

Grommet Press

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Objective

- Reverse Engineer the original Grommet Press to create a new Grommet Press
- Create assembly that consists of 3 cast components
- Maximum bounding box length has to be approximately 10" x 16" x 5"
- Assembly Chosen
 - Grommet Press



Requirement of Grommet Press

- Withstand maximum force that can possibly be applied
- Avg. tensile force applied
 - 6.55MPa
- Surface Finish
 - Not crucial
 - Leave as is after sand casting

Process

- Fill mold with sand
- Pour molten metal through sprue
- Wait for molten metal to solidify
- Separate casting from sand
- Cool off casting
- Separate components from risers and gates
- Assemble Grommet Press



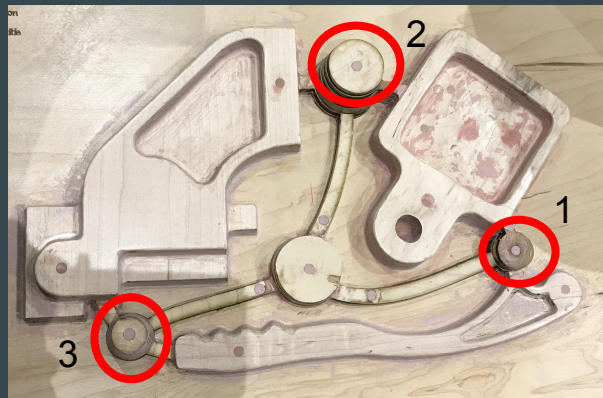
Open Finished Molds



Risers

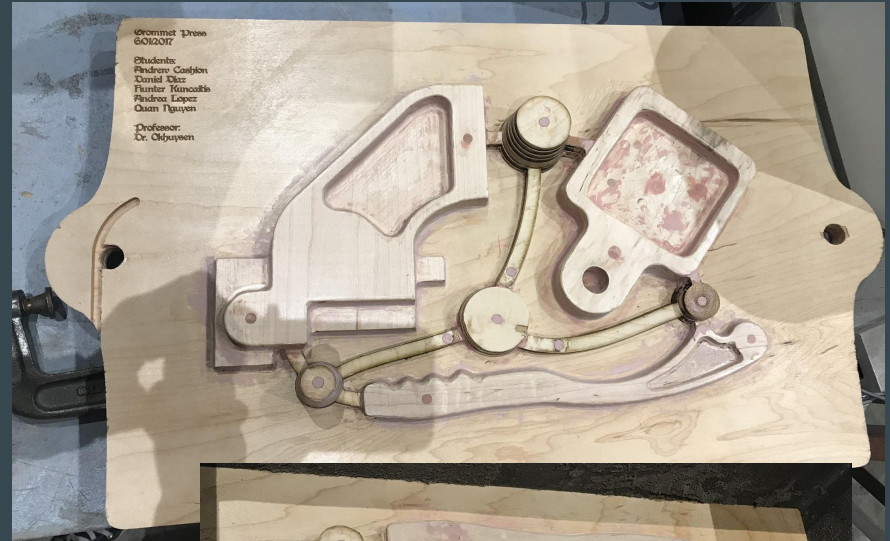
Riser Number	Max Modulus	Feed Volume	Riser Casting Modulus Ratio	Required Riser Modulus	Sleeve Type	Riser Modulus Increase Factor	Riser Diameter	Riser Height
1	0.2366123	23.64912	1.2					
2	0.2616025	21.32956	1.2	0.2839348	1	1	1.250009	6.211998
3	0.1951562	7.236442	1.2	0.314	1	1	2	1.688172
4	###Undefined###			0.234	1	1	1.25	1.863057

Actual Riser Modulus	Height Diameter Ratio	Actual Riser Vol.	Required Riser Vol.	Riser Efficiency Factor
0.2839348	4.969564	7.623366	5.841024	15
0.314	0.8440861	5.303544	5.268123	15
0.234	1.490446	2.286313	1.787307	15

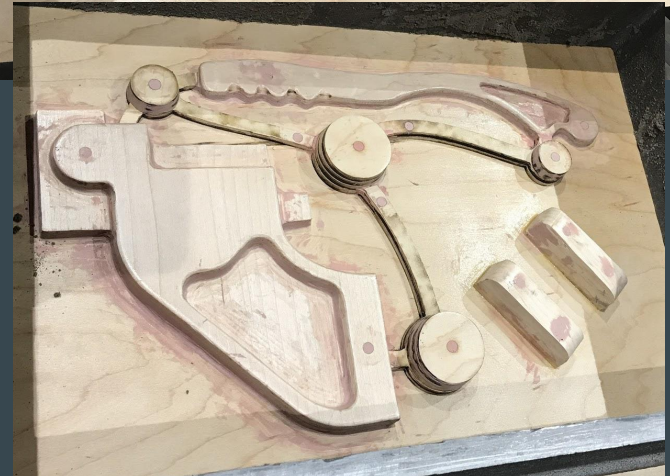


Gating System/ MatchPlate

- Gating system developed to create flow through the casting
- All components casted using one MatchPlate



Front (top)
and Back
(bottom) of
Match Plate

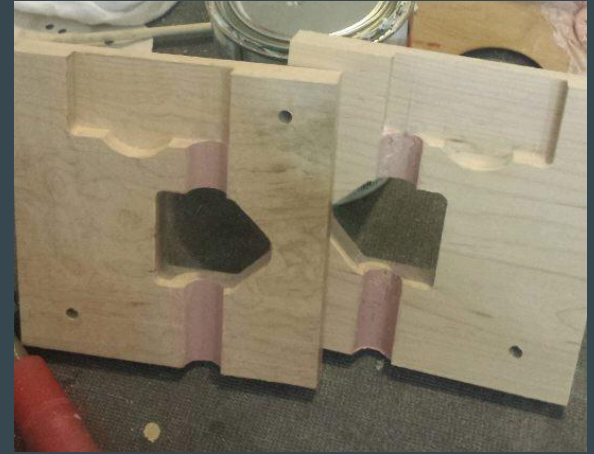


Core Box

- Wooden core box used



Front

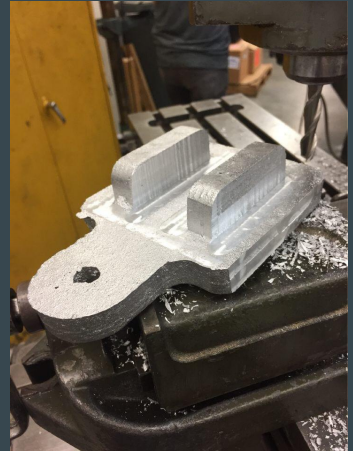


Inside



Post Processing

- Once metal has been poured
 - Separate the parts from the sand
 - Put in water to cool down
 - Separate components from risers and gates
 - Machined if needed
 - Assemble



Conclusion

- Final product
 - Casting of Grommet Press was successful
- Recommendation
 - Heat treatment to make the Grommet Press stronger

