

Loading the Bearing

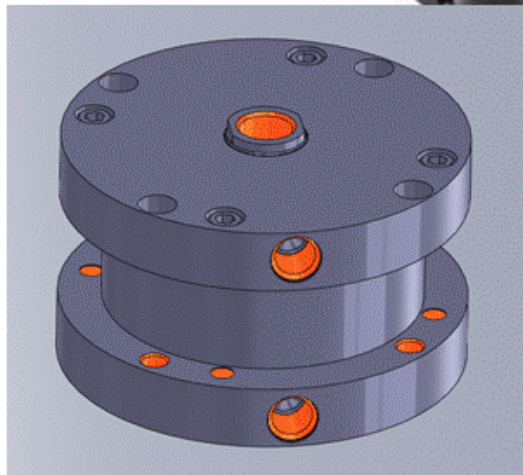
- Total load seen by the bearing = 360lbs
 - Pressure roll force: 1200lb (600lb/bearing)
 - Heat roll force: 184lb/roll
 - Angle between heat rolls: 60°
- Using a pneumatic cylinder to apply load
 - Sized according to force needed (plus weight of object applying load)
 - Pressure regulator will be used to adjust air pressure applied to cylinder
 - Maximum pressure available = ~75psi

Sizing the pneumatic cylinder

- Force needed = 370lb (assuming 10lb weight of bearing “pusher”)
- Distance to apply force = small
- Pressure available = 75psi
- Formulas used:
 - $F = P * A$
 - $A = \pi * r^2$
- Cylinder bore needed for 75psi = 2.506in²
- Want to stay under maximum pressure available → Use 3.00” bore
- Pressure needed for 3.00” bore cylinder = 52.3psi
- Use pressure regulator to adjust pressure if needed
 - Pressure regulator can have pressure gauge attached

Pneumatic Cylinder

- Parker “Pancake Style” pneumatic cylinder (3.0NLPR9X1.00)
 - Bore size: 3.00”
 - Stroke size: 1.00”
 - Rod thread size: 5/8-18 female
 - Height: 2.625”
 - Cost: \$181.67
 - Source: MSC Direct



Pressure Regulator

- Jupiter Pneumatics Air pressure regulator with pressure gauge (4710302535JP)
 - Port Size: 1/4"
 - Maximum PSI: 120psi
 - Width: 1.97"
 - Height: 1.97"
 - Cost: \$11.36
 - Source: MSC Direct



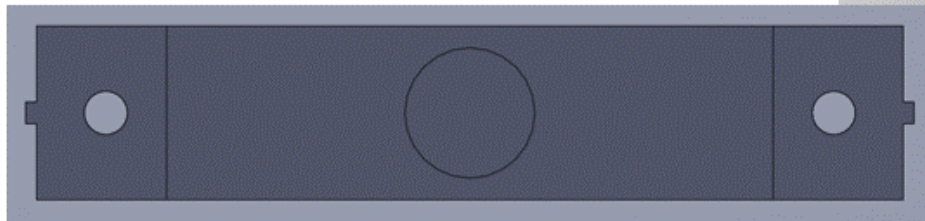
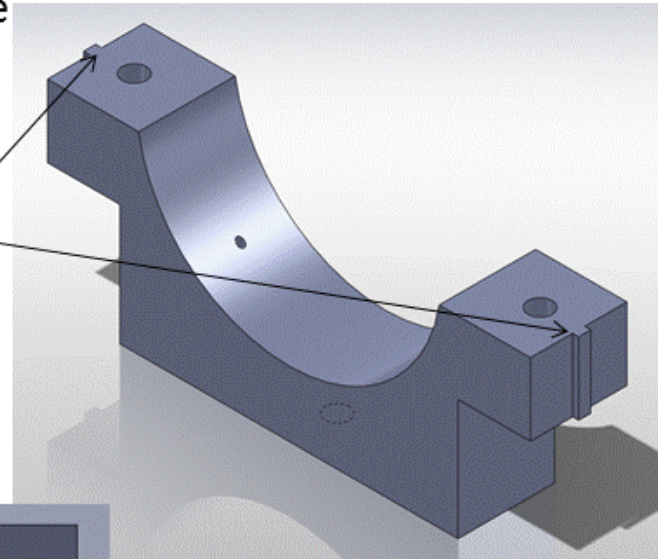
Pushing Rod

- 5/8"-18 Threaded Stud (91187A650)
 - Thread: 5/8"-18
 - Material: 18-8 SS
 - Overall Length: 12"
 - Cost: \$13.33
 - Source: McMaster-Carr



Bearing “Pusher” and Sensor Holder

- Made from (1) 6” x 6” x 1” Aluminum Plate (89155K971)
 - Material: Aluminum 6061
 - Both pieces cut from 1 plate
 - 1/8” width x 1/16” depth keys on both sides for guide rails
 - Oversized hole for pushing rod on bottom
 - 1/4-20 holes for connecting top and bottom halves



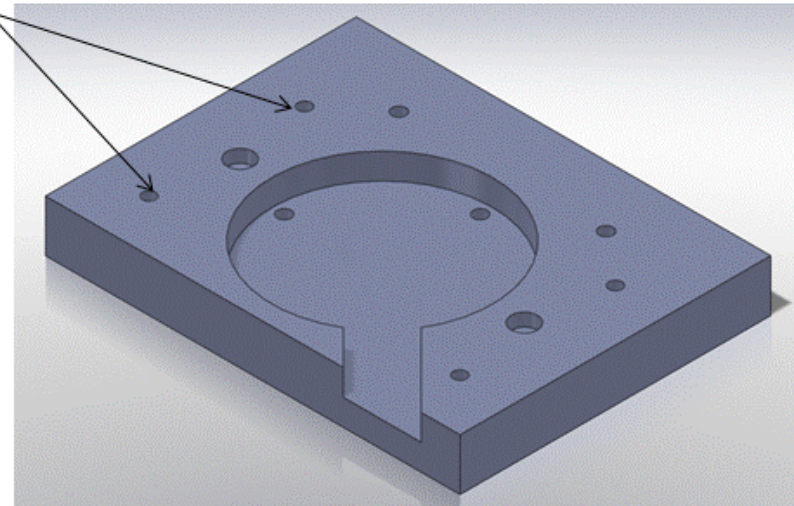
Guide Rails

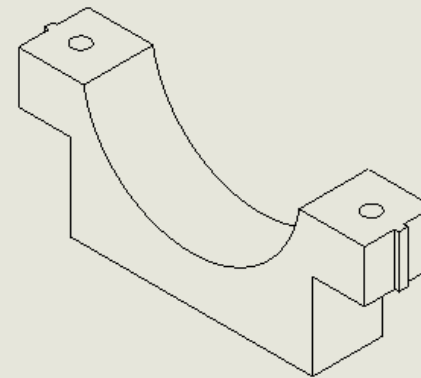
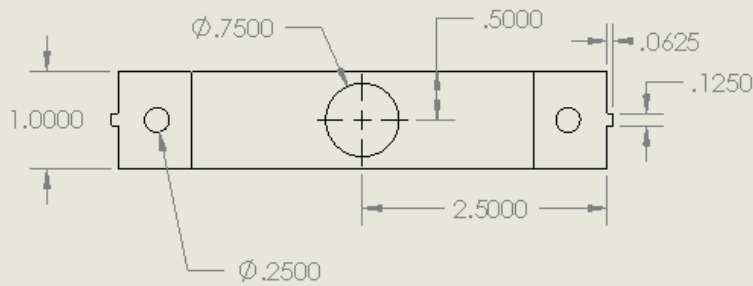
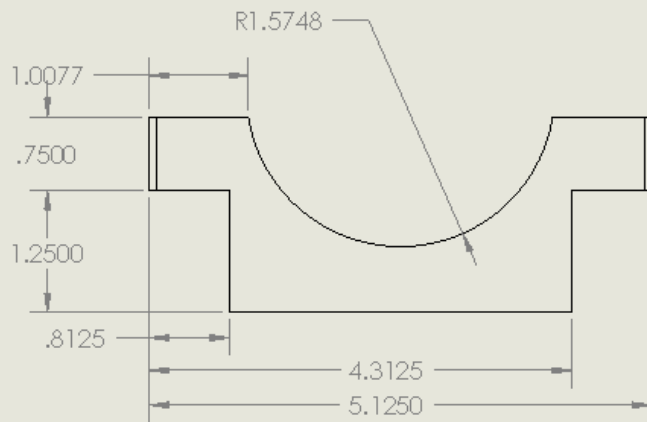
- Precision shaft with keyhole (7398K22)
 - Shaft diameter: 1/2"
 - Material: 304 SS
 - Overall Length: 12"
 - 1/8" width x 1/16" depth keyhole
 - Will need to tap hole into bottom for mounting
 - Cost: \$44.32 (\$22.16ea)
 - Source: McMaster-Carr



Mounting Plate

- Made from (1) 8" x 8" x 1" Aluminum Plate (9246K61)
 - Material: Aluminum 6061
 - Holes mount guide rails, pneumatic cylinder, front sleeve bearing support
 - Countersunk holes from the bottom allow mounting to another table
 - Mounting holes spaced at 3" and 6" distances for mounting to table with inch spacing mounting holes
 - Cost: \$47.00
 - Source: McMaster-Carr





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		UNLESS OTHERWISE SPECIFIED:		NAME	DATE	
		DIMENSIONS ARE IN INCHES	DRAWN			TITLE:
		TOLERANCES:	CHECKED			
		FRACTIONS: HALFS	ENG APPR.			
		ANGULAR: MACH ± BEND ±	MFG APPR.			
		TWO PLACE DECIMAL ±	Q.A.			
		THREE PLACE DECIMAL ±	COMMENTS:			
		DISSIPATIVE COEFFICIENT				SIZE DWG. NO. REV
		TOLERANCE PER:				Bearing Holder
		MATERIAL:				SCALE: 1:2 WEIGHT: SHEET 1 OF 1
		FINISH				
		DO NOT SCALE DRAWING				
	NEXT ASSY	USED ON				
	APPLICATION					

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