Wheel Balance

Description
This activity plan is designed as one among many through which students will rotate in small groups. The activity involves dismounting and remounting a tire on a tire machine. Such operations are required in the automotive field whenever a different tire has to be installed on a rim/wheel or for a flat repair. Many entry- or apprentice-level mechanics are required to be quite competent in this task. This activity would definitely be considered to be a “hook” exercise, designed to draw interest into the field.

Lesson Outcomes
The student will be able to balance a single wheel and/or tire assembly so that each side of the tire is balanced to specifications.

Assumptions
Many of the terms used in this activity plan overlap with Tire Change. This activity should be introduced after the tire change activity. Before trying themselves, students should have been given some theory and the instructor should have demonstrated the proper procedures for balancing a tire.

Terminology
-Aluminum mag: a wheel that is constructed of aluminum.
-Bead area: the area of the tire that is sealed to the rim.
-Rim centre: the middle of the wheel (the round opening in the centre).
-Rim diameter: the diameter of the wheel, not the tire.
-Rim width: how wide the rim is.
-Steel wheel: a wheel that is constructed of steel.
-Tire balancing machine: a machine that is used to calculate how much weight has to be installed on each side of the tire/rim assembly.
-Wheel weight: a small weight that is hammered onto the wheel in order to equalize or balance the tire.
-Wheel weight hammer: a small, specialized hammer that is used to install the wheel weights onto the rim assembly.
-Zero: the reading that most wheel balancers state when both sides of the tire/rim assembly are balanced.
Estimated time
30–45 minutes

Recommended Number of Students
20, based on the BC Technology Educators’ Best Practice Guide, groups of 2–3 students

Facilities
Automotive shop or similar

Tools
• Tire balancing machine
• Wheel balance weight pliers
• Wheel weight hammer

Figure 1—Wheel balance weight pliers

Materials
• At least one wheel/tire assembly
• Selection of wheel weights
Resources for Tire Change and Wheel Balance

Tire Removal/Replacement—Andrada Polytechnic High School
https://www.youtube.com/watch?v=BsOUTR_lTeE

MSCTC Tire Changing Training Video
www.youtube.com/watch?v=tmW9YJpVwO4

Dismount and Mount Tire Demo
www.youtube.com/watch?v=m303xb2CUjw

How to Mount and Balance a Tire—Eric the Car Guy
www.youtube.com/watch?v=8hOZXlr1ujE

Tire Balancer Demo
www.youtube.com/watch?v=bC5p08jTTvo
Activity

1. Make sure both the inner and outer beads of the tire are properly seated on the wheel.
2. Ensure that the tire pressure is within manufacturer’s specifications.
3. Mount the tire/wheel assembly onto the tire machine using the correct size centring cones.
4. Make sure that the wheel assembly is properly mounted.
5. Measure the rim diameter and enter this number into the wheel balancer.
6. Measure the rim width and enter this number into the wheel balancer.
7. Measure the distance the inside of the wheel assembly sits from the wheel balancer and enter this number into the machine.
8. Start the machine and then wait until it stops.
9. Most tire machines will give numbers for balancing both the left and right sides of the wheel/tire assembly.
10. Rotate the wheel into the exact position that the balancer wants and install the required wheel weight onto the left side of the wheel.
11. Rotate the wheel again into the exact position that the balancer wants and install the required wheel weight onto the right side of the wheel.
12. Start the machine again and wait until it stops.
13. If done correctly, both sides of the wheel should read to zeroes.
14. If numbers other than zeroes appear, it is best to start the process again from step number 8.

Evaluation Guidelines

Wheel Balance Rubric (see next page)
## Wheel Balance Rubric

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Poor</th>
<th>Below Standard</th>
<th>Satisfactory</th>
<th>Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are the correct centring cones used?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Are the correct rim diameter specifications entered into the balancer?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Are the correct rim width specifications entered into the balancer?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Is the correct distance that the tire sits from the balancer entered?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Does the balancer read “Zero” on both sides to indicate that the tire is successfully balanced?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Total:** /25