

Performance Evaluation/Assessment

Automotive Technology

NATEF Brake Systems

Standardized Integration Module (SIM)

Task 4: Disc Brake Diagnosis and Repair

Hours: 15

Date: 9/01/2008

Exit Outcome/Terminal Performance Objective:

- Demonstrate the ability to perform disc brakes diagnosis and repairs.

Enabling Objectives:

- Explains basic disc brake theory.
- Explains basic disc brake operation.
- Explains basic steps to diagnosis disc brake systems problems.
- Explains steps to perform disc brake diagnosis.
- Identifies disc brake system components.
- Explains basic steps to repair disc brake systems
- Performs basic disc brake diagnosis and repairs.
- Locate correct diagnostic, repair, service & maintenance information using ShopKey.

Mastery: All hands-on tasks must be completed to 100% accuracy and to industry standards.

To achieve Mastery of this task, the student must:

1. Participate in a lecture, view either the PowerPoint presentation or video of the material.
2. Participate in a demonstration of the task.
3. Participate in a guided application of the task.
4. Practice the task without the instructor.
5. Complete task to 100% accuracy.
6. Demonstrate or practice the task with another student.

Academic Standards:

Science

PA Academic Standard:

4.3.10.C Explain biological diversity as an indicator of a healthy environment.

Assessment Anchor:

S11.A.3.1 Analyze the parts of a simple system, their roles, and their relationships to the system as a whole.

Eligible Content:

S11.A.3.1.1 Apply systems analysis, showing relationships (e.g., flowcharts, concept maps), input and output, and measurements to explain a system and its parts.

S11.A.3.1.2 Analyze and predict the effect of making a change in one part of a system on the system as a whole.

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Math

PA Academic Standard:

2.2.11.A Use operations (e.g., opposite, reciprocal, absolute value, raising to a power, finding roots, finding logarithms).

2.5.11.A Select and use appropriate mathematical concepts and techniques from different areas of mathematics and apply them to solving non-routine and multi-step problems.

Assessment Anchor:

M11.A.2.1 Apply ratio and/or proportion in problem-solving situations.

M11.A.2.2 Use exponents, roots and/or absolute value to solve problems

Eligible Content:

M11.A.2.1.1 Solve problems using operations with rational numbers including rates and percents (single and multi-step and multiple procedure operations) (e.g., distance, work and mixture problems, etc.).

M11.A.2.2.1 Simplify/evaluate expressions involving positive and negative exponents, roots and/or absolute value

Language Arts

PA Academic Standard:

1.1.11.G Demonstrate after reading understanding and interpretation of both fiction and nonfiction text, including public documents.

1.2.11.A Read and understand essential content of informational texts and documents in all academic areas.

Assessment Anchor:

R11.A.2.3 Make inferences, draw conclusions, and make generalizations based on text.

Eligible Content:

R11.A.2.3.1 Make inferences and/or draw conclusions based on information from text.

R11.A.2.3.2 Cite evidence from text to support generalizations.

Social Studies

PA Academic Standard:

8.1.12.D Synthesize historical approach

Career Education & Work

PA Academic Standard:

13.1.11.A Relate careers to individual interests, abilities, and aptitudes.

SAFETY NOTICE: In addition to following all North Montco Technical Career Center Automotive Technology Program Safety and MSDS Policies, refer to the specific vehicle's manufacturer's shop manual for complete safety details when performing these tasks.

NOTE: *Safety is not an option!* Although this information is very thorough, it is general and does not fully cover all safety rules, procedures and hazards.

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PERFORMANCE CRITERIA	Needs Practice	Satisfactory
Read and follow all covered and posted safety materials provided and comply with personal and environmental safety practices associated with clothing; eye protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials including MSDS.		
Diagnose poor stopping, noise, vibration, pulling, grabbing, dragging or pulsation concerns; determine necessary action. P-1		
Remove caliper assembly; inspect for leaks and damage to caliper housing; determine necessary action. P-1		
Clean and inspect caliper mounting and slides/pins for operation, wear, and damage; determine necessary action. P-1		
Remove, inspect and replace pads and retaining hardware; determine necessary action. P-1		
Disassemble and clean caliper assembly; inspect parts for wear, and damage; replace seal, boot, and damaged or worn parts. P-3		
Reassemble, lubricate, and reinstall caliper, pads, and related hardware; seat pads, and inspect for leaks. P-1		
Clean, inspect, and measure rotor thickness, lateral runout, and thickness variation; determine necessary action P-1		
Remove and reinstall rotor. P-1		
Refinish rotor on vehicle; measure final rotor thickness. P-1		
Refinish rotor off vehicle; measure final rotor thickness. P-1		
Retract caliper piston on an integrated parking brake system. P-3		
Install wheel, torque lug nuts, and make final checks and adjustments. P-1		
Check brake pad wear indicator system operation; determine necessary action. P-2		
Complete an Outline, 3-4 Reading Grids, Summary and "Last-Word" Worksheet Packet for Chapters 1-10, 80, 71, 72 & 73 from <i>Modern Automotive Technology</i> .		
Score an 80% or better on <i>Modern Automotive Technology</i> Chapter Tests 1-10 & 80		
Score 80% or better on <i>Modern Automotive Technology</i> Chapter Tests 71, 72 and 73		
Score 80% or better on Math Intro Lessons 1-5 & Math Lessons 1, 2, 3, 14 and 15 Homework Sheets		
Score 80% or better on ASE Practice Test 5		
Earn a passing grade on the AYES Brake Exit Exam A-5		