Math Manufacturing at Alcoa	Name: _____ Date: _____ Homeroom: (Circle One) PENN STATE MIAMI HOWARD	

Do Now

1) What is a manufacturing plant?
2) What are some companies that manufacture (make) products in Cleveland?
3) Have you ever been on a plane? If so, what did it look like inside?
4) What is a fighter jet?

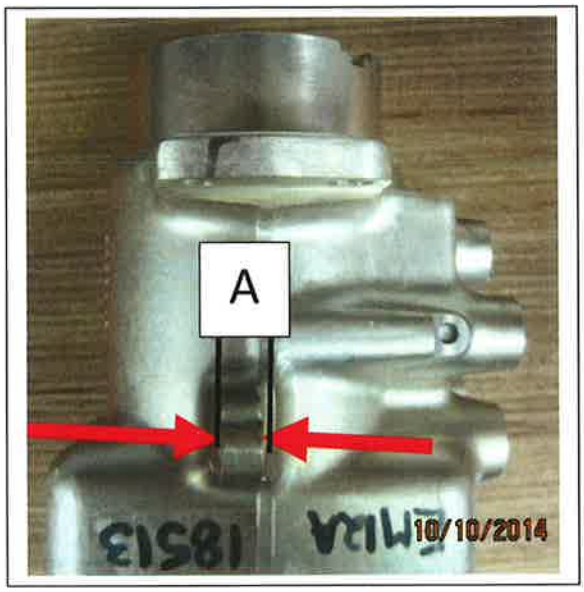
MAGNET
Manufacturing Advocacy & Growth Network
AN OHIO MEP AFFILIATE

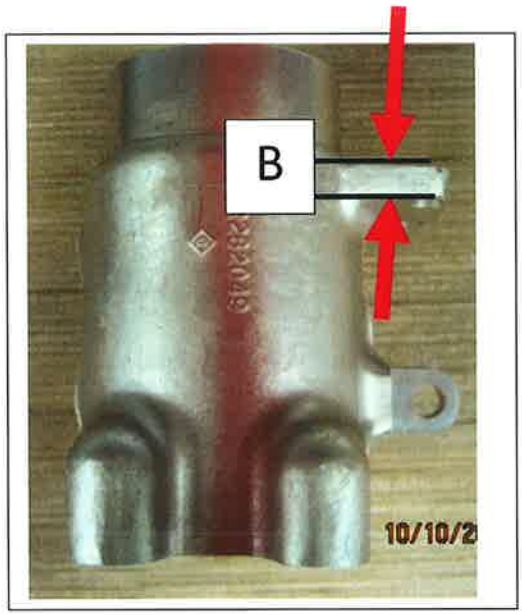
PART 1

Part Name: Valve Body

Weight: 3.4 lbs.

Function on the Press: Releases fluid inside of it. Makes the press go up and down.





Instructions:

Each person on each team takes the part and measures locations A and B.

Each person records their measurements on the final inspector form.

Dimension A Specification: .380" +.030" / - .030"

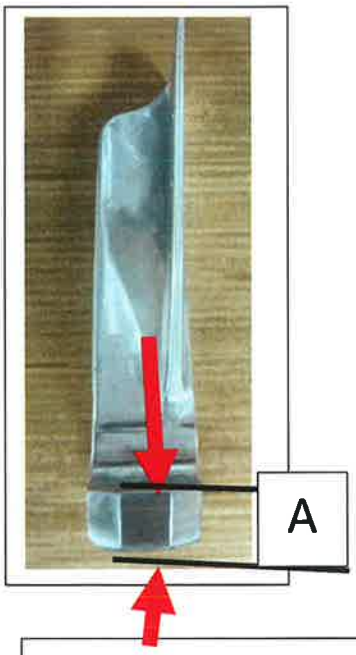
Dimension B Specification: .385" +.030" / - .030"

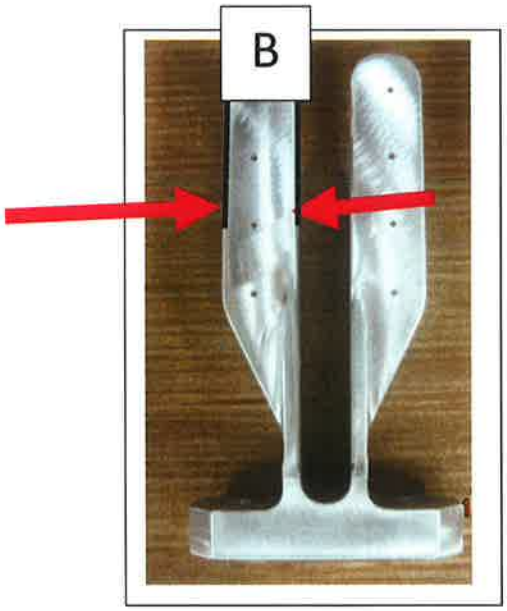
PART 2

Part Name: Assembly Clip

Weight: 1.2 lbs.

Function on the Press: This holds the saside shield in place. It ensures the operators are safe.





Instructions:

Each person on each team takes the part and measures locations A and B.

Each person records their measurements on the final inspector form.

Dimension A Specification: .690" +.035" / - .030"

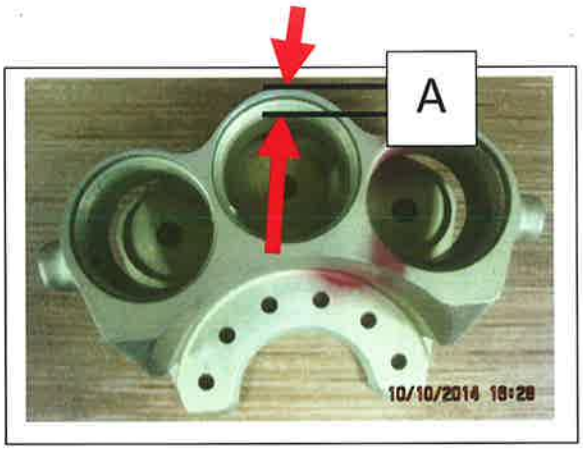
Dimension B Specification: 1.000" +.040" / - .030"

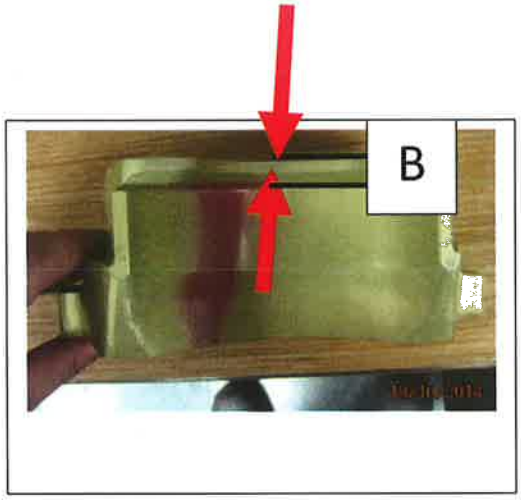
PART 3

Part Name: Brake Housing

Weight: 2.4 lbs.

Function on the Press: Ensures the press stops when it goes down. Acts as a brake or stopper.





Instructions:

Each person on each team takes the part and measures locations A and B.

Each person records their measurements on the final inspector form.

Dimension A Specification: .140" +.030" / - .030"

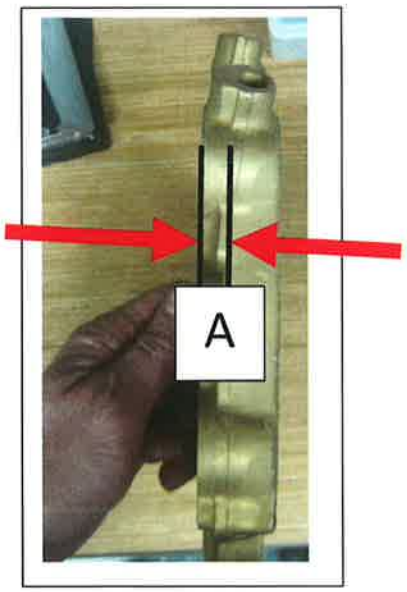
Dimension B Specification: .330" +.030" / - .030"

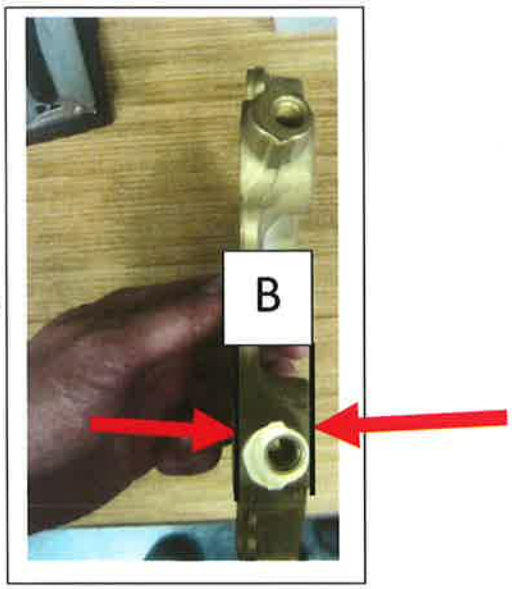
PART 4

Part Name: Pressure Plate

Weight: 2.1 lbs.

Function on the Press: Creates force so the press closes properly and good parts are made.





Instructions:

Each person on each team takes the part and measures locations A and B.

Each person records their measurements on the final inspector form.

Dimension A Specification: .370" +.030" / - .030"

Dimension B Specification: 1.146" +.030" / - .030"

Name_____ HR_____

Exit Ticket

Directions: Solve all problems **SHOWING ALL WORK. Circle your final answer!!**

1) What are two new things you learned today?
2) What is something you would like to learn more about after today's lesson?
3) How does Mr. Smereczynsky use math as an engineer at Alcoa?

Team 1 Names:

_____

Part 1: Valve Body

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Part 2: Assembly Clip

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Part 3: Break Housing

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Part 4: Pressure Plate

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Team 2 Names:

_____

Part 1: Valve Body

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Part 2: Assembly Clip

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Part 3: Break Housing

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Part 4: Pressure Plate

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Team 3 Names:

_____

Part 1: Valve Body

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Part 2: Assembly Clip

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Part 3: Break Housing

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Part 4: Pressure Plate

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Team 4 Names:

_____

Part 1: Valve Body

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Part 2: Assembly Clip

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Part 3: Break Housing

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Part 4: Pressure Plate

- **Measured Dimension A (Record 4 decimal places):**_____
- **Measured Dimension A (Rounded to 3 decimal places):**_____

- **Measured Dimension B (Record 4 decimal places):**_____
- **Measured Dimension B (Rounded to 3 decimal places):**_____

Name: _____ Date: _____

Manufacturing in Middle School Mathematics

Armon works for a company that manufactures parts for the automotive industry. He works in the quality control department and is in charge of identifying and fixing significant errors in the production of many different parts. He recently began working on a project that involves measuring the length of control arms for a specific model of car. The length of the control arm should be 15 ½" from center bolt to center bolt, with an allowed margin of error of 3/16".

Below is a list of different parts and their measurements. Help Armon determine if the parts meet his company's standards by calculating each margin of error.

Part #:	Measured Length:	Margin of Error (+/- $\frac{3}{16}$ in.)	Pass/Fail?
901156	15.44"		
901157	15.36"		
901158	15.17"		
901159	15.69"		
901160	15.874"		
901161	16.004"		
901162	15.503"		
901163	15.37"		

Name_____ HR_____

Exit Ticket

Directions: Solve all problems **SHOWING ALL WORK. Circle your final answer!!**

1) What are two new things you learned today?
2) What is something you would like to learn more about after today's lesson?
3) How does Mr. Smereczynsky use math as an engineer at Alcoa?

MAGNET
Manufacturing Advocacy & Growth Network
AN OHIO MEP AFFILIATE