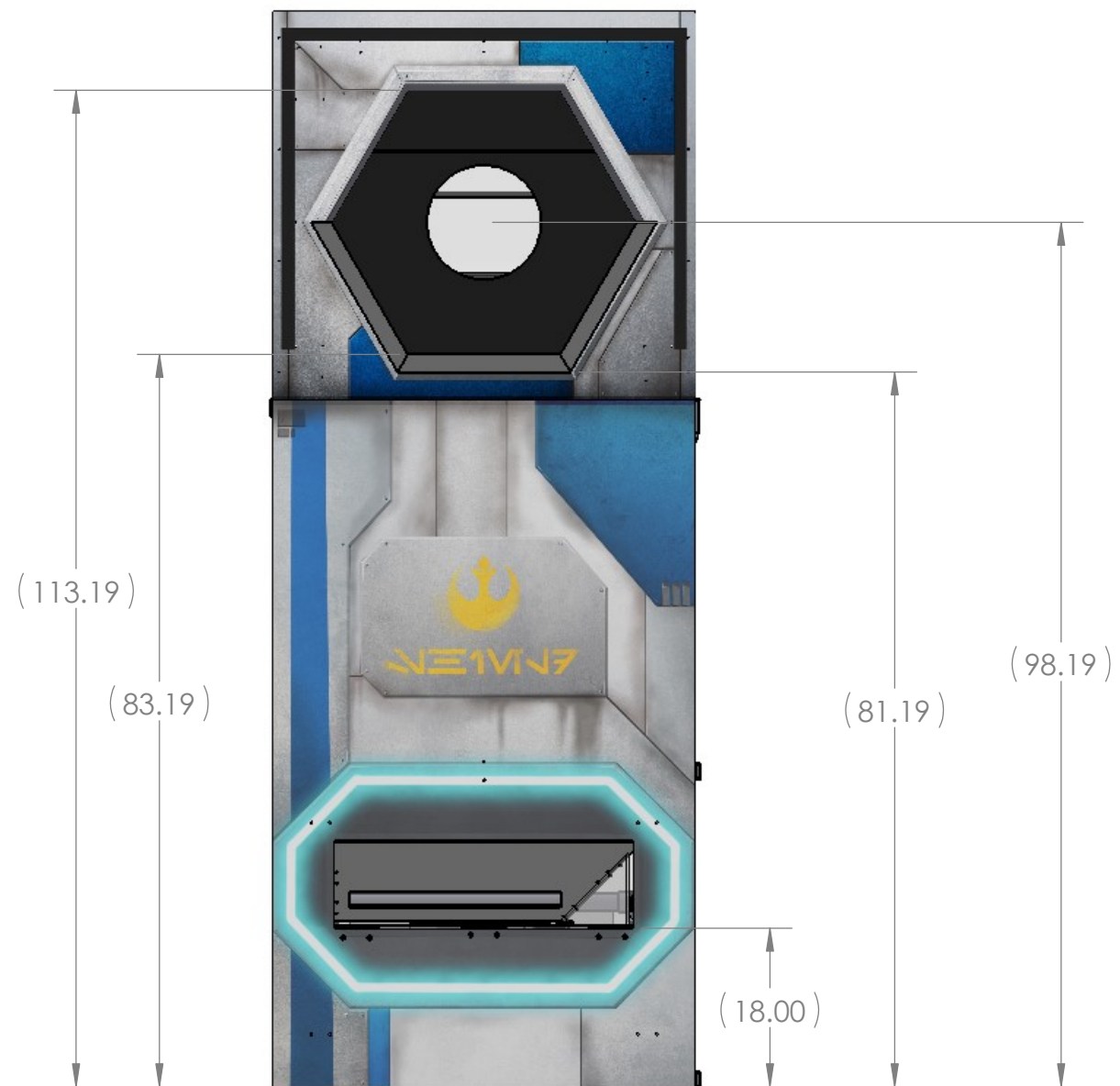
Notes:

- 1. Attach 15 to 10 using 50 lb. cable ties.
- 2. Attach this subassembly to the rest of the assembly using 50 lb. cable ties.
- 3. Slide 17 into place.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE: <h1>Power Port</h1></div>
		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			SIZE DWG. NO. REV
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				SCALE: 1:20 WEIGHT: SHEET 3 OF 4
		FINISH				
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

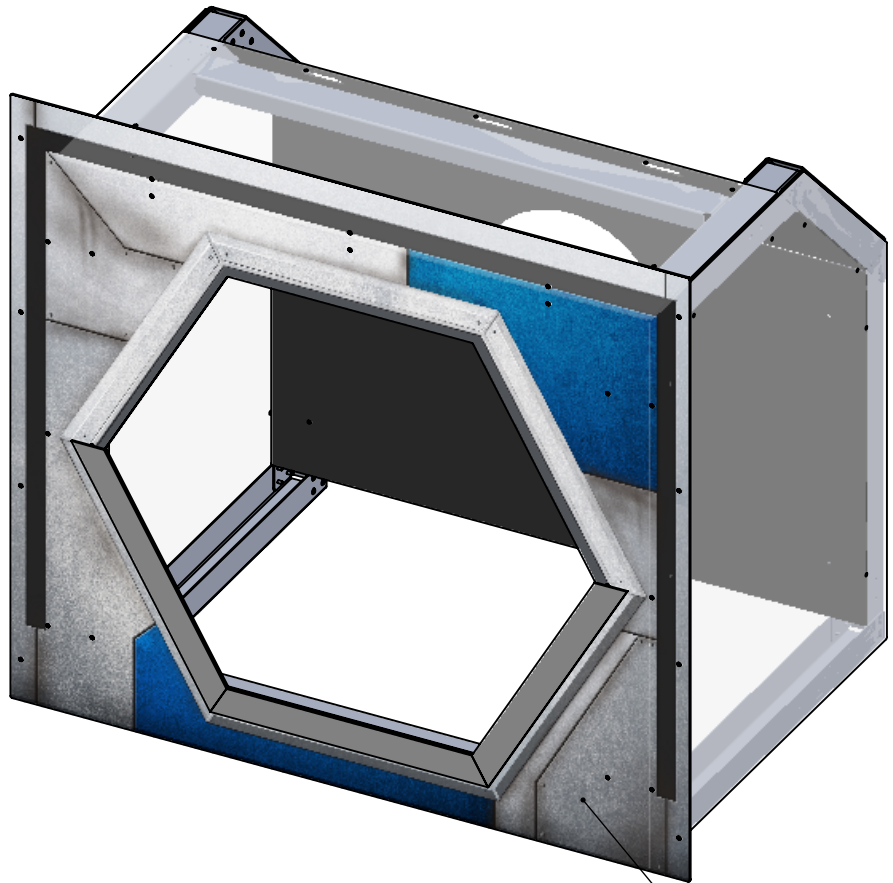
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SIZE <b>B</b>	DWG. NO. <b>GE-20300</b>	REV
SCALE: 1:20 WEIGHT:		SHEET 4 OF 4

1





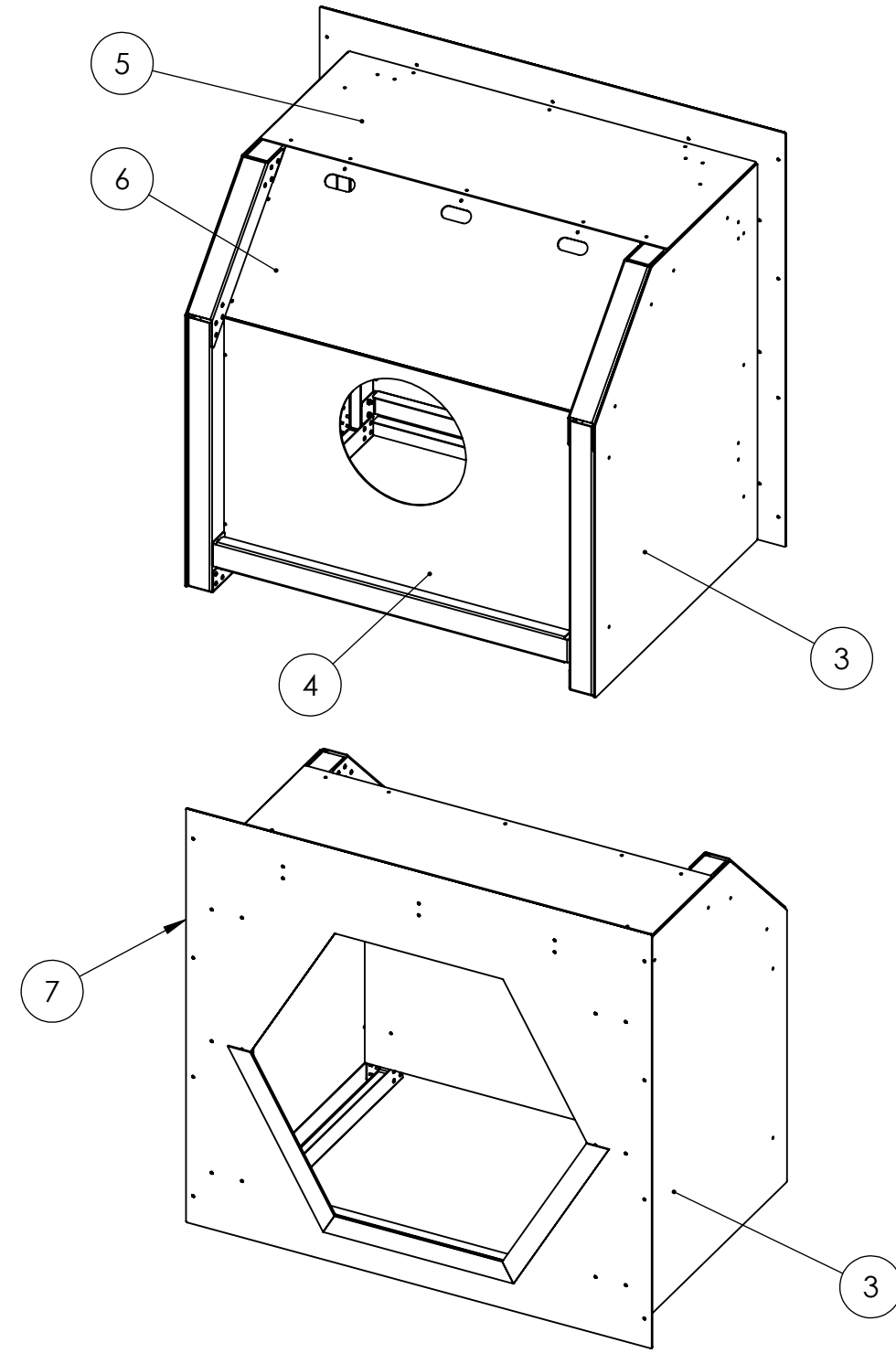
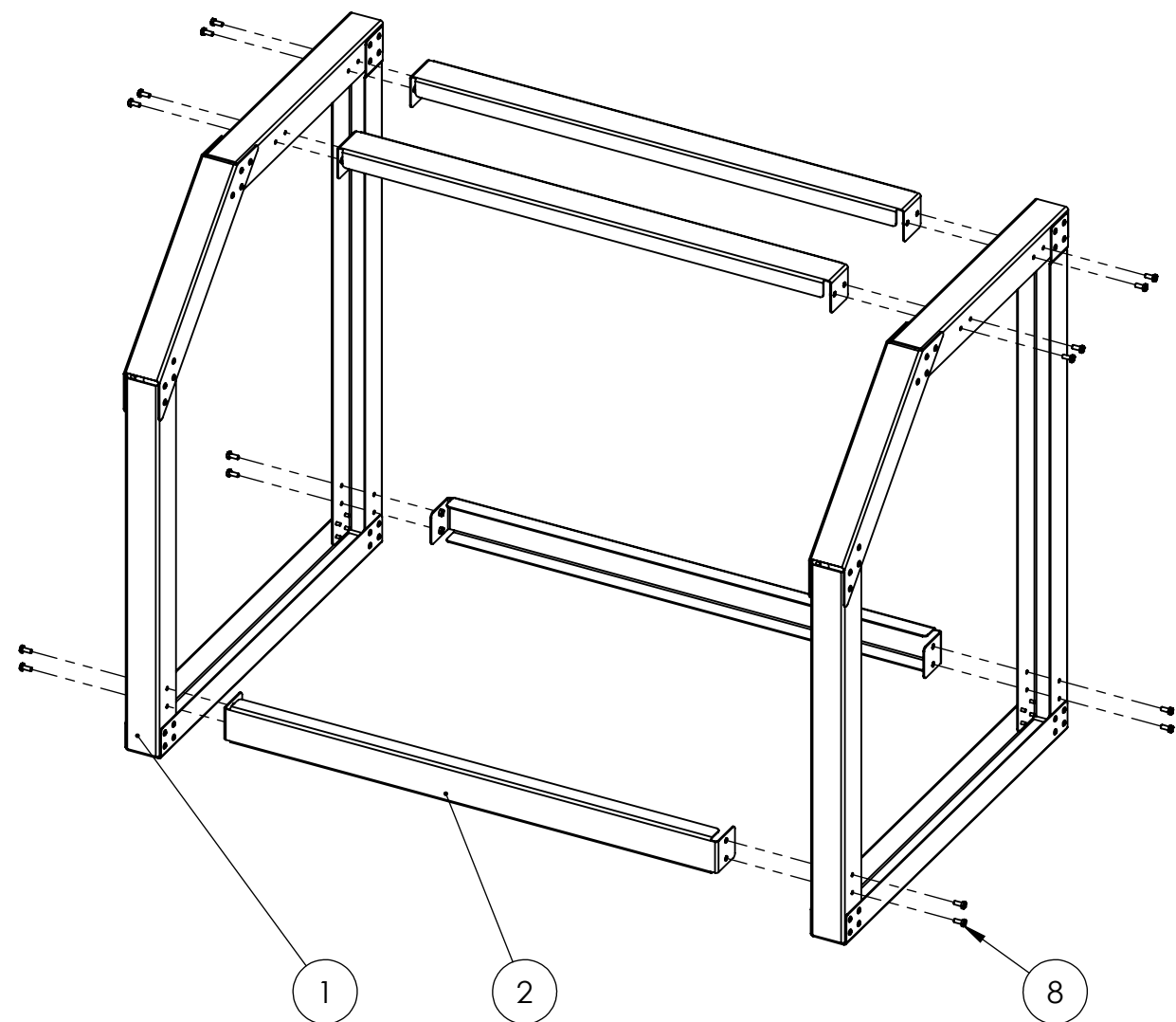


Blue version shown,  
also exists in red.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20302	Power Port Top Frame	2
2	GE-20303	Power Port Top Brace	4
3	GE-20304	Power Port Top Side Polycarbonate	2
4	GE-20305	Power Port Top Back Polycarbonate	1
5	GE-20307	Power Port Top Roof Polycarbonate	1
6	GE-20308	Power Port Top Deflector Polycarbonate	1
7	GE-20322	Power Port Top Front	1
8	hex_.25_20_.625	Steel Hex Head Screw, 1/4"-20 x 5/8" long, fully threaded	16



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 	
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  <h1>Power Port Top Assembly</h1>	
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.				
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:				
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL					
		FINISH					
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING	SIZE DWG. NO. REV <b>B</b> GE-20301				
			SCALE: 1:12			WEIGHT:	SHEET 1 OF 2



Notes:  
1. Cable tie plastic at available locations.

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			TITLE:  <h1>Power Port Top Assembly</h1>
			CHECKED			
			ENG APPR.			
			MFG APPR.			
			Q.A.			
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			
		MATERIAL				
		FINISH				SIZE DWG. NO. REV
NEXT ASSY	USED ON					<b>B</b> <b>GE-20301</b>
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:12 WEIGHT: SHEET 2 OF 2

4

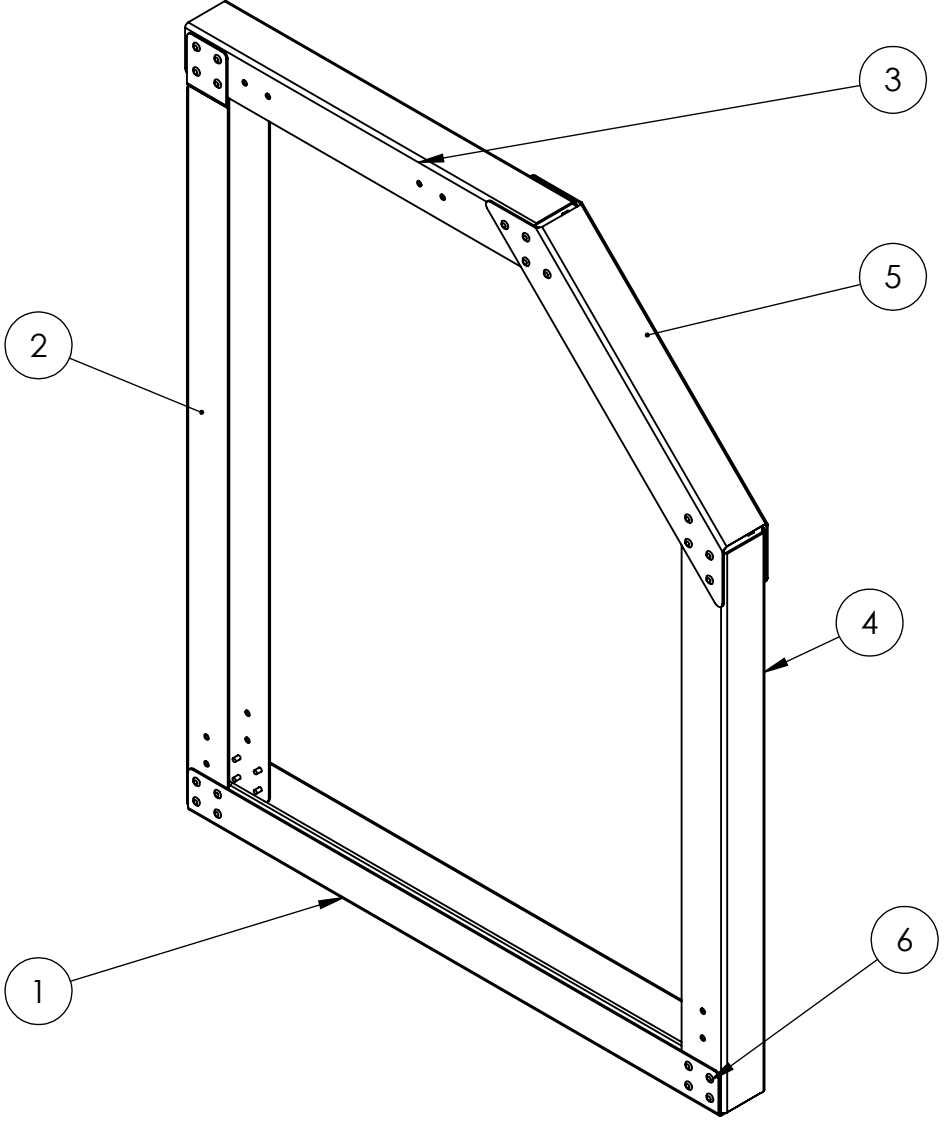
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2

1





REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2, A3	A	Material used changed.	9/30/2019	CPO



- Notes:
- 1. Rivets to be aluminum.
  - 2. Tag or label with part number.
  - 3. Remove all burrs and sharp edges.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20302-01	12 GA, 5052 Aluminum	1
2	GE-20302-02	12 GA, 5052 Aluminum	1
3	GE-20302-03	12 GA, 5052 Aluminum	1
4	GE-20302-04	12 GA, 5052 Aluminum	1
5	GE-20302-05	12 GA, 5052 Aluminum	1
6	rivet_.1875_.126-.25	3/16" Rivet, .126-.25 Grip Range	40

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>					
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  <h1>Power Port Top Frame</h1>					
		TOLERANCES:	CHECKED								
		FRACTIONAL $\pm 1/16$	ENG APPR.								
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.								
		TWO PLACE DECIMAL $\pm .01$	Q.A.								
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE		DWG. NO.		REV	
		INTERPRET GEOMETRIC				B		GE-20302		A	
		TOLERANCING PER:									
		MATERIAL									
		FINISH				SCALE: 1:8		WEIGHT:		SHEET 1 OF 4	
NEXT ASSY	USED ON										
APPLICATION		DO NOT SCALE DRAWING									

4

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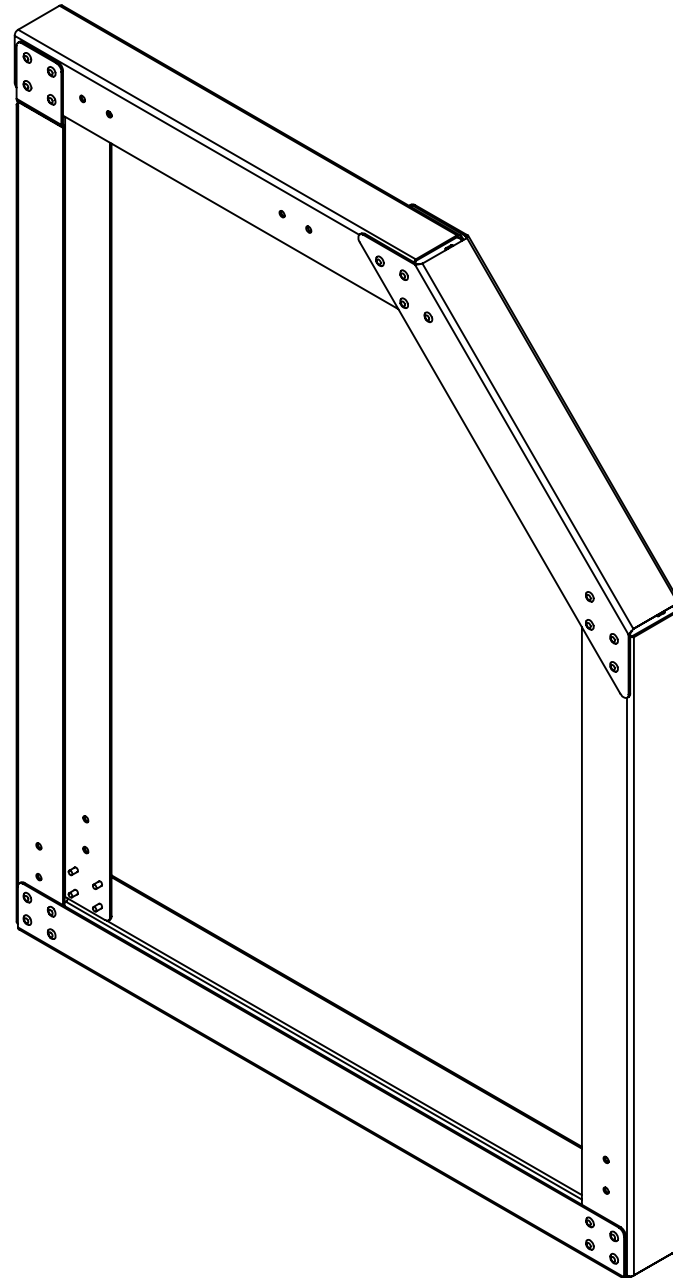
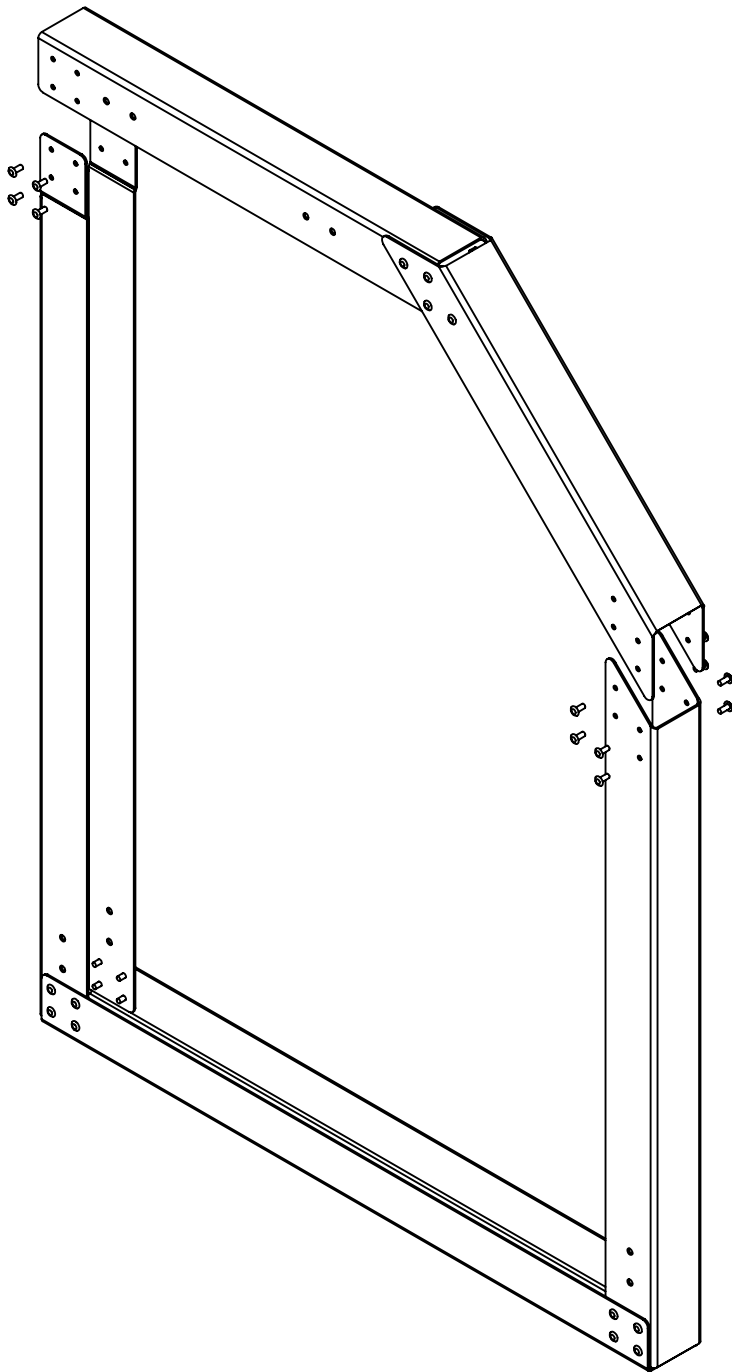
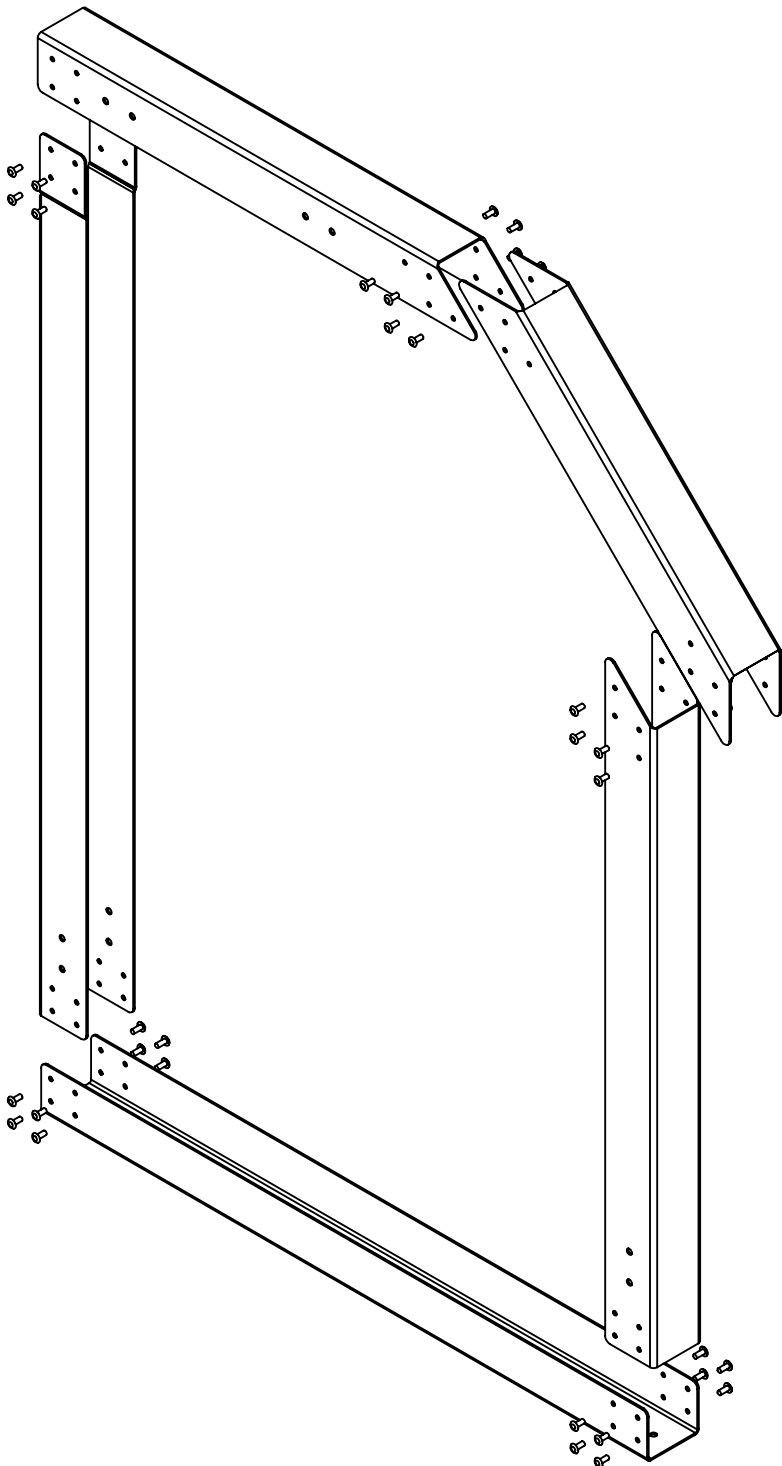
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		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC			
		TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:

Power Port Top  
Frame

SIZE

DWG. NO.

REV

B

GE-20302

A

SCALE: 1:7

WEIGHT:

SHEET 2 OF 4

4

3

2

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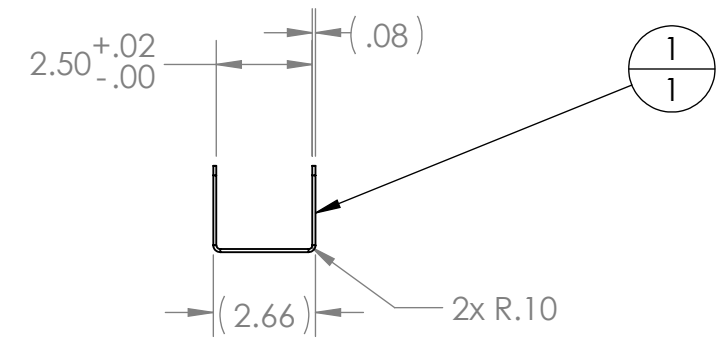
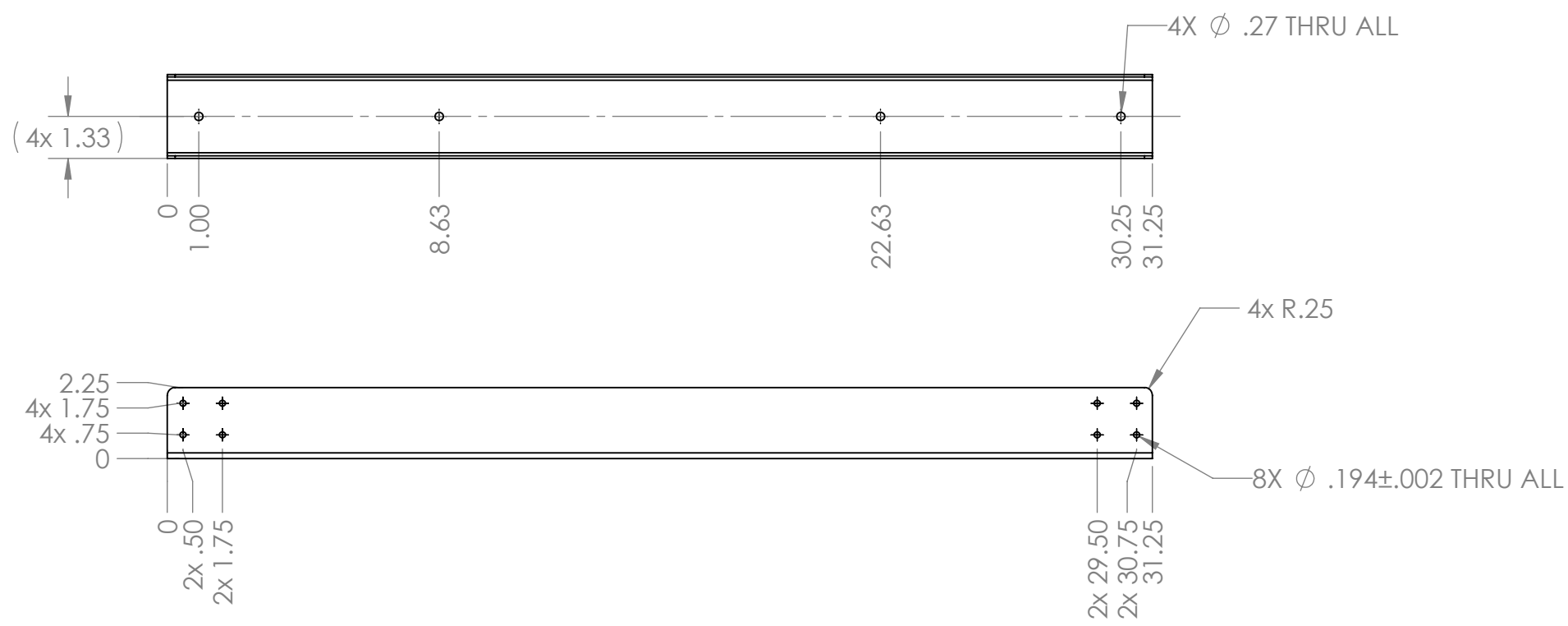
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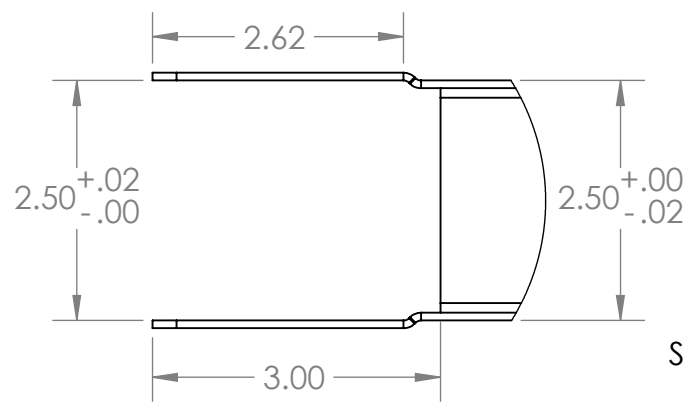
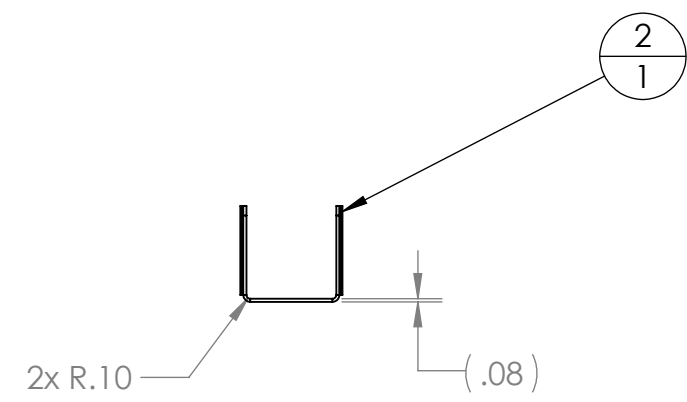
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B





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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  Power Port Top Frame		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> GE-20302 <b>A</b>  SCALE: 1:5 WEIGHT: SHEET 3 OF 4		
		MATERIAL	COMMENTS:					
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NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						

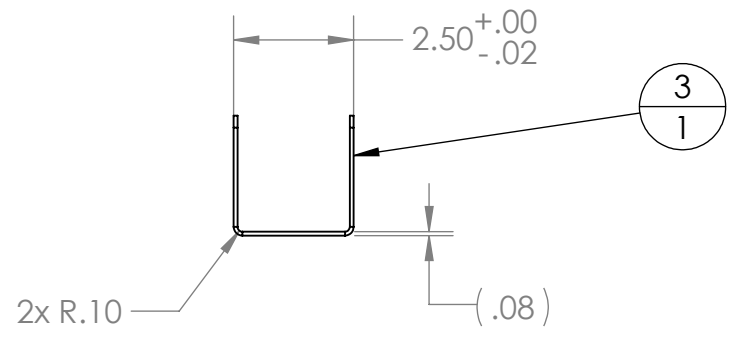
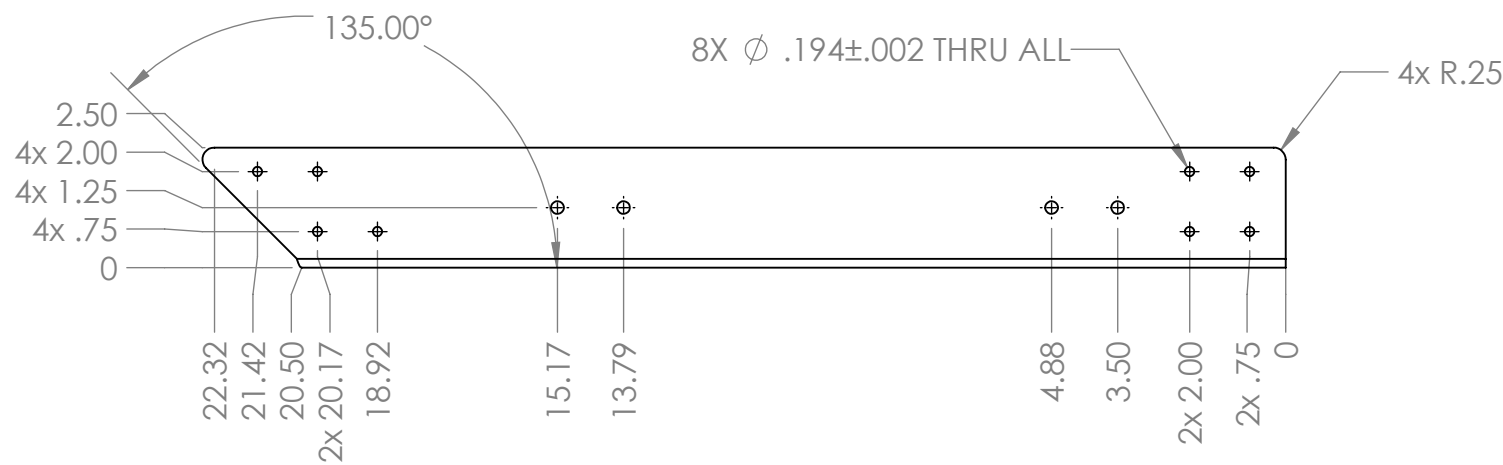
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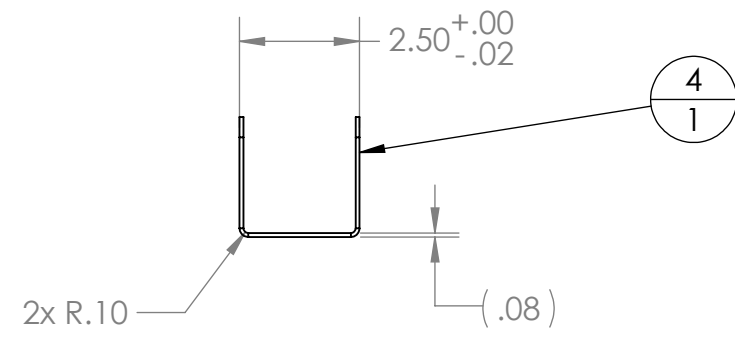
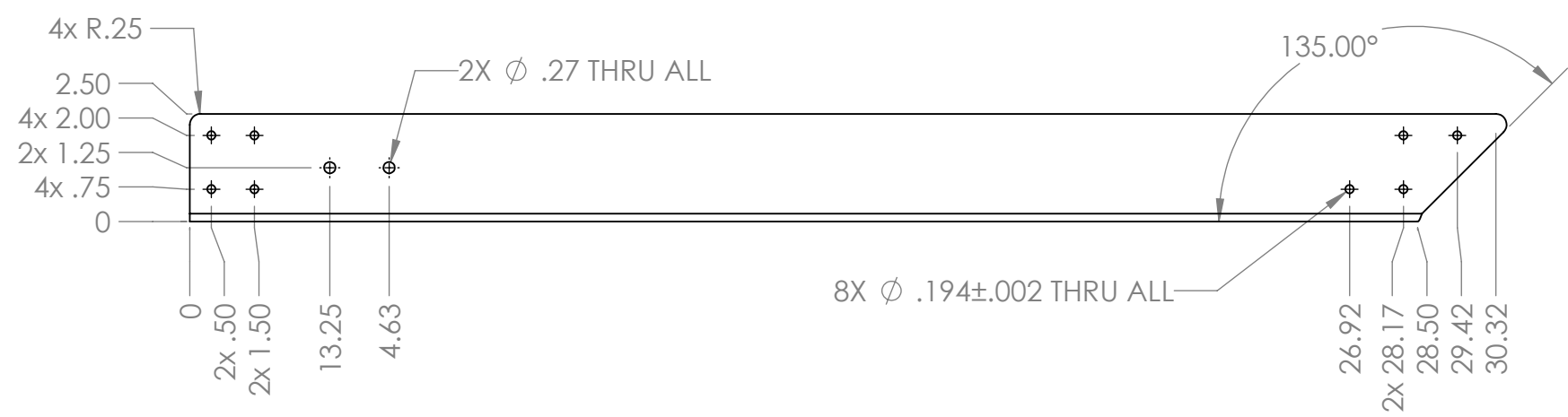
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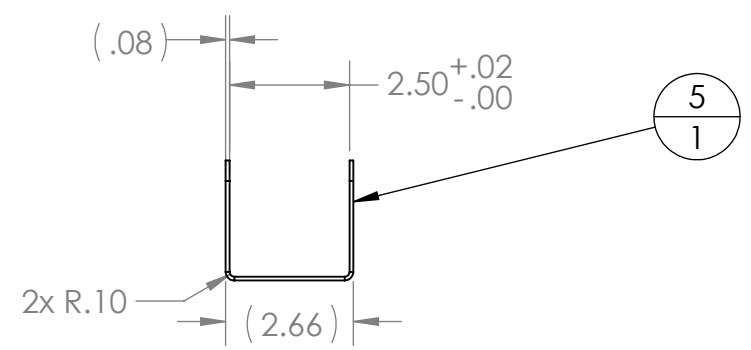
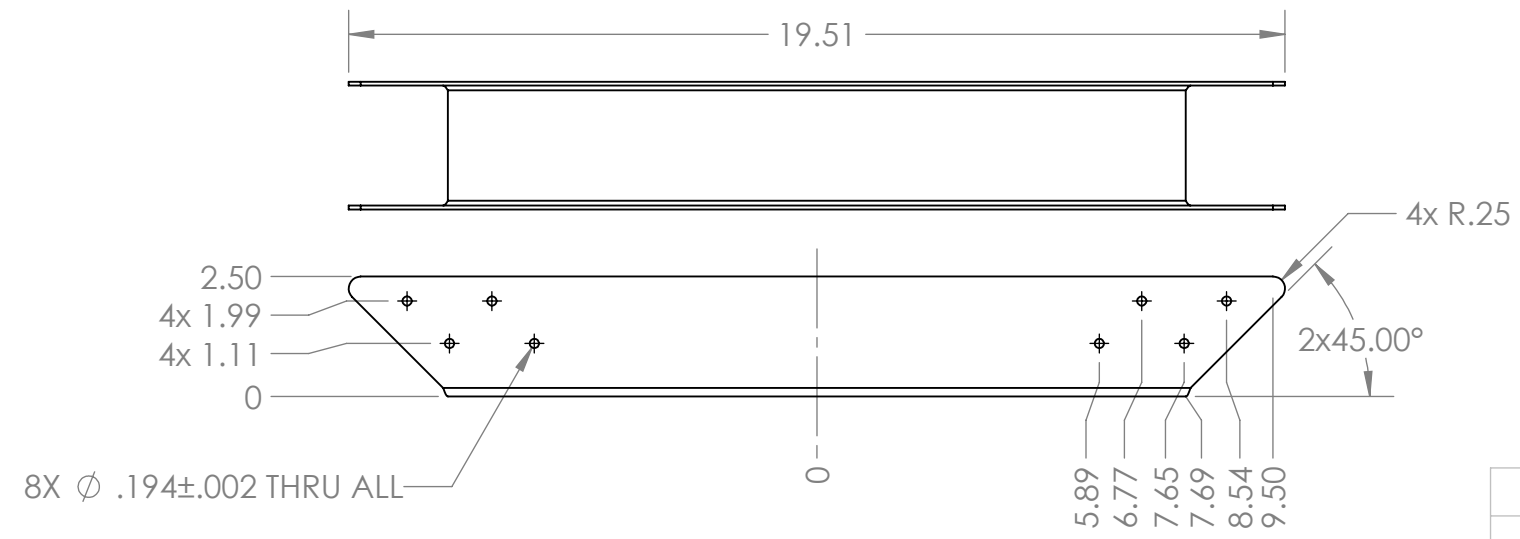


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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			TITLE:  Power Port Top Frame			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
			Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV B GE-20302 A			
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4		WEIGHT:	SHEET 4 OF 4

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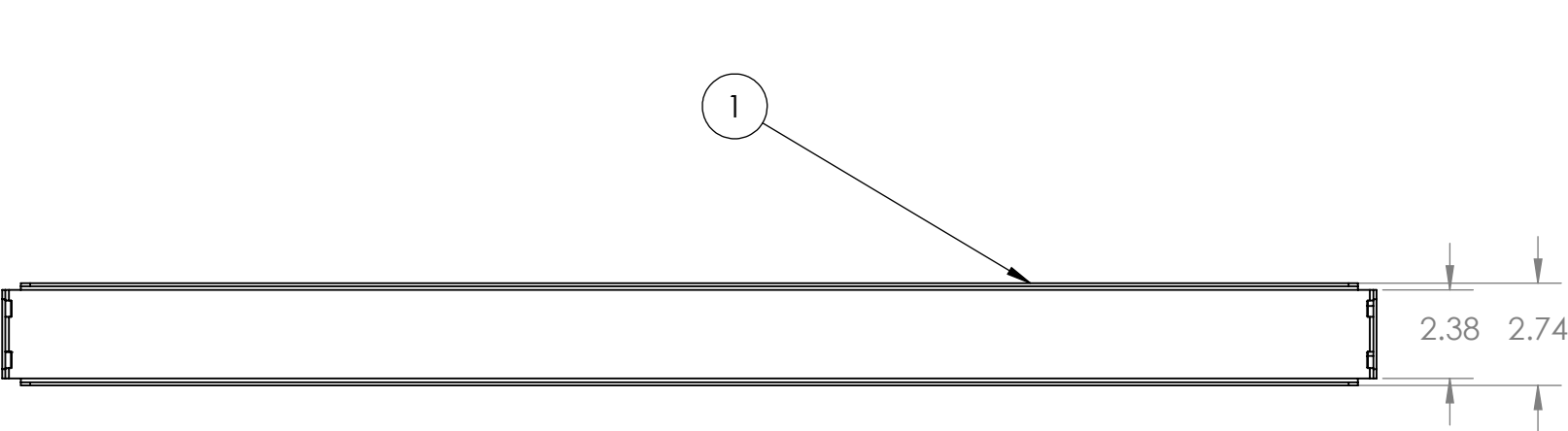
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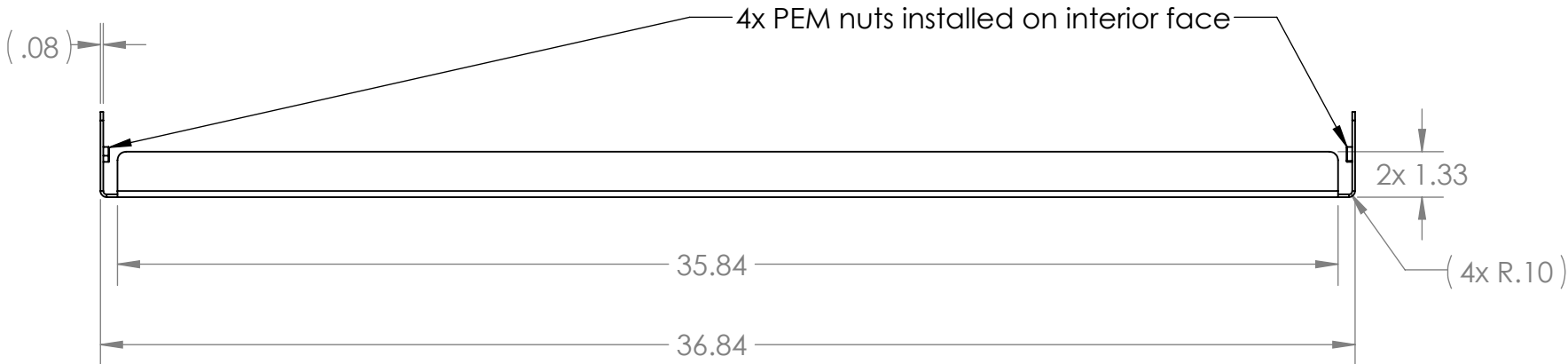
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Part material changed to aluminum.	9/30/2019	CPO

B

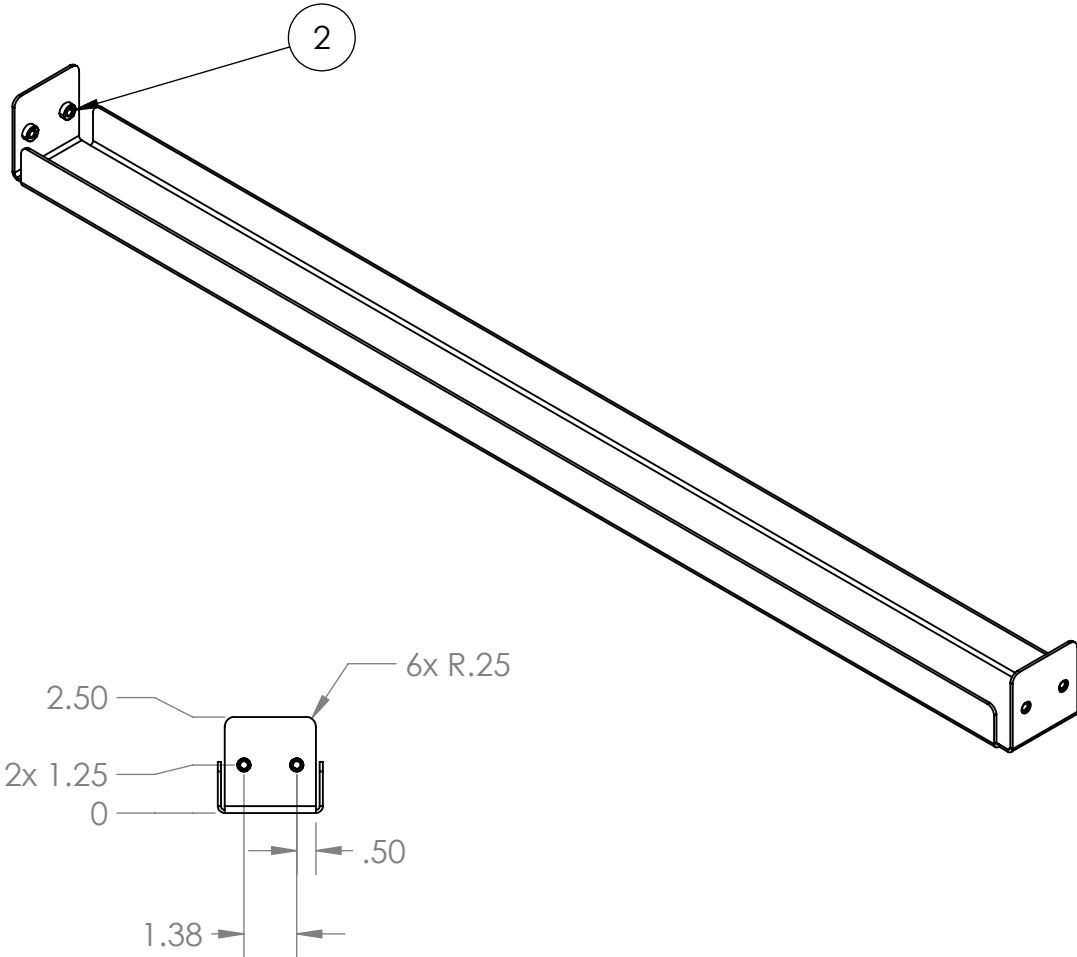


B



A

- Notes:
1. Tag or label with Part Number
  2. Remove all burrs and sharp edges





A

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20303-01	12 GA, 5052 Aluminum	1
2	S-0420-1ZI-PennEngineering	1/4-20 self-clinching nut, .054 shank	4

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		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	COMMENTS:		
		THREE PLACE DECIMAL $\pm .001$			
		INTERPRET GEOMETRIC TOLERANCING PER:		Q.A.	
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:

# Power Port Top Brace

SIZE	DWG. NO.	REV
<b>B</b>	<b>GE-20303</b>	<b>A</b>

SCALE: 1:5	WEIGHT:	SHEET 1 OF 1
------------	---------	--------------

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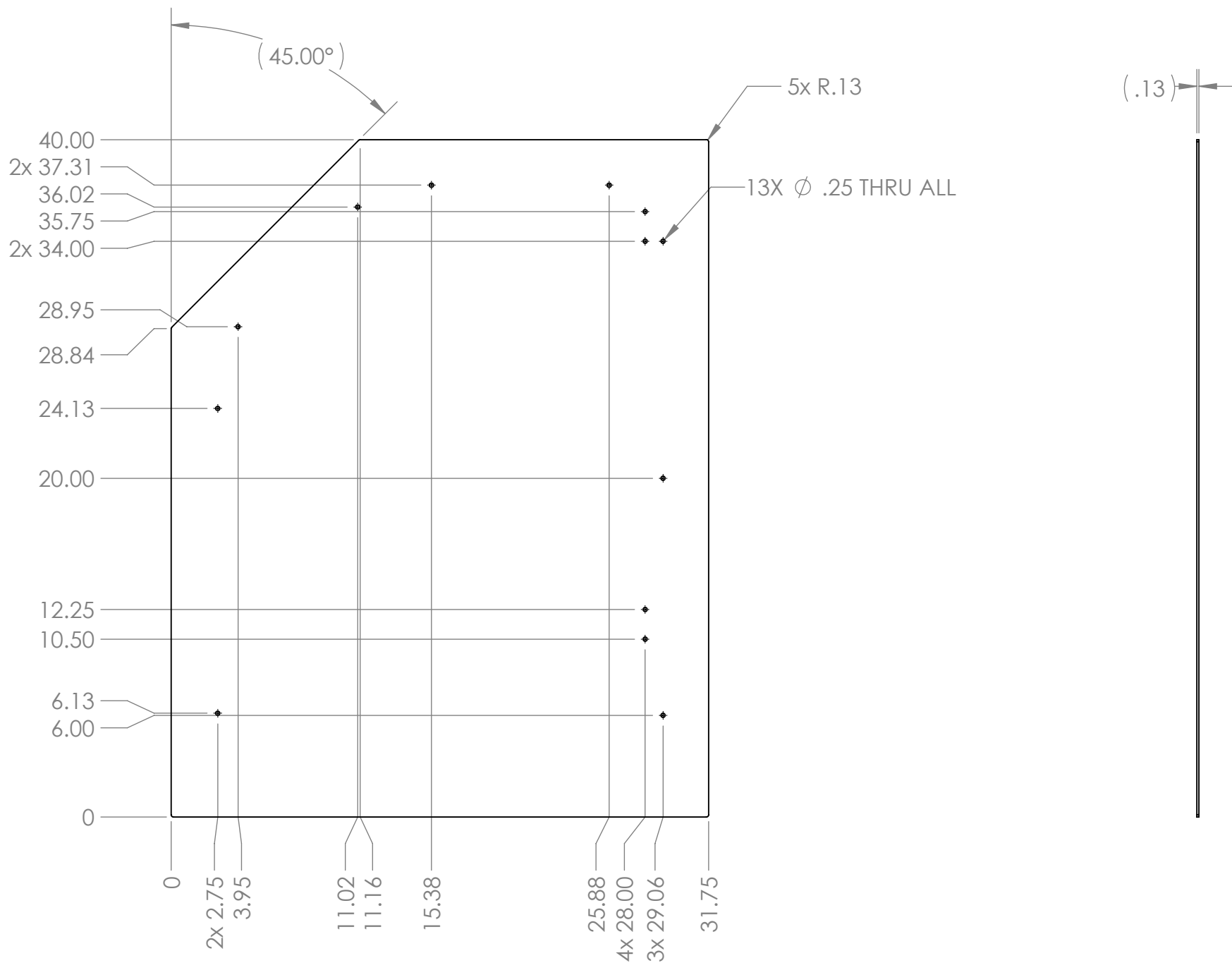
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2

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B

B



A

A

- Notes:
- 1. Material: 1/8" thick, clear polycarbonate
  - 2. Remove all burrs and sharp edges
  - 3. Tag or label with part number

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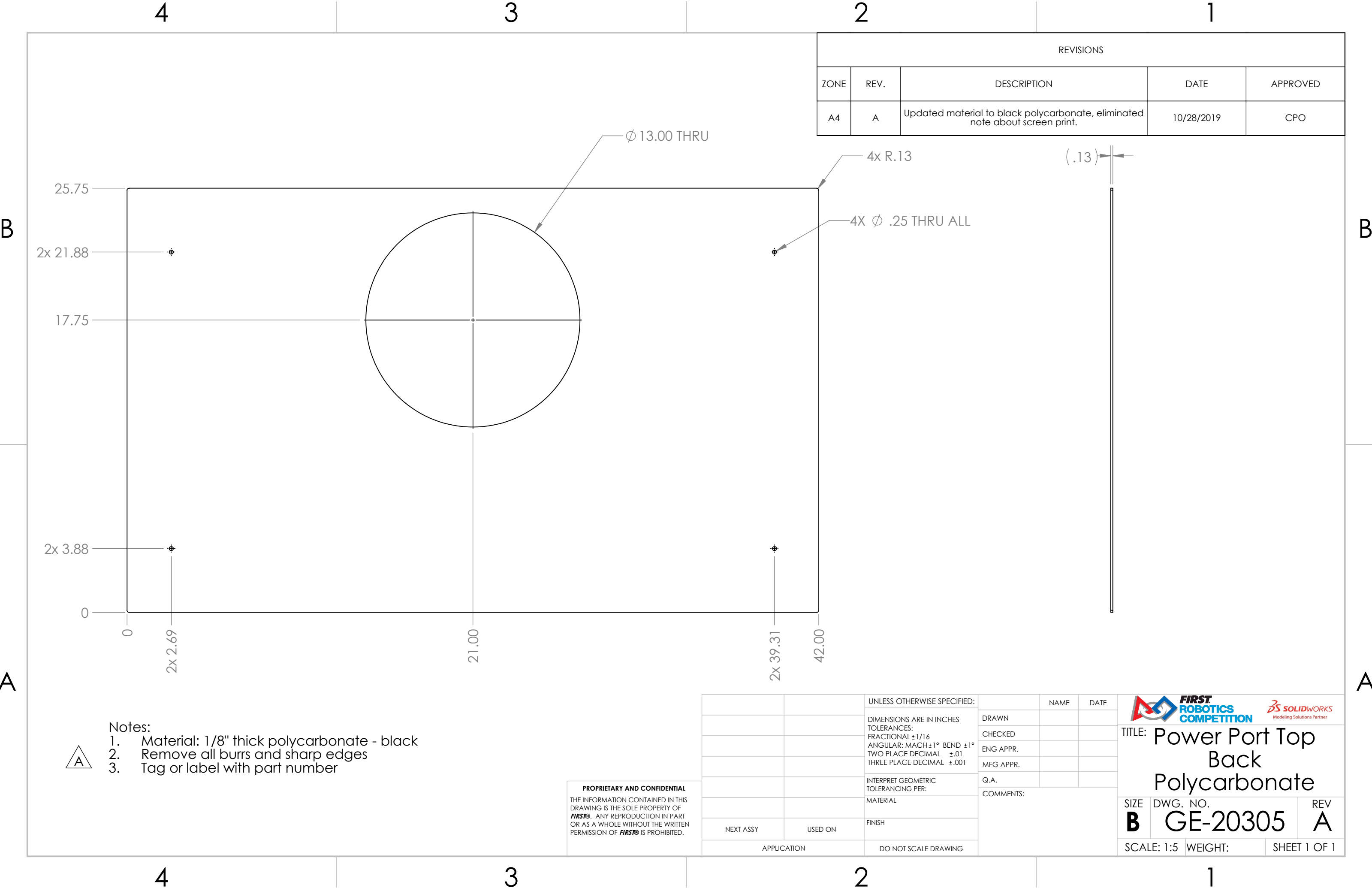
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			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			
			TITLE: Power Port Top Side Polycarbonate		
SIZE <b>B</b>	DWG. NO. GE-20304	REV			
SCALE: 1:8		WEIGHT:	SHEET 1 OF 1		

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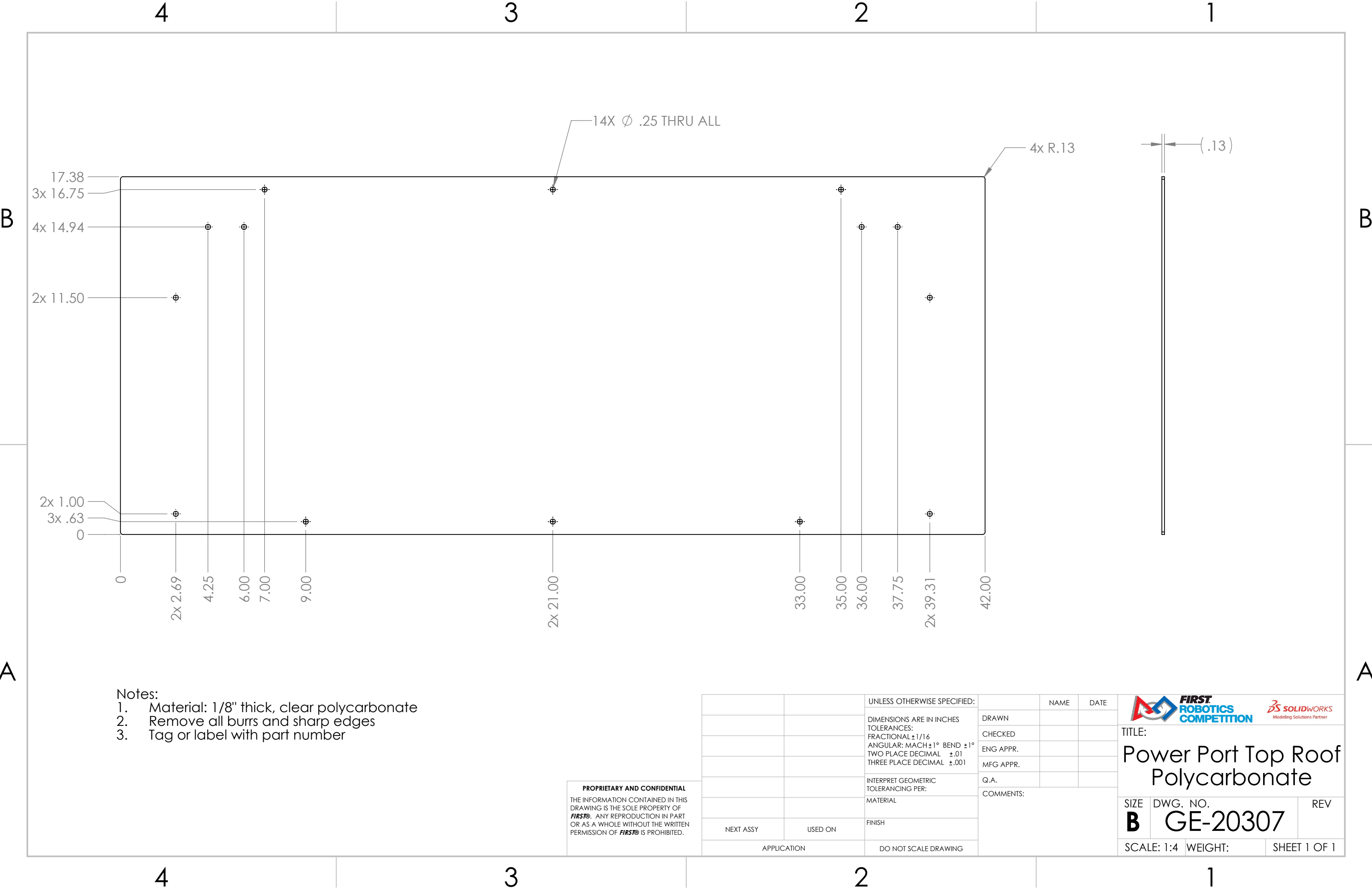


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(.13) 



		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 <b>FIRST ROBOTICS COMPETITION</b> 
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			
			CHECKED			
			ENG APPR.			
			MFG APPR.			
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			<b>TITLE: Power Port Top Front Polycarbonate</b>
		MATERIAL	COMMENTS:			
		FINISH				
NEXT ASSY	USED ON					SIZE <b>B</b>   DWG. NO. <b>GE-20306</b>   REV
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:8   WEIGHT:			SHEET 1 OF 1

1



- Notes:
1. Material: 1/8" thick, clear polycarbonate
  2. Remove all burrs and sharp edges
  3. Tag or label with part number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  Power Port Top Roof Polycarbonate		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20307</b>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL				SCALE: 1:4 WEIGHT: SHEET 1 OF 1		
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						

4

3

2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Finish changed from vinyl to screen print.	10/9/2019	CPO
A4	B	Updated material to black polycarbonate, eliminated note about screen print.	10/28/2019	CPO

6x R.63

7X Ø .25 THRU ALL

(.13)

8x R.13

16.75  
3x 16.13  
3x 14.75  
2x 13.13  
2x 11.56  
2x 1.56  
0  
0  
2.70  
2x 2.81

8.13  
9.00  
9.88

20.13  
21.00  
21.88

32.13  
33.00  
33.88

2x 39.19  
39.30  
42.00

B

- Notes:
- Material: 1/8" thick polycarbonate - black
  - Remove all burrs and sharp edges
  - Tag or label with part number

A

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NEXT ASSY

USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES  
TOLERANCES:  
FRACTIONAL ±1/16  
ANGULAR: MACH ±1° BEND ±1°  
TWO PLACE DECIMAL ±.01  
THREE PLACE DECIMAL ±.001

INTERPRET GEOMETRIC  
TOLERANCING PER:

MATERIAL

FINISH

NAME

DATE

DRAWN

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:



TITLE: Power Port Top  
Deflector  
Polycarbonate

SIZE

B

DWG. NO.

GE-20308

REV

B

SCALE: 1:4

WEIGHT:

SHEET 1 OF 1

4

3

2

1

4

3

2

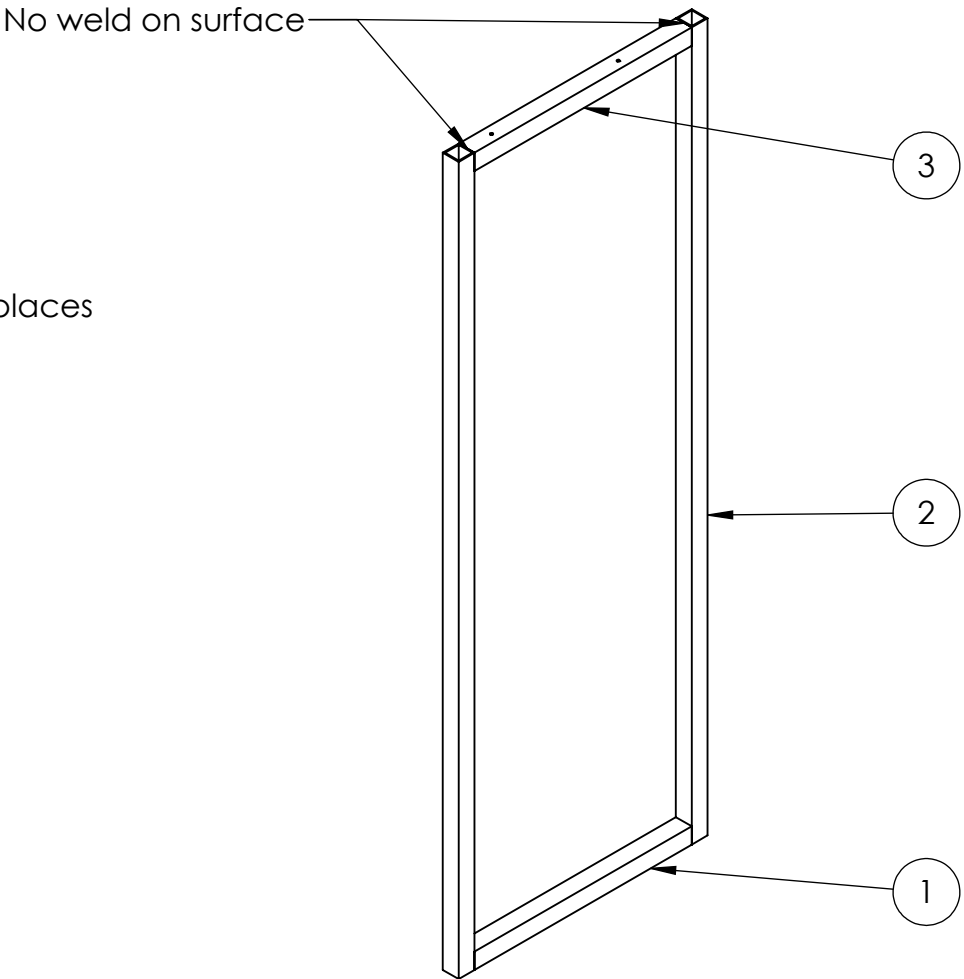
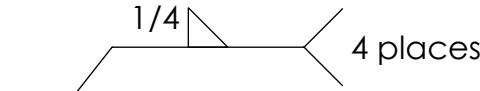
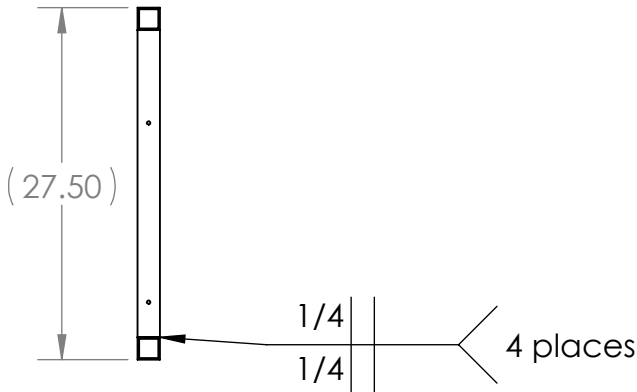
1

B

B

A



A



- Notes:
- 1. Tag or label with part number.
  - 2. Remove burrs and sharp edges.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20309-01	1.75" x .125" thk. Square Tube, 6061 Aluminum	1
2	GE-20309-02	1.75" x .125" thk. Square Tube, 6061 Aluminum	2
3	GE-20309-03	1.75" x .125" thk. Square Tube, 6061 Aluminum	1

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div><div><div>FIRST ROBOTICS COMPETITION</div></div><div><div>SOLIDWORKS Modeling Solutions Partner</div></div></div>			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  <h1>Goal Base Upright</h1>			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
			Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20309</b>			
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:15 WEIGHT: SHEET 1 OF 2			

4

3

2

1

4

3

2

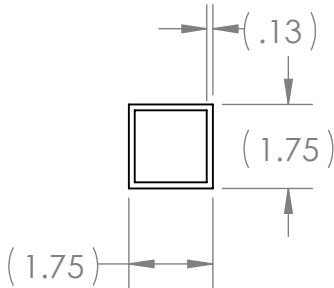
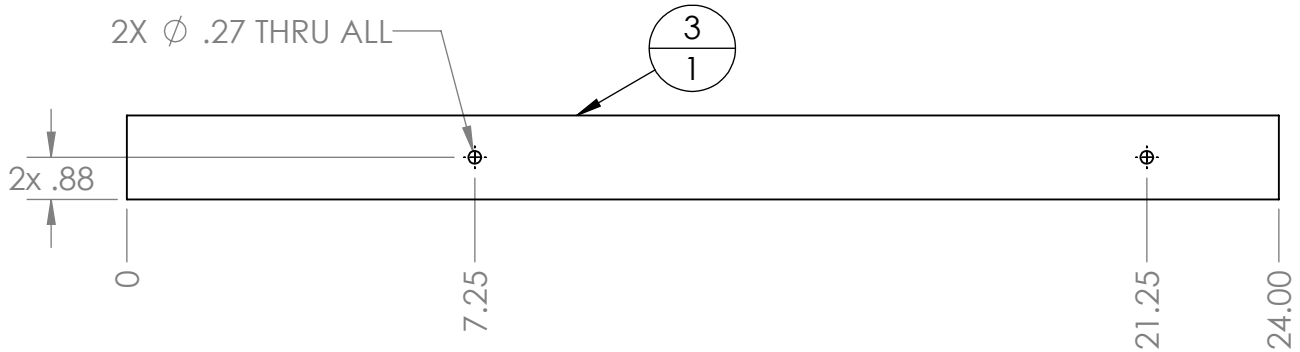
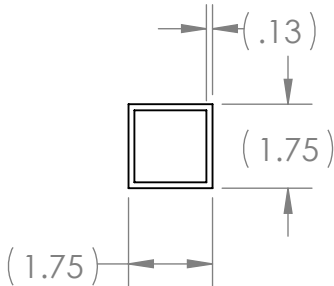
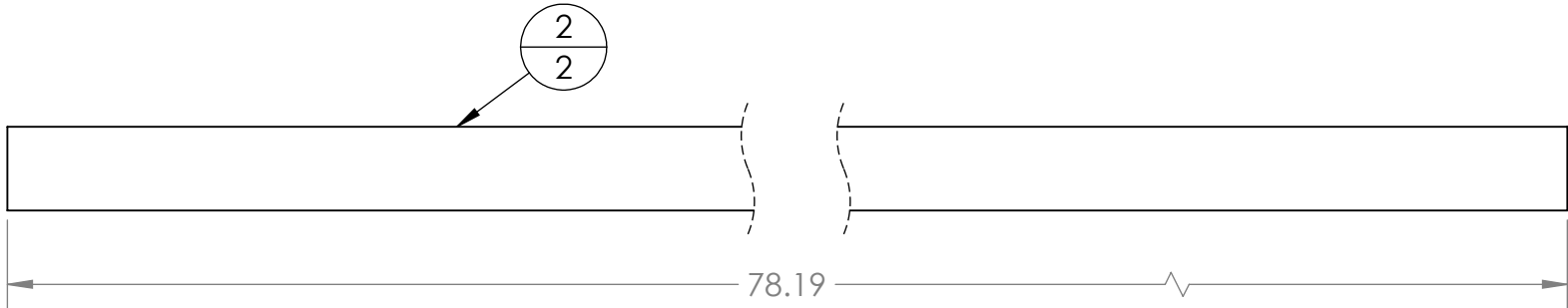
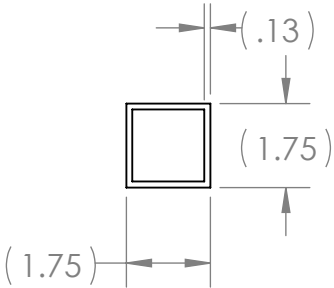
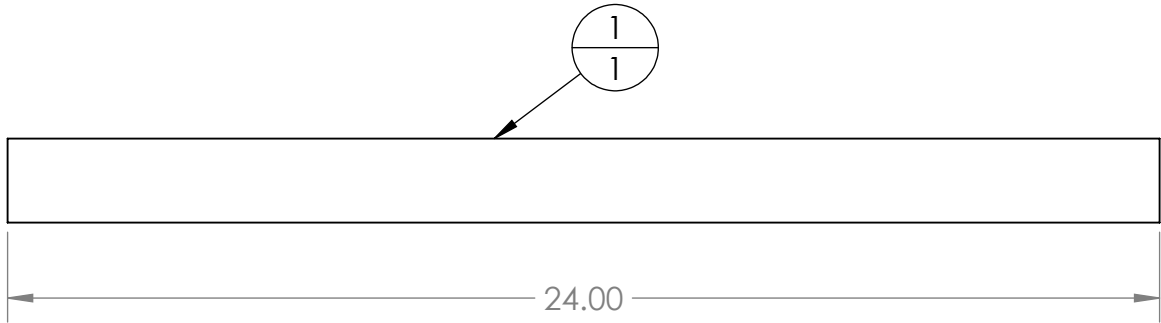
1

B




B

A

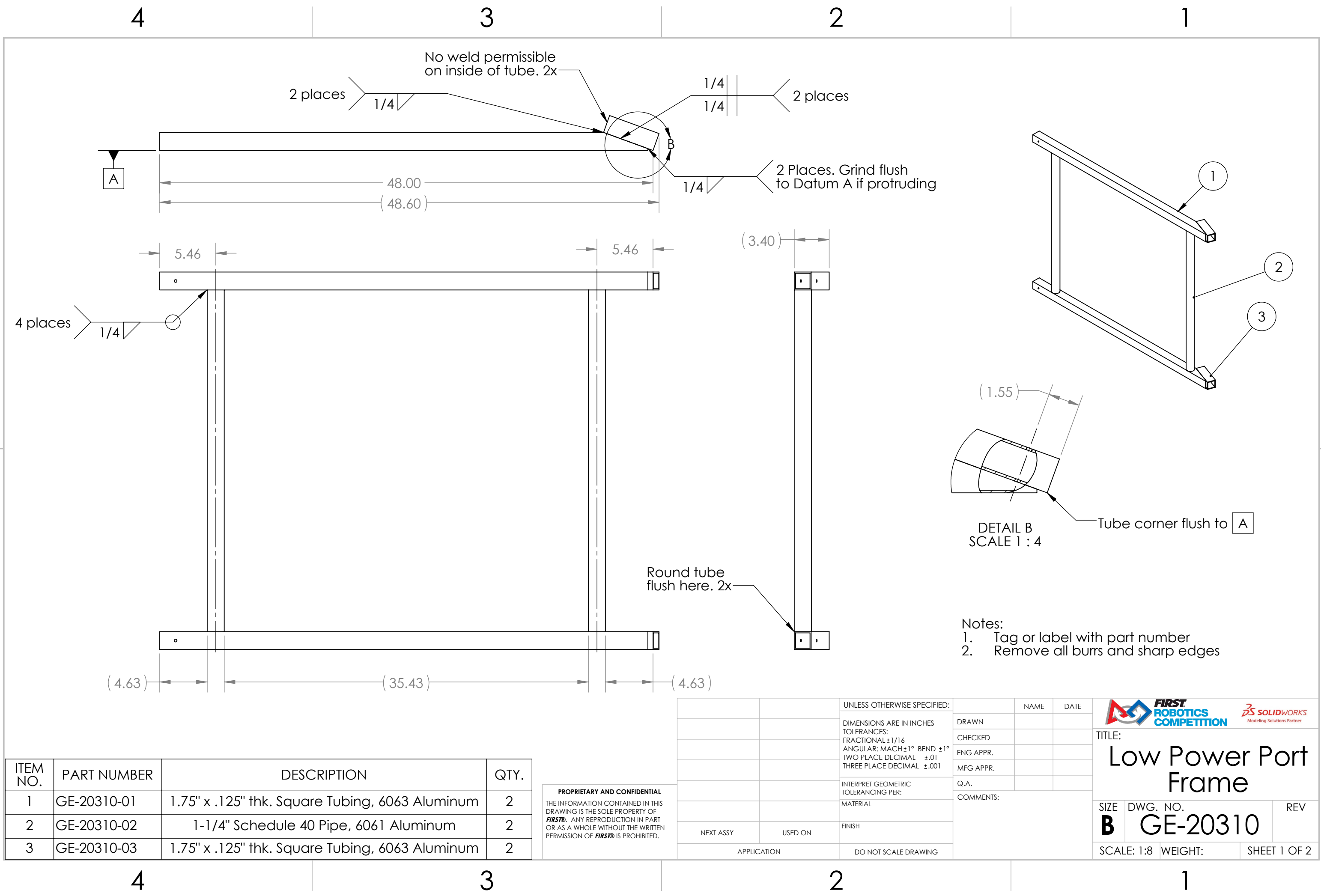
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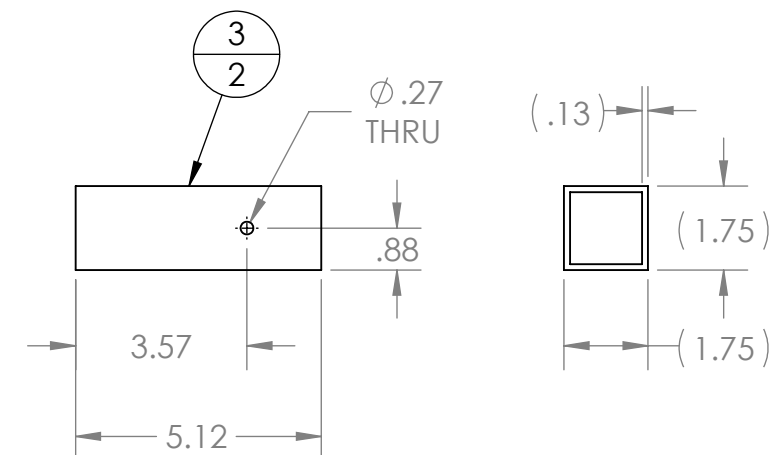
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		UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	NAME	DATE	<div></div> <div>TITLE:  Goal Base Upright</div>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			<div>SIZE DWG. NO. REV</div> <div>B GE-20309</div>		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT: SHEET 2 OF 2		





1



		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  <h1>Low Power Port Frame</h1>		
			CHECKED					
			ENG APPR.			SIZE    DWG. NO.    REV <b>B</b> <b>GE-20310</b>		
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SCALE: 1:4    WEIGHT:    SHEET 2 OF 2		
		MATERIAL	COMMENTS:					
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						

1

4

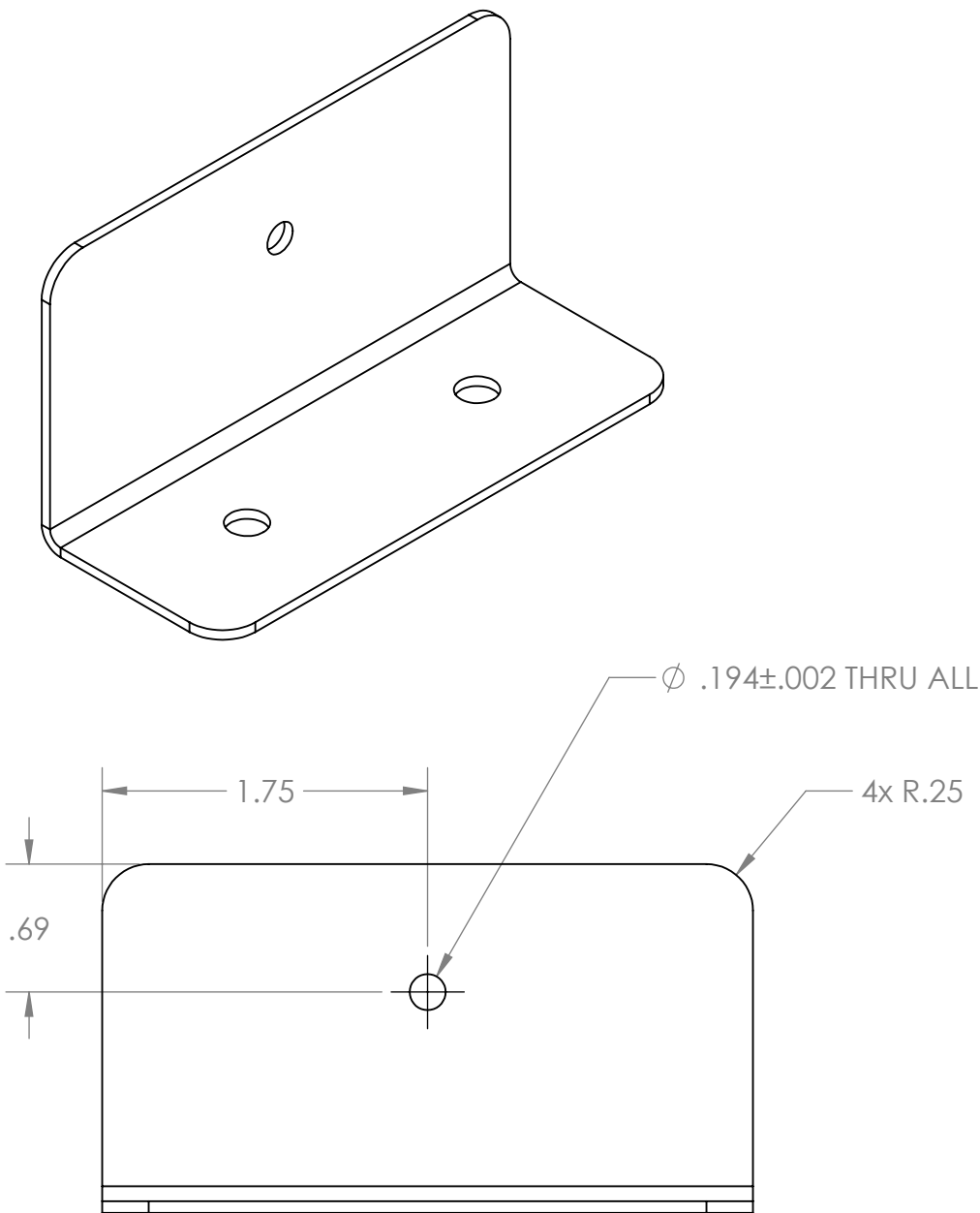
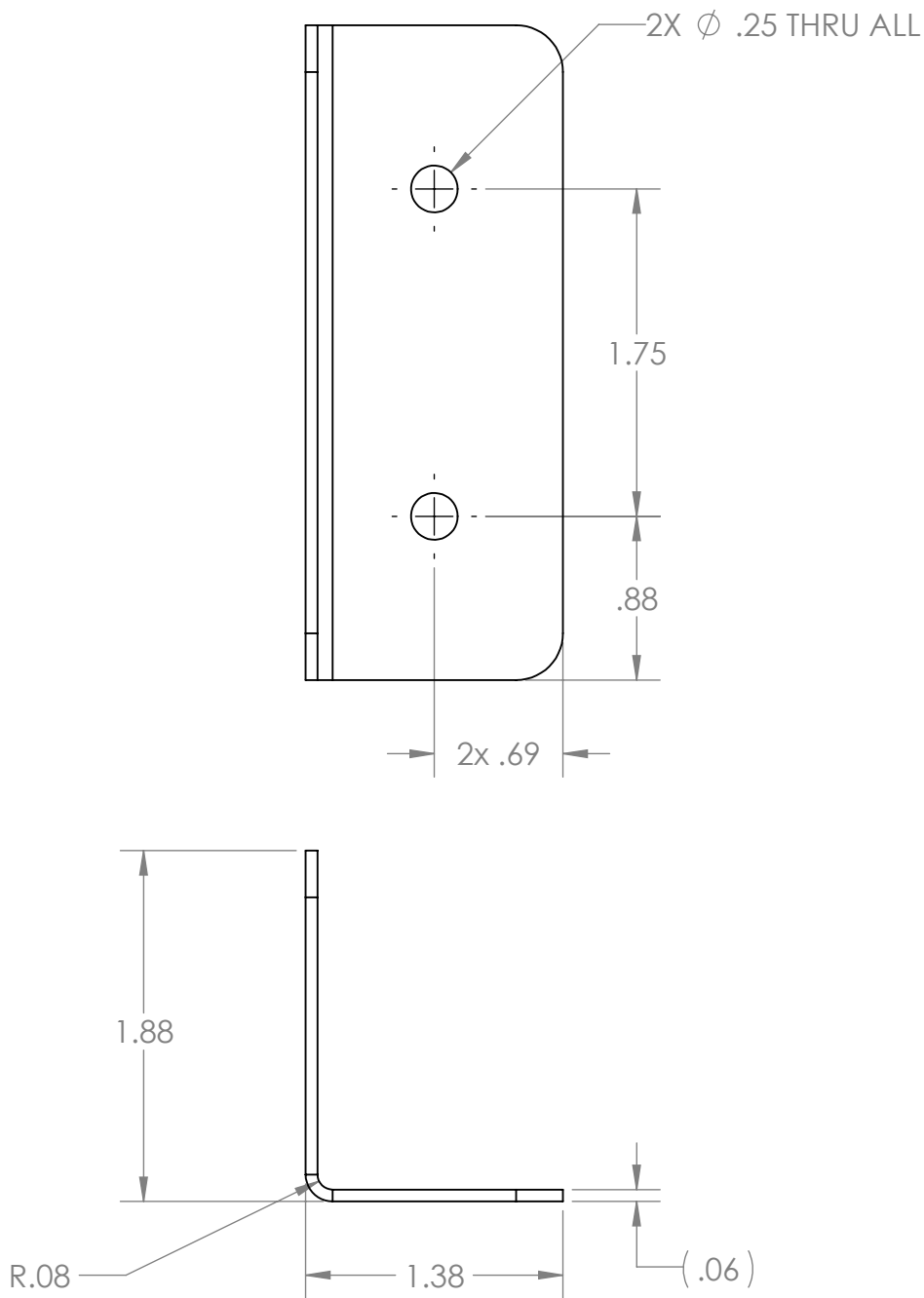
3

2

1

B



B



Notes:

1. Material: 16 GA. Preplated Steel
2. Remove all burrs and sharp edge
3. Tag or label with part number

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		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  <div>Power Port Light Bracket</div>			
		TOLERANCES:	CHECKED						
		FRACTIONAL $\pm 1/16$	ENG APPR.						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.						
		TWO PLACE DECIMAL $\pm .01$	Q.A.						
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <div>BGE-20311</div>			
		INTERPRET GEOMETRIC TOLERANCING PER:							
		MATERIAL				SCALE: 1:1 WEIGHT: SHEET 1 OF 1			
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING							

4

3

2

1

A

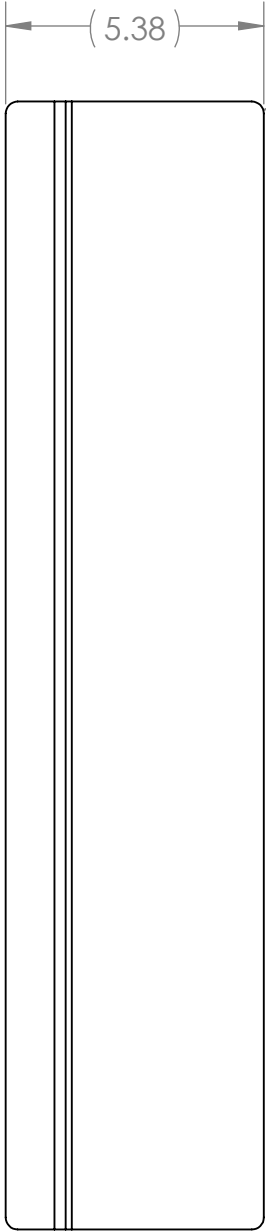
A

4

3

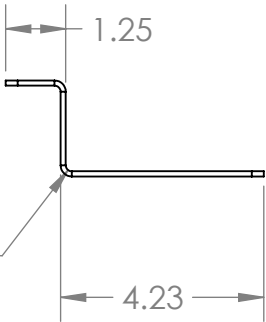
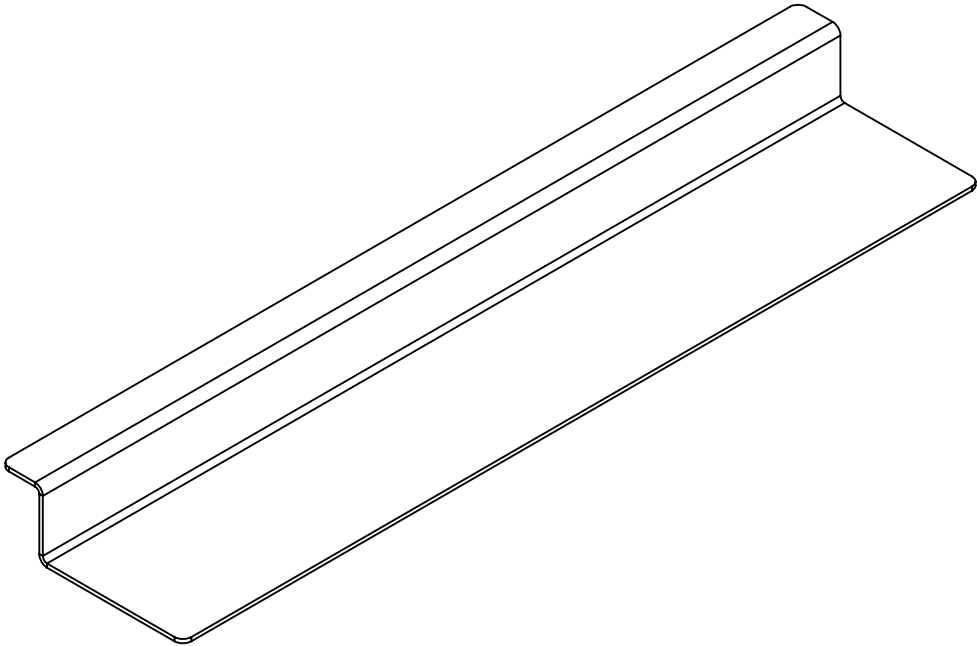
2

1



R.25 4x

( 5.38 )



1.25

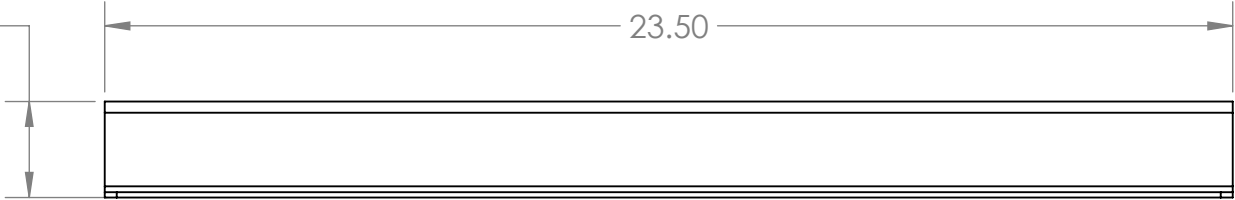
2x R.13

4.23

( .11 )



2.00

23.50



- Notes:
- 1. Material: 12 Gauge Preplated Steel
  - 2. Remove all burrs and sharp edges
  - 3. Tag or label with part number

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		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  Anchor			
		TOLERANCES:	CHECKED						
		FRACTIONAL $\pm 1/16$	ENG APPR.						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.						
		TWO PLACE DECIMAL $\pm .01$	Q.A.						
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20312</b>			
		INTERPRET GEOMETRIC TOLERANCING PER:							
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT: SHEET 1 OF 1			

4

3

2

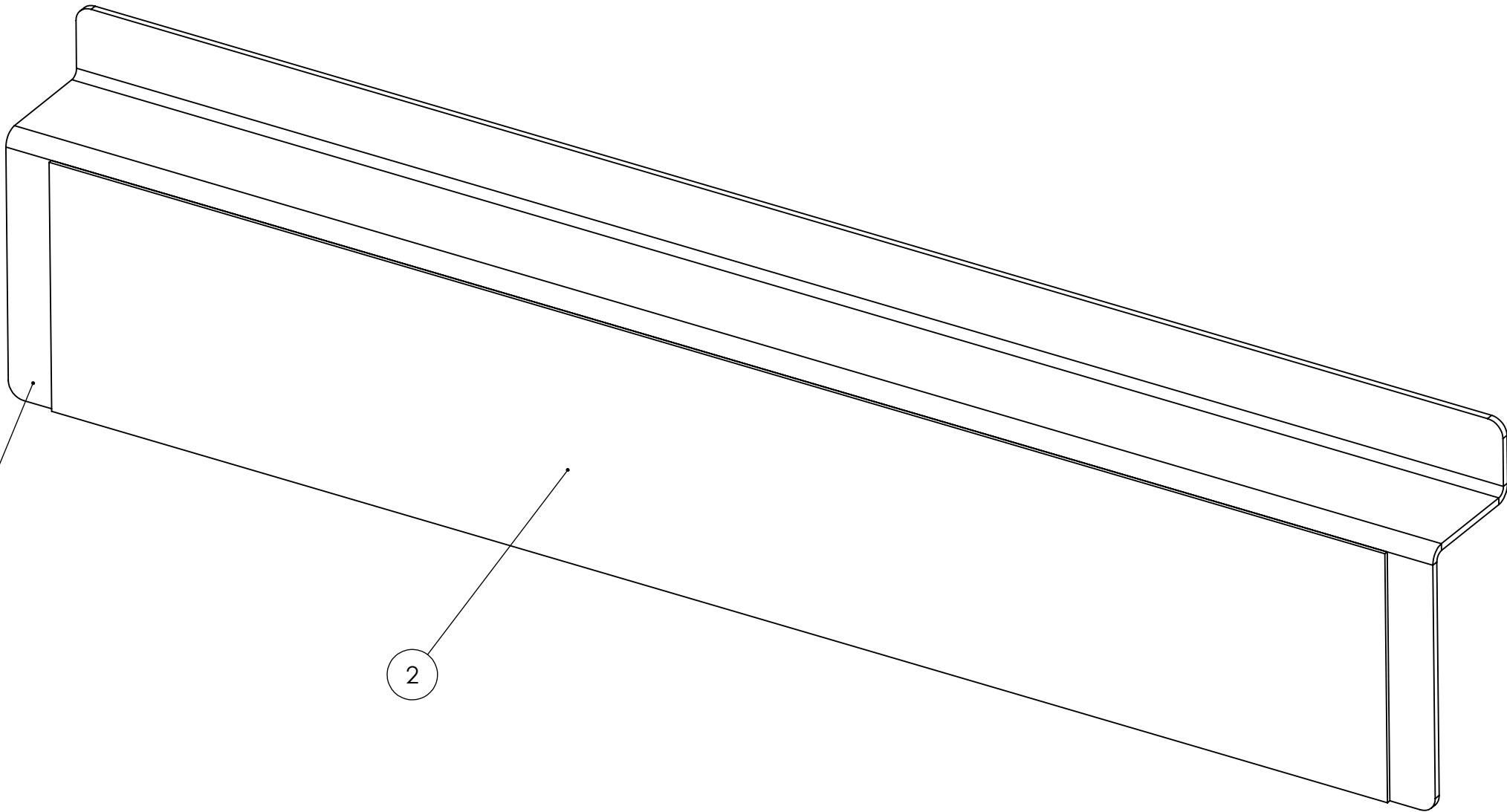
1

4

3

2

1



1

2

Notes:

- 1. Make sure surface of GE-20312 is clean prior to hook application.
- 2. Press firmly on hook to ensure adhesion.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20312	Anchor	1
2	Hook_4_22	4" x 22" Hook Fastener, Adhesive Backed	1

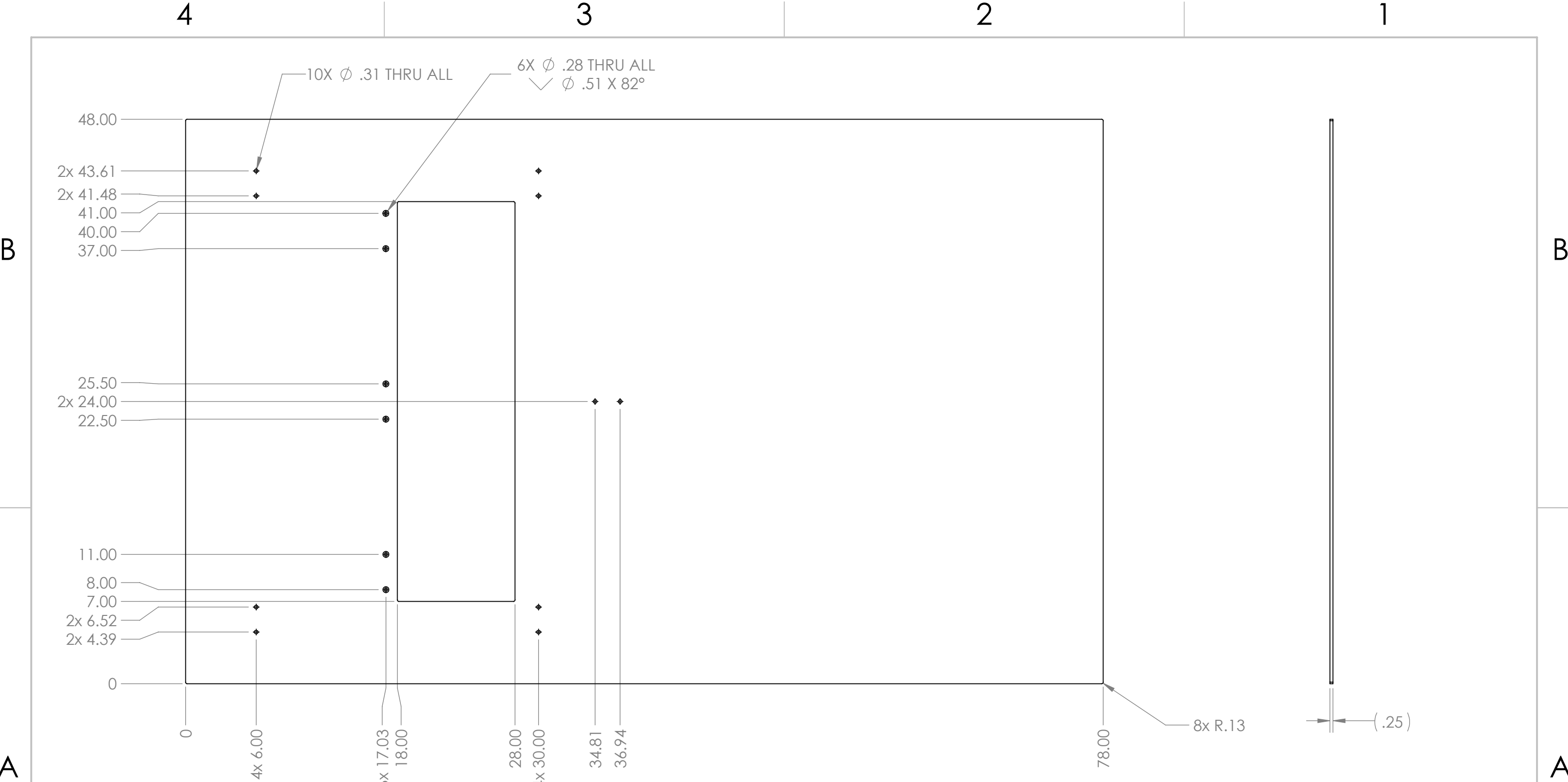
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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE		
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <b>Anchor with hook</b>	
		TOLERANCES:	CHECKED				
		FRACTIONAL ±1/16	ENG APPR.				
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.				
		TWO PLACE DECIMAL ±.01	Q.A.				
		THREE PLACE DECIMAL ±.001	COMMENTS:			SIZE	DWG. NO.
		INTERPRET GEOMETRIC				<b>B</b>	<b>GE-20313</b>
		TOLERANCING PER:				SCALE: 1:2	WEIGHT:
		MATERIAL					
		FINISH					
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING					





REV

SHEET 1 OF 1



- Notes:
1. Material: 1/4" thk. Polycarbonate, Clear.
  2. Tag or label with part number.
  3. Remove all burrs and sharp edges.
  4. Finish: Vinyl to be applied to face.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  <b>Low Power Port Polycarbonate</b>		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20314</b>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON					SCALE: 1:8 WEIGHT: SHEET 1 OF 1		
APPLICATION		DO NOT SCALE DRAWING						





4

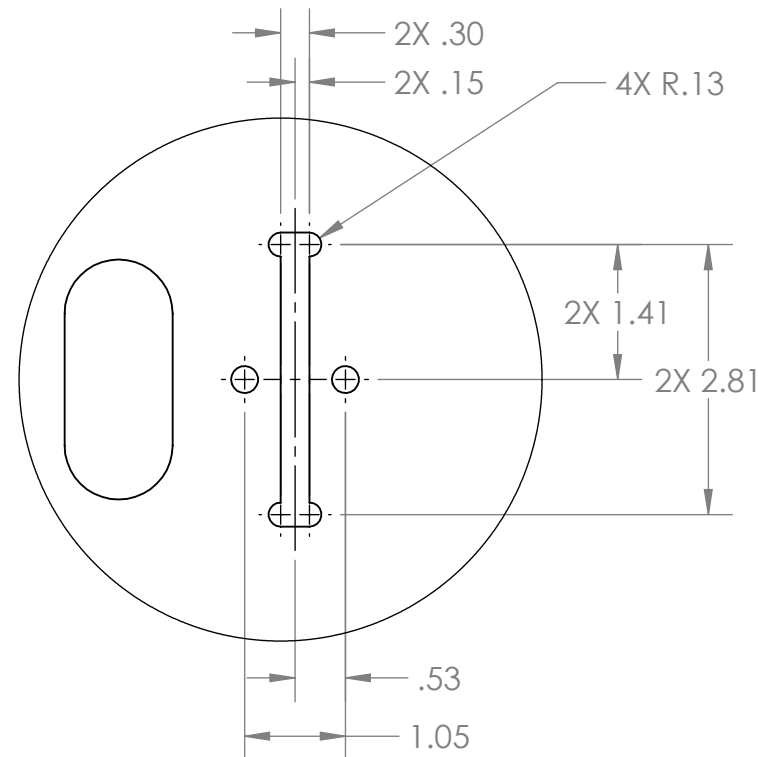
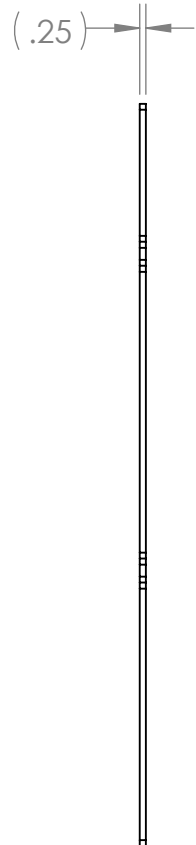
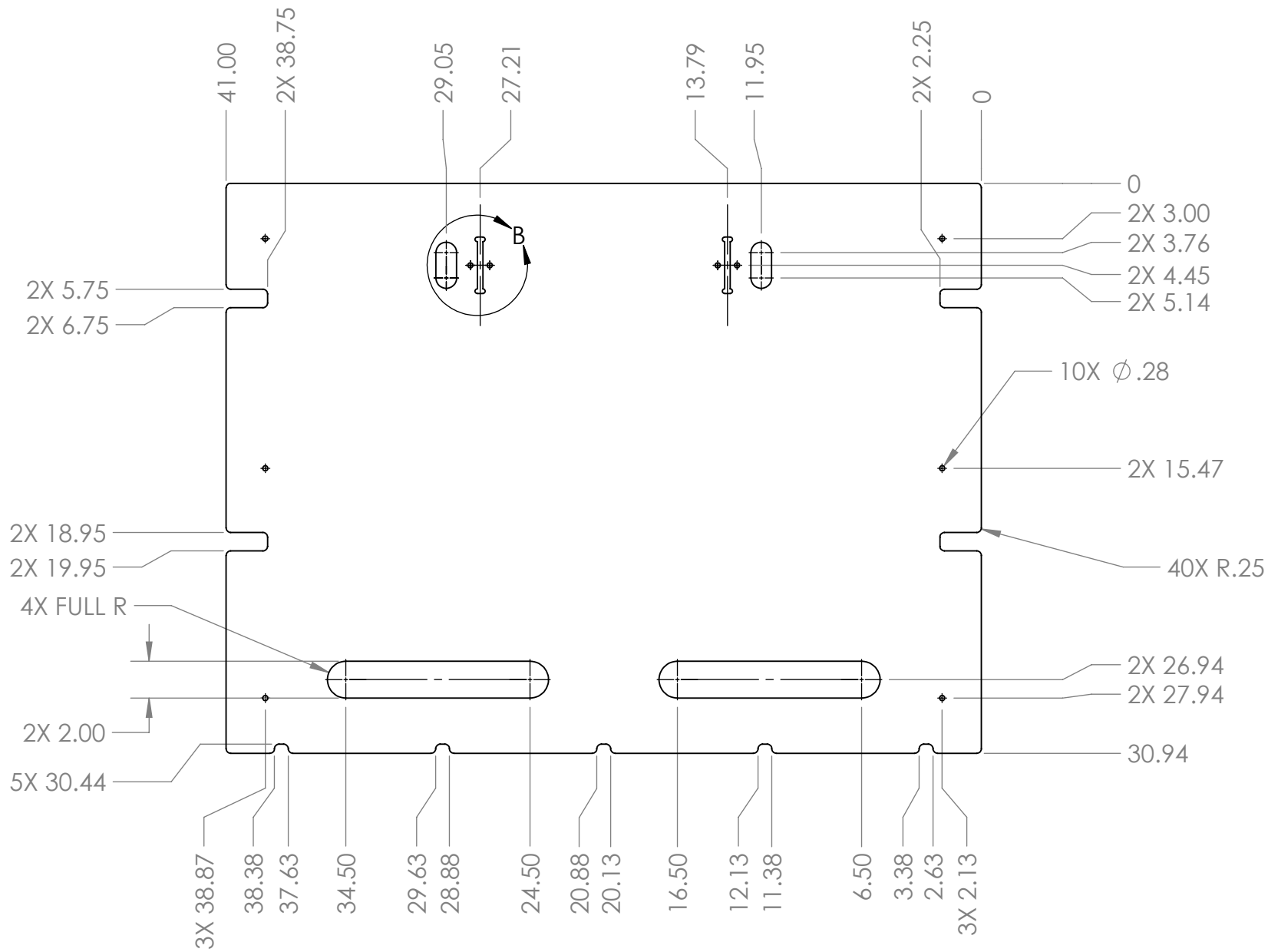
3

2

1

B

B



DETAIL B  
SCALE 1 : 2  
2 PLACES

A

A

Notes:

1. Material: 1/4" Clear Polycarbonate.
2. Remove all burrs and sharp edges.
3. Tag or label with part number.

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		UNLESS OTHERWISE SPECIFIED:			NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			
			CHECKED			
			ENG APPR.			
			MFG APPR.			
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			
		MATERIAL	COMMENTS:			
		FINISH				
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				
			TITLE: Power Port Base Back Top			
SIZE <b>B</b>	DWG. NO. <b>GE-20316</b>	REV				
SCALE: 1:8		WEIGHT:	SHEET 1 OF 1			

4

3

2

1

4

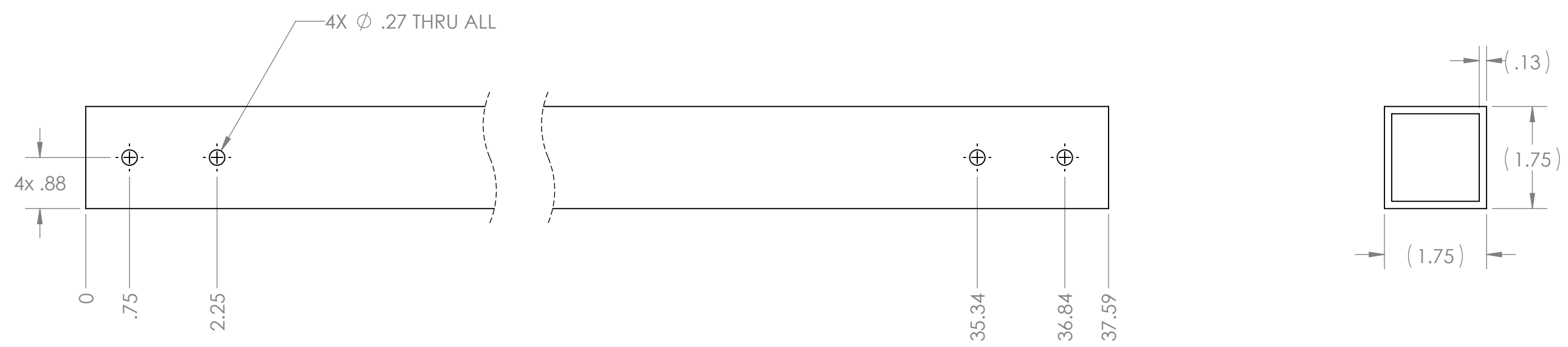
3

2

1

B



B



- Notes:
1. Material: 1.75" x .125" thk. Square Tube, 6063 Aluminum
  2. Remove all burrs and sharp edges
  3. Tag or label with part numbers

A

A

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			DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			
				CHECKED			
				ENG APPR.			
				MFG APPR.			
				Q.A.			
				COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL					
		FINISH					
	NEXT ASSY	USED ON					
	APPLICATION		DO NOT SCALE DRAWING				

4

3

2

1

4

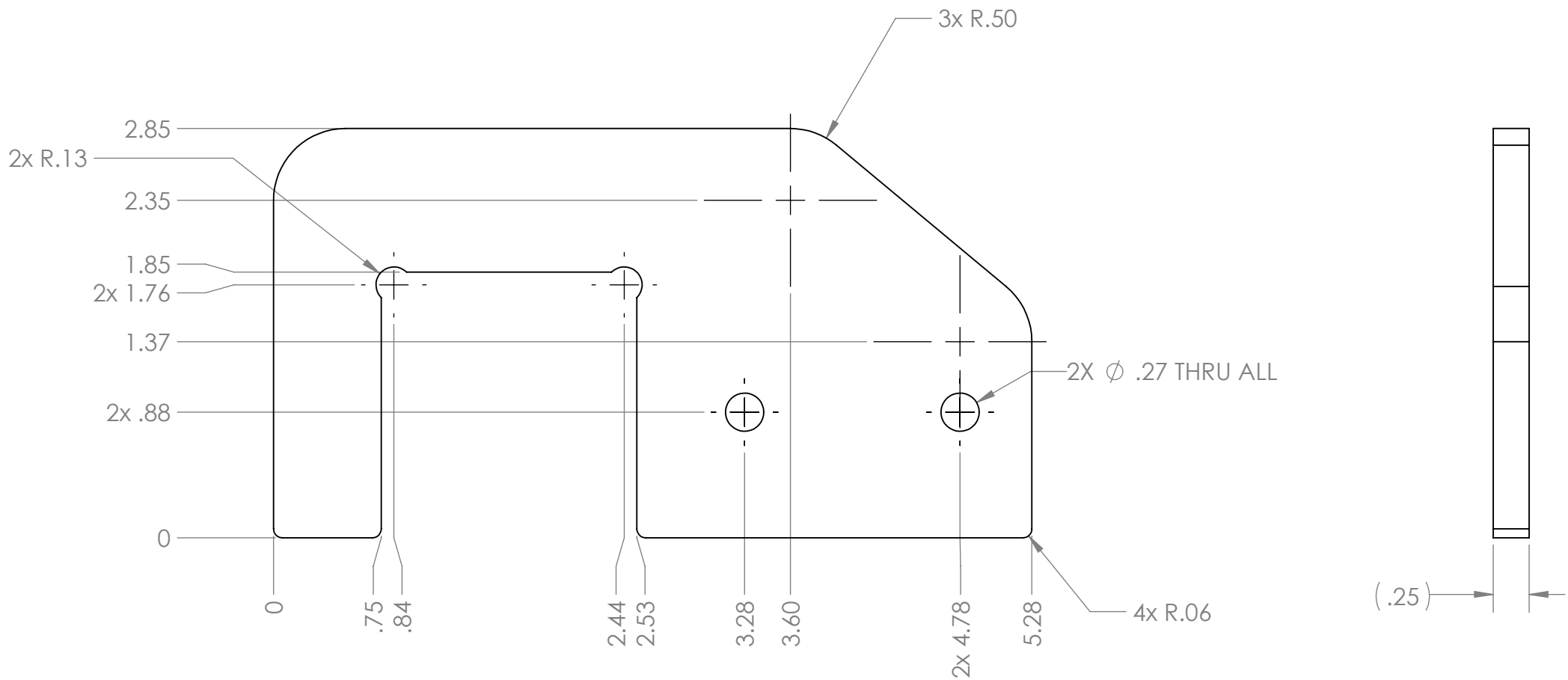
3

2

1

B

B





- Notes:
- 1. Material: 1/4" thk. Polycarbonate, Clear
  - 2. Tag or label with part number
  - 3. Remove all burrs and sharp edges

A

A

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE									
		DIMENSIONS ARE IN INCHES	DRAWN											
		TOLERANCES:	CHECKED											
		FRACTIONAL $\pm 1/16$	ENG APPR.											
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.											
		TWO PLACE DECIMAL $\pm .01$	Q.A.											
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:	<div><div></div><div>TITLE: <b>Power Port Base Brace Hook</b></div><div><table><tr><td>SIZE</td><td>DWG. NO.</td><td>REV</td></tr><tr><td><b>B</b></td><td><b>GE-20318</b></td><td></td></tr></table></div><div><table><tr><td>SCALE: 1:1</td><td>WEIGHT:</td><td>SHEET 1 OF 1</td></tr></table></div></div>		SIZE	DWG. NO.	REV	<b>B</b>	<b>GE-20318</b>		SCALE: 1:1	WEIGHT:	SHEET 1 OF 1
SIZE	DWG. NO.	REV												
<b>B</b>	<b>GE-20318</b>													
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1												
		INTERPRET GEOMETRIC TOLERANCING PER:												
		MATERIAL												
		FINISH												
NEXT ASSY	USED ON													
APPLICATION		DO NOT SCALE DRAWING												

4

3

2

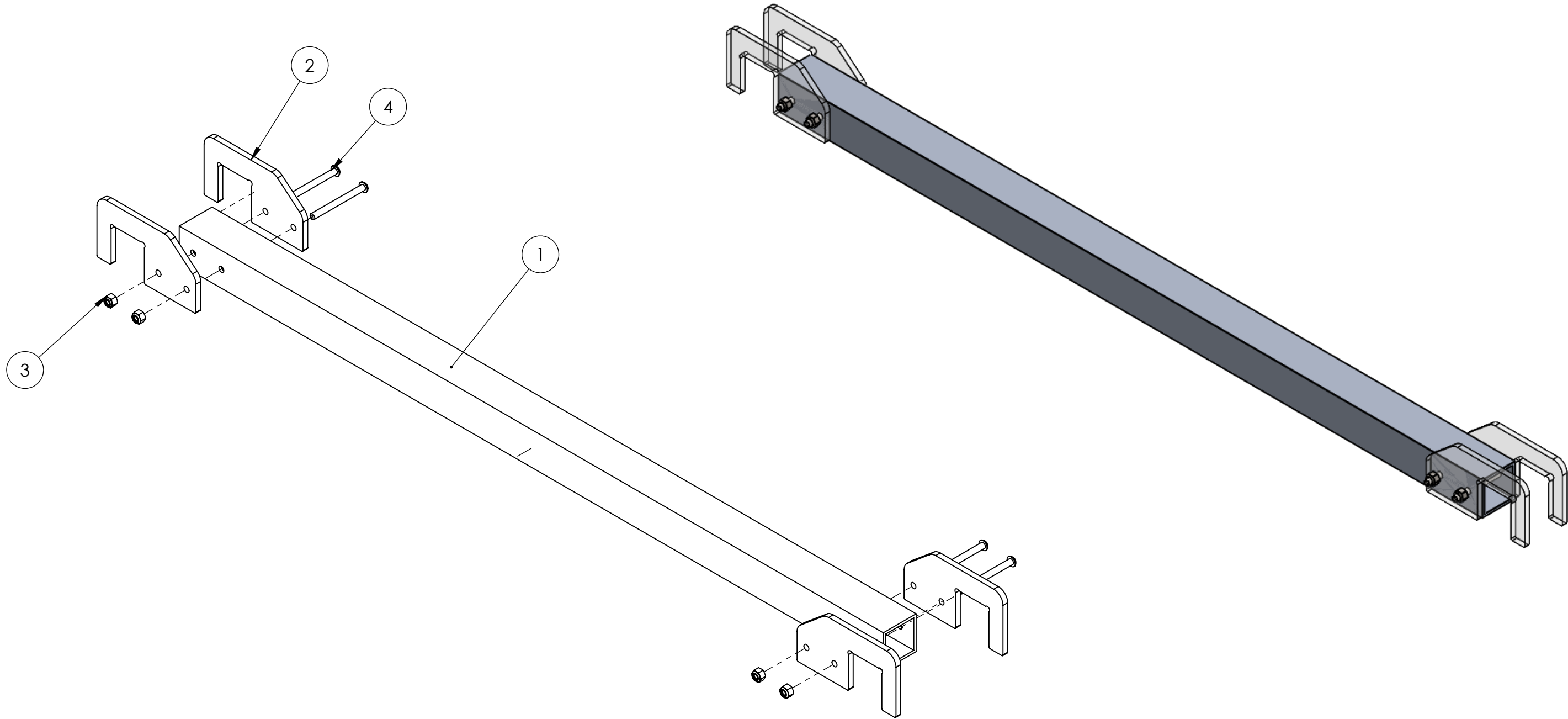
1

B

B



A

A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20317	Power Port Base Brace Bar	1
2	GE-20318	Power Port Base Brace Hook	4
3	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4
4	round_hex_.25_20_2.75_partial	Steel Button Head Hex Drive Screw, 1/4"-20 x 2.75" long, partially threaded	4

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			TITLE: <div>Power Port Base Brace Assembly</div>			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
			Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:						
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON					SIZE <b>B</b>	DWG. NO. <b>GE-20319</b>	REV	
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8		WEIGHT:	SHEET 1 OF 1

4

3

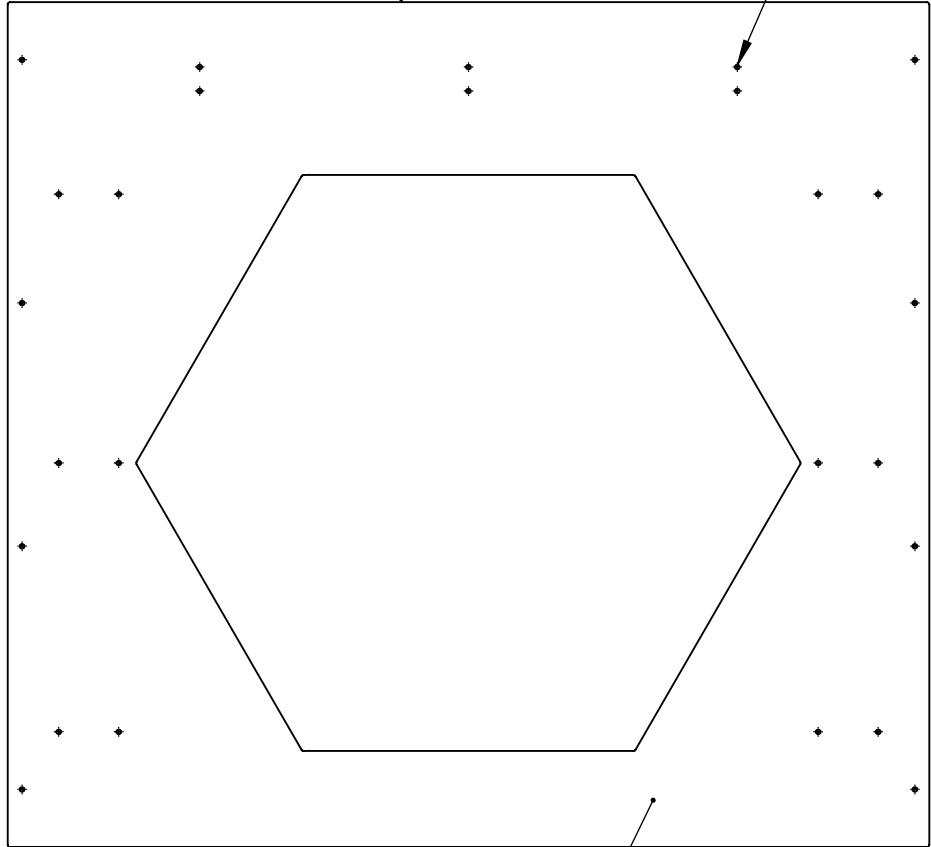
2

1

GE-20306

This row of holes oriented towards top.

Black region to be cut out, backed with translucent, light diffusing vinyl.



Vinyl applied to one face. Front and back of part are identical.



GE-20320-Blue





GE-20320-Red

Notes:  
1. Tag or label with part number

Color Variations		
Part Number	Vinyl Image	QTY per field
GE-20320-Blue	GE-20320-Blue-Vinyl	1
GE-20320-Red	GE-20320-Red-Vinyl	1

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			
			 		
			TITLE: <b>Power Port Top Front with Vinyl</b>		
SIZE <b>B</b>	DWG. NO. <b>GE-20320</b>	REV			
SCALE: 1:10		WEIGHT:	SHEET 1 OF 1		

4

3

2

1

B

A



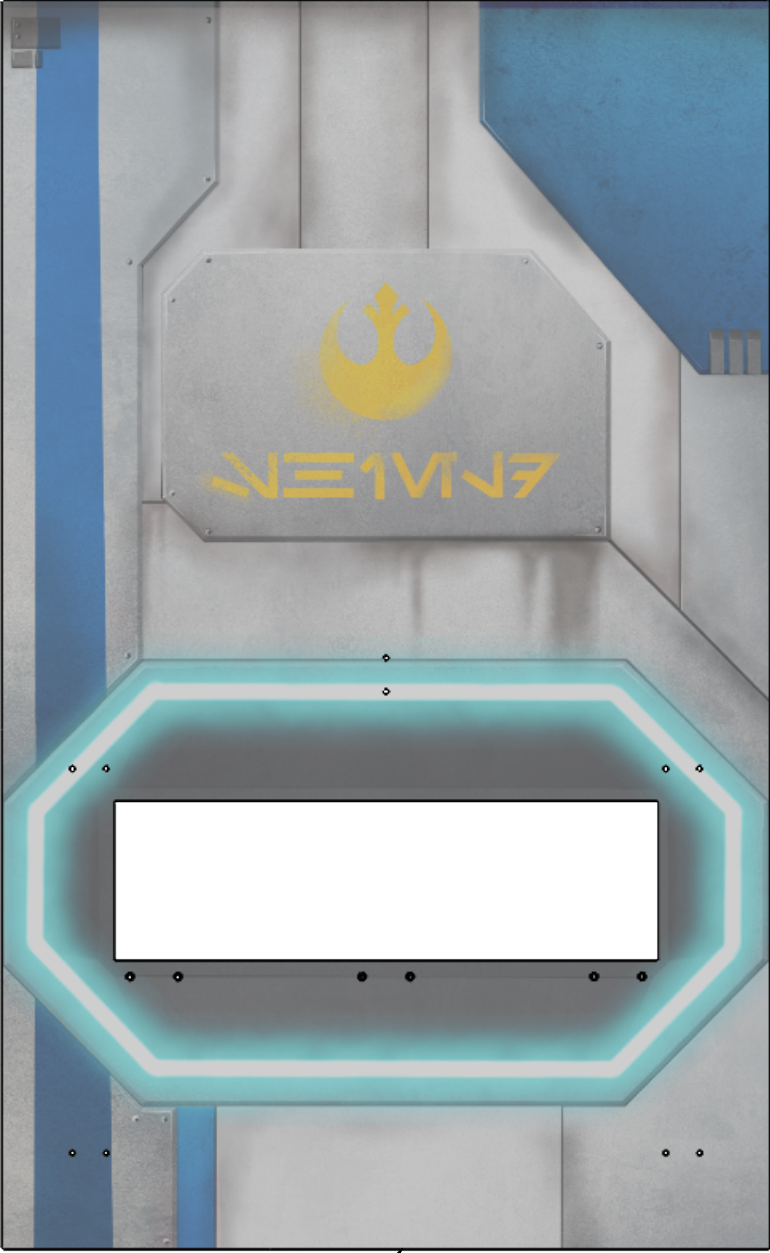
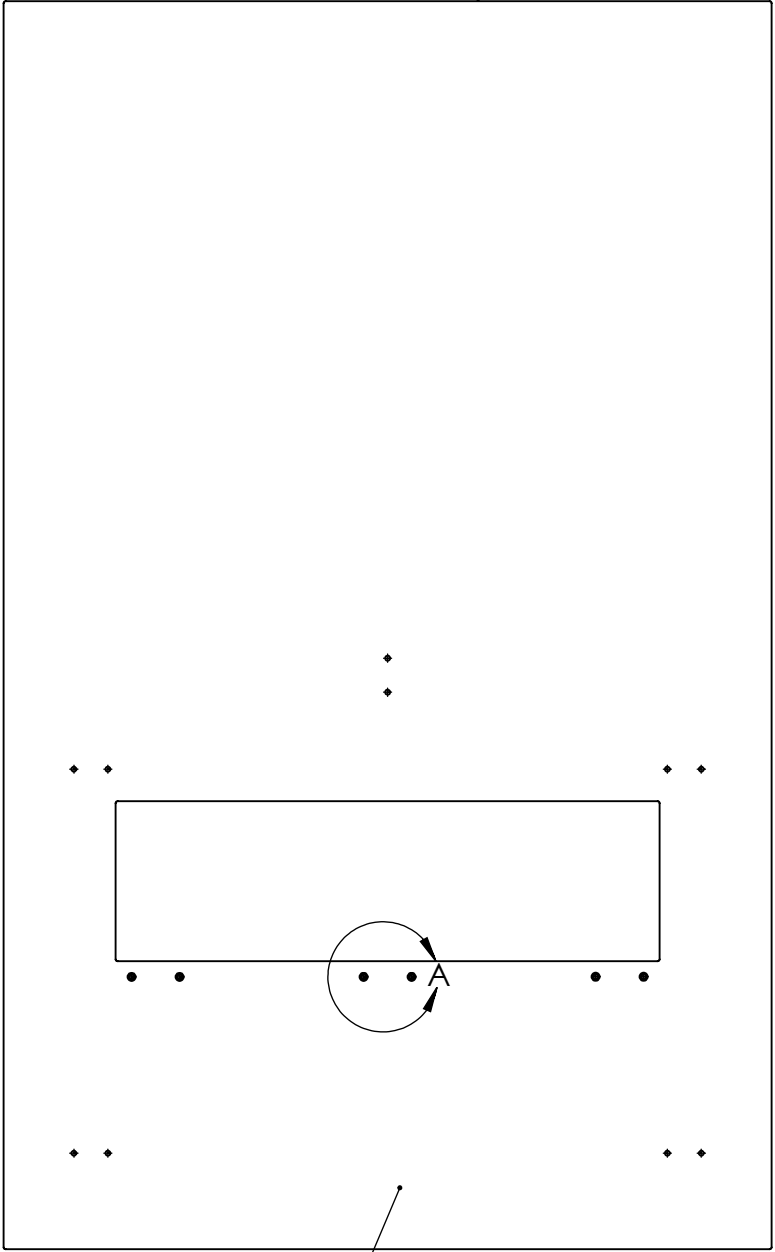
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3

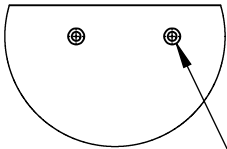
2

1

GE-20314



Vinyl applied to this face



DETAIL A  
SCALE 1 : 6

GE-20321-Red

GE-20321-Blue

Countersinks face up

Color Variations		
Part Number	Vinyl Image	QTY per field
GE-20321-Blue	GE-20321-Blue-Vinyl	1
GE-20321-Red	GE-20321-Red-Vinyl	1

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		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			
			TITLE:		
			Low Power Port with Vinyl		
SIZE	DWG. NO.	REV			
B	GE-20321				
SCALE: 1:12		WEIGHT:	SHEET 1 OF 1		

4

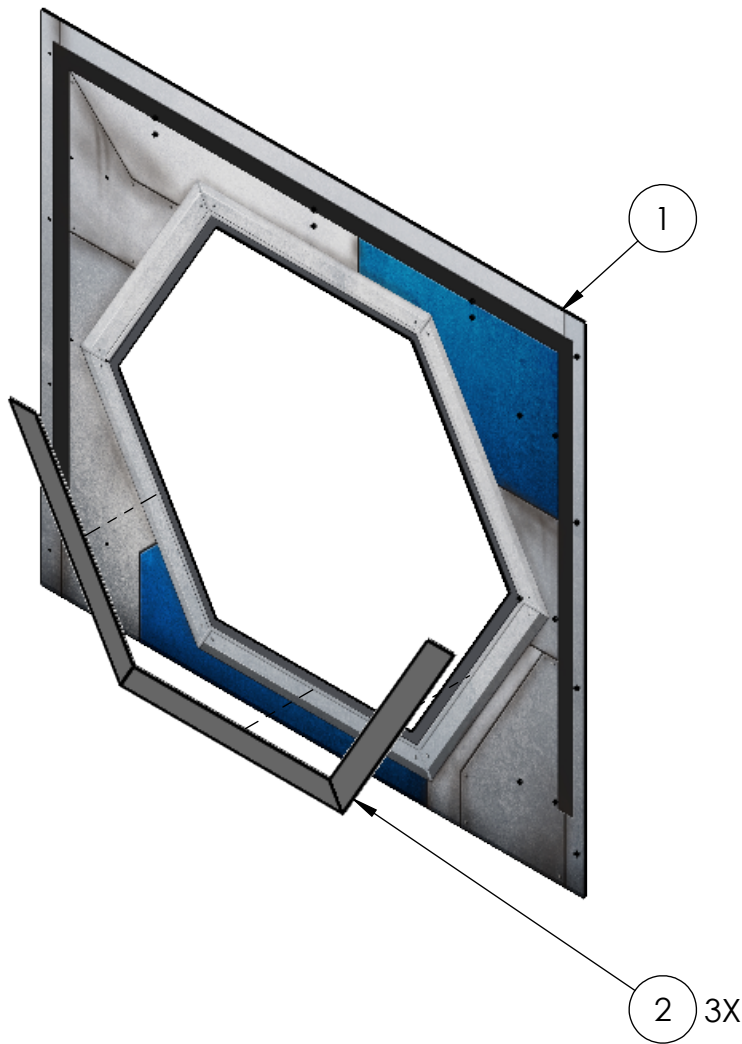
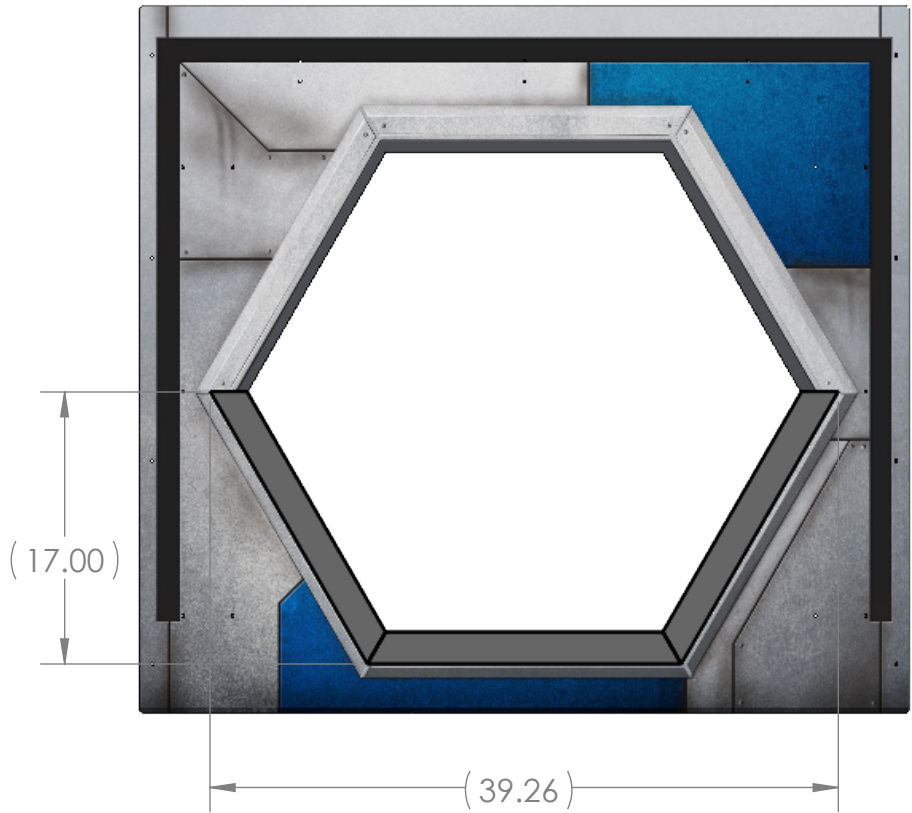
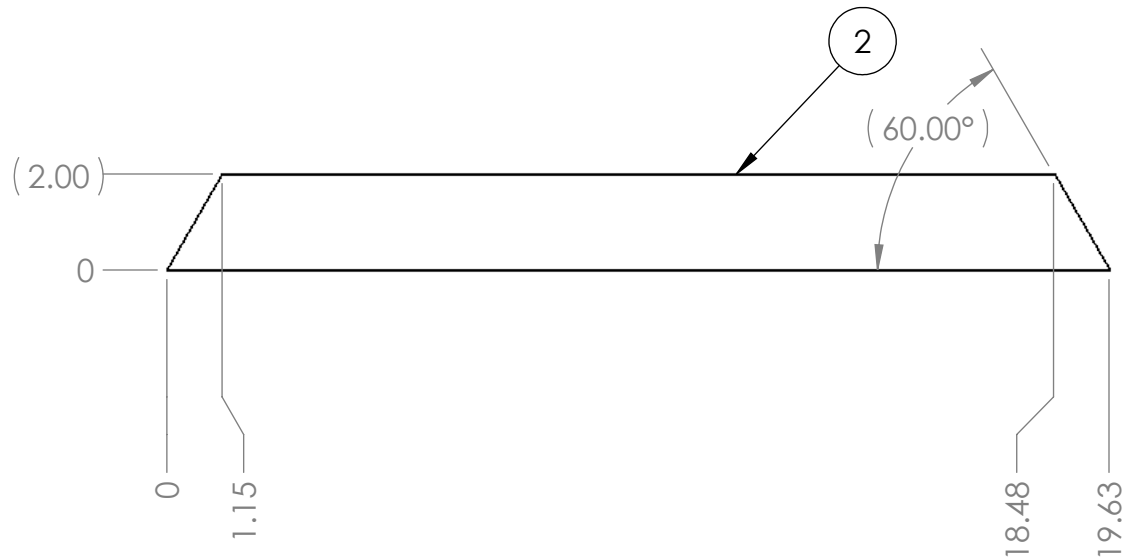
3

2

1

B

B





- Notes:
1. Attach (2) 3X to (1) .
  2. Align to lower portion of the opening on the face of the vinyl
  3. Repeat for GE-20320-Red.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20320-Blue	Power Port Top Front with Vinyl	1
2	Vision_PowerPort		3

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		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL ±1/16	ENG APPR.		
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.		
		TWO PLACE DECIMAL ±.01	Q.A.		
		THREE PLACE DECIMAL ±.001	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
**Power Port Top Front**

SIZE **B** DWG. NO. **GE-20322** REV

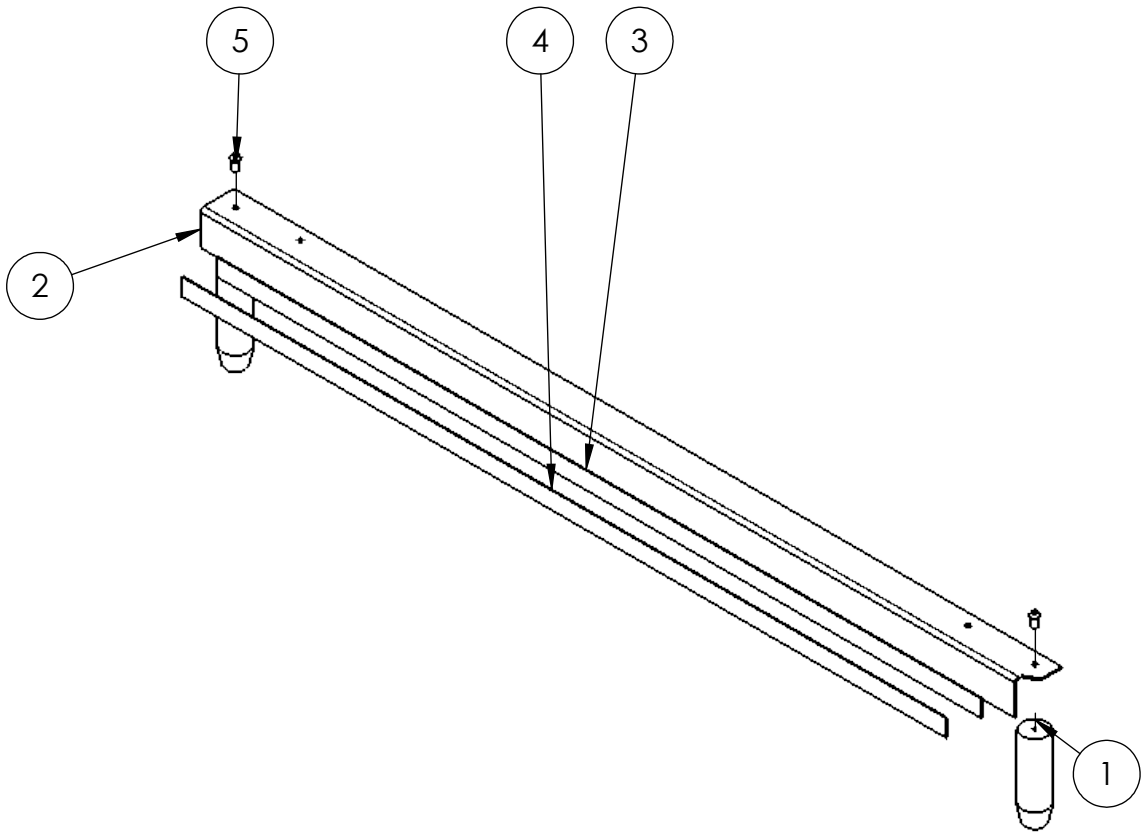
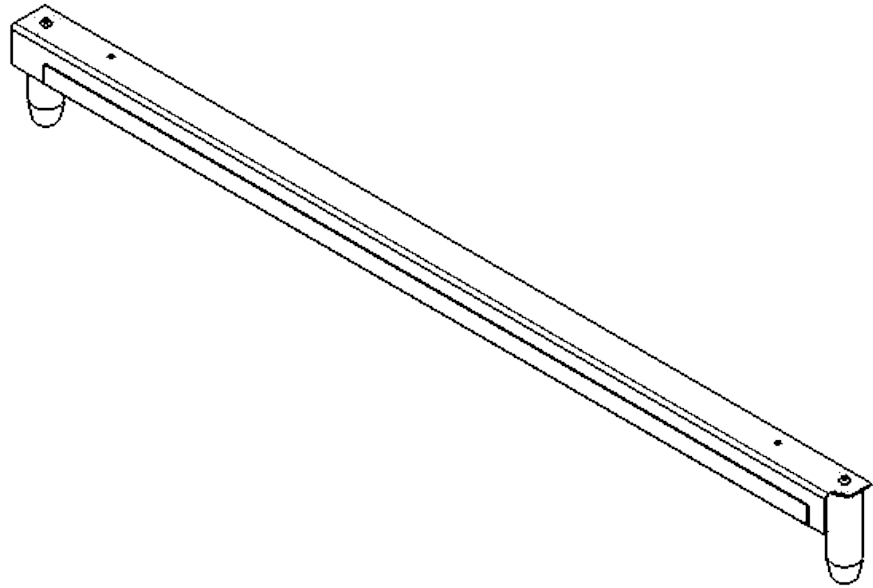
SCALE: 1:12 WEIGHT: SHEET 1 OF 1

A

A



B





B

A

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20218	Top Rail, Post	2
2	GE-20324	Top Rail, Power Port Angle	1
3	Hook_1_45	1" X 45" Hook, Adhesive Backed	1
4	Loop_1_45	1" x 45" Loop, Adhesive Backed	1
5	round_hex_.25_20_.62_5_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 5/8" long, fully threaded	2

A

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  <div>Top Rail, Standard</div>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <div>Bge-20323</div>		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8 WEIGHT: SHEET 1 OF 2		

4

3

2

1

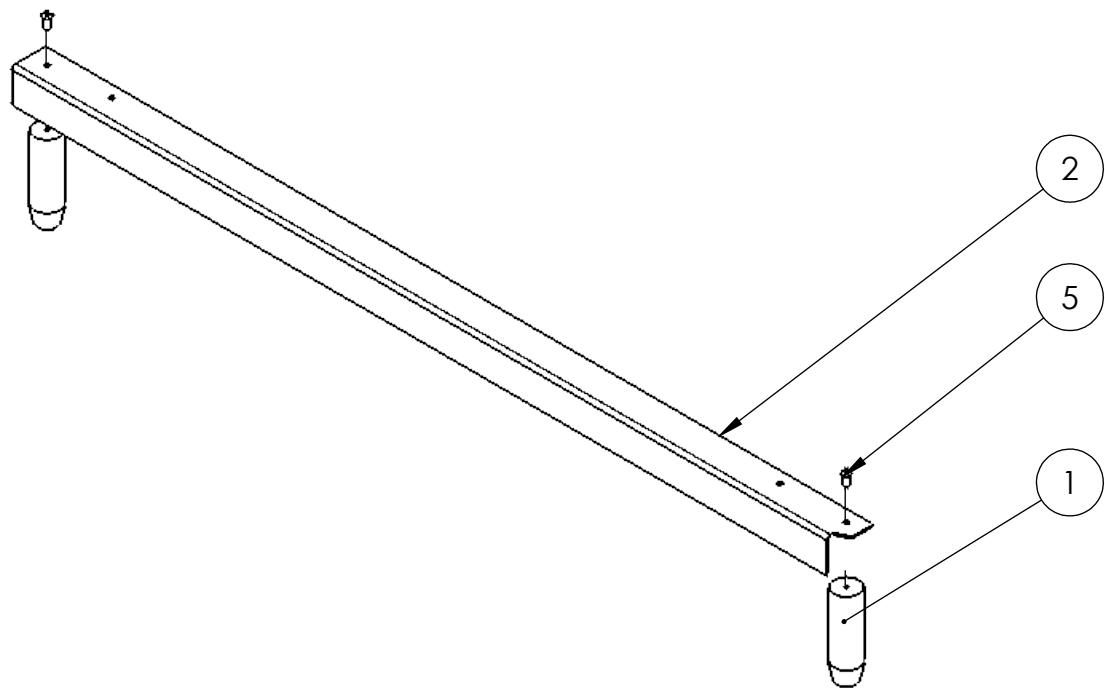
4

3

2

1

B



Notes:

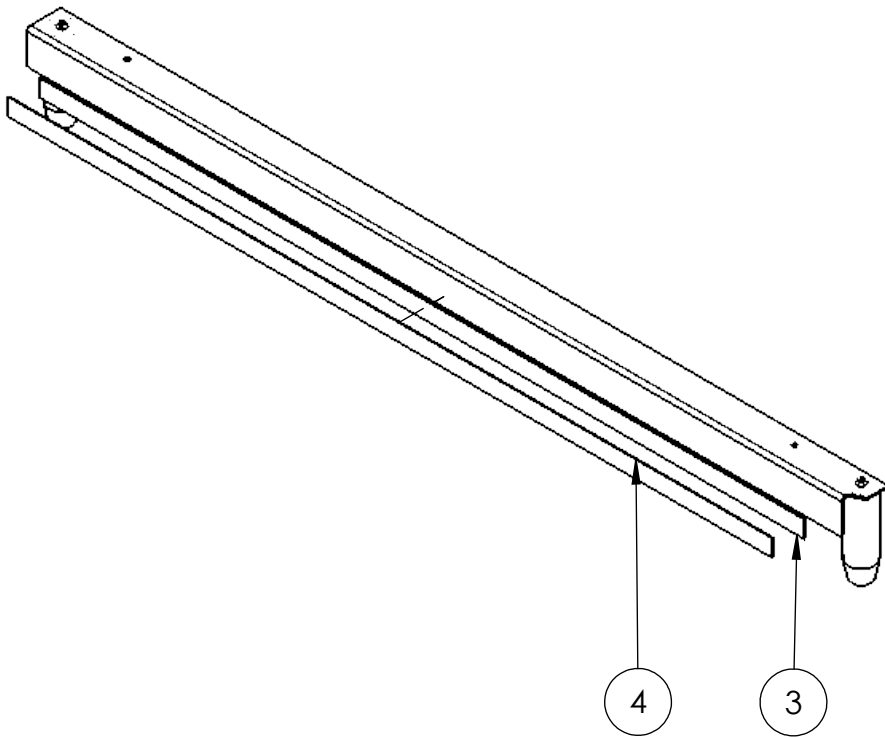
1. Attach 1 to the underside of 2
2. Fasten in place with 5

A

Note:



1. Clean and Prep 2.
2. Attach 3 to the front of of 2.
3. Attach 4 to 3 and leave the protective backing on.

B



A

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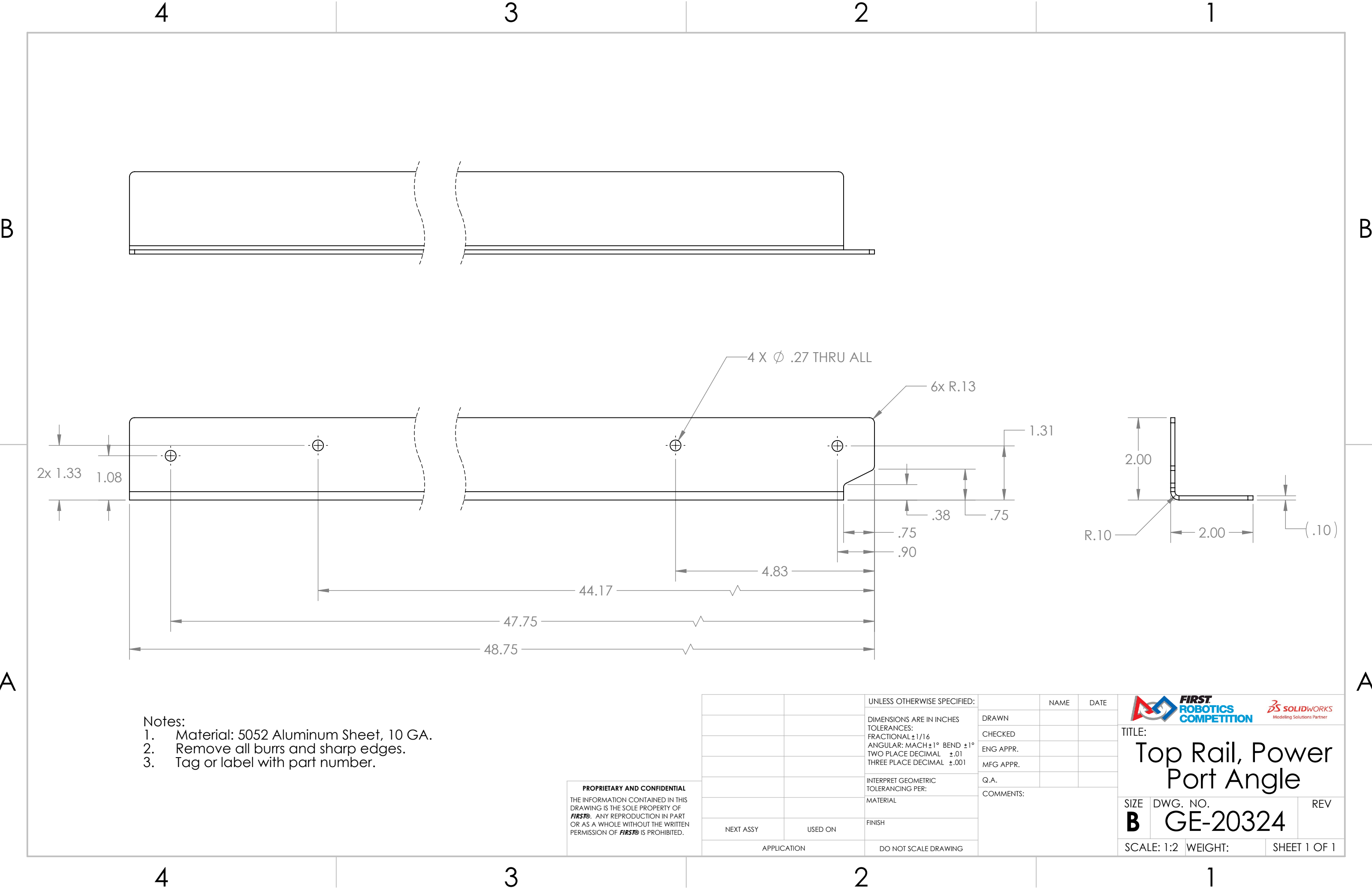
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 <b>FIRST</b> ROBOTICS COMPETITION  Modeling Solutions Partner
		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			TITLE: <b>Top Rail, Standard</b>
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				SIZE DWG. NO. REV
		MATERIAL				<b>B</b> ge-20323
		FINISH				SCALE: 1:8 WEIGHT: SHEET 2 OF 2
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

4

3

2

1



A



A

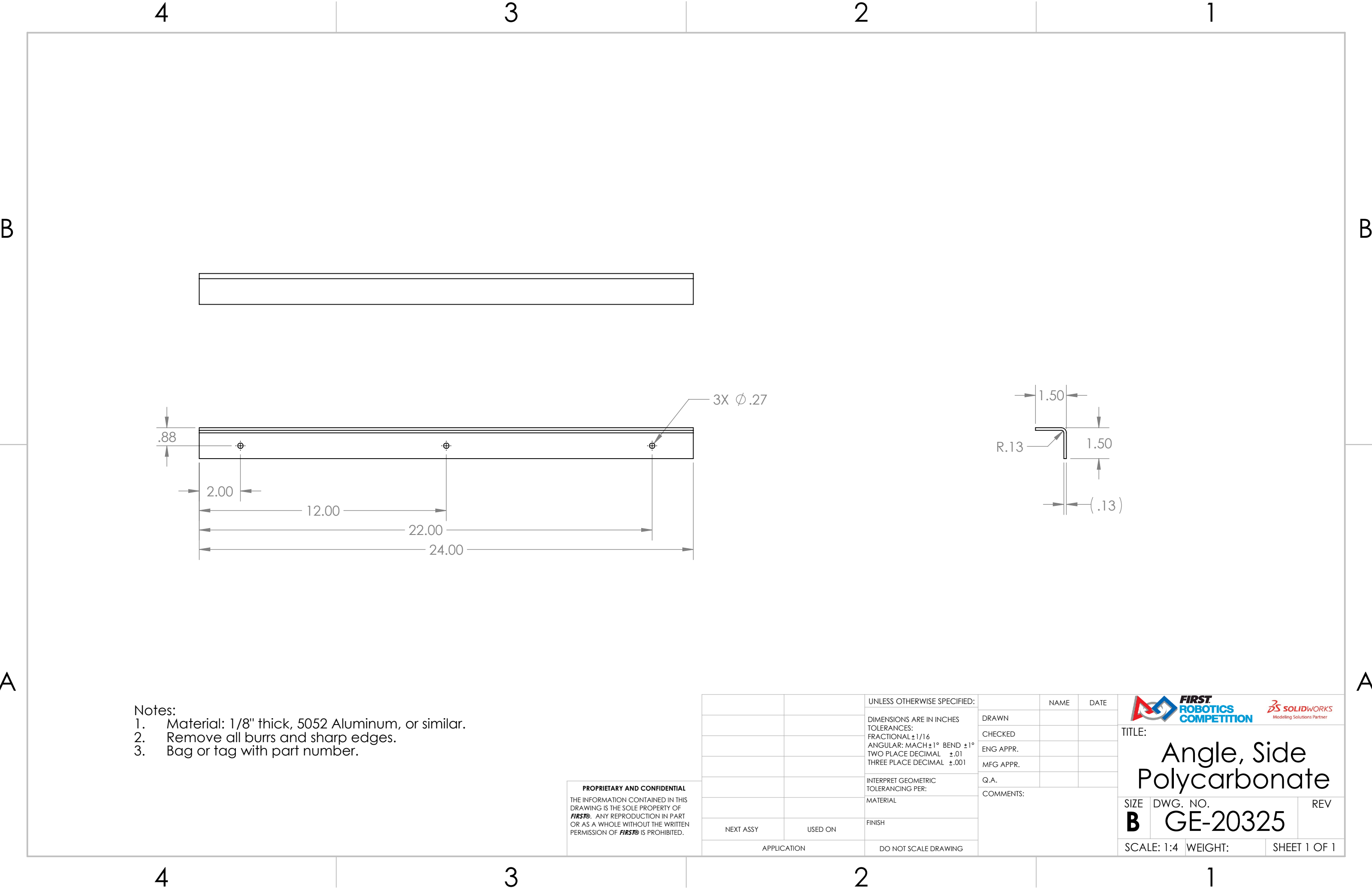
B

B

- Notes:
- 1. Material: 5052 Aluminum Sheet, 10 GA.
  - 2. Remove all burrs and sharp edges.
  - 3. Tag or label with part number.

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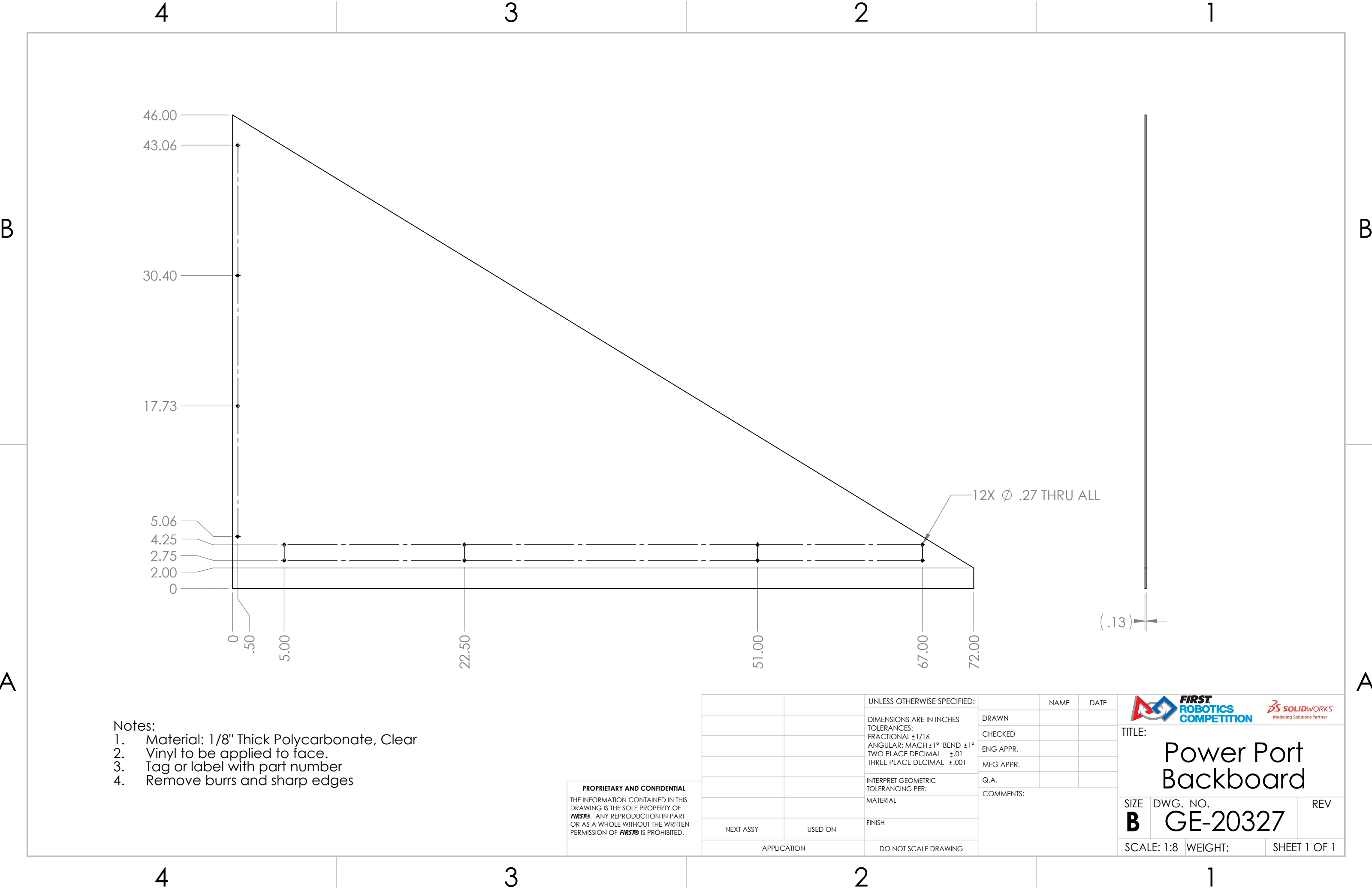
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL ±1/16	ENG APPR.		
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.		
		TWO PLACE DECIMAL ±.01	Q.A.		
		THREE PLACE DECIMAL ±.001	COMMENTS:	<div><div></div><div>TITLE: <b>Top Rail, Power Port Angle</b></div><div><div>SIZE <b>B</b></div><div>DWG. NO. <b>GE-20324</b></div><div>REV</div></div><div><div>SCALE: 1:2</div><div>WEIGHT:</div><div>SHEET 1 OF 1</div></div></div>	
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



- Notes:
- 1. Material: 1/8" thick, 5052 Aluminum, or similar.
  - 2. Remove all burrs and sharp edges.
  - 3. Bag or tag with part number.

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			
			TITLE: <b>Angle, Side Polycarbonate</b>		
SIZE <b>B</b>	DWG. NO. <b>GE-20325</b>	REV			
SCALE: 1:4		WEIGHT:	SHEET 1 OF 1		

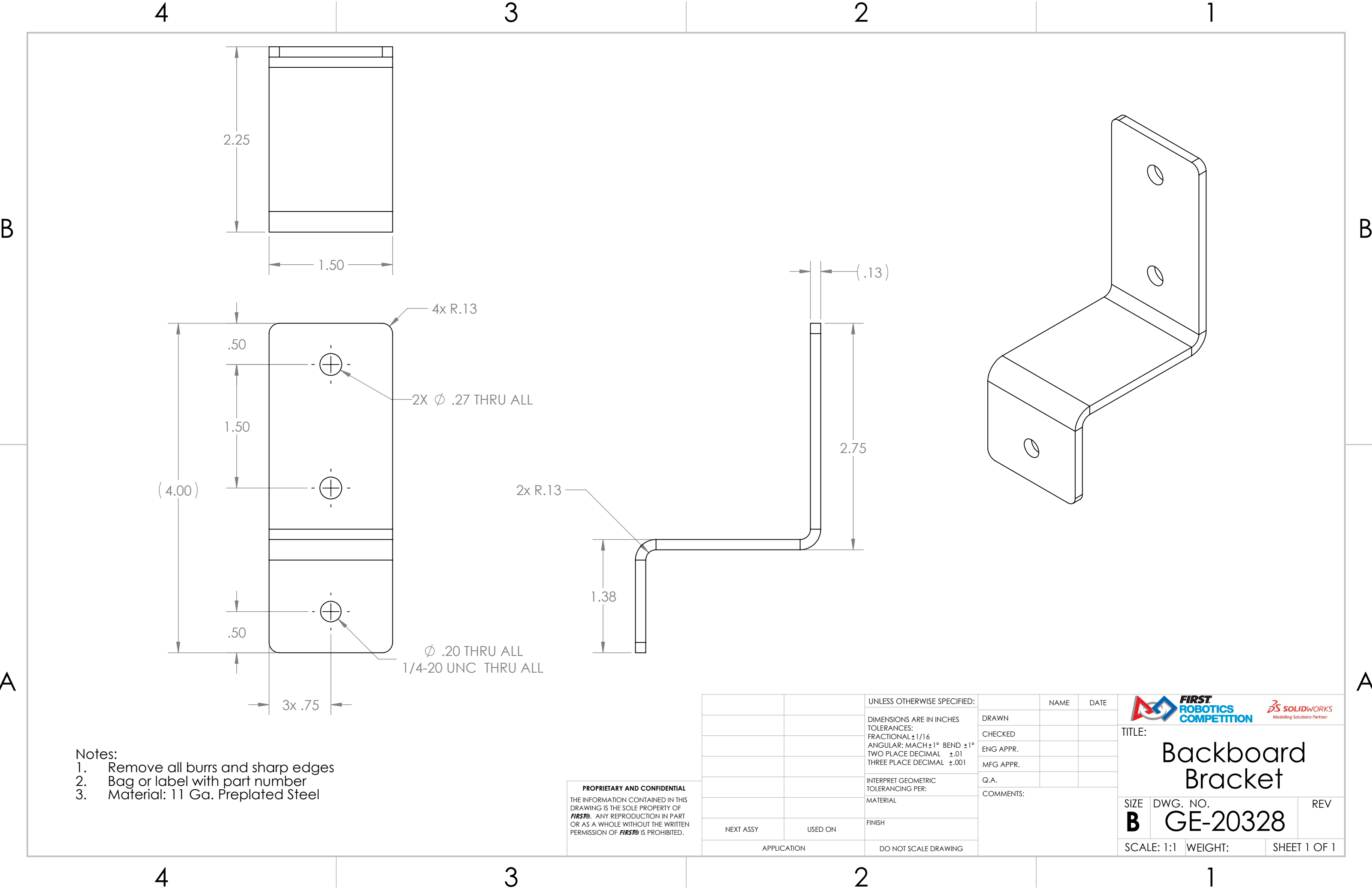


Notes:

1. Material: 1/8" Thick Polycarbonate, Clear
2. Vinyl to be applied to face.
3. Tag or label with part number
4. Remove burrs and sharp edges



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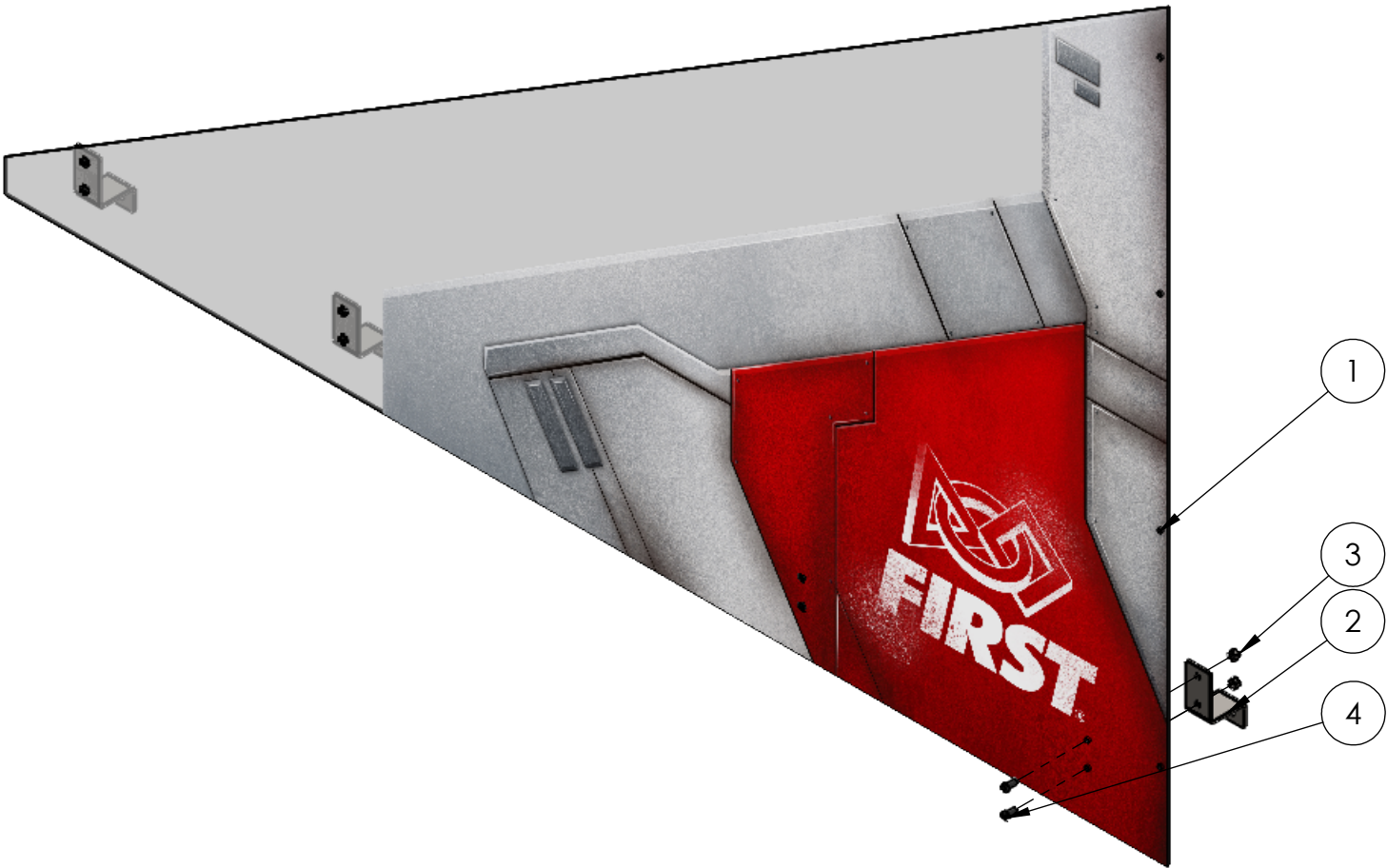
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 				
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  <h1>Power Port Backboard</h1>				
		TOLERANCES:	CHECKED							
		FRACTIONAL $\pm 1/16$	ENG APPR.							
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.							
		TWO PLACE DECIMAL $\pm .01$	Q.A.							
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE		DWG. NO.		REV
		INTERPRET GEOMETRIC TOLERANCING PER:				B		GE-20327		
		MATERIAL								
		FINISH								
NEXT ASSY	USED ON					SCALE: 1:8		WEIGHT:		SHEET 1 OF 1
APPLICATION		DO NOT SCALE DRAWING								



- Notes:
- 1. Remove all burrs and sharp edges
  - 2. Bag or label with part number
  - 3. Material: 11 Ga. Preplated Steel

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 						
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  <h1>Backboard Bracket</h1>						
		TOLERANCES:	CHECKED									
		FRACTIONAL $\pm 1/16$	ENG APPR.									
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.									
		TWO PLACE DECIMAL $\pm .01$	Q.A.									
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE <b>B</b>			DWG. NO. <b>GE-20328</b>		REV	
		INTERPRET GEOMETRIC TOLERANCING PER:										
		MATERIAL										
		FINISH										
NEXT ASSY	USED ON											
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:1    WEIGHT:    SHEET 1 OF 1									



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20331-Red	Power Port Backboard Left with Vinyl	1
2	GE-20328	Backboard Bracket	4
3	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	8
4	round_hex_.25_20_.625_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 5/8" long, fully threaded	8

Note:  
1. Plastic with vinyl same for both RED and BLUE

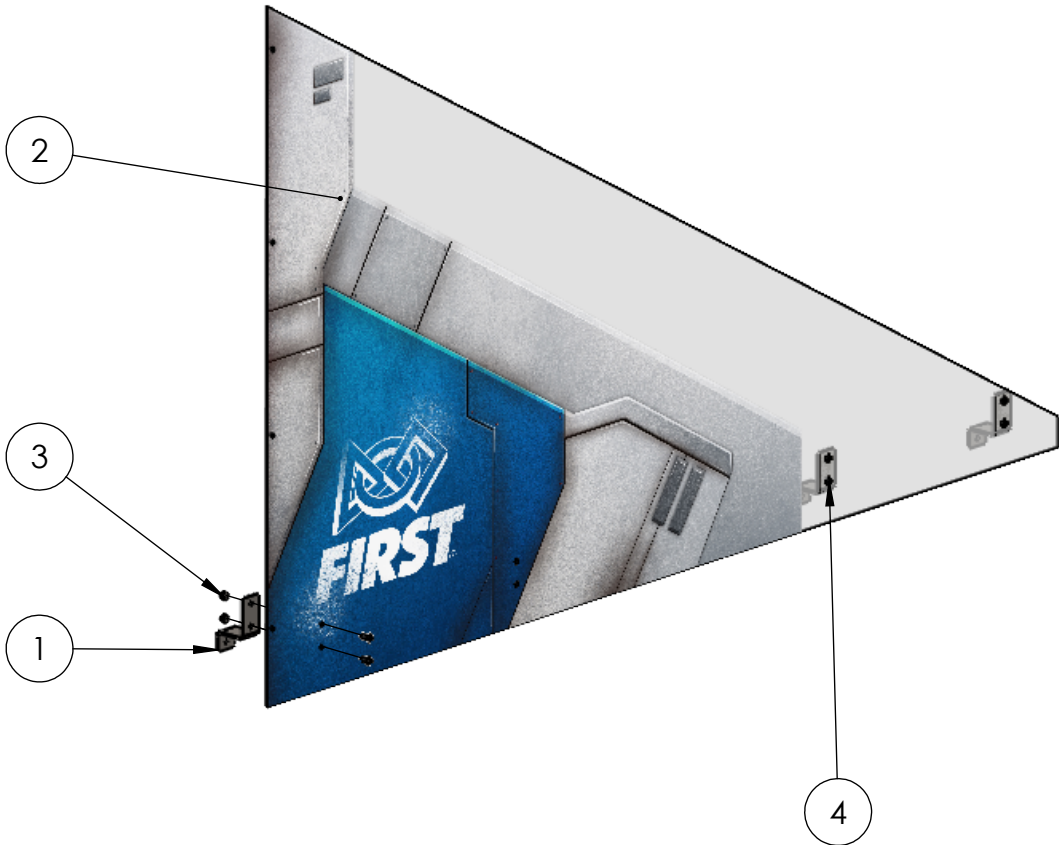
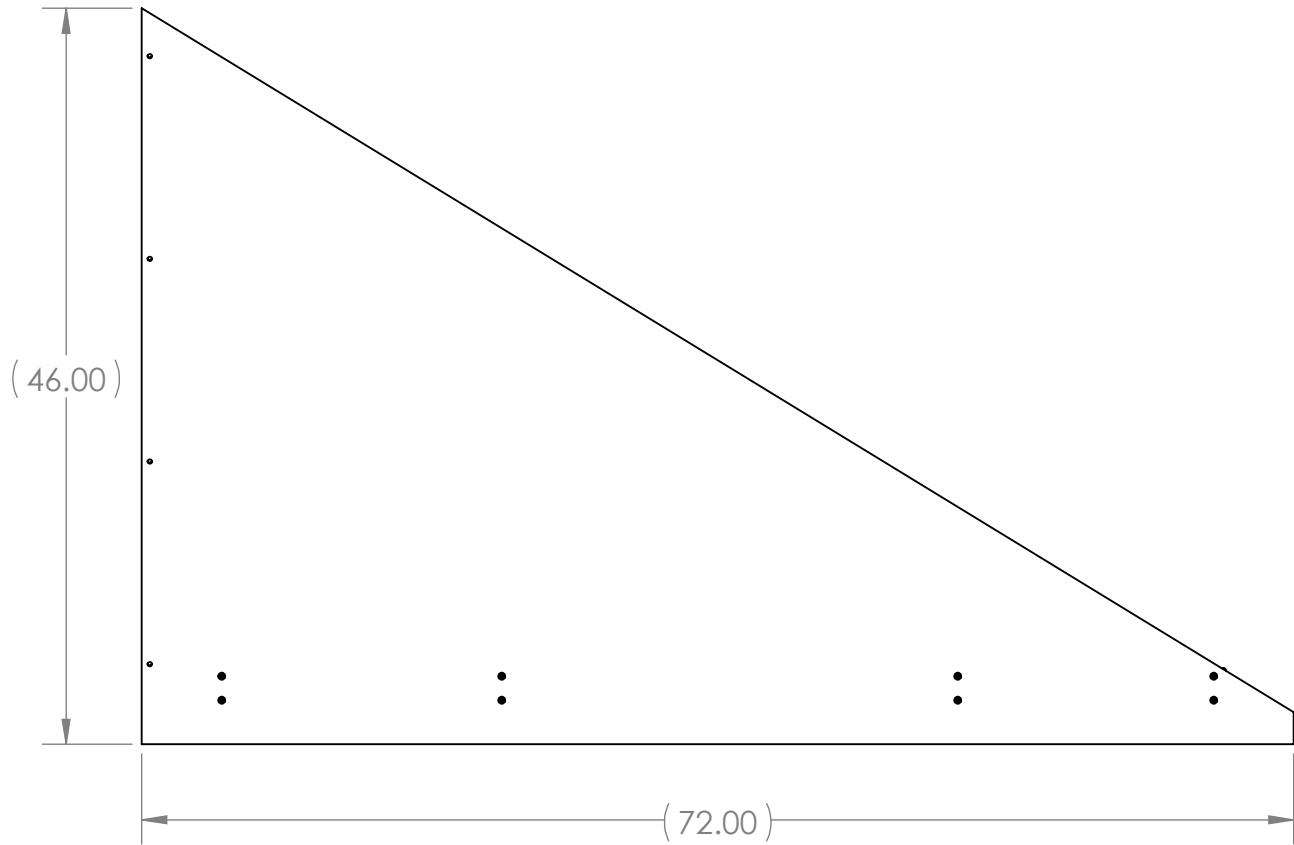
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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE:  <h1>Power Port Backboard Left</h1></div> <div><div>SIZE</div><div>DWG. NO.</div><div>REV</div></div> <div><div>SCALE: 1:12</div><div>WEIGHT:</div><div>SHEET 1 OF 1</div></div>	
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN				
			CHECKED				
			ENG APPR.				
			MFG APPR.				
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			COMMENTS:	
		MATERIAL					
		FINISH					
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING					



B

B



Note: Item 2 can be red or blue. See drawing for more details.

A

A

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20328	Backboard Bracket	4
2	GE-20332	Power Port Backboard Right with Vinyl	1
3	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	8
4	round_hex_.25_20_.62_5_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 5/8" long, fully threaded	8

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			
			TITLE: Power Port Backboard Right Assembly		
			SIZE B	DWG. NO. GE-20330	REV
			SCALE: 1:12 WEIGHT:		SHEET 1 OF 1

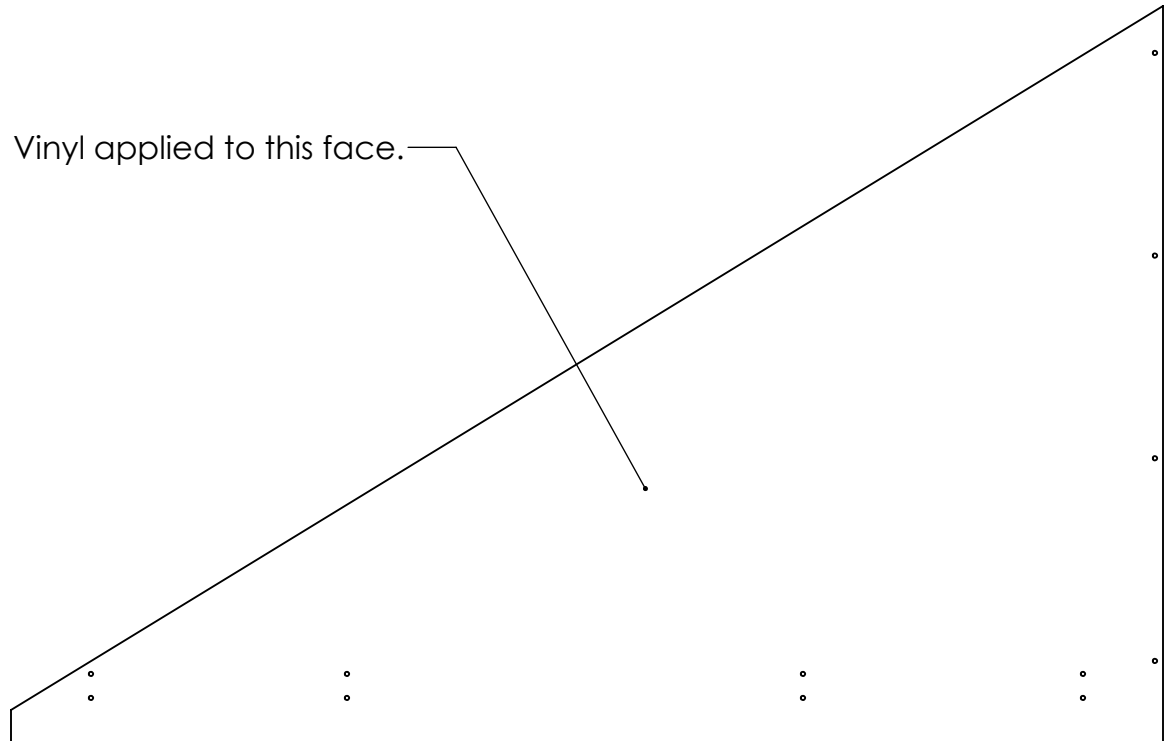
4

3

2

1

B



GE-20327



A

Notes: Tag or label with part number

Color Variations		
Part Number	Vinyl Image	QTY per field
GE-20331-Blue	GE-20331-Blue-Vinyl	1
GE-20331-Red	GE-20331-Red-Vinyl	1

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		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL ±1/16	ENG APPR.		
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.		
		TWO PLACE DECIMAL ±.01	Q.A.		
		THREE PLACE DECIMAL ±.001	COMMENTS:		
		INTERPRET GEOMETRIC			
		TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



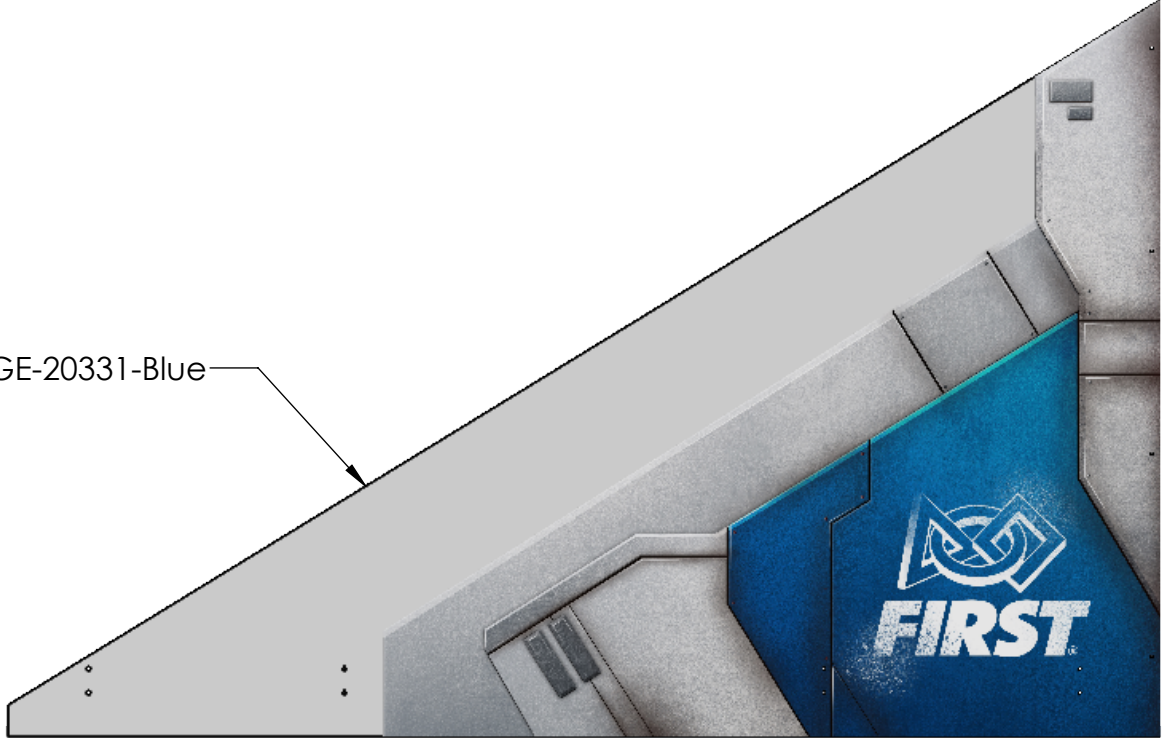
TITLE: Power Port Backboard Left with Vinyl

SIZE DWG. NO. REV

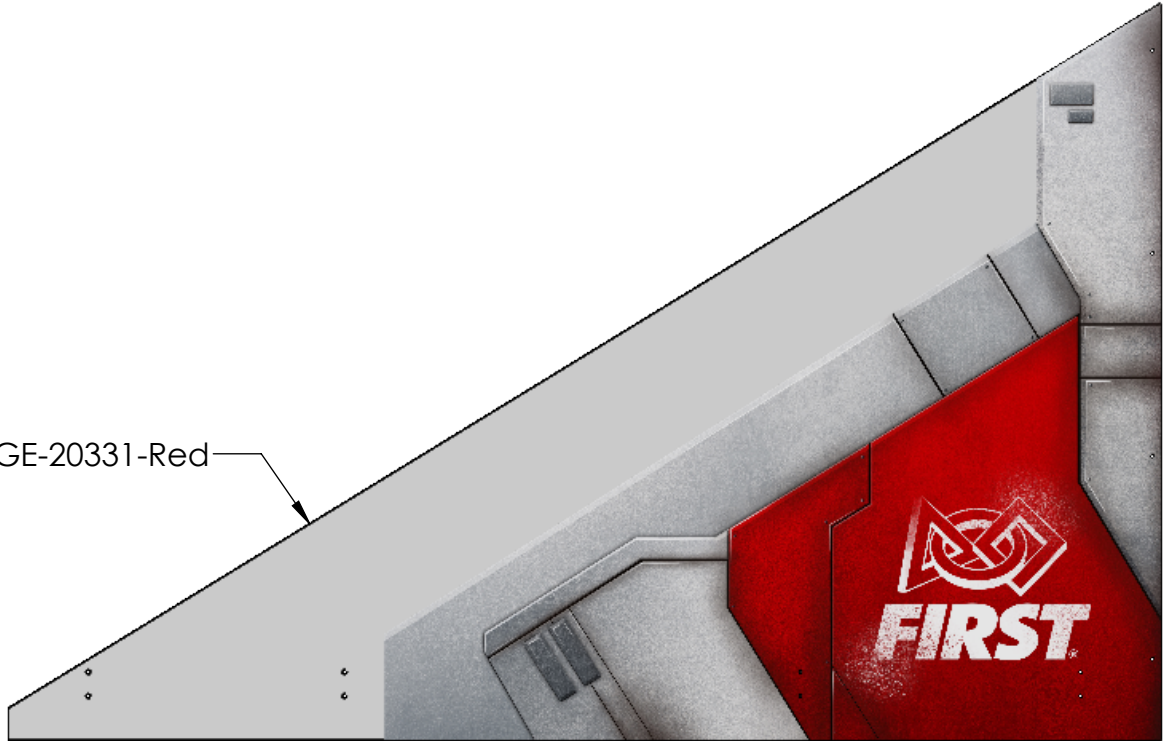
B GE-20331

SCALE: 1:12 WEIGHT: SHEET 1 OF 1

GE-20331-Blue



GE-20331-Red



B

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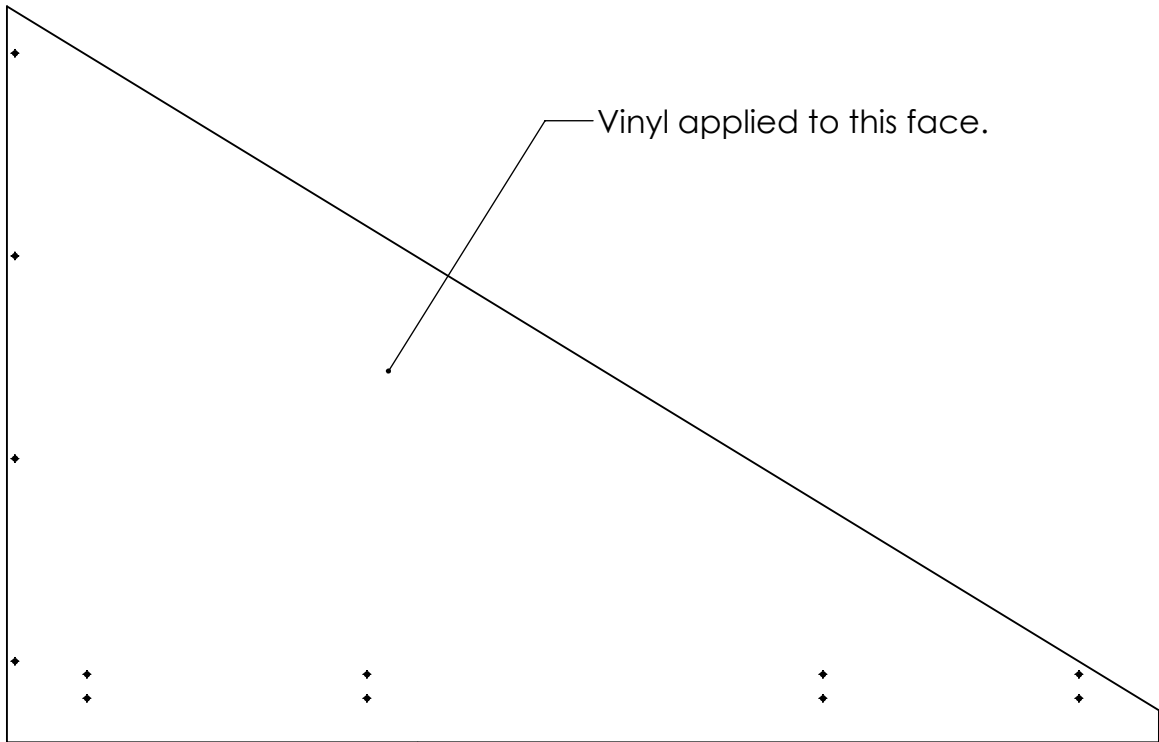
3

2

1

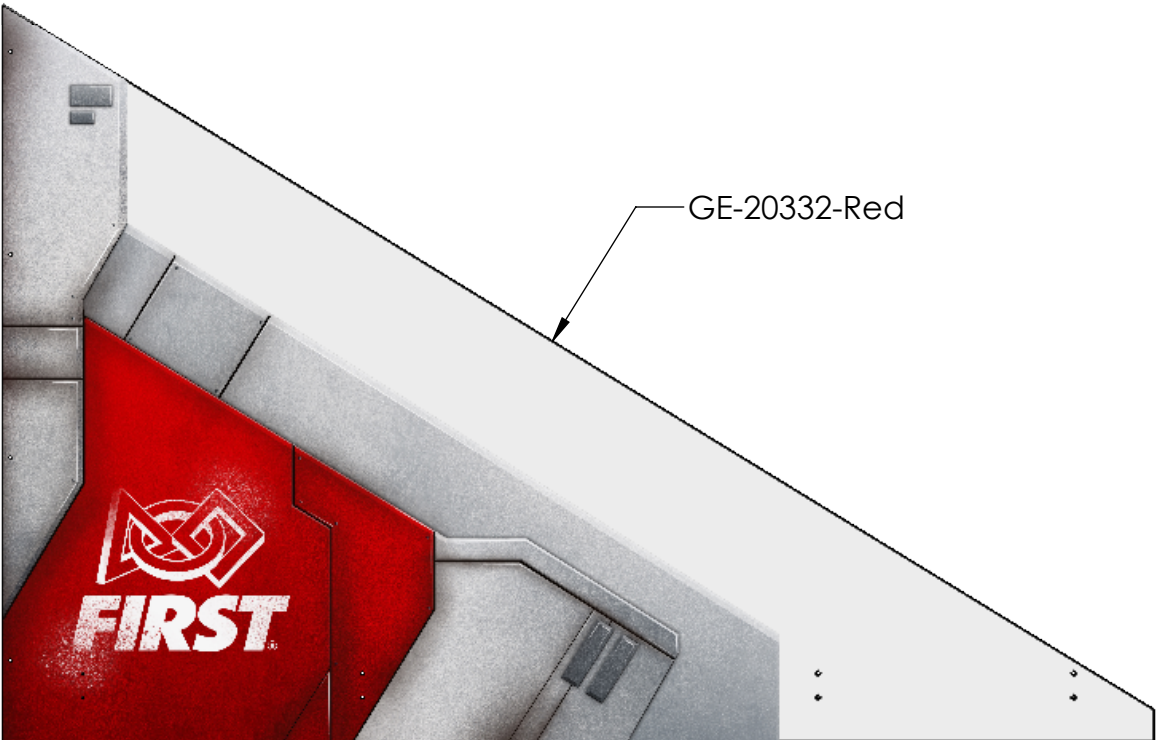
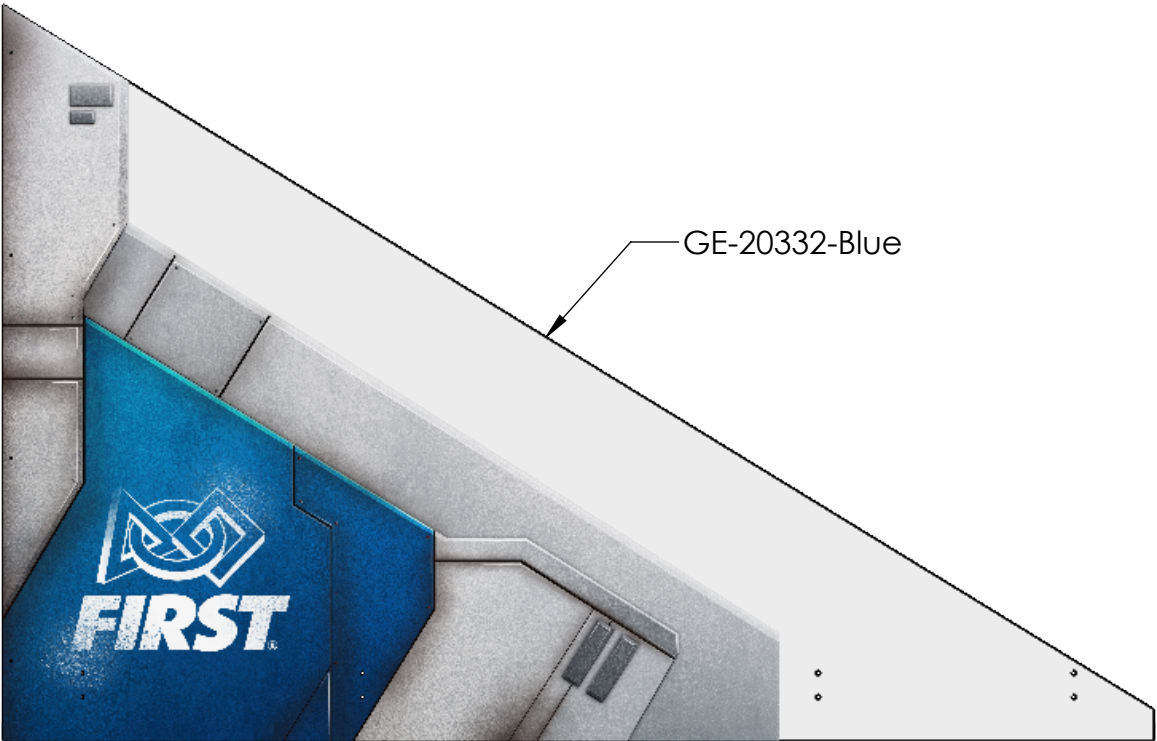
B

B



GE-20327

Notes: Tag or label with part number





A

Color Variations		
Part Number	Vinyl Image	QTY per field
GE-20332-Red	GE-20332-Red-Vinyl	1
GE-20332-Blue	GE-20332-Blue-Vinyl	1

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		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE: Power Port Backboard Right with Vinyl

SIZE **B** DWG. NO. **GE-20332** REV

SCALE: 1:12 WEIGHT: SHEET 1 OF 1

4

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4

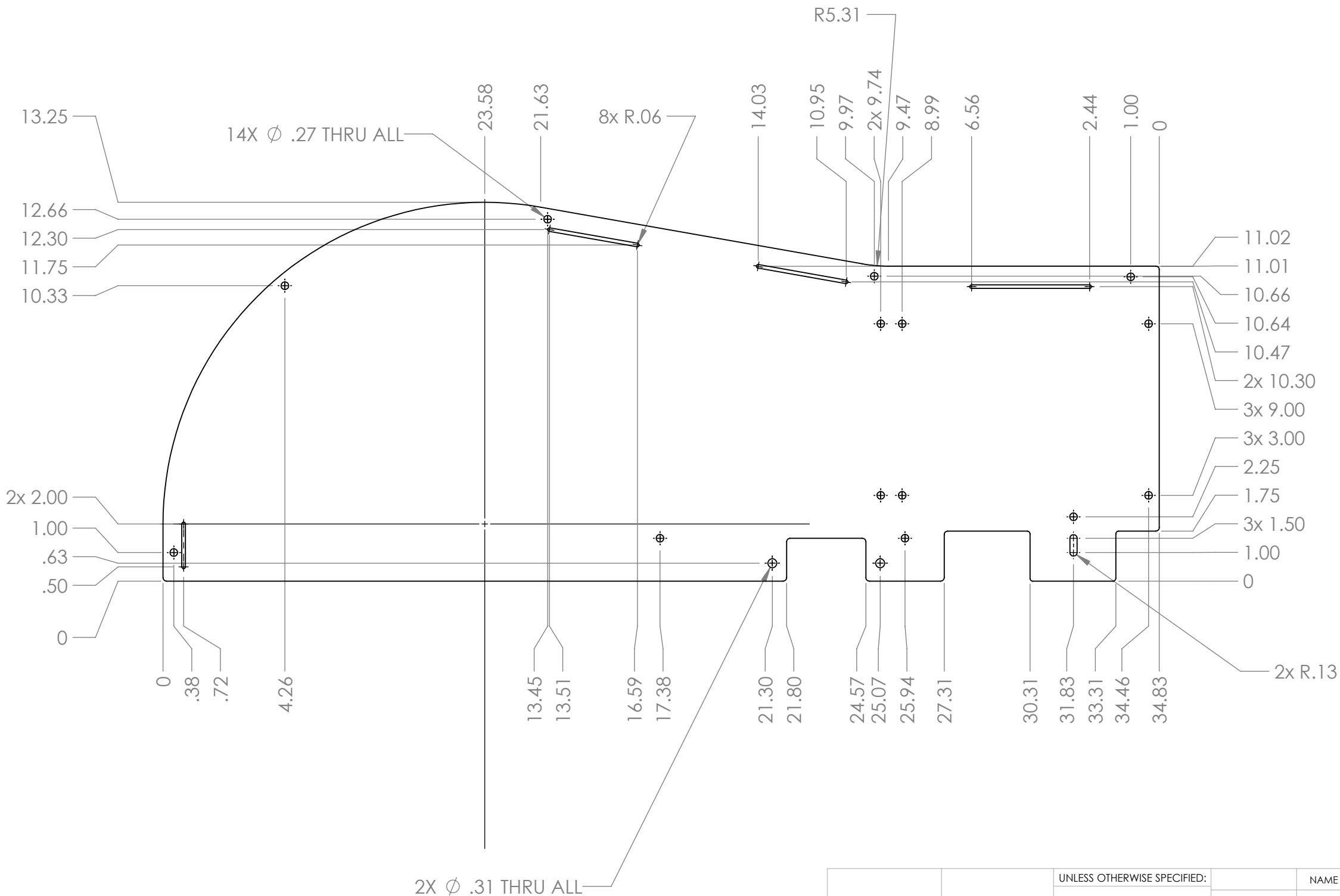
3

2

1

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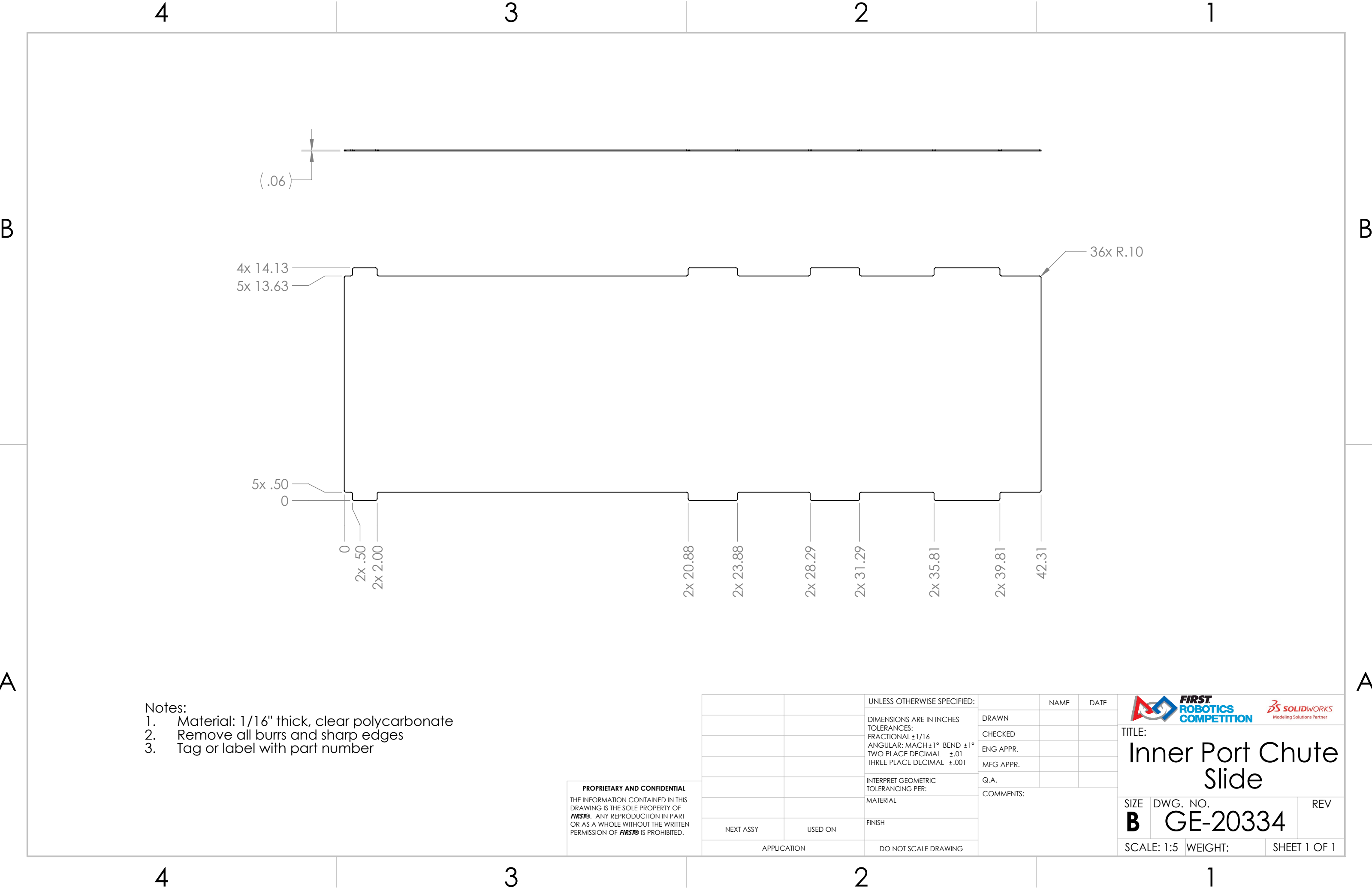
Notes:

1. Material: 1/4" thick, clear polycarbonate.
2. Remove all burrs and sharp edges.
3. Tag or label with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <h1>Inner Port Chute Wall</h1>		
		TOLERANCES:	CHECKED					
		FRACTIONAL ±1/16	ENG APPR.					
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.					
		TWO PLACE DECIMAL ±.01						
		THREE PLACE DECIMAL ±.001						
		INTERPRET GEOMETRIC	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20333</b>		
		TOLERANCING PER:	COMMENTS:					
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON					SCALE: 1:4 WEIGHT: SHEET 1 OF 1		
APPLICATION		DO NOT SCALE DRAWING						





- Notes:
1. Material: 1/16" thick, clear polycarbonate
  2. Remove all burrs and sharp edges
  3. Tag or label with part number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	  TITLE: <b>Inner Port Chute Slide</b>
		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			SIZE DWG. NO. REV
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				SCALE: 1:5 WEIGHT: SHEET 1 OF 1
		MATERIAL				
		FINISH				
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

4

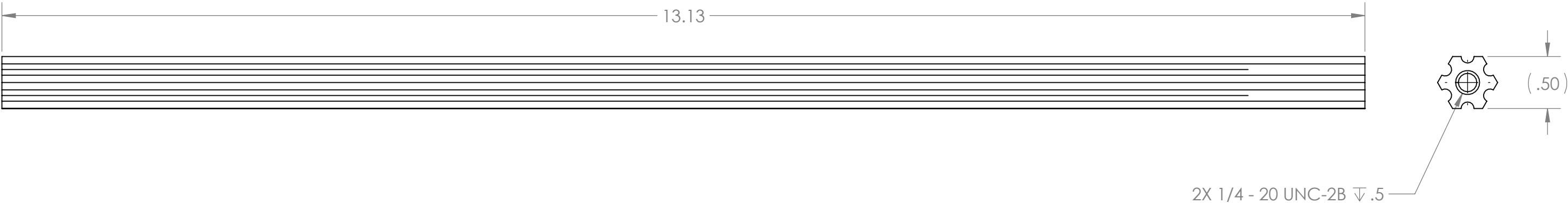
3

2

1

B

B





- Notes:
- 1. Material: Aluminum
  - 2. Description: AndyMark Churro
  - 3. Make from AndyMark PN: am-3101-6, or equivalent.
  - 4. Bag or tag with part number.

A

A

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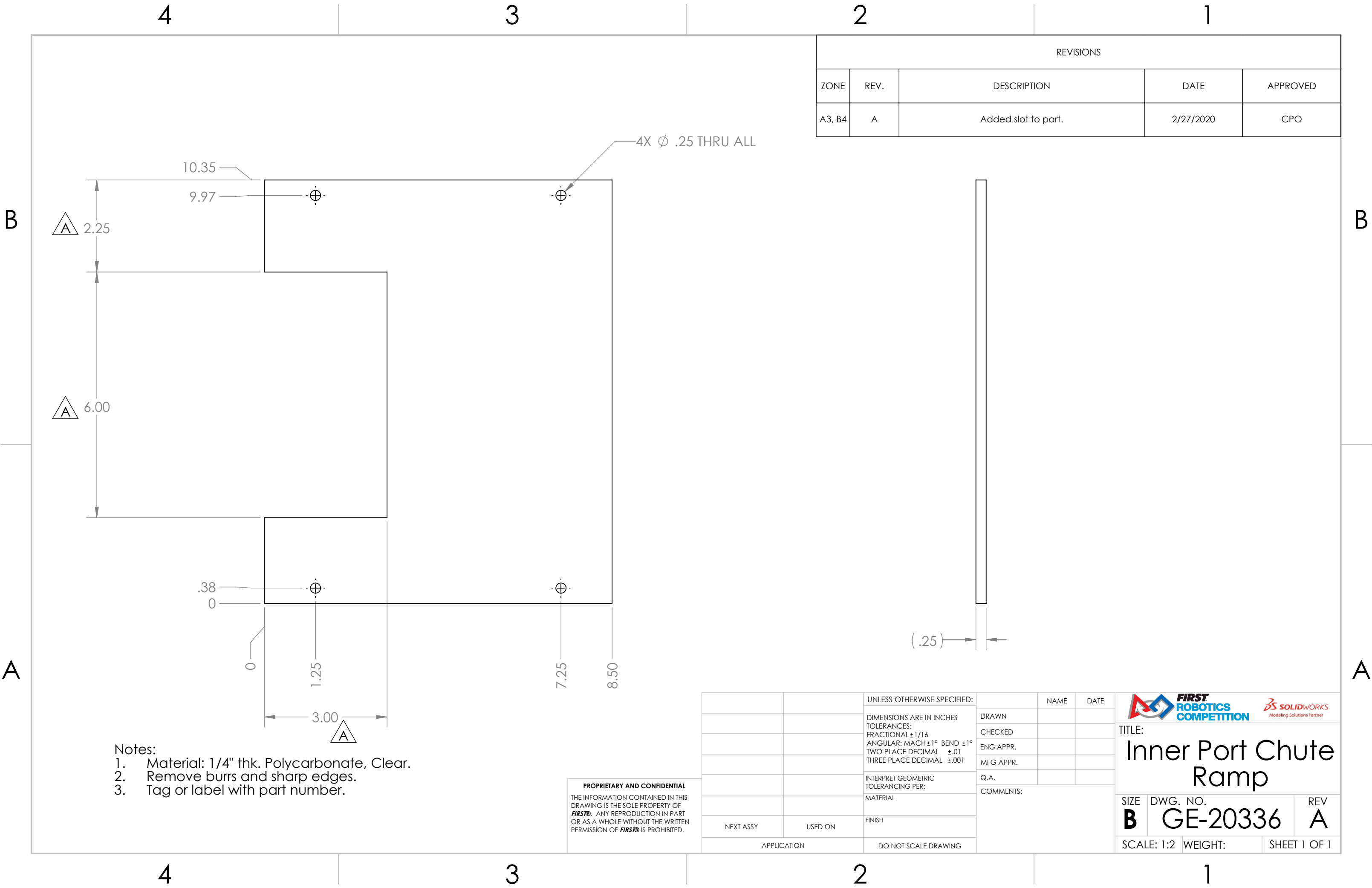
		UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN	NAME	DATE	<div></div> <div>TITLE:  Inner Port Chute Churro</div>
			CHECKED			
			ENG APPR.			
			MFG APPR.			
			Q.A.			
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <div>BGE-20335</div>
		MATERIAL				
		FINISH				
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:1 WEIGHT: SHEET 1 OF 1			

4

3

2



1



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3, B4	A	Added slot to part.	2/27/2020	CPO

- Notes:
- Material: 1/4" thk. Polycarbonate, Clear.
  - Remove burrs and sharp edges.
  - Tag or label with part number.

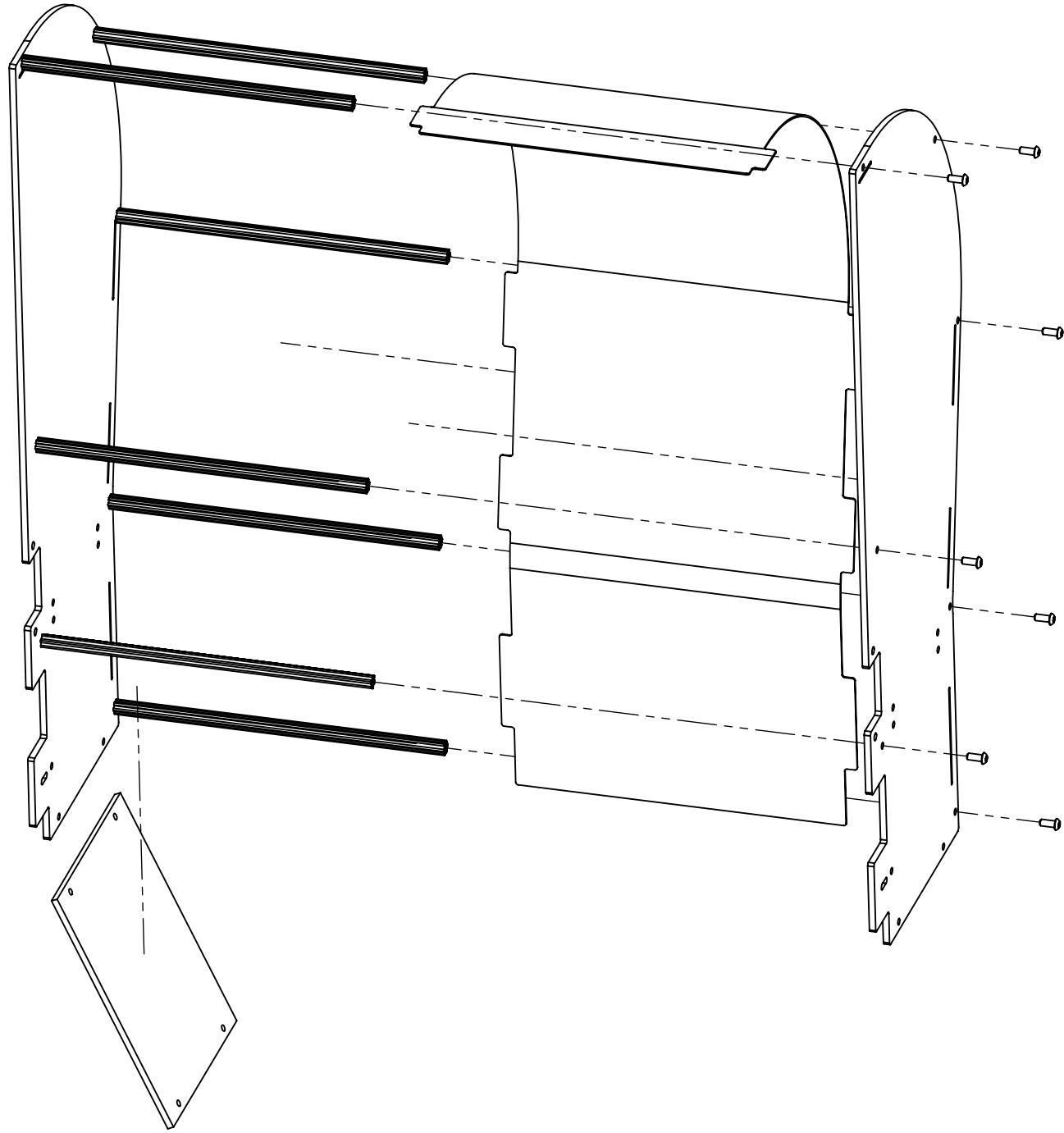
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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>			
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <div>Inner Port Chute Ramp</div>			
		TOLERANCES:	CHECKED						
		FRACTIONAL $\pm 1/16$	ENG APPR.						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.						
		TWO PLACE DECIMAL $\pm .01$							
		THREE PLACE DECIMAL $\pm .001$							
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.						
		MATERIAL	COMMENTS:						
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING				SIZE <b>B</b>	DWG. NO. <b>GE-20336</b>	REV <b>A</b>	
						SCALE: 1:2		WEIGHT:	SHEET 1 OF 1





A

B



ITEM NO.	PART NUMBER	DESCRIPTION	
1	GE-20333	Inner Port Chute Wall	2
2	GE-20334	Inner Port Chute Slide	1
3	GE-20335	Inner Port Chute Churro	7
4	GE-20336	Inner Port Chute Ramp	1
5	round_hex_.25_20_.62_5_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 5/8" long, fully threaded	14

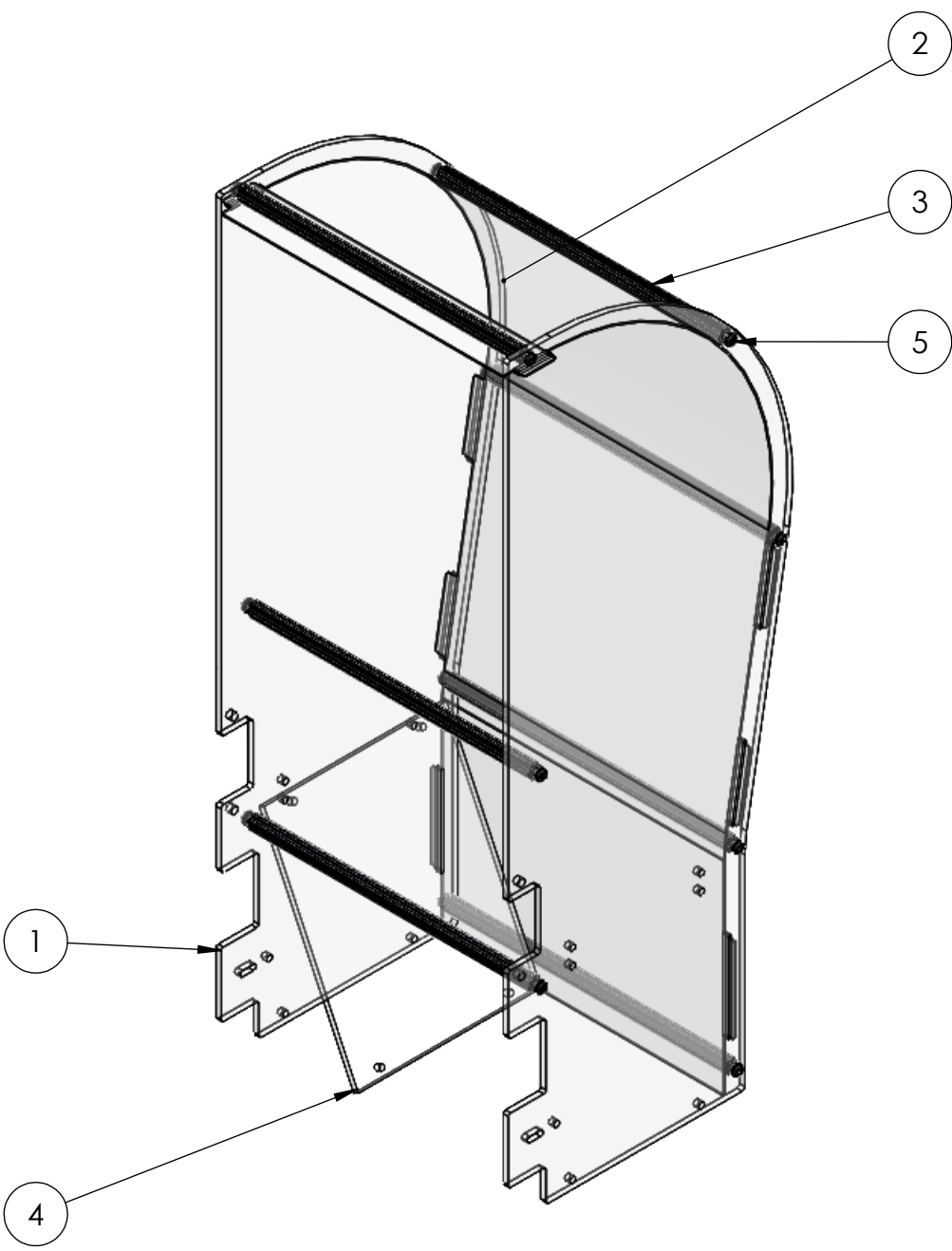
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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div></div> <div><div>SOLIDWORKS Modeling Solutions Partner</div></div>			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			TITLE: <div>Inner Port Chute Assembly</div>			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
			Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <div>BGE-20337</div>			
		MATERIAL							
		FINISH				SCALE: 1:6 WEIGHT: SHEET 1 OF 2			
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING							



A

B



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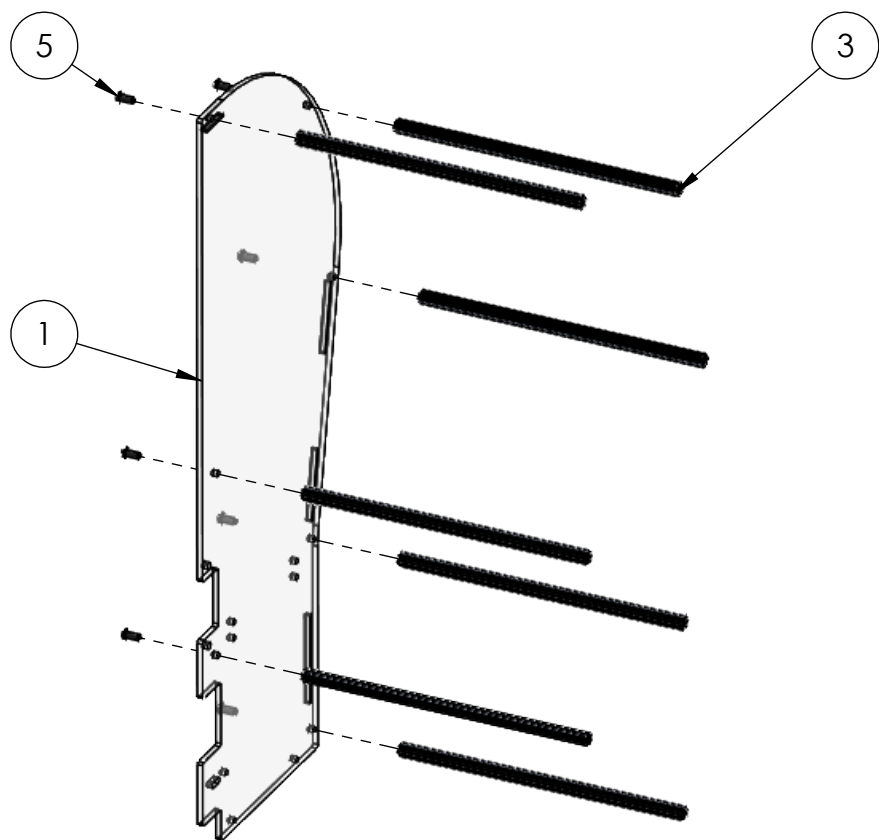
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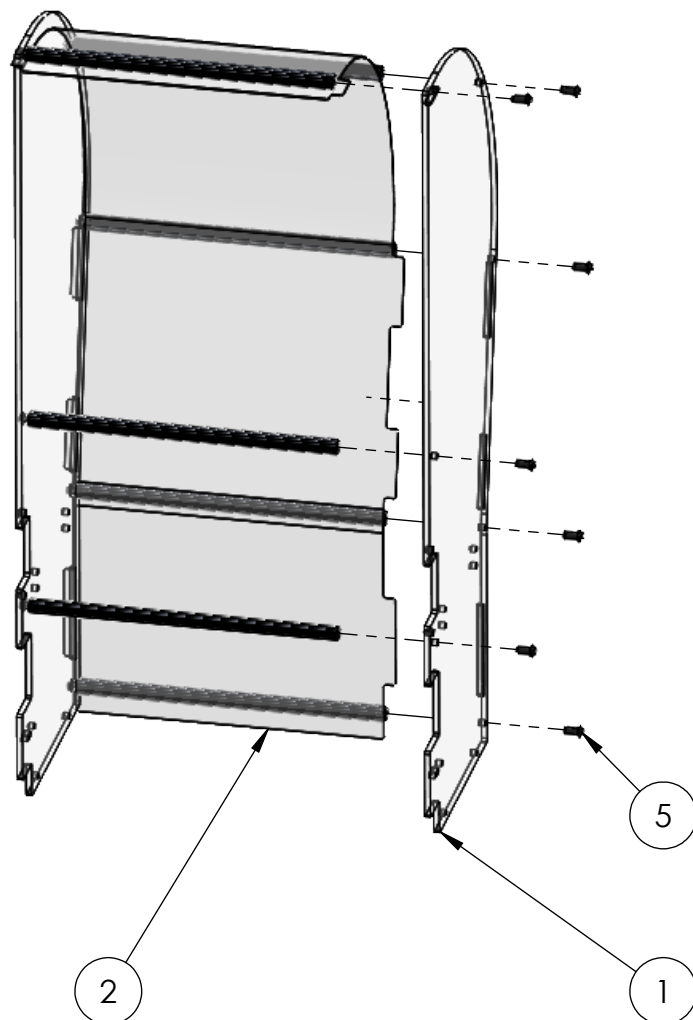
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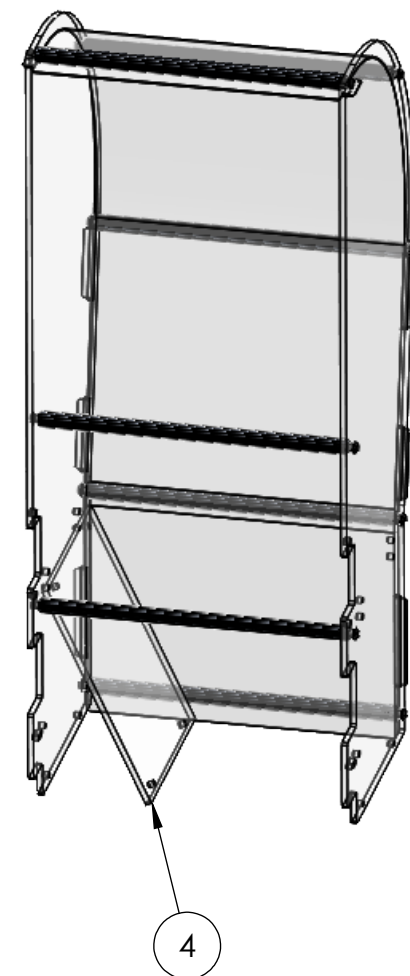
1



- Notes:
1. Attach (3) (qty. 7) to (1) using (5) (qty. 7)





- Notes:
1. Attach (2) to the assembly by bending and aligning the plastic tabs
  2. Attach (1) to the assembly, aligning with the tabs of (2). Bolt using (5) (qty. 7)



- Notes:
1. Attach (4) to the assembly using 50 lb. cable ties.

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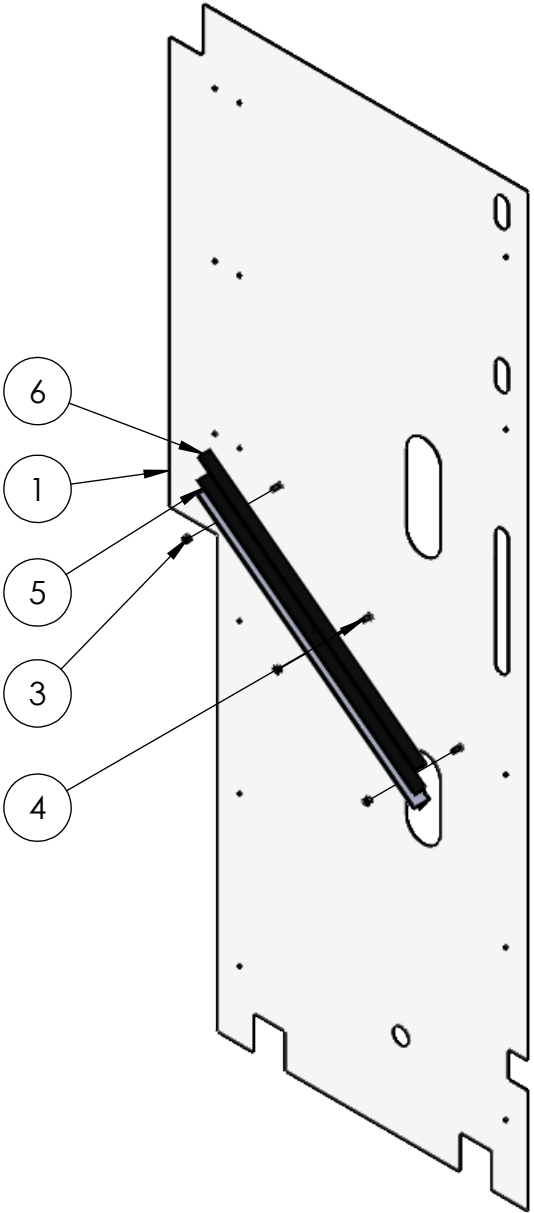
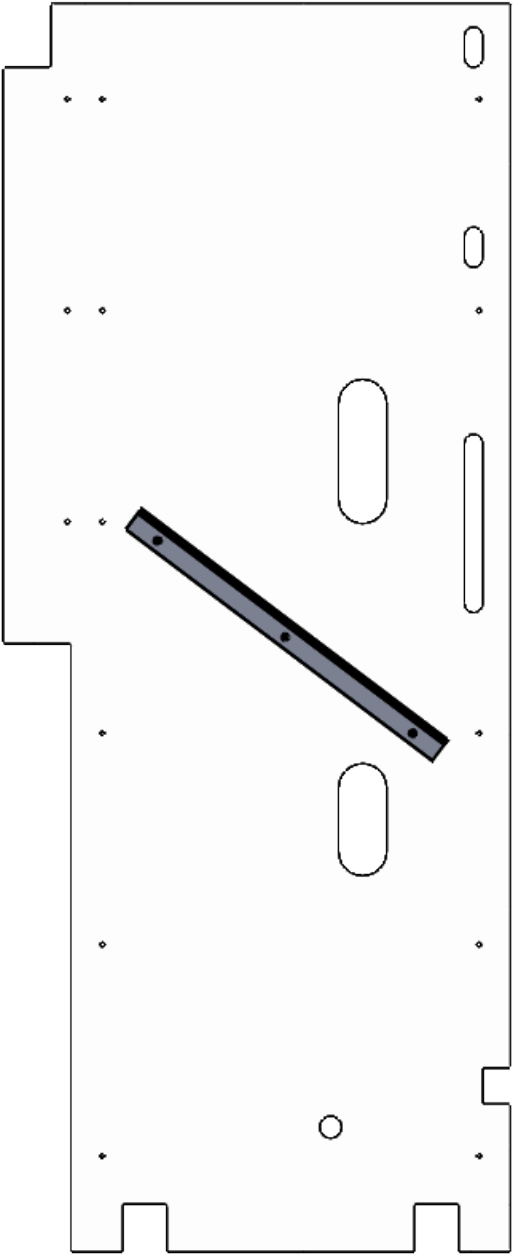
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE:</div> <div>Inner Port Chute Assembly</div> <div><div>SIZE</div><div>B</div><div>DWG. NO.</div><div>GE-20337</div><div>REV</div></div> <div><div>SCALE: 1:8</div><div>WEIGHT:</div><div>SHEET 2 OF 2</div></div>
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			
			CHECKED			
			ENG APPR.			
			MFG APPR.			
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			
		MATERIAL	COMMENTS:			
NEXT ASSY	USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING				

B

B



A

A



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20315	Power Port Base Side Polycarbonate	1
2	GE-20325	Angle, Side Polycarbonate	1
3	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	3
4	round_hex_.25_20_.62_5_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 5/8" long, fully threaded	3
5	Hook_1_24	1"x 24" Hook, Adhesive backed	1
6	Loop_1_24	1" x 24" Loop, Adhesive backed	1

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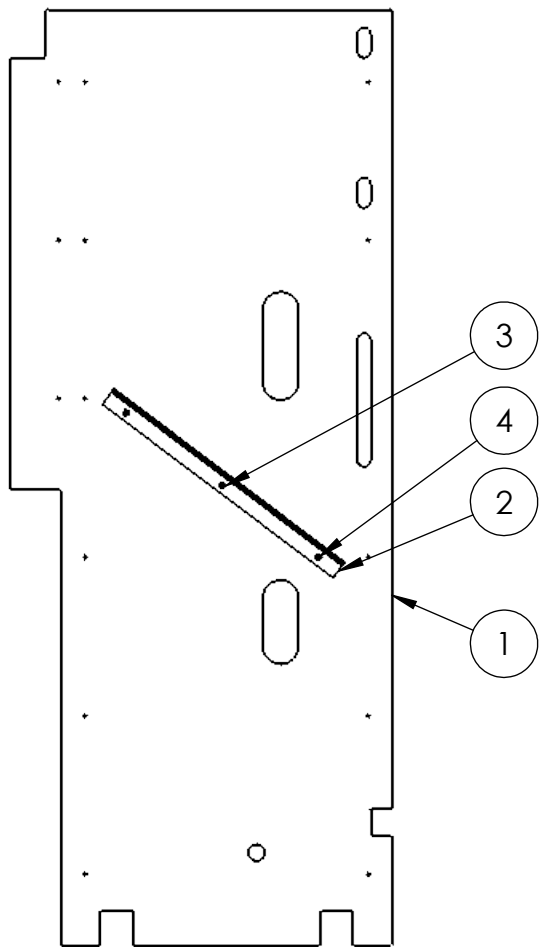
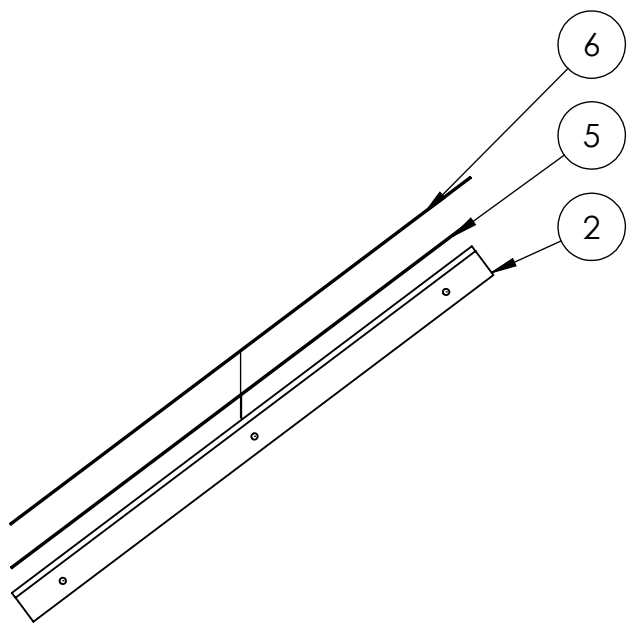
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE: Side Polycarbonate Assembly, Right		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20338		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:24					

4

3

2

1





Notes:

1. Clean and prep (2)
2. Attach (5) to (2) to the back without drilled holes.
3. Attach (6) to (5) leaving protective backing on.

Notes:

1. Remove protective plastic from (1).
2. Attach (2) to one in the orientation shown above.
3. Fasten with (3) and (4) in three locations.

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  Side Polycarbonate Assembly, Right		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20338</b>		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON					SCALE: 1:24 WEIGHT: SHEET 2 OF 2		
APPLICATION		DO NOT SCALE DRAWING						

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2

1

4

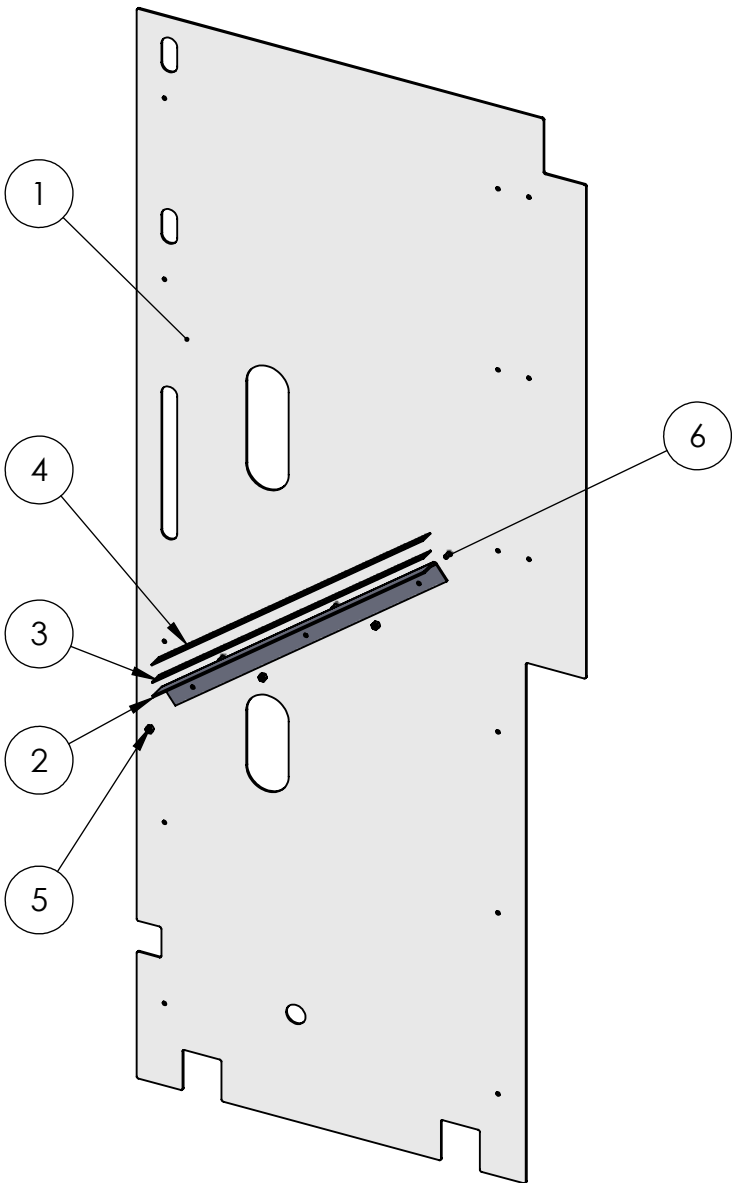
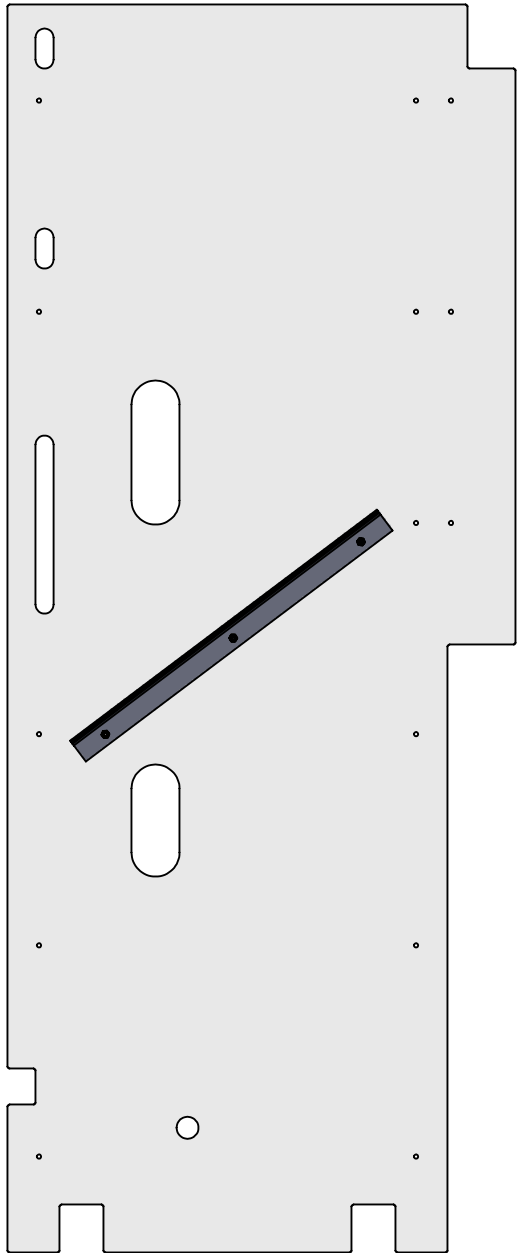
3

2

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B

B





A

A

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20315	Power Port Base Side Polycarbonate	1
2	GE-20325	Angle, Side Polycarbonate	1
3	Hook_1_24	1" x 24" Hook, Adhesive backed	1
4	Loop_1_24	1" x 24" Loop, Adhesive backed	1
5	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	3
6	round_hex_.25_20_.62_5_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 5/8" long, fully threaded	3

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	  TITLE: Side Polycarbonate Assembly, Left	
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN				
		INTERPRET GEOMETRIC TOLERANCING PER:	CHECKED				
		MATERIAL	ENG APPR.				
		FINISH	MFG APPR.				
NEXT ASSY	USED ON		Q.A.			SIZE	DWG. NO.
APPLICATION		DO NOT SCALE DRAWING	COMMENTS:			B	GE-20339
						SCALE: 1:12	WEIGHT:
						SHEET 1 OF 2	

4

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2

1

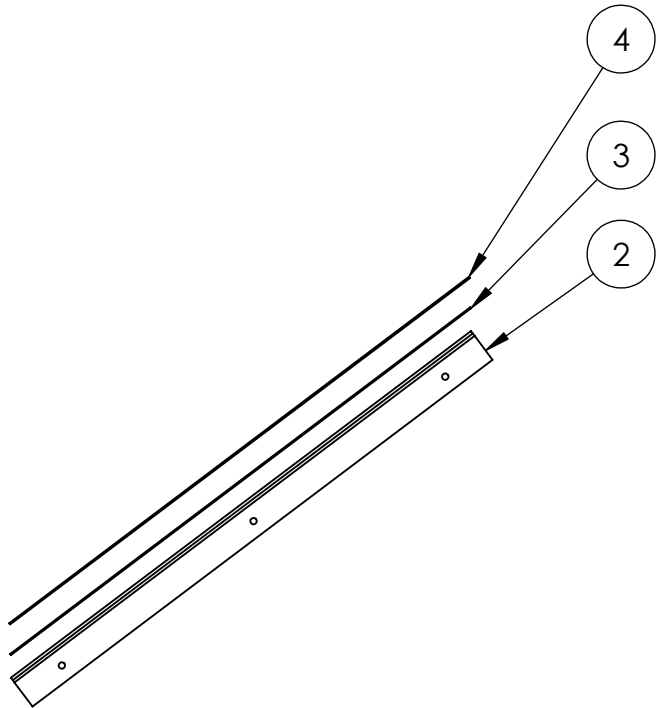
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3

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1

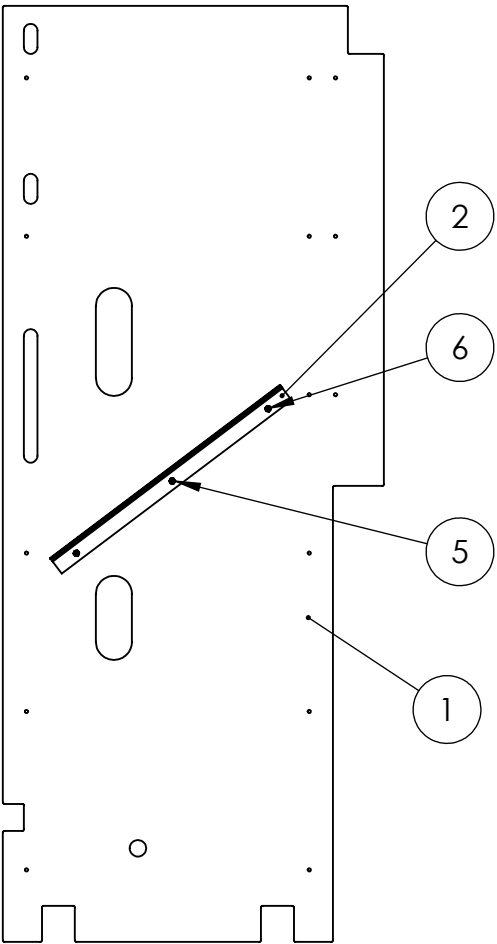
B



Notes:

1. Clean and prep 2 .
2. Attach 3 to 2 to the face without holes.
3. Attach 4 to 3 , but leave the protective backing on.

A





B

Notes:

1. Remove protective plastic from 1 .
2. Attach 2 to the plastic in the orientation shown.
3. Fasten with 6 and 5 in three locations.

A

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		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL: $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			TITLE: Side Polycarbonate Assembly, Left
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				SIZE DWG. NO. REV
		MATERIAL				<b>B</b> GE-20339
		FINISH				SCALE: 1:24 WEIGHT: SHEET 2 OF 2
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING			

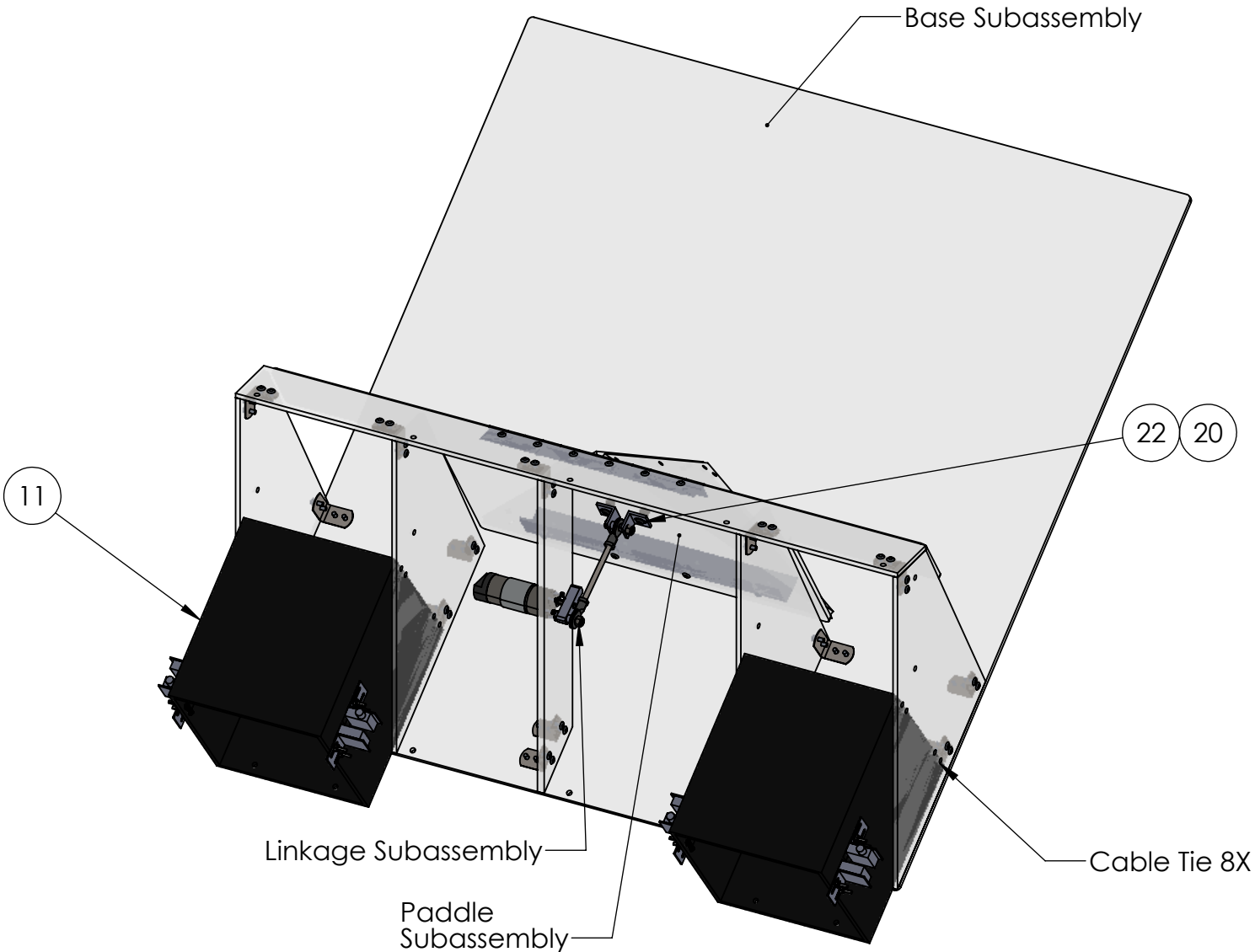
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3



2

1

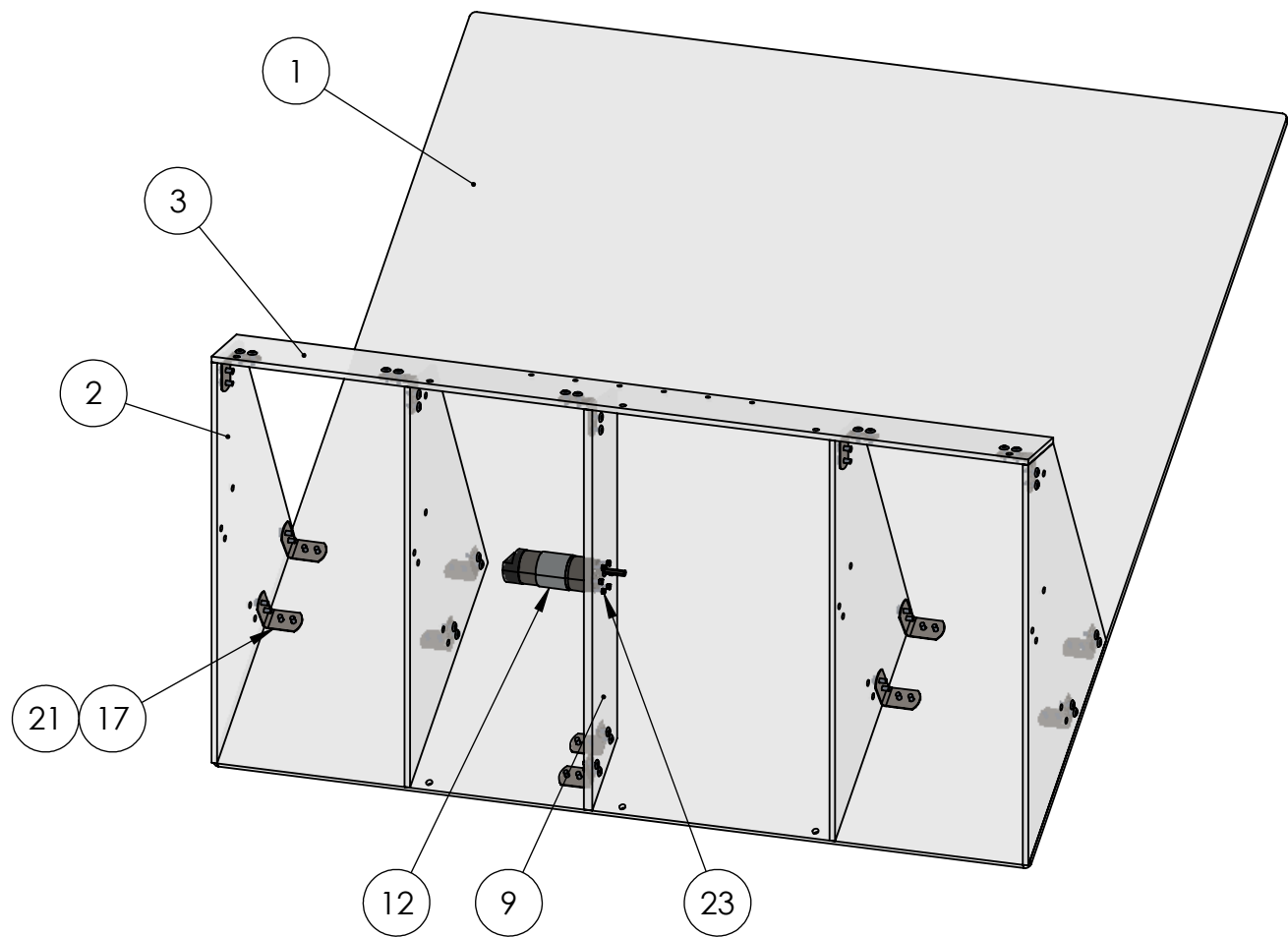
4		3	
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20341	Floor, Outer Port Serializer	1
2	GE-20342	Side Plate, Outer Port Serializer	4
3	GE-20343	Top Plate, Outer Port Serializer	1
4	GE-20344	Hinge, Outer Port Serializer	1
5	GE-20345	Paddle, Outer Port Serializer	1
6	GE-20346	Angle, Outer Port Serializer	1
7	GE-20347	Foot, Outer Port Serializer	1
8	GE-20348	Ramp, Outer Port Serializer	2
9	GE-20349	Motor Mount, Outer Port Serializer	1
10	GE-20364	Igus Bearing	2
11	GE-20370	Counter Assembly	2
12	GE-20381	NeverRest 60	1
13	GE-20382	Hub	1
14	GE-20384	L Bracket	2
15	GE-20385	Spacer	3
16	GE-20399	Cover, Outer Port Serializer	1
17	Clamp_4hole	4 Hole Clamp, TCH: 504-1700800	15
18	CUP POINT SET SCREW 10-24_.50	Cup Point Set Screw 10-24	1
19	hex_.25_20_1.25	Hex Head Bolt, 1/4-20 x 1.25", Steel	2
20	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	4
21	rivet_.1875_.251-.375	3/16" Aluminum Rivet, .251-.375 Grip Range	80
22	round_hex_.25_20_.625_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 5/8" long, fully threaded	2
23	socket_hex_3mm_14mm	Socket Head Screw, 3mm x .5mm x 14mm	6
24	threaded_rod_.25_20_4	Threaded Rod, 1/4-20 x 4"	1



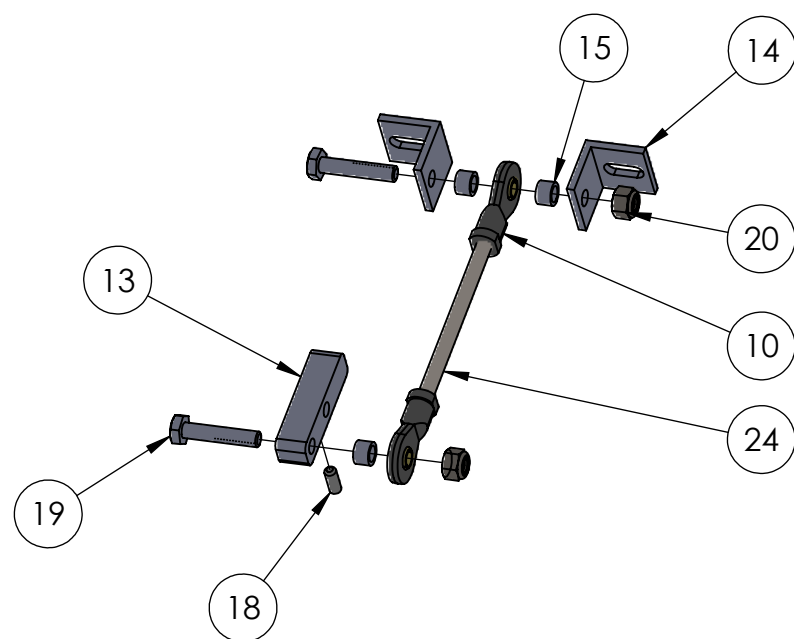
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			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20340</b>		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:8			WEIGHT:		SHEET 1 OF 2

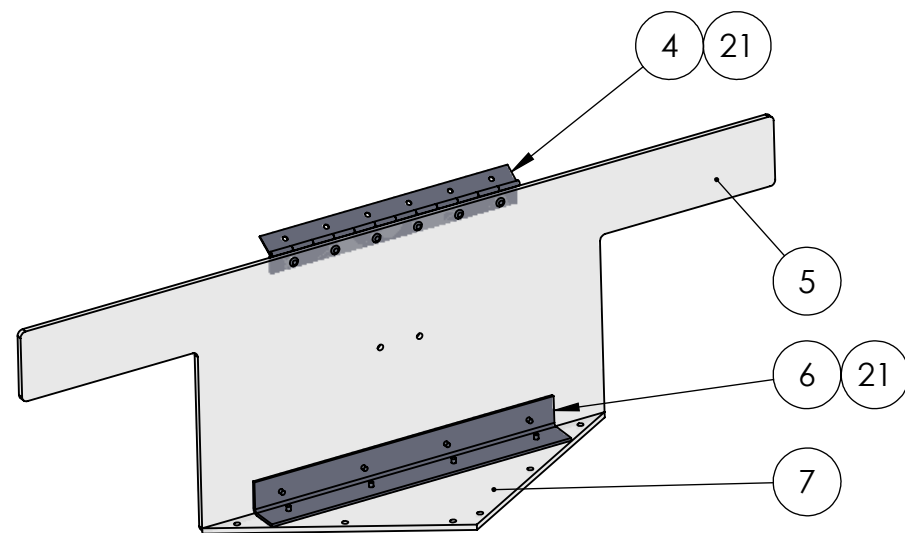




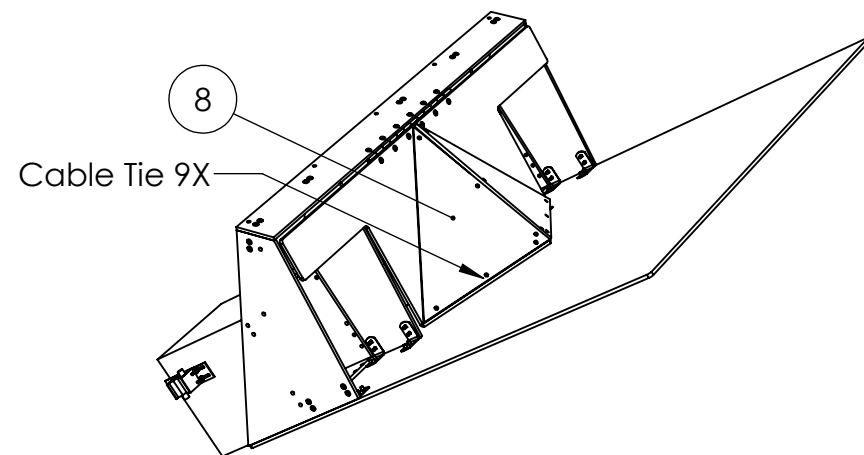
Base Subassembly



Linkage Subassembly





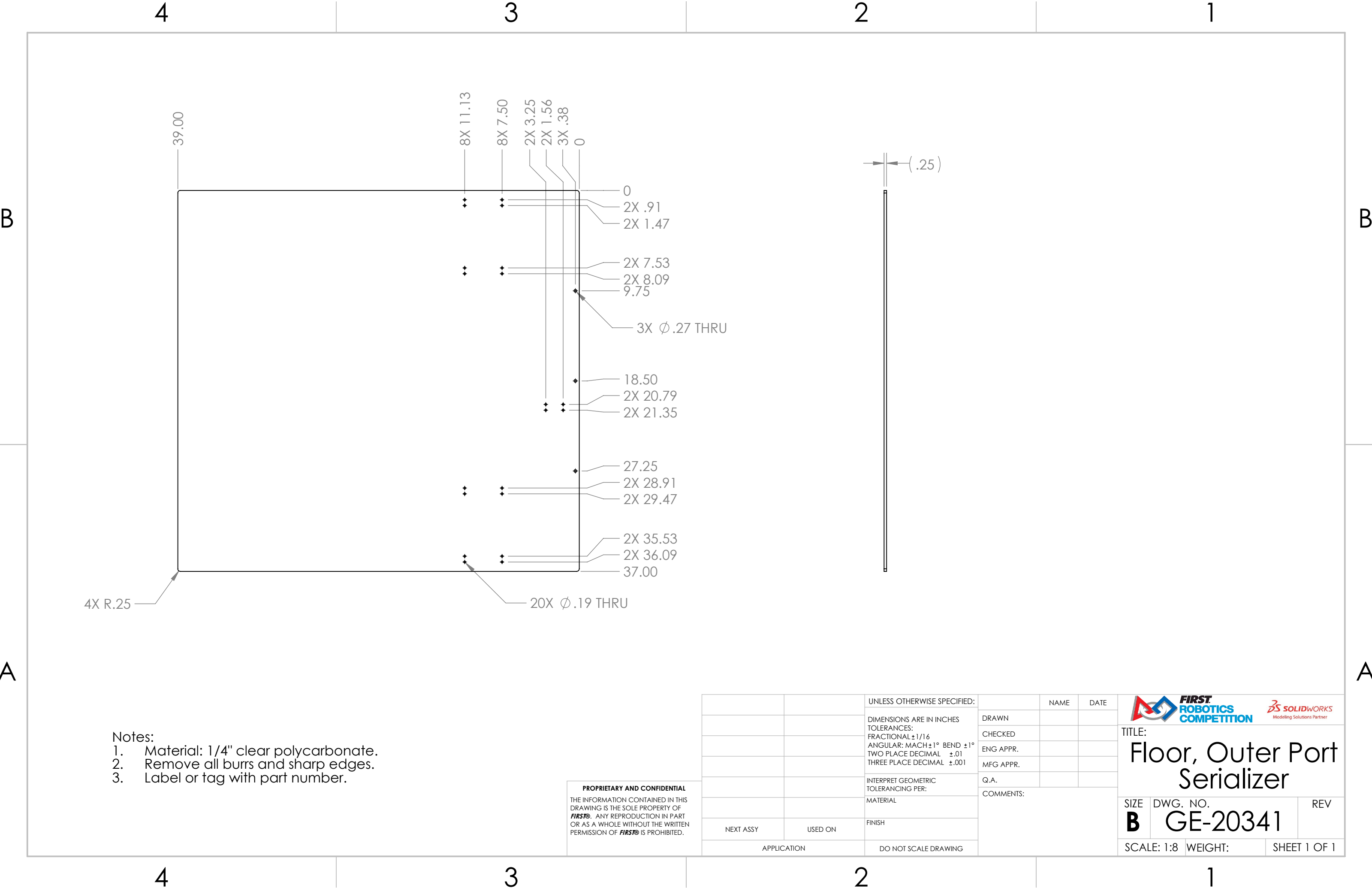
Paddle Subassembly



Cable Tie 9X



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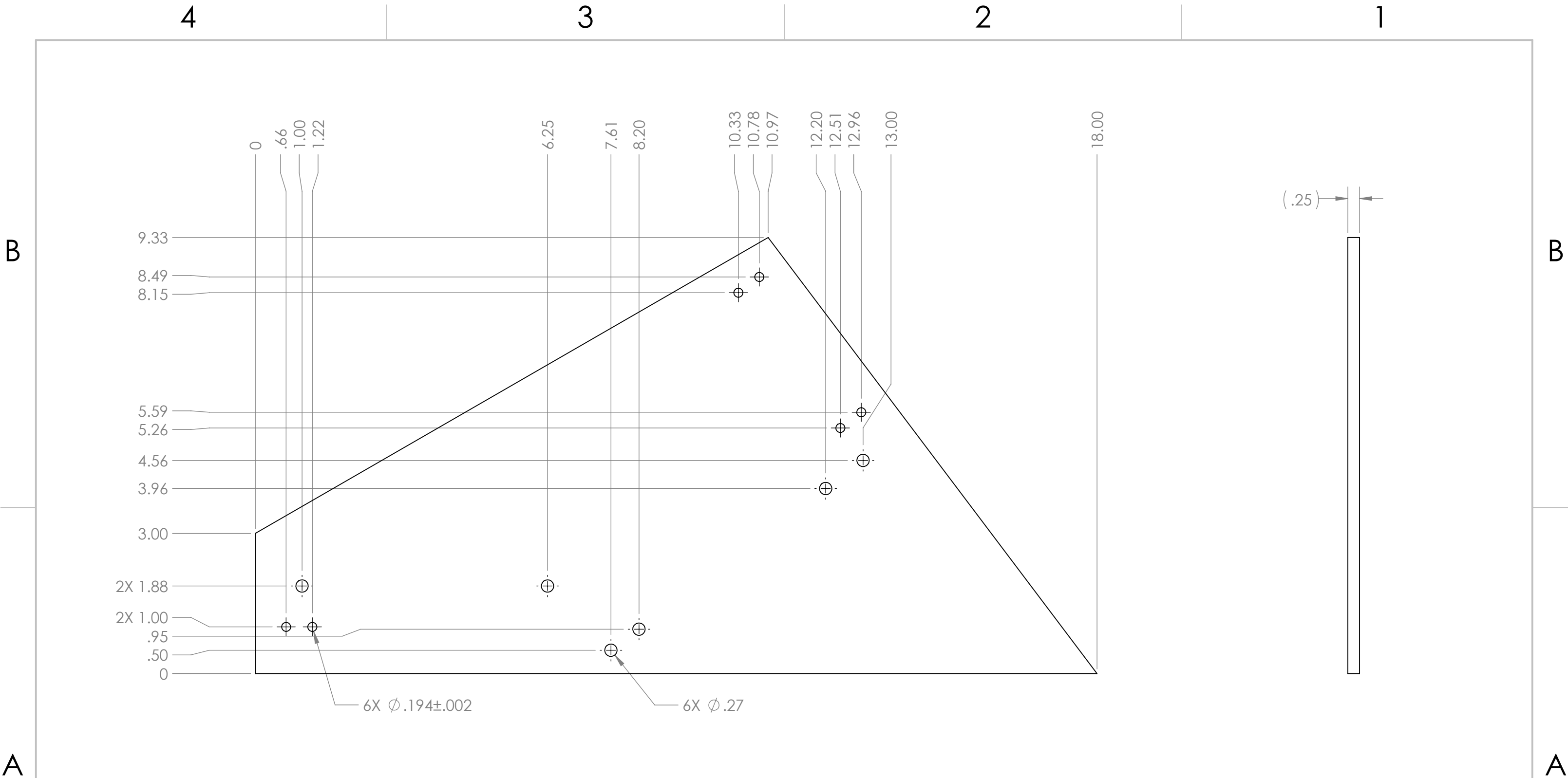
		UNLESS OTHERWISE SPECIFIED:  DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001  INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL  FINISH	DRAWN	NAME	DATE	<div></div>		
			CHECKED					
			ENG APPR.					
			MFG APPR.			TITLE:  <div>Outer Port Serializer</div>		
			Q.A.					
			COMMENTS:					
NEXT ASSY	USED ON					SIZE	DWG. NO.	REV
						B	GE-20340	
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:12 WEIGHT:		SHEET 2 OF 2



- Notes:
1. Material: 1/4" clear polycarbonate.
  2. Remove all burrs and sharp edges.
  3. Label or tag with part number.



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		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <h1>Floor, Outer Port Serializer</h1>			
		TOLERANCES:	CHECKED						
		FRACTIONAL $\pm 1/16$	ENG APPR.						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.						
		TWO PLACE DECIMAL $\pm .01$							
		THREE PLACE DECIMAL $\pm .001$							
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.						
		MATERIAL	COMMENTS:						
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING				SIZE <b>B</b>	DWG. NO. <b>GE-20341</b>		REV
						SCALE: 1:8		WEIGHT:	SHEET 1 OF 1



- Notes:
- 1. Material: 1/4" Clear Polycarbonate.
  - 2. Remove all burrs and sharp edges.
  - 3. Tag or label with part number.

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			DRAWN			
			CHECKED			
			ENG APPR.			
			MFG APPR.			
			Q.A.			COMMENTS:
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

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NOTES:

1. Material: 1/4" Clear Polycarbonate.
2. Remove all burrs and sharp edges.
3. Tag or label with part number.

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN				TITLE:			
			CHECKED				Top Plate, Outer Port Serializer			
			ENG APPR.							
			MFG APPR.							
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE	DWG. NO.	REV		
		MATERIAL	COMMENTS:			<b>B</b>	GE-20343			
NEXT ASSY	USED ON	FINISH								
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:3			WEIGHT:	SHEET 1 OF 1

4

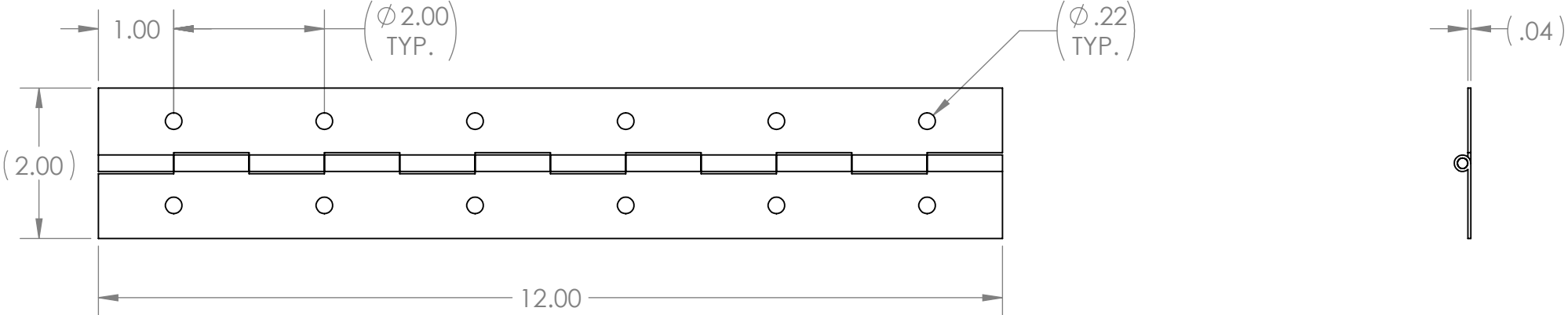
3

2

1

B

B





Notes:

1. Make from commecial part:  
Vendor: TCH  
Website: TCHWEB.com  
SKU #: 505-1965801  
Desription: STEEL CONTINUOUS HINGE - 0.04" X 2.0" X 72"  
WITH NICKEL PLATE & MOUNTING HOLES
2. Bar or tag with part number.
3. Remove burrs and shar edges.

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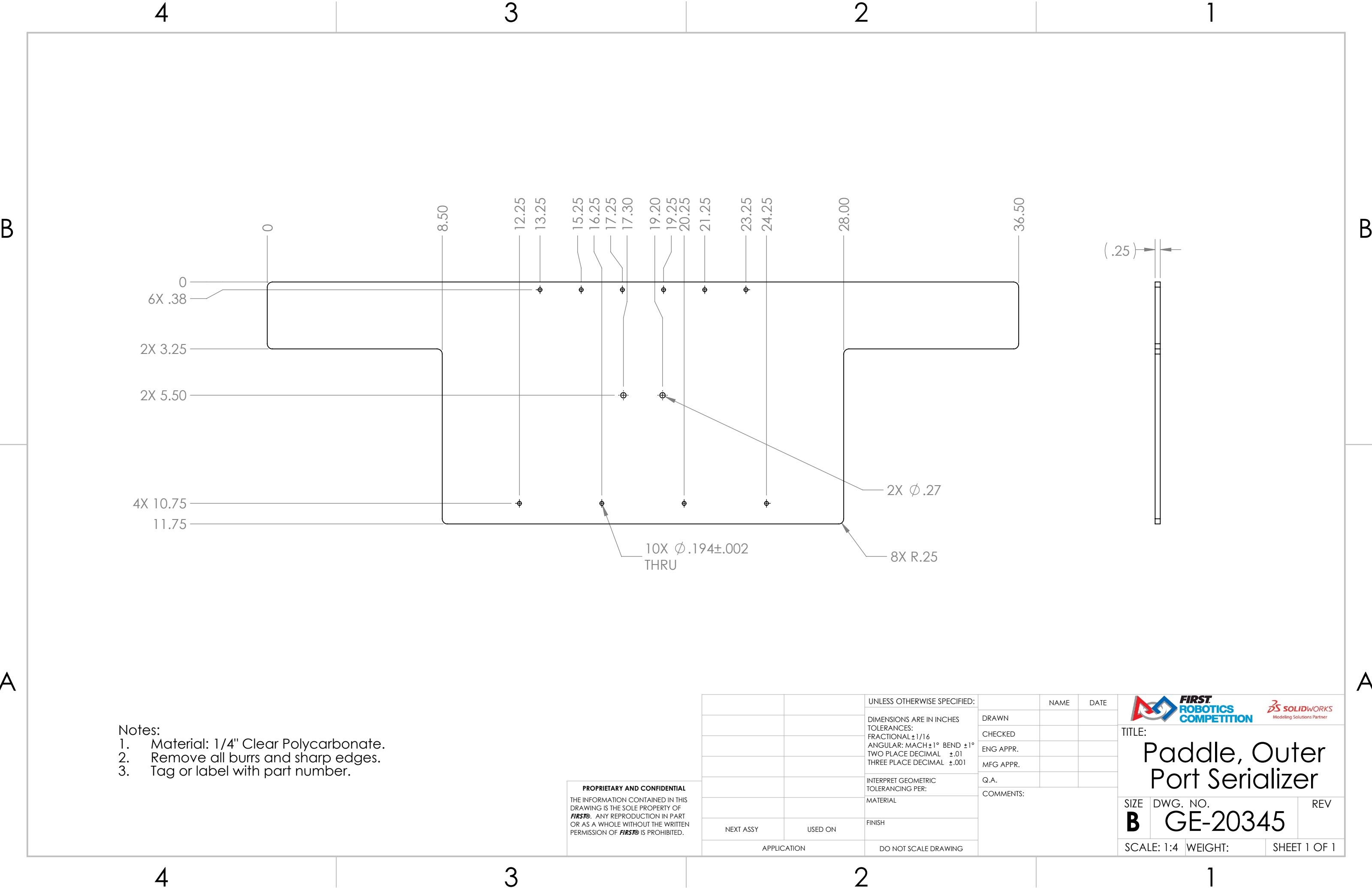
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		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			TITLE: Hinge, Outer Port Serializer
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				SIZE DWG. NO. REV
		MATERIAL				<b>B</b> GE-20344 1
		FINISH				SCALE: 1:2 WEIGHT: SHEET 1 OF 1
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				

4

3



2

1



- Notes:
1. Material: 1/4" Clear Polycarbonate.
  2. Remove all burrs and sharp edges.
  3. Tag or label with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div><div><div>FIRST ROBOTICS COMPETITION</div></div><div><div>SOLIDWORKS Modeling Solutions Partner</div></div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  Paddle, Outer Port Serializer		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20345		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT: SHEET 1 OF 1		

4

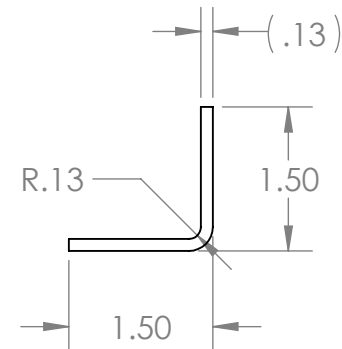
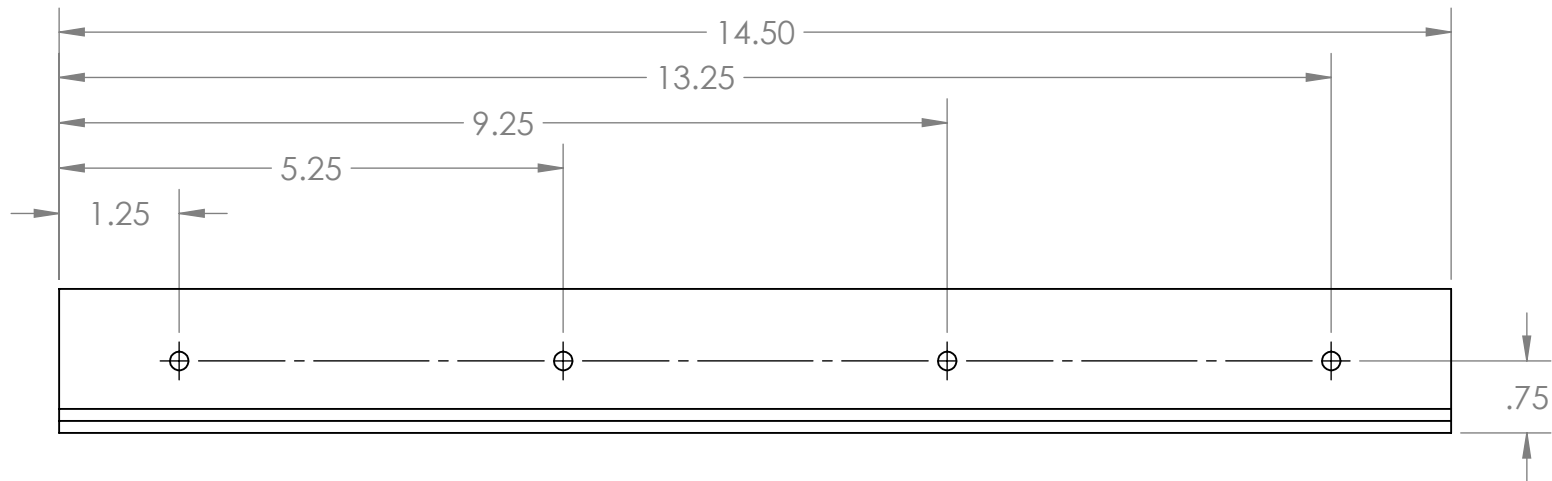
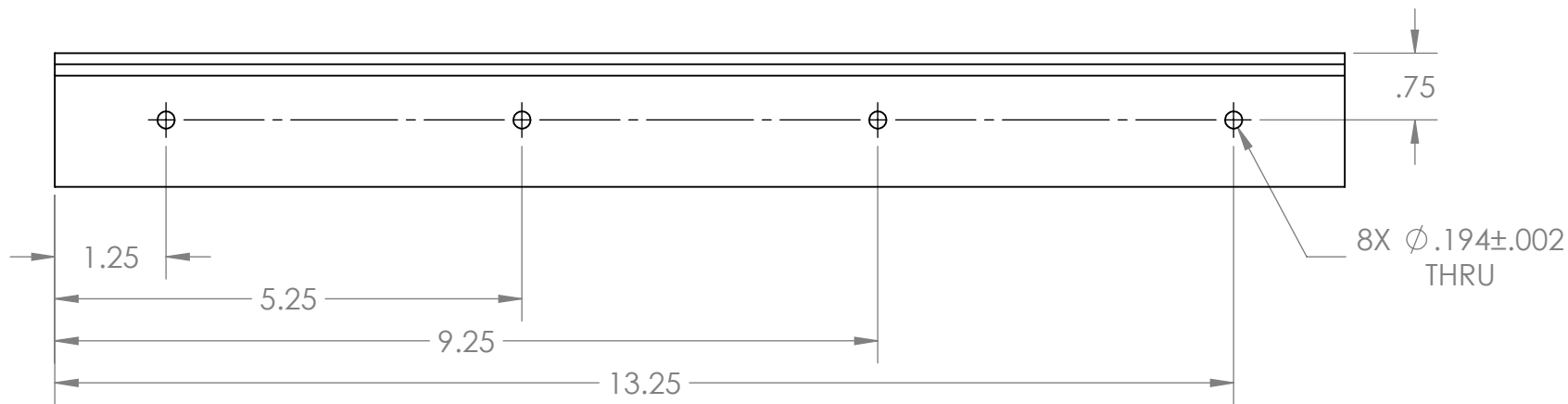
3

2

1

B

B





A

A

- Notes:
1. Material: 1/8" 5052 Aluminum sheet or similar.
  2. Remove all burrs and sharp edges.
  3. Bag or tag with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  <h1>Angle, Outer Port Serializer</h1>		
		TOLERANCES:	CHECKED					
		FRACTIONAL ±1/16	ENG APPR.					
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.					
		TWO PLACE DECIMAL ±.01	Q.A.					
		THREE PLACE DECIMAL ±.001	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20346</b>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON					SCALE: 1:2 WEIGHT: SHEET 1 OF 1		
APPLICATION		DO NOT SCALE DRAWING						



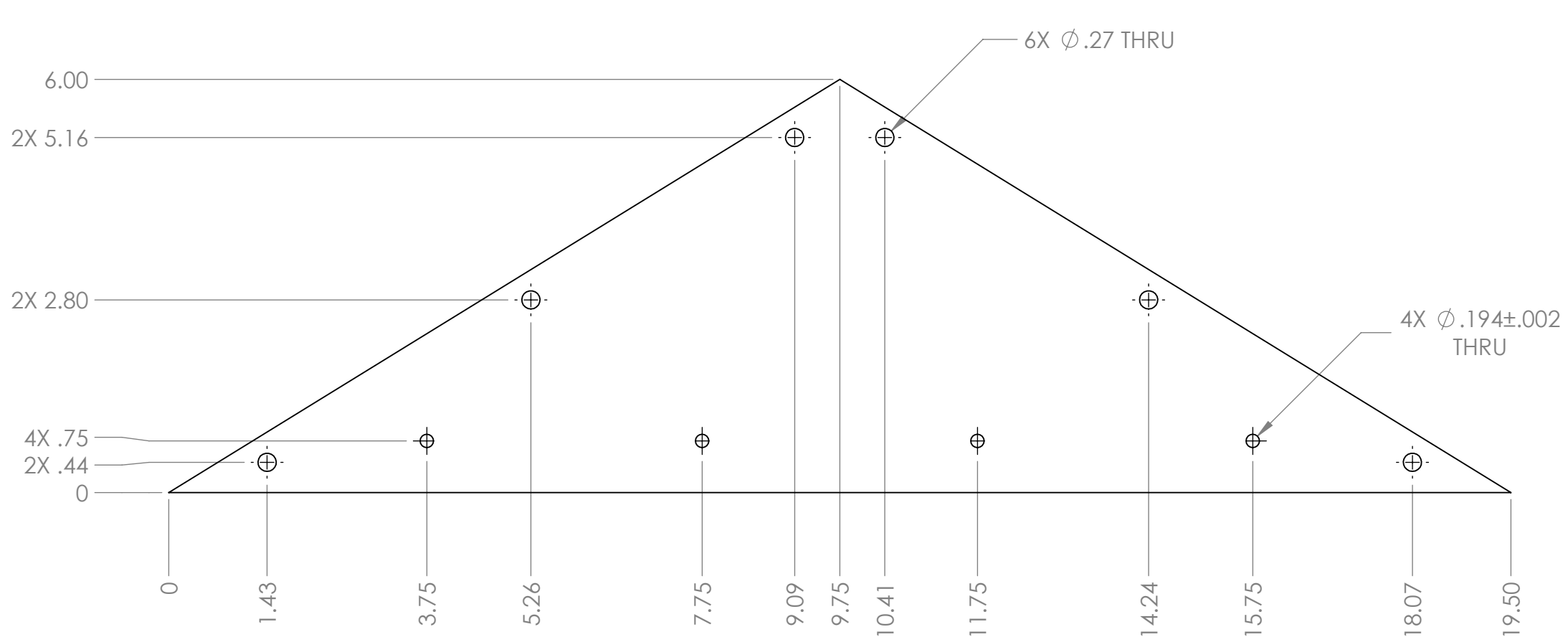
4

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B

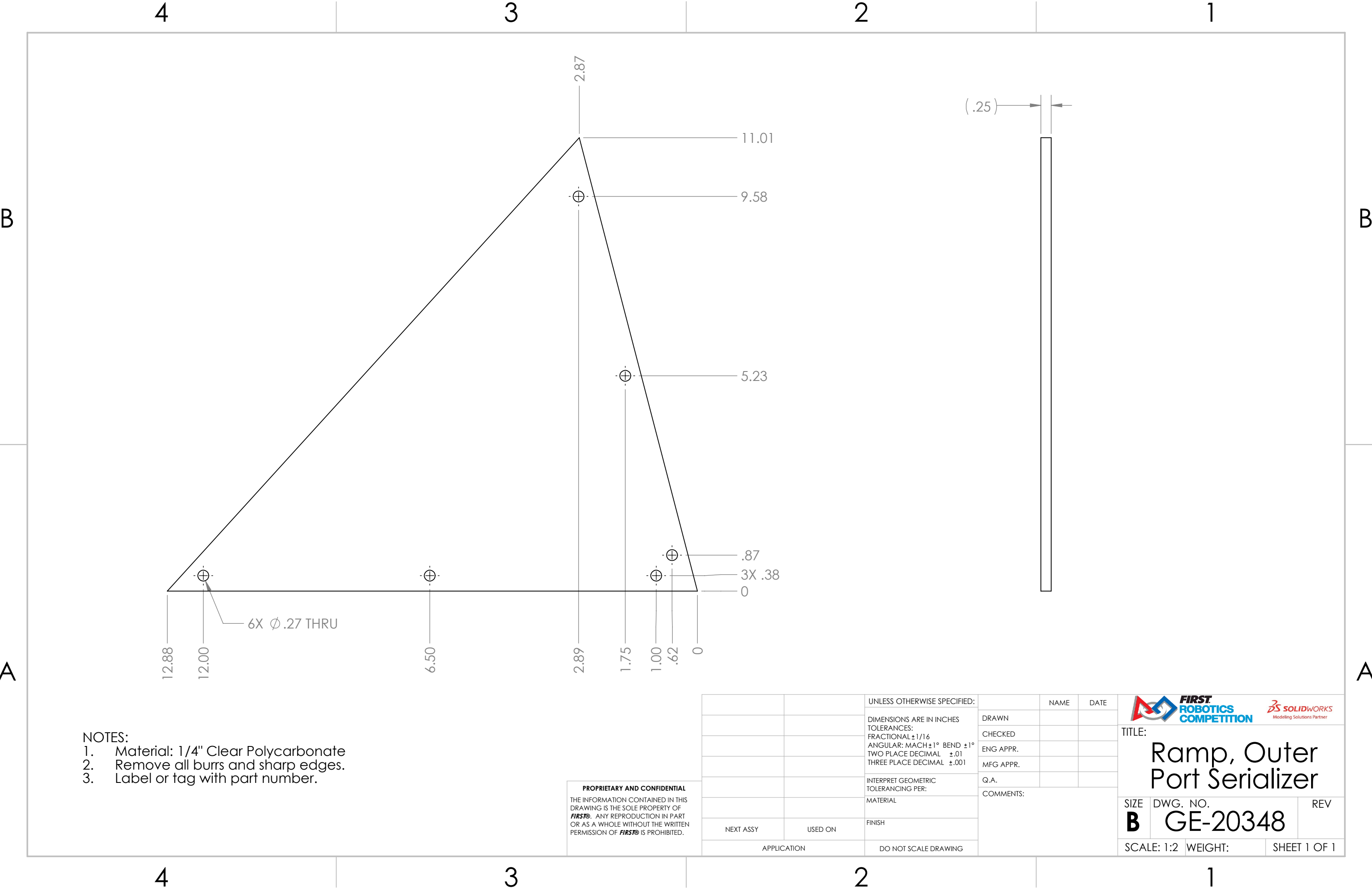
A

- Notes:
1. Material: 1/4" Clear Polycarbonate
  2. Remove all burrs and sharp edges.
  3. Tag or label with part number,

A



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  <b>Foot, Outer Port Serializer</b>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20347</b>		
		MATERIAL						
		FINISH	SCALE: 1:2 WEIGHT: SHEET 1 OF 1					
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						



- NOTES:
- 1. Material: 1/4" Clear Polycarbonate
  - 2. Remove all burrs and sharp edges.
  - 3. Label or tag with part number.

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE: <b>Ramp, Outer Port Serializer</b></div>
		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			COMMENTS:
		THREE PLACE DECIMAL $\pm .001$				
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				SIZE DWG. NO. REV
NEXT ASSY	USED ON	FINISH				<b>B</b> <b>GE-20348</b>
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2 WEIGHT: SHEET 1 OF 1





4

3

2

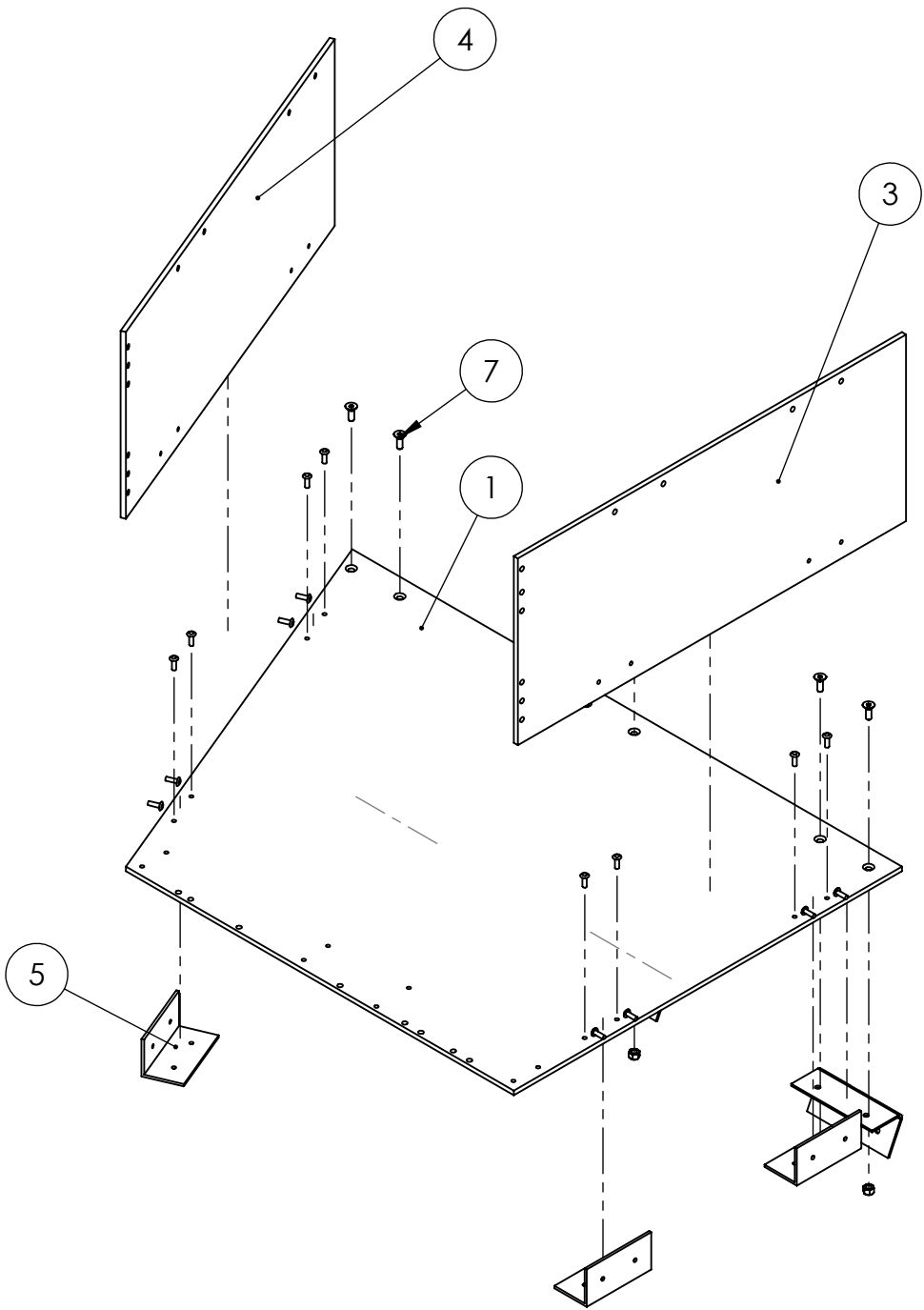
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B

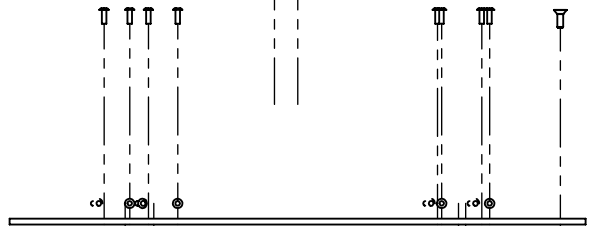
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A

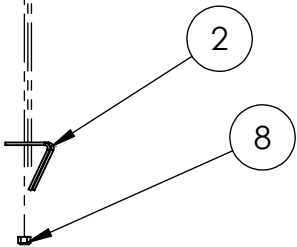
A





Note: Place Item 2 (QTY:4) in four places  
Place Item 5 (QTY:4) in four places



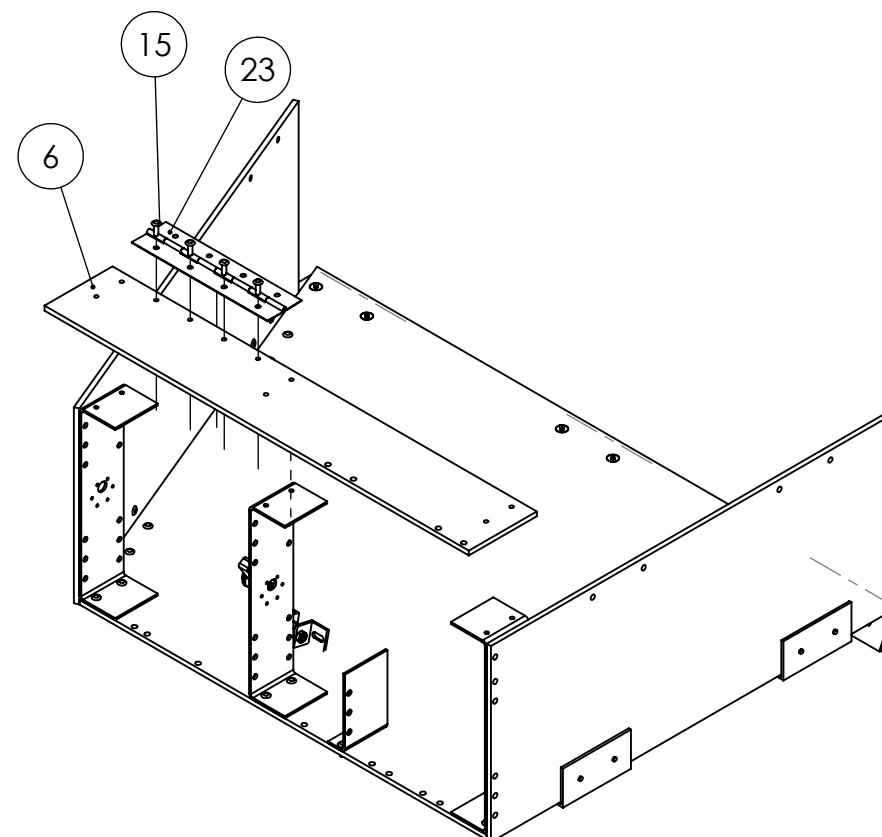
Notes:  
Attach Item 2 6 places



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  <b>Plastic Serializer Assembly</b>		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B GE-20350</b>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8 WEIGHT: SHEET 2 OF 4		

T



Notes:  
Attach Item 6 and 22 with Item 15

DO NOT SCALE DRAWING

1

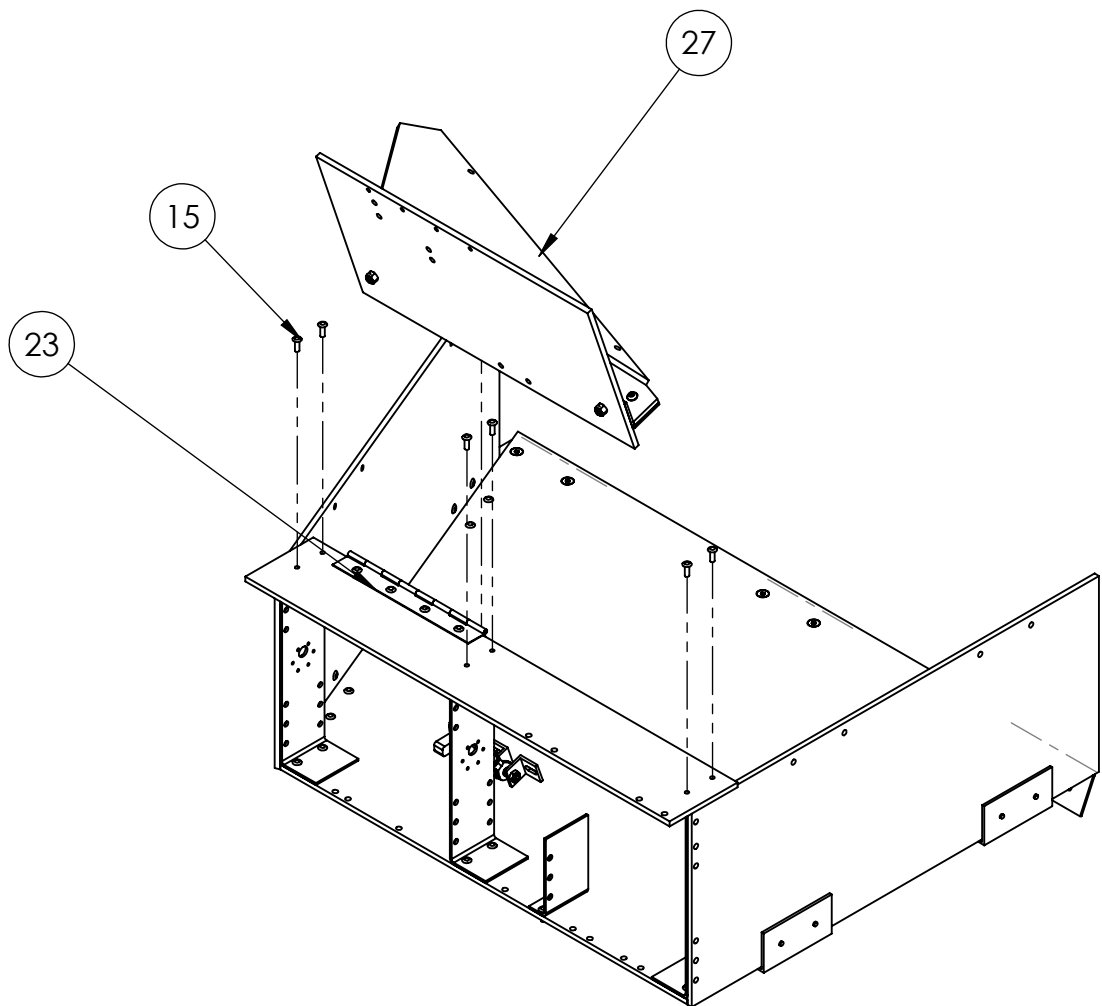
4

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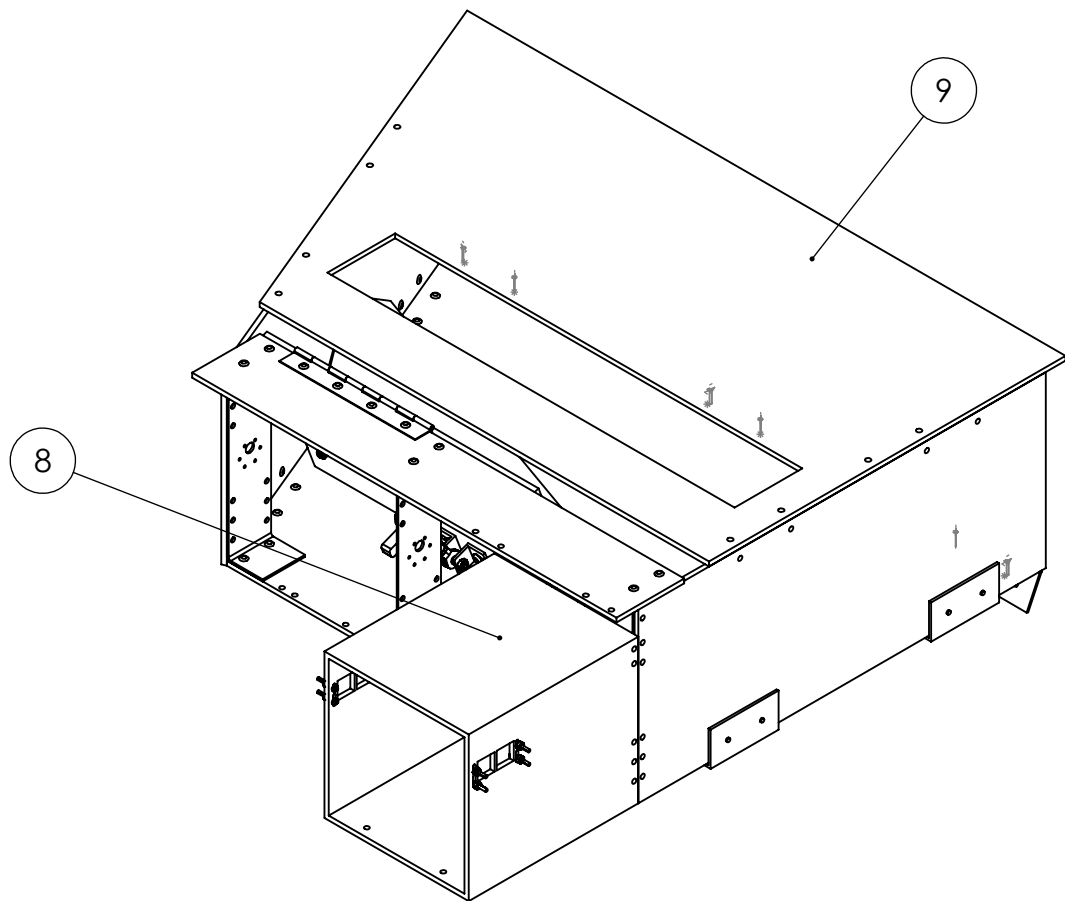
B



Note:  
Attach item 27 and 23 using item 15

A



B



Note:  
Attach item 9 and 8 using cable ties

A

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div><div>FIRST ROBOTICS COMPETTITION</div><div>SOLIDWORKS Modeling Solutions Partner</div></div> <div>TITLE: <h1>Plastic Serializer Assembly</h1></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 ANGULAR: MACH ± 1° BEND ± 1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN					
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20350</b>		
		MATERIAL	COMMENTS:					
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:8 WEIGHT: SHEET 4 OF 4		

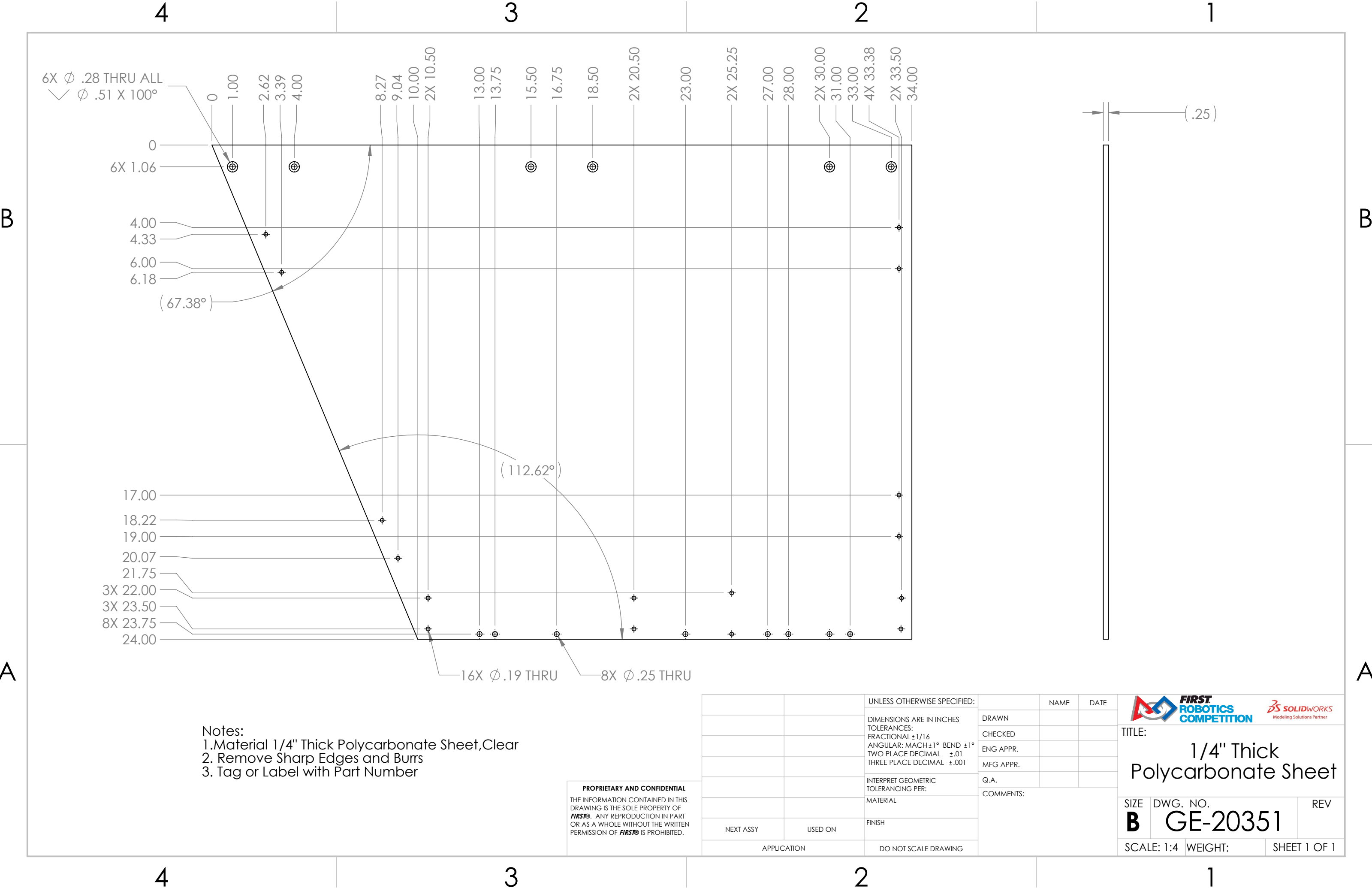
4

3

2

1





Notes:  
1. Material 1/4" Thick Polycarbonate Sheet, Clear  
2. Remove Sharp Edges and Burrs  
3. Tag or Label with Part Number

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		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:	TITLE: <b>1/4" Thick Polycarbonate Sheet</b>	
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON			SIZE	DWG. NO.
APPLICATION		DO NOT SCALE DRAWING		<b>B</b>	<b>GE-20351</b>
				SCALE: 1:4	WEIGHT:
				SHEET 1 OF 1	



4

3

2

1

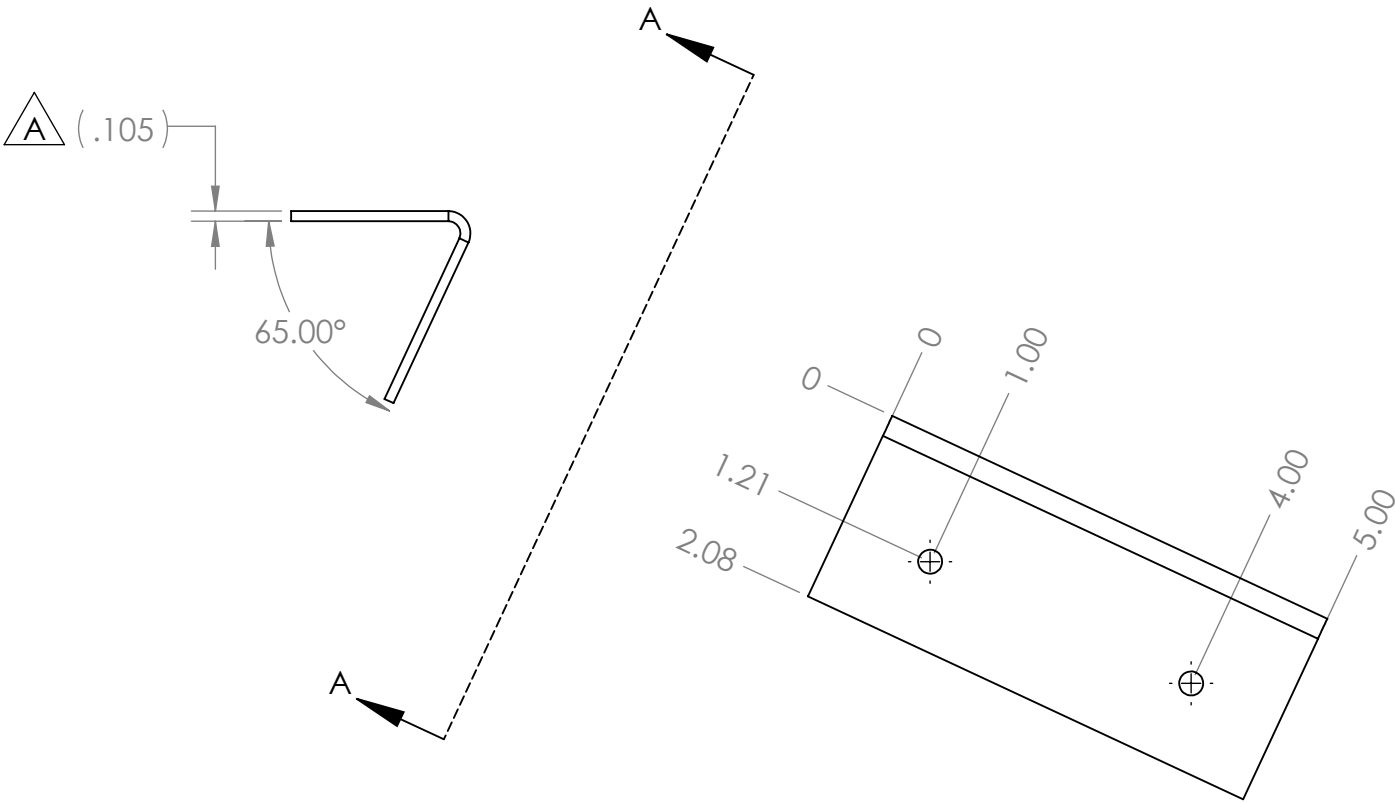
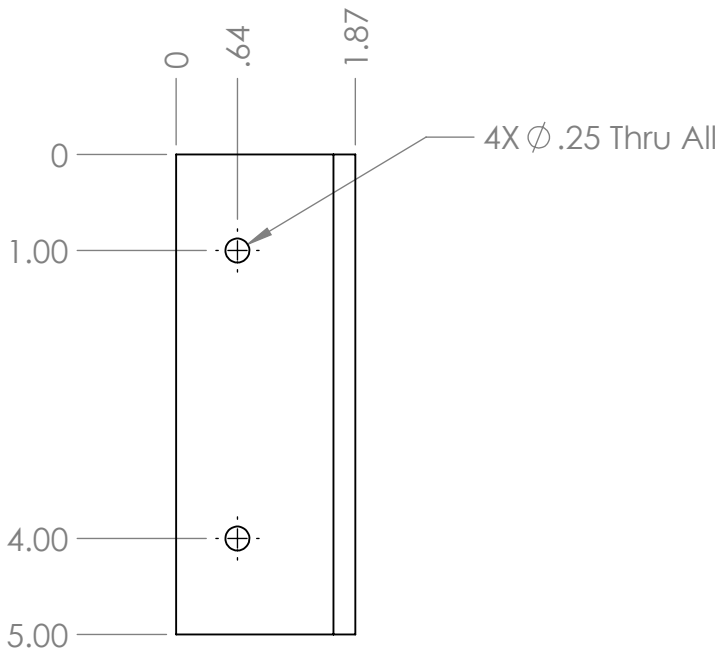
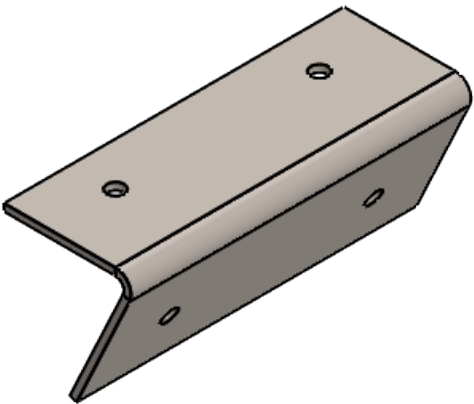
B

B

A

A



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
B4	A	12 Gage Steel Thickness updated	11/1/2019	MXS



Note:  
1.Material: 12 GA Plated Sheet  
2. Remove Sharp edges and burrs  
3. Label and Tag with part number

VIEW A-A

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  <h1>Sheet Metal Angle</h1>			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
			Q.A.						
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			<div><div>SIZE <b>B</b></div><div>DWG. NO. <b>GE-20352</b></div><div>REV <b>A</b></div></div> <div>SCALE: 1:2</div> <div>WEIGHT:</div> <div>SHEET 1 OF 1</div>			
		MATERIAL							
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING							

4

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4

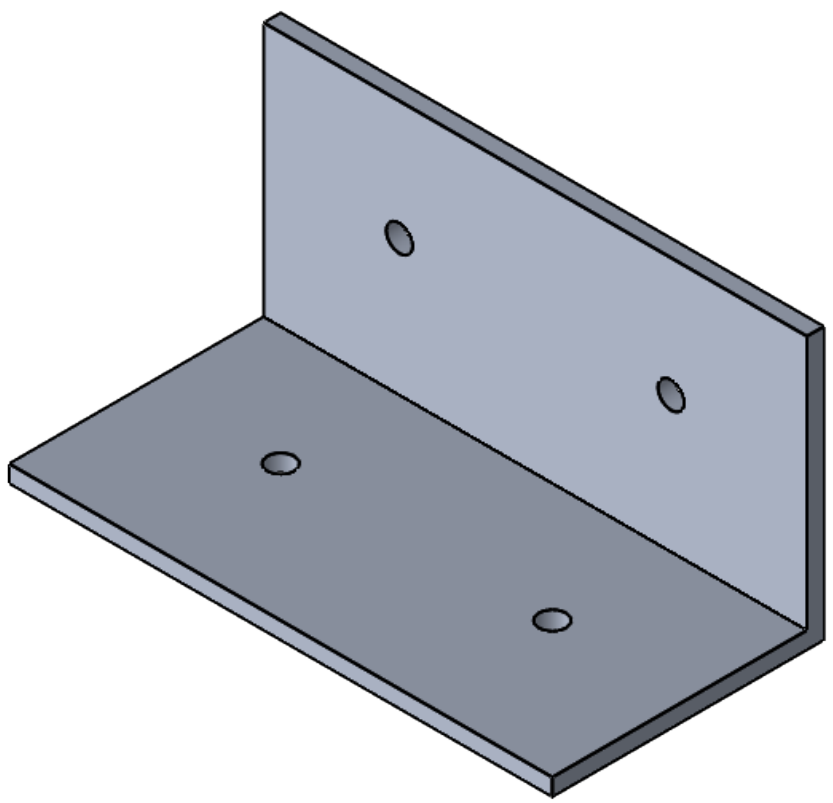
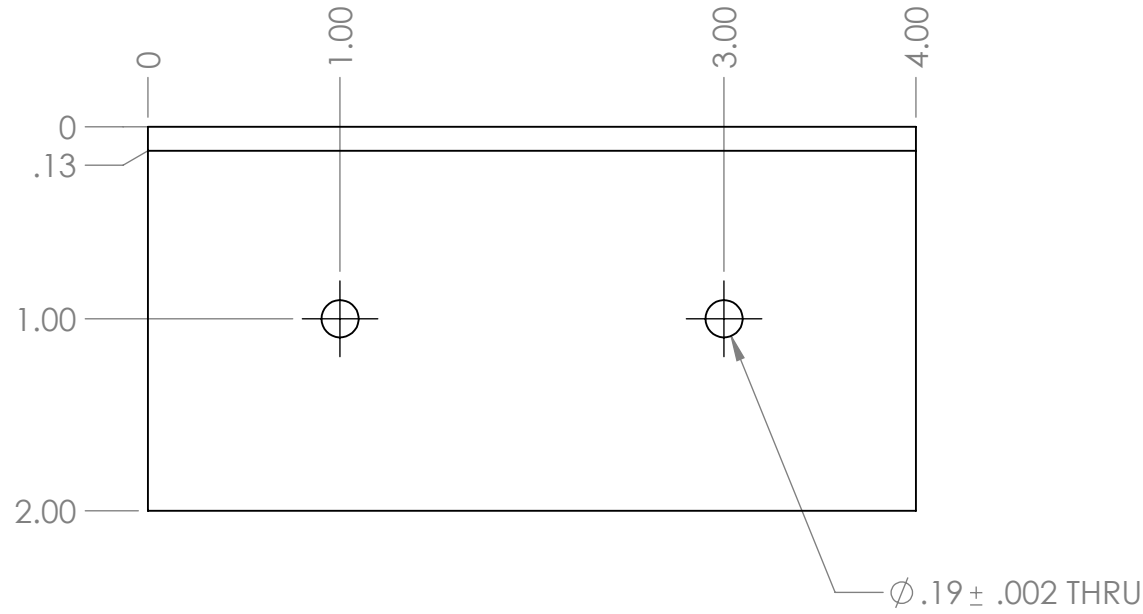
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2

1

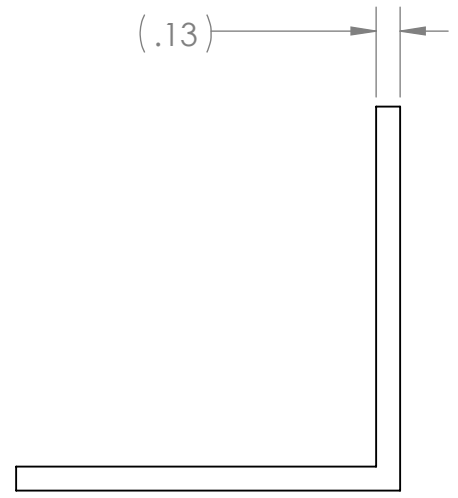
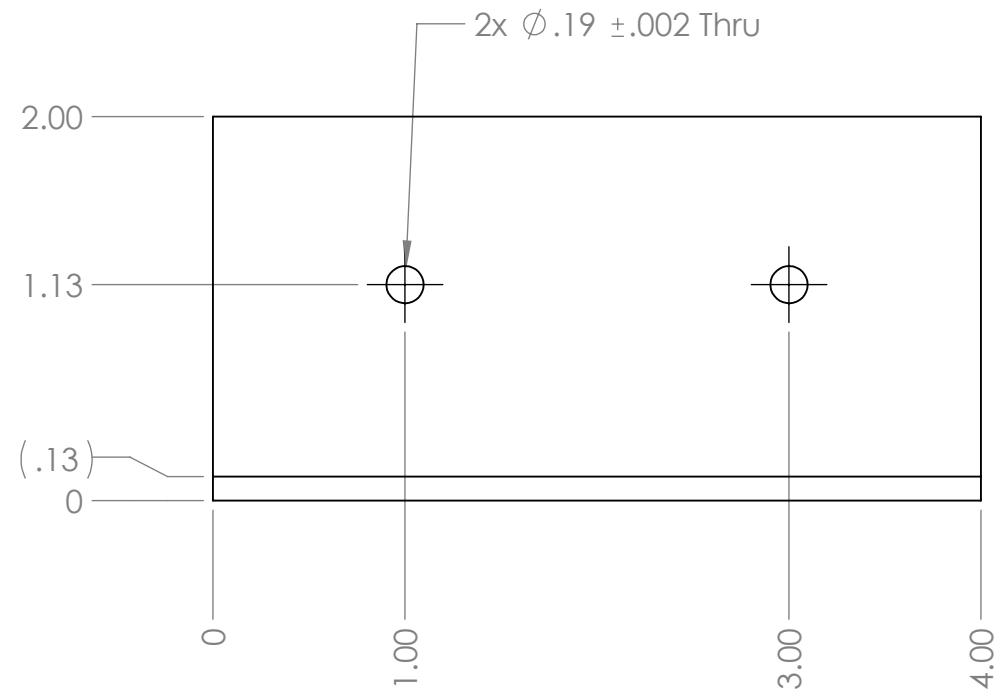
B

B





A

A



- Notes
1. Material: 2" x 2" x .125" Aluminumn Angle 6063
  2. R"emove Sharp Edges and Burrs
  3. Tag and Label wth Part Number

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  2 x 2 Aluminum Angle 6063				
			CHECKED							
			ENG APPR.							
			MFG APPR.							
			Q.A.							
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> GE-20353				
		MATERIAL								
		FINISH								
NEXT ASSY	USED ON									
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:1		WEIGHT:	SHEET 1 OF 1	

4

3

2

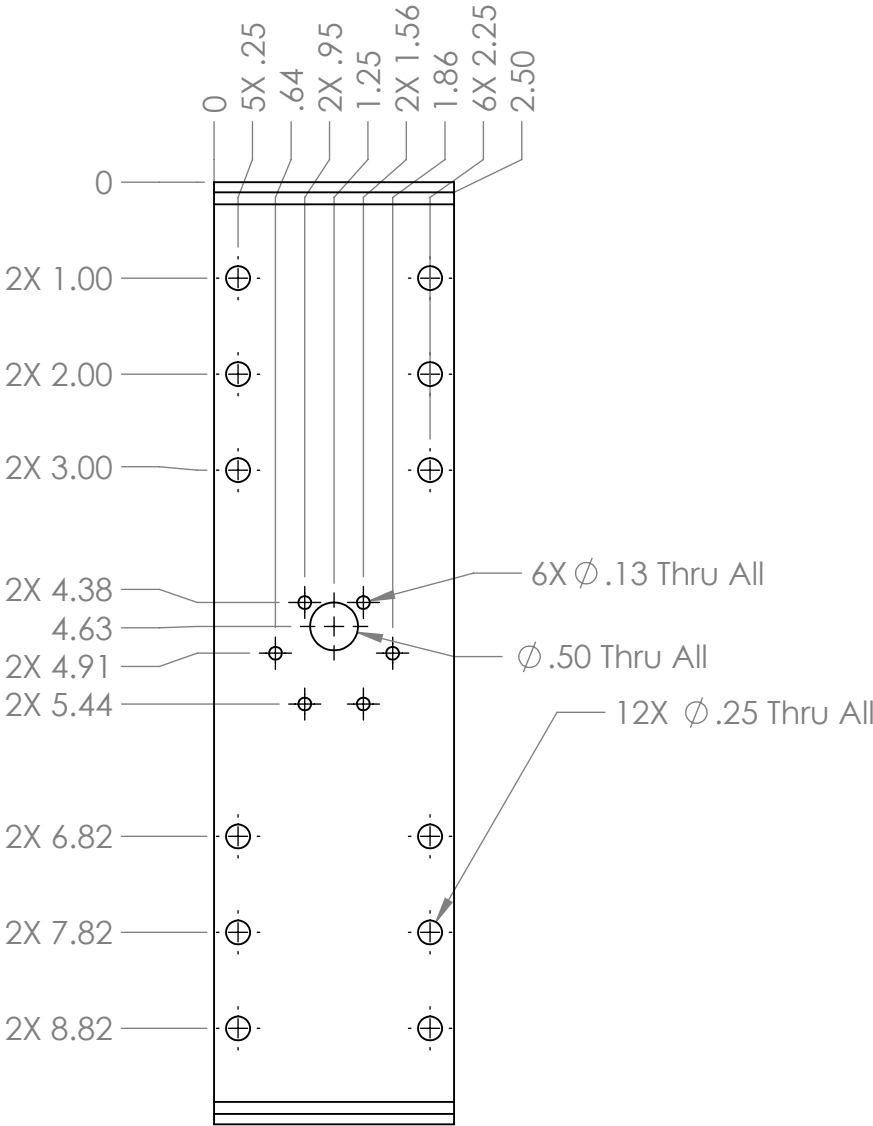
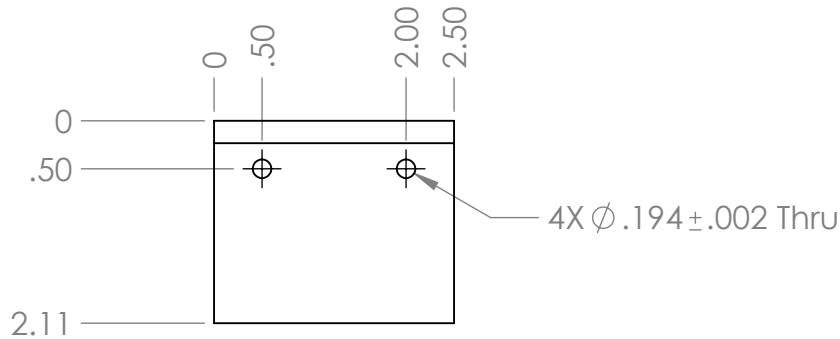
1

B

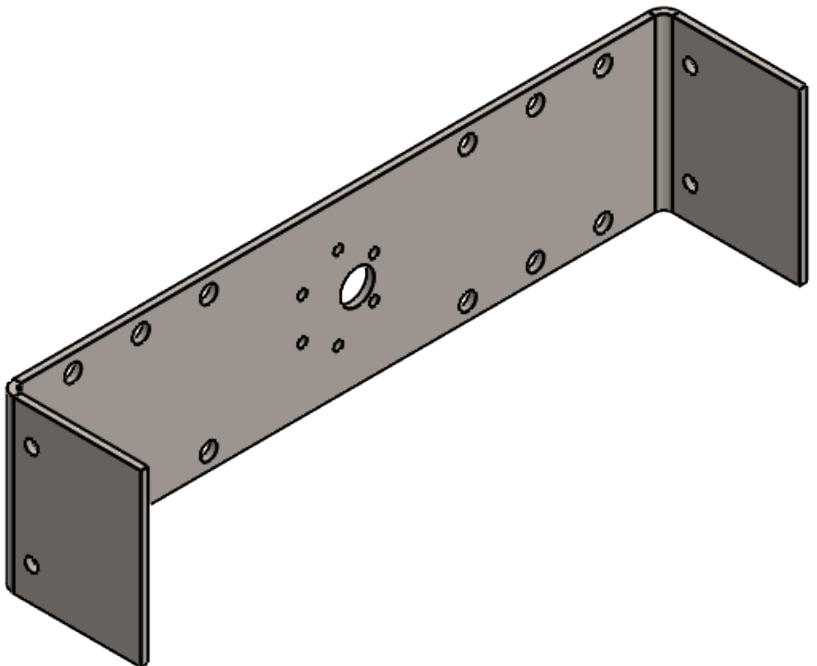
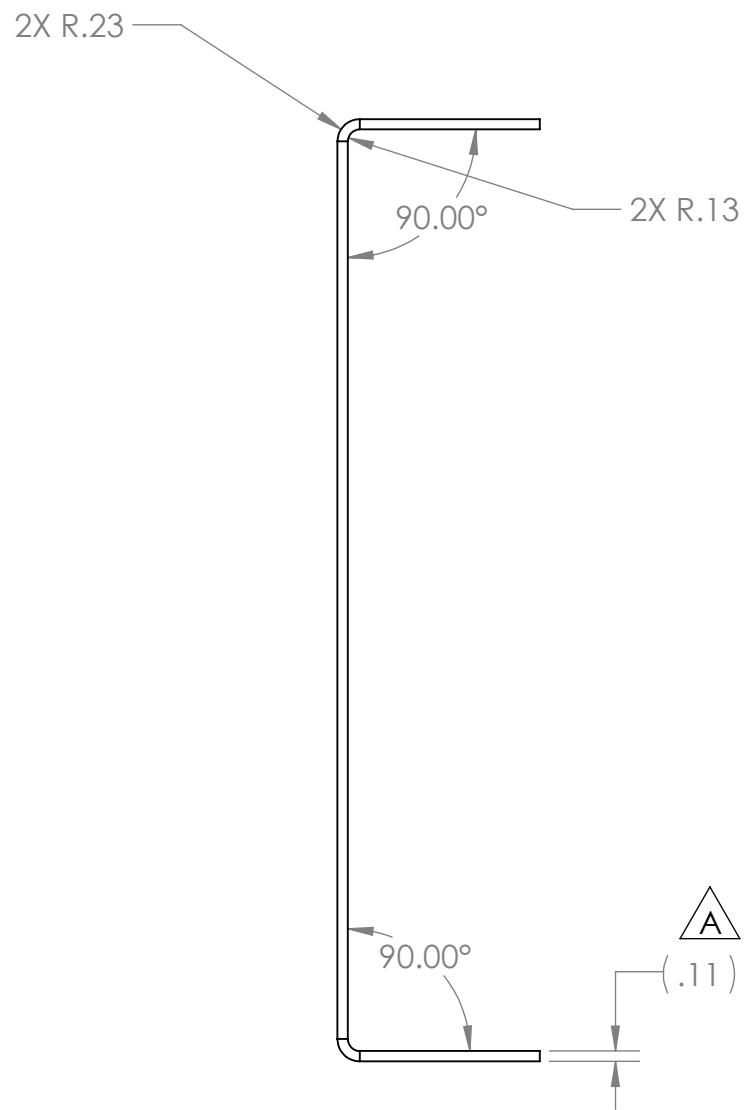
A

B

A





Notes:  
1.Material: 12 Ga. Pre Plated Steel  
2.Remove all burs and sharp edges  
3. Tag and Label With Part Number



REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A2	A	Changed to 12 Gage Preplated Steel	10/24/2019	MXS
A1	B	Changed Part description	10/30/2019	MXS

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 		
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <h1>Serializer Bracket Support</h1>		
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20354</b> <b>B</b>		
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2 WEIGHT: SHEET 1 OF 1		

4

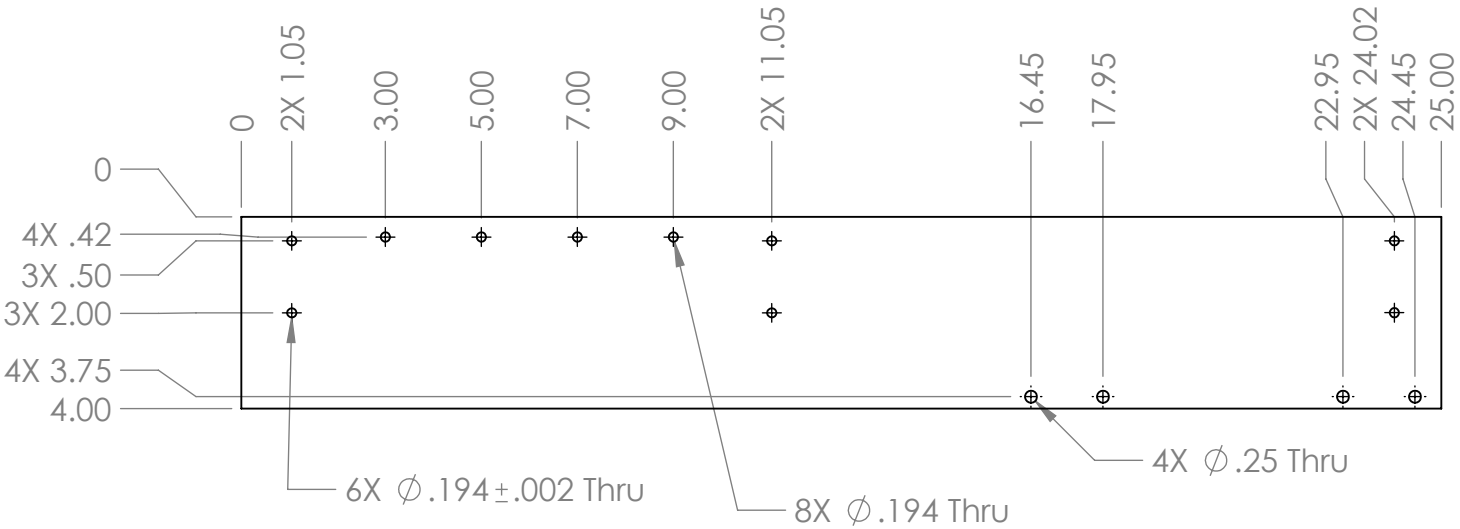
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2

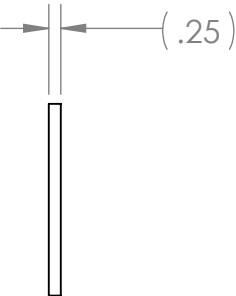
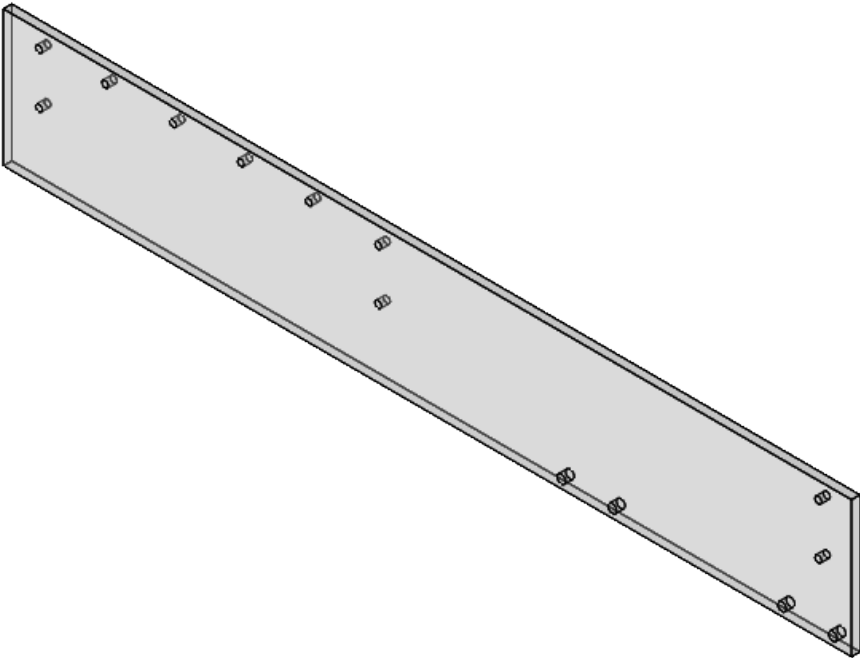
1

B

B





- Notes:
1. Material 1/4" Thick Polycarbonate Sheet
  2. Remove Sharp Edges and Burrs
  3. Label and Tag with Part Number



A

A

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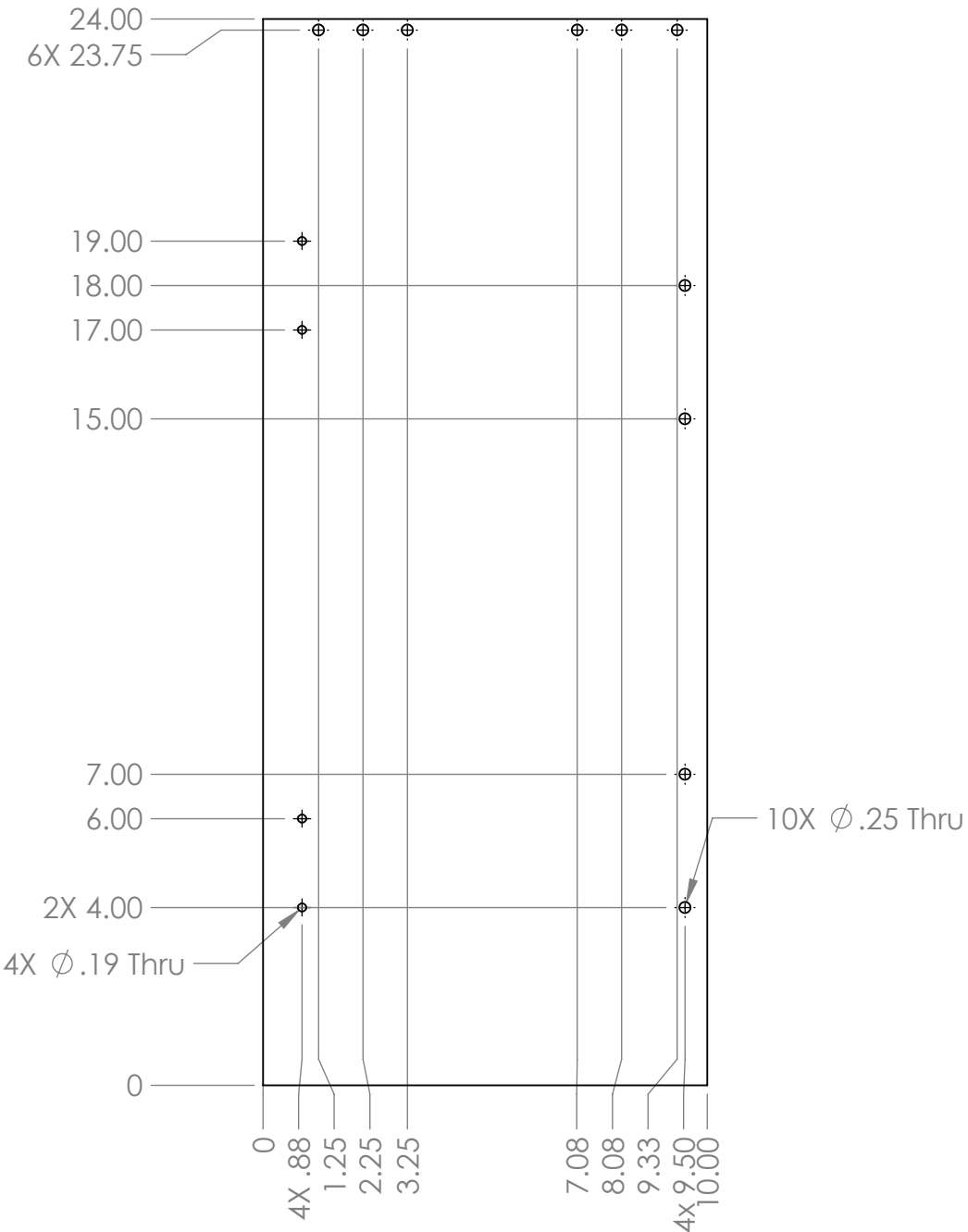
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		DIMENSIONS ARE IN INCHES	DRAWN				
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			TITLE: Top Bracket	
		TWO PLACE DECIMAL $\pm .01$	Q.A.				
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE <b>B</b>	DWG. NO. GE-20355
		INTERPRET GEOMETRIC TOLERANCING PER:				SCALE: 1:4	WEIGHT:
		MATERIAL					SHEET 1 OF 1
		FINISH					
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING					

B

A



B

A



- Notes:
1. Material: 1/4" Thick Polycarbonate Sheet, Clear
  2. Remove Sharp Edges and Burrs
  3. Label and Tag with Part Number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			TITLE:  Serializer Side Wall		
	CHECKED							
	ENG APPR.							
	MFG APPR.							
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> GE-20356		
		MATERIAL	COMMENTS:					
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT:		SHEET 1 OF 1

4

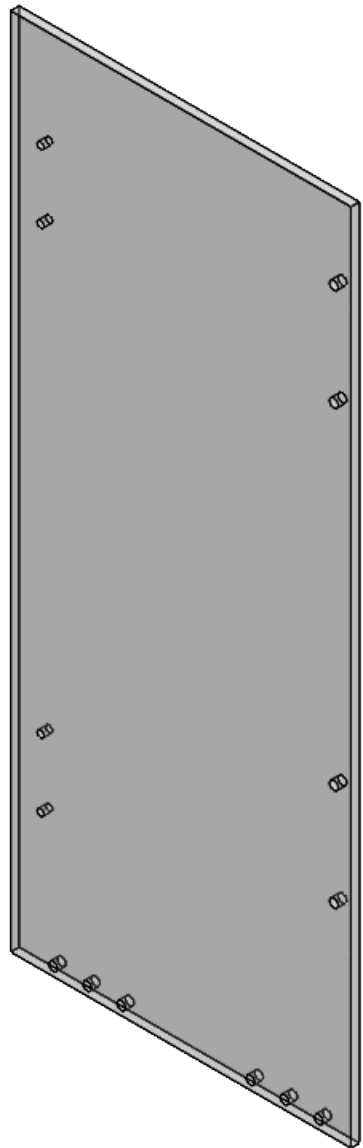
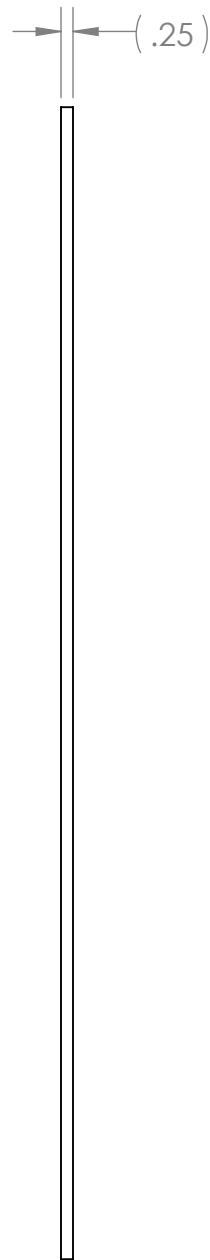
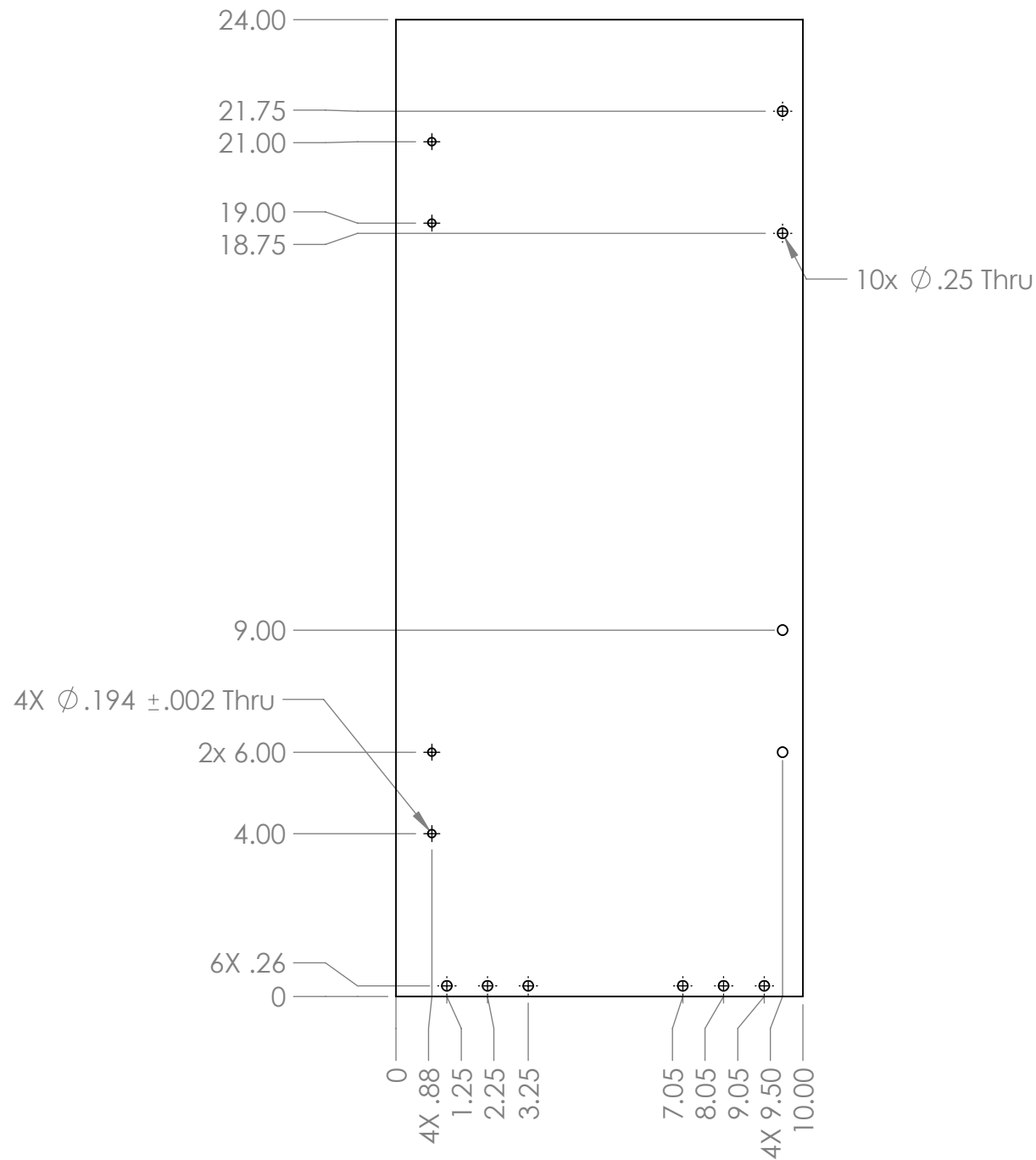
3

2

1

B

B





A

A

- Notes:
1. Material: 1/4" Thick Polycarbonate Sheet
  2. Remove Sharp Edges And Burrs
  3. Tag and Label with Part Numbers

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN						TITLE:  Serializer Side Wall Angled		
			CHECKED								
			ENG APPR.								
			MFG APPR.								
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> GE-20357					
		MATERIAL	COMMENTS:								
		FINISH									
NEXT ASSY	USED ON										
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT: SHEET 1 OF 1					

4

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2

1



4

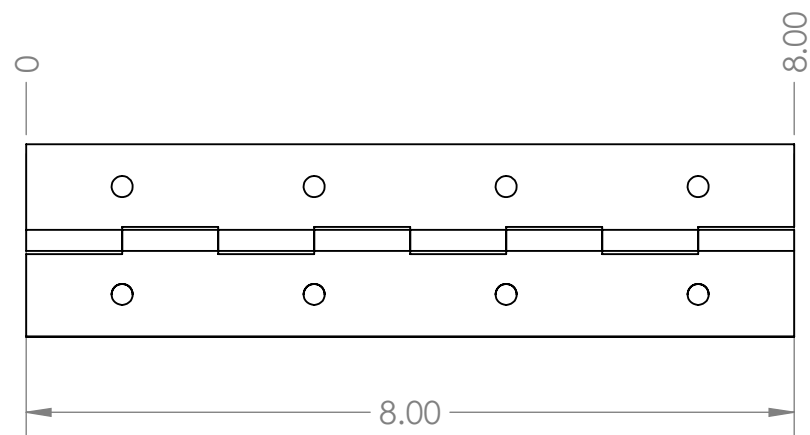
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2

1

B

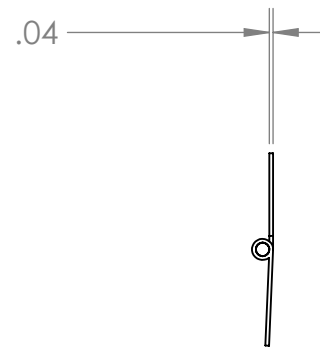
B



Description: STEEL CONTINUOUS HINGE - 0.04" X 2.0" X 72" WITH NICKEL PLATE & MOUNTING HOLES

Vendor TCH



Part Number: 505-1965801



A

A

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			TITLE:  Steel Continuous Hinge, Nickel (6' lengths ) TCH 505- 1965801			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> GE-20358			
		MATERIAL	COMMENTS:						
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2 WEIGHT: SHEET 1 OF 1			

4

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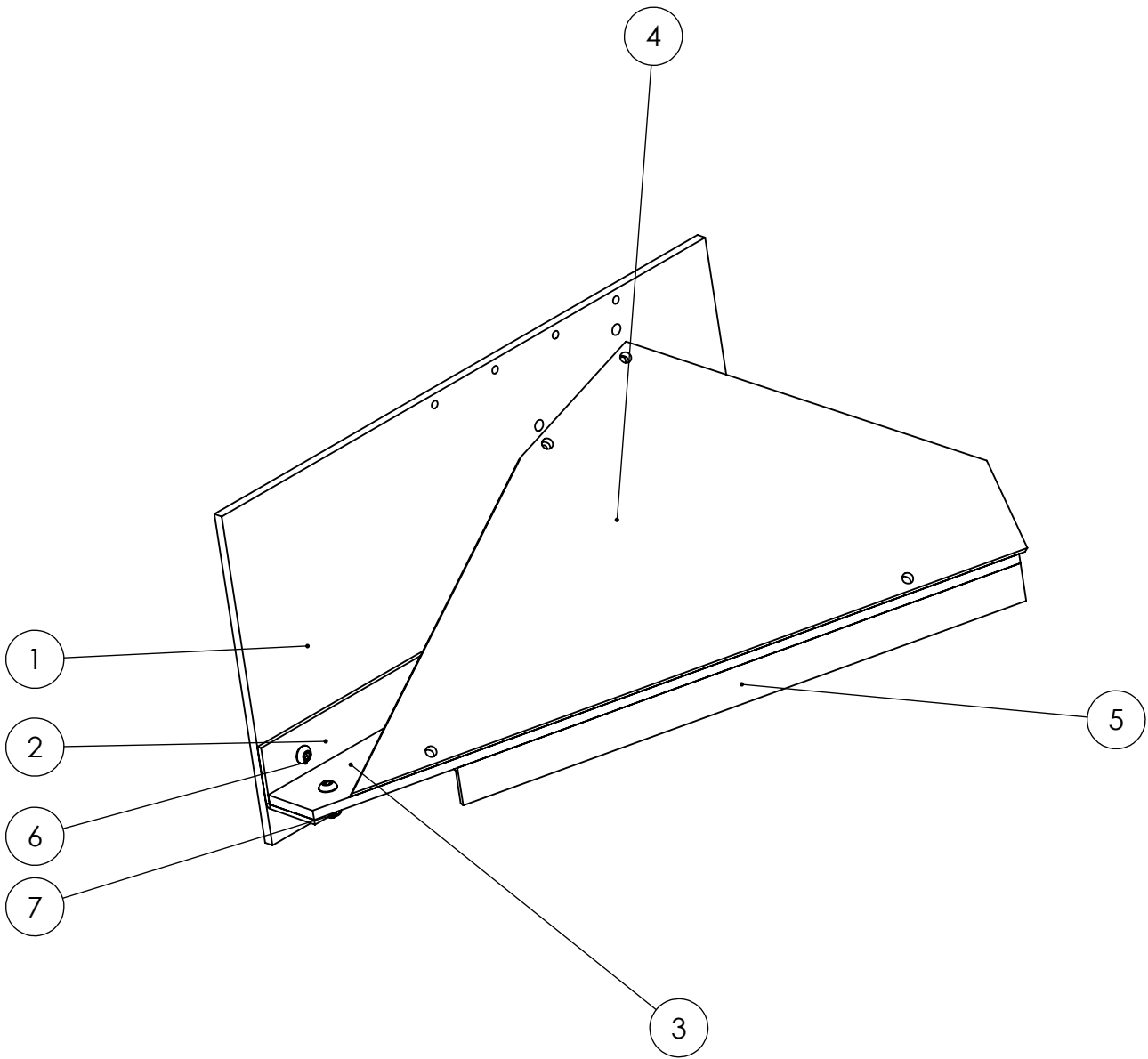
3

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1

B

B





A

A

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20361	Polycarbonate Face	1
2	GE-20362	Angle Bracket	1
3	GE-20363	Angle Pusher	1
4	GE-20374	Serializer Top Angle	1
5	GE-20367	Serializer Lower Angle Bracket	1
6	round_hex_.25_20_.75_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 3/4" long, fully threaded	6
7	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	6

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE: <h1>Pusher Assembly</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <h1>B GE-20360</h1>		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT: SHEET 1 OF 2		

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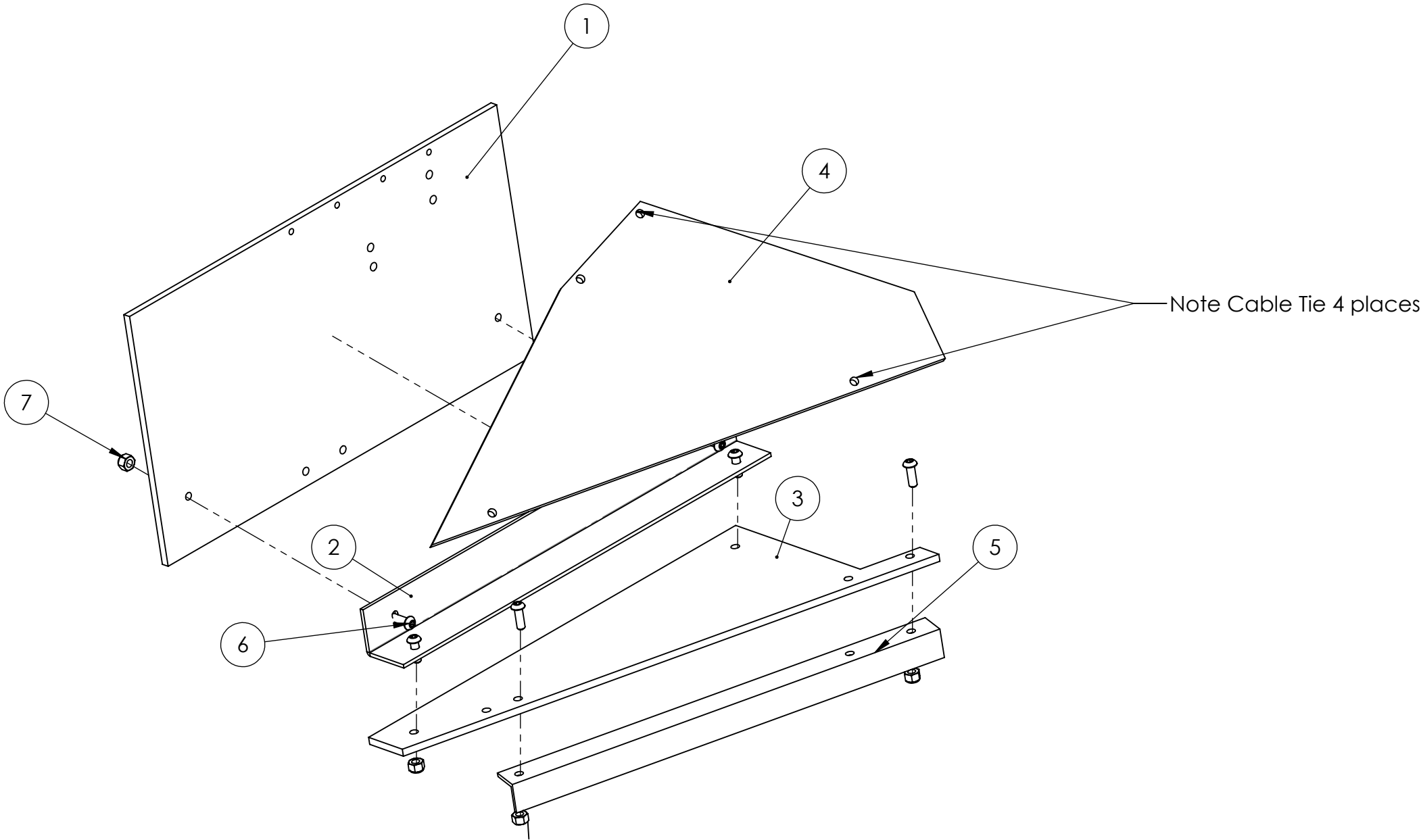
3

2

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B



B



A

A

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div></div> <div><div>SOLIDWORKS Modeling Solutions Partner</div></div>			
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <div>Pusher Assembly</div>			
		TOLERANCES:	CHECKED						
		FRACTIONAL $\pm 1/16$	ENG APPR.						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.						
		TWO PLACE DECIMAL $\pm .01$	Q.A.						
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <div>BGE-20360</div>			
		INTERPRET GEOMETRIC TOLERANCING PER:							
		MATERIAL							
		FINISH				SCALE: 1:8 WEIGHT: SHEET 2 OF 2			
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING							

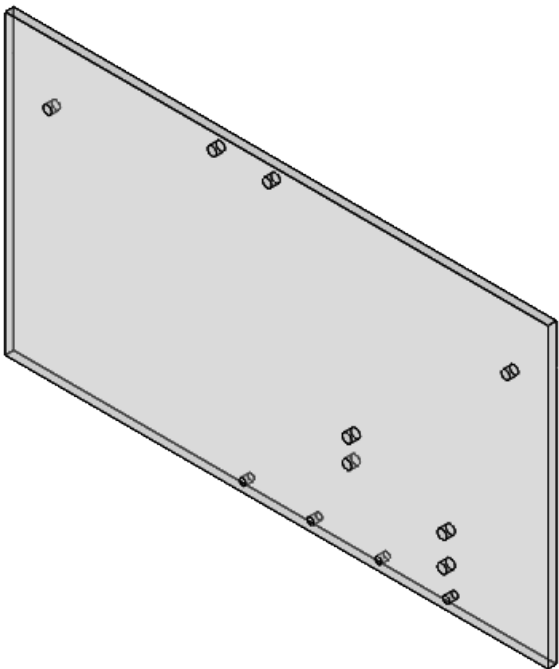
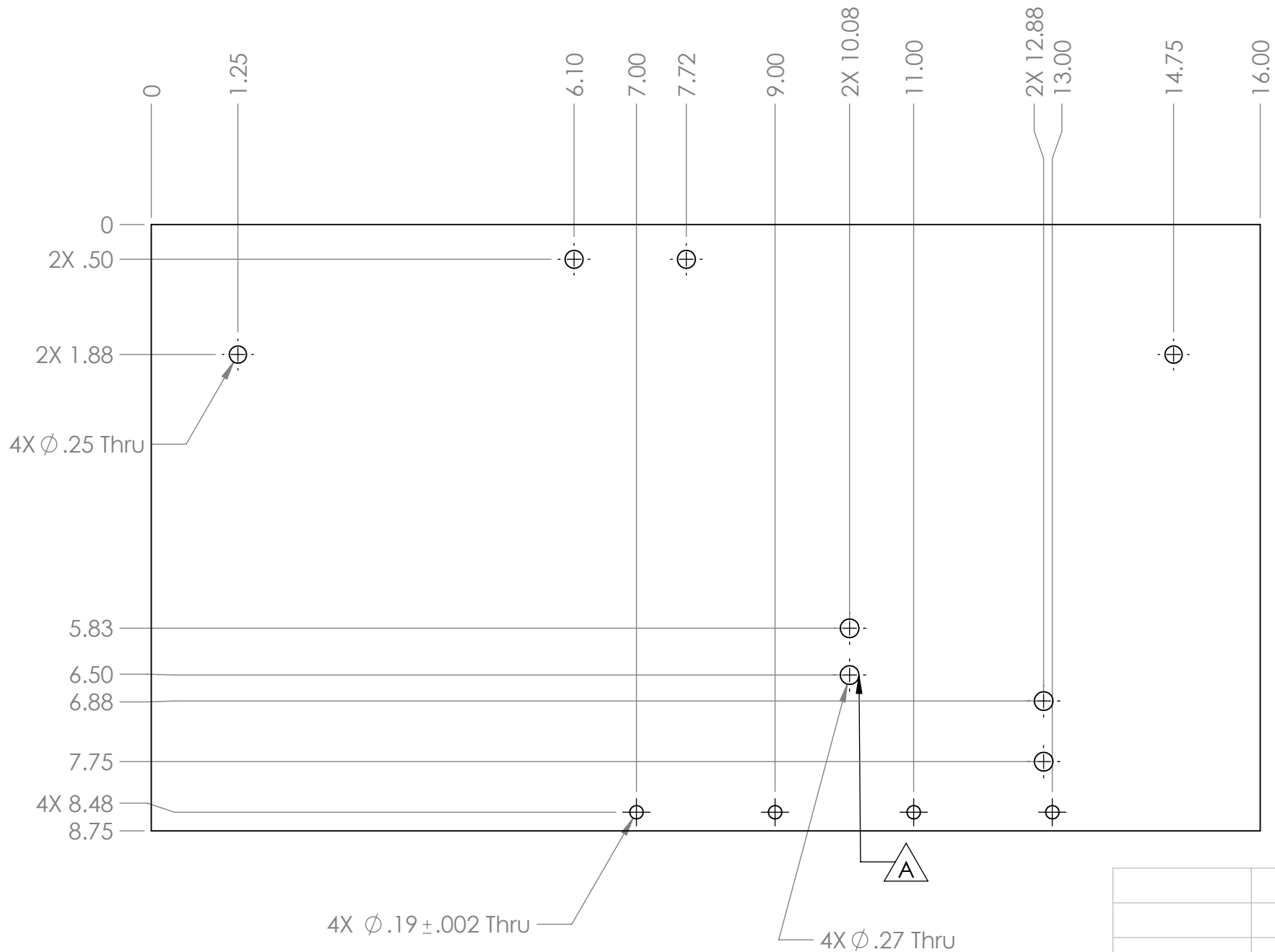
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3

2



1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Added Four houles	11/22/2019	MXS
A1	B	Description/Title Change	12/19/2019	MXS



Note:  
1. Material: 1/4" Thick Polycarbonate Sheet  
2. Remove Sharp Edges and Burrs  
3. Tag and Label with Part Number

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		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <div>Polycarbonate Face</div>					
		TOLERANCES:	CHECKED								
		FRACTIONAL $\pm 1/16$	ENG APPR.								
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.								
		TWO PLACE DECIMAL $\pm .01$	Q.A.								
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE DWG. NO. REV <div>BGE-20361B</div>					
		INTERPRET GEOMETRIC TOLERANCING PER:							SCALE: 1:2 WEIGHT: SHEET 1 OF 1		
		MATERIAL									
		FINISH									
NEXT ASSY	USED ON										
APPLICATION		DO NOT SCALE DRAWING									

4

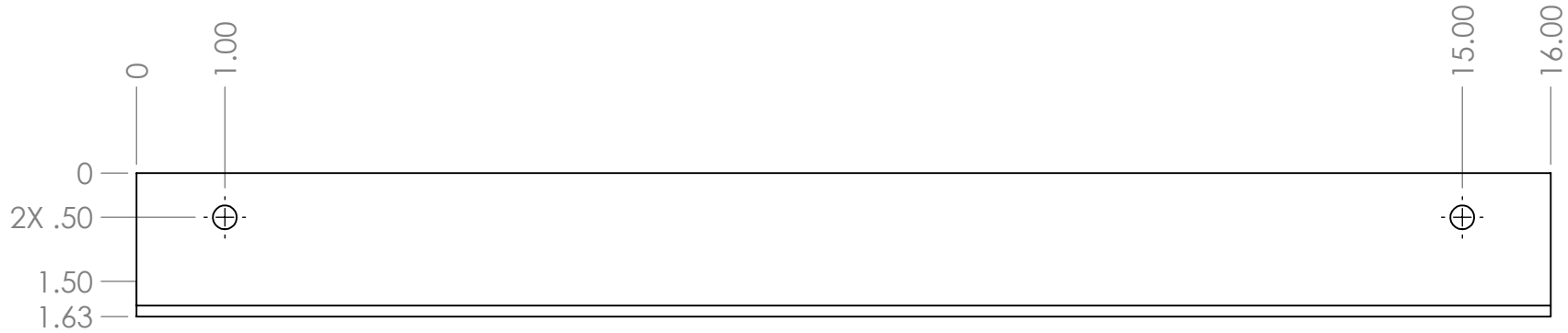
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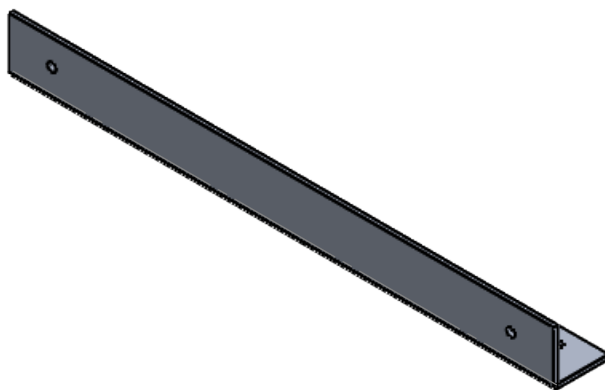
1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Hole Change	12/19/2019	MXS
A1	B	Description/title change	12/19/2019	MXS

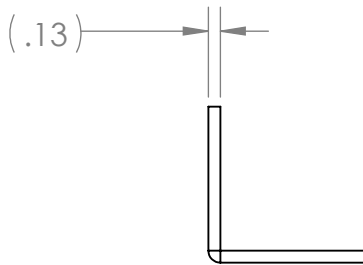
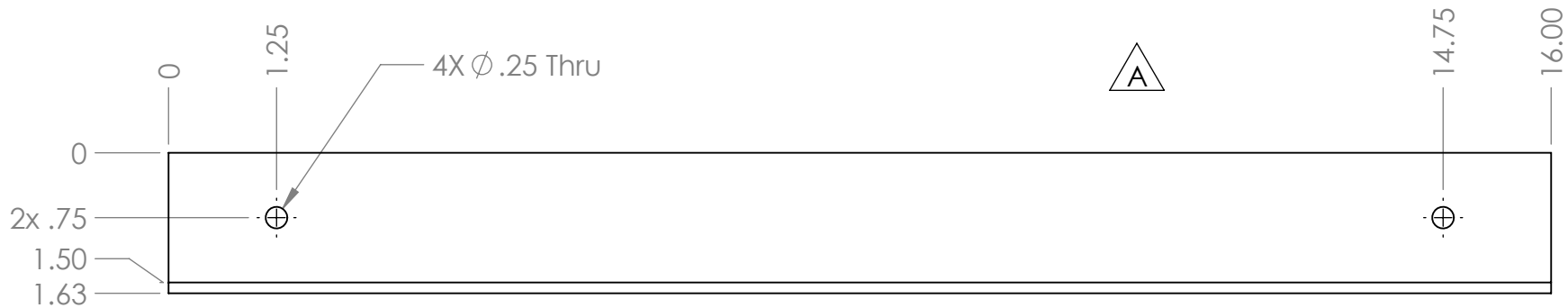
B



B



A





B

A

- Notes:
- 1.Material: 1.5" X 1.5" X .125" Aluminum Angle 6063
  - 2.Remove Sharp Edges and Burrs
  - 3.Tag and Label with Part Number 2x .75

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		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			TITLE: Angle Bracket
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				SIZE <b>B</b>
		MATERIAL				DWG. NO. <b>GE-20362</b>
		FINISH				REV <b>C</b>
NEXT ASSY	USED ON					SCALE: 1:2
APPLICATION		DO NOT SCALE DRAWING				WEIGHT:
						SHEET 1 OF 1

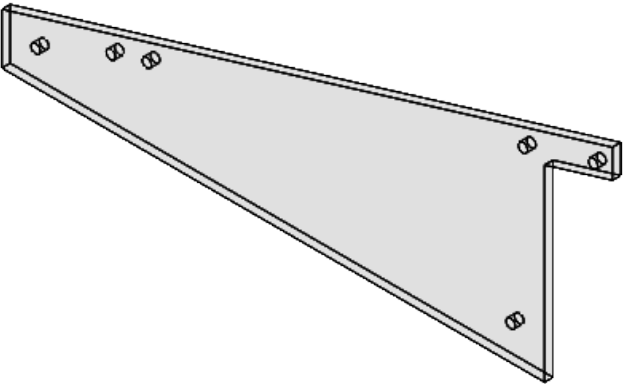
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3

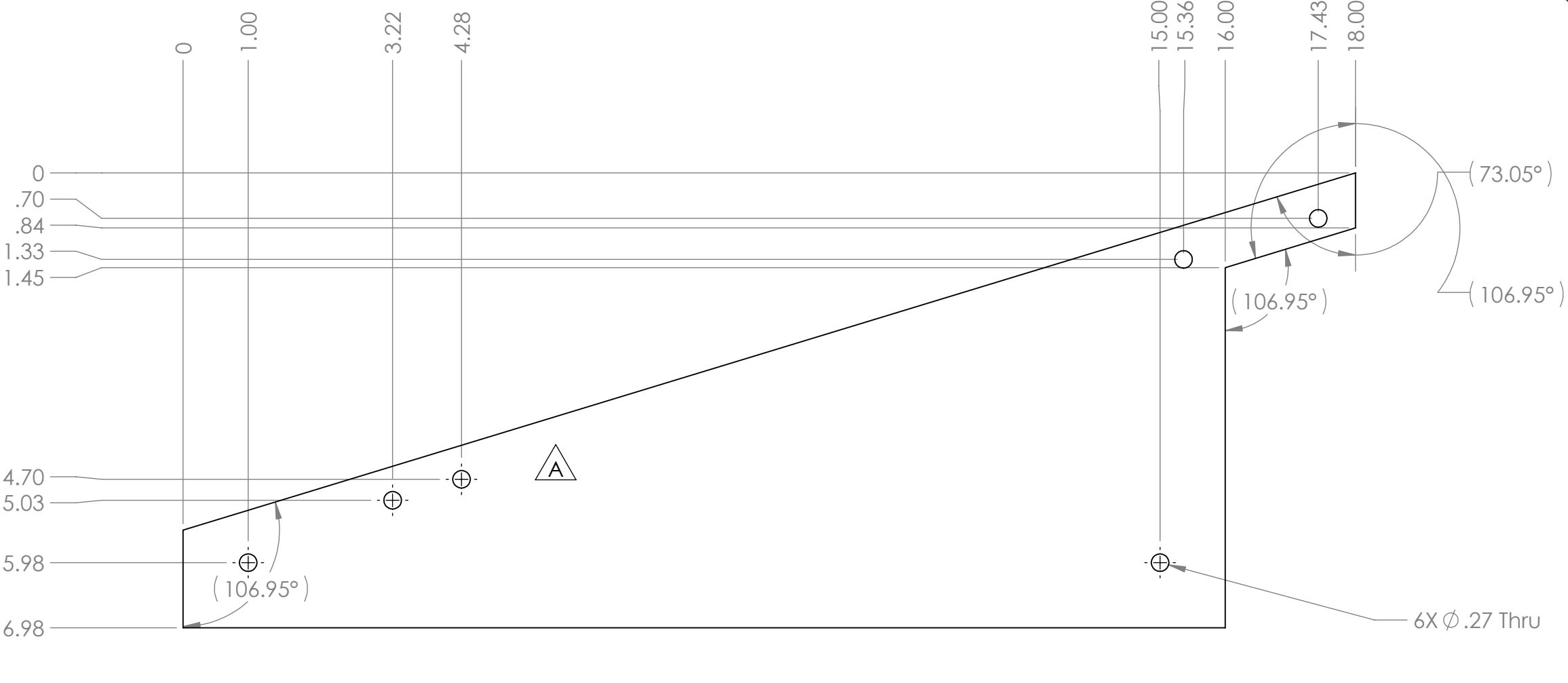
2

1

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Added four holes	11/27/2019	MXS





B



A

- Notes:
1. Material: 1/4" Thick Polycarbonate Sheet, Clear
  2. Remove Sharp Edges and Burrs
  3. Tag and Label with Part Number

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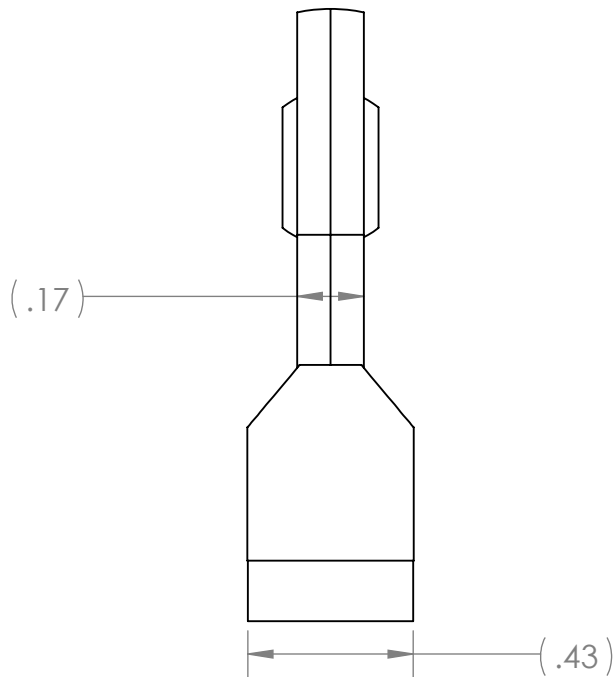
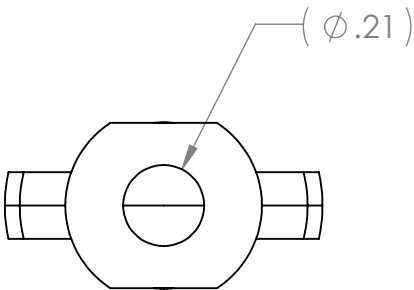
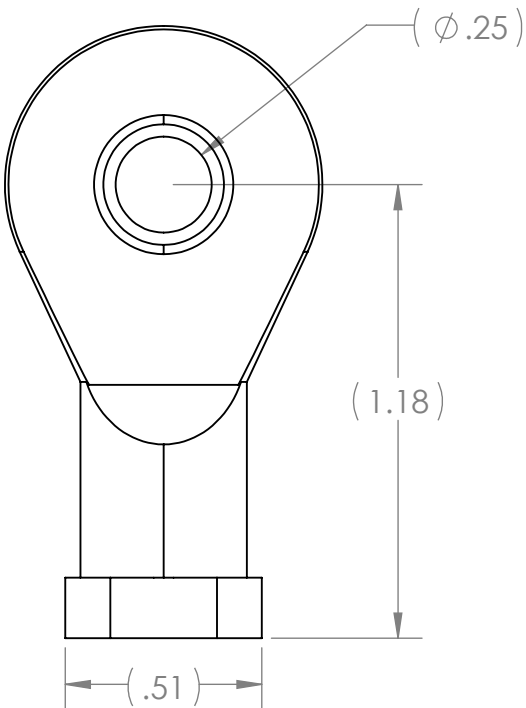
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div></div> <div></div>				
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: Angle Pusher				
		TOLERANCES:	CHECKED							
		FRACTIONAL $\pm 1/16$	ENG APPR.							
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.							
		TWO PLACE DECIMAL $\pm .01$	Q.A.							
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:							
		INTERPRET GEOMETRIC TOLERANCING PER:								
		MATERIAL								
		FINISH								
NEXT ASSY	USED ON									
APPLICATION		DO NOT SCALE DRAWING				SIZE <b>B</b>	DWG. NO. <b>GE-20363</b>		REV <b>A</b>	
						SCALE: 1:2		WEIGHT:	SHEET 1 OF 1	

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1





Description: Rod end with female thread, EBRI igubal®, spherical ball iglide® L280, inch

Vendor: Igus

Part Number: EBRI-04

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		DIMENSIONS ARE IN INCHES	DRAWN				
		TOLERANCES:	CHECKED				
		FRACTIONAL ±1/16	ENG APPR.				
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.				
		TWO PLACE DECIMAL ±.01	Q.A.			SIZE	DWG. NO.
		THREE PLACE DECIMAL ±.001	COMMENTS:			<b>B</b>	GE-20364
		INTERPRET GEOMETRIC				SCALE: 2:1	WEIGHT:
		TOLERANCING PER:					SHEET 1 OF 1
		MATERIAL					
NEXT ASSY	USED ON	FINISH					
APPLICATION		DO NOT SCALE DRAWING					

4

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2

1

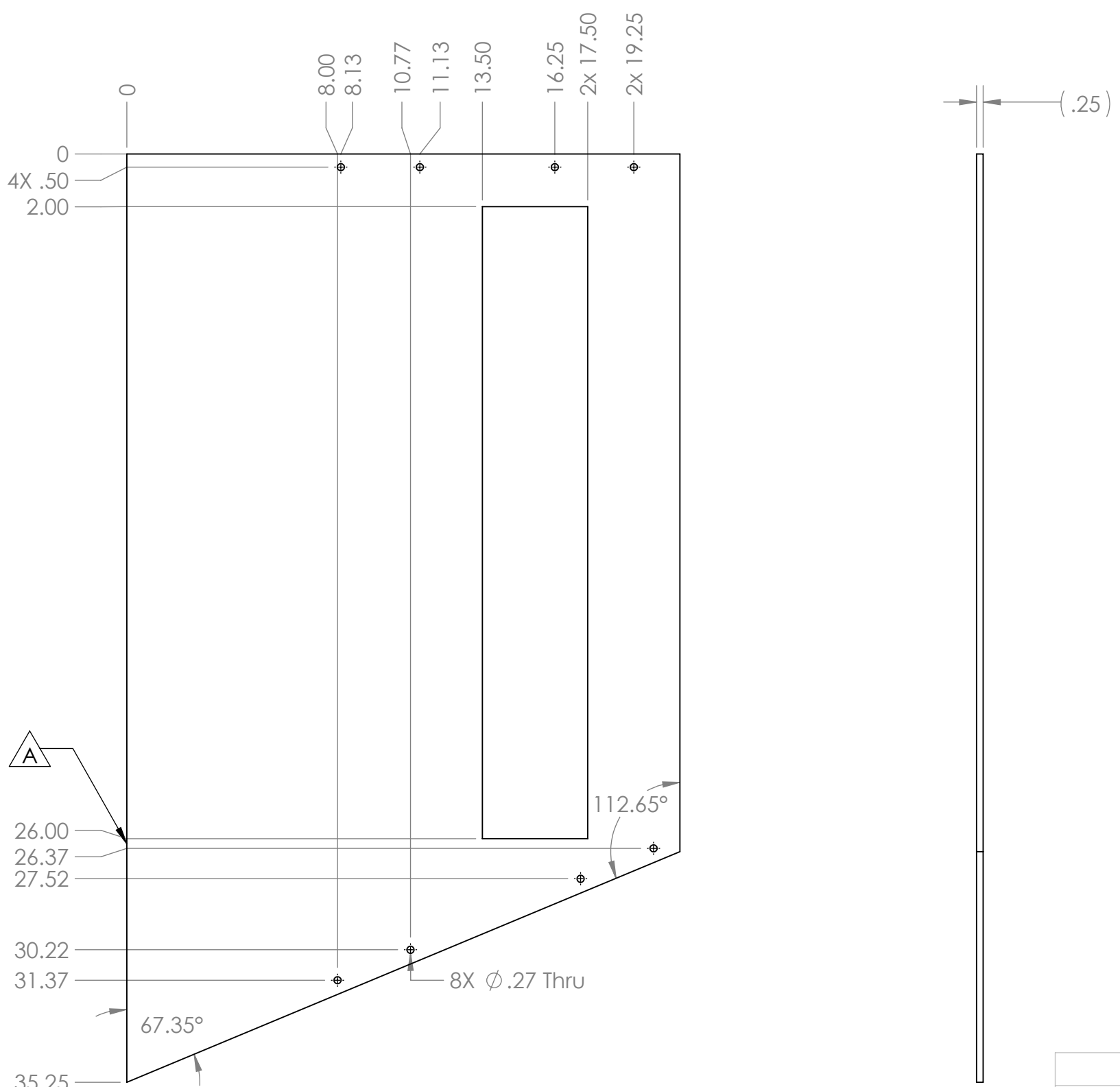


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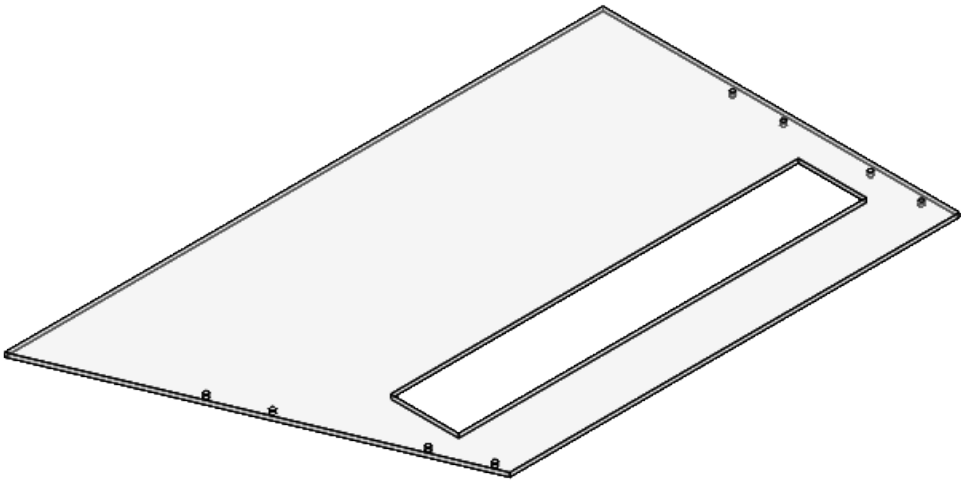
B

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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A4	A	Changed overall diminisions to make smaller	10/24/2019	MXS



- Notes:
1. Material 1/4" Thick Polycarbonate Sheet
  2. Remove Sharp Edges and Burrs
  3. Tag and Label with Part Number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL ±1/16	ENG APPR.		
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.		
		TWO PLACE DECIMAL ±.01	Q.A.		
		THREE PLACE DECIMAL ±.001	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

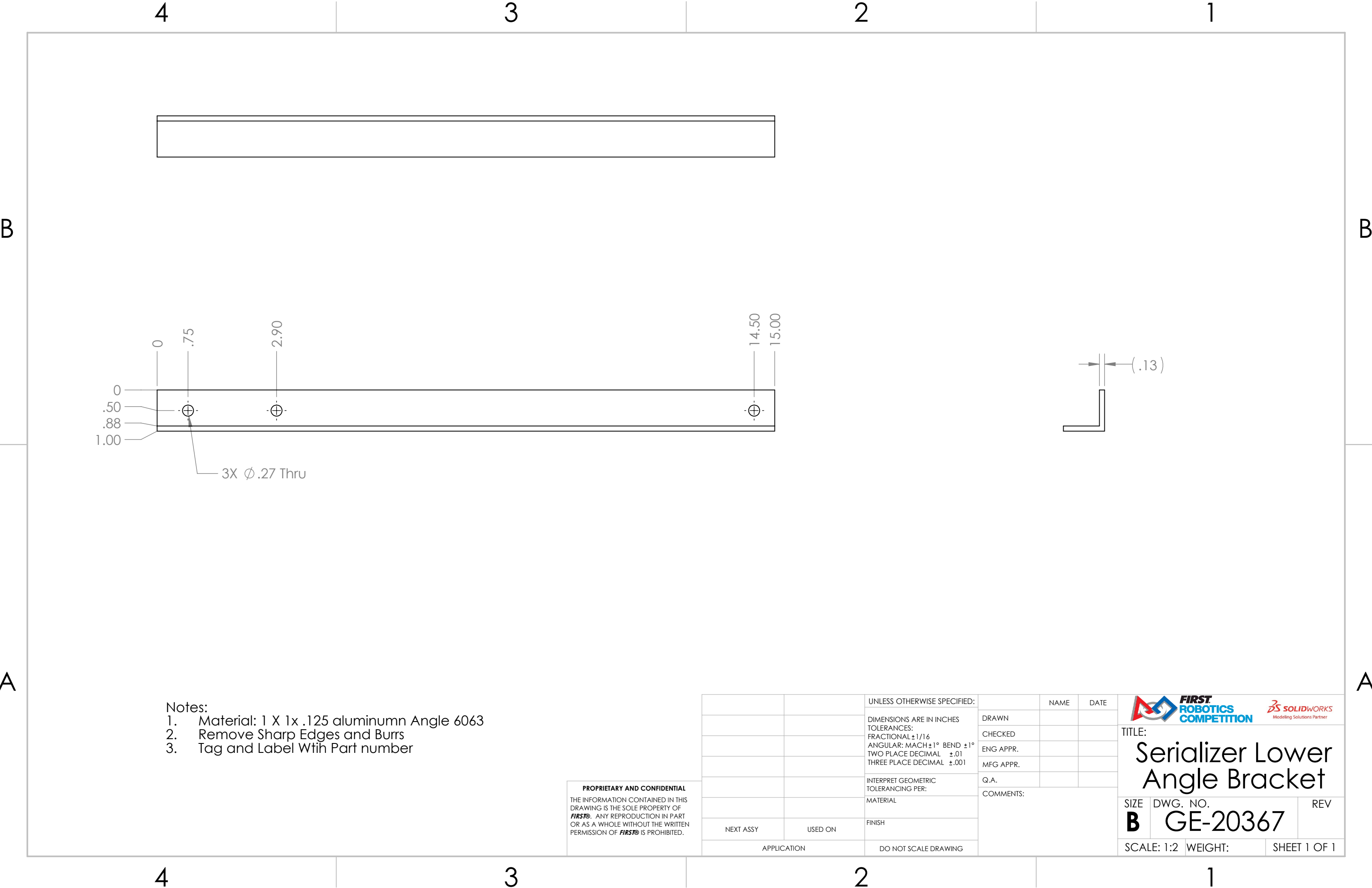


TITLE: 1/4" Thick Polycarbonate Sheet

SIZE DWG. NO. REV



B GE-20365 A

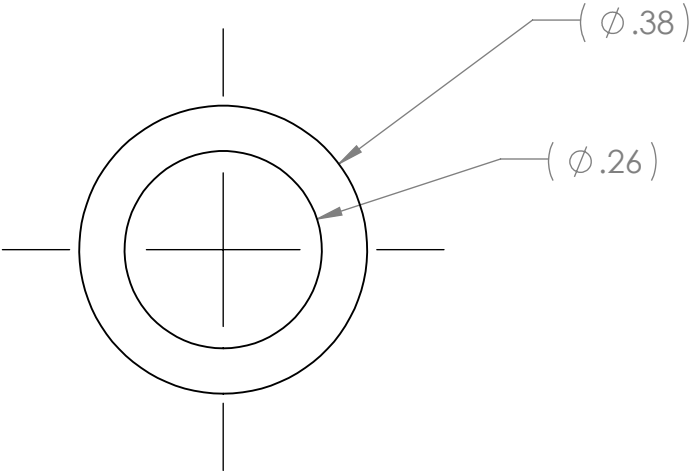
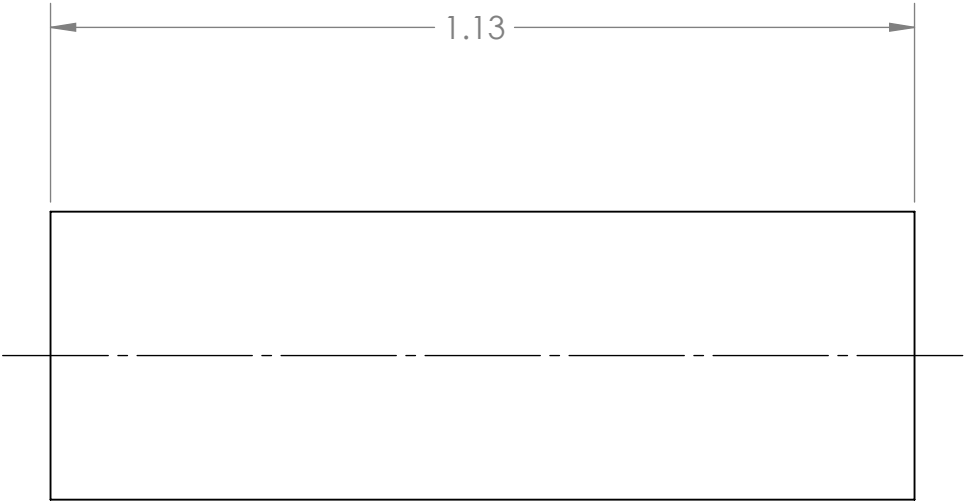
SCALE: 1:5 WEIGHT: SHEET 1 OF 1



- Notes:
- 1. Material: 1 X 1x .125 aluminum Angle 6063
  - 2. Remove Sharp Edges and Burrs
  - 3. Tag and Label Wtih Part number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE: <b>Serializer Lower Angle Bracket</b></div>	
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN				
			CHECKED				
			ENG APPR.				
			MFG APPR.				
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			COMMENTS:	
		MATERIAL					
		FINISH					
NEXT ASSY	USED ON					SIZE DWG. NO. REV	
APPLICATION		DO NOT SCALE DRAWING				<b>B</b> <b>GE-20367</b> 1	
			SCALE: 1:2		WEIGHT:	SHEET 1 OF 1	

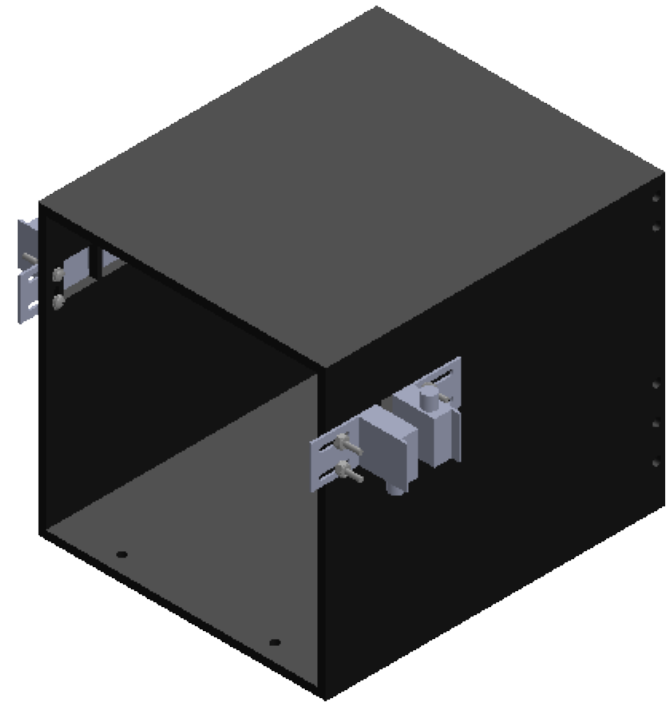
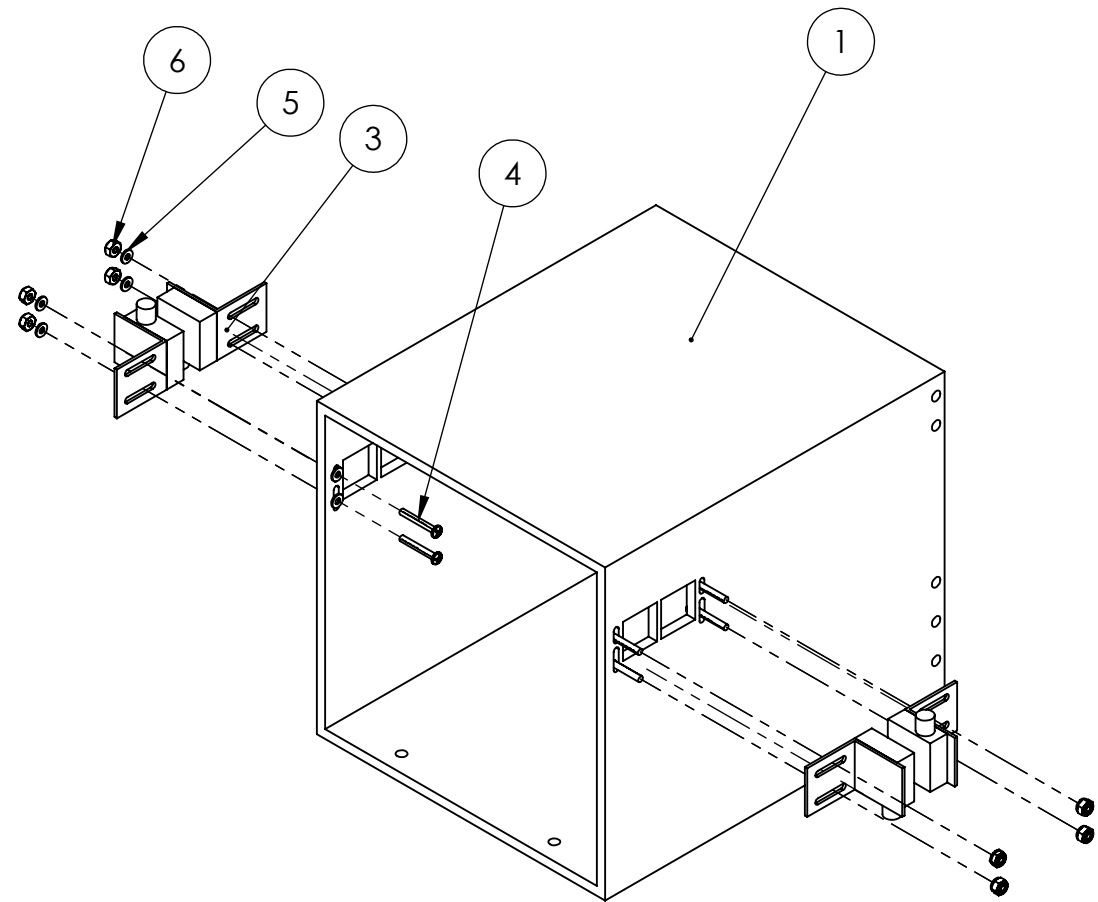


Description: Aluminum Spacer 3/8 OD x .257 ID x 1-1/8 Long

Vendor: Aluminum Spacers



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		DIMENSIONS ARE IN INCHES	DRAWN			TITLE: <div>Serializer 1/4 x 20 Rod Spacer</div>			
		TOLERANCES:	CHECKED						
		FRACTIONAL ±1/16	ENG APPR.						
		ANGULAR: MACH ±1° BEND ±1°	MFG APPR.						
		TWO PLACE DECIMAL ±.01							
		THREE PLACE DECIMAL ±.001							
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.						
		MATERIAL	COMMENTS:						
NEXT ASSY	USED ON	FINISH				SIZE <b>B</b>	DWG. NO. <b>GE-20368</b>		REV
APPLICATION		DO NOT SCALE DRAWING				SCALE: 4:1		WEIGHT:	SHEET 1 OF 1



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20372	Counter Box	1
2	VisiSight_with_bracket	VisiSight Break Beam with Bracket	-
4	6-32_Pan_Phil_1	6-32 Steel Pan Head Phillips Screw	8
5	No.5 Washer	No 5 Screw washer	16
6	Nylock_6_32	6-32 Nylock Nut	8

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			TITLE:  <div>Counter Assembly</div>			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <div>BGE-20370</div>			
		MATERIAL	COMMENTS:						
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:2 WEIGHT: SHEET 1 OF 3						

4

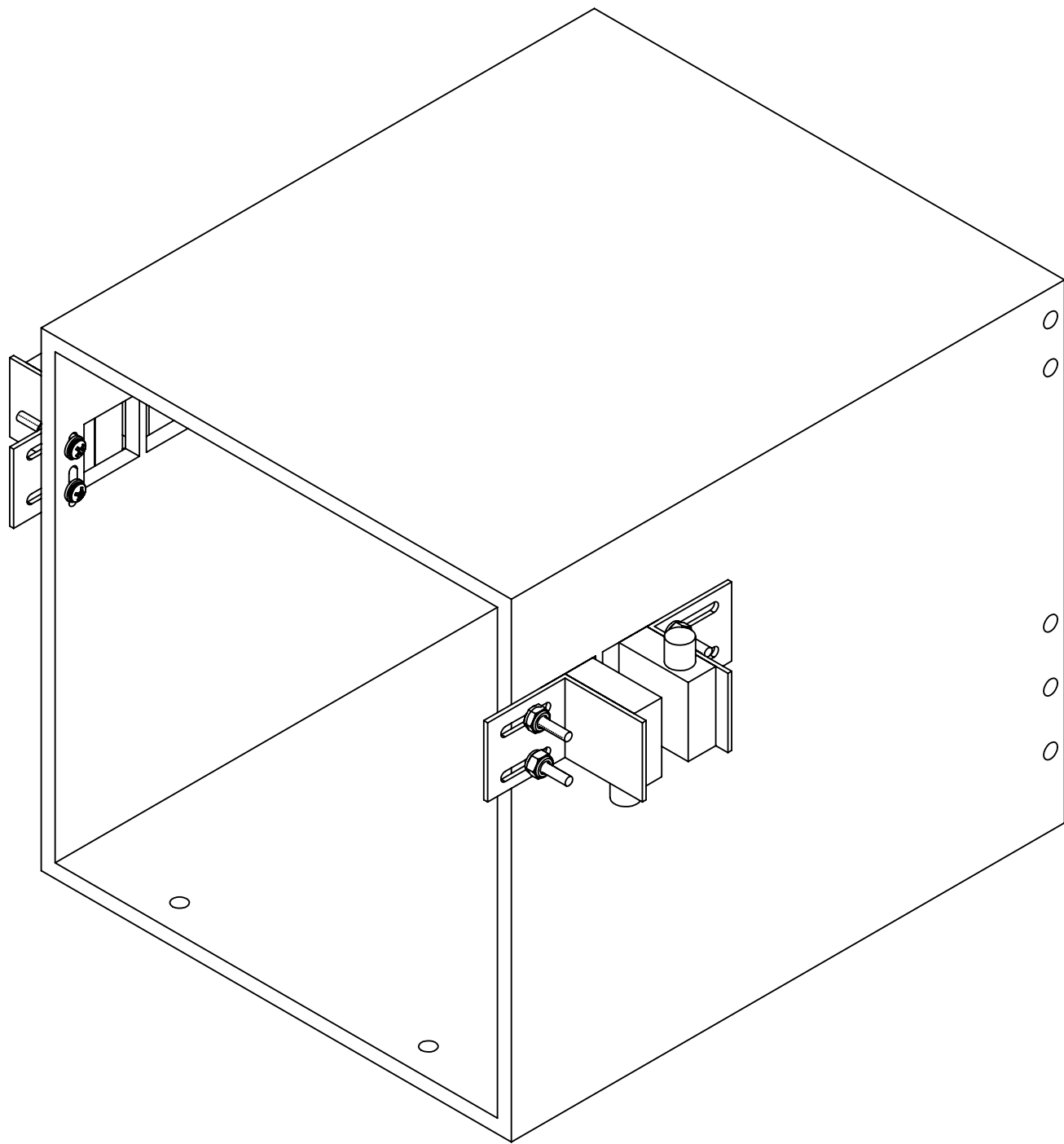
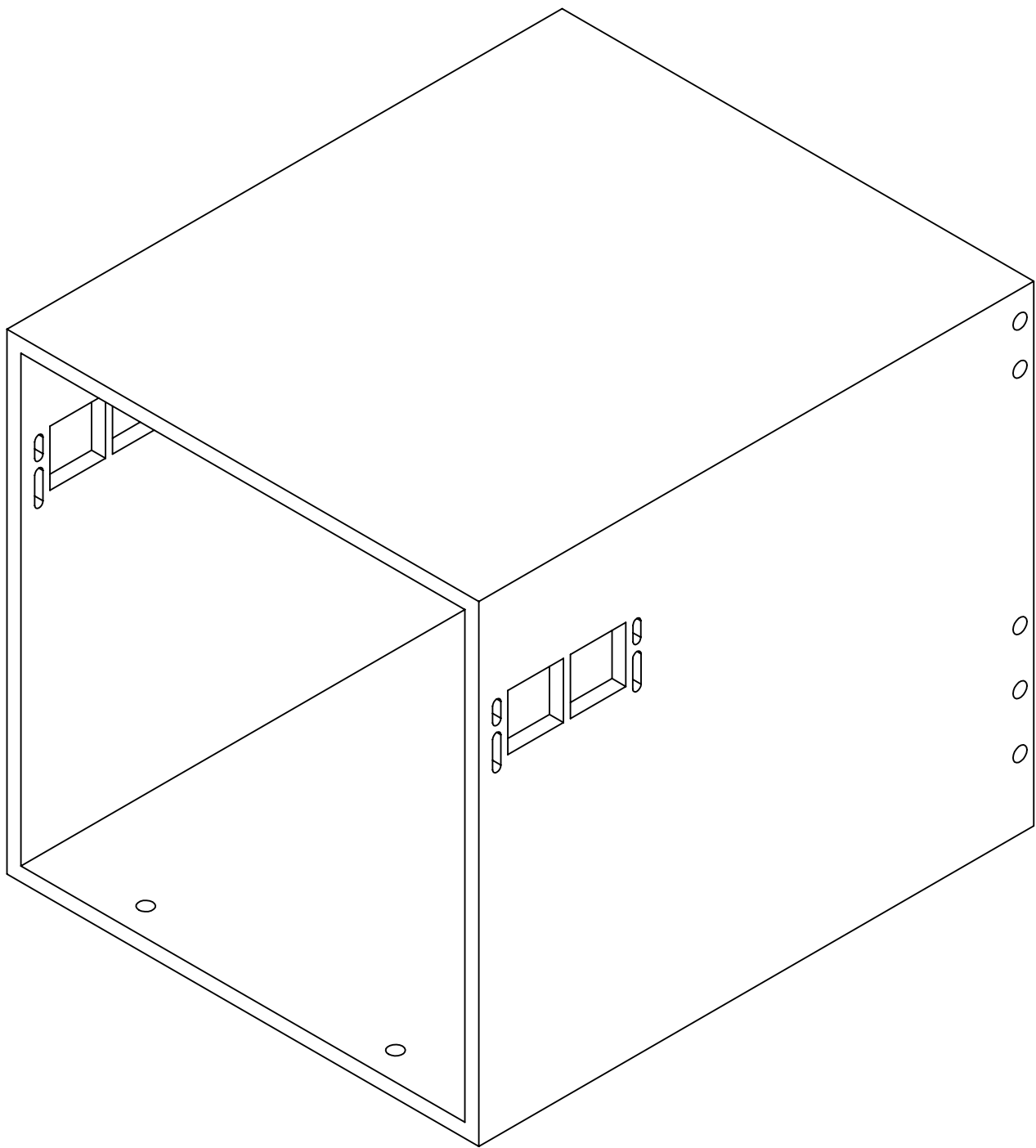
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B



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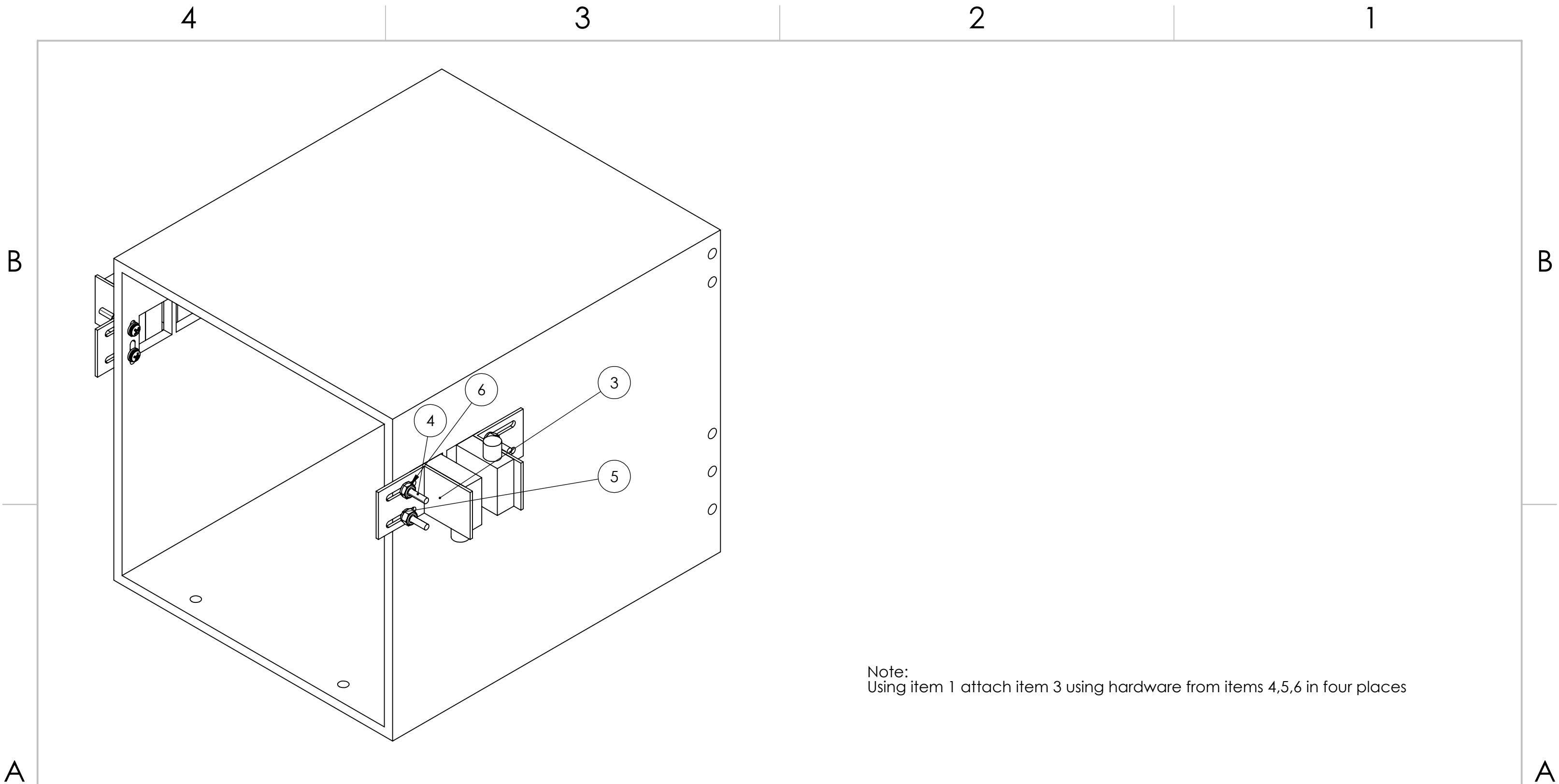


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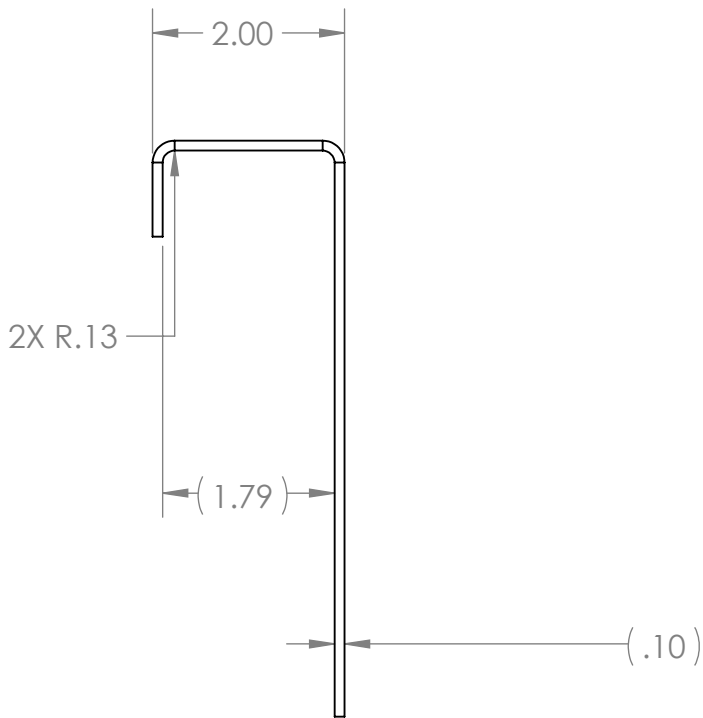
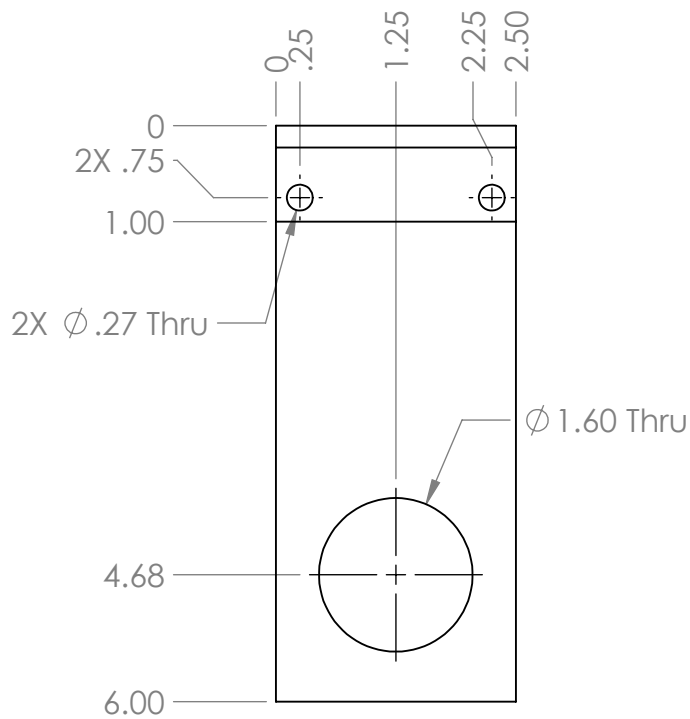
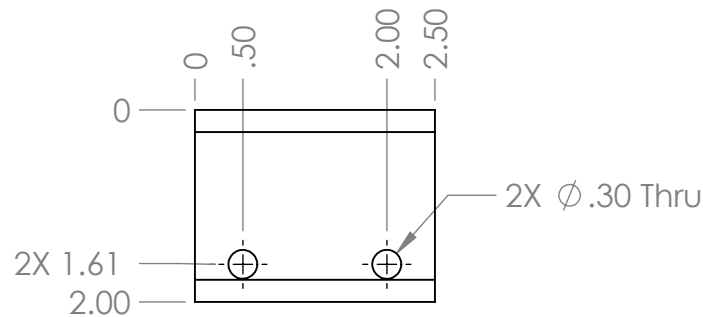
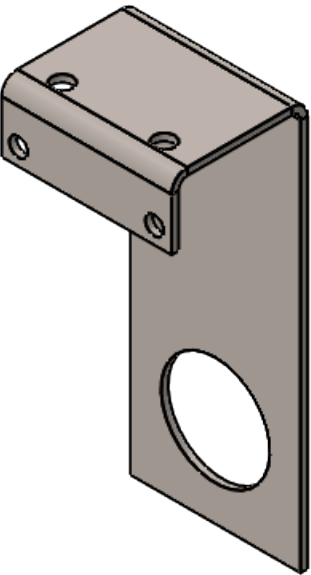
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		DIMENSIONS ARE IN INCHES	DRAWN					
		TOLERANCES:	CHECKED					
		FRACTIONAL $\pm 1/16$	ENG APPR.					
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.					
		TWO PLACE DECIMAL $\pm .01$	Q.A.					
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:					
		INTERPRET GEOMETRIC TOLERANCING PER:						
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						





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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	  TITLE: <b>Counter Assembly</b>
		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			SIZE DWG. NO. REV <b>B</b> <b>GE-20370</b>
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				
		MATERIAL				SCALE: 1:4 WEIGHT: SHEET 3 OF 3
NEXT ASSY	USED ON	FINISH				
APPLICATION		DO NOT SCALE DRAWING				

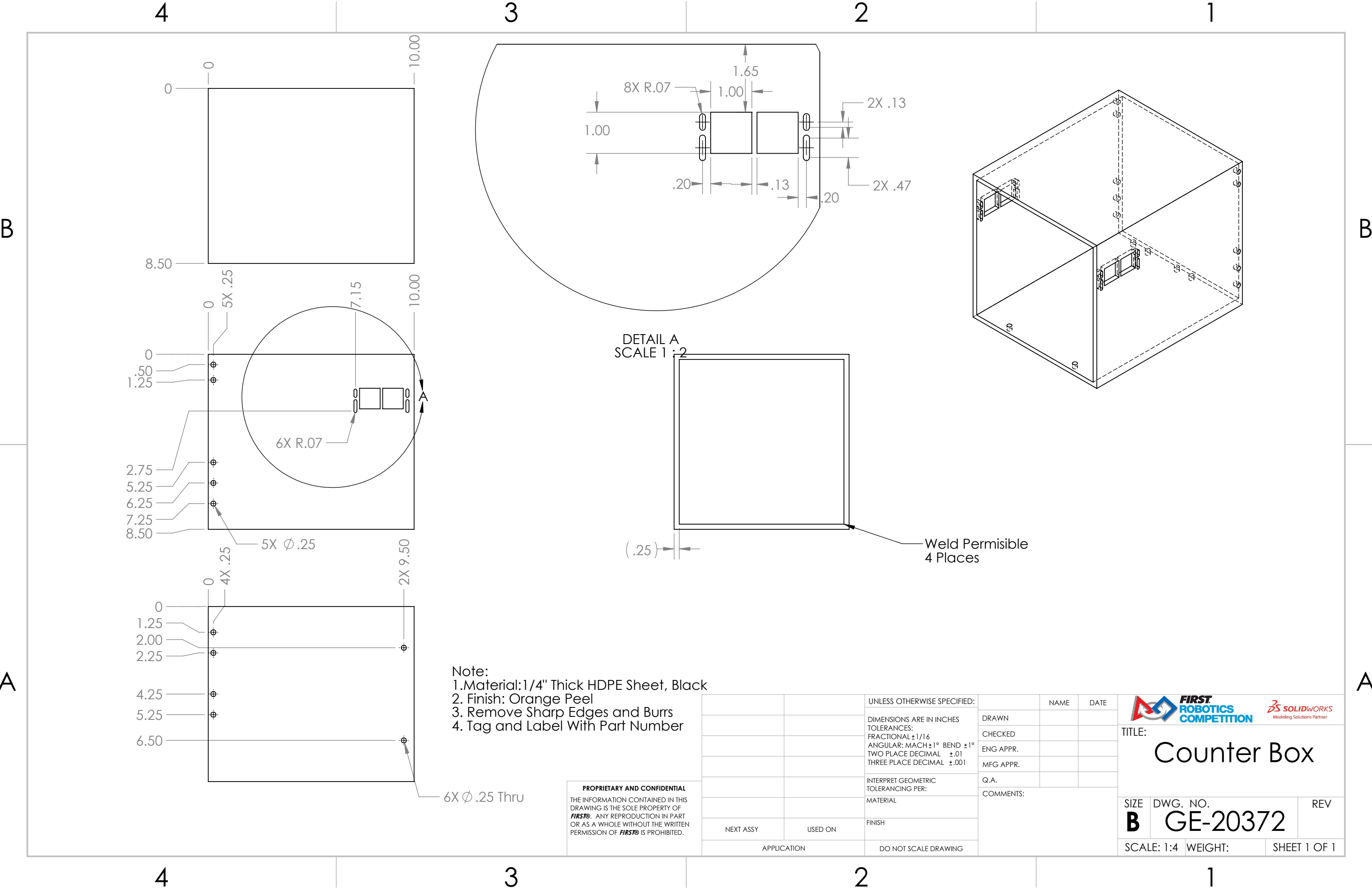


Notes:  
1. Material: 12 GA Pre Plated Steel  
2. Remove Sharp Edges and Burrs  
3. Tag and Label with Part Number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div><div>FIRST ROBOTICS COMPETITION</div></div> <div></div>			
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  12 GA Plated Steel			
		TOLERANCES:	CHECKED						
		FRACTIONAL $\pm 1/16$	ENG APPR.						
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.						
		TWO PLACE DECIMAL $\pm .01$							
		THREE PLACE DECIMAL $\pm .001$							
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.						
		MATERIAL	COMMENTS:						
		FINISH							
NEXT ASSY	USED ON					SIZE <b>B</b>	DWG. NO. <b>GE-20371</b>		REV
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2		WEIGHT:	SHEET 1 OF 1





Note:  
1. Material: 1/4" Thick HDPE Sheet, Black  
2. Finish: Orange Peel  
3. Remove Sharp Edges and Burrs  
4. Tag and Label With Part Number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES		DRAWN	
		TOLERANCES:		CHECKED	
		FRACTIONAL $\pm 1/16$		ENG APPR.	
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$		MFG APPR.	
		TWO PLACE DECIMAL $\pm .01$		Q.A.	
		THREE PLACE DECIMAL $\pm .001$		COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY		USED ON			
APPLICATION		DO NOT SCALE DRAWING			
				TITLE:	
				Counter Box	
SIZE		DWG. NO.		REV	
B		GE-20372			
SCALE: 1:4		WEIGHT:		SHEET 1 OF 1	

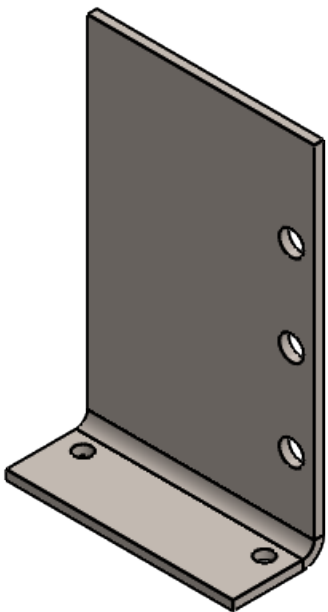
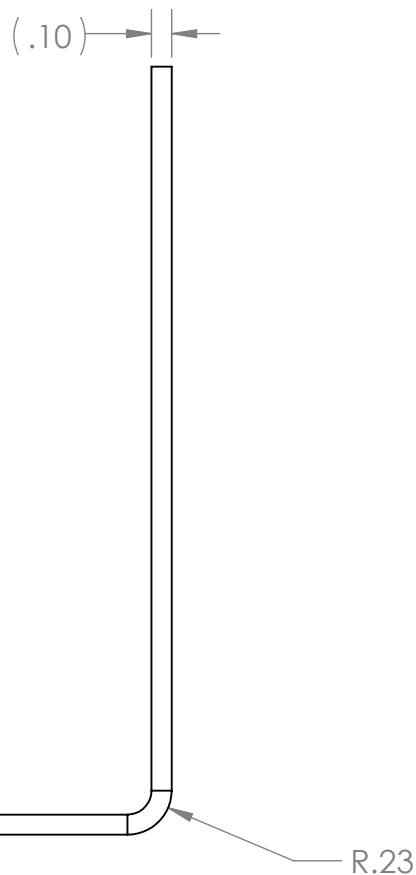
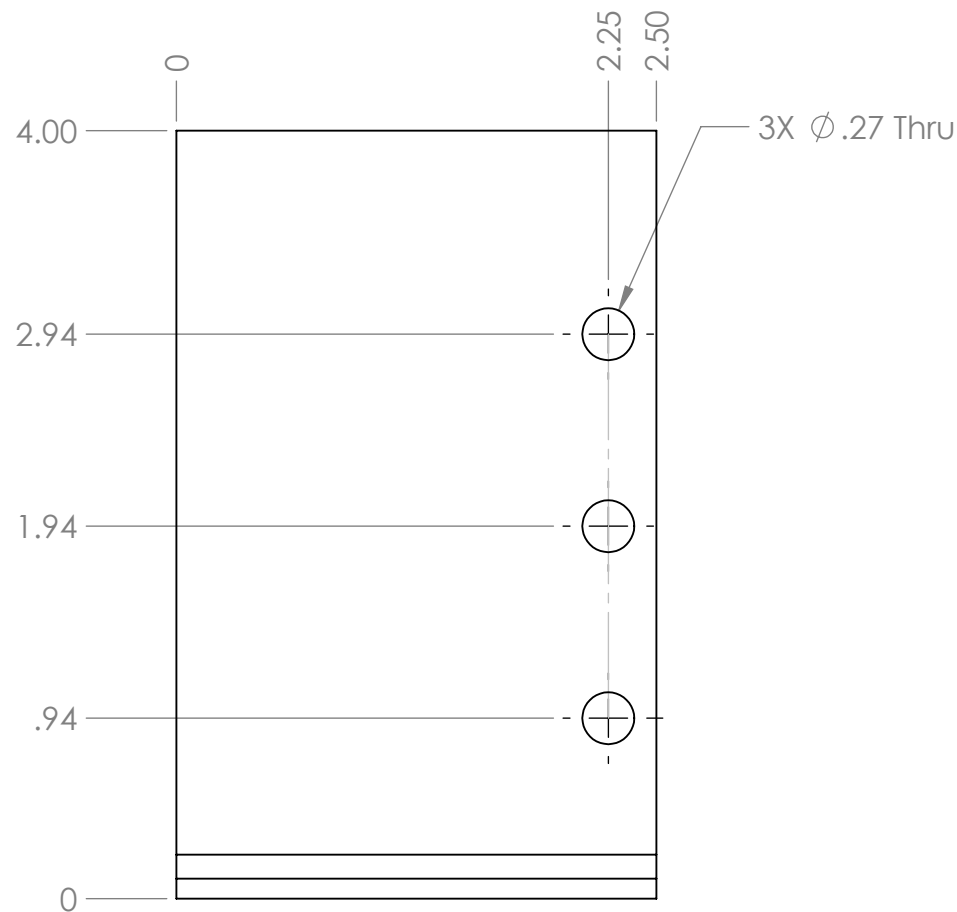
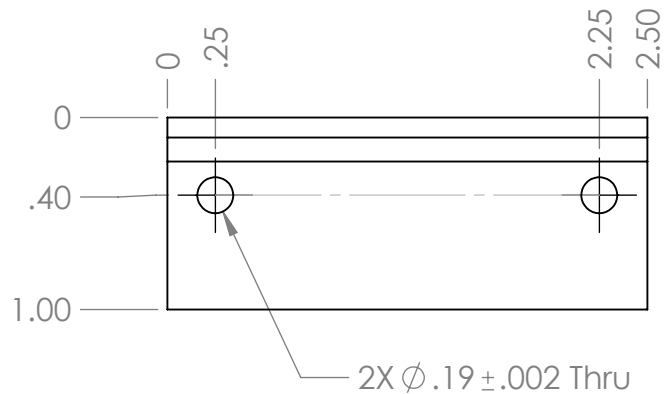
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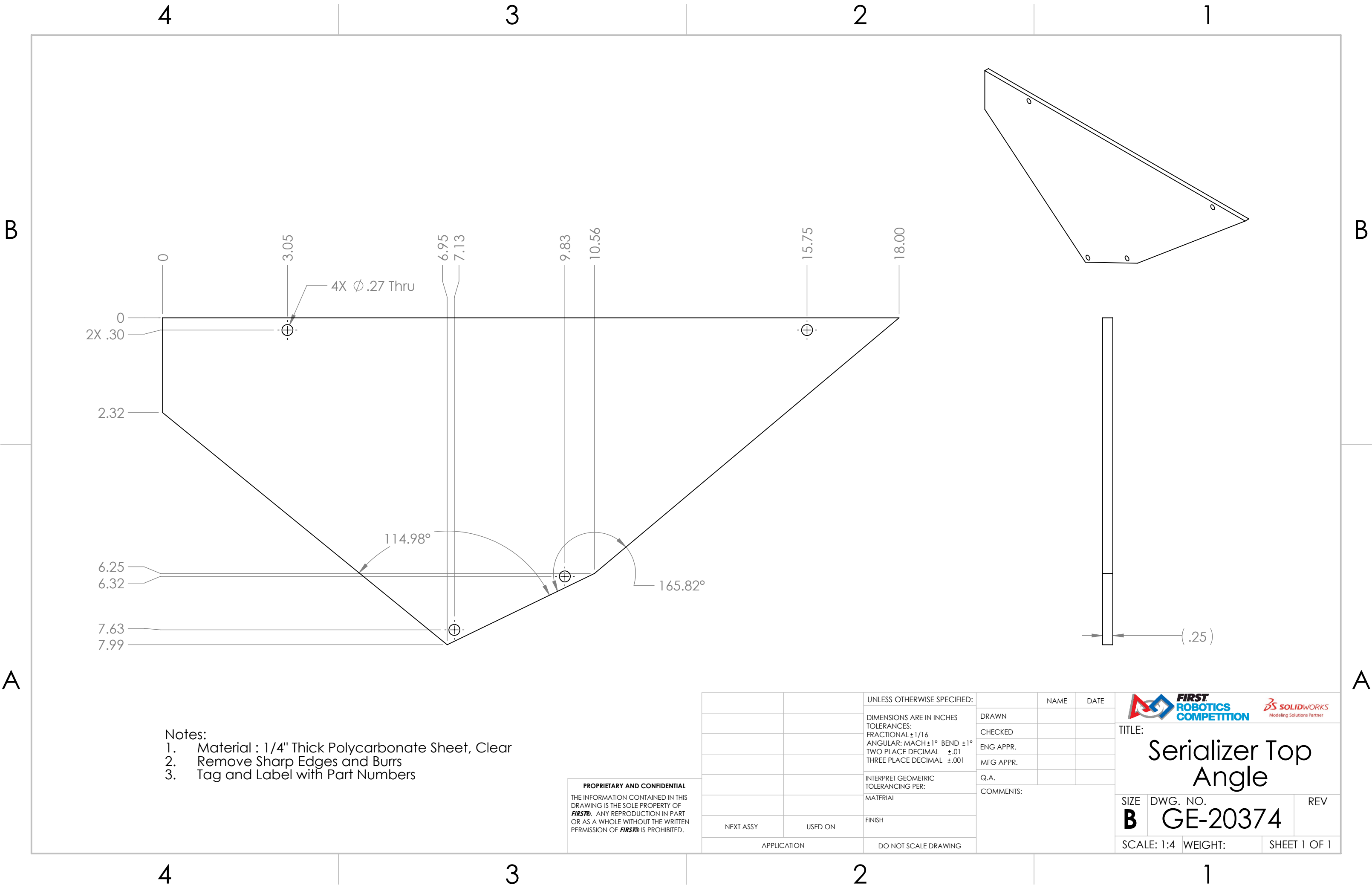
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A1	A	Changed Part Name	11/22/2019	MXS



Note:  
1.Material: 12 Gage Preplated Steel Sheet  
2.Remove Sharp Edges and Burrs  
3.Tag and Label With Part Number



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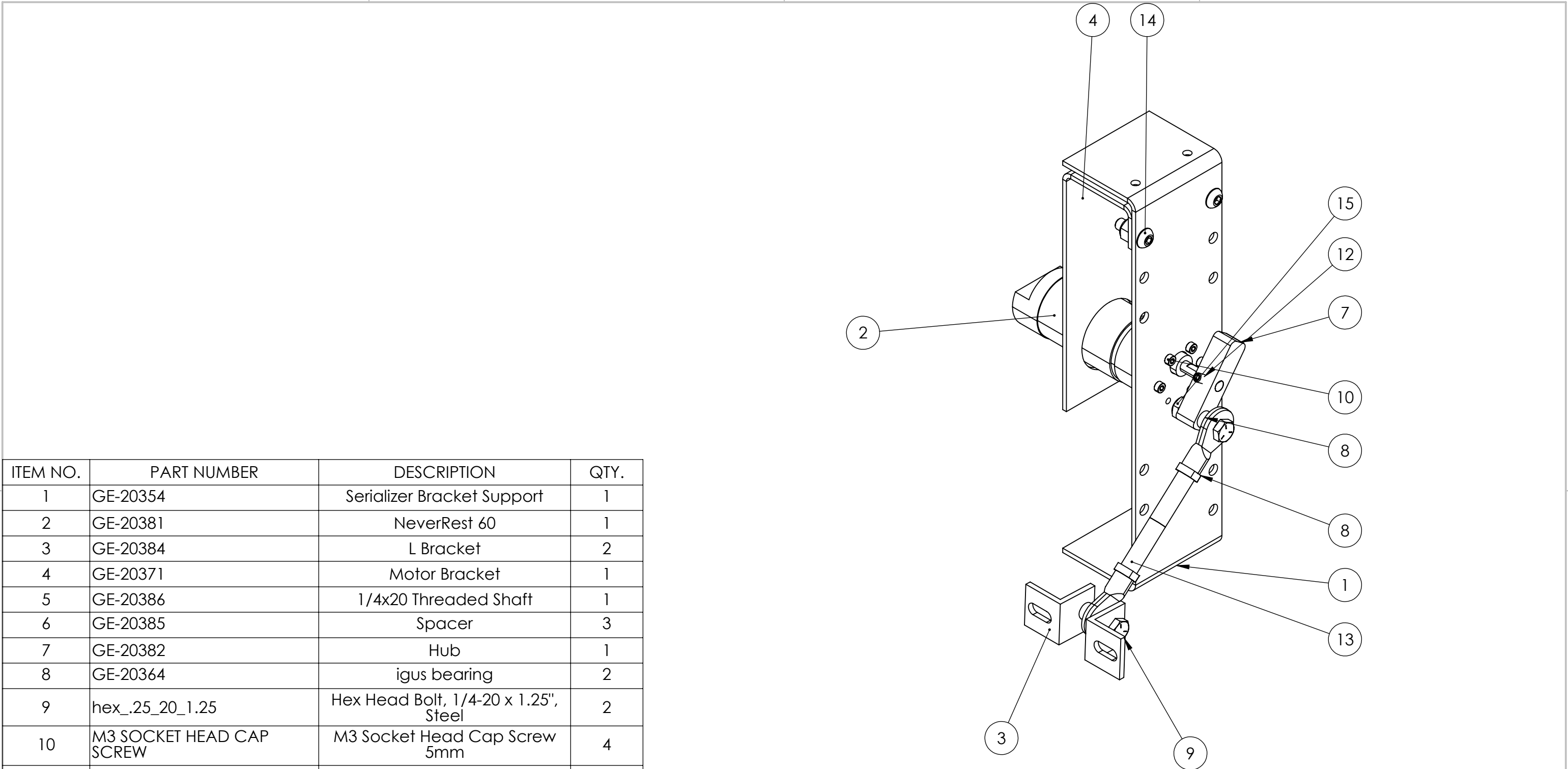
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 				
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  <h1>Counter Box Side Bracket</h1>				
		TOLERANCES:	CHECKED							
		FRACTIONAL $\pm 1/16$	ENG APPR.							
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.							
		TWO PLACE DECIMAL $\pm .01$	Q.A.							
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE		DWG. NO.		REV
		INTERPRET GEOMETRIC TOLERANCING PER:				B		GE-20373		A
		MATERIAL				SCALE: 1:1		WEIGHT:		SHEET 1 OF 1
NEXT ASSY	USED ON	FINISH								
APPLICATION		DO NOT SCALE DRAWING								



- Notes:
- 1. Material : 1/4" Thick Polycarbonate Sheet, Clear
  - 2. Remove Sharp Edges and Burrs
  - 3. Tag and Label with Part Numbers

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 				
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:  <h1>Serializer Top Angle</h1>				
		TOLERANCES:	CHECKED							
		FRACTIONAL $\pm 1/16$	ENG APPR.							
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.							
		TWO PLACE DECIMAL $\pm .01$	Q.A.							
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			SIZE		DWG. NO.		REV
		INTERPRET GEOMETRIC TOLERANCING PER:				B		GE-20374		
		MATERIAL								
		FINISH								
NEXT ASSY	USED ON					SCALE: 1:4		WEIGHT:	SHEET 1 OF 1	
APPLICATION		DO NOT SCALE DRAWING								



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20354	Serializer Bracket Support	1
2	GE-20381	NeverRest 60	1
3	GE-20384	L Bracket	2
4	GE-20371	Motor Bracket	1
5	GE-20386	1/4x20 Threaded Shaft	1
6	GE-20385	Spacer	3
7	GE-20382	Hub	1
8	GE-20364	igus bearing	2
9	hex_.25_20_1.25	Hex Head Bolt, 1/4-20 x 1.25", Steel	2
10	M3 SOCKET HEAD CAP SCREW	M3 Socket Head Cap Screw 5mm	4
11	nylock_.25_20	Steel Nylon-Insert Locknut, 1/4"-20	2
12	CUP POINT SET SCREW 10-24_.50	Cup Point Set Screw 10-24	1
13	GE-20368	Serializer 1/4 x 20 Rod Spacer	2
14	round_hex_.25_20_.75_full	Steel Button Head Hex Drive Screw, 1/4"-20 x 3/4" long, fully threaded	2
15	Nylock_Shallow_.25_.20	Nylock Shallow 1/4 x 20	2

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN		
		INTERPRET GEOMETRIC TOLERANCING PER:	CHECKED		
		MATERIAL	ENG APPR.		
		FINISH	MFG APPR.		
NEXT ASSY	USED ON		Q.A.		
APPLICATION		DO NOT SCALE DRAWING	COMMENTS:		
			TITLE:		
			NeverRest Assembly		
			SIZE	DWG. NO.	REV
			B	GE-20380	
			SCALE: 1:2		WEIGHT:
					SHEET 1 OF 2



4

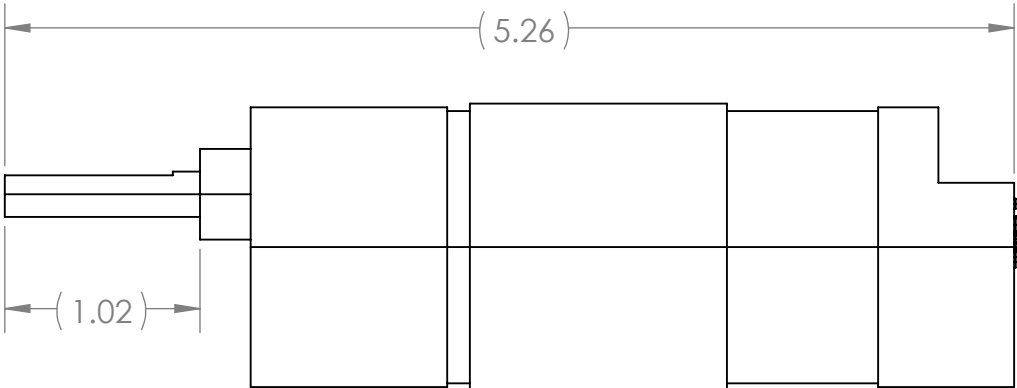
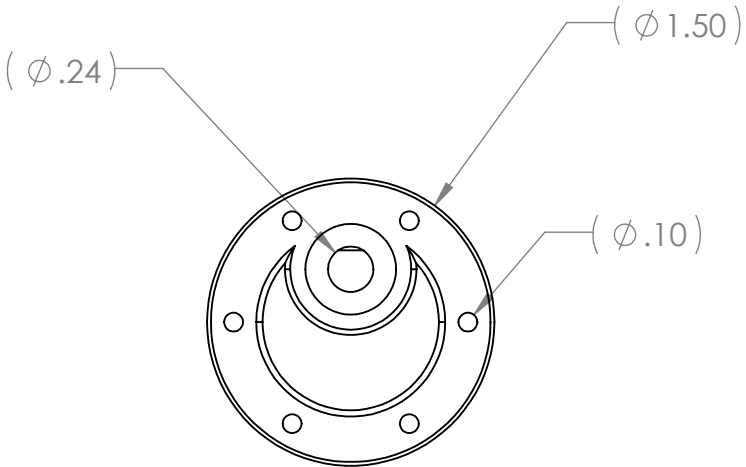
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**Description:** NeverRest 60 Motor

**Vendor:** Andymark

**Part Number:** am-3103

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN		
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm 1/16$	ENG APPR.		
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.		
		TWO PLACE DECIMAL $\pm .01$	Q.A.		
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:		
		INTERPRET GEOMETRIC			
		TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			



TITLE:  
**NeverRest 60**

SIZE	DWG. NO.	REV
<b>B</b>	<b>GE-20381</b>	

SCALE: 1:2	WEIGHT:	SHEET 1 OF 1
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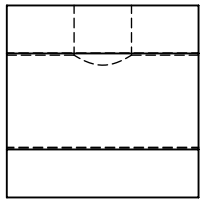
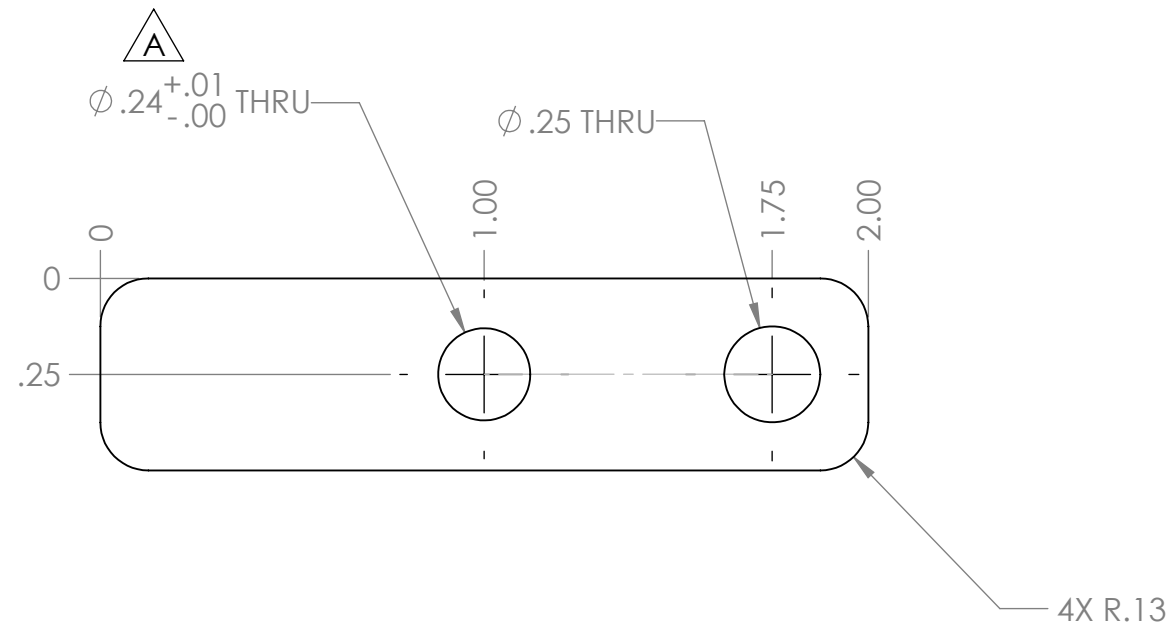
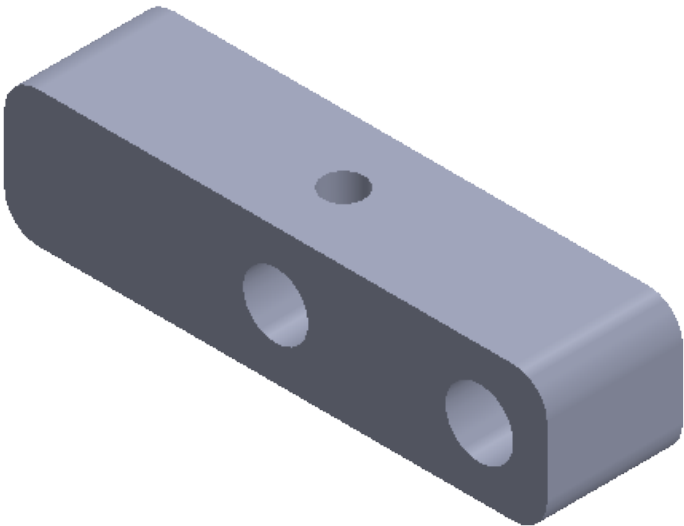
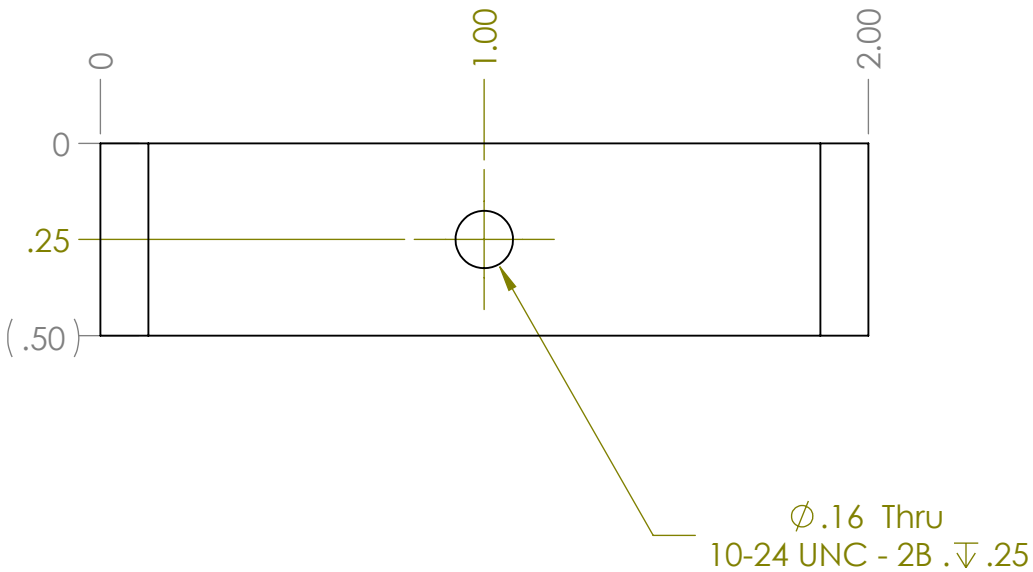
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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
B4	A	Changed Hole size and tolорanced	10/23/2019	MXS



Note:  
1.Material: 1/2" Square Bar, 6061 Aluminum  
2. Remove Sharp Edges and Burrs  
3. Tag and Label With Part Number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 
		DIMENSIONS ARE IN INCHES	DRAWN			
		TOLERANCES:	CHECKED			
		FRACTIONAL $\pm 1/16$	ENG APPR.			
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
		TWO PLACE DECIMAL $\pm .01$	Q.A.			TITLE: <h1>Hub</h1>
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:				SIZE DWG. NO. REV
		MATERIAL				<b>B</b> <b>GE-20382</b> <b>B</b>
NEXT ASSY	USED ON	FINISH				SCALE: 2:1 WEIGHT: SHEET 1 OF 1
APPLICATION		DO NOT SCALE DRAWING				

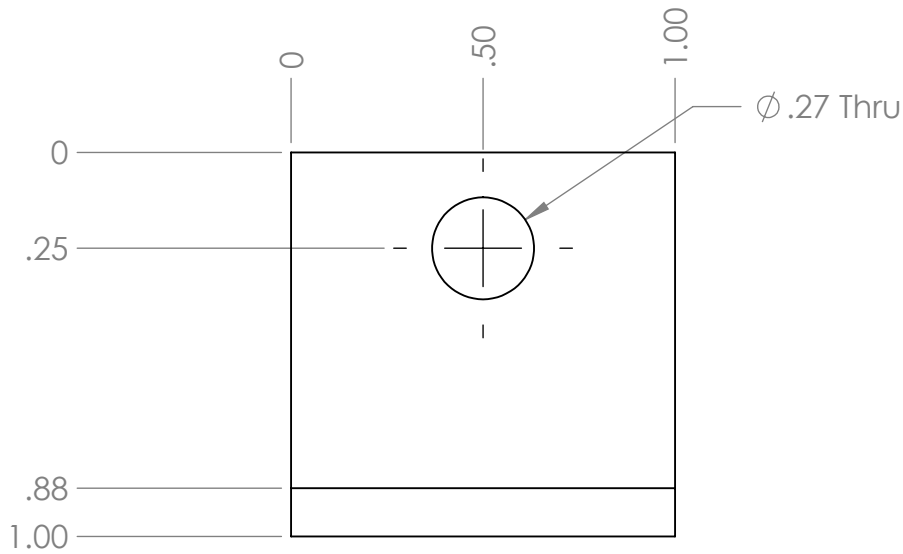
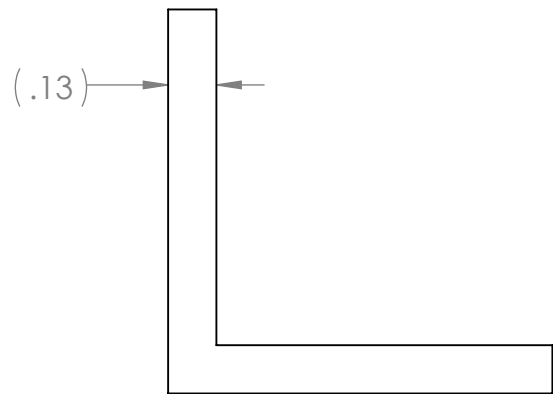
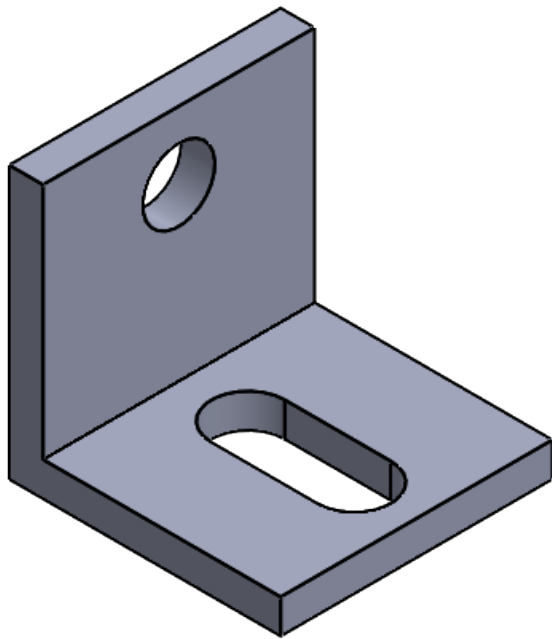
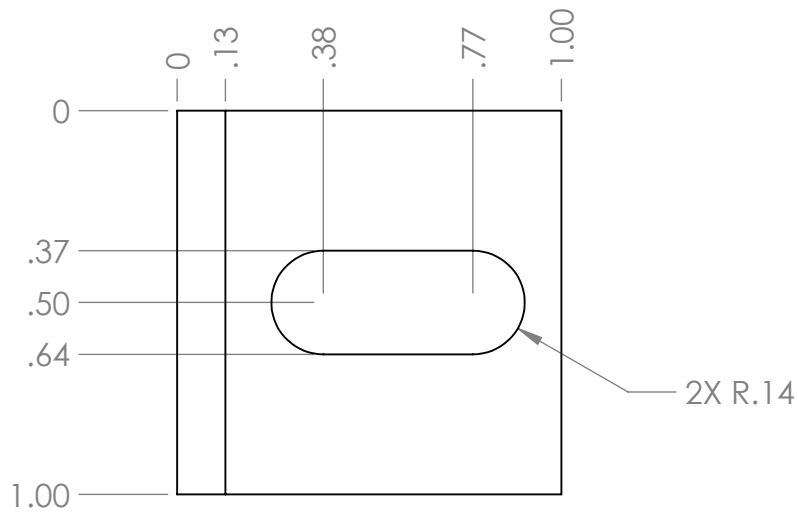


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Notes:

1. Material: 1x1x.125 Aluminum Angle 6063
2. Remove Sharp Edges and Burrs
3. Tag and Label with Part Numbers

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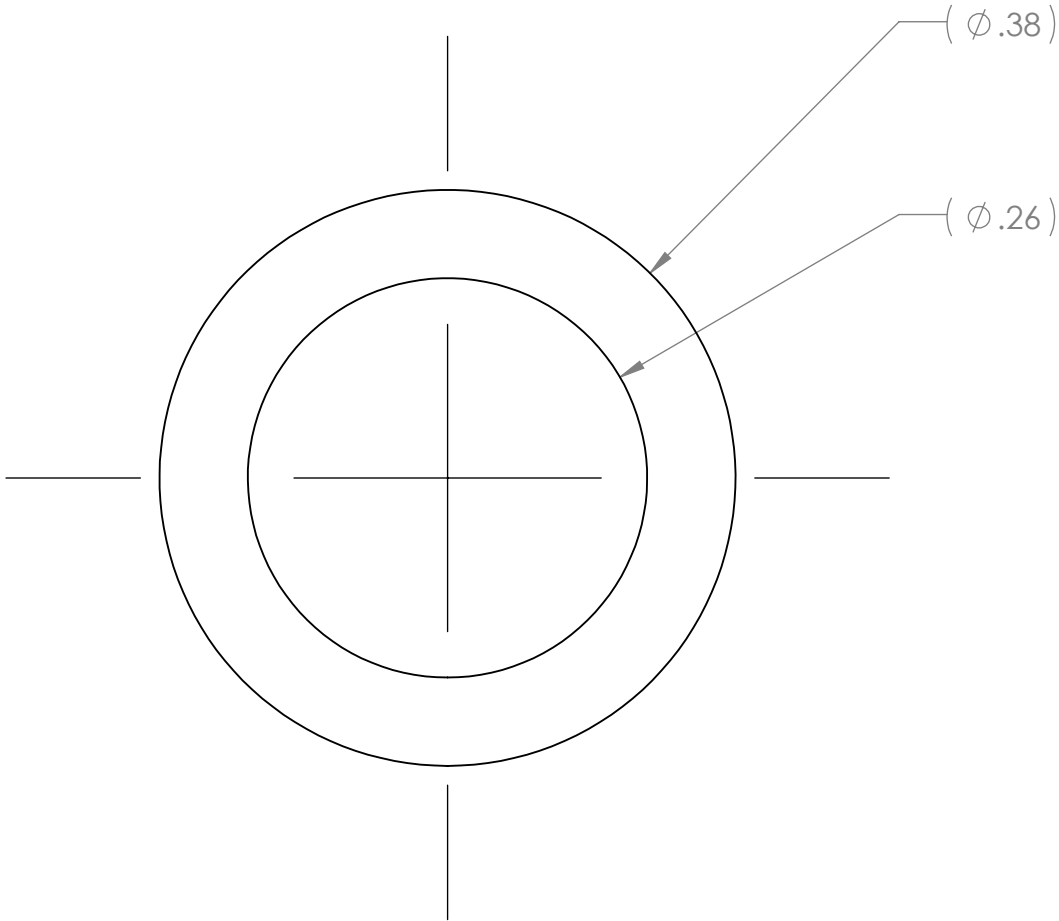
		UNLESS OTHERWISE SPECIFIED:			NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			
			CHECKED			
			ENG APPR.			
			MFG APPR.			
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			
		MATERIAL	COMMENTS:			
		FINISH				
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				
			TITLE: <b>L Bracket</b>			
			SIZE <b>B</b>	DWG. NO. <b>GE-20384</b>	REV	
			SCALE: 2:1	WEIGHT:	SHEET 1 OF 1	

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Notes

Vendor: McMasterCarr

Partnumber: 94639A569

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  <h1>Spacer</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			COMMENTS:		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON					SIZE <b>B</b>	DWG. NO. <b>GE-20385</b>	REV
APPLICATION		DO NOT SCALE DRAWING				SCALE: 8:1	WEIGHT:	SHEET 1 OF 1

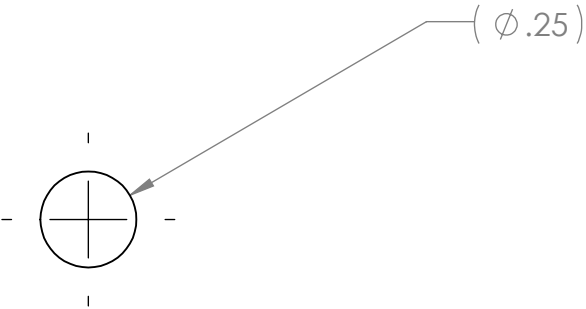
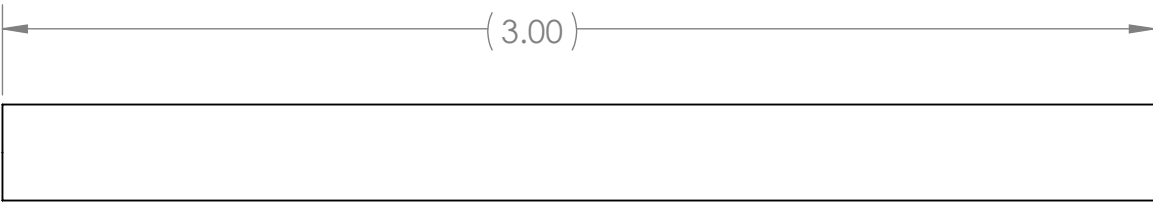
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REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A3	A	Changed Part and part length	10/24/2019	MXS



Notes:  
1. Material:Low-Strength Steel Threaded Rod  
1/4"-20 Thread Size, 3" Long  
  
Mcmaster-Carr: 91565A554

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  1/4x20 Threaded Shaft		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <b>B</b> <b>GE-20386</b> <b>A</b>		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING						

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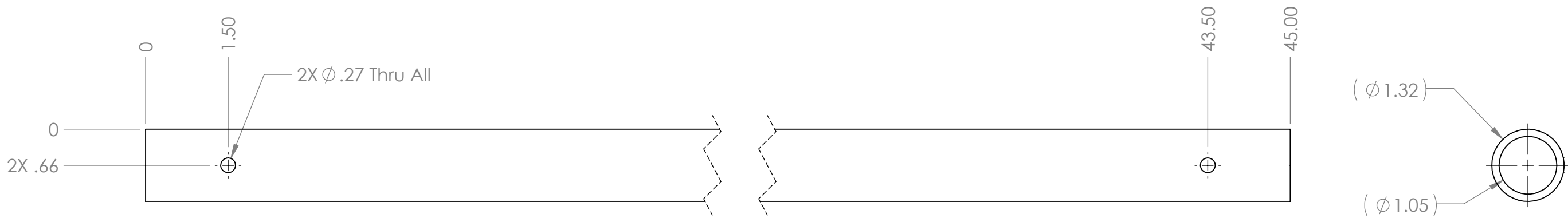
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Notes:  
1.Material: 1" Schedule 40 Pipe, 6061 Aluminum  
2. Remove Sharp Edges and Burrs  
3. Tag and Label With Part Number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  support bar		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> GE-20387		
		MATERIAL	COMMENTS:					
NEXT ASSY	USED ON	FINISH						
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2	WEIGHT:	SHEET 1 OF 1

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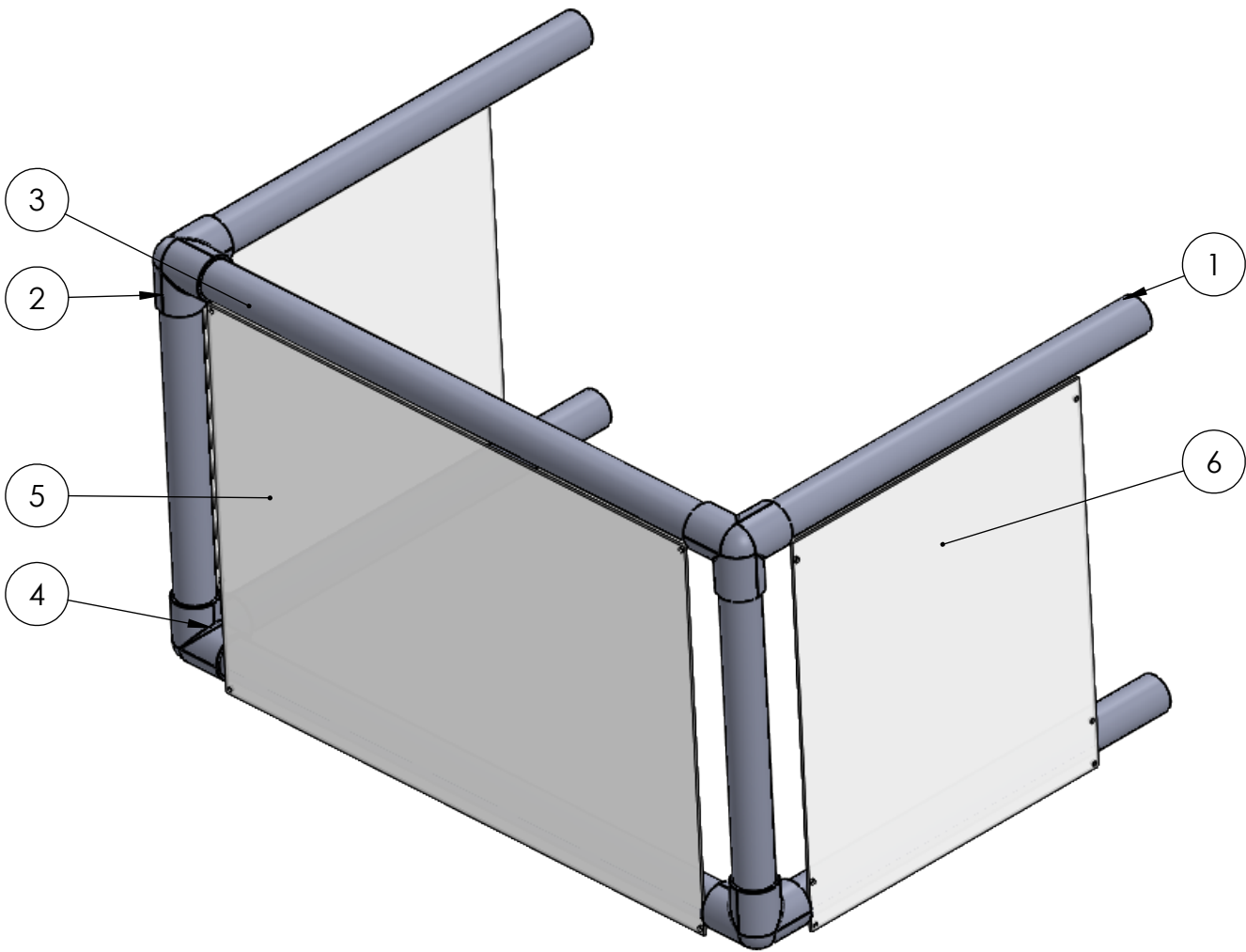
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Note: Use cable ties to attach plastic pieces.

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ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	GE-20393	Corral Leg Side	4
2	GE-20396	Corral Elbow	4
3	GE-20395	Corral Leg Middle	2
4	GE-20394	Corral Leg Vertical	2
5	GE-20391	Corral Backboard	1
6	GE-20392	Corral Side Plastic	2

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		UNLESS OTHERWISE SPECIFIED:			NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			
			CHECKED			
			ENG APPR.			
			MFG APPR.			
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			
		MATERIAL	COMMENTS:			
		FINISH				
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				
			TITLE: <b>Corral Assembly</b>			
			SIZE <b>B</b>	DWG. NO. <b>GE-20390</b>	REV	
			SCALE: 1:8	WEIGHT:	SHEET 1 OF 1	

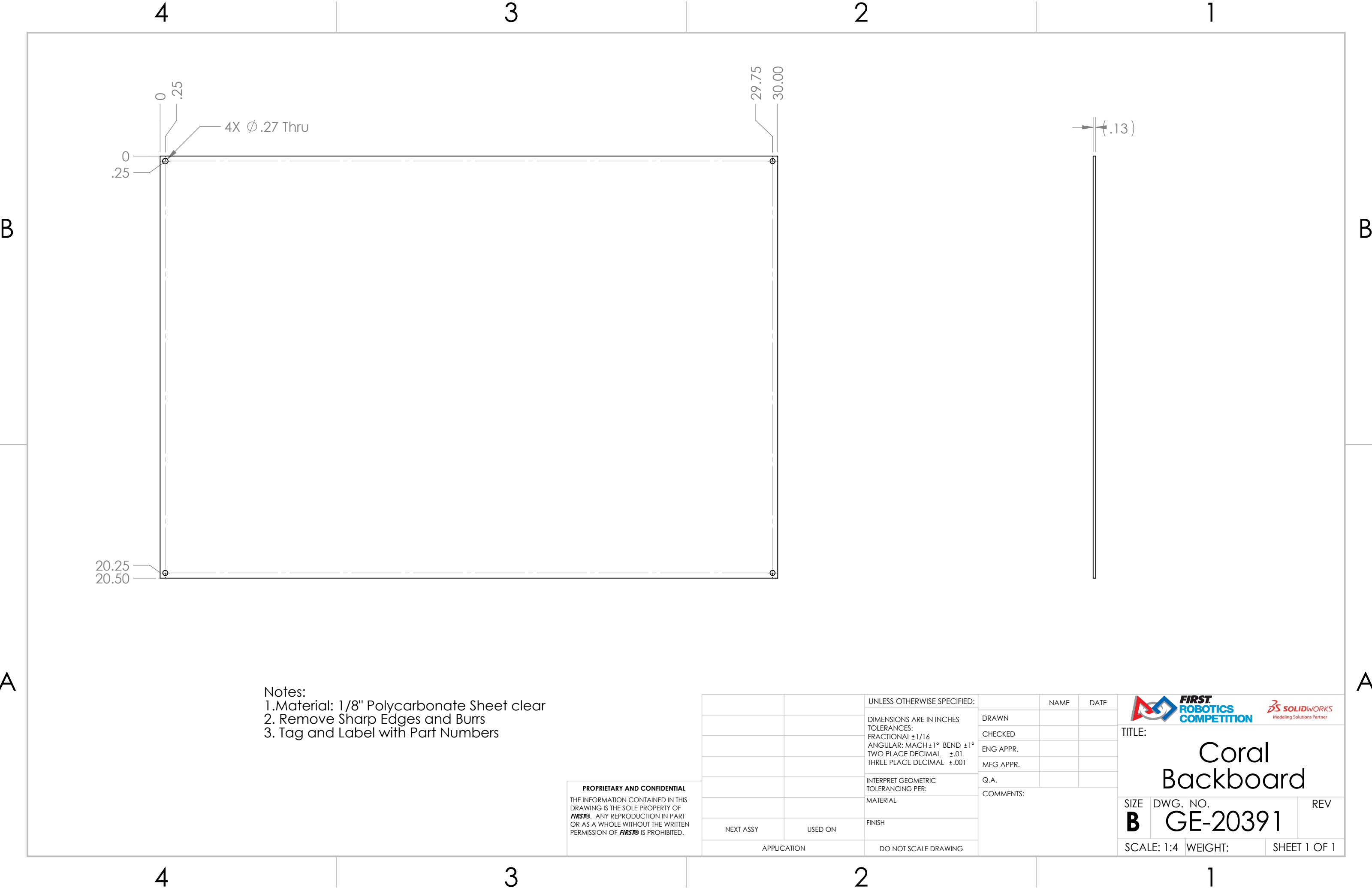


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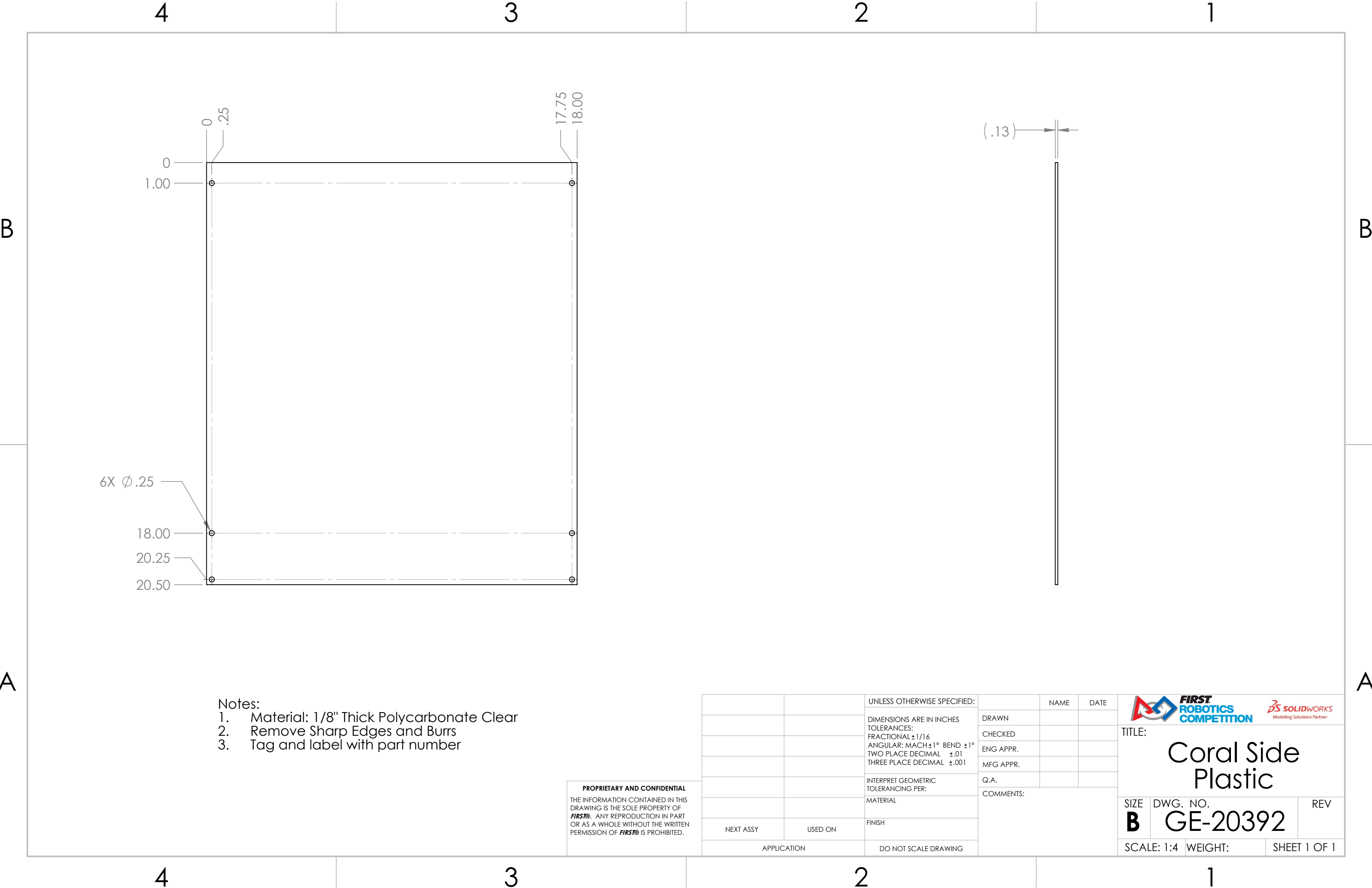
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Notes:  
1.Material: 1/8" Polycarbonate Sheet clear  
2. Remove Sharp Edges and Burrs  
3. Tag and Label with Part Numbers

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  <h1>Coral Backboard</h1>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
		MATERIAL	COMMENTS:			SIZE	DWG. NO.	REV
		FINISH				<b>B</b>	<b>GE-20391</b>	
NEXT ASSY	USED ON					SCALE: 1:4	WEIGHT:	SHEET 1 OF 1
APPLICATION		DO NOT SCALE DRAWING						



- Notes:
- 1. Material: 1/8" Thick Polycarbonate Clear
  - 2. Remove Sharp Edges and Burrs
  - 3. Tag and label with part number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			
			TITLE: <b>Coral Side Plastic</b>		
			SIZE <b>B</b>	DWG. NO. <b>GE-20392</b>	REV
			SCALE: 1:4	WEIGHT:	SHEET 1 OF 1



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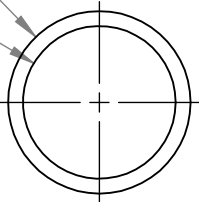
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24.00

( Ø 1.90 )

( Ø 1.59 )





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- Notes:
- 1. Materials: 1 1/2" Schedule 40 PVC Pipe, White
  - 2. Remove Sharp edges and burrs
  - 3. Remove markings and lettering
  - 4. Tag and Label with Part Numbers

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>			
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  Corral Leg Side			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV  <b>B</b> <b>GE-20393</b>			
		MATERIAL	COMMENTS:						
NEXT ASSY	USED ON	FINISH							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2		WEIGHT:	SHEET 1 OF 1

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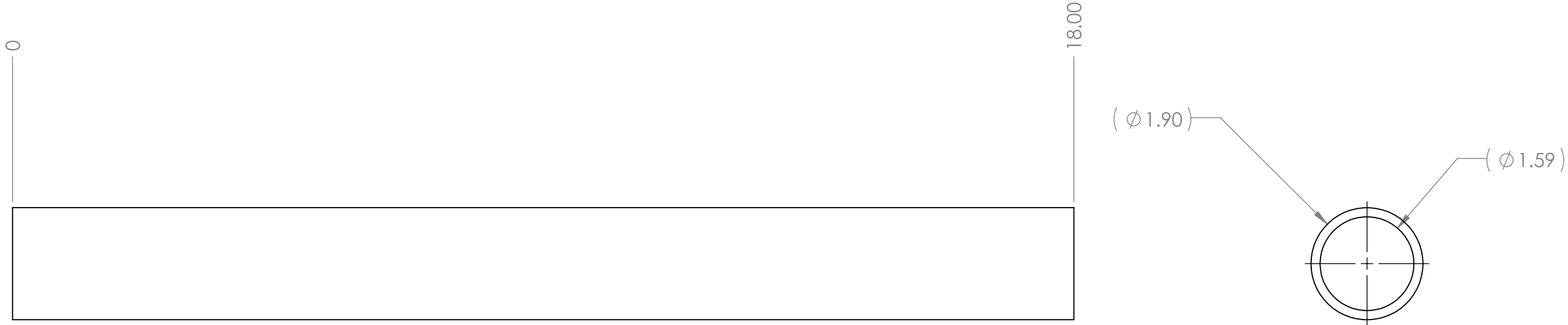
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B

B





- Notes:
- 1. Material: 1-1/2" Schedule 40 PVC Pipe, White
  - 2. Remove Lettering and Markings
  - 3. Remove Sharp Edges and Burrs
  - 4. Tag and Label with Part Number

A

A

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  <div>Corral Leg Vertical</div>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
			Q.A.					
		INTERPRET GEOMETRIC TOLERANCING PER:	COMMENTS:			SIZE DWG. NO. REV <div>BGE-20394</div>		
		MATERIAL						
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:2 WEIGHT: SHEET 1 OF 1		

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- Notes:
1. Material: 1-1/2" Schedule 40 PVC, White
  2. Remove Labeling and Lettering
  3. Remove Sharp Edges and Burrs
  4. Tag and Label with Part Number

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN			TITLE:  <div>Corral Leg Middle</div>		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <div>BGE-20395</div>		
		MATERIAL	COMMENTS:					
		FINISH						
NEXT ASSY	USED ON							
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT: SHEET 1 OF 1		

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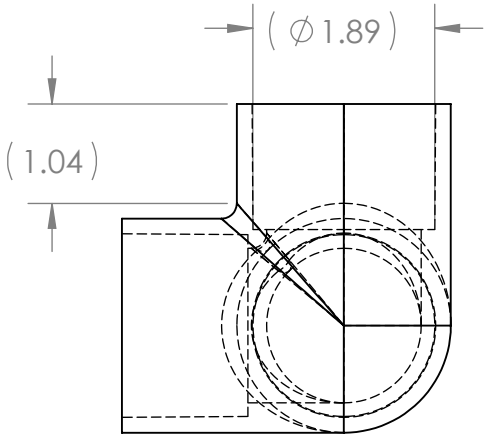
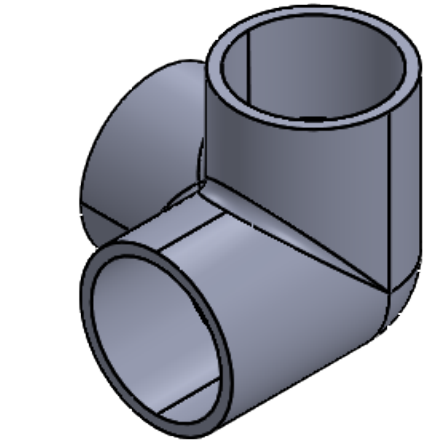
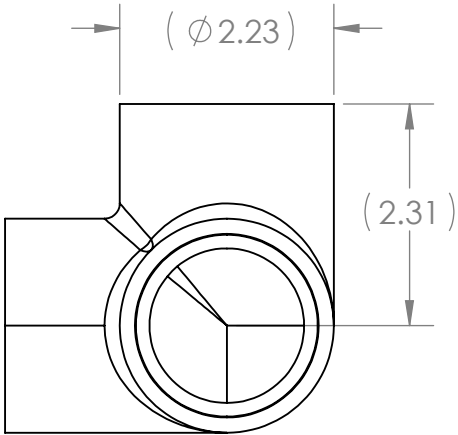
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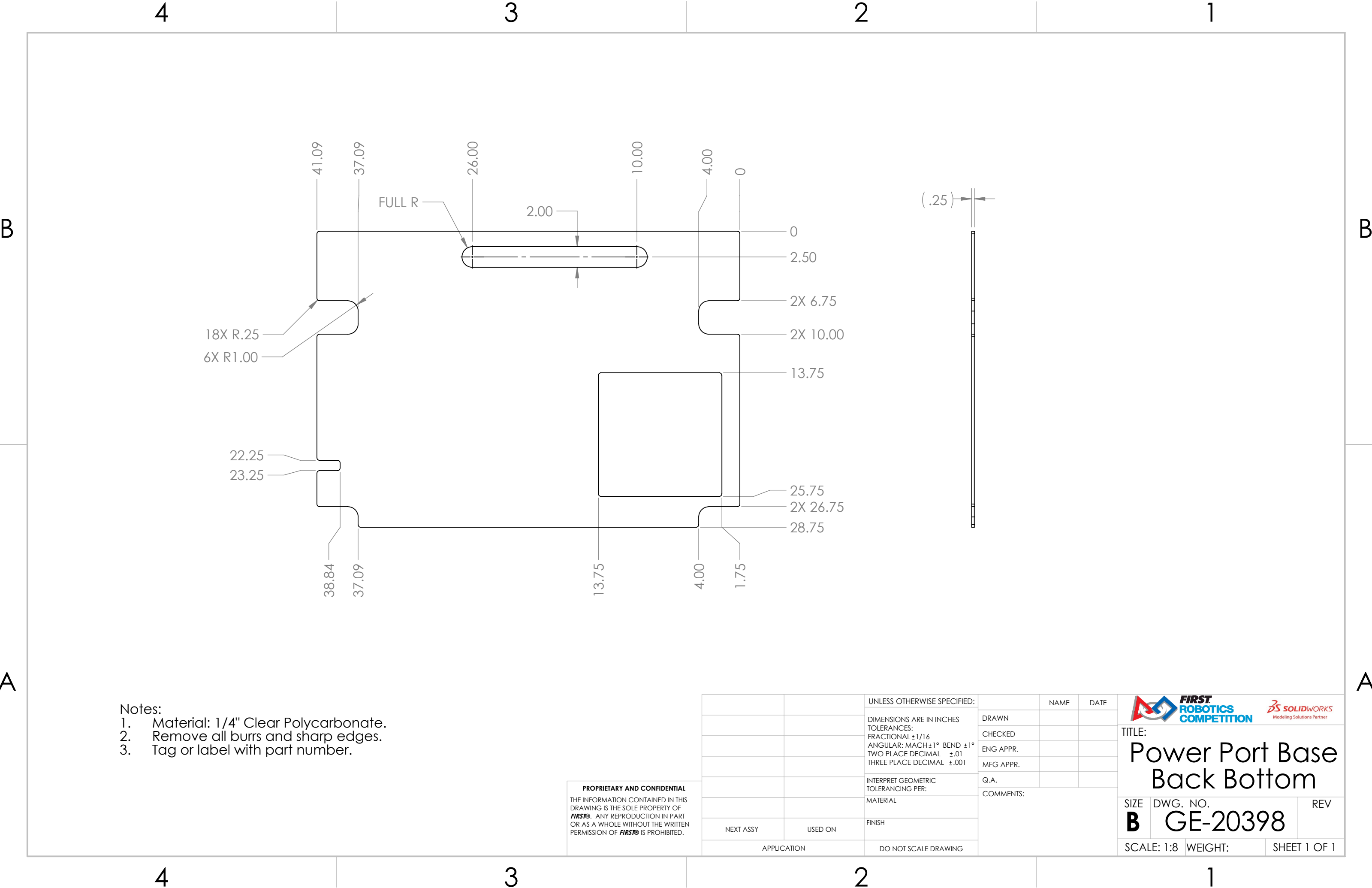
**Description:** Standard-Wall PVC Pipe Fitting for Water  
Side-Outlet Elbow Connector, 1-1/2 Socket-Connect Female

**Vendor:** McMaster-Carr

**Part Number:** 4880K634

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div> <div>TITLE: <b>Corral Elbow</b></div>	
		DIMENSIONS ARE IN INCHES	DRAWN				
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.			SIZE	DWG. NO.
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:			<b>B</b>	<b>GE-20396</b>
		INTERPRET GEOMETRIC TOLERANCING PER:				SCALE: 1:2	WEIGHT:
		MATERIAL					SHEET 1 OF 1
		FINISH					
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING					

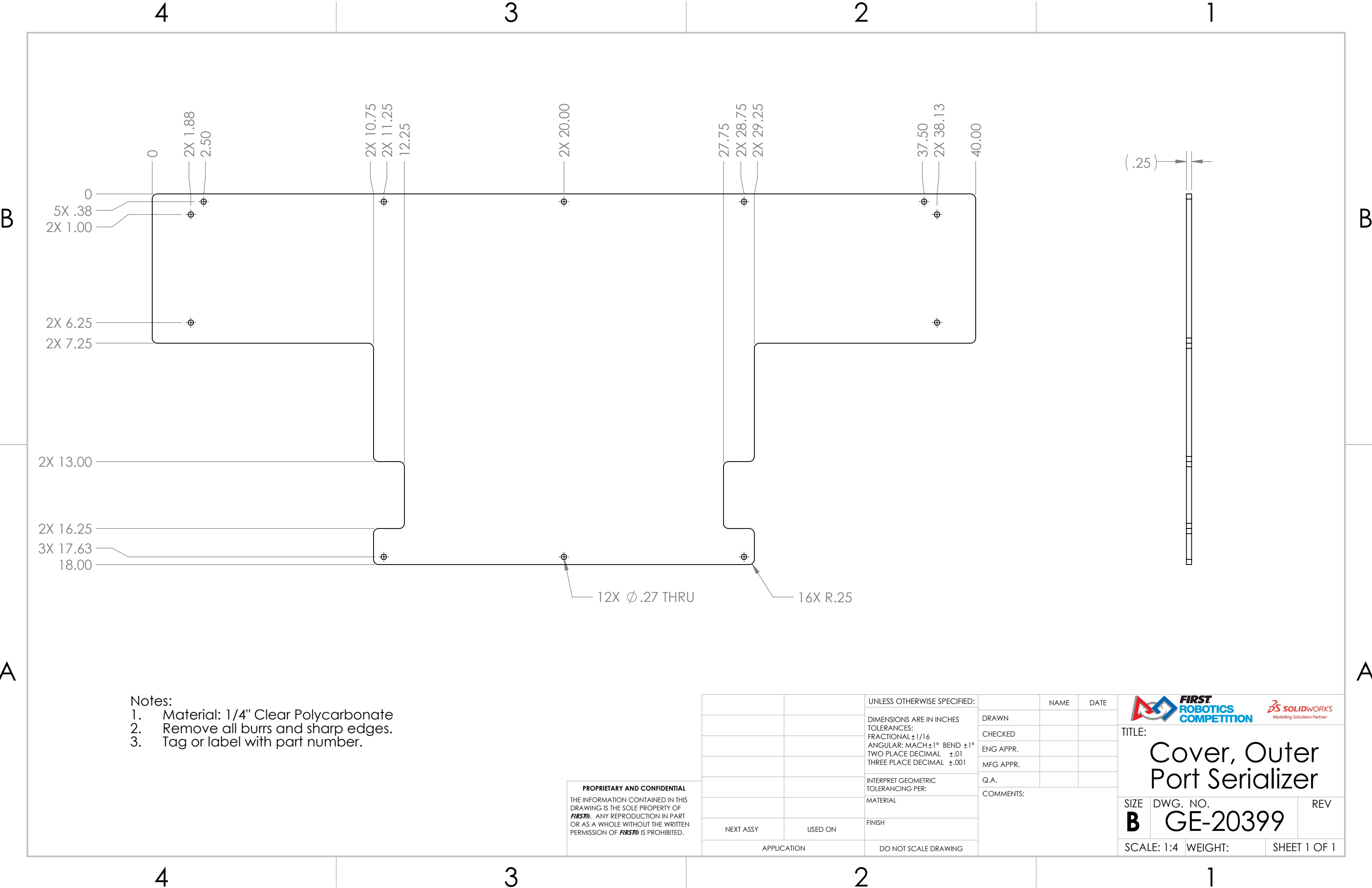


Notes:

1. Material: 1/4" Clear Polycarbonate.
2. Remove all burrs and sharp edges.
3. Tag or label with part number.



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	 	
		DIMENSIONS ARE IN INCHES	DRAWN				TITLE:  <b>Power Port Base Back Bottom</b>
		TOLERANCES:	CHECKED				
		FRACTIONAL $\pm 1/16$	ENG APPR.				
		ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$	MFG APPR.				
		TWO PLACE DECIMAL $\pm .01$	Q.A.				
		THREE PLACE DECIMAL $\pm .001$	COMMENTS:				
		INTERPRET GEOMETRIC TOLERANCING PER:					
		MATERIAL					
		FINISH					
NEXT ASSY	USED ON						
APPLICATION		DO NOT SCALE DRAWING					
			SIZE		DWG. NO.	REV	
			<b>B</b>		<b>GE-20398</b>		
			SCALE: 1:8		WEIGHT:	SHEET 1 OF 1	



- Notes:
1. Material: 1/4" Clear Polycarbonate
  2. Remove all burrs and sharp edges.
  3. Tag or label with part number.

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ±1/16 ANGULAR: MACH ±1° BEND ±1° TWO PLACE DECIMAL ±.01 THREE PLACE DECIMAL ±.001	DRAWN				TITLE:  Cover, Outer Port Serializer
			CHECKED				
			ENG APPR.				
			MFG APPR.				
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			SIZE DWG. NO. REV <b>B</b> GE-20399	
		MATERIAL	COMMENTS:				
NEXT ASSY	USED ON	FINISH					
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:4 WEIGHT: SHEET 1 OF 1	

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Ø 7.00

FIRST logo applied to face in black.

Notes:

- 1. Description: Medium Bounce Dino-Skin Foam Ball, 7 inches
- 2. Source: Flaghouse
- 3. Item #: 1892 YEL
- 4. Available to teams as am-4200 from AndyMark

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	<div></div>		
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm 1/16$ ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$ TWO PLACE DECIMAL $\pm .01$ THREE PLACE DECIMAL $\pm .001$	DRAWN			TITLE:  Power Cell		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.					
		MATERIAL	COMMENTS:			SIZE	DWG. NO.	REV
NEXT ASSY	USED ON	FINISH				B	GE-20500	
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:1	WEIGHT:	SHEET 1 OF 1