Unit 3: Brakes

Content Area: **Applied Technology**
Course(s):
Time Period: **Marking Period 1**
Length: **3 weeks**
Status: **Published**

Brief Summary of Unit

Students will learn the basic functions and operation of the automotive brake system. They will learn how hydraulics and Pascal's law are applied to the automotive braking system, basic diagnostic procedures, and how to troubleshoot simple brake problems. Emphasis will be on safety.

Revised: July 2023

Essential Questions/Enduring Understandings

Essential Questions

- How will understanding how automotive brakes operate help a student when they have a brake concern?

Enduring Understandings

- The Brake system is one of the most important systems in the vehicle
- Proper maintenance is extremely critical
- Modern brakes work to the science of liquid in motion and Pascals Law

Objectives

Students Will Know

- how disc and drum brakes operate and the use of hydraulics in the brake system
- the components of each (disc and drum), the type of brakes
- Pascal's law and how it pertains to a modern brake system
- how air affects the brake system and common problems that can occur.

Students Will Be Skilled At

- recognizing automotive brake concerns
- relating concerns to an automotive professional
- basic automotive brake inspections and repairs

Learning Plan

- Preview the essential questions and connect to learning throughout the unit.
- Teacher presentation and student research into brake functions, wear, maintenance, and repair.
- Modern Automotive Technology text and workbook assignments.
- Hands-on job sheet on brake repair and maintenance.
- Written test
- Writing prompt on brake safety.
- Use of a cooperative learning technique to evaluate unit mastery.
- Closing discussion.

Assessment

Formative

- Answer essential questions
- Participate in class discussions
- Demonstrate proper and safe work habits daily.

Summative

- Section Quizzes and Tests

Benchmark

- Hands on performance of Job Sheets
- Final Exam

Alternative

- Verbal test
- Power points the student created that shows an understanding of unit.

Materials

- Use of Modern Automotive Technology text and workbook.
- Use of video and internet information.

vehicles and automotive shop equipment

Standards

LA.RI.11-12.4	Determine the meaning of words and phrases as they are used in a text, includin figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).
LA.RST.11-12.2	Determine the central ideas, themes, or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
LA.RST.11-12.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
LA.RST.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP8.1	Career-ready individuals readily recognize problems in the workplace, understan the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.
CAEP.9.2.12.C.3	Identify transferable career skills and design alternate career plans.
TECH.8.1.8	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.1.12	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.1.12.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.

TECH.8.1.12.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
TECH.8.2.8	Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.
TECH.8.2.12	Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.
TECH.8.2.12.A	The Nature of Technology: Creativity and Innovation: Technology systems impac every aspect of the world in which we live.
TECH.8.2.12.B	Technology and Society: Knowledge and understanding of human, cultural and society values are fundamental when designing technology systems and product in the global society.

Suggested Strategies For Modification

https://docs.google.com/spreadsheets/d/1uiLPbTXK4FZS_Pj1-X11O_BGMLz19ri5fVsil6XbSy0/edit?usp=sharing