

REVISIONS				
ZONE	REV.	DESCRIPTION		DATE

#### Parts list:

Camera (2)

Bar (1)

Center laser bracket (1)

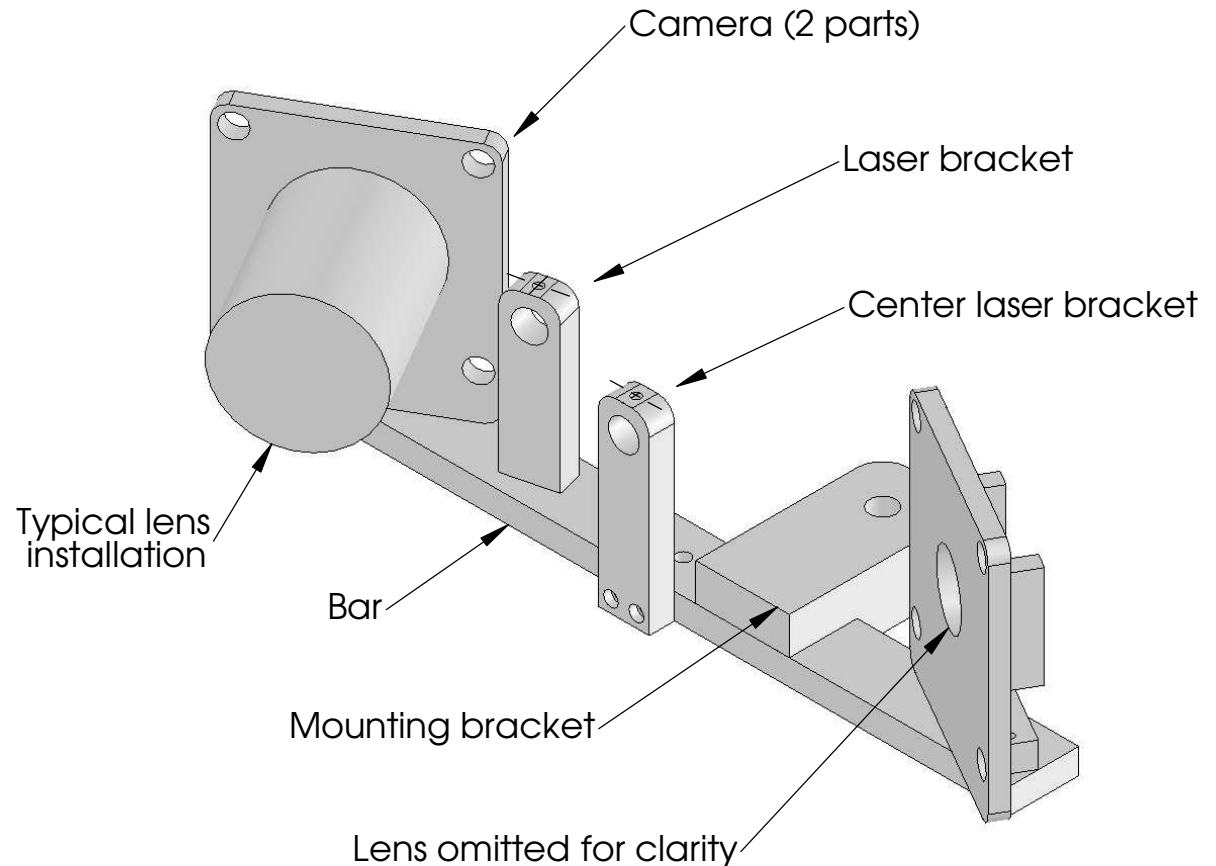
Laser bracket (1)

Mounting bracket (1)

Adapter plate (not shown here) (1)

The purpose of this assembly is to suspend two cameras and two lasers from the "Mounting bracket". Stock photographic accessories with 3/8 thread are used to connect "Mounting bracket" and "Adapter plate". "Adapter plate" is mounted to a microscope via an accessory dovetail.

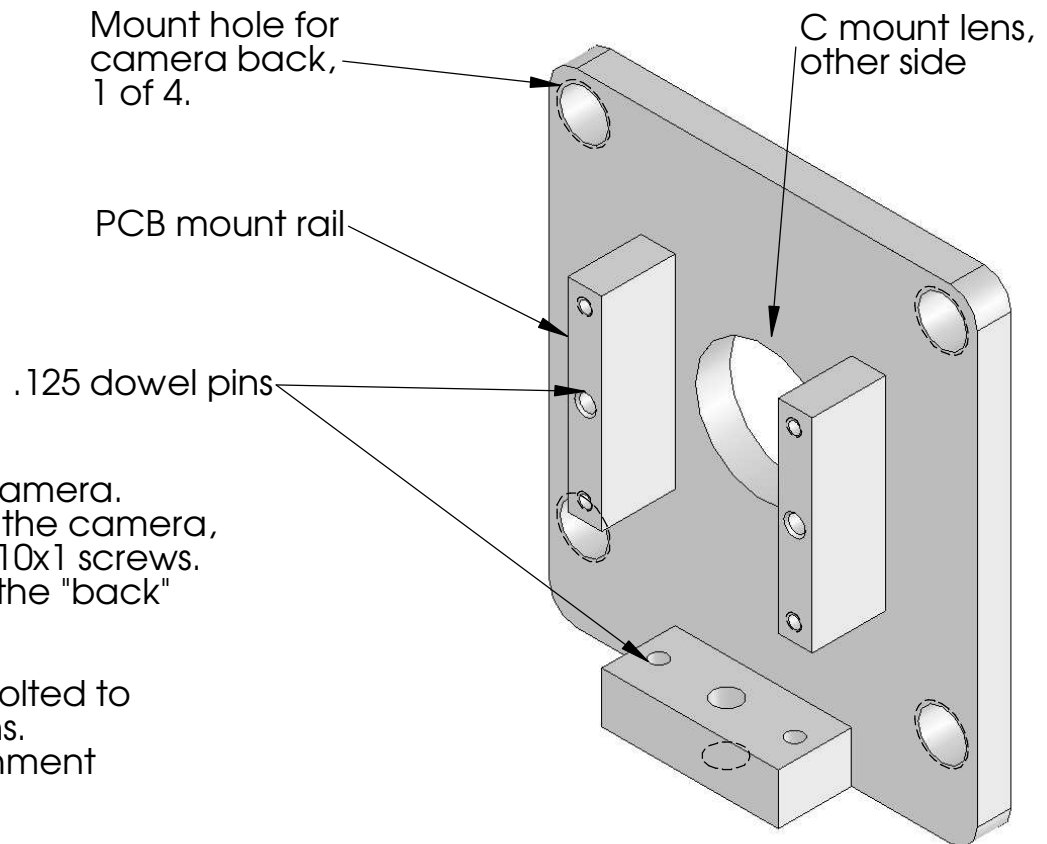
The camera axes converge at a 60 degree angle. The laser axes converge at this same point, and serve as a sighting device.



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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ±    BEND ± TWO PLACE DECIMAL    ± THREE PLACE DECIMAL    ±		NAME	DATE	CMU Robotics Institute		
			DRAWN			ASAP assembly view		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		MATERIAL	Aluminum		Q.A.			
		FINISH	--		COMMENTS:			
NEXT ASSY	USED ON							SIZE
APPLICATION		DO NOT SCALE DRAWING						
				SCALE:1:2    WEIGHT:    SHEET 1 OF 10				

		REVISIONS			
ZONE	REV.	DESCRIPTION		DATE	APPROVED



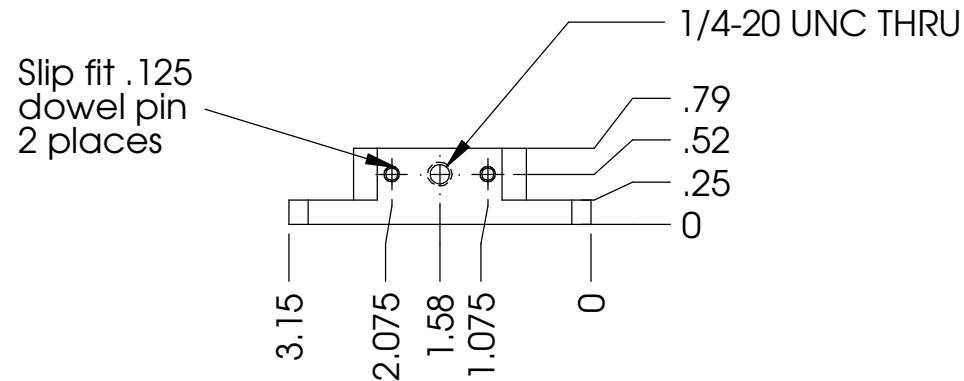
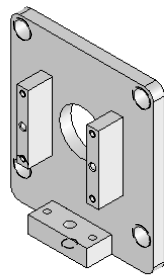
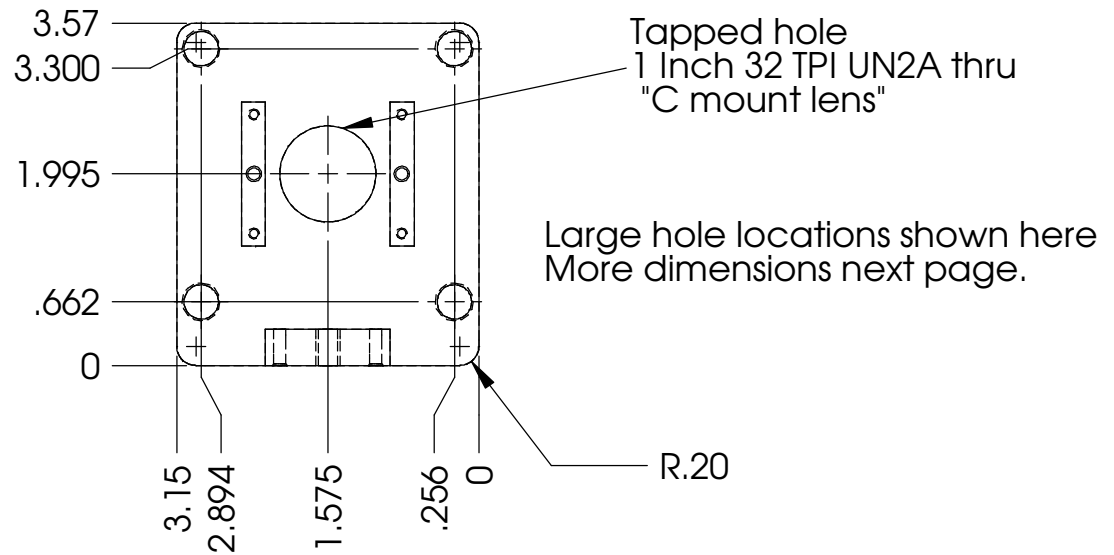
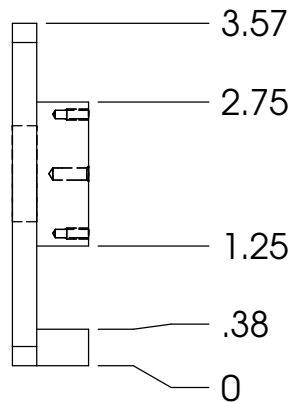
The "camera" part is the front plate of a camera. The "front" surface shown is actually inside the camera, enclosed by a stock box with 4 captive M10x1 screws. The lens is "C mount", and threads in from the "back" surface of the "camera" part.

A printed circuit board with the sensor is bolted to two rails, with alignment by .125 dowel pins. Dowel pins are also used to maintain alignment between the "camera" and "bar" parts.

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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm$ ANGULAR: MACH $\pm$ BEND $\pm$ TWO PLACE DECIMAL $\pm$ THREE PLACE DECIMAL $\pm$	NAME	DATE	CMU Robotics Institute  Camera Description
			DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		MATERIAL	Aluminum		Q.A. COMMENTS:
		FINISH	--		
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			SIZE <b>A</b> DWG. NO. REV.
		SCALE: 1:1 WEIGHT: SHEET 2 OF 10			

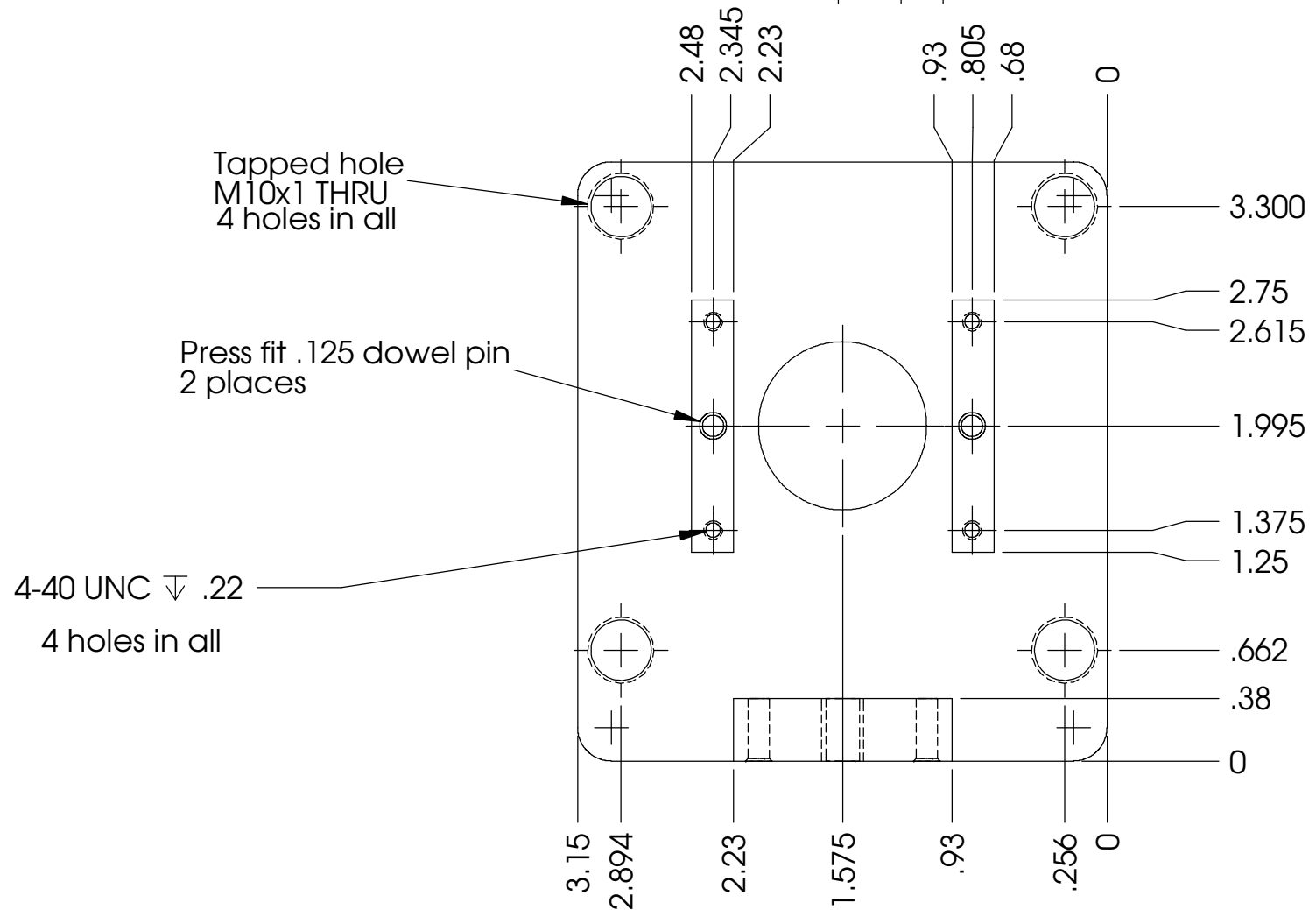
		REVISIONS		
ZONE	REV.	DESCRIPTION	DATE	APPROVED



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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±		NAME		DATE		CMU Robotics Institute	
		MATERIAL Aluminum		DRAWN				ASAP camera Standard view	
		FINISH --		CHECKED					
				ENG APPR.					
				MFG APPR.					
NEXT ASSY		USED ON		Q.A.					
APPLICATION		DO NOT SCALE DRAWING		COMMENTS:					
				SIZE A		DWG. NO.		REV.	
				SCALE: 1:2		WEIGHT:		SHEET 3 OF 10	

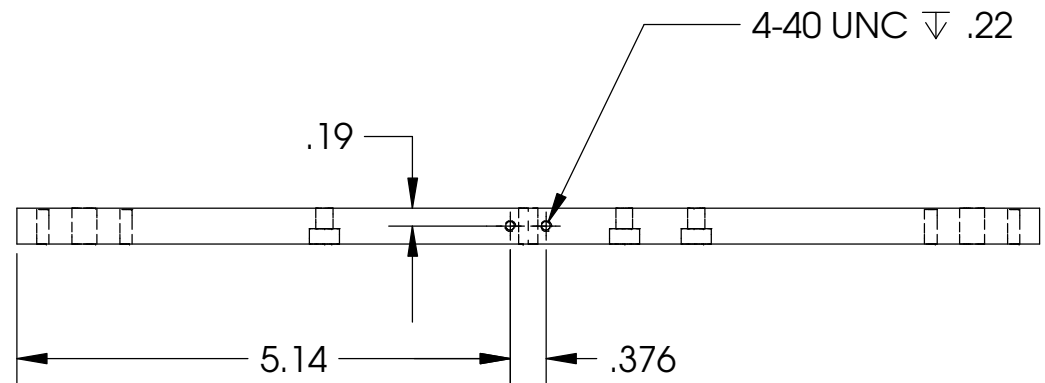
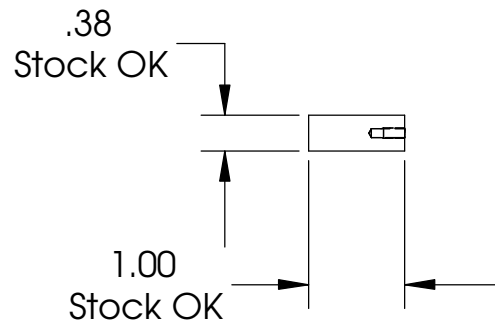
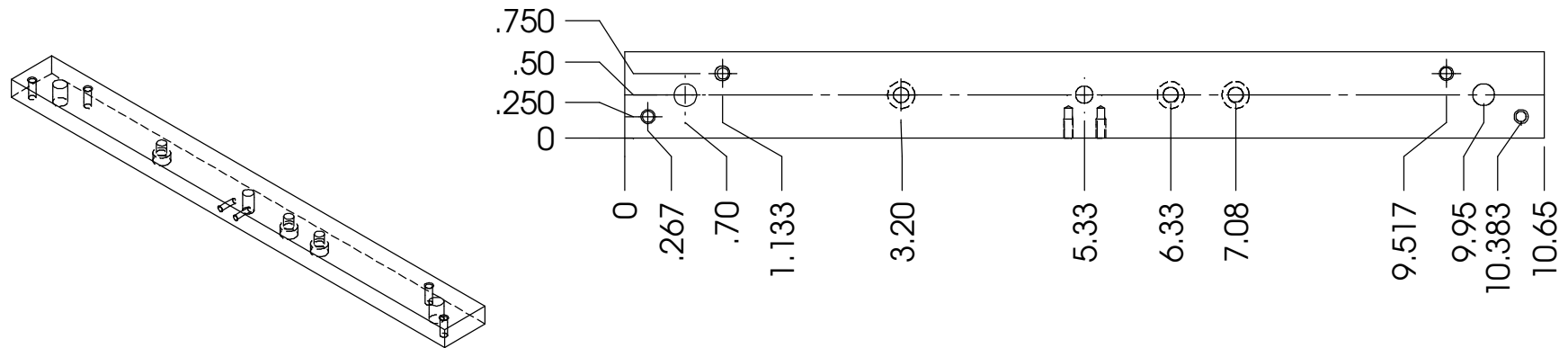
		REVISIONS			
ZONE	REV.	DESCRIPTION		DATE	APPROVED



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				DRAWN		
				CHECKED		
				ENG APPR.		
				MFG APPR.		
		MATERIAL	Aluminum		Q.A.	
		FINISH	--		COMMENTS:	
NEXT ASSY	USED ON					
APPLICATION		DO NOT SCALE DRAWING				
		SIZE	DWG. NO.		REV.	
		A				
		SCALE:1:2	WEIGHT:		SHEET 4 OF 10	

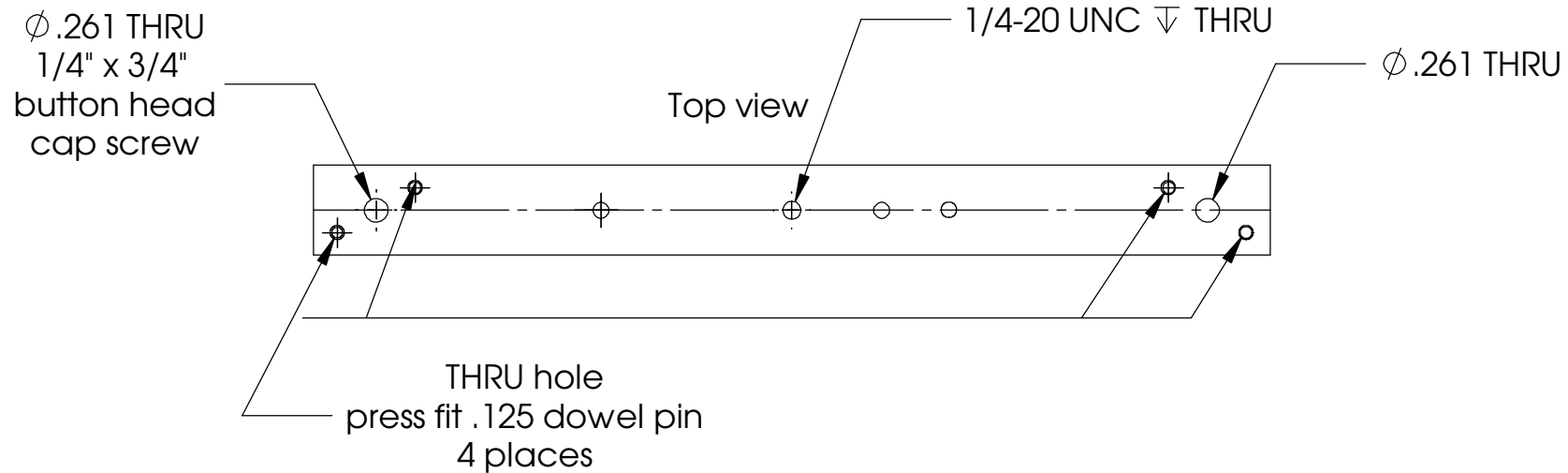
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ZONE	REV.	DESCRIPTION		DATE	APPROVED



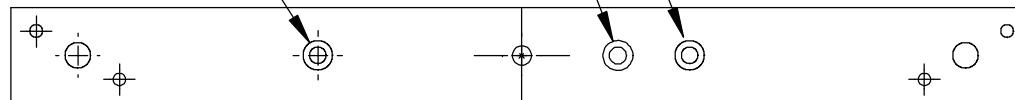
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		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL $\pm$ ANGULAR: MACH $\pm$ BEND $\pm$ TWO PLACE DECIMAL $\pm$ THREE PLACE DECIMAL $\pm$	NAME	DATE	CMU Robotics Institute  ASAP bar standard view
			DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		MATERIAL	Aluminum		COMMENTS:
		FINISH	--		
NEXT ASSY	USED ON				
APPLICATION		DO NOT SCALE DRAWING			
		SIZE	DWG. NO.		REV.
		A			
		SCALE: 1:2	WEIGHT:		SHEET 5 OF 10

		REVISIONS		
ZONE	REV.	DESCRIPTION	DATE	APPROVED



$\phi .18$  THRU  
□  $\phi .31$   $\nabla$  .16  
clearance for #8  
socket head cap  
screw



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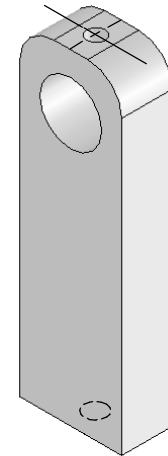
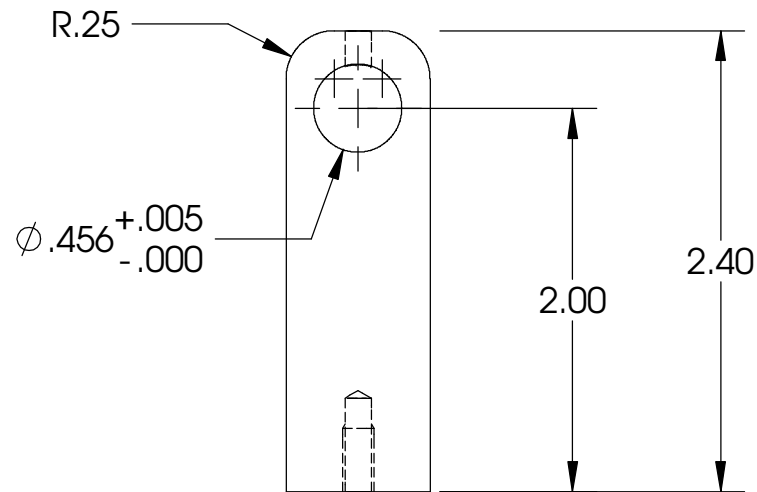
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			DRAWN			ASAP bar hole details			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
		MATERIAL	Aluminum	Q.A.		SIZE <b>A</b> DWG. NO.    REV.			
		FINISH	--	COMMENTS:					
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING		SCALE:1:2		WEIGHT:		SHEET 6 OF 10	

		REVISIONS		
ZONE	REV.	DESCRIPTION	DATE	APPROVED

8-32 UNC THRU  
Nylon setscrew

.38  
Stock OK

.75  
Stock OK



8-32 UNC  $\nabla$  .33

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			DRAWN			ASAP side laser bracket				
			CHECKED							
			ENG APPR.							
			MFG APPR.							
		MATERIAL	Aluminum			COMMENTS:	SIZE	DWG. NO.	REV.	
		FINISH	--				<b>A</b>			
NEXT ASSY	USED ON						SCALE:1:1	WEIGHT:	SHEET 7 OF 10	
APPLICATION		DO NOT SCALE DRAWING								

		REVISIONS			
ZONE	REV.	DESCRIPTION		DATE	APPROVED

.75  
Stock ok

.38  
Stock ok

8-32 UNC THRU  
Nylon setscrew

R.25

2.78

2.37

$\phi .456^{+.005}_{-.000}$

.376

.19

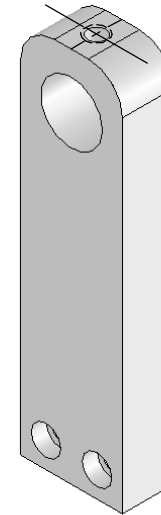
0

.38

.19

0

$\phi .13$  THRU  
 $\square \phi .22 \nabla .11$   
 Clearance for # 4-40  
 cap screw

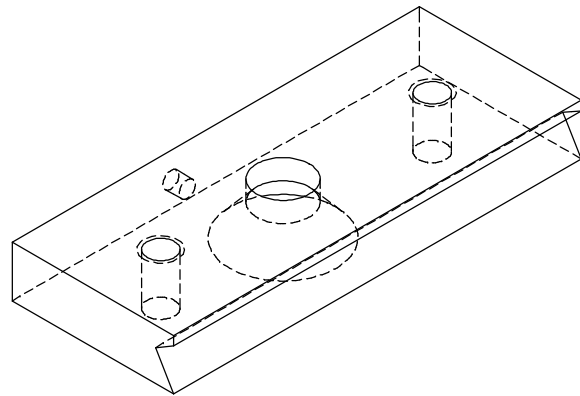


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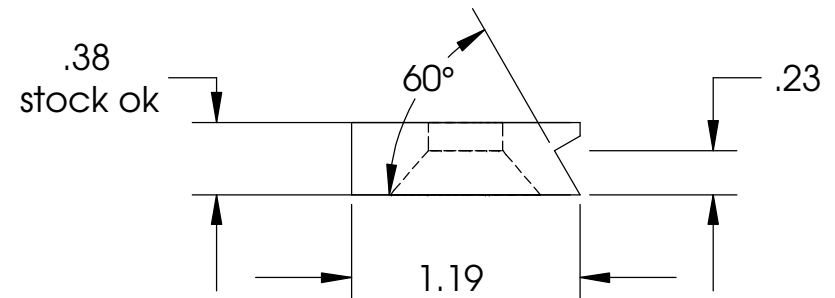
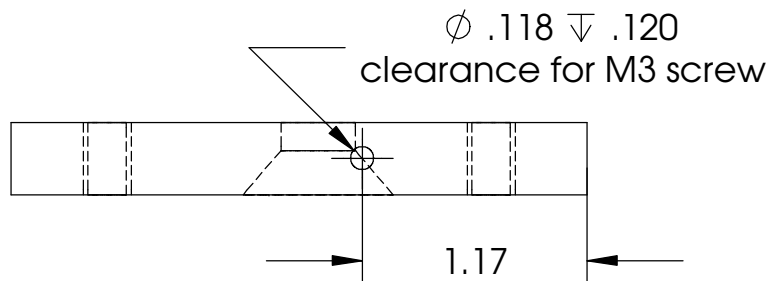
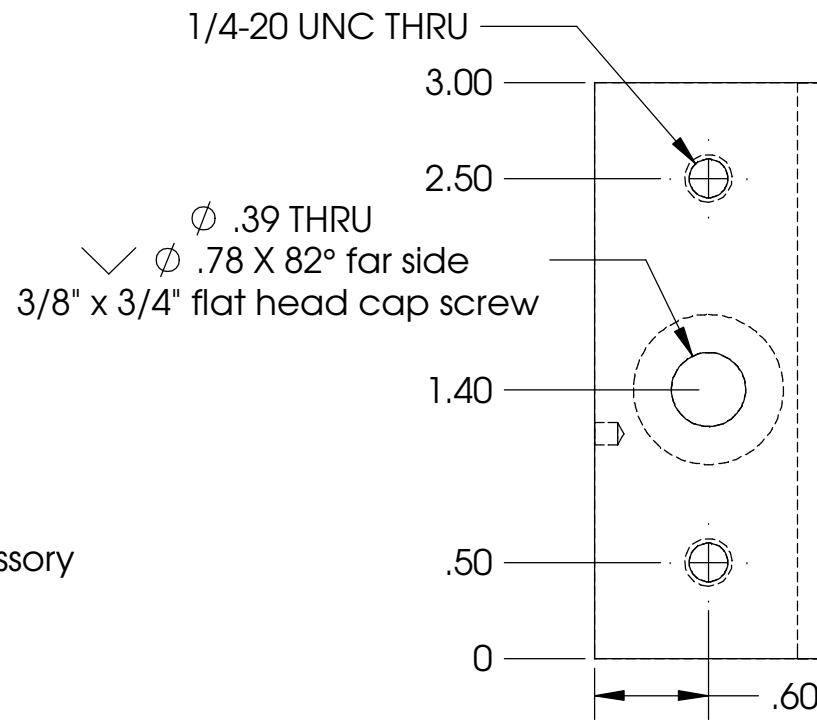
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ±    BEND ± TWO PLACE DECIMAL    ± THREE PLACE DECIMAL    ±		NAME	DATE	CMU Robotics Institute			
			DRAWN			ASAP center laser bracket			
			CHECKED						
			ENG APPR.						
			MFG APPR.						
		MATERIAL	Aluminum		Q.A.		SIZE <b>A</b> DWG. NO.    REV.		
		FINISH	--		COMMENTS:				
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING		SCALE:1:1		WEIGHT:		SHEET 8 OF 10	



REVISIONS				
ZONE	REV.	DESCRIPTION		DATE



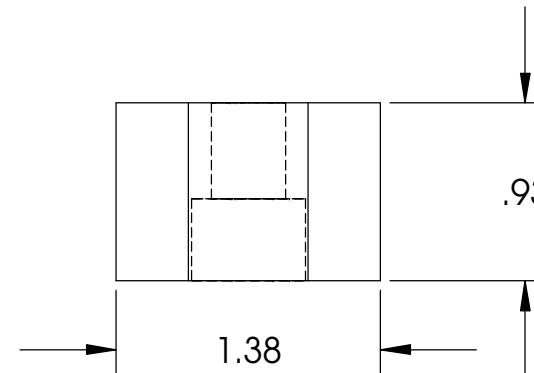
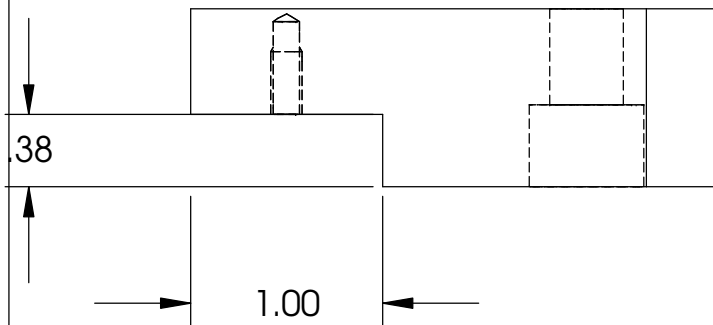
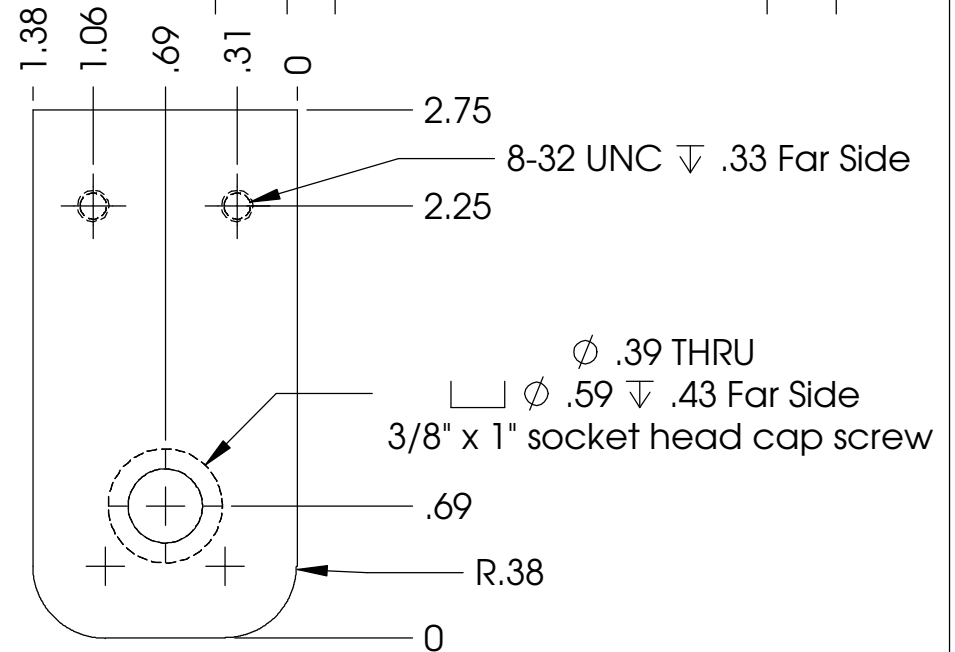
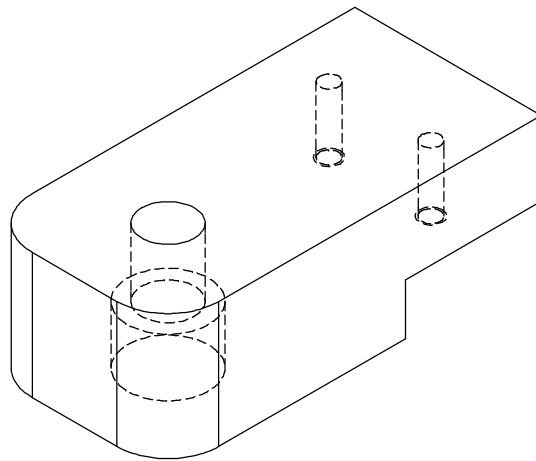
This part fits in a microscope accessory holder dovetail.



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		DIMENSIONS ARE IN INCHES		NAME		DATE		CMU Robotics Institute	
		TOLERANCES:		DRAWN				ASAP adapter plate	
		FRACTIONAL $\pm$		CHECKED					
		ANGULAR: MACH $\pm$ BEND $\pm$		ENG APPR.					
		TWO PLACE DECIMAL $\pm$		MFG APPR.					
		THREE PLACE DECIMAL $\pm$		Q.A.					
		MATERIAL Aluminum		COMMENTS:					
NEXT ASSY	USED ON	FINISH --							
APPLICATION		DO NOT SCALE DRAWING							
				SIZE A		DWG. NO.		REV.	
				SCALE: 1:1		WEIGHT:		SHEET 9 OF 10	

		REVISIONS			
ZONE	REV.	DESCRIPTION		DATE	APPROVED



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			DRAWN			ASAP Mounting block		
			CHECKED					
			ENG APPR.					
			MFG APPR.					
		Q.A.						
		MATERIAL	Aluminum					
		FINISH	--					
NEXT ASSY	USED ON			SIZE <b>A</b>			DWG. NO.	REV.
APPLICATION		DO NOT SCALE DRAWING		SCALE:1:1			WEIGHT:	SHEET 10 OF 10