

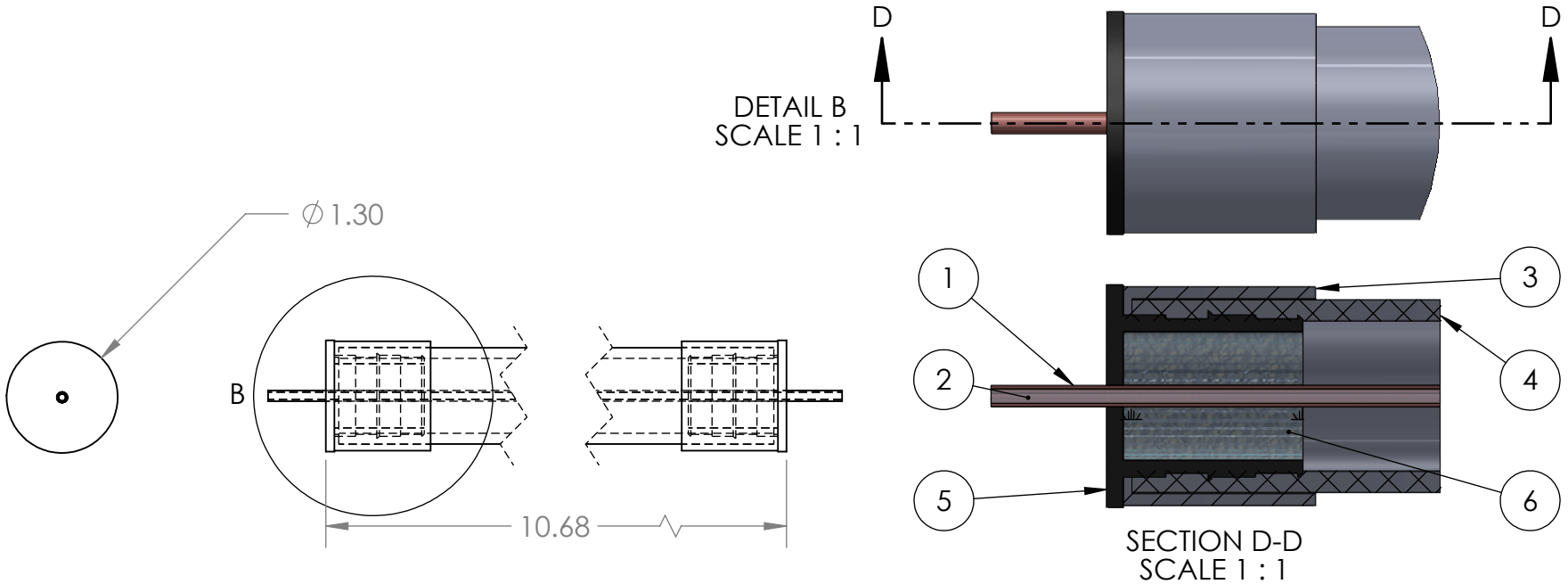
2

1

ITEM NO.	DRAWING NO.	PART	DESCRIPTION	QTY.
1	6	Copper Tube	Heat transfer Material	1
2	N/A	Ethylene Glycol	Working fluid for thermal energy transfrer	0.000284 gal
3	4	Pex Expansion Ring	Contracts PEX to fit cap	2
4	5	PEX-A	Encases TES	1
5	3	Pex Cap	Holds in water/ holds copper centered	2
6	N/A	Water	Thermal Energy Storage	1

B

B



A

A

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	AE
		TOLERANCES:	CHECKED	10/17/24
		FRACTIONAL ±	ENG APPR.	
		ANGULAR: MACH ± BEND ±	MFG APPR.	
		TWO PLACE DECIMAL ±	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
	APPLICATION	DO NOT SCALE DRAWING		

TITLE:			
<h1>Water Bar</h1>			
SIZE	DWG. NO.	REV	
<b>A</b>	1	3	
SCALE: 1:2	WEIGHT:	SHEET 1 OF 1	

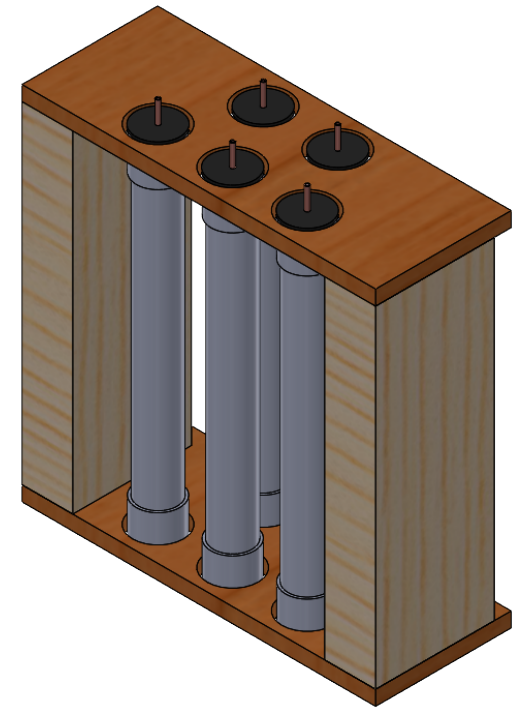
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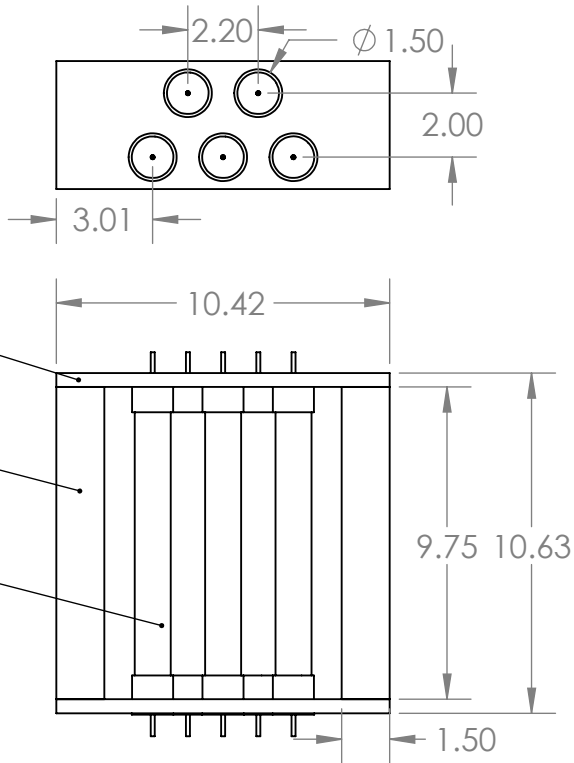
2

ITEM NO.	DRAWING NO.	PART	DESCRIPTION	QTY.
1	1	Water Bars V3	Thermal energy storage	5
2	25	OSB Board	Holds waterbars in place	2
3	26	Frame Lumber	Holds OSB in place	2

1



B



B

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	AE
		TOLERANCES:	CHECKED	10/17/24
		FRACTIONAL ±	ENG APPR.	
		ANGULAR: MACH ± BEND ±	MFG APPR.	
		TWO PLACE DECIMAL ±	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
	NEXT ASSY	USED ON		
	APPLICATION			
		DO NOT SCALE DRAWING		

A

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TITLE:  
**Water Frame**

SIZE	DWG. NO.	REV
<b>A</b>	<b>2</b>	<b>1</b>
SCALE: 1:6	WEIGHT:	SHEET 1 OF 1

2

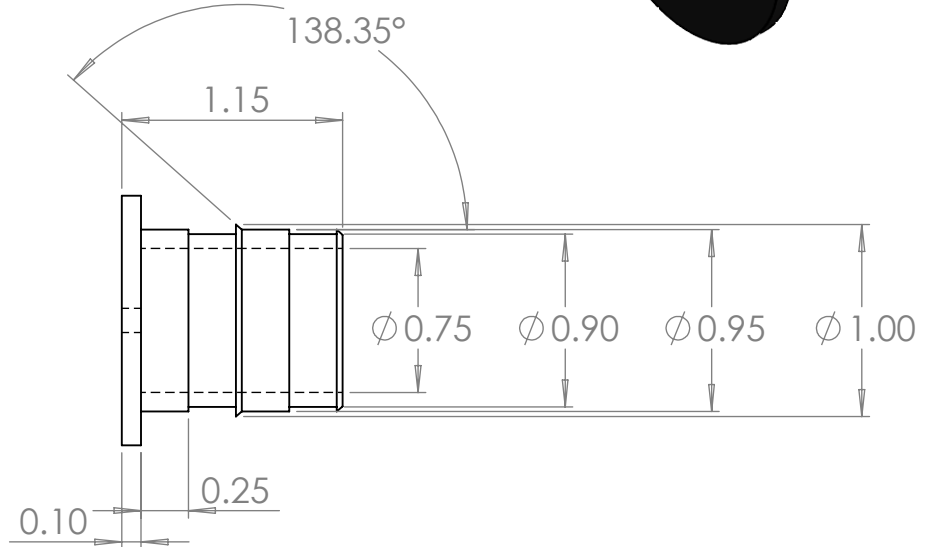
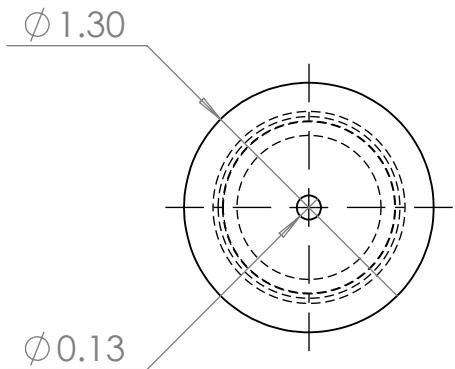
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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	AE	11/14
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm$	ENG APPR.		
		ANGULAR: MACH $\pm$ BEND $\pm$	MFG APPR.		
		TWO PLACE DECIMAL $\pm$	Q.A.		
		THREE PLACE DECIMAL $\pm$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

TITLE:			
<h1>Pex Cap</h1>			
SIZE	DWG. NO.	REV	
<b>A</b>	<b>3</b>	<b>2</b>	
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1	

2

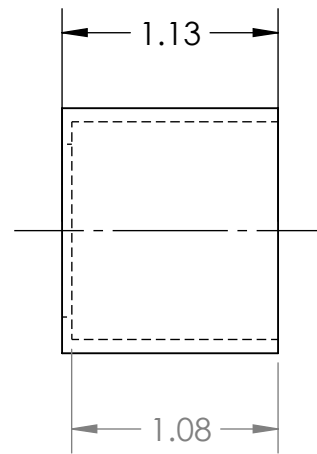
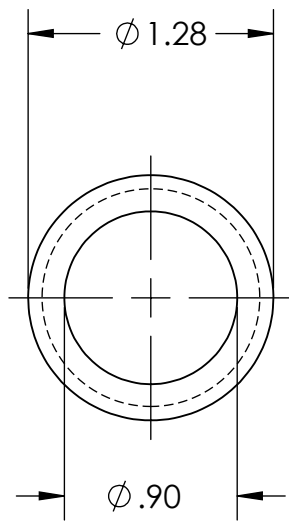
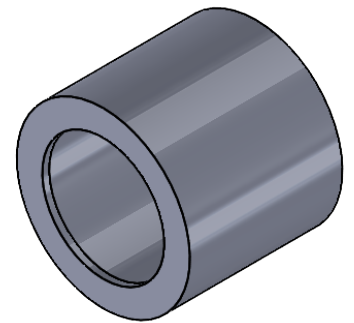
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		DIMENSIONS ARE IN INCHES	DRAWN	AE	11/22/24
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm$	ENG APPR.		
		ANGULAR: MACH $\pm$ BEND $\pm$	MFG APPR.		
		TWO PLACE DECIMAL $\pm$	Q.A.		
		THREE PLACE DECIMAL $\pm$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

TITLE:  
**PEX Expansion Ring**

SIZE	DWG. NO.	REV
<b>A</b>	<b>4</b>	<b>1</b>
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

2

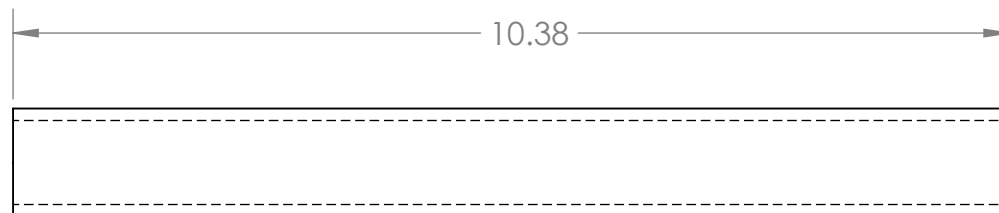
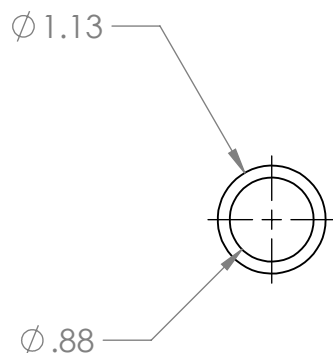
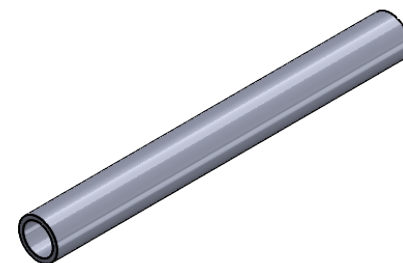
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		DIMENSIONS ARE IN INCHES	DRAWN	AE	11/22/24
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm$	ENG APPR.		
		ANGULAR: MACH $\pm$ BEND $\pm$	MFG APPR.		
		TWO PLACE DECIMAL $\pm$	Q.A.		
		THREE PLACE DECIMAL $\pm$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			

TITLE:		
<h1>PEX Pipe</h1>		
SIZE	DWG. NO.	REV
<b>A</b>	<b>5</b>	<b>2</b>
SCALE: 1:2	WEIGHT:	SHEET 1 OF 1

2

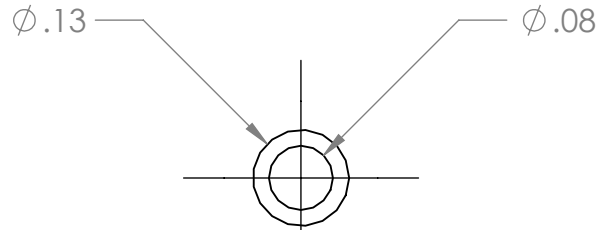
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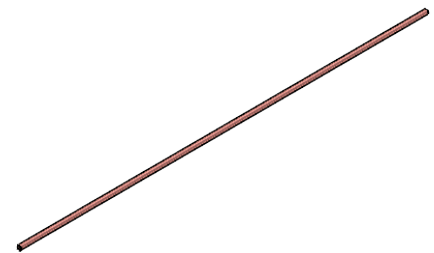
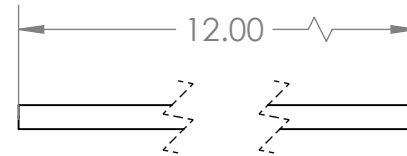
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B



DETAIL A  
SCALE 4 : 1



A

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		DIMENSIONS ARE IN INCHES	DRAWN	AE	11/22/24
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm$	ENG APPR.		
		ANGULAR: MACH $\pm$ BEND $\pm$	MFG APPR.		
		TWO PLACE DECIMAL $\pm$	Q.A.		
		THREE PLACE DECIMAL $\pm$	COMMENTS:		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

TITLE:  
**1/8 Copper Pipe**

SIZE	DWG. NO.	REV
<b>A</b>	<b>6</b>	<b>1</b>
SCALE 1:1	WEIGHT:	SHEET 1 OF 1

2

1

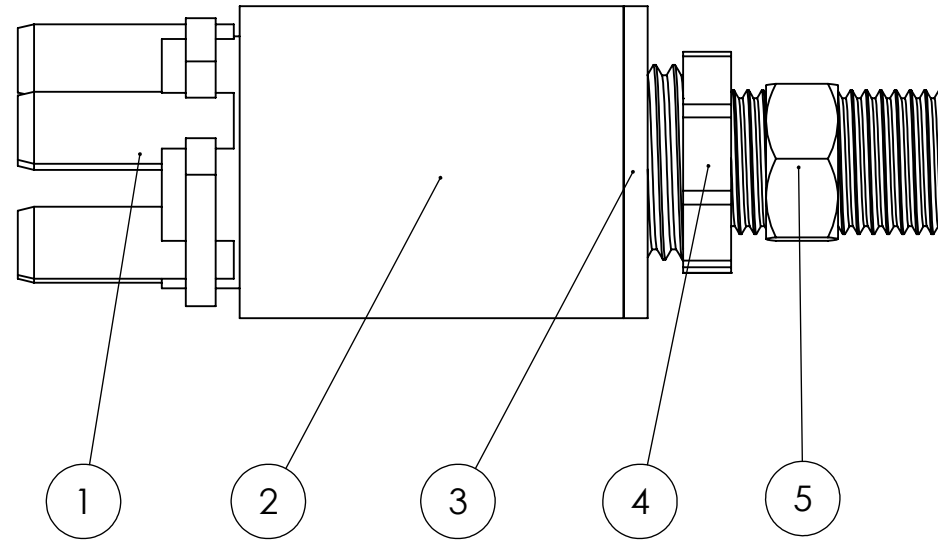
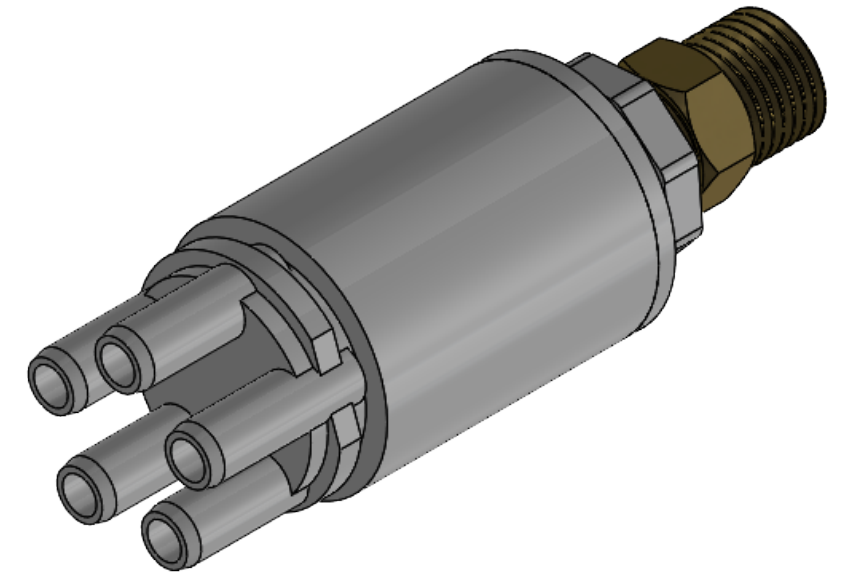
4

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1

ITEM	DRAWING NO.	PART	DESCRIPTION	QTY.
1	8	PVC Manifold	3/8" Smooth Barb 5 Port Transition 1" Spigot Manifold	1
2	13	PVC Pipe	1 in. x 2 in. Rigid PVC Schedule 40 Pipe	1
3	9	PVC Reducer Inner Thread	1 in. x 3/4 in. PVC Schedule 40 Reducer Bushing	1
4	10	PVC Reducer Double thread	3/4 in. x 1/2 in. PVC Schedule 40 Reducer Bushing	1
5	12	Brass Nipple	1/2 in. x Close MIP Brass Hex Nipple Fitting	1
6	N/A	Manifold tubing	1/4 in. O.D. x 7/64 in. I.D. x 8 in. Vinyl Micro Fuel Line (Connects manifold to the 5 waterbars in Waterframe)	5



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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE	TITLE: <b>Water Bar Manifold</b>	
		DIMENSIONS ARE IN INCHES	DRAWN	AE		11/20/24
		TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	CHECKED			
		INTERPRET GEOMETRIC TOLERANCING PER:	ENG APPR.			
		MATERIAL	MFG APPR.			
		FINISH	Q.A.			
NEXT ASSY	USED ON		COMMENTS: All PVC parts glued using PVC Solvent Cement		SIZE DWG. NO. REV	
APPLICATION		DO NOT SCALE DRAWING			<b>B</b> 13 1	
			SCALE: 1:1 WEIGHT:		SHEET 1 OF 1	

3

2

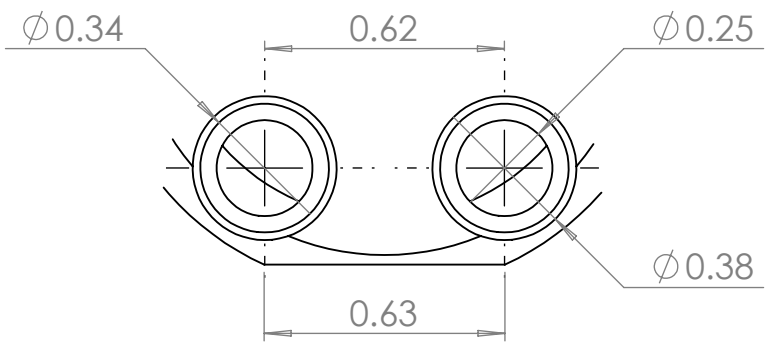
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2

1

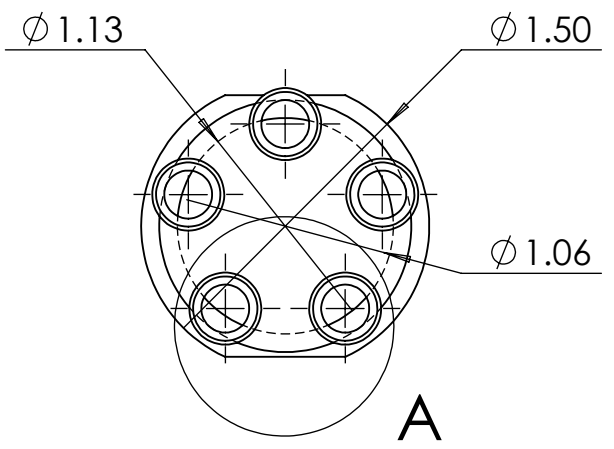
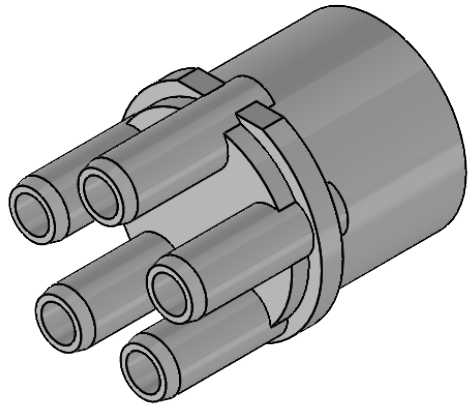
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B

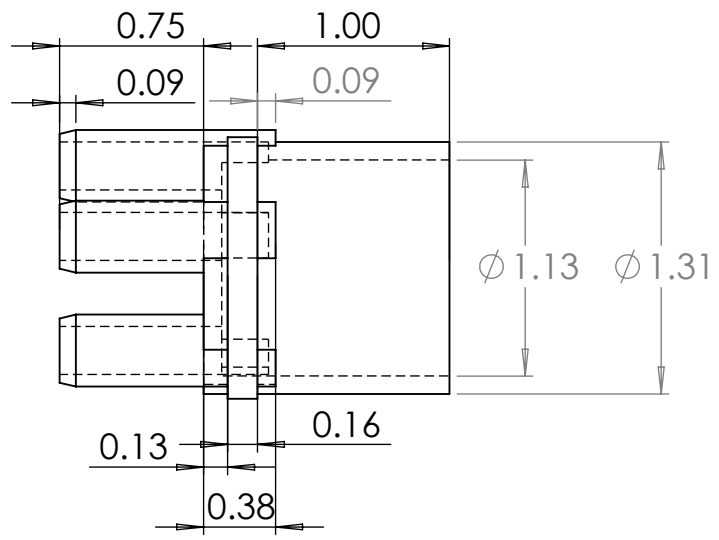


DETAIL A

SCALE 2 : 1



A



A

A

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE
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		TOLERANCES:	CHECKED	11/20/24
		FRACTIONAL ±	ENG APPR.	
		ANGULAR: MACH ± BEND ±	MFG APPR.	
		TWO PLACE DECIMAL ±	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS: 3/8" Smooth Barb 5 Port Transition 1" Spigot Manifold	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION		DO NOT SCALE DRAWING		

TITLE:			
<h1>PVC Manifold</h1>			
SIZE	DWG. NO.	REV	
<b>A</b>	<b>8</b>	<b>1</b>	
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1	

2

1

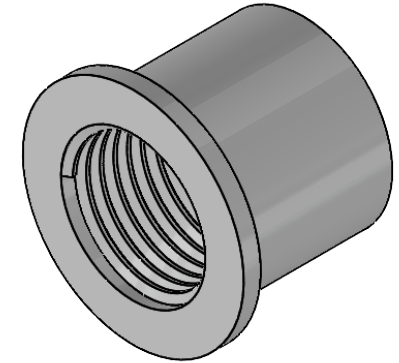
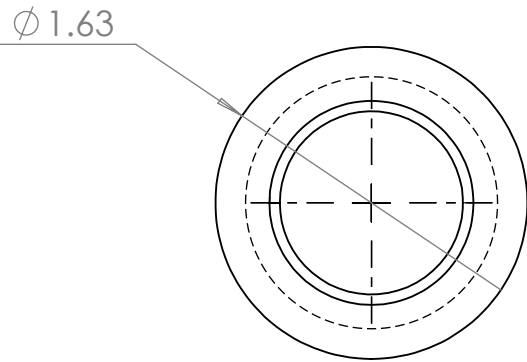


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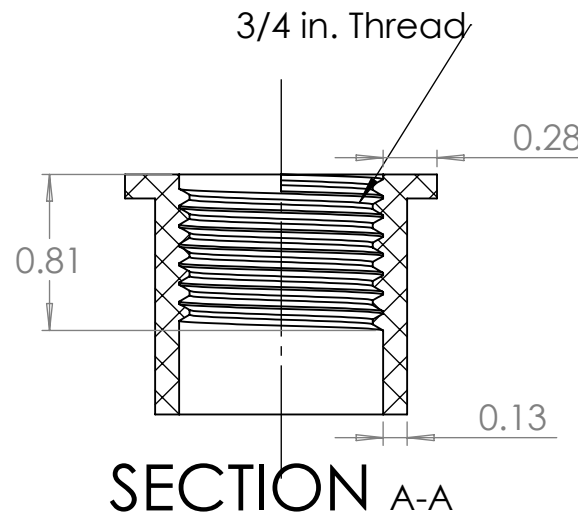
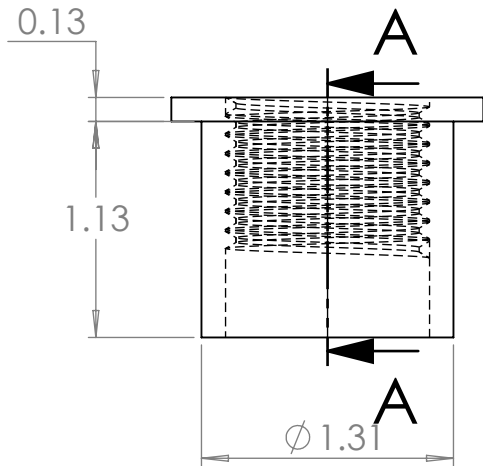
A

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B



SECTION A-A

A

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		TOLERANCES:	CHECKED	11/20/24
		FRACTIONAL ±	ENG APPR.	
		ANGULAR: MACH ± BEND ±	MFG APPR.	
		TWO PLACE DECIMAL ±	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS: 1 in. x 3/4 in.	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION		DO NOT SCALE DRAWING		

TITLE:

# PVC Reducer Bushing

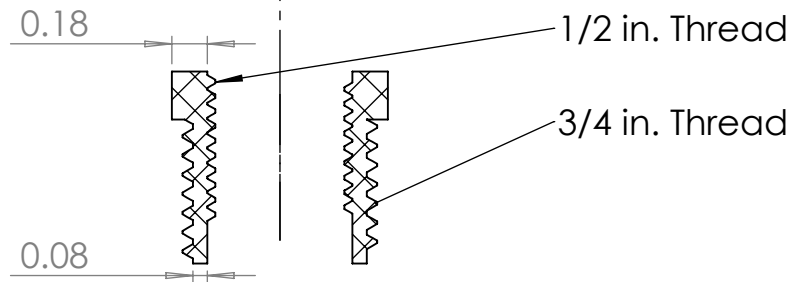
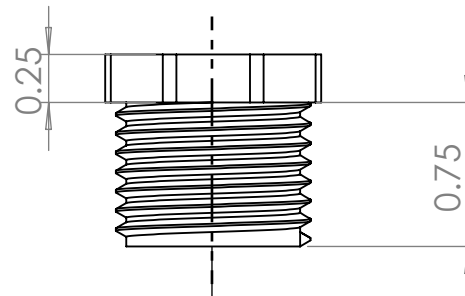
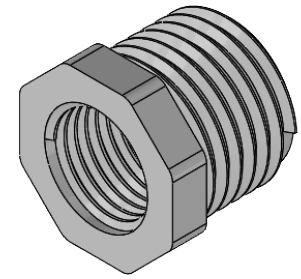
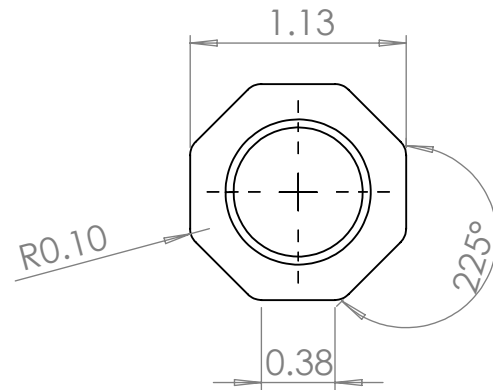
SIZE	DWG. NO.	REV
<b>A</b>	9	1
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

2

1

B

B



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		TOLERANCES:	CHECKED	11/20/24
		FRACTIONAL ±	ENG APPR.	
		ANGULAR: MACH ± BEND ±	MFG APPR.	
		TWO PLACE DECIMAL ±	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

TITLE:  
**PVC Reducer Bushing**

SIZE	DWG. NO.	REV
<b>A</b>	<b>10</b>	<b>1</b>
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

2

1

2

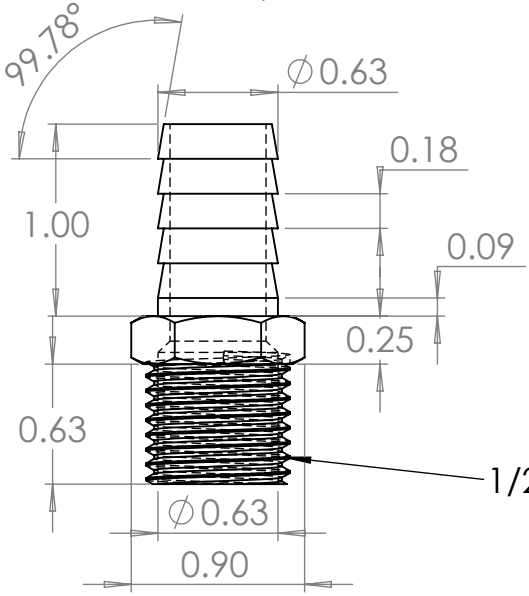
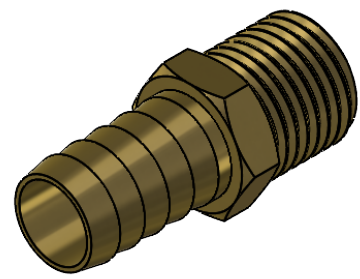
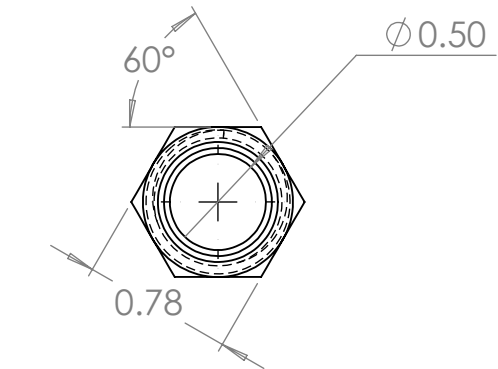
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		DIMENSIONS ARE IN INCHES	DRAWN	AE
		TOLERANCES:	CHECKED	11/19/24
		FRACTIONAL ±	ENG APPR.	
		ANGULAR: MACH ± BEND ±	MFG APPR.	
		TWO PLACE DECIMAL ±	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS: 5/8 in. Barb x 1/2 in. MIP Brass Adapter Fitting	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION		DO NOT SCALE DRAWING		

TITLE:  
**Brass Barb Fitting**

SIZE	DWG. NO.	REV
<b>A</b>	<b>11</b>	<b>1</b>
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

2

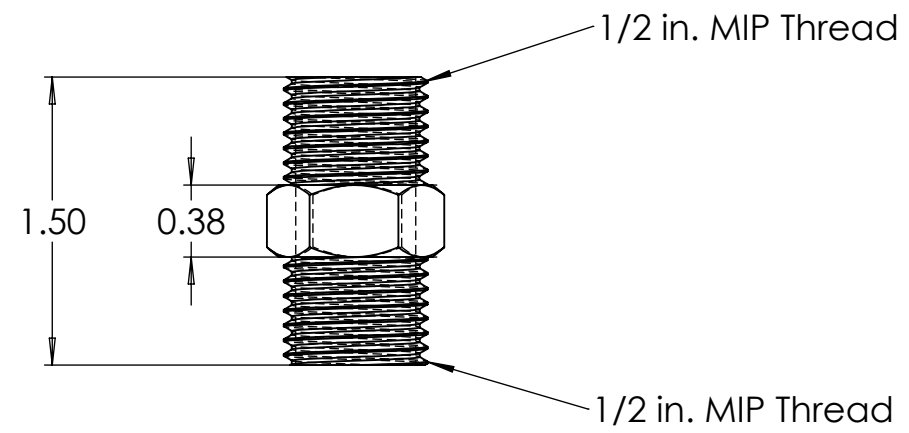
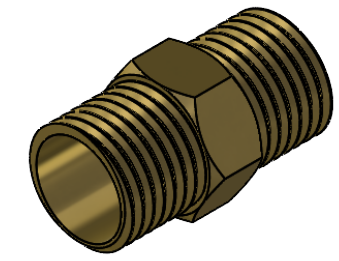
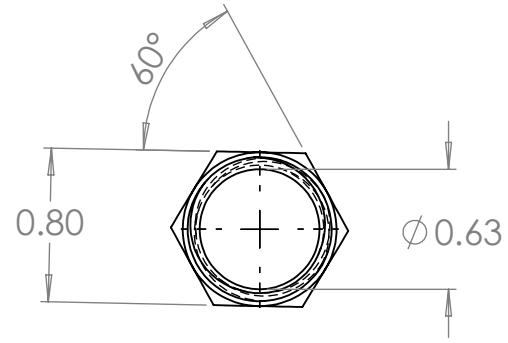
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		DIMENSIONS ARE IN INCHES	DRAWN	AE
		TOLERANCES:	CHECKED	11/19/24
		FRACTIONAL ±	ENG APPR.	
		ANGULAR: MACH ± BEND ±	MFG APPR.	
		TWO PLACE DECIMAL ±	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS: 1/2 in. x Close MIP Brass Hex Nipple Fitting	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION		DO NOT SCALE DRAWING		

TITLE:  
**Brass Hex Nipple**

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

2

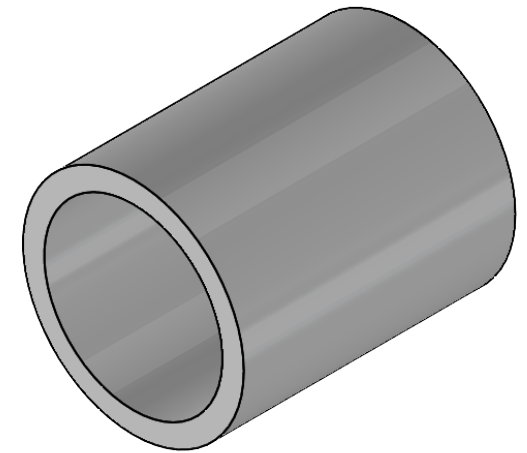
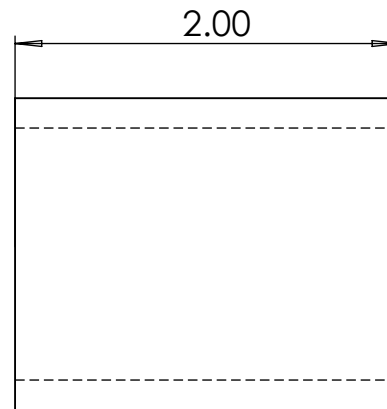
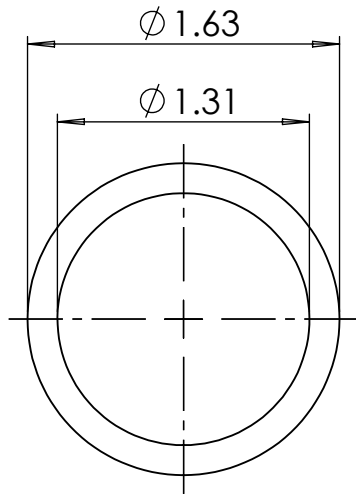
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		DIMENSIONS ARE IN INCHES	DRAWN	AE	11/20/24
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm$	ENG APPR.		
		ANGULAR: MACH $\pm$ BEND $\pm$	MFG APPR.		
		TWO PLACE DECIMAL $\pm$	Q.A.		
		THREE PLACE DECIMAL $\pm$	COMMENTS: 1 in. x 2 in.		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

TITLE:

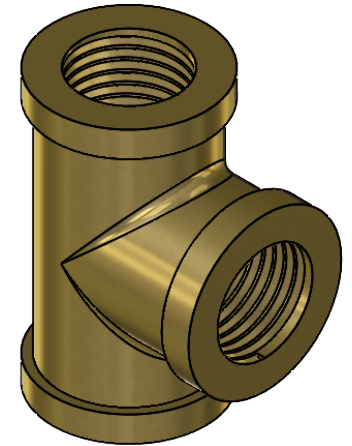
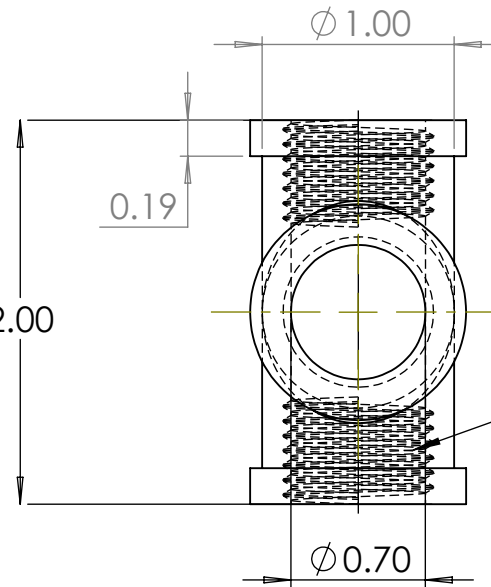
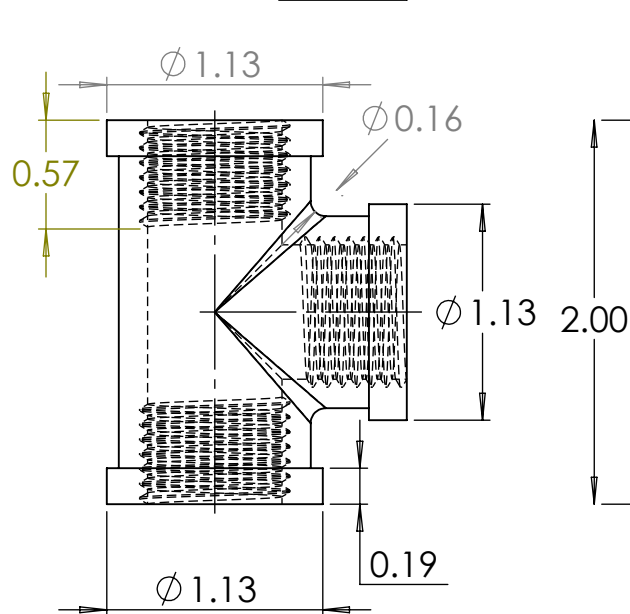
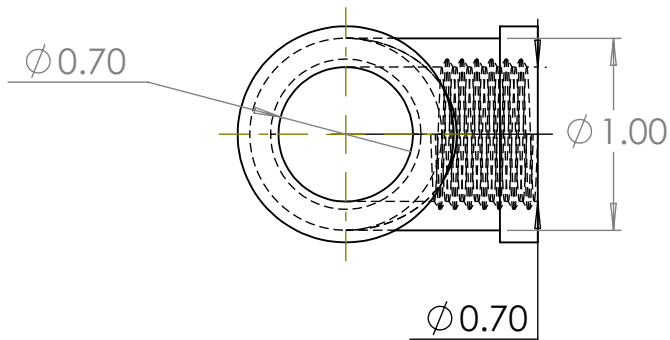
PVC Schedule 40 Pipe

SIZE	DWG. NO.	REV
<b>A</b>	13	1
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

2

1

B



1/2 in. FIP Thread

B

A

A

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	AE
		TOLERANCES:	CHECKED	11/22/24
		FRACTIONAL ±	ENG APPR.	
		ANGULAR: MACH ± BEND ±	MFG APPR.	
		TWO PLACE DECIMAL ±	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS: 1/2 in. FIP Brass Tee Fitting	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION		DO NOT SCALE DRAWING		

TITLE:

1/2in. Brass Tee

SIZE

A

DWG. NO.

14

REV

1

SCALE: 1:1

WEIGHT:

SHEET 1 OF 1

2

1

2

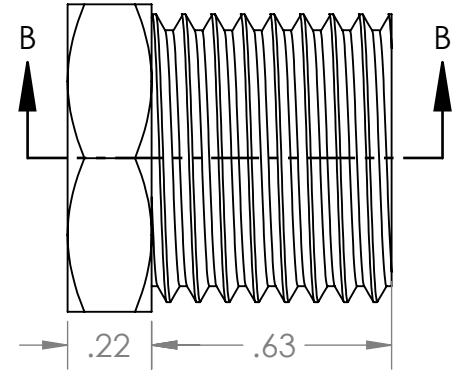
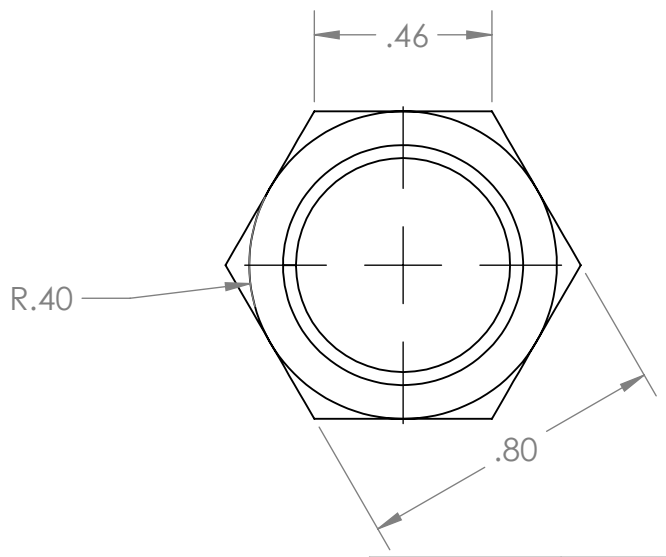
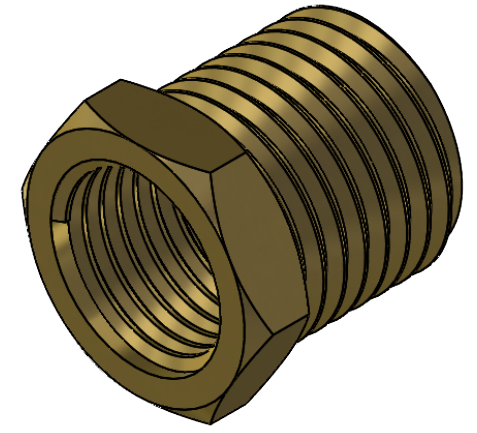
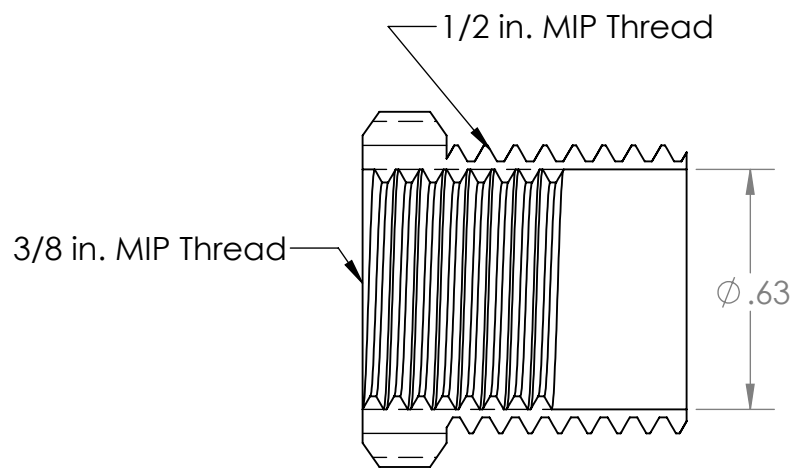
1

2

1

B

B



A

A

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		DIMENSIONS ARE IN INCHES	DRAWN	AE
		TOLERANCES:	CHECKED	11/22/24
		FRACTIONAL ±	ENG APPR.	
		ANGULAR: MACH ± BEND ±	MFG APPR.	
		TWO PLACE DECIMAL ±	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS: 1/2 in. MIP x 3/8 in. FIP Brass Bushing Fitting	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION		DO NOT SCALE DRAWING		

TITLE:		
<b>Brass Bushing Fitting</b>		
SIZE	DWG. NO.	REV
<b>A</b>	<b>15</b>	<b>1</b>
SCALE: 2:1	WEIGHT:	SHEET 1 OF 1

2

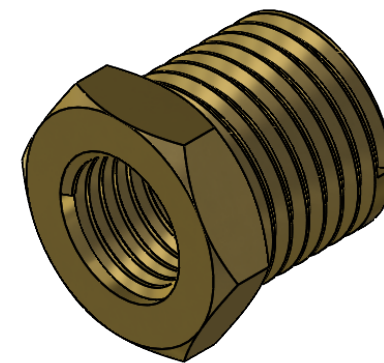
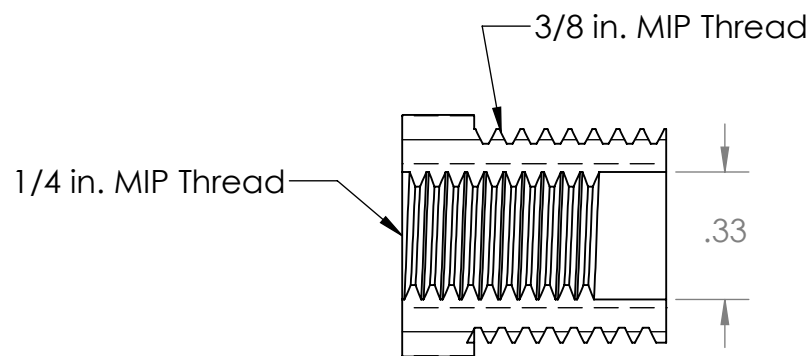
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2

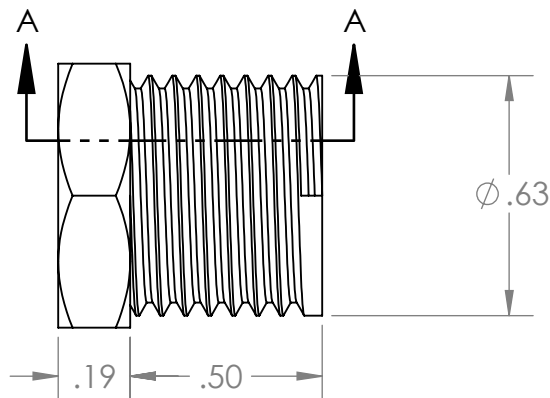
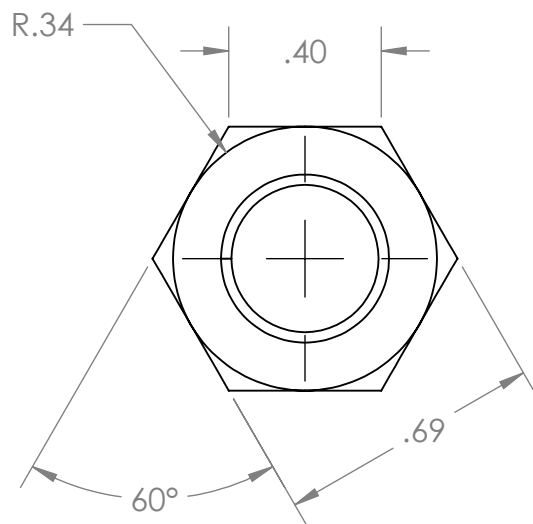
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B

B



SECTION A-A



A

A

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	AE
		TOLERANCES:	CHECKED	11/22/24
		FRACTIONAL ±	ENG APPR.	
		ANGULAR: MACH ± BEND ±	MFG APPR.	
		TWO PLACE DECIMAL ±	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS: 3/8 in. MIP x 1/4 in. FIP Brass Bushing Fitting	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
APPLICATION		DO NOT SCALE DRAWING		

TITLE:  
**Brass Reducer Fitting**

SIZE	DWG. NO.	REV
<b>A</b>	<b>16</b>	<b>1</b>
SCALE: 2:1	WEIGHT:	SHEET 1 OF 1

2

1



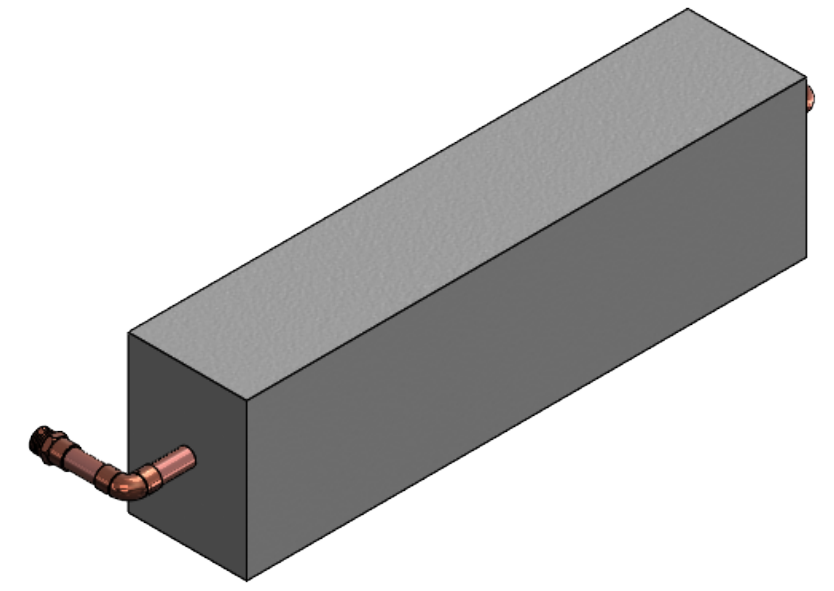
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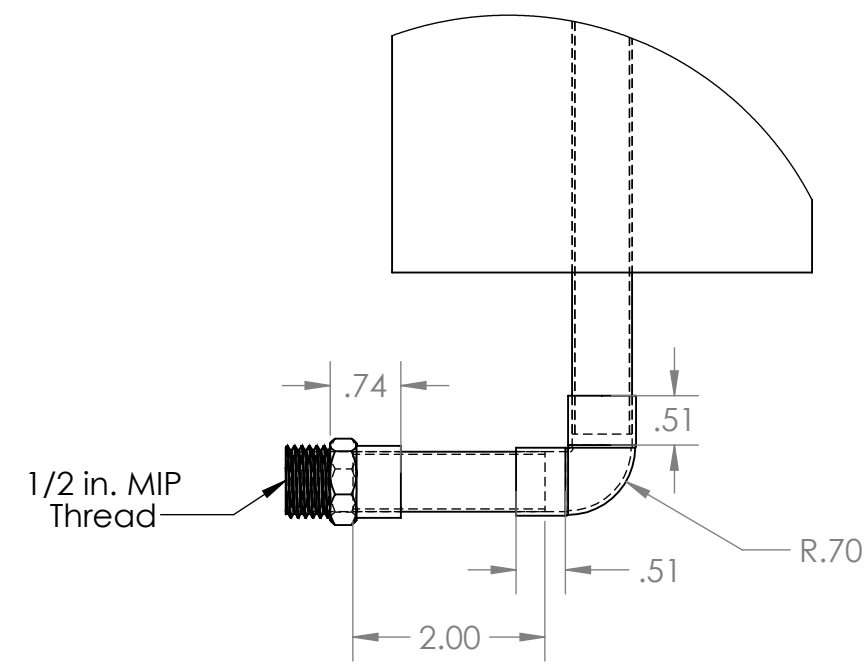
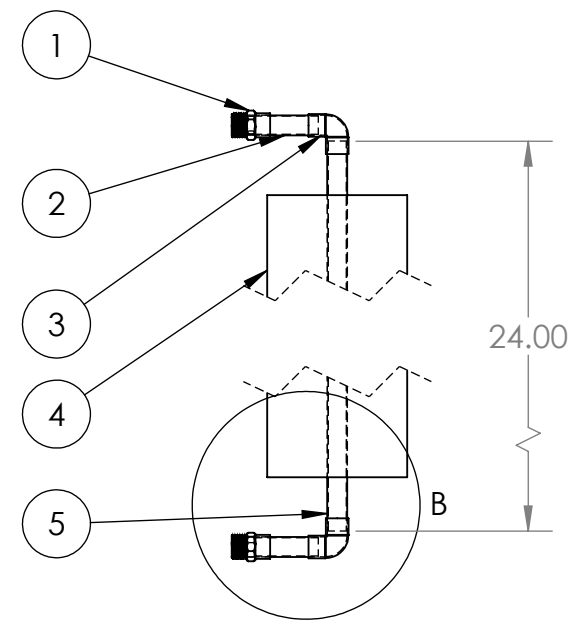
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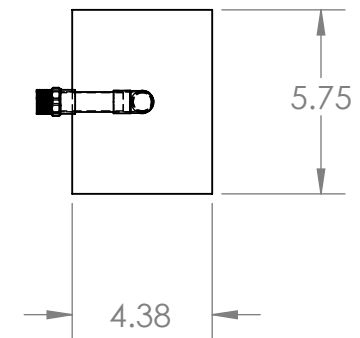
ITEM	PART	DESCRIPTION	QTY.
1	Copper Fitting	1/2 in. Copper Adapter Solder x MPT Fitting	2
2	Copper Pipe	1/2 in. x 2 in. Copper Type M Pipe	2
3	Copper Elbow	1/2 in. Copper Pressure 90-Degree Cup x Cup Elbow Fitting	2
4	Concrete	Used as the Thermal Energy Storage	1
5	Copper Pipe	1/2 in. x 2 ft. Copper Type M Pipe (Transfers heat from the concrete to fluid)	1



B



DETAIL B  
SCALE 1 : 2



A

A

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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE		
		DIMENSIONS ARE IN INCHES	DRAWN	AE	11/22/24	TITLE: <b>Concrete TES</b>
		TOLERANCES:	CHECKED			
		FRACTIONAL ±	ENG APPR.			
		ANGULAR: MACH ± BEND ±	MFG APPR.			
		TWO PLACE DECIMAL ±	Q.A.			SIZE DWG. NO. REV <b>B 17 1</b>
		THREE PLACE DECIMAL ±	COMMENTS:			
NEXT ASSY	USED ON	MATERIAL				
APPLICATION		FINISH				
		DO NOT SCALE DRAWING				
			SCALE: 1:6	WEIGHT:	SHEET 1 OF 1	

4

3

2

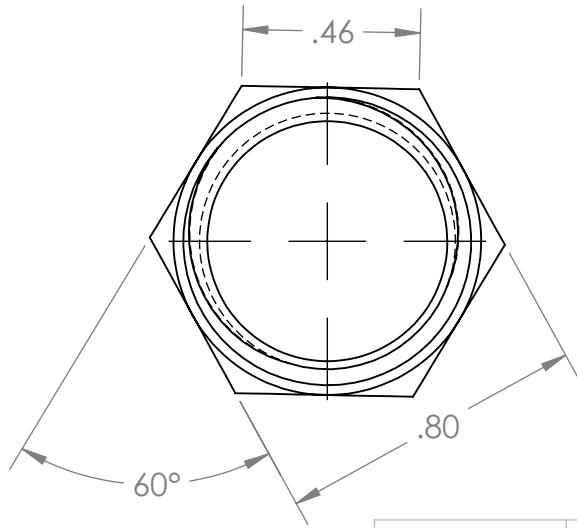
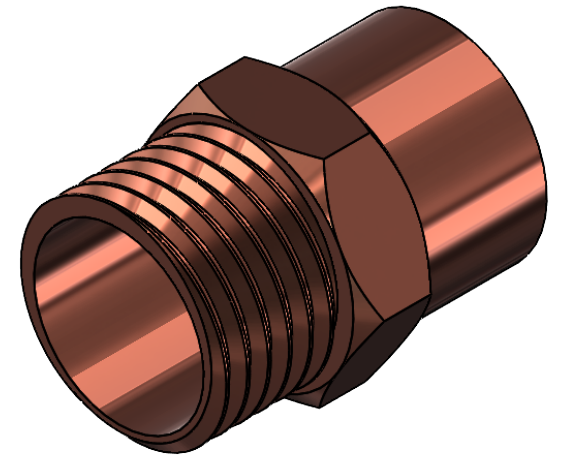
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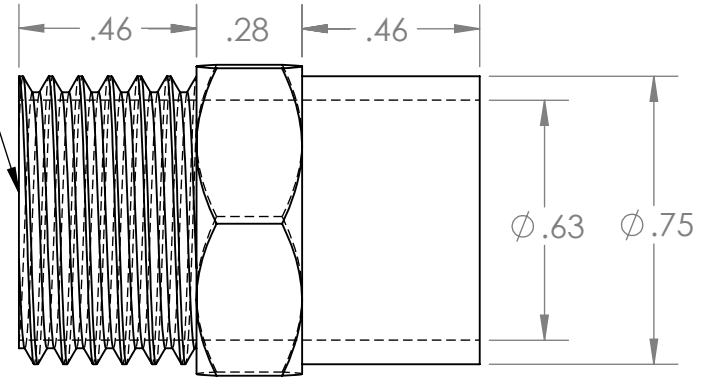
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B

B



1/2 in MPT Thread



A

A

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	AE	11/22/24
		TOLERANCES:	CHECKED		
		FRACTIONAL ±	ENG APPR.		
		ANGULAR: MACH ± BEND ±	MFG APPR.		
		TWO PLACE DECIMAL ±	Q.A.		
		THREE PLACE DECIMAL ±	COMMENTS: 1/2 in. Copper Adapter Solder x MPT Fitting		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

TITLE:		
<b>Copper Pipe Fitting</b>		
SIZE	DWG. NO.	REV
<b>A</b>	<b>18</b>	<b>1</b>
SCALE: 2:1	WEIGHT:	SHEET 1 OF 1

2

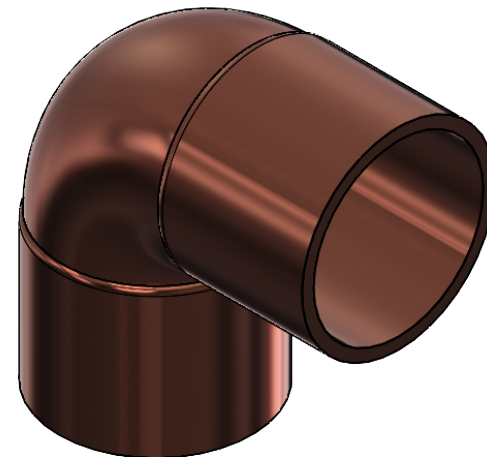
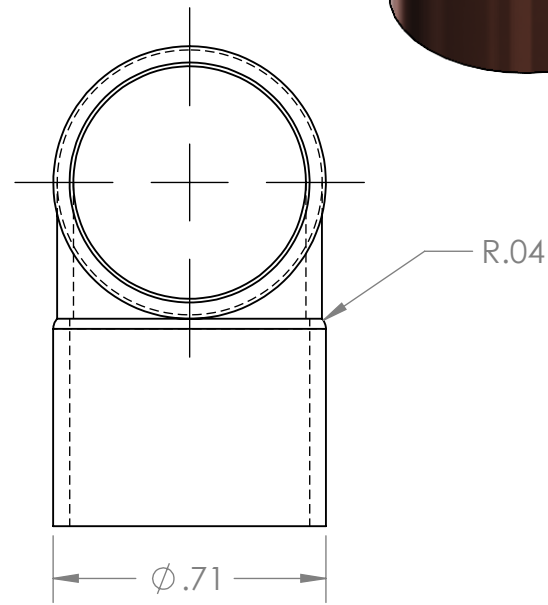
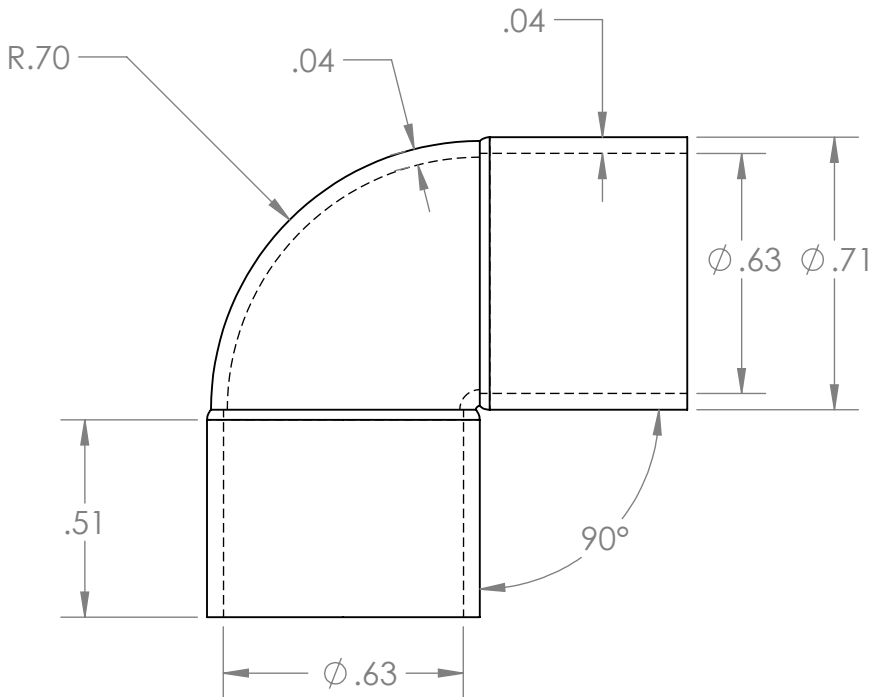
1

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A

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		DIMENSIONS ARE IN INCHES	DRAWN	AE	11/22/24
		TOLERANCES:	CHECKED		
		FRACTIONAL ±	ENG APPR.		
		ANGULAR: MACH ± BEND ±	MFG APPR.		
		TWO PLACE DECIMAL ±	Q.A.		
		THREE PLACE DECIMAL ±	COMMENTS: 1/2 in. Copper Pressure 90-Degree Cup x Cup Elbow Fitting		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

TITLE:  
**Copper Elbow**

SIZE	DWG. NO.	REV
<b>A</b>	<b>19</b>	<b>1</b>
SCALE: 2:1	WEIGHT:	SHEET 1 OF 1

2

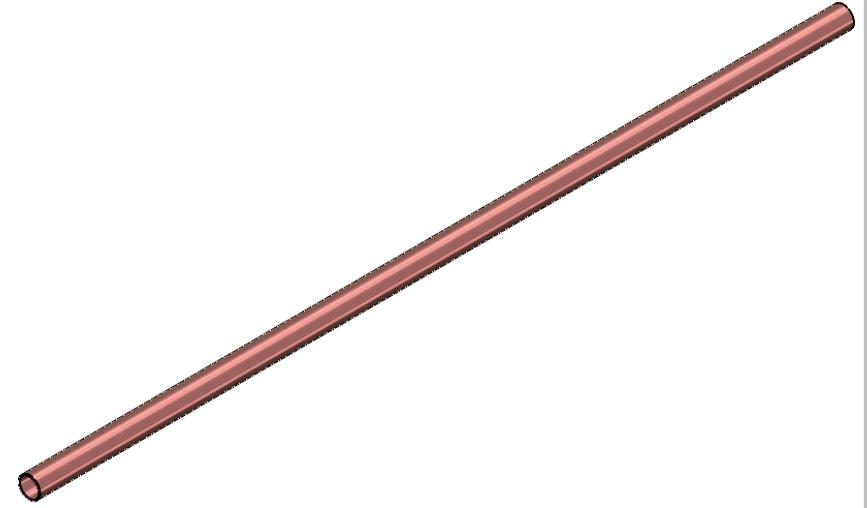
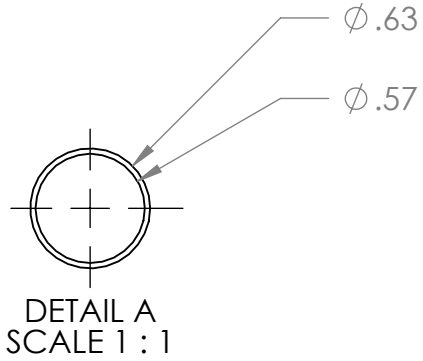
1

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A

A

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	AE	11/22/24
		TOLERANCES:	CHECKED		
		FRACTIONAL $\pm$	ENG APPR.		
		ANGULAR: MACH $\pm$ BEND $\pm$	MFG APPR.		
		TWO PLACE DECIMAL $\pm$	Q.A.		
		THREE PLACE DECIMAL $\pm$	COMMENTS: 1/2 in. x 2 ft. Copper Type M Pipe		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

TITLE:		
<h1>Copper Pipe</h1>		
SIZE	DWG. NO.	REV
<b>A</b>	<b>20</b>	<b>1</b>
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1

2

1

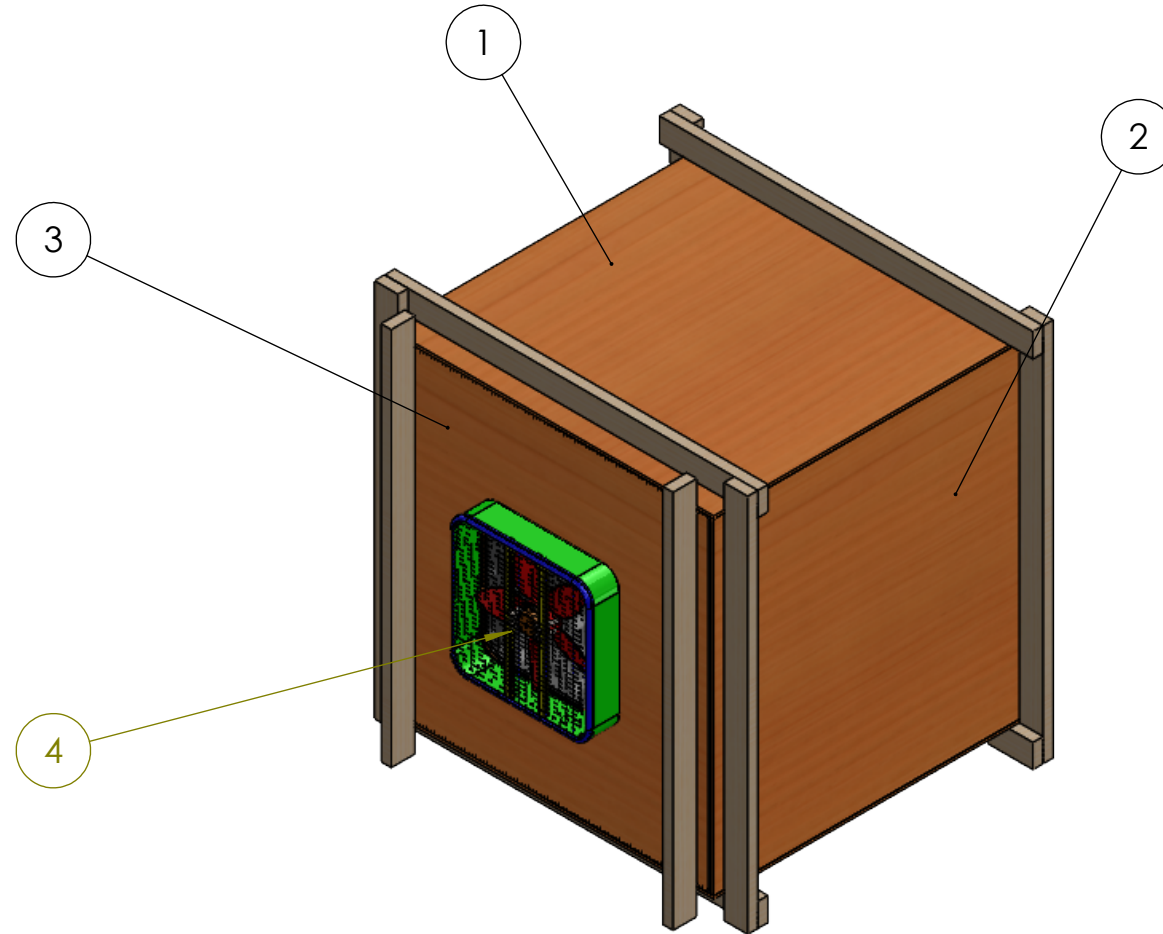
4

3

2

1

ITEM	DRAWING NO.	PART NUMBER	DESCRIPTION	QTY.
1	22	Inner Wall	Makes up the top and bottom walls	2
2	23	Outer Wall	Left and Right sides of box	2
3	24	Fan Wall	Wall that holds the fan	1
4	27	Box Fan	Fan Used for forced convection	1



		UNLESS OTHERWISE SPECIFIED:		NAME	DATE		
		DIMENSIONS ARE IN INCHES		DRAWN	AE	11/22/24	TITLE: <b>Test Box</b>
		TOLERANCES:		CHECKED			
		FRACTIONAL ±		ENG APPR.			
		ANGULAR: MACH ± BEND ±		MFG APPR.			
		TWO PLACE DECIMAL ±		Q.A.			SIZE DWG. NO. REV <b>B 21 1</b>
		THREE PLACE DECIMAL ±		COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:					SCALE: 1:20 WEIGHT: SHEET 1 OF 1
		MATERIAL					
NEXT ASSY	USED ON	FINISH					
APPLICATION		DO NOT SCALE DRAWING					

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4

3

2

1

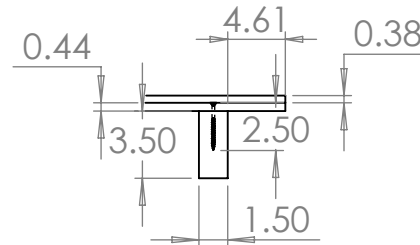
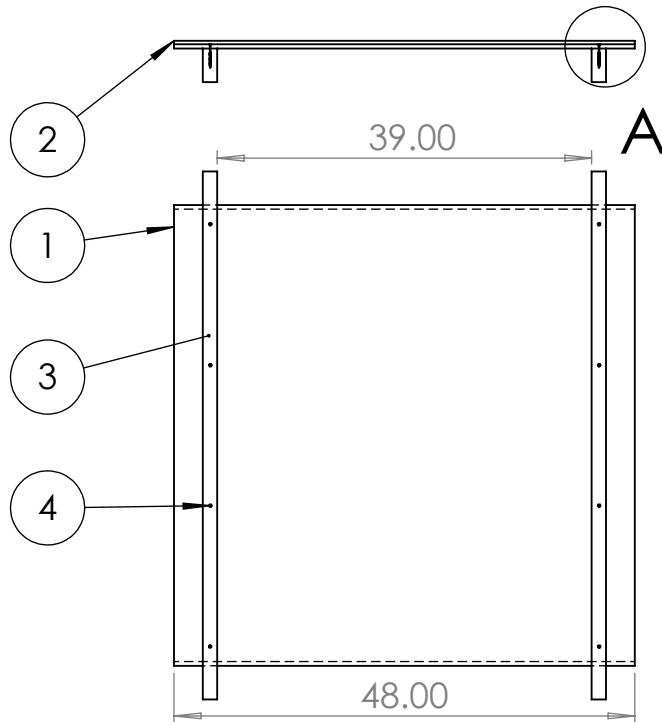
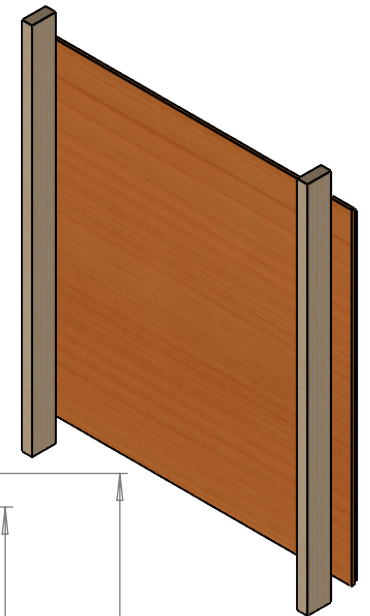
B

B

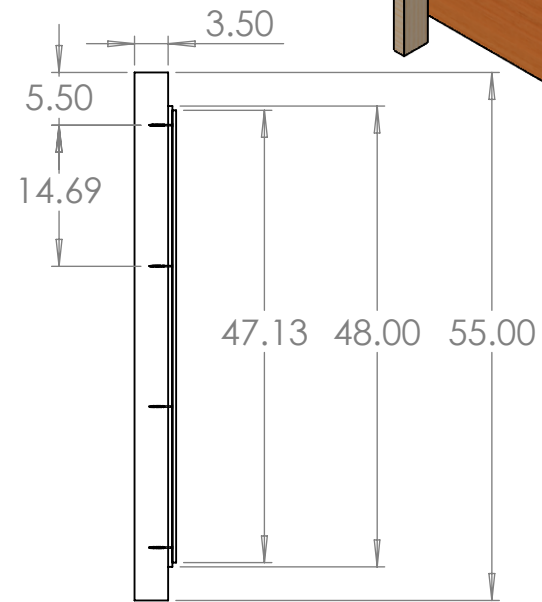
A

A

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	Board	OSB, used for walls of box	1
2	Insulation	Attached to OSB inner side of box	1
3	Timber	2x4 timber, for connecting walls for box	2
4	#8 Wood Screw	Attach timber to OSB	8



**DETAIL A**  
SCALE 1 : 10



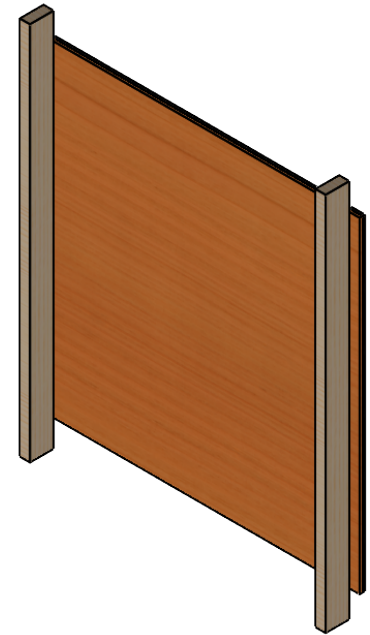
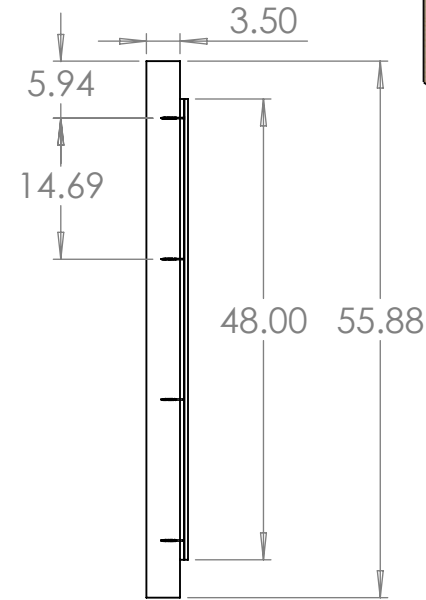
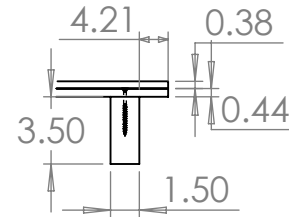
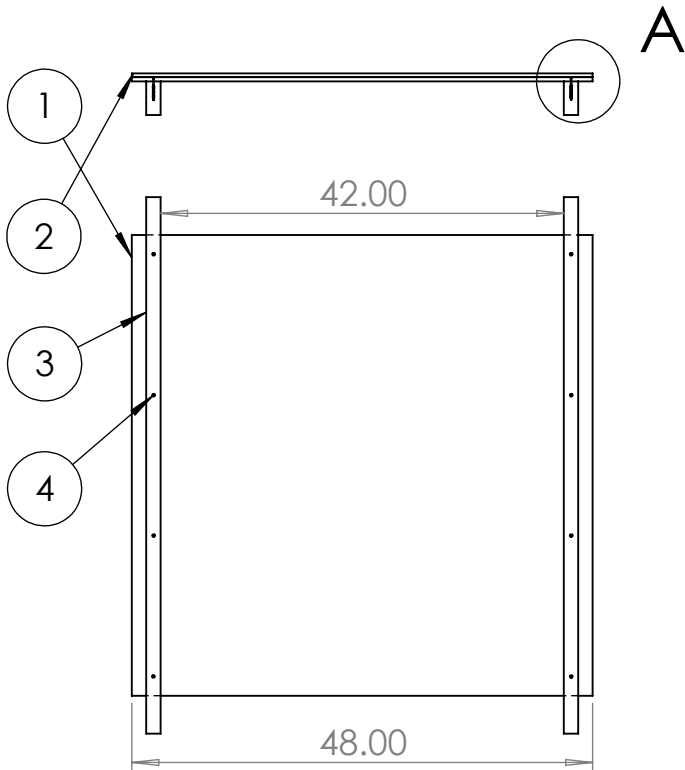
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		DIMENSIONS ARE IN INCHES	DRAWN	AE
		TOLERANCES:	CHECKED	11/15
		FRACTIONAL ±	ENG APPR.	
		ANGULAR: MACH ± BEND ±	MFG APPR.	
		TWO PLACE DECIMAL ±	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS: Used for Test Box Wall	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
		FINISH		
NEXT ASSY	USED ON			
	APPLICATION	DO NOT SCALE DRAWING		

TITLE: <b>Inner Wall</b>			
SIZE <b>A</b>	DWG. NO. <b>22</b>	REV <b>1</b>	
SCALE: 1:20		WEIGHT:	SHEET 1 OF 1

ITEM	PART	DESCRIPTION	QTY.
1	Board	OSB, used for walls of box	1
2	Insulation	Attached to OSB inner side of box	1
3	Timber	2x4 timber, for connecting walls for box	2
4	#8 Wood Screw	Attach timber to OSB	8

B



B

A

		UNLESS OTHERWISE SPECIFIED:	NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	AE
		TOLERANCES:	CHECKED	11/21/24
		FRACTIONAL ±	ENG APPR.	
		ANGULAR: MACH ± BEND ±	MFG APPR.	
		TWO PLACE DECIMAL ±	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS: This wall assembly is used for the left and right side of the test box	
		INTERPRET GEOMETRIC TOLERANCING PER:		
		MATERIAL		
NEXT ASSY	USED ON	FINISH		
APPLICATION		DO NOT SCALE DRAWING		

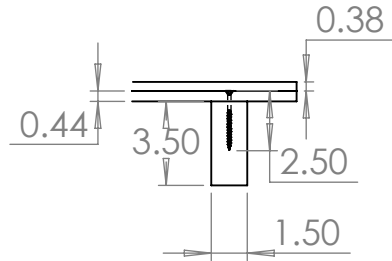
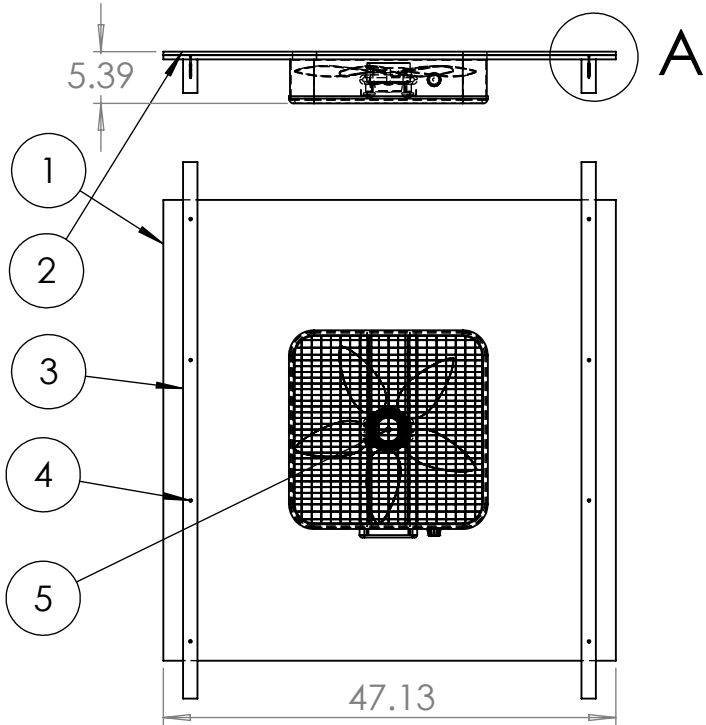
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TITLE:		
Outer Wall		
SIZE	DWG. NO.	REV
<b>A</b>	<b>23</b>	<b>1</b>
SCALE: 1:20		WEIGHT:
		SHEET 1 OF 1

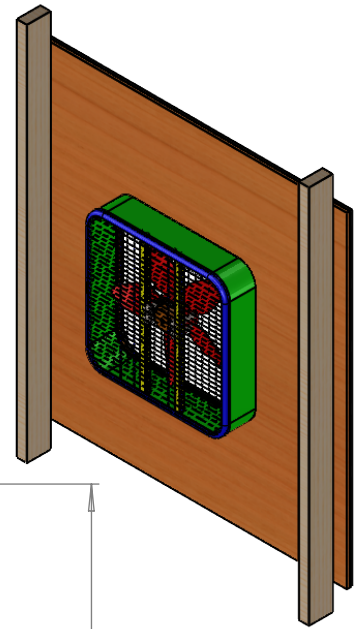
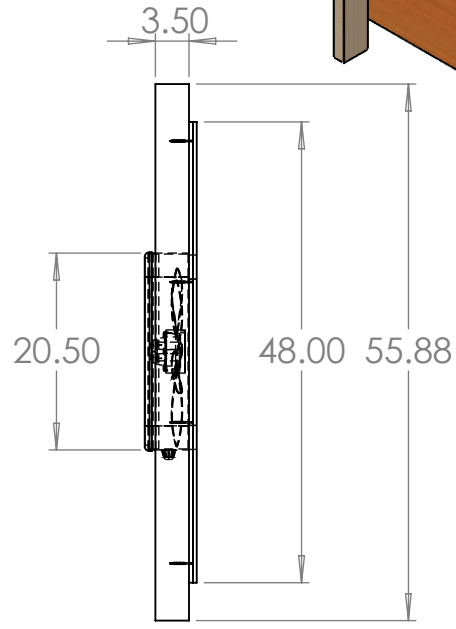
A

ITEM NO.	PART	DESCRIPTION	QTY.
1	Board	OSB, wall of test box	1
2	Insulation	Insulation layer for inside of box	1
3	Timber	2x4 lumber,for connecting walls	2
4	#8 Wood Screw	Attach timber to OSB	8
5	Box Fan	Creates air flow through box	1

B



**DETAIL A**  
SCALE 1 : 8



B

A

A

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		DIMENSIONS ARE IN INCHES	DRAWN	AE	11/15
		TOLERANCES:	CHECKED		
		FRACTIONAL ±	ENG APPR.		
		ANGULAR: MACH ± BEND ±	MFG APPR.		
		TWO PLACE DECIMAL ±	Q.A.		
		THREE PLACE DECIMAL ±	COMMENTS: Used as the fan wall in Test Box.		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
	APPLICATION	DO NOT SCALE DRAWING			

TITLE:			
<h1>Fan Wall</h1>			
SIZE	DWG. NO.	REV	
<b>A</b>	<b>24</b>	<b>1</b>	
SCALE: 1:20		WEIGHT:	SHEET 1 OF 1

2

1

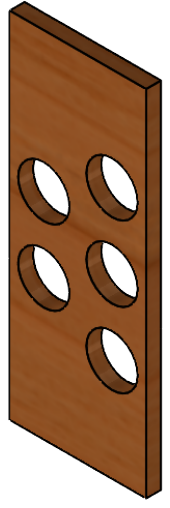
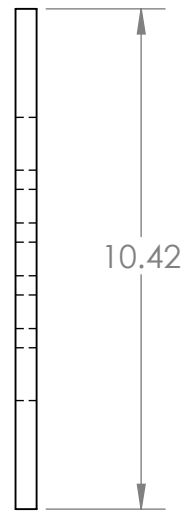
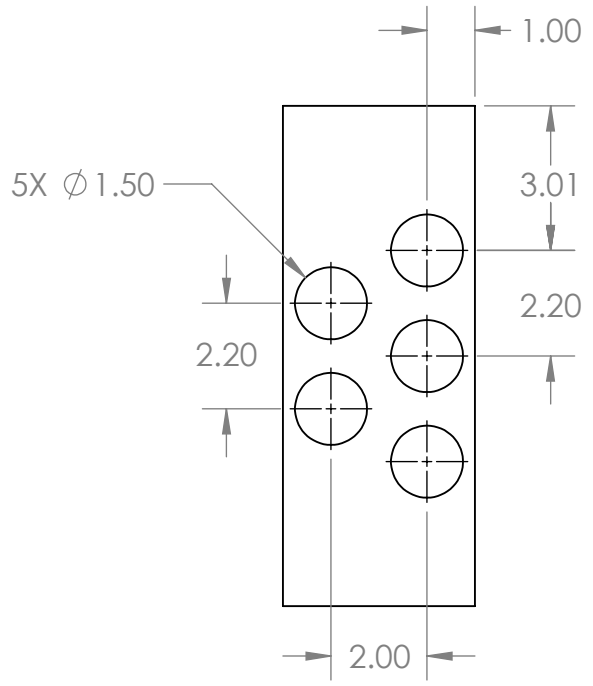
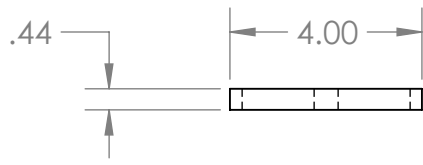


B

A

B

A



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	AE	11/22/24
		TOLERANCES:	CHECKED		
		FRACTIONAL ±	ENG APPR.		
		ANGULAR: MACH ± BEND ±	MFG APPR.		
		TWO PLACE DECIMAL ±	Q.A.		
		THREE PLACE DECIMAL ±	COMMENTS: OSB 7/16 Application Sheathing Panel		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

TITLE:		
Frame OSB		
SIZE	DWG. NO.	REV
<b>A</b>	<b>25</b>	<b>1</b>
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1

2

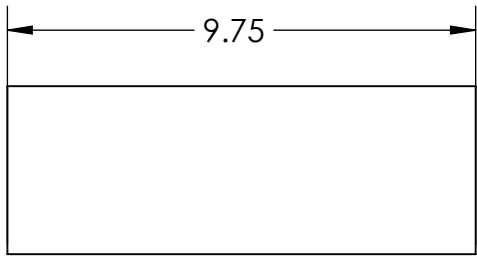
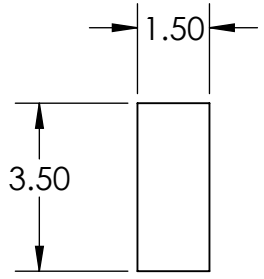
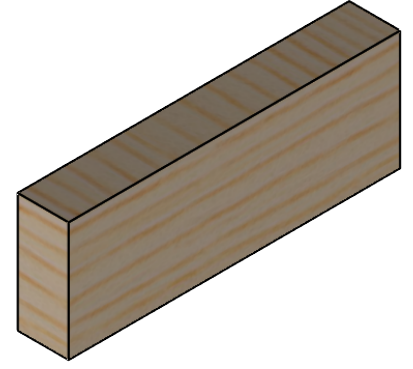
1

2

1

B

B



A

A

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	AE	11/22/24
		TOLERANCES:	CHECKED		
		FRACTIONAL ±	ENG APPR.		
		ANGULAR: MACH ± BEND ±	MFG APPR.		
		TWO PLACE DECIMAL ±	Q.A.		
		THREE PLACE DECIMAL ±	COMMENTS: 2 in. x 4 in. Premium Grade Fir Dimensional Lumber		
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
		FINISH			
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			

TITLE:  
**Frame Lumber**

SIZE	DWG. NO.	REV
<b>A</b>	<b>26</b>	<b>1</b>
SCALE: 1:4	WEIGHT:	SHEET 1 OF 1

2

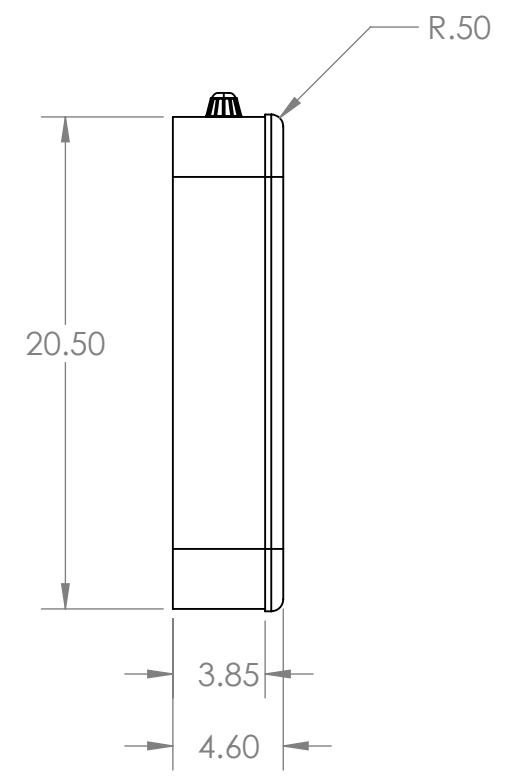
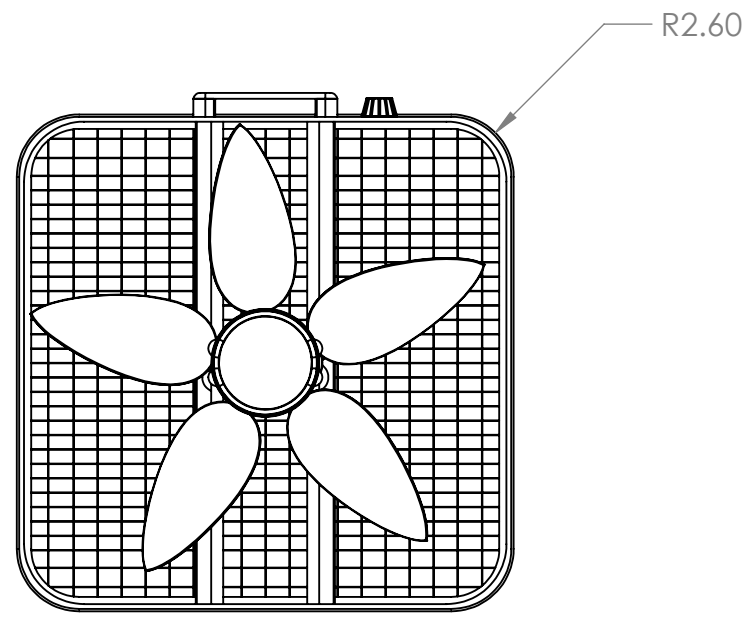
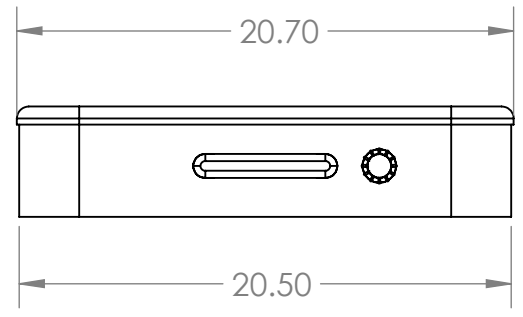
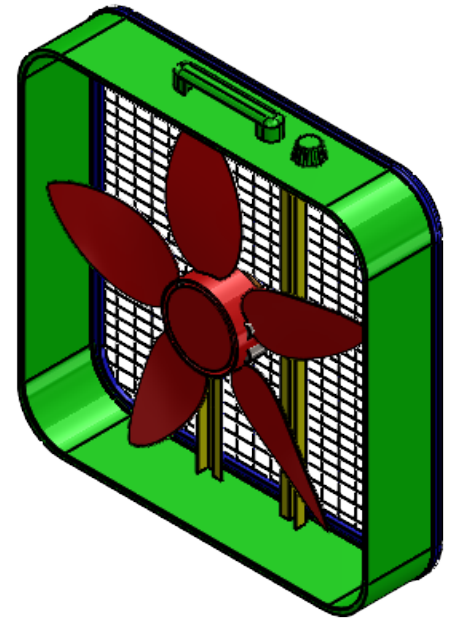
1

4

3

2

1



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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE			
		DIMENSIONS ARE IN INCHES		DRAWN	AE	11/22/24	TITLE: <b>Box Fan</b>	
		TOLERANCES:		CHECKED				
		FRACTIONAL ±		ENG APPR.				
		ANGULAR: MACH ± BEND ±		MFG APPR.				
		TWO PLACE DECIMAL ±		Q.A.			COMMENTS: Model: 'Box Fan' by user: 'CADmeifyoucan' Source: <a href="https://grabcad.com/library/box-fan-1">https://grabcad.com/library/box-fan-1</a>	
		THREE PLACE DECIMAL ±						
		INTERPRET GEOMETRIC TOLERANCING PER:				SIZE	DWG. NO.	REV
		MATERIAL				<b>B</b>	<b>27</b>	<b>1</b>
		FINISH				SCALE: 1:8	WEIGHT:	SHEET 1 OF 1
NEXT ASSY	USED ON			APPLICATION		DO NOT SCALE DRAWING		

4

3

2

1

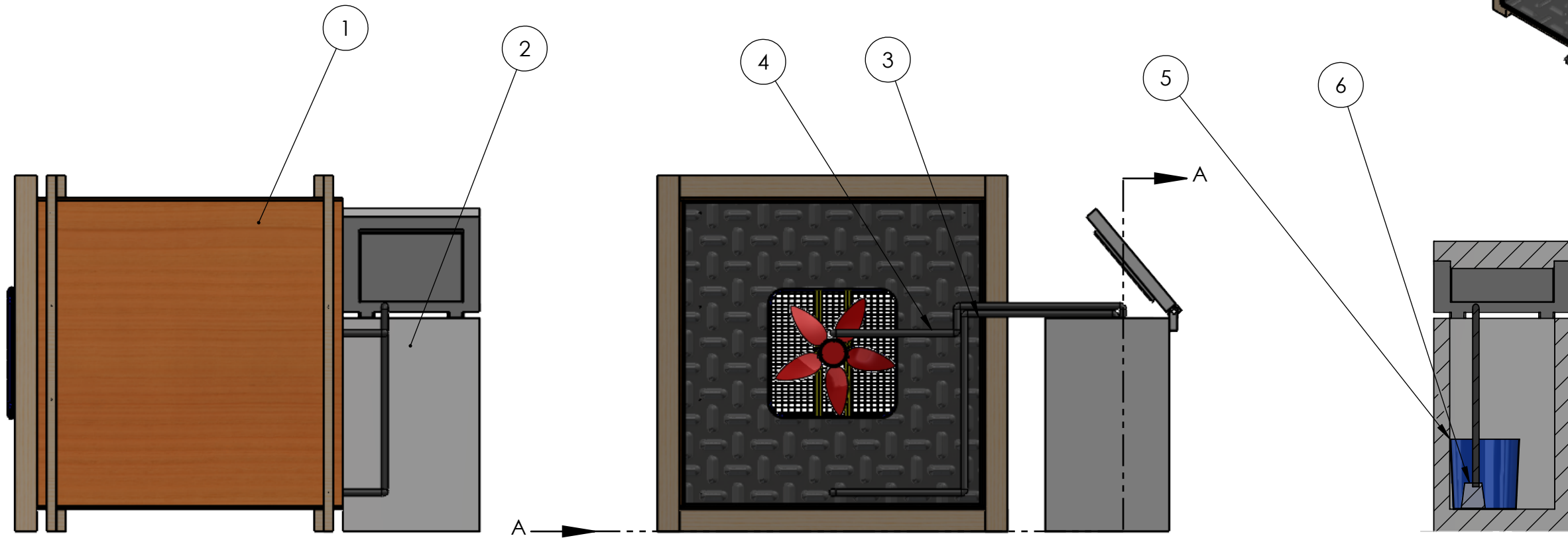
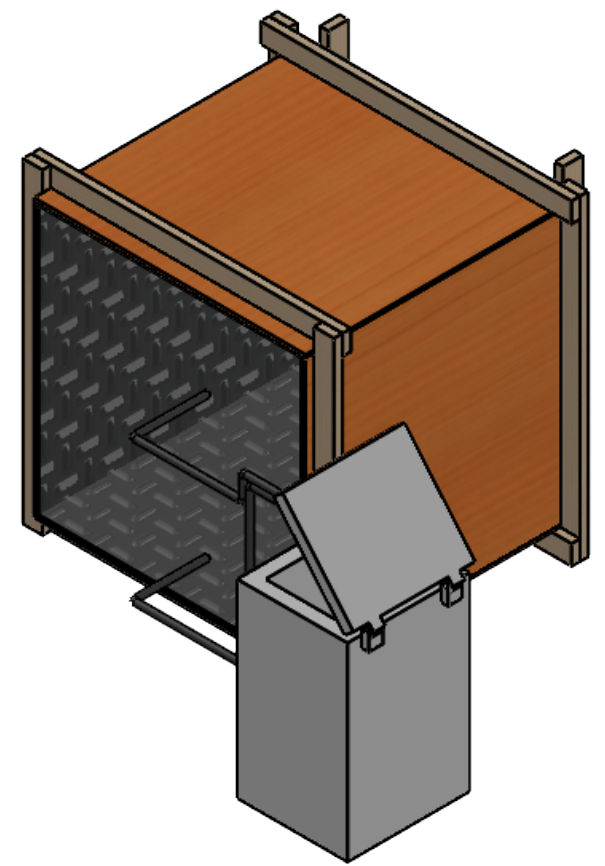
B

B

A

A

ITEM NO.	DRAWING NO.	PART NUMBER	DESCRIPTION	QTY.
1	21	Test Box	Used as a controlled space for testing	1
2	N/A	Deep Freeze	Chills Ethylene Glycol for heat transfer fluid	1
3	N/A	Inlet Hose	Transports ethylene glycol to TES	1
4	N/A	Outlet Hose	Transport ethylene glycol from TES to bucket	1
5	N/A	Bucket	Stores Chilled Etylene inside Freezer	1
6	N/A	Pump	Pumps chilled ethylene glycol into TES and back into bucket	1



SECTION A-A  
SCALE 1 : 20

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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN INCHES		DRAWN	AE 11/22/24
		TOLERANCES:		CHECKED	
		FRACTIONAL ±		ENG APPR.	
		ANGULAR: MACH ± BEND ±		MFG APPR.	
		TWO PLACE DECIMAL ±		Q.A.	
		THREE PLACE DECIMAL ±		COMMENTS:	
		INTERPRET GEOMETRIC TOLERANCING PER:			
		MATERIAL			
NEXT ASSY	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING			
				TITLE:	
				System Assembly	
SIZE	DWG. NO.	REV			
<b>B</b>	28	1			
SCALE: 1:20			WEIGHT:	SHEET 1 OF 1	

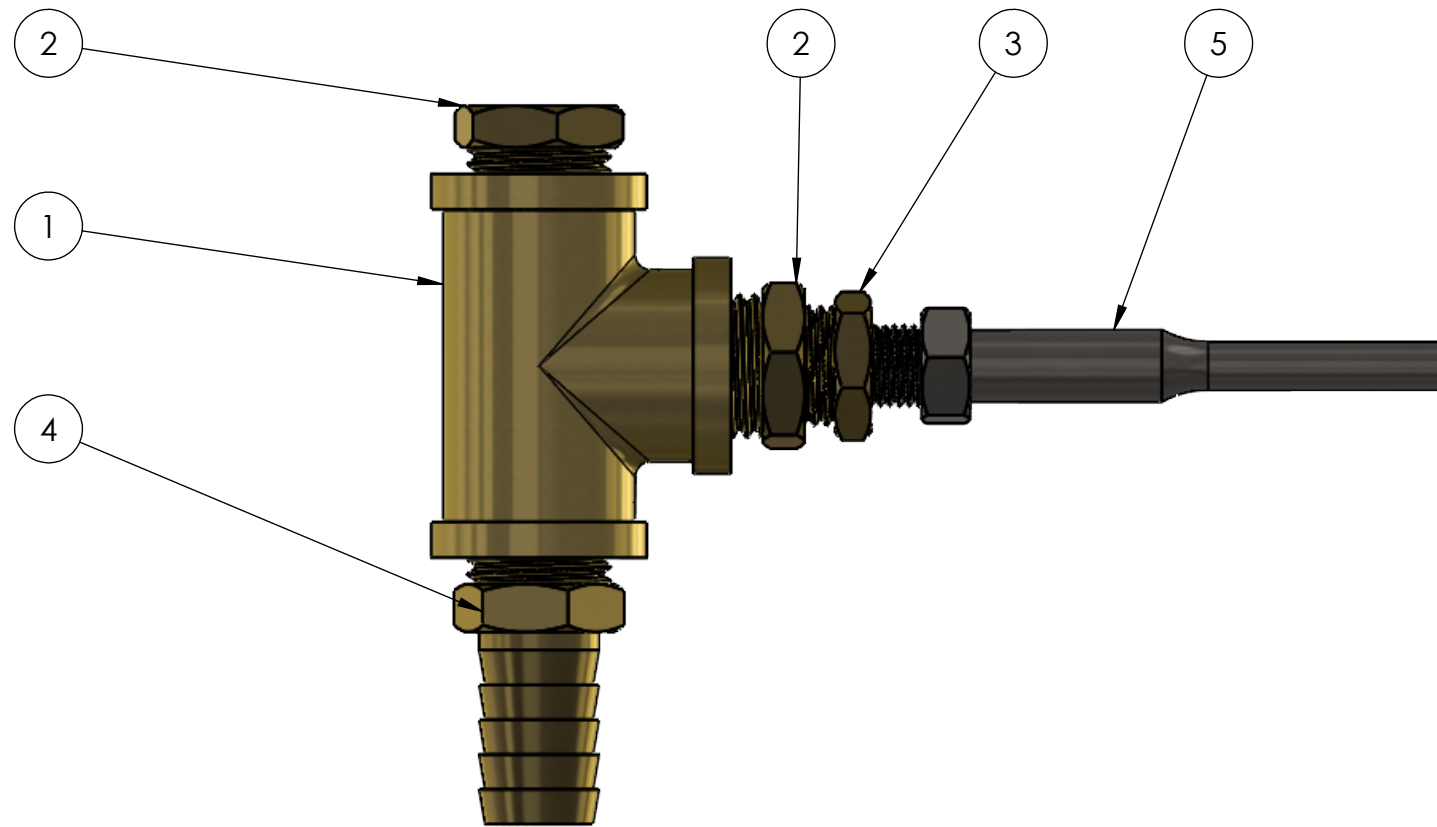
4

3

2

1

ITEM	DRAWING NO.	PART	DESCRIPTION	QTY.
1	14	Brass Tee	1/2 in. FIP Brass Tee Fitting	1
2	15	Brass Reducer	1/2 in. MIP x 3/8 in. FIP Brass Bushing Fitting	2
3	16	Brass Reducer	3/8 in. MIP x 1/4 in. FIP Brass Bushing Fitting	1
4	11	Brass Barb	5/8 in. Barb x 1/2 in. MIP Brass Adapter Fitting	1
5	N/A	Thermocouple	CGELE K-Type Thermocouple NPT	1



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UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES		DRAWN	AE 11/22/24
TOLERANCES:		CHECKED	
FRACTIONAL ±		ENG APPR.	
ANGULAR: MACH ± BEND ±		MFG APPR.	
TWO PLACE DECIMAL ±		Q.A.	
THREE PLACE DECIMAL ±		COMMENTS:	
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL			
NEXT ASSY	USED ON		
FINISH			
APPLICATION			
DO NOT SCALE DRAWING			

TITLE: <b>Thermocouple Setup</b>		
SIZE <b>B</b>	DWG. NO. <b>29</b>	REV <b>1</b>
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1

4

3

2

1

B

B

A

A